

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>
416001 2002 AO <sub>188</sub>	17.1	X	22.85786	173.57714	268.50978	20.58259	0.0926879	0.37421319	1.9071726	20	—	—
416002 2002 BN	20.5	X	57.02417	147.25132	115.75944	27.75519	0.5464469	1.20413297	0.8750236	20	1 8.7	19.5
416003 2002 BA <sub>19</sub>	16.7	X	58.53672	53.05885	96.49735	14.32286	0.2149037	0.22581587	2.6707490	20	5 11.0	20.0
416004 2002 CJ <sub>12</sub>	17.6	X	38.87887	132.53709	326.36379	18.34040	0.0989409	0.37715232	1.8972513	20	—	—
416005 2002 CJ <sub>14</sub>	17.8	X	106.40595	264.50333	145.61981	24.40632	0.0604792	0.37923863	1.8902866	20	1 9.9	19.9
416006 2002 CT <sub>24</sub>	16.8	X	89.93750	50.72722	158.15099	21.82232	0.2111959	0.28914921	2.2649296	20	9 9.9	20.0
416007 2002 CJ <sub>29</sub>	16.1	X	29.23937	197.71859	331.17309	12.25200	0.1083933	0.22420851	2.6834983	20	3 22.8	19.2
416008 2002 CY <sub>29</sub>	16.7	X	118.04787	342.15236	94.76369	10.79234	0.1886619	0.22710409	2.6606398	20	4 18.1	20.8
416009 2002 CX <sub>43</sub>	18.1	X	123.24047	186.40227	132.69537	24.60624	0.0423460	0.36914667	1.9245835	20	—	—
416010 2002 CE <sub>44</sub>	17.7	X	117.43836	227.84148	140.26950	24.20840	0.0394879	0.37506366	1.9042884	20	—	—
416011 2002 CB <sub>67</sub>	18.4	X	167.90809	185.98225	326.65511	3.58627	0.1824292	0.29635613	2.2280594	20	9 6.7	21.9
416012 2002 CS <sub>67</sub>	17.3	X	75.85669	311.99425	117.58862	7.98146	0.2531233	0.22122880	2.7075404	20	2 22.1	20.4
416013 2002 CU <sub>67</sub>	16.5	X	150.89115	313.99896	121.32220	14.60378	0.1059546	0.23131510	2.6282503	20	5 12.9	20.7
416014 2002 CE <sub>91</sub>	16.7	X	351.21774	216.24086	342.63660	10.20758	0.0861887	0.22041213	2.7142242	20	3 6.2	19.9
416015 2002 CZ <sub>113</sub>	16.4	X	121.81701	65.99127	343.30160	11.00422	0.1749207	0.22429521	2.6828067	20	3 10.7	20.4
416016 2002 CW <sub>135</sub>	17.7	X	248.14921	137.00126	299.73435	5.89224	0.1080113	0.29837922	2.2179768	20	8 31.7	20.2
416017 2002 CA <sub>162</sub>	16.4	X	66.12945	10.86644	122.73162	14.64240	0.1963098	0.22502534	2.6770003	20	4 29.4	19.9
416018 2002 CO <sub>169</sub>	16.3	X	29.71819	47.02754	137.65966	17.31100	0.2054570	0.22287970	2.6941537	20	5 6.9	19.3
416019 2002 CH <sub>177</sub>	16.8	X	102.28217	321.88458	111.75109	14.80897	0.2371077	0.22525786	2.6751579	20	4 4.9	20.9
416020 2002 CX <sub>213</sub>	16.4	X	309.35094	230.71300	334.70920	11.92823	0.2253166	0.21286886	2.7779726	20	—	—
416021 2002 CT <sub>217</sub>	16.6	X	103.80597	152.22041	346.71527	10.76256	0.1228793	0.22878155	2.6476184	20	6 6.6	20.6
416022 2002 CB <sub>222</sub>	17.9	X	186.88779	1.10563	137.20667	6.83053	0.0919664	0.29742424	2.2227220	20	9 15.1	20.9
416023 2002 CO <sub>256</sub>	17.1	X	63.81050	36.67717	119.55061	9.98976	0.2523218	0.22569369	2.6717128	20	5 31.9	20.5
416024 2002 CR <sub>272</sub>	16.4	X	124.68104	340.95159	130.92482	17.22353	0.2299166	0.22996443	2.6385315	20	6 9.6	21.0
416025 2002 CK <sub>276</sub>	16.6	X	37.92774	228.99364	280.85196	13.33898	0.1741618	0.22265979	2.6959274	20	3 13.3	19.7
416026 2002 CA <sub>303</sub>	17.1	X	75.65860	15.69087	129.43377	14.74866	0.1850791	0.22696464	2.6617294	20	5 25.0	20.8
416027 2002 DY	16.9	X	25.35816	213.39501	347.35491	13.57270	0.1227860	0.22335749	2.6903102	20	4 29.9	20.2
416028 2002 DC <sub>2</sub>	17.8	X	347.48936	123.59996	16.06204	21.30124	0.1715317	0.37449088	1.9062296	20	—	—
416029 2002 DU <sub>5</sub>	18.3	X	343.00624	116.60333	333.96223	18.13647	0.0985281	0.36630832	1.9345124	20	—	—
416030 2002 EF <sub>6</sub>	16.3	X	50.50338	48.50405	144.67617	28.60721	0.1053587	0.22948723	2.6421879	20	6 12.3	20.2
416031 2002 EX <sub>10</sub>	15.7	X	57.75760	77.66175	159.88931	28.75072	0.3525929	0.23185910	2.6241377	20	9 26.3	19.7
416032 2002 EX <sub>11</sub>	20.8	X	18.45331	315.06889	187.11889	2.50724	0.4093340	0.38037177	1.8865307	20	—	—
416033 2002 EE <sub>17</sub>	17.5	X	7.16885	198.51586	287.81925	0.82377	0.1701644	0.21399899	2.7681837	20	—	—
416034 2002 EA <sub>27</sub>	16.8	X	143.92303	25.70714	351.02525	5.13151	0.0124195	0.21574799	2.7532029	20	2 8.2	20.6
416035 2002 EK <sub>64</sub>	16.0	X	36.24720	291.25272	341.71200	13.06952	0.1720602	0.23375725	2.6099127	20	9 14.2	19.1
416036 2002 EO <sub>84</sub>	17.9	X	143.50925	143.65179	9.22318	5.34751	0.1582533	0.28986967	2.2611751	20	8 16.8	21.4
416037 2002 ES <sub>92</sub>	16.4	X	311.87951	196.28575	349.71494	8.20342	0.1572440	0.21282470	2.7783569	20	—	—
416038 2002 ED <sub>102</sub>	16.4	X	77.37901	7.94895	126.35218	14.86384	0.1998841	0.22460298	2.6803553	20	5 16.1	20.2
416039 2002 EX <sub>103</sub>	17.0	X	4.60818	99.01493	65.67444	9.45536	0.2586010	0.21620295	2.7493391	20	1 30.4	19.5
416040 2002 ER <sub>137</sub>	17.2	X	12.90094	357.21079	156.35246	2.81306	0.1237333	0.21614756	2.7498088	20	2 8.1	20.3
416041 2002 EZ <sub>162</sub>	16.7	X	100.81746	308.74051	182.12780	14.04471	0.1253126	0.22620189	2.6677097	20	5 27.0	20.7
416042 2002 ED <sub>164</sub>	16.3	X	117.98443	140.67062	155.35134	13.03440	0.0453845	0.19786317	2.9167066	20	12 29.3	20.7
416043 2002 FT <sub>3</sub>	16.4	X	318.23034	152.83241	41.59988	9.82547	0.2086247	0.21187605	2.7866438	20	—	—
416044 2002 FK <sub>40</sub>	17.3	X	13.87943	341.09482	152.12323	7.55741	0.0639176	0.21484075	2.7609483	20	1 16.2	20.8
416045 2002 GW <sub>2</sub>	16.7	X	22.63366	322.68594	207.32536	15.83632	0.2810985	0.21951551	2.7216101	20	3 21.9	18.9
416046 2002 GW <sub>22</sub>	15.9	X	31.80734	260.85068	238.30296	8.78979	0.2543905	0.21553349	2.9502292	20	2 24.2	18.3
416047 2002 GF <sub>27</sub>	17.6	X	345.29521	83.24104	81.43067	23.77334	0.1014899	0.37436300	1.9066637	20	—	—
416048 2002 GR <sub>29</sub>	17.1	X	70.68524	265.87585	158.03588	9.09808	0.1225932	0.21444206	2.7643694	20	1 16.1	20.5
416049 2002 GS <sub>29</sub>	17.4	X	58.42908	14.12011	70.95295	1.78527	0.0431832	0.21436893	2.7649980	20	1 18.7	21.0
416050 2002 GJ <sub>39</sub>	17.4	X	35.03803	13.61036	213.92800	6.40031	0.1741164	0.28164282	2.3049965	20	7 12.6	19.6
416051 2002 GX <sub>56</sub>	16.8	X	352.97594	332.52728	225.14760	11.21181	0.2668823	0.21767628	2.7369192	20	2 8.4	19.7
416052 2002 GP <sub>74</sub>	17.4	X	58.55090	11.00033	194.93644	11.30561	0.1901548	0.28049402	2.3112858	20	7 21.3	20.3
416053 2002 GV <sub>97</sub>	16.7	X	42.51820	98.94133	64.84572	10.77896	0.2737289	0.22144966	2.7057399	20	5 8.1	19.2
416054 2002 GB <sub>104</sub>	16.4	X	346.06326	76.13739	77.58588	17.42242	0.1949723	0.21077145	2.7963715	20	—	—
416055 2002 GU <sub>106</sub>	17.1	X	57.25217	25.19685	155.28079	10.05483	0.1962022	0.22407672	2.6845504	20	6 14.2	20.5
416056 2002 GU <sub>116</sub>	17.5	X	4.81282	198.56569	47.74688	7.31426	0.1686396	0.27715233	2.3298271	20	6 5.1	19.2
416057 2002 GG <sub>158</sub>	17.3	X	72.01907	32.44766	145.33620	6.39491	0.1152536	0.27927179	2.3180244	20	6 19.9	20.1
416058 2002 GK <sub>180</sub>	16.6	X	47.16379	280.05837	235.95793	5.80391	0.1354011	0.22070139	2.7118522	20	4 11.3	19.6
416059 2002 GX <sub>185</sub>	18.2	X	140.63259	146.38985	17.12469	3.40991	0.1155115	0.28774850	2.2722739	20	8 26.1	21.4
416060 2002 HW <sub>12</sub>	15.5	X	341.75631	183.70989	69.18474	28.32178	0.1684786	0.22068876	2.7119556	20	5 7.4	18.7
416061 2002 HW <sub>17</sub>	16.2	X	86.92902	341.14574	168.70554	28.56539	0.1444604	0.22412391	2.6841735	20	6 7.9	20.6
416062 2002 HQ <sub>18</sub>	17.2	X	4.75436	167.29858	81.88491	7.52702	0.0766641	0.27675697	2.3320454	20	6 8.0	19.6
416063 2002 JH <sub>14</sub>	16.3	X	48.68323	102.12474	112.64533	13.02167	0.2163141	0.22620097	2.6677169	20	7 22.1	19.3
416064 2002 JY <sub>107</sub>	15.7	X	341.28419	116.55122	70.91524	15.21629	0.2210494	0.21348260	2.7726458	20	1 21.0	19.1
416065 2002 JM <sub>136</sub>	17.5	X	76.76924	153.49839	43.84725	5.93729	0.0990574	0.28094166	2.3088300	20	7 24.7	20.4
416066 2002 JM <sub>150</sub>	16.8	X	352.45316	109.31242	68.69580	14.17586	0.1478517	0.21024786	2.8010121	20	2 10.4	20.3
416067 2002 KM <sub>16</sub>	16.9	X	8.47013	340.44720	280.58138	11.99271	0.1515132	0.27219002	2.3580585	20	7 8.5	18.9
416068 2002 LH <sub>58</sub>	18.1	X	252.06360	61.73612	100.69828	24.70011	0.0711791	0.35507437	1.9751034	20	—	—
416069 2002 MZ <sub>4</sub>	16.8	X	87.22789	99.12866	107.59619	22.80314	0.1831594	0.27908842	2.3190396	20	9 6.2	20.5
416070 2002 ME <sub>6</sub>	15.9	X	93.65299	29.51972	283.94578	16.76683	0.1681678	0.18091235	3.0961636	20	12 29.9	20.8
416071 2002 NV	17.9	X	63.05767	271.86606	294.27647	22.26413	0.6161375	0.22604801	2.6689202	20	9 4.9	23.1
416072 2002 NT <sub>30</sub>	16.0	X	73.05119	89.89612	269.39404	20.15191	0.2694505	0.18079384	3.0975165	20	—	—
416073 2002 NX <sub>30</sub>	16.2	X	63.73193	46.04609	290.22759	15.56151	0.2138307	0.17838208	3.1253733	20	—	—
416074 2002 NL <sub>39</sub>	16.4	X	236.65573	40.74895	278.49873	22.						

