

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12001 Gasbarini	13.2	X	303.72176	182.97001	156.15574	14.05415	0.0407791	0.17661034	3.1462408	20	7 7.3	17.7
12002 Suess	13.6	X	97.40689	98.97841	216.61396	9.42877	0.1074049	0.18800582	3.0177865	20	12 31.4	18.4
12003 Hideosugai	12.1	X	76.75878	77.75944	10.57597	9.82754	0.0904924	0.15980037	3.3631859	20	3 3.4	16.7
12004 1996 JW ₁	13.1	X	333.62133	195.31555	175.47562	0.93749	0.1230783	0.17449339	3.1716364	20	9 26.4	16.9
12005 Delgiudice	12.6	X	350.77296	136.92964	132.89778	10.91445	0.1664910	0.17526290	3.1623460	20	6 11.5	16.2
12006 Hruschka	12.1	X	56.78046	11.69329	231.82193	10.23069	0.0838918	0.12374808	3.9882014	20	8 6.9	17.8
12007 Fermat	15.2	X	203.43581	154.80146	33.29625	6.36306	0.1007324	0.29022708	2.2593184	20	12 7.0	18.0
12008 Kandrup	13.1	X	242.19437	344.92633	263.32389	29.74631	0.3161590	0.34931953	1.9967367	20	—	—
12009 1996 UE	15.1	X	123.47053	303.41856	41.98092	4.15515	0.2786925	0.30315557	2.1946184	20	—	—
12010 1996 UN	15.1	X	298.28264	304.53001	199.15361	4.79348	0.1407329	0.29720289	2.2238254	20	—	—
12011 1996 VT ₅	14.2	X	272.82405	326.12352	89.72491	7.56733	0.0990894	0.28212644	2.3023616	20	9 14.2	16.8
12012 Kitahiroshima	14.0	X	306.18726	11.52287	24.05506	7.15409	0.1452424	0.28558616	2.2837292	20	10 6.2	15.9
12013 Sibatahosimi	14.9	X	357.00186	216.88145	207.65608	6.13549	0.1314622	0.29413460	2.2392641	20	—	—
12014 Bobhawkes	13.8	X	353.20455	357.70730	202.68213	1.74634	0.1575054	0.26680426	2.3896862	20	2 25.6	16.0
12015 1996 WA	14.8	X	63.73579	37.72782	32.11761	4.00740	0.1356015	0.30084234	2.2058539	20	—	—
12016 Green	13.9	X	230.78475	168.38936	95.79013	6.72611	0.1944290	0.25934254	2.4353060	20	—	—
12017 1996 XC ₁	14.6	X	56.37602	96.26213	197.74174	2.06470	0.0592753	0.28424880	2.2908868	20	11 4.1	17.4
12018 1996 XJ ₁₅	14.6	X	213.86552	210.20967	97.07415	6.49778	0.1749348	0.26026851	2.4295264	20	1 30.4	18.6
12019 1996 XF ₁₉	14.7	X	308.59479	143.25299	242.12922	4.11841	0.1505930	0.28195915	2.3032721	20	9 19.5	16.6
12020 1996 XW ₁₉	14.3	X	175.77289	206.59744	258.14880	6.91458	0.1468823	0.27293867	2.3537446	20	7 11.5	17.9
12021 1996 XX ₁₉	14.8	X	82.54149	251.27308	102.13706	4.01944	0.1605278	0.29398091	2.2400444	20	—	—
12022 Hilbert	15.5	X	205.37690	250.85021	199.99320	0.57711	0.1057201	0.27476597	2.3432975	20	7 27.5	18.8
12023 1996 YJ	14.7	X	300.72028	89.87171	280.64714	6.26115	0.1360930	0.27787441	2.3257892	20	8 10.9	16.9
12024 1996 YN ₂	15.1	X	293.31687	152.80261	250.06556	2.51144	0.1735179	0.28184567	2.3038904	20	9 13.0	17.1
12025 1997 AJ ₁	14.9	X	173.89040	189.88058	333.56217	3.18997	0.1066845	0.27810834	2.3244848	20	9 27.8	18.3
12026 1997 AV ₁	14.1	X	123.99919	70.59795	316.66848	6.96161	0.1188823	0.25861229	2.4398883	20	2 4.1	17.2
12027 Masaakitanaka	14.6	X	90.89663	61.23436	30.68925	6.51386	0.1656835	0.26212660	2.4180317	20	3 26.5	17.4
12028 Annekinney	14.1	X	69.63321	155.98402	132.63842	14.33900	0.1775039	0.23629821	2.5911691	20	11 22.7	18.2
12029 1997 AQ ₂₂	13.5	X	304.68513	87.25118	120.48387	8.54866	0.1575132	0.21250415	2.7811502	20	1 4.2	17.3
12030 1997 BF ₃	14.8	X	297.19374	273.45245	129.52212	5.48829	0.2202323	0.27988871	2.3146170	20	9 18.2	16.4
12031 Kobaton	14.0	X	266.25330	309.34906	69.19432	9.92961	0.1548729	0.27538644	2.3397764	20	6 25.3	16.9
12032 Ivory	15.6	X	189.13125	291.37917	142.59185	2.70279	0.1834677	0.26961795	2.3730315	20	6 14.1	19.4
12033 Anselmo	13.5	X	332.62493	85.69811	112.63176	2.55518	0.1094851	0.16972287	3.2307930	20	2 12.6	17.5
12034 1997 CR	13.6	X	248.71907	209.41188	137.44118	13.47765	0.1764723	0.22211209	2.7003574	20	4 26.4	18.0
12035 Ruggieri	14.9	X	28.80584	203.83267	321.13742	1.28189	0.0754080	0.25982106	2.4323150	20	3 15.5	17.4
12036 1997 CR ₁₉	13.3	X	78.83287	120.29628	19.55892	7.12374	0.0659110	0.21916954	2.7244735	20	4 27.9	16.9
12037 1997 CT ₁₉	15.3	X	156.27979	202.30762	241.15255	1.46044	0.1732708	0.26728192	2.3868383	20	5 26.6	19.0
12038 1997 CE ₂₀	14.0	X	37.19819	256.18706	103.88712	5.39629	0.1387175	0.24013854	2.5634694	20	—	—
12039 1997 CB ₂₂	12.7	X	262.15833	282.18903	348.32997	6.72418	0.0885528	0.21174638	2.7877814	20	2 12.2	16.7
12040 Jacobi	15.3	X	122.47003	92.78891	354.09521	2.70617	0.2043513	0.26176950	2.4202303	20	4 29.6	19.0
12041 1997 EQ ₂₅	13.5	X	159.32706	122.29167	174.94680	12.34980	0.1017382	0.16010600	3.3589043	20	—	—
12042 Laques	13.1	X	119.22310	96.61263	128.80933	11.86210	0.0639538	0.19031124	2.9933655	20	10 11.1	17.7
12043 1997 FN	13.2	X	5.88217	306.98685	62.03293	12.56617	0.0528531	0.19107845	2.9853476	20	11 13.8	17.2
12044 Fabbri	12.7	X	299.07049	7.56361	48.07205	13.96645	0.1376621	0.23621749	2.5917594	20	10 14.9	15.6
12045 Klein	12.9	X	30.01188	326.16574	349.93150	12.72172	0.1917883	0.23439020	2.6052121	20	11 2.4	16.4
12046 1997 FQ ₄	12.6	X	350.06273	13.89884	250.57655	4.01084	0.1184052	0.17668392	3.1453672	20	6 2.8	16.2
12047 Hideomitani	13.6	X	44.04375	301.82090	24.67290	10.08271	0.0383537	0.19033258	2.9931418	20	11 5.9	17.8
12048 1997 GW ₂₉	13.6	X	332.96428	256.74310	141.94428	11.31111	0.1178334	0.19164212	2.9794909	20	11 9.3	17.3
12049 1997 GT ₃₂	13.3	X	82.05697	16.65413	350.96623	1.37710	0.0955874	0.19970822	2.8987143	20	—	—
12050 Humecronyn	13.1	X	58.13742	57.60652	312.75314	1.22783	0.0855674	0.19815089	2.9138824	20	—	—
12051 Pícha	14.4	X	191.49080	235.41540	355.53580	9.38664	0.1711557	0.28152015	2.3056660	20	—	—
12052 Aretaon	10.6	X	262.57902	86.24969	219.77420	11.46643	0.0692004	0.08233228	5.2330627	20	4 4.5	17.6
12053 Turtlestar	14.1	X	103.04952	10.08778	302.30197	6.10124	0.1414671	0.27047081	2.3680404	20	—	—
12054 1997 TT ₉	11.8	X	291.58607	40.14545	44.52908	10.08483	0.0638053	0.08434299	5.1495592	20	10 16.7	18.5
12055 1997 YR ₁₁	14.5	X	69.24342	11.41450	12.26806	6.47848	0.0235149	0.30245874	2.1979879	20	—	—
12056 Yoshigeru	14.3	X	54.52100	171.78421	108.60082	6.28064	0.1605899	0.28558996	2.2837090	20	10 31.6	17.3
12057 Alfredsturm	14.9	X	36.17586	135.20226	0.03602	2.35416	0.0522440	0.31140404	2.1556912	20	2 5.7	16.9
12058 1998 DV ₁₁	14.8	X	358.15665	36.19152	166.11366	4.93034	0.1776021	0.22414458	2.6840085	20	3 15.8	17.3
12059 du Châtelet	14.2	X	97.55140	213.35562	61.06168	4.11442	0.1842880	0.24383360	2.5375056	20	11 29.3	18.1
12060 1998 FH ₂	14.4	X	359.58394	237.49603	346.98109	22.14489	0.2561791	0.27044445	2.3681943	20	3 28.9	16.2
12061 Alena	14.2	X	70.74332	279.83075	23.47270	3.88344	0.1918295	0.28664420	2.2781061	20	12 18.1	17.6
12062 Tilmanspohn	14.3	X	59.63395	74.88393	207.89314	6.26535	0.1985236	0.23915162	2.5705171	20	11 3.9	18.0
12063 1998 FH ₁₁	14.8	X	32.87389	98.80285	129.73383	8.77066	0.1301477	0.27425741	2.3461934	20	7 3.6	17.1
12064 Guiraudon	13.0	X	305.76342	202.92950	213.46165	21.52058	0.0723250	0.23893310	2.5720841	20	10 28.7	15.7
12065 Jaworski	15.3	X	290.02943	97.53304	160.71682	2.85429	0.1769532	0.26565823	2.3965539	20	2 8.8	18.7
12066 1998 FX ₃₉	14.5	X	76.63793	81.29094	213.48879	4.28681	0.2769705	0.24271250	2.5453135	20	12 12.4	18.8
12067 Jeter	15.3	X	184.09424	304.85073	342.26323	9.02354	0.1815808	0.25546468	2.4598888	20	—	—
12068 Khandrika	14.6	X	296.78032	156.38962	223.55347	5.02867	0.1887357	0.28325922	2.2962192	20	8 10.3	16.6
12069 1998 FC ₅₉	13.6	X	69.05065	156.58469	169.33291	7.13557	0.1789381	0.29042773	2.2582776	20	—	—
12070 Kilkis	14.6	X	252.64370	211.81274	46.10655	2.84658	0.1683361	0.25986781	2.4320233	20	1 4.4	18.3
12071 Davykim	14.0	X	6.33434	339.80631	47.43159	5.45557	0.1552274	0.29282469	2.2459371	20	—	—
12072 Anupamakotha	14.7	X	105.39555	168.02882	199.92529	4.69588	0.1221733	0.25667768	2.4521328	20	—	—
12073 Larimer	14.1	X	254.50628	73.80817	198.93306	6.24312	0.0842385	0.26236692	2.4165549	20	1 28.1	17.6
12074 Carolinelau	14.3	X	45.71982	83.44511	198.87798	9.43511	0.1321014	0.23698355	2.5861711	20	10 6.4	17.7
12075 Legg	14.4	X	201.96881	146.04605	133.43749	3.95839	0.1654846	0.25557274	2.4591953	20	—	—
12076 1998 FT ₇₀	14.9	X	31.03737	212.79505	32.12622	3.49614	0.2349601	0.22979434	2.6398332	20	8 9.6	17.6
12077 1998 FZ ₇₀	13.5	X	47.71493	225.62134	14.67217	14.53919	0.1415793	0.23214406	2.6219898	20	8 20.8	17.0

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12081 1998 FH ₁₁₅	14.0	X	348.73333	104.82516	270.11461	5.13970	0.2196163	0.28599871	2.2815326	20	12 13.0	15.9
12082 1998 FS ₁₁₈	14.0	X	305.53340	313.95374	359.89805	12.40110	0.2891950	0.22626053	2.6672487	20	4 24.5	17.4
12083 1998 FS ₁₂₁	14.2	X	15.00579	253.12357	333.49423	2.59476	0.0018437	0.31738312	2.1285319	20	5 17.5	16.5
12084 Unno	13.4	X	90.43702	28.43247	201.88057	13.41258	0.0943992	0.23769014	2.5810432	20	9 16.5	17.2
12085 1998 HV ₁₉	15.5	X	88.27157	60.43680	4.69897	4.10194	0.0627549	0.30804266	2.1713449	20	1 20.1	17.8
12086 Joshualevine	15.2	X	313.14054	16.05531	209.69164	5.19024	0.1081413	0.26448930	2.4036098	20	2 3.7	18.2
12087 Tiffanylin	15.2	X	88.90700	302.54018	69.60535	3.48367	0.1607104	0.29972722	2.2113217	20	—	—
12088 Macalintal	14.0	X	31.31293	334.48750	239.39971	6.24342	0.0740427	0.27268283	2.3552166	20	5 31.5	16.3
12089 Maichin	14.6	X	2.74949	116.43806	137.29786	3.37351	0.1210609	0.27295257	2.3536647	20	6 12.8	16.6
12090 1998 HX ₃₆	14.2	X	184.67561	110.69499	204.14230	7.06431	0.2228532	0.21165297	2.7886016	20	1 18.9	19.1
12091 Jesmalmquist	14.3	X	218.95526	95.88481	184.29048	5.86790	0.1056063	0.25654087	2.4530045	20	1 1.3	18.1
12092 1998 HH ₉₇	14.0	X	277.37709	211.66229	212.44821	8.19207	0.1462903	0.23902721	2.5714089	20	9 11.1	17.1
12093 Chrimatthews	15.1	X	287.25602	103.27210	187.89972	5.38326	0.0286925	0.26729982	2.3867317	20	4 12.3	17.8
12094 Mazumder	14.7	X	269.31177	2.22401	154.81651	4.45167	0.1041893	0.29471132	2.2363417	20	—	—
12095 Pinesl	13.6	X	289.01726	163.00949	345.38304	1.42745	0.0194758	0.20451960	2.8530722	20	—	—
12096 1998 HL ₁₂₀	13.0	X	137.34197	84.36964	133.11838	13.87159	0.1381946	0.24029030	2.5623900	20	10 30.7	17.3
12097 1998 HG ₁₂₁	13.7	X	234.28526	207.90544	134.84656	6.13866	0.1657789	0.26563997	2.3966637	20	4 4.4	17.3
12098 1998 HV ₁₂₂	12.9	X	254.70047	260.89934	96.47200	10.28333	0.2130205	0.18007275	3.1057802	20	5 10.8	17.9
12099 Meigooni	14.7	X	182.85943	342.06262	117.62838	5.74403	0.0545174	0.27525307	2.3405321	20	7 15.9	17.8
12100 Amiens	15.0	X	89.49313	234.75230	9.13002	2.70546	0.0398520	0.23548457	2.5971343	20	9 28.8	18.3
12101 Trujillo	13.6	X	30.32020	142.21263	165.74017	10.26097	0.0936095	0.19104187	2.9857287	20	10 6.9	17.5
12102 Piazzolla	13.7	X	341.50357	28.04181	211.70252	12.21403	0.1298017	0.22197226	2.7014914	20	4 10.6	16.9
12103 1998 KL	14.3	X	288.68725	243.33180	179.82617	5.44645	0.1598687	0.28354569	2.2946723	20	10 11.4	16.1
12104 Chesley	12.6	X	56.80264	177.24843	78.03610	11.14504	0.0253475	0.18851782	3.0123201	20	8 29.0	17.0
12105 1998 KA ₁₀	14.1	X	341.01789	247.83380	141.20643	4.74283	0.1656467	0.28542274	2.2846008	20	12 11.2	16.1
12106 Menghuan	15.3	X	209.11518	194.82849	202.46537	5.77401	0.1017900	0.26890827	2.3772049	20	5 20.4	18.8
12107 1998 KU ₄₆	14.5	X	59.59103	275.85544	215.36942	5.03472	0.0273386	0.30651052	2.1785747	20	3 4.7	17.8
12108 1998 KJ ₄₈	13.7	X	335.23004	152.86463	160.66726	5.07330	0.1684293	0.18175206	3.0866199	20	7 10.6	17.1
12109 1998 KD ₅₁	12.5	X	332.37474	112.91210	129.85054	8.80266	0.1461561	0.22046953	2.7137531	20	4 2.1	15.7
12110 1998 KL ₅₆	14.3	X	194.32400	261.16038	290.48437	1.43611	0.1079468	0.29369695	2.2414880	20	12 1.0	17.1
12111 Ulm	13.9	X	148.09672	341.70533	250.05233	3.88777	0.0665643	0.24054933	2.5605501	20	11 22.9	17.6
12112 Sprague	12.2	X	11.45118	101.61811	157.01606	22.89772	0.1439322	0.17961073	3.1111041	20	7 4.5	16.3
12113 Hollows	12.7	X	48.41520	236.86085	100.46969	11.71315	0.1080972	0.18912822	3.0058352	20	12 7.1	16.9
12114 1998 QJ ₈	13.1	X	222.25945	275.93627	140.15154	14.73417	0.1641805	0.17315702	3.1879339	20	6 22.6	18.3
12115 Robertgrimm	12.0	X	28.60067	333.17074	187.42070	17.82007	0.0863157	0.16987091	3.2289157	20	3 19.8	16.2
12116 1999 JA ₃₄	12.9	X	303.16601	251.26333	260.24344	8.73709	0.0479202	0.17054877	3.2203543	20	—	—
12117 Meagmessina	14.5	X	203.54983	19.09076	158.22664	3.06840	0.1768375	0.25465901	2.4650743	20	11 8.6	18.1
12118 Mirotsin	14.5	X	170.63414	40.59910	120.15857	6.09537	0.0932312	0.28688502	2.2768310	20	9 26.5	17.7
12119 Memamis	14.6	X	256.15124	108.75992	316.34315	6.63003	0.1104392	0.28300288	2.2976056	20	8 25.2	17.3
12120 1999 NQ ₄₁	14.9	X	139.66101	357.86595	20.90893	4.30603	0.0131792	0.31008609	2.1617951	20	1 21.2	17.4
12121 1999 NX ₄₈	13.8	X	118.72592	43.70606	166.41048	13.62131	0.1104689	0.24074190	2.5591845	20	9 28.0	17.6
12122 1999 NV ₅₅	12.6	X	140.95151	305.54294	245.03112	11.23027	0.0258680	0.19066198	2.9896934	20	9 10.2	17.1
12123 Pazin	14.3	X	131.73479	207.46627	179.85052	2.32085	0.1967956	0.25897856	2.4375873	20	2 22.5	17.7
12124 Hvar	13.9	X	76.71895	174.36788	177.82259	1.96172	0.0744024	0.19978861	2.8979367	20	—	—
12125 Jamesjones	13.4	X	313.31031	234.06436	71.73109	0.21514	0.1961526	0.18075935	3.0979105	20	5 17.6	17.2
12126 1999 RM ₁₁	10.1	X	285.63205	304.18612	351.00332	2.04544	0.2094742	0.08262437	5.2207225	20	4 1.0	16.9
12127 Mamiya	13.7	X	153.06080	317.92845	26.85555	3.55747	0.1869096	0.25656512	2.4528499	20	1 22.8	17.3
12128 Palermitti	13.2	X	340.83023	185.01412	177.82978	10.35238	0.0964764	0.18806574	3.0171456	20	10 1.4	16.8
12129 1999 RB ₁₃₈	12.9	X	266.64616	236.39977	41.65142	1.28295	0.1579998	0.17279390	3.1923986	20	2 21.8	17.6
12130 Mousa	14.6	X	326.55341	113.42576	192.53703	5.65528	0.1085135	0.22970265	2.6405357	20	6 22.0	17.6
12131 Echternach	14.4	X	274.61510	199.77102	277.88804	1.00152	0.0251932	0.19916622	2.9039709	20	11 28.1	18.2
12132 Wilmfröger	13.9	X	64.91061	355.42275	218.03948	3.02468	0.1364979	0.22711798	2.6605313	20	7 29.8	17.5
12133 Titulaer	13.5	X	223.30616	47.49492	18.55535	5.12828	0.1524805	0.17575570	3.1561925	20	7 6.4	18.5
12134 Hansfriedeman	13.7	X	143.77374	90.91893	12.74680	22.22239	0.0709398	0.17516967	3.1634680	20	5 26.9	18.8
12135 Terlingen	13.0	X	52.26584	256.79961	300.07148	12.24429	0.0893123	0.17570498	3.1570394	20	6 10.6	17.3
12136 Martinryle	13.2	X	357.58992	337.40982	332.34395	12.74875	0.1634196	0.22918326	2.6445237	20	8 27.6	15.8
12137 Williefowler	14.3	X	347.80231	327.13820	341.80630	5.32476	0.0261174	0.22804296	2.6533321	20	8 5.1	17.6
12138 Olinwilson	14.4	X	173.37184	61.55572	214.73815	6.35441	0.1134952	0.25220707	2.4810254	20	—	—
12139 Tomcowling	14.7	X	118.99945	241.61542	323.72480	3.07471	0.1227272	0.27910209	2.3189639	20	9 24.8	18.1
12140 Johnbolton	15.0	X	313.30440	156.03471	2.61840	2.01418	0.1104016	0.25195057	2.4827090	20	—	—
12141 Chushayashi	14.2	X	212.72178	130.80113	341.53597	1.90841	0.0428531	0.22915117	2.6447705	20	9 5.9	17.9
12142 Franklow	14.1	X	206.98676	283.49263	147.37216	4.08862	0.1614821	0.17557156	3.1586386	20	6 25.5	19.2
12143 Harwit	14.3	X	87.01812	183.10007	13.69231	7.21042	0.0477706	0.27705895	2.3303506	20	7 30.9	17.3
12144 Einhart	14.3	X	355.01940	19.87096	54.07217	2.69880	0.0396733	0.20107673	2.8855471	20	—	—
12145 Behaim	15.3	X	298.90060	291.45751	26.01494	4.74664	0.0877518	0.22669395	2.6638480	20	5 26.4	18.7
12146 Ostriker	14.1	X	341.26732	300.99891	358.97512	11.30609	0.1951448	0.22846534	2.6500607	20	7 8.8	16.8
12147 Bramante	14.7	X	10.05621	212.72421	220.64637	3.48469	0.0927416	0.25103264	2.4887576	20	—	—
12148 Caravaggio	14.0	X	261.02883	53.92906	116.08708	3.77116	0.0190872	0.20149630	2.8815401	20	—	—
12149 Begas	13.7	X	296.88353	123.62353	184.51273	12.71655	0.1229113	0.17764606	3.1340000	20	5 9.8	18.1
12150 De Ruyter	12.4	X	207.95444	150.18254	356.88876	10.51519	0.0551301	0.19046531	2.9917511	20	10 6.1	16.8
12151 Oranje-Nassau	14.4	X	27.10159	220.33915	288.83874	1.45766	0.1403739	0.26038050	2.4288298	20	2 19.0	16.7
12152 Aratus	15.5	X	166.07634	51.53914	215.83672	1.76882	0.0195067	0.29424513	2.2387032	20	—	—
12153 Conon	15.5	X	124.05779	272.75060	330.92569	3.63524	0.1285728	0.29002560	2.2603646	20	11 20.7	18.8
12154 Callimachus	13.8	X	27.59284	111.99704	195.39697	9.96699	0.0566112	0.18829646	3.0146804	20	9 24.1	17.8
12155 Hyginus	14.7	X	174.14092	301.68337	115.88154	3.98935	0.2066965	0.26435145	2.4044454	20	5 11.5	18.6
12156 Ubels	14.5	X	302.36969	139.57926	214.79302	1.91129	0.1199538	0.22841035	2.6504861	20	7 19.0	17.7
12157 Können	14.8	X	244.61914	82.68671	187.46609	5.82111	0.0962132	0.26302539	2.4125200	20	1 13.9	18.3

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12161 Avienius	15.8 ^m	X	168.47784	188.81660	223.83204	1.69412	0.2066239	0.26544102	2.3978611	20	4 29.3	19.8
12162 Bilderdijk	14.5	X	293.70919	197.93266	187.96166	13.43742	0.1615757	0.22901957	2.6457836	20	8 9.7	17.7
12163 Manilius	14.2	X	282.92088	261.66252	161.45212	4.38558	0.0690750	0.23108695	2.6299799	20	10 2.3	17.4
12164 Lowellgreen	14.6	X	357.46501	60.84333	132.29050	2.21203	0.0672738	0.30683128	2.1770561	20	2 27.3	16.7
12165 Ringleb	13.1	X	248.46577	320.41830	168.74140	9.77948	0.0209906	0.19089289	2.9872820	20	11 10.7	17.3
12166 Oliverherrmann	14.3	X	209.78100	329.11951	144.01552	6.58751	0.1826633	0.22881644	2.6473492	20	8 21.3	18.3
12167 Olivermüller	14.2	X	263.13530	296.83203	18.33077	9.60247	0.2161526	0.26692466	2.3889676	20	3 21.9	17.9
12168 Polko	12.7	X	12.04166	18.04265	300.92438	9.52960	0.0984488	0.18849343	3.0125799	20	9 17.2	16.7
12169 Munsterman	15.0	X	248.67335	163.90398	320.75712	4.34700	0.0236147	0.30000252	2.0299686	20	11 26.1	17.6
12170 Vanvollenhoven	14.2	X	13.99010	59.20720	247.53698	2.99252	0.2998969	0.18394117	3.0620816	20	10 4.2	17.4
12171 Johannink	15.0	X	298.98452	273.85437	310.79297	2.37252	0.0575700	0.21740937	2.7391588	20	1 31.6	18.8
12172 Niekdekort	13.6	X	337.10807	225.47533	14.36532	7.60412	0.0708412	0.26734218	2.3864796	20	4 6.5	16.2
12173 Lansbergen	14.0	X	82.89185	262.96398	185.40447	3.43111	0.0608069	0.21742792	2.7390030	20	2 25.7	17.5
12174 van het Reve	13.5	X	255.70853	189.52690	195.88773	12.95143	0.1109587	0.22457154	2.6806055	20	6 25.3	17.5
12175 Wimhermans	13.3	X	289.35134	304.91457	70.87395	2.88391	0.1813602	0.17939182	3.1136345	20	7 15.9	17.4
12176 Hidayat	15.0	X	292.52950	194.33791	49.81993	2.03164	0.1435696	0.26534003	2.3984695	20	1 30.1	18.3
12177 Raharto	15.1	X	4.76006	93.59858	95.80456	3.31335	0.0821832	0.26543580	2.3978925	20	3 11.6	17.7
12178 Dhani	14.7	X	87.12350	14.26779	117.85224	4.49304	0.0260205	0.22071606	2.7117320	20	4 26.1	18.3
12179 Taufiq	13.5	X	322.46595	172.99093	149.78600	11.81666	0.2029005	0.18060004	3.0997320	20	6 25.8	17.2
12180 Kistemaker	13.9	X	296.81407	170.61222	136.90729	10.33959	0.0938032	0.17729445	3.1381422	20	5 14.5	18.3
12181 1964 VL ₁	13.9	X	266.47783	356.81175	62.99692	5.42617	0.2563734	0.22577014	2.6711097	20	8 5.6	17.6
12182 Storm	14.9	X	232.96814	178.88565	190.66071	1.86375	0.1480895	0.26682208	2.3895798	20	5 5.6	18.4
12183 1975 SU ₁	13.3	X	73.39883	16.75830	172.74282	1.49611	0.1293628	0.16991853	3.2283124	20	7 5.5	17.8
12184 1975 SB ₂	15.0	X	75.00500	184.61932	190.10792	7.85791	0.1265637	0.29141210	2.2531892	20	—	—
12185 Gasprinskij	13.9	X	205.13567	30.00767	14.61048	5.54478	0.0932453	0.21729490	2.7401207	20	5 24.5	18.0
12186 Mitukurigen	13.7	X	23.62736	144.58903	265.37768	0.81202	0.0600884	0.19929889	2.9026820	20	—	—
12187 Lenagoryunova	13.8	X	285.96889	195.52784	193.71300	13.28151	0.2394322	0.22646113	2.6656734	20	7 19.6	17.5
12188 Kalaallitnunaat	14.7	X	334.68758	214.34407	133.23127	5.23317	0.2306570	0.28265626	2.2994836	20	9 24.5	15.8
12189 Dovgyj	14.5	X	38.12382	144.60079	176.38444	5.68280	0.1497345	0.28433798	2.2904077	20	12 1.1	17.4
12190 Sarkisov	13.1	X	98.42883	144.17633	204.23388	8.98939	0.0591199	0.24121117	2.5558642	20	—	—
12191 Vorontsova	13.3	X	20.07673	275.04363	56.10755	5.07671	0.2726190	0.23555724	2.5966001	20	11 26.6	16.4
12192 1978 VD ₅	14.2	X	202.41082	289.42068	182.58545	1.26304	0.1191703	0.18134304	3.0912594	20	8 13.0	19.0
12193 1979 EL	12.2	X	325.45589	320.91319	90.83154	14.82166	0.1589378	0.23060419	2.6336492	20	11 25.3	14.9
12194 1979 KO ₁	13.8	X	255.95518	5.38189	267.68460	7.28735	0.2292965	0.25901840	2.4373373	20	1 20.5	18.0
12195 1979 MM ₄	16.0	X	235.68851	55.97524	202.53834	2.80074	0.1676733	0.30324804	2.1941722	20	—	—
12196 1979 MM ₈	14.6	X	209.16392	154.74198	178.24405	3.65154	0.1246524	0.25700315	2.4500620	20	2 25.6	18.3
12197 Jan-Otto	14.0	X	31.63959	239.55007	171.43868	5.33084	0.1960786	0.24104899	2.5570105	20	—	—
12198 1980 PJ ₁	14.6	X	198.30142	130.36979	278.63444	4.55025	0.2415700	0.31418721	2.1429418	20	5 18.2	18.2
12199 Sohlman	13.6	X	186.35565	149.62848	224.56414	6.49437	0.1102091	0.26192025	2.4193015	20	3 23.7	17.2
12200 1981 EM ₇	13.5	X	54.99412	73.87286	221.77972	5.80542	0.2117121	0.23737015	2.5833623	20	11 16.2	17.3
12201 1981 ED ₁₂	14.5	X	308.88089	340.79926	201.14967	11.43240	0.0797570	0.24800763	2.5089539	20	—	—
12202 1981 EM ₁₃	15.7	X	325.74310	311.22851	232.79107	5.00561	0.0811951	0.29947453	2.2125654	20	—	—
12203 1981 EO ₁₉	14.2	X	306.71616	260.73143	181.16035	8.76245	0.0710927	0.19153187	2.9806343	20	11 22.7	18.1
12204 1981 EK ₂₆	15.1	X	157.01328	106.34667	163.23570	2.88162	0.1209322	0.24274776	2.5450671	20	—	—
12205 1981 EZ ₂₆	15.1	X	288.25756	272.20653	260.24027	1.45193	0.0762510	0.24586156	2.5235328	20	—	—
12206 1981 EG ₂₇	14.8	X	184.70406	269.49714	313.74490	2.27700	0.0594835	0.19164940	2.9794155	20	12 12.9	19.2
12207 1981 EU ₂₈	14.3	X	160.71383	19.78526	296.66328	4.11003	0.1939061	0.29649404	2.2273685	20	—	—
12208 1981 EF ₃₅	15.5	X	31.97331	272.25129	165.13969	3.44156	0.0777257	0.24735813	2.5133440	20	—	—
12209 1981 EF ₃₇	13.0	X	122.61989	296.32237	1.73059	15.15835	0.1233878	0.24243681	2.5472428	20	—	—
12210 1981 EA ₄₂	15.6	X	121.63311	219.16665	173.50277	7.59534	0.1075211	0.30043431	2.2078507	20	1 29.4	18.3
12211 Arnoschmidt	12.7	X	346.96195	260.98092	35.76120	15.22119	0.1587778	0.17873154	3.1212982	20	7 13.4	16.5
12212 1981 QR ₂	14.8	X	321.92057	323.38822	346.26342	3.69196	0.2373816	0.27601359	2.3362308	20	5 30.9	16.8
12213 1981 QN ₃	13.8	X	265.56043	201.03767	138.88269	1.98339	0.1949981	0.17203470	3.2017838	20	4 30.3	18.7
12214 Miroshnikov	11.8	X	304.82866	32.06944	254.59043	14.39209	0.0480196	0.17214379	3.2004311	20	4 11.7	16.3
12215 1981 US ₂₂	14.5	X	47.96459	288.73922	76.21204	6.53533	0.1531812	0.28244216	2.3006455	20	—	—
12216 1981 WF ₉	14.6	X	326.66295	141.97392	206.14149	6.24288	0.1350690	0.27555116	2.3388438	20	8 27.8	16.8
12217 1982 JD ₂	15.0	X	340.36485	95.00514	106.94451	4.08574	0.0680873	0.30753913	2.1737143	20	2 12.8	17.1
12218 Fleischer	13.5	X	128.48741	290.58806	108.21642	4.86558	0.1411251	0.29959388	2.2119778	20	2 24.3	16.2
12219 Grigor'ev	14.2	X	148.33455	323.92909	343.39027	3.30185	0.1751206	0.29546711	2.2325265	20	—	—
12220 Semenchar	14.4	X	50.02731	84.73953	309.05931	3.19144	0.1479891	0.29169812	2.2517161	20	—	—
12221 Ogatakoan	13.9	X	33.48869	213.46646	106.59880	1.98453	0.0853338	0.23287690	2.6164861	20	11 2.0	17.2
12222 Perotto	13.7	X	279.32109	209.82912	254.03938	10.78706	0.1844526	0.23269422	2.6178554	20	11 2.9	16.7
12223 Hoskin	13.3	X	296.85124	231.22512	191.67012	10.28290	0.1087836	0.18633318	3.0358194	20	10 8.8	16.9
12224 Jimcornell	13.7	X	97.94775	137.67545	196.59991	1.61400	0.0498324	0.19827077	2.9127078	20	—	—
12225 Yanfernández	14.2	X	244.58938	116.34299	153.66314	4.76708	0.1940979	0.29932759	2.2132895	20	1 5.2	17.7
12226 Caseyllise	14.7	X	1.51455	5.22326	25.64830	4.98141	0.1600991	0.28539393	2.2847546	20	—	—
12227 Penney	14.7	X	52.84937	83.06347	375.73074	5.64544	0.1898787	0.28765119	2.2727863	20	—	—
12228 1985 TZ ₃	14.2	X	94.84162	344.37976	206.66085	5.33732	0.1731693	0.28692757	2.2766059	20	12 24.4	17.8
12229 Paulsson	13.7	X	152.89740	265.47587	39.86092	4.59854	0.1556595	0.29169815	2.2517159	20	—	—
12230 1986 QN	13.7	X	46.91622	241.07171	155.08193	4.72074	0.2481010	0.24134325	2.5549316	20	—	—
12231 1986 QQ ₁	14.2	X	65.15191	20.95707	27.77394	2.80994	0.2181673	0.24350183	2.5398100	20	—	—
12232 1986 QZ ₂	13.4	X	132.61714	248.66409	10.75169	9.62143	0.1680481	0.23931900	2.5693184	20	12 9.2	17.7
12233 1986 QF ₃	14.2	X	62.91421	261.67944	117.91611	4.95780	0.2491933	0.24076092	2.5590497	20	—	—
12234 Shkuratov	13.2	X	26.61748	208.65124	144.22323	12.36569	0.2005720	0.23633265	2.5909174	20	12 23.6	16.8
12235 Imranakperov	12.0	X	323.57077	82.08820	264.98707	14.65122	0.1087870	0.17183294	3.2042896	20	8 3.7	16.2
12236 1987 DD ₆	14.7	X	145.57484	42.65875	155.00348	4.15695	0.0926427	0.28159806	2.3052407	20	10 15.6	18.0
12237 Coughlin	14.0	X	212.14294	14.14370	169.84133	23.43233	0.2009518	0.28405401	2.2919339	20	12 1.2	17.7
12238 Actor												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12241 Lefort	15.4	X	344.11443	244.63480	89.80989	1.69629	0.2308722	0.27736143	2.3286560	20	9 24.9	16.6
12242 Koon	10.7	X	286.65511	93.11994	222.65734	29.77862	0.0676322	0.08544760	5.1050831	20	5 13.9	17.4
12243 1988 RD ₁	12.8	X	35.00901	40.90453	318.15067	9.71149	0.1012000	0.18973697	2.9994025	20	12 14.8	17.0
12244 Werfel	13.1	X	336.82136	163.33289	188.79381	8.99527	0.1005401	0.18260901	3.0769557	20	9 7.1	17.0
12245 1988 RM ₇	14.4	X	18.09794	5.45494	296.47829	1.36079	0.2019458	0.18616167	3.0376836	20	9 21.2	17.8
12246 Pliska	13.8	X	343.87492	186.74220	181.46072	5.99710	0.1155937	0.27957187	2.3163654	20	11 7.6	16.0
12247 1988 RO ₁₁	14.1	X	334.48714	0.66932	21.76960	1.26979	0.1760431	0.18608237	3.0385466	20	10 15.8	17.3
12248 1988 RX ₁₂	13.1	X	14.28088	166.14048	194.10488	9.79494	0.1020010	0.18832156	3.0144125	20	11 19.6	17.0
12249 1988 SH ₂	12.7	X	56.58948	222.58987	108.67335	11.36031	0.1119284	0.18998019	2.9968419	20	12 10.1	17.0
12250 1988 TT	13.0	X	59.28156	336.34409	3.94230	10.79535	0.0927342	0.18911790	3.0059444	20	12 19.7	17.5
12251 1988 TO ₁	13.8	X	313.75625	314.35636	102.89983	2.54529	0.2431770	0.18466436	3.0540817	20	10 17.6	16.8
12252 Gwangju	13.1	X	258.60702	245.03655	175.74001	12.28676	0.2252160	0.17810099	3.1286609	20	7 25.6	18.0
12253 1988 VG ₄	12.6	X	217.91783	142.68594	273.25459	6.20203	0.1524508	0.17415878	3.1756976	20	6 18.1	17.7
12254 1988 XJ ₁	12.8	X	274.43882	309.02201	73.26215	13.62224	0.0392118	0.17639160	3.1488414	20	7 26.9	17.3
12255 1988 XR ₁	13.8	X	225.71978	339.88465	81.94288	7.28518	0.1050734	0.26989246	2.3714222	20	7 11.9	17.0
12256 1989 CJ ₈	13.7	X	344.09512	66.51461	144.92262	8.65115	0.1976120	0.25483040	2.4639689	20	2 22.2	15.8
12257 Lassne	14.0	X	219.39509	28.61343	204.46499	13.50563	0.1263382	0.24356797	2.5393502	20	—	—
12258 Oscarwilde	14.5	X	132.42529	347.58410	251.78815	2.82056	0.1411831	0.23629869	2.5911656	20	11 15.5	18.7
12259 Szukalski	14.4	X	251.79627	102.52818	158.66078	4.17836	0.1606029	0.30311787	2.1948004	20	1 1.6	17.8
12260 1989 SP ₁₁	13.4	X	28.86006	57.50622	304.81413	0.85411	0.1184912	0.19555645	2.9395981	20	12 14.8	17.3
12261 Ledouanier	15.2	X	156.94872	116.44696	163.79881	5.93111	0.1574248	0.29616153	2.2290353	20	—	—
12262 Nishio	13.2	X	208.99729	190.23610	217.77640	5.44465	0.1395438	0.21296130	2.7771687	20	6 1.1	17.5
12263 1989 YA ₄	14.6	X	282.57946	254.26233	259.11052	0.33143	0.1403600	0.28720604	2.2751341	20	—	—
12264 1990 CD	13.8	X	183.60240	319.94011	287.12163	5.56674	0.1067864	0.28578385	2.2826760	20	—	—
12265 1990 FG	13.8	X	338.61084	2.23996	356.94651	25.73588	0.0304349	0.37315103	1.9107900	20	10 15.7	15.9
12266 1990 FL	14.2	X	50.95647	47.38168	161.80426	24.17666	0.1909291	0.26741995	2.3860169	20	7 15.5	17.4
12267 Denneau	15.8	X	172.29201	255.87165	240.09538	19.14679	0.0703677	0.36797597	1.9286633	20	8 21.7	18.6
12268 1990 OY ₁	13.3	X	73.26376	210.13930	72.81403	5.80918	0.1755646	0.23569431	2.5955934	20	11 15.6	17.2
12269 1990 QR	13.2	X	37.58786	123.88497	168.72287	13.55515	0.1754747	0.23274348	2.6174860	20	10 18.3	16.6
12270 Bozar	14.9	X	346.68279	202.29792	145.55922	3.27258	0.1569850	0.23123382	2.6288662	20	10 3.7	17.4
12271 1990 RC ₂	13.8	X	204.09233	166.11010	198.79461	4.31142	0.0527857	0.21887715	2.7268993	20	4 5.1	17.7
12272 Gedlylee	13.3	X	277.58326	95.28542	301.27942	11.67516	0.1723858	0.22622467	2.6675306	20	7 30.8	16.5
12273 1990 TS ₄	13.4	X	326.81443	298.19117	101.14476	10.01973	0.0623482	0.23045950	2.6347514	20	11 9.3	16.7
12274 1990 UJ ₁	13.4	X	246.97895	197.73892	226.15594	13.05592	0.1603317	0.22453196	2.6809205	20	7 25.7	17.6
12275 Marcelgoffin	12.9	X	160.47578	314.44161	97.70712	10.46343	0.1542995	0.21478946	2.7613878	20	4 25.7	17.5
12276 IJzer	13.5	X	279.82055	230.38309	152.90051	7.02450	0.1433457	0.22364925	2.6879700	20	7 20.1	16.9
12277 Tajimasatonokai	13.3	X	281.17814	1.32094	78.84474	14.63449	0.1351103	0.22777628	2.6554026	20	10 20.0	16.7
12278 Kishinoki	13.5	X	253.05070	218.33587	215.14926	6.59471	0.1678132	0.22412688	2.6841498	20	8 15.4	17.4
12279 Laon	12.7	X	2.01571	125.57949	88.25799	10.25824	0.0897909	0.21368405	2.7709030	20	4 19.3	16.1
12280 Reims	13.4	X	217.15409	222.92135	157.60254	3.04718	0.0855881	0.21696443	2.7429024	20	5 9.4	17.5
12281 Chaumont	12.9	X	346.57296	145.66882	119.05649	6.35600	0.0139968	0.21738163	2.7393919	20	6 2.7	16.5
12282 Crombecq	13.0	X	134.81849	66.04808	153.53007	8.12781	0.2529582	0.21980218	2.7192432	20	10 27.5	17.9
12283 1991 EC	13.3	X	9.85626	129.29706	2.05886	7.47838	0.2484019	0.20125563	2.8838369	20	—	—
12284 Pohl	13.1	X	18.28400	34.35077	187.09436	14.67673	0.1927903	0.17354236	3.1832132	20	5 31.4	16.8
12285 1991 FN ₂	13.7	X	254.52042	335.83521	157.47665	3.81792	0.1015523	0.19001038	2.9965245	20	11 10.6	17.8
12286 Poiseuille	14.8	X	200.72144	197.17853	58.94100	2.07632	0.0643146	0.29405426	2.2396719	20	—	—
12287 Langres	13.9	X	322.42179	72.29410	212.92658	4.39114	0.1358938	0.17295091	3.1904663	20	5 14.2	17.8
12288 Verdun	14.3	X	82.71777	44.94472	26.26090	7.18254	0.1118020	0.30088470	2.2056468	20	1 30.2	16.5
12289 Carnot	14.2	X	55.13139	81.91053	328.18554	2.38899	0.0934342	0.29555039	2.2321071	20	—	—
12290 1991 LZ	14.3	X	261.89788	48.77540	202.57390	10.86613	0.2353454	0.26259569	2.4151512	20	—	—
12291 Gohnaumann	12.7	X	306.46961	217.16870	90.00034	7.14723	0.0716833	0.16992157	3.2282739	20	5 27.9	17.1
12292 Dalton	13.4	X	120.41226	116.83986	71.48356	6.19655	0.0978013	0.17690202	3.1427815	20	8 26.8	18.2
12293 1991 NV ₁	13.7	X	239.98907	135.49160	252.92172	6.18127	0.1216171	0.26795307	2.3828510	20	6 10.4	16.7
12294 Avogadro	14.8	X	335.63242	279.18057	14.63610	1.97117	0.1200231	0.26993630	2.3711655	20	6 21.3	16.8
12295 Tasso	14.0	X	175.04784	294.78415	110.77886	3.29798	0.2120220	0.26279125	2.4139528	20	4 27.6	18.0
12296 1991 PL ₁₃	14.7	X	192.46487	47.04917	267.45558	1.63313	0.1788209	0.25678828	2.4514286	20	1 19.9	18.7
12297 1991 PT ₁₄	14.4	X	79.66283	53.98852	141.69770	2.82815	0.0486135	0.26949388	2.3737599	20	7 15.2	17.3
12298 Brecht	14.5	X	195.74485	69.62372	306.38020	8.18189	0.2406163	0.26138075	2.4226294	20	4 2.4	18.8
12299 1991 PV ₁₇	14.4	X	230.51076	317.79765	74.55012	3.02492	0.1943680	0.26536138	2.3983409	20	5 28.9	18.1
12300 1991 RX ₁₀	14.0	X	217.98535	345.85841	1.27987	12.76726	0.1015755	0.25944336	2.4346751	20	3 24.0	17.4
12301 Eötvös	15.0	X	267.47571	17.59131	23.73618	3.40432	0.2341270	0.26982141	2.3718385	20	7 17.9	18.1
12302 1991 RV ₁₇	14.9	X	219.80424	17.17895	326.04371	2.02713	0.2173736	0.26091202	2.4255300	20	3 16.5	18.9
12303 1991 RB ₂₄	14.4	X	302.11680	143.34357	141.86095	4.02034	0.2132080	0.26515700	2.3995731	20	3 27.2	17.3
12304 1991 SR ₁	13.2	X	293.18437	157.70995	208.13081	12.77232	0.1644798	0.23390150	2.6088396	20	7 11.3	16.6
12305 1991 TE ₁	13.6	X	292.36311	21.99093	89.33227	14.74021	0.1172996	0.24074253	2.5591800	20	12 19.1	16.1
12306 Pebronstein	14.0	X	331.17357	89.89049	119.69891	3.71073	0.1214980	0.25775433	2.4452996	20	2 9.2	16.9
12307 1991 UA	12.9	X	221.05197	27.62332	352.01203	2.34573	0.2521500	0.12408567	3.9809645	20	5 2.9	19.4
12308 1991 VB ₅	13.4	X	32.95024	187.74526	194.76342	14.78663	0.1204917	0.24239047	2.5475674	20	—	—
12309 Tommygrav	14.4	X	194.23218	108.26891	321.17980	0.72025	0.0307160	0.21976242	2.7195712	20	6 17.5	18.2
12310 Lontontario	14.3	X	233.86371	225.59162	141.34757	1.70286	0.1879146	0.21827832	2.7318844	20	5 1.6	18.5
12311 Ingemyr	14.4	X	277.90432	3.76668	52.26707	5.41095	0.1947051	0.22810182	2.6528756	20	8 27.8	17.7
12312 Väte	14.1	X	186.72881	285.26307	110.13513	7.04471	0.1277490	0.21702887	2.7423595	20	4 27.5	18.5
12313 1992 EX ₁₀	14.6	X	314.24846	206.10915	355.62335	5.99933	0.0568768	0.20862549	2.8155147	20	1 25.4	18.4
12314 1992 EE ₁₄	14.5	X	21.94130	354.44673	200.00025	3.53262	0.0376380	0.21444508	2.7643434	20	4 18.3	18.1
12315 1992 FA ₂	12.8	X	202.92654	346.18699	73.91817	6.32065	0.0481176	0.21746983	2.7386511	20	6 14.7	16.7
12316 1992 HG	12.2	X	341.98308	90.72504	215.94095	7.98016	0.1257122	0.18124352	3.0923910	20	7 14.7	16.0
12317 Madicampbell	13.5	X	168.79013	201.6								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12321 Zurakowski	15.0	X	136.94135	144.33980	171.83719	4.89828	0.2163157	0.29693289	2.2251733	20	—	—
12322 1992 QW	15.5	X	76.90166	339.88785	5.43557	5.93538	0.2039580	0.29259118	2.2471319	20	—	—
12323 Haeckel	14.2	X	281.28524	216.69708	22.48874	4.18614	0.1530609	0.30198292	2.2002961	20	1 4.3	17.2
12324 Van Rompaey	15.0	X	83.68538	104.06017	204.88778	2.34645	0.1408307	0.28997727	2.2606157	20	—	—
12325 Bogota	14.3	X	346.68416	76.55658	35.12153	4.75289	0.0809721	0.29421984	2.2388315	20	—	—
12326 Shirasaki	14.6	X	35.27914	17.47945	2.92606	5.83507	0.1866986	0.28942335	2.2634992	20	—	—
12327 Terbruggen	15.5	X	279.58130	6.02889	58.72147	1.22179	0.1103812	0.28202872	2.3028933	20	10 3.2	17.7
12328 1992 SK ₁₃	14.7	X	25.06419	59.98621	307.70856	4.56418	0.1804766	0.28724629	2.2749216	20	—	—
12329 Liebermann	13.9	X	227.89733	55.84597	262.78160	4.32147	0.1595290	0.26646077	2.3917394	20	2 22.4	17.6
12330 1992 UX ₂	14.6	X	103.76400	125.01919	211.13900	5.97046	0.2206153	0.29179964	2.2511938	20	—	—
12331 1992 UH ₆	13.9	X	155.28885	292.72606	64.58598	6.23804	0.1949703	0.29796239	2.2200449	20	2 6.6	17.2
12332 1992 UJ ₆	14.4	X	4.80185	185.68134	205.30400	6.56126	0.1965634	0.28537930	2.2848327	20	—	—
12333 1992 WJ ₂	13.9	X	347.35692	273.60354	51.25827	7.12546	0.1482658	0.27749641	2.3279008	20	9 12.6	15.9
12334 1992 WD ₃	14.0	X	25.13969	279.15010	148.65599	5.43967	0.1392090	0.28906141	2.2653882	20	—	—
12335 Tatsukushi	13.9	X	142.37949	43.97374	173.85027	5.74948	0.0711335	0.28026566	2.3125411	20	11 7.7	17.0
12336 1992 WO ₃	13.4	X	286.89307	237.92501	221.05484	20.83516	0.2620597	0.28079248	2.3096476	20	11 19.3	14.7
12337 1992 WV ₃	14.0	X	277.96782	54.33663	12.36741	5.38787	0.1026571	0.27827457	2.3235590	20	10 3.3	16.4
12338 1992 XE	13.8	X	17.46784	6.46752	99.76335	6.21250	0.1052348	0.29067438	2.2569999	20	—	—
12339 Carloo	14.0	X	286.72549	260.65473	302.20552	3.78763	0.1113307	0.28969605	2.2620785	20	—	—
12340 Stalle	13.8	X	215.09403	289.39453	90.06761	7.55876	0.1330151	0.26695453	2.3887893	20	5 3.3	17.4
12341 Calevoet	14.9	X	251.61463	267.77421	118.06027	3.17871	0.2228320	0.26923753	2.3752664	20	6 8.4	18.4
12342 Kudohmichiko	14.6	X	223.46530	16.52525	74.58849	4.09823	0.1553096	0.27115334	2.3640650	20	8 14.3	17.9
12343 Martinbeech	15.1	X	105.79021	56.99348	199.62239	3.19391	0.2466010	0.23620624	2.5918417	20	11 17.8	19.4
12344 1993 FB ₁	13.2	X	189.60775	162.65501	65.65890	8.65900	0.1487252	0.23945990	2.5683105	20	12 26.2	17.2
12345 1993 FT ₈	14.5	X	141.86702	313.99995	106.40435	3.35036	0.1617250	0.25733421	2.4479602	20	4 13.7	18.1
12346 1993 FK ₂₅	14.5	X	124.19793	187.66450	224.78437	2.12076	0.1793632	0.25403375	2.4691176	20	3 15.4	18.0
12347 1993 FW ₃₇	14.0	X	175.23298	0.97864	183.75111	11.77123	0.1107218	0.23468181	2.6030535	20	10 23.1	17.9
12348 1993 FX ₄₀	14.5	X	45.84223	71.98398	181.72746	13.64836	0.0954211	0.22767375	2.6561998	20	8 18.9	18.1
12349 1993 GO	13.5	X	264.34740	145.88675	57.53930	13.61423	0.1867748	0.24393633	2.5367932	20	—	—
12350 Feuchtwanger	13.8	X	221.61791	182.77771	42.98004	6.30254	0.1609572	0.24244828	2.5471624	20	—	—
12351 1993 JD	13.1	X	170.84042	1.44052	223.42058	12.50168	0.1123054	0.23548816	2.5971079	20	12 5.6	17.1
12352 Jepejacobsen	11.9	X	260.79269	325.54923	116.71206	15.93022	0.1123194	0.18697246	3.0288955	20	9 18.1	16.3
12353 Marquez	13.5	X	182.77133	100.47639	149.12434	2.48890	0.0148364	0.19748891	2.9203904	20	—	—
12354 Hemmerechts	13.2	X	233.05195	307.08287	161.93080	10.00873	0.0536726	0.18357967	3.0661001	20	9 20.7	17.5
12355 Coelho	13.6	X	154.55663	218.41690	189.49676	1.71094	0.0714139	0.20592580	2.8400689	20	4 5.3	17.7
12356 Carlscheele	13.3	X	89.06363	196.52401	192.18286	1.60956	0.1037824	0.19588911	2.9362691	20	—	—
12357 Toyako	12.8	X	281.66777	211.02281	172.78085	11.23528	0.0864632	0.17715382	3.1398027	20	7 27.5	17.3
12358 Azzurra	13.6	X	70.67439	337.81405	207.75060	7.58973	0.1100343	0.21100393	2.7943171	20	6 25.1	17.4
12359 Cajigal	12.9	X	226.38399	223.50844	175.00423	0.94503	0.1538291	0.17193708	3.2029957	20	6 4.9	17.9
12360 Unilandes	13.4	X	233.25105	319.40425	62.86294	2.38085	0.1926130	0.17162813	3.2068384	20	5 19.6	18.6
12361 1993 TB	14.0	X	304.42214	263.70778	101.11567	2.68532	0.1813303	0.17820392	3.1274560	20	7 24.5	17.7
12362 Mumuryk	13.0	X	310.64214	167.90860	196.40497	13.95423	0.0940106	0.17746294	3.1361557	20	8 9.9	17.2
12363 Marinmarais	13.1	X	33.89186	138.90523	99.71689	2.61114	0.1343974	0.17519753	3.1631325	20	7 14.2	16.9
12364 Asadagouryu	15.0	X	157.31810	200.28664	204.30159	2.16177	0.0517647	0.30929396	2.1654845	20	3 25.4	17.5
12365 Yoshitoki	12.9	X	163.90019	74.70693	100.06189	14.83089	0.0330813	0.17454802	3.1709746	20	9 28.4	17.8
12366 Luisapla	14.3	X	164.19248	9.39453	219.96564	3.42611	0.1137443	0.28550687	2.2841520	20	12 14.1	17.6
12367 Ourinhos	14.6	X	8.46881	272.29328	124.32022	2.30835	0.1410355	0.29211848	2.2495554	20	—	—
12368 Mutsaers	14.5	X	33.76353	204.50516	39.46829	1.98290	0.2068832	0.27291463	2.3538828	20	8 13.3	16.7
12369 Pirandello	14.1	X	164.59627	83.57710	121.68305	4.96544	0.0895503	0.28405743	2.2919156	20	11 16.3	17.4
12370 Kageyasu	14.4	X	177.50780	25.92883	174.93844	2.41655	0.1295411	0.28249294	2.3003697	20	11 20.3	17.6
12371 1994 GL ₉	14.5	X	213.34108	333.25928	224.63379	3.51114	0.1013655	0.28579799	2.2826006	20	—	—
12372 Kagesuke	14.5	X	249.60419	18.42489	166.51825	4.21350	0.1033882	0.28680853	2.2772358	20	—	—
12373 Lancelarmstrong	14.2	X	250.93042	149.95991	118.49345	6.75221	0.1144564	0.25691390	2.4506294	20	1 19.1	17.8
12374 Rakhat	13.8	X	79.17341	201.90670	123.39977	8.98528	0.3061801	0.24180571	2.5516730	20	—	—
12375 1994 NO ₁	14.1	X	262.18541	338.28998	260.78178	5.00317	0.1766520	0.28982845	2.2613895	20	—	—
12376 Cochabamba	13.4	X	153.51787	91.76990	131.90076	6.60979	0.2423462	0.23957486	2.5674888	20	11 16.5	18.0
12377 1994 PP	12.9	X	199.86681	53.60583	317.71874	33.40731	0.2979337	0.21469657	2.7621842	20	3 16.1	18.6
12378 1994 PK ₁	14.2	X	275.67744	264.53585	69.55663	16.82171	0.3331881	0.22185958	2.7024060	20	4 21.5	18.6
12379 Thulin	14.1	X	62.97796	242.37776	310.84484	3.41968	0.0707990	0.22142562	2.7059357	20	6 19.3	17.7
12380 Sciascia	13.7	X	121.11994	320.61508	171.32178	5.34694	0.0625244	0.22009946	2.7167941	20	6 12.7	17.6
12381 Hugoclaus	13.5	X	49.05265	318.12294	185.41067	9.06545	0.1002660	0.21394243	2.7686715	20	3 26.4	16.7
12382 Niagara Falls	14.7	X	255.86923	165.25044	130.37455	1.00034	0.0420216	0.21210009	2.7846811	20	3 10.9	18.7
12383 Eboshi	13.4	X	295.60233	294.67727	56.06571	8.28528	0.1338231	0.18246667	3.0785558	20	6 28.9	17.5
12384 Luigimartella	12.9	X	30.91409	347.37546	322.46565	9.87289	0.0954876	0.19100388	2.9861246	20	10 3.6	17.0
12385 1994 UO	13.9	X	90.56396	240.74967	146.42319	2.75991	0.0846502	0.19999187	2.8959729	20	—	—
12386 Nikolova	14.0	X	103.91195	1.91189	53.36813	3.13200	0.1476525	0.20601531	2.8392462	20	2 27.5	17.9
12387 Tomokofujiwara	12.6	X	171.78594	232.92907	231.35072	16.99226	0.0624475	0.21737704	2.7394304	20	7 2.7	16.9
12388 Kikunokai	13.5	X	33.39855	330.60554	74.14075	3.05658	0.1185472	0.19659737	2.9292127	20	—	—
12389 1994 WU	12.7	X	138.32215	301.12009	253.59521	13.09714	0.1638104	0.18195860	3.0842838	20	9 16.1	18.0
12390 1994 WB ₁	15.0	X	322.63384	88.18937	69.67487	24.81105	0.1517025	0.39003256	1.8552487	20	—	—
12391 Eoadachi	12.9	X	260.08383	266.38613	96.71702	9.12024	0.2166567	0.21655879	2.7463265	20	5 21.1	17.1
12392 1994 WR ₂	13.8	X	209.34526	319.59751	69.69288	9.01852	0.2307799	0.21282637	2.7783423	20	5 6.7	18.6
12393 1994 YC ₁	13.5	X	211.29338	79.50819	68.84611	0.40524	0.1158330	0.18239762	3.0793326	20	10 6.3	18.2
12394 1995 BQ	14.1	X	207.17817	311.53569	128.22970	1.26447	0.2231096	0.17226789	3.1988938	20	7 3.2	19.4
12395 Richnelson	12.2	X	33.82778	16.44466	232.38018	21.09676	0.0516835	0.16917112	3.2378140	20	7 11.4	16.9
12396 Amyphillips	13.0	X	180.23707	79.12589	71.72557	20.10580	0.3124147	0.17715997	3.1397301	20	9 12.9	19.1
12397 Peterbrown	12.8	X	180.75585	135.08979	35.38310	8.64904	0.1125504	0.17500517	3.1654500	20	10 3.8	17.8
12398 Pickhardt	15.8	X	297.66233	171.76714	78.17824	1.05264	0.1289725	0.30995819				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12401 Tucholsky	15.0	X	269.65014	152.29361	134.18992	1.93372	0.1775235	0.26630221	2.3926887	20	2 23.5	18.4
12402 1995 PK	14.3	X	122.93865	235.49726	132.15038	5.20690	0.1291040	0.29637513	2.2279642	20	1 2.1	16.7
12403 1995 QD ₃	14.0	X	161.15596	110.52277	315.48767	1.96646	0.1929342	0.26248521	2.4158288	20	5 8.7	18.0
12404 1995 QW ₃	14.7	X	10.58230	88.76263	245.34769	20.99831	0.1521257	0.27994878	2.3142858	20	11 6.4	17.4
12405 Nespoli	15.0	X	305.46832	59.14370	248.55191	5.19627	0.1133733	0.26965931	2.3727889	20	5 18.6	17.7
12406 Zvíkov	14.8	X	312.31543	121.44261	286.63718	2.69504	0.1469216	0.27768781	2.3268310	20	11 4.0	16.8
12407 Riccardi	14.5	X	188.03330	223.84634	161.20116	6.72740	0.1265965	0.26452825	2.4033739	20	4 12.6	18.1
12408 Fujioka	15.0	X	253.71993	267.12752	81.47571	7.78839	0.1513687	0.26583467	2.3954934	20	5 2.3	18.4
12409 Bukovanská	15.9	X	238.28629	53.18325	247.80391	0.62068	0.1807962	0.26087360	2.4257682	20	2 11.5	19.6
12410 Donald Duck	15.2	X	92.34234	140.33428	345.81981	8.11986	0.1628152	0.26064303	2.4271986	20	5 9.6	18.5
12411 Tannokayo	13.8	X	254.20076	186.70008	276.01760	5.71115	0.0789382	0.27799520	2.3251154	20	10 18.6	16.5
12412 Muchisachie	14.0	X	276.98286	214.22233	153.11591	6.91577	0.1506534	0.27066666	2.3668980	20	6 25.3	16.9
12413 Johnnyweir	14.8	X	215.52578	292.15341	40.21842	3.85593	0.1897477	0.26020974	2.4298923	20	3 2.7	18.7
12414 Bure	14.7	X	222.61151	267.89869	66.14163	2.26117	0.1994162	0.26122385	2.4235994	20	3 9.9	18.7
12415 Wakatakayo	14.0	X	91.04897	74.34660	247.77238	4.70429	0.1651351	0.28578107	2.2826907	20	—	—
12416 1995 TS	14.8	X	205.87025	2.03426	356.87524	0.59598	0.1855094	0.26084840	2.4259244	20	3 25.3	18.7
12417 1995 TC ₈	14.0	X	82.66209	234.76557	116.70952	5.43086	0.1611090	0.28717458	2.2753003	20	—	—
12418 Tongling	13.8	X	127.83821	219.91069	30.07521	11.65153	0.1302023	0.19229994	2.9726922	20	11 15.0	18.6
12419 1995 UP ₄	13.7	X	209.58816	330.74385	62.82903	7.95207	0.1371203	0.26261154	2.4150540	20	5 13.9	17.2
12420 1995 UT ₄	13.6	X	326.02411	52.27175	52.18582	14.22261	0.1412493	0.24132355	2.5550706	20	—	—
12421 Zhenya	14.2	X	190.81424	288.34603	45.92552	5.55637	0.1219619	0.25699780	2.4500960	20	2 12.2	17.9
12422 1995 US ₈	13.4	X	330.26630	213.41080	69.33398	12.09186	0.0862973	0.26485488	2.4013976	20	5 27.9	15.9
12423 Slotin	13.9	X	78.69487	201.19385	84.95176	4.84348	0.1711140	0.23815643	2.5776731	20	11 24.7	17.8
12424 1995 VM	13.2	X	102.48918	174.01031	61.13595	14.74027	0.1229846	0.23230470	2.6207809	20	10 17.0	17.3
12425 1995 VG ₂	14.1	X	53.33390	304.21507	27.32029	7.87632	0.1403890	0.27973289	2.3154764	20	12 30.1	17.4
12426 Racquetball	13.9	X	286.41012	133.14231	264.28642	3.59130	0.0702992	0.27140064	2.3626287	20	9 4.7	16.6
12427 1995 WM ₃	15.2	X	28.48453	272.80772	68.78481	1.49756	0.1226800	0.23758486	2.5818057	20	11 29.4	18.3
12428 1995 WJ ₅	12.8	X	121.65794	15.81904	262.56021	8.56673	0.0836112	0.23781571	2.5801346	20	12 21.8	16.6
12429 1995 WH ₇	14.3	X	195.53252	292.99725	140.54750	3.09971	0.1426400	0.26268437	2.4146076	20	6 20.7	17.9
12430 1995 XB ₂	14.3	X	347.90054	265.15822	46.72366	2.15782	0.0392670	0.27303635	2.3531832	20	8 14.4	16.9
12431 Webster	14.0	X	54.90449	286.21911	117.88774	15.64539	0.0847243	0.24123781	2.5556761	20	—	—
12432 Usuda	13.4	X	283.47944	106.50543	306.39207	9.37813	0.0364698	0.18510867	3.0491927	20	9 11.2	17.7
12433 Barbieri	15.0	X	295.52102	221.62855	215.26935	6.06434	0.2436991	0.23231318	2.6207171	20	10 18.6	17.1
12434 1996 BM	14.6	X	133.61392	174.63472	313.31586	2.74291	0.1283933	0.21701145	2.7425062	20	6 27.6	18.8
12435 Sudachi	13.5	X	272.49531	100.77357	90.99774	3.26577	0.0175467	0.19997792	2.8961076	20	—	—
12436 1996 BY ₁	13.1	X	200.03036	25.58477	343.17633	8.86697	0.1739337	0.21217911	2.7839898	20	4 1.4	17.7
12437 Westlane	14.0	X	58.73120	237.14740	73.38523	4.02502	0.1680811	0.18944704	3.0024619	20	11 23.8	18.4
12438 1996 CZ	14.5	X	295.00095	276.19615	207.59712	5.52271	0.2609765	0.23407000	2.6075874	20	12 27.8	16.4
12439 Okasaki	12.7	X	86.02253	136.80430	80.83613	2.18748	0.1331377	0.17712178	3.1401814	20	8 27.6	17.3
12440 Koshigayaboshi	12.2	X	82.26593	136.48202	125.11574	12.07965	0.0418186	0.18409157	3.0604135	20	10 10.1	16.7
12441 1996 DV	13.4	X	51.23102	75.54429	153.60745	11.81464	0.0569424	0.17504197	3.1650063	20	7 15.9	17.8
12442 Beltramemass	12.5	X	134.72837	317.83246	292.10494	10.32087	0.1403307	0.18714584	3.0270245	20	11 21.0	17.5
12443 Paulsdney	12.6	X	247.78161	205.02370	195.97470	17.46604	0.2059754	0.17893384	3.1189451	20	6 22.9	17.8
12444 Prothoon	9.8	X	305.75103	65.13172	213.22046	30.83330	0.0726232	0.08213796	5.2413131	20	4 23.7	16.5
12445 Sirataka	12.5	X	112.67090	181.45107	72.25694	10.10235	0.0296476	0.17974900	3.1095083	20	10 31.8	17.0
12446 Juliabryant	14.9	X	254.87153	266.42351	86.40477	23.81486	0.1168871	0.36287571	1.9466929	20	5 17.5	17.4
12447 Yatescup	14.2	X	326.83814	192.79608	86.46473	5.40336	0.2088818	0.30968893	2.1636430	20	4 27.5	15.8
12448 Mr. Tompkins	14.1	X	70.61806	192.24880	115.26657	7.77306	0.1308191	0.28334272	2.2957681	20	12 17.9	17.3
12449 1996 XL ₃₁	14.0	X	116.04996	74.08985	140.26672	3.99620	0.1083260	0.27727978	2.3291131	20	10 5.3	17.3
12450 1996 YD	14.2	X	301.26014	87.56462	43.54613	2.47965	0.0901068	0.29030559	2.2589110	20	—	—
12451 1996 YF	14.3	X	348.42592	358.44469	77.78080	5.72137	0.1206753	0.29063075	2.2572258	20	—	—
12452 1996 YO	15.2	X	132.80266	192.53240	251.89173	2.08420	0.0903789	0.30792136	2.1719151	20	4 23.6	17.8
12453 1996 YY	13.2	X	160.98308	320.77037	286.38085	10.30644	0.2643589	0.24263289	2.5458703	20	12 17.1	17.6
12454 1996 YO ₁	14.8	X	350.42639	301.73163	273.17821	1.54461	0.1215077	0.26175330	2.4203302	20	3 17.9	17.2
12455 1997 AR	14.9	X	327.81499	323.86455	292.00740	2.08506	0.1425067	0.26368009	2.4085250	20	4 3.8	17.3
12456 Genichiaraki	14.7	X	181.00177	259.99381	41.24787	2.51256	0.0832148	0.25323587	2.4743012	20	—	—
12457 1997 AK ₁	14.0	X	300.31360	16.15784	88.92802	5.40289	0.0802349	0.28718202	2.2752610	20	—	—
12458 1997 AR ₁	14.6	X	336.88224	175.32984	78.44224	3.36011	0.1720753	0.26409729	2.4059878	20	4 16.2	16.8
12459 1997 AQ ₄	15.0	X	197.76284	86.75074	111.05913	5.03125	0.0853032	0.28358204	2.2944763	20	12 14.6	18.0
12460 Mando	15.0	X	63.09520	234.45038	96.92108	7.56054	0.1601325	0.28625898	2.2801494	20	—	—
12461 1997 AM ₅	14.5	X	180.22695	133.39402	18.52599	3.59931	0.1417594	0.27668335	2.3324590	20	9 19.1	17.8
12462 1997 AO ₅	13.6	X	27.54104	295.83776	77.16570	5.75598	0.1961409	0.24533295	2.5271564	20	—	—
12463 1997 AL ₇	13.7	X	1.70622	108.93470	149.39955	4.24451	0.0856498	0.26767161	2.3845211	20	6 16.9	16.2
12464 Manhattan	14.6	X	272.59344	338.29405	133.29110	7.36066	0.0589687	0.28352920	2.2947613	20	12 6.9	17.3
12465 Perth Amboy	14.9	X	233.89038	192.33839	145.11815	4.13030	0.1979264	0.26385551	2.4074573	20	3 23.8	18.6
12466 1997 AS ₁₂	14.0	X	315.00532	127.72437	107.22417	9.56403	0.1789763	0.25872474	2.4391813	20	2 12.3	17.0
12467 1997 AX ₁₇	14.9	X	331.15465	296.27430	54.03600	3.31204	0.0423829	0.31796022	2.1259556	20	9 22.7	16.8
12468 Zachotin	14.3	X	261.80269	311.97895	306.36587	6.21809	0.1337100	0.29832373	2.2182518	20	1 10.8	17.5
12469 Katsuura	14.7	X	239.96314	199.15765	324.80561	5.69799	0.0895234	0.28563072	2.2834917	20	12 26.2	17.4
12470 Pinotti	14.0	X	183.04607	187.28628	140.56984	4.24179	0.2337281	0.29568404	2.2314344	20	1 26.3	17.6
12471 Larryscherr	14.8	X	186.70819	164.96750	180.07652	2.40982	0.2098033	0.25907129	2.4370056	20	2 21.3	18.7
12472 Samadhi	16.6	X	251.12491	323.46411	25.50143	2.99997	0.1302002	0.26709847	2.3879310	20	4 29.3	20.0
12473 Levi-Cvita	13.9	X	353.12603	218.27471	81.07869	13.53327	0.1699120	0.22452516	2.6809746	20	8 5.3	16.7
12474 1997 CZ ₁₉	14.1	X	23.71225	250.42936	121.89961	3.82568	0.0797541	0.28278563	2.2987822	20	—	—
12475 1997 CC ₂₀	14.4	X	12.76555	104.61680	127.99114	4.08339	0.1225669	0.22028505	2.7152680	20	5 30.8	17.4
12476 1997 EU ₂	14.7	X	125.29961	36.94433	102.24174	2.99814	0.1441771	0.26582127	2.3955738	20	7 6.4	18.2
12477 Haiku	14.3	X	345.87116	29.37001	196.49022	2.10545	0.1298909	0.25947085				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12481 Streuvels	13.4	X	308.83978	66.68340	195.83837	9.12512	0.1540707	0.21240882	2.7819822	20	3 17.7	17.0
12482 Pajka	14.2	X	68.33175	30.18022	133.37276	8.62136	0.1608739	0.26237581	2.4165003	20	6 2.4	17.1
12483 1997 FW ₁	13.8	X	153.54770	229.59495	38.08623	12.00089	0.1261218	0.19835881	2.9118459	20	—	—
12484 1997 FO ₃	14.3	X	305.94942	103.35436	166.34282	3.50934	0.1102041	0.21412098	2.7671321	20	3 31.6	18.0
12485 Jenniferharris	14.4	X	214.58466	74.20103	306.98259	1.96132	0.1949762	0.26073283	2.4266412	20	4 28.8	18.4
12486 1997 GP ₆	14.1	X	82.57393	152.73946	34.25308	4.82871	0.0788258	0.26257588	2.4152726	20	7 12.5	17.1
12487 1997 GJ ₈	13.2	X	204.47683	242.52981	222.00497	10.11730	0.0858324	0.18200313	3.0837807	20	8 4.9	18.1
12488 1997 GD ₁₅	14.4	X	264.14323	79.95636	266.79483	1.55120	0.0843896	0.21879554	2.7275773	20	5 19.7	18.2
12489 1997 GR ₃₆	14.0	X	333.25208	6.52175	73.54393	5.61981	0.1964575	0.23831925	2.5764989	20	—	—
12490 Leiden	14.4	X	11.98160	67.62927	146.46180	0.95708	0.1200768	0.17206106	3.2014569	20	5 4.1	18.1
12491 Musschenbroek	13.2	X	158.32783	175.09658	144.77926	2.80521	0.0469477	0.19959555	2.8998051	20	—	—
12492 Tanais	13.1	X	265.89958	125.19437	111.57883	3.54690	0.0415635	0.20295595	2.8677075	20	1 11.3	17.3
12493 Minkowski	13.3	X	208.48745	12.29608	125.61290	6.71698	0.1029048	0.17591353	3.1545438	20	9 23.6	18.1
12494 Doughamilton	14.6	X	1.20051	160.77010	137.98129	24.73943	0.0317498	0.36960921	1.9229775	20	8 30.6	16.3
12495 1998 FJ	15.2	X	290.01457	3.83076	277.48766	1.17396	0.1479320	0.31195915	2.1531332	20	3 9.0	17.8
12496 Ekholm	14.5	X	199.70525	231.27713	82.71350	3.83928	0.1875640	0.25818172	2.4426002	20	1 26.5	18.5
12497 1998 FQ ₁₄	14.7	X	314.17683	78.19609	205.91978	6.88460	0.2826667	0.22454659	2.6808041	20	3 31.8	18.1
12498 Dragesco	13.7	X	321.33969	287.05612	0.09722	13.24986	0.2531572	0.22616732	2.6679815	20	4 19.2	16.8
12499 1998 FR ₄₇	13.9	X	114.05312	6.54236	337.03464	6.78149	0.2282981	0.29940895	2.2128885	20	—	—
12500 Desngai	14.9	X	169.30274	333.41638	327.78203	2.14369	0.1769358	0.29971309	2.2113912	20	—	—
12501 Nord	14.3	X	11.55942	267.98339	19.92790	0.77005	0.1973848	0.27704006	2.3304565	20	9 6.7	16.2
12502 1998 FO ₆₈	14.6	X	265.20783	328.42157	32.26136	1.84476	0.2109395	0.26440549	2.4041178	20	2 25.8	18.3
12503 1998 FC ₇₅	14.2	X	243.39165	73.69011	197.57955	8.74060	0.1239995	0.21510821	2.7586592	20	1 18.1	18.7
12504 Nueest	14.2	X	228.13055	277.31964	59.44740	5.96919	0.1512670	0.26723754	2.3871026	20	3 21.7	18.0
12505 1998 FN ₇₇	14.2	X	185.22857	199.49714	136.48560	5.25073	0.2123104	0.30492374	2.8612622	20	2 5.4	17.6
12506 Pariser	14.8	X	242.28952	285.04569	252.15340	6.13366	0.0384044	0.25066135	2.4912146	20	—	—
12507 1998 FZ ₁₀₉	13.5	X	186.15141	25.64861	269.60715	7.00803	0.2005157	0.21061441	2.7977613	20	—	—
12508 1998 FZ ₁₁₃	14.4	X	202.24314	96.58811	237.88628	6.96691	0.1636972	0.26292813	2.4131150	20	2 17.9	18.4
12509 Pathak	15.0	X	26.78621	37.85518	270.15120	3.80648	0.1713416	0.28102397	2.3083791	20	10 28.9	17.5
12510 1998 FM ₁₂₁	14.8	X	210.08531	98.20733	243.42212	3.87685	0.1713976	0.26526311	2.3989332	20	3 5.1	18.9
12511 Patil	14.6	X	42.85282	55.23772	244.70975	0.20496	0.1854433	0.28307901	2.2971936	20	11 12.7	17.5
12512 Split	14.6	X	94.97788	84.49637	224.38931	5.06895	0.1913364	0.28826359	2.2695662	20	—	—
12513 Niven	14.8	X	225.00773	334.38236	27.61344	2.23677	0.1785132	0.31225882	2.1517554	20	4 13.4	17.8
12514 Schommer	14.8	X	54.97393	168.90206	176.92460	5.30494	0.1659127	0.24233990	2.5479218	20	—	—
12515 Suseki	14.2	X	204.73960	163.90046	162.86802	4.95255	0.1368618	0.25891356	2.4379952	20	2 13.4	17.9
12516 1998 HB ₄₅	14.8	X	236.41145	254.14306	13.38769	4.88657	0.0781220	0.30331812	2.1938342	20	—	—
12517 Grayzeck	15.9	X	6.74612	120.08646	155.99324	0.65850	0.1957419	0.27367240	2.3495357	20	8 5.0	17.6
12518 1998 HM ₅₂	13.8	X	84.37765	236.20880	85.34217	6.12009	0.2154574	0.28678582	2.2773560	20	—	—
12519 Pullen	14.9	X	358.93172	31.68166	222.32950	1.45779	0.1955072	0.27129237	2.3632572	20	6 5.0	16.4
12520 1998 HV ₇₈	14.5	X	86.77952	101.83596	252.53767	4.80519	0.2931565	0.29259247	2.2471253	20	—	—
12521 1998 HT ₉₅	13.4	X	211.68874	182.09002	109.79228	3.68161	0.1767205	0.25620233	2.4551649	20	1 9.6	17.4
12522 Rara	15.0	X	45.25616	200.86018	156.87266	3.10169	0.1410681	0.28894231	2.2660107	20	—	—
12523 1998 HH ₁₀₀	13.2	X	142.96476	274.18287	78.41151	5.91676	0.2163072	0.25442768	2.4665683	20	1 25.8	16.9
12524 Conscience	15.0	X	8.20362	234.16708	102.17692	0.74476	0.1955034	0.27915472	2.3186724	20	11 14.5	17.3
12525 1998 HT ₁₄₇	14.5	X	331.65813	106.92362	183.51623	14.13953	0.1962199	0.22562595	2.6722476	20	5 31.3	17.4
12526 de Coninck	15.5	X	12.23720	198.15276	59.01786	0.91143	0.1853402	0.27162099	2.3613507	20	7 15.2	17.2
12527 Anneraugh	14.0	X	340.80413	109.29226	183.84003	7.18019	0.1346301	0.27184525	2.3600519	20	6 29.6	16.3
12528 1998 KL ₃₁	12.9	X	1.76968	171.46449	81.52153	14.49109	0.1265192	0.22531731	2.6746873	20	6 8.7	15.8
12529 Reighard	14.3	X	44.13296	308.31892	78.46987	2.20752	0.0283187	0.29137993	2.2533550	20	—	—
12530 Richardson	14.2	X	76.00895	135.93708	123.63152	5.60068	0.0564934	0.23458334	2.6037819	20	10 7.2	17.8
12531 1998 KQ ₅₁	12.9	X	251.88254	279.28651	163.21862	11.17156	0.0821458	0.19079597	2.9882935	20	9 6.2	17.1
12532 1998 KW ₅₄	13.0	X	319.28636	128.06628	187.37029	16.50453	0.2380160	0.17953337	3.1119976	20	6 4.9	16.9
12533 Edmond	14.3	X	121.11268	129.08566	119.34764	5.04174	0.2146689	0.23876793	2.5732702	20	11 20.0	18.6
12534 Janhoet	13.5	X	206.37495	217.94183	196.79121	9.31010	0.1098584	0.22264305	2.6960625	20	6 8.8	17.8
12535 1998 MZ ₃₀	13.8	X	359.43430	237.11369	144.18794	9.61055	0.1238832	0.23464056	2.6033586	20	12 10.2	17.0
12536 1998 MD ₃₃	12.7	X	303.72730	274.35803	129.83591	9.90775	0.1839032	0.18382314	3.0633922	20	9 18.5	16.3
12537 Kendriddle	14.2	X	172.75417	9.68311	239.43987	5.60930	0.1405487	0.28736515	2.2742942	20	—	—
12538 1998 OH	15.8	X	213.23399	321.72144	220.73929	24.52625	0.4060698	0.51488027	1.5416953	20	—	—
12539 Chaikin	13.7	X	359.16242	304.84854	296.68346	3.73523	0.0573841	0.21786551	2.7353342	20	5 17.2	17.1
12540 Picander	13.1	X	356.74824	216.97753	260.74335	0.89343	0.0176055	0.19971098	2.8986876	20	—	—
12541 Makarska	13.6	X	108.82792	101.48822	172.36651	11.21858	0.1196687	0.18875643	3.0097809	20	11 27.8	18.4
12542 Laver	13.7	X	299.61410	291.67900	34.25402	5.05494	0.1462115	0.17447711	3.1718337	20	5 30.3	18.0
12543 1998 QM ₅	13.9	X	336.48792	98.42564	195.79856	7.01925	0.1831159	0.27113888	2.3641490	20	6 18.3	15.9
12544 1998 QX ₉	14.0	X	311.95617	261.75050	116.05848	5.50472	0.2101767	0.17907834	3.1172670	20	8 21.9	17.4
12545 1998 QT ₁₉	14.0	X	272.07987	116.50422	164.84745	5.58338	0.0463679	0.20969423	2.8059401	20	3 12.3	17.7
12546 1998 QJ ₂₁	13.3	X	33.98706	152.56278	146.59388	1.01748	0.1667704	0.18251603	3.0780007	20	10 8.2	17.0
12547 1998 QL ₂₂	13.4	X	280.45207	86.65956	281.04663	7.48902	0.1254908	0.17352836	3.1833843	20	6 30.9	17.6
12548 Erinriley	14.3	X	205.91376	332.03171	128.98986	2.88605	0.1589243	0.26628119	2.3928146	20	8 6.2	17.9
12549 1998 QO ₂₆	13.3	X	160.22304	258.91865	211.07119	4.35571	0.1373438	0.17017427	3.2250772	20	6 30.0	18.4
12550 1998 QR ₃₀	13.0	X	196.48140	17.05217	181.26226	13.23340	0.0820343	0.23477159	2.6023898	20	12 4.1	16.9
12551 1998 QQ ₃₉	13.1	X	339.45113	256.47243	8.27272	5.49318	0.0953508	0.26142462	2.4223584	20	5 14.1	15.6
12552 1998 QQ ₄₅	12.4	X	171.25594	197.37284	323.68424	13.60084	0.0870390	0.17934966	3.1141224	20	9 8.3	17.2
12553 Aaronritter	14.4	X	57.29470	52.80712	105.52744	3.51796	0.0571149	0.30142068	2.2030314	20	4 19.0	16.7
12554 1998 QA ₄₇	12.7	X	0.61940	169.17463	120.49484	6.45573	0.1471829	0.17612928	3.1519671	20	7 27.1	16.3
12555 1998 QP ₄₇	12.7	X	143.37595	205.46510	149.35916	2.58218	0.0801214	0.20052645	2.8908237	20	1 20.2	17.0
12556 Kyrobinson	14.3	X	213.51103	270.02993	200.31904	6.45724	0.0633366	0.26814209	2.3817310	20	9 4.8	17.5
12557 Caracol	12.8	X	158.00477	291.56638	227.74787	4.81433						

