ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500001 2011 PX_{10}	16.1	X	204.80514	298.57908	49.67404	9.91914	0.0998873	0.18301560	3.0723968	20	3 22.4	21.0
500002 2011 PQ_{14}	16.7	X	155.80907	240.39811	172.23281	12.95876	0.1232794	0.17872854	3.1213330	20	4 19.6	21.7
500003 2011 QW_{2}	16.9	X	192.68320	79.59160	231.81125	8.95369	0.2046429	0.17081431	3.2170160	20	1 23.8	22.5
500004 2011 QE_{4}	16.0	X	81.45952	201.45686	247.87233	8.10871	0.0492776	0.17518082	3.1633337	20	2 25.5	20.5
500005 2011 QC_{5}	16.1	X	165.27381	61.82895	284.10783	17.31868	0.1309020	0.16993554	3.2280970	20	2 4.3	21.4
500006 2011 QR_{8}	16.9	X	233.95177	125.78381	182.76084	14.26441	0.0545012	0.17871637	3.1214748	20	3 1.7	21.7
500007 2011 QT_{8}	17.0	X	225.73044	99.04303	179.84216	15.74610	0.1824476	0.17129034	3.2110530	20	1 13.9	22.6
500008 2011 QB_{13}	16.1	X	206.59476	64.92455	271.13923	8.20321	0.2219255	0.17736024	3.1373661	20	2 28.8	21.7
500009 2011 QQ_{17}	16.5	X	211.27045	350.15854	324.13222	14.67728	0.2734228	0.17432984	3.1736198	20	2 11.4	22.0
500010 2011 QY_{19}	16.8	X	171.31345	178.68345	191.14523	2.20144	0.1083225	0.17222700	3.1994001	20	3 11.6	21.9
500011 2011 QB_{20}	16.1	X	127.29815	114.84019	342.23928	26.21071	0.2308343	0.17826751	3.1267123	20	5 10.9	21.8
500012 2011 QD_{34}	16.3	X	185.31691	33.76957	339.10753	12.20395	0.2123184	0.17757876	3.1347918	20	3 25.9	21.7
500013 2011 QN_{35}	15.8	X	181.96254	355.59921	12.21757	28.20418	0.1712016	0.17272010	3.1933079	20	3 24.9	21.1
500014 2011 QL_{47}	16.6	X	204.75989	311.81637	327.59647	23.88066	0.3216112	0.16914078	3.2382013	20	1 4.9	22.8
500015 2011 QZ_{48}	16.1	X	218.18858	329.88612	8.55569	11.62524	0.1755377	0.17790184	3.1309953	20	3 18.1	21.3
500016 2011 QH_{58}	16.3	X	87.97541	198.25091	287.29168	9.16408	0.0704312	0.18528590	3.0472481	20	4 21.0	20.7
500017 2011 QL_{60}	16.2	X	200.36293	162.74414	189.80398	14.51140	0.1869710	0.17654873	3.1469728	20	3 16.9	21.5
500018 2011 QW_{63}	16.7	X	124.60809	282.36041	199.03384	10.80215	0.0480236	0.19596479	2.9355131	20	6 1.7	21.0
500019 2011 QW_{78}	16.2	X	175.50842	17.94699	343.83803	14.66441	0.1052489	0.17231791	3.1982748	20	3 6.1	21.1
500020 2011 QY_{84}	16.7	X	175.77632	35.70098	338.10419	8.60904	0.0930426	0.17485658	3.1672431	20	3 18.4	21.7
500021 2011 QZ_{86}	16.0	X	190.44729	159.91843	184.55423	8.89719	0.0781197	0.17441795	3.1725509	20	2 27.6	20.9
500022 2011 QU_{94}	15.6	X	10.38473	220.53607	330.62854	15.40964	0.0272823	0.17931521	3.1145212	20	3 24.6	20.0
500023 2011 RA_{3}	16.5	X	9.18690	269.54066	285.14024	8.84530	0.0624402	0.18490782	3.0514003	20	3 28.4	20.7
500024 2011 SW	16.8	X	228.73117	130.58734	181.13291	11.87005	0.2038322	0.17676000	3.1444647	20	2 20.8	22.3
500025 2011 SS_{6}	16.4	X	140.56439	93.21013	337.72221	8.84910	0.0819747	0.17882648	3.1201933	20	4 16.8	21.2
500026 2011 SS_{21}	19.0	X	341.45657	279.60625	4.73189	3.25172	0.3165209	0.31865881	2.1228473	20	5 24.6	19.1
500027 2011 SD_{29}	16.3	X	145.26301	142.49202	193.61884	7.00000	0.1304245	0.15139082	3.4866072	20	1 11.4	21.8
500028 2011 SC_{34}	16.2	X	158.83616	271.68773	187.39819	23.64622	0.3784453	0.17741704	3.1366964	20	6 21.1	22.5
500029 2011 SW_{39}	16.2	X	126.80817	76.71755	351.42636	14.92470	0.0863416	0.17364480	3.1819610	20	3 30.3	21.0
500030 2011 SY_{42}	18.9	X	313.23123	353.41846	336.90537	1.21856	0.0740259	0.31766483	2.1272733	20	7 15.6	20.7
500031 2011 SS_{47}	16.5	X	235.50319	131.02375	183.41237	9.34432	0.0675046	0.17513301	3.1639094	20	3 10.6	21.3
500032 2011 SF_{63}	16.0	X	192.88634	141.56113	213.75141	13.84879	0.2232774	0.17402351	3.1773430	20	3 12.1	21.6
500033 2011 SS_{75}	16.2	X	192.70801	47.64293	303.61767	6.52604	0.1451474	0.17457762	3.1706162	20	3 7.9	21.4
500034 2011 SS_{82}	18.1	X	209.27846	190.12630	185.03846	7.22356	0.1532967	0.29139281	2.2532886	20	4 18.5	21.5
500035 2011 SM_{108}	16.2	X	190.63338	30.01769	323.16691	7.23252	0.2800232	0.17460405	3.1702962	20	3 9.8	22.0
500036 2011 SZ_{110}	16.0	X	229.60084	72.98439	253.51356	9.54966	0.1619038	0.17982436	3.1086396	20	3 8.6	21.2
500037 2011 SG_{114}	16.4	X	218.77725	271.78242	30.13379	24.19314	0.3295870	0.17393828	3.1783808	20	2 11.9	22.6
500038 2011 SG_{136}	16.4	X	165.23383	210.07641	194.94294	11.28980	0.1137409	0.17550936	3.1593848	20	4 17.5	21.3
500039 2011 SM_{156}	15.9	X	285.39964	99.75741	178.35558	9.36074	0.0393690	0.17742085	3.1366516	20	3 28.8	20.3
500040 2011 SJ_{177}	16.2	X	263.07840	117.64411	183.48850	9.39790	0.0894599	0.17752943	3.1353725	20	3 23.1	20.6
500041 2011 SV_{191}	16.7	X	144.40895	226.81051	184.95645	11.86557	0.1400026	0.17256562	3.1952134	20	4 7.3	21.7
500042 2011 SK_{192}	16.2	X	164.96784	203.01941	193.69008	8.51034	0.0858840	0.17490194	3.1666955	20	4 5.4	21.0
500043 2011 SJ_{201}	16.6	X	222.33599	120.05056	175.49474	25.93840	0.2643913	0.17205542	3.2015268	20	1 27.0	22.6
500044 2011 SB_{216}	16.1	X	299.94483	267.26165	342.39165	8.31160	0.1645162	0.18267678	3.0761947	20	2 22.8	20.2
500045 2011 SQ_{248}	15.7	X	158.10472	331.96943	26.69110	17.44541	0.1388152	0.15883327	3.3768238	20	2 26.7	21.3
500046 2011 SN_{260}	18.9	X	332.59090	92.39232	221.18215	5.46574	0.1610847	0.31631628	2.1333152	20	7 17.8	20.3
500047 2011 SQ_{262}	16.5	X	260.76195	97.69327	177.57794	21.70726	0.0755448	0.17260643	3.1947097	20	2 18.5	21.4
500048 2011 TC_{6}	15.6	X	200.65006	325.60797	18.88940	27.79506	0.1755564	0.17414975	3.1758074	20	3 19.2	21.1
500049 2011 UY_{5}	18.7	X	292.12091	145.69834	208.89587	2.90252	0.1932763	0.31181882	2.1537791	20	6 24.2	20.6
500050 2011 US_{40}	19.6	X	275.11390	133.42263	239.82992	1.44387	0.1468646	0.31355338	2.1458287	20	7 3.9	21.7
500051 2011 UB_{74}	18.4	X	261.61601	115.23379	268.37831	2.85473	0.1073882	0.30699662	2.1762744	20	7 5.7	20.8
500052 2011 UK_{103}	17.7	X	68.02428	128.33553	245.79863	13.23396	0.1675071	0.24247957	2.5469433	20	—	—
500053 2011 UU_{123}	16.4	X	202.68348	103.27200	205.40895	7.13632	0.2993692	0.16402990	3.3051210	20	1 29.1	22.5
500054 2011 UE_{135}	18.2	X	326.65472	352.13079	346.44880	2.55638	0.1621755	0.31597307	2.1348597	20	8 21.6	19.2
500055 2011 UG_{147}	15.8	X	107.06837	349.05232	59.24639	6.46004	0.0938687	0.14752537	3.5472482	20	2 23.6	20.9
500056 2011 UZ_{154}	16.0	X	247.37326	161.69959	168.44852	10.86925	0.1233125	0.18209992	3.0826878	20	4 8.3	20.7
500057 2011 UB_{163}	18.1	X	298.89253	65.28172	284.44924	1.89433	0.2069866	0.31258453	2.1502604	20	6 26.6	19.8
500058 2011 UA_{167}	16.1	X	117.98016	157.64697	276.93219	6.61299	0.0233715	0.17068999	3.2185779	20	3 20.4	20.9
500059 2011 UQ_{185}	15.6	X	126.33599	49.38082	66.57229	22.22996	0.1143063	0.17226893	3.1988809	20	6 1.9	20.4
500060 2011 UQ_{246}	17.9	X	353.86613	21.05999	228.50505	4.80904	0.0749074	0.29139774	2.2532632	20	5 19.5	20.1
500061 2011 UV_{257}	18.3	X	254.16981	342.23040	44.38519	2.75374	0.0413391	0.30548823	2.1834323	20	7 11.1	20.6
500062 2011 UF_{271}	15.5	X	147.98418	100.83366	246.65111	15.11166	0.1405798	0.15826839	3.3848539	20	1 23.4	21.0
500063 2011 UA_{286}	15.6	X	187.99243	44.31733	304.26699	15.58114	0.1267327	0.17099690	3.2147254	20	2 26.8	20.9
500064 2011 UY_{291}	18.7	X	265.66325	226.40391	95.76874	4.65365	0.1718556	0.29665397	2.2265679	20	4 6.3	21.7
500065 2011 UO_{303}	18.4	X	264.83261	325.91521	60.45770	3.58494	0.1032160	0.30938214	2.1650730	20	7 16.6	20.7
500066 2011 UO_{314}	18.6	X	236.85691	276.58926	138.74708	2.57313	0.0922022	0.30819599	2.1706246	20	7 20.4	21.0
500067 2011 UK_{316}	18.4	X	84.54747	326.45593	246.71870	4.55534	0.0485301	0.30781668	2.1724075	20	8 18.5	21.1
500068 2011 UY_{381}	15.8	X	199.61426	285.88092	86.62020	11.52913	0.1541375	0.17501449	3.1653377	20	4 15.5	21.1
500069 2011 UC_{406}	16.7	X	185.34376	279.98729	103.25057	6.48574	0.2003998	0.17333911	3.1857009	20	4 13.7	22.1
500070 2011 VW_{15}	18.9	X	254.13069	193.86978	210.62721	0.87633	0.1021565	0.31169263	2.1543604	20	7 27.5	21.3
500071 2011 VE_{19}	16.0	X	256.49409	307.32411	47.49876	10.09761	0.0839674	0.18232103	3.0801950	20	5 20.6	20.6
500072 2011 WN_{25}	17.9	X	35.58427	163.25412	61.49907	7.81722	0.1250935	0.29700869	2.2247947	20	7 3.7	20.0
500073 2011 WD_{27}	15.7	X	186.71168	3.16076	64.71587	18.77255	0.1095278	0.17760085	3.1345319	20	6 3.3	20.6
500074 2011 WB_{35}	17.5	X	13.18085	171.70521	64.41569	4.44740	0.1245496	0.29164232	2.2520033	20	6 5.6	19.3
500075 2011 WU_{67}	18.5	X	186.89655	218.81714	220.69297	3.67037	0.1024494	0.29355144	2.2422287	20	6 21.5	21.5
500076 2011 WO_{70}	17.5	X	96.87490	124.85781	61.66056	6.41538	0.0718644	0.29821328	2.2187995	20	8 3.5	20.3
500077 2011 WJ_{76}	18.2	X	290.99639	66.48079	269.00450	4.60849	0.1433047	0.30250422	2.1977676	20	5 31.7	20.3
500078 2011 WZ_{88}	18.2	X	129.75341	220.12924	266.93820	5.58998	0.1142338	0.28667263	2.2779555	20	6 22.8	21.2
500079 2011 WY_{92}	17.9	X	244.89894	261.79441	95.85489	4.76442	0.2218509	0.29482905	2.2357464	20	4 26.3	21.3
500080 2011 WV_{134}	17.1	X	272.11371	25.70452	157.72179	6.04079	0.6783741	0.21206605	2.7849792	20	11 13.3	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500081 2011 WJ_{148}	18.1	X	228.79299	146.60497	262.27585	5.36212	0.1087889	0.29823209	2.2187062	20	6 27.6	21.0
500082 2011 YF_{1}	17.1	X	115.58145	10.21181	92.79708	10.75164	0.0644678	0.27205624	2.3588315	20	4 30.8	20.3
500083 2011 YO_{11}	17.5	X	88.33330	78.21535	102.79606	6.64630	0.1029336	0.28504694	2.2866084	20	7 16.2	20.3
500084 2011 YF_{26}	18.8	X	236.29315	164.44519	245.48937	0.30153	0.1992704	0.29629026	2.2283896	20	6 27.6	22.0
500085 2011 YK_{37}	18.5	X	248.92150	271.80523	127.45632	3.22857	0.2154161	0.29763519	2.2216716	20	6 24.9	21.5
500086 2011 YO_{43}	17.7	X	221.91057	125.21789	288.67774	6.52980	0.0891733	0.29221837	2.2490427	20	6 28.5	20.7
500087 2011 YL_{57}	17.8	X	79.91583	81.72409	91.06047	6.14249	0.0283784	0.27912868	2.3188166	20	6 9.4	20.6
500088 2011 YK_{65}	17.7	X	68.69870	44.01680	129.82805	7.44126	0.0440998	0.27599159	2.3363549	20	5 29.3	20.6
500089 2011 YE_{73}	18.1	X	143.10839	130.61788	330.71167	5.26699	0.1047474	0.27834412	2.3231719	20	5 31.7	21.4
500090 2011 YQ_{74}	15.0	X	109.11223	304.10126	313.41643	15.60219	0.1994227	0.17968874	3.1102035	20	11 5.4	20.5
500091 2012 AD_{15}	16.8	X	104.13696	219.57967	306.85024	24.15956	0.1436945	0.28273669	2.2990475	20	7 22.7	19.9
500092 2012 BA_{10}	16.8	X	304.09801	75.11595	147.40995	29.32933	0.3188421	0.23309932	2.6148214	20	—	—
500093 2012 BB_{17}	18.0	X	2.86859	86.42090	105.16849	3.39620	0.1416817	0.25238240	2.4798762	20	3 9.2	20.4
500094 2012 BC_{20}	18.7	X	350.07738	103.90288	151.65689	23.83579	0.2789042	0.61221064	1.3736269	20	2 22.9	17.4
500095 2012 BT_{20}	17.7	X	159.39510	212.17257	280.68710	5.55855	0.1527775	0.28909852	2.2651943	20	8 2.4	21.1
500096 2012 BY_{20}	18.2	X	97.40209	24.00828	118.49889	5.40239	0.1145589	0.26873167	2.3782462	20	6 4.8	21.3
500097 2012 BX_{21}	18.1	X	195.17056	317.30859	140.40909	7.31344	0.1257151	0.29363148	2.2418212	20	7 24.8	21.3
500098 2012 BY_{28}	17.8	X	241.09238	81.07360	285.91202	5.49844	0.1173381	0.28448805	2.2896022	20	5 11.9	20.9
500099 2012 BK_{38}	18.2	X	179.42233	152.18649	315.36751	4.90445	0.1613523	0.29071230	2.2568036	20	7 20.9	21.5
500100 2012 BP_{51}	18.3	X	119.44835	198.58293	288.58021	4.10090	0.0909873	0.27562345	2.3384348	20	6 7.5	21.4
500101 2012 BZ_{59}	17.9	X	202.38534	82.42024	316.71077	6.39250	0.1295012	0.28012180	2.3133328	20	5 10.9	21.6
500102 2012 BX_{70}	18.3	X	73.79320	185.98079	313.10964	0.53618	0.1247368	0.26291266	2.4132096	20	4 27.8	21.1
500103 2012 BA_{73}	17.0	X	83.99326	17.99621	142.33721	13.57864	0.0943883	0.26894210	2.3770055	20	6 10.2	20.2
500104 2012 BW_{82}	17.7	X	337.54643	121.81313	119.48166	4.84844	0.1720361	0.25958172	2.4338098	20	3 30.8	20.1
500105 2012 BQ_{84}	18.2	X	113.63779	183.96435	329.74317	4.43948	0.0937358	0.28020064	2.3128988	20	7 9.0	21.3
500106 2012 BH_{85}	17.9	X	33.83342	182.51222	341.93704	1.79974	0.1149153	0.25703282	2.4498735	20	3 25.8	20.2
500107 2012 BA_{91}	17.5	X	168.10904	304.68471	130.11872	7.13000	0.0779332	0.27421787	2.3464189	20	5 25.8	20.8
500108 2012 BQ_{91}	18.1	X	53.50596	124.68868	109.06255	2.64500	0.1718160	0.27886015	2.3203050	20	8 24.5	20.7
500109 2012 BS_{94}	18.3	X	52.09132	65.41725	134.77176	5.00883	0.1731089	0.27048373	2.3679651	20	7 1.2	20.7
500110 2012 BJ_{100}	18.2	X	234.62159	324.08801	101.64981	5.09486	0.1333603	0.29560492	2.2318326	20	7 26.7	21.1
500111 2012 BV_{100}	18.5	X	216.15655	81.72591	340.74214	2.18870	0.1201462	0.28833410	2.2691962	20	6 30.4	21.5
500112 2012 BL_{105}	17.4	X	68.46985	54.42807	109.72020	8.97883	0.0693156	0.26695593	2.3887810	20	5 19.9	20.4
500113 2012 BA_{111}	18.4	X	91.79999	349.51361	156.42517	3.46369	0.0883156	0.26899594	2.3766883	20	5 28.9	21.4
500114 2012 BW_{114}	18.2	X	148.83052	135.89580	304.19222	7.42909	0.0492921	0.27005049	2.3704970	20	5 2.6	21.4
500115 2012 BE_{118}	18.1	X	32.92874	50.52785	143.95974	1.82154	0.1198992	0.26456143	2.4031729	20	5 10.2	20.5
500116 2012 BO_{118}	18.7	X	50.22680	41.84911	144.28140	1.85664	0.1219588	0.26768423	2.3844462	20	5 29.1	21.2
500117 2012 BO_{125}	18.1	X	185.48702	124.38955	302.04291	6.04458	0.0939155	0.27669695	2.3323826	20	6 1.0	21.4
500118 2012 BM_{137}	18.6	X	221.63269	326.25099	106.07020	2.87510	0.1585417	0.29303846	2.2448447	20	7 16.8	21.8
500119 2012 BV_{137}	18.9	X	230.08575	176.39657	229.81939	1.89321	0.1929006	0.29280111	2.2460577	20	6 16.4	22.2
500120 2012 BP_{148}	18.1	X	106.02960	329.28222	156.71404	6.94610	0.0778903	0.26838676	2.3802833	20	5 19.8	21.3
500121 2012 BW_{149}	18.1	X	127.82948	347.03602	189.26286	4.01362	0.1208796	0.28765415	2.2727707	20	8 27.3	21.4
500122 2012 CX_{6}	18.6	X	278.27594	254.31572	151.72678	4.61112	0.1308177	0.30355220	2.1927063	20	9 2.3	20.5
500123 2012 CK_{11}	18.3	X	100.09282	161.48929	336.90137	4.90872	0.0557021	0.26902841	2.3764971	20	5 22.3	21.3
500124 2012 CW_{12}	17.1	X	243.94541	224.53193	123.00357	7.57927	0.1364701	0.26735813	2.3863847	20	4 22.5	20.6
500125 2012 CB_{14}	18.5	X	117.95333	179.02722	345.35526	1.19434	0.1141943	0.28109725	2.3079779	20	7 31.1	21.5
500126 2012 CB_{16}	18.0	X	42.60258	267.47461	299.25586	1.62406	0.1352699	0.26808133	2.3820910	20	6 17.9	20.4
500127 2012 CP_{19}	18.4	X	145.46191	141.84495	336.34455	2.92541	0.1615870	0.28088609	2.3091345	20	7 1.0	21.8
500128 2012 CD_{25}	17.7	X	211.86145	183.64267	290.64644	6.64246	0.0295765	0.29706398	2.2245186	20	9 14.8	20.5
500129 2012 CV_{27}	17.9	X	235.27478	63.37243	336.92007	6.01025	0.0920556	0.28750620	2.2735503	20	6 25.8	20.9
500130 2012 CW_{27}	18.2	X	162.85396	137.17854	314.01048	5.03467	0.1700791	0.27896447	2.3197265	20	6 11.8	21.8
500131 2012 CW_{32}	17.3	X	285.68593	355.28598	199.71048	3.50140	0.1605561	0.22522325	2.6754319	20	—	—
500132 2012 CT_{33}	18.3	X	185.56199	121.55545	311.68450	4.67107	0.1340848	0.27921852	2.3183192	20	6 10.2	21.7
500133 2012 CC_{35}	18.2	X	291.06104	241.72318	138.64512	6.90580	0.2311440	0.30167580	2.2017892	20	7 26.4	20.1
500134 2012 CX_{36}	18.4	X	186.21593	143.78069	308.61666	1.56562	0.1894270	0.28710096	2.2756892	20	7 5.8	22.0
500135 2012 CT_{42}	17.9	X	68.00186	108.15362	111.05817	6.29042	0.1458407	0.27843291	2.3226780	20	8 20.3	20.7
500136 2012 CO_{46}	22.7	X	237.81475	64.36448	349.63428	3.63039	0.1968005	0.64947737	1.3205658	20	8 5.0	21.5
500137 2012 CD_{52}	17.9	X	169.46090	265.19360	167.89864	5.85986	0.0917375	0.27112928	2.3642049	20	5 24.9	21.3
500138 2012 CC_{55}	17.2	X	308.38263	112.92236	117.12719	24.48886	0.0701177	0.36113342	1.9529491	20	1 25.9	19.0
500139 2012 DY_{4}	18.3	X	130.40721	141.35332	355.34793	1.10180	0.1225449	0.27732268	2.3288729	20	7 7.5	21.6
500140 2012 DG_{8}	17.4	X	285.88744	121.81533	101.81679	6.65676	0.3351852	0.22402387	2.6849725	20	—	—
500141 2012 DP_{12}	17.3	X	297.65026	67.41821	106.50261	14.01988	0.2239380	0.22320318	2.6915501	20	—	—
500142 2012 DO_{15}	16.7	X	274.92705	207.16875	21.30290	13.71744	0.2323013	0.22026103	2.7154654	20	—	—
500143 2012 DT_{16}	15.9	X	224.36522	309.18476	9.49179	11.16355	0.2016976	0.24488351	2.5302476	20	2 25.6	20.2
500144 2012 DW_{16}	18.1	X	151.73489	109.47582	19.20034	7.45154	0.0582867	0.28051161	2.3111891	20	7 20.1	21.3
500145 2012 DC_{30}	16.9	X	304.98990	67.71956	167.52502	13.22645	0.1592721	0.23542515	2.5975713	20	2 2.3	20.5
500146 2012 DH_{32}	18.0	X	123.18864	154.87174	348.68937	6.27161	0.1412964	0.27412445	2.3469519	20	7 11.4	21.4
500147 2012 DU_{34}	17.4	X	321.73583	265.24453	357.69229	10.12570	0.1475539	0.25349798	2.4725953	20	4 3.0	20.1
500148 2012 DS_{45}	18.2	X	60.19854	128.95170	71.38438	3.02327	0.1582230	0.26501875	2.4004075	20	7 12.1	20.9
500149 2012 DH_{49}	17.9	X	92.32530	81.32147	131.96000	3.76685	0.0893943	0.27963960	2.3159914	20	9 3.9	20.9
500150 2012 DA_{55}	17.6	X	127.82482	129.26047	317.76988	4.08013	0.0640227	0.26744140	2.3858893	20	4 18.0	20.8
500151 2012 DA_{64}	17.5	X	308.14789	308.49499	317.57027	13.96867	0.1192039	0.25777885	2.4451445	20	3 16.7	20.8
500152 2012 DR_{66}	16.9	X	192.88327	17.06916	152.32632	5.66002	0.0881256	0.18539147	3.0460911	20	10 17.0	21.6
500153 2012 DW_{66}	17.7	X	305.94717	199.13558	14.24396	1.55770	0.1545077	0.23368065	2.6104830	20	1 9.8	21.3
500154 2012 DE_{80}	18.0	X	66.45528	125.56136	58.95522	2.04793	0.1253469	0.26632290	2.3925648	20	6 22.4	20.6
500155 2012 DF_{81}	17.8	X	21.21152	146.70149	73.21351	3.64427	0.1576370	0.25961138	2.4336245	20	5 30.0	20.0
500156 2012 DG_{89}	16.9	X	314.97810	308.18926	274.90015	3.86704	0.2428030	0.23358983	2.6111596	20	1 19.7	20.5
500157 2012 EU	18.0	X	9.12143	261.66194	318.49586	3.82026	0.0899922	0.25863914	2.4397195	20	4 30.6	20.7
500158 2012 ED_{5}	17.4	X	284.24415	264.40342	338.76608	6.75484	0.3666006	0.22638293	2.6662873	20	1 3.0	22.0
500159 2012 EY_{13}	18.4	X	168.59435	90.02002	30.82552	7.81538	0.1936502	0.28237245	2.3010241	20	7 29.6	22.3
500160 2012 EQ_{16}	17.6	X	177.51696	32.79420	61.88895	6.99433	0.0514158	0.27192367	2.3595981	20	7 2.2	20.7

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500161 2012 EW_{16}	16.6	X	261.38659	254.85349	85.84996	8.58159	0.2642546	0.25514884	2.4619184	20	4 19.5	20.6
500162 2012 EH_{17}	17.2	X	82.80189	131.03307	53.17829	7.30009	0.1095920	0.26850467	2.3795865	20	7 14.2	20.3
500163 2012 FS	18.1	X	145.43600	52.53610	91.27344	4.85935	0.1581648	0.28094895	2.3087900	20	8 5.1	21.6
500164 2012 FH_{6}	17.6	X	256.39301	180.47613	208.20977	3.32741	0.1934427	0.28432244	2.2904912	20	6 21.5	20.5
500165 2012 FO_{12}	17.5	X	142.00969	304.62495	165.37401	6.19188	0.1601911	0.27009460	2.3702389	20	6 16.3	21.2
500166 2012 FS_{12}	17.8	X	191.24187	29.66083	42.94050	2.98373	0.1907597	0.27596041	2.3365309	20	6 13.8	21.5
500167 2012 FP_{19}	18.1	X	351.90323	184.62450	81.92384	2.46128	0.1599878	0.26124022	2.4234981	20	6 9.3	20.2
500168 2012 FY_{19}	18.3	X	172.33711	313.73203	144.36703	4.71299	0.1517330	0.27663957	2.3327052	20	6 30.1	21.8
500169 2012 FC_{21}	17.6	X	79.29784	175.77352	18.57474	7.22313	0.0872268	0.27124660	2.3635231	20	7 21.7	20.6
500170 2012 FF_{25}	17.4	X	269.56332	282.88856	356.74967	30.05300	0.2511859	0.23509883	2.5999744	20	2 22.8	21.9
500171 2012 FW_{25}	18.1	X	29.64687	14.70708	177.78196	6.70748	0.0982582	0.25338545	2.4733274	20	4 30.6	20.8
500172 2012 FP_{34}	17.8	X	110.38840	126.93389	38.58713	6.48311	0.0229551	0.27066738	2.3668938	20	7 12.7	20.8
500173 2012 FX_{40}	18.2	X	40.23849	220.46988	339.53311	0.93635	0.1295264	0.25939412	2.4349832	20	6 1.9	20.5
500174 2012 FH_{42}	18.2	X	103.04890	63.09656	96.59403	2.30012	0.1164580	0.26791505	2.3830765	20	7 5.8	21.4
500175 2012 FM_{44}	17.2	X	46.72461	77.77696	153.98779	7.63485	0.1569245	0.26210217	2.4181819	20	8 4.7	19.9
500176 2012 FN_{45}	18.2	X	106.58709	123.25534	33.26065	1.81031	0.1206881	0.26998950	2.3708539	20	7 6.6	21.4
500177 2012 FW_{45}	18.0	X	357.63883	129.94645	138.91682	3.06866	0.1438671	0.26349344	2.4096623	20	6 26.5	20.1
500178 2012 FN_{46}	17.7	X	230.14132	120.40301	149.45947	2.35822	0.1846881	0.21944968	2.7221544	20	1 3.2	22.1
500179 2012 FL_{47}	17.9	X	181.81468	279.65288	153.33372	5.83424	0.2128543	0.27427634	2.3460854	20	6 6.6	21.9
500180 2012 FC_{49}	18.0	X	126.60115	100.92298	20.61243	7.09612	0.1151862	0.26619978	2.3933025	20	6 10.2	21.4
500181 2012 FG_{50}	17.3	X	279.68851	147.15664	135.14016	5.75513	0.1604221	0.24123479	2.5556973	20	3 5.4	20.8
500182 2012 FK_{51}	18.0	X	356.49839	130.58716	133.50728	4.74883	0.0719516	0.26439053	2.4042085	20	6 16.2	20.6
500183 2012 FH_{53}	17.7	X	271.10278	284.14638	342.05166	7.13328	0.1575356	0.23199181	2.6231368	20	2 6.7	21.6
500184 2012 FM_{59}	17.7	X	174.16977	292.39752	152.54796	7.08509	0.0666544	0.27067358	2.3668576	20	6 14.7	21.0
500185 2012 FU_{75}	17.5	X	323.25767	255.72850	327.30000	3.44604	0.1335378	0.23874145	2.5734605	20	2 16.3	20.6
500186 2012 GH_{3}	18.1	X	161.61965	339.13963	153.89565	2.13010	0.1309631	0.27760376	2.3273006	20	8 5.0	21.6
500187 2012 GV_{8}	17.7	X	285.60997	294.06349	329.19187	3.47818	0.1711528	0.23395262	2.6084596	20	2 15.3	21.4
500188 2012 GZ_{16}	16.7	X	250.42817	226.82702	71.90981	13.55617	0.3004238	0.22424480	2.6832088	20	2 20.8	21.7
500189 2012 GB_{19}	18.2	X	135.09247	31.34497	99.47896	2.31212	0.1343993	0.26816586	2.3815904	20	7 4.9	21.6
500190 2012 GZ_{20}	18.2	X	359.00627	205.96160	53.91178	2.08602	0.1521590	0.25982570	2.4322860	20	6 14.5	20.2
500191 2012 GC_{22}	17.1	X	294.42751	198.51585	23.72129	8.06755	0.1761587	0.22344698	2.6895919	20	1 7.3	21.1
500192 2012 GO_{22}	16.9	X	264.78194	159.85839	78.68333	9.32361	0.1988688	0.21576009	2.7530999	20	—	—
500193 2012 GP_{34}	17.9	X	311.41169	246.78137	343.95614	4.79407	0.2353913	0.23085311	2.6317557	20	1 28.1	21.4
500194 2012 GS_{35}	17.7	X	318.76775	346.90897	243.37755	3.54807	0.1053176	0.23382232	2.6094285	20	2 22.7	20.9
500195 2012 GJ_{36}	16.9	X	256.81091	55.91345	231.03827	12.27881	0.1363055	0.22786349	2.6547251	20	2 13.5	21.2
500196 2012 HG_{1}	17.1	X	288.66345	135.31550	129.01569	10.22498	0.0317951	0.22965371	2.6409109	20	3 14.5	20.7
500197 2012 HB_{3}	17.1	X	260.85984	130.27148	138.58935	13.00891	0.1429519	0.22245689	2.6975664	20	1 31.4	21.3
500198 2012 HV_{4}	17.4	X	243.09384	135.58462	136.75957	8.08664	0.2540031	0.21754117	2.7380523	20	1 13.6	22.1
500199 2012 HQ_{6}	17.5	X	336.35090	38.15128	180.92675	17.05742	0.2244722	0.23656546	2.5892172	20	2 14.5	20.5
500200 2012 HQ_{8}	17.0	X	292.95330	92.37456	160.95914	13.22843	0.1326087	0.22922513	2.6442016	20	2 15.9	20.7
500201 2012 HO_{9}	17.2	X	304.67893	112.62090	98.35450	12.26017	0.1180275	0.22233849	2.6985240	20	1 12.3	20.8
500202 2012 HX_{12}	17.8	X	10.24926	101.64397	109.21497	8.16293	0.1557709	0.24298928	2.5433803	20	4 26.4	20.3
500203 2012 HO_{17}	17.4	X	277.84724	107.87324	177.06945	10.43395	0.2974352	0.22630439	2.6669041	20	2 19.2	21.9
500204 2012 HQ_{19}	17.2	X	267.46330	93.34113	155.83396	12.27334	0.1591708	0.21645950	2.7471663	20	1 13.2	21.5
500205 2012 HZ_{26}	17.1	X	284.00760	78.50019	172.71755	12.38705	0.2338970	0.22733585	2.6588312	20	1 21.7	21.5
500206 2012 HF_{27}	17.1	X	349.56254	47.50171	138.58891	9.87761	0.1431438	0.23217360	2.6217674	20	2 7.5	20.0
500207 2012 HQ_{27}	17.8	X	344.84704	171.82904	53.32062	5.68702	0.2134890	0.24015562	2.5633478	20	3 18.1	20.2
500208 2012 HB_{28}	17.5	X	15.71660	350.05673	195.72717	8.76248	0.0999847	0.23891030	2.5722478	20	3 25.5	20.2
500209 2012 HK_{28}	18.0	X	130.05818	43.68585	121.06531	6.67243	0.2004272	0.27455937	2.3444728	20	8 19.3	21.7
500210 2012 HN_{30}	16.4	X	324.98184	141.39236	59.36146	14.10707	0.1070867	0.22600659	2.6692463	20	1 30.5	20.1
500211 2012 HM_{32}	17.3	X	15.53679	355.03981	190.56517	0.82974	0.0787451	0.24237475	2.5476776	20	3 25.3	20.0
500212 2012 HD_{34}	17.6	X	263.51526	153.02293	147.44868	8.49722	0.2190262	0.22979166	2.6398538	20	3 5.8	21.7
500213 2012 HL_{36}	17.2	X	279.51336	90.62739	133.37044	9.34235	0.1950204	0.21838442	2.7309994	20	—	—
500214 2012 HC_{42}	17.8	X	110.12036	164.85664	20.31941	2.30995	0.1459744	0.27562174	2.3384445	20	8 22.8	21.1
500215 2012 HV_{43}	17.8	X	294.14578	78.42879	194.57940	3.34024	0.1805528	0.23473084	2.6026910	20	3 6.3	21.3
500216 2012 HP_{47}	17.0	X	29.40246	107.51349	121.29326	7.64599	0.1269275	0.25298710	2.4759230	20	6 26.1	19.6
500217 2012 HB_{48}	17.2	X	248.71588	150.91230	142.62860	5.57769	0.1487465	0.22404672	2.6847900	20	2 18.2	21.4
500218 2012 HQ_{48}	17.5	X	144.28736	50.87279	99.93062	9.87885	0.1003968	0.27119374	2.3638302	20	8 11.7	20.9
500219 2012 HZ_{48}	16.9	X	251.02046	164.50487	155.74750	13.56155	0.2800609	0.22700559	2.6614094	20	3 14.5	21.4
500220 2012 HV_{57}	16.8	X	295.91022	328.90433	263.65801	8.31055	0.1882058	0.22585143	2.6704687	20	1 17.2	20.7
500221 2012 HS_{64}	17.3	X	296.31599	183.84238	51.46698	13.38507	0.1043094	0.22647773	2.6655431	20	2 7.9	21.2
500222 2012 HD_{69}	16.4	X	238.88124	247.27143	107.14248	12.98155	0.2008829	0.23826972	2.5768560	20	4 24.5	20.8
500223 2012 HM_{69}	17.1	X	222.76476	147.30664	160.93704	12.86255	0.1660288	0.22047769	2.7136862	20	2 10.2	21.7
500224 2012 HM_{74}	17.9	X	304.20836	128.54751	172.60396	3.70779	0.1933867	0.24559989	2.5253250	20	4 25.8	20.8
500225 2012 HU_{77}	17.6	X	346.09914	353.17714	223.87756	9.10774	0.1444219	0.23591469	2.5939767	20	3 11.3	20.7
500226 2012 HC_{79}	17.4	X	279.12354	102.90772	172.95874	11.80347	0.2581895	0.22512130	2.6762396	20	2 13.4	21.7
500227 2012 JM	17.5	X	319.66835	70.42544	190.74718	28.98748	0.3272231	0.23518773	2.5993192	20	2 27.9	21.2
500228 2012 JV_{1}	17.5	X	337.45789	65.32748	166.22473	7.56459	0.1654088	0.23718632	2.5846969	20	3 18.1	20.2
500229 2012 JA_{2}	17.2	X	353.53640	10.55679	206.85429	8.60312	0.1042325	0.23877352	2.5732300	20	3 31.4	20.2
500230 2012 JR_{2}	17.7	X	32.10415	80.57203	110.05675	4.60582	0.0474062	0.24387965	2.5371862	20	4 28.9	20.8
500231 2012 JW_{2}	17.0	X	302.14115	221.70342	54.88965	13.25474	0.0616070	0.23972158	2.5664410	20	4 14.2	20.4
500232 2012 JE_{7}	17.8	X	348.37106	138.71143	66.83929	3.30318	0.1358266	0.23466395	2.6031856	20	3 5.9	20.5
500233 2012 JL_{7}	17.5	X	275.76832	41.69644	250.61260	3.54794	0.2730686	0.22885331	2.6470649	20	2 28.2	21.8
500234 2012 JK_{13}	16.9	X	237.82787	148.77527	199.31168	8.59139	0.1378754	0.23610849	2.5925570	20	4 14.8	20.7
500235 2012 JH_{16}	17.0	X	233.91061	139.81805	148.40278	21.63547	0.2564551	0.21305304	2.7763714	20	1 25.0	22.0
500236 2012 JC_{17}	17.5	X	278.89653	244.64355	61.58507	15.81786	0.1478677	0.24091952	2.5579264	20	4 12.1	21.2
500237 2012 JS_{23}	16.9	X	318.17081	126.45890	144.72771	13.61577	0.2011930	0.23819068	2.5774260	20	4 8.7	20.0
500238 2012 JG_{24}	16.9	X	342.47877	300.39213	255.48610	10.24928	0.1835506	0.22988286	2.6391556	20	1 30.8	20.1
500239 2012 JL_{25}	17.4	X	56.77086	30.41339	235.33412	2.73233	0.1457437	0.27268906	2.3551808	20	10 6.2	20.5
500240 2012 JE_{27}	17.5	X	289.83014	44.66181	198.69891	8.87705	0.2297467	0.22255104	2.6968056	20	1 18.8	21.8

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500241 2012 JT_{28}	16.2	X	232.80167	116.91768	236.10858	29.18329	0.3051850	0.23340134	2.6125653	20	3 31.1	21.4
500242 2012 JF_{33}	17.6	X	296.14245	63.45326	171.22827	6.62508	0.1276699	0.22689283	2.6622911	20	1 28.1	21.4
500243 2012 JG_{38}	17.5	X	330.41004	79.87803	154.80058	11.92171	0.1456914	0.23508912	2.6000460	20	3 14.6	20.4
500244 2012 JW_{38}	17.8	X	265.80309	128.72138	170.83289	4.28040	0.1608559	0.23135074	2.6279804	20	3 11.6	21.8
500245 2012 JL_{43}	17.4	X	234.15336	121.53599	186.52729	1.94871	0.2774742	0.21957917	2.7210840	20	2 15.6	22.2
500246 2012 JO_{52}	17.3	X	278.02483	188.92644	77.10578	12.59182	0.0780404	0.23071459	2.6328090	20	2 28.4	21.2
500247 2012 JB_{56}	17.9	X	344.34394	175.09547	44.25961	4.41594	0.1299699	0.23686740	2.5870164	20	3 18.9	20.7
500248 2012 JV_{63}	17.6	X	233.73676	96.89940	202.33126	3.03693	0.2246897	0.21829911	2.7317109	20	2 6.9	22.3
500249 2012 JY_{65}	17.1	X	290.54673	224.47173	71.61332	5.29916	0.2389442	0.23331783	2.6131887	20	3 27.2	20.8
500250 2012 KE_{5}	17.3	X	257.35148	187.57395	90.88883	6.37332	0.0778248	0.22127170	2.7071904	20	2 17.3	21.2
500251 2012 KA_{10}	17.8	X	84.03523	67.72587	110.03953	2.98554	0.0799301	0.25505238	2.4625391	20	6 30.2	20.7
500252 2012 KU_{10}	17.4	X	20.94739	357.38359	201.76167	7.02821	0.1074982	0.24107037	2.5568593	20	4 24.8	20.0
500253 2012 KA_{15}	17.6	X	324.51168	55.16715	150.35154	9.78527	0.2013664	0.22703664	2.6611667	20	1 16.8	21.0
500254 2012 KW_{15}	17.4	X	301.28232	122.71029	98.64298	12.10138	0.1057336	0.21957198	2.7211435	20	1 23.9	21.1
500255 2012 KM_{27}	17.4	X	357.35162	165.39049	73.21780	11.23277	0.1652269	0.24419467	2.5350037	20	5 9.8	19.8
500256 2012 KP_{34}	16.9	X	203.92023	225.62177	100.88848	6.10347	0.1435795	0.21567427	2.7538302	20	2 18.9	21.4
500257 2012 KQ_{46}	16.9	X	252.70304	189.21034	89.16522	9.37362	0.1737562	0.21686401	2.7437490	20	2 4.4	21.3
500258 2012 KP_{48}	16.6	X	48.33698	275.10971	225.87968	11.91701	0.1267927	0.23172744	2.6251315	20	3 18.3	19.8
500259 2012 KE_{49}	16.5	X	318.89075	192.32592	73.53570	17.67429	0.1303802	0.23730205	2.5838565	20	4 18.4	19.9
500260 2012 KF_{49}	16.7	X	1.94302	314.45792	235.15285	10.74125	0.1370772	0.23150941	2.6267795	20	2 29.9	19.9
500261 2012 KN_{49}	16.8	X	289.34102	227.78550	113.81498	8.08807	0.2576057	0.24357858	2.5392765	20	5 21.4	20.1
500262 2012 KV_{49}	17.2	X	31.71154	317.54293	228.31724	14.83817	0.1127495	0.23927289	2.5696485	20	4 23.5	19.9
500263 2012 KJ_{51}	17.0	X	249.15155	191.20025	122.65380	17.97892	0.2610294	0.22612389	2.6683231	20	3 9.9	21.7
500264 2012 LC_{9}	17.0	X	224.30624	167.35019	155.01426	14.66392	0.1351123	0.22124900	2.7073755	20	3 2.1	21.1
500265 2012 LN_{10}	16.9	X	56.86168	328.27358	202.88202	12.33920	0.1842183	0.24228012	2.5483409	20	5 29.3	19.9
500266 2012 LK_{12}	17.3	X	279.56328	38.79167	226.84584	10.47641	0.1665149	0.22359809	2.6883800	20	2 9.3	21.6
500267 2012 LL_{13}	17.5	X	266.80183	142.38362	159.06231	13.73654	0.1735622	0.22883398	2.6472140	20	3 15.1	21.4
500268 2012 LH_{14}	17.2	X	255.44459	153.03650	126.03799	15.55882	0.2072761	0.21759390	2.7376099	20	2 3.6	21.6
500269 2012 LN_{15}	16.6	X	348.14089	347.12601	214.53659	12.66816	0.2321634	0.23182180	2.6244192	20	2 9.3	19.6
500270 2012 LW_{17}	17.1	X	314.85734	55.42829	228.18101	12.63748	0.1765809	0.23907997	2.5710306	20	4 18.3	20.2
500271 2012 LN_{19}	16.9	X	251.95109	65.50001	238.11731	12.67360	0.1949663	0.22265703	2.6959496	20	2 24.0	21.5
500272 2012 MC_{3}	17.1	X	18.83681	359.43406	197.10610	21.63110	0.0043406	0.23544777	2.5974049	20	4 14.9	20.4
500273 2012 MT_{3}	16.8	X	209.04236	208.42196	128.29458	13.00950	0.1120627	0.20890530	2.8130001	20	3 9.3	21.3
500274 2012 MV_{7}	17.0	X	267.21818	162.60251	96.23594	5.53903	0.1166450	0.21699810	2.7426186	20	1 30.2	21.1
500275 2012 MS_{8}	16.6	X	9.08628	13.54488	175.89277	13.09781	0.1013457	0.23359307	2.6111355	20	3 20.9	19.5
500276 2012 PK_{2}	16.8	X	123.59598	61.38187	323.32314	8.36283	0.0719509	0.18315370	3.0708522	20	2 5.0	21.1
500277 2012 PQ_{2}	16.9	X	126.43079	232.66058	171.63472	10.56540	0.1324868	0.18861502	3.0112850	20	3 8.5	21.4
500278 2012 PM_{3}	16.4	X	25.04662	155.65776	332.59649	8.57428	0.0944928	0.18376642	3.0640225	20	2 3.1	20.1
500279 2012 PL_{9}	16.5	X	225.41010	57.79998	211.59754	7.14873	0.0919770	0.18757341	3.0224227	20	1 4.6	21.2
500280 2012 PU_{10}	16.5	X	100.30130	232.16373	172.56190	10.60773	0.0470376	0.18204542	3.0833031	20	1 26.9	20.9
500281 2012 PD_{13}	16.5	X	217.09264	22.53541	321.56420	10.59112	0.1292566	0.20346174	2.8629530	20	3 18.4	21.2
500282 2012 PP_{13}	16.1	X	78.99625	124.08305	317.88470	8.81058	0.0716708	0.18529806	3.0471147	20	2 18.0	20.2
500283 2012 PF_{14}	16.0	X	321.10140	74.16808	176.40940	17.24425	0.0934822	0.20986603	2.8044086	20	3 31.7	19.6
500284 2012 PB_{16}	18.8	X	48.91819	344.00432	322.64027	18.28944	0.0382312	0.38647509	1.8666163	20	11 29.9	21.1
500285 2012 PG_{18}	17.9	X	32.15786	160.09586	145.05483	22.87142	0.0755120	0.38180911	1.8817930	20	11 19.0	20.5
500286 2012 PU_{18}	17.6	X	134.14647	275.53201	276.92443	21.85661	0.1178637	0.38300783	1.8778646	20	9 24.9	20.7
500287 2012 PQ_{23}	16.5	X	258.02494	167.21689	141.94384	22.28026	0.1704991	0.21390772	2.7689710	20	3 20.0	21.0
500288 2012 PG_{24}	17.0	X	359.73187	32.30461	208.99300	14.00843	0.2179795	0.23338718	2.6126709	20	5 17.3	19.1
500289 2012 PY_{34}	16.1	X	140.49197	27.99070	335.08498	8.56567	0.1482726	0.18410152	3.0603032	20	2 6.7	20.8
500290 2012 PA_{37}	16.8	X	257.78968	164.83462	142.87390	14.02859	0.1757649	0.21140201	2.7908081	20	3 16.4	21.2
500291 2012 PB_{38}	17.2	X	306.34334	52.32539	225.81027	4.56456	0.1007514	0.22251613	2.6970876	20	4 11.6	20.5
500292 2012 PK_{43}	17.0	X	184.49353	295.03312	40.94282	3.25614	0.1784552	0.19276868	2.9678713	20	2 15.4	21.9
500293 2012 PW_{43}	16.2	X	129.32332	190.95810	152.82024	13.12154	0.1482905	0.17391123	3.1787104	20	1 3.9	21.1
500294 2012 QF_{2}	18.0	X	280.55086	55.63602	32.64548	21.52680	0.0333739	0.38187050	1.8815914	20	12 11.0	20.0
500295 2012 QW_{7}	16.9	X	254.51223	45.03138	275.98445	6.47530	0.2133896	0.21738587	2.7393562	20	3 19.3	21.5
500296 2012 QU_{13}	16.4	X	187.19463	325.38788	336.21910	17.33219	0.1387625	0.18141848	3.0904024	20	1 12.1	21.6
500297 2012 QT_{17}	18.7	X	304.41814	283.82415	163.56674	22.94421	0.0854624	0.39729769	1.8325620	20	—	—
500298 2012 QR_{21}	16.3	X	172.51109	9.81068	321.55125	10.15892	0.0609157	0.18299445	3.0726336	20	1 25.9	20.8
500299 2012 QC_{22}	16.9	X	221.16246	171.58411	172.84764	17.16164	0.1918029	0.20557784	2.8432727	20	3 24.9	21.6
500300 2012 QY_{27}	16.7	X	158.84561	161.89631	182.94081	4.68702	0.1461515	0.18173915	3.0867661	20	1 31.6	21.7
500301 2012 QW_{28}	16.3	X	119.96303	80.53666	314.24118	11.79893	0.0722652	0.18328196	3.0694195	20	2 11.5	20.6
500302 2012 QQ_{31}	15.8	X	178.77551	1.32451	309.25044	9.47803	0.1017575	0.17960279	3.1111957	20	1 10.4	20.7
500303 2012 QR_{34}	16.9	X	119.23313	78.37919	314.65042	9.11387	0.0992160	0.18211386	3.0825305	20	2 12.4	21.2
500304 2012 QQ_{39}	16.4	X	120.90745	74.50124	341.34860	9.98353	0.1355325	0.18947386	3.0021785	20	3 15.4	20.8
500305 2012 QK_{42}	18.3	X	303.63327	117.42238	305.17123	19.07520	0.1042840	0.38783509	1.8622500	20	12 26.7	19.7
500306 2012 QY_{46}	16.2	X	90.72389	62.59113	343.34095	9.20363	0.1085636	0.18189280	3.0850275	20	1 28.9	20.4
500307 2012 QB_{49}	16.9	X	234.06222	67.22395	276.42767	3.70460	0.1728319	0.20991376	2.8039834	20	4 2.1	21.4
500308 2012 QA_{52}	16.9	X	232.01444	2.51866	341.82530	8.38597	0.1584536	0.20965045	2.8063307	20	4 1.3	21.4
500309 2012 RY	16.1	X	273.81264	122.74499	153.40683	12.94684	0.0823823	0.20644925	2.8352662	20	3 3.9	20.0
500310 2012 RD_{3}	16.3	X	133.03388	80.25002	322.41246	11.30100	0.3514626	0.18255559	3.0775559	20	3 27.2	21.9
500311 2012 RL_{3}	16.2	X	149.30605	77.14597	308.49045	12.74469	0.2343501	0.18650959	3.0339047	20	3 11.3	21.5
500312 2012 RN_{4}	16.2	X	137.03786	350.95850	6.46498	13.39782	0.0997086	0.17700824	3.1415241	20	1 26.6	21.1
500313 2012 RE_{14}	16.5	X	251.05266	123.93852	205.52846	19.75537	0.2271064	0.21029364	2.8006056	20	3 27.2	21.2
500314 2012 RX_{21}	16.8	X	142.30089	153.94040	227.02950	5.54752	0.2137285	0.18332444	3.0689452	20	3 2.2	21.8
500315 2012 RB_{22}	15.8	X	80.59414	82.32830	339.35923	11.55544	0.0629990	0.17889360	3.1194128	20	1 29.8	20.1
500316 2012 RS_{23}	16.8	X	118.65360	240.47693	150.08322	5.59986	0.1443021	0.17287012	3.1914601	20	2 16.0	21.5
500317 2012 RE_{24}	16.0	X	149.85600	343.36301	21.92278	16.74324	0.2516514	0.18034696	3.1026312	20	3 2.5	21.5
500318 2012 RS_{28}	16.8	X	181.68002	355.44922	351.67211	9.82625	0.1964414	0.19147411	2.9812336	20	2 26.6	21.8
500319 2012 RV_{31}	16.0	X	188.91691	150.50089	162.80255	19.66829	0.1356246	0.18372653	3.0644659	20	1 21.4	21.2
500320 2012 RQ_{34}	16.3	X	117.22373	178.45561	206.50356	8.62064	0.0860610	0.17314183	3.1881204	20	1 29.2	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500321 2012 RD_{35}	16.3	X	161.22856	179.56378	196.82224	15.73578	0.1228502	0.18724910	3.0259115	20	3 6.9	21.2
500322 2012 RM_{40}	16.5	X	224.72404	184.96738	171.53818	4.56185	0.1202423	0.20880666	2.8138859	20	4 15.3	20.8
500323 2012 RE_{43}	16.5	X	63.85494	118.41315	321.89605	9.75651	0.0868284	0.18438803	3.0571323	20	1 30.4	20.5
500324 2012 SF	16.8	X	240.88037	98.69389	175.63808	15.35296	0.1808027	0.19032422	2.9932295	20	1 19.1	22.0
500325 2012 SQ	18.6	X	98.88824	99.76704	191.33285	29.32175	0.2095496	0.40033402	1.8232843	20	—	—
500326 2012 SW_{7}	16.7	X	188.46376	347.95574	350.26385	10.71453	0.1297986	0.18968000	3.0000030	20	2 21.3	21.5
500327 2012 SY_{8}	16.6	X	178.07112	29.87080	14.08874	9.68985	0.1277413	0.20231429	2.8737679	20	4 25.2	21.2
500328 2012 SY_{14}	18.2	X	187.15202	357.92652	202.31108	22.40611	0.0466269	0.38999120	1.8553799	20	—	—
500329 2012 SN_{16}	17.3	X	153.59141	56.03376	322.59919	5.85677	0.1883233	0.18343079	3.0677589	20	3 8.2	22.4
500330 2012 SZ_{20}	16.7	X	158.61808	213.71647	190.97461	10.69298	0.0744621	0.20039750	2.8920637	20	4 6.6	21.0
500331 2012 SU_{23}	16.6	X	128.29645	40.67536	3.56944	8.94126	0.0847403	0.18512473	3.0490163	20	3 7.2	21.0
500332 2012 SE_{24}	16.7	X	131.90948	40.19612	4.43542	11.63535	0.1467459	0.18534306	3.0466215	20	3 17.6	21.3
500333 2012 SF_{27}	16.6	X	162.27045	12.72241	355.56795	11.11720	0.1294649	0.18729586	3.0254078	20	3 3.1	21.3
500334 2012 SD_{39}	16.6	X	152.62536	351.38562	350.81194	10.77869	0.0766783	0.17673778	3.1447283	20	1 21.4	21.4
500335 2012 SS_{40}	16.4	X	137.49641	45.63735	350.67729	9.64955	0.0458513	0.18840827	3.0134876	20	3 2.5	20.6
500336 2012 SD_{41}	16.5	X	182.10760	204.00821	207.69379	4.96428	0.1646044	0.20621634	2.8374006	20	5 11.2	21.0
500337 2012 SY_{45}	17.0	X	215.22957	334.99611	355.95378	10.92648	0.0968855	0.19514128	2.9437660	20	3 7.9	21.5
500338 2012 SU_{49}	16.7	X	181.10352	350.71086	15.04836	10.18186	0.1127089	0.19281888	2.9673561	20	3 17.3	21.3
500339 2012 SH_{52}	16.3	X	110.33953	187.74898	199.64952	11.90627	0.0636087	0.17690744	3.1427173	20	1 20.4	21.0
500340 2012 SH_{54}	16.1	X	189.32932	339.03921	337.22716	11.98113	0.1073596	0.18367558	3.0650327	20	1 28.4	21.0
500341 2012 SW_{55}	16.6	X	160.29121	216.84817	145.54530	10.87422	0.3144643	0.18633667	3.0357814	20	3 3.5	22.0
500342 2012 SM_{56}	18.3	X	3.78683	187.46550	195.12274	20.54815	0.0447688	0.38794559	1.8618963	20	—	—
500343 2012 SZ_{58}	17.9	X	348.97378	76.43576	330.20354	15.57868	0.1508846	0.38861897	1.8597449	20	—	—
500344 2012 SZ_{62}	16.6	X	135.97062	112.82514	266.62668	4.15365	0.1778700	0.17944051	3.1130712	20	2 21.6	21.5
500345 2012 SJ_{65}	17.3	X	224.81021	207.99548	129.31972	2.96320	0.0774610	0.20206240	2.8761556	20	3 26.0	21.5
500346 2012 TW_{1}	16.3	X	172.51784	342.75911	9.32195	13.17672	0.0655838	0.18603443	3.0390685	20	2 22.9	21.0
500347 2012 TY_{1}	17.5	X	162.24620	199.20106	158.28430	1.35513	0.1474997	0.18476786	3.0529412	20	2 19.0	22.4
500348 2012 TH_{4}	15.3	X	138.90793	88.07971	296.08495	24.50918	0.2515854	0.17994215	3.1072828	20	2 25.6	20.8
500349 2012 TX_{6}	16.8	X	155.29147	197.64162	184.09199	8.68998	0.1217761	0.18618891	3.0373874	20	3 9.3	21.6
500350 2012 TG_{10}	17.0	X	143.84193	44.28502	327.45050	4.22119	0.3042028	0.17924753	3.1153051	20	3 1.1	22.5
500351 2012 TQ_{10}	16.5	X	150.34702	176.44576	213.80063	11.09130	0.0901724	0.18203831	3.0833833	20	3 10.2	21.4
500352 2012 TH_{11}	16.5	X	125.11593	29.63694	29.01741	17.05945	0.1052292	0.18161774	3.0881416	20	3 27.2	21.2
500353 2012 TL_{11}	16.2	X	201.35713	266.77377	31.00962	26.10468	0.2323892	0.17696752	3.1420060	20	1 23.9	22.1
500354 2012 TE_{13}	16.4	X	161.48397	339.07350	54.67817	11.71883	0.0822155	0.19203182	2.9754586	20	4 1.9	21.0
500355 2012 TR_{14}	17.7	X	150.14351	236.61174	310.43476	17.63527	0.0576528	0.37108720	1.9178681	20	10 8.8	20.4
500356 2012 TG_{18}	17.2	X	172.25567	324.67606	19.38427	1.20808	0.1751978	0.18158343	3.0885306	20	2 14.5	22.2
500357 2012 TT_{18}	17.3	X	148.85656	235.53785	147.14110	0.83133	0.1900000	0.18251035	3.0780645	20	3 10.5	22.4
500358 2012 TA_{25}	16.4	X	148.70678	123.76600	213.93688	8.47843	0.0400395	0.17014538	3.2254423	20	1 5.3	21.2
500359 2012 TC_{28}	16.3	X	106.55888	248.46663	185.11309	14.09298	0.1144380	0.18642872	3.0347820	20	3 19.5	20.7
500360 2012 TF_{33}	16.7	X	173.27089	340.18040	8.21607	2.96797	0.3118963	0.18523623	3.0477927	20	2 24.8	22.2
500361 2012 TG_{33}	16.3	X	112.43605	200.71371	207.07160	9.24202	0.1096528	0.17627869	3.1501858	20	2 22.1	20.9
500362 2012 TP_{33}	17.1	X	145.00284	218.86007	175.30593	3.05926	0.2165828	0.18347602	3.0672547	20	3 22.3	22.0
500363 2012 TG_{34}	16.1	X	272.97559	209.01167	117.00100	10.55822	0.1653522	0.21342234	2.7731677	20	4 27.4	20.3
500364 2012 TQ_{34}	16.3	X	113.89299	104.75508	297.80731	8.78175	0.2177099	0.17959960	3.1112325	20	2 29.8	21.2
500365 2012 TT_{36}	17.3	X	159.96153	188.31020	197.08681	4.41558	0.1640181	0.19262268	2.9693708	20	3 20.4	22.2
500366 2012 TM_{37}	16.2	X	150.99051	185.12127	181.12960	28.89969	0.1479459	0.17961380	3.1110686	20	2 16.9	21.4
500367 2012 TR_{37}	15.9	X	116.07429	338.80693	70.41613	14.79255	0.1504657	0.17696680	3.1420145	20	3 14.7	20.8
500368 2012 TS_{39}	15.9	X	134.58894	24.97525	354.66594	10.79464	0.1281159	0.17754273	3.1352160	20	2 20.1	20.7
500369 2012 TV_{40}	16.1	X	147.36955	48.12580	353.29166	12.99897	0.0929001	0.18943598	3.0025788	20	3 21.9	20.7
500370 2012 TD_{42}	16.1	X	50.50424	124.60535	341.22798	10.38879	0.0392157	0.17724029	3.1387815	20	2 10.3	20.4
500371 2012 TC_{46}	16.3	X	169.99771	357.48151	330.37350	8.39341	0.0593683	0.17538667	3.1608580	20	1 20.4	21.1
500372 2012 TE_{49}	17.0	X	85.82581	92.72617	4.39370	3.84868	0.1117016	0.18391766	3.0623425	20	3 23.5	21.0
500373 2012 TM_{54}	16.1	X	172.00959	106.92070	250.70064	10.15780	0.1220866	0.17904628	3.1176392	20	2 22.8	21.2
500374 2012 TB_{55}	15.7	X	112.83337	204.58003	238.53795	12.91985	0.1745183	0.18110462	3.0939719	20	4 12.9	20.5
500375 2012 TX_{55}	16.1	X	122.54268	193.70046	212.95403	16.30472	0.1060911	0.18106097	3.0944692	20	2 29.3	21.0
500376 2012 TT_{57}	16.8	X	170.01996	165.96321	218.76521	5.89925	0.2929668	0.18909315	3.0062068	20	4 1.0	22.2
500377 2012 TB_{59}	16.5	X	108.55130	174.93507	223.16711	9.25059	0.0906271	0.17396522	3.1780527	20	2 3.5	21.2
500378 2012 TC_{59}	16.1	X	184.39020	355.44122	356.38030	10.79357	0.1006702	0.18737135	3.0245952	20	3 3.6	20.7
500379 2012 TX_{59}	16.7	X	123.12501	193.35356	193.44126	9.65547	0.1463951	0.17474749	3.1685611	20	2 14.0	21.5
500380 2012 TK_{65}	16.5	X	144.96746	25.44360	326.63442	8.49794	0.0803027	0.17423149	3.1748140	20	1 23.9	21.2
500381 2012 TM_{65}	16.3	X	159.66104	45.87713	340.85981	10.67677	0.0483330	0.19013629	2.9952015	20	3 13.6	20.6
500382 2012 TN_{68}	17.2	X	149.26878	165.72518	199.57556	0.42922	0.1803211	0.17544119	3.1602032	20	2 19.5	22.3
500383 2012 TR_{69}	16.3	X	161.77067	317.47282	32.47075	10.92342	0.2255645	0.17716819	3.1396330	20	2 19.8	21.7
500384 2012 TE_{70}	16.4	X	136.84217	317.59500	68.04675	2.28521	0.1810381	0.17811235	3.1285279	20	3 3.8	21.2
500385 2012 TG_{80}	16.9	X	158.68456	150.43534	204.83090	4.12371	0.2648759	0.17976225	3.1093555	20	2 19.2	22.4
500386 2012 TP_{81}	16.7	X	183.62471	290.13813	25.39953	10.63151	0.2394768	0.18249310	3.0782585	20	1 27.0	22.2
500387 2012 TX_{83}	17.0	X	139.88154	192.99737	205.96626	20.56552	0.0608829	0.18458721	3.0549327	20	3 5.3	21.7
500388 2012 TP_{84}	16.6	X	215.21213	278.71032	16.02972	10.00091	0.0400060	0.17641428	3.1485715	20	1 31.3	21.4
500389 2012 TF_{85}	16.8	X	171.38518	23.48998	320.79034	0.10833	0.1090884	0.17956288	3.1116567	20	2 10.7	21.7
500390 2012 TX_{86}	16.6	X	163.74302	158.40788	209.61842	11.27322	0.1110983	0.18338702	3.0682471	20	2 27.4	21.6
500391 2012 TA_{87}	16.5	X	145.33757	176.66390	211.22856	4.85382	0.1376293	0.18237755	3.0795586	20	3 7.8	21.3
500392 2012 TK_{88}	16.9	X	157.79842	340.68482	9.61091	1.53394	0.1902869	0.17774770	3.1328052	20	2 10.7	22.1
500393 2012 TC_{89}	16.1	X	250.15593	122.16805	161.45324	12.15356	0.0552376	0.18935501	3.0034346	20	2 18.5	20.6
500394 2012 TT_{90}	16.8	X	93.30500	328.27048	89.46613	2.71818	0.1619660	0.17385546	3.1793901	20	2 22.9	21.1
500395 2012 TT_{91}	17.0	X	135.34821	19.44497	78.14802	3.56932	0.0658642	0.20442743	2.8539297	20	5 16.3	21.1
500396 2012 TY_{91}	16.1	X	69.40545	78.29025	38.90204	11.12912	0.0786886	0.18794665	3.0184199	20	3 26.0	20.2
500397 2012 TF_{92}	17.2	X	259.64358	202.54973	142.67356	5.19657	0.0770572	0.21297557	2.7770446	20	5 15.1	21.1
500398 2012 TO_{93}	16.2	X	31.94625	77.34850	40.09439	9.57262	0.0557671	0.17470561	3.1690675	20	2 2.6	20.5
500399 2012 TY_{94}	16.8	X	184.66998	84.69434	277.37725	2.65839	0.1722322	0.18949519	3.0019532	20	3 14.1	21.7
500400 2012 TN_{97}	16.5	X	283.12555	236.53028	22.11411	16.71007	0.0247370	0.18530393	3.0470503	20	3 9.7	20.9

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500401 2012 TU_{97}	16.5	X	135.89191	32.03293	21.29883	8.93119	0.0869927	0.18571978	3.0425002	20	3 26.6	21.0
500402 2012 TV_{97}	16.9	X	232.41159	289.57764	6.23225	2.90336	0.0799476	0.18291355	3.0735394	20	2 14.4	21.5
500403 2012 TX_{97}	17.0	X	146.17747	53.59114	353.58632	1.30244	0.0996975	0.18738326	3.0244670	20	3 29.5	21.6
500404 2012 TE_{100}	16.0	X	151.59768	147.30216	236.97215	17.06433	0.1812381	0.18290628	3.0736209	20	3 7.4	21.3
500405 2012 TW_{108}	16.1	X	270.96033	273.00049	344.72077	9.95728	0.1251343	0.18715219	3.0269560	20	2 6.1	20.6
500406 2012 TB_{109}	16.5	X	146.89026	35.70457	342.74874	8.58548	0.0945977	0.18138625	3.0907685	20	2 25.7	21.1
500407 2012 TC_{110}	16.2	X	185.39095	17.94832	350.95749	11.19037	0.1027919	0.19190409	2.9767788	20	3 21.5	21.0
500408 2012 TF_{110}	16.8	X	137.45806	39.93218	337.62592	8.89936	0.0847704	0.17707551	3.1407284	20	2 14.7	21.4
500409 2012 TT_{111}	16.8	X	136.86075	19.57082	348.79134	9.04543	0.0964039	0.17435792	3.1732790	20	2 6.0	21.5
500410 2012 TD_{112}	17.1	X	152.22367	154.39609	229.66044	8.84180	0.1049531	0.18481169	3.0524584	20	3 5.2	21.9
500411 2012 TN_{114}	16.7	X	128.86816	33.67069	345.15561	8.43057	0.0891784	0.17487989	3.1669616	20	2 8.4	21.4
500412 2012 TY_{114}	17.1	X	180.75508	130.17484	228.55989	8.09302	0.0884391	0.18767702	3.0213102	20	3 2.9	21.8
500413 2012 TA_{115}	16.5	X	293.53037	359.94618	234.68471	7.43481	0.0157744	0.18261310	3.0769098	20	2 13.7	20.9
500414 2012 TB_{115}	15.9	X	325.96749	184.17507	4.04576	17.06342	0.1722091	0.17474396	3.1686038	20	1 17.0	20.4
500415 2012 TA_{116}	16.7	X	140.79981	140.84171	252.29279	6.78447	0.0856072	0.18265897	3.0763947	20	3 2.9	21.4
500416 2012 TM_{116}	16.6	X	152.09172	137.43803	287.23619	4.68367	0.0825859	0.19652692	2.9299128	20	4 22.7	21.0
500417 2012 TV_{121}	16.6	X	200.62466	124.66916	231.43893	10.90467	0.0707574	0.19307759	2.9647049	20	3 19.1	21.3
500418 2012 TZ_{128}	16.9	X	180.49218	126.46435	219.99265	9.26156	0.1075754	0.18505374	3.0497961	20	2 17.9	21.9
500419 2012 TF_{131}	16.6	X	171.23441	313.34381	38.57614	6.00259	0.1967233	0.18381459	3.0634871	20	2 25.5	21.7
500420 2012 TJ_{131}	17.3	X	134.41810	265.16491	140.34400	2.46280	0.1800240	0.18308024	3.0716736	20	3 24.1	22.0
500421 2012 TM_{134}	16.8	X	153.23421	200.58761	179.29158	11.96956	0.0692389	0.18643996	3.0346601	20	2 29.5	21.4
500422 2012 TO_{136}	18.3	X	80.30669	79.27782	207.70339	20.69612	0.0737396	0.38420586	1.8739589	20	12 18.1	20.9
500423 2012 TX_{136}	16.5	X	114.39100	246.13947	228.29040	10.82777	0.0896584	0.20117302	2.8846263	20	5 15.8	20.6
500424 2012 TH_{141}	17.2	X	143.92463	289.87726	96.19191	4.27673	0.1536886	0.18451763	3.0557006	20	3 8.9	22.0
500425 2012 TO_{141}	16.2	X	237.30778	271.63736	356.86438	18.59987	0.0770188	0.18279339	3.0748862	20	1 23.9	21.1
500426 2012 TP_{142}	16.6	X	112.16494	261.81584	153.88545	12.40907	0.2155457	0.17578282	3.1561073	20	3 20.0	21.4
500427 2012 TD_{144}	17.2	X	223.95424	236.15276	100.73281	2.90071	0.0698940	0.19687526	2.9264557	20	3 25.7	21.5
500428 2012 TY_{144}	16.9	X	137.47149	266.37258	129.36876	5.40356	0.1724091	0.18383714	3.0632367	20	3 15.7	21.7
500429 2012 TK_{145}	17.8	X	156.55135	328.19333	227.10275	20.39164	0.0483902	0.37153231	1.9163360	20	11 12.3	19.6
500430 2012 TS_{148}	18.3	X	356.42761	344.38740	32.47056	20.38050	0.0947776	0.38248479	1.8795762	20	—	—
500431 2012 TF_{149}	16.6	X	78.44084	79.26194	38.49385	13.51447	0.2715630	0.17428348	3.1741825	20	5 2.4	20.9
500432 2012 TG_{151}	16.9	X	164.87659	134.27617	229.98733	2.35890	0.2200579	0.18114493	3.0935128	20	3 3.1	22.1
500433 2012 TO_{152}	17.4	X	165.51288	332.04343	10.19594	4.98718	0.1564003	0.17982554	3.1086259	20	2 7.1	22.4
500434 2012 TX_{154}	17.0	X	119.95795	26.76449	28.07216	4.73582	0.1456699	0.18250190	3.0781595	20	3 17.9	21.6
500435 2012 TY_{154}	16.7	X	192.86564	313.18826	20.20687	11.52686	0.1123858	0.18603421	3.0390710	20	2 22.5	21.6
500436 2012 TK_{155}	16.6	X	199.03156	130.74331	176.90389	5.25857	0.0719935	0.17861073	3.1227055	20	1 24.3	21.3
500437 2012 TU_{160}	16.9	X	130.83414	225.90749	164.57190	6.19286	0.1292455	0.17895962	3.1186455	20	2 26.1	21.6
500438 2012 TO_{164}	16.8	X	50.91405	304.18464	186.61755	9.58961	0.0749707	0.18652520	3.0337354	20	3 11.8	20.9
500439 2012 TC_{166}	16.8	X	181.54580	150.12055	185.10705	11.69557	0.0788357	0.17864439	3.1223132	20	2 6.5	21.7
500440 2012 TA_{168}	16.3	X	213.33067	179.85108	165.05674	8.45433	0.0587172	0.19052228	2.9911547	20	3 24.6	20.7
500441 2012 TM_{170}	16.7	X	182.72052	100.55148	214.40210	0.43668	0.1562803	0.17663478	3.1459507	20	1 20.5	21.9
500442 2012 TP_{171}	16.6	X	144.42701	33.78478	339.95477	4.44374	0.1431166	0.17937729	3.1138026	20	2 21.9	21.3
500443 2012 TJ_{172}	16.7	X	105.01135	258.50363	213.47965	11.06712	0.0063242	0.19983478	2.8974903	20	4 18.9	20.7
500444 2012 TQ_{173}	16.7	X	208.66221	69.04096	238.50178	4.64934	0.1282796	0.18369625	3.0648027	20	2 1.1	21.6
500445 2012 TE_{183}	16.7	X	165.26318	354.27950	10.33940	9.49350	0.0996102	0.18442797	3.0566909	20	3 1.3	21.5
500446 2012 TV_{184}	16.6	X	69.75130	124.64696	338.31352	9.27946	0.0383963	0.18319507	3.0703899	20	2 28.7	20.8
500447 2012 TB_{186}	15.9	X	26.28626	107.47104	55.72346	16.70488	0.0293975	0.17608925	3.1524448	20	3 26.6	20.5
500448 2012 TX_{192}	16.4	X	224.43211	77.19260	231.20775	9.11644	0.0457693	0.18592280	3.0402849	20	2 17.8	21.1
500449 2012 TJ_{198}	17.5	X	161.30832	137.67846	236.13257	6.65743	0.2517387	0.18514564	3.0487868	20	3 10.6	22.9
500450 2012 TT_{198}	16.5	X	87.61976	81.20528	0.48423	6.85619	0.1674937	0.17531553	3.1617130	20	3 15.9	20.8
500451 2012 TG_{199}	17.2	X	148.70749	141.50077	249.08376	3.77753	0.1511306	0.18446012	3.0563358	20	3 14.8	22.0
500452 2012 TT_{200}	17.4	X	221.29425	164.99836	155.24674	3.38182	0.1537076	0.19420981	2.9531711	20	2 26.9	22.2
500453 2012 TD_{202}	16.6	X	109.33507	14.34703	35.20692	9.30408	0.0559751	0.18022750	3.1040022	20	2 20.1	21.1
500454 2012 TS_{203}	16.8	X	175.90970	217.05954	102.79951	2.41891	0.1635959	0.17805878	3.1291553	20	1 20.7	22.0
500455 2012 TC_{205}	18.1	X	18.90312	120.65647	245.12011	8.61534	0.1537012	0.25926192	2.4358108	20	12 28.0	21.0
500456 2012 TO_{206}	16.5	X	172.53548	35.98499	351.24336	9.19798	0.0803902	0.18961998	3.0006360	20	3 29.7	21.1
500457 2012 TZ_{206}	16.8	X	102.75805	20.40368	56.30392	6.12501	0.1128907	0.18381782	3.0634512	20	3 22.3	21.2
500458 2012 TD_{209}	16.8	X	169.52912	188.21992	145.09326	9.28629	0.0618589	0.17767963	3.1336053	20	1 24.0	21.4
500459 2012 TP_{210}	16.6	X	353.94113	126.74361	90.38486	6.67949	0.0447159	0.20173345	2.8792814	20	4 12.1	20.4
500460 2012 TV_{210}	16.3	X	37.66558	124.44749	5.09609	12.63049	0.1259202	0.17662676	3.1460458	20	2 29.6	20.2
500461 2012 TL_{213}	16.9	X	166.59139	294.36628	38.60588	1.49507	0.1701368	0.17591515	3.1545244	20	1 28.5	22.0
500462 2012 TB_{218}	16.8	X	169.80639	255.68499	88.32974	2.56314	0.1860699	0.18274108	3.0754730	20	2 13.2	21.8
500463 2012 TZ_{218}	16.2	X	155.43039	185.95062	222.02419	19.34810	0.1245065	0.18713580	3.0271327	20	4 8.6	21.1
500464 2012 TW_{219}	16.8	X	147.59996	294.43047	58.24228	1.24438	0.2205309	0.17711228	3.1402936	20	2 7.0	21.9
500465 2012 TB_{221}	17.1	X	83.08692	102.38433	24.52151	8.52241	0.1722522	0.19243861	2.9712640	20	5 3.7	21.1
500466 2012 TO_{221}	16.2	X	22.46505	320.86669	190.72309	11.43395	0.1990950	0.18068502	3.0987601	20	2 27.7	19.6
500467 2012 TR_{222}	16.2	X	166.61801	314.38113	46.67140	8.72377	0.1966071	0.17815802	3.1279932	20	3 5.1	21.5
500468 2012 TD_{226}	16.9	X	172.86590	318.05186	38.66520	9.45384	0.0999855	0.18458360	3.0549726	20	3 1.1	21.7
500469 2012 TS_{226}	17.1	X	146.47035	264.03778	149.83345	5.28676	0.1371956	0.19088871	2.9873255	20	4 11.6	21.7
500470 2012 TX_{227}	17.0	X	141.45545	243.45513	150.43910	5.09841	0.0738305	0.18415696	3.0596890	20	3 7.1	21.5
500471 2012 TB_{228}	16.9	X	181.69310	257.51667	70.38251	0.08717	0.1298987	0.17934576	3.1141675	20	2 2.3	21.7
500472 2012 TC_{234}	18.3	X	82.23689	135.39798	184.24733	22.19452	0.0319369	0.39383114	1.8432999	20	—	—
500473 2012 TQ_{234}	16.7	X	148.71601	296.70180	72.92570	6.44012	0.1533084	0.18129714	3.0917812	20	2 24.3	21.6
500474 2012 TE_{236}	16.7	X	238.89253	211.37964	121.19960	6.76930	0.0742826	0.20015458	2.8944032	20	4 6.9	21.0
500475 2012 TF_{236}	16.3	X	80.57404	335.84614	112.80142	6.22376	0.1119837	0.17838882	3.1252945	20	3 9.1	20.5
500476 2012 TU_{237}	16.6	X	102.82977	271.87093	146.51055	5.80226	0.1989429	0.17495870	3.1660105	20	3 10.6	21.2
500477 2012 TY_{239}	16.7	X	144.62600	24.96704	29.75765	12.95297	0.1584112	0.18903421	3.0068317	20	4 11.9	21.4
500478 2012 TT_{241}	16.6	X	180.22739	193.29957	181.64311	10.65577	0.1124349	0.19221887	2.9735280	20	3 25.5	21.2
500479 2012 TX_{241}	17.1	X	208.58143	136.06986	185.88233	6.35213	0.2406298	0.19069521	2.9893461	20	2 15.6	22.4
500480 2012 TL_{244}	16.2	X	114.92273	264.30460	181.95850	10.10697	0.2350741	0.18235151	3.0798517	20	4 29.8	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500481 2012 TP_{244}	18.3	X	359.91576	163.27524	199.46538	24.73535	0.0605553	0.37817059	1.8938441	20	12 15.2	20.7
500482 2012 TV_{248}	16.6	X	120.41733	44.57334	352.81426	8.95597	0.0948304	0.17536048	3.1611728	20	2 21.6	21.1
500483 2012 TZ_{251}	16.1	X	265.48498	242.44256	11.34692	16.53346	0.1682095	0.18111766	3.0938234	20	1 26.8	21.2
500484 2012 TC_{254}	16.0	X	217.73813	282.50680	350.66270	14.67557	0.1915211	0.17277612	3.1926176	20	1 4.9	21.6
500485 2012 TK_{254}	15.7	X	302.50947	272.50215	308.41403	9.56797	0.0887214	0.17750955	3.1356066	20	2 1.5	19.9
500486 2012 TZ_{255}	17.2	X	150.87498	263.77061	145.49877	5.21664	0.2445764	0.19238209	2.9718459	20	4 16.7	22.3
500487 2012 TL_{256}	16.5	X	155.63347	43.14231	29.74706	12.18460	0.0379600	0.20092646	2.8869857	20	5 4.1	20.6
500488 2012 TM_{257}	16.6	X	159.88531	192.93679	156.76742	3.94108	0.1945382	0.17754286	3.1352144	20	2 11.2	21.6
500489 2012 TO_{261}	16.8	X	86.63082	84.39538	348.36892	9.52597	0.0932073	0.17679328	3.1440701	20	2 23.1	21.0
500490 2012 TS_{261}	16.6	X	20.39570	131.68577	27.95668	9.98997	0.0887050	0.18445538	3.0563881	20	3 9.6	20.5
500491 2012 TK_{264}	16.9	X	142.48643	21.90528	35.81815	8.70232	0.1067649	0.19018952	2.9946426	20	4 9.6	21.5
500492 2012 TP_{264}	16.9	X	131.78434	213.45807	199.59500	10.62623	0.0734926	0.18523231	3.0478357	20	3 17.2	21.4
500493 2012 TW_{264}	17.1	X	159.71854	252.98520	182.63347	5.83002	0.0686217	0.20223191	2.8745482	20	5 17.1	21.4
500494 2012 TK_{265}	16.5	X	132.35277	291.70552	80.17666	6.18189	0.1463180	0.17274696	3.1929768	20	2 10.6	21.4
500495 2012 TH_{267}	16.4	X	68.37171	49.87704	56.53313	8.16892	0.1064401	0.17733157	3.1377043	20	3 15.9	20.6
500496 2012 TP_{267}	16.5	X	67.43023	69.43454	55.43175	11.81458	0.0787901	0.18391201	3.0624052	20	4 3.4	20.7
500497 2012 TB_{269}	17.7	X	195.16481	234.79263	156.56675	4.54540	0.1533487	0.20379653	2.8598167	20	4 29.2	22.4
500498 2012 TV_{270}	16.9	X	17.47202	358.21455	207.90303	9.08326	0.0297631	0.19920116	2.9036314	20	4 28.3	20.7
500499 2012 TP_{273}	17.3	X	109.55717	32.15909	50.05134	2.38528	0.2278139	0.18134131	3.0912791	20	4 17.6	22.1
500500 2012 TJ_{276}	16.4	X	197.51770	39.09510	302.34914	4.63440	0.1485128	0.18879450	3.0093762	20	2 29.8	21.4
500501 2012 TW_{282}	16.0	X	135.49634	186.38407	211.64795	17.37698	0.2182026	0.17767202	3.1336947	20	3 15.7	21.3
500502 2012 TC_{285}	16.4	X	199.57682	131.57958	200.91760	16.79839	0.1508365	0.18489746	3.0515143	20	2 19.1	21.7
500503 2012 TG_{285}	16.7	X	151.27053	161.49116	200.42162	5.12741	0.1485356	0.17503307	3.1651136	20	2 13.6	21.7
500504 2012 TX_{285}	16.4	X	257.21569	231.38646	18.90711	9.87133	0.0976447	0.17731730	3.1378726	20	1 18.5	21.3
500505 2012 TU_{286}	16.4	X	132.70215	340.61497	64.21495	6.27869	0.1412193	0.18031775	3.1029664	20	3 20.5	21.2
500506 2012 TF_{287}	16.5	X	140.24480	325.70862	68.79986	3.72236	0.0948802	0.18011639	3.1052785	20	3 10.3	21.2
500507 2012 TP_{287}	16.6	X	108.02203	204.51412	248.38566	12.75641	0.1433970	0.18776390	3.0203781	20	4 15.1	21.2
500508 2012 TH_{288}	16.1	X	177.61838	64.51981	256.98623	9.59856	0.0778423	0.17357930	3.1827614	20	1 18.7	21.1
500509 2012 TJ_{288}	16.5	X	118.74364	98.48880	285.03892	7.63853	0.1151966	0.17170296	3.2059065	20	2 3.0	21.2
500510 2012 TL_{288}	16.2	X	195.29850	53.01928	265.46410	10.01001	0.0902323	0.17945855	3.1128626	20	1 31.3	21.2
500511 2012 TQ_{288}	16.6	X	104.94936	119.01024	296.10844	9.28349	0.0915547	0.17586922	3.1550736	20	2 19.8	21.2
500512 2012 TV_{288}	16.6	X	189.53600	83.20925	260.33505	10.14655	0.0794731	0.18429677	3.0581414	20	2 21.4	21.4
500513 2012 TE_{289}	16.5	X	91.69912	129.64053	320.77518	9.09704	0.0350799	0.18423166	3.0588619	20	3 8.9	20.9
500514 2012 TF_{291}	16.7	X	149.15267	218.00907	177.45643	10.15314	0.1772913	0.18356155	3.0663019	20	3 25.1	21.6
500515 2012 TV_{291}	15.9	X	98.75913	237.72877	238.05320	15.46872	0.2414025	0.18339922	3.0681109	20	5 18.8	20.6
500516 2012 TO_{295}	16.3	X	101.74147	60.56128	11.88821	13.60380	0.1269184	0.17701765	3.1414127	20	3 18.0	20.8
500517 2012 TR_{298}	16.5	X	168.05513	131.25468	196.78382	8.56065	0.1123120	0.17205640	3.2015147	20	1 19.1	21.6
500518 2012 TL_{300}	16.9	X	296.13401	145.67297	125.38900	8.86131	0.1887034	0.21372815	2.7705217	20	3 10.8	20.8
500519 2012 TQ_{302}	15.8	X	152.29071	332.22466	23.80975	9.60512	0.1022681	0.17351186	3.1835861	20	2 9.7	20.8
500520 2012 TA_{304}	16.7	X	176.88961	236.90172	119.00015	3.30180	0.2317346	0.18683739	3.0303551	20	3 4.7	21.9
500521 2012 TB_{306}	17.1	X	153.90618	164.24601	235.07159	4.09221	0.1525158	0.19045959	2.9918110	20	3 30.1	22.0
500522 2012 TZ_{306}	16.3	X	193.58014	30.93123	349.50856	16.99312	0.1577543	0.19785885	2.9167491	20	4 7.3	21.3
500523 2012 TB_{308}	16.0	X	165.83639	88.40196	264.30469	13.82872	0.1454972	0.17698798	3.1417638	20	2 11.8	21.2
500524 2012 TO_{308}	16.2	X	138.95800	43.83851	350.77196	15.93445	0.2127987	0.17807928	3.1289151	20	3 16.5	21.3
500525 2012 TU_{308}	18.8	X	322.11810	226.12588	185.98920	22.34357	0.1101099	0.38570148	1.8691114	20	—	—
500526 2012 TW_{308}	16.4	X	139.90498	45.79488	356.10604	5.61401	0.1674177	0.18273137	3.0755820	20	3 22.7	21.1
500527 2012 TR_{313}	17.4	X	8.92125	312.12193	55.85388	10.22265	0.2420370	0.26022106	2.4298218	20	—	—
500528 2012 TC_{314}	16.8	X	141.98413	243.88360	126.25883	5.72619	0.2364061	0.17993787	3.1073321	20	2 23.8	21.9
500529 2012 TA_{317}	16.3	X	119.20820	287.98291	123.75588	10.73425	0.1887871	0.18039854	3.1020398	20	3 20.9	21.2
500530 2012 TG_{320}	17.7	X	179.64609	175.48785	359.86137	21.48579	0.1176283	0.37005074	1.9214475	20	10 25.9	20.4
500531 2012 TH_{321}	16.2	X	115.69496	294.56621	142.59406	13.82284	0.2397618	0.18016399	3.1047315	20	4 23.1	21.3
500532 2012 UT	15.8	X	152.14471	94.32834	269.96369	7.89876	0.1375184	0.17759040	3.1346548	20	2 14.6	20.8
500533 2012 UJ_{2}	16.9	X	155.29308	272.98565	100.56006	2.77517	0.1170008	0.18235600	3.0798011	20	3 1.6	21.7
500534 2012 UK_{2}	16.8	X	150.63390	230.99467	169.68716	5.73752	0.1151953	0.18832415	3.0143849	20	3 28.3	21.4
500535 2012 UM_{14}	17.0	X	176.40632	316.59594	36.38753	6.43521	0.0396805	0.18235614	3.0797996	20	2 25.4	21.5
500536 2012 UY_{14}	16.4	X	203.62086	285.69257	38.42096	10.03867	0.0790303	0.18350887	3.0668886	20	2 22.2	21.2
500537 2012 UH_{18}	18.8	X	11.84910	17.70654	7.03724	20.66563	0.0682833	0.39136218	1.8510443	20	—	—
500538 2012 UN_{21}	17.2	X	183.98044	340.55790	45.77139	9.84823	0.1019584	0.19610443	2.9341194	20	4 13.6	21.7
500539 2012 UX_{22}	16.3	X	109.33528	117.56150	301.95225	10.20811	0.0185690	0.17924287	3.1153592	20	2 19.9	20.8
500540 2012 UR_{24}	17.2	X	133.06182	94.89152	326.77393	8.39614	0.3491651	0.18254112	3.0777186	20	4 19.0	22.8
500541 2012 UE_{25}	16.0	X	27.78427	247.18435	320.67523	9.75686	0.0716618	0.20346286	2.8629425	20	5 14.0	19.8
500542 2012 US_{25}	16.3	X	230.17324	311.78157	338.73806	9.86761	0.1982054	0.18457415	3.0550768	20	2 1.3	21.4
500543 2012 UX_{25}	16.6	X	197.07098	40.77480	313.21387	7.43324	0.1200075	0.19014006	2.9951619	20	3 13.7	21.4
500544 2012 UE_{27}	16.8	X	143.53380	253.53577	172.60467	17.20939	0.0917770	0.19172530	2.9786292	20	4 21.2	21.4
500545 2012 UR_{31}	16.2	X	140.20938	128.68684	273.98697	8.38993	0.0983832	0.17720225	3.1392307	20	3 14.2	21.1
500546 2012 US_{32}	16.5	X	134.11338	218.30162	192.35385	29.26674	0.3349687	0.18085453	3.0968235	20	4 10.5	22.0
500547 2012 UT_{32}	16.5	X	116.23656	199.83559	263.87561	7.68601	0.2542762	0.18600131	3.0394293	20	5 21.4	21.4
500548 2012 UB_{36}	16.2	X	147.02892	309.57821	48.52587	5.80665	0.1841651	0.17178114	3.2049338	20	2 12.4	21.4
500549 2012 UC_{36}	16.8	X	145.27026	173.49332	201.22313	0.53619	0.1809378	0.17529893	3.1619127	20	2 26.8	21.9
500550 2012 UF_{38}	16.3	X	93.84385	204.11821	240.80204	9.73154	0.0732942	0.17846402	3.1244166	20	3 9.1	20.9
500551 2012 UR_{40}	16.6	X	145.08250	300.66226	87.29334	3.06879	0.1797058	0.18095218	3.0957093	20	3 14.1	21.5
500552 2012 UA_{41}	16.3	X	207.48686	277.64611	39.33473	11.19969	0.0789015	0.18125895	3.0922154	20	2 18.4	21.2
500553 2012 UG_{42}	16.5	X	151.84628	154.98781	213.61459	9.92251	0.0889077	0.17712326	3.1401639	20	2 15.2	21.4
500554 2012 UE_{43}	16.1	X	199.62178	117.69378	202.14814	17.19991	0.1470124	0.18186997	3.0852857	20	2 4.6	21.4
500555 2012 UG_{46}	16.8	X	164.58027	203.64393	169.42266	5.51014	0.2449967	0.18404349	3.0609465	20	3 14.9	22.0
500556 2012 UY_{49}	16.7	X	148.59053	187.03898	170.09827	5.31526	0.1634451	0.17252309	3.1957384	20	2 7.8	21.8
500557 2012 UZ_{50}	16.6	X	180.08903	258.54970	61.87854	2.18643	0.1535494	0.17155993	3.2076881	20	1 25.6	21.7
500558 2012 UE_{51}	16.0	X	214.57649	94.55209	219.52035	10.36984	0.0883240	0.17865047	3.1222424	20	2 13.3	21.0
500559 2012 UT_{52}	17.4	X	175.73980	206.76226	162.52986	0.75128	0.2038836	0.18489639	3.0515261	20	3 17.6	22.6
500560 2012 US_{55}	16.7	X	68.36794	131.66263	355.11844	5.00948	0.1317537	0.17986965	3.1081177	20	4 8.4	20.8

