

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48001 2001 BZ <sub>41</sub>	15.4	X	171.94714	140.49290	228.44451	19.69633	0.0683247	0.36285562	1.9467648	20	2 9.2	18.3
48002 2001 BN <sub>44</sub>	15.6	X	92.13999	134.58697	45.40499	2.96684	0.1527519	0.26978896	2.3720287	20	7 26.5	18.8
48003 2001 BZ <sub>49</sub>	14.2	X	147.06037	213.91410	350.45075	8.51778	0.1855235	0.17619018	3.1512408	20	10 8.7	19.5
48004 2001 BS <sub>61</sub>	15.3	X	60.53878	63.59400	155.93879	2.46654	0.1636143	0.27191296	2.3596601	20	8 10.6	18.0
48005 2001 BM <sub>66</sub>	15.2	X	125.19616	62.55799	135.83630	7.82545	0.0677190	0.27642148	2.3339319	20	9 23.1	18.4
48006 2001 BF <sub>67</sub>	15.6	X	216.05989	346.77953	192.10783	6.86614	0.1720245	0.28899121	2.2657551	20	12 1.7	18.5
48007 2001 BH <sub>67</sub>	14.0	X	30.47443	235.29693	14.49892	13.18349	0.1511862	0.26753594	2.3853272	20	8 11.5	16.8
48008 2001 BX <sub>67</sub>	15.7	X	60.28319	226.54961	5.01528	4.26348	0.1686307	0.27251571	2.3561794	20	8 29.9	18.5
48009 2001 BK <sub>69</sub>	15.6	X	116.72029	81.48972	76.75948	3.02668	0.1476110	0.27201102	2.3590929	20	7 24.0	18.9
48010 2001 BD <sub>70</sub>	14.3	X	47.69881	313.62679	347.92517	23.28807	0.2548917	0.27987296	2.3147038	20	11 20.4	18.2
48011 2001 BQ <sub>73</sub>	15.7	X	109.13741	328.96191	228.50744	11.69344	0.1084695	0.27711712	2.3300245	20	8 28.8	19.3
48012 2001 BV <sub>77</sub>	15.2	X	318.49569	65.71208	164.89649	8.60071	0.1271692	0.25673959	2.4517385	20	2 16.9	18.2
48013 2001 CB <sub>1</sub>	15.8	X	44.07971	111.44860	110.40783	5.08357	0.0819600	0.27173169	2.3607094	20	7 5.4	18.3
48014 2001 CS <sub>6</sub>	15.8	X	216.53171	148.77908	117.18889	5.57577	0.1421645	0.30120351	2.2040902	20	—	—
48015 2001 CQ <sub>8</sub>	15.2	X	77.14377	254.17832	3.00758	6.79244	0.1771269	0.27845171	2.3225735	20	10 22.6	18.6
48016 2001 CQ <sub>9</sub>	14.7	X	45.10106	192.61022	12.33452	24.59700	0.1517324	0.26378220	2.4079034	20	6 20.3	18.0
48017 2001 CW <sub>16</sub>	15.4	X	303.85607	305.70019	93.78109	5.65123	0.1791392	0.23583834	2.5945365	20	9 23.7	18.0
48018 2001 CB <sub>36</sub>	14.9	X	82.59115	186.03892	24.74144	7.76907	0.1759938	0.27056697	2.3674794	20	9 1.2	18.2
48019 2001 CD <sub>43</sub>	14.3	X	90.82832	195.31339	91.03306	17.22981	0.2697127	0.22919754	2.6444138	20	12 11.7	18.9
48020 2001 DC	16.5	X	345.72650	241.17390	296.93089	2.79204	0.0375548	0.30768632	2.1730210	20	1 20.7	18.9
48021 2001 DN <sub>6</sub>	15.3	X	134.34807	256.07923	11.64296	5.62926	0.1496301	0.28619534	2.2804874	20	12 31.4	18.8
48022 2001 DJ <sub>7</sub>	15.2	X	207.63747	209.70599	27.53517	6.15839	0.1567053	0.24228229	2.5483257	20	—	—
48023 2001 DL <sub>7</sub>	14.9	X	50.75351	224.60155	56.96593	4.71331	0.2218001	0.22520287	2.6755933	20	10 24.7	18.6
48024 2001 DJ <sub>17</sub>	15.2	X	316.73313	174.87402	83.22810	7.60009	0.0986073	0.26232401	2.4168184	20	4 1.9	18.1
48025 2001 DS <sub>17</sub>	14.9	X	339.53578	281.22258	293.0586	7.32328	0.1723893	0.27152158	2.3619271	20	7 16.9	16.9
48026 2001 DN <sub>24</sub>	16.0	X	102.36937	138.56188	134.75467	6.86229	0.0971935	0.28653624	2.2786783	20	12 6.8	19.3
48027 2001 DG <sub>29</sub>	15.6	X	53.09830	242.66285	353.22371	7.18474	0.0631333	0.27333965	2.3514421	20	8 9.3	18.3
48028 2001 DX <sub>31</sub>	15.4	X	331.98367	178.06612	106.64100	3.15311	0.2100736	0.26629052	2.3927587	20	5 19.1	17.4
48029 2001 DS <sub>37</sub>	15.9	X	56.73049	71.00879	161.74659	7.26883	0.0803996	0.27462168	2.3441182	20	8 9.7	18.6
48030 2001 DH <sub>39</sub>	16.3	X	125.45189	67.08003	173.41953	3.82128	0.1320721	0.28505559	2.2863483	20	11 19.2	19.6
48031 2001 DL <sub>39</sub>	16.4	X	305.32993	290.99068	278.63027	3.69145	0.0796339	0.30701319	2.1761961	20	1 1.1	19.1
48032 2001 DX <sub>42</sub>	15.9	X	226.83611	75.78078	150.79074	2.59518	0.1996651	0.24440702	2.5335351	20	—	—
48033 2001 DJ <sub>44</sub>	16.3	X	190.00571	136.99506	134.08152	3.08691	0.0303258	0.29875000	2.2161413	20	—	—
48034 2001 DM <sub>53</sub>	15.7	X	338.25512	72.72559	164.87077	1.26607	0.1446371	0.26209778	2.4182090	20	3 27.8	18.1
48035 2001 DM <sub>67</sub>	16.0	X	304.22037	35.95286	204.04745	1.72635	0.1709503	0.25707470	2.4496074	20	2 3.8	19.1
48036 2001 DA <sub>68</sub>	16.0	X	116.61903	211.88563	337.54702	4.67126	0.0891028	0.27619730	2.3351947	20	8 30.3	19.0
48037 2001 DE <sub>68</sub>	15.4	X	158.51903	297.62307	340.04242	6.45798	0.1642524	0.29272510	2.2464465	20	—	—
48038 2001 DC <sub>69</sub>	14.7	X	353.16198	289.44361	332.45691	8.26899	0.1604860	0.21530473	2.7569803	20	6 2.5	17.6
48039 2001 DT <sub>69</sub>	15.5	X	0.77953	75.96387	173.82297	6.49084	0.1467623	0.26623194	2.3931097	20	6 3.1	17.6
48040 2001 DL <sub>70</sub>	15.6	X	2.13086	197.34006	10.39832	1.83262	0.1607611	0.26118216	2.4238573	20	3 27.9	17.6
48041 2001 DE <sub>71</sub>	15.4	X	326.50156	83.64038	178.56050	5.97064	0.1054621	0.26333878	2.4106057	20	4 19.3	18.0
48042 2001 DO <sub>71</sub>	14.9	X	336.52957	321.26936	350.48484	5.34879	0.2331414	0.27077309	2.3662777	20	7 17.8	16.3
48043 2001 DF <sub>74</sub>	15.2	X	148.68194	40.24186	177.26947	6.21801	0.0721282	0.27847021	2.3224706	20	11 14.1	18.4
48044 2001 DZ <sub>74</sub>	14.3	X	194.37889	347.75795	213.94918	16.10902	0.25272721	0.18071019	3.0984723	20	11 12.3	19.6
48045 2001 DD <sub>81</sub>	16.3	X	229.73127	42.63596	96.50336	6.14668	0.0977026	0.28497629	2.2869863	20	11 7.3	19.0
48046 2001 DO <sub>83</sub>	15.8	X	84.28810	28.66235	140.75446	3.62025	0.1214940	0.26819259	2.3814321	20	6 25.7	18.8
48047 Houghten	15.9	X	165.05327	178.84952	27.91955	6.87427	0.0553810	0.28402877	2.2920697	20	11 18.4	18.8
48048 2001 DG <sub>88</sub>	14.1	X	39.37409	254.52962	340.28029	13.80528	0.2134042	0.21509478	2.7587741	20	8 6.5	17.4
48049 2001 DB <sub>90</sub>	15.4	X	261.89600	53.29208	205.03886	11.00516	0.1282787	0.25427255	2.4675714	20	1 14.8	19.3
48050 2001 DK <sub>92</sub>	14.7	X	214.01005	275.34828	312.04040	9.98201	0.1610860	0.23975101	2.5662311	20	—	—
48051 2001 DV <sub>93</sub>	16.3	X	201.60866	1.22934	231.98506	3.50263	0.0856113	0.29535251	2.2331039	20	—	—
48052 2001 DZ <sub>98</sub>	15.1	X	121.61283	299.72783	312.43786	11.44062	0.1668397	0.23265979	2.6181137	20	11 18.6	19.5
48053 2001 EL	14.8	X	74.73102	219.75629	33.82545	5.89803	0.1109251	0.22416028	2.6838832	20	10 2.4	18.5
48054 2001 EM	15.3	X	90.44029	41.96144	157.09086	6.77583	0.0832867	0.27110024	2.3643737	20	8 8.9	18.5
48055 2001 EQ <sub>3</sub>	16.2	X	311.57361	105.97963	132.30250	2.43171	0.0812812	0.30989594	2.1626793	20	2 18.5	18.6
48056 2001 EF <sub>4</sub>	15.6	X	341.86909	143.47658	133.11129	3.96766	0.1951425	0.26623438	2.3930951	20	5 31.5	17.3
48057 2001 EO <sub>5</sub>	16.2	X	87.23608	144.87986	80.83957	3.65182	0.0720114	0.27572538	2.3378585	20	9 13.3	19.2
48058 2001 EE <sub>7</sub>	15.7	X	80.07977	210.82981	101.90202	4.71677	0.1951456	0.28505464	2.2865672	20	—	—
48059 2001 ET <sub>7</sub>	15.9	X	299.12674	233.11608	39.64320	2.97628	0.1854879	0.25887741	2.4382222	20	3 11.1	19.1
48060 2001 EY <sub>7</sub>	15.6	X	130.69363	278.15110	15.85850	6.46736	0.1350662	0.29013560	2.2597932	20	—	—
48061 2001 EZ <sub>7</sub>	15.1	X	199.51657	134.25295	97.78468	3.63840	0.1544013	0.23998714	2.5645474	20	—	—
48062 2001 EK <sub>8</sub>	15.1	X	75.22590	144.57987	141.44598	5.66456	0.2740832	0.22819926	2.6521204	20	11 29.5	19.5
48063 2001 EP <sub>9</sub>	15.8	X	151.40938	72.87350	157.65619	7.27250	0.0551437	0.28529262	2.2852955	20	12 6.2	19.0
48064 2001 EL <sub>16</sub>	15.8	X	91.45414	120.04584	100.69042	5.06686	0.1228832	0.27535810	2.3399369	20	9 18.4	19.0
48065 2001 EK <sub>17</sub>	14.3	X	200.13689	87.88270	127.42884	22.70332	0.2219418	0.18408156	3.0605245	20	12 8.9	19.6
48066 2001 EH <sub>20</sub>	15.4	X	289.65093	92.51695	198.67442	2.25512	0.1596112	0.26203322	2.4186061	20	3 25.6	18.4
48067 2001 EF <sub>21</sub>	16.4	X	198.40478	30.63994	193.62628	8.80601	0.1298425	0.29116647	2.2544562	20	—	—
48068 2001 EU <sub>26</sub>	15.3	X	30.88723	92.94786	213.50950	3.04596	0.1520906	0.27836764	2.3230410	20	10 30.5	17.8
48069 2001 FP	14.6	X	168.87140	118.92515	143.29358	12.60647	0.1130296	0.18636717	3.0354501	20	—	—
48070 Zizza	13.9	X	290.81635	78.95704	190.16537	3.34642	0.1966676	0.20397374	2.8581600	20	2 27.5	18.1
48071 2001 FV <sub>5</sub>	13.9	X	147.34422	206.20845	12.47270	12.61454	0.1338145	0.27848843	2.3223693	20	11 7.3	17.5
48072 2001 FB <sub>11</sub>	15.1	X	308.46638	273.80372	0.17337	7.65900	0.1423611	0.26014955	2.4302670	20	3 30.3	18.1
48073 2001 FC <sub>13</sub>	14.9	X	311.98441	266.56242	17.36040	6.44100	0.1309197	0.26197565	2.4189604	20	4 20.8	17.8
48074 2001 FC <sub>15</sub>	15.5	X	233.31527	111.25029	179.88545	6.63787	0.1251026	0.25200902	2.4823251	20	1 28.1	19.4
48075 2001 FY <sub>15</sub>												

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48081 2001 <i>FJ</i> <sub>35</sub>	14.5 <sup>m</sup>	X	177.10001	316.06403	295.21502	1.88990	0.1640514	0.23906419	2.5711438	20	—	—
48082 2001 <i>FT</i> <sub>35</sub>	15.4	X	153.76356	199.34444	308.63488	6.62485	0.0461087	0.27576239	2.3376493	20	8 15.2	18.5
48083 2001 <i>FO</i> <sub>36</sub>	16.1	X	19.36764	331.46086	213.81063	1.91581	0.1274231	0.26048752	2.4281645	20	3 29.5	18.4
48084 2001 <i>FV</i> <sub>37</sub>	15.2	X	134.53483	334.46074	287.13083	4.00069	0.1294287	0.23536489	2.5980147	20	12 14.1	19.3
48085 2001 <i>FU</i> <sub>41</sub>	15.4	X	253.89668	195.83906	70.39618	1.51018	0.1317559	0.25159796	2.4850281	20	1 19.2	19.2
48086 2001 <i>FV</i> <sub>41</sub>	16.4	X	343.03071	87.83869	162.37582	1.92392	0.0764770	0.26290926	2.4132305	20	5 2.5	18.8
48087 2001 <i>FZ</i> <sub>41</sub>	15.4	X	43.92804	272.77310	18.67902	1.68312	0.1695314	0.22464691	2.6800059	20	10 19.9	18.7
48088 2001 <i>FG</i> <sub>42</sub>	14.9	X	51.79731	306.01705	349.67252	2.96414	0.2465759	0.22508368	2.6765378	20	11 13.8	18.8
48089 2001 <i>FH</i> <sub>42</sub>	15.0	X	10.15978	276.55109	354.68878	7.58772	0.2370208	0.21549101	2.7553912	20	8 4.6	17.5
48090 2001 <i>FK</i> <sub>42</sub>	15.5	X	46.91027	18.56378	191.70811	2.07519	0.1773131	0.26604873	2.3942082	20	7 8.0	18.0
48091 2001 <i>FT</i> <sub>44</sub>	15.2	X	19.73894	189.18982	16.30164	6.74828	0.0871121	0.26162824	2.4211014	20	4 27.7	17.8
48092 2001 <i>FL</i> <sub>45</sub>	15.3	X	133.41423	129.26392	180.45272	3.38548	0.1635748	0.29022611	2.2593234	20	—	—
48093 2001 <i>FR</i> <sub>46</sub>	14.7	X	354.86388	280.52459	4.23118	9.16903	0.1704463	0.21484790	2.7608871	20	7 15.4	17.6
48094 2001 <i>FX</i> <sub>47</sub>	15.3	X	188.67051	160.96781	0.87338	7.15901	0.0454539	0.27934519	2.3176183	20	10 17.7	18.4
48095 2001 <i>FZ</i> <sub>50</sub>	15.4	X	45.18236	223.07294	343.49118	2.52018	0.1082521	0.26436724	2.4043497	20	6 17.8	18.0
48096 2001 <i>FP</i> <sub>51</sub>	15.9	X	12.15514	178.66044	71.33105	1.80741	0.0920996	0.26556039	2.3971425	20	6 23.4	18.2
48097 2001 <i>FV</i> <sub>52</sub>	15.8	X	23.45990	222.71376	297.06166	3.94301	0.1337392	0.25615272	2.4554819	20	2 27.4	18.2
48098 2001 <i>FL</i> <sub>54</sub>	13.8	X	111.04757	239.03623	33.30889	14.05772	0.2073896	0.17465673	3.1696587	20	11 26.5	19.3
48099 2001 <i>FT</i> <sub>57</sub>	13.6	X	179.61669	27.42527	198.37102	11.41478	0.1259038	0.17852044	3.1237583	20	12 4.6	18.7
48100 2001 <i>FW</i> <sub>57</sub>	14.2	X	131.56252	220.11225	355.28052	12.76369	0.1363210	0.22577247	2.6710912	20	10 11.6	18.5
48101 2001 <i>FB</i> <sub>61</sub>	16.2	X	25.87212	77.54822	142.21836	2.75423	0.1578965	0.26480461	2.4017015	20	6 9.3	18.4
48102 2001 <i>FH</i> <sub>64</sub>	14.8	X	65.61983	136.70808	148.71968	6.85089	0.1142907	0.27915474	2.3186723	20	11 12.8	18.0
48103 2001 <i>FP</i> <sub>66</sub>	16.0	X	350.35595	333.02948	152.43263	7.98183	0.0720142	0.29934156	2.2132206	20	—	—
48104 2001 <i>FN</i> <sub>68</sub>	14.0	X	101.06110	288.16432	26.00773	15.16308	0.3036183	0.23336405	2.6128436	20	—	—
48105 2001 <i>FR</i> <sub>70</sub>	15.5	X	327.08883	220.18495	80.65790	2.50293	0.0878547	0.26630012	2.3927012	20	6 18.8	18.1
48106 2001 <i>FV</i> <sub>70</sub>	15.2	X	57.33384	245.00025	65.43582	4.62087	0.0853597	0.22957880	2.6414853	20	11 19.2	18.6
48107 2001 <i>FZ</i> <sub>70</sub>	15.1	X	212.09958	217.77951	80.77510	3.89804	0.1708842	0.29979267	2.2109998	20	1 12.9	18.4
48108 2001 <i>FG</i> <sub>71</sub>	15.0	X	358.76859	202.30764	135.74754	6.65035	0.1604044	0.27605903	2.3359744	20	10 27.3	17.3
48109 2001 <i>FV</i> <sub>72</sub>	15.2	X	295.43250	101.10568	150.07551	5.83091	0.1086455	0.25433054	2.4670670	20	2 17.4	18.4
48110 2001 <i>FX</i> <sub>72</sub>	15.6	X	197.73873	75.12670	120.54892	5.28092	0.0331724	0.23389674	2.6088750	20	12 7.1	19.1
48111 2001 <i>FT</i> <sub>74</sub>	15.5	X	34.27924	61.23291	169.14536	6.95608	0.0835168	0.26561074	2.3968395	20	7 1.3	18.2
48112 2001 <i>FV</i> <sub>74</sub>	15.3	X	331.79592	34.54497	173.89985	6.51795	0.0874302	0.25414560	2.4683931	20	2 12.4	18.2
48113 2001 <i>FJ</i> <sub>77</sub>	15.2	X	94.74805	60.37144	148.79145	6.26595	0.0646164	0.27172590	2.3607429	20	8 27.5	18.3
48114 2001 <i>FW</i> <sub>77</sub>	15.4	X	175.25285	237.84180	69.83310	6.46708	0.1841079	0.29411429	2.2393671	20	—	—
48115 2001 <i>FF</i> <sub>83</sub>	14.9	X	12.45237	106.87920	215.66862	3.30128	0.2034994	0.27622563	2.3350351	20	11 1.9	17.1
48116 2001 <i>FK</i> <sub>90</sub>	15.3	X	8.45484	103.58252	188.67130	6.42060	0.1168131	0.27070941	2.3666488	20	8 22.9	17.6
48117 2001 <i>FL</i> <sub>90</sub>	15.3	X	128.50678	31.91987	167.28061	4.02139	0.0736610	0.22504421	2.6768507	20	9 19.2	19.0
48118 2001 <i>FX</i> <sub>95</sub>	15.2	X	354.92910	164.86585	98.64492	7.67568	0.1127137	0.26533898	2.3984758	20	6 12.3	17.3
48119 2001 <i>FK</i> <sub>97</sub>	14.8	X	114.49549	198.31931	163.78240	15.51136	0.1300656	0.24552969	2.5258063	20	—	—
48120 2001 <i>FT</i> <sub>97</sub>	15.3	X	51.57657	98.00553	114.37947	7.29072	0.0701951	0.26645881	2.3917512	20	7 1.2	17.9
48121 2001 <i>FE</i> <sub>99</sub>	14.5	X	290.00230	215.04877	126.01209	12.79712	0.1133298	0.26574347	2.3960414	20	6 14.4	17.5
48122 2001 <i>FQ</i> <sub>100</sub>	14.7	X	119.51680	196.70761	53.10824	15.87508	0.1572474	0.22719114	2.6599601	20	11 15.5	19.0
48123 2001 <i>FP</i> <sub>101</sub>	15.1	X	112.46345	357.00112	240.45614	5.61645	0.2233906	0.22796817	2.6539124	20	10 27.9	19.7
48124 2001 <i>FZ</i> <sub>101</sub>	15.2	X	117.10150	297.94596	304.67181	8.58202	0.1081981	0.28168430	2.3047701	20	11 8.3	18.7
48125 2001 <i>FK</i> <sub>105</sub>	15.3	X	267.06148	148.06688	158.81633	1.46515	0.1904976	0.26083011	2.4260378	20	3 16.8	18.8
48126 2001 <i>FS</i> <sub>105</sub>	15.9	X	152.40648	122.20566	160.19502	7.54293	0.1339074	0.29182566	2.2510600	20	—	—
48127 2001 <i>FX</i> <sub>105</sub>	15.1	X	117.30374	264.26005	13.79145	9.69694	0.2737821	0.23399674	2.6081317	20	12 20.5	19.9
48128 2001 <i>FU</i> <sub>107</sub>	15.5	X	344.68172	29.71260	273.14918	4.42486	0.1725655	0.27085404	2.3658062	20	7 24.0	17.1
48129 2001 <i>FF</i> <sub>112</sub>	14.9	X	0.55902	188.92686	169.85631	3.63837	0.1842262	0.27789471	2.3256759	20	12 2.4	17.2
48130 2001 <i>FF</i> <sub>119</sub>	14.2	X	106.67535	336.53969	298.74028	12.82051	0.1483652	0.23096625	2.6308961	20	12 3.9	18.6
48131 2001 <i>FK</i> <sub>119</sub>	14.7	X	179.43067	83.56926	147.75444	12.22013	0.1220659	0.18361413	3.0657164	20	12 12.6	19.7
48132 2001 <i>FA</i> <sub>122</sub>	14.3	X	67.55330	276.74749	36.08579	11.66794	0.2128664	0.22665593	2.6641458	20	12 16.4	18.6
48133 2001 <i>FD</i> <sub>126</sub>	15.7	X	81.66475	45.94553	129.29784	5.87511	0.1556055	0.26718960	2.3373881	20	7 5.6	18.8
48134 2001 <i>FD</i> <sub>127</sub>	15.1	X	45.78770	125.10569	138.79643	7.21696	0.1077138	0.27183874	2.3600896	20	9 15.2	17.9
48135 2001 <i>FC</i> <sub>128</sub>	14.2	X	114.47800	206.65702	27.81285	2.10749	0.1459695	0.17314706	3.1880562	20	10 15.8	19.3
48136 2001 <i>FO</i> <sub>141</sub>	15.3	X	118.61106	177.19101	138.66527	4.49686	0.0971508	0.23893335	2.5720823	20	—	—
48137 2001 <i>FS</i> <sub>143</sub>	15.2	X	237.58394	299.56872	69.24538	7.44269	0.1217177	0.26277622	2.4140449	20	5 12.8	18.5
48138 2001 <i>FF</i> <sub>144</sub>	15.2	X	300.82512	358.34349	154.45158	5.66980	0.1038071	0.24192081	2.5508306	20	—	—
48139 2001 <i>FY</i> <sub>144</sub>	14.4	X	216.96835	4.73228	154.26412	18.48088	0.1180747	0.22952202	2.6419209	20	11 6.7	18.5
48140 2001 <i>FT</i> <sub>148</sub>	14.3	X	200.66942	320.40170	324.76340	13.51705	0.1954748	0.24533685	2.5271297	20	—	—
48141 2001 <i>FE</i> <sub>150</sub>	15.6	X	354.28193	26.77111	284.14159	5.05033	0.1816713	0.27028199	2.3691432	20	8 29.6	17.4
48142 2001 <i>FS</i> <sub>151</sub>	14.3	X	169.94492	335.42728	224.85445	19.63088	0.1997875	0.17762778	3.1342151	20	10 23.3	19.7
48143 2001 <i>FY</i> <sub>155</sub>	15.4	X	228.09846	340.58405	235.17073	13.04077	0.0953942	0.24001469	2.5643512	20	—	—
48144 2001 <i>FQ</i> <sub>156</sub>	15.9	X	89.78590	60.57609	112.41447	7.97106	0.0651970	0.26816748	2.3815807	20	6 29.6	19.0
48145 2001 <i>FJ</i> <sub>157</sub>	15.4	X	243.55532	233.01654	83.91022	7.00208	0.1622390	0.25811218	2.4430389	20	3 12.3	19.2
48146 2001 <i>FR</i> <sub>159</sub>	15.1	X	43.39401	144.25801	170.39369	3.						

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48161 2001 <i>HM</i> <sub>3</sub>	15.0	X	24.64854	45.35994	216.20305	7.47334	0.1072188	0.26602264	2.3943648	20	8 2.1	17.7
48162 2001 <i>HX</i> <sub>3</sub>	15.2	X	292.42592	315.20464	188.69201	3.33460	0.1410462	0.23916247	2.5704393	20	—	—
48163 2001 <i>HD</i> <sub>5</sub>	14.9	X	127.60544	215.91173	4.00992	6.59294	0.0538023	0.27603736	2.3360966	20	10 20.1	18.0
48164 2001 <i>HJ</i> <sub>9</sub>	14.0	X	115.76720	278.78018	52.07683	13.76074	0.1712115	0.18360610	3.0658058	20	—	—
48165 2001 <i>HH</i> <sub>10</sub>	12.8	X	170.85198	208.33600	72.89304	13.73407	0.1251570	0.18466046	3.0541247	20	—	—
48166 2001 <i>HT</i> <sub>10</sub>	15.3	X	121.00173	175.05341	168.31011	4.18618	0.1717939	0.29074379	2.2566407	20	—	—
48167 2001 <i>HS</i> <sub>11</sub>	14.5	X	154.09108	274.14775	33.52719	5.39013	0.1674703	0.18751004	3.0231036	20	—	—
48168 2001 <i>HC</i> <sub>12</sub>	15.7	X	175.73042	255.88439	205.82236	4.95798	0.0549727	0.26784988	2.3834630	20	7 8.5	19.1
48169 2001 <i>HV</i> <sub>12</sub>	14.5	X	359.70510	233.66111	57.74268	7.64758	0.0272200	0.21605649	2.7505815	20	7 29.2	18.2
48170 2001 <i>HP</i> <sub>15</sub>	15.4	X	322.54184	277.59774	39.31127	1.95759	0.0404143	0.26777991	2.3838782	20	7 10.4	17.9
48171 Juza	16.3	X	102.00109	31.40937	124.47945	1.91277	0.0498738	0.26461722	2.4028352	20	6 19.6	19.4
48172 2001 <i>HY</i> <sub>18</sub>	15.4	X	261.85626	278.65035	335.83587	0.35887	0.1284966	0.19614620	2.9337028	20	1 20.3	19.9
48173 2001 <i>HM</i> <sub>19</sub>	15.7	X	1.38965	157.13752	208.94800	1.78617	0.1043421	0.22656229	2.6648799	20	11 16.8	18.9
48174 2001 <i>HF</i> <sub>21</sub>	15.5	X	207.77928	43.00152	33.60183	7.30579	0.0789821	0.26877904	2.3779668	20	7 14.2	18.8
48175 2001 <i>HB</i> <sub>23</sub>	14.6	X	94.09183	204.95644	79.67981	16.18854	0.1049668	0.22657040	2.6648163	20	12 1.1	18.5
48176 2001 <i>HF</i> <sub>26</sub>	15.7	X	74.72614	245.18854	111.62534	1.99456	0.1046729	0.23628479	2.5912672	20	—	—
48177 2001 <i>HF</i> <sub>27</sub>	13.9	X	102.22708	207.94110	48.63458	6.82778	0.1730337	0.17310612	3.1885588	20	10 29.9	18.7
48178 2001 <i>HU</i> <sub>31</sub>	14.1	X	248.98913	231.09226	229.37441	21.30539	0.0333563	0.22314399	2.6920260	20	10 3.2	18.1
48179 2001 <i>HY</i> <sub>31</sub>	14.4	X	189.26429	340.40651	215.54865	8.40675	0.1343914	0.17736477	3.1373128	20	11 8.1	19.2
48180 2001 <i>HN</i> <sub>32</sub>	15.4	X	176.27120	241.11051	49.29961	8.24950	0.0449204	0.24160367	2.5530954	20	—	—
48181 2001 <i>HW</i> <sub>32</sub>	14.6	X	5.62780	194.72230	84.13681	3.44789	0.1038411	0.21493024	2.7601819	20	7 22.9	17.6
48182 2001 <i>HH</i> <sub>40</sub>	14.3	X	175.10106	207.38808	71.44261	12.87582	0.0656827	0.24050237	2.5608834	20	—	—
48183 2001 <i>HD</i> <sub>41</sub>	14.4	X	290.97151	55.59530	112.49528	15.88562	0.1040698	0.24126735	2.5554674	20	—	—
48184 2001 <i>HA</i> <sub>44</sub>	16.0	X	273.86794	226.16877	201.96177	6.29287	0.1075914	0.27754118	2.3276504	20	9 26.4	18.6
48185 2001 <i>HK</i> <sub>44</sub>	15.0	X	5.45876	102.71132	186.09006	5.85879	0.0427527	0.21659263	2.7460405	20	7 30.9	18.5
48186 2001 <i>HL</i> <sub>45</sub>	14.5	X	129.40284	139.75474	158.98225	7.90528	0.2123985	0.18139025	3.0907230	20	—	—
48187 2001 <i>HU</i> <sub>46</sub>	14.8	X	81.50223	199.94172	351.21244	1.95139	0.0799991	0.21403802	2.7678471	20	7 13.6	18.5
48188 2001 <i>HX</i> <sub>48</sub>	14.4	X	207.35106	2.44074	253.10355	13.06424	0.1312992	0.24148632	2.5539224	20	—	—
48189 2001 <i>HR</i> <sub>49</sub>	14.0	X	86.96108	88.62378	236.97586	13.25468	0.2969132	0.17640988	3.1486238	20	—	—
48190 2001 <i>HA</i> <sub>53</sub>	15.4	X	83.97263	178.58959	174.78896	5.89365	0.1263209	0.28728990	2.2746914	20	—	—
48191 2001 <i>HX</i> <sub>54</sub>	15.5	X	178.46505	32.01430	137.40846	6.16820	0.0397574	0.27713894	2.3299022	20	10 19.8	18.5
48192 2001 <i>HL</i> <sub>57</sub>	14.3	X	283.36848	163.42281	125.68720	13.79910	0.1697567	0.20432714	2.8548635	20	3 24.1	18.6
48193 2001 <i>HO</i> <sub>58</sub>	13.9	X	141.45735	236.04185	141.40522	23.40487	0.2501055	0.19179038	2.9779553	20	3 3.8	18.9
48194 2001 <i>HX</i> <sub>63</sub>	15.2	X	300.03092	345.67264	48.00649	5.77033	0.0471314	0.22263126	2.6961576	20	9 20.4	18.6
48195 2001 <i>HJ</i> <sub>65</sub>	15.3	X	37.89488	240.50308	215.53003	13.36252	0.0486114	0.24665644	2.5181083	20	—	—
48196 2001 <i>JU</i> <sub>1</sub>	13.7	X	358.93812	264.75707	75.29060	9.97192	0.2927879	0.21686406	2.7437487	20	11 2.5	16.2
48197 2001 <i>JO</i> <sub>2</sub>	14.4	X	60.88065	14.33757	177.98218	8.13070	0.1505240	0.21003390	2.8029185	20	6 26.9	18.1
48198 2001 <i>JA</i> <sub>6</sub>	15.3	X	142.06899	165.88473	139.62945	4.31037	0.1899703	0.23719740	2.5846128	20	—	—
48199 2001 <i>JU</i> <sub>6</sub>	15.6	X	74.75724	339.18289	169.21130	13.93159	0.1798774	0.26039414	2.4287450	20	5 25.4	18.8
48200 2001 <i>KU</i> <sub>1</sub>	14.6	X	190.16132	78.39219	220.70315	12.76892	0.1647174	0.23984037	2.5655936	20	—	—
48201 2001 <i>KD</i> <sub>3</sub>	14.8	X	215.51792	252.55023	210.18365	3.90447	0.0381954	0.21999759	2.7176327	20	8 25.7	18.6
48202 2001 <i>KL</i> <sub>5</sub>	13.9	X	78.36847	118.59452	224.40877	6.38698	0.1432342	0.17845325	3.1245423	20	—	—
48203 2001 <i>KQ</i> <sub>6</sub>	14.8	X	194.04225	146.19680	231.62339	13.67298	0.1256986	0.25530079	2.4609414	20	4 4.7	18.7
48204 2001 <i>KG</i> <sub>8</sub>	15.4	X	100.91866	116.48722	145.54828	3.22147	0.0183964	0.27702738	2.3305276	20	11 13.2	18.3
48205 2001 <i>KX</i> <sub>11</sub>	14.6	X	320.51754	176.97899	142.83401	4.21825	0.1109313	0.21040654	2.7996037	20	6 30.4	17.8
48206 2001 <i>KV</i> <sub>13</sub>	14.5	X	76.46463	265.72930	34.94125	4.95480	0.1603447	0.17221636	3.1995319	20	11 26.4	19.4
48207 2001 <i>KE</i> <sub>15</sub>	15.4	X	282.44596	330.59194	196.07382	8.44455	0.1013955	0.23937361	2.5689276	20	—	—
48208 2001 <i>KJ</i> <sub>17</sub>	13.5	X	162.76339	209.68710	89.35323	13.25671	0.1496054	0.18602014	3.0392242	20	—	—
48209 2001 <i>KM</i> <sub>18</sub>	13.7	X	222.00432	146.93221	99.48267	11.10471	0.0584541	0.18759570	3.0221833	20	—	—
48210 2001 <i>KG</i> <sub>22</sub>	14.4	X	120.90536	307.17195	256.29475	10.42332	0.0737701	0.22080866	2.7109737	20	9 9.7	18.6
48211 2001 <i>KN</i> <sub>22</sub>	13.9	X	46.97138	156.02160	242.53343	8.49298	0.0889799	0.18449642	3.0559348	20	—	—
48212 2001 <i>KO</i> <sub>24</sub>	14.4	X	353.17190	39.49855	261.31619	11.08863	0.0309454	0.21423934	2.7661129	20	7 26.9	18.2
48213 2001 <i>KP</i> <sub>24</sub>	14.2	X	276.68380	185.62774	244.77595	21.05105	0.0343166	0.22271906	2.6954490	20	9 27.6	18.3
48214 2001 <i>KB</i> <sub>27</sub>	13.9	X	87.45469	98.45927	257.20354	9.89981	0.2015213	0.23231209	2.6207253	20	—	—
48215 2001 <i>KO</i> <sub>28</sub>	14.2	X	121.86087	330.38013	256.90131	10.50317	0.1014675	0.22415701	2.6839092	20	10 14.9	18.5
48216 2001 <i>KE</i> <sub>38</sub>	14.7	X	131.84128	113.68594	187.28482	13.83505	0.1140406	0.23277151	2.6172758	20	—	—
48217 2001 <i>KL</i> <sub>38</sub>	15.1	X	287.88842	10.70260	151.68330	9.94808	0.1050502	0.23989954	2.5651717	20	—	—
48218 2001 <i>KZ</i> <sub>38</sub>	13.3	X	46.62246	136.90259	223.04242	20.71809	0.0085519	0.17708192	3.1406527	20	12 13.1	18.0
48219 2001 <i>KN</i> <sub>39</sub>	14.2	X	7.46915	168.08438	223.20196	23.59335	0.1769944	0.27808319	2.3246249	20	—	—
48220 2001 <i>KX</i> <sub>40</sub>	14.5	X	212.48643	102.28613	116.68529	13.47981	0.1704961	0.18406085	3.0607541	20	12 24.8	19.3
48221 2001 <i>KA</i> <sub>41</sub>	14.6	X	124.33037	130.19211	177.59384	13.90532	0.1310162	0.23307863	2.6149763	20	—	—
48222 2001 <i>KJ</i> <sub>42</sub>	15.9	X	204.10612	288.58485	144.39007	6.50154	0.0765700	0.26550916	2.3974508	20	7 2.9	19.2
48223 2001 <i>KV</i> <sub>43</sub>	15.1	X	191.23214	353.09957	188.29161	7.28958	0.1328301	0.22762964	2.6565430	20	11 1.2	19.1
48224 2001 <i>KK</i> <sub>44</sub>	15.0	X	178.94862	313.74560	200.86008	11.22359	0.0931296	0.22138924	2.7062321	20	9 14.3	19.2
48225 2001 <i>KG</i> <sub>55</sub>	14.7	X	21.39324	101.94372	134.27655	7.80650	0.1461392	0.21088070	2.7954056	20	6 22.6	17.8
48226 2001 <i>KK</i> <sub>56</sub>	14.9	X	185.76585	315.69518	204.34250	14.80213	0.1924495	0.22387495	2.6861631	20	9 23.2	19.4
48227 2001 <i>KG</i> <sub>58</sub>	14.5	X	254.00786	178.07804	176.84141	10.93735	0.1596467	0.20628487	2.8367722	20	5 11.4	18.9
48228 2001 <i>KB</i> <sub>59</sub>	14.2	X	4.45017	117.41321	199.00485	8.39739	0.1593853	0.21423825	2.7661223	20	9 15.4	17.3
48229 2001 <i>KP</i> <sub>63</sub>	14.5	X	305.09433	232.22158	99.42293	14.83589	0.1523312	0.21345398	2.7728937	20	6 16.6	17.9
48230 2001 <i>KS</i> <sub>65</sub>	14.6	X	127.13278	23.47593	142.30382	12.93941	0.0531804	0.21692105	2.7432680	20	8 1.9	18.5
48231 2001 <i>KF</i> <sub>69</sub>	15.1	X	279.34468	279.43471	160.10606	3.33442	0.0941068	0.22720009	2.6598903	20	10 15.3	18.3
48232 2001 <i>KY</i> <sub>70</sub>	15.1	X	283.62851	9.68671	38.55736	12.98409	0.1491061	0.27341987	2.3509821	20	9 14.6	17.7
48233 2001 <i>LY</i> <sub>9</sub>	14.1	X</										

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48241 2001 NS <sub>12</sub>	13.7	X	354.34872	266.28667	158.85041	8.94497	0.1943759	0.17159264	3.2072805	20	—	—
48242 2001 PB <sub>1</sub>	12.8	X	112.81081	108.26136	313.99268	8.77637	0.1045240	0.18781707	3.0198081	20	3 8.9	17.3
48243 2001 PE <sub>7</sub>	14.5	X	352.11285	217.53820	275.38032	10.51764	0.1343497	0.23334181	2.6130096	20	—	—
48244 2001 PG <sub>8</sub>	13.8	X	344.29741	124.63119	29.63883	11.15375	0.0502862	0.18206991	3.0830266	20	1 11.6	18.2
48245 2001 PD <sub>9</sub>	13.2	X	171.51406	50.26472	354.74315	10.86424	0.1252921	0.18953202	3.0015644	20	4 18.9	18.1
48246 2001 QG <sub>32</sub>	13.5	X	141.71123	352.67703	341.75226	7.20494	0.2792927	0.17702649	3.1413082	20	1 18.2	18.8
48247 2001 QU <sub>101</sub>	15.6	X	221.93584	316.93303	64.33697	3.32697	0.1963594	0.24412414	2.5354919	20	5 7.1	19.7
48248 2001 RP <sub>69</sub>	14.6	X	265.77586	220.66957	213.15827	7.18679	0.1122693	0.20448138	2.8534277	20	9 7.8	18.6
48249 2001 SY <sub>345</sub>	12.1	X	199.05095	266.94213	100.46193	7.53965	0.0137065	0.08531654	5.1103099	20	4 14.9	19.0
48250 2001 TH <sub>9</sub>	14.1	X	156.29293	187.39164	209.44321	9.87316	0.1002522	0.19118832	2.9842038	20	3 25.8	18.7
48251 2001 TA <sub>190</sub>	14.8	X	94.31999	192.76470	330.18686	3.28659	0.1186331	0.24131273	2.5551470	20	6 28.8	18.4
48252 2001 TL <sub>212</sub>	12.3	X	204.39108	154.53578	225.96110	15.56265	0.0200077	0.08454995	5.1393289	20	5 1.5	19.1
48253 2001 UK <sub>22</sub>	13.8	X	280.73245	249.29022	337.68250	11.59957	0.1096702	0.17808992	3.1287905	20	1 14.5	18.5
48254 2001 UE <sub>83</sub>	12.4	X	269.34693	291.16127	47.23604	31.80283	0.1059498	0.08368029	5.1767112	20	5 12.8	19.3
48255 2001 VY <sub>20</sub>	14.9	X	51.46432	85.01952	299.00181	1.43224	0.0913755	0.21659856	2.7459904	20	—	—
48256 2001 VT <sub>39</sub>	15.4	X	275.25867	77.42346	73.68142	3.16431	0.1429919	0.26395025	2.4068812	20	—	—
48257 2001 VE <sub>92</sub>	14.7	X	278.44191	81.01703	197.00051	14.47340	0.1091692	0.23418956	2.6066998	20	3 1.5	18.6
48258 2001 WA <sub>31</sub>	14.9	X	97.34683	49.76280	125.60019	4.59169	0.0543699	0.24392165	2.5368949	20	7 10.3	18.1
48259 2001 WL <sub>40</sub>	15.3	X	318.68680	263.65821	173.24250	5.99786	0.0551182	0.25951088	2.4342527	20	12 21.9	18.2
48260 2001 XM <sub>24</sub>	14.8	X	222.96289	13.67775	85.66179	13.05208	0.0559555	0.24640335	2.5198323	20	9 8.9	18.5
48261 2001 XT <sub>27</sub>	15.0	X	136.59324	42.77499	33.52155	6.13378	0.1492076	0.28211734	2.3024111	20	4 24.9	18.2
48262 2001 XL <sub>87</sub>	14.7	X	297.19217	261.75007	321.69281	13.08553	0.1307166	0.21889969	2.7267121	20	1 19.5	18.6
48263 2001 XX <sub>183</sub>	15.6	X	33.06293	277.94922	159.71166	4.08715	0.0702869	0.21482195	2.7611094	20	—	—
48264 2001 XB <sub>212</sub>	15.1	X	29.76069	248.42367	122.79538	4.43283	0.0760309	0.26236688	2.4165551	20	—	—
48265 2001 YZ <sub>15</sub>	14.5	X	226.50315	203.69627	72.11772	2.17810	0.1423456	0.16848187	3.2466385	20	1 14.9	19.6
48266 2001 YV <sub>117</sub>	14.3	X	320.34710	146.28759	100.83159	13.34869	0.1318919	0.22578478	2.6709942	20	3 24.6	17.8
48267 2001 YA <sub>118</sub>	15.2	X	247.54217	119.94785	315.08806	1.48033	0.1287820	0.24623455	2.5209838	20	8 21.0	18.4
48268 2002 AK <sub>1</sub>	13.9	X	187.25357	207.07650	119.98591	14.31989	0.1912620	0.22817401	2.6523160	20	2 3.8	18.3
48269 2002 AX <sub>166</sub>	12.0	X	155.22213	43.02063	162.57229	15.74844	0.0447389	0.08405896	5.1611526	20	10 8.4	19.1
48270 2002 CS <sub>82</sub>	15.6	X	327.23962	223.86710	34.47715	2.88499	0.1457340	0.22422355	2.6833783	20	4 11.2	18.4
48271 2002 CL <sub>112</sub>	15.6	X	351.79978	206.02896	58.95854	3.59586	0.1449429	0.27884659	2.3203802	20	6 6.9	17.4
48272 2002 CM <sub>139</sub>	15.0	X	170.96071	38.05501	198.71290	5.64717	0.0322435	0.20097246	2.8865512	20	12 18.1	19.1
48273 2002 CQ <sub>230</sub>	15.6	X	62.31100	138.05373	189.05136	4.50463	0.1948105	0.29462566	2.2367752	20	—	—
48274 2002 CY <sub>235</sub>	14.9	X	244.29993	252.47300	58.25003	4.96356	0.1767255	0.22294980	2.6935889	20	3 5.9	19.2
48275 2002 CY <sub>242</sub>	14.7	X	306.58445	6.61955	312.96198	13.95661	0.1214762	0.23116538	2.6293851	20	6 5.3	18.1
48276 2002 ED <sub>20</sub>	14.8	X	300.68754	272.65518	346.02061	6.38625	0.1221630	0.27119201	2.3638402	20	3 1.5	17.8
48277 2002 EQ <sub>26</sub>	15.5	X	229.17181	61.74126	218.23155	5.59468	0.1154397	0.26513396	2.3997121	20	1 9.3	19.2
48278 2002 EV <sub>69</sub>	15.5	X	278.78780	32.10420	193.55691	2.30522	0.1280794	0.26387640	2.4073303	20	—	—
48279 2002 EK <sub>72</sub>	15.2	X	124.35404	209.50756	176.20298	3.79353	0.1084205	0.21267820	2.7796326	20	2 6.5	19.2
48280 2002 EK <sub>85</sub>	14.7	X	51.43161	135.13899	167.81016	5.30171	0.1568593	0.18670836	3.0317511	20	11 5.5	19.0
48281 2002 EN <sub>153</sub>	16.3	X	276.11149	252.76952	24.28764	1.38002	0.1726904	0.26869294	2.3784748	20	2 18.8	19.8
48282 2002 FA <sub>22</sub>	15.0	X	315.15200	223.27723	150.35866	13.49617	0.0288423	0.23749925	2.5824260	20	9 18.4	18.3
48283 2002 GN <sub>19</sub>	15.2	X	348.27629	62.18279	236.60913	3.45483	0.1330374	0.28136670	2.3065042	20	7 26.2	17.1
48284 2002 GD <sub>60</sub>	15.5	X	18.03483	102.50151	61.05518	1.15487	0.0115634	0.21253317	2.7808970	20	3 3.7	19.1
48285 2002 GK <sub>95</sub>	15.0	X	231.04441	95.38524	358.41867	10.77806	0.0139717	0.23576490	2.5950752	20	9 11.3	18.3
48286 2002 GZ <sub>96</sub>	15.3	X	161.25764	195.11107	208.77103	6.55551	0.0909272	0.21878620	2.7276550	20	4 7.4	19.4
48287 2002 GE <sub>167</sub>	15.5	X	227.00347	20.34547	256.81390	6.35962	0.1032243	0.26326046	2.4110837	20	1 4.6	19.0
48288 2002 HC <sub>6</sub>	15.5	X	328.32134	162.02197	86.59129	2.57610	0.0639880	0.27360228	2.3499371	20	4 7.3	18.1
48289 2002 HM <sub>15</sub>	15.0	X	149.31969	233.58275	163.08641	4.46780	0.1001646	0.21750497	2.7383561	20	3 18.5	19.1
48290 2002 JH	15.2	X	247.09599	249.48151	49.95884	12.65983	0.2600984	0.26451272	2.4034680	20	2 18.7	19.5
48291 2002 JQ <sub>1</sub>	15.8	X	203.38136	61.32883	187.40705	1.35082	0.1206881	0.30649845	2.1786319	20	—	—
48292 2002 JW <sub>14</sub>	15.4	X	221.75320	171.92704	80.29997	4.39267	0.0611686	0.25582214	2.4575968	20	—	—
48293 2002 JD <sub>52</sub>	14.7	X	313.46023	131.38149	240.99068	21.92371	0.2300968	0.28357779	2.2944937	20	8 19.0	17.1
48294 2002 JG <sub>131</sub>	15.7	X	147.21653	232.38305	164.35679	6.29698	0.1376405	0.26438576	2.4042373	20	3 16.0	19.1
48295 2002 KW <sub>6</sub>	15.2	X	33.11297	100.39988	126.96448	23.47988	0.2299344	0.27325110	2.3519501	20	7 19.8	17.4
48296 2002 LB <sub>18</sub>	13.5	X	64.38841	340.33795	246.09751	18.08795	0.1103022	0.17080980	3.2170726	20	7 31.2	18.3
48297 2002 LJ <sub>24</sub>	14.9	X	63.76696	161.29582	124.87664	14.26730	0.1527546	0.22918273	2.6445277	20	11 10.4	19.0
48298 2002 LL <sub>33</sub>	15.1	X	281.79398	330.25726	305.89254	6.67774	0.1849091	0.21171491	2.7880577	20	2 25.7	19.3
48299 2002 LE <sub>35</sub>	14.7	X	119.84741	111.37777	266.07250	9.44425	0.2140814	0.24310284	2.5425882	20	1 29.9	18.4
48300 Kronk	13.2	X	239.21040	343.62338	276.05451	8.53463	0.0233711	0.18984909	2.9982214	20	1 11.4	17.6
48301 2002 LL <sub>35</sub>	14.8	X	347.54152	27.02385	291.87449	13.03909	0.1966412	0.21990253	2.7184158	20	8 14.8	17.4
48302 2002 LM <sub>36</sub>	13.3	X	228.37760	235.47326	266.40062	15.36620	0.0925188	0.17531011	3.1617783	20	10 12.5	18.2
48303 2002 LJ <sub>37</sub>	15.9	X	101.72136	104.13704	197.03461	7.51525	0.1644919	0.28985010	2.2612769	20	—	—
48304 2002 LL <sub>37</sub>	13.2	X	16.58399	163.47319	252.29903	17.29404	0.0979808	0.17801171	3.1297069	20	—	—
48305 2002 LS <sub>47</sub>	15.0	X	74.07477	133.77155	192.62164	13.35304	0.1576606	0.23826985	2.5768550	20	—	—
48306 2002 LA <sub>48</sub>	14.9	X	329.98510	167.32015	152.02426	14.98342	0.1269811	0.22193391	2.7018026	20	7 15.2	18.1
48307 2002 LP <sub>53</sub>	13.7	X	46.20876	213.90487	148.86842	14.67089	0.1242273	0.17854621	3.1234577	20	—	—
48308 2002 LP <sub>56</sub>	14.5	X	285.19705	58.81330	257.80825	7.85264	0.1522151	0.20886903	2.8133257	20	4 25.4	18.4
48309 2002 LG <sub>57</sub>	14.7	X	334.22319	113.54263	242.94301	14.11872	0.0861108	0.22269067	2.6956782	20	9 10.3	18.2
48310 2002 NE <sub>1</sub>	14.5	X	326.92700	177.40347	136.32883	9.77973	0.1654475	0.21662261	2.7457871	20	6 27.8	17.5
48311 2002 NF <sub>3</sub>	14.2	X	22.19670	328.92573	45.80230	1.76221	0.1640337	0.17754518	3.1351870	20	12 22.8	18.3
48312 2002 NP <sub>3</sub>	15.1	X	226.03682	316.12375	7.80111	1.80467	0.0595284	0.20372987	2.8604404	20	3 10.9	19.4
48313 2002 ND <sub>12</sub>	16.2	X	324.09032	158.35533	176.00745	2.34849	0.2284768	0.27382305	2.3486739	20	7 21.9	17.5
48314 2002 NK <sub>13</sub>	15.2	X	11.11766	6.49775	249.19168	2.49724	0.1480185	0.21687626	2.7			

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48321 2002 NG <sub>28</sub>	14.8	X	128.55026	79.51391	253.75442	4.49036	0.2772889	0.23941739	2.5686145	20	—	—
48322 2002 NT <sub>32</sub>	14.1	X	88.24850	147.49285	236.66086	9.96995	0.1430056	0.18442425	3.0567320	20	—	—
48323 2002 NN <sub>33</sub>	14.6	X	245.74557	85.04840	241.08561	5.93568	0.2616094	0.25802979	2.4435589	20	3 12.5	18.7
48324 2002 NQ <sub>40</sub>	14.6	X	12.12615	240.18681	147.64971	2.37654	0.1982666	0.17654141	3.1470597	20	12 29.0	18.4
48325 2002 NO <sub>42</sub>	16.2	X	296.11373	355.55352	17.06171	3.06234	0.1888277	0.27367029	2.3495478	20	7 30.5	18.3
48326 2002 NE <sub>47</sub>	14.3	X	288.35443	212.38380	300.78928	13.66959	0.0345673	0.24201564	2.5501972	20	—	—
48327 2002 NF <sub>50</sub>	15.3	X	3.92913	237.91356	156.32705	4.51197	0.2241181	0.23103855	2.6303472	20	—	—
48328 2002 NN <sub>53</sub>	15.7	X	332.45950	12.52219	332.86865	1.22185	0.0866713	0.22130039	2.7069564	20	8 29.6	18.6
48329 2002 NA <sub>54</sub>	16.1	X	269.15963	72.80879	186.90478	2.73751	0.0878712	0.31180101	2.1538612	20	1 21.5	19.0
48330 2002 NA <sub>56</sub>	15.7	X	77.32320	221.76418	176.22731	5.72402	0.1895088	0.24256465	2.5463477	20	—	—
48331 2002 NR <sub>56</sub>	14.5	X	91.85325	217.48374	140.33163	3.76683	0.3282422	0.18307094	3.0717777	20	1 1.3	18.6
48332 2002 OK <sub>3</sub>	14.6	X	119.34551	0.91508	272.14299	9.42725	0.0422384	0.22916010	2.6447018	20	12 9.8	18.3
48333 2002 OW <sub>6</sub>	13.8	X	277.31346	194.18526	125.35349	12.23658	0.1477611	0.17412440	3.1761155	20	10 27.4	18.3
48334 2002 OX <sub>18</sub>	15.9	X	359.24365	209.95635	276.07738	3.99474	0.1977619	0.27972936	2.3154959	20	10 30.9	17.9
48335 2002 PW <sub>1</sub>	14.4	X	71.35003	118.11927	258.86578	13.55454	0.1485435	0.23724765	2.5842514	20	—	—
48336 2002 PS <sub>6</sub>	15.8	X	157.35092	79.26880	257.22969	17.50885	0.0948562	0.35895171	1.9608545	20	—	—
48337 2002 PT <sub>6</sub>	15.9	X	52.06329	210.33006	123.21615	2.42038	0.1228368	0.23123571	2.6288519	20	12 18.5	19.4
48338 2002 PV <sub>27</sub>	15.9	X	45.20315	271.47833	158.02910	6.37670	0.3854967	0.23872095	2.5736077	20	—	—
48339 2002 PC <sub>31</sub>	13.9	X	311.05583	147.87323	283.34027	4.43793	0.1570268	0.17343935	3.1844733	20	11 1.9	17.7
48340 2002 PT <sub>32</sub>	15.2	X	225.66389	199.61474	173.57479	2.48948	0.2045315	0.26166449	2.4208778	20	4 29.6	19.2
48341 2002 PU <sub>47</sub>	16.0	X	142.16527	45.24694	263.12884	5.39566	0.1767899	0.29603321	2.2296794	20	—	—
48342 2002 PQ <sub>51</sub>	13.3	X	76.00953	347.89235	358.45378	3.39590	0.1893587	0.12664732	3.9271009	20	—	—
48343 2180 P-L	14.7	X	249.21844	332.26526	202.62643	8.09785	0.0446062	0.18424507	3.0587135	20	12 29.2	19.0
48344 2588 P-L	15.1	X	228.95706	95.01892	17.76620	6.18083	0.1718668	0.27872798	2.3210385	20	9 18.0	18.1
48345 2662 P-L	15.5	X	271.35005	73.90905	15.83220	8.24746	0.0700295	0.28024213	2.3126705	20	10 29.3	17.9
48346 3077 P-L	14.4	X	6.89336	75.00083	347.87744	14.90259	0.0733866	0.23370680	2.6102883	20	—	—
48347 3567 P-L	15.1	X	286.59661	154.52107	319.13990	7.04082	0.0558741	0.28191918	2.3034898	20	12 31.1	17.6
48348 4124 P-L	14.4	X	263.45755	203.56377	195.13276	9.14740	0.1609644	0.21095387	2.7947592	20	7 14.0	18.5
48349 4239 P-L	13.7	X	185.96852	298.26184	351.32048	11.88029	0.1375815	0.18705767	3.0279756	20	—	—
48350 6221 P-L	15.1	X	323.48275	229.15632	352.11284	6.36158	0.0810876	0.25651715	2.4531557	20	2 20.9	18.1
48351 6250 P-L	16.4	X	147.24936	171.42409	207.18915	3.80656	0.0666193	0.30473744	2.1870170	20	2 6.3	19.1
48352 6320 P-L	14.2	X	208.67397	121.26306	187.00712	8.63713	0.0781965	0.18903830	3.0067883	20	2 1.5	18.8
48353 6616 P-L	14.8	X	222.44358	224.81753	171.85545	1.93647	0.1023609	0.20981614	2.8048531	20	6 3.1	18.9
48354 1291 T-1	15.5	X	138.69391	13.57358	198.78299	11.68666	0.1329706	0.22942135	2.6426937	20	10 19.0	19.5
48355 2184 T-1	16.0	X	105.42456	336.55731	166.81363	6.81783	0.0717663	0.26439440	2.4041850	20	6 10.4	19.2
48356 3118 T-1	15.5	X	14.01468	100.20522	353.86504	11.79601	0.2092871	0.23723624	2.5843343	20	—	—
48357 1013 T-2	16.2	X	228.14474	98.16949	194.33812	2.77051	0.1873312	0.30607064	2.1806616	20	1 17.9	19.6
48358 1187 T-2	16.5	X	77.13980	33.51889	346.49305	3.33953	0.2470499	0.23745215	2.5827675	20	—	—
48359 1219 T-2	17.5	X	156.35440	354.23030	8.56437	2.42945	0.1423152	0.30480743	2.1866822	20	2 7.3	20.4
48360 1262 T-2	16.1	X	224.42875	230.31528	7.48349	5.06239	0.1585225	0.30221879	2.1991511	20	—	—
48361 2022 T-2	15.4	X	265.89330	203.36633	192.30389	6.91299	0.1176699	0.27020322	2.3696036	20	7 24.1	18.4
48362 2184 T-2	16.3	X	332.05290	284.34577	31.68515	2.59710	0.2168667	0.27085569	2.3657966	20	7 12.9	17.7
48363 2192 T-2	15.9	X	283.50077	207.91752	181.67094	7.38206	0.1703875	0.27081725	2.3660205	20	8 2.6	18.5
48364 3096 T-2	15.0	X	6.58940	247.51514	24.68267	6.71311	0.1069738	0.27032020	2.3689199	20	7 21.7	17.4
48365 3106 T-2	14.7	X	26.04032	38.09478	16.81692	13.77841	0.1809853	0.23613078	2.5923939	20	—	—
48366 3284 T-2	15.4	X	188.88028	324.30800	135.70526	5.38831	0.1877313	0.26841994	2.3800872	20	7 17.3	19.3
48367 4127 T-2	15.5	X	251.18328	269.07270	162.42112	8.42906	0.0933437	0.27136801	2.3628181	20	8 29.4	18.2
48368 4141 T-2	14.8	X	177.12397	268.75868	22.21471	5.61576	0.1514333	0.23917341	2.5703610	20	—	—
48369 4153 T-2	14.8	X	258.03104	271.29953	53.34163	2.79433	0.0642038	0.20323275	2.8651031	20	4 17.5	18.9
48370 1056 T-3	16.0	X	90.05772	15.34914	300.00662	7.83090	0.2227679	0.23417017	2.6068437	20	—	—
48371 1173 T-3	15.0	X	119.70938	51.17781	254.89739	9.06466	0.1380421	0.23502457	2.6005220	20	—	—
48372 1182 T-3	14.2	X	235.32564	304.30743	330.90845	8.56902	0.0164280	0.19337068	2.9617084	20	1 27.5	18.4
48373 Gorythion	12.0	X	16.39735	33.20733	208.34451	27.22230	0.0139649	0.08152302	5.2676375	20	6 8.4	19.1
48374 2583 T-3	15.0	X	20.20100	201.29468	219.80039	12.64446	0.1468722	0.23442392	2.6049622	20	—	—
48375 3320 T-3	14.7	X	105.56115	295.15897	77.68832	2.05479	0.1268527	0.23762838	2.5814904	20	—	—
48376 4044 T-3	14.5	X	192.49502	73.65420	71.08891	6.53698	0.0667493	0.27448170	2.3449151	20	10 1.7	17.7
48377 4047 T-3	15.9	X	332.13603	259.07409	66.33397	5.84171	0.2561099	0.27349843	2.3505320	20	7 29.4	17.2
48378 4241 T-3	15.8	X	205.31189	359.18622	101.20017	5.77291	0.1895019	0.27098624	2.3650367	20	8 3.6	19.4
48379 4672 T-3	14.9	X	303.31768	31.59037	77.22064	5.05082	0.1400865	0.23208161	2.6224601	20	12 31.0	17.5
48380 5622 T-3	15.2	X	63.81115	92.61626	74.64195	10.77960	0.0569210	0.24477309	2.5310085	20	5 14.9	18.3
48381 1977 SU <sub>3</sub>	15.3	X	158.58567	290.62211	79.63865	23.26918	0.1027935	0.35708601	1.9676786	20	2 15.7	18.2
48382 1978 UC <sub>6</sub>	15.7	X	56.14271	193.15321	236.83866	2.78306	0.1119449	0.29049850	2.2579108	20	—	—
48383 1978 VH <sub>7</sub>	15.6	X	45.86846	359.88978	66.61964	5.86364	0.1796413	0.28794498	2.2712401	20	—	—
48384 1978 VQ <sub>8</sub>	14.6	X	257.51203	318.59283	222.69085	4.39943	0.1254030	0.23717151	2.5848045	20	—	—
48385 1978 VH <sub>9</sub>	15.2	X	5.61239	250.45853	259.35065	4.99869	0.2332992	0.24155304	2.5534521	20	1 2.6	17.2
48386 1979 MQ <sub>1</sub>	14.4	X	134.44966	344.70148	281.43296	12.32309	0.1389174	0.22464565	2.6800159	20	12 17.8	18.6
48387 1979 MM <sub>2</sub>	15.8	X	329.50201	43.62491	262.60729	5.63738	0.1077045	0.26363942	2.4087727	20	6 29.5	18.3
48388 1979 MZ <sub>5</sub>	15.4	X	79.17193	14.90007	248.58450	2.94513	0.1669211	0.22095447	2.7097810	20	10 23.8	19.5
48389 1979 MV <sub>8</sub>	15.9	X	288.84008	139.95792	148.73060	5.77577	0.1730322	0.26010626	2.4305367	20	3 21.2	19.2
48390 1979 ON <sub>1</sub>	14.5	X	100.84196	191.24162	137.55457	6.15857	0.1129313	0.17671086	3.1450476	20	—	—
48391 1981 DH <sub>2</sub>	14.5	X	257.75590	214.67944	225.70075	12.52692	0.1520883	0.21301518	2.7767003	20	8 28.9	18.7
48392 1981 DV <sub>2</sub>	15.1	X	214.23685	245.83513	192.37414	22.36214	0.2996769	0.26128217	2.4232387	20	7 2.8	19.8
48393 1981 EB <sub>5</sub>	14.7	X	170.31551	190.97825	309.05073	7.98241	0.0839206	0.21053290	2.7984834	20	8 17.6	19.0
48394 1981 EP <sub>9</sub>	15.0	X	266.05883	153.43640	235.43684	5.13515	0.1221810	0.25990732	2.4317768	20	7 13.7	18.1
48395 1981 ES <sub>11</sub>	15.3	X	303.82252	11.50573	259.00294	4.57361	0.1497151	0.25279524	2.4771756	20	3 16.6	18.5
48396 1981 EP <sub>14</sub>	15.2	X	241.11716	19.64418	228.09045	5.21032	0.1292005	0.2				

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48401 1981 <i>EW</i> <sub>27</sub>	14.4	X	267.66760	254.46380	181.95724	7.64992	0.2104211	0.21412771	2.7670742	20	9 1.1	18.0
48402 1981 <i>EH</i> <sub>28</sub>	15.1	X	145.76822	82.42844	26.04743	2.31714	0.0693222	0.25697293	2.4502541	20	6 11.7	18.4
48403 1981 <i>EP</i> <sub>41</sub>	15.7	X	241.65939	62.65123	355.45003	2.46539	0.1696828	0.26068519	2.4269368	20	7 17.6	19.1
48404 1981 <i>EQ</i> <sub>41</sub>	14.4	X	258.82254	62.90027	337.92998	4.88186	0.1006362	0.20962024	2.8066003	20	7 22.7	18.2
48405 1981 <i>EQ</i> <sub>46</sub>	14.8	X	267.09023	232.11721	164.61801	4.07621	0.1372595	0.21051433	2.7986479	20	7 20.8	18.5
48406 1981 <i>EQ</i> <sub>47</sub>	15.2	X	246.94547	279.54620	127.14779	1.65398	0.1518536	0.25996791	2.4313989	20	7 9.9	18.6
48407 1981 <i>QL</i> <sub>2</sub>	15.0	X	109.22257	6.68001	358.42594	5.76619	0.1894659	0.28885294	2.2664781	20	—	—
48408 1982 <i>VN</i> <sub>2</sub>	14.4	X	95.10810	75.60114	331.54103	12.26193	0.1860330	0.24272598	2.5452193	20	2 6.6	17.5
48409 1984 <i>SL</i> <sub>5</sub>	13.7	X	28.03491	52.68814	355.93862	13.13334	0.2890104	0.22498680	2.6773061	20	—	—
48410 Kolmogorov	13.5	X	23.15770	12.97471	353.59927	12.44173	0.1816350	0.17231777	3.1982765	20	12 14.4	17.9
48411 Johnventre	14.6	X	123.00811	22.00204	10.00432	5.35408	0.3253516	0.23921722	2.5700436	20	3 7.9	18.7
48412 1986 <i>QN</i> <sub>1</sub>	13.7	X	163.64680	32.53852	345.59909	13.45462	0.1242244	0.19150221	2.9809420	20	3 12.6	18.3
48413 1986 <i>TB</i> <sub>7</sub>	13.3	X	206.64482	114.77529	246.88269	9.82719	0.1357802	0.19067010	2.9896085	20	3 30.7	18.3
48414 1987 <i>OS</i>	15.5	X	19.39590	61.87494	259.39750	7.07477	0.1344092	0.27180771	2.3602692	20	10 27.4	18.3
48415 Dehio	14.9	X	306.42006	45.91423	334.18473	8.34276	0.2202463	0.26810672	2.3819405	20	8 26.9	16.7
48416 Carmelita	13.3	X	155.34864	65.49547	44.26950	16.61907	0.2404910	0.19490422	2.9461525	20	6 28.8	18.7
48417 1988 <i>QO</i> <sub>2</sub>	14.3	X	34.99320	348.55232	133.79736	3.22499	0.2443031	0.18613233	3.0380028	20	2 18.9	17.2
48418 1988 <i>EA</i> <sub>1</sub>	14.6	X	173.26277	84.83270	165.23896	12.82933	0.2323318	0.23332380	2.6131441	20	12 29.5	19.2
48419 1988 <i>RB</i> <sub>5</sub>	14.6	X	17.41295	277.72850	114.03200	7.24277	0.1060624	0.28502198	2.2867419	20	—	—
48420 1988 <i>RN</i> <sub>5</sub>	14.6	X	2.76690	109.97029	246.91302	2.32479	0.1588590	0.21856892	2.7294624	20	11 10.8	17.5
48421 1988 <i>VF</i>	14.7	X	94.84916	331.93630	36.01565	6.35857	0.2598956	0.28759898	2.2730613	20	—	—
48422 Schrade	15.4	X	37.65703	328.05327	62.13780	8.17827	0.1694583	0.28327167	2.2961519	20	—	—
48423 1988 <i>WA</i>	13.7	X	3.14448	264.11292	58.05135	13.52038	0.1802050	0.27518560	2.3409146	20	10 17.1	16.0
48424 Souchay	13.7	X	170.27355	213.27266	201.20098	1.56899	0.0569670	0.20212620	2.8755504	20	4 30.6	18.0
48425 Tischendorf	15.6	X	178.66909	8.65112	113.82854	2.26144	0.1383976	0.26609310	2.3939421	20	8 7.5	19.3
48426 1989 <i>EV</i> <sub>2</sub>	15.4	X	239.50457	223.04350	245.21131	5.94879	0.0755700	0.27078141	2.3662292	20	10 4.6	18.5
48427 1989 <i>SZ</i> <sub>2</sub>	14.4	X	123.59412	192.43654	179.76912	10.90112	0.1827084	0.23583621	2.5945520	20	1 25.2	18.2
48428 1989 <i>SV</i> <sub>5</sub>	14.5	X	76.17236	48.55511	71.58380	6.26723	0.1826731	0.23947726	2.5681863	20	4 18.5	17.6
48429 1989 <i>SK</i> <sub>10</sub>	15.1	X	74.59373	114.91921	264.97992	0.61762	0.1763112	0.23306987	2.6150418	20	—	—
48430 1989 <i>TQ</i> <sub>3</sub>	14.7	X	25.63188	25.00486	36.47374	13.87403	0.1157777	0.23056161	2.6339734	20	—	—
48431 1989 <i>TV</i> <sub>5</sub>	15.3	X	30.53726	186.86958	174.08647	7.12458	0.3100492	0.22698016	2.6616082	20	—	—
48432 1989 <i>TM</i> <sub>6</sub>	15.1	X	24.75601	234.47496	113.35739	4.34939	0.0704453	0.22518516	2.6757336	20	11 22.6	18.5
48433 1989 <i>US</i> <sub>1</sub>	13.5	X	67.75707	340.82735	31.63150	13.89057	0.2346012	0.23012410	2.6373108	20	—	—
48434 Maxbeckmann	15.1	X	41.50639	303.89203	74.57300	1.77979	0.0816500	0.22739820	2.6583451	20	—	—
48435 Jaspers	14.9	X	262.95458	349.42926	49.80460	9.08767	0.1453823	0.21625073	2.7489341	20	7 20.5	18.8
48436 1989 <i>VK</i>	14.7	X	75.55236	132.17977	266.59781	3.10476	0.3128448	0.23239522	2.6201003	20	1 15.9	17.1
48437 1989 <i>VM</i> <sub>1</sub>	16.5	X	147.68416	232.47920	142.05127	5.81493	0.1751031	0.30167347	2.2018005	20	2 16.6	19.5
48438 1989 <i>WJ</i> <sub>2</sub>	10.9	X	223.62106	291.33496	95.88482	31.41052	0.0296502	0.08461032	5.1387066	20	6 4.5	18.0
48439 1989 <i>WR</i> <sub>2</sub>	13.5	X	313.51605	34.64173	54.62242	13.28874	0.2439065	0.22432116	2.6825998	20	12 17.6	15.7
48440 1989 <i>YO</i> <sub>2</sub>	15.2	X	73.97637	313.85916	110.14395	6.60778	0.1393256	0.29475181	2.2361369	20	1 5.5	16.9
48441 1990 <i>ET</i> <sub>1</sub>	15.6	X	14.63973	163.19584	283.91744	5.45558	0.1229122	0.28853866	2.2681235	20	—	—
48442 1990 <i>GF</i>	14.4	X	96.69615	293.78938	214.25454	1.01105	0.0646846	0.20258352	2.8712211	20	6 3.1	18.3
48443 1990 <i>HY</i> <sub>5</sub>	15.8	X	104.09142	261.39866	264.02150	2.07972	0.1332032	0.26436844	2.4043424	20	7 16.6	19.1
48444 1990 <i>QQ</i> <sub>7</sub>	13.8	X	8.05776	93.58279	334.47090	10.36844	0.0905698	0.17415954	3.1756883	20	—	—
48445 1990 <i>QX</i> <sub>7</sub>	14.0	X	31.56466	50.61882	324.86777	1.77445	0.1663001	0.17135430	3.2102539	20	—	—
48446 1990 <i>RB</i> <sub>1</sub>	13.9	X	113.21734	153.50133	171.94285	10.55238	0.2051499	0.17407153	3.1767586	20	—	—
48447 Hingley	13.0	X	95.49071	322.56477	8.48485	15.53096	0.0668554	0.17115151	3.2127892	20	—	—
48448 1990 <i>WR</i> <sub>2</sub>	14.0	X	101.50710	335.30529	93.82239	8.99245	0.2508690	0.24322941	2.5417061	20	3 27.5	17.6
48449 1991 <i>EK</i> <sub>4</sub>	15.1	X	46.68852	38.23043	185.74029	2.83690	0.0799881	0.31285544	2.1490189	20	7 14.9	17.2
48450 1991 <i>NA</i>	15.5	X	289.64302	40.96785	277.58885	11.72804	0.3298313	0.26757410	2.3851004	20	3 31.6	19.4
48451 Pichincha	14.0	X	106.28123	199.42591	128.51135	13.16910	0.0876071	0.18200852	3.0837198	20	—	—
48452 1991 <i>PH</i> <sub>7</sub>	16.2	X	15.87713	333.68195	18.85799	2.61079	0.2418450	0.27713319	3.2299344	20	12 25.9	19.0
48453 1991 <i>PT</i> <sub>9</sub>	13.6	X	133.32672	357.91600	286.84103	24.75873	0.2177647	0.28500924	2.2868100	20	—	—
48454 1991 <i>PQ</i> <sub>12</sub>	15.6	X	339.03730	71.17457	309.64172	1.86360	0.2415591	0.27504834	2.3416934	20	11 30.0	17.1
48455 1991 <i>PK</i> <sub>13</sub>	15.5	X	354.55105	14.42160	321.17620	6.53574	0.2116639	0.27366708	2.3495661	20	10 14.4	17.5
48456 Wilhelmwien	14.1	X	298.30489	215.87458	350.73021	19.48185	0.0830079	0.18536777	3.0463507	20	1 15.8	18.7
48457 Joseffried	15.2	X	103.98571	289.97299	328.88185	6.29744	0.0749879	0.27571987	2.3378896	20	11 13.1	18.5
48458 Merian	13.6	X	36.86234	52.98142	1.51894	11.78405	0.1430153	0.17891207	3.1191980	20	—	—
48459 1991 <i>RO</i> <sub>5</sub>	15.4	X	59.76757	295.27549	31.94705	6.53296	0.1639787	0.27816769	2.3241541	20	—	—
48460 1991 <i>RH</i> <sub>6</sub>	15.3	X	309.68194	325.46004	28.26510	6.85794	0.1568798	0.26925179	2.3751825	20	8 3.3	17.6
48461 1991 <i>RN</i> <sub>6</sub>	15.2	X	36.49471	156.02996	161.76118	10.36486	0.2456496	0.27643232	2.3338709	20	12 7.2	18.5
48462 1991 <i>RT</i> <sub>6</sub>	12.8	X	118.62983	278.44751	320.81692	20.23129	0.0861031	0.17468473	3.1693200	20	10 10.5	18.0
48463 1991 <i>RH</i> <sub>14</sub>	14.5	X	285.11757	122.86897	326.13936	6.56760	0.0739210	0.27563994	2.3383416	20	11 17.3	17.1
48464 1991 <i>RA</i> <sub>17</sub>	14.6	X	93.31248	304.13351	35.36886	7.23159	0.1599700	0.28229467	2.3014468	20	—	—
48465 1991 <i>RS</i> <sub>20</sub>	13.1	X	187.72868	22.16700	52.10871	3.10143	0.0970130	0.19616193	2.9335459	20	6 13.6	17.6
48466 1991 <i>RY</i> <sub>29</sub>	15.1	X	36.80424	137.66538	278.76507	6.02652	0.1480083	0.28346146	2.2951269	20	—	—
48467 1991 <i>SB</i> <sub>1</sub>	15.2	X	358.49135	266.82887	89.48569	7.32954	0.1361009	0.27513026	2.3412285	20	11 17.7	17.5
48468 1991 <i>SS</i> <sub>1</sub>	16.5	X	294.15016	353.92713	37.69759	5.73814	0.3675796	0.26968276	2.3726514	20	7 21.6	18.8
48469 1991 <i>TQ</i> <sub>1</sub>	13.6	X	10.19243	7.28628	21.03712	24.63533	0.2163595	0.27726848	2.3291764	20	—	—
48470 1991 <i>TC</i> <sub>2</sub>	14.8	X	210.50330	55.43234	26.81583	24.96783	0.1196682	0.37006766	1.9213890	20	8 10.9	17.8
48471 Orchiston	15.4	X	243.13201	337.96210	355.97870	8.20344	0.1784827	0.26145624	2.4221630	20	3 27.1	19.1
48472 Mössbauer	15.0	X	221.81856	203.60593	332.84520	5.26416	0.0633022	0.27822346	2.3238435	20	12 18.9	17.8
48473 1991 <i>TU</i> <sub>9</sub>	15.6	X	74.85149	127.86645	103.19316	3.27473	0.1610437	0.26946371	2.3739370	20	9 15.8	18.8
48474 1991 <i>UR</i>	14.2	X	73.79564	331.96349	10.42742	6.92312	0.1277078	0.27908821	2.3190408	20	—	—
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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48481 1992 <i>BZ</i> <sub>3</sub>	15.3	X	352.61316	278.24073	58.80267	7.32325	0.1176102	0.26900492	2.3766355	20	10 7.1	17.7
48482 Oruki	14.0	X	5.46651	34.68148	113.03907	6.12135	0.1087366	0.17497573	3.1658050	20	1 28.7	17.9
48483 1992 <i>CB</i> <sub>3</sub>	15.0	X	138.60778	207.44303	248.53128	4.57646	0.0879193	0.25460453	2.4654260	20	5 18.6	18.5
48484 1992 <i>ET</i> <sub>1</sub>	14.6	X	74.07918	269.90701	16.38171	7.31270	0.1250175	0.22529664	2.6748508	20	11 10.7	18.5
48485 1992 <i>EX</i> <sub>4</sub>	15.0	X	232.80884	75.82158	143.57915	14.18703	0.1031472	0.23705248	2.5856697	20	—	—
48486 1992 <i>EG</i> <sub>5</sub>	15.9	X	156.62338	347.20511	98.30491	4.63790	0.1458670	0.25397471	2.4695002	20	5 29.1	19.8
48487 1992 <i>EY</i> <sub>5</sub>	14.4	X	328.66358	41.76865	145.22728	14.12277	0.0967397	0.24349832	2.5398344	20	1 11.6	17.8
48488 1992 <i>EN</i> <sub>12</sub>	14.4	X	357.67530	29.22473	97.68989	3.08490	0.0723633	0.24110695	2.5566007	20	—	—
48489 1992 <i>EZ</i> <sub>28</sub>	14.5	X	245.49940	83.80974	168.79580	13.40732	0.1249486	0.24068890	2.5595602	20	—	—
48490 1992 <i>GD</i> <sub>4</sub>	14.7	X	319.62197	336.92959	213.98519	6.68898	0.1379900	0.23998528	2.5645607	20	—	—
48491 1992 <i>HG</i> <sub>5</sub>	13.5	X	0.44440	227.14632	16.32787	16.98290	0.1710987	0.17888591	3.1195022	20	5 17.1	17.2
48492 Utewielen	14.5	X	118.07971	241.47083	186.24999	1.70110	0.0330810	0.19603392	2.9348229	20	3 14.5	18.5
48493 1992 <i>WG</i>	13.7	X	81.84870	353.92845	53.38263	12.40593	0.1425404	0.18715366	3.0269402	20	1 23.1	17.8
48494 1992 <i>WM</i>	14.4	X	302.55560	67.02656	50.73989	7.54589	0.0787151	0.28625253	2.2801836	20	—	—
48495 Ryugado	15.3	X	282.81097	24.47053	144.58011	5.80176	0.1397458	0.28298301	2.2977132	20	—	—
48496 1993 <i>BM</i> <sub>3</sub>	15.1	X	171.96377	183.83740	29.39709	6.55764	0.0588021	0.27646608	2.3336809	20	12 3.6	18.3
48497 1993 <i>BQ</i> <sub>5</sub>	15.1	X	87.03579	73.81484	110.40294	2.27960	0.1458468	0.26487312	2.4012873	20	7 23.9	18.2
48498 1993 <i>BS</i> <sub>6</sub>	12.7	X	282.82616	202.06546	309.84532	18.96598	0.1479164	0.17357655	3.1827951	20	—	—
48499 1993 <i>BV</i> <sub>7</sub>	13.8	X	36.89011	277.50927	213.06270	3.41930	0.0253345	0.18351553	3.0668145	20	2 17.9	18.0
48500 1993 <i>DU</i> <sub>2</sub>	14.2	X	355.83185	175.68075	339.30330	4.87007	0.1135199	0.18127318	3.0920536	20	1 22.0	17.9
48501 1993 <i>FM</i>	13.5	X	31.41959	245.33588	190.91196	1.20967	0.1853376	0.17564244	3.1577888	20	—	—
48502 1993 <i>FL</i> <sub>5</sub>	16.0	X	276.99180	133.87064	146.44588	3.14037	0.1862163	0.25297643	2.4759926	20	2 23.6	19.5
48503 1993 <i>FN</i> <sub>6</sub>	15.9	X	35.76427	213.34788	20.65888	7.01008	0.0785522	0.26175358	2.4203284	20	7 10.3	18.7
48504 1993 <i>FK</i> <sub>9</sub>	15.1	X	305.91571	39.10157	37.26008	5.74524	0.0883384	0.27481261	2.3430323	20	12 4.8	17.5
48505 1993 <i>FM</i> <sub>10</sub>	15.6	X	24.29205	171.34496	75.05667	2.50548	0.1398408	0.26091061	2.4255388	20	7 16.4	17.9
48506 1993 <i>FO</i> <sub>10</sub>	14.0	X	6.71603	295.07304	175.79857	16.52969	0.1895532	0.17634332	3.1494161	20	—	—
48507 1993 <i>FS</i> <sub>11</sub>	14.6	X	276.22310	308.84271	160.67554	6.85796	0.0633936	0.27471972	2.3435604	20	12 6.5	17.4
48508 1993 <i>FF</i> <sub>12</sub>	14.0	X	338.20570	74.10954	30.02544	10.23906	0.0394424	0.17111011	3.2133074	20	—	—
48509 1993 <i>FI</i> <sub>12</sub>	15.4	X	100.12745	101.92898	114.06052	3.45214	0.1153204	0.26628248	2.3928069	20	9 18.9	18.7
48510 1993 <i>FP</i> <sub>13</sub>	15.8	X	300.74355	49.18166	40.36799	7.78997	0.0671973	0.27537066	2.3398657	20	12 15.6	18.4
48511 1993 <i>FR</i> <sub>13</sub>	15.3	X	197.09734	47.72391	50.39124	6.15204	0.1187787	0.26599927	2.3945051	20	7 28.6	18.9
48512 1993 <i>FR</i> <sub>15</sub>	13.9	X	84.34903	93.61986	29.83657	8.80193	0.2092742	0.18513933	3.0488561	20	5 6.7	18.2
48513 1993 <i>FB</i> <sub>22</sub>	15.4	X	209.42202	74.65271	7.96296	1.17544	0.1546128	0.26524693	2.3990307	20	7 16.8	19.0
48514 1993 <i>FN</i> <sub>22</sub>	15.6	X	183.47065	88.24919	194.08635	3.80388	0.2353586	0.24235724	2.5478003	20	—	—
48515 1993 <i>FO</i> <sub>24</sub>	14.0	X	16.83955	104.19361	148.89775	4.61248	0.1667104	0.17532083	3.1616494	20	—	—
48516 1993 <i>FL</i> <sub>25</sub>	14.2	X	334.20854	306.01274	395.97490	13.86671	0.2425699	0.17552778	3.1591638	20	—	—
48517 1993 <i>FR</i> <sub>25</sub>	15.4	X	172.08296	277.28983	239.87899	1.53305	0.1564469	0.26893563	2.3770436	20	9 14.6	19.1
48518 1993 <i>FB</i> <sub>29</sub>	14.9	X	323.95764	0.23358	260.95145	4.50239	0.1592463	0.25615303	2.4554799	20	4 1.8	17.5
48519 1993 <i>FC</i> <sub>37</sub>	15.4	X	56.78541	44.89267	178.60147	6.06392	0.1115382	0.26220791	2.4175318	20	7 30.8	18.3
48520 1993 <i>FK</i> <sub>45</sub>	15.8	X	279.20021	281.08780	68.73520	1.28777	0.1125048	0.26182454	2.4198911	20	6 9.2	18.8
48521 1993 <i>FV</i> <sub>50</sub>	16.1	X	207.42769	263.28521	233.64555	1.43071	0.1643637	0.27133678	2.3629993	20	9 23.7	19.5
48522 1993 <i>FF</i> <sub>54</sub>	13.7	X	2.05511	43.40417	37.44834	8.85718	0.0612495	0.17160880	3.2070791	20	—	—
48523 1993 <i>FY</i> <sub>55</sub>	15.6	X	169.81685	227.45044	53.50252	5.40427	0.2290683	0.24150896	2.5537627	20	—	—
48524 1993 <i>FY</i> <sub>78</sub>	14.2	X	49.02568	34.64541	15.10867	3.10179	0.1803817	0.17363675	3.1820595	20	—	—
48525 1993 <i>GB</i>	13.8	X	46.73879	172.30553	25.17294	9.85167	0.1934497	0.25865902	2.4395944	20	6 20.3	16.5
48526 1993 <i>HL</i> <sub>3</sub>	15.3	X	223.45766	302.64514	124.43285	3.31790	0.1486959	0.26492625	2.4009663	20	7 11.0	18.6
48527 1993 <i>LC</i> <sub>1</sub>	16.1	X	250.69523	274.09886	38.57981	21.58527	0.0802534	0.36084282	1.9539975	20	3 21.2	18.8
48528 1993 <i>OC</i> <sub>3</sub>	14.7	X	199.95092	0.92221	305.52277	3.90500	0.1359563	0.24118413	2.5560552	20	1 18.0	18.0
48529 von Wrangel	14.0	X	117.47235	74.00878	253.18267	2.17148	0.2351256	0.12423776	3.9777149	20	—	—
48530 1993 <i>PF</i>	14.5	X	73.17579	139.49771	281.56897	13.98835	0.0590081	0.23907073	2.5710969	20	1 4.5	17.5
48531 1993 <i>PP</i>	15.2	X	70.13042	230.20158	240.14367	3.98968	0.1568633	0.24234845	2.5478619	20	3 17.2	18.1
48532 1993 <i>PL</i> <sub>7</sub>	14.5	X	162.81755	112.98387	161.12869	13.69648	0.1544330	0.23258862	2.6186477	20	—	—
48533 1993 <i>QU</i>	14.3	X	79.30316	356.02567	346.10190	18.87134	0.2632422	0.22909988	2.6451652	20	—	—
48534 1993 <i>QM</i> <sub>4</sub>	14.6	X	315.66857	73.12783	10.65971	1.95199	0.0600038	0.22594127	2.6697607	20	12 16.3	17.9
48535 1993 <i>RD</i> <sub>4</sub>	15.0	X	47.09625	89.82765	338.49777	3.73262	0.1565976	0.23157072	2.6263159	20	—	—
48536 1993 <i>RS</i> <sub>6</sub>	15.0	X	279.75294	283.12412	247.26596	2.63363	0.0256080	0.23020231	2.6367134	20	—	—
48537 1993 <i>RO</i> <sub>7</sub>	15.3	X	67.02568	69.26009	9.87805	3.63951	0.1801579	0.23418617	2.6067250	20	2 5.5	18.0
48538 1993 <i>RF</i> <sub>15</sub>	15.1	X	32.69020	151.43090	170.21966	1.75637	0.2167869	0.22257881	2.6965812	20	11 20.4	18.5
48539 1993 <i>SD</i> <sub>11</sub>	14.7	X	245.82961	85.85174	349.54986	2.91693	0.1045315	0.21553633	2.7550050	20	8 20.4	18.4
48540 1993 <i>TW</i> <sub>8</sub>	13.8	X	54.78132	355.90244	17.73700	14.50170	0.2549459	0.22663041	2.6643458	20	—	—
48541 1993 <i>TV</i> <sub>10</sub>	14.1	X	149.46474	33.34670	219.97468	11.37856	0.1519059	0.22574637	2.6712971	20	12 15.6	18.6
48542 1993 <i>TN</i> <sub>13</sub>	14.7	X	79.87009	193.52068	156.21246	4.01020	0.2267416	0.22790931	2.6543693	20	—	—
48543 1993 <i>TJ</i> <sub>14</sub>	13.7	X	343.33818	291.70736	24.30006	9.37689	0.1548794	0.21549198	2.7553830	20	8 9.5	16.7
48544 1993 <i>TO</i> <sub>15</sub>	14.6	X	271.35437	205.36843	195.58979	2.18754	0.0820176	0.21467088	2.7624046	20	8 10.3	18.1
48545 1993 <i>TZ</i> <sub>16</sub>	15.8	X	359.03750	170.44795	180.39800	5.01339	0.1211947	0.21976898	2.7195170	20	10 24.4	18.9
48546 1993 <i>TM</i> <sub>19</sub>	15.0	X	253.23946	354.14925	47.53668	4.07838	0.0907780	0.21263987	2.7799666	20	7 18.1	18.9
48547 1993 <i>TJ</i> <sub>20</sub>	14.4	X	71.12386	264.61863	30.37763	13.30366	0.0906076	0.22187757	2.7022599	20	11 12.7	18.3
48548 1993 <i>TM</i> <sub>25</sub>	15.0	X	312.28731	309.64473	142.99913	3.86697	0.2721468	0.22196942	2.7015144	20	12 19.5	16.8
48549 1993 <i>TP</i> <sub>25</sub>	15.0	X	265.29629	307.93518	42.94732	6.83307	0.0988750	0.20982338	2.8047886	20	5 24.0	18.9
48550 1993 <i>TU</i> <sub>25</sub>	14.2	X	236.25611	61.56352	46.25371	6.02126	0.0191629	0.21807338	2.7335957	20	10 4.2	17.9
48551 1993 <i>TR</i> <sub>28</sub>	15.4	X	272.13175	303.63970	152.35476	3.68682	0.0580625	0.22001025	2.7175285	20	10 30.4	18.8
48552 1993 <i>TN</i> <sub>31</sub>	14.8	X	193.12587	66.37512	46.84958	9.78746	0.1147518	0.21247133	2.7814366	20	8 12.1	19.2
48553 1993 <i>TS</i> <sub>31</sub>	15.3	X	280.07819	230.96262	150.93179	4.04811	0.1037574	0.21332586	2.7740038	20	7 24.4	18.9