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12561 Howard	12.8	X	140.43054	154.46101	42.91664	0.76240	0.1398848	0.18068612	3.0987475	20	9 26.7	17.8
12562 Briangrazer	11.8	X	98.80085	204.17471	13.13237	12.54993	0.1015006	0.17580978	3.1557847	20	9 9.4	16.5
12563 1998 SA ₄₃	12.9	X	269.87666	255.54367	126.10135	1.65183	0.0853516	0.21669713	2.7451575	20	7 13.3	16.5
12564 lkeller	13.6	X	273.16529	118.32766	180.03015	1.62024	0.0386497	0.20666166	2.8333232	20	4 5.5	17.4
12565 Khege	13.2	X	179.59486	274.00851	203.95933	6.24836	0.0911951	0.17291888	3.1908601	20	7 27.4	18.2
12566 Derichardson	13.3	X	169.40083	286.77598	198.81048	5.05516	0.1036027	0.17149849	3.2084542	20	7 26.6	18.4
12567 Herreweghe	13.0	X	185.81626	334.11157	149.89321	2.17288	0.1116485	0.17155766	3.2077165	20	8 11.0	17.9
12568 Kuffner	13.1	X	165.74737	218.36542	37.41573	1.29822	0.0545013	0.18395794	3.0618955	20	12 29.8	17.5
12569 1998 VC ₂₉	12.6	X	332.47150	209.30568	137.69069	5.00192	0.1017690	0.17228121	3.1987290	20	8 24.7	16.5
12570 1998 WV ₅	12.8	X	191.24231	349.28956	250.66436	13.51896	0.1061845	0.18646060	3.0344361	20	—	—
12571 1999 NM ₂	14.3	X	44.23056	105.86273	221.77893	10.63334	0.1897923	0.24285545	2.5443147	20	12 12.3	17.9
12572 Sadegh	14.7	X	61.54184	324.07326	273.36445	4.09061	0.1076890	0.28344817	2.2951987	20	8 28.2	17.6
12573 1999 NJ ₅₃	13.2	X	359.13674	145.00122	226.33506	11.91793	0.1113759	0.19551577	2.9400058	20	11 12.8	16.7
12574 LONEOS	13.0	X	149.78171	337.23521	116.73321	10.99182	0.0876519	0.22355783	2.6887028	20	5 31.5	17.1
12575 Palmaria	14.9	X	282.37199	342.25892	80.27276	2.25468	0.0910340	0.28380364	2.2932817	20	10 8.5	17.1
12576 Oresme	14.1	X	241.03996	51.21467	354.13983	3.93880	0.0681498	0.22998821	2.6383495	20	7 11.5	17.7
12577 Samra	14.5	X	217.04859	21.52788	302.24307	4.40903	0.0930967	0.21693556	2.7431458	20	2 25.8	18.7
12578 Bensaur	15.0	X	8.58390	340.44303	327.50471	7.26138	0.1268333	0.28230217	2.3014060	20	9 19.5	17.2
12579 Ceva	14.3	X	355.12939	241.11540	36.40257	1.58119	0.1868625	0.18270935	3.0758291	20	6 30.2	17.3
12580 Antonini	14.2	X	312.40044	307.75683	41.40051	2.55275	0.2465409	0.18373106	3.0644156	20	7 7.3	17.6
12581 Rovinj	15.1	X	214.50406	194.39490	351.10456	3.67773	0.0941571	0.29039039	2.2584712	20	12 19.8	17.8
12582 1999 RY ₃₄	13.7	X	318.66797	62.23843	70.43391	2.65948	0.1171455	0.29187228	2.2508202	20	—	—
12583 Buckjean	12.4	X	343.38650	17.63984	26.65547	10.85613	0.0686240	0.19140648	2.9819359	20	11 24.5	16.4
12584 Zeljkoandreic	14.6	X	278.84951	299.40201	39.99893	7.35718	0.1369618	0.26991138	2.3713114	20	5 19.6	17.6
12585 Katschwarz	14.7	X	24.56470	220.27005	128.77394	6.73852	0.1814771	0.24192035	2.5508668	20	12 14.5	18.0
12586 1999 RQ ₈₁	13.9	X	187.65069	145.24037	208.52510	3.51815	0.1799526	0.21547573	2.7555215	20	3 5.4	18.5
12587 1999 RD ₉₅	13.2	X	212.57126	347.73631	338.75232	3.45292	0.0987160	0.21459591	2.7630479	20	2 26.0	17.4
12588 1999 RR ₉₈	14.6	X	160.99474	198.76729	170.87543	12.63779	0.1904529	0.25988769	2.4318993	20	2 27.7	18.5
12589 1999 RR ₁₁₄	15.0	X	200.34752	333.96247	338.96003	2.47687	0.1528351	0.30876717	2.1679469	20	1 18.7	18.2
12590 1999 RR ₁₂₅	13.8	X	182.68684	107.61287	192.94179	5.00051	0.0394941	0.20946720	2.8079672	20	—	—
12591 1999 RT ₁₃₃	13.9	X	264.56224	61.40700	254.22661	5.32944	0.1259285	0.27024188	2.3693776	20	3 29.3	17.3
12592 1999 RD ₁₃₄	13.7	X	206.46580	32.96139	285.47895	6.62830	0.1109130	0.21528292	2.7571665	20	2 8.4	18.1
12593 Shashlov	14.6	X	255.81702	126.92659	158.23555	3.94408	0.0907785	0.26562701	2.3967417	20	2 14.9	17.9
12594 1999 RU ₁₄₅	14.3	X	192.04933	101.65177	236.96802	3.71920	0.1846897	0.21560599	2.7544116	20	2 19.9	19.0
12595 Amandashaw	14.9	X	14.26727	0.34697	337.95020	3.21074	0.1717768	0.28705136	2.2759514	20	11 24.1	17.4
12596 Shukla	14.8	X	286.97380	15.02806	296.73861	2.58935	0.1926865	0.27281004	2.3544844	20	4 12.3	17.7
12597 1999 RL ₁₅₈	13.8	X	193.77091	58.61671	135.64995	2.76300	0.0716155	0.19641383	2.9310373	20	11 24.0	17.9
12598 Sierra	14.2	X	16.23846	20.12560	152.60322	9.47643	0.03734659	0.21755288	2.7379541	20	3 13.2	17.4
12599 Singhal	14.9	X	211.27336	347.86875	132.80608	6.24245	0.0449947	0.28314421	2.2968409	20	9 25.4	17.8
12600 1999 RM ₁₇₇	12.4	X	329.87610	78.42603	136.48760	2.21392	0.1282263	0.16924300	3.2368971	20	2 26.7	16.5
12601 Tiffanyswann	14.7	X	179.69965	316.34598	45.62456	3.28427	0.1810428	0.26288126	2.4134018	20	3 7.7	18.5
12602 Tammytam	14.4	X	37.38254	262.42990	9.78042	7.37882	0.0979365	0.28112800	2.3078097	20	9 14.1	16.9
12603 Tanchunghue	14.9	X	209.40185	353.89258	62.63356	3.22181	0.1972240	0.27141851	2.3625250	20	6 9.2	18.8
12604 Lisatate	14.6	X	16.72391	19.87094	215.81863	5.97276	0.0330910	0.27233892	2.3571990	20	6 6.1	17.3
12605 1999 SK	14.9	X	56.97626	169.73301	159.56864	1.98003	0.1058574	0.24111646	2.5565334	20	12 17.7	18.3
12606 Apuleius	14.9	X	202.52460	294.67103	353.70006	5.84362	0.2640407	0.25501509	2.4627791	20	—	—
12607 Alcaeus	14.7	X	6.84204	9.62249	277.06983	2.18852	0.0373352	0.22770856	2.6559291	20	7 31.9	17.9
12608 Aesop	15.3	X	305.55225	133.38013	248.35228	3.52043	0.1162837	0.27870190	2.3211833	20	9 10.2	17.5
12609 Apollodoros	14.1	X	312.97689	31.64153	299.81446	0.87720	0.1849187	0.17883295	3.1201180	20	6 22.7	17.7
12610 Hāfēz	13.7	X	192.07100	296.19437	25.40568	1.73240	0.0994541	0.20521077	2.8466623	20	2 1.5	18.0
12611 Ingres	14.2	X	304.03119	195.09124	188.02388	2.44552	0.2139236	0.17859061	3.1229400	20	8 11.8	17.8
12612 Daumier	14.5	X	287.16740	74.05035	176.56399	5.25989	0.0898224	0.25608746	2.4558990	20	2 7.6	17.9
12613 Hogarth	14.5	X	332.15658	51.99663	285.93681	2.98237	0.1396240	0.22895334	2.6462938	20	8 16.5	17.2
12614 Hokusai	15.1	X	197.10956	138.99716	191.29422	4.45137	0.2166218	0.30531618	2.1842525	20	2 7.2	18.7
12615 Mendesdeleon	14.1	X	27.91605	57.32231	28.11637	1.98288	0.0560271	0.20285596	2.8686498	20	—	—
12616 Lochner	14.7	X	298.27248	342.44701	54.42011	3.37831	0.0980114	0.22955434	2.6416729	20	9 16.7	17.8
12617 Angelusilesius	13.5	X	339.07675	321.21073	30.43232	8.06447	0.1229714	0.22969207	2.6406168	20	9 23.9	16.3
12618 Cellarius	13.4	X	107.58794	13.22209	196.09317	16.08899	0.1429791	0.18047517	3.1011617	20	9 6.9	18.4
12619 Anubelshunu	14.4	X	35.18678	295.11254	220.69493	5.55949	0.0740376	0.25617205	2.4553584	20	3 11.5	17.3
12620 Simaqian	13.7	X	79.94498	59.27911	180.01882	0.91852	0.1446310	0.18096593	3.0955525	20	9 17.4	18.3
12621 Alsufi	13.9	X	322.62870	203.62788	147.87591	2.43283	0.1286317	0.17951682	3.1121890	20	8 12.8	17.5
12622 Doppelmayr	14.7	X	14.45027	186.92800	117.59812	2.78477	0.0824119	0.22979221	2.6398496	20	9 13.0	17.8
12623 Tawaddud	14.5	X	201.32189	170.78487	164.14259	4.86303	0.0544711	0.25606757	2.4560262	20	2 19.9	18.0
12624 Mariacunitia	14.6	X	31.74598	208.06383	138.80035	4.39846	0.1426184	0.28183941	2.3039244	20	12 24.9	17.5
12625 Koopman	12.9	X	237.87315	82.09503	2.45826	5.88993	0.1005973	0.17897545	3.1184617	20	8 20.8	17.4
12626 Timmerman	14.5	X	213.68976	126.11104	259.08027	1.66252	0.1085411	0.22398115	2.6853139	20	5 8.8	18.6
12627 Maryedwards	15.6	X	156.47873	302.33824	328.74605	2.20036	0.1400570	0.29315535	2.2442479	20	—	—
12628 Ackworthor	15.1	X	338.43584	98.73816	135.75140	2.76684	0.1271463	0.26186298	2.4196542	20	3 26.9	17.5
12629 Jandeboer	14.1	X	211.32471	177.23995	182.51490	11.78803	0.1284955	0.26212250	2.4180569	20	4 2.4	17.6
12630 Verstappen	14.5	X	223.18364	301.34256	6.16360	6.36377	0.1398462	0.25901932	2.4373315	20	2 9.8	18.4
12631 Mariekebaan	13.3	X	88.17886	110.17569	188.97794	10.94634	0.2062199	0.19032067	2.9932667	20	12 13.4	18.3
12632 Mignonette	14.9	X	357.82954	235.69460	325.43258	1.96450	0.1131405	0.26113095	2.4241742	20	3 12.4	17.1
12633 Warmenhoven	15.2	X	107.32489	262.95205	251.34518	1.55618	0.1078174	0.26486104	2.4013603	20	7 2.2	18.3
12634 LOFAR	15.5	X	288.78296	237.51615	20.40318	2.54521	0.1512996	0.25992318	2.4316779	20	2 12.4	18.7
12635 HennyIamers	13.7	X	60.55679	125.75736	180.19747	10.34282	0.0979547	0.18992349	2.9974384	20	11 13.0	18.0
12636 Padrielli	13.3	X	72.85247	266.86982	31.06045	10.72255	0.0737861	0.19018469	2.9946933	20	11 10.9	17.6
12637 Gustavleonhardt	14.3	X	311.94082	224.51375	189.34909	0.93803	0.1984246	0.23169531	2.6253742	20	10 26.6	16.6

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12641 Hubertushenrichs	15.3	X	204.20211	345.70118	45.59477	2.06682	0.1877975	0.26664468	2.3906396	20	5 3.3	19.0
12642 Davidjansen	14.6	X	214.30819	298.71936	189.45543	4.52956	0.1767350	0.27219265	2.3580433	20	9 18.4	17.8
12643 Henkolphof	13.7	X	190.54577	129.49193	114.31933	3.31425	0.0359835	0.19450280	2.9502046	20	—	—
12644 Robertwielinga	14.4	X	244.35395	320.63160	56.02927	3.74535	0.2311007	0.26832717	2.3806357	20	5 18.5	18.1
12645 Jacobrosales	14.9	X	219.26592	319.27117	85.24421	3.47858	0.1895101	0.26782932	2.3835849	20	6 3.5	18.5
12646 Avercamp	14.1	X	277.44950	9.18463	320.26318	8.88816	0.2295273	0.22637399	2.6663574	20	4 18.5	18.2
12647 Pauluspotter	14.9	X	303.18792	226.98968	238.56772	10.04515	0.0573222	0.19231328	2.9725548	20	12 16.5	18.9
12648 Ibarbourou	14.1	X	329.15972	299.21661	319.77368	6.20473	0.0825539	0.26829884	2.3808033	20	4 16.8	16.9
12649 Ascanios	11.7	X	280.38831	342.02240	337.60120	6.57338	0.1479858	0.08422683	5.1542929	20	4 28.2	18.6
12650 de Vries	15.0	X	1.21052	320.11055	305.94741	4.10489	0.2130257	0.27173023	2.3607178	20	7 4.9	16.4
12651 Frenkel	13.9	X	325.20363	165.16991	224.38294	10.01814	0.1192138	0.18289188	3.0737822	20	10 6.5	17.7
12652 2622 T-3	14.4	X	97.99708	13.75149	226.03677	9.14038	0.1452511	0.18345999	3.0674334	20	10 5.4	19.2
12653 2664 T-3	15.8	X	186.00069	82.94439	355.03996	2.45414	0.1381999	0.26907372	2.3762303	20	6 17.0	19.4
12654 4118 T-3	13.6	X	353.80356	168.70737	178.11429	11.74035	0.1027036	0.18276539	3.0752003	20	9 30.3	17.2
12655 5041 T-3	12.8	X	114.14018	113.69700	151.93327	11.71690	0.1017873	0.18591307	3.0433909	20	11 22.8	17.7
12656 5170 T-3	14.0	X	204.22247	26.94629	152.94413	10.88177	0.1765292	0.23069494	2.6329585	20	11 10.9	18.2
12657 Bonch-Bruevich	12.6	X	95.71627	37.14166	321.18805	9.41627	0.1044435	0.18757899	3.0223627	20	—	—
12658 Peiraos	11.2	X	302.70881	325.80957	111.88213	1.77664	0.0569103	0.08388129	5.1684379	20	10 21.5	17.8
12659 Schlegel	14.8	X	250.43424	14.79488	29.90193	2.82257	0.1954090	0.26894676	2.3769781	20	7 6.4	18.1
12660 1975 NC	13.5	X	336.48377	358.63146	269.82028	5.76435	0.1553818	0.21639270	2.7477317	20	5 9.9	16.6
12661 Schelling	14.9	X	235.81621	59.33102	134.46393	4.87485	0.1175635	0.28465023	2.2887324	20	—	—
12662 1978 CK	12.7	X	188.74339	155.64601	309.64577	20.68972	0.0447165	0.17297954	3.1901142	20	7 26.1	17.4
12663 Björkegren	13.8	X	103.26244	165.63524	218.76073	1.08181	0.0716832	0.19835305	2.9119023	20	1 8.2	17.8
12664 Sonisenia	14.3	X	27.50972	166.93970	193.34577	2.76204	0.1569785	0.23743585	2.5828857	20	12 27.2	17.5
12665 1978 VE ₇	14.8	X	272.75906	172.43051	176.39723	0.76397	0.2201677	0.27558882	2.3386307	20	5 13.2	17.8
12666 1978 XW	13.6	X	256.51049	6.00572	105.70713	1.86004	0.1876401	0.18609108	3.0384517	20	10 3.9	17.8
12667 1979 DF	13.3	X	184.85504	126.40717	35.95799	14.74991	0.1660705	0.22754977	2.6571646	20	10 3.8	17.6
12668 1979 MX ₁	14.1	X	15.80719	297.42179	268.99809	3.51074	0.0437415	0.21251422	2.7810623	20	4 24.2	17.6
12669 1979 MY ₅	13.4	X	97.55318	347.27922	277.64215	11.80887	0.1119355	0.22194669	2.7016988	20	11 6.4	17.7
12670 Passargea	14.9	X	135.32302	59.41721	300.71568	5.52101	0.2107718	0.29960795	2.2119085	20	1 19.6	17.8
12671 Thörnqvist	14.3	X	170.95871	241.50677	343.93670	6.83373	0.1146225	0.28416041	2.2913618	20	12 15.6	17.7
12672 Nygårdh	13.8	X	326.60663	98.81194	1.80493	0.75294	0.0563597	0.18928272	3.0041993	20	—	—
12673 Kiselman	13.3	X	7.42735	227.04593	179.80089	8.58868	0.0793608	0.18832682	3.0143564	20	—	—
12674 Rybalka	14.0	X	273.48816	8.72882	310.71806	1.72426	0.2104920	0.26526544	2.3989191	20	4 5.1	17.4
12675 Chabot	13.7	X	157.50749	87.69590	17.94229	6.30908	0.0481156	0.26548667	2.3975862	20	6 21.5	17.0
12676 1981 DU ₁	13.9	X	85.22388	192.23624	235.26737	11.67125	0.1766491	0.20044799	2.8915780	20	2 16.9	17.9
12677 1981 EO ₄	14.4	X	39.89723	55.05238	292.90386	9.50644	0.1128981	0.19021070	2.9944203	20	12 9.0	18.5
12678 1981 EQ ₂₀	15.0	X	129.60470	122.28682	176.75949	2.46458	0.1225440	0.24313918	2.5423349	20	—	—
12679 1981 EK ₂₂	14.5	X	320.18444	257.23760	268.09684	0.74278	0.0604948	0.19760318	2.9192644	20	—	—
12680 Bogdanovich	14.8	X	31.55062	169.95438	34.10554	3.51463	0.0708183	0.30362608	2.1923506	20	5 15.0	16.8
12681 1981 UL ₂₉	14.6	X	222.70657	131.14101	213.99829	14.09596	0.2284683	0.21834800	2.7313031	20	3 20.9	19.5
12682 Kawada	14.3	X	27.23670	260.46600	75.58517	5.90577	0.2730163	0.23482330	2.6020078	20	12 12.5	17.6
12683 1983 RP ₃	14.1	X	296.80101	196.50410	130.67831	3.10039	0.0622560	0.26289525	2.4133162	20	6 11.6	16.8
12684 1984 DQ	13.9	X	273.97907	251.32872	320.54768	11.04430	0.2306522	0.24225786	2.5484971	20	—	—
12685 1985 VE	13.6	X	178.13761	342.37538	164.42204	4.84010	0.1016483	0.27778213	2.3263042	20	9 11.7	16.8
12686 Bezuglyj	13.5	X	99.37878	329.06028	4.69407	13.89607	0.1871222	0.23945944	2.5683137	20	—	—
12687 de Valory	13.2	X	334.22991	305.34812	149.09299	13.01142	0.1227839	0.24120668	2.5558959	20	—	—
12688 Baekeland	13.5	X	9.97756	346.76204	290.98874	12.06546	0.1575697	0.22378951	2.6868467	20	8 1.0	16.2
12689 1988 RO ₂	13.3	X	7.17038	55.21923	318.08932	9.77828	0.1112237	0.18792539	3.0186476	20	11 23.1	17.3
12690 Kochimirakagaku	11.9	X	288.69927	298.62774	219.41014	11.36748	0.1189278	0.18912034	3.0059187	20	—	—
12691 1988 VF ₂	14.2	X	32.24423	303.66745	33.59531	7.49220	0.1619248	0.27908856	2.3190389	20	12 14.2	17.2
12692 1989 BV ₁	14.6	X	109.80988	183.60817	336.62385	1.90544	0.1373579	0.26285922	2.4135367	20	7 17.2	18.0
12693 1989 EZ	12.5	X	112.35498	258.32656	20.27751	7.06051	0.2128016	0.24172058	2.5522720	20	12 17.1	16.9
12694 Schleiermacher	13.7	X	118.87877	359.02713	136.97809	0.49370	0.0832387	0.16759864	3.2580349	20	6 16.3	18.5
12695 Utrecht	14.2	X	150.91019	14.27855	256.68383	3.91093	0.2524867	0.23961417	2.5672080	20	—	—
12696 Camus	13.5	X	149.29228	128.17134	160.33078	7.99209	0.1426350	0.23210801	2.6222613	20	—	—
12697 Verhaeren	13.3	X	126.07713	293.52161	179.06231	7.60247	0.1824729	0.21053056	2.7985041	20	6 5.5	17.8
12698 1989 US ₄	13.5	X	260.76387	185.39293	222.87911	1.23795	0.0985488	0.21737366	2.7394588	20	8 3.6	17.2
12699 1990 DD ₂	15.0	X	108.36475	48.87716	180.59237	3.14238	0.1579760	0.27621144	2.3351150	20	10 18.8	18.4
12700 1990 FH	14.3	X	219.65333	145.50442	50.47818	24.52539	0.2277547	0.28158708	2.3053006	20	12 13.8	17.7
12701 Chénier	14.5	X	159.41520	192.73644	356.32149	6.52092	0.1707315	0.27679363	2.3318395	20	10 13.1	18.2
12702 Panamarenko	13.9	X	92.50940	311.43339	69.42258	2.14362	0.1728082	0.24205090	2.5499495	20	—	—
12703 1990 SV ₁₃	14.0	X	87.98927	20.28784	7.44405	4.41694	0.0591261	0.24358530	2.5392297	20	—	—
12704 Tupolev	13.6	X	10.98923	0.04968	320.21405	1.25022	0.1962960	0.22996974	2.6384908	20	10 13.1	16.3
12705 1990 TJ	13.7	X	108.11838	350.80230	56.10807	4.89884	0.0659475	0.24488397	2.5302444	20	2 5.3	16.9
12706 Tanezaki	13.8	X	339.99674	343.31670	19.01715	13.49465	0.2945305	0.22908832	2.6452543	20	10 17.5	15.5
12707 1990 UK	13.5	X	351.23953	339.23665	50.57824	15.81767	0.1086736	0.23223709	2.6212896	20	12 2.4	16.6
12708 Van Straten	14.0	X	183.26921	241.14456	185.55461	10.13216	0.1298412	0.21859379	2.7292553	20	5 31.6	18.4
12709 Bergen op Zoom	13.2	X	190.94152	351.68077	205.67749	12.62583	0.1167244	0.22988307	2.6391540	20	11 22.0	17.2
12710 Breda	13.7	X	244.39664	75.47968	133.08579	8.72639	0.0640389	0.23623267	2.5916484	20	—	—
12711 Tukmit	15.9	X	150.81259	322.89128	294.98000	38.48908	0.2722070	0.76277137	1.1863326	20	—	—
12712 1991 EY ₃	13.8	X	339.23320	239.33383	316.73282	1.33395	0.1328852	0.20377946	2.8599764	20	2 10.5	17.4
12713 1991 FY ₃	11.7	X	341.48916	300.11116	15.07896	17.22819	0.2324351	0.17594243	3.1541983	20	7 30.4	15.2
12714 Alkimos	10.2	X	264.68157	162.73817	298.89303	9.50599	0.0358268	0.08228785	5.2349464	20	10 1.2	17.2
12715 Godin	14.0	X	30.19091	295.32066	18.35114	2.20915	0.1875809	0.28246448	2.3005243	20	11 14.7	16.7
12716 Delft	13.6	X	286.43383	221.68092	218.46983	9.28792	0.0411898	0.18477077	3.0529091	20	10 22.5	17.7
12717 1991 HK	15.1	X	290.80597	54.96339	167.96005	5.22718	0.1635683	0.29872521	2.2162639	20	—	—
12718 Le Gentil	14.4	X	8									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12721 1991 PB	13.7	X	8.25062	182.65047	150.08274	2.59033	0.2461452	0.27550802	2.3390879	20	11 17.9	15.9
12722 Petrarca	14.7	X	147.02428	38.31236	191.16572	3.34439	0.1463213	0.28084428	2.3093636	20	11 24.9	18.3
12723 1991 PD ₁₀	13.9	X	213.02031	118.96433	331.99010	7.26851	0.0388378	0.27013404	2.3700081	20	8 13.9	16.9
12724 1991 PZ ₁₄	13.4	X	108.96776	72.95647	195.43143	6.53849	0.1604237	0.24566966	2.5248468	20	12 2.2	17.4
12725 1991 PP ₁₆	13.8	X	278.10462	190.60712	151.53230	5.39648	0.1551982	0.26625933	2.3929456	20	5 22.2	16.8
12726 1991 PQ ₁₆	13.8	X	277.25151	229.72234	169.68124	7.49255	0.0854420	0.27049949	2.3678730	20	8 22.4	16.4
12727 Cavendish	13.9	X	14.35407	345.17437	118.03020	5.90865	0.0874945	0.28775001	2.2722659	20	—	—
12728 1991 RP ₁	13.3	X	64.58556	337.08195	348.91558	15.16449	0.1293946	0.24360533	2.5309096	20	12 26.8	17.3
12729 Berger	13.7	X	298.24780	117.06224	213.86262	11.54863	0.0456890	0.26425561	2.4050267	20	6 20.9	16.7
12730 1991 RU ₈	14.5	X	305.76848	299.85098	3.91201	1.89872	0.1926171	0.26559411	2.3969396	20	4 29.4	17.3
12731 1991 RW ₁₂	13.6	X	284.68788	102.95110	187.86928	3.73985	0.0481854	0.26166257	2.4208896	20	4 5.2	16.5
12732 1991 TN	14.1	X	143.63752	112.52533	96.75247	5.59584	0.1110504	0.27368804	2.3494462	20	10 28.3	17.6
12733 1991 TV ₁	13.8	X	20.51476	330.67092	52.18529	8.39869	0.3042474	0.24266648	2.5456353	20	—	—
12734 Haruna	13.7	X	183.29074	51.14355	39.83657	13.35680	0.1879897	0.26186572	2.4196373	20	6 30.6	17.8
12735 1991 VV ₁	13.8	X	196.27752	125.88732	228.72270	13.35059	0.2260559	0.25724487	2.4485270	20	3 7.3	18.3
12736 1991 VC ₃	14.1	X	349.91447	5.80736	68.17833	24.13120	0.1976461	0.27631625	2.3345245	20	—	—
12737 1991 VV ₄	13.5	X	349.21139	236.56886	98.54766	7.53706	0.1547065	0.26927008	2.3750749	20	10 2.3	15.7
12738 Satoshimiki	13.5	X	41.99592	274.17783	142.82957	13.29051	0.2886944	0.24324430	2.5416023	20	—	—
12739 1992 DY ₇	14.2	X	15.29313	186.82301	75.30316	3.09477	0.0324446	0.21979499	2.7193025	20	7 10.1	17.5
12740 1992 EX ₈	12.4	X	0.50087	318.94657	143.78036	15.66329	0.0515127	0.23914601	2.5705573	20	—	—
12741 1992 EU ₃₀	14.4	X	160.12690	258.55838	243.97742	2.59391	0.0365995	0.22279599	2.6948285	20	8 10.5	18.1
12742 Delisle	12.1	X	353.85622	230.38573	124.71426	9.69907	0.1288833	0.17896187	3.1186194	20	10 22.9	15.5
12743 1992 PL ₂	12.2	X	69.84225	272.02689	295.56145	20.39804	0.0676602	0.17287688	3.1913769	20	7 15.7	16.6
12744 1992 SQ	14.7	X	179.11297	109.47290	269.22936	3.09503	0.1311278	0.30288665	2.1959172	20	3 20.2	18.0
12745 1992 UL ₂	14.3	X	187.97474	66.16758	135.75065	2.96595	0.1751459	0.30376505	2.1916819	20	4 3.6	17.6
12746 Yumeginga	13.7	X	131.78919	81.71502	265.18497	4.71386	0.1905562	0.29428065	2.2385231	20	—	—
12747 Michageffert	14.5	X	259.49575	83.94494	76.41316	2.30954	0.1410965	0.28261520	2.2997063	20	—	—
12748 1993 BP ₃	14.0	X	196.67493	136.79658	327.63744	24.17681	0.1876274	0.26927020	2.3750742	20	8 4.7	17.9
12749 Odokaigan	14.4	X	185.72070	68.89252	134.89799	5.43689	0.1316665	0.27550014	2.3391326	20	12 1.8	17.7
12750 Berthollet	13.0	X	82.41797	129.14020	140.57532	14.40778	0.0469821	0.23768510	2.5810797	20	10 30.5	16.8
12751 Kamihayashi	13.9	X	132.40384	135.28383	82.84138	3.14242	0.1674744	0.26968586	2.3726332	20	10 26.9	17.7
12752 Kvarnis	15.3	X	125.54522	314.61297	160.76370	3.28733	0.1245997	0.26015809	2.4302138	20	6 2.9	18.7
12753 Povenmire	12.8	X	136.86803	111.41101	93.63920	14.81939	0.1455537	0.23183017	2.6243560	20	10 16.2	17.3
12754 1993 LF ₂	12.7	X	234.09817	238.40079	94.21271	10.29212	0.1583277	0.21336146	2.7736952	20	3 27.8	17.3
12755 Balmer	13.7	X	322.66604	51.39439	273.83509	4.03433	0.0251571	0.21884888	2.7271341	20	7 19.6	17.3
12756 1993 QE ₁	13.0	X	96.42470	191.51422	124.06899	14.58792	0.1611756	0.22970347	2.6405294	20	—	—
12757 Yangtze	13.5	X	151.36585	113.14532	220.65344	1.05931	0.0783155	0.19812294	2.9141566	20	1 4.2	17.6
12758 Kabudari	13.9	X	287.82823	245.55266	138.59113	1.82444	0.1776349	0.17670154	3.1451582	20	7 24.5	18.0
12759 Joule	12.9	X	94.45220	112.32846	40.36998	4.81782	0.0705214	0.17042793	3.2218763	20	6 6.3	17.5
12760 Maxwell	13.5	X	37.66222	153.22626	183.88319	9.87536	0.0939930	0.18488284	3.0516752	20	11 20.9	17.7
12761 Pauwels	13.6	X	132.22055	19.65960	190.70568	18.49716	0.0597680	0.18057008	3.1000749	20	9 30.1	18.1
12762 Nadiavittor	13.3	X	286.17662	308.49131	47.53468	14.57461	0.1812401	0.17476637	3.1683328	20	6 13.2	17.7
12763 1993 UQ ₂	13.2	X	29.63446	167.13142	179.99243	9.73615	0.0949424	0.18437050	3.0573260	20	11 22.9	17.4
12764 1993 VA ₂	12.9	X	62.07871	288.11402	41.13226	11.07625	0.0856227	0.18448976	3.0560084	20	12 6.6	17.4
12765 1993 VA ₃	12.5	X	81.39192	284.07208	53.84670	10.39048	0.1172219	0.18746873	3.0235477	20	—	—
12766 Paschen	12.7	X	355.27502	349.94112	83.36071	9.73669	0.0495045	0.18613585	3.0379646	20	—	—
12767 1994 AS	13.1	X	182.93942	199.79306	31.70941	1.80294	0.1621922	0.17955263	3.1117751	20	12 11.3	18.1
12768 1994 EQ ₁	14.2	X	307.72433	296.71831	173.63749	3.81501	0.1104101	0.28905980	2.2653966	20	—	—
12769 Kandakurenai	13.9	X	240.24039	79.51469	128.95771	6.03460	0.1355036	0.29013927	2.2597742	20	—	—
12770 1994 GF	14.7	X	21.47592	101.71028	106.91367	3.64852	0.0578185	0.30433216	2.1889583	20	5 5.3	16.7
12771 Kimshin	14.4	X	210.94861	207.29073	85.65999	4.81788	0.1634384	0.29370936	2.2414249	20	1 5.4	17.7
12772 1994 GM ₁	14.2	X	48.43084	229.06223	90.65967	4.71071	0.1228822	0.27862115	2.3216317	20	12 6.4	17.3
12773 Lyman	14.3	X	222.15434	92.85928	285.27773	1.47483	0.0928006	0.21886793	2.7269759	20	5 9.9	18.4
12774 Pfund	15.2	X	244.88232	242.29899	165.13303	2.43535	0.2028947	0.22189066	2.7021536	20	6 30.6	19.2
12775 Brackett	14.9	X	255.16800	327.68846	135.35944	3.74181	0.2436049	0.22886685	2.6469605	20	9 19.6	18.4
12776 Reynolds	14.6	X	180.11134	43.84183	210.84337	3.57210	0.0551862	0.24048546	2.5610034	20	—	—
12777 Manuel	14.2	X	315.58341	304.60975	151.18702	3.71770	0.1839482	0.23594465	2.5937570	20	—	—
12778 1994 VJ ₁	13.8	X	257.61710	267.94296	82.38705	6.53547	0.0851046	0.21472400	2.7619490	20	5 17.5	17.7
12779 1994 YA ₁	13.9	X	165.45943	315.64573	118.26559	4.72686	0.1864539	0.20951949	2.8075000	20	5 24.6	18.6
12780 Salamony	14.1	X	187.82997	134.44444	345.69413	5.72994	0.1141315	0.17579803	3.1559253	20	8 9.9	19.0
12781 1995 EA ₈	14.5	X	12.27553	285.09276	163.46530	0.65763	0.2112897	0.19074274	2.9888494	20	—	—
12782 Mauersberger	13.1	X	273.25039	271.48259	160.51795	6.57407	0.1266539	0.17681732	3.1437850	20	9 12.5	17.3
12783 1995 GV	14.3	X	93.83874	53.09871	192.55265	3.22402	0.1116059	0.28742391	2.2739843	20	10 22.8	17.4
12784 1995 QE ₃	14.7	X	285.61513	12.34188	323.66644	1.73046	0.2287329	0.26950068	2.3737199	20	5 9.6	17.8
12785 1995 ST	14.4	X	156.77220	260.89307	339.30125	7.32519	0.0809143	0.28378081	2.2934047	20	12 22.2	17.6
12786 1995 SU	14.6	X	124.78333	273.26541	318.11206	5.05067	0.0845909	0.27920223	2.3184094	20	11 1.7	17.9
12787 Abetadashi	14.0	X	111.47687	17.58073	328.62838	6.24523	0.1775559	0.29062119	2.2572753	20	—	—
12788 Shigeno	14.3	X	310.30585	170.49666	202.37459	6.13567	0.2402579	0.27409393	2.3471262	20	8 19.3	15.9
12789 Salvadoraguirre	13.1	X	173.70836	263.55247	304.70339	23.31198	0.1591259	0.27953161	2.3165878	20	11 17.9	17.1
12790 Cernan	15.3	X	12.66184	139.52750	99.99846	4.33976	0.0829396	0.26574402	2.3960381	20	6 7.7	17.8
12791 1995 UN ₄	13.9	X	174.40252	95.69756	239.25175	5.43915	0.1643918	0.25357232	2.4721121	20	1 26.8	17.8
12792 1995 UL ₆	15.0	X	233.24653	354.57902	339.98763	2.20510	0.1873336	0.26096097	2.4252267	20	3 18.8	18.9
12793 Hosinokokai	14.4	X	185.51495	291.47201	354.95062	3.36370	0.1383095	0.28993856	2.2608170	20	—	—
12794 1995 VL	14.5	X	315.43404	284.11890	60.45314	12.58552	0.1731147	0.23001513	2.6381437	20	7 24.3	17.4
12795 1995 VA ₂	14.0	X	214.84531	141.37623	59.45728	10.10929	0.0577413	0.24157168	2.5533207	20	—	—
12796 Kamenrider	15.5	X	242.27844	163.01797	246.15040	10.58625	0.2055752	0.26723961	2.3870902	20	6 30.3	19.0
12797 1995 WL ₄	15.1	X	107.78484	305.81434	137.30821	3.30316	0.1506668					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12801 Somekawa	14.4	X	137.61200	351.13958	63.79372	7.34302	0.1238332	0.25397782	2.4694800	20	3 31.6	18.0
12802 Hagino	15.0	X	167.52764	40.02705	64.68638	3.61654	0.1460946	0.26202849	2.4186352	20	7 3.9	18.7
12803 1995 YF	14.3	X	312.93774	206.25427	127.71256	3.15342	0.2003219	0.26685498	2.3893834	20	6 28.1	16.5
12804 1995 YJ ₃	14.4	X	279.62739	27.55676	131.70328	5.32913	0.1908767	0.23700336	2.5860269	20	—	—
12805 1995 YL ₂₃	14.3	X	345.86513	206.67158	61.68266	6.05999	0.1537237	0.26356314	2.4092374	20	5 29.4	16.4
12806 1996 AN	14.1	X	182.18259	7.13231	73.10973	3.07798	0.1700828	0.25997498	2.4313548	20	6 15.6	18.0
12807 1996 AW	14.7	X	18.90052	341.55473	100.29017	2.55542	0.0838680	0.24125732	2.5555382	20	—	—
12808 1996 AF ₁	13.4	X	24.42254	294.03480	125.48704	8.36374	0.2887890	0.24186040	2.5512883	20	—	—
12809 1996 BB	12.9	X	238.53430	214.71179	119.41715	10.20749	0.1611789	0.21251942	2.7810170	20	4 1.9	17.4
12810 Okumiomote	14.2	X	56.53881	241.73880	110.62263	14.10437	0.2332422	0.23737531	2.5833249	20	—	—
12811 Rigionistern	14.8	X	89.54784	117.74707	338.64386	9.35391	0.1504711	0.28968386	2.2621419	20	3 20.9	17.4
12812 Cioni	14.6	X	69.76805	253.33829	16.79939	2.41078	0.1437028	0.26305633	2.4123309	20	10 26.5	18.0
12813 Paolapaolini	13.8	X	84.36945	154.34873	356.46928	9.02036	0.0904365	0.21251349	2.7810687	20	5 22.8	17.7
12814 Vittorio	14.0	X	96.36921	168.40056	194.26217	6.87207	0.1368500	0.28155901	2.3054539	20	—	—
12815 1996 DL ₂	13.4	X	215.29418	183.69920	97.31798	3.44364	0.0043849	0.19957428	2.9000112	20	1 8.9	17.5
12816 1996 ES ₁	13.6	X	31.54973	81.09974	175.29266	3.14278	0.1964797	0.17338282	3.1851656	20	8 10.9	17.3
12817 Federica	13.6	X	125.37500	56.17745	210.93511	3.83752	0.1034662	0.18403628	3.0610265	20	11 28.9	17.9
12818 Tomhanks	13.8	X	12.77365	228.03848	77.46601	3.85210	0.0600453	0.21739380	2.7392895	20	9 8.3	17.2
12819 Susumutakahasi	12.9	X	107.88122	44.34449	215.18580	7.33208	0.0416201	0.17871621	3.1214767	20	10 31.4	17.3
12820 Robinwilliams	13.0	X	135.40264	259.04413	117.20420	2.96405	0.0496663	0.19673974	2.9277994	20	2 3.6	17.0
12821 1996 RG ₁	14.4	X	133.15691	18.56762	8.95033	5.74776	0.1654219	0.30602896	2.1808596	20	2 17.7	17.2
12822 1996 XD ₁	14.5	X	309.43511	217.93371	93.63711	3.28191	0.1682278	0.31494583	2.1394993	20	5 22.1	16.1
12823 Pochintesta	14.7	X	59.27851	31.00805	293.69003	2.64092	0.1672678	0.28484336	2.2876978	20	12 31.4	17.9
12824 1997 AW ₃	14.4	X	294.30601	343.96344	171.40840	5.54595	0.0534430	0.28692401	2.2766247	20	—	—
12825 1997 AJ ₇	15.5	X	127.91750	266.12379	235.01260	1.30243	0.1513804	0.27264878	2.3554127	20	9 3.4	19.1
12826 1997 AO ₇	14.4	X	260.26182	121.90111	152.18459	4.90492	0.1284115	0.29954193	2.2122335	20	1 28.7	17.5
12827 1997 AS ₇	13.9	X	81.62088	128.73279	116.21901	7.46156	0.0886684	0.27062925	2.3671161	20	10 5.8	17.1
12828 Batteas	14.5	X	218.50962	87.57597	150.16105	3.68968	0.1333420	0.28974393	2.2618293	20	—	—
12829 1997 AB ₁₃	14.0	X	48.94538	343.62684	64.73111	3.18776	0.0162442	0.29223029	2.2489816	20	—	—
12830 1997 BP ₁	15.0	X	265.60693	6.52202	63.05021	1.90440	0.2006309	0.27525761	2.3405064	20	7 14.7	17.8
12831 1997 BS ₆	14.7	X	21.84176	344.74627	126.67316	7.71606	0.118613	0.29570324	2.2313378	20	—	—
12832 1997 CE ₁	13.9	X	310.68268	3.97430	10.38277	7.11240	0.2390299	0.27668042	2.3324755	20	8 30.2	15.3
12833 Kamenny Ujezd	14.9	X	343.27331	197.77605	110.40687	2.62879	0.1584163	0.31663891	2.1318658	20	8 8.0	16.1
12834 Bomben	14.4	X	256.12422	189.67347	128.98633	4.06301	0.1521572	0.30662621	2.1780267	20	3 22.5	17.3
12835 Stropek	14.2	X	50.25584	163.25326	135.29657	7.81783	0.1266520	0.27865495	2.3214440	20	11 13.6	17.3
12836 1997 CA ₂₂	14.5	X	49.64440	27.91792	156.30101	1.52224	0.0679452	0.30471394	2.1871295	20	5 16.3	16.6
12837 1997 EK ₃₅	14.4	X	104.83500	190.36547	134.82857	5.88781	0.1899362	0.28817322	2.2700407	20	—	—
12838 Adamsmith	13.0	X	35.94593	89.83929	322.00329	1.16346	0.0674618	0.20120008	2.8843676	20	—	—
12839 1997 FB ₂	14.2	X	117.12152	230.14660	120.41718	8.83633	0.1993003	0.24352535	2.5396465	20	—	—
12840 Paolaferrari	14.4	X	153.43934	82.55035	110.62958	5.36133	0.1406491	0.27453121	2.3446332	20	10 17.5	18.1
12841 1997 GD ₈	14.9	X	197.34282	173.47278	28.90724	0.29251	0.1612419	0.27810277	2.3245158	20	12 8.8	17.9
12842 1997 GQ ₂₃	13.8	X	299.07685	332.52903	329.24591	2.02141	0.0630305	0.21510814	2.7586598	20	5 9.3	17.5
12843 Ewers	14.6	X	40.78882	89.94980	20.51214	3.06335	0.1214035	0.25271089	2.4777268	20	1 22.3	17.0
12844 1997 JE ₁₀	12.5	X	238.14685	81.49374	74.90719	11.52727	0.0578454	0.19107925	2.9853393	20	11 24.8	16.7
12845 Crick	14.3	X	321.07239	151.85561	94.89975	2.97133	0.0163899	0.21102476	2.7941332	20	4 5.5	18.0
12846 Fullerton	14.2	X	21.73119	136.70520	208.79529	7.62319	0.0375622	0.18595581	3.0399251	20	11 2.1	18.3
12847 1997 NQ ₂	13.5	X	80.06786	255.16843	281.46922	29.80865	0.1319192	0.21119843	2.7926013	20	6 30.3	17.2
12848 Agostino	13.5	X	58.73196	249.75219	172.82134	15.06476	0.0962706	0.23474648	2.6025754	20	—	—
12849 1997 QD ₂	12.0	X	236.36452	91.33552	142.88187	10.91487	0.0667589	0.18902156	3.0069658	20	—	—
12850 Axelmunthe	14.0	X	73.84018	314.15734	349.79972	4.18083	0.2110203	0.29102446	2.2551896	20	12 24.4	17.6
12851 1998 DT ₉	15.1	X	257.78122	346.36404	344.77361	2.03049	0.1188894	0.31689352	2.1307237	20	4 11.1	17.6
12852 Teply	14.4	X	87.28723	115.44030	163.91070	6.47184	0.1451827	0.28814393	2.2701945	20	12 2.1	17.8
12853 1998 FZ ₉₇	13.4	X	59.15325	65.26709	232.02269	6.04672	0.2278454	0.24134353	2.5549296	20	11 25.1	17.2
12854 1998 HA ₁₃	15.0	X	306.89045	83.57148	236.03817	5.23493	0.2953517	0.26918094	2.3755992	20	5 6.2	17.5
12855 Tewksbury	14.6	X	43.35958	121.43869	197.05890	2.20810	0.1773468	0.24064651	2.5598607	20	11 27.8	17.9
12856 1998 HH ₉₃	13.8	X	85.61457	75.88413	355.47884	2.41328	0.0712768	0.30534020	2.1841379	20	1 26.2	15.9
12857 1998 HQ ₉₇	13.5	X	43.31620	343.04783	8.89859	2.02211	0.0743445	0.19929720	2.9026985	20	12 14.9	17.5
12858 1998 JD ₂	14.9	X	96.17437	96.70279	186.66599	4.61469	0.1841183	0.28454521	2.2892956	20	12 16.1	18.6
12859 Marlamooore	14.7	X	27.74644	306.41614	47.13784	3.41950	0.1775139	0.28472840	2.2883135	20	—	—
12860 Turney	14.5	X	277.93514	247.40294	42.06773	4.77598	0.1273163	0.26318521	2.4115433	20	3 15.7	17.7
12861 Wacker	14.7	X	12.16776	214.45840	144.57193	0.92946	0.1179949	0.23848509	2.5753043	20	11 28.9	17.6
12862 1998 KV ₃₇	14.7	X	115.46171	195.72537	109.72210	6.75980	0.2073010	0.24348605	2.5399198	20	—	—
12863 Whitfield	14.6	X	161.09936	124.92643	125.78201	2.93323	0.0956651	0.28842674	2.2687103	20	—	—
12864 1998 KB ₅₅	13.9	X	246.52636	207.11378	164.77041	8.97987	0.1406851	0.22301316	2.6930787	20	5 26.4	18.0
12865 1998 KL ₅₅	13.3	X	8.55850	89.67510	200.95815	9.11206	0.0800865	0.18430885	3.0580078	20	8 4.9	17.4
12866 Yanamadala	14.8	X	296.54006	228.32543	44.67738	2.92020	0.1863439	0.26268000	2.4146344	20	3 7.7	17.9
12867 Joëloïc	13.7	X	23.83426	177.13279	163.34467	6.64233	0.2104179	0.27905455	2.3192273	20	12 16.2	16.7
12868 Onken	12.8	X	349.30341	91.99008	246.82527	14.15166	0.2868683	0.17992264	3.1075074	20	9 10.5	15.8
12869 1998 MR ₃₂	13.9	X	57.32966	162.20012	221.53706	1.86410	0.0640475	0.19761425	2.9191553	20	—	—
12870 Rolandmeier	13.9	X	125.38394	358.32367	276.20643	7.18594	0.1760891	0.23875135	2.5733893	20	12 22.3	18.1
12871 Samarasinha	14.1	X	56.37421	296.74218	112.59774	5.32281	0.1716946	0.28810620	2.2703927	20	—	—
12872 Susiestevens	14.4	X	177.66792	57.23167	213.08863	3.21888	0.1370163	0.29042927	2.2582696	20	—	—
12873 Clausewitz	14.3	X	23.12411	26.74225	297.70390	5.33603	0.1248726	0.27449378	2.3448463	20	11 5.7	17.1
12874 Poisson	13.6	X	281.18756	92.23052	175.92441	1.76260	0.0637166	0.20528292	2.8459953	20	3 4.5	17.4
12875 1998 QA ₂	14.6	X	280.16650	197.72026	216.57243	3.08944	0.1990197	0.22407662	2.6845512	20	8 23.1	17.8
12876 1998 QR ₁₀	13.8	X	111.11675	35.49856	301.61724	0.97229	0.0814052	0.19671311	2.9280637	20	—	—
12877 1998 QF ₁₁	13.5	X	203.98371	15.39343	116.09558	12.76230	0.0819216	0.27339477	2.3511261			