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500561 2012 US_{56}	16.1	X	257.42947	240.04433	32.48566	11.96149	0.0907662	0.17883971	3.1200394	20	2 17.1	20.9
500562 2012 UD_{58}	16.8	X	194.69950	145.70901	222.49415	15.69733	0.2189530	0.19217695	2.9739604	20	3 27.5	22.1
500563 2012 UN_{58}	18.2	X	166.77000	91.81352	245.40174	3.30989	0.1508273	0.30177123	2.2013250	20	1 15.9	21.2
500564 2012 UU_{58}	16.2	X	75.62951	79.04962	40.46737	19.85533	0.1509933	0.17800925	3.1297357	20	4 17.2	20.4
500565 2012 UP_{61}	18.3	X	167.90287	21.02957	190.53578	21.90840	0.0451606	0.38302873	1.8777963	20	12 25.1	20.9
500566 2012 UT_{61}	18.9	X	33.53956	150.86509	188.81253	22.04456	0.0620362	0.38324806	1.8770798	20	12 31.6	21.5
500567 2012 UM_{64}	16.6	X	81.17800	273.71784	187.97132	10.47525	0.0997898	0.17467878	3.1693919	20	3 21.7	21.0
500568 2012 UM_{65}	16.5	X	142.06264	331.84776	53.27588	6.30076	0.1356618	0.17400379	3.1775831	20	3 6.5	21.4
500569 2012 UB_{66}	16.9	X	119.59213	337.98302	80.09182	2.22169	0.1639441	0.17573749	3.1566500	20	3 23.7	21.6
500570 2012 UB_{68}	18.0	X	264.41653	278.87514	186.70036	21.78275	0.1108685	0.37870394	1.8920655	20	12 9.9	19.9
500571 2012 UX_{70}	17.0	X	212.99879	134.17560	195.85413	7.22780	0.1870776	0.19167302	2.9791708	20	2 28.7	22.1
500572 2012 UX_{77}	16.4	X	153.23940	103.54597	246.57988	3.30361	0.1956750	0.17374805	3.1807003	20	2 5.8	21.6
500573 2012 UA_{79}	16.2	X	174.94520	32.92276	314.50626	4.22872	0.1526956	0.17844691	3.1246163	20	2 19.1	21.3
500574 2012 UD_{79}	16.8	X	180.86631	357.30909	351.90189	4.36294	0.1590844	0.18062759	3.0994169	20	2 27.3	21.9
500575 2012 UK_{79}	16.1	X	108.56375	188.88384	244.89004	9.89635	0.0680889	0.17814746	3.1281168	20	3 12.6	20.7
500576 2012 UP_{81}	16.9	X	209.17337	280.77019	65.95841	14.53419	0.2939139	0.19301973	2.9652973	20	3 22.9	22.5
500577 2012 UR_{82}	15.8	X	148.94623	118.49694	280.09532	7.92762	0.0814092	0.17902154	3.1179264	20	3 17.1	20.6
500578 2012 UV_{82}	16.4	X	181.91623	108.21101	275.43517	8.45303	0.1106271	0.18683312	3.0304013	20	4 2.5	21.3
500579 2012 UZ_{83}	16.1	X	189.98725	69.79129	260.42296	8.92004	0.2147359	0.17714576	3.1398979	20	2 10.4	21.7
500580 2012 UG_{87}	16.5	X	157.37178	306.61835	84.55061	6.37093	0.1433399	0.18217347	3.0818580	20	3 28.2	21.5
500581 2012 UW_{87}	16.9	X	147.46822	175.76112	223.63676	3.77812	0.1252513	0.17998999	3.1067321	20	3 22.9	21.6
500582 2012 UQ_{88}	17.0	X	144.38733	357.50751	54.83414	1.56750	0.1770547	0.18238785	3.0794426	20	4 9.7	22.0
500583 2012 UB_{89}	17.0	X	145.63741	355.35451	53.26162	2.76020	0.1830592	0.18162443	3.0880657	20	4 7.3	22.0
500584 2012 UX_{89}	17.7	X	51.72742	342.39712	56.75516	4.02195	0.1796402	0.27591217	2.3368032	20	—	—
500585 2012 UE_{93}	16.3	X	161.74324	77.39610	267.88270	9.51038	0.0752613	0.17919529	3.1159106	20	1 28.8	21.1
500586 2012 UL_{95}	16.4	X	163.56580	319.58656	25.96083	5.09106	0.2209960	0.17793739	3.1305783	20	2 13.1	21.7
500587 2012 UX_{95}	16.7	X	108.70883	198.91134	215.29091	9.15185	0.0715521	0.17554753	3.1589269	20	2 20.1	21.4
500588 2012 UU_{97}	16.7	X	122.49554	161.36339	234.44869	3.93611	0.0470998	0.17741420	3.1367299	20	2 12.4	21.2
500589 2012 UX_{99}	16.7	X	115.04991	281.19907	203.66157	10.97839	0.1084317	0.19639989	2.9311760	20	6 1.7	21.1
500590 2012 UK_{100}	16.5	X	223.39221	171.28186	133.61360	2.99502	0.0479196	0.17677753	3.1442568	20	2 17.5	21.1
500591 2012 UY_{101}	16.6	X	202.31461	134.99200	211.66238	8.70976	0.1513591	0.18793074	3.0185902	20	3 10.2	21.7
500592 2012 UJ_{104}	16.1	X	123.98282	109.99010	302.43709	9.08619	0.0906255	0.17966694	3.1104551	20	3 7.9	20.8
500593 2012 UN_{106}	16.3	X	132.93691	188.11258	223.37002	9.96751	0.0818165	0.18177966	3.0863075	20	3 16.2	21.0
500594 2012 UP_{106}	16.4	X	135.26435	44.55251	32.55598	20.46477	0.1138520	0.18946523	3.0022697	20	4 24.4	20.9
500595 2012 UN_{110}	15.5	X	83.39019	40.08352	55.12188	25.18070	0.0940759	0.17309807	3.1886577	20	3 31.2	20.3
500596 2012 UH_{111}	16.6	X	158.75888	255.64078	118.72834	3.14717	0.1226176	0.17871004	3.1215484	20	3 6.6	21.4
500597 2012 UQ_{111}	18.5	X	295.27375	211.83045	213.76012	20.08386	0.0924788	0.37348354	1.9096557	20	12 3.5	20.0
500598 2012 UF_{114}	16.9	X	169.58237	336.59012	16.71014	4.97785	0.1365317	0.18181846	3.0858684	20	2 22.3	21.8
500599 2012 UX_{118}	16.8	X	168.91851	317.93232	59.59215	2.67964	0.1186369	0.18088995	3.0964192	20	3 19.7	21.7
500600 2012 UW_{119}	16.0	X	112.28763	184.67655	235.80318	28.65547	0.1752444	0.17423235	3.1748035	20	3 10.3	21.3
500601 2012 UD_{120}	16.4	X	139.16344	134.81045	266.32352	9.31898	0.1063391	0.17841076	3.1250384	20	3 11.6	21.4
500602 2012 UP_{120}	16.5	X	203.93236	91.95837	264.40933	9.05937	0.0575940	0.18670169	3.0318233	20	3 22.9	21.2
500603 2012 UH_{121}	16.1	X	234.98883	305.94183	18.24387	11.62173	0.1648292	0.19058710	2.9904764	20	3 17.2	20.9
500604 2012 UG_{123}	16.3	X	120.99217	182.02544	245.98577	8.08058	0.0750908	0.17890705	3.1192564	20	3 21.9	21.1
500605 2012 UP_{123}	16.2	X	118.27220	187.14250	247.70448	8.15060	0.0851638	0.17964478	3.1107108	20	3 28.6	20.9
500606 2012 UQ_{128}	16.2	X	134.84787	39.81669	9.13576	16.41088	0.1209389	0.17953459	3.1119835	20	3 23.9	20.8
500607 2012 UF_{130}	16.8	X	147.42537	115.85307	300.37400	7.29013	0.0771932	0.18796745	3.0181972	20	4 5.3	21.4
500608 2012 UK_{132}	16.2	X	157.80899	102.91528	302.52329	7.45629	0.1102481	0.18970410	2.9997489	20	4 5.2	21.0
500609 2012 UG_{135}	16.8	X	151.77745	251.51068	180.84151	15.35963	0.3580619	0.19072462	2.9890387	20	5 19.5	22.6
500610 2012 UK_{138}	18.6	X	273.05174	88.79946	28.61556	20.67099	0.0998001	0.38171244	1.8821107	20	—	—
500611 2012 UU_{138}	16.4	X	140.51361	65.24135	349.62162	18.30039	0.1022067	0.18809584	3.0168236	20	3 28.4	21.1
500612 2012 UX_{138}	16.5	X	134.18181	104.13555	292.87155	11.43214	0.1088821	0.18108684	3.0941744	20	3 1.2	21.4
500613 2012 UO_{139}	16.1	X	134.32774	27.50269	334.77501	11.78878	0.1267522	0.17097609	3.2149863	20	1 30.9	21.0
500614 2012 UK_{145}	16.8	X	170.51880	199.46822	157.28140	5.42128	0.1360445	0.18050218	3.1008523	20	2 25.5	21.7
500615 2012 UZ_{145}	15.8	X	70.38151	189.92136	277.36731	10.65158	0.0964680	0.17777070	3.1325350	20	3 8.2	20.2
500616 2012 UB_{146}	15.9	X	19.25356	182.63793	328.92593	11.27644	0.0683922	0.17630944	3.1498196	20	2 22.8	19.8
500617 2012 UU_{147}	16.9	X	121.29427	97.09364	357.28023	3.33100	0.1947804	0.18686759	3.0300285	20	5 8.7	21.7
500618 2012 UZ_{147}	17.9	X	134.38883	357.94616	206.25569	23.54674	0.0765934	0.36758233	1.9300400	20	10 25.0	20.0
500619 2012 UH_{149}	16.5	X	65.30729	106.46787	19.55725	10.07914	0.1941794	0.17705335	3.1409904	20	4 13.2	20.4
500620 2012 US_{149}	16.4	X	130.07594	33.97512	28.36069	15.44658	0.0631201	0.18330731	3.0691364	20	3 30.9	20.9
500621 2012 UM_{152}	17.4	X	138.21450	335.37743	90.96247	3.60386	0.3016607	0.18250926	3.0780768	20	4 29.9	22.8
500622 2012 UM_{153}	16.8	X	152.68933	203.82657	202.13297	5.07286	0.1407169	0.18354680	3.0664661	20	4 6.7	21.6
500623 2012 UE_{154}	16.9	X	70.80585	71.61390	26.97170	1.43396	0.1772363	0.17390740	3.1787571	20	3 15.9	20.9
500624 2012 UK_{154}	16.2	X	218.38646	300.73431	323.49310	4.03680	0.1222936	0.16869851	3.2438584	20	—	—
500625 2012 UL_{154}	16.4	X	174.51568	341.75281	6.34400	9.02790	0.0335594	0.17926593	3.1150920	20	2 17.6	21.0
500626 2012 UE_{157}	16.2	X	24.40762	188.76931	320.57115	9.45133	0.0209278	0.17891098	3.1192107	20	2 25.1	20.5
500627 2012 UO_{157}	16.1	X	103.09440	106.17383	329.25781	9.92017	0.1048383	0.17888231	3.1195440	20	3 14.7	20.6
500628 2012 UW_{160}	17.6	X	150.62527	55.19683	5.51892	1.75206	0.2374423	0.18940966	3.0028569	20	4 27.4	22.7
500629 2012 UP_{163}	16.1	X	157.16413	43.15509	24.25113	9.66603	0.0521188	0.19290114	2.9665125	20	4 30.4	20.6
500630 2012 UU_{163}	16.5	X	167.88707	118.19607	259.55380	8.56073	0.0715973	0.18074547	3.0980691	20	3 11.2	21.4
500631 2012 UT_{164}	15.7	X	242.83449	28.34413	242.83414	29.94628	0.0384031	0.17331058	3.1860506	20	1 19.9	20.9
500632 2012 UZ_{166}	15.7	X	128.95077	99.73346	354.58976	12.64941	0.1216482	0.19064292	2.9898927	20	5 5.5	20.4
500633 2012 UK_{169}	18.0	X	225.08240	253.13889	227.61173	19.02856	0.1128364	0.36149971	1.9516297	20	10 12.6	20.2
500634 2012 UU_{171}	18.0	X	350.37211	118.62440	237.99516	20.73177	0.0980133	0.37016946	1.9210367	20	11 24.9	19.4
500635 2012 UG_{173}	16.2	X	146.85622	36.98768	11.26271	8.66016	0.1084923	0.18360599	3.0658071	20	4 1.5	20.7
500636 2012 VH	16.6	X	172.65952	210.96855	148.43177	12.72316	0.1276503	0.18231692	3.0802412	20	3 2.0	21.4
500637 2012 VJ_1	16.9	X	110.32678	343.21528	108.25735	11.63078	0.0800354	0.18778640	3.0201369	20	4 16.7	21.4
500638 2012 VS_1	17.7	X	10.72328	10.77170	8.18501	14.75407	0.2695255	0.39959000	1.8255468	20	—	—
500639 2012 VW_1	18.4	X	75.94590	78.41539	193.17223	21.98550	0.0195009	0.37238576	1.9134069	20	11 15.4	20.6
500640 2012 VD_2	17.9	X	78.42126	275.02687	35.46923	22.01814	0.0773351	0.38520687	1.8707110	20	—	—

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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500641 2012 VK_3	16.6	X	81.98231	37.30907	60.46693	7.10006	0.0851216	0.17806051	3.1291350	20	3 19.7	20.9
500642 2012 VD_4	16.4	X	125.86919	306.28385	92.22630	13.19201	0.1459086	0.17643776	3.1482922	20	3 9.7	21.4
500643 2012 VO_5	16.1	X	212.59812	283.56481	11.10969	9.83645	0.0670929	0.17705522	3.1409683	20	1 27.3	21.0
500644 2012 VR_7	16.6	X	110.77432	227.58858	184.64617	1.70752	0.1014001	0.17581399	3.1557344	20	2 27.0	21.1
500645 2012 VY_7	16.7	X	97.89662	32.64119	43.55733	5.71891	0.1229184	0.17726462	3.1384942	20	3 17.4	21.1
500646 2012 VW_8	16.7	X	41.81169	92.62247	43.95852	0.33346	0.1255956	0.17611790	3.1521029	20	3 12.7	20.3
500647 2012 VD_9	15.8	X	55.67090	81.38480	39.01416	17.33677	0.1379987	0.17497227	3.1658468	20	3 23.3	20.0
500648 2012 VW_{10}	17.3	X	163.02766	127.91929	209.91197	0.60545	0.1652130	0.17823989	3.1270352	20	1 29.8	22.4
500649 2012 VT_{12}	17.4	X	96.82851	34.86920	70.49038	1.94112	0.1658646	0.18360170	3.0658548	20	4 24.6	21.7
500650 2012 VL_{13}	16.7	X	167.26126	315.75539	48.28834	3.29432	0.0903045	0.18090917	3.0961999	20	3 1.2	21.5
500651 2012 VU_{14}	16.4	X	106.69889	307.81486	113.29614	12.38282	0.1547997	0.17541702	3.1604934	20	3 16.2	21.2
500652 2012 VO_{15}	16.8	X	164.31667	122.96166	234.56343	8.60728	0.1419907	0.18091724	3.0961078	20	2 17.5	21.9
500653 2012 VU_{16}	15.8	X	128.31307	29.83074	36.17315	9.55615	0.0878427	0.18044743	3.1014795	20	4 3.9	20.3
500654 2012 VB_{18}	16.7	X	169.61093	268.47221	116.82400	3.10618	0.0931986	0.18301941	3.0723542	20	3 28.7	21.4
500655 2012 VL_{18}	16.6	X	136.97183	238.31109	184.59997	4.95432	0.1463365	0.18215880	3.0820235	20	4 13.2	21.3
500656 2012 VG_{19}	16.9	X	167.50694	203.67063	206.20856	8.37208	0.1158212	0.18984891	2.9982233	20	4 24.7	21.5
500657 2012 VK_{19}	16.4	X	187.51924	257.23690	67.93647	14.70752	0.3690257	0.18158527	3.0885097	20	2 13.1	22.5
500658 2012 VX_{19}	16.9	X	159.37733	285.52534	114.09603	2.32199	0.2017843	0.18161274	3.0881983	20	4 9.7	22.1
500659 2012 VU_{20}	16.7	X	124.71145	15.59079	28.08621	9.88446	0.0964606	0.17852743	3.1236767	20	3 6.9	21.3
500660 2012 VS_{21}	16.7	X	145.46346	328.31598	46.92883	1.25699	0.1900216	0.17605711	3.1528285	20	2 28.9	21.8
500661 2012 VN_{23}	17.2	X	94.31036	76.38468	15.10267	0.79098	0.1600716	0.17732206	3.1378165	20	4 3.5	21.5
500662 2012 VJ_{27}	16.6	X	123.32997	32.64780	351.67897	5.89413	0.1221744	0.17170182	3.2059208	20	2 12.7	21.3
500663 2012 VS_{27}	16.3	X	62.78088	161.64677	311.41314	3.76476	0.1185553	0.17672692	3.1448571	20	3 12.2	20.3
500664 2012 VO_{28}	17.2	X	157.62606	108.21959	300.29763	0.83056	0.1638930	0.19045601	2.9918485	20	4 15.1	22.0
500665 2012 VB_{29}	18.5	X	122.31821	2.97470	219.91794	19.76382	0.0480878	0.37312021	1.9108952	20	11 7.3	20.2
500666 2012 VO_{29}	17.1	X	181.93118	111.19726	284.73882	4.48330	0.0896513	0.19597144	2.9354466	20	4 18.9	21.7
500667 2012 VS_{31}	16.0	X	139.96323	11.15062	13.35404	10.60797	0.0064449	0.17935303	3.1140834	20	2 19.8	20.5
500668 2012 VL_{39}	17.3	X	107.16716	46.40590	8.55912	1.66183	0.1766485	0.17572978	3.1567424	20	3 7.6	21.9
500669 2012 VU_{39}	16.2	X	149.85250	147.03991	250.19047	8.18493	0.0939635	0.17937747	3.1138005	20	3 17.9	21.1
500670 2012 VV_{39}	16.1	X	104.94489	188.97359	251.05622	9.77086	0.0579864	0.17586310	3.1551468	20	3 14.5	20.7
500671 2012 VJ_{42}	16.2	X	173.05395	318.64736	64.48561	12.21616	0.2164724	0.18304516	3.0720661	20	4 6.2	21.6
500672 2012 VM_{43}	15.8	X	146.55725	302.65606	71.83186	12.18383	0.0783376	0.17248600	3.1961966	20	2 24.9	20.8
500673 2012 VF_{45}	16.4	X	171.40387	259.27103	131.64665	9.59662	0.2130597	0.18906452	3.0065102	20	4 12.0	21.6
500674 2012 VY_{47}	16.9	X	175.72675	278.94101	68.38969	2.61096	0.1916411	0.18217382	3.0818541	20	2 22.3	22.0
500675 2012 VK_{59}	16.8	X	215.08080	105.50131	199.37034	4.36946	0.1385541	0.17548980	3.1596196	20	2 4.6	21.9
500676 2012 VX_{60}	17.1	X	146.42307	17.18043	60.12210	10.85141	0.1825152	0.18977082	2.9990458	20	5 11.9	21.9
500677 2012 VA_{62}	16.3	X	138.43949	341.02238	55.19642	11.50655	0.1343519	0.17729614	3.1381222	20	3 18.3	21.3
500678 2012 VD_{63}	16.5	X	336.16125	126.07932	78.97190	6.18801	0.0664190	0.17874058	3.1211929	20	3 3.0	20.7
500679 2012 VE_{63}	16.7	X	221.86697	245.10405	77.74453	6.13774	0.2290410	0.19032411	2.9932306	20	3 1.7	22.0
500680 2012 VD_{73}	16.5	X	81.13870	250.89889	208.43015	9.69077	0.0932049	0.17472391	3.1688462	20	3 16.1	20.9
500681 2012 VS_{73}	16.2	X	130.89285	345.87530	74.59445	13.79661	0.1542091	0.17806878	3.1290382	20	4 11.2	21.3
500682 2012 VC_{74}	16.3	X	212.14566	266.71563	55.78534	12.93691	0.0582228	0.17884451	3.1199836	20	3 3.0	21.2
500683 2012 VZ_{78}	16.2	X	161.18449	313.06271	60.30167	12.33643	0.0919272	0.17573746	3.1566503	20	3 11.5	21.2
500684 2012 VH_{81}	16.3	X	180.57902	198.69204	171.36195	10.30346	0.0692725	0.17806349	3.1291001	20	3 20.3	21.1
500685 2012 VA_{83}	16.5	X	161.29417	312.70026	58.44015	10.14922	0.2165755	0.17724831	3.1386868	20	3 14.3	21.9
500686 2012 VO_{85}	16.6	X	149.29824	301.47828	96.58059	3.29033	0.1486312	0.18024666	3.1037822	20	3 27.7	21.5
500687 2012 VO_{88}	16.5	X	162.42755	172.58992	222.09075	8.61446	0.0686630	0.18017280	3.1046303	20	3 27.9	21.3
500688 2012 VF_{91}	16.5	X	183.65698	118.09230	221.35590	8.53619	0.1033035	0.17238632	3.1974286	20	2 14.1	21.6
500689 2012 VB_{92}	16.2	X	184.44520	138.82462	226.00568	9.05215	0.0813172	0.17972671	3.1097655	20	3 14.5	21.1
500690 2012 VS_{92}	16.4	X	90.93508	69.10370	75.05743	10.19238	0.2003914	0.18477413	3.0528721	20	6 9.5	20.9
500691 2012 VP_{94}	16.4	X	169.01784	329.22240	47.91960	10.22580	0.1239441	0.18160078	3.0883338	20	3 22.8	21.4
500692 2012 VF_{95}	16.7	X	176.52883	282.62554	83.26199	2.99930	0.1884316	0.18298675	3.0727198	20	3 15.4	21.8
500693 2012 VG_{95}	15.6	X	329.65576	359.37402	226.86005	18.14560	0.1254576	0.18212178	3.0824411	20	3 3.3	19.9
500694 2012 VP_{97}	18.1	X	12.44042	303.36421	47.11566	22.72918	0.1175406	0.37501758	1.9044444	20	12 23.1	20.4
500695 2012 VD_{107}	17.4	X	133.92378	127.96347	278.65853	0.53978	0.2455287	0.17782327	3.1319176	20	3 29.6	22.6
500696 2012 VF_{109}	16.9	X	111.58571	39.52266	58.12626	5.29038	0.2098280	0.18209755	3.0827146	20	5 6.4	21.6
500697 2012 VH_{109}	16.8	X	181.26605	272.45039	75.62392	1.78989	0.2223358	0.18091513	3.0961319	20	2 28.0	22.1
500698 2012 VQ_{109}	16.1	X	147.85310	318.30279	96.20941	27.99434	0.1736408	0.17325579	3.1867223	20	4 29.2	21.7
500699 2012 VN_{110}	16.9	X	212.01202	59.37640	249.48044	7.56388	0.1026642	0.17157499	3.2075004	20	2 6.2	22.0
500700 2012 VP_{111}	17.1	X	130.59959	355.28667	52.54869	1.29977	0.1912669	0.17650797	3.1474572	20	3 24.4	22.0
500701 2012 WO_1	16.8	X	117.03096	207.02279	240.79827	8.71659	0.0724639	0.18355262	3.0664013	20	4 11.3	21.2
500702 2012 WK_3	16.8	X	187.41550	193.78424	163.11111	3.65091	0.2574852	0.18362963	3.0655439	20	3 13.2	22.1
500703 2012 WL_3	17.7	X	80.55819	219.82772	54.30533	22.50927	0.0958845	0.37114909	1.9176549	20	11 27.2	19.9
500704 2012 WC_{10}	15.8	X	121.42336	25.34108	49.33791	28.63351	0.1309683	0.17956673	3.1116122	20	4 19.2	20.7
500705 2012 WA_{12}	16.8	X	168.80728	319.36316	83.34459	3.64834	0.0876544	0.18661157	3.0327993	20	4 17.5	21.4
500706 2012 WE_{14}	17.0	X	164.19867	328.49299	95.75218	5.77768	0.1163194	0.19121922	2.9838823	20	5 10.3	21.8
500707 2012 WF_{18}	16.2	X	143.88392	2.39867	50.22826	15.61190	0.0312451	0.18052122	3.1006343	20	4 3.7	20.8
500708 2012 WB_{19}	16.3	X	186.61352	340.26684	48.90525	10.20664	0.0886916	0.18902561	3.0069228	20	4 19.7	21.0
500709 2012 WS_{28}	16.6	X	136.00790	198.57678	214.28409	4.95111	0.1470099	0.18000106	3.1066048	20	3 29.8	21.5
500710 2012 WX_{33}	16.9	X	109.13811	259.73303	186.46412	1.48349	0.1647702	0.17380829	3.1799654	20	4 14.8	21.6
500711 2012 XJ	18.0	X	168.26783	294.15700	258.26195	18.01503	0.0950390	0.36573575	1.9365309	20	11 16.3	20.5
500712 2012 XM_1	16.6	X	213.63278	114.65711	232.93638	7.43823	0.1283104	0.18914474	3.0056601	20	3 21.7	21.6
500713 2012 XZ_7	16.0	X	180.19643	313.02857	75.22044	11.80365	0.1426261	0.18693601	3.0292892	20	4 16.1	21.0
500714 2012 XL_{10}	16.1	X	168.23452	290.36334	67.40203	27.09571	0.2352059	0.17564446	3.1577646	20	3 15.2	22.0
500715 2012 XU_{16}	18.4	X	313.67876	348.79696	92.83001	25.03431	0.0803167	0.38065322	1.8856006	20	—	—
500716 2012 XG_{18}	17.2	X	121.61745	12.07569	51.28783	2.20235	0.1882072	0.17639675	3.1487800	20	4 3.1	22.0
500717 2012 XJ_{20}	16.0	X	215.21892	250.85246	71.73766	10.40434	0.0693375	0.17495896	3.1660073	20	3 4.8	20.9
500718 2012 XY_{22}	15.8	X	159.00237	135.24249	255.03277	8.04681	0.0946392	0.17862523	3.1225364	20	3 18.9	20.8
500719 2012 XX_{24}	16.4	X	213.44983	84.72772	237.85521	8.85164	0.0845056	0.17674725	3.1446159	20	2 22.3	21.4
500720 2012 XL_{30}	17.2	X	131.52989	132.40463	274.23093	4.42212	0.1815783	0.17315166	3.1879997	20	3 20.4	22.3

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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500721 2012 XA_{34}	16.5	X	150.29624	306.71539	98.78499	2.66238	0.1724398	0.17899473	3.1182377	20	4 7.6	21.5
500722 2012 XO_{34}	16.9	X	158.28958	340.17113	79.80140	8.47154	0.2034462	0.18622292	3.0370175	20	5 3.9	22.0
500723 2012 XS_{34}	17.4	X	136.16517	255.12473	169.34462	0.81650	0.1840363	0.17903764	3.1177394	20	4 17.1	22.4
500724 2012 XS_{40}	16.1	X	203.62973	83.77740	259.72602	8.27431	0.1196583	0.17638726	3.1488931	20	3 7.3	21.3
500725 2012 XP_{43}	16.1	X	158.04646	317.02159	73.72533	10.56319	0.0973012	0.17508984	3.1644295	20	3 28.3	21.1
500726 2012 XW_{47}	17.6	X	120.23025	127.06195	99.19245	24.53571	0.0481135	0.35431401	1.9779281	20	11 16.4	20.5
500727 2012 XY_{50}	17.0	X	180.82719	306.52802	59.40860	2.62123	0.1131293	0.18559623	3.0438502	20	3 16.9	21.7
500728 2012 XZ_{57}	16.6	X	159.86490	267.64012	109.67206	4.14193	0.0469457	0.17287017	3.1914595	20	3 7.2	21.3
500729 2012 XZ_{69}	16.9	X	138.55496	274.81060	146.53715	8.10930	0.1872074	0.17954771	3.1118319	20	4 18.5	22.0
500730 2012 XG_{72}	16.3	X	149.95191	327.71612	92.68108	11.24369	0.0762031	0.18557214	3.0441137	20	4 22.2	21.0
500731 2012 XM_{85}	16.7	X	150.61490	280.55326	171.46646	12.10289	0.1732939	0.19024384	2.9940725	20	6 2.9	21.8
500732 2012 XT_{85}	16.2	X	181.53543	177.33888	211.25841	11.37190	0.1168280	0.18329098	3.0693187	20	4 11.9	20.9
500733 2012 XQ_{110}	15.4	X	161.67917	92.70276	297.14617	24.54788	0.2670442	0.17488432	3.1669081	20	3 18.9	21.4
500734 2012 XB_{116}	17.8	X	255.43597	187.41491	272.31308	19.15800	0.0410305	0.35630122	1.9705669	20	11 9.5	20.0
500735 2012 XA_{123}	16.8	X	204.35274	178.22458	181.21190	8.87940	0.0942447	0.18262489	3.0767774	20	3 31.6	21.6
500736 2012 XS_{127}	17.0	X	156.61463	141.75935	257.23385	3.92601	0.2472660	0.18302549	3.0722861	20	4 6.1	22.3
500737 2012 XY_{128}	17.0	X	149.74491	200.63457	211.42262	3.15933	0.1924052	0.18532781	3.0467886	20	4 14.4	21.9
500738 2012 XK_{129}	16.3	X	156.09378	96.13271	285.54066	14.50159	0.2536379	0.17523650	3.1626636	20	3 11.7	22.1
500739 2012 XM_{133}	15.4	X	144.17628	137.31420	264.40624	20.71009	0.1483232	0.17503333	3.1651106	20	3 15.7	20.8
500740 2012 XJ_{140}	16.5	X	157.29049	310.87266	83.88853	6.39365	0.1430100	0.18017430	3.1046131	20	4 1.4	21.5
500741 2012 XF_{142}	16.7	X	80.76469	11.64845	124.05770	7.02172	0.0925274	0.18252824	3.0778634	20	5 4.7	21.0
500742 2012 XE_{144}	15.7	X	149.19870	313.06302	136.74920	10.90318	0.0716125	0.19066549	2.9896567	20	5 25.2	20.3
500743 2012 YE_{7}	18.5	X	272.97654	163.13868	292.07929	16.37643	0.1582327	0.37146146	1.9165796	20	11 30.8	19.7
500744 2013 AK_{17}	17.5	X	104.83725	207.25417	298.47266	25.47245	0.2082511	0.31077215	2.1586123	20	7 4.5	20.6
500745 2013 AO_{19}	16.2	X	150.56677	277.48750	113.88152	10.63430	0.2512722	0.16605094	3.2782482	20	3 31.0	21.9
500746 2013 AC_{21}	18.3	X	330.50723	292.56181	106.55143	24.08030	0.1021687	0.36479449	1.9398607	20	12 28.4	19.7
500747 2013 AU_{47}	16.3	X	144.16163	356.81454	60.96474	11.82991	0.1100080	0.17254507	3.1954670	20	4 15.3	21.3
500748 2013 AJ_{50}	18.6	X	270.77455	143.13424	295.31164	17.18302	0.1049393	0.35526891	1.9743823	20	10 15.9	20.9
500749 2013 AP_{60}	16.9	X	204.39642	49.15374	251.10343	21.89716	0.7502067	0.20262518	2.8708276	20	1 15.4	23.8
500750 2013 AA_{65}	18.3	X	312.87220	320.54299	126.33213	23.33230	0.0888840	0.37523392	1.9037123	20	—	—
500751 2013 AU_{68}	16.3	X	107.34631	332.98303	115.19835	11.78965	0.2460430	0.16851439	3.2462207	20	4 29.6	21.5
500752 2013 AO_{71}	18.2	X	284.55763	103.40035	346.75279	18.15721	0.1266551	0.36747124	1.9304289	20	12 23.1	19.9
500753 2013 AM_{74}	16.2	X	166.45448	67.12839	340.71187	15.11335	0.2381047	0.17959922	3.1112369	20	4 18.6	21.8
500754 2013 AN_{75}	16.1	X	172.14548	24.91893	14.35776	17.46294	0.2168299	0.17709881	3.1404530	20	4 16.4	21.5
500755 2013 AM_{92}	15.8	X	156.22920	302.71959	127.01379	11.04056	0.0911916	0.17511097	3.1641749	20	5 10.5	20.8
500756 2013 AD_{100}	17.9	X	146.16983	259.79903	305.02509	17.43523	0.0444586	0.35285056	1.9833933	20	10 30.7	20.7
500757 2013 AF_{100}	16.5	X	195.46335	296.83595	101.35990	11.00550	0.1512633	0.18333916	3.0687809	20	5 10.4	21.6
500758 2013 AF_{119}	17.6	X	71.71533	6.03607	272.67792	18.01280	0.0349717	0.36340069	1.9448176	20	11 14.9	20.0
500759 2013 AN_{141}	18.0	X	131.57901	338.29616	260.44427	17.89357	0.0409629	0.35962353	1.9584116	20	12 10.1	19.9
500760 2013 BX_{20}	16.6	X	144.02338	319.94086	112.59596	12.14447	0.2635792	0.17751524	3.1355396	20	5 12.3	22.2
500761 2013 BU_{27}	17.9	X	352.41429	83.96498	270.93502	16.11105	0.1134506	0.35598577	1.9717308	20	11 22.9	19.7
500762 2013 BK_{70}	17.6	X	230.91510	194.59711	299.59071	17.52711	0.1013685	0.35424065	1.9782012	20	11 9.6	20.0
500763 2013 CF_{1}	17.9	X	294.71430	256.65040	154.01097	24.27610	0.1152923	0.35290791	1.9831784	20	11 6.7	20.0
500764 2013 CJ_{1}	18.3	X	18.40133	35.72897	302.94827	16.54443	0.0754571	0.35292043	1.9831315	20	12 2.5	20.7
500765 2013 CO_{1}	17.8	X	347.59355	101.24857	297.70478	17.41940	0.1059655	0.36746609	1.9304469	20	—	—
500766 2013 CL_{13}	18.6	X	87.22814	181.20109	352.78463	3.02237	0.0850093	0.31322779	2.1473155	20	7 3.1	20.9
500767 2013 CO_{15}	18.0	X	327.61926	238.56063	352.27185	2.35756	0.1021783	0.28590923	2.2820086	20	3 3.0	20.2
500768 2013 CP_{42}	18.7	X	354.26751	316.78607	299.33884	0.63582	0.1700727	0.30304302	2.1951617	20	5 27.4	20.0
500769 2013 CX_{45}	17.8	X	1.61790	284.46181	298.63573	7.31749	0.3129032	0.28771253	2.2724632	20	3 26.9	18.8
500770 2013 CT_{64}	16.6	X	141.86797	286.22055	156.53791	13.81472	0.2848117	0.17497071	3.1658656	20	5 22.9	22.3
500771 2013 CT_{115}	18.0	X	2.53679	340.26455	263.09643	6.24845	0.1149766	0.30176797	2.2013408	20	5 25.0	19.7
500772 2013 CQ_{145}	17.9	X	296.29087	177.18194	84.82571	3.53826	0.1871002	0.27953703	2.3165579	20	2 19.9	21.0
500773 2013 CM_{155}	15.7	X	276.90337	99.86263	127.84311	3.88960	0.1271652	0.12531267	3.9549353	20	1 14.4	21.4
500774 2013 CK_{186}	17.5	X	54.45823	260.14913	255.04598	3.92567	0.0597899	0.29285631	2.2457754	20	4 6.6	19.9
500775 2013 CP_{191}	16.4	X	148.04804	35.42447	60.57897	17.73585	0.2626466	0.17822303	3.1272325	20	6 6.4	21.9
500776 2013 CV_{192}	18.3	X	3.83190	105.99118	111.28107	2.70677	0.1601372	0.28897836	2.2658222	20	4 14.9	19.8
500777 2013 DM_{12}	17.5	X	343.31805	356.81828	212.12737	6.98412	0.1415248	0.28037377	2.3119466	20	2 17.5	20.0
500778 2013 DR_{15}	17.6	X	283.21052	341.87193	290.39107	7.21930	0.2279684	0.27749454	2.3279113	20	2 10.5	21.2
500779 2013 EP_{10}	16.3	X	122.91912	304.47718	175.41863	26.86735	0.3651402	0.17388407	3.1790414	20	6 23.9	22.4
500780 2013 EN_{16}	18.2	X	296.06738	126.39363	136.57064	5.76888	0.1450465	0.27788098	2.3257525	20	2 26.5	21.1
500781 2013 EA_{18}	18.3	X	2.35428	314.77950	244.67161	4.55472	0.2714210	0.27806701	2.3247151	20	2 24.4	19.7
500782 2013 EN_{18}	18.5	X	290.02356	310.79671	297.95647	0.64991	0.1544646	0.27173885	2.3606679	20	1 30.0	21.8
500783 2013 EA_{30}	15.0	X	290.37957	143.32703	71.54032	9.36789	0.1107528	0.12572207	3.9463448	20	1 17.5	20.6
500784 2013 EG_{42}	14.6	X	234.67716	305.52505	210.50945	3.52645	0.0252254	0.08344206	5.1865596	20	11 3.6	21.5
500785 2013 EU_{78}	18.8	X	39.13796	95.82440	144.61582	3.72527	0.1536763	0.30804628	2.1713278	20	8 10.8	20.6
500786 2013 ET_{87}	15.8	X	118.72754	15.71402	95.01800	9.39855	0.0848976	0.16080529	3.3491595	20	5 18.2	20.8
500787 2013 EJ_{107}	17.2	X	355.80405	233.04118	38.32966	22.87756	0.3569993	0.29089621	2.2558523	20	7 24.2	18.6
500788 2013 EP_{109}	17.4	X	4.16950	148.42137	72.60634	10.99911	0.2886039	0.28579108	2.2826374	20	4 20.4	18.4
500789 2013 EC_{120}	17.6	X	339.05166	286.39400	350.76484	7.15537	0.1192656	0.29773632	2.2211685	20	5 30.4	19.7
500790 2013 EG_{123}	18.1	X	69.95054	83.39670	74.86772	5.49568	0.2132315	0.29459737	2.2369184	20	6 4.5	20.4
500791 2013 EQ_{123}	18.2	X	347.49709	242.34911	34.70119	6.59459	0.2633192	0.29175686	2.2514138	20	6 10.6	19.0
500792 2013 ER_{126}	17.0	X	280.10635	148.67739	153.91596	23.42030	0.1723265	0.27902330	2.3194005	20	3 30.5	20.4
500793 2013 FC	17.6	X	194.94325	136.71868	22.82509	19.65908	0.0493550	0.34511513	2.0129209	20	11 1.7	19.9
500794 2013 FC_{5}	18.0	X	323.30616	234.16071	36.08918	6.46084	0.1202376	0.28623269	2.2802890	20	4 20.9	20.4
500795 2013 FN_{11}	18.5	X	354.53435	273.62501	1.96698	3.75643	0.1388459	0.30021848	2.2089087	20	7 4.1	20.1
500796 2013 FR_{13}	17.5	X	322.62753	214.74592	63.82696	7.75326	0.1700426	0.28801460	2.2708740	20	4 26.3	19.6
500797 2013 FO_{22}	18.5	X	12.25480	58.63056	187.16580	5.56283	0.1846455	0.29927332	2.2135570	20	6 26.4	20.0
500798 2013 GM_{1}	17.9	X	332.19540	26.13708	223.34760	3.82489	0.1910789	0.28045237	2.3115146	20	3 22.9	19.9
500799 2013 GQ_{3}	18.5	X	341.09194	192.77990	64.36964	1.44714	0.2024656	0.28669423	2.2778411	20	4 23.1	19.9
500800 2013 GJ_{5}	18.6	X	54.14809	20.38878	157.68989	5.48369	0.2554740	0.29273700	2.2463856	20	6 17.3	20.8

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
500801 2013 GU_{7}	18.0	X	24.20522	348.30318	30.15746	20.38567	0.0761600	0.35432021	1.9779050	20	—	—
500802 2013 GA_{18}	18.3	X	10.08867	226.03551	52.71034	6.13502	0.1717569	0.30345801	2.1931600	20	8 23.6	20.0
500803 2013 GB_{18}	17.3	X	343.97698	249.22364	16.91402	23.56134	0.1347999	0.29029846	2.2589480	20	5 11.6	19.7
500804 2013 GH_{21}	18.6	X	63.83021	233.56268	307.08282	3.02316	0.1122142	0.29336049	2.2432016	20	6 10.6	20.8
500805 2013 GR_{24}	16.1	X	125.83882	286.12855	206.27863	18.99370	0.2918456	0.17320187	3.1873836	20	7 3.1	21.9
500806 2013 GC_{27}	17.5	X	334.65011	178.34686	115.00561	8.73977	0.1788083	0.29391568	2.2403758	20	6 14.4	19.1
500807 2013 GY_{34}	18.1	X	335.40571	41.43788	230.62657	3.53258	0.0777383	0.29071307	2.2567997	20	5 21.1	20.0
500808 2013 GP_{37}	18.2	X	68.05054	127.61947	84.69074	4.93845	0.0948611	0.30600770	2.1809606	20	8 4.3	20.6
500809 2013 GT_{39}	17.5	X	331.00793	135.15778	126.26818	5.93220	0.2024363	0.28357914	2.2944919	20	4 11.2	19.5
500810 2013 GA_{43}	18.3	X	344.53812	195.71676	30.37239	6.23229	0.1181923	0.27741534	2.3283543	20	3 25.4	20.5
500811 2013 GM_{63}	18.2	X	84.54142	232.96994	339.42789	4.30939	0.1437927	0.31116313	2.1568037	20	9 2.5	20.9
500812 2013 GD_{71}	18.4	X	38.01555	180.44586	28.35886	4.81537	0.0759908	0.29260519	2.2470602	20	6 3.7	20.6
500813 2013 GR_{71}	18.5	X	303.29632	175.15878	134.93170	2.13541	0.2171971	0.28405428	2.2919325	20	5 1.1	20.8
500814 2013 GL_{82}	18.0	X	324.43628	328.46966	272.94956	2.40996	0.1441660	0.27267515	2.3552608	20	3 6.6	20.6
500815 2013 GU_{87}	18.0	X	356.81493	159.82376	154.09003	6.81341	0.2576404	0.30257145	2.1974420	20	10 7.2	19.2
500816 2013 GF_{88}	18.7	X	10.13118	77.13236	162.18388	8.77460	0.1675082	0.28993747	2.2608226	20	6 8.7	20.5
500817 2013 GX_{93}	18.2	X	32.43250	31.49061	187.70325	5.03231	0.0988944	0.29416857	2.2390917	20	6 14.4	20.3
500818 2013 GZ_{97}	18.0	X	335.01836	358.46134	233.23082	1.72238	0.1814496	0.27345799	2.3507637	20	3 4.4	20.2
500819 2013 GF_{99}	18.3	X	42.40367	203.66056	18.60493	5.52665	0.1204988	0.29643568	2.2276608	20	7 12.6	20.5
500820 2013 GX_{101}	17.7	X	341.07701	184.92057	68.40453	6.23050	0.1792400	0.27759058	2.3273743	20	4 22.9	19.5
500821 2013 GG_{110}	17.4	X	340.06806	316.04274	27.24704	3.01739	0.1767705	0.31504635	2.1390442	20	10 5.9	18.6
500822 2013 GX_{113}	18.0	X	320.51728	296.08129	340.90827	2.59969	0.2016558	0.28345971	2.2951363	20	4 10.9	20.4
500823 2013 GY_{115}	18.7	X	33.29758	148.99641	62.66627	3.44110	0.1481899	0.29237582	2.2482352	20	6 10.3	20.3
500824 2013 GU_{126}	17.3	X	308.67996	277.27462	58.05027	10.21066	0.0869239	0.29826719	2.2185322	20	7 13.1	19.6
500825 2013 GM_{127}	18.0	X	3.41228	163.94715	135.91549	4.94865	0.1962135	0.30123314	2.2039457	20	9 15.7	19.5
500826 2013 GP_{130}	17.3	X	27.41303	12.61746	257.68283	6.07668	0.1211120	0.30499970	2.1857632	20	8 27.8	19.6
500827 2013 GQ_{133}	18.1	X	342.59757	268.13268	16.59543	5.53271	0.2260636	0.29135628	2.2534770	20	6 13.5	19.3
500828 2013 GR_{136}	7.8	X	332.83752	56.13302	198.68990	1.64088	0.0811761	0.00339633	43.8324793	20	5 3.4	23.9
500829 2013 GT_{136}	7.4	X	184.50723	354.99377	40.86700	12.10447	0.1512473	0.00356003	42.4782619	20	4 29.4	24.3
500830 2013 GU_{136}	7.9	X	34.76162	127.44731	49.18391	8.31254	0.1681081	0.00334459	44.2833436	20	5 4.9	23.8
500831 2013 GV_{136}	8.2	X	70.98617	296.09214	216.04438	7.44072	0.0331265	0.00371974	41.2535427	20	5 7.4	24.3
500832 2013 GZ_{136}	8.2	X	355.52995	36.68381	213.93102	18.34967	0.6155346	0.00119194	88.0979274	20	5 8.1	23.6
500833 2013 GD_{137}	8.3	X	21.22253	354.46401	204.43609	6.93732	0.1059077	0.00396563	39.5300681	20	5 5.9	23.8
500834 2013 GK_{137}	7.2	X	164.90355	11.52346	44.99958	9.87021	0.1746120	0.00400337	39.2812584	20	5 5.9	23.8
500835 2013 GN_{137}	7.0	X	37.06828	106.94679	72.42920	2.75934	0.0655504	0.00334902	44.2443407	20	5 1.9	23.2
500836 2013 GQ_{137}	7.4	X	49.32961	71.65350	90.51647	2.84553	0.1307459	0.00317522	45.8444825	20	5 4.9	23.7
500837 2013 GT_{137}	7.4	X	77.78897	110.64786	25.31917	2.29862	0.1031967	0.00329342	44.7408927	20	5 5.5	23.8
500838 2013 GV_{137}	6.8	X	234.00903	287.08649	69.82541	3.19357	0.0826850	0.00338141	43.9613127	20	5 4.4	23.4
500839 2013 GW_{137}	7.7	X	347.85764	191.30624	46.31634	5.01592	0.0666174	0.00349090	43.0372318	20	5 3.9	23.7
500840 2013 GA_{138}	7.8	X	338.23117	187.23695	63.43460	3.89698	0.0502607	0.00337778	43.9927804	20	5 7.3	24.0
500841 2013 HE_{30}	18.1	X	261.38982	26.28723	256.75912	5.26994	0.1309402	0.26379150	2.4078468	20	2 12.8	21.6
500842 2013 HE_{49}	18.7	X	79.45374	287.61639	239.85174	3.28454	0.1218087	0.29454092	2.2372042	20	6 16.9	21.2
500843 2013 HQ_{52}	18.4	X	296.05826	42.89777	288.86586	4.28703	0.1743653	0.29498128	2.2349771	20	5 28.2	20.8
500844 2013 HE_{53}	18.4	X	289.46692	17.70825	302.78461	4.30049	0.1683099	0.28753793	2.2733831	20	4 30.7	21.3
500845 2013 HK_{61}	18.4	X	64.51194	297.00529	247.27422	3.80484	0.0050657	0.29366476	2.2416518	20	5 30.4	21.0
500846 2013 HN_{61}	18.5	X	1.39755	271.43261	349.16936	3.45435	0.1475267	0.29353682	2.2423031	20	6 23.0	20.1
500847 2013 HC_{62}	17.8	X	38.80598	23.41854	214.95661	7.24863	0.1749607	0.30060492	2.2070152	20	8 6.8	20.1
500848 2013 HC_{64}	19.1	X	121.47488	185.98240	350.02692	4.26660	0.0172824	0.31244924	2.1508811	20	8 16.1	21.5
500849 2013 HA_{73}	18.1	X	343.91075	92.04430	230.26394	5.51378	0.1222880	0.30974140	2.1633986	20	8 28.3	20.0
500850 2013 HB_{81}	18.6	X	290.53998	92.22725	209.41467	8.21966	0.2406869	0.27521030	2.3407746	20	3 26.7	21.8
500851 2013 HQ_{84}	18.1	X	318.46334	84.09346	230.01254	2.63427	0.1940598	0.29298952	2.2450947	20	6 9.0	19.9
500852 2013 HJ_{89}	18.3	X	299.35177	303.90212	2.07551	3.51461	0.1962238	0.28427935	2.2907227	20	4 20.5	21.1
500853 2013 HT_{120}	18.0	X	268.11740	143.98324	205.99351	6.55836	0.1391712	0.29178701	2.2512588	20	5 21.3	20.7
500854 2013 HP_{128}	17.7	X	72.76710	183.58288	3.00793	8.25931	0.0406512	0.29648610	2.2274083	20	6 21.6	20.4
500855 2013 HS_{140}	18.6	X	158.95224	274.45326	190.89561	5.19380	0.1069341	0.30345546	2.1931723	20	6 25.8	21.7
500856 2013 HT_{156}	7.6	X	239.83859	293.05223	54.50592	3.67683	0.0164515	0.00335414	44.1992681	20	5 6.2	24.1
500857 2013 JO_{2}	18.2	X	331.58865	139.25146	124.65287	2.20667	0.1706025	0.27583425	2.3372433	20	4 20.2	20.4
500858 2013 JJ_{3}	18.3	X	88.06126	197.26244	347.30570	5.99594	0.0571690	0.30208310	2.1998096	20	7 16.3	20.9
500859 2013 JG_{6}	18.2	X	309.66824	148.02570	128.61325	1.80427	0.1818064	0.27414935	2.3468098	20	3 29.8	20.9
500860 2013 JZ_{10}	18.3	X	314.67610	98.51218	191.03081	5.16631	0.1700021	0.28027667	2.3124805	20	4 27.9	20.6
500861 2013 JE_{11}	17.7	X	6.47485	188.55549	61.47431	6.96661	0.1559305	0.28888594	2.2663055	20	6 16.1	19.3
500862 2013 JY_{21}	18.1	X	338.07171	272.74221	59.85993	3.51880	0.0895979	0.30758217	2.1735115	20	9 6.6	20.0
500863 2013 JZ_{23}	17.8	X	77.34787	53.20377	95.78053	6.94440	0.0677543	0.27927589	2.3180017	20	5 10.2	20.6
500864 2013 JC_{25}	16.9	X	245.54029	58.50721	185.77518	11.57321	0.2186365	0.23693852	2.5864987	20	—	—
500865 2013 JT_{26}	17.0	X	14.73045	192.70206	72.38338	7.02161	0.1189116	0.29363065	2.2418254	20	7 29.9	19.1
500866 2013 JJ_{29}	18.6	X	303.97610	75.28607	210.66883	6.11592	0.2179450	0.27214937	2.3582933	20	3 26.6	21.4
500867 2013 JO_{29}	18.1	X	351.21877	24.49595	209.45308	5.94193	0.0743156	0.27665249	2.3326325	20	4 20.9	20.6
500868 2013 JN_{39}	18.5	X	15.88959	185.27430	55.11559	3.69342	0.1645455	0.28764988	2.2727932	20	6 22.9	20.1
500869 2013 JW_{46}	17.9	X	316.77589	150.05273	147.42417	6.44049	0.1776389	0.27782637	2.3260573	20	5 14.5	20.2
500870 2013 JQ_{48}	18.4	X	20.03958	212.79282	66.95522	6.32881	0.1860516	0.30020934	2.2089536	20	9 17.5	20.4
500871 2013 JL_{52}	16.2	X	169.86188	113.10105	41.29769	9.16722	0.1657819	0.18789714	3.0189501	20	9 6.6	21.3
500872 2013 JJ_{53}	18.0	X	273.49833	312.22341	358.43465	1.46330	0.1873960	0.27126254	2.3634305	20	3 27.8	21.3
500873 2013 JO_{58}	18.3	X	129.99183	270.40954	213.03378	4.81247	0.0779379	0.29519717	2.2338873	20	6 14.7	21.2
500874 2013 JT_{58}	18.3	X	336.07616	239.48080	60.09079	7.18221	0.1745504	0.29201692	2.2500770	20	6 28.9	19.9
500875 2013 JZ_{62}	18.2	X	0.73006	77.81625	133.65705	2.00298	0.1522457	0.27360926	2.3498972	20	3 30.8	20.2
500876 2013 JD_{64}	8.0	X	0.57527	178.46885	67.54233	50.23536	0.4163050	0.00158063	72.9875831	20	5 28.7	24.3
500877 2013 JE_{64}	8.2	X	29.21724	90.22006	107.17963	8.32012	0.2881299	0.00295037	48.1450426	20	5 31.6	23.9
500878 2013 JG_{64}	7.7	X	223.80744	181.61842	207.93880	18.19836	0.1053915	0.00362622	41.9597931	20	5 27.4	24.3
500879 2013 JH_{64}	5.8	X	52.86568	60.87649	86.07898	13.69434	0.3821518	0.00214937	59.4650308	20	5 26.3	23.1
500880 2013 JJ_{64}	7.4	X	304.80933	181.47168	128.25404	7.64110	0.0876029	0.00295406	48.1049749	20	5 28.3	24.0

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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500881 2013 JM_{64}	8.2	X	30.57112	53.15618	165.44247	7.28639	0.0520727	0.00353899	42.6464869	20	6 3.7	24.3
500882 2013 JN_{64}	8.3	X	14.72974	79.83120	146.52459	7.73540	0.2933920	0.00251429	53.5622971	20	6 5.6	24.2
500883 2013 JJ_{65}	7.4	X	94.31051	274.86397	214.87204	19.79829	0.2515148	0.00396288	39.5483757	20	6 1.4	23.7
500884 2013 JK_{65}	9.6	X	353.26589	186.52242	83.12360	20.00809	0.2636032	0.00392669	39.7910033	20	6 8.9	24.3
500885 2013 JL_{65}	9.0	X	57.22733	26.93283	145.81901	7.24519	0.2307562	0.00396437	39.5384570	20	6 6.8	24.6
500886 2013 JN_{65}	7.4	X	210.26627	314.57409	79.96588	19.59423	0.0075814	0.00376848	40.8970637	20	5 27.2	23.5
500887 2013 JO_{65}	8.2	X	323.36733	114.60366	175.17829	9.95900	0.0862856	0.00353193	42.7032814	20	5 29.2	24.2
500888 2013 JP_{65}	8.0	X	67.75505	340.24425	192.09127	12.46771	0.0631494	0.00368371	41.5220765	20	5 29.2	24.1
500889 2013 KC_{9}	17.4	X	266.45819	255.78988	79.19095	6.64545	0.1409820	0.27242643	2.3566942	20	4 29.6	20.6
500890 2013 LS_{4}	18.1	X	337.43299	170.55838	72.28384	4.60282	0.1927449	0.27381435	2.3487236	20	3 27.9	20.2
500891 2013 LH_{5}	18.0	X	279.32751	164.04843	138.65550	2.33849	0.1830056	0.26670223	2.3902957	20	3 25.9	21.2
500892 2013 LO_{6}	18.3	X	281.68654	171.57056	166.90043	6.13893	0.2633729	0.27440975	2.3453249	20	5 5.3	21.4
500893 2013 LJ_{9}	18.1	X	313.06924	236.95934	73.43399	7.16926	0.1293462	0.28217795	2.3020813	20	6 2.7	20.2
500894 2013 LM_{9}	18.2	X	302.56695	235.87604	77.16942	3.13754	0.2541915	0.27465637	2.3439208	20	4 28.2	20.9
500895 2013 LJ_{13}	18.5	X	69.42816	114.71198	123.48685	4.47934	0.1538701	0.30525843	2.1845280	20	9 23.2	21.2
500896 2013 LG_{21}	17.8	X	278.98986	245.49242	69.17773	7.11227	0.1622114	0.27185195	2.3600131	20	4 15.2	20.9
500897 2013 LV_{27}	18.5	X	312.46325	112.22668	170.66792	0.95986	0.1642696	0.27444291	2.3451360	20	4 14.8	20.9
500898 2013 LD_{28}	16.2	X	212.29210	245.27327	91.95294	8.07677	0.2701447	0.24530219	2.5273677	20	3 7.7	20.8
500899 2013 LS_{28}	17.6	X	328.50542	89.70667	188.93990	7.16850	0.0995224	0.28271932	2.2991416	20	5 17.9	19.9
500900 2013 LX_{31}	17.8	X	280.84035	121.05762	183.97477	7.32437	0.2427662	0.26543082	2.3979225	20	3 22.0	21.0
500901 2013 MX_{3}	17.8	X	296.08498	156.50195	156.04060	6.08245	0.1921069	0.26281239	2.4138234	20	4 30.4	20.8
500902 2013 MA_{5}	17.9	X	301.80973	108.97896	206.35400	4.32314	0.1894044	0.26478370	2.4018279	20	5 11.8	20.4
500903 2013 MW_{9}	18.1	X	349.83843	196.99411	79.39119	3.24848	0.2060957	0.27828132	2.3235214	20	6 20.7	19.2
500904 2013 ND	16.3	X	236.32729	13.37709	256.49910	14.11518	0.0975135	0.23842368	2.5757465	20	1 7.5	20.3
500905 2013 NA_{1}	17.7	X	319.09248	57.28048	199.76195	6.27619	0.1402252	0.26794382	2.3829059	20	3 22.1	20.2
500906 2013 NS_{5}	18.2	X	314.70268	204.10208	84.21585	2.37163	0.1790487	0.26677619	2.3898538	20	4 25.3	20.6
500907 2013 NC_{6}	18.4	X	311.33649	27.76538	289.67742	0.96801	0.1773291	0.27499032	2.3420228	20	6 2.2	20.4
500908 2013 NR_{18}	17.7	X	345.88104	288.54659	347.22277	6.46412	0.1036175	0.27073721	2.3664868	20	6 13.3	20.1
500909 2013 NZ_{20}	18.0	X	39.51194	135.28629	105.11321	5.20311	0.1044477	0.28307862	2.2971957	20	7 31.6	20.3
500910 2013 NJ_{22}	16.7	X	104.65303	171.82551	276.56948	7.25583	0.2827334	0.20142897	2.8821821	20	4 22.6	21.2
500911 2013 OD_{5}	17.1	X	250.93747	299.23650	5.78547	5.77566	0.1892432	0.24398428	2.5364608	20	3 1.4	21.2
500912 2013 OL_{5}	18.2	X	240.71450	91.14926	280.48129	13.76700	0.4183604	0.24902822	2.5020943	20	4 21.4	23.2
500913 2013 OD_{10}	17.8	X	304.72202	208.77156	126.94583	7.77653	0.1467982	0.27524727	2.3405650	20	6 24.5	20.2
500914 2013 PM_{3}	16.9	X	257.23104	138.93543	240.54226	7.07884	0.2553769	0.25811849	2.4429991	20	6 1.7	20.4
500915 2013 PU_{9}	17.8	X	90.36653	218.16697	310.32609	5.41302	0.0587379	0.25745530	2.4471926	20	6 22.8	20.9
500916 2013 PB_{10}	17.7	X	237.93317	331.84067	350.38781	5.61684	0.2290953	0.24352512	2.5396481	20	3 7.3	21.9
500917 2013 PM_{11}	17.1	X	199.17799	129.86057	269.99035	5.18402	0.3489956	0.23368097	2.6104807	20	5 6.1	22.1
500918 2013 PH_{13}	18.3	X	239.82502	162.90864	172.07203	12.68238	0.2023162	0.24388506	2.5371487	20	3 26.9	22.3
500919 2013 PJ_{25}	17.6	X	276.75425	98.70900	217.65649	2.78260	0.2165110	0.25473762	2.4645671	20	4 4.9	21.1
500920 2013 PW_{25}	16.8	X	206.62973	209.66331	182.42644	33.91343	0.2831834	0.23616735	2.5921262	20	5 6.3	21.9
500921 2013 PY_{25}	16.7	X	167.42945	122.19437	300.18002	10.81897	0.2839763	0.22940363	2.6428298	20	5 10.3	21.7
500922 2013 PE_{26}	17.8	X	302.97516	204.48357	316.00727	45.58386	0.6116669	0.50947233	1.5525859	20	—	—
500923 2013 PP_{30}	17.9	X	159.33214	202.18957	196.08814	2.95105	0.1281012	0.22812206	2.6527186	20	3 31.6	22.1
500924 2013 PG_{34}	17.2	X	312.32087	349.01048	304.72371	5.63839	0.1146801	0.25615796	2.4554484	20	5 7.3	20.1
500925 2013 PW_{36}	17.4	X	164.05410	86.93592	316.66663	8.28602	0.1279655	0.23486468	2.6017022	20	4 7.5	21.6
500926 2013 PR_{38}	17.1	X	353.81972	58.30736	165.20644	9.44169	0.2022375	0.25586528	2.4573205	20	4 2.6	19.0
500927 2013 PG_{39}	18.2	X	270.58787	168.56848	164.24226	7.08333	0.2083991	0.25323551	2.4743036	20	4 23.4	21.7
500928 2013 PO_{39}	18.0	X	10.42854	130.11176	129.25964	3.31250	0.1924484	0.27221567	2.3579104	20	7 15.1	19.6
500929 2013 PM_{45}	17.9	X	219.00991	114.93667	279.90863	7.17787	0.1829719	0.25579584	2.4577652	20	5 20.9	22.0
500930 2013 PR_{47}	18.0	X	224.17901	30.17894	311.04754	2.39242	0.2012223	0.23830570	2.5765966	20	3 19.2	22.3
500931 2013 PS_{50}	18.0	X	186.56908	207.31035	213.15986	2.71678	0.1148411	0.24740624	2.5130181	20	5 26.0	21.8
500932 2013 PZ_{50}	17.3	X	227.16885	185.54914	120.31309	13.97389	0.1804134	0.21838586	2.7309875	20	2 13.5	21.8
500933 2013 PA_{54}	17.5	X	240.46084	10.72807	344.28997	3.44039	0.1536304	0.24736659	2.5132866	20	4 22.9	21.2
500934 2013 PF_{55}	17.8	X	352.53635	22.06213	175.83842	6.48253	0.1227233	0.23285190	2.6166734	20	3 1.5	20.8
500935 2013 PX_{55}	17.9	X	168.03194	84.21455	335.38835	12.39194	0.1775777	0.23676003	2.5877985	20	5 2.2	22.4
500936 2013 PU_{60}	18.0	X	23.12182	44.12021	184.73075	7.30589	0.1260243	0.26864959	2.3787306	20	6 14.7	20.4
500937 2013 PX_{63}	17.7	X	161.25168	229.83394	197.05710	5.02330	0.1352160	0.24705636	2.5153902	20	5 9.4	21.6
500938 2013 PE_{66}	17.7	X	248.47662	160.11085	207.07795	2.74854	0.2033628	0.25314287	2.4749072	20	5 13.6	21.3
500939 2013 PR_{69}	17.3	X	284.88387	23.61377	292.43182	7.02491	0.1940309	0.25916220	2.4364356	20	4 13.8	20.7
500940 2013 PW_{72}	18.1	X	266.96924	298.94259	337.61593	10.51907	0.3133042	0.24129588	2.5552660	20	2 1.7	22.5
500941 2013 PB_{74}	16.9	X	211.86732	31.85969	339.75233	13.06921	0.2829072	0.23417858	2.6067813	20	4 8.3	21.8
500942 2013 QK_{2}	18.3	X	240.63357	143.66936	191.18119	5.93993	0.2777499	0.24486721	2.5303599	20	3 20.9	22.8
500943 2013 QZ_{4}	17.2	X	162.64581	62.51910	328.07091	12.02834	0.1705508	0.22843912	2.6502635	20	3 23.1	21.6
500944 2013 QS_{5}	17.7	X	286.86954	62.03157	236.48076	1.77698	0.1813440	0.25291157	2.4764159	20	3 28.9	21.1
500945 2013 QC_{6}	17.3	X	217.48017	128.33569	230.29682	4.31614	0.3582892	0.23343447	2.6123181	20	3 29.7	22.4
500946 2013 QU_{6}	18.1	X	287.74456	132.57514	209.10985	5.11321	0.2221035	0.26430021	2.4047561	20	5 23.2	20.9
500947 2013 QP_{9}	18.1	X	195.55969	52.26991	320.90402	2.41239	0.1354548	0.23407416	2.6075565	20	4 3.5	22.1
500948 2013 QN_{12}	17.4	X	167.74115	62.03889	320.75443	9.57216	0.0957203	0.22877401	2.6476765	20	3 15.5	21.4
500949 2013 QU_{13}	16.9	X	107.72358	143.07153	324.41894	32.81499	0.2048761	0.23406242	2.6076437	20	4 23.8	21.6
500950 2013 QT_{15}	17.2	X	176.49453	282.30519	127.24050	14.01713	0.1173011	0.22964576	2.6409718	20	5 7.2	21.6
500951 2013 QS_{27}	17.5	X	341.80684	83.65740	167.09753	2.68667	0.1688362	0.25705863	2.4497095	20	4 21.9	19.5
500952 2013 QU_{28}	17.1	X	229.41344	183.19608	156.84754	7.06721	0.1811786	0.23908756	2.5709763	20	3 25.7	21.2
500953 2013 QX_{28}	17.8	X	196.83287	193.78325	163.90175	0.13766	0.0470393	0.23257804	2.6187271	20	3 17.7	21.5
500954 2013 QZ_{31}	17.9	X	253.91067	217.30285	177.66078	7.16360	0.1860036	0.26277842	2.4140314	20	6 27.4	21.4
500955 2013 QQ_{32}	16.9	X	270.77102	359.42148	343.23417	14.82336	0.1616058	0.25830649	2.4418136	20	5 3.9	20.6
500956 2013 QR_{33}	17.7	X	305.71475	331.31030	264.37276	6.78286	0.1781144	0.23714350	2.5850080	20	1 31.5	21.4
500957 2013 QX_{35}	18.1	X	238.84295	113.47842	308.71748	1.54122	0.2111979	0.26415217	2.4056545	20	7 14.6	21.6
500958 2013 QG_{37}	18.1	X	199.41925	228.82712	143.91250	6.33000	0.1334994	0.23889143	2.5723832	20	4 9.9	22.2
500959 2013 QD_{42}	17.5	X	158.26713	39.02538	340.85391	5.24305	0.0765096	0.22528733	2.6749246	20	3 4.0	21.2
500960 2013 QY_{42}	16.4	X	205.53847	359.51681	21.78863	14.12112	0.2559438	0.23310495	2.6147794	20	4 19.9	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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500961 2013 QP_{44}	17.9	X	14.13091	52.01472	178.21013	8.49929	0.1852753	0.25870803	2.4392863	20	6 3.6	20.0
500962 2013 QT_{50}	18.1	X	328.45634	60.50172	207.14720	0.94766	0.1564152	0.25637763	2.4540456	20	4 22.5	20.3
500963 2013 QF_{51}	18.5	X	199.97035	222.18674	179.39041	4.53911	0.2038754	0.24446616	2.5331266	20	5 13.7	22.7
500964 2013 QX_{56}	17.0	X	164.25021	275.53482	119.52786	6.18742	0.1779098	0.22822565	2.6519159	20	4 7.0	21.4
500965 2013 QE_{57}	18.0	X	218.13787	290.39837	38.04924	4.64324	0.1891894	0.23107135	2.6300983	20	3 2.8	22.3
500966 2013 QD_{61}	17.5	X	322.71721	100.30612	158.19038	9.26979	0.2403280	0.25950535	2.4342873	20	3 16.4	20.0
500967 2013 QS_{64}	17.6	X	263.22809	211.19131	162.04839	7.60857	0.1907682	0.26518769	2.3993880	20	6 9.4	21.1
500968 2013 QF_{67}	18.1	X	242.99266	29.80409	281.90884	2.17517	0.2254710	0.23807613	2.5782527	20	2 27.3	22.4
500969 2013 QK_{68}	17.9	X	278.98146	23.73395	295.44505	0.68901	0.1822659	0.25389695	2.4700044	20	4 16.0	21.2
500970 2013 QH_{69}	17.6	X	293.25548	234.87843	87.89855	4.08313	0.1986033	0.26438409	2.4042475	20	5 8.5	20.5
500971 2013 QO_{70}	17.4	X	186.50124	42.39817	5.59817	12.36998	0.1618576	0.23714824	2.5849736	20	5 5.4	21.7
500972 2013 QO_{72}	17.5	X	202.02081	49.66484	21.94200	5.01385	0.1741628	0.25634672	2.4542429	20	6 22.9	21.4
500973 2013 QE_{74}	17.6	X	306.44382	153.58568	159.80501	5.10605	0.2333830	0.26257952	2.4152503	20	5 10.1	20.3
500974 2013 QH_{76}	17.4	X	211.36203	32.78895	330.15849	5.87560	0.2588483	0.23585081	2.5944450	20	4 1.2	22.0
500975 2013 QJ_{77}	17.4	X	265.15936	359.62731	271.83728	2.12019	0.1238686	0.23151363	2.6267476	20	2 8.4	21.3
500976 2013 QD_{80}	18.1	X	211.80357	75.27211	316.99274	3.96808	0.1850996	0.24680700	2.5170842	20	5 10.5	22.3
500977 2013 QH_{82}	17.2	X	306.88929	250.18272	335.71360	10.73280	0.1364222	0.23131337	2.6282634	20	1 31.8	20.8
500978 2013 QC_{83}	16.9	X	208.29837	359.63141	357.60181	14.45897	0.2678260	0.23475526	2.6025105	20	3 24.1	21.5
500979 2013 QM_{83}	17.9	X	224.70590	238.35509	108.24078	4.86190	0.3033214	0.23840164	2.5759053	20	3 25.4	22.6
500980 2013 QC_{84}	17.2	X	280.56636	69.81248	251.87407	5.71571	0.1422943	0.25443824	2.4665000	20	4 26.3	20.5
500981 2013 QN_{90}	17.6	X	213.29927	197.77359	157.44629	6.52643	0.0384980	0.23979519	2.5659158	20	4 4.6	21.1
500982 2013 QL_{91}	17.2	X	132.74853	296.01234	144.90877	10.86595	0.1231633	0.24156187	2.5533898	20	4 30.0	21.1
500983 2013 QB_{95}	17.9	X	247.23658	317.62040	20.58184	1.39484	0.2008685	0.24800043	2.5090025	20	4 5.4	21.8
500984 2013 RX_{1}	16.7	X	176.74644	151.90194	234.43149	4.95154	0.1677962	0.22142043	2.7059780	20	4 3.0	21.1
500985 2013 RB_{3}	17.8	X	206.43855	135.59610	196.37970	1.78790	0.0921264	0.22344554	2.6896035	20	2 25.2	21.8
500986 2013 RK_{5}	18.2	X	268.24739	331.66724	339.36619	3.17342	0.1094914	0.24206612	2.5498426	20	4 2.3	21.6
500987 2013 RH_{8}	18.0	X	158.41864	157.20393	238.74767	2.00779	0.1065315	0.22687623	2.6624209	20	3 25.7	22.0
500988 2013 RR_{10}	17.5	X	196.44540	26.70211	348.18586	8.15827	0.1912929	0.23483672	2.6019087	20	4 4.8	21.9
500989 2013 RM_{11}	18.7	X	236.58000	340.62884	349.19881	4.74473	0.2826663	0.23890657	2.5722745	20	3 12.4	23.0
500990 2013 RC_{12}	17.7	X	254.50452	24.15452	259.71413	2.73237	0.1597974	0.23321522	2.6139551	20	2 9.0	21.9
500991 2013 RP_{12}	17.7	X	175.22532	226.35410	189.90010	9.13512	0.0928241	0.24401987	2.5362142	20	5 9.6	21.5
500992 2013 RB_{16}	17.9	X	246.48229	335.24566	323.02064	4.46080	0.1371423	0.23073990	2.6326164	20	2 21.3	21.7
500993 2013 RA_{18}	17.6	X	261.51128	335.64113	333.48815	9.43392	0.2315377	0.24214282	2.5493042	20	3 9.6	21.8
500994 2013 RA_{20}	17.5	X	299.86472	319.99570	352.99094	2.53710	0.2257706	0.26031492	2.4292377	20	4 27.7	20.4
500995 2013 RE_{20}	17.0	X	174.74469	6.10321	353.05226	5.99259	0.0336732	0.21997302	2.7178351	20	2 24.6	20.7
500996 2013 RC_{22}	16.4	X	186.30641	40.22821	357.11867	11.92910	0.1608470	0.23106395	2.6301545	20	4 21.9	20.8
500997 2013 RO_{22}	17.2	X	214.44467	168.09631	177.70908	10.07492	0.1638938	0.23127656	2.6285423	20	3 19.1	21.5
500998 2013 RP_{23}	17.6	X	242.93771	185.79198	191.72065	7.20812	0.1426511	0.25424193	2.4677695	20	5 28.5	21.3
500999 2013 RD_{25}	17.0	X	112.50419	101.38762	356.71510	11.80323	0.1320103	0.22313790	2.6920750	20	4 22.7	21.0
501000 2013 RS_{25}	16.9	X	207.49742	15.01410	349.60110	14.31937	0.1675672	0.23193794	2.6235430	20	3 31.7	21.4
501001 2013 RD_{26}	17.6	X	219.79493	87.34081	284.62197	5.24817	0.1915106	0.24201945	2.5501704	20	4 21.2	21.8
501002 2013 RG_{28}	17.0	X	124.04356	34.68855	23.03670	6.69951	0.0080455	0.21554497	2.7549314	20	3 6.6	20.7
501003 2013 RL_{28}	17.2	X	87.72893	12.48438	61.90736	2.91609	0.0521366	0.20584553	2.8408072	20	2 16.8	21.0
501004 2013 RE_{29}	17.4	X	280.18170	196.47701	68.25745	2.36636	0.1104224	0.22264897	2.6960147	20	2 21.1	21.1
501005 2013 RR_{31}	17.0	X	239.28192	357.66515	331.87685	13.41752	0.1765608	0.23605210	2.5929699	20	3 16.7	21.3
501006 2013 RT_{31}	17.8	X	231.20045	28.81131	306.52401	6.56554	0.2072119	0.23801798	2.5786726	20	3 15.8	22.1
501007 2013 RD_{33}	17.5	X	232.34088	204.42779	128.23826	6.55304	0.2861094	0.23696369	2.5863156	20	3 14.9	22.1
501008 2013 RV_{33}	17.3	X	244.50484	359.30803	329.53479	8.91431	0.1701894	0.23880587	2.5729976	20	3 22.0	21.3
501009 2013 RN_{36}	17.1	X	196.25711	351.21361	1.60493	6.08777	0.0376458	0.22417604	2.6837574	20	3 12.2	20.7
501010 2013 RW_{36}	17.9	X	238.65528	158.90181	165.51124	2.45691	0.2238251	0.23534592	2.5981543	20	3 11.2	22.3
501011 2013 RL_{38}	17.1	X	246.45319	312.89358	2.45707	10.79521	0.1431416	0.23372183	2.6101765	20	3 14.1	21.0
501012 2013 RB_{39}	17.9	X	252.41581	138.38910	179.99665	4.13423	0.1305588	0.23704927	2.5856931	20	3 23.9	21.6
501013 2013 RO_{39}	16.7	X	342.20116	203.99164	1.75960	16.82162	0.1168190	0.22629313	2.6669926	20	3 2.4	19.9
501014 2013 RS_{42}	17.9	X	302.25352	213.00742	82.63750	2.68961	0.1846375	0.25528617	2.4610354	20	4 16.1	20.8
501015 2013 RR_{45}	17.4	X	250.69402	30.37184	282.05660	3.50319	0.1044510	0.23423993	2.6063262	20	3 15.3	21.2
501016 2013 RO_{46}	18.4	X	236.99520	41.28593	310.54122	2.46103	0.1742785	0.24218822	2.5489855	20	4 13.9	22.3
501017 2013 RB_{47}	17.7	X	190.63692	184.82221	190.75907	7.59441	0.1895997	0.22952945	2.6418639	20	4 3.5	22.0
501018 2013 RE_{47}	17.2	X	252.39397	2.23171	335.42614	11.71304	0.1333078	0.24259896	2.5461076	20	4 11.3	21.1
501019 2013 RK_{53}	16.9	X	106.13005	150.15850	286.20377	4.04745	0.1007727	0.21355567	2.7720133	20	3 16.6	20.8
501020 2013 RG_{54}	17.8	X	245.49963	47.76763	338.24713	0.77885	0.1879759	0.25719022	2.4488738	20	6 5.5	21.4
501021 2013 RW_{55}	17.3	X	181.42020	89.11287	301.92330	10.19940	0.1586228	0.23264674	2.6182116	20	4 8.4	21.8
501022 2013 RY_{56}	17.6	X	204.19154	60.15250	301.40635	3.59457	0.2043801	0.23120180	2.6291089	20	3 26.7	22.1
501023 2013 RE_{57}	17.7	X	244.62515	354.50779	314.79837	3.61837	0.1898870	0.23419559	2.6066551	20	2 28.5	22.0
501024 2013 RJ_{60}	16.5	X	307.63482	168.55399	100.80787	11.41461	0.0827045	0.23230623	2.6207694	20	4 10.9	20.1
501025 2013 RP_{60}	16.4	X	240.46603	31.53316	316.79632	12.99410	0.1881859	0.23647881	2.5898497	20	4 6.4	20.8
501026 2013 RA_{63}	17.6	X	169.12032	206.70879	170.38204	6.17198	0.0552329	0.22522004	2.6754573	20	3 11.4	21.5
501027 2013 RT_{63}	17.6	X	225.16525	43.94169	359.70025	6.69555	0.1221178	0.25538032	2.4604305	20	6 13.1	21.2
501028 2013 RX_{64}	16.9	X	182.99427	168.89116	235.31602	2.86061	0.1950251	0.23011408	2.6373874	20	5 1.6	21.1
501029 2013 RL_{67}	17.8	X	200.79058	180.34895	185.97940	7.70337	0.2089785	0.23276114	2.6173536	20	3 31.6	22.3
501030 2013 RF_{68}	17.3	X	231.71768	36.60297	314.97727	8.29432	0.2091699	0.23764976	2.5813355	20	4 3.7	21.7
501031 2013 RP_{70}	17.4	X	267.22300	335.46107	351.32965	7.68097	0.1407519	0.24303393	2.5430688	20	4 15.9	21.1
501032 2013 RQ_{70}	17.6	X	165.19220	59.87727	319.34116	3.04432	0.1141148	0.21753475	2.7381062	20	3 13.0	21.7
501033 2013 RS_{70}	17.9	X	268.97552	306.97942	59.38756	3.34931	0.2087682	0.25774495	2.4453589	20	6 3.2	21.1
501034 2013 RV_{70}	17.6	X	305.60132	175.52248	169.79300	13.80311	0.2047437	0.26632867	2.3925302	20	6 30.0	20.2
501035 2013 RY_{70}	16.8	X	185.01672	176.56006	223.87977	12.79480	0.2490603	0.23126026	2.6286658	20	4 28.8	21.5
501036 2013 RA_{71}	17.2	X	152.11397	242.59459	154.14290	2.59950	0.1844573	0.21931769	2.7232465	20	3 27.8	21.6
501037 2013 RT_{71}	17.3	X	226.48316	188.38339	135.14480	3.26339	0.1867552	0.22844729	2.6502004	20	3 2.9	21.5
501038 2013 RX_{72}	17.4	X	170.40990	16.64774	357.90625	5.83927	0.0529805	0.21881987	2.7273752	20	3 10.6	21.4
501039 2013 RL_{74}	18.2	X	229.23417	38.07067	309.69048	19.01178	0.2409565	0.24092076	2.5579177	20	3 19.9	23.0
501040 2013 RF_{78}	18.1	X	210.87280	211.63344	167.24378	6.14087	0.2330029	0.23987765	2.5653278	20	4 24.5	22.5