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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>
416081 2002 NE <sub>77</sub>	16.0	X	80.09474	188.47877	126.77792	12.41627	0.1245985	0.17792922	3.1306741	20	12 15.6	20.9
416082 2002 NR <sub>77</sub>	16.6	X	119.02782	220.75665	93.87858	8.73229	0.1075866	0.18528252	3.0472851	20	—	—
416083 2002 NY <sub>77</sub>	16.4	X	41.68127	51.60378	305.19167	16.05983	0.2095348	0.17739078	3.1370060	20	—	—
416084 2002 ND <sub>78</sub>	16.2	X	97.28782	34.72834	307.71284	10.29536	0.1311025	0.18521387	3.0480380	20	—	—
416085 2002 NU <sub>79</sub>	16.0	X	63.61176	341.79114	340.21473	10.27135	0.2158426	0.17684849	3.1434157	20	12 15.0	21.0
416086 2002 ND <sub>81</sub>	15.8	X	97.65884	240.62133	114.60031	12.10512	0.0970766	0.18780080	3.0199825	20	—	—
416087 2002 OQ <sub>18</sub>	17.0	X	264.29563	78.03244	275.15254	8.92117	0.2630272	0.26480644	2.4016904	20	5 1.7	20.7
416088 2002 OL <sub>24</sub>	15.7	X	47.03448	209.65873	133.21085	18.48290	0.2109568	0.17493861	3.1662529	20	12 23.1	20.5
416089 2002 OO <sub>28</sub>	15.6	X	34.33974	17.55430	341.63953	17.07393	0.2052932	0.17538593	3.1608670	20	12 27.2	20.2
416090 2002 OH <sub>29</sub>	15.9	X	109.76050	347.34964	292.61787	8.64694	0.0602546	0.17877877	3.1207484	20	11 27.2	20.6
416091 2002 OM <sub>33</sub>	16.2	X	84.03051	49.47402	259.68931	8.16528	0.0944699	0.17842932	3.1248217	20	12 8.2	20.7
416092 2002 OH <sub>34</sub>	17.7	X	229.25449	48.82457	305.71431	13.96421	0.1708764	0.26055243	2.4277612	20	4 2.6	21.8
416093 2002 OO <sub>34</sub>	16.2	X	149.43117	41.20843	277.04737	9.54174	0.0954231	0.18733343	3.0250033	20	—	—
416094 2002 PM <sub>3</sub>	16.2	X	67.05086	72.71013	283.98575	13.41075	0.2768550	0.18035278	3.1025646	20	—	—
416095 2002 PZ <sub>8</sub>	16.3	X	75.82883	19.15434	282.56293	8.53307	0.1618556	0.17633382	3.1495291	20	11 27.2	21.1
416096 2002 PS <sub>9</sub>	16.5	X	108.01828	354.13104	297.68316	11.67415	0.2520136	0.17985249	3.1083154	20	12 21.9	21.9
416097 2002 PM <sub>12</sub>	16.0	X	94.05924	356.96460	282.32023	12.56032	0.1698650	0.17672032	3.1449354	20	11 18.6	21.1
416098 2002 PZ <sub>12</sub>	17.3	X	311.02686	16.50628	267.44591	4.34777	0.1814932	0.26545114	2.3978002	20	4 9.1	20.2
416099 2002 PQ <sub>23</sub>	16.5	X	42.17267	37.66586	306.07709	5.74755	0.2647589	0.17414718	3.1758386	20	12 24.2	21.1
416100 2002 PN <sub>30</sub>	17.9	X	227.06836	19.50104	310.10846	5.67963	0.2146334	0.25734191	2.4479115	20	3 4.9	22.0
416101 2002 PO <sub>40</sub>	15.7	X	65.57384	344.20116	338.07327	10.29450	0.2812554	0.17525248	3.1624714	20	12 24.7	20.9
416102 2002 PR <sub>40</sub>	15.9	X	1.51446	106.90789	143.81358	23.58186	0.3147142	0.21648711	2.7469327	20	6 13.9	18.3
416103 2002 PY <sub>66</sub>	18.1	X	226.52549	184.70372	134.64247	5.14108	0.2255272	0.25705433	2.4497368	20	2 23.3	22.1
416104 2002 PV <sub>111</sub>	15.0	X	354.19405	75.14424	324.70059	24.48656	0.2368346	0.17412139	3.1761521	20	12 21.6	18.9
416105 2002 PA <sub>112</sub>	17.2	X	290.07062	63.09801	286.74671	8.41332	0.0886133	0.26953651	2.3735096	20	6 30.5	19.7
416106 2002 PJ <sub>114</sub>	16.9	X	118.78712	9.17694	299.36672	1.48936	0.1062007	0.18292910	3.0733653	20	—	—
416107 2002 PA <sub>162</sub>	18.2	X	216.83667	282.07505	67.24510	2.40213	0.1980672	0.25800413	2.4437209	20	3 23.9	22.1
416108 2002 PJ <sub>162</sub>	16.3	X	77.26295	206.85273	126.24527	10.97889	0.1535513	0.17903097	3.1178168	20	—	—
416109 2002 PG <sub>168</sub>	15.7	X	21.36487	252.79455	143.17890	11.02181	0.2536239	0.17724582	3.1387162	20	—	—
416110 2002 PJ <sub>173</sub>	17.7	X	207.39360	194.53846	184.21389	4.36068	0.1576166	0.25979599	2.4324715	20	4 22.2	21.4
416111 2002 PW <sub>175</sub>	15.9	X	226.34555	295.85014	280.98476	8.19314	0.0307206	0.18616439	3.0376541	20	—	—
416112 2002 PR <sub>177</sub>	16.3	X	89.86975	121.66044	255.59950	8.68204	0.0800795	0.18809367	3.0168468	20	—	—
416113 2002 PJ <sub>191</sub>	18.2	X	205.05196	305.50560	46.41424	2.05907	0.2056907	0.25680316	2.4513339	20	3 16.9	22.2
416114 2002 PZ <sub>191</sub>	16.3	X	66.85833	122.74385	272.80996	9.38129	0.1094162	0.18648422	3.0341799	20	—	—
416115 2002 PF <sub>195</sub>	18.5	X	215.69488	46.24739	311.36819	1.66863	0.2143282	0.25917949	2.4363273	20	3 30.7	22.7
416116 2002 PG <sub>199</sub>	17.7	X	266.01946	157.66540	338.75509	9.42218	0.1258015	0.25987505	2.4319781	20	3 11.1	21.2
416117 2002 QZ <sub>3</sub>	17.7	X	198.00125	33.84304	338.80382	1.83670	0.2342907	0.25676869	2.4515533	20	4 3.9	21.8
416118 2002 QO <sub>31</sub>	17.6	X	231.18985	312.99045	42.86649	3.39726	0.2339180	0.26004032	2.4309475	20	4 10.9	21.7
416119 2002 QS <sub>35</sub>	16.3	X	8.26640	33.44040	355.78471	13.99249	0.2709580	0.17310713	3.1885464	20	—	—
416120 2002 QO <sub>37</sub>	16.3	X	329.19798	270.38755	163.74882	15.76166	0.2014078	0.17210711	3.2008857	20	12 11.6	20.0
416121 2002 QS <sub>54</sub>	17.4	X	171.12270	95.75880	333.75545	8.20404	0.2983167	0.25792730	2.4442062	20	5 22.4	22.0
416122 2002 QM <sub>59</sub>	16.4	X	49.74745	88.14717	286.32332	4.95151	0.1159345	0.17954438	3.1118704	20	—	—
416123 2002 QM <sub>69</sub>	17.8	X	198.45581	242.14429	124.73068	3.59449	0.2472265	0.25622017	2.4550509	20	3 30.4	22.1
416124 2002 QZ <sub>71</sub>	17.1	X	197.39237	70.26290	326.84327	7.74098	0.2201138	0.25938623	2.4350326	20	4 30.9	21.5
416125 2002 QZ <sub>75</sub>	17.8	X	171.96113	355.76157	42.50940	3.52334	0.1945870	0.25569393	2.4584182	20	4 14.8	21.7
416126 2002 QF <sub>89</sub>	17.6	X	206.16171	42.17486	326.80489	6.21271	0.1422762	0.25792212	2.4442389	20	4 5.4	21.5
416127 2002 QC <sub>95</sub>	16.3	X	64.61747	36.25928	305.03505	9.28422	0.2097069	0.17618212	3.1513368	20	—	—
416128 2002 QE <sub>95</sub>	17.0	X	25.49857	283.40568	93.30446	3.05298	0.1796952	0.17559444	3.1583642	20	12 31.4	21.1
416129 2002 QA <sub>99</sub>	16.6	X	65.76888	27.19463	295.61112	3.89289	0.1380523	0.17604913	3.1529237	20	12 9.1	21.2
416130 2002 QF <sub>101</sub>	18.0	X	246.75717	257.97396	38.15996	3.66758	0.2030711	0.25647509	2.4534239	20	2 14.0	21.9
416131 2002 QT <sub>103</sub>	16.1	X	58.66349	69.08870	288.64856	8.38679	0.0996300	0.17806348	3.1291003	20	—	—
416132 2002 QS <sub>105</sub>	17.6	X	174.54588	354.10088	56.65675	3.26939	0.1812135	0.25755766	2.4465442	20	5 2.2	21.4
416133 2002 QD <sub>106</sub>	16.2	X	80.62346	269.86763	107.00751	10.16776	0.1561017	0.18386971	3.0628748	20	—	—
416134 2002 QK <sub>108</sub>	16.0	X	18.05072	89.73965	318.48434	10.26807	0.0923177	0.18100894	3.0950621	20	—	—
416135 2002 QW <sub>114</sub>	17.0	X	70.45249	51.51432	269.75759	3.98911	0.1792994	0.17565043	3.1576930	20	12 16.9	21.9
416136 2002 QN <sub>115</sub>	16.3	X	74.72376	187.98854	151.77317	11.56193	0.0896264	0.17850191	3.1239744	20	—	—
416137 2002 QF <sub>117</sub>	17.8	X	250.84148	44.29670	270.82993	3.93190	0.1084554	0.25921707	2.4360918	20	3 16.1	21.3
416138 2002 QK <sub>122</sub>	16.4	X	50.29608	165.02307	173.27700	14.20253	0.1311989	0.17445361	3.1721186	20	12 10.3	21.1
416139 2002 QX <sub>122</sub>	16.1	X	356.58620	89.84011	317.58688	11.84999	0.2947731	0.17294380	3.1905536	20	—	—
416140 2002 QK <sub>123</sub>	16.8	X	20.76100	258.42613	132.03465	1.84707	0.1741092	0.17623717	3.1506806	20	—	—
416141 2002 QG <sub>126</sub>	16.3	X	10.86640	226.77322	157.49462	11.60746	0.1132507	0.17600270	3.1534782	20	12 12.7	20.6
416142 2002 QR <sub>126</sub>	16.3	X	5.75502	29.13164	1.01573	11.63471	0.1183252	0.17442310	3.1724885	20	12 9.8	20.5
416143 2002 QY <sub>130</sub>	18.3	X	189.65104	320.40388	42.35511	2.93554	0.2266506	0.25465277	2.4651146	20	3 18.2	22.5
416144 2002 QO <sub>135</sub>	15.9	X	350.26015	264.10948	135.98631	16.05961	0.1952133	0.17227698	3.1987813	20	12 9.0	19.7
416145 2002 QH <sub>142</sub>	17.5	X	220.52643	127.91246	253.48584	5.70651	0.1336707	0.26109921	2.4243706	20	5 8.2	21.2
416146 2002 QP <sub>146</sub>	16.3	X	117.00238	341.53887	347.24903	9.46473	0.1645680	0.18434038	3.0576591	20	—	—
416147 2002 QW <sub>147</sub>	17.8	X	315.88035	155.16112	125.63447	8.05532	0.0976486	0.26455451	2.4032149	20	5 2.6	20.6
416148 2002 QU <sub>150</sub>	16.4	X	7.41906	260.33047	144.25866	6.09262	0.1323709	0.17709762	3.1404670	20	—	—
416149 2002 QV <sub>154</sub>	16.5	X	72.37160	359.45933	352.17043	10.17586	0.2083856	0.17844641	3.1246221	20	—	—
416150 2002 RR <sub>23</sub>	15.7	X	89.84034	4.84190	346.78890	15.71716	0.2344187	0.18132209	3.0914975	20	—	—
416151 2002 RQ <sub>25</sub>	20.7	X	129.25575	225.70964	10.50947	4.57624	0.3063576	0.84088933	1.1116724	20	—	—
416152 2002 RX <sub>68</sub>	17.3	X	286.97810	319.83191	346.01332	6.71746	0.2216832	0.26232744	2.4167973	20	3 31.3	20.8
416153 2002 RB <sub>79</sub>	17.4	X	237.43222	21.87493	12.94150	2.20509	0.1867156	0.26391909	2.4070707	20	6 8.7	21.1