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12881 Yapeiyu	14.5 ^m	X	62.83607	199.15171	134.60875	3.60216	0.1559553	0.23439881	2.6051483	20	—	—
12882 1998 QS ₃₁	12.3	X	326.98794	295.72683	347.32573	13.88691	0.1219629	0.17228265	3.1987111	20	5 14.6	16.6
12883 1998 QY ₃₂	14.1	X	257.05646	343.28976	211.14778	3.05893	0.0932074	0.28728713	2.2747060	20	—	—
12884 1998 QL ₃₄	13.0	X	237.79705	294.51643	115.72847	2.43943	0.1479977	0.17194435	3.2029053	20	7 1.2	17.7
12885 1998 QM ₃₄	13.8	X	329.03181	85.57404	136.44704	8.07141	0.1415802	0.21035832	2.8000315	20	2 27.9	17.2
12886 1998 QG ₃₅	13.3	X	236.39787	30.04751	344.48470	8.68981	0.1783862	0.21461014	2.7629258	20	5 10.5	17.9
12887 1998 QP ₃₅	13.4	X	292.64862	283.04707	86.03610	2.60387	0.2134048	0.17434746	3.1734060	20	7 6.2	17.5
12888 1998 QR ₄₂	12.8	X	142.05581	353.48703	177.12851	15.83335	0.1367995	0.17791498	3.1308412	20	8 24.5	17.9
12889 1998 QW ₄₂	13.0	X	105.88532	7.41535	205.09414	1.58747	0.1275924	0.17986475	3.1081742	20	9 9.9	17.6
12890 1998 QG ₄₃	12.8	X	153.18019	47.60233	147.90875	11.92399	0.0057583	0.18238213	3.0795070	20	10 8.5	17.3
12891 1998 QH ₅₁	13.6	X	228.67149	166.83606	189.48414	3.64015	0.1112122	0.21116101	2.7929311	20	4 19.1	17.9
12892 1998 QE ₅₂	12.9	X	161.61932	209.65016	244.42520	5.79120	0.1436962	0.21242585	2.7818335	20	6 13.1	17.3
12893 Mommert	13.9	X	216.98129	184.11316	185.49443	2.32931	0.0707621	0.20727414	2.8277388	20	4 26.1	18.0
12894 1998 QN ₇₃	13.2	X	352.17012	49.41610	269.41792	10.66165	0.2064935	0.22362627	2.6881542	20	8 25.5	15.9
12895 Balbastre	14.7	X	1.91767	37.17685	128.61980	6.11789	0.1041970	0.29431309	2.2383586	20	1 22.5	16.6
12896 Geoffroy	12.3	X	268.38157	322.40245	47.03932	6.34051	0.0879690	0.12494983	3.9625882	20	5 26.9	18.3
12897 Bougeret	14.4	X	40.97257	134.92632	22.44601	3.97190	0.0878696	0.29855327	2.2171147	20	3 22.6	16.2
12898 Mignard	13.2	X	331.10350	152.49059	151.05860	6.38524	0.1485993	0.17400451	3.1775743	20	6 20.9	17.0
12899 1998 RV ₁₃	14.4	X	91.34942	58.22425	114.03672	3.22964	0.1228307	0.26453586	2.4033278	20	7 9.2	17.6
12900 1998 RP ₂₈	14.1	X	23.92386	119.35210	151.26637	2.95520	0.1528257	0.17695465	3.1421583	20	8 12.1	17.8
12901 1998 RF ₅₀	13.4	X	336.44811	320.49075	153.11021	6.60046	0.1100151	0.19222714	2.9734428	20	—	—
12902 1998 RV ₅₂	12.5	X	220.50144	162.94025	13.26833	9.69508	0.0473046	0.18681232	3.0306262	20	11 25.1	17.0
12903 1998 RK ₅₇	14.0	X	319.82993	128.01758	154.24857	2.61332	0.1948689	0.26061823	2.4273525	20	4 23.1	16.3
12904 1998 RB ₆₅	13.2	X	29.46946	147.44604	91.17921	0.08199	0.1335829	0.17132208	3.2106564	20	7 6.5	17.1
12905 1998 RJ ₇₂	13.2	X	21.81860	169.82669	88.43263	2.44034	0.1426176	0.17270937	3.1934402	20	7 21.6	16.9
12906 1998 RS ₇₂	13.7	X	80.33544	10.54843	155.02996	4.22059	0.0317185	0.21164858	2.7886402	20	5 31.5	17.4
12907 1998 RV ₇₉	13.6	X	117.75207	139.39365	106.91271	3.49406	0.1623055	0.22879901	2.6474837	20	11 11.3	17.8
12908 Yagudina	12.9	X	194.96811	141.16779	46.14875	13.64490	0.1138801	0.22742871	2.6581074	20	11 12.2	16.8
12909 Jaclifford	14.5	X	346.74637	126.41755	9.11163	2.65056	0.1121065	0.24074472	2.5591645	20	—	—
12910 Deliso	14.5	X	316.82056	1.22937	115.76838	3.01360	0.0539875	0.23458597	2.6037625	20	—	—
12911 Goodhue	13.0	X	75.86520	175.05158	96.88114	2.43312	0.1569162	0.18105917	3.0944896	20	10 25.1	17.6
12912 Streater	13.2	X	44.25459	142.54167	109.77015	2.70011	0.1375041	0.17479754	3.1679562	20	8 18.3	17.4
12913 1998 SR ₁₃₀	13.3	X	305.52024	99.92724	213.47415	5.62664	0.0521503	0.21285314	2.7781094	20	6 6.0	16.9
12914 1998 SJ ₁₄₁	12.8	X	187.26360	157.00135	23.02952	13.48283	0.1066172	0.22471606	2.6794561	20	10 25.3	16.9
12915 1998 SL ₁₆₁	13.5	X	175.32019	359.50107	219.55458	1.40853	0.1628865	0.23004756	2.6378957	20	11 28.7	17.5
12916 Eteoneus	11.4	X	261.70113	213.70584	219.34152	26.41299	0.0207258	0.08446926	5.1444261	20	8 26.4	18.6
12917 1998 TF ₁₆	11.4	X	265.94278	228.19241	204.23066	11.83791	0.0924356	0.08346445	5.1856318	20	8 25.2	18.4
12918 1998 UG ₂₁	12.0	X	193.31259	220.15488	46.34093	11.39744	0.0599656	0.18933526	3.0036434	20	—	—
12919 Tomjohnson	13.8	X	122.37154	67.00568	256.62383	6.36850	0.2178118	0.28739665	2.2741280	20	—	—
12920 1998 VM ₁₅	10.9	X	323.12456	87.83769	220.97520	6.33567	0.2053891	0.12378946	3.9873125	20	6 6.3	15.7
12921 1998 WZ ₅	11.0	X	279.25955	273.23526	160.16492	12.80125	0.0932638	0.08208218	5.2436874	20	9 14.3	17.8
12922 1998 WW ₁₉	13.0	X	332.65544	267.48575	96.24784	7.87118	0.0496443	0.17341121	3.1848179	20	9 21.3	17.3
12923 Zephyr	15.7	X	197.89516	147.06785	168.19034	5.30429	0.4920120	0.35865875	1.9619221	20	1 24.3	19.6
12924 1999 RK ₂₁	15.5	X	217.20136	299.53544	24.01786	2.75197	0.1699377	0.31138934	2.1557591	20	2 17.5	18.8
12925 1999 SN ₄	14.0	X	114.16440	60.98887	12.22125	10.41839	0.1294064	0.25963844	2.4334554	20	3 25.6	17.1
12926 Brianmason	13.5	X	225.65864	309.01214	44.89573	8.78475	0.2213138	0.22365281	2.6879415	20	4 7.9	18.1
12927 Pinocchio	15.7	X	313.53945	21.81241	11.70873	3.80761	0.1344206	0.28178487	2.3042217	20	10 16.6	17.7
12928 Nicolapozio	14.0	X	305.22732	124.92635	201.39397	14.11489	0.0763708	0.22516025	2.6759309	20	6 19.4	17.7
12929 1999 TZ ₁	9.9	X	281.75728	128.03711	200.22265	43.42365	0.0397069	0.08207295	5.2440804	20	5 23.2	17.2
12930 1999 TJ ₆	13.6	X	147.93077	59.93499	49.63217	1.45493	0.1405490	0.17021780	3.2245274	20	6 18.4	18.8
12931 Mario	13.9	X	174.80752	319.26876	123.87923	3.38568	0.0072601	0.22046697	2.7137741	20	6 11.5	17.5
12932 Conedera	14.8	X	197.64484	232.98172	114.01462	3.42099	0.2033772	0.26114018	2.4241170	20	3 4.9	18.7
12933 1999 TC ₁₆	15.2	X	94.59622	169.27558	186.59822	2.00349	0.1567519	0.29641256	2.2277766	20	—	—
12934 Bisque	15.4	X	126.84105	266.98528	83.55669	2.21158	0.1008692	0.29833404	2.2182007	20	—	—
12935 Zhengzhemin	15.2	X	67.00505	230.30568	38.25056	5.82072	0.0985094	0.28008614	2.3135291	20	10 19.3	18.0
12936 2549 P-L	13.7	X	108.48852	284.46666	167.46697	2.14244	0.0376486	0.20697533	2.8304598	20	4 2.5	17.4
12937 Premadi	13.4	X	216.78598	253.33113	290.26729	11.11349	0.1816088	0.23266079	2.6181062	20	11 23.3	17.4
12938 4161 P-L	14.6	X	225.10627	157.11983	337.61673	7.22204	0.1432985	0.23044777	2.6348408	20	10 5.3	18.5
12939 4206 P-L	14.5	X	21.24660	328.72319	350.00258	11.77649	0.1711186	0.28023324	2.3127194	20	10 31.6	17.3
12940 4588 P-L	15.2	X	21.59046	143.84909	187.88240	5.68181	0.1755151	0.28079262	2.3096469	20	11 26.7	17.9
12941 4638 P-L	15.3	X	2.50626	198.59169	137.39172	1.67474	0.0851218	0.23030488	2.6359305	20	10 7.8	18.5
12942 6054 P-L	14.3	X	299.30757	181.77435	204.53832	3.84820	0.1926067	0.17879298	3.1205830	20	8 10.7	18.1
12943 6670 P-L	14.6	X	259.95571	119.85044	10.19997	3.93968	0.1304120	0.23213923	2.6220262	20	11 16.8	18.0
12944 6745 P-L	14.2	X	231.93971	331.09323	138.93804	2.05162	0.1493329	0.18003712	3.1061900	20	9 7.9	19.0
12945 9534 P-L	14.3	X	23.74705	62.49752	172.23086	3.22265	0.1342696	0.26036905	2.4289010	20	6 25.5	16.6
12946 1290 T-1	14.8	X	158.53435	284.01563	194.87933	6.19561	0.0662633	0.26581544	2.3956089	20	7 10.9	18.2
12947 3099 T-1	14.3	X	62.57525	102.98977	336.21196	5.45812	0.1103138	0.29879021	2.2159424	20	1 3.8	16.2
12948 4273 T-1	14.3	X	359.63016	316.21631	135.20164	5.70944	0.1166323	0.19595942	2.9355667	20	—	—
12949 4290 T-1	12.3	X	291.96855	227.52699	23.32675	12.44497	0.1475822	0.16150195	3.3395211	20	2 24.3	17.2
12950 4321 T-1	14.4	X	248.24234	76.19668	59.55942	2.54789	0.1491635	0.23215137	2.6219347	20	11 6.4	17.9
12951 1041 T-2	13.5	X	103.18006	161.21314	175.71961	2.05808	0.1130965	0.19483481	2.9468521	20	—	—
12952 1102 T-2	14.6	X	160.87913	75.16245	198.65081	1.59807	0.0744589	0.19476544	2.9475518	20	—	—
12953 1264 T-2	14.4	X	332.96192	39.93097	354.86612	2.16559	0.1236742	0.23219757	2.6215869	20	11 10.6	17.1
12954 2040 T-2	14.1	X	53.71976	222.27312	187.90903	7.29718	0.0151483	0.19573812	2.9377789	20	—	—
12955 2162 T-2	15.2	X	65.11382	85.28534	192.83268	4.44650	0.0811091	0.23158138	2.6262353	20	10 18.3	18.6
12956 2232 T-2	14.9	X	288.51545	178.96705	174.76546	3.89527	0.0946019	0.				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
12961 4262 T-2	15.5	X	347.83908	168.15526	77.87955	3.50721	0.1342727	0.30982178	2.1630244	20	4 27.5	17.1
12962 4297 T-2	13.0	X	32.42481	80.50584	75.47390	3.43638	0.0245706	0.15834972	3.3836948	20	3 19.9	17.7
12963 5485 T-2	13.9	X	188.64870	133.19738	298.37196	5.68288	0.0878850	0.26754407	2.3852789	20	6 12.4	17.2
12964 1071 T-3	14.3	X	246.10515	0.30088	324.59654	5.93447	0.1476306	0.26757928	2.3850696	20	3 19.5	18.0
12965 1080 T-3	13.3	X	193.70404	258.13199	332.19702	11.13049	0.1113102	0.23453530	2.6041374	20	—	—
12966 1102 T-3	13.5	X	178.81361	270.89952	247.63019	11.57308	0.1568875	0.18185559	3.0854483	20	9 9.3	18.7
12967 3105 T-3	14.8	X	214.04955	172.76257	170.78571	2.71693	0.1801206	0.26647436	2.3916581	20	3 13.2	18.5
12968 3261 T-3	14.0	X	127.98598	193.70709	71.88875	1.29626	0.0692346	0.18645632	3.0344826	20	12 2.4	18.6
12969 3482 T-3	14.9	X	277.36819	77.38854	334.12008	0.33435	0.1628137	0.18020839	3.1042215	20	8 17.3	19.1
12970 4012 T-3	13.4	X	52.38058	278.65993	40.78242	10.63202	0.0644616	0.18503498	3.0500023	20	11 11.2	17.6
12971 4054 T-3	13.3	X	14.79322	266.11569	41.84657	10.59284	0.1052947	0.18228905	3.0805552	20	9 17.1	17.3
12972 Eumaios	11.6	X	336.39950	339.63306	40.50326	8.44126	0.1520925	0.08453784	5.1416435	20	9 27.2	17.7
12973 Melanthios	11.4	X	315.80853	36.96420	358.13580	5.74528	0.0585932	0.08510806	5.1186518	20	9 19.2	17.8
12974 Halitherses	11.3	X	339.28643	3.18403	15.15344	7.60703	0.0520962	0.08355670	5.1818146	20	9 30.2	17.8
12975 Efreмов	13.2	X	44.17127	217.48358	186.29258	15.13174	0.1414928	0.23677177	2.5877130	20	—	—
12976 Kalinenkov	14.2	X	181.20985	123.28882	200.04690	2.45176	0.2007520	0.25810480	2.4430855	20	1 21.3	18.3
12977 1978 NC	14.2	X	79.25131	190.58914	114.42383	27.63657	0.1986911	0.24103544	2.5571063	20	12 23.2	18.5
12978 Ivashov	14.4	X	228.55852	97.84834	216.65520	3.74115	0.2002408	0.29634648	2.2281078	20	2 14.4	18.0
12979 Evgalvasil'ev	14.7	X	73.41864	354.57939	14.62495	5.34960	0.1776288	0.28845943	2.2685389	20	—	—
12980 1978 VO ₃	15.5	X	13.66917	122.03189	211.24712	2.37412	0.1876927	0.28113644	2.3077634	20	11 18.4	17.7
12981 1978 VP ₃	14.1	X	0.97335	21.00579	84.11951	4.04466	0.0735014	0.19221812	2.9735358	20	—	—
12982 1979 MS ₅	15.0	X	87.54465	108.67227	118.87938	6.47502	0.0985689	0.26717762	2.3874594	20	9 19.2	18.2
12983 1979 OH ₁	12.9	X	115.21799	106.80926	137.04271	12.30724	0.0664522	0.17352106	3.1834736	20	10 26.5	17.8
12984 Lowry	14.0	X	143.36478	214.24998	158.59765	2.47371	0.0791570	0.20570495	2.8421013	20	2 10.2	18.2
12985 1980 UW ₁	14.9	X	269.80920	40.69300	309.48421	1.65539	0.1951692	0.26554115	2.3972583	20	5 14.5	18.1
12986 1981 DM ₂	14.4	X	68.49649	82.38456	320.33794	10.17478	0.1039235	0.19643197	2.9308569	20	—	—
12987 1981 EF ₂	13.6	X	38.16439	323.68641	300.31226	6.48932	0.0307961	0.26035586	2.4289830	20	8 17.2	16.6
12988 1981 EC ₅	15.7	X	251.30421	75.16472	273.08564	6.13773	0.0590769	0.30584050	2.1817554	20	5 4.7	18.4
12989 1981 EV ₉	16.1	X	51.35455	205.93362	286.30596	4.32116	0.0693874	0.30251937	2.1976942	20	2 26.2	18.3
12990 1981 EB ₁₇	14.3	X	322.39381	237.37202	338.90883	3.29647	0.0546894	0.25107647	2.4884679	20	2 16.4	17.3
12991 1981 EN ₂₁	14.1	X	283.72461	35.79936	187.33658	1.80320	0.0118290	0.19895349	2.9060406	20	1 19.8	18.2
12992 1981 EZ ₂₂	15.3	X	219.82610	325.87586	355.44378	2.45206	0.1880692	0.30097813	2.2051904	20	2 17.3	18.8
12993 1981 EP ₂₇	14.1	X	173.95399	163.38390	185.69666	12.50091	0.0396464	0.19977370	2.8980809	20	2 10.4	18.5
12994 1981 ET ₂₇	14.5	X	213.28234	75.05795	167.62604	2.21825	0.0288057	0.19492942	2.9458985	20	—	—
12995 1981 EY ₂₇	13.8	X	165.57662	301.13067	5.75948	11.76341	0.1820330	0.24528103	2.5275130	20	—	—
12996 1981 EV ₂₈	14.4	X	78.45949	114.30410	210.52696	10.18137	0.0984843	0.19134176	2.9826081	20	12 23.3	19.0
12997 1981 EV ₂₉	15.4	X	6.28937	37.97721	209.92335	12.62070	0.1464227	0.23046020	2.6347461	20	6 10.5	18.2
12998 1981 EB ₄₃	15.5	X	219.56174	243.27167	9.02158	1.97253	0.0538365	0.24620186	2.5212069	20	—	—
12999 Toruń	13.8	X	95.58980	211.21172	152.26220	5.76833	0.1884245	0.28744228	2.2738874	20	—	—
13000 1981 QK ₃	14.2	X	20.26425	10.18762	344.44413	12.24998	0.1137906	0.23108893	2.6299649	20	11 29.1	17.7
13001 Woodney	14.4	X	321.80816	4.73055	24.12059	3.75911	0.1556248	0.27774298	2.3265229	20	10 25.9	16.2
13002 1982 BJ ₁₃	13.8	X	330.08251	342.21328	300.36211	5.02410	0.0859436	0.26538951	2.3981713	20	5 26.2	16.4
13003 Dickbeasley	13.7	X	108.28631	33.36365	177.51585	26.56453	0.2057344	0.24096202	2.5576257	20	9 23.9	17.8
13004 Aldaz	13.9	X	17.71033	186.90567	173.80644	14.21146	0.2967099	0.23647055	2.5899100	20	—	—
13005 Stankonyukhov	13.0	X	76.84806	301.70221	352.79180	12.40214	0.1732511	0.18530223	3.0470690	20	11 19.6	17.9
13006 Schwaar	13.7	X	317.05355	358.14311	129.23281	28.53286	0.2027265	0.28747820	2.2736979	20	—	—
13007 1984 AU	13.0	X	48.08416	87.81157	330.45441	3.23501	0.1333890	0.24438245	2.5337049	20	—	—
13008 1984 SE ₆	14.0	X	350.28474	318.56496	6.21771	3.28253	0.2032147	0.27356982	2.3501230	20	9 19.2	15.4
13009 Voloshchuk	13.1	X	100.36727	214.60442	145.31314	14.05428	0.1987513	0.23560649	2.5962383	20	—	—
13010 Germantitov	12.3	X	307.33906	119.10212	325.60359	13.66433	0.1050060	0.17850234	3.1239694	20	11 15.5	16.6
13011 Loeillet	13.5	X	1.64112	29.51605	332.94194	10.51155	0.1260923	0.18179514	3.0861323	20	10 29.2	17.4
13012 1987 SO ₅	12.8	X	24.23656	61.46369	354.52804	8.33710	0.0164735	0.18645274	3.0345214	20	—	—
13013 1987 SP ₁₂	13.3	X	333.33899	187.68300	185.79644	2.71432	0.2523115	0.17836956	3.1255195	20	9 26.9	16.2
13014 Hasslacher	13.2	X	303.40844	0.10741	32.43097	7.04750	0.1248192	0.17567315	3.1574207	20	9 8.3	17.2
13015 Noradokei	13.7	X	31.83962	284.49612	55.40292	16.51378	0.2645290	0.24100603	2.5573143	20	12 21.7	17.4
13016 1988 DB ₅	14.3	X	241.14321	13.24387	200.40290	12.86612	0.1074595	0.23855395	2.5748087	20	—	—
13017 Owakenoomi	13.5	X	284.39921	184.11971	15.06338	13.72981	0.1162371	0.24032244	2.5621615	20	—	—
13018 Geoffjames	12.6	X	189.50232	49.27483	227.01304	13.36723	0.1761805	0.23576136	2.5951012	20	—	—
13019 1988 NW	13.0	X	158.74592	353.75360	304.05876	13.06580	0.1766785	0.23000865	2.6381933	20	—	—
13020 1988 PW ₂	13.4	X	137.02328	72.70584	175.71976	10.58714	0.0359310	0.19107985	2.9853330	20	11 23.5	17.9
13021 1988 RY ₅	13.3	X	229.79840	165.61677	184.87495	1.99754	0.0921252	0.20746329	2.8260199	20	4 14.4	17.4
13022 1988 RL ₉	13.7	X	175.86850	63.61447	327.88399	5.11562	0.1066949	0.29935165	2.2131709	20	4 1.5	16.7
13023 1988 XT ₁	12.8	X	334.56234	9.73166	41.12061	17.92066	0.2992718	0.18446709	3.0562587	20	11 24.7	15.4
13024 Conradferdinand	14.1	X	55.89123	284.65585	317.94358	5.70942	0.1010153	0.26552538	2.3973532	20	8 25.4	17.0
13025 Zürich	13.6	X	187.18466	141.20613	342.59400	23.93883	0.2774744	0.26798798	2.3826441	20	8 18.4	17.9
13026 1989 CX	13.9	X	273.13674	146.74616	328.01263	24.41887	0.2308802	0.27459927	2.3442457	20	10 30.3	16.9
13027 Geeraerts	13.7	X	250.87894	286.88786	327.03223	3.76281	0.1121456	0.24134807	2.5548976	20	12 24.7	16.8
13028 Klaustschira	13.7	X	255.05155	208.43346	118.47964	13.08191	0.2145579	0.25158365	2.4851224	20	4 3.2	17.8
13029 1989 HA	13.2	X	147.11639	125.03349	142.63187	15.07459	0.1668261	0.23786592	2.5797714	20	—	—
13030 1989 PF	12.9	X	277.36382	190.91285	147.22949	18.73477	0.2422809	0.21707477	2.7419728	20	5 8.7	17.3
13031 Durance	13.5	X	280.20387	52.54105	157.18008	4.25868	0.1317279	0.23516424	2.5994923	20	—	—
13032 Tarn	14.3	X	223.72847	280.53881	171.89342	4.87186	0.0413871	0.21890964	2.7266294	20	8 22.7	18.0
13033 Gardon	13.9	X	100.20024	111.41749	164.66368	6.50352	0.0412436	0.22527676	2.6750082	20	11 22.1	17.7
13034 1989 UN	14.5	X	231.75832	6.74723	12.96194	3.47562	0.1242565	0.30971496	2.1635217	20	5 18.1	17.4
13035 1989 UA ₆	11.8	X	52.68439	211.72031	58.12988	3.63228	0.1601877	0.12426803	3.9770688	20	9 18.4	17.1
13036 1989 YO ₃	14.6	X	90.14395	150.69923	72.42861	1.35302	0.0679637	0.27606422	2.3359451	20	9 11.6	17.5
13037 Potosi	14.7	X	257.39785	39.15112	209.96407							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13041 1990 OS ₄	13.1	X	265.53906	235.86669	269.16613	14.08352	0.0533785	0.24085321	2.5583959	20	12 28.3	16.1
13042 1990 QE	13.8	X	71.11157	49.76867	307.64151	16.70974	0.2388527	0.23941375	2.5686405	20	—	—
13043 1990 QT ₄	13.4	X	14.44885	48.53596	1.53601	15.17809	0.0966248	0.23869292	2.5738093	20	—	—
13044 Wannas	13.7	X	42.87221	96.99538	341.51516	12.14707	0.1447137	0.24354857	2.5394850	20	—	—
13045 Vermandere	14.8	X	28.63468	77.28083	334.11037	0.64977	0.0954531	0.24032645	2.5621330	20	—	—
13046 Aliev	15.0	X	126.06922	11.01630	313.60827	2.95096	0.2616029	0.24176667	2.5519476	20	—	—
13047 1990 RJ ₅	14.4	X	62.90728	184.30692	266.93833	2.80611	0.1477924	0.24511285	2.5286691	20	2 6.2	17.0
13048 1990 RR ₇	14.4	X	176.71107	114.38959	164.02420	6.40710	0.1316258	0.24293735	2.5437428	20	—	—
13049 Butov	13.3	X	24.90498	226.67916	193.07579	13.44344	0.1630199	0.23858533	2.5745829	20	—	—
13050 1990 SY	13.4	X	81.70890	337.13538	330.60307	8.40514	0.1867243	0.23615666	2.5922044	20	12 24.5	17.6
13051 1990 SF ₅	14.9	X	61.01325	193.28417	153.77607	4.52861	0.1083867	0.23686253	2.5870519	20	—	—
13052 Las Casas	13.8	X	112.18425	145.27593	59.80395	4.12700	0.0386375	0.22853523	2.6495205	20	9 7.1	17.5
13053 BertrandRussell	14.8	X	352.74521	307.17646	116.42224	5.44570	0.2956435	0.23550643	2.5969736	20	—	—
13054 1990 ST ₁₅	13.6	X	112.24836	308.96748	311.82107	6.22382	0.0860329	0.26932872	2.3747302	20	11 25.1	17.1
13055 Krepplein	13.9	X	256.65368	16.98433	38.84780	13.69372	0.1710505	0.22342546	2.6897646	20	8 3.8	17.9
13056 1990 VN ₁	13.4	X	357.79446	347.91666	45.88097	8.73308	0.1149908	0.23193622	2.6235559	20	12 20.4	16.5
13057 Jorgensen	13.9	X	225.91542	328.39136	24.68991	8.32406	0.1822769	0.21792737	2.7348165	20	4 7.7	18.4
13058 Alfredstevens	14.5	X	66.31114	214.90294	197.07154	6.10495	0.1162729	0.27216487	2.3582038	20	—	—
13059 Ducuroir	13.5	X	334.74398	53.26415	115.21614	6.56333	0.0945750	0.23673098	2.5880102	20	—	—
13060 1991 EJ	10.7	X	326.70133	96.98993	280.44275	22.95492	0.1243955	0.08429890	5.1513545	20	8 27.2	17.4
13061 1991 FL ₂	13.0	X	194.00155	48.40168	347.35929	11.06158	0.0939572	0.20901262	2.8120371	20	4 28.2	17.5
13062 Podarkes	11.1	X	14.50459	280.47812	91.01326	8.22937	0.0110361	0.08388006	5.1684886	20	11 4.4	18.0
13063 Purifoy	14.4	X	185.33846	122.11185	218.59142	4.83520	0.1945510	0.29678105	2.2259322	20	2 9.5	18.0
13064 Haemhouts	15.0	X	244.73841	278.41506	125.68123	7.43253	0.1266134	0.26909830	2.3760856	20	7 7.4	18.2
13065 1991 PG ₁₁	14.0	X	95.40290	138.12526	179.05769	6.62773	0.2369150	0.28157032	2.3053921	20	—	—
13066 1991 PM ₁₃	14.2	X	120.36534	279.16739	357.36882	4.06628	0.2049585	0.28184555	2.3038910	20	12 28.3	17.9
13067 1991 PA ₁₅	15.1	X	6.17532	152.37636	191.76181	5.16050	0.1675085	0.27549142	2.3391819	20	11 17.5	17.4
13068 1991 RL ₁	14.4	X	163.78036	102.12112	192.90611	11.66102	0.1690707	0.28677658	2.2774050	20	—	—
13069 Umbertococo	14.2	X	249.58513	81.19098	357.69474	7.33054	0.2472336	0.26949986	2.3737247	20	8 16.4	17.5
13070 Seanconnery	14.7	X	224.92368	131.75819	205.69753	5.62321	0.2792124	0.26048814	2.4281606	20	3 10.7	19.1
13071 1991 RT ₅	13.7	X	350.01873	313.66952	32.91329	7.38949	0.1387982	0.27271597	2.3550258	20	10 17.0	15.9
13072 1991 RS ₈	14.0	X	333.87580	56.15013	352.24266	8.28564	0.1056739	0.27585594	2.3371208	20	12 14.7	16.5
13073 1991 RE ₁₅	13.8	X	185.06262	330.88505	342.96255	7.93896	0.2210838	0.28975581	2.2617674	20	1 12.7	17.5
13074 1991 RK ₁₅	14.0	X	71.92651	335.17275	3.60421	5.18293	0.1556236	0.28042839	2.3116464	20	—	—
13075 1991 UN ₁	14.3	X	292.91465	84.31039	312.78661	5.75615	0.1202577	0.26973272	2.3723584	20	9 7.9	16.9
13076 1991 VT ₃	13.2	X	12.46716	114.00712	237.95858	12.69467	0.1829240	0.23835900	2.5762125	20	11 29.7	16.0
13077 Edschneider	14.9	X	37.99561	39.59634	191.71018	4.12238	0.1015872	0.26301640	2.4125751	20	7 11.2	17.5
13078 1991 WD	13.8	X	226.89732	35.42547	89.33837	13.87864	0.2195538	0.23298996	2.6156397	20	9 26.2	18.1
13079 Toots	14.1	X	105.59048	183.91155	153.91838	10.23149	0.1012232	0.24024447	2.5627158	20	—	—
13080 1992 EZ ₇	14.5	X	295.29288	275.51469	162.66071	12.32440	0.2012527	0.23258322	2.6186882	20	10 30.8	17.2
13081 1992 EW ₉	12.6	X	65.99233	210.64763	154.57948	15.14821	0.1227102	0.23656232	2.5892402	20	—	—
13082 Gutiérrez	13.8	X	312.06828	351.13193	344.15651	14.22822	0.1575260	0.22160165	2.7045025	20	7 5.7	17.1
13083 1992 EE ₃₂	15.1	X	273.46968	310.96071	193.47748	4.34615	0.1871742	0.23476023	2.6024738	20	12 21.5	17.8
13084 Virchow	13.7	X	133.33218	204.27690	95.96233	5.83234	0.0489569	0.23193296	2.6235805	20	—	—
13085 Borlaug	14.1	X	7.26102	349.08520	273.70957	0.19366	0.0822088	0.21559659	2.7544916	20	6 30.9	17.1
13086 Sauerbruch	13.5	X	316.37496	181.11485	100.03379	9.44741	0.1898338	0.21010573	2.8022752	20	4 23.6	17.0
13087 Chastellux	13.4	X	136.56698	243.07303	198.84418	1.50914	0.0366240	0.20214693	2.8753538	20	4 24.4	17.4
13088 Filippotera	13.1	X	312.42139	218.90637	149.00411	8.03978	0.1045535	0.17584463	3.1553677	20	8 19.9	16.9
13089 1992 PH ₂	13.1	X	71.22394	70.41504	270.91048	9.45237	0.1306667	0.18535537	3.0464866	20	—	—
13090 1992 PV ₂	13.1	X	112.93430	59.23540	272.00980	8.97682	0.1159035	0.18861056	3.0113325	20	—	—
13091 1992 PT ₃	15.4	X	114.80337	223.69909	82.68940	2.36603	0.2752577	0.29404033	2.2397426	20	—	—
13092 Schrödinger	15.3	X	289.44316	134.03286	207.29023	0.61853	0.0499616	0.31163904	2.1546074	20	6 24.5	17.4
13093 Wolfgangpauli	12.5	X	337.85659	330.51972	203.80667	10.12631	0.0560512	0.19068969	2.9894038	20	—	—
13094 Shinshuueda	14.7	X	341.12722	133.42315	239.62628	3.85365	0.1269644	0.28235619	2.3011125	20	11 14.2	16.6
13095 1992 WY ₁	14.5	X	265.40334	97.25052	0.31624	3.28244	0.0863578	0.28073996	2.3099357	20	10 29.8	16.9
13096 Tigris	12.0	X	89.58465	60.91313	309.91278	2.27425	0.0361986	0.14092311	3.6571932	20	—	—
13097 Lamoraal	14.9	X	324.42512	185.70028	213.95721	2.58545	0.0145143	0.27575403	2.3376966	20	11 12.4	17.6
13098 1993 FM ₆	14.6	X	314.73188	236.39719	93.04270	2.46934	0.0877531	0.26321951	2.4113338	20	7 10.9	16.9
13099 1993 FO ₇	14.1	X	191.28695	11.99392	77.41438	3.43454	0.1689851	0.26524314	2.3990535	20	7 6.7	17.9
13100 1993 FB ₁₀	14.4	X	212.18842	251.44532	118.86062	3.48699	0.1930197	0.25787529	2.4445348	20	4 15.7	18.4
13101 Fransson	14.5	X	246.88277	147.91197	173.14772	6.89092	0.0935543	0.25544173	2.4600361	20	3 23.9	17.8
13102 1993 FU ₁₁	14.3	X	71.78060	155.19067	123.57499	4.00150	0.0804880	0.23334809	2.6129627	20	10 28.9	17.9
13103 1993 FR ₁₂	14.8	X	39.81537	50.96135	99.20953	3.58600	0.1292954	0.25500153	2.4628664	20	3 19.9	17.2
13104 1993 FV ₂₄	15.4	X	343.35965	349.88533	268.85443	1.42683	0.1731485	0.25739014	2.4476056	20	5 6.1	17.5
13105 1993 FO ₂₇	15.6	X	175.89374	234.37403	241.56009	2.82125	0.1378411	0.26567307	2.3964647	20	7 26.5	19.3
13106 1993 FV ₄₈	14.4	X	100.86497	70.93433	182.08224	6.78051	0.0845169	0.27004307	2.3705404	20	11 5.4	17.7
13107 1993 FE ₅₉	13.7	X	102.43118	351.86211	1.05372	10.36676	0.3052373	0.24367077	2.5386359	20	—	—
13108 1993 FD ₈₂	15.0	X	196.24022	91.86779	159.90321	3.92558	0.1346321	0.24281443	2.5446012	20	—	—
13109 Berzelius	14.5	X	147.99168	275.80946	232.71150	6.12921	0.1803182	0.26262428	2.4149759	20	8 9.4	18.4
13110 1993 LS ₁	13.8	X	152.75706	24.79741	301.03128	12.78965	0.1746945	0.24213146	2.5493839	20	—	—
13111 Papacosmas	14.3	X	308.80333	212.69242	127.95981	27.35201	0.0965932	0.36423220	1.9418566	20	7 26.7	15.6
13112 Montmerency	14.1	X	102.87611	66.43646	14.02594	1.85048	0.0244967	0.20418888	2.8561520	20	3 10.2	18.1
13113 Williamyeats	13.7	X	247.92025	301.94213	183.13333	7.05899	0.0508168	0.22214487	2.7000918	20	11 6.0	17.4
13114 Isabelgodin	13.9	X	265.06238	346.19545	354.05499	12.07505	0.0383901	0.21101689	2.7942027	20	5 14.9	18.0
13115 Jeangodin	13.8	X	173.49258	267.99193	349.36256	4.02984	0.0919902	0.22924883	2.6440194	20	—	—
13116 Hortensia	13.1	X	318.58131	87.44361	36.05318	10.48096	0.0565043	0.19071055	2.9891858	20	—	—
13117 Pondicherry	13.5	X	150.35298	133.27729	168.30140	9.86435	0.0491367	0.19201664	2.9756155	20	—	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13121 Tisza	15.1	X	351.05982	312.87015	354.10085	4.88370	0.1144800	0.27674859	2.3320925	20	8 16.4	17.2
13122 Drava	14.9	X	54.87992	121.36106	141.89365	6.60123	0.1161121	0.27825802	2.3236511	20	9 30.1	17.7
13123 Tyson	12.4	X	350.72017	251.89688	68.80178	23.28682	0.2714808	0.27187493	2.3598801	20	10 11.4	14.7
13124 1994 PS	13.6	X	208.25057	31.37267	154.29924	11.22924	0.1085737	0.27392464	2.3480931	20	12 7.5	16.9
13125 Tobolsk	13.4	X	185.53687	128.74171	327.75949	9.16168	0.0053472	0.22380272	2.6867410	20	7 15.7	17.1
13126 Calbuco	15.1	X	238.13973	344.94937	263.48518	2.25594	0.0752602	0.24617584	2.5213846	20	—	—
13127 Jeroenbrouwers	14.9	X	76.60408	118.53566	101.41050	2.22644	0.1352623	0.26562493	2.3967542	20	8 28.9	18.1
13128 Aleppo	14.7	X	91.37873	89.84322	134.78829	6.02823	0.1748248	0.26810058	2.3819769	20	9 27.5	18.3
13129 Poseidonios	14.3	X	280.56669	161.75865	134.49860	8.02277	0.0964554	0.21789395	2.7350961	20	4 6.2	18.1
13130 Dylanthomas	13.8	X	329.76642	77.67365	175.47204	7.83419	0.1681975	0.25771492	2.4455489	20	4 2.3	16.1
13131 Palmyra	15.0	X	21.31580	208.49715	218.26725	3.45271	0.1934347	0.23894452	2.5720022	20	—	—
13132 Ortelius	14.1	X	182.50321	223.58530	304.26167	5.93672	0.0774673	0.26930708	2.3748574	20	10 12.0	17.5
13133 Jandecleir	14.7	X	275.62461	204.56039	216.34847	3.13063	0.1186944	0.22878331	2.6476048	20	9 8.2	17.8
13134 1994 QX	14.5	X	83.75089	207.75017	157.88430	5.16752	0.1657138	0.24037068	2.5618187	20	—	—
13135 1994 QX	14.0	X	336.77074	79.75367	315.21762	14.09911	0.1530851	0.23067083	2.6331419	20	11 12.9	17.3
13136 1994 UJ ₁	13.9	X	90.83223	21.27449	347.67921	3.08891	0.1806739	0.23856417	2.5747352	20	—	—
13137 1994 UT ₁	13.4	X	278.27645	331.21769	44.85761	14.60295	0.1860488	0.22041861	2.7141710	20	7 1.6	17.2
13138 1994 VA	13.6	X	163.85524	90.47298	232.02128	12.00432	0.2489372	0.24301489	2.5432016	20	1 8.9	18.0
13139 1994 VD ₂	14.0	X	232.74736	352.83793	59.14985	8.83799	0.2201279	0.21686086	2.7437756	20	6 22.3	18.4
13140 Shinchukai	14.2	X	299.43613	313.77684	77.73815	5.15975	0.2934530	0.22319082	2.6916494	20	8 10.4	16.9
13141 1994 WW ₂	13.8	X	23.93509	304.91736	14.25003	3.14711	0.0605253	0.22261923	2.6962548	20	10 11.8	17.1
13142 1994 YM ₂	13.6	X	229.29695	214.34322	230.94201	12.49530	0.1248451	0.21848422	2.7301678	20	8 5.6	17.9
13143 1995 AF	12.6	X	60.95585	27.89275	293.91925	11.52990	0.1660201	0.22636174	2.6664536	20	12 17.2	16.5
13144 1995 BJ	13.3	X	309.20554	127.45232	303.76297	9.89279	0.0905808	0.18367096	3.0650840	20	11 4.2	17.4
13145 Cavezzo	13.1	X	109.25728	198.93368	78.96182	7.32133	0.1211740	0.18062474	3.0994495	20	11 30.2	17.9
13146 Yuriko	12.9	X	109.44498	145.17408	73.80245	8.91550	0.0946191	0.17363367	3.1820970	20	9 22.9	17.8
13147 Foglia	13.3	X	55.01126	312.82226	140.66955	2.84103	0.0422900	0.19526052	2.9425674	20	1 27.4	17.2
13148 1995 EF	13.7	X	102.48062	56.53400	127.47078	8.51237	0.1589428	0.21009112	2.8024051	20	8 8.5	18.0
13149 Heisenberg	13.9	X	242.68414	357.27542	110.68732	3.10731	0.1451292	0.17863011	3.1224795	20	9 18.4	18.4
13150 Palotesi	13.2	X	201.91466	156.23798	356.68519	17.30380	0.1543738	0.17934774	3.1141447	20	9 27.0	18.3
13151 Polino	14.7	X	6.60425	48.28269	248.27169	4.45293	0.2105219	0.28001289	2.3139326	20	9 9.7	16.5
13152 1995 QK	15.3	X	348.46259	133.16182	230.82632	3.31603	0.1714724	0.27982842	2.3149494	20	11 15.6	17.3
13153 1995 QC ₃	15.4	X	226.07909	345.13192	336.80248	5.63860	0.3670174	0.26245583	2.4160091	20	2 21.6	19.8
13154 Petermrva	14.2	X	170.24381	59.09720	331.57775	5.52149	0.1675970	0.30019971	2.2090008	20	3 28.6	17.6
13155 1995 SB ₁	14.4	X	213.67991	167.88388	231.60322	24.37453	0.2548962	0.26605211	2.3941880	20	5 19.3	18.5
13156 Mannoucyo	14.8	X	245.95110	67.40365	251.07468	5.38788	0.2010469	0.30361144	2.1924210	20	3 3.7	18.2
13157 Searfoss	14.5	X	47.98827	134.38872	19.36406	3.32960	0.0461679	0.29843779	2.2176866	20	3 25.3	16.6
13158 1995 UE	15.0	X	316.46002	212.63369	344.02962	5.90759	0.0676201	0.29467406	2.2365303	20	1 4.8	17.6
13159 1995 UW ₃	15.1	X	230.30885	22.49570	7.01491	2.45906	0.2003722	0.26557153	2.3970754	20	5 23.9	18.8
13160 1995 US ₄	14.6	X	154.33516	259.54733	57.04040	6.26652	0.2025431	0.28985685	2.2612148	20	—	—
13161 1995 UK ₆	14.5	X	237.98846	30.66139	341.43139	1.88787	0.2050585	0.26491080	2.4010596	20	5 8.2	18.3
13162 Ryokochigaku	14.0	X	322.17949	93.42747	254.72717	5.76441	0.1462820	0.27263520	2.3554909	20	8 16.3	16.2
13163 Koyamachuya	13.5	X	98.62500	304.81680	41.66194	10.57172	0.0693294	0.28573335	2.2829449	20	—	—
13164 1995 VF	14.7	X	54.97104	114.83976	253.04913	6.14023	0.1330599	0.28254527	2.3000857	20	—	—
13165 1995 WS ₁	14.0	X	164.60368	317.40651	43.83866	3.87031	0.1892433	0.29521298	2.2338075	20	2 20.0	17.4
13166 1995 WU ₁	12.6	X	131.13443	69.59263	43.85188	11.70426	0.0607943	0.26104448	2.4270952	20	5 28.9	16.0
13167 1995 WC ₅	14.1	X	182.47333	233.16461	225.82475	3.35290	0.0697195	0.22416837	2.6838186	20	7 10.8	17.9
13168 Danocconnell	13.7	X	78.64659	223.99927	54.65889	15.75237	0.0979401	0.23123430	2.6288625	20	11 7.5	17.4
13169 1995 XS ₁	14.5	X	234.89398	173.26180	233.46307	1.42610	0.2098099	0.26405424	2.4062493	20	6 19.9	18.3
13170 1995 YX	14.5	X	225.65445	270.76151	89.45455	3.53705	0.2070516	0.25886791	2.4382819	20	4 14.1	18.4
13171 1996 AA	14.3	X	210.78469	207.56514	294.06441	5.86021	0.0581568	0.26863722	2.3788037	20	10 13.7	17.5
13172 1996 AO	14.3	X	219.94811	97.11407	302.51990	10.71660	0.1910257	0.26091235	2.4255280	20	5 27.0	18.3
13173 1996 AJ ₂	14.8	X	173.18342	36.75068	114.16644	3.42199	0.1302825	0.26478489	2.4018207	20	9 10.4	18.3
13174 Timossi	14.3	X	292.64471	293.17504	136.71208	15.16698	0.1051490	0.22821673	2.6519850	20	10 27.1	17.7
13175 1996 EB ₂	14.1	X	154.30116	72.85177	353.71602	8.18025	0.1459325	0.21060470	2.7978473	20	4 29.8	18.7
13176 Kobedaitenken	12.1	X	96.26820	131.98208	56.83608	18.67614	0.1402182	0.17255392	3.1953578	20	8 8.9	17.2
13177 Hansschmidt	13.5	X	211.94786	294.77220	26.61566	2.34974	0.0648721	0.19847176	2.9107410	20	2 22.5	17.7
13178 Catalan	13.8	X	211.56621	253.43455	223.86759	3.42131	0.1540034	0.17829459	3.1263957	20	8 24.6	18.8
13179 Johncochrane	13.7	X	145.53765	51.18489	168.26114	1.23302	0.1258789	0.18017481	3.1046072	20	10 27.1	18.7
13180 Fourcroy	13.6	X	209.78348	224.14675	216.71430	6.96616	0.1026604	0.17117507	3.2124944	20	7 12.6	18.6
13181 Peneleos	12.0	X	243.09215	103.86474	10.92378	2.54436	0.1359337	0.08264710	5.2197653	20	9 15.9	19.2
13182 1996 SO ₈	10.7	X	335.41316	66.12761	302.91752	5.08400	0.1143823	0.08269162	5.2178915	20	9 9.5	17.0
13183 1996 TW	10.7	X	40.22470	314.85444	8.05356	17.95309	0.0907090	0.08272657	5.2164218	20	10 13.7	17.4
13184 Augeias	11.0	X	46.76085	97.74784	227.46096	4.51268	0.0495178	0.08382071	5.1709280	20	10 21.8	17.7
13185 Agasthenes	12.0	X	304.58248	52.83940	4.33695	9.10720	0.0546273	0.08326501	5.1939094	20	9 30.0	18.6
13186 1996 UM	14.5	X	242.59224	200.54919	190.43874	21.97837	0.0828043	0.36252352	1.9479535	20	6 23.9	17.3
13187 1997 AN ₄	15.1	X	208.68551	311.51023	285.90388	0.97055	0.1369860	0.28848576	2.2684008	20	—	—
13188 Okinawa	15.2	X	17.69874	224.81251	334.77105	1.90474	0.0854809	0.30326319	2.1940992	20	4 12.2	17.0
13189 1997 AF ₁₃	14.3	X	166.75003	148.52315	94.31243	10.39736	0.1775984	0.28410708	2.2916486	20	12 28.4	17.6
13190 1997 BN ₁	14.6	X	1.14603	252.84249	138.96911	5.68028	0.0778024	0.30423595	2.1894198	20	3 29.3	16.8
13191 1997 BP ₃	14.5	X	287.98809	340.73507	137.97804	7.05777	0.0563140	0.28402630	2.2920830	20	—	—
13192 Quine	15.1	X	187.20852	275.45861	323.76182	0.66637	0.1423993	0.28473917	2.2882558	20	—	—
13193 1997 CW	14.4	X	165.06415	145.14578	40.80925	4.21089	0.1135367	0.27685070	2.3315190	20	10 19.1	17.6
13194 1997 CA ₁	14.6	X	149.41948	293.39607	323.03731	7.18826	0.0814381	0.28341784	2.2953624	20	—	—
13195 1997 CG ₆	13.7	X	358.15302	147.06373	55.55558	8.10050	0.1215174	0.29836477	2.2180484	20	3 14.8	15.7
13196 Rogerssmith	14.0	X	11.94933	203.51915	153.74556	5.98259	0.1375826	0.28213385	2.3023212	20	12 11.9	16.6
13197 Pontecorvo	14.3	X	46.80840	85.58575	158.46817	2.54327	0.1681961	0.2666				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13201 1997 <i>EF</i> ₄₁	15.2	X	235.21254	130.12738	196.02512	4.78692	0.1049029	0.30198543	2.2002839	20	3 11.0	18.3
13202 1997 <i>FT</i> ₃	15.6	X	235.66840	336.74378	211.71442	4.52128	0.1003402	0.28268801	2.2993114	20	—	—
13203 1997 <i>FC</i> ₅	14.4	X	256.04785	194.06872	174.97852	6.15232	0.0659278	0.22125830	2.7072997	20	6 11.5	18.2
13204 1997 <i>GR</i> ₁₂	14.8	X	105.54327	304.20156	152.39956	2.77427	0.1645523	0.25857187	2.4401425	20	4 20.6	18.1
13205 1997 <i>GB</i> ₁₉	14.0	X	196.29762	46.73173	214.01958	7.20055	0.1159539	0.28474324	2.2882340	20	—	—
13206 Baer	14.6	X	132.26931	218.82476	163.33251	2.04469	0.1005230	0.20525525	2.8462510	20	2 11.6	18.5
13207 Tamagawa	15.0	X	254.03235	56.92591	149.97900	4.91707	0.0785200	0.28451005	2.2894842	20	—	—
13208 Fraschetti	14.2	X	268.02186	138.71779	175.72994	4.51395	0.2014845	0.25558909	2.4590905	20	3 26.7	17.8
13209 Arnhem	14.6	X	262.67929	36.41918	88.51565	2.55040	0.1261234	0.27848875	2.3223675	20	11 28.8	16.8
13210 1997 <i>HP</i> ₈	14.8	X	286.44076	218.78770	187.48763	3.71556	0.0946541	0.22704257	2.6611203	20	9 8.5	17.9
13211 Stucky	13.8	X	196.69440	209.05491	103.22361	5.38929	0.1524833	0.20163462	2.8802221	20	1 27.2	18.5
13212 Jayleno	14.5	X	314.22791	58.11225	195.01849	3.29363	0.1554951	0.25331568	2.4737815	20	3 8.6	17.5
13213 MacLaurin	14.5	X	347.95130	92.45404	80.26271	3.72549	0.0909253	0.29197293	2.2503030	20	1 12.3	16.7
13214 Chirikov	14.2	X	338.59511	52.68162	168.41358	2.30881	0.1237065	0.25308665	2.4752737	20	3 8.1	16.9
13215 1997 <i>JT</i> ₁₆	13.3	X	335.76550	268.18859	97.34108	10.98921	0.1349279	0.18175918	3.0865393	20	9 30.6	17.1
13216 1997 <i>LH</i> ₄	14.1	X	251.33946	353.08771	185.37487	14.88116	0.0290504	0.23570939	2.5954826	20	—	—
13217 Alpbach	14.6	X	233.58931	297.00769	156.44423	3.55987	0.1664259	0.26817075	2.3815613	20	8 25.8	17.9
13218 1997 <i>MC</i> ₃	14.0	X	250.19946	252.62947	337.39995	4.06158	0.0957630	0.23993339	2.5649304	20	—	—
13219 Cailletet	12.7	X	288.51639	89.22898	301.61158	21.64328	0.0960312	0.17167253	3.2062854	20	8 10.4	17.1
13220 Kashiwagura	12.4	X	127.15658	163.29023	158.24498	10.85079	0.0912101	0.18924727	3.0045744	20	—	—
13221 Nao	13.4	X	222.93038	149.80425	318.41201	8.22376	0.1452041	0.21801055	2.7341209	20	8 29.2	17.4
13222 Ichikawakazuo	13.3	X	135.85478	264.26594	294.49625	9.53202	0.0606421	0.21847522	2.7302427	20	9 19.9	17.4
13223 Cenaceneri	15.1	X	222.76703	200.68812	153.58818	7.71810	0.1865605	0.28811270	2.2703585	20	4 4.2	18.6
13224 Takamatsuda	12.9	X	236.02003	152.10689	322.85876	6.56028	0.0142498	0.17552910	3.1591480	20	10 1.9	17.4
13225 Manfredi	13.8	X	6.45062	3.27990	162.54045	2.47131	0.0648947	0.19777591	2.9175645	20	2 19.6	17.6
13226 Soulié	13.6	X	221.62858	356.31266	274.30390	9.06442	0.0671662	0.19242024	2.9714531	20	1 2.9	17.9
13227 Poor	13.5	X	186.29969	180.13045	356.64051	5.24026	0.1060708	0.17583219	3.1555166	20	10 13.6	18.4
13228 1997 <i>SJ</i> ₂₅	12.8	X	73.78708	211.31124	79.77042	2.99672	0.1632536	0.17538706	3.1608533	20	11 13.9	17.5
13229 Echion	11.6	X	221.72318	167.11032	343.01312	3.83766	0.0744829	0.08178445	5.2564057	20	10 8.3	18.7
13230 1997 <i>VG</i> ₁	11.3	X	281.88151	37.49916	53.82658	4.32442	0.0610064	0.08618991	5.0757291	20	10 12.5	17.9
13231 Blondelet	13.7	X	297.11189	261.40020	169.07546	0.43231	0.1568414	0.16999079	3.2273975	20	10 9.6	17.5
13232 1998 <i>FM</i> ₅₄	14.0	X	212.40912	329.59259	350.98934	5.28091	0.1987872	0.26284195	2.4136424	20	2 13.9	17.9
13233 1998 <i>FC</i> ₆₆	13.6	X	303.03393	121.81079	196.51474	10.34524	0.2212312	0.27221978	2.3578867	20	5 13.4	16.2
13234 Natashawen	14.1	X	131.37936	279.22477	103.67469	3.67624	0.1439176	0.30660491	2.1781276	20	2 4.7	16.6
13235 Isiguroyuki	14.2	X	50.71979	100.40513	181.39065	4.02148	0.0427475	0.28103020	2.3083450	20	10 7.1	17.0
13236 1998 <i>HF</i> ₉₆	13.9	X	104.94725	188.61996	149.06191	5.60254	0.2133619	0.29269027	2.2466247	20	—	—
13237 1998 <i>HC</i> ₉₈	15.4	X	305.74715	287.11922	2.90344	5.15961	0.2170473	0.31163074	2.1546456	20	4 1.3	17.4
13238 Lambeaux	15.1	X	108.46874	282.82383	20.35335	3.31117	0.1790710	0.28763967	2.2728470	20	—	—
13239 Kana	14.8	X	16.76766	206.83805	106.67053	2.83978	0.2503340	0.27650418	2.3334665	20	11 5.5	17.2
13240 Thouvoy	14.9	X	82.02391	353.10135	235.76823	1.10662	0.1501847	0.23347334	2.6120282	20	9 13.1	18.6
13241 Bivo	14.2	X	240.72616	93.63940	56.73097	7.29970	0.0652887	0.28758568	2.2731314	20	12 11.6	16.7
13242 1998 <i>KR</i> ₄₄	14.7	X	282.26461	182.02025	131.42678	3.32818	0.2104426	0.26472887	2.4021595	20	4 9.7	18.0
13243 1998 <i>KZ</i> ₄₇	13.9	X	105.68294	176.05243	107.37745	7.62310	0.1174182	0.28485501	2.2876354	20	12 22.7	17.2
13244 Dannymeyer	11.7	X	61.91350	333.51808	284.79669	19.55018	0.0123691	0.17523028	3.1627385	20	8 21.6	16.5
13245 1998 <i>MM</i> ₁₉	14.8	X	141.33261	335.61534	196.04447	21.24870	0.0579882	0.36526575	1.9381918	20	9 10.9	17.2
13246 1998 <i>MJ</i> ₃₃	13.7	X	64.86789	92.13471	121.77428	4.73945	0.1543500	0.22523120	2.6753690	20	8 3.4	17.1
13247 1998 <i>MW</i> ₃₄	14.4	X	121.48634	52.49582	203.55531	3.58478	0.1106270	0.28149600	2.3057978	20	12 3.5	17.8
13248 Fornasier	14.1	X	204.99485	341.58752	47.76125	3.11258	0.2180298	0.21391346	2.7689215	20	5 2.1	18.7
13249 Marcallen	11.9	X	267.55672	134.90432	284.22616	14.06116	0.1658604	0.22525291	2.6751971	20	8 12.9	15.6
13250 Danieladucato	15.3	X	263.61054	358.40404	240.07393	3.94992	0.1318995	0.29591059	2.2302953	20	—	—
13251 Viot	14.6	X	301.79860	129.15179	161.27147	3.85910	0.1798994	0.30760875	2.1733863	20	4 4.6	16.8
13252 1998 <i>ON</i> ₁	14.1	X	234.15131	164.46892	197.79714	7.73579	0.2326812	0.21458298	2.7631590	20	4 23.1	18.6
13253 Stejneger	14.7	X	294.14992	207.49530	136.79511	6.44801	0.1113236	0.28822373	2.2697755	20	—	—
13254 Kekulé	14.9	X	173.03159	272.85664	319.49296	6.73590	0.1287194	0.28295489	2.2978654	20	12 25.9	18.3
13255 1998 <i>OH</i> ₁₄	13.8	X	224.41229	324.82139	131.50485	6.82326	0.2335940	0.26720757	2.3872810	20	8 12.2	17.3
13256 Marne	13.6	X	203.52486	239.38623	140.31603	11.98666	0.1537417	0.25664996	2.4523093	20	4 23.8	17.7
13257 1998 <i>QT</i> ₈	13.7	X	314.52882	282.56983	64.32294	4.80685	0.1171760	0.22347017	2.6894059	20	7 31.1	16.7
13258 Bej	14.3	X	40.80700	329.94124	290.09369	5.97208	0.0931733	0.26972586	2.3723986	20	8 25.5	17.1
13259 Bhat	14.5	X	35.90931	144.15932	156.64560	7.28018	0.1198542	0.27406863	2.3472706	20	10 26.2	17.3
13260 Sabadell	13.5	X	153.28707	7.09655	286.92540	12.76187	0.1573581	0.24218934	2.5489777	20	—	—
13261 1998 <i>QM</i> ₁₆	14.1	X	167.92154	111.55916	191.66623	4.43298	0.1490558	0.24503057	2.5292351	20	—	—
13262 1998 <i>QF</i> ₁₇	13.8	X	28.02411	145.73403	122.34576	6.32380	0.1020719	0.26881552	2.3777516	20	8 21.9	16.3
13263 1998 <i>QV</i> ₂₂	13.4	X	235.49667	76.77077	14.71543	1.92908	0.0789584	0.17960873	3.1111271	20	8 28.4	18.0
13264 1998 <i>QD</i> ₂₃	13.9	X	337.20622	248.77336	17.65155	5.68464	0.0604371	0.26155224	2.4215703	20	5 16.1	16.6
13265 Terbunkley	14.7	X	296.06456	77.15031	349.38245	4.30398	0.1267017	0.27389624	2.3482554	20	10 29.8	16.8
13266 1998 <i>QY</i> ₃₀	14.0	X	170.51260	21.59122	320.97660	1.46576	0.0834650	0.20351213	2.8624803	20	2 3.8	18.2
13267 1998 <i>QV</i> ₃₂	13.8	X	348.49842	44.17872	302.97223	3.71674	0.1650816	0.18021315	3.1041669	20	9 20.1	17.2
13268 Trevorcorbin	14.5	X	114.00269	97.60905	194.40556	6.04554	0.0967645	0.23622781	2.5916839	20	12 30.2	18.5
13269 Dahlstrom	14.5	X	30.52446	305.51967	286.24259	5.49612	0.0817391	0.26340974	2.4101727	20	6 27.2	17.1
13270 1998 <i>QX</i> ₃₅	14.1	X	66.52094	91.94082	9.96599	2.04035	0.0382128	0.20495979	2.8489857	20	2 21.2	17.7
13271 1998 <i>QZ</i> ₃₅	13.8	X	261.42165	21.64236	337.37839	8.30550	0.1585726	0.21625398	2.7489065	20	5 20.1	18.0
13272 Ericadavid	14.9	X	109.10216	12.13316	237.55137	3.85399	0.1588337	0.27648999	2.3335464	20	11 13.4	18.5
13273 1998 <i>QW</i> ₃₇	14.6	X	51.30901	203.02920	330.54923	4.67795	0.1021908	0.30322283	2.1942938	20	5 4.5	16.7
13274 Roygross	15.0	X	273.53528	138.68159	335.09810	7.60638	0.0461520	0.25580514	2.4577057	20	3 23.3	18.2
13275 1998 <i>QT</i> ₃₉	13.9	X	76.70918	256.61619	142.64405	7.67668	0.1957091	0.24167185	2.5526152	20	—	—
13276 1998 <i>QP</i> ₄₀	13.1	X	307.7									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13281 Aliciahall	15.1	X	224.51497	20.72799	232.43709	2.43774	0.1257848	0.29049307	2.2579389	20	—	—
13282 1998 QQ ₄₉	13.9	X	153.27636	332.61255	139.61801	8.52319	0.1157863	0.21516238	2.7581962	20	6 27.0	18.3
13283 Dahart	14.4	X	332.55065	9.26050	294.45400	0.37833	0.1876187	0.26467694	2.4024737	20	6 24.2	16.2
13284 1998 QB ₅₂	13.3	X	2.18834	155.14787	182.75026	12.98084	0.1787761	0.22597593	2.6694877	20	10 21.2	16.1
13285 Stephicks	14.3	X	226.02662	175.10940	187.51469	6.86027	0.1205194	0.25657223	2.4528046	20	4 22.3	17.8
13286 Adamchauvin	13.7	X	124.52800	263.26233	326.01868	6.27183	0.0725507	0.27180001	2.3603138	20	10 27.4	17.2
13287 1998 QW ₅₃	14.0	X	95.43888	117.12195	176.13072	6.41704	0.1164047	0.27742532	2.3282985	20	12 22.9	17.5
13288 1998 QV ₆₇	14.2	X	290.34566	251.83499	189.12387	11.93126	0.2516108	0.22815991	2.6524253	20	10 12.5	16.7
13289 1998 QK ₇₅	12.7	X	25.37380	155.09046	244.17480	9.11885	0.1063331	0.18985929	2.9981140	20	—	—
13290 1998 QN ₇₅	12.1	X	325.63180	203.85643	187.93278	21.97181	0.0941057	0.22712456	2.6604799	20	10 25.6	15.2
13291 1998 QH ₇₇	12.9	X	250.09742	89.43050	295.79120	13.69552	0.0971025	0.16968753	3.2312416	20	6 20.3	17.7
13292 1998 QT ₉₀	13.9	X	213.52899	229.86650	53.20185	5.46202	0.1203762	0.24597247	2.5227742	20	1 1.8	17.9
13293 Mechelen	14.4	X	86.99630	65.29609	69.40329	5.79547	0.0339549	0.25495741	2.4631506	20	4 28.6	17.5
13294 Rockox	14.2	X	293.37575	148.30958	48.77179	5.73278	0.0977626	0.29048084	2.2580023	20	—	—
13295 1998 RE	12.4	X	209.23478	123.87666	58.15845	13.68191	0.0981415	0.17700823	3.1415241	20	11 14.7	17.1
13296 1998 RV	13.1	X	38.18396	6.01614	4.57762	9.81387	0.0895253	0.19077773	2.9884839	20	—	—
13297 1998 RX	12.6	X	257.80172	33.13761	357.85379	10.42389	0.0545470	0.17036316	3.2226929	20	7 14.4	17.3
13298 Namatjira	14.5	X	71.48263	168.23138	77.31418	5.92589	0.1048477	0.26749282	2.3855835	20	9 25.2	17.7
13299 1998 RU ₁₅	14.2	X	186.65162	78.57193	175.50448	5.05581	0.1133061	0.28271439	2.2991683	20	—	—
13300 1998 RF ₁₆	14.3	X	140.98108	145.05024	134.14375	5.17475	0.1760910	0.23600787	2.5932938	20	—	—
13301 1998 RP ₁₉	14.4	X	294.66130	95.39921	291.33202	1.01977	0.0879089	0.22338081	2.6901230	20	8 25.7	17.7
13302 Kezmoh	14.6	X	356.89925	223.43181	267.95620	4.83613	0.0815922	0.28903035	2.2655505	20	—	—
13303 Asmitakumar	14.3	X	24.47446	294.53278	144.23704	2.25106	0.1942661	0.23864988	2.5741187	20	—	—
13304 1998 RP ₄₇	13.1	X	98.55936	310.92525	326.08408	8.77823	0.0664759	0.18477125	3.0529038	20	11 11.2	17.8
13305 Danielang	14.9	X	359.03385	49.29851	225.48459	4.91843	0.0853540	0.26281919	2.4137818	20	7 6.3	17.5
13306 1998 RT ₅₈	13.3	X	210.60189	291.23271	337.94777	1.37101	0.0582347	0.19745305	2.9207440	20	—	—
13307 1998 RE ₅₉	13.9	X	108.84257	66.21341	227.07660	2.59243	0.0491613	0.18735376	3.0247845	20	12 13.9	18.4
13308 1998 RL ₅₉	14.0	X	167.46111	224.40044	205.60301	3.43539	0.0848037	0.21038787	2.7997693	20	5 18.2	18.2
13309 1998 RA ₆₀	13.3	X	321.09912	157.29871	343.77047	9.21052	0.0244211	0.19388829	2.9564350	20	—	—
13310 1998 RX ₆₃	13.8	X	12.89253	208.15003	109.49946	3.19798	0.1985661	0.17944029	3.1130737	20	10 3.8	17.3
13311 1998 RA ₆₈	12.7	X	240.02002	337.68080	356.95215	10.30210	0.1693356	0.20948265	2.8078291	20	3 28.5	17.2
13312 1998 RK ₆₈	13.7	X	348.92901	271.60765	195.17807	4.70161	0.0856621	0.23717240	2.5847980	20	—	—
13313 1998 RU ₆₈	13.9	X	268.64862	57.70128	9.73162	4.82467	0.1342870	0.17630732	3.1498448	20	8 31.4	18.1
13314 1998 RH ₇₁	13.7	X	223.49145	325.55961	39.88118	4.79506	0.2166146	0.21057692	2.7980933	20	4 18.9	18.5
13315 Hilana	14.1	X	148.08642	106.37932	18.46124	6.85489	0.0904024	0.25983918	2.4322019	20	7 9.6	17.7
13316 Llano	14.9	X	345.96263	119.57136	60.05623	1.86368	0.0824953	0.29246897	2.2477579	20	1 20.3	17.3
13317 1998 RQ ₇₇	12.9	X	271.20560	314.70052	40.60475	7.13980	0.2019776	0.12393915	3.9841013	20	5 23.2	18.6
13318 1998 RV ₇₇	13.3	X	95.78751	313.73990	21.02714	11.22462	0.1026957	0.19048059	2.9915911	20	—	—
13319 Michaelmi	14.7	X	323.69967	187.00647	52.70209	6.17681	0.1321944	0.29919903	2.2139234	20	3 6.4	17.0
13320 Jessicamiles	14.2	X	71.93351	229.44777	115.08044	3.78188	0.1781895	0.27987908	2.3146700	20	—	—
13321 1998 RC ₈₀	13.3	X	345.16800	248.22034	154.43138	11.12091	0.1091817	0.18362269	3.0656212	20	11 29.9	17.2
13322 1998 RH ₈₀	13.1	X	5.62685	292.78609	44.77697	5.93101	0.1729534	0.17921530	3.1156787	20	10 13.9	16.6
13323 1998 SQ	11.1	X	264.40505	254.48721	182.53205	0.91844	0.0908942	0.08580479	5.0909055	20	9 1.1	17.8
13324 1998 SK ₂	13.7	X	323.61309	315.60070	30.59297	1.40186	0.2191590	0.17495998	3.1659951	20	7 29.0	17.1
13325 Valérienataf	14.1	X	327.77850	147.51025	93.60940	4.90100	0.0776044	0.29767099	2.2214935	20	3 23.6	16.4
13326 Ferri	12.9	X	355.04798	166.57450	142.59770	5.69708	0.2124311	0.17660471	3.1463077	20	8 15.2	16.0
13327 Reitsema	14.1	X	328.13562	306.71980	85.04124	3.19402	0.1584005	0.18070656	3.0985139	20	10 16.6	17.6
13328 Guetter	14.2	X	349.21485	284.43856	136.10738	4.31629	0.1149296	0.18723051	3.0261118	20	12 28.0	17.8
13329 Davidhardy	13.6	X	127.02824	142.23142	186.79712	6.46131	0.0764660	0.19324235	2.9630195	20	—	—
13330 Dondavis	13.0	X	30.84879	24.34857	298.23685	0.26384	0.1686276	0.17969593	3.1101206	20	11 1.6	17.0
13331 1998 SU ₅₂	11.4	X	282.46984	149.12516	284.78418	2.29629	0.1090611	0.08621402	5.0747828	20	9 15.2	18.1
13332 Benkhoff	14.2	X	154.12795	241.85791	164.49767	2.25595	0.0620270	0.20609793	2.8384873	20	4 2.5	18.2
13333 Carsenty	14.6	X	43.55075	60.74390	158.97408	6.59481	0.0835577	0.25995506	2.4314791	20	6 30.6	17.4
13334 Tost	13.9	X	61.43536	15.11663	14.19095	10.70955	0.1151388	0.19230670	2.9726226	20	—	—
13335 Tobiaswolf	13.5	X	284.09788	43.52754	344.12147	11.72583	0.1333598	0.21889623	2.7267408	20	8 6.9	17.0
13336 1998 SN ₁₁₄	13.9	X	148.83579	262.14897	117.13543	3.67051	0.1763893	0.20180181	2.8786311	20	3 5.2	18.4
13337 1998 SZ ₁₁₄	13.8	X	316.94847	250.10095	88.49659	1.43177	0.0630203	0.21782151	2.7357025	20	7 27.1	17.2
13338 1998 SK ₁₁₉	12.7	X	174.10273	78.76093	22.18437	9.32633	0.1188525	0.21281233	2.7784645	20	7 4.7	17.2
13339 1998 SF ₁₂₃	13.5	X	133.79849	308.59879	14.13346	10.36417	0.0962400	0.19278427	2.9677113	20	—	—
13340 1998 SM ₁₂₃	14.3	X	180.27789	253.75475	21.68673	5.56670	0.2401150	0.24090974	2.5579957	20	—	—
13341 1998 ST ₁₂₃	13.8	X	223.29523	249.33405	191.55997	9.52478	0.0787807	0.21695665	2.7429679	20	7 31.5	17.9
13342 1998 SF ₁₂₇	13.1	X	215.04427	92.88858	39.98889	12.23468	0.0311280	0.17834635	3.1257907	20	10 3.2	17.6
13343 1998 SY ₁₂₇	14.0	X	208.57759	268.86071	155.28286	5.75991	0.0566493	0.21357930	2.7718089	20	6 26.3	18.1
13344 1998 SD ₁₃₀	13.8	X	220.75387	136.02942	191.67747	1.77343	0.0545608	0.20411733	2.8568195	20	3 9.3	18.0
13345 1998 SW ₁₃₂	13.0	X	344.70800	191.12712	217.29133	9.50309	0.1037765	0.18303571	3.0721718	20	12 4.1	16.8
13346 Danielmiller	14.8	X	40.57821	44.39204	229.03148	1.37141	0.1820189	0.26729851	2.3867395	20	9 30.2	17.5
13347 1998 SF ₁₃₆	15.2	X	105.23633	185.12954	90.42274	3.61745	0.2299915	0.27685611	2.3314887	20	12 14.4	19.1
13348 1998 SF ₁₃₈	12.8	X	56.21486	230.46438	32.62626	1.23154	0.1431280	0.17597581	3.1537994	20	9 18.2	17.0
13349 1998 SD ₁₃₉	14.1	X	353.22872	329.22855	329.07484	4.68849	0.0402314	0.21624947	2.7489447	20	7 28.0	17.6
13350 Gmelin	13.4	X	265.35072	199.								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13361 1998 <i>UM</i> ₈	13.9 ^m	X	277.32649	174.87165	95.19132	4.67893	0.1744832	0.29246870	2.2477592	20	2 8.9	17.1
13362 1998 <i>UQ</i> ₁₆	11.0	X	168.03765	119.92575	57.89682	9.34052	0.0271294	0.08360173	5.1799534	20	9 22.3	18.0
13363 1998 <i>UR</i> ₁₆	13.2	X	77.84359	201.45424	81.73815	2.68478	0.1400686	0.17883708	3.1200699	20	11 6.9	17.9
13364 1998 <i>UK</i> ₂₀	12.7	X	62.88364	231.48221	20.93061	15.08704	0.1140985	0.21798024	2.7343743	20	9 19.3	16.5
13365 Tenzinyama	12.7	X	116.30945	80.46118	243.68575	8.91401	0.1022893	0.18714213	3.0270645	20	—	—
13366 1998 <i>US</i> ₂₄	11.2	X	259.50679	355.29564	96.29328	6.63615	0.1043157	0.08248827	5.2264635	20	9 13.2	18.2
13367 Jifi	13.0	X	355.81755	261.89559	63.28456	16.16491	0.0718784	0.17223468	3.1993051	20	9 10.6	17.5
13368 Wlodekofman	13.9	X	100.62359	336.54645	54.19297	2.79133	0.0814334	0.19458723	2.9493512	20	1 15.4	17.8
13369 1998 <i>UV</i> ₃₇	13.5	X	60.15731	247.87597	33.11343	1.34074	0.1479931	0.17862535	3.1225350	20	10 16.0	17.9
13370 Júlíusbreza	14.4	X	284.86448	245.95741	51.22007	5.67980	0.1939968	0.30376236	2.1916948	20	3 22.4	17.2
13371 1998 <i>VH</i> ₅	13.9	X	259.28976	297.89123	280.84261	6.00375	0.0817917	0.28283996	2.2984878	20	—	—
13372 1998 <i>VU</i> ₆	11.2	X	320.07679	303.77919	96.67977	7.30362	0.0476506	0.08223472	5.2372010	20	10 4.3	18.0
13373 1998 <i>VL</i> ₇	14.0	X	85.51834	173.22302	220.99912	0.99381	0.1231294	0.19437916	2.9514556	20	1 5.1	17.7
13374 1998 <i>VT</i> ₁₀	13.5	X	353.49667	208.40002	53.05673	4.03729	0.1328889	0.30331325	2.1938578	20	6 5.2	15.0
13375 1998 <i>VH</i> ₂₆	13.7	X	312.04689	229.53568	337.23665	1.19834	0.0504839	0.19688745	2.9263349	20	1 30.1	17.7
13376 Dunphy	13.2	X	98.55927	3.26260	304.42274	9.54023	0.1454435	0.22902595	2.6457344	20	—	—
13377 1998 <i>VN</i> ₃₃	12.9	X	313.31481	12.19938	109.67131	4.29948	0.0637710	0.18285053	3.0742457	20	—	—
13378 1998 <i>VF</i> ₃₅	12.2	X	334.62473	299.53632	187.95574	10.12635	0.0589573	0.18848816	3.0126360	20	—	—
13379 1998 <i>WX</i> ₉	11.5	X	297.64524	336.25508	89.54996	4.91504	0.0650352	0.08420199	5.1553065	20	10 2.9	18.2
13380 Yamamohammed	14.2	X	338.94697	85.91519	172.86674	3.23860	0.1550865	0.29875390	2.2161220	20	4 27.7	15.9
13381 1998 <i>WJ</i> ₁₇	12.4	X	334.18581	81.97073	233.95398	4.20480	0.2145174	0.12311575	4.0018455	20	7 3.7	16.9
13382 1998 <i>XC</i> ₄	13.0	X	196.54903	128.34476	282.49906	0.97482	0.0703018	0.20568582	2.8422775	20	5 25.1	17.2
13383 1998 <i>XS</i> ₃₁	11.2	X	319.20466	160.74395	252.21165	6.39774	0.0644413	0.08420394	5.1552269	20	10 10.6	17.8
13384 1998 <i>XG</i> ₇₉	12.4	X	328.71516	264.28553	114.92024	12.95084	0.2221478	0.17458958	3.1704713	20	10 1.3	15.9
13385 1998 <i>XO</i> ₇₉	10.9	X	34.16816	166.68797	157.12871	13.96319	0.0461603	0.08242017	5.2293420	20	10 8.3	17.7
13386 1998 <i>XG</i> ₈₀	12.4	X	1.70070	231.58284	116.92093	15.58051	0.1408669	0.17461373	3.1701790	20	10 23.4	16.5
13387 Irus	12.0	X	331.70214	20.25044	355.90579	7.24552	0.0971725	0.08299496	5.2051697	20	9 15.5	18.5
13388 1999 <i>AE</i> ₆	12.3	X	32.67426	179.15658	245.85171	14.17643	0.0692723	0.23616260	2.5921610	20	—	—
13389 Stacey	13.1	X	141.00085	338.21253	317.39758	1.77051	0.1527332	0.17790328	3.1309784	20	—	—
13390 Bouška	12.9	X	89.94265	251.03571	148.52641	13.24857	0.1778932	0.23763649	2.5814317	20	1 16.9	16.0
13391 1999 <i>JF</i> ₃₇	12.7	X	131.92408	191.23770	237.85016	8.60672	0.0847184	0.18446547	3.0562766	20	4 6.4	17.3
13392 1999 <i>KK</i> ₁₅	14.3	X	357.10057	145.59332	167.51820	13.97705	0.1729808	0.23602355	2.5931790	20	9 2.6	16.7
13393 1999 <i>ND</i> ₉	13.9	X	220.39439	287.37818	118.11559	4.97148	0.0068969	0.27732032	2.3288861	20	6 23.0	16.6
13394 1999 <i>RL</i> ₃₁	14.2	X	20.40073	26.22738	5.07875	7.55722	0.1435146	0.29108958	2.2548532	20	—	—
13395 Deconihout	14.8	X	41.71992	138.78434	173.34075	3.14267	0.1911812	0.28606283	2.2811916	20	11 29.6	17.7
13396 Midavaine	13.7	X	284.96411	255.91009	162.98616	9.21819	0.1787968	0.23612247	2.5924547	20	9 13.9	16.5
13397 1999 <i>RF</i> ₄₇	14.8	X	117.39875	348.63492	23.81298	2.59879	0.2070996	0.25746159	2.4471528	20	1 21.2	18.1
13398 1999 <i>RF</i> ₆₂	13.3	X	29.05621	110.99849	13.34444	6.55414	0.1159673	0.26036562	2.4289223	20	1 19.9	15.8
13399 1999 <i>RJ</i> ₈₈	12.6	X	358.89883	151.67136	182.48042	10.00565	0.0992512	0.18736757	3.0246358	20	9 21.3	16.2
13400 1999 <i>RC</i> ₉₄	14.2	X	300.03485	222.95726	144.70676	6.97265	0.1344250	0.27832524	2.3232770	20	8 7.3	16.5
13401 1999 <i>RA</i> ₁₃₃	13.0	X	181.44586	344.75666	300.19791	9.87662	0.2432670	0.20951080	2.8075776	20	—	—
13402 1999 <i>RV</i> ₁₆₅	11.5	X	312.74936	127.02000	160.84006	7.53160	0.1208598	0.08180695	5.2554419	20	5 9.6	18.2
13403 Sarahmousa	14.0	X	100.43645	257.10742	29.80971	5.38811	0.1819800	0.29299771	2.2450528	20	12 25.5	17.6
13404 Norris	14.6	X	252.13052	88.04483	10.59803	3.52941	0.1037185	0.28389247	2.2928033	20	10 9.4	17.0
13405 Dorisbillings	13.8	X	190.71968	190.82261	327.90826	4.83544	0.0994099	0.28367910	2.2939528	20	10 10.8	16.9
13406 Sekora	13.5	X	306.45880	39.18420	230.89346	12.43201	0.1658528	0.21714639	2.7413699	20	3 18.8	17.3
13407 1999 <i>TF</i> ₄	13.4	X	252.84863	35.51862	56.11235	2.19315	0.2603951	0.18249007	3.0782925	20	8 25.8	18.1
13408 Deadokleistic	14.8	X	175.64213	323.21465	51.12144	3.44078	0.1796460	0.26140140	2.4225011	20	3 19.4	18.7
13409 1999 <i>US</i>	13.3	X	131.61048	73.39658	133.02432	3.36348	0.1177713	0.18215458	3.0820718	20	9 29.5	18.0
13410 Arhale	14.3	X	189.78293	53.15232	259.66518	4.89159	0.2166790	0.30449334	2.1881857	20	1 11.3	17.9
13411 OLRAP	14.3	X	339.00247	265.46975	36.49508	12.71735	0.1903387	0.22854554	2.6494408	20	7 5.2	17.0
13412 Guerriero	13.9	X	60.50413	37.66706	26.44053	2.15019	0.0649458	0.20198876	2.8767597	20	—	—
13413 Bobpeterson	14.0	X	56.38346	21.48114	27.91746	2.55884	0.0627927	0.19954529	2.9002920	20	—	—
13414 Grantham	13.8	X	178.35459	24.36293	308.83687	1.21649	0.0843659	0.20636430	2.8360443	20	1 30.3	18.0
13415 Stevenbland	15.2	X	273.94651	334.36337	330.16863	1.90184	0.1885461	0.26507665	2.4000580	20	3 20.2	18.7
13416 Berryman	12.9	X	293.56283	81.86259	233.07114	4.00701	0.2296908	0.17663512	3.1459465	20	4 25.4	17.2
13417 1999 <i>VH</i> ₆	13.2	X	304.71987	125.30285	213.69345	7.22616	0.0730822	0.22183117	2.7026367	20	7 6.2	16.7
13418 1999 <i>VO</i> ₉	14.2	X	220.96972	149.03536	209.87160	0.61505	0.1907534	0.26394687	2.4069018	20	4 7.2	18.1
13419 1999 <i>VJ</i> ₁₀	14.0	X	207.44453	9.26320	90.07620	0.23020	0.1441845	0.17433485	3.1735590	20	7 31.7	18.9
13420 1999 <i>VN</i> ₁₀	13.0	X	200.29061	104.56282	265.92982	5.26285	0.0451296	0.21145302	2.7903592	20	4 6.1	17.1
13421 Holvorcem	13.2	X	295.89815	262.75247	123.69104	3.29948	0.0944272	0.22782010	2.6550621	20	8 28.3	16.4
13422 1999 <i>VM</i> ₁₉	15.1	X	176.58526	212.99192	138.81483	3.13426	0.2021174	0.25828418	2.4419542	20	2 16.6	18.9
13423 Bobwoolley	13.1	X	197.31243	93.48242	285.49787	4.02848	0.0755021	0.21638621	2.7477866	20	4 13.2	17.2
13424 Margalida	14.0	X	104.26412	66.99292	259.07392	5.08877	0.1846931	0.24579304	2.5240018	20	—	—
13425 Waynebrown	13.6	X	298.22023	338.68579	64.45315	0.64495	0.1415224	0.18432029	3.0578813	20	9 10.5	17.2
13426 1999 <i>VA</i> ₂₅	15.1	X	37.33584	325.64868	66.46801	5.53602	0.2062538	0.28970263	2.2620442	20	—	—
13427 1999 <i>VM</i> ₂₅	13.7	X	192.13289	152.95291	261.44057	9.94494	0.2527645	0.21643657	2.7473603	20	5 20.9	18.7
13428 1999 <i>VC</i> ₃₅	13.6	X	350.84759	359.29535	333.03595	0.49933	0.2862033	0.18238940	3.0794251	20	9 13.8	16.1
13429 1999 <i>VM</i> ₃₅	13.2	X	112.42990	249.31353	133.96571	1.49559	0.0671107	0.15389955	3.4486131	20	1 24.5	18.0
13430 1999 <i>VM</i> ₃₆	14.8	X	346.35190	135.51823	277.94900	1.24517	0.2445524	0.23282885	2.6168461	20	11 3.2	16.8
13431 1999 <i>VB</i> ₃₇	14.6	X	81.36503	275.14207	72.49382	2.45563	0.1820415	0.24276452	2.5449499	20	—	—
13432 1999 <i>VW</i> ₄₉	13.9	X	70.81860	42.43137	6.09678	1.70144	0.0713784	0.20113705	2.8849702	20	—	—
13433 Phelps	14.5	X	302.30903	243.97673	82.81217	5.21855	0.1763458	0.26917643	2.3756258	20	5 31.9	16.8
13434 Adamquade	15.1	X	278.83909	83.20862	212.10044	1.96916	0.1807495	0.26396453	2.4067944	20	3 14.6	18.4
13435 Rohret	15.0	X	100.48385	191.34083	70.23803</							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13441 Janmerlin	12.7	X	9.22192	158.11119	191.85906	11.93358	0.2613410	0.23110724	2.6298260	20	12 3.5	15.8
13442 2646 <i>P-L</i>	14.8	X	312.08189	23.26923	18.45744	5.28363	0.1579370	0.23013384	2.6372364	20	10 10.9	17.3
13443 2785 <i>P-L</i>	15.1	X	52.41032	250.79998	93.06047	2.17140	0.1005241	0.23268304	2.6179392	20	12 27.9	18.5
13444 3040 <i>P-L</i>	14.3	X	345.04901	57.37624	287.99003	8.04758	0.2201137	0.22989494	2.6390631	20	9 22.9	16.7
13445 3063 <i>P-L</i>	12.7	X	59.13965	263.16969	290.91998	6.91276	0.0286077	0.16026008	3.3567512	20	6 7.8	17.4
13446 Almarkim	12.6	X	57.68958	89.40290	260.93900	8.33227	0.0958410	0.18347350	3.0672827	20	12 28.9	16.9
13447 4115 <i>P-L</i>	15.3	X	342.56749	170.50543	223.20954	1.06899	0.0977333	0.23159985	2.6260956	20	11 24.7	18.3
13448 Edbryce	13.8	X	138.02835	138.09479	358.07155	2.34404	0.1425220	0.25915845	2.4364591	20	7 15.9	17.5
13449 Margaretgarland	14.1	X	286.35134	248.59311	171.13949	10.98054	0.1038428	0.18010766	3.1053789	20	9 18.8	18.0
13450 6077 <i>P-L</i>	14.0	X	303.67926	67.31845	342.34994	3.21287	0.0688015	0.18096267	3.0955896	20	10 3.8	18.1
13451 6103 <i>P-L</i>	14.8	X	278.18153	63.78585	358.98070	5.08523	0.2041199	0.17895487	3.1187008	20	8 27.7	19.0
13452 6513 <i>P-L</i>	14.0	X	210.57865	245.60769	2.18787	12.68964	0.1613326	0.23672630	2.5880443	20	—	—
13453 6538 <i>P-L</i>	13.5	X	331.06429	324.79509	118.49156	1.84808	0.1993661	0.18334633	3.0687009	20	12 30.3	16.5
13454 6594 <i>P-L</i>	14.8	X	245.32661	196.07303	177.62161	6.37025	0.0720844	0.25951064	2.4342542	20	6 3.8	18.1
13455 6626 <i>P-L</i>	15.3	X	164.06371	219.92988	1.49969	2.57667	0.0627944	0.28220317	2.3019442	20	12 6.5	18.5
13456 6640 <i>P-L</i>	13.9	X	267.61830	60.47034	3.96654	4.66384	0.1467726	0.17893495	3.1189322	20	8 24.6	18.2
13457 6761 <i>P-L</i>	13.3	X	269.23232	319.62399	174.40192	9.73145	0.0657848	0.18354654	3.0664690	20	12 4.1	17.6
13458 4214 <i>T-1</i>	14.7	X	291.28780	331.92450	153.75420	4.36658	0.1207145	0.23392707	2.6086495	20	—	—
13459 4235 <i>T-1</i>	15.2	X	143.10593	297.92613	135.34361	3.97059	0.1253578	0.30314312	2.1946785	20	4 26.9	18.2
13460 1083 <i>T-2</i>	14.6	X	298.17272	119.26976	359.92047	2.98009	0.1931371	0.23414855	2.6070042	20	—	—
13461 1607 <i>T-2</i>	14.7	X	303.97067	42.60014	344.65967	7.45057	0.1253633	0.27231650	2.3573284	20	9 14.9	16.9
13462 2076 <i>T-2</i>	15.4	X	28.62080	61.32614	180.65463	2.96444	0.1034555	0.31169910	2.1543306	20	7 15.6	17.3
13463 Antiphos	11.2	X	320.99654	84.17247	323.56388	10.52423	0.0069079	0.08346260	5.1857084	20	10 8.2	18.1
13464 1036 <i>T-3</i>	13.7	X	286.36559	128.53947	332.89107	9.16672	0.2008413	0.18449477	3.0559530	20	10 25.1	17.6
13465 1193 <i>T-3</i>	14.3	X	350.84520	9.05167	311.92834	6.17493	0.1279350	0.27367074	2.3495452	20	9 4.1	16.5
13466 2349 <i>T-3</i>	13.5	X	39.44159	194.22606	223.12788	9.47668	0.0709428	0.18953545	3.0015281	20	—	—
13467 2676 <i>T-3</i>	14.8	X	122.12379	39.46022	211.86576	3.99178	0.1148164	0.27783750	2.3259951	20	11 27.6	18.1
13468 3378 <i>T-3</i>	15.0	X	269.18128	8.51386	138.05666	0.88219	0.1622065	0.27886577	2.3202738	20	—	—
13469 3424 <i>T-3</i>	14.8	X	46.59721	171.80741	152.15016	2.29590	0.0316678	0.23098752	2.6307346	20	11 15.9	18.3
13470 3517 <i>T-3</i>	14.2	X	7.65978	354.74043	34.30004	2.04447	0.1091436	0.23229201	2.6208764	20	12 28.8	17.3
13471 4046 <i>T-3</i>	14.4	X	216.82873	167.50276	112.02579	5.13965	0.1525327	0.28610873	2.2809476	20	—	—
13472 4064 <i>T-3</i>	13.7	X	354.91603	221.30783	170.61103	10.92765	0.0984131	0.18520954	3.0480855	20	11 30.4	17.7
13473 Hokema	14.8	X	277.00351	63.34190	172.96975	4.80294	0.1708572	0.29119457	2.2543112	20	—	—
13474 ν yus	13.7	X	359.94901	36.16404	317.24157	7.81793	0.2904281	0.23213871	2.6220301	20	11 23.7	16.3
13475 Orestes	11.5	X	238.42835	122.72572	353.42040	7.94127	0.0736006	0.08365212	5.1778734	20	9 18.9	18.4
13476 1974 <i>QF</i>	15.1	X	72.38969	109.77466	255.70517	2.29753	0.2105861	0.28553032	2.2840269	20	—	—
13477 Utkin	13.7	X	264.52913	271.25479	67.82231	8.46379	0.1445719	0.25734566	2.4478877	20	5 2.7	17.0
13478 Fraunhofer	15.3	X	298.15229	83.56758	321.50100	18.72297	0.1150030	0.36974699	1.9224997	20	10 16.6	17.2
13479 Vet	14.3	X	86.68722	256.81890	84.16307	6.97520	0.1879889	0.28126013	2.3070868	20	—	—
13480 Potapov	15.0	X	191.32062	31.41370	309.33034	5.29762	0.2186530	0.29617825	2.2289514	20	2 16.6	18.6
13481 1978 <i>VM</i> ₁₁	14.9	X	306.29558	95.47799	73.93407	5.62123	0.2097391	0.23893513	2.5720695	20	—	—
13482 Igorfedorov	12.4	X	161.67030	205.71106	100.70915	7.51571	0.2304863	0.18114278	3.0935374	20	—	—
13483 1980 <i>SF</i>	14.8	X	310.61560	216.65712	156.48308	2.43468	0.2133709	0.26990364	2.3713567	20	8 26.7	16.6
13484 1981 <i>EA</i> ₁₆	14.9	X	276.22416	283.97490	332.96962	6.57801	0.1179055	0.30018478	2.2090740	20	1 26.6	17.8
13485 1981 <i>QJ</i> ₃	13.3	X	18.80405	199.11508	139.70054	2.62970	0.1785286	0.17863460	3.1224273	20	11 6.6	17.2
13486 1981 <i>UT</i> ₂₉	12.7	X	206.61155	50.19140	223.64489	9.21795	0.0861869	0.18556871	3.0441512	20	—	—
13487 1981 <i>VN</i>	12.7	X	19.00995	17.32072	39.74667	15.92505	0.1066550	0.23225414	2.6211612	20	—	—
13488 Savanov	12.0	X	47.35570	180.37354	243.75627	9.81760	0.0913172	0.18885402	3.0087439	20	—	—
13489 Dmitrienko	12.9	X	125.06920	101.48687	237.74762	9.15551	0.1141353	0.18844302	3.0131171	20	—	—
13490 1984 <i>BZ</i> ₆	14.6	X	328.87087	264.14658	134.69804	1.51348	0.2215106	0.18219077	3.0816629	20	10 25.9	17.6
13491 1984 <i>UJ</i> ₁	14.6	X	336.80473	351.11831	28.58070	6.25651	0.2407229	0.27457321	2.3443941	20	11 21.1	16.1
13492 Vitalijzaxharov	14.0	X	309.60202	349.37625	74.32513	6.50956	0.1427686	0.27259796	2.3557054	20	11 22.9	16.0
13493 Lockwood	13.6	X	352.49755	200.97584	139.30126	12.89616	0.1997012	0.22659522	2.6646217	20	10 11.1	16.3
13494 Treiso	15.0	X	152.62886	21.98423	352.90298	3.13524	0.1874565	0.29712923	2.2241930	20	2 24.2	18.1
13495 1985 <i>RD</i> ₃	14.6	X	217.88819	272.55008	117.10264	2.42846	0.1214747	0.30397737	2.1906612	20	5 17.9	17.6
13496 1985 <i>RF</i> ₃	14.3	X	25.19033	213.52319	122.40316	6.03183	0.2465666	0.22873732	2.6479597	20	12 5.3	17.7
13497 Ronstone	13.5	X	291.39959	108.44990	6.21031	23.34597	0.2326466	0.27895037	2.3198047	20	—	—
13498 Al Chwarizmi	15.1	X	338.60919	152.84051	195.42463	2.76201	0.1782670	0.32036425	2.1153067	20	10 12.8	16.1
13499 Steinberg	13.6	X	329.16533	217.43775	144.68645	1.92054	0.1898282	0.17104671	3.2141013	20	9 2.9	17.0
13500 Viscardy	12.7	X	66.99882	22.52049	277.91611	7.50628	0.0646609	0.21332110	2.7740451	20	11 10.2	16.6
13501 1987 <i>VR</i>	12.6	X	359.80261	224.42429	212.21475	9.01662	0.0821030	0.18421575	3.0590380	20	—	—
13502 1987 <i>WD</i>	13.6	X	337.66158	308.59548	13.51555	8.95409	0.1555306	0.26500825	2.4004710	20	8 14.2	15.7
13503 1988 <i>RH</i> ₆	14.2	X	128.87507	52.98680	318.55030	7.00369	0.1304378	0.29292141	2.2454427	20	1 17.4	16.9
13504 1988 <i>RV</i> ₁₂	11.9	X	220.92901	305.55205	186.08338	16.26983	0.1706394	0.12431633	3.9760387	20	9 13.2	18.1
13505 1989 <i>AB</i> ₃	12.9	X	52.83150	304.23482	113.23318	11.14334	0.1051095	0.18844166	3.0131316	20	—	—
13506 1989 <i>AF</i> ₃	14.4	X	292.05381	29.11733	110.64608	6.73869	0.1877142	0.27804781	2.3248221	20	—	—
13507 1989 <i>AN</i> ₅	13.8	X	355.16471	287.67788	128.52564	9.95749	0.1173229	0.18330448	3.0691680	20	12 30.7	17.6
13508 1989 <i>DC</i>	13.5	X	247.14684	156.31024	27.19097	7.22815	0.0744681	0.27589602	2.3368944	20	—	—
13509 Guayaquil	14.4	X	284.27020	19.86950	260.00167	4.11813	0.0970048	0.25319941	2.4745387	20	3 11.6	17.9
13510 1989												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13521 1991 BK	13.6 ^m	X	319.34032	48.06073	67.04906	5.73351	0.2793285	0.23107198	2.6300935	20	—	—
13522 1991 FG	14.1	X	145.08188	325.92417	204.18737	13.56370	0.3406701	0.21565190	2.7540206	20	9 1.8	19.5
13523 Vanhassel	14.3	X	145.36204	54.97297	221.11902	5.48483	0.0518447	0.18578654	3.0417712	20	12 31.9	18.9
13524 1991 OO	14.8	X	90.18292	109.48488	231.30458	3.38686	0.2013259	0.28359350	2.2944144	20	—	—
13525 Paullédoux	13.9	X	225.83507	134.70454	91.33899	2.76916	0.1528917	0.18567852	3.0429509	20	—	—
13526 Libbrecht	15.1	X	155.68155	163.93187	142.31176	6.63223	0.1315756	0.28767742	2.2726481	20	—	—
13527 1991 PJ ₁₅	14.7	X	136.23859	167.77945	118.73264	3.04728	0.1426448	0.28341488	2.2953784	20	—	—
13528 1991 PM ₁₆	14.6	X	192.09065	143.24531	154.73045	21.84027	0.2348569	0.28951960	2.2629975	20	—	—
13529 Yokaboshi	13.8	X	61.50244	173.56383	312.64243	4.36358	0.0962064	0.29377777	2.2410769	20	3 10.2	16.1
13530 Ninnemann	13.8	X	345.94670	243.80616	210.06540	6.48172	0.0650840	0.28146686	2.3059570	20	—	—
13531 Weizsäcker	13.1	X	133.38436	174.02673	204.61710	8.27090	0.0754584	0.18542931	3.0456767	20	2 5.9	17.7
13532 1991 RY ₈	14.5	X	85.13796	10.68183	8.33691	3.74812	0.1380047	0.28400420	2.2922019	20	—	—
13533 Junili	13.6	X	87.69068	187.45808	105.67539	2.42701	0.1084412	0.17778060	3.1324186	20	11 25.0	18.3
13534 Alain-Fournier	13.5	X	4.88020	320.35443	8.14220	1.25466	0.1724493	0.17177121	3.2050573	20	9 27.3	17.2
13535 1991 RS ₁₃	14.3	X	263.13642	4.50848	287.82124	4.36214	0.1428989	0.29486094	2.2355852	20	2 22.7	17.4
13536 1991 RA ₁₅	13.2	X	95.61611	128.03433	149.03347	0.08736	0.1490896	0.17477063	3.1682814	20	11 17.2	17.9
13537 1991 SJ ₁₅	12.9	X	29.58635	190.07380	157.03989	9.84886	0.0754194	0.17433684	3.1735349	20	11 18.7	17.3
13538 1991 ST	13.7	X	309.73263	229.34745	79.51601	6.84987	0.2203740	0.30191298	2.2006359	20	5 9.7	15.8
13539 1991 TY	14.7	X	254.47031	240.31300	126.67020	23.15142	0.2935924	0.26498691	2.4005998	20	5 18.1	19.1
13540 Kazukitakahashi	14.6	X	306.00366	10.26189	41.69119	1.92783	0.1517858	0.27140334	2.3626130	20	10 26.6	16.6
13541 1991 VP ₃	14.1	X	223.69448	82.15895	49.47099	7.86685	0.0919956	0.27079501	2.3661500	20	10 17.8	17.2
13542 1991 VC ₅	13.8	X	286.32181	25.88621	51.93883	7.65300	0.0955031	0.27190367	2.3597138	20	11 3.2	16.2
13543 Butler	13.8	X	104.21229	71.94760	118.02848	8.56555	0.1441168	0.25882098	2.4385766	20	8 21.9	17.3
13544 1992 DU ₅	14.2	X	52.12864	235.40144	147.90753	10.14757	0.2158588	0.23745120	2.5827744	20	—	—
13545 1992 DZ ₅	15.1	X	288.28173	313.45750	147.19246	3.48272	0.1979324	0.23324949	2.6136990	20	11 16.5	17.8
13546 1992 DF ₈	14.8	X	90.76935	174.68555	200.65997	7.50370	0.0349056	0.23943213	2.5685090	20	—	—
13547 1992 DJ ₈	15.4	X	330.72875	343.91155	209.87572	4.10764	0.1610182	0.24413197	2.5354377	20	1 13.2	18.4
13548 1992 ER ₁	13.6	X	170.57646	354.15607	140.45303	12.63372	0.1490492	0.22295862	2.6935180	20	8 12.3	17.8
13549 1992 EW ₇	14.0	X	330.89763	54.30055	238.81102	1.18197	0.1587800	0.25313526	2.4749568	20	6 5.9	16.3
13550 1992 EX ₉	14.6	X	0.35707	241.77784	181.64584	3.71949	0.1932138	0.23738792	2.5832333	20	—	—
13551 Gadsden	16.3	X	5.26057	238.16172	317.27399	5.27559	0.4263382	0.24605616	2.5222021	20	2 9.6	17.2
13552 1992 GA	13.6	X	210.27343	249.37100	309.49276	11.64989	0.1197171	0.23035764	2.6355280	20	12 13.6	17.5
13553 Masaakikoyama	16.4	X	206.18166	109.95579	193.47761	5.87458	0.4640940	0.30426830	2.1892646	20	1 17.2	21.0
13554 Declair	14.0	X	351.54369	270.44575	26.26473	2.80587	0.1625526	0.21486249	2.7607621	20	7 24.8	16.7
13555 1992 JB ₂	13.2	X	44.31999	150.77798	218.26121	11.09937	0.0622946	0.22927582	2.6438119	20	—	—
13556 1992 OY ₇	12.9	X	235.41476	51.97083	277.94363	8.73990	0.2731238	0.20262059	2.8708709	20	3 10.0	18.2
13557 Lievetruwant	13.3	X	36.20323	171.32082	115.69953	12.02496	0.1837549	0.21495096	2.7600045	20	10 9.9	17.0
13558 1992 PR ₆	13.4	X	46.98355	27.70467	329.62610	9.52136	0.2870429	0.18284696	3.0742857	20	—	—
13559 Werth	13.2	X	143.01136	337.54939	359.17757	13.66681	0.0968227	0.18997247	2.9969231	20	1 4.0	17.9
13560 La Pérouse	13.0	X	41.17119	28.73496	7.97615	9.49190	0.0925814	0.18566297	3.0431208	20	—	—
13561 Kudogou	12.4	X	343.52143	344.58569	1.56000	17.00947	0.1586455	0.17405130	3.1770048	20	9 13.5	15.9
13562 Bobeggleton	14.0	X	198.02893	312.54855	174.90426	1.54718	0.1287970	0.17373966	3.1808028	20	8 26.4	19.0
13563 1992 UW	13.7	X	287.29926	19.11411	1.85614	2.87458	0.2343243	0.24174629	2.5520911	20	7 15.7	16.7
13564 Kodomomiraikan	14.8	X	66.16187	61.85618	0.28545	3.56233	0.1608943	0.29421760	2.2388429	20	—	—
13565 Yotakanashi	13.0	X	321.40883	19.41393	65.90488	14.48644	0.1073444	0.17871668	3.1214711	20	12 11.7	16.8
13566 1992 UM ₉	13.2	X	337.74097	159.10659	185.98005	6.44856	0.1206232	0.17245024	3.1966384	20	8 28.3	17.2
13567 Urabe	11.9	X	113.02540	268.14430	101.22239	11.05826	0.1017141	0.18683733	3.0303557	20	1 8.4	16.2
13568 1992 WL ₃	12.1	X	269.72413	219.96605	203.88236	10.86165	0.0377538	0.17041722	3.2220114	20	9 6.3	16.8
13569 Oshu	14.8	X	64.14632	163.17680	49.40698	7.05022	0.0780469	0.26248090	2.4158553	20	7 23.8	17.8
13570 1993 FH ₇	14.8	X	45.40150	200.87015	88.50863	3.51234	0.2011479	0.26675668	2.3899703	20	11 2.1	17.9
13571 1993 FT ₇	14.9	X	313.71236	215.77376	155.67027	6.42929	0.1177107	0.26816361	2.3816037	20	9 10.7	17.0
13572 1993 FS ₁₂	15.4	X	235.45705	322.76455	117.18073	3.31069	0.1722298	0.26838249	2.3803086	20	8 9.3	18.5
13573 1993 FZ ₁₈	14.1	X	144.14121	212.60934	71.38145	6.13658	0.1500582	0.27608746	2.3358140	20	—	—
13574 1993 FX ₇₀	14.1	X	274.24570	122.90029	195.21879	1.82987	0.1282729	0.25696607	2.4502977	20	4 16.8	17.3
13575 1993 GN	14.4	X	255.87994	154.92143	46.18848	6.87566	0.1452220	0.27978463	2.3151909	20	—	—
13576 Gotoyoshi	14.1	X	113.39092	181.10317	82.54263	3.02859	0.1829156	0.26981076	2.3719009	20	12 4.4	17.9
13577 Ukawa	14.8	X	87.52651	115.90736	110.25030	3.04431	0.1694313	0.26451042	2.4034819	20	9 23.8	18.3
13578 1993 MK	13.7	X	286.95781	236.87807	112.33344	24.49550	0.0923548	0.36356863	1.9442187	20	6 29.6	15.5
13579 Allodd	13.8	X	351.14475	301.92755	123.29376	9.61623	0.1800195	0.23095682	2.6309677	20	—	—
13580 de Saussure	14.3	X	199.63820	79.01136	293.94003	5.82452	0.2325865	0.20919089	2.8104392	20	4 5.2	19.3
13581 1993 QX ₄	12.7	X	47.86962	323.47647	160.25778	15.34129	0.0506674	0.24034349	2.5620119	20	2 18.1	15.9
13582 Tominari	13.1	X	247.73044	229.23079	38.43823	14.12616	0.1391862	0.23657213	2.5891686	20	1 19.1	17.4
13583 Bosret	13.7	X	65.07374	211.85421	61.41783	3.40479	0.0343667	0.21839095	2.7309450	20	10 4.0	17.4
13584 1993 TH ₁₉	14.6	X	148.48502	154.77237	124.20641	0.51784	0.0763607	0.19070305	2.9892642	20	—	—
13585 Justinsmith	14.4	X	325.52230	268.71290	39.09990	4.24224	0.0859712	0.21194486	2.7860407	20	6 24.6	17.8
13586 Copenhagen	13.3	X	116.53166	117.13637	187.18639	9.73782	0.0746104	0.18986806	2.9980217	20	—	—
13587 1993 TQ ₂₉	15.0	X	303.57365	261.48926	177.97979	5.17355	0.1935566	0.18379826	3.0636686	20	11 1.6	18.3
13588 1993 TU ₃₈	14.3	X	180.65936	0.04822	98.27934	5.52851	0.0246842	0.21025136	2.8009811	20	7 8.8	18.3
13589 1993 XM	13.5	X	310.85487	36.54065	107.45775	16.72654	0.1572641	0.18515888	3.0486414	20	—	—
13590 1994 AC ₃	13.8	X	201.87865	91.32219	29.61139	0.56163	0.1313436	0.17095397	3.2152637	20	8 22.4	18.8
13591 1994 BC ₁	12.8	X	129.90074	298.67030	313.85418	12.40305	0.1834056	0.17364948	3.1819039	20	11 17.6	18.3
13592 1994 JU	14.8	X	100.21875	63.09405	203.89683	6.30894	0.1900164	0.27744327	2.3281980	20	11 29.1	18.5
13593 1994 NF ₁	13.9	X	294.30920	199.58603	99.07511	8.19647	0.1397098	0.29856494	2.2170569	20	4 16.8	16.6
13594 1994 PC ₂	14.6	X	75.40090	284.51020	359.62678	2.04839	0.2251176	0.27241714	2.3567477	20	11 28.7	18.2
13595 1994 PL ₃	15.1	X	79.80208	92.75244	315.46033	2.22158	0.1201305	0.24473530	2.5312691	20	1 3.6	17.8
13596 1994 PD ₁₈	14.4	X	48.32958	120.61749	158.71253	6.70127	0.1160492	0.26787296	2.3833261	20	10 11.3	17.3
13597 1994 PH ₁₈	15.5	X	125.94579	72.90534	166.58015	2.53248						