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501041 2013 RK_{79}	18.3	X	148.01878	215.57978	199.29688	3.01670	0.1347822	0.22798477	2.6537835	20	4 10.5	22.4
501042 2013 RD_{82}	17.4	X	207.30736	70.67846	266.84212	1.06774	0.0869466	0.22471880	2.6794343	20	3 3.8	21.3
501043 2013 RM_{82}	18.8	X	253.61526	131.32428	202.42827	13.82479	0.2849498	0.24449829	2.5329046	20	3 28.7	23.1
501044 2013 RG_{83}	16.8	X	189.38004	53.75892	340.39279	12.22057	0.1862482	0.23268435	2.6179294	20	4 19.5	21.4
501045 2013 RK_{86}	16.7	X	286.17674	288.27935	358.25626	14.59419	0.1373488	0.23601037	2.5932755	20	3 20.5	20.3
501046 2013 RJ_{87}	16.7	X	196.63180	25.88809	18.34656	14.13602	0.2515085	0.23242254	2.6198950	20	5 8.7	21.5
501047 2013 RN_{94}	18.0	X	233.91267	271.35953	67.84771	3.45470	0.2743599	0.23756580	2.5819437	20	3 23.8	22.4
501048 2013 RQ_{94}	16.8	X	259.60702	190.13863	158.77362	16.56246	0.1897522	0.24591051	2.5231980	20	5 7.5	20.8
501049 2013 RT_{94}	16.9	X	239.04117	349.34764	345.19379	5.42883	0.2114697	0.23479505	2.6022165	20	3 23.4	21.1
501050 2013 RD_{95}	18.2	X	228.37837	304.70300	55.84322	6.15891	0.2560166	0.23928352	2.5695724	20	4 15.1	22.6
501051 2013 RU_{96}	17.8	X	252.00419	139.28849	207.10057	10.22014	0.2065547	0.24674730	2.5174901	20	4 20.0	21.8
501052 2013 RM_{97}	16.9	X	147.85348	215.47359	290.45391	11.18549	0.0933886	0.26703457	2.3883120	20	8 4.2	20.4
501053 2013 RQ_{97}	17.1	X	299.03844	33.22172	254.72428	9.87739	0.1449670	0.24578801	2.5240362	20	4 2.3	20.5
501054 2013 SA	17.2	X	230.48049	352.91943	5.37811	5.10449	0.3028246	0.23733243	2.5836360	20	4 9.3	21.9
501055 2013 SP_{8}	17.5	X	229.23674	14.00732	316.38510	2.50278	0.1364129	0.23369651	2.6103650	20	3 14.1	21.5
501056 2013 SO_{14}	17.4	X	225.60726	145.36302	180.69224	6.86140	0.0550042	0.22831223	2.6512454	20	3 10.3	21.3
501057 2013 SQ_{15}	17.6	X	177.73103	19.54830	15.12306	2.38606	0.1302574	0.22987067	2.6392488	20	4 14.1	21.6
501058 2013 SH_{20}	17.1	X	207.57855	50.01000	348.31083	17.81280	0.2694921	0.23864313	2.5741672	20	5 5.4	22.0
501059 2013 SU_{25}	17.7	X	284.49610	43.23526	287.69436	9.16507	0.2012721	0.25708560	2.4495382	20	5 3.3	21.0
501060 2013 SO_{27}	17.8	X	196.62013	76.73305	330.16469	10.55226	0.1897868	0.23884870	2.5726900	20	5 13.2	22.3
501061 2013 SX_{27}	16.8	X	230.30847	2.80325	13.66251	29.85880	0.1736131	0.23893111	2.5720984	20	4 28.3	21.3
501062 2013 SJ_{28}	17.1	X	202.59411	33.42554	3.54554	4.23114	0.3075253	0.23490069	2.6014362	20	5 5.6	21.9
501063 2013 SG_{29}	15.9	X	12.80084	311.97346	246.66440	9.63085	0.2117041	0.23811735	2.5779552	20	4 4.6	18.1
501064 2013 SH_{30}	17.3	X	196.31538	2.36616	39.09123	4.22073	0.2226095	0.23385545	2.6091820	20	5 8.9	21.8
501065 2013 SC_{32}	17.8	X	142.69150	272.03925	155.09376	2.63596	0.0913899	0.23004374	2.6379250	20	4 17.6	21.6
501066 2013 SZ_{32}	17.7	X	178.24718	38.14406	1.06764	14.77895	0.0878886	0.23498813	2.6007909	20	4 14.9	21.7
501067 2013 SY_{37}	17.4	X	142.22346	311.10909	116.85938	3.88342	0.0391458	0.23129036	2.6284377	20	4 13.8	21.0
501068 2013 SD_{39}	17.7	X	195.75423	21.80086	14.98427	4.47312	0.1439396	0.23416894	2.6068529	20	5 3.3	21.8
501069 2013 SC_{41}	17.6	X	203.94195	247.64640	174.17107	10.22981	0.2215319	0.25362094	2.4717961	20	6 10.8	21.9
501070 2013 SL_{42}	18.1	X	241.39663	262.88720	64.10222	3.98744	0.2526055	0.23755158	2.5820467	20	3 16.6	22.5
501071 2013 SW_{45}	17.2	X	203.88616	158.93173	241.45740	5.95308	0.2162436	0.24517314	2.5282545	20	5 13.9	21.4
501072 2013 SX_{45}	17.3	X	178.43849	116.58301	222.40122	7.92673	0.2021237	0.21853452	2.7297488	20	2 8.2	22.1
501073 2013 SA_{46}	17.4	X	165.32395	110.67314	302.99722	8.64702	0.1841403	0.23487058	2.6016586	20	4 24.1	21.8
501074 2013 ST_{47}	17.3	X	204.18136	204.45604	165.36252	6.38345	0.3307730	0.22959301	2.6413763	20	4 6.9	22.3
501075 2013 SU_{49}	17.7	X	176.62558	313.46269	122.12471	3.33052	0.1494276	0.23583575	2.5945554	20	6 4.7	21.8
501076 2013 SM_{50}	16.6	X	269.39512	292.63863	37.64985	14.98294	0.1506212	0.23606529	2.5928733	20	4 25.3	20.2
501077 2013 SY_{50}	16.9	X	162.76143	320.29453	86.36289	3.29960	0.1770413	0.22322752	2.6913544	20	4 18.5	21.3
501078 2013 SQ_{53}	17.3	X	313.65214	261.02145	2.76942	4.59880	0.1914901	0.24203488	2.5500620	20	3 18.8	20.4
501079 2013 SE_{54}	16.1	X	214.80363	298.85440	7.50137	8.18835	0.0360157	0.21083837	2.7957797	20	2 8.7	20.2
501080 2013 SK_{55}	18.0	X	237.16766	168.11650	201.25233	14.98753	0.2841843	0.24368361	2.5385468	20	4 30.4	22.4
501081 2013 SN_{55}	17.3	X	194.87055	181.42761	204.47332	11.75897	0.1951368	0.22502126	2.6770327	20	4 19.9	21.9
501082 2013 SM_{56}	16.6	X	282.25668	331.47505	333.05366	14.21813	0.1049868	0.24114487	2.5563326	20	4 5.8	20.3
501083 2013 SJ_{57}	17.4	X	130.94204	315.30423	89.07859	3.73314	0.0257071	0.21561463	2.7543380	20	2 28.9	21.2
501084 2013 SG_{58}	15.8	X	9.30281	159.93982	308.76588	16.32240	0.1686300	0.17848998	3.1241136	20	—	—
501085 2013 SS_{62}	17.3	X	207.61702	201.79102	169.23498	9.50221	0.1557028	0.23572367	2.5953778	20	4 14.9	21.5
501086 2013 SN_{64}	16.3	X	169.55659	127.77178	292.03194	21.15476	0.0393012	0.24031828	2.5621911	20	4 26.7	20.4
501087 2013 SN_{66}	17.4	X	189.04238	81.41323	351.07330	14.52780	0.0888901	0.25201012	2.4823179	20	6 12.8	21.3
501088 2013 SR_{68}	17.3	X	242.11476	152.87117	157.65405	2.79276	0.1929831	0.23250135	2.6193029	20	2 28.5	21.6
501089 2013 SK_{71}	16.9	X	208.57815	331.11585	25.58682	8.87108	0.2327712	0.23160322	2.6260701	20	3 27.5	21.4
501090 2013 SY_{71}	17.5	X	243.77097	182.25964	171.10174	14.64854	0.1955973	0.24442630	2.5334019	20	4 24.9	21.6
501091 2013 SL_{72}	17.3	X	151.42730	31.83108	8.41877	6.39220	0.0644326	0.22497091	2.6774321	20	3 21.6	21.2
501092 2013 SM_{72}	17.8	X	268.53715	183.50808	171.36344	6.81402	0.1264110	0.25630523	2.4545077	20	5 31.4	21.1
501093 2013 SP_{72}	17.9	X	265.01027	313.85535	0.08444	3.93891	0.1304264	0.24236175	2.5477687	20	3 31.2	21.6
501094 2013 SW_{76}	17.4	X	217.63935	87.63450	256.44021	10.23167	0.1858098	0.23282094	2.6169054	20	3 13.9	21.9
501095 2013 SH_{78}	17.3	X	193.09253	282.67258	80.52341	4.12910	0.2247375	0.22305060	2.6927774	20	3 24.1	21.9
501096 2013 SN_{81}	17.5	X	218.64849	152.55087	196.00203	6.03418	0.3149642	0.22816719	2.6523689	20	3 20.8	22.5
501097 2013 SO_{81}	16.3	X	77.39469	206.49617	234.14915	9.62329	0.1027563	0.19000094	2.9966237	20	2 14.5	20.4
501098 2013 SP_{81}	17.4	X	195.67090	192.83211	222.31583	4.59959	0.2444569	0.23115059	2.6294972	20	5 25.5	21.9
501099 2013 ST_{81}	16.8	X	174.72828	344.34217	50.16879	9.68935	0.2091313	0.21727258	2.7403083	20	4 16.2	21.5
501100 2013 SV_{81}	16.8	X	228.71553	337.08673	45.55424	8.31336	0.1967702	0.23611042	2.5925429	20	5 14.2	20.9
501101 2013 SZ_{82}	17.4	X	187.98886	104.22673	305.81936	11.88380	0.2582043	0.23217500	2.6217568	20	5 9.3	22.3
501102 2013 SB_{83}	17.7	X	236.33178	237.51335	105.75090	5.78936	0.3002259	0.23768161	2.5811049	20	3 30.3	22.3
501103 2013 SF_{83}	16.1	X	99.02680	184.04352	260.32740	14.22551	0.1059763	0.20642376	2.8354996	20	3 13.9	20.3
501104 2013 SG_{85}	17.0	X	283.21437	182.57565	123.70721	7.54396	0.2184218	0.24357094	2.5393295	20	4 3.7	20.6
501105 2013 SA_{87}	7.1	X	21.80298	140.46813	207.56404	40.80275	0.0749807	0.00364268	41.8332762	20	10 6.4	23.0
501106 2013 TN_{1}	17.7	X	195.01974	200.61797	172.82770	4.34085	0.1469463	0.22956268	2.6416089	20	4 5.4	21.9
501107 2013 TF_{2}	16.8	X	243.63171	329.97825	331.07215	15.02065	0.1903071	0.22733881	2.6588081	20	2 19.3	21.2
501108 2013 TF_{3}	16.9	X	197.23193	82.40817	305.86997	13.50688	0.1405153	0.23128080	2.6285102	20	4 18.5	21.4
501109 2013 TE_{7}	17.2	X	173.02947	358.00767	62.94809	7.25568	0.1999619	0.22890958	2.6466310	20	5 14.7	21.6
501110 2013 TJ_{7}	17.0	X	222.91501	59.88010	270.65495	10.87689	0.1956264	0.23152926	2.6266294	20	3 1.5	21.7
501111 2013 TE_{8}	16.9	X	180.52362	348.70237	36.02927	14.39767	0.2448171	0.22344300	2.6896239	20	4 9.9	21.7
501112 2013 TN_{8}	16.5	X	12.95300	199.81615	19.22576	5.26893	0.1002226	0.24310129	2.5425990	20	5 7.5	19.2
501113 2013 TL_{10}	17.0	X	291.97192	143.09669	166.36051	9.59348	0.0525281	0.24077956	2.5589176	20	5 14.1	20.4
501114 2013 TG_{12}	17.3	X	286.50796	340.24021	8.61343	5.20072	0.1418968	0.25753782	2.4466699	20	6 13.2	20.2
501115 2013 TU_{12}	17.0	X	252.60032	111.99290	222.13195	24.84987	0.4020144	0.24116460	2.5561932	20	3 16.6	22.1
501116 2013 TP_{13}	18.0	X	225.18984	299.52619	50.53185	3.73606	0.2034557	0.23428771	2.6059718	20	4 2.2	22.2
501117 2013 TA_{15}	17.9	X	241.05221	172.15360	151.40502	5.52982	0.1998681	0.23461150	2.6035736	20	3 14.6	22.0
501118 2013 TM_{18}	18.0	X	247.11429	47.13489	294.09099	1.96713	0.1816792	0.23754245	2.5821129	20	4 10.3	22.1
501119 2013 TK_{19}	17.1	X	130.60604	82.92086	312.40107	5.62921	0.0771576	0.21070510	2.7969584	20	2 21.6	21.0
501120 2013 TR_{20}	17.8	X	160.88309	27.74894	26.37409	2.83491	0.2026576	0.22606366	2.6687970	20	4 25.4	22.2

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501121 2013 TN_{22}	18.1	X	271.79023	262.72788	60.18178	2.22156	0.1456793	0.24474450	2.5312056	20	4 18.8	21.6
501122 2013 TV_{23}	16.4	X	198.59244	102.15920	246.68481	5.57915	0.0188089	0.21392290	2.7688401	20	3 7.5	20.4
501123 2013 TX_{23}	17.9	X	236.42952	11.08040	338.59813	2.99852	0.1718392	0.23457065	2.6038758	20	4 11.4	21.9
501124 2013 TH_{24}	16.9	X	262.81689	67.53716	219.65835	12.09894	0.1016687	0.21993584	2.7181414	20	2 25.1	21.1
501125 2013 TU_{25}	17.7	X	210.16727	19.66972	7.89401	5.05554	0.2216203	0.23793520	2.5792706	20	5 2.1	22.0
501126 2013 TO_{26}	17.9	X	252.31241	337.24460	18.42362	7.15249	0.0813089	0.24477069	2.5310250	20	5 15.1	21.4
501127 2013 TO_{31}	17.0	X	186.17058	41.35859	323.32235	4.72039	0.1012273	0.21978973	2.7193459	20	3 15.1	21.1
501128 2013 TX_{31}	17.5	X	218.67005	158.77966	195.55681	5.08594	0.2856029	0.23347058	2.6120487	20	3 28.5	22.2
501129 2013 TL_{32}	17.6	X	208.21578	127.54394	262.41354	0.70159	0.1680941	0.23529514	2.5985280	20	5 6.5	21.8
501130 2013 TW_{32}	17.7	X	200.33375	202.34659	203.58692	3.56361	0.2954023	0.23543313	2.5975126	20	5 16.8	22.4
501131 2013 TE_{33}	17.2	X	239.56281	130.74908	201.80335	13.08111	0.1983099	0.23142509	2.6274175	20	3 21.9	21.7
501132 2013 TJ_{35}	16.9	X	201.57969	36.39824	324.36074	5.95252	0.0739106	0.21841221	2.7307678	20	3 25.4	21.0
501133 2013 TN_{35}	17.9	X	214.97881	88.15410	294.39782	3.45970	0.2843774	0.23514522	2.5996324	20	4 27.4	22.6
501134 2013 TO_{35}	17.8	X	204.02250	50.66896	15.44003	14.50986	0.2508646	0.24029285	2.5623718	20	6 12.2	22.5
501135 2013 TE_{39}	17.1	X	175.68308	185.70670	204.08465	5.63442	0.0546942	0.22197136	2.7014987	20	4 3.7	20.9
501136 2013 TO_{40}	17.2	X	89.93436	35.49023	39.83654	2.37454	0.0460455	0.20433506	2.8547897	20	2 19.9	21.1
501137 2013 TJ_{43}	16.9	X	179.47931	348.76094	14.36323	10.97534	0.1651152	0.21686369	2.7437518	20	3 12.9	21.4
501138 2013 TM_{43}	17.5	X	183.29540	55.48991	14.96688	13.13459	0.1729483	0.23760049	2.5816924	20	5 31.9	21.9
501139 2013 TX_{44}	17.3	X	151.23403	201.28640	219.46575	4.67369	0.0697567	0.22487230	2.6782148	20	4 16.0	21.1
501140 2013 TT_{52}	17.1	X	241.78618	97.86431	226.22402	11.81907	0.3016105	0.23382750	2.6093900	20	3 4.6	21.9
501141 2013 TS_{53}	18.0	X	260.09139	12.29193	305.07601	3.83514	0.3150309	0.24000969	2.5643868	20	3 11.7	22.5
501142 2013 TV_{53}	17.2	X	190.73165	131.22738	237.00788	7.14383	0.2412639	0.22258370	2.6965417	20	3 23.7	22.0
501143 2013 TB_{54}	17.6	X	234.95638	71.07494	265.40191	3.79933	0.2751138	0.23462383	2.6034823	20	3 17.9	22.2
501144 2013 TT_{55}	17.2	X	260.17333	12.45811	294.58763	4.01680	0.2344389	0.23502186	2.6005420	20	3 6.1	21.4
501145 2013 TL_{61}	17.0	X	244.00635	114.28088	216.19984	15.27449	0.2443752	0.23639700	2.5904472	20	3 17.9	21.6
501146 2013 TT_{61}	16.3	X	320.75725	273.70036	248.96619	9.52077	0.1639306	0.18425227	3.0586339	20	—	—
501147 2013 TM_{62}	18.0	X	201.63451	238.71992	127.82154	6.30222	0.3132250	0.23024215	2.6364093	20	4 2.9	22.9
501148 2013 TO_{64}	17.4	X	196.44191	333.93446	6.55301	4.15567	0.0822249	0.21546197	2.7556388	20	2 27.7	21.6
501149 2013 TR_{65}	17.0	X	175.06999	221.28439	208.59919	12.89625	0.2302727	0.22821931	2.6519650	20	5 28.1	21.7
501150 2013 TV_{65}	17.2	X	158.80951	114.95529	316.66761	7.86090	0.1409578	0.23077489	2.6323503	20	5 9.9	21.5
501151 2013 TK_{70}	17.8	X	249.48842	251.13184	51.43201	2.40180	0.2279963	0.23159321	2.6261458	20	2 24.2	22.1
501152 2013 TX_{71}	17.9	X	226.32156	145.89230	183.88471	1.83872	0.1186234	0.23106426	2.6301521	20	3 12.3	21.7
501153 2013 TG_{72}	18.0	X	199.97854	17.41195	10.91253	1.81060	0.1415136	0.23193940	2.6235320	20	4 27.4	22.2
501154 2013 TM_{72}	17.5	X	232.83525	341.37821	8.39857	7.98084	0.2055546	0.24047157	2.5611021	20	4 6.0	21.7
501155 2013 TP_{72}	17.8	X	200.93371	161.35782	196.18603	3.67830	0.2260339	0.22418696	2.6836702	20	3 20.8	22.5
501156 2013 TU_{73}	17.4	X	233.97746	79.03133	259.67363	3.16371	0.2930758	0.23326045	2.6136172	20	3 19.4	22.1
501157 2013 TZ_{73}	17.1	X	197.26450	198.41623	223.22776	11.67493	0.2388185	0.23670445	2.5882036	20	6 3.8	21.6
501158 2013 TM_{77}	17.6	X	220.50881	86.80637	299.72810	10.31938	0.2011740	0.24211456	2.5495025	20	5 8.6	22.0
501159 2013 TQ_{77}	17.2	X	93.91296	97.51378	342.84715	2.90608	0.1647694	0.20467954	2.8515857	20	3 18.2	21.1
501160 2013 TD_{79}	16.5	X	138.28312	58.16930	2.22011	22.18037	0.0431065	0.22643615	2.6658694	20	3 27.1	20.2
501161 2013 TH_{79}	18.2	X	209.68957	26.64995	346.76028	3.79415	0.2497425	0.23656116	2.5892486	20	4 13.7	22.7
501162 2013 TW_{79}	18.2	X	201.02225	303.14575	41.45580	22.46529	0.1032356	0.37018144	1.9209952	20	3 7.3	21.2
501163 2013 TF_{80}	17.6	X	239.24548	173.89678	184.42189	11.84403	0.0706794	0.23988304	2.5652893	20	5 7.9	21.3
501164 2013 TU_{82}	17.6	X	242.80764	189.45226	204.07068	10.14526	0.2552789	0.25507986	2.4623622	20	6 6.3	21.6
501165 2013 TR_{83}	17.9	X	214.31268	145.65480	216.72480	11.09647	0.1868448	0.23110617	2.6298341	20	4 5.9	22.3
501166 2013 TB_{84}	17.1	X	183.54745	23.49679	343.82902	4.76730	0.1409450	0.21863562	2.7289072	20	3 17.5	21.5
501167 2013 TK_{84}	17.1	X	159.76540	150.95144	250.21374	3.42531	0.1202990	0.21925170	2.7237928	20	4 3.4	21.3
501168 2013 TL_{84}	18.2	X	214.85537	146.01212	250.57188	2.87518	0.2664217	0.23972717	2.5664012	20	5 16.2	22.7
501169 2013 TJ_{89}	17.8	X	258.71222	120.17511	230.58025	4.70778	0.1448820	0.24392107	2.5368990	20	5 9.8	21.5
501170 2013 TO_{89}	17.6	X	221.56353	358.28101	357.67642	4.29215	0.2263447	0.23205033	2.6226958	20	4 3.4	22.0
501171 2013 TX_{89}	17.1	X	124.23038	227.70516	212.70793	10.90975	0.2279438	0.21337728	2.7735581	20	4 28.1	21.5
501172 2013 TC_{93}	17.3	X	218.04449	160.41352	201.78199	7.05847	0.1867216	0.23102647	2.6304389	20	4 10.4	21.7
501173 2013 TM_{93}	17.2	X	226.60754	145.40728	205.33253	10.72513	0.1210029	0.22898179	2.6460746	20	4 7.3	21.3
501174 2013 TN_{94}	17.4	X	223.53570	160.35395	201.49205	13.99050	0.2640554	0.23676772	2.5877424	20	4 10.9	22.0
501175 2013 TV_{94}	17.0	X	149.81407	196.98772	196.56905	5.06693	0.1379451	0.20941769	2.8084097	20	3 17.6	21.4
501176 2013 TS_{95}	18.0	X	228.95534	209.31676	153.60300	2.46119	0.1733238	0.23386133	2.6091383	20	4 22.8	22.0
501177 2013 TK_{96}	17.5	X	317.60993	91.57443	217.31439	10.19200	0.1077340	0.25472990	2.4646170	20	6 11.5	20.3
501178 2013 TC_{99}	16.4	X	179.08875	204.98900	182.34340	8.78191	0.1250656	0.22083898	2.7107256	20	4 7.8	20.6
501179 2013 TM_{99}	17.8	X	224.16090	48.44953	4.08482	9.43304	0.2867410	0.24470987	2.5314444	20	6 10.1	22.3
501180 2013 TU_{99}	16.5	X	157.60102	26.56992	15.34016	15.05322	0.1928054	0.21527163	2.7572629	20	4 7.4	21.1
501181 2013 TQ_{102}	17.4	X	138.10619	45.06670	11.72942	3.46434	0.0916924	0.21625353	2.7489104	20	3 30.2	21.5
501182 2013 TO_{106}	17.4	X	271.57638	268.03434	17.30887	7.01527	0.2213691	0.23146469	2.6271178	20	2 25.2	21.5
501183 2013 TP_{106}	17.1	X	166.45053	207.17891	196.94400	5.03223	0.0917598	0.22305889	2.6927106	20	4 13.9	21.0
501184 2013 TT_{108}	18.1	X	204.43588	147.23780	229.97025	1.30584	0.2316725	0.23123202	2.6288798	20	4 15.8	22.6
501185 2013 TW_{108}	17.5	X	190.51670	203.68686	198.42687	4.98196	0.2524799	0.23169767	2.6253564	20	5 5.9	22.1
501186 2013 TH_{109}	16.7	X	221.65367	329.10609	354.67609	13.50718	0.1941622	0.21984220	2.7189132	20	3 1.1	21.3
501187 2013 TM_{109}	16.9	X	178.13354	49.66309	6.74127	9.73678	0.1591726	0.22890923	2.6466338	20	5 9.5	21.4
501188 2013 TG_{110}	16.8	X	139.50196	130.29756	286.11138	3.33738	0.0810436	0.21411692	2.7671672	20	3 28.5	20.9
501189 2013 TT_{110}	17.4	X	164.16299	171.52581	245.29530	5.31968	0.1857281	0.22253143	2.6969639	20	4 30.4	22.0
501190 2013 TX_{112}	16.9	X	174.11488	342.88056	39.66202	6.50310	0.0523867	0.21821461	2.7324161	20	3 26.6	20.8
501191 2013 TP_{113}	16.9	X	201.34678	191.03147	202.64613	12.10399	0.0727820	0.23300774	2.6155066	20	5 9.2	20.8
501192 2013 TS_{114}	16.9	X	197.22458	209.32978	204.25153	21.94517	0.0441829	0.23910865	2.5708250	20	5 30.8	20.8
501193 2013 TJ_{115}	17.0	X	271.25665	271.71534	28.91813	4.39504	0.2338632	0.22951605	2.6419667	20	3 12.3	21.0
501194 2013 TM_{116}	16.8	X	167.23502	127.01113	261.78537	5.56697	0.0642249	0.21747275	2.7386265	20	3 22.2	20.8
501195 2013 TX_{123}	18.7	X	200.64068	91.58689	310.00719	1.48045	0.2258002	0.23612540	2.5924332	20	5 12.3	23.0
501196 2013 TH_{124}	17.2	X	156.61937	83.31438	4.00010	12.27597	0.1238861	0.23264598	2.6182172	20	5 26.6	21.5
501197 2013 TL_{124}	18.8	X	225.04880	138.26967	251.81488	1.67138	0.3250163	0.24271333	2.5453078	20	5 12.9	23.3
501198 2013 TO_{126}	17.3	X	215.85192	60.08752	312.14008	2.67387	0.2097659	0.23651365	2.5895953	20	4 18.4	21.7
501199 2013 TK_{127}	17.2	X	182.35018	107.82072	268.76591	4.16380	0.0731754	0.21889335	2.7267648	20	3 24.5	21.3
501200 2013 TK_{128}	17.7	X	308.38624	102.69243	203.10528	10.04269	0.1933996	0.25777303	2.4451813	20	5 8.8	20.4

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501201 2013 TH_{130}	17.0	X	237.59661	355.97853	327.89751	9.15065	0.1246099	0.23090801	2.6313385	20	3 13.6	21.0
501202 2013 TU_{134}	18.3	X	195.09325	294.88116	119.81920	5.97662	0.2987729	0.23270432	2.6177796	20	5 24.5	23.1
501203 2013 TB_{136}	16.4	X	199.58473	241.38135	193.04539	30.27336	0.2667681	0.23478456	2.6022940	20	6 18.5	21.6
501204 2013 TE_{136}	17.1	X	148.03266	104.79568	340.76368	9.78680	0.2072340	0.22404580	2.6847974	20	5 20.9	21.8
501205 2013 TT_{136}	18.0	X	257.75099	308.15579	29.38727	16.78984	0.2229070	0.24453355	2.5326611	20	4 13.9	21.8
501206 2013 TZ_{136}	16.7	X	157.17270	220.55989	208.54857	13.86663	0.1035357	0.22837882	2.6507300	20	5 6.9	20.7
501207 2013 TO_{141}	17.3	X	149.34486	331.76751	43.73756	4.98428	0.0812485	0.20914454	2.8108545	20	2 22.4	21.4
501208 2013 TS_{141}	17.5	X	165.83054	2.27139	17.63863	12.93808	0.1590518	0.21733646	2.7397713	20	3 20.7	22.0
501209 2013 TV_{141}	17.1	X	77.44136	64.78479	35.51707	4.72283	0.0275720	0.21291932	2.7775337	20	3 3.8	20.8
501210 2013 TF_{142}	17.8	X	242.08412	282.72596	46.01355	3.94613	0.1123302	0.23196748	2.6233203	20	3 29.3	21.7
501211 2013 TQ_{143}	17.5	X	214.83820	264.38311	94.79454	3.27834	0.2694584	0.23241215	2.6199731	20	4 2.9	22.1
501212 2013 TB_{145}	17.2	X	184.79393	328.81669	51.30529	8.79082	0.2631016	0.22529336	2.6748768	20	4 7.9	22.0
501213 2013 TS_{145}	17.0	X	173.05897	133.31063	253.26968	4.69082	0.2447245	0.21993602	2.7181399	20	4 1.9	21.7
501214 2013 TC_{146}	6.5	X	105.19558	56.25781	147.50964	14.17313	0.1628052	0.00770737	25.3823500	20	8 19.1	20.8
501215 2013 TZ_{153}	17.2	X	290.81256	294.56692	27.83110	4.14195	0.1239055	0.24112594	2.5564664	20	5 15.5	20.4
501216 2013 UW	17.3	X	186.01670	80.31105	20.07959	27.98991	0.3662557	0.23284798	2.6167028	20	7 16.4	22.9
501217 2013 UY_{1}	18.2	X	286.81385	219.49924	88.11698	23.76966	0.0560005	0.38566609	1.8692257	20	5 7.2	20.5
501218 2013 UZ_{2}	16.2	X	156.39288	141.14038	261.09306	16.23165	0.2554452	0.21495701	2.7599527	20	4 4.4	21.3
501219 2013 UP_{3}	17.3	X	240.51747	233.72057	123.64008	18.06594	0.2727996	0.24312436	2.5424381	20	4 25.8	22.0
501220 2013 UB_{6}	16.8	X	171.24650	34.41755	27.57418	7.94005	0.1890189	0.22940114	2.6428489	20	5 12.4	21.1
501221 2013 UX_{7}	16.1	X	99.08187	222.70080	239.00272	14.10952	0.0538371	0.21653773	2.7465046	20	3 30.8	20.1
501222 2013 US_{9}	17.4	X	234.41707	224.16326	130.36272	8.62381	0.1077651	0.23584323	2.5945006	20	4 25.4	21.3
501223 2013 UU_{12}	17.2	X	135.54354	326.51904	79.20995	5.35654	0.0732840	0.21277871	2.7787572	20	3 14.5	21.2
501224 2013 UU_{13}	17.7	X	209.98300	65.05897	293.12144	11.74309	0.2851786	0.23012074	2.6373365	20	3 21.3	22.8
501225 2013 UY_{13}	17.0	X	169.53420	112.99336	310.43185	12.79177	0.2329310	0.22785977	2.6547540	20	5 11.2	21.8
501226 2013 UH_{14}	17.4	X	227.86487	353.80178	28.14321	14.78895	0.1695279	0.24043757	2.5613435	20	5 11.8	21.5
501227 2013 UO_{14}	17.2	X	200.52682	47.24730	3.79938	5.22749	0.2096834	0.23584790	2.5944663	20	5 23.6	21.6
501228 2013 VL_{1}	16.8	X	195.81000	297.46928	79.60668	6.24891	0.2109800	0.22606551	2.6687825	20	4 12.3	21.4
501229 2013 VO_{1}	16.9	X	242.37700	243.00299	125.65218	5.99896	0.2774521	0.24127525	2.5554116	20	5 5.4	21.2
501230 2013 VB_{3}	16.9	X	217.62741	71.99265	310.53461	12.93509	0.1217378	0.23614874	2.5922624	20	5 3.6	21.1
501231 2013 VS_{3}	17.5	X	186.47265	238.19115	169.61038	11.81382	0.1822936	0.22937182	2.6430741	20	5 12.1	22.0
501232 2013 VT_{3}	16.5	X	208.02513	269.23389	148.35488	10.42253	0.0580546	0.24158113	2.5532541	20	6 18.3	20.3
501233 2013 VS_{4}	17.1	X	238.06146	54.77697	299.88215	11.83507	0.2986939	0.23606203	2.5928971	20	4 5.3	21.9
501234 2013 VK_{6}	17.2	X	166.99934	169.27248	252.34222	8.46275	0.1911840	0.22309407	2.6924276	20	5 8.9	21.8
501235 2013 VM_{6}	17.6	X	158.00118	183.30261	249.05014	7.24963	0.2538347	0.22039794	2.7143407	20	5 17.3	22.4
501236 2013 VY_{6}	16.3	X	117.84643	107.04692	328.79871	8.56404	0.0988243	0.21084759	2.7956982	20	3 28.6	20.4
501237 2013 VR_{7}	17.3	X	175.57933	152.20048	237.83567	2.61869	0.1194875	0.21951279	2.7216326	20	4 5.8	21.5
501238 2013 VG_{8}	17.6	X	194.13439	210.36156	197.75122	3.71012	0.2186190	0.23005790	2.6378167	20	5 16.4	22.1
501239 2013 VK_{10}	16.8	X	186.21599	357.84028	51.20079	15.04067	0.2368575	0.23070051	2.6329161	20	5 10.6	21.5
501240 2013 VN_{10}	17.3	X	209.41217	205.77735	189.97903	6.61756	0.1089928	0.23620465	2.5918533	20	5 19.1	21.3
501241 2013 VA_{11}	17.1	X	180.92875	347.21592	73.57887	14.59270	0.2334991	0.23063389	2.6334230	20	5 22.1	21.6
501242 2013 VO_{12}	17.0	X	227.02532	220.69108	146.15130	19.34040	0.2990794	0.23689417	2.5868215	20	4 23.9	21.9
501243 2013 VG_{13}	21.8	X	317.44413	24.72154	156.57752	7.80212	0.3545584	0.92298487	1.0447354	20	—	—
501244 2013 VA_{15}	17.0	X	225.64832	142.98780	213.79303	12.07901	0.1463418	0.22977460	2.6399844	20	4 12.0	21.0
501245 2013 VW_{15}	17.0	X	155.80155	269.61160	112.25438	5.25602	0.1181156	0.20970837	2.8058140	20	3 10.8	21.3
501246 2013 VC_{16}	17.2	X	239.02883	164.45085	197.83775	8.59176	0.1754189	0.23926811	2.5696827	20	5 1.5	21.1
501247 2013 VK_{16}	17.4	X	198.10460	328.00751	79.56492	6.11649	0.2408394	0.23462769	2.6034538	20	5 18.6	22.0
501248 2013 VR_{18}	16.9	X	232.44131	327.13943	36.68682	31.25245	0.2306100	0.23935949	2.5690287	20	4 23.9	21.1
501249 2013 VR_{19}	17.6	X	242.43243	128.79558	220.77808	8.69733	0.2249789	0.23636738	2.5906636	20	4 12.7	21.8
501250 2013 VT_{20}	17.3	X	221.28203	182.19063	187.81808	6.99311	0.2972379	0.23320967	2.6139966	20	4 18.7	22.0
501251 2013 VX_{20}	17.3	X	193.07690	36.94514	30.30088	7.12738	0.3379937	0.23193169	2.6235901	20	6 4.3	22.3
501252 2013 VX_{21}	17.3	X	226.28091	239.95922	128.43098	5.10753	0.2675639	0.23634440	2.5908315	20	4 22.9	21.8
501253 2013 VF_{22}	17.0	X	153.89220	132.90182	312.14420	12.60449	0.2278578	0.22330232	2.6907534	20	5 27.1	21.8
501254 2013 VG_{22}	17.1	X	225.95740	8.04962	17.55547	14.38595	0.0697758	0.23973552	2.5663415	20	5 21.9	20.9
501255 2013 VH_{22}	17.3	X	220.70439	324.70461	17.78968	12.95162	0.3063288	0.22964173	2.6410027	20	3 18.9	22.2
501256 2013 WA	16.5	X	205.68732	66.69109	350.27216	27.79037	0.3168154	0.23471405	2.6028151	20	5 24.1	21.9
501257 2013 WN_{1}	17.6	X	240.82978	217.89848	128.88567	4.67255	0.2902566	0.23629838	2.5911679	20	4 6.6	22.1
501258 2013 WA_{2}	16.9	X	235.30121	262.52666	83.31536	13.74873	0.2811903	0.23210077	2.6223158	20	4 7.1	21.7
501259 2013 WY_{2}	17.1	X	171.82132	192.44694	231.21952	13.23498	0.1939288	0.22144102	2.7058102	20	5 16.7	21.6
501260 2013 WY_{3}	16.1	X	136.23302	251.37208	245.70589	21.14795	0.0571791	0.23481122	2.6020970	20	7 3.4	20.0
501261 2013 WB_{6}	17.1	X	237.56952	217.33076	161.28788	7.13978	0.1948797	0.23891027	2.5722480	20	5 20.0	21.3
501262 2013 WU_{6}	17.1	X	179.73876	18.40416	51.67141	14.64983	0.2272930	0.22947998	2.6422436	20	5 29.6	21.8
501263 2013 WT_{9}	17.3	X	185.32752	219.42019	205.95432	11.39600	0.1612055	0.23044926	2.6348294	20	5 31.2	21.7
501264 2013 WF_{11}	16.7	X	140.40448	242.02336	221.80750	21.16886	0.0506144	0.22410202	2.6843483	20	5 28.4	20.6
501265 2013 WE_{12}	16.7	X	231.23318	248.85434	115.92074	13.73939	0.2181611	0.23223168	2.6213302	20	4 29.4	21.3
501266 2013 WJ_{13}	17.2	X	170.80453	322.36958	82.44636	9.10882	0.1303220	0.21583319	2.7524782	20	4 24.4	21.6
501267 2013 WV_{13}	16.9	X	239.78651	199.26440	127.00379	6.70926	0.0387480	0.21002655	2.8029795	20	4 2.6	20.9
501268 2013 WG_{14}	17.4	X	141.39792	284.26407	156.94448	5.58455	0.0554927	0.21447559	2.7640812	20	5 2.5	21.3
501269 2013 WE_{15}	16.2	X	171.42348	255.65317	85.67744	10.95022	0.0897471	0.19076635	2.9886028	20	2 7.7	20.9
501270 2013 WE_{19}	15.6	X	29.77185	34.60354	111.55954	11.17250	0.0712617	0.19058169	2.9905330	20	3 4.8	19.5
501271 2013 WE_{26}	17.0	X	172.60417	41.85097	13.02630	9.57777	0.2611244	0.22596802	2.6695500	20	5 5.1	21.8
501272 2013 WC_{29}	17.3	X	202.04134	164.16307	247.01652	3.08414	0.2031006	0.23320858	2.6140047	20	5 26.5	21.6
501273 2013 WZ_{33}	17.2	X	170.74844	333.40659	64.59965	5.52841	0.0753582	0.21327175	2.7744729	20	4 12.5	21.3
501274 2013 WT_{34}	17.3	X	137.00873	204.14250	234.84362	3.26040	0.0809418	0.21414732	2.7669052	20	4 24.6	21.3
501275 2013 WN_{37}	16.7	X	179.79702	117.04831	271.64721	12.02394	0.2098096	0.21498381	2.7597233	20	4 5.8	21.7
501276 2013 WH_{41}	17.4	X	126.78333	52.83972	58.71477	4.43705	0.1885187	0.21650312	2.7467973	20	6 4.3	21.7
501277 2013 WJ_{41}	15.8	X	267.52852	357.76412	258.27624	11.25856	0.0339383	0.19034382	2.9930239	20	2 4.0	20.2
501278 2013 WZ_{41}	16.9	X	167.37419	268.05646	133.01665	10.05057	0.2076563	0.21559265	2.7545252	20	4 19.9	21.7
501279 2013 WA_{43}	15.9	X	108.40918	341.36815	64.44259	11.53935	0.0480768	0.18588500	3.0406970	20	2 12.8	20.4
501280 2013 WO_{43}	17.5	X	222.71623	329.16585	53.91817	5.25502	0.1781404	0.22943725	2.6425716	20	5 11.2	21.5

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501281 2013 WJ_{46}	16.5	X	241.69634	294.68024	59.39119	11.84148	0.1293668	0.23286779	2.6165544	20	4 29.5	20.5
501282 2013 WM_{46}	16.9	X	213.33258	290.00502	76.95936	7.40411	0.2282356	0.22831171	2.6512495	20	4 14.1	21.5
501283 2013 WS_{46}	16.7	X	149.75478	2.54611	80.52104	11.58985	0.1520137	0.22255379	2.6967834	20	5 20.8	21.1
501284 2013 WV_{46}	17.0	X	200.54251	187.83033	220.29552	13.61225	0.2242156	0.23288428	2.6164309	20	5 21.4	21.5
501285 2013 WY_{46}	17.1	X	144.39064	349.50989	91.12466	6.37274	0.1423411	0.21947237	2.7219667	20	5 11.8	21.3
501286 2013 WK_{53}	16.3	X	271.10804	22.69729	317.58222	6.22723	0.2516219	0.24223079	2.5486869	20	4 23.6	20.2
501287 2013 WR_{54}	16.6	X	75.31596	128.37786	314.51867	8.09805	0.0976676	0.19145431	2.9814392	20	2 16.8	20.5
501288 2013 WW_{54}	16.5	X	144.19793	291.13953	115.82805	10.14244	0.1368049	0.20488299	2.8496977	20	4 3.1	21.1
501289 2013 WY_{54}	17.2	X	218.53494	87.14043	292.14653	11.38023	0.2888824	0.23286719	2.6165589	20	4 22.7	22.1
501290 2013 WB_{56}	16.7	X	191.32524	147.80266	256.98810	8.78499	0.1413449	0.22569421	2.6717087	20	5 9.2	21.1
501291 2013 WH_{57}	17.0	X	228.77506	257.53741	137.27318	4.76516	0.1612358	0.23993098	2.5649476	20	6 3.0	20.9
501292 2013 WY_{57}	16.7	X	209.95849	319.47720	62.13163	14.49185	0.2715627	0.23026169	2.6362601	20	4 28.1	21.5
501293 2013 WA_{59}	17.4	X	168.38856	5.47329	90.17883	5.77425	0.2338142	0.23020477	2.6366947	20	6 22.9	21.9
501294 2013 WZ_{59}	17.6	X	174.76487	255.47392	139.97137	4.11210	0.2024799	0.21751972	2.7382323	20	4 16.5	22.2
501295 2013 WL_{62}	17.0	X	108.57940	305.48677	124.75191	9.11431	0.1907631	0.19607090	2.9344538	20	3 31.3	21.4
501296 2013 WB_{63}	16.8	X	191.67911	219.58537	210.74945	11.14059	0.2242207	0.23366135	2.6106268	20	6 10.3	21.4
501297 2013 WF_{63}	17.3	X	215.24232	197.09773	193.71143	9.33158	0.2794526	0.23251204	2.6192227	20	5 10.6	22.0
501298 2013 WV_{63}	17.1	X	234.92587	220.76534	118.02746	11.35766	0.1009377	0.22717184	2.6601108	20	4 8.6	21.2
501299 2013 WB_{68}	16.3	X	266.60343	328.83920	19.73409	7.87347	0.2189209	0.24190814	2.5509526	20	5 4.9	20.0
501300 2013 WW_{68}	17.8	X	183.40466	136.61587	297.72921	1.22350	0.1882100	0.23446167	2.6046826	20	6 8.7	22.2
501301 2013 WZ_{68}	16.8	X	108.27691	242.62451	235.59970	11.72383	0.0960006	0.22084287	2.7106938	20	5 13.4	20.5
501302 2013 WD_{69}	17.0	X	182.05811	170.93969	196.77849	3.84356	0.1804134	0.21546424	2.7556195	20	3 17.8	21.6
501303 2013 WA_{70}	17.3	X	181.12603	9.74849	42.29796	5.63720	0.0670545	0.22408275	2.6845022	20	5 8.9	21.3
501304 2013 WM_{70}	17.3	X	222.87768	332.78023	12.25005	0.35059	0.0821571	0.21557676	2.7546605	20	3 31.0	21.5
501305 2013 WS_{71}	17.6	X	168.69088	98.90562	297.75540	1.52360	0.2068810	0.21427837	2.7657770	20	4 10.8	22.4
501306 2013 WF_{72}	16.5	X	311.90919	207.11219	63.55836	10.91862	0.1612529	0.22126752	2.7072245	20	4 6.7	20.0
501307 2013 WD_{74}	17.6	X	162.73664	352.39623	112.37931	5.70315	0.1868712	0.23077828	2.6323245	20	6 28.9	22.0
501308 2013 WW_{78}	17.4	X	210.69891	330.26489	79.01894	5.74846	0.2965999	0.23688045	2.5869214	20	5 27.9	22.1
501309 2013 WF_{83}	17.1	X	232.36562	271.72944	80.02073	6.89371	0.0369646	0.21918762	2.7243236	20	4 25.5	20.9
501310 2013 WS_{85}	18.0	X	194.60917	281.58098	155.01354	4.90175	0.2870782	0.23382826	2.6093843	20	6 18.9	22.8
501311 2013 WW_{85}	17.2	X	199.87569	343.48884	76.19057	5.82383	0.2711884	0.23332895	2.6131057	20	6 2.4	21.7
501312 2013 WJ_{86}	16.8	X	164.69628	182.34526	211.44855	17.86861	0.1914499	0.21520314	2.7578479	20	4 2.5	21.4
501313 2013 WJ_{91}	16.4	X	111.24643	148.48199	259.88708	10.20993	0.1287064	0.19176206	2.9782484	20	2 20.3	20.9
501314 2013 WV_{98}	16.6	X	242.87131	304.49450	67.06624	9.63503	0.0428933	0.23275058	2.6174327	20	5 31.4	19.9
501315 2013 WD_{103}	17.6	X	207.87726	336.40074	67.13968	5.42633	0.2411123	0.23631028	2.5910809	20	5 20.8	22.2
501316 2013 WT_{103}	16.2	X	108.29290	90.93849	61.46443	22.60041	0.1070918	0.22902890	2.6457117	20	6 27.4	20.2
501317 2013 WU_{103}	16.8	X	171.13605	174.59694	256.91794	10.89212	0.1558283	0.22522322	2.6754321	20	5 24.7	21.1
501318 2013 WB_{104}	16.7	X	47.40576	198.17204	266.54488	4.45828	0.2014286	0.17913257	3.1166379	20	2 15.1	20.2
501319 2013 WF_{104}	16.7	X	176.97622	139.06906	256.59376	12.89576	0.2062700	0.22076031	2.7113696	20	4 12.9	21.5
501320 2013 WA_{106}	16.1	X	138.09297	337.42551	98.84654	10.50958	0.1375255	0.21592829	2.7516700	20	5 2.2	20.5
501321 2013 WP_{106}	17.7	X	185.28451	147.88804	258.00919	6.39719	0.3098009	0.22557990	2.6726112	20	5 4.9	22.7
501322 2013 WD_{108}	17.6	X	229.85509	251.56031	141.09390	4.60788	0.2193145	0.23838064	2.5760565	20	5 27.8	21.8
501323 2013 WV_{108}	17.4	X	182.00360	167.47037	281.08583	5.15576	0.2270670	0.23212716	2.6221171	20	6 25.0	21.9
501324 2013 XK_{2}	17.5	X	180.96908	267.07607	123.94477	5.73732	0.1721262	0.21709944	2.7417651	20	4 16.8	22.1
501325 2013 XD_{3}	16.6	X	211.33074	139.64475	251.06022	13.47240	0.1123470	0.22959860	2.6413334	20	5 12.5	20.6
501326 2013 XG_{5}	17.3	X	218.71593	258.12199	127.40019	3.42916	0.1263783	0.22990571	2.6389807	20	5 14.7	21.3
501327 2013 XN_{5}	16.4	X	158.83853	69.02876	288.48463	8.58784	0.0025984	0.19265807	2.9690071	20	2 2.0	20.5
501328 2013 XL_{6}	16.2	X	113.60346	102.36070	300.33046	7.76426	0.1084888	0.19292711	2.9662463	20	2 16.3	20.5
501329 2013 XR_{8}	16.6	X	126.57246	64.78683	80.59173	13.90983	0.2037531	0.22770608	2.6559484	20	7 19.6	21.1
501330 2013 XP_{10}	17.2	X	197.36291	141.20898	249.87822	6.96143	0.1286453	0.22499470	2.6772434	20	4 27.9	21.5
501331 2013 XW_{10}	17.3	X	221.24375	311.90779	42.73679	7.23673	0.0392167	0.21766008	2.7370550	20	4 14.4	21.1
501332 2013 XK_{12}	17.0	X	217.49969	315.61912	59.66049	6.99127	0.0854975	0.22198276	2.7014061	20	5 2.9	20.9
501333 2013 XJ_{14}	17.7	X	187.29341	152.75323	261.41912	3.69419	0.2319786	0.22524120	2.6752897	20	5 17.3	22.4
501334 2013 XS_{16}	17.6	X	166.00429	35.16528	27.13313	6.08387	0.0627132	0.21729655	2.7401069	20	5 4.4	21.5
501335 2013 XQ_{18}	16.8	X	135.94981	41.26405	67.05814	10.12874	0.1212120	0.21927920	2.7235651	20	6 3.8	20.9
501336 2013 XT_{20}	16.4	X	198.87176	39.72285	40.11671	29.31319	0.2136657	0.23707130	2.5855328	20	6 24.6	21.3
501337 2013 XM_{23}	16.3	X	130.51707	300.03023	105.92206	22.71878	0.2215141	0.18999483	2.9966880	20	4 3.1	21.6
501338 2013 YK	16.9	X	165.97323	266.38207	132.18629	13.08052	0.1567942	0.21941565	2.7224358	20	4 14.7	21.5
501339 2013 YV_{1}	16.3	X	94.03268	166.62576	280.37429	9.63067	0.0788395	0.18668314	3.0320242	20	3 11.1	20.8
501340 2013 YS_{4}	15.7	X	187.14267	38.72762	286.78946	15.87944	0.1996919	0.17921313	3.1157038	20	2 2.4	21.1
501341 2013 YG_{7}	16.6	X	178.87120	134.54156	260.78382	13.02278	0.0997307	0.21345842	2.7728551	20	4 11.9	21.1
501342 2013 YC_{10}	16.0	X	98.13012	127.49860	275.69491	11.14988	0.1182908	0.17200083	3.2022042	20	2 1.5	20.5
501343 2013 YD_{10}	16.8	X	190.34874	345.69400	107.35943	15.14427	0.2227526	0.22806942	2.6531268	20	7 7.4	21.4
501344 2013 YH_{10}	15.8	X	228.84488	174.45087	123.53020	14.29802	0.0308934	0.17423082	3.1748220	20	2 18.1	20.5
501345 2013 YC_{11}	17.0	X	196.49116	265.05300	143.59435	8.39833	0.2114116	0.21550347	2.7552850	20	5 20.9	21.9
501346 2013 YQ_{11}	17.5	X	179.12675	343.47662	103.03969	5.50929	0.3221152	0.22238890	2.6981162	20	6 19.6	22.6
501347 2013 YN_{12}	15.8	X	182.71035	43.09031	272.20781	12.99352	0.0375563	0.18007774	3.1057228	20	1 14.4	20.4
501348 2013 YS_{13}	16.2	X	39.77230	189.45362	301.26278	12.22257	0.0573882	0.17102859	3.2143283	20	2 22.5	20.6
501349 2013 YE_{15}	17.3	X	234.57858	278.41766	89.20805	4.69130	0.2617162	0.23421813	2.6064879	20	4 28.4	21.8
501350 2013 YO_{15}	16.9	X	254.70034	277.82921	88.19697	12.50738	0.2195055	0.23924440	2.5698525	20	5 19.3	20.9
501351 2013 YV_{19}	14.9	X	323.10321	290.32088	259.98908	21.57577	0.2184173	0.17365561	3.1818290	20	1 1.8	19.3
501352 2013 YM_{20}	16.8	X	257.27348	209.27854	152.14240	3.23254	0.2410316	0.23978899	2.5659600	20	5 11.9	20.7
501353 2013 YC_{25}	17.7	X	219.30029	308.57406	78.97289	3.71728	0.2064853	0.23234093	2.6205084	20	5 12.5	21.9
501354 2013 YQ_{26}	16.9	X	108.28915	10.38987	89.40200	7.21060	0.0599238	0.19743855	2.9208870	20	4 18.9	21.1
501355 2013 YJ_{30}	16.7	X	174.90570	271.07784	135.61964	10.63402	0.2535015	0.20612339	2.8382536	20	5 3.6	21.9
501356 2013 YU_{30}	16.2	X	129.14183	102.40447	280.53339	4.05009	0.1592138	0.17911560	3.1168347	20	2 17.6	21.0
501357 2013 YC_{31}	17.3	X	220.64257	314.13182	76.07281	6.99140	0.1010331	0.22921751	2.6442602	20	5 24.0	21.1
501358 2013 YV_{32}	16.9	X	68.83097	26.32330	72.78299	13.17054	0.0845233	0.19007386	2.9958573	20	3 5.6	21.1
501359 2013 YZ_{32}	16.8	X	3.30304	275.39820	264.17883	7.53699	0.0301294	0.19650073	2.9301731	20	3 1.4	21.0
501360 2013 YD_{33}	17.7	X	182.30310	350.51830	69.70873	6.53543	0.0765583	0.22351645	2.6890346	20	5 21.6	21.5

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501361 2013 YN_{33}	16.6	X	123.56417	341.34934	131.31698	10.20824	0.0865591	0.20475207	2.8509122	20	5 26.3	20.9
501362 2013 YY_{33}	16.3	X	44.43612	5.33213	125.37226	18.54510	0.1625890	0.17683697	3.1435522	20	3 18.9	20.3
501363 2013 YE_{36}	16.9	X	151.38298	328.06938	147.83325	13.97587	0.0890163	0.24014691	2.5634099	20	6 29.6	20.9
501364 2013 YO_{40}	16.5	X	247.46974	118.38970	305.90981	16.79389	0.1515440	0.23956107	2.5675873	20	8 1.8	20.0
501365 2013 YA_{42}	17.4	X	211.01970	115.18158	278.02576	4.82913	0.0586942	0.22448606	2.6812859	20	5 18.6	21.3
501366 2013 YS_{42}	16.1	X	102.27041	87.41450	318.64134	11.70340	0.1406616	0.17616067	3.1515927	20	2 14.6	20.5
501367 2013 YQ_{43}	17.1	X	171.19265	119.21390	306.71962	7.78251	0.2130926	0.21289446	2.7777499	20	5 17.3	22.0
501368 2013 YU_{44}	16.2	X	123.73381	291.92942	113.10541	11.62088	0.1420312	0.18083095	3.0970927	20	3 12.8	21.0
501369 2013 YD_{45}	16.2	X	62.18847	167.20845	305.11136	11.84045	0.1188104	0.17759301	3.1346242	20	3 6.6	20.4
501370 2013 YN_{45}	16.2	X	28.23000	81.03377	134.09418	13.40673	0.0358764	0.20341767	2.8633664	20	5 28.7	20.2
501371 2013 YJ_{47}	15.8	X	353.27219	95.50319	91.71578	12.61929	0.0459063	0.18814576	3.0162900	20	3 7.5	20.0
501372 2013 YS_{47}	16.7	X	50.26288	35.46692	96.25194	7.00639	0.1333388	0.18145785	3.0899554	20	3 23.8	20.6
501373 2013 YX_{47}	16.1	X	26.34403	203.92056	300.84946	3.86228	0.1323825	0.17279379	3.1923999	20	2 26.3	19.9
501374 2013 YW_{48}	16.8	X	176.50930	138.39994	257.03267	9.13014	0.3108401	0.21643644	2.7473614	20	4 15.5	22.0
501375 2013 YT_{50}	17.2	X	193.73530	3.26700	91.72765	13.37229	0.1514040	0.23297316	2.6157654	20	7 16.0	21.4
501376 2013 YS_{51}	16.3	X	100.74690	327.84013	109.50070	13.00656	0.0241899	0.18446680	3.0562620	20	3 10.1	20.7
501377 2013 YX_{53}	16.7	X	207.30731	296.52269	78.55075	7.29708	0.0764101	0.21556450	2.7547650	20	4 23.9	20.8
501378 2013 YE_{56}	16.2	X	0.24556	91.01702	73.75033	11.51246	0.0174646	0.18064243	3.0992471	20	2 19.3	20.7
501379 2013 YH_{59}	15.9	X	57.41705	140.69883	316.27687	9.66401	0.0520925	0.17503024	3.1651478	20	2 7.9	20.2
501380 2013 YS_{59}	17.2	X	118.31975	77.57340	37.31382	3.82112	0.0479478	0.20811869	2.8200837	20	5 15.1	21.1
501381 2013 YG_{64}	15.6	X	106.99112	322.02738	100.74336	10.63492	0.0838918	0.17538977	3.1608209	20	3 8.8	20.2
501382 2013 YH_{65}	16.0	X	104.77552	120.99473	289.31181	9.34861	0.0947490	0.17670208	3.1451518	20	2 14.2	20.5
501383 2013 YM_{65}	16.2	X	354.11110	186.78662	354.01531	10.14120	0.1560389	0.17561778	3.1580843	20	2 19.9	20.0
501384 2013 YC_{66}	17.1	X	233.57497	22.08131	18.36205	6.04128	0.3237633	0.23818107	2.5774954	20	5 31.0	21.6
501385 2013 YT_{68}	16.3	X	124.47685	320.70519	122.37166	4.97591	0.0964005	0.18970164	2.9997748	20	4 21.0	20.7
501386 2013 YU_{68}	16.0	X	103.95304	316.58477	127.64911	13.78436	0.0890434	0.18088071	3.0965247	20	4 1.4	20.6
501387 2013 YA_{69}	16.5	X	173.72417	249.39710	132.24230	11.11119	0.1322950	0.18802407	3.0175913	20	3 31.9	21.5
501388 2013 YS_{74}	16.4	X	165.04657	307.02539	76.75596	8.29371	0.1313768	0.19344959	2.9609030	20	3 26.3	21.2
501389 2013 YD_{75}	15.9	X	53.01669	159.19507	302.84592	8.67615	0.1897446	0.17240093	3.1972480	20	2 20.8	19.8
501390 2013 YM_{75}	16.3	X	120.61472	279.01161	132.20504	11.78029	0.0797650	0.18018617	3.1044767	20	3 7.8	20.8
501391 2013 YR_{75}	16.4	X	86.23539	315.25906	133.02748	9.92891	0.0729646	0.18035596	3.1025280	20	3 10.4	20.7
501392 2013 YW_{75}	16.9	X	188.91716	255.32072	133.62156	12.74111	0.0696479	0.19965926	2.8991882	20	4 24.6	21.5
501393 2013 YF_{76}	16.9	X	141.74047	336.15028	142.79355	8.27632	0.1139470	0.21127719	2.7919072	20	6 23.5	21.2
501394 2013 YQ_{78}	15.9	X	58.94227	166.84002	298.56369	8.58140	0.0390947	0.17915263	3.1164052	20	2 16.3	20.2
501395 2013 YE_{83}	15.4	X	216.80997	28.83181	281.33515	9.32958	0.1053613	0.17617574	3.1514130	20	2 11.4	20.4
501396 2013 YH_{83}	16.9	X	252.34392	306.68964	89.59755	4.35283	0.1137601	0.23671660	2.5881150	20	7 6.9	20.4
501397 2013 YR_{83}	16.4	X	211.02581	275.91794	124.83913	13.41039	0.2702029	0.22464325	2.6800350	20	5 22.4	21.3
501398 2013 YF_{90}	16.3	X	82.94907	311.73219	136.38575	10.65690	0.0947723	0.17463992	3.1698621	20	3 9.4	20.7
501399 2013 YH_{92}	16.8	X	65.85631	339.86992	126.19697	10.18717	0.1337966	0.19000741	2.9965557	20	3 13.1	20.7
501400 2013 YQ_{92}	16.7	X	178.77082	305.24727	88.93903	7.78491	0.0528162	0.21250927	2.7811055	20	4 17.5	20.8
501401 2013 YO_{93}	16.6	X	25.51849	29.90314	104.82264	10.19470	0.0281062	0.17286188	3.1915615	20	2 13.3	21.0
501402 2013 YU_{93}	15.5	X	312.09405	120.47670	101.69959	10.88631	0.0249693	0.17748988	3.1358383	20	2 27.5	20.0
501403 2013 YG_{94}	17.2	X	113.18631	303.19069	110.12613	5.72304	0.1840749	0.18372371	3.0644973	20	3 14.4	21.8
501404 2013 YE_{95}	16.3	X	307.01710	124.61685	111.76913	12.21462	0.0236501	0.18055895	3.1002023	20	3 10.1	20.8
501405 2013 YU_{96}	15.6	X	94.02967	344.86302	112.22686	12.35953	0.0722301	0.18216904	3.0819080	20	4 3.3	20.1
501406 2013 YD_{107}	16.9	X	124.29254	268.67422	129.80091	5.93279	0.1712070	0.18427816	3.0583474	20	3 5.7	21.5
501407 2013 YY_{108}	16.6	X	123.00204	75.79438	348.51903	9.22224	0.0742066	0.19125185	2.9835429	20	3 20.8	21.0
501408 2013 YL_{109}	15.8	X	207.27274	252.88377	115.46032	13.88022	0.1393796	0.20498539	2.8487485	20	4 17.6	20.6
501409 2013 YJ_{111}	16.8	X	180.47310	100.20209	340.75192	10.67393	0.2251451	0.22271583	2.6954751	20	6 13.8	21.6
501410 2013 YQ_{113}	16.6	X	234.78694	195.60993	111.23845	6.87647	0.0619324	0.18257344	3.0773554	20	3 3.7	21.2
501411 2013 YT_{116}	16.5	X	144.11422	314.71217	117.16228	12.74782	0.0970617	0.19503331	2.9448523	20	5 1.6	21.2
501412 2013 YV_{120}	15.8	X	94.54798	315.32210	112.06666	28.45128	0.1269602	0.18072498	3.0983033	20	3 7.3	20.6
501413 2013 YN_{124}	16.6	X	94.58553	347.12451	99.53995	6.94945	0.1376396	0.18045379	3.1014066	20	3 29.2	21.0
501414 2013 YA_{125}	16.5	X	197.59744	296.09188	115.15240	7.29233	0.0770393	0.20983123	2.8047186	20	5 28.2	20.8
501415 2013 YS_{128}	16.3	X	86.35421	296.34121	145.58446	12.12619	0.0752103	0.18791723	3.0187349	20	2 29.7	20.4
501416 2013 YP_{130}	17.3	X	139.35039	34.13967	49.23084	7.26622	0.0766504	0.20443457	2.8538633	20	5 3.6	21.4
501417 2013 YQ_{130}	17.0	X	227.21253	323.39894	77.82380	12.55674	0.0419547	0.22433184	2.6825147	20	6 20.2	20.6
501418 2013 YD_{131}	16.2	X	131.34902	29.21187	346.00100	8.32601	0.0533454	0.17292977	3.1907262	20	2 3.1	20.8
501419 2013 YJ_{131}	16.2	X	54.74550	115.00851	320.78976	15.41088	0.0767627	0.16496576	3.2926091	20	1 16.4	20.6
501420 2013 YD_{132}	16.1	X	40.64730	155.66764	339.92510	9.07029	0.0971878	0.18109060	3.0941315	20	3 5.8	19.9
501421 2013 YK_{132}	15.5	X	233.24735	209.28492	81.66327	19.47835	0.1977094	0.17835489	3.1256909	20	2 6.6	21.0
501422 2013 YG_{133}	17.2	X	149.10253	60.88979	335.87092	10.66424	0.1317494	0.19358173	2.9595553	20	3 19.4	21.9
501423 2013 YS_{138}	16.1	X	114.67590	94.63048	310.03640	16.96345	0.0973160	0.18217812	3.0818055	20	2 17.8	20.7
501424 2013 YU_{139}	17.7	X	193.04028	108.93234	327.88618	2.92554	0.2678700	0.22319022	2.6916542	20	6 18.1	22.6
501425 2013 YW_{139}	16.0	X	110.82945	289.46647	116.88017	9.06522	0.1321872	0.17557095	3.1586460	20	2 26.7	20.6
501426 2013 YQ_{141}	16.8	X	212.18636	97.83444	270.28360	5.60797	0.1421302	0.21738827	2.7393360	20	4 12.4	21.2
501427 2013 YP_{146}	16.5	X	73.23468	111.87368	324.49425	11.57579	0.1484978	0.17562944	3.1579446	20	2 15.8	20.5
501428 2013 YF_{149}	16.0	X	70.48830	134.16093	312.93631	22.50294	0.3211837	0.17488555	3.1668933	20	3 10.9	20.4
501429 2013 YH_{149}	16.2	X	38.11629	346.02425	125.65034	18.62288	0.1641515	0.17823454	3.1270979	20	2 6.7	19.7
501430 2013 YD_{150}	17.1	X	227.55411	32.84772	357.52650	4.68330	0.2359408	0.23568209	2.5956830	20	5 19.4	21.5
501431 2013 YL_{150}	16.6	X	175.39740	356.17816	81.12206	10.21652	0.2348732	0.22554007	2.6729259	20	6 5.9	21.2
501432 2013 YP_{150}	15.7	X	113.55689	306.24996	80.37132	10.55445	0.1235215	0.18045759	3.1013631	20	2 4.9	20.3
501433 2014 AV	16.3	X	321.24413	117.56947	91.75800	10.88737	0.0510297	0.17538924	3.1608272	20	2 20.3	20.8
501434 2014 AA_1	17.2	X	207.39800	317.59541	76.59193	6.95165	0.2036643	0.21808119	2.7335304	20	5 11.5	21.7
501435 2014 AO_4	16.2	X	115.15843	303.31993	95.42099	10.32366	0.0917412	0.17467842	3.1693963	20	2 18.2	20.9
501436 2014 AG_{10}	15.7	X	72.64467	156.21519	311.68089	22.07826	0.1512961	0.18310549	3.0713912	20	3 12.9	20.1
501437 2014 AA_{19}	17.1	X	61.02935	38.25330	89.05369	1.93378	0.1339855	0.18365266	3.0652877	20	3 31.7	21.0
501438 2014 AO_{19}	16.4	X	33.31633	202.56778	300.21455	10.15359	0.0869871	0.17326363	3.1866260	20	2 29.7	20.7
501439 2014 AC_{20}	16.4	X	143.42852	295.26473	71.28797	12.94479	0.0936633	0.18882607	3.0090408	20	2 10.7	21.1
501440 2014 AW_{22}	16.0	X	119.98309	119.06576	284.75215	19.80241	0.0361186	0.17912788	3.1166923	20	2 11.3	20.7

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501441 2014 AQ_{23}	15.7	X	187.40372	219.41657	124.77020	10.75792	0.0762434	0.17922205	3.1156004	20	2 27.3	20.5
501442 2014 AW_{23}	16.8	X	126.32525	45.69599	355.31762	5.64625	0.2104817	0.18888536	3.0084111	20	3 13.0	21.3
501443 2014 AB_{27}	15.9	X	102.88494	294.75003	134.43349	27.46606	0.1906924	0.18125105	3.0923053	20	3 27.6	20.8
501444 2014 AG_{27}	15.3	X	44.19216	205.91383	282.70262	14.18317	0.1185342	0.17391169	3.1787048	20	2 27.4	19.6
501445 2014 AH_{27}	15.8	X	79.43167	323.14093	142.80485	18.32905	0.0802478	0.18146838	3.0898359	20	3 26.3	20.2
501446 2014 AJ_{28}	17.4	X	177.04902	275.14784	224.56927	3.81913	0.2151421	0.23574743	2.5952034	20	8 22.4	21.8
501447 2014 AW_{29}	16.4	X	29.76416	221.42458	253.83346	8.40542	0.0931459	0.18013554	3.1050584	20	1 22.1	20.3
501448 2014 AX_{33}	16.8	X	107.87983	325.28672	113.47503	11.05904	0.0841235	0.18850233	3.0124851	20	3 28.9	21.2
501449 2014 AA_{35}	16.3	X	101.03766	162.13866	261.49970	9.81023	0.0986758	0.18879858	3.0093329	20	2 23.0	20.7
501450 2014 AM_{36}	17.1	X	231.43885	98.79415	255.04380	11.87932	0.2478660	0.22486147	2.6783008	20	4 4.4	21.9
501451 2014 AP_{38}	16.8	X	55.47624	328.72657	122.77080	3.50358	0.0799446	0.17146110	3.2089207	20	2 2.2	20.8
501452 2014 AM_{40}	16.1	X	71.92559	13.72798	106.58407	14.98642	0.2007976	0.18384003	3.0632045	20	4 23.9	20.4
501453 2014 AZ_{40}	15.9	X	35.37040	335.04558	126.63423	13.36068	0.0205605	0.15943014	3.3683905	20	1 16.9	20.6
501454 2014 AL_{41}	16.8	X	117.69337	122.23238	299.19480	7.99536	0.1971499	0.18436004	3.0574417	20	3 23.6	21.6
501455 2014 AW_{42}	16.0	X	123.73580	289.98318	81.75131	10.79793	0.1214507	0.18237486	3.0795888	20	1 28.3	20.6
501456 2014 AK_{43}	15.7	X	58.66645	325.84317	124.74342	25.00482	0.1941480	0.17258516	3.1949722	20	2 20.9	19.7
501457 2014 AY_{45}	17.0	X	173.33618	29.82332	60.13017	10.02716	0.3230720	0.21952504	2.7215313	20	6 19.3	22.2
501458 2014 AU_{46}	16.5	X	88.52811	321.69369	124.12429	11.63779	0.0953532	0.17913603	3.1165977	20	3 14.9	20.9
501459 2014 AL_{47}	16.9	X	33.76419	116.37413	29.80486	1.62263	0.1078369	0.17886350	3.1197627	20	3 10.9	20.8
501460 2014 AS_{47}	16.3	X	337.24707	91.52785	115.54425	10.50006	0.0294966	0.17960457	3.1111752	20	3 11.2	20.7
501461 2014 AS_{49}	16.6	X	41.03339	42.32913	114.60549	10.54211	0.0921353	0.18645945	3.0344486	20	4 7.9	20.6
501462 2014 BD_{7}	16.8	X	167.38286	258.51341	131.36342	3.65850	0.1107107	0.18813442	3.0164112	20	4 1.4	21.4
501463 2014 BE_{10}	15.9	X	103.78909	11.74331	23.08805	16.56567	0.2263990	0.17373122	3.1809058	20	2 23.1	20.8
501464 2014 BC_{11}	16.3	X	6.96650	239.67733	313.07216	8.48349	0.0239691	0.18450678	3.0558205	20	3 24.1	20.6
501465 2014 BY_{14}	16.4	X	326.36465	183.30048	67.42598	8.69393	0.0169300	0.20019316	2.8940313	20	4 19.9	20.4
501466 2014 BR_{16}	17.1	X	185.79725	334.37404	77.33191	6.10375	0.1599366	0.21366631	2.7710563	20	5 14.8	21.6
501467 2014 BZ_{17}	15.7	X	192.06767	31.33165	307.06437	26.17248	0.1673377	0.17314902	3.1880322	20	2 16.9	21.2
501468 2014 BU_{18}	16.1	X	61.57118	179.47716	298.02893	7.94814	0.0570486	0.17707729	3.1407074	20	3 6.4	20.4
501469 2014 BV_{19}	16.1	X	121.05386	112.35454	310.64643	7.86434	0.1002398	0.18124484	3.0923759	20	3 18.8	20.8
501470 2014 BM_{20}	16.1	X	87.73413	323.30993	109.34969	12.40419	0.1744232	0.17664072	3.1458801	20	3 10.2	20.6
501471 2014 BR_{30}	16.5	X	118.36369	257.50220	162.66523	11.02547	0.0961586	0.17647195	3.1478855	20	3 16.8	21.0
501472 2014 BE_{36}	15.7	X	125.05486	287.89686	127.19573	10.62110	0.0762253	0.17727359	3.1383884	20	3 18.2	20.4
501473 2014 BJ_{39}	16.2	X	115.35669	133.54455	328.49723	7.91870	0.1111152	0.18638322	3.0352759	20	4 30.6	20.9
501474 2014 BQ_{44}	16.1	X	122.23217	109.19620	311.98277	6.17785	0.1092203	0.18023368	3.1039311	20	3 19.9	20.8
501475 2014 BQ_{48}	16.2	X	64.62451	339.58377	159.88156	19.28792	0.1350388	0.17800892	3.1297396	20	4 26.1	20.6
501476 2014 BV_{52}	15.8	X	40.55531	159.42209	320.25395	15.18147	0.0474163	0.17368435	3.1814780	20	2 12.7	19.9
501477 2014 BW_{54}	16.5	X	138.67094	84.19253	320.06206	8.38968	0.0919261	0.17836910	3.1255249	20	3 15.2	21.2
501478 2014 BT_{58}	16.0	X	147.79502	115.21375	311.29256	10.55320	0.0990925	0.19156522	2.9802883	20	4 18.6	20.8
501479 2014 BD_{60}	17.7	X	284.10520	240.77517	111.34331	23.70480	0.0981173	0.37196225	1.9148590	20	6 28.6	19.4
501480 2014 BD_{62}	15.7	X	101.53080	242.18733	194.80317	13.42033	0.0516032	0.17699439	3.1416880	20	3 8.2	20.2
501481 2014 BW_{62}	16.7	X	138.67348	259.40034	161.10100	11.47333	0.0730773	0.19234395	2.9722388	20	4 6.7	21.1
501482 2014 CO_{2}	16.1	X	126.41278	334.12195	118.86910	11.02117	0.0613349	0.18793419	3.0185533	20	5 4.0	20.6
501483 2014 CU_{2}	15.4	X	52.81153	162.29557	334.30736	27.96030	0.1354319	0.17502622	3.1651962	20	3 18.4	19.7
501484 2014 CR_{4}	17.0	X	106.18464	272.56884	157.59111	3.45027	0.1974281	0.18073627	3.0981742	20	3 27.4	21.6
501485 2014 CW_{4}	16.1	X	158.10405	78.91645	320.69134	8.71745	0.0883294	0.18437091	3.0573215	20	3 28.4	20.9
501486 2014 CK_{5}	16.7	X	108.35608	68.27635	5.49467	4.68918	0.1537519	0.18304818	3.0720322	20	3 27.7	21.2
501487 2014 CL_{6}	16.1	X	342.77227	94.98936	114.33721	12.94659	0.0317687	0.17815050	3.1280813	20	3 22.9	20.6
501488 2014 CN_{12}	16.4	X	120.65744	65.44625	358.46444	7.78704	0.0717085	0.18017369	3.1046201	20	3 19.5	20.9
501489 2014 CW_{12}	16.4	X	34.39433	66.57428	86.93966	6.60453	0.0292827	0.17775624	3.1327049	20	3 19.6	20.7
501490 2014 CJ_{16}	16.5	X	78.42545	142.45896	314.30125	12.84262	0.1791699	0.17493532	3.1662926	20	3 17.9	20.9
501491 2014 CM_{17}	16.3	X	96.85750	316.14483	140.95915	6.28085	0.1198655	0.17969413	3.1101413	20	4 10.2	20.8
501492 2014 DW	16.3	X	120.76797	286.80146	151.62690	7.91871	0.1624311	0.18670125	3.0318280	20	4 19.2	21.0
501493 2014 DP_{1}	17.5	X	177.29581	304.28213	155.79145	4.04845	0.2691657	0.22194560	2.7017076	20	7 4.6	22.3
501494 2014 DV_{1}	16.4	X	73.06162	325.28554	149.65102	11.22865	0.1977949	0.17794745	3.1304604	20	4 14.9	20.6
501495 2014 DO_{8}	16.2	X	67.08605	175.60057	302.73968	10.29551	0.0787558	0.18098950	3.0952837	20	3 15.5	20.5
501496 2014 DF_{9}	16.0	X	102.18557	302.98783	155.71916	17.49588	0.0887706	0.18195530	3.0843211	20	4 16.2	20.6
501497 2014 DW_{23}	16.2	X	111.87904	93.23780	338.97264	15.52780	0.2628163	0.17939346	3.1136155	20	4 4.9	21.3
501498 2014 DP_{28}	15.9	X	176.84735	54.13216	319.77661	13.64574	0.1160562	0.18303858	3.0721397	20	3 16.0	20.9
501499 2014 DB_{29}	16.6	X	60.06554	334.20179	155.60013	6.10680	0.0949285	0.17805252	3.1292286	20	3 29.3	20.7
501500 2014 DZ_{30}	16.9	X	122.45166	289.21488	173.80604	10.07439	0.0889138	0.19212345	2.9745125	20	5 12.8	21.4
501501 2014 DG_{35}	15.5	X	1.43569	206.62842	330.79045	27.09946	0.1506580	0.17218267	3.1999493	20	2 24.4	19.2
501502 2014 DE_{36}	17.0	X	44.69903	144.89808	350.59673	0.53780	0.1118205	0.17371042	3.1811597	20	3 14.7	20.9
501503 2014 DS_{39}	16.4	X	90.51622	119.49711	324.36797	15.72192	0.2405275	0.18213678	3.0822719	20	3 24.1	21.0
501504 2014 DA_{40}	16.5	X	83.54321	324.98019	130.29156	10.45737	0.0935177	0.17790236	3.1309892	20	3 19.6	20.9
501505 2014 DP_{49}	16.5	X	103.28977	319.65562	149.95501	9.86833	0.0654913	0.17875230	3.1210565	20	4 27.0	21.1
501506 2014 DV_{68}	16.3	X	153.38668	277.22972	159.67729	16.01762	0.0757753	0.18347280	3.0672906	20	5 15.2	21.2
501507 2014 DC_{74}	16.1	X	170.63075	305.29959	129.60376	10.04934	0.1274502	0.19224297	2.9732795	20	5 30.5	21.0
501508 2014 DU_{109}	16.5	X	150.74409	272.92136	155.61119	11.64252	0.1561764	0.18614582	3.0378560	20	5 6.4	21.5
501509 2014 DZ_{109}	16.3	X	182.20213	256.48009	142.82158	9.29563	0.0789880	0.18237062	3.0796366	20	4 29.2	21.1
501510 2014 DH_{115}	15.8	X	115.80899	85.21710	344.31925	18.42640	0.1616113	0.17583300	3.1555069	20	3 26.5	20.7
501511 2014 DC_{116}	16.2	X	150.50523	76.23247	351.65518	9.58829	0.0578054	0.17990954	3.1076582	20	4 22.3	20.9
501512 2014 DE_{116}	16.3	X	121.54991	85.40768	1.56498	8.39848	0.0688864	0.17639840	3.1487604	20	4 15.6	20.9
501513 2014 DQ_{119}	16.8	X	203.20321	283.41369	159.00142	9.62248	0.2419609	0.21941289	2.7224586	20	7 3.3	21.6
501514 2014 DT_{121}	16.1	X	148.76330	92.23986	324.74719	8.01059	0.0984385	0.18016457	3.1047249	20	4 9.9	21.0
501515 2014 DB_{127}	16.3	X	124.78427	112.17346	335.27870	9.89206	0.0858881	0.18231898	3.0802180	20	4 19.3	21.0
501516 2014 DG_{127}	16.9	X	107.55706	304.51644	178.61983	8.88356	0.1291140	0.19044873	2.9919247	20	5 25.3	21.4
501517 2014 DQ_{127}	17.0	X	161.04087	271.34726	170.59454	8.35632	0.2068631	0.20135221	2.8829147	20	5 31.6	22.0
501518 2014 DB_{128}	16.7	X	198.20563	236.00184	159.65226	10.77402	0.0672519	0.18980731	2.9986614	20	5 11.3	21.3
501519 2014 DR_{134}	16.1	X	240.70756	184.62129	147.87011	10.07166	0.0814239	0.17554720	3.1589307	20	4 9.7	20.9
501520 2014 EE_{19}	16.9	X	97.40996	102.94395	35.71214	3.42070	0.2128786	0.19226771	2.9730244	20	6 11.2	21.3