416154 2002 RY <sub>109</sub>	16.7	X	208.25328	69.02252	328.97459	8.59617	0.2					

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>
416161 2002 RZ <sub>217</sub>	17.9	X	298.70010	331.62954	320.51966	1.89116	0.1943757	0.26272386	2.4143656	20	4 1.8	20.7
416162 2002 RL <sub>226</sub>	16.3	X	38.37865	44.66807	331.16841	9.33386	0.2268176	0.17599267	3.1535980	20	—	—
416163 2002 RE <sub>228</sub>	17.6	X	167.77452	7.37258	26.71833	9.97551	0.2876620	0.25303707	2.4755970	20	4 9.7	22.1
416164 2002 RQ <sub>233</sub>	18.4	X	193.44580	42.78446	316.80804	0.69991	0.2009650	0.25416783	2.4682491	20	3 15.8	22.4
416165 2002 RF <sub>235</sub>	16.2	X	46.55245	347.68851	339.05947	12.64664	0.1156167	0.17201304	3.2020526	20	11 13.7	20.9
416166 2002 RO <sub>250</sub>	16.1	X	359.45795	282.35899	129.86330	11.46715	0.0898392	0.17662891	3.1460204	20	12 27.4	20.2
416167 2002 RS <sub>252</sub>	17.8	X	164.60003	200.07976	218.02818	3.31711	0.1760114	0.25567726	2.4585251	20	5 2.1	21.5
416168 2002 RS <sub>262</sub>	15.5	X	342.75711	128.16299	349.58092	27.21721	0.1219130	0.18108649	3.0941784	20	—	—
416169 2002 RB <sub>263</sub>	16.4	X	63.16644	36.88659	323.20293	6.52538	0.1718284	0.17727343	3.1383903	20	—	—
416170 2002 RQ <sub>264</sub>	15.6	X	212.96118	289.31028	320.87954	8.88716	0.0459752	0.18392106	3.0623047	20	—	—
416171 2002 RP <sub>267</sub>	15.7	X	11.74226	352.73175	90.98865	10.98512	0.0932011	0.18104323	3.0946712	20	—	—
416172 2002 RC <sub>276</sub>	16.5	X	153.82516	322.12783	342.12963	9.08146	0.0306640	0.18384394	3.0631611	20	—	—
416173 2002 RG <sub>286</sub>	15.4	X	309.48837	154.81634	311.30540	16.07744	0.1096699	0.17677768	3.1442551	20	12 20.8	19.5
416174 2002 SY <sub>5</sub>	17.7	X	196.87529	149.02812	213.27272	0.67555	0.1961089	0.25299943	2.4758426	20	3 22.0	21.6
416175 2002 SS <sub>13</sub>	15.4	X	7.00823	127.00949	262.00187	15.43058	0.2241809	0.17151945	3.2081928	20	12 24.1	19.2
416176 2002 SV <sub>13</sub>	16.0	X	31.86817	134.86603	263.03317	15.61178	0.2369676	0.17597264	3.1538373	20	—	—
416177 2002 SZ <sub>13</sub>	17.8	X	221.11850	202.69538	137.80531	1.88911	0.1991179	0.25516097	2.4618403	20	3 16.3	21.8
416178 2002 SM <sub>14</sub>	17.6	X	197.48177	21.53529	21.18339	6.36194	0.1656180	0.25802962	2.4435600	20	5 11.2	21.4
416179 2002 SC <sub>15</sub>	15.7	X	78.43204	44.52349	273.22484	15.68780	0.2129378	0.17366285	3.1817405	20	12 23.4	20.8
416180 2002 SB <sub>54</sub>	15.9	X	80.62966	69.79285	257.61559	13.73726	0.2748539	0.17667222	3.1455062	20	—	—
416181 2002 SA <sub>66</sub>	16.1	X	181.83592	133.14236	140.06542	11.84333	0.0698092	0.18532657	3.0468021	20	—	—
416182 2002 SD <sub>67</sub>	16.7	X	72.82879	101.49304	249.43896	3.88898	0.1381089	0.17764893	3.1339663	20	—	—
416183 2002 SB <sub>70</sub>	17.3	X	33.66369	39.14373	0.67283	9.77789	0.2252617	0.17682697	3.1436707	20	—	—
416184 2002 SR <sub>72</sub>	17.8	X	189.08309	342.88156	66.09644	3.35533	0.1783701	0.25894134	2.4378209	20	5 12.9	21.6
416185 2002 TW <sub>14</sub>	15.2	X	112.14286	338.58880	351.49990	16.70772	0.2669654	0.18217039	3.0818939	20	—	—
416186 2002 TD <sub>60</sub>	19.3	X	117.74159	343.75313	62.64461	7.41169	0.0825956	0.74784499	1.2020660	20	—	—
416187 2002 TP <sub>65</sub>	16.5	X	132.99505	284.57910	71.84532	28.09196	0.3763812	0.24154151	2.5535333	20	2 14.1	21.4
416188 2002 TR <sub>85</sub>	15.8	X	49.37310	33.61510	0.37733	11.33535	0.1180655	0.17694721	3.1422463	20	—	—
416189 2002 TT <sub>99</sub>	16.6	X	36.80738	51.16487	323.19020	8.90900	0.2322144	0.17529122	3.1620054	20	—	—
416190 2002 TF <sub>105</sub>	16.9	X	194.40024	91.64034	282.19209	3.17445	0.1481058	0.25339978	2.4732341	20	4 1.5	20.7
416191 2002 TK <sub>122</sub>	16.3	X	69.49597	109.97613	228.25254	12.90313	0.2038629	0.17584957	3.1553086	20	—	—
416192 2002 TX <sub>131</sub>	17.9	X	84.39557	158.08247	203.46584	21.63639	0.0560160	0.34655075	2.0073579	20	—	—
416193 2002 TE <sub>135</sub>	15.5	X	126.36082	141.39660	248.74510	8.23586	0.0224740	0.18960467	3.0009796	20	2 3.9	19.8
416194 2002 TX <sub>156</sub>	17.7	X	204.69768	112.07821	282.73114	4.92031	0.2270492	0.25836741	2.4414297	20	5 5.8	21.9
416195 2002 TR <sub>190</sub>	19.4	X	200.34336	104.74333	24.23030	26.91659	0.1599557	0.88192149	1.0769183	20	—	—
416196 2002 TV <sub>199</sub>	15.1	X	14.65648	118.39414	267.06371	16.24824	0.1457055	0.17144145	3.2091658	20	12 20.9	19.1
416197 2002 TY <sub>269</sub>	15.8	X	70.95518	40.38947	348.04232	9.26927	0.1368150	0.18045892	3.1013479	20	—	—
416198 2002 TR <sub>293</sub>	15.5	X	7.26180	99.88919	296.01277	14.09250	0.0719555	0.17230166	3.1984758	20	12 15.4	19.9
416199 2002 TH <sub>308</sub>	15.8	X	57.79191	199.32093	151.66430	9.37614	0.0630881	0.17267204	3.1939004	20	12 23.5	20.5
416200 2002 TZ <sub>308</sub>	15.8	X	209.63317	229.83948	69.69550	9.89800	0.0162505	0.18791795	3.0187272	20	1 28.2	20.2
416201 2002 TY <sub>315</sub>	15.5	X	244.11437	30.73664	136.02919	12.62247	0.0091079	0.16970811	3.2309804	20	12 16.6	20.3
416202 2002 TE <sub>319</sub>	16.2	X	38.61806	48.92665	346.84037	9.99508	0.1670482	0.17810450	3.1286198	20	—	—
416203 2002 TV <sub>326</sub>	16.4	X	342.86640	61.89962	13.14500	14.00824	0.1865463	0.17318976	3.1875322	20	—	—
416204 2002 TF <sub>327</sub>	18.1	X	170.54861	40.11522	32.76780	3.19241	0.1005196	0.25823157	2.4422859	20	5 24.3	21.6
416205 2002 TP <sub>331</sub>	16.7	X	322.02453	21.55743	98.88209	2.25718	0.1435021	0.17638663	3.1489005	20	—	—
416206 2002 TC <sub>334</sub>	16.3	X	154.20715	213.93766	29.54955	11.36443	0.0596950	0.17247188	3.1963710	20	11 28.7	21.2
416207 2002 TZ <sub>349</sub>	16.6	X	37.73800	124.15487	251.74397	8.80392	0.1158818	0.17761061	3.1344170	20	—	—
416208 2002 TW <sub>355</sub>	18.3	X	216.53252	353.31099	337.51695	2.91981	0.1585424	0.25347817	2.4727242	20	3 1.1	22.3
416209 2002 TM <sub>375</sub>	17.6	X	195.72334	258.14907	118.20464	3.00625	0.2844774	0.25357668	2.4720837	20	4 8.6	22.1
416210 2002 UZ <sub>23</sub>	16.1	X	59.76346	124.74454	216.83587	15.46323	0.1859625	0.17155022	3.2078092	20	12 27.8	21.1
416211 2002 UB <sub>31</sub>	16.4	X	139.15338	268.06175	81.52627	27.71288	0.3823472	0.24063869	2.5599162	20	2 7.7	21.3
416212 2002 UQ <sub>60</sub>	16.2	X	61.86181	280.35317	77.02522	12.71874	0.0459298	0.17275847	3.1928351	20	—	—
416213 2002 UQ <sub>61</sub>	16.1	X	111.74229	45.61778	242.05607	8.22009	0.0662576	0.17655511	3.1468969	20	12 9.3	20.7
416214 2002 VR <sub>2</sub>	17.2	X	186.72502	136.89859	281.97198	1.64477	0.1628319	0.25508240	2.4623458	20	5 23.0	21.0
416215 2002 VL <sub>61</sub>	15.7	X	42.39063	211.89796	231.56150	14.24230	0.1990692	0.17921097	3.1157288	20	1 7.2	19.3
416216 2002 VM <sub>90</sub>	17.3	X	206.45115	337.79580	52.92611	7.63455	0.1191579	0.25507827	2.4623724	20	5 7.7	21.0
416217 2002 VD <sub>118</sub>	20.5	X	62.64224	66.37812	35.20997	14.24913	0.1437144	0.57781909	1.4276052	20	—	—
416218 2002 WK <sub>24</sub>	15.6	X	291.91525	100.09395	65.72439	9.74492	0.1089335	0.17229176	3.1985983	20	—	—
416219 2002 WQ <sub>26</sub>	16.3	X	5.97273	341.32216	95.14241	5.69074	0.1744058	0.17196079	3.2027013	20	—	—
416220 2002 WW <sub>30</sub>	17.4	X	118.71829	56.78008	77.80691	5.61428	0.1180700	0.25265188	2.4781125	20	6 19.7	21.0
416221 2002 WG <sub>31</sub>	17.1	X	134.37337	173.68351	234.02613	11.98314	0.1360693	0.24348127	2.5399530	20	3 12.3	21.0
416222 2002 XR <sub>3</sub>	15.9	X	42.97909	15.30999	17.89278	11.97986	0.2521788	0.17517371	3.1634193	20	—	—
416223 2002 XJ <sub>69</sub>	18.7	X	263.91362	191.33013	275.98674	25.17157	0.3173050	0.32455106	2.0970753	20	9 24.8	21.7
416224 2002 XM <sub>90</sub>	18.0	X	67.56493	80.76521	81.61520	20.18418	0.3777249	0.41117687	1.7910880	20	7 9.3	19.9
416225 2002 XZ <sub>118</sub>	13.6	X	213.82223	302.82195	69.28565	15.56505	0.0553935	0.08349538	5.1843514	20	5 4.0	20.7
416226 2002 YL <sub>34</sub>	16.5	X	89.08332	143.23205	321.58512	8.35884	0.0908208	0.23917394	2.5703572	20	3 25.9	19.9
416227 2003 AX <sub>7</sub>	15.7	X	42.85048	220.61229	312.38830	10.39500	0.2153496	0.23779773	2.5802646	20	5 5.4	18.5
416228 2003 AL <sub>20</sub>	15.8	X	334.01028	42.71746	109.97300	22.14932	0.3317199	0.16954480	3.2330548	20	—	—
416229 2003 AM <sub>55</sub>	15.4	X	329.91952	5.43592	115.45722	29.20298	0.2442775	0.16521344	3.2893175	20	—	—
416230 2003 AB <sub>69</sub>	17.1	X	19.08667	59.76283	100.30738	10.14144	0.2094939	0.23495442	2.6010397	20	2 28.2	19.4
416231 2003 AJ <sub>73</sub>	18.6	X	20.54054	168.77409	4.90934	9.77169	0.3491863	0.40408492	1.8119837	20	—	—
416232 2003 AK <sub>79</sub>	16.9	X	45.23485	25.22331	132.32359	14.51809	0.1185843	0.23849538	2.5752302	20	4 15.0	20.1
416233 2003 AG <sub>90</sub>	15.6	X	290.71898	63.04710	82.28401	15.98222	0.2601603	0.16369762	3.3095921	20	12 17.2	19.1