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13601 1994 <i>PU</i> ₂₉	14.4	X	56.67422	229.26740	166.53135	11.17878	0.1827438	0.24017094	2.5632388	20	—	—
13602 Pierreboullez	14.9	X	60.78830	198.84034	240.73067	1.06704	0.0830210	0.24664360	2.5181957	20	1 11.2	17.8
13603 1994 <i>PV</i> ₃₇	14.8	X	351.95014	119.24999	171.94832	2.36732	0.1810548	0.26381523	2.4077024	20	7 21.6	16.5
13604 1994 <i>PA</i> ₃₉	15.5	X	149.89055	41.44152	217.24605	2.39139	0.1891205	0.27798232	2.3251873	20	12 30.6	19.1
13605 Nakamuraminoru	13.8	X	28.28625	349.77467	331.26798	5.32127	0.1335840	0.26859225	2.3790692	20	11 8.5	16.6
13606 Bean	15.3	X	10.19966	61.66464	199.13237	2.84431	0.1037986	0.25995462	2.4314818	20	7 6.7	17.8
13607 Vicars	14.0	X	216.53730	201.91950	21.19382	6.60831	0.0588617	0.27680473	2.3317772	20	—	—
13608 Andosatoru	13.8	X	121.43810	234.37664	55.31713	7.08544	0.1459674	0.27384992	2.3485202	20	—	—
13609 Lewicki	14.2	X	249.88332	96.63508	235.30682	2.15760	0.0701558	0.25370536	2.4712478	20	4 12.3	17.4
13610 Lilienthal	14.6	X	10.73919	147.99756	189.25145	5.97768	0.1360226	0.26643829	2.3918740	20	11 7.8	17.1
13611 1994 <i>UM</i> ₁	13.8	X	138.36879	69.73136	250.00705	3.39666	0.1954044	0.23948282	2.5681466	20	—	—
13612 1994 <i>UQ</i> ₁	14.0	X	116.87320	134.69247	201.70945	3.55277	0.1931047	0.23883343	2.5727997	20	—	—
13613 1994 <i>UA</i> ₃	14.5	X	279.04179	201.22609	221.44392	1.19242	0.1787784	0.22602350	2.6691131	20	10 4.6	17.6
13614 1994 <i>VF</i> ₂	13.2	X	302.80090	68.20223	55.39593	13.11245	0.2235507	0.23104765	2.6302782	20	—	—
13615 Manulis	13.5	X	46.20610	250.10972	139.37045	12.68064	0.2116258	0.23491469	2.6013329	20	—	—
13616 1994 <i>XQ</i> ₄	14.2	X	267.08143	312.45544	77.59843	4.13274	0.1186485	0.21617485	2.7495774	20	7 16.2	17.9
13617 1994 <i>YA</i> ₂	13.5	X	318.59651	97.83041	358.12053	22.03967	0.0450888	0.22811984	2.6527359	20	—	—
13618 1995 <i>BF</i> ₂	12.9	X	227.58907	218.02839	341.06967	8.40013	0.0805009	0.18545015	3.0454485	20	12 29.1	17.3
13619 1995 <i>DN</i> ₁	13.1	X	74.46941	257.87221	24.25273	7.08168	0.1028396	0.17680188	3.1439681	20	10 26.9	17.7
13620 Moynahan	13.8	X	104.53222	153.87995	46.92106	4.02122	0.0444116	0.17097530	3.2149962	20	8 17.3	18.5
13621 1995 <i>GC</i> ₇	12.9	X	25.12178	76.37039	2.97047	9.92922	0.1000449	0.18768933	3.0211781	20	—	—
13622 McArthur	13.6	X	216.68974	337.20677	127.81631	3.30730	0.1800393	0.17174274	3.2054115	20	8 13.8	18.7
13623 1995 <i>TD</i>	14.9	X	178.53721	142.89938	186.51918	6.39586	0.1562197	0.29630046	2.2283385	20	1 18.4	18.3
13624 Abeosamu	14.7	X	56.76887	200.89594	257.89108	3.64363	0.0965635	0.29212679	2.2495128	20	1 21.8	16.9
13625 1995 <i>UP</i> ₃	14.3	X	0.08474	330.81983	7.75398	4.39619	0.1569427	0.27569271	2.3380432	20	10 25.4	16.5
13626 1995 <i>UD</i> ₄	14.7	X	287.37161	342.67854	28.38391	5.48763	0.1646567	0.31030518	2.1607774	20	7 20.0	16.7
13627 Yukitamayo	14.4	X	89.58917	276.47261	89.16627	5.93787	0.2174370	0.28731216	2.2745739	20	—	—
13628 1995 <i>WE</i>	14.0	X	350.26674	52.62735	68.83297	6.81221	0.1562462	0.28549832	2.2841976	20	—	—
13629 1995 <i>WD</i> ₂	14.9	X	281.64926	263.61983	222.78398	2.32879	0.1653655	0.27765468	2.3270161	20	12 31.4	16.7
13630 1995 <i>WO</i> ₃	15.0	X	254.51022	158.15375	232.32889	1.65449	0.1962287	0.26714065	2.3876797	20	6 20.9	18.1
13631 1995 <i>WL</i> ₅	15.1	X	354.48699	118.86996	256.62392	6.92400	0.1529285	0.27590116	2.3368654	20	12 9.8	17.2
13632 1995 <i>WP</i> ₈	14.4	X	326.35546	274.20169	58.95387	5.50377	0.1798476	0.30954490	2.1643141	20	8 10.6	15.7
13633 Ivens	15.4	X	73.30539	212.65286	21.78192	4.11870	0.0808499	0.31076457	2.1586474	20	9 12.5	17.8
13634 1995 <i>WY</i> ₄₁	15.1	X	342.31077	124.37882	277.98441	3.71574	0.2072762	0.27798424	2.3251766	20	—	—
13635 1995 <i>WA</i> ₄₂	15.1	X	306.46755	215.47557	206.81144	4.39388	0.0585117	0.27635056	2.3343312	20	11 17.8	17.4
13636 1995 <i>YS</i> ₂	15.7	X	194.38732	222.80226	262.55627	0.51509	0.1207543	0.26596704	2.3946984	20	8 28.9	19.3
13637 1995 <i>YO</i> ₃	14.6	X	229.45595	223.04806	134.52998	0.60029	0.1587148	0.26509068	2.3999733	20	7 30.9	17.8
13638 Fiorenza	14.1	X	169.49955	121.15903	215.62760	7.46468	0.0912377	0.27334398	2.3514173	20	—	—
13639 1996 <i>EG</i> ₂	13.8	X	254.48671	112.88538	165.79207	12.32833	0.0385267	0.24367862	2.5385814	20	2 11.8	17.3
13640 Ohtateruaki	13.6	X	280.73064	101.89576	38.93789	13.24271	0.1186232	0.23010934	2.6374236	20	—	—
13641 de Lesseps	13.7	X	156.50322	175.22264	59.31635	0.82446	0.1595367	0.18287480	3.0739736	20	11 23.1	18.8
13642 Ricci	13.6	X	135.14128	317.81455	2.40949	6.20292	0.1602390	0.18722601	3.0261602	20	—	—
13643 Takushi	12.8	X	337.19636	87.42298	56.32193	13.83497	0.1123420	0.23589334	2.5941332	20	—	—
13644 Lynnanderson	13.4	X	312.85705	343.69648	38.71751	0.43421	0.2014610	0.17492207	3.1664525	20	8 29.3	16.7
13645 1996 <i>HF</i> ₁₁	14.1	X	211.56372	180.29848	79.47201	2.58131	0.1681100	0.19061584	2.9901758	20	—	—
13646 1996 <i>HC</i> ₁₂	14.7	X	56.68601	261.47291	220.26786	1.10256	0.0167713	0.20017106	2.8942443	20	3 1.6	18.7
13647 Rey	13.9	X	22.62318	222.81085	85.88111	4.59240	0.1730696	0.17315100	3.1880078	20	10 4.4	17.8
13648 1996 <i>JJ</i> ₁	13.6	X	192.04400	122.89791	176.70701	9.34378	0.0407641	0.19289628	2.9665623	20	1 5.0	18.1
13649 1996 <i>PM</i> ₄	12.9	X	183.72907	162.39516	34.33408	1.46307	0.1365610	0.17329573	3.1862326	20	11 2.7	18.0
13650 Perimedes	11.8	X	287.26037	244.04972	206.82294	10.70893	0.0970172	0.08265579	5.2193992	20	10 11.5	18.5
13651 1997 <i>BR</i>	17.6	X	320.90641	133.82498	116.66378	17.24856	0.3056593	0.63859402	1.3355274	20	—	—
13652 Elowitz	15.3	X	181.01584	194.61493	140.28386	6.03782	0.1895388	0.29883358	2.2157280	20	1 30.5	18.8
13653 Priscus	15.6	X	340.17026	135.69920	128.69370	4.60023	0.1678104	0.30488691	2.1863022	20	5 9.2	17.2
13654 Masuda	15.4	X	171.83942	316.19135	21.95135	4.36990	0.0117939	0.29459065	2.2369524	20	1 11.3	18.2
13655 1997 <i>ER</i> ₂	14.4	X	289.00107	7.14472	55.75484	4.54407	0.0554154	0.27640365	2.3340324	20	10 22.4	16.9
13656 1997 <i>EX</i> ₄₅	14.5	X	322.87185	19.71069	109.86878	3.30549	0.0968897	0.24463031	2.5319932	20	—	—
13657 Badinter	14.0	X	326.00222	298.99072	1.16542	2.30733	0.1964455	0.26159304	2.4213185	20	5 31.9	15.9
13658 Sylvester	15.4	X	19.63623	69.20956	180.98892	3.91743	0.1596805	0.30659755	2.1781625	20	7 19.1	17.1
13659 1997 <i>FH</i> ₄	13.8	X	238.86647	326.24040	9.95503	11.51329	0.0776516	0.25707657	2.4495955	20	4 3.2	17.1
13660 1997 <i>GE</i> ₈	15.6	X	115.42558	228.97446	254.44364	0.40055	0.1333505	0.26018535	2.4300441	20	6 2.6	18.9
13661 1997 <i>GH</i> ₈	15.3	X	127.33019	25.93912	223.50848	4.01954	0.0608775	0.27439032	2.3454356	20	11 29.4	18.4
13662 1997 <i>GL</i> ₁₁	15.0	X	185.37425	276.57228	1.56181	6.11141	0.0817414	0.28597668	2.2816497	20	—	—
13663 1997 <i>GA</i> ₁₄	14.6	X	257.78748	65.29353	286.42489	1.59641	0.2007975	0.26045890	2.4283423	20	5 2.2	18.0
13664 1997 <i>GE</i> ₁₇	15.7	X	51.79592	138.61073	357.97461	5.22491	0.0528832	0.29765777	2.2215593	20	3 6.8	17.9
13665 1997 <i>GK</i> ₁₇	15.0	X	166.92422	119.08524	330.29826	2.22766	0.0930010	0.30611161	2.1804670	20	6 12.3	17.8
13666 1997 <i>GX</i> ₂₂	15.0	X	38.43497	115.50733	147.53240	1.71056	0.1518247	0.26437258	2.4043173	20	9 7.2	17.7
13667 Samthurman	14.9	X	289.67540	193.87811	195.36999	2.32593	0.1767718	0.26994706	2.3711024	20	8 13.0	17.2
13668 Tanner	14.9	X	192.58318	243.71483	15.01779	3.94410	0.1291714	0.28429101	2.2906600	20	—	—
13669 Swammerdam	15.0	X	147.10363	175.02094	171.27714	2.38712	0.0827824	0.24391215	2.5369608	20	1 7.5	18.5
13670 1997 <i>JD</i> ₁₅	14.7	X	80.35476	67.27829	84.59761	3.66693	0.0868608	0.30059589	2.2070594	20	5 20.1	17.1
13671 1997 <i>JH</i> ₁₈	14.9	X	170.58317	173.57605	121.38991	5.03254	0.1977660	0.23876206	2.5733123	20	—	—
13672 Tarski	14.7	X	87.63599	119.64937	194.79243	2.03847	0.0887737	0.23183803	2.6242967	20	12 29.1	18.4
13673 Urysohn	14.8	X	184.73075	159.25454	186.11246	1.76780	0.0948730	0.20316351	2.8657540	20	2 21.6	19.0
13674 Bourge	14.5	X	220.86632	7.84351	94.77211	7.76102	0.0693255	0.26729142	2.3867817	20	9 8.7	17.7
13675 1997 <i>MZ</i> ₂	14.3	X	86.85305	315.80473	346.50058	2.96969	0.0821612	0.22771544	2.6558756	20	12 11.8	18.1
13676 1997 <i>MA</i> ₄	14.1</											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13681 Monty Python	14.3	X	212.29863	283.83969	344.67883	10.11286	0.0631950	0.19051016	2.9912815	20	—	—
13682 Pressberger	13.8	X	343.92727	196.28600	147.83494	2.84856	0.0971488	0.17301062	3.1897321	20	9 8.6	17.6
13683 1997 PV ₃	13.2	X	117.63124	45.16878	253.32514	8.40724	0.0743321	0.18389525	3.0625913	20	12 29.4	17.8
13684 Borbona	12.6	X	215.81042	181.40263	297.60772	16.87697	0.0948311	0.17426098	3.1744558	20	8 29.9	17.6
13685 1997 QG ₄	13.3	X	208.12080	117.23866	147.73685	12.20190	0.1384688	0.19022467	2.9942737	20	—	—
13686 Kongozan	13.9	X	37.22346	155.17042	200.48988	1.26229	0.1773488	0.17923088	3.1154981	20	12 21.6	18.1
13687 1997 RB ₇	12.5	X	205.79770	39.08571	211.35981	8.92233	0.0664625	0.18768940	3.0211774	20	—	—
13688 Oklahoma	13.4	X	55.38785	350.18694	321.67436	5.67835	0.1494994	0.17641347	3.1485812	20	11 14.6	18.0
13689 Succì	13.7	X	94.67270	123.34716	138.59134	10.27419	0.0565308	0.17529598	3.1619482	20	10 24.2	18.4
13690 Leslymartin	13.1	X	115.37904	325.97777	299.40530	15.57412	0.1669174	0.17847626	3.1242738	20	11 20.8	18.4
13691 Akie	13.6	X	282.48502	108.43409	147.56036	12.32556	0.1030583	0.23945757	2.5683271	20	2 10.1	17.3
13692 1997 SW ₃₀	13.9	X	310.38292	76.74667	171.18657	9.27001	0.1773137	0.24401059	2.5362785	20	2 22.5	17.0
13693 Bondar	14.3	X	225.82317	44.73666	229.97027	1.72988	0.1847168	0.23634250	2.5908454	20	1 3.3	18.5
13694 1997 WW ₇	10.9	X	334.23459	164.05205	249.76572	5.64422	0.0692706	0.08175485	5.2576745	20	10 30.9	17.5
13695 1998 FO ₅₂	13.8	X	318.39277	278.61886	8.07607	11.02662	0.1678990	0.22733734	2.6588196	20	4 28.8	17.0
13696 1998 HU ₄₃	13.8	X	68.23633	17.43222	37.84232	7.21931	0.1380068	0.30312555	2.1947633	20	—	—
13697 1998 HJ ₁₃₃	13.7	X	103.93378	200.80051	153.82427	8.41862	0.2377063	0.25510741	2.4621849	20	—	—
13698 1998 KF ₃₅	13.3	X	183.43389	272.52030	71.72597	7.02977	0.1522909	0.25725670	2.4484519	20	2 19.1	17.2
13699 Nickthomas	13.8	X	159.64384	84.79827	261.84541	4.87557	0.2042849	0.29371588	2.2413917	20	1 26.2	17.1
13700 Connors	15.0	X	220.11868	31.58374	307.94269	6.08996	0.1963244	0.30111741	2.2045104	20	3 8.3	18.6
13701 Roquebrune	15.2	X	36.61265	188.99655	232.99395	3.60555	0.1543282	0.28825599	2.2696061	20	—	—
13702 1998 OE ₇	14.2	X	93.70878	88.24677	130.34789	12.02544	0.2090704	0.24398420	2.5364613	20	1 26.3	17.1
13703 Romero	14.4	X	268.91164	221.96608	150.10363	1.56117	0.1961582	0.26369586	2.4084290	20	6 13.3	17.4
13704 Aletesi	13.7	X	292.69140	202.05348	238.05257	5.62968	0.1259061	0.18556299	3.0442138	20	10 20.9	17.5
13705 Llapasset	14.6	X	183.23933	239.93741	128.69398	4.69780	0.1298413	0.29926800	2.2135833	20	3 14.9	17.7
13706 1998 QF ₃	14.2	X	53.47580	88.20227	331.40993	20.44478	0.2215963	0.28776362	2.2721942	20	—	—
13707 1998 QS ₉	13.2	X	332.88324	47.51710	324.63399	12.00082	0.1641892	0.22788810	2.6545339	20	10 2.4	16.0
13708 1998 QU ₉	14.3	X	168.66046	75.29054	333.96868	6.37781	0.0377747	0.30380222	2.1915031	20	4 12.6	17.0
13709 1998 QE ₁₃	14.0	X	324.42619	298.80482	135.00205	5.72433	0.2612303	0.27756346	2.3275259	20	—	—
13710 Shridhar	14.6	X	74.48551	79.43892	320.53497	5.83291	0.1405706	0.28862927	2.2676488	20	—	—
13711 1998 QB ₂₆	14.7	X	317.34014	349.16332	337.47325	1.91804	0.2323063	0.26515437	2.3995890	20	6 19.9	16.8
13712 1998 QL ₃₀	14.3	X	12.35234	234.11848	129.78386	4.97169	0.1366045	0.27593797	2.3366575	20	12 19.3	16.9
13713 1998 QN ₃₀	15.0	X	274.76755	157.81899	164.45671	1.96127	0.2064726	0.30521319	2.1847438	20	4 9.9	18.0
13714 Stainbrook	14.5	X	40.74399	203.69977	248.84824	4.42181	0.1388580	0.28910646	2.2651529	20	—	—
13715 Steed	15.0	X	50.65827	250.29533	117.54315	5.87889	0.1502062	0.23574887	2.5951928	20	—	—
13716 Trevino	14.4	X	0.94606	171.05646	188.31173	6.82829	0.1344571	0.27380961	2.3487507	20	11 25.2	16.9
13717 Vencill	15.3	X	206.54870	30.05427	212.10069	2.23304	0.0458960	0.28590644	2.2820234	20	—	—
13718 Welcker	15.4	X	290.81428	250.20318	19.69258	4.94078	0.1173413	0.30138222	2.2032188	20	3 2.5	18.0
13719 1998 QU ₄₅	14.9	X	354.72359	97.68903	198.99257	5.13107	0.1149457	0.31168046	2.1544165	20	8 8.4	16.7
13720 1998 QU ₅₀	13.1	X	0.16280	278.09060	348.50814	21.29950	0.0483328	0.17197260	3.2025546	20	6 23.9	17.8
13721 Kevinwelsh	15.1	X	335.23507	258.95561	215.08894	4.97727	0.0633922	0.28375090	2.2935659	20	—	—
13722 Campobagatin	14.5	X	69.93837	44.75108	269.14210	2.52906	0.2125113	0.23203193	2.6228345	20	12 21.9	18.6
13723 Kolokolova	14.1	X	237.23347	168.39120	220.48429	4.17204	0.1660792	0.21384633	2.7695009	20	6 2.9	18.3
13724 Schwehm	14.1	X	122.64940	338.60245	262.96405	1.32626	0.1928249	0.27491506	2.3424502	20	11 16.1	18.0
13725 1998 QY ₅₅	13.7	X	78.97495	275.12062	147.79039	2.58576	0.0621307	0.19943000	2.9014096	20	1 22.7	17.4
13726 1998 QV ₈₉	12.8	X	59.57433	8.10824	299.15400	9.65121	0.0741037	0.18349896	3.0669991	20	11 3.4	17.3
13727 1998 QU ₉₀	13.8	X	30.87141	54.12366	52.64871	5.96030	0.0785972	0.28888076	2.2663325	20	—	—
13728 1998 QC ₉₈	13.9	X	162.20766	256.93231	152.87463	10.14682	0.1167392	0.25262200	2.4783079	20	4 19.8	17.7
13729 Nicolewien	15.1	X	266.11514	306.82025	171.96052	3.91267	0.0733180	0.27692486	2.3311027	20	12 2.8	17.7
13730 Willis	14.5	X	44.43360	143.79459	214.51329	6.30483	0.1523106	0.27829340	2.3234542	20	—	—
13731 1998 RG ₄₉	15.1	X	294.17734	108.93863	184.13129	3.03402	0.1460756	0.30361326	2.1924123	20	4 2.5	17.4
13732 Woodall	14.4	X	282.13825	218.32520	204.63389	6.04310	0.0993155	0.26936758	2.3745018	20	10 2.3	16.9
13733 Dylanyoung	14.7	X	195.04707	12.35140	210.17928	4.35114	0.0780931	0.28053597	2.3110554	20	—	—
13734 Buklad	15.3	X	343.81756	19.00458	203.18694	3.72894	0.1167421	0.29912767	2.2142755	20	3 12.1	17.2
13735 1998 RZ ₆₇	14.4	X	24.23584	221.49393	216.72003	3.47150	0.1249301	0.19240941	2.9715646	20	—	—
13736 1998 RF ₇₁	14.3	X	59.76661	264.34353	99.00793	3.08497	0.1102863	0.18931464	3.0038615	20	—	—
13737 1998 RU ₇₆	14.1	X	13.77822	168.63030	149.45105	6.21310	0.2524432	0.27107255	2.3645347	20	11 7.4	16.6
13738 1998 SF ₁	15.0	X	320.78315	92.91705	190.94907	5.98318	0.0917952	0.25681238	2.4512753	20	5 13.8	17.7
13739 Nancyworden	12.7	X	283.90197	94.80834	46.27082	10.92491	0.0698948	0.18861418	3.0112939	20	—	—
13740 Lastrucci	13.8	X	99.73322	68.34979	328.47941	6.08227	0.2730822	0.24276149	2.5449711	20	2 11.3	16.9
13741 1998 SH ₁₀	13.7	X	211.82831	351.84513	60.35098	0.94597	0.0655141	0.21128591	2.7918304	20	6 13.8	17.7
13742 1998 SJ ₂₂	14.5	X	281.57472	205.33155	145.05322	5.42999	0.1718571	0.21570033	2.7536084	20	6 4.3	18.2
13743 Rivkin	15.2	X	199.75302	197.06344	119.77686	4.90762	0.1429724	0.29359195	2.2420224	20	1 24.2	18.4
13744 Rickline	13.7	X	325.68625	341.86537	33.12167	6.04645	0.0950785	0.22328424	2.6908987	20	9 30.9	16.7
13745 Mikecosta	14.4	X	30.86225	64.51284	331.74417	1.15056	0.0814643	0.23502665	2.6005067	20	—	—
13746 1998 SR ₄₃	13.8	X	46.97208	73.79549	3.75172	1.75657	0.0590673	0.19535625	2.9416060	20	—	—
13747 1998 SS ₄₃	14.6	X	294.54678	175.88020	183.47938	9.73276	0.1506651	0.21765148	2.7371271	20	7 7.0	18.2
13748 Radaly	13.9	X	359.76454	157.90614	218.41438	2.69999	0.1020529	0.18118229	3.0930876	20	11 15.6	17.8
13749 1998 SG ₄₉	12.9	X	183.40263	234.33901	213.32206	8.13971	0.1235318	0.21116675	2.7928805	20	6 25.5	17.4
13750 Mattdawson	14.2	X	25.80759	306.15232	11.01403	6.49166	0.1387556	0.27184982	2.3600255	20	11 1.6	16.9
13751 Joelparker	15.1	X	342.85739	3.50889	166.33140	6.55003	0.0746098	0.29175271	2.2514352	20	1 2.0	17.6
13752 Grantstokes	14.9	X	287.10672	314.93463	4.69260	7.11749	0.1882457	0.25978752	2.4325243	20	4 24.1	18.0
13753 Jennivirta	13.9	X	264.46616	290.77345	133.27323	6.14147	0.1366004	0.17487134	3.1670649	20	8 20.4	18.2
13754 1998 SB ₆₃	12.3	X	301.62034	60.37256	22.85574	22.37398	0.0486592	0.22812387	2.6527047	20	11 18.7	15.9
13755 1998 SR ₇₀	13.9	X	3.25793	340.64826	29.78520	9.35459	0.0833574	0.18135467	3.0911273	20	11 10.0	17.8
13756 1998 ST ₇₂	14.5	X	72.48748	317.03413	95.34402	3.17288	0.0902545	0.19451496	2.9500817	20	1 5.3	18.2
13757 1998 ST ₇₃	14.9	X	205.17634	89.12556	143.23484	4.13704	0.1536162	0.281498				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13761 Dorrstaylor	14.4	X	128.72097	9.63803	167.53509	2.53019	0.1213698	0.26302169	2.4125427	20	8 27.9	18.0
13762 1998 SG ₁₃₀	13.8	X	132.93996	355.21164	13.11156	8.71328	0.2156796	0.28918770	2.2647286	20	2 1.9	17.0
13763 1998 SO ₁₃₅	14.1	X	232.03050	26.01543	37.18085	10.96341	0.1269435	0.16901149	3.2398525	20	7 15.1	19.2
13764 Mcalanis	15.0	X	147.87662	290.10886	75.72048	3.94289	0.0154456	0.29027895	2.2590492	20	1 17.8	17.7
13765 Nansmith	14.6	X	138.03539	128.36227	282.64891	0.96827	0.0668993	0.20292273	2.8680205	20	3 20.7	18.8
13766 Bonham	14.6	X	160.57643	325.15859	336.65458	3.73486	0.1722984	0.28566690	2.2832989	20	—	—
13767 1998 SF ₁₄₁	14.1	X	181.65484	259.45296	27.22672	1.64429	0.0616102	0.23917652	2.5703387	20	—	—
13768 1998 SS ₁₄₃	14.7	X	100.49465	216.18979	225.45705	1.12497	0.0552248	0.20169705	2.8796277	20	3 12.4	18.5
13769 1998 SV ₁₄₄	14.2	X	102.55003	221.56029	29.83838	3.85893	0.1130642	0.22495428	2.6775641	20	10 29.1	18.0
13770 Commerson	13.7	X	18.98942	243.91338	145.71095	2.99573	0.0895684	0.18507476	3.0495652	20	12 28.5	17.7
13771 1998 SG ₁₅₉	14.4	X	277.91391	108.16511	9.23383	11.89980	0.1311682	0.18253714	3.0777633	20	11 11.6	18.5
13772 Livius	12.8	X	261.25945	112.65399	62.57575	11.06773	0.0376696	0.18760339	3.0221006	20	—	—
13773 1998 TY ₁₇	14.1	X	288.18034	31.81403	162.81997	3.96844	0.1236569	0.23759715	2.5817166	20	—	—
13774 Spurný	13.5	X	38.33788	30.26286	17.71865	9.27427	0.1003300	0.18868766	3.0105121	20	—	—
13775 Thébault	13.9	X	187.42647	168.02034	17.20561	7.39466	0.1556651	0.22462149	2.6802081	20	10 28.5	18.0
13776 1998 UK ₁	14.2	X	233.44771	287.90631	190.74522	1.34223	0.1521245	0.17659947	3.1463699	20	9 18.7	18.8
13777 Cielobuio	14.2	X	82.53633	141.21242	269.16729	1.09159	0.0903598	0.19530041	2.9421667	20	1 16.4	18.0
13778 1998 US ₇	14.1	X	206.95237	18.12154	211.26871	14.51152	0.0883648	0.23267886	2.6179706	20	—	—
13779 1998 UY ₇	13.5	X	86.41414	189.85371	194.83648	9.72185	0.1096407	0.23734133	2.5835714	20	—	—
13780 1998 UZ ₈	11.9	X	264.30189	50.58109	25.11306	8.24626	0.0965837	0.08392281	5.1663733	20	9 1.9	18.8
13781 1998 UO ₁₅	14.9	X	242.53345	54.32606	282.16274	0.33810	0.1764339	0.25262997	2.4782559	20	3 31.3	18.8
13782 1998 UM ₁₈	11.5	X	338.10911	232.46343	150.14125	28.59182	0.1341126	0.08355748	5.1817821	20	10 4.7	17.9
13783 1998 UJ ₂₀	14.1	X	274.98087	110.53404	265.44145	5.15440	0.2136762	0.26169882	2.4206660	20	6 23.9	17.0
13784 1998 UN ₂₀	14.3	X	134.41786	171.81622	106.34317	2.45620	0.1960249	0.27713660	3.2399152	20	—	—
13785 1998 UR ₂₀	14.0	X	233.34874	50.72628	292.21671	0.98993	0.0091281	0.20448146	2.8534269	20	4 15.7	17.9
13786 1998 UV ₂₀	13.1	X	272.45846	300.08687	223.05535	12.55857	0.0728545	0.23104382	2.6303072	20	—	—
13787 Nagaiishi	13.3	X	254.28218	339.48682	99.68316	2.13074	0.1339796	0.17223184	3.1993402	20	8 27.3	17.9
13788 Dansolander	13.6	X	64.22748	66.70201	184.99690	8.55185	0.2330324	0.21941771	2.7224187	20	10 1.9	17.5
13789 1998 UZ ₂₈	14.2	X	98.68064	253.03107	85.54558	7.76827	0.1512041	0.28021803	2.3128031	20	—	—
13790 1998 UF ₃₁	11.7	X	236.45460	55.04277	67.23847	7.96802	0.1118560	0.08143606	5.2713868	20	9 23.5	18.9
13791 1998 VC	14.1	X	153.17145	302.44733	272.32397	1.38399	0.1542399	0.26859893	2.3790297	20	11 9.2	17.7
13792 Kuščynskij	13.4	X	285.83575	359.86147	55.65316	3.76804	0.1788881	0.17486831	3.1671015	20	9 2.4	17.4
13793 Laubernasconi	14.0	X	142.85303	179.71155	122.25584	2.43666	0.1665610	0.18735970	3.0247206	20	—	—
13794 1998 VD ₅	13.5	X	278.37423	9.77204	77.83859	2.62053	0.1609439	0.17665456	3.1457157	20	10 5.2	17.6
13795 1998 VP ₂₀	13.4	X	104.53453	83.28914	146.11050	2.16707	0.1429555	0.17471900	3.1689055	20	9 30.9	18.2
13796 1998 VB ₂₆	13.6	X	326.86296	336.71962	13.22925	1.32783	0.1670834	0.17270423	3.1935036	20	8 14.8	17.2
13797 1998 VQ ₂₇	13.7	X	190.04856	344.46005	349.58834	1.59357	0.0886664	0.19906708	2.9049350	20	2 14.4	18.1
13798 Cecchini	14.3	X	256.93479	242.05585	31.83384	4.85017	0.0864475	0.19864138	2.9090839	20	2 12.9	18.6
13799 1998 VC ₃₄	14.7	X	135.48023	122.98764	300.15642	1.04944	0.0511525	0.20168493	2.8797431	20	3 31.2	18.9
13800 1998 VR ₃₆	12.8	X	282.70080	207.74643	241.82507	12.09400	0.1335793	0.22460322	2.6803535	20	10 24.9	17.1
13801 Kohlhase	13.6	X	146.54002	75.82215	103.15581	10.17808	0.0766761	0.21570600	2.7535601	20	9 16.9	17.9
13802 1998 WR ₃	13.8	X	252.12409	224.33283	58.28260	7.89319	0.1530595	0.29097790	2.2554302	20	2 2.8	17.2
13803 1998 WU ₁₀	14.2	X	100.20206	43.64942	234.76055	1.92577	0.2248462	0.27232341	2.3572885	20	12 12.9	18.1
13804 Hrazany	13.2	X	341.26306	43.10361	331.51138	5.96923	0.1422402	0.17567203	3.1574342	20	10 12.3	16.9
13805 1998 XN ₃	13.2	X	358.00342	297.34755	34.52671	1.75384	0.1863469	0.17175357	3.2052768	20	9 20.6	16.6
13806 Darmstrong	14.2	X	214.24221	184.31769	113.73598	3.06566	0.0806219	0.19592698	2.9358907	20	1 27.4	18.6
13807 1998 XE ₁₃	13.9	X	223.62013	270.21258	66.73327	3.01356	0.0735733	0.20296813	2.8675928	20	3 24.7	18.1
13808 Davewilliams	11.9	X	340.75480	101.47411	289.68591	14.67209	0.0890312	0.17275118	3.1929249	20	10 27.9	16.3
13809 1998 XJ ₄₀	13.0	X	225.64354	212.80249	3.03145	7.26457	0.0576816	0.18226265	3.0808526	20	—	—
13810 1998 XU ₅₁	12.6	X	134.01321	214.71798	56.89731	17.05183	0.1640929	0.17612534	3.1520141	20	12 13.7	17.9
13811 1998 XP ₉₂	12.4	X	82.75821	149.38230	238.01659	9.69236	0.1192029	0.18745023	3.0237466	20	—	—
13812 1998 YR	12.3	X	215.95497	348.92337	277.47139	10.45472	0.1483739	0.18504478	3.0498945	20	—	—
13813 1998 YX	12.4	X	70.41810	323.50644	99.22929	11.68752	0.0873630	0.18867611	3.0106350	20	1 16.5	16.3
13814 1998 YG ₃	12.8	X	160.17831	246.16298	94.11046	10.68898	0.0913576	0.18946780	3.0022425	20	1 24.7	17.3
13815 Furuya	12.4	X	357.87471	117.43196	227.90708	12.56882	0.1869161	0.17115543	3.2127401	20	10 4.8	16.1
13816 Stülpner	14.2	X	84.30673	239.72491	234.85253	12.90511	0.1274786	0.24282272	2.5445433	20	4 7.7	17.6
13817 Genobechetti	12.3	X	58.55079	5.09248	175.37635	16.52743	0.0336570	0.16991088	3.2284093	20	5 24.3	17.0
13818 Ullery	14.3	X	236.55374	160.51922	187.10202	6.86630	0.1316317	0.22056312	2.7129854	20	4 14.7	18.4
13819 1999 SX ₅	13.6	X	300.20981	268.95184	135.97635	23.48177	0.3031999	0.27914444	2.3187294	20	9 17.9	15.3
13820 Schwartz	13.4	X	264.42404	252.21666	166.97029	1.23177	0.1700264	0.17879569	3.1205514	20	8 8.8	17.9
13821 1999 VE ₈	15.0	X	218.12352	265.84149	111.27151	3.01031	0.2155078	0.26280103	2.4138929	20	4 27.9	19.0
13822 Stevedodson	15.1	X	320.66031	104.74716	262.43235	2.91587	0.1662448	0.27969755	2.3156715	20	9 15.5	16.9
13823 1999 VO ₇₂	12.6	X	134.03313	9.91273	327.31818	9.70834	0.0971649	0.18927844	3.0042446	20	—	—
13824 Kramlik	14.3	X	162.76695	131.97887	85.71519	6.27139	0.0866536	0.28526050	2.2854670	20	11 29.9	17.3
13825 Booth	14.2	X	112.46809	42.39423	241.78984	6.18080	0.1840339	0.24198524	2.5504107	20	12 23.3	18.4
13826 1999 WM	14.7	X	224.68083	286.92898	130.68001	4.60208	0.2016677	0.26841305	2.3801279	20	6 24.9	18.4
13827 1999 WK ₄	14.3	X	255.79722	234.74497	100.02828	3.42080	0.0925754	0.26232333	2.4168226	20	4 22.4	17.5
13828 1999 WL ₆	14.8	X	147.62668	286.43273	86.03947	3.21330	0.0834790	0.20574156	2.8417641	20	2 16.3	18.9
13829 1999 WK ₁₈	13.3	X	46.27854	148.00444	127.51565	1.92572	0.1588249	0.17869698	3.1217005	20	9 23.9	17.4
13830 ARLT	13.6	X	137.07716	323.64991	90.00845	5.45502	0.1003157	0.20935704	2.8089521	20	3 29.4	17.8
13831 1999 XD ₈	14.5	X	11.78119	253.00325	108.30834	6.02745	0.1684558	0.28177042	2.3043005	20	12 21.7	17.0
13832 1999 XR ₁₃	10.7	X	323.54196	127.35671	85.22536	16.30072	0.1126904	0.15956161	3.3665400	20	2 23.9	15.4
13833 1999 XW ₁₃	12.4	X	314.02219	254.89188	188.47138	10.70057	0.0799972	0.18859494	3.0114988	20	12 3.6	16.4
13834 1999 XU ₁₈	13.9	X	22.11878	259.48719	73.45409	3.56870	0.2013054	0.23765909	2.5812680	20	11 21.6	16.9
13835 1999 XJ ₂₀	13.3	X	178.05247	248.18803	68.37114	3.04689	0.0553794	0.20525606	2.8462435	20	1 9.9	17.5
13836 1999 XF ₂₄	12.8	X	347.48162	319.78177	52.84800	14.72370						

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13841 Blankenship	14.6	X	152.26363	339.03793	177.29203	1.09683	0.1292713	0.26600019	2.3944995	20	8 25.5	18.2
13842 1999 XR ₃₃	13.1	X	264.77392	86.51414	306.77619	9.60299	0.1496117	0.21797188	2.7344442	20	7 13.3	16.8
13843 Cowenbrown	15.4	X	54.27683	253.02995	230.69593	1.38398	0.0649889	0.29740511	2.2228173	20	2 20.3	17.7
13844 1999 XW ₃₄	14.0	X	144.32081	185.14392	109.32371	4.82642	0.1515367	0.28206159	2.3027144	20	—	—
13845 Jillburnett	14.5	X	358.09550	158.00707	127.10287	2.18417	0.1647946	0.17530356	3.1618570	20	7 16.1	18.0
13846 1999 XV ₆₉	14.0	X	28.45860	176.70189	84.77615	3.31651	0.1839815	0.26905971	2.3763128	20	8 26.8	16.3
13847 1999 XC ₇₄	14.6	X	24.80520	177.46477	92.80400	2.28164	0.1496435	0.31765614	2.1273121	20	9 4.6	16.4
13848 Cioffi	14.2	X	106.55045	210.88675	108.47054	4.62413	0.1646082	0.28884074	2.2665419	20	—	—
13849 Dunn	14.5	X	77.81751	222.85803	252.90031	4.62296	0.0908209	0.30127572	2.2037380	20	3 19.5	16.9
13850 Erman	14.7	X	252.03033	134.41357	115.43705	3.54461	0.1583968	0.29394257	2.2402392	20	—	—
13851 1999 XB ₉₄	12.3	X	348.76174	244.41843	96.67820	10.94746	0.1833556	0.17565866	3.1575943	20	9 21.0	15.9
13852 Ford	14.4	X	176.61803	39.68672	283.40213	1.29063	0.1997338	0.30033407	2.2083419	20	1 12.5	17.5
13853 Jenniferfritz	14.8	X	222.42888	4.50659	345.45434	2.10902	0.1791963	0.26170582	2.4206228	20	3 28.5	18.7
13854 1999 XX ₁₀₄	15.2	X	151.73014	246.27565	248.09601	1.52404	0.1055596	0.26454321	2.4032833	20	7 25.9	18.7
13855 1999 XX ₁₀₅	14.4	X	194.65429	212.82973	140.45044	7.07080	0.1576854	0.25515551	2.4618755	20	3 10.4	18.4
13856 1999 XZ ₁₀₅	13.0	X	302.16923	144.09448	239.95168	10.56691	0.1871229	0.22533586	2.6745505	20	8 15.8	16.2
13857 Stafford	14.1	X	7.28298	219.23376	102.94328	4.66873	0.1597064	0.23152105	2.6266914	20	10 7.6	16.9
13858 Ericchristensen	14.8	X	185.14238	29.91374	273.37186	4.84870	0.2109618	0.25359711	2.4719510	20	1 2.3	18.7
13859 Fredtreasure	12.2	X	90.96914	253.05426	298.67610	13.21668	0.2059168	0.21024762	2.8010142	20	8 8.7	16.6
13860 Neely	12.1	X	7.78262	186.53460	121.11625	17.10117	0.1994369	0.17932088	3.1144555	20	9 14.3	15.7
13861 1999 XE ₁₅₇	14.3	X	252.16178	300.59516	160.58308	2.76494	0.1422748	0.18061226	3.0995922	20	9 20.6	18.6
13862 1999 XT ₁₆₀	11.6	X	292.83056	278.32493	132.13960	8.39947	0.0864949	0.08131067	5.2768047	20	9 6.2	18.4
13863 1999 XE ₁₆₆	13.7	X	164.82721	36.46480	316.47917	6.49759	0.2417028	0.20928385	2.8096070	20	2 18.3	18.6
13864 1999 XU ₁₆₆	14.0	X	271.00270	138.31716	346.29924	5.68446	0.0999642	0.28353656	2.2947216	20	12 17.2	16.3
13865 1999 XA ₁₇₀	14.2	X	332.08586	17.55564	316.95924	3.22726	0.2304923	0.22644547	2.6657962	20	8 6.0	16.3
13866 1999 XS ₁₇₄	13.5	X	189.16372	278.61265	67.59009	5.35463	0.0939929	0.25111784	2.4881946	20	2 25.4	17.2
13867 1999 XR ₁₈₂	13.9	X	266.11709	177.18672	0.67884	6.98587	0.0608722	0.19343771	2.9610242	20	—	—
13868 Catalonia	14.5	X	50.93431	102.59855	302.23107	4.21905	0.1228608	0.24109080	2.5567148	20	—	—
13869 Fruge	14.7	X	28.77372	187.97129	224.28458	8.70686	0.1122758	0.23797757	2.5789645	20	—	—
13870 2158 P-L	14.8	X	168.28644	234.54165	205.88313	6.02736	0.0999538	0.25804803	2.4434438	20	6 1.9	18.3
13871 2635 P-L	15.1	X	202.12369	73.11555	189.92033	3.15758	0.1601596	0.28601534	2.2814441	20	—	—
13872 2649 P-L	14.0	X	95.47360	10.61164	190.05717	10.80599	0.1204935	0.22770468	2.6559593	20	8 16.2	18.0
13873 2657 P-L	14.7	X	352.85560	190.37516	33.32740	3.68477	0.0851158	0.25780363	2.4449878	20	4 9.6	17.4
13874 3013 P-L	13.3	X	236.25181	274.23974	305.36116	12.43117	0.1047602	0.18604976	3.0389017	20	—	—
13875 4525 P-L	13.9	X	337.55167	186.66324	206.24598	1.17913	0.1769479	0.18115686	3.0933771	20	11 3.9	17.2
13876 4625 P-L	15.2	X	221.10003	190.96076	33.68876	2.22307	0.0913554	0.28473467	2.2882799	20	—	—
13877 6063 P-L	15.4	X	307.83897	5.40552	314.27506	2.38887	0.1452164	0.30990226	2.1626499	20	6 4.9	17.3
13878 6106 P-L	15.1	X	22.19276	57.05907	323.89116	2.50724	0.0797377	0.23300727	2.6155101	20	—	—
13879 6328 P-L	14.4	X	275.99769	181.85821	9.16330	3.03391	0.0918945	0.23616878	2.5921158	20	—	—
13880 Wayneclark	14.0	X	69.26760	74.67656	134.32059	3.85069	0.1434984	0.26086150	2.4258432	20	8 3.6	17.0
13881 6625 P-L	15.4	X	353.88179	148.76428	135.91285	2.63641	0.1188306	0.26100398	2.4249603	20	7 13.4	17.6
13882 6637 P-L	15.3	X	347.63474	322.19949	157.53325	4.80475	0.1135962	0.28517040	2.2859484	20	—	—
13883 7066 P-L	12.6	X	144.46948	111.21728	204.79147	11.75952	0.1516254	0.18635463	3.0355864	20	—	—
13884 1064 T-1	15.9	X	17.68661	217.59686	354.08916	4.40911	0.0846961	0.30298565	2.1954388	20	4 30.9	18.0
13885 2104 T-1	15.1	X	87.21320	204.53357	21.78679	2.53363	0.1438817	0.26739384	2.3861722	20	9 20.2	18.3
13886 2312 T-1	13.7	X	179.79870	11.80032	35.91817	2.55569	0.0546499	0.20320676	2.8653474	20	5 2.5	17.7
13887 3041 T-1	14.4	X	311.15341	339.04369	332.50994	5.44439	0.2026047	0.22371834	2.6874166	20	5 18.2	17.6
13888 3290 T-1	14.8	X	64.06494	271.86032	353.65064	6.24955	0.0891160	0.26788294	2.3832669	20	10 5.8	17.9
13889 4206 T-1	14.9	X	167.01358	37.53579	140.46188	2.75833	0.1784695	0.26979898	2.3719699	20	10 7.7	18.7
13890 1186 T-2	13.4	X	89.22965	238.02776	188.33172	5.58899	0.0455618	0.15598838	3.4177572	20	2 11.9	18.2
13891 1237 T-2	14.4	X	0.69550	134.54860	349.82775	1.42250	0.0383831	0.19696017	2.9256146	20	—	—
13892 1266 T-2	14.4	X	8.11706	324.07874	352.41792	6.36143	0.0625752	0.27245294	2.3565413	20	9 23.3	17.0
13893 1296 T-2	15.0	X	251.70638	53.35676	162.01880	2.03923	0.1468336	0.23907940	2.5710348	20	—	—
13894 2039 T-2	14.0	X	133.40591	189.32306	359.63584	6.59003	0.0530561	0.27200935	2.3591026	20	9 16.6	17.2
13895 Letkasagionica	14.1	X	82.61916	188.60402	197.78457	1.64778	0.1177741	0.19583169	2.9368430	20	—	—
13896 3310 T-2	15.3	X	316.36005	279.36939	107.04936	2.31119	0.1182120	0.27297829	2.3535168	20	10 11.3	17.3
13897 Vesuvius	12.4	X	16.58236	142.70994	168.39298	9.24519	0.1369295	0.12379408	3.9872132	20	9 12.3	17.3
13898 4834 T-2	14.7	X	227.46199	130.34474	105.76617	4.74933	0.0928497	0.28067060	2.3103163	20	—	—
13899 5036 T-2	13.8	X	256.87365	183.50614	261.99158	8.49067	0.0366199	0.23076507	2.6324249	20	9 24.6	17.5
13900 5211 T-2	13.1	X	109.50014	208.07983	228.44818	9.21435	0.2154017	0.19965866	2.8991941	20	4 5.9	17.5
13901 1140 T-3	14.0	X	68.84635	112.78403	262.99773	6.91018	0.1291567	0.18904233	3.0067455	20	—	—
13902 4205 T-3	13.8	X	148.25204	218.47187	97.68951	3.55863	0.2067915	0.23766634	2.5812155	20	—	—
13903 1975 ST	14.3	X	141.43609	97.64975	187.12238	11.20312	0.2386522	0.22537545	2.6742273	20	—	—
13904 Univinnitsa	13.9	X	216.54014	34.08055	35.39775	8.20891	0.2998390	0.21316579	2.7753923	20	6 25.0	18.9
13905 1976 QA	14.6	X	57.55418	13.58909	324.21472	2.76236	0.1959794	0.27407676	2.3472242	20	—	—
13906 Shunda	14.2	X	87.57646	0.70985	350.04258	5.60769	0.1914772	0.28243720	2.3006724	20	—	—
13907 1977 RS ₁₇	13.5	X	135.35313	215.24970	174.90504	1.93366	0.0306448	0.19549689	2.9401950	20	2 17.6	17.7
13908 Wölbörn	15.2	X	296.25958	152.25759	149.14522	4.12695	0.1421583	0.30096793	2.2052402	20	4 20.3	17.7
13909 1978 VD ₈	15.7	X	196.87023	254.03297	58.09995	3.26362	0.0539733	0.29058556	2.2574598	20	1 12.1	18.5
13910 1979 MH ₃	15.1	X	214.41428	260.27761	119.30663	5.98445	0.2180781	0.25970687	2.4330279	20	4 29.1	19.2
13911 Stempels	14.6	X	174.56705	68.99032	169.17399	1.33640	0.1720486	0.27283243	2.3543556	20	12 28.3	18.0
13912 1979 QA ₂	14.7	X	95.40039	203.41992	20.99719	1.29402	0.1427771	0.26659270	2.3909503	20	9 26.1	18.2
13913 1979 SO	13.5	X	285.44139	351.00316	8.40712	8.14893	0.2282919	0.21295104	2.7725759	20	6 10.8	17.3
13914 Galegant	13.3	X	189.01196	233.94669	98.77291	13.49297	0.2695652	0.23796750	2.5790373	20	2 15.1	18.0
13915 Yalow	12.8	X	58.19258	190.78678	76.40009	10.31140	0.1353465	0.21365606	2.7711450	20	10 5.6	16.7
13916 Bernolák	14.2	X	7.75671	6.35215	292.78122	5.79395	0.2440035	0.25907845	2.4369607	20	9 16.5	16.4
13917 Correggia	12.8	X	318.14862	99.97538	345.63649	13.65274	0.1919017	0.18354369	3.0665007	20	12 4.7	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
13921 Sgarbini	14.6	X	334.67045	226.36247	166.69016	8.01230	0.2291453	0.28384913	2.2930367	20	12 13.1	16.4
13922 Kremenja	13.6	X	37.07450	79.52768	323.20186	3.65862	0.1417930	0.23222294	2.6213960	20	—	—
13923 Peterhof	12.7	X	340.73537	338.21594	58.86253	15.45487	0.2039669	0.22616506	2.6679993	20	12 2.5	15.2
13924 1986 PE ₁	14.0	X	270.26792	244.92985	138.56787	8.40459	0.0965668	0.25906475	2.4370466	20	7 16.9	17.1
13925 1986 QS ₃	12.9	X	211.71122	152.18123	140.77992	11.24968	0.0617600	0.18863633	3.0110583	20	1 19.3	17.5
13926 Berners–Lee	14.5	X	91.28993	19.63348	354.77249	3.27108	0.2952487	0.24039064	2.5616769	20	1 5.2	17.2
13927 Grundy	14.2	X	100.39005	332.49828	3.59449	9.22212	0.1605148	0.27853558	2.3221072	20	—	—
13928 Aaronrogers	14.6	X	70.80577	49.51263	295.94710	4.12408	0.2412517	0.27669327	2.3324033	20	—	—
13929 1988 PL	15.1	X	291.70649	136.08502	206.07563	1.97110	0.1390118	0.30507213	2.1854172	20	6 13.6	17.2
13930 Tashko	14.3	X	223.67668	288.95799	37.72237	4.92506	0.1806223	0.29689067	2.2253843	20	2 29.6	17.8
13931 1988 RF ₁₃	13.9	X	10.62682	270.78144	31.17599	17.09244	0.1454920	0.21559837	2.7544765	20	9 15.9	17.2
13932 1988 SL ₁	15.9	X	216.12038	127.61433	215.16514	0.23150	0.1825280	0.29822778	2.2187276	20	3 11.7	19.5
13933 Charleville	13.1	X	19.57629	267.28240	45.32018	8.31189	0.1437735	0.21338451	2.7734955	20	10 9.0	16.4
13934 Kannami	13.7	X	244.78396	234.75376	83.05439	7.64441	0.2456013	0.29531699	2.2332830	20	3 6.6	17.4
13935 1989 EE	13.7	X	234.70033	323.31629	163.05343	29.44547	0.2781004	0.17765243	3.1339251	20	9 17.1	18.8
13936 1989 HC	12.1	X	340.83333	299.39098	82.41975	22.66166	0.0050253	0.17203577	3.2017706	20	10 30.9	17.0
13937 Robertgraves	13.8	X	213.13941	195.14248	137.87444	29.59818	0.2437885	0.24329106	2.5412766	20	3 2.4	18.4
13938 1989 RP ₁	13.6	X	64.01487	155.22566	162.50727	12.96165	0.2315692	0.22831551	2.6512200	20	12 22.6	18.0
13939 1989 SJ ₂	14.1	X	207.96011	120.18591	172.06629	13.28632	0.1494824	0.23754259	2.5821119	20	1 7.8	18.5
13940 1989 SZ ₃	13.9	X	89.79516	219.96558	113.32829	4.02777	0.1144482	0.22981939	2.6396415	20	—	—
13941 1989 TF ₁₄	13.9	X	236.75840	200.24836	71.84533	3.34527	0.0757457	0.23899531	2.5716378	20	1 13.9	17.5
13942 Shiratakihime	13.0	X	78.60057	267.49329	60.68662	14.13752	0.1866204	0.22753831	2.6572537	20	—	—
13943 1990 HG	13.9	X	262.42615	166.20096	49.04699	23.73340	0.0748087	0.28595504	2.2815520	20	—	—
13944 1990 OX ₁	13.7	X	337.25888	280.51967	86.82941	5.72471	0.1183900	0.26553448	2.3972984	20	10 22.4	16.0
13945 1990 OH ₂	12.8	X	138.69213	278.50079	349.18792	4.75872	0.1182673	0.17430391	3.1739346	20	12 14.4	18.2
13946 1990 OK ₃	14.5	X	341.85547	205.08184	127.75450	3.09011	0.2158874	0.26369719	2.4084209	20	9 10.0	15.9
13947 1990 QB ₅	14.0	X	207.49293	337.18273	66.78551	5.91998	0.1824553	0.25504989	2.4625551	20	5 23.1	17.8
13948 1990 QB ₆	13.8	X	16.26199	319.67044	358.67293	12.42074	0.2320865	0.26450935	2.4034884	20	10 29.9	16.5
13949 1990 RN ₃	14.1	X	94.74780	94.89110	179.82113	5.49051	0.1994954	0.26863262	2.3788308	20	12 2.9	18.0
13950 1990 RP ₉	13.8	X	110.42707	44.93516	247.23623	5.60927	0.1138141	0.27185146	2.3600160	20	—	—
13951 1990 SD ₅	14.7	X	79.74933	213.43521	35.82051	3.26061	0.1613338	0.26408114	2.4060859	20	10 13.5	18.1
13952 Nykvist	13.7	X	78.69815	183.17359	122.18232	4.86577	0.0791610	0.26824209	2.3811391	20	12 15.7	17.0
13953 1990 TO ₄	13.9	X	63.53005	5.57911	82.78248	10.40536	0.1649031	0.24260611	2.5460576	20	2 10.5	16.7
13954 Born	14.3	X	51.99243	247.94961	216.77304	13.93027	0.1366769	0.24278573	2.5448017	20	1 31.6	17.4
13955 1990 UA ₂	15.3	X	78.93489	280.68456	113.50928	4.32926	0.2685791	0.24057728	2.5603518	20	1 6.1	17.6
13956 Banks	13.3	X	46.68572	349.75918	165.09735	8.09136	0.1173436	0.24545046	2.5263498	20	4 8.2	16.0
13957 NARIT	14.0	X	227.75076	243.88727	153.40451	14.73303	0.3003270	0.22017095	2.7162060	20	5 28.5	19.0
13958 1991 DY	13.7	X	240.97388	343.07036	188.63632	7.10630	0.1432367	0.22610953	2.6684361	20	12 12.7	17.3
13959 1991 EL ₄	13.1	X	173.63382	85.87745	181.39218	12.83265	0.1681798	0.22556757	2.6727086	20	—	—
13960 1991 GF ₈	13.7	X	188.82149	106.91065	7.61603	9.07812	0.1177608	0.21305311	2.7763708	20	8 8.4	18.1
13961 1991 PV	15.5	X	200.69501	95.35270	221.12475	1.85280	0.2033580	0.29269894	2.2465803	20	1 25.8	19.1
13962 Delambre	13.0	X	334.19133	233.63422	154.20095	2.07241	0.1807515	0.17310690	3.1885493	20	10 19.8	16.3
13963 Euphrates	13.8	X	246.99674	129.53148	227.20095	0.93597	0.2570952	0.16227928	3.3288483	20	4 26.2	19.3
13964 La Billardière	13.4	X	334.28604	120.68189	248.14672	0.59328	0.1542599	0.17151611	3.2082345	20	9 23.2	17.0
13965 1991 PL ₈	14.1	X	128.46097	256.30410	31.03728	1.39810	0.1564203	0.18080969	3.0973355	20	12 29.2	19.1
13966 1991 PR ₁₆	14.8	X	154.20049	187.84202	138.39429	1.42746	0.1954343	0.28768628	2.2726015	20	—	—
13967 1991 QJ	14.7	X	191.73739	162.98233	160.93531	5.99603	0.2059501	0.29159461	2.2522489	20	1 27.3	18.3
13968 1991 RE ₇	12.0	X	84.29625	277.95796	7.81260	17.54360	0.1534547	0.17356116	3.1829832	20	11 10.6	17.1
13969 1991 RK ₂₆	15.1	X	173.29320	297.42756	20.68710	7.24594	0.1947869	0.28780577	2.2719724	20	1 5.5	18.6
13970 1991 RH ₂₇	14.4	X	229.02989	167.94105	149.46778	4.84418	0.1865930	0.29302577	2.2449095	20	2 20.7	18.0
13971 1991 UF ₁	15.1	X	284.27543	308.34299	93.28863	3.40162	0.2091629	0.26860719	2.3789809	20	8 18.6	17.6
13972 1991 UN ₃	13.9	X	96.16408	305.63008	84.21416	4.56364	0.0972705	0.28358291	2.2944715	20	—	—
13973 1991 YZ ₃	15.5	X	257.20739	291.34792	130.62264	1.77680	0.1696124	0.26733753	2.3865073	20	8 11.8	18.3
13974 1991 UC	13.7	X	294.52253	24.62270	108.89426	14.94429	0.2101094	0.23792872	2.5793175	20	—	—
13975 Beatricepotter	14.6	X	113.38181	244.73133	216.81379	5.55112	0.0862570	0.25284804	2.4768307	20	4 25.1	17.8
13976 1992 EZ ₆	14.4	X	241.31673	151.41061	129.62253	11.23249	0.2303495	0.24165963	2.5527012	20	1 20.9	18.9
13977 Frisch	12.3	X	317.35437	133.59316	193.85989	15.72004	0.1929557	0.25347855	2.4727217	20	6 26.0	15.1
13978 Hiwasa	13.4	X	219.37651	53.86734	184.56534	12.35758	0.1857476	0.23290398	2.6162833	20	—	—
13979 1992 JH ₃	13.9	X	206.44636	60.31794	208.72669	3.52272	0.2213541	0.23336484	2.6128377	20	—	—
13980 Neuhauser	13.6	X	149.78731	63.70558	218.10459	10.91723	0.1790051	0.22665433	2.6641584	20	—	—
13981 1992 OT ₉	13.2	X	304.89008	248.51101	102.98454	7.70191	0.0535753	0.21071919	2.7968338	20	7 27.5	16.8
13982 Thunberg	13.3	X	134.95273	115.07935	244.78187	0.54954	0.1079613	0.19240863	2.9715726	20	1 21.5	17.8
13983 1992 RJ ₅	14.1	X	45.94569	279.24265	80.98586	3.38330	0.1632167	0.18247408	3.0784723	20	—	—
13984 1992 RM ₇	14.2	X	343.38519	351.38265	65.20196	2.25425	0.1575677	0.18129789	3.0917727	20	12 14.9	17.8
13985 1992 UH ₃	14.3	X	172.02896	41.74542	12.83114	5.98145	0.1111600	0.30483658	2.1865428	20	4 29.5	17.4
13986 1992 WA ₄	13.1	X	313.48834	309.90617	72.82116	6.36937	0.1417519	0.17121242	3.2120271	20	9 9.5	17.0
13987 1992 WK ₉	13.8	X	340.80515	324.39064	54.14292	0.84012	0.2082559	0.17527313	3.1622229	20	10 21.1	16.9
13988 1992 YG ₂	15.4	X	180.39158	84.30814	302.66693	3.41394	0.1532479	0.30036138	2.2082081	20	4 2.3	18.6
13989 Murikabushi	14.3	X	249.49447	234.75233	123.98130	14.59420	0.2883556	0.26877535	2.3779886	20	5 1.3	18.5
13990 1993 EK	15.0	X	11.82112	125.95235	338.95841	6.92540	0.1787910	0.28560839	2.2836107	20	—	—
13991 Kenphillips	14.9	X	37.98158	209.18736	69.26336	3.29623	0.1972974	0.26490533	2.4010927	20	10 7.8	17.8
13992 Cesarebarbieri	14.4	X	88.49432	229.37752	36.05219	7.32933	0.0991726	0.26990729	2.3713353	20	11 6.7	17.8
13993 Clemenssimmer	14.9	X	297.84123	51.41852	46.91656	4.04305	0.0527843	0.27579548	2.3374623	20	12 24.5	17.5
13994 Tuominen	14.5	X	295.16896	315.11589	50.31521	7.71591	0.1281051	0.26509392	2.3999538	20	7 28.4	17.2
13995 Töravere	15.0	X	340.15213	212.63402	102.35346	2.42255	0.1706673	0.26287957	2.4134121	20	8 3.2	16.8
13996 1993 FH ₂₀	15.4	X	287.40640	116.94177	284.70893	1.72853	0.1701236	0.26951732	2.3736222	20	8 29.3	17.5
13997 1993 FB ₃₂												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14001 1993 KR	13.7	X	258.38102	305.22469	229.27748	20.97201	0.2525912	0.27688686	2.3313160	20	—	—
14002 1993 LW ₁	14.0	X	30.22522	205.33097	61.92855	12.30861	0.2389513	0.26034662	2.4290405	20	9 22.4	16.9
14003 1993 OO ₄	15.1	X	133.99746	188.58275	128.45183	3.87930	0.0623906	0.23545751	2.5973333	20	—	—
14004 Chikama	14.3	X	146.88081	313.61374	359.10845	14.11088	0.2430890	0.23314765	2.6144601	20	—	—
14005 1993 SO ₃	12.3	X	330.54397	319.32325	25.86570	14.11175	0.0301422	0.17838177	3.1253770	20	8 29.7	16.7
14006 Sakamotofumio	13.0	X	353.57530	172.79888	177.99276	8.59826	0.1806613	0.21978609	2.7193760	20	10 21.3	15.7
14007 1993 TH ₁₄	13.4	X	279.14667	68.26693	157.14465	3.60550	0.1948923	0.23655960	2.5892600	20	—	—
14008 1993 TD ₁₇	14.7	X	354.98869	201.96638	87.70279	1.77969	0.0413712	0.21262969	2.7800554	20	7 17.9	18.3
14009 1993 TQ ₃₆	13.1	X	229.11652	329.07583	66.11606	10.51655	0.1392458	0.21052428	2.7985598	20	6 4.4	17.4
14010 Jomonaomori	13.8	X	80.38902	131.44543	196.27148	12.71971	0.1883735	0.22565334	2.6720313	20	—	—
14011 1993 US	14.5	X	51.09438	169.64479	166.58721	1.86384	0.0920213	0.22349029	2.6892444	20	12 13.6	18.2
14012 Amedee	12.4	X	190.77255	296.27510	98.05195	13.84001	0.1269083	0.20316633	2.8657275	20	5 3.2	17.2
14013 1993 YF	14.3	X	303.89500	313.12442	112.72839	2.58431	0.1686722	0.17905901	3.1174914	20	10 16.7	18.0
14014 Münchhausen	13.1	X	354.12641	283.20698	180.03061	9.81901	0.0709278	0.18442302	3.0567456	20	—	—
14015 Senancour	13.5	X	261.37552	312.40594	156.46486	5.96613	0.0981223	0.17645183	3.1481248	20	10 18.8	17.8
14016 Steller	13.4	X	252.97637	281.09741	275.68989	8.45501	0.0447131	0.18299807	3.0725931	20	—	—
14017 1994 NS	14.8	X	40.26190	79.31603	203.51089	6.48752	0.2391340	0.30892390	2.1672136	20	10 30.7	17.3
14018 1994 PM ₁₄	15.5	X	305.81064	166.13830	164.51889	1.97112	0.2242935	0.26167933	2.4207862	20	6 4.4	17.9
14019 Pourbus	15.6	X	248.71160	136.66261	131.95377	1.07737	0.1246796	0.28834738	2.2691265	20	1 12.0	18.6
14020 1994 PE ₁₈	15.1	X	178.66061	339.65325	316.20914	0.64403	0.1516948	0.28346340	2.2951164	20	—	—
14021 1994 PL ₂₀	15.6	X	173.64543	329.98090	166.12368	2.51238	0.1142186	0.26388825	2.4072582	20	8 20.9	19.0
14022 1994 PW ₂₇	14.5	X	148.82227	323.05785	357.25129	3.36996	0.0940902	0.28247479	2.3004683	20	—	—
14023 1994 PX ₃₁	14.5	X	256.21925	225.09311	300.04399	6.18342	0.0446442	0.28034563	2.3121013	20	—	—
14024 Procol Harum	15.3	X	85.63520	45.94031	341.87641	2.42844	0.2653780	0.24169217	2.5524720	20	1 8.8	17.9
14025 Fallada	14.0	X	212.80022	158.36370	238.59270	7.63323	0.1651086	0.21771086	2.7366294	20	5 20.1	18.5
14026 Esquerdo	15.3	X	91.19318	128.77629	158.22645	2.63817	0.1603591	0.27178451	2.3604035	20	12 12.6	18.9
14027 1994 TJ ₁	14.7	X	88.81366	195.72312	181.96392	6.34767	0.1626238	0.23994623	2.5648389	20	—	—
14028 Nakamurahiroshi	14.2	X	103.48351	202.13264	182.64700	5.06281	0.2071380	0.24174949	2.5520685	20	1 20.3	17.5
14029 1994 UC ₁	14.0	X	336.75826	248.57369	34.92986	1.60919	0.1120072	0.25586534	2.4573201	20	6 7.2	16.5
14030 1994 UP ₁	14.2	X	62.81192	50.20239	80.42484	13.80580	0.1364439	0.24162354	2.5529554	20	2 2.5	17.3
14031 Rozyo	12.6	X	76.74693	292.08606	86.98672	14.01848	0.1975319	0.23656641	2.5892103	20	—	—
14032 Mego	13.4	X	115.42503	157.81215	225.22094	7.32412	0.2108860	0.24098841	2.5574389	20	1 31.9	17.1
14033 1994 YR	14.1	X	80.45626	244.19544	101.82163	4.28823	0.2852357	0.23164651	2.6257430	20	—	—
14034 1995 BW	14.0	X	299.63104	8.45826	28.75713	2.94085	0.0846021	0.21781416	2.7357641	20	9 18.0	17.2
14035 1995 CJ	13.4	X	200.49671	114.00471	126.60493	14.49706	0.2119695	0.18431923	3.0578930	20	—	—
14036 1995 EY ₇	12.8	X	199.61998	254.23915	206.43207	8.05224	0.0910590	0.20911603	2.8111100	20	7 28.5	17.2
14037 1995 EZ ₇	13.1	X	89.44121	332.92287	209.07600	9.52919	0.0683086	0.20479094	2.8505515	20	7 7.5	17.3
14038 1995 HR	12.9	X	149.95097	75.65390	199.06799	11.14966	0.1797219	0.17717814	3.1395154	20	12 30.8	18.3
14039 1995 KZ ₁	12.3	X	140.44746	13.39039	224.36513	16.11187	0.0889592	0.17199234	3.2023095	20	11 10.5	17.2
14040 Andrejka	15.4	X	226.18429	105.52096	289.53783	3.77723	0.1122138	0.30676435	2.1773728	20	6 4.1	18.2
14041 Dürrenmatt	14.6	X	19.61925	269.53045	127.48805	3.44018	0.1742655	0.28389442	2.2927928	20	—	—
14042 Agafonov	15.2	X	194.28213	327.52696	30.33945	4.18724	0.1688464	0.29982130	2.2108591	20	3 12.6	18.5
14043 1995 UA ₄₅	14.8	X	174.75799	355.75891	70.25183	5.91327	0.1349221	0.30259531	2.1973265	20	5 20.7	18.1
14044 1995 VS ₁	14.2	X	195.61441	329.10286	49.75201	6.87024	0.1360611	0.26010383	2.4305518	20	4 12.3	17.9
14045 1995 VW ₁	14.3	X	282.96954	190.03819	273.24709	7.99916	0.1490264	0.27326369	2.3518778	20	11 27.9	16.4
14046 Keikai	15.0	X	52.30230	2.62218	55.46179	5.73776	0.1120936	0.28672536	2.2776762	20	—	—
14047 Kohichiro	14.3	X	221.33354	244.17413	198.22660	5.75060	0.0791697	0.26823932	2.3811555	20	8 4.8	17.6
14048 1995 WS ₇	14.8	X	30.08598	85.84294	90.30112	1.13087	0.0666128	0.29558240	2.2319459	20	3 30.9	17.0
14049 1995 XH ₁	14.7	X	137.38361	92.84049	275.26347	4.13122	0.1604681	0.29092867	2.2556845	20	1 26.2	17.6
14050 1995 YH ₁	14.1	X	99.59496	101.55042	276.84734	3.49625	0.1310733	0.28555512	2.2838947	20	—	—
14051 1995 YY ₁	14.6	X	273.03293	138.55566	105.28298	6.22099	0.1291557	0.28706151	2.2758977	20	1 5.6	17.7
14052 1995 YH ₃	15.0	X	88.83558	264.45461	112.94764	8.75560	0.2300605	0.28523789	2.2855878	20	—	—
14053 1995 YS ₂₅	16.4	X	277.29156	78.60843	50.06569	5.67759	0.408643	0.27588913	2.3369333	20	—	—
14054 Dušek	15.8	X	178.26857	22.67489	86.77989	3.92806	0.1821791	0.26148012	2.4220156	20	7 20.4	19.6
14055 1996 AS	14.7	X	170.84290	0.48546	136.61291	5.04136	0.0501877	0.26410499	2.4059410	20	8 21.9	17.8
14056 Kainar	14.9	X	272.47870	326.33201	69.31728	3.91349	0.1925153	0.26611455	2.3938134	20	7 23.6	17.7
14057 Manfredstoll	15.5	X	88.41195	77.65967	123.27196	2.08784	0.1336123	0.26042042	2.4285816	20	8 15.9	18.8
14058 1996 AP ₁₅	14.6	X	157.36242	141.73239	135.70273	3.71582	0.1761684	0.27461083	2.3441799	20	—	—
14059 1996 BB ₂	14.9	X	181.32588	161.71730	318.85374	10.26157	0.1714687	0.26242989	2.4161683	20	8 7.0	18.8
14060 Patersonewen	14.1	X	84.11503	276.55048	357.06698	3.41040	0.0598799	0.26883219	2.3776533	20	11 7.5	17.1
14061 Nagincox	14.4	X	232.52936	192.47246	210.59594	6.14452	0.1314839	0.26071168	2.4267725	20	6 20.3	17.9
14062 Cremaschini	14.6	X	129.75011	133.31847	35.02833	2.65665	0.1319653	0.25981334	2.4323632	20	8 19.1	18.1
14063 1996 DZ	13.9	X	77.75825	140.14506	93.60258	2.12774	0.1624283	0.25879273	2.4387540	20	9 21.0	17.2
14064 1996 DT ₃	14.9	X	149.46987	118.11570	316.14688	2.66298	0.0742710	0.25355734	2.4722094	20	4 30.1	18.5
14065 Flegel	15.4	X	38.33819	40.64692	20.40482	2.22026	0.1595611	0.23796007	2.5790910	20	—	—
14066 1996 FA ₄	14.1	X	280.84317	77.53986	41.43582	13.24234	0.1116379	0.22853366	2.6495326	20	12 4.5	17.3
14067 1996 GY ₁₇	14.4	X	289.49594	284.43789	19.45683	1.99739	0.0564601	0.20603466	2.8390684	20	4 30.7	18.3
14068 Hauserová	14.9	X	258.11328	356.54836	198.02685	11.11084	0.1213709	0.23290861	2.6162486	20	—	—
14069 Krashenninnikov	12.9	X	330.27204	330.38946	46.27396	22.63132	0.2089328	0.17542151	3.1604395	20	10 7.3	16.5
14070 1996 JC ₁	13.1	X	226.46839	264.36497	64.22474	5.19681	0.0848093	0.19949280	2.9008007	20	3 18.3	17.5
14071 Gadabird	14.0	X	272.35100	187.28534	120.98641	3.05144	0.0519256	0.20427495	2.8553498	20	4 16.7	17.9
14072 Volterra	13.4	X	308.42508	11.17181	37.96040	1.85455	0.1593314	0.17602004	3.1532711	20	10 1.9	17.0
14073 1996 KO ₁	14.5	X	85.93447	21.05916	164.01594	5.24537	0.1534878	0.25562886	2.4588354	20	7 23.2	17.8
14074 Riccati	13.4	X	182.36437	160.64733	135.43455	9.81636	0.0850509	0.18510701	3.0492110	20	—	—
14075 Kenwill	13.7	X	142.80807	158.50984	126.47603	2.15214	0.1662664	0.17916132	3.1163045	20	—	—
14076 1996 OO ₁	13.1	X	259.80789	266.63874	326.50658	8.10320	0.0873009	0.18539637	3.0460373	20	—	—
14077 Volfango	13.7	X	176.04195	253.34834	359.86673	4.88136	0.1249918	0.17967265	3.1103892			