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48561 1993 UZ <sub>2</sub>	14.3	X	40.82110	309.67226	82.98414	30.21618	0.2554028	0.22717954	2.6600507	20	—	—
48562 1993 UZ <sub>6</sub>	14.6	X	153.08386	74.13252	125.38970	5.15718	0.0330844	0.21810609	2.7333224	20	10 18.1	18.5
48563 1994 AP <sub>5</sub>	14.9	X	138.29843	252.96127	48.46021	0.75435	0.0983769	0.18280614	3.0747433	20	—	—
48564 1994 BL <sub>3</sub>	14.5	X	330.74893	249.93793	163.62267	5.23885	0.1843958	0.21650091	2.7468160	20	12 2.3	17.2
48565 1994 CA <sub>9</sub>	15.8	X	33.25344	111.98702	14.60415	0.76182	0.1159321	0.30244410	2.1980588	20	1 18.7	17.6
48566 1994 CH <sub>9</sub>	14.0	X	130.85151	191.51992	57.58086	1.97495	0.1409556	0.17164993	3.2065669	20	11 15.9	19.2
48567 1994 CH <sub>14</sub>	15.5	X	286.57031	68.20537	92.57734	6.12910	0.1049110	0.29254150	2.2473863	20	—	—
48568 1994 CO <sub>14</sub>	13.7	X	85.41773	63.77037	7.86105	11.43673	0.1404933	0.18887049	3.0085690	20	2 27.6	17.8
48569 1994 EN	14.0	X	110.32206	170.58701	159.46927	10.05632	0.0761562	0.18099485	3.0952228	20	—	—
48570 1994 EA <sub>2</sub>	15.9	X	14.51663	326.45095	183.80436	7.99333	0.3006368	0.30123504	2.2039364	20	—	—
48571 1994 ER <sub>5</sub>	15.3	X	226.73699	159.27712	35.33808	3.83111	0.1224334	0.28923871	2.2644624	20	—	—
48572 1994 EJ <sub>6</sub>	15.3	X	56.42467	355.21414	74.27656	4.96303	0.0478132	0.29711929	2.2242426	20	—	—
48573 1994 JX <sub>5</sub>	13.9	X	8.37330	312.06659	56.14534	5.50206	0.0535576	0.16660690	3.2709511	20	11 10.0	18.2
48574 1994 JG <sub>6</sub>	14.0	X	310.49507	291.14050	217.92185	8.33955	0.0966957	0.17668345	3.1453728	20	—	—
48575 Hawaii	13.7	X	58.82972	234.26325	228.49971	10.36427	0.1083346	0.18404011	3.0609840	20	2 17.3	17.8
48576 1994 NN <sub>2</sub>	15.1	X	86.77740	58.14643	217.05344	22.47814	0.2340531	0.27556015	2.3387929	20	11 29.1	19.1
48577 1994 PD <sub>8</sub>	15.4	X	297.72136	55.81778	329.90278	5.30785	0.1205100	0.26537696	2.3982470	20	8 29.7	17.5
48578 1994 PL <sub>11</sub>	15.0	X	332.51146	13.90966	302.49856	5.33614	0.1081806	0.26304582	2.4123951	20	7 21.8	17.1
48579 1994 PW <sub>11</sub>	15.3	X	151.87798	321.37467	324.59390	5.14646	0.2675716	0.24270070	2.5453900	20	—	—
48580 1994 PD <sub>17</sub>	15.3	X	313.26997	1.36341	327.61957	11.46206	0.1698948	0.26213669	2.4179696	20	6 27.1	17.9
48581 1994 PV <sub>19</sub>	15.1	X	222.86967	163.58824	289.84023	1.19634	0.1699555	0.26306739	2.4122633	20	8 12.5	18.5
48582 1994 PF <sub>25</sub>	15.9	X	252.43679	257.32493	84.87759	2.25973	0.1948845	0.25723806	2.4485702	20	4 16.6	19.6
48583 1994 PE <sub>35</sub>	15.2	X	319.02078	235.59669	172.61757	3.12746	0.1586585	0.26993013	2.3712016	20	11 18.4	17.0
48584 1994 PF <sub>37</sub>	14.8	X	106.79945	333.59001	157.79367	5.86271	0.0900208	0.25755814	2.4465412	20	5 29.5	18.1
48585 1994 PK <sub>37</sub>	14.9	X	139.99722	254.27875	296.53193	4.01060	0.1648701	0.26936414	2.3745220	20	9 26.1	18.8
48586 1994 PE <sub>39</sub>	15.6	X	277.64911	117.43308	163.84986	6.29157	0.1126371	0.25473729	2.4645693	20	3 5.3	18.8
48587 1994 PO <sub>39</sub>	16.2	X	239.18952	63.68004	315.41524	2.01495	0.1640403	0.25868708	2.4394180	20	5 22.6	19.7
48588 Raschröder	15.4	X	343.78137	108.98130	251.48456	5.72737	0.1459942	0.26715252	2.3876089	20	10 22.4	17.6
48589 1994 RW <sub>17</sub>	15.8	X	302.00542	345.83948	284.17305	0.82002	0.1377657	0.25600146	2.4564490	20	3 17.1	18.8
48590 1994 TY <sub>2</sub>	14.2	X	215.45354	65.03084	17.41177	10.81933	0.2680192	0.25697015	2.4502718	20	7 15.9	18.5
48591 1994 TB <sub>3</sub>	13.6	X	37.31017	13.87789	14.46351	14.57134	0.1500856	0.23491929	2.6012990	20	—	—
48592 1994 TP <sub>5</sub>	15.3	X	38.92041	58.90275	160.91401	2.98378	0.1284937	0.25784658	2.4447163	20	6 29.8	18.0
48593 1994 VF	15.1	X	166.88119	70.77391	291.92794	1.78195	0.1082316	0.24617625	2.5213818	20	2 25.3	19.1
48594 1994 VA <sub>2</sub>	13.9	X	129.87739	324.98845	71.05286	14.04547	0.1675127	0.24475824	2.5311109	20	3 8.7	17.9
48595 1994 VH <sub>2</sub>	14.0	X	359.35561	62.71987	48.99689	15.92525	0.0583238	0.23639982	2.5904266	20	—	—
48596 1994 VY <sub>6</sub>	15.6	X	115.64830	104.19706	265.51110	3.04682	0.2776525	0.24183938	2.5514362	20	1 26.3	19.2
48597 1994 XP <sub>4</sub>	15.4	X	12.92078	162.49497	343.31309	3.67939	0.2017678	0.23779870	2.5802576	20	1 18.9	17.7
48598 1994 XD <sub>5</sub>	14.7	X	112.09100	298.05784	97.38652	5.36065	0.1088897	0.23894870	2.5719722	20	2 2.0	18.0
48599 1994 YS	14.5	X	345.74578	28.09722	112.13164	5.54846	0.0986635	0.23433918	2.6055902	20	—	—
48600 1994 YZ	13.9	X	118.37326	55.97078	289.29681	12.89735	0.1949557	0.23453174	2.6041638	20	—	—
48601 1995 BL	14.7	X	125.65462	178.12985	309.54311	17.98284	0.0654203	0.36329768	1.9451852	20	6 16.7	17.2
48602 1995 BV <sub>1</sub>	14.1	X	235.92605	238.08517	330.81388	10.81169	0.1412683	0.22617955	2.6678853	20	—	—
48603 1995 BC <sub>2</sub>	17.7	X	229.16822	81.76348	328.26582	5.02470	0.4298853	0.37108377	1.9178799	20	6 2.9	21.1
48604 1995 CV	12.5	X	255.83621	145.13559	152.93180	7.08004	0.0866796	0.08438145	5.1479943	20	3 20.5	19.5
48605 1995 CW <sub>1</sub>	14.6	X	313.92063	150.45697	222.51145	25.01946	0.1337766	0.21507728	2.7589237	20	8 22.5	18.4
48606 1995 DH	14.0	X	14.97940	251.12491	155.19858	28.12004	0.2462951	0.22608222	2.6686510	20	—	—
48607 Yamagatatemodai	14.8	X	251.75043	111.92983	26.18736	10.31349	0.2849206	0.22114949	2.7081877	20	10 21.9	18.5
48608 1995 DW <sub>8</sub>	14.2	X	94.52198	316.12548	140.59321	2.63628	0.0291093	0.19821862	2.9132187	20	3 21.8	18.3
48609 1995 DE <sub>14</sub>	15.3	X	333.77604	153.13561	315.24500	1.38884	0.1914466	0.22811798	2.6527503	20	—	—
48610 1995 EF <sub>6</sub>	14.7	X	342.42506	284.23082	151.61611	4.40548	0.1760368	0.22456413	2.6806645	20	—	—
48611 1995 FS <sub>6</sub>	14.4	X	256.41054	76.59669	8.72268	9.00385	0.1681402	0.21615363	2.7497573	20	9 8.5	18.1
48612 1995 FX <sub>6</sub>	14.9	X	202.87048	332.19180	163.19620	12.18588	0.1121599	0.21439441	2.7647789	20	9 16.5	19.1
48613 1995 FM <sub>11</sub>	15.9	X	259.79878	104.92213	184.46691	3.75928	0.1389516	0.31167452	2.1544439	20	2 14.5	18.8
48614 1995 FP <sub>14</sub>	14.5	X	188.15698	281.38094	83.79427	3.72456	0.0908676	0.19608701	2.9342931	20	3 22.7	19.0
48615 1995 FG <sub>16</sub>	14.4	X	146.08651	344.11846	9.41468	14.99893	0.1794093	0.18966114	3.0002019	20	2 7.6	19.4
48616 1995 GP <sub>7</sub>	14.7	X	70.23564	171.93566	77.53258	5.33079	0.1154672	0.21045472	2.7991764	20	9 21.7	18.6
48617 1995 HR <sub>2</sub>	14.2	X	32.17624	60.33448	53.61899	11.46069	0.1335233	0.19052591	2.9911167	20	1 28.8	17.8
48618 1995 HB <sub>4</sub>	14.8	X	300.38821	310.47614	134.57789	3.89176	0.2274525	0.21719865	2.7409302	20	11 10.0	17.3
48619 Jianli	16.2	X	216.89285	131.74345	174.26863	6.09406	0.2165375	0.30371138	2.1919401	20	1 24.7	19.8
48620 1995 MN <sub>5</sub>	14.6	X	116.00912	291.37429	121.56980	9.84607	0.0901391	0.18944892	3.0024420	20	3 5.1	18.9
48621 1995 OC	15.9	X	190.09657	168.01795	171.57205	2.87171	0.2753227	0.30111816	2.2045067	20	2 15.9	19.7
48622 1995 OA <sub>10</sub>	15.8	X	156.54410	79.44590	265.67436	5.54406	0.2086197	0.29750599	2.2223148	20	1 21.4	19.1
48623 1995 OV <sub>12</sub>	16.4	X	172.64857	169.19752	139.31848	5.87706	0.2195503	0.29606489	2.2295204	20	—	—
48624 Sadayuki	15.8	X	250.56978	26.51572	273.58131	5.27775	0.1678708	0.30454482	2.1879391	20	2 16.3	19.1
48625 1995 QF	15.8	X	142.74132	184.37938	189.87855	5.15036	0.1861432	0.29782973	2.2207040	20	2 10.9	19.0
48626 1995 QJ <sub>4</sub>	15.2	X	6.95053	9.58731	333.61784	6.01892	0.1288506	0.27840352	2.3228414	20	11 8.2	17.7
48627 1995 QX <sub>14</sub>	15.7	X	165.46812	54.67053	272.02862	4.17584	0.2152911	0.29690376	2.2253189	20	1 8.2	19.0
48628 Janetfender	14.9	X	7.79478	336.59781	83.85852	8.02344	0.1056706	0.28671514	2.2777303	20	—	—
48629 1995 SP	14.7	X	322.65836	38.13298	13.08729	9.24052	0.1887986	0.27832080	2.3233017	20	12 3.3	16.6
48630 1995 SC <sub>7</sub>	15.9	X	101.59980	335.31825	3.99417	3.59126	0.1481981	0.28935391	2.2638613	20	—	—
48631 Hasantufan	15.4	X	155.65262	164.71258	183.49081	4.55285	0.1990685	0.29492257	2.2352737	20	1 23.8	18.6
48632 1995 SV <sub>29</sub>	15.3	X	112.19982	156.52866	213.29157	7.06246	0.1567865	0.29229792	2.2486347	20	—	—
48633 1995 SH <sub>38</sub>	15.7	X	226.63171	156.79946	176.47079	3.66515	0.1267662	0.22291279	2.6938871	20	3 17.3	19.9
48634 1995 SE <sub>44</sub>	13.5	X	69.87439	272.20071	9.42690	6.81617	0.0414194	0.15778758	3.3917266	20	10 9.7	18.2
48635 1995 SY <sub>52</sub>	14.9	X	108.38685	41.95515	287.88797	5.25392	0.1561153	0.28887010	2.2563883	20	—	—
48636 Huangkun	15.8	X	18.389									



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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48641 1995 UA <sub>1</sub>	15.0 <sup>m</sup>	X	249.17963	180.19782	334.15061	6.45763	0.0535982	0.28103905	2.3082965	20	12 30.7	17.6
48642 1995 UH <sub>1</sub>	15.6	X	338.67447	27.60120	25.87354	7.06511	0.1204537	0.28086025	2.3092761	20	—	—
48643 Allen-Beach	15.7	X	341.72109	303.92446	111.75072	10.15594	0.1236554	0.28100841	2.3084644	20	—	—
48644 1995 UG <sub>7</sub>	14.6	X	235.62263	277.71443	34.58814	6.57888	0.1281034	0.25930925	2.4355144	20	2 29.2	18.3
48645 1995 UF <sub>8</sub>	14.1	X	77.03915	190.31171	39.34835	14.25847	0.0794826	0.26990805	2.3713309	20	9 11.8	17.4
48646 1995 UL <sub>8</sub>	15.3	X	253.78331	45.16139	41.67835	2.82224	0.1708123	0.27224886	2.3577188	20	9 13.2	18.1
48647 1995 UT <sub>8</sub>	15.2	X	111.07958	311.42100	99.73317	4.25204	0.1258395	0.29375204	2.2412078	20	2 16.5	17.7
48648 1995 UQ <sub>12</sub>	15.2	X	313.92920	46.12676	11.02571	2.48910	0.1974253	0.27764695	2.3270593	20	11 23.2	16.7
48649 1995 UH <sub>37</sub>	15.8	X	349.25719	204.54890	157.91380	4.12216	0.1815692	0.27699645	2.3307011	20	11 16.8	17.9
48650 Kazanuniversity	14.4	X	36.05853	59.75565	6.41515	0.85191	0.1207735	0.28697348	2.2763631	20	—	—
48651 1995 UC <sub>54</sub>	15.6	X	163.29317	153.89802	352.37272	2.04512	0.1603649	0.26895689	2.3769184	20	8 24.1	19.3
48652 1995 VB	15.3	X	359.12436	193.06899	263.39408	4.74955	0.1349058	0.28413199	2.2915146	20	—	—
48653 1995 VD	15.0	X	272.78707	89.69161	7.08001	2.72725	0.1080146	0.27472085	2.3435540	20	11 5.3	17.5
48654 1995 VG <sub>10</sub>	16.7	X	322.48338	51.40263	178.81470	0.93756	0.1459439	0.25924378	2.4359245	20	2 19.6	19.6
48655 1995 VQ <sub>12</sub>	15.3	X	90.06418	196.93891	201.76204	7.48321	0.1134915	0.29097098	2.2554659	20	—	—
48656 1995 VN <sub>18</sub>	15.8	X	18.39602	334.30296	238.23504	5.67734	0.0433916	0.26023284	2.4297485	20	5 5.3	18.5
48657 1995 WK	15.3	X	174.87085	354.41036	66.46517	7.51536	0.1210682	0.26070053	2.4268417	20	5 14.6	18.9
48658 1995 WT <sub>1</sub>	15.1	X	28.15178	143.55342	252.20312	5.05074	0.1642785	0.28262696	2.2996425	20	—	—
48659 1995 WX <sub>2</sub>	15.2	X	288.22253	287.18574	228.03010	4.31932	0.0802647	0.28460720	2.2889631	20	—	—
48660 1995 WA <sub>5</sub>	15.8	X	308.89088	276.43288	155.72191	1.11236	0.2462362	0.27645443	2.3377465	20	12 6.4	17.0
48661 1995 WH <sub>5</sub>	15.1	X	6.36181	151.19897	258.06024	3.99140	0.1062303	0.28004002	2.3137831	20	—	—
48662 1995 WK <sub>5</sub>	14.9	X	30.26921	342.22737	42.21656	3.45187	0.1232086	0.28044703	2.3115439	20	—	—
48663 1995 WY <sub>7</sub>	15.2	X	45.73919	27.65026	347.23344	4.43663	0.2607285	0.28263668	2.2995898	20	—	—
48664 1995 WG <sub>9</sub>	15.9	X	278.39996	153.42507	27.39808	5.40268	0.0892369	0.28676305	2.2774766	20	—	—
48665 1995 WL <sub>25</sub>	15.8	X	20.00798	3.61523	278.10892	4.21285	0.1408197	0.27018198	2.3697278	20	8 31.2	18.2
48666 1995 WU <sub>26</sub>	16.0	X	19.41550	239.85211	19.04671	2.38643	0.1874206	0.27010188	2.3701962	20	8 4.6	18.0
48667 1995 WS <sub>33</sub>	15.3	X	102.74414	96.30844	177.23311	4.64661	0.1364557	0.27988976	2.3146112	20	12 7.5	18.7
48668 1995 XB <sub>1</sub>	13.2	X	128.70016	129.09433	272.88727	9.38939	0.2076123	0.17279409	3.1923962	20	3 12.3	18.4
48669 1995 YO <sub>1</sub>	15.2	X	22.28780	306.84278	108.16012	7.00606	0.1217467	0.28049720	2.3112683	20	—	—
48670 1995 WY <sub>2</sub>	15.2	X	321.17715	291.47378	92.96542	10.35297	0.2424117	0.27192885	2.3595682	20	10 22.4	16.8
48671 1995 YS <sub>3</sub>	14.7	X	264.22483	298.86600	95.00399	10.19911	0.2086255	0.26576631	2.3959041	20	7 5.9	17.8
48672 1995 YF <sub>5</sub>	15.3	X	99.74395	133.50578	87.61311	3.42497	0.1215388	0.27022797	2.3694589	20	9 26.7	18.7
48673 1995 YF <sub>16</sub>	15.6	X	154.68298	203.28297	108.35630	6.49149	0.2114126	0.24068846	2.5595633	20	—	—
48674 1995 YV <sub>21</sub>	14.8	X	12.97259	331.15888	52.52748	8.85035	0.1976744	0.28268120	2.2993483	20	—	—
48675 1995 YA <sub>23</sub>	15.8	X	237.94821	86.81343	337.45954	0.74109	0.1678919	0.26548611	2.3975896	20	7 21.8	19.0
48676 1996 AW <sub>6</sub>	16.1	X	284.12457	11.08243	23.75456	2.78741	0.1893865	0.26691465	2.3890273	20	8 10.8	18.5
48677 1996 AQ <sub>7</sub>	16.0	X	192.21182	121.42864	12.18678	2.22916	0.1447864	0.26545277	2.3977633	20	9 5.7	19.6
48678 1996 AP <sub>12</sub>	15.7	X	119.10372	230.74855	251.58995	6.27429	0.0198606	0.25512325	2.4620330	20	5 21.8	18.7
48679 1996 AL <sub>19</sub>	15.3	X	209.71447	260.84945	198.68424	5.89656	0.0780424	0.26318268	2.4115588	20	8 13.6	18.7
48680 1996 BU	15.1	X	269.64359	116.53829	276.89774	7.01429	0.1170811	0.26468635	2.4024168	20	7 26.6	18.0
48681 Zeilinger	14.8	X	110.55514	28.07121	120.83071	6.42336	0.1388195	0.25780816	2.4449592	20	7 2.1	18.2
48682 1996 BP <sub>1</sub>	15.3	X	154.76309	62.43395	40.59939	4.05809	0.1675063	0.25769374	2.4456829	20	6 19.3	19.3
48683 1996 BQ <sub>1</sub>	15.9	X	292.47157	20.36633	53.71346	4.18385	0.2018405	0.27128851	2.3632796	20	10 27.6	17.8
48684 1996 EP	14.9	X	278.31219	57.80350	0.94038	1.89990	0.1866482	0.26494359	2.4008615	20	9 5.7	17.5
48685 1996 EW	14.5	X	334.20405	3.71616	163.46555	13.68788	0.1183277	0.24183997	2.5514320	20	—	—
48686 1996 EM <sub>1</sub>	14.4	X	272.25823	229.83082	335.57309	10.87790	0.2049490	0.23681296	2.5874129	20	—	—
48687 1996 EO <sub>6</sub>	15.2	X	96.45289	212.10561	170.61946	13.39885	0.1680020	0.23965865	2.5668903	20	1 2.4	18.5
48688 1996 FM <sub>2</sub>	15.3	X	72.74690	355.05418	165.25601	3.43630	0.1368204	0.25207495	2.4818922	20	5 30.2	18.4
48689 1996 GP <sub>1</sub>	13.7	X	292.04704	75.15065	2.97612	22.09420	0.0437806	0.22778173	2.6553603	20	10 27.5	17.5
48690 1996 GP <sub>4</sub>	15.2	X	19.50546	176.01106	104.79836	3.98582	0.0106766	0.21566937	2.7538719	20	8 9.2	18.7
48691 1996 GP <sub>6</sub>	14.8	X	126.81303	136.21481	94.66518	3.06140	0.0211099	0.22253892	2.6969034	20	10 25.7	18.5
48692 1996 GE <sub>20</sub>	13.6	X	44.66544	259.11903	67.74560	4.62014	0.0558377	0.22167731	2.7038871	20	11 18.3	17.0
48693 1996 GH <sub>20</sub>	14.7	X	31.89509	280.47517	83.57434	2.45316	0.0800373	0.22442544	2.6817687	20	12 22.9	18.2
48694 1996 HP	13.9	X	337.79831	113.52093	52.17834	14.47913	0.0926382	0.23758898	2.5817758	20	—	—
48695 1996 HG <sub>7</sub>	15.5	X	24.56894	219.46389	180.49911	11.15128	0.0867390	0.23028922	2.6360500	20	—	—
48696 1996 HJ <sub>8</sub>	14.9	X	347.45802	245.16644	228.61683	3.60985	0.2059307	0.23485750	2.6017552	20	—	—
48697 1996 HX <sub>14</sub>	14.7	X	183.76621	145.90559	47.94386	4.58548	0.0178536	0.22267887	2.6957734	20	11 15.9	18.5
48698 1996 HJ <sub>20</sub>	14.8	X	303.27266	271.60522	85.30199	1.69624	0.0859311	0.21221957	2.7836359	20	7 28.3	18.3
48699 1996 HN <sub>21</sub>	14.2	X	274.27834	356.50852	49.98800	12.75968	0.1453206	0.21542018	2.7559952	20	8 19.2	18.0
48700 Hanggao	14.5	X	250.13267	143.94470	37.67074	15.00232	0.0875286	0.23178333	2.6247095	20	—	—
48701 1996 HD <sub>22</sub>	14.2	X	283.58302	107.95585	40.80621	13.44348	0.1085292	0.23250260	2.6192935	20	—	—
48702 1996 JE	14.5	X	204.64533	126.09201	61.32066	15.65826	0.0632281	0.22550024	2.6732406	20	11 28.2	18.1
48703 1996 JQ	16.1	X	181.78186	228.54267	211.91780	21.34024	0.1065295	0.37172356	1.9156786	20	6 16.6	18.9
48704 1996 JR <sub>2</sub>	13.7	X	99.52439	166.93390	42.44834	16.62406	0.2599734	0.21631306	2.7484060	20	9 23.7	18.5
48705 1996 JR <sub>3</sub>	14.5	X	42.72680	280.27554	77.60603	5.61012	0.0606627	0.22528306	2.6749583	20	12 18.4	17.9
48706 1996 JF <sub>0</sub>	16.0	X	208.82369	106.49760	154.83831	6.92809	0.1935372	0.18934854	3.0035030	20	—	—
48707 1996 KR <sub>1</sub>	15.4	X	202.21286	171.69441	218.02049	19.55350	0.1049173	0.36636201	1.9343234	20	4 28.1	17.7
48708 1996 LM <sub>2</sub>	15.2	X	317.28085	331.07788	132.47195	7.99827	0.1559484	0.22770030	2.6559933	20	—	—
48709 1996 LX <sub>2</sub>	15.9	X	262.60242	327.60786	174.63418	6.63238	0.0673937	0.26613284	2.3937038	20	12 26.6	18.8
48710 1996 LB <sub>3</sub>	14.6	X	344.88564	291.98696	90.79336	14.60074	0.1759679	0.21887911	2.7268830	20	11 20.3	17.5
48711 1996 ND <sub>5</sub>	14.2	X	104.02551	349.32380	302.49879	0.46576	0.1728612	0.17442902	3.1724167	20	12 13.2	19.3
48712 1996 OV <sub>2</sub>	14.5	X	7.08868	207.82222	29.11120	2.65038	0.0281938	0.20052726	2.8908159	20	5 23.5	18.2
48713 1996 PT <sub>1</sub>	14.2	X	103.00363	171.18037	124.61740	5.92081	0.1430325	0.17441441	3.1725938	20	12 15.3	19.3
48714 1996 PB <sub>8</sub>	14.3	X	47.84517	175.01297	172.93889	2.25135	0.2767684	0.17155333	3.2077704	20	—	—
48715 Balbinot	13.8	X	296.00167	155.21562	349.24885	4.51233	0.1164486	0.17382356	3.1797791	20	—	—
48716 1996 RH <sub>3</sub>												

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48721 1996 UJ <sub>2</sub>	13.8 <sup>m</sup>	X	218.79883	32.52005	334.20601	9.03431	0.0994694	0.19268448	2.9687358	20	4 18.8	18.6
48722 1996 VZ <sub>20</sub>	14.0	X	16.01867	67.83212	49.58346	11.68995	0.1484013	0.17518044	3.1633383	20	1 6.1	17.8
48723 1996 XF <sub>22</sub>	15.5	X	9.22850	193.60219	48.82623	4.14619	0.0948707	0.30969544	2.1636126	20	6 6.2	17.3
48724 1996 XZ <sub>26</sub>	15.4	X	103.83250	166.58022	8.10453	2.82833	0.1545805	0.26921308	2.3754102	20	8 2.0	18.7
48725 1997 AQ <sub>1</sub>	15.1	X	279.77988	179.60368	309.78929	4.79399	0.0963757	0.28676313	2.2774762	20	—	—
48726 1997 AZ <sub>12</sub>	15.5	X	293.07510	30.40982	113.98770	8.88779	0.1613908	0.28922600	2.2645287	20	—	—
48727 1997 AL <sub>18</sub>	15.7	X	130.26732	180.43772	111.25982	10.16902	0.1074061	0.28772552	2.2723948	20	—	—
48728 1997 AM <sub>20</sub>	15.5	X	63.59215	138.37118	146.13881	4.88008	0.0952776	0.27818823	2.3240397	20	11 6.0	18.6
48729 1997 AG <sub>22</sub>	15.9	X	260.27201	98.51395	238.92228	1.28029	0.0569319	0.30971472	2.1635228	20	5 3.2	18.2
48730 1997 BD <sub>3</sub>	15.2	X	325.69628	335.94847	140.33509	2.53864	0.0812872	0.28944808	2.2633702	20	—	—
48731 1997 BV <sub>3</sub>	14.9	X	309.65619	89.33925	108.43924	4.27937	0.1073965	0.29443983	2.2377162	20	—	—
48732 1997 CM <sub>4</sub>	15.7	X	59.15377	40.04892	359.03145	4.90303	0.1049595	0.29268785	2.2466371	20	—	—
48733 1997 CK <sub>6</sub>	15.6	X	144.20377	243.70383	340.48167	6.51125	0.0630118	0.28003337	2.3138197	20	11 14.4	18.9
48734 1997 CL <sub>16</sub>	15.2	X	339.77006	135.86645	310.54047	6.25219	0.0477176	0.28618878	2.2805222	20	—	—
48735 1997 CX <sub>19</sub>	15.4	X	240.77399	156.88217	0.00943	4.72637	0.1360860	0.28241062	2.3008167	20	12 7.9	17.9
48736 Ehime	15.9	X	330.79404	158.31243	326.62639	4.97062	0.1601016	0.29107359	2.2549358	20	—	—
48737 Cusinato	15.3	X	125.66768	225.14284	4.21470	1.29081	0.1896661	0.27471595	2.3435819	20	11 3.5	19.1
48738 1997 ER <sub>16</sub>	16.3	X	277.85777	331.88234	2.27877	0.88270	0.1914670	0.26180001	2.4200422	20	5 3.4	19.4
48739 1997 EV <sub>17</sub>	15.2	X	174.47851	229.84551	316.58181	6.15453	0.0586072	0.27752376	2.3277479	20	10 30.5	18.4
48740 1997 EF <sub>32</sub>	15.7	X	246.11538	2.89970	355.28184	1.53629	0.2401296	0.26202515	2.4186558	20	4 25.2	19.5
48741 1997 EO <sub>42</sub>	15.7	X	18.94183	57.87367	238.39302	1.65818	0.2126640	0.27112307	2.3642409	20	10 4.7	18.0
48742 1997 EE <sub>47</sub>	16.0	X	113.31299	235.88789	286.49152	0.77946	0.0758487	0.26501120	2.4004531	20	7 17.3	19.2
48743 1997 EE <sub>57</sub>	16.0	X	112.46212	186.77962	358.69996	2.08766	0.1399912	0.268812191	2.3818506	20	8 24.1	19.4
48744 1997 FY <sub>2</sub>	15.1	X	188.37754	235.38485	354.85361	5.48652	0.06974500	0.28114349	2.3077248	20	—	—
48745 1997 GA	15.9	X	49.36158	46.04461	242.92617	4.76081	0.0949468	0.27181744	2.3602128	20	10 15.9	18.9
48746 1997 GE <sub>1</sub>	16.2	X	330.65355	187.53532	199.68110	1.94220	0.2036170	0.27700852	2.3306334	20	11 16.5	17.8
48747 1997 GD <sub>2</sub>	16.1	X	324.80985	199.59454	188.11615	5.28137	0.1822533	0.27616455	2.3353793	20	11 1.9	17.7
48748 1997 GV <sub>3</sub>	15.0	X	241.57891	169.94702	26.25946	7.36601	0.0653465	0.28388154	2.2928622	20	—	—
48749 1997 GZ <sub>6</sub>	15.7	X	211.21980	127.81546	44.51335	3.45910	0.1007740	0.27674297	2.3321241	20	11 23.1	18.7
48750 1997 GG <sub>8</sub>	15.1	X	177.08451	249.70072	218.28462	5.82823	0.0602076	0.26442222	2.4040163	20	7 17.9	18.5
48751 1997 GM <sub>8</sub>	14.9	X	238.51180	146.58349	222.34486	5.85532	0.1487903	0.25823188	2.4422839	20	5 10.7	18.6
48752 1997 GH <sub>9</sub>	15.6	X	321.19423	309.25786	349.75403	6.01565	0.1439340	0.26111978	2.4242433	20	5 26.9	18.2
48753 1997 GC <sub>19</sub>	15.2	X	306.07166	318.27766	356.16338	6.98714	0.1191465	0.26131942	2.4230084	20	5 27.2	18.1
48754 1997 GJ <sub>22</sub>	15.5	X	268.20424	5.51747	219.40631	4.99825	0.0804663	0.24576814	2.5241723	20	—	—
48755 1997 GQ <sub>24</sub>	15.5	X	76.39015	133.73043	58.38505	2.69645	0.1195583	0.26247705	2.4158789	20	7 17.3	18.6
48756 1997 GQ <sub>28</sub>	14.8	X	25.04539	180.88245	83.75735	3.42018	0.1848544	0.26289374	2.4133254	20	8 24.5	17.1
48757 1997 GC <sub>33</sub>	15.3	X	26.38035	93.16032	346.27454	2.74119	0.1243117	0.28863465	2.2676206	20	—	—
48758 1997 GX <sub>35</sub>	15.0	X	28.26034	151.76550	180.25867	4.95211	0.1085489	0.27123751	2.3635759	20	11 23.5	17.8
48759 1997 GB <sub>36</sub>	15.1	X	17.86784	56.16284	66.71595	6.97513	0.1616282	0.29159247	2.2522599	20	—	—
48760 1997 HM <sub>11</sub>	15.3	X	193.23406	254.75742	339.18579	2.00751	0.1137499	0.23764709	2.5813549	20	—	—
48761 1997 HV <sub>11</sub>	14.9	X	19.01820	18.74506	35.65591	6.79708	0.1057322	0.28161908	2.5051260	20	—	—
48762 1997 HD <sub>13</sub>	15.6	X	173.23236	155.31376	351.97472	0.47649	0.1506541	0.26987268	2.3715381	20	9 4.0	19.2
48763 1997 JZ	15.0	X	30.79935	74.29978	217.46280	13.63059	0.1269425	0.26664410	2.3906430	20	9 29.7	17.8
48764 1997 JJ <sub>10</sub>	11.5	X	176.81069	304.11950	96.73184	25.61426	0.0901515	0.08326472	5.1939213	20	5 6.4	19.0
48765 1997 JN <sub>13</sub>	15.3	X	62.27507	38.52337	146.03337	2.44547	0.1509135	0.26013678	2.4303466	20	6 20.3	18.0
48766 1997 JY <sub>13</sub>	14.9	X	184.77468	354.77463	137.96742	1.33556	0.1505066	0.26917758	2.3756190	20	8 27.5	18.6
48767 Skamander	11.9	X	242.00476	101.90929	227.99678	29.05450	0.0674541	0.08272339	5.2165556	20	4 8.7	19.2
48768 1997 KE	15.0	X	57.81542	226.73347	142.02659	13.46519	0.1760913	0.23372061	2.6101855	20	—	—
48769 1997 MJ	14.8	X	229.55968	339.90282	229.98475	18.13431	0.1913330	0.23884693	2.5727027	20	—	—
48770 1997 MO <sub>3</sub>	15.0	X	121.54458	119.58847	241.07210	4.25056	0.1073856	0.23767952	2.5811201	20	—	—
48771 1997 MJ <sub>6</sub>	15.7	X	91.57755	230.04048	102.12285	7.35254	0.1127827	0.23416193	2.6069049	20	—	—
48772 1997 MR <sub>9</sub>	14.8	X	80.98682	47.83657	179.44554	12.08492	0.1217685	0.21698653	2.7427162	20	9 3.3	18.7
48773 1997 PS	14.7	X	37.77843	67.49841	305.21586	10.50252	0.2102334	0.22490416	2.6779619	20	—	—
48774 Anngower	15.1	X	323.51177	258.65061	274.77040	6.48069	0.0659739	0.23941334	2.5686434	20	—	—
48775 1997 QL	14.7	X	241.76992	165.35290	291.98689	8.56016	0.0502642	0.21763861	2.7372351	20	9 15.9	18.7
48776 1997 QT	15.0	X	283.83153	110.22149	173.15284	7.89383	0.1895690	0.20202290	2.8765305	20	3 9.9	19.3
48777 1997 QE <sub>5</sub>	15.1	X	285.85031	239.77839	137.03684	8.09939	0.2890210	0.21037270	2.7999039	20	6 26.3	18.9
48778 Shokoyukako	14.4	X	299.35668	206.16668	152.30768	9.85395	0.1600665	0.21069238	2.7907010	20	7 12.1	17.8
48779 Mariko	14.7	X	78.34104	4.76003	316.86528	1.44299	0.0882585	0.22329360	2.6908235	20	12 26.1	18.7
48780 1997 RA <sub>2</sub>	14.9	X	244.61587	328.53187	40.00278	2.91992	0.1480610	0.20196227	2.8771062	20	5 17.3	19.3
48781 1997 SL	15.1	X	227.03130	164.76490	118.92472	1.83505	0.2462742	0.20457832	2.8525262	20	5 11.9	19.8
48782 Fierz	14.7	X	68.39846	105.24596	163.95786	9.64236	0.1513529	0.21736188	2.7395578	20	10 20.1	18.7
48783 1997 SR	13.7	X	38.42541	353.35848	323.95675	11.89529	0.1726184	0.22004474	2.7172445	20	11 10.1	17.5
48784 1997 SX	13.1	X	117.35452	319.19205	46.09237	10.58257	0.1033436	0.18398394	3.0616069	20	1 10.3	17.6
48785 Pitter	14.1	X	146.49467	355.56090	23.32249	2.74235	0.1140613	0.19123518	2.9837163	20	2 27.0	18.6
48786 1997 SH <sub>4</sub>	14.4	X	181.04031	129.40482	223.59955	4.06119	0.1652329	0.19457904	2.9494340	20	2 28.7	19.4
48787 1997 SY <sub>4</sub>	14.5	X	54.91396	318.82362	349.32949	8.05283	0.0889912	0.21961315	2.7208034	20	11 8.6	18.3
48788 1997 SL <sub>6</sub>	14.6	X	12.93954	101.42056	348.42753	12.16829	0.1655295	0.22854238	2.6494652	20	—	—
48789 1997 SV <sub>12</sub>	14.5	X	324.49239	204.46766	175.87803	5.68597	0.1036313	0.21582094	2.7525824	20	10 3.5	17.6
48790 1997 SH <sub>30</sub>	15.2	X	253.35786	25.55559	312.16457	0.98240	0.1117033	0.20013777	2.8945652	20	4 21.9	19.3
48791 1997 SD <sub>33</sub>	14.7	X	254.58610	178.35574	322.51835	0.24663	0.1505066	0.17326320	3.1866314	20	11 8.3	19.0
48792 1997 SC <sub>34</sub>	14.3	X	77.57666	16.60726	45.42604	15.31426	0.1413421	0.18477237	3.0528915	20	2 8.2	18.5
48793 1997 TK <sub>8</sub>	15.1	X	24.52379	169.03172	202.38305	5.67791	0.0307040	0.22160544	2.7044717	20	12 15.1	18.8
48794 Stolzová	15.1	X	326.25692	215.77050	68.41457	7.02825	0.0279726	0.20362281	2.8614430	20	5 29.5	18.9
48795 1997 TB <sub>10</sub>	14.8	X	91.02895	213.25311	219.43065	0.88617	0.2883039	0.18798821	3.0179751	20	3 24.2	19.0
48796 1997 TE <sub>11</sub>	15.0	X	24									

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48801 Penninger	14.8 <sup>m</sup>	X	283.66475	202.40337	196.41001	7.78496	0.2222364	0.21074630	2.7965939	20	7 31.6	18.4
48802 1997 UU <sub>8</sub>	14.1	X	295.01745	22.04369	95.94290	2.71869	0.1592681	0.17421995	3.1749541	20	12 6.6	18.0
48803 1997 UN <sub>10</sub>	13.8	X	40.70917	234.89701	229.23792	8.85251	0.0515153	0.18658785	3.0330564	20	1 21.0	18.0
48804 1997 UE <sub>12</sub>	15.5	X	176.95532	338.60870	27.10616	2.11489	0.1113967	0.19478809	2.9473234	20	3 11.6	20.2
48805 1997 UY <sub>13</sub>	14.7	X	153.01843	286.14744	83.05732	5.38229	0.0535025	0.18906042	3.0065537	20	2 18.2	19.1
48806 1997 UB <sub>21</sub>	14.4	X	350.40285	293.53599	155.62102	14.23420	0.1540941	0.17798840	3.1299801	20	—	—
48807 Takahata	13.5	X	172.99459	316.73111	24.83936	12.21576	0.1383225	0.19168958	2.9789992	20	2 14.4	18.4
48808 1997 VK <sub>3</sub>	14.4	X	85.34935	292.08248	180.80952	2.48364	0.1975192	0.18939751	3.0029853	20	4 24.5	18.5
48809 1997 VX <sub>4</sub>	14.8	X	79.48651	345.58700	80.24487	1.25271	0.2616352	0.18636366	3.0354883	20	2 27.6	18.7
48810 1997 VA <sub>7</sub>	14.0	X	252.41286	204.96161	224.56552	16.72634	0.1070471	0.21008457	2.8024633	20	8 12.7	18.3
48811 1997 WH	13.9	X	272.93621	223.96987	245.36170	10.11011	0.0777514	0.16957500	3.2326709	20	11 1.5	18.3
48812 1997 WL	13.7	X	120.93098	170.51091	62.01741	7.70716	0.0352332	0.21003615	2.8028941	20	10 20.5	17.7
48813 1997 WJ <sub>1</sub>	14.5	X	122.24905	29.53273	14.95576	10.13300	0.1016086	0.19133488	2.9826797	20	3 3.9	18.9
48814 1997 WF <sub>2</sub>	13.6	X	168.34186	226.71169	230.18370	4.93003	0.1779117	0.19734148	2.9218447	20	6 22.9	18.4
48815 1997 WA <sub>3</sub>	14.5	X	358.46386	47.22899	64.34049	2.35838	0.1115276	0.17847749	3.1242594	20	—	—
48816 1997 WP <sub>3</sub>	14.2	X	254.62346	331.05255	36.99310	9.06811	0.0638134	0.24367567	2.5386019	20	6 7.0	17.7
48817 1997 WV <sub>13</sub>	13.6	X	168.45472	218.66851	353.28748	4.68143	0.1039784	0.17433518	3.1845244	20	11 6.1	18.7
48818 1997 WE <sub>15</sub>	14.3	X	95.20609	349.16592	27.72982	0.87264	0.1714332	0.18452236	3.0556484	20	1 5.8	18.3
48819 1997 WB <sub>16</sub>	13.8	X	289.58503	228.91606	229.39130	14.81066	0.1620328	0.17119001	3.2123074	20	11 1.1	17.8
48820 1997 WVV <sub>33</sub>	14.4	X	16.57650	76.13765	13.22642	0.45996	0.1471366	0.17984442	3.1084084	20	—	—
48821 1997 WK <sub>35</sub>	14.3	X	295.75364	306.78334	186.40174	1.88329	0.1881932	0.17381469	3.1798873	20	12 23.8	17.9
48822 1997 WY <sub>35</sub>	14.1	X	156.87918	339.25787	49.95091	11.45150	0.1337233	0.19118533	2.9842349	20	3 26.1	18.9
48823 1997 WM <sub>36</sub>	13.1	X	13.39836	353.49937	68.53140	23.42428	0.0384695	0.17685738	3.1433103	20	—	—
48824 1997 WK <sub>38</sub>	14.4	X	288.88170	194.13634	248.26374	6.78813	0.1824729	0.21193926	2.7860898	20	10 15.3	17.7
48825 1997 WJ <sub>48</sub>	14.3	X	121.81796	290.45166	161.75147	3.32222	0.1382758	0.18989009	2.9977898	20	3 9.1	18.7
48826 1997 WQ <sub>54</sub>	14.1	X	350.09512	332.50708	121.21447	2.71302	0.1502399	0.17745987	3.1361917	20	—	—
48827 1997 YB	14.1	X	99.66852	244.59422	141.19357	1.52502	0.2503689	0.18422668	3.0589171	20	2 1.9	18.2
48828 1997 YU	14.1	X	48.71606	305.16395	107.46453	1.87945	0.2036881	0.17804947	3.1292644	20	—	—
48829 1997 YH <sub>1</sub>	13.3	X	49.16031	22.35223	43.74841	11.06407	0.0568445	0.18289790	3.0737148	20	—	—
48830 1997 YN <sub>2</sub>	13.1	X	6.90420	90.44709	291.14767	15.60680	0.1722923	0.16894107	3.2407527	20	12 7.4	17.2
48831 1997 YG <sub>3</sub>	13.7	X	125.19413	187.54058	280.33626	8.91752	0.0644523	0.19108347	2.9852953	20	5 15.6	18.1
48832 1997 YR <sub>3</sub>	12.9	X	93.96697	213.17889	249.93505	17.34115	0.2262304	0.19062100	2.9901219	20	4 22.9	17.4
48833 1997 YA <sub>5</sub>	13.3	X	314.27344	180.52695	267.59717	16.50561	0.1502946	0.21507864	2.7589121	20	12 16.0	16.3
48834 1997 YZ <sub>6</sub>	15.4	X	262.23422	165.48053	269.62002	19.34526	0.0982981	0.38476946	1.8721285	20	9 30.7	17.5
48835 1997 YK <sub>18</sub>	13.7	X	145.43747	286.58236	146.34270	10.71280	0.0867064	0.19006917	2.9959065	20	5 2.0	18.4
48836 1998 AW	13.6	X	19.02735	149.18845	314.99486	16.84363	0.1276184	0.17575278	3.1564670	20	—	—
48837 1998 AR <sub>6</sub>	14.2	X	237.61686	6.63314	97.15944	7.30125	0.1284007	0.15990688	3.3616922	20	9 9.4	19.2
48838 1998 AF <sub>10</sub>	14.5	X	14.33851	260.41667	245.62654	12.88654	0.3008179	0.18317702	3.0705915	20	1 26.5	17.3
48839 1998 BZ <sub>1</sub>	14.8	X	105.79708	317.60200	141.11343	2.71415	0.2025525	0.18744386	3.0238151	20	5 1.4	19.3
48840 1998 BR <sub>4</sub>	14.0	X	12.92762	143.82104	265.16826	3.75714	0.2258878	0.17260276	3.1947550	20	—	—
48841 1998 BB <sub>19</sub>	13.7	X	132.53846	337.91254	5.65576	9.44636	0.1780687	0.17713015	3.1400825	20	1 11.8	18.7
48842 1998 BA <sub>44</sub>	12.9	X	125.06616	21.53488	332.82621	15.70794	0.0786390	0.17672188	3.1449169	20	1 5.9	17.6
48843 1998 BN <sub>44</sub>	13.3	X	118.81593	117.85746	295.20150	8.56885	0.1204064	0.18411966	3.0601022	20	3 4.0	17.8
48844 Bellaves	16.4	X	19.27163	193.91308	308.06473	17.89279	0.0667200	0.35797662	1.9644136	20	1 8.5	18.1
48845 1998 DW <sub>8</sub>	14.0	X	354.66846	356.35867	142.23207	6.53268	0.1539172	0.17479684	3.1679647	20	—	—
48846 1998 DC <sub>14</sub>	15.7	X	238.67099	45.03462	174.73056	2.91568	0.1082455	0.29791827	2.2202641	20	—	—
48847 1998 EW <sub>6</sub>	15.3	X	121.19199	142.01320	12.53617	20.89622	0.0868428	0.36561513	1.9369568	20	8 4.3	18.1
48848 1998 FD <sub>46</sub>	16.5	X	309.30454	229.88244	14.71026	4.30744	0.0632055	0.31176066	2.1540470	20	2 28.3	18.9
48849 1998 FW <sub>51</sub>	16.0	X	134.96285	251.73434	24.15821	5.62447	0.1518450	0.29249544	2.2476222	20	—	—
48850 1998 FL <sub>57</sub>	16.3	X	257.13390	302.33526	342.09933	0.58205	0.2194913	0.30740456	2.1743486	20	2 1.2	19.4
48851 1998 FA <sub>69</sub>	14.6	X	168.76107	301.91375	354.80442	2.94087	0.1845434	0.29750756	2.2223070	20	—	—
48852 1998 FL <sub>72</sub>	16.3	X	226.46983	248.96155	346.06480	1.87896	0.1016625	0.29888869	2.2154557	20	—	—
48853 1998 FN <sub>79</sub>	15.2	X	258.99102	126.21840	93.36997	3.88945	0.1237537	0.25634283	2.4542677	20	—	—
48854 1998 FH <sub>83</sub>	14.8	X	72.31026	47.81446	152.59898	13.18846	0.1346806	0.23363206	2.6108450	20	7 22.1	18.4
48855 1998 FH <sub>97</sub>	13.6	X	42.57024	171.90897	284.59005	4.61855	0.1959368	0.17574887	3.1565137	20	1 27.7	17.0
48856 1998 FO <sub>103</sub>	14.4	X	31.72375	335.26533	320.36926	5.09341	0.1755660	0.28174166	2.3044573	20	10 18.2	17.0
48857 1998 FU <sub>133</sub>	15.0	X	299.85623	98.70148	182.85307	12.51869	0.1743624	0.22416702	2.6838294	20	3 27.8	18.5
48858 1998 HS <sub>3</sub>	15.6	X	169.20204	304.63726	49.21256	10.95043	0.1393256	0.26101407	2.4248978	20	2 18.5	19.4
48859 1998 HY <sub>13</sub>	16.1	X	203.46076	231.98433	91.09866	4.58517	0.1477095	0.30484770	2.1864897	20	2 4.5	19.3
48860 1998 HG <sub>24</sub>	15.6	X	297.45899	78.69874	185.90014	3.79170	0.1131419	0.30869527	2.1682835	20	2 29.9	18.2
48861 1998 HR <sub>24</sub>	15.1	X	224.71558	260.93209	48.35249	5.68846	0.2282635	0.30363793	2.1922935	20	2 7.3	18.8
48862 1998 HE <sub>32</sub>	14.9	X	167.40750	53.49105	238.52803	1.69141	0.1791317	0.29666263	2.2265246	20	—	—
48863 1998 HY <sub>37</sub>	15.8	X	258.65887	25.94779	269.82252	2.75667	0.1623812	0.30844297	2.1694658	20	2 19.8	19.0
48864 1998 HK <sub>43</sub>	15.5	X	161.12331	78.94738	182.56527	6.33088	0.2859450	0.29093262	2.2556642	20	—	—
48865 1998 HT <sub>46</sub>	14.2	X	59.56974	160.81330	109.08021	2.60462	0.0538770	0.19328959	2.9625367	20	9 21.4	18.2
48866 1998 HW <sub>50</sub>	14.8	X	112.80077	329.68061	350.14314	4.04100	0.1935428	0.29260172	2.2470779	20	—	—
48867 1998 HR <sub>67</sub>	14.9	X	212.85130	250.26147	19.82991	7.29939	0.1456100	0.29953057	2.2122895	20	—	—
48868 1998 HB <sub>92</sub>	16.0	X	107.31454	88.62283	193.08560	6.17279	0.1422478	0.28727515	2.2747692	20	12 22.9	19.5
48869 1998 HC <sub>92</sub>	16.0	X	30									

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48881 1998 <i>HS</i> <sub>136</sub>	12.6	X	208.43942	234.62739	35.91528	11.33122	0.0703471	0.12318804	4.0002796	20	—	—
48882 1998 <i>HJ</i> <sub>139</sub>	16.2	X	176.65976	147.00055	125.53713	6.79278	0.1521436	0.29580762	2.2308129	20	—	—
48883 1998 <i>HY</i> <sub>147</sub>	15.4	X	353.93984	205.66799	45.45928	1.57641	0.1238155	0.31381059	2.1446561	20	5 19.3	17.0
48884 1998 <i>HJ</i> <sub>149</sub>	16.0	X	47.66236	254.80340	11.78981	2.22843	0.1903342	0.27675513	2.3320557	20	10 3.9	18.8
48885 1998 <i>HY</i> <sub>153</sub>	16.6	X	282.28438	156.08763	155.00828	4.17858	0.1576310	0.31398996	2.1438392	20	4 10.9	19.2
48886 1998 <i>JA</i> <sub>4</sub>	15.7	X	116.32682	225.88563	92.97343	8.17244	0.2178129	0.28963027	2.2624210	20	—	—
48887 1998 <i>KM</i> <sub>4</sub>	15.5	X	152.79736	143.84861	93.57200	5.16989	0.1296369	0.28737243	2.2742558	20	12 12.0	18.8
48888 1998 <i>KR</i> <sub>6</sub>	15.8	X	85.51571	79.51343	212.55930	4.04042	0.1816355	0.28387490	2.2928979	20	12 16.9	19.4
48889 1998 <i>KZ</i> <sub>9</sub>	14.9	X	99.98498	263.60705	51.81650	4.30139	0.1755838	0.28727553	2.2747672	20	—	—
48890 1998 <i>KC</i> <sub>16</sub>	15.3	X	217.59581	146.50283	81.80999	5.74093	0.1370271	0.29523763	2.2336832	20	—	—
48891 1998 <i>KM</i> <sub>45</sub>	15.1	X	282.74501	338.14995	241.54552	4.13693	0.1069142	0.30097860	2.2051881	20	—	—
48892 1998 <i>KA</i> <sub>48</sub>	15.7	X	84.52854	207.31104	103.08389	7.64474	0.2332895	0.28388488	2.2928442	20	—	—
48893 1998 <i>KM</i> <sub>48</sub>	15.5	X	56.86047	86.78245	215.38989	7.95018	0.2449588	0.27954735	2.3165009	20	12 7.8	19.0
48894 1998 <i>KR</i> <sub>56</sub>	15.6	X	263.88123	160.01759	171.79173	4.68711	0.1643626	0.31127299	2.1562962	20	4 16.2	18.4
48895 1998 <i>KU</i> <sub>64</sub>	15.4	X	263.86251	356.58172	224.74598	7.66181	0.1599740	0.29920224	2.2139076	20	—	—
48896 1998 <i>KT</i> <sub>66</sub>	16.1	X	247.28834	46.72806	192.16533	5.12447	0.1559635	0.30035855	2.2082219	20	—	—
48897 1998 <i>LQ</i> <sub>2</sub>	16.6	X	100.40448	134.53829	182.33467	6.75851	0.1862039	0.28635740	2.2796269	20	—	—
48898 1998 <i>MO</i> <sub>5</sub>	13.8	X	324.36576	212.05955	112.54782	24.42006	0.2256540	0.27044283	2.3682037	20	7 6.2	15.6
48899 1998 <i>MM</i> <sub>7</sub>	15.1	X	319.52937	242.57190	98.74127	12.48034	0.2577288	0.26916313	2.3757040	20	7 17.7	16.7
48900 1998 <i>MP</i> <sub>22</sub>	14.1	X	142.81667	222.15664	97.19981	7.92573	0.2298931	0.29015109	2.2597128	20	—	—
48901 1998 <i>MO</i> <sub>31</sub>	15.9	X	45.95076	186.21857	82.88627	1.68171	0.2385406	0.27425456	2.3462096	20	10 12.9	18.8
48902 1998 <i>MP</i> <sub>31</sub>	14.6	X	203.04528	36.04525	290.49545	5.35372	0.2204620	0.29845706	2.2175911	20	2 8.2	18.3
48903 1998 <i>MD</i> <sub>32</sub>	14.8	X	273.10774	260.19387	322.24571	2.98712	0.0909636	0.29688940	2.2253906	20	—	—
48904 1998 <i>ME</i> <sub>34</sub>	15.2	X	102.15678	200.53596	91.26461	6.57594	0.1835824	0.28284390	2.2984664	20	12 31.2	18.8
48905 1998 <i>MH</i> <sub>34</sub>	15.6	X	213.35790	268.98460	97.19981	5.44783	0.1785440	0.30367912	2.1920953	20	4 11.0	19.0
48906 1998 <i>MF</i> <sub>36</sub>	15.4	X	329.26908	212.16296	86.14258	7.23993	0.1323566	0.26668145	2.3904198	20	6 14.3	17.5
48907 1998 <i>MX</i> <sub>36</sub>	15.4	X	19.89824	5.90668	130.66596	5.56958	0.1294913	0.27413274	2.3469046	20	10 20.2	18.0
48908 1998 <i>MG</i> <sub>40</sub>	15.7	X	65.59865	121.18139	162.89619	4.45073	0.1413765	0.27745572	2.3281284	20	11 13.0	18.9
48909 Laurake	15.6	X	26.43693	134.83328	120.16474	2.51516	0.2719998	0.27729470	2.3290295	20	—	—
48910 1998 <i>MF</i> <sub>48</sub>	16.0	X	321.77013	195.98704	103.66266	3.38125	0.2120518	0.26574945	2.3960054	20	5 20.6	18.2
48911 1998 <i>MU</i> <sub>48</sub>	15.2	X	3.27738	232.33064	94.53858	7.25911	0.2220535	0.27564488	2.3383136	20	10 29.3	17.4
48912 1998 <i>OT</i> <sub>1</sub>	15.2	X	128.43560	29.81401	303.06379	6.51564	0.1123816	0.28899691	2.2657253	20	—	—
48913 1998 <i>OH</i> <sub>2</sub>	15.0	X	334.77871	107.10608	151.39588	1.70501	0.1401666	0.26040595	2.4286715	20	4 23.3	17.2
48914 1998 <i>OG</i> <sub>4</sub>	15.7	X	17.31646	199.88812	174.73734	3.74753	0.1703072	0.27896202	2.3197401	20	—	—
48915 1998 <i>OJ</i> <sub>5</sub>	16.0	X	20.87725	215.11876	170.32248	4.72906	0.1232478	0.28204646	2.3027968	20	—	—
48916 1998 <i>OR</i> <sub>6</sub>	15.3	X	308.14300	104.87792	183.59517	7.11990	0.1160959	0.26139975	2.4225120	20	4 26.3	18.1
48917 1998 <i>OS</i> <sub>6</sub>	15.3	X	17.15526	311.60349	267.16750	6.25333	0.1058544	0.30708377	2.1758626	20	5 13.0	17.0
48918 1998 <i>OP</i> <sub>8</sub>	14.8	X	342.79352	201.25338	286.88125	4.39788	0.0903530	0.28957907	2.2626876	20	—	—
48919 1998 <i>OU</i> <sub>8</sub>	15.1	X	12.47209	188.97913	136.60621	9.21076	0.1405611	0.27324013	2.3520130	20	10 30.3	17.8
48920 1998 <i>OE</i> <sub>11</sub>	16.5	X	279.32672	158.82657	141.63116	1.63767	0.1905952	0.25924993	2.4358859	20	3 22.2	19.7
48921 1998 <i>OK</i> <sub>11</sub>	15.1	X	297.45579	95.08715	135.67368	4.96155	0.0599021	0.29793167	2.2201974	20	1 24.1	17.6
48922 1998 <i>OQ</i> <sub>11</sub>	15.8	X	8.63117	206.81081	139.92879	2.72987	0.2287474	0.27427858	2.3460726	20	12 4.8	18.3
48923 1998 <i>OY</i> <sub>11</sub>	15.5	X	335.18856	270.59989	61.66141	2.81320	0.2287728	0.26908758	2.3761487	20	8 22.3	16.7
48924 1998 <i>OK</i> <sub>12</sub>	14.9	X	7.96197	324.32571	43.77264	7.51015	0.1251686	0.27667227	2.3325213	20	12 16.1	17.6
48925 1998 <i>ON</i> <sub>12</sub>	14.9	X	319.41320	175.92368	153.31268	2.72794	0.2107055	0.26645758	2.3917585	20	7 2.9	16.7
48926 1998 <i>OV</i> <sub>13</sub>	15.3	X	60.35253	242.70843	138.43287	7.12924	0.1145574	0.28440366	2.2900551	20	—	—
48927 1998 <i>OU</i> <sub>14</sub>	15.1	X	150.27858	256.69112	341.71659	0.36532	0.1040588	0.28045134	2.3115203	20	12 10.4	18.3
48928 1998 <i>PB</i>	15.0	X	348.81665	67.35881	201.90912	13.15928	0.2009752	0.26478252	2.4018350	20	6 5.2	17.0
48929 1998 <i>PC</i>	15.2	X	40.66468	90.58591	230.42117	7.97889	0.1871872	0.27581368	2.3373595	20	12 6.9	18.4
48930 1998 <i>PW</i>	16.4	X	258.16023	18.07714	344.14207	4.12558	0.2259495	0.26182727	2.4198743	20	5 12.7	19.9
48931 1998 <i>PM</i> <sub>1</sub>	15.3	X	348.40079	337.11276	0.82644	5.29902	0.2550785	0.27176814	2.3604983	20	10 12.1	16.6
48932 1998 <i>QB</i>	14.5	X	151.13251	265.54950	315.60850	6.03202	0.0742506	0.27595176	2.3365797	20	11 17.8	17.8
48933 1998 <i>QD</i>	16.2	X	258.07060	196.83454	151.82214	3.07422	0.2090002	0.25994178	2.4315618	20	4 29.4	19.9
48934 Kočanová	16.0	X	280.74621	136.65939	175.39859	2.50051	0.1858987	0.25973306	2.4328643	20	4 8.7	19.3
48935 1998 <i>QK</i> <sub>1</sub>	14.9	X	78.11508	39.86418	310.47430	6.45099	0.1394250	0.28308125	2.2971815	20	—	—
48936 1998 <i>QS</i> <sub>2</sub>	15.3	X	202.85172	318.04064	323.74257	5.39270	0.1686117	0.29356879	2.2421404	20	—	—
48937 1998 <i>QN</i> <sub>4</sub>	14.3	X	160.71020	195.49300	13.07751	6.45676	0.0848912	0.27642963	2.3338861	20	11 11.9	17.6
48938 1998 <i>QK</i> <sub>5</sub>	15.7	X	245.79028	299.80995	238.79111	3.70212	0.0774236	0.28363862	2.2941711	20	—	—
48939 1998 <i>QO</i> <sub>8</sub>	15.1	X	344.94492	218.34454	130.92711	6.69839	0.1441216	0.27274009	2.3548870	20	10 14.4	17.2
48940 1998 <i>QV</i> <sub>8</sub>	14.5	X	275.91435	206.73404	110.28260	6.81206	0.1058512	0.26106057	2.4246099	20	4 23.8	17.7
48941 1998 <i>QP</i> <sub>11</sub>	14.9	X	84.92629	4.88586	311.37838	12.20055	0.1624225	0.23642912	2.5902125	20	—	—
48942 1998 <i>QV</i> <sub>11</sub>	15.6	X	37.42213	50.61652	265.07301	3.01437	0.1714803	0.27565672	2.3382467	20	11 23.1	18.5
48943 1998 <i>QH</i> <sub>12</sub>	15.7	X	160.35406	21.14666	278.42655	6.84797	0.1281392	0.28917854	2.2647765	20	—	—
48944 1998 <i>QT</i> <sub>13</sub>	15.6	X	6.90797	246.83102	149.50583	2.24404	0.2472450	0.27839502	2.3228887	20	—	—
48945 1998 <i>QW</i> <sub>13</sub>	15.7	X	9.94708	14.55792	303.96730	1.86216	0.2313753	0.27239667	2.3568658	20	10 25.3	17.9
48946 1998 <i>QF</i> <sub>14</sub>	14.7	X	279.67674	300.23680	261.36658	3.55759	0.0934705	0.29218697	2.2492038	20	—	—
48947 1998 <i>QK</i> <sub>14</sub>	14.7	X	47.37922	31.95187	315.14148	14.32719	0.1772080	0.23401000	2.6080331	20	—	—
48948 1998 <i>QL</i> <sub>14</sub>	15.4	X	245.94772	97.69877	216.52526	4.32441	0.1870888	0.25617149	2.4553619	20	3 4.3	19.3
48949 1998 <i>QR</i> <sub>16</sub>	15.7	X	341.93178	53.30850	300.93656	3.72697	0.1833021	0.27163492	2.3612700	20	10 12.9	17.6
48950 1998 <i>QW</i> <sub>17</sub>	15.9	X	346.55651	23.17383	292.82286	3.54367	0.1904822	0.26868868	2.3784999	20	8 20.8	17.5
48951 1998 <i>QO</i> <sub>19</sub>	15.6	X	0.34506	249.85041	134.38406	5.04074	0.1759842	0.27676857	2.3319803	20	—	—
48952 1998 <i>QY</i> <sub>19</sub>	14.8	X	315.15080	303.04758	162.67872	7.86098	0.1306609	0.28157133	2.3053866	20	—	—
48953 1998 <i>QZ</i> <sub>20</sub>	15.6	X	341.15242	116.15008	256.28590	4.06635	0.2335769	0.27239532</				

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
48961 1998 <i>QS</i> <sub>26</sub>	15.2	X	269.13798	129.46931	222.36235	3.27320	0.0723514	0.26152145	2.4217604	20	6 4.5	18.2
48962 1998 <i>QH</i> <sub>31</sub>	16.0	X	355.01152	204.57603	107.84566	3.92758	0.1863429	0.26934738	2.3746205	20	9 8.4	17.8
48963 1998 <i>QJ</i> <sub>33</sub>	15.0	X	31.10729	65.14259	303.95705	6.12448	0.1312541	0.27891936	2.3199766	20	—	—
48964 1998 <i>QW</i> <sub>33</sub>	15.8	X	282.14392	170.05409	174.30455	2.88402	0.1929211	0.26275911	2.4141497	20	5 23.9	18.7
48965 1998 <i>QX</i> <sub>34</sub>	15.5	X	252.51355	117.45025	281.25564	5.67687	0.2210710	0.26309130	2.4121171	20	6 26.6	19.0
48966 1998 <i>QY</i> <sub>34</sub>	15.1	X	318.29513	45.49651	290.98726	6.44084	0.1308773	0.26623300	2.3931034	20	7 23.3	17.2
48967 1998 <i>QX</i> <sub>36</sub>	15.6	X	120.32436	60.08869	218.44892	4.95171	0.1690943	0.28129872	2.3068758	20	12 29.9	19.2
48968 1998 <i>QC</i> <sub>38</sub>	14.4	X	212.55932	190.48661	345.11669	6.83888	0.0514512	0.27855282	2.3220114	20	12 6.2	17.5
48969 1998 <i>QZ</i> <sub>38</sub>	15.5	X	346.33200	108.23354	283.51832	3.94806	0.1421384	0.27511858	2.3412948	20	12 17.3	17.6
48970 1998 <i>QY</i> <sub>38</sub>	15.4	X	41.35546	210.41111	172.68854	6.38615	0.2170740	0.28066917	2.3103241	20	—	—
48971 1998 <i>QC</i> <sub>39</sub>	15.0	X	310.65504	143.17605	149.38949	2.77166	0.1913147	0.26165191	2.4209553	20	4 23.2	17.5
48972 1998 <i>QM</i> <sub>39</sub>	15.6	X	256.27216	340.77171	68.61295	3.22164	0.2064861	0.26486607	2.4013299	20	7 18.4	18.9
48973 1998 <i>QO</i> <sub>39</sub>	16.1	X	14.57902	283.46519	109.22716	4.07857	0.2469023	0.27799002	2.3251443	20	—	—
48974 1998 <i>QS</i> <sub>39</sub>	15.5	X	302.21482	181.80957	113.51130	3.42170	0.1873578	0.26084078	2.4259717	20	4 15.4	18.3
48975 1998 <i>QH</i> <sub>40</sub>	14.7	X	269.18898	142.95427	258.90494	2.94414	0.2213495	0.26521770	2.3992070	20	7 21.4	17.5
48976 1998 <i>QN</i> <sub>40</sub>	14.7	X	243.67584	189.50753	250.64400	4.23889	0.0342068	0.26896196	2.3768885	20	9 7.3	17.8
48977 1998 <i>QO</i> <sub>40</sub>	14.8	X	205.48573	35.33953	200.69210	6.93228	0.0788042	0.28539087	2.2847710	20	—	—
48978 1998 <i>QU</i> <sub>40</sub>	14.8	X	111.38990	121.47066	179.38112	7.20751	0.1945757	0.23709684	2.5853472	20	—	—
48979 1998 <i>QZ</i> <sub>40</sub>	14.5	X	203.12869	239.88874	116.36081	4.50211	0.1173573	0.28028951	2.3124099	20	12 13.5	17.6
48980 1998 <i>QK</i> <sub>43</sub>	14.3	X	276.01032	194.91713	320.69370	6.36196	0.1456051	0.25919557	2.4362265	20	4 16.1	17.6
48981 1998 <i>QD</i> <sub>45</sub>	14.3	X	347.77980	113.68023	283.36895	5.61838	0.1255008	0.27572934	2.3378361	20	12 25.4	16.7
48982 1998 <i>QL</i> <sub>46</sub>	14.2	X	116.60365	308.70194	342.39970	15.00711	0.1249217	0.23607790	2.5927809	20	—	—
48983 1998 <i>QM</i> <sub>46</sub>	15.0	X	358.30416	299.42317	344.20818	3.90148	0.1702607	0.26606518	2.3941096	20	7 25.9	16.8
48984 1998 <i>QC</i> <sub>47</sub>	15.4	X	293.30465	348.84194	53.44335	3.36570	0.2062699	0.26868412	2.3785268	20	9 7.7	17.6
48985 1998 <i>QF</i> <sub>47</sub>	15.0	X	149.00837	173.15355	355.84302	13.81589	0.1191595	0.26943362	2.3741138	20	9 9.9	18.4
48986 1998 <i>QJ</i> <sub>47</sub>	15.0	X	22.73723	48.45800	41.49258	4.85767	0.0800382	0.28744175	2.2738902	20	—	—
48987 1998 <i>QL</i> <sub>47</sub>	15.8	X	287.85486	190.97831	197.15446	9.43372	0.1072534	0.26701907	2.3884044	20	8 16.9	18.7
48988 1998 <i>QR</i> <sub>47</sub>	15.2	X	3.79147	292.94875	350.93023	1.89604	0.2110430	0.26715713	2.3875815	20	8 12.9	16.7
48989 1998 <i>QS</i> <sub>47</sub>	15.6	X	287.56107	207.83827	156.10428	3.89666	0.2125246	0.26444495	2.4038786	20	6 25.4	18.3
48990 1998 <i>QX</i> <sub>47</sub>	15.9	X	307.38081	55.81270	314.31693	3.98007	0.2451999	0.26713543	2.3877108	20	8 7.5	17.8
48991 1998 <i>QY</i> <sub>47</sub>	15.2	X	341.82929	250.33546	178.16330	6.29340	0.0708545	0.27915644	2.3186629	20	—	—
48992 1998 <i>QC</i> <sub>48</sub>	15.1	X	243.16317	98.63725	230.86668	3.78082	0.1819835	0.25587125	2.4572823	20	3 21.2	19.1
48993 1998 <i>QF</i> <sub>48</sub>	14.5	X	88.27759	356.74061	298.42130	6.37546	0.1301008	0.27790246	2.3256327	20	12 19.1	17.8
48994 1998 <i>QL</i> <sub>50</sub>	15.4	X	16.66499	334.09162	59.86558	3.33564	0.1145837	0.27931231	2.3178002	20	—	—
48995 1998 <i>QC</i> <sub>51</sub>	14.7	X	124.58114	239.41930	159.13129	4.30938	0.1281952	0.29305784	2.2447457	20	2 15.9	17.4
48996 1998 <i>QK</i> <sub>51</sub>	14.8	X	314.12090	345.97652	176.12753	5.63008	0.0398768	0.28809322	2.2704609	20	—	—
48997 1998 <i>QT</i> <sub>51</sub>	14.1	X	102.35275	356.17164	316.58532	6.45819	0.1485463	0.28156528	2.3054196	20	—	—
48998 1998 <i>QU</i> <sub>51</sub>	14.5	X	329.14841	11.71912	316.13704	7.60562	0.1363553	0.26594010	2.3948602	20	8 1.4	16.4
48999 1998 <i>QM</i> <sub>52</sub>	14.8	X	316.96722	271.94117	143.40823	6.80333	0.0978985	0.27430190	2.3459397	20	11 26.3	17.3
49000 1998 <i>QY</i> <sub>52</sub>	14.9	X	149.60725	346.50381	279.93419	7.38313	0.1410534	0.28169620	2.3047053	20	—	—
49001 1998 <i>QZ</i> <sub>54</sub>	14.5	X	159.59506	129.83861	329.30596	6.11542	0.1100374	0.25735386	2.4478356	20	6 17.2	18.2
49002 1998 <i>QX</i> <sub>57</sub>	14.9	X	267.72334	269.07619	176.72488	3.36582	0.1295053	0.27046835	2.3680548	20	10 9.0	17.2
49003 1998 <i>QC</i> <sub>58</sub>	15.5	X	286.29224	211.63755	181.04742	1.02911	0.1854547	0.26617374	2.3934586	20	8 10.7	17.8
49004 1998 <i>QK</i> <sub>61</sub>	14.5	X	315.98447	339.18473	157.90675	6.82643	0.0367216	0.28528178	2.2853534	20	—	—
49005 1998 <i>QN</i> <sub>62</sub>	14.8	X	243.93445	315.09601	202.55340	6.57541	0.0627034	0.28067733	2.3102793	20	12 25.0	17.6
49006 1998 <i>QL</i> <sub>63</sub>	15.8	X	184.41980	342.93277	273.47603	3.83333	0.0721166	0.23817158	2.5775638	20	—	—
49007 1998 <i>QF</i> <sub>67</sub>	14.9	X	87.15420	71.14217	250.94418	11.55948	0.1075456	0.23627832	2.5913146	20	—	—
49008 1998 <i>QZ</i> <sub>68</sub>	15.2	X	309.62363	4.10430	268.90041	6.71151	0.1270289	0.25936240	2.4351817	20	3 30.4	18.3
49009 1998 <i>QY</i> <sub>68</sub>	14.6	X	335.85889	66.45194	239.05816	5.54094	0.1451588	0.26595175	2.3947902	20	7 7.9	16.8
49010 1998 <i>QF</i> <sub>72</sub>	15.1	X	62.30226	157.85677	248.44158	13.92224	0.1886547	0.24012578	2.5635602	20	—	—
49011 1998 <i>QQ</i> <sub>72</sub>	14.9	X	273.36408	16.52461	189.43830	14.40410	0.0249596	0.24430787	2.5342206	20	—	—
49012 1998 <i>QR</i> <sub>72</sub>	14.6	X	56.53286	45.14243	241.39446	6.07216	0.1124837	0.27347152	2.3506858	20	10 29.4	17.5
49013 1998 <i>QW</i> <sub>73</sub>	15.1	X	61.01992	113.61168	214.88360	12.81836	0.2855896	0.23317393	2.6142636	20	—	—
49014 1998 <i>QQ</i> <sub>74</sub>	15.2	X	83.20793	13.61352	223.18836	12.13158	0.0744595	0.26984842	2.3716802	20	9 16.4	18.6
49015 1998 <i>QG</i> <sub>75</sub>	15.6	X	17.11447	106.88065	238.35539	5.60865	0.1346834	0.27407785	2.3472180	20	11 29.6	18.1
49016 1998 <i>QJ</i> <sub>77</sub>	14.4	X	74.30190	336.06670	279.27162	11.32417	0.1839102	0.27148193	2.3621570	20	10 13.2	18.1
49017 1998 <i>QN</i> <sub>77</sub>	15.6	X	243.21666	176.31639	225.20780	9.89803	0.1277712	0.26193406	2.4192165	20	6 30.3	19.0
49018 1998 <i>QY</i> <sub>84</sub>	15.3	X	338.62664	73.07510	239.90549	6.10261	0.1162698	0.26629814	2.3927131	20	7 26.2	17.7
49019 1998 <i>QF</i> <sub>85</sub>	13.8	X	246.99831	262.72376	298.75543	13.90636	0.0511937	0.24004282	2.5641508	20	—	—
49020 1998 <i>QP</i> <sub>86</sub>	15.4	X	86.15715	353.02196	259.18545	5.99700	0.1240833	0.27284003	2.3543119	20	10 19.1	18.7
49021 1998 <i>QL</i> <sub>89</sub>	14.7	X	85.44081	106.08162	225.28149	12.65705	0.2416657	0.23568038	2.5956956	20	—	—
49022 1998 <i>QV</i> <sub>91</sub>	15.0	X	317.38685	224.81647	174.88904	2.26871	0.2075662	0.268895948	2.3769031	20	10 31.3	16.4
49023 1998 <i>QQ</i> <sub>93</sub>	13.3	X	52.92864	341.94493	57.17481	13.00667	0.1541248	0.23450542	2.6043587	20	—	—
49024 1998 <i>QX</i> <sub>95</sub>	15.0	X	82.92968	301.62157	263.65180	7.76659	0.1288464	0.26621251	2.3932262	20	8 11.4	18.3
49025 1998 <i>QL</i> <sub>96</sub>	16.3	X	273.86136	61.48343	293.76170	7.60586	0.2731555	0.26196689	2.4190144	20	5 14.0	19.8
49026 1998 <i>QW</i> <sub>98</sub>	15.7	X	343.22029	173.47326	138.24173	2.49965	0.2202915	0.26681735	2.3896080	20	8 5.4	17.1
49027 1998 <i>QA</i> <sub>99</sub>	14.8	X	60.48996	159.73262	149.55786	4.98865	0.1391969	0.27585406	2.3371314	20	12 8.7	18.0
49028 1998 <i>QM</i> <sub>99</sub>	15.0	X	291.71162	328.29834	357.50997	7.85239	0.2990350	0.26207443	2.4183525	20	4 20.9	18.5
49029 1998 <i>QN</i> <sub>102</sub>	14.9	X	184.71789	67.69058	24.00893	3.47777	0.1480652	0.26028992	2.4293932	20	7 3.9	18.6
49030 1998 <i>QL</i> <sub>103</sub>	15.4	X	97.58003	73.07895	83.20543	4.37248	0.0587824	0.30454173	2.1879539	20	6 16.2	17.9
49031 1998 <i>QT</i> <sub>103</sub>	14.9	X	244.12957	153.17716	140.68115	9.49525	0.1612030	0.25180580	2.4836605	20	2 10.3	18.9
49032 1998 <i>QS</i> <sub>104</sub>	15.2	X	2.05907	145.56574	142.26009	7.14813	0.1267148					