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501521 2014 EW_{27}	16.3	X	45.32860	338.17131	160.77934	13.74833	0.1258364	0.17253200	3.1956284	20	3 23.6	20.2
501522 2014 EG_{29}	16.7	X	109.99170	342.57786	106.64037	4.21241	0.1781203	0.18180882	3.0859775	20	4 22.3	21.3
501523 2014 EX_{29}	16.2	X	83.94983	339.47596	163.96026	10.80027	0.0285433	0.18316983	3.0706720	20	5 9.5	20.6
501524 2014 EA_{31}	16.2	X	184.08919	274.18882	152.24750	11.47725	0.1214233	0.19588980	2.9362622	20	6 2.1	21.0
501525 2014 EF_{50}	15.6	X	5.90386	200.23379	352.75572	10.77881	0.0263704	0.17381288	3.1799094	20	3 26.2	19.9
501526 2014 EF_{51}	15.7	X	45.78471	326.69717	175.58334	24.13626	0.0852340	0.16989107	3.2286603	20	3 23.5	19.8
501527 2014 FR_{3}	16.5	X	137.09271	292.07095	126.22807	12.24257	0.1245032	0.17342069	3.1847018	20	4 10.9	21.6
501528 2014 FV_{5}	16.2	X	187.16270	257.56071	147.49963	10.36641	0.1396208	0.19000130	2.9966200	20	5 10.8	21.2
501529 2014 FA_{8}	16.3	X	104.26841	275.60735	171.35996	13.80333	0.2219223	0.17533476	3.1614819	20	4 19.9	21.2
501530 2014 FH_{8}	16.3	X	103.80981	87.43783	5.16388	15.43928	0.2322093	0.17824417	3.1269852	20	4 20.2	21.2
501531 2014 FP_{19}	15.7	X	90.80565	263.16839	172.94401	18.22346	0.1450006	0.17238962	3.1973877	20	3 9.4	20.2
501532 2014 FR_{21}	16.4	X	110.28345	268.08086	206.79925	9.44314	0.1438882	0.18725151	3.0258855	20	5 19.2	21.0
501533 2014 FV_{39}	16.6	X	94.17016	335.69979	172.31916	5.20741	0.1418967	0.18255588	3.0775527	20	6 10.9	21.1
501534 2014 FQ_{55}	15.6	X	41.02266	114.69145	54.62438	18.13238	0.1552165	0.16839439	3.2477629	20	4 30.1	19.6
501535 2014 HY_{35}	16.1	X	60.19700	112.21812	59.04712	16.99333	0.1477754	0.17386958	3.1792181	20	5 27.0	20.3
501536 2014 HQ_{122}	16.7	X	133.14229	283.37860	169.74826	10.41200	0.2371846	0.17871877	3.1214468	20	5 24.4	22.0
501537 2014 HH_{161}	16.0	X	131.21231	24.90192	83.65733	11.81887	0.0529630	0.17360636	3.1824307	20	5 25.4	20.6
501538 2014 HM_{168}	15.8	X	316.65211	275.45851	56.95715	23.10592	0.0902747	0.18344230	3.0676305	20	7 13.3	20.1
501539 2014 JZ_{2}	16.1	X	92.76756	172.73411	71.37458	15.45165	0.0596304	0.21124340	2.7922049	20	10 10.2	20.4
501540 2014 JF_{25}	17.3	X	291.23875	255.36670	116.23464	24.36023	0.1257945	0.36020944	1.9562874	20	8 11.8	18.8
501541 2014 JJ_{40}	17.4	X	112.68244	118.87307	110.53351	5.22374	0.0425941	0.21495491	2.7599707	20	10 8.3	21.3
501542 2014 JE_{56}	18.1	X	321.89564	302.32039	103.56246	23.01623	0.0915567	0.38331305	1.8768676	20	12 28.7	19.1
501543 2014 JG_{56}	18.2	X	115.38362	90.75354	132.98231	23.88524	0.0473329	0.37820216	1.8937387	20	11 10.6	21.0
501544 2014 JH_{56}	18.1	X	261.50410	271.82034	191.33685	22.09634	0.0333728	0.38358073	1.8759943	20	12 8.8	20.3
501545 2014 JC_{66}	16.0	X	334.45986	238.08389	79.28917	11.17432	0.0969619	0.18499937	3.0503936	20	7 21.4	19.8
501546 2014 JJ_{80}	5.5	X	343.86358	97.61076	261.44602	18.67544	0.2780654	0.00345341	43.3481273	20	8 15.7	20.6
501547 2014 KN_{21}	18.8	X	90.18242	134.86614	180.57724	22.07181	0.0063521	0.40337211	1.8141177	20	—	—
501548 2014 KX_{81}	17.2	X	199.43278	293.29315	248.51704	3.37239	0.1340548	0.23253075	2.6190822	20	11 9.1	21.0
501549 2014 KC_{85}	18.0	X	333.48679	94.25500	271.58844	18.11806	0.0964427	0.36826404	1.9276574	20	11 1.5	19.8
501550 2014 KJ_{85}	18.2	X	12.03040	244.24116	93.99819	24.06174	0.0422747	0.37534158	1.9033483	20	11 29.9	20.2
501551 2014 KS_{86}	18.5	X	298.66239	266.35371	176.45487	20.04537	0.1057872	0.38945893	1.8570700	20	—	—
501552 2014 LQ_{9}	18.3	X	36.91860	180.99473	137.78642	24.86572	0.0949037	0.37858730	1.8924541	20	12 15.9	21.0
501553 2014 LB_{16}	18.0	X	254.38942	234.83890	110.26519	7.83705	0.2247154	0.29900307	2.2148906	20	4 20.5	21.4
501554 2014 LN_{24}	18.3	X	208.81216	225.43431	309.88010	18.59858	0.0862718	0.38311391	1.8775180	20	12 29.6	20.1
501555 2014 LX_{25}	18.3	X	49.92894	172.88250	170.06185	22.56033	0.0618298	0.39092408	1.8524270	20	—	—
501556 2014 LF_{26}	18.3	X	19.69712	198.23430	152.31358	23.84122	0.1018258	0.37884470	1.8915968	20	—	—
501557 2014 LX_{26}	17.9	X	267.07470	294.63283	138.76302	24.63700	0.0457879	0.37143527	1.9166697	20	11 5.3	20.4
501558 2014 LD_{27}	18.5	X	272.38786	282.02214	169.47544	23.13670	0.0694815	0.37993020	1.8879921	20	12 8.3	20.7
501559 2014 MO_{18}	17.8	X	241.07181	332.74979	123.26429	24.82480	0.0572070	0.36114700	1.9529002	20	10 26.5	20.5
501560 2014 MD_{37}	17.8	X	210.05417	239.97810	145.02584	4.35575	0.2192738	0.28910065	2.2651832	20	4 30.5	21.6
501561 2014 MG_{37}	18.1	X	287.50370	157.51011	136.87639	7.76711	0.1087632	0.29470831	2.2363570	20	4 5.1	20.8
501562 2014 MA_{55}	18.3	X	248.86516	166.55446	316.61088	17.96026	0.1000399	0.37310449	1.9109489	20	12 5.0	20.3
501563 2014 NA_{19}	18.1	X	281.58102	312.48979	144.85840	22.80079	0.0614942	0.36971624	1.9226063	20	12 30.7	20.1
501564 2014 NT_{28}	18.2	X	346.49424	97.69592	133.41122	6.70396	0.1209744	0.30343853	2.1932538	20	4 4.0	20.1
501565 2014 NQ_{59}	17.8	X	110.06341	152.99596	120.41062	23.72269	0.0578598	0.37053952	1.9197574	20	—	—
501566 2014 NV_{62}	18.1	X	61.50924	356.40723	301.13022	17.27108	0.0616046	0.36620979	1.9348594	20	12 4.4	20.6
501567 2014 NF_{63}	21.0	X	11.25897	325.64824	297.64212	2.16980	0.4201453	0.33570611	2.0503589	20	9 23.9	22.1
501568 2014 OC	17.7	X	157.42992	257.83342	299.13413	17.46164	0.0788313	0.36600194	1.9355919	20	11 5.1	20.5
501569 2014 OE_{5}	18.6	X	9.78149	0.43174	309.08363	14.72637	0.0584330	0.34294052	2.0214213	20	9 19.4	20.8
501570 2014 OQ_{43}	17.4	X	207.21087	253.16352	112.42128	6.47825	0.2613582	0.26882592	2.3776903	20	4 5.2	21.6
501571 2014 OQ_{97}	17.4	X	70.19472	128.77394	151.58003	23.69221	0.0557288	0.35083679	1.9909757	20	11 23.9	20.4
501572 2014 OP_{127}	17.9	X	347.42191	116.27991	90.07482	7.27098	0.0452444	0.28514706	2.2860731	20	3 10.8	20.5
501573 2014 OV_{143}	18.1	X	311.58044	110.46402	88.09644	3.14146	0.1440620	0.27016229	2.3698429	20	—	—
501574 2014 OO_{195}	18.2	X	301.34169	187.21007	147.76927	6.66249	0.1909216	0.31008368	2.1618063	20	6 10.6	20.2
501575 2014 OB_{232}	19.7	X	332.10032	78.13752	287.68870	1.44118	0.2176967	0.33526589	2.0521533	20	11 8.1	20.3
501576 2014 OA_{296}	18.3	X	304.20780	113.57704	199.08046	0.79928	0.1628651	0.30188437	2.2007749	20	5 15.0	20.3
501577 2014 OG_{296}	18.0	X	279.99396	149.06889	135.60999	3.96652	0.1898597	0.28037092	2.3119622	20	2 29.8	21.3
501578 2014 OX_{296}	18.1	X	275.22815	252.02175	98.19916	4.18964	0.1653714	0.30101132	2.2050283	20	5 26.9	20.7
501579 2014 OE_{366}	18.4	X	342.86404	280.59181	128.35922	22.35569	0.0831038	0.37443987	1.9064028	20	—	—
501580 2014 OZ_{390}	18.6	X	187.52895	184.64595	330.76492	17.21752	0.0660519	0.35577727	1.9725011	20	10 10.1	21.2
501581 2014 OB_{394}	6.1	X	354.57459	9.60344	8.08634	20.71210	0.2516304	0.00307663	46.8186403	20	10 1.8	21.5
501582 2014 PN_{21}	18.5	X	302.45496	160.74052	138.21516	5.87926	0.2142258	0.30512919	2.1851447	20	4 14.2	20.9
501583 2014 QS_{2}	18.2	X	251.43997	308.94143	164.72327	23.06041	0.0877607	0.36055901	1.9550227	20	11 28.3	20.6
501584 2014 QZ_{21}	17.9	X	304.66891	13.08064	270.15878	5.05923	0.1864485	0.29680558	2.2258096	20	3 24.8	20.5
501585 2014 QA_{43}	11.3	X	15.24049	247.87300	118.38779	37.21478	0.5064869	0.03286316	9.6530196	20	12 12.3	19.1
501586 2014 QG_{119}	19.2	X	346.79936	330.98772	313.24101	1.05539	0.1518303	0.31646197	2.1326604	20	7 1.5	20.2
501587 2014 QE_{124}	17.9	X	296.38412	294.65266	333.83247	2.34735	0.1387560	0.28445935	2.2897562	20	3 4.4	20.6
501588 2014 QX_{136}	17.3	X	43.53893	281.16714	161.18722	5.92610	0.1847858	0.22737916	2.6584935	20	—	—
501589 2014 QY_{140}	19.3	X	309.54814	223.14252	112.31175	2.18110	0.1298095	0.31513302	2.1386519	20	7 8.7	21.1
501590 2014 QN_{141}	17.0	X	57.73504	253.28126	161.00869	22.24760	0.0631424	0.22696335	2.6617396	20	—	—
501591 2014 QF_{166}	18.1	X	310.14221	93.43410	328.07587	18.22691	0.1376609	0.35224925	1.9856498	20	12 26.7	19.9
501592 2014 QK_{166}	17.4	X	208.40409	227.87460	156.87145	23.34173	0.1801536	0.28813857	2.2702226	20	5 4.4	21.5
501593 2014 QY_{198}	17.2	X	68.92721	273.76858	187.78911	6.65404	0.1692363	0.25563053	2.4588247	20	3 3.5	19.7
501594 2014 QA_{224}	18.4	X	117.86001	200.25528	312.58234	4.77300	0.0298714	0.30967468	2.1637093	20	7 7.0	20.9
501595 2014 QO_{226}	19.5	X	328.64781	26.17090	289.15515	0.55154	0.1791844	0.31973451	2.1180833	20	7 11.2	20.2
501596 2014 QX_{237}	19.0	X	227.89514	292.77515	124.47720	2.59111	0.2064857	0.30362648	2.1923486	20	6 28.2	22.3
501597 2014 QH_{240}	18.7	X	259.98710	208.53262	152.28043	5.57073	0.0978559	0.30219179	2.1992821	20	6 1.7	21.3
501598 2014 QD_{241}	18.6	X	334.12468	176.53611	105.61544	2.41983	0.1441926	0.30717597	2.1754272	20	5 27.9	20.2
501599 2014 QA_{300}	18.0	X	281.38196	145.77203	127.27554	4.95779	0.1712908	0.27811714	2.3244358	20	2 18.7	21.3
501600 2014 QT_{300}	18.1	X	321.53461	179.53479	112.50523	4.27919	0.1650947	0.30527946	2.1844276	20	5 15.4	19.9

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501601 2014 QV_{306}	18.4	X	335.47547	287.99331	356.31273	4.65908	0.1838416	0.30847499	2.1693156	20	5 27.7	19.9
501602 2014 QS_{322}	18.0	X	252.86304	187.07090	121.07402	2.14623	0.1952211	0.27606019	2.3359679	20	3 3.2	21.4
501603 2014 QT_{328}	18.3	X	293.89208	326.30694	31.97278	5.21357	0.1483979	0.30961526	2.1639861	20	7 13.7	20.3
501604 2014 QQ_{336}	17.9	X	230.28837	233.14351	133.86449	4.49867	0.2432613	0.28636886	2.2795661	20	4 23.9	21.6
501605 2014 QU_{357}	17.5	X	89.69755	102.40079	18.61101	5.81175	0.0986348	0.26694516	2.3888453	20	4 20.6	20.5
501606 2014 QC_{369}	18.6	X	286.25498	216.02657	139.23528	5.78724	0.2348503	0.30971853	2.1635051	20	6 8.2	21.0
501607 2014 QL_{382}	18.3	X	254.44487	145.87117	182.08298	4.59287	0.1922127	0.28643923	2.2791927	20	3 29.1	21.7
501608 2014 QU_{390}	18.1	X	251.30352	130.60142	358.70900	20.18116	0.0619733	0.36702604	1.9319897	20	12 25.8	20.4
501609 2014 QU_{403}	17.9	X	288.69974	40.04412	251.67046	5.47748	0.2335113	0.29139106	2.2532977	20	3 9.4	21.2
501610 2014 QG_{417}	17.1	X	206.67582	77.94850	196.04179	14.28652	0.0635213	0.23334494	2.6129862	20	—	—
501611 2014 QW_{438}	17.5	X	97.43516	15.39881	110.43030	6.04175	0.0625775	0.25788152	2.4444954	20	5 6.1	20.6
501612 2014 RE	17.8	X	234.72642	186.63943	226.79972	6.03857	0.3447411	0.29243225	2.2479460	20	6 17.1	21.7
501613 2014 RV_{30}	18.1	X	343.52624	219.71860	204.58771	19.57754	0.0825348	0.37087615	1.9185956	20	—	—
501614 2014 RP_{41}	17.9	X	232.03842	197.86678	152.93473	7.74464	0.1367854	0.28242348	2.3007469	20	4 12.3	21.3
501615 2014 SQ_{36}	18.7	X	233.04738	272.60420	142.19024	3.79477	0.1305685	0.30691249	2.1766721	20	7 9.0	21.6
501616 2014 SN_{48}	18.1	X	263.21285	244.08040	40.20976	6.07072	0.0943203	0.27372981	2.3492072	20	2 24.3	21.3
501617 2014 SL_{58}	18.5	X	23.42683	112.67810	114.70580	6.07130	0.0729102	0.29940215	2.2129220	20	6 8.4	20.7
501618 2014 SL_{93}	18.4	X	330.65376	321.79846	330.87813	4.75097	0.1745197	0.30724404	2.1751059	20	6 1.8	19.9
501619 2014 SQ_{96}	19.3	X	349.75014	332.58128	340.93008	2.49036	0.0556230	0.31974198	2.1180504	20	8 26.5	21.2
501620 2014 SF_{143}	17.7	X	211.79596	236.20265	284.09551	17.06673	0.0584197	0.35305143	1.9826409	20	12 2.9	19.9
501621 2014 SG_{144}	18.5	X	349.19547	139.62873	133.44057	3.78228	0.2441666	0.30914004	2.1662033	20	6 12.2	19.0
501622 2014 SU_{147}	18.1	X	260.46900	104.94336	217.55696	4.34186	0.1923369	0.28642163	2.2792861	20	3 26.7	21.4
501623 2014 SD_{156}	17.8	X	337.72343	247.46896	2.92568	5.95020	0.1108437	0.28163627	2.3050322	20	4 16.0	20.0
501624 2014 SG_{157}	18.7	X	223.93095	192.65192	217.57125	4.18566	0.1333584	0.29445197	2.2376547	20	6 20.9	21.7
501625 2014 SZ_{164}	18.1	X	306.57045	151.65982	156.43468	5.05771	0.1842523	0.29786525	2.2205275	20	5 9.9	20.4
501626 2014 SZ_{171}	18.7	X	135.87169	21.01346	134.62049	1.92521	0.0618835	0.31231115	2.1515150	20	8 7.9	21.4
501627 2014 SD_{206}	18.0	X	304.26758	319.12639	355.34907	6.08861	0.1815377	0.30167586	2.2017889	20	5 11.9	20.2
501628 2014 SU_{206}	18.4	X	307.08963	158.44995	171.79766	4.59646	0.1520133	0.29699109	2.2248826	20	6 20.0	20.4
501629 2014 SA_{208}	17.1	X	99.56302	331.06235	130.48234	6.27495	0.1611509	0.24355028	2.5394731	20	4 21.9	20.6
501630 2014 SD_{208}	18.1	X	290.02812	196.02388	150.08760	5.10110	0.1665114	0.29520623	2.2338416	20	6 12.2	20.4
501631 2014 SS_{208}	17.3	X	259.34970	226.92008	129.82832	6.39390	0.1382371	0.28371400	2.2937647	20	5 20.9	20.5
501632 2014 SZ_{208}	17.9	X	264.70889	243.77963	114.16023	7.14855	0.1540247	0.28834036	2.2691634	20	5 26.8	20.9
501633 2014 SZ_{209}	16.8	X	127.24731	245.01276	130.06204	7.25358	0.0391907	0.22211356	2.7003455	20	1 17.6	20.5
501634 2014 SH_{213}	17.8	X	205.63311	284.71014	69.58871	16.32930	0.2508044	0.25945389	2.4346092	20	3 27.9	22.4
501635 2014 SC_{214}	17.0	X	112.03672	264.75301	125.86517	7.90010	0.1081992	0.22103573	2.7091168	20	1 28.6	20.7
501636 2014 SM_{214}	18.0	X	292.19790	191.96940	143.36908	5.42860	0.1738871	0.29097778	2.2554307	20	5 29.5	20.6
501637 2014 SZ_{215}	17.5	X	109.74045	351.81132	121.04859	8.64704	0.1411658	0.25106591	2.4885376	20	5 16.5	21.1
501638 2014 SD_{216}	17.8	X	288.61098	193.41073	164.11481	7.31366	0.2319748	0.29929566	2.2134469	20	6 15.5	20.3
501639 2014 SE_{216}	17.2	X	237.86818	268.73633	121.46106	7.29905	0.1219449	0.28255209	2.3000487	20	6 11.3	20.3
501640 2014 SK_{216}	17.4	X	342.10509	220.79247	107.57113	9.04097	0.0739270	0.30436343	2.1888084	20	9 8.3	19.6
501641 2014 SR_{216}	16.5	X	112.49182	246.17933	143.74020	7.23324	0.0762043	0.21861926	2.7290433	20	1 23.4	20.1
501642 2014 SD_{217}	17.6	X	317.83316	198.73425	124.19288	7.17942	0.1976543	0.29585254	2.2305871	20	6 22.7	19.2
501643 2014 SZ_{217}	17.9	X	254.26801	216.95878	188.33919	5.93595	0.0303885	0.29976228	2.2111493	20	8 7.8	20.6
501644 2014 SB_{219}	17.7	X	181.65436	304.49720	123.81552	7.33098	0.0870396	0.26986023	2.3716110	20	6 1.4	21.1
501645 2014 SJ_{221}	17.8	X	266.17650	234.79957	116.33006	7.91587	0.1558585	0.29176880	2.2513524	20	5 19.5	20.8
501646 2014 SC_{223}	18.3	X	307.72334	291.00385	40.26072	8.55883	0.2668480	0.30766860	2.1731044	20	5 29.9	20.3
501647 2014 SD_{224}	22.3	X	75.39868	277.11538	286.44160	4.54844	0.3310770	1.01937098	0.9777951	20	12 19.6	17.4
501648 2014 SB_{227}	17.4	X	280.85555	173.02073	101.47137	3.35929	0.1882204	0.26916379	2.3757001	20	2 19.3	20.8
501649 2014 SS_{233}	17.4	X	142.82832	347.69078	129.82290	4.26961	0.0923434	0.28549830	2.2841978	20	6 23.2	20.4
501650 2014 SA_{271}	18.9	X	347.05487	101.82511	182.84083	0.57634	0.1551871	0.31121698	2.1565549	20	7 2.3	20.0
501651 2014 SZ_{281}	17.3	X	100.03637	339.44207	171.89229	6.11651	0.0318133	0.28055611	2.3109448	20	6 8.4	20.2
501652 2014 SA_{293}	17.6	X	306.49433	339.54308	33.89939	3.92977	0.1872557	0.31515090	2.1385710	20	9 2.5	18.7
501653 2014 SO_{297}	18.5	X	177.91123	253.95066	192.94320	3.52286	0.1836069	0.28994132	2.2608026	20	6 20.8	22.0
501654 2014 SD_{299}	17.4	X	168.52152	236.10611	241.54819	5.55156	0.0976877	0.29379446	2.2409920	20	7 22.4	20.5
501655 2014 SS_{300}	17.9	X	136.56964	75.15350	3.64695	6.07105	0.1052819	0.26048626	2.4281723	20	4 23.1	21.3
501656 2014 SG_{305}	18.5	X	273.35083	177.22315	204.67313	6.96100	0.1862274	0.30853307	2.1690434	20	7 6.0	21.0
501657 2014 SU_{319}	18.8	X	310.80310	312.20528	10.56094	4.57215	0.1988725	0.30536071	2.1840401	20	6 5.4	20.6
501658 2014 SA_{333}	18.3	X	257.51214	74.99795	234.71871	1.54609	0.1878486	0.27586664	2.3370604	20	3 8.8	21.9
501659 2014 SC_{335}	17.5	X	353.97378	103.53521	125.42501	7.06853	0.0914026	0.27479825	2.3431139	20	4 20.9	20.0
501660 2014 SJ_{336}	18.4	X	319.38676	123.71067	180.86258	7.79851	0.2024292	0.30257978	2.1974017	20	5 25.7	20.2
501661 2014 ST_{336}	18.2	X	156.55418	300.61475	145.09295	3.30112	0.1375617	0.27391354	2.3481566	20	5 28.9	21.7
501662 2014 SZ_{337}	18.5	X	326.20997	170.44910	169.26787	5.42842	0.1597538	0.31556821	2.1366853	20	8 20.9	19.6
501663 2014 SF_{338}	18.5	X	335.95302	187.25774	124.12560	3.38025	0.1932620	0.31183915	2.1536855	20	7 22.4	19.2
501664 2014 SK_{339}	18.1	X	297.16959	210.59001	110.20616	3.89450	0.2337620	0.29733351	2.2231741	20	5 4.7	20.5
501665 2014 SD_{343}	19.0	X	306.84883	66.62006	281.20542	0.57124	0.2470219	0.31456375	2.1412314	20	7 2.6	20.1
501666 2014 SJ_{348}	18.6	X	217.73291	274.12297	130.85438	4.29133	0.1158632	0.28650933	2.2788209	20	6 8.5	21.9
501667 2014 TG_{4}	18.2	X	216.98901	11.30351	46.24105	5.07311	0.1552013	0.29313828	2.2443351	20	6 21.2	21.4
501668 2014 TB_{6}	17.7	X	160.92387	89.51212	37.70802	7.64841	0.0891636	0.29460872	2.2368609	20	7 31.5	20.9
501669 2014 TB_{14}	17.8	X	144.67231	229.07720	226.30620	6.29781	0.1443594	0.27206473	2.3587824	20	5 29.5	21.3
501670 2014 TE_{16}	18.4	X	219.29522	213.81032	227.83447	4.29188	0.1990471	0.30066095	2.2067410	20	7 22.2	21.6
501671 2014 TT_{19}	17.8	X	160.42198	40.15221	33.55208	3.57058	0.1573050	0.27073087	2.3665237	20	5 16.6	21.4
501672 2014 TT_{22}	17.5	X	152.04917	264.00755	180.61243	6.06134	0.0872865	0.27162221	2.3613436	20	5 20.3	20.9
501673 2014 TD_{28}	17.7	X	70.56201	158.81354	51.06607	7.26344	0.0374655	0.29709909	2.2243434	20	7 25.4	20.3
501674 2014 TU_{28}	18.6	X	296.69049	296.02916	72.28515	4.43789	0.1774897	0.31199147	2.1529845	20	7 31.6	20.2
501675 2014 TS_{29}	17.6	X	148.92954	28.18836	53.38849	2.27094	0.1488536	0.26604777	2.3942140	20	5 15.5	21.1
501676 2014 TA_{35}	18.2	X	20.26344	142.35225	204.64094	20.94497	0.0926578	0.35142959	1.9887361	20	12 19.4	20.8
501677 2014 TG_{42}	18.2	X	247.59531	337.31077	55.59317	2.90241	0.1129737	0.29587909	2.2304536	20	6 28.5	21.0
501678 2014 TB_{45}	18.8	X	244.02025	3.40830	28.13491	0.66996	0.2324422	0.29457278	2.2370429	20	6 6.8	22.1
501679 2014 TX_{45}	17.9	X	193.28390	324.74426	91.68022	1.68459	0.2006394	0.27512728	2.3412454	20	5 25.7	21.6
501680 2014 TE_{47}	17.4	X	95.34344	310.58577	219.13835	6.03540	0.0642431	0.28530451	2.2852320	20	7 2.4	20.2

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501681 2014 TF_{48}	18.7	X	238.25828	86.08456	309.89772	1.29140	0.2295956	0.29282776	2.2459214	20	6 7.2	22.1
501682 2014 TG_{48}	17.6	X	118.81371	85.93693	18.69788	6.21611	0.0669017	0.26438873	2.4042194	20	5 1.9	20.6
501683 2014 TY_{53}	17.8	X	229.11743	200.03299	188.85642	6.18862	0.1161691	0.28068984	2.3102107	20	5 30.7	21.1
501684 2014 TO_{54}	18.5	X	217.27220	206.46151	188.47740	6.42674	0.1420174	0.27764165	2.3270889	20	5 23.9	21.9
501685 2014 TV_{54}	18.0	X	246.07237	226.32435	155.41610	4.76610	0.1341967	0.28619447	2.2804920	20	6 7.8	21.1
501686 2014 TQ_{58}	16.8	X	112.89845	163.81113	229.32597	15.49706	0.0426229	0.22946356	2.6423696	20	1 17.4	20.7
501687 2014 TM_{60}	18.7	X	220.33906	187.76936	221.58805	3.60313	0.1098255	0.29089201	2.2558741	20	6 17.7	21.8
501688 2014 TB_{65}	17.8	X	298.35622	298.51914	43.98321	5.37618	0.1791328	0.30845029	2.1694314	20	6 18.3	19.9
501689 2014 TL_{69}	18.2	X	282.10752	325.42968	68.82844	4.19830	0.0771894	0.31030244	2.1607901	20	9 2.7	20.3
501690 2014 TD_{74}	17.9	X	184.10593	280.00025	166.67789	5.24482	0.1143437	0.28277902	2.2988180	20	6 27.5	21.3
501691 2014 TJ_{74}	17.8	X	313.99925	233.37298	79.20461	7.74379	0.2524327	0.29884463	2.2156734	20	5 17.5	19.6
501692 2014 UW	17.8	X	214.53000	282.82961	129.91623	3.26900	0.2523515	0.27971256	2.3155886	20	6 6.4	21.7
501693 2014 UW_{1}	18.2	X	219.78760	229.66001	175.50202	5.45497	0.0899421	0.28176925	2.3043069	20	6 13.3	21.3
501694 2014 UB_{4}	18.0	X	269.69393	213.41281	169.18224	4.45574	0.1615007	0.29951273	2.2123773	20	7 6.1	20.6
501695 2014 UC_{4}	17.1	X	321.96136	166.53632	96.54473	6.81168	0.2147265	0.26862991	2.3788468	20	3 28.1	19.7
501696 2014 UA_{5}	18.3	X	273.31941	239.71581	102.20381	3.54060	0.2169498	0.28612137	2.2808804	20	5 5.6	21.3
501697 2014 UQ_{6}	18.4	X	260.55313	299.40587	91.45692	5.21748	0.1618860	0.29725479	2.2235666	20	7 5.6	21.0
501698 2014 UE_{7}	18.2	X	239.65614	252.91149	139.88973	2.48273	0.1248133	0.28628671	2.2800022	20	6 16.2	21.2
501699 2014 UN_{9}	16.7	X	32.70156	215.48340	230.71725	18.00785	0.1316312	0.20631699	2.8364778	20	—	—
501700 2014 UL_{10}	18.5	X	271.32552	264.24823	109.66119	4.54140	0.1966562	0.29760027	2.2218454	20	6 19.9	21.3
501701 2014 UC_{11}	18.3	X	187.94334	171.63768	259.76160	6.27011	0.0867094	0.28305570	2.2973197	20	6 11.7	21.3
501702 2014 UD_{12}	17.9	X	156.32598	217.84514	273.18011	4.03062	0.1167260	0.29301916	2.2449433	20	7 27.9	21.2
501703 2014 UA_{13}	17.8	X	305.17856	301.47675	353.82794	4.75337	0.1707369	0.28417360	2.2912909	20	4 17.6	20.4
501704 2014 UK_{13}	18.0	X	157.70381	87.09646	16.23660	7.47489	0.0553837	0.28131272	2.3067993	20	6 18.9	21.2
501705 2014 UG_{18}	17.6	X	178.40532	120.07473	234.90663	1.38882	0.1095846	0.24546913	2.5262217	20	2 23.1	21.3
501706 2014 UV_{21}	17.9	X	110.08827	53.95499	89.68021	7.07313	0.0412941	0.27169187	2.3609400	20	6 12.2	20.7
501707 2014 UL_{22}	16.6	X	153.36552	212.54839	121.99598	6.78542	0.0500784	0.21367100	2.7710157	20	1 1.7	20.6
501708 2014 UW_{22}	17.8	X	296.31230	256.75124	70.47572	7.76605	0.1370097	0.28569453	2.2831517	20	5 29.2	20.3
501709 2014 UF_{23}	17.0	X	152.54972	187.27584	184.84804	6.60449	0.0813222	0.23810233	2.5780635	20	2 14.5	20.7
501710 2014 UY_{23}	18.3	X	298.71564	234.77484	113.24437	4.59294	0.2146933	0.30490300	2.1862253	20	6 21.5	20.0
501711 2014 UB_{25}	17.9	X	280.71942	307.19055	67.48949	7.07318	0.1215411	0.29835727	2.2180856	20	7 20.7	20.2
501712 2014 UP_{27}	18.0	X	205.00696	289.40018	128.30204	4.21658	0.0958139	0.27940166	2.3173061	20	6 12.6	21.2
501713 2014 UH_{28}	17.7	X	274.63167	283.57603	44.58492	12.41830	0.2151053	0.28108017	2.3080714	20	4 19.7	20.9
501714 2014 UT_{37}	17.5	X	58.76348	77.81506	88.48695	3.53046	0.1365701	0.26587610	2.3952445	20	5 16.5	20.0
501715 2014 UG_{39}	18.4	X	216.11813	242.41012	178.34060	3.91413	0.1299040	0.29328535	2.2435847	20	6 26.8	21.6
501716 2014 UN_{40}	17.3	X	274.02841	125.36503	242.12752	9.29071	0.1367744	0.29435469	2.2381477	20	6 23.7	19.9
501717 2014 US_{41}	17.5	X	140.59850	239.73969	232.81726	4.11978	0.2230781	0.26424920	2.4050656	20	6 21.4	21.3
501718 2014 UL_{42}	18.6	X	261.75371	158.99924	219.44912	3.92931	0.1777913	0.29293159	2.2453907	20	6 16.3	21.4
501719 2014 UX_{42}	17.6	X	125.08964	179.59425	301.76785	4.59069	0.1771611	0.26960893	2.3730845	20	6 15.1	21.1
501720 2014 UT_{43}	16.2	X	3.41546	230.31484	235.17003	14.15874	0.1141002	0.20403404	2.8575969	20	—	—
501721 2014 UC_{48}	18.1	X	296.84901	200.16614	109.13155	5.42543	0.1076559	0.27799861	2.3250964	20	5 10.3	20.9
501722 2014 UW_{48}	18.5	X	290.70880	352.30292	30.59795	3.88037	0.0953191	0.31337213	2.1466561	20	8 28.1	20.5
501723 2014 UJ_{50}	17.8	X	251.54848	125.68022	239.09210	5.87250	0.1415963	0.28130192	2.3068583	20	5 20.0	21.0
501724 2014 UG_{51}	18.6	X	310.63602	130.76956	220.10727	4.93200	0.1967670	0.30820378	2.1705881	20	7 25.0	20.1
501725 2014 UC_{54}	16.3	X	282.28619	210.28046	44.92332	16.60742	0.1343919	0.24250844	2.5467412	20	2 12.5	20.3
501726 2014 UH_{54}	18.6	X	190.45315	52.42557	34.62769	1.97469	0.1812074	0.28346330	2.2951170	20	7 2.9	22.1
501727 2014 UF_{55}	18.2	X	161.93419	336.06982	127.01942	4.75811	0.1064605	0.28020901	2.3128528	20	6 25.7	21.5
501728 2014 UB_{68}	18.1	X	219.26683	252.16362	173.16118	4.35765	0.1236299	0.29538633	2.2329335	20	7 7.3	21.2
501729 2014 UD_{78}	17.7	X	127.58216	252.96431	228.30191	2.35888	0.1799329	0.27174932	2.3606073	20	6 17.8	21.3
501730 2014 UG_{82}	17.8	X	127.03824	234.13485	231.00138	3.34857	0.1306825	0.26646210	2.3917315	20	5 21.9	21.0
501731 2014 UG_{84}	18.3	X	291.78877	276.13919	56.96387	2.13570	0.2666346	0.29569661	2.2313712	20	5 7.8	20.9
501732 2014 UZ_{84}	17.4	X	28.74199	340.82990	230.39916	6.52716	0.0590791	0.26661604	2.3908107	20	5 21.8	19.8
501733 2014 UC_{87}	16.8	X	223.13592	236.12447	35.72270	9.94631	0.1806997	0.23695369	2.5863884	20	—	—
501734 2014 UO_{90}	17.4	X	18.24496	132.69363	75.19041	7.13679	0.0690525	0.26354633	2.4093399	20	5 1.8	20.0
501735 2014 UX_{91}	17.6	X	145.50417	250.11291	223.43780	6.54853	0.0319455	0.28659522	2.2783656	20	6 16.5	20.5
501736 2014 UU_{93}	18.5	X	186.64221	230.74354	214.45141	4.92746	0.1910366	0.28010655	2.3134167	20	6 26.0	22.2
501737 2014 UN_{95}	17.7	X	189.24643	267.26301	142.16115	1.41446	0.1829494	0.27207805	2.3587055	20	5 13.5	21.4
501738 2014 UF_{96}	18.4	X	10.65193	226.11816	65.17619	4.31698	0.1586690	0.31312928	2.1477658	20	9 14.2	20.1
501739 2014 UM_{96}	18.3	X	312.45607	282.27740	60.14877	4.02287	0.1538848	0.30786344	2.1721875	20	7 24.3	19.8
501740 2014 UV_{98}	17.0	X	75.74026	277.29655	145.13517	5.62427	0.0524302	0.22037225	2.7145517	20	1 12.6	20.4
501741 2014 UF_{106}	18.2	X	179.42749	178.80778	249.85013	3.34872	0.0670292	0.27481865	2.3429980	20	5 28.8	21.4
501742 2014 UN_{112}	18.1	X	279.44694	249.05092	118.96596	4.99277	0.1679107	0.30556015	2.1830896	20	6 28.5	20.5
501743 2014 UM_{116}	18.2	X	312.98583	23.30834	285.54130	5.57761	0.2581220	0.29644082	2.2276351	20	5 4.5	20.3
501744 2014 UZ_{118}	18.0	X	146.93978	137.84821	306.60305	1.08090	0.1101999	0.26595133	2.3947928	20	5 14.2	21.3
501745 2014 UB_{124}	17.7	X	99.89894	235.17593	304.48153	6.77661	0.0608826	0.29361551	2.2419025	20	7 24.4	20.3
501746 2014 UL_{129}	17.5	X	67.18199	312.68978	232.61205	8.47273	0.0884320	0.27906602	2.3191637	20	6 18.4	20.2
501747 2014 UM_{134}	18.5	X	273.77614	345.43927	336.61842	2.42215	0.1833809	0.28026745	2.3125312	20	4 11.4	21.5
501748 2014 UT_{134}	17.9	X	335.95727	346.66907	342.75838	1.61510	0.1897799	0.31407805	2.1434383	20	8 28.9	18.9
501749 2014 UD_{135}	18.1	X	264.86385	52.76768	350.00053	1.63286	0.0920776	0.30477198	2.1868518	20	8 12.5	20.3
501750 2014 UU_{135}	17.8	X	89.92203	126.77413	37.81849	5.46711	0.0965826	0.27372695	2.3492236	20	6 22.7	20.7
501751 2014 UJ_{136}	18.3	X	204.11989	5.74468	38.07372	6.20802	0.1348016	0.27582767	2.3372805	20	5 20.4	21.9
501752 2014 UT_{138}	17.8	X	97.59642	162.95505	305.82510	3.86325	0.0541878	0.25627425	2.4547055	20	4 6.7	21.0
501753 2014 UJ_{140}	17.6	X	123.91767	239.68297	248.30852	6.31541	0.0542063	0.27811900	2.3244254	20	6 10.3	20.4
501754 2014 UE_{148}	17.4	X	95.44105	263.39561	219.77694	5.58759	0.1011555	0.25626479	2.4547659	20	5 3.4	20.4
501755 2014 UB_{154}	18.0	X	263.91129	236.46706	134.06800	4.69528	0.1700442	0.29849078	2.2174241	20	6 9.5	20.9
501756 2014 UU_{154}	18.3	X	314.05867	231.82784	73.58177	6.43104	0.1406024	0.29596643	2.2300148	20	5 25.9	20.3
501757 2014 UB_{157}	18.2	X	319.01671	14.27909	343.25536	1.60538	0.1269708	0.31075664	2.1586842	20	9 6.5	19.8
501758 2014 UL_{159}	17.7	X	157.02637	353.14541	99.69017	6.93057	0.0809572	0.27441725	2.3452822	20	6 5.4	20.9
501759 2014 UW_{161}	17.6	X	113.80665	258.17237	215.20504	3.98054	0.1454132	0.25954528	2.4340376	20	5 19.9	21.0
501760 2014 UE_{171}	17.7	X	292.89942	223.16796	139.87232	3.19589	0.0187013	0.29656959	2.2269902	20	8 6.6	20.2

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501761 2014 UN_{171}	18.0	X	296.96754	194.54917	159.28918	4.62930	0.1489602	0.30017281	2.2091327	20	7 9.4	20.2
501762 2014 UC_{172}	18.2	X	258.42281	218.99981	159.81307	7.38939	0.1537581	0.29402837	2.2398034	20	6 16.6	21.2
501763 2014 UP_{172}	18.2	X	278.38863	218.14083	158.00275	6.48109	0.1768302	0.30350485	2.1929343	20	7 7.2	20.6
501764 2014 UX_{173}	17.6	X	236.06319	235.05522	112.88628	6.26825	0.2710106	0.27638981	2.3341102	20	4 4.8	21.6
501765 2014 UY_{179}	18.1	X	325.45626	245.26820	63.76693	6.43345	0.1588282	0.30145252	2.2028763	20	6 21.9	19.6
501766 2014 UT_{181}	17.6	X	283.96295	305.80985	59.10992	6.34922	0.0666182	0.29922880	2.2137766	20	7 20.6	20.0
501767 2014 UA_{184}	18.4	X	316.35394	242.21198	62.70338	3.07923	0.2644201	0.29870360	2.2163708	20	5 6.0	20.1
501768 2014 UQ_{190}	18.7	X	212.31918	128.84376	286.78521	4.92916	0.1260720	0.28854690	2.2680804	20	6 15.8	21.9
501769 2014 UP_{200}	18.3	X	197.02806	171.96022	254.79948	2.54600	0.1982942	0.28043844	2.3115911	20	6 11.4	21.8
501770 2014 UO_{201}	17.8	X	335.51339	220.50991	87.19083	4.46870	0.1371281	0.30683263	2.1770498	20	7 17.1	19.3
501771 2014 UQ_{204}	17.9	X	303.77261	157.82000	172.94451	5.24647	0.2513352	0.29888869	2.2154557	20	5 27.4	20.0
501772 2014 UT_{206}	17.9	X	227.13940	57.39799	339.80639	6.65733	0.1439337	0.28424676	2.2908977	20	6 4.3	21.3
501773 2014 UY_{206}	17.1	X	148.68207	23.65857	125.46635	5.88609	0.0536137	0.29733555	2.2231639	20	8 14.1	19.8
501774 2014 UG_{207}	17.9	X	280.56944	259.01431	73.67670	8.10691	0.1112661	0.28912735	2.2650438	20	5 18.3	20.6
501775 2014 UG_{210}	18.2	X	316.90898	216.07146	74.63047	6.32649	0.1604962	0.28608718	2.2810622	20	5 5.9	20.3
501776 2014 VH_{4}	18.6	X	245.61609	17.54500	16.71137	7.13443	0.1774526	0.29644299	2.2276242	20	6 18.5	21.8
501777 2014 VF_{5}	17.7	X	289.86520	231.54730	106.66305	6.43454	0.1278592	0.30303065	2.1952215	20	6 6.9	20.0
501778 2014 VA_{6}	18.1	X	268.48478	334.50672	68.13783	6.72370	0.1765178	0.31022733	2.1611389	20	8 5.5	20.4
501779 2014 VB_{10}	17.3	X	201.51999	120.80354	323.14399	22.49714	0.2555294	0.28053502	2.3110606	20	7 10.7	21.5
501780 2014 VY_{10}	17.6	X	293.06245	61.77672	278.48655	5.71637	0.1328977	0.29091465	2.2557571	20	6 13.6	19.8
501781 2014 VB_{11}	18.3	X	228.78901	35.80276	344.86635	3.28014	0.1829871	0.27763496	2.3271262	20	5 11.4	21.8
501782 2014 VV_{14}	18.2	X	169.92846	358.07129	74.66462	2.19370	0.1484604	0.26748769	2.3856140	20	5 25.1	21.8
501783 2014 VL_{16}	19.0	X	230.68955	60.52523	3.47199	2.89877	0.1926708	0.29131878	2.2536704	20	7 12.1	22.1
501784 2014 VO_{17}	17.9	X	143.78626	267.32022	199.64934	5.21814	0.1995253	0.26924496	2.3752226	20	6 16.0	21.7
501785 2014 VR_{18}	17.9	X	180.52960	236.22011	213.85795	5.40833	0.0564732	0.29367513	2.2415990	20	6 29.5	20.9
501786 2014 VQ_{21}	18.4	X	193.22670	224.45588	215.19196	6.36855	0.0820356	0.28203524	2.3028578	20	6 29.0	21.7
501787 2014 VV_{21}	18.2	X	215.44501	218.80948	176.97138	2.65850	0.1837011	0.27673691	2.3321581	20	5 20.1	21.9
501788 2014 VK_{22}	18.7	X	163.98476	234.18341	201.64366	1.08435	0.1611993	0.26459127	2.4029923	20	5 23.8	22.3
501789 2014 VZ_{23}	17.9	X	351.44002	163.39039	166.36759	3.04276	0.1743170	0.31635570	2.1331379	20	10 9.8	19.1
501790 2014 VB_{25}	18.7	X	256.20190	333.88312	73.87712	3.62721	0.1263019	0.29832565	2.2182423	20	7 31.7	21.1
501791 2014 VV_{28}	17.4	X	307.77717	251.12562	42.19664	3.55248	0.1729514	0.27631162	2.3345506	20	4 21.0	19.7
501792 2014 VO_{30}	17.5	X	211.84496	232.30275	68.29050	4.03149	0.1702344	0.23212707	2.6221177	20	1 23.6	21.7
501793 2014 VV_{30}	18.5	X	239.63980	217.60023	187.14339	1.87252	0.1896711	0.29104344	2.2550915	20	6 24.9	21.6
501794 2014 VZ_{30}	16.6	X	326.72274	343.51595	233.34608	12.74402	0.1788697	0.23148995	2.6269267	20	2 2.1	20.1
501795 2014 VG_{31}	18.8	X	284.20951	301.55295	86.72907	4.52201	0.1653000	0.30650777	2.1785877	20	8 10.9	20.7
501796 2014 VH_{35}	17.3	X	148.78173	95.36768	64.92222	6.67033	0.0775930	0.30053850	2.2073404	20	9 3.1	20.3
501797 2014 VJ_{36}	17.6	X	84.01682	312.05354	216.49729	6.34828	0.0416960	0.27449906	2.3448162	20	6 11.3	20.4
501798 2014 VN_{36}	18.2	X	134.97178	70.60636	68.13195	5.95017	0.0840039	0.28225404	2.3016676	20	7 13.5	21.3
501799 2014 WV_{11}	17.8	X	191.03410	169.31163	257.92776	2.05373	0.1491580	0.27874254	2.3209576	20	6 7.7	21.4
501800 2014 WE_{24}	17.9	X	207.91220	126.87220	277.07539	6.58426	0.1736499	0.27401027	2.3476039	20	5 22.8	21.5
501801 2014 WU_{24}	18.7	X	210.88392	159.99308	245.27119	0.93734	0.1429707	0.27853800	2.3220937	20	5 29.9	22.2
501802 2014 WB_{25}	18.1	X	292.79256	301.28072	52.10847	5.84088	0.1757264	0.30015751	2.2092078	20	6 26.4	20.3
501803 2014 WA_{34}	17.7	X	128.75439	157.67041	310.00666	1.65042	0.1728070	0.26429809	2.4047690	20	5 30.9	21.4
501804 2014 WL_{37}	17.4	X	53.36231	346.97014	257.87970	4.87509	0.0460452	0.30163095	2.2020074	20	8 18.5	20.0
501805 2014 WM_{46}	17.5	X	105.74412	246.16409	240.29114	6.88983	0.1024548	0.25789287	2.4444238	20	5 21.7	20.5
501806 2014 WV_{49}	17.5	X	340.78037	191.26622	85.65291	8.70360	0.1296677	0.27948228	2.3168604	20	6 4.3	19.4
501807 2014 WV_{50}	17.9	X	220.49344	340.79884	48.18294	2.96360	0.2128950	0.27672709	2.3322133	20	5 13.6	21.5
501808 2014 WS_{51}	18.0	X	197.67371	185.77150	257.26677	4.29805	0.1550403	0.28344303	2.2952264	20	7 5.3	21.4
501809 2014 WD_{52}	17.3	X	125.04162	85.14438	44.10790	6.01592	0.0262778	0.27103780	2.3647368	20	6 9.4	20.4
501810 2014 WR_{53}	18.1	X	315.85269	243.79865	74.57801	5.39993	0.1700738	0.29167424	2.2518390	20	6 14.5	19.9
501811 2014 WU_{54}	17.3	X	101.71285	264.36805	206.81239	4.01937	0.2193378	0.24289533	2.5440361	20	5 12.9	20.8
501812 2014 WC_{56}	18.0	X	285.33536	284.53684	77.74179	2.99106	0.1803369	0.29690683	2.2253035	20	6 26.6	20.3
501813 2014 WH_{56}	17.1	X	63.76342	208.70711	290.09958	2.60904	0.1446112	0.24013729	2.5634783	20	4 14.9	20.0
501814 2014 WB_{59}	18.5	X	345.58018	132.54993	175.85126	3.33795	0.2116456	0.30745225	2.1741238	20	8 13.9	19.4
501815 2014 WL_{60}	18.2	X	207.23246	287.59797	117.34628	4.73919	0.1973550	0.27769379	2.3267976	20	5 24.3	21.9
501816 2014 WE_{61}	18.1	X	300.75258	206.65869	108.66665	4.87651	0.1675488	0.28822603	2.2697634	20	5 14.4	20.5
501817 2014 WV_{61}	18.0	X	292.22136	222.57348	121.86467	5.80084	0.1383611	0.29439915	2.2379224	20	6 18.2	20.4
501818 2014 WE_{66}	18.2	X	203.48237	207.71716	249.72504	2.66882	0.1254535	0.29972974	2.2113093	20	8 2.8	21.2
501819 2014 WA_{67}	18.1	X	245.44389	115.66139	280.10413	7.42211	0.1137811	0.29690581	2.2253086	20	6 29.6	21.0
501820 2014 WA_{71}	18.2	X	48.98055	158.03957	90.89510	4.85942	0.1422313	0.30070822	2.2065097	20	9 9.1	20.7
501821 2014 WB_{78}	18.5	X	191.33596	249.31946	202.29871	2.94264	0.1332316	0.28643184	2.2792319	20	7 11.3	21.7
501822 2014 WF_{78}	18.6	X	189.21427	23.21185	94.80396	2.97925	0.0766965	0.29904278	2.2146946	20	8 20.9	21.3
501823 2014 WY_{84}	17.9	X	299.90258	97.39924	198.84880	6.13309	0.1410304	0.27640684	2.3340144	20	4 18.6	20.6
501824 2014 WT_{91}	17.3	X	209.29568	179.87081	97.02374	5.52308	0.0729569	0.21567096	2.7538584	20	—	—
501825 2014 WJ_{94}	17.6	X	47.12817	161.19333	83.91088	5.00272	0.1000535	0.29521332	2.2338058	20	8 22.8	20.0
501826 2014 WX_{101}	18.2	X	266.70734	249.80860	107.38227	4.68914	0.2161132	0.29104096	2.2551043	20	5 18.9	21.3
501827 2014 WY_{104}	18.5	X	313.66045	293.83080	43.70002	5.03681	0.2322295	0.31468750	2.1406700	20	7 4.4	19.7
501828 2014 WJ_{106}	18.0	X	187.08264	20.26493	75.72170	6.97028	0.1598686	0.29041029	2.2583680	20	7 13.0	21.4
501829 2014 WV_{107}	18.3	X	283.03484	343.80679	354.93826	3.51380	0.2168333	0.29660365	2.2268197	20	5 10.7	21.2
501830 2014 WG_{109}	17.5	X	231.27432	239.17716	101.99470	6.54731	0.2047172	0.26780213	2.3837463	20	3 27.7	21.4
501831 2014 WT_{122}	18.2	X	295.90624	6.80793	356.56564	4.99738	0.1016991	0.30028795	2.2085680	20	8 2.7	20.2
501832 2014 WN_{125}	18.3	X	159.23859	151.83009	309.33982	2.33292	0.1419378	0.27031954	2.3689238	20	6 20.9	21.7
501833 2014 WP_{127}	18.0	X	289.47626	92.92038	267.91276	3.24714	0.0696123	0.29232736	2.2484837	20	7 20.3	20.2
501834 2014 WQ_{128}	18.5	X	219.13230	96.80674	335.51231	3.50494	0.1204755	0.28963712	2.2623853	20	7 18.3	21.6
501835 2014 WM_{134}	18.5	X	219.41049	209.41022	214.79963	1.56156	0.1687141	0.28782157	2.2718892	20	7 1.7	21.7
501836 2014 WJ_{135}	17.0	X	288.74079	123.38691	105.36192	5.66734	0.1180370	0.22318850	2.6916681	20	1 15.3	20.7
501837 2014 WL_{135}	17.9	X	27.61357	104.44023	154.00333	3.52565	0.0565833	0.28978294	2.2616263	20	7 31.4	20.1
501838 2014 WZ_{135}	18.3	X	164.92324	278.15278	182.48737	0.84057	0.1368966	0.27430072	2.3459464	20	6 25.9	21.8
501839 2014 WP_{137}	18.2	X	117.10769	316.39405	196.78977	0.67736	0.1147223	0.27409470	2.3471218	20	7 13.7	21.4
501840 2014 WT_{138}	16.1	X	203.17602	168.61631	66.61890	17.97509	0.1759726	0.18223570	3.0811564	20	—	—

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501841 2014 WT_{139}	17.5	X	180.94945	355.34949	71.44396	2.46616	0.1694839	0.26881282	2.3777676	20	5 28.1	21.3
501842 2014 WK_{141}	17.8	X	98.96780	263.96696	231.41018	5.71684	0.0713560	0.25860422	2.4399391	20	5 20.7	21.0
501843 2014 WF_{145}	18.6	X	251.80378	45.09777	339.45046	4.03241	0.2179635	0.29225282	2.2488660	20	6 6.7	21.8
501844 2014 WQ_{160}	17.7	X	267.02190	175.37278	105.46291	9.29348	0.0393447	0.24519155	2.5281279	20	3 6.1	21.2
501845 2014 WF_{161}	18.0	X	285.19460	201.50646	134.94076	4.51547	0.1705976	0.28379831	2.2933104	20	5 21.1	20.6
501846 2014 WH_{165}	17.1	X	59.84800	48.00580	62.74495	6.47662	0.1307604	0.22569638	2.6716916	20	3 5.1	20.2
501847 2014 WB_{184}	17.0	X	92.51291	185.83569	305.35443	14.25994	0.0866778	0.24450486	2.5328592	20	5 2.8	20.6
501848 2014 WR_{187}	18.2	X	177.17430	324.31668	107.32789	5.89548	0.0821779	0.27438047	2.3454918	20	5 31.3	21.4
501849 2014 WA_{190}	17.9	X	13.91159	43.16729	192.75288	8.09552	0.0344910	0.27256943	2.3558698	20	6 2.6	20.7
501850 2014 WG_{190}	17.8	X	239.92592	283.68015	137.01084	5.42389	0.0914437	0.29776820	2.2210100	20	7 31.9	20.3
501851 2014 WJ_{194}	17.2	X	356.44073	241.32730	306.00266	8.42916	0.0644752	0.23702585	2.5858634	20	2 24.9	20.3
501852 2014 WL_{212}	17.6	X	259.40720	29.08309	323.16568	6.32700	0.1325383	0.28124989	2.3071428	20	5 10.9	20.9
501853 2014 WS_{212}	17.1	X	280.78373	324.22532	21.57668	7.78977	0.1350835	0.28421274	2.2910805	20	5 31.3	19.8
501854 2014 WH_{214}	17.7	X	267.04998	241.79071	94.77965	3.12587	0.1225844	0.27350654	2.3504855	20	5 3.9	20.7
501855 2014 WA_{223}	18.4	X	272.88356	152.03398	237.42793	1.94978	0.1484467	0.30277916	2.1964369	20	7 24.2	20.6
501856 2014 WY_{223}	17.9	X	132.46463	240.82986	233.50148	4.08962	0.1852292	0.26323928	2.4112131	20	6 13.9	21.6
501857 2014 WU_{230}	16.2	X	34.16601	337.59720	184.25361	12.81288	0.1121898	0.21536503	2.7564657	20	3 28.1	19.3
501858 2014 WN_{234}	16.9	X	103.40669	35.59371	62.01154	13.03011	0.1414938	0.24015939	2.5633210	20	4 20.5	20.5
501859 2014 WO_{240}	18.4	X	252.60724	175.16004	178.87888	6.20563	0.1347742	0.28003987	2.3137839	20	5 8.9	21.6
501860 2014 WB_{260}	18.0	X	136.78957	342.98691	173.29741	4.06237	0.0892674	0.28762827	2.2729070	20	8 8.4	21.2
501861 2014 WD_{263}	18.5	X	208.45101	333.90797	114.01459	7.08186	0.0903015	0.29241875	2.2480152	20	7 30.5	21.3
501862 2014 WW_{269}	18.3	X	161.43492	311.18388	119.04965	5.80644	0.1299497	0.26089561	2.4256317	20	5 14.5	22.0
501863 2014 WV_{272}	18.2	X	203.57531	319.17533	105.29993	5.86648	0.2154652	0.27929254	2.3179096	20	6 13.9	21.9
501864 2014 WX_{274}	17.8	X	129.76229	319.48264	132.52097	7.28495	0.0957399	0.25367130	2.4714690	20	5 6.7	21.3
501865 2014 WT_{279}	17.9	X	198.94682	275.22268	129.55420	4.15932	0.1864055	0.27021716	2.3695221	20	5 17.1	21.7
501866 2014 WH_{283}	18.8	X	302.88865	281.76799	93.45056	5.40650	0.1621652	0.31163036	2.1546474	20	8 31.3	20.3
501867 2014 WX_{285}	16.6	X	124.32044	316.99017	112.05488	10.18985	0.0591821	0.24066121	2.5597565	20	3 28.9	20.2
501868 2014 WC_{286}	17.2	X	168.62411	333.96657	93.51454	10.71998	0.0777670	0.26265893	2.4147635	20	5 17.5	20.7
501869 2014 WV_{286}	18.1	X	189.84641	276.51640	174.41767	4.56512	0.0947105	0.28170458	2.3046596	20	7 10.2	21.3
501870 2014 WP_{296}	17.7	X	195.42200	236.27854	166.70301	7.50687	0.1502429	0.26792828	2.3829980	20	5 13.1	21.4
501871 2014 WS_{322}	17.5	X	293.60880	191.60643	96.03057	8.39726	0.1037572	0.26817123	2.3815585	20	4 8.4	20.6
501872 2014 WM_{339}	16.9	X	95.54882	324.37691	103.34697	13.43721	0.0567454	0.23237092	2.6202830	20	2 17.6	20.4
501873 2014 WA_{349}	17.8	X	222.32100	58.12377	324.85606	5.88952	0.1206222	0.27393053	2.3480595	20	5 11.4	21.2
501874 2014 WO_{349}	18.2	X	267.59116	108.93873	270.16863	6.53697	0.1323549	0.29528234	2.2334577	20	7 2.7	20.6
501875 2014 WM_{350}	17.9	X	294.49720	254.70415	88.83530	10.37540	0.2288302	0.30027376	2.2086376	20	6 4.4	20.1
501876 2014 WO_{355}	16.5	X	125.62234	230.51828	174.52291	9.38229	0.0822092	0.21177815	2.7875026	20	2 28.5	20.5
501877 2014 WH_{357}	18.1	X	176.26733	118.82505	347.89917	6.21810	0.0326109	0.29093889	2.2556318	20	7 20.8	20.9
501878 2014 WF_{365}	17.2	X	184.63756	15.14380	165.75730	17.88816	0.7632592	0.29023296	2.2592878	20	10 4.8	22.7
501879 2014 WV_{378}	17.9	X	217.50466	109.33047	283.62361	5.80173	0.1326868	0.27639438	2.3340845	20	5 19.9	21.5
501880 2014 WK_{382}	16.3	X	302.00961	219.54531	31.95307	14.88248	0.0105932	0.22771106	2.6559096	20	3 21.4	20.0
501881 2014 WG_{388}	18.4	X	216.11276	242.09698	190.25050	5.15630	0.1480604	0.28707980	2.2758011	20	7 10.4	21.7
501882 2014 WL_{397}	18.1	X	252.01585	223.72427	151.89634	8.00839	0.1934322	0.29319795	2.2440305	20	5 30.9	21.4
501883 2014 WQ_{399}	15.7	X	348.81275	249.47223	270.76858	10.13104	0.0445777	0.18608728	3.0384931	20	1 20.9	19.9
501884 2014 WY_{399}	16.2	X	160.19520	249.49316	143.67628	25.05356	0.1613420	0.21752203	2.7382129	20	4 3.7	21.0
501885 2014 WN_{407}	19.0	X	235.34780	236.31730	165.58805	2.33009	0.2210605	0.28625288	2.2801818	20	6 13.3	22.4
501886 2014 WG_{408}	18.2	X	198.18189	355.49771	60.57086	3.08429	0.1652429	0.27149453	2.3620839	20	5 30.3	22.0
501887 2014 WG_{419}	18.4	X	265.18339	261.61557	151.80593	5.03860	0.1677428	0.30318750	2.1944643	20	8 14.8	20.7
501888 2014 WB_{420}	16.6	X	107.20804	346.76117	115.41970	15.77141	0.2187824	0.23141689	2.6274795	20	5 12.9	20.8
501889 2014 WF_{421}	17.1	X	127.02750	304.39183	126.80853	13.54573	0.1536273	0.23009381	2.6375422	20	4 16.9	21.3
501890 2014 WR_{422}	16.7	X	18.88413	297.27794	214.47210	6.51068	0.2505617	0.20250672	2.8719470	20	2 14.7	19.2
501891 2014 WX_{425}	16.7	X	8.36920	193.40685	336.53460	14.07840	0.0489258	0.21781568	2.7357513	20	2 25.7	20.1
501892 2014 WZ_{427}	15.9	X	318.11817	326.69061	308.65675	12.44952	0.1143391	0.22813872	2.6525895	20	4 17.0	19.5
501893 2014 WE_{428}	16.5	X	219.02064	197.21026	155.02188	9.63592	0.1142641	0.22576905	2.6711183	20	4 5.2	20.6
501894 2014 WS_{428}	17.7	X	165.34233	94.31488	16.17537	7.84830	0.2203810	0.25375877	2.4709010	20	7 10.9	22.0
501895 2014 WX_{428}	15.9	X	301.68929	180.00548	51.81310	10.93714	0.0623691	0.18753035	3.0228853	20	2 21.6	20.3
501896 2014 WE_{429}	16.1	X	43.65126	109.86781	80.56319	10.28765	0.0407975	0.21890791	2.7266438	20	5 16.2	19.6
501897 2014 WL_{429}	16.5	X	104.87187	64.71082	43.96214	5.41565	0.1012721	0.21638946	2.7477590	20	4 27.9	20.3
501898 2014 WR_{429}	16.6	X	74.42544	133.49587	5.42286	13.69313	0.2509387	0.21390972	2.7689537	20	5 16.4	20.5
501899 2014 WM_{435}	18.8	X	247.59750	87.00238	334.52286	3.18298	0.1441342	0.30110798	2.2045564	20	8 5.7	21.4
501900 2014 WJ_{437}	17.6	X	140.00883	219.49941	284.80340	6.41873	0.0426697	0.28503449	2.2866750	20	7 23.8	20.4
501901 2014 WE_{443}	16.6	X	101.43310	170.75834	295.97935	4.84323	0.0863834	0.24516826	2.5282880	20	4 14.5	20.0
501902 2014 WG_{454}	18.2	X	233.89705	232.40149	164.43399	10.40899	0.2269175	0.28736542	2.2742928	20	6 5.9	21.9
501903 2014 WE_{463}	16.6	X	268.25871	122.53936	73.27663	11.39433	0.0391653	0.19640454	2.9311297	20	—	—
501904 2014 WV_{464}	18.3	X	234.28043	173.65855	244.11468	4.01189	0.1455117	0.29051652	2.2578175	20	7 11.7	21.2
501905 2014 WH_{467}	16.0	X	52.42277	138.95188	311.14171	9.04268	0.0780015	0.18782022	3.0197743	20	1 24.4	19.7
501906 2014 WO_{467}	16.3	X	134.13208	282.93313	133.83916	9.56946	0.1768292	0.21783013	2.7356304	20	4 7.0	20.6
501907 2014 WY_{467}	16.3	X	329.77714	200.38428	326.20791	14.43965	0.1508058	0.17673578	3.1447519	20	—	—
501908 2014 WF_{468}	16.4	X	144.15123	149.13070	318.15982	13.10591	0.1366846	0.23960273	2.5672897	20	6 12.7	20.5
501909 2014 WP_{468}	16.0	X	352.94567	45.24582	82.25199	8.30331	0.1536692	0.17227623	3.1987906	20	—	—
501910 2014 WY_{468}	16.2	X	116.70588	325.49896	124.99284	14.12045	0.0770975	0.21881839	2.7273874	20	4 21.7	20.3
501911 2014 WD_{476}	18.4	X	259.74506	200.00640	145.32955	1.80769	0.2029690	0.28072485	2.3100186	20	4 26.3	21.7
501912 2014 WU_{477}	17.6	X	123.27604	297.16318	154.62017	13.15692	0.1754284	0.23404435	2.6077779	20	5 9.4	21.8
501913 2014 WP_{478}	17.0	X	135.90678	293.61387	135.59552	22.57858	0.0555123	0.22531030	2.6747428	20	4 16.2	21.2
501914 2014 WY_{478}	15.9	X	248.38010	342.69727	277.63115	14.64613	0.1755623	0.18248709	3.0783261	20	1 11.5	21.0
501915 2014 WJ_{479}	16.4	X	202.40909	198.52776	156.62511	10.59540	0.0761363	0.21971305	2.7199786	20	3 23.5	20.4
501916 2014 WN_{479}	15.6	X	285.65587	318.31539	259.77605	9.82865	0.0923346	0.18230645	3.0803592	20	1 7.5	20.1
501917 2014 WX_{479}	15.7	X	311.02857	41.07859	143.46867	18.00853	0.1706527	0.17617200	3.1514575	20	—	—
501918 2014 WY_{479}	16.8	X	237.35061	112.71129	227.51881	5.41411	0.0638162	0.22665839	2.6641265	20	4 9.8	20.7
501919 2014 WL_{480}	15.6	X	3.01823	262.44903	237.94605	10.12828	0.0862349	0.18566799	3.0430659	20	1 12.5	19.6
501920 2014 WJ_{481}	16.9	X	98.93355	340.42718	164.99933	14.95529	0.0279643	0.24218532	2.5490059	20	5 30.7	20.6