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14081 1997 <i>GT</i> ₁₈	15.1	X	184.77323	200.11932	177.06137	1.84577	0.1414320	0.29870524	2.2163626	20	3 26.5	18.3
14082 1997 <i>GK</i> ₂₁	15.6	X	279.64022	66.23842	192.70028	2.54324	0.1706173	0.29267847	2.2466851	20	1 26.4	18.7
14083 1997 <i>GH</i> ₂₂	14.2	X	116.73669	298.69595	33.75854	8.18368	0.2684615	0.27965101	2.3159284	20	—	—
14084 1997 <i>GX</i> ₂₃	14.3	X	284.90497	261.10164	60.01158	9.54834	0.2165651	0.25617809	2.4553198	20	4 23.9	17.5
14085 1997 <i>GA</i> ₃₇	15.4	X	103.55585	211.15386	207.15598	5.38536	0.1069973	0.29489158	2.2354303	20	2 8.9	18.0
14086 1997 <i>GC</i> ₃₈	15.2	X	106.24083	206.02265	186.69513	5.58298	0.0444184	0.28896107	2.2659126	20	—	—
14087 1997 <i>HG</i> ₁₀	15.7	X	61.33211	279.48548	54.77895	3.78136	0.0859002	0.27585875	2.3371049	20	—	—
14088 Ancus	15.3	X	303.45325	50.86143	115.63934	2.95281	0.0902000	0.28613108	2.2808288	20	—	—
14089 1997 <i>JC</i> ₁₄	14.1	X	144.25352	154.24588	195.68470	10.12795	0.2034789	0.24171110	2.5523388	20	1 20.7	18.2
14090 1997 <i>MS</i> ₃	14.7	X	313.20228	198.00424	136.97043	5.44719	0.1087356	0.21472183	2.7619676	20	7 10.0	17.9
14091 1997 <i>MQ</i> ₄	13.6	X	127.29548	291.98319	89.54492	13.42172	0.1884952	0.24005735	2.5640474	20	2 16.1	17.5
14092 Gaily	15.0	X	95.87107	39.19174	223.37630	1.31704	0.0372914	0.22178763	2.7029904	20	10 28.1	18.5
14093 1997 <i>OM</i>	14.7	X	231.29862	205.19010	144.36735	2.65195	0.0796356	0.20491241	2.8494249	20	4 16.8	18.9
14094 Garneau	14.5	X	185.17090	254.62421	97.64003	3.13780	0.0506533	0.19837305	2.9117065	20	3 2.4	18.7
14095 1997 <i>PE</i> ₂	13.3	X	130.83070	185.14055	143.10429	18.50382	0.3047323	0.23279194	2.6171227	20	—	—
14096 1997 <i>PC</i> ₄	14.5	X	159.16047	142.63795	162.35364	5.33677	0.2301822	0.23398600	2.6082115	20	—	—
14097 Capdepera	14.2	X	314.14108	70.87496	289.41807	4.17746	0.0579986	0.21428282	2.7657387	20	8 20.3	17.6
14098 Simek	14.3	X	200.41508	282.34166	30.16657	2.49024	0.0765579	0.19579430	2.9372169	20	1 31.1	18.8
14099 1997 <i>RQ</i> ₃	13.2	X	29.82823	193.39403	133.56984	2.43436	0.1743290	0.17355964	3.1830019	20	11 6.1	17.4
14100 Weierstrass	13.5	X	184.31080	34.60530	190.29926	0.58242	0.0944102	0.17819067	3.1276111	20	12 9.3	18.2
14101 1997 <i>SD</i> ₁	14.0	X	206.82511	3.92775	223.78169	11.61815	0.1391238	0.22884576	2.6471231	20	—	—
14102 1997 <i>SG</i> ₂₅	14.2	X	106.97034	198.09858	68.55745	3.03643	0.1818767	0.26404092	2.4063302	20	12 1.4	18.0
14103 Manzoni	13.8	X	239.00540	265.69784	21.11221	2.12558	0.0701283	0.19549918	2.9401721	20	2 9.7	18.2
14104 Delpino	13.7	X	121.87881	258.30023	358.89458	9.02756	0.0571101	0.17527247	3.1622309	20	11 10.6	18.5
14105 Nakadai	13.0	X	179.46635	131.95066	209.24200	9.28957	0.1072013	0.19164746	2.9794356	20	2 10.5	17.9
14106 1997 <i>UO</i> ₂₄	14.5	X	16.47511	42.66461	275.53398	1.57298	0.0300221	0.21528106	2.7571824	20	9 24.2	18.1
14107 1997 <i>VM</i> ₅	13.8	X	65.94416	224.86278	107.27289	0.62002	0.1665615	0.17326048	3.1866648	20	12 23.1	18.6
14108 1998 <i>OA</i> ₁₃	14.7	X	122.16547	25.15723	319.33514	6.26061	0.1733053	0.28828236	2.2694677	20	—	—
14109 1998 <i>OM</i> ₁₄	14.3	X	326.57976	251.52926	145.05262	11.51447	0.2289332	0.22759497	2.6568127	20	11 6.9	16.7
14110 1998 <i>QA</i> ₂₃	15.2	X	328.29269	356.85853	60.76046	3.46244	0.2113941	0.27579025	2.3374919	20	12 30.8	16.8
14111 Kimamos	15.2	X	15.20607	201.75617	210.78887	5.31451	0.1244710	0.28174761	2.3044249	20	—	—
14112 1998 <i>QZ</i> ₂₅	14.3	X	176.47588	38.17499	15.10860	2.81622	0.1610456	0.25539461	2.4603387	20	5 5.9	18.2
14113 1998 <i>QD</i> ₃₂	12.9	X	344.03663	231.49677	142.88104	17.56628	0.2572674	0.18144597	3.0900903	20	11 2.9	16.2
14114 Randyray	15.5	X	282.46073	243.02149	141.58580	3.48421	0.1793734	0.26620053	2.3932980	20	7 23.9	18.1
14115 Melaas	15.1	X	215.07235	129.42726	253.42192	3.60021	0.1914752	0.25759199	2.4463268	20	5 1.7	18.9
14116 Ogea	14.7	X	177.69852	190.95395	194.31699	1.64380	0.1800419	0.25314937	2.4748648	20	4 2.7	18.5
14117 1998 <i>QD</i> ₄₂	15.1	X	181.20351	325.67548	88.65191	4.73349	0.0845571	0.30327890	2.1940234	20	5 11.9	17.9
14118 1998 <i>QF</i> ₄₅	14.2	X	347.59405	225.27074	183.31138	12.83974	0.1648997	0.23118104	2.6292663	20	12 29.6	17.3
14119 Johnprince	14.4	X	285.86618	106.18604	296.07795	5.85311	0.1247507	0.26813052	2.3817996	20	9 1.8	17.0
14120 Espenak	13.6	X	259.67307	213.27628	222.89102	5.98559	0.0878630	0.26778378	2.3838552	20	9 15.8	16.6
14121 Stüwe	13.9	X	186.10273	58.50452	301.47537	3.98909	0.1731602	0.29603034	2.2296938	20	3 5.0	17.3
14122 Josties	14.9	X	161.11974	170.74953	190.34199	5.64649	0.2237396	0.29278268	2.2461519	20	2 16.0	18.4
14123 1998 <i>QA</i> ₅₆	15.3	X	118.00550	146.73099	186.77755	5.28851	0.1916758	0.28543943	2.2845118	20	—	—
14124 Kamil	14.3	X	123.15297	7.63812	19.15466	12.46856	0.1662365	0.24210387	2.5495776	20	2 16.7	18.1
14125 1998 <i>QT</i> ₆₂	13.5	X	302.34954	141.20008	180.83357	9.58345	0.2692463	0.21680078	2.7442825	20	5 11.5	17.0
14126 1998 <i>QZ</i> ₉₀	13.9	X	24.93662	274.23633	173.47445	14.08061	0.1565970	0.23857810	2.5746350	20	—	—
14127 1998 <i>QA</i> ₉₁	12.9	X	89.52141	154.15591	166.67472	13.77823	0.1995362	0.23471666	2.6027958	20	—	—
14128 1998 <i>QX</i> ₉₂	13.3	X	235.58210	218.54130	193.12239	8.97793	0.1483560	0.21323679	2.7747762	20	7 1.1	17.6
14129 Dibucci	14.6	X	314.57059	185.44387	205.95060	6.95365	0.1507500	0.27111865	2.3642667	20	10 11.7	16.5
14130 1998 <i>QQ</i> ₁₀₃	14.7	X	90.68000	351.29500	30.82212	4.47043	0.1144829	0.28641569	2.2793176	20	—	—
14131 1998 <i>QN</i> ₁₀₅	14.5	X	36.67917	338.20462	42.36969	4.99721	0.1520685	0.27966984	2.3158244	20	—	—
14132 1998 <i>QB</i> ₁₀₆	15.0	X	99.68702	267.48418	105.95283	3.97855	0.1972585	0.28684455	2.2770452	20	—	—
14133 1998 <i>RJ</i> ₁₇	14.3	X	193.36617	261.95043	178.75155	10.56741	0.2281905	0.26057296	2.4276337	20	6 24.7	18.6
14134 Penkala	14.5	X	54.60858	166.22617	275.19231	4.48250	0.1217863	0.24189149	2.5510697	20	—	—
14135 Cynthialang	15.1	X	236.35495	298.65964	54.33244	3.20103	0.1992863	0.25683609	2.4511244	20	4 14.4	18.9
14136 1998 <i>RM</i> ₆₇	14.1	X	16.86145	170.63700	290.94131	3.26930	0.1720332	0.28427605	2.2907404	20	—	—
14137 1998 <i>RB</i> ₇₁	14.4	X	155.79404	308.07059	152.58615	8.92233	0.2173108	0.21036943	2.7999329	20	6 18.7	19.3
14138 1998 <i>RL</i> ₇₁	14.6	X	284.28359	281.90233	112.37136	3.11644	0.2025983	0.26552796	2.3973377	20	8 7.3	17.2
14139 1998 <i>RX</i> ₇₂	13.6	X	353.71752	215.30574	181.99917	8.58028	0.2414419	0.18352543	3.0667041	20	12 18.6	16.9
14140 1998 <i>RS</i> ₇₃	15.1	X	71.16625	115.49250	243.16105	2.57940	0.2298498	0.23545302	2.5973663	20	—	—
14141 Demeautis	14.7	X	58.71228	254.41214	95.76584	4.55818	0.1958816	0.27897607	2.3196622	20	—	—
14142 1998 <i>SG</i> ₁₀	14.0	X	240.60989	118.29882	60.49830	6.61531	0.1410979	0.27940403	2.3172930	20	—	—
14143 Hadfield	14.6	X	343.59916	177.16210	169.25068	5.96868	0.1367227	0.26855459	2.3792915	20	10 2.8	16.6
14144 1998 <i>SQ</i> ₂₂	14.1	X	220.78342	18.99458	0.62864	7.99478	0.2410721	0.21088002	2.7954116	20	4 29.6	19.1
14145 Sciam	15.3	X	281.41550	215.55845	153.24290	4.22728	0.2077159	0.26368260	2.4085097	20	6 23.9	18.2
14146 Hughmaclean	14.7	X	4.11041	72.85245	350.99235	2.09012	0.1212133	0.27974112	2.3154310	20	—	—
14147 Wenlingshuguang	14.0	X	35.43238	291.50416	83.91252	3.60658	0.0288430	0.27803256	2.3249072	20	—	—
14148 Jimchamberlin	16.0	X	221.20039	62.66915	104.65163	1.24719	0.1249594	0.27475400	2.3433655	20	11 25.7	19.0
14149 Yakowitz	14.2	X	328.58813	118.57600	319.35413	6.36253	0.0743356	0.27644464	2.3338016	20	—	—
14150 1998 <i>SQ</i> ₆₅	14.2	X	87.01588	120.26906	78.90796	3.50309	0.1418997	0.26028416	2.4294291	20	8 13.9	17.5
14151 1998 <i>SJ</i> ₇₃	15.0	X	214.93799	248.77387	132.67121	3.41629	0.1890877	0.25515859	2.4618557	20	5 2.1	18.9
14152 1998 <i>SV</i> ₇₃	15.1	X	109.47856	288.10519	42.80930	7.09668	0.1593626	0.28245179	2.3005932	20	—	—
14153 Dianecaplain	15.8	X	227.38924	283.20520	201.73646	3.76053	0.0602086	0.27116726	2.3639841	20	10 16.2	18.8
14154 Negrelli	14.4	X	248.04537	240.96910	199.14201	2.75277	0.0607528	0.22104682	2.7090261	20	9 4.2	18.1
14155 Cibronen	14.5	X	59.36490	227.35576	226.91220	3.33152	0.0966123	0.28894181	2.2660133	20	1	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14161 1998 SO ₁₄₅	14.9 ^m	X	356.65418	251.32348	67.97014	1.84301	0.1355435	0.26620653	2.3932620	20	9 15.9	17.1
14162 1998 TV ₁	13.6	X	300.18232	341.32622	54.22046	13.61679	0.2476993	0.26586765	2.3952953	20	9 12.2	15.9
14163 Johnchapman	14.7	X	110.11936	145.86565	294.43866	0.79509	0.0751248	0.20199767	2.8767700	20	3 25.6	18.7
14164 Hennigar	14.1	X	55.42092	94.51358	354.68778	1.51006	0.0560448	0.19579149	2.9372451	20	1 24.2	17.8
14165 1998 UZ	13.6	X	327.04879	266.71941	214.84147	12.09958	0.1976585	0.23201061	2.6229951	20	—	—
14166 1998 UZ ₆	13.7	X	224.93854	19.71113	148.55959	12.80726	0.0989015	0.22362466	2.6881671	20	11 26.9	17.7
14167 1998 UL ₈	13.3	X	315.72915	5.69710	87.26117	2.55914	0.1556494	0.18124458	3.0923788	20	12 12.7	16.7
14168 1998 UR ₁₅	13.2	X	264.72588	75.02702	7.76604	0.65049	0.1551194	0.17491703	3.1665133	20	9 10.2	17.5
14169 1998 UZ ₂₄	13.9	X	287.54295	319.47735	63.17180	6.23688	0.1682105	0.21548767	2.7554198	20	7 28.7	17.4
14170 1998 VF ₆	13.5	X	257.16151	157.93052	305.33490	4.45077	0.1089923	0.17657637	3.1466444	20	9 30.8	17.9
14171 1998 VO ₆	13.4	X	225.42771	153.86327	289.51100	6.11503	0.0893036	0.21489855	2.7604532	20	8 6.3	17.5
14172 Amanolivre	14.6	X	270.78675	3.82210	341.10736	2.76616	0.1569465	0.25835619	2.4415004	20	5 12.3	17.8
14173 1998 VL ₉	14.3	X	301.34351	321.82455	63.45426	5.35256	0.0737509	0.26572691	2.3961409	20	9 15.6	17.0
14174 Deborahsmall	14.3	X	109.57524	168.54345	309.55888	1.95429	0.1804112	0.20428881	2.8552206	20	5 25.2	18.6
14175 1998 VO ₁₈	13.1	X	279.41042	79.92419	345.31936	5.54040	0.0875028	0.17522413	3.1628125	20	9 16.7	17.4
14176 1998 VB ₂₈	13.6	X	337.94349	29.46613	333.09096	4.42873	0.1450438	0.17515838	3.1636039	20	9 21.5	17.2
14177 1998 VU ₂₉	13.2	X	200.42268	169.39068	260.09424	9.12080	0.1640441	0.20949848	2.8076877	20	6 18.9	17.8
14178 1998 VK ₃₀	13.8	X	193.92811	273.50828	108.42582	3.08954	0.0893741	0.20432356	2.8548968	20	4 17.1	18.1
14179 Skinner	14.3	X	235.78871	334.21232	285.41201	8.29821	0.2129327	0.28466366	2.2886604	20	—	—
14180 1998 WY ₅	13.8	X	313.79114	309.10948	105.95767	2.69869	0.1105236	0.17630385	3.1498861	20	10 23.7	17.6
14181 Koromházi	13.3	X	276.21709	37.00526	72.74518	8.91378	0.1584901	0.22048442	2.7136309	20	11 10.3	16.4
14182 Alley	14.8	X	105.16491	99.31453	225.21094	5.94345	0.1431298	0.27843926	2.3226427	20	—	—
14183 1998 WA ₁₈	13.2	X	322.61353	139.67558	292.90667	4.92287	0.0714366	0.18000055	3.1066106	20	11 28.7	17.1
14184 1998 WA ₃₂	13.4	X	219.63099	91.93347	226.35967	1.26706	0.0394313	0.19834399	2.9119909	20	2 26.6	17.6
14185 Van Ness	13.6	X	173.43343	326.69619	18.47663	7.22231	0.1946217	0.23973206	2.5663662	20	2 14.7	17.8
14186 Virgiliofos	13.0	X	239.82436	49.47147	93.27034	1.78407	0.1011875	0.17557501	3.1585972	20	10 31.9	17.5
14187 1998 XS ₉	14.3	X	207.83798	123.35520	190.44772	2.50337	0.1564768	0.28921067	2.2646087	20	1 28.1	17.8
14188 1998 XP ₁₁	13.5	X	328.50197	257.45573	302.46225	8.76974	0.0449402	0.19180204	2.9778346	20	2 11.5	17.4
14189 Sèvre	14.2	X	335.24978	157.85538	191.66367	3.14017	0.1969034	0.21897882	2.7260552	20	9 6.6	16.7
14190 Soldán	13.1	X	1.07392	30.50887	91.93810	4.58953	0.0888613	0.18737769	3.0245269	20	—	—
14191 1998 XR ₂₈	13.8	X	263.72020	337.46090	255.36513	5.67425	0.1240571	0.28376844	2.2934713	20	—	—
14192 1998 XA ₃₃	13.0	X	103.34361	22.80119	359.31621	9.74423	0.1144233	0.19117858	2.9843051	20	1 15.3	17.2
14193 1998 XZ ₄₀	13.0	X	348.66671	11.29759	15.52850	8.03637	0.1992445	0.17693596	3.1423796	20	11 15.2	16.5
14194 1998 XU ₅₀	13.1	X	335.54966	310.73402	300.80470	7.22469	0.2195863	0.19736184	2.9216437	20	4 3.8	16.4
14195 1998 XD ₅₁	11.9	X	219.63381	192.88903	318.20639	7.74227	0.1288719	0.12473811	3.9670706	20	10 5.6	18.0
14196 1998 XH ₅₉	13.5	X	234.73477	186.23402	114.13541	7.28678	0.2191006	0.28911566	2.2651048	20	2 4.5	17.1
14197 1998 XK ₇₂	13.6	X	57.67593	13.04789	25.79654	1.28424	0.1449906	0.18637507	3.0353644	20	—	—
14198 1998 XZ ₇₃	12.6	X	354.44350	8.68892	352.10956	6.66638	0.1377901	0.21872687	2.7281482	20	10 27.9	15.8
14199 1998 XV ₇₇	13.3	X	283.91506	286.31571	91.79573	13.17667	0.2084105	0.26081761	2.4261153	20	7 11.5	16.0
14200 1998 XY ₇₇	13.6	X	208.58787	274.37478	160.55910	6.58184	0.0750682	0.25615560	2.4554635	20	7 10.4	17.0
14201 1998 XR ₉₂	12.9	X	162.14729	57.82788	235.21192	12.17116	0.1563478	0.23027334	2.6361712	20	—	—
14202 1998 YF ₃	13.5	X	138.86853	74.24696	287.03670	6.31924	0.2161645	0.23764282	2.5813858	20	2 1.2	17.4
14203 Hocking	13.0	X	178.25527	347.90312	307.95587	9.44365	0.1077330	0.18340006	3.0681016	20	—	—
14204 1999 AM ₂₀	12.9	X	221.37773	177.46605	123.96371	11.32637	0.0843826	0.19045200	2.9918904	20	2 8.7	17.5
14205 1999 BC ₄	12.8	X	276.33611	77.75892	127.84571	11.24341	0.0329148	0.18306875	3.0718021	20	—	—
14206 Sehna	13.0	X	13.01665	233.30240	117.19808	8.43052	0.1741161	0.17054117	3.2204500	20	11 11.8	17.0
14207 1999 CS ₁₈	12.3	X	259.45777	163.82953	100.76318	10.94595	0.0356837	0.18985626	2.9981460	20	2 11.2	16.6
14208 1999 CR ₆₄	13.0	X	202.37090	135.09356	198.08901	12.80521	0.1640629	0.23648522	2.5898029	20	2 18.6	17.5
14209 1999 CV ₈₁	14.7	X	145.89955	255.38818	330.41816	2.93572	0.1178663	0.30393235	2.1908775	20	11 22.7	17.8
14210 1999 CO ₉₉	13.5	X	230.79372	250.01463	339.01122	12.82097	0.1522781	0.22244111	2.6976940	20	—	—
14211 1999 NT ₁	13.9	X	314.12715	90.99016	282.09022	21.35254	0.3190481	0.28136837	2.3064951	20	8 8.7	15.7
14212 1999 NW ₃₉	14.2	X	341.07687	261.58705	109.77113	14.00676	0.1741899	0.23969692	2.5666171	20	11 5.7	17.0
14213 1999 NX ₅₄	12.8	X	207.02184	189.20489	158.73865	25.14885	0.0275737	0.22037769	2.7145070	20	3 21.0	16.7
14214 Hirsch	14.8	X	58.85063	270.65866	101.04083	3.18722	0.1964124	0.24712965	2.5148928	20	—	—
14215 1999 TV ₆	14.1	X	200.44132	232.40395	198.38567	3.57718	0.1448865	0.26997391	2.3709452	20	6 22.0	17.6
14216 1999 VW ₁	13.6	X	319.63312	191.08363	273.35374	9.26382	0.1229236	0.23887307	2.5725151	20	—	—
14217 Oaxaca	15.8	X	229.94165	218.16895	112.48378	3.69492	0.1880794	0.26273625	2.4142897	20	3 12.8	19.6
14218 1999 VS ₃₀	14.3	X	205.03390	173.94931	238.28194	5.14514	0.1172264	0.26640414	2.3920783	20	6 3.5	17.7
14219 1999 VY ₇₇	14.1	X	23.58422	30.39022	81.91795	6.19860	0.0574903	0.24646167	2.5194348	20	—	—
14220 Alexgibbs	12.5	X	3.09566	326.45484	305.16265	10.87184	0.1651246	0.22612830	2.6682884	20	7 12.4	15.0
14221 1999 WL	14.3	X	352.54174	15.62616	99.17569	6.07643	0.0993821	0.29160304	2.2522055	20	—	—
14222 1999 WS ₁	14.0	X	306.64560	84.88621	229.16964	17.17876	0.5453711	0.18094171	3.0958287	20	3 21.8	19.1
14223 Dolby	14.7	X	255.46838	250.30789	105.46302	3.83538	0.3014272	0.26979813	2.3719749	20	4 26.9	18.5
14224 Gaede	14.5	X	300.85771	135.18875	284.57307	0.79951	0.1986466	0.22731797	2.6589706	20	10 9.2	16.9
14225 Alisahamilton	15.2	X	338.74926	236.52393	70.24262	3.29572	0.2263245	0.27319228	2.3522877	20	7 14.7	16.4
14226 Hamura	15.0	X	166.60748	270.90039	206.44554	2.91462	0.0370351	0.22091664	2.7100903	20	7 16.2	18.8
14227 1999 XW ₈₅	12.4	X	163.61478	85.51539	132.90459	2.25227	0.1208931	0.18020749	3.1042319	20	11 11.8	17.3
14228 1999 XQ ₈₈	14.1	X	75.07169	117.64720	98.26545	4.24484	0.0686240	0.21749797	2.7384149	20	8 6.5	17.8
14229 1999 XV ₉₄	13.9	X	120.03444	314.92155	5.40014	4.27528	0.1768200	0.28156196	2.3054377	20	—	—
14230 Mariahines	14.7	X	17.94260	245.37718	290.42548	3.54276	0.0882412	0.30163802	2.2019730	20	3 4.9	16.6
14231 1999 XD ₁₀₂	13.6	X	289.76477	283.84613	89.51195	7.93987	0.0517432	0.17122478	3.2118726	20	8 1.8	18.0
14232 Curtismiller	13.1	X	214.10955	295.14954	262.18367	11.23151	0.1137769	0.23797360	2.5789932	20	12 18.5	16.5
14233 1999 XM ₁₆₉	13.1	X	31.53739	98.97970	279.31237	13.73482	0.1131513	0.23747794	2.5825805	20	—	—
14234 Davidhoover	14.8	X	62.37886	323.64220	31.09943	7.54146	0.1814475	0.28932996	2.2639862	20	—	—
14235 1999 XA ₁₈₇	11.3	X	307.04482	25.32182	41.35853	8.67126	0.0842720	0.08471386	5.1345186	20	10 13.1	17.8
14236 1999 XZ ₂₀₀	13.7	X	77.17907	298.32667</								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14241 2000 AO ₅	12.8	X	162.44987	117.82311	113.15271	2.39106	0.1896688	0.17840189	3.1251419	20	11 23.2	18.1
14242 2000 AE ₂₅	14.0	X	251.99200	276.13761	114.77854	0.27082	0.1829569	0.17071462	3.2182682	20	6 18.3	19.0
14243 2000 AH ₂₉	14.3	X	332.03396	218.04395	312.04063	1.05959	0.0399960	0.19703753	2.9248487	20	1 11.7	18.3
14244 Labnow	14.8	X	22.40084	276.62174	47.69487	4.46255	0.0591501	0.22557261	2.6726688	20	10 17.9	18.3
14245 2000 AS ₃₁	13.9	X	290.68703	343.24668	339.34066	6.95467	0.2551864	0.26270609	2.4144745	20	4 21.3	17.1
14246 2000 AN ₅₀	13.1	X	260.09096	355.20851	302.66895	1.12353	0.0295949	0.20205317	2.8762432	20	3 20.5	17.2
14247 2000 AV ₅₅	14.4	X	289.41890	245.94818	101.08130	3.26324	0.2075895	0.26547669	2.3976463	20	6 4.5	17.1
14248 2000 AF ₅₆	13.3	X	340.12780	206.31558	146.52299	1.41329	0.1787802	0.17519593	3.1631518	20	9 13.8	16.7
14249 2000 AW ₅₇	12.9	X	288.54426	106.07677	311.02955	10.05811	0.0361807	0.17584686	3.1553410	20	9 21.2	17.4
14250 Kathleenmartin	15.5	X	66.08007	38.56799	346.41800	5.33005	0.1734071	0.28805418	2.2706660	20	—	—
14251 2000 AX ₆₃	13.2	X	163.90633	352.20040	314.65652	9.04230	0.0875170	0.19028962	2.9935923	20	—	—
14252 Audrey Meyer	15.2	X	225.13364	182.53124	87.85949	2.12682	0.1176502	0.28957090	2.2627302	20	—	—
14253 2000 AL ₆₄	14.1	X	343.79727	291.50969	55.05741	3.53244	0.0946463	0.22123900	2.7074571	20	9 21.6	17.1
14254 2000 AF ₆₄	12.6	X	235.63546	129.97381	338.52985	9.93875	0.0918864	0.17485438	3.1672696	20	9 14.3	17.3
14255 2000 AS ₇₀	13.2	X	146.57320	299.75733	118.86661	8.78348	0.2212174	0.21089542	2.7952755	20	4 24.3	18.0
14256 2000 AA ₉₆	13.4	X	168.18089	350.96226	5.66278	1.56270	0.0922849	0.19763089	2.9189915	20	2 19.7	17.9
14257 2000 AR ₉₇	12.8	X	119.97032	4.20989	55.25970	5.16869	0.1401011	0.29688538	2.2541072	20	3 14.3	15.5
14258 Katrinaminck	14.8	X	130.61117	100.24443	166.94423	4.47066	0.0353104	0.27937728	2.3174408	20	12 27.4	17.8
14259 2000 AQ ₁₁₇	13.0	X	225.65065	277.25226	138.52171	10.69788	0.1147967	0.16777431	3.2557602	20	6 28.6	18.1
14260 2000 AF ₁₁₉	13.1	X	335.13870	293.04078	133.62281	11.50976	0.0958223	0.18428144	3.0583110	20	12 13.4	17.1
14261 2000 AB ₁₂₁	13.0	X	42.46351	134.49016	270.91485	9.71389	0.0971357	0.19007405	2.9958553	20	—	—
14262 Kratzer	14.3	X	328.53501	182.46734	187.56442	5.89560	0.1403173	0.27236324	2.3570587	20	10 9.2	16.0
14263 2000 AA ₁₂₇	12.9	X	137.67761	166.30361	196.71490	1.40158	0.1104171	0.19629630	2.9322070	20	1 27.7	17.2
14264 2000 AH ₁₄₂	13.3	X	270.49978	259.46283	173.53085	9.14676	0.0606159	0.17396331	3.1780759	20	9 19.0	17.5
14265 2000 AV ₁₄₂	13.2	X	236.95267	338.46414	207.56952	4.96241	0.0928365	0.18217021	3.0818948	20	12 21.2	17.6
14266 2000 AG ₁₄₃	13.6	X	245.97324	342.48021	293.46921	8.28798	0.1857867	0.24193746	2.5507465	20	1 20.8	17.8
14267 Zook	14.5	X	340.00044	11.56144	1.68538	3.72258	0.2450649	0.27553381	2.3389420	20	11 19.7	16.0
14268 2000 AK ₁₅₆	10.5	X	285.51552	125.97766	284.51946	15.00017	0.0922903	0.08247668	5.2269532	20	8 20.3	17.4
14269 2000 AH ₁₈₂	12.9	X	264.24459	167.44079	164.62580	9.61853	0.1605929	0.21116859	2.7928643	20	4 23.7	17.1
14270 2000 AB ₁₈₉	14.0	X	281.96573	219.85990	185.17049	13.12014	0.0053363	0.22662262	2.6644069	20	9 11.4	17.5
14271 2000 AN ₂₃₃	13.0	X	130.43756	275.60559	124.51988	2.92765	0.1258520	0.19675490	2.9276491	20	3 7.4	17.3
14272 2000 AZ ₂₃₄	13.3	X	260.64098	182.10887	128.32358	5.20188	0.0376251	0.15884569	3.3766477	20	4 10.6	18.2
14273 2000 BY ₁₄	13.9	X	78.29722	334.36678	67.77268	9.80021	0.1642823	0.24198221	2.5504320	20	—	—
14274 Landstreet	12.5	X	359.42899	24.17580	313.37015	16.67170	0.1289429	0.17361021	3.1823837	20	9 17.6	16.7
14275 Dianemurray	15.5	X	205.57822	197.03608	33.55297	2.90158	0.0937148	0.28129875	2.3068756	20	—	—
14276 2000 CF ₂	13.3	X	128.45780	343.44146	31.25261	6.45108	0.1779861	0.29193593	2.2504931	20	1 29.8	16.2
14277 Parsa	14.7	X	120.89968	301.16495	187.67621	3.88534	0.0495849	0.21008801	2.8024327	20	6 6.7	18.7
14278 Perrenot	15.4	X	263.29133	344.78950	144.92835	2.21612	0.1767115	0.27706295	2.3303281	20	11 28.8	17.5
14279 2000 CD ₆₅	13.7	X	32.39544	322.16764	37.60743	1.44573	0.1755735	0.18074614	3.0980615	20	12 20.7	17.8
14280 2000 CN ₇₂	13.5	X	252.02269	205.06091	124.38962	3.09394	0.0078078	0.20377050	2.8600602	20	4 24.3	17.4
14281 2000 CR ₉₂	13.4	X	258.27053	212.82592	131.52446	2.88097	0.0888868	0.20492432	2.8493145	20	5 10.2	17.5
14282 Cruiff	13.5	X	129.27736	138.39319	194.42678	7.71079	0.0477858	0.18597057	3.0397643	20	—	—
14283 2206 P-L	14.5	X	351.81303	286.40763	192.33823	5.29359	0.1213861	0.23514923	2.5996029	20	—	—
14284 2530 P-L	14.1	X	51.59570	36.36461	22.71818	4.67904	0.1313509	0.28497679	2.2869836	20	—	—
14285 2566 P-L	15.2	X	191.32763	238.84423	190.35519	1.95635	0.1826305	0.25832856	2.4416745	20	6 9.8	19.2
14286 2577 P-L	15.1	X	6.43256	293.77359	348.70059	0.53777	0.1286002	0.26110196	2.4243536	20	8 5.6	17.4
14287 2777 P-L	14.4	X	86.62992	100.00680	159.43162	2.92794	0.1660003	0.26401659	2.4064781	20	11 3.7	18.0
14288 2796 P-L	16.1	X	15.54410	249.10750	140.96701	3.27622	0.2234403	0.23258075	2.6187068	20	—	—
14289 4648 P-L	15.2	X	18.17664	98.24718	186.33154	0.95512	0.1736131	0.26225107	2.4172665	20	9 7.3	17.6
14290 9072 P-L	14.5	X	39.62493	27.93419	212.85651	5.97825	0.0574190	0.21103479	2.7940447	20	7 16.8	18.2
14291 1104 T-1	13.9	X	323.41383	74.51143	352.55031	11.68363	0.1274216	0.27287074	2.3541352	20	12 25.5	16.4
14292 1148 T-1	15.7	X	350.89184	260.71390	358.82700	2.30400	0.0969179	0.30375751	2.1917181	20	5 28.2	17.6
14293 2307 T-1	15.0	X	343.94805	102.73180	18.47853	6.56013	0.1051582	0.23660694	2.5888949	20	—	—
14294 3306 T-1	15.2	X	30.69108	137.11892	167.57164	2.47267	0.2096405	0.26739649	2.3861565	20	11 4.5	18.0
14295 4161 T-1	13.4	X	164.84912	143.80316	182.77414	14.79889	0.1406493	0.23664579	2.5886313	20	1 8.0	17.7
14296 4298 T-1	15.3	X	70.78195	155.66922	135.50482	3.23339	0.1622638	0.26925551	2.3751606	20	11 27.9	18.7
14297 2124 T-2	15.5	X	326.59271	96.25330	285.96387	1.60976	0.1623802	0.27321175	2.3521759	20	10 23.9	17.3
14298 2144 T-2	14.6	X	280.27803	278.73278	357.45259	4.45677	0.1299690	0.24424069	2.5346852	20	3 1.3	18.2
14299 3162 T-2	13.5	X	103.12603	216.44230	168.92632	13.83298	0.1846380	0.23933019	2.5692383	20	1 17.0	17.0
14300 3336 T-2	14.8	X	334.45217	231.36214	157.06679	4.90232	0.2058177	0.27408951	2.3471514	20	11 27.8	16.5
14301 5205 T-2	14.5	X	174.42465	218.86474	294.05621	5.79192	0.0359314	0.27200195	2.3591454	20	9 15.3	17.7
14302 5482 T-2	14.3	X	155.98412	6.64160	315.21642	6.95951	0.2005536	0.28180193	2.3041287	20	—	—
14303 1144 T-3	14.0	X	79.38111	80.91855	336.50153	8.65323	0.0621153	0.19223435	2.9733684	20	1 19.8	18.0
14304 3417 T-3	13.8	X	29.08932	107.13454	24.72949	16.34779	0.1201315	0.23961739	2.5671849	20	2 11.1	16.9
14305 3437 T-3	14.4	X	255.88850	272.36138	13.71836	2.62431	0.1426817	0.24263540	2.5458527	20	2 15.4	18.2
14306 4327 T-3	14.3	X	301.51932	139.60312	55.77838	9.30058	0.1123502	0.23869558	2.5737902	20	—	—
14307 4336 T-3	15.0	X	256.52510	50.10543	161.59928	7.69737	0.0468819	0.28301980	2.2975140	20	—	—
14308 5193 T-3	12.8	X	203.32576	82.48346	151.34580	12.52787	0.2012845	0.18933596	3.0036361	20	12 30.8	17.7
14309 Defoy	14.3	X	231.77179	136.91962	174.89105	6.50437	0.4474218	0.23442940	2.6049216	20	2 11.6	19.5
14310 Shuttleworth	13.9	X	103.62362	164.99358	51.05423	2.61714	0.1604918	0.22091392	2.7101126	20	9 21.1	18.0
14311 1971 UK ₁	15.0	X	172.40116	235.42524	206.01685	7.74713	0.2210382	0.25427107	2.4675810	20	6 8.9	19.3
14312 Polytech	14.6	X	27.27561	97.15780	257.64621	1.90201	0.1357148	0.31644500	2.1327366	20	—	—
14313 Dodaira	13.3	X	180.64140	138.77458	207.14032	10.51300	0.1109405	0.19014344	2.9951264	20	2 17.2	18.2
14314 Tokigawa	13.7	X	325.94058	15.21280	62.04007	2.14190	0.1677619	0.17731194	3.1379358	20	12 9.1	17.0
14315 Ogawamachi	12.8	X	160.43420	107.60499	178.27703	21.20507	0.1032933	0.17562047	3.1580521	20	—	—
14316 Higashichichibu	12.6	X	221.54876	142.90301	356.33773	15.26484	0.0857072	0.172408				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14321 1978 VT ₉	15.6 ^m	X	230.03163	289.22181	55.33494	3.84486	0.2000273	0.29611304	2.2292787	20	3 27.7	19.1
14322 Shakura	14.1	X	191.68395	20.27133	0.64931	7.82098	0.1372029	0.29527143	2.2335127	20	4 5.9	17.4
14323 1979 MV ₁	14.8	X	182.88869	136.98432	133.40568	6.75980	0.0788672	0.27600891	2.3362572	20	—	—
14324 1979 MK ₆	14.2	X	4.26483	228.11048	162.67389	2.69505	0.0882304	0.22281983	2.6946363	20	12 20.4	17.5
14325 1979 MM ₆	14.1	X	222.97109	336.62006	233.24273	4.26367	0.1053979	0.17840011	3.1251627	20	12 30.6	18.6
14326 1980 BA	14.3	X	165.26426	333.08794	108.99027	6.84863	0.1661870	0.25331352	2.4737955	20	6 3.1	18.2
14327 Lemke	13.0	X	175.93853	302.13590	343.13279	8.65878	0.1612345	0.18953844	3.0014966	20	—	—
14328 Granvik	13.6	X	201.29240	102.92672	260.44887	7.86552	0.2472965	0.21247446	2.7814092	20	3 25.2	18.6
14329 1981 EY ₁₀	14.6	X	304.41820	171.13213	209.68199	3.09533	0.1071230	0.26195732	2.4190732	20	9 5.3	17.2
14330 1981 EG ₂₁	13.7	X	211.96847	254.47582	159.76725	6.01008	0.0762816	0.15722014	3.3998827	20	6 15.3	18.9
14331 1981 EC ₂₆	16.3	X	124.67279	184.60948	12.35229	1.25299	0.1404406	0.26126049	2.4233728	20	9 19.9	19.8
14332 1981 EX ₂₆	14.5	X	69.28326	80.48258	198.59580	2.98475	0.2473840	0.26091164	2.4255324	20	11 18.0	18.1
14333 1981 ED ₃₄	15.3	X	218.59917	94.41243	305.43534	2.16244	0.1988134	0.25824724	2.4421870	20	5 26.6	19.2
14334 1981 EE ₃₈	14.7	X	208.08014	109.82673	314.17975	2.13370	0.1225830	0.20830984	2.8183582	20	6 21.0	18.9
14335 Alexosipov	14.2	X	218.14212	181.85860	170.11114	5.90226	0.2104207	0.29514017	2.2341749	20	3 25.4	17.7
14336 1981 UU ₂₉	15.9	X	173.17750	110.26989	244.13291	1.29675	0.1927949	0.29149429	2.2527656	20	2 17.5	19.4
14337 1981 WJ ₉	14.5	X	11.51552	254.16115	191.86077	5.27351	0.1834758	0.23284745	2.6167068	20	—	—
14338 Shibakoukan	12.6	X	297.99375	204.70110	61.47318	13.55270	0.0537075	0.19509838	2.9441975	20	4 1.6	16.8
14339 Knorre	12.4	X	228.85899	177.18304	115.77521	14.40247	0.1746020	0.23495354	2.6010461	20	1 28.3	16.7
14340 1983 RQ ₃	14.7	X	49.12905	8.29396	329.34827	4.65336	0.2435643	0.27200238	2.3591429	20	—	—
14341 1983 RV ₃	13.7	X	64.05063	144.46787	175.60544	5.42043	0.1664099	0.21849537	2.7300749	20	12 16.6	17.9
14342 Iglita	12.5	X	310.25946	229.25942	156.84123	9.70436	0.3034329	0.21785493	2.7354227	20	8 20.6	14.7
14343 1984 SM ₅	13.8	X	254.35892	145.08096	156.15734	6.79123	0.1373855	0.29319679	2.2440365	20	2 27.4	17.0
14344 1985 CP ₂	15.2	X	253.89600	145.31785	295.52299	1.79198	0.1334207	0.26670884	2.3902561	20	9 7.9	18.3
14345 Gritsevich	13.9	X	192.80348	202.67934	145.46070	3.41942	0.1430410	0.24306968	2.5428194	20	3 2.0	17.7
14346 Zhilyaev	13.1	X	59.37404	286.28023	66.61672	1.65804	0.1489527	0.17476149	3.1683918	20	—	—
14347 1985 RL ₄	14.9	X	333.94091	299.60448	34.96338	3.39139	0.1570505	0.30887665	2.1674346	20	9 2.3	16.1
14348 Cumming	13.1	X	89.38953	333.00067	31.66474	22.67910	0.0437278	0.23333475	2.6130623	20	—	—
14349 NikitamiKhalkov	13.1	X	324.12442	268.77941	124.01141	2.71583	0.1174384	0.16764473	3.2574377	20	10 9.4	17.0
14350 1985 VA ₁	12.8	X	142.95747	186.77578	87.76560	18.92523	0.0742284	0.17626927	3.1502980	20	12 25.7	17.7
14351 Tomaskohout	14.2	X	24.40939	143.81293	182.04216	2.45599	0.2001253	0.26357453	2.4091680	20	11 21.9	17.0
14352 1987 DK ₆	14.6	X	76.72499	293.59856	325.94339	2.47970	0.1819139	0.30942346	2.1648803	20	10 31.2	17.6
14353 1987 DN ₆	14.5	X	327.41663	180.00706	287.24309	2.41006	0.1682228	0.23126325	2.6286432	20	—	—
14354 Kolesnikov	13.9	X	294.95108	155.41825	151.31002	5.74734	0.2427471	0.20523368	2.8464505	20	4 15.9	17.8
14355 1987 SL ₅	14.7	X	281.66005	212.01473	225.18811	4.47045	0.2013119	0.26878054	2.3779579	20	10 6.5	17.0
14356 1987 SF ₆	14.8	X	208.41394	182.22885	172.79791	5.74435	0.2316342	0.25849942	2.4405985	20	3 22.5	18.8
14357 1987 UR	13.4	X	67.69846	22.51967	23.26429	5.94954	0.2723564	0.18876168	3.0097251	20	1 16.9	16.7
14358 1988 BY ₃	14.3	X	58.98805	297.78823	164.10900	6.99079	0.1091623	0.24692440	2.5162863	20	2 9.5	17.1
14359 1988 CU ₁	14.7	X	129.20398	198.47145	339.21696	1.65274	0.1224673	0.25868332	2.4394417	20	8 29.1	18.0
14360 Ipatov	13.3	X	76.53371	147.75264	181.87825	18.18908	0.1602367	0.17337567	3.1852531	20	12 29.2	18.5
14361 Bosovich	13.1	X	268.92236	174.94334	352.71721	13.24201	0.0960367	0.23752274	2.5822558	20	—	—
14362 1988 MH	12.4	X	173.03765	37.67447	292.36616	12.97509	0.1914202	0.23553693	2.5967494	20	1 23.9	16.6
14363 1988 RB ₂	14.8	X	47.67677	173.77649	153.01748	2.73038	0.2047599	0.28282543	2.2985666	20	12 25.5	18.1
14364 1988 RM ₂	14.6	X	84.85564	99.24134	278.38505	5.11577	0.1869099	0.28825382	2.2696175	20	—	—
14365 Jeanpaul	14.2	X	158.81836	263.62357	12.50808	4.97347	0.2322996	0.22510026	2.6764063	20	—	—
14366 Wilhelmraabe	14.6	X	316.09182	165.57413	166.69296	4.60701	0.0759508	0.21157033	2.7893277	20	7 14.1	18.1
14367 Hippokratess	14.0	X	257.85159	172.17070	171.91144	1.38152	0.2021521	0.17734634	3.1375300	20	4 26.2	18.8
14368 1988 TK	13.5	X	21.81410	308.11857	2.54896	9.55412	0.2004616	0.21600951	2.7509802	20	10 14.3	16.7
14369 1988 UV	15.0	X	97.23319	207.39526	212.48198	7.46361	0.0978296	0.29190531	2.2506505	20	1 30.9	17.7
14370 1988 VR ₂	13.7	X	86.22842	0.64431	87.96506	13.26446	0.2775333	0.19670760	2.9281183	20	4 12.5	18.1
14371 1988 XX ₂	15.1	X	28.20042	8.16632	73.66237	2.21761	0.1761837	0.28447938	2.2896487	20	—	—
14372 Paulgerhardt	13.5	X	32.53031	257.70090	192.14652	9.80188	0.0941754	0.19006250	2.9959767	20	—	—
14373 1989 LT	14.0	X	102.89735	247.60321	0.53507	1.69487	0.1416342	0.26312358	2.4119198	20	11 2.1	17.6
14374 1989 SA	13.4	X	121.42061	300.17129	77.84351	13.93357	0.1896417	0.23669097	2.5883019	20	2 5.3	17.3
14375 1989 SU	13.7	X	246.15876	33.58210	291.80745	4.07765	0.2356018	0.24443848	2.5333177	20	3 15.2	17.9
14376 1989 ST ₁₀	13.2	X	216.95745	135.64776	175.80659	9.15437	0.2010370	0.24145814	2.5541211	20	2 5.9	17.6
14377 1989 TX ₂	13.5	X	36.15223	274.18959	185.10439	15.15253	0.0774750	0.23480962	2.6021089	20	—	—
14378 1989 TA ₁₆	14.4	X	180.09677	71.95778	232.56230	2.30047	0.1606980	0.23662523	2.5887812	20	—	—
14379 1989 UM ₄	12.5	X	346.85409	185.69104	218.77262	12.94464	0.1644136	0.22582120	2.6707070	20	12 20.6	15.5
14380 1989 UC ₆	13.3	X	118.65743	254.72765	37.54997	28.50852	0.2412712	0.22997014	2.6384877	20	—	—
14381 1990 CE	15.0	X	291.87820	335.51473	160.07570	5.38775	0.0967136	0.28660184	2.2783305	20	—	—
14382 Woszczyk	13.3	X	156.06072	197.64452	203.95077	1.43384	0.0596954	0.19959298	2.8998300	20	3 29.3	17.6
14383 1990 OY ₃	14.0	X	49.46594	6.99720	324.69198	5.97956	0.1348336	0.26986718	2.3715703	20	12 22.7	17.3
14384 1990 OH ₄	13.2	X	173.65144	98.13749	181.65039	7.11029	0.1163289	0.17897061	3.1185179	20	—	—
14385 1990 QG ₁	14.1	X	78.22218	351.69856	344.08960	6.59899	0.1364752	0.27181821	2.3602084	20	—	—
14386 1990 QN ₂	14.4	X	96.65613	336.42088	346.30542	7.09580	0.1376376	0.27233774	2.3572058	20	—	—
14387 1990 QE ₅	14.6	X	88.57228	312.24048	359.93154	6.70444	0.1278209	0.27119093	2.3638465	20	—	—
14388 1990 QO ₅	15.0	X	161.70041	214.40035	74.36013	1.69767	0.1235045	0.27630652	2.3345793	20	—	—
14389 1990 QR ₅	13.1	X	110.43465	171.15283	125.59104	2.60657	0.1644409	0.17241576	3.1970645	20	12 23.4	18.3
14390 1990 QP ₁₀	12.3	X	53.60373	311.53781	5.93221	6.56058	0.1022340	0.16872609	3.2435049	20	11 11.2	16.9
14391 1990 RE ₂	14.5	X	232.83613	193.20509	194.96878	3.55350	0.1990597	0.25577947	2.4578701	20	5 25.9	18.3
14392 1990 RS ₆	14.6	X	167.21951	211.98208	348.82550	6.21326	0.0703534	0.26809356	2.3820185	20	11 7.9	17.9
14393 1990 SX ₆	14.8	X	185.38698	214.17796	94.60469	4.53147	0.1337902	0.24545330	2.5263303	20	1 6.4	18.6
14394 1990 SP ₁₅	12.1	X	130.30612	65.46417	192.95430	15.63857	0.0697890	0.17017611	3.2250540	20	11 24.8	17.2
14395 Tommorgan	15.3	X	283.70332	4.63283	21.17802	20.88759	0.0938340	0.35837311	1.9629645	20	9 8.4	17.3
14396 1990 UX ₄	13.7	X	239.07129	282.61101	82.23141	8.24695	0.0465462	0.21922779	2.7239909	20	5 18.8	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14401 Reikoyukawa	13.3	X	20.89134	103.73580	294.53758	11.79759	0.1879545	0.23203357	2.6228221	20	—	—
14402 1991 DB	18.7	X	343.41968	51.38849	158.22389	11.41656	0.4017335	0.43886689	1.7149344	20	—	—
14403 de Machault	14.3	X	33.92066	25.57106	264.77406	2.87059	0.0435151	0.21361583	2.7714929	20	9 12.1	17.9
14404 1991 NQ ₆	14.8	X	100.50341	100.98321	275.79601	4.63463	0.1661940	0.28846729	2.2684976	20	—	—
14405 1991 PE ₈	15.1	X	263.05543	224.28399	124.02627	2.18192	0.1983834	0.26673734	2.3900859	20	5 5.0	18.4
14406 1991 PP ₈	13.8	X	63.83130	252.34151	78.66322	2.42629	0.1538591	0.17749399	3.1357898	20	12 19.0	18.3
14407 1991 PQ ₈	13.9	X	179.19490	210.99855	118.36450	1.94555	0.0977290	0.18900257	3.0071672	20	1 30.5	18.6
14408 1991 PC ₁₆	13.7	X	56.43197	239.79991	84.77702	0.48199	0.1971935	0.17562908	3.1579489	20	12 8.6	18.2
14409 1991 RM ₁	12.0	X	51.07815	257.94602	36.53750	27.87139	0.2144614	0.17231142	3.1983551	20	10 29.7	16.3
14410 1991 RR ₁	12.6	X	154.89949	99.46434	229.32795	9.47672	0.1345249	0.18422618	3.0589226	20	1 7.8	17.5
14411 Clérambault	14.6	X	83.73012	150.43410	265.35874	4.62432	0.1455414	0.28725791	2.2748603	20	1 13.5	16.6
14412 Wolflojewski	14.6	X	325.79381	271.17641	254.75975	4.47572	0.0924201	0.28667037	2.2779674	20	—	—
14413 Geiger	14.3	X	77.88255	177.92138	224.07083	5.01443	0.1476634	0.28482628	2.2877892	20	—	—
14414 1991 RF ₆	14.6	X	195.33394	250.97586	112.28442	2.95687	0.2093214	0.29359458	2.2420090	20	3 21.2	18.3
14415 1991 RQ ₇	13.3	X	226.03954	9.22551	305.15227	9.70814	0.2831900	0.19145964	2.9813838	20	2 17.5	18.7
14416 1991 RU ₇	15.6	X	34.30583	223.50463	178.19458	6.73701	0.2097544	0.28110741	2.3079223	20	—	—
14417 1991 RN ₁₃	15.1	X	305.64637	44.03681	273.52535	4.24322	0.1950244	0.30122204	2.3039998	20	5 18.4	17.3
14418 1991 RU ₁₆	15.5	X	157.38331	316.31917	31.27560	6.44213	0.1316964	0.28896267	2.2659042	20	1 21.6	18.7
14419 1991 RK ₂₃	14.6	X	306.98524	231.36393	91.91120	3.26879	0.0968714	0.30162685	2.2020274	20	6 17.8	16.7
14420 Massey	12.8	X	176.76317	223.22827	122.31340	11.21858	0.1178186	0.18880031	3.0093146	20	2 18.3	17.6
14421 1991 SA ₁	13.8	X	150.07185	201.93166	143.04002	15.40889	0.1598235	0.18587181	3.0408409	20	1 24.7	18.6
14422 1991 SK ₂	13.4	X	153.80994	356.31845	328.43907	9.43447	0.1142970	0.18451730	3.0557042	20	1 2.9	18.1
14423 1991 SM ₂	14.6	X	80.04605	58.60186	15.67860	6.94112	0.0658368	0.28773715	2.2723336	20	1 26.3	17.1
14424 Laval	12.6	X	339.77363	64.36253	19.56884	21.76246	0.1263836	0.17679476	3.1440526	20	—	—
14425 Fujimimachi	13.8	X	25.05663	256.10183	53.45803	5.80907	0.2267120	0.30703105	2.1761117	20	11 14.4	16.2
14426 Katotsuyoshi	13.7	X	22.90109	290.72762	112.95177	4.74654	0.1963176	0.27812307	2.3244027	20	—	—
14427 1991 VJ ₂	14.4	X	213.96465	146.41866	203.82922	4.63259	0.2277837	0.29266029	2.2467781	20	3 17.8	18.2
14428 Lazaridis	13.2	X	68.35452	275.08583	66.61719	1.60150	0.1811032	0.17370147	3.1812689	20	—	—
14429 Coyne	13.9	X	169.42466	92.56471	0.72686	21.38612	0.2999644	0.25822768	2.4423104	20	6 21.8	18.8
14430 1992 CH	13.2	X	257.43673	168.88949	311.44242	12.62837	0.1109323	0.23113337	2.6296278	20	10 29.1	16.8
14431 1992 DX ₈	14.8	X	198.30162	12.50026	73.25019	3.30292	0.0894562	0.25663169	2.4524257	20	7 12.9	18.2
14432 1992 EA ₆	14.4	X	201.25136	316.34532	127.72638	7.13641	0.1514719	0.25768179	2.4457584	20	7 9.6	18.3
14433 1992 EE ₈	14.8	X	42.23094	135.11030	161.50899	6.48504	0.1234282	0.26082577	2.4260647	20	10 26.7	17.9
14434 1992 ER ₁₁	13.9	X	39.65584	89.35078	148.01775	4.91755	0.1657479	0.25352663	2.4724090	20	8 2.3	16.5
14435 1992 ED ₁₃	14.4	X	36.87282	148.85485	196.66072	6.33574	0.1420983	0.26584238	2.3954470	20	12 25.1	17.7
14436 Morishita	14.1	X	281.66703	208.28947	353.80595	1.85461	0.2236479	0.23858502	2.5745852	20	—	—
14437 1992 GD ₃	14.1	X	255.57667	99.64873	211.52127	7.95015	0.0417779	0.24448024	2.5330293	20	3 25.8	17.5
14438 MacLean	13.8	X	107.71722	231.84402	130.05501	3.12384	0.0967830	0.19891966	2.9063701	20	—	—
14439 Evermeersch	13.7	X	101.39939	89.10337	347.76258	1.23022	0.0850710	0.19636428	2.9315303	20	3 12.8	17.6
14440 1992 RF ₅	14.0	X	319.29521	151.65015	173.06603	2.06365	0.0492605	0.20720156	2.8283992	20	7 11.3	17.5
14441 Atakanoseki	13.5	X	71.32956	318.57208	2.68967	8.82161	0.2785156	0.21808459	2.7335020	20	—	—
14442 1992 SR ₂₅	13.5	X	98.51881	55.30244	354.94868	9.88458	0.1160952	0.19164712	2.9794392	20	2 13.3	17.6
14443 Sekinenomatsu	13.3	X	241.83555	172.07827	197.53265	1.79483	0.0798847	0.20222159	2.8746460	20	5 23.6	17.3
14444 1992 TG ₁	14.5	X	60.82734	326.64195	346.40453	6.15323	0.1883533	0.28638261	2.2794931	20	12 20.6	17.9
14445 Koichi	13.5	X	116.74401	2.90133	10.72182	2.30595	0.2181489	0.18875039	3.0098451	20	2 1.9	17.9
14446 Kinkowan	12.4	X	156.90289	156.97463	218.18822	12.85406	0.1643045	0.19253962	2.9702247	20	3 2.1	17.3
14447 Hosakakanai	13.5	X	107.34564	265.00319	109.70674	9.15279	0.3034313	0.18839491	3.0136300	20	2 4.3	18.0
14448 1992 VQ	13.5	X	10.67121	290.32009	123.49734	1.65838	0.1857414	0.18103266	3.0947917	20	—	—
14449 Myogizinyza	15.0	X	22.47699	264.24672	89.16688	4.90165	0.2014175	0.28434530	2.2903684	20	12 31.4	17.7
14450 1992 WZ ₁	13.0	X	102.01556	341.12211	36.36876	10.62002	0.1026718	0.18630264	3.0361511	20	1 5.8	17.3
14451 1992 WR ₅	12.5	X	86.99577	112.70629	261.20450	9.55354	0.1410437	0.18409301	3.0603976	20	—	—
14452 1992 WB ₉	13.7	X	66.17184	76.67515	346.35685	1.83870	0.0888653	0.18621293	3.0371262	20	1 11.5	17.7
14453 1993 FV ₇	14.3	X	184.23193	276.95443	34.66986	7.50120	0.1116878	0.28423622	2.2909543	20	1 1.9	17.7
14454 1993 FX ₁₇	15.0	X	32.57068	335.90898	123.93974	5.92820	0.1115887	0.28576056	2.2828000	20	—	—
14455 1993 FB ₁₈	14.2	X	250.03578	205.65214	95.42238	4.48419	0.1551732	0.28863481	2.2676198	20	2 23.5	17.5
14456 1993 FK ₂₀	13.6	X	127.54626	123.86613	190.45096	17.28142	0.1471360	0.16905603	3.2392833	20	—	—
14457 1993 FR ₂₃	14.1	X	103.54615	23.97200	359.59145	6.36611	0.2053602	0.28380426	2.2932784	20	1 12.9	16.6
14458 1993 FX ₂₅	15.9	X	141.12328	312.19933	333.50294	4.11214	0.1309126	0.27632873	2.3344542	20	—	—
14459 1993 FY ₂₇	15.1	X	164.71339	22.12526	295.39067	1.93465	0.1708388	0.28193854	2.3033844	20	—	—
14460 1993 FZ ₄₀	14.4	X	160.56798	312.15824	42.36650	3.74181	0.1628469	0.28621440	2.2803862	20	2 6.0	17.7
14461 1993 FL ₅₄	14.3	X	191.92804	255.67132	10.84008	21.31278	0.3268560	0.27760947	2.3272687	20	—	—
14462 1993 GA	15.7	X	86.78992	259.26706	15.04950	6.51547	0.1177368	0.26956638	2.3733342	20	11 16.8	19.2
14463 McCarter	14.7	X	64.87938	15.02417	7.33575	7.11309	0.1183002	0.28028397	2.3124404	20	—	—
14464 1993 HC ₁	15.1	X	305.09997	158.16443	19.98530	26.58877	0.1894651	0.28368431	2.2939248	20	—	—
14465 1993 NB	12.8	X	349.76933	205.47119	130.02108	14.20940	0.2284537	0.25849331	2.4406370	20	10 12.1	15.0
14466 Hodge	14.6	X	149.66209	317.58322	352.22388	17.18212	0.2007215	0.23309362	2.6148641	20	—	—
14467 Vranckx	14.3	X	92.34652	137.51523	314.62661	4.05242	0.1058157	0.24486779	2.5303559	20	3 17.4	17.5
14468 Ottostern	14.6	X	63.19767	124.45493	137.79501	3.27550	0.1629901	0.26096320	2.4252129	20	10 12.5	17.8
14469 Komatsuataka	13.6	X	155.28387	12.80769	343.76438	12.29769	0.2678126	0.23742492	2.5829650	20	2 17.2	18.0
14470 1993 RV ₇	14.1	X	193.81629	309.13887	357.65090	5.79549	0.0900348	0.23631583	2.5910403	20	1 12.7	18.0
14471 1993 SG ₁	13.7	X	158.53126	176.95272	174.52334	13.90414	0.2921178	0.23737796	2.5833056	20	2 11.2	18.3
14472 1993 SQ ₁₄	15.1	X	319.90175	156.65745	231.19607	20.61135	0.1189010	0.36751221	1.9302854	20	11 19.8	15.9
14473 1993 TL ₁₇	13.9	X	189.80714	358.65140	183.45577	9.65193	0.1675381	0.22071151	2.7117693	20	10 28.5	18.2
14474 1993 TL ₂₅	14.9	X	309.74280	150.17811	111.87177	3.20344	0.1055703	0.24282761	2.5445091	20	3 25.9	18.0
14475 1993 VT	14.4	X	126.88948	269.79068	63.57298	12.12015	0.2114151	0.22950628	2.6420417	20	—	—
14476 1993 XW ₂	12.9	X	81.19675	227.04584	129.02142	13.66502	0.1882906	0.22333012	2.6905300	20	—	—
14477 1994 CN	13.4											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14481 1994 PO ₁₂	14.8 ^m	X	93.71676	335.59867	318.11939	3.04473	0.1761268	0.27463191	2.3440600	20	12 24.4	18.5
14482 1994 PK ₁₅	14.5	X	209.16729	303.74808	294.34424	3.26569	0.1354477	0.28101178	2.3084459	20	—	—
14483 1994 PZ ₂₂	16.0	X	288.92266	227.59897	197.15716	0.44613	0.0766396	0.26828450	2.3808882	20	10 19.8	18.4
14484 1994 PU ₃₂	14.9	X	195.27863	81.77423	209.51301	4.43854	0.0327251	0.28377195	2.2934524	20	—	—
14485 1994 RK ₁₁	14.5	X	341.47994	68.91074	296.91658	1.24335	0.2314014	0.26738257	2.3862393	20	11 6.2	16.2
14486 Tuscia	15.3	X	325.61384	260.14116	165.16119	3.26448	0.0699240	0.27151261	2.3619791	20	12 21.2	17.8
14487 Sakaisakae	15.6	X	14.19484	149.83428	199.73208	3.19226	0.2579928	0.26876583	2.3780447	20	12 19.8	18.3
14488 1994 TF ₁₅	13.8	X	287.21176	3.84401	316.47368	2.54212	0.2230466	0.29586649	2.2305170	20	4 18.7	16.7
14489 1994 UW	15.0	X	340.89658	359.88986	12.87803	6.27577	0.1507321	0.26590271	2.3950847	20	11 4.8	17.2
14490 1994 US ₂	14.1	X	191.66191	18.89948	55.80431	3.10474	0.1503199	0.25379201	2.4706853	20	6 17.8	18.0
14491 Hitachiomiya	14.6	X	291.45918	175.29259	257.96589	5.68169	0.3597162	0.22563142	2.6722044	20	9 8.1	17.3
14492 Bistar	13.7	X	241.20897	143.48722	239.61341	7.30024	0.2471386	0.21696003	2.7429395	20	5 22.9	18.0
14493 1994 WJ ₃	14.5	X	42.01561	261.21844	95.88838	9.05538	0.2578514	0.27080344	2.3661009	20	—	—
14494 1994 YP ₂	13.1	X	325.55357	104.12491	94.84386	14.04196	0.1146215	0.23707895	2.5854772	20	1 22.9	16.4
14495 1995 AK ₁	13.1	X	339.28002	339.24728	81.28052	9.77860	0.3167689	0.22784015	2.6549064	20	—	—
14496 1995 BK ₄	13.5	X	233.15991	311.65097	133.97178	14.00012	0.1765309	0.17673452	3.1447669	20	8 6.5	18.4
14497 1995 DD ₁	12.8	X	138.51705	322.27594	357.57585	13.80485	0.1736052	0.22610129	2.6685009	20	—	—
14498 Bernini	13.4	X	213.26198	15.80775	118.36592	3.65831	0.1343038	0.21558572	2.7545842	20	9 24.9	17.6
14499 Satotoshio	14.9	X	296.24559	258.01618	107.18304	4.98712	0.1839213	0.30997667	2.1623038	20	7 22.5	16.4
14500 Kibo	15.6	X	138.29771	161.14668	256.37264	3.80483	0.1003936	0.29573948	2.2311555	20	3 24.2	18.5
14501 Tetsuokojima	15.2	X	199.11022	39.62265	0.48814	5.29339	0.1450526	0.30103253	2.2049247	20	5 8.6	18.6
14502 Morden	15.8	X	59.82006	39.49555	95.35904	5.14891	0.0902611	0.29552876	2.2322160	20	3 24.7	18.0
14503 1995 WW ₄₂	14.9	X	347.74565	354.78637	68.72300	5.62156	0.1667819	0.27989014	2.3146090	20	—	—
14504 Tsumijura	14.9	X	339.55421	297.46907	125.83017	5.03715	0.1385067	0.27649210	2.3335345	20	—	—
14505 Barentine	14.8	X	209.08446	115.92150	75.45775	3.27436	0.1666037	0.27229882	2.3574304	20	12 5.9	18.1
14506 1996 BL ₂	14.6	X	102.81137	156.63118	230.00222	3.94265	0.1700989	0.28545246	2.2844423	20	1 7.6	17.0
14507 1996 CQ ₁	14.8	X	8.41756	40.94087	319.14406	6.21209	0.1315776	0.27095647	2.3652100	20	12 4.8	17.5
14508 1996 DH ₂	14.1	X	158.62960	255.26737	4.83514	10.30562	0.1640772	0.22984380	2.6394545	20	—	—
14509 Lučenec	15.1	X	177.10201	216.86421	257.72189	2.70260	0.0503901	0.25911979	2.4367015	20	7 27.9	18.5
14510 1996 ES ₂	13.7	X	185.59636	12.45896	343.30329	5.68535	0.1953346	0.28807746	2.2705437	20	3 2.3	17.1
14511 Nickel	14.3	X	54.26448	333.92325	357.32647	7.70716	0.1156449	0.26790953	2.3831092	20	12 24.9	17.7
14512 1996 GL ₁	14.3	X	353.28993	59.01754	40.00011	6.68614	0.1345160	0.27851022	2.3222481	20	—	—
14513 Alicelindner	14.0	X	15.00523	216.43254	186.87873	4.38310	0.0592630	0.22796985	2.6538993	20	—	—
14514 1996 GA ₁₈	14.6	X	292.51671	10.45266	205.02308	7.25906	0.1449007	0.23793086	2.5793021	20	—	—
14515 Koichisato	13.0	X	126.27659	259.46648	181.57417	7.55846	0.1284967	0.24484319	2.5305254	20	4 20.7	16.7
14516 1996 HM ₁₁	14.4	X	158.60751	126.76967	191.46919	3.70113	0.0660153	0.23295123	2.6159296	20	—	—
14517 Monitoma	13.9	X	65.57658	49.40483	219.06531	14.38583	0.1288860	0.21353884	2.7721590	20	10 7.6	18.0
14518 1996 RZ ₃₀	12.1	X	278.89743	253.68084	179.00596	6.47810	0.1454096	0.08144682	5.2709223	20	9 4.6	19.0
14519 Ural	13.4	X	173.72736	124.34173	98.11635	2.35905	0.1491477	0.17212805	3.2006261	20	11 23.0	18.6
14520 1997 GC ₁₁	14.8	X	33.64860	5.83332	346.64526	2.62193	0.2137138	0.23402788	2.6079003	20	—	—
14521 1997 GL ₁₅	14.0	X	90.82358	7.39546	8.41123	5.76835	0.2189846	0.24462880	2.5320036	20	—	—
14522 1997 GS ₂₁	14.5	X	231.91807	293.47099	43.74182	8.01868	0.1292302	0.25335894	2.4734999	20	3 28.3	18.2
14523 1997 GV ₂₁	14.1	X	318.03631	40.18244	58.67109	7.43598	0.0600737	0.28038060	2.3119090	20	—	—
14524 1997 GK ₂₃	14.2	X	195.57483	93.34360	176.10579	2.09696	0.0236708	0.19938909	2.9018065	20	—	—
14525 1997 GV ₃₅	15.4	X	146.28110	72.08424	210.79276	6.54658	0.1030476	0.27946992	2.3169287	20	—	—
14526 Xenocrates	15.3	X	355.86035	247.19379	70.34108	2.87389	0.2224791	0.26325310	2.4111287	20	9 22.1	17.0
14527 1997 JD ₁₂	15.3	X	112.52211	149.77807	220.33953	6.38262	0.1169807	0.28585965	2.2822724	20	—	—
14528 1997 JN ₁₅	14.9	X	90.77043	225.74621	100.69839	2.13506	0.2492798	0.27522972	2.3406645	20	—	—
14529 1997 NR ₂	14.7	X	53.48856	241.22351	156.58951	1.58366	0.1199608	0.23135962	2.6279131	20	—	—
14530 1997 PR	14.3	X	85.98211	334.97916	319.82638	8.56057	0.2097729	0.26726396	2.3869452	20	12 19.6	18.2
14531 1997 PM ₂	14.1	X	205.11401	119.02401	304.74244	4.59927	0.1531899	0.20642581	2.8354808	20	6 15.9	18.7
14532 1997 QM	14.2	X	349.76879	54.11522	169.32797	15.08181	0.0112831	0.24413628	2.5354079	20	4 13.0	17.5
14533 Roy	14.4	X	178.63629	147.59200	183.31964	9.27436	0.1833480	0.23882664	2.5728485	20	1 28.1	18.7
14534 1997 QE ₂	13.8	X	252.01505	16.03919	30.60740	4.88155	0.1289341	0.20912248	2.8110522	20	7 17.8	17.9
14535 Kazuyukihanda	13.4	X	232.44316	299.93871	170.00333	23.54107	0.2008791	0.17100743	3.2145935	20	8 31.4	18.5
14536 1997 RY ₂	14.5	X	336.13225	140.60488	200.53771	3.37933	0.1035277	0.214449746	2.7638934	20	8 27.2	17.7
14537 Tyn nad Vltavou	14.6	X	246.85669	304.95107	358.35649	13.01652	0.1883025	0.24340343	2.5404945	20	2 26.6	18.7
14538 1997 RR ₈	13.7	X	238.28403	69.60751	193.20463	10.06236	0.0626988	0.19122947	2.9837756	20	1 10.3	18.4
14539 Clocke Roeland	14.9	X	332.67473	30.18090	178.43360	4.24457	0.1478809	0.24026736	2.5625530	20	2 7.6	17.9
14540 1997 RJ ₁₀	13.2	X	127.61158	250.16361	168.99571	2.07602	0.0424175	0.19562784	2.9388828	20	3 17.0	17.3
14541 1997 SF	14.1	X	353.39067	322.16898	86.60120	6.28290	0.1508475	0.17949411	3.1124514	20	12 20.7	17.7
14542 Karitskaya	13.9	X	327.18925	250.74411	237.85611	10.44891	0.1048450	0.18338775	3.0682388	20	—	—
14543 Sajigawasuseiki	13.8	X	321.28212	263.11046	215.46612	12.70258	0.0651385	0.18069814	3.0986100	20	—	—
14544 Ericjones	12.9	X	78.64297	182.50218	210.26157	9.53002	0.0960102	0.18454706	3.0553758	20	—	—
14545 1997 SK ₂₅	13.7	X	128.10744	214.90583	172.08964	9.97647	0.0964453	0.19147682	2.9812055	20	2 12.8	18.1
14546 1997 TM ₁₈	13.9	X	249.60952	246.32435	26.91447	10.68770	0.1664763	0.23808864	2.5781624	20	1 26.0	18.2
14547 1997 TF ₁₉	14.2	X	51.37429	321.45575	39.95409	1.81503	0.2006191	0.17821120	3.1273708	20	—	—
14548 1997 TJ ₂₄	13.0	X	20.87394	232.61537	227.75410	9.02279	0.0791555	0.18512684	3.0489932	20	—	—
14549 1997 TM ₂₇	13.7	X	178.44204	313.66294	10.77093	2.59371	0.2385683	0.23518515	2.5993382	20	1 25.8	18.1
14550 Lehký	14.3	X	223.64043	123.54243	162.28971	6.60333	0.1442497	0.28097853	2.3086280	20	1 9.0	17.9
14551 Itagaki	13.4	X	54.82857	259.60008	25.51630	7.06999	0.2209434	0.21634042	2.7481743	20	10 30.3	17.2
14552 1997 UX ₂₀	13.5	X	334.34417	319.44170	68.28423	1.70180	0.1297895	0.16996161	3.2277669	20	10 19.2	17.2
14553 1997 UD ₂₅	13.0	X	212.89272	305.13732	93.42887	3.50594	0.0617357	0.20077531	2.8884344	20	5 28.9	17.3
14554 1997 UE ₂₅	13.5	X	28.44840	282.91405	102.78776	3.36409	0.1554519	0.17762217	3.1342810	20	—	—
14555 Shinohara	13.0	X	97.66346	166.54189	207.31657	9.23901	0.0996499	0.18323750	3.0699159	20	—	—
14556 1997 VN ₁	13.4	X	328.23449	230.12363	168.63403	1.33255	0.1384813	0.17112546	3.2131151	20	10 23.1	17.1
14557 1997 VG ₈	13.8	X	185.0499									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14561 1997 WC ₃₄	13.7	X	352.32845	232.03386	131.44829	2.24173	0.1204894	0.16869141	3.2439494	20	10 17.9	17.7
14562 1997 YQ ₁₉	13.1	X	68.23847	180.06781	186.54798	17.35860	0.1769768	0.17820051	3.1274960	20	—	—
14563 1998 AV ₅	14.7	X	134.04288	122.99675	130.39299	4.76856	0.1892308	0.29174480	2.2514759	20	12 13.5	18.3
14564 Heasley	13.2	X	346.94215	181.49984	114.16994	4.71907	0.2274364	0.20503960	2.8482463	20	7 9.6	15.7
14565 1998 EQ ₁₀	14.5	X	358.94972	249.49954	69.96422	4.44828	0.1839768	0.28312417	2.2969493	20	10 3.1	16.3
14566 Hokule'a	13.9	X	68.22649	60.34587	255.65538	10.56802	0.2542540	0.23411464	2.6072559	20	12 26.5	18.2
14567 Nicovincenti	14.4	X	134.22169	75.21882	195.29510	6.05376	0.1075831	0.28717123	2.2753180	20	—	—
14568 Zanotta	14.3	X	2.26547	86.68288	186.16538	6.61679	0.0953488	0.26615502	2.3935708	20	7 9.7	16.9
14569 1998 QB ₃₂	12.4	X	239.85052	37.87591	346.00398	10.88267	0.2839072	0.12407034	3.9812924	20	5 17.3	19.0
14570 Burkam	15.4	X	90.41138	166.67490	243.31243	1.94723	0.1260652	0.29064292	2.2571628	20	1 12.9	17.4
14571 Caralexander	14.2	X	48.47981	145.57493	235.12823	5.40046	0.1549450	0.23606557	2.5928712	20	—	—
14572 Armando	14.9	X	44.82720	249.05778	191.88413	7.60616	0.1065138	0.28652698	2.2787274	20	—	—
14573 Montebugnoli	15.5	X	24.87063	223.06608	191.22258	5.55481	0.1489764	0.28045830	2.3114820	20	—	—
14574 Payette	15.1	X	0.26343	78.59468	352.92860	5.58768	0.1613280	0.27986318	2.3147577	20	—	—
14575 Jamesblanc	14.7	X	53.72865	224.30839	182.79293	2.26841	0.1611127	0.28178761	2.3042068	20	—	—
14576 Jepholley	14.6	X	31.74980	263.95560	155.13249	2.42422	0.1187299	0.27990820	2.3145095	20	—	—
14577 1998 QN ₉₃	13.7	X	359.41938	210.61733	203.23081	14.38596	0.1725950	0.22879324	2.6475281	20	—	—
14578 1998 QO ₉₃	13.4	X	46.79477	227.88503	237.63959	12.86933	0.1260537	0.23855910	2.5747717	20	1 23.9	16.4
14579 1998 QZ ₉₉	15.0	X	219.40253	322.99149	54.67615	3.42399	0.1686940	0.25703443	2.4498633	20	5 1.3	18.6
14580 1998 QW ₁₀₁	14.2	X	57.24127	63.30081	0.55965	14.04336	0.1864497	0.24101282	2.5572663	20	—	—
14581 1998 RT ₄	14.1	X	270.94418	245.00992	170.26753	31.61950	0.4045849	0.21867202	2.7286043	20	7 12.5	18.9
14582 Conlin	14.2	X	94.60843	254.99169	169.37625	5.36429	0.1716346	0.29108549	2.2548743	20	2 16.6	16.5
14583 Lester	14.8	X	70.63038	122.58652	271.61665	1.72467	0.1702354	0.23899330	2.5716522	20	—	—
14584 Lawson	14.9	X	224.58426	242.49432	107.93766	3.14755	0.1875909	0.30044783	2.2077844	20	3 30.6	18.4
14585 1998 RX ₆₄	15.4	X	248.93158	248.17176	188.62445	2.29669	0.1495266	0.26584856	2.3954099	20	8 23.8	18.4
14586 1998 RN ₇₀	14.2	X	11.11226	82.50862	42.81977	7.46485	0.2157527	0.24156007	2.5534026	20	—	—
14587 1998 RW ₇₀	14.7	X	225.25464	243.92303	131.55720	4.48894	0.1474641	0.30249532	2.1978107	20	5 5.9	17.8
14588 Pharrams	15.1	X	331.76574	192.76518	198.06705	6.51787	0.1194862	0.27153952	2.3618230	20	11 16.4	17.4
14589 Stevenbyrnes	15.0	X	172.36868	283.78936	183.60159	5.43934	0.1898270	0.25828612	2.4419419	20	7 10.9	19.0
14590 1998 RL ₈₀	14.7	X	160.14717	86.41995	55.87741	4.11829	0.0198045	0.30938181	2.1650746	20	8 22.5	17.2
14591 1998 SZ ₂₁	15.3	X	335.31078	55.08150	18.24809	2.36898	0.0831267	0.27626424	2.3348175	20	—	—
14592 1998 SV ₂₂	14.9	X	289.56433	207.19762	204.96975	5.91073	0.1039793	0.26713694	2.3877018	20	9 27.7	17.5
14593 Everett	15.3	X	358.61779	44.07793	56.31473	5.11666	0.1432542	0.28177753	2.3042617	20	—	—
14594 Jindrašilhán	14.1	X	107.90464	64.17889	16.91560	13.93648	0.1493118	0.24492019	2.5299950	20	4 1.4	17.4
14595 Peaker	14.7	X	39.74264	82.37185	5.25495	4.81204	0.2344608	0.24026865	2.5625439	20	—	—
14596 Bergstralh	14.6	X	281.81205	253.62656	172.42674	9.07659	0.2144637	0.26853231	2.3794231	20	9 18.8	16.6
14597 Waynerichie	15.0	X	306.15061	16.36580	99.26283	2.46482	0.1800733	0.27799756	2.3251023	20	—	—
14598 Larrysmith	15.8	X	1.39317	244.71052	66.44298	3.11707	0.0668987	0.31224813	2.1518045	20	9 14.4	17.8
14599 1998 SV ₆₄	15.0	X	38.57244	73.03996	76.67905	5.04017	0.1169576	0.29263450	2.2469101	20	3 11.2	17.0
14600 Gainsbourg	15.5	X	353.91147	300.28944	160.49197	4.52302	0.2155117	0.23400506	2.6080698	20	—	—
14601 1998 SU ₇₃	14.9	X	83.11435	266.77217	52.38731	4.25935	0.1886915	0.27824671	2.3237141	20	—	—
14602 1998 SW ₇₄	14.5	X	296.18183	36.30695	50.67752	7.34556	0.1067604	0.27222852	2.3578362	20	12 1.7	16.7
14603 1998 SK ₁₁₅	13.8	X	269.37906	107.22392	12.74373	12.68668	0.1334659	0.22738301	2.6584636	20	11 12.9	17.2
14604 1998 SM ₁₁₅	13.8	X	263.20209	121.20819	330.98524	0.38874	0.1926487	0.17787778	3.1312777	20	9 14.8	18.2
14605 Hyecheonchoi	14.7	X	102.43845	36.98921	13.03968	4.61585	0.1216913	0.28937320	2.2637607	20	2 2.8	17.1
14606 Hifleischer	14.8	X	327.86784	180.23922	154.99282	6.38303	0.1257024	0.26495392	2.4007991	20	8 9.9	16.9
14607 1998 SG ₁₃₂	14.1	X	292.72242	256.02081	338.62409	5.42101	0.1281055	0.29244596	2.2478757	20	1 16.1	17.0
14608 1998 SN ₁₃₅	14.3	X	312.65884	357.94699	40.21880	7.73144	0.0532042	0.26943552	2.3741026	20	10 22.8	16.8
14609 1998 SV ₁₄₅	14.7	X	198.50699	40.24287	112.42854	1.78218	0.1468578	0.26727748	2.3868647	20	10 7.6	18.3
14610 1998 SE ₁₄₆	13.9	X	174.19247	246.27949	203.57823	7.27672	0.2050224	0.20939641	2.8086000	20	6 19.8	18.8
14611 Elsaadawi	15.1	X	45.76390	255.72944	173.09414	4.07848	0.1511765	0.23741211	2.5830579	20	—	—
14612 Irtish	12.8	X	125.60722	77.31212	140.94880	7.31742	0.0977329	0.17619292	3.1512081	20	10 7.2	17.7
14613 Sanchez	13.5	X	340.28175	83.52413	282.64441	1.77231	0.2303465	0.22350019	2.6891654	20	10 17.3	15.8
14614 1998 TX ₂	14.1	X	268.38469	146.34996	6.44856	4.19979	0.1521966	0.18410089	3.0603102	20	12 12.9	18.1
14615 1998 TR ₅	14.6	X	4.07251	4.98671	31.93166	6.10916	0.0608243	0.27424164	2.3462833	20	—	—
14616 Van Gaal	14.2	X	304.37202	149.82890	208.45345	11.33199	0.1523451	0.26316279	2.4116803	20	7 23.7	16.9
14617 Lasvergnas	12.9	X	238.13590	246.27527	110.81954	12.15027	0.1666582	0.20121967	2.8841804	20	4 30.3	17.7
14618 1998 UK ₇	13.4	X	72.92803	11.21947	45.78745	15.86885	0.0806760	0.23911503	2.5707793	20	1 1.9	16.7
14619 Plotkin	15.8	X	9.83739	161.78498	5.64527	4.70670	0.0802130	0.29438658	2.2379861	20	2 12.2	17.9
14620 1998 UP ₁₅	14.7	X	133.15169	75.24510	84.49664	3.12581	0.1002627	0.25806567	2.4433324	20	8 9.1	18.1
14621 Tati	14.7	X	280.96619	328.86707	164.29457	7.79349	0.1059468	0.27363527	2.3497482	20	—	—
14622 Arcadiopoveda	13.3	X	279.48981	313.42027	132.56347	27.29772	0.1585213	0.17490206	3.1666940	20	10 12.5	18.0
14623 Kamoun	15.2	X	15.18877	313.99968	79.45271	7.66835	0.0935207	0.27624433	2.3349296	20	—	—
14624 Prymachenko	14.5	X	291.70677	229.08144	202.81276	6.47266	0.1257611	0.22221002	2.6995640	20	10 18.1	17.3
14625 1998 UH ₃₁	12.2	X	34.86580	348.60036	61.86818	14.33955	0.1409061	0.23148590	2.6269574	20	—	—
14626 1998 UP ₃₀	14.3	X	334.52681	232.31990	216.23119	11.86785	0.2669841	0.22957761	2.6414944	20	—	—
14627 Emilkowalski	13.6	X	26.93231	44.30261	41.43824	17.74851	0.1501815	0.23515238	2.5995797	20	—	—
14628 1998 VX ₁₈	15.1	X	329.33878	71.38122	255.54686	4.13590	0.0613012	0.30708577	2.1758532	20	8 7.0	17.3
14629 1998 VT ₃₀	14.8	X	274.78272	93.08268	277.60464	4.45803	0.1701532	0.30503111	2.1856131	20	6 24.9	17.1
14630 1998 VQ ₃₁	13.2	X	6.36431	155.45457	243.14793	12.77076	0.1644721	0.22744229	2.6580016	20	—	—
14631 Benbryan	12.0	X	185.37757	162.37273	91.25195	15.27899	0.0800060	0.17629500	3.1499915	20	—	—
14632 Flensburg	14.4	X	348.44465	139.47803	269.03592	1.55002	0.2196064	0.22669708	2.6638234	20	—	—
14633 1998 VY ₃₄	14.6	X	62.38084	275.02222	108.86653	6.65238	0.1937060	0.27994031	2.3143325	20	—	—
14634 1998 VE ₃₇	14.0	X	206.84328	84.40141	8.60954	9.04422	0.1817924	0.21317177	2.7753404	20	7 25.8	18.6
14635 1998 VO ₃₈	13.3	X	277.34048	207.00444	241.59380	7.60468	0.1989490	0.17719433	3.1393242	20	9 24.8	17.6
14636 1998 VD ₄₄	14.5	X	274.78171	340.97686	71.09866	7.47612	0.1113003	0.26249308	2.4157805	20	9 6.6	17.4
14637 1998 WN ₁	14.6	X	168.26426	106.87534	218.28426	4.51563	0.1577726	0.28433516	2.2904229	20	1 5.3	17.