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49041 1998 RW	15.7	X	248.75506	40.95510	305.26199	5.84405	0.1411481	0.25753187	2.4467075	20	4 19.5	19.5
49042 1998 RD <sub>2</sub>	15.9	X	258.33028	304.09905	129.78854	3.01179	0.1446585	0.26941152	2.3742436	20	9 4.7	18.7
49043 1998 RG <sub>4</sub>	14.9	X	277.44512	313.71408	178.21994	24.33221	0.2212689	0.27648386	2.3335809	20	12 23.9	17.6
49044 1998 RL <sub>15</sub>	15.5	X	205.89171	291.63307	186.99749	0.73469	0.1378792	0.26695940	2.3887603	20	8 31.3	18.8
49045 1998 RC <sub>17</sub>	16.2	X	299.98736	189.59644	188.72900	2.14910	0.2050686	0.26801297	2.3824959	20	8 10.9	18.2
49046 1998 RV <sub>18</sub>	15.1	X	4.90271	224.31745	41.74357	2.98851	0.1697754	0.26577499	2.3958519	20	7 10.9	16.9
49047 1998 RK <sub>20</sub>	16.0	X	311.03500	221.39238	173.62701	7.15955	0.1154388	0.27152491	2.3619077	20	10 14.1	18.2
49048 1998 RZ <sub>21</sub>	15.3	X	252.70823	146.76549	356.92945	5.33799	0.1218915	0.27641164	2.3339873	20	12 8.3	17.8
49049 1998 RF <sub>25</sub>	16.1	X	217.21476	71.35491	319.59246	2.74318	0.1917499	0.25834587	2.4415654	20	5 13.8	20.0
49050 1998 RL <sub>26</sub>	16.1	X	234.27543	245.46703	134.74035	4.40893	0.2265126	0.25943870	2.4347042	20	5 15.6	20.0
49051 1998 RW <sub>27</sub>	15.7	X	230.83348	98.12699	215.47976	5.62216	0.1482477	0.25279603	2.4771704	20	2 20.5	19.8
49052 1998 RV <sub>32</sub>	14.5	X	311.31507	178.57742	347.41426	10.69654	0.1183162	0.24283672	2.5444454	20	—	—
49053 1998 RY <sub>33</sub>	15.3	X	92.62394	300.73750	46.20687	4.69040	0.1853211	0.28399238	2.2922655	20	—	—
49054 1998 RQ <sub>34</sub>	14.8	X	218.79341	121.05569	8.03778	9.76122	0.1487309	0.27089652	2.3655589	20	9 28.7	17.8
49055 1998 RQ <sub>35</sub>	15.4	X	28.95571	307.08940	304.85939	1.24601	0.1728261	0.26607158	2.3940712	20	8 8.5	17.8
49056 1998 RZ <sub>39</sub>	15.2	X	67.69676	168.01453	133.47811	6.23035	0.1420478	0.27632778	2.3344595	20	12 7.2	18.5
49057 1998 RZ <sub>41</sub>	15.2	X	171.19530	300.64554	340.76151	12.97153	0.1542181	0.24149614	2.5538531	20	—	—
49058 1998 RQ <sub>42</sub>	14.9	X	124.88267	33.77324	297.57506	4.35875	0.1277574	0.28587928	2.2821679	20	—	—
49059 1998 RP <sub>44</sub>	14.8	X	206.78795	334.14519	140.64968	8.26656	0.0631797	0.26762615	2.3847912	20	9 5.7	18.0
49060 1998 RJ <sub>46</sub>	14.7	X	165.35985	269.41393	202.32712	7.13338	0.1813327	0.21409814	2.7673289	20	7 8.3	19.5
49061 1998 RF <sub>47</sub>	15.4	X	320.89872	341.23104	301.05525	5.58887	0.1069045	0.25959968	2.4336976	20	5 5.8	18.2
49062 1998 RK <sub>47</sub>	15.4	X	261.87683	90.99954	316.88553	5.34530	0.1377796	0.26478774	2.4018035	20	8 3.3	18.3
49063 1998 RN <sub>48</sub>	15.2	X	107.71320	99.12815	268.56414	1.78466	0.0425531	0.24191338	2.5509158	20	—	—
49064 1998 RE <sub>49</sub>	15.5	X	29.55913	148.70060	134.18346	3.45105	0.0927343	0.26825605	2.3810565	20	9 13.8	18.1
49065 1998 RV <sub>50</sub>	14.8	X	209.94583	109.32369	136.89462	4.41331	0.1284692	0.24144260	2.5542306	20	—	—
49066 1998 RN <sub>53</sub>	15.2	X	118.28797	70.28879	228.31589	3.04758	0.0832340	0.23547069	2.5972364	20	—	—
49067 1998 RP <sub>53</sub>	15.2	X	105.42006	6.56122	199.82081	7.34300	0.1433653	0.26763966	2.3847109	20	9 11.3	18.7
49068 1998 RF <sub>54</sub>	14.8	X	34.64427	338.06636	325.18230	5.46157	0.2441330	0.22723469	2.6596202	20	11 1.6	18.3
49069 1998 RM <sub>54</sub>	15.2	X	271.13004	215.81845	284.25334	3.86480	0.0416840	0.27856723	2.3219313	20	—	—
49070 1998 RV <sub>54</sub>	15.4	X	201.42612	118.44654	317.20774	6.29004	0.0826762	0.26047137	2.4282648	20	7 3.8	18.8
49071 1998 RQ <sub>56</sub>	14.7	X	220.85072	283.09479	193.74438	6.69939	0.0675195	0.26895336	2.3769392	20	9 24.1	17.8
49072 1998 RY <sub>57</sub>	15.0	X	24.42308	172.67895	111.37002	1.90047	0.0316521	0.26656881	2.3910931	20	8 28.9	17.9
49073 1998 RA <sub>58</sub>	16.0	X	299.50158	276.81801	153.82423	2.51246	0.1771105	0.27182874	2.3601475	20	11 10.4	17.7
49074 1998 RE <sub>58</sub>	15.5	X	323.44954	190.04161	166.21535	4.38629	0.2406916	0.26777444	2.3839106	20	8 27.7	16.9
49075 1998 RJ <sub>58</sub>	15.5	X	8.39694	245.22818	166.13398	1.84535	0.2412648	0.27786915	2.3258186	20	—	—
49076 1998 RB <sub>59</sub>	15.5	X	122.34853	176.20154	215.53347	2.91824	0.1264115	0.24569730	2.5246575	20	2 9.4	19.0
49077 1998 RT <sub>59</sub>	15.7	X	54.88478	61.67739	220.57129	4.46536	0.1048569	0.27095585	2.3652136	20	10 20.4	18.6
49078 1998 RX <sub>59</sub>	15.1	X	123.77145	48.03623	211.05954	5.63651	0.1020647	0.27667584	2.3325013	20	12 8.7	18.4
49079 1998 RJ <sub>62</sub>	15.0	X	196.76904	248.27048	4.66998	6.12229	0.2013846	0.24146428	2.5540778	20	—	—
49080 1998 RP <sub>63</sub>	15.0	X	293.40016	111.65517	34.25214	7.39266	0.1267421	0.28174357	2.3044469	20	—	—
49081 1998 RA <sub>64</sub>	14.2	X	142.95430	15.37459	120.89026	3.34080	0.1156624	0.26084324	2.4259564	20	7 19.3	17.8
49082 1998 RB <sub>64</sub>	14.1	X	205.06853	105.62323	9.11807	12.43061	0.1320843	0.22016076	2.7162898	20	8 26.5	18.4
49083 1998 RS <sub>64</sub>	14.8	X	256.20266	181.82361	2.24849	15.35021	0.0522132	0.23695681	2.5863656	20	—	—
49084 1998 RU <sub>65</sub>	15.8	X	296.89856	34.23769	333.53391	1.60420	0.1901873	0.26491689	2.4010228	20	7 22.2	18.0
49085 1998 RO <sub>67</sub>	14.9	X	92.12943	61.66019	213.74658	6.31599	0.1040530	0.27433010	2.3457789	20	11 25.9	18.3
49086 1998 RB <sub>68</sub>	15.4	X	320.93502	225.44748	209.59759	4.38605	0.1592774	0.22906471	2.6454360	20	12 16.0	18.1
49087 1998 RC <sub>68</sub>	15.0	X	359.10544	160.10022	226.68684	2.01151	0.0856223	0.27479304	2.3431435	20	12 22.6	17.6
49088 1998 RS <sub>68</sub>	14.2	X	41.75871	22.79379	1.37401	9.14356	0.1005083	0.27987916	2.3146696	20	—	—
49089 1998 RR <sub>69</sub>	15.7	X	323.84488	203.75065	157.66294	2.84284	0.1823182	0.26802619	2.3824176	20	9 12.1	17.3
49090 1998 RV <sub>69</sub>	15.2	X	55.93209	213.23520	41.84158	2.82505	0.1781189	0.26881721	2.3777417	20	9 26.8	18.3
49091 1998 RZ <sub>70</sub>	15.0	X	124.97170	168.12108	54.01076	4.59703	0.1658767	0.27252059	2.3561512	20	10 25.3	18.7
49092 1998 RK <sub>71</sub>	15.3	X	70.88316	94.84073	28.52176	6.08733	0.0595136	0.29616608	2.2290125	20	3 20.4	17.7
49093 1998 RG <sub>72</sub>	14.4	X	116.29052	149.76760	168.56593	7.44467	0.1182270	0.23718316	2.5847199	20	—	—
49094 1998 RQ <sub>72</sub>	16.2	X	308.30114	358.06788	26.56975	2.62282	0.1929113	0.26772758	2.3841888	20	9 13.2	18.0
49095 1998 RT <sub>72</sub>	15.1	X	317.21765	48.59168	10.09665	2.55168	0.2242170	0.27168775	2.3609639	20	12 2.8	16.5
49096 1998 RL <sub>73</sub>	14.3	X	189.41157	0.31198	292.16179	2.18200	0.0840278	0.24266740	2.5456289	20	—	—
49097 1998 RU <sub>73</sub>	15.7	X	285.74762	136.22595	214.19342	6.68559	0.1299955	0.26159180	2.4213262	20	6 16.9	18.7
49098 1998 RZ <sub>73</sub>	14.7	X	349.36555	16.99877	345.99398	11.87362	0.2255471	0.22540507	2.6739930	20	10 29.5	17.3
49099 1998 RB <sub>74</sub>	14.1	X	295.68898	162.06505	322.30441	7.14342	0.1080127	0.23180478	2.6245476	20	—	—
49100 1998 RT <sub>74</sub>	15.0	X	130.04425	196.89370	313.94495	1.80131	0.1115708	0.26025877	2.4295870	20	7 24.6	18.4
49101 1998 RE <sub>76</sub>	14.8	X	355.25517	302.70022	20.36681	6.70821	0.1278480	0.26809479	2.3820112	20	9 19.7	16.9
49102 1998 RQ <sub>76</sub>	15.6	X	0.91616	207.48713	104.70447	3.28705	0.1222997	0.26847094	2.3797857	20	9 25.4	17.4
49103 1998 RE <sub>78</sub>	15.5	X	347.70261	175.70545	106.33129	3.46514	0.2023355	0.26326764	2.4110399	20	6 24.3	17.0
49104 1998 RC <sub>79</sub>	15.2	X	240.25073	273.10535	134.27175	5.10625	0.1860397	0.26093220	2.4254050	20	6 28.8	18.8
49105 1998 RT <sub>79</sub>	15.4	X	69.67797	207.90373	62.44590	2.98542	0.1996161	0.27209175	2.3586263	20	11 4.4	18.8
49106 1998 SY	15.1	X	46.09727	8.21111	28.63840	4.51142	0.1486044	0.23475041	2.6025464	20	—	—
49107 1998 SG <sub>1</sub>	15.8	X	37.05515	271.79523	177.01740	2.25699	0.1894502	0.23810208	2.5780654	20	—	—
49108 1998 SQ <sub>1</sub>	14.7	X	22.45807	40.68738	77.41715	5.83044	0.1944201	0.24161788	2.5529953	20	—	—
49109 Agnesraab	14.7	X	107.20936	329.11149	73.42960	14.27093	0.1723613	0.24065420	2.5598062	20	2 19.0	18.4
49110 Květařalová	15.1	X	346.02276	8.11309	356.68111	1.68644	0.0398013	0.22490134	2.6779843	20	10 14.8	18.5
49111 1998 SE <sub>6</sub>	15.3	X	74.03512	27.33033	161.91137	4.68798	0.0786086	0.26255137	2.4154230	20	7 2.2	18.2
49112 1998 SF <sub>6</sub>	15.9	X	242.36044	240.94102	160.93049	2.68403	0.1353789	0.26293630	2.4130650	20	6 29.9	19.4
49113 1998 SK <sub>7</sub>	16.0	X	16.42204	77.85605	175.47786	3.27044	0.1421650	0.26374275	2.4081435	20	7 11.2	18.1
49114 1998 ST <sub>7</sub>	15.2	X	180.83514	109.63131	4.53454	2.16267	0.1659538	0.26233435	2.4167549	20	7 29.6	19.1
49115 1998 SL <sub>9</sub>	15.5	X	204.69202									

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49121 1998 SL <sub>14</sub>	15.2	X	22.77825	248.89056	81.82861	5.51154	0.1939980	0.27422013	2.3464060	20	11 27.8	17.8
49122 1998 SR <sub>14</sub>	15.4	X	237.34399	344.33476	54.19499	5.47095	0.1478955	0.25980871	2.4323920	20	6 17.7	19.0
49123 1998 SX <sub>16</sub>	14.8	X	97.85416	73.86407	176.29551	5.09574	0.0520070	0.27123609	2.3635841	20	10 26.2	17.9
49124 1998 SF <sub>17</sub>	16.0	X	291.20180	271.21598	58.13280	2.15667	0.1898821	0.26077183	2.4263993	20	5 15.4	18.8
49125 1998 SB <sub>22</sub>	14.8	X	99.57385	59.91673	196.15133	6.00462	0.0559314	0.27120597	2.3637591	20	11 5.2	18.0
49126 1998 SF <sub>22</sub>	15.9	X	0.83766	105.67180	236.71639	3.35687	0.1802582	0.27175929	2.3605495	20	11 4.9	18.1
49127 1998 ST <sub>22</sub>	14.1	X	64.99388	319.31901	45.37338	14.42213	0.1892559	0.23292545	2.6161226	20	—	—
49128 1998 SD <sub>23</sub>	15.7	X	113.99911	193.07244	150.02684	4.02747	0.1702927	0.24022970	2.5628208	20	—	—
49129 1998 SU <sub>23</sub>	14.9	X	185.64148	95.78195	43.97318	7.71391	0.0406370	0.26769611	2.3843757	20	9 17.8	18.1
49130 1998 SQ <sub>24</sub>	15.2	X	69.91904	25.15605	33.43673	6.39995	0.1509437	0.24209619	2.5496315	20	1 6.6	17.9
49131 1998 SV <sub>24</sub>	15.0	X	64.50004	323.40389	90.77631	4.37228	0.1480548	0.23955457	2.5676338	20	—	—
49132 1998 SW <sub>24</sub>	14.9	X	245.72824	273.20044	140.22804	7.07819	0.0299916	0.26315057	2.4117549	20	8 5.2	17.9
49133 1998 SC <sub>25</sub>	14.9	X	338.89082	174.14785	37.04531	6.36506	0.0862348	0.29571261	2.2312907	20	2 25.7	17.2
49134 1998 SF <sub>27</sub>	15.1	X	209.30403	277.71069	161.06325	1.57809	0.1500930	0.26155471	2.4215551	20	7 11.2	18.6
49135 1998 SP <sub>28</sub>	14.7	X	244.99846	3.54031	35.15598	8.00973	0.0312694	0.21560438	2.7544253	20	7 12.7	18.6
49136 1998 SY <sub>33</sub>	15.0	X	346.74621	157.10810	190.81133	13.73607	0.2651946	0.22439741	2.6819921	20	10 10.3	16.8
49137 1998 SC <sub>35</sub>	15.0	X	152.94925	270.03877	16.65088	29.04760	0.2709832	0.23919569	2.5702013	20	—	—
49138 1998 SV <sub>36</sub>	15.5	X	82.56796	35.08029	187.30170	2.95910	0.1714263	0.26595060	2.3947971	20	9 11.7	18.8
49139 1998 SF <sub>37</sub>	14.8	X	245.55335	199.45604	216.16033	5.04334	0.1427589	0.26151789	2.4217824	20	7 20.6	18.1
49140 1998 SU <sub>40</sub>	15.7	X	188.91371	197.85476	237.35000	1.32305	0.0904394	0.25931201	2.4354972	20	6 17.5	19.2
49141 1998 SM <sub>41</sub>	14.5	X	141.62583	109.67818	359.21196	9.96662	0.1881929	0.25586977	2.4572918	20	6 14.9	18.6
49142 1998 SQ <sub>42</sub>	16.0	X	206.34899	96.17573	349.82684	4.13027	0.1488014	0.26067454	2.4270030	20	7 18.9	19.7
49143 1998 SK <sub>43</sub>	15.2	X	199.86716	126.61723	5.80865	7.84994	0.0486771	0.26688548	2.3892014	20	9 21.9	18.2
49144 1998 SB <sub>46</sub>	15.8	X	264.38908	51.60584	13.83432	6.23159	0.2417615	0.26411246	2.4058956	20	8 17.2	18.9
49145 1998 SD <sub>46</sub>	15.5	X	210.54977	94.66950	2.33053	1.70925	0.0730614	0.26230318	2.4169464	20	8 14.2	18.7
49146 1998 SN <sub>48</sub>	15.3	X	351.25491	82.18789	6.12440	1.62867	0.1903188	0.23209670	2.6223465	20	—	—
49147 1998 SR <sub>48</sub>	14.8	X	109.39052	335.31160	4.24048	4.14678	0.2300918	0.23776945	2.5804692	20	—	—
49148 1998 SB <sub>49</sub>	16.0	X	280.29458	215.15645	170.73578	3.36662	0.1229812	0.26529075	2.3987665	20	7 31.6	18.6
49149 1998 SD <sub>49</sub>	15.8	X	273.03429	194.55442	171.95215	2.95205	0.2075195	0.26238642	2.4164351	20	6 9.3	19.1
49150 1998 SO <sub>50</sub>	15.1	X	211.83615	142.72008	10.71223	4.86402	0.1733628	0.26882206	2.3777131	20	10 18.7	18.3
49151 1998 SM <sub>51</sub>	15.0	X	98.26384	355.28099	208.46660	11.35843	0.0835088	0.21631603	2.7483809	20	8 16.8	19.2
49152 1998 SQ <sub>52</sub>	14.8	X	98.95509	214.51140	356.49722	5.58445	0.0610092	0.26668389	2.3904052	20	9 4.2	17.9
49153 1998 ST <sub>52</sub>	15.0	X	35.68076	266.46446	236.48252	3.60829	0.1799575	0.24467759	2.5316670	20	3 1.7	17.4
49154 1998 SM <sub>53</sub>	15.7	X	310.24532	323.97183	337.92331	7.72675	0.1782995	0.26140608	2.4224729	20	5 3.7	18.5
49155 1998 SZ <sub>53</sub>	14.5	X	27.50956	44.69099	321.34016	3.76747	0.1220359	0.27678461	2.3318902	20	—	—
49156 1998 SN <sub>54</sub>	14.2	X	198.63328	215.14867	340.77747	6.74722	0.0521924	0.27733370	2.3288113	20	12 15.6	17.3
49157 1998 SQ <sub>54</sub>	15.3	X	273.48243	68.17013	228.68765	1.40299	0.1765381	0.25589357	2.4571394	20	3 11.4	19.0
49158 1998 SB <sub>55</sub>	15.4	X	335.48080	168.19710	188.55356	9.94425	0.2117255	0.26938341	2.3744088	20	10 5.1	16.9
49159 1998 SK <sub>55</sub>	16.0	X	180.85509	241.97163	182.55315	2.04567	0.1851780	0.25589384	2.4571377	20	5 25.5	20.0
49160 1998 SU <sub>55</sub>	15.2	X	61.68359	86.97519	354.20918	6.80249	0.1018302	0.28960759	2.2625391	20	1 7.6	17.4
49161 1998 SE <sub>56</sub>	15.0	X	151.20194	317.51614	349.30032	15.94537	0.0830666	0.24048744	2.5609894	20	—	—
49162 1998 SO <sub>56</sub>	15.6	X	348.43273	312.09877	10.44173	2.69365	0.2101712	0.26791623	2.3830694	20	9 9.9	17.0
49163 1998 SQ <sub>56</sub>	15.4	X	81.92025	179.71234	91.00765	1.42574	0.1763134	0.27460409	2.3442183	20	11 15.1	18.9
49164 1998 ST <sub>56</sub>	14.2	X	306.23066	279.31202	14.90131	2.67367	0.1808538	0.26005958	2.4308275	20	4 18.8	17.1
49165 1998 SU <sub>56</sub>	15.3	X	12.80897	294.71293	7.54762	6.04002	0.2013277	0.26941398	2.3742291	20	9 30.8	17.3
49166 1998 SL <sub>57</sub>	14.4	X	259.22181	146.71372	23.11663	4.47697	0.0845705	0.28128759	2.3069366	20	—	—
49167 1998 SP <sub>57</sub>	15.8	X	13.14575	247.29655	47.62470	3.69170	0.1335179	0.26776422	2.3839713	20	9 10.9	18.1
49168 1998 SB <sub>58</sub>	15.6	X	313.54545	60.51062	25.39305	7.22552	0.1673800	0.27519652	2.3408527	20	—	—
49169 1998 SL <sub>59</sub>	15.7	X	16.40437	227.87346	56.73112	2.14422	0.1761859	0.26657010	2.3910855	20	9 6.7	17.9
49170 1998 SN <sub>59</sub>	14.7	X	139.73604	196.28104	41.34428	5.16518	0.0288217	0.27427698	2.3460818	20	11 28.1	17.6
49171 1998 SD <sub>60</sub>	15.6	X	201.15686	350.11028	76.38189	3.14047	0.1506287	0.25826599	2.4420688	20	6 16.6	19.4
49172 1998 SE <sub>60</sub>	15.0	X	29.93983	321.46191	38.88975	4.94247	0.1109195	0.23041519	2.6350891	20	12 21.7	18.4
49173 1998 SQ <sub>63</sub>	14.9	X	40.30750	297.50611	56.31788	2.79133	0.0728344	0.27591868	2.3367665	20	—	—
49174 1998 SA <sub>64</sub>	14.8	X	317.16863	96.69351	178.91035	8.81903	0.0207349	0.25440925	2.4666874	20	5 6.7	17.9
49175 1998 SG <sub>65</sub>	14.9	X	28.01080	220.07392	139.89578	2.87053	0.1002391	0.27433834	2.3457319	20	12 29.1	17.7
49176 1998 SS <sub>65</sub>	15.3	X	71.96803	240.03938	130.22640	3.74002	0.2445468	0.23577246	2.5950198	20	—	—
49177 1998 SU <sub>65</sub>	14.6	X	9.94226	119.97213	80.77517	4.66777	0.1480259	0.29655525	2.2270620	20	4 1.9	16.2
49178 1998 SB <sub>67</sub>	15.3	X	129.36929	285.92896	78.68596	4.33165	0.1528322	0.24218667	2.5489964	20	1 20.2	18.9
49179 1998 SC <sub>67</sub>	15.3	X	75.12238	203.84653	85.04486	6.49549	0.1851690	0.22785202	2.6548142	20	11 24.3	19.4
49180 1998 SE <sub>67</sub>	14.6	X	350.18786	208.26960	114.36548	4.91513	0.1874639	0.26635448	2.3923757	20	9 13.9	16.4
49181 1998 SO <sub>67</sub>	14.1	X	276.65624	89.99807	78.25203	6.97874	0.1603906	0.23322891	2.6138528	20	—	—
49182 1998 SP <sub>69</sub>	15.2	X	304.43690	133.13048	241.86984	6.68619	0.1356096	0.26711237	2.3878482	20	8 22.2	17.7
49183 1998 SW <sub>72</sub>	14.9	X	69.75493	152.05292	46.24100	6.58483	0.0759423	0.25835308	2.4415200	20	7 9.6	18.0
49184 1998 SW <sub>73</sub>	14.4	X	111.16137	284.62395	35.03923	8.05717	0.1379197	0.28122398	2.3072845	20	—	—
49185 1998 SA <sub>74</sub>	14.6	X	156.63616	274.31967	49.56217	6.51733	0.0576352	0.24086893	2.5582847	20	—	—
49186 1998 SS <sub>75</sub>	15.4	X	150.64706	343.10073	179.57417	2.87332	0.1154847	0.26447593	2.4036909	20	8 31.7	18.9
49187 Zucchini	15.7	X	346.82775	65.83813	352.41105	4.33294	0.0916681	0.27804877	2.3248168	20	—	—
49188 1998 SZ <sub>79</sub>	15.8	X	247.84010	139.37513	314.66008	2.11437	0.1269632	0.26867950	2.3785541	20	9 19.4	18.6
49189 1998 SJ <sub>80</sub>	15.4	X	40.59584	8.51674	208.74615	10.45968	0.0882395	0.26029299	2.4293741	20	6 22.4	18.3
49190 1998 SL <sub>81</sub>	15.6	X	200.01208	331.22025	147.27488	1.60826	0.1400230	0.26553586	2.3972901	20	8 24.7	19.1
49191 1998 SN <sub>85</sub>	15.4	X	82.26027	223.91667	28.05346	3.99783	0.2491944	0.27278887	2.3546062	20	10 28.3	18.9
49192 1998 SU <sub>89</sub>	16.0	X	173.20674	115.75555	215.79031	1.33348	0.1155079	0.24615509	2.5215263	20	1 20.5	19.8
49193 1998 SM <sub>91</sub>	15.0	X	223.57484	190.12555	312.95130	4.82469	0.0583681	0.27188060	2.3598473	20	11 3.2	18.1
49194 1998 SX <sub>95</sub>	14.8	X	233.63270	177.89425	50.44521	6.05466	0.1585649	0.24154744	2.5534915	20	—	—
49195 1998 SG <sub>102</sub>	15.0	X										

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49201 1998 <i>SH</i> <sub>110</sub>	15.4	X	219.33657	325.21378	212.35357	8.94455	0.0515480	0.27560333	2.3385486	20	12 18.0	18.3
49202 1998 <i>SE</i> <sub>111</sub>	15.4	X	295.94145	199.30629	218.81049	1.79337	0.1924874	0.26880928	2.3777885	20	10 8.7	17.1
49203 1998 <i>SW</i> <sub>115</sub>	15.2	X	50.49168	311.61190	290.66573	1.68461	0.1312489	0.26375639	2.4080605	20	8 22.1	17.9
49204 1998 <i>SR</i> <sub>116</sub>	14.1	X	11.12213	181.02199	292.72841	3.59583	0.0956026	0.23958377	2.5674251	20	—	—
49205 1998 <i>SZ</i> <sub>117</sub>	14.2	X	335.62119	308.68561	3.78395	6.67157	0.0858015	0.21716382	2.7412232	20	7 20.4	17.5
49206 1998 <i>SR</i> <sub>118</sub>	15.0	X	109.00655	200.93781	189.59028	2.37455	0.0568086	0.24285641	2.5443079	20	1 12.8	18.1
49207 1998 <i>SV</i> <sub>118</sub>	16.4	X	65.11454	213.19339	171.47097	1.82874	0.2141547	0.23655152	2.5893190	20	—	—
49208 1998 <i>SB</i> <sub>119</sub>	15.1	X	60.93135	187.60665	26.47743	2.65923	0.1321975	0.26079871	2.4262325	20	7 29.2	18.1
49209 1998 <i>SB</i> <sub>119</sub>	14.9	X	16.49370	160.03400	150.68087	2.74377	0.2241669	0.26983354	2.3717674	20	10 25.6	17.3
49210 1998 <i>ST</i> <sub>119</sub>	14.6	X	353.21581	41.12261	56.55266	4.83844	0.1297818	0.23529217	2.5985499	20	—	—
49211 1998 <i>SX</i> <sub>119</sub>	14.9	X	243.09858	176.76065	37.55570	8.35068	0.1290707	0.24023388	2.5627911	20	—	—
49212 1998 <i>SM</i> <sub>121</sub>	14.9	X	330.48464	239.94189	258.31135	3.97488	0.0570450	0.28361514	2.2942977	20	—	—
49213 1998 <i>SW</i> <sub>122</sub>	15.5	X	264.18095	115.09431	276.82519	0.70536	0.2163554	0.26190309	2.4194072	20	7 1.8	18.5
49214 1998 <i>SJ</i> <sub>123</sub>	14.6	X	145.23742	225.71773	13.49540	6.23877	0.0569524	0.27444487	2.3451249	20	12 5.6	17.9
49215 1998 <i>SE</i> <sub>124</sub>	15.8	X	255.08894	265.68850	179.58130	6.42702	0.0848245	0.26739622	2.3861581	20	9 25.1	18.7
49216 1998 <i>SH</i> <sub>124</sub>	15.2	X	321.64145	26.21028	28.04363	6.16623	0.1599927	0.27178600	2.3603949	20	12 2.2	17.2
49217 1998 <i>SJ</i> <sub>124</sub>	15.5	X	264.59916	292.12424	29.05761	7.01774	0.1553470	0.25580079	2.4577733	20	4 6.6	19.0
49218 1998 <i>SO</i> <sub>124</sub>	15.4	X	302.63961	296.72586	26.55198	6.04889	0.1587106	0.26086032	2.4258505	20	5 28.7	18.2
49219 1998 <i>SR</i> <sub>124</sub>	15.0	X	82.41015	338.09141	153.23184	1.84492	0.0064527	0.25244553	2.4794628	20	4 12.4	18.0
49220 1998 <i>SA</i> <sub>129</sub>	14.7	X	213.09207	251.21758	184.30821	15.25593	0.3040306	0.21248730	2.7812972	20	6 28.8	20.0
49221 1998 <i>SR</i> <sub>129</sub>	15.0	X	326.96397	25.77287	49.36517	3.29850	0.0628600	0.22985967	2.6393330	20	12 23.0	18.2
49222 1998 <i>SM</i> <sub>135</sub>	15.0	X	293.52949	5.08396	63.54774	3.27183	0.1896523	0.26921218	2.3754155	20	10 22.4	16.8
49223 1998 <i>SA</i> <sub>136</sub>	14.5	X	45.25626	260.91795	40.43068	6.70936	0.1626822	0.27223624	2.3577916	20	11 18.8	17.6
49224 1998 <i>SK</i> <sub>136</sub>	15.1	X	4.98539	36.84187	69.69394	5.59142	0.1505763	0.23720356	2.5845717	20	—	—
49225 1998 <i>SV</i> <sub>136</sub>	14.5	X	5.75748	311.15731	59.95295	8.19321	0.0598733	0.22779366	2.6552676	20	11 24.5	17.9
49226 1998 <i>SX</i> <sub>136</sub>	15.1	X	66.63317	275.47770	127.68953	5.22771	0.0897077	0.28434124	2.2903902	20	—	—
49227 1998 <i>SC</i> <sub>137</sub>	14.3	X	151.68776	224.52896	37.86430	15.30318	0.0714945	0.23350631	2.6117823	20	—	—
49228 1998 <i>SK</i> <sub>137</sub>	14.6	X	143.73812	157.09759	94.21420	5.70821	0.0836035	0.23071982	2.6327692	20	12 10.5	18.4
49229 1998 <i>SB</i> <sub>140</sub>	14.8	X	65.57727	264.19074	344.93919	6.06898	0.0933117	0.26524136	2.3990643	20	9 16.1	17.9
49230 1998 <i>SL</i> <sub>140</sub>	15.6	X	154.01947	62.25000	276.77027	2.20059	0.2668912	0.24359931	2.5391324	20	1 21.5	19.8
49231 1998 <i>ST</i> <sub>140</sub>	15.9	X	295.24465	83.36439	318.52952	1.79784	0.1835962	0.26650975	2.3914464	20	9 11.6	17.9
49232 1998 <i>SB</i> <sub>143</sub>	15.1	X	154.36927	200.32675	267.81256	5.40905	0.1011900	0.25619431	2.4552162	20	6 23.2	18.6
49233 1998 <i>SE</i> <sub>145</sub>	15.4	X	165.52715	142.36303	178.95818	4.04592	0.1413104	0.24227758	2.5483587	20	1 2.8	19.2
49234 1998 <i>SL</i> <sub>146</sub>	14.4	X	176.25252	29.93029	193.21808	12.53575	0.0694145	0.22953782	2.6417997	20	12 11.4	18.4
49235 1998 <i>SZ</i> <sub>146</sub>	14.9	X	82.93459	313.30833	19.88802	12.72583	0.3147495	0.23446921	2.6046268	20	—	—
49236 1998 <i>SK</i> <sub>151</sub>	15.9	X	248.02507	84.59908	32.40005	2.82258	0.1615347	0.27071954	2.3665898	20	10 17.7	18.8
49237 1998 <i>SW</i> <sub>153</sub>	15.3	X	148.36237	11.99344	137.02520	7.56071	0.1821489	0.26241659	2.4162499	20	8 13.1	19.1
49238 1998 <i>SE</i> <sub>157</sub>	15.9	X	307.83442	304.39225	32.67387	1.61821	0.1210500	0.26259939	2.4151285	20	7 5.8	18.4
49239 1998 <i>SE</i> <sub>164</sub>	13.3	X	26.48325	245.71552	42.32604	14.24400	0.2247724	0.22127195	2.7071884	20	10 4.1	16.5
49240 1998 <i>TF</i> <sub>164</sub>	14.4	X	289.49775	342.78578	49.55482	11.69955	0.0408247	0.21874481	2.7279990	20	9 7.5	18.2
49241 1998 <i>TQ</i> <sub>3</sub>	14.0	X	302.78712	2.57793	34.58129	13.78892	0.2031647	0.26680246	2.3896969	20	9 25.5	16.1
49242 1998 <i>TD</i> <sub>5</sub>	14.6	X	198.02189	333.81410	80.68269	4.33045	0.1272103	0.25495825	2.4631451	20	5 29.7	18.4
49243 1998 <i>TE</i> <sub>5</sub>	14.8	X	180.37866	254.80890	70.24530	5.52943	0.0209400	0.24213750	2.5493415	20	1 15.1	18.2
49244 1998 <i>TG</i> <sub>5</sub>	14.5	X	77.18896	29.39492	59.41453	7.53441	0.1734531	0.24269195	2.5454572	20	3 7.7	17.5
49245 1998 <i>TS</i> <sub>5</sub>	14.4	X	33.87923	345.41976	50.31258	14.61356	0.1561074	0.23241987	2.6199151	20	—	—
49246 1998 <i>TF</i> <sub>6</sub>	14.7	X	229.28658	343.01383	68.49986	3.07161	0.1415538	0.25823892	2.4422395	20	6 27.1	18.3
49247 1998 <i>TL</i> <sub>6</sub>	15.8	X	22.50154	339.81663	121.77704	7.77615	0.1769521	0.23641010	2.5903515	20	—	—
49248 1998 <i>TX</i> <sub>7</sub>	15.8	X	142.99357	346.98385	170.86336	1.20606	0.1235644	0.26235527	2.4166265	20	8 17.5	19.5
49249 1998 <i>TV</i> <sub>13</sub>	15.3	X	176.42680	152.30222	200.69269	2.04101	0.1654470	0.24620629	2.5211767	20	2 21.3	19.2
49250 1998 <i>TD</i> <sub>15</sub>	15.0	X	122.01059	164.25081	216.40520	14.10638	0.0942089	0.24176787	2.5519392	20	1 19.1	18.8
49251 1998 <i>TR</i> <sub>17</sub>	15.5	X	67.25121	170.34143	181.97389	1.33208	0.1109523	0.23192482	2.6236419	20	—	—
49252 1998 <i>TR</i> <sub>18</sub>	15.5	X	130.95372	99.03540	203.45365	3.84816	0.1783420	0.23620242	2.5918697	20	—	—
49253 1998 <i>TF</i> <sub>21</sub>	14.8	X	284.60559	129.15764	22.90815	4.56993	0.0399217	0.23316814	2.6143070	20	—	—
49254 1998 <i>TQ</i> <sub>25</sub>	15.6	X	45.52898	80.46142	232.06428	2.36860	0.0708609	0.22417509	2.6837650	20	11 3.3	19.1
49255 1998 <i>TJ</i> <sub>29</sub>	15.9	X	197.63836	195.10120	238.52604	1.72315	0.1766554	0.25637148	2.4540848	20	6 21.3	19.6
49256 1998 <i>TA</i> <sub>31</sub>	14.2	X	352.95808	126.45030	14.04896	4.61611	0.1944636	0.23732360	2.5837000	20	—	—
49257 1998 <i>TJ</i> <sub>31</sub>	14.9	X	40.51713	350.53337	26.08781	5.65068	0.1011909	0.23238059	2.6202103	20	—	—
49258 1998 <i>TM</i> <sub>32</sub>	14.8	X	13.13738	343.07314	297.65377	1.30202	0.1117639	0.26286525	2.4134998	20	8 13.8	17.2
49259 1998 <i>TF</i> <sub>33</sub>	14.6	X	317.79770	328.07209	190.36324	6.17257	0.0352692	0.28364940	2.2941130	20	—	—
49260 1998 <i>TU</i> <sub>33</sub>	15.3	X	117.54065	278.39029	79.70985	4.06990	0.2143852	0.23977487	2.5660608	20	1 6.5	18.7
49261 1998 <i>TW</i> <sub>33</sub>	15.4	X	172.74097	134.75141	198.98812	13.58948	0.1865857	0.24433819	2.5340109	20	1 24.6	19.7
49262 1998 <i>TY</i> <sub>34</sub>	15.2	X	238.68615	250.89272	181.21174	2.28237	0.1902906	0.26143899	2.4222696	20	7 29.5	18.8
49263 1998 <i>TJ</i> <sub>36</sub>	15.1	X	89.15022	138.03041	211.60160	15.49995	0.1844418	0.23660632	2.5889191	20	—	—
49264 1998 <i>UC</i> <sub>36</sub>	14.8	X	267.08015	222.31520	244.14677	24.61064	0.2529427	0.27067712	2.3668370	20	10 9.8	17.8
49265 1998 <i>UM</i> <sub>3</sub>	15.9	X	341.20633	176.42499	197.60477	0.82616	0.2247597	0.27270808	2.3550712	20	11 21.1	17.4
49266 1998 <i>UV</i> <sub>5</sub>	15.7	X	26.22133	45.40759	100.27837	4.11149	0.1226015	0.24405144	2.5359955	20	2 17.4	18.2
49267 1998 <i>UU</i> <sub>6</sub>	13.7	X	179.13875	300.45649	64.22847	14.25122	0.2245248	0.24358496	2.5392321	20	3 19.6	18.3
49268 1998 <i>UV</i> <sub>7</sub>	14.7	X	314.56898	8.42125	45.84583	14.69434	0.1585874	0.22396448	2.6854472	20	11 2.5	17.3
49269 1998 <i>UW</i> <sub>7</sub>	14.5	X	62.45660	295.04205	170.14330	7.80829	0.1150486	0.24269035	2.5454684	20	2 21.3	17.2
49270 1998 <i>UB</i> <sub>9</sub>	15.3	X	323.25834	234.60913	18.55795	2.06231	0.0401122	0.23004837	2.6378896	20	—	—
49271 1998 <i>UG</i> <sub>15</sub>	14.5	X	170.59103	103.76842	113.95731	7.51173	0.0550381	0.27669027	2.3324202	20	12 10.1	17.6
49272 1998 Bryce Canyon	14.5	X	359.38507	114.60480	308.37799	12.45149	0.2174939	0.23055460	2.6340268			



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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49281 1998 UX <sub>22</sub>	15.1 <sup>m</sup>	X	64.71249	354.51414	61.70699	3.21941	0.1243506	0.23732501	2.5836899	20	—	—
49282 1998 UA <sub>24</sub>	15.5	X	325.62922	343.02186	84.41025	6.84125	0.1955636	0.27289779	2.3539796	20	—	—
49283 1998 UG <sub>29</sub>	14.6	X	358.07804	82.14913	161.06097	6.98142	0.0796689	0.25365375	2.4715829	20	5 19.9	17.4
49284 1998 US <sub>29</sub>	14.7	X	85.33588	37.51588	70.30420	10.73025	0.2036104	0.24476567	2.5310597	20	4 19.7	18.0
49285 1998 UT <sub>29</sub>	14.9	X	139.69301	189.94936	152.52796	7.94258	0.1423858	0.23989802	2.5651825	20	1 2.3	18.6
49286 1998 UC <sub>30</sub>	14.8	X	298.82125	317.90854	158.37336	7.55466	0.2327423	0.22659443	2.6646279	20	12 24.9	17.2
49287 1998 US <sub>31</sub>	14.2	X	82.22917	264.49294	68.15033	3.92862	0.0826022	0.22924379	2.6440581	20	—	—
49288 1998 UD <sub>33</sub>	15.2	X	70.98872	123.15544	260.90678	5.53904	0.1017384	0.28288823	2.2982264	20	—	—
49289 1998 UH <sub>40</sub>	15.5	X	44.88574	67.56498	354.50394	4.05942	0.2819411	0.23618651	2.5919860	20	—	—
49290 1998 UV <sub>41</sub>	15.3	X	267.82571	276.80493	100.21406	2.73829	0.2094246	0.26093201	2.4254062	20	6 16.7	18.5
49291 1998 VJ	14.5	X	344.20544	26.98690	65.71744	15.38743	0.1639633	0.22975795	2.6401120	20	—	—
49292 1998 VA <sub>1</sub>	15.0	X	41.01773	33.59138	50.59690	14.68198	0.1567041	0.23757713	2.5818616	20	—	—
49293 1998 VK <sub>1</sub>	14.6	X	128.71855	326.90189	41.17156	14.48408	0.1792083	0.24161485	2.5530166	20	1 31.6	18.5
49294 1998 VG <sub>2</sub>	15.4	X	359.54899	342.96627	18.67777	3.10167	0.2748201	0.27411966	2.3469793	20	12 18.6	17.6
49295 1998 VJ <sub>2</sub>	14.7	X	216.93493	251.51827	38.37662	7.05619	0.1363085	0.24297199	2.5435010	20	1 14.7	18.8
49296 1998 VD <sub>3</sub>	15.1	X	272.08440	300.58524	231.93836	11.82238	0.1140063	0.23182378	2.6244042	20	—	—
49297 1998 VY <sub>4</sub>	15.0	X	204.48459	133.02679	319.60425	1.44666	0.1364485	0.25776602	2.4452257	20	7 25.8	18.6
49298 1998 VS <sub>5</sub>	14.7	X	282.99593	95.13643	26.92137	22.39942	0.0188659	0.22852611	2.6495909	20	12 19.9	18.7
49299 1998 VU <sub>5</sub>	14.5	X	51.81462	178.17063	318.23485	3.47464	0.0735139	0.24529174	2.5274395	20	3 13.3	17.3
49300 1998 VZ <sub>5</sub>	14.8	X	165.89939	257.96179	77.74218	7.27368	0.1356508	0.28461595	2.2889162	20	1 15.5	18.0
49301 1998 VD <sub>6</sub>	14.5	X	230.87514	243.44730	50.76572	10.45715	0.0950493	0.24378545	2.5378398	20	2 6.1	18.4
49302 1998 VN <sub>7</sub>	15.2	X	168.29042	133.47091	345.36431	3.96028	0.1444316	0.25842587	2.4410615	20	7 23.9	18.9
49303 1998 VN <sub>9</sub>	14.5	X	147.78161	239.40913	34.77127	12.80689	0.1478798	0.23394288	2.6085319	20	—	—
49304 1998 VT <sub>9</sub>	15.2	X	209.56523	89.30267	38.75705	2.87473	0.1123624	0.26547822	2.3976371	20	9 20.9	18.4
49305 1998 VQ <sub>13</sub>	15.8	X	22.38772	108.13403	309.19919	1.83331	0.1851149	0.23299805	2.6155791	20	—	—
49306 1998 VS <sub>13</sub>	15.1	X	288.15470	280.69377	29.81669	11.70775	0.2242581	0.25700098	2.4500758	20	4 11.1	18.2
49307 1998 VJ <sub>15</sub>	15.2	X	141.76564	123.68427	226.24017	5.92465	0.1179136	0.24129760	2.5552538	20	1 9.9	18.9
49308 1998 VV <sub>15</sub>	14.8	X	282.40295	41.87086	198.86449	5.88184	0.0805550	0.24476454	2.5310674	20	1 22.7	18.3
49309 1998 VB <sub>16</sub>	14.7	X	235.22378	327.13530	129.46942	2.85305	0.1711546	0.26375105	2.4080930	20	8 31.8	17.9
49310 1998 VD <sub>17</sub>	14.0	X	305.97440	237.16841	212.81810	21.44186	0.0903139	0.22710870	2.6606038	20	12 8.8	17.4
49311 1998 VZ <sub>17</sub>	16.1	X	15.31561	35.13380	17.36010	4.51157	0.2401197	0.23149323	2.6269019	20	—	—
49312 1998 VA <sub>18</sub>	14.9	X	9.46281	265.75360	235.88328	12.71401	0.1580402	0.24010068	2.5637389	20	1 5.9	17.7
49313 1998 VM <sub>18</sub>	13.6	X	345.72852	3.91034	242.41570	13.29264	0.0848289	0.25309833	2.4751975	20	4 28.7	16.5
49314 1998 VN <sub>19</sub>	15.1	X	197.68761	39.37469	69.86506	6.93395	0.1686877	0.25992373	2.4316745	20	8 10.0	18.9
49315 1998 VP <sub>21</sub>	15.8	X	79.10957	26.80803	2.65386	3.78789	0.1985093	0.23742071	2.5829955	20	—	—
49316 1998 VX <sub>23</sub>	14.9	X	274.94681	64.87172	58.90981	6.02746	0.1859683	0.27128867	2.3632787	20	12 7.8	16.8
49317 1998 VN <sub>24</sub>	13.6	X	316.95604	4.40403	65.81317	14.34872	0.1548421	0.22583434	2.6706034	20	11 29.7	16.1
49318 1998 VE <sub>25</sub>	15.6	X	139.05750	296.79109	69.81006	2.95306	0.2056581	0.24309889	2.5426158	20	2 8.3	19.5
49319 1998 VT <sub>25</sub>	15.2	X	5.50529	302.37555	47.47367	2.68311	0.2256368	0.22463683	2.6800861	20	11 17.6	17.8
49320 1998 VJ <sub>26</sub>	14.9	X	265.87663	57.99636	300.73392	1.56247	0.1848642	0.25816399	2.4427120	20	5 23.1	18.1
49321 1998 VY <sub>28</sub>	15.5	X	108.71810	52.72486	333.22345	2.55742	0.2858351	0.24091786	2.5579382	20	2 10.0	19.1
49322 1998 VN <sub>29</sub>	14.6	X	133.77370	168.44141	242.59479	10.76885	0.0557519	0.24549870	2.5260188	20	3 5.7	18.3
49323 1998 VN <sub>30</sub>	14.7	X	21.84917	94.53023	264.88412	6.09885	0.1755297	0.27201142	2.3590906	20	12 30.9	17.5
49324 1998 VX <sub>30</sub>	14.5	X	103.98695	168.52386	252.40594	13.51922	0.1453246	0.24291656	2.5438879	20	2 21.5	18.1
49325 1998 VK <sub>31</sub>	14.3	X	1.51789	19.27431	248.94785	8.19459	0.0830697	0.25417137	2.4682262	20	6 30.2	16.9
49326 1998 VL <sub>31</sub>	14.1	X	19.49682	82.10461	73.77441	14.48162	0.1358969	0.24018186	2.5631612	20	2 26.4	17.0
49327 1998 VZ <sub>33</sub>	15.7	X	3.35497	192.80448	181.85097	3.62267	0.1057600	0.22471833	2.6794380	20	12 1.3	18.9
49328 1998 VL <sub>35</sub>	14.0	X	115.78991	115.80025	266.59989	11.24427	0.1671119	0.23591109	2.5940030	20	1 25.9	17.6
49329 1998 VQ <sub>35</sub>	15.2	X	80.03522	123.85751	233.50623	3.77289	0.0940429	0.23216659	2.6218202	20	—	—
49330 1998 VE <sub>36</sub>	15.9	X	322.16068	248.42249	145.74401	2.73709	0.2011064	0.22253547	2.6969313	20	10 18.0	18.2
49331 1998 VZ <sub>37</sub>	14.5	X	295.37207	108.04802	54.55325	13.59389	0.1264706	0.23368798	2.6104285	20	—	—
49332 1998 VC <sub>44</sub>	14.5	X	198.94607	218.08551	175.90199	4.30349	0.1415273	0.25138900	2.4864050	20	5 4.5	18.3
49333 1998 VP <sub>45</sub>	14.5	X	237.93774	201.68192	41.68200	6.00307	0.1550244	0.23904402	2.5712884	20	—	—
49334 1998 VU <sub>45</sub>	15.5	X	5.89049	205.64391	169.72970	3.97555	0.2622496	0.27265374	2.3553841	20	—	—
49335 1998 VV <sub>45</sub>	14.5	X	0.64304	297.52553	68.08198	15.73900	0.1443863	0.22469234	2.6796447	20	11 20.6	17.4
49336 1998 VC <sub>49</sub>	14.6	X	270.43996	230.19342	223.77176	21.05457	0.0372623	0.22302402	2.6929914	20	10 26.5	18.3
49337 1998 VN <sub>50</sub>	15.2	X	37.88235	164.31677	214.68938	14.19124	0.1144627	0.23059706	2.6337034	20	—	—
49338 1998 VR <sub>51</sub>	13.8	X	75.98110	241.45233	92.89909	15.14981	0.1962529	0.23175051	2.6249573	20	—	—
49339 1998 VH <sub>54</sub>	14.6	X	229.72156	147.09237	275.12188	11.51389	0.1527922	0.25870874	2.4392818	20	7 10.0	18.0
49340 1998 WG	15.4	X	164.84561	231.56189	101.11091	3.67470	0.2140144	0.24099769	2.5573733	20	1 22.2	19.4
49341 1998 WW <sub>2</sub>	15.5	X	65.99970	215.93308	57.62744	4.88426	0.1557229	0.22124573	2.7074022	20	10 22.8	19.3
49342 1998 WE <sub>3</sub>	14.7	X	262.60205	78.59634	338.90842	4.48888	0.0291029	0.21708782	2.7418630	20	8 29.8	18.1
49343 1998 WH <sub>3</sub>	14.6	X	70.75160	146.27439	271.93714	12.19780	0.1316767	0.23533633	2.5982249	20	1 5.3	17.4
49344 1998 WC <sub>4</sub>	14.9	X	281.30655	28.20740	7.18506	6.03607	0.0782478	0.21553750	2.7549951	20	8 20.5	18.4
49345 1998 WH <sub>4</sub>	13.5	X	310.59629	1.00328	72.44781	4.31178	0.0628601	0.22414985	2.6839665	20	11 24.9	16.8
49346 1998 WK <sub>4</sub>	15.1	X	327.55523	308.25301	73.33060	2.88664	0.2382509	0.22081281	2.7109398	20	10 10.4	17.1
49347 1998 WQ <sub>4</sub>	14.2	X	179.77009	187.00370	149.47778	17.54935	0.2772421	0.24532488	2.5272119	20	2 9.1	18.8
49348 1998 WO <sub>6</sub>	14.4	X	347.31990	351.95453	72.83334	19.43854	0.2128255	0.22668677	2.6639041	20	—	—
49349 1998 WW <sub>6</sub>	14.0	X	158.10083	33.59017	250.56069	14.26406	0.1179387	0.23027966	2.6361229	20	—	—
49350 Katheynix	14.6	X	311.13272	295.08447	76.10992	6.91777	0.0845263	0.26311822	2.4119526	20	9 10.9	17.2
49351 1998 WE <sub>9</sub>	13.0	X	149.08279	260.67093	102.31426	11.14517	0.0887165	0.18949581	3.0019467	20	2 9.7	17.6
49352 1998 WS <sub>9</sub>	14.0	X	96.12594	222.36236	69.23402	6.78291	0.0987007	0.27221113	2.3579366	20	12 19.3	17.3
49353 1998 WY <sub>9</sub>	14.6	X	130.07945	143.12837	210.65877	4.55437	0.1271500	0.23894038	2.5720319	20	1 3.3	18.1
49354 1998 WP <sub>11</sub>	13.7	X	105.78024	237.48288	70.38962	14.65420	0.1581637	0.23094726	2.6310404	20	—	—
49355 1998 WH <sub>12</sub>	15.3	X	302.82716	134.								

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49361 1998 <i>WN</i> <sub>15</sub>	14.8	X	241.39911	325.81156	114.08048	5.14123	0.1125194	0.21601653	2.7509206	20	8 20.4	18.6
49362 1998 <i>WV</i> <sub>16</sub>	14.3	X	309.84510	240.02818	226.34752	4.68866	0.2472780	0.22625238	2.6673128	20	—	—
49363 1998 <i>WZ</i> <sub>16</sub>	14.4	X	324.02189	297.96547	79.59285	3.05555	0.0830371	0.21981273	2.7191562	20	10 1.3	17.5
49364 1998 <i>WG</i> <sub>17</sub>	14.8	X	190.64164	117.68552	173.31485	0.40111	0.1486272	0.23843387	2.5756732	20	—	—
49365 1998 <i>WR</i> <sub>18</sub>	13.8	X	91.88351	18.71924	255.09787	6.73322	0.0976814	0.22274808	2.6952150	20	11 12.2	17.8
49366 1998 <i>WY</i> <sub>18</sub>	15.1	X	297.99940	177.34509	259.03631	2.04898	0.0559664	0.22328839	2.6908653	20	11 9.7	18.3
49367 1998 <i>WK</i> <sub>19</sub>	13.0	X	87.81188	164.14579	277.90072	12.90238	0.1234531	0.23834814	2.5762908	20	2 24.8	16.5
49368 1998 <i>WN</i> <sub>19</sub>	14.1	X	118.51304	124.86709	279.67853	11.84138	0.2623104	0.23917373	2.5703587	20	3 4.9	18.2
49369 1998 <i>WO</i> <sub>19</sub>	15.0	X	97.55264	215.54786	246.38623	11.11029	0.2013262	0.24106607	2.5568897	20	4 20.5	18.7
49370 1998 <i>WS</i> <sub>21</sub>	14.9	X	28.72430	163.51357	276.75419	1.93996	0.1315332	0.23483164	2.6019462	20	—	—
49371 1998 <i>WZ</i> <sub>21</sub>	14.5	X	13.72784	229.01824	162.67412	1.00011	0.0189921	0.22780506	2.6551790	20	12 26.7	18.1
49372 1998 <i>WL</i> <sub>30</sub>	15.0	X	298.47428	251.88765	234.29332	11.89842	0.1161233	0.22913266	2.6449129	20	—	—
49373 1998 <i>WO</i> <sub>35</sub>	15.4	X	313.51058	304.78716	112.40965	3.78789	0.1008829	0.21830011	2.7317026	20	11 6.2	18.6
49374 1998 <i>WD</i> <sub>36</sub>	15.3	X	86.26567	223.05022	57.06813	3.85315	0.0377840	0.22460497	2.6803395	20	11 8.7	18.8
49375 1998 <i>WV</i> <sub>36</sub>	16.4	X	122.26679	260.20776	44.88975	5.43494	0.2274318	0.23506076	2.6002551	20	—	—
49376 1998 <i>WB</i> <sub>41</sub>	14.8	X	114.74034	263.65304	67.63600	13.86371	0.1377605	0.23512015	2.5998172	20	—	—
49377 1998 <i>WP</i> <sub>41</sub>	14.5	X	145.25296	264.61905	239.08965	7.87306	0.0696367	0.21106818	2.7937500	20	7 24.2	18.7
49378 1998 <i>XU</i> <sub>2</sub>	14.2	X	14.02780	40.48234	341.29435	12.06695	0.1755291	0.22549111	2.6733127	20	—	—
49379 1998 <i>XF</i> <sub>3</sub>	14.6	X	125.66305	106.05639	322.70198	9.87756	0.1459259	0.24422979	2.5347607	20	3 30.8	18.5
49380 1998 <i>XU</i> <sub>4</sub>	14.2	X	191.36245	41.65731	42.26291	2.48549	0.0405228	0.20655978	2.8342547	20	7 2.5	18.2
49381 1998 <i>XX</i> <sub>4</sub>	13.3	X	80.74047	314.44068	78.55200	13.41917	0.1395911	0.18805351	3.0172764	20	—	—
49382 1998 <i>Lynnokamoto</i>	14.6	X	353.08897	187.43085	242.89371	11.06914	0.1641958	0.22699665	2.6614792	20	—	—
49383 1998 <i>XP</i> <sub>6</sub>	15.1	X	252.78437	121.33997	74.40838	4.90492	0.0511104	0.23248450	2.6194295	20	—	—
49384 1998 <i>Hubertnaudot</i>	14.6	X	7.53084	80.85516	55.86127	12.81699	0.1389656	0.23472047	2.6027677	20	1 1.4	17.6
49385 1998 <i>XA</i> <sub>12</sub>	13.4	X	10.94458	89.48565	274.95377	20.67853	0.3138143	0.27104067	2.3647201	20	—	—
49386 1998 <i>XH</i> <sub>12</sub>	14.3	X	340.34780	129.46787	69.28285	4.88474	0.1171195	0.24267002	2.5456106	20	2 13.5	17.2
49387 1998 <i>XH</i> <sub>16</sub>	14.6	X	17.15909	328.87256	64.73823	13.12960	0.3009220	0.22811767	2.6527527	20	—	—
49388 1998 <i>XR</i> <sub>20</sub>	14.3	X	153.73357	204.65847	232.56045	1.03398	0.0648121	0.19967094	2.8990751	20	5 10.9	18.7
49389 1998 <i>XS</i> <sub>20</sub>	12.9	X	114.13529	338.76711	289.96620	15.83423	0.2498842	0.21660933	2.7458993	20	12 4.8	17.9
49390 1998 <i>XO</i> <sub>21</sub>	14.7	X	250.81233	51.70651	287.57471	4.82641	0.0985689	0.20014440	2.8945013	20	4 20.8	19.1
49391 1998 <i>XH</i> <sub>25</sub>	14.9	X	164.09295	128.40280	85.64463	6.67066	0.0865444	0.22309665	2.6924068	20	11 15.8	19.0
49392 1998 <i>XD</i> <sub>26</sub>	14.3	X	221.08713	98.42361	37.68772	8.55287	0.1062881	0.21196188	2.7858916	20	10 8.9	18.3
49393 1998 <i>XC</i> <sub>28</sub>	14.3	X	196.09950	302.34554	32.48551	13.99848	0.2137148	0.24537922	2.5268387	20	2 25.0	18.8
49394 1998 <i>XT</i> <sub>29</sub>	14.5	X	328.86063	173.69031	280.97779	20.96486	0.0488863	0.22832542	2.6511433	20	—	—
49395 1998 <i>XW</i> <sub>32</sub>	14.2	X	147.91446	93.40228	279.20709	11.97378	0.2015354	0.24288505	2.5441079	20	2 17.6	18.4
49396 1998 <i>XG</i> <sub>40</sub>	14.2	X	184.60724	42.03258	47.16662	10.03127	0.0809549	0.25325377	2.4741846	20	7 1.9	17.9
49397 1998 <i>XU</i> <sub>40</sub>	14.1	X	351.15576	34.71369	69.86145	13.45481	0.1529412	0.23003250	2.6380109	20	—	—
49398 1998 <i>XO</i> <sub>41</sub>	14.2	X	212.55441	94.42182	9.75383	7.37602	0.1855280	0.21202531	2.7853359	20	8 13.7	18.7
49399 1998 <i>XK</i> <sub>44</sub>	14.9	X	257.67932	98.89873	37.53838	7.75061	0.1953036	0.22070903	2.7117896	20	11 9.6	18.2
49400 1998 <i>XS</i> <sub>44</sub>	14.3	X	28.77301	104.55192	40.50489	14.67190	0.1056896	0.23889246	2.5723758	20	2 29.3	17.4
49401 1998 <i>XT</i> <sub>44</sub>	14.4	X	339.74115	130.95043	333.27022	11.00581	0.1375974	0.22839483	2.6506062	20	—	—
49402 1998 <i>XZ</i> <sub>44</sub>	14.2	X	267.77953	66.57042	341.17504	6.42015	0.0874766	0.21311456	2.7758371	20	8 15.4	17.9
49403 1998 <i>XE</i> <sub>45</sub>	14.0	X	324.02033	1.72626	72.07782	14.70626	0.1606497	0.22369660	2.6875907	20	12 17.4	16.6
49404 1998 <i>XN</i> <sub>45</sub>	14.3	X	312.98276	316.08756	52.99437	3.37079	0.0917463	0.21429319	2.7656495	20	8 30.9	17.5
49405 1998 <i>XW</i> <sub>46</sub>	14.9	X	71.13322	78.81921	340.51965	3.53451	0.1475908	0.23554038	2.5967241	20	1 10.8	17.8
49406 1998 <i>XP</i> <sub>47</sub>	13.8	X	248.96479	69.76389	68.79811	11.07082	0.0562197	0.22063444	2.7124007	20	11 22.7	17.4
49407 1998 <i>XC</i> <sub>50</sub>	14.1	X	161.00775	138.99891	61.98715	9.35155	0.0706251	0.21648473	2.7469528	20	10 27.9	18.3
49408 1998 <i>XL</i> <sub>50</sub>	14.3	X	340.27281	315.55196	75.78776	3.57419	0.0819419	0.21968088	2.7202441	20	11 13.9	17.5
49409 1998 <i>XS</i> <sub>50</sub>	14.0	X	119.66638	87.91462	291.08668	8.98393	0.1367126	0.19078395	2.9884190	20	1 30.2	18.4
49410 1998 <i>XR</i> <sub>51</sub>	13.8	X	64.60757	346.55514	15.07744	8.96691	0.0414511	0.18022239	3.1040608	20	—	—
49411 1998 <i>XT</i> <sub>51</sub>	13.5	X	171.33433	170.30414	34.51105	11.75452	0.1220956	0.17153595	3.2079871	20	10 31.7	18.5
49412 1998 <i>XV</i> <sub>55</sub>	14.5	X	270.79436	177.36590	240.55152	9.11001	0.1193810	0.21581170	2.7526610	20	8 22.9	18.3
49413 1998 <i>XZ</i> <sub>62</sub>	14.4	X	107.89187	102.97367	298.46719	10.06296	0.2399547	0.24127762	2.5553949	20	2 18.9	18.0
49414 1998 <i>XT</i> <sub>65</sub>	15.3	X	42.19056	356.63276	65.28008	6.48603	0.1932103	0.23427380	2.6060749	20	—	—
49415 1998 <i>XE</i> <sub>68</sub>	14.6	X	323.40578	287.72552	62.31182	9.74590	0.1808825	0.21660636	2.7459245	20	8 17.8	17.5
49416 1998 <i>XG</i> <sub>73</sub>	14.2	X	286.37833	186.42832	299.50467	12.26511	0.1168213	0.22389243	2.6860233	20	12 23.9	17.4
49417 1998 <i>XM</i> <sub>73</sub>	13.9	X	84.33671	76.35132	33.50659	7.85263	0.1314653	0.24217615	2.5490702	20	4 6.7	17.0
49418 1998 <i>XP</i> <sub>73</sub>	14.1	X	26.78494	121.69007	22.53241	7.87538	0.1549349	0.23822563	2.5771739	20	2 20.1	16.7
49419 1998 <i>XJ</i> <sub>74</sub>	14.3	X	94.42128	22.24502	51.40105	13.45690	0.1532172	0.23959420	2.5673506	20	3 13.1	17.9
49420 1998 <i>XK</i> <sub>74</sub>	14.2	X	312.82284	332.38973	63.84506	14.03781	0.1524953	0.21755375	2.7379468	20	10 9.6	17.4
49421 1998 <i>XC</i> <sub>77</sub>	14.0	X	165.76202	280.30932	230.23159	2.55162	0.0333072	0.21107771	2.7936659	20	8 26.7	18.0
49422 1998 <i>XM</i> <sub>77</sub>	14.5	X	96.79970	232.19957	162.04332	4.74653	0.1159706	0.23822596	2.5771715	20	1 10.6	17.8
49423 1998 <i>XR</i> <sub>77</sub>	15.0	X	124.02775	292.31284	82.78565	6.34873	0.2799634	0.24111660	2.5565324	20	2 13.5	18.9
49424 1998 <i>XC</i> <sub>80</sub>	14.0	X	172.10034	320.98304	165.90523	8.28552	0.1729873	0.20980188	2.8049802	20	8 1.7	18.7
49425 1998 <i>XE</i> <sub>80</sub>	14.7	X	299.36862	246.51820	198.18861	11.01556	0.1710044	0.22266155	2.6959132	20	11 15.3	17.5
49426 1998 <i>XP</i> <sub>80</sub>	14.4	X	359.69636	118.90557	228.71789	13.34496	0.3245747	0.22249240	2.6972794	20	11 19.9	16.7
49427 1998 <i>XE</i> <sub>86</sub>	14.3	X	162.45966	135.30203	235.67779	12.72228	0.1861042	0.24346256	2.5400831	20	2 27.1	18.7
49428 1998 <i>XL</i> <sub>94</sub>	13.6	X	212.98244	308.05493	211.58870	7.95304	0.2047295	0.21625004	2.7489400	20	10 17.2	18.0
49429 1998 <i>XZ</i> <sub>95</sub>	15.0	X	107.19431	243.19863	129.87881	4.14054	0.3401660	0.23728586	2.5839740	20	1 30.8	18.7
49430 1998 <i>XZ</i> <sub>96</sub>	13.9	X	245.08726	254.59051	115.49826	13.66254	0.1125141	0.20296741	2.8675996	20	5 27.4	18.3
49431 1998 <i>XB</i> <sub>99</sub>	13.7	X	82.24115	181.58271	232.30136	12.26319	0.1267110	0.23854783	2.5748528	20	1 13.9	16.9
49432 1998 <i>YD</i>	13.3	X	260.83543	222.14839	287.86938	20.88971	0.0440471	0.22218232	2.699			

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49441 Scerbanenco	15.7 <sup>m</sup>	X	114.68853	203.48582	228.88861	5.55580	0.1810079	0.24204881	2.5499642	20	3 30.8	19.4
49442 1998 YD <sub>7</sub>	13.2	X	140.08283	79.13566	21.65850	1.67203	0.1152631	0.20208133	2.8759760	20	5 29.2	17.6
49443 Marcobondi	14.8	X	315.12452	261.31950	235.08687	10.81803	0.2369846	0.22804672	2.6533029	20	—	—
49444 1998 YO <sub>7</sub>	15.5	X	311.90154	330.18889	87.74099	11.26024	0.2550639	0.22237583	2.6982219	20	10 30.5	17.8
49445 1998 YS <sub>8</sub>	14.7	X	12.85286	247.58033	158.37645	14.38321	0.0848698	0.22940672	2.6428061	20	—	—
49446 1998 YO <sub>9</sub>	14.1	X	101.01938	116.61095	257.45846	14.50321	0.1260422	0.23660327	2.5889414	20	—	—
49447 1998 YW <sub>11</sub>	13.6	X	141.04283	268.09477	310.29108	8.34453	0.0873236	0.17068091	3.2186919	20	10 15.0	18.7
49448 Macocha	14.6	X	26.50460	130.92691	45.81400	9.33470	0.2121717	0.24324127	2.5416235	20	4 10.7	16.7
49449 1998 YN <sub>13</sub>	14.8	X	224.91663	1.65662	105.94538	10.38474	0.1169132	0.21226539	2.7832353	20	9 7.9	19.0
49450 1998 YD <sub>14</sub>	14.6	X	139.15760	173.87272	90.06935	8.31818	0.0801018	0.22746896	2.6577938	20	12 20.3	18.5
49451 1998 YH <sub>18</sub>	15.2	X	151.24421	108.48206	201.18645	4.34857	0.1140647	0.23522215	2.5990656	20	—	—
49452 1998 YV <sub>18</sub>	15.0	X	238.81210	290.93157	102.58280	4.69365	0.1011536	0.21050981	2.7986880	20	6 17.4	19.1
49453 1998 YD <sub>19</sub>	14.9	X	267.26425	7.45066	87.71714	11.01003	0.0480209	0.22098052	2.7095680	20	10 27.7	18.6
49454 1998 YH <sub>22</sub>	15.6	X	325.07029	247.34989	207.14983	5.48582	0.1345678	0.27071573	2.3666119	20	—	—
49455 1998 YO <sub>22</sub>	14.3	X	309.00057	304.92309	124.61652	11.98280	0.2443716	0.22066076	2.7121850	20	11 10.4	16.8
49456 1998 YD <sub>28</sub>	14.2	X	133.90094	105.20716	290.95436	10.42965	0.1985670	0.23984576	2.5655551	20	3 4.1	18.3
49457 1998 YC <sub>30</sub>	14.9	X	280.96966	321.52494	140.68153	13.04170	0.1309396	0.22312880	2.6921482	20	11 15.1	18.3
49458 1999 AH <sub>2</sub>	14.5	X	86.56099	30.32102	20.96774	4.00536	0.1138704	0.23505606	2.6002897	20	1 20.3	17.7
49459 1999 AJ <sub>2</sub>	13.9	X	249.38716	162.33530	78.42497	9.99694	0.0465625	0.18483093	3.0522466	20	—	—
49460 1999 AT <sub>4</sub>	13.4	X	133.27729	231.72908	103.94357	10.51403	0.0492700	0.18174871	3.0866579	20	—	—
49461 1999 AK <sub>5</sub>	13.1	X	93.13851	51.92359	17.50833	11.03277	0.1142253	0.19066512	2.9896606	20	3 2.3	17.3
49462 1999 AS <sub>6</sub>	14.4	X	336.59900	312.90349	121.58422	16.81276	0.1889724	0.22354701	2.6887895	20	—	—
49463 1999 AZ <sub>6</sub>	13.1	X	326.25379	279.93303	290.84722	8.39287	0.0345211	0.19051520	2.9912288	20	2 21.8	17.2
49464 1999 AO <sub>7</sub>	13.9	X	255.60257	137.32760	118.13121	12.16512	0.0472071	0.18949967	3.0019060	20	1 23.6	18.1
49465 1999 AT <sub>8</sub>	15.6	X	313.75751	186.51614	189.01777	4.53769	0.1256575	0.21870271	2.7283491	20	9 5.1	18.7
49466 1999 AX <sub>8</sub>	14.2	X	335.76460	228.51250	129.99705	10.32499	0.1704037	0.21469004	2.7622403	20	9 25.9	17.0
49467 1999 AC <sub>16</sub>	14.5	X	274.48293	122.47356	114.66317	8.79643	0.1099183	0.21422776	2.7662126	20	9 19.5	18.1
49468 1999 AE <sub>24</sub>	14.4	X	51.22129	289.04762	112.99847	12.76575	0.3004433	0.22878616	2.6475828	20	—	—
49469 Emilianomazzoni	14.0	X	70.21558	198.74064	120.72934	7.93086	0.0902860	0.17169146	3.2060498	20	12 4.8	18.7
49470 1999 AZ <sub>26</sub>	14.3	X	236.37804	145.29578	306.08758	5.10416	0.0705493	0.21102222	2.7941556	20	8 31.7	18.2
49471 1999 AX <sub>27</sub>	14.4	X	185.70398	242.38485	131.49741	12.86492	0.0774614	0.19478099	2.9473950	20	4 2.5	19.0
49472 1999 AR <sub>30</sub>	14.5	X	124.95023	222.14078	162.33481	0.51462	0.1253918	0.19013729	2.9951909	20	2 11.4	18.7
49473 1999 AT <sub>32</sub>	15.0	X	244.88334	278.56345	38.84656	1.22220	0.1341175	0.19555488	2.9396138	20	3 17.9	19.5
49474 1999 BL	13.8	X	264.78210	226.45607	325.93874	12.95977	0.1465692	0.17854759	3.1234415	20	—	—
49475 1999 BH <sub>3</sub>	14.8	X	30.34883	87.53065	16.52691	7.78862	0.1557225	0.23310607	2.6147710	20	—	—
49476 1999 BA <sub>6</sub>	14.8	X	296.28713	127.29242	291.48150	5.51266	0.1143869	0.26085859	2.4258613	20	10 14.6	17.5
49477 1999 BA <sub>8</sub>	15.0	X	252.39406	208.34169	227.76947	1.78267	0.1480751	0.25767988	2.4457705	20	8 26.6	18.2
49478 1999 BY <sub>8</sub>	13.9	X	38.15327	308.90593	111.94652	2.73621	0.1141273	0.18174567	3.0866923	20	—	—
49479 1999 BH <sub>9</sub>	15.3	X	355.26552	109.14739	297.64796	5.40143	0.1044855	0.26673411	2.3901052	20	—	—
49480 1999 BX <sub>9</sub>	14.1	X	284.61478	174.77306	313.64991	8.32103	0.0852545	0.17302965	3.1894982	20	12 11.2	18.4
49481 Gisellarubini	14.3	X	231.51451	203.10074	40.53770	1.16701	0.1231535	0.18056307	3.1001552	20	—	—
49482 1999 BV <sub>12</sub>	14.0	X	340.02997	211.72470	288.16594	6.43795	0.1625890	0.18300371	3.0725299	20	—	—
49483 1999 BP <sub>13</sub>	13.0	X	324.21703	141.81120	338.54959	6.63337	0.2329240	0.22327780	2.6909504	20	—	—
49484 1999 BP <sub>15</sub>	14.0	X	335.20902	15.85793	107.44831	12.79988	0.1330544	0.22706009	2.6609835	20	—	—
49485 1999 BL <sub>16</sub>	14.0	X	347.51624	186.94506	357.60088	12.15815	0.1763607	0.19070460	2.9892479	20	2 10.2	17.6
49486 1999 BU <sub>18</sub>	14.9	X	52.35250	323.93979	58.36342	8.54568	0.1748971	0.22883921	2.6471736	20	—	—
49487 1999 BM <sub>22</sub>	14.4	X	344.87555	325.94966	110.15133	13.61425	0.1177391	0.22570013	2.6716620	20	—	—
49488 1999 BZ <sub>23</sub>	14.1	X	337.14892	304.34166	267.31420	10.40240	0.1357233	0.23835315	2.5762547	20	2 16.8	17.3
49489 1999 BQ <sub>24</sub>	14.2	X	113.55015	124.03566	152.73865	6.34467	0.0673714	0.21902463	2.7256751	20	12 7.8	18.2
49490 1999 BX <sub>24</sub>	13.5	X	205.54468	252.92372	264.50174	8.89164	0.1735035	0.21425623	2.7659675	20	10 6.4	18.1
49491 1999 BW <sub>25</sub>	13.4	X	40.27460	218.25507	164.84591	10.32698	0.1652540	0.22543220	2.6737784	20	—	—
49492 1999 BC <sub>26</sub>	14.8	X	328.42698	242.07781	238.42167	4.11030	0.1058273	0.17874727	3.1211150	20	—	—
49493 1999 CD	14.9	X	117.43357	0.83664	54.52237	6.25954	0.1702890	0.28445012	2.2898057	20	3 11.7	17.9
49494 1999 CJ <sub>1</sub>	14.4	X	277.11985	334.75546	106.38132	10.26151	0.1298721	0.21388408	2.7691750	20	10 10.8	18.0
49495 1999 CU <sub>1</sub>	14.7	X	40.52332	53.62196	36.25309	5.42699	0.1883350	0.23106622	2.6301373	20	—	—
49496 1999 CC <sub>2</sub>	14.0	X	234.03373	64.38381	65.18592	4.64925	0.0422017	0.21214931	2.7842504	20	10 24.2	17.8
49497 1999 CM <sub>3</sub>	13.7	X	300.51921	110.63026	7.41334	8.70327	0.0409599	0.17398408	3.1778230	20	12 24.5	18.2
49498 1999 CO <sub>5</sub>	14.3	X	343.09609	104.31131	22.85344	11.63017	0.2072657	0.22861320	2.6489180	20	—	—
49499 1999 CJ <sub>8</sub>	13.4	X	291.64261	148.37744	132.40571	10.03377	0.0543702	0.19072233	2.9890627	20	4 9.5	17.7
49500 Ishitoshi	14.0	X	343.13691	83.42277	14.84156	14.23693	0.2973584	0.17875430	3.1210331	20	—	—
49501 Basso	14.1	X	18.00736	312.83400	136.39915	1.04983	0.1539229	0.18180746	3.0859928	20	—	—
49502 1999 CK <sub>14</sub>	13.6	X	257.64696	339.62704	315.97127	9.99916	0.0774153	0.19152114	2.9807456	20	3 7.2	18.1
49503 1999 CX <sub>16</sub>	13.6	X	58.43170	101.69594	20.11716	10.06370	0.0529026	0.19256909	2.9699217	20	3 12.2	17.5
49504 1999 CA <sub>17</sub>	15.0	X	143.22396	356.73334	95.04700	5.49500	0.1344436	0.24634692	2.5202171	20	5 23.3	18.7
49505 1999 CF <sub>19</sub>	13.9	X	60.41839	165.31528	323.33866	9.97786	0.0548488	0.19280701	2.9674779	20	3 16.8	17.9
49506 1999 CE <sub>20</sub>	14.8	X	177.56833	75.57128	65.88521	9.74324	0.0928790	0.20899715	2.8121759	20	9 2.2	19.2
49507 1999 CF <sub>20</sub>	14.2	X	39.51369	100.55664	2.66605	12.69930	0.1265854	0.23379523	2.6096301	20	1 17.4	17.2
49508 1999 CG <sub>22</sub>	14.5	X	38.12373	106.57931	35.98623	10.02896	0.0765243	0.19103319	2.9858192	20	3 13.4	18.4
49509 1999 CM <sub>22</sub>	14.4	X	49.39472	334.30022	96.21853	10.928						