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
501921 2014 WU_{481}	17.1	X	72.13098	299.16370	208.33584	11.03368	0.1334057	0.22604094	2.6689759	20	5 11.4	20.4
501922 2014 WA_{482}	16.9	X	97.03687	307.30412	252.19460	23.35804	0.1692567	0.28644646	2.2791544	20	8 17.5	20.9
501923 2014 WG_{485}	17.8	X	205.76909	229.26759	184.94469	4.93832	0.1493195	0.27762175	2.3272001	20	6 5.8	21.3
501924 2014 WK_{487}	16.8	X	14.04652	297.11739	255.93823	16.76896	0.1199598	0.24052182	2.5607454	20	3 25.1	20.0
501925 2014 WP_{487}	16.7	X	193.42155	295.32843	129.03818	15.10368	0.1000696	0.24413984	2.5353832	20	6 10.1	20.7
501926 2014 WH_{490}	17.0	X	77.66422	9.18622	119.17477	14.68331	0.0882415	0.24103160	2.5571335	20	4 21.7	20.6
501927 2014 WE_{494}	16.8	X	145.58091	198.86805	254.35837	8.30810	0.1296341	0.24317593	2.5420787	20	5 26.2	20.6
501928 2014 WL_{494}	17.1	X	122.13229	295.35619	152.63985	13.16364	0.1546711	0.22980220	2.6397731	20	5 1.6	21.3
501929 2014 WS_{494}	16.6	X	202.86516	115.70887	271.14025	13.36397	0.0962721	0.23868338	2.5738778	20	4 25.9	20.7
501930 2014 WT_{494}	16.7	X	119.11098	288.28437	150.71495	13.06752	0.1686323	0.22479225	2.6788506	20	4 18.6	20.8
501931 2014 WJ_{496}	16.7	X	304.26855	328.47043	218.89698	9.82203	0.1484128	0.17708079	3.1406660	20	—	—
501932 2014 WX_{504}	17.0	X	104.04951	326.08372	153.82137	13.63838	0.2151937	0.24705069	2.5154286	20	5 28.9	21.0
501933 2014 WC_{506}	18.1	X	233.20671	345.70982	68.35239	4.41049	0.1298318	0.29271295	2.2465086	20	7 8.3	21.1
501934 2014 XT_{3}	17.8	X	276.58558	14.75549	321.63098	11.03435	0.4668688	0.29057306	2.2575246	20	3 28.2	22.0
501935 2014 XO_{6}	18.6	X	315.25571	231.69996	103.63481	7.88020	0.3285538	0.30675223	2.1774302	20	6 11.9	19.7
501936 2014 XE_{13}	18.1	X	187.42916	151.10559	270.05970	0.33706	0.1707340	0.26915525	2.3757504	20	5 26.8	21.8
501937 2014 XZ_{14}	16.0	X	44.42159	267.09548	254.13552	12.69858	0.1327569	0.23781275	2.5801559	20	4 8.8	19.1
501938 2014 XB_{17}	17.6	X	277.96744	239.16606	123.12394	4.85368	0.1841089	0.29238065	2.2482104	20	6 14.4	20.2
501939 2014 XB_{29}	17.8	X	191.12294	346.52443	112.18040	10.32152	0.0417909	0.28545086	2.2844508	20	7 27.2	20.7
501940 2014 XE_{37}	17.7	X	263.50693	291.57831	91.15679	8.22651	0.1241118	0.27607012	2.3359118	20	7 2.9	20.4
501941 2014 XA_{38}	17.0	X	89.90195	183.51764	298.39833	13.96510	0.1275966	0.22968334	2.6406837	20	4 22.8	20.8
501942 2014 XL_{38}	16.4	X	31.79463	1.11589	111.71295	4.16359	0.1188469	0.19869281	2.9085818	20	1 21.3	19.8
501943 2014 XU_{38}	18.2	X	210.46139	49.05920	13.02799	1.23635	0.1671827	0.27082798	2.3659580	20	6 19.4	21.9
501944 2014 XF_{39}	17.7	X	248.45426	335.84282	86.45193	8.40718	0.1305602	0.29814859	2.2191205	20	8 12.2	20.4
501945 2014 YR_{2}	17.9	X	228.19197	293.34392	144.21719	5.93601	0.1916349	0.28666205	2.2780115	20	7 26.8	21.2
501946 2014 YH_{3}	16.0	X	355.59773	7.92404	128.23953	13.66264	0.0234057	0.18669555	3.0318898	20	1 3.9	20.2
501947 2014 YO_{3}	16.9	X	111.52023	180.59774	289.20593	12.93383	0.2019510	0.23541428	2.5976513	20	5 16.9	21.0
501948 2014 YU_{3}	16.2	X	219.26894	22.06904	299.48373	10.96764	0.0664203	0.21252385	2.7809783	20	2 24.2	20.4
501949 2014 YV_{3}	17.0	X	158.38713	315.11828	115.99312	6.75134	0.0626085	0.23961891	2.5671741	20	5 9.8	20.7
501950 2014 YN_{4}	16.4	X	149.94092	302.41835	120.40987	27.33963	0.1630047	0.23576031	2.5951089	20	5 6.3	21.1
501951 2014 YA_{5}	16.7	X	60.73704	340.95658	125.01673	9.75205	0.1735232	0.21087579	2.7954489	20	3 7.3	19.9
501952 2014 YP_{5}	16.0	X	306.92709	63.32897	106.66723	26.31114	0.1584316	0.17550808	3.1594002	20	—	—
501953 2014 YA_{7}	17.2	X	141.69578	312.30613	111.87496	14.75934	0.1671368	0.23558259	2.5964139	20	4 25.1	21.5
501954 2014 YB_{7}	16.5	X	104.76293	351.80469	109.91476	6.27871	0.0915047	0.22994661	2.6386677	20	4 19.5	20.2
501955 2014 YF_{8}	17.2	X	13.04632	105.36195	71.51853	7.16160	0.0065769	0.21802364	2.7340114	20	3 17.1	20.9
501956 2014 YC_{10}	17.2	X	272.90685	117.80034	284.31471	22.59984	0.2803544	0.29674505	2.2261123	20	7 17.3	19.9
501957 2014 YK_{10}	16.3	X	324.59846	312.38226	287.48251	12.15190	0.1696661	0.21233369	2.7826385	20	3 3.3	19.9
501958 2014 YY_{10}	16.7	X	91.66753	176.83397	289.77197	12.58957	0.1409753	0.23050162	2.6344304	20	4 6.2	20.5
501959 2014 YB_{11}	17.9	X	156.13784	139.52603	310.15332	1.67320	0.1711787	0.26171575	2.4205617	20	6 3.3	21.6
501960 2014 YW_{11}	18.2	X	244.39274	106.31800	328.85671	4.96695	0.1485862	0.30296336	2.1955465	20	8 20.4	20.6
501961 2014 YD_{13}	17.3	X	105.97382	312.58858	211.61975	0.72453	0.1242203	0.25597801	2.4565990	20	7 15.8	20.7
501962 2014 YZ_{15}	18.7	X	184.27397	202.64712	252.53007	1.43910	0.1813370	0.26933816	2.3746747	20	7 7.1	22.5
501963 2014 YJ_{16}	16.3	X	145.14650	133.54111	297.77530	20.66078	0.1172769	0.23659114	2.5890299	20	4 16.5	20.7
501964 2014 YE_{20}	18.1	X	263.41405	328.54536	69.52328	4.09973	0.1741829	0.28520454	2.2857660	20	7 18.2	20.9
501965 2014 YQ_{20}	16.5	X	38.53937	235.13778	294.91697	10.97811	0.1174371	0.24625819	2.5208224	20	4 6.8	19.5
501966 2014 YJ_{21}	16.6	X	309.17256	320.88013	279.87449	15.75517	0.1862871	0.24382432	2.5375700	20	2 5.7	20.2
501967 2014 YP_{21}	17.7	X	213.86918	339.24869	97.95087	6.78564	0.1926809	0.27563812	2.3383519	20	7 11.5	21.1
501968 2014 YD_{22}	16.4	X	322.75196	219.80791	305.82961	5.11636	0.1048661	0.18082039	3.0972133	20	—	—
501969 2014 YG_{22}	16.7	X	108.93631	312.33640	122.17069	6.43719	0.0242441	0.21429266	2.7656540	20	3 11.1	20.5
501970 2014 YY_{22}	16.4	X	308.74135	66.27210	94.52264	13.37377	0.1146493	0.17641329	3.1485833	20	—	—
501971 2014 YY_{23}	17.5	X	204.63582	72.02836	21.82882	2.91064	0.1579216	0.28258509	2.2998696	20	7 28.3	21.0
501972 2014 YE_{24}	17.8	X	151.08027	161.40729	321.62570	5.77420	0.1392173	0.27265289	2.3553890	20	7 12.6	21.3
501973 2014 YG_{24}	17.6	X	231.72351	301.57944	165.38736	4.43723	0.0948212	0.29908864	2.2144682	20	9 27.0	20.3
501974 2014 YX_{24}	17.7	X	265.73017	93.41053	317.24998	7.23897	0.2036330	0.29688210	2.2254271	20	8 4.9	20.1
501975 2014 YT_{28}	16.7	X	154.87141	6.54988	7.28299	6.00516	0.0556092	0.21817894	2.7327139	20	2 22.6	20.5
501976 2014 YV_{28}	17.4	X	109.71261	134.42029	36.07240	5.39403	0.0497351	0.26852526	2.3794648	20	7 22.7	20.5
501977 2014 YE_{31}	16.8	X	97.05692	61.59439	69.06327	14.20489	0.0161237	0.23823928	2.5770754	20	5 6.6	20.2
501978 2014 YL_{31}	16.2	X	60.84971	76.05992	16.08799	14.83991	0.1237683	0.20382395	2.8595602	20	2 16.8	19.9
501979 2014 YN_{38}	16.2	X	287.88945	122.09481	69.35444	6.61101	0.1049780	0.17984484	3.1084036	20	—	—
501980 2014 YR_{38}	17.1	X	201.41827	282.95888	65.84983	6.53775	0.0660302	0.22580142	2.6708629	20	3 15.7	21.1
501981 2014 YT_{38}	17.7	X	147.86637	38.19525	60.01769	4.75135	0.1503300	0.25268680	2.4778842	20	6 5.3	21.5
501982 2014 YN_{40}	17.5	X	177.58975	146.77646	284.77683	8.34404	0.1859461	0.26698822	2.3885884	20	5 30.6	21.5
501983 2014 YJ_{41}	16.9	X	79.40940	107.94599	52.10531	6.91927	0.0885507	0.24180199	2.5516991	20	5 30.2	20.2
501984 2014 YN_{41}	18.4	X	231.77150	219.34812	205.04121	1.84876	0.2306518	0.28607268	2.2811392	20	7 8.7	21.9
501985 2014 YV_{42}	17.7	X	151.49344	105.15091	21.47712	6.02634	0.2190945	0.26159638	2.4212979	20	7 20.3	21.8
501986 2014 YM_{43}	16.6	X	51.56579	176.13781	298.45454	14.08488	0.1130451	0.21997799	2.7177942	20	2 16.2	19.9
501987 2014 YU_{45}	16.6	X	129.04651	296.85842	146.08173	8.20759	0.1496630	0.24310311	2.5425863	20	4 30.3	20.5
501988 2014 YE_{48}	16.6	X	100.02203	21.72599	107.70321	10.36208	0.1644850	0.24559429	2.5253634	20	5 29.5	20.2
501989 2015 AS_{2}	16.7	X	24.19798	193.03095	27.59266	15.35342	0.1248986	0.23581211	2.5947289	20	5 29.7	19.8
501990 2015 AP_{3}	17.9	X	264.39134	286.49895	121.10421	5.74242	0.0713974	0.28916534	2.2648454	20	8 21.7	20.3
501991 2015 AW_{9}	18.2	X	219.70942	60.95262	20.96974	6.21410	0.1621882	0.28298033	2.2977277	20	7 29.1	21.6
501992 2015 AJ_{10}	16.1	X	295.05639	181.37946	16.05672	11.26515	0.0490806	0.18896269	3.0075903	20	—	—
501993 2015 AF_{18}	17.5	X	107.30706	2.31429	115.21871	13.75591	0.1153822	0.23909687	2.5709095	20	5 18.4	21.3
501994 2015 AW_{21}	16.4	X	196.94067	21.27745	233.73312	8.97699	0.0608261	0.18609774	3.0383792	20	—	—
501995 2015 AP_{28}	17.9	X	217.61712	108.84958	316.46451	2.72726	0.1264784	0.27480897	2.3430530	20	7 5.0	21.2
501996 2015 AY_{28}	17.1	X	73.31601	262.42728	302.66285	4.48183	0.0532746	0.26432634	2.4045976	20	7 20.5	19.8
501997 2015 AZ_{28}	16.6	X	250.65273	123.54719	106.11744	10.69735	0.1631564	0.17789234	3.1311068	20	—	—
501998 2015 AV_{29}	17.4	X	41.36883	166.20775	318.19572	2.68917	0.0443680	0.20946643	2.8079741	20	2 14.6	20.9
501999 2015 AN_{30}	17.2	X	89.30459	154.76492	280.74356	3.20024	0.0241781	0.21029255	2.8006153	20	2 13.5	20.9
502000 2015 AA_{33}	18.2	X	356.60071	219.00535	138.40486	1.74779	0.1121671	0.31136225	2.1558841	20	11 21.9	20.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502001 2015 AR_{35}	16.1	X	147.34038	208.07007	101.60444	8.93366	0.1001809	0.17581469	3.1557259	20	—	—
502002 2015 AA_{36}	17.5	X	153.34812	157.99894	310.11973	5.78253	0.0743516	0.25847735	2.4407374	20	6 21.1	20.9
502003 2015 AB_{37}	16.9	X	278.70524	263.68784	314.59959	5.23186	0.1448793	0.18580836	3.0415331	20	—	—
502004 2015 AB_{38}	17.7	X	195.15093	112.86503	316.55241	4.31732	0.0824486	0.26254571	2.4154577	20	6 17.2	21.2
502005 2015 AW_{39}	17.7	X	44.39554	197.42245	28.29959	2.69206	0.1294542	0.25401195	2.4692588	20	7 19.1	20.5
502006 2015 AK_{41}	18.2	X	195.06607	324.39591	107.38012	2.12607	0.1554529	0.26605323	2.3941813	20	6 17.5	21.9
502007 2015 AL_{43}	16.6	X	317.00638	310.87439	328.06423	6.41285	0.1319827	0.24126306	2.5554977	20	4 20.5	19.8
502008 2015 AH_{53}	17.5	X	127.31572	188.70296	276.87705	4.52631	0.0552424	0.24644210	2.5195682	20	5 13.6	20.9
502009 2015 AO_{55}	17.4	X	118.37835	316.29537	103.85757	7.56230	0.0544016	0.22118418	2.7079045	20	3 9.4	21.2
502010 2015 AK_{56}	17.0	X	119.34691	99.14153	305.49430	5.03736	0.0119972	0.21192588	2.7862071	20	2 11.1	20.6
502011 2015 AF_{57}	18.1	X	115.18183	167.35280	292.00523	2.92173	0.1134897	0.23762354	2.5815254	20	4 27.6	21.8
502012 2015 AE_{62}	17.4	X	256.55945	40.75935	245.15952	3.98410	0.0823104	0.22035696	2.7146773	20	2 21.2	21.3
502013 2015 AS_{67}	16.2	X	296.43954	271.56594	281.97148	9.83886	0.0781551	0.18701301	3.0284576	20	—	—
502014 2015 AV_{68}	16.5	X	309.68956	131.60459	114.15618	10.50268	0.0702547	0.22284907	2.6944006	20	3 14.2	20.1
502015 2015 AL_{70}	17.0	X	53.23829	9.85375	107.35080	13.58296	0.0548708	0.21321452	2.7749694	20	2 26.5	20.7
502016 2015 AN_{73}	16.5	X	137.07508	142.53071	289.01389	13.79249	0.0518613	0.23338727	2.6126703	20	4 3.7	20.5
502017 2015 AR_{74}	17.4	X	83.84055	198.23278	262.09236	3.46833	0.0723390	0.22007264	2.7170149	20	3 13.7	20.9
502018 2015 AZ_{75}	17.9	X	254.20544	184.85294	167.76893	2.64456	0.1072792	0.25617603	2.4553330	20	5 12.3	21.1
502019 2015 AY_{77}	17.4	X	72.12834	294.11982	276.03852	5.42556	0.0610521	0.26421339	2.4052829	20	7 26.2	20.4
502020 2015 AZ_{80}	17.4	X	103.58297	330.29508	134.43697	3.56959	0.1694056	0.23219408	2.6216133	20	5 1.2	21.0
502021 2015 AW_{81}	17.6	X	123.53332	234.54938	203.40926	1.20396	0.0022070	0.22686037	2.6625450	20	3 27.4	21.1
502022 2015 AW_{83}	17.7	X	30.03567	175.26116	342.54544	0.28364	0.0153394	0.21967808	2.7202672	20	3 10.8	21.4
502023 2015 AP_{84}	18.2	X	161.29838	57.46679	78.18871	2.67801	0.1368373	0.27334712	2.3513993	20	8 9.1	21.6
502024 2015 AR_{87}	17.1	X	204.96655	238.65301	103.10968	5.45126	0.1084782	0.22804502	2.6533160	20	3 9.0	21.2
502025 2015 AC_{96}	16.0	X	278.31314	3.47569	166.55497	20.30058	0.0471404	0.17851504	3.1238212	20	—	—
502026 2015 AW_{96}	16.7	X	74.40897	326.55268	140.63219	22.48203	0.0180981	0.22652903	2.6651407	20	3 6.4	20.3
502027 2015 AK_{99}	17.1	X	140.16062	305.12772	106.61529	7.39772	0.0620115	0.22517575	2.6758081	20	3 26.1	20.9
502028 2015 AK_{100}	16.3	X	228.12633	282.71984	316.54268	3.90820	0.0999295	0.17340001	3.1849550	20	—	—
502029 2015 AO_{102}	16.7	X	151.75964	234.65268	113.40877	19.37219	0.1708470	0.20319264	2.8654802	20	1 30.1	21.3
502030 2015 AD_{105}	16.5	X	298.89764	306.95430	304.98360	3.46645	0.0782994	0.21746442	2.7386965	20	3 1.7	20.3
502031 2015 AM_{112}	16.6	X	125.76702	232.10807	149.61033	2.42953	0.0101766	0.19857350	2.9097468	20	1 23.8	20.5
502032 2015 AA_{118}	16.9	X	16.18033	242.19981	292.05564	3.84566	0.0674810	0.21617538	2.7495728	20	3 11.8	20.4
502033 2015 AR_{125}	17.4	X	43.54229	211.97323	304.31358	0.84249	0.1133512	0.22009116	2.7168624	20	4 4.2	20.4
502034 2015 AP_{126}	18.3	X	244.59697	168.61130	260.89897	1.35153	0.1572695	0.28859846	2.2678102	20	8 8.9	21.3
502035 2015 AM_{128}	17.0	X	271.53222	11.35219	299.24713	6.79167	0.1618692	0.23564526	2.5959535	20	3 27.6	20.9
502036 2015 AR_{128}	17.0	X	350.27775	34.11057	144.07968	2.60040	0.0234006	0.20562138	2.8428714	20	2 14.7	20.7
502037 2015 AH_{129}	17.7	X	202.37337	236.07470	114.20509	3.89859	0.1411827	0.22700253	2.6614333	20	3 15.9	21.9
502038 2015 AO_{130}	16.9	X	229.79994	34.46901	301.27691	6.73914	0.1959635	0.23403031	2.6078822	20	3 15.7	21.3
502039 2015 AN_{132}	16.0	X	234.49092	306.02319	310.65439	9.83432	0.1205102	0.18304481	3.0720700	20	—	—
502040 2015 AS_{133}	17.1	X	157.87045	272.25688	113.63501	7.07488	0.0809934	0.21986231	2.7187474	20	3 15.1	21.1
502041 2015 AF_{142}	17.0	X	263.54443	191.59743	93.12207	4.17178	0.0397428	0.21870649	2.7283176	20	3 7.9	20.8
502042 2015 AM_{142}	17.1	X	186.29693	31.16693	316.63853	5.67874	0.0961583	0.21648278	2.7469694	20	2 24.3	21.2
502043 2015 AD_{146}	17.3	X	37.25616	177.25593	35.57031	2.19422	0.0913638	0.24443770	2.5333232	20	6 10.6	20.0
502044 2015 AX_{146}	18.0	X	269.79769	75.47970	313.45634	6.78945	0.1379982	0.28255853	2.3000138	20	7 20.1	20.5
502045 2015 AY_{149}	17.0	X	267.98147	256.88703	37.84082	2.70676	0.1243025	0.22333582	2.6904843	20	3 13.9	20.8
502046 2015 AX_{150}	16.8	X	298.75932	194.36169	74.44589	4.02931	0.0595643	0.22480737	2.6787305	20	3 28.8	20.3
502047 2015 AH_{152}	17.2	X	234.75881	252.32760	116.78116	12.49176	0.0416915	0.24783618	2.5101109	20	5 21.7	20.8
502048 2015 AR_{154}	15.9	X	246.43410	131.77883	111.96657	12.07908	0.1098940	0.18088349	3.0964929	20	—	—
502049 2015 AT_{154}	17.7	X	315.68869	317.42007	319.86321	4.32277	0.0937099	0.23700747	2.5859970	20	4 23.2	20.8
502050 2015 AH_{158}	17.4	X	188.36447	80.85616	304.74266	13.96073	0.0909900	0.23532542	2.5983051	20	4 4.9	21.6
502051 2015 AK_{158}	18.0	X	231.65004	268.85594	123.96989	6.94557	0.1764726	0.26599267	2.3945446	20	6 2.5	21.6
502052 2015 AZ_{158}	17.5	X	94.66063	48.51942	129.23156	3.21825	0.1327917	0.25370725	2.4712355	20	7 21.7	20.7
502053 2015 AP_{164}	16.9	X	325.27065	66.55324	120.45949	3.19723	0.0158678	0.19620900	2.9330768	20	1 27.0	20.9
502054 2015 AX_{164}	16.9	X	136.93813	288.92569	113.47393	2.72410	0.0643868	0.21477185	2.7615388	20	3 9.0	20.8
502055 2015 AC_{166}	16.6	X	326.59927	134.33974	124.51210	8.17300	0.1239801	0.22864597	2.6486649	20	4 17.4	19.8
502056 2015 AW_{166}	17.7	X	176.68519	54.16547	17.79575	1.47891	0.1652582	0.25460866	2.4653993	20	5 30.5	21.7
502057 2015 AK_{168}	17.2	X	78.81580	36.95702	113.50578	6.17704	0.1145548	0.23459930	2.6036638	20	5 22.5	20.5
502058 2015 AU_{168}	17.0	X	358.18166	191.72993	116.12602	7.75454	0.1414957	0.27667792	2.3324896	20	9 5.7	19.1
502059 2015 AZ_{170}	17.3	X	162.18126	52.85562	321.70938	6.01425	0.0687578	0.21365483	2.7711555	20	3 1.3	21.5
502060 2015 AB_{172}	17.3	X	133.43781	354.24691	99.08611	4.87759	0.1798907	0.24124557	2.5556212	20	5 19.1	21.3
502061 2015 AC_{176}	17.4	X	136.36867	22.23356	56.98358	4.11417	0.0461604	0.23200427	2.6230429	20	4 21.1	20.9
502062 2015 AD_{179}	17.6	X	141.95057	37.44486	20.00452	3.02292	0.0375471	0.22334672	2.6903968	20	3 29.5	21.3
502063 2015 AG_{179}	16.1	X	231.28842	294.13343	312.90805	24.76080	0.1735886	0.17013828	3.2255320	20	—	—
502064 2015 AH_{180}	17.0	X	127.31074	313.66577	95.75039	6.82898	0.0362123	0.21147149	2.7901967	20	3 5.1	20.9
502065 2015 AO_{180}	17.9	X	116.70743	16.92295	90.51406	4.29231	0.0656586	0.23498689	2.6008000	20	5 6.6	21.4
502066 2015 AM_{181}	18.6	X	240.17034	328.82369	94.07573	3.74014	0.1940953	0.28367251	2.2939884	20	7 20.5	21.6
502067 2015 AE_{182}	17.4	X	67.90235	76.73548	96.80617	4.56154	0.1779242	0.23550461	2.5969870	20	6 16.8	20.6
502068 2015 AL_{183}	16.8	X	214.76385	157.96326	105.44314	5.80783	0.0885152	0.18064498	3.0992180	20	—	—
502069 2015 AZ_{188}	17.2	X	305.52672	123.99659	117.75284	12.60184	0.0820211	0.21250091	2.7811784	20	3 2.1	21.0
502070 2015 AB_{189}	17.2	X	227.16454	242.41817	108.47384	5.99752	0.0959788	0.23929337	2.5695019	20	4 12.9	21.0
502071 2015 AK_{191}	17.6	X	155.37925	140.59697	327.26590	5.17641	0.0731221	0.25706837	2.4496477	20	6 23.1	21.0
502072 2015 AM_{193}	17.8	X	105.99024	335.05005	137.03878	2.60795	0.0221258	0.23171958	2.6251910	20	4 22.5	21.2
502073 2015 AL_{196}	18.3	X	232.49117	18.41428	23.33875	1.63893	0.1851191	0.27017029	2.3697962	20	6 13.1	21.7
502074 2015 AN_{196}	16.4	X	230.77442	345.24433	320.17871	14.63541	0.1613380	0.20918613	2.8104819	20	2 15.3	20.9
502075 2015 AA_{206}	15.7	X	269.95346	278.53292	295.45671	15.28207	0.1944588	0.17801339	3.1296873	20	—	—
502076 2015 AF_{206}	18.0	X	190.17617	340.71224	100.98389	2.92034	0.1364122	0.26789146	2.3832163	20	6 26.4	21.6
502077 2015 AD_{225}	17.3	X	134.70461	260.28590	172.67014	9.17168	0.1088470	0.22893023	2.6464719	20	4 18.9	21.2
502078 2015 AS_{228}	16.3	X	340.64217	83.37347	170.22819	13.58957	0.0832176	0.23128983	2.6284417	20	5 7.2	19.6
502079 2015 AR_{229}	17.5	X	213.03058	184.16020	248.95294	6.46795	0.0876148	0.26578917	2.3957667	20	7 12.2	20.8
502080 2015 AT_{232}	16.2	X	166.07945	65.24677	307.76577	24.14267	0.1630255	0.21181597	2.7871708	20	2 28.7	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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502081 2015 AB_{233}	16.7	X	223.84392	98.59328	250.45930	5.29190	0.0622488	0.22317189	2.6918016	20	4 4.8	20.6
502082 2015 AX_{233}	16.7	X	287.93885	23.99821	168.42306	12.84310	0.0714406	0.17043173	3.2218284	20	—	—
502083 2015 AQ_{234}	16.9	X	202.35191	105.31864	290.28794	13.80646	0.1280003	0.24296089	2.5435785	20	5 5.5	21.1
502084 2015 AO_{238}	17.0	X	72.55554	225.40602	221.00399	7.47004	0.0425272	0.19743055	2.9209658	20	2 7.8	21.1
502085 2015 AW_{238}	15.9	X	28.23422	120.45403	340.68852	8.56582	0.0983606	0.18129943	3.0917552	20	1 5.4	19.8
502086 2015 AT_{239}	17.5	X	162.99752	87.24577	28.99073	3.41771	0.1297618	0.25818979	2.4425493	20	7 14.9	21.2
502087 2015 AB_{240}	17.2	X	136.55112	130.20799	331.72332	11.08064	0.1669936	0.24074972	2.5591291	20	5 28.9	21.4
502088 2015 AD_{240}	17.6	X	107.94262	320.40078	177.03142	8.75903	0.1094691	0.23971762	2.5664693	20	6 10.3	21.3
502089 2015 AJ_{241}	15.9	X	47.17208	324.45751	127.57816	11.92472	0.0987891	0.18618455	3.0374348	20	1 20.3	19.7
502090 2015 AM_{241}	16.3	X	83.44327	324.05004	108.26991	4.68446	0.0821891	0.19579232	2.9372367	20	2 13.9	20.1
502091 2015 AT_{246}	17.1	X	46.68288	345.80558	151.06537	14.64621	0.1973543	0.22595385	2.6696617	20	3 26.8	19.9
502092 2015 AH_{248}	17.3	X	203.60170	25.04068	309.18446	5.28268	0.0458064	0.21964495	2.7205408	20	2 24.9	21.2
502093 2015 AC_{250}	16.9	X	348.25320	214.92342	3.30220	12.86409	0.1052297	0.22501544	2.6770789	20	3 25.6	19.9
502094 2015 AB_{252}	16.9	X	255.02164	143.22214	101.20971	11.67658	0.0639931	0.19105512	2.9855906	20	1 7.9	21.3
502095 2015 AL_{252}	18.1	X	212.56844	51.39963	30.77216	2.26835	0.1426393	0.27756299	2.3275285	20	7 21.6	21.3
502096 2015 AQ_{253}	17.4	X	41.83373	152.69863	341.07646	3.77650	0.0524624	0.20885337	2.8134663	20	2 28.1	21.0
502097 2015 AT_{258}	16.2	X	69.09168	169.13276	321.57269	11.97707	0.1542055	0.21495927	2.7599333	20	4 10.1	19.9
502098 2015 AV_{261}	17.9	X	203.80338	249.47955	175.41492	6.12846	0.1153324	0.25742536	2.4473824	20	6 19.2	21.7
502099 2015 AB_{262}	17.4	X	219.84780	212.22298	198.73147	6.25217	0.1176506	0.25781386	2.4449231	20	6 17.9	21.1
502100 2015 AE_{263}	17.2	X	116.93356	303.49383	134.85124	8.80765	0.1806961	0.21974518	2.7197134	20	4 16.5	21.4
502101 2015 AE_{264}	16.1	X	147.73652	293.12693	71.50531	13.00575	0.0564491	0.18366132	3.0651913	20	2 9.9	20.8
502102 2015 AF_{264}	18.1	X	339.17191	155.82045	353.27437	18.96878	0.0650708	0.35889003	1.9610791	20	—	—
502103 2015 AN_{264}	16.7	X	101.07662	44.54502	55.27569	10.29593	0.0809649	0.21643226	2.7473968	20	4 12.1	20.5
502104 2015 AA_{265}	17.1	X	200.50767	317.15911	136.45240	14.54302	0.1236541	0.26551287	2.3974285	20	7 23.5	20.6
502105 2015 AQ_{272}	15.1	X	194.71552	34.23962	132.54686	2.41481	0.0849195	0.12540053	3.9530878	20	10 7.1	21.1
502106 2015 AX_{273}	17.0	X	246.82509	255.99549	45.44215	4.58928	0.0875219	0.21500570	2.7595360	20	3 4.7	21.0
502107 2015 AU_{278}	16.0	X	191.98841	357.81879	308.55095	18.01864	0.1987961	0.17966253	3.1105060	20	1 20.5	21.3
502108 2015 AZ_{279}	17.3	X	125.33341	111.61320	334.23330	21.66648	0.0484694	0.22598261	2.6694351	20	4 3.7	21.4
502109 2015 AP_{280}	16.4	X	135.30943	46.29928	331.61499	8.96621	0.0049279	0.19004937	2.9961146	20	2 1.9	20.5
502110 2015 BR	16.8	X	170.17074	58.54704	344.92157	9.01411	0.1882206	0.24346723	2.5400506	20	4 15.9	21.1
502111 2015 BS_{2}	16.6	X	79.56734	322.32217	122.32415	3.05525	0.0340161	0.20364539	2.8612314	20	2 16.2	20.4
502112 2015 BT_{3}	16.9	X	235.99304	279.15796	117.35714	24.00403	0.2941305	0.27051107	2.3678055	20	6 6.0	21.2
502113 2015 BB_{5}	16.5	X	333.13070	294.46085	278.29701	13.82406	0.0534680	0.21415245	2.7668611	20	2 24.3	20.4
502114 2015 BG_{5}	17.0	X	160.57485	126.06991	291.79410	10.28928	0.1555414	0.23667996	2.5883821	20	4 23.3	21.3
502115 2015 BZ_{5}	17.7	X	251.29541	299.74081	101.28897	7.24375	0.1265128	0.27451010	2.3447533	20	7 12.2	20.5
502116 2015 BC_{6}	16.8	X	100.67103	165.52673	327.50988	10.42479	0.1225581	0.23683758	2.5872336	20	5 24.8	20.6
502117 2015 BS_{6}	17.6	X	85.99097	225.68682	282.67670	3.38432	0.1264819	0.23355346	2.6114308	20	5 29.4	21.1
502118 2015 BR_{7}	16.2	X	318.09647	237.99792	308.29827	9.28134	0.1496482	0.19136415	2.9823756	20	—	—
502119 2015 BS_{7}	17.4	X	57.92092	92.20842	73.83631	3.21708	0.0841809	0.23611578	2.5925036	20	5 7.4	20.5
502120 2015 BT_{7}	17.3	X	149.02136	354.13885	150.93203	5.18163	0.0489869	0.26480801	2.4016809	20	8 4.5	20.5
502121 2015 BK_{8}	18.0	X	234.52358	94.66623	335.96478	4.01301	0.1304375	0.28545736	2.2844161	20	8 2.5	20.9
502122 2015 BT_{8}	16.7	X	358.44892	11.77187	145.53670	3.66847	0.1463279	0.19055178	2.9908460	20	1 22.9	20.0
502123 2015 BC_{13}	16.7	X	205.10599	216.38111	105.41359	3.27905	0.0597935	0.20289357	2.8682953	20	2 15.3	20.9
502124 2015 BG_{13}	16.3	X	289.84725	79.12605	121.44509	11.71186	0.0141484	0.18298639	3.0727238	20	1 2.8	20.6
502125 2015 BN_{15}	16.3	X	194.99701	339.03597	340.12655	1.20894	0.0725399	0.19648223	2.9303570	20	2 1.7	20.5
502126 2015 BA_{16}	16.1	X	305.96171	230.36621	314.61091	1.91217	0.0293240	0.18343147	3.0677513	20	1 1.3	20.5
502127 2015 BO_{16}	16.6	X	94.93114	308.40648	127.89774	3.75897	0.1636260	0.21235321	2.7824679	20	3 15.3	20.3
502128 2015 BR_{16}	16.2	X	278.78386	96.85139	130.47701	17.58586	0.1197233	0.18563705	3.0434041	20	1 8.3	20.8
502129 2015 BC_{18}	17.6	X	104.90920	311.35294	166.13128	1.89074	0.1529297	0.23009540	2.6375301	20	5 16.5	21.3
502130 2015 BA_{19}	17.4	X	75.50264	131.88831	352.51406	3.99518	0.0980205	0.22873486	2.6479786	20	4 6.9	20.7
502131 2015 BB_{20}	16.4	X	291.54713	141.80195	102.97865	5.90120	0.0928504	0.19229160	2.9727782	20	2 16.4	20.6
502132 2015 BP_{21}	17.2	X	179.75567	197.04627	193.08635	5.61925	0.1451550	0.22726040	2.6594196	20	4 11.4	21.2
502133 2015 BU_{22}	17.7	X	166.22317	1.80147	149.74533	7.28113	0.0535950	0.27475556	2.3433566	20	9 6.6	20.9
502134 2015 BZ_{22}	16.8	X	220.40742	206.77935	153.67829	14.09200	0.1205635	0.22855164	2.6493936	20	4 18.1	21.0
502135 2015 BX_{23}	16.3	X	252.35468	177.52751	156.61533	11.44287	0.1014742	0.22694917	2.6618505	20	4 20.1	20.3
502136 2015 BT_{24}	16.4	X	333.36988	10.89366	155.72598	12.15840	0.0302880	0.17940478	3.1134846	20	1 12.5	20.8
502137 2015 BA_{25}	17.1	X	142.68613	138.99197	294.02301	3.46062	0.0807652	0.22374786	2.6871802	20	4 21.9	20.9
502138 2015 BL_{25}	17.3	X	142.46303	227.14839	228.54949	2.36368	0.0854478	0.23575890	2.5951192	20	5 23.1	20.9
502139 2015 BC_{26}	16.4	X	257.08263	282.32953	321.34783	8.41832	0.0506257	0.17732250	3.1378113	20	1 13.8	21.0
502140 2015 BG_{26}	17.0	X	182.46800	263.69986	148.98309	9.10182	0.1110213	0.23640469	2.5903910	20	5 14.4	21.1
502141 2015 BN_{26}	16.5	X	6.49643	219.53178	292.41277	2.76641	0.0608729	0.18947218	3.0021963	20	2 3.5	20.3
502142 2015 BU_{26}	17.3	X	29.49036	46.28904	162.25666	1.04695	0.0868054	0.22696232	2.6617476	20	5 22.2	20.2
502143 2015 BQ_{27}	16.9	X	98.14070	301.87842	147.16704	5.71021	0.1382480	0.21107654	2.7936762	20	4 1.5	20.7
502144 2015 BC_{28}	17.2	X	258.22460	72.55503	309.24402	5.48797	0.1599934	0.25842049	2.4410954	20	6 18.4	20.6
502145 2015 BH_{28}	16.2	X	201.44404	358.30753	297.37238	7.86208	0.0126553	0.17660020	3.1463613	20	1 13.9	20.6
502146 2015 BJ_{30}	16.8	X	21.97662	359.91704	147.62461	17.57799	0.1631725	0.19726654	2.9225846	20	2 20.1	20.0
502147 2015 BY_{31}	15.5	X	211.40170	327.90399	296.01619	18.06805	0.0796229	0.17617823	3.1513832	20	—	—
502148 2015 BK_{34}	16.8	X	248.27074	7.73187	312.41793	6.88105	0.0725019	0.22677421	2.6632194	20	3 24.7	20.7
502149 2015 BL_{34}	17.6	X	245.94711	279.19920	108.57408	5.80866	0.1765473	0.26975275	2.3722409	20	6 10.4	20.9
502150 2015 BO_{34}	16.0	X	286.42301	77.46310	122.06566	13.48982	0.1554611	0.17448378	3.1717529	20	—	—
502151 2015 BQ_{34}	17.2	X	83.62663	142.14414	317.00999	13.56502	0.1404622	0.21658865	2.7460741	20	3 17.9	21.0
502152 2015 BS_{34}	18.6	X	200.76312	51.93979	25.74420	1.68591	0.1585563	0.26805981	2.3822184	20	7 1.0	22.1
502153 2015 BJ_{36}	15.5	X	350.39936	224.96334	283.24117	12.11344	0.0418310	0.16974015	3.2305738	20	1 12.8	19.8
502154 2015 BW_{36}	16.6	X	46.93921	178.50071	293.96666	15.14449	0.1195476	0.18628881	3.0363013	20	2 12.0	20.4
502155 2015 BH_{38}	17.3	X	250.01070	328.03756	19.83327	6.58798	0.1471899	0.25342303	2.4730828	20	4 24.5	20.8
502156 2015 BO_{41}	16.8	X	229.64081	272.86161	45.70270	5.85174	0.0756488	0.22275706	2.6951425	20	3 8.1	20.8
502157 2015 BQ_{41}	17.4	X	257.21178	247.05460	80.66772	9.43857	0.0984048	0.24267985	2.5455418	20	4 17.9	21.1
502158 2015 BH_{42}	17.2	X	151.26047	23.64628	12.91482	4.98356	0.0515025	0.22440095	2.6819639	20	3 15.9	20.9
502159 2015 BP_{45}	18.0	X	200.96128	297.64070	145.93629	6.94160	0.1941910	0.28056425	2.3109001	20	7 7.0	21.7
502160 2015 BW_{48}	17.3	X	176.96805	284.22647	146.84621	9.74935	0.2053530	0.26440703	2.4041084	20	6 1.1	21.4

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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502161 2015 BV_{53}	18.0	X	179.29515	329.80629	136.52877	5.90167	0.1940183	0.26930691	2.3748584	20	7 16.6	21.9
502162 2015 BQ_{57}	17.3	X	127.33916	23.18757	46.86851	3.53103	0.1170895	0.22528985	2.6749046	20	4 7.0	21.1
502163 2015 BK_{58}	17.2	X	314.26202	183.74515	94.11649	5.74279	0.0941966	0.23414043	2.6070645	20	4 26.7	20.4
502164 2015 BQ_{58}	17.3	X	62.87272	146.78130	349.70517	4.31768	0.0632285	0.21996045	2.7179387	20	3 31.7	20.9
502165 2015 BY_{58}	18.6	X	183.99334	5.76422	98.88847	3.27923	0.1619058	0.26930866	2.3748481	20	7 20.2	22.1
502166 2015 BZ_{58}	17.7	X	214.78537	337.62762	103.13116	4.02116	0.1503930	0.27535205	2.3399712	20	7 20.8	20.9
502167 2015 BA_{59}	18.3	X	222.95834	3.28347	48.69671	2.31282	0.1695574	0.26802621	2.3824175	20	6 18.4	21.9
502168 2015 BE_{59}	16.1	X	274.28204	88.18787	121.87977	16.86967	0.0752167	0.17590767	3.1546138	20	—	—
502169 2015 BN_{59}	17.5	X	164.31808	294.27839	122.25413	9.21168	0.2113204	0.24208746	2.5496927	20	5 5.1	21.9
502170 2015 BP_{59}	16.6	X	160.08768	266.37395	120.21934	6.69347	0.0476676	0.21526172	2.7573476	20	3 15.9	20.5
502171 2015 BR_{59}	16.1	X	272.02927	96.44836	125.78427	15.13500	0.1540800	0.17612207	3.1520531	20	—	—
502172 2015 BZ_{59}	17.7	X	194.31734	333.16253	97.87801	2.55837	0.1638533	0.26082060	2.4260968	20	6 15.4	21.5
502173 2015 BB_{60}	16.5	X	326.93354	107.89215	46.88041	1.25670	0.1228973	0.17615446	3.1516668	20	—	—
502174 2015 BH_{60}	17.5	X	220.50971	316.88809	120.98272	6.63205	0.1465044	0.27614036	2.3355157	20	7 23.4	20.7
502175 2015 BE_{61}	17.1	X	32.98890	265.35262	347.07002	6.00281	0.0279397	0.26165134	2.4209589	20	7 26.7	20.0
502176 2015 BG_{61}	16.2	X	148.71896	3.06443	344.06372	8.07395	0.0516729	0.18771803	3.0208701	20	1 17.8	20.6
502177 2015 BK_{61}	17.3	X	232.35620	230.81455	116.52919	12.31058	0.2517283	0.23834661	2.5763017	20	4 6.5	21.9
502178 2015 BS_{61}	17.6	X	250.54397	281.12462	91.87029	6.12672	0.1598994	0.25991477	2.4317303	20	5 28.8	21.1
502179 2015 BU_{63}	16.2	X	36.31192	356.23563	95.40518	9.52724	0.0385947	0.18246016	3.0786289	20	1 2.7	20.1
502180 2015 BV_{63}	16.4	X	312.04977	215.79862	342.76781	9.32701	0.0467829	0.19041396	2.9922889	20	1 23.7	20.6
502181 2015 BG_{64}	16.9	X	124.94512	30.45119	22.58379	6.34802	0.0528884	0.21005458	2.8027301	20	3 8.2	20.8
502182 2015 BA_{65}	15.9	X	340.25963	123.84339	18.50524	5.29811	0.0755259	0.17708134	3.1406595	20	—	—
502183 2015 BG_{65}	16.8	X	114.46512	358.90915	79.13835	5.43300	0.0445412	0.21579669	2.7527886	20	3 26.1	20.6
502184 2015 BH_{65}	17.3	X	158.59829	112.45183	358.56137	6.62253	0.1357866	0.25676531	2.4515748	20	7 3.6	21.1
502185 2015 BK_{66}	17.0	X	170.92829	36.25140	337.47425	5.75483	0.0521861	0.21228582	2.7830568	20	3 9.5	21.1
502186 2015 BO_{66}	17.1	X	28.43465	69.84616	74.89760	3.17967	0.0080134	0.20356512	2.8619836	20	2 24.3	20.9
502187 2015 BS_{66}	16.1	X	183.34957	182.14974	116.70081	10.01880	0.0469043	0.17562778	3.1579645	20	—	—
502188 2015 BT_{66}	16.2	X	334.25693	28.56383	113.02234	9.17920	0.0964145	0.17288123	3.1913235	20	—	—
502189 2015 BB_{67}	16.2	X	215.86167	293.31021	327.99732	8.05182	0.0526052	0.17410266	3.1763799	20	—	—
502190 2015 BY_{67}	17.9	X	196.08218	348.80272	94.21677	4.23477	0.1811520	0.26602757	2.3943352	20	7 2.2	21.5
502191 2015 BA_{68}	16.6	X	322.93974	67.94494	89.89767	2.72542	0.1529659	0.17369746	3.1813180	20	—	—
502192 2015 BG_{69}	16.1	X	250.50549	2.24296	251.70163	8.38369	0.0674552	0.18754776	3.0226983	20	1 13.1	20.6
502193 2015 BQ_{69}	17.2	X	99.28961	298.39885	160.02791	10.00721	0.1289543	0.22266733	2.6958665	20	4 13.9	20.9
502194 2015 BV_{69}	17.1	X	69.26637	275.37968	222.60654	5.38612	0.0072891	0.22334883	2.6903798	20	4 3.8	20.6
502195 2015 BY_{69}	17.0	X	296.73180	13.54477	244.37070	6.44203	0.0507909	0.21417681	2.7666513	20	3 8.9	20.9
502196 2015 BZ_{69}	16.7	X	315.23060	15.27272	271.79908	9.21030	0.1409524	0.23709829	2.5853366	20	4 28.4	19.9
502197 2015 BG_{70}	17.2	X	218.80455	80.96329	268.12757	7.63873	0.2308955	0.23271895	2.6176699	20	3 20.6	21.9
502198 2015 BV_{71}	16.5	X	330.06590	241.30961	271.84553	3.98883	0.1194459	0.17439683	3.1728070	20	—	—
502199 2015 BW_{71}	17.0	X	40.41296	17.74757	143.73254	15.84518	0.0752675	0.21539833	2.7561816	20	4 8.9	20.6
502200 2015 BY_{71}	16.7	X	193.28512	81.39729	273.15110	3.47184	0.0895038	0.21207577	2.7848941	20	3 10.0	21.1
502201 2015 BQ_{72}	16.9	X	210.60035	195.16443	159.47147	9.72658	0.1345526	0.22790099	2.6544338	20	3 29.3	21.1
502202 2015 BE_{73}	16.9	X	78.23970	6.78942	102.49534	9.90309	0.0886587	0.21603068	2.7508005	20	3 27.8	20.6
502203 2015 BB_{74}	17.0	X	277.96118	192.51435	93.79068	4.40735	0.0728311	0.22001910	2.7174556	20	3 23.4	20.7
502204 2015 BK_{74}	16.3	X	309.59074	80.89928	107.04571	9.62896	0.0695919	0.18340720	3.0680219	20	1 3.6	20.4
502205 2015 BW_{74}	17.2	X	37.95972	196.19173	334.07189	8.71556	0.0303602	0.22359813	2.6883797	20	4 3.7	20.7
502206 2015 BY_{74}	17.5	X	87.91016	86.45017	6.93372	3.82938	0.0711809	0.21293852	2.7773667	20	3 13.3	21.0
502207 2015 BZ_{75}	16.9	X	150.33766	282.23044	106.78705	12.54607	0.1711402	0.21786624	2.7353281	20	3 20.9	21.4
502208 2015 BA_{76}	16.6	X	257.93525	183.80793	64.98826	6.15774	0.2354010	0.17736296	3.1373341	20	1 4.3	21.8
502209 2015 BN_{77}	17.2	X	157.80638	333.95411	34.60663	4.01213	0.1080130	0.20987686	2.8043121	20	2 24.6	21.4
502210 2015 BO_{77}	16.5	X	249.47542	194.71374	52.19363	4.19890	0.1432225	0.18008549	3.1056338	20	—	—
502211 2015 BG_{78}	15.4	X	16.38857	301.25077	139.14943	15.78097	0.0969467	0.17189158	3.2035609	20	—	—
502212 2015 BY_{78}	18.7	X	221.38239	291.05019	161.03180	4.49413	0.2476686	0.28942555	2.2634877	20	8 2.7	22.1
502213 2015 BP_{80}	17.6	X	299.99860	243.99301	92.00657	7.32515	0.1322734	0.27102355	2.3648197	20	6 18.6	20.2
502214 2015 BF_{81}	17.2	X	253.01509	267.84297	93.77218	10.33588	0.1346423	0.26151002	2.4218310	20	5 20.9	20.7
502215 2015 BW_{82}	15.9	X	10.39179	290.19298	277.62734	17.05498	0.1236902	0.22599028	2.6693747	20	4 10.1	19.4
502216 2015 BX_{85}	17.8	X	226.67717	239.15109	149.27636	3.90018	0.2144548	0.26204223	2.4185507	20	5 19.8	21.8
502217 2015 BF_{86}	17.1	X	137.18857	290.08542	145.47696	2.29683	0.0670901	0.22872756	2.6480350	20	4 19.7	20.9
502218 2015 BZ_{86}	17.3	X	97.12979	5.12110	122.83862	3.03705	0.0252140	0.22994137	2.6387078	20	5 2.7	20.7
502219 2015 BA_{87}	15.6	X	320.33328	28.59077	133.04848	16.38571	0.0216698	0.17547214	3.1598316	20	—	—
502220 2015 BW_{87}	18.0	X	114.42064	314.97600	145.30166	4.75968	0.1850893	0.23002569	2.6380629	20	5 9.8	22.0
502221 2015 BB_{88}	16.5	X	323.40098	13.88346	173.52275	1.00753	0.1415059	0.18439933	3.0570074	20	1 10.1	20.6
502222 2015 BD_{88}	16.2	X	232.41586	300.51379	298.82615	4.44611	0.0238929	0.16791970	3.2538806	20	—	—
502223 2015 BH_{88}	17.2	X	89.10332	284.44308	165.90084	4.41710	0.0788617	0.20930337	2.8094323	20	3 12.1	20.7
502224 2015 BK_{88}	16.9	X	184.02785	264.64326	148.26805	9.02339	0.0405234	0.23764716	2.5813544	20	5 16.2	20.6
502225 2015 BN_{88}	18.4	X	244.26856	276.76362	146.53349	4.71654	0.2332564	0.28516663	2.2859685	20	7 19.9	21.8
502226 2015 BQ_{88}	17.1	X	249.71239	76.20457	222.97377	5.53742	0.0278914	0.21333603	2.7739156	20	3 6.9	21.0
502227 2015 BU_{88}	17.5	X	193.34563	117.53077	306.32712	8.08582	0.1695305	0.25719005	2.4488749	20	6 4.2	21.5
502228 2015 BA_{89}	18.1	X	235.85386	312.65982	108.54070	3.09808	0.1676026	0.27586491	2.3370701	20	7 15.7	21.3
502229 2015 BE_{89}	16.9	X	337.87675	237.09834	356.39364	1.80072	0.0209864	0.22013246	2.7165226	20	4 7.6	20.5
502230 2015 BO_{89}	16.9	X	46.77795	158.51498	50.65599	8.01675	0.1362277	0.23787125	2.5797330	20	6 27.9	20.0
502231 2015 BV_{89}	17.8	X	182.54945	16.07500	68.40170	2.23467	0.1514643	0.25734400	2.4478982	20	6 21.8	21.5
502232 2015 BX_{89}	17.3	X	129.43647	325.43026	115.50649	6.64435	0.1877908	0.23013629	2.6372177	20	5 1.9	21.5
502233 2015 BQ_{90}	17.8	X	203.35720	149.00996	269.68970	1.67814	0.1897183	0.25627782	2.4546827	20	6 6.7	21.8
502234 2015 BS_{90}	16.8	X	182.37213	269.50251	149.86879	14.81801	0.1590613	0.23993252	2.5649366	20	5 23.8	21.2
502235 2015 BZ_{90}	17.1	X	44.34924	53.64415	144.13577	10.08913	0.0448183	0.23014732	2.6371334	20	5 28.2	20.6
502236 2015 BA_{91}	17.1	X	117.54631	327.34487	145.82010	12.09913	0.1538359	0.23157121	2.6263121	20	5 27.7	21.2
502237 2015 BO_{91}	16.5	X	96.91913	291.45341	141.51489	17.35207	0.1482228	0.20515227	2.8472034	20	3 13.8	20.5
502238 2015 BN_{93}	17.0	X	125.14382	13.94682	45.40297	4.51495	0.0956403	0.21613604	2.7499065	20	3 20.9	21.0
502239 2015 BJ_{94}	17.6	X	134.95749	65.09841	39.30102	2.50278	0.0366318	0.24716301	2.5146665	20	5 20.4	21.0
502240 2015 BQ_{96}	17.8	X	127.73130	58.98416	93.68985	8.63217	0.0575762	0.26595840	2.3947503	20	7 20.9	20.9

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502241 2015 BL_{98}	18.3	X	210.36876	298.00754	116.04193	5.39112	0.1388957	0.26039181	2.4287594	20	6 10.7	21.9
502242 2015 BS_{98}	16.8	X	194.61903	39.55862	311.75197	13.43760	0.2100781	0.22296186	2.6934918	20	3 4.3	21.5
502243 2015 BC_{99}	16.7	X	287.02181	112.63978	111.52083	1.87180	0.0848642	0.18961272	3.0007126	20	1 17.2	21.0
502244 2015 BA_{100}	17.2	X	327.14746	330.64276	229.08634	1.14815	0.0306849	0.20201692	2.8765872	20	2 10.9	21.2
502245 2015 BC_{100}	17.3	X	127.82543	126.86669	292.48022	3.75242	0.0581494	0.21730249	2.7400569	20	3 15.5	21.1
502246 2015 BH_{100}	18.0	X	189.44031	297.98935	127.86325	3.22428	0.1765841	0.25378338	2.4707412	20	6 4.1	21.9
502247 2015 BV_{100}	17.0	X	339.24415	134.54288	144.56236	4.69284	0.0482345	0.24409601	2.5356867	20	6 10.1	20.0
502248 2015 BS_{101}	16.0	X	163.08699	228.64418	127.76521	12.67248	0.0369192	0.19000220	2.9966105	20	2 11.4	20.2
502249 2015 BE_{102}	17.4	X	176.85419	256.77496	156.14529	6.43267	0.0767617	0.23386017	2.6091470	20	5 7.5	21.3
502250 2015 BV_{102}	17.1	X	222.53254	43.01729	311.11989	3.25742	0.1449817	0.22400806	2.6850989	20	4 5.4	21.4
502251 2015 BJ_{103}	16.5	X	213.06256	162.43198	145.73887	10.40211	0.0867230	0.18898206	3.0073848	20	2 7.2	21.1
502252 2015 BM_{103}	16.8	X	248.50194	140.85705	146.77796	12.52925	0.0170517	0.19822557	2.9131505	20	2 25.8	20.8
502253 2015 BP_{107}	16.7	X	108.58860	281.64732	161.68782	4.79424	0.1354093	0.22133779	2.7066515	20	4 5.1	20.4
502254 2015 BB_{113}	16.4	X	230.60007	150.57778	90.98711	16.02480	0.1017727	0.17805851	3.1291585	20	—	—
502255 2015 BS_{117}	16.3	X	50.70390	255.92350	157.96295	7.51722	0.2007477	0.18664748	3.0324102	20	—	—
502256 2015 BS_{118}	16.6	X	335.80081	254.25915	353.04131	6.71974	0.0298355	0.22404897	2.6847720	20	4 20.1	20.2
502257 2015 BT_{118}	17.2	X	262.79500	229.31471	93.19898	4.76039	0.0273769	0.22665214	2.6641755	20	4 25.9	20.8
502258 2015 BK_{119}	17.7	X	174.34454	24.54222	66.41349	2.70884	0.1534635	0.25391979	2.4698563	20	6 22.2	21.5
502259 2015 BN_{119}	16.9	X	102.95567	349.32991	113.37392	6.20032	0.1239800	0.22071213	2.7117641	20	4 23.5	20.7
502260 2015 BT_{119}	17.1	X	163.72629	275.84678	124.04694	11.01295	0.1112548	0.22064998	2.7122733	20	4 11.6	21.4
502261 2015 BM_{120}	17.5	X	63.12955	58.33054	77.40477	5.81397	0.0711051	0.22003855	2.7172955	20	4 5.2	20.9
502262 2015 BE_{121}	16.3	X	214.27281	221.60406	112.69023	14.25113	0.1572845	0.21868044	2.7285343	20	3 11.1	20.9
502263 2015 BW_{121}	17.1	X	296.30721	280.60054	22.55597	1.87689	0.0494153	0.24083223	2.5585445	20	5 8.9	20.4
502264 2015 BD_{122}	16.9	X	252.34174	214.69272	99.00812	3.79667	0.0689310	0.22419448	2.6836102	20	3 27.3	20.7
502265 2015 BM_{122}	16.5	X	236.06826	169.39592	93.72975	5.53495	0.0475857	0.18725615	3.0258356	20	1 11.5	21.0
502266 2015 BN_{122}	16.8	X	188.68736	245.75008	109.99727	7.40750	0.0621112	0.21533728	2.7567025	20	3 10.8	20.9
502267 2015 BF_{124}	17.3	X	254.17814	323.94210	322.88243	2.85308	0.0656331	0.20933222	2.8091741	20	2 24.1	21.3
502268 2015 BH_{124}	17.5	X	40.25233	18.66697	123.97727	9.72252	0.1056194	0.21058743	2.7980003	20	3 15.6	20.9
502269 2015 BO_{125}	16.3	X	285.77181	250.44883	309.49225	9.91245	0.0700346	0.17794660	3.1304703	20	—	—
502270 2015 BR_{125}	17.1	X	200.73244	241.50072	120.43817	6.14629	0.0866836	0.22575086	2.6712617	20	3 30.6	21.2
502271 2015 BQ_{126}	18.2	X	186.81700	312.14804	94.49851	2.55826	0.0883852	0.24240766	2.5474470	20	5 8.9	22.0
502272 2015 BM_{128}	17.2	X	251.49517	304.60987	358.51207	3.86806	0.0658892	0.21599610	2.7510941	20	3 12.1	20.9
502273 2015 BP_{129}	16.8	X	206.37042	212.66293	125.03325	4.52052	0.2011780	0.21720175	2.7409040	20	3 4.1	21.4
502274 2015 BC_{130}	18.0	X	242.17312	257.50164	128.34517	3.27935	0.2036168	0.26638341	2.3922025	20	5 31.8	21.5
502275 2015 BQ_{130}	16.8	X	50.12831	158.07008	326.34784	4.01471	0.0753249	0.20691823	2.8309805	20	2 29.4	20.4
502276 2015 BY_{132}	16.7	X	272.99659	123.14790	116.93310	10.83009	0.0397365	0.19192818	2.9765297	20	1 25.7	20.8
502277 2015 BS_{133}	17.3	X	174.39906	349.08113	79.58208	3.45842	0.0829889	0.24559065	2.5253883	20	5 23.5	20.8
502278 2015 BT_{133}	16.9	X	203.24124	272.77755	73.87415	5.43236	0.1361067	0.21887240	2.7269388	20	3 14.2	21.3
502279 2015 BP_{134}	16.8	X	207.60103	260.10563	105.07098	8.61954	0.1403870	0.23209603	2.6223515	20	4 10.5	21.1
502280 2015 BW_{135}	18.2	X	251.01222	41.93703	342.72614	5.28344	0.2513052	0.27396329	2.3478723	20	6 1.6	21.7
502281 2015 BR_{136}	16.3	X	179.35531	43.06495	319.67723	24.02496	0.0485590	0.21358184	2.7717869	20	2 27.6	20.6
502282 2015 BD_{138}	15.4	X	228.08365	300.08714	323.47232	25.54501	0.2278379	0.17387923	3.1791004	20	1 4.0	21.2
502283 2015 BB_{139}	17.5	X	194.74637	358.90515	8.34567	6.25820	0.0330073	0.22192694	2.7018592	20	3 28.4	21.3
502284 2015 BE_{140}	17.1	X	248.92497	277.81711	17.58906	6.43458	0.0668256	0.20900781	2.8120802	20	3 2.2	21.1
502285 2015 BP_{140}	16.4	X	146.45375	19.31075	336.58129	14.44977	0.0288442	0.18974216	2.9993477	20	1 24.6	20.8
502286 2015 BT_{140}	17.0	X	183.48851	283.65020	71.43747	6.28185	0.1438067	0.21263584	2.7800017	20	3 7.1	21.5
502287 2015 BZ_{140}	17.9	X	255.54570	19.70994	17.08723	6.26632	0.1622964	0.27533623	2.3400608	20	7 7.3	21.1
502288 2015 BD_{141}	17.0	X	177.34207	340.91337	45.22163	6.90222	0.0360921	0.22186473	2.7023641	20	4 3.1	20.8
502289 2015 BL_{141}	17.1	X	182.94083	359.39700	58.25690	6.61577	0.1451982	0.24693960	2.5161830	20	5 18.3	21.1
502290 2015 BO_{141}	16.3	X	300.12805	197.19564	3.38761	9.77632	0.1564343	0.17931715	3.1144988	20	—	—
502291 2015 BS_{141}	17.4	X	159.37892	34.14640	86.05771	8.12943	0.0148053	0.25856287	2.4401992	20	7 13.7	20.5
502292 2015 BY_{141}	17.1	X	83.65518	91.98894	36.69706	6.36629	0.1465395	0.22511880	2.6762594	20	5 2.8	20.4
502293 2015 BK_{142}	17.0	X	235.04530	219.66632	90.20521	7.42500	0.0230440	0.20982973	2.8047320	20	3 9.4	21.0
502294 2015 BT_{143}	16.1	X	152.06002	226.94737	112.87427	13.74552	0.0568379	0.18245589	3.0786770	20	1 12.5	20.4
502295 2015 BB_{144}	17.1	X	45.93860	110.80275	87.99415	4.60029	0.0842808	0.23724050	2.5843033	20	6 3.8	20.1
502296 2015 BB_{146}	18.4	X	213.07725	87.73639	332.27630	3.93283	0.1371591	0.26347368	2.4097827	20	6 21.3	21.9
502297 2015 BC_{146}	16.2	X	224.46467	145.78176	125.29224	14.46406	0.1694557	0.17671421	3.1450078	20	1 5.8	21.4
502298 2015 BQ_{146}	17.4	X	197.06952	310.81792	116.36593	8.03126	0.1721983	0.26011552	2.4304790	20	6 13.3	21.3
502299 2015 BJ_{147}	16.5	X	255.76857	109.78766	122.36838	10.59380	0.0619326	0.17659338	3.1464423	20	—	—
502300 2015 BK_{147}	17.2	X	45.22836	178.20208	345.05511	3.59530	0.0224380	0.22166356	2.7039989	20	4 6.6	20.7
502301 2015 BP_{148}	17.6	X	196.79113	40.85377	21.04396	3.08388	0.1686708	0.25689766	2.4507327	20	6 5.2	21.5
502302 2015 BQ_{148}	17.0	X	128.04859	1.20285	36.10204	2.48391	0.0753917	0.20349954	2.8625984	20	2 23.8	21.0
502303 2015 BT_{148}	17.3	X	230.31900	302.65079	110.34476	6.85408	0.0960871	0.26559481	2.3969354	20	7 5.7	20.5
502304 2015 BL_{149}	16.5	X	25.14038	125.80375	337.27406	10.37851	0.1171172	0.18364297	3.0653954	20	1 2.5	20.3
502305 2015 BQ_{149}	16.6	X	237.88897	292.06977	347.65977	5.55607	0.1627689	0.18783287	3.0196387	20	1 27.0	21.5
502306 2015 BF_{150}	16.8	X	291.30347	169.02246	109.88343	6.57035	0.0953280	0.21783862	2.7355593	20	3 28.6	20.6
502307 2015 BU_{150}	17.1	X	286.72124	245.24140	25.64319	4.60955	0.0296046	0.21448715	2.7639819	20	3 20.2	20.9
502308 2015 BA_{151}	17.3	X	271.79821	267.13727	24.24251	4.55731	0.0532122	0.21677399	2.7445087	20	3 23.8	20.9
502309 2015 BC_{151}	16.9	X	144.85639	286.10814	98.97481	6.84393	0.0805684	0.20529731	2.8458623	20	2 29.9	21.1
502310 2015 BG_{151}	17.3	X	133.00550	31.40141	47.48767	3.92227	0.1344023	0.22935314	2.6432176	20	4 25.6	21.2
502311 2015 BQ_{151}	17.9	X	249.75585	300.85634	92.71501	7.76978	0.0813417	0.26828348	2.3808942	20	7 5.9	20.9
502312 2015 BA_{153}	16.5	X	197.17034	169.58737	128.12315	9.68804	0.0440908	0.18539613	3.0460400	20	1 10.3	21.1
502313 2015 BV_{153}	18.0	X	196.79951	54.39755	358.81691	5.02526	0.1364540	0.25273518	2.4775680	20	5 25.0	21.9
502314 2015 BZ_{154}	16.9	X	231.91118	310.27862	329.39398	10.56234	0.0781769	0.19059899	2.9903520	20	1 26.0	21.4
502315 2015 BB_{155}	16.5	X	359.73105	202.19556	340.66123	8.68482	0.1525982	0.20311958	2.8661672	20	2 25.9	19.6
502316 2015 BX_{156}	16.6	X	84.49477	344.62712	123.33226	11.34031	0.0805243	0.21016500	2.8017483	20	4 2.8	20.5
502317 2015 BF_{157}	16.5	X	110.57219	292.69170	156.39196	12.79204	0.1349026	0.21058902	2.7979862	20	4 17.9	20.7
502318 2015 BU_{159}	16.9	X	272.76408	90.13942	153.63318	9.20600	0.0311348	0.19120533	2.9840268	20	1 29.9	21.2
502319 2015 BW_{159}	17.1	X	113.25647	230.69450	196.27357	3.64643	0.0873982	0.21010425	2.8022884	20	3 13.3	20.9
502320 2015 BJ_{160}	17.0	X	140.76432	175.46175	229.00842	2.95894	0.0977528	0.21309594	2.7759988	20	3 17.3	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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502321 2015 BL_{160}	17.0	X	142.07375	151.93217	250.54554	2.58525	0.1001045	0.21288949	2.7777932	20	3 16.4	21.1
502322 2015 BD_{161}	16.9	X	224.34400	153.38622	183.61440	5.71612	0.0535232	0.21997756	2.7177977	20	3 23.9	20.6
502323 2015 BX_{163}	17.4	X	233.20645	35.20163	314.80606	14.02749	0.1221285	0.23779649	2.5802736	20	4 5.5	21.6
502324 2015 BM_{164}	17.1	X	180.64302	273.81945	88.29934	5.17181	0.0896396	0.21610337	2.7501836	20	3 10.4	21.3
502325 2015 BO_{165}	16.9	X	255.54389	309.27455	318.49061	4.11826	0.0756626	0.19853827	2.9100910	20	2 3.3	21.0
502326 2015 BW_{166}	17.3	X	197.97983	243.94016	118.25916	7.23557	0.0602492	0.22301502	2.6930638	20	3 28.9	21.3
502327 2015 BL_{167}	17.1	X	309.33861	7.30484	323.75610	5.35199	0.1468955	0.26444183	2.4038975	20	6 25.4	19.6
502328 2015 BM_{168}	16.4	X	253.89774	187.16959	67.06126	2.82338	0.1387209	0.18553758	3.0444917	20	1 13.1	21.0
502329 2015 BD_{169}	17.4	X	265.44364	196.75012	111.69662	7.34048	0.0478073	0.22639852	2.6661648	20	4 9.8	21.2
502330 2015 BE_{169}	16.6	X	355.88766	9.97165	116.69030	11.73742	0.0163955	0.17941770	3.1133350	20	—	—
502331 2015 BW_{171}	17.9	X	194.44273	304.65784	121.64725	2.11830	0.1703609	0.25905600	2.4371015	20	6 9.3	21.9
502332 2015 BO_{173}	17.7	X	197.92226	53.41030	317.44067	15.18747	0.1391312	0.23089513	2.6314363	20	3 27.2	22.2
502333 2015 BM_{176}	15.9	X	118.30559	55.54321	322.39780	15.58893	0.0081912	0.18665157	3.0323660	20	1 14.9	20.2
502334 2015 BT_{179}	17.7	X	127.92133	125.60966	330.50483	11.14640	0.1382909	0.23708949	2.5854006	20	5 7.6	21.8
502335 2015 BR_{184}	17.2	X	305.36082	287.75078	7.15424	9.40619	0.1097813	0.23606668	2.5928631	20	4 28.9	20.5
502336 2015 BA_{185}	16.9	X	304.08438	166.64037	103.53010	13.41237	0.1031145	0.21956328	2.7212154	20	4 5.9	20.7
502337 2015 BB_{186}	17.5	X	234.44578	320.07019	85.97353	6.93150	0.1104394	0.26542052	2.3979846	20	6 29.4	20.9
502338 2015 BF_{187}	16.9	X	234.86697	241.25017	81.41746	3.74570	0.0641279	0.21763248	2.7372864	20	3 19.4	20.9
502339 2015 BZ_{187}	16.4	X	243.73857	119.87073	119.18591	10.88196	0.0451344	0.17515734	3.1636164	20	—	—
502340 2015 BJ_{189}	17.1	X	251.65985	243.00754	113.52287	3.95785	0.0640718	0.24553869	2.5257445	20	5 20.6	20.6
502341 2015 BB_{191}	16.7	X	73.41032	183.02383	319.86160	11.65599	0.1335452	0.22558148	2.6725987	20	4 30.4	20.4
502342 2015 BJ_{193}	17.0	X	282.51694	191.78785	99.69750	6.30715	0.0125106	0.22409967	2.6843671	20	4 14.4	20.6
502343 2015 BK_{193}	17.2	X	178.12458	278.43703	92.15122	5.26688	0.0831068	0.21533815	2.7566951	20	3 18.1	21.4
502344 2015 BH_{195}	18.3	X	225.26245	31.06516	358.78744	4.91080	0.1188667	0.25173417	2.4841316	20	5 25.3	22.0
502345 2015 BV_{195}	17.0	X	255.80973	214.73854	97.21964	6.55529	0.0584112	0.22020687	2.7159107	20	4 1.2	20.9
502346 2015 BJ_{197}	17.9	X	232.58680	22.64299	342.78448	2.09452	0.1127497	0.24593465	2.5230328	20	5 2.2	21.5
502347 2015 BP_{198}	16.9	X	14.44664	77.51164	95.41972	4.27854	0.0374944	0.21120836	2.7925137	20	3 12.6	20.5
502348 2015 BR_{200}	16.0	X	173.65489	314.51690	346.74387	15.43950	0.1512890	0.17048840	3.2211145	20	—	—
502349 2015 BN_{203}	15.7	X	244.56147	302.29250	296.45402	16.67723	0.1493675	0.17240861	3.1971529	20	—	—
502350 2015 BS_{203}	18.4	X	247.04678	235.46166	161.24744	4.13053	0.2241790	0.27662074	2.3328110	20	6 17.9	21.9
502351 2015 BH_{204}	17.6	X	121.40825	285.47954	197.94215	4.52249	0.0862816	0.24487834	2.5302832	20	6 4.6	21.1
502352 2015 BT_{205}	17.1	X	141.55464	133.44344	316.21314	11.91103	0.1518486	0.23661741	2.5888383	20	5 15.7	21.4
502353 2015 BU_{205}	17.3	X	112.56319	314.27117	135.56918	5.91198	0.1346899	0.22136028	2.7064681	20	4 19.4	21.2
502354 2015 BY_{207}	15.9	X	102.53249	290.49215	110.62860	14.63516	0.1568593	0.21589642	2.7519408	20	2 8.3	19.7
502355 2015 BM_{213}	15.9	X	311.29184	255.56355	275.16965	17.47757	0.1055508	0.18265054	3.0764893	20	—	—
502356 2015 BV_{213}	16.7	X	120.43593	301.95555	109.43867	4.63549	0.0937162	0.20866961	2.8151179	20	3 5.9	20.6
502357 2015 BT_{215}	17.1	X	139.50719	310.54082	81.88980	6.78057	0.0596293	0.21821021	2.7324529	20	2 29.8	21.0
502358 2015 BT_{222}	15.8	X	231.98856	2.11524	251.05640	8.50747	0.1910368	0.17781375	3.1320294	20	—	—
502359 2015 BW_{222}	16.5	X	292.96518	307.85404	321.63982	4.50669	0.0920894	0.22856301	2.6493058	20	3 13.2	19.9
502360 2015 BJ_{223}	17.2	X	279.26933	171.55799	76.38596	5.50820	0.0146875	0.21170636	2.7881328	20	2 14.2	21.0
502361 2015 BS_{224}	17.1	X	40.44223	38.24968	89.80711	6.02379	0.1111815	0.21052581	2.7985462	20	2 24.7	20.4
502362 2015 BL_{225}	19.0	X	206.96729	33.24271	8.61926	2.26911	0.2383657	0.26504314	2.4002603	20	5 16.9	23.1
502363 2015 BO_{231}	16.6	X	341.51673	174.54336	70.46556	7.36108	0.0561860	0.23745781	2.5827264	20	4 27.2	19.7
502364 2015 BK_{233}	16.4	X	304.22667	170.57290	19.40008	6.60046	0.1796455	0.18515117	3.0487261	20	—	—
502365 2015 BR_{233}	16.5	X	283.52626	306.46118	327.55862	12.36571	0.1522099	0.22487882	2.6781631	20	2 28.1	20.4
502366 2015 BQ_{238}	17.0	X	70.18920	90.80582	29.38134	4.44308	0.0686666	0.22262224	2.6962305	20	3 23.2	20.3
502367 2015 BR_{238}	16.0	X	107.76323	87.76491	259.81633	10.94811	0.1183292	0.17673620	3.1447469	20	—	—
502368 2015 BZ_{238}	18.0	X	296.75043	263.67533	62.30414	4.77344	0.0804435	0.26103524	2.4247667	20	6 6.2	20.8
502369 2015 BG_{240}	16.9	X	149.66338	262.10475	132.55192	12.72823	0.1154784	0.21996225	2.7179239	20	3 20.9	21.1
502370 2015 BT_{240}	18.0	X	198.10568	313.99875	138.41378	6.58337	0.1016976	0.27047239	2.3680312	20	7 21.0	21.2
502371 2015 BU_{240}	16.7	X	298.01557	147.66609	132.80017	15.16649	0.2208801	0.22285716	2.6943354	20	3 21.4	20.6
502372 2015 BH_{241}	17.4	X	4.28176	2.13884	197.36612	0.78769	0.0457183	0.22006016	2.7171176	20	3 29.6	20.8
502373 2015 BL_{241}	17.7	X	207.10487	234.57608	139.40955	3.69843	0.1630429	0.24046100	2.5611771	20	4 17.2	21.8
502374 2015 BE_{242}	17.2	X	296.00563	142.51618	158.31830	6.43873	0.1199941	0.23799874	2.5788116	20	4 26.9	20.5
502375 2015 BO_{242}	16.9	X	290.24614	25.44273	237.17653	2.52282	0.0188643	0.21554901	2.7548970	20	3 13.2	20.5
502376 2015 BS_{242}	17.7	X	219.26961	139.27285	282.16054	9.30670	0.2052645	0.27208421	2.3586698	20	6 24.7	21.3
502377 2015 BV_{242}	16.9	X	234.54839	172.42614	161.00788	9.66089	0.0653448	0.22583521	2.6705965	20	3 31.9	20.8
502378 2015 BW_{242}	16.9	X	155.78575	278.26878	136.86340	27.26771	0.0938134	0.23149979	2.6268523	20	4 25.6	21.4
502379 2015 BC_{243}	16.8	X	279.34500	2.94097	286.69733	11.32829	0.0623411	0.22289484	2.6940317	20	3 21.6	20.9
502380 2015 BN_{243}	16.6	X	227.76543	122.83418	146.25674	10.50804	0.1113465	0.18282244	3.0745605	20	1 7.1	21.5
502381 2015 BS_{243}	16.9	X	254.52701	36.20456	258.36143	3.49818	0.0337908	0.21373273	2.7704822	20	3 6.6	20.8
502382 2015 BT_{243}	17.8	X	220.34209	116.78963	277.05124	5.46288	0.2000575	0.25953388	2.4341089	20	5 19.9	21.8
502383 2015 BA_{244}	17.0	X	214.04253	200.56298	147.54970	11.53186	0.0906556	0.22425678	2.6831132	20	3 27.5	21.1
502384 2015 BU_{244}	18.1	X	241.94412	144.62969	247.80436	1.84995	0.2007105	0.27023385	2.3694245	20	6 9.1	21.7
502385 2015 BW_{244}	17.2	X	346.51528	281.57345	276.42295	3.17098	0.0404500	0.20994047	2.8037456	20	3 2.3	20.8
502386 2015 BN_{245}	18.0	X	228.53296	283.22453	137.21416	5.36560	0.1334001	0.27264311	2.3554453	20	7 9.5	21.4
502387 2015 BW_{245}	16.3	X	342.30647	199.84563	305.44648	8.93620	0.0366763	0.18165570	3.0877114	20	—	—
502388 2015 BC_{246}	17.9	X	212.70141	244.64128	153.70700	2.92996	0.1363203	0.25374852	2.4709675	20	5 23.8	21.6
502389 2015 BD_{246}	17.5	X	102.51380	277.66608	177.27128	1.78014	0.0319449	0.21923771	2.7239087	20	3 27.6	21.1
502390 2015 BP_{246}	16.6	X	314.93466	358.70593	278.40569	3.35478	0.1783853	0.22861548	2.6489004	20	4 9.5	19.9
502391 2015 BY_{247}	15.9	X	120.51891	195.18755	142.42133	9.30305	0.1364251	0.16920512	3.2373803	20	—	—
502392 2015 BG_{248}	16.2	X	14.32792	164.12206	313.19663	9.24917	0.0729120	0.18458623	3.0549435	20	1 4.3	20.1
502393 2015 BK_{248}	17.4	X	153.87688	263.87990	139.77430	3.90767	0.1670141	0.22722515	2.6596947	20	4 6.2	21.6
502394 2015 BP_{248}	17.1	X	105.13157	307.55990	132.79260	0.51801	0.0513956	0.21349267	2.7725587	20	3 15.6	20.8
502395 2015 BC_{249}	17.5	X	156.03611	291.99432	130.50560	1.66602	0.1080548	0.23309029	2.6148890	20	4 27.1	21.4
502396 2015 BV_{249}	17.6	X	117.38668	18.96906	114.92598	5.99170	0.0340897	0.24377708	2.5378979	20	6 7.6	21.0
502397 2015 BV_{250}	17.1	X	129.75945	306.11809	124.03065	3.19181	0.0443388	0.21802246	2.7340213	20	4 2.3	20.8
502398 2015 BJ_{251}	18.0	X	193.76529	272.65689	173.69457	1.48575	0.1523980	0.26390252	2.4071714	20	7 5.3	21.7
502399 2015 BO_{251}	17.1	X	242.61406	190.77805	153.52241	2.40460	0.0941586	0.23165073	2.6257111	20	4 20.0	21.0
502400 2015 BP_{251}	18.7	X	235.78502	118.30510	308.51682	2.37807	0.2344105	0.28133806	2.3066607	20	7 15.9	22.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
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502401 2015 BR_{251}	16.4	X	247.48154	285.72993	326.56656	2.44482	0.1408286	0.17598396	3.1537021	20	1 5.9	21.3
502402 2015 BF_{252}	17.8	X	196.44733	188.00245	232.27184	2.52277	0.1322418	0.25320672	2.4744911	20	6 4.4	21.5
502403 2015 BG_{252}	17.0	X	60.83240	353.45727	160.79485	5.79814	0.0412633	0.22357257	2.6885846	20	4 21.5	20.4
502404 2015 BW_{252}	16.7	X	88.97470	185.73005	265.11559	5.19963	0.0515411	0.20856787	2.8160332	20	3 5.7	20.6
502405 2015 BD_{253}	16.1	X	23.32713	186.56767	295.24110	8.51716	0.0421458	0.18870483	3.0103296	20	1 20.9	20.2
502406 2015 BO_{253}	17.1	X	336.36458	38.98985	179.83632	4.08641	0.0782175	0.21113468	2.7931633	20	3 12.3	20.4
502407 2015 BR_{253}	17.3	X	19.05870	12.07088	155.98048	8.01903	0.0787720	0.20906003	2.8116119	20	3 11.9	20.8
502408 2015 BS_{253}	16.8	X	303.51668	76.96958	168.21963	4.71788	0.0552113	0.20908506	2.8113875	20	3 4.5	20.5
502409 2015 BA_{254}	16.9	X	217.00976	120.93464	221.19814	3.83743	0.1227010	0.22029380	2.7151961	20	3 17.8	21.2
502410 2015 BC_{254}	17.0	X	246.25037	41.95481	278.87908	5.22100	0.0711467	0.22143435	2.7058645	20	3 24.3	20.9
502411 2015 BQ_{254}	16.7	X	41.58178	226.72747	286.41814	3.74068	0.0768418	0.21360715	2.7715679	20	3 23.2	20.1
502412 2015 BS_{254}	16.0	X	198.97286	148.29134	149.23781	11.68612	0.1623282	0.18042994	3.1016799	20	1 13.6	21.2
502413 2015 BT_{254}	16.5	X	308.57664	43.92462	141.42877	18.77819	0.1392734	0.17749604	3.1357657	20	—	—
502414 2015 BJ_{255}	17.3	X	142.33491	293.89828	141.40589	11.76989	0.0903736	0.23168829	2.6254273	20	5 1.1	21.3
502415 2015 BL_{255}	16.7	X	155.67298	287.16293	138.75121	11.92858	0.1725174	0.23839124	2.5759802	20	5 8.2	21.0
502416 2015 BN_{255}	15.9	X	77.59650	249.25716	140.85983	11.73662	0.1879662	0.18112534	3.0937359	20	—	—
502417 2015 BO_{255}	16.1	X	339.13486	213.59436	306.14657	7.04924	0.0343173	0.18540548	3.0459376	20	1 11.3	20.3
502418 2015 BB_{256}	16.4	X	187.59239	23.86518	285.56658	7.83520	0.0470131	0.18593966	3.0401011	20	1 13.7	20.8
502419 2015 BD_{256}	16.1	X	205.85382	30.63929	258.14638	4.45922	0.1323508	0.18119697	3.0929205	20	1 9.5	21.1
502420 2015 BF_{256}	16.4	X	278.56638	46.87138	149.89012	9.98046	0.0595097	0.17208897	3.2011107	20	—	—
502421 2015 BS_{256}	16.7	X	100.93566	156.63260	286.61776	6.96730	0.1936701	0.21873687	2.7280651	20	3 30.0	20.7
502422 2015 BW_{256}	16.7	X	146.45305	124.69894	285.60679	5.57604	0.0645574	0.22080586	2.7109967	20	3 25.3	20.7
502423 2015 BC_{257}	16.1	X	347.50682	211.87286	283.17693	5.24748	0.1405963	0.17846500	3.1244051	20	—	—
502424 2015 BJ_{257}	18.0	X	227.56549	274.94345	152.46787	7.44099	0.1495036	0.27509023	2.3414557	20	7 15.9	21.4
502425 2015 BN_{257}	16.6	X	347.10589	291.77610	254.44134	5.60790	0.0437822	0.20386281	2.8591967	20	2 16.5	20.5
502426 2015 BA_{258}	18.4	X	226.78717	274.93620	163.83519	5.27403	0.1899029	0.28180596	2.3041068	20	7 26.4	21.8
502427 2015 BC_{258}	16.9	X	257.86421	31.41575	266.90459	6.03587	0.0607059	0.21583800	2.7524374	20	3 10.6	21.0
502428 2015 BH_{259}	17.5	X	77.97759	339.79096	134.68720	5.77277	0.1007791	0.21514780	2.7583208	20	4 2.3	21.0
502429 2015 BG_{260}	15.6	X	214.44449	150.70164	144.56710	10.77115	0.0732108	0.18887153	3.0085580	20	1 24.5	20.1
502430 2015 BD_{264}	16.7	X	265.36861	75.32565	275.54134	13.71758	0.1276632	0.23912177	2.5707310	20	5 19.0	20.5
502431 2015 BX_{268}	17.4	X	250.56173	110.68779	249.54828	3.16314	0.1472998	0.25446065	2.4663552	20	5 12.1	20.8
502432 2015 BB_{269}	17.5	X	200.69424	144.62786	284.53873	4.50274	0.1931371	0.26639708	2.3921207	20	6 17.9	21.4
502433 2015 BO_{270}	17.0	X	122.52052	318.52752	99.66893	4.83042	0.0892338	0.21023064	2.8011651	20	3 16.7	21.0
502434 2015 BG_{274}	16.4	X	323.29675	329.06803	326.95236	14.04417	0.1222162	0.24242863	2.5473001	20	5 28.1	19.6
502435 2015 BH_{274}	18.0	X	195.93633	348.29384	104.80021	2.75595	0.1434252	0.26713660	2.3877038	20	7 17.4	21.6
502436 2015 BY_{275}	17.4	X	126.25933	285.15276	136.75299	8.38048	0.2197406	0.21471163	2.7620551	20	4 9.5	21.8
502437 2015 BD_{276}	16.0	X	29.46040	316.07813	153.48148	11.26392	0.0610793	0.17794422	3.1304982	20	1 15.7	20.2
502438 2015 BH_{276}	17.1	X	65.53461	24.96222	119.30487	4.65905	0.0355099	0.21353138	2.7722235	20	4 15.0	20.7
502439 2015 BQ_{276}	16.2	X	355.96129	189.51102	342.75451	9.37975	0.0450066	0.19057171	2.9906374	20	2 16.9	20.1
502440 2015 BF_{277}	17.0	X	269.85260	17.00102	339.40966	12.93492	0.1244667	0.24540719	2.5266467	20	5 31.8	20.6
502441 2015 BK_{277}	16.9	X	333.67084	82.25728	131.85325	7.04500	0.1640757	0.19493241	2.9458684	20	2 23.7	20.3
502442 2015 BL_{277}	17.7	X	194.58788	292.98417	131.56768	5.99445	0.1994063	0.25166980	2.4845552	20	6 6.9	21.9
502443 2015 BT_{277}	16.7	X	253.67301	115.14489	147.18006	16.39728	0.0792553	0.18087719	3.0965649	20	1 26.8	21.4
502444 2015 BZ_{277}	17.2	X	102.71995	296.75747	159.78673	4.44071	0.0427551	0.21599394	2.7511124	20	4 1.8	20.8
502445 2015 BK_{278}	16.0	X	40.32074	123.31788	319.84103	9.59017	0.0595058	0.17657620	3.1466464	20	—	—
502446 2015 BT_{278}	16.6	X	286.27600	283.03098	318.63961	0.28473	0.1240126	0.18870721	3.0103042	20	2 1.3	20.7
502447 2015 BB_{281}	17.0	X	269.69104	62.68029	223.50772	8.36488	0.1653765	0.21842525	2.7306591	20	2 25.4	21.3
502448 2015 BQ_{291}	15.9	X	254.52289	110.40342	143.82339	12.05963	0.0917688	0.17917805	3.1161105	20	1 17.5	20.7
502449 2015 BR_{291}	16.8	X	58.33530	7.64683	127.61039	4.60308	0.0369465	0.20861613	2.8155989	20	3 24.6	20.5
502450 2015 BU_{291}	16.4	X	17.58674	327.87552	139.71779	11.36450	0.0700110	0.17476277	3.1683764	20	—	—
502451 2015 BW_{291}	16.1	X	356.58409	24.07808	142.29754	12.45241	0.0635202	0.19078097	2.9884501	20	2 7.4	20.0
502452 2015 BF_{292}	15.7	X	126.12242	228.21018	140.88524	10.65722	0.1116789	0.18028454	3.1033473	20	1 24.6	20.2
502453 2015 BZ_{292}	16.0	X	51.62526	111.15954	351.75916	12.54143	0.1224189	0.18292669	3.0733923	20	2 16.2	19.8
502454 2015 BD_{293}	16.8	X	231.68739	183.79068	201.85603	13.88275	0.1461945	0.25674094	2.4517300	20	5 26.6	20.6
502455 2015 BX_{294}	15.4	X	285.31502	298.82396	268.25999	14.42591	0.0686655	0.17723303	3.1388672	20	—	—
502456 2015 BB_{304}	16.0	X	80.26995	307.90832	141.08986	9.78175	0.1078856	0.18784106	3.0195510	20	3 6.7	20.0
502457 2015 BE_{304}	16.6	X	58.29749	151.18237	32.97330	7.28045	0.0602144	0.22142019	2.7059799	20	5 28.1	20.1
502458 2015 BH_{305}	16.1	X	204.18865	201.51345	144.46853	12.89642	0.0657602	0.19142423	2.9817515	20	3 17.3	20.6
502459 2015 BJ_{305}	16.9	X	19.51576	83.33654	133.83107	10.49614	0.1084690	0.21277821	2.7787615	20	5 22.5	20.3
502460 2015 BB_{307}	16.2	X	243.91149	242.67189	20.62577	9.65438	0.0994989	0.18652880	3.0336964	20	1 18.8	21.0
502461 2015 BD_{307}	15.7	X	66.05460	314.85809	102.74136	15.95347	0.0234337	0.17964812	3.1106723	20	—	—
502462 2015 BE_{307}	16.3	X	46.63660	96.38749	2.99599	10.78104	0.0380743	0.19198521	2.9759402	20	1 27.5	20.4
502463 2015 BK_{310}	17.2	X	300.74018	300.72941	31.28490	6.59153	0.1558286	0.25959794	2.4337085	20	6 8.4	20.0
502464 2015 BQ_{310}	18.0	X	204.26484	262.98809	183.24969	1.75337	0.1724073	0.27389861	2.3482419	20	7 14.8	21.6
502465 2015 BM_{313}	16.7	X	305.51194	113.55771	131.46273	4.72078	0.0499043	0.21165631	2.7885723	20	3 8.9	20.4
502466 2015 BW_{314}	16.4	X	230.86027	190.95928	147.67890	18.61333	0.1556757	0.21716325	2.7412280	20	3 30.9	21.0
502467 2015 BK_{316}	17.1	X	141.43997	28.78739	2.31402	4.16479	0.0776046	0.21128127	2.7918713	20	3 1.7	21.2
502468 2015 BX_{318}	16.8	X	306.15530	94.05451	85.56261	2.27072	0.0301357	0.18001014	3.1065003	20	—	—
502469 2015 BD_{320}	17.6	X	234.35124	10.64080	326.52548	1.84252	0.0903189	0.22735654	2.6586699	20	3 31.6	21.6
502470 2015 BU_{321}	18.3	X	198.73497	12.75343	46.29246	3.01865	0.1822422	0.25949854	2.4343299	20	6 3.0	22.1
502471 2015 BD_{324}	17.7	X	179.93920	16.51217	68.35207	6.26130	0.1110110	0.25572465	2.4582214	20	6 19.9	21.5
502472 2015 BW_{329}	18.0	X	147.27336	30.51508	91.26633	5.27807	0.1855929	0.25199049	2.4824468	20	7 7.4	22.0
502473 2015 BS_{334}	16.0	X	333.82508	186.24613	315.14187	14.96759	0.0403213	0.17494041	3.1662312	20	—	—
502474 2015 BY_{338}	16.1	X	346.32585	30.64834	101.56084	10.52778	0.0529514	0.17506409	3.1647398	20	—	—
502475 2015 BP_{339}	17.2	X	174.24112	338.32494	92.33995	5.63751	0.0976820	0.24618070	2.5213514	20	5 26.7	20.9
502476 2015 BY_{339}	16.6	X	18.40996	22.11944	103.06224	4.41150	0.0721696	0.18957565	3.0011037	20	1 18.2	20.4
502477 2015 BN_{341}	15.5	X	236.55717	282.34443	322.94805	27.50654	0.0846626	0.17174416	3.2053938	20	—	—
502478 2015 BO_{341}	17.1	X	332.90451	77.33129	104.86104	6.06472	0.0451752	0.19170080	2.9788830	20	1 28.5	21.1
502479 2015 BB_{346}	16.8	X	170.31976	86.86242	302.72936	11.43920	0.0722906	0.23246877	2.6195477	20	3 22.6	20.8
502480 2015 BC_{353}	18.3	X	161.75481	305.15816	135.38319	12.78100	0.1896954	0.24697767	2.5159244	20	5 31.5	22.6