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14641 1998 WC ₆	14.8	X	252.97726	225.79735	96.37495	4.34155	0.1889875	0.29807755	2.2194730	20	3 21.8	18.2
14642 1998 WF ₂₄	15.2	X	110.20941	66.24706	257.99570	2.46823	0.1122085	0.27863225	2.3215700	20	—	—
14643 Morata	13.7	X	321.66167	21.84968	335.13279	9.18287	0.2197286	0.26146921	2.4220829	20	8 25.2	15.3
14644 1998 XR ₃	14.1	X	294.12601	124.11740	294.19241	2.71834	0.0702415	0.21867973	2.7285403	20	10 7.4	17.6
14645 1998 XR ₉	14.0	X	77.74804	356.80002	231.66000	5.69592	0.0999462	0.25901058	2.4373864	20	9 1.4	17.3
14646 1998 XO ₂₈	13.5	X	314.05744	69.70218	276.28611	3.08363	0.0131385	0.21328433	2.7743639	20	8 4.9	17.2
14647 1998 XG ₄₈	12.7	X	118.62802	312.34086	66.73014	11.54912	0.1340215	0.19109839	2.9851400	20	2 2.1	17.2
14648 1998 XV ₄₉	12.8	X	176.34472	193.07914	33.37593	12.44969	0.1081877	0.17553486	3.1590789	20	11 29.8	17.8
14649 1998 XW ₆₂	12.8	X	58.49722	55.64459	26.39742	18.28145	0.0864576	0.18933751	3.0036197	20	1 29.9	17.0
14650 1998 YD ₃	14.1	X	151.04115	317.49688	50.29320	3.16305	0.1378318	0.28512533	2.2861893	20	2 10.5	17.3
14651 1998 YE ₅	13.0	X	180.73254	153.10689	105.12228	2.75532	0.1850440	0.17462011	3.1701018	20	—	—
14652 1998 YT ₈	13.7	X	157.32382	271.15138	105.49335	3.34961	0.1006229	0.19871433	2.9083718	20	3 4.9	18.0
14653 1998 YV ₁₁	14.3	X	217.37946	216.46870	77.75077	9.01364	0.3424544	0.28502610	2.2867198	20	1 14.9	18.6
14654 Rajivgupta	13.5	X	337.76711	264.91579	157.92440	1.46658	0.1456194	0.17649943	3.1475588	20	12 11.1	17.1
14655 1998 YJ ₂₂	13.7	X	272.68074	302.79624	161.37987	5.77299	0.0157581	0.21808275	2.7335174	20	11 15.8	17.4
14656 Lijiang	13.1	X	262.20910	349.50163	136.26966	9.92252	0.0382882	0.21932476	2.7231879	20	11 27.9	16.8
14657 1998 YU ₂₇	13.2	X	88.89579	53.59171	289.46067	11.05852	0.2747564	0.22679207	2.6630796	20	—	—
14658 1999 AC ₁₀	12.8	X	220.53047	39.93317	278.45604	8.96646	0.0897565	0.19145019	2.9814819	20	2 22.8	17.5
14659 Gregoriana	13.0	X	264.13361	81.51558	115.11208	11.49361	0.1185585	0.22942063	2.6426992	20	—	—
14660 1999 BO ₁	13.0	X	274.07923	174.25643	108.05046	9.09429	0.1815080	0.23920827	2.5701112	20	2 27.7	16.9
14661 1999 BH ₁₀	13.9	X	38.31326	147.22010	154.21578	4.02096	0.1192552	0.21037037	2.7999246	20	10 16.5	17.6
14662 1999 BF ₁₂	13.8	X	261.22017	215.19932	14.47256	12.50032	0.1075507	0.22901480	2.6458204	20	—	—
14663 1999 BP ₂₅	13.4	X	148.89548	134.63383	165.10771	3.66223	0.0793658	0.22628810	2.6670321	20	—	—
14664 Vandervelden	12.9	X	74.73052	16.19314	332.58856	15.83794	0.0541841	0.17668907	3.1453062	20	—	—
14665 1999 CC ₅	12.8	X	257.35856	181.05364	173.19165	15.94245	0.1702907	0.23754614	2.5820862	20	2 22.3	17.0
14666 1999 CG ₁₇	12.7	X	317.99378	80.76640	115.81183	11.46055	0.0442571	0.18798590	3.0179997	20	1 27.6	16.8
14667 1999 CS ₁₉	13.2	X	199.14343	13.34453	313.95114	9.74960	0.0669952	0.18972587	2.9995194	20	2 15.0	17.7
14668 1999 CB ₆₇	12.5	X	185.68524	86.96117	257.56302	11.29690	0.2266242	0.23619773	2.5919039	20	2 17.5	17.2
14669 Beletic	11.4	X	296.28982	247.90974	195.55477	5.76636	0.1276008	0.12400840	3.9826180	20	10 19.0	16.4
14670 1999 JG ₅₃	13.6	X	54.64783	61.74943	173.13990	5.05160	0.1476643	0.24099030	2.5574256	20	8 17.3	16.9
14671 1999 RM ₄₉	13.9	X	160.19395	14.52677	13.10563	3.76221	0.1689445	0.21774799	2.7363182	20	3 22.9	18.1
14672 1999 RO ₉₄	12.6	X	155.67326	162.54789	20.83773	10.64379	0.0438841	0.18753398	3.0228463	20	9 26.2	17.1
14673 1999 RK ₁₆₉	13.8	X	163.38602	242.29259	238.54483	3.15672	0.1058236	0.17915253	3.1164063	20	7 15.9	18.7
14674 INAOE	14.4	X	6.54428	27.41525	67.57186	3.02083	0.1086664	0.24612232	2.5217501	20	—	—
14675 1999 VS ₇	14.1	X	230.01772	265.51979	226.82852	13.87071	0.1049913	0.23135052	2.6279821	20	10 13.6	17.9
14676 1999 WW ₇	14.7	X	42.93548	154.70962	271.08288	1.03644	0.1244403	0.24335323	2.5408438	20	—	—
14677 1999 XZ	14.2	X	168.76191	205.22876	301.73764	3.56165	0.1556574	0.26962234	2.3730058	20	8 28.9	18.0
14678 Pinney	14.5	X	212.00499	121.28738	275.85262	1.86158	0.1924241	0.26104767	2.4246897	20	5 17.4	18.4
14679 Susanreed	15.7	X	281.61951	27.29090	284.75247	1.78451	0.1799892	0.26678427	2.3898056	20	4 8.6	19.0
14680 1999 XV ₁₀₄	14.2	X	266.25472	67.90454	119.95905	8.43827	0.1453646	0.23752981	2.5822045	20	—	—
14681 Estellechurch	13.9	X	5.74735	3.40814	296.78932	0.93879	0.1740725	0.18067546	3.0988694	20	8 22.7	17.2
14682 Davidhirsch	14.2	X	323.69234	318.57665	188.09248	4.63722	0.1024546	0.24574102	2.5243580	20	—	—
14683 Remy	14.6	X	149.70027	51.14133	222.03837	4.99808	0.1564018	0.28687704	2.2768732	20	—	—
14684 Reyes	14.9	X	306.95326	337.01576	5.61952	3.26331	0.2501070	0.27288289	2.3540653	20	6 27.7	17.1
14685 1999 XM ₁₇₂	13.1	X	268.79471	176.94130	309.26941	10.45913	0.0760683	0.18376607	3.0640263	20	11 18.8	17.4
14686 1999 XA ₁₇₄	13.5	X	39.28490	297.36055	24.91757	6.44899	0.1294646	0.27638716	2.3341252	20	11 27.2	16.4
14687 1999 YR ₁₃	13.9	X	151.53179	332.72359	282.46438	3.12982	0.2117268	0.27580495	2.3374088	20	12 26.5	17.8
14688 2000 AJ ₂	13.6	X	169.81983	48.12952	329.88891	13.10269	0.1172830	0.25293489	2.4762637	20	3 11.1	17.5
14689 2000 AM ₂	14.1	X	295.97504	1.54279	36.47876	5.47054	0.1024718	0.27130329	2.3631938	20	9 22.3	16.4
14690 2000 AR ₂₅	10.6	X	355.51977	5.38007	1.47136	4.44739	0.0316136	0.08296152	5.2065687	20	10 6.1	17.4
14691 2000 AK ₁₁₉	11.9	X	128.74727	19.86471	270.10395	12.21886	0.1506781	0.23295550	2.6158976	20	—	—
14692 2000 AG ₁₃₃	12.5	X	347.93453	112.86035	353.04634	9.61202	0.0595494	0.18898180	3.0073876	20	—	—
14693 Selwyn	14.6	X	163.70408	43.42156	197.27373	1.81839	0.1948045	0.27337310	2.3512503	20	12 19.8	18.2
14694 Skurat	15.1	X	77.58069	160.28756	209.73319	5.33220	0.1875725	0.28674207	2.2775877	20	—	—
14695 2000 AR ₂₀₀	13.0	X	1.85451	248.04583	142.36420	13.61616	0.1702674	0.23848155	2.5753298	20	—	—
14696 Lindawilliams	14.4	X	286.69017	259.75955	250.57189	10.46764	0.0835820	0.23170287	2.6253172	20	—	—
14697 Ronsawyer	15.5	X	224.44512	76.54202	250.59601	0.51204	0.1253617	0.29983298	2.2108017	20	2 29.8	18.8
14698 Scottyoung	15.1	X	60.91758	58.31331	172.43083	1.11187	0.1455867	0.26173592	2.4204372	20	8 23.2	18.0
14699 Klarasmi	13.2	X	207.92929	107.52637	291.31235	6.11532	0.2555318	0.21106370	2.7937895	20	5 13.1	18.1
14700 Johnreid	13.2	X	219.84702	299.18602	162.87880	10.07360	0.1247572	0.21765498	2.7370977	20	8 20.8	17.2
14701 Aizu	13.8	X	221.17909	185.56106	195.20309	13.10862	0.1900035	0.21774084	2.7363782	20	5 7.9	18.4
14702 Benclark	13.0	X	180.64590	109.26649	199.40209	10.06633	0.0998489	0.19120547	2.9840253	20	1 6.1	17.8
14703 2000 AX ₂₄₃	13.7	X	292.56218	110.10459	101.96753	7.56372	0.1094950	0.23927000	2.5696692	20	—	—
14704 2000 CE ₂	14.2	X	350.72972	36.68761	1.79014	12.75553	0.2951664	0.23052312	2.6342666	20	—	—
14705 2000 CG ₂	12.8	X	337.14163	318.72758	5.09494	13.01930	0.1733463	0.21334078	2.7738744	20	8 8.7	15.8
14706 2000 CQ ₂	12.8	X	157.82109	284.36676	28.26961	13.90030	0.1766414	0.23528025	2.5986377	20	—	—
14707 2000 CC ₂₀	11.3	X	304.44059	286.90227	156.05930	13.65624	0.0405569	0.08235627	5.2320467	20	11 2.5	18.2
14708 Slaven	14.7	X	149.92940	188.41859	169.76196	3.30869	0.2322256	0.29453560	2.2372311	20	2 3.6	17.9
14709 2000 CO ₂₉	13.9	X	151.16442	65.93893	175.50681	4.62011	0.0861867	0.22613071	2.6682695	20	12 5.6	18.0
14710 2000 CC ₃₃	16.6	X	153.72184	295.67628	201.14345	0.79094	0.0541357	0.31046954	2.1600148	20	8 3.0	19.2
14711 2000 CG ₃₆	13.9	X	117.16774	299.03413	307.20027	6.66061	0.0559246	0.22182971	2.7026486	20	10 31.3	17.9
14712 2000 CO ₅₁	13.1	X	95.92849	62.20914	309.43314	10.20200	0.1312250	0.18867100	3.0106821	20	—	—
14713 2000 CS ₆₃	13.0	X	341.80427	111.94424	325.21823	12.63196	0.0086476	0.22827688	2.6515724	20	—	—
14714 2000 CQ ₆₅	14.3	X	9.14687	296.73123	346.35319	1.76099	0.1760598	0.25937164	2.4351239	20	8 17.9	16.4
14715 2000 CD ₇₁	13.1	X	146.88299	295.73870	317.29895	8.20837	0.0534152	0.17496100	3.1659827	20	11 21.1	18.0
14716 2000 CX ₈₁	13.0	X	22.10902	206.80437	119.14681	2.39128	0.1					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14721 2000 CW ₉₁	13.4	X	120.37028	203.95502	159.75813	13.97191	0.1741940	0.23865504	2.5740816	20	1 10.5	17.2
14722 2000 CK ₉₂	13.0	X	78.65900	320.42782	347.22699	8.92883	0.0703332	0.17485776	3.1672288	20	11 25.0	17.8
14723 2000 CB ₉₃	13.0	X	296.56902	95.75764	351.86447	16.77118	0.1910228	0.17800657	3.1297671	20	10 21.0	16.9
14724 SNO	14.6	X	212.25391	193.60863	123.44680	3.13786	0.0727909	0.19816406	2.9137534	20	2 17.1	19.0
14725 2000 DC ₃	12.9	X	306.88379	351.53687	51.77508	11.63325	0.0538488	0.17106752	3.2138407	20	10 5.7	17.3
14726 2000 DD ₃	12.6	X	349.59127	332.43446	112.69790	8.65450	0.0261883	0.18162108	3.0881037	20	—	—
14727 Suggs	15.8	X	30.25946	273.32614	172.59594	3.67834	0.1029948	0.28557192	2.2838052	20	—	—
14728 Schuchardt	14.1	X	252.04764	187.38312	139.92931	4.56350	0.1548005	0.29811222	2.2193009	20	3 30.1	17.3
14729 2000 DK ₁₆	13.7	X	215.64695	133.00447	7.86324	4.29715	0.0858867	0.21873963	2.7280421	20	10 9.7	17.5
14730 2000 DS ₁₉	13.9	X	343.72832	339.95554	19.86950	1.46728	0.2087385	0.17490662	3.1666389	20	10 1.2	17.0
14731 2000 DY ₆₈	13.4	X	136.28323	103.35257	180.58418	10.47833	0.1070345	0.17830924	3.1262244	20	12 30.3	18.5
14732 2000 DX ₇₁	13.4	X	29.47867	313.49647	24.61914	1.11986	0.1862647	0.17185741	3.2039855	20	11 19.6	17.4
14733 2000 DV ₇₄	13.6	X	244.55536	273.21018	178.58202	15.22859	0.1697320	0.21962443	2.7207102	20	8 29.2	17.5
14734 Susanstoker	15.2	X	125.38699	139.86863	190.84975	5.57560	0.2030714	0.28039756	2.3118158	20	—	—
14735 2000 DV ₈₆	13.9	X	287.84845	249.32054	33.49974	5.26854	0.1583771	0.29750831	2.2223032	20	3 11.4	16.8
14736 2000 DW ₉₇	13.2	X	45.33207	8.58500	9.90539	9.22139	0.1402636	0.18440854	3.0569057	20	—	—
14737 2000 DU ₉₉	14.1	X	344.21572	131.34290	0.06293	13.87029	0.1129420	0.23847958	2.5753440	20	—	—
14738 2000 DW ₁₀₆	12.7	X	5.57878	28.25276	24.82391	11.18690	0.1587187	0.18265384	3.0764522	20	—	—
14739 Edgarchavez	12.8	X	101.96247	139.90317	241.65453	9.62488	0.1208958	0.19079669	2.9882860	20	1 9.9	17.0
14740 2000 ED ₃₂	13.4	X	132.25976	302.81949	13.15052	5.49263	0.1444927	0.18444111	3.0565457	20	—	—
14741 Teamequinoux	14.3	X	41.45806	160.69952	271.15349	7.23163	0.1990005	0.28729133	2.2746838	20	—	—
14742 2000 EQ ₅₆	13.8	X	138.89879	216.27856	114.54425	2.22316	0.1329788	0.18452061	3.0566677	20	—	—
14743 2016 P-L	13.7	X	317.19403	136.40109	197.78475	6.60992	0.1467933	0.21145387	2.7903518	20	7 9.9	17.1
14744 2092 P-L	14.1	X	338.93311	10.76147	323.45563	5.14393	0.1246321	0.22894673	2.6463447	20	8 25.2	16.8
14745 2154 P-L	14.5	X	203.16120	256.61748	202.47534	12.98766	0.1048670	0.21062732	2.7976470	20	7 28.4	19.1
14746 2164 P-L	15.0	X	354.24204	50.98863	290.37494	2.18373	0.1865306	0.26307893	2.4121927	20	10 18.7	17.0
14747 2541 P-L	15.0	X	330.86953	321.55114	29.60633	1.02358	0.2169989	0.26236675	2.4165560	20	9 10.4	16.3
14748 2620 P-L	14.4	X	324.01623	162.79034	29.28381	1.63844	0.1173577	0.23814502	2.5777555	20	1 10.5	17.7
14749 2626 P-L	13.9	X	283.05622	76.48417	153.84912	1.93368	0.0902543	0.18851822	3.0123158	20	1 19.2	18.3
14750 2654 P-L	14.9	X	342.09490	309.12416	139.77935	1.63825	0.1816953	0.18391973	3.0623195	20	—	—
14751 2688 P-L	15.0	X	175.68343	201.32893	125.96941	1.63908	0.0987401	0.18813238	3.0164330	20	1 24.7	19.5
14752 3005 P-L	13.6	X	223.21303	346.22900	279.68211	9.33872	0.0575008	0.18753386	3.0228476	20	—	—
14753 4592 P-L	14.1	X	41.49738	160.34748	159.77404	5.32772	0.1740856	0.21528472	2.7571512	20	11 22.7	17.9
14754 4806 P-L	15.1	X	296.12898	338.83880	160.28595	2.63840	0.1093096	0.23396498	2.6083677	20	—	—
14755 6069 P-L	14.0	X	37.67530	291.68159	330.98117	1.64279	0.1609962	0.21279052	2.7786544	20	8 29.9	17.2
14756 6232 P-L	14.5	X	326.90601	231.54529	227.36682	4.81921	0.1775044	0.18391847	3.0623335	20	—	—
14757 6309 P-L	15.0	X	241.29079	102.42543	192.17479	6.99598	0.1518018	0.23971427	2.5664932	20	2 8.5	19.2
14758 6519 P-L	13.3	X	352.71549	93.42690	29.21207	3.42037	0.1857219	0.18620496	3.0372127	20	—	—
14759 6520 P-L	15.1	X	64.71327	240.28916	169.22101	4.87724	0.1344561	0.28541863	2.2846228	20	—	—
14760 6595 P-L	15.0	X	81.31738	102.18683	168.49690	1.32037	0.1551056	0.26471683	2.4022323	20	11 11.0	18.4
14761 6608 P-L	16.0	X	7.30170	44.75153	12.61290	6.02372	0.3130266	0.23323188	2.6138306	20	—	—
14762 6647 P-L	14.4	X	3.29862	306.58375	34.43939	3.02322	0.2267975	0.26386774	2.4073830	20	11 12.9	16.6
14763 6793 P-L	15.4	X	246.46478	225.04296	44.87165	3.81492	0.1374379	0.28859851	2.2678100	20	1 11.4	18.9
14764 Kilauaea	14.7	X	215.00757	298.95665	196.77783	21.21835	0.0781568	0.36235522	1.9485567	20	11 1.1	16.6
14765 9519 P-L	14.7	X	21.84453	289.92281	29.85401	4.67792	0.0715935	0.21435496	2.7651181	20	10 10.3	18.1
14766 9594 P-L	13.7	X	116.05682	102.19133	50.75903	2.08502	0.2016825	0.16092281	3.3475287	20	6 26.9	18.5
14767 1137 T-1	14.4	X	335.51596	45.55676	285.08474	3.13938	0.1714395	0.30662314	2.1780412	20	8 25.8	15.7
14768 1238 T-1	14.4	X	268.77653	345.76988	339.50303	1.58036	0.0706850	0.20303631	2.8669509	20	4 29.4	18.5
14769 2175 T-1	15.1	X	263.49022	304.06509	176.85910	5.80286	0.0908502	0.27236225	2.3570644	20	11 28.5	17.7
14770 2198 T-1	14.2	X	227.19934	32.14625	83.44086	2.85605	0.1607737	0.17189249	3.2035496	20	9 8.6	19.1
14771 4105 T-1	13.4	X	116.65141	132.92303	147.66949	1.29927	0.1513717	0.17032301	3.2231994	20	12 9.6	18.5
14772 4195 T-1	14.0	X	10.31321	141.23012	95.65436	3.18617	0.0146895	0.20372273	2.8605072	20	5 28.4	17.9
14773 4264 T-1	14.2	X	2.68020	254.14028	29.17412	8.32802	0.1848637	0.20502897	2.8483448	20	7 30.9	17.2
14774 4845 T-1	13.1	X	328.71282	359.23012	97.18025	3.31890	0.1272027	0.19451199	2.9501117	20	—	—
14775 1139 T-2	14.5	X	38.77222	96.39837	183.72679	6.76498	0.1797070	0.21011771	2.8021687	20	9 26.9	18.1
14776 1282 T-2	13.4	X	252.23125	125.04411	250.90187	1.15961	0.0790979	0.20535881	2.8452941	20	6 13.2	17.3
14777 2078 T-2	15.3	X	72.15977	178.29028	185.86984	4.51565	0.1660746	0.27866814	2.3213707	20	—	—
14778 2216 T-2	13.5	X	107.56685	274.83669	31.74145	0.82952	0.2048428	0.17156878	3.2075779	20	—	—
14779 3072 T-2	13.2	X	303.77046	242.01895	83.54103	3.19926	0.0714543	0.20604142	2.8390063	20	6 16.9	16.9
14780 1078 T-3	14.2	X	280.60694	269.10897	237.25994	14.09125	0.0699403	0.23386503	2.6091108	20	—	—
14781 1107 T-3	13.0	X	302.72097	68.25821	241.09887	13.01167	0.1546138	0.20118627	2.8844996	20	5 11.4	16.5
14782 3149 T-3	15.9	X	323.91667	285.72471	173.54596	1.92442	0.1593674	0.27914327	2.3187358	20	—	—
14783 3152 T-3	13.7	X	263.34000	254.42249	50.62409	2.81631	0.0995042	0.19785889	2.9167486	20	3 26.6	17.9
14784 3268 T-3	16.0	X	276.48570	318.78506	205.35799	5.88312	0.0439416	0.28109221	2.3080055	20	—	—
14785 3508 T-3	14.6	X	193.27861	270.04908	205.38100	5.47245	0.0875346	0.27212276	2.3584471	20	8 15.5	18.0
14786 4052 T-3	14.9	X	305.21359	151.36816	54.89301	7.68027	0.0518031	0.28601612	2.2814399	20	1 5.2	17.7
14787 5038 T-3	13.4	X	204.74120	163.13732	126.34280	10.35015	0.0308934	0.19256829	2.9699299	20	1 7.6	17.7
14788 5172 T-3	13.1	X	156.72048	125.62441	121.12060	9.99363	0.0383105	0.18667525	3.0321095	20	12 11.7	17.6
14789 GAISH	12.9	X	84.46379	161.75885	200.21164	5.81613	0.0933105	0.17844479	3.1246411	20	—	—
14790 Beletskij	13.4	X	72.54462	31.54948	321.12916	6.25020	0.3112802	0.22247074	2.6974545	20	—	—
14791 Atreus	11.8	X	341.74640	185.75304	194.77489	2.93697	0.1614990	0.08448017	5.1439833	20	10 2.6	17.8
14792 Thyestes	12.1	X	329.34009	244.88042	154.77065	11.36731	0.0830393	0.08373947	5.1742720	20	10 12.5	18.6
14793 1975 SE ₂	15.1	X	310.23482	332.23541	40.30394	6.84661	0.1387566	0.26152253	2.4217537	20	9 5.6	17.5
14794 Konetskij	13.3	X	101.34392	183.27242	213.07856	9.65708	0.1152580	0.18781285	3.0198533	20	1 25.6	17.6
14795 Syoyou	13.2	X	315.47143	301.34948	346.56678	2.75398	0.2361947	0.18564885	3.0432750	20	4 19.6	17.0
14796 1977 XF ₂	13.1	X	213.24668	335.20806	81.93393	8.21355	0.1342572	0.17443574	3.1723352	20	6 16.2	18.1
14797 1977 XZ ₂	13.3	X	271.73808	316.03853	343.45010	1.25405						

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14801 1980 PE ₃	13.7	X	295.14746	209.35370	64.88888	15.65040	0.1579196	0.24089247	2.5581179	20	3 22.1	17.4
14802 1981 DJ ₂	13.8	X	339.62462	151.29644	213.56685	14.76872	0.1453306	0.21230697	2.7828719	20	10 5.5	16.9
14803 1981 EL ₇	14.9	X	156.81118	231.05713	200.07714	12.26134	0.1937104	0.25661425	2.4525368	20	5 13.6	18.9
14804 1981 EW ₁₃	15.1	X	149.75181	244.91725	270.99799	1.76507	0.0797132	0.26041037	2.4286440	20	8 20.5	18.4
14805 1981 ED ₁₅	14.8	X	243.87337	125.90775	288.54168	3.08327	0.0805191	0.25982564	2.4322864	20	7 26.9	18.0
14806 1981 EV ₂₅	13.8	X	21.19987	198.86382	173.69402	8.61004	0.1630310	0.21636048	2.7480044	20	12 29.3	17.4
14807 1981 EN ₂₆	14.5	X	150.71916	359.30107	186.10897	8.13627	0.1529617	0.21186643	2.7867282	20	9 24.7	19.0
14808 1981 EV ₂₇	14.4	X	326.53767	180.62440	178.27527	4.89410	0.0627351	0.21114642	2.7930598	20	9 6.5	17.9
14809 1981 ES ₂₈	14.5	X	196.63513	134.52430	4.05201	5.80608	0.1377902	0.26309249	2.4121098	20	9 17.2	18.1
14810 1981 EM ₃₁	15.6	X	66.78762	140.78783	162.37676	1.31745	0.1099327	0.26388232	2.4072943	20	12 1.6	18.8
14811 1981 ED ₄₃	13.8	X	48.35641	293.63439	10.02620	7.62212	0.2174097	0.21159987	2.7890681	20	11 12.3	17.8
14812 Rosario	14.0	X	63.93032	225.39398	28.20384	13.96062	0.2075984	0.25752566	2.4467469	20	10 8.4	17.4
14813 1981 QW ₂	15.0	X	306.14528	272.07078	40.55612	3.72543	0.1772260	0.29982031	2.2108639	20	5 15.2	17.0
14814 Gurij	14.0	X	305.89975	88.00846	289.59668	10.73507	0.2473757	0.22616840	2.6679730	20	8 6.5	16.8
14815 Rutberg	14.3	X	353.15967	163.96492	171.27657	4.47718	0.2355289	0.30323323	2.1942437	20	10 30.5	15.7
14816 1981 UQ ₂₂	14.5	X	13.77557	165.94580	130.70143	3.64990	0.0844634	0.27500286	2.3419516	20	9 8.2	16.8
14817 1982 FJ ₃	15.1	X	224.65660	226.71991	1.42125	1.74303	0.1780484	0.27628012	2.3347280	20	—	—
14818 Mindeli	12.9	X	240.47930	148.13450	217.80692	8.23779	0.1689695	0.19884945	2.9070541	20	5 8.5	17.5
14819 Nikolaylavrov	14.6	X	158.88345	134.60942	243.28259	3.43330	0.2109715	0.24653717	2.5189204	20	3 8.5	18.8
14820 Aizuyaichi	15.2	X	327.49034	165.68604	205.97092	3.31284	0.2054008	0.31065213	2.1591683	20	10 25.5	16.2
14821 Motaeno	15.0	X	228.62296	301.50425	208.86415	3.57681	0.1145116	0.28548825	2.2842513	20	11 16.9	17.8
14822 1984 SR ₅	12.9	X	20.95548	351.66424	17.14661	5.42963	0.1034495	0.16876937	3.2429504	20	12 2.4	17.2
14823 1984 ST ₅	14.7	X	206.82576	36.06377	342.39531	1.75044	0.1895312	0.26557917	2.3970295	20	4 18.7	18.6
14824 1985 CF ₂	14.3	X	195.28219	359.28898	175.55396	9.33556	0.1665311	0.26775198	2.3840440	20	11 1.3	17.9
14825 Fieber-Beyer	14.8	X	240.98611	331.08747	17.96347	6.41707	0.3004723	0.24639609	2.5198818	20	4 6.4	19.2
14826 Nicollier	13.5	X	177.31738	311.77247	10.28398	2.33492	0.2614261	0.18256461	3.0774545	20	1 27.9	18.9
14827 Hypnos	18.3	X	52.71831	238.10932	57.96619	1.98059	0.6662280	0.20580996	2.8411345	20	12 21.9	23.8
14828 1988 QT ₁	14.8	X	301.37146	21.03383	17.14252	2.49795	0.2154130	0.26152003	2.4217692	20	9 14.3	16.7
14829 Povalyaeva	13.6	X	103.69581	73.38900	238.48014	8.77452	0.2792900	0.26867472	2.3785823	20	—	—
14830 1986 XR ₅	13.4	X	100.50224	342.07155	31.19507	4.15486	0.2984966	0.18314409	3.0709597	20	1 26.9	17.8
14831 Gentileschi	13.2	X	38.72283	150.90259	294.75400	12.24315	0.1274397	0.23708125	2.5854605	20	—	—
14832 Alechinsky	14.2	X	114.28094	78.24847	307.38403	5.72958	0.1242008	0.28395539	2.2924646	20	1 17.0	16.8
14833 Vilenius	14.4	X	156.35497	355.95051	352.13642	5.29530	0.1789543	0.28368479	2.2939222	20	1 26.3	17.7
14834 Isaev	15.0	X	179.61357	135.93373	216.68077	4.51153	0.2358011	0.28589589	2.2820795	20	2 22.2	18.8
14835 Holdridge	13.1	X	34.14200	133.29069	233.35362	22.99304	0.2771768	0.27289824	2.3539771	20	—	—
14836 Maxfrisch	13.0	X	187.72617	78.89782	143.89237	15.23448	0.1083848	0.17325939	3.1866780	20	12 10.5	18.1
14837 1988 RN ₂	13.7	X	224.15059	193.97179	263.11571	5.93786	0.1601587	0.21261267	2.7802038	20	8 13.5	18.0
14838 1988 RK ₆	14.8	X	58.61922	176.38477	180.19718	6.67068	0.1405837	0.28529093	2.2853045	20	—	—
14839 1988 RH ₈	14.8	X	246.70886	28.08098	341.00121	4.93929	0.1840736	0.27111520	2.3642867	20	5 13.9	18.3
14840 1988 RR ₁₁	16.0	X	331.65446	293.03294	44.47702	1.07692	0.1910257	0.30776787	2.1726371	20	8 31.2	16.8
14841 1988 TU	14.4	X	275.90458	180.53969	223.87216	2.97134	0.2206343	0.27425464	2.3462092	20	8 4.4	17.0
14842 1988 TN ₁	13.2	X	65.47970	343.66011	20.81481	13.51823	0.1693065	0.22254528	2.6968521	20	—	—
14843 Tanna	15.1	X	165.65018	17.89839	34.02645	6.05148	0.1258763	0.29583141	2.2306933	20	4 21.5	18.0
14844 1988 VT ₃	14.4	X	80.25858	216.82435	245.76552	3.99008	0.1157488	0.29170793	2.2516656	20	3 9.4	16.8
14845 Hegel	13.0	X	346.98223	210.19587	209.13143	4.90166	0.2399799	0.12553859	3.9501891	20	12 10.2	17.2
14846 Lampedusa	13.9	X	211.84907	47.85990	109.22061	10.03408	0.1751973	0.27200441	2.3591312	20	10 29.2	17.4
14847 1989 CY ₂	15.4	X	351.73157	217.96314	220.19629	5.15925	0.1365564	0.27860540	2.3217192	20	—	—
14848 1989 GK ₁	13.9	X	165.06274	303.17743	2.83867	9.23100	0.0645016	0.18066674	3.0989691	20	—	—
14849 1989 GQ ₁	14.8	X	93.07618	73.57876	248.61057	2.09007	0.1934617	0.26999531	2.3708199	20	—	—
14850 Nagashimacho	15.1	X	224.24193	28.94944	306.60963	2.78179	0.1504341	0.30800921	2.1715021	20	3 9.1	18.4
14851 1989 SD	14.6	X	252.71581	343.78266	30.09498	2.35546	0.1492333	0.31215728	2.1522220	20	6 1.9	17.1
14852 1989 SE	14.3	X	201.82008	348.44478	7.80104	7.65528	0.2935876	0.24289874	2.5440123	20	3 19.7	19.0
14853 Shimokawa	13.9	X	179.51627	355.15942	27.60896	6.70341	0.3059218	0.24142084	2.5543842	20	4 5.3	18.5
14854 1989 SO ₁	14.4	X	315.45419	53.47826	80.79929	5.09595	0.1222311	0.23045705	2.6347701	20	—	—
14855 1989 SP ₉	13.6	X	141.50269	240.78504	184.48628	5.77494	0.0822607	0.21026442	2.8008651	20	4 13.9	17.6
14856 1989 SY ₁₃	14.1	X	271.25199	217.33003	296.21339	12.03963	0.1089571	0.22785732	2.6547730	20	—	—
14857 1989 TT	14.3	X	116.26732	221.51276	173.23407	16.98107	0.2836639	0.23590384	2.5940562	20	2 27.5	18.3
14858 1989 UW ₃	13.8	X	173.78549	120.65072	234.47316	12.36995	0.1955142	0.23799524	2.5788369	20	2 19.0	18.4
14859 1989 WU ₁	13.7	X	170.06861	112.72417	226.37279	9.98232	0.2767566	0.23618653	2.5919859	20	2 3.0	18.4
14860 1989 WD ₃	14.0	X	236.11811	228.22403	241.73015	5.08523	0.1508028	0.21805984	2.7337089	20	9 13.6	18.0
14861 1990 DA ₂	13.7	X	320.94351	234.87835	164.82779	6.13647	0.0543743	0.21535366	2.7565627	20	10 26.5	17.2
14862 1990 EQ ₂	15.0	X	170.68291	216.19822	254.40835	3.53240	0.0885235	0.30407813	2.1901772	20	7 16.6	17.9
14863 1990 OK	14.3	X	100.61209	95.87851	249.63298	6.77331	0.1981978	0.27584446	2.3371856	20	—	—
14864 1990 QK ₄	15.0	X	20.02810	203.66156	157.09514	2.66050	0.2191418	0.26814242	2.3817291	20	—	—
14865 1990 QE ₇	14.0	X	29.60330	319.18815	142.87789	2.13764	0.1209179	0.24418068	2.5351005	20	—	—
14866 1990 RF ₁	13.4	X	149.28891	56.73857	224.52541	0.86790	0.1954182	0.17426206	3.1744426	20	—	—
14867 1990 RW ₄	12.9	X	141.14087	345.06718	302.42846	4.15852	0.1371881	0.17355910	3.1830085	20	—	—
14868 1990 RA ₇	14.5	X	274.84039	52.30656	164.06703	10.07441	0.2231510	0.28055534	2.3109490	20	—	—
14869 1990 ST ₈	15.0	X	113.79022	278.85524	51.78794	3.51406	0.1918147	0.27424279	2.3462767	20	—	—
14870 1990 SM ₁₄	13.7	X	40.59211	186.96297	142.68260	4.24568	0.2236154	0.26703368	2.3883173	20	12 20.6	17.0
14871 Pyramus	13.9	X	38.20441	314.30574	5.71788	0.98429	0.2193313	0.16442744	3.2997917	20	11 12.4	18.3
14872 Hoher List	14.3	X	325.31668	27.52644	337.59843	1.97216	0.2087917	0.26148399	2.4219917	20	9 18.6	15.7
14873 Shoyo	13.7	X	24.45400	325.80169	43.53309	8.45905	0.2247216	0.26655817	2.3911568	20	—	—
14874 1990 US ₄	13.7	X	193.15712	218.81253	76.40553	7.06746	0.1961816	0.27697733	2.3308084	20	—	—
14875 1990 WZ ₁	14.3	X	95.69188	147.09876	159.95156	5.33084	0.1952864	0.26777949	2.3838807	20	—	—
14876 Dampier	13.9	X	158.15896	10.00945	103.15563	7.31105	0.0791849	0.25265781	2.4780738	20	7 3.4	17.3
14877 Zauberflote												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14881 1991 PK	15.6 ^m	X	261.34201	211.96215	153.76729	2.69737	0.1976402	0.30143656	2.2029540	20	5 26.3	18.5
14882 1991 PP ₁₁	13.8	X	327.56922	122.74545	185.08674	9.60094	0.3032877	0.20087012	2.8875254	20	5 31.6	16.6
14883 1991 PT ₁₁	13.3	X	51.62810	208.58056	180.16497	3.68919	0.2279316	0.17998713	3.1067650	20	—	—
14884 1991 PH ₁₆	14.4	X	280.25590	355.29037	335.12542	6.60406	0.1245906	0.29967615	2.2115729	20	5 7.9	17.2
14885 Paskoff	12.2	X	25.16580	105.17354	328.80718	10.00672	0.0699921	0.18092621	3.0960055	20	—	—
14886 1991 RL ₉	14.8	X	198.04441	150.91776	212.12375	2.01365	0.1778238	0.25925624	2.4358464	20	3 23.2	18.6
14887 1991 RQ ₁₄	13.8	X	37.60322	286.47046	58.70899	1.93744	0.1635392	0.17395909	3.1781273	20	12 6.2	18.2
14888 Kanazawashi	14.9	X	246.99236	160.71242	203.18832	5.79817	0.1677773	0.29806608	2.2195299	20	5 10.9	18.1
14889 1991 VX ₂	12.8	X	42.21341	74.80714	301.30795	4.37549	0.1492738	0.17387885	3.1791051	20	—	—
14890 1991 VG ₃	14.2	X	124.73706	179.28990	218.88101	25.83430	0.1689570	0.28901803	2.2656149	20	2 13.3	17.9
14891 1991 VY ₄	14.2	X	126.41355	334.04165	98.40354	3.73241	0.1507700	0.25549010	2.4597256	20	4 12.1	17.7
14892 1991 VE ₅	14.1	X	309.24332	222.28577	110.15249	3.75146	0.2011955	0.30091787	2.2054848	20	6 19.2	15.9
14893 1992 DN ₆	13.6	X	128.60904	185.50756	136.75143	3.13351	0.2421739	0.27089881	2.3655456	20	—	—
14894 1992 EA ₈	14.3	X	3.87755	285.89016	192.95010	1.61279	0.0359249	0.20621922	2.8373743	20	—	—
14895 1992 EJ ₂₄	14.5	X	331.52591	251.17600	132.04015	9.86994	0.2400668	0.26534046	2.3984669	20	11 14.7	16.3
14896 1992 EB ₂₆	15.5	X	141.07109	121.48182	348.55611	9.06681	0.1808603	0.25418203	2.4681572	20	6 15.7	19.6
14897 1992 GE ₅	13.9	X	108.38726	286.32285	49.22535	2.82949	0.0735595	0.19696590	2.9255578	20	—	—
14898 1992 JR ₃	14.3	X	351.08332	338.57774	265.16712	2.11080	0.1024182	0.24601570	2.5224787	20	5 4.7	16.9
14899 1992 LS	14.1	X	297.80533	101.23111	203.01256	4.06414	0.1638816	0.24470969	2.5314457	20	4 24.8	17.1
14900 1992 RH ₅	14.1	X	136.03909	295.44769	66.18680	3.32476	0.0995757	0.19201334	2.9756496	20	1 24.8	18.4
14901 Hidatakayama	13.1	X	145.26931	106.96754	188.46065	12.32357	0.1715774	0.22271045	2.6955185	20	—	—
14902 Miyairi	12.3	X	184.95086	272.43858	97.25102	11.99169	0.1215690	0.18908250	3.0063196	20	3 30.0	17.3
14903 1993 DF ₂	14.7	X	333.62932	70.51732	151.18629	4.70592	0.0584966	0.29183231	2.2510258	20	3 5.4	17.0
14904 1993 FM ₁₄	15.4	X	107.21934	57.37173	41.96269	6.14979	0.0823642	0.29315046	2.2442729	20	4 12.3	17.9
14905 1993 FV ₂₇	15.5	X	18.51677	214.69909	293.06886	1.77285	0.0968291	0.28849883	2.2683323	20	1 29.5	17.9
14906 1993 NJ ₁	15.5	X	88.56509	171.12083	132.79474	3.29346	0.1720486	0.26657779	2.3910394	20	12 30.2	19.2
14907 1993 OF ₃	15.6	X	80.96578	319.53025	326.06333	1.20929	0.1257814	0.26425354	2.4050393	20	11 25.9	19.1
14908 1993 OQ ₄	15.3	X	160.43922	98.37034	143.98386	2.66034	0.1723410	0.26897583	2.3768068	20	12 19.5	18.9
14909 Kamchatka	13.5	X	187.71770	142.33245	157.75440	13.44241	0.1598614	0.23816035	2.5776448	20	—	—
14910 1993 QR ₄	14.0	X	64.46911	98.98518	12.18552	3.53583	0.0791593	0.23979782	2.5658970	20	3 1.9	17.1
14911 Fukamatsu	14.2	X	231.97956	350.28812	3.12875	14.15892	0.2039426	0.24496561	2.5296822	20	4 7.6	18.4
14912 1993 RP ₃	13.2	X	355.70141	165.85452	262.30199	12.14367	0.2517905	0.22793708	2.6541537	20	—	—
14913 1993 RP ₇	14.6	X	237.59231	316.55442	191.84030	5.85983	0.0492898	0.22344353	2.6896196	20	11 22.5	18.2
14914 Moreux	14.6	X	291.10488	322.82052	177.67647	8.65058	0.0364525	0.22679517	2.6630553	20	—	—
14915 1993 UM ₈	14.0	X	92.58322	259.50242	185.31888	14.83696	0.1034871	0.23624441	2.5915625	20	3 8.6	17.4
14916 1993 VV ₇	13.7	X	306.48886	301.60388	110.12559	33.61083	0.3328602	0.21764853	2.7371518	20	10 5.1	17.0
14917 Taco	12.6	X	265.09859	57.94825	324.22595	12.36790	0.2089868	0.20578024	2.8414080	20	6 19.8	17.0
14918 1994 BP ₄	13.0	X	347.67787	62.49809	138.98129	10.21903	0.1598459	0.19010104	2.9955717	20	3 3.2	16.4
14919 Robertohaver	14.1	X	147.58180	14.62924	157.52497	12.47762	0.0947380	0.26648671	2.3915842	20	9 11.4	17.4
14920 1994 PE ₃₃	13.9	X	18.28460	253.60635	293.17352	3.95076	0.0850203	0.29236136	2.2483093	20	3 23.5	16.0
14921 1994 QA	13.9	X	256.94438	121.28445	69.33672	25.10987	0.2233433	0.27675390	2.3320627	20	—	—
14922 Ohyama	14.5	X	155.08838	354.95126	9.00105	5.44871	0.2096037	0.28439958	2.2900770	20	2 17.2	18.0
14923 1994 TU ₃	14.0	X	86.98474	141.09097	211.55064	22.62090	0.2680955	0.27701212	2.3306132	20	—	—
14924 1994 VZ	15.1	X	135.85210	113.93526	221.78178	5.88264	0.1512048	0.27890087	2.3200792	20	—	—
14925 Naoko	14.5	X	231.85318	313.79953	27.08504	6.76894	0.1943370	0.28967145	2.2622065	20	3 25.3	18.0
14926 Hoshide	14.9	X	141.68669	161.46495	190.83730	3.98743	0.2275783	0.28073965	2.3099374	20	1 20.0	18.3
14927 Satoshi	13.9	X	270.16945	246.51317	68.49214	7.12800	0.1920899	0.29144592	2.2530149	20	3 31.8	17.2
14928 1994 WN ₁	14.4	X	355.41502	266.19458	70.86264	2.53515	0.1928091	0.26226241	2.4171968	20	10 17.6	16.5
14929 1994 WP ₁	14.6	X	59.68927	200.05869	277.01187	3.84873	0.1646659	0.24191083	2.5509337	20	3 9.9	17.4
14930 1994 WL ₃	14.7	X	129.06469	299.40189	139.44816	4.30537	0.1494235	0.24689483	2.5164871	20	4 23.6	18.4
14931 1994 WR ₃	12.9	X	62.61658	339.32924	78.38475	14.87854	0.1603675	0.23731628	2.5837532	20	—	—
14932 1994 YC	14.8	X	317.47942	183.18052	315.12539	4.89650	0.1623905	0.23149229	2.6269090	20	—	—
14933 1994 YX	14.2	X	92.21950	141.50026	287.90873	4.37297	0.1320715	0.23973347	2.5663562	20	2 20.6	17.5
14934 1995 BP	13.6	X	232.45579	309.77818	315.72403	13.18894	0.2563342	0.23107588	2.6300639	20	—	—
14935 1995 BP ₁	13.9	X	62.74989	307.60848	88.99204	13.52536	0.2595097	0.23118248	2.6292554	20	—	—
14936 1995 BU ₂	13.0	X	292.77824	310.26128	299.16335	14.07542	0.0952942	0.23815657	2.5776721	20	2 12.2	16.5
14937 Thirsk	15.5	X	211.65147	125.28975	175.33839	2.87497	0.1707278	0.23451726	2.6042710	20	1 21.8	19.9
14938 1995 DN	12.5	X	46.31096	116.15647	165.64612	9.32935	0.1373036	0.21166943	2.7884571	20	10 5.1	16.2
14939 Norikura	15.2	X	218.17384	272.64118	211.14588	4.30350	0.1126040	0.21516357	2.7581860	20	9 16.4	19.4
14940 Freiligrath	13.6	X	62.12821	0.61092	130.67493	5.12070	0.0403503	0.23758226	2.5818244	20	3 22.3	16.8
14941 Tomswift	14.4	X	247.37700	76.22137	9.17995	9.01936	0.1298209	0.21473510	2.7618538	20	9 3.1	18.3
14942 Stevebaker	13.3	X	325.40139	229.62503	202.18781	15.79232	0.0919800	0.17375044	3.1806712	20	12 1.4	17.5
14943 1995 VD ₁₉	14.7	X	302.93367	296.72160	272.09779	4.95204	0.1402964	0.28575204	2.2828453	20	—	—
14944 1995 YV	15.3	X	29.06663	333.20720	102.22529	6.19427	0.1314670	0.28367334	2.2939839	20	—	—
14945 1995 YM ₃	14.3	X	31.67518	204.08282	114.35691	6.06934	0.0857396	0.31018969	2.1613137	20	11 16.1	16.8
14946 1996 AN ₂	15.0	X	329.78596	0.52825	119.52963	6.10311	0.1320068	0.27923337	2.3182370	20	—	—
14947 Luigibussolino	15.0	X	12.33115	250.31141	218.52744	4.24538	0.1056028	0.28296729	2.2977982	20	—	—
14948 Bartuška	14.6	X	188.30441	17.55555	316.77573	6.07129	0.2093272	0.28682540	2.2771466	20	2 7.6	18.3
14949 1996 BA ₂	14.5	X	217.75390	177.69915	103.73993	7.10355	0.1100180	0.28229751	2.3014313	20	—	—
14950 1996 BE ₂	13.7	X	19.62707	86.47726	84.81835	6.37828	0.0974868	0.29043065	2.2582625	20	3 8.8	15.8
14951 1996 BS ₂	13.8	X	242.64494	218.23099	125.81401	7.48092	0.2018528	0.29386991	2.2406084	20	4 9.6	17.3
14952 1996 CQ	14.1	X	37.22329	223.14362	33.55951	5.98570	0.1252817	0.25731206	2.4481008	20	8 24.3	16.9
14953 Bevilacqua	15.3	X	319.01415	272.19043	239.26352	5.72326	0.1356870	0.28074845	2.3098891	20	—	—
14954 1996 DL	15.2	X	271.54036	330.07271	151.37327	4.63586	0.1082206	0.27164430	2.3612157	20	12 9.5	17.6
14955 1996 DX	14.7	X	251.60033	9.57791	101.30601	3.06439	0.1694613	0.26848122	2.3797250	20	10 14.1	17.5
14956 1996 DB ₁	14.1	X	57.62052	300.47741	343.08146	6.58680	0.0976888	0.26307233	2.4122331	20	10 20.9	17.3
14957 1996 HQ												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
14961 d'Auteroche	14.4	X	11.41650	241.99940	72.48556	3.47528	0.1632260	0.25579732	2.4577557	20	10 9.1	16.8
14962 Masanoriabe	12.2	X	244.96541	341.17764	207.61268	21.25274	0.0226435	0.17235992	3.1977551	20	—	—
14963 Toshikazu	13.6	X	125.62680	193.15555	140.46500	1.60048	0.1698244	0.17705144	3.1410131	20	—	—
14964 Robertobacci	13.7	X	165.45380	53.33288	193.72209	9.54042	0.0681083	0.17123609	3.2117311	20	12 16.1	18.7
14965 Bonk	14.0	X	8.88463	140.16377	97.82312	14.44844	0.2023074	0.25846482	2.4408163	20	6 5.7	15.9
14966 Jurijvega	15.0	X	192.57474	179.27333	150.28393	8.82294	0.2105488	0.28356497	2.2945683	20	2 5.1	18.7
14967 Madrid	14.5	X	172.33107	61.08587	303.83369	6.03480	0.1442110	0.24067842	2.5596345	20	3 1.1	18.6
14968 Kubáček	14.0	X	81.12681	296.42808	150.30894	5.44326	0.0962284	0.23977486	2.5660609	20	2 24.1	17.0
14969 Willacather	14.6	X	246.55257	120.70843	169.57470	3.41501	0.1412356	0.28505133	2.2865849	20	2 5.1	17.9
14970 1997 QA ₂	14.6	X	75.53280	352.16428	266.09517	4.04539	0.0311389	0.21394203	2.7686750	20	9 23.0	18.4
14971 1997 QN ₃	13.8	X	9.32883	357.39449	23.26884	7.27291	0.1289246	0.21794042	2.7347077	20	12 18.2	17.2
14972 Olihainaut	14.8	X	17.21209	130.94435	187.61885	3.50240	0.1948171	0.25713402	2.4492303	20	10 29.5	17.3
14973 Rossirosina	13.7	X	227.01215	151.49735	302.39823	4.49237	0.0671188	0.21342661	2.7731307	20	8 24.5	17.6
14974 Počátky	14.2	X	331.63067	157.75036	338.39101	3.87016	0.0859744	0.23090362	2.6313719	20	—	—
14975 Serasin	14.4	X	61.94622	106.72307	201.90029	3.53603	0.0645596	0.21831047	2.7316162	20	11 17.6	18.0
14976 Josefcapek	14.5	X	47.67164	165.96174	206.21281	4.73227	0.1568690	0.17862308	3.1225614	20	—	—
14977 Bressler	14.0	X	142.83137	55.59876	4.46818	1.72069	0.0913963	0.19773984	2.9179193	20	4 9.3	18.4
14978 1997 SD ₂₅	13.3	X	43.87705	252.68374	195.03391	10.41200	0.0770322	0.18629969	3.0361831	20	1 7.4	17.4
14979 1997 TK ₁	14.1	X	311.52931	153.67642	329.39561	4.00539	0.0951269	0.22879715	2.6474980	20	—	—
14980 Gustavbrom	14.4	X	78.19180	294.22618	89.40657	2.92812	0.1306550	0.18390154	3.0625215	20	—	—
14981 Uenoiwakura	13.5	X	212.79822	328.56255	72.37101	2.82540	0.0693006	0.20160907	2.8804654	20	5 31.0	17.5
14982 1997 TH ₁₉	14.4	X	163.86942	324.91960	1.02031	3.31328	0.3206611	0.27701835	2.3305782	20	1 17.2	18.4
14983 1997 TE ₂₅	14.7	X	188.39847	158.90811	193.72059	3.93659	0.2955854	0.23799746	2.5788209	20	3 5.3	19.4
14984 1997 TN ₂₆	13.7	X	172.46233	309.65113	27.97021	13.06550	0.1908107	0.23420719	2.6065691	20	2 7.9	18.2
14985 1997 UU ₂	13.5	X	203.36242	29.75871	313.21802	1.58865	0.0249579	0.20003344	2.8955717	20	5 24.8	17.5
14986 1997 UJ ₃	13.5	X	95.02960	359.62243	304.34343	2.83194	0.0821464	0.21851717	2.7298933	20	12 20.9	17.5
14987 1997 UV ₃	13.9	X	324.28473	210.87723	213.20408	0.68846	0.1450468	0.17261278	3.1946313	20	11 17.9	17.4
14988 Tryggvason	13.5	X	125.01401	319.21897	52.14534	8.42401	0.3431348	0.18873755	3.0099816	20	2 22.5	18.7
14989 Tutte	12.9	X	344.61227	307.53782	48.06009	16.52066	0.2838640	0.21304080	2.7764777	20	10 19.7	15.1
14990 Zermelo	13.8	X	114.86057	252.49509	189.08572	1.52807	0.0775625	0.19214166	2.9743245	20	4 3.4	17.9
14991 1997 UV ₁₄	13.1	X	286.31716	141.10628	201.29121	8.10375	0.0318684	0.20140397	2.8824206	20	6 20.3	17.1
14992 1997 UY ₁₄	13.6	X	177.25028	320.81090	62.53847	2.93917	0.1234771	0.19481795	2.9470221	20	4 2.8	18.2
14993 1997 UC ₁₅	13.6	X	52.32683	254.22948	124.50537	1.08800	0.2033217	0.17942678	3.1132300	20	—	—
14994 Uppenkamp	12.5	X	91.86560	111.64166	62.39637	9.20328	0.0238492	0.15692549	3.4041373	20	6 23.3	17.3
14995 Archytas	13.0	X	104.61967	155.48838	224.30895	3.24684	0.0928776	0.18314843	3.0709111	20	1 9.6	17.3
14996 1997 VY ₂	14.4	X	139.60115	247.04981	108.92818	2.37559	0.1504940	0.23260750	2.6185060	20	1 21.3	18.3
14997 1997 VD ₄	12.8	X	25.65488	65.40613	208.50950	1.37288	0.0310976	0.20615693	2.8379457	20	8 8.2	16.6
14998 Ogosemachi	13.8	X	322.73139	174.02642	157.91854	2.36137	0.0711845	0.20522341	2.8465454	20	7 24.4	17.3
14999 1997 VX ₈	12.6	X	120.00488	304.80099	66.57319	13.96022	0.1885555	0.23008468	2.6376121	20	1 26.5	16.5
15000 CCD	14.3	X	129.71640	338.16277	247.05665	8.26821	0.1085481	0.21447893	2.7640525	20	10 20.8	18.6
15001 Fuzhou	13.3	X	155.83102	339.34159	48.52305	11.47454	0.1336645	0.19221068	2.9736126	20	3 23.5	18.1
15002 1997 WN ₃₈	13.9	X	342.68788	314.39768	69.26673	2.31236	0.1416102	0.16945854	3.2341518	20	10 28.4	17.5
15003 Midori	12.8	X	229.57721	91.13478	233.18172	9.22761	0.1109835	0.19110048	2.9851182	20	3 8.9	17.6
15004 Vallerani	12.7	X	161.33289	330.83709	71.66521	11.47346	0.1139832	0.19216728	2.9740602	20	4 14.1	17.4
15005 Guerrero	13.5	X	45.81347	307.15431	57.73776	5.87750	0.1543529	0.17470582	3.1690649	20	—	—
15006 Samcristoforetti	13.5	X	0.17565	29.30947	80.61206	12.82669	0.0337067	0.17464283	3.1698268	20	—	—
15007 Edoardopozio	13.3	X	76.31587	39.41100	333.71574	9.14300	0.1763305	0.23789141	2.5795872	20	—	—
15008 Delahodde	15.0	X	76.82272	53.47146	24.72286	5.60508	0.2107068	0.24119149	2.5560032	20	2 25.8	17.8
15009 1998 QF ₂₇	16.1	X	285.42688	247.47035	174.94776	22.88294	0.1144513	0.36192001	1.9501184	20	11 6.2	17.8
15010 1998 QL ₉₂	14.0	X	321.31237	226.92853	177.40869	2.02075	0.2109560	0.26934725	2.3746213	20	11 18.8	15.4
15011 1998 QM ₉₂	14.3	X	94.75252	103.44250	279.73146	3.62510	0.2543167	0.23898763	2.5716928	20	1 14.9	17.2
15012 1998 QS ₉₂	13.8	X	144.37452	252.33609	91.77446	6.54539	0.2216915	0.28774236	2.2723062	20	1 11.9	17.1
15013 1998 QH ₉₃	13.5	X	317.77709	212.21037	344.94539	11.23137	0.2276223	0.22689175	2.6622995	20	—	—
15014 Annagekker	15.5	X	133.62142	134.95550	217.91639	3.58231	0.1149943	0.29851623	2.2172981	20	5 8.2	18.5
15015 1998 RG ₇₅	13.8	X	323.24911	279.26031	182.21303	13.03155	0.1301239	0.23252186	2.6191489	20	—	—
15016 1998 SO ₁	15.0	X	235.73253	321.18216	148.82549	1.49292	0.1408862	0.26636126	2.3923351	20	9 24.1	18.1
15017 Cuppy	15.7	X	11.48288	348.43673	63.81237	6.21067	0.1611757	0.27777299	2.3263553	20	—	—
15018 1998 SM ₃₄	14.4	X	333.35506	51.89073	14.76223	10.56801	0.2230330	0.27474006	2.3434448	20	—	—
15019 Gingold	15.1	X	353.16239	101.73692	134.32703	3.09737	0.1289902	0.30071872	2.2064584	20	4 23.7	16.7
15020 Brandonimber	14.7	X	185.50425	13.69984	104.08437	2.24542	0.1353444	0.26242876	2.4161752	20	8 8.9	18.4
15021 Alexkardon	15.3	X	325.13613	26.21689	38.74957	2.63936	0.1800106	0.27310907	2.3527654	20	12 30.2	17.1
15022 1998 SM ₁₄₄	15.5	X	236.21649	245.10579	209.51600	2.23531	0.1787484	0.26410941	2.4059142	20	8 27.7	18.9
15023 Ketover	15.6	X	354.71987	148.00370	269.77619	1.83888	0.1488887	0.27647103	2.3336531	20	—	—
15024 1998 TB	13.9	X	210.56037	354.07017	110.20116	5.95209	0.1157776	0.25912143	2.4366912	20	8 20.4	17.3
15025 Uwontario	13.7	X	220.54885	71.31261	31.23829	7.27449	0.1062308	0.17223980	3.1992416	20	8 24.2	18.6
15026 Davidscott	14.2	X	7.84168	26.40631	73.09004	5.49331	0.1691094	0.23531829	2.5983576	20	—	—
15027 1998 UF ₈	13.8	X	347.81386	141.21235	50.55080	7.28911	0.0865809	0.29020556	2.2594300	20	2 12.9	16.2
15028 Soushiyov	14.9	X	217.59316	14.04690	59.70374	3.76321	0.1459498	0.25765055	2.4459561	20	7 14.2	18.5
15029 1998 VC ₅	14.8	X	217.04175	23.61028	119.20645	1.17575	0.0666893	0.26663152	2.3907182	20	10 25.6	17.9
15030 Matthewkroll	14.8	X	346.40558	215.08304	244.79122	1.79787	0.1619714	0.23243943	2.6197681	20	—	—
15031 Lemus	14.2	X	291.67598	40.49843	69.55460	5.44161	0.1277473	0.27199230	2.3592012	20	12 27.1	16.2
15032 Alexlevin	14.5	X	323.09672	126.33677	286.72455	5.51051	0.1180349	0.26983382	2.3717657	20	11 30.9	16.7
15033 1998 VY ₂₉	10.6	X	295.96121	164.74329	258.41245	12.02237	0.2032140	0.08360616	5.1797708	20	9 2.3	17.3
15034 Décines	14.3	X	139.90970	129.63730	77.84918	5.79000	0.1510713	0.26314628	2.4117812	20	10 20.7	18.1
15035 1998 WS ₃	14.2	X	130.10079	125.91207	57.87197	4.54093	0.0812647	0.30598419	2.1810723	20	9 13.1	17.0
15036 Giovannianselmi	14.2	X	159.07871	125.73921	329.58094	5.82263	0.0893415	0.25479822	2.4641764	20	6 10.3	17.8
15037 Chassagne	13.1	X	264.81394	66.40879	179.20194	10.09290	0.0573437	0.18767998	3.0212784			