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49521 1999 CC <sub>36</sub>	14.8	X	32.49888	12.67610	45.05754	7.96260	0.3494209	0.22993089	2.6387880	20	—	—
49522 1999 CK <sub>37</sub>	14.5	X	322.36591	328.10392	113.18104	5.36227	0.1459843	0.17426249	3.1744374	20	12 7.7	18.1
49523 1999 CL <sub>38</sub>	13.5	X	193.31149	331.72987	331.41693	12.46348	0.1264606	0.18259225	3.0771440	20	1 17.4	18.5
49524 1999 CJ <sub>39</sub>	13.9	X	304.99834	96.14785	348.99463	8.65265	0.0606366	0.17111662	3.2132259	20	11 15.6	18.4
49525 1999 CO <sub>40</sub>	13.9	X	202.29651	161.90851	98.19768	14.42407	0.1393980	0.22413211	2.6841081	20	—	—
49526 1999 CP <sub>40</sub>	13.4	X	229.18389	239.07220	2.04202	16.54326	0.1950121	0.17773122	3.1329988	20	—	—
49527 1999 CR <sub>44</sub>	14.6	X	343.94011	12.20171	94.85034	4.52303	0.1722071	0.22564709	2.6720806	20	—	—
49528 1999 CN <sub>46</sub>	14.2	X	259.60603	49.86678	97.27587	3.12500	0.1179171	0.17196953	3.2025927	20	11 26.9	18.7
49529 1999 CF <sub>46</sub>	13.8	X	91.83645	199.29100	149.73745	9.51953	0.0230315	0.17566098	3.1575665	20	—	—
49530 1999 CC <sub>50</sub>	14.3	X	271.07774	160.23580	352.57096	12.35735	0.1388576	0.17374123	3.1807836	20	12 15.3	18.7
49531 1999 CR <sub>51</sub>	13.4	X	35.04510	44.48822	133.76412	11.20758	0.0269632	0.19233442	2.9723370	20	4 20.6	17.6
49532 1999 CJ <sub>54</sub>	13.6	X	315.22940	276.44068	155.01800	8.55609	0.0494345	0.16923041	3.2370577	20	11 18.1	18.0
49533 1999 CN <sub>54</sub>	13.3	X	103.30379	236.46342	156.82238	11.14586	0.1214667	0.18410857	3.060251	20	1 27.4	17.6
49534 1999 CO <sub>56</sub>	14.6	X	295.95378	14.19564	79.24074	4.58615	0.1655588	0.21722631	2.7406975	20	11 19.1	17.3
49535 1999 CB <sub>57</sub>	14.3	X	0.13569	349.79755	121.57729	3.49435	0.1543317	0.18070091	3.0985784	20	—	—
49536 1999 CS <sub>60</sub>	15.0	X	39.98037	245.94376	207.67897	1.84080	0.1388800	0.23154769	2.6264900	20	1 1.6	17.8
49537 1999 CJ <sub>60</sub>	14.4	X	349.10378	315.91973	165.96059	4.40023	0.146821	0.18202585	3.0835240	20	—	—
49538 1999 CH <sub>61</sub>	14.2	X	272.07963	350.08792	182.88270	5.19224	0.1068616	0.17711560	3.1402545	20	—	—
49539 1999 CQ <sub>62</sub>	14.4	X	333.31225	289.10073	149.80651	12.97841	0.1605684	0.22246504	2.6975005	20	—	—
49540 1999 CU <sub>63</sub>	13.6	X	250.69947	286.51338	291.27257	12.49434	0.1092992	0.17936132	3.1139875	20	—	—
49541 1999 CO <sub>66</sub>	13.9	X	2.25132	220.06729	293.10631	8.76101	0.0341037	0.18657781	3.0331651	20	1 31.2	18.1
49542 1999 CT <sub>70</sub>	14.0	X	234.46402	279.05175	225.88941	4.38152	0.0641507	0.16924264	3.2369017	20	10 31.3	18.6
49543 1999 CD <sub>76</sub>	15.1	X	316.68786	269.79492	162.90969	7.33425	0.2543539	0.21978439	2.7193899	20	11 30.8	17.3
49544 1999 CA <sub>77</sub>	14.1	X	354.53129	325.85130	170.35245	11.53947	0.0549563	0.18269171	3.0760271	20	—	—
49545 1999 CJ <sub>77</sub>	14.1	X	336.29661	240.98368	292.76183	9.32034	0.0407795	0.18455754	3.0552601	20	1 23.0	18.1
49546 1999 CG <sub>79</sub>	14.2	X	272.48360	261.97695	158.64450	7.95902	0.2171231	0.21131289	2.7915927	20	8 16.7	18.0
49547 1999 CY <sub>82</sub>	13.8	X	10.84733	56.38888	356.96823	8.38438	0.1714062	0.18043738	3.1015947	20	—	—
49548 1999 CP <sub>83</sub>	13.7	X	289.59485	88.29403	85.15160	4.28459	0.2321560	0.22641691	2.6660204	20	—	—
49549 1999 CL <sub>84</sub>	14.6	X	316.26066	169.61449	355.48193	1.04123	0.2277719	0.18238246	3.0795032	20	—	—
49550 1999 CO <sub>84</sub>	14.3	X	71.76942	139.08336	14.82029	5.97372	0.1872928	0.24298691	2.5433969	20	5 25.9	17.5
49551 1999 CV <sub>84</sub>	14.5	X	217.38902	84.25006	71.52183	9.94382	0.1032706	0.21607123	2.7504563	20	10 31.3	18.5
49552 1999 CF <sub>85</sub>	14.7	X	30.45406	316.71952	111.55759	4.75175	0.1527796	0.22919807	2.6444098	20	—	—
49553 1999 CB <sub>87</sub>	14.4	X	203.47085	124.38996	351.92794	7.31650	0.1784056	0.20977897	2.8051844	20	8 19.7	18.9
49554 1999 CG <sub>87</sub>	14.8	X	307.06103	100.88394	348.82908	7.06989	0.1367749	0.22045277	2.7138906	20	12 5.8	17.9
49555 1999 CK <sub>88</sub>	14.5	X	305.71792	352.47173	87.69422	13.61646	0.1184137	0.21906454	2.7253440	20	11 24.6	17.7
49556 1999 CJ <sub>91</sub>	13.0	X	48.35112	55.14380	332.06008	17.68232	0.1310452	0.17882188	3.1202468	20	—	—
49557 1999 CQ <sub>91</sub>	14.0	X	13.94105	277.94086	138.87129	9.76245	0.0654697	0.17704056	3.1411418	20	—	—
49558 1999 CN <sub>92</sub>	14.2	X	63.99107	51.80250	63.87992	10.65825	0.1173960	0.19099884	2.9861771	20	3 22.9	18.2
49559 1999 CU <sub>92</sub>	14.7	X	303.81303	47.84906	57.97822	5.21753	0.0781554	0.22032541	2.7149364	20	12 25.4	18.0
49560 1999 CQ <sub>93</sub>	14.5	X	238.13795	247.25803	319.78701	0.83687	0.0488767	0.17671928	3.1449477	20	—	—
49561 1999 CA <sub>98</sub>	14.8	X	335.87500	75.84668	44.13413	2.71739	0.1756718	0.17939619	3.1135839	20	—	—
49562 1999 CF <sub>100</sub>	14.3	X	276.68225	282.96914	133.26419	9.69263	0.1511644	0.20992277	2.8039032	20	8 29.5	17.8
49563 1999 CQ <sub>100</sub>	13.7	X	191.60362	118.92587	113.63274	10.24074	0.0427017	0.17254531	3.1954641	20	12 28.9	18.3
49564 1999 CN <sub>103</sub>	14.0	X	290.94438	339.08681	247.41630	12.95651	0.0927420	0.23308937	2.6148959	20	1 13.8	17.8
49565 1999 CK <sub>104</sub>	14.5	X	2.26948	194.05012	269.10638	0.63339	0.1586945	0.18130662	3.0916734	20	—	—
49566 1999 CM <sub>106</sub>	13.7	X	50.15224	137.86302	274.71415	11.16581	0.1375799	0.22870454	2.6482127	20	—	—
49567 1999 CP <sub>107</sub>	14.1	X	48.05919	221.07513	191.25287	10.30595	0.0925630	0.18134497	3.0912375	20	—	—
49568 1999 CT <sub>107</sub>	13.4	X	129.03424	353.20660	305.79623	12.78858	0.1079382	0.17499135	3.1656167	20	—	—
49569 1999 CH <sub>109</sub>	14.0	X	78.35121	222.79067	201.64987	10.38046	0.0658018	0.18660098	3.0329140	20	1 23.9	18.2
49570 1999 CQ <sub>110</sub>	14.0	X	136.84620	215.62787	186.42934	10.16079	0.1137789	0.19126251	2.9834320	20	3 13.9	18.4
49571 1999 CA <sub>113</sub>	14.3	X	245.50581	5.20433	157.97647	21.98173	0.0192451	0.17219830	3.1997556	20	12 14.5	19.3
49572 1999 CE <sub>114</sub>	15.3	X	222.11716	291.77140	166.84225	6.61023	0.2434693	0.20961126	2.8066805	20	8 6.9	20.0
49573 1999 CB <sub>118</sub>	13.6	X	218.28520	268.34171	318.15286	13.42738	0.1147715	0.17330884	3.1860719	20	—	—
49574 1999 CO <sub>119</sub>	13.1	X	248.61277	161.57221	51.74516	18.39020	0.1595038	0.17761945	3.1343130	20	—	—
49575 1999 CX <sub>119</sub>	14.3	X	65.70893	26.78501	87.32638	14.87547	0.1131404	0.23714324	2.5850099	20	3 20.4	17.7
49576 1999 CN <sub>121</sub>	13.5	X	310.45831	99.87025	5.39586	21.87523	0.0424326	0.22252257	2.6970356	20	—	—
49577 1999 CB <sub>124</sub>	14.5	X	319.90725	31.17868	44.74872	13.18518	0.1125295	0.21958895	2.7210032	20	12 9.1	17.6
49578 1999 CD <sub>124</sub>	14.0	X	328.31151	106.17376	22.66090	14.54883	0.0634332	0.22616528	2.6679975	20	—	—
49579 1999 CL <sub>124</sub>	14.3	X	333.24873	145.77643	34.22961	15.59706	0.0363350	0.23285105	2.6166798	20	1 24.5	18.0
49580 1999 CL <sub>126</sub>	14.3	X	310.38279	26.72753	54.01639	13.75057	0.1363518	0.21815937	2.7328773	20	11 28.7	17.2
49581 1999 CO <sub>127</sub>	13.6	X	296.55742	57.21968	98.90687	18.89664	0.1445738	0.17680039	3.1439857	20	—	—
49582 1999 CB <sub>128</sub>	13.6	X	34.52294	5.67919	91.43706	14.65027	0.1458645	0.22971465	2.6404438	20	—	—
49583 1999 CU <sub>132</sub>	15.4	X	269.25876	338.74984	77.39424	3.69911	0.1712002	0.26335650	2.4104975	20	8 21.9	18.1
49584 1999 CE <sub>133</sub>	14.4	X	71.39788	81.66846	302.29680	0.42448	0.1919341	0.18156742	3.0887121	20	—	—
49585 1999 CO <sub>137</sub>	14.4	X	118.91573	96.32551	245.07266	0.46020	0.1504248	0.17941840	3.1133269	20	—	—
49586 1999 CD <sub>138</sub>	13.8	X	312.54741	292.09512	323.73054	6.18844	0.1619605	0.19058241	2.9905254	20	3 14.6	17.7
49587 1999 CL <sub>145</sub>	14.8	X	4.58568	113.93217	313.91401	1.75808	0.0916606	0.17509783	3.1643332	20	—	—
49588 1999 CJ <sub>149</sub>	15.0	X	108.36797	160.83688	254.18102	0.48641	0.1561024	0.18704459	3.0281168	20	3 4.7	19.3
49589 1999 CQ <sub>149</sub>	14.7	X	105.67546	316.00723	171.33532	2.04971	0.0853628	0.19426163	2.9526459	20	5 21.7	18.8
49590 1999 DZ <sub>1</sub>	13.5	X	215.33798	197.93417	122.28659	11.40019	0.0228154	0.18738384	3.0244608	20	2 29.1	17.9
49591 1999 DO <sub>2</sub>	12.5	X	273.12755	84.83943	46.23302	17.70343	0.1054055	0.17085808	3.2164666	20	11 23.9	16.9
49592 1999 DD <sub>7</sub>	13.8	X	171.07480	59.69463	2.29088	11.82954	0.0255799	0.19489730	2.9462222	20	5 5.9	18.2
49593 1999 DX <sub>7</sub>	13.3	X	139.69431	269.59590	148.16718	10.95585	0.0749568	0.19029771	2.9935074	20	4 5.5	17.8
49594 1999 EM <sub>13</sub>	14.2	X	55.30738	235.90211	147.49548	8.01041	0.2020711	0.17939627	3.1135829	20	—	—
49595 1999 FG <sub>1</sub>	13.8	X	348.24184	131.23569	195.1137							

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49601 1999 FG <sub>22</sub>	13.4	X	245.54538	32.90386	179.20706	10.72658	0.1852022	0.17543316	3.1602996	20	—	—
49602 1999 FH <sub>24</sub>	13.5	X	314.03393	272.38041	233.53010	5.44769	0.0860061	0.17509740	3.1643384	20	—	—
49603 1999 FC <sub>25</sub>	13.8	X	67.71630	34.58562	93.98929	4.23602	0.0459574	0.18765186	3.0215803	20	3 31.9	18.0
49604 1999 FP <sub>25</sub>	13.8	X	265.23118	346.95230	187.03529	5.11178	0.1099050	0.17192717	3.2031187	20	—	—
49605 1999 FE <sub>26</sub>	13.8	X	332.16766	233.41794	249.91188	3.97072	0.1429590	0.17544752	3.1601271	20	—	—
49606 1999 FU <sub>27</sub>	12.7	X	27.85136	10.56083	14.50220	27.23958	0.0606089	0.16815610	3.2508303	20	12 25.7	17.7
49607 1999 FC <sub>28</sub>	13.6	X	309.30315	310.69355	207.99687	8.36002	0.1096717	0.17570667	3.1570192	20	—	—
49608 1999 FX <sub>28</sub>	14.5	X	0.96288	52.27376	69.60346	1.89687	0.1514969	0.17887264	3.1196564	20	—	—
49609 1999 FO <sub>29</sub>	13.5	X	183.55529	312.66560	39.49070	10.93885	0.0498804	0.18367012	3.0650934	20	3 5.8	18.2
49610 1999 FY <sub>29</sub>	14.7	X	305.97586	293.08888	158.49017	6.49064	0.1238476	0.26099250	2.4250314	20	12 22.9	17.1
49611 1999 FV <sub>30</sub>	13.9	X	14.72224	261.79538	220.87697	4.66729	0.1367719	0.18021025	3.1042002	20	1 8.4	17.6
49612 1999 FA <sub>31</sub>	13.9	X	306.33474	143.88796	20.87802	23.59941	0.0904260	0.17570327	3.1570599	20	—	—
49613 1999 FS <sub>32</sub>	13.8	X	272.01537	34.70811	141.96032	1.97790	0.1515540	0.17242140	3.1969949	20	—	—
49614 1999 FB <sub>39</sub>	14.0	X	164.75815	121.85745	345.19389	19.23644	0.1412223	0.20075984	2.8885828	20	7 6.0	19.0
49615 1999 FW <sub>41</sub>	14.5	X	45.07895	287.44805	164.54814	4.33324	0.1510918	0.18419861	3.0592278	20	1 20.7	18.1
49616 1999 FY <sub>42</sub>	14.0	X	37.08152	88.37185	353.38064	13.50729	0.1248866	0.18163511	3.0879447	20	—	—
49617 1999 FJ <sub>43</sub>	13.8	X	64.01054	314.01103	147.31415	12.14258	0.0370129	0.18618718	3.0740661	20	2 19.1	18.0
49618 1999 FC <sub>44</sub>	14.0	X	41.91058	102.12760	354.18923	11.78661	0.0811282	0.18313808	3.0710268	20	1 21.0	18.1
49619 1999 FU <sub>46</sub>	14.4	X	19.57390	135.10421	17.00961	8.34110	0.2646066	0.18658709	3.0330645	20	2 27.9	17.0
49620 1999 FH <sub>51</sub>	13.5	X	116.22719	123.75129	329.46793	9.23371	0.0463074	0.19142978	2.9816938	20	4 11.2	17.8
49621 1999 GL	15.8	X	242.30180	161.58488	41.33089	3.18472	0.1362077	0.26636132	2.3923347	20	—	—
49622 1999 GO <sub>3</sub>	13.4	X	128.63678	131.42082	205.13060	8.75399	0.0712937	0.17453108	3.1711797	20	—	—
49623 1999 GB <sub>5</sub>	12.9	X	25.21339	23.87373	111.53799	12.66458	0.1719822	0.18529988	3.0470947	20	2 14.5	16.2
49624 1999 GR <sub>10</sub>	13.2	X	200.43195	88.87535	16.87150	11.96893	0.1452325	0.20262896	2.8707918	20	8 8.3	17.9
49625 1999 GS <sub>10</sub>	14.2	X	72.80060	53.16199	19.03700	8.24122	0.1529371	0.18219547	3.0816100	20	2 13.3	18.2
49626 1999 GL <sub>16</sub>	13.8	X	315.49104	329.48553	157.74248	6.73242	0.1269590	0.17272015	3.1933073	20	—	—
49627 1999 GP <sub>16</sub>	13.3	X	319.88536	122.66080	35.86409	13.04963	0.1096024	0.22560125	2.6724426	20	—	—
49628 1999 GV <sub>16</sub>	12.7	X	274.98670	216.57319	83.05970	10.98706	0.0612475	0.18969655	2.9998285	20	4 12.7	17.1
49629 1999 GF <sub>20</sub>	13.3	X	345.21303	114.11754	69.47369	12.26930	0.0959466	0.18237996	3.0795314	20	2 16.4	17.4
49630 1999 GB <sub>21</sub>	12.5	X	277.55500	124.19650	47.33091	24.72927	0.1181707	0.17232076	3.1982395	20	—	—
49631 1999 GA <sub>23</sub>	13.6	X	297.55779	100.30695	18.10765	10.71964	0.0836725	0.17127557	3.2112376	20	12 16.1	18.0
49632 1999 GV <sub>37</sub>	14.0	X	308.20951	65.66283	62.15290	10.46299	0.2168593	0.17498099	3.1657417	20	—	—
49633 1999 GC <sub>38</sub>	13.0	X	131.45153	288.50729	34.80451	17.09221	0.1470041	0.17324173	3.1868946	20	—	—
49634 1999 GS <sub>41</sub>	13.3	X	28.19080	284.61794	152.07094	12.09057	0.1332728	0.17684212	3.1434912	20	—	—
49635 1999 GA <sub>47</sub>	13.3	X	198.74087	344.72458	29.48030	10.18162	0.0916525	0.19064278	2.9898941	20	4 12.5	17.8
49636 1999 HJ <sub>1</sub>	14.0	X	347.89880	88.11585	201.48409	22.35009	0.2462922	0.28692361	2.2766269	20	7 5.3	16.1
49637 1999 HO <sub>8</sub>	13.8	X	339.53515	159.69941	345.37208	13.35647	0.1374080	0.22516354	2.6759049	20	—	—
49638 1999 HK <sub>9</sub>	13.6	X	78.76839	263.15640	210.16253	9.09188	0.0932707	0.18635437	3.0355892	20	3 30.3	17.8
49639 1999 JJ <sub>17</sub>	13.6	X	46.42271	4.99849	91.95712	14.58048	0.1877949	0.17666044	3.1456460	20	2 7.1	17.3
49640 1999 JH <sub>19</sub>	13.5	X	58.53185	124.98412	13.57395	4.31919	0.1256185	0.18643496	3.0347143	20	4 8.8	17.4
49641 1999 JX <sub>25</sub>	13.6	X	40.52181	65.55798	43.56377	14.82157	0.0973124	0.17923146	3.1154914	20	2 8.4	17.8
49642 1999 JK <sub>26</sub>	13.7	X	291.75652	120.88786	50.41423	12.21231	0.0544069	0.17237937	3.1975145	20	—	—
49643 1999 JH <sub>31</sub>	13.7	X	95.92267	239.17770	226.53087	10.06445	0.1000574	0.18564404	3.0433276	20	4 12.6	18.0
49644 1999 JJ <sub>33</sub>	13.5	X	59.50408	7.72180	43.48521	18.90936	0.1732731	0.17287801	3.1913631	20	—	—
49645 1999 JU <sub>34</sub>	14.2	X	65.62336	58.49592	33.93366	7.77430	0.1626895	0.22687245	2.6624505	20	2 23.0	17.2
49646 1999 JX <sub>34</sub>	14.0	X	184.69291	76.98616	40.69151	13.59819	0.1955690	0.19938916	2.9018059	20	8 6.7	19.1
49647 1999 JW <sub>37</sub>	13.4	X	53.17560	164.26589	244.75773	13.78862	0.0572000	0.17074199	3.2179243	20	—	—
49648 1999 JR <sub>45</sub>	13.8	X	301.98124	292.09799	222.86866	17.85928	0.1631236	0.17186992	3.2038300	20	—	—
49649 1999 JC <sub>46</sub>	14.7	X	286.05146	138.24569	191.69925	6.38159	0.1515456	0.28178588	2.3042162	20	5 15.9	17.4
49650 1999 JH <sub>61</sub>	12.8	X	297.42629	347.33680	225.44040	14.74926	0.1489537	0.17583178	3.1555215	20	1 6.5	17.6
49651 1999 JR <sub>66</sub>	12.4	X	272.03831	344.26013	53.80979	11.60941	0.0297638	0.15268012	3.4669511	20	8 14.9	17.5
49652 1999 JW <sub>81</sub>	14.1	X	344.05315	11.40451	69.24551	12.52164	0.0826542	0.26206807	2.4183917	20	—	—
49653 1999 JO <sub>85</sub>	13.8	X	279.36433	186.40867	109.84361	15.46728	0.0842978	0.23004530	2.6379130	20	4 10.3	17.7
49654 1999 JY <sub>85</sub>	13.4	X	350.20131	15.93585	71.36241	13.75428	0.0486151	0.17064569	3.2191348	20	—	—
49655 1999 JY <sub>87</sub>	14.0	X	125.38718	347.45388	88.74908	11.29039	0.0742537	0.18620645	3.0371966	20	4 14.6	18.6
49656 1999 JK <sub>92</sub>	13.5	X	42.42338	339.70205	112.04852	13.71908	0.1249690	0.17698669	3.1417791	20	1 16.5	17.2
49657 1999 JH <sub>99</sub>	13.5	X	67.45524	23.59213	113.12658	10.94403	0.2130414	0.18548707	3.0450444	20	5 7.6	17.6
49658 1999 JK <sub>105</sub>	13.2	X	357.29277	199.31636	238.32790	12.83469	0.1001297	0.17018282	3.2249691	20	—	—
49659 1999 JC <sub>118</sub>	13.7	X	328.26931	108.32134	52.12802	16.96698	0.1969771	0.17581014	3.1557804	20	—	—
49660 1999 JU <sub>130</sub>	14.0	X	177.25988	333.12935	87.52614	11.42909	0.1063677	0.19032663	2.9932042	20	5 19.2	18.8
49661 1999 JH <sub>138</sub>	13.3	X	325.98593	100.49292	54.57544	19.72848	0.2174201	0.17960828	3.1111323	20	—	—
49662 1999 KC <sub>3</sub>	12.6	X	313.05418	82.68255	57.97813	16.80217	0.1036903	0.17089445	3.2160101	20	—	—
49663 1999 LV <sub>4</sub>	13.2	X	336.66450	32.54067	102.55802	17.55364	0.1976216	0.17563933	3.1578261	20	—	—
49664 1999 MV	15.5	X	329.34278	56.28484	296.82858	22.85508	0.1284931	0.37890724	1.8913887	20	9 19.8	17.5
49665 1999 NL <sub>2</sub>	16.0	X	179.94044	264.51701	159.01242	22.85477	0.1125480	0.36834960	1.9273588	20	5 27.1	19.1
49666 1999 NZ <sub>57</sub>	15.4	X	103.69754	252.49947	250.39218	19.88382	0.0771917	0.37302531	1.9112193	20	6 8.3	17.2
49667 1999 OM <sub>2</sub>	14.2	X	29.19977	291.81042	281.72729	17.99361	0.0591011	0.36423130	1.9418598	20	5 23.2	16.0
49668 1999 OP <sub>2</sub>	15.3	X	227.65150	127.51329	303.18444	19.91895	0.0870612	0.36954704	1.9231931	20	8 3.8	17.2
49669 1999 RZ <sub>30</sub>	14.6	X	47.32943	254.53462	333.28908	17.93642	0.0596876	0.36934253	1.9239030	20	7 30.6	16.4
49670 1999 RZ <sub>33</sub>	16.5	X	240.60886	174.52567	187.42958	22.45892	0.0581619	0.36778368	1.9293355	20	5 13.3	18.9
49671 1999 RP <sub>46</sub>	13.1	X	269.48978	125.34466	291.34338	9.59055	0.1012241	0.18974482	2.9993197	20	8 20.4	17.2
49672 1999 RM <sub>103</sub>	14.9	X	258.45845	86.52161	287.21061	6.07778	0.1306983	0.27483566	2.3429013	20	6 11.8	17.8
49673 1999 RA <sub>215</sub>	7.7	X	314.27082	266.65767	132.22367	22.47290	0.1049609	0.00344939	43.3817929	20	9 9.6	23.8
49674 1999 SB <sub>5</sub>	14.6	X	213.14084	277.46215	67.01852	22.99673	0.1025508	0.35926946	1.9596981	20	3 23.2	17.8
49675 1999 SW <sub>27</sub>	14.7	X	79.41865	221.62780	268.04258	18						

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49681 1999 <i>TN</i> <sub>25</sub>	13.8	X	128.71277	84.00829	6.42605	3.34496	0.1104375	0.21527364	2.7572458	20	5 2.4	17.8
49682 1999 <i>TT</i> <sub>29</sub>	16.4	X	115.40460	249.90936	212.51315	1.99091	0.0184245	0.31369897	2.1451648	20	4 15.2	18.7
49683 1999 <i>TX</i> <sub>70</sub>	15.8	X	351.30667	125.23911	22.18203	4.23641	0.1096709	0.30007206	2.2096272	20	—	—
49684 1999 <i>TH</i> <sub>137</sub>	15.8	X	118.47445	325.59406	203.55337	5.28154	0.0886625	0.27370822	2.3493307	20	8 2.3	19.1
49685 1999 <i>TT</i> <sub>145</sub>	16.1	X	187.06559	249.09050	21.25370	5.32405	0.1040552	0.29912623	2.2142826	20	—	—
49686 1999 <i>TP</i> <sub>154</sub>	16.0	X	154.91593	336.34112	56.01799	7.30262	0.0626228	0.30797000	2.1716864	20	3 11.0	18.8
49687 1999 <i>TQ</i> <sub>178</sub>	16.1	X	237.70505	311.93787	269.54813	2.42179	0.0798706	0.29686344	2.2255204	20	—	—
49688 1999 <i>TO</i> <sub>198</sub>	15.2	X	264.30803	337.64192	210.40164	3.46138	0.1114822	0.30756811	2.1735777	20	2 21.1	17.8
49689 1999 <i>TM</i> <sub>200</sub>	15.7	X	77.24279	138.95404	323.97931	5.94090	0.1815795	0.29251789	2.2475072	20	—	—
49690 1999 <i>TB</i> <sub>212</sub>	15.8	X	302.12168	249.97170	357.76243	3.86289	0.1270835	0.30900034	2.1668561	20	2 12.3	18.2
49691 1999 <i>TJ</i> <sub>230</sub>	15.7	X	314.71161	50.35213	97.23336	5.72050	0.0938891	0.29638862	2.2278966	20	—	—
49692 1999 <i>UB</i> <sub>7</sub>	14.8	X	108.56015	90.80440	176.52535	4.55022	0.2113717	0.28132966	2.3067067	20	12 7.8	18.6
49693 1999 <i>UR</i> <sub>10</sub>	14.7	X	205.86430	66.20885	34.19335	22.87764	0.1236234	0.26948305	2.3738234	20	8 21.8	18.7
49694 1999 <i>US</i> <sub>41</sub>	15.2	X	43.74978	145.29346	205.58530	21.52109	0.2131470	0.28787366	2.2716152	20	—	—
49695 1999 <i>UF</i> <sub>42</sub>	15.5	X	352.28704	20.50134	105.90374	4.61356	0.1392639	0.29423253	2.2387671	20	—	—
49696 1999 <i>UW</i> <sub>42</sub>	15.5	X	245.16555	264.89314	256.82775	8.19102	0.0910948	0.28832203	2.2629595	20	12 30.7	17.9
49697 1999 <i>UK</i> <sub>52</sub>	15.4	X	56.03009	327.38610	132.30834	7.42472	0.0885353	0.30116907	2.2042583	20	1 19.7	17.5
49698 Váchal	15.6	X	244.98876	302.62366	74.26585	7.20832	0.0667526	0.26747657	2.3856802	20	6 7.7	18.7
49699 Hidetakasato	13.8	X	204.04933	100.78168	53.87215	23.27190	0.2742571	0.27616128	2.3353977	20	10 15.0	17.9
49700 Mather	15.4	X	297.93537	257.98436	4.46681	3.61535	0.0592085	0.30789315	2.1720477	20	3 8.9	17.8
49701 1999 <i>VZ</i> <sub>1</sub>	16.2	X	46.38013	215.53181	241.72729	1.05664	0.0916546	0.29987043	2.2106176	20	—	—
49702 Koikeda	14.8	X	204.85068	116.33014	64.62291	7.45512	0.1718156	0.28078403	2.3096940	20	11 19.1	17.8
49703 1999 <i>VT</i> <sub>12</sub>	15.4	X	36.92720	327.66628	62.48416	6.01075	0.1792041	0.29015046	2.2597160	20	—	—
49704 1999 <i>VR</i> <sub>15</sub>	16.2	X	244.84187	0.84593	303.20085	2.19891	0.0498641	0.30908890	2.1664422	20	2 25.0	18.8
49705 1999 <i>VC</i> <sub>19</sub>	15.0	X	157.85240	355.52439	259.62682	6.12662	0.0854918	0.28561328	2.2835847	20	—	—
49706 1999 <i>VB</i> <sub>21</sub>	14.4	X	206.45486	63.26406	84.65192	7.97671	0.1409022	0.27607830	2.3358657	20	10 15.2	17.8
49707 1999 <i>VZ</i> <sub>23</sub>	14.5	X	159.47608	6.50473	48.20320	5.15739	0.1209051	0.30877620	2.1679046	20	4 18.5	17.5
49708 1999 <i>VH</i> <sub>26</sub>	15.5	X	185.22218	297.34948	224.30537	1.60260	0.1542554	0.27616724	2.3353641	20	10 4.7	19.0
49709 1999 <i>VJ</i> <sub>26</sub>	15.7	X	253.67330	54.61267	62.90535	2.95209	0.1264924	0.28022704	2.3127536	20	11 4.1	18.2
49710 1999 <i>VE</i> <sub>27</sub>	15.3	X	113.73019	198.09077	57.19576	3.87840	0.1637832	0.28191299	2.3035235	20	11 25.7	18.9
49711 1999 <i>VB</i> <sub>29</sub>	15.9	X	149.00582	318.13326	357.20176	0.56950	0.1154827	0.29630780	2.2283017	20	—	—
49712 1999 <i>VP</i> <sub>29</sub>	15.6	X	197.51985	98.17944	47.11019	7.47527	0.0383649	0.27769804	2.3267738	20	10 11.3	18.5
49713 1999 <i>VB</i> <sub>34</sub>	16.2	X	13.30783	321.62736	224.68796	3.76151	0.0967063	0.30557493	2.1830193	20	3 11.9	18.3
49714 1999 <i>VP</i> <sub>34</sub>	13.6	X	219.20023	140.01513	248.78619	11.80638	0.1141441	0.21731142	2.7399818	20	5 18.9	17.8
49715 1999 <i>VZ</i> <sub>34</sub>	14.7	X	7.16538	191.14546	65.54912	4.21152	0.0734436	0.31479312	2.1401912	20	6 25.8	16.5
49716 1999 <i>VZ</i> <sub>35</sub>	15.0	X	118.27635	91.69977	60.66992	5.65415	0.1660081	0.26460717	2.4028960	20	7 19.5	18.7
49717 1999 <i>VR</i> <sub>36</sub>	14.7	X	93.89275	167.24245	71.90390	6.97689	0.1687010	0.27516487	2.3410322	20	10 19.8	18.2
49718 1999 <i>VP</i> <sub>39</sub>	15.9	X	131.91622	229.44248	67.88470	5.61628	0.1687848	0.29150442	2.2527135	20	—	—
49719 1999 <i>VE</i> <sub>50</sub>	15.2	X	109.72208	173.74382	306.19154	2.25979	0.0996027	0.31013341	2.1615752	20	5 15.7	17.7
49720 1999 <i>VS</i> <sub>52</sub>	15.0	X	205.73104	160.40488	233.52315	4.18952	0.1362255	0.31130724	2.1561381	20	5 8.7	18.1
49721 1999 <i>VX</i> <sub>52</sub>	14.8	X	298.05373	255.82131	246.09211	5.24856	0.1110122	0.28642572	2.2792644	20	—	—
49722 1999 <i>VS</i> <sub>63</sub>	15.2	X	311.09754	201.64496	42.74078	7.45205	0.0977105	0.26011033	2.4305113	20	3 5.3	18.2
49723 1999 <i>VX</i> <sub>64</sub>	15.5	X	269.35820	19.99180	215.13500	3.49172	0.1212623	0.30096427	2.2052581	20	—	—
49724 1999 <i>VQ</i> <sub>66</sub>	15.4	X	181.73184	157.62932	50.10172	4.62399	0.1080186	0.28447380	2.2896786	20	12 5.3	18.6
49725 1999 <i>VD</i> <sub>67</sub>	16.1	X	270.75759	68.49781	86.17816	2.19328	0.0973492	0.28824772	2.2696495	20	—	—
49726 1999 <i>VF</i> <sub>67</sub>	16.8	X	147.49266	121.89979	209.70011	1.71807	0.1140242	0.29854367	2.2171622	20	—	—
49727 1999 <i>VG</i> <sub>69</sub>	15.8	X	166.93320	14.24118	181.30329	2.14084	0.0832526	0.28189316	2.3036316	20	11 5.2	19.0
49728 1999 <i>VE</i> <sub>72</sub>	14.2	X	52.51339	278.18787	110.06086	15.54723	0.0494482	0.23743772	2.5828721	20	—	—
49729 1999 <i>VB</i> <sub>73</sub>	15.6	X	33.44609	129.56351	246.79871	6.14866	0.0317880	0.28598828	2.2815880	20	—	—
49730 1999 <i>VQ</i> <sub>78</sub>	16.2	X	19.37358	277.66446	357.66744	3.79525	0.0640778	0.32247447	2.1060685	20	8 19.9	18.0
49731 1999 <i>VR</i> <sub>80</sub>	15.2	X	146.14823	320.07138	177.86014	5.09899	0.1639506	0.26819049	2.3814445	20	7 26.1	19.0
49732 1999 <i>VX</i> <sub>85</sub>	16.4	X	306.58858	39.34480	252.49657	1.70761	0.1804176	0.31673038	2.1314553	20	4 11.4	18.3
49733 1999 <i>VB</i> <sub>103</sub>	15.8	X	263.98293	301.62244	45.01489	2.62245	0.0390252	0.21920216	2.7242032	20	5 25.9	19.4
49734 1999 <i>VR</i> <sub>106</sub>	16.2	X	118.02003	131.40948	174.52924	0.41753	0.1614316	0.29118550	2.2543580	20	—	—
49735 1999 <i>VX</i> <sub>106</sub>	15.7	X	44.62323	30.76428	158.50327	1.44171	0.1116718	0.26212461	2.4180439	20	5 22.4	18.1
49736 1999 <i>VU</i> <sub>109</sub>	15.9	X	143.24775	164.79510	57.62651	8.04914	0.0428026	0.28126821	2.3070426	20	11 14.4	18.9
49737 1999 <i>VS</i> <sub>112</sub>	15.2	X	344.57845	202.91921	63.86898	6.95244	0.2075744	0.31321242	2.1473857	20	5 17.8	16.2
49738 1999 <i>VP</i> <sub>113</sub>	15.9	X	23.40604	284.11196	314.45450	1.01914	0.0961914	0.31584880	2.1354196	20	6 29.5	17.7
49739 1999 <i>VZ</i> <sub>121</sub>	15.9	X	33.02117	159.65470	90.24190	3.16915	0.1767986	0.27103596	2.3647475	20	8 15.6	18.2
49740 1999 <i>VV</i> <sub>123</sub>	15.7	X	52.06801	39.91890	193.55805	2.92199	0.1752292	0.27033801	2.3688159	20	8 19.5	18.3
49741 1999 <i>VW</i> <sub>124</sub>	15.6	X	74.00208	337.43698	222.28414	4.34301	0.1679980	0.26709995	2.3879223	20	7 30.7	18.7
49742 1999 <i>VS</i> <sub>129</sub>	15.9	X	100.99739	54.87190	22.86613	5.29380	0.0260533	0.30616900	2.1801945	20	2 22.6	18.3
49743 1999 <i>VP</i> <sub>143</sub>	16.1	X	82.28626	56.90257	297.04041	2.02387	0.2020960	0.29407987	2.2395419	20	—	—
49744 1999 <i>VO</i> <sub>145</sub>	15.5	X	18.61762	164.48003	77.07555	3.37275	0.1715989	0.26833740	2.3805752	20	7 1.2	17.3
49745 1999 <i>VM</i> <sub>153</sub>	16.7	X	314.71967	76.47090	205.44544	3.06697	0.1791761	0.31415300	2.1430974	20	4 10.7	18.8
49746 1999 <i>VG</i> <sub>156</sub>	15.5	X	133.78723	175.13875	47.96942	3.82196	0.2067016	0.27982114	2.3149895	20	11 3.9	19.3
49747 1999 <i>VK</i> <sub>161</sub>	14.8	X	316.07299	176.93563	42.88208	12.03306	0.1650086	0.25579764	2.4577537	20	1 29.5	18.2
49748 1999 <i>VD</i> <sub>166</sub>	15.9	X	254.44523	24.83219	282.18096	1.55613	0.1798267	0.31129492	2.1561949	20	2 29.0	19.1
49749 1999 <i>VQ</i> <sub>166</sub>	16.2	X	109.46732	271.42580	28.12084	3.17704	0.1154068	0.28868869	2.2673376	20	—	—
49750 1999 <i>VV</i> <sub>167</sub>	15.5	X	2.16684	124.51381	352.37914	2.09068	0.1121978	0.24640261	2.5198374	20	—	—
49751 1999 <i>VL</i> <sub>168</sub>	15.8	X	192.60110	243.47356	34.64111	6.14831	0.1517603	0.29574179	2.2311439	20	—	—
49752 1999 <i>VP</i> <sub>169</sub>	16.3	X	17.97671	153.67497	26.09153	3.54957	0.0495365	0.30531997	2.1842344	20	3 14.9	18.3
49753 1999 <i>VO</i> <sub>172</sub>	15.2	X	331.94644	305.183								

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49761 1999 VU <sub>201</sub>	15.1	X	196.20540	162.92739	18.36582	7.35589	0.0336526	0.28263460	2.2996010	20	11 25.2	18.1
49762 1999 VQ <sub>207</sub>	15.9	X	178.26311	244.53739	236.03711	20.54778	0.0801889	0.37121934	1.9174129	20	8 5.9	18.8
49763 1999 VO <sub>210</sub>	15.5	X	255.95217	32.02257	115.95958	5.82351	0.0952735	0.28547245	2.2843356	20	12 27.3	17.7
49764 1999 VE <sub>212</sub>	16.1	X	44.53716	46.46303	179.86667	1.22469	0.1382460	0.26787850	2.3832932	20	7 21.8	18.5
49765 1999 VB <sub>217</sub>	15.5	X	216.97780	343.27857	158.24764	4.83109	0.0724272	0.27931236	2.3177999	20	10 26.6	18.5
49766 1999 WS	15.2	X	325.13793	280.19730	356.04557	1.35613	0.1230280	0.31385785	2.1444407	20	4 30.7	17.2
49767 1999 WK <sub>2</sub>	14.7	X	308.98100	161.12378	51.94790	7.86112	0.1036655	0.30308137	2.1949766	20	1 8.7	17.4
49768 1999 WP <sub>3</sub>	15.8	X	341.38714	158.07552	237.89285	6.61736	0.105621	0.28169354	2.3047198	20	12 11.8	18.0
49769 1999 WZ <sub>6</sub>	15.6	X	254.19453	53.84676	92.87536	5.73664	0.0631597	0.28402353	2.2920980	20	12 26.5	18.2
49770 1999 WC <sub>7</sub>	15.1	X	48.57918	198.11668	93.66437	5.84346	0.1843385	0.27895616	2.3197726	20	11 9.7	18.1
49771 1999 WP <sub>7</sub>	15.5	X	213.84854	17.16005	142.42745	1.86732	0.0811772	0.27976087	2.3153220	20	11 13.8	18.4
49772 1999 WT <sub>7</sub>	15.2	X	4.10399	91.09473	207.80513	2.87763	0.0837804	0.27233161	2.3572411	20	8 22.6	17.6
49773 1999 WJ <sub>8</sub>	15.1	X	105.75550	76.84544	130.70052	6.34903	0.0678595	0.27094322	2.3652871	20	9 10.3	18.2
49774 1999 WT <sub>9</sub>	15.4	X	292.44542	24.75224	74.86570	7.04910	0.1034950	0.28093394	2.3088723	20	12 17.4	17.4
49775 1999 WO <sub>13</sub>	15.2	X	30.30700	131.11695	165.20155	3.53555	0.1135809	0.27567607	2.3381373	20	10 9.1	17.7
49776 1999 WG <sub>18</sub>	15.2	X	88.08272	310.57867	67.98318	2.60279	0.0975523	0.29463404	2.2367328	20	—	—
49777 Cappi	15.6	X	96.48572	341.85046	237.59213	4.46738	0.0677995	0.27258743	2.3557661	20	9 10.9	18.7
49778 1999 XT	15.6	X	157.22266	288.35308	66.70600	7.27254	0.2133472	0.30662348	2.1780396	20	2 6.7	18.9
49779 1999 XG <sub>3</sub>	15.1	X	275.60121	27.56622	95.02870	6.71879	0.1079770	0.28434867	2.2903503	20	12 22.1	17.2
49780 1999 XG <sub>6</sub>	15.5	X	181.65121	199.10471	70.57686	4.18944	0.1476075	0.29263633	2.2469007	20	—	—
49781 1999 XT <sub>7</sub>	13.9	X	30.15189	79.88310	340.91644	12.58736	0.1830383	0.24163407	2.5528812	20	—	—
49782 1999 XK <sub>9</sub>	13.8	X	182.21181	284.20980	252.11784	21.73139	0.2769852	0.27464027	2.3440124	20	10 6.5	18.3
49783 1999 XW <sub>9</sub>	15.9	X	40.60216	231.90037	84.39159	3.10538	0.2281300	0.27638292	2.3341490	20	12 6.2	19.1
49784 1999 XA <sub>10</sub>	16.0	X	61.80223	306.63716	41.45901	1.10613	0.2265777	0.28523158	2.2856215	20	—	—
49785 1999 XB <sub>10</sub>	16.1	X	228.62642	202.42613	75.82501	2.30461	0.0833193	0.24623743	2.5209641	20	1 11.4	19.9
49786 1999 XE <sub>11</sub>	15.9	X	136.21868	0.95523	337.05798	4.59853	0.1345523	0.29817604	2.2189843	20	—	—
49787 1999 XY <sub>11</sub>	14.7	X	317.21910	209.11563	250.36504	24.41268	0.2301989	0.28662058	2.2782312	20	—	—
49788 1999 XA <sub>13</sub>	15.7	X	268.56605	319.55412	177.96634	6.50568	0.0559889	0.28510170	2.2863156	20	—	—
49789 1999 XY <sub>15</sub>	14.6	X	80.27303	23.69583	147.09340	3.12383	0.1244421	0.25698504	2.4501771	20	6 22.3	17.6
49790 1999 XF <sub>20</sub>	15.2	X	257.62957	42.56046	112.20230	2.51836	0.1684414	0.28705157	2.2759503	20	12 30.2	17.1
49791 1999 XF <sub>31</sub>	15.8	X	254.73408	290.21682	186.10724	6.12821	0.0547109	0.27961859	2.3161074	20	11 15.9	18.5
49792 1999 XO <sub>31</sub>	14.4	X	190.34100	39.79247	115.55325	12.24555	0.1690510	0.22329364	2.6908231	20	9 30.4	18.9
49793 1999 XX <sub>31</sub>	13.5	X	110.48481	42.22949	125.50491	11.27274	0.2543788	0.21076616	2.7964182	20	8 4.5	18.1
49794 1999 XH <sub>32</sub>	14.7	X	201.66200	158.47184	161.49824	2.29439	0.2033092	0.29759101	2.2218915	20	1 30.6	18.3
49795 1999 XJ <sub>32</sub>	15.1	X	321.57259	323.29736	150.10420	3.75987	0.1544348	0.28461391	2.2889271	20	—	—
49796 1999 XS <sub>32</sub>	15.5	X	351.91028	175.61466	258.20719	3.64509	0.1100574	0.28384817	2.2930419	20	—	—
49797 1999 XC <sub>33</sub>	14.7	X	287.43601	263.86848	300.67291	4.26570	0.1354930	0.28891133	2.2661727	20	—	—
49798 1999 XL <sub>33</sub>	15.4	X	30.46021	242.62308	285.52989	2.71780	0.1098217	0.29866394	2.2165670	20	3 17.8	17.3
49799 1999 XB <sub>34</sub>	15.2	X	296.58107	38.18128	90.94053	4.15525	0.0951109	0.28158702	2.3053010	20	—	—
49800 1999 XL <sub>34</sub>	15.5	X	203.99951	271.74702	178.96021	2.48656	0.1364287	0.26496320	2.4007430	20	7 22.4	19.0
49801 1999 XP <sub>34</sub>	14.6	X	256.68637	271.74750	295.58185	10.46756	0.2000665	0.23609779	2.5926353	20	—	—
49802 1999 XA <sub>35</sub>	14.6	X	311.55513	63.23691	108.14149	5.66582	0.2226708	0.23886636	2.5725632	20	—	—
49803 1999 XG <sub>35</sub>	16.3	X	163.60957	242.92068	85.22155	2.87482	0.1892930	0.29850031	2.2173769	20	1 5.9	19.4
49804 1999 XM <sub>35</sub>	15.7	X	195.39594	107.98439	80.91355	3.93201	0.1272702	0.28168906	2.3047442	20	11 24.3	18.9
49805 1999 XC <sub>36</sub>	14.7	X	286.89096	326.42325	107.77187	12.79710	0.1185857	0.27714874	2.3298472	20	11 3.5	17.3
49806 1999 XL <sub>38</sub>	15.2	X	8.79399	114.07067	43.98811	6.61439	0.2494141	0.24469936	2.5315169	20	1 21.8	17.3
49807 1999 XL <sub>39</sub>	15.4	X	197.01666	310.25171	193.01888	3.90137	0.1987902	0.27385682	2.3484808	20	9 18.7	18.9
49808 1999 XD <sub>40</sub>	14.7	X	237.06452	329.57909	105.85481	13.00714	0.1038361	0.26714708	2.3876414	20	8 16.7	17.9
49809 1999 XC <sub>42</sub>	15.0	X	140.49216	226.67136	42.61367	5.21648	0.1072686	0.28856641	2.2679781	20	—	—
49810 1999 XH <sub>43</sub>	15.2	X	176.81348	335.89188	247.96938	4.34112	0.1204613	0.28569877	2.2831291	20	12 20.1	18.2
49811 1999 XT <sub>44</sub>	15.4	X	150.64369	127.83414	50.52797	3.05715	0.1611556	0.27425276	2.3462199	20	9 24.1	19.0
49812 1999 XH <sub>46</sub>	16.1	X	313.48703	222.40609	251.35733	6.06543	0.0791540	0.28833087	2.2692131	20	—	—
49813 1999 XQ <sub>46</sub>	16.0	X	103.85493	277.00315	70.51834	4.12841	0.1892492	0.29504234	2.2346688	20	—	—
49814 1999 XL <sub>47</sub>	14.8	X	195.89175	266.15282	252.96695	5.19936	0.0546534	0.27871894	2.3210887	20	10 22.2	17.8
49815 1999 XK <sub>56</sub>	15.6	X	188.28289	117.95675	76.63448	4.90694	0.0679607	0.28158576	2.3053078	20	11 30.2	18.5
49816 1999 XZ <sub>57</sub>	15.0	X	256.40163	336.00674	220.40016	4.01763	0.0842729	0.29058637	2.2574557	20	—	—
49817 1999 XC <sub>58</sub>	15.6	X	124.82681	11.87246	224.44892	3.63482	0.1079064	0.27920995	2.3183667	20	11 11.0	18.9
49818 1999 XT <sub>58</sub>	15.7	X	227.28868	292.51891	212.69121	1.57400	0.1635641	0.27882148	2.3205195	20	10 29.7	17.2
49819 1999 XA <sub>59</sub>	15.6	X	354.38679	322.85468	255.39425	0.69619	0.1254101	0.30649387	2.1786536	20	3 24.9	17.5
49820 1999 XS <sub>64</sub>	14.8	X	197.55223	308.93030	259.53994	5.45185	0.1157012	0.28407002	2.2918479	20	12 24.1	17.8
49821 1999 XA <sub>70</sub>	16.2	X	336.10032	102.37947	111.22992	1.61157	0.0606724	0.30320870	2.1943620	20	2 24.5	18.3
49822 1999 XD <sub>70</sub>	15.4	X	236.59363	338.06293	183.71301	1.30095	0.1846514	0.28104000	2.3082914	20	12 1.2	18.0
49823 1999 XV <sub>71</sub>	15.4	X	147.85960	280.84227	236.36563	1.20372	0.1382384	0.26898425	2.3767572	20	8 22.2	18.9
49824 1999 XV <sub>73</sub>	15.0	X	179.34450	238.41698	87.89577	5.20571	0.0996498	0.29890081	2.2153958	20	1 12.2	17.8
49825 1999 XW <sub>73</sub>	15.5	X	231.39547	86.67501	85.69834	5.38356	0.0821069	0.28268331	2.2993369	20	12 25.1	18.2
49826 1999 XN <sub>74</sub>	15.3	X	89.79741	100.23628	127.71289	2.90922	0.0787575	0.27165640	2.3611455	20	9 18.9	18.3
49827 1999 XM <sub>77</sub>	15.3	X	105.14821	69.66207	235.29264	4.19673	0.1667480	0.28572043	2.2830137	20	—	—
49828 1999 XE <sub>82</sub>	16.8	X	217.74321	231.05041	91.85557	1.03198	0.0705819	0.30386340	2.1912089	20	2 18.4	19.7
49829 1999 XA <sub>83</sub>	15.4	X	241.25978	351.95528	262.44006	6.66674	0.0457981	0.29457274	2.2370431	20	—	—
49830 1999 XP <sub>83</sub>	15.3	X	150.94552	269.44913	238.52437	1.62610	0.1296846	0.26666798	2.3905003	20	8 12.7	18.8
49831 1999 XT <sub>83</sub>	15.7	X	162.57303	21.79200	118.95569	3.42663	0.1346866	0.26734411	2.3864681	20	8 16.4	19.3
49832 1999 XA <sub>84</sub>	14.4	X	200.10489	146.44623	111.95741	8.83381	0.1299245	0.28843627	2.2686603	20	—	—
49833 1999 XB <sub>84</sub>	15.7	X	187.38298	299.26642	116.22977	3.96531	0.1688316	0.26215114	2.4178808	20	5 20.5	19.6
49834 1999 XC <sub>84</sub>	14.7	X	105.63322	186.80178	102.08813	12.58678	0.1179360	0.28103710	2.3083072	20	12 28.7	17.9
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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49841 1999 <i>XN</i> <sub>90</sub>	15.6	X	24.06951	261.07431	262.25215	3.22561	0.1280274	0.29927667	2.2135405	20	2 25.7	17.4
49842 1999 <i>XS</i> <sub>90</sub>	15.0	X	248.18270	79.49067	101.47154	8.03877	0.0680371	0.28393146	2.2925934	20	—	—
49843 1999 <i>XP</i> <sub>92</sub>	16.1	X	218.98978	161.90507	192.31323	0.86648	0.1674540	0.30775283	2.1727079	20	3 28.9	19.4
49844 1999 <i>XR</i> <sub>92</sub>	16.1	X	1.57768	259.25938	135.10556	2.20142	0.1356159	0.28311526	2.2969975	20	—	—
49845 1999 <i>XA</i> <sub>93</sub>	15.8	X	218.54098	219.11386	123.42645	2.95436	0.2292436	0.30618512	2.1801180	20	3 13.2	19.2
49846 1999 <i>XE</i> <sub>93</sub>	14.0	X	238.70481	329.16146	277.57857	9.24651	0.1412159	0.24153384	2.5535874	20	—	—
49847 1999 <i>XO</i> <sub>93</sub>	15.2	X	318.01191	30.71843	83.59607	6.32796	0.1051405	0.28457161	2.2891540	20	—	—
49848 1999 <i>XG</i> <sub>94</sub>	14.6	X	1.12651	36.08639	296.48220	6.03554	0.1309017	0.27203648	2.3589458	20	10 10.8	17.0
49849 1999 <i>XK</i> <sub>94</sub>	14.3	X	237.64433	228.06731	100.75063	14.31566	0.1815131	0.25535697	2.4605805	20	3 23.9	18.5
49850 1999 <i>XM</i> <sub>94</sub>	15.3	X	248.28577	231.88179	270.16235	1.16125	0.1739561	0.27748735	2.3279515	20	11 21.4	17.8
49851 1999 <i>XM</i> <sub>95</sub>	15.0	X	303.41242	55.66542	22.04341	5.79780	0.1052355	0.28015938	2.3131259	20	12 3.6	17.3
49852 1999 <i>XA</i> <sub>96</sub>	15.1	X	168.52414	86.43647	10.45699	4.18268	0.2740418	0.26334309	2.4105793	20	6 25.4	19.3
49853 1999 <i>XG</i> <sub>96</sub>	14.8	X	179.97138	117.30565	52.26938	7.42948	0.0626102	0.27716930	2.3297320	20	10 19.2	17.8
49854 1999 <i>XB</i> <sub>98</sub>	15.2	X	58.42527	195.51989	264.09684	6.03325	0.0713794	0.29900768	2.2148679	20	1 22.1	17.3
49855 1999 <i>XV</i> <sub>98</sub>	15.1	X	144.71827	258.48276	312.64990	2.19333	0.2025743	0.27447875	2.3449319	20	10 27.5	19.1
49856 1999 <i>XC</i> <sub>99</sub>	14.8	X	166.08630	239.48648	292.17894	4.22642	0.1124398	0.27298713	2.3534660	20	9 27.9	18.4
49857 1999 <i>XD</i> <sub>99</sub>	14.9	X	32.38057	219.01707	28.01644	2.96918	0.0512901	0.26617771	2.3934347	20	7 20.4	17.5
49858 1999 <i>XZ</i> <sub>99</sub>	14.8	X	55.92591	96.46151	76.68824	6.67230	0.2970135	0.25549968	2.4596641	20	6 18.9	17.5
49859 1999 <i>XB</i> <sub>100</sub>	14.6	X	162.35657	259.55501	277.93068	3.91530	0.1738962	0.27190872	2.3596846	20	9 29.9	18.3
49860 1999 <i>XO</i> <sub>100</sub>	15.1	X	343.65227	3.30358	88.25155	8.07367	0.1520162	0.23865852	2.5740566	20	—	—
49861 1999 <i>XG</i> <sub>101</sub>	15.6	X	250.42631	108.02715	43.72107	2.49805	0.1105793	0.28048380	2.3113419	20	12 19.8	17.9
49862 1999 <i>XC</i> <sub>104</sub>	15.4	X	67.70773	350.33760	77.83267	9.15528	0.2229860	0.29554404	2.2321390	20	1 9.9	16.8
49863 1999 <i>XK</i> <sub>104</sub>	16.0	X	205.25688	57.05689	291.18417	2.04762	0.1686168	0.30692629	2.1766069	20	3 7.4	19.3
49864 1999 <i>XS</i> <sub>104</sub>	14.6	X	28.25918	112.92109	56.14375	5.29419	0.0607537	0.30150242	2.2026332	20	3 18.5	16.8
49865 1999 <i>XF</i> <sub>108</sub>	15.9	X	87.15968	11.05555	97.60248	3.23470	0.1487188	0.25763447	2.4460579	20	4 10.9	18.9
49866 1999 <i>XG</i> <sub>111</sub>	14.2	X	179.55770	113.97803	49.77598	13.51141	0.1151980	0.22245824	2.6975555	20	10 3.7	18.5
49867 1999 <i>XL</i> <sub>111</sub>	15.1	X	284.12910	352.52893	34.35154	10.45449	0.2225072	0.27056918	2.3674664	20	7 26.9	17.9
49868 1999 <i>XF</i> <sub>112</sub>	15.8	X	251.03627	254.00687	307.25469	1.12362	0.1711311	0.28908691	2.2652550	20	—	—
49869 1999 <i>XG</i> <sub>115</sub>	16.0	X	141.38271	103.20340	250.91642	5.55886	0.1356545	0.30119773	2.2041184	20	1 7.5	18.7
49870 1999 <i>XK</i> <sub>118</sub>	14.9	X	193.91187	285.63992	298.09775	2.88516	0.1136355	0.28776019	2.2722123	20	—	—
49871 1999 <i>XY</i> <sub>118</sub>	14.2	X	306.82987	185.58130	258.70013	3.52972	0.1185234	0.28382393	2.2931724	20	12 22.5	16.2
49872 1999 <i>XT</i> <sub>124</sub>	16.1	X	243.39047	306.84145	4.26565	5.42869	0.1880397	0.30911917	2.1663008	20	2 25.6	19.3
49873 1999 <i>XZ</i> <sub>124</sub>	15.1	X	123.58858	237.39472	22.71474	6.95151	0.0851380	0.28394135	2.2925402	20	12 9.9	18.4
49874 1999 <i>XW</i> <sub>129</sub>	15.7	X	186.63082	255.14542	22.79178	7.09436	0.1781005	0.29379917	2.2409681	20	—	—
49875 1999 <i>XR</i> <sub>130</sub>	15.8	X	144.27598	174.91526	16.90147	7.23441	0.0775175	0.27513839	2.3411824	20	10 4.4	19.0
49876 1999 <i>XG</i> <sub>131</sub>	14.5	X	94.21758	320.18565	290.34515	11.40702	0.1738593	0.27636963	2.3342239	20	10 27.8	18.4
49877 1999 <i>XD</i> <sub>133</sub>	14.9	X	156.77316	233.05976	335.95380	9.63673	0.1155326	0.27600323	2.3362893	20	11 4.2	18.6
49878 1999 <i>XF</i> <sub>134</sub>	15.4	X	312.50659	168.96459	5.17304	7.11970	0.0865340	0.29098313	2.2554031	20	—	—
49879 1999 <i>XH</i> <sub>135</sub>	15.1	X	290.77463	74.76042	182.15833	5.49190	0.1702752	0.30269574	2.1968404	20	2 2.9	18.0
49880 1999 <i>XP</i> <sub>135</sub>	15.6	X	215.23767	222.45780	135.27213	2.82104	0.2155958	0.30942239	2.1648853	20	3 29.8	19.1
49881 1999 <i>XO</i> <sub>138</sub>	15.9	X	120.01246	80.95368	115.18381	1.51842	0.1599564	0.27265432	2.3553808	20	9 16.9	19.5
49882 1999 <i>XO</i> <sub>140</sub>	15.2	X	179.42034	28.73665	266.37349	2.21029	0.1686386	0.24209817	2.5496176	20	—	—
49883 1999 <i>XW</i> <sub>140</sub>	15.6	X	279.57345	299.59595	270.43215	3.07766	0.0448760	0.24351303	2.5397322	20	—	—
49884 1999 <i>XA</i> <sub>144</sub>	15.1	X	156.74285	140.66767	39.01082	7.48536	0.0628720	0.27541779	2.3395988	20	10 4.8	18.3
49885 1999 <i>XG</i> <sub>146</sub>	15.9	X	204.34654	214.53956	71.99127	5.28736	0.1912846	0.29989555	2.2104941	20	—	—
49886 1999 <i>XX</i> <sub>151</sub>	14.3	X	168.46878	202.51796	318.45225	1.59191	0.1521591	0.26977754	2.3720956	20	9 16.5	18.0
49887 1999 <i>XH</i> <sub>156</sub>	15.6	X	124.75083	344.11212	155.35026	2.82013	0.1314723	0.26344044	2.4099855	20	7 4.7	19.1
49888 1999 <i>XQ</i> <sub>156</sub>	15.5	X	136.07977	51.75762	228.20771	6.93673	0.1255468	0.28598175	2.2816227	20	—	—
49889 1999 <i>XA</i> <sub>158</sub>	15.4	X	273.71546	46.00655	141.95229	4.27555	0.0635993	0.28985111	2.2612716	20	—	—
49890 1999 <i>XE</i> <sub>158</sub>	15.2	X	260.39898	295.89145	235.05608	4.51311	0.1568216	0.28432948	2.2904533	20	—	—
49891 1999 <i>XF</i> <sub>158</sub>	15.1	X	346.19014	249.65630	243.09020	5.38521	0.0795366	0.29219615	2.2491568	20	—	—
49892 1999 <i>XG</i> <sub>159</sub>	15.3	X	30.24567	238.01907	139.37457	7.70269	0.1512289	0.28506202	2.2865277	20	—	—
49893 1999 <i>XF</i> <sub>160</sub>	15.7	X	46.74643	138.58033	224.59151	4.53909	0.1825333	0.28598117	2.2816258	20	—	—
49894 1999 <i>XJ</i> <sub>160</sub>	15.2	X	325.78930	253.10778	216.03912	3.27398	0.1031222	0.28624825	2.2802064	20	—	—
49895 1999 <i>XK</i> <sub>160</sub>	15.6	X	185.32813	334.00304	237.12690	5.42126	0.0579223	0.28040618	2.3117684	20	12 19.2	18.5
49896 1999 <i>XN</i> <sub>160</sub>	15.2	X	344.61088	311.07792	219.59974	3.42765	0.0901367	0.24742710	2.5128769	20	1 12.9	18.1
49897 1999 <i>XY</i> <sub>160</sub>	15.3	X	182.67268	91.54008	127.59271	5.97719	0.1770306	0.27876237	2.3208476	20	12 13.8	18.8
49898 1999 <i>XZ</i> <sub>160</sub>	14.6	X	82.22618	164.56469	104.99744	13.04244	0.1848710	0.27527469	2.3404095	20	11 18.5	18.3
49899 1999 <i>XA</i> <sub>163</sub>	15.2	X	71.93509	180.24724	250.20679	1.54797	0.0767358	0.29510353	2.2343598	20	1 4.5	17.2
49900 1999 <i>XV</i> <sub>163</sub>	13.1	X	347.79435	215.33289	102.51897	13.28325	0.1086667	0.21834773	2.7313054	20	8 20.1	16.3
49901 1999 <i>XK</i> <sub>164</sub>	15.0	X	187.08010	286.13915	88.44711	6.61032	0.0730444	0.30264353	2.1970931	20	3 27.1	18.0
49902 1999 <i>XS</i> <sub>164</sub>	14.6	X	134.18906	67.79928	92.27144	10.07943	0.0812798	0.21498404	2.7597213	20	8 7.3	18.8
49903 1999 <i>XK</i> <sub>165</sub>	15.1	X	23.24815	32.81326	62.46763	5.16418	0.1415736	0.24084069	2.5584846	20	—	—
49904 1999 <i>XN</i> <sub>165</sub>	13.6	X	71.13444	64.97512	82.22208	10.64268	0.0668594	0.25281703	2.4770333	20	4 30.9	16.8
49905 1999 <i>XU</i> <sub>165</sub>	15.3	X	7.22312	155.32409	338.63423	5.88852	0.1356599	0.29182991	2.2510381	20	—	—
49906 1999 <i>XX</i> <sub>165</sub>	14.8	X	352.28283	29.12011	72.18597	8.56939	0.1908824	0.23732506	2.5836895	20	—	—
49907 1999 <i>XZ</i> <sub>165</sub>	14.5	X	238.32553	113.25855	63.21074	7.37266	0.0479213	0.27844692	2.3226001	20	—	—
49908 1999 <i>XZ</i> <sub>168</sub>	14.6	X	297.80332	259.63842	283.53387	7.99488	0.1105790	0.29265714	2.2467942	20	—	—
49909 1999 <i>XB</i> <sub>169</sub>	15.4	X	258.19197	87.22353	22.61141	3.76615	0.1346863	0.27836990	2.3230285	20	10 28.4	17.7
49910 1999 <i>XS</i> <sub>169</sub>	15.0	X	295.74878	185.33409	325.07792	4.07050	0.1338216	0.28663028	2.2781798	20	—	—
49911 1999 <i>XT</i> <sub>169</sub>	14.3	X	136.33458	76.87462	44.23771	4.90588	0.1961029	0.26138799	2.4225847	20	6 27.2	18.2
49912 1999 <i>XY</i> <sub>170</sub>	15.0	X	173.50629	144.65290	46.02878	6.14441	0.1303226	0.27533333	2.3400772	20	11 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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
49921 1999 <i>XL</i> <sub>174</sub>	15.2	X	230.61241	324.12355	48.79154	3.16591	0.1877426	0.26226039	2.4172093	20	5 4.3	18.9
49922 1999 <i>XP</i> <sub>174</sub>	15.3	X	216.09040	310.16428	80.22446	9.47244	0.1676303	0.26213410	2.4179856	20	5 15.9	19.1
49923 1999 <i>XQ</i> <sub>174</sub>	13.4	X	152.13183	192.75777	93.37551	15.15474	0.0917804	0.23660038	2.5889625	20	—	—
49924 1999 <i>XY</i> <sub>174</sub>	14.2	X	9.68838	79.29904	46.43137	5.99065	0.0945005	0.29276076	2.2462640	20	—	—
49925 1999 <i>XJ</i> <sub>175</sub>	14.7	X	63.66873	337.50381	38.00759	4.71103	0.1937751	0.28824492	2.2696642	20	—	—
49926 1999 <i>XK</i> <sub>175</sub>	15.4	X	337.33211	336.54961	45.81617	5.63029	0.2071602	0.27778896	2.3262661	20	11 24.3	17.1
49927 1999 <i>XG</i> <sub>176</sub>	14.4	X	109.32143	104.44007	59.33791	6.03238	0.1603340	0.26081792	2.4261134	20	7 24.9	18.0
49928 1999 <i>XN</i> <sub>176</sub>	14.1	X	186.21821	183.16568	80.55393	15.60166	0.1445275	0.23648300	2.5898191	20	—	—
49929 1999 <i>XU</i> <sub>176</sub>	14.8	X	32.79050	102.43113	33.57856	6.79372	0.0826894	0.29646605	2.2275087	20	2 6.4	17.0
49930 1999 <i>XZ</i> <sub>176</sub>	13.7	X	20.33788	260.52028	71.64570	12.40207	0.2112798	0.22651524	2.6652489	20	11 18.0	16.8
49931 1999 <i>XL</i> <sub>177</sub>	15.4	X	204.71143	119.79896	335.71654	3.15762	0.0524531	0.26761673	2.3848471	20	8 7.3	18.6
49932 1999 <i>XK</i> <sub>178</sub>	15.6	X	237.59191	334.58553	18.20608	3.12323	0.0691181	0.30711379	2.1757209	20	4 23.0	18.1
49933 1999 <i>XD</i> <sub>179</sub>	15.4	X	336.60989	346.05203	75.66518	6.94717	0.1813799	0.28157360	2.3053742	20	—	—
49934 1999 <i>XU</i> <sub>179</sub>	15.5	X	162.23508	220.88915	351.41034	5.63253	0.1334630	0.27576376	2.3376416	20	11 15.4	19.1
49935 1999 <i>XV</i> <sub>179</sub>	14.5	X	105.48307	294.19553	314.24310	7.57876	0.1812743	0.27273960	2.3548898	20	11 6.2	18.4
49936 1999 <i>XD</i> <sub>180</sub>	14.7	X	170.91650	146.54981	51.00181	9.15334	0.1485578	0.27245709	2.3565173	20	11 6.3	18.3
49937 1999 <i>XO</i> <sub>180</sub>	14.1	X	223.30781	48.68083	47.15097	9.73153	0.1696814	0.26817447	2.3815393	20	8 21.9	17.7
49938 1999 <i>XS</i> <sub>180</sub>	13.5	X	190.19205	138.71427	67.42115	12.55866	0.1335172	0.22641571	2.6660298	20	11 28.8	17.4
49939 1999 <i>XV</i> <sub>180</sub>	14.9	X	160.42333	161.74599	42.15497	10.29407	0.1362449	0.27133412	2.3630148	20	11 3.9	18.5
49940 1999 <i>XZ</i> <sub>186</sub>	15.2	X	310.53412	192.97872	318.01163	9.03235	0.0600498	0.24080482	2.5587387	20	—	—
49941 1999 <i>XN</i> <sub>187</sub>	15.3	X	97.84566	51.11010	344.09400	7.20564	0.0967799	0.29490646	2.2353551	20	—	—
49942 1999 <i>XL</i> <sub>188</sub>	14.9	X	225.32334	165.23982	327.25661	4.80448	0.1072132	0.27688135	2.3313470	20	10 15.4	18.0
49943 1999 <i>XW</i> <sub>192</sub>	15.1	X	222.41341	91.46634	18.16273	8.16396	0.0685965	0.27323256	2.3520565	20	9 19.6	18.0
49944 1999 <i>XQ</i> <sub>193</sub>	15.0	X	301.41449	167.14402	34.51964	5.98666	0.0933599	0.29483357	2.2357235	20	—	—
49945 1999 <i>XC</i> <sub>201</sub>	16.5	X	6.11491	60.66167	35.10737	7.47847	0.1021696	0.28493865	2.2871877	20	—	—
49946 1999 <i>XD</i> <sub>204</sub>	14.9	X	164.40551	117.02258	47.80959	7.33058	0.0519539	0.27096734	2.3651467	20	9 24.9	18.1
49947 1999 <i>XY</i> <sub>204</sub>	14.4	X	135.29397	198.71183	48.15540	12.59297	0.1392097	0.22845980	2.6501036	20	11 24.8	18.7
49948 1999 <i>XF</i> <sub>205</sub>	14.9	X	288.89292	42.30510	21.99354	6.43216	0.1056476	0.27553956	2.3389095	20	10 17.3	17.3
49949 1999 <i>XG</i> <sub>207</sub>	15.4	X	277.49154	215.93878	349.72015	6.07918	0.0671555	0.29139702	2.2532670	20	—	—
49950 1999 <i>XJ</i> <sub>207</sub>	14.8	X	58.51319	225.51170	44.16960	7.24289	0.0922236	0.27104746	2.3646806	20	10 8.9	17.7
49951 1999 <i>XT</i> <sub>211</sub>	15.4	X	200.74871	204.76495	19.37467	7.28781	0.0864373	0.28265176	2.2995080	20	—	—
49952 1999 <i>XH</i> <sub>212</sub>	15.7	X	212.61099	218.05810	119.80720	3.64569	0.2324254	0.30987960	2.1627553	20	3 2.3	19.1
49953 1999 <i>XL</i> <sub>215</sub>	14.4	X	160.13053	128.17042	171.57145	6.15585	0.2081964	0.28999108	2.2605440	20	—	—
49954 1999 <i>XL</i> <sub>216</sub>	15.6	X	173.50138	35.89661	103.82126	3.38938	0.1044502	0.26828884	2.3808625	20	8 28.0	19.1
49955 1999 <i>XU</i> <sub>216</sub>	15.3	X	255.84085	30.94021	101.27590	5.26118	0.0716371	0.27875666	2.3208793	20	12 6.4	18.0
49956 1999 <i>XZ</i> <sub>220</sub>	14.8	X	243.84740	325.46574	225.59602	9.63859	0.1672949	0.28041181	2.3117375	20	—	—
49957 1999 <i>XQ</i> <sub>221</sub>	14.6	X	245.61423	167.85182	37.66679	5.73253	0.1925061	0.24037751	2.5617702	20	—	—
49958 1999 <i>XC</i> <sub>223</sub>	14.2	X	188.81625	241.88762	55.43875	7.47456	0.1158802	0.29002271	2.2603796	20	—	—
49959 1999 <i>XJ</i> <sub>225</sub>	15.0	X	66.81226	251.45231	98.60531	5.86512	0.1796137	0.28519029	2.2858421	20	—	—
49960 1999 <i>XN</i> <sub>225</sub>	15.7	X	217.01717	355.24596	96.67156	5.26223	0.0764125	0.26838728	2.3802803	20	8 16.7	18.9
49961 1999 <i>XZ</i> <sub>226</sub>	16.1	X	77.25425	247.26468	91.40239	4.34676	0.1521642	0.28462225	2.2888824	20	—	—
49962 1999 <i>XU</i> <sub>227</sub>	15.1	X	92.40391	46.25689	111.35932	2.99048	0.0615127	0.25952610	2.4341576	20	6 10.6	18.0
49963 1999 <i>XH</i> <sub>228</sub>	15.6	X	260.91790	228.21550	92.47687	5.69035	0.2037906	0.25835885	2.4414837	20	3 29.8	19.4
49964 1999 <i>XQ</i> <sub>228</sub>	15.3	X	57.12479	146.09819	72.42692	2.05673	0.1434348	0.26178475	2.4201363	20	7 31.6	18.0
49965 1999 <i>XA</i> <sub>231</sub>	12.9	X	342.99989	339.70337	39.62256	14.27820	0.1771018	0.22631357	2.6668320	20	11 8.9	15.4
49966 1999 <i>XT</i> <sub>231</sub>	15.0	X	244.66538	99.99678	56.99881	7.14775	0.1488553	0.27722538	2.3294178	20	12 10.6	17.5
49967 1999 <i>XC</i> <sub>235</sub>	15.6	X	265.74531	347.54422	131.55473	4.98291	0.1169214	0.28227146	2.3015729	20	11 28.9	17.9
49968 1999 <i>XN</i> <sub>243</sub>	15.1	X	219.33480	53.85917	346.50959	10.81702	0.2046195	0.26497946	2.4006448	20	5 25.1	19.2
49969 1999 <i>XS</i> <sub>247</sub>	15.6	X	134.91843	197.91231	129.00761	4.97082	0.2184405	0.29667171	2.2264791	20	—	—
49970 1999 <i>XD</i> <sub>249</sub>	15.8	X	305.04343	292.69144	139.17532	4.38780	0.0731741	0.28048795	2.3113191	20	11 30.6	18.1
49971 1999 <i>XZ</i> <sub>249</sub>	15.6	X	10.34977	250.79116	133.82534	6.12996	0.1423624	0.28341317	2.2953876	20	—	—
49972 1999 <i>XL</i> <sub>255</sub>	15.4	X	128.73613	229.14291	55.88520	1.73533	0.1240963	0.23351759	2.6116981	20	—	—
49973 1999 <i>YQ</i>	14.4	X	301.66920	230.63155	249.67033	23.49022	0.2457101	0.28273290	2.2990680	20	—	—
49974 1999 <i>YT</i> <sub>2</sub>	14.8	X	102.21031	268.04830	330.49794	1.71718	0.1897360	0.26992511	2.3712309	20	10 24.4	18.5
49975 1999 <i>YZ</i> <sub>2</sub>	15.1	X	158.58339	252.83636	225.77208	21.11498	0.1293872	0.26337195	2.4104032	20	7 7.7	19.2
49976 1999 <i>YR</i> <sub>4</sub>	15.4	X	85.78560	7.61722	281.58883	7.15431	0.1089075	0.27850958	2.3222517	20	12 7.2	18.6
49977 1999 <i>YS</i> <sub>4</sub>	15.6	X	114.13133	114.52276	97.83657	5.89031	0.0703102	0.27075816	2.3663647	20	9 28.8	18.9
49978 1999 <i>YT</i> <sub>5</sub>	14.3	X	340.74792	344.45206	12.91605	25.77161	0.2223140	0.27575730	2.3376781	20	10 16.8	16.0
49979 1999 <i>YB</i> <sub>8</sub>	14.8	X	284.16447	293.38105	258.96535	2.35374	0.0971724	0.29203215	2.2499887	20	—	—
49980 1999 <i>YQ</i> <sub>10</sub>	16.1	X	184.42658	72.23271	198.34719	3.24691	0.1433592	0.29320310	2.2440042	20	—	—
49981 1999 <i>YJ</i> <sub>13</sub>	14.5	X	181.81988	142.91172	130.40406	8.40791	0.1497704	0.28585507	2.2822968	20	—	—
49982 1999 <i>YP</i> <sub>22</sub>	14.3	X	69.74708	276.31029	267.24326	19.10365	0.1987517	0.26369287	2.4084472	20	7 5.9	17.4
49983 1999 <i>YX</i> <sub>22</sub>	15.7	X	337.30478	351.97273	38.02700	4.09480	0.1668777	0.27875065	2.3209126	20	12 1.5	17.6
49984 2000 <i>AA</i> <sub>1</sub>	15.1	X	319.82806	162.25325	131.42340	6.66472	0.1166763	0.25830528	2.4418212	20	5 24.1	17.8
49985 2000 <i>AX</i> <sub>1</sub>	15.5	X	350.84963	293.18676	125.57795	5.86414	0.1197126	0.28232434	2.3012855	20	—	—
49986 2000 <i>AF</i> <sub>2</sub>	15.4	X	154.73343	347.70360	41.51762	7.63596	0.1449144	0.30068600	2.2066185	20	3 14.9	18.5
49987 2000 <i>Bonata</i>	14.3	X	89.33388	177.01654	107.68231	13.93746	0.1204876	0.22744034	2.6580168	20	11 29.5	18.4
49988 2000 <i>AE</i> <sub>5</sub>	15.5	X	174.09469	51.52266	1.27183	3.61366	0.1078656	0.30527211	2.1844627	20	4 29.5	18.6
49989 2000 <i>AJ</i> <sub>5</sub>	15.7	X	85.28156	38.88029	104.96012	1.97905	0.1088071	0.30454133	2.1879558	20	5 19.1	18.1
49990 2000 <i>AK</i> <sub>5</sub>	15.1	X	185.55436	68.80699	91.42176	6.45202	0.0592236	0.27332495	2.3515264	20	10 14.5	18.3
49991 2000 <i>AZ</i> <sub>5</sub>	15.4	X	146.73172	186.06629	123.51447	6.39518	0.2080051	0.23770880	2.5809081	20	—	—
49992 2000 <i>AQ</i> <sub>7</sub>	15.3	X	284.57207	267.46540	130.66066	6.78139	0.0939596	0.24711960	2.5149610	20	—	—
49993 2000 <i></i>												