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502481 2015 BU_{353}	16.3	X	249.41632	90.54372	137.76096	8.77612	0.0447148	0.17429530	3.1740390	20	—	—
502482 2015 BS_{354}	16.9	X	253.67559	230.18926	82.14276	1.67057	0.0571934	0.21166233	2.7885193	20	3 28.2	20.8
502483 2015 BT_{354}	17.0	X	90.67007	320.36459	130.15057	3.03054	0.0546950	0.20435330	2.8546198	20	3 12.2	20.7
502484 2015 BX_{354}	15.6	X	332.30438	279.46788	253.06231	11.03681	0.1594528	0.17872770	3.1213429	20	1 1.8	19.8
502485 2015 BY_{355}	17.7	X	228.32487	261.25121	142.21587	6.18182	0.2461343	0.26581146	2.3956328	20	6 7.1	21.7
502486 2015 BD_{356}	16.3	X	26.08837	139.92098	327.08865	9.10965	0.0261356	0.17854770	3.1234403	20	1 10.1	20.7
502487 2015 BJ_{356}	16.0	X	283.38914	76.75372	148.37812	12.86471	0.0757556	0.18114069	3.0935612	20	1 15.9	20.6
502488 2015 BM_{356}	17.1	X	196.32713	230.74603	142.81622	4.91619	0.1231060	0.22227213	2.6990610	20	4 8.4	21.4
502489 2015 BR_{356}	16.8	X	281.39007	87.97509	143.55899	13.58883	0.0875468	0.18082028	3.0972146	20	1 19.9	21.4
502490 2015 BC_{357}	16.6	X	332.29844	192.55274	22.87691	4.22463	0.0377021	0.21268366	2.7795850	20	3 8.3	20.2
502491 2015 BF_{357}	16.0	X	237.41165	267.59495	334.47914	10.13131	0.0342026	0.17702514	3.1413241	20	—	—
502492 2015 BO_{357}	16.7	X	206.65247	261.46864	89.00771	7.13343	0.0633590	0.21968146	2.7202393	20	3 24.5	20.8
502493 2015 BZ_{381}	17.0	X	155.04523	266.88151	104.39204	4.91766	0.1109886	0.20920833	2.8102831	20	2 25.3	21.2
502494 2015 BP_{389}	17.2	X	97.83169	15.61989	75.59444	5.82112	0.0314361	0.21383359	2.7696110	20	3 20.3	21.0
502495 2015 BM_{395}	16.0	X	335.06232	76.50943	103.07447	11.53519	0.0208266	0.19330344	2.9623952	20	1 31.2	20.1
502496 2015 BY_{395}	18.0	X	227.82553	10.36529	73.15657	6.74306	0.1261590	0.28041420	2.3117243	20	8 14.4	21.1
502497 2015 BC_{398}	16.7	X	36.16642	279.96341	179.45639	2.23522	0.0563171	0.18417731	3.0594637	20	1 11.8	20.8
502498 2015 BD_{398}	16.8	X	155.78533	88.62256	303.18032	3.85141	0.1183508	0.21571546	2.7534796	20	3 18.5	21.1
502499 2015 BD_{401}	17.6	X	158.40620	140.90870	277.09947	1.62107	0.0747501	0.22883464	2.6472088	20	4 20.6	21.6
502500 2015 BD_{405}	18.1	X	234.39708	234.96119	177.89002	1.37951	0.1789941	0.27049101	2.3679225	20	6 30.8	21.4
502501 2015 BW_{406}	17.0	X	185.40413	65.05641	317.99689	8.07982	0.1556924	0.22701748	2.6613164	20	4 3.8	21.4
502502 2015 BN_{411}	16.5	X	264.69068	113.59018	128.20119	10.17429	0.0796588	0.18284490	3.0743087	20	1 14.7	21.0
502503 2015 BS_{413}	17.5	X	271.22898	8.34543	348.67458	6.03931	0.1395801	0.25564127	2.4587558	20	6 2.6	20.8
502504 2015 BY_{418}	17.4	X	144.42258	76.03222	340.19141	2.06722	0.0714691	0.21896644	2.7261579	20	4 2.7	21.2
502505 2015 BE_{420}	16.2	X	194.27881	331.21292	332.19694	9.90241	0.0767268	0.17961902	3.1110082	20	1 17.4	21.0
502506 2015 BK_{420}	16.7	X	138.79605	66.38269	330.56206	8.82760	0.1271131	0.20880749	2.8138784	20	3 8.7	21.0
502507 2015 BQ_{420}	16.2	X	308.92290	232.68578	322.58154	8.02674	0.0899490	0.18074190	3.0981099	20	1 10.3	20.6
502508 2015 BU_{421}	16.5	X	203.62257	145.94133	177.53822	2.26591	0.0563875	0.19682419	2.9269619	20	2 15.1	20.8
502509 2015 BP_{422}	17.3	X	134.13088	121.40872	314.74917	1.72477	0.1859209	0.22922595	2.6441953	20	4 26.9	21.4
502510 2015 BR_{422}	17.3	X	224.40556	223.36726	142.92302	13.63438	0.1939902	0.23816798	2.5775898	20	4 25.4	21.7
502511 2015 BU_{422}	16.8	X	184.27480	89.89197	280.95595	1.27650	0.0904357	0.21507315	2.7589591	20	3 21.6	21.1
502512 2015 BB_{423}	16.9	X	109.06078	269.75392	153.33797	6.57107	0.0485313	0.20191551	2.8775504	20	2 28.7	20.9
502513 2015 BR_{424}	16.8	X	251.42694	304.40747	313.72160	1.26209	0.0809301	0.18219604	3.0816035	20	1 20.1	21.5
502514 2015 BK_{426}	16.8	X	201.67566	352.92672	328.94425	11.19662	0.0410905	0.19338609	2.9615510	20	2 12.6	21.0
502515 2015 BR_{426}	16.1	X	219.02114	300.51597	328.96926	9.70648	0.0279585	0.17366421	3.1817239	20	1 4.5	20.8
502516 2015 BZ_{429}	17.3	X	132.72871	340.64675	120.25169	5.36749	0.1184669	0.23513924	2.5996765	20	5 23.1	21.1
502517 2015 BQ_{430}	15.9	X	177.51787	191.04335	126.31673	14.40634	0.1797431	0.17692818	3.1424717	20	1 19.7	21.2
502518 2015 BC_{432}	16.7	X	299.61945	243.78708	334.74744	22.07044	0.1322076	0.18477205	3.0528950	20	1 25.6	21.2
502519 2015 BL_{433}	16.4	X	203.32677	218.95329	136.68643	16.44034	0.2221210	0.21834129	2.7313591	20	3 25.7	21.3
502520 2015 BY_{433}	17.4	X	277.97590	260.15915	29.23750	3.48792	0.0801741	0.21294788	2.7772854	20	3 25.3	21.1
502521 2015 BA_{434}	17.0	X	119.74799	333.70405	102.79154	5.68333	0.0427407	0.21292361	2.7774964	20	3 30.7	20.9
502522 2015 BO_{434}	17.2	X	213.25402	343.16940	3.53607	5.37628	0.0315607	0.21272551	2.7792205	20	3 24.9	21.0
502523 2015 BC_{435}	16.7	X	298.32224	180.03595	91.43477	4.71334	0.0505269	0.21431554	2.7654572	20	4 3.3	20.4
502524 2015 BY_{435}	16.3	X	276.69306	90.87573	136.13806	12.47437	0.0853529	0.17801377	3.1296828	20	1 10.4	21.0
502525 2015 BK_{436}	17.7	X	157.62968	107.19580	326.97780	10.38494	0.1849314	0.23912877	2.5706808	20	5 13.2	22.1
502526 2015 BD_{437}	16.8	X	226.80525	211.09219	125.84430	5.10139	0.1077865	0.21470580	2.7621051	20	3 25.8	21.0
502527 2015 BA_{438}	17.4	X	114.50668	61.43845	30.24590	2.36135	0.0577454	0.21800442	2.7341722	20	4 11.6	20.9
502528 2015 BM_{438}	17.0	X	171.81965	49.32004	299.38493	2.49878	0.0220850	0.19181185	2.9777330	20	2 9.6	21.3
502529 2015 BY_{438}	17.2	X	39.63899	323.09428	155.42260	2.58232	0.0293330	0.19108299	2.9853003	20	2 6.8	21.2
502530 2015 BG_{439}	17.2	X	54.21374	179.37472	321.88483	4.88685	0.0317125	0.20991869	2.8039396	20	3 22.1	20.8
502531 2015 BP_{439}	16.4	X	187.60455	349.43652	325.71892	8.35921	0.0564532	0.18079407	3.0975139	20	1 22.9	21.0
502532 2015 BU_{439}	17.3	X	122.99006	37.49504	41.51349	0.82815	0.0566174	0.21619004	2.7494485	20	4 5.7	21.1
502533 2015 BF_{440}	16.2	X	133.41162	206.90085	141.67140	5.78530	0.0247719	0.17104936	3.2140681	20	—	—
502534 2015 BH_{440}	16.9	X	27.24450	170.30218	335.69923	6.96491	0.0195875	0.19786308	2.9167075	20	2 23.9	20.7
502535 2015 BF_{442}	17.1	X	205.20476	24.38001	344.97479	6.01227	0.0690070	0.22109015	2.7086722	20	4 9.5	21.2
502536 2015 BU_{442}	16.5	X	135.30224	256.81194	127.44985	6.69131	0.0965970	0.19703101	2.9249132	20	2 19.3	20.8
502537 2015 BK_{443}	16.8	X	139.33981	292.15937	118.48712	5.41515	0.0717388	0.21054489	2.7983772	20	3 24.6	20.8
502538 2015 BY_{445}	17.3	X	273.94333	203.46918	127.34622	10.32658	0.1150659	0.23377935	2.6097483	20	5 10.4	21.1
502539 2015 BC_{446}	17.6	X	121.50663	91.36107	6.61475	5.28430	0.1734401	0.22985059	2.6394026	20	5 9.9	21.7
502540 2015 BM_{449}	16.3	X	287.66429	83.47143	124.28904	10.62326	0.0436670	0.17434067	3.1734884	20	1 6.2	20.8
502541 2015 BG_{450}	16.8	X	277.08106	261.21999	14.75755	7.26569	0.0835736	0.20235338	2.8733978	20	3 9.1	20.9
502542 2015 BH_{450}	17.2	X	90.48926	38.01445	75.50053	4.77615	0.0492888	0.21419678	2.7664793	20	4 10.1	21.0
502543 2015 BQ_{451}	17.9	X	210.82948	32.40980	23.13354	2.31434	0.1934441	0.25634564	2.4542497	20	6 9.2	21.9
502544 2015 BZ_{456}	16.7	X	357.74890	181.88895	328.29054	9.47365	0.0391831	0.18636802	3.0354410	20	1 24.2	20.7
502545 2015 BP_{457}	17.6	X	186.68040	57.15750	341.30184	0.63835	0.1189728	0.23309651	2.6148425	20	4 27.5	21.6
502546 2015 BQ_{459}	16.8	X	210.49276	248.31884	121.64493	8.34565	0.2094024	0.23242089	2.6199074	20	4 16.4	21.3
502547 2015 BP_{463}	17.0	X	62.16322	359.96590	126.49258	10.92170	0.0291579	0.20493496	2.8492159	20	3 19.9	20.9
502548 2015 BA_{466}	16.2	X	147.62427	148.34833	295.66257	21.11622	0.0079240	0.22633402	2.6666714	20	4 29.6	20.4
502549 2015 BM_{467}	17.0	X	163.19304	273.04609	122.00853	7.15525	0.0536926	0.21442190	2.7645426	20	3 31.3	21.1
502550 2015 BG_{468}	16.7	X	83.62653	31.33039	83.79806	3.57256	0.0175820	0.21108695	2.7935843	20	3 29.5	20.5
502551 2015 BJ_{468}	17.2	X	208.07077	38.09348	350.20664	10.65981	0.0870081	0.23436695	2.6053844	20	5 3.6	21.2
502552 2015 BD_{469}	16.0	X	268.29924	246.27664	342.49461	14.11089	0.1425716	0.16969154	3.2311907	20	1 1.1	21.2
502553 2015 BV_{470}	17.4	X	249.68737	145.60868	173.12902	4.92053	0.0232552	0.22487426	2.6781993	20	4 3.5	20.9
502554 2015 BO_{472}	16.2	X	225.84359	331.39843	303.53915	15.10862	0.2282044	0.17970592	3.1100052	20	1 10.3	21.6
502555 2015 BU_{472}	16.9	X	209.30420	53.95294	274.95311	4.70722	0.1058604	0.21033776	2.8002140	20	2 23.9	21.3
502556 2015 BZ_{474}	17.4	X	194.17867	275.63810	142.90960	7.00030	0.1218074	0.25359620	2.4719569	20	6 1.4	21.2
502557 2015 BC_{475}	17.2	X	214.31745	195.18947	142.05649	6.77171	0.0561628	0.21697350	2.7428260	20	3 14.7	21.1
502558 2015 BK_{480}	17.5	X	115.83905	219.43756	229.73293	4.67187	0.1161150	0.22557184	2.6726749	20	4 16.4	21.3
502559 2015 BL_{483}	16.9	X	252.95172	57.94103	197.58221	1.56750	0.0285663	0.19013717	2.9951922	20	1 21.9	21.3
502560 2015 BE_{484}	16.8	X	177.43812	99.49898	236.69389	0.91420	0.1118861	0.19712523	2.9239812	20	2 5.0	21.3

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502561 2015 BU_{484}	17.0	X	185.20232	218.35178	143.61580	2.89193	0.0486144	0.21380224	2.7698816	20	3 12.1	20.8
502562 2015 BR_{485}	18.1	X	179.56346	179.76727	292.61149	0.74004	0.1292176	0.26817797	2.3815186	20	7 26.7	21.7
502563 2015 BH_{488}	17.7	X	285.27164	72.51101	300.07852	7.33305	0.1875969	0.27788219	2.3257458	20	7 10.5	20.0
502564 2015 BL_{492}	15.9	X	236.47807	306.92808	318.00020	9.09230	0.1790495	0.17717382	3.1395665	20	1 9.3	21.1
502565 2015 BN_{493}	17.0	X	131.77425	278.21941	138.96450	15.42851	0.1654699	0.22029092	2.7152197	20	4 5.2	21.4
502566 2015 BY_{493}	17.0	X	315.29713	286.92523	314.22730	2.48911	0.0392514	0.21197633	2.7857650	20	3 15.9	20.7
502567 2015 BW_{496}	17.5	X	178.80003	33.16495	351.84868	1.56318	0.0370846	0.21973679	2.7197827	20	3 31.9	21.5
502568 2015 BK_{497}	17.6	X	93.91513	1.74878	117.61544	3.09122	0.0275765	0.22312142	2.6922076	20	4 17.8	21.2
502569 2015 BC_{498}	17.4	X	123.49287	316.36697	123.04674	6.19737	0.0875528	0.22154021	2.7050025	20	4 13.3	21.3
502570 2015 BS_{498}	17.4	X	42.08021	70.55339	127.21288	4.79938	0.0754017	0.23230483	2.6207799	20	5 26.9	20.6
502571 2015 BE_{501}	16.8	X	0.54772	15.25414	159.10535	2.34334	0.0119357	0.20162186	2.8803436	20	2 24.3	20.6
502572 2015 BA_{502}	17.5	X	350.61184	57.19025	154.39254	6.80596	0.0243488	0.21607006	2.7504662	20	3 29.5	21.1
502573 2015 BB_{503}	17.2	X	160.59599	114.24887	265.30336	3.75176	0.0918557	0.21506081	2.7590645	20	3 6.5	21.4
502574 2015 BP_{503}	17.3	X	244.40092	126.76078	198.22315	1.52672	0.0904047	0.22637285	2.6663664	20	3 27.9	21.2
502575 2015 BU_{503}	17.0	X	286.85912	76.56888	141.75383	10.15029	0.0382156	0.18911405	3.0059853	20	1 15.6	21.3
502576 2015 BC_{506}	16.0	X	260.58803	315.38243	298.57926	3.82859	0.1347412	0.18547673	3.0451575	20	1 19.2	20.7
502577 2015 BJ_{507}	17.1	X	156.18086	67.56326	322.17572	5.41339	0.0456082	0.21061686	2.7977396	20	3 11.3	21.2
502578 2015 BP_{507}	16.9	X	239.12779	100.96138	199.22669	1.65047	0.0338778	0.20419732	2.8560733	20	2 26.6	21.0
502579 2015 BJ_{512}	17.0	X	225.71130	265.22794	138.63074	23.28967	0.3104073	0.27348553	2.3506058	20	6 5.6	21.6
502580 2015 BJ_{513}	16.5	X	114.43714	189.16870	276.73043	8.04806	0.0784395	0.23793603	2.5792646	20	4 29.3	20.2
502581 2015 CJ_{1}	17.2	X	210.95851	280.91663	144.04674	13.68153	0.1345346	0.26129163	2.4231802	20	6 26.3	21.0
502582 2015 CL_{2}	16.1	X	318.21394	48.02797	130.11604	13.13159	0.0911575	0.18642889	3.0347801	20	—	—
502583 2015 CJ_{3}	17.8	X	160.55796	314.61677	159.99557	4.75156	0.1431718	0.25572708	2.4582058	20	7 9.1	21.7
502584 2015 CX_{3}	16.7	X	76.63451	311.60432	147.18291	8.35157	0.0757630	0.20934282	2.8090793	20	3 6.6	20.3
502585 2015 CH_{4}	16.6	X	213.99438	218.17546	121.37793	6.68032	0.0717600	0.21465495	2.7625413	20	3 17.9	20.7
502586 2015 CP_{4}	16.9	X	338.29089	160.19423	76.45147	5.46086	0.0719650	0.21940457	2.7225275	20	4 10.8	20.3
502587 2015 CJ_{5}	16.0	X	270.45169	273.76296	304.40343	15.26609	0.0905891	0.17935630	3.1140455	20	—	—
502588 2015 CN_{5}	16.6	X	142.80457	136.34258	284.70326	4.36719	0.0696487	0.22707062	2.6609012	20	4 4.6	20.4
502589 2015 CS_{5}	17.1	X	137.46467	270.86908	129.57742	6.86943	0.0488590	0.21416152	2.7667829	20	3 6.1	21.0
502590 2015 CK_{7}	16.7	X	260.73360	115.16421	161.47757	2.20396	0.0316108	0.20067806	2.8893675	20	2 24.2	20.7
502591 2015 CQ_{7}	16.2	X	266.92918	261.70726	319.59999	8.26775	0.0361502	0.17478087	3.1681577	20	—	—
502592 2015 CS_{7}	16.2	X	236.05945	297.42227	319.77179	14.04983	0.1230501	0.17311760	3.1884179	20	1 4.3	21.3
502593 2015 CW_{8}	16.7	X	31.52810	278.82923	276.29692	3.08457	0.0239056	0.22315287	2.6919546	20	4 30.4	20.3
502594 2015 CB_{9}	16.2	X	357.99120	201.52614	284.25406	3.55205	0.1084253	0.17727371	3.1383870	20	—	—
502595 2015 CP_{9}	15.9	X	174.00604	314.76815	325.76244	9.06920	0.0621290	0.15615772	3.4152860	20	—	—
502596 2015 CW_{9}	18.3	X	202.40657	149.10359	303.93729	1.37276	0.1299689	0.26775624	2.3840187	20	7 25.0	21.7
502597 2015 CZ_{9}	16.5	X	244.06272	64.30215	199.65163	0.57350	0.1313092	0.17593599	3.1542752	20	1 16.4	21.4
502598 2015 CM_{10}	16.6	X	316.76703	30.25344	151.16336	5.23685	0.1770315	0.18672777	3.0315409	20	—	—
502599 2015 CQ_{10}	16.5	X	19.11096	7.35415	109.39732	2.32855	0.0667229	0.18543981	3.0455617	20	1 9.5	20.4
502600 2015 CZ_{10}	17.5	X	165.05778	29.29746	354.80784	4.74289	0.1420474	0.21804630	2.7338220	20	3 21.0	21.9
502601 2015 CY_{11}	16.8	X	99.60155	304.96126	153.31872	6.96509	0.0856757	0.20908518	2.8113865	20	4 8.0	20.7
502602 2015 CD_{14}	15.9	X	259.56486	110.65029	133.67842	13.65160	0.0433121	0.18234992	3.0798697	20	1 15.8	20.4
502603 2015 CK_{14}	17.2	X	236.59908	28.03081	313.54525	5.32337	0.0471140	0.22795141	2.6540424	20	4 10.6	21.1
502604 2015 CN_{14}	16.7	X	254.05095	78.74878	160.95862	2.04655	0.0261441	0.18121579	3.0927064	20	1 6.2	21.1
502605 2015 CC_{15}	16.3	X	47.32237	215.21120	319.75583	28.07181	0.1043251	0.23035880	2.6355192	20	4 17.2	20.3
502606 2015 CE_{15}	15.8	X	278.04928	170.15736	49.14864	5.93207	0.0967705	0.17818230	3.1277090	20	1 2.0	20.4
502607 2015 CB_{16}	16.6	X	262.89409	18.83298	287.93030	3.84892	0.0978374	0.21987892	2.7186105	20	3 23.5	20.5
502608 2015 CW_{16}	16.3	X	322.23656	232.09493	330.46605	9.62750	0.0522561	0.19135448	2.9824760	20	2 8.4	20.4
502609 2015 CF_{17}	16.1	X	287.44056	245.41377	341.64472	25.81552	0.1775370	0.17928822	3.1148338	20	1 19.5	21.1
502610 2015 CY_{18}	16.9	X	190.99566	76.30303	296.45200	4.70498	0.0415054	0.21815993	2.7328726	20	3 28.7	20.9
502611 2015 CF_{19}	16.4	X	47.82120	214.93429	301.56800	5.37697	0.0409408	0.21516182	2.7582010	20	4 1.7	20.0
502612 2015 CJ_{19}	18.1	X	197.01056	174.16538	265.79847	2.93620	0.2313363	0.26531833	2.3986002	20	6 27.0	22.1
502613 2015 CE_{20}	15.8	X	305.42718	217.22439	332.44961	27.30984	0.1400473	0.17949686	3.1124196	20	—	—
502614 2015 CW_{20}	17.5	X	104.66872	116.76634	343.82495	4.86608	0.0113392	0.21886571	2.7269943	20	4 2.1	21.1
502615 2015 CB_{21}	16.8	X	324.10315	297.79971	344.68004	8.03927	0.1125290	0.23538199	2.5978889	20	5 10.6	20.0
502616 2015 CW_{21}	16.7	X	258.32451	14.01727	325.96702	12.32130	0.2731577	0.24184422	2.5514021	20	4 5.6	21.1
502617 2015 CU_{22}	17.4	X	172.19217	4.20238	147.48073	7.33452	0.1375655	0.27483428	2.3429092	20	9 10.9	20.8
502618 2015 CO_{23}	16.6	X	293.49806	76.53668	168.09837	5.56884	0.1295258	0.18756344	3.0225298	20	2 11.7	20.8
502619 2015 CU_{23}	17.0	X	151.41111	119.66418	329.56597	12.00087	0.2310908	0.24092589	2.5578814	20	5 30.2	21.6
502620 2015 CO_{24}	18.0	X	204.41151	280.71582	157.38888	11.81213	0.2225418	0.26204637	2.4185252	20	7 1.1	22.2
502621 2015 CP_{25}	16.6	X	15.30347	51.38751	157.89074	6.30275	0.0328098	0.21426364	2.7659038	20	4 30.5	20.3
502622 2015 CF_{26}	17.1	X	23.09217	166.99596	332.41840	0.87410	0.1724748	0.18917725	3.0053157	20	2 12.8	20.1
502623 2015 CV_{26}	18.2	X	237.40857	247.99372	159.08082	2.36117	0.1597692	0.26826696	2.3809919	20	6 28.4	21.7
502624 2015 CY_{27}	16.7	X	152.99058	86.25549	309.46482	6.00622	0.0404968	0.21267601	2.7796517	20	3 13.5	20.6
502625 2015 CG_{29}	16.3	X	268.43628	98.50733	130.74469	19.08724	0.0503240	0.18012045	3.1052319	20	1 8.1	20.9
502626 2015 CK_{29}	16.3	X	313.06055	212.30619	340.38803	8.40117	0.0774139	0.18394747	3.0620116	20	1 14.1	20.5
502627 2015 CU_{29}	17.5	X	279.91206	15.99234	320.88908	5.40775	0.1120580	0.24507999	2.5288951	20	5 21.4	20.8
502628 2015 CB_{30}	17.0	X	137.71558	258.24670	133.01954	2.90669	0.0755712	0.20275105	2.8696393	20	2 27.1	21.1
502629 2015 CC_{30}	17.3	X	164.33503	65.40813	328.56848	4.14947	0.1018856	0.21952153	2.7215603	20	3 28.9	21.5
502630 2015 CF_{30}	17.2	X	291.18972	297.49414	353.70331	1.55185	0.0657440	0.22442108	2.6818035	20	4 13.7	20.6
502631 2015 CG_{30}	16.4	X	231.79635	155.23427	140.26438	13.39355	0.0790266	0.19555570	2.9396056	20	2 11.3	20.6
502632 2015 CQ_{30}	17.3	X	317.82573	207.26629	52.15637	3.78357	0.0268927	0.22351201	2.6890702	20	4 14.9	20.7
502633 2015 CR_{31}	17.3	X	189.14074	315.04587	88.60982	7.19293	0.2175786	0.24586590	2.5235031	20	5 8.0	21.6
502634 2015 CX_{31}	17.4	X	210.36673	296.22572	94.15090	4.99024	0.1862658	0.24733591	2.5134945	20	5 9.6	21.6
502635 2015 CY_{32}	17.0	X	141.49732	89.22446	357.77214	14.08960	0.1575222	0.22829561	2.6513741	20	5 11.1	21.4
502636 2015 CZ_{32}	16.3	X	149.40998	264.80731	155.58450	17.48931	0.1414512	0.21684565	2.7439040	20	4 24.7	20.9
502637 2015 CF_{33}	16.2	X	218.96180	6.07694	330.00862	13.71791	0.0713087	0.22172702	2.7034830	20	3 11.9	20.4
502638 2015 CC_{35}	17.4	X	128.37138	123.53570	25.11531	4.64170	0.1211180	0.25863775	2.4397281	20	7 21.6	21.0
502639 2015 CD_{35}	16.5	X	293.52374	172.75243	95.46815	10.64711	0.1581516	0.21592512	2.7516969	20	3 10.5	20.5
502640 2015 CH_{38}	16.0	X	293.51347	236.92190	337.54185	15.03570	0.1686894	0.17849145	3.1240965	20	1 6.8	20.8

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502641 2015 CN_{38}	17.5	X	133.76197	93.52061	344.94063	11.85339	0.1050766	0.22673534	2.6635237	20	4 17.5	21.6
502642 2015 CM_{39}	16.4	X	137.78238	301.63926	166.74102	22.11133	0.0642091	0.23166182	2.6256272	20	6 4.6	20.7
502643 2015 CS_{41}	15.8	X	326.86038	61.57687	115.55795	12.41757	0.0572884	0.18287597	3.0739605	20	1 13.9	19.8
502644 2015 CB_{42}	17.3	X	177.90835	69.77755	25.65640	4.21553	0.1078212	0.25111591	2.4882073	20	7 2.3	21.0
502645 2015 CR_{42}	16.4	X	17.59943	329.15958	165.53834	20.23327	0.1353719	0.18628224	3.0363727	20	1 26.4	20.2
502646 2015 CW_{42}	16.7	X	108.93503	141.49457	313.32296	7.27492	0.1727468	0.21820826	2.7324691	20	4 20.5	20.9
502647 2015 CX_{42}	16.4	X	82.70204	305.09568	167.84288	8.97168	0.1043951	0.21066254	2.7973352	20	4 7.1	20.1
502648 2015 CC_{43}	17.7	X	267.79872	288.87007	150.91639	5.48435	0.0873895	0.29102977	2.2551622	20	10 13.1	20.0
502649 2015 CF_{43}	16.1	X	248.31994	306.47047	331.09931	26.83025	0.1209433	0.18638815	3.0352224	20	2 9.3	20.9
502650 2015 CG_{43}	16.9	X	346.65989	196.36154	315.96262	3.30329	0.0744294	0.17893471	3.1189350	20	1 8.9	21.0
502651 2015 CK_{43}	16.5	X	280.01724	350.41678	331.01436	12.61136	0.1873831	0.22895045	2.6463160	20	4 14.8	20.5
502652 2015 CX_{43}	16.2	X	101.58596	233.02706	162.90831	10.02650	0.0650349	0.18172421	3.0869353	20	1 20.9	20.7
502653 2015 CE_{44}	16.4	X	237.88623	142.52708	205.16774	5.52584	0.0616074	0.22145913	2.7056627	20	4 22.0	20.0
502654 2015 CO_{44}	15.9	X	307.17007	269.27766	309.42543	9.35544	0.0302811	0.18810766	3.0166972	20	2 10.5	20.2
502655 2015 CE_{45}	16.8	X	128.48897	277.16058	156.14679	7.05894	0.1182185	0.21621139	2.7492676	20	4 14.4	20.8
502656 2015 CS_{46}	15.8	X	204.24064	341.45883	332.56241	9.52950	0.0057042	0.18362965	3.0655437	20	2 8.1	20.1
502657 2015 CO_{48}	17.2	X	117.15101	89.23838	14.98011	5.32914	0.0765199	0.22079197	2.7111103	20	5 2.2	20.9
502658 2015 CU_{48}	16.9	X	94.53762	102.69248	0.61892	8.01856	0.2166094	0.21508508	2.7588570	20	4 21.9	20.8
502659 2015 CN_{49}	16.8	X	116.77331	280.33736	152.88934	14.12965	0.1980067	0.21094593	2.7948293	20	4 12.7	21.2
502660 2015 CY_{49}	17.1	X	178.18860	344.35067	66.10947	4.38907	0.0605171	0.22134895	2.7065605	20	5 4.5	20.9
502661 2015 CC_{50}	16.1	X	314.64759	258.89601	321.39830	5.43590	0.0736408	0.19077121	2.9885521	20	2 16.3	20.1
502662 2015 CM_{50}	17.5	X	110.27107	224.03141	275.80655	1.29103	0.1415038	0.23413559	2.6071004	20	6 19.3	21.4
502663 2015 CE_{51}	16.3	X	343.51765	198.73576	342.25708	8.55284	0.0573674	0.18274908	3.0753833	20	2 11.2	20.3
502664 2015 CF_{51}	16.2	X	36.19058	149.62149	337.38380	8.07016	0.0548087	0.18439294	3.0570780	20	2 15.9	20.2
502665 2015 CM_{51}	16.8	X	41.50462	242.60819	301.90219	5.95035	0.0524396	0.21469289	2.7622158	20	5 1.8	20.4
502666 2015 CX_{52}	16.5	X	30.18921	60.54416	151.52807	8.13690	0.0281180	0.21872614	2.7281542	20	5 25.2	20.2
502667 2015 CB_{53}	16.1	X	159.19187	230.44579	155.58503	9.60343	0.0332232	0.19117562	2.9843359	20	3 13.8	20.3
502668 2015 CD_{53}	16.5	X	57.98828	301.63112	158.12521	10.70204	0.2682822	0.19152888	2.9806652	20	3 9.3	19.7
502669 2015 CG_{53}	17.6	X	214.47575	347.19391	108.94683	3.47907	0.1523408	0.26572403	2.3961582	20	8 9.9	20.9
502670 2015 CK_{53}	17.1	X	55.90715	19.03025	159.11963	10.15547	0.1177485	0.21764986	2.7371407	20	5 28.3	20.7
502671 2015 CZ_{53}	17.1	X	180.62947	270.37071	166.86480	10.06510	0.0967141	0.23463736	2.6033823	20	6 11.5	21.2
502672 2015 CC_{54}	16.4	X	251.89530	347.03821	347.90531	6.36970	0.0393279	0.21207287	2.7849195	20	4 22.9	20.3
502673 2015 CR_{54}	16.5	X	141.44760	60.87086	352.06650	14.34666	0.1465284	0.20459242	2.8523951	20	3 31.3	21.1
502674 2015 CZ_{54}	16.6	X	308.54943	207.64129	353.08234	21.23323	0.0745700	0.17256815	3.1951821	20	1 26.4	21.4
502675 2015 CH_{56}	16.3	X	57.30165	303.05842	169.89919	11.61264	0.0963038	0.19085976	2.9876276	20	2 29.4	20.2
502676 2015 CN_{56}	16.2	X	193.01202	340.64929	343.83235	8.96409	0.0620788	0.17641277	3.1485895	20	2 9.7	21.0
502677 2015 CO_{56}	16.5	X	344.73593	32.35826	173.81775	13.00029	0.1741280	0.19197194	2.9760774	20	2 28.5	20.0
502678 2015 CQ_{56}	16.4	X	66.43412	99.04882	348.88548	5.60356	0.1486701	0.18614026	3.0379165	20	2 20.1	20.2
502679 2015 CZ_{56}	16.5	X	0.37130	170.23463	338.68558	16.73238	0.0856886	0.17513687	3.1638629	20	1 28.1	20.7
502680 2015 CB_{57}	17.0	X	160.88356	123.26640	336.77123	8.54634	0.1252184	0.23852040	2.5750502	20	6 20.1	21.1
502681 2015 CS_{57}	16.5	X	78.11000	291.50631	166.45470	16.10581	0.0802272	0.19321795	2.9632690	20	3 9.1	20.5
502682 2015 CT_{57}	17.0	X	73.18729	136.89618	3.82194	4.28463	0.0456260	0.21001064	2.8031210	20	4 19.0	20.8
502683 2015 CB_{58}	16.5	X	42.13114	58.19578	36.65607	0.69008	0.1592156	0.17673121	3.1448062	20	1 22.5	19.9
502684 2015 CX_{58}	16.7	X	140.67206	229.50993	158.92548	11.81190	0.0175905	0.19550201	2.9401437	20	2 20.1	20.9
502685 2015 CR_{60}	16.2	X	130.17666	327.45983	84.84842	8.01643	0.0653030	0.21598128	2.7512199	20	3 16.7	20.2
502686 2015 CE_{61}	16.4	X	9.85705	233.78199	288.33187	8.73792	0.1414018	0.19273161	2.9682519	20	2 15.2	19.8
502687 2015 CQ_{61}	16.2	X	17.68736	267.11470	26.11927	7.57674	0.2115175	0.25269688	2.4778184	20	9 26.6	18.7
502688 2015 CD_{62}	15.9	X	61.89313	157.00748	355.43200	13.78494	0.1471611	0.20969040	2.8059742	20	4 28.6	19.6
502689 2015 CJ_{62}	15.9	X	258.83145	6.32583	302.53805	25.73325	0.0854301	0.21977576	2.7194611	20	3 9.3	20.4
502690 2015 DK	16.7	X	124.58043	297.52105	168.94711	9.43787	0.2018698	0.22583215	2.6706207	20	5 29.8	21.1
502691 2015 DW_{3}	17.5	X	90.40697	78.40223	121.74821	4.47590	0.1090906	0.26340565	2.4101976	20	8 14.7	20.7
502692 2015 DG_{8}	17.2	X	192.19401	72.09093	273.89719	3.10305	0.0812349	0.21309546	2.7760029	20	2 27.7	21.5
502693 2015 DH_{8}	17.1	X	116.49912	189.45013	263.13503	1.15173	0.0475651	0.22754664	2.6571889	20	4 12.6	20.6
502694 2015 DN_{9}	17.4	X	130.63699	76.66956	344.95731	2.27395	0.1800407	0.22670775	2.6637398	20	4 4.9	21.4
502695 2015 DU_{10}	16.7	X	326.25334	131.53562	115.10417	9.64068	0.1757352	0.21743772	2.7389207	20	3 25.0	20.0
502696 2015 DP_{11}	16.9	X	47.84973	195.96786	327.12836	7.92111	0.0329436	0.22458112	2.6805293	20	4 8.1	20.5
502697 2015 DL_{14}	16.8	X	225.67877	181.23968	146.27797	6.83737	0.0736696	0.21801963	2.7340449	20	3 13.9	20.7
502698 2015 DK_{17}	17.5	X	226.71801	287.55390	118.06115	7.11287	0.1226858	0.25389689	2.4700048	20	6 18.4	21.2
502699 2015 DN_{17}	17.1	X	221.05631	333.52924	29.55068	6.63868	0.0420558	0.22343348	2.6897003	20	4 22.9	20.7
502700 2015 DS_{17}	17.8	X	212.45449	349.40535	112.86313	6.06029	0.1698567	0.27691233	2.3311731	20	8 15.7	21.2
502701 2015 DO_{18}	16.9	X	163.16813	304.41729	92.03038	5.11911	0.1075687	0.21441480	2.7646036	20	4 4.6	21.1
502702 2015 DW_{18}	16.7	X	320.84104	112.01236	85.42767	5.36069	0.0756019	0.18431301	3.0579618	20	1 29.3	20.9
502703 2015 DY_{18}	16.2	X	58.71014	352.83320	70.05956	2.82184	0.1127316	0.17443814	3.1723061	20	1 5.3	20.1
502704 2015 DG_{19}	17.1	X	211.57230	281.85494	86.14251	5.91866	0.0972982	0.22295259	2.6935665	20	4 18.2	21.2
502705 2015 DC_{20}	15.8	X	195.61057	175.36980	134.75060	11.54635	0.0553842	0.17901122	3.1180463	20	1 24.1	20.4
502706 2015 DO_{20}	17.1	X	251.97131	296.85141	31.04858	7.02606	0.0435330	0.21951412	2.7216216	20	4 15.7	20.8
502707 2015 DA_{21}	16.9	X	250.41496	255.56859	37.11566	6.16390	0.0438929	0.19830108	2.9124110	20	3 4.5	21.1
502708 2015 DD_{21}	17.6	X	169.31462	5.79458	95.24852	2.90822	0.1392757	0.25217733	2.4812204	20	6 30.4	21.2
502709 2015 DE_{22}	16.4	X	322.13442	184.21942	356.09531	10.46401	0.1649458	0.17555904	3.1587887	20	—	—
502710 2015 DH_{22}	16.8	X	173.37599	66.30508	357.64509	7.89060	0.0647626	0.23195966	2.6233792	20	5 13.0	20.7
502711 2015 DR_{22}	17.1	X	156.08833	330.41010	118.18193	6.06048	0.0820327	0.23629647	2.5911819	20	5 30.1	21.0
502712 2015 DM_{23}	17.0	X	189.22031	249.26584	127.10958	4.86191	0.0882277	0.21454926	2.7634485	20	4 5.5	21.2
502713 2015 DS_{24}	16.5	X	174.50001	29.08846	352.45767	9.88647	0.2416205	0.21682293	2.7440956	20	3 28.4	21.3
502714 2015 DZ_{24}	17.8	X	180.83862	67.64138	24.35584	2.89062	0.1392273	0.25332696	2.4737081	20	6 30.3	21.5
502715 2015 DF_{25}	17.7	X	197.91854	277.24102	114.45515	4.15797	0.0929797	0.22787633	2.6546253	20	5 2.8	21.6
502716 2015 DP_{26}	17.0	X	316.22391	155.18907	104.84386	5.39304	0.0217224	0.21515327	2.7582741	20	4 16.6	20.7
502717 2015 DN_{27}	17.2	X	125.37175	55.86897	39.28455	5.07116	0.1082524	0.22411584	2.6842380	20	5 4.9	21.0
502718 2015 DZ_{27}	16.6	X	141.42351	342.12658	41.59464	6.56864	0.1048254	0.19541087	2.9410579	20	2 28.3	21.1
502719 2015 DH_{28}	16.6	X	85.19988	306.06290	122.80814	10.11896	0.1187697	0.19162451	2.9796735	20	2 18.1	20.6
502720 2015 DN_{28}	16.7	X	153.75789	27.51318	40.59871	7.03512	0.1091874	0.22699821	2.6614670	20	5 1.4	20.5

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502721 2015 DT_{30}	16.9	X	161.16894	282.99582	138.92800	17.46325	0.2029702	0.23171528	2.6252234	20	5 11.3	21.6
502722 2015 DY_{30}	17.0	X	141.40314	329.74274	98.71292	7.53847	0.0363669	0.21504851	2.7591698	20	4 15.9	20.9
502723 2015 DA_{31}	17.5	X	230.93941	339.07896	101.89460	5.69901	0.1031974	0.27189436	2.3597677	20	8 15.9	20.6
502724 2015 DY_{31}	16.4	X	170.81072	223.43289	135.33810	9.95984	0.1187570	0.19305096	2.9649775	20	2 27.6	21.1
502725 2015 DC_{32}	17.3	X	226.85366	274.73686	133.22323	8.47468	0.1533196	0.25469777	2.4648242	20	6 18.9	21.1
502726 2015 DJ_{32}	16.6	X	76.70082	78.16058	58.16484	4.25624	0.1408112	0.21749434	2.7384453	20	5 3.7	20.0
502727 2015 DM_{32}	17.9	X	88.83294	84.07592	90.11703	4.89800	0.0674615	0.23924465	2.5698507	20	6 29.2	21.3
502728 2015 DA_{33}	16.6	X	67.30623	353.82411	139.48976	11.74871	0.2290024	0.21298405	2.7769709	20	5 4.5	20.2
502729 2015 DC_{33}	17.0	X	161.44580	342.99347	79.43582	4.88876	0.0905725	0.22454234	2.6808379	20	5 2.8	20.9
502730 2015 DL_{33}	16.1	X	21.90528	114.50925	358.67206	8.37153	0.0544024	0.17603391	3.1531054	20	1 12.8	20.3
502731 2015 DX_{33}	16.1	X	275.02528	201.73232	20.48788	4.99184	0.1078333	0.16927105	3.2365396	20	1 2.6	20.9
502732 2015 DY_{34}	16.4	X	135.36749	264.92090	143.59924	12.59068	0.1260216	0.20569372	2.8422048	20	3 24.4	20.8
502733 2015 DZ_{34}	16.3	X	197.63728	144.27494	149.11696	16.75207	0.1762734	0.16165690	3.3373868	20	1 10.4	22.0
502734 2015 DW_{35}	16.5	X	250.81072	216.06554	64.59891	3.10157	0.0380033	0.18941423	3.0028086	20	2 19.6	20.9
502735 2015 DG_{36}	17.2	X	135.07437	302.72938	147.77893	12.11990	0.2178809	0.23163567	2.6258249	20	5 22.2	21.7
502736 2015 DG_{37}	16.7	X	230.52563	167.43193	137.85781	10.30103	0.0817411	0.18981414	2.9985895	20	2 22.9	21.1
502737 2015 DD_{38}	16.4	X	243.33767	183.83284	91.29895	5.53564	0.0754637	0.17942567	3.1132429	20	2 2.4	21.0
502738 2015 DF_{38}	16.9	X	118.87926	62.78876	33.08753	6.59281	0.0240776	0.21493558	2.7601362	20	4 18.2	20.7
502739 2015 DP_{38}	16.4	X	91.19101	296.27325	129.04086	12.05548	0.0735596	0.18835430	3.0140632	20	2 15.1	20.5
502740 2015 DH_{40}	16.0	X	198.53262	246.58010	96.98917	9.42656	0.0711912	0.19685984	2.9266085	20	3 9.4	20.5
502741 2015 DR_{42}	17.1	X	141.76310	319.54045	102.77254	9.51459	0.1908571	0.21902923	2.7256369	20	4 22.8	21.6
502742 2015 DX_{42}	16.3	X	252.36166	215.43995	68.22393	8.54906	0.0442978	0.19026931	2.9938053	20	2 26.9	20.7
502743 2015 DU_{44}	16.9	X	208.25077	268.54743	95.62702	5.65571	0.0863478	0.21364671	2.7712258	20	4 11.0	21.1
502744 2015 DW_{44}	17.0	X	100.60688	61.53943	51.29518	4.85698	0.0184478	0.21332428	2.7740175	20	4 16.8	20.7
502745 2015 DM_{45}	16.6	X	330.17398	108.84167	82.85350	4.61170	0.0710929	0.18333500	3.0688273	20	2 4.4	20.6
502746 2015 DX_{45}	17.3	X	190.92449	336.04549	79.65268	5.68115	0.2005756	0.24134289	2.5549342	20	5 23.2	21.5
502747 2015 DZ_{45}	16.4	X	300.49638	173.82500	130.14858	10.37020	0.1779295	0.21986610	2.7187161	20	5 1.5	20.0
502748 2015 DH_{46}	17.1	X	217.80064	232.08513	120.74428	7.40988	0.0703652	0.21047819	2.7989683	20	4 8.8	21.3
502749 2015 DR_{46}	16.5	X	29.02249	63.99630	54.90798	5.34228	0.1366790	0.18303400	3.0721909	20	1 29.8	20.1
502750 2015 DR_{48}	16.7	X	207.08713	251.48987	113.78563	7.44446	0.0669428	0.21605269	2.7506137	20	4 12.6	20.8
502751 2015 DV_{48}	16.5	X	224.58842	292.08078	0.00044	15.50592	0.2039297	0.17679211	3.1440840	20	2 2.5	22.0
502752 2015 DV_{50}	16.8	X	64.49186	120.43750	39.64418	8.79662	0.1144017	0.22012219	2.7166071	20	5 12.6	20.1
502753 2015 DM_{53}	16.1	X	283.12753	141.39261	122.77321	3.25141	0.0564727	0.19745000	2.9207740	20	3 4.9	20.1
502754 2015 DN_{57}	16.2	X	205.26856	312.97929	331.32997	10.46810	0.0680831	0.17430973	3.1738639	20	1 6.8	21.1
502755 2015 DQ_{58}	16.8	X	358.86890	28.36883	114.11936	2.22957	0.0940393	0.18333548	3.0688221	20	1 11.1	20.8
502756 2015 DX_{58}	16.5	X	274.33623	75.25332	172.44289	0.51375	0.1085366	0.18695250	3.0291111	20	1 28.4	21.0
502757 2015 DQ_{63}	17.3	X	79.81908	340.18389	144.90064	8.92672	0.0920936	0.21710947	2.7416807	20	4 18.5	21.0
502758 2015 DN_{65}	16.7	X	305.95922	64.04727	134.30235	10.39105	0.0376731	0.18243005	3.0789677	20	1 15.9	21.0
502759 2015 DH_{66}	18.5	X	212.40705	0.52858	67.57591	2.37284	0.1643854	0.26381467	2.4077058	20	6 29.5	22.3
502760 2015 DE_{68}	17.6	X	172.14769	338.67473	81.09511	3.73189	0.0502269	0.23152353	2.6266727	20	5 9.2	21.4
502761 2015 DT_{68}	16.1	X	197.92667	299.98569	348.98415	10.28135	0.0623898	0.17095259	3.2152810	20	1 5.1	21.1
502762 2015 DW_{68}	17.8	X	194.55405	20.62911	26.32829	2.63636	0.0618309	0.23663765	2.5886906	20	5 17.4	21.5
502763 2015 DZ_{69}	17.8	X	222.74017	261.66641	150.72221	6.75298	0.1622887	0.26002825	2.4310227	20	6 19.5	21.6
502764 2015 DZ_{73}	17.2	X	84.98800	139.58666	337.76222	3.05584	0.0344011	0.21308138	2.7761252	20	4 2.4	20.8
502765 2015 DQ_{74}	16.4	X	302.44345	59.48683	149.17065	10.95895	0.0818801	0.18117707	3.0931470	20	1 17.7	20.8
502766 2015 DG_{76}	17.1	X	274.38054	286.98845	18.28501	2.57932	0.1648449	0.21548756	2.7554206	20	3 29.0	21.1
502767 2015 DZ_{80}	16.6	X	244.55116	274.28178	359.60336	8.74170	0.1189740	0.18134832	3.0911994	20	1 31.2	21.5
502768 2015 DL_{81}	16.4	X	206.55015	171.05416	133.53804	12.42647	0.0732117	0.18102683	3.0948582	20	1 28.8	21.1
502769 2015 DO_{81}	16.0	X	211.40873	299.86068	0.72218	13.37580	0.2588469	0.17356414	3.1829468	20	1 31.5	21.8
502770 2015 DV_{81}	17.3	X	147.46283	346.78841	76.98247	4.28775	0.1096808	0.22153297	2.7050615	20	4 21.1	21.3
502771 2015 DN_{82}	17.2	X	190.46669	286.73065	108.31699	3.29074	0.0898345	0.22716957	2.6601285	20	4 28.9	21.2
502772 2015 DA_{83}	16.5	X	238.23184	195.61321	81.50952	2.65676	0.1620851	0.17665065	3.1457622	20	1 24.8	21.5
502773 2015 DV_{83}	17.2	X	161.88599	278.73259	151.44229	11.00575	0.1129696	0.23265445	2.6181537	20	5 16.0	21.4
502774 2015 DF_{87}	17.0	X	290.56397	158.76010	127.01343	3.53006	0.0429261	0.21584332	2.7523921	20	4 11.9	20.6
502775 2015 DB_{89}	17.5	X	109.74995	72.16021	17.75021	1.92798	0.0380274	0.21427509	2.7658053	20	3 31.7	21.4
502776 2015 DD_{89}	18.1	X	159.21278	315.18450	135.78799	5.02236	0.1890524	0.24728019	2.5138720	20	6 9.2	22.3
502777 2015 DX_{89}	17.5	X	153.27810	47.18236	26.45310	3.36936	0.1897341	0.23660744	2.5889110	20	5 11.8	21.6
502778 2015 DR_{90}	16.5	X	237.25293	284.49100	356.94656	4.35163	0.1357228	0.18321149	3.0702064	20	1 30.3	21.4
502779 2015 DD_{92}	16.3	X	203.89860	313.93232	359.76906	10.05808	0.0074979	0.18812509	3.0165109	20	2 8.7	20.7
502780 2015 DX_{92}	17.3	X	44.42844	20.88376	143.92062	4.15788	0.0276361	0.21392227	2.7688454	20	4 11.5	20.9
502781 2015 DO_{94}	16.4	X	46.84198	334.37390	117.78805	10.91365	0.0300121	0.17830477	3.1262766	20	1 17.3	20.6
502782 2015 DC_{97}	16.6	X	166.02912	310.20034	71.49907	2.98373	0.0834905	0.19947770	2.9009472	20	3 19.0	21.0
502783 2015 DK_{97}	16.8	X	239.28277	236.56125	106.51058	4.49629	0.0989053	0.21412335	2.7671117	20	4 16.4	20.9
502784 2015 DQ_{97}	16.5	X	160.50313	302.30582	125.22546	4.96282	0.0663624	0.22177028	2.7031314	20	5 7.7	20.5
502785 2015 DA_{98}	16.2	X	269.99837	193.48904	128.12811	6.70416	0.0407164	0.21826530	2.7319930	20	5 3.4	20.0
502786 2015 DD_{98}	16.7	X	253.93230	9.60279	4.32526	15.46883	0.1458437	0.24245676	2.5471030	20	5 31.1	20.6
502787 2015 DE_{98}	17.3	X	150.84014	202.04239	227.94073	1.41543	0.0661624	0.21876433	2.7278367	20	4 27.8	21.3
502788 2015 DT_{98}	16.1	X	239.40486	156.61745	155.98602	10.81374	0.1129855	0.18778901	3.0201089	20	3 9.6	20.8
502789 2015 DP_{99}	16.8	X	319.44406	117.32642	111.39907	4.23269	0.0492861	0.19031643	2.9933111	20	3 9.4	20.9
502790 2015 DQ_{99}	16.4	X	107.83403	299.08239	170.69738	6.29650	0.0454571	0.21229015	2.7830188	20	4 26.9	20.2
502791 2015 DX_{99}	17.2	X	79.30900	264.00737	221.90966	7.76485	0.1163160	0.22162264	2.7043318	20	4 18.1	20.7
502792 2015 DY_{99}	16.0	X	322.11727	271.71573	276.58664	12.23328	0.2154684	0.18523405	3.0478166	20	—	—
502793 2015 DF_{100}	17.0	X	267.85318	85.33563	145.42611	10.33557	0.1912101	0.17689314	3.1428867	20	—	—
502794 2015 DJ_{102}	17.1	X	54.58652	130.53567	47.77919	6.63228	0.0617496	0.23311952	2.6146704	20	5 15.4	20.3
502795 2015 DR_{104}	17.8	X	152.76877	80.09540	4.74265	11.18991	0.0766107	0.24151597	2.5537134	20	5 16.1	21.7
502796 2015 DJ_{105}	16.5	X	0.04994	207.57858	27.62031	9.22456	0.1242000	0.22910993	2.6450879	20	5 7.5	19.3
502797 2015 DL_{105}	17.1	X	154.28447	322.34792	130.28553	4.02320	0.1893007	0.23862516	2.5742964	20	6 6.7	21.3
502798 2015 DD_{107}	16.7	X	355.24923	130.40275	111.50587	14.78283	0.0514196	0.23230125	2.6208069	20	5 17.9	20.2
502799 2015 DE_{107}	16.4	X	247.30065	288.40206	23.51299	10.08041	0.0495820	0.21609052	2.7502926	20	3 22.4	20.3
502800 2015 DP_{107}	16.3	X	36.73102	85.35422	106.29950	15.11143	0.0517464	0.22920649	2.6443449	20	5 12.5	19.9

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502801 2015 DZ_{108}	17.1	X	285.08934	229.50254	58.16333	12.73193	0.1795057	0.21759189	2.7376268	20	3 23.6	21.2
502802 2015 DB_{109}	16.7	X	187.52882	309.60315	56.08384	11.91738	0.1259886	0.21935574	2.7229315	20	3 25.5	21.1
502803 2015 DV_{110}	16.0	X	339.51002	106.65010	39.12505	12.14283	0.0945756	0.17772051	3.1331247	20	—	—
502804 2015 DD_{111}	16.4	X	184.05498	260.24881	56.68805	12.22333	0.0642865	0.18559217	3.0438946	20	1 21.9	21.2
502805 2015 DP_{111}	17.7	X	149.83954	97.66113	346.26237	22.16450	0.1132476	0.23966566	2.5668403	20	5 7.4	22.1
502806 2015 DX_{111}	17.0	X	14.81329	136.87751	69.65083	10.21934	0.0672149	0.22327987	2.6909337	20	4 27.4	20.3
502807 2015 DB_{112}	17.0	X	46.59274	101.67724	58.20145	9.10187	0.1457119	0.21670567	2.7450854	20	4 21.7	20.1
502808 2015 DR_{112}	16.1	X	356.99142	134.99619	24.23025	10.36025	0.0231213	0.19261167	2.9694840	20	2 5.9	20.3
502809 2015 DS_{112}	16.8	X	13.58307	119.37299	106.80421	13.81390	0.1463057	0.22715783	2.6602201	20	5 26.9	19.7
502810 2015 DW_{112}	16.4	X	151.96954	263.94560	108.81604	15.67067	0.1674173	0.20449650	2.8532870	20	3 2.8	21.2
502811 2015 DO_{117}	16.8	X	101.81733	280.32696	193.06158	6.38363	0.1176787	0.21613572	2.7499092	20	5 3.4	20.6
502812 2015 DO_{118}	16.3	X	138.41222	320.18951	125.89739	10.45701	0.0897731	0.22167923	2.7038715	20	5 10.4	20.5
502813 2015 DU_{119}	17.2	X	221.20556	324.34638	52.75379	6.86513	0.0241147	0.22349715	2.6891894	20	5 13.3	20.7
502814 2015 DV_{120}	16.4	X	71.31085	354.28335	107.30166	11.23004	0.0755322	0.19345534	2.9608442	20	3 8.0	20.4
502815 2015 DP_{121}	16.1	X	272.45402	217.64968	30.83464	14.87900	0.1340866	0.17640149	3.1487237	20	1 31.1	21.1
502816 2015 DZ_{122}	17.5	X	117.57712	93.80621	34.34268	12.19544	0.2455707	0.23606028	2.5929100	20	6 21.3	21.9
502817 2015 DM_{123}	16.8	X	169.08822	353.75835	91.75377	9.59485	0.1071265	0.23757156	2.5819019	20	6 9.5	20.8
502818 2015 DA_{127}	15.7	X	271.97490	124.53421	136.81573	18.17402	0.0860819	0.17915116	3.1164222	20	2 15.3	20.2
502819 2015 DM_{127}	17.4	X	167.66847	349.58041	112.11363	13.21342	0.1847787	0.24659132	2.5185516	20	6 29.9	21.7
502820 2015 DK_{131}	16.4	X	324.34156	154.17069	118.56839	13.22503	0.0389622	0.21507912	2.7589080	20	5 15.1	20.2
502821 2015 DC_{135}	16.1	X	234.29608	259.96044	122.40243	15.23136	0.2069685	0.22799441	2.6537087	20	5 23.4	20.6
502822 2015 DU_{135}	16.3	X	172.44255	322.69163	100.41173	14.46564	0.0622586	0.21549970	2.7553172	20	5 18.1	20.5
502823 2015 DM_{139}	17.1	X	124.98332	285.32205	141.92159	7.83720	0.0289238	0.21640748	2.7476065	20	3 22.6	20.9
502824 2015 DH_{143}	18.3	X	253.93782	204.86404	210.86661	3.91267	0.1400833	0.28611552	2.2809115	20	8 3.2	21.1
502825 2015 DK_{144}	16.9	X	112.54689	181.03552	276.49163	12.94588	0.1419466	0.23204366	2.6227460	20	4 22.6	20.9
502826 2015 DA_{145}	17.0	X	90.70151	227.55466	281.23947	11.51590	0.1227372	0.24001787	2.5643285	20	6 4.8	20.5
502827 2015 DG_{146}	16.5	X	289.71345	341.29156	226.79879	3.81632	0.1033991	0.18345106	3.0675329	20	—	—
502828 2015 DJ_{148}	17.7	X	113.06870	24.71813	155.86398	9.40927	0.1395416	0.26291282	2.4132086	20	8 16.5	21.3
502829 2015 DK_{148}	16.5	X	245.82508	163.78012	145.24143	15.83443	0.0876324	0.21836975	2.7311217	20	3 13.1	20.6
502830 2015 DS_{149}	17.0	X	56.76456	240.19081	269.73752	4.53387	0.0469595	0.22472259	2.6794041	20	4 6.2	20.5
502831 2015 DU_{149}	17.0	X	296.50209	44.76615	147.50687	11.13926	0.1643261	0.17701274	3.1414709	20	—	—
502832 2015 DD_{150}	15.9	X	307.17881	349.63875	308.09336	32.52686	0.2646845	0.23406178	2.6076485	20	3 19.8	20.2
502833 2015 DQ_{151}	16.4	X	291.63985	136.48157	102.75299	11.47580	0.1763049	0.18252216	3.0779317	20	1 30.6	21.0
502834 2015 DV_{151}	16.3	X	123.83595	72.40862	19.41168	5.46473	0.0506725	0.21431765	2.7654391	20	4 21.8	20.0
502835 2015 DG_{152}	17.1	X	106.20433	6.22489	103.07837	5.30585	0.0595502	0.21378859	2.7699996	20	4 26.7	20.9
502836 2015 DL_{152}	16.9	X	232.58145	274.96441	86.02988	5.20035	0.1082914	0.22050629	2.7134515	20	4 30.2	21.0
502837 2015 DB_{153}	16.9	X	188.96912	234.49395	154.01489	4.94898	0.0859412	0.21196762	2.7858412	20	4 20.1	21.2
502838 2015 DT_{153}	16.5	X	74.69008	355.98107	139.62415	10.10488	0.1390379	0.21165277	2.7886034	20	5 3.4	20.3
502839 2015 DF_{154}	15.9	X	329.73131	100.90120	117.49223	10.07563	0.0495131	0.19143999	2.9815878	20	3 11.9	20.0
502840 2015 DY_{155}	16.9	X	96.66018	258.55434	215.18648	10.34513	0.1893426	0.21995757	2.7179624	20	5 6.9	20.7
502841 2015 DZ_{163}	16.5	X	246.96399	189.43470	152.33186	13.48054	0.1360857	0.21487286	2.7606733	20	4 21.5	20.9
502842 2015 DR_{165}	16.2	X	204.56000	170.39216	162.86143	9.55656	0.0553442	0.18595658	3.0399167	20	2 29.2	20.8
502843 2015 DB_{166}	16.0	X	155.44728	221.15776	154.14733	10.11491	0.0812989	0.18507742	3.0495360	20	2 29.2	20.6
502844 2015 DF_{166}	17.3	X	6.54358	174.65219	67.52419	4.52808	0.0402449	0.22315101	2.6919696	20	5 30.3	20.7
502845 2015 DW_{167}	17.3	X	95.60392	316.97552	159.00418	9.88240	0.0860164	0.21083129	2.7958423	20	4 26.7	21.2
502846 2015 DX_{167}	15.9	X	251.94953	255.16209	7.69505	12.94191	0.0595580	0.17268433	3.1937489	20	2 2.9	20.8
502847 2015 DZ_{169}	15.8	X	55.51323	251.89247	251.87449	16.20953	0.0950484	0.21640647	2.7476151	20	3 29.2	19.6
502848 2015 DA_{171}	16.8	X	174.15460	241.75076	170.45563	22.10993	0.0288473	0.23323226	2.6138278	20	5 4.4	20.8
502849 2015 DV_{172}	16.4	X	174.12966	181.58636	207.41963	13.47916	0.0052913	0.22424692	2.6831918	20	3 28.2	20.1
502850 2015 DS_{173}	16.2	X	247.16889	166.85945	105.76703	12.36724	0.0628225	0.18291064	3.0735720	20	2 4.4	20.8
502851 2015 DK_{175}	16.7	X	214.05205	114.17859	276.50613	14.38990	0.0945049	0.22747071	2.6577802	20	5 15.4	20.9
502852 2015 DX_{176}	17.0	X	273.11012	64.58799	234.62976	12.87393	0.1197136	0.22251934	2.6970617	20	3 20.3	21.2
502853 2015 DO_{178}	15.8	X	14.98166	208.16919	271.12860	8.71244	0.0956612	0.18033072	3.1028175	20	1 6.3	19.6
502854 2015 DU_{179}	17.0	X	135.44953	217.84898	234.15276	10.17599	0.0562516	0.22682976	2.6627846	20	5 6.8	20.7
502855 2015 DB_{180}	16.2	X	106.51845	196.21772	277.75309	9.52236	0.1043557	0.22296224	2.6934888	20	5 4.3	20.1
502856 2015 DJ_{180}	15.4	X	289.08121	333.05266	233.76383	11.02035	0.0907762	0.17297060	3.1902240	20	—	—
502857 2015 DL_{185}	16.5	X	250.26205	255.11678	14.70175	11.58493	0.0244809	0.18659315	3.0329989	20	2 10.9	21.0
502858 2015 DF_{189}	16.4	X	269.40680	154.25890	79.34808	10.91862	0.0380438	0.17389880	3.1788619	20	1 17.4	21.0
502859 2015 DD_{190}	16.5	X	15.83724	53.14277	88.34259	10.72563	0.0462702	0.18397281	3.0617304	20	2 7.6	20.7
502860 2015 DX_{196}	16.7	X	163.51255	113.33156	325.39906	14.17293	0.1537282	0.23369929	2.6103443	20	5 23.6	21.2
502861 2015 DA_{197}	15.8	X	111.00421	119.01994	334.51371	21.42182	0.1538965	0.21265881	2.7798016	20	4 10.8	20.3
502862 2015 DV_{201}	16.5	X	8.96780	177.13296	331.81522	4.74424	0.1165514	0.18294980	3.0731335	20	2 3.1	20.1
502863 2015 DL_{202}	16.3	X	151.92898	84.38926	309.01498	13.56132	0.1592552	0.20401722	2.8577539	20	3 15.7	21.1
502864 2015 DM_{202}	16.9	X	194.20288	114.33931	285.73893	8.53456	0.1336797	0.22938920	2.6429406	20	5 4.7	21.2
502865 2015 DT_{202}	15.8	X	164.55331	113.26399	250.27192	7.74144	0.0542946	0.18865225	3.0108889	20	2 18.7	20.4
502866 2015 DU_{202}	16.7	X	312.14671	336.40710	230.61877	9.03129	0.0531941	0.18117987	3.0931151	20	1 29.3	21.2
502867 2015 DH_{203}	16.7	X	106.37549	131.66173	326.59020	16.55141	0.1153233	0.21141534	2.7906908	20	4 9.2	21.0
502868 2015 DE_{204}	16.8	X	85.64091	272.07165	199.43435	11.16516	0.0779715	0.20471611	2.8512461	20	4 3.4	20.5
502869 2015 DK_{204}	15.9	X	306.76870	248.62218	324.27215	16.60260	0.1215209	0.17419278	3.1752843	20	1 27.1	20.3
502870 2015 DE_{205}	16.6	X	252.58647	181.88228	160.72321	10.45035	0.1021133	0.20434759	2.8546730	20	5 1.7	20.9
502871 2015 DX_{205}	16.1	X	85.15619	258.99323	178.06141	16.43065	0.1144724	0.17416203	3.1756581	20	2 26.5	20.5
502872 2015 DY_{205}	17.0	X	89.58958	331.39501	160.33637	10.98248	0.1937365	0.21116538	2.7928926	20	5 24.8	21.1
502873 2015 DF_{207}	16.2	X	118.06646	277.40461	157.70131	11.90794	0.0756760	0.19053730	2.9909974	20	4 1.6	20.5
502874 2015 DS_{207}	16.7	X	87.18048	77.87487	80.41142	10.29190	0.1143227	0.21806918	2.7336308	20	6 11.8	20.3
502875 2015 DU_{209}	16.2	X	276.25720	169.12340	105.13468	10.98396	0.0539713	0.17918626	3.1160153	20	3 15.0	20.8
502876 2015 DY_{209}	17.0	X	45.96715	7.43243	149.12206	14.43265	0.0528649	0.19058448	2.9905038	20	4 9.6	21.1
502877 2015 DA_{210}	16.4	X	350.51005	126.46244	55.65634	17.14541	0.1519325	0.17626236	3.1503804	20	2 22.0	20.5
502878 2015 DQ_{211}	17.4	X	134.01377	341.46596	170.96142	12.14904	0.1112679	0.23657401	2.5891548	20	7 27.5	21.5
502879 2015 DY_{212}	16.7	X	23.99148	334.13997	185.39532	18.05210	0.1486244	0.18546989	3.0452324	20	3 10.9	20.3
502880 2015 DZ_{212}	16.9	X	107.24969	318.00347	169.33207	7.66552	0.1646058	0.21621323	2.7492519	20	6 3.2	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502881 2015 DJ_{214}	16.4	X	287.17787	248.55055	351.59395	13.47445	0.0714877	0.18089645	3.0963451	20	2 12.3	20.9
502882 2015 DO_{216}	16.1	X	12.58474	149.86218	342.69336	8.80593	0.0411082	0.17547701	3.1597731	20	1 24.5	20.4
502883 2015 DY_{216}	16.3	X	270.24047	124.30961	147.44441	4.39631	0.1270610	0.18107772	3.0942783	20	2 20.2	21.0
502884 2015 DK_{217}	16.3	X	309.60732	26.40629	173.20744	29.25828	0.1847819	0.17158222	3.2074104	20	1 3.5	21.4
502885 2015 DS_{217}	16.2	X	316.44931	322.38881	239.77534	9.80889	0.0471700	0.17644271	3.1482333	20	1 29.9	20.8
502886 2015 DL_{219}	16.0	X	38.61553	135.20205	337.64694	12.74819	0.1047599	0.17744511	3.1363657	20	2 7.2	19.9
502887 2015 DD_{220}	16.0	X	85.98787	135.09225	329.67446	10.32537	0.0438858	0.19259835	2.9696209	20	3 19.2	20.2
502888 2015 DO_{220}	16.5	X	106.94614	96.52044	350.00945	10.72717	0.0532476	0.19540378	2.9411290	20	3 25.4	20.6
502889 2015 DU_{220}	16.3	X	134.87158	162.09056	338.88113	12.65907	0.1075440	0.24123327	2.5557081	20	7 18.5	20.3
502890 2015 DX_{220}	15.9	X	202.37809	109.37903	241.54387	9.36344	0.0131661	0.19263054	2.9692900	20	3 15.4	20.3
502891 2015 DC_{221}	15.8	X	305.51798	194.92285	351.99311	4.51043	0.0423432	0.17022070	3.2244908	20	1 4.1	20.3
502892 2015 DJ_{222}	16.3	X	19.63623	319.97773	182.80271	11.31323	0.0536281	0.18309445	3.0715147	20	2 9.6	20.5
502893 2015 DA_{223}	13.9	X	283.41361	182.06759	235.78555	8.70303	0.0568716	0.08369975	5.1759088	20	9 1.9	20.8
502894 2015 DD_{223}	17.1	X	85.67922	295.87671	229.94996	4.26054	0.1701281	0.22704792	2.6610786	20	6 28.2	20.9
502895 2015 DL_{223}	17.5	X	167.01930	33.08701	100.00342	5.91477	0.1964531	0.26420533	2.4053318	20	8 10.6	21.4
502896 2015 EH_{2}	17.5	X	106.38644	129.12118	24.09618	4.36297	0.0337361	0.23898657	2.5717005	20	6 18.5	21.0
502897 2015 EL_{3}	17.2	X	158.01569	289.09601	161.21823	9.43076	0.0655740	0.23879021	2.5731101	20	6 3.3	21.0
502898 2015 EA_{4}	15.5	X	36.11161	112.30584	352.79342	13.37590	0.0339122	0.17463791	3.1698864	20	1 23.9	20.0
502899 2015 EW_{5}	16.2	X	206.56691	345.01819	332.80260	9.87164	0.0837196	0.19002596	2.9963607	20	2 13.3	20.7
502900 2015 EH_{6}	16.8	X	96.05379	161.52742	357.10742	12.67705	0.0555406	0.23285705	2.6166349	20	6 14.4	20.6
502901 2015 EU_{7}	16.2	X	44.55594	111.05273	81.02461	15.16011	0.1233637	0.21966788	2.7203514	20	5 29.6	19.5
502902 2015 EZ_{8}	16.1	X	73.75441	334.88774	130.25010	4.13486	0.0271354	0.19391620	2.9561512	20	3 6.2	20.1
502903 2015 EB_{9}	16.3	X	279.41963	169.69991	112.26016	3.20388	0.0233205	0.20292906	2.8679609	20	3 27.4	20.2
502904 2015 EL_{9}	16.2	X	249.35222	346.96038	7.92913	14.90748	0.0600093	0.22576847	2.6711228	20	5 9.9	20.2
502905 2015 EP_{10}	17.2	X	87.19012	141.97940	2.22623	4.18079	0.0520296	0.23236738	2.6203096	20	5 12.7	20.6
502906 2015 EA_{11}	17.0	X	308.21430	258.89272	20.26824	5.47156	0.0455821	0.22821539	2.6519954	20	4 23.6	20.3
502907 2015 ES_{12}	16.0	X	300.84127	207.75877	349.98710	16.34876	0.1635617	0.17660105	3.1463512	20	—	—
502908 2015 EV_{12}	17.2	X	137.04338	2.95663	57.45822	6.46686	0.0540002	0.21717071	2.7411652	20	4 1.2	21.1
502909 2015 EY_{12}	17.7	X	245.48624	323.10001	59.40931	6.71379	0.1248528	0.25679826	2.4513651	20	6 7.9	21.2
502910 2015 ET_{14}	15.8	X	263.22658	104.88484	132.45172	10.35173	0.0513922	0.17895870	3.1186562	20	1 11.4	20.5
502911 2015 EK_{15}	16.6	X	29.61786	166.84786	4.09765	8.78379	0.0886453	0.21134604	2.7913008	20	3 30.9	20.0
502912 2015 EW_{16}	17.1	X	179.54279	311.06026	82.99515	7.36235	0.0408237	0.22399184	2.6852285	20	4 17.0	21.0
502913 2015 EB_{17}	16.7	X	278.86041	239.39396	348.35739	21.85063	0.1811530	0.17703999	3.1411485	20	1 8.2	21.9
502914 2015 EW_{17}	17.3	X	13.48667	181.22785	12.75694	9.23673	0.0796527	0.21419261	2.7665152	20	4 5.1	20.5
502915 2015 ED_{18}	16.7	X	187.52095	19.36446	5.75534	12.94141	0.0602091	0.22314280	2.6920356	20	4 9.4	20.7
502916 2015 EC_{19}	16.1	X	238.84510	273.66697	342.57145	13.95827	0.1627011	0.17068412	3.2186516	20	1 4.2	21.5
502917 2015 ED_{20}	16.6	X	265.88555	73.84492	157.66901	27.12293	0.0602035	0.17620699	3.1510403	20	1 7.9	21.7
502918 2015 EH_{20}	16.9	X	240.78540	164.00284	169.10539	5.36333	0.0508683	0.21895973	2.7262136	20	4 8.9	20.8
502919 2015 EE_{22}	17.0	X	156.81198	263.06065	161.00458	12.94360	0.1419037	0.22993216	2.6387783	20	5 4.9	21.3
502920 2015 EJ_{22}	16.8	X	324.93088	11.48396	163.33363	10.59230	0.1019988	0.17709893	3.1404516	20	1 3.3	21.2
502921 2015 EX_{23}	16.5	X	244.74274	284.47392	350.86082	7.01622	0.1260925	0.18382872	3.0633302	20	1 31.4	21.4
502922 2015 EK_{25}	17.6	X	190.63863	238.02867	156.60391	6.58630	0.0471718	0.22502220	2.6770253	20	4 29.9	21.5
502923 2015 EO_{25}	16.0	X	321.99979	192.16014	344.98254	11.05400	0.0252693	0.17735706	3.1374036	20	1 15.4	20.5
502924 2015 EM_{27}	17.0	X	166.69251	62.06861	337.60314	3.61606	0.0728339	0.21630564	2.7484689	20	4 6.4	21.1
502925 2015 EZ_{27}	17.0	X	59.05162	355.84440	161.77038	7.12706	0.0402163	0.21758298	2.7377015	20	4 24.1	20.6
502926 2015 EX_{29}	16.9	X	221.19092	326.97343	31.70104	2.69029	0.0894399	0.22143126	2.7058897	20	4 14.7	20.8
502927 2015 EF_{30}	16.0	X	208.78338	321.36710	349.96899	15.40011	0.0777007	0.18567925	3.0429429	20	2 11.9	20.7
502928 2015 EV_{30}	16.4	X	83.21584	280.05224	130.52370	9.98578	0.0791259	0.17859891	3.1228432	20	1 18.9	20.6
502929 2015 EJ_{33}	17.0	X	189.22109	348.99948	39.29540	5.58536	0.0512985	0.21861745	2.7290584	20	4 18.6	21.0
502930 2015 EP_{33}	17.1	X	118.38379	346.33191	100.89555	4.90911	0.0662630	0.21375508	2.7702890	20	4 14.4	21.0
502931 2015 ET_{33}	17.0	X	165.50169	281.64780	117.13717	6.35391	0.0730472	0.21290343	2.7776719	20	4 8.7	21.2
502932 2015 EX_{34}	16.7	X	234.17563	339.79013	355.31163	4.37068	0.1276581	0.21071001	2.7969151	20	3 27.3	21.0
502933 2015 EG_{37}	16.7	X	199.60977	9.06664	8.62545	6.03338	0.0909508	0.22031413	2.7150291	20	4 14.5	20.8
502934 2015 EF_{39}	17.7	X	135.36803	96.54843	351.51717	12.35926	0.2434796	0.23384620	2.6092509	20	5 13.7	22.2
502935 2015 EL_{39}	17.1	X	283.21017	260.12008	28.99465	4.71389	0.0398643	0.21301866	2.7766701	20	4 6.2	20.8
502936 2015 EB_{40}	16.5	X	22.77166	185.96283	348.77339	15.26784	0.0704232	0.20500609	2.8485567	20	3 22.8	20.0
502937 2015 EO_{40}	17.3	X	291.27449	267.04616	56.57333	3.87833	0.0396156	0.23846876	2.5754219	20	5 31.9	20.4
502938 2015 EQ_{44}	16.6	X	58.23689	258.60495	190.58661	2.55698	0.0945390	0.18606119	3.0387771	20	2 1.3	20.3
502939 2015 EP_{45}	17.0	X	104.60008	308.23384	173.19789	13.11254	0.1821096	0.22739591	2.6583630	20	5 26.8	21.1
502940 2015 EE_{46}	17.1	X	101.27573	270.77553	173.03568	6.61830	0.0308100	0.20098929	2.8863840	20	3 13.2	20.9
502941 2015 EA_{47}	17.3	X	120.89759	108.77582	349.50189	2.44314	0.1073151	0.22226089	2.6991520	20	5 3.1	21.1
502942 2015 EO_{51}	17.5	X	180.64652	202.17120	220.42681	5.31054	0.2127062	0.24333133	2.5409963	20	5 22.9	21.7
502943 2015 EG_{52}	16.2	X	205.88751	54.10077	245.13873	7.21879	0.0357510	0.17862928	3.1224893	20	1 20.9	20.9
502944 2015 EC_{54}	16.5	X	238.60070	33.44487	233.71743	7.61806	0.0247320	0.18008210	3.1056728	20	1 19.6	21.1
502945 2015 ED_{55}	16.7	X	235.27130	123.47568	167.34231	9.95669	0.0652079	0.18759509	3.0221898	20	2 9.7	21.3
502946 2015 EK_{57}	15.4	X	309.06123	163.69883	38.99622	28.70410	0.1451267	0.17114633	3.2128540	20	1 16.1	20.4
502947 2015 EP_{58}	15.9	X	45.89984	76.60187	86.27652	17.82223	0.0664676	0.20169523	2.8796451	20	4 23.1	19.9
502948 2015 ER_{58}	15.8	X	37.30376	23.38583	89.67277	19.85256	0.0271492	0.16998274	3.2274994	20	2 3.2	20.5
502949 2015 ED_{59}	16.2	X	336.74049	255.46595	336.24780	24.23846	0.1006462	0.21387227	2.7692770	20	3 17.9	19.9
502950 2015 EF_{59}	16.6	X	322.60337	274.45778	21.05780	8.32273	0.0865928	0.24424393	2.5346628	20	5 31.8	19.6
502951 2015 EU_{59}	16.5	X	92.82537	105.37591	15.39554	13.32318	0.1794117	0.21479379	2.7613507	20	5 5.9	20.5
502952 2015 EB_{62}	16.5	X	79.46576	17.07391	123.25762	9.55814	0.0753025	0.22015852	2.7163082	20	5 6.2	20.2
502953 2015 EE_{62}	16.3	X	94.84715	67.81218	38.41999	8.12295	0.1881392	0.21695053	2.7430196	20	4 24.8	20.0
502954 2015 EW_{62}	16.1	X	74.09374	188.82616	322.71619	13.64179	0.1030825	0.21320162	2.7750814	20	5 8.8	20.1
502955 2015 EY_{62}	17.1	X	75.36503	307.48997	190.84279	7.72528	0.1746901	0.21243220	2.7817781	20	5 10.9	20.8
502956 2015 ES_{65}	16.7	X	296.97025	174.07818	33.69697	1.96852	0.1230789	0.18123666	3.0924689	20	1 5.6	21.1
502957 2015 EB_{66}	16.9	X	53.96778	61.87840	76.83847	5.43536	0.0077357	0.21170180	2.7881728	20	3 21.0	20.7
502958 2015 EL_{66}	16.2	X	272.55547	215.42678	351.99409	10.72222	0.0642925	0.16878737	3.2427197	20	—	—
502959 2015 ED_{68}	16.7	X	212.27077	185.77934	155.61320	6.73162	0.0688054	0.20884196	2.8135688	20	3 17.3	20.8
502960 2015 EO_{70}	17.4	X	130.23294	315.45830	111.37427	5.01751	0.0883808	0.21113111	2.7931948	20	4 5.4	21.4