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15041 Paperetti	15.0	X	214.16879	147.35107	181.47744	5.77466	0.1647196	0.29075962	2.2565588	20	2 21.1	18.4
15042 Anndavgui	13.5	X	358.31666	81.65123	309.11622	16.92481	0.3133006	0.17937485	3.1138309	20	12 30.1	16.9
15043 1998 XW ₉	13.6	X	198.88924	262.06253	174.77023	2.25298	0.0530463	0.20498554	2.8487471	20	7 1.2	17.6
15044 1998 XY ₁₆	13.5	X	64.71562	205.00261	166.53174	5.49139	0.0554845	0.18028102	3.1033878	20	—	—
15045 Walesdymond	14.7	X	35.82843	185.30593	115.11511	1.57738	0.0513930	0.21297758	2.7770271	20	10 1.6	18.2
15046 1998 XY ₄₁	13.7	X	329.01945	22.38344	31.17051	2.66633	0.1981239	0.26874865	2.3781460	20	12 20.7	15.4
15047 1998 XG ₄₉	14.1	X	250.00535	338.14984	68.10100	7.78635	0.1185963	0.25620156	2.4551698	20	7 19.1	17.5
15048 1998 XQ ₆₃	14.4	X	250.47988	91.17935	326.91337	8.37801	0.1063330	0.26008074	2.4306957	20	8 7.3	17.6
15049 1998 XA ₉₀	13.8	X	108.41640	223.02075	219.99270	12.22224	0.1449961	0.24294448	2.5436930	20	3 31.6	17.5
15050 Heddal	13.3	X	112.07288	335.30919	315.13791	3.90369	0.1231745	0.17191475	3.2032730	20	12 15.3	18.4
15051 1998 YK ₁	14.1	X	210.60402	260.76368	125.81266	3.60651	0.0698532	0.20244400	2.8725401	20	5 11.4	18.3
15052 Emileschweitzer	13.8	X	6.00921	90.40896	313.15761	4.08907	0.1425269	0.17664427	3.1458380	20	—	—
15053 Bochníček	15.5	X	21.84212	35.17836	179.37316	3.16760	0.0416668	0.29668664	2.2264044	20	5 14.0	17.7
15054 1998 YS ₅	12.6	X	111.19448	288.43905	110.28937	11.53799	0.1077714	0.19024927	2.9940155	20	2 12.6	16.9
15055 1998 YS ₉	13.9	X	225.08293	18.97226	137.26703	3.01390	0.1356278	0.17137186	3.2100346	20	10 27.5	18.8
15056 Barbaradixon	13.1	X	147.73539	63.59769	299.62903	1.83320	0.0892966	0.18948865	3.0020223	20	2 6.4	17.6
15057 Whitson	14.2	X	291.29138	301.83920	152.26096	2.10552	0.1509220	0.17379390	3.1801410	20	11 1.9	18.1
15058 Billcooke	13.7	X	35.01602	283.61488	123.82362	5.82834	0.1765736	0.18210414	3.0826402	20	—	—
15059 1998 YL ₂₇	13.4	X	30.57793	119.50221	202.25584	2.32086	0.0735463	0.21510927	2.7586502	20	10 25.1	17.0
15060 1999 AD	14.3	X	109.85643	237.65078	190.76541	3.67547	0.1055436	0.28926916	2.2643034	20	3 4.9	16.9
15061 1999 AL	13.3	X	29.64937	246.62056	147.54390	7.28390	0.2300584	0.18090093	3.0962940	20	—	—
15062 1999 AL ₂	13.2	X	88.06620	78.31643	331.74844	8.94559	0.1040440	0.18826028	3.0150666	20	1 28.2	17.2
15063 1999 AQ ₃	13.9	X	261.47007	276.02304	68.57667	3.52160	0.0686378	0.19969992	2.8987947	20	5 16.5	18.0
15064 1999 AC ₄	13.7	X	248.21166	146.82140	25.21237	1.91385	0.1278344	0.17564166	3.1577981	20	12 5.2	18.2
15065 1999 AJ ₄	15.5	X	359.35735	161.51636	217.02267	1.52436	0.2233168	0.26830913	2.3807425	20	12 31.3	17.9
15066 1999 AX ₇	12.4	X	188.71620	230.58120	359.76579	9.06868	0.0458656	0.17508737	3.1644592	20	12 23.5	17.2
15067 1999 AM ₉	13.4	X	289.57453	256.51378	58.64126	9.74104	0.1561733	0.21061534	2.7977531	20	5 2.1	17.1
15068 Wiegert	14.0	X	287.67015	93.43533	346.54897	1.74314	0.2267104	0.12494950	3.9625951	20	9 19.0	19.0
15069 1999 AU ₂₁	13.7	X	131.82441	237.57821	156.99311	2.01479	0.0893483	0.18973197	2.9994551	20	2 26.9	18.1
15070 1999 BK ₈	13.9	X	208.07225	322.60004	58.03015	5.56004	0.1796028	0.29255246	2.2473301	20	4 23.8	17.3
15071 Hallerstein	13.1	X	137.22145	49.76433	35.41285	6.26817	0.1789374	0.24510653	2.5287125	20	5 10.4	17.1
15072 Landolt	15.3	X	45.41256	123.50760	221.40041	5.10050	0.1384025	0.26697325	2.3886777	20	—	—
15073 1999 BK ₁₃	13.0	X	358.09721	253.61464	165.31983	15.69020	0.1409517	0.17338849	3.1850961	20	—	—
15074 1999 BN ₁₄	13.4	X	291.46360	106.66104	52.06734	1.99288	0.1219436	0.18017766	3.1045745	20	—	—
15075 1999 BF ₁₅	14.0	X	347.00062	183.03914	206.83756	1.86670	0.2023977	0.26560292	2.3968866	20	12 21.4	16.1
15076 Joellewis	14.1	X	356.16706	124.35109	168.80573	6.65506	0.1339522	0.25175707	2.4839810	20	7 30.1	16.4
15077 Edyalge	13.1	X	71.97860	75.19167	52.20318	2.78222	0.0455635	0.19516310	2.9435466	20	4 3.1	16.9
15078 1999 CW	12.5	X	300.07938	8.75520	120.76086	7.92399	0.1124117	0.17586391	3.1551371	20	—	—
15079 1999 CO ₁₆	13.8	X	249.87764	295.47117	27.30745	2.16934	0.0270089	0.19473774	2.9478313	20	4 9.9	18.0
15080 1999 CR ₂₀	13.7	X	273.24675	19.18990	70.56172	4.88596	0.0961536	0.21583956	2.7524241	20	10 18.2	17.1
15081 1999 CU ₂₅	13.3	X	219.95656	313.00616	84.83335	3.11426	0.0764233	0.20155634	2.8809678	20	6 3.7	17.5
15082 1999 CT ₃₀	12.3	X	327.57845	124.53238	339.28605	9.06093	0.0072948	0.17603601	3.1530803	20	—	—
15083 Tianhuili	14.2	X	275.68641	215.34902	124.80746	3.54938	0.1814801	0.24639382	2.5198973	20	5 12.3	17.5
15084 1999 CH ₃₈	13.8	X	90.23167	234.19614	131.21238	3.60691	0.1858510	0.18047750	3.1011350	20	—	—
15085 1999 CB ₄₃	12.9	X	205.62302	192.73747	91.30375	1.96210	0.1332442	0.18057327	3.1000384	20	1 4.5	17.8
15086 1999 CH ₆₀	14.2	X	292.37508	276.92657	174.21339	1.37805	0.1408550	0.171133024	3.2105544	20	10 31.1	18.1
15087 1999 CZ ₆₁	13.3	X	322.89720	302.99722	180.75911	11.44359	0.0781610	0.17912973	3.1166708	20	—	—
15088 Licitra	14.9	X	81.42796	265.49697	98.44020	7.09058	0.1429312	0.27476881	2.3432813	20	—	—
15089 1999 CQ ₈₂	13.2	X	218.90998	259.66514	38.96651	10.22244	0.1650113	0.23611227	2.5925293	20	1 29.4	17.6
15090 1999 CA ₉₇	13.0	X	257.97694	152.09088	162.59651	2.11501	0.0840138	0.19315097	2.9639540	20	4 3.0	17.2
15091 Howell	13.8	X	119.56725	312.47290	305.08336	7.27345	0.0763092	0.17003053	3.2268946	20	11 9.4	18.8
15092 Beegees	12.1	X	94.17117	122.67204	356.00531	9.69854	0.0286684	0.18889425	3.0083167	20	4 14.8	16.3
15093 Lestermackey	14.8	X	249.04568	209.83807	221.85178	3.29740	0.1571298	0.27713873	3.2299033	20	8 15.9	17.8
15094 Polymele	11.6	X	320.98763	4.30003	50.32261	12.98892	0.0952098	0.08383270	5.1704348	20	10 18.0	18.1
15095 1999 WO ₃	14.5	X	257.55838	264.39031	233.61383	5.13305	0.0863908	0.28210928	2.3024549	20	12 15.7	17.0
15096 1999 XH ₁₂	13.0	X	172.28043	236.92733	163.08282	5.39896	0.0663867	0.20887401	2.8132810	20	4 16.1	17.1
15097 1999 XP ₃₈	12.7	X	298.50144	118.38485	99.82499	11.10210	0.0785401	0.19484128	2.9467869	20	1 24.3	16.8
15098 2000 AY ₂	14.9	X	134.14632	322.39523	105.07799	3.07422	0.1583010	0.25503076	2.4626782	20	4 14.5	18.5
15099 Janestrom	14.7	X	278.22270	195.85608	259.31112	6.26402	0.1928330	0.22763130	2.6565300	20	10 16.6	17.9
15100 2000 AP ₁₄₄	13.1	X	115.65841	334.89162	328.16748	21.74908	0.0142058	0.22931802	2.6434875	20	—	—
15101 2000 AY ₁₅₀	13.2	X	333.08404	54.47581	148.27662	27.14281	0.1972659	0.19625739	2.9325947	20	2 1.5	16.8
15102 2000 AA ₂₀₂	11.8	X	273.83148	106.68714	301.48782	20.82555	0.0363119	0.16937353	3.2352339	20	8 18.9	16.6
15103 2000 AN ₂₀₄	13.9	X	12.43211	238.89222	189.95733	12.71563	0.1540174	0.23937631	2.5689083	20	—	—
15104 2000 BV ₃	12.8	X	236.01923	285.88443	113.77417	9.80092	0.0512313	0.21207069	2.7849385	20	6 28.3	16.8
15105 2000 BJ ₄	12.3	X	141.09193	112.59178	41.41876	16.30474	0.0547042	0.17116722	3.2125926	20	8 6.7	17.4
15106 Swanson	14.5	X	322.56238	248.99674	209.01453	4.08431	0.2076191	0.23353903	2.6115383	20	—	—
15107 Toepperwein	14.5	X	221.19836	14.39898	266.03336	4.59667	0.1766710	0.28770065	2.2725258	20	—	—
15108 2000 CT ₆₁	13.2	X	56.95391	106.91219	200.40950	6.99074	0.0185737	0.17314967	3.1880241	20	10 25.6	17.7
15109 Wilber	14.9	X	123.74840	33.42720	218.32704	6.65571	0.0809713	0.27101433	2.3648733	20	11 28.1	18.1
15110 2000 CE ₆₂	12.9	X	202.48994	316.25182	301.35009	8.62839	0.0540625	0.18477507	3.0528617	20	—	—
15111 Winters	14.8	X	330.54364	9.44639	29.88248	5.35958	0.2457293	0.27378904	2.3488683	20	12 8.9	16.2
15112 Arlenewolfe	14.3	X	264.11135	144.06645	72.07703	3.80095	0.1453188	0.28237705	2.3009991	20	—	—
15113 2000 CO ₉₆	13.7	X	67.52399	59.41751	174.80566	6.69694	0.1244975	0.26095107	2.4252881	20	9 2.0	16.8
15114 2000 CY ₁₀₁	12.9	X	232.08697	19.97844	186.30492	6.87104	0.1013545	0.17863086	3.1224708	20	—	—
15115 Yvonneroe	14.3	X	132.94675	228.92739	343.21775	0.82967	0.1316373	0.26612155	2.3937715	20	10 17.4	18.0
15116 Jaytate	15.0	X	12.23450	235.07411	122.22321	1.43095	0.2355692	0.26874318	2.3781783			

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15121 2000 EN ₁₄	15.0	X	20.89575	200.51326	168.13709	3.56493	0.1629665	0.27358058	2.3500614	20	—	—
15122 2000 EE ₁₇	14.4	X	264.30775	277.49339	205.33627	0.28217	0.1693537	0.17748421	3.1359051	20	10 27.8	18.7
15123 2000 EP ₃₆	12.9	X	186.20533	162.79824	53.17795	1.65952	0.1314216	0.17536409	3.1611294	20	11 27.7	17.7
15124 2000 EZ ₃₉	13.6	X	223.33446	166.63301	37.56231	2.55265	0.1405339	0.22777059	2.6554469	20	—	—
15125 2000 EZ ₄₁	14.1	X	335.53121	242.92429	148.47525	0.37396	0.1580125	0.17264930	3.1941809	20	10 26.4	17.7
15126 Brittanvanderson	15.7	X	188.65496	151.26652	178.37340	4.18678	0.1731047	0.28785406	2.2717183	20	1 30.6	19.3
15127 2000 EN ₄₅	12.2	X	134.35443	6.06959	1.33757	20.48683	0.2756496	0.18956167	3.0012514	20	2 22.8	17.4
15128 Patrickjones	14.8	X	105.13018	214.89578	359.75529	8.60895	0.0713078	0.21270646	2.7793864	20	9 11.4	18.7
15129 Sparks	14.2	X	327.40206	27.83775	352.27999	4.63351	0.2053431	0.26610984	2.3938417	20	10 20.4	15.8
15130 2000 EU ₄₉	13.7	X	79.39734	202.86644	339.44124	2.28033	0.1502718	0.20465581	2.8518061	20	7 9.1	17.7
15131 Alanalda	13.7	X	200.78707	225.12960	61.29961	6.62577	0.1159365	0.23277272	2.6172668	20	—	—
15132 Steigmeyer	15.7	X	282.14553	243.34466	194.76909	6.39043	0.0994108	0.26897298	2.3768236	20	10 26.2	18.2
15133 Sullivan	14.3	X	341.46544	343.27869	271.53829	3.45179	0.1209176	0.29895688	2.2151188	20	4 28.1	16.3
15134 2000 ED ₉₂	13.2	X	246.53746	231.50641	228.00431	3.95365	0.1094515	0.17101943	3.2144432	20	9 13.1	17.9
15135 2000 EG ₉₂	13.4	X	228.84523	94.83302	191.95181	12.12296	0.1661279	0.23790680	2.5794759	20	1 18.1	17.8
15136 2000 EE ₉₃	12.6	X	173.20266	46.07753	128.82674	15.93512	0.0483611	0.16992031	3.2282899	20	10 6.6	17.6
15137 2000 EL ₉₃	13.2	X	285.17293	267.14830	323.79737	14.32402	0.0583048	0.24037329	2.5618002	20	1 21.4	16.8
15138 2000 EQ ₉₃	13.3	X	15.98057	33.80956	315.91095	11.90443	0.1836486	0.22028319	2.7152833	20	11 24.4	16.8
15139 Connormcarty	14.9	X	256.37396	292.53008	205.13420	10.80272	0.1343885	0.22568186	2.6718062	20	11 21.7	18.3
15140 2000 EB ₉₇	14.1	X	73.86592	238.26090	349.53658	5.64387	0.1126782	0.25694305	2.4504441	20	8 31.7	17.2
15141 2000 EP ₁₀₆	13.7	X	252.54745	248.36534	348.99033	13.68720	0.1486980	0.23709613	2.5853524	20	—	—
15142 2000 EF ₁₀₈	13.1	X	77.29364	115.38402	146.65030	9.70469	0.1152718	0.21404339	2.7678009	20	10 17.1	17.2
15143 2000 EX ₁₀₈	12.9	X	72.10964	281.60626	153.88234	10.72456	0.0901654	0.19018134	2.9947285	20	2 2.4	16.8
15144 Araas	14.3	X	204.49253	268.43329	5.56646	6.02796	0.1492911	0.28030963	2.3122992	20	—	—
15145 Ritageorge	15.0	X	38.85441	212.03907	24.80282	4.31261	0.1328653	0.30133503	2.2034488	20	8 1.9	17.1
15146 Halpov	14.0	X	284.83796	198.71345	132.80845	2.97837	0.0729265	0.20598006	2.8395701	20	5 29.5	17.9
15147 Siegfried	12.8	X	348.89728	304.90523	57.92344	8.94052	0.0665561	0.16868494	3.2440324	20	10 10.2	17.4
15148 Michaelmaryott	15.6	X	194.77757	332.50454	2.69175	6.17804	0.1141565	0.29165006	2.2519634	20	2 12.9	18.8
15149 Loufaix	13.5	X	241.19251	42.90290	131.12421	13.86376	0.1177714	0.22555061	2.6728426	20	12 20.4	17.2
15150 Salsa	14.3	X	239.67846	275.10502	37.89351	3.92529	0.1544628	0.29089140	2.2558773	20	2 28.4	17.7
15151 Wilmacherup	14.2	X	102.22596	301.97768	18.17541	2.22678	0.2323540	0.27198969	2.3592163	20	—	—
15152 2000 FJ ₅	13.8	X	213.18240	348.84432	136.13025	11.04617	0.2930385	0.21815618	2.7329039	20	8 31.1	18.5
15153 2000 FD ₁₇	12.7	X	49.01213	228.15962	147.40043	10.42844	0.1494039	0.18016218	3.1047523	20	—	—
15154 2000 FW ₃₀	13.3	X	185.78440	173.90907	73.07559	15.29739	0.1280368	0.22809058	2.6529627	20	—	—
15155 Ahn	14.6	X	306.02038	289.10963	156.92664	5.61318	0.0642079	0.27232821	3.3572608	20	12 19.2	17.2
15156 2000 FK ₃₈	13.7	X	133.13217	269.78222	80.37847	3.51308	0.1956595	0.18429283	3.0581851	20	1 19.5	18.5
15157 2000 FV ₃₉	13.8	X	204.31402	282.00781	31.28549	15.07186	0.1358040	0.23718033	2.5847405	20	2 5.7	18.2
15158 2000 FH ₄₀	13.6	X	146.71331	256.84951	41.42404	13.81186	0.2067793	0.22598838	2.6693897	20	—	—
15159 2000 FN ₄₁	13.8	X	88.97848	268.34990	95.66685	6.76437	0.2612355	0.22860611	2.6489727	20	—	—
15160 Wygoda	15.1	X	335.83239	50.41464	48.27409	5.17059	0.2363372	0.23310123	2.6148072	20	—	—
15161 2000 FQ ₄₈	11.5	X	70.20966	99.62242	230.64526	18.22643	0.2020835	0.17096605	3.2151122	20	12 26.3	16.7
15162 2000 GN ₂	14.3	X	318.58617	251.31036	190.00427	6.32920	0.0795442	0.27229927	2.3574278	20	—	—
15163 2000 GB ₄	13.6	X	274.86536	350.44354	145.30969	12.69592	0.1363690	0.22504778	2.6768224	20	12 16.9	17.0
15164 2000 GA ₈₉	14.1	X	65.09059	114.66691	160.20174	6.72287	0.0998058	0.26187201	2.4195986	20	10 23.8	17.3
15165 2000 GR ₈₉	12.9	X	316.94049	127.82209	52.21274	13.84149	0.0926889	0.23625577	2.5914794	20	—	—
15166 2000 GX ₉₀	12.7	X	120.93657	160.97823	170.38040	13.68672	0.1722024	0.22645316	2.6657360	20	—	—
15167 2000 GS ₁₃₅	13.9	X	103.86256	23.30485	143.00297	7.24669	0.0857251	0.25370237	2.4712672	20	7 10.8	17.2
15168 Marijnfranz	13.8	X	70.80216	295.31285	351.85331	5.06920	0.0423551	0.21453490	2.7635718	20	10 26.4	17.7
15169 Wilfriedboland	14.6	X	118.87302	14.11323	13.23702	1.85174	0.0755158	0.18801997	3.0176351	20	2 2.6	18.8
15170 Erikdeul	15.4	X	259.86702	23.23419	40.69900	1.83522	0.1608399	0.26124452	2.4234715	20	8 19.9	18.2
15171 Xandertielens	15.1	X	251.91213	228.32476	84.68508	2.53051	0.1411943	0.29043837	2.2582225	20	3 12.5	18.2
15172 3086 P-L	12.9	X	243.31824	64.73258	245.57047	9.15595	0.0838437	0.19061476	2.9901871	20	3 7.8	17.6
15173 3520 P-L	13.3	X	132.75611	144.39614	242.79299	9.53620	0.1302903	0.18858953	3.0115563	20	2 19.4	18.1
15174 4649 P-L	13.2	X	83.75896	253.93382	183.45862	10.85711	0.0336322	0.18889919	3.0082642	20	2 11.7	17.4
15175 6113 P-L	14.8	X	263.16985	320.11484	331.03367	1.17432	0.1381601	0.24065706	2.5597859	20	2 28.8	18.6
15176 6299 P-L	14.6	X	200.98156	284.55311	194.99100	13.30588	0.1571281	0.21191255	2.7863239	20	8 17.8	19.3
15177 6599 P-L	14.1	X	27.32190	15.16564	110.34903	1.67746	0.0785930	0.23794263	2.5792169	20	1 22.3	16.8
15178 7075 P-L	13.7	X	202.88253	138.16663	203.23339	9.47305	0.1831925	0.19063789	2.9899452	20	3 4.1	18.8
15179 9062 P-L	13.9	X	144.79271	142.43833	240.01403	2.48213	0.1929324	0.23869206	2.5738154	20	3 1.1	18.0
15180 9094 P-L	15.1	X	16.11526	167.08295	196.52692	9.41943	0.2573312	0.26516094	2.3995493	20	—	—
15181 9525 P-L	15.1	X	134.90690	337.34557	157.10698	3.49644	0.1287904	0.28834270	2.2691511	20	2 26.1	18.0
15182 9538 P-L	14.9	X	257.22698	131.54409	158.10406	1.57464	0.0358392	0.28960798	2.2625370	20	2 25.6	17.6
15183 3074 T-1	14.5	X	228.13680	157.16246	359.34341	5.33748	0.1400188	0.17255382	3.1953591	20	10 27.9	19.4
15184 3232 T-1	13.8	X	289.03949	242.34894	190.16179	10.75270	0.1016395	0.19072393	2.9890459	20	10 11.6	17.5
15185 4104 T-1	13.6	X	246.26028	171.17869	168.08725	10.51733	0.0965520	0.24253153	2.5465795	20	4 18.6	17.3
15186 2058 T-2	15.6	X	25.84759	267.08954	174.61293	1.92334	0.0372942	0.28024658	2.3126460	20	—	—
15187 2112 T-2	13.8	X	31.45509	273.27971	78.64146	0.16245	0.1513899	0.16932498	3.2358524	20	12 3.7	18.1
15188 3044 T-2	13.4	X	262.74656	344.55157	123.02686	2.75048	0.1070480	0.16993078	3.2281573	20	10 15.9	17.9
15189 3071 T-2	14.6	X	262.94792	240.61309	47.16483	5.27487	0.0794203	0.24397801	2.5365042	20	3 4.2	18.1
15190 3353 T-2	13.7	X	114.19138	291.26630	26.01037	5.21194	0.1838128	0.17272983	3.1931880	20	—	—
15191 4234 T-2	13.0	X	130.07050	258.74428	29.70619	5.25014	0.1154319	0.17212379	3.2006789	20	12 29.5	18.1
15192 5049 T-2	14.9	X	275.27042	282.53577	280.81573	8.26157	0.1030793	0.28127089	2.3070280	20	—	—
15193 5148 T-2	14.6	X	157.83022	40.03816	308.69621	6.34397	0.2173090	0.28311024	2.2970247	20	1 30.7	18.2
15194 2272 T-3	15.0	X	43.55633	67.22875	2.19232	4.77807	0.1491247	0.28267279	2.2993939	20	—	—
15195 2407 T-3	14.6	X	246.33207	0.98824	355.85649	1.34279	0.086693	0.19964631	2.8993136	20	5 11.9	18.6
15196 3178 T-3	15.1	X	91.74393	351.81617	61.40882	0.69177	0.1510073	0.19259009	2.9697058	20	2 10.7	19.1

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15201 1976 UY	13.8	X	102.37582	154.04645	237.71235	11.18249	0.2131915	0.22955610	2.6416594	20	1 27.8	17.5
15202 Yamada-Houkoku	14.2	X	356.80417	224.34317	177.66772	9.57366	0.2093998	0.26641145	2.3920346	20	—	—
15203 Grishanin	14.1	X	349.86777	37.99754	331.24387	2.67281	0.1904593	0.25952338	2.4341746	20	11 21.2	16.3
15204 1978 UG	14.3	X	0.13372	316.94657	45.93170	3.27040	0.2021566	0.25945037	2.4346312	20	12 3.6	16.7
15205 1978 VC ₄	14.7	X	213.30129	55.18493	3.38032	1.45516	0.0646961	0.20320438	2.8653698	20	6 23.7	18.8
15206 1978 VJ ₆	14.6	X	248.78950	343.98474	28.94530	2.93975	0.0811396	0.22689745	2.6622549	20	6 4.5	18.3
15207 1979 KU	13.0	X	303.86008	101.20284	150.03515	7.85547	0.1504462	0.23599317	2.5934015	20	2 24.8	16.3
15208 1979 MW ₁	14.4	X	125.98250	127.23542	244.49512	4.65020	0.1805691	0.22928717	2.6437246	20	1 28.5	18.3
15209 1979 ML ₂	13.3	X	245.99049	150.14362	130.15793	12.90852	0.1914132	0.18398555	3.0615891	20	2 1.1	18.1
15210 1979 MU ₂	14.4	X	139.62361	153.18622	161.22120	5.73966	0.1415915	0.17829430	3.1263990	20	—	—
15211 1979 MW ₃	15.6	X	220.27793	35.35643	234.04713	2.65410	0.2139205	0.27879271	2.3206792	20	—	—
15212 Yaroslavl	13.1	X	252.05000	343.15853	89.25443	10.31593	0.1357471	0.21142937	2.7905673	20	8 22.6	17.1
15213 1980 UO ₁	13.1	X	98.02514	111.98574	220.14462	21.57605	0.0352349	0.17709854	3.1404561	20	—	—
15214 1981 DY	14.1	X	105.72165	326.69627	284.82765	6.25928	0.1449194	0.21278156	2.7787324	20	10 30.9	18.5
15215 1981 EH ₁₃	15.1	X	73.19286	65.89569	256.42678	2.98389	0.2162787	0.26523184	2.3991217	20	—	—
15216 1981 EX ₁₄	15.3	X	43.62248	56.58462	206.41724	8.62730	0.1093091	0.20908040	2.8114293	20	8 27.8	19.1
15217 1981 ET ₁₉	16.2	X	112.94316	115.02617	135.62175	1.91479	0.1396941	0.26349475	2.4096543	20	11 16.1	19.9
15218 1981 EO ₄₁	14.0	X	4.33404	357.44643	5.95936	9.72802	0.1379205	0.21440807	2.7646615	20	11 15.4	17.4
15219 1981 EY ₄₂	16.0	X	135.26056	10.48105	211.77992	0.63283	0.1355541	0.26314009	2.4118190	20	11 1.4	19.6
15220 Sumerkin	13.9	X	211.54928	344.65377	40.16782	8.65680	0.2446660	0.24501899	2.5293148	20	4 30.1	18.3
15221 1981 UA ₂₃	14.9	X	105.29271	338.92159	92.95832	3.08618	0.1619123	0.29008276	2.2600677	20	3 15.1	17.5
15222 1982 FL ₁	12.6	X	338.62018	89.29054	25.23597	1.40160	0.1491250	0.17624791	3.1505525	20	—	—
15223 1984 SN ₄	15.0	X	156.45641	9.34713	337.54102	1.48115	0.2113316	0.23263970	2.6182644	20	2 1.4	19.0
15224 Penttilä	13.9	X	101.14236	196.20566	70.11478	12.34915	0.2419209	0.26246507	2.4159524	20	11 28.8	17.8
15225 1985 RJ ₄	13.6	X	110.29487	314.57687	33.51017	2.24866	0.2027657	0.17836233	3.1256041	20	—	—
15226 1986 UP	13.4	X	106.62427	251.89650	35.15018	22.47847	0.2385236	0.26604144	2.3942520	20	12 26.1	17.9
15227 1986 VA	13.1	X	187.53314	61.05563	271.97996	8.84831	0.1000077	0.18723334	3.0260813	20	2 8.9	18.0
15228 Rommiller	14.8	X	175.06651	351.65337	178.33573	2.76462	0.1387691	0.31158067	2.1548765	20	10 12.0	17.7
15229 1987 QZ ₆	14.1	X	255.74263	16.01059	291.18314	5.02272	0.0674873	0.29041601	2.2583384	20	3 12.4	17.0
15230 Alona	14.6	X	117.95638	248.60948	167.74953	5.42813	0.1660730	0.28563681	2.2834592	20	3 9.6	17.5
15231 Ehdita	12.0	X	54.43793	215.75397	158.30314	6.81453	0.2928104	0.12598206	3.9409136	20	—	—
15232 1987 SD ₁₃	14.8	X	331.40740	333.99785	65.07468	1.92154	0.1919607	0.27122576	2.3636441	20	12 3.6	16.6
15233 1987 WU ₄	14.0	X	323.39976	326.11266	79.33255	4.72557	0.1555064	0.23889298	2.5723721	20	11 12.5	16.4
15234 1988 BJ ₅	13.7	X	95.39222	226.28516	280.92234	12.06643	0.0635049	0.22079422	2.7110919	20	5 30.5	17.6
15235 1988 DA ₅	13.3	X	107.70827	163.32549	183.21939	22.41131	0.0314584	0.17820456	3.1274485	20	—	—
15236 1988 RJ ₄	13.9	X	107.07082	152.71679	204.03019	2.16147	0.0946623	0.22768459	2.6561155	20	—	—
15237 1988 RL ₆	14.3	X	210.68130	180.56876	159.82341	7.32484	0.1481702	0.26634348	2.3924415	20	3 7.2	18.0
15238 Hisaohori	14.9	X	334.64958	137.39387	43.69112	3.88216	0.0766505	0.28554743	2.2839357	20	1 7.7	17.5
15239 Stenhammar	13.5	X	256.84988	26.31404	247.07906	9.05793	0.0534672	0.19122188	2.9838546	20	2 10.7	18.1
15240 1989 GF ₃	15.3	X	30.56646	14.89107	223.19840	4.14496	0.1596913	0.25789426	2.4444149	20	7 16.7	17.8
15241 1989 ST ₃	14.9	X	49.20651	307.08488	135.89920	3.03535	0.1110337	0.23416866	2.6068549	20	1 1.7	17.8
15242 1989 SX ₅	14.5	X	71.96322	11.83793	94.45025	2.88403	0.1038607	0.23841098	2.5758380	20	3 11.3	17.6
15243 1989 TU ₁	13.5	X	351.90837	161.18570	260.11344	6.70334	0.2880509	0.22629179	2.6670031	20	—	—
15244 1989 TY ₂	14.3	X	265.07237	241.65174	71.29512	4.56114	0.0258533	0.24334857	2.5408763	20	4 15.3	17.6
15245 1989 TP ₁₆	13.6	X	180.34971	2.66246	52.44157	2.01600	0.1428128	0.17955327	3.1117677	20	5 13.6	18.5
15246 Kumeta	14.1	X	55.13981	296.98085	117.53944	3.63618	0.2039570	0.23121565	2.6290039	20	—	—
15247 1989 WS	13.8	X	155.69058	159.24669	237.22763	8.74568	0.1928401	0.23946701	2.5682596	20	3 26.3	18.1
15248 Hidekazu	14.1	X	184.31031	347.76353	36.82940	1.20313	0.2089420	0.24010090	2.5637373	20	4 8.9	18.5
15249 Capodimonte	12.2	X	26.08382	169.12357	59.25818	16.78427	0.1215593	0.17575848	3.1563988	20	6 14.2	16.1
15250 Nishiyamahiro	13.8	X	338.81750	217.64863	337.81429	9.58601	0.1702163	0.19552341	2.9399292	20	2 7.5	17.3
15251 1990 EF ₂	15.0	X	137.27615	301.89016	252.83768	3.71097	0.0766343	0.30789085	2.1720585	20	10 2.7	17.9
15252 Yoshiken	14.0	X	186.35605	156.88336	127.50653	7.52085	0.1315891	0.27938913	2.3173753	20	—	—
15253 1990 QA ₄	14.4	X	245.53653	253.41801	337.95106	4.86421	0.0442684	0.27816131	2.3241897	20	—	—
15254 1990 QM ₄	14.0	X	280.78085	124.42156	137.99615	5.23479	0.1408921	0.28515668	2.2860217	20	2 6.1	17.1
15255 1990 QQ ₈	14.1	X	92.46017	308.83108	52.07516	2.15805	0.1598720	0.17603953	3.1530384	20	—	—
15256 1990 RD ₁	12.7	X	37.99024	248.26813	169.43929	9.59417	0.0835580	0.17508652	3.1644694	20	—	—
15257 1990 RQ ₈	14.0	X	135.98503	325.97355	7.88879	1.27931	0.1726481	0.17723977	3.1387876	20	1 1.7	18.9
15258 Alfipenko	13.1	X	75.68297	32.50821	293.88285	6.73656	0.1649605	0.16923098	3.2370505	20	12 25.4	18.1
15259 1990 SL ₇	15.2	X	330.97104	342.43524	61.79980	3.19249	0.1943706	0.26577580	2.3958471	20	12 8.6	16.9
15260 1990 SY ₈	14.8	X	208.31793	240.59105	56.71619	4.23609	0.1655051	0.28046530	2.3114436	20	1 10.5	18.5
15261 1990 SV ₁₂	13.4	X	66.65988	324.23278	62.77351	2.27758	0.1872132	0.17507570	3.1645999	20	—	—
15262 Abderhalden	13.3	X	137.62717	287.91880	5.74035	0.62818	0.1424599	0.17115391	3.2127592	20	3 12.7	19.2
15263 Erwingroten	14.6	X	243.33401	116.46298	26.32762	2.97032	0.1140155	0.26435067	2.4044501	20	11 21.1	17.4
15264 Delbruck	15.1	X	223.26641	128.14073	336.55705	2.29821	0.1291294	0.26046098	2.4283294	20	9 1.8	18.4
15265 Ernsting	14.6	X	250.76538	24.70833	64.83849	11.46082	0.2002741	0.26073210	2.4266457	20	9 12.3	18.0
15266 1990 UQ ₃	15.1	X	126.73642	170.28290	177.30179	5.82216	0.1774685	0.27470258	2.3436579	20	—	—
15267 Kolyma	13.8	X	348.77359	324.56851	81.08319	12.85054	0.2275106	0.26527173	2.3988812	20	—	—
15268 Wendelinefroger	14.6	X	81.58757	210.47643	143.98319	2.75333	0.2334774	0.27027735	2.3665442	20	—	—
15269 1990 XF	12.1	X	39.25120	220.62900	292.91508	11.00388	0.2038578	0.24196849	2.5505285	20	3 23.3	14.6
15270 1991 AE ₂	13.6	X	72.77478	267.48017	150.04501	14.10723	0.1467169	0.23990812	2.5651105	20	1 8.8	16.6
15271 1991 DE	13.7	X	338.00049	82.81086	81.83780	13.09157	0.2316395	0.23492722	2.6012404	20	—	—
15272 1991 GH	12.9	X	241.10735	13.03986	194.90249	13.27863	0.0978924	0.22692801	2.6620159	20	—	—
15273 Ruhmkorff	13.6	X	90.08168	236.86442	199.83109	12.10661	0.1485254	0.23522099	2.5990741	20	2 28.8	17.1
15274 1991 GO ₆	13.9	X	121.56700	192.03316	200.09562	14.91719	0.1343241	0.23245088	2.6196821	20	2 8.8	17.9
15275 1991 GV ₆	14.5	X	187.00097	99.77020	200.07610	2.76096	0.0940915	0.22843128	2.6503242	20	—	—
15276 Diebel	12.6	X	85.37316	130.50075	111.67182	16.14655	0.1763347	0.21322442	2.7748835	20	10 12.4	17.2
15277 1991 PC ₇	13.7	X	323.4									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15281 1991 <i>PT</i> ₁₆	13.2	X	308.35334	168.35363	152.31978	2.40219	0.0677926	0.19839391	2.9115025	20	6 17.5	17.0
15282 Franzmarc	13.5	X	209.35281	145.72363	203.45231	8.47913	0.0784788	0.19028189	2.9936734	20	3 22.4	18.0
15283 1991 <i>RB</i> ₈	14.0	X	129.32846	58.74978	37.40844	5.30260	0.1222692	0.29430903	2.2383792	20	5 10.2	17.1
15284 1991 <i>RZ</i> ₁₆	15.2	X	152.11764	355.68874	63.93242	2.52851	0.2059826	0.29330295	2.2434950	20	4 23.4	18.5
15285 1991 <i>RW</i> ₁₈	13.8	X	116.13493	98.57650	268.09428	4.85925	0.1156732	0.18400250	3.0614011	20	1 10.7	18.2
15286 1991 <i>RJ</i> ₂₂	14.2	X	58.19146	214.84996	120.49988	4.48234	0.2111870	0.31368467	2.1452299	20	—	—
15287 1991 <i>RX</i> ₂₅	14.5	X	23.31551	253.11180	90.53086	5.05632	0.2034180	0.30986496	2.1628235	20	12 26.3	17.1
15288 1991 <i>RN</i> ₂₇	12.5	X	195.32694	177.42297	338.56651	14.27648	0.0328900	0.23774016	2.5806812	20	10 7.8	16.3
15289 1991 <i>TL</i>	15.3	X	44.06860	171.78437	140.72846	5.64995	0.1345058	0.30925848	2.1656502	20	11 30.9	18.0
15290 1991 <i>TF</i> ₁	13.1	X	337.70809	275.46203	170.46532	17.69082	0.1395345	0.17400409	3.1775794	20	—	—
15291 1991 <i>VO</i> ₁	14.1	X	128.70803	313.43476	112.69526	5.47844	0.1234170	0.29039659	2.2584391	20	4 1.8	17.1
15292 1991 <i>VD</i> ₂	13.1	X	83.77760	302.30018	103.26605	3.01752	0.1926053	0.18073378	3.0982027	20	1 29.7	17.1
15293 1991 <i>VO</i> ₃	14.6	X	230.58527	37.77050	59.38910	4.16150	0.1505061	0.26765950	2.3845931	20	8 31.8	17.8
15294 Underwood	14.3	X	25.68618	239.95468	117.95525	3.59315	0.1831580	0.31089371	2.1580496	20	—	—
15295 Tante Riek	14.8	X	216.87211	105.17278	59.61595	7.60906	0.0614617	0.27347839	2.3506468	20	11 25.5	17.8
15296 Tanttetrus	15.5	X	201.93290	61.91055	114.25807	2.29266	0.1298183	0.26728664	2.3868102	20	11 12.5	18.8
15297 1992 <i>CF</i>	13.4	X	171.83206	307.61013	283.97406	9.70175	0.0538831	0.26849685	2.3796326	20	12 27.2	16.4
15298 1992 <i>EB</i> ₁₃	14.2	X	101.44990	7.77332	306.53840	4.10679	0.1237886	0.26827595	2.3809388	20	—	—
15299 1992 <i>ER</i> ₁₇	14.5	X	339.51818	102.08408	324.97943	1.77817	0.1883556	0.27008889	2.3702722	20	—	—
15300 1992 <i>RV</i> ₂	14.0	X	328.57299	207.93923	169.35117	6.97268	0.1246149	0.21278489	2.7787034	20	10 5.9	17.1
15301 Marutesser	14.0	X	230.40472	258.37016	134.43779	2.71911	0.1003227	0.20327535	2.8647028	20	6 7.1	18.3
15302 1992 <i>TJ</i> ₁	13.0	X	178.42298	180.75595	149.84883	14.46770	0.1816239	0.22825407	2.6516958	20	1 29.6	17.5
15303 Hatoyamamachi	13.0	X	166.83002	108.89648	226.97671	9.13366	0.1073337	0.19010763	2.9955025	20	1 23.6	17.7
15304 Wikberg	13.4	X	244.38014	173.15914	239.41695	16.13118	0.3271951	0.20245465	2.8724394	20	6 22.4	18.4
15305 1992 <i>WT</i> ₁	13.1	X	27.93735	292.54946	83.70033	7.54048	0.2587056	0.21479026	2.7613810	20	—	—
15306 1992 <i>WK</i> ₂	15.0	X	197.80918	228.84246	250.71257	2.60224	0.1076720	0.27528635	2.3403435	20	8 25.9	18.4
15307 1992 <i>XK</i>	14.4	X	166.24126	119.08540	282.41462	1.16764	0.2129637	0.26531768	2.3986042	20	4 13.1	18.2
15308 1993 <i>FR</i> ₄	15.2	X	132.72862	115.08400	152.64173	3.22192	0.2048682	0.27326472	2.3518719	20	12 25.9	19.2
15309 1993 <i>FZ</i> ₇	15.8	X	181.38330	12.54786	53.61092	4.10924	0.0321232	0.29683749	2.2256501	20	5 27.4	18.5
15310 1993 <i>FT</i> ₁₉	14.4	X	65.40756	280.09023	47.92799	7.89923	0.2250158	0.27230068	2.3574197	20	—	—
15311 1993 <i>FZ</i> ₂₂	15.3	X	275.60509	46.55150	263.10902	1.33098	0.1885432	0.29149473	2.2527634	20	3 26.6	18.3
15312 1993 <i>FH</i> ₂₇	14.3	X	180.34392	23.12582	339.28069	5.84222	0.1439076	0.21735591	2.7396079	20	3 8.9	18.7
15313 1993 <i>FM</i> ₂₈	15.6	X	77.49556	180.22735	292.99573	1.67846	0.1504492	0.25580456	2.4577094	20	3 31.5	18.5
15314 1993 <i>FL</i> ₃₄	13.2	X	44.18036	182.75934	44.02491	6.77309	0.0389435	0.15291851	3.4633470	20	7 1.0	18.0
15315 1993 <i>FX</i> ₃₅	14.3	X	188.08290	296.65279	15.30204	22.51613	0.2487465	0.28222883	2.3018047	20	1 20.2	18.7
15316 Okagakimachi	14.5	X	284.54545	295.36221	291.95023	0.76229	0.1640241	0.28412987	2.2915260	20	—	—
15317 1993 <i>HW</i> ₁	13.9	X	249.85081	177.43051	75.88171	12.51314	0.2042924	0.28260138	2.2997813	20	—	—
15318 Innsbruck	13.2	X	162.36235	192.32182	93.63769	25.62367	0.2007643	0.27474151	2.3434365	20	—	—
15319 1993 <i>NU</i> ₁	14.8	X	42.10440	226.32744	151.74470	2.88030	0.2095178	0.26717108	2.3874984	20	—	—
15320 1993 <i>OQ</i> ₈	15.4	X	61.53873	247.35966	108.79779	2.23831	0.1982726	0.26738937	2.3861988	20	—	—
15321 Donnadean	13.9	X	186.31808	44.89618	269.15933	24.03589	0.2720487	0.27511488	2.3413158	20	1 12.2	18.1
15322 1993 <i>QY</i>	13.7	X	114.22065	236.01874	156.12354	28.33073	0.3285736	0.23569228	2.5956082	20	2 29.1	17.7
15323 1993 <i>QH</i> ₄	13.9	X	241.84209	246.30381	128.34936	2.20347	0.2248686	0.17378388	3.1802631	20	5 16.1	19.0
15324 1993 <i>QO</i> ₄	14.0	X	320.47576	210.20825	149.52378	1.79145	0.2136186	0.18026930	3.1035223	20	8 11.6	17.2
15325 1993 <i>QN</i> ₇	15.2	X	46.11545	290.19681	44.18681	1.75399	0.1461074	0.26207327	2.4183597	20	12 21.6	18.4
15326 1993 <i>QA</i> ₉	15.2	X	50.95559	133.47233	140.73404	3.14898	0.1761658	0.25774451	2.4453617	20	10 14.7	18.3
15327 1993 <i>RA</i> ₃	13.5	X	57.85530	99.33159	203.37319	12.22395	0.1712332	0.22427230	2.6829894	20	11 21.4	17.4
15328 1993 <i>RJ</i> ₉	14.9	X	86.43742	21.98960	254.50090	1.20693	0.1862452	0.26140648	2.4224704	20	11 24.8	18.7
15329 Sabena	13.9	X	238.21379	119.40599	177.73721	1.22270	0.1215769	0.17721031	3.1391355	20	8 7.5	18.6
15330 de Almeida	14.0	X	45.51480	337.97607	22.71463	13.90108	0.2479489	0.22543494	2.6737568	20	—	—
15331 1993 <i>TO</i> ₂₄	14.7	X	274.92753	62.59918	99.48456	3.06560	0.1297777	0.22677317	2.6632275	20	—	—
15332 CERN	13.3	X	335.80545	181.87498	51.41014	7.03616	0.0554278	0.24191070	2.5509346	20	4 2.5	16.4
15333 1993 <i>TS</i> ₃₆	13.7	X	109.52817	357.74279	65.27926	14.21139	0.2302130	0.23684687	2.5871659	20	3 29.3	17.7
15334 1993 <i>UE</i>	13.8	X	30.30113	225.47067	117.08679	13.32917	0.2115987	0.26038880	2.4287781	20	12 22.8	17.1
15335 Satoyukie	14.1	X	25.83472	192.70098	217.60733	13.60063	0.2406295	0.22529319	2.6748782	20	—	—
15336 1993 <i>UC</i> ₃	14.1	X	37.60510	92.26612	317.49519	1.19959	0.2186195	0.22676965	2.6632551	20	—	—
15337 1993 <i>VT</i> ₂	13.4	X	2.58946	295.03988	91.24043	22.67724	0.2929436	0.26082688	2.4260579	20	—	—
15338 Dufault	14.3	X	32.33630	102.40038	96.42607	2.94091	0.1231262	0.19699278	2.9252917	20	5 17.8	17.7
15339 Pierazzo	13.6	X	188.34169	246.02040	127.72053	3.10501	0.0851463	0.19683392	2.9268654	20	4 1.6	18.0
15340 1994 <i>CE</i> ₁₄	13.7	X	2.96470	10.48115	126.79565	10.63572	0.0383103	0.18525807	3.0475531	20	1 13.7	17.7
15341 1994 <i>CV</i> ₁₆	13.6	X	31.77629	121.85231	107.63917	3.11655	0.0117821	0.19777464	2.9175769	20	6 16.3	17.6
15342 Assisi	14.1	X	315.12837	86.01326	65.27376	1.85244	0.1273878	0.18124814	3.0923383	20	—	—
15343 1994 <i>PB</i> ₁	15.4	X	189.29326	238.70838	155.68544	3.72025	0.1347375	0.29322605	2.2438871	20	4 24.3	18.6
15344 1994 <i>PA</i> ₂	14.7	X	249.92967	9.02356	356.76848	3.76966	0.1876674	0.29681360	2.2257695	20	5 12.6	17.8
15345 1994 <i>PK</i> ₁₁	14.4	X	340.55527	116.20834	299.57850	4.34835	0.2221431	0.27167707	2.3610257	20	—	—
15346 Bonifatius	15.0	X	178.94406	105.27799	246.30280	5.57472	0.1395547	0.28725662	2.2748670	20	2 14.8	18.4
15347 Colinstuart	14.6	X	56.12477	328.07495	76.13559	6.05610	0.2249700	0.27655898	2.3331583	20	—	—
15348 1994 <i>UJ</i>	14.9	X	233.06669	289.36957	70.04987	3.86910	0.1837096	0.29095275	2.2555601	20	4 19.7	18.4
15349 1994 <i>UX</i> ₁	14.4	X	104.81714	326.46366	67.59483	3.45943	0.2191484	0.28062933	2.3105428	20	1 31.9	17.1
15350 Naganuma	14.1	X	347.83859	204.85987	197.80446	4.61546	0.0236647	0.26835172	2.3804906	20	—	—
15351 Yamaguchimamoru	14.2	X	281.27424	26.73391	33.13939	10.01012	0.2183442	0.26192960	2.4192439	20	9 11.5	16.8
15352 1994 <i>VB</i> ₇	14.8	X	318.02050	197.85964	223.11613	2.81217	0.1549135	0.26622168	2.3931712	20	12 3.9	16.8
15353 Meucci	14.7	X	113.75403	287.45934	87.23912	4.23023	0.2033952	0.27897374	2.3196751	20	1 14.9	17.3
15354 1994 <i>YN</i> ₁	14.8	X	6.69786	299.86055	74.06625	3.72751	0.1818264	0.26455977	2.4031830	20	12 28.4	17.3
15355 Maupassant	13.6	X	31.44392	322.5								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15361 1996 DK ₂	14.7	X	277.01393	103.06952	131.55927	5.27594	0.1987488	0.24008652	2.5638397	20	—	—
15362 1996 ED	13.7	X	112.22320	53.41992	19.74648	5.81531	0.1623372	0.28881617	2.2666704	20	3 25.5	16.4
15363 Ysaye	14.3	X	240.74688	157.44128	171.66653	5.27338	0.2252761	0.28803103	2.2707877	20	3 15.2	17.8
15364 Kenglover	14.8	X	73.58944	85.90837	198.72588	13.12237	0.0939305	0.26064863	2.4271638	20	11 14.3	18.2
15365 1996 HQ ₉	14.2	X	280.03290	160.47223	218.37649	11.98704	0.2355452	0.25323908	2.4742803	20	6 29.6	17.6
15366 1996 HR ₁₆	14.5	X	252.29804	265.42888	43.88346	14.02775	0.1917230	0.24077284	2.5589653	20	3 13.8	18.7
15367 1996 HP ₂₃	14.3	X	246.02446	13.80904	58.05800	6.99954	0.0697006	0.25644368	2.4536242	20	8 28.9	17.6
15368 Katsuji	14.3	X	151.86061	99.25695	164.14315	11.37247	0.1306873	0.26461042	2.4028763	20	—	—
15369 1996 KB	13.6	X	340.17579	6.53546	229.99309	2.75610	0.0889955	0.24460971	2.5321354	20	4 6.2	16.5
15370 Kanchi	15.0	X	31.42248	113.85159	264.41294	2.74073	0.1030025	0.21791410	2.7349275	20	—	—
15371 Steward	14.4	X	253.05240	126.38148	171.15857	2.73850	0.1088721	0.19010919	2.9954861	20	3 4.6	18.8
15372 Agrigento	13.2	X	216.21391	276.29639	97.46313	4.43812	0.0971048	0.15093412	3.4936369	20	5 1.8	18.5
15373 1996 WV ₁	12.9	X	339.48009	205.83160	214.42424	8.43256	0.1530021	0.12498880	3.9617644	20	11 25.3	17.7
15374 Teta	14.4	X	278.36402	190.38919	131.95835	32.40455	0.1619854	0.35034360	1.9928438	20	5 2.7	17.7
15375 Laetitiafoggia	15.1	X	257.53413	34.06180	146.09519	4.48016	0.0580811	0.28811502	2.2703463	20	—	—
15376 Marták	12.5	X	80.66708	101.58228	256.42395	2.89787	0.3095847	0.12600076	3.9405236	20	—	—
15377 1997 KW	15.4	X	313.71290	216.33650	127.12863	6.35370	0.2200220	0.30363137	2.1923251	20	7 16.2	16.7
15378 Artin	15.7	X	217.89967	222.52653	124.16929	4.74020	0.1857171	0.24442617	2.5334028	20	3 23.7	19.8
15379 Alefranz	14.2	X	94.28195	341.34405	222.93236	5.40787	0.1048060	0.25520491	2.4615578	20	8 20.7	17.6
15380 1997 QQ ₄	14.6	X	87.69470	339.12025	23.78868	2.76836	0.0824459	0.22549194	2.6733062	20	—	—
15381 Spadolini	14.7	X	250.53152	13.68206	271.89453	4.57834	0.1308046	0.28557016	2.2838145	20	2 3.2	18.0
15382 Vian	14.9	X	352.78529	0.48014	219.32994	6.93856	0.0476865	0.28744769	2.2738589	20	4 1.5	17.3
15383 1997 SE ₃	14.3	X	65.54617	252.06188	175.41347	13.81747	0.1720430	0.23350187	2.6118154	20	1 13.4	17.3
15384 Samková	14.7	X	160.83472	202.73362	212.30315	1.41757	0.0796671	0.19602723	2.9348897	20	4 21.9	18.9
15385 Dallolma	14.0	X	79.04677	321.95373	130.61578	11.74500	0.0802714	0.19342489	2.9611550	20	3 6.0	18.0
15386 Nicolini	15.2	X	104.20466	129.62615	196.34078	6.03313	0.1336203	0.27008280	2.3703079	20	—	—
15387 Hanazukayama	14.3	X	38.72303	285.83149	13.78847	12.54632	0.1810028	0.25863263	2.4397604	20	10 29.2	17.4
15388 Coelum	15.3	X	76.59791	178.09233	160.38104	2.68615	0.2062836	0.26729553	2.3867573	20	—	—
15389 Geflorsch	15.3	X	38.79331	216.95515	78.66418	3.46223	0.1872797	0.25868320	2.4394424	20	10 29.2	18.2
15390 Znojil	14.9	X	225.94081	175.91372	159.74284	0.50686	0.0757809	0.23863381	2.5742343	20	3 21.4	18.7
15391 Steliomancinelli	14.8	X	345.72763	172.57240	202.65465	5.18467	0.1558869	0.26031893	2.4292127	20	11 19.4	17.0
15392 Budějický	15.0	X	261.88769	117.50658	210.46218	5.00452	0.1644960	0.28767232	2.2726750	20	4 8.1	18.2
15393 1997 TR ₂₄	13.6	X	11.73284	265.55744	192.90722	2.04067	0.2214728	0.18407769	3.0605674	20	—	—
15394 1997 TQ ₂₅	14.4	X	131.54904	84.04595	248.76239	8.40855	0.1488193	0.22601193	2.6692043	20	—	—
15395 Rühl	14.4	X	294.76019	354.90824	145.47171	0.86235	0.1273799	0.17677014	3.1443444	20	—	—
15396 Howardmoore	15.3	X	51.18171	169.95421	217.13645	1.81411	0.2416631	0.22414168	2.6840317	20	—	—
15397 Ksoari	14.4	X	88.05088	69.37402	325.47544	2.75491	0.0511904	0.23070203	2.6329045	20	—	—
15398 1997 UZ ₂₃	10.8	X	210.99909	137.16692	189.59901	28.46665	0.0251673	0.08482154	5.1301722	20	9 28.8	17.6
15399 Hudec	14.7	X	259.42584	263.12079	345.94589	1.70648	0.1490406	0.23259256	2.6186181	20	1 4.9	18.7
15400 1997 VZ	13.4	X	101.26268	18.36930	45.25958	7.03837	0.1883360	0.18800416	3.0178043	20	3 14.8	17.7
15401 1997 VE ₄	14.0	X	197.52589	110.50071	234.21763	10.70361	0.3042239	0.23710919	2.5852574	20	2 27.7	19.0
15402 Suzaku	14.9	X	71.42622	211.16648	94.29367	2.26994	0.1899379	0.26186277	2.4196555	20	12 16.8	18.7
15403 Merignac	14.6	X	173.91196	269.39114	49.20968	4.77319	0.0410564	0.22977993	2.6399437	20	1 2.6	18.2
15404 1997 VE ₈	14.1	X	189.64360	329.24882	341.45806	3.10584	0.1695853	0.23028703	2.6360667	20	1 16.5	18.3
15405 1997 WJ ₇	14.6	X	39.02529	91.26006	263.96770	2.02542	0.2028669	0.21836068	2.7311974	20	—	—
15406 Bleibtreu	14.3	X	172.81459	183.30309	40.22483	4.99732	0.0197042	0.21783691	2.7355736	20	12 8.3	18.0
15407 Udakiyoo	13.7	X	243.30367	223.50307	116.56406	6.72554	0.1887428	0.28852606	2.2681896	20	4 6.2	17.2
15408 1997 WU ₂₁	12.9	X	208.11920	241.32101	81.83654	9.59807	0.0736889	0.18548333	3.0450853	20	2 24.8	17.6
15409 1997 WQ ₃₁	13.7	X	196.29813	293.24676	79.78806	3.13519	0.1224493	0.19518470	2.9433294	20	4 8.7	18.4
15410 1997 YZ	12.2	X	277.67783	297.65853	237.01578	17.16026	0.0968845	0.17954538	3.1118589	20	—	—
15411 1997 YL ₁	13.9	X	47.70030	228.80737	165.73901	6.50049	0.1267202	0.27181806	2.3602093	20	—	—
15412 Schaefer	13.5	X	38.04754	294.13347	99.39396	2.88561	0.1989192	0.17462031	3.1700993	20	—	—
15413 Beaglehole	14.0	X	47.08962	352.49214	86.56110	12.63782	0.0439208	0.18302423	3.0723002	20	1 1.5	18.2
15414 Pettiorosi	13.9	X	54.54936	56.37187	108.67969	3.19284	0.0389731	0.19442261	2.9510158	20	4 27.7	17.8
15415 Rika	14.2	X	75.60010	28.78648	327.30217	7.47769	0.2280062	0.30170924	2.2016265	20	—	—
15416 1998 DZ ₂	12.4	X	206.94719	276.60702	85.71974	15.86083	0.1446400	0.23923931	2.5698889	20	4 10.1	16.8
15417 Babylon	11.8	X	206.34205	193.78264	75.76079	3.18414	0.0535325	0.12622971	3.9357575	20	—	—
15418 Sergiospinelli	13.6	X	185.65505	116.84938	151.21897	9.43713	0.1608477	0.21245688	2.7815627	20	—	—
15419 1998 FZ ₆₂	13.3	X	204.57284	207.65751	187.82282	14.11608	0.1862748	0.22972349	2.6403760	20	5 11.9	17.8
15420 Aedouglass	15.1	X	331.30507	358.92524	305.84515	3.29385	0.2726069	0.22936180	2.6431511	20	6 9.1	17.3
15421 Adammalin	14.3	X	62.86261	280.59169	55.79632	2.77862	0.0697362	0.20052851	2.8908039	20	12 19.1	18.3
15422 1998 QP ₄₅	13.2	X	253.07981	340.60931	191.50950	12.24556	0.1690369	0.23643483	2.5901708	20	12 27.9	16.5
15423 1998 QR ₉₁	15.4	X	245.32420	283.94531	102.56206	0.58632	0.1955512	0.30458613	2.1877413	20	6 5.5	18.4
15424 1998 QE ₁₀₀	14.2	X	244.68076	358.53219	70.99545	3.21390	0.1865491	0.26463163	2.4027480	20	8 4.4	17.5
15425 Welzl	13.1	X	300.75102	294.25180	264.77889	12.21833	0.1493448	0.23078669	2.6322606	20	—	—
15426 1998 SW ₄₃	12.9	X	263.89153	136.57417	240.54031	5.25627	0.1694070	0.12467755	3.9683553	20	6 15.1	18.7
15427 Shabas	12.6	X	329.79273	299.08838	211.03268	13.84746	0.1629523	0.23969800	2.5666094	20	—	—
15428 1998 SV ₁₂₈	13.2	X	12.79457	271.20608	34.35601	9.13325	0.0082449	0.17449180	3.1716557	20	8 31.8	17.7
15429 1998 UA ₂₃	14.7	X	229.18081	82.45310	56.66048	2.92383	0.1574457	0.26680111	2.3897050	20	10 23.2	17.8
15430 1998 UR ₃₁	14.2	X	1.19756	177.54980	62.77874	8.18036	0.1700484	0.29758042	2.2219442	20	5 17.2	15.5
15431 1998 UQ ₃₂	14.4	X	85.75610	343.50548	85.30645	5.63569	0.1080266	0.28274691	2.2989920	20	2 2.4	16.8
15432 1998 VA ₅	14.6	X	137.70337	296.21566	231.60497	1.98569	0.1425836	0.25862176	2.4398288	20	8 24.8	18.4
15433 1998 VQ ₇	13.7	X	54.47211	212.66477	69.88668	7.35180	0.1013984	0.26915489	2.3757525	20	10 22.8	16.7
15434 Mittal	15.1	X	47.48992	227.66552	217.35876	3.87939	0.1219598	0.28433094	2.2904455	20	—	—
15435 1998 VS ₂₈	15.0	X	276.12909	69.84887	344.94960	1.82265	0.0871831	0.30983259	2.1629741	20	9 20.2	16.9
15436 1998 VU ₃₀	9.1	X	282.73394	178.68292	253.42399	16.26309	0.0443947	0.08287751	5.2100865	20	9 15.3	16.2
15437 1998 VS ₃₅	14.9	X	146.43974	266.54075	300.62260	1.66321	0.1369085	0.26366423	2.4086216	20	10 23.5	18.6</

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15441 1998 <i>WJ</i> ₉	14.5	X	326.60779	18.82279	95.41729	14.36797	0.1971069	0.22948657	2.6421930	20	—	—
15442 1998 <i>WN</i> ₁₁	11.9	X	286.15098	320.06219	110.36415	4.51055	0.1681808	0.08335057	5.1903543	20	9 10.3	18.5
15443 1998 <i>WM</i> ₁₉	14.5	X	83.03988	230.00582	209.02877	3.75855	0.2406217	0.23758683	2.5817914	20	3 9.2	17.6
15444 1998 <i>WT</i> ₂₃	12.5	X	143.14495	31.79773	62.54812	11.65250	0.1168829	0.19789352	2.9164084	20	5 24.5	16.9
15445 1998 <i>XE</i>	13.5	X	32.21928	336.55635	84.17472	13.11722	0.1781693	0.22652260	2.6651911	20	—	—
15446 1998 <i>XQ</i> ₄	14.0	X	236.56413	26.57022	301.89600	5.98065	0.0874622	0.29109044	2.2548488	20	3 15.8	17.1
15447 1998 <i>XV</i> ₄	14.0	X	266.66863	240.76814	337.63332	2.29426	0.1049094	0.23229067	2.6208865	20	—	—
15448 Siegwarth	14.2	X	269.04598	259.43735	272.08597	2.52264	0.0177628	0.22610274	2.6684895	20	—	—
15449 1998 <i>XS</i> ₃₀	13.8	X	298.04867	277.36151	251.92537	12.23607	0.1352006	0.23246741	2.6195579	20	—	—
15450 1998 <i>XV</i> ₄₀	13.5	X	72.80352	268.97025	51.37407	8.05116	0.2049005	0.22519236	2.6756766	20	12 30.4	17.8
15451 1998 <i>XK</i> ₄₂	12.5	X	240.14139	176.91571	77.44812	11.21832	0.0569614	0.18871822	3.0101871	20	1 4.7	17.0
15452 Ibramohammed	14.5	X	222.08343	59.44656	29.31749	3.27831	0.0807634	0.25690260	2.4507013	20	8 16.9	17.8
15453 Brasileirinhos	14.0	X	192.40068	282.88091	117.36652	3.14087	0.0817864	0.19879230	2.9076112	20	5 8.3	18.4
15454 1998 <i>YB</i> ₃	12.9	X	51.37647	295.18853	290.07794	14.21127	0.2086589	0.20267202	2.8703852	20	8 3.2	16.6
15455 1998 <i>YJ</i> ₃	14.8	X	211.13688	39.12875	309.92064	5.97935	0.1532799	0.29050792	2.2578620	20	3 13.7	18.2
15456 1998 <i>YP</i> ₃	15.1	X	164.49455	221.81097	268.85480	5.30044	0.0926526	0.25472913	2.4646219	20	8 2.1	18.7
15457 1998 <i>YN</i> ₆	12.5	X	233.92421	34.49370	125.19749	22.95747	0.0753743	0.17129757	3.2109626	20	11 23.8	17.5
15458 1998 <i>YW</i> ₉	14.6	X	288.54123	264.55976	150.95572	1.42853	0.1920102	0.26190463	2.4193977	20	9 18.1	16.6
15459 1998 <i>YY</i> ₉	14.1	X	64.04187	11.41498	122.04643	2.39591	0.0945486	0.19434275	2.9518242	20	4 6.9	17.9
15460 Manca	13.6	X	155.74294	320.31907	92.41996	3.28743	0.0895672	0.19906273	2.9049774	20	4 15.6	17.9
15461 Johnbird	13.5	X	327.46312	39.96314	18.53687	13.41931	0.1239682	0.17305133	3.1892318	20	11 12.9	17.5
15462 Stumegan	13.7	X	208.86546	103.64712	324.05329	1.09046	0.0383281	0.20466194	2.8517491	20	7 2.6	17.6
15463 1999 <i>AT</i> ₂	13.7	X	357.47993	285.28192	92.33581	8.18096	0.0949932	0.21552428	2.7551077	20	11 23.4	17.1
15464 1999 <i>AN</i> ₅	14.2	X	186.62849	355.71983	14.31697	5.26405	0.1987462	0.28783148	2.2718371	20	3 21.8	17.9
15465 Buchroeder	14.3	X	359.90137	355.68208	130.91623	1.52760	0.0911545	0.18333679	3.0688074	20	—	—
15466 Barlow	13.5	X	138.34313	310.69376	131.69515	13.73843	0.1428918	0.24207315	2.5497933	20	5 10.9	17.6
15467 Aflorsch	13.6	X	132.62392	296.26325	148.73274	2.41758	0.0731636	0.19473763	2.9478325	20	4 28.6	17.9
15468 Mondriaan	13.7	X	305.41763	307.49373	356.22603	1.81413	0.0165116	0.19859582	2.9095287	20	5 27.7	17.7
15469 Ohmura	14.0	X	143.94187	59.60559	30.04688	2.09122	0.0672301	0.19872980	2.9082209	20	5 15.5	18.2
15470 1999 <i>BS</i>	15.5	X	342.11779	224.45184	179.82329	2.41486	0.1595341	0.26726873	2.3869168	20	12 27.4	17.6
15471 1999 <i>BE</i> ₅	13.9	X	346.48265	77.57957	115.00140	12.74125	0.0786480	0.23725605	2.5841905	20	2 20.9	17.1
15472 1999 <i>BR</i> ₅	14.0	X	217.37029	23.59117	164.78967	1.44294	0.1344522	0.17188777	3.2036082	20	11 25.5	18.9
15473 1999 <i>BL</i> ₉	12.7	X	153.80265	267.46486	185.69400	14.99158	0.1396797	0.24041545	2.5615007	20	6 5.5	17.0
15474 1999 <i>BG</i> ₁₁	14.2	X	249.30875	38.22357	2.74786	1.44981	0.1122324	0.20417935	2.8562409	20	7 8.2	18.3
15475 1999 <i>BQ</i> ₁₄	14.6	X	74.50117	241.04172	147.57293	6.56932	0.2204405	0.27756428	2.3275213	20	—	—
15476 Narendra	14.6	X	128.87289	187.54423	213.70125	6.84817	0.0986654	0.28471508	2.2883849	20	2 19.4	17.7
15477 1999 <i>CG</i> ₁	13.4	X	164.80904	7.97689	119.97015	6.16758	0.0519128	0.20436377	2.8545223	20	7 27.9	17.6
15478 1999 <i>CZ</i> ₂	13.6	X	299.81107	307.36764	186.91084	0.81427	0.1794033	0.17649686	3.1475893	20	—	—
15479 1999 <i>CH</i> ₉	14.5	X	321.33337	214.64077	191.10899	9.34803	0.1896915	0.26465006	2.4026364	20	11 19.5	16.4
15480 1999 <i>CB</i> ₁₄	12.9	X	32.11747	327.63670	135.61146	10.86942	0.0652748	0.18447602	3.0561601	20	1 11.0	17.0
15481 1999 <i>CK</i> ₁₉	14.0	X	98.21257	344.34483	331.04861	4.11595	0.1363081	0.26796680	2.3827696	20	2.3827696	20
15482 1999 <i>CB</i> ₂₁	13.6	X	302.04306	45.53883	92.90229	2.65262	0.1083221	0.17808481	3.1288504	20	—	—
15483 1999 <i>CW</i> ₂₅	13.3	X	112.53508	297.31007	336.86039	7.99071	0.0628029	0.17009521	3.2260765	20	11 20.7	18.2
15484 1999 <i>CU</i> ₄₆	13.3	X	90.86046	37.39875	352.56357	6.31253	0.0697832	0.18201323	3.0836665	20	1 2.9	17.5
15485 1999 <i>CY</i> ₅₃	13.7	X	336.49950	18.78776	94.18415	2.65228	0.1456413	0.17797627	3.1301224	20	—	—
15486 1999 <i>CP</i> ₆₂	13.9	X	83.13580	278.16924	149.42184	14.95968	0.1738811	0.23550418	2.5969902	20	2 13.3	16.8
15487 1999 <i>CC</i> ₆₃	13.0	X	191.00516	11.54365	225.63228	5.06669	0.1310386	0.17381468	3.1798875	20	12 26.0	18.1
15488 1999 <i>CB</i> ₇₅	12.5	X	334.99192	274.29424	176.24750	21.95332	0.0334692	0.17480730	3.1678383	20	—	—
15489 1999 <i>CJ</i> ₇₈	12.8	X	1.26670	207.27172	189.05449	7.80866	0.2104276	0.17398264	3.1778406	20	12 23.0	16.6
15490 1999 <i>CJ</i> ₈₁	14.3	X	108.11097	194.51708	221.37353	4.59293	0.2914736	0.23677285	2.5877051	20	3 17.0	18.1
15491 1999 <i>CW</i> ₈₅	13.6	X	349.64260	351.34005	326.92036	5.18777	0.2172454	0.30103640	2.2049058	20	9 13.1	14.7
15492 Nyberg	14.7	X	316.60527	45.88411	341.23853	2.13499	0.1821166	0.26054283	2.4278209	20	10 4.4	16.6
15493 1999 <i>CS</i> ₁₀₅	13.4	X	136.37714	289.44713	311.70320	11.98146	0.0632011	0.16922694	3.2371019	20	11 4.6	18.5
15494 1999 <i>CX</i> ₁₂₃	13.7	X	97.03343	309.76896	45.82259	15.10677	0.1333969	0.22649931	2.6653738	20	—	—
15495 Bogie	13.2	X	327.11251	208.34128	214.61335	4.53099	0.1390856	0.21573393	2.7533225	20	12 5.6	16.2
15496 1999 <i>DQ</i> ₃	13.3	X	30.08565	64.62897	97.72964	13.07013	0.1036508	0.23507803	2.6001278	20	3 26.5	16.5
15497 Lucca	14.4	X	225.43686	140.94686	80.35629	2.68970	0.1096989	0.17708209	3.1406506	20	—	—
15498 1999 <i>EQ</i> ₄	12.5	X	111.13747	257.43877	190.66215	9.68874	0.0686113	0.18850101	3.0124991	20	4 6.5	16.7
15499 Cloyd	12.9	X	113.67192	283.53446	152.76412	10.69394	0.0924217	0.18932172	3.0037867	20	3 31.2	17.3
15500 Anantpatel	14.8	X	215.82978	127.21261	17.24280	4.81428	0.1331197	0.25604554	2.4561671	20	10 14.8	18.2
15501 Pepawlowski	14.4	X	84.30309	336.68691	0.31006	1.70075	0.0699812	0.20258640	2.8711939	20	—	—
15502 1999 <i>NV</i> ₂₇	10.0	X	93.88206	182.13409	308.72578	16.82565	0.0154899	0.08499966	5.1230029	20	4 28.2	17.1
15503 1999 <i>RD</i> ₂₅	14.1	X	22.00765	36.64127	226.09355	3.55171	0.0606792	0.22852067	2.6496330	20	7 22.9	17.3
15504 1999 <i>RG</i> ₃₃	12.1	X	273.78764	273.78529	23.51840	34.92795	0.7742049	0.03431996	9.3778838	20	2 26.2	23.6
15505 1999 <i>RF</i> ₅₆	11.5	X	330.26492	215.31687	1.48489	7.97981	0.1176943	0.12544046	3.9522489	20	3 8.2	16.6
15506 Preygel	14.7	X	322.16499	330.31694	278.24560	4.80272	0.0613571	0.26945183	2.3740068	20	3 24.9	17.5
15507 Rengarajan	14.4	X	61.65529	356.57124	147.25731	5.65714	0.1428379	0.26583403	2.3954972	20	4 20.5	17.0
15508 1999 <i>TE</i> ₃₈	14.8	X	75.93558	188.60456	193.47021	3.50596	0.2275036	0.20192052	2.8775027	20	—	—
15509 1999 <i>TX</i> ₁₁₃	13.8	X	148.96655	322.14279	200.17326	12.39599	0.0697747	0.23032411	2.6357838	20	8 22.1	17.8
15510 Phoeberounds	15.2	X	85.98286	312.51778	156.06286	2.49399	0.0912805	0.26058622	2.4275513	20	3 29.5	18.1
15511 1999 <i>TD</i> ₁₈₅	13.2	X	350.39116	48.43079	257.36733	14.67223	0.1872652	0.23027931	2.6361256	20	7 31.4	15.9
15512 Snyder	12.2	X	25.33480	171.14113	127.16457	13.79855	0.0216736	0.18587495	3.0408066	20	9 9.5	16.5
15513 Emmermann	14.5	X	74.75619	311.69844	342.84905	4.89724	0.0804480	0.28612689	2.2808511	20	11 29.7	17.5
15514 1999 <i>VW</i> ₂₄	11.8	X	158.74598	263.73990	258.25358	19.59706	0.0775663	0.17609586	3.1523658	20</		