ELEMENTS AND OPPOSITION DATES IN 2020

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50001 2000 AK <sub>15</sub>	15.3	X	336.64455	318.04420	307.71515	3.31279	0.1088286	0.30982660	2.1630020	20	5 7.3	17.2
50002 2000 AB <sub>16</sub>	15.1	X	167.33831	227.59480	322.21705	4.33396	0.0488117	0.27628402	2.3347060	20	10 27.7	18.4
50003 2000 AM <sub>16</sub>	14.9	X	211.08267	102.52993	283.74243	5.41350	0.1210829	0.26238085	2.4164694	20	5 4.4	18.5
50004 2000 AS <sub>16</sub>	15.5	X	128.31026	148.74870	334.24375	2.34134	0.1269114	0.26139180	2.4225611	20	6 16.0	19.0
50005 2000 AW <sub>18</sub>	14.7	X	79.00314	307.54038	264.29578	8.11813	0.1549384	0.26792174	2.3830368	20	8 18.8	18.1
50006 2000 AY <sub>19</sub>	15.0	X	256.42347	132.01153	69.19635	6.45367	0.1665040	0.28809272	2.2704635	20	—	—
50007 2000 AW <sub>21</sub>	15.5	X	99.89042	246.75766	350.18940	4.71558	0.1275517	0.27566778	2.3381841	20	10 15.6	18.9
50008 2000 AF <sub>25</sub>	14.9	X	53.04419	181.83106	34.84874	1.60512	0.1441830	0.26164490	2.4209986	20	7 22.6	17.5
50009 2000 AQ <sub>26</sub>	15.3	X	69.24436	14.05118	291.60340	7.62780	0.1385315	0.27859390	2.3217831	20	12 13.3	18.6
50010 2000 AP <sub>27</sub>	14.9	X	25.56479	202.90758	37.36429	4.53713	0.0308808	0.21418089	2.7666161	20	6 24.2	18.5
50011 2000 AE <sub>29</sub>	15.2	X	190.12685	259.52385	301.58413	5.16666	0.1406143	0.27747672	2.3280109	20	11 30.9	18.5
50012 2000 AS <sub>30</sub>	15.5	X	197.65119	24.04914	330.10636	4.64202	0.1666392	0.30316392	2.1945781	20	3 8.3	18.9
50013 2000 AE <sub>31</sub>	15.1	X	162.93163	141.67007	15.49199	2.69398	0.1553952	0.26808333	2.3820791	20	9 7.3	18.9
50014 2000 AO <sub>32</sub>	15.4	X	11.39760	149.69935	88.56463	4.24457	0.0418087	0.25907619	2.4369749	20	6 1.7	18.0
50015 2000 AR <sub>32</sub>	14.5	X	24.44755	152.87625	92.97431	7.23636	0.0902152	0.26110256	2.4243498	20	7 9.1	17.1
50016 2000 AT <sub>32</sub>	15.4	X	88.47807	277.49384	49.87263	2.18237	0.0699367	0.28246469	2.3005232	20	—	—
50017 2000 AA <sub>33</sub>	15.3	X	113.52631	27.92814	2.95788	3.01255	0.1658969	0.29636074	2.2280364	20	1 28.3	17.8
50018 2000 AK <sub>33</sub>	15.1	X	3.86647	222.86508	66.02826	6.78544	0.1081686	0.26476992	2.4019112	20	8 12.3	17.6
50019 2000 AL <sub>33</sub>	14.7	X	265.15951	274.62580	330.54679	8.03579	0.1043705	0.24489022	2.5302014	20	1 9.0	18.5
50020 2000 AR <sub>34</sub>	15.0	X	264.06117	168.06269	346.90358	4.70524	0.0977898	0.28137673	2.3064494	20	—	—
50021 2000 AA <sub>36</sub>	16.1	X	181.84833	219.60749	93.04660	3.67037	0.1073544	0.29502304	2.2347662	20	—	—
50022 2000 AX <sub>36</sub>	15.1	X	30.01251	295.05681	41.96702	3.04083	0.0772014	0.22941696	2.6427274	20	11 16.4	18.6
50023 2000 AY <sub>37</sub>	15.0	X	8.29583	298.27818	318.60587	2.21692	0.1187443	0.26087138	2.4257819	20	6 28.6	17.4
50024 2000 AZ <sub>40</sub>	14.8	X	131.24988	72.60725	22.83765	3.07094	0.1248770	0.25667336	2.4521603	20	5 12.5	18.2
50025 2000 AR <sub>41</sub>	15.2	X	244.89620	95.01107	356.55727	6.26074	0.0839612	0.27096236	2.3651757	20	9 19.9	17.9
50026 2000 AS <sub>41</sub>	15.4	X	168.61098	108.28717	51.29059	4.89530	0.0831336	0.26849756	2.3796285	20	9 20.2	18.7
50027 2000 AQ <sub>43</sub>	15.5	X	97.40170	111.05739	289.89347	3.08338	0.0975961	0.29352708	2.2423527	20	1 6.6	17.7
50028 2000 AN <sub>44</sub>	16.0	X	42.46383	295.43481	358.91572	1.93995	0.1880398	0.22349017	2.6892453	20	10 23.9	19.5
50029 2000 AU <sub>46</sub>	16.1	X	250.31155	125.88224	258.91356	0.36220	0.1848182	0.26616469	2.3935128	20	6 9.8	19.6
50030 2000 AG <sub>47</sub>	14.5	X	4.14366	197.69603	112.55204	10.28732	0.0155145	0.21849867	2.7300474	20	8 30.7	18.2
50031 2000 AH <sub>47</sub>	14.5	X	118.68959	117.93245	116.63328	13.44179	0.0553945	0.22308698	2.6924847	20	10 27.7	18.6
50032 2000 AT <sub>47</sub>	15.5	X	161.68800	335.15788	113.03305	7.32492	0.0886969	0.25891262	2.4380011	20	6 5.1	19.0
50033 Perelman	14.9	X	40.71111	118.58388	116.82390	9.87472	0.0703206	0.21395375	2.7685739	20	7 14.4	18.3
50034 2000 AJ <sub>48</sub>	15.1	X	166.18444	214.27722	107.74432	9.03441	0.2110428	0.24507519	2.5289281	20	1 9.7	19.2
50035 2000 AL <sub>50</sub>	15.2	X	23.88864	256.37370	147.07009	3.07889	0.1077461	0.28478309	2.2880206	20	—	—
50036 2000 AH <sub>53</sub>	15.5	X	107.72314	293.10432	262.68116	4.42493	0.1298194	0.26954833	2.3734401	20	8 29.1	18.9
50037 2000 AR <sub>54</sub>	15.4	X	309.29812	259.01835	93.52637	2.57679	0.1413123	0.26832244	2.3806637	20	7 30.9	17.4
50038 2000 AT <sub>54</sub>	14.4	X	74.77003	177.45604	106.63261	6.70993	0.1575287	0.22531397	2.6747137	20	11 15.9	18.5
50039 2000 AV <sub>56</sub>	15.6	X	324.18076	234.68365	85.64940	3.48293	0.1418309	0.26666575	2.3905136	20	7 8.7	17.8
50040 2000 AL <sub>57</sub>	15.2	X	87.11659	45.78068	346.30395	2.76357	0.1771683	0.29270567	2.2465459	20	—	—
50041 2000 AL <sub>58</sub>	14.0	X	12.23661	335.60215	314.27819	5.29105	0.0511668	0.21698891	2.7426961	20	8 13.6	17.4
50042 2000 AW <sub>58</sub>	14.6	X	215.90767	331.76177	314.60858	13.15784	0.1500043	0.24358972	2.5391991	20	1 9.9	18.8
50043 2000 AC <sub>59</sub>	14.9	X	316.75313	247.53481	25.98070	2.24161	0.1407977	0.25491510	2.4634231	20	4 13.3	17.5
50044 2000 AV <sub>60</sub>	14.4	X	292.77865	204.43618	113.22809	8.43115	0.1368564	0.25892271	2.4373978	20	5 13.1	17.4
50045 2000 AB <sub>61</sub>	14.6	X	22.90630	119.94581	103.32172	5.92850	0.1419941	0.25582357	2.4575877	20	6 6.9	16.9
50046 2000 AL <sub>61</sub>	15.6	X	279.13239	40.52353	23.50652	3.38613	0.1209250	0.27278177	2.3546471	20	9 27.9	18.1
50047 2000 AA <sub>62</sub>	13.6	X	111.42623	153.08510	122.42440	14.94770	0.1570771	0.22678464	2.6631377	20	12 11.0	18.1
50048 2000 AL <sub>62</sub>	14.9	X	75.96747	210.78218	124.70863	7.14878	0.1448974	0.28077095	2.3097658	20	—	—
50049 2000 AQ <sub>62</sub>	14.3	X	149.04165	101.49870	108.12982	7.34942	0.0640974	0.27208929	2.3586405	20	11 4.8	17.6
50050 2000 AB <sub>63</sub>	15.0	X	230.27091	196.64421	317.97935	14.24330	0.1293902	0.22740651	2.6582804	20	11 3.5	19.1
50051 2000 AH <sub>63</sub>	15.4	X	189.08509	124.10055	57.58122	3.74913	0.1310936	0.27323327	2.3520524	20	11 6.0	18.8
50052 2000 AV <sub>63</sub>	14.0	X	228.48420	227.11997	113.26470	6.63898	0.2459240	0.25464832	2.4651433	20	3 22.9	18.2
50053 2000 AR <sub>64</sub>	14.7	X	229.98686	252.59932	342.06459	8.18664	0.1640892	0.23601404	2.5932486	20	—	—
50054 2000 AD <sub>65</sub>	15.1	X	27.31304	324.96525	119.54589	8.93278	0.0599838	0.23979022	2.5659512	20	—	—
50055 2000 AE <sub>65</sub>	14.7	X	300.90972	273.03347	317.26124	12.12514	0.1192217	0.24531657	2.5272689	20	1 28.9	18.1
50056 2000 AN <sub>66</sub>	14.0	X	245.32885	90.76248	114.84332	15.41264	0.0602373	0.23508146	2.6001025	20	—	—
50057 2000 AO <sub>66</sub>	13.9	X	146.76995	82.24375	118.96521	17.59401	0.0958810	0.22086403	2.7105207	20	10 19.3	18.4
50058 2000 AQ <sub>67</sub>	15.7	X	209.05952	348.07391	79.94206	3.64836	0.1703744	0.26363902	2.4087751	20	6 25.5	19.4
50059 2000 AY <sub>67</sub>	15.2	X	200.22673	166.94403	88.12214	3.29809	0.1153112	0.23616301	2.5921580	20	—	—
50060 2000 AA <sub>68</sub>	14.8	X	278.28499	117.17552	96.23342	6.21983	0.1023524	0.28796667	2.2711260	20	—	—
50061 2000 AF <sub>69</sub>	15.8	X	249.22404	7.89334	117.51736	6.88886	0.1266170	0.27961562	2.3161238	20	11 10.7	18.5
50062 2000 AD <sub>71</sub>	16.0	X	83.97128	324.97589	178.22937	1.67579	0.1114938	0.25886470	2.4383020	20	5 17.6	19.0
50063 2000 AY <sub>71</sub>	15.1	X	176.51718	190.59796	106.38311	9.37463	0.0974390	0.29466236	2.2365894	20	—	—
50064 2000 AQ <sub>72</sub>	14.8	X	11.80754	159.45551	117.79665	7.92518	0.1073841	0.26888240	2.3773573	20	8 7.3	17.2
50065 2000 AF <sub>74</sub>	15.1	X	168.73862	349.21130	141.36255	5.40632	0.1648362	0.26784600	2.3834860	20	8 8.1	18.9
50066 2000 AH <sub>75</sub>	15.7	X	26.55782	323.86307	144.01518	5.64788	0.0904378	0.29505430	2.2346084	20	—	—
50067 2000 AS <sub>75</sub>	16.0	X	265.76405	262.42827	172.66461	2.89105	0.1256772	0.27518678	2.3409080	20	9 21.3	18.4
50068 2000 AR <sub>77</sub>	14.9	X	144.42613	68.16914	146.18461	5.34256	0.1760275	0.27432394	2.3458140	20	11 3.4	18.7
50069 2000 AM <sub>78</sub>	15.1	X	328.69766	234.30281	114.34777	7.51358	0.1365296	0.27298175	2.3534970	20	9 7.9	17.2
50070 2000 AG <sub>80</sub>	15.3	X	154.82208	85.41063	133.42420	6.98891	0.0628711	0.27696529	2.3308759	20	11 23.5	18.6
50071 2000 AL <sub>81</sub>	15.8	X	357.11752	345.89679	127.56927	5.67897	0.0217890	0.29200814	2.2501221	20	—	—
50072 2000 AA <sub>81</sub>	15.4	X	301.77870	31.91383	129.60954	5.80911	0.0917882	0.28887342	2.2663709	20	—	—
50073 2000 AU <sub>82</sub>	15.8	X	135.55974	211.44068	176.79009	3.27124	0.1498214	0.30006514	2.2096612	20	2 17.3	18.6
50074 2000 AN <sub>83</sub>	15.9	X	299.43480	297.74882	118.11289	3.49914	0.0803190	0.27605591	2.3359920	20	10 27.8	18.4

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50081 2000 AL <sub>88</sub>	15.2	X	301.36015	214.42229	268.86789	4.16145	0.0800701	0.28274968	2.2989770	20	—	—
50082 2000 AW <sub>88</sub>	15.2	X	222.36816	61.71404	133.70258	7.09774	0.0557023	0.28093353	2.3088745	20	—	—
50083 2000 AG <sub>89</sub>	15.1	X	191.43937	305.57474	282.41880	1.82654	0.0556635	0.23251939	2.6191674	20	—	—
50084 2000 AZ <sub>89</sub>	15.2	X	263.17966	10.34388	134.80547	7.06642	0.0628453	0.28147534	2.3059107	20	—	—
50085 2000 AS <sub>90</sub>	14.8	X	52.11849	72.90610	287.33499	5.61768	0.1596023	0.28354712	2.2946646	20	—	—
50086 2000 AT <sub>90</sub>	15.0	X	68.86888	50.80643	288.4460	6.18485	0.1543212	0.28216335	2.3021608	20	—	—
50087 2000 AH <sub>91</sub>	15.2	X	213.50864	16.61297	161.95205	5.04666	0.1218908	0.27819343	2.3240108	20	12 2.9	18.2
50088 2000 AO <sub>94</sub>	16.1	X	259.15196	130.36722	289.11455	2.49728	0.0697402	0.27060370	2.3672651	20	8 26.9	19.0
50089 2000 AA <sub>95</sub>	15.3	X	163.98608	73.82366	306.43804	7.94194	0.2384274	0.25292170	2.4763498	20	3 14.9	19.6
50090 2000 AN <sub>96</sub>	15.0	X	116.28704	27.24092	136.92843	13.61858	0.1499506	0.25985720	2.4320895	20	7 29.9	18.7
50091 2000 AP <sub>96</sub>	14.4	X	7.44380	323.75729	126.06110	7.83776	0.0791252	0.28537347	2.2848638	20	—	—
50092 2000 AR <sub>96</sub>	15.2	X	227.76055	175.84909	337.10980	5.37257	0.1530570	0.27404397	2.3474114	20	11 8.1	18.2
50093 2000 AT <sub>96</sub>	15.2	X	124.35698	55.45576	72.03006	4.44113	0.1069668	0.30566792	2.1825765	20	6 16.5	18.0
50094 2000 AB <sub>97</sub>	14.8	X	47.87889	354.93632	92.18420	1.47632	0.1247428	0.29065154	2.2571182	20	—	—
50095 2000 AE <sub>97</sub>	15.0	X	32.60247	113.89933	35.08432	4.47692	0.1524241	0.24686796	2.5166697	20	3 6.8	17.3
50096 2000 AF <sub>97</sub>	13.9	X	289.71066	142.66177	346.70987	6.50226	0.2117132	0.18269605	3.0759784	20	12 7.5	17.4
50097 2000 AG <sub>98</sub>	13.9	X	61.69570	84.04162	356.78921	9.12023	0.2048322	0.24078506	2.5588786	20	1 13.1	17.3
50098 2000 AH <sub>98</sub>	13.9	X	33.93273	257.63866	98.47098	7.18125	0.1740129	0.27455841	2.3444783	20	—	—
50099 2000 AI <sub>98</sub>	14.7	X	163.97154	3.07109	97.64202	8.00099	0.1009876	0.25739444	2.4475784	20	6 23.9	18.2
50100 2000 AJ <sub>102</sub>	15.9	X	55.50670	292.06248	101.37835	9.82631	0.1419557	0.29301303	2.2409746	20	—	—
50101 2000 AK <sub>105</sub>	15.6	X	289.48877	257.82303	212.38928	6.06991	0.0678897	0.28295458	2.2978671	20	—	—
50102 2000 AL <sub>105</sub>	15.5	X	262.02986	3.60547	216.38910	4.14931	0.1341214	0.29090543	2.2558047	20	—	—
50103 2000 AM <sub>111</sub>	15.2	X	78.16797	106.08829	151.55974	8.19559	0.0911872	0.27148485	2.3621401	20	10 18.2	18.4
50104 2000 AN <sub>111</sub>	15.7	X	293.76759	204.62752	207.76452	4.19489	0.1405428	0.27530994	2.3402098	20	10 3.3	17.8
50105 2000 AO <sub>111</sub>	14.7	X	247.14062	268.41089	233.75706	5.55027	0.0853920	0.27881272	2.3205681	20	12 4.9	17.4
50106 2000 AC <sub>113</sub>	15.8	X	100.73153	286.50989	190.98960	4.46412	0.1349188	0.30431444	2.1890432	20	5 7.1	18.3
50107 2000 AD <sub>113</sub>	15.5	X	346.36474	340.93519	213.60313	4.16901	0.1099049	0.29774824	2.2211092	20	2 4.3	17.7
50108 2000 AE <sub>113</sub>	15.4	X	60.36723	294.75629	213.29871	4.93407	0.0606188	0.30257023	2.1974479	20	4 5.9	17.6
50109 2000 AF <sub>113</sub>	13.8	X	226.08264	103.65043	133.93818	17.66975	0.2527138	0.18836330	3.0139672	20	—	—
50110 2000 AG <sub>115</sub>	14.4	X	354.72675	258.46208	246.58650	6.73094	0.1015131	0.29282010	2.2459606	20	—	—
50111 2000 AH <sub>116</sub>	14.2	X	161.77930	296.62203	284.73495	11.81928	0.1267756	0.22745085	2.6579349	20	11 18.3	18.5
50112 2000 AI <sub>116</sub>	14.0	X	90.83967	349.95681	256.73550	6.64300	0.1571974	0.26951130	2.3736576	20	10 19.5	17.5
50113 2000 AJ <sub>116</sub>	14.7	X	73.36205	142.52234	132.33361	13.97048	0.1800077	0.22364795	2.6879804	20	11 8.7	19.0
50114 2000 AK <sub>117</sub>	14.9	X	134.94589	16.99925	230.71312	6.33789	0.0877870	0.27641580	2.3339639	20	12 5.9	18.3
50115 2000 AL <sub>117</sub>	16.0	X	340.32389	288.96756	167.04586	4.14419	0.1164068	0.28538718	2.2847906	20	—	—
50116 2000 AM <sub>119</sub>	14.7	X	323.64367	70.14893	225.46647	3.20664	0.0796111	0.21199221	2.7856258	20	6 5.3	18.1
50117 2000 AN <sub>119</sub>	14.4	X	263.49324	52.99904	185.51728	3.14846	0.1508919	0.24265370	2.5457247	20	—	—
50118 2000 AO <sub>119</sub>	15.7	X	95.18753	238.38057	166.60244	4.76320	0.1206508	0.29475760	2.2361077	20	1 11.4	18.1
50119 2000 AP <sub>119</sub>	15.5	X	265.26117	282.07617	202.51839	4.68042	0.1642624	0.27819909	2.3239793	20	11 27.3	17.6
50120 2000 AQ <sub>120</sub>	15.2	X	76.47871	95.46448	161.78732	6.57668	0.0875262	0.26948920	2.3737873	20	10 13.7	18.3
50121 2000 AS <sub>122</sub>	15.5	X	180.27689	243.07990	239.87963	6.47597	0.0650547	0.26681844	2.3896015	20	8 10.3	18.9
50122 2000 AT <sub>123</sub>	15.3	X	316.61694	276.02663	115.63502	4.23427	0.1213851	0.27269177	2.3551651	20	10 20.8	17.4
50123 2000 AU <sub>123</sub>	15.9	X	38.40617	221.02831	198.11423	4.06023	0.1704803	0.28907984	2.2652919	20	—	—
50124 2000 AV <sub>123</sub>	15.0	X	280.64500	352.09661	163.86039	7.19202	0.0390314	0.28361417	2.2943030	20	—	—
50125 2000 AB <sub>124</sub>	16.0	X	68.92092	266.09836	168.98387	3.67002	0.1249289	0.29444582	2.2376859	20	1 10.6	18.0
50126 2000 AC <sub>124</sub>	15.6	X	284.99288	146.20722	261.24600	5.63839	0.1682483	0.27220529	2.3579704	20	8 31.9	18.1
50127 2000 AD <sub>124</sub>	14.5	X	329.97383	315.96514	156.21285	9.77520	0.0553746	0.23621682	2.5917643	20	—	—
50128 2000 AE <sub>125</sub>	15.8	X	46.30041	234.31501	177.39042	5.33356	0.1472788	0.28864771	2.2675523	20	—	—
50129 2000 AF <sub>125</sub>	14.4	X	66.88474	104.53778	133.74688	10.05906	0.0927093	0.21602273	2.7508680	20	8 29.7	18.1
50130 2000 AG <sub>125</sub>	15.3	X	346.61159	190.60325	148.26027	3.86301	0.0839765	0.26937686	2.3744472	20	9 23.5	17.7
50131 2000 AH <sub>125</sub>	15.4	X	359.75120	92.95429	283.42388	3.77962	0.1535698	0.27786004	2.3258694	20	12 20.6	17.7
50132 2000 AI <sub>125</sub>	14.6	X	289.53009	273.86594	145.00114	4.53518	0.0510097	0.27260759	2.3556499	20	10 17.9	17.3
50133 2000 AJ <sub>126</sub>	15.4	X	1.72344	259.77383	148.93687	6.83540	0.1136327	0.28181910	2.3040351	20	—	—
50134 2000 AK <sub>126</sub>	15.3	X	195.01995	324.02451	228.60766	3.65913	0.0916349	0.27565511	2.3382558	20	12 1.6	18.3
50135 2000 AL <sub>127</sub>	15.7	X	129.72282	231.90375	141.27944	2.78746	0.1726685	0.29453520	2.2372332	20	1 25.5	18.4
50136 2000 AM <sub>128</sub>	14.2	X	175.15596	89.30169	162.89378	7.23173	0.1673399	0.23057213	2.6338933	20	—	—
50137 2000 AN <sub>128</sub>	14.3	X	141.08307	258.13298	304.50811	9.32343	0.1300377	0.21966039	2.7204133	20	10 2.7	18.8
50138 2000 AO <sub>128</sub>	15.4	X	183.58307	317.89614	182.72746	6.19231	0.0753503	0.26859381	2.3790599	20	9 9.2	18.5
50139 2000 AP <sub>129</sub>	14.9	X	278.42737	114.95708	268.16652	7.35315	0.0980197	0.26666584	2.3905131	20	7 27.7	17.8
50140 2000 AQ <sub>129</sub>	14.4	X	151.46723	22.01522	297.14910	3.16143	0.2160905	0.23980845	2.5658212	20	—	—
50141 2000 AS <sub>129</sub>	15.4	X	118.32321	216.48266	158.43447	5.04302	0.1638837	0.29315676	2.2442407	20	1 11.5	18.1
50142 2000 AT <sub>129</sub>	14.8	X	344.60834	200.41772	162.08082	3.28346	0.0238441	0.22267636	2.6957936	20	10 11.4	18.2
50143 2000 AU <sub>132</sub>	15.6	X	67.94617	271.44896	76.31725	6.62172	0.2796300	0.28756546	2.2732380	20	—	—
50144 2000 AV <sub>132</sub>	15.4	X	73.61030	147.31159	35.69826	3.94321	0.0870812	0.30744938	2.1741373	20	6 26.1	17.8
50145 2000 AB <sub>133</sub>	15.5	X	15.43351	87.19358	322.05747	3.68339	0.0779654	0.28591589	2.2819731	20	—	—
50146 2000 AC <sub>134</sub>	15.1	X	262.36777	195.40900	26.88600	4.68481	0.1809168	0.24181567	2.5516029	20	—	—
50147 2000 AD <sub>136</sub>	14.7	X	341.40006	275.27765	88.73964	7.75195	0.1007818	0.27024239	2.3693746	20	10 26.1	17.2
50148 2000 AE <sub>136</sub>	15.1	X	152.95407	95.71371	83.98599	7.49025	0.0819692	0.26701112	2.3884518	20	9 30.9	18.6
50149 2000 AF <sub>136</sub>	14.0	X	208.36309	51.07250	147.68144	13.34033	0.1098057	0.22685922	2.6625540	20	12 13.4	18.1
50150 2000 AG <sub>136</sub>	14.3	X	261.72147	52.47792	121.76945	3.60984	0.0989743	0.23125858	2.6286785	20	—	—
50151 2000 AH <sub>140</sub>	16.0	X	224.22331	268.58150	203.90145	5.01203	0.1802361	0.27109408	2.3644095	20	9 6.9	19.5
50152 2000 AI <sub>141</sub>	15.1	X	355.42897	234.62845	217.56175	5.76392	0.0406716	0.28509787	2.2863361	20	—	—
50153 2000 AJ <sub>141</sub>	14.9	X	316.93574	104.07353	259.96775	7.05329	0.1525498	0.26950567	2.3736906	20	8 28.5	17.3
50154 2000 AK <sub>141</sub>	15.1	X	75.84574	248.68261	202.92182	5.30936	0.0742618	0.29621963	2.2287438	20	2 8.4	17.5
50155 2000 AL <sub>142</sub>												

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50161 2000 AM <sub>144</sub>	14.8	X	52.28632	151.24239	303.80843	3.70622	0.1428600	0.29215913	2.2493467	20	1 11.3	16.6
50162 2000 AH <sub>146</sub>	14.5	X	75.35864	172.55496	114.28531	25.83767	0.1776229	0.27802441	2.3249525	20	12 5.9	18.4
50163 2000 AV <sub>146</sub>	15.2	X	320.51586	358.53043	196.06566	6.98773	0.1231629	0.24320105	2.5419036	20	1 5.9	18.5
50164 2000 AW <sub>146</sub>	14.9	X	356.61016	314.43299	78.53669	6.22235	0.1914447	0.27841058	2.3228022	20	—	—
50165 2000 AT <sub>147</sub>	15.0	X	112.58216	336.87170	243.81258	7.48124	0.1532273	0.27103745	2.3647388	20	10 7.4	18.8
50166 2000 AW <sub>150</sub>	14.8	X	138.41933	327.95347	259.39875	11.52864	0.1109500	0.27313483	2.3526175	20	11 11.1	18.4
50167 2000 AU <sub>154</sub>	15.3	X	180.60325	182.52931	272.22053	5.91765	0.0716287	0.26759941	2.3849500	20	7 5.1	18.6
50168 2000 AH <sub>155</sub>	15.4	X	287.66344	332.54122	296.73600	4.46292	0.0492272	0.30473808	2.1870140	20	3 3.4	17.9
50169 2000 AK <sub>157</sub>	15.3	X	91.77223	165.40958	64.55415	3.60080	0.1765904	0.26907610	2.3762163	20	10 4.5	18.8
50170 2000 AT <sub>158</sub>	15.3	X	12.03940	175.51165	78.82236	3.63420	0.1430210	0.26084487	2.4259463	20	7 4.2	17.4
50171 2000 AA <sub>159</sub>	14.4	X	206.69606	188.38009	95.29470	12.82153	0.1531233	0.24332490	2.5410410	20	—	—
50172 2000 AC <sub>159</sub>	15.6	X	143.84831	104.97441	76.37777	3.56067	0.1042422	0.26865724	2.3786854	20	9 20.9	19.0
50173 2000 AK <sub>159</sub>	15.5	X	208.59543	44.92873	323.33929	4.59778	0.1841169	0.30659588	2.1781703	20	4 4.0	18.9
50174 2000 AQ <sub>159</sub>	15.5	X	21.95314	126.21091	347.75089	6.35648	0.0337316	0.24438204	2.5337078	20	—	—
50175 2000 AQ <sub>161</sub>	14.9	X	220.34106	65.30636	353.81310	12.49433	0.1701624	0.26427122	2.4049320	20	6 26.0	18.8
50176 2000 AH <sub>163</sub>	13.9	X	68.42262	59.98630	120.40501	10.38261	0.1811889	0.21121301	2.7924728	20	6 26.9	17.6
50177 2000 AT <sub>163</sub>	15.6	X	290.53522	164.50376	248.49120	6.22800	0.1005472	0.27405343	2.3473574	20	9 30.4	18.1
50178 2000 AV <sub>163</sub>	15.7	X	359.48563	169.24382	220.30310	4.77594	0.1616610	0.28105872	2.3081889	20	—	—
50179 2000 AW <sub>163</sub>	15.6	X	290.80396	202.17176	209.24201	5.55713	0.0961631	0.27350847	2.3504744	20	10 1.1	18.0
50180 2000 AD <sub>164</sub>	14.7	X	142.77627	2.02987	254.88086	3.00855	0.0805221	0.22946678	2.6423448	20	12 15.9	18.7
50181 2000 AH <sub>167</sub>	15.4	X	219.46589	288.63484	168.62123	9.34551	0.1004645	0.26897847	2.3767912	20	8 21.3	18.6
50182 2000 AB <sub>168</sub>	13.2	X	186.91630	104.81508	113.76390	10.43820	0.0470858	0.17528143	3.1621232	20	12 8.8	17.9
50183 2000 AC <sub>168</sub>	14.0	X	347.30157	83.78262	109.84343	13.80777	0.1050669	0.24285948	2.5442865	20	2 20.3	17.0
50184 2000 AD <sub>168</sub>	14.9	X	45.48991	244.90769	143.83307	6.39184	0.0392074	0.23401542	2.6079929	20	—	—
50185 2000 AN <sub>170</sub>	14.2	X	95.90461	108.98263	101.40104	22.20516	0.2657208	0.26820657	2.3813493	20	9 30.2	18.7
50186 2000 AZ <sub>174</sub>	15.9	X	4.49040	213.08752	187.67854	6.02942	0.1032664	0.28421697	2.2910578	20	—	—
50187 2000 AG <sub>176</sub>	15.5	X	191.99721	25.85956	162.63265	9.52042	0.1388139	0.27895922	2.3197556	20	11 20.2	18.9
50188 2000 AU <sub>184</sub>	15.9	X	204.77508	288.69341	168.87359	7.16875	0.0636422	0.26701298	2.3884407	20	8 7.2	19.2
50189 2000 AB <sub>190</sub>	14.1	X	15.96609	121.40195	219.01186	13.87079	0.1473268	0.23073699	2.6326386	20	11 12.3	17.1
50190 2000 AK <sub>193</sub>	14.2	X	71.42635	338.24046	238.18362	10.33637	0.1613878	0.21355167	2.7720479	20	8 10.5	18.2
50191 2000 AQ <sub>193</sub>	14.5	X	156.91941	22.90545	185.77414	12.59444	0.1187164	0.22489059	2.6780696	20	11 1.9	18.7
50192 2000 AT <sub>193</sub>	14.8	X	265.93940	182.73596	253.68707	11.32587	0.1494900	0.27349028	2.3505787	20	9 12.2	17.8
50193 2000 AM <sub>194</sub>	15.1	X	147.53940	45.68822	217.18342	11.21337	0.0988632	0.23127081	2.6285859	20	12 26.9	19.3
50194 2000 AX <sub>194</sub>	15.8	X	340.95009	208.90666	194.21175	6.99250	0.1981103	0.28012905	2.3132929	20	—	—
50195 2000 AL <sub>197</sub>	14.4	X	74.58195	44.06586	244.92959	9.60103	0.1736063	0.27225867	2.3576621	20	11 29.9	17.8
50196 2000 AM <sub>198</sub>	14.9	X	316.73258	227.79152	231.09984	6.42452	0.0652622	0.28072834	2.3099995	20	—	—
50197 2000 AS <sub>198</sub>	14.6	X	123.63300	68.58005	171.72436	12.04694	0.1253160	0.22263045	2.6961642	20	11 8.8	19.0
50198 2000 AT <sub>198</sub>	14.0	X	310.26452	285.97224	274.64724	12.84900	0.1333518	0.24228138	2.5483321	20	—	—
50199 2000 AS <sub>201</sub>	15.0	X	161.15383	329.13646	216.79301	10.34389	0.1162621	0.27029654	2.3690582	20	10 11.9	18.5
50200 2000 AB <sub>203</sub>	13.7	X	229.36329	357.41203	268.75516	13.01384	0.1468491	0.23708536	2.5854306	20	—	—
50201 2000 AC <sub>203</sub>	14.0	X	135.54418	2.12992	276.46010	13.75810	0.0940911	0.22707875	2.6608377	20	—	—
50202 2000 AF <sub>203</sub>	14.4	X	280.22629	259.62683	284.69770	13.31743	0.1413557	0.23437495	2.6053251	20	—	—
50203 2000 AH <sub>203</sub>	14.1	X	241.92561	31.51706	259.18442	12.46465	0.1550672	0.24187293	2.5512002	20	2 1.5	18.3
50204 2000 AR <sub>203</sub>	13.8	X	162.23046	306.34446	291.86236	10.69176	0.1254597	0.22353149	2.6889140	20	12 10.0	18.0
50205 2000 AP <sub>204</sub>	14.7	X	248.19054	17.33082	199.16272	12.34345	0.2096754	0.23796389	2.5790633	20	—	—
50206 2000 AW <sub>209</sub>	15.4	X	203.57797	169.73001	95.83203	7.66368	0.0932992	0.29216452	2.2493191	20	—	—
50207 2000 AV <sub>211</sub>	14.6	X	0.44292	4.13114	315.49582	10.46103	0.2994956	0.21651377	2.7467072	20	9 26.6	17.1
50208 2000 AD <sub>222</sub>	15.2	X	55.84789	344.21683	294.89269	2.42276	0.0976031	0.21837429	2.7310839	20	10 6.2	19.0
50209 2000 AR <sub>224</sub>	15.9	X	126.29044	62.53651	248.51223	1.58255	0.1914301	0.29031907	2.2588411	20	—	—
50210 2000 AL <sub>228</sub>	15.0	X	110.93894	324.83595	298.91382	1.37973	0.0642482	0.22598762	2.6693957	20	11 18.9	18.7
50211 2000 AA <sub>232</sub>	14.2	X	200.33506	167.04494	120.79506	8.23037	0.2233869	0.24145427	2.5541484	20	—	—
50212 2000 AJ <sub>233</sub>	14.6	X	33.82907	67.09150	33.28455	5.87800	0.1426403	0.24183915	2.5514378	20	—	—
50213 2000 AJ <sub>234</sub>	15.6	X	263.56084	224.76146	212.71077	0.91908	0.0308131	0.27437527	2.3455214	20	10 5.9	18.4
50214 2000 AV <sub>234</sub>	16.3	X	45.03793	177.57690	212.57053	2.35677	0.2612004	0.28903630	2.2655194	20	—	—
50215 2000 AY <sub>235</sub>	14.7	X	81.10297	201.34447	109.74110	7.05266	0.1638888	0.27838486	2.3229453	20	—	—
50216 2000 AT <sub>236</sub>	15.1	X	318.26459	264.32411	254.08103	4.93962	0.0957933	0.28623586	2.2802722	20	—	—
50217 2000 AU <sub>236</sub>	14.9	X	238.61925	236.04535	273.27766	6.31992	0.0555238	0.27451631	2.3447180	20	12 5.4	17.8
50218 2000 AA <sub>237</sub>	15.2	X	29.05694	262.61688	268.41591	5.72886	0.1340271	0.29660656	2.2268052	20	3 18.6	17.1
50219 2000 AL <sub>237</sub>	13.7	X	332.79948	0.83857	163.77336	13.08163	0.0986018	0.23953749	2.5677558	20	—	—
50220 2000 AS <sub>237</sub>	13.9	X	263.82614	250.42612	328.07033	10.38248	0.2123152	0.18510474	3.0492359	20	—	—
50221 2000 AQ <sub>238</sub>	15.1	X	225.22060	14.91667	74.49355	3.62455	0.2003873	0.26772519	2.3842030	20	8 8.2	18.7
50222 2000 AV <sub>238</sub>	15.4	X	287.21256	302.20772	281.09427	0.88266	0.1501102	0.24299776	2.5433211	20	—	—
50223 2000 AC <sub>239</sub>	16.2	X	315.74135	87.92331	299.82622	1.24825	0.2061754	0.27545976	2.3393611	20	10 6.7	17.8
50224 2000 AS <sub>239</sub>	13.7	X	220.12031	93.54431	99.37853	12.25659	0.2094303	0.22733554	2.6588336	20	12 6.7	17.8
50225 2000 AB <sub>240</sub>	15.4	X	221.74561	330.85948	145.61807	8.27517	0.2091754	0.26924446	2.3752256	20	9 8.8	18.8
50226 2000 AH <sub>241</sub>	15.0	X	201.51773	21.16039	159.06168	9.60208	0.1642147	0.27604346	2.3360622	20	11 16.9	18.5
50227 2000 AX <sub>241</sub>	15.2	X	331.08155	331.10351	167.19189	14.42622	0.1404011	0.23889189	2.5723799	20	—	—
50228 2000 AD <sub>242</sub>	14.7	X	106.46972	276.58248	209.24307	9.18748	0.1351692	0.25549368	2.4597026	20	5 27.2	18.1
50229 2000 AQ <sub>242</sub>	15.0	X	199.34815	294.19819	106.82252	5.30953	0.1667201	0.30649998	2.1786246	20	5 12.9	18.2
50230 2000 AT <sub>244</sub>	13.7	X	320.93609	201.79771	250.81878	8.89381	0.0701551	0.18425655	3.0585864	20	12 22.7	17.6
50231 2000 AQ <sub>245</sub>	14.4	X	313.93105	248.88294	290.89295	13.61764	0.1293748	0.23803802	2.5785279	20	—	—
50232 2000 AR <sub>245</sub>	14.3	X	185.55982	300.07958	266.62208	12.37922	0.1263262	0.22345784	2.6895047	20	11 24.3	18.5
50233 2000 AK <sub>246</sub>	14.4	X	339.29162	354.00795	78.55379	6.19876	0.1656129	0.27701081	2.3306205	20	—	—
50234 2000 BP	15.3	X	341.61764	9.35252	287.71379	5.60821	0.1200264	0.26333576	2.4106241			

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50241 2000 <i>BB</i> <sub>8</sub>	15.4	X	93.12365	334.58840	351.02225	6.50167	0.1360900	0.28413709	2.2914872	20	—	—
50242 2000 <i>BU</i> <sub>11</sub>	15.3	X	40.83372	290.29444	277.98636	0.41535	0.1292394	0.25837729	2.4413675	20	6 15.9	17.8
50243 2000 <i>BT</i> <sub>13</sub>	14.7	X	107.40532	316.51688	296.02245	1.24908	0.1632019	0.22265640	2.6959547	20	11 7.1	18.8
50244 2000 <i>BG</i> <sub>14</sub>	15.5	X	262.88607	31.16184	356.52101	1.30099	0.1875346	0.26545872	2.3977545	20	6 28.8	18.7
50245 2000 <i>BL</i> <sub>14</sub>	15.2	X	254.07509	3.01801	84.85811	6.96460	0.0884804	0.27024386	2.3693661	20	10 1.4	18.1
50246 2000 <i>BT</i> <sub>14</sub>	13.3	X	133.21614	191.88850	47.50514	5.25911	0.0544927	0.22343711	2.6896711	20	11 12.8	17.2
50247 2000 <i>BX</i> <sub>14</sub>	14.3	X	291.00030	43.11400	60.95501	9.47058	0.1418217	0.22948259	2.6422235	20	11 30.1	17.0
50248 2000 <i>BB</i> <sub>16</sub>	15.4	X	322.03353	309.74831	32.12857	7.44547	0.1268434	0.26769460	2.3843846	20	8 13.9	17.7
50249 2000 <i>BL</i> <sub>16</sub>	15.0	X	205.35044	259.51763	305.22643	11.04185	0.1256442	0.23300896	2.6154975	20	12 15.4	18.9
50250 Daveharrington	15.2	X	308.73581	237.10541	194.50493	1.53193	0.0388303	0.22773869	2.6556949	20	11 21.5	18.5
50251 Iorg	14.6	X	99.77272	30.55669	167.55812	2.86935	0.1306639	0.21393796	2.7687101	20	8 20.0	18.6
50252 2000 <i>BE</i> <sub>23</sub>	15.8	X	25.47722	116.62851	296.11307	3.50141	0.1397421	0.28531055	2.2851997	20	—	—
50253 2000 <i>BP</i> <sub>24</sub>	14.4	X	153.97451	199.39923	72.95299	16.44489	0.0981703	0.23239162	2.6201274	20	—	—
50254 2000 <i>BE</i> <sub>25</sub>	15.6	X	230.58994	247.59215	131.36259	1.21027	0.1851484	0.31068790	2.1590025	20	5 11.7	18.5
50255 2000 <i>BY</i> <sub>25</sub>	15.1	X	239.59395	73.01443	112.69943	3.21694	0.0783703	0.23363193	2.6108459	20	—	—
50256 2000 <i>BJ</i> <sub>26</sub>	15.7	X	92.44522	322.61287	93.55375	3.62486	0.1426018	0.29505790	2.2345902	20	1 28.2	17.9
50257 2000 <i>BQ</i> <sub>26</sub>	15.7	X	239.39067	33.45418	47.70087	2.84120	0.1848436	0.26938788	2.3743825	20	8 14.9	18.9
50258 2000 <i>BV</i> <sub>26</sub>	14.4	X	257.31515	299.61017	316.79263	14.50893	0.1541980	0.24241193	2.5474171	20	1 12.1	18.4
50259 2000 <i>BE</i> <sub>27</sub>	15.1	X	284.98948	99.59829	41.41619	3.97686	0.0816669	0.23277462	2.6172526	20	—	—
50260 2000 <i>BK</i> <sub>27</sub>	14.7	X	150.30681	54.77463	331.61539	6.67776	0.2101149	0.29925563	2.2136443	20	3 7.8	18.0
50261 2000 <i>BM</i> <sub>27</sub>	15.4	X	221.82563	181.43158	333.37389	2.06043	0.1103646	0.27418456	2.3466089	20	11 10.7	18.3
50262 2000 <i>BN</i> <sub>27</sub>	15.8	X	244.83360	127.27947	330.27708	1.82487	0.1837972	0.27164531	2.3612098	20	9 12.2	18.7
50263 2000 <i>BU</i> <sub>27</sub>	14.7	X	232.70374	298.33442	97.15631	3.43570	0.0667177	0.21226551	2.7832343	20	6 16.7	18.7
50264 2000 <i>BX</i> <sub>27</sub>	13.9	X	223.47699	114.39844	103.38059	2.22847	0.1765536	0.18294343	3.0732048	20	—	—
50265 2000 <i>BN</i> <sub>28</sub>	15.0	X	31.57470	96.01400	34.88067	10.24527	0.0807226	0.29375773	2.2411789	20	1 29.1	17.4
50266 2000 <i>BU</i> <sub>28</sub>	14.1	X	42.14368	165.28951	105.86414	10.21772	0.1200417	0.21610027	2.7502099	20	9 16.2	17.7
50267 2000 <i>BS</i> <sub>29</sub>	15.0	X	332.63835	119.93134	76.68454	13.82370	0.1227941	0.24530397	2.5273555	20	1 29.0	18.2
50268 2000 <i>BD</i> <sub>31</sub>	14.9	X	334.25191	272.36324	79.33172	7.07643	0.0350780	0.22159646	2.7045447	20	9 15.3	18.4
50269 2000 <i>BZ</i> <sub>34</sub>	14.8	X	104.63619	321.53700	130.90264	6.50812	0.0984311	0.27904307	2.3192909	20	12 4.9	18.2
50270 2000 <i>CJ</i>	16.1	X	306.67951	346.51499	125.70725	3.71578	0.0999523	0.28068441	2.3102405	20	—	—
50271 2000 <i>CW</i>	14.2	X	123.32025	293.22450	337.11638	9.89329	0.1767062	0.22471883	2.6794340	20	12 12.7	18.8
50272 2000 <i>CZ</i>	15.1	X	55.46498	207.50205	130.63889	3.86388	0.0857607	0.22913059	2.6449289	20	12 21.6	18.7
50273 2000 <i>CA</i> <sub>1</sub>	15.4	X	322.06742	40.29364	109.89756	0.77127	0.0615951	0.23841486	2.5758101	20	—	—
50274 2000 <i>CN</i> <sub>1</sub>	15.8	X	193.96344	196.16272	341.31617	1.94368	0.0841528	0.27298600	2.3534725	20	11 9.8	18.9
50275 2000 <i>CU</i> <sub>1</sub>	14.2	X	198.58092	298.56103	332.55410	7.10887	0.0632033	0.23540719	2.5977034	20	—	—
50276 2000 <i>CS</i> <sub>2</sub>	14.0	X	242.96781	118.75031	120.57616	15.36801	0.0623789	0.23682046	2.5873582	20	—	—
50277 2000 <i>CX</i> <sub>6</sub>	14.9	X	79.47127	296.24858	75.79968	12.64741	0.0689259	0.23897611	2.5717755	20	—	—
50278 2000 <i>CZ</i> <sub>12</sub>	15.4	X	46.03705	105.64667	248.92741	1.26832	0.0358294	0.23111901	2.6297367	20	12 24.2	18.9
50279 2000 <i>CX</i> <sub>14</sub>	15.3	X	228.57148	279.68595	275.55139	2.72694	0.0564098	0.23285014	2.6166866	20	—	—
50280 2000 <i>CN</i> <sub>17</sub>	14.1	X	120.85158	146.00819	140.93065	15.13966	0.1686092	0.23025380	2.6363203	20	12 31.7	18.6
50281 2000 <i>CV</i> <sub>18</sub>	14.1	X	156.20982	346.36340	296.64817	11.88981	0.1501691	0.23410072	2.6073593	20	—	—
50282 2000 <i>CM</i> <sub>19</sub>	15.5	X	139.81966	126.76110	144.81822	4.04428	0.0627020	0.23092223	2.6312304	20	12 31.2	19.3
50283 2000 <i>CO</i> <sub>20</sub>	14.9	X	304.47789	26.60558	296.31577	3.36277	0.0687757	0.21200006	2.7855571	20	6 14.8	18.4
50284 2000 <i>CP</i> <sub>23</sub>	14.7	X	73.19712	50.56176	170.52486	5.05837	0.0604060	0.21393824	2.7687076	20	8 7.4	18.5
50285 2000 <i>CB</i> <sub>25</sub>	14.9	X	34.48006	81.52761	292.50399	7.03704	0.2413494	0.28220017	2.3019605	20	—	—
50286 2000 <i>CA</i> <sub>26</sub>	16.0	X	256.77399	237.55233	176.48175	1.06661	0.1718248	0.26803440	2.3823690	20	7 30.2	18.8
50287 2000 <i>CT</i> <sub>26</sub>	14.3	X	272.96565	11.69195	235.85010	2.04208	0.1276757	0.19434164	2.9518354	20	1 23.2	18.6
50288 2000 <i>CV</i> <sub>26</sub>	14.0	X	28.93863	316.82501	314.22016	13.09023	0.1383735	0.21362601	2.7714048	20	8 21.8	17.3
50289 2000 <i>CJ</i> <sub>27</sub>	14.5	X	272.10803	95.15330	171.22714	5.04781	0.1656614	0.24527529	2.5275525	20	2 3.1	18.2
50290 2000 <i>CT</i> <sub>27</sub>	14.2	X	46.14618	268.08414	155.38674	5.85957	0.1204731	0.28856796	2.2679700	20	—	—
50291 2000 <i>CX</i> <sub>28</sub>	14.3	X	228.08390	117.92718	164.63437	5.68040	0.1703868	0.24133189	2.5550118	20	1 13.6	18.4
50292 2000 <i>CO</i> <sub>29</sub>	15.6	X	261.36305	274.28274	154.07772	2.88995	0.1888358	0.27019337	2.3696612	20	8 23.8	18.4
50293 2000 <i>CH</i> <sub>30</sub>	14.4	X	329.11368	244.29956	148.65297	16.79813	0.1738379	0.22573924	2.6713534	20	11 7.0	17.4
50294 2000 <i>CN</i> <sub>31</sub>	16.1	X	235.43359	245.86210	155.71726	3.51801	0.1238284	0.26311358	2.4119809	20	6 22.7	19.4
50295 2000 <i>CR</i> <sub>31</sub>	15.2	X	275.89679	196.89634	244.73595	0.90425	0.0557260	0.22438091	2.6821236	20	10 16.2	18.7
50296 2000 <i>CY</i> <sub>32</sub>	14.3	X	283.48622	51.73999	309.65037	4.14142	0.1229019	0.21323655	2.7747783	20	6 28.9	18.0
50297 2000 <i>CS</i> <sub>33</sub>	14.9	X	245.67154	232.25770	137.80628	10.86191	0.1405807	0.25962292	2.4335523	20	5 23.9	18.6
50298 2000 <i>CA</i> <sub>34</sub>	15.0	X	49.61342	131.96109	137.55428	2.71291	0.0375110	0.21584718	2.7523593	20	9 7.7	18.7
50299 2000 <i>CD</i> <sub>34</sub>	15.2	X	190.32848	108.89527	340.32462	2.84435	0.1897632	0.26198561	2.4188991	20	7 4.9	19.1
50300 2000 <i>CF</i> <sub>34</sub>	15.2	X	188.55372	69.59253	185.49629	1.15854	0.0485205	0.23250865	2.6192481	20	—	—
50301 2000 <i>CL</i> <sub>36</sub>	15.7	X	312.54626	218.93589	277.48761	3.69149	0.0931479	0.28299618	2.2976419	20	—	—
50302 2000 <i>CP</i> <sub>36</sub>	14.5	X	179.90023	303.56276	164.24895	5.98354	0.0469803	0.21223244	2.7835234	20	7 18.9	18.6
50303 2000 <i>CX</i> <sub>36</sub>	15.2	X	26.27381	99.98825	330.42123	4.63151	0.1780491	0.28615348	2.2807098	20	—	—
50304 2000 <i>CZ</i> <sub>36</sub>	14.3	X	261.87871	7.09881	272.10562	1.80948	0.0958068	0.24424882	2.5346290	20	2 15.8	17.9
50305 2000 <i>CA</i> <sub>37</sub>	15.3	X	307.50354	193.56546	268.49110	1.00971	0.0839587	0.27775935	2.3264314	20	—	—
50306 2000 <i>CA</i> <sub>39</sub>	14.4	X	173.55181	122.89797	122.17277	15.45789	0.1547765	0.17875862	3.1209828	20	12 20.2	19.6
50307 2000 <i>CG</i> <sub>39</sub>	14.7	X	9									

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50321 2000 CH <sub>51</sub>	13.7	X	77.10134	40.36936	228.09265	4.81066	0.1093363	0.21869124	2.7284445	20	10 20.8	17.5
50322 2000 CK <sub>51</sub>	13.8	X	158.42612	56.63484	199.49513	6.81137	0.2039201	0.17698248	3.1418289	20	12 17.4	19.2
50323 2000 CM <sub>52</sub>	15.5	X	6.98959	318.85684	224.71692	2.42312	0.0643645	0.24739843	2.5130710	20	3 7.2	18.4
50324 2000 CS <sub>53</sub>	14.3	X	32.44368	80.58208	167.54226	6.33291	0.0994459	0.25718903	2.4488814	20	7 25.9	17.1
50325 2000 CT <sub>53</sub>	13.9	X	168.26731	323.96150	341.17213	14.62386	0.1183229	0.23450019	2.6043974	20	—	—
50326 2000 CH <sub>54</sub>	14.9	X	273.77949	88.92323	187.52299	5.90954	0.0610302	0.24704620	2.5154591	20	2 29.7	18.4
50327 2000 CS <sub>55</sub>	14.9	X	87.67175	325.92485	320.97873	2.56072	0.06454365	0.22532185	2.6746514	20	11 18.9	18.6
50328 2000 CW <sub>55</sub>	16.4	X	73.56453	248.52173	160.28244	0.71317	0.1996408	0.29171947	2.2516062	20	—	—
50329 2000 CK <sub>56</sub>	14.7	X	18.62251	245.98610	120.18033	7.39060	0.1311146	0.27537731	2.3398281	20	12 30.0	17.4
50330 2000 CN <sub>56</sub>	12.8	X	216.85101	207.22127	18.02566	14.26230	0.1686632	0.17772985	3.1330149	20	—	—
50331 2000 CO <sub>56</sub>	14.1	X	346.63474	198.88028	113.82148	7.36238	0.1824290	0.21270417	2.7794063	20	8 7.4	16.8
50332 2000 CP <sub>57</sub>	14.3	X	22.59970	340.39649	63.52685	14.93481	0.0999272	0.23353088	2.6115991	20	—	—
50333 2000 CZ <sub>57</sub>	13.8	X	201.62907	335.39267	333.14155	14.25958	0.1966942	0.23912826	2.5706845	20	1 26.1	18.2
50334 2000 CK <sub>58</sub>	13.6	X	205.90369	68.96651	143.57179	11.82169	0.1339164	0.22656908	2.6648266	20	12 23.5	17.7
50335 2000 CM <sub>58</sub>	14.4	X	185.72068	69.93774	68.12481	9.88078	0.0921506	0.26281973	2.4137784	20	9 13.1	18.0
50336 2000 CR <sub>60</sub>	15.1	X	42.04134	171.40494	259.36963	5.64136	0.1447085	0.23958806	2.5673945	20	—	—
50337 2000 CP <sub>61</sub>	16.4	X	243.37522	320.28744	167.15383	2.25583	0.0648578	0.27457703	2.3443723	20	11 9.3	19.0
50338 2000 CU <sub>61</sub>	15.5	X	284.24500	283.14176	203.77655	4.96102	0.0897185	0.27784025	2.3259798	20	—	—
50339 2000 CF <sub>62</sub>	14.7	X	74.46189	73.30763	183.89931	9.33475	0.1197901	0.21578777	2.7528644	20	10 5.7	18.6
50340 2000 CH <sub>62</sub>	14.6	X	130.47702	337.52828	188.86614	6.01631	0.0268809	0.21246121	2.7815249	20	8 3.1	18.5
50341 2000 CR <sub>63</sub>	14.2	X	15.75199	157.87984	181.81119	16.17126	0.1432861	0.21923754	2.7239101	20	11 9.8	17.7
50342 2000 CT <sub>63</sub>	16.2	X	286.29278	191.63211	251.98002	4.55950	0.1562190	0.27415533	2.3467757	20	11 3.5	18.3
50343 2000 CX <sub>64</sub>	15.2	X	101.67249	259.94332	74.53315	3.36205	0.1166236	0.23514382	2.5996427	20	—	—
50344 2000 CA <sub>65</sub>	14.8	X	275.28449	201.11703	128.77743	6.76977	0.0328175	0.20825810	2.8188250	20	5 21.9	18.7
50345 2000 CK <sub>65</sub>	14.7	X	335.80074	311.56239	352.03976	2.80402	0.0843540	0.21187820	2.7866250	20	7 6.2	18.0
50346 2000 CP <sub>65</sub>	14.9	X	85.56751	206.03256	140.96068	2.74259	0.0223233	0.23225784	2.6211334	20	—	—
50347 2000 CA <sub>66</sub>	15.8	X	289.60280	329.00713	208.82351	5.96686	0.0401431	0.28847803	2.2684413	20	—	—
50348 2000 CF <sub>69</sub>	15.8	X	236.07635	219.47077	134.66764	3.11869	0.2176656	0.25761959	2.4461521	20	4 14.8	19.7
50349 2000 CC <sub>70</sub>	14.3	X	271.22622	159.14333	250.40680	6.04205	0.1961648	0.26673639	2.3900915	20	8 6.9	17.3
50350 2000 CD <sub>70</sub>	14.0	X	66.56045	329.32653	300.63555	8.32536	0.1311564	0.21703437	2.7423131	20	10 9.2	18.0
50351 2000 CE <sub>70</sub>	14.8	X	126.30015	9.93139	228.62046	3.99220	0.1630736	0.22026677	2.7154182	20	11 7.3	19.0
50352 2000 CK <sub>70</sub>	13.4	X	163.74857	347.43818	301.32538	11.65495	0.1383917	0.23194026	2.6235255	20	—	—
50353 2000 CW <sub>70</sub>	14.5	X	110.61298	254.89071	279.21726	4.33343	0.1663966	0.25922608	2.4360353	20	8 6.9	18.2
50354 2000 CX <sub>70</sub>	15.6	X	62.78403	213.56572	213.60766	5.37722	0.2648671	0.29173238	2.2515398	20	—	—
50355 2000 CB <sub>71</sub>	14.9	X	2.69039	179.11499	248.08346	5.99702	0.0881763	0.28034815	2.3120875	20	—	—
50356 2000 CH <sub>71</sub>	15.2	X	284.26130	232.63600	300.56901	2.56199	0.1046579	0.23371335	2.6102395	20	—	—
50357 2000 CJ <sub>71</sub>	15.6	X	190.01440	203.31108	267.96541	2.13583	0.1255984	0.26282046	2.4137740	20	8 4.5	19.2
50358 2000 CP <sub>71</sub>	14.5	X	275.77194	327.53511	195.55257	11.31319	0.1146431	0.23225449	2.6211586	20	—	—
50359 2000 CO <sub>72</sub>	14.8	X	192.96557	309.14393	165.66193	6.75503	0.0555228	0.26840817	2.3801568	20	8 17.5	18.1
50360 2000 CS <sub>75</sub>	14.6	X	301.78889	17.79125	210.94236	12.44559	0.1078839	0.24298196	2.5434314	20	1 25.3	18.3
50361 2000 CE <sub>76</sub>	15.2	X	104.85447	353.19891	151.61960	7.04495	0.0622290	0.25583408	2.4575203	20	6 10.3	18.5
50362 2000 CB <sub>77</sub>	15.0	X	120.47749	194.44557	346.85009	2.08741	0.1400946	0.26094244	2.4253416	20	8 26.2	18.6
50363 2000 CD <sub>77</sub>	13.4	X	68.90009	340.48940	350.22501	12.71545	0.1806221	0.22436597	2.6822426	20	—	—
50364 2000 CG <sub>77</sub>	13.8	X	344.87298	333.03656	356.32702	2.36077	0.0564108	0.21376864	2.7701719	20	8 26.9	17.3
50365 2000 CP <sub>77</sub>	15.2	X	116.44910	29.92852	278.47243	4.43844	0.1855994	0.23210333	2.6222965	20	—	—
50366 2000 CW <sub>77</sub>	16.0	X	250.95056	159.45373	319.91180	5.48820	0.0691243	0.27315732	2.3524884	20	11 7.2	18.8
50367 2000 CB <sub>80</sub>	14.6	X	216.82428	313.88775	336.06533	0.80620	0.1560824	0.19009839	2.9955995	20	1 19.6	19.5
50368 2000 CY <sub>81</sub>	15.9	X	264.07795	310.61387	128.43020	3.14796	0.1347459	0.27134331	2.3629614	20	9 23.5	18.5
50369 2000 CK <sub>83</sub>	14.2	X	139.65323	128.93435	137.96704	13.76288	0.1338364	0.22717771	2.6600650	20	12 24.4	18.6
50370 2000 CL <sub>84</sub>	14.5	X	87.78759	308.62355	349.06153	2.48184	0.0624251	0.22540814	2.6739687	20	12 4.6	18.4
50371 2000 CT <sub>84</sub>	13.5	X	190.61738	169.56824	134.23975	11.16910	0.0822695	0.19118646	2.9842231	20	1 10.6	18.2
50372 2000 CF <sub>85</sub>	14.8	X	229.37151	266.09445	335.20521	14.37428	0.1652867	0.23489602	2.6014708	20	—	—
50373 2000 CR <sub>85</sub>	15.8	X	154.67501	201.72419	340.24703	4.89169	0.1676671	0.26693974	2.3888800	20	9 28.9	19.5
50374 2000 CG <sub>86</sub>	14.9	X	200.72290	110.68971	119.10879	3.43638	0.0272268	0.23127751	2.6285351	20	—	—
50375 2000 CJ <sub>86</sub>	15.6	X	159.19171	9.98822	83.95871	3.30074	0.1434524	0.25826075	2.4421019	20	6 11.1	19.1
50376 2000 CQ <sub>86</sub>	15.1	X	90.85578	91.19563	351.96977	6.14980	0.1232155	0.29614640	2.2291113	20	3 1.7	17.5
50377 2000 CK <sub>88</sub>	14.4	X	240.39472	318.64758	358.75221	1.83949	0.0563238	0.20025708	2.8934154	20	3 19.2	18.6
50378 2000 CV <sub>88</sub>	13.9	X	287.32619	134.28203	134.96473	10.97577	0.1598910	0.19609758	2.9341877	20	3 3.2	18.1
50379 2000 CB <sub>89</sub>	13.1	X	170.61985	232.52510	121.91681	9.60262	0.2932510	0.24340594	2.5404770	20	2 26.9	17.7
50380 2000 CE <sub>89</sub>	13.5	X	194.33155	323.63322	12.80435	13.67639	0.1878274	0.24294327	2.5437014	20	2 23.9	17.8
50381 2000 CG <sub>89</sub>	13.8	X	136.93721	202.57987	133.67261	13.25564	0.1794893	0.23621348	2.5917887	20	—	—
50382 2000 CH <sub>89</sub>	14.3	X	47.56448	222.47193	68.94586	5.96475	0.0929130	0.21752397	2.7381967	20	10 14.4	17.9
50383 2000 CN <sub>89</sub>	15.0	X	205.83411	234.97133	28.40179	6.72897	0.1192681	0.23408746	2.6074577	20	—	—
50384 2000 CQ <sub>89</sub>	14.5	X	316.91487	85.14946	354.24204	21.83297	0.0463684	0.22657214	2.6648026	20	12 9.4	18.4
50385 2000 CZ <sub>89</sub>	14.3	X	44.90676	186.69119	141.65996	15.72443	0.0912131	0.22488886	2.6780834	20	11 29.9	18.2
50386 2000 CG <sub>91</sub>	15.7	X	325.76150	157.06202	336.67743	5.79817	0.1162887	0.28442706	2.2899295	20	—	—
50387 2000 CM <sub>91</sub>	14.3	X	10.22896	6.59172	348.60695	7.35113	0.0522842	0.22254140	2.6968834	20	11 5.2	17.9
50388 2000 CM <sub>92</sub>	14.3	X	183.68348	64.17667	127.33461	0.45542	0.1553843	0.17346604	3.1841468	20	10 26.9	19.5
50389 2000 CO <sub>92</sub>	14.1	X	48.34586	87.15674	166.37265	3.89910	0.1012403	0.21124131	2.7922233	20	8 23.4	17.7
50390 2000 CE <sub>93</sub>	14.5	X	108.26558	28.59912	150.56340	9.93589	0.0844761	0.20976161	2.8053392	20	7 30.2	18.5
50391 2000 CK <sub>93</sub>	14.0	X	128.93930	93.98431	137.70137	9.23944	0.0909651	0.21892889	2.7264697	20	11 2.6	18.3
50392 2000 CD <sub>94</sub>	14.0	X	350.33025	171.70030	353.71808	10.61884	0.0413111	0.19227678	2.9729309	20	2 2.7	18.0
50393 2000 CN <sub>94</sub>	14.2	X	97.97993	188.11556	6.00123	8.44791	0.0342843	0.20991781	2.8039474	20	8 5.1	18.2
50394 2000 CR <sub>94</sub>	13.8	X	321.39234	342.82568	32.64067	4.93548	0.1157912	0.21668378	2.7452703	20	9 22.0	16.8
50395												

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ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50401 2000 <i>CJ</i> <sub>109</sub>	15.1	X	76.37442	327.21093	253.66830	9.08569	0.1146832	0.26160829	2.4212244	20	8 20.7	18.5
50402 2000 <i>CN</i> <sub>111</sub>	14.3	X	57.66928	217.17341	96.08434	3.21571	0.1563941	0.22420360	2.6835375	20	12 1.5	18.1
50403 2000 <i>CB</i> <sub>114</sub>	13.1	X	52.06804	308.17097	42.06946	23.31528	0.1963154	0.27965950	2.3158815	20	—	—
50404 2000 <i>CV</i> <sub>115</sub>	14.3	X	356.67013	239.38451	247.17645	9.35067	0.0445392	0.19246761	2.9709656	20	—	—
50405 2000 <i>CB</i> <sub>116</sub>	15.5	X	275.01005	220.23554	224.19858	5.74037	0.0723267	0.27363283	2.3497622	20	10 26.9	18.2
50406 2000 <i>CK</i> <sub>116</sub>	14.8	X	194.43073	318.63101	8.43214	8.17407	0.1789740	0.24512107	2.5286125	20	2 9.9	19.0
50407 2000 <i>CY</i> <sub>117</sub>	15.1	X	226.24902	224.93039	114.06555	3.14887	0.0893532	0.20518450	2.8469053	20	3 28.9	19.4
50408 2000 <i>CZ</i> <sub>124</sub>	14.4	X	30.92149	306.14633	342.84661	12.30250	0.1866454	0.21696036	2.7429367	20	9 25.9	17.8
50409 2000 <i>CO</i> <sub>125</sub>	15.2	X	88.84627	214.52710	97.97378	5.20430	0.0855660	0.22872118	2.6480842	20	12 27.2	18.8
50410 2000 <i>CK</i> <sub>126</sub>	14.8	X	336.39205	262.45010	121.38982	10.16343	0.0934425	0.22283930	2.6944794	20	11 3.1	18.1
50411 2000 <i>DS</i>	13.3	X	267.59342	196.23511	6.23901	15.88591	0.2052509	0.18564418	3.0433261	20	—	—
50412 Ewen	14.5	X	342.00076	311.32734	94.58335	3.04653	0.0820593	0.22361659	2.6882317	20	12 6.7	17.8
50413 Petgrinz	14.7	X	329.45043	235.86124	121.31328	9.96522	0.1706913	0.21972322	2.7198947	20	9 10.9	17.4
50414 2000 <i>DB</i> <sub>2</sub>	13.9	X	166.88754	266.72892	357.28263	4.51088	0.1161088	0.17796689	3.1302323	20	—	—
50415 2000 <i>DL</i> <sub>2</sub>	15.6	X	107.54062	163.29141	117.33501	3.04389	0.1983701	0.27152315	2.3619180	20	12 20.6	19.4
50416 2000 <i>DZ</i> <sub>2</sub>	13.9	X	209.75141	261.48226	46.02905	9.62214	0.0887514	0.19286216	2.9669123	20	2 6.7	18.6
50417 2000 <i>DY</i> <sub>6</sub>	16.3	X	212.05396	228.35810	222.08953	1.27351	0.1752850	0.26383543	2.4075795	20	7 27.5	20.0
50418 2000 <i>DC</i> <sub>7</sub>	14.5	X	18.43320	345.47969	144.19424	16.21571	0.1248393	0.24112816	2.5564507	20	1 10.2	17.5
50419 2000 <i>DL</i> <sub>7</sub>	13.4	X	248.57199	143.37525	38.61538	16.28424	0.1361848	0.18046032	3.1013318	20	12 22.8	17.9
50420 2000 <i>DN</i> <sub>7</sub>	14.7	X	299.84789	128.08302	55.19619	7.68511	0.0452200	0.28491586	2.2873096	20	—	—
50421 2000 <i>DD</i> <sub>9</sub>	14.4	X	102.96798	136.61751	152.99637	4.12120	0.2410304	0.17618297	3.1513267	20	12 14.5	19.8
50422 2000 <i>DB</i> <sub>10</sub>	14.7	X	142.59596	139.78212	145.82358	5.80576	0.1392347	0.18172184	3.0869621	20	—	—
50423 2000 <i>DE</i> <sub>13</sub>	15.9	X	242.20308	281.88057	161.91060	5.55258	0.1797678	0.26590239	2.3950866	20	8 20.4	19.0
50424 2000 <i>DQ</i> <sub>13</sub>	14.8	X	60.05564	143.53623	188.24155	1.95086	0.0746303	0.22619316	2.6677783	20	12 16.9	18.6
50425 2000 <i>DV</i> <sub>13</sub>	16.6	X	240.38354	269.75565	172.61639	2.43346	0.1616905	0.26771554	2.3842603	20	8 19.1	19.6
50426 2000 <i>DJ</i> <sub>15</sub>	14.2	X	203.21447	95.32014	153.14422	10.43504	0.0790584	0.18273184	3.0755767	20	—	—
50427 2000 <i>DT</i> <sub>15</sub>	14.0	X	190.86610	139.06736	138.50164	11.44855	0.0788572	0.18462505	3.0545153	20	—	—
50428 Alexanderdessler	15.2	X	259.23845	32.58811	153.46166	6.42679	0.1629043	0.23118650	2.6292249	20	—	—
50429 2000 <i>DB</i> <sub>16</sub>	14.0	X	168.71254	127.35535	356.71509	15.13830	0.1117046	0.21169189	2.7882598	20	8 2.2	18.5
50430 2000 <i>DG</i> <sub>16</sub>	14.4	X	216.50166	325.15564	180.88243	9.17333	0.0615078	0.21931073	2.7233041	20	10 22.4	18.2
50431 2000 <i>DU</i> <sub>19</sub>	15.5	X	40.95925	17.39884	55.53931	1.13497	0.0791095	0.24014378	2.5634321	20	—	—
50432 2000 <i>DB</i> <sub>20</sub>	16.1	X	242.25921	334.30739	170.21545	2.71564	0.1375638	0.27588892	2.3369345	20	11 22.3	18.8
50433 2000 <i>DY</i> <sub>22</sub>	14.4	X	342.09979	173.62513	148.54585	8.85235	0.2618207	0.21671595	2.7449987	20	8 9.6	16.2
50434 2000 <i>DG</i> <sub>23</sub>	14.6	X	14.57494	297.88751	320.80540	0.85076	0.1644081	0.20913030	2.8109821	20	7 14.1	17.4
50435 2000 <i>DH</i> <sub>23</sub>	14.8	X	128.00464	159.28185	148.69891	13.69709	0.1669996	0.23273020	2.6175856	20	—	—
50436 2000 <i>DK</i> <sub>23</sub>	14.9	X	43.52352	188.98584	146.66383	2.60626	0.0909576	0.22634707	2.6665689	20	12 4.3	18.5
50437 2000 <i>DX</i> <sub>23</sub>	15.1	X	58.16292	86.71846	191.87975	1.43039	0.1235813	0.21894707	2.7263187	20	10 13.9	18.8
50438 2000 <i>DZ</i> <sub>24</sub>	15.1	X	196.28426	163.19063	167.23335	1.97823	0.1431838	0.24565941	2.5249171	20	2 11.7	18.9
50439 2000 <i>DW</i> <sub>26</sub>	15.3	X	237.18428	278.21967	143.66569	5.92242	0.0049023	0.21450275	2.7638479	20	8 4.5	19.0
50440 2000 <i>DD</i> <sub>29</sub>	14.9	X	51.98725	338.08817	336.40308	3.28004	0.0912947	0.22336572	2.6902442	20	11 15.9	18.7
50441 2000 <i>DD</i> <sub>30</sub>	15.3	X	1.20711	199.57650	159.52516	6.27694	0.0203711	0.22289595	2.6940228	20	10 30.6	18.8
50442 2000 <i>DL</i> <sub>32</sub>	14.4	X	27.80892	182.64783	147.87446	12.75256	0.1936395	0.22230040	2.6988323	20	11 24.6	18.1
50443 2000 <i>DO</i> <sub>32</sub>	15.1	X	9.11714	325.62995	156.45609	10.08119	0.0157153	0.19169146	2.9789797	20	1 2.9	19.3
50444 2000 <i>DG</i> <sub>34</sub>	14.7	X	14.17519	354.11970	327.61271	8.21801	0.1211416	0.21879723	2.7275633	20	10 4.1	18.1
50445 2000 <i>DH</i> <sub>35</sub>	15.9	X	37.35749	87.25046	27.83292	1.12832	0.0825913	0.24378945	2.5378120	20	1 23.3	18.5
50446 2000 <i>DD</i> <sub>36</sub>	15.5	X	54.20382	230.02993	152.76692	0.74402	0.0806803	0.23365303	2.6106888	20	—	—
50447 2000 <i>DQ</i> <sub>37</sub>	15.9	X	174.09635	59.61244	345.20055	2.10498	0.1977281	0.25499625	2.4629004	20	4 23.6	19.9
50448 2000 <i>DZ</i> <sub>37</sub>	15.2	X	243.63295	77.33270	146.83284	1.18631	0.0906758	0.23553321	2.5967768	20	—	—
50449 2000 <i>DG</i> <sub>38</sub>	15.6	X	231.55416	257.81995	171.86011	2.67782	0.1530929	0.26500737	2.4004762	20	7 22.8	18.9
50450 2000 <i>DS</i> <sub>38</sub>	15.4	X	131.07808	123.31494	166.48415	3.64069	0.1351864	0.22881496	2.6473607	20	—	—
50451 2000 <i>DF</i> <sub>41</sub>	15.9	X	319.19215	55.24005	339.56719	2.86520	0.2450275	0.27340449	2.3510703	20	10 27.1	17.2
50452 2000 <i>DT</i> <sub>41</sub>	14.6	X	222.57334	187.59094	127.49662	3.14555	0.0729647	0.19715373	2.9236994	20	2 25.8	18.9
50453 2000 <i>DJ</i> <sub>46</sub>	15.3	X	326.32598	90.01892	323.23212	6.05323	0.1911324	0.27614090	2.3355126	20	12 16.7	17.2
50454 2000 <i>DT</i> <sub>48</sub>	16.3	X	280.97126	190.38033	202.29706	0.79272	0.1795443	0.26711434	2.3878365	20	8 2.7	18.8
50455 2000 <i>DX</i> <sub>52</sub>	14.5	X	58.01240	105.60113	192.94007	1.97325	0.1444616	0.21983617	2.7189629	20	11 11.3	18.2
50456 2000 <i>DW</i> <sub>53</sub>	14.4	X	107.78097	69.07574	258.68225	1.91444	0.0807456	0.23140239	2.6275893	20	—	—
50457 2000 <i>DZ</i> <sub>53</sub>	15.2	X	326.82707	102.77996	290.92486	1.91579	0.0994868	0.22309601	2.6924120	20	10 26.1	18.3
50458 2000 <i>DC</i> <sub>55</sub>	14.8	X	171.60649	27.70905	13.46376	2.19871	0.0633032	0.20277400	2.8694227	20	4 15.1	19.0
50459 2000 <i>DZ</i> <sub>55</sub>	15.4	X	256.96763	266.81857	141.05230	2.94252	0.1606737	0.26485409	2.4014023	20	7 23.3	18.4
50460 2000 <i>DK</i> <sub>56</sub>	14.0	X	68.13198	127.75581	163.02515	13.47354	0.1176889	0.17105694	3.2139732	20	11 4.1	18.8
50461 2000 <i>DZ</i> <sub>58</sub>	13.8	X	100.59760	338.49906	294.65870	1.86445	0.0905489	0.17301105	3.1897268	20	11 11.5	18.6
50462 2000 <i>DU</i> <sub>60</sub>	13.6	X	122.14702	164.50646	92.06029	2.30829	0.1690373	0.17249072	3.1961383	20	11 18.5	18.7
50463 2000 <i>DF</i> <sub>63</sub>	14.3	X	356.47467	143.59881	188.15100	5.05528	0.1493450	0.21643748	2.7473526	20	9 23.3	17.2
50464 2000 <i>DT</i> <sub>63</sub>	14.5	X	118.36010	149.42887	187.10113	3.75111	0.2598201	0.23285195	2.6166730	20	—	—
50465 2000 <i>DW</i> <sub>64</sub>	15.5	X	47.23266	8.27194	166.19456	6.18693	0.1136961	0.25100850	2.4889171	20	5 7.1	18.2
50466 2000 <i>DA</i> <sub>66</sub>	15.8	X	287.50566	135.58126	272.28294	1.82433	0.1572174	0.26920108	2.3754808	20	9 9.9	18.0
50467 2000 <i>DU</i> <sub>66</sub>	14.2	X	176.09440	131.76862	125.87794	1.92623	0.1222411	0.18044935	3.1014575	20	—	—
50468 2000 <i>DA</i> <sub>69</sub>	14.2	X	113.23948	110.79873	233.10735	2.07397	0.1524360	0.23350269	2.6118093	20	—	—
50469 2000 <i>DL</i> <sub>69</sub>	15.9	X	226.43612	279.59673	205.65960	1.70687	0.1628429	0.27016524	2.3698257	20	9 30.0	18.9
50470 2000 <i>DQ</i> <sub>69</sub>	16.2	X	290.11025	289.61676	170.15084	7.46394	0.1274335	0.27551912	2.3390251	20	12 10.9	18.5
50471 2000 <i>DT</i> <sub>69</sub>	15.8	X	236.40820	68.37651	11.22019	1.34381	0.1576874	0.26602069	2.3943765	20	8 11.8	18.9
50472 2000 <i>DH</i> <sub>71</sub>	15.4	X	32.25009	91.77540	331.44469	4.72686	0.1128656	0.28379033	2.2933534	20	—	—
50473 20												