416234 2003 BW	16.3	X	102.16916	62.02509	56.01951	12.61171	0.2321728	0.24208482	2.5497113	20	5 22.9	19.9
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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>
416241 2003 <i>BP</i> <sub>66</sub>	17.3	X	71.72460	183.58637	309.95838	4.69284	0.2372714	0.23830283	2.5766173	20	5 5.1	20.4
416242 2003 <i>BZ</i> <sub>66</sub>	17.0	X	48.95387	190.12173	313.43082	4.05762	0.1900714	0.23792004	2.5793803	20	4 1.6	19.5
416243 2003 <i>BS</i> <sub>81</sub>	16.4	X	109.72017	43.28805	71.57952	6.75015	0.2365973	0.24220334	2.5488794	20	5 27.9	20.3
416244 2003 <i>BZ</i> <sub>86</sub>	17.8	X	147.71933	283.35305	144.94718	6.55286	0.1619001	0.24226321	2.5484595	20	5 1.1	21.8
416245 2003 <i>CT</i> <sub>1</sub>	16.7	X	56.00450	147.91227	315.09964	7.15350	0.1797228	0.23446937	2.6046256	20	2 16.5	19.3
416246 2003 <i>CL</i> <sub>6</sub>	17.0	X	99.20671	33.53728	105.10865	5.81693	0.1646520	0.24350879	2.5397616	20	6 8.4	20.6
416247 2003 <i>CD</i> <sub>7</sub>	16.2	X	77.24559	39.51158	126.59474	10.33150	0.1077693	0.24236269	2.5477621	20	6 9.9	19.6
416248 2003 <i>CD</i> <sub>26</sub>	16.8	X	289.86723	38.51148	173.12814	5.99355	0.2250138	0.22369081	2.6876371	20	—	—
416249 2003 <i>DG</i> <sub>4</sub>	16.6	X	7.01839	0.06384	176.38320	13.52791	0.2746638	0.22955829	2.6416426	20	2 12.1	18.7
416250 2003 <i>DL</i> <sub>22</sub>	16.5	X	335.26370	89.48750	130.79404	12.24565	0.1356472	0.23282454	2.6168784	20	3 5.6	19.5
416251 2003 <i>EQ</i>	16.8	X	46.67303	93.67295	69.60275	8.75622	0.1619084	0.23711848	2.5851899	20	4 27.8	19.5
416252 2003 Manuelherrera	16.6	X	343.25227	229.33682	352.50670	12.99294	0.2105022	0.22977086	2.6400131	20	3 9.4	19.2
416253 2003 <i>EF</i> <sub>23</sub>	16.2	X	9.75768	155.39715	3.10068	14.28645	0.1883472	0.22906915	2.6454018	20	2 9.0	18.9
416254 2003 <i>ES</i> <sub>35</sub>	16.9	X	69.07168	268.24266	259.33405	2.96305	0.2134902	0.23913022	2.5706705	20	6 16.0	20.1
416255 2003 <i>EW</i> <sub>35</sub>	16.5	X	354.01636	162.27467	11.20405	13.64364	0.1443423	0.22812832	2.6526701	20	2 4.5	19.7
416256 2003 <i>EB</i> <sub>42</sub>	16.2	X	73.24983	117.26152	319.01965	21.57909	0.0445039	0.23088253	2.6315321	20	1 27.7	19.6
416257 2003 <i>EG</i> <sub>46</sub>	16.6	X	8.14709	177.17433	16.55849	7.97451	0.1336712	0.23306036	2.6151129	20	3 25.3	19.1
416258 2003 <i>ED</i> <sub>48</sub>	15.9	X	302.35439	279.61145	305.96630	15.46290	0.3080082	0.22411629	2.6842344	20	1 4.2	20.0
416259 2003 <i>EK</i> <sub>62</sub>	16.4	X	344.02685	76.66322	118.17086	13.84336	0.2115973	0.22567237	2.6718811	20	2 2.4	19.1
416260 2003 <i>FK</i> <sub>3</sub>	16.5	X	332.48235	105.77101	100.70270	13.24958	0.1323801	0.22823389	2.6518521	20	2 12.8	19.8
416261 2003 <i>FD</i> <sub>5</sub>	17.5	X	67.05959	85.18324	67.41364	28.06286	0.3806243	0.23847903	2.5753479	20	6 15.7	21.1
416262 2003 <i>FG</i> <sub>20</sub>	16.5	X	5.80889	166.08465	21.45444	12.66289	0.1542130	0.23269195	2.6178724	20	3 14.5	19.2
416263 2003 <i>FQ</i> <sub>24</sub>	16.2	X	32.61059	104.05890	1.45341	14.37989	0.0433780	0.22441573	2.6818461	20	1 9.8	19.9
416264 2003 <i>FF</i> <sub>29</sub>	16.7	X	12.54625	101.94530	33.29962	5.70303	0.0115298	0.22515674	2.6759588	20	1 19.7	20.3
416265 2003 <i>FW</i> <sub>52</sub>	16.6	X	55.09536	74.29198	127.14421	8.52054	0.1968613	0.24007150	2.5639466	20	7 10.3	19.5
416266 2003 <i>FV</i> <sub>70</sub>	16.6	X	342.16942	67.04372	170.24516	12.64743	0.0437735	0.23396477	2.6083692	20	4 19.4	19.9
416267 2003 <i>FN</i> <sub>93</sub>	16.3	X	327.53355	158.31156	43.28652	14.59119	0.1882517	0.22483734	2.6784924	20	1 23.0	19.9
416268 2003 <i>FR</i> <sub>96</sub>	16.9	X	320.44982	344.08224	203.37117	12.65978	0.1029346	0.22306981	2.6926228	20	1 2.9	20.7
416269 2003 <i>FJ</i> <sub>108</sub>	17.2	X	67.50684	30.60594	142.34215	5.74846	0.2088560	0.23900180	2.5715913	20	6 20.8	20.4
416270 2003 <i>FY</i> <sub>119</sub>	17.5	X	59.95267	236.49584	12.57810	5.97409	0.1874497	0.30267961	2.1969185	20	9 29.4	20.0
416271 2003 <i>FS</i> <sub>131</sub>	16.5	X	153.74609	232.74572	61.90154	8.32172	0.2772889	0.20446919	2.8535411	20	—	—
416272 2003 <i>GN</i> <sub>3</sub>	17.2	X	72.64523	329.81350	202.22591	5.20315	0.2196423	0.23957527	2.5674859	20	6 27.7	20.6
416273 2003 <i>GS</i> <sub>28</sub>	17.0	X	45.43785	134.99640	23.22391	13.66087	0.1897620	0.23512386	2.5997899	20	4 18.1	19.6
416274 2003 <i>GA</i> <sub>52</sub>	17.1	X	87.95804	60.03061	12.93175	6.16513	0.0162659	0.22375984	2.6870843	20	2 8.9	20.7
416275 2003 <i>HK</i> <sub>15</sub>	16.2	X	310.37988	200.05438	48.23854	22.44771	0.0162221	0.22848259	2.6499274	20	4 2.1	20.1
416276 2003 <i>HU</i> <sub>34</sub>	17.7	X	322.98909	265.66415	33.52399	8.80877	0.1407817	0.29532223	2.2332566	20	5 31.2	19.6
416277 2003 <i>HR</i> <sub>58</sub>	17.9	X	50.97074	291.79475	137.54398	24.03798	0.1018862	0.38689081	1.8652789	20	—	—
416278 2003 <i>KG</i>	16.5	X	324.10954	170.12093	85.76952	15.87079	0.2145556	0.22772000	2.6558401	20	4 1.0	19.9
416279 2003 <i>KW</i> <sub>2</sub>	16.9	X	54.29827	78.24686	108.25513	5.76824	0.1628041	0.23441082	2.6050593	20	6 12.0	19.8
416280 2003 <i>KA</i> <sub>3</sub>	16.0	X	173.09172	204.44446	72.83969	16.58096	0.1197322	0.20674872	2.8325277	20	—	—
416281 2003 <i>KZ</i> <sub>27</sub>	17.4	X	343.37188	130.35053	127.71120	5.73931	0.2249327	0.28917854	2.2647765	20	4 29.8	18.9
416282 2003 <i>KE</i> <sub>31</sub>	18.3	X	257.19385	150.02983	150.38531	8.28223	0.2879264	0.27849730	2.3223200	20	2 18.9	22.3
416283 2003 <i>MM</i>	21.5	X	335.94113	19.78620	127.62020	8.54476	0.2563437	0.91180498	1.0532579	20	—	—
416284 2003 <i>OP</i> <sub>21</sub>	17.6	X	2.78278	138.06045	127.17077	7.85735	0.1481956	0.28809398	2.2704569	20	7 4.0	19.3
416285 2003 <i>OW</i> <sub>25</sub>	16.3	X	198.91462	89.25362	258.18877	4.33394	0.0637428	0.21353814	2.7721650	20	3 6.6	20.5
416286 2003 <i>PR</i> <sub>11</sub>	17.0	X	45.65174	89.89466	295.63859	12.02480	0.5234901	0.18699318	3.0286718	20	—	—
416287 2003 <i>QK</i> <sub>34</sub>	17.0	X	273.13290	5.95669	330.53150	10.56202	0.1805706	0.28067460	2.3102943	20	4 26.6	20.4
416288 2003 <i>QP</i> <sub>71</sub>	16.3	X	47.00021	62.09582	308.51037	14.54799	0.2512027	0.18525663	3.0446113	20	—	—
416289 2003 <i>QT</i> <sub>71</sub>	17.2	X	50.07766	90.98928	303.37617	18.11436	0.1039538	0.36767738	1.9297073	20	—	—
416290 2003 <i>QJ</i> <sub>77</sub>	17.2	X	287.37020	17.87086	335.11222	10.67378	0.2412727	0.28263919	2.2995761	20	6 2.2	20.1
416291 2003 <i>QZ</i> <sub>86</sub>	16.1	X	29.14898	12.63465	329.84877	5.63253	0.1183808	0.18195492	3.0843253	20	11 15.6	20.3
416292 2003 <i>QJ</i> <sub>93</sub>	17.5	X	285.21001	318.73472	15.45175	6.98570	0.1482592	0.28168656	2.3045758	20	5 18.2	20.3
416293 2003 <i>QJ</i> <sub>95</sub>	16.2	X	60.65499	58.87953	325.41137	11.78450	0.3305842	0.18997608	2.9968851	20	—	—
416294 2003 <i>QK</i> <sub>99</sub>	17.1	X	305.89607	308.93724	3.25686	23.85323	0.2787844	0.28260991	2.2997350	20	4 16.3	20.1
416295 2003 <i>QD</i> <sub>109</sub>	16.9	X	226.35719	38.00637	353.40132	7.12141	0.1091321	0.27969985	2.3156587	20	5 28.9	20.3
416296 2003 <i>RM</i> <sub>1</sub>	17.8	X	255.80414	41.91411	338.63349	6.05125	0.2840550	0.27985981	2.3147763	20	5 27.9	21.5
416297 2003 <i>RW</i> <sub>2</sub>	17.8	X	288.90300	354.33370	351.29021	3.23683	0.2006033	0.28344997	2.2951889	20	6 1.9	20.3
416298 2003 <i>RZ</i> <sub>13</sub>	17.1	X	249.18436	98.24756	270.59960	9.99405	0.2357006	0.27826779	2.3235967	20	5 10.6	20.9
416299 2003 <i>RW</i> <sub>19</sub>	18.1	X	234.47451	230.91889	173.92915	3.78675	0.2333704	0.27985257	2.3148162	20	6 15.2	21.7
416300 2003 <i>RS</i> <sub>22</sub>	17.9	X	266.68745	171.07274	192.96337	4.80772	0.2528960	0.28081063	2.3095482	20	5 23.1	21.0
416301 2003 <i>RL</i> <sub>26</sub>	17.1	X	294.71141	83.46083	218.40344	21.54587	0.2950790	0.27925484	2.3181182	20	3 20.9	20.7
416302 2003 <i>SW</i> <sub>4</sub>	17.6	X	205.16922	25.30937	356.49921	8.76190	0.2532057	0.27196206	2.3593760	20	4 17.8	21.8
416303 2003 <i>SF</i> <sub>5</sub>	17.7	X	220.55844	2.44359	24.99232	3.56050	0.2270565	0.27414605	2.3468287	20	5 10.4	21.7
416304 2003 <i>SS</i> <sub>8</sub>	18.3	X	232.06852	62.25227	355.55403	3.54470	0.1122970	0.28132956	2.3067072	20	7 14.3	21.3
416305 2003 <i>SP</i> <sub>13</sub>	18.0	X	271.08859	19.24718	356.02368	5.90386	0.2426848	0.28257804	2.2999079	20	6 13.2	21.0
416306 2003 <i>SL</i> <sub>28</sub>	16.1	X	42.69324	41.45275	335.27674	16.19765	0.1802710	0.18592827	3.0402253	20	—	—
416307 2003 <i>SA</i> <sub>39</sub>	17.3	X	253.05519	88.29302	295.50009	6.68340	0.2294294	0.27947287	2.3169124	20	6 5.7	20.7
416308 2003 <i>SP</i> <sub>41</sub>	17.4	X	242.15289	335.80625	13.81419	15.12861	0.2048686	0.27364337	2.3497019	20	4 11.8	21.0
416309 2003 <i>SV</i> <sub>42</sub>	17.6	X	240.33313	175.59953	228.67139	5.35430	0.1896908	0.28170803	2.3046407	20	6 24.6	20.9