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
502961 2015 EF_{71}	17.7	X	236.79127	259.83144	148.52290	6.83855	0.1192329	0.25879636	2.4387312	20	7 3.8	21.1
502962 2015 EJ_{71}	17.2	X	321.86230	149.17752	137.73971	2.62484	0.0391326	0.23116499	2.6293880	20	5 26.3	20.5
502963 2015 EL_{71}	16.9	X	348.84639	157.88457	8.29319	0.41106	0.0368984	0.18839736	3.0136039	20	1 30.5	21.0
502964 2015 EP_{72}	16.5	X	354.31911	24.36559	196.14928	6.53575	0.1504038	0.21055277	2.7983073	20	4 7.0	19.5
502965 2015 EC_{73}	16.5	X	259.04590	43.79252	217.90327	1.45019	0.0835059	0.18156145	3.0887798	20	1 31.6	21.2
502966 2015 FV_{1}	16.8	X	354.76435	206.06100	14.77804	11.27102	0.0984009	0.21779024	2.7359644	20	4 9.9	20.1
502967 2015 FJ_{6}	16.6	X	308.71659	308.74026	324.07885	14.39572	0.1109604	0.22934508	2.6432795	20	3 29.9	20.3
502968 2015 FH_{8}	18.5	X	217.53162	276.49632	161.23632	2.12792	0.2171779	0.27919581	2.3184450	20	7 13.5	22.0
502969 2015 FK_{12}	16.5	X	189.33671	299.41005	102.60581	9.18926	0.1156579	0.21710042	2.7417569	20	5 8.6	20.9
502970 2015 FP_{17}	15.9	X	292.08605	242.76830	25.04583	10.52452	0.0712757	0.18489496	3.0515418	20	3 21.6	20.2
502971 2015 FM_{21}	15.7	X	171.26024	292.27670	98.55297	13.13602	0.0928485	0.20097024	2.8865664	20	4 10.3	20.3
502972 2015 FE_{39}	16.4	X	91.68075	247.91488	192.39448	9.55263	0.0821190	0.17668729	3.1453272	20	3 4.9	20.8
502973 2015 FQ_{39}	17.0	X	109.19417	106.05198	43.09369	3.38460	0.0906366	0.22326136	2.6910824	20	6 24.0	20.8
502974 2015 FA_{44}	15.7	X	344.41477	330.01447	194.84816	21.80022	0.0723744	0.15916009	3.3721995	20	1 20.6	20.7
502975 2015 FZ_{44}	15.9	X	201.04513	312.22365	33.60385	9.96451	0.0909002	0.17465050	3.1697341	20	3 16.0	20.8
502976 2015 FC_{45}	16.2	X	204.21744	150.06634	200.28471	18.38560	0.0796014	0.17802306	3.1295739	20	3 18.5	21.1
502977 2015 FP_{47}	15.7	X	338.20570	196.83175	319.73570	14.35787	0.1108332	0.17881695	3.1203041	20	—	—
502978 2015 FA_{51}	16.4	X	122.32213	285.57699	157.58885	22.19738	0.0613825	0.22218336	2.6997799	20	4 15.4	20.5
502979 2015 FO_{56}	17.0	X	146.49089	135.65510	269.77289	11.67037	0.1181469	0.21496732	2.7598644	20	3 21.4	21.5
502980 2015 FJ_{59}	16.3	X	262.46877	18.55525	232.39334	10.63997	0.0650542	0.18208572	3.0828480	20	1 21.9	21.1
502981 2015 FA_{60}	16.0	X	55.64516	188.12470	254.64637	10.47748	0.0493269	0.18121702	3.0926924	20	1 16.1	20.2
502982 2015 FQ_{66}	16.3	X	326.90010	290.16469	261.56697	10.13964	0.0722232	0.17657992	3.1466022	20	1 27.9	20.7
502983 2015 FD_{72}	16.3	X	179.53167	345.43831	28.07796	11.35334	0.0448036	0.18507216	3.0495937	20	3 24.8	20.8
502984 2015 FC_{73}	17.7	X	135.68430	283.46725	188.19552	11.22947	0.2598613	0.22910924	2.6450932	20	6 17.7	22.4
502985 2015 FG_{74}	16.8	X	101.86276	93.58154	36.36063	6.06215	0.0196683	0.20496106	2.8489739	20	5 9.7	20.8
502986 2015 FQ_{74}	16.9	X	85.14994	86.82202	58.06126	5.86784	0.1070666	0.20915176	2.8107898	20	5 21.0	20.5
502987 2015 FG_{75}	17.3	X	86.96643	111.74141	33.80896	8.20847	0.1688240	0.21192927	2.7861773	20	6 1.2	21.2
502988 2015 FP_{75}	15.9	X	293.02063	224.30960	25.55950	13.90776	0.0901996	0.17330733	3.1860905	20	3 2.6	20.5
502989 2015 FE_{76}	15.8	X	172.25917	167.71942	201.89026	16.81605	0.0289676	0.17297737	3.1901409	20	3 5.8	20.6
502990 2015 FG_{76}	16.6	X	128.24433	252.96530	199.12993	12.94168	0.0481645	0.19704712	2.9247538	20	4 29.9	20.8
502991 2015 FH_{76}	17.4	X	136.78101	287.25498	197.17027	11.03050	0.1396943	0.22467405	2.6797901	20	6 26.4	21.8
502992 2015 FH_{82}	16.7	X	39.32689	196.96900	267.37651	8.77605	0.0789186	0.18270439	3.0758848	20	1 22.0	20.6
502993 2015 FA_{88}	16.2	X	289.82122	265.45187	321.37324	13.33801	0.0351380	0.18145187	3.0900233	20	2 1.6	20.4
502994 2015 FM_{93}	16.5	X	140.30032	94.35290	332.63849	13.80003	0.2158452	0.21473985	2.7618131	20	4 18.2	21.3
502995 2015 FD_{94}	15.8	X	76.27063	187.77822	273.74205	7.46089	0.0279902	0.18819383	3.0157764	20	2 29.8	20.2
502996 2015 FG_{94}	16.3	X	19.12400	232.40567	259.93473	8.24989	0.0478890	0.17463362	3.1699383	20	1 28.4	20.7
502997 2015 FF_{95}	16.7	X	240.67430	97.29860	282.55386	9.61139	0.2064638	0.23264744	2.6182063	20	5 20.5	21.0
502998 2015 FB_{96}	16.4	X	107.83059	115.49577	328.96643	10.62394	0.0939168	0.19919316	2.9037090	20	3 26.9	20.6
502999 2015 FE_{96}	15.8	X	68.66884	128.51437	332.85640	13.37701	0.0718718	0.18566171	3.0431345	20	2 28.2	19.9
503000 2015 FK_{96}	15.7	X	306.75208	236.93104	337.97797	12.80071	0.1004958	0.17439144	3.1728724	20	2 1.5	20.1
503001 2015 FX_{96}	16.5	X	56.69568	223.42237	227.18049	8.52933	0.0410567	0.17339630	3.1850005	20	1 26.9	21.0
503002 2015 FS_{98}	16.3	X	222.68357	341.33030	342.75383	16.19377	0.0927598	0.18640446	3.0350454	20	3 6.3	20.9
503003 2015 FW_{99}	16.3	X	358.53775	293.13437	221.77312	8.48865	0.0470944	0.17415532	3.1757397	20	1 28.1	20.7
503004 2015 FV_{101}	16.3	X	174.79778	125.71556	286.56196	7.42866	0.1213204	0.21693773	2.7431274	20	5 1.3	20.7
503005 2015 FK_{102}	17.0	X	76.51962	258.18604	249.19178	7.92845	0.1637109	0.21516849	2.7581440	20	5 21.3	20.4
503006 2015 FT_{102}	15.9	X	230.63393	59.49244	250.45357	9.52314	0.1018441	0.18033069	3.1028179	20	2 22.8	20.8
503007 2015 FX_{102}	16.5	X	344.11415	264.31359	306.90307	9.13203	0.0533990	0.19217332	2.9739979	20	3 14.0	20.5
503008 2015 FD_{106}	16.5	X	145.31703	103.18935	315.09043	4.84626	0.0570521	0.20017222	2.8942332	20	4 4.5	20.7
503009 2015 FN_{106}	15.7	X	356.76836	308.40212	213.08101	8.70126	0.0351268	0.17448447	3.1717445	20	2 3.3	20.1
503010 2015 FW_{108}	16.5	X	103.14279	238.63613	237.13297	8.46219	0.1652570	0.21456476	2.7633154	20	5 13.4	20.4
503011 2015 FG_{109}	15.8	X	185.07010	41.37357	336.52676	11.48410	0.0425637	0.19590297	2.9361306	20	3 28.2	20.2
503012 2015 FK_{110}	17.2	X	156.43725	144.76226	344.65096	7.19883	0.0854389	0.24385653	2.5373466	20	7 24.9	20.9
503013 2015 FL_{110}	16.1	X	323.00413	201.97239	6.12456	27.48347	0.0935964	0.17691179	3.1426658	20	2 24.9	20.7
503014 2015 FW_{110}	13.9	X	277.20328	140.58739	291.22261	3.67848	0.0351565	0.08249747	5.2260747	20	9 15.2	20.8
503015 2015 FW_{111}	17.5	X	154.05394	235.67742	238.45813	3.93655	0.2427585	0.24437035	2.5337886	20	7 4.6	21.9
503016 2015 FP_{112}	16.0	X	285.19391	267.90019	357.63074	9.83123	0.0614153	0.18585728	3.0409994	20	3 9.6	20.3
503017 2015 FB_{113}	16.1	X	239.16232	4.39019	342.72857	20.45787	0.0853814	0.21005472	2.8027289	20	4 10.6	20.7
503018 2015 FL_{115}	16.2	X	58.07134	299.36723	180.19789	9.40957	0.0492628	0.17970356	3.1100325	20	3 5.8	20.4
503019 2015 FT_{115}	15.7	X	305.55935	225.81967	357.68111	16.49193	0.1150821	0.17702853	3.1412840	20	2 10.9	20.2
503020 2015 FW_{116}	16.2	X	102.72622	228.60723	194.86370	9.73791	0.1225319	0.18756739	3.0224874	20	3 2.0	20.5
503021 2015 FE_{121}	16.1	X	245.17746	237.01332	91.16582	6.70568	0.0419133	0.21204289	2.7851819	20	4 11.5	20.1
503022 2015 FJ_{121}	16.1	X	330.27081	163.13657	17.06331	8.39903	0.0818932	0.18000771	3.1065282	20	1 21.9	20.4
503023 2015 FM_{121}	16.2	X	139.22571	88.97791	7.06729	14.47818	0.0560035	0.22277955	2.6949611	20	5 12.1	20.2
503024 2015 FB_{123}	16.8	X	105.62506	79.03264	31.90939	9.11946	0.1101097	0.21347080	2.7727480	20	5 2.0	20.6
503025 2015 FY_{135}	16.0	X	54.62248	326.48557	153.29250	11.13270	0.0707313	0.18842262	3.0133346	20	3 4.2	19.8
503026 2015 FL_{136}	16.1	X	37.08321	137.69022	327.36828	15.07650	0.0710410	0.17765017	3.1339517	20	1 24.9	20.2
503027 2015 FG_{139}	16.0	X	126.89709	2.86999	27.88921	11.61796	0.0862218	0.17413090	3.1760365	20	2 23.5	20.8
503028 2015 FF_{140}	16.6	X	94.93841	75.14744	23.96429	9.35213	0.0850978	0.19685909	2.9266159	20	4 2.9	20.5
503029 2015 FT_{140}	16.3	X	200.42234	150.39380	177.76885	8.74094	0.0701900	0.17444673	3.1722020	20	2 18.7	21.2
503030 2015 FM_{141}	16.3	X	118.15042	8.20540	51.69325	4.49632	0.1332383	0.18890262	3.0082279	20	3 20.7	20.8
503031 2015 FV_{141}	16.8	X	326.76881	170.61899	47.36429	1.44981	0.1080342	0.18386648	3.0629107	20	2 27.1	20.8
503032 2015 FK_{143}	16.7	X	112.88657	255.40263	190.24871	10.88852	0.0864570	0.19792610	2.9160883	20	4 7.4	20.8
503033 2015 FE_{144}	16.9	X	70.72201	326.87709	165.76774	5.99720	0.1150087	0.20167897	2.8797998	20	4 18.4	20.6
503034 2015 FN_{144}	16.5	X	4.82510	122.47862	46.53659	5.23235	0.0792138	0.18208255	3.0828838	20	2 25.8	20.4
503035 2015 FX_{145}	17.0	X	134.35239	114.46406	20.77214	12.46308	0.1287592	0.23676354	2.5877729	20	7 10.6	21.2
503036 2015 FU_{146}	17.4	X	160.96030	76.14771	31.43622	8.60843	0.1108452	0.23751405	2.5823187	20	6 29.8	21.5
503037 2015 FX_{146}	16.4	X	166.04532	46.82258	32.30266	10.65431	0.1448249	0.22714494	2.6603208	20	5 27.5	20.7
503038 2015 FG_{149}	17.0	X	175.05569	262.03222	175.54641	16.48016	0.1889041	0.23203963	2.6227764	20	6 7.1	21.7
503039 2015 FR_{149}	16.6	X	238.27141	251.74125	63.49845	6.32034	0.1296153	0.18277900	3.0750477	20	3 13.0	21.4
503040 2015 FR_{150}	16.3	X	123.04464	322.37097	49.60159	5.58299	0.0118005	0.15811734	3.3870092	20	1 16.8	21.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503041 2015 FW_{150}	16.9	X	89.30165	42.68491	69.14309	2.87019	0.0738307	0.19775512	2.9177689	20	4 10.1	20.9
503042 2015 FJ_{151}	16.2	X	86.42644	250.53865	179.81283	15.73234	0.0859469	0.17358664	3.1826718	20	2 15.4	20.7
503043 2015 FD_{152}	16.2	X	225.37363	274.18131	23.77210	4.71124	0.0849334	0.16848712	3.2465710	20	2 12.0	21.1
503044 2015 FU_{152}	16.6	X	41.30147	42.98372	105.26258	1.99182	0.1009542	0.19142378	2.9817562	20	3 23.9	20.1
503045 2015 FL_{153}	17.3	X	125.75729	334.59478	185.84079	14.92007	0.0957645	0.24131176	2.5551539	20	7 27.0	21.3
503046 2015 FL_{158}	15.8	X	333.42466	144.85916	51.80513	11.41168	0.0515922	0.17602904	3.1531636	20	2 22.5	20.3
503047 2015 FV_{158}	16.4	X	201.71630	14.96877	50.26804	11.52242	0.1302428	0.23308093	2.6149591	20	6 14.9	20.5
503048 2015 FY_{158}	16.4	X	235.49806	138.15987	175.16333	15.84004	0.0785771	0.18007469	3.1057579	20	3 8.2	21.1
503049 2015 FB_{159}	17.2	X	66.68845	113.03491	51.97086	6.07411	0.1174250	0.21212575	2.7844566	20	5 23.7	20.6
503050 2015 FO_{161}	17.8	X	142.94952	345.65004	122.42221	5.56968	0.2608587	0.23381112	2.6095118	20	6 19.3	22.4
503051 2015 FR_{162}	15.9	X	98.18989	265.35910	154.75235	8.73674	0.0071620	0.16778260	3.2556530	20	2 9.4	20.6
503052 2015 FJ_{164}	17.1	X	165.84786	8.85290	74.28353	2.98101	0.1099747	0.22246726	2.6974826	20	6 2.5	21.1
503053 2015 FS_{165}	15.9	X	154.20959	338.97303	44.24025	10.02365	0.0526265	0.17777440	3.1324915	20	3 11.2	20.6
503054 2015 FH_{166}	16.0	X	353.81552	343.74619	191.79970	18.62253	0.0974750	0.17717198	3.1395882	20	2 10.8	20.4
503055 2015 FB_{168}	16.9	X	313.04761	192.03149	76.28597	3.13241	0.0201393	0.20120754	2.8842964	20	4 22.5	20.7
503056 2015 FM_{170}	16.4	X	352.58160	152.29128	37.64282	8.72790	0.0825086	0.18428930	3.0582240	20	3 6.4	20.4
503057 2015 FE_{171}	16.6	X	176.20493	341.68745	78.99775	5.33225	0.0556348	0.21482382	2.7610934	20	5 15.6	20.6
503058 2015 FC_{174}	17.0	X	116.29389	84.43464	57.46030	12.73386	0.1590097	0.22889378	2.6467528	20	6 30.2	21.1
503059 2015 FP_{174}	16.7	X	128.54960	303.26030	158.88229	12.16337	0.1488400	0.21385351	2.7694389	20	5 24.6	21.2
503060 2015 FM_{177}	16.0	X	111.81682	184.59387	256.19958	5.59912	0.0405716	0.19796192	2.9157365	20	3 21.4	20.3
503061 2015 FZ_{179}	17.2	X	228.07938	315.13994	41.52439	3.62229	0.0465367	0.21110698	2.7934077	20	4 23.8	21.1
503062 2015 FZ_{195}	16.3	X	331.61885	226.10978	332.32018	14.19383	0.1603506	0.18300578	3.0725068	20	2 4.5	20.1
503063 2015 FA_{196}	15.9	X	334.00421	224.75639	307.98846	8.35449	0.0450822	0.17437719	3.1730452	20	1 21.1	20.3
503064 2015 FT_{205}	17.4	X	107.94454	315.77715	194.37154	11.17397	0.1267910	0.23364251	2.6107671	20	6 27.7	21.4
503065 2015 FU_{208}	16.5	X	326.62876	324.36114	221.21402	3.64114	0.0273102	0.17809140	3.1287732	20	1 27.2	20.9
503066 2015 FU_{211}	15.9	X	128.02608	337.41839	98.41081	6.88311	0.1270958	0.20040510	2.8919906	20	4 19.7	20.3
503067 2015 FV_{211}	17.0	X	187.28370	313.32215	104.07400	6.44024	0.1178335	0.21975706	2.7196154	20	5 23.9	21.2
503068 2015 FW_{212}	16.7	X	109.84310	21.49813	83.62010	10.46257	0.1842436	0.20995970	2.8035744	20	5 12.4	20.9
503069 2015 FG_{214}	15.6	X	157.29559	290.42105	93.08427	11.69559	0.1147899	0.17969644	3.1101146	20	3 20.1	20.6
503070 2015 FX_{222}	16.8	X	56.35771	324.40519	155.27784	8.37752	0.0915561	0.19195480	2.9762545	20	3 8.4	20.6
503071 2015 FO_{224}	16.2	X	124.84579	276.30453	161.95703	9.18891	0.1636457	0.21092113	2.7950483	20	4 22.2	20.5
503072 2015 FR_{229}	16.3	X	269.75017	164.07312	88.27790	2.48629	0.1221758	0.17223946	3.1992458	20	1 29.9	21.1
503073 2015 FK_{237}	16.9	X	188.07932	251.42582	148.62259	7.05000	0.0426414	0.21436605	2.7650228	20	5 4.5	20.9
503074 2015 FN_{247}	16.4	X	59.61306	309.53821	155.20746	11.42462	0.0882470	0.18281729	3.0746183	20	2 23.1	20.2
503075 2015 FK_{251}	16.5	X	153.04134	4.66401	71.74855	4.93473	0.0699602	0.21649093	2.7469004	20	5 9.9	20.6
503076 2015 FK_{253}	16.5	X	307.33857	205.80848	34.39396	6.45111	0.2359888	0.18289803	3.0737134	20	2 12.2	20.8
503077 2015 FQ_{263}	17.0	X	146.09079	347.69671	79.77168	4.97905	0.0749117	0.21671961	2.7449677	20	4 21.9	20.9
503078 2015 FY_{265}	16.3	X	21.28795	101.42041	95.69741	4.88502	0.0323012	0.21348308	2.7726417	20	4 22.8	19.9
503079 2015 FO_{267}	16.7	X	37.27118	35.56510	70.71580	1.90054	0.1429919	0.18240551	3.0792439	20	1 26.8	20.2
503080 2015 FF_{268}	16.3	X	357.08608	36.07153	102.77358	2.26885	0.0362043	0.17202964	3.2018467	20	1 10.8	20.7
503081 2015 FM_{279}	16.3	X	34.67987	27.98287	159.85206	14.74949	0.1023614	0.21299511	2.7768748	20	5 7.7	19.9
503082 2015 FE_{280}	17.2	X	129.02215	355.16505	133.35194	7.64359	0.0774387	0.23570301	2.5955294	20	6 19.6	21.0
503083 2015 FG_{284}	16.4	X	173.14339	274.41467	152.33479	13.08786	0.2585834	0.22456851	2.6806296	20	5 25.3	21.4
503084 2015 FM_{284}	16.9	X	135.73713	41.58355	69.02415	12.10089	0.1130342	0.22278698	2.6949012	20	6 5.8	20.9
503085 2015 FE_{290}	16.3	X	351.42803	353.88564	181.93508	13.53024	0.0885303	0.17951024	3.1122650	20	2 9.3	20.5
503086 2015 FF_{290}	15.5	X	275.30962	163.67585	102.16601	23.72131	0.0803138	0.18154231	3.0889969	20	3 2.1	20.4
503087 2015 FT_{291}	17.2	X	91.32190	59.59660	107.16018	9.74006	0.0749442	0.23538843	2.5978415	20	6 23.5	20.6
503088 2015 FN_{294}	16.5	X	283.11339	167.58864	97.52848	12.20847	0.1150720	0.17326716	3.1865828	20	3 4.5	21.3
503089 2015 FP_{294}	15.7	X	183.39414	280.55690	95.03227	13.37570	0.0619772	0.18246608	3.0785624	20	4 4.9	20.6
503090 2015 FZ_{295}	16.1	X	227.18418	278.71001	59.65310	16.71277	0.0308819	0.18436080	3.0574333	20	4 9.8	20.7
503091 2015 FR_{296}	15.7	X	343.92998	111.48001	99.86967	11.70119	0.0386635	0.18110373	3.0939820	20	3 26.6	20.1
503092 2015 FA_{298}	16.5	X	359.58899	14.25140	187.08796	13.92674	0.1330428	0.18447146	3.0562104	20	3 24.8	19.9
503093 2015 FV_{298}	16.3	X	47.00386	6.60313	138.81929	10.45094	0.1658945	0.18552798	3.0445967	20	4 9.4	20.0
503094 2015 FT_{300}	17.0	X	153.17508	338.76280	151.74508	12.79696	0.2315064	0.24060749	2.5601375	20	7 23.4	21.5
503095 2015 FN_{301}	16.4	X	12.70141	92.81891	92.35452	10.05538	0.0285785	0.18254796	3.0776417	20	3 31.9	20.7
503096 2015 FF_{304}	17.9	X	296.33157	242.92999	59.84043	22.54727	0.0910528	0.38796697	1.8618279	20	5 2.0	19.5
503097 2015 FJ_{306}	15.9	X	341.69882	155.18315	31.26990	11.44201	0.0239445	0.17835912	3.1256415	20	2 22.9	20.4
503098 2015 FJ_{309}	16.3	X	203.98207	266.01968	138.68803	7.70136	0.0964551	0.22423257	2.6833063	20	5 26.3	20.4
503099 2015 FE_{312}	16.7	X	104.96582	100.27422	48.01071	12.33591	0.1352494	0.22961151	2.6412344	20	6 22.8	20.6
503100 2015 FG_{314}	16.1	X	201.62991	192.15504	143.65270	11.20880	0.0906245	0.17849993	3.1239976	20	3 1.9	21.0
503101 2015 FE_{315}	17.3	X	126.71568	25.83655	96.73742	6.10294	0.0895421	0.22512296	2.6762265	20	6 9.9	21.3
503102 2015 FK_{315}	16.1	X	107.65803	0.96157	61.61767	10.16362	0.1064118	0.18321346	3.0701845	20	3 12.6	20.6
503103 2015 FT_{315}	16.9	X	162.21298	327.02504	134.17630	7.17110	0.0771855	0.23149944	2.6268549	20	6 21.6	20.7
503104 2015 FV_{315}	16.1	X	57.82452	306.76015	147.80211	10.80095	0.0383223	0.17006522	3.2264558	20	2 4.5	20.5
503105 2015 FL_{316}	16.0	X	225.16875	301.40255	44.79844	9.16567	0.0343543	0.19931103	2.9025642	20	4 10.8	20.2
503106 2015 FS_{316}	16.1	X	250.43211	165.61051	103.94877	6.25351	0.0870853	0.16778559	3.2556142	20	2 3.5	20.9
503107 2015 FQ_{317}	16.9	X	220.52958	240.88573	165.28935	10.41361	0.1292974	0.23179454	2.6246249	20	6 11.9	21.0
503108 2015 FN_{318}	16.5	X	219.89157	179.12301	149.18257	11.31371	0.0399427	0.18442006	3.0567783	20	3 13.8	20.9
503109 2015 FA_{319}	16.3	X	63.42964	328.36242	132.69975	9.16945	0.0931372	0.17902939	3.1178352	20	2 26.6	20.3
503110 2015 FJ_{319}	16.3	X	164.30675	292.92084	81.87738	10.21138	0.1138257	0.18094874	3.0957486	20	3 15.9	21.3
503111 2015 FB_{320}	16.4	X	81.26962	290.52151	162.48245	16.56360	0.0322919	0.18088952	3.0964241	20	3 1.7	20.8
503112 2015 FU_{320}	17.5	X	133.94420	50.39609	87.89551	7.74715	0.2292425	0.24280497	2.5446673	20	7 18.9	21.8
503113 2015 FV_{323}	16.0	X	169.85264	276.73980	95.57646	11.14036	0.1540179	0.18139594	3.0906584	20	3 20.1	21.2
503114 2015 FS_{325}	15.7	X	224.53483	254.77025	67.81674	11.85171	0.1313657	0.17848233	3.1242029	20	3 11.9	20.8
503115 2015 FJ_{327}	16.6	X	17.32205	51.86597	127.98647	7.54031	0.1484814	0.19239739	2.9716883	20	3 30.4	20.0
503116 2015 FF_{329}	16.4	X	265.75035	201.70482	85.30043	11.12999	0.0734799	0.18559830	3.0438276	20	3 16.1	21.0
503117 2015 FH_{329}	15.6	X	187.57624	265.49946	83.08753	11.35235	0.1380162	0.17548778	3.1596438	20	3 8.1	20.9
503118 2015 FG_{330}	17.0	X	118.65073	88.61219	64.78698	8.28270	0.1325053	0.23508976	2.6000412	20	7 16.8	20.9
503119 2015 FL_{331}	16.5	X	326.05369	145.46037	57.22950	4.75280	0.1304441	0.17653752	3.1471060	20	2 6.3	20.6
503120 2015 FX_{331}	16.1	X	274.88107	93.50318	184.67275	23.99398	0.0285991	0.19139253	2.9820807	20	3 14.6	20.3

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503121 2015 FE_{334}	16.4	X	87.70730	288.95109	173.50126	9.10763	0.0598613	0.17431634	3.1737837	20	3 26.7	20.7
503122 2015 FY_{341}	16.0	X	16.05893	22.37305	110.39809	6.50356	0.1059358	0.17377477	3.1803743	20	1 26.8	19.9
503123 2015 FA_{342}	16.2	X	232.88480	137.36561	217.63758	5.23826	0.0482002	0.21086301	2.7955619	20	4 26.9	20.2
503124 2015 FB_{342}	16.7	X	340.06357	311.16444	297.39951	3.35483	0.0145250	0.21124503	2.7921905	20	4 30.6	20.6
503125 2015 FE_{343}	17.2	X	64.79406	134.37097	28.17343	9.47452	0.2024951	0.21319788	2.7751137	20	5 29.8	20.8
503126 2015 FL_{343}	17.4	X	239.33354	259.20403	30.57560	20.04019	0.0831679	0.36175904	1.9506969	20	1 28.8	20.3
503127 2015 FS_{363}	16.9	X	186.17774	219.10323	152.50115	11.93880	0.1189529	0.21586371	2.7522188	20	3 28.3	21.3
503128 2015 FS_{366}	16.0	X	333.56457	215.25518	312.81074	22.98445	0.1304705	0.17671143	3.1450408	20	1 7.7	20.3
503129 2015 FP_{371}	16.6	X	192.52501	117.66508	294.02962	12.27408	0.1492393	0.23021163	2.6366423	20	5 17.8	21.1
503130 2015 FL_{377}	16.1	X	50.06181	185.95837	275.27359	9.65720	0.0412255	0.18513199	3.0489367	20	1 29.8	20.3
503131 2015 FF_{380}	15.7	X	254.80510	18.51420	261.18324	8.18348	0.0253539	0.19232933	2.9723894	20	2 18.9	20.1
503132 2015 FO_{383}	15.7	X	256.74909	312.59397	308.59738	12.50407	0.1758461	0.17213706	3.2005145	20	1 22.7	20.7
503133 2015 FB_{384}	16.3	X	105.67206	105.89419	299.91529	9.16618	0.0499064	0.18163397	3.0879576	20	2 4.7	20.6
503134 2015 FE_{390}	16.3	X	81.90883	107.03467	333.33007	6.99952	0.0911824	0.17979701	3.1089548	20	2 24.1	20.4
503135 2015 GK_{3}	15.9	X	220.60078	313.94780	2.02815	12.84807	0.1199403	0.18358025	3.0660936	20	2 26.9	20.8
503136 2015 GJ_{7}	15.6	X	213.41911	176.79738	139.99181	15.36755	0.0474522	0.17604691	3.1529502	20	2 21.5	20.2
503137 2015 GE_{14}	16.7	X	120.86770	23.74162	83.95483	7.13431	0.0123710	0.20649008	2.8348925	20	5 6.8	20.6
503138 2015 GB_{15}	17.1	X	145.13700	74.82636	346.40018	1.46416	0.0565987	0.20288003	2.8684229	20	4 9.7	21.3
503139 2015 GT_{15}	16.2	X	206.14838	143.55998	194.47359	9.41671	0.1095030	0.18439040	3.0571061	20	3 5.1	21.0
503140 2015 GX_{15}	16.5	X	236.02875	109.29943	190.68334	1.56555	0.0386090	0.18152194	3.0892280	20	2 25.0	20.9
503141 2015 GL_{17}	15.5	X	87.15311	52.63542	14.53194	13.76320	0.0647804	0.17547152	3.1598390	20	2 17.6	20.0
503142 2015 GR_{17}	16.9	X	37.88289	101.65803	32.45333	2.21571	0.1163657	0.18682863	3.0304498	20	3 1.8	20.6
503143 2015 GZ_{19}	16.9	X	130.80790	244.58386	183.79472	11.96661	0.0276449	0.19471980	2.9480124	20	3 30.9	21.1
503144 2015 GD_{21}	17.0	X	112.11359	291.09083	168.55171	2.19954	0.0220877	0.20261996	2.8708768	20	4 15.2	20.9
503145 2015 GE_{21}	16.4	X	312.81015	49.49007	154.13962	1.61670	0.0606337	0.17117369	3.2125116	20	1 29.4	20.9
503146 2015 GT_{21}	16.9	X	157.89474	260.32678	152.25470	2.58142	0.0643839	0.20310766	2.8662793	20	4 15.4	21.0
503147 2015 GG_{23}	16.5	X	60.67674	7.93234	105.74105	14.92133	0.2360413	0.18362924	3.0655482	20	4 4.5	20.5
503148 2015 GV_{24}	16.3	X	98.29957	341.34987	99.59787	9.99187	0.0716816	0.18079782	3.0974710	20	3 18.6	20.8
503149 2015 GR_{25}	15.8	X	79.62731	15.43102	84.59972	17.00885	0.0723406	0.17957140	3.1115583	20	3 23.3	20.4
503150 2015 GZ_{25}	16.0	X	324.51935	109.14600	108.95635	12.48471	0.0195318	0.17634597	3.1493846	20	3 10.9	20.5
503151 2015 GJ_{26}	16.4	X	240.71023	223.36245	96.74949	10.37884	0.0379836	0.18798296	3.0180312	20	3 31.2	20.9
503152 2015 GY_{28}	16.0	X	318.81169	9.04455	190.35381	8.93640	0.0145787	0.17579449	3.1559676	20	2 3.9	20.5
503153 2015 GL_{29}	16.2	X	272.60737	245.91111	14.24117	17.65272	0.0293438	0.17842573	3.1248636	20	2 28.5	20.8
503154 2015 GN_{30}	16.9	X	114.20505	89.77150	12.08499	1.94206	0.0184025	0.20326543	2.8647960	20	4 19.2	20.9
503155 2015 GM_{31}	16.6	X	72.36143	337.94833	112.42067	2.12047	0.1502848	0.18305485	3.0719576	20	3 3.3	20.4
503156 2015 GU_{32}	16.2	X	198.18476	181.20903	161.22813	16.03936	0.0739739	0.17547322	3.1598186	20	3 5.8	20.9
503157 2015 GZ_{32}	16.6	X	22.19528	88.82225	88.94433	11.42299	0.0505125	0.19104126	2.9857350	20	4 5.1	20.7
503158 2015 GA_{33}	16.4	X	182.31471	237.46200	123.88671	12.60441	0.0948123	0.17800705	3.1297615	20	3 15.8	21.4
503159 2015 GE_{34}	16.4	X	71.80130	281.44366	170.16151	14.59605	0.0874332	0.17390010	3.1788461	20	2 23.6	20.6
503160 2015 GQ_{36}	16.1	X	15.50114	46.22692	203.09937	34.07437	0.2097656	0.21064930	2.7974524	20	6 29.9	19.9
503161 2015 GS_{36}	15.7	X	202.60598	237.49557	58.59236	10.76805	0.0629769	0.15600750	3.4174781	20	1 20.4	21.0
503162 2015 GT_{36}	16.3	X	0.33962	99.49769	69.41493	8.58179	0.0908670	0.17863228	3.1224542	20	2 20.3	20.4
503163 2015 GK_{37}	16.6	X	199.36764	258.51065	137.79324	6.15905	0.0385284	0.21343208	2.7730833	20	5 12.9	20.6
503164 2015 GM_{37}	15.7	X	160.26064	312.08560	56.12405	9.94072	0.0899258	0.17661280	3.1462116	20	3 2.8	20.6
503165 2015 GC_{38}	16.5	X	176.29908	244.59734	139.44114	7.56212	0.0921758	0.19390160	2.9562997	20	4 3.5	21.1
503166 2015 GD_{38}	16.6	X	99.00634	32.64996	84.81944	6.99779	0.0208796	0.20312483	2.8661178	20	4 23.5	20.6
503167 2015 GM_{38}	16.6	X	317.16109	76.96794	146.47570	10.05178	0.0851289	0.18129726	3.0917798	20	2 23.9	20.6
503168 2015 GQ_{38}	16.3	X	145.14342	10.83056	66.66999	10.18142	0.1779979	0.21631226	2.7484128	20	5 10.8	20.8
503169 2015 GS_{38}	16.1	X	250.37949	237.79712	67.41118	11.79376	0.0784973	0.18827372	3.0149232	20	3 20.8	20.7
503170 2015 GB_{39}	16.7	X	115.29019	333.71560	159.13352	13.60013	0.1022025	0.22364765	2.6879828	20	6 12.6	20.8
503171 2015 GC_{39}	16.0	X	161.84027	300.99485	84.29872	11.14870	0.0723928	0.18741356	3.0241410	20	3 23.7	20.7
503172 2015 GE_{40}	16.5	X	104.11829	0.44980	122.91883	4.77986	0.0469187	0.20965225	2.8063147	20	5 10.2	20.4
503173 2015 GQ_{40}	15.9	X	28.13365	307.15031	188.84268	25.26807	0.0923848	0.17620369	3.1510796	20	2 13.5	20.3
503174 2015 GQ_{41}	16.5	X	124.19409	313.56273	153.71372	14.63470	0.1713863	0.21805455	2.7337530	20	5 29.2	21.0
503175 2015 GH_{43}	16.3	X	16.53025	9.31871	126.50324	6.65462	0.1608405	0.17316406	3.1878476	20	1 30.2	19.9
503176 2015 GK_{43}	16.0	X	164.69460	279.54630	157.44574	9.07814	0.1430961	0.21903210	2.7256130	20	5 27.5	20.5
503177 2015 GL_{43}	16.9	X	305.97339	196.65965	60.16372	11.22086	0.0668117	0.18841072	3.0134614	20	3 28.7	21.1
503178 2015 GM_{43}	16.9	X	41.59366	64.71412	85.66242	7.70772	0.1481448	0.19245031	2.9711436	20	4 4.1	20.4
503179 2015 GA_{44}	15.6	X	207.41144	158.15129	187.39209	26.95100	0.1165590	0.17882428	3.1202189	20	3 16.0	20.6
503180 2015 GD_{44}	16.3	X	46.93185	301.13699	173.48774	13.53118	0.1367717	0.18094297	3.0958143	20	2 20.3	20.2
503181 2015 GH_{44}	16.4	X	223.38230	260.26134	62.14263	15.03021	0.0566621	0.18370504	3.0647049	20	3 16.2	21.2
503182 2015 GQ_{44}	16.1	X	354.77853	124.40116	48.99808	10.96260	0.0647133	0.17698705	3.1417748	20	2 21.2	20.4
503183 2015 GF_{45}	16.4	X	239.82714	215.30825	156.10862	14.11496	0.1721214	0.21379298	2.7699616	20	5 17.4	21.0
503184 2015 GH_{45}	16.2	X	205.59168	193.71722	154.35452	11.04450	0.0492261	0.18469356	3.0537598	20	3 21.6	20.8
503185 2015 GX_{46}	16.1	X	3.03937	135.86949	75.51722	7.21892	0.0144700	0.20055425	2.8905566	20	4 17.8	20.1
503186 2015 GS_{48}	16.2	X	161.84127	316.10302	75.09375	16.27523	0.0561671	0.18718063	3.0266494	20	4 1.9	21.0
503187 2015 HM	16.2	X	349.61189	313.47574	223.85872	9.55782	0.1609167	0.17442010	3.1725249	20	2 1.6	20.1
503188 2015 HX_{2}	16.4	X	138.22951	183.78144	266.34010	11.39696	0.1248291	0.22278931	2.6948824	20	5 13.0	20.5
503189 2015 HX_{3}	16.5	X	27.23764	230.83200	272.62584	9.64323	0.1328242	0.18801229	3.0177173	20	2 20.3	20.3
503190 2015 HE_{4}	16.1	X	236.91752	28.12191	270.27187	9.08894	0.0238252	0.18413993	3.0598777	20	2 21.3	20.6
503191 2015 HC_{5}	15.8	X	218.23001	337.80167	333.65606	14.87191	0.0081442	0.18037347	3.1023273	20	2 21.1	20.0
503192 2015 HD_{5}	16.2	X	261.43905	13.18265	259.56187	10.04725	0.0290610	0.18195559	3.0843178	20	2 18.2	20.8
503193 2015 HL_{5}	15.9	X	82.13772	222.38099	279.36164	9.31887	0.0950579	0.21360628	2.7715755	20	5 8.7	19.8
503194 2015 HQ_{5}	16.2	X	40.20879	201.87434	292.12200	9.12121	0.0299564	0.18464422	3.0543039	20	2 24.2	20.4
503195 2015 HL_{6}	16.2	X	335.28235	356.81153	266.65509	12.08240	0.0923428	0.21540997	2.7560823	20	5 6.2	19.7
503196 2015 HA_{9}	17.2	X	146.56072	102.96324	48.72041	20.01471	0.2856836	0.26048169	2.4282007	20	8 27.3	22.0
503197 2015 HA_{11}	18.0	X	355.73590	23.50456	179.08292	23.09459	0.0430299	0.37896619	1.8911925	20	2 27.4	19.8
503198 2015 HD_{12}	16.2	X	52.07489	102.88613	9.67399	7.20570	0.0612438	0.18587527	3.0408032	20	2 21.8	20.2
503199 2015 HJ_{14}	16.3	X	2.13480	341.69645	164.10154	14.27806	0.1803981	0.17803389	3.1294470	20	1 13.4	20.0
503200 2015 HV_{14}	15.9	X	251.60424	221.51568	99.04981	10.32777	0.0695305	0.18023200	3.1039504	20	4 10.3	20.6

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503201 2015 HF_{16}	16.4	X	118.89558	28.47832	105.13493	15.44326	0.1322006	0.24001182	2.5643716	20	6 20.7	20.1
503202 2015 HM_{18}	16.0	X	308.94614	50.74776	189.83916	10.61465	0.0166999	0.18494222	3.0510220	20	3 12.4	20.2
503203 2015 HT_{20}	16.2	X	327.28844	20.84952	182.80574	6.40883	0.0775694	0.17476063	3.1684023	20	2 13.0	20.4
503204 2015 HB_{21}	17.1	X	124.25508	93.37618	42.25306	7.73970	0.1234520	0.22814555	2.6525366	20	6 27.4	21.2
503205 2015 HY_{23}	16.4	X	38.29317	91.24901	42.35482	10.04368	0.0732616	0.17824836	3.1269362	20	3 4.3	20.6
503206 2015 HJ_{25}	16.1	X	193.51737	94.38166	199.63916	17.82039	0.0299392	0.14813860	3.5374520	20	1 5.3	21.6
503207 2015 HY_{28}	16.2	X	18.52800	322.85434	186.11235	20.08420	0.1311672	0.17788153	3.1312336	20	2 15.5	20.2
503208 2015 HH_{30}	16.2	X	33.55620	148.61502	34.73744	16.09969	0.1552669	0.20150188	2.8814869	20	4 29.8	19.5
503209 2015 HS_{30}	16.2	X	264.66148	251.86330	59.87001	12.74853	0.0111536	0.19668450	2.9283476	20	4 20.3	20.4
503210 2015 HB_{31}	16.0	X	181.45880	196.14198	171.17201	10.73186	0.0607768	0.18024564	3.1037939	20	3 17.4	20.6
503211 2015 HN_{34}	16.4	X	318.71576	201.88498	52.56440	10.85444	0.0582934	0.19103244	2.9858270	20	4 10.8	20.5
503212 2015 HM_{35}	15.7	X	121.50070	217.00163	193.36196	17.50797	0.1155287	0.17204716	3.2016293	20	3 7.8	20.6
503213 2015 HN_{36}	16.6	X	84.44194	62.01526	80.23630	11.22319	0.0398877	0.20283483	2.8688490	20	5 9.6	20.6
503214 2015 HX_{36}	15.6	X	259.30592	196.23290	76.96064	11.78731	0.0561407	0.16820528	3.2501966	20	2 24.3	20.5
503215 2015 HV_{37}	15.9	X	312.02964	56.20856	187.00950	15.25042	0.1335087	0.17849326	3.1240754	20	3 3.5	20.1
503216 2015 HB_{40}	15.8	X	58.82936	286.98923	199.48404	26.48530	0.1777817	0.18433079	3.0577651	20	3 31.4	19.7
503217 2015 HD_{41}	17.6	X	130.58429	338.13480	166.44338	4.58049	0.1837433	0.23597619	2.5935259	20	7 19.6	21.9
503218 2015 HA_{42}	15.9	X	349.17923	24.73363	177.25064	11.17056	0.0115067	0.19041465	2.9922817	20	3 16.6	20.0
503219 2015 HN_{42}	15.8	X	355.95213	137.99986	54.03258	12.40103	0.1336311	0.18031905	3.1029514	20	3 14.2	19.7
503220 2015 HS_{42}	16.1	X	295.80241	205.51625	39.87306	17.60332	0.1412204	0.17193279	3.2030489	20	2 25.7	20.9
503221 2015 HV_{47}	16.3	X	7.36700	91.94804	70.04768	9.19887	0.1123504	0.17921424	3.1156910	20	2 21.7	20.2
503222 2015 HB_{51}	15.6	X	244.46004	235.55016	73.53140	11.72214	0.1162622	0.18001734	3.1064175	20	3 16.1	20.5
503223 2015 HL_{63}	16.8	X	26.23236	160.24549	327.81427	0.30423	0.1644135	0.17201050	3.2020842	20	2 7.0	20.4
503224 2015 HL_{64}	16.3	X	358.50500	321.48008	213.85488	11.03962	0.1604685	0.17781566	3.1320069	20	2 13.0	20.1
503225 2015 HC_{74}	16.2	X	115.92860	235.04237	198.88497	8.93604	0.0609997	0.18191555	3.0847704	20	3 23.7	20.5
503226 2015 HO_{84}	17.0	X	33.98097	10.16196	161.53848	2.88855	0.0955272	0.19123045	2.9837655	20	4 11.8	20.5
503227 2015 HG_{95}	15.5	X	185.54108	178.72685	99.01246	4.52543	0.1421592	0.12357732	3.9918745	20	—	—
503228 2015 HK_{99}	16.7	X	171.68331	28.66788	50.81354	14.31390	0.2279364	0.22352595	2.6889584	20	6 3.7	21.4
503229 2015 HU_{101}	16.4	X	71.38787	286.54114	231.49474	6.51790	0.1006500	0.20541362	2.8447879	20	5 19.1	20.2
503230 2015 HC_{103}	15.4	X	180.95706	302.66518	53.87915	27.69578	0.2210312	0.17156334	3.2076457	20	3 24.4	21.4
503231 2015 HP_{104}	16.3	X	332.61619	128.73811	83.85105	10.45888	0.0515785	0.17996364	3.1070354	20	3 11.3	20.7
503232 2015 HE_{108}	17.2	X	102.95545	341.48694	139.13104	10.04285	0.2247052	0.21255268	2.7807268	20	5 29.3	21.6
503233 2015 HD_{109}	16.6	X	346.57580	58.75431	136.08947	12.36089	0.1052091	0.17760681	3.1344617	20	2 29.2	20.6
503234 2015 HE_{118}	15.2	X	151.82618	85.69581	218.65836	7.88629	0.1084413	0.12397743	3.9832812	20	—	—
503235 2015 HL_{137}	16.6	X	19.61354	41.34477	129.77139	5.15889	0.0752113	0.18022820	3.1039941	20	3 21.1	20.6
503236 2015 HQ_{138}	15.5	X	236.13472	118.61656	205.45712	17.11428	0.0991888	0.17624078	3.1506376	20	3 18.4	20.5
503237 2015 HH_{145}	16.0	X	338.38428	233.91602	317.51545	3.65870	0.1055459	0.17095406	3.2152624	20	2 11.9	20.0
503238 2015 HD_{149}	16.4	X	16.01590	167.27887	16.98521	11.11282	0.0998872	0.18574585	3.0422154	20	3 31.3	20.2
503239 2015 HO_{152}	15.5	X	10.85350	137.16000	35.69261	17.00206	0.0662935	0.17659723	3.1463966	20	3 17.1	19.8
503240 2015 HX_{171}	17.4	X	139.66919	128.63837	344.87960	3.97744	0.2234658	0.23778957	2.5803236	20	6 21.5	21.7
503241 2015 HK_{173}	15.8	X	307.55543	9.98479	244.37368	9.83072	0.0661469	0.18553693	3.0444988	20	3 17.9	20.2
503242 2015 HL_{175}	16.8	X	125.41394	83.21425	53.06555	13.73375	0.1055332	0.22714930	2.6602867	20	6 27.2	20.9
503243 2015 HN_{176}	15.5	X	275.21613	176.83578	83.71994	19.64576	0.0206448	0.17365012	3.1818960	20	3 6.4	20.4
503244 2015 HR_{181}	16.0	X	290.61119	72.54876	199.58309	10.50259	0.1675556	0.17988760	3.1079110	20	3 6.8	20.5
503245 2015 JM_{2}	15.8	X	24.95620	34.17271	121.91107	14.52135	0.2214106	0.18970816	2.9997061	20	3 18.1	18.9
503246 2015 KV_{6}	15.7	X	269.52015	104.89045	189.64552	12.91614	0.1217615	0.17065458	3.2190230	20	3 18.0	20.5
503247 2015 KP_{7}	15.7	X	72.48655	19.85900	94.43312	18.05006	0.0876347	0.17123333	3.2117656	20	4 3.9	20.4
503248 2015 KN_{9}	16.4	X	118.28034	325.99425	111.00960	13.94976	0.1242731	0.17474067	3.1686436	20	4 15.2	21.4
503249 2015 KU_{10}	16.4	X	333.17366	59.73496	160.07870	12.09901	0.1109576	0.17206484	3.2014099	20	3 10.8	20.6
503250 2015 KO_{15}	16.2	X	241.16089	192.26160	139.23737	10.93337	0.0563550	0.17341278	3.1847987	20	4 12.4	21.0
503251 2015 KX_{17}	15.9	X	64.16138	339.85035	159.96121	10.87920	0.0620962	0.17550035	3.1594930	20	4 14.0	20.2
503252 2015 KJ_{18}	16.5	X	339.64724	31.19976	184.46863	16.86966	0.1347532	0.17165582	3.2064934	20	3 10.6	20.6
503253 2015 KB_{28}	15.6	X	182.37760	50.45236	245.33887	10.11023	0.2322876	0.12501377	3.9612368	20	1 5.6	22.2
503254 2015 KF_{45}	17.6	X	134.82531	322.75075	245.69813	2.65621	0.1731513	0.25561011	2.4589557	20	10 13.3	21.6
503255 2015 KM_{71}	15.3	X	203.54479	258.62832	94.06421	17.30370	0.0742075	0.17290914	3.1909801	20	4 1.3	20.5
503256 2015 KL_{76}	16.3	X	288.24835	196.25222	105.18571	11.87698	0.0779722	0.18871297	3.0102429	20	4 29.1	20.6
503257 2015 KT_{78}	15.8	X	347.00664	51.25845	105.32299	11.20983	0.0922877	0.15085963	3.4947868	20	1 18.2	20.4
503258 2015 KR_{81}	16.9	X	199.67063	276.48113	170.39388	12.75316	0.2521828	0.23108785	2.6299731	20	7 5.4	21.7
503259 2015 KG_{84}	16.2	X	72.84135	340.75843	135.95255	11.06548	0.0117791	0.17227508	3.1988049	20	3 21.8	20.8
503260 2015 KS_{105}	16.5	X	348.13921	44.36839	189.60804	8.52774	0.0180023	0.18275853	3.0752773	20	4 26.2	20.7
503261 2015 KY_{116}	15.6	X	280.92803	208.33175	99.53733	11.21436	0.0533355	0.18228296	3.0806238	20	5 1.2	20.1
503262 2015 KE_{127}	14.2	X	134.28222	173.44254	75.54870	5.93267	0.0933655	0.08224382	5.2368144	20	11 4.9	21.5
503263 2015 LT_{2}	15.9	X	201.82459	268.10674	93.18160	10.91771	0.1147198	0.18394870	3.0619980	20	4 4.8	20.9
503264 2015 LG_{4}	16.9	X	138.30692	103.98829	17.59745	14.18551	0.1491687	0.21943164	2.7223036	20	6 25.7	21.4
503265 2015 LK_{35}	15.4	X	263.78814	177.81086	87.62097	17.60155	0.1064394	0.15620313	3.4146241	20	2 15.5	20.7
503266 2015 MS_{1}	16.0	X	180.16154	101.94284	272.59035	8.75387	0.0198561	0.17953911	3.1119313	20	3 18.6	20.7
503267 2015 MG_{51}	16.0	X	325.10581	241.95132	83.43408	10.14973	0.1112641	0.18566827	3.0430629	20	7 15.1	19.7
503268 2015 OA_{2}	17.9	X	281.93328	12.06406	293.86221	18.40182	0.0510508	0.36130012	1.9523484	20	4 2.3	20.5
503269 2015 OB_{3}	16.3	X	350.10517	31.98578	264.54978	9.10078	0.1754999	0.18788053	3.0191281	20	7 15.9	19.5
503270 2015 OA_{20}	15.9	X	279.28804	129.41805	242.38701	9.49797	0.0735944	0.17789164	3.1311150	20	7 10.8	20.3
503271 2015 PQ_{33}	16.0	X	174.98447	229.30949	264.51202	10.65355	0.0691317	0.18693854	3.0292619	20	8 10.2	20.7
503272 2015 PE_{231}	15.8	X	286.11271	291.81552	78.36137	10.59880	0.0520685	0.18317070	3.0706622	20	7 24.7	20.1
503273 2015 PN_{291}	11.6	X	9.25876	30.57914	12.79960	9.48472	0.5418273	0.01794240	14.4504817	20	12 22.6	20.2
503274 2015 QE_{9}	19.4	X	35.86392	321.94935	135.93605	11.37107	0.2487902	0.49035553	1.5926805	20	—	—
503275 2015 RS_{5}	18.1	X	198.09486	48.89825	332.06455	17.50211	0.0815928	0.35154694	1.9882935	20	4 1.2	20.9
503276 2015 RE_{12}	18.4	X	231.99736	222.72339	154.44788	23.28314	0.0735514	0.36381272	1.9433490	20	5 26.7	21.3
503277 2015 RT_{83}	19.8	X	29.32516	117.91478	316.10745	12.25106	0.3031341	0.45993552	1.6621546	20	—	—
503278 2015 SR_{1}	16.5	X	333.04891	46.20446	255.57261	9.03661	0.1227229	0.17493957	3.1662413	20	6 23.7	20.3
503279 2015 TS_{144}	17.9	X	46.82227	359.16938	234.19117	19.09247	0.0602426	0.36642644	1.9340967	20	7 24.0	20.2
503280 2015 TD_{300}	16.0	X	310.71397	88.68476	285.68161	9.26898	0.1740218	0.17495436	3.1660629	20	8 14.5	19.9

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503281 2015 TC_{303}	17.0	X	159.79560	215.67138	88.39731	7.70728	0.1383916	0.26660404	2.3908825	20	—	—
503282 2015 UN_{4}	17.3	X	65.55514	222.11033	116.80549	2.87981	0.0877904	0.23059347	2.6337308	20	—	—
503283 2015 UU_{17}	16.6	X	276.23249	303.25418	163.01154	4.93568	0.0709189	0.20874102	2.8144758	20	11 14.3	20.3
503284 2015 VF_{78}	16.1	X	122.97112	137.98534	107.56622	10.24328	0.0182800	0.19020112	2.9945208	20	11 5.2	20.5
503285 2015 VW_{108}	16.2	X	294.03525	284.39144	112.37677	9.60737	0.1326156	0.17600066	3.1535025	20	8 28.9	20.3
503286 2015 VM_{118}	18.2	X	334.73853	136.90761	199.81135	22.07756	0.1395123	0.38220743	1.8804854	20	9 22.3	19.2
503287 2015 VA_{126}	16.2	X	242.07174	295.33465	191.27574	24.27740	0.3362238	0.17535609	3.1612256	20	9 14.8	21.5
503288 2015 XT_{170}	18.3	X	241.15051	178.61399	315.25672	15.61051	0.0876534	0.38267946	1.8789387	20	12 16.2	20.1
503289 2015 XU_{288}	18.2	X	352.16958	43.49364	125.70588	3.22225	0.1486056	0.26399613	2.4066024	20	1 11.5	20.8
503290 2015 YF_{2}	17.7	X	129.64888	337.84573	252.46121	20.13350	0.0601348	0.38805623	1.8615424	20	12 1.2	19.5
503291 2015 YY_{7}	18.7	X	59.03431	12.61157	295.81788	18.86840	0.0606630	0.39273401	1.8467313	20	12 26.9	20.7
503292 2016 AD_{3}	17.6	X	235.26809	227.56589	268.79834	20.09878	0.0794865	0.38221324	1.8804663	20	12 10.2	18.9
503293 2016 AA_{9}	19.2	X	57.40689	115.53535	275.04483	7.01259	0.2424868	0.44568843	1.6973907	20	—	—
503294 2016 AF_{24}	18.0	X	1.22099	5.09262	209.57079	1.96100	0.1671557	0.27627794	2.3347403	20	4 3.2	19.6
503295 2016 AM_{30}	17.0	X	357.14586	341.10787	129.64600	5.61167	0.1364384	0.22426285	2.6830648	20	—	—
503296 2016 AN_{36}	16.4	X	281.55512	329.07050	285.92403	12.57953	0.2246648	0.23051617	2.6343195	20	1 24.6	20.5
503297 2016 AY_{53}	16.8	X	308.88609	88.12359	114.42579	11.66037	0.0759780	0.24320596	2.5418694	20	1 9.0	20.2
503298 2016 AW_{61}	17.8	X	236.57157	245.93651	112.97831	7.12142	0.0625427	0.30623307	2.1798904	20	5 4.9	20.6
503299 2016 AP_{66}	18.3	X	277.05085	129.37382	307.67924	18.79772	0.1227027	0.37983392	1.8883111	20	11 3.6	20.2
503300 2016 AF_{75}	17.8	X	35.96830	300.17148	268.44602	7.39561	0.1534061	0.28548714	2.2842573	20	6 11.6	19.6
503301 2016 AX_{78}	17.8	X	39.61981	56.91117	117.85467	7.20341	0.1986890	0.27229384	2.3574591	20	5 5.2	19.8
503302 2016 AB_{99}	17.9	X	28.60697	70.81463	115.80420	3.33413	0.1376124	0.27310573	2.3527846	20	4 21.3	19.9
503303 2016 AB_{109}	17.4	X	338.90230	119.61086	76.82239	6.31678	0.1488234	0.24415884	2.5352517	20	2 2.9	20.2
503304 2016 AV_{110}	18.1	X	17.67461	95.93945	99.51759	3.83354	0.1314272	0.26866411	2.3786449	20	4 12.9	20.2
503305 2016 AO_{111}	18.0	X	294.91727	138.27496	310.52228	20.04505	0.0437827	0.38701389	1.8648834	20	—	—
503306 2016 AB_{113}	16.0	X	192.86241	97.33177	121.43883	23.18063	0.0463967	0.17351972	3.1834900	20	12 17.2	20.9
503307 2016 AH_{113}	16.5	X	220.98145	161.93208	98.49040	10.28037	0.1086742	0.21422928	2.7661995	20	—	—
503308 2016 AL_{115}	17.7	X	20.15858	88.68405	114.93927	5.48402	0.1697971	0.27150680	2.3620128	20	5 3.8	19.6
503309 2016 AN_{122}	17.0	X	302.00426	328.35762	316.57369	24.02698	0.1676225	0.27116968	2.3639700	20	3 16.9	20.5
503310 2016 AF_{124}	16.8	X	50.39577	320.62669	129.99427	13.58997	0.1216522	0.23122220	2.6289542	20	1 15.4	19.6
503311 2016 AU_{124}	17.4	X	356.86719	245.33946	337.07979	2.01341	0.1225090	0.27015742	2.3698714	20	4 9.7	19.7
503312 2016 AK_{125}	17.6	X	17.38837	69.66441	129.29294	5.27018	0.1583793	0.26655881	2.3911530	20	4 19.6	19.6
503313 2016 AC_{126}	16.7	X	35.74455	246.40240	313.14806	19.93273	0.1666693	0.27690262	2.3312276	20	5 25.4	19.4
503314 2016 AO_{127}	16.0	X	132.97943	256.16087	95.12222	13.64500	0.1205209	0.20337898	2.8637296	20	1 9.2	20.2
503315 2016 AG_{128}	18.6	X	298.38262	98.57937	8.25093	20.35072	0.1089840	0.38969940	1.8563060	20	—	—
503316 2016 AQ_{129}	15.8	X	133.19210	190.49846	124.49085	12.82248	0.0726648	0.17386063	3.1793272	20	—	—
503317 2016 AA_{131}	18.0	X	44.32007	350.73107	303.97119	17.63571	0.0730013	0.37069338	1.9192262	20	10 31.7	20.5
503318 2016 AC_{131}	17.8	X	131.81359	309.86045	272.67855	17.91415	0.0567865	0.37275469	1.9121442	20	11 17.0	20.1
503319 2016 AR_{142}	16.5	X	243.08272	357.40432	259.19863	11.58153	0.1515612	0.22389991	2.6859635	20	—	—
503320 2016 AZ_{160}	16.4	X	307.88605	253.77682	263.84058	13.70805	0.0984504	0.20340695	2.8634671	20	—	—
503321 2016 AK_{164}	18.5	X	265.92088	133.38451	313.39287	17.34393	0.0751557	0.37727922	1.8968259	20	11 2.3	20.6
503322 2016 AV_{178}	17.2	X	296.91435	319.28082	276.50662	10.63689	0.1512706	0.23364125	2.6107765	20	1 25.3	20.9
503323 2016 AL_{181}	16.7	X	249.29538	317.25589	235.74301	8.08951	0.0257010	0.18164472	3.0878358	20	—	—
503324 2016 AA_{192}	17.0	X	327.40795	326.22106	301.14882	4.77565	0.0995665	0.27653628	2.3332860	20	4 24.5	19.5
503325 2016 BB	18.0	X	321.49704	285.09602	105.57694	22.01728	0.1044275	0.37886937	1.8915147	20	12 6.8	19.6
503326 2016 BZ_{5}	16.8	X	338.09621	352.40154	282.18234	6.92194	0.1093025	0.28299620	2.2976418	20	5 26.2	19.0
503327 2016 BB_{6}	16.9	X	283.82775	333.54543	274.02680	8.02946	0.1276081	0.22800854	2.6535991	20	1 29.1	20.8
503328 2016 BN_{8}	16.9	X	282.46483	288.84695	324.28366	12.47049	0.1501653	0.22610358	2.6684829	20	2 3.9	20.7
503329 2016 BO_{8}	17.9	X	35.88687	13.05210	184.17408	4.84156	0.1122809	0.27060220	2.3672739	20	5 19.4	20.3
503330 2016 BT_{9}	17.1	X	332.45220	37.64419	171.93043	13.84130	0.1983447	0.23150767	2.6267927	20	2 1.1	20.3
503331 2016 BT_{10}	17.4	X	284.09528	329.29668	296.05552	13.39966	0.1117126	0.24098045	2.5574953	20	2 18.3	21.2
503332 2016 BN_{12}	18.5	X	3.92202	69.59535	295.76207	18.12849	0.1160768	0.38971169	1.8562669	20	—	—
503333 2016 BG_{19}	18.2	X	48.79894	266.07479	307.96861	4.29150	0.1301088	0.30237162	2.1984100	20	7 12.0	20.2
503334 2016 BD_{20}	18.4	X	58.23016	85.68903	113.99406	4.58705	0.1329695	0.30001304	2.2099170	20	7 5.2	20.6
503335 2016 BG_{20}	18.5	X	38.73892	252.59431	328.30752	3.71741	0.1119002	0.30060574	2.2070112	20	7 1.5	20.5
503336 2016 BO_{25}	18.8	X	7.23971	60.46382	319.43840	18.76914	0.0578453	0.39454255	1.8410835	20	—	—
503337 2016 BA_{26}	17.7	X	15.32859	88.68044	85.91351	4.62426	0.1322568	0.26088720	2.4256839	20	3 8.4	20.0
503338 2016 BM_{30}	17.9	X	64.35096	162.12911	9.63467	3.44760	0.1621237	0.28611055	2.2809379	20	6 6.2	20.3
503339 2016 BW_{36}	18.0	X	24.84306	167.20688	36.80318	2.68194	0.1442676	0.27722678	2.3294100	20	5 9.7	20.0
503340 2016 BY_{36}	17.6	X	345.85098	121.10172	93.50901	3.25888	0.1614230	0.25976443	2.4326684	20	3 7.2	19.9
503341 2016 BB_{39}	17.6	X	186.21560	264.04906	277.49121	19.73693	0.0394170	0.37719350	1.8971132	20	12 7.6	19.4
503342 2016 BL_{39}	18.5	X	3.34156	29.21810	327.51718	19.39201	0.0975855	0.38137009	1.8832369	20	12 23.4	20.7
503343 2016 BG_{41}	17.5	X	294.78106	279.31466	324.46641	7.74522	0.1616010	0.24539057	2.5267609	20	2 1.7	20.8
503344 2016 BM_{44}	17.8	X	356.43303	59.78247	158.31263	1.41552	0.1420169	0.26757714	2.3850823	20	4 2.3	19.7
503345 2016 BJ_{48}	16.6	X	242.26516	75.82342	126.78123	11.56832	0.0406825	0.19111594	2.9849572	20	—	—
503346 2016 BM_{48}	17.9	X	38.18789	53.33122	124.35922	7.87071	0.1709983	0.27013375	2.3700099	20	5 3.4	20.1
503347 2016 BP_{56}	17.7	X	329.95146	279.41409	327.76300	5.38968	0.1616254	0.27664981	2.3326476	20	3 20.3	20.2
503348 2016 BX_{58}	18.0	X	19.60837	329.61653	304.91932	2.16840	0.1667279	0.31630894	2.1333482	20	9 2.3	19.6
503349 2016 BX_{59}	17.5	X	311.92781	289.50602	317.70851	5.19934	0.1420507	0.25570534	2.4583451	20	2 27.7	20.6
503350 2016 BH_{62}	16.8	X	240.18873	28.11689	169.76398	5.68076	0.1605921	0.19031177	2.9933600	20	12 31.7	21.0
503351 2016 BS_{62}	18.6	X	81.10654	21.38069	148.50436	5.16292	0.1316323	0.30146207	2.2028298	20	6 24.8	21.2
503352 2016 BJ_{63}	18.2	X	310.68145	347.17435	293.97955	1.07066	0.1497846	0.28319823	2.2965489	20	4 10.2	20.8
503353 2016 BR_{70}	17.8	X	288.02574	227.89787	5.02038	3.91732	0.2437249	0.22642189	2.6659814	20	1 5.1	21.9
503354 2016 BZ_{72}	16.6	X	228.12792	161.53461	59.09895	1.83837	0.1535689	0.18562093	3.0435802	20	—	—
503355 2016 BH_{75}	18.1	X	59.47242	130.77995	65.96813	4.84555	0.1573898	0.29370259	2.2414593	20	7 7.2	20.5
503356 2016 BS_{79}	18.5	X	312.67291	276.76250	357.26346	5.47121	0.0709466	0.28049301	2.3112913	20	4 15.1	21.1
503357 2016 BW_{79}	18.0	X	350.80856	153.38978	103.30453	6.85900	0.0814530	0.29139158	2.2532950	20	5 26.3	20.1
503358 2016 CT	18.6	X	62.62535	49.32953	155.36440	3.60198	0.0949011	0.30648980	2.1786729	20	7 13.3	20.8
503359 2016 CO_{3}	17.8	X	347.52679	21.05204	255.53217	3.82407	0.1785241	0.30029769	2.2085203	20	6 16.7	19.0
503360 2016 CB_{5}	17.8	X	7.58847	297.23785	276.79892	3.39865	0.0852447	0.27707965	2.3302345	20	4 17.3	20.2

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503361 2016 CG_{7}	17.9	X	340.42870	251.33444	335.55181	0.93410	0.1359696	0.26464758	2.4026514	20	3 16.2	20.2
503362 2016 CT_{7}	17.0	X	0.69786	352.26612	135.61081	3.26988	0.0494724	0.22442100	2.6818041	20	—	—
503363 2016 CW_{7}	17.4	X	10.37510	255.33093	294.66916	1.59839	0.1357595	0.26175771	2.4203030	20	3 17.8	19.6
503364 2016 CE_{8}	18.0	X	27.00323	270.66075	278.33631	1.43685	0.1483593	0.27089615	2.3655610	20	4 19.9	20.1
503365 2016 CH_{9}	17.7	X	50.28607	68.42287	148.32971	6.77739	0.1035447	0.30397344	2.1906801	20	7 13.1	19.9
503366 2016 CK_{13}	17.6	X	351.81995	358.38959	234.77683	2.07631	0.1502526	0.27130044	2.3632104	20	4 14.3	19.5
503367 2016 CR_{13}	17.5	X	323.69238	283.56574	294.24742	7.41386	0.1294865	0.24511730	2.5286385	20	2 7.9	20.7
503368 2016 CW_{14}	18.3	X	11.64957	293.35271	300.07212	2.73338	0.1692223	0.28141837	2.3062219	20	5 30.9	20.1
503369 2016 CQ_{23}	17.1	X	13.79011	279.70007	313.31376	23.51722	0.2829768	0.28205911	2.3027279	20	6 24.9	18.8
503370 2016 CL_{24}	17.8	X	48.27913	198.98413	353.09146	9.69869	0.0955434	0.29352202	2.2423785	20	5 27.2	20.3
503371 2016 CD_{28}	16.1	X	168.85244	159.49486	135.01590	29.69159	0.1107559	0.18239048	3.0794129	20	—	—
503372 2016 CQ_{30}	19.1	X	330.00200	100.84241	311.48173	20.34088	0.1694547	0.39313365	1.8454795	20	—	—
503373 2016 CL_{31}	18.2	X	328.83100	63.12286	304.45115	16.88659	0.1088799	0.35660605	1.9694437	20	10 16.2	20.3
503374 2016 CS_{32}	17.7	X	352.17671	355.80161	237.71901	4.61272	0.1322594	0.27050410	2.3678462	20	4 16.6	19.9
503375 2016 CX_{32}	17.2	X	314.50517	59.27521	134.82063	8.60766	0.2236609	0.21299637	2.7768638	20	—	—
503376 2016 CR_{35}	17.1	X	353.58240	249.78822	335.21475	11.27001	0.1613632	0.27146776	2.3622392	20	3 29.8	19.4
503377 2016 CG_{49}	18.0	X	346.62955	283.67295	347.56740	7.61702	0.1986673	0.29084926	2.2560951	20	5 31.1	19.5
503378 2016 CO_{61}	17.2	X	312.44593	119.71448	105.95250	9.44631	0.1137173	0.24058187	2.5603192	20	2 9.2	20.5
503379 2016 CK_{70}	15.9	X	280.20170	57.39198	90.00685	10.54914	0.0526917	0.18011611	3.1052818	20	—	—
503380 2016 CJ_{72}	16.0	X	111.94908	202.66760	128.07860	12.98660	0.0341642	0.18345452	3.0674943	20	—	—
503381 2016 CP_{72}	17.8	X	12.21956	236.20666	359.30085	2.41130	0.1758585	0.27693760	2.3310313	20	6 5.6	19.5
503382 2016 CC_{79}	17.9	X	328.37740	138.90381	115.81976	7.42844	0.1059373	0.27125221	2.3634905	20	4 13.5	20.5
503383 2016 CF_{94}	16.6	X	255.21100	344.83623	241.20564	7.76712	0.0968688	0.21162135	2.7888793	20	—	—
503384 2016 CO_{102}	17.4	X	136.18024	211.69083	210.55589	7.44091	0.0973097	0.27254239	2.3560256	20	3 30.4	20.7
503385 2016 CX_{107}	17.8	X	11.60102	331.72177	229.12674	5.25347	0.0936807	0.26872767	2.3782698	20	4 5.3	20.2
503386 2016 CZ_{114}	17.4	X	340.11811	296.79384	257.36510	7.55405	0.1501465	0.23974290	2.5662889	20	1 28.9	20.5
503387 2016 CP_{118}	18.1	X	23.34354	359.08482	214.05915	5.13853	0.1057635	0.28072896	2.3099960	20	5 19.0	20.2
503388 2016 CY_{120}	17.6	X	341.77057	304.61190	250.21660	3.77873	0.1913622	0.23918186	2.5703005	20	1 27.8	20.4
503389 2016 CQ_{143}	17.3	X	123.96204	342.54095	156.12438	23.45129	0.1700311	0.29535183	2.2331073	20	7 7.9	21.1
503390 2016 CN_{148}	18.3	X	132.15835	355.99499	119.97344	1.04915	0.0318142	0.29589900	2.2303536	20	6 1.7	20.8
503391 2016 CO_{160}	18.2	X	28.47325	58.99275	159.39751	1.48153	0.1555640	0.28890132	2.2662250	20	6 12.7	19.9
503392 2016 CC_{163}	17.8	X	343.01927	132.54355	133.45161	6.29676	0.1501367	0.29821670	2.2187826	20	5 21.3	19.5
503393 2016 CV_{188}	17.8	X	70.83602	347.35803	158.43744	3.58713	0.0821069	0.26450405	2.4035205	20	4 27.6	20.6
503394 2016 CP_{189}	16.5	X	318.28338	334.34535	194.73033	2.49334	0.1680348	0.19261780	2.9694209	20	—	—
503395 2016 CY_{196}	17.1	X	309.62673	90.71753	141.71316	13.14236	0.2102319	0.23376641	2.6098446	20	1 29.6	20.7
503396 2016 CK_{202}	17.7	X	348.72338	273.36317	350.98560	6.40120	0.1242982	0.28874162	2.2670606	20	5 29.2	19.8
503397 2016 CX_{202}	17.6	X	354.00076	117.98868	102.09399	2.88586	0.1154082	0.26390131	2.4071788	20	4 4.6	19.9
503398 2016 CL_{206}	17.6	X	354.19613	258.64672	318.19785	4.52180	0.0626800	0.26537379	2.3982661	20	3 30.8	20.4
503399 2016 CF_{207}	18.2	X	39.85196	32.65047	147.76503	2.71683	0.1452771	0.26967748	2.3726823	20	5 4.9	20.3
503400 2016 CX_{207}	17.5	X	293.03341	114.58966	121.14135	2.53548	0.1357788	0.23162052	2.6259394	20	1 25.2	21.1
503401 2016 CC_{215}	17.9	X	320.98903	205.70809	73.42503	3.56691	0.1531402	0.27534481	2.3400122	20	4 26.7	20.2
503402 2016 CG_{227}	17.3	X	318.83831	196.06885	25.82423	9.88098	0.1323149	0.24317452	2.5420885	20	2 12.6	20.6
503403 2016 CG_{242}	15.7	X	234.65258	120.93055	85.18636	18.27967	0.0854302	0.17688064	3.1430347	20	—	—
503404 2016 CW_{245}	16.7	X	241.11304	84.45084	174.44792	16.30388	0.1901993	0.17752009	3.1354825	20	1 3.8	22.1
503405 2016 CU_{247}	17.9	X	346.14364	54.63642	303.12684	17.81269	0.0845089	0.36186555	1.9503141	20	11 6.2	20.2
503406 2016 CJ_{250}	17.9	X	317.27818	157.27851	85.30496	2.75124	0.1457309	0.25732037	2.4480481	20	3 1.9	20.9
503407 2016 CC_{251}	16.9	X	343.20637	51.45999	99.61153	22.93271	0.0228834	0.22585172	2.6704664	20	—	—
503408 2016 CV_{258}	16.3	X	15.43932	36.62133	152.18783	15.28546	0.0413942	0.23302966	2.6153426	20	4 3.7	19.7
503409 2016 CM_{259}	16.4	X	275.60943	302.15902	274.19833	8.14208	0.2234804	0.18463602	3.0543943	20	—	—
503410 2016 CH_{261}	16.5	X	310.48548	264.21135	15.10559	12.16992	0.1552595	0.23594191	2.5937771	20	4 9.8	19.7
503411 2016 CR_{261}	17.2	X	284.31109	65.40379	209.97934	8.21375	0.1425883	0.22405337	2.6847369	20	3 2.0	21.0
503412 2016 DD	18.2	X	321.83195	76.17431	349.88706	21.11201	0.0511767	0.38676915	1.8656700	20	—	—
503413 2016 DE	18.1	X	146.84315	276.14301	295.16657	18.01048	0.0606803	0.36169450	1.9509289	20	11 15.4	20.9
503414 2016 DY_{1}	18.2	X	342.48367	67.37133	335.41366	18.38374	0.1177865	0.37833380	1.8932994	20	—	—
503415 2016 DC_{2}	17.8	X	328.99550	124.50409	269.85693	17.84906	0.1032122	0.36908278	1.9248056	20	12 18.6	18.8
503416 2016 DS_{17}	18.3	X	78.66045	284.22939	251.91278	1.31025	0.1483404	0.28714542	2.2754543	20	7 2.7	20.9
503417 2016 DA_{21}	17.5	X	32.09399	61.90404	130.95203	2.92545	0.0572424	0.26782138	2.3836321	20	4 30.9	20.2
503418 2016 DD_{24}	16.2	X	15.54392	288.20118	138.04495	10.37446	0.0281395	0.18237550	3.0795817	20	—	—
503419 2016 DZ_{24}	17.8	X	24.94181	50.53396	124.05442	3.36091	0.1301428	0.25437958	2.4668792	20	3 27.5	20.1
503420 2016 DE_{26}	18.8	X	161.39723	327.81373	144.77711	2.40602	0.0362390	0.30610169	2.1805141	20	7 7.9	21.5
503421 2016 DL_{27}	17.3	X	307.80521	256.49098	32.33664	9.89632	0.1111292	0.27101066	2.3648946	20	4 24.7	19.8
503422 2016 DP_{30}	16.5	X	276.75762	135.77021	123.02879	14.51723	0.1862076	0.21981559	2.7191326	20	1 31.8	20.7
503423 2016 EC_{2}	18.0	X	1.78814	249.38377	142.36489	24.09690	0.1007551	0.37995692	1.8879036	20	—	—
503424 2016 EX_{4}	17.8	X	353.18853	103.63978	133.79117	3.10278	0.1577554	0.25503530	2.4626490	20	4 27.2	20.0
503425 2016 EC_{8}	17.6	X	129.02184	348.27841	123.25352	6.20575	0.0292082	0.28644459	2.2791643	20	5 23.1	20.4
503426 2016 EY_{17}	16.5	X	264.03597	167.88019	127.62789	15.80463	0.1356902	0.24158597	2.5532200	20	3 10.5	20.4
503427 2016 EX_{24}	16.7	X	243.14945	12.88117	267.70538	12.02799	0.2018577	0.20126235	2.8837727	20	1 24.8	21.6
503428 2016 EY_{24}	16.3	X	257.97762	324.39066	300.02856	11.49846	0.0905040	0.20867300	2.8150873	20	1 29.2	20.5
503429 2016 ES_{25}	16.3	X	295.50795	251.59107	307.44562	7.51216	0.1047938	0.19724226	2.9228245	20	—	—
503430 2016 ED_{32}	16.5	X	164.34250	254.90622	93.98362	15.37630	0.1284598	0.22191601	2.7019478	20	2 8.8	20.8
503431 2016 EP_{36}	16.1	X	242.18006	273.32928	331.85129	15.20111	0.3084912	0.17630580	3.1498629	20	—	—
503432 2016 EK_{54}	18.3	X	65.35793	240.59731	325.64772	6.91411	0.0704191	0.28591445	2.2819808	20	7 15.9	20.9
503433 2016 EF_{55}	18.1	X	332.32496	268.23323	149.05738	21.19249	0.0913560	0.38271427	1.8788248	20	—	—
503434 2016 ES_{55}	19.1	X	314.04735	297.52077	164.33318	13.75679	0.2595081	0.40326428	1.8144411	20	—	—
503435 2016 EK_{61}	16.1	X	240.15974	277.98555	317.97464	25.52890	0.1693900	0.18386555	3.0629210	20	—	—
503436 2016 EX_{74}	18.4	X	127.82613	358.15161	142.52281	4.02937	0.0531814	0.30406568	2.1902370	20	7 4.5	21.0
503437 2016 EG_{75}	17.7	X	316.09532	327.71237	328.03011	6.50859	0.1256637	0.28628931	2.2799883	20	5 13.8	20.1
503438 2016 ES_{75}	17.2	X	329.15929	232.62669	333.37561	10.86675	0.1271921	0.23619920	2.5918932	20	2 5.5	20.3
503439 2016 EA_{77}	17.9	X	354.24431	278.68240	347.10728	6.11423	0.1129496	0.28816680	2.2700744	20	6 14.4	20.0
503440 2016 EK_{80}	17.0	X	306.23915	73.52641	129.48439	15.94566	0.2327346	0.21374225	2.7703999	20	—	—

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503441 2016 ET_{87}	17.3	*X*	357.18090	179.39462	106.85364	7.62883	0.0989365	0.28218128	2.3020632	20	7 24.8	19.3
503442 2016 EL_{88}	16.9	*X*	303.28516	16.26599	207.63505	11.63919	0.2728842	0.21940632	2.7225130	20	1 4.6	21.1
503443 2016 EZ_{88}	18.2	*X*	42.95243	308.39945	292.66653	2.44342	0.0630853	0.30914510	2.1661796	20	8 2.0	20.3
503444 2016 EO_{95}	18.0	*X*	3.76084	200.60603	74.99356	7.61137	0.1660079	0.29550041	2.2323587	20	7 29.9	19.7
503445 2016 EM_{110}	16.0	*X*	214.94687	108.41049	118.23582	9.55699	0.0139464	0.17009332	3.2261004	20	—	—
503446 2016 EJ_{111}	17.9	*X*	9.41889	259.74869	352.13623	1.84486	0.1798973	0.27621551	2.3350921	20	6 28.6	19.6
503447 2016 EA_{112}	18.3	*X*	37.91731	34.19104	152.79967	5.92939	0.0662428	0.26706205	2.3881481	20	5 3.7	20.9
503448 2016 EB_{112}	18.1	*X*	329.31277	117.73613	152.92065	4.98151	0.2251351	0.26123561	2.4235266	20	4 19.3	20.4
503449 2016 EQ_{113}	17.4	*X*	294.83000	159.06678	139.48254	6.31610	0.0553996	0.27157108	2.3616401	20	5 1.3	20.3
503450 2016 EV_{115}	16.5	*X*	330.02685	190.93281	7.41412	14.64373	0.1928523	0.22574138	2.6713365	20	1 22.7	20.0
503451 2016 EY_{115}	18.5	*X*	120.69702	14.68659	139.93588	6.11273	0.1382669	0.30344190	2.1932376	20	7 23.4	21.5
503452 2016 EC_{116}	17.7	*X*	354.80255	152.48380	36.23328	4.33993	0.1455458	0.23860840	2.5744170	20	2 21.2	20.3
503453 2016 EW_{118}	18.0	*X*	16.07343	168.97992	54.57852	3.23588	0.1391456	0.27140899	2.3625802	20	5 22.8	19.8
503454 2016 EQ_{119}	17.9	*X*	290.53268	104.12602	163.86743	9.63503	0.1785886	0.23843275	2.5756812	20	2 24.7	21.4
503455 2016 EV_{119}	18.2	*X*	353.24365	214.28131	28.78142	3.67263	0.1094983	0.26806646	2.3821790	20	5 6.3	20.4
503456 2016 EX_{121}	18.1	*X*	37.09541	157.63623	71.89305	4.76371	0.1017651	0.28879520	2.2667801	20	7 10.1	20.3
503457 2016 EF_{122}	18.1	*X*	17.04057	311.35291	249.10830	0.99430	0.1520487	0.25650072	2.4532605	20	4 18.5	20.3
503458 2016 EN_{124}	17.0	*X*	262.96352	88.81252	200.43221	11.01055	0.1812168	0.22974611	2.6402027	20	2 20.1	21.4
503459 2016 EC_{126}	17.8	*X*	320.18761	347.29319	321.87391	1.84268	0.2226941	0.27845559	2.3225519	20	5 29.4	19.8
503460 2016 ET_{127}	16.8	*X*	236.75445	114.19186	177.15381	8.38183	0.1143228	0.21812685	2.7331489	20	2 4.9	21.1
503461 2016 EC_{133}	18.6	*X*	27.98623	55.62905	202.74783	5.58288	0.0777838	0.29552498	2.2322350	20	8 2.9	20.9
503462 2016 EH_{139}	17.3	*X*	311.06671	62.33662	171.59979	10.16906	0.0881507	0.22873730	2.6479598	20	2 20.6	20.9
503463 2016 EU_{139}	17.9	*X*	13.85039	46.31259	178.06698	5.77913	0.1745165	0.26124739	2.4234538	20	5 23.3	19.9
503464 2016 EK_{141}	17.8	*X*	17.93169	214.28395	24.69900	2.73397	0.1421552	0.27396471	2.3478642	20	6 22.0	19.7
503465 2016 EC_{144}	18.2	*X*	69.02244	312.07962	211.80049	2.06717	0.1070694	0.26689226	2.3891609	20	5 24.1	20.8
503466 2016 ET_{144}	18.0	*X*	76.92269	155.70296	0.00348	1.97750	0.1048951	0.26693751	2.3888909	20	5 22.9	20.7
503467 2016 ED_{145}	18.4	*X*	17.05690	178.89812	30.70171	2.81986	0.1644348	0.25522756	2.4614121	20	5 3.9	20.3
503468 2016 EG_{145}	17.8	*X*	329.93708	214.12140	29.47067	3.25959	0.1210535	0.24278534	2.5448044	20	3 28.1	20.6
503469 2016 EW_{145}	17.9	*X*	333.69229	71.67586	170.28020	13.06096	0.2007668	0.24039673	2.5616336	20	3 20.6	20.6
503470 2016 EK_{146}	18.8	*X*	281.49847	276.91340	183.68907	21.92563	0.1216380	0.36959509	1.9230264	20	—	—
503471 2016 ES_{147}	17.9	*X*	87.76254	60.91326	64.09597	6.01891	0.1047204	0.25459719	2.4654733	20	4 27.4	20.9
503472 2016 EY_{147}	17.8	*X*	330.71006	93.19997	115.41047	6.13308	0.0935169	0.22342382	2.6897778	20	2 17.7	21.1
503473 2016 EO_{148}	17.4	*X*	317.96846	72.95686	141.33287	8.50750	0.1612114	0.21649775	2.7468427	20	1 27.4	21.0
503474 2016 EY_{152}	17.6	*X*	350.10092	222.47684	10.22626	2.35451	0.1495436	0.25857946	2.4400948	20	4 11.6	19.6
503475 2016 EP_{157}	18.0	*X*	324.32786	98.95394	273.46111	16.98145	0.0589796	0.34940795	1.9963998	20	10 12.7	20.3
503476 2016 ET_{158}	16.6	*X*	80.35443	280.30659	152.26435	22.28531	0.0461230	0.22808394	2.6530143	20	1 29.2	20.3
503477 2016 EJ_{159}	17.1	*X*	272.32558	190.49186	74.80025	14.18969	0.1372740	0.22864283	2.6486892	20	2 12.7	21.2
503478 2016 EF_{162}	16.8	*X*	258.87938	279.85368	333.85870	3.27960	0.1556938	0.21000214	2.8031967	20	1 12.8	21.1
503479 2016 ET_{163}	18.2	*X*	35.87625	350.88684	237.28299	6.65410	0.0947737	0.28903681	2.2655167	20	7 3.2	20.5
503480 2016 EX_{164}	18.1	*X*	114.93481	269.93563	210.74445	5.95363	0.0509578	0.27441390	2.3453013	20	5 18.9	21.1
503481 2016 EU_{167}	17.5	*X*	355.92921	226.76989	8.77345	5.57315	0.1249094	0.26024710	2.4296597	20	4 28.3	19.9
503482 2016 EO_{172}	16.4	*X*	22.51215	24.88938	97.24044	7.19696	0.0184491	0.20168727	2.8797209	20	1 18.9	20.3
503483 2016 EJ_{173}	16.3	*X*	237.03214	93.04546	149.81869	26.16978	0.2088393	0.17939670	3.1135780	20	—	—
503484 2016 EQ_{175}	17.5	*X*	340.23074	195.82179	13.51997	5.37982	0.2186859	0.23503599	2.6004378	20	2 14.2	20.2
503485 2016 EU_{175}	18.2	*X*	120.54252	119.40207	4.36570	5.40439	0.1039317	0.28338031	2.2955650	20	6 4.9	21.3
503486 2016 EN_{178}	17.7	*X*	311.22781	304.60509	291.84980	2.12849	0.1339680	0.22885392	2.6470602	20	2 17.8	21.2
503487 2016 EA_{181}	17.2	*X*	342.45971	248.12824	337.32424	3.07666	0.2126127	0.23860792	2.5744204	20	3 10.2	19.8
503488 2016 EZ_{181}	18.0	*X*	294.16156	226.61186	194.98318	23.29682	0.1078618	0.34407742	2.0169661	20	11 15.2	19.8
503489 2016 EM_{186}	16.6	*X*	279.26330	252.02214	354.33398	12.58616	0.1947046	0.21612626	2.7499894	20	1 22.2	21.0
503490 2016 ES_{187}	17.2	*X*	354.31609	273.91262	276.63248	7.90290	0.1831027	0.24245595	2.5471088	20	2 12.0	19.7
503491 2016 EH_{188}	17.6	*X*	356.89630	342.46065	226.00236	7.21249	0.0615794	0.25767544	2.4457986	20	3 23.7	20.4
503492 2016 EM_{188}	17.7	*X*	325.45143	299.11157	313.56074	15.13572	0.1176694	0.25929060	2.4356312	20	3 22.5	20.8
503493 2016 EP_{191}	17.3	*X*	47.07577	225.64013	338.97087	23.86180	0.1710215	0.28004237	2.3137702	20	7 7.0	20.3
503494 2016 EY_{191}	16.2	*X*	182.02174	18.33279	268.33768	9.51641	0.1259059	0.18853285	3.0121599	20	—	—
503495 2016 EC_{192}	17.6	*X*	357.90455	4.80658	232.63417	6.56404	0.0669463	0.27328733	2.3517423	20	5 8.2	20.1
503496 2016 EK_{192}	19.0	*X*	281.72840	112.08409	337.11187	19.81258	0.1320215	0.37386652	1.9083513	20	12 16.1	20.8
503497 2016 EC_{196}	17.6	*X*	43.31317	74.90567	118.15475	8.45059	0.0436767	0.27685755	2.3314806	20	5 19.2	20.4
503498 2016 EO_{196}	17.8	*X*	68.87425	116.86382	80.23375	6.83516	0.0979000	0.28633282	2.2797574	20	7 11.5	20.3
503499 2016 EX_{198}	17.7	*X*	7.74120	152.99918	77.90651	3.21976	0.1405855	0.26728658	2.3868105	20	5 17.5	19.7
503500 2016 EJ_{199}	18.0	*X*	75.32173	182.36014	5.05813	4.45582	0.1310358	0.28813211	2.2702566	20	7 12.9	20.7
503501 2016 EX_{200}	17.4	*X*	284.95927	350.06675	260.74925	1.90396	0.1318676	0.22767476	2.6561919	20	2 4.2	21.1
503502 2016 EG_{201}	18.1	*X*	19.13695	189.81841	87.69388	5.43629	0.1597933	0.30049408	2.2075579	20	9 6.4	20.1
503503 2016 EH_{201}	18.1	*X*	354.19753	100.35492	130.99807	7.65870	0.0623893	0.26278435	2.4139951	20	4 27.5	20.9
503504 2016 ER_{202}	17.9	*X*	252.23756	14.24004	125.03919	24.33114	0.0692381	0.37410125	1.9075530	20	—	—
503505 2016 ES_{202}	17.2	*X*	8.87708	113.22963	138.60142	13.31545	0.1202636	0.27741233	2.3283712	20	6 23.4	19.6
503506 2016 FP	18.7	*X*	154.47193	235.79140	222.87405	2.82898	0.0360888	0.28948465	2.2631796	20	6 7.6	21.5
503507 2016 FK_{1}	18.1	*X*	2.84306	52.34890	214.61191	5.20171	0.2238035	0.28062125	2.3105871	20	7 11.5	19.4
503508 2016 FO_{1}	18.6	*X*	309.28369	276.77314	169.49220	22.93453	0.1093403	0.38946611	1.8570472	20	—	—
503509 2016 FQ_{3}	17.3	*X*	10.55580	310.03678	45.21644	21.18257	0.1238580	0.36086459	1.9539189	20	12 25.2	19.7
503510 2016 FE_{4}	17.4	*X*	342.47324	356.54440	172.34393	7.53296	0.2406567	0.21579246	2.7528246	20	—	—
503511 2016 FL_{4}	17.0	*X*	314.71674	207.18241	4.25217	8.20190	0.1305468	0.21707924	2.7419352	20	1 27.1	20.7
503512 2016 FD_{5}	18.3	*X*	108.86076	331.50072	144.11090	1.59614	0.1364588	0.27353203	2.3503394	20	5 15.7	21.3
503513 2016 FJ_{5}	16.3	*X*	222.60269	296.81707	359.74843	11.42464	0.2106359	0.20436098	2.8545483	20	2 1.6	21.3
503514 2016 FY_{6}	16.8	*X*	37.86549	229.00840	342.40506	23.65748	0.1447042	0.28602518	2.2813918	20	6 20.8	19.7
503515 2016 FN_{7}	16.1	*X*	209.06955	278.40953	32.17771	9.38478	0.0843852	0.20992272	2.8039037	20	2 7.9	20.5
503516 2016 FW_{8}	17.6	*X*	13.65372	164.05491	68.13962	6.10717	0.1536006	0.26698534	2.3886056	20	6 1.9	19.4
503517 2016 FE_{9}	17.3	*X*	301.87810	152.27684	159.93829	5.51265	0.1408800	0.27394813	2.3479589	20	5 16.8	19.9
503518 2016 FK_{9}	17.9	*X*	76.66438	339.74808	156.47779	3.90964	0.0892095	0.26077314	2.4263912	20	4 24.2	20.7
503519 2016 FO_{9}	16.6	*X*	271.55477	185.39963	49.45873	5.96023	0.0977208	0.20376498	2.8601119	20	1 9.7	20.9
503520 2016 FZ_{9}	16.6	*X*	278.31220	355.13262	159.85940	9.59484	0.0714086	0.17346736	3.1841306	20	—	—