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50481 2000 <i>DD</i> <sub>75</sub>	14.6	X	3.62195	134.18112	294.65575	2.37918	0.0478429	0.23067182	2.6331343	20	—	—
50482 2000 <i>DF</i> <sub>75</sub>	14.7	X	319.35647	71.30157	282.35423	2.19093	0.0873469	0.21357895	2.7718119	20	8 17.5	18.1
50483 2000 <i>DR</i> <sub>79</sub>	14.6	X	212.88216	227.40767	349.82101	12.04997	0.2059490	0.23079141	2.6322247	20	12 29.9	18.7
50484 2000 <i>DB</i> <sub>83</sub>	15.3	X	75.34374	47.30319	127.59306	7.21162	0.0982928	0.25628302	2.4546495	20	6 17.3	18.4
50485 2000 <i>DX</i> <sub>83</sub>	15.0	X	322.87427	246.15741	98.47953	6.38510	0.1228422	0.21640727	2.7476083	20	8 10.5	18.0
50486 2000 <i>DY</i> <sub>84</sub>	16.1	X	232.86835	71.18351	9.23245	6.03428	0.1556042	0.26743483	2.3859284	20	8 10.9	19.4
50487 2000 <i>DH</i> <sub>85</sub>	15.3	X	318.95069	268.14944	103.25035	7.92577	0.1332630	0.26909003	2.3761343	20	9 24.9	17.6
50488 2000 <i>DA</i> <sub>86</sub>	14.7	X	347.75033	277.35570	30.51366	6.54208	0.1367691	0.26176986	2.4202280	20	8 11.5	17.0
50489 2000 <i>DY</i> <sub>87</sub>	15.2	X	271.78364	299.14644	92.17850	6.93448	0.1493478	0.26627786	2.3928346	20	7 23.5	18.0
50490 2000 <i>DO</i> <sub>88</sub>	15.7	X	189.41837	159.89007	355.47119	12.42705	0.1011458	0.26864130	2.3787795	20	10 2.2	19.1
50491 2000 <i>DL</i> <sub>92</sub>	15.4	X	273.18701	164.73599	14.93786	3.58516	0.1399933	0.23189575	2.6238612	20	—	—
50492 2000 <i>DB</i> <sub>93</sub>	15.8	X	143.29929	108.24796	9.39593	2.24748	0.1586070	0.25948102	2.4344395	20	6 27.2	19.6
50493 2000 <i>DL</i> <sub>93</sub>	14.8	X	9.97042	155.36632	45.22765	2.49195	0.0207306	0.20301014	2.8671972	20	4 10.4	18.7
50494 2000 <i>DM</i> <sub>93</sub>	14.8	X	192.35147	157.06510	95.19877	3.69556	0.1657146	0.23232677	2.6206149	20	—	—
50495 2000 <i>DU</i> <sub>93</sub>	13.6	X	332.28080	175.22947	131.94063	9.29813	0.2153423	0.21133419	2.7914051	20	6 23.4	16.3
50496 2000 <i>DA</i> <sub>94</sub>	15.0	X	245.57594	82.80827	16.04848	3.34563	0.0321725	0.22145724	2.7056781	20	10 1.3	18.5
50497 2000 <i>DO</i> <sub>94</sub>	15.4	X	354.95193	125.13585	2.47112	4.93500	0.0429052	0.23972486	2.5664176	20	—	—
50498 2000 <i>DU</i> <sub>95</sub>	14.3	X	116.48356	165.84341	116.56817	5.86765	0.2035645	0.22651991	2.6652122	20	12 22.7	18.8
50499 2000 <i>DH</i> <sub>96</sub>	14.5	X	75.11176	328.34894	326.17580	2.98661	0.1277475	0.22453433	2.6809016	20	11 23.1	18.5
50500 2000 <i>DU</i> <sub>96</sub>	15.9	X	126.68287	106.30968	35.88261	1.67961	0.1353153	0.25975348	2.4327368	20	7 11.2	19.3
50501 2000 <i>DM</i> <sub>97</sub>	15.4	X	228.63226	266.22794	332.72463	7.97129	0.1054210	0.23551451	2.5969142	20	—	—
50502 2000 <i>DB</i> <sub>98</sub>	14.1	X	184.48591	146.53364	126.20180	11.62603	0.0770334	0.18567827	3.0429536	20	—	—
50503 2000 <i>DG</i> <sub>98</sub>	14.9	X	308.16503	326.25687	18.56985	6.18535	0.0538927	0.21329669	2.7742567	20	7 24.7	18.5
50504 2000 <i>DJ</i> <sub>98</sub>	14.6	X	3.63956	195.16234	128.55418	10.22122	0.0733816	0.21771166	2.7366227	20	9 22.3	18.0
50505 2000 <i>DP</i> <sub>98</sub>	14.7	X	20.48674	249.18048	71.34527	6.11979	0.0350568	0.21971089	2.7199964	20	10 8.2	18.3
50506 2000 <i>DV</i> <sub>99</sub>	14.5	X	298.89558	275.28780	37.18855	7.37168	0.1269235	0.25526774	2.4611538	20	5 12.5	17.3
50507 2000 <i>DW</i> <sub>99</sub>	14.4	X	206.90359	232.61394	1.35861	14.51383	0.0877718	0.23187325	2.6240310	20	—	—
50508 2000 <i>DF</i> <sub>100</sub>	14.0	X	87.94193	272.75357	358.54972	13.00754	0.1500307	0.17095579	3.2152408	20	10 29.1	19.0
50509 2000 <i>DB</i> <sub>101</sub>	15.6	X	289.59097	318.65158	100.26319	5.35414	0.1317171	0.27093885	2.3653125	20	10 9.7	17.9
50510 2000 <i>DE</i> <sub>101</sub>	13.5	X	168.86429	278.17873	9.16384	9.88423	0.0639087	0.18500506	3.0503311	20	—	—
50511 2000 <i>DZ</i> <sub>101</sub>	14.3	X	208.07064	159.61636	144.23083	15.61478	0.0995892	0.24101713	2.5572358	20	1 21.3	18.4
50512 2000 <i>DA</i> <sub>103</sub>	15.5	X	53.13376	114.99495	80.18478	4.77902	0.0831998	0.25438757	2.4668276	20	6 9.8	18.4
50513 2000 <i>DH</i> <sub>103</sub>	15.5	X	134.07096	80.25175	86.03111	1.45257	0.0206391	0.21419159	2.7665240	20	8 9.4	19.1
50514 2000 <i>DL</i> <sub>105</sub>	14.7	X	199.05861	270.16791	76.72654	4.65549	0.1846316	0.24624564	2.5209081	20	3 8.1	18.9
50515 2000 <i>DS</i> <sub>105</sub>	15.0	X	246.69114	256.03928	113.88680	6.10062	0.1017149	0.25630832	2.4544880	20	5 27.8	18.4
50516 2000 <i>DL</i> <sub>106</sub>	14.9	X	92.80081	342.62394	20.76185	10.50061	0.0482561	0.23413211	2.6071263	20	—	—
50517 2000 <i>DK</i> <sub>109</sub>	14.6	X	39.93166	271.62196	71.65064	6.29328	0.1570780	0.27433643	2.3457428	20	12 30.4	17.6
50518 2000 <i>DL</i> <sub>109</sub>	16.1	X	173.24703	248.79134	135.03850	2.96340	0.2736686	0.25261514	2.4783528	20	4 1.4	20.4
50519 2000 <i>DG</i> <sub>110</sub>	14.2	X	56.23915	80.24991	18.24120	22.40491	0.0717037	0.24102005	2.5572151	20	2 11.2	17.8
50520 2000 <i>DO</i> <sub>110</sub>	15.1	X	87.91517	8.31256	355.12144	5.65607	0.1832671	0.28600835	2.2814813	20	—	—
50521 2000 <i>DZ</i> <sub>110</sub>	15.4	X	31.80723	178.69685	130.66942	3.01750	0.0734619	0.22117601	2.7079712	20	10 13.1	18.8
50522 2000 <i>DU</i> <sub>111</sub>	15.2	X	88.72701	208.22931	124.96596	11.40226	0.1062798	0.23024032	2.6364232	20	—	—
50523 2000 <i>DQ</i> <sub>116</sub>	14.8	X	187.26107	77.68693	164.81341	11.80353	0.2747551	0.22980905	2.6397206	20	12 28.4	19.4
50524 2000 <i>DY</i> <sub>117</sub>	15.2	X	224.54417	196.84222	82.18661	1.68738	0.1497552	0.24079197	2.5588297	20	1 7.5	19.3
50525 2000 <i>EQ</i> <sub>3</sub>	15.3	X	3.24054	338.80063	143.25106	3.55519	0.1056696	0.23891811	2.5721917	20	—	—
50526 2000 <i>ET</i> <sub>5</sub>	16.6	X	266.21662	206.73018	153.38291	2.65319	0.2423813	0.26142967	2.4223272	20	5 21.1	19.9
50527 2000 <i>EE</i> <sub>6</sub>	15.6	X	308.82052	252.99971	175.34043	11.41080	0.1639558	0.22409324	2.6844184	20	11 12.9	18.5
50528 2000 <i>EL</i> <sub>9</sub>	14.5	X	245.33564	260.52448	345.37014	13.12669	0.1341926	0.23770746	2.5809178	20	—	—
50529 2000 <i>EC</i> <sub>10</sub>	15.7	X	208.39397	227.28436	219.68711	1.11747	0.0647453	0.21255693	2.7806897	20	7 25.1	19.7
50530 2000 <i>EP</i> <sub>10</sub>	15.0	X	116.89904	11.31958	155.37274	1.96176	0.0082527	0.20982139	2.8048063	20	7 16.2	18.8
50531 2000 <i>EZ</i> <sub>11</sub>	14.4	X	5.10591	202.91387	85.69287	9.29456	0.1438749	0.21263758	2.7799866	20	8 9.9	17.5
50532 2000 <i>EO</i> <sub>12</sub>	13.7	X	175.70719	181.06852	82.39592	8.99467	0.0840207	0.18305754	3.0719275	20	—	—
50533 2000 <i>EP</i> <sub>12</sub>	14.0	X	200.22192	210.53824	34.75979	9.62996	0.0939884	0.18376709	3.0640150	20	—	—
50534 2000 <i>EY</i> <sub>12</sub>	13.9	X	6.82026	258.27788	44.41688	9.71909	0.1445603	0.21380949	2.7698191	20	9 6.0	17.1
50535 2000 <i>EB</i> <sub>13</sub>	14.9	X	33.49781	260.93662	46.55039	8.32873	0.0802435	0.22004040	2.7172803	20	10 14.6	18.4
50536 2000 <i>EK</i> <sub>13</sub>	15.5	X	96.22864	87.22127	76.25089	4.10753	0.0315697	0.30622605	2.1799237	20	6 20.7	17.7
50537 2000 <i>EH</i> <sub>14</sub>	15.6	X	195.98479	276.38595	180.08257	4.49711	0.1513497	0.26084475	2.4259471	20	7 20.1	19.3
50538 2000 <i>EA</i> <sub>15</sub>	14.6	X	251.56763	113.76906	174.29589	9.06738	0.0745550	0.19299080	2.9655936	20	2 22.7	18.9
50539 2000 <i>EM</i> <sub>15</sub>	14.7	X	16.26498	359.18719	41.99085	4.44819	0.1770979	0.27866958	2.3213627	20	—	—
50540 2000 <i>EK</i> <sub>16</sub>	16.0	X	248.71834	352.69502	313.41742	4.43970	0.1620527	0.29466927	2.2365545	20	2 24.8	19.3
50541 2000 <i>EV</i> <sub>16</sub>	14.5	X	197.23895	158.07235	181.01816	10.55192	0.1184016	0.19501682	2.9450183	20	2 26.2	19.2
50542 2000 <i>EZ</i> <sub>16</sub>	13.8	X	233.21520	299.10658	357.63196	9.81802	0.0821068	0.19327603	2.9626753	20	2 16.9	18.3
50543 2000 <i>ED</i> <sub>17</sub>	14.6	X	69.28799	68.61702	195.11356	1.51864	0.0438210	0.21597596	2.7512651	20	9 26.3	18.4
50544 2000 <i>EO</i> <sub>17</sub>	15.4	X	299.92821	42.73327	28.84136	7.23254	0.1582605	0.27553240	2.3389500	20	11 12.9	17.3
50545 2000 <i>ER</i> <sub>17</sub>	13.0	X	227.18067	301.85644	3.67824	15.28584	0.0937364	0.24538394	2.5268064	20	2 17.9	16.9
50546 2000 <i>ED</i> <sub>18</sub>	14.2	X	276.62423	244.30359	114.91507	15.08833	0.0983524	0.20950568	2.8076234	20	6 20.9	18.0
50547 2000 <i>ES</i> <sub>18</sub>	15.6	X	280.77255	43.86578	21.13615	3.05168	0.1508267	0.27116657	2.3639881	20	9 27.1	18.0
50548 2000 <i>EC</i> <sub>19</sub>	15.5	X	118.04695	86.71327	70.57476	2.24958	0.1294050	0.25877144	2.4388878	20	7 21.6	18.9
50549 2000 <i>EV</i> <sub>19</sub>	14.7	X	226.71294	56.65110	210.99949	8.15630	0.1343091	0.23919637	2.5701965	20	—	—
50550 2000 <i>EZ</i> <sub>19</sub>	13.2	X	214.43656	198.60398	62.94716	11.07074	0.0552058	0.18373183	3.0644070	20	—	—
50551 2000 <i>EJ</i> <sub>20</sub>	13.8	X	278.81357	48.35665	253.20018	12.60291	0.2497712	0.20136963	2.8827484	20	3 13.6	18.5
50552 2000 <i>EV</i> <sub>20</sub>	14.3	X	39.21216	46.46694	242.57579	8.95006	0.0792325	0.21665773	2.7454904	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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50561 2000 <i>EB</i> <sub>30</sub>	14.6	X	136.50157	234.86413	130.23956	14.50279	0.2132729	0.24300728	2.5432547	20	2 3.9	18.3
50562 2000 <i>EX</i> <sub>32</sub>	14.8	X	155.36321	174.54217	132.87900	7.13929	0.1262373	0.28287666	2.2982890	20	—	—
50563 2000 <i>EF</i> <sub>36</sub>	14.8	X	214.83665	351.54132	97.49108	6.58854	0.0727015	0.26305649	2.4123299	20	8 9.7	18.0
50564 2000 <i>EE</i> <sub>37</sub>	14.1	X	37.53048	330.39852	353.63064	2.61309	0.0766162	0.21918643	2.7243336	20	11 6.8	17.8
50565 2000 <i>ES</i> <sub>37</sub>	14.3	X	308.23113	94.95050	207.90048	1.41528	0.0389999	0.20407702	2.8571956	20	5 28.1	18.1
50566 2000 <i>EL</i> <sub>38</sub>	13.4	X	241.41200	94.34462	183.64059	9.54249	0.0374530	0.19142526	2.9817408	20	2 1.9	17.8
50567 2000 <i>EN</i> <sub>38</sub>	14.4	X	22.29956	304.13576	356.47946	7.63791	0.1477913	0.21238000	2.7822339	20	9 24.1	17.7
50568 2000 <i>ES</i> <sub>38</sub>	14.3	X	164.44828	6.40008	192.13039	3.32835	0.0320296	0.21972932	2.7198443	20	10 28.7	18.0
50569 2000 <i>ET</i> <sub>38</sub>	14.2	X	117.15108	244.37050	186.12839	11.91891	0.0116438	0.19605818	2.9345808	20	3 13.0	18.2
50570 2000 <i>EZ</i> <sub>38</sub>	16.1	X	302.02115	256.28089	209.38377	1.34721	0.1691479	0.27717802	2.3296831	20	—	—
50571 2000 <i>EA</i> <sub>39</sub>	14.5	X	314.07225	124.92775	179.13676	9.79783	0.1472428	0.20354983	2.8621269	20	5 25.4	18.1
50572 2000 <i>EM</i> <sub>39</sub>	13.8	X	181.84373	109.29004	21.11359	4.08513	0.0474916	0.21327518	2.7744432	20	8 22.6	17.7
50573 2000 <i>EX</i> <sub>39</sub>	14.2	X	39.12523	106.00506	13.83782	6.80131	0.1865029	0.24317572	2.5420802	20	2 9.1	16.5
50574 2000 <i>ED</i> <sub>40</sub>	14.5	X	193.75827	34.49343	22.99477	5.10560	0.1039436	0.20561738	2.8429082	20	5 28.8	19.0
50575 2000 <i>EL</i> <sub>40</sub>	14.5	X	297.54173	351.90874	0.35680	11.07095	0.0911655	0.25786398	2.4446063	20	7 18.5	17.5
50576 2000 <i>EP</i> <sub>40</sub>	14.0	X	186.52244	350.91698	54.14591	2.64701	0.0414505	0.20199996	2.8767483	20	5 7.1	18.1
50577 2000 <i>EU</i> <sub>40</sub>	14.7	X	253.23196	228.41248	5.28979	0.78959	0.1357958	0.18534753	3.0465724	20	—	—
50578 2000 <i>EH</i> <sub>41</sub>	15.3	X	146.42695	314.23174	153.12233	2.61498	0.1440827	0.25510610	2.4621933	20	6 15.9	19.1
50579 2000 <i>EN</i> <sub>41</sub>	15.2	X	70.50799	275.81769	174.54131	6.05671	0.1162005	0.24216661	2.5491372	20	2 13.9	18.1
50580 2000 <i>EO</i> <sub>41</sub>	14.9	X	245.05044	124.37351	22.21666	4.61224	0.1428182	0.22426606	2.6830392	20	11 14.3	18.5
50581 2000 <i>EA</i> <sub>42</sub>	14.9	X	32.51696	217.23911	94.17206	0.14220	0.0284387	0.21689950	2.7434498	20	10 8.2	18.3
50582 2000 <i>ED</i> <sub>42</sub>	14.0	X	135.02205	302.19042	342.03450	4.99704	0.1478599	0.17570024	3.1570962	20	12 30.5	19.1
50583 2000 <i>EN</i> <sub>42</sub>	14.2	X	54.16466	114.10277	167.40674	5.36221	0.0013589	0.21601413	2.7509410	20	9 24.3	17.9
50584 2000 <i>EK</i> <sub>43</sub>	14.5	X	143.07683	222.39910	30.74527	2.38920	0.1674433	0.17231361	3.1983280	20	12 1.2	19.8
50585 2000 <i>EL</i> <sub>43</sub>	16.3	X	249.56283	291.25194	149.77871	2.63656	0.1769319	0.26634467	2.3924344	20	8 27.2	19.4
50586 2000 <i>EP</i> <sub>43</sub>	15.8	X	117.87834	312.12463	175.14346	5.03326	0.1377177	0.25374932	2.4709623	20	6 11.5	19.4
50587 2000 <i>ET</i> <sub>45</sub>	13.3	X	17.71206	179.09429	359.68616	1.72513	0.0521056	0.19668256	2.9283669	20	3 24.0	16.9
50588 2000 <i>EX</i> <sub>45</sub>	14.8	X	77.09503	93.68632	195.24666	3.45672	0.0565497	0.21885193	2.7271088	20	11 10.3	18.5
50589 2000 <i>ED</i> <sub>46</sub>	13.8	X	163.11751	316.56887	357.73538	10.37299	0.0911167	0.18414630	3.0598071	20	—	—
50590 2000 <i>EO</i> <sub>46</sub>	15.4	X	351.46920	124.17161	6.29422	0.53220	0.1004621	0.23647264	2.5898947	20	—	—
50591 2000 <i>EQ</i> <sub>46</sub>	15.3	X	238.84447	321.48707	175.56235	2.26378	0.1474723	0.27156194	2.3616930	20	11 4.5	18.2
50592 2000 <i>ES</i> <sub>46</sub>	14.9	X	213.91457	243.56434	181.73680	5.57246	0.1344263	0.25808765	2.4431937	20	6 28.9	18.7
50593 2000 <i>EU</i> <sub>46</sub>	15.5	X	246.55078	196.14401	356.47530	4.93262	0.1472327	0.27800377	2.3250677	20	—	—
50594 2000 <i>EV</i> <sub>46</sub>	14.5	X	300.37720	71.82195	240.86384	1.06166	0.0531211	0.20328652	2.8645978	20	5 28.2	18.3
50595 2000 <i>EZ</i> <sub>46</sub>	15.0	X	54.67271	181.27483	216.74966	2.85584	0.1262347	0.23201682	2.6229484	20	—	—
50596 2000 <i>EV</i> <sub>47</sub>	13.3	X	253.49560	31.21148	331.46280	1.64480	0.0770854	0.20408800	2.8570932	20	5 28.3	17.4
50597 2000 <i>EY</i> <sub>47</sub>	14.1	X	171.47201	341.49561	190.74114	3.90461	0.1001636	0.26555620	2.3971677	20	10 6.6	17.6
50598 2000 <i>EH</i> <sub>48</sub>	14.2	X	140.48459	209.72171	186.43440	12.62235	0.1959040	0.24367507	2.5386061	20	3 13.9	18.1
50599 2000 <i>EM</i> <sub>48</sub>	14.2	X	337.94148	312.53469	27.97253	4.71004	0.0805296	0.21175349	2.7877190	20	9 1.7	17.5
50600 2000 <i>ED</i> <sub>49</sub>	14.9	X	318.64807	229.30853	181.75410	5.10063	0.0425516	0.22015596	2.7163293	20	11 7.8	18.3
50601 2000 <i>EY</i> <sub>49</sub>	14.9	X	215.27902	124.72571	38.20294	2.64884	0.0816680	0.22265207	2.6959896	20	11 7.6	18.5
50602 2000 <i>EM</i> <sub>50</sub>	14.7	X	244.31789	111.59806	111.28279	5.98494	0.1043675	0.26332776	2.4106729	20	8 5.3	17.8
50603 2000 <i>EK</i> <sub>54</sub>	14.9	X	325.04104	293.21240	123.78343	5.96978	0.0442575	0.22057667	2.7128742	20	11 24.9	18.4
50604 2000 <i>EX</i> <sub>54</sub>	13.9	X	99.79615	147.32446	174.50005	15.03390	0.2062604	0.17247955	3.1962763	20	—	—
50605 2000 <i>EO</i> <sub>55</sub>	14.3	X	189.52183	310.33355	130.84525	7.09173	0.0369634	0.20497235	2.8488693	20	6 26.6	18.4
50606 2000 <i>ES</i> <sub>55</sub>	15.2	X	14.37239	140.71906	157.56774	1.98933	0.0717499	0.21326397	2.7745405	20	8 30.2	18.4
50607 2000 <i>EE</i> <sub>56</sub>	13.6	X	352.06749	348.11316	322.81154	7.38246	0.2172701	0.21144522	2.7904278	20	8 17.2	16.1
50608 2000 <i>EL</i> <sub>56</sub>	14.4	X	155.84698	55.89932	175.30416	13.37307	0.1298926	0.22229252	2.6988960	20	11 27.4	18.9
50609 2000 <i>EU</i> <sub>56</sub>	13.9	X	65.45922	275.94467	18.14158	5.20241	0.0164451	0.21944977	2.7221536	20	10 26.7	17.7
50610 2000 <i>EW</i> <sub>56</sub>	14.0	X	136.62911	76.30943	192.33344	7.97423	0.1540318	0.17500363	3.1654687	20	12 14.1	19.3
50611 2000 <i>EL</i> <sub>57</sub>	15.7	X	169.17334	270.14088	230.91551	0.48319	0.1338908	0.26313039	2.4118782	20	8 22.4	19.3
50612 2000 <i>EX</i> <sub>57</sub>	14.9	X	358.96299	175.16861	187.88949	6.12366	0.0298641	0.22012363	2.7165953	20	10 31.9	18.4
50613 2000 <i>ER</i> <sub>58</sub>	14.6	X	321.14395	2.20276	26.98760	5.23514	0.0093921	0.21758388	2.7376940	20	10 13.0	18.2
50614 2000 <i>EJ</i> <sub>59</sub>	15.3	X	0.74211	242.49960	182.85384	11.99859	0.1572563	0.22973552	2.6402838	20	—	—
50615 2000 <i>EG</i> <sub>60</sub>	14.2	X	304.88545	18.92979	181.74731	10.25036	0.0379600	0.19019006	2.9946369	20	1 14.8	18.5
50616 2000 <i>EH</i> <sub>61</sub>	14.8	X	155.70168	14.08608	207.42204	3.56378	0.0625138	0.22136613	2.7064204	20	11 15.6	18.8
50617 2000 <i>EG</i> <sub>62</sub>	14.5	X	194.39051	278.60958	18.40399	1.49314	0.1790499	0.18521872	3.0479848	20	1 9.9	19.6
50618 2000 <i>EH</i> <sub>62</sub>	14.9	X	77.93727	208.34590	164.88167	3.12963	0.0956480	0.23205725	2.6226437	20	—	—
50619 2000 <i>EM</i> <sub>62</sub>	14.2	X	65.77922	87.07351	34.46822	2.28307	0.0591360	0.19708295	2.9243993	20	3 19.6	18.1
50620 2000 <i>ES</i> <sub>62</sub>	14.8	X	224.51004	147.05647	18.58753	4.31537	0.0627247	0.22406563	2.6846390	20	11 24.2	18.5
50621 2000 <i>EO</i> <sub>63</sub>	14.8	X	170.22801	343.83516	160.40842	4.65295	0.0877624	0.21395893	2.7685292	20	8 24.1	19.0
50622 2000 <i>ER</i> <sub>63</sub>	13.8	X	75.91454	353.77864	8.33777	13.55066	0.1774762	0.22990474	2.6389881	20	—	—
50623 2000 <i>EC</i> <sub>65</sub>	14.4	X	216.96212	63.47085	314.29142	0.86595	0.1061252	0.20276709	2.8694879	20	5 3.4	18.7
50624 2000 <i>EL</i> <sub>65</sub>	14.7	X	239.79384	170.59973	196.72123	1.50250	0.0301819	0.20377015	2.8600634	20	5 23.9	18.6
50625 2000 <i>EL</i> <sub>66</sub>	14.1	X	82.19374	184.04404	120.67468	2.99866	0.1500156	0.17147342	3.2087670	20	12 5.9	19.1
50626 2000 <i>EY</i> <sub>67</sub>	15.1	X	160.08823	82.24867	355.68602	6.13077	0.1045694	0.25332317	2.4737327	20	5 18.4	18.9
50627 2000 <i>EZ</i> <sub>68</sub>	15.9	X	31.10082	357.55141	136.43293	2.35782	0.0749961	0.24220587	2.5488617	20	2 7.9	18.8
50628 2000 <i>EA</i> <sub>69</sub>	13.9	X	53.19037	259.94959	73.98167	1.99655	0.1571737	0.17148172	3.2086635	20	12 10.0	18.4
50629 2000 <i>EG</i> <sub>69</sub>	14.3	X	246.49570	288.06031	44.34827	2.74055	0.0794027	0.19896509	2.9059277	20	4 12.2	18.4
50630 2000 <i>EK</i> <sub>70</sub>	14.2	X	137.24599	84.91067	162.19959	1.40194	0.1128494	0.17143335	3.2092669	20	11 18.9	19.1
50631 2000 <i>EL</i> <sub>71</sub>	16.8	X	335.82903	262.94110	144.55989	2.73727	0.1976298	0.27768708	2.3268351	20	12 29.9	18.6
50632 2000 <i>EO</i> <sub>74</sub>	14.5	X	32.46012	26.62718	178.16832							

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50641 2000 EM <sub>84</sub>	14.0	X	196.65053	180.74164	129.95613	5.29922	0.1325860	0.23887383	2.5725096	20	1 19.9	18.1
50642 2000 EK <sub>86</sub>	14.6	X	215.85735	62.57002	236.86707	3.46815	0.0454192	0.24108069	2.5567863	20	1 24.0	18.1
50643 2000 EU <sub>86</sub>	15.4	X	231.95375	261.59687	243.77478	2.57527	0.1691153	0.27271454	2.3550340	20	11 2.4	18.4
50644 2000 EP <sub>87</sub>	15.6	X	187.70865	49.42250	70.74655	3.24737	0.1521948	0.26290001	2.4132870	20	8 14.5	19.3
50645 2000 EQ <sub>87</sub>	13.9	X	61.91230	281.60712	22.63991	13.78166	0.0517998	0.21936804	2.7228297	20	11 6.9	17.8
50646 2000 EA <sub>88</sub>	15.3	X	333.23102	306.61676	239.94844	9.99727	0.1792976	0.24258110	2.5462326	20	1 4.1	18.4
50647 2000 EN <sub>88</sub>	13.5	X	208.89733	22.77711	237.40912	8.78940	0.0695534	0.18519194	3.0482787	20	—	—
50648 2000 EL <sub>89</sub>	14.5	X	309.96623	192.93457	100.92481	3.14356	0.0301852	0.20530848	2.8457590	20	5 20.1	18.4
50649 2000 EK <sub>90</sub>	13.9	X	14.08482	45.57157	289.71555	8.71050	0.1496330	0.21819393	2.7325887	20	10 26.2	17.3
50650 2000 EV <sub>90</sub>	15.3	X	234.12935	176.81126	316.49018	6.66448	0.0577230	0.27047103	2.3680391	20	11 3.1	18.4
50651 2000 EO <sub>91</sub>	14.8	X	217.60631	257.33873	220.29227	5.83360	0.0981575	0.21759112	2.7376333	20	9 8.8	18.8
50652 2000 ER <sub>91</sub>	14.1	X	158.58069	156.71660	201.11279	8.86951	0.0676593	0.19195903	2.9762108	20	2 6.9	18.7
50653 2000 EV <sub>92</sub>	14.2	X	62.76744	138.52084	254.17218	5.78044	0.0427020	0.23351386	2.6117260	20	—	—
50654 2000 EH <sub>93</sub>	14.5	X	166.63986	218.47543	295.17937	10.14546	0.1561841	0.21544779	2.7557598	20	8 27.9	19.2
50655 2000 EL <sub>94</sub>	13.9	X	243.54168	316.39965	336.41637	12.96462	0.1590969	0.24081649	2.5586560	20	2 11.7	17.9
50656 2000 EM <sub>94</sub>	13.7	X	168.06616	90.86077	286.70515	6.05813	0.2622658	0.24616400	2.5214654	20	3 16.7	18.2
50657 2000 EN <sub>94</sub>	14.5	X	149.65850	217.08668	317.97276	7.24837	0.1340027	0.21485778	2.7608024	20	9 9.2	18.9
50658 2000 ES <sub>94</sub>	15.0	X	53.23899	196.18212	238.96839	6.18223	0.2312476	0.24034396	2.5620086	20	1 4.6	17.0
50659 2000 EW <sub>94</sub>	14.2	X	49.13254	349.46385	254.04392	7.75057	0.0897653	0.20867895	2.8150338	20	8 6.3	18.0
50660 2000 EJ <sub>95</sub>	13.9	X	14.59385	241.97055	324.54776	10.01821	0.0561837	0.19955063	2.9002403	20	4 19.7	17.9
50661 2000 EN <sub>95</sub>	14.1	X	194.94998	21.21679	214.08678	10.14246	0.1674178	0.17731673	3.1378793	20	12 24.9	19.3
50662 2000 EG <sub>97</sub>	15.1	X	308.92946	314.55911	206.08417	14.07111	0.1180340	0.23372852	2.6101266	20	—	—
50663 2000 EY <sub>102</sub>	14.9	X	89.14247	47.05058	265.03499	8.36869	0.0252242	0.22719214	2.6599523	20	12 21.3	18.5
50664 2000 EY <sub>103</sub>	14.8	X	274.38173	193.41390	269.61149	7.11611	0.1373442	0.27088164	2.3656455	20	11 11.3	17.2
50665 2000 EK <sub>104</sub>	13.3	X	324.24926	120.25263	70.66931	15.76236	0.0798984	0.18722639	3.0261562	20	1 26.3	17.6
50666 2000 EQ <sub>104</sub>	14.2	X	172.13739	347.39006	110.39460	6.99987	0.1232695	0.25714045	2.4491899	20	6 29.0	18.0
50667 2000 ES <sub>104</sub>	14.4	X	308.27915	328.53251	221.47210	4.34310	0.1060876	0.28638645	2.2794728	20	—	—
50668 2000 EO <sub>105</sub>	13.2	X	273.60624	183.82262	63.59775	10.83750	0.0465432	0.19077726	2.9884889	20	2 6.9	17.6
50669 2000 ES <sub>105</sub>	14.9	X	283.97937	353.67784	59.19874	9.62728	0.1673327	0.26603035	2.3943185	20	9 16.4	17.5
50670 2000 EY <sub>105</sub>	15.3	X	184.74875	56.16378	85.28095	6.93343	0.0676602	0.26370324	2.4083840	20	9 16.5	18.7
50671 2000 EL <sub>107</sub>	14.7	X	202.74280	63.97485	185.89773	12.11830	0.0911520	0.23359879	2.6110929	20	—	—
50672 2000 EN <sub>107</sub>	14.2	X	124.85376	42.71556	272.42740	6.51631	0.1951086	0.23154708	2.6264946	20	—	—
50673 2000 EQ <sub>107</sub>	14.4	X	116.88055	17.93251	285.30098	5.25724	0.1577632	0.22773501	2.6557234	20	—	—
50674 2000 ES <sub>107</sub>	15.0	X	275.96645	307.45847	241.98719	2.50542	0.2495317	0.23433632	2.6056114	20	—	—
50675 2000 ED <sub>108</sub>	15.1	X	12.64851	357.74838	74.22164	6.00135	0.2206784	0.28244548	2.3006275	20	—	—
50676 2000 EQ <sub>108</sub>	13.9	X	308.66797	153.69899	26.28735	9.66778	0.0159069	0.19165650	2.9793419	20	—	—
50677 2000 ED <sub>109</sub>	13.8	X	248.08509	68.28599	168.08789	11.73454	0.0435445	0.18418538	3.0593743	20	—	—
50678 2000 EQ <sub>109</sub>	14.5	X	85.91536	145.08676	93.07170	10.20823	0.0922559	0.21580730	2.7526984	20	9 26.3	18.6
50679 2000 EZ <sub>109</sub>	15.0	X	50.33065	33.95339	35.81251	3.81573	0.0329846	0.23726066	2.5841570	20	—	—
50680 2000 EQ <sub>110</sub>	14.9	X	261.98095	309.37757	159.76340	11.89240	0.1646954	0.22322261	2.6913939	20	10 23.1	18.4
50681 2000 EG <sub>111</sub>	14.0	X	82.20409	185.47978	66.27964	9.18238	0.1704113	0.21409961	2.7673163	20	10 16.4	18.3
50682 2000 EJ <sub>111</sub>	13.6	X	116.29653	283.52345	32.94297	18.40201	0.1054279	0.17937854	3.1137881	20	—	—
50683 2000 EN <sub>111</sub>	14.1	X	242.80020	191.48164	38.47756	14.45688	0.0612758	0.23430829	2.6058192	20	—	—
50684 2000 ER <sub>111</sub>	13.0	X	272.87684	0.10707	33.76283	18.32771	0.1479857	0.21223924	2.7834639	20	7 30.7	17.1
50685 2000 EV <sub>113</sub>	13.7	X	265.28822	191.46579	24.17891	10.02809	0.0222079	0.18458802	3.0549237	20	—	—
50686 2000 EZ <sub>113</sub>	14.3	X	336.95766	230.15221	103.61424	3.30786	0.1258010	0.25780546	2.4449762	20	8 27.5	16.6
50687 Paultemple	13.8	X	120.69320	322.56884	46.38174	22.69908	0.1270756	0.23918387	2.5702860	20	1 13.9	17.7
50688 2000 EX <sub>118</sub>	14.8	X	54.96731	237.77567	93.73207	11.12708	0.0846101	0.22613400	2.6682436	20	12 13.3	18.5
50689 2000 EJ <sub>119</sub>	14.0	X	165.98485	200.17737	24.52779	14.56818	0.1227427	0.22494940	2.6772418	20	11 24.5	18.4
50690 2000 ER <sub>119</sub>	14.5	X	88.11263	242.29487	123.24080	16.06863	0.1726875	0.23606392	2.5928833	20	—	—
50691 2000 ET <sub>122</sub>	15.7	X	252.00071	171.18940	214.29236	1.50925	0.1849573	0.21194878	2.7860063	20	6 11.9	19.7
50692 2000 EB <sub>124</sub>	14.3	X	250.77219	72.96757	168.61780	11.34829	0.0173834	0.18940411	3.0029155	20	1 3.6	18.7
50693 2000 EF <sub>124</sub>	14.7	X	145.11705	161.55925	149.76736	2.41778	0.1809201	0.18227920	3.0806662	20	—	—
50694 2000 EM <sub>124</sub>	13.9	X	69.20572	193.21089	135.08085	6.50702	0.1653385	0.22491361	2.6778868	20	—	—
50695 2000 EU <sub>126</sub>	14.3	X	308.08125	302.69673	78.74186	3.61646	0.1035939	0.21691250	2.7433402	20	9 8.7	17.5
50696 2000 EX <sub>127</sub>	13.9	X	133.45069	130.18596	159.75350	11.42767	0.1002639	0.17799438	3.1299100	20	—	—
50697 2000 EL <sub>128</sub>	15.9	X	140.72081	72.84518	42.08040	3.18490	0.1382665	0.25628368	2.4546453	20	6 19.5	19.7
50698 2000 EY <sub>128</sub>	14.0	X	126.44112	216.56691	156.14568	11.08617	0.0619239	0.19071792	2.9891087	20	1 21.0	18.4
50699 2000 EC <sub>129</sub>	15.0	X	261.16055	295.95119	125.21738	3.64774	0.0693670	0.21611618	2.7500749	20	8 27.2	18.7
50700 2000 EM <sub>129</sub>	15.8	X	178.34033	352.39667	143.12808	3.63902	0.1268353	0.26389333	2.4072273	20	8 25.3	19.4
50701 2000 EU <sub>129</sub>	14.0	X	247.74854	221.97299	13.47924	10.64759	0.0730784	0.18692273	3.0294327	20	—	—
50702 2000 EU <sub>130</sub>	13.7	X	247.32643	247.76506	83.20361	3.10289	0.0748973	0.20093411	2.8869124	20	4 12.5	17.8
50703 2000 EE <sub>131</sub>	13.5	X	125.55359	174.81883	86.38758	2.42750	0.1581722	0.17282609	3.1920021	20	11 26.1	18.8
50704 2000 EK <sub>132</sub>	14.6	X	84.24226	118.24406	186.59482	6.83152	0.1276869	0.27084998	2.3658299	20	12 25.1	18.2
50705 2000 ER <sub>132</sub>	14.4	X	356.41747	142.78817	164.33777	4.53140	0.0938029	0.21117810	2.7927805	20	8 14.1	17.6
50706 2000 EX <sub>132</sub>	14.6	X	263.06035	345.03163	4.78973	7.65206	0.1691706	0.25383510	2.4704056	20	5 7.8	18.2
50707 2000 EC <sub>133</sub>	15.7	X	346.80254	60.67526	356.69849	4.61641	0.1740928	0.27722556	2.3294168	20	—	—
50708 2000 EF <sub>133</sub>	15.5	X	35.42065	92.19977	1.59219	5.51216	0.1838763	0.24004352	2.5641459	20	—	—
50709 2000 EK <sub>133</sub>	15.9	X	192.23264	231.96851	228.30347	1.17909	0.1565063	0.26134064	2.4228772	20	7 21.8	19.5
50710 2000 EQ <sub>133</sub>	14.1	X	195.53919	253.86650	52.54973	10.83358	0.0837238	0.18809622	3.0168195	20	1 21.5	18.9
50711 2000 ER <sub>134</sub>	14.6	X	68.38967	317.17034	97.96633	3.62353	0.2273848	0.23880656	2.5729927	20	1 9.4	16.9
50712 2000 EV <sub>134</sub>	14.2	X	179.39105	255.47822	164.37640	12.27792	0.0693092	0.20330813	2.8643948	20	5 20.6	18.7
50713 2000 EZ <sub>135</sub>	14.0	X	317.98826	20.06938	20.80565	26.07187	0.2414635	0.27030834	2.3689893	20	10 26.8	15.6
50714 2000 ER <sub>136</sub>	15.2	X	27.97333	84.10133	23.27343	5.60567	0.2043471	0.24065885	2.5597732	20		

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50721 2000 EU <sub>141</sub>	14.5	X	146.23280	3.71869	81.25354	9.49681	0.1555676	0.25105413	2.4886155	20	5 19.4	18.4
50722 2000 EW <sub>141</sub>	13.4	X	136.62289	254.59253	117.61673	12.02594	0.1074727	0.18882296	3.0090739	20	2 8.6	17.9
50723 2000 EG <sub>143</sub>	15.1	X	315.04033	327.51789	241.71859	11.76219	0.1215567	0.24305282	2.5429370	20	1 15.9	18.6
50724 2000 EK <sub>145</sub>	15.0	X	351.21397	282.94256	220.00571	4.66148	0.1931377	0.23873305	2.5735208	20	—	—
50725 2000 EH <sub>146</sub>	15.0	X	336.99882	256.46727	204.01367	15.09194	0.0973900	0.23310937	2.6147463	20	—	—
50726 2000 EH <sub>147</sub>	14.7	X	107.48216	267.92261	321.33370	3.38818	0.0366386	0.21501763	2.7594340	20	9 27.2	18.7
50727 2000 EO <sub>147</sub>	14.3	X	300.09077	157.87646	2.07593	10.72036	0.0577450	0.18309943	3.0714590	20	—	—
50728 2000 ED <sub>148</sub>	14.3	X	330.49660	178.75951	8.20750	2.80555	0.0874607	0.19042716	2.9921506	20	1 26.4	18.2
50729 2000 ET <sub>148</sub>	15.2	X	152.60153	265.43577	269.51089	1.29490	0.1486643	0.26321727	2.4113475	20	9 18.4	18.8
50730 2000 EZ <sub>149</sub>	13.9	X	68.79343	272.07094	103.83448	14.10648	0.1930678	0.23065566	2.6332574	20	—	—
50731 2000 EA <sub>150</sub>	13.7	X	219.68291	46.88734	118.11874	13.30474	0.0998671	0.22270997	2.6955224	20	11 17.7	17.7
50732 2000 EJ <sub>151</sub>	14.9	X	15.02819	65.31731	59.80661	14.33833	0.1175444	0.23894597	2.5719918	20	—	—
50733 2000 EV <sub>152</sub>	15.9	X	172.33780	27.92887	60.49620	3.29558	0.1311938	0.30673024	2.1775342	20	6 17.6	19.0
50734 2000 EP <sub>153</sub>	14.6	X	141.60819	148.55420	191.44012	14.69005	0.1291661	0.23586053	2.5943737	20	—	—
50735 2000 ER <sub>153</sub>	15.6	X	212.93378	282.10367	196.89182	4.26638	0.0417057	0.21673022	2.7448782	20	9 12.6	19.4
50736 2000 EA <sub>154</sub>	14.2	X	183.27852	287.04561	41.25770	8.29186	0.1819521	0.23894128	2.5720255	20	2 2.7	18.5
50737 2000 EB <sub>154</sub>	13.5	X	117.67809	159.16369	140.03768	13.91343	0.1076595	0.17696502	3.1420356	20	12 31.0	18.5
50738 2000 EA <sub>155</sub>	15.2	X	201.97579	170.31082	319.68732	8.09453	0.1113405	0.21724987	2.7404994	20	9 6.1	19.4
50739 2000 EY <sub>156</sub>	13.8	X	118.82736	254.58895	95.69139	14.42303	0.2270091	0.24065846	2.5597760	20	—	—
50740 2000 EO <sub>157</sub>	13.7	X	157.55039	271.15507	333.39366	18.81756	0.1599117	0.17353457	3.1833084	20	11 30.9	19.3
50741 2000 EW <sub>157</sub>	16.2	X	281.76077	240.15561	228.02215	4.71105	0.1882811	0.27502428	2.3418299	20	11 29.9	17.9
50742 2000 EZ <sub>158</sub>	14.3	X	338.76744	322.81137	206.29835	13.08898	0.1000663	0.23687121	2.5869887	20	1 1.9	17.8
50743 2000 EL <sub>163</sub>	15.0	X	354.91986	22.39111	349.54719	1.84349	0.1000186	0.22213885	2.7001405	20	11 11.9	18.1
50744 2000 EL <sub>164</sub>	14.9	X	233.02575	213.43888	184.80634	8.18364	0.2318880	0.21123857	2.7922475	20	6 5.5	19.6
50745 2000 ET <sub>165</sub>	14.1	X	264.33441	279.57318	1.162538	2.06088	0.0384496	0.19798672	2.9154930	20	3 22.9	18.0
50746 2000 EJ <sub>170</sub>	13.1	X	156.98963	263.06844	81.09662	10.70082	0.0919696	0.19132974	2.9827331	20	1 26.4	17.7
50747 2000 EL <sub>170</sub>	14.1	X	129.70915	224.31085	55.68726	10.84676	0.1228844	0.17678828	3.1441293	20	12 19.8	19.1
50748 2000 ED <sub>171</sub>	14.6	X	165.04684	157.47729	140.97871	14.24223	0.1547316	0.23171669	2.6252128	20	—	—
50749 2000 EL <sub>171</sub>	13.9	X	137.50127	235.64755	76.09464	10.84574	0.0704637	0.18236851	3.0796604	20	—	—
50750 2000 EU <sub>171</sub>	14.2	X	135.24649	270.97911	58.13356	13.07541	0.2145558	0.23289097	2.6163808	20	—	—
50751 2000 EL <sub>173</sub>	14.6	X	260.66318	214.11685	46.22914	15.60986	0.1204684	0.24155545	2.5534351	20	1 24.6	18.7
50752 2000 EA <sub>174</sub>	14.2	X	132.93523	185.46837	99.14230	16.36224	0.0975304	0.22613609	2.6682272	20	—	—
50753 2000 EO <sub>177</sub>	14.3	X	130.99834	62.95626	207.32464	12.11624	0.1491997	0.22238669	2.6981341	20	12 18.6	18.8
50754 2000 EW <sub>178</sub>	14.3	X	23.70686	269.55532	113.47828	15.64178	0.1335914	0.23007294	2.6377018	20	—	—
50755 2000 EQ <sub>181</sub>	15.3	X	13.94143	303.59416	63.18406	9.55858	0.1436846	0.27437677	2.3455129	20	12 25.7	18.1
50756 2000 ET <sub>181</sub>	13.8	X	21.81698	341.03235	14.05974	15.86943	0.1916986	0.22501511	2.6770815	20	12 12.7	17.5
50757 2000 EA <sub>183</sub>	14.2	X	191.88822	230.65913	93.63658	10.12294	0.0917954	0.19298189	2.9656849	20	2 7.2	18.8
50758 2000 EB <sub>183</sub>	13.4	X	124.71298	172.38080	131.44700	18.79825	0.1848174	0.17880608	3.1204306	20	—	—
50759 2000 EF <sub>183</sub>	14.4	X	32.21901	246.92075	134.16220	16.76276	0.1555124	0.22959239	2.6413810	20	—	—
50760 2000 ER <sub>183</sub>	15.1	X	122.46931	201.90046	53.28650	2.92704	0.1638583	0.22238817	2.6981221	20	11 23.9	19.5
50761 2000 EZ <sub>183</sub>	14.2	X	330.90241	206.15074	111.75147	8.81003	0.1091097	0.20996804	2.8035002	20	7 17.4	17.5
50762 2000 EY <sub>184</sub>	14.9	X	274.71832	291.28690	113.97144	13.48386	0.0777432	0.21614802	2.7498049	20	8 25.6	18.6
50763 2000 EV <sub>185</sub>	16.2	X	45.94962	220.20886	117.91630	0.70824	0.0795071	0.22745595	2.6578952	20	12 8.7	19.6
50764 2000 EZ <sub>185</sub>	16.7	X	284.53406	311.90249	53.99782	0.49364	0.2303927	0.26559715	2.3969213	20	6 20.5	19.2
50765 2000 FM	14.1	X	166.12045	108.29998	100.73490	8.92959	0.0698246	0.21984350	2.7189024	20	11 13.3	18.2
50766 2000 FA <sub>2</sub>	14.7	X	330.03005	30.92326	178.25217	1.44866	0.0753636	0.19291392	2.9663815	20	2 22.5	18.4
50767 2000 FV <sub>2</sub>	15.0	X	180.36325	98.45277	33.23749	7.12247	0.0861036	0.21065134	2.7974343	20	8 22.4	19.3
50768 lanwessen	14.1	X	112.37814	247.21191	95.14974	12.64382	0.0733250	0.22961177	2.6412324	20	—	—
50769 2000 FH <sub>3</sub>	14.4	X	198.37118	129.64301	92.94390	12.61074	0.1446663	0.22710922	2.6605997	20	12 25.5	18.4
50770 2000 FE <sub>5</sub>	14.2	X	260.29941	36.41886	135.41864	10.75019	0.1427119	0.22782029	2.6550607	20	—	—
50771 2000 FH <sub>5</sub>	14.6	X	196.90138	65.01850	83.13279	9.56626	0.2280524	0.21756176	2.7378796	20	9 22.9	19.3
50772 2000 FQ <sub>8</sub>	15.0	X	280.70784	286.52430	22.82246	2.43854	0.0256236	0.20028548	2.8931419	20	5 1.0	18.8
50773 2000 FG <sub>12</sub>	14.2	X	328.36343	150.34094	39.56864	13.27617	0.1087455	0.24237215	2.5476958	20	1 16.6	17.6
50774 2000 FK <sub>12</sub>	15.0	X	95.74297	357.49492	75.17230	10.11043	0.1382077	0.29498758	2.2349453	20	3 1.8	17.6
50775 2000 FQ <sub>12</sub>	14.3	X	264.49762	94.63122	93.87836	11.24487	0.0474998	0.18435037	3.0575486	20	—	—
50776 2000 FS <sub>12</sub>	14.0	X	97.27197	261.29089	66.81911	12.98160	0.1772644	0.22826037	2.6516470	20	—	—
50777 2000 FL <sub>13</sub>	14.2	X	227.61937	85.06038	120.40416	15.09495	0.0711708	0.22938562	2.6429681	20	—	—
50778 2000 FZ <sub>15</sub>	14.5	X	77.53765	143.47341	156.30636	13.66296	0.0587632	0.22178656	2.7029991	20	11 27.6	18.6
50779 2000 FA <sub>16</sub>	14.5	X	276.43331	359.37607	63.25989	6.30799	0.0553372	0.21823182	2.7322724	20	9 24.4	18.1
50780 2000 FE <sub>16</sub>	14.2	X	143.33824	241.70232	135.37869	10.31540	0.0110549	0.19313908	2.9640756	20	2 9.8	18.4
50781 2000 FO <sub>16</sub>	14.8	X	159.06396	10.86387	131.49726	5.91865	0.0431153	0.21213688	2.7843592	20	8 9.4	18.6
50782 2000 FU <sub>16</sub>	15.2	X	314.17713	327.42751	81.86484	8.46973	0.2019040	0.27182451	2.3601719	20	11 11.4	16.8
50783 2000 FE <sub>17</sub>	14.8	X	331.99210	42.49844	52.68267	9.72446	0.0888258	0.23042299	2.6350297	20	—	—
50784 2000 FF <sub>17</sub>	14.0	X	186.49137	80.43405	143.99445	12.27654	0.0326451	0.17737219	3.1372252	20	12 16.7	18.8
50785 2000 FS <sub>18</sub>	14.5	X	356.67220	278.02167	139.31597	11.76841	0.1817146	0.22854692	2.6494301	20	—	—
50786 2000 FY <sub>19</sub>	13.5	X	186.25676	229.93330	60.88480	11.88913	0.0788530	0.18519970	3.0481935	20	—	—
50787 2000 FP <sub>20</sub>	15.2	X	199.64786	56.77753	81.09914	5.66592	0.1372127	0.26670376	2.3902865	20	9 22.6	18.7
50788 2000 FB <sub>21</sub>	14.4	X	229.35542	44.29309	52.94274	12.02257	0.0703610	0.21609373	2.7502654	20	9 8.7	18.5
50789 2000 FJ <sub>21</sub>	14.3	X	125.09403	303.09873	34.16449	14.90557	0.1076468	0.23243502	2.6198012	20	—	—
50790 2000 FZ <sub>21</sub>	13.9	X	115.06982	255.69627	63.02962	10.02671	0.10718637	0.17986563	3.1081640	20	—	—
50791 2000 FY <sub>22</sub>	14.6	X	49.01930	346.26193	88.19275	12.78468	0.1557005	0.23759809	2.5817098	20	—	—
50792 2000 FZ <sub>22</sub>	14.7	X	26.51123	64.78298	51.17840	15.80725	0.10163352	0.23827463	2.5768206	20	1 10.5	18.3
50793 2000 FF <sub>23</sub>	14.4	X	218.85828	14.86439	93.59325	10.03549	0.1039863	0.21528738	2.7517284	20	9 4.2	18.6
50794 2000 FH <sub>24</sub>	15.0	X	294.46389	318.79499	140.18739	14.60779	0.0505359	0.22311469	2.6922617	20	12 7.7	18.7

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50801 2000 FA <sub>27</sub>	14.1	X	185.04444	321.29599	17.65975	11.00234	0.1076900	0.19075687	2.9887018	20	2 20.7	18.9
50802 2000 FH <sub>27</sub>	14.4	X	264.96605	102.45922	219.90457	1.07049	0.1139089	0.19890894	2.9064745	20	4 15.9	18.6
50803 2000 FP <sub>27</sub>	14.4	X	110.18861	219.46624	194.32243	13.32175	0.1562502	0.24240027	2.5474988	20	2 25.7	18.0
50804 2000 FC <sub>28</sub>	14.2	X	4.80310	92.33816	265.02523	1.55925	0.0746047	0.21825592	2.7320713	20	11 4.2	17.6
50805 2000 FF <sub>28</sub>	14.8	X	164.77951	61.10173	241.79367	1.23242	0.0713012	0.18243380	3.0789254	20	—	—
50806 2000 FH <sub>28</sub>	13.9	X	106.43912	237.44925	203.43118	12.10566	0.0853875	0.19586278	2.9365322	20	3 22.4	18.0
50807 2000 FJ <sub>28</sub>	13.8	X	216.13762	201.17803	337.47008	4.49934	0.0841864	0.17411918	3.1761790	20	11 17.0	18.5
50808 2000 FK <sub>28</sub>	15.1	X	196.11092	155.31947	337.62158	5.07649	0.2379740	0.26585616	2.3953642	20	9 1.7	19.0
50809 2000 FF <sub>29</sub>	13.8	X	291.03222	295.11209	218.44692	4.32878	0.1477867	0.18184518	3.0855661	20	—	—
50810 2000 FL <sub>29</sub>	14.3	X	261.72121	37.90361	5.82609	3.93781	0.0822180	0.21076014	2.7964715	20	8 2.5	18.0
50811 2000 FZ <sub>29</sub>	14.7	X	268.98561	173.27414	169.58205	2.23088	0.0662440	0.20267611	2.8703466	20	5 24.4	18.6
50812 2000 FC <sub>30</sub>	14.2	X	243.72410	242.69185	169.73216	7.87169	0.2047429	0.26034252	2.4290660	20	7 6.5	17.9
50813 2000 FJ <sub>30</sub>	14.6	X	161.10199	352.45991	141.68017	4.13534	0.0429384	0.20956462	2.8070969	20	7 31.4	18.5
50814 2000 FO <sub>30</sub>	15.2	X	262.10180	32.30274	82.40374	4.26885	0.1900374	0.22346300	2.6894634	20	10 22.2	18.5
50815 2000 FC <sub>31</sub>	14.9	X	348.15291	87.74969	50.06071	8.55463	0.1960948	0.23919222	2.5702262	20	—	—
50816 2000 FU <sub>31</sub>	14.1	X	132.17081	300.89695	53.39566	14.10801	0.1965523	0.23690608	2.5867348	20	1 18.2	18.1
50817 2000 FV <sub>32</sub>	13.9	X	51.66187	255.00923	85.92288	14.23472	0.1986155	0.22262466	2.6962110	20	—	—
50818 2000 FV <sub>32</sub>	15.1	X	222.13252	9.15816	40.32441	6.74392	0.1104835	0.25655582	2.4529092	20	6 18.8	18.7
50819 2000 FW <sub>32</sub>	14.7	X	57.39346	284.27128	135.96672	15.33193	0.0438275	0.23556042	2.5965768	20	—	—
50820 2000 FV <sub>33</sub>	13.9	X	193.39354	264.40880	91.06315	3.41659	0.0459676	0.19586448	2.9365152	20	3 15.9	18.2
50821 2000 FC <sub>34</sub>	15.2	X	270.45159	37.61985	110.05133	3.60429	0.1333890	0.22783937	2.6549125	20	12 25.7	18.3
50822 2000 FH <sub>35</sub>	14.5	X	40.32971	135.85436	132.76086	3.80751	0.0804960	0.21012259	2.8012153	20	8 30.2	17.9
50823 2000 FL <sub>35</sub>	14.4	X	186.05860	185.87101	51.68383	6.36674	0.1381375	0.17633200	3.1495509	20	12 21.9	19.4
50824 2000 FU <sub>35</sub>	14.3	X	314.67615	267.22725	124.86559	6.02942	0.0659601	0.21690319	2.7434186	20	10 7.9	17.8
50825 2000 FD <sub>37</sub>	14.4	X	247.23149	313.53242	136.05530	4.37343	0.0673549	0.21588387	2.7520474	20	9 16.2	18.2
50826 2000 FE <sub>37</sub>	14.9	X	232.07660	345.42077	132.51920	4.02725	0.1799306	0.21940312	2.7225395	20	9 19.7	18.8
50827 2000 FN <sub>37</sub>	14.1	X	254.06307	98.15716	162.94516	10.58433	0.0755165	0.18885444	3.0087394	20	1 24.6	18.6
50828 2000 FR <sub>37</sub>	15.2	X	25.88875	1.64377	153.19306	7.79327	0.1343033	0.24397912	2.5364966	20	2 29.1	17.7
50829 2000 FV <sub>37</sub>	13.9	X	329.61333	76.41955	75.14275	14.62592	0.0989357	0.23590513	2.5940467	20	—	—
50830 2000 FF <sub>38</sub>	14.8	X	274.15952	12.49079	89.20574	5.64038	0.0200158	0.22046812	2.7137647	20	11 14.2	18.4
50831 2000 FQ <sub>38</sub>	14.9	X	265.90474	9.23728	154.98216	4.53248	0.0348626	0.22764758	2.6564034	20	—	—
50832 2000 FH <sub>39</sub>	14.4	X	10.17924	96.99595	79.66033	3.14835	0.0248571	0.19434704	2.9517807	20	3 12.9	18.3
50833 2000 FE <sub>40</sub>	14.7	X	10.28123	261.96538	64.16302	6.94069	0.0596811	0.21388110	2.7692007	20	10 3.3	18.2
50834 2000 FV <sub>40</sub>	14.0	X	293.83038	163.00200	69.80845	8.21972	0.0548864	0.19074867	2.9887875	20	2 11.5	18.3
50835 2000 FX <sub>40</sub>	14.0	X	341.24860	22.85718	40.75288	13.77549	0.1668081	0.22598789	2.6693935	20	—	—
50836 2000 FG <sub>41</sub>	14.8	X	174.49136	351.32671	142.34742	5.02600	0.0123593	0.21045664	2.7991594	20	8 17.1	18.7
50837 2000 FG <sub>42</sub>	14.2	X	160.44884	159.59596	149.49444	9.13350	0.0719268	0.18196397	3.0842231	20	—	—
50838 2000 FG <sub>42</sub>	14.6	X	120.17592	162.64586	97.24434	3.62105	0.0693275	0.22191353	2.7019680	20	11 24.6	18.6
50839 2000 FJ <sub>43</sub>	14.2	X	128.80755	28.73696	31.20192	12.44590	0.0442266	0.19650760	2.9301048	20	3 23.6	18.4
50840 2000 FQ <sub>43</sub>	14.1	X	75.83120	295.70473	159.98705	15.11497	0.1292735	0.19533921	2.9417771	20	3 10.5	17.9
50841 2000 FG <sub>44</sub>	14.4	X	179.28401	305.40271	25.33632	13.58856	0.1666861	0.23821077	2.5772811	20	2 3.9	18.8
50842 2000 FL <sub>44</sub>	15.1	X	311.62758	325.45691	165.98684	12.88013	0.1209057	0.23192865	2.6236131	20	—	—
50843 2000 FS <sub>44</sub>	13.9	X	132.18563	158.99054	29.00380	13.60913	0.1230028	0.21368600	2.7708861	20	9 15.7	18.3
50844 2000 FU <sub>44</sub>	13.6	X	183.98683	302.57587	42.32681	11.63474	0.1306729	0.19266031	2.9689841	20	2 28.4	18.5
50845 2000 FL <sub>45</sub>	14.0	X	280.85599	77.40920	72.91524	7.13508	0.0830604	0.17998533	3.1067858	20	—	—
50846 2000 FX <sub>45</sub>	15.2	X	85.71961	12.75571	68.25067	10.16364	0.0461434	0.24183517	2.5514657	20	2 20.2	18.6
50847 2000 FG <sub>46</sub>	13.6	X	70.13796	337.73771	61.40398	10.13308	0.1382689	0.18544527	3.0455019	20	—	—
50848 2000 FM <sub>46</sub>	14.5	X	271.53396	279.59409	146.22459	10.14590	0.1252004	0.21664122	2.7456299	20	9 8.9	17.9
50849 2000 FV <sub>46</sub>	14.6	X	108.52949	352.52574	69.53917	10.66440	0.2343098	0.24459624	2.5322283	20	3 25.0	18.4
50850 2000 FX <sub>46</sub>	13.5	X	161.15666	233.09228	86.89327	10.55370	0.1175403	0.18389615	3.0625813	20	1 3.9	18.1
50851 2000 FR <sub>47</sub>	15.3	X	124.67763	168.84534	154.53876	11.77032	0.1774013	0.27622386	2.3350450	20	—	—
50852 2000 FZ <sub>47</sub>	13.7	X	150.52769	258.24054	80.97187	11.94170	0.0548644	0.18581111	3.0415031	20	1 9.6	18.2
50853 2000 FC <sub>50</sub>	14.1	X	291.73079	214.98571	288.38947	12.20736	0.0942289	0.22994809	2.6386564	20	—	—
50854 2000 FD <sub>50</sub>	14.2	X	234.51180	237.78926	266.15837	12.17546	0.1371127	0.22281809	2.6946503	20	10 26.7	18.3
50855 2000 FK <sub>55</sub>	14.5	X	170.04184	80.34509	212.38429	10.08846	0.1797865	0.23270697	2.6177597	20	—	—
50856 2000 FZ <sub>61</sub>	14.5	X	77.56815	198.71565	171.23368	23.96489	0.1338943	0.23197114	2.6232927	20	—	—
50857 2000 FP <sub>62</sub>	14.6	X	159.17429	315.19600	74.70330	3.03311	0.1175000	0.19689079	2.9263018	20	3 24.2	19.1
50858 2000 FR <sub>64</sub>	15.0	X	302.14719	304.37997	104.28131	2.57751	0.1378949	0.21929232	2.7234565	20	10 3.0	18.0
50859 2000 FC <sub>64</sub>	13.9	X	168.98612	262.70231	338.26342	8.43045	0.0494842	0.17486931	3.1670894	20	12 13.7	18.7
50860 2000 FD <sub>65</sub>	14.3	X	58.28740	6.74791	7.08269	13.70328	0.1864704	0.23040687	2.6351526	20	—	—
50861 2000 FO <sub>69</sub>	14.7	X	347.64949	139.81758	226.24111	4.89869	0.0823618	0.21752286	2.7382060	20	10 20.8	17.9
50862 2000 FX <sub>73</sub>	13.4	X	33.81450	324.95424	64.98042	30.56124	0.0984734	0.22877914	2.6476370	20	—	—
50863 2000 GN <sub>1</sub>	14.5	X	24.43400	198.10351	198.80960	14.16289	0.0974710	0.22544747	2.6736577	20	—	—
50864 2000 GM <sub>2</sub>	13.0	X	345.92838	80.54893	76.59206	10.90455	0.0356207	0.18796690	3.0182031	20	1 16.7	17.1
50865 2000 GU <sub>2</sub>	14.8	X	287.23149	248.64142	97.66569	6.86758	0.0578364	0.25692690	2.4505468	20	6 25.2	17.7
50866 Davidesprizzi	13.3	X	31.56003	71.78722	50.29565	13.36644	0.1345103	0.23825348	2.5769731	20	1 28.9	16.2
50867 2000 GM <sub>4</sub>	15.0	X	0.21742	280.21887	189.36581	22.34355	0.2806009	0.28536658	2.2849006	20	—	—
50868 2000 GC <sub>6</sub>	13.9	X	190.91595	31.84806	346.96910	1.78831	0.0545149	0.19902937	2.9053019	20	4 8.5	18.2
50869 2000 GJ <sub>8</sub>	16.2	X	180.82762	294.46578	165.90002	1.15942	0.1538387	0.26019692	2.4299720	20	7 10.9	19.8
50870 2000 GQ <sub>8</sub>	15.7	X	196.41053	72.23780	353.99659	2.50922	0.1598827	0.25783889	2.4447649	20	6 10.9	19.4
50871 2000 GX <sub>9</sub>	14.6	X	111.60213	124.23299	306.11189	0.83337	0.1087073	0.19736817	2.9215813	20	3 19.9	18.8
50872 2000 GT <sub>10</sub>	14.4	X	278.34346	150.56690	243.80420	1.71630	0.1612141	0.26306394	2.4122843	20	8 3.4	17.1
50873 2000 GQ <sub>13</sub>	15.1	X	326.82689	332.70815	197.07616	8.82678	0.1346562	0.23798829	2.5788871	20	—	—
50874 2000 GE <sub>23</sub>	14.5	X	110.11475	183.48651	187.26395	5.33761	0.2470577	0.23409033	2.6074365	20	1 17.8	18.1
50875 2000 GQ <sub>2</sub>												

ELEMENTS AND OPPOSITION DATES IN 2020

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50881 2000 GF <sub>33</sub>	14.5	X	351.17903	17.78663	9.06716	5.95471	0.0563746	0.22031415	2.7150289	20	11 20.6	17.9
50882 2000 GW <sub>35</sub>	14.9	X	215.69300	181.29990	315.94244	1.54180	0.0620291	0.21739663	2.7392658	20	10 7.5	18.9
50883 2000 GD <sub>36</sub>	14.8	X	136.22234	22.06850	11.69186	7.19702	0.1600961	0.24114889	2.5563042	20	3 6.4	18.5
50884 2000 GZ <sub>37</sub>	14.5	X	100.18477	33.39832	24.72949	9.79718	0.0713869	0.19108268	2.9853036	20	2 20.2	18.8
50885 2000 GD <sub>39</sub>	15.6	X	14.63078	73.71224	40.20737	2.23079	0.0858091	0.23634384	2.5908356	20	—	—
50886 2000 GW <sub>39</sub>	14.6	X	208.73465	276.76062	64.97524	0.81992	0.1332499	0.19332698	2.9621547	20	3 12.9	19.2
50887 2000 GD <sub>40</sub>	14.4	X	341.92951	225.21323	199.20749	21.45647	0.0623073	0.22442551	2.6817682	20	12 27.0	18.3
50888 2000 GN <sub>40</sub>	15.3	X	226.28209	126.07985	22.50001	2.62725	0.1546996	0.27032040	2.3689188	20	11 1.2	18.3
50889 2000 GO <sub>40</sub>	14.7	X	200.06006	164.57890	211.54615	1.20190	0.0832984	0.19799290	2.9154324	20	4 15.2	19.1
50890 2000 GS <sub>40</sub>	15.1	X	299.73327	82.21335	18.85259	13.49355	0.0451231	0.22372335	2.6873764	20	12 13.7	18.8
50891 2000 GH <sub>41</sub>	14.5	X	236.57282	126.14649	221.68884	1.12024	0.0518269	0.19859620	2.9095250	20	4 22.3	18.5
50892 2000 GO <sub>41</sub>	14.7	X	234.25449	55.97560	223.97495	2.72167	0.0710743	0.18807579	3.0170381	20	1 26.9	19.2
50893 2000 GX <sub>41</sub>	14.5	X	139.71064	187.10180	205.40512	10.12651	0.1201816	0.19231936	2.9724921	20	3 4.1	19.1
50894 2000 GA <sub>42</sub>	14.1	X	359.20911	252.15884	311.24678	0.89851	0.0537548	0.19578383	2.9373216	20	3 28.9	17.9
50895 2000 GH <sub>42</sub>	14.1	X	112.03565	50.68939	7.50644	5.70888	0.1415016	0.24182032	2.5515702	20	3 6.9	17.5
50896 2000 GS <sub>43</sub>	14.4	X	112.14275	291.70316	177.98359	1.57943	0.0342097	0.19911273	2.9044910	20	4 29.8	18.5
50897 2000 GA <sub>44</sub>	14.4	X	112.12483	351.81915	24.28635	15.90074	0.2051338	0.23464619	2.6033170	20	1 27.8	18.3
50898 2000 GF <sub>47</sub>	14.6	X	73.83423	189.26231	287.86738	0.89640	0.0256298	0.19451126	2.9501192	20	3 19.5	18.7
50899 2000 GM <sub>47</sub>	14.4	X	239.74940	114.72280	343.75517	1.24788	0.0280778	0.21459620	2.7630454	20	9 22.2	18.1
50900 2000 GK <sub>48</sub>	14.9	X	240.57800	285.75980	11.82505	0.65309	0.0702173	0.19123079	2.9837619	20	2 24.2	19.2
50901 2000 GR <sub>48</sub>	14.5	X	29.96245	36.86301	23.65992	11.62098	0.0458915	0.18066467	3.0989927	20	—	—
50902 2000 GJ <sub>49</sub>	14.5	X	250.19069	201.09913	11.79286	3.12060	0.0470482	0.18156291	3.0887633	20	—	—
50903 2000 GM <sub>50</sub>	14.9	X	311.34472	359.65930	57.22347	2.66654	0.0539441	0.21882034	2.7273713	20	11 3.3	18.3
50904 2000 GK <sub>51</sub>	14.6	X	152.83013	157.40102	130.06439	2.17354	0.1524058	0.17614141	3.1518224	20	—	—
50905 2000 GL <sub>51</sub>	14.6	X	353.72047	3.58364	158.79395	3.04736	0.1328724	0.19053959	2.9909734	20	1 22.9	18.0
50906 2000 GX <sub>51</sub>	14.4	X	171.75505	107.82971	194.50340	14.59463	0.1586491	0.18059528	3.0997865	20	—	—
50907 2000 GB <sub>52</sub>	15.1	X	259.89884	113.98817	36.61451	5.31577	0.1659066	0.27483661	2.3428959	20	12 23.8	17.4
50908 2000 GE <sub>53</sub>	14.7	X	79.53148	97.07308	112.87072	8.01221	0.2141663	0.21737841	2.7394188	20	12 22.9	19.2
50909 2000 GG <sub>53</sub>	14.1	X	302.04092	204.65555	310.91478	0.59237	0.0814881	0.18190902	3.0848442	20	—	—
50910 2000 GK <sub>53</sub>	14.9	X	83.32948	238.96822	196.95123	10.82705	0.1253860	0.24006456	2.5639960	20	2 12.9	18.1
50911 2000 GC <sub>54</sub>	15.4	X	65.99089	295.79246	196.86531	3.96146	0.0787705	0.24508501	2.5288605	20	3 31.8	18.5
50912 2000 GX <sub>54</sub>	14.7	X	256.71550	57.29301	22.84827	5.04829	0.1419424	0.21540087	2.7561599	20	9 5.5	18.5
50913 2000 GD <sub>56</sub>	15.1	X	255.00966	9.27687	119.45039	2.39219	0.0317966	0.22065800	2.7122076	20	11 21.5	18.6
50914 2000 GE <sub>56</sub>	13.8	X	278.86697	144.06455	33.29691	16.03680	0.0160517	0.18091665	3.0961146	20	—	—
50915 2000 GG <sub>56</sub>	13.8	X	121.22298	302.44499	143.07136	2.77430	0.0715154	0.19703279	2.9248957	20	4 15.9	17.9
50916 2000 GK <sub>56</sub>	14.8	X	208.10985	199.99387	184.30166	2.11676	0.0153543	0.19938714	2.9018255	20	5 7.9	18.9
50917 2000 GG <sub>57</sub>	14.8	X	321.25089	298.24012	218.92064	1.30608	0.0959232	0.23383368	2.6093440	20	—	—
50918 2000 GO <sub>57</sub>	14.8	X	142.79601	110.31554	209.49048	10.42182	0.1064042	0.17953578	3.1119699	20	—	—
50919 2000 GX <sub>57</sub>	14.1	X	296.49592	40.66621	211.91816	9.68351	0.0475033	0.19276769	2.9678814	20	3 4.8	18.3
50920 2000 GT <sub>58</sub>	14.4	X	31.25826	121.13446	27.49096	11.32682	0.0930076	0.19322904	2.9631555	20	3 11.7	18.2
50921 2000 GS <sub>58</sub>	15.3	X	273.90132	40.06344	28.99113	14.60814	0.1572425	0.21589141	2.7519834	20	9 16.8	19.0
50922 2000 GM <sub>59</sub>	13.9	X	81.86495	56.62970	69.52446	2.73116	0.0417404	0.19658556	2.9293300	20	4 13.9	17.8
50923 2000 GO <sub>60</sub>	14.4	X	325.30465	351.09868	30.45478	5.99684	0.1030607	0.21429971	2.7655934	20	10 6.7	17.6
50924 2000 GK <sub>61</sub>	14.3	X	294.44365	138.58353	148.01377	2.64599	0.0344887	0.19809158	2.9144640	20	4 19.8	18.3
50925 2000 GW <sub>64</sub>	13.8	X	257.21651	195.28419	30.20130	13.90284	0.1150792	0.23271855	2.6176729	20	—	—
50926 2000 GF <sub>65</sub>	13.9	X	113.99021	17.51241	45.66814	6.23606	0.1892815	0.24243973	2.5472223	20	3 23.5	17.5
50927 2000 GZ <sub>65</sub>	14.1	X	102.28885	64.93240	208.80773	13.18627	0.0162865	0.21843922	2.7305427	20	11 17.5	17.9
50928 2000 GT <sub>66</sub>	14.9	X	286.55634	57.47799	24.21017	8.95239	0.1196022	0.21892769	2.7264796	20	10 22.5	18.1
50929 2000 GU <sub>66</sub>	14.6	X	39.88905	35.55587	357.01692	2.15479	0.1823112	0.22598718	2.6693991	20	—	—
50930 2000 GW <sub>66</sub>	14.5	X	1.13187	283.73613	214.94350	8.93441	0.0257165	0.18645191	3.0345304	20	1 11.9	18.9
50931 2000 GT <sub>67</sub>	14.1	X	51.21607	155.72349	195.92793	5.67079	0.0902479	0.17175626	3.2052433	20	12 19.8	18.7
50932 2000 GE <sub>68</sub>	14.5	X	70.57850	21.86220	39.07812	13.57403	0.1471713	0.23546486	2.5972793	20	1 13.7	17.6
50933 2000 GR <sub>68</sub>	13.4	X	142.34888	281.91295	32.30874	14.31735	0.2094504	0.17633853	3.1494731	20	—	—
50934 2000 GW <sub>68</sub>	15.1	X	275.44781	53.17220	41.97790	5.86291	0.0098333	0.21785516	2.7354209	20	11 6.7	18.9
50935 2000 GX <sub>68</sub>	14.6	X	217.29583	190.54508	68.94364	2.20557	0.1111688	0.18131031	3.0916315	20	—	—
50936 2000 GD <sub>69</sub>	15.2	X	291.09438	86.81065	142.11937	1.19868	0.0306395	0.18856100	3.0118602	20	2 4.1	19.3
50937 2000 GP <sub>69</sub>	14.3	X	14.61318	286.24446	210.29938	4.21006	0.0905042	0.18883766	3.0089177	20	1 25.1	18.0
50938 2000 GR <sub>69</sub>	14.6	X	231.18909	110.21760	31.80659	4.64305	0.0491692	0.21865581	2.7287393	20	11 3.9	18.3
50939 2000 GE <sub>70</sub>	14.6	X	310.69617	23.11543	16.30312	3.91755	0.1508314	0.21466263	2.7624754	20	10 1.9	17.4
50940 2000 GF <sub>70</sub>	13.6	X	284.44955	86.31920	29.21956	16.76093	0.0811820	0.17359126	3.1826153	20	11 22.3	18.0
50941 2000 GL <sub>71</sub>	15.2	X	227.13298	304.41688	172.54699	3.01610	0.2159754	0.21738122	2.7393952	20	9 7.5	19.6
50942 2000 GR <sub>71</sub>	13.2	X	297.98243	234.65723	154.79867	2.13744	0.0827047	0.16178125	3.3356765	20	8 27.3	17.7
50943 2000 GW <sub>71</sub>	14.8	X	301.91775	112.08666	36.26518	11.66611	0.0631777	0.22901543	2.6458155	20	—	—
50944 2000 GA <sub>72</sub>	14.7	X	220.36113	131.11263	44.61416	7.96049	0.1571072	0.22232366	2.6986440	20	11 19.3	18.5
50945 2000 GJ <sub>72</sub>	13.9	X	277.06295	124.17360	40.03715	12.61439	0.1111456	0.17900450	3.1181243	20	—	—
50946 2000 GM <sub>75</sub>	14.3	X	217.65802	291.69949	45.91856	10.24839	0.0731572	0.19231843	2.9725017	20	3 22.9	18.9
50947 2000 GN <sub>75</sub>	14.5	X	133.31214	173.47194	187.48144	4.15763	0.1171773	0.18368166	3.0649650	20	1 22.5	19.0
50948 2000 GX <sub>75</sub>	15.1	X	298.72905	126.62686	35.87736	13.47307	0.1091654	0.23068472	2.6330362	20	—	—
50949 2000 GC <sub>77</sub>	14.5	X	295.81008	0.67052	190.85823	5.52823	0.1314588	0.18432112	3.0578721	20	—	—
50950 2000 GZ <sub>77</sub>	14.6	X	250.63504	92.55386	213.10874	9.54398	0.0669844	0.19296004	2.9659088	20	3 13.4	19.0
50951 2000 GE <sub>78</sub>	14.5	X	162.92246	176.00016	194.62262	10.16796	0.1092015	0.19033993	2.9930648	20	3 1.2	19.3
50952 2000 GO <sub>78</sub>	14.4	X	14.13448	61.47204	27.66634	10.72414	0.1080645	0.18230215	3.0804076	20	—	—
50953 2000 GA <sub>79</sub>	13.9	X	16.62233	272.04860	93.50423	2.73952	0.1205564	0.16846020	3.2469168	20	11 25.8	18.1
50954 2000 GH <sub>79</sub>	14.6	X	236.49274	71.18513	32.18701	13.36333	0.1761944	0.21569092	2.7536885	20	9 11.1	18.8
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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
50961 2000 GD <sub>83</sub>	14.2	X	56.99928	223.40606	120.34572	17.73432	0.2141913	0.22537665	2.6742178	20	—	—
50962 2000 GB <sub>84</sub>	15.6	X	190.81818	41.71007	50.94233	8.01325	0.0714143	0.25882706	2.4385384	20	7 15.7	19.1
50963 2000 GT <sub>84</sub>	13.9	X	196.46688	234.81078	68.01770	17.53906	0.1947553	0.18444371	3.0565170	20	1 19.8	19.3
50964 2000 GF <sub>85</sub>	14.0	X	268.48947	174.81402	70.88998	14.32562	0.1064244	0.23735531	2.5834699	20	1 13.8	17.9
50965 2000 GN <sub>85</sub>	13.5	X	174.70502	99.05525	132.77699	16.65970	0.0823882	0.17358454	3.1826975	20	12 10.3	18.6
50966 2000 GZ <sub>85</sub>	14.2	X	324.94809	192.49390	323.62594	4.14734	0.0574461	0.18770307	3.0210306	20	—	—
50967 2000 GE <sub>86</sub>	14.3	X	103.58219	233.95680	29.47670	13.66814	0.1162397	0.22019928	2.7159730	20	11 11.1	18.5
50968 2000 GR <sub>86</sub>	15.2	X	6.50136	14.72769	73.16234	5.69286	0.2298985	0.23491387	2.6013389	20	—	—
50969 2000 GO <sub>87</sub>	14.5	X	115.90767	30.89551	101.56967	7.04951	0.0860261	0.25250109	2.4790990	20	6 10.2	17.8
50970 2000 GT <sub>87</sub>	15.2	X	338.66062	174.36443	107.74876	6.43565	0.1925103	0.29904409	2.2146881	20	6 2.7	16.5
50971 2000 GP <sub>88</sub>	13.7	X	215.90773	263.50057	64.48062	11.11071	0.1192584	0.19178660	2.9779944	20	3 9.2	18.6
50972 2000 GE <sub>90</sub>	14.2	X	32.74414	315.70760	128.18886	4.12871	0.0860619	0.18588461	3.0407012	20	—	—
50973 2000 GZ <sub>90</sub>	14.1	X	241.45688	226.45794	80.07645	11.12144	0.0810090	0.19213373	2.9744063	20	3 11.4	18.7
50974 2000 GA <sub>91</sub>	14.5	X	318.38213	142.66524	80.13805	11.56564	0.0587978	0.19204158	2.9753578	20	3 3.0	18.7
50975 2000 GQ <sub>91</sub>	13.9	X	163.91848	214.30511	111.76377	11.32074	0.0803833	0.18364271	3.0653984	20	1 10.8	18.6
50976 2000 GD <sub>92</sub>	13.2	X	96.74442	242.55599	63.13593	19.77516	0.1364314	0.17048668	3.2211361	20	12 17.4	18.3
50977 2000 GL <sub>92</sub>	14.7	X	209.55400	315.76398	166.91060	11.91921	0.0633016	0.21332996	2.7159730	20	9 11.6	18.6
50978 2000 GS <sub>92</sub>	15.1	X	318.76041	337.75940	137.72778	3.24213	0.0296074	0.23028555	2.6360780	20	—	—
50979 2000 GX <sub>92</sub>	14.0	X	207.24347	278.83527	24.64107	10.24498	0.0802298	0.19010912	2.9954868	20	1 30.8	18.7
50980 2000 GE <sub>93</sub>	13.4	X	78.67528	234.41065	153.85965	13.80291	0.1147984	0.18342766	3.0677938	20	—	—
50981 2000 GL <sub>93</sub>	13.8	X	160.77653	273.33412	80.82896	11.34864	0.1146679	0.18883964	3.0088966	20	2 15.0	18.6
50982 2000 GO <sub>93</sub>	13.7	X	182.88519	174.22403	76.20666	12.00471	0.1526387	0.17636123	3.1492029	20	—	—
50983 2000 GT <sub>93</sub>	13.2	X	161.12078	266.90415	103.11413	10.96237	0.1264537	0.19136317	2.9823857	20	3 5.9	18.0
50984 2000 GY <sub>93</sub>	13.9	X	347.17752	39.60780	112.69917	11.61663	0.0701743	0.18791913	3.0187146	20	1 8.0	17.9
50985 2000 GB <sub>94</sub>	13.9	X	249.63392	170.13389	103.60991	11.64611	0.0241577	0.18993788	2.9972870	20	2 12.0	18.2
50986 2000 GC <sub>94</sub>	13.5	X	346.43959	247.72491	136.69912	11.70900	0.1130911	0.21855404	2.7295862	20	11 19.8	16.9
50987 2000 GD <sub>94</sub>	13.7	X	186.40793	181.02896	106.04841	10.71710	0.0555432	0.18235001	3.0798685	20	—	—
50988 2000 GF <sub>94</sub>	14.2	X	218.08235	229.90080	96.82034	12.07148	0.1032592	0.19198597	2.9759323	20	3 9.8	19.0
50989 2000 GG <sub>94</sub>	14.1	X	11.71710	71.10807	90.58789	11.92419	0.0387486	0.19203132	2.9754638	20	2 28.5	18.2
50990 2000 GH <sub>94</sub>	14.0	X	315.50873	68.34611	85.12095	13.00040	0.0812516	0.18372551	3.0644772	20	—	—
50991 2000 GK <sub>94</sub>	14.3	X	29.87599	299.49393	153.75124	13.20115	0.1565318	0.23581993	2.5946715	20	—	—
50992 2000 GL <sub>94</sub>	14.8	X	353.43158	323.24959	125.70115	12.66825	0.1307724	0.22978451	2.6399086	20	—	—
50993 2000 GR <sub>94</sub>	14.0	X	70.30654	280.25395	88.08817	11.76469	0.1846951	0.22719169	2.6599558	20	—	—
50994 2000 GS <sub>94</sub>	13.8	X	302.32095	320.95190	140.08377	12.23260	0.0561100	0.17497705	3.1657891	20	12 7.5	18.2
50995 2000 GH <sub>95</sub>	14.1	X	201.42941	93.74032	354.69231	4.97885	0.1270882	0.25700458	2.4500529	20	7 18.6	17.8
50996 2000 GJ <sub>96</sub>	13.9	X	215.34197	212.84122	20.79261	5.22955	0.1182964	0.17729418	3.1381454	20	—	—
50997 2000 GB <sub>97</sub>	14.5	X	102.35123	355.83945	243.37368	3.62112	0.0770255	0.21655968	2.7463190	20	10 8.6	18.4
50998 2000 GB <sub>98</sub>	14.0	X	202.44562	12.96399	218.94236	8.73054	0.0258714	0.17890372	3.1192952	20	—	—
50999 2000 GH <sub>98</sub>	14.0	X	156.52723	328.23172	334.70259	4.77992	0.1362862	0.17992223	3.1075121	20	—	—
51000 2000 GK <sub>98</sub>	14.7	X	240.62903	284.58920	219.89200	10.77575	0.1471626	0.22309696	2.6924044	20	11 6.2	18.4
51001 2000 GL <sub>98</sub>	14.0	X	314.89336	127.78247	265.26350	4.96109	0.0760321	0.21665167	2.7455415	20	10 3.2	17.4
51002 2000 GY <sub>99</sub>	14.5	X	245.13239	125.35110	337.59500	3.70876	0.0774240	0.21688411	2.7435796	20	9 27.2	18.3
51003 2000 GP <sub>100</sub>	15.0	X	76.84605	242.36733	221.31397	10.15572	0.1307758	0.24373334	2.5382014	20	3 12.6	18.1
51004 2000 GL <sub>102</sub>	14.1	X	270.29481	47.00599	211.51011	8.59929	0.0533747	0.19134096	2.9826165	20	2 8.9	18.6
51005 2000 GM <sub>102</sub>	14.9	X	88.46224	276.95589	346.89595	4.81999	0.0220804	0.21691959	2.7432804	20	10 16.5	18.8
51006 2000 GQ <sub>102</sub>	15.3	X	288.99634	311.45631	227.06270	4.12802	0.0562189	0.23273909	2.6175189	20	—	—
51007 2000 GZ <sub>102</sub>	14.6	X	11.96919	348.48816	60.47202	3.45340	0.1039876	0.22671857	2.6636551	20	—	—
51008 2000 GD <sub>103</sub>	14.1	X	131.81033	301.27763	126.80684	3.14882	0.0819222	0.19693060	2.9259074	20	4 7.9	18.4
51009 2000 GF <sub>103</sub>	13.9	X	99.19898	218.55826	91.56196	2.88665	0.2083533	0.17120632	3.2121035	20	12 31.4	19.2
51010 2000 GN <sub>103</sub>	15.7	X	187.40272	353.57385	134.47090	3.06141	0.1483643	0.26234812	2.4166704	20	8 23.7	19.3
51011 2000 GQ <sub>103</sub>	14.6	X	120.85090	329.95931	33.74248	16.30103	0.1588412	0.23340469	2.6125403	20	1 13.3	18.5
51012 2000 GP <sub>103</sub>	14.0	X	232.26520	111.59649	143.15246	3.05954	0.2002545	0.18268417	3.0761117	20	—	—
51013 2000 GX <sub>104</sub>	14.5	X	314.97378	63.89831	37.57866	12.95402	0.1669881	0.22712568	2.6604712	20	—	—
51014 2000 GS <sub>105</sub>	14.9	X	170.28105	121.66152	0.85011	6.20531	0.0625769	0.20838868	2.8176473	20	7 29.3	19.1
51015 2000 GZ <sub>105</sub>	15.1	X	331.15440	145.28490	320.08076	3.25936	0.1377114	0.22935831	2.6431779	20	—	—
51016 2000 GG <sub>106</sub>	13.5	X	275.24835	123.94570	20.16113	16.26504	0.0766842	0.17669834	3.1451962	20	12 18.4	18.0
51017 2000 GA <sub>107</sub>	14.2	X	29.53133	244.80607	198.44202	13.01454	0.0723304	0.23180618	2.6245371	20	—	—
51018 2000 GM <sub>107</sub>	13.4	X	90.29974	295.10700	41.66972	16.35081	0.0682027	0.17561636	3.1581014	20	—	—
51019 2000 GT <sub>107</sub>	13.6	X	124.98640	288.26237	44.96275	15.38507	0.1123101	0.22810250	2.6528703	20	—	—
51020 2000 GU <sub>108</sub>	13.8	X	290.10302	78.68550	50.13241	13.33178	0.1187781	0.22568061	2.6718160	20	—	—
51021 2000 GZ <sub>108</sub>	15.6	X	206.37385	48.93606	68.43053	3.45879	0.1435951	0.26274887	2.4142124	20	8 31.3	19.1
51022 2000 GE <sub>109</sub>	13.7	X	180.21442	80.47268	182.19936	6.31288	0.1000061	0.17693839	3.1423509	20	—	—
51023 2000 GT <sub>109</sub>	15.3	X	31.14663	82.88429	35.26841	15.19535	0.1731169	0.24092185	2.5579100	20	1 21.9	18.1
51024 2000 GV <sub>109</sub>	14.7	X	34.26155	265.28879	98.00400	5.14514	0.0500870	0.22281607	2.6946666	20	12 20.3	18.2
51025 2000 GP <sub>110</sub>	15.2	X	326.22889	256.65932	206.17530	14.79431	0.0970194	0.22852288	2.6496159	20	—	—
51026 2000 GL <sub>111</sub>	13.8	X	3.23179	241.81063	216.81849	8.76594	0.0424466	0.18374799	3.0642274	20	—	—
51027 2000 GE <sub>112</sub>	15.0	X	1.17169	46.48366	33.23759	9.89316	0.1755028	0.23172532	2.6251476	20	—	—
51028 2000 GT <sub>113</sub>	13.9	X	350.59321	110.86902	243.17455	7.77217	0.2129115	0.21524978	2.7574495	20	10 17.6	16.7
51029 2000 GJ <sub>114</sub>	14.0	X	240.94758	27.09782	358.36396	4.08345	0.0847380	0.20426072	2.8554823	20	6 10.8	18.1
51030 2000 GQ <sub>115</sub>	14.9	X	142.26738	250.48091	103.62602	2.70760	0.0801925	0.23617228	2.5920902	20	1 12.9	18.3
51031 2000 GB <sub>116</sub>	14.8	X	229.19652	75.04669	324.44744	4.49805	0.1362807	0.25605995	2.4560749	20	6 10.9	18.3
51032 2000 GE <sub>119</sub>	15.3	X	304.87600	81.92257	340.76898	1.53836	0.0658634	0.22177494	2.7030935	20	10 31.5	18.5
51033 2000 GD <sub>122</sub>	13.8	X	172.46817	37.03933	104.28747	8.93420	0.1710934	0.21068903	2.7971007	20	8 23.7	18.4
51034 2000 GB <sub>124</sub>	14.1	X	15.54007	86.42341	50.10417	22.97868	0.0398042	0.23713310	2.5850837	20	1 25.9	17.9
51035 2000 GO <sub></sub>												