416310 2003 <i>SP</i> <sub>48</sub>	16.3	X	17.55952	81.16433	293.46591	7.37923	0.3133433	0.18060236	3.0997055	20	—	—
416311 2003 <i>SA</i> <sub>51</sub>	17.6	X	218.12919	210.46151	173.33497	2.18303	0.2290306	0.27461687	2.3441455	20	5 4.8	21.4
416312 2003 <i>SX</i> <sub>55</sub>	17.5	X	271.44937	24.77183	312.19278							

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>
416321 2003 SV <sub>150</sub>	17.9	X	224.83067	331.67808	57.14443	5.43722	0.2845658	0.27593600	2.3366687	20	5 13.3	21.8
416322 2003 SE <sub>153</sub>	16.1	X	98.60106	328.44415	20.42707	15.67940	0.2551707	0.19224760	2.9732318	20	—	—
416323 2003 SW <sub>161</sub>	18.3	X	259.72739	109.23428	222.13256	1.39008	0.2442314	0.27463520	2.3440412	20	4 2.8	21.8
416324 2003 SF <sub>165</sub>	17.7	X	215.63848	152.25423	169.16878	7.77964	0.2684653	0.26629850	2.3927109	20	2 14.4	21.9
416325 2003 SL <sub>176</sub>	16.6	X	37.25199	23.31692	9.83211	3.99734	0.2524135	0.18743674	3.0238917	20	—	—
416326 2003 SY <sub>177</sub>	18.1	X	248.14296	143.82318	200.65733	4.70873	0.2629980	0.27597346	2.3364573	20	4 7.6	21.9
416327 2003 SM <sub>179</sub>	16.8	X	76.17599	274.10905	74.98271	5.84254	0.2512599	0.18791658	3.0187419	20	—	—
416328 2003 SV <sub>183</sub>	18.0	X	239.31783	37.77525	318.43990	1.81455	0.1860228	0.27452415	2.3446733	20	4 19.9	21.7
416329 2003 SX <sub>192</sub>	16.0	X	71.54708	80.71156	247.74324	7.86456	0.2770561	0.18439205	3.0570878	20	—	—
416330 2003 SM <sub>194</sub>	17.6	X	197.99062	169.49216	259.30057	4.55430	0.2081656	0.27612248	2.3356165	20	6 14.5	21.3
416331 2003 SV <sub>194</sub>	17.9	X	246.83959	39.61768	310.57298	5.69953	0.2009962	0.27461513	2.3441554	20	4 16.1	21.6
416332 2003 SQ <sub>202</sub>	17.9	X	221.06623	37.01202	359.34698	1.75928	0.1769683	0.27674775	2.3320972	20	5 25.7	21.4
416333 2003 SV <sub>202</sub>	18.3	X	245.38239	13.34397	324.33299	1.04535	0.2509034	0.27459551	2.3442671	20	3 28.4	22.2
416334 2003 ST <sub>205</sub>	17.9	X	258.06636	330.18917	9.87426	1.74417	0.2574344	0.27634487	2.3343633	20	4 11.2	21.3
416335 2003 SG <sub>207</sub>	16.1	X	79.06220	298.92452	30.38272	3.43649	0.3102105	0.18514439	3.0488005	20	—	—
416336 2003 SG <sub>219</sub>	17.4	X	66.54485	59.10233	262.61994	18.48397	0.0674758	0.35982571	1.9576780	20	—	—
416337 2003 SM <sub>222</sub>	15.9	X	73.45013	335.57073	31.94095	9.92965	0.0952246	0.18911140	3.0060134	20	—	—
416338 2003 SF <sub>244</sub>	16.7	X	62.07118	193.38945	181.70655	2.04304	0.1604856	0.18875833	3.0097607	20	—	—
416339 2003 SS <sub>258</sub>	16.2	X	112.05610	312.69971	24.76960	11.34577	0.2158654	0.19140903	2.9819093	20	—	—
416340 2003 SH <sub>280</sub>	17.3	X	228.85098	254.42539	123.11946	5.00000	0.2124577	0.27493745	2.3423230	20	5 8.4	21.1
416341 2003 SV <sub>281</sub>	18.0	X	255.01471	63.80991	327.66410	5.36599	0.1780056	0.28159294	2.3052687	20	6 26.3	21.1
416342 2003 SR <sub>289</sub>	15.9	X	73.19631	145.25894	173.26593	13.84510	0.1438770	0.18253953	3.0777364	20	12 14.9	20.8
416343 2003 SZ <sub>293</sub>	15.8	X	56.66686	172.76984	192.78448	14.82309	0.2511333	0.18436092	3.0574320	20	—	—
416344 2003 SX <sub>295</sub>	16.2	X	69.02541	112.27567	258.25936	7.74125	0.1674456	0.18881244	3.0091857	20	—	—
416345 2003 SD <sub>307</sub>	15.6	X	69.16158	353.22121	321.30317	20.94078	0.2895732	0.18255763	3.0772530	20	12 22.6	20.9
416346 2003 SQ <sub>323</sub>	18.2	X	211.34105	86.51186	317.90822	1.76519	0.1811537	0.27647880	2.3336094	20	5 26.7	21.8
416347 2003 SQ <sub>327</sub>	17.4	X	211.97199	134.31815	245.36335	12.36788	0.2075656	0.27264354	2.3554429	20	4 22.3	21.3
416348 2003 SW <sub>328</sub>	17.9	X	145.78055	14.61636	30.10116	4.92269	0.1364267	0.26516200	2.3995429	20	3 25.4	21.3
416349 2003 SA <sub>329</sub>	17.7	X	115.54923	180.77427	24.08105	8.35137	0.0487660	0.28784509	2.2717655	20	9 20.3	20.6
416350 2003 SH <sub>331</sub>	16.8	X	41.06141	296.35185	64.78785	11.96413	0.1079025	0.18152683	3.0891725	20	12 23.2	21.1
416351 2003 SJ <sub>331</sub>	17.1	X	332.62059	215.03628	79.90612	8.21213	0.1524587	0.27989061	2.3146065	20	6 13.9	18.9
416352 2003 SJ <sub>332</sub>	15.4	X	352.16883	68.59280	9.13816	16.38187	0.2241122	0.18073036	3.0982418	20	—	—
416353 2003 SL <sub>333</sub>	18.0	X	212.34889	155.98038	255.79911	2.17919	0.2707472	0.27644618	2.3337930	20	6 2.0	21.8
416354 2003 SJ <sub>338</sub>	18.7	X	187.32461	279.08341	166.34655	1.76542	0.1419583	0.27814488	2.3242812	20	6 28.5	22.3
416355 2003 SZ <sub>338</sub>	15.7	X	62.40362	329.93803	38.54813	10.99094	0.0746883	0.18721734	3.0262538	20	—	—
416356 2003 SD <sub>339</sub>	16.3	X	2.30378	42.70128	38.22531	12.84860	0.0663204	0.18781281	3.0198537	20	—	—
416357 2003 ST <sub>339</sub>	16.5	X	100.11753	237.27970	93.16540	11.12476	0.0387575	0.18510378	3.0492465	20	—	—
416358 2003 SM <sub>344</sub>	17.8	X	233.37708	141.48851	283.06665	2.21409	0.2230223	0.28190354	2.3035750	20	7 11.4	21.0
416359 2003 SZ <sub>357</sub>	18.4	X	297.23727	328.05103	335.95091	1.35772	0.1909424	0.27786916	2.3258185	20	4 16.2	21.1
416360 2003 SR <sub>365</sub>	16.5	X	302.16501	268.63276	192.25072	9.52672	0.0901188	0.18412914	3.0599972	20	12 5.9	20.5
416361 2003 SV <sub>368</sub>	17.5	X	166.41733	210.80500	223.25664	3.14541	0.0136084	0.21699948	2.7426070	20	5 19.3	21.3
416362 2003 SM <sub>382</sub>	16.6	X	297.77239	103.02201	17.13936	9.80893	0.0527475	0.18503222	3.0500326	20	12 25.7	20.8
416363 2003 SS <sub>391</sub>	16.7	X	5.74073	7.95320	35.97799	13.05640	0.1063247	0.18269575	3.0759817	20	12 29.5	20.8
416364 2003 SR <sub>399</sub>	16.2	X	119.19330	201.28586	129.09659	11.03888	0.0914301	0.18901320	3.0070544	20	—	—
416365 2003 SL <sub>418</sub>	16.3	X	16.88588	336.37877	68.47263	11.54364	0.1025886	0.18359307	3.0659509	20	—	—
416366 2003 SR <sub>418</sub>	17.8	X	168.67890	328.34300	105.24101	7.16132	0.1977275	0.27018507	2.3697097	20	5 27.3	21.7
416367 2003 SG <sub>419</sub>	16.1	X	129.04478	179.35269	111.99670	11.23007	0.0526251	0.18383231	3.0632902	20	—	—
416368 2003 SS <sub>421</sub>	18.1	X	191.91799	92.25385	279.81933	6.27592	0.1349376	0.26959965	2.3731389	20	3 25.1	21.8
416369 2003 SS <sub>428</sub>	17.6	X	253.64833	141.33147	210.65597	6.67747	0.1384312	0.27502844	2.3418064	20	5 5.9	20.8
416370 2003 SE <sub>429</sub>	16.1	X	59.22983	36.51865	355.65616	11.20948	0.1417533	0.18918886	3.0051929	20	—	—
416371 2003 SK <sub>430</sub>	17.8	X	265.67610	27.74073	358.65112	6.91772	0.1131798	0.28078406	2.3096938	20	7 15.4	20.6
416372 2003 TK <sub>5</sub>	16.1	X	70.82154	309.93956	50.13880	13.42894	0.3049246	0.18808729	3.0169151	20	—	—
416373 2003 TG <sub>18</sub>	18.2	X	277.70786	0.09946	343.49032	9.76685	0.2225058	0.27937305	2.3174642	20	5 7.2	21.5
416374 2003 TC <sub>25</sub>	16.7	X	46.14248	45.87801	330.79698	5.96709	0.1556671	0.18600190	3.0394229	20	—	—
416375 2003 TS <sub>26</sub>	16.5	X	118.54591	56.80576	235.38323	10.54137	0.1031754	0.18499724	3.0504170	20	12 24.3	21.3
416376 2003 TT <sub>34</sub>	16.5	X	53.67511	64.11934	300.79113	7.31249	0.0952392	0.18416516	3.0595983	20	—	—
416377 2003 TB <sub>45</sub>	16.3	X	357.27112	78.74768	295.52355	6.66384	0.0825891	0.17647316	3.1478712	20	11 3.9	20.5
416378 2003 TG <sub>46</sub>	16.4	X	314.48680	264.85331	219.45753	10.98114	0.1444551	0.18456498	3.0551780	20	—	—
416379 2003 TU <sub>55</sub>	18.1	X	233.18868	297.92762	73.45309	6.37069	0.1530890	0.27442309	2.3452489	20	5 8.5	21.6
416380 2003 UA <sub>2</sub>	17.9	X	168.97656	95.13145	355.27370	3.80169	0.1089479	0.27419734	2.3465360	20	6 15.8	21.3
416381 2003 UR <sub>8</sub>	17.3	X	31.84385	154.23565	285.06773	17.26083	0.0842348	0.36880883	1.9257586	20	—	—
416382 2003 UU <sub>9</sub>	17.8	X	221.35121	343.98708	48.45190	2.97803	0.2027709	0.27340146	2.3510877	20	5 19.4	21.6
416383 2003 UH <sub>11</sub>	18.2	X	28.19791	164.99986	203.08669	22.68446	0.1062637	0.35840450	1.9628499	20	—	—
416384 2003 UA <sub>15</sub>	16.2	X	67.34220	343.10454	19.55485	9.76672	0.1547241	0.18602201	3.0392039	20	—	—
416385 2003 UN <sub>17</sub>	17.7	X	185.16687	170.50173	278.93668	4.39542	0.1844371	0.27648718	2.3335622	20	6 30.6	21.2
416386 2003 UW <sub>19</sub>	16.8	X	233.36840	261.85076	82.96705	22.53798	0.3369803	0.26948059	2.3738379	20	4 5.8	21.6
416387 2003 UL <sub>28</sub>	16.2	X	40.16315	129.74144	230.73249	2.19582	0.1592524	0.18008349	3.1056567	20	12 28.5	20.4
416388 2003 UY <sub>28</sub>	16.6	X	348.58446	170.60864	220.62671	16.52602	0.1993915	0.17592726	3.1543796	20	11 23.3	20.0
416389 2003 UR <sub>33</sub>	18.2	X	193.87906	286.70291	125.89676	1.66035	0.1785648	0.27289983	2.3539679	20	5 21.9	21.8
416390 2003 UD <sub>35</sub>	17.5	X	274.78854	87.68902	322.37095	5.25410	0.1256001	0.27646319	2.3336972	20	5 2.7	20.3