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503521 2016 FB_{11}	16.0	*X*	168.81506	183.50262	109.22854	6.59899	0.1289808	0.18297186	3.0728865	20	—	—
503522 2016 FT_{11}	18.0	*X*	76.12859	126.48077	37.01786	2.66760	0.1591374	0.27445584	2.3450624	20	6 11.8	20.7
503523 2016 FN_{12}	17.9	*X*	355.35418	193.89390	180.78601	22.21184	0.0847297	0.35552303	1.9734414	20	12 24.5	20.5
503524 2016 FW_{15}	17.0	*X*	218.03486	203.38494	74.04366	4.36489	0.1332794	0.18915190	3.0055843	20	1 6.9	21.8
503525 2016 FV_{16}	16.6	*X*	238.65658	76.79864	127.59896	10.29098	0.0440691	0.17492286	3.1664429	20	—	—
503526 2016 FL_{17}	17.3	*X*	278.95782	301.58834	2.48700	15.58148	0.1732708	0.24147388	2.5540101	20	3 28.3	20.9
503527 2016 FM_{17}	16.4	*X*	245.14862	281.92275	306.89307	3.68192	0.1157311	0.17819125	3.1276043	20	—	—
503528 2016 FO_{17}	16.1	*X*	172.30428	221.15760	118.34623	12.05823	0.1834824	0.18402559	3.0611451	20	2 10.2	21.2
503529 2016 FG_{20}	17.2	*X*	255.63480	216.60086	97.07251	3.85212	0.2540348	0.23052008	2.6342898	20	3 12.5	21.5
503530 2016 FN_{20}	17.3	*X*	267.45155	182.86677	99.07460	3.57562	0.1638776	0.22240767	2.6979644	20	2 22.4	21.3
503531 2016 FF_{21}	16.6	*X*	294.12699	130.03527	99.11210	6.40230	0.0468736	0.21219423	2.7838575	20	2 3.6	20.4
503532 2016 FJ_{21}	17.4	*X*	243.41788	225.85614	97.40087	6.86364	0.0653336	0.23772680	2.5807778	20	3 30.1	21.1
503533 2016 FL_{21}	16.6	*X*	190.85472	149.29339	154.11684	12.76511	0.0900683	0.18522294	3.0479385	20	1 11.1	21.5
503534 2016 FN_{21}	17.4	*X*	335.73885	174.52133	117.93244	7.48244	0.1237792	0.27193015	2.3595607	20	6 19.5	19.7
503535 2016 FL_{24}	18.1	*X*	315.18743	295.98329	23.19516	2.70939	0.0263945	0.28987952	2.2611239	20	7 4.7	20.5
503536 2016 FN_{24}	18.1	*X*	8.96433	236.07759	19.23277	3.21189	0.1525667	0.27483491	2.3429055	20	7 1.1	19.9
503537 2016 FL_{25}	17.4	*X*	282.15153	192.99020	134.48886	2.09115	0.1943406	0.26087819	2.4257397	20	4 30.5	20.7
503538 2016 FP_{25}	17.7	*X*	270.93136	197.55514	153.48476	3.05887	0.1939955	0.27390680	2.3481951	20	5 18.6	20.9
503539 2016 FD_{27}	16.9	*X*	260.98901	222.25670	41.09588	4.94379	0.0277891	0.21547562	2.7555225	20	2 8.8	20.8
503540 2016 FK_{27}	17.4	*X*	293.37716	82.89599	180.34043	8.55230	0.1713806	0.22697578	2.6616424	20	2 23.4	21.1
503541 2016 FF_{29}	18.5	*X*	103.86302	334.81744	169.29122	1.95437	0.1540354	0.28007302	2.3136013	20	6 20.3	21.5
503542 2016 FN_{30}	17.2	*X*	220.94083	157.11132	142.68469	5.06525	0.0417308	0.21117352	2.7928208	20	2 4.3	21.1
503543 2016 FD_{31}	17.5	*X*	282.02058	147.48289	126.81812	3.38609	0.1230154	0.22891521	2.6465876	20	3 3.8	21.1
503544 2016 FL_{31}	17.0	*X*	271.19056	131.81989	179.82495	14.60258	0.2316766	0.23822566	2.5771737	20	3 24.2	20.8
503545 2016 FQ_{34}	17.3	*X*	236.50135	322.84345	356.10745	1.73502	0.1976163	0.22390361	2.6859339	20	3 5.2	21.6
503546 2016 FC_{35}	17.1	*X*	240.16240	89.00349	202.00555	10.64167	0.0627883	0.21618847	2.7494619	20	2 10.2	21.4
503547 2016 FS_{36}	16.9	*X*	237.68366	281.55118	26.58113	7.89060	0.2168287	0.21362481	2.7714152	20	2 25.3	21.6
503548 2016 FW_{36}	17.2	*X*	256.35237	287.07212	57.32313	2.15049	0.2027711	0.25601043	2.4563916	20	4 22.1	20.7
503549 2016 FL_{41}	16.8	*X*	289.92361	61.70301	205.39982	8.68282	0.2669027	0.22142871	2.7059105	20	2 11.5	21.0
503550 2016 FM_{41}	15.9	*X*	250.26225	220.40997	3.18666	16.96465	0.1809699	0.17600905	3.1534023	20	—	—
503551 2016 FN_{42}	17.6	*X*	126.32353	78.05924	72.03438	6.31354	0.0610330	0.29614305	2.2291281	20	7 17.8	20.5
503552 2016 FB_{43}	16.6	*X*	61.15998	72.15927	29.25067	5.67590	0.0128581	0.21819852	2.7325504	20	2 10.9	20.4
503553 2016 FF_{43}	18.6	*X*	114.45126	117.04072	76.38614	1.36831	0.0941484	0.31303681	2.1481888	20	9 7.6	21.4
503554 2016 FP_{46}	17.6	*X*	11.36464	230.86690	338.48536	6.22440	0.0925546	0.26480787	2.4016818	20	4 16.7	20.2
503555 2016 FR_{47}	17.4	*X*	221.41490	198.91485	121.32999	4.63640	0.0889332	0.22239603	2.6980585	20	2 28.2	21.5
503556 2016 FE_{48}	18.5	*X*	353.65444	181.83344	100.11831	3.49210	0.1614796	0.27834553	2.3231641	20	7 11.4	20.0
503557 2016 FM_{48}	16.7	*X*	226.43239	286.44781	330.58614	8.44240	0.1116116	0.18571603	3.0425412	20	—	—
503558 2016 FO_{48}	18.1	*X*	14.31642	228.12842	38.39250	5.75826	0.0988625	0.28690721	2.2767136	20	7 28.5	20.4
503559 2016 FT_{49}	17.5	*X*	294.55833	223.04169	98.84890	3.47046	0.1422827	0.26893449	2.3770503	20	5 18.4	20.3
503560 2016 FV_{51}	17.6	*X*	323.62418	211.93810	342.54630	1.77867	0.1236475	0.21293883	2.7773641	20	1 16.9	21.1
503561 2016 FT_{52}	17.2	*X*	79.51277	155.74476	325.47075	4.54131	0.0682849	0.24462295	2.5320440	20	4 1.5	20.3
503562 2016 FP_{54}	16.2	*X*	289.54230	48.56546	225.77042	8.42052	0.2208211	0.22413945	2.6840494	20	2 24.5	20.3
503563 2016 FJ_{56}	17.4	*X*	305.24639	196.95366	50.66957	7.55895	0.1734314	0.23084836	2.6317918	20	2 22.7	21.0
503564 2016 FH_{57}	17.9	*X*	161.22107	204.49286	245.72496	6.51991	0.0763460	0.28484882	2.2876685	20	6 6.1	21.0
503565 2016 FT_{57}	16.9	*X*	295.37607	52.30698	215.40637	11.19265	0.1434737	0.23703276	2.5858131	20	3 2.9	20.5
503566 2016 GO_{5}	16.8	*X*	305.94162	301.36919	191.01832	16.32038	0.1873242	0.17933995	3.1142348	20	—	—
503567 2016 GZ_{6}	16.9	*X*	231.58696	356.06172	298.09058	3.70840	0.1024289	0.21724718	2.7405219	20	2 5.1	21.0
503568 2016 GL_{9}	16.7	*X*	217.21819	190.07921	93.54315	3.23037	0.0120208	0.19841628	2.9112836	20	1 14.5	20.7
503569 2016 GU_{9}	17.9	*X*	28.40128	158.60234	67.73425	2.08674	0.1320002	0.27064783	2.3670078	20	6 21.6	19.9
503570 2016 GK_{11}	17.8	*X*	183.09078	82.79254	339.92189	7.04004	0.0817005	0.28416500	2.2913371	20	5 22.8	21.1
503571 2016 GX_{11}	17.7	*X*	329.83915	37.94176	183.93178	12.84752	0.1800738	0.22867342	2.6484529	20	2 16.4	21.0
503572 2016 GC_{14}	17.8	*X*	30.59877	130.34703	78.01432	4.69005	0.0648766	0.26330724	2.4107981	20	5 21.5	20.3
503573 2016 GD_{20}	17.3	*X*	252.33823	302.06390	11.37675	4.31454	0.1180668	0.24210108	2.5495971	20	3 18.9	21.0
503574 2016 GN_{29}	17.5	*X*	204.45036	300.58273	36.69630	1.18410	0.0363738	0.23105052	2.6302564	20	3 1.4	21.3
503575 2016 GL_{33}	17.3	*X*	270.98526	13.16863	246.32131	1.52212	0.0082170	0.22345327	2.6895414	20	2 14.9	20.9
503576 2016 GP_{34}	18.1	*X*	278.27305	120.55029	212.86486	4.99755	0.1195650	0.27082823	2.3659565	20	5 14.6	20.9
503577 2016 GN_{39}	18.3	*X*	201.22828	39.55577	12.72363	4.93741	0.0989360	0.28257384	2.2999307	20	5 30.1	21.7
503578 2016 GS_{48}	17.3	*X*	248.97126	325.17506	273.58826	1.21396	0.1859823	0.18475707	3.0530599	20	—	—
503579 2016 GY_{49}	15.9	*X*	189.04222	294.40743	0.48584	5.19037	0.1187931	0.18197106	3.0841429	20	1 2.1	20.8
503580 2016 GV_{50}	17.9	*X*	318.53893	304.73160	16.83192	5.52088	0.1875175	0.28169556	2.3047087	20	6 22.7	19.8
503581 2016 GF_{51}	17.2	*X*	203.26118	166.51715	196.73849	2.22886	0.1150289	0.24347010	2.5400307	20	3 30.2	21.1
503582 2016 GY_{51}	17.8	*X*	252.19540	128.36362	242.61704	2.47473	0.1719784	0.28071387	2.3100788	20	5 25.6	20.9
503583 2016 GD_{53}	17.4	*X*	10.23529	335.87121	204.36393	3.47208	0.1381600	0.23642419	2.5902486	20	3 6.5	20.0
503584 2016 GY_{54}	17.4	*X*	233.76713	308.17354	28.47426	3.12069	0.0539367	0.24499923	2.5294508	20	4 2.2	20.7
503585 2016 GX_{55}	18.2	*X*	157.31248	275.22836	192.36232	3.90026	0.0851228	0.28928993	2.2641951	20	6 26.0	21.3
503586 2016 GY_{56}	16.4	*X*	210.26210	221.27295	42.47841	1.45257	0.1333236	0.17420478	3.1751385	20	—	—
503587 2016 GB_{57}	17.3	*X*	235.82702	222.87583	68.35258	1.14282	0.0366604	0.21556659	2.7547472	20	2 11.2	21.0
503588 2016 GN_{59}	18.1	*X*	113.74671	120.67544	319.16274	4.00962	0.0191422	0.24147833	2.5539787	20	3 16.9	21.5
503589 2016 GO_{64}	18.2	*X*	106.26941	99.85712	63.99290	4.64806	0.0499310	0.28556076	2.2838646	20	7 8.3	21.1
503590 2016 GZ_{64}	17.0	*X*	173.44591	283.52476	114.30782	3.57991	0.0967783	0.24686641	2.5166803	20	4 13.9	20.7
503591 2016 GF_{65}	18.1	*X*	346.85488	242.03099	19.61831	3.43471	0.0976957	0.26633981	2.3924635	20	5 23.7	20.4
503592 2016 GT_{65}	18.0	*X*	52.85353	116.71725	63.00444	3.33845	0.1423000	0.26240767	2.4163047	20	5 26.7	20.5
503593 2016 GF_{66}	16.8	*X*	268.70266	159.65776	60.20916	4.94177	0.1273333	0.18745792	3.0236639	20	—	—
503594 2016 GC_{68}	16.9	*X*	291.98548	162.25307	84.44959	4.55826	0.1398486	0.21629915	2.7485239	20	2 9.6	20.8
503595 2016 GH_{70}	17.1	*X*	159.43952	2.61398	14.49251	6.34435	0.0576326	0.22554687	2.6728721	20	3 2.5	20.9
503596 2016 GS_{71}	18.4	*X*	342.35017	93.25221	195.48959	0.45290	0.1834372	0.27322048	2.3521258	20	6 23.6	19.9
503597 2016 GC_{75}	17.3	*X*	264.38456	127.36632	149.99318	3.83659	0.1628713	0.21661465	2.7458543	20	2 13.1	21.4
503598 2016 GA_{78}	17.5	*X*	213.96948	200.23181	127.57790	2.67638	0.1695324	0.21683385	2.7440035	20	2 27.7	22.0
503599 2016 GQ_{78}	17.5	*X*	225.15791	319.76004	11.53204	1.60152	0.1617473	0.22823334	2.6518564	20	3 11.7	21.9
503600 2016 GY_{87}	17.1	*X*	335.91357	151.82812	66.21684	3.58163	0.1418834	0.23216482	2.6218335	20	3 1.9	20.2

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503601 2016 GQ_{91}	16.7	X	221.26879	162.87506	138.10338	6.37377	0.0413013	0.20990328	2.8040768	20	2 6.5	20.7
503602 2016 GA_{93}	17.0	X	184.92593	232.12415	124.89591	5.43469	0.1350338	0.21936194	2.7228802	20	3 8.5	21.3
503603 2016 GT_{93}	17.8	X	31.27508	67.70643	134.55893	5.97750	0.0875135	0.25845410	2.4408838	20	5 17.4	20.5
503604 2016 GQ_{95}	16.6	X	199.74312	123.88602	168.64815	10.24389	0.1028746	0.18286503	3.0740832	20	1 7.5	21.6
503605 2016 GP_{96}	17.5	X	235.54246	166.52747	144.83334	6.25300	0.0375844	0.22411584	2.6842379	20	3 6.5	21.2
503606 2016 GX_{98}	17.5	X	333.00232	39.25041	155.04593	5.32701	0.0533318	0.21534993	2.7565946	20	2 6.9	21.1
503607 2016 GG_{101}	17.3	X	151.08478	228.50396	181.23775	9.32851	0.0520117	0.24011231	2.5636561	20	3 31.2	20.9
503608 2016 GZ_{107}	17.6	X	282.47034	226.96584	41.71775	5.92904	0.1643462	0.21978710	2.7193676	20	2 23.8	21.6
503609 2016 GK_{108}	16.6	X	215.38137	193.92451	71.63742	2.44075	0.1413330	0.17439549	3.1728233	20	—	—
503610 2016 GZ_{108}	16.6	X	185.93803	303.30982	45.55808	7.23146	0.0899768	0.21502721	2.7593520	20	2 29.7	20.9
503611 2016 GN_{109}	17.3	X	312.81902	166.99609	72.07720	3.61236	0.0803262	0.22714291	2.6603366	20	3 5.3	20.7
503612 2016 GF_{111}	17.7	X	36.70378	129.92780	90.88507	2.26254	0.1351539	0.27085351	2.3658093	20	6 29.3	20.1
503613 2016 GH_{124}	16.8	X	63.68646	325.81052	163.82634	12.95979	0.1488988	0.22709678	2.6606969	20	4 8.1	20.0
503614 2016 GT_{125}	16.7	X	278.17945	349.09916	206.97913	5.80162	0.1441971	0.17994306	3.1072723	20	—	—
503615 2016 GC_{126}	18.1	X	85.19696	200.20413	18.99291	6.00353	0.0882728	0.30242308	2.1981606	20	9 7.2	20.9
503616 2016 GM_{126}	17.4	X	357.19143	264.14086	8.11588	6.25436	0.1151992	0.27338977	2.3511547	20	7 1.9	19.6
503617 2016 GU_{127}	18.5	X	85.12351	187.62366	0.15024	5.53618	0.0427555	0.28703062	2.2760610	20	7 13.2	21.2
503618 2016 GN_{128}	16.8	X	24.33469	152.80914	340.93202	4.14400	0.0571377	0.21509115	2.7588051	20	2 2.8	20.1
503619 2016 GP_{128}	16.2	X	201.25994	293.81221	7.12790	15.19938	0.2002461	0.18510711	3.0492098	20	1 24.3	21.6
503620 2016 GY_{129}	18.1	X	94.57856	169.56354	337.55843	1.27768	0.1239658	0.27282720	2.3543856	20	6 8.1	21.1
503621 2016 GL_{130}	18.5	X	17.75023	232.00498	25.66816	1.24929	0.1586052	0.27714536	2.3298662	20	7 25.8	20.4
503622 2016 GS_{130}	17.4	X	16.34885	266.31448	255.51859	1.79713	0.0705148	0.22684982	2.6626275	20	2 24.1	20.5
503623 2016 GK_{132}	17.9	X	43.44360	358.75568	219.04389	6.69644	0.0528141	0.28027234	2.3125043	20	6 23.8	20.5
503624 2016 GD_{133}	18.0	X	95.64057	353.70235	156.78839	2.40826	0.1472516	0.27365888	2.3496131	20	6 18.0	21.1
503625 2016 GO_{135}	17.9	X	310.23434	258.84637	164.32582	22.86417	0.1122860	0.36576012	1.9364449	20	12 30.2	20.0
503626 2016 GV_{135}	16.9	X	317.45267	194.77009	97.06673	9.07336	0.1098347	0.26489808	2.4011365	20	5 18.6	19.6
503627 2016 GE_{138}	17.2	X	347.96299	30.80010	164.61028	8.40814	0.1557463	0.22864605	2.6486643	20	2 15.7	20.1
503628 2016 GU_{140}	17.1	X	308.24260	204.31727	63.25058	10.38424	0.1131512	0.22978017	2.6399418	20	4 3.8	20.5
503629 2016 GB_{145}	16.6	X	15.89331	175.89932	339.11755	12.79030	0.1132303	0.22907342	2.6453690	20	2 15.6	19.4
503630 2016 GX_{146}	17.9	X	160.14829	221.70773	218.86405	5.93812	0.0730612	0.27003133	2.3706091	20	5 22.7	21.0
503631 2016 GC_{147}	18.4	X	138.30025	110.81679	20.10516	7.03847	0.0285423	0.29125638	2.2539923	20	7 2.6	21.2
503632 2016 GA_{166}	17.8	X	341.01811	182.70730	105.01331	2.52470	0.1743037	0.26689895	2.3891210	20	6 18.8	19.7
503633 2016 GL_{169}	16.7	X	185.55085	264.62010	91.30797	7.34938	0.0733613	0.21792858	2.7348064	20	3 8.2	20.8
503634 2016 GR_{169}	16.1	X	135.60614	261.17620	75.53751	10.05413	0.0311092	0.17288733	3.1912484	20	—	—
503635 2016 GW_{170}	17.2	X	12.21992	153.79912	65.94100	6.98595	0.1006541	0.25318734	2.4746174	20	5 9.1	19.8
503636 2016 GX_{170}	17.1	X	355.89491	82.63580	131.31254	5.67663	0.1694660	0.23888205	2.5724506	20	3 29.4	19.6
503637 2016 GV_{172}	16.6	X	269.90402	234.09298	47.64790	10.96675	0.1270877	0.21895698	2.7262364	20	3 4.6	20.7
503638 2016 GF_{173}	17.4	X	309.33634	287.82733	59.91714	7.31775	0.1446105	0.28981263	2.2614718	20	7 26.9	19.5
503639 2016 GP_{173}	17.7	X	71.53054	345.23362	154.37125	4.98761	0.0581887	0.24418312	2.5350837	20	4 17.9	20.8
503640 2016 GU_{174}	17.0	X	238.87111	101.14035	163.90422	6.16591	0.2822179	0.17914156	3.1165336	20	1 5.1	22.5
503641 2016 GC_{178}	17.5	X	276.08931	233.00887	102.80184	7.30032	0.1708540	0.25314004	2.4749257	20	5 9.6	20.9
503642 2016 GW_{178}	17.4	X	108.36042	314.61193	108.20975	7.25080	0.0305243	0.21282682	2.7783384	20	2 25.7	21.2
503643 2016 GQ_{182}	16.1	X	172.33782	175.71877	151.08181	10.23006	0.0783288	0.18340526	3.0680436	20	1 19.4	20.9
503644 2016 GU_{188}	16.6	X	204.02894	215.15548	79.52972	10.38176	0.0677973	0.18403056	3.0610899	20	1 15.3	21.3
503645 2016 GO_{189}	16.7	X	133.19574	305.91566	120.79364	9.84432	0.0550852	0.23242644	2.6198657	20	4 5.6	20.5
503646 2016 GQ_{189}	18.3	X	162.41146	354.09121	122.45138	5.55916	0.1008561	0.29008843	2.2600382	20	7 15.0	21.4
503647 2016 GE_{190}	17.1	X	255.03055	171.54314	165.81886	6.29691	0.1701735	0.22805690	2.6532239	20	4 17.7	21.1
503648 2016 GG_{191}	17.0	X	311.81892	140.55870	105.16806	9.88644	0.2414260	0.21448282	2.7640191	20	2 19.5	20.8
503649 2016 GX_{191}	16.7	X	313.95863	148.05803	132.30618	9.69308	0.1153355	0.23284473	2.6167271	20	4 28.5	20.0
503650 2016 GM_{192}	17.6	X	82.99090	45.62950	151.01863	6.61498	0.0843679	0.27808187	2.3246323	20	7 27.2	20.5
503651 2016 GJ_{200}	17.4	X	9.61778	195.55610	59.00007	6.64180	0.1910680	0.27101358	2.3648777	20	7 4.9	19.1
503652 2016 GU_{204}	16.9	X	288.23128	92.11684	194.17652	14.32012	0.1100001	0.23333495	2.6130608	20	3 26.6	20.4
503653 2016 GV_{205}	17.5	X	35.26060	198.72756	2.45617	4.74285	0.1409288	0.26951673	2.3736257	20	5 25.6	19.8
503654 2016 GU_{207}	17.0	X	320.21813	100.38994	148.59156	12.26281	0.1483248	0.24170996	2.5523468	20	3 17.8	20.0
503655 2016 GW_{207}	15.8	X	169.12590	284.59124	25.52012	16.65247	0.0536418	0.17094311	3.2153999	20	—	—
503656 2016 GC_{218}	16.4	X	267.78941	197.31381	71.90276	13.23428	0.0830631	0.21909313	2.7251069	20	2 20.8	20.6
503657 2016 GO_{219}	16.0	X	262.13676	287.04136	26.83193	22.12715	0.1045980	0.22739740	2.6583514	20	4 5.5	19.8
503658 2016 GT_{222}	17.4	X	324.30613	98.42195	138.25591	8.34175	0.1888688	0.21845411	2.7304187	20	3 2.9	20.6
503659 2016 GV_{222}	16.4	X	201.63738	184.94324	140.97186	12.10024	0.1844285	0.17864733	3.1222789	20	2 18.1	21.7
503660 2016 GZ_{232}	18.0	X	204.49919	302.54461	167.90922	6.96487	0.0281811	0.29989758	2.2104842	20	9 2.9	20.5
503661 2016 GR_{237}	16.5	X	197.72601	170.44887	198.70753	10.56965	0.1614138	0.20650360	2.8347688	20	4 2.5	21.0
503662 2016 GH_{240}	16.2	X	195.90706	137.05306	182.17570	27.80625	0.2521293	0.17158462	3.2073804	20	2 3.7	22.2
503663 2016 GG_{242}	17.7	X	91.36149	47.56658	164.95228	7.39851	0.0819748	0.29957870	2.2120525	20	9 1.8	20.4
503664 2016 GB_{245}	17.6	X	317.93250	355.47624	276.40942	1.80948	0.1995182	0.24388125	2.5371751	20	4 2.9	20.3
503665 2016 GE_{245}	16.8	X	259.61788	47.39476	227.63029	4.32452	0.0635204	0.21589011	2.7519944	20	2 13.7	20.8
503666 2016 GP_{245}	16.4	X	247.73228	221.17707	30.06153	2.50575	0.0862993	0.19075142	2.9887588	20	1 6.8	20.9
503667 2016 GH_{246}	17.4	X	94.77697	107.97600	351.17791	4.56390	0.1031859	0.23801350	2.5787049	20	3 31.1	20.8
503668 2016 GW_{246}	17.6	X	251.32969	59.25763	252.93104	2.39530	0.0634875	0.23090094	2.6313922	20	3 20.9	21.4
503669 2016 GW_{248}	18.2	X	344.29078	105.66310	181.14026	0.98952	0.1730822	0.26878500	2.3779316	20	6 25.4	19.9
503670 2016 HY	16.7	X	303.40735	354.54291	251.58193	5.09417	0.1091481	0.22323182	2.6913198	20	2 22.5	20.3
503671 2016 HA_{1}	16.3	X	303.77051	257.52148	8.75233	11.54895	0.1668273	0.23077667	2.6323368	20	3 15.2	19.6
503672 2016 HZ_{1}	18.0	X	347.39951	209.79527	73.81024	4.57551	0.1851499	0.26298206	2.4127851	20	6 26.9	19.8
503673 2016 HX_{2}	17.1	X	3.69159	230.43184	342.15273	9.05717	0.1472993	0.23817149	2.5775645	20	4 7.2	19.8
503674 2016 HH_{3}	17.6	X	298.86263	212.91411	254.57211	19.01097	0.0923301	0.37787012	1.8948479	20	—	—
503675 2016 HM_{5}	17.3	X	301.83108	65.40733	205.96305	12.88431	0.0684951	0.23336823	2.6128124	20	3 30.7	20.8
503676 2016 HH_{6}	16.6	X	226.64744	81.83174	187.77954	13.89183	0.2481251	0.17227967	3.1987480	20	1 2.9	22.4
503677 2016 HZ_{6}	17.3	X	248.18423	219.76732	105.66558	5.06115	0.0613711	0.23095553	2.6309775	20	4 7.4	21.0
503678 2016 HR_{7}	15.9	X	144.08206	289.12743	63.94368	17.89540	0.1602260	0.17457518	3.1706457	20	2 4.1	21.2
503679 2016 HZ_{7}	17.3	X	274.36103	88.47904	207.49006	2.42483	0.2097355	0.21600757	2.7509967	20	3 11.1	21.6
503680 2016 HH_{8}	16.9	X	199.60124	237.52528	114.16249	7.26999	0.0558258	0.22344620	2.6895982	20	3 17.2	20.8

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503681 2016 HL_8	15.8	X	185.55241	207.12449	101.29705	14.99045	0.1501102	0.17609860	3.1523332	20	1 15.8	20.9
503682 2016 HY_8	16.8	X	340.76841	197.86437	80.02278	9.28282	0.0910765	0.26287900	2.4134156	20	6 7.9	19.3
503683 2016 HS_9	16.4	X	205.14377	220.86358	71.08085	11.25143	0.1812796	0.17496643	3.1659173	20	1 14.4	21.8
503684 2016 HZ_9	17.4	X	242.41372	253.88901	142.39271	5.60028	0.1425084	0.28224374	2.3017236	20	6 22.1	20.5
503685 2016 HL_{10}	16.0	X	56.93218	240.33052	176.31298	11.86999	0.0760301	0.17391605	3.1786517	20	—	—
503686 2016 HS_{10}	16.7	X	308.62448	148.44109	130.56736	7.92036	0.2305480	0.23216950	2.6217983	20	3 30.0	20.0
503687 2016 HK_{15}	17.4	X	240.06114	219.19920	68.20227	2.44891	0.0837317	0.20356218	2.8620112	20	2 9.8	21.8
503688 2016 HW_{17}	17.3	X	189.87438	218.21353	134.60107	5.63732	0.0810208	0.20969017	2.8059763	20	3 7.7	21.5
503689 2016 HR_{18}	17.2	X	226.53356	221.31833	70.35064	3.11896	0.0316125	0.20101896	2.8861000	20	2 3.7	21.3
503690 2016 HH_{20}	18.4	X	149.32847	188.27391	289.81366	1.49049	0.1426987	0.28380035	2.2932995	20	7 3.9	21.7
503691 2016 HD_{22}	18.4	X	103.45126	183.83717	6.77203	1.97084	0.0539230	0.29227272	2.2487639	20	8 13.9	21.1
503692 2016 JM_2	16.1	X	256.36538	141.34721	89.34569	10.96429	0.0203284	0.18225972	3.0808857	20	—	—
503693 2016 JG_4	17.1	X	1.98261	352.71235	207.69701	9.00309	0.1300613	0.22915718	2.6447243	20	3 20.7	20.1
503694 2016 JJ_4	16.7	X	283.68469	90.38655	219.20067	11.51347	0.1405262	0.23119950	2.6291263	20	4 15.9	20.3
503695 2016 JP_6	16.0	X	204.34255	118.88335	147.40998	26.93576	0.2271930	0.16948328	3.2338371	20	—	—
503696 2016 JB_7	17.2	X	340.19223	126.48720	71.22954	12.38486	0.1816891	0.21816179	2.7328571	20	2 9.3	20.5
503697 2016 JF_9	17.1	X	196.30770	204.73539	156.62949	6.52200	0.0343995	0.22215835	2.6999825	20	3 24.0	20.8
503698 2016 JL_9	17.1	X	219.44046	205.84859	124.65920	6.59967	0.0225782	0.21639661	2.7476985	20	3 14.5	20.9
503699 2016 JU_{10}	18.1	X	99.18516	69.42241	106.86192	7.20297	0.1078388	0.27825767	2.3236531	20	7 24.2	21.1
503700 2016 JV_{10}	16.1	X	223.88927	99.61695	189.84904	10.77597	0.0692900	0.18401910	3.0612170	20	1 26.4	20.9
503701 2016 JF_{11}	16.4	X	265.31689	140.58977	99.64808	11.92560	0.0912537	0.18241351	3.0791537	20	1 12.8	20.9
503702 2016 JP_{11}	16.3	X	235.49334	127.40521	130.65068	12.43937	0.0574989	0.17260363	3.1947443	20	1 6.4	21.1
503703 2016 JO_{12}	16.7	X	0.17751	43.57330	154.35423	25.91841	0.0174413	0.22356010	2.6886846	20	3 26.2	20.5
503704 2016 JE_{14}	16.7	X	335.94710	85.26897	154.86763	15.35758	0.0468330	0.22833877	2.6510400	20	4 15.8	20.2
503705 2016 JD_{15}	16.4	X	192.99834	177.60696	158.82487	18.38042	0.2215792	0.18147115	3.0898044	20	2 22.3	21.7
503706 2016 JJ_{15}	16.9	X	349.28148	84.14104	145.17253	13.67075	0.2291370	0.23473349	2.6026714	20	4 3.7	19.4
503707 2016 JL_{16}	16.2	X	180.69198	238.04580	72.32814	10.07011	0.0460609	0.17613298	3.1519230	20	1 9.5	20.9
503708 2016 JU_{16}	17.4	X	280.23044	226.10843	79.19715	3.35379	0.1303519	0.23284980	2.6166892	20	4 9.8	21.0
503709 2016 JZ_{19}	17.4	X	237.74168	312.89240	65.55276	4.06271	0.2143161	0.25522250	2.4614447	20	5 16.4	21.2
503710 2016 JB_{20}	16.7	X	156.00448	249.03795	138.63151	1.28040	0.1219640	0.21189405	2.7864860	20	3 16.4	20.9
503711 2016 JU_{20}	16.5	X	341.98359	94.21887	52.70823	9.02403	0.0068779	0.17806788	3.1290487	20	1 3.4	20.9
503712 2016 JL_{21}	16.3	X	8.97831	83.41581	39.56097	10.47699	0.0869171	0.18446214	3.0563134	20	1 2.4	20.3
503713 2016 JO_{21}	17.8	X	117.38480	142.69067	359.32461	2.09009	0.1155631	0.27198388	2.3592498	20	6 28.8	21.1
503714 2016 JE_{23}	16.3	X	149.40733	112.35926	210.25092	7.95888	0.1398758	0.15527956	3.4281502	20	—	—
503715 2016 JH_{23}	17.7	X	59.99784	162.51290	54.31048	7.54966	0.0731401	0.27821589	2.3238857	20	7 24.3	20.5
503716 2016 JE_{25}	16.8	X	320.38413	206.78261	16.34972	4.17921	0.0382010	0.21256336	2.7806337	20	3 2.0	20.4
503717 2016 JY_{25}	18.2	X	78.86033	118.63526	96.38937	4.85616	0.1130849	0.28916844	2.2648292	20	8 25.4	21.0
503718 2016 JT_{27}	15.7	X	124.98934	292.67719	67.86531	12.71446	0.0703507	0.16878657	3.2427300	20	1 11.1	20.5
503719 2016 JY_{27}	16.9	X	277.08408	111.94904	107.17347	4.53454	0.1342612	0.18174052	3.0867506	20	—	—
503720 2016 JP_{28}	17.3	X	292.98326	170.98638	118.56935	12.47850	0.1794770	0.23313666	2.6145423	20	4 2.4	21.0
503721 2016 JN_{30}	16.7	X	329.36468	23.69176	189.34825	7.81952	0.1492592	0.21521647	2.7577340	20	2 11.3	20.1
503722 2016 JG_{33}	16.2	X	311.41951	55.04320	120.76531	11.33297	0.0351032	0.17751399	3.1355542	20	—	—
503723 2016 JL_{35}	16.8	X	297.85456	59.75450	214.84571	11.80149	0.1585645	0.22263282	2.6961450	20	3 14.9	20.6
503724 2016 JP_{36}	16.5	X	352.44602	176.57131	49.06237	12.81856	0.1221275	0.23955521	2.5676292	20	4 14.3	19.2
503725 2016 JB_{37}	15.9	X	201.78655	66.27578	256.54040	8.76984	0.0891638	0.19153697	2.9805813	20	2 9.9	20.7
503726 2016 JV_{38}	15.9	X	228.63017	251.34462	88.86377	13.71365	0.1985630	0.22013228	2.7165241	20	3 31.3	20.6
503727 2016 KO_2	17.0	X	341.48513	44.59496	199.80336	6.86973	0.1529983	0.23283838	2.6167747	20	4 14.9	19.6
503728 2016 LR_3	15.9	X	278.69871	68.17413	128.80082	26.82494	0.2393286	0.17901634	3.1179868	20	—	—
503729 2016 LE_5	16.6	X	237.06260	121.61844	160.60240	16.80400	0.1168386	0.18477100	3.0529066	20	1 29.4	21.6
503730 2016 LF_5	16.6	X	250.72770	59.98269	190.39294	26.40515	0.1511125	0.17193782	3.2029865	20	1 3.9	22.2
503731 2016 LM_7	16.8	X	5.62550	92.94558	123.36469	10.01493	0.0656645	0.23202160	2.6229123	20	4 27.4	20.1
503732 2016 LV_{16}	16.5	X	8.20041	22.23121	126.54306	11.66604	0.0377765	0.18733413	3.0249958	20	2 3.9	20.4
503733 2016 LT_{20}	16.7	X	319.72056	68.45619	144.85149	10.12201	0.0427632	0.19599827	2.9351788	20	2 18.2	20.7
503734 2016 LV_{21}	16.5	X	24.90371	276.97973	200.50542	9.22896	0.0478838	0.17910460	3.1169623	20	1 17.7	20.8
503735 2016 LG_{24}	16.7	X	261.01232	25.83188	213.98147	12.34032	0.0814003	0.17424409	3.1746609	20	1 7.7	21.7
503736 2016 LH_{24}	16.6	X	247.14086	199.31723	103.97901	11.16530	0.1424497	0.19932016	2.9024755	20	3 6.1	21.2
503737 2016 LQ_{24}	16.5	X	78.36154	272.71700	146.00379	7.04183	0.0617349	0.17047931	3.2212290	20	1 21.3	21.0
503738 2016 LJ_{25}	16.9	X	170.42167	203.00182	190.31526	5.83262	0.0370408	0.21589744	2.7519321	20	4 2.2	20.6
503739 2016 LU_{25}	17.6	X	244.98892	184.56376	154.13015	4.12369	0.0794233	0.22426475	2.6830496	20	4 18.0	21.5
503740 2016 LU_{27}	16.3	X	270.14427	144.21839	94.75847	16.86866	0.0478771	0.18042180	3.1017733	20	1 22.4	20.8
503741 2016 LU_{28}	17.5	X	84.35831	73.60686	130.52348	7.01736	0.0563939	0.27610678	2.3357050	20	8 5.3	20.4
503742 2016 LD_{31}	16.3	X	175.68015	275.81547	92.87153	14.71455	0.2548967	0.18333420	3.0688363	20	3 25.3	21.9
503743 2016 LN_{31}	17.2	X	31.20045	40.26475	149.14230	5.12072	0.0325586	0.22826336	2.6516238	20	4 25.6	20.5
503744 2016 LU_{34}	16.4	X	100.72331	212.05246	221.66700	11.48158	0.0386903	0.19314380	2.9640273	20	2 26.5	20.8
503745 2016 LY_{36}	16.3	X	167.88061	204.23599	144.23078	8.02936	0.1473021	0.17364027	3.1820164	20	2 14.9	21.3
503746 2016 LY_{41}	17.7	X	81.28116	95.56125	105.30012	6.53074	0.0791158	0.27319044	2.3522982	20	7 31.3	20.5
503747 2016 LV_{43}	15.9	X	172.32177	201.72908	156.33011	28.89436	0.1588871	0.17950334	3.1123447	20	2 29.9	21.0
503748 2016 LQ_{47}	16.0	X	53.98989	281.85989	224.54583	23.63491	0.1179683	0.21840580	2.7308212	20	4 5.6	19.5
503749 2016 MM_1	16.5	X	246.54326	124.22521	147.06424	18.15867	0.1761885	0.17718693	3.1394116	20	1 23.3	21.7
503750 2016 MJ_2	17.0	X	238.36496	120.26191	236.41605	10.44831	0.1769108	0.22138206	2.7062906	20	4 21.7	21.3
503751 2016 MW_2	16.7	X	6.90112	42.05915	148.48968	14.13009	0.1932522	0.22425395	2.6831357	20	3 18.8	19.2
503752 2016 MZ_2	16.6	X	231.31358	120.34133	195.64855	13.77795	0.1959917	0.18845922	3.0129444	20	2 26.2	21.8
503753 2016 NP_2	16.6	X	303.31273	191.48547	114.31435	15.26431	0.1826377	0.23086651	2.6316538	20	5 9.2	20.2
503754 2016 NY_2	16.7	X	123.36078	320.18637	136.19361	22.71289	0.0813422	0.22363650	2.6880722	20	5 9.7	21.1
503755 2016 ND_3	16.2	X	246.76733	54.08141	219.19544	11.45531	0.1095399	0.17795666	3.1303523	20	1 27.7	21.2
503756 2016 NN_4	15.9	X	275.83394	152.04362	120.66311	15.67673	0.2312794	0.18309230	3.0715387	20	2 17.1	20.8
503757 2016 NQ_4	15.7	X	232.14027	43.89793	288.97854	15.71470	0.0858546	0.18453608	3.0554970	20	3 19.0	20.7
503758 2016 NP_{11}	16.7	X	271.83403	143.14546	147.72960	7.68043	0.1193479	0.18923624	3.0046912	20	3 17.5	21.1
503759 2016 NB_{20}	16.4	X	249.86950	207.89862	98.37079	16.30870	0.1317902	0.20430179	2.8550996	20	3 16.0	21.1
503760 2016 NT_{23}	16.4	X	217.04343	167.89055	191.96698	8.33193	0.0679872	0.19206126	2.9751546	20	4 15.0	20.8

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503761 2016 NT_{53}	16.4	X	238.92791	171.52596	146.31713	11.08619	0.0674955	0.17580352	3.1558596	20	3 21.7	21.2
503762 2016 OS_{4}	16.0	X	4.01327	222.81153	317.39637	15.09307	0.0728683	0.17900937	3.1180677	20	3 2.9	20.1
503763 2016 PS_{9}	16.2	X	296.78075	139.32202	121.28207	8.60152	0.1023307	0.17396643	3.1780380	20	3 15.4	20.7
503764 2016 PZ_{12}	16.8	X	180.53151	17.81755	93.50680	14.27694	0.1782841	0.22919056	2.6444675	20	7 23.9	21.2
503765 2016 PE_{37}	15.3	X	352.02842	299.30032	278.25965	17.86641	0.0573444	0.18122773	3.0925705	20	3 28.8	19.8
503766 2016 PX_{67}	16.4	X	234.98841	156.85785	186.79741	9.66158	0.1196387	0.18208832	3.0828188	20	4 11.1	21.1
503767 2016 PC_{68}	15.7	X	114.89150	270.35748	178.72935	15.94750	0.0662075	0.17381949	3.1798288	20	4 14.5	20.3
503768 2016 PH_{74}	15.7	X	277.00536	2.26710	352.42163	16.30594	0.0689433	0.19233473	2.9723338	20	6 18.2	20.2
503769 2016 QA_{10}	14.8	X	279.91814	149.24172	83.77648	9.11886	0.0569259	0.12603642	3.9397804	20	2 2.9	20.4
503770 2016 QB_{29}	16.1	X	174.17891	333.86602	93.53370	9.38316	0.1294072	0.19104247	2.9857225	20	5 24.1	20.9
503771 2016 QX_{31}	17.0	X	150.02910	26.70204	139.72650	6.01092	0.1302866	0.24447012	2.5330991	20	9 4.7	20.9
503772 2016 QQ_{36}	15.1	X	190.77909	9.86108	286.70005	8.69599	0.2401602	0.12484085	3.9648938	20	1 13.2	21.6
503773 2016 QB_{43}	16.3	X	318.28951	79.33775	191.44387	13.02992	0.0158807	0.18417537	3.0594852	20	5 4.6	20.6
503774 2016 QS_{47}	15.9	X	120.05448	336.51530	138.55388	10.96490	0.0229306	0.18081844	3.0972356	20	5 18.6	20.5
503775 2016 QD_{55}	16.0	X	250.50681	154.96235	160.49469	7.33570	0.1640870	0.17450030	3.1715526	20	3 20.6	21.0
503776 2016 QK_{57}	16.3	X	198.66924	195.45698	182.16255	13.87414	0.0783583	0.17397972	3.1778762	20	4 18.8	21.2
503777 2016 QV_{65}	16.5	X	228.31909	186.45463	179.07850	10.20325	0.0380124	0.19044919	2.9919199	20	5 8.9	20.9
503778 2016 QE_{66}	16.1	X	230.70046	205.51811	173.41675	9.85727	0.0800562	0.19862909	2.9092038	20	5 24.3	20.5
503779 2016 QR_{67}	15.9	X	238.84274	151.46708	182.97568	10.87626	0.0410875	0.17998940	3.1067390	20	4 11.7	20.3
503780 2016 QS_{67}	15.5	X	299.83177	321.69710	298.34192	13.70235	0.1050949	0.17763438	3.1341374	20	3 7.8	20.1
503781 2016 QN_{68}	16.4	X	291.70365	86.43866	178.22999	5.30623	0.1052882	0.17261640	3.1945867	20	3 10.3	21.0
503782 2016 RZ_{21}	16.4	X	243.93136	201.17277	169.39319	10.27595	0.1018198	0.20272713	2.8698650	20	5 26.4	20.8
503783 2016 RA_{23}	16.4	X	277.83251	131.34646	164.05479	8.76405	0.1300343	0.18338314	3.0682903	20	3 28.8	20.8
503784 2016 RD_{42}	15.9	X	255.00882	148.98142	183.49122	9.36606	0.0921724	0.17494470	3.1661794	20	4 22.6	20.5
503785 2016 UW_{67}	16.2	X	184.19116	44.79474	70.24091	11.06072	0.1832181	0.17409540	3.1764683	20	7 30.2	21.6
503786 2016 UJ_{146}	15.7	X	162.32351	270.04666	233.87922	11.18567	0.0444727	0.18749329	3.0232837	20	8 8.4	20.4
503787 2016 WW_{6}	16.3	X	222.95697	32.59350	49.88868	10.98595	0.1077201	0.18744091	3.0238469	20	8 3.2	21.0
503788 2016 WL_{25}	15.5	X	167.55639	71.47114	57.33677	11.37749	0.0268298	0.17672417	3.1448897	20	8 2.4	20.2
503789 2016 XR_{21}	18.3	X	18.13939	93.44980	66.02970	23.41284	0.0615526	0.36350504	1.9444454	20	2 9.7	20.6
503790 2016 YV_{7}	17.8	X	257.43816	100.79074	190.71792	21.60569	0.0444889	0.36454387	1.9407496	20	2 12.8	20.3
503791 2016 YB_{10}	17.6	X	238.17330	223.87106	113.87411	21.68603	0.0636044	0.38042170	1.8863656	20	4 10.2	20.3
503792 2017 AB_{15}	16.9	X	285.09594	171.41342	284.95663	5.08095	0.1617710	0.22128990	2.7070420	20	11 2.7	20.0
503793 2017 BK_{4}	17.6	X	15.89199	66.08363	134.01134	24.21023	0.0824544	0.35875728	1.9615629	20	4 17.0	19.9
503794 2017 BK_{12}	18.1	X	51.61464	205.97911	315.99907	18.02651	0.0430754	0.35629650	1.9705843	20	3 24.4	20.4
503795 2017 BQ_{111}	16.5	X	292.96310	247.98945	311.71127	4.09943	0.2116387	0.24095237	2.5576940	20	—	—
503796 2017 CW_{6}	16.7	X	297.96875	111.64451	328.79185	7.41058	0.1764867	0.21305870	2.7763222	20	10 28.8	19.8
503797 2017 DT_{33}	16.5	X	218.25514	243.17469	342.04138	10.92535	0.1464063	0.23292909	2.6160953	20	—	—
503798 2017 DK_{35}	18.0	X	315.13717	141.57108	142.89169	23.72421	0.0679834	0.36904519	1.9249362	20	5 13.2	20.5
503799 2017 EX_{11}	17.5	X	256.06333	130.25520	57.05015	6.43447	0.1113375	0.22038669	2.7144331	20	—	—
503800 2017 FM_{55}	16.1	X	301.73003	335.81126	106.82792	10.29997	0.0324549	0.17865877	3.1221456	20	11 17.8	20.4
503801 2017 GA_{7}	18.1	X	286.90229	185.18841	76.73402	6.92671	0.2077163	0.26982333	2.3718273	20	2 8.5	21.6
503802 2017 HR_{22}	16.2	X	208.35590	116.30197	104.17133	8.26913	0.1900224	0.17862542	3.1225343	20	12 19.4	21.0
503803 2017 HW_{31}	17.0	X	303.34623	75.80480	102.46282	9.77206	0.0235851	0.22409082	2.6844378	20	—	—
503804 2017 HB_{32}	16.8	X	193.42729	184.56284	152.28818	5.24936	0.2210804	0.24237919	2.5476465	20	2 18.8	21.2
503805 2017 HU_{42}	16.0	X	177.68616	177.49094	96.03021	13.68908	0.1703401	0.18476550	3.0529671	20	—	—
503806 2017 JP_{1}	17.6	X	30.16993	141.12308	100.18441	23.60700	0.0568770	0.36139252	1.9520156	20	7 14.7	19.1
503807 2017 JO_{3}	16.1	X	196.76386	181.65545	114.34041	14.40425	0.2493007	0.21207350	2.7849140	20	1 8.6	21.1
503808 2017 JB_{4}	15.8	X	211.03730	73.32527	152.79869	15.27969	0.0531206	0.17305171	3.1892271	20	—	—
503809 2017 KU_{2}	17.7	X	248.43067	242.63822	130.93691	25.61675	0.1135104	0.34986933	1.9946443	20	6 8.7	20.7
503810 2017 KL_{5}	17.7	X	320.78066	226.84848	106.07851	23.58008	0.0773886	0.36368556	1.9438019	20	8 13.2	19.4
503811 2017 KV_{5}	16.1	X	109.13403	314.19561	66.95850	28.73574	0.0371571	0.22793762	2.6541494	20	—	—
503812 2017 KZ_{8}	17.0	X	267.66859	6.19788	236.44657	12.25821	0.0977650	0.24434376	2.5339724	20	1 5.9	20.8
503813 2017 KN_{10}	16.9	X	192.74786	92.42623	188.92028	8.94696	0.1045852	0.20620292	2.8375238	20	—	—
503814 2017 KA_{12}	16.0	X	169.39241	48.24551	240.58934	20.97671	0.1597789	0.18171196	3.0870739	20	—	—
503815 2017 KB_{12}	17.7	X	306.82870	348.92629	229.15528	4.69181	0.0911204	0.25728748	2.4482567	20	1 20.5	21.0
503816 2017 KK_{12}	16.9	X	261.05765	172.74620	79.24459	10.31838	0.1242512	0.24060694	2.5601414	20	1 11.2	20.8
503817 2017 KO_{12}	18.0	X	329.56686	143.28798	119.93125	4.33522	0.1272871	0.31091606	2.1579462	20	4 20.6	20.0
503818 2017 KU_{12}	17.7	X	296.64637	174.09466	93.94573	7.34637	0.1769434	0.28385200	2.2930212	20	3 2.2	20.7
503819 2017 KX_{15}	15.8	X	175.73504	49.89382	224.61556	16.23884	0.2080717	0.17563485	3.1578797	20	—	—
503820 2017 KC_{16}	15.6	X	188.28137	21.30586	229.63317	29.44509	0.2201085	0.17311731	3.1884214	20	12 27.6	21.3
503821 2017 KE_{16}	17.5	X	264.85518	180.97786	124.24812	7.35618	0.1687974	0.28113806	2.3077546	20	3 15.6	20.8
503822 2017 KG_{16}	16.8	X	271.13603	5.67007	220.89917	17.09363	0.1517302	0.23281373	2.6169594	20	—	—
503823 2017 KT_{18}	16.8	X	251.35330	38.57367	183.99901	9.23004	0.0996224	0.21121547	2.7924510	20	—	—
503824 2017 KV_{19}	18.4	X	328.19729	43.02842	186.42872	4.61857	0.1325200	0.29366240	2.2416638	20	2 23.3	20.6
503825 2017 KX_{19}	16.5	X	166.38072	167.09264	126.81799	5.02429	0.2093392	0.18686574	3.0300486	20	—	—
503826 2017 KY_{19}	16.4	X	159.30500	158.26834	129.63911	5.12084	0.1489941	0.18058937	3.0998541	20	—	—
503827 2017 KP_{20}	16.6	X	196.47281	112.26623	129.72030	6.96188	0.1053067	0.18032714	3.1028586	20	—	—
503828 2017 KU_{24}	17.9	X	285.05977	201.44953	83.17873	6.17966	0.1578851	0.28696635	2.2764008	20	3 12.8	20.9
503829 2017 KK_{25}	16.7	X	226.01922	173.25725	84.26435	13.89996	0.1431600	0.21573919	2.7532777	20	—	—
503830 2017 KL_{26}	16.1	X	131.16463	189.33942	131.28055	11.69934	0.0265939	0.18121074	3.0927638	20	—	—
503831 2017 KR_{26}	15.8	X	176.26178	113.31235	240.89904	28.76826	0.1837637	0.23508360	2.6000867	20	2 12.5	20.7
503832 2017 KZ_{26}	15.7	X	175.38348	131.08668	132.38008	11.73420	0.0471571	0.17653705	3.1471116	20	—	—
503833 2017 KT_{27}	16.5	X	218.21355	168.58862	108.72756	14.98441	0.1716063	0.21842432	2.7306669	20	1 2.6	20.9
503834 2017 KV_{27}	17.0	X	261.44638	41.42675	202.28312	12.43541	0.1913468	0.23119720	2.6291438	20	—	—
503835 2017 KZ_{27}	16.6	X	170.32559	152.07364	150.19844	6.98233	0.2213646	0.18725708	3.0258255	20	—	—
503836 2017 KS_{29}	17.4	X	268.79771	31.14196	242.40096	4.68600	0.1627352	0.26275743	2.4141600	20	2 6.0	21.0
503837 2017 KX_{30}	16.8	X	271.82908	344.83388	220.06170	13.04698	0.1872298	0.22296974	2.6934284	20	—	—
503838 2017 KR_{33}	16.1	X	187.29363	139.92931	99.57314	17.56678	0.0884216	0.17066872	3.2188452	20	12 28.1	20.8
503839 2017 KU_{33}	17.2	X	238.01234	158.28786	119.80783	15.95666	0.1554633	0.23899809	2.5716178	20	1 18.4	21.3
503840 2017 KO_{35}	16.1	X	217.42285	16.19550	244.64186	16.14830	0.1963128	0.20951561	2.8075346	20	—	—

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503841 2017 KR_{35}	15.7	X	129.35329	196.97414	117.70646	23.93427	0.0804995	0.17413917	3.1759360	20	—	—
503842 2017 KU_{35}	17.6	X	244.46918	230.06707	96.21252	3.18180	0.2203327	0.27479336	2.3431417	20	3 17.6	21.3
503843 2017 KW_{35}	17.6	X	290.57883	44.59755	209.59726	2.93125	0.2052043	0.26893697	2.3770358	20	1 30.8	21.1
503844 2017 LK_{1}	17.2	X	271.39809	32.37409	180.38206	13.74927	0.1946278	0.22242316	2.6978391	20	—	—
503845 2017 MV_{3}	17.7	X	289.37687	251.13328	59.77266	10.87420	0.2653588	0.27840754	2.3228191	20	4 9.4	20.9
503846 2017 MG_{5}	16.2	X	187.31431	168.54238	136.63365	15.33163	0.1234331	0.17842380	3.1248861	20	1 12.1	21.2
503847 2017 MF_{8}	18.0	X	243.51834	34.57914	268.73486	5.58952	0.3576061	0.23209919	2.6223278	20	2 10.9	23.1
503848 4702 $P–L$	18.2	X	318.94108	243.51401	77.12177	0.78424	0.2797191	0.29429554	2.2384476	20	6 4.6	19.5
503849 1453 $T–2$	18.1	X	283.21433	357.49207	344.91691	2.70966	0.2658970	0.26933835	2.3746736	20	5 9.4	21.4
503850 4150 $T–3$	17.7	X	271.98606	342.27867	37.98160	7.34454	0.2289931	0.27172354	2.3607566	20	6 23.7	20.8
503851 1995 TZ_{3}	17.5	X	167.41588	78.61667	17.92873	7.31103	0.1304215	0.22530059	2.6748196	20	6 21.7	21.8
503852 1995 TN_{4}	16.4	X	166.94907	8.97318	20.27204	14.14211	0.0246204	0.17947945	3.1126209	20	3 28.3	20.9
503853 1995 VU_{8}	16.5	X	208.97231	288.20738	56.16106	12.34565	0.2965448	0.18027464	3.1034610	20	3 19.2	22.3
503854 1996 RA_{7}	16.5	X	219.41739	355.30485	352.80077	10.27333	0.0797203	0.19131372	2.9828996	20	3 30.7	21.1
503855 1996 SO_{5}	18.6	X	259.40395	307.54226	178.57744	22.64646	0.0664261	0.37716403	1.8972120	20	—	—
503856 1996 TC_{34}	16.4	X	131.95411	218.79591	220.66504	11.30268	0.1539880	0.18598899	3.0395636	20	4 28.0	21.2
503857 1996 VM_{16}	17.5	X	143.14817	1.38772	64.03065	3.16855	0.1035269	0.18564064	3.0433648	20	4 18.9	22.2
503858 1998 HQ_{151}	8.8	X	38.84501	347.51103	228.81482	11.92890	0.2878896	0.00392874	39.7771774	20	7 3.1	24.0
503859 1998 QO_{52}	18.5	X	229.40152	224.16714	163.97797	6.20389	0.4149641	0.25792589	2.4442151	20	5 10.8	23.3
503860 1998 TM_{1}	18.0	X	270.42146	285.80537	207.91572	21.11572	0.0339675	0.36605095	1.9354191	20	—	—
503861 1998 WZ_{1}	19.8	X	259.82975	137.41905	344.84300	4.31359	0.5568069	0.30980344	2.1631097	20	9 13.7	22.7
503862 1999 BG_{31}	18.3	X	262.23663	325.62879	104.43028	3.71633	0.1297237	0.30520294	2.1847927	20	9 14.6	20.5
503863 1999 SU_{3}	16.9	X	227.55845	2.02742	17.66518	9.93373	0.2683863	0.22216628	2.6999183	20	5 3.6	21.6
503864 1999 SJ_{24}	18.5	X	263.76660	23.85877	7.18858	1.11954	0.2916305	0.27505787	2.3416393	20	6 19.8	21.9
503865 1999 VM_{11}	20.7	X	60.21583	206.42677	218.02671	17.04984	0.2792215	0.48935025	1.5948610	20	—	—
503866 1999 VH_{83}	18.0	X	212.34528	201.37870	164.30455	1.65231	0.2509133	0.21675303	2.7446856	20	4 8.8	22.9
503867 1999 VS_{84}	17.7	X	233.55993	156.91807	228.65450	2.43386	0.1349019	0.22090083	2.7102196	20	5 28.8	21.8
503868 2000 AK_{42}	17.4	X	284.30333	20.65716	97.86085	24.42299	0.0496798	0.37862070	1.8923428	20	—	—
503869 2000 GW_{23}	17.5	X	64.25656	235.22769	322.88431	0.70908	0.1768310	0.25347646	2.4727353	20	7 17.1	20.5
503870 2000 QW_{225}	17.7	X	260.18740	18.85877	323.37207	6.14786	0.3021865	0.23584328	2.5945002	20	4 10.8	22.2
503871 2000 SL	18.1	X	144.70318	70.20101	207.75039	38.34992	0.3948120	0.51565808	1.5401446	20	—	—
503872 2000 SK_{52}	16.7	X	272.22789	91.97911	240.83131	11.52297	0.3015015	0.23530903	2.5984258	20	4 9.8	21.0
503873 2000 SQ_{164}	17.4	X	236.23767	5.72193	15.20072	17.43884	0.2922450	0.23409488	2.6074027	20	5 7.1	22.1
503874 2000 SH_{272}	18.6	X	304.14711	41.05647	298.55951	1.51082	0.2906132	0.29049183	2.2579454	20	6 2.0	20.5
503875 2000 SB_{304}	17.0	X	197.24077	149.44277	222.15715	13.45125	0.3251047	0.22845849	2.6501137	20	3 31.9	22.2
503876 2000 ST_{336}	16.8	X	237.63455	343.80486	25.17681	13.94160	0.2911570	0.23224842	2.6212043	20	4 27.2	21.4
503877 2000 SR_{344}	17.0	X	263.04337	177.17009	178.23463	12.12811	0.2642729	0.23537013	2.5979761	20	5 8.9	21.2
503878 2000 SS_{347}	15.7	X	205.76152	64.30878	274.21200	14.76128	0.2490707	0.17792429	3.1307320	20	2 27.3	21.5
503879 2000 UJ_{3}	17.5	X	226.89229	39.65520	45.49246	27.44848	0.3317612	0.28555659	2.2838869	20	7 30.2	21.9
503880 2000 YJ_{29}	18.0	X	6.81198	327.81185	266.13141	43.69387	0.8321222	0.35949615	1.9588742	20	10 9.4	21.9
503881 2001 BZ_{2}	16.8	X	206.83364	307.31760	128.51448	32.44810	0.4750551	0.22910253	2.6451449	20	6 24.7	22.5
503882 2001 BL_{40}	17.2	X	167.67851	153.05774	310.05339	5.47649	0.3029692	0.22561049	2.6723696	20	7 2.3	22.1
503883 2001 QF_{331}	7.8	X	348.96585	248.66075	156.76403	2.67290	0.2524914	0.00358225	42.3024716	20	10 21.3	22.8
503884 2001 SP_{152}	16.7	X	185.35938	108.12457	196.02822	23.37125	0.3780525	0.18049915	3.1008871	20	1 12.3	23.0
503885 2001 SU_{166}	15.7	X	256.75411	314.99781	2.56616	10.49028	0.0939675	0.19072125	2.9890740	20	4 2.3	20.0
503886 2001 SM_{243}	17.3	X	218.91305	120.08640	192.10230	22.05398	0.4703863	0.18773932	3.0206417	20	2 5.4	23.7
503887 2001 TB_{53}	16.3	X	188.45684	194.61337	199.31382	8.38670	0.2604274	0.18785049	3.0194499	20	4 25.7	21.6
503888 2001 TE_{213}	16.9	X	187.51003	129.90926	234.23882	12.31525	0.3298335	0.18558265	3.0439987	20	3 17.5	22.8
503889 2001 TQ_{259}	18.5	X	34.80005	119.71140	204.11679	22.27125	0.0365704	0.36717143	1.9314796	20	12 3.1	20.8
503890 2001 TM_{263}	16.6	X	352.52008	0.45182	332.98432	8.65257	0.1358947	0.20500381	2.8485779	20	9 13.3	19.8
503891 2001 UT_{6}	17.0	X	204.13910	24.48474	5.88284	8.23675	0.3258632	0.18920657	3.0050053	20	4 28.3	22.7
503892 2001 UF_{18}	19.1	X	163.14557	202.58332	45.98655	31.26861	0.6096534	0.80851959	1.1411490	20	—	—
503893 2001 UX_{38}	16.4	X	153.83443	6.09434	72.06413	2.39898	0.2413277	0.18602528	3.0391682	20	5 21.4	21.5
503894 2001 UO_{131}	16.7	X	172.68352	354.45509	60.37241	1.21815	0.2925852	0.18554611	3.0443983	20	5 8.8	22.3
503895 2001 UY_{171}	18.2	X	329.00625	168.40778	188.29867	4.81581	0.2004457	0.31051304	2.1598130	20	9 30.4	18.9
503896 2001 UL_{220}	18.0	X	204.02646	220.13050	223.34740	11.03204	0.2532938	0.24549814	2.5260226	20	7 4.2	22.5
503897 2001 VA_{4}	18.0	X	247.12669	120.61060	248.37432	5.45124	0.2714119	0.24500275	2.5294266	20	5 7.4	22.2
503898 2001 WO_{64}	17.7	X	250.75993	315.71406	60.42607	2.11815	0.2126270	0.24518709	2.5281586	20	5 26.3	21.5
503899 2001 XX_{11}	16.6	X	138.40846	64.20606	43.51455	14.74451	0.2777619	0.18246831	3.0785372	20	6 13.6	22.1
503900 2001 XU_{33}	16.6	X	130.99767	27.91440	87.86082	10.53653	0.2198833	0.18216370	3.0819683	20	6 15.7	21.7
503901 2001 XN_{181}	16.2	X	161.70482	294.65314	106.58921	17.48951	0.2466103	0.17846879	3.1243609	20	4 22.3	21.9
503902 2001 YH_{44}	16.6	X	150.65102	150.57160	271.18034	15.48165	0.2207570	0.18046214	3.1013110	20	4 24.4	22.1
503903 2002 AR_{147}	18.1	X	186.59203	141.75540	332.31476	4.61501	0.2580678	0.24167254	2.5526102	20	7 30.7	22.4
503904 2002 AO_{193}	16.9	X	109.53101	238.48313	294.88668	20.36825	0.2487454	0.28795307	2.2711975	20	8 9.3	20.7
503905 2002 CU_{5}	16.0	X	73.09788	33.34883	138.07173	26.52523	0.1528759	0.17556883	3.1586713	20	6 20.0	20.8
503906 2002 CK_{9}	16.9	X	284.87057	184.17682	137.57807	16.20563	0.0281957	0.23101939	2.6304926	20	5 27.1	20.7
503907 2002 CD_{66}	18.0	X	202.64325	167.52998	319.38177	8.12290	0.1270610	0.29946195	2.2126274	20	9 10.1	21.0
503908 2002 CQ_{162}	17.4	X	170.40198	119.72900	333.27548	15.54013	0.1850268	0.23593676	2.5938148	20	6 22.1	22.0
503909 2002 CH_{293}	16.1	X	73.27824	190.25880	327.07127	14.11388	0.2064832	0.17260743	3.1946973	20	6 4.5	20.8
503910 2002 CD_{316}	16.9	X	306.82687	302.04268	323.29620	8.42422	0.0963375	0.22272718	2.6953836	20	3 24.0	20.4
503911 2002 FD_{6}	22.3	X	51.68546	256.86887	15.17992	10.06484	0.3420010	0.71989941	1.2329766	20	—	—
503912 2002 FM_{23}	18.3	X	253.37192	111.59396	5.80461	19.63661	0.0559798	0.35382378	1.9797547	20	11 27.5	20.6
503913 2002 JD_{58}	18.2	X	78.76878	3.22573	228.85751	2.36777	0.1750915	0.28523250	2.2856166	20	9 22.7	21.3
503914 2002 OK_{33}	17.2	X	228.09443	164.00044	180.30960	5.26460	0.2626881	0.20531635	2.8456864	20	3 26.2	22.1
503915 2002 QD_{71}	17.4	X	225.52808	22.74876	330.85364	5.88569	0.1154236	0.20439726	2.8542105	20	4 9.5	22.0
503916 2002 QT_{96}	18.5	X	303.08683	225.55333	105.04440	4.23991	0.2570806	0.26908400	2.3761698	20	5 24.8	20.9
503917 2002 RW_{71}	16.2	X	203.73365	45.06317	339.09111	14.44808	0.1567244	0.20339310	2.8635970	20	4 20.0	21.2
503918 2002 RD_{156}	18.1	X	268.07295	15.37943	294.28556	1.44131	0.2056702	0.25974449	2.4327929	20	3 18.8	21.8
503919 2002 RJ_{266}	16.7	X	278.92970	328.96446	326.51450	9.22708	0.0757617	0.20582847	2.8409641	20	3 30.4	20.9
503920 2002 TT_{299}	18.1	X	251.67847	137.39681	262.92018	1.20768	0.2036773	0.26345125	2.4099195	20	6 30.1	21.2

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	H	G	M	ω	Ω	i	e	μ	a	TE	Oppos.	V
	m		°	°	°	°		°				
503921 2002 TB_{335}	17.3	X	235.53484	304.47374	41.77636	7.04806	0.1002530	0.20105335	2.8857709	20	4 15.8	21.6
503922 2002 UF_{4}	16.8	X	295.77247	108.26310	269.72400	22.94566	0.2852719	0.26831548	2.3807049	20	7 12.9	19.3
503923 2002 WL_{32}	14.9	X	175.21667	257.39614	52.48311	13.20450	0.1470210	0.12660752	3.9279237	20	1 15.7	21.2
503924 2002 XW_{71}	17.4	X	230.79782	158.32239	276.49527	10.33104	0.2536912	0.26160634	2.4212365	20	7 17.4	21.3
503925 2002 YT_{15}	15.9	X	90.38550	218.29094	293.47811	15.28118	0.1703108	0.18796799	3.0181914	20	6 15.5	20.4
503926 2003 BG_{59}	16.8	X	80.60686	130.90578	11.55164	6.36727	0.2475689	0.18346312	3.0673985	20	5 31.8	21.2
503927 2003 BN_{93}	16.7	X	121.09118	334.41591	153.55030	10.67143	0.1911771	0.18641078	3.0349768	20	6 20.0	21.7
503928 2003 EL_{35}	19.5	X	317.79518	172.60825	343.85085	8.91964	0.2009941	0.44907322	1.6888508	20	—	—
503929 2003 KJ_{11}	18.0	X	10.19528	296.85689	64.14210	26.23500	0.1238477	0.36851067	1.9267972	20	—	—
503930 2003 NA_{11}	17.1	X	298.78248	10.04898	282.94757	12.97202	0.1193447	0.22195953	2.7015947	20	4 12.5	20.9
503931 2003 QN_{8}	18.2	X	306.23029	353.99279	340.90667	2.47189	0.2538664	0.28507777	2.2864435	20	6 5.6	20.3
503932 2003 QW_{102}	17.2	X	230.12080	214.54434	120.88269	8.08289	0.3416379	0.21460513	2.7629688	20	3 16.3	22.4
503933 2003 SK_{28}	16.9	X	183.76866	180.24141	247.43671	7.33908	0.2088278	0.21501622	2.7594460	20	5 31.6	21.4
503934 2003 SR_{48}	16.8	X	206.15719	153.97250	283.26847	6.10695	0.2578246	0.21815369	2.7329248	20	6 28.9	21.6
503935 2003 SW_{96}	17.7	X	255.95636	96.79748	242.77543	0.55409	0.1225455	0.21809932	2.7333789	20	4 25.5	21.6
503936 2003 SV_{278}	16.7	X	237.18164	141.11478	228.38231	12.91879	0.2012749	0.21561584	2.7543277	20	5 6.0	21.1
503937 2003 SO_{323}	17.4	X	214.79545	52.34533	300.70454	1.57175	0.2105042	0.21250859	2.7811114	20	3 26.9	22.1
503938 2003 SL_{429}	18.8	X	288.37040	343.78568	34.90746	3.64002	0.1807991	0.28405462	2.2919307	20	7 28.3	21.1
503939 2003 TR_{36}	17.4	X	238.85565	71.53684	279.80035	3.24911	0.0891851	0.21291784	2.7775466	20	4 23.9	21.5
503940 2003 UA_{3}	18.4	X	198.96959	133.38204	29.09934	20.75375	0.0813663	0.35134586	1.9890521	20	11 8.2	20.6
503941 2003 UV_{11}	19.5	X	144.23301	124.79245	31.89726	5.92429	0.7628993	0.56249009	1.4534256	20	9 5.1	22.9
503942 2003 UV_{30}	18.3	X	286.78017	134.25828	242.21416	5.60425	0.1536080	0.28442344	2.2899489	20	7 23.6	20.7
503943 2003 UV_{84}	18.7	X	259.51884	3.36601	41.51240	6.05746	0.2342033	0.28112313	2.3078363	20	7 13.5	21.8
503944 2003 UB_{138}	17.1	X	323.85784	156.53523	160.51632	3.93170	0.2596405	0.28229616	2.3014386	20	6 15.3	18.6
503945 2003 UF_{190}	18.0	X	246.90588	186.05665	218.17096	9.89250	0.2421316	0.27870667	2.3211568	20	6 24.9	21.6
503946 2003 UU_{232}	18.4	X	250.28163	40.60856	24.08631	3.21210	0.1880182	0.28221897	2.3018583	20	8 6.2	21.4
503947 2003 UD_{242}	18.3	X	287.15945	311.74787	58.87786	3.70903	0.2707046	0.28242204	2.3007547	20	6 25.1	20.8
503948 2003 UW_{247}	17.8	X	281.33081	169.21760	230.43338	5.82571	0.2180862	0.28456278	2.2892013	20	8 6.5	20.3
503949 2003 UN_{287}	18.5	X	266.48843	155.91948	180.46794	2.33366	0.2460351	0.27660235	2.3329144	20	4 16.5	21.9
503950 2003 WJ_{49}	16.5	X	240.79953	201.49648	240.75048	23.61244	0.1879217	0.28254923	2.3000642	20	8 6.2	20.4
503951 2003 WY_{154}	16.4	X	162.00144	195.34212	213.07883	11.79572	0.1741607	0.20465415	2.8518215	20	4 18.9	21.1
503952 2003 YM_{130}	17.6	X	222.53363	146.67314	302.92607	8.29150	0.1605390	0.27645937	2.3337187	20	8 8.3	21.0
503953 2004 CG_{68}	17.9	X	188.37323	158.75674	336.65625	4.89168	0.1731034	0.27348648	2.3506004	20	9 2.4	21.5
503954 2004 EL_{27}	16.6	X	180.37799	338.43915	321.46963	16.20674	0.1742058	0.17174910	3.2053324	20	1 5.5	22.0
503955 2004 ED_{107}	17.5	X	22.77957	246.03720	357.47302	4.81609	0.0799154	0.25704514	2.4497953	20	7 1.6	20.2
503956 2004 NM_{25}	18.2	X	201.24336	258.50338	290.34628	18.52126	0.0716386	0.38992989	1.8555744	20	—	—
503957 2004 PU_{9}	16.9	X	272.04557	217.62517	144.93620	9.80362	0.1383875	0.23995541	2.5647735	20	6 13.7	20.4
503958 2004 PK_{13}	16.6	X	232.05966	63.16881	320.77229	30.05352	0.2258045	0.23412443	2.6071833	20	5 5.3	21.6
503959 2004 PO_{69}	17.1	X	249.02683	3.17420	350.92632	5.35175	0.2819711	0.23265243	2.6181688	20	4 18.9	21.6
503960 2004 QF_{1}	18.3	X	101.69303	174.04477	332.93287	17.82540	0.2905317	0.91448639	1.0511981	20	8 17.5	17.5
503961 2004 QU_{15}	17.8	X	266.44350	87.97441	221.86095	3.61771	0.1495122	0.22966891	2.6407943	20	3 25.5	21.6
503962 2004 QD_{28}	17.2	X	212.52815	289.30090	78.90310	12.41587	0.2866246	0.22771598	2.6558714	20	4 15.7	22.1
503963 2004 RE_{88}	17.7	X	239.45204	159.24060	200.68297	2.45055	0.1953083	0.23135502	2.6279480	20	4 26.7	21.9
503964 2004 RB_{97}	16.3	X	261.69646	52.87200	304.77429	10.87311	0.1022543	0.23446990	2.6046217	20	5 27.1	20.1
503965 2004 RK_{102}	17.6	X	284.83138	31.08398	289.41824	3.37225	0.2093342	0.23464506	2.6033253	20	4 20.8	21.3
503966 2004 RX_{109}	18.1	X	305.63878	37.30350	200.59922	29.03312	0.8114383	0.29982086	2.2108613	20	—	—
503967 2004 RC_{113}	16.8	X	188.16182	122.98633	293.94185	16.72871	0.2720826	0.22636242	2.6664483	20	5 19.0	21.9
503968 2004 RB_{158}	16.4	X	6.40883	65.79390	185.78241	16.68835	0.2466388	0.23976502	2.5661310	20	6 22.5	18.8
503969 2004 RE_{159}	18.4	X	327.39523	15.91295	310.24154	4.68083	0.2141332	0.30503034	2.1856168	20	7 23.7	19.2
503970 2004 RQ_{162}	17.4	X	260.50373	105.94115	232.06913	11.99522	0.3081526	0.23236324	2.6203407	20	4 5.7	21.9
503971 2004 RD_{180}	18.2	X	338.11802	22.56741	300.24470	4.31231	0.2027819	0.30634266	2.1793705	20	8 18.8	19.3
503972 2004 RT_{271}	17.6	X	263.36103	162.62407	165.13877	6.25271	0.2227024	0.23173377	2.6250837	20	4 8.1	21.7
503973 2004 RM_{275}	19.1	X	322.32115	156.74896	189.16594	3.15332	0.1943206	0.30740501	2.1743465	20	8 17.7	20.3
503974 2004 SK_{19}	16.5	X	201.54140	77.63146	344.39305	21.15458	0.1428010	0.23138923	2.6276889	20	6 9.2	21.2
503975 2004 SE_{44}	17.1	X	207.10648	196.73610	212.44229	12.54887	0.2779255	0.22916604	2.6446561	20	5 26.3	21.9
503976 2004 SZ_{52}	17.6	X	233.51218	139.89082	213.58792	5.08226	0.2652799	0.22912901	2.6449411	20	4 8.2	22.2
503977 2004 TB_{22}	16.9	X	210.09370	222.68326	202.11695	14.60522	0.1679673	0.23226923	2.6210477	20	6 20.9	21.3
503978 2004 TG_{34}	17.5	X	211.41068	28.09862	4.04230	2.52168	0.1712330	0.22751235	2.6574559	20	5 11.7	21.7
503979 2004 TK_{43}	17.6	X	212.41181	109.70218	256.68992	2.04657	0.1830775	0.22388457	2.6860861	20	4 10.3	22.1
503980 2004 TG_{86}	17.8	X	285.37891	120.94715	193.67432	11.98107	0.1435847	0.23100069	2.6306346	20	4 26.8	21.3
503981 2004 TS_{90}	18.1	X	297.61017	313.72377	1.30204	5.39325	0.1597058	0.29490630	2.2353559	20	5 6.3	20.6
503982 2004 TV_{91}	17.0	X	279.78394	85.50712	208.08544	15.85019	0.2193895	0.22647129	2.6655937	20	3 8.8	21.3
503983 2004 TN_{93}	17.6	X	185.59860	186.45075	256.27336	0.89380	0.1998857	0.22850265	2.6497723	20	6 20.9	21.9
503984 2004 TT_{99}	18.8	X	336.48950	157.28353	166.30512	2.07298	0.2763313	0.30486984	2.1863838	20	8 15.9	19.0
503985 2004 TU_{108}	18.4	X	351.08113	107.95259	197.47228	5.05284	0.2707157	0.30583164	2.1817975	20	8 31.9	19.0
503986 2004 TP_{183}	17.2	X	202.28296	40.87487	356.65114	6.65930	0.2202406	0.22666584	2.6640682	20	5 7.3	21.9
503987 2004 TQ_{188}	17.3	X	237.44194	148.52519	208.52137	3.12382	0.1175560	0.22784016	2.6549063	20	4 27.8	21.3
503988 2004 TJ_{202}	17.0	X	223.78534	348.30365	38.48942	18.95347	0.1378527	0.22590141	2.6700748	20	5 16.4	21.2
503989 2004 TQ_{295}	17.3	X	220.54265	159.70404	228.79775	5.53066	0.1603247	0.22633451	2.6666674	20	5 17.2	21.5
503990 2004 TG_{297}	16.8	X	249.40181	79.86944	273.69057	9.51928	0.2595677	0.22815631	2.6524532	20	4 18.7	21.4
503991 2004 TX_{359}	17.0	X	208.94725	111.14936	238.73773	6.29626	0.1710730	0.21972325	2.7198944	20	3 17.1	21.6
503992 2004 VC_{12}	16.2	X	213.95600	18.46817	38.78635	30.74101	0.2018442	0.22776413	2.6554971	20	6 5.2	21.0
503993 2004 VR_{20}	17.1	X	228.14950	325.45098	51.23358	5.58517	0.2345134	0.22741755	2.6581943	20	5 4.8	21.5
503994 2004 VZ_{22}	16.5	X	213.59998	243.33074	231.85598	29.06526	0.3496430	0.23374920	2.6099727	20	8 4.0	21.9
503995 2004 VU_{54}	18.4	X	337.13440	1.57174	45.52257	21.77054	0.1139989	0.37563074	1.9023714	20	—	—
503996 2004 VJ_{75}	18.3	X	330.37133	25.88893	33.98450	22.12829	0.0945623	0.37710417	1.8974128	20	—	—
503997 2004 XB_{71}	17.7	X	223.56319	50.17385	14.88173	4.38439	0.2505725	0.22698229	2.6615915	20	6 28.9	22.3
503998 2004 XD_{78}	16.7	X	235.91440	100.34065	258.10810	14.92329	0.3040676	0.22479424	2.6788348	20	4 9.6	21.8
503999 2004 XN_{111}	17.6	X	193.35822	28.79505	59.12607	6.38738	0.3368307	0.22430561	2.6827238	20	6 30.3	22.6
504000 2004 YC_{26}	18.1	X	245.30495	151.74815	283.46440	7.28008	0.1184561	0.29394613	2.2402211	20	8 22.2	20.9