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51041 2000 <i>GD</i> <sub>134</sub>	13.5	X	114.36742	119.03484	203.93386	12.20744	0.1260598	0.17267648	3.1938456	20	—	—
51042 2000 <i>GJ</i> <sub>134</sub>	14.9	X	13.64326	194.73112	268.91027	3.82420	0.1714542	0.28705479	2.2759332	20	—	—
51043 2000 <i>GY</i> <sub>134</sub>	14.3	X	261.50126	55.81238	176.39358	13.41023	0.0877646	0.18538260	3.0461883	20	—	—
51044 2000 <i>GG</i> <sub>135</sub>	14.5	X	116.26397	306.74022	48.23203	15.65360	0.1563893	0.23183597	2.6243122	20	—	—
51045 2000 <i>GL</i> <sub>135</sub>	14.2	X	350.56571	251.42617	128.55216	12.46861	0.1498081	0.21802602	2.7339915	20	11 24.1	17.5
51046 2000 <i>GV</i> <sub>136</sub>	13.5	X	6.43286	11.10749	86.93260	15.72275	0.0304502	0.22920578	2.6443504	20	—	—
51047 2000 <i>GX</i> <sub>136</sub>	14.8	X	47.87529	76.93988	65.22045	13.12628	0.0665300	0.24208797	2.5496892	20	3 24.2	18.1
51048 2000 <i>GB</i> <sub>137</sub>	13.8	X	165.79586	121.37265	130.85949	12.28540	0.0875982	0.17278720	3.1924811	20	12 22.5	18.8
51049 2000 <i>GE</i> <sub>137</sub>	13.9	X	74.58174	25.84382	116.51506	12.41887	0.0912874	0.24570491	2.5246053	20	5 5.1	17.3
51050 2000 <i>GF</i> <sub>137</sub>	14.0	X	91.12815	48.82690	116.57481	12.41588	0.1288451	0.20160453	2.8805087	20	6 28.2	18.2
51051 2000 <i>GN</i> <sub>137</sub>	13.6	X	91.88184	295.44467	55.27934	22.63804	0.0040868	0.18010086	3.1054571	20	—	—
51052 2000 <i>GP</i> <sub>137</sub>	14.0	X	237.57912	43.42924	150.65333	17.53926	0.1672771	0.17748382	3.1359097	20	12 21.8	18.8
51053 2000 <i>GH</i> <sub>138</sub>	15.4	X	4.60394	30.70025	36.40800	12.48059	0.1797824	0.22890130	2.6466949	20	—	—
51054 2000 <i>GD</i> <sub>139</sub>	15.0	X	261.51528	351.57114	75.50118	12.53726	0.0361781	0.21368419	2.7709017	20	9 15.8	19.0
51055 2000 <i>GG</i> <sub>140</sub>	15.0	X	312.28862	284.19251	184.42713	11.82442	0.1283181	0.22725970	2.6594251	20	—	—
51056 2000 <i>GP</i> <sub>140</sub>	13.9	X	337.70327	316.59507	45.84358	11.20090	0.1924515	0.21259168	2.7803867	20	10 6.3	16.6
51057 2000 <i>GT</i> <sub>140</sub>	14.4	X	311.79174	28.49781	54.66079	5.84999	0.228591	0.22436347	2.6822626	20	12 6.1	16.9
51058 2000 <i>GA</i> <sub>142</sub>	13.6	X	175.40840	148.61281	67.33452	20.41390	0.1178624	0.17117153	3.2125386	20	11 19.7	18.6
51059 2000 <i>GR</i> <sub>142</sub>	14.0	X	96.73664	236.73961	150.71797	11.89840	0.1369482	0.18350978	3.0668785	20	1 14.9	18.3
51060 2000 <i>GT</i> <sub>142</sub>	14.9	X	13.24712	339.97600	121.68486	10.24220	0.0904579	0.23278151	2.6172009	20	—	—
51061 2000 <i>GW</i> <sub>142</sub>	13.6	X	159.85662	193.92481	63.13479	22.87259	0.0460045	0.17401557	3.1774397	20	12 20.8	18.5
51062 2000 <i>GE</i> <sub>143</sub>	14.0	X	179.65782	220.51045	75.91111	10.62707	0.0746269	0.18153245	3.0891088	20	—	—
51063 2000 <i>GO</i> <sub>143</sub>	13.9	X	83.87027	307.80745	78.42038	10.58272	0.0848327	0.18222988	3.0812220	20	—	—
51064 2000 <i>GY</i> <sub>143</sub>	15.0	X	3.13769	108.30203	32.87179	5.42315	0.1888286	0.23774550	2.5806425	20	—	—
51065 2000 <i>GC</i> <sub>149</sub>	15.3	X	358.48411	34.86061	353.07156	10.92615	0.0686988	0.22404474	2.6848058	20	12 4.2	18.9
51066 2000 <i>GP</i> <sub>152</sub>	14.6	X	36.62419	225.08507	259.92366	13.52814	0.0466685	0.24243232	2.5472743	20	1 29.7	18.0
51067 2000 <i>GP</i> <sub>153</sub>	15.2	X	270.64977	151.56950	130.56296	5.39864	0.1513967	0.27121974	2.3636791	20	10 31.2	17.7
51068 2000 <i>GW</i> <sub>156</sub>	14.9	X	302.40752	309.63922	16.41766	2.00526	0.0672137	0.20333808	2.8641135	20	6 16.0	18.6
51069 2000 <i>GV</i> <sub>157</sub>	13.4	X	121.48758	338.48772	318.43527	12.10618	0.0826463	0.17746035	3.1361861	20	—	—
51070 2000 <i>GO</i> <sub>158</sub>	14.0	X	32.25144	203.46559	119.57505	3.16441	0.2315234	0.16599334	3.2790065	20	11 11.8	18.2
51071 2000 <i>GJ</i> <sub>159</sub>	13.6	X	149.48778	322.16285	338.04773	14.42552	0.2031629	0.17821621	3.1273122	20	—	—
51072 2000 <i>GX</i> <sub>159</sub>	14.1	X	219.98076	202.39770	344.07846	8.94689	0.0426020	0.17488972	3.1668430	20	12 5.8	18.8
51073 2000 <i>GO</i> <sub>160</sub>	14.6	X	309.66565	57.20648	35.11847	13.95552	0.1696681	0.22553867	2.6729369	20	12 14.4	17.5
51074 2000 <i>GT</i> <sub>161</sub>	14.2	X	199.44178	217.52701	99.20873	11.77773	0.1304851	0.18637326	3.0353841	20	2 6.5	19.1
51075 2000 <i>GG</i> <sub>162</sub>	15.0	X	287.95588	294.21834	217.50095	21.83224	0.3172804	0.27669095	2.3324164	20	—	—
51076 2000 <i>GV</i> <sub>162</sub>	14.2	X	323.79064	257.62738	136.83272	8.20706	0.0696914	0.21694902	2.7430323	20	10 25.6	17.7
51077 2000 <i>GT</i> <sub>163</sub>	14.9	X	53.38771	347.75335	116.87741	14.78847	0.0491621	0.23988783	2.5652552	20	2 2.4	18.0
51078 2000 <i>GZ</i> <sub>163</sub>	13.2	X	127.82035	332.11902	80.70556	12.24658	0.1332903	0.19089910	2.9872171	20	3 26.9	17.9
51079 2000 <i>GG</i> <sub>166</sub>	14.5	X	154.14582	301.81515	60.37279	3.31783	0.0789884	0.18893030	3.0079340	20	2 12.6	18.9
51080 2000 <i>GT</i> <sub>167</sub>	15.2	X	296.15577	234.18721	260.75035	8.38992	0.0422605	0.27911660	2.3188836	20	—	—
51081 2000 <i>GB</i> <sub>168</sub>	13.9	X	90.91300	202.99265	181.48111	10.31579	0.1256974	0.18418317	3.0593988	20	1 2.0	18.1
51082 2000 <i>GZ</i> <sub>169</sub>	14.8	X	306.04956	196.39670	236.44713	13.83274	0.1214330	0.22601630	2.6691699	20	11 14.2	17.7
51083 2000 <i>GG</i> <sub>170</sub>	15.0	X	13.74579	8.07401	347.77672	10.71130	0.0332336	0.21901748	2.7257343	20	11 6.3	18.9
51084 2000 <i>GO</i> <sub>171</sub>	14.5	X	229.76247	27.48282	81.69833	8.60466	0.0532033	0.21410672	2.7672550	20	9 24.9	18.5
51085 2000 <i>GU</i> <sub>172</sub>	14.6	X	150.50631	280.37420	289.71833	6.93068	0.1249881	0.21966905	2.7203418	20	10 22.6	19.0
51086 2000 <i>GX</i> <sub>172</sub>	13.3	X	122.25199	158.76664	137.52374	24.22314	0.1368005	0.17521658	3.1629033	20	—	—
51087 2000 <i>GB</i> <sub>177</sub>	14.8	X	147.68233	319.35998	180.04403	3.43983	0.0366705	0.21016533	2.8017454	20	7 21.4	18.7
51088 2000 <i>GE</i> <sub>177</sub>	15.8	X	346.10458	12.44889	172.61186	1.25759	0.1045890	0.24307104	2.5428100	20	2 2.9	18.5
51089 2000 <i>GO</i> <sub>178</sub>	15.0	X	132.76494	264.75464	190.76338	1.66460	0.0253531	0.20277438	2.8694192	20	5 6.1	19.0
51090 2000 <i>GX</i> <sub>182</sub>	14.5	X	285.55971	310.55091	185.28484	14.36571	0.0361534	0.22456516	2.6806563	20	—	—
51091 2000 <i>GH</i> <sub>183</sub>	14.9	X	82.05071	188.22210	185.00873	13.38119	0.1826725	0.23358702	2.6111806	20	—	—
51092 2000 <i>HH</i>	13.8	X	316.05015	23.46952	144.12455	15.75641	0.0713788	0.23265847	2.6181235	20	—	—
51093 2000 <i>HQ</i> <sub>1</sub>	14.4	X	319.54965	317.21185	221.30947	8.31149	0.1404740	0.23517181	2.5994365	20	—	—
51094 2000 <i>HO</i> <sub>4</sub>	13.4	X	68.75569	163.97263	199.23780	16.72809	0.1194705	0.17612834	3.1519784	20	—	—
51095 2000 <i>HW</i> <sub>5</sub>	14.7	X	40.22503	117.47255	84.93144	3.20900	0.0102877	0.20039842	2.8920548	20	5 22.9	18.5
51096 2000 <i>HP</i> <sub>7</sub>	13.8	X	123.60409	180.69987	170.97941	8.86604	0.1180429	0.18195257	3.0843519	20	1 1.9	18.5
51097 2000 <i>HA</i> <sub>8</sub>	14.5	X	259.68877	225.04660	159.32254	2.30559	0.0836691	0.20500092	2.8486046	20	7 2.9	18.4
51098 2000 <i>HS</i> <sub>8</sub>	14.6	X	241.53902	277.71527	65.35457	3.24492	0.0880004	0.19602494	2.9349126	20	4 19.6	19.0
51099 2000 <i>HZ</i> <sub>8</sub>	14.7	X	145.01359	128.18136	212.64012	9.06761	0.1131487	0.18214416	3.0821886	20	1 10.2	19.5
51100 2000 <i>HQ</i> <sub>10</sub>	13.8	X	211.72272	214.07519	71.28055	2.18020	0.0978217	0.18264422	3.0765603	20	1 11.6	18.7
51101 2000 <i>HY</i> <sub>10</sub>	14.6	X	235.91863	2.70771	145.99694	0.81566	0.1441487	0.17178758	3.2048538	20	10 28.2	19.1
51102 2000 <i>HH</i> <sub>12</sub>	15.2	X	335.78991	113.53776	43.20255	3.03133	0.1378750	0.23519548	2.5992621	20	—	—
51103 2000 <i>HX</i> <sub>12</sub>	13.0	X	157.70575	96.36789	234.78576	6.32318	0.1652221	0.18061500	3.0995609	20	1 16.1	18.0
51104 2000 <i>HJ</i> <sub>13</sub>	14.7	X	101.79655	150.19773	26.49676	2.06206	0.0415030	0.20345279	2.8630370	20	7 14.5	18.6
51105 2000 <i>HQ</i> <sub>13</sub>	14.1	X	258.96135	82.82674	64.33800	1.71539	0.1563330	0.17444504	3.1722225	20	11 20.9	18.4
51106 2000 <i>HB</i> <sub>15</sub>	14.3	X	144.33815	262.98097	107.62181	3.26301	0.1037547	0.18731267	3.0252269	20	2 14.2	18.8
51107 2000 <i>HF</i> <sub>17</sub>	14.4	X	74.19079	155.66689	180.21282	5.41128	0.1354105	0.17188545	3.2036371	20	12 31.6	19.3
51108 2000 <i>HP</i> <sub>22</sub>	15.4	X	225.30947	347.89308	33.63900	2.38553	0.0091794	0.19976956	2.8981210	20	5 25.9	19.4
51109 2000 <i>HA</i> <sub>25</sub>	15.4	X	96.24301	70.10889	27.13140	7.53961	0.1791864	0.24460792	2.5321478	20	4 11.9	18.5
51110 2000 <i>HE</i> <sub>25</sub>	14.5	X	310.40739	175.16923	237.47329	4.61322	0.0613032	0.21679372	2.7443421	20	10 25.3	18.0
51111 2000 <i>HM</i> <sub>26</sub>	14.8	X	341.79417	62.50120	187.93410	3.46810	0.0403209	0.19806898	2.9146858	20	5 6.4	18.6
51112 2000 <i>HQ</i> <sub>27</sub>	15.9	X	295.47018	195.24842	219.88577	21.09036	0.0808725	0.3629769				

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51121 2000 <i>HC</i> <sub>34</sub>	15.1	X	350.36463	343.03284	192.07792	12.59025	0.1001305	0.24308072	2.5427424	20	1 24.9	18.3
51122 2000 <i>HN</i> <sub>35</sub>	13.8	X	111.06559	184.67114	151.19786	10.80781	0.1565559	0.17659474	3.1464261	20	—	—
51123 2000 <i>HS</i> <sub>35</sub>	14.5	X	263.93535	223.60345	264.57834	10.39346	0.1485031	0.22226539	2.6991156	20	11 14.7	18.0
51124 2000 <i>HV</i> <sub>35</sub>	13.9	X	140.18790	290.06374	270.84688	9.35259	0.1012128	0.21343891	2.7730241	20	9 28.3	18.3
51125 2000 <i>HM</i> <sub>36</sub>	14.2	X	319.07754	119.38663	109.57481	11.19529	0.0486539	0.19195309	2.9762722	20	3 11.9	18.4
51126 2000 <i>HR</i> <sub>36</sub>	14.1	X	24.83118	350.44234	97.57812	15.72333	0.1489394	0.23262708	2.6183591	20	—	—
51127 2000 <i>HH</i> <sub>37</sub>	14.4	X	354.96183	19.57634	138.97365	14.42209	0.0551907	0.18712998	3.0271955	20	1 27.4	18.4
51128 2000 <i>HW</i> <sub>38</sub>	14.2	X	57.29382	260.15794	118.87574	5.92928	0.1310313	0.17386128	3.1793192	20	—	—
51129 2000 <i>HJ</i> <sub>39</sub>	13.8	X	211.78865	269.77806	76.91726	9.76265	0.1071740	0.19100916	2.9860696	20	3 27.3	18.6
51130 2000 <i>HF</i> <sub>40</sub>	15.0	X	193.12212	306.80482	131.77601	3.13672	0.0364625	0.20436832	2.8544800	20	6 27.5	19.1
51131 2000 <i>HM</i> <sub>41</sub>	13.8	X	331.46607	32.30175	99.76367	15.89960	0.0434722	0.22896794	2.6461813	20	—	—
51132 2000 <i>HB</i> <sub>42</sub>	14.2	X	226.18730	66.53446	293.30772	1.36994	0.0806275	0.19874087	2.9081129	20	4 22.5	18.4
51133 2000 <i>HZ</i> <sub>43</sub>	15.2	X	168.66151	315.31720	186.66138	7.64785	0.1666168	0.21153811	2.7896110	20	8 16.9	19.9
51134 2000 <i>HG</i> <sub>44</sub>	14.9	X	165.33422	109.87140	12.79577	15.41241	0.0611830	0.21052487	2.7985546	20	7 27.6	19.3
51135 2000 <i>HO</i> <sub>44</sub>	13.8	X	104.89342	154.74520	170.98276	7.80175	0.1509606	0.17390746	3.1787564	20	—	—
51136 2000 <i>HQ</i> <sub>44</sub>	14.0	X	279.67127	58.95648	67.66676	10.31186	0.0582053	0.17444611	3.1722095	20	12 5.8	18.4
51137 2000 <i>HS</i> <sub>44</sub>	15.5	X	220.52293	20.24403	59.26965	8.85952	0.1954520	0.25959779	2.4337094	20	7 21.7	19.3
51138 2000 <i>HC</i> <sub>45</sub>	14.0	X	195.95411	290.06993	55.79209	10.56277	0.1037497	0.19127434	2.9833090	20	3 11.3	18.8
51139 2000 <i>HM</i> <sub>45</sub>	14.0	X	115.93673	182.46802	199.11458	15.70335	0.0712984	0.18617655	3.0375218	20	1 19.0	18.6
51140 2000 <i>HU</i> <sub>45</sub>	13.7	X	70.49907	277.53971	62.92760	3.78087	0.1774099	0.17247097	3.1963823	20	—	—
51141 2000 <i>HP</i> <sub>46</sub>	14.8	X	292.05009	344.36166	209.37678	1.04188	0.0198432	0.18333823	3.0687914	20	—	—
51142 2000 <i>HR</i> <sub>47</sub>	14.6	X	290.61608	213.70996	208.51905	4.99322	0.0691814	0.21445346	2.7642714	20	10 7.7	18.2
51143 2000 <i>HA</i> <sub>48</sub>	13.6	X	140.69607	165.27509	152.14535	1.19372	0.1626873	0.17624561	3.1505800	20	—	—
51144 2000 <i>HA</i> <sub>49</sub>	14.7	X	206.13293	167.43493	217.88253	11.43230	0.0681416	0.19701222	2.9250992	20	5 4.1	19.0
51145 2000 <i>HS</i> <sub>49</sub>	14.2	X	51.89388	64.73743	45.65675	13.15207	0.1243383	0.23865809	2.5740597	20	2 20.7	17.3
51146 2000 <i>HW</i> <sub>49</sub>	14.5	X	97.27589	181.44146	227.80988	13.81847	0.0387996	0.18558534	3.0439694	20	1 24.4	19.0
51147 2000 <i>HG</i> <sub>50</sub>	14.5	X	331.23637	75.77073	77.84909	0.97539	0.1449390	0.18442052	3.0567732	20	—	—
51148 2000 <i>HB</i> <sub>52</sub>	14.4	X	166.85178	73.53652	245.73653	1.33346	0.0546665	0.18116108	3.0933290	20	1 4.3	18.8
51149 2000 <i>HF</i> <sub>52</sub>	13.3	X	51.42940	4.48464	52.33729	14.82887	0.2438308	0.22933898	2.6433264	20	—	—
51150 2000 <i>HJ</i> <sub>53</sub>	14.2	X	109.72715	334.89416	55.79656	6.71832	0.0871439	0.28170999	2.3046300	20	1 12.6	16.9
51151 2000 <i>HB</i> <sub>54</sub>	14.2	X	80.89403	199.76427	178.46239	2.55905	0.0456086	0.17765198	3.1339304	20	—	—
51152 2000 <i>HL</i> <sub>54</sub>	14.0	X	347.45929	70.14558	61.57463	13.50367	0.0975877	0.23140637	2.6275592	20	—	—
51153 2000 <i>HA</i> <sub>56</sub>	14.5	X	150.95620	350.82323	49.92492	10.60185	0.0867495	0.19243237	2.9713282	20	3 29.9	19.1
51154 2000 <i>HC</i> <sub>56</sub>	14.2	X	247.84732	77.39990	125.18717	3.11405	0.1204210	0.17879215	3.1205927	20	—	—
51155 2000 <i>HS</i> <sub>56</sub>	14.4	X	266.96332	84.36602	205.52165	9.85938	0.0776941	0.19207075	2.9750566	20	3 11.8	18.9
51156 2000 <i>HJ</i> <sub>56</sub>	14.3	X	26.36738	2.90530	61.79379	7.07858	0.1067463	0.22888039	2.6468561	20	—	—
51157 2000 <i>HB</i> <sub>57</sub>	15.8	X	34.52656	325.80504	160.63597	3.92868	0.3061103	0.29113433	2.2546222	20	1 18.1	16.2
51158 2000 <i>HG</i> <sub>57</sub>	13.7	X	99.69407	225.76738	121.62977	6.31577	0.1617112	0.17528715	3.1620543	20	—	—
51159 2000 <i>HO</i> <sub>57</sub>	14.3	X	241.75604	195.50272	53.05606	16.25121	0.0891929	0.18293148	3.0733387	20	—	—
51160 2000 <i>HR</i> <sub>57</sub>	14.8	X	165.84458	61.95371	68.44444	5.73045	0.0893557	0.25659201	2.4526785	20	8 6.9	18.4
51161 2000 <i>HJ</i> <sub>57</sub>	15.2	X	10.18197	50.60198	65.17683	5.83947	0.1713115	0.23456763	2.6038982	20	—	—
51162 2000 <i>HP</i> <sub>58</sub>	14.4	X	182.97512	273.54734	235.09649	10.07475	0.1624544	0.21382780	2.7696609	20	9 4.8	19.1
51163 2000 <i>HU</i> <sub>58</sub>	13.9	X	151.79498	149.93519	242.74106	9.01714	0.0984957	0.19191180	2.9766990	20	3 13.6	18.5
51164 2000 <i>HR</i> <sub>62</sub>	14.4	X	38.44446	312.99479	62.27195	16.00320	0.1857248	0.22416280	2.6838631	20	—	—
51165 2000 <i>HO</i> <sub>63</sub>	14.5	X	280.48474	293.27989	67.70610	3.45428	0.0722694	0.20498466	2.8487553	20	7 1.6	18.2
51166 2000 <i>HW</i> <sub>63</sub>	14.2	X	65.90742	339.16331	34.86909	1.71836	0.1837839	0.17777134	3.1325274	20	—	—
51167 2000 <i>HF</i> <sub>64</sub>	14.2	X	208.40117	253.02555	238.72482	10.25560	0.0395639	0.21500333	2.7595563	20	9 20.2	18.2
51168 2000 <i>HC</i> <sub>65</sub>	14.8	X	31.37207	8.16481	50.50975	9.27302	0.0864144	0.22910729	2.6451082	20	—	—
51169 2000 <i>HQ</i> <sub>65</sub>	14.3	X	268.23190	290.15542	112.78086	14.61005	0.1434715	0.17454044	3.1710665	20	11 30.2	18.6
51170 2000 <i>HJ</i> <sub>66</sub>	14.4	X	152.08597	131.59177	44.29676	15.23037	0.0746112	0.21067495	2.7972254	20	9 21.5	18.8
51171 2000 <i>HW</i> <sub>66</sub>	13.7	X	335.78419	278.84834	86.99109	9.14236	0.2079619	0.21692820	2.7432078	20	10 9.6	16.3
51172 2000 <i>HX</i> <sub>67</sub>	15.1	X	335.09928	42.13773	85.61826	5.73825	0.1079664	0.23209368	2.6223692	20	—	—
51173 2000 <i>HD</i> <sub>69</sub>	14.8	X	55.33961	267.81748	184.29906	9.62094	0.1843397	0.23746378	2.5826832	20	1 28.8	17.5
51174 2000 <i>HM</i> <sub>69</sub>	14.5	X	57.21075	37.32055	59.97486	10.98139	0.0717391	0.18787864	3.0191483	20	2 12.6	18.6
51175 2000 <i>HV</i> <sub>69</sub>	14.8	X	224.52834	232.46488	242.97598	4.49016	0.0676150	0.21544889	2.7557503	20	9 17.7	18.9
51176 2000 <i>HF</i> <sub>70</sub>	14.3	X	80.42430	153.23419	237.61622	11.51862	0.1433929	0.23176093	2.6248786	20	—	—
51177 2000 <i>HM</i> <sub>70</sub>	14.0	X	285.32270	88.29431	10.00557	8.09819	0.0564069	0.17150478	3.2083758	20	11 6.5	18.5
51178 2000 <i>HX</i> <sub>70</sub>	12.6	X	88.86971	282.00308	78.66242	10.05806	0.2347333	0.12495936	3.9623866	20	—	—
51179 2000 <i>HM</i> <sub>71</sub>	14.3	X	278.57059	16.11627	69.57868	8.46365	0.1049021	0.21759707	2.7375834	20	10 21.2	17.7
51180 2000 <i>HN</i> <sub>73</sub>	14.8	X	269.62328	13.57346	106.21221	13.97772	0.1209321	0.22224966	2.6992430	20	11 21.7	18.3
51181 2000 <i>HT</i> <sub>74</sub>	14.5	X	163.41596	197.48359	106.74247	3.55455	0.0703476	0.17992209	3.1075138	20	—	—
51182 2000 <i>HP</i> <sub>76</sub>	13.7	X	358.46863	310.28560	87.06193	8.65775	0.2162232	0.21875178	2.7279411	20	—	—
51183 2000 <i>HS</i> <sub>76</sub>	14.3	X	76.79896	351.95832	96.23518	10.14989	0.1326227	0.23886113	2.5726008	20	2 29.4	17.5
51184 2000 <i>HQ</i> <sub>78</sub>	13.8	X	207.57621	30.66349	258.88092	9.44781	0.0586636	0.18481257	3.0524487	20	1 10.9	18.5
51185 2000 <i>HP</i> <sub>85</sub>	14.1	X	161.57272	264.50670	357.43550	8.73033	0.0518368	0.17489884	3.1667329	20	12 31.5	18.9
51186 2000 <i>HW</i> <sub>86</sub>	14.5	X	326.92218	51.49868	58.93343	12.50749	0.1565947	0.22744128	2.6580094	20	—	—
51187 2000 <i>HM</i> <sub>88</sub>	14.7	X	297.30846	330.64554	242.34850	8.79325	0.1477966	0.23735387	2.5834804	20	—	—
51188 2000 <i>HB</i> <sub>90</sub>	14.2	X	347.28625	45.26733	60.73263	11.42670	0.0601458	0.17871740	3.1214628	20	—	—
51189 2000 <i>HA</i> <sub>91</sub>	14.1	X	231.12019	217.31346	239.39686	10.92562	0.0786126	0.21323770	2.7747683	20	8 27.6	18.4
51190 2000 <i>HF</i> <sub>94</sub>	14.8	X	272.43427	331.66420	128.07745	18.38229	0.0847164	0.21824330	2.7321766	20	11 7.1	18.7
51191 2000 <i>HT</i> <sub>94</sub>	15.6	X	71.29134	251.51538	228.05641	13.71895	0.2101166	0.24299998	2.5433057	20	4 9.3	18.7
51192 2000 <i>HJ</i> <sub>95</sub>	13.9	X	172.31920	7.63981	251.86905	12.54670	0.0888170	0.17618993	3.1512437	20	—	—
51193 2000 <i>HT</i> <sub>96</sub>	14.7	X	102.20149									



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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51201 2000 JG <sub>6</sub>	14.7	X	128.44828	191.02364	211.81815	13.40621	0.1754869	0.24106421	2.5569028	20	3 5.4	18.6
51202 2000 JR <sub>6</sub>	14.1	X	136.37809	295.23638	119.21884	13.70490	0.1171172	0.19271563	2.9684160	20	4 4.6	18.8
51203 2000 JW <sub>7</sub>	15.5	X	349.74314	209.80559	180.06771	2.55186	0.1345232	0.22343700	2.6896720	20	12 2.7	18.5
51204 2000 JE <sub>9</sub>	14.6	X	119.39680	172.67895	246.79825	4.06404	0.0958077	0.24190575	2.5509695	20	3 7.8	18.1
51205 2000 JV <sub>9</sub>	14.3	X	351.43893	276.05786	177.51063	16.67716	0.1262682	0.22816276	2.6524032	20	—	—
51206 2000 JL <sub>11</sub>	14.2	X	102.18542	34.87690	17.40424	9.15353	0.1737746	0.23707474	2.5855079	20	2 23.8	17.6
51207 2000 JR <sub>11</sub>	13.7	X	274.73797	93.51510	41.28625	12.77674	0.1233281	0.22245786	2.6975586	20	12 13.2	17.1
51208 2000 JV <sub>13</sub>	14.5	X	247.65917	25.07658	41.79693	4.54929	0.1030978	0.20915702	2.8107427	20	8 12.5	18.4
51209 2000 JG <sub>14</sub>	13.9	X	252.48074	103.82629	58.33365	14.74243	0.1307839	0.17441131	3.1726314	20	12 3.3	18.3
51210 2000 JT <sub>19</sub>	13.5	X	49.13389	295.57510	101.59123	6.14275	0.1524201	0.17835545	3.1256844	20	—	—
51211 2000 JA <sub>20</sub>	14.8	X	259.35335	246.48952	275.69458	4.53742	0.0542348	0.22583229	2.6706196	20	—	—
51212 2000 JT <sub>20</sub>	14.9	X	272.34471	228.85823	299.55119	4.86350	0.1567106	0.22873274	2.6479950	20	—	—
51213 2000 JU <sub>20</sub>	14.1	X	205.03244	323.24368	337.38026	5.09513	0.0670219	0.18590587	3.0404695	20	1 23.2	18.6
51214 2000 JE <sub>22</sub>	13.7	X	73.66239	117.60930	247.11512	4.03406	0.1340969	0.17500369	3.1654679	20	—	—
51215 2000 JL <sub>22</sub>	13.1	X	8.79290	95.51904	288.53506	5.03271	0.1531472	0.17113454	3.2130016	20	12 11.5	17.1
51216 2000 JU <sub>22</sub>	13.5	X	54.01681	295.93483	266.91021	11.02989	0.1203300	0.20247299	2.8722660	20	6 26.1	17.1
51217 2000 JV <sub>22</sub>	15.1	X	176.46081	223.86700	259.95863	9.49988	0.1515554	0.25951341	2.4322369	20	8 3.2	19.0
51218 2000 JC <sub>23</sub>	13.5	X	37.61920	217.45190	264.05161	8.57096	0.0403340	0.18963175	3.0005119	20	2 5.7	17.6
51219 2000 JE <sub>23</sub>	14.8	X	264.97377	233.33020	296.31166	5.48871	0.1779319	0.22817634	2.6522979	20	—	—
51220 2000 JG <sub>23</sub>	14.6	X	92.48668	197.83853	250.84275	12.46113	0.1143099	0.24253649	2.5465448	20	3 9.6	18.2
51221 2000 JK <sub>23</sub>	14.6	X	152.22830	274.15078	256.25687	11.42105	0.1353038	0.21236703	2.7823472	20	9 1.9	19.3
51222 2000 JE <sub>24</sub>	13.7	X	63.45331	106.27615	359.59377	8.98337	0.0174738	0.19001014	2.9965270	20	2 23.6	17.8
51223 2000 JQ <sub>24</sub>	15.1	X	233.01516	100.91838	9.59029	9.63826	0.162220	0.26404434	2.4063094	20	9 25.1	18.2
51224 2000 JU <sub>24</sub>	13.6	X	127.13300	119.85871	244.13043	10.02990	0.1181531	0.18340996	3.0679911	20	1 18.2	18.2
51225 2000 JF <sub>24</sub>	14.0	X	25.88186	266.95075	236.04358	15.76461	0.1949070	0.24148566	2.5539270	20	2 3.9	16.7
51226 2000 JJ <sub>25</sub>	14.1	X	44.12380	356.01573	292.15129	8.31515	0.0807533	0.21087302	2.7954734	20	9 25.2	18.0
51227 2000 JK <sub>25</sub>	13.9	X	214.61435	296.24574	10.41797	13.80378	0.0332247	0.18800809	3.0177623	20	2 14.5	18.4
51228 2000 JQ <sub>26</sub>	14.3	X	193.41863	256.74695	304.46922	4.17448	0.1326352	0.26957831	2.3732642	20	12 4.1	17.7
51229 2000 JF <sub>27</sub>	13.6	X	277.94517	122.36894	13.96343	10.15797	0.1827657	0.17612734	3.1519902	20	11 27.1	17.6
51230 2000 JL <sub>27</sub>	14.3	X	330.29093	164.90878	27.67002	13.51040	0.0249152	0.18807541	3.0170421	20	2 15.4	18.7
51231 2000 JM <sub>28</sub>	13.7	X	207.52732	259.97051	25.94495	9.40017	0.0778861	0.18250860	3.0780842	20	1 9.5	18.6
51232 2000 JX <sub>30</sub>	14.1	X	216.31669	22.99224	261.16131	8.49061	0.0556221	0.18342543	3.0678187	20	1 13.9	18.7
51233 2000 JX <sub>31</sub>	13.5	X	309.43005	82.34212	42.24328	21.74403	0.0966761	0.17648780	3.1476971	20	—	—
51234 2000 JZ <sub>31</sub>	13.9	X	170.12237	11.61280	27.20840	10.35403	0.0998377	0.19335191	2.9619001	20	4 13.2	18.3
51235 2000 JD <sub>32</sub>	13.8	X	282.17596	287.95147	249.30173	12.51976	0.0375604	0.22806782	2.6531392	20	—	—
51236 2000 JE <sub>32</sub>	14.0	X	194.69445	345.64228	252.14456	12.30527	0.0786138	0.17438038	3.1730066	20	—	—
51237 2000 JZ <sub>33</sub>	14.3	X	19.83768	125.04095	8.95538	6.00672	0.1005485	0.18762011	3.0219211	20	2 2.3	18.0
51238 2000 JT <sub>34</sub>	13.4	X	81.78867	121.79403	230.70523	9.47147	0.2083666	0.17267220	3.1938984	20	—	—
51239 2000 JH <sub>35</sub>	15.0	X	337.20537	100.96619	21.39868	3.08174	0.1814317	0.23058912	2.6337639	20	—	—
51240 2000 JW <sub>36</sub>	13.8	X	153.92904	221.15204	49.62034	1.96173	0.1220339	0.17130590	3.2108585	20	12 30.7	18.9
51241 2000 JX <sub>36</sub>	13.7	X	126.31210	34.48821	267.66151	3.76549	0.1102547	0.17131029	3.2108037	20	—	—
51242 2000 JC <sub>38</sub>	14.7	X	30.69288	195.33677	233.14156	12.99110	0.1516498	0.22839222	2.6506263	20	—	—
51243 2000 JG <sub>38</sub>	14.4	X	240.85421	303.52472	245.98026	5.01121	0.1001667	0.17492853	3.1663745	20	12 27.0	18.7
51244 2000 JF <sub>39</sub>	13.0	X	193.60034	72.31187	240.64501	8.35348	0.0759623	0.18316207	3.0707587	20	1 23.2	17.8
51245 2000 JW <sub>40</sub>	14.5	X	343.00089	136.10754	58.51952	10.57836	0.1249726	0.23991472	2.5650635	20	2 14.3	17.6
51246 2000 JH <sub>42</sub>	14.9	X	284.09349	22.07807	34.83771	9.52964	0.1515930	0.21348007	2.7726677	20	9 14.2	18.4
51247 2000 JL <sub>45</sub>	14.5	X	324.05550	22.85589	216.76598	1.75424	0.0397205	0.19244119	2.9712375	20	3 27.9	18.5
51248 2000 JF <sub>46</sub>	14.1	X	143.95987	183.09633	238.02338	8.42995	0.0619768	0.19257174	2.9698945	20	4 7.4	18.6
51249 2000 JA <sub>47</sub>	13.8	X	44.11421	225.30823	238.21764	8.96593	0.0734533	0.18751128	3.0230903	20	1 25.6	17.8
51250 2000 JO <sub>47</sub>	13.5	X	159.48228	40.96616	253.20991	17.55677	0.1131752	0.17662636	3.1460506	20	—	—
51251 2000 JE <sub>49</sub>	13.6	X	358.84826	226.28076	23.94337	12.96389	0.0564091	0.19861085	2.9093819	20	5 26.7	17.5
51252 2000 JT <sub>49</sub>	14.6	X	200.59310	34.07359	19.69708	2.48491	0.0622592	0.20007174	2.8952020	20	6 2.6	18.8
51253 2000 JG <sub>56</sub>	14.4	X	291.77454	304.01140	213.83322	11.15444	0.2076863	0.22866109	2.6485481	20	—	—
51254 2000 JK <sub>57</sub>	13.0	X	92.62902	225.00967	91.25148	11.29881	0.0621837	0.16918388	3.2376513	20	12 20.5	17.7
51255 2000 JX <sub>57</sub>	13.7	X	86.50157	98.69006	70.77751	17.65586	0.0569206	0.19887280	2.9068266	20	6 15.7	17.7
51256 2000 JB <sub>58</sub>	14.4	X	210.74772	133.37307	81.77855	12.88455	0.0531476	0.22193707	2.7017769	20	—	—
51257 2000 JL <sub>59</sub>	13.9	X	322.46477	308.02384	278.67253	8.85766	0.0372180	0.19321024	2.9633478	20	3 5.6	18.1
51258 2000 JU <sub>59</sub>	13.8	X	104.16368	97.83364	336.37579	11.58416	0.2318200	0.24405106	2.5359981	20	3 25.3	17.4
51259 2000 JY <sub>59</sub>	14.0	X	348.46499	261.98071	21.18687	13.07418	0.0843916	0.20213635	2.8754541	20	6 27.9	17.8
51260 2000 JZ <sub>62</sub>	13.4	X	113.12376	141.78054	276.90081	8.92281	0.0875227	0.19007949	2.9957981	20	3 1.1	17.9
51261 Holuša	14.6	X	284.51740	288.80700	230.72942	2.03496	0.1300702	0.22567739	2.6718415	20	—	—
51262 2000 JC <sub>69</sub>	13.2	X	65.23855	278.25585	39.57847	13.42504	0.1964838	0.22261079	2.6963229	20	12 17.6	17.5
51263 2000 JM <sub>69</sub>	13.4	X	61.82588	233.71368	172.34452	21.73461	0.0192838	0.17792236	3.1307546	20	—	—
51264 2000 JH <sub>71</sub>	14.5	X	257.48274	82.71350	344.33356	11.91712	0.0135640	0.21400315	2.7681478	20	9 6.5	18.3
51265 2000 JM <sub>71</sub>	14.8	X	349.07061	188.40158	245.14896	11.19638	0.1152437	0.27714589	2.3298632	20	—	—
51266 2000 JX <sub>71</sub>	14.3	X	264.18074	12.08730	62.69689	10.16984	0.1828038	0.21463917	2.7626767	20	9 5.7	18.2
51267 2000 JE <sub>72</sub>	14.5	X	175.86062	60.81188	157.07057	8.09388	0.0168180	0.16957659	3.2326508	20	11 26.9	19.3
51268 2000 JM <sub>72</sub>	14.5	X	209.92225	346.00224	148.17773	9.77095	0.0924196	0.21413906	2.7669764	20	9 26.1	18.6
51269 2000 JU <sub>72</sub>	14.6	X	108.28850	262.68191	294.25858	10.47249	0.1595405	0.21204052	2.7852027	20	8 26.6	19.1
51270 2000 JK <sub>73</sub>	14.7	X	77.21922	277.25034	319.69333	7.97264	0.1301249	0.211117163	2.7928375	20	9 10.7	18.7
51271 2000 JD <sub>74</sub>	14.8	X	148.38795	277.37547	292.16607	6.28302	0.0616354	0.21698836	2.7427008	20	10 19.6	18.9
51272 2000 JO <sub>74</sub>	15.2	X	349.98011	155.43322	306.95818	2.06536	0.0209547	0.23016695	2.6369834	20	—	—
51273 2000 JV <sub>74</sub>	14.4	X	305.50370	329.42072	189.89842	7.75904	0.0791886	0.19790333	3.1090318	20	—	—
51274 2000 JR <sub>77</sub>	14.2	X	357.51335	259.35616	280.52321	9.97630	0.0700258	0.19069231	2.9893763	20	2 21.1	18.1

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51281 2000 <i>KW</i> <sub>6</sub>	14.1	X	212.15772	162.66992	102.36817	10.59230	0.0377491	0.17916101	3.1163081	20	—	—
51282 2000 <i>KC</i> <sub>7</sub>	13.8	X	167.92619	325.04868	82.08221	10.83928	0.0904775	0.19241577	2.9714991	20	4 24.7	18.4
51283 2000 <i>KN</i> <sub>7</sub>	13.9	X	77.65578	9.54833	89.92583	10.87644	0.1924030	0.18941930	3.0027549	20	4 2.1	18.1
51284 2000 <i>KE</i> <sub>9</sub>	14.0	X	143.47978	106.92620	211.41583	3.01913	0.2680675	0.12627541	3.9348078	20	1 4.8	20.4
51285 2000 <i>KM</i> <sub>15</sub>	15.3	X	224.95011	57.30107	75.06231	5.86269	0.1558594	0.21577299	2.7529902	20	10 4.2	19.4
51286 2000 <i>KX</i> <sub>15</sub>	13.2	X	131.52384	211.93698	123.56954	23.47006	0.0237028	0.17668723	3.1453280	20	—	—
51287 2000 <i>KH</i> <sub>16</sub>	14.4	X	86.33917	355.76315	50.42156	7.80377	0.1007519	0.18211827	3.0824808	20	1 22.0	18.6
51288 2000 <i>KH</i> <sub>20</sub>	14.5	X	265.85435	250.27943	278.52749	0.71059	0.1329455	0.17558165	3.1585176	20	12 29.7	18.5
51289 2000 <i>KK</i> <sub>21</sub>	13.8	X	212.63935	345.36287	59.57714	11.33889	0.1374985	0.19798825	2.9154780	20	5 30.9	18.5
51290 2000 <i>KF</i> <sub>27</sub>	14.1	X	275.48131	174.70743	42.60172	0.52414	0.1257757	0.18171651	3.0870225	20	—	—
51291 2000 <i>KK</i> <sub>29</sub>	12.4	X	117.15617	85.26758	252.51961	27.95194	0.1510425	0.17329255	3.1862716	20	—	—
51292 2000 <i>KF</i> <sub>30</sub>	14.2	X	222.45464	211.63162	182.93527	1.91657	0.1076267	0.19677154	2.9274840	20	5 30.9	18.8
51293 2000 <i>KP</i> <sub>30</sub>	13.9	X	209.66245	129.27939	254.41156	8.87472	0.1157876	0.19343802	2.9610210	20	5 2.0	18.5
51294 2000 <i>KT</i> <sub>30</sub>	14.7	X	281.03962	55.62454	257.37212	8.20519	0.2020649	0.24149474	2.5538630	20	4 5.1	18.4
51295 2000 <i>KF</i> <sub>36</sub>	14.7	X	14.97499	28.10281	126.40624	4.10074	0.1533347	0.23756824	2.5819260	20	2 8.1	17.2
51296 2000 <i>KA</i> <sub>37</sub>	14.9	X	312.10276	353.43209	168.69787	10.70945	0.1048923	0.18123402	3.0924990	20	—	—
51297 2000 <i>KN</i> <sub>45</sub>	13.7	X	7.72716	172.45500	214.51033	9.61269	0.1244770	0.16809052	3.2516758	20	12 9.5	17.9
51298 2000 <i>KY</i> <sub>51</sub>	13.0	X	89.35107	356.50760	350.68244	3.26400	0.2122848	0.12394793	3.9839132	20	—	—
51299 2000 <i>KK</i> <sub>52</sub>	14.2	X	312.97265	278.68403	198.64825	7.67692	0.0820971	0.17642289	3.1484691	20	—	—
51300 2000 <i>KL</i> <sub>52</sub>	14.8	X	219.08412	136.70148	22.98092	13.28535	0.0912102	0.21871760	2.7282252	20	11 3.6	18.8
51301 2000 <i>KX</i> <sub>54</sub>	14.0	X	290.42637	186.51834	79.69817	11.93811	0.0562202	0.19103767	2.9857724	20	3 22.8	18.4
51302 2000 <i>KY</i> <sub>54</sub>	14.0	X	346.90999	153.38017	78.74411	14.63912	0.1013807	0.24350700	2.5397741	20	4 18.9	17.1
51303 2000 <i>KR</i> <sub>56</sub>	13.4	X	298.48376	41.04553	233.08788	10.07813	0.0567298	0.19128972	2.9831491	20	4 2.5	17.5
51304 2000 <i>KB</i> <sub>58</sub>	14.1	X	34.48832	346.12158	70.93632	16.12794	0.0862969	0.22835965	2.6508784	20	—	—
51305 2000 <i>KL</i> <sub>58</sub>	14.1	X	156.94760	242.80476	147.61121	10.78078	0.1942534	0.19180547	2.9777991	20	3 22.3	18.7
51306 2000 <i>KL</i> <sub>59</sub>	14.7	X	187.43026	39.58523	215.20412	3.74140	0.0412391	0.17551461	3.1593219	20	—	—
51307 2000 <i>KF</i> <sub>61</sub>	13.6	X	1.00107	305.16987	99.97223	12.27216	0.0267347	0.17079137	3.2173040	20	12 14.0	18.1
51308 2000 <i>KK</i> <sub>62</sub>	14.4	X	304.54661	351.63063	117.41212	14.37560	0.1355132	0.22336601	2.6902419	20	12 30.5	17.3
51309 2000 <i>KN</i> <sub>62</sub>	13.8	X	65.12067	59.11643	180.31735	12.14858	0.0285105	0.15674791	3.4067077	20	8 9.3	18.7
51310 2000 <i>KY</i> <sub>62</sub>	14.3	X	150.63992	308.93874	110.54140	11.71367	0.0952343	0.19335591	2.9618593	20	4 23.2	19.0
51311 2000 <i>KJ</i> <sub>65</sub>	14.2	X	129.58935	191.45635	188.76227	10.61053	0.1247561	0.18401341	3.0612801	20	2 9.6	19.0
51312 2000 <i>KG</i> <sub>66</sub>	14.1	X	314.20565	332.87505	191.42786	10.99748	0.0396991	0.18075083	3.0980079	20	—	—
51313 2000 <i>KF</i> <sub>71</sub>	14.5	X	213.05167	333.00120	145.60704	14.03839	0.0850841	0.21118816	2.7926918	20	9 9.7	18.6
51314 2000 <i>KX</i> <sub>73</sub>	13.7	X	331.40639	304.13213	108.97573	11.05735	0.0618067	0.16893170	3.2408725	20	11 18.4	18.1
51315 2000 <i>KY</i> <sub>73</sub>	14.3	X	68.95993	355.33719	70.18303	15.70298	0.1859265	0.23496969	2.6009270	20	1 22.6	17.3
51316 2000 <i>KZ</i> <sub>73</sub>	14.3	X	318.57970	73.00109	155.15909	10.66079	0.0304877	0.19143763	2.9816124	20	3 9.0	18.4
51317 2000 <i>KZ</i> <sub>75</sub>	14.2	X	100.52863	179.74180	135.70327	11.25586	0.0167528	0.17181078	3.2045652	20	12 25.0	18.9
51318 2000 <i>KT</i> <sub>77</sub>	13.9	X	134.66422	240.95183	165.76842	10.73891	0.1040265	0.18781493	3.0198310	20	3 18.2	18.4
51319 2000 <i>KF</i> <sub>80</sub>	13.4	X	331.61062	244.81983	222.93337	19.27061	0.0907551	0.17359445	3.1825763	20	—	—
51320 2000 <i>KP</i> <sub>81</sub>	14.2	X	47.41184	245.36801	172.09418	5.18719	0.1551467	0.17910897	3.1169116	20	—	—
51321 2000 <i>LL</i> <sub>1</sub>	14.5	X	359.29494	125.34695	88.59814	15.33872	0.0527349	0.24209024	2.5496733	20	4 17.6	17.9
51322 2000 <i>LY</i> <sub>5</sub>	14.1	X	235.41081	163.81275	46.80465	5.83654	0.1195311	0.17546312	3.1599398	20	—	—
51323 2000 <i>LQ</i> <sub>8</sub>	14.4	X	284.43175	99.52587	55.67253	6.94727	0.1150153	0.22500698	2.6771460	20	—	—
51324 2000 <i>LW</i> <sub>8</sub>	12.6	X	44.32458	320.47793	82.68809	15.71850	0.0817789	0.17386027	3.1793315	20	—	—
51325 2000 <i>LV</i> <sub>16</sub>	13.7	X	50.57430	311.60931	142.55569	11.59816	0.0691552	0.18308645	3.0716041	20	1 25.9	17.7
51326 2000 <i>LY</i> <sub>16</sub>	13.4	X	112.71170	308.36179	147.51115	11.17847	0.0636967	0.19160764	2.9798484	20	4 20.9	17.8
51327 2000 <i>LA</i> <sub>19</sub>	12.5	X	252.67649	317.66486	264.12959	16.30106	0.1028007	0.17501502	3.1653313	20	—	—
51328 2000 <i>LO</i> <sub>19</sub>	12.6	X	113.36884	78.92742	257.24367	13.41234	0.0820200	0.16910002	3.2387215	20	—	—
51329 2000 <i>LP</i> <sub>32</sub>	13.4	X	5.89676	354.59466	78.60877	26.07184	0.1751535	0.17611381	3.1521517	20	—	—
51330 2000 <i>LK</i> <sub>33</sub>	14.3	X	258.57229	49.13290	140.48733	6.60055	0.1361950	0.17794582	3.1304794	20	—	—
51331 2000 <i>LH</i> <sub>35</sub>	14.2	X	66.31484	336.91726	157.63945	11.28278	0.0399440	0.19342650	2.9611386	20	4 5.9	18.2
51332 2000 <i>LP</i> <sub>35</sub>	13.1	X	344.23821	224.89037	281.46731	14.40343	0.0417654	0.17370878	3.1811797	20	1 2.6	17.2
51333 2000 <i>ME</i> <sub>1</sub>	13.6	X	0.55943	218.79653	274.87867	11.87833	0.1100356	0.18083296	3.0970697	20	1 1.7	17.5
51334 2000 <i>NW</i> <sub>11</sub>	14.3	X	45.63652	282.48477	183.99307	8.98854	0.1112118	0.18572346	3.0424600	20	2 4.3	18.1
51335 2000 <i>NZ</i> <sub>11</sub>	15.3	X	170.95570	211.55049	134.65768	7.23016	0.2262403	0.28101136	2.3084482	20	2 9.2	19.1
51336 2000 <i>NV</i> <sub>26</sub>	13.3	X	49.80716	144.87374	315.75507	8.31023	0.0600086	0.17546097	3.1599657	20	2 3.1	17.3
51337 2000 <i>OK</i> <sub>12</sub>	15.0	X	40.54605	58.71500	285.56385	2.95299	0.2147882	0.30749810	2.1739077	20	—	—
51338 2000 <i>OZ</i> <sub>24</sub>	13.4	X	85.31978	224.51038	303.00482	8.10581	0.1393860	0.19433334	2.9519195	20	6 25.2	17.6
51339 2000 <i>OA</i> <sub>61</sub>	12.1	X	28.84083	236.42406	325.67713	7.08773	0.0688868	0.08430200	5.1512283	20	5 11.8	18.7
51340 2000 <i>QJ</i> <sub>12</sub>	11.9	X	219.08685	261.66667	88.07255	2.76328	0.0663198	0.08449552	5.1433601	20	4 11.3	18.9
51341 2000 <i>QP</i> <sub>26</sub>	14.6	X	178.92866	181.93385	182.35469	6.04786	0.3031052	0.22622307	2.6675432	20	3 13.8	19.4
51342 2000 <i>QO</i> <sub>75</sub>	14.7	X	195.09293	356.38639	336.03017	2.72741	0.1257049	0.22574716	2.6712909	20	2 15.2	18.8
51343 2000 <i>QR</i> <sub>80</sub>	15.7	X	79.75930	33.82527	341.79666	3.53706	0.1151023	0.26340052	2.4102290	20	—	—
51344 2000 <i>QA</i> <sub>127</sub>	12.1	X	242.22057	40.48236	314.10074	4.38440	0.0463087	0.08367839	5.1767896	20	5 9.8	19.2
51345 2000 <i>QH</i> <sub>137</sub>	11.8	X	169.42635	126.79392	292.86459	13.92410	0.1485328	0.08258000	5.2225925	20	5 7.7	19.5
51346 2000 <i>QX</i> <sub>158</sub>	12.0	X	287.79630	53.80465	246.52891	8.99024	0.0300702	0.08487227	5.1281278	20	5 1.5	18.7
51347 2000 <i>QZ</i> <sub>165</sub>	11.9	X	227.93547	131.43935	239.59189	7.64179	0.1413474	0.08394183	5.1659529	20	5 6.6	19.2
51348 2000 <i>QR</i> <sub>169</sub>	12.0	X	3.01597	283.92893	307.75589	7.70979	0.0662956	0.08475438	5.1328820	20	5 11.9	18.5
51349 2000 <i>QQ</i> <sub>173</sub>	12.9	X	282.19570	288.83134	291.30720	10.48091	0.1426741	0.12547073	3.9516132	20	1 9.9	18.7
51350 2000 <i>QU</i> <sub>176</sub>	11.6	X	231.36922	21.40889	328.07654	17.29168	0.0538654	0.08325346	5.1943895	20	4 15.2	18.9
51351 2000 <i>QO</i> <sub>218</sub>	12.3	X	193.51354	248.62258	138.37313	2.95752	0.0694415	0.08550950	5.1026189	20	4 27.3	19.4
51352 2000 <i>RW</i> <sub>9</sub>	15.3	X	342.04422	342.43027	46.44849	7.18459	0.1755645	0.29565040	2.2316037	20	12 1	

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51361 2000 SS <sub>124</sub>	13.2	X	188.37534	323.28184	59.45170	13.16563	0.1403368	0.17601936	3.1532792	20	4 16.7	18.4
51362 2000 SY <sub>247</sub>	12.3	X	305.22094	147.02178	129.95314	5.17129	0.0623210	0.08297094	5.2061745	20	4 24.7	19.0
51363 2000 SO <sub>319</sub>	14.4	X	123.36962	53.33613	334.13569	9.81872	0.2182420	0.21566367	2.7539204	20	2 21.6	18.4
51364 2000 SU <sub>333</sub>	11.5	X	150.50456	6.67829	87.05579	14.18176	0.0999061	0.08148877	5.2691522	20	5 31.8	18.8
51365 2000 TA <sub>42</sub>	10.6	X	305.76293	256.75526	18.38498	30.20541	0.0575414	0.08262473	5.2207074	20	4 17.0	17.5
51366 2000 UU <sub>88</sub>	15.9	X	220.17971	96.03793	134.10458	3.21126	0.0404861	0.30909832	2.1663982	20	—	—
51367 2000 UD <sub>104</sub>	14.0	X	158.93598	283.49997	338.59742	6.48789	0.1903927	0.30308089	2.1949789	20	—	—
51368 2000 WV <sub>60</sub>	14.8	X	225.03436	258.15220	105.32934	7.98762	0.1324523	0.27452940	2.3446434	20	4 23.6	18.3
51369 2000 WM <sub>158</sub>	13.3	X	113.90727	32.64666	67.99593	15.12734	0.1241098	0.21676371	2.7445954	20	5 4.8	17.3
51370 2000 WS <sub>165</sub>	14.7	X	28.50583	18.75124	188.73336	23.15738	0.1094984	0.27658440	2.3330153	20	5 22.2	17.5
51371 2000 XF <sub>15</sub>	14.9	X	187.27008	178.56478	64.33973	22.97215	0.0614814	0.39721857	1.8328054	20	—	—
51372 2000 YM <sub>18</sub>	15.2	X	229.86681	44.93000	280.66128	5.81854	0.1158537	0.26924141	2.3752435	20	3 4.8	18.8
51373 2000 YF <sub>53</sub>	14.4	X	34.76008	10.18809	294.40657	14.62087	0.1298776	0.23648794	2.5897830	20	10 12.8	18.0
51374 2000 YN <sub>63</sub>	15.5	X	118.27485	59.33618	114.04957	7.62316	0.1552155	0.27623220	2.3349980	20	8 16.9	19.0
51375 2000 YO <sub>120</sub>	14.8	X	178.33850	36.02290	327.92987	20.10522	0.1094525	0.36399219	1.9427101	20	2 21.5	16.9
51376 2001 AZ <sub>23</sub>	15.4	X	322.50259	154.12647	99.02567	7.10022	0.0920088	0.27063990	2.3670540	20	4 3.8	18.1
51377 2001 AT <sub>28</sub>	15.7	X	294.71402	273.10001	328.25389	19.39630	0.0663038	0.36321921	1.9454654	20	1 28.3	17.9
51378 2001 AT <sub>33</sub>	11.5	X	276.16400	122.58751	302.42460	33.68547	0.0511318	0.08431503	5.1506974	20	8 22.1	18.6
51379 2001 BY <sub>7</sub>	15.1	X	140.60417	223.92700	58.06096	5.19176	0.1310975	0.29637164	2.2279817	20	—	—
51380 2001 BM <sub>44</sub>	15.6	X	66.71439	104.43640	87.07618	4.89312	0.1756236	0.26732631	2.3865741	20	7 12.0	18.3
51381 2001 BG <sub>51</sub>	14.3	X	124.05367	57.31835	145.28860	23.88145	0.2205774	0.28092163	2.3089398	20	10 7.4	18.5
51382 2001 BK <sub>73</sub>	14.9	X	53.03680	326.34150	269.62228	9.19302	0.2085582	0.27089768	2.3655522	20	8 26.1	18.0
51383 2001 BF <sub>77</sub>	15.6	X	282.68156	356.47403	92.77557	7.46085	0.1303232	0.28611157	2.2809325	20	11 15.4	17.8
51384 2001 CP <sub>4</sub>	15.3	X	13.56257	235.45644	6.24316	6.95758	0.2120215	0.26694556	2.3888429	20	6 24.1	17.1
51385 2001 CR <sub>20</sub>	15.7	X	244.02336	294.87775	53.83492	22.18253	0.1772625	0.36709583	1.9317448	20	4 28.1	17.9
51386 2001 CN <sub>35</sub>	15.1	X	52.52773	99.44310	26.88871	21.42191	0.0763032	0.36112634	1.9529746	20	2 26.7	17.3
51387 2001 DU <sub>6</sub>	13.7	X	41.34547	203.19895	98.07143	13.36917	0.1806155	0.22051383	2.7133897	20	11 4.9	17.5
51388 2001 DE <sub>14</sub>	16.5	X	269.12034	86.57476	180.37345	2.89671	0.1904519	0.30815169	2.1708327	20	1 22.3	19.6
51389 2001 DH <sub>15</sub>	15.9	X	53.08576	145.33824	86.35713	8.11956	0.1048321	0.27411004	2.3470320	20	8 10.4	18.7
51390 2001 DW <sub>18</sub>	14.7	X	291.03563	216.97881	57.50369	5.77271	0.2402992	0.25816042	2.4427371	20	2 27.1	18.2
51391 2001 DM <sub>21</sub>	14.2	X	22.75627	226.78910	36.19534	13.05408	0.1849559	0.21784718	2.7354876	20	8 16.3	17.4
51392 2001 DW <sub>30</sub>	14.7	X	43.06218	261.69954	0.69030	11.58016	0.2066045	0.22222521	2.6994409	20	9 16.7	18.1
51393 2001 DW <sub>44</sub>	15.3	X	112.28662	316.04877	342.55660	5.80670	0.1670016	0.29003638	2.2603086	20	—	—
51394 2001 DX <sub>49</sub>	15.1	X	316.71921	184.15185	85.34235	10.61581	0.2220011	0.26388762	2.4072620	20	3 30.5	18.0
51395 2001 DH <sub>71</sub>	15.9	X	8.78074	71.75218	171.17722	1.34834	0.1371691	0.26625556	2.3929682	20	6 8.2	18.0
51396 2001 DW <sub>71</sub>	15.6	X	125.59890	254.98213	331.02527	6.18371	0.0886687	0.28131091	2.3068091	20	10 26.5	19.0
51397 2001 DT <sub>74</sub>	15.3	X	106.36016	186.24872	59.88719	3.10084	0.1161527	0.27684259	2.3315645	20	11 4.6	18.7
51398 2001 DJ <sub>80</sub>	15.2	X	292.17571	330.84276	304.25143	4.02148	0.1592014	0.30955706	2.1642574	20	2 29.9	18.0
51399 2001 DG <sub>81</sub>	15.3	X	351.58695	179.81787	81.95413	7.30064	0.1089068	0.26559845	2.3969135	20	6 2.8	17.4
51400 2001 DN <sub>81</sub>	15.1	X	346.71403	150.19657	124.99192	10.89040	0.2423321	0.26418660	2.4054455	20	6 8.6	16.8
51401 2001 DX <sub>82</sub>	16.9	X	322.97339	276.02159	8.05569	2.27837	0.0472084	0.31808826	2.1253850	20	5 20.5	19.1
51402 2001 DC <sub>92</sub>	15.8	X	188.22647	85.54950	168.03287	7.59361	0.1275558	0.29252074	2.2474926	20	—	—
51403 2001 DE <sub>99</sub>	15.9	X	160.51759	236.63095	359.95589	6.03698	0.1208861	0.28738218	2.2742044	20	12 19.1	19.2
51404 2001 DV <sub>99</sub>	15.6	X	75.60817	145.73740	68.57230	3.40033	0.1662576	0.26898055	2.3767790	20	8 25.4	18.8
51405 2001 DL <sub>106</sub>	12.4	X	343.72875	202.23641	153.11146	1.85339	0.0724844	0.08016537	5.3269447	20	9 8.5	18.9
51406 Massimolvani	16.0	X	200.72820	263.71342	356.10596	16.45646	0.1796455	0.24320537	2.5418736	20	—	—
51407 2001 EU <sub>5</sub>	15.7	X	354.43050	196.09681	83.87943	3.91885	0.2239733	0.26713238	2.3877290	20	7 10.9	16.9
51408 2001 EQ <sub>6</sub>	16.2	X	43.58455	182.06451	77.05189	3.35981	0.1629894	0.27175769	2.3605588	20	9 14.3	18.9
51409 2001 EU <sub>6</sub>	14.8	X	69.84696	245.58402	50.36066	5.61484	0.2421411	0.22840237	2.6505478	20	12 2.2	19.0
51410 2001 EJ <sub>7</sub>	16.4	X	219.21253	162.98379	134.12299	5.86569	0.1499978	0.30278213	2.1964225	20	1 16.5	19.6
51411 2001 EL <sub>9</sub>	16.0	X	165.19480	310.84810	7.32805	5.06718	0.1641684	0.29970011	2.2114551	20	—	—
51412 2001 EE <sub>10</sub>	15.4	X	293.62597	263.10800	60.87006	3.12918	0.2300892	0.26542185	2.3979766	20	5 4.7	18.2
51413 2001 EO <sub>11</sub>	15.1	X	105.18875	130.35453	141.83624	12.49727	0.1658640	0.22821730	2.6519806	20	12 2.5	19.6
51414 2001 EK <sub>12</sub>	14.4	X	159.45258	139.82251	178.90721	15.46534	0.2380046	0.24036005	2.5618942	20	1 1.8	18.9
51415 Tovinder	15.1	X	61.60261	320.82746	355.97319	7.33815	0.1359972	0.28400797	2.2921817	20	12 20.2	18.4
51416 2001 EX <sub>15</sub>	14.3	X	341.67202	202.30214	110.12800	9.76871	0.2704434	0.21558330	2.7546048	20	7 22.8	16.1
51417 2001 EG <sub>17</sub>	15.8	X	97.55441	47.44457	34.13552	21.25536	0.1033287	0.36095355	1.9535979	20	3 11.2	18.1
51418 2001 EO <sub>17</sub>	15.6	X	240.72575	247.79753	64.45303	22.91028	0.0668303	0.35923164	1.9598357	20	3 11.6	18.6
51419 2001 EJ <sub>20</sub>	16.7	X	131.55721	99.17023	171.76764	2.58544	0.1410910	0.28780440	2.2719796	20	—	—
51420 2001 EV <sub>20</sub>	16.3	X	18.57097	348.90283	247.94610	4.32930	0.1932775	0.26617498	2.3934511	20	6 25.5	18.1
51421 2001 EC <sub>22</sub>	15.8	X	200.44511	282.14065	292.84624	4.20436	0.1189606	0.29106653	2.2549723	20	—	—
51422 2001 EJ <sub>24</sub>	15.5	X	75.84675	279.17968	29.85715	7.54946	0.1587481	0.28150501	2.3057486	20	12 26.9	19.1
51423 2001 FJ	15.7	X	26.75457	282.03247	306.87638	0.62528	0.1383232	0.26638179	2.3922122	20	6 23.1	17.8
51424 2001 FK	15.9	X	20.48630	151.21709	28.69987	21.16891	0.0488965	0.36157961	1.9513422	20	3 22.0	17.8
51425 2001 FV <sub>1</sub>	15.4	X	36.92292	173.43063	85.09395	5.32260	0.1509378	0.27116543	2.3639947	20	9 1.7	18.0
51426 2001 FV <sub>3</sub>	16.2	X	78.65830	52.44210	190.43721	2.34172	0.1307576	0.27432511	2.3458073	20	10 1.2	19.3
51427 2001 FE <sub>4</sub>	15.2	X	189.57381	102.89800	102.19605	9.21581	0.1840793	0.23344806	2.6122167	20	11 25.8	19.4
51428 2001 FS <sub>4</sub>	15.4	X	175.59241	346.85485	289.60429	5.59256	0.1940757	0.29547114				

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51441 2001 <i>FY</i> <sub>25</sub>	15.5	X	188.75477	75.24231	195.25747	6.71711	0.0869643	0.29306294	2.2447197	20	—	—
51442 2001 <i>FZ</i> <sub>25</sub>	13.4	X	1.95921	314.26251	356.67845	16.24621	0.3464426	0.21833899	2.7313783	20	9 29.3	15.3
51443 2001 <i>FN</i> <sub>27</sub>	15.5	X	154.59355	355.38957	313.09853	4.23329	0.1803138	0.29336334	2.2431871	20	—	—
51444 2001 <i>FS</i> <sub>27</sub>	15.9	X	12.21519	282.38827	320.00147	2.57766	0.1414417	0.26417204	2.4055339	20	6 14.7	18.0
51445 2001 <i>FM</i> <sub>28</sub>	15.9	X	23.87536	160.22987	138.67824	7.05281	0.1368593	0.27621158	2.3351142	20	10 8.9	18.5
51446 2001 <i>FX</i> <sub>28</sub>	15.8	X	156.05110	159.43120	128.37140	5.09776	0.1376547	0.29130274	2.2537531	20	—	—
51447 2001 <i>FZ</i> <sub>28</sub>	15.6	X	154.12383	169.82677	98.72114	4.72543	0.1012606	0.23762725	2.5814986	20	—	—
51448 2001 <i>FD</i> <sub>29</sub>	14.3	X	44.20550	43.73169	193.35503	13.64593	0.1411443	0.21359899	2.7716385	20	7 29.1	18.1
51449 2001 <i>FH</i> <sub>29</sub>	15.3	X	356.20323	167.30798	134.07401	7.08872	0.1389857	0.26541135	2.3980398	20	8 16.8	17.4
51450 2001 <i>FS</i> <sub>30</sub>	15.7	X	340.16456	158.95785	135.03581	3.70905	0.1265980	0.26757863	2.3850735	20	6 30.3	17.7
51451 2001 <i>FE</i> <sub>31</sub>	15.8	X	36.71433	0.29261	233.23003	1.85551	0.1549599	0.26689745	2.3891299	20	7 21.7	18.1
51452 2001 <i>FO</i> <sub>33</sub>	16.4	X	204.98616	54.61712	179.08610	3.04700	0.0934754	0.29383755	2.2407730	20	—	—
51453 2001 <i>FU</i> <sub>36</sub>	15.4	X	162.06840	269.40986	2.22513	12.47625	0.2110081	0.23874161	2.5734593	20	—	—
51454 2001 <i>FX</i> <sub>37</sub>	16.0	X	166.03473	348.84782	245.70167	4.61312	0.0997309	0.28769235	2.2725695	20	12 24.2	19.1
51455 2001 <i>FC</i> <sub>38</sub>	16.1	X	5.83993	308.12265	294.90315	4.26223	0.1806392	0.26467267	2.4024996	20	6 2.7	17.8
51456 2001 <i>FX</i> <sub>38</sub>	15.9	X	163.49666	67.31526	231.34123	2.70752	0.1896318	0.29422872	2.2387865	20	—	—
51457 2001 <i>FP</i> <sub>41</sub>	15.4	X	194.37521	184.45323	179.70969	14.19588	0.1181896	0.25919655	2.4362204	20	3 21.6	19.2
51458 2001 <i>FL</i> <sub>42</sub>	16.3	X	176.51714	296.82521	335.07694	1.13920	0.1405702	0.29199633	2.2501828	20	—	—
51459 2001 <i>FC</i> <sub>43</sub>	15.4	X	244.45755	48.41395	232.60576	1.70764	0.2066323	0.30192900	2.2005580	20	1 17.9	18.9
51460 2001 <i>FQ</i> <sub>43</sub>	16.0	X	224.15987	96.13058	217.18867	2.09082	0.1485186	0.30462472	2.1875565	20	2 9.9	19.4
51461 2001 <i>FV</i> <sub>43</sub>	15.7	X	352.56709	141.65135	187.69526	1.65491	0.2313843	0.27309476	2.3528476	20	10 6.3	17.3
51462 2001 <i>FX</i> <sub>43</sub>	16.2	X	261.29828	272.24332	19.54785	3.70260	0.1078990	0.30714231	2.1755862	20	2 25.3	19.0
51463 2001 <i>FJ</i> <sub>47</sub>	15.5	X	52.95772	66.75390	171.58645	2.34181	0.1686208	0.26895696	2.3769180	20	8 27.3	18.4
51464 2001 <i>FY</i> <sub>47</sub>	15.1	X	231.58639	101.33768	28.15240	4.28382	0.1053530	0.22922020	2.6442396	20	10 26.5	18.7
51465 2001 <i>FZ</i> <sub>47</sub>	15.8	X	183.39982	168.47201	29.31941	4.84483	0.0961951	0.28357088	2.2945365	20	11 24.8	19.0
51466 2001 <i>FK</i> <sub>48</sub>	14.9	X	135.12004	90.67166	191.11983	5.49253	0.2231587	0.23326913	2.6135523	20	—	—
51467 2001 <i>FQ</i> <sub>48</sub>	15.5	X	99.68141	300.94458	350.01990	3.42247	0.1375603	0.28198869	2.3031113	20	12 26.4	19.0
51468 2001 <i>FL</i> <sub>50</sub>	15.6	X	257.35760	287.26992	312.16409	3.61588	0.1925086	0.29803527	2.2196829	20	—	—
51469 2001 <i>FB</i> <sub>52</sub>	16.3	X	254.91831	56.86900	169.66316	4.39289	0.0770069	0.29692476	2.2252140	20	—	—
51470 2001 <i>FC</i> <sub>52</sub>	15.6	X	132.60617	46.88987	161.36399	3.57155	0.1044821	0.27728076	2.3291076	20	10 14.5	18.9
51471 2001 <i>FB</i> <sub>53</sub>	15.8	X	38.80169	217.75359	42.36070	4.09925	0.1846656	0.26869368	2.3784704	20	9 11.8	18.4
51472 2001 <i>FU</i> <sub>53</sub>	13.8	X	22.15112	264.16492	25.03281	8.17337	0.2817930	0.21681658	2.7441492	20	10 2.7	16.7
51473 2001 <i>FW</i> <sub>54</sub>	15.3	X	176.97599	255.25865	30.27317	5.34102	0.2206310	0.24119736	2.5559617	20	—	—
51474 2001 <i>FG</i> <sub>55</sub>	15.2	X	83.43456	230.68096	339.52502	5.35889	0.1668984	0.26945661	2.3739787	20	8 27.8	18.5
51475 2001 <i>FQ</i> <sub>55</sub>	14.4	X	14.43631	227.65422	32.59238	13.41721	0.1211355	0.21236702	2.7823473	20	7 14.9	17.9
51476 2001 <i>FS</i> <sub>55</sub>	15.0	X	335.83654	240.19072	40.35679	12.72446	0.2086598	0.25921130	2.4361280	20	5 18.4	17.1
51477 2001 <i>FP</i> <sub>57</sub>	15.5	X	270.97431	38.27862	121.76988	5.06847	0.1432272	0.29132526	2.2536370	20	—	—
51478 2001 <i>FJ</i> <sub>60</sub>	15.2	X	60.23879	279.64580	30.03122	7.25595	0.1306511	0.28259537	2.2998139	20	12 7.6	18.3
51479 2001 <i>FG</i> <sub>65</sub>	15.7	X	125.31907	268.98965	50.84715	6.36055	0.2249620	0.29128897	2.2538241	20	—	—
51480 2001 <i>FM</i> <sub>67</sub>	15.8	X	84.32392	229.37012	46.08262	4.14245	0.1099571	0.27993115	2.3143830	20	11 18.2	18.8
51481 2001 <i>FG</i> <sub>70</sub>	15.3	X	110.89455	236.85987	51.51720	5.28412	0.1478683	0.28431009	2.2905575	20	—	—
51482 2001 <i>FY</i> <sub>70</sub>	15.7	X	244.78114	202.96439	131.07910	4.82309	0.1948186	0.31015665	2.1614672	20	3 27.7	18.9
51483 2001 <i>FP</i> <sub>71</sub>	14.6	X	61.86476	91.67294	161.63995	8.43844	0.2330674	0.22026959	2.7153951	20	10 3.0	18.5
51484 2001 <i>FU</i> <sub>72</sub>	16.0	X	330.52797	53.30518	144.18124	3.83019	0.0805692	0.30441204	2.1885753	20	1 19.3	18.4
51485 2001 <i>FB</i> <sub>73</sub>	15.2	X	344.25159	243.66200	65.40664	7.53287	0.1346877	0.26882989	2.3776669	20	8 6.4	17.4
51486 2001 <i>FL</i> <sub>73</sub>	15.3	X	2.52181	246.20264	86.69346	5.24300	0.1431495	0.27626337	2.3348224	20	10 23.3	17.5
51487 2001 <i>FL</i> <sub>74</sub>	15.4	X	115.12588	129.65401	165.51225	7.22361	0.1441693	0.28481631	2.2878421	20	—	—
51488 2001 <i>FV</i> <sub>75</sub>	14.8	X	44.01211	178.33408	161.91266	15.18568	0.1264281	0.23329849	2.6133330	20	12 18.1	18.7
51489 2001 <i>FM</i> <sub>76</sub>	15.4	X	8.79311	246.62184	39.46744	7.30139	0.1152636	0.26966220	2.3727719	20	8 19.9	17.9
51490 2001 <i>FQ</i> <sub>76</sub>	15.9	X	136.20470	212.36126	88.69618	4.81772	0.1102661	0.28945123	2.2633538	20	—	—
51491 2001 <i>FS</i> <sub>76</sub>	15.4	X	80.42399	152.03768	163.36557	5.35718	0.1782834	0.28236320	2.3010743	20	—	—
51492 2001 <i>FK</i> <sub>77</sub>	15.0	X	349.94144	308.10000	43.63905	7.69712	0.1433200	0.27587822	2.3369950	20	10 26.4	17.1
51493 2001 <i>FE</i> <sub>79</sub>	15.7	X	116.55723	53.33280	182.66459	5.62739	0.1867819	0.27553239	2.3389500	20	11 5.4	19.5
51494 2001 <i>FG</i> <sub>79</sub>	14.2	X	305.34954	135.81950	105.29161	6.84375	0.1586217	0.19857321	2.9097496	20	2 14.9	18.2
51495 2001 <i>FO</i> <sub>79</sub>	15.0	X	211.05166	309.24715	293.40118	6.30636	0.1482806	0.29262588	2.2469542	20	—	—
51496 2001 <i>FT</i> <sub>79</sub>	13.6	X	118.07580	321.42683	346.21940	16.30324	0.1903489	0.18342115	3.0678664	20	—	—
51497 2001 <i>FB</i> <sub>80</sub>	14.2	X	78.41886	253.70522	349.34208	14.40170	0.1702752	0.22166608	2.7039784	20	9 26.0	18.3
51498 2001 <i>FW</i> <sub>80</sub>	15.1	X	33.38784	204.64717	2.84051	12.94726	0.1376528	0.26202841	2.4186357	20	5 28.9	17.8
51499 2001 <i>FF</i> <sub>81</sub>	16.1	X	234.81310	303.88162	297.36812	6.73174	0.0823397	0.29804920	2.2196138	20	—	—
51500 2001 <i>FE</i> <sub>83</sub>	16.4	X	211.05124	65.97617	240.68138	2.02008	0.1846473	0.30200939	2.2001675	20	1 21.2	20.0
51501 2001 <i>FN</i> <sub>86</sub>	15.9	X	251.65662	167.71298	130.45085	2.69541	0.1526049	0.30383510	2.1913450	20	2 18.6	19.1
51502 2001 <i>FR</i> <sub>86</sub>	15.5	X	96.26748	124.40714	144.94276	9.82560	0.0550764	0.28100022	2.3085092	20	11 22.6	18.7
51503 2001 <i>FA</i> <sub>87</sub>	14.8	X	203.10225	220.27940	44.02296	11.52934	0.1200279	0.24318705	2.5420012	20	—	—
51504 2001 <i>FN</i> <sub>87</sub>	14.9	X	96.48383	270.98475	55.36833	6.38462	0.1094724	0.23691019	2.5867049	20	—	—
51505 2001 <i>FE</i> <sub>88</sub>	16.0	X	189.47930	115.51347	138.73755	6.99401	0.0626756	0.29184308	2.2509704	20	—	—
51506 2001 <i>FE</i> <sub>91</sub>	14.6	X	33.50812	259.69432	43.81885	23.60041	0.3016644	0.21933197	2.7231282	20	11 8.9	18.0
51507 2001 <i>FV</i> <sub>94</sub>	15.5	X	148.66513	221.56315	51.56020	8.54708	0.1423440	0.28860672	2.2677670	20	—	—
51508 2001 <i>FM</i> <sub>97</sub>	16.5	X	95.65097	155.71725	163.07128	3.42484	0.1902447	0.28780853	2.2719579	20	—	—
51509 2001 <i>FP</i> <sub>97</sub>	15.5	X	80.41902	187.80198	110.83213	7.91603	0.1232944	0.28149700	2.3057924	20	12 15.9	18.9
51510 2001 <i>FE</i> <sub>98</sub>	14.7	X	307.87113	198.87711	131.25747	10.38776	0.0907242	0.26710998	2.3878625	20	6 29.8	17.5
51511 2001 <i>FP</i> <sub>98</sub>	15.3	X	331.93218	199.13260	98.52845	6.77500	0.1300851	0.26468307	2.4024366	20	6 18.9	17.6
51512 2001 <i>FG</i> <sub>99</sub>	15.3	X	87.71291	195.94051	88.88785	11.17973	0.2419873	0.27781376	2.3261277	20	12 12.6	19.1
51513 2001 <i>FY</i> <sub>99</sub>	14.7											