416391 2003 UG <sub>51</sub>	15.6	X	94.85054	344.97759	323.51890	18.41414	0.1490236	0.18366690	3.0651292	20	12 26.4	20.7
416392 2003 UL <sub>51</sub>	16.0	X	357.47807	86.24929	337.15940	14.73040	0.1956744	0.18215657	3.0820487	20	—	—
416393 2003 UT <sub>66</sub>	17.5	X	224.03216	344.51443	100.94760	9.88707	0.2032730	0.27997051	2.3141661	20	8 2.3	20.9
416394 2003 UF <sub>67</sub>	17.2	X	76.33263	143.09558	209.94787	10.55912	0.1295820	0.18776784				

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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>
416401 2003 <i>UP</i> <sub>119</sub>	16.4	X	3.01345	146.65239	226.12169	7.98310	0.1120806	0.17701299	3.1414679	20	11 15.9	20.4
416402 2003 <i>UF</i> <sub>123</sub>	18.0	X	241.98243	89.85561	272.01743	0.39403	0.2016621	0.27341549	2.3510073	20	4 29.3	21.7
416403 2003 <i>UO</i> <sub>131</sub>	18.1	X	207.64765	61.42767	313.88750	4.06300	0.2379085	0.26955946	2.3733748	20	4 12.8	22.1
416404 2003 <i>US</i> <sub>131</sub>	17.6	X	271.40799	110.26748	255.10892	6.52671	0.3445435	0.27982963	2.3149427	20	5 17.0	21.1
416405 2003 <i>UN</i> <sub>136</sub>	17.7	X	212.75043	29.15182	30.88628	8.66117	0.2553344	0.27543180	2.3395195	20	6 12.8	21.7
416406 2003 <i>UG</i> <sub>139</sub>	16.7	X	44.63359	200.55108	153.00401	7.56934	0.3067097	0.18236896	3.0796552	20	—	—
416407 2003 <i>UP</i> <sub>140</sub>	17.3	X	200.36445	343.19806	81.44666	4.01769	0.2157680	0.27575789	2.3307648	20	6 10.9	20.9
416408 2003 <i>UM</i> <sub>146</sub>	15.8	X	325.39055	335.62859	58.61926	16.08423	0.2252865	0.17177164	3.0505020	20	10 15.1	19.3
416409 2003 <i>UJ</i> <sub>154</sub>	16.2	X	352.84789	353.72600	48.50011	9.45485	0.1925351	0.17969162	3.1101703	20	12 14.9	19.8
416410 2003 <i>UU</i> <sub>170</sub>	17.3	X	157.84110	354.35087	18.11240	8.53126	0.1067865	0.26079072	2.4262821	20	2 25.8	20.8
416411 2003 <i>UN</i> <sub>175</sub>	18.1	X	233.16322	39.79953	359.29826	1.84970	0.2171450	0.27672128	2.3322459	20	6 7.2	21.7
416412 2003 <i>US</i> <sub>176</sub>	17.5	X	243.78391	58.11461	323.48458	4.83992	0.1712217	0.27577035	2.3376043	20	5 29.8	21.0
416413 2003 <i>UM</i> <sub>179</sub>	17.5	X	291.57672	194.05875	146.83073	2.62184	0.2239202	0.28000487	2.3139768	20	5 27.3	20.1
416414 2003 <i>UA</i> <sub>181</sub>	15.5	X	42.20940	281.14668	43.47933	16.33569	0.2375162	0.17714918	3.1398576	20	11 26.0	20.0
416415 2003 <i>UA</i> <sub>184</sub>	15.8	X	35.15292	359.68113	44.53161	6.26091	0.2428253	0.18551788	3.0447072	20	—	—
416416 2003 <i>UG</i> <sub>189</sub>	17.2	X	277.02034	354.75430	11.69730	5.31307	0.1634295	0.27978367	2.3151963	20	6 22.1	19.9
416417 2003 <i>UP</i> <sub>190</sub>	16.1	X	20.15857	319.88042	49.44292	6.90482	0.1784536	0.17850844	3.1238982	20	12 15.2	20.2
416418 2003 <i>UZ</i> <sub>194</sub>	17.8	X	240.13045	91.70169	287.74211	1.34603	0.2081264	0.27464307	2.3439965	20	5 19.9	21.5
416419 2003 <i>UL</i> <sub>205</sub>	16.0	X	106.96509	102.30673	262.04689	10.40484	0.1650218	0.19126264	2.9834307	20	1 2.3	20.1
416420 2003 <i>UW</i> <sub>210</sub>	17.6	X	269.50303	36.54208	325.42246	1.62036	0.2336184	0.27781276	2.3261332	20	5 24.9	20.7
416421 2003 <i>UL</i> <sub>221</sub>	15.8	X	69.14231	327.26117	3.28058	9.88867	0.1000548	0.18228166	3.0806384	20	12 18.4	20.4
416422 2003 <i>UC</i> <sub>222</sub>	16.1	X	103.57504	214.35838	177.38271	11.23374	0.1473372	0.19524443	2.9427290	20	1 26.9	20.3
416423 2003 <i>UY</i> <sub>230</sub>	17.8	X	262.43104	53.32335	299.71886	2.22698	0.1761109	0.27693890	2.3310240	20	5 11.7	20.8
416424 2003 <i>UK</i> <sub>231</sub>	17.9	X	126.15970	247.95288	227.65886	3.55572	0.2060447	0.26736937	2.3863178	20	6 15.3	21.8
416425 2003 <i>UB</i> <sub>233</sub>	17.1	X	187.03616	175.08082	240.40102	6.30047	0.0892851	0.27014474	2.3699456	20	5 19.6	20.5
416426 2003 <i>UT</i> <sub>236</sub>	16.2	X	19.42329	338.59586	84.29106	5.10946	0.2257786	0.18565448	3.0432135	20	—	—
416427 2003 <i>UT</i> <sub>241</sub>	17.9	X	208.34833	331.14926	69.02499	3.28227	0.2152148	0.27255598	2.3559473	20	5 17.5	21.8
416428 2003 <i>UK</i> <sub>249</sub>	17.5	X	232.24772	117.76002	253.58115	3.69121	0.1939219	0.27363122	2.3497714	20	5 2.3	21.0
416429 2003 <i>UM</i> <sub>260</sub>	16.6	X	63.79347	138.02853	214.83864	9.27994	0.1246404	0.18347952	3.0672135	20	—	—
416430 2003 <i>UH</i> <sub>264</sub>	17.8	X	200.24132	336.34333	173.55852	5.26566	0.2147392	0.271142529	2.3624856	20	5 23.9	21.7
416431 2003 <i>UA</i> <sub>267</sub>	17.8	X	225.88331	314.08138	57.08273	3.33366	0.2239149	0.27190500	2.3597061	20	4 25.7	21.6
416432 2003 <i>UY</i> <sub>278</sub>	17.9	X	244.67390	62.09396	279.18768	3.60061	0.1676923	0.27279378	2.3545779	20	4 6.4	21.5
416433 2003 <i>UF</i> <sub>295</sub>	17.0	X	47.81971	142.19051	228.16637	3.81473	0.1680177	0.18450879	3.0557982	20	—	—
416434 2003 <i>UO</i> <sub>315</sub>	18.0	X	320.47042	208.48600	88.23385	4.86330	0.1563568	0.27887819	2.3202049	20	5 22.4	20.0
416435 2003 <i>UC</i> <sub>317</sub>	16.6	X	70.45910	26.71072	357.54283	12.31993	0.1767410	0.19201021	2.9756818	20	—	—
416436 2003 <i>UR</i> <sub>317</sub>	17.9	X	329.16474	43.49454	258.32431	5.42995	0.1417343	0.28426318	2.9080995	20	6 19.3	19.9
416437 2003 <i>UA</i> <sub>338</sub>	16.9	X	17.31391	225.97219	185.57934	9.90022	0.1264579	0.18644669	3.0345871	20	—	—
416438 2003 <i>UW</i> <sub>345</sub>	16.7	X	52.65261	217.21725	188.37291	9.63584	0.0304645	0.19274507	2.9681136	20	—	—
416439 2003 <i>UQ</i> <sub>351</sub>	17.8	X	261.73486	238.04149	109.46448	2.86827	0.1335838	0.27637642	2.3341856	20	5 10.7	21.0
416440 2003 <i>UB</i> <sub>355</sub>	16.4	X	301.34184	73.89361	43.36632	14.41176	0.0567064	0.18334206	3.0687485	20	12 25.4	20.7
416441 2003 <i>UG</i> <sub>369</sub>	16.0	X	39.28340	95.65133	340.04726	7.89044	0.0964549	0.19050872	2.9912966	20	—	—
416442 2003 <i>US</i> <sub>371</sub>	16.2	X	192.38882	9.86832	248.41604	11.61981	0.0698403	0.19702996	2.9249236	20	—	—
416443 2003 <i>UO</i> <sub>376</sub>	16.4	X	271.91630	249.68326	0.58440	14.81761	0.1138180	0.20569384	2.8422037	20	1 31.1	20.8
416444 2003 <i>UL</i> <sub>380</sub>	17.9	X	156.95185	27.36565	35.61752	7.14968	0.1096664	0.26946582	2.3739246	20	4 26.7	21.3
416445 2003 <i>UY</i> <sub>400</sub>	18.2	X	264.14184	99.43239	289.15839	5.23961	0.1772077	0.28385130	2.2930250	20	7 4.2	20.9
416446 2003 <i>VY</i>	16.8	X	208.35832	46.65725	18.12749	23.10150	0.2905198	0.27305144	2.3530965	20	6 9.9	21.4
416447 2003 <i>VG</i> <sub>4</sub>	17.5	X	236.70675	316.33584	26.54720	6.62720	0.2664389	0.27045102	2.3681559	20	3 28.8	21.5
416448 2003 <i>VK</i> <sub>4</sub>	17.6	X	213.34805	32.93797	346.33765	5.08638	0.1746405	0.26989251	2.3714219	20	4 24.7	21.4
416449 2003 <i>VZ</i> <sub>6</sub>	16.8	X	8.79738	342.25531	40.44251	3.81040	0.1330057	0.17675950	3.1444706	20	12 8.7	20.7
416450 2003 <i>VZ</i> <sub>10</sub>	17.8	X	247.31342	311.87986	97.16590	3.94391	0.2089626	0.27858478	2.3218338	20	7 7.0	21.0
416451 2003 <i>VM</i> <sub>12</sub>	17.8	X	238.50543	287.28290	90.66665	7.83502	0.3127645	0.27425638	2.3461992	20	5 10.5	21.9
416452 2003 <i>WD</i> <sub>3</sub>	16.6	X	20.79862	158.81698	234.84057	11.29547	0.2102147	0.18140957	3.0905036	20	—	—
416453 2003 <i>WU</i> <sub>4</sub>	17.6	X	196.52132	38.40106	10.13166	7.84051	0.1351575	0.27038343	2.3685506	20	5 17.5	21.3
416454 2003 <i>WL</i> <sub>10</sub>	17.8	X	193.56788	44.38032	10.33878	5.25115	0.2150064	0.27043943	2.3682236	20	5 22.0	21.7
416455 2003 <i>WW</i> <sub>14</sub>	16.4	X	5.71224	189.97467	229.29718	11.33827	0.1258715	0.18151002	3.0893633	20	—	—
416456 2003 <i>WC</i> <sub>19</sub>	16.2	X	60.74551	100.59262	264.28867	13.10635	0.2250378	0.18346541	3.0673730	20	—	—
416457 2003 <i>WO</i> <sub>20</sub>	15.8	X	17.15518	173.61861	254.76671	17.49087	0.1786926	0.18332776	3.0689082	20	—	—
416458 2003 <i>WV</i> <sub>20</sub>	17.4	X	56.22589	184.16738	257.96967	18.39274	0.0818252	0.37033383	1.9204682	20	—	—
416459 2003 <i>WT</i> <sub>36</sub>	16.1	X	37.27153	130.11474	266.27458	10.08038	0.1149562	0.18352468	3.0667125	20	—	—
416460 2003 <i>WY</i> <sub>40</sub>	15.4	X	320.56023	351.98476	60.14447	28.73191	0.1385855	0.17146412	3.2088830	20	11 4.3	19.4
416461 2003 <i>WT</i> <sub>41</sub>	15.4	X	357.42031	153.60554	254.41150	26.96638	0.1552268	0.17739234	3.1369877	20	12 23.4	19.3
416462 2003 <i>WC</i> <sub>52</sub>	16.8	X	338.32213	288.67067	273.55002	4.85770	0.0870090	0.25677847	2.4514911	20	2 12.7	19.6
416463 2003 <i>WV</i> <sub>58</sub>	18.4	X	222.43953	221.19843	198.35469	0.96610	0.1688936	0.27539796	2.3397111	20	6 28.3	21.9
416464 2003 <i>WX</i> <sub>64</sub>	17.4	X	203.73819	325.22911	77.30407	3.55422	0.2376159	0.27067328	2.3668594	20	5 16.2	21.4
416465 2003 <i>WT</i> <sub>65</sub>	16.1	X	39.35101	282.82811	65.62121	16.96670	0.2341656	0.17703443	3.1412142	20	12 21.8	20.6