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15521 1999 XH ₁₃₃	11.2	X	181.82628	171.62591	10.40834	10.68102	0.0699119	0.08217624	5.2396854	20	10 5.6	18.5
15522 Trueblood	14.5	X	349.29484	241.85315	114.08546	9.83998	0.1250896	0.27888942	2.3201427	20	11 3.4	16.9
15523 Grenville	13.4	X	203.18739	228.65772	103.42008	10.24498	0.1617841	0.21319170	2.7751674	20	2 26.5	18.0
15524 1999 XO ₁₇₅	12.9	X	74.20460	297.84787	312.58770	11.48804	0.1147954	0.22003512	2.7173238	20	9 20.4	16.9
15525 1999 XH ₁₇₆	13.3	X	98.68261	309.15445	323.53757	8.93730	0.1939312	0.22596693	2.6695586	20	11 24.1	17.8
15526 Kokura	13.5	X	307.06313	314.15136	179.97757	16.18469	0.1653584	0.19167709	2.9791286	20	—	—
15527 1999 YY ₂	10.8	X	11.04799	168.50589	173.75673	21.26825	0.1546148	0.08290479	5.2089435	20	10 6.6	17.0
15528 2000 AJ ₁₀	15.1	X	200.28155	20.87915	286.32418	4.32008	0.1924912	0.30229519	2.1987806	20	1 13.1	18.3
15529 2000 AA ₈₀	11.4	X	100.70687	87.59194	169.53790	5.08479	0.0263336	0.08172910	5.2587787	20	10 4.8	18.4
15530 Kuber	15.0	X	324.13616	289.93588	78.53859	5.69356	0.1600687	0.28003477	2.3138121	20	10 2.5	16.8
15531 2000 AV ₉₉	15.3	X	152.38955	273.33836	91.93052	5.22991	0.1508661	0.30407307	2.1902015	20	2 7.8	18.2
15532 2000 AP ₁₂₆	12.5	X	86.04524	346.98152	297.06178	11.63950	0.0258159	0.17744022	3.1364233	20	10 29.0	17.2
15533 2000 AP ₁₃₈	13.9	X	170.66724	52.32489	99.03843	9.67918	0.1304736	0.27661579	2.3328388	20	9 12.9	17.5
15534 2000 AQ ₁₆₄	13.1	X	261.69513	310.07100	264.32167	7.81599	0.1517469	0.18564024	3.0433691	20	—	—
15535 2000 AT ₁₇₇	10.6	X	269.37584	302.32592	155.10036	13.17757	0.0841841	0.08362003	5.1791980	20	10 2.9	17.5
15536 2000 AG ₁₉₁	11.3	X	272.19985	258.78337	192.66819	14.65768	0.1433478	0.08295340	5.2069081	20	9 17.8	18.3
15537 2000 AM ₁₉₉	12.5	X	5.11632	187.36624	134.41340	12.53460	0.1312756	0.18422149	3.0589745	20	9 21.1	16.2
15538 2000 BW ₁₄	13.3	X	121.20492	279.58392	86.90443	10.33604	0.0747534	0.19239790	2.9716832	20	1 10.2	17.6
15539 2000 CN ₃	10.5	X	248.41261	329.69807	108.78183	27.94626	0.0438417	0.08114486	5.2839906	20	8 25.8	17.7
15540 2000 CF ₁₈	12.2	X	124.60105	79.06346	142.45317	16.97033	0.1098400	0.12426742	3.9770818	20	10 6.4	18.4
15541 2000 CN ₆₃	13.1	X	271.43430	138.02077	333.76056	18.39161	0.1255609	0.17673576	3.1447522	20	10 20.2	17.7
15542 2000 DN ₃	13.8	X	202.11873	87.36847	32.03554	9.93398	0.1046358	0.21533676	2.7567069	20	8 31.1	18.1
15543 Elizateel	15.6	X	345.36141	230.46330	188.52752	5.07703	0.1590212	0.23251213	2.6192220	20	—	—
15544 2000 EG ₁₇	14.0	X	149.12380	55.57752	345.03645	1.37457	0.0596757	0.19782980	2.9170346	20	3 20.4	18.3
15545 2000 EK ₄₆	13.1	X	255.98691	120.97126	348.23601	2.17577	0.1749898	0.12465364	3.9688627	20	9 22.4	18.8
15546 2000 EZ ₇₅	14.0	X	227.87511	288.59323	353.94134	11.49430	0.1451382	0.24090573	2.5580241	20	1 17.7	18.2
15547 2000 ET ₉₁	14.9	X	37.04159	15.65314	300.29882	2.84628	0.1349054	0.31474688	2.1404007	20	11 26.2	17.5
15548 Kalinowski	15.1	X	347.67804	261.56786	340.40888	5.03569	0.0926284	0.29739858	2.2228498	20	4 21.4	17.1
15549 2000 FN	13.8	X	318.22130	175.26469	127.16375	7.13319	0.2102625	0.29865778	2.2165975	20	5 19.0	15.8
15550 Sydney	13.3	X	212.62810	112.92162	228.06031	9.59140	0.1216717	0.19227356	2.9729641	20	3 12.1	18.1
15551 Paddock	12.9	X	215.39842	247.36819	35.81585	9.00232	0.1766248	0.18509500	3.0493428	20	1 12.2	18.1
15552 Sandashoukan	12.6	X	293.29938	95.09142	18.89647	16.34620	0.2072452	0.17967789	3.1103288	20	11 19.4	16.4
15553 Carachang	14.8	X	203.43661	203.54361	124.01713	6.85718	0.1476342	0.28892497	2.2661013	20	2 11.5	18.1
15554 2000 FH ₄₆	14.1	X	357.85769	251.69904	102.45128	7.08447	0.1404636	0.26532692	2.3985485	20	11 12.1	16.6
15555 2000 FD ₄₉	13.8	X	45.30998	266.27259	208.59413	10.29281	0.0639244	0.19092624	2.9869341	20	2 8.7	17.9
15556 2000 FW ₄₉	13.9	X	82.65228	34.41864	294.70957	6.08692	0.1264291	0.27016065	2.3698525	20	—	—
15557 Kimcochar	13.7	X	358.17461	72.57081	202.42569	1.16418	0.0856743	0.20370796	2.8606456	20	7 2.3	17.0
15558 2000 GR ₂	13.3	X	331.10732	327.67569	146.40581	14.71100	0.1261700	0.23750821	2.5823611	20	—	—
15559 Abigailhines	14.9	X	358.59300	240.49709	219.13067	1.78393	0.0816512	0.23267466	2.6180021	20	—	—
15560 2000 GR ₂₄	13.3	X	284.02218	137.43784	202.07058	12.00650	0.2621391	0.20239834	2.8729722	20	5 11.1	17.4
15561 2000 GU ₃₆	14.2	X	15.91985	178.61367	159.91316	10.47026	0.2434478	0.26533462	2.3985021	20	12 5.7	17.2
15562 2000 GF ₄₈	12.2	X	194.34021	217.61910	24.05549	11.58217	0.1966824	0.17631780	3.1497199	20	12 30.4	17.5
15563 Remsberg	15.1	X	166.60068	105.89041	12.67943	2.31979	0.1547560	0.25798626	2.4438338	20	7 21.6	18.8
15564 2000 GU ₄₈	13.8	X	272.54905	332.71072	327.50396	1.32689	0.0541196	0.19621207	2.9330462	20	4 4.9	17.9
15565 Benjaminsteele	14.4	X	305.00878	56.24585	272.47658	0.76271	0.0904892	0.20387575	2.8590758	20	6 20.4	17.8
15566 Elizabethbaker	15.7	X	118.23425	234.94762	171.81399	2.33327	0.1404745	0.28935128	2.2638750	20	2 21.2	18.2
15567 Giacomelli	14.8	X	248.16434	70.60517	228.27288	0.60463	0.0399002	0.19273826	2.9681835	20	3 7.4	19.0
15568 2000 GP ₅₄	13.8	X	40.84531	226.09768	268.46379	0.90986	0.0458440	0.19226614	2.9730407	20	2 28.9	17.8
15569 Feinberg	15.4	X	236.54652	241.58728	101.42076	1.76030	0.1841180	0.29317973	2.2441235	20	4 1.1	18.6
15570 2000 GT ₆₀	14.3	X	287.22224	186.90538	185.80062	1.46949	0.1288290	0.25635319	2.4542016	20	7 21.8	16.9
15571 2000 GM ₆₁	14.0	X	354.71726	335.64221	60.12625	0.63284	0.12128356	0.17328349	3.1863826	20	12 10.8	17.4
15572 2000 GH ₆₅	13.5	X	112.55755	213.83496	82.40185	2.10769	0.1602753	0.17088059	3.2161841	20	12 24.1	18.7
15573 2000 GX ₆₅	13.9	X	165.38856	269.87968	183.33024	1.71274	0.0370725	0.20278499	2.8693191	20	6 12.9	17.9
15574 Stephaniehass	15.2	X	90.83998	20.47196	23.01417	3.69128	0.1321466	0.28412804	2.2915358	20	1 7.8	17.5
15575 2000 GC ₆₈	13.6	X	15.76264	173.38492	180.09521	5.25097	0.1706447	0.21561768	2.7543120	20	11 29.3	16.9
15576 Munday	14.5	X	308.81208	99.90394	181.33467	1.92756	0.0705140	0.19763300	2.9189707	20	4 26.5	18.3
15577 Gywilliams	16.3	X	21.04876	35.99977	189.35640	2.16575	0.1184601	0.29837544	2.2179956	20	6 4.3	18.0
15578 2000 GW ₆₉	13.7	X	233.58274	28.11199	342.26720	1.35872	0.0778378	0.19991470	2.8967171	20	5 14.5	17.9
15579 2000 GP ₇₀	14.2	X	325.44252	60.20051	30.88528	3.23187	0.0413682	0.22418230	2.6837074	20	—	—
15580 2000 GE ₇₁	13.0	X	353.54581	270.21861	208.09008	7.38789	0.0494051	0.23182071	2.6244274	20	—	—
15581 2000 GV ₇₂	14.3	X	259.25584	33.53812	199.00456	2.10197	0.0492936	0.23348533	2.6119387	20	—	—
15582 Russellburrows	14.5	X	117.09391	34.40628	13.91316	1.68972	0.0977621	0.18954136	3.0014657	20	2 28.5	18.8
15583 Hanick	14.9	X	137.06002	139.92985	212.17053	1.81192	0.1326010	0.23149423	2.6268943	20	1 11.4	18.7
15584 2000 GO ₇₄	13.8	X	112.24698	131.13496	35.60144	13.47981	0.0584028	0.20487422	2.8497790	20	7 19.4	18.1
15585 2000 GR ₇₄	14.2	X	176.48600	285.08811	36.62031	9.05983	0.2398692	0.27985047	2.3148278	20	1 17.7	18.1
15586 2000 GV ₇₅	13.7	X	180.94967	309.03629	34.74985	13.66446	0.2312834	0.23474460	2.6025893	20	2 24.9	18.4
15587 2000 GK ₇₆	14.5	X	209.52684	304.19078	12.81834	2.32734	0.0144078	0.18888361	3.0084297	20	2 16.7	18.7
15588 2000 GO ₇₉	13.9	X	148.96162	74.08251	193.93540	1.02511	0.1505566	0.17198840	3.2023585	20	12 22.9	19.1
15589 2000 GB ₈₀	12.8	X	61.76360	217.38475	229.29474	9.10493	0.0545512	0.19033559	2.9931102	20	1 27.1	16.9
15590 2000 GH ₈₂	13.0	X	224.19656	103.30014	193.79921	12.36843	0.1613997	0.23525025	2.5988586	20	1 26.2	17.4
15591 2000 GP ₈₉	12.5	X	23.64410	349.07069	60.11433	13.37174	0.0861653	0.17835652	3.1256720	20	—	—
15592 2000 GJ ₉₁	14.4	X	64.13290	344.36873	128.77697	8.32066	0.2045445	0.24370873	2.5383723	20	3 24.2	17.1
15593 2000 GR ₉₃	13.2	X	275.82245	339.68951	131.01370	11.00012	0.1815068	0.17522861	3.1627585	20	10 30.6	17.5
15594 Castillo	14.4	X	116.18940	35.96268	4.78940	7.41222	0.1619824	0.28698536	2.2763003	20	2 16.9	17.2
15595 2000 GX ₉₅	14.2	X	229.80860	291.03218	19.90689	14.23388	0.1064315	0.23827349	2.5768288	20	2 28.0</	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15601 2000 GZ ₁₀₆	13.0	X	243.67781	85.77720	52.56039	11.45410	0.1748382	0.17257941	3.1950431	20	10 22.9	17.7
15602 2000 GA ₁₀₈	13.4	X	221.47485	311.15488	160.42900	4.69643	0.0225700	0.21291973	2.7775301	20	9 17.1	17.3
15603 2000 GG ₁₀₈	14.3	X	46.75706	176.38785	103.94347	6.49378	0.0732486	0.21092251	2.7950362	20	9 25.6	18.1
15604 Fruits	14.7	X	262.21549	110.51349	177.95877	8.69444	0.1832640	0.28826713	2.2695476	20	2 13.8	18.1
15605 2000 GY ₁₁₄	13.1	X	272.86381	222.63727	58.71051	14.18664	0.1483179	0.23902592	2.5714182	20	3 4.9	17.1
15606 Winer	14.7	X	19.12770	204.66466	97.17870	3.72558	0.1723600	0.30643979	2.1789100	20	10 17.3	16.8
15607 2000 GA ₁₂₄	13.8	X	296.56193	276.31699	108.62879	7.58397	0.2733157	0.25770039	2.4456408	20	8 1.8	16.0
15608 Owens	14.5	X	274.14247	43.36728	145.82408	7.34807	0.0420565	0.27870706	2.3211546	20	—	—
15609 Kosmaczewski	15.4	X	264.51694	163.52988	138.00630	6.73113	0.2898067	0.28813113	2.2702617	20	2 27.1	19.1
15610 2000 GY ₁₂₆	13.2	X	7.49177	65.88336	171.93418	10.98336	0.0891854	0.19590997	2.9360607	20	5 28.9	17.0
15611 2000 GD ₁₂₇	13.8	X	104.42035	107.28751	159.33092	8.18586	0.1625167	0.21418047	2.7666197	20	11 22.2	18.3
15612 2000 GV ₁₃₃	13.9	X	316.77230	82.80242	161.97249	11.58011	0.0566880	0.19245590	2.9710861	20	3 24.9	17.8
15613 2000 GH ₁₃₆	13.5	X	27.68030	333.81093	165.84401	12.78733	0.1071906	0.23970603	2.5665521	20	2 9.1	16.4
15614 Pillinger	13.5	X	242.04048	149.87112	148.35085	10.27360	0.0514822	0.19065499	2.9897664	20	2 28.7	17.9
15615 2000 HU ₁	12.4	X	116.75648	152.46860	180.20342	2.99606	0.2417930	0.12449491	3.9722355	20	—	—
15616 2000 HG ₁₀	13.3	X	184.89989	83.92999	160.75087	2.50721	0.1495445	0.17404768	3.1770488	20	12 27.8	18.3
15617 Fallowfield	14.8	X	210.22315	108.13360	193.59061	2.81351	0.1106687	0.28300399	2.2975996	20	1 15.4	18.1
15618 Lorifritz	16.3	X	297.90452	40.25748	172.77613	2.20979	0.1423712	0.28490527	2.2873664	20	—	—
15619 Albertwu	14.6	X	160.69364	304.78979	20.43675	2.17230	0.0967974	0.23010433	2.6374619	20	—	—
15620 Beltrami	15.2	X	175.00268	312.73929	204.08882	1.57383	0.1525487	0.26130244	2.4231134	20	9 16.7	19.0
15621 Erikhovland	12.7	X	220.56668	145.67945	109.75041	15.99113	0.1543890	0.23101862	2.6304985	20	—	—
15622 Westrich	15.1	X	340.47949	64.40957	150.08784	3.68832	0.0620417	0.29120830	2.2542404	20	3 5.1	17.3
15623 2000 HU ₃₀	14.4	X	151.64530	9.35815	18.54747	3.37576	0.1796388	0.28771116	2.2724704	20	3 11.5	17.8
15624 Lambertson	14.8	X	194.31415	189.69109	16.51167	1.92393	0.0469055	0.26923438	2.3752849	20	12 22.6	17.8
15625 2000 HB ₃₅	14.2	X	202.25539	276.89516	44.04264	15.54782	0.1359390	0.23783441	2.5799993	20	2 13.7	18.6
15626 2000 HR ₅₀	12.4	X	359.83844	288.18902	137.95429	1.80121	0.1125535	0.12538750	3.9533618	20	12 30.9	17.4
15627 Hong	14.3	X	237.31298	232.42403	67.49560	4.30240	0.1229865	0.23657219	2.5891682	20	2 16.9	18.3
15628 Gonzales	15.2	X	343.97965	135.14856	163.44395	0.92898	0.1398715	0.29984051	2.2107647	20	7 19.3	16.8
15629 Sriner	14.7	X	183.04773	18.08496	223.00560	1.20382	0.1067025	0.22244566	2.6976572	20	—	—
15630 Disanti	14.2	X	329.88803	38.75674	74.33935	5.46058	0.1159554	0.27784687	2.3259429	20	—	—
15631 Dellorusso	12.8	X	69.75237	250.51588	205.39415	10.54674	0.0798533	0.18941033	3.0028498	20	2 21.1	16.9
15632 Magee-Sauer	14.7	X	21.74439	47.97818	86.10367	5.11295	0.0921134	0.28638675	2.2794712	20	1 13.9	16.8
15633 2000 JZ ₁	13.6	X	206.84186	117.87751	97.57538	24.24292	0.2160231	0.27375698	2.3490517	20	12 28.4	16.6
15634 2000 JD ₁₅	13.7	X	226.05919	152.06081	64.86454	7.50759	0.0517132	0.27393232	2.3480492	20	—	—
15635 Andrewhager	14.3	X	27.95814	345.94163	329.04053	3.26142	0.1821694	0.25891281	2.4379999	20	11 6.1	17.3
15636 2000 JD ₃₁	13.3	X	254.78576	259.72635	262.39441	5.83138	0.1524704	0.17490254	3.1666882	20	12 4.2	17.7
15637 2000 JY ₅₃	12.7	X	192.77679	328.30137	238.16242	15.37688	0.0794517	0.17442838	3.1724244	20	11 26.9	17.6
15638 2000 JA ₆₅	11.4	X	100.17707	224.44662	116.63464	9.41130	0.1849886	0.12353762	3.9927295	20	—	—
15639 2074 P-L	15.7	X	241.41086	210.21525	239.02364	2.52206	0.0911244	0.27850157	2.3222962	20	9 10.3	18.5
15640 2632 P-L	14.6	X	218.01354	333.55514	18.16246	1.18734	0.2127701	0.19178334	2.9780281	20	3 29.8	19.7
15641 2668 P-L	16.1	X	298.50487	138.25877	111.65535	1.36545	0.0567366	0.28940397	2.2636002	20	2 23.5	18.6
15642 2679 P-L	16.0	X	241.79446	189.41609	160.01358	3.73089	0.1956250	0.29146855	2.2528983	20	4 14.1	19.3
15643 3540 P-L	13.6	X	327.13918	95.97949	278.61911	7.74362	0.1700221	0.21323639	2.7747796	20	9 21.7	16.6
15644 4157 P-L	15.3	X	33.74946	186.69249	304.64556	2.18150	0.1587884	0.28748607	2.2736565	20	1 30.3	17.0
15645 4163 P-L	14.2	X	201.89873	86.83273	228.34021	3.86674	0.0141243	0.18877977	3.0095328	20	2 3.4	18.5
15646 4555 P-L	15.2	X	22.50215	182.38819	167.79530	2.46148	0.2211063	0.26493358	2.4009220	20	12 24.8	18.2
15647 4556 P-L	13.7	X	168.09709	332.52487	43.18802	3.14686	0.1398113	0.19009356	2.9956503	20	3 17.1	18.4
15648 6115 P-L	15.5	X	66.43935	119.55032	338.00666	5.23689	0.0765610	0.28785325	2.2717225	20	2 6.6	17.8
15649 6317 P-L	14.9	X	93.15465	138.21165	245.80490	1.02454	0.0787270	0.20327560	2.8647004	20	—	—
15650 6725 P-L	14.3	X	296.12410	346.06074	163.58000	2.50583	0.1271715	0.18542970	3.0456724	20	—	—
15651 Tlepolemos	11.3	X	301.76833	29.77566	45.32357	2.96044	0.0401743	0.08084038	5.2972501	20	10 18.4	18.0
15652 1048 T-1	12.7	X	240.68050	267.18590	192.52313	22.36092	0.0803152	0.16974195	3.2305509	20	9 9.1	17.5
15653 1080 T-1	13.9	X	150.24098	241.54130	198.40659	8.99435	0.2296805	0.24447703	2.5330514	20	5 20.7	18.3
15654 1176 T-1	13.3	X	221.64769	19.50217	188.55083	6.09583	0.1011831	0.17355981	3.1829997	20	12 26.4	18.1
15655 2209 T-1	13.4	X	53.46527	303.04020	75.64277	3.01064	0.1866375	0.17451714	3.1713486	20	—	—
15656 3277 T-1	13.3	X	117.26757	136.40484	175.67655	0.53373	0.1230454	0.17202057	3.2019592	20	—	—
15657 1125 T-2	14.1	X	61.98136	186.15143	191.78977	1.00948	0.1812613	0.17372643	3.1809643	20	—	—
15658 1265 T-2	15.0	X	60.26889	287.00670	205.59978	1.42371	0.1269748	0.24279207	2.5447574	20	3 29.6	17.9
15659 2141 T-2	13.7	X	11.57529	323.23823	9.39153	5.14144	0.0536654	0.21016781	2.8017233	20	10 8.6	17.1
15660 3025 T-2	15.3	X	119.61189	257.55612	121.80776	2.35685	0.1867458	0.28228974	2.3014736	20	1 25.4	18.0
15661 3281 T-2	15.1	X	218.45952	172.04027	160.90431	4.50296	0.1816946	0.28615083	2.2807239	20	3 2.4	18.4
15662 4064 T-2	14.2	X	28.55282	321.96908	176.71856	8.51625	0.0310970	0.28389083	2.2928121	20	2 1.2	16.8
15663 Periphas	10.8	X	328.78158	23.67338	12.08916	33.88342	0.1049698	0.08323010	5.1953613	20	10 4.0	17.2
15664 4050 T-3	14.6	X	130.48622	284.46314	135.52841	5.07856	0.1456322	0.24162995	2.5529102	20	3 31.9	18.4
15665 4094 T-3	14.7	X	276.95177	282.79742	60.39690	4.94150	0.0740950	0.24693694	2.5162010	20	6 2.4	17.8
15666 5021 T-3	14.0	X	106.80974	248.97113	151.90918	9.40762	0.1662675	0.23909992	2.5708876	20	2 9.2	17.4
15667 5046 T-3	15.3	X	12.85813	356.24465	116.96413	6.17813	0.1162195	0.28343656	2.2952613	20	—	—
15668 5138 T-3	14.4	X	329.00034	86.13732	61.01242	12.96689	0.1297345	0.23651403	2.5895926	20	—	—
15669 Pshenichner	14.5	X	50.53819	329.37630	356.46483	2.77140	0.2060403	0.26068063	2.4269651	20	12 22.8	18.0
15670 1975 SO ₁	13.8	X	106.49833	334.68081	145.07810	2.38545	0.0409025	0.18916210	3.0054763	20	5 7.4	18.0
15671 Suzannedébarbat	12.3	X	169.43828	18.38301	185.09166	7.20894	0.1028275	0.12519991	3.9573096	20	10 23.9	18.3
15672 Sato-Norio	14.9	X	170.21486	152.94496	4.66019	2.27940	0.1406433	0.26113079	2.4241751	20	9 14.2	18.6
15673 Chetaev	14.4	X	271.97937	5.28951	319.13170	5.36720	0.2683919	0.30071168	2.2064928	20	3 30.5	17.8
15674 1978 RR ₇	14.4	X	68.10092	324.67242	171.67241	6.16011	0.0478003	0.27442929	2.3452136	20	4 3.6	17.0
15675 Golosevo	13.3	X	3.87688	196.70501	186.19929	3.95104	0.1088222	0.21334346	2.7738512	20	12 9.8	16.6
15676 Almoisheev	13.1	X	143.40767	58.92949	322.62225	4.84891	0.3316604	0.17664946	3.1457763	20	3 12.8	18.6
15677 1980 TZ ₅	12.2	X	91.19119	1.54339	12.95							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15681 1981 <i>ES</i> ₁₇	14.4	X	73.44334	86.82658	257.17035	2.03982	0.0972295	0.21788453	2.7351750	20	—	—
15682 1981 <i>EB</i> ₂₅	13.7	X	98.02970	135.69269	178.68352	11.55822	0.2333058	0.19052125	2.9911655	20	—	—
15683 1981 <i>EX</i> ₂₅	15.3	X	142.76067	130.83230	179.63282	4.08395	0.1140212	0.26974932	2.3722610	20	—	—
15684 1981 <i>ED</i> ₂₈	14.4	X	155.03443	144.86656	153.36732	2.82688	0.0859196	0.21938477	2.7226913	20	—	—
15685 1981 <i>EU</i> ₃₃	15.1	X	149.84605	105.97045	233.99407	5.69624	0.1358509	0.27275966	2.3547743	20	1 3.8	18.3
15686 1981 <i>EW</i> ₃₃	14.9	X	123.61655	106.07279	251.95471	2.69981	0.1147600	0.22226788	2.6990955	20	1 2.5	18.4
15687 1981 <i>ES</i> ₃₈	14.9	X	81.36146	146.14301	197.79364	6.57253	0.1314611	0.26805708	2.3822346	20	—	—
15688 1981 <i>UW</i> ₂₃	12.8	X	130.84605	283.42443	59.64701	13.94447	0.2022362	0.23604357	2.5930323	20	1 1.5	16.7
15689 1981 <i>UP</i> ₂₅	13.2	X	30.44369	1.12153	201.25800	7.73368	0.1954045	0.24325155	2.5415519	20	5 27.7	15.6
15690 1982 <i>JD</i> ₃	14.2	X	117.62640	308.79751	80.81519	7.58732	0.1110580	0.27834267	2.3231800	20	1 27.1	17.0
15691 Maslov	14.7	X	139.10044	29.94482	332.49676	3.12621	0.2425375	0.27090579	2.3655049	20	2 3.3	18.1
15692 1984 <i>RA</i>	15.0	X	73.37666	273.21356	142.56544	23.22022	0.1020782	0.36866184	1.9262704	20	—	—
15693 1984 <i>SN</i> ₆	13.0	X	62.18551	128.24092	61.74290	3.29119	0.0876510	0.24028741	2.5624105	20	6 16.6	16.1
15694 1985 <i>RR</i> ₃	12.9	X	268.22830	149.74630	169.97056	10.96423	0.0969475	0.18978652	2.9988804	20	4 21.8	17.3
15695 Fedorshpig	14.5	X	37.89102	338.33750	52.56436	2.82224	0.2464351	0.26050829	2.4280354	20	—	—
15696 1986 <i>QG</i> ₁	14.5	X	335.81586	85.03882	111.60379	4.57656	0.0125266	0.27873053	2.3210243	20	2 10.8	17.4
15697 1986 <i>QO</i> ₁	13.5	X	355.99880	194.71946	113.03878	4.27814	0.1442792	0.20233220	2.8735982	20	8 17.1	16.6
15698 1986 <i>QO</i> ₂	13.6	X	50.21647	200.02887	120.70135	1.86195	0.1670748	0.17813590	3.1282521	20	11 24.1	18.0
15699 Lyytinen	14.5	X	122.64515	324.94982	42.98970	4.10588	0.2222934	0.27256554	2.3558922	20	1 21.8	17.7
15700 1987 <i>QD</i>	14.7	X	12.71472	119.47586	175.45060	26.79201	0.3152663	0.30020291	2.2089851	20	10 22.4	17.0
15701 1987 <i>RG</i> ₁	14.3	X	222.60968	348.52071	348.58712	1.21903	0.1839169	0.25911894	2.4367068	20	3 13.1	18.0
15702 Olegkotov	13.2	X	47.43097	115.59693	288.00923	7.95237	0.1378301	0.21774420	2.7363500	20	—	—
15703 Yrjölä	14.8	X	332.31306	122.60012	254.49903	6.02465	0.1329937	0.30013409	2.2093228	20	11 3.8	16.6
15704 1987 <i>SE</i> ₇	15.1	X	323.85018	54.09679	297.05646	4.82362	0.1917127	0.29792328	2.2202391	20	8 28.9	16.5
15705 Hautot	13.8	X	184.98306	269.92238	269.92194	6.96541	0.0871495	0.26248939	2.4158032	20	10 29.7	17.2
15706 1988 <i>CE</i> ₂	14.2	X	237.39909	58.44173	307.39199	6.44961	0.1498997	0.28603053	2.2813633	20	5 1.5	17.5
15707 1988 <i>RN</i> ₄	13.8	X	283.21025	279.40533	336.66302	11.19250	0.2557997	0.23679706	2.5875288	20	1 27.6	17.9
15708 1988 <i>RB</i> ₁₂	14.1	X	298.84939	345.59849	350.44031	5.42627	0.2567929	0.24307773	2.5427633	20	5 23.7	17.1
15709 1988 <i>XH</i> ₁	13.0	X	152.84466	249.41820	78.12900	13.92840	0.1874628	0.22499293	2.6772574	20	1 4.9	17.2
15710 Böcklin	13.7	X	328.56356	173.00022	116.26813	6.99983	0.1880812	0.29355722	2.2421993	20	5 23.2	15.4
15711 1989 <i>GZ</i> ₁	15.3	X	266.96329	48.45469	253.69681	2.05181	0.0582105	0.28479448	2.2879595	20	3 23.2	18.0
15712 1989 <i>RN</i> ₂	13.0	X	177.65341	320.25735	349.01711	11.22269	0.2057650	0.17341445	3.1847782	20	1 14.7	18.5
15713 1989 <i>SM</i> ₄	13.8	X	297.38863	245.13010	108.95716	2.52060	0.1352652	0.18526111	3.0475199	20	7 5.9	17.7
15714 1989 <i>TL</i> ₁₅	14.3	X	200.53385	87.56297	322.37831	1.42134	0.1504627	0.24554364	2.5257106	20	5 24.9	18.2
15715 1989 <i>UN</i> ₁	14.7	X	186.64785	184.77996	213.43502	4.81504	0.2865599	0.24225314	2.5485301	20	4 27.6	19.3
15716 Narahara	13.3	X	251.19053	303.49924	75.23153	15.24310	0.1900457	0.21314488	2.7755738	20	6 2.1	17.4
15717 1990 <i>BL</i> ₁	13.4	X	90.25575	258.57983	177.11977	12.92258	0.1593130	0.23252080	2.6191569	20	3 2.7	16.6
15718 Imokawa	13.5	X	97.85967	189.44410	305.14241	11.14408	0.1104388	0.23613942	2.5923306	20	5 21.9	17.2
15719 1990 <i>CF</i>	13.3	X	90.93972	350.56123	113.98534	14.29547	0.1036197	0.23321539	2.6139538	20	4 10.9	17.0
15720 1990 <i>EN</i> ₁	13.6	X	114.29931	350.45103	208.69166	7.44012	0.1519302	0.20976096	2.8053450	20	10 2.4	18.1
15721 1990 <i>OV</i>	14.5	X	277.57777	87.10132	208.36505	6.31256	0.1296097	0.28884822	2.2665028	20	3 16.8	17.5
15722 1990 <i>QV</i> ₂	12.8	X	285.30374	137.67057	177.26229	10.40083	0.1068658	0.18967875	3.0000162	20	5 5.2	17.0
15723 Girraween	14.6	X	242.84059	8.06180	359.10434	1.42542	0.1330082	0.28743277	2.2739375	20	5 13.5	17.6
15724 Zille	14.0	X	78.16866	220.13063	211.61550	5.40683	0.1032208	0.27676242	2.3320148	20	1 22.5	16.5
15725 1990 <i>TX</i> ₄	13.5	X	313.36339	91.07947	212.49532	8.23644	0.1497935	0.19214683	2.9742712	20	5 22.3	17.1
15726 1990 <i>TG</i> ₅	15.0	X	266.71000	84.33206	295.43123	3.75791	0.1854411	0.29181026	2.2511392	20	6 23.7	17.6
15727 Ianmorison	15.0	X	195.22847	126.91203	276.88545	3.23650	0.1376085	0.28578334	2.2826787	20	5 10.9	18.5
15728 Karlmay	14.9	X	257.28855	351.59011	277.57865	2.49466	0.0820453	0.28102864	2.3083535	20	1 25.6	18.0
15729 Yumikoitahana	14.9	X	178.70408	141.38756	284.91970	3.20546	0.1696037	0.28530738	2.2852166	20	5 24.7	18.4
15730 1990 <i>UA</i> ₁	12.6	X	234.41583	221.30111	236.57219	12.07611	0.1291431	0.22561198	2.6723579	20	8 27.4	16.8
15731 1990 <i>UW</i> ₂	13.2	X	136.87333	240.03925	82.38524	7.10297	0.1145176	0.17294757	3.1905073	20	—	—
15732 Vitusbearing	12.5	X	186.77218	191.57025	122.48783	10.41489	0.0563405	0.17469132	3.1692402	20	1 20.4	17.3
15733 1990 <i>VB</i> ₆	14.2	X	65.36255	298.39397	132.77176	7.55527	0.0839811	0.27389359	2.3482706	20	—	—
15734 1990 <i>VW</i> ₁	14.9	X	5.31201	2.02369	131.58646	5.28372	0.0439405	0.27419719	2.3465369	20	—	—
15735 Andakerkhoven	13.0	X	132.41771	257.62501	95.45822	10.45902	0.0745410	0.17404909	3.1770317	20	1 9.9	17.7
15736 Hamanasa	13.7	X	195.63335	18.74312	86.32060	6.32381	0.1582930	0.25430034	2.4673916	20	8 1.6	17.5
15737 1991 <i>CL</i>	12.5	X	105.56505	50.36099	128.40175	13.94807	0.1560788	0.21389273	2.7691004	20	8 4.8	16.7
15738 1991 <i>DP</i>	13.0	X	186.95124	350.49165	147.49395	10.81664	0.0361509	0.18481307	3.0524432	20	9 4.2	17.4
15739 Matsukuma	14.2	X	149.57721	331.00668	165.10433	8.04324	0.0808407	0.24695522	2.5160769	20	7 23.0	17.9
15740 Hyakumangoku	13.4	X	61.15311	314.43416	176.96365	14.94001	0.1290343	0.23803876	2.5785225	20	3 31.8	16.4
15741 1991 <i>GZ</i> ₆	15.2	X	307.72555	224.28233	246.52767	2.22393	0.0880870	0.29178450	2.2512716	20	—	—
15742 Laurabassi	13.8	X	204.00285	15.43577	238.95949	14.23340	0.0322736	0.22353430	2.6888915	20	—	—
15743 1991 <i>ND</i> ₇	14.1	X	154.97129	161.91175	155.10055	2.79681	0.0457372	0.22135844	2.7064832	20	—	—
15744 1991 <i>PU</i>	13.6	X	121.60279	81.93674	289.56489	4.15406	0.1313847	0.22097694	2.7095972	20	1 19.3	17.4
15745 Yuliya	17.3	X	305.09522	140.63368	132.61509	14.42832	0.2551811	0.43705824	1.7196623	20	2 16.9	18.9
15746 1991 <i>PN</i> ₈	14.4	X	46.28804	213.76426	175.12483	1.96213	0.2326286	0.21425586	2.7659707	20	—	—
15747 1991 <i>RW</i> ₂₃	13.5	X	21.12151	187.23415	198.72333	4.00767	0.0797027	0.21121884	2.7924214	20	—	—
15748 1991 <i>RG</i> ₂₅	13.3	X	84.68851	224.12081	91.72719	9.10362	0.2172112	0.21035898	2.8000257	20	—	—
15749 1991 <i>VT</i> ₁	14.4	X	310.61336	144.44969	262.22235	2.95091	0.1158569	0.30509482	2.1853089	20	11 8.2	16.0
15750 1991 <i>VJ</i> ₄	13.6	X	175.35974	278.88085	42.38745	7.01826	0.1489415	0.28505343	2.2865737	20	1 8.1	17.0
15751 1991 <i>VN</i> ₄	11.9	X	200.01098	279.94968	92.99837	11.64212	0.1119911	0.18945530	3.0023746	20	4 16.8	16.8
15752 Eluard	13.0	X	80.39475	238.20458	144.97447	10.85241	0.2351911	0.17599955	3.1535158	20	1 4.0	17.0
15753 1992 <i>DD</i> ₁₀	13.4	X	130.99026	117.08910	213.97347	4.43068	0.1074730	0.16868170	3.2440738	20	—	—
15754 1992 <i>EP</i>	14.1	X	193.64954	179.72328	70.07814	5.84016	0.1930287	0.26854283	2.3793610	20	—	—
15755 1992 <i>ET</i> ₅	13.8											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15761 Schumi	13.3	X	79.64670	307.81919	182.27760	10.50105	0.0584640	0.23395704	2.6084267	20	4 16.9	16.6
15762 Rühmann	13.8	X	314.29960	57.77208	272.83396	4.18462	0.2213251	0.24310561	2.5425689	20	6 20.7	15.9
15763 Nagakubo	13.4	X	15.65173	353.90661	76.71045	9.73523	0.0740041	0.21856284	2.7295130	20	—	—
15764 1992 UL ₈	13.4	X	142.34954	139.10928	262.02285	11.84396	0.2035192	0.22840731	2.6505096	20	3 18.5	17.9
15765 1992 WU ₁	14.7	X	229.71967	164.91785	231.13846	5.21565	0.3414595	0.23638454	2.5905382	20	5 22.9	19.2
15766 Strahlenberg	12.7	X	66.98278	69.96165	298.32312	5.12361	0.0473470	0.17511639	3.1641096	20	—	—
15767 1993 FN ₇	13.4	X	216.12259	218.41962	141.53255	6.34643	0.1617357	0.18506682	3.0496524	20	4 11.6	18.4
15768 1993 FW ₁₁	15.7	X	350.20578	181.55141	130.62978	4.28759	0.2048248	0.29959517	2.2119714	20	9 4.6	16.8
15769 1993 FP ₂₃	15.1	X	159.68309	111.10355	307.77244	1.92434	0.1607565	0.25784479	2.4447276	20	4 26.7	18.9
15770 1993 FL ₂₉	13.5	X	180.63257	79.93901	290.33423	3.80812	0.1835657	0.18260859	3.0769605	20	3 20.4	18.8
15771 1993 FS ₃₄	13.4	X	145.57503	293.05015	53.87630	2.18376	0.1895871	0.17494229	3.1662086	20	1 27.8	18.4
15772 1993 FW ₃₄	13.6	X	153.43128	174.33177	135.85944	2.70560	0.1389990	0.17041833	3.2219973	20	—	—
15773 1993 FO ₃₇	14.3	X	308.86575	349.46013	167.72782	3.57318	0.0348634	0.20914302	2.8108681	20	—	—
15774 1993 FK ₃₈	13.4	X	232.79036	116.99704	152.26956	4.38685	0.0394857	0.17600791	3.1534159	20	1 16.7	18.0
15775 1993 FA ₄₉	15.1	X	74.73794	333.13195	335.87966	0.65277	0.1976625	0.30803309	2.1713898	20	—	—
15776 1993 KO	13.9	X	70.45724	25.96590	198.55815	5.73840	0.1188996	0.29758962	2.2218984	20	8 25.6	16.7
15777 1993 LF	12.5	X	192.46966	183.43762	119.30590	15.56278	0.1078469	0.24144659	2.5542025	20	1 5.4	16.4
15778 1993 NH	14.7	X	221.21142	81.11980	245.76203	22.26489	0.3120976	0.28176389	2.3043361	20	2 14.0	19.5
15779 Scottroberts	13.4	X	198.55388	59.86396	282.95457	23.21691	0.2422568	0.27808486	2.3246156	20	2 16.4	17.9
15780 1993 OO ₃	15.2	X	80.86491	63.25707	298.92842	1.39035	0.2170196	0.26949122	2.3737755	20	—	—
15781 1993 OJ ₇	14.2	X	141.82454	118.07570	297.53980	5.85595	0.0965695	0.28219008	2.3020154	20	3 25.3	17.4
15782 1993 ON ₈	15.3	X	321.94966	105.90552	107.21891	3.24467	0.0621984	0.28201327	2.3029775	20	2 5.8	17.9
15783 Briancox	12.2	X	139.28163	119.01713	220.39316	4.84059	0.2573845	0.12514291	3.9585112	20	1 22.8	18.6
15784 1993 QZ	14.2	X	111.37129	183.17507	163.86567	21.84853	0.1580544	0.27022222	2.3694925	20	—	—
15785 de Villegas	13.1	X	202.22332	283.75547	156.43541	14.19154	0.0552206	0.17637754	3.1490088	20	7 7.7	18.0
15786 1993 RS	14.2	X	86.26331	46.11187	351.48585	22.48019	0.0478091	0.38132109	1.8833982	20	—	—
15787 1993 RY ₇	15.1	X	63.90182	341.23981	289.78879	1.21875	0.1658786	0.25736249	2.4477810	20	10 22.6	18.4
15788 1993 SB	7.9	X	356.45941	79.01229	354.67276	1.93610	0.3169996	0.00402201	39.1598365	20	11 29.7	22.1
15789 1993 SC	7.0	X	71.61996	316.82301	354.53498	5.14901	0.1884192	0.00396655	39.5239834	20	11 6.1	22.9
15790 Keizan	13.5	X	160.20571	293.49940	23.53118	22.85802	0.3168382	0.27178385	2.3604073	20	1 5.5	18.0
15791 Yoshiewatanabe	14.2	X	67.95550	340.89914	77.15792	3.35343	0.2026355	0.26844506	2.3799387	20	—	—
15792 1993 TS ₁₅	15.2	X	358.45617	216.63173	153.71303	2.42576	0.1987161	0.22136646	2.7064177	20	11 28.9	17.9
15793 1993 TG ₁₉	14.9	X	128.80151	221.04267	49.41475	4.24824	0.1869460	0.26326340	2.4110658	20	12 24.5	18.9
15794 1993 TG ₃₁	14.5	X	141.73139	171.56566	69.35500	3.78329	0.1402154	0.25990960	2.4317626	20	11 30.1	18.2
15795 1993 TY ₃₈	14.2	X	63.61880	270.30061	161.79146	7.79066	0.1479004	0.23207161	2.6225355	20	1 14.6	17.1
15796 1993 TZ ₃₈	13.6	X	77.11721	150.78464	144.66383	6.88065	0.1258259	0.25907719	2.4369686	20	12 4.8	17.2
15797 1993 UD ₃	13.8	X	92.03382	99.01041	256.14156	5.33108	0.1500279	0.26514190	2.3996642	20	—	—
15798 1993 VZ ₄	14.4	X	42.28495	348.04199	29.50360	1.73673	0.1962932	0.26122814	2.4235729	20	—	—
15799 1993 XN	12.8	X	333.04691	280.06498	268.22336	12.14416	0.1263659	0.22886174	2.6469998	20	1 16.4	16.1
15800 1993 XP	13.4	X	170.64716	207.30821	267.68146	12.26989	0.1150415	0.24251414	2.5467013	20	7 17.5	17.4
15801 1994 AF	14.4	X	350.69097	166.48253	240.39704	3.47084	0.1859163	0.25631023	2.4544758	20	—	—
15802 1994 AT ₂	14.3	X	53.70663	108.66883	252.75441	4.77225	0.0729275	0.21795206	2.7346100	20	—	—
15803 1994 CW	13.5	X	197.91495	218.66343	158.46001	14.43175	0.1873403	0.23678392	2.5876244	20	4 14.8	17.9
15804 Yenisei	13.4	X	26.89074	297.52965	116.59035	6.27134	0.0500599	0.21734608	2.7396906	20	—	—
15805 Murakamitakehiko	13.6	X	174.75226	238.80060	40.14710	5.50915	0.1967725	0.28789861	2.2714839	20	—	—
15806 Kohei	12.7	X	28.64480	43.23491	128.97582	10.33091	0.1168288	0.18808600	3.0169289	20	4 9.5	16.5
15807 1994 GV ₉	7.4	X	77.37519	307.03274	176.59735	0.56004	0.0581871	0.00339887	43.8106691	20	4 17.4	23.8
15808 Zelter	13.4	X	80.86260	117.93514	107.29685	1.32137	0.0850088	0.20087611	2.8874681	20	8 26.6	17.5
15809 1994 JS	7.8	X	356.10900	237.36057	56.28334	14.03265	0.2250910	0.00353707	42.6619112	20	7 10.3	23.0
15810 Arawn	7.7	X	32.91813	104.60752	144.79086	3.79859	0.1231634	0.00393746	39.7184060	20	7 13.2	23.2
15811 Nüsslein-Volhard	12.8	X	171.86681	75.08110	225.52302	9.61076	0.1660003	0.17168674	3.2061085	20	—	—
15812 1994 PZ	15.0	X	131.29300	139.86030	149.62860	3.11534	0.1644710	0.31590226	2.1351787	20	—	—
15813 1994 PL ₁₂	14.8	X	96.89840	269.51387	260.17114	1.48286	0.1361800	0.26065406	2.4271301	20	7 14.1	18.0
15814 1994 PX ₁₂	15.6	X	75.34398	181.14730	199.10652	1.72131	0.1659760	0.24092706	2.5578731	20	—	—
15815 1994 PY ₁₈	14.3	X	74.15354	10.15078	331.06852	11.18140	0.2750350	0.27594229	2.3366332	20	—	—
15816 1994 PV ₃₉	14.8	X	73.33650	330.01315	275.01159	1.30376	0.1815588	0.26857602	2.3791650	20	10 2.7	18.1
15817 Lucianotesi	18.4	X	25.56650	94.31717	162.49592	13.87263	0.1182156	0.64644660	1.3246901	20	10 23.3	18.4
15818 DeVeny	16.6	X	246.74541	233.19650	274.82848	0.78551	0.0704309	0.27172122	2.3607700	20	12 12.4	19.3
15819 Alisterfling	14.2	X	35.10271	119.48653	181.90177	6.83409	0.1135086	0.30508914	2.1853360	20	10 30.4	16.6
15820 1994 TB	7.3	X	2.17967	98.71249	317.25676	12.14441	0.3146188	0.00399470	39.3380674	20	11 21.6	21.6
15821 Iijimatatsushi	14.4	X	11.31768	312.92735	120.32173	3.28855	0.0385987	0.31437281	2.1420983	20	—	—
15822 1994 TV ₁₅	14.6	X	176.52713	150.10462	190.84252	22.02396	0.0798225	0.36251071	1.9479994	20	1 12.3	17.5
15823 1994 UO ₁	15.1	X	10.86085	173.15523	204.39829	1.59464	0.1563742	0.30783312	2.1723301	20	—	—
15824 1994 WM ₁	14.6	X	214.73311	38.17849	65.49723	15.89333	0.0842930	0.25782790	2.4448344	20	9 4.5	18.3
15825 1994 WX ₁	14.8	X	67.59134	229.31505	257.83553	2.72506	0.0890895	0.24563895	2.5250573	20	3 26.6	17.8
15826 1994 YO	15.3	X	257.51988	272.82604	107.33459	3.88578	0.1655551	0.29209916	2.2496546	20	6 15.2	18.1
15827 1995 AO ₁	13.8	X	244.82355	308.23266	210.68330	10.08847	0.3151150	0.22175846	2.7032274	20	11 6.1	17.8
15828 Sincheskul	14.6	X	283.83741	39.36513	132.28030	7.41943	0.0583253	0.26775381	2.3840330	20	—	—
15829 1995 BA ₁	13.9	X	85.59257	295.71453	117.86653	14.47346	0.1756852	0.23628684	2.5912522	20	1 30.4	16.9
15830 1995 BW ₁	15.0	X	62.92300	329.37038	131.19139	8.99955	0.2200219	0.23765916	2.5812675	20	3 5.9	17.6
15831 1995 BG ₃	13.1	X	18.37043	277.93052	281.13048	11.77960	0.0799034	0.20371747	2.8605566	20	4 15.5	16.9
15832 1995 CB ₁	14.1	X	356.62526	279.84052	103.36178	7.15646	0.1588994	0.26205339	2.4184820	20	12 20.9	16.5
15833 1995 CL ₁	14.1	X	302.62940	53.51642	132.47557	13.39955	0.1537618	0.23068184	2.6330581	20	—	—
15834 McBride	13.4	X	136.12302	301.30614	270.10307	32.39802	0.2585708	0.21310012	2.7759625	20	10 2.9	19.0
15835 1995 DY	14.3	X	327.89812	83.98506	193.69151	2.30305	0.3176007	0.24136965	2.5547453	20	5 10.6	17.1
15836 1995 DA ₂	7.7	X	65.27341	333.19504	127.58061	6.56540	0.0712649	0.00450716	36.2967449	20	3 15.6	23.2
15837 Mariovalori	14.1											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15841 Yamaguchi	14.4	X	227.47211	298.83045	284.68492	20.29887	0.3235894	0.17694482	3.1422747	20	12 26.9	19.6
15842 1995 SX ₂	14.2	X	217.64589	280.59418	41.97978	3.50659	0.1907487	0.26107864	2.4244980	20	2 21.4	18.1
15843 Comcom	13.2	X	32.30047	326.03860	297.87785	11.95228	0.1819082	0.19801823	2.9151837	20	8 20.3	16.7
15844 1995 UQ ₅	12.7	X	268.60767	338.50313	317.78942	10.67547	0.1775940	0.18528145	3.0472968	20	3 8.9	17.5
15845 Bambi	14.5	X	336.83213	305.54584	64.04119	7.58684	0.1324771	0.27499283	2.3420085	20	10 28.2	16.5
15846 Billfyfe	14.4	X	189.60477	293.99953	40.37217	5.70544	0.1414763	0.25764997	2.4459598	20	2 11.8	18.2
15847 1995 WA ₂	15.2	X	244.25187	256.76077	215.87883	3.12094	0.1931829	0.27346791	2.3507068	20	9 30.8	18.0
15848 1995 YJ ₄	12.4	X	140.79372	281.36566	132.04013	25.98697	0.2991976	0.17683545	3.1435702	20	4 24.8	18.3
15849 Billharper	14.3	X	148.92296	102.67237	162.81994	2.37940	0.0709875	0.19434071	2.9518448	20	12 25.3	18.8
15850 1996 AE ₁	13.2	X	86.88154	269.78458	291.04847	15.09215	0.0521397	0.17984008	3.1084584	20	7 25.1	17.6
15851 Chrisfleming	13.3	X	99.39300	304.75484	292.83553	12.21803	0.1427841	0.22468585	2.6796963	20	10 4.7	17.7
15852 1996 BR ₁	14.2	X	62.28006	126.81016	103.99288	5.63028	0.1099504	0.29966784	2.2116138	20	8 26.3	16.7
15853 Benedettafaglia	14.8	X	64.39633	13.93666	119.87621	5.32241	0.1016108	0.29318593	2.2440919	20	4 1.7	17.0
15854 Numa	15.3	X	7.97201	12.21041	245.31964	5.80528	0.0984077	0.29698351	2.2249204	20	6 29.0	17.3
15855 Mariasalvatore	15.1	X	300.99026	106.86739	126.89953	4.40329	0.0909341	0.28569003	2.2831757	20	1 30.6	18.0
15856 Yanokoji	13.4	X	189.05816	262.88868	327.78123	7.87000	0.2041262	0.26979907	2.3719694	20	12 30.4	17.0
15857 Touji	14.2	X	350.99862	8.83679	207.17794	2.58930	0.1238732	0.28772514	2.2723968	20	3 17.0	16.2
15858 Davidwoods	15.6	X	64.62232	178.94735	127.87508	2.03489	0.1535093	0.30715817	2.1755113	20	12 17.5	18.4
15859 1996 GO ₁₈	15.0	X	272.83672	135.46001	201.16563	4.57418	0.1326112	0.28882007	2.2666500	20	5 9.3	17.8
15860 Sirán	14.7	X	358.34392	299.48669	123.27525	7.90299	0.0948944	0.26915839	2.3757319	20	—	—
15861 Ispahan	12.6	X	182.69958	247.97989	41.01707	13.63894	0.1338631	0.19035800	2.9928753	20	—	—
15862 1996 HJ ₁₅	14.6	X	4.90780	84.12876	139.27063	1.11865	0.0377730	0.24641756	2.5197355	20	5 1.4	17.4
15863 1996 HT ₁₅	13.8	X	76.13950	259.07144	161.27721	2.21815	0.0824868	0.19542445	2.9409216	20	1 18.8	17.7
15864 1996 HQ ₂₃	15.2	X	266.14600	266.68990	139.28587	1.10602	0.1471446	0.29621969	2.2287436	20	8 8.2	17.7
15865 1996 HW ₂₅	14.5	X	182.81315	285.90754	75.36429	6.32811	0.2114394	0.27953901	2.3165469	20	3 11.2	18.4
15866 1996 KG	14.4	X	140.09113	279.21690	192.47239	2.90954	0.0531685	0.28894390	2.2660024	20	6 8.6	17.3
15867 1996 NK ₅	13.5	X	181.52688	46.91023	177.35042	0.77030	0.1293043	0.17630230	3.1499046	20	12 3.4	18.5
15868 Akiyoshidai	14.9	X	14.33259	230.40875	96.73304	4.53226	0.1648205	0.29125102	2.2540199	20	11 10.6	17.1
15869 Tullius	15.0	X	243.22463	62.49032	219.61889	12.15098	0.1837646	0.23085253	2.6317601	20	1 23.9	19.5
15870 Obúrka	14.4	X	220.68999	86.25227	208.76249	11.40722	0.1672443	0.22997567	2.6384454	20	1 21.1	19.0
15871 1996 QX ₁	13.3	X	85.92633	85.28798	312.15746	12.15611	0.1769008	0.22271973	2.6954437	20	1 13.3	16.5
15872 1996 RJ ₄	14.1	X	290.99210	100.95914	142.25536	2.46936	0.0887039	0.22997305	2.6384655	20	2 7.7	17.7
15873 1996 TH ₇	14.1	X	83.48428	7.89694	21.19451	2.75037	0.0818252	0.21997079	2.7178535	20	—	—
15874 1996 TL ₆₆	5.3	X	9.15984	184.15175	217.79092	23.99486	0.5776595	0.00130819	82.7983607	20	12 12.9	21.2
15875 1996 TP ₆₆	7.0	X	29.77708	74.71983	316.64083	5.70337	0.3290207	0.00401708	39.1918365	20	12 21.9	21.7
15876 1996 VO ₃₈	13.8	X	54.53085	173.88709	134.54400	2.86356	0.0620226	0.20495838	2.8489988	20	11 5.8	17.8
15877 1996 WZ ₁	12.1	X	329.43950	348.04405	98.77109	10.61676	0.1011191	0.17064725	3.2191153	20	12 24.5	16.1
15878 1996 XC ₃	12.9	X	148.32066	231.55503	108.40881	11.47048	0.1706932	0.17387371	3.1791677	20	1 20.6	18.0
15879 1996 XH ₆	13.7	X	341.74099	243.36827	109.63018	3.20838	0.1089309	0.19962288	2.8995405	20	9 23.0	17.0
15880 1997 AM ₇	15.2	X	227.14632	208.86500	328.38490	3.46800	0.0938538	0.28442739	2.2899277	20	12 24.6	17.9
15881 1997 CU	14.7	X	96.57495	11.72852	157.70982	6.10180	0.0488560	0.26768389	2.3844482	20	7 1.1	17.7
15882 1997 CF ₂₉	14.3	X	249.48927	14.79947	169.95781	2.30348	0.1327389	0.28308093	2.2971832	20	—	—
15883 1997 CR ₂₉	7.1	X	73.67274	299.79442	127.29779	19.19904	0.2105376	0.00307538	46.8314061	20	3 8.5	23.8
15884 Maspalomas	14.3	X	137.48023	58.78855	130.54675	7.06373	0.0544999	0.27662365	2.3327947	20	9 25.3	17.5
15885 1997 EE	14.9	X	5.74740	60.85100	43.19813	4.01554	0.0969844	0.29144524	2.2530184	20	—	—
15886 1997 EB ₆	15.1	X	176.28981	190.84102	48.60009	3.70175	0.1275730	0.28229039	2.3014700	20	—	—
15887 Daveclark	13.9	X	307.68375	192.07950	167.16100	1.88731	0.2059119	0.18391943	3.0623228	20	7 18.6	17.6
15888 1997 EE ₂₉	15.2	X	56.03455	230.08283	303.08262	0.49313	0.1248965	0.26096913	2.4251762	20	5 19.4	17.9
15889 Xiaoyuhe	15.2	X	69.75849	246.26317	180.76483	6.49575	0.0500233	0.29176689	2.2513622	20	—	—
15890 Prachatice	16.1	X	159.25777	339.82748	201.56918	2.66952	0.0959717	0.31467050	2.1407471	20	10 12.5	18.8
15891 Alissazhang	14.9	X	83.28354	169.75005	181.23610	4.37574	0.2002043	0.27943831	2.3171034	20	—	—
15892 1997 GB ₁₄	15.1	X	164.06629	186.87417	232.26152	3.56028	0.1302832	0.30253458	2.1976205	20	4 28.9	18.3
15893 1997 GV ₂₀	14.9	X	305.71255	280.50644	231.45009	2.89566	0.1583099	0.24514819	2.5284261	20	—	—
15894 1997 JA ₁₃	15.3	X	326.97996	167.77727	161.46326	3.02715	0.1501774	0.26255134	2.4154231	20	7 27.3	17.5
15895 1997 JJ ₁₅	14.5	X	201.24379	84.86021	211.40648	5.48560	0.1363647	0.28650807	2.2788276	20	—	—
15896 Birkhoff	15.6	X	52.18821	115.25488	139.38822	1.98552	0.1543074	0.26120489	2.4237167	20	9 15.9	18.6
15897 Beňacková	15.5	X	42.83706	247.79664	174.00447	2.54151	0.0949879	0.31348201	2.1461544	20	—	—
15898 Kharasterteam	13.1	X	287.69627	260.45434	327.93490	13.60271	0.0673236	0.23746694	2.5826603	20	1 20.6	16.8
15899 Silvain	15.4	X	22.41835	242.99763	66.91453	2.32761	0.0876384	0.30208705	2.1997905	20	10 17.9	17.8
15900 1997 RK ₃	14.3	X	77.51679	263.15324	84.99463	7.35253	0.1322157	0.26830911	2.3807425	20	—	—
15901 1997 RY ₈	13.4	X	345.65022	333.32834	172.10911	10.55683	0.1027416	0.18684968	3.0302222	20	—	—
15902 Dostál	14.9	X	242.79851	195.15666	179.16396	5.67139	0.0957931	0.28973013	2.2619011	20	5 29.4	17.9
15903 Rolandflorrie	13.9	X	167.43773	104.90887	158.01569	12.76181	0.1406728	0.22993062	2.6387901	20	—	—
15904 Halstead	14.2	X	251.92072	269.27118	242.10724	3.04671	0.0263587	0.30988423	2.1627338	20	—	—
15905 Berthier	14.3	X	254.95867	326.38000	18.66151	7.80137	0.1793369	0.24471052	2.5314399	20	4 22.9	18.0
15906 Yoshikaneda	15.1	X	260.50243	192.10971	188.79015	1.87836	0.1214202	0.29278356	2.2461474	20	6 26.9	17.8
15907 Robot	15.7	X	267.59705	91.46812	205.45662	5.33661	0.1309741	0.28344633	2.2952086	20	3 7.2	18.9
15908 Bertoni	14.2	X	20.38987	147.20690	309.33855	1.88108	0.0970066	0.18392692	3.0622397	20	—	—
15909 1997 TM ₁₇	14.4	X	288.66440	25.56845	257.55258	6.78917	0.1449392	0.28512427	2.2861949	20	3 9.8	17.6
15910 Shinkamigoto	14.3	X	329.29151	64.66271	206.95595	5.51442	0.1006021	0.28871145	2.2672185	20	5 7.0	16.4
15911 Davidgauthier	16.5	X	64.52846	274.16638	15.12495	2.13708	0.2092989	0.26004002	2.4309494	20	11 21.2	20.0
15912 1997 TR ₂₆	14.5	X	27.04438	299.11518	45.76216	3.63720	0.1913703	0.26009514	2.4306060	20	12 17.8	17.4
15913 Telemachus	12.0	X	292.49127	9.44697	49.03692	7.24918	0.0604168	0.08327688	5.1934157	20	9 19.7	18.7
15914 1997 UM ₃	14.1	X	48.59263	64.12905	348.52243	2.01846	0.2005366	0.26848867	2.3796810	20	—	—
15915 1997 UR ₃	14.1	X	137.18813	293.74472	37.18565	3.33426	0.0489669	0.22619397	2.6677720	20	—	—
15916 Shigeoyamada	14.1	X	235.66498	82.83574	103.82979	3.76603	0.0509883	0.26499583	2.4005460	20	—	—
15917 Rosahavel	13.5	X	266.26379	223.07604	225.92863	7.0						

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
15921 Kintaikyo	15.6 ^m	X	237.39105	64.25482	231.32538	6.40000	0.1193178	0.27979987	2.3151069	20	2 2.7	19.1
15922 Masajisaito	15.6	X	256.94370	194.53494	172.79522	2.98835	0.1892730	0.28990302	2.2610017	20	5 24.5	18.6
15923 1997 VN ₃	13.4	X	290.96810	36.78584	236.81824	18.10908	0.1891539	0.23704618	2.5857155	20	2 23.5	17.5
15924 Axelmartin	14.9	X	34.51265	292.20563	75.11779	3.05606	0.2009155	0.26453709	2.4033204	20	—	—
15925 Rokycany	13.0	X	170.64851	160.33109	284.43197	12.38791	0.1240558	0.23627001	2.5913753	20	6 10.1	17.0
15926 1997 VP ₆	14.4	X	265.35828	139.10353	225.29165	1.04556	0.1731286	0.24706028	2.5153635	20	6 1.4	17.6
15927 1997 WV ₂	13.8	X	42.39101	145.53982	268.33370	5.19833	0.0854662	0.26582058	2.3955780	20	—	—
15928 1997 WC ₃	14.1	X	89.56132	252.24671	91.32701	7.72132	0.1197522	0.26461591	2.4028431	20	—	—
15929 Ericlinton	13.4	X	181.96267	166.51087	53.42077	1.48705	0.1177159	0.17469468	3.1691996	20	11 29.0	18.2
15930 1997 WT ₃₇	14.5	X	106.54874	338.75704	350.65478	2.46636	0.1127438	0.26565504	2.3965731	20	—	—
15931 1997 WK ₄₅	13.1	X	334.61009	14.82047	71.35875	2.07648	0.1835283	0.17418638	3.1753620	20	—	—
15932 1997 XL ₅	13.7	X	136.10726	291.22579	132.17645	5.45151	0.0928569	0.23442421	2.6049601	20	4 6.6	17.4
15933 1997 YD	14.7	X	71.61913	17.26390	54.59703	1.42422	0.2015603	0.27136336	2.3628451	20	1 28.5	16.7
15934 1997 YQ	14.9	X	85.16070	172.11517	198.53899	2.36093	0.2073020	0.26569762	2.3963170	20	—	—
15935 1997 YT	14.3	X	224.52886	38.51992	272.71058	3.85323	0.0744057	0.22903119	2.6456941	20	2 17.5	18.3
15936 1997 YM ₄	13.4	X	239.75364	59.45069	269.90648	12.72924	0.1730756	0.23816471	2.5776134	20	3 14.2	17.8
15937 1997 YP ₅	14.5	X	28.26715	265.17284	126.06540	2.63002	0.2119303	0.26037727	2.4288498	20	—	—
15938 Bohnenblust	13.7	X	224.43726	317.94134	251.34282	11.93547	0.2093105	0.25641475	2.4538087	20	—	—
15939 Fessenden	12.4	X	250.23535	114.93779	106.92052	13.12352	0.1184484	0.17385961	3.1793396	20	—	—
15940 1997 YU ₁₃	13.5	X	338.12309	320.21576	358.62035	1.45023	0.0510862	0.19700040	2.9252162	20	7 31.3	17.1
15941 Stevegauthier	13.0	X	264.12764	355.78037	294.39317	14.43972	0.1132617	0.18607801	3.0385941	20	2 29.9	17.8
15942 1997 YZ ₁₆	14.0	X	3.95992	261.88320	149.65357	5.47359	0.1165600	0.25973587	2.4328468	20	—	—
15943 1998 AZ	13.1	X	314.56363	278.69226	326.32517	10.07134	0.0683537	0.18332676	3.0689194	20	3 16.4	17.3
15944 1998 AH ₅	13.1	X	31.22774	351.69847	140.83098	2.63692	0.1227434	0.17893037	3.1189855	20	2 18.8	16.9
15945 Raymondavid	13.5	X	136.00901	20.11295	340.80289	4.83502	0.1392352	0.17606586	3.1527240	20	1 29.5	18.3
15946 Satinsky	14.8	X	149.93987	244.38227	98.66554	4.29567	0.0934497	0.22362290	2.6881811	20	1 11.6	18.8
15947 Milligan	14.4	X	262.38105	265.08115	141.50231	4.93749	0.1572990	0.24568553	2.5247381	20	7 27.7	17.8
15948 1998 BE	13.3	X	149.73486	288.32946	39.53545	6.53180	0.0669586	0.22066593	2.7121427	20	—	—
15949 Rhaeticus	14.1	X	137.68746	356.58262	105.99760	7.41565	0.1403443	0.28538999	2.2847757	20	6 1.2	17.3
15950 Dallago	14.1	X	269.36578	304.37238	47.97398	4.17729	0.1884211	0.24065528	2.5598198	20	5 18.3	17.7
15951 1998 BB ₂	12.1	X	242.23240	160.12285	102.03973	17.69792	0.1269859	0.17803803	3.1293984	20	1 12.8	16.9
15952 1998 BM ₇	12.9	X	259.02069	124.14700	127.18875	12.86114	0.0610578	0.17891953	3.1191114	20	1 22.3	17.3
15953 1998 BD ₈	13.0	X	195.75254	48.40686	327.16841	12.91362	0.1907678	0.23211049	2.6222426	20	4 1.5	17.6
15954 1998 BG ₁₁	13.5	X	171.44795	177.49967	106.74904	6.42909	0.0299813	0.21859174	2.7292724	20	—	—
15955 Johannesgmunden	13.3	X	261.22029	256.75560	276.79686	3.08062	0.0459079	0.21207463	2.7849041	20	12 26.3	17.1
15956 1998 BY ₂₄	13.8	X	98.58209	1.07989	278.15392	1.21516	0.0167708	0.20569337	2.8422080	20	11 15.9	17.8
15957 Gemoore	13.7	X	306.07041	29.09422	310.76800	1.10962	0.1098619	0.19625401	2.9326283	20	7 4.4	17.3
15958 1998 BE ₃₃	14.4	X	90.11713	257.54077	167.49392	10.30153	0.2846933	0.22266929	2.6956600	20	3 10.4	18.0
15959 1998 BQ ₄₀	13.8	X	64.71234	4.12359	340.08508	4.28149	0.0849610	0.21129566	2.7917445	20	—	—
15960 Hluboka	12.8	X	83.53772	293.99951	106.25965	22.73259	0.0694011	0.22319209	2.6916392	20	—	—
15961 1998 CC ₁	13.4	X	97.76929	181.08066	140.64890	9.96203	0.1461326	0.21221664	2.7836615	20	—	—
15962 1998 CM ₂	14.4	X	327.77394	288.65480	137.08969	3.16126	0.1507958	0.26018825	2.4300260	20	12 27.9	16.5
15963 Koeberl	13.1	X	133.62458	243.88483	150.80970	13.26635	0.1757185	0.22501360	2.6770935	20	3 7.2	17.1
15964 Billgray	15.0	X	141.89657	110.62903	309.55242	18.07745	0.0924297	0.36132902	1.9522443	20	3 16.5	17.6
15965 Robertcox	12.8	X	172.04056	343.09506	90.66108	12.23246	0.0862454	0.19001627	2.9964620	20	5 29.2	17.5
15966 1998 DL ₁₃	12.7	X	80.69799	294.06903	133.23789	7.41981	0.1422100	0.17717682	3.1935310	20	2 14.6	16.8
15967 Clairearmstrong	12.9	X	180.22823	273.18660	123.50291	12.22029	0.2882183	0.23016716	2.6369818	20	4 26.6	17.9
15968 Waltercugno	13.3	X	253.72682	199.01378	23.57867	1.00888	0.1241577	0.17077743	3.2174791	20	—	—
15969 Charlesgreen	12.5	X	166.12358	217.16118	132.25590	8.64753	0.0764048	0.17566507	3.1575175	20	2 10.5	17.3
15970 Robertbrownlee	15.6	X	199.28934	309.93029	53.22399	5.05976	0.1826149	0.31069162	2.1589853	20	3 24.2	18.9
15971 Hestroffer	15.2	X	92.45667	207.32839	145.23519	5.50582	0.1904015	0.29243556	2.2479290	20	—	—
15972 1998 FM ₂₇	13.2	X	139.06063	201.90453	236.49358	3.13132	0.1214317	0.18055784	3.0497510	20	4 30.9	18.0
15973 1998 FM ₈₅	13.4	X	78.98698	345.98748	145.93684	11.80704	0.0547138	0.18322764	3.0700261	20	4 23.5	17.8
15974 1998 FL ₁₀₃	13.1	X	174.05538	87.68902	332.87640	8.15037	0.1363697	0.18549222	3.0449880	20	5 11.4	18.1
15975 1998 FW ₁₀₈	13.5	X	87.32114	131.80267	272.44543	5.19419	0.1484815	0.17201771	3.2019948	20	1 26.5	17.8
15976 1998 FY ₁₁₉	13.5	X	245.27716	48.23980	340.07015	10.04461	0.1047390	0.19082460	2.9879946	20	6 17.3	18.1
15977 1998 MA ₁₁	10.4	X	140.15726	228.60392	209.57260	17.34632	0.0469690	0.08360728	5.1797242	20	4 29.9	17.5
15978 1998 QL ₁	14.5	X	310.26483	171.70825	206.96769	3.79550	0.1199150	0.22453486	2.6808974	20	9 4.5	17.6
15979 1998 QW ₃₄	13.2	X	276.58379	131.52065	175.13620	14.86919	0.2006630	0.21364416	2.7712478	20	3 29.8	17.3
15980 1998 RC ₁₉	12.9	X	22.89837	142.56567	133.72212	8.95894	0.0401882	0.17671380	3.1450127	20	8 6.1	17.1
15981 1998 UP ₆	13.3	X	107.64059	299.81188	23.60947	17.55601	0.2513259	0.23427481	2.6060675	20	—	—
15982 1998 VA ₄	14.6	X	210.76016	101.08406	70.90970	12.88301	0.1567264	0.26733640	2.3865140	20	11 15.1	18.0
15983 1998 WM ₁	13.8	X	219.15241	59.68579	255.29794	4.70187	0.1897959	0.24383026	2.5375288	20	2 11.7	18.0
15984 1998 WM ₇	13.5	X	53.40153	66.63604	94.44259	9.06579	0.2216001	0.23988605	2.5652678	20	5 16.4	16.2
15985 1998 WU ₂₀	14.0	X	9.72201	9.22829	126.96878	7.54401	0.0500726	0.29759321	2.2218805	20	5 11.4	16.0
15986 Fienga	14.7	X	259.60079	284.86503	207.13985	2.65029	0.2289729	0.22283458	2.6945174	20	11 2.6	18.1
15987 1998 XV ₁₀	14.9	X	348.82772	84.50588	118.46828	4.70836	0.1123196	0.28311945	2.2969749	20	2 26.8	17.1
15988 Parini	14.0	X	294.60041	170.28805	107.76983	5.42747	0.1767650	0.28851966	2.2682232	20	3 11.9	17.0
15989 1998 XK ₃₉	13.9	X	293.17957	108.14651	74.19549	5.70823	0.0998132	0.27774418	2.3265161	20	—	—
15990 1998 YT ₁	14.8	X	40.68897	235.49787	173.04953	1.99595	0.2145412	0.27286928	2.3541436	20	—	—
15991 1998 YH ₃	13.8	X	44.72827	48.95057	272.09038	5.25855	0.0700502	0.30997532	2.1623101	20	12 2.9	16.3
15992 Cynthia	14.2	X	300.26040	269.50854	312.32614	6.54098	0.0645640	0.27848790	2.3223722	20	1 19.2	17.1
15993 1998 YH ₈	13.6	X	9.33637	244.82684	261.61397	3.89788	0.1304462	0.23436783	3.6053779	20	1 18.3	16.4
15994 1998 YO ₈	14.1	X	23.94854	46.40566	143.54253	5.05302	0.0603871	0.28830385	2.2693549	20	4 12.6	16.4
15995 1998 YQ ₉	14.5	X	3.09238	330.89972	244.48293	2.31121	0.1181125	0.28828975	2.2694289	20	4 9.4	16.5
15996 1998 YC ₁₂	14.3	X	298.96379	291.17586	314.08005	7.27257	0.1698047	0.28257056	2.2999485	20	2 1.5	17.0