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51521 2001 FJ <sub>113</sub>	15.2 <sup>m</sup>	X	96.53478	291.52898	54.06528	7.44745	0.2107455	0.29113003	2.2546444	20	—	—
51522 2001 FZ <sub>117</sub>	15.2	X	148.42151	144.04715	131.32077	11.40807	0.1688397	0.23534546	2.5981577	20	—	—
51523 2001 FJ <sub>120</sub>	15.7	X	166.82899	81.78701	183.91151	3.67147	0.1501886	0.28974244	2.2618370	20	—	—
51524 2001 FJ <sub>121</sub>	15.0	X	231.63427	118.90958	124.72675	8.11390	0.1784404	0.24243063	2.5472861	20	—	—
51525 2001 FZ <sub>121</sub>	14.8	X	124.89283	268.09447	31.36542	9.14772	0.2089744	0.28479747	2.2879435	20	—	—
51526 2001 FF <sub>123</sub>	16.6	X	334.22645	75.34117	180.40397	4.31055	0.1643336	0.26099034	2.4250448	20	4 14.6	18.8
51527 2001 FO <sub>123</sub>	15.5	X	113.79080	136.31275	168.75148	1.97012	0.1871272	0.23518328	2.5993520	20	—	—
51528 2001 FP <sub>123</sub>	16.2	X	338.45673	105.98925	191.94690	3.10218	0.1435693	0.26654252	2.3912504	20	7 1.8	18.2
51529 2001 FL <sub>128</sub>	13.6	X	176.63895	279.31377	29.03490	9.79629	0.2363258	0.18890605	3.0081914	20	1 11.5	18.9
51530 2001 FL <sub>129</sub>	15.7	X	170.67097	199.45417	51.16629	3.81274	0.1892820	0.28662566	2.2782043	20	—	—
51531 2001 FS <sub>129</sub>	15.1	X	201.03912	258.16159	26.97898	13.59372	0.1848613	0.24394165	2.5367563	20	—	—
51532 2001 FN <sub>130</sub>	14.7	X	19.72430	237.86937	43.15293	4.80055	0.0582668	0.21721264	2.7408125	20	8 16.1	18.2
51533 2001 FF <sub>132</sub>	15.3	X	57.62724	215.14401	99.99690	5.93366	0.2199197	0.27690056	2.3312391	20	12 21.3	18.7
51534 2001 FQ <sub>132</sub>	16.1	X	1.08844	195.78773	101.79493	6.51449	0.2328802	0.26998828	2.3708611	20	9 6.1	17.8
51535 2001 FD <sub>133</sub>	15.7	X	89.79931	79.62985	200.41200	6.75770	0.1177816	0.27963732	2.3160040	20	12 1.6	19.0
51536 2001 FN <sub>133</sub>	15.1	X	249.35318	47.13317	242.97540	5.82690	0.1200127	0.25197801	2.4825288	20	2 11.1	18.8
51537 2001 FT <sub>133</sub>	15.3	X	84.54552	355.97576	250.47243	0.89551	0.2918877	0.17004096	3.2267626	20	10 14.7	20.6
51538 2001 FA <sub>143</sub>	14.7	X	344.84513	193.52079	81.56612	10.50093	0.1558205	0.21518340	2.7580166	20	6 7.0	17.5
51539 2001 FG <sub>143</sub>	14.3	X	192.24443	222.86238	58.87763	15.24949	0.1488988	0.24132053	2.5550920	20	—	—
51540 2001 FQ <sub>143</sub>	15.3	X	189.41898	150.94382	153.85694	8.79510	0.2403368	0.24302452	2.5431345	20	1 9.3	19.8
51541 2001 FB <sub>145</sub>	15.6	X	355.18575	201.93104	47.71479	21.85015	0.0257727	0.36650859	1.9338077	20	5 18.7	17.3
51542 2001 FA <sub>147</sub>	15.0	X	156.64979	13.11907	307.27073	6.38753	0.3382799	0.24159229	2.5531755	20	1 10.0	19.5
51543 2001 FJ <sub>150</sub>	15.5	X	177.99293	5.75935	278.03968	5.25384	0.1901228	0.29212383	2.2495280	20	—	—
51544 2001 FH <sub>151</sub>	15.7	X	85.28663	94.63236	182.73172	6.42639	0.1193434	0.27766663	2.3269493	20	11 23.6	19.1
51545 2001 FM <sub>158</sub>	15.3	X	318.10348	167.85151	135.14543	1.92396	0.1896892	0.26632165	2.3925723	20	5 22.1	17.4
51546 2001 FU <sub>159</sub>	15.9	X	79.56149	92.55126	181.49162	6.48277	0.1163678	0.27764937	2.3270458	20	11 12.9	19.1
51547 2001 FX <sub>159</sub>	16.6	X	267.65513	82.22619	200.19674	4.03691	0.0964624	0.30620821	2.1800084	20	2 18.5	19.5
51548 2001 FD <sub>160</sub>	16.2	X	137.82754	289.82638	5.75668	2.39156	0.1146759	0.28937012	2.2637767	20	—	—
51549 2001 FM <sub>161</sub>	15.5	X	97.86449	265.85487	40.10234	4.63804	0.1189142	0.28362014	2.2942707	20	—	—
51550 2001 FB <sub>162</sub>	13.8	X	83.60067	256.06368	86.09740	17.32759	0.2019708	0.23386467	2.6091135	20	—	—
51551 2001 FO <sub>164</sub>	14.8	X	2.33075	116.05886	191.34346	10.53495	0.3729335	0.21501774	2.7594330	20	10 1.5	16.6
51552 2001 FP <sub>164</sub>	15.3	X	328.44770	283.68465	22.33284	8.23760	0.0522319	0.26623866	2.3930695	20	7 3.2	18.1
51553 2001 FR <sub>164</sub>	15.6	X	348.04430	36.12644	185.09928	7.75397	0.0834725	0.25726997	2.4483677	20	3 28.6	18.3
51554 2001 FS <sub>164</sub>	14.5	X	119.30535	294.30152	36.39730	22.96703	0.1941593	0.28760982	2.2730042	20	—	—
51555 2001 FK <sub>165</sub>	15.8	X	28.11883	50.42353	230.41995	3.47430	0.1551900	0.27243163	2.3566642	20	9 16.6	18.4
51556 2001 FG <sub>171</sub>	14.4	X	84.35466	106.38789	208.71306	11.08834	0.2581777	0.22875233	2.6478438	20	—	—
51557 2001 FL <sub>176</sub>	14.6	X	266.87891	209.73507	80.11470	9.42611	0.3010220	0.20191705	2.8775357	20	2 22.9	19.5
51558 2001 GE <sub>5</sub>	15.1	X	161.55053	181.80439	119.71172	10.29588	0.1503301	0.23844568	2.5755881	20	—	—
51559 2001 GZ <sub>6</sub>	15.8	X	102.09023	213.40521	95.17681	6.67792	0.1391952	0.28564811	2.2833990	20	—	—
51560 2001 GF <sub>8</sub>	16.1	X	225.84297	117.29309	121.08459	6.16173	0.1429586	0.29318442	2.2440996	20	—	—
51561 2001 GG <sub>9</sub>	15.1	X	282.97651	191.04910	132.51998	10.03005	0.2238794	0.25922762	2.4360257	20	4 25.5	18.6
51562 2001 GP <sub>9</sub>	15.4	X	67.11338	189.81918	100.50540	7.79863	0.1122837	0.27654986	2.3332096	20	11 19.9	18.6
51563 2001 HK <sub>9</sub>	15.4	X	45.18879	118.69571	114.02520	3.17219	0.1393281	0.26545554	2.3977737	20	8 2.2	17.9
51564 2001 HZ <sub>9</sub>	15.7	X	48.45929	110.95252	135.90909	2.02200	0.1522501	0.26779458	2.3837911	20	8 30.8	18.3
51565 2001 HQ <sub>1</sub>	15.3	X	331.15545	176.14096	20.94302	7.39278	0.0542801	0.25200903	2.4823250	20	2 5.7	18.4
51566 2001 HX <sub>1</sub>	15.6	X	151.42786	186.24319	66.68162	0.69122	0.1988890	0.28322570	2.2964004	20	12 25.6	19.3
51567 2001 HY <sub>1</sub>	15.0	X	74.05711	286.74897	40.41827	9.62290	0.0728218	0.23205742	2.6226424	20	12 28.6	18.8
51568 2001 HJ <sub>3</sub>	15.0	X	143.03533	115.46129	186.35892	2.83673	0.1832873	0.23598216	2.5934822	20	—	—
51569 Garywessen	14.0	X	34.93670	249.79481	75.21238	13.70423	0.1905390	0.22237217	2.6982515	20	11 24.5	17.6
51570 Phendricksen	14.5	X	332.89478	299.18317	58.86015	12.44496	0.1837316	0.21891846	2.7265562	20	9 23.7	17.3
51571 2001 HF <sub>4</sub>	15.4	X	149.44279	31.53184	279.89492	2.13466	0.2156025	0.23653737	2.5894222	20	—	—
51572 2001 HV <sub>4</sub>	15.3	X	112.55077	341.89291	264.56184	5.95861	0.0867657	0.27959299	2.3162487	20	11 22.5	18.6
51573 2001 HX <sub>4</sub>	15.5	X	3.61939	266.65070	357.17269	10.52447	0.1356086	0.26372687	2.4082401	20	7 2.9	17.9
51574 2001 HA <sub>5</sub>	15.3	X	243.46142	15.50970	266.51213	6.52000	0.1399810	0.30034608	2.2082830	20	1 20.4	18.6
51575 2001 HU <sub>5</sub>	15.1	X	280.01137	180.93828	6.89461	4.40671	0.2024402	0.24309271	2.5426588	20	—	—
51576 2001 HW <sub>5</sub>	13.9	X	75.93606	73.38146	248.15220	11.69860	0.2771847	0.22622899	2.6674967	20	—	—
51577 2001 HX <sub>5</sub>	15.2	X	248.06601	322.74034	284.27639	2.99755	0.1823798	0.24403491	2.5361099	20	—	—
51578 2001 HX <sub>6</sub>	15.6	X	309.43650	65.21294	109.86029	4.41723	0.0221745	0.24395914	2.5366350	20	—	—
51579 2001 HY <sub>8</sub>	14.3	X	80.70606	201.26082	96.79019	2.68781	0.1910746	0.17445095	3.1721508	20	12 1.3	19.2
51580 2001 HA <sub>9</sub>	15.3	X	159.93964	98.14670	163.94657	3.41830	0.1628630	0.23402004	2.6079586	20	—	—
51581 2001 HL <sub>9</sub>	15.2	X	52.41714	198.93322	61.41929	8.93468	0.2273365	0.26907550	2.3762198	20	10 9.9	18.4
51582 2001 HU <sub>9</sub>	15.3	X	351.14718	247.39347	65.90881	6.03378	0.1105511	0.26761230	2.3848734	20	8 27.2	17.7
51583 2001 HZ <sub>9</sub>	13.9	X	22.57959	248.80175	60.96742	12.57650	0.1829507	0.21888111	2.7268664	20	10 19.4	17.2
51584 2001 HP <sub>10</sub>	15.1	X	310.77633	197.25210	83.56762	7.30017	0.1274800	0.25698317	2.4501891	20	4 19.8	18.0
51585 2001 HH <sub>12</sub>	15.8	X	244.61487	352.33490	195.03690	3.83353	0.0564973	0.28942577	2.2634866	20	—	—
51586 2001 HO <sub>12</sub>	15.7	X	4.61565	224.38344	57.34762	2.93605	0.1744978	0.26535400	2.3983853	20	8 7.2	17.7
51587 2001 HY <sub>12</sub>	15.7	X	170.07831	58.41877	179.91354	1.06980	0.0445774	0.23414603	2.6070230	20	12 25.8	19.4
51588 2001 HH <sub>13</sub>	15.9	X	107.91192	238.71804	51.00629	4.67730	0.1745099	0.23008440	2.6376142	20	12 23.7	20.2
51589 2001 HQ <sub>13</sub>	13.9	X	36.93541	212.04029	91.66885	13.56486	0.1730475	0.22334762	2.6903896	20	11 1.8	17.6
51590 2001 HF <sub>14</sub>	16.0	X	116.02076	198.29686	350.58412	2.40616	0.1089210	0.27129676	2.3632318	20	8 30.2	19.1
51591 2001 HN <sub>15</sub>	15.3	X	357.13733	271.51264	41.48001	10.80466	0.1216926	0.27002346	2.3706551	20	9 12.0	17.8
51592 2001 HO <sub>18</sub>	15.7	X	35.13682	180.91423	132.50612	4.09581	0.1589587	0.27350087	2.3505179	20	11 16.4	18.6
51593 2001 HO <sub>20</sub>	14.7	X	134.15369	36.48943	231.24756	13.52051	0.0591752	0.23037277	2.6354126	20	12 19.6	18.6
51594 2001 HR <sub>20</sub>	15.5	X	209.97626	200.59804	26.98979	2.45645	0.1412644	0.23620289	2.5918662	20	—	—
51595 2001 HM <sub>21</sub>	15.0	X	44.12419	313.92247								

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51601 2001 HW <sub>27</sub>	15.4	X	349.27681	43.73061	222.94000	7.38797	0.0970678	0.26150359	2.4218706	20	6 6.4	17.9
51602 2001 HL <sub>28</sub>	14.4	X	94.84432	170.32146	106.83835	0.06445	0.2109916	0.17267638	3.1938469	20	11 21.2	19.5
51603 2001 HU <sub>28</sub>	14.9	X	66.58512	267.20264	61.71040	6.16236	0.1798434	0.27843551	2.3226635	20	—	—
51604 2001 HY <sub>28</sub>	13.9	X	46.38110	102.80643	234.96281	8.88888	0.2329431	0.22360956	2.6882881	20	12 27.5	17.9
51605 2001 HD <sub>29</sub>	15.3	X	78.07183	89.36247	221.99768	1.35685	0.1992992	0.22699820	2.6614671	20	12 24.2	19.6
51606 2001 HK <sub>29</sub>	15.8	X	350.14819	271.27636	67.48162	1.62602	0.1530750	0.27047496	2.3680162	20	10 6.0	17.8
51607 2001 HO <sub>29</sub>	15.5	X	108.87874	34.54348	215.21405	7.37662	0.1012178	0.22501897	2.6770509	20	11 2.2	19.5
51608 2001 HF <sub>32</sub>	15.0	X	67.61604	277.06113	50.52215	6.57824	0.2211790	0.28114039	2.3077418	20	—	—
51609 2001 HZ <sub>32</sub>	15.2	X	63.00659	109.37561	221.14370	5.63910	0.1537294	0.28098168	2.3086108	20	—	—
51610 2001 HH <sub>33</sub>	15.8	X	41.80022	218.33492	48.01008	2.79775	0.1956588	0.26853167	2.3794270	20	9 26.2	18.6
51611 2001 HQ <sub>33</sub>	15.7	X	227.79885	16.20057	250.87114	1.60239	0.1171382	0.24428742	2.5343620	20	—	—
51612 2001 HT <sub>33</sub>	14.4	X	77.96115	238.02652	52.46195	6.07414	0.1524383	0.17326771	3.1865761	20	11 15.4	19.3
51613 2001 HS <sub>34</sub>	15.3	X	170.33619	246.04173	40.05587	1.01259	0.0792610	0.23843934	2.5756337	20	—	—
51614 2001 HD <sub>35</sub>	14.2	X	75.69371	309.33993	62.77028	19.41916	0.2485801	0.23311641	2.6146937	20	—	—
51615 2001 HE <sub>35</sub>	15.6	X	126.22083	204.31303	48.41655	6.86795	0.0958429	0.27820168	2.3239648	20	12 2.4	18.9
51616 2001 HL <sub>35</sub>	14.9	X	135.68167	238.49117	41.00589	13.64086	0.1553744	0.23188448	2.6239462	20	—	—
51617 2001 HO <sub>35</sub>	14.9	X	105.59047	313.17093	354.57296	3.37188	0.1745879	0.23048929	2.6345243	20	—	—
51618 2001 HV <sub>35</sub>	14.9	X	163.26766	261.10811	59.80346	7.26413	0.2176199	0.23979508	2.5659166	20	1 7.5	19.1
51619 2001 HE <sub>36</sub>	15.6	X	186.94367	181.45956	349.97384	3.71769	0.1074744	0.27853042	2.3221358	20	10 22.7	18.8
51620 2001 HQ <sub>36</sub>	15.7	X	241.57523	262.02660	4.49186	2.90739	0.1531607	0.29672076	2.2262338	20	—	—
51621 2001 HR <sub>36</sub>	15.2	X	349.02924	349.49281	255.63508	7.85955	0.0849116	0.25836639	2.4414362	20	5 2.5	17.8
51622 2001 HA <sub>37</sub>	14.8	X	126.70366	352.16157	297.66475	3.76059	0.1470521	0.23075609	2.6324933	20	—	—
51623 2001 HJ <sub>37</sub>	14.9	X	127.78342	298.64804	289.72868	4.51342	0.1153360	0.27562562	2.3384226	20	11 1.6	18.4
51624 2001 HT <sub>37</sub>	14.1	X	90.18367	281.02341	59.57899	12.99692	0.1721537	0.23080959	2.6320864	20	—	—
51625 2001 HX <sub>37</sub>	15.4	X	90.92655	160.49754	182.84983	6.37592	0.1359051	0.28681261	2.2772142	20	—	—
51626 2001 HJ <sub>38</sub>	15.2	X	184.19647	56.69578	183.35496	2.84854	0.0782482	0.28537549	2.2848530	20	—	—
51627 2001 HK <sub>38</sub>	14.3	X	335.99436	109.17397	217.43855	8.09953	0.1800534	0.21252710	2.7809499	20	7 31.6	17.2
51628 2001 HC <sub>42</sub>	15.2	X	286.07009	184.02435	156.18505	6.66528	0.1287946	0.26529299	2.3987530	20	6 3.9	18.1
51629 2001 HM <sub>43</sub>	15.6	X	322.79364	40.88544	216.75287	6.03995	0.1123826	0.25846627	2.4408011	20	4 3.1	18.3
51630 2001 HL <sub>44</sub>	15.6	X	26.67548	212.94612	119.70742	4.37419	0.1649376	0.27749637	2.3279070	20	12 2.6	18.4
51631 2001 HN <sub>46</sub>	16.0	X	63.37753	230.45979	334.42554	1.95973	0.1346941	0.26701273	2.3884422	20	7 19.8	18.9
51632 2001 HT <sub>46</sub>	14.0	X	119.08816	344.28395	230.31999	6.90515	0.0354266	0.17097944	3.2149443	20	9 15.1	18.8
51633 2001 HK <sub>46</sub>	15.7	X	116.43403	157.98062	39.33281	7.79907	0.0569417	0.27166960	2.3610690	20	9 10.7	18.9
51634 2001 HU <sub>47</sub>	15.6	X	142.48491	274.28323	210.95773	20.56900	0.0916571	0.37360538	1.9092405	20	7 3.0	18.4
51635 2001 HA <sub>48</sub>	15.5	X	114.83828	197.26099	96.35682	10.04301	0.1115411	0.28765522	2.2727651	20	—	—
51636 2001 HM <sub>49</sub>	15.6	X	177.78808	76.70374	257.19985	7.32898	0.2227119	0.29750361	2.2223266	20	1 26.8	19.2
51637 2001 HP <sub>49</sub>	15.0	X	310.25480	83.56628	241.70720	12.15598	0.2054224	0.25697951	2.4502122	20	4 4.7	18.1
51638 2001 HF <sub>53</sub>	15.6	X	334.33789	83.74330	165.71866	3.38735	0.1643823	0.25710461	2.4494174	20	4 5.7	17.9
51639 2001 HH <sub>53</sub>	14.9	X	350.80151	252.96071	78.03011	6.04415	0.1678101	0.21755519	2.7379347	20	9 16.8	17.7
51640 2001 HP <sub>54</sub>	15.9	X	153.26304	12.89263	171.39537	6.14324	0.0450152	0.27547089	2.3392981	20	10 5.9	19.0
51641 2001 HI <sub>54</sub>	15.5	X	196.15948	3.78442	173.29919	5.53806	0.1438954	0.28170037	2.3046825	20	11 9.0	18.7
51642 2001 HG <sub>55</sub>	13.8	X	67.20228	143.37848	192.13178	11.35593	0.1744026	0.17695137	3.1421972	20	12 29.1	18.7
51643 2001 HT <sub>56</sub>	15.7	X	192.22033	347.80143	314.99342	4.38900	0.1242989	0.24354560	2.5395057	20	1 5.8	19.5
51644 2001 HD <sub>60</sub>	15.3	X	101.69881	1.05680	163.56077	6.66335	0.0737768	0.26355865	2.4092648	20	7 4.5	18.5
51645 2001 HP <sub>60</sub>	14.7	X	96.70173	189.47690	153.72682	14.35911	0.1607728	0.23512422	2.5997872	20	—	—
51646 2001 HA <sub>62</sub>	15.6	X	286.12722	277.68331	351.04934	4.83899	0.0851368	0.30597772	2.1811030	20	2 26.7	18.2
51647 2001 HY <sub>62</sub>	15.7	X	331.48509	217.85154	64.50219	2.64859	0.1338004	0.26064331	2.4271968	20	5 24.0	17.9
51648 2001 HN <sub>63</sub>	15.7	X	114.27941	10.10330	250.89685	9.55406	0.1252539	0.27811353	2.3244559	20	12 3.9	19.6
51649 2001 HB <sub>64</sub>	16.1	X	305.13250	311.06840	351.15715	0.76379	0.1782576	0.25901202	2.4373773	20	4 29.2	18.9
51650 2001 HG <sub>64</sub>	15.4	X	347.52617	271.85726	49.43164	8.20260	0.1420400	0.26684907	2.3894187	20	9 5.1	17.7
51651 2001 HC <sub>65</sub>	16.0	X	57.55080	110.82922	203.74201	2.18740	0.0861074	0.27850695	2.3222663	20	12 5.7	19.1
51652 2001 HH <sub>65</sub>	15.2	X	196.42339	334.91967	331.67140	2.18018	0.1980094	0.24245426	2.5471206	20	1 16.6	19.4
51653 2001 HM <sub>65</sub>	15.4	X	148.49217	292.41162	215.00393	5.96910	0.0671119	0.26798543	2.3826592	20	8 6.1	18.8
51654 2001 HK <sub>66</sub>	15.2	X	130.41834	128.18436	192.60989	14.73189	0.1582737	0.23626631	2.5914023	20	—	—
51655 Susannemond	14.9	X	19.05707	214.64335	117.42447	15.95732	0.1023313	0.22202380	2.7010732	20	11 4.0	18.6
51656 2001 JD	14.0	X	103.34715	270.99313	104.19127	13.70873	0.1948732	0.23879851	2.5730505	20	1 7.4	17.1
51657 2001 JG	14.8	X	275.63663	13.71742	287.79643	4.87746	0.1984764	0.25537350	2.4604743	20	3 15.6	18.4
51658 2001 JJ <sub>1</sub>	14.6	X	174.11078	135.39745	184.09059	10.31703	0.0518157	0.19104696	2.9856757	20	1 9.4	19.2
51659 2001 JN <sub>1</sub>	15.3	X	355.33998	201.92661	91.99475	8.23468	0.1490771	0.26440519	2.4041196	20	8 4.7	17.4
51660 2001 JX <sub>2</sub>	14.9	X	124.24692	285.24074	15.68837	7.25060	0.1243501	0.28595199	2.2817810	20	—	—
51661 2001 JO <sub>6</sub>	15.1	X	308.93879	7.82433	298.88844	5.71797	0.1738557	0.25975960	2.4326986	20	5 11.2	17.7
51662 2001 JZ <sub>6</sub>	15.3	X	129.93196	253.94592	65.44451	10.16863	0.2616196	0.23547787	2.5971836	20	—	—
51663 Lovelock	16.5	X	338.73919	318.12370	161.88089	4.38163	0.0772970	0.29295886	2.2452513	20	—	—
51664 2001 JB <sub>9</sub>	14.5	X	253.41937	309.09437	35.74739	3.56285	0.1827838	0.20525512	2.8462522	20	4 23.4	18.8
51665 2001 JN <sub>10</sub>	14.5	X	319.32611	271.27100	58.60484	9.90320	0.1689454	0.21377245	2.7701390	20	7 6.7	17.6
51666 2001 KJ <sub>1</sub>	14.8	X	84.87810	296.64999	62.73790	13.59925	0.2034691	0.23284650	2.6167139	20	—	—
51667 2001 KH <sub>3</sub>	15.2	X	202.59791	194.60327	77.83498	4.50671	0.1225671	0.24066606	2.5597221	20	—	—
51668 2001 KL <sub>4</sub>	14.6	X	306.25142	95.01382	246.80071	2.72191	0.1057360	0.21239331	2.7821176	20	7 7.5	18.0
51669 2001 KQ <sub>4</sub>	14.1	X	44.79794	259.09063	62.23560	10.55358	0.0932121	0.17188288	3.2036689	20	11 7.8	18.4
51670 2001 KF <sub>5</sub>	15.5	X	254.00303	7.49215	200.96293	3.29083	0.0348208	0.23938913	2.5688166	20	—	—
51671 2001 KP <sub>6</sub>	15.8	X	48.69346	348.98533	187.45576	2.41374	0.1364474	0.25860676	2.4399230	20	5 14.1	18.2
51672 2001 KW <sub>6</sub>	14.4	X	313.37834	119.23818	232.55606	4.27718	0.0745161	0.21463853	2.7626822	20	8 5.5	17.9
51673 2001 KC <sub>7</sub>	14.6	X	348.72058	92.11096	229.51036	4.83023	0.1008928	0.21480662	2.7612407	20	8 20.4	17.8
51674 2001 KE <sub>7</sub>	15.2	X	330.69409	232.94402	178.80511	7.81635	0.0855746	0.26268308	2.4146155	20	7 12.9	17.7
51675 2001 KS <sub>7</sub>	15.2	X	175.69867	166.83762	157.05348	4						

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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51681 2001 KO <sub>9</sub>	15.4	X	138.49105	235.78030	96.98533	5.15056	0.0950799	0.23936044	2.5690218	20	—	—
51682 2001 KM <sub>10</sub>	14.1	X	292.80122	311.89937	76.62800	13.89303	0.0854601	0.21775291	2.7362771	20	9 1.5	17.8
51683 2001 KT <sub>10</sub>	14.6	X	349.94520	121.50622	192.02854	5.69941	0.0823837	0.214449956	2.7638753	20	8 11.1	17.9
51684 2001 KU <sub>10</sub>	14.0	X	95.22548	213.53141	75.26916	12.86641	0.1837332	0.22565078	2.6720515	20	12 11.2	18.3
51685 2001 KQ <sub>11</sub>	14.4	X	6.01945	251.08660	100.55667	6.97389	0.1750828	0.22084682	2.7106615	20	11 14.6	17.5
51686 2001 KF <sub>12</sub>	13.8	X	54.18981	137.81612	231.52417	16.22467	0.2170542	0.17730965	3.1379629	20	—	—
51687 2001 KP <sub>12</sub>	14.6	X	175.35489	144.50889	89.35703	7.68982	0.0698554	0.28255538	2.3000308	20	—	—
51688 2001 KN <sub>12</sub>	15.4	X	34.32581	97.07955	154.34178	4.68912	0.0659296	0.26412186	2.4058386	20	7 30.3	18.0
51689 2001 KW <sub>13</sub>	13.8	X	151.83013	86.40120	247.15708	12.18108	0.1963110	0.23512865	2.5997545	20	1 8.6	18.0
51690 2001 KS <sub>13</sub>	15.4	X	121.84904	246.97705	312.65618	4.31955	0.1744931	0.27267628	2.3552543	20	9 21.4	19.1
51691 2001 KT <sub>13</sub>	15.5	X	66.53245	115.86916	213.12070	1.42031	0.2075041	0.22660231	2.6645661	20	—	—
51692 2001 KY <sub>13</sub>	15.6	X	293.16997	140.49670	74.15311	3.01424	0.0406458	0.24782484	2.5101875	20	1 9.2	18.9
51693 2001 KS <sub>14</sub>	15.5	X	107.18551	204.70858	165.66495	5.63830	0.1938261	0.29178530	2.2512676	20	—	—
51694 2001 KX <sub>14</sub>	14.0	X	126.57827	224.75745	96.11248	5.40095	0.2691202	0.18074639	3.0980586	20	—	—
51695 2001 KQ <sub>16</sub>	14.6	X	230.67584	24.14396	207.60372	7.76046	0.1422619	0.23936360	2.5689993	20	—	—
51696 2001 KD <sub>17</sub>	15.8	X	19.36180	112.46704	178.18914	5.83128	0.1237961	0.26683782	2.3894858	20	9 11.3	18.2
51697 2001 KJ <sub>17</sub>	14.2	X	111.34453	75.38428	244.96262	12.33467	0.2280680	0.22742726	2.6581187	20	—	—
51698 2001 KQ <sub>20</sub>	15.2	X	66.18348	153.22873	117.52793	7.02266	0.0952948	0.27202846	2.3589921	20	10 22.2	18.3
51699 2001 KA <sub>21</sub>	14.8	X	1.99011	196.52253	90.21535	8.49584	0.1610731	0.21341540	2.7732278	20	8 1.2	17.6
51700 2001 KJ <sub>23</sub>	13.9	X	162.69134	94.32991	257.68686	6.03145	0.2475229	0.24224071	2.5486173	20	2 11.6	18.2
51701 2001 KZ <sub>23</sub>	15.1	X	59.84725	289.86512	44.31912	8.33388	0.0223534	0.28093251	2.3088801	20	12 26.7	18.1
51702 2001 KK <sub>24</sub>	15.1	X	191.30502	229.10671	266.36584	6.25363	0.0527688	0.27236188	2.3570665	20	9 11.1	18.3
51703 2001 KM <sub>24</sub>	15.3	X	189.14172	280.28427	29.68282	5.22717	0.1563742	0.24194604	2.5506862	20	1 13.8	19.4
51704 2001 KO <sub>26</sub>	14.9	X	17.82259	267.85027	39.47503	3.56086	0.0734802	0.21786249	2.7353595	20	9 19.3	18.2
51705 2001 KA <sub>27</sub>	14.0	X	163.91453	273.47180	62.86101	11.63805	0.0835552	0.19038080	2.9926363	20	1 24.4	18.6
51706 2001 KX <sub>27</sub>	15.6	X	241.32559	175.38616	57.31923	4.29058	0.1301994	0.29205315	2.2498909	20	—	—
51707 2001 KR <sub>28</sub>	14.7	X	291.23100	343.00920	260.66330	5.72406	0.1636869	0.19987822	2.8970705	20	1 31.9	19.1
51708 2001 KU <sub>28</sub>	15.6	X	122.86799	14.89011	255.50557	6.04141	0.1432586	0.28164934	2.3049609	20	12 22.6	19.1
51709 2001 KW <sub>28</sub>	15.4	X	121.57899	300.26858	332.47896	2.50302	0.1452048	0.28165682	2.3049201	20	12 24.5	19.0
51710 2001 KZ <sub>28</sub>	15.7	X	82.86763	266.21059	338.18154	3.55407	0.1778592	0.27262263	2.3555633	20	10 11.7	19.1
51711 2001 KH <sub>29</sub>	15.3	X	95.82682	129.76362	229.52250	5.96370	0.1510510	0.28945461	2.2633362	20	—	—
51712 2001 KO <sub>29</sub>	15.3	X	43.54177	225.95017	83.30755	3.86713	0.0805799	0.22327652	2.6909607	20	10 30.3	18.8
51713 2001 KC <sub>30</sub>	15.3	X	180.68898	255.00957	95.46170	3.06400	0.1625028	0.24659088	2.5185546	20	2 23.8	19.2
51714 2001 KG <sub>30</sub>	14.8	X	287.45590	1.52240	236.72879	15.82696	0.0320138	0.19633986	2.9317734	20	2 3.5	19.2
51715 2001 KB <sub>31</sub>	15.5	X	135.38342	2.80028	235.83733	5.89777	0.0909489	0.27727845	2.3291206	20	11 24.8	18.8
51716 2001 KF <sub>31</sub>	14.7	X	32.80886	229.21801	59.98160	22.58786	0.2159691	0.26971519	2.3724612	20	10 26.7	17.8
51717 2001 KJ <sub>31</sub>	14.8	X	251.72326	130.03519	85.67108	14.35211	0.1152224	0.24165253	2.5527512	20	—	—
51718 2001 KL <sub>34</sub>	14.8	X	148.41605	279.31557	73.87014	8.82114	0.2656615	0.24173370	2.5521797	20	2 7.8	19.1
51719 2001 KH <sub>36</sub>	15.0	X	199.00056	7.00254	245.31655	10.20464	0.2073724	0.23390053	2.6088468	20	—	—
51720 2001 KZ <sub>36</sub>	13.8	X	133.85526	224.85456	91.66950	11.24229	0.1348223	0.18242292	3.0790479	20	—	—
51721 2001 KY <sub>37</sub>	14.8	X	301.18468	132.79691	101.12978	7.53080	0.0374419	0.19807576	2.9146192	20	2 22.9	18.8
51722 2001 KF <sub>38</sub>	14.1	X	79.31410	223.98358	101.86540	15.46178	0.1648873	0.22791752	2.6543055	20	—	—
51723 2001 KN <sub>38</sub>	15.0	X	88.98201	180.66986	173.73404	13.00414	0.1865853	0.23302139	2.6154044	20	—	—
51724 2001 KJ <sub>39</sub>	14.9	X	241.17048	156.59620	117.36034	12.27118	0.1130505	0.24504055	2.5291665	20	1 17.7	18.7
51725 2001 KV <sub>39</sub>	14.2	X	182.25451	207.57452	110.49517	18.20451	0.1811806	0.18838648	3.0137200	20	1 23.7	19.2
51726 2001 KV <sub>40</sub>	14.5	X	348.74902	191.89651	158.52150	12.30345	0.2650272	0.21765171	2.7312520	20	10 21.0	16.9
51727 2001 KJ <sub>41</sub>	14.3	X	308.93525	289.88765	85.95423	10.25768	0.1661126	0.21087517	2.7954545	20	8 27.7	17.5
51728 2001 KQ <sub>42</sub>	15.6	X	207.77619	77.94353	142.78802	6.90319	0.1906874	0.28751045	2.2735279	20	—	—
51729 2001 KA <sub>44</sub>	13.9	X	55.35471	210.33598	114.72357	11.08749	0.1958111	0.17196184	3.2026882	20	12 4.3	18.6
51730 2001 KC <sub>45</sub>	14.9	X	182.08510	51.68973	206.28254	11.09380	0.1539700	0.23426431	2.6061454	20	—	—
51731 2001 KF <sub>45</sub>	15.6	X	203.21297	61.16400	167.45240	5.85555	0.1237556	0.28591647	2.2819700	20	—	—
51732 2001 KQ <sub>45</sub>	14.2	X	62.53313	183.39165	213.01589	11.17569	0.1865521	0.23435153	2.6054986	20	—	—
51733 2001 KZ <sub>45</sub>	14.9	X	168.76541	318.98938	215.87345	12.68762	0.0746241	0.27284839	2.3542638	20	10 7.3	18.3
51734 2001 KC <sub>46</sub>	14.6	X	160.26007	73.39729	227.71173	12.36883	0.1911462	0.23315048	2.6144390	20	—	—
51735 2001 KL <sub>47</sub>	14.7	X	156.54683	350.01663	260.53974	12.10795	0.0471767	0.23115645	2.6294528	20	12 24.2	18.5
51736 2001 KA <sub>48</sub>	14.8	X	343.53381	293.01912	46.89811	8.66280	0.1303549	0.26803268	2.3823792	20	9 25.5	17.1
51737 2001 KD <sub>48</sub>	15.8	X	161.88952	312.72588	279.06936	2.84030	0.0745578	0.28069004	2.3102096	20	12 16.6	19.0
51738 2001 KQ <sub>48</sub>	15.6	X	290.84962	168.04279	131.62439	7.96600	0.0526312	0.25601188	2.4563823	20	4 29.1	18.8
51739 2001 KQ <sub>49</sub>	15.3	X	37.95336	138.32179	78.86684	3.58942	0.1294951	0.26084480	2.4259467	20	6 24.5	17.7
51740 2001 KG <sub>50</sub>	14.9	X	189.43105	90.29970	249.89522	12.26688	0.2059870	0.24366446	2.5386798	20	2 13.9	19.4
51741 Davidixon	14.4	X	249.54069	214.05611	119.11058	7.25953	0.1622967	0.20208630	2.8759288	20	4 10.7	19.0
51742 2001 KE <sub>55</sub>	15.2	X	84.09024	167.63856	99.46631	8.07902	0.1429305	0.27541214	2.3396308	20	11 12.2	18.6
51743 2001 KK <sub>55</sub>	15.0	X	136.87647	102.80255	148.21372	6.92650	0.1434833	0.22935313	2.6432177	20	12 3.8	19.3
51744 2001 KP <sub>56</sub>	15.1	X	146.27007	224.22760	104.28194	8.87556	0.2237392	0.23966159	2.5668693	20	1 1.4	19.1
51745 2001 KS <sub>58</sub>	14.6	X	67.25550	145.39238	102.52306	13.63291	0.0356783	0.21638641	2.7477849	20	9 7.4	18.5
51746 2001 KM <sub>62</sub>	15.2	X	358.81868	231.38925	104.37778	3.14182	0.1345498	0.21987628	2.7186322	20	10 5.0	18.2
51747 2001 KR <sub>63</sub>	15.4	X	340.36759	205.57062	128.96965	12.48981	0.1840935	0.26940680	2.3742713	20	9 12.2	17.3
51748 2001 KC <sub>64</sub>	15.7	X	98.55622	71.45392	244.46200	2.48828	0.1823843	0.23057876	2.6338428	20	—	—
51749 2001 KF <sub>65</sub>	14.3	X	134.64609	229.51363	111.27550	15.64859	0.1431159	0.24021734	2.5629088	20	—	—
51750 2001 KL <sub>66</sub>	15.8	X	330.19159	58.98877	155.45882	4.88872	0.0856344	0.30306185	2.1950708	20	2 11.5	17.9
51751 2001 KQ <sub>66</sub>	13.5	X	168.06718	308.91019	288.64937	16.80461	0.1586695	0.17311383	3.1884641	20	12 4.6	18.9
51752 2001 KW <sub>68</sub>	15.2	X	172.50280	28.31304	212.92500	5.84477	0.1160173	0.23199293	2.6231284	20	12 25.7	19.3
51753 2001 KV <sub>71</sub>	14.7	X	130.02086	133.70738	241.53043	7.86871	0.1800597	0.24446137	2.5331596	20	2 2.7	18.4
51754 2001 KT <sub>73</sub>	15.9	X	281.67369	140.77663	208.02080	9.46837	0.0750950	0.26115115	2.4240492	20	6 17.5	19.0

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51761 2001 LD <sub>7</sub>	12.9	X	148.86664	0.79677	279.56806	15.62114	0.1037102	0.17377429	3.1803802	20	—	—
51762 2001 LV <sub>7</sub>	14.6	X	170.25989	4.57997	263.75892	13.99599	0.0618624	0.22954603	2.6417367	20	—	—
51763 2001 LD <sub>8</sub>	13.4	X	328.28459	48.44612	338.74943	8.62332	0.1754901	0.16243056	3.3267810	20	10 1.1	17.2
51764 2001 LR <sub>8</sub>	13.7	X	47.88943	221.26551	226.51204	9.65535	0.2109876	0.17759871	3.1345570	20	1 24.8	17.3
51765 2001 LT <sub>10</sub>	14.5	X	166.21134	126.57353	250.35472	14.05634	0.1431025	0.24337095	2.5407205	20	3 4.9	18.8
51766 2001 LH <sub>12</sub>	14.4	X	151.84324	347.68762	267.23306	13.69824	0.0992110	0.22515389	2.6759813	20	12 21.3	18.4
51767 2001 LH <sub>15</sub>	13.9	X	172.00207	48.91428	265.07190	8.55152	0.0756530	0.18400502	3.0613731	20	1 4.2	18.4
51768 2001 LQ <sub>16</sub>	14.4	X	358.08477	242.95952	128.96344	5.92726	0.1479681	0.21799710	2.7342333	20	11 23.7	17.5
51769 2001 LS <sub>18</sub>	14.2	X	145.73706	214.91278	146.52223	12.94513	0.2151090	0.18534013	3.0466535	20	2 13.7	19.1
51770 2001 LH <sub>19</sub>	14.0	X	323.42450	118.72816	272.95490	10.66700	0.1203073	0.21309618	2.7759966	20	10 10.0	17.4
51771 2001 MH	13.8	X	82.22322	69.00982	271.54558	15.45585	0.0399280	0.17388233	3.1790626	20	—	—
51772 Sparker	14.1	X	74.46063	79.52266	260.92081	11.02329	0.1854965	0.22387459	2.6861660	20	—	—
51773 2001 MV	14.2	X	100.01370	95.81198	249.91671	22.16952	0.2962553	0.28476973	2.2880921	20	—	—
51774 2001 MH <sub>1</sub>	14.4	X	90.13194	340.55241	323.33891	11.31386	0.1836953	0.22825540	2.6516854	20	12 26.2	18.8
51775 2001 MZ <sub>2</sub>	13.1	X	304.45505	223.69999	266.00780	8.63769	0.1230158	0.17068859	3.2185955	20	—	—
51776 2001 MT <sub>3</sub>	15.0	X	213.15677	322.01488	303.76411	4.11963	0.2125343	0.24053680	2.5606390	20	—	—
51777 2001 MG <sub>8</sub>	13.3	X	14.12570	199.25470	211.40623	10.35512	0.1562310	0.17272221	3.1932819	20	—	—
51778 2001 MV <sub>8</sub>	14.6	X	267.90821	159.58337	81.40810	14.79820	0.1399189	0.24120092	2.5559366	20	1 2.6	18.4
51779 2001 MY <sub>8</sub>	14.9	X	215.81062	0.94918	359.10872	1.73073	0.1241014	0.19605081	2.9346544	20	4 9.8	19.6
51780 2001 MB <sub>9</sub>	14.4	X	166.21220	84.63464	310.91506	9.05920	0.1237911	0.19359635	2.9594064	20	4 1.3	19.2
51781 2001 MU <sub>9</sub>	14.6	X	169.61292	21.68069	320.18565	14.45303	0.1376859	0.23825445	2.5769661	20	2 2.4	18.4
51782 2001 MC <sub>12</sub>	15.1	X	55.17318	344.57272	57.28330	4.04030	0.0411993	0.23113191	2.6296389	20	—	—
51783 2001 MO <sub>12</sub>	13.6	X	172.82060	294.41318	276.74185	11.16639	0.1067680	0.21873800	2.7280556	20	11 16.5	18.0
51784 2001 MJ <sub>15</sub>	14.6	X	225.99616	136.55517	343.73922	9.43275	0.1801720	0.21643176	2.7474011	20	9 13.6	18.8
51785 2001 MK <sub>17</sub>	14.1	X	99.50595	49.06843	349.45024	9.53235	0.0510734	0.18384634	3.0631344	20	1 22.9	18.4
51786 2001 MY <sub>18</sub>	13.1	X	69.41321	134.50754	267.20590	15.09632	0.1713518	0.17525802	3.1624047	20	—	—
51787 2001 MP <sub>19</sub>	15.2	X	15.79220	296.61308	290.18067	10.87348	0.1535422	0.25498421	2.4629779	20	5 27.6	17.6
51788 2001 ME <sub>21</sub>	15.2	X	298.72903	199.66284	94.33244	3.07116	0.0574556	0.19963135	2.8994584	20	5 1.7	19.0
51789 2001 MG <sub>21</sub>	14.0	X	50.35080	89.26799	315.17526	8.69466	0.1206223	0.17778536	3.1323628	20	—	—
51790 2001 MC <sub>23</sub>	12.3	X	25.10250	149.71385	238.54169	14.84263	0.0494876	0.16828322	3.2491930	20	12 23.8	16.9
51791 2001 MD <sub>24</sub>	14.0	X	331.62157	283.68109	273.38322	14.06608	0.0578391	0.23873152	2.5735318	20	1 31.3	17.5
51792 2001 MD <sub>25</sub>	15.0	X	257.56976	2.11360	230.85302	12.81194	0.2564585	0.23872014	2.5736136	20	—	—
51793 2001 MK <sub>25</sub>	13.5	X	314.48946	31.43822	295.63422	14.41540	0.2077414	0.20414665	2.8565459	20	6 17.4	16.9
51794 2001 MC <sub>26</sub>	14.3	X	68.46718	132.31623	155.21808	13.09668	0.1805286	0.22129781	2.7069774	20	11 17.1	18.6
51795 2001 MR <sub>26</sub>	15.5	X	197.38670	47.89600	147.73324	4.14023	0.0962204	0.27767594	2.3268973	20	12 8.6	18.5
51796 2001 MJ <sub>27</sub>	13.0	X	200.37239	12.04898	317.96200	9.73432	0.0319304	0.18659979	3.0329269	20	2 19.9	17.5
51797 2001 MM <sub>27</sub>	13.8	X	46.19040	92.71810	301.68790	6.24869	0.0968987	0.17216269	3.0001968	20	—	—
51798 2001 MA <sub>28</sub>	14.9	X	159.17370	189.24824	148.15898	3.27990	0.1262794	0.18440080	3.0569912	20	1 26.9	19.9
51799 2001 MF <sub>29</sub>	14.5	X	147.27649	274.62101	105.67846	2.57108	0.1074205	0.18778438	3.0201585	20	2 29.2	19.1
51800 2001 NN <sub>2</sub>	14.9	X	19.43472	118.66282	252.02797	4.88782	0.0357549	0.22146547	2.7056111	20	12 8.1	18.3
51801 2001 NZ <sub>2</sub>	13.8	X	55.48413	171.08624	229.86434	17.07512	0.1145055	0.17530546	3.1618342	20	—	—
51802 2001 NF <sub>4</sub>	14.8	X	253.66006	106.30693	95.87333	14.94915	0.0958923	0.23332459	2.6131382	20	—	—
51803 2001 NN <sub>7</sub>	15.2	X	359.62662	352.37115	68.06994	3.57042	0.0453815	0.22551378	2.6731336	20	—	—
51804 2001 NP <sub>8</sub>	14.6	X	307.17069	302.22941	167.14340	1.56106	0.1384662	0.17334552	3.1856224	20	12 17.2	18.2
51805 2001 NY <sub>12</sub>	14.8	X	265.19058	8.35039	260.43128	5.31857	0.1615130	0.24414408	2.5353539	20	1 30.2	18.8
51806 2001 NN <sub>18</sub>	14.4	X	170.50780	124.11086	188.02123	9.98682	0.0998761	0.18195473	3.0843275	20	1 2.0	19.3
51807 2001 NX <sub>19</sub>	14.4	X	354.58230	132.12980	281.35058	13.77914	0.0058981	0.22293613	2.6936991	20	12 27.2	17.8
51808 2001 OM <sub>1</sub>	12.8	X	314.76301	14.51746	108.56906	20.49072	0.0944865	0.17518550	3.1632774	20	—	—
51809 2001 OQ <sub>1</sub>	14.3	X	186.76877	247.00261	60.52127	10.80609	0.0712792	0.18394447	3.0620449	20	1 13.0	19.0
51810 2001 ON <sub>5</sub>	14.0	X	269.11211	11.18849	232.62623	9.61833	0.0162196	0.18369151	3.0648554	20	1 26.4	18.5
51811 2001 OP <sub>5</sub>	14.1	X	95.16318	124.67800	231.15992	9.44752	0.0748661	0.17440169	3.1727481	20	—	—
51812 2001 OE <sub>7</sub>	13.4	X	195.39771	19.75138	299.97057	9.59727	0.1173072	0.18456595	3.0551673	20	2 3.4	18.2
51813 2001 OT <sub>8</sub>	13.5	X	125.18501	207.56429	180.55998	10.63193	0.1329278	0.18372062	3.0645317	20	2 15.7	18.1
51814 2001 OZ <sub>8</sub>	12.7	X	66.94874	213.10308	239.81765	8.58097	0.0629639	0.18374149	3.0642996	20	2 11.9	16.9
51815 2001 OM <sub>10</sub>	14.0	X	50.90011	118.54262	315.60334	8.68333	0.1141441	0.18287912	3.0739253	20	1 6.6	17.8
51816 2001 OY <sub>12</sub>	14.2	X	17.05620	102.29005	86.12368	10.74932	0.0960856	0.19088038	2.9874125	20	4 11.9	18.0
51817 2001 OA <sub>13</sub>	14.3	X	130.67652	24.82166	312.41718	13.28281	0.1718076	0.23131208	2.6282732	20	—	—
51818 2001 OM <sub>15</sub>	14.6	X	344.37225	163.25045	340.69727	12.67197	0.1880455	0.23629098	2.5912220	20	—	—
51819 2001 OZ <sub>15</sub>	14.8	X	247.00615	51.95718	33.82451	7.94747	0.2049983	0.20977995	2.8051757	20	8 24.4	19.0
51820 2001 OT <sub>19</sub>	15.2	X	106.43648	79.81120	319.77158	2.97171	0.1741153	0.23576422	2.5950802	20	2 9.3	18.6
51821 2001 OV <sub>20</sub>	13.6	X	281.13844	196.75527	337.78864	12.51562	0.1050886	0.22563846	2.6721487	20	—	—
51822 2001 OB <sub>25</sub>	13.5	X	346.01538	223.28528	239.50955	12.26600	0.0594298	0.17451785	3.1713400	20	—	—
51823 Rickhusband	14.3	X	61.32185	347.05376	58.04307	11.55480	0.2179273	0.17670839	3.1450769	20	—	—
51824 Mikeanderson	14.4	X	191.78248	358.41850	334.38162	9.77391	0.1122445	0.18923301	3.0047253	20	2 16.5	19.1
51825 Davidbrown	14.2	X	150.28833	32.58208	23.44144	9.61946	0.0701064	0.19301576	2.9653379	20	4 11.4	18.4
51826 Kalpanachawla	14.1	X	72.81328	50.42401	14.15065	9.58704	0.0857773	0.18279467	3.0748719	20	1 25.6	18.3
51827 Laureclark	14.1	X	66.82838	92.23710	10.62860	10.23319	0.1456278	0.18678491	3.0309227	20	3 11.6	18.0
51828 llanramon	13.9	X	288.36194	43.61655	41.63864	9.46403	0.1305871	0.21351034	2.7724056	20	10 28.7	16.9
51829 Williamccool	15.1	X	258.53792	118.77688	93.32245	7.56792	0.0540641	0.28661746	2.2782478	20	—	—
51830 2001 OO <sub>44</sub>	13.9	X	119.31626	227.70735	244.59523	7.89436	0.0848315	0.18992347	2.9974385	20	5 17.9	18.3
51831 2001 OT <sub>44</sub>	13.3	X	57.68907	290.73659	114.73574	17.99527	0.1669549	0.17563752	3.1578478	20	—	—
51832 2001 OS <sub>46</sub>	14.4	X	213.68291	194.16656	132.14518	13.49207	0.0221523	0.19038291	2.9926143	20	3 5.3	18.7
51833 2001 OP <sub>47</sub>	13.9	X	10.33544	172.56615	315.83415	11.91011	0.1076806	0.23390289	2.6088293	20	—	—
51834 2001 OV <sub>47</sub>	13.9	X	105.91640	249.91973	152.70407	10.23398	0.1084571	0.18315340	3.0708555	20	2 9.6	18.3
51835 2001 OF <sub>52</sub>	14.2	X	250.91295	209.01411	14.80992	11.79723	0.0401129	0.18059399	3.1001973	20	—	—



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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51841 2001 OO <sub>65</sub>	14.5	X	48.51190	170.24290	303.96235	11.68817	0.1269852	0.23985287	2.5655044	20	2 10.6	17.3
51842 2001 OQ <sub>68</sub>	14.5	X	160.27546	262.70458	338.09386	12.44640	0.1461361	0.22312126	2.6922089	20	12 9.3	19.0
51843 2001 OF <sub>83</sub>	13.6	X	16.57682	169.67381	358.11214	16.16872	0.1405636	0.19121338	2.9839431	20	3 11.1	17.0
51844 2001 ON <sub>83</sub>	14.0	X	120.54178	278.77540	41.94092	11.33965	0.0256794	0.17477909	3.1681791	20	—	—
51845 2001 OO <sub>83</sub>	13.8	X	38.63979	324.84174	57.27319	8.98673	0.0689284	0.17089335	3.2160239	20	—	—
51846 2001 OT <sub>88</sub>	14.1	X	243.02346	278.21956	310.62220	12.02098	0.1186060	0.23402904	2.6078917	20	—	—
51847 2001 OV <sub>88</sub>	14.1	X	223.41918	283.99435	101.12138	3.37767	0.1235919	0.19791483	2.9161990	20	5 19.3	18.7
51848 2001 OZ <sub>89</sub>	13.7	X	61.02606	232.94387	130.01381	12.74191	0.1296873	0.17113392	3.2130093	20	—	—
51849 2001 OX <sub>90</sub>	14.8	X	138.37809	122.61366	201.75488	1.28507	0.1092370	0.17881038	3.1203805	20	—	—
51850 2001 OJ <sub>92</sub>	13.8	X	94.02379	62.53689	348.14902	11.24528	0.0269455	0.18539731	3.0460271	20	1 28.0	18.1
51851 2001 OC <sub>93</sub>	13.8	X	27.29492	100.92479	340.07113	12.92982	0.2207118	0.17682367	3.1437098	20	—	—
51852 2001 OB <sub>95</sub>	12.3	X	320.19989	243.60221	260.29122	21.36806	0.0940222	0.17395036	3.1782337	20	—	—
51853 2001 OY <sub>96</sub>	14.1	X	3.68580	25.89951	110.45183	10.62970	0.0315358	0.18282981	3.0744779	20	1 14.6	18.1
51854 2001 OQ <sub>100</sub>	12.9	X	36.50287	58.89916	325.74034	14.22866	0.0735271	0.17130084	3.2109218	20	—	—
51855 2001 OK <sub>102</sub>	14.5	X	290.81808	246.15996	301.99648	11.91713	0.0999441	0.23329279	2.6133756	20	—	—
51856 2001 OT <sub>103</sub>	13.6	X	243.73656	340.31338	311.79145	12.08615	0.1744760	0.23780840	2.5801874	20	2 7.8	17.8
51857 2001 OA <sub>105</sub>	13.7	X	204.81029	234.88986	177.77812	12.98657	0.1468835	0.22496174	2.6775049	20	—	—
51858 2001 OQ <sub>105</sub>	13.1	X	241.15378	346.61870	301.60374	8.69108	0.1158277	0.18609019	3.0384615	20	2 9.3	17.9
51859 2001 OR <sub>107</sub>	13.6	X	70.57163	322.70143	32.42354	5.61674	0.1530813	0.17126782	3.2113344	20	—	—
51860 2001 OS <sub>107</sub>	13.9	X	196.08477	297.25991	91.91198	10.83029	0.1121496	0.19348092	2.9605833	20	5 1.0	18.7
51861 2001 PD	13.7	X	174.86547	0.58125	8.17039	8.92481	0.1260340	0.18869895	3.0103921	20	3 14.9	18.4
51862 2001 PH	13.9	X	298.63546	132.37552	304.15253	14.40753	0.1526889	0.21090931	2.7951528	20	10 22.8	17.5
51863 2001 PQ	14.9	X	152.58723	219.27885	85.33414	2.25416	0.1488344	0.17875136	3.1210674	20	—	—
51864 2001 PW	14.7	X	70.00852	319.49991	346.97431	4.70014	0.0047661	0.21879021	2.7276216	20	11 14.7	18.5
51865 2001 PR <sub>2</sub>	13.1	X	133.43169	313.88548	32.97889	2.54083	0.0888597	0.12648953	3.9303661	20	1 12.8	18.8
51866 2001 PH <sub>3</sub>	14.0	X	264.07600	237.95593	264.00520	22.52960	0.1943268	0.27203112	2.3589767	20	12 13.5	16.2
51867 2001 PC <sub>4</sub>	13.6	X	317.33830	176.51403	268.22089	12.08994	0.1148579	0.21652750	2.7465911	20	12 17.5	16.4
51868 2001 PE <sub>4</sub>	13.9	X	110.24944	217.16148	104.99076	20.98887	0.1423284	0.17523365	3.1626979	20	—	—
51869 2001 PR <sub>4</sub>	13.7	X	136.63431	90.56733	1.54742	9.94129	0.0323919	0.19243724	2.9712782	20	5 3.9	18.0
51870 2001 PC <sub>6</sub>	13.9	X	94.66232	75.37023	355.47022	10.06007	0.1186622	0.18311642	3.0712690	20	3 4.6	18.0
51871 2001 PH <sub>8</sub>	13.9	X	186.43087	208.16388	47.21190	9.72740	0.0405878	0.17430172	3.1739611	20	—	—
51872 2001 PN <sub>9</sub>	13.5	X	67.14979	168.61264	273.42472	10.47491	0.0873253	0.18503915	3.0499564	20	2 2.0	17.5
51873 2001 PX <sub>19</sub>	14.5	X	185.51044	341.33211	102.13814	8.55562	0.0509735	0.20144369	2.8820418	20	6 24.3	18.7
51874 2001 PZ <sub>28</sub>	13.1	X	148.06642	147.59039	160.88314	11.61004	0.2361392	0.12445764	3.9730284	20	—	—
51875 2001 PG <sub>34</sub>	13.4	X	157.72229	159.52850	230.40907	8.76613	0.0985172	0.18655941	3.0333646	20	3 17.6	18.2
51876 2001 PU <sub>41</sub>	13.4	X	250.31537	219.35017	264.25108	6.33085	0.0494796	0.16103955	3.3459107	20	10 23.1	18.2
51877 2001 PO <sub>46</sub>	14.1	X	198.65943	286.74466	85.48442	12.71927	0.2288214	0.19037299	2.9927183	20	4 13.4	19.5
51878 2001 PP <sub>46</sub>	14.5	X	85.80746	160.59111	210.39797	15.58448	0.0999634	0.17588078	3.1549353	20	—	—
51879 2001 PA <sub>47</sub>	13.3	X	87.49791	62.24323	63.51792	11.24916	0.0500343	0.19153449	2.9806071	20	4 24.6	17.4
51880 2001 PV <sub>52</sub>	14.4	X	23.34944	321.11576	113.78983	2.46521	0.2506236	0.17409112	3.1765203	20	—	—
51881 2001 PF <sub>58</sub>	13.9	X	182.33130	44.52635	357.92565	9.41900	0.0738278	0.19241780	2.9714782	20	4 26.2	18.5
51882 2001 QM <sub>6</sub>	13.7	X	130.64983	187.55132	206.34569	1.24480	0.1239554	0.18476624	3.0529590	20	2 28.7	18.3
51883 2001 QO <sub>8</sub>	14.4	X	117.52127	316.09016	156.12464	3.54679	0.1668728	0.24572858	2.5244432	20	5 25.6	18.1
51884 2001 QS <sub>10</sub>	14.1	X	171.59393	315.35352	115.26663	3.23231	0.0953865	0.19502829	2.9449029	20	5 24.0	18.6
51885 2001 QD <sub>14</sub>	13.5	X	131.03694	170.87016	166.84585	1.62278	0.2329048	0.12305502	4.0031620	20	1 13.8	19.7
51886 2001 QV <sub>16</sub>	13.5	X	7.90103	71.33286	3.87384	6.28451	0.1318350	0.17118563	3.2123622	20	—	—
51887 2001 QA <sub>17</sub>	14.5	X	175.07382	45.73870	16.31370	4.22003	0.1279872	0.24591404	2.5231738	20	5 15.1	18.4
51888 2001 QZ <sub>17</sub>	13.0	X	137.15181	15.66063	319.16602	1.77773	0.2290685	0.12425183	3.9774146	20	1 15.6	19.2
51889 2001 QP <sub>18</sub>	13.6	X	213.91007	271.15685	311.81347	3.97837	0.1078262	0.17227580	3.1987960	20	—	—
51890 2001 QH <sub>18</sub>	13.4	X	71.17973	82.42026	345.30819	20.96008	0.1311588	0.17828568	3.1264998	20	2 6.5	17.6
51891 2001 QS <sub>19</sub>	14.0	X	234.16973	169.79546	264.64389	0.93390	0.0491272	0.20342891	2.8632610	20	8 10.2	17.9
51892 2001 QP <sub>25</sub>	13.3	X	217.65502	342.44478	6.18348	11.23001	0.1093613	0.18978540	2.9988922	20	3 29.8	18.0
51893 2001 QD <sub>25</sub>	13.8	X	48.52836	69.24350	5.36254	5.75958	0.1045609	0.17518340	3.1633027	20	1 4.3	17.8
51894 2001 QU <sub>26</sub>	13.8	X	103.07408	343.99677	69.10709	6.84091	0.1597047	0.18058141	3.0999452	20	3 1.2	18.3
51895 Biblialex <sub>a</sub>	14.3	X	26.93694	315.91206	212.88632	10.97647	0.0839698	0.18872046	3.0101633	20	3 24.3	18.1
51896 2001 QY <sub>34</sub>	14.7	X	179.53258	192.55615	118.06555	8.17344	0.0446833	0.18398028	3.0616476	20	1 6.7	19.2
51897 2001 QN <sub>35</sub>	14.9	X	186.41304	217.20829	308.28453	6.44483	0.0243048	0.21627472	2.7487308	20	10 9.2	18.8
51898 2001 QS <sub>36</sub>	13.9	X	40.76524	82.09091	311.58250	8.05468	0.0678319	0.17393724	3.1783936	20	—	—
51899 2001 QD <sub>37</sub>	14.0	X	133.94888	102.84561	324.13724	9.90271	0.1143934	0.19154953	2.9804510	20	4 6.3	18.7
51900 2001 QF <sub>37</sub>	14.4	X	101.13386	312.57801	38.90914	1.61475	0.1121437	0.17646871	3.1479240	20	—	—
51901 2001 QF <sub>39</sub>	14.5	X	214.35358	338.08416	321.61326	8.94093	0.0601920	0.18755587	3.0226111	20	1 31.5	19.1
51902 2001 QL <sub>39</sub>	14.2	X	93.25702	327.45845	71.83094	1.28167	0.1878110	0.18166681	3.0875855	20	2 2.6	18.2
51903 2001 QR <sub>41</sub>	14.7	X	140.17709	344.92033	86.31189	2.24313	0.1029400	0.19338829	2.9615286	20	4 22.6	19.0
51904 2001 QZ <sub>41</sub>	14.8	X	350.65842	134.24035	316.68940	13.55554	0.0740921	0.22706311	2.6609599	20	—	—
51905 2001 QM <sub>51</sub>	14.4	X	277.93740	149.20997	351.55800	4.59394	0.1365219	0.22392960	2.6857261	20	12 27.3	17.4
51906 2001 QN <sub>51</sub>	14.0	X	15.93505	320.17706	115.52844	6.38949	0.1452162	0.17430070	3.1739735	20	—	—
51907 2001 QF <sub>58</sub>	13.8	X	295.40147	134.55634	20.09283	12.08143	0.1222999	0.22452468	2.6809785	20	—	—
51908 2001 QP <sub>59</sub>	14.6	X	179.59713	271.60649	16.38610	4.78292	0.1146025	0.17893783	3.1188987	20	—	—
51909 2001 QD <sub>60</sub>	14.8	X	245.41897	217.79172	339.81157	11.00348	0.1252851	0.22900477	2.6458976	20	—	—
51910 2001 QP <sub>60</sub>	11.6	X	270.02878	298.09190	8.63386	32.62171	0.0866776	0.08383270	5.1704350	20	4 6.9	18.6
51911 2001 QD <sub>68</sub>	13.3	X	191.10869	338.21802	261.07010	20.46860	0.0757679	0.17349062	3.1838460	20	12 31.3	18.1
51912 2001 QS <sub>69</sub>	13.3	X	163.67969	325.82362	116.20943	16.05609	0.1478648	0.17366982	3.1816555	20	—	—
51913 2001 QP <sub>69</sub>	14.0	X	158.44323	16.25528	285.15437	4.97969	0.1379311	0.17525357	3.1624582	20	—	—
51914 2001 QM <sub>70</sub>	13.3	X	224.52185	321.53040	274.30971	7.99659	0.0431820	0.17405025	3.1770175	20	—	—
51915 Andry	13.3	X	336.24507	229.96034	260.32137	10.45928						

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>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
51921 2001 QU <sub>90</sub>	13.4	X	46.41580	140.39370	269.27319	28.62202	0.2175931	0.22591349	2.6699796	20	—	—
51922 2001 QZ <sub>92</sub>	13.7	X	125.60922	109.10230	280.31470	14.94829	0.0798877	0.18046944	3.1012274	20	2 8.6	18.4
51923 2001 QD <sub>95</sub>	15.2	X	221.62011	227.20644	191.00933	1.69943	0.0550649	0.20265607	2.8705359	20	7 3.8	19.3
51924 2001 QW <sub>96</sub>	13.0	X	133.76779	327.11077	7.20563	14.69374	0.0391343	0.17169120	3.2060529	20	—	—
51925 2001 QA <sub>98</sub>	15.0	X	150.25186	212.67753	182.58444	3.97195	0.2271263	0.24096970	2.5575713	20	3 25.4	19.1
51926 2001 QE <sub>98</sub>	13.7	X	34.30367	142.97634	264.61956	4.81556	0.1223993	0.17411943	3.1761760	20	—	—
51927 2001 QO <sub>122</sub>	13.4	X	321.55260	343.34756	129.54078	15.18023	0.1410810	0.17154002	3.2079364	20	—	—
51928 2001 QK <sub>122</sub>	14.1	X	345.74559	333.92137	128.96573	10.25629	0.0707338	0.17437088	3.1731218	20	—	—
51929 2001 QF <sub>126</sub>	13.6	X	110.78629	137.09381	187.80385	11.10390	0.1322539	0.17456141	3.1708124	20	—	—
51930 2001 QW <sub>127</sub>	13.0	X	125.91890	113.78788	218.28972	8.36696	0.2124427	0.12408184	3.9810464	20	—	—
51931 2001 QA <sub>128</sub>	14.7	X	98.10550	346.80814	256.93952	8.03923	0.0987439	0.21376910	2.7701679	20	10 8.8	18.9
51932 2001 QF <sub>129</sub>	14.3	X	44.88751	222.97621	202.95797	7.45330	0.0363457	0.17742889	3.1365568	20	—	—
51933 2001 QD <sub>133</sub>	14.3	X	53.09549	307.56395	213.71338	10.35524	0.0368162	0.19258639	2.9697439	20	4 19.0	18.3
51934 2001 QJ <sub>133</sub>	13.5	X	8.36078	262.62466	237.80286	8.68851	0.0426016	0.18168266	3.0874059	20	1 22.7	17.7
51935 2001 QK <sub>134</sub>	12.0	X	148.02684	159.12679	270.69903	13.01357	0.0908408	0.08298647	5.2055249	20	4 27.9	19.4
51936 2001 QM <sub>141</sub>	14.5	X	85.03949	268.74705	211.48853	6.19061	0.0929183	0.19204501	2.9753224	20	4 17.1	18.5
51937 2001 QD <sub>159</sub>	13.9	X	137.79697	281.71524	149.85936	2.80545	0.1075901	0.18977669	2.9989839	20	4 21.3	18.3
51938 2001 QL <sub>159</sub>	13.7	X	312.15767	348.51901	150.52067	13.38334	0.0164667	0.17404427	3.1770904	20	—	—
51939 2001 QG <sub>168</sub>	14.5	X	50.52679	171.19046	313.38268	11.99086	0.1029642	0.24166731	2.5526471	20	2 24.9	17.4
51940 2001 QK <sub>172</sub>	14.1	X	200.05286	298.99000	201.94201	7.93665	0.2005224	0.21129793	2.7917245	20	9 10.9	18.7
51941 2001 QT <sub>175</sub>	15.6	X	294.91024	327.83957	155.49402	6.07718	0.2643845	0.22098367	2.7095422	20	12 20.2	17.8
51942 2001 QL <sub>177</sub>	14.0	X	24.87310	62.89252	48.48175	9.67557	0.0505014	0.18261964	3.0768364	20	1 12.9	18.2
51943 2001 QK <sub>181</sub>	13.5	X	70.92153	345.50952	34.66096	12.61688	0.1595114	0.17146911	3.2088207	20	—	—
51944 2001 QW <sub>194</sub>	13.9	X	337.44392	176.61582	326.48056	15.91214	0.1388202	0.17166844	3.2063363	20	—	—
51945 2001 QM <sub>196</sub>	14.3	X	152.33901	316.82163	11.58255	16.23256	0.0828194	0.17894578	3.1188064	20	1 4.4	19.2
51946 2001 QE <sub>205</sub>	13.9	X	50.19521	213.93765	201.15875	8.92144	0.0651168	0.17535082	3.1612889	20	—	—
51947 2001 QE <sub>215</sub>	13.7	X	113.03958	280.22714	159.79744	9.50524	0.1318098	0.18552382	3.0446422	20	4 9.1	18.2
51948 2001 QJ <sub>215</sub>	14.6	X	28.28296	154.03018	13.28071	3.14148	0.1191456	0.24057286	2.5603831	20	3 22.9	17.0
51949 2001 QF <sub>219</sub>	14.3	X	46.69119	128.26365	324.30129	9.01861	0.0545540	0.18128014	3.0919745	20	1 19.9	18.4
51950 2001 QA <sub>222</sub>	14.3	X	63.47558	248.28904	208.41082	9.26876	0.0735062	0.18436704	3.0573644	20	2 13.5	18.5
51951 2001 QD <sub>222</sub>	14.0	X	23.53459	299.17730	196.23722	10.86367	0.1065942	0.18445873	3.0563511	20	2 5.4	17.9
51952 2001 QG <sub>226</sub>	13.3	X	223.23035	67.45060	216.86276	8.92200	0.0538809	0.18126990	3.0920909	20	1 20.7	18.1
51953 2001 QK <sub>239</sub>	13.9	X	326.18637	140.24513	359.70711	4.97685	0.1314669	0.17538678	3.1608568	20	—	—
51954 2001 QR <sub>249</sub>	13.7	X	329.82688	354.57747	122.69380	17.38282	0.1338207	0.17352872	3.1833799	20	—	—
51955 2001 QG <sub>250</sub>	13.8	X	243.73670	3.08850	80.66075	8.84978	0.1272718	0.20567697	2.8423591	20	8 28.0	18.0
51956 2001 QE <sub>251</sub>	15.0	X	301.28156	299.18581	271.70869	12.44682	0.1036212	0.24094254	2.5577636	20	1 5.8	18.4
51957 2001 QF <sub>251</sub>	14.2	X	322.77984	249.89658	201.91769	8.46259	0.0818200	0.17192018	3.2032055	20	12 20.8	18.4
51958 2001 QJ <sub>256</sub>	11.5	X	273.94622	277.18268	15.31414	17.57526	0.1105263	0.08521076	5.1145383	20	3 30.4	18.4
51959 2001 QH <sub>257</sub>	12.2	X	319.14745	135.94190	18.36217	19.60319	0.1263078	0.17256463	3.1952256	20	—	—
51960 2001 QW <sub>261</sub>	13.8	X	35.52537	288.28305	267.73834	8.29075	0.0249425	0.19040250	2.9924090	20	5 7.8	18.0
51961 2001 QC <sub>266</sub>	13.9	X	92.00235	82.68594	259.89043	14.66566	0.1183359	0.17437071	3.1731239	20	—	—
51962 2001 QH <sub>267</sub>	11.5	X	336.29758	302.17975	288.11538	18.54341	0.0587564	0.08326383	5.1939583	20	3 30.3	18.5
51963 2001 QN <sub>276</sub>	13.7	X	217.04884	249.37060	355.39428	23.88885	0.1649541	0.17806553	3.1290762	20	—	—
51964 2001 QN <sub>276</sub>	13.6	X	60.30423	359.57337	39.93973	9.99332	0.0823694	0.17469171	3.1692355	20	—	—
51965 2001 QO <sub>281</sub>	12.9	X	7.61745	83.51463	47.02689	25.80679	0.2501336	0.17569871	3.1571145	20	—	—
51966 2001 QG <sub>282</sub>	13.5	X	197.20438	71.31939	261.52886	14.92940	0.1185266	0.18209828	3.0827064	20	2 14.9	18.7
51967 2001 QC <sub>283</sub>	13.3	X	26.80189	223.62795	246.21891	15.70299	0.1723996	0.18119569	3.0929351	20	1 9.8	16.9
51968 2001 QR <sub>284</sub>	13.8	X	47.19294	225.46988	255.45175	7.79744	0.1499597	0.23561807	2.5961532	20	2 18.6	16.7
51969 2001 QZ <sub>292</sub>	12.0	X	278.87114	303.91891	348.41387	25.63537	0.0225112	0.08249559	5.2261544	20	4 4.6	19.1
51970 2001 RK <sub>3</sub>	14.1	X	47.53704	272.37157	224.50174	11.89763	0.0903628	0.18666424	3.0322287	20	3 13.0	18.1
51971 2001 RP <sub>4</sub>	13.8	X	330.17703	198.59739	267.70088	3.93037	0.1128201	0.17061646	3.2195025	20	—	—
51972 2001 RU <sub>19</sub>	13.8	X	317.01290	1.60538	140.23674	1.62440	0.1525371	0.17491374	3.1665530	20	—	—
51973 2001 RX <sub>23</sub>	14.4	X	109.18881	244.02467	352.14893	5.07209	0.0054387	0.21105243	2.7938890	20	10 4.8	18.3
51974 2001 RW <sub>31</sub>	13.8	X	86.76689	235.30567	176.21286	9.74766	0.1061183	0.18179198	3.0861680	20	1 26.3	18.1
51975 2001 RD <sub>54</sub>	14.3	X	64.35394	23.94376	79.07599	1.69483	0.1548401	0.17917904	3.1160990	20	3 8.8	18.2
51976 2001 RZ <sub>79</sub>	13.9	X	201.96862	221.40534	189.96427	2.16518	0.0918833	0.19369063	2.9584460	20	5 31.4	18.3
51977 2001 RF <sub>120</sub>	14.2	X	165.91816	33.55283	26.28526	10.28981	0.1007185	0.19071947	2.9890926	20	5 2.8	18.8
51978 2001 RQ <sub>126</sub>	14.0	X	45.73099	81.56284	26.22036	9.46315	0.1024088	0.18004610	3.1060867	20	2 12.7	18.0
51979 2001 RU <sub>146</sub>	13.8	X	113.16399	290.77989	59.15773	11.58400	0.1323502	0.17508327	3.1645086	20	—	—
51980 2001 RN <sub>147</sub>	13.4	X	167.80541	357.69479	70.75531	11.50166	0.0909192	0.19144933	2.9814909	20	5 17.8	18.0
51981 2001 RS <sub>148</sub>	13.6	X	102.34375	53.33759	47.10543	11.57461	0.1173936	0.18986931	2.9980085	20	4 19.8	17.9
51982 2001 RK <sub>150</sub>	14.2	X	77.89243	120.18586	16.42079	4.88186	0.1752276	0.19019804	2.9945532	20	5 10.3	18.3
51983 Hönig	13.2	X	176.79988	295.36424	9.96900	9.39611	0.1205061	0.12495166	3.9625495	20	1 11.5	19.4
51984 2001 SS <sub>115</sub>	12.1	X	241.99468	319.11523	30.32693	9.66029	0.0683228	0.08442010	5.1464229	20	5 1.9	19.0
51985 Kirby	13.7	X	244.74180	286.45792	270.10113	5.85694	0.1007594	0.17198243	3.2024325	20	—	—
51986 2001 SA <sub>172</sub>	13.7	X	132.43137	39.09164	33.17483	10.32782	0.0837173	0.18477505	3.0528619	20	4 14.2	18.1
51987 2001 SV <sub>179</sub>	14.8	X	135.17633	99.22919	2.17806	1.61851	0.0716015	0.19684748	2.9267310	20	5 20.7	19.2
51988 2001 SV <sub>265</sub>	15.2	X	290.65600	337.16182	222.28520	3.66038	0.1151191	0.27877340	2.3207864	20	—	—
51989 2001 ST <sub>286</sub>	12.6	X	340.88755	116.33043	48.38170	23.75160	0.1022211	0.17605179	3.1528920	20	1 15.9	17.1
51990 2001 SX <sub>286</sub>	13.4	X	217.27287	255.18182	87.84254	11.13392	0.0995126	0.18614826	3.0378294	20	3 29.7	18.3
51991 2001 SQ <sub>339</sub>	13.5	X	20.70935	237.82358	260.91596	13.04772	0.2091273	0.17900822	3.1180811	20	2 3.9	16.9
51992 2001 TX <sub>37</sub>	13.8	X	229.31260	333.18894	41.94713	10.39837	0.1715453	0.24063120	2.5599693	20	5 7.1	17.8
51993 2001 TT <sub>43</sub>	15.1	X	321.81050	16.21814	62.76527	7.49435	0.1111919	0.25816498	2.4427058	20	—	—
51994 2001 TJ <sub>58</sub>	12.2	X	91.34338	121.84524	19.83433	12.32431	0.0796388	0.08254961	5.2238740	20	5 19.5	