416466 2003 <i>WG</i> <sub>66</sub>	15.4	X	315.75271	216.16114	270.65545	26.37284	0.1579688	0.17895552	3.1186932	20	—	—
416467 2003 <i>WJ</i> <sub>69</sub>	16.0	X	334.26196	46.80050	70.54025	8.36211	0.2722669	0.17977491	3.1092096	20	—	—
416468 2003 <i>WQ</i> <sub>78</sub>	17.6	X	216.89741	1.87479	26.85403	6.60828	0.1109232	0.27100785	2.3649110	20	5 14.8	21.0
416469 2003 <i>WA</i> <sub>81</sub>	16.2	X	26.52822	152.36204	255.92282	17.43974	0.1653120	0.18160937	3.0882364	20	—	—
416470 2003 <i>WD</i> <sub>82</sub>	15.9	X	49.67053	88.38728	277.79435	9.50093	0.4672823	0.18350319	3.0669520	20	—	—
416471 2003 <i>WZ</i> <sub>86</sub>	16.8	X	184.06526	173.56207	260.13588	4.93606	0.1999841	0.26966796	2.3727382	20	6 8.7	20.7
416472 2003 <i>WW</i> <sub>88</sub>	17.9	X	238									

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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>
416481 2003 <i>WH</i> <sub>110</sub>	18.0	X	147.64729	100.64968	21.68117	5.46308	0.1737930	0.27061260	2.3672132	20	7 9.5	21.8
416482 2003 <i>WG</i> <sub>115</sub>	15.7	X	308.34589	220.49145	263.26825	10.70319	0.1738763	0.17761362	3.1343817	20	—	—
416483 2003 <i>WM</i> <sub>116</sub>	15.2	X	352.70194	164.62314	252.95264	26.22783	0.0767863	0.17681107	3.1438592	20	12 20.9	19.4
416484 2003 <i>WP</i> <sub>127</sub>	15.2	X	308.08814	207.57221	271.77120	27.06019	0.2243042	0.17438015	3.1730093	20	12 25.8	18.5
416485 2003 <i>WZ</i> <sub>140</sub>	15.2	X	15.83625	341.58325	74.67537	17.04769	0.1505196	0.17890797	3.1192457	20	—	—
416486 2003 <i>WK</i> <sub>144</sub>	17.9	X	229.17290	133.45183	276.94073	1.32404	0.1846911	0.27575772	2.3376757	20	6 21.6	21.2
416487 2003 <i>WL</i> <sub>152</sub>	17.1	X	258.37872	299.23575	116.79569	6.94527	0.0910354	0.28030743	2.3123114	20	8 20.9	19.7
416488 2003 <i>WJ</i> <sub>153</sub>	15.8	X	338.08018	328.09466	118.91882	17.11033	0.2790163	0.17820806	3.1274076	20	—	—
416489 2003 <i>WI</i> <sub>156</sub>	17.1	X	198.33408	270.19270	138.18092	12.15445	0.2111097	0.26928241	2.3750024	20	5 22.8	21.3
416490 2003 <i>WY</i> <sub>156</sub>	17.2	X	24.38899	263.80187	149.36094	6.26295	0.1857048	0.18403188	3.0610752	20	—	—
416491 2003 <i>WE</i> <sub>158</sub>	18.9	X	68.47093	257.60173	80.52023	4.50656	0.2784408	0.36008024	1.9567553	20	—	—
416492 2003 <i>WA</i> <sub>187</sub>	17.1	X	58.17297	286.92662	60.71330	2.49574	0.1580461	0.18237423	3.0795959	20	—	—
416493 2003 <i>WR</i> <sub>187</sub>	18.0	X	227.99767	165.20544	201.64882	0.90757	0.2097196	0.27240277	2.3568306	20	4 22.3	21.6
416494 2003 <i>XU</i> <sub>18</sub>	17.3	X	28.38882	337.06153	94.05510	24.94086	0.0691970	0.36496851	1.9392440	20	—	—
416495 2003 <i>XA</i> <sub>19</sub>	16.6	X	7.24084	9.52942	87.35269	6.74548	0.2203885	0.18398147	3.0616343	20	—	—
416496 2003 <i>XR</i> <sub>20</sub>	15.9	X	332.10130	57.96741	63.99618	15.91575	0.2544238	0.17931844	3.1144838	20	—	—
416497 2003 <i>WA</i> <sub>21</sub>	17.1	X	265.87099	273.90459	67.87183	12.73939	0.2720036	0.27341083	2.3510340	20	4 24.1	20.7
416498 2003 <i>XS</i> <sub>29</sub>	18.1	X	165.16579	136.32791	284.03604	1.07420	0.1660923	0.26557247	2.3970698	20	5 4.4	21.8
416499 2003 <i>XK</i> <sub>34</sub>	15.5	X	161.54724	18.10709	249.58392	10.58918	0.1381446	0.17966824	3.1104401	20	—	—
416500 2003 <i>XX</i> <sub>42</sub>	16.2	X	326.08104	71.37731	29.88337	13.40162	0.2913336	0.17524192	3.1625984	20	—	—
416501 2003 <i>YU</i> <sub>1</sub>	18.5	X	280.51355	76.26942	287.33406	7.79728	0.2146271	0.45492807	1.6743294	20	6 19.7	19.3
416502 2003 <i>YT</i> <sub>7</sub>	13.4	X	260.47303	237.80084	103.80655	33.17946	0.0292306	0.08347960	5.1850044	20	5 28.8	20.6
416503 2003 <i>YK</i> <sub>10</sub>	15.7	X	32.50715	27.89095	29.92464	13.06976	0.2450388	0.18338351	3.0682862	20	—	—
416504 2003 <i>YT</i> <sub>12</sub>	15.3	X	31.31704	314.35686	90.56199	17.84322	0.2135019	0.17835417	3.1256994	20	—	—
416505 2003 <i>YV</i> <sub>40</sub>	15.7	X	335.20845	349.27042	107.10122	18.08172	0.1692871	0.17433927	3.1735053	20	—	—
416506 2003 <i>YM</i> <sub>44</sub>	15.9	X	305.00619	279.39244	298.62065	12.48457	0.0967161	0.18595460	3.0399383	20	1 28.9	20.2
416507 2003 <i>YF</i> <sub>46</sub>	16.0	X	315.99646	159.66941	322.55702	14.38739	0.2343438	0.17486233	3.1671701	20	—	—
416508 2003 <i>YB</i> <sub>63</sub>	15.0	X	269.00161	268.14483	292.54488	21.48635	0.2284058	0.17489536	3.1667749	20	—	—
416509 2003 <i>YN</i> <sub>65</sub>	16.3	X	330.16390	346.89839	108.44776	14.65297	0.2566756	0.17425549	3.1745225	20	—	—
416510 2003 <i>YF</i> <sub>70</sub>	17.8	X	31.12564	117.96368	288.99881	15.71183	0.1207256	0.35670270	1.9690880	20	—	—
416511 2003 <i>YT</i> <sub>77</sub>	15.4	X	332.04458	224.46993	282.56416	17.10775	0.1979217	0.18049840	3.1008956	20	—	—
416512 2003 <i>YK</i> <sub>92</sub>	16.1	X	39.20493	353.54252	63.14625	10.17486	0.1307930	0.18423490	3.0588261	20	—	—
416513 2003 <i>YU</i> <sub>93</sub>	13.5	X	109.19803	197.21059	282.42495	14.84662	0.0743444	0.08311786	5.2000377	20	5 14.0	20.6
416514 2003 <i>YP</i> <sub>96</sub>	15.8	X	24.15542	288.72033	98.50285	9.63550	0.3090455	0.17996027	3.1070742	20	—	—
416515 2003 <i>YV</i> <sub>111</sub>	16.4	X	33.30944	142.30261	292.84553	10.59452	0.2280303	0.18506766	3.0496431	20	—	—
416516 2003 <i>YC</i> <sub>112</sub>	17.5	X	226.46775	23.77927	39.14392	6.21625	0.1587005	0.27466488	2.3438724	20	7 9.1	21.0
416517 2003 <i>YK</i> <sub>113</sub>	17.5	X	212.17211	332.94561	116.18138	9.87565	0.1739850	0.27310152	2.3528088	20	7 27.2	21.0
416518 2003 <i>YU</i> <sub>119</sub>	17.4	X	239.91230	335.09396	58.34423	5.43554	0.1978882	0.27207524	2.3587217	20	6 8.3	21.0
416519 2003 <i>YY</i> <sub>119</sub>	16.7	X	300.36045	63.02091	93.92840	27.44014	0.2568991	0.17543012	3.1603361	20	—	—
416520 2003 <i>YT</i> <sub>123</sub>	17.6	X	195.18028	12.03000	92.87362	3.24463	0.1535266	0.27507898	2.3415195	20	8 1.9	21.0
416521 2003 <i>YR</i> <sub>124</sub>	17.3	X	337.67751	209.55842	309.67916	18.17895	0.0704187	0.36424479	1.9418119	20	—	—
416522 2003 <i>YX</i> <sub>134</sub>	15.7	X	341.04423	348.48797	84.01649	16.85017	0.2547877	0.17392778	3.1785087	20	—	—
416523 2003 <i>YM</i> <sub>141</sub>	17.3	X	208.98574	30.59196	33.43693	9.47485	0.1779466	0.27097684	2.3650914	20	6 19.2	21.2
416524 2003 <i>YO</i> <sub>146</sub>	16.1	X	349.29447	30.89409	99.58435	17.90457	0.1797257	0.17820015	3.1275001	20	—	—
416525 2003 <i>YD</i> <sub>170</sub>	15.6	X	330.27818	223.00544	300.22796	17.06436	0.2551354	0.18121544	3.0927103	20	—	—
416526 2003 <i>YK</i> <sub>171</sub>	16.3	X	9.90214	86.33548	335.37946	8.63583	0.2397323	0.17757395	3.1348484	20	—	—
416527 2003 <i>YY</i> <sub>172</sub>	17.8	X	223.04737	173.42836	244.50044	2.58994	0.1903107	0.27469325	2.3437110	20	6 24.8	21.3
416528 2003 <i>YG</i> <sub>181</sub>	16.1	X	65.73528	314.69913	118.22272	10.68211	0.1686234	0.18615604	3.0377449	20	2 2.3	19.7
416529 2003 <i>YR</i> <sub>181</sub>	17.8	X	179.49665	200.96011	287.03298	1.55998	0.1466564	0.27038454	2.3685441	20	8 15.6	21.4
416530 2003 <i>YN</i> <sub>182</sub>	16.0	X	344.55618	146.42881	288.99359	15.32634	0.1999935	0.17341835	3.1847304	20	—	—
416531 2004 <i>AK</i> <sub>6</sub>	16.5	X	272.31223	46.32029	104.43678	6.20162	0.1156855	0.17049664	3.2210107	20	12 17.6	20.6
416532 2004 <i>AX</i> <sub>6</sub>	16.0	X	294.92056	81.92097	113.31941	22.67428	0.1410765	0.17985839	3.1082474	20	—	—
416533 2004 <i>AW</i> <sub>11</sub>	15.5	X	7.81670	164.87765	257.83623	10.05229	0.0733807	0.17774520	3.1328346	20	—	—
416534 2004 <i>BQ</i> <sub>6</sub>	17.3	X	46.80866	319.05885	135.47622	23.81358	0.0898395	0.36584402	1.9361489	20	—	—
416535 2004 <i>BD</i> <sub>13</sub>	16.6	X	135.50737	99.14155	123.28973	25.87551	0.2435956	0.27518980	2.3408909	20	11 13.9	21.2
416536 2004 <i>BV</i> <sub>16</sub>	16.0	X	343.45664	355.71709	95.89214	16.89815	0.2437516	0.17525405	3.1624525	20	—	—
416537 2004 <i>BW</i> <sub>38</sub>	17.5	X	159.52554	32.15341	106.52890	7.36528	0.2209110	0.26996274	2.3710106	20	8 11.7	21.4
416538 2004 <i>BM</i> <sub>47</sub>	15.1	X	110.38990	9.33739	291.28950	12.81204	0.0565244	0.17010623	3.2259371	20	12 21.5	19.9
416539 2004 <i>BE</i> <sub>50</sub>	15.5	X	34.97252	255.62524	125.74845	22.69928	0.4044894	0.17781666	3.1319952	20	—	—
416540 2004 <i>BB</i> <sub>55</sub>	17.5	X	160.23630	323.55563	129.77263	11.96708	0.1921688	0.26379737	2.4078111	20	6 14.2	21.6
416541 2004 <i>BV</i> <sub>57</sub>	17.1	X	106.77616	349.89942	138.50540	15.09532	0.2337993	0.25770601	2.4456052	20	6 13.4	21.1
416542 2004 <i>BG</i> <sub>62</sub>	16.0	X	329.56229	338.69481	108.43691	12.46132	0.1026772	0.17158157	3.2074184	20	12 25.6	20.1
416543 2004 <i>BX</i> <sub>63</sub>	15.3	X	221.79940	297.10514	305.23750	21.20908	0.2341896	0.17326786	3.1865742	20	—	—
416544 2004 <i>BA</i> <sub>64</sub>	15.8	X	41.09889	325.78659	109.68528	10.19868	0.0328370	0.18033564	3.1027611	20	—	—
416545 2004 <i>BX</i> <sub>68</sub>	15.7	X	351.65338	271.16923	221.15235	23.70200	0.3113842	0.17903695	3.1177475	20	—	—
416546 2004 <i>BE</i> <sub>69</sub>	15.8	X	316.69063	89.66297	46.06512	13.97763	0.2602058	0.17546966	3.1598614	20	—	—
416547 2004 <i>BX</i> <sub>7</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>
416561 2004 CD <sub>58</sub>	15.6	X	301.40864	99.90804	88.47040	14.54615	0.2345713	0.17512037	3.1640616	20	—	—
416562 2004 CK <sub>116</sub>	17.7	X	179.03540	350.76472	84.76978	2.32707	0.1587016	0.26406489	2.4061846	20	6 6.7	21.5
416563 2004 CH <sub>118</sub>	16.1	X	312.67583	70.24089	136.95692	17.33557	0.2772498	0.18006448	3.1058753	20	1 2.6	20.6
416564 2004 CM <sub>128</sub>	16.0	X	19.84006	313.96852	156.76558	16.45207	0.1892442	0.18178680	3.0862267	20	—	—
416565 2004 DG <sub>3</sub>	17.6	X	167.91555	281.23584	159.45222	3.58169	0.1965099	0.26126763	2.4233286	20	6 3.9	21.5
416566 2004 DB <sub>60</sub>	15.9	X	36.86694	282.05585	154.47344	16.80827	0.2332753	0.17975294	3.1094629	20	—	—
416567 2004 EB	17.1	X	310.59679	238.34884	21.12304	21.10229	0.6586189	0.17896714	3.1185582	20	1 21.7	22.9
416568 2004 EL <sub>20</sub>	16.2	X	359.41613	95.09477	45.11286	25.07864	0.2936287	0.17874647	3.1211243	20	—	—
416569 2004 ET <sub>28</sub>	16.2	X	310.41464	271.14122	168.38440	6.08587	0.2174830	0.16301887	3.3187724	20	11 6.5	19.9
416570 2004 EA <sub>31</sub>	17.9	X	314.70308	178.33529	0.09973	19.89816	0.0425770	0.35770482	1.9654086	20	—	—
416571 2004 EY <sub>41</sub>	15.5	X	338.66979	165.62653	13.34946	17.25589	0.1442758	0.17881332	3.1203464	20	1 28.7	19.8
416572 2004 EM <sub>42</sub>	16.9	X	94.70863	92.59777	109.11639	10.00730	0.1640885	0.26085687	2.4258719	20	8 30.9	20.5
416573 2004 EK <sub>61</sub>	18.2	X	87.74745	326.69097	178.95586	11.70389	0.2292944	0.25523147	2.4613870	20	6 13.5	21.8
416574 2004 EY <sub>80</sub>	15.6	X	308.45972	70.49702	65.18136	7.75375	0.1430475	0.16893220	3.2408661	20	—	—
416575 2004 EZ <sub>82</sub>	17.0	X	66.46681	154.49295	43.41200	9.12477	0.1165395	0.25500508	2.4628435	20	7 11.2	20.2
416576 2004 EC <sub>86</sub>	15.9	X	351.56263	344.89737	127.30165	6.55463	0.1524287	0.17263177	3.1943971	20	—	—
416577 2004 EP <sub>98</sub>	16.2	X	201.69300	192.12678	151.92061	4.29124	0.2151564	0.24449597	2.5329206	20	3 5.1	20.4
416578 2004 FX <sub>86</sub>	15.8	X	324.96495	180.04293	16.05121	16.21130	0.1466340	0.17921434	3.1156898	20	1 29.3	20.2
416579 2004 FF <sub>97</sub>	17.0	X	101.22334	40.96962	161.25643	14.09020	0.1716395	0.26294922	2.4129859	20	9 5.4	20.6
416580 2004 GR <sub>2</sub>	15.4	X	312.26520	95.92481	78.05785	31.58380	0.2839848	0.17285845	3.1916038	20	—	—
416581 2004 GP <sub>81</sub>	16.5	X	140.04613	178.90782	202.18244	10.00420	0.1596324	0.23721223	2.5845087	20	2 18.9	20.6
416582 2004 HA <sub>26</sub>	16.4	X	277.03076	197.73724	51.60092	9.77913	0.2033054	0.23405404	2.6077059	20	1 18.7	20.6
416583 2004 JH	17.0	X	185.62664	63.03044	234.61778	7.46658	0.2225910	0.22242645	2.6978125	20	—	—
416584 2004 JB <sub>12</sub>	18.9	X	319.14003	152.25166	151.99761	8.43973	0.5161648	0.30467215	2.1873295	20	3 24.3	21.4
416585 2004 JU <sub>24</sub>	16.5	X	188.59347	56.16348	238.06121	12.19811	0.2502286	0.22271733	2.6954630	20	—	—
416586 2004 JX <sub>24</sub>	16.8	X	262.66884	170.65620	61.96012	8.84762	0.1746344	0.22906308	2.6454486	20	—	—
416587 2004 JQ <sub>25</sub>	16.1	X	191.81730	260.72584	60.23259	16.57614	0.2373281	0.22691396	2.6621258	20	2 5.8	21.0
416588 2004 JS <sub>31</sub>	17.5	X	349.11425	50.21048	268.71507	4.93980	0.3034409	0.31508173	2.1388840	20	10 1.6	18.2
416589 2004 KV	17.0	X	187.74556	339.04098	278.18232	9.61025	0.2797716	0.21847584	2.7302376	20	—	—
416590 2004 LM <sub>1</sub>	15.7	X	310.21300	68.96017	134.89388	26.81348	0.2170808	0.17071670	3.2182420	20	1 6.6	20.5
416591 2004 LC <sub>2</sub>	18.5	X	74.67694	290.64003	84.32147	10.98149	0.7344623	0.38703364	1.8648199	20	2 10.2	18.1
416592 2004 LP <sub>3</sub>	15.9	X	282.59427	359.67635	285.22575	19.53264	0.2600844	0.23305745	2.6151347	20	2 19.2	20.4
416593 2004 LB <sub>13</sub>	16.7	X	197.46859	174.77071	113.74456	8.14456	0.2601595	0.22338699	2.6900734	20	—	—
416594 2004 NC <sub>6</sub>	16.2	X	167.64282	9.37296	286.81073	13.39291	0.2232139	0.21409798	2.7673304	20	—	—
416595 2004 NZ <sub>8</sub>	16.1	X	118.64064	302.76862	84.63252	8.05280	0.5175693	0.21334174	2.7738661	20	3 19.9	21.3
416596 2004 NA <sub>15</sub>	16.3	X	335.05199	1.30816	288.52990	14.55241	0.1133355	0.24267298	2.5455899	20	6 14.1	19.1
416597 2004 OS <sub>4</sub>	18.0	X	320.42976	29.56785	298.62900	5.16984	0.2476140	0.30678174	2.1772905	20	7 1.1	18.9
416598 2004 PR <sub>13</sub>	17.6	X	332.04097	320.58083	328.35870	7.58766	0.2311568	0.30326648	2.1940833	20	5 17.7	19.2
416599 2004 PJ <sub>54</sub>	16.8	X	138.37709	167.68865	154.25430	17.59072	0.2453835	0.21024172	2.8010667	20	—	—
416600 2004 PV <sub>68</sub>	16.5	X	61.51656	96.73466	303.92750	12.75418	0.3323777	0.20493240	2.8492395	20	1 2.4	18.9
416601 2004 PW <sub>78</sub>	16.4	X	188.33028	79.94495	173.54896	7.63294	0.1782988	0.21123212	2.7923043	20	—	—
416602 2004 PW <sub>79</sub>	16.1	X	290.92684	354.14329	318.97947	14.56288	0.1295931	0.23468094	2.6030599	20	4 25.4	19.9
416603 2004 PO <sub>99</sub>	18.4	X	8.20209	203.29881	101.92171	3.72360	0.1988953	0.31203440	2.1527870	20	10 9.2	20.0
416604 2004 PD <sub>104</sub>	18.1	X	301.17548	68.87673	283.42647	4.62912	0.2209805	0.30370214	2.1919845	20	7 2.4	19.6
416605 2004 PV <sub>116</sub>	17.5	X	122.99702	224.47185	141.15681	4.39252	0.1695401	0.21351963	2.7723253	20	1 19.7	21.5
416606 2004 QK <sub>2</sub>	15.9	X	257.96174	24.76277	343.32169	29.24603	0.0707603	0.23906002	2.5711737	20	6 9.5	20.2
416607 2004 QJ <sub>28</sub>	16.8	X	82.76092	200.43190	215.45262	8.51512	0.1436321	0.21190703	2.7863723	20	1 25.5	20.4
416608 2004 RH <sub>27</sub>	18.2	X	330.50369	192.27169	132.65036	4.35733	0.1697376	0.30583560	2.1817787	20	8 2.8	19.3
416609 2004 RW <sub>34</sub>	16.7	X	126.83702	3.99940	15.88373	8.02931	0.2704049	0.21377839	2.7700876	20	2 23.6	21.1
416610 2004 RE <sub>38</sub>	18.1	X	13.14431	258.93931	53.67327	3.86114	0.1662865	0.31143005	2.1555712	20	10 22.6	19.9
416611 2004 RB <sub>44</sub>	17.0	X	107.24962	160.03891	203.69273	8.05086	0.2018844	0.20899531	2.8121924	20	1 3.6	20.9
416612 2004 RQ <sub>44</sub>	17.3	X	109.65518	53.11889	310.83440	3.79685	0.1830419	0.20938548	2.8086978	20	1 5.4	21.0
416613 2004 RD <sub>47</sub>	17.0	X	191.34086	339.30932	343.99382	8.46639	0.1681210	0.21819784	2.7325561	20	2 4.3	21.5
416614 2004 RD <sub>70</sub>	18.0	X	293.10982	353.59398	8.65143	4.44303	0.2034547	0.30316683	2.1945641	20	7 7.2	20.1
416615 2004 RS <sub>93</sub>	16.7	X	146.90200	125.56101	262.61103	6.75660	0.2134030	0.21904587	2.7254989	20	3 10.8	21.3
416616 2004 RX <sub>97</sub>	16.3	X	298.95241	296.35884	335.20934	16.69895	0.2204657	0.23121095	2.6290395	20	3 3.8	19.8
416617 2004 RL <sub>136</sub>	16.1	X	128.86903	127.69311	221.80965	14.68799	0.1431136	0.21002991	2.8029496	20	1 1.9	20.4
416618 2004 RD <sub>138</sub>	16.0	X	163.25814	90.36933	218.35047	12.19234	0.2194403	0.21271240	2.7793347	20	—	—
416619 2004 RV <sub>142</sub>	16.0	X	124.61018	97.67736	257.32510	10.82103	0.0959317	0.20973910	2.8055399	20	—	—
416620 2004 RK <sub>162</sub>	17.9	X	250.68762	119.28918	304.16580	5.38934	0.1503773	0.30429160	2.1891528	20	8 10.9	20.3
416621 2004 RE <sub>178</sub>	16.8	X	93.75294	43.97862	310.70375	7.31986	0.3478188	0.20428466	2.8552592	20	—	—
416622 2004 RU <sub>182</sub>	16.0	X	106.33692	4.54168	388.66296	14.80492	0.1410703	0.20446630	2.8535680	20	—	—
416623 2004 RK <sub>185</sub>	18.2	X	309.98548	99.68832	253.41628	3.90163	0.1632359	0.30459658	2.1876913	20	8 1.8	19.8
416624 2004 RG <sub>215</sub>	15.8	X	162.18640	49.85096	307.85131	12.47611	0.2509193	0.21625545	2.7488941	20	2 19.6	20.7
416625 2004 RU <sub>227</sub>	15.8	X	95.15048	7.13308	6.20013	15.25187	0.1429883	0.20450463	2.8532114	20	—	—
416626 2004 RB <sub>233</sub>	17.0	X	118.90764	330.76204	16.88113	8.65716	0.1688948	0.20559337	2.8431295	20	—	—
416627 2004 RV <sub>237</sub>	17.5	X	126.03595	167.26039	193.15301	4.11714	0.0916472	0.21105757	2.7938436	20	1 6.8	21.4
416628 2004 RV <sub>244</sub>	17.2	X	172.60044	292.34375	30.12665	2.86892	0.1119368	0.21408191	2.7674688	20	1 13.9	21.4
416629 2004 RZ <sub>249</sub>	16.8	X	153.12445	348.35534	350.29371	7.99853	0.2101573	0.21260330	2.7802854	20	1 23.7	21.3
416630 2004 RF <sub>305</sub>	17.0	X	97.36188	159.39043	299.22565	4.48388	0.0359598	0.22369189	2.6876284	20	3 23.3	20.6
416631 2004 RM <sub>312</sub>	17.5	X	319.66292	328.75922	29.18165	6.74146	0.2233825	0.30688501	2.1768020	20	9 6.3	18.5
416632 2004 RO <sub>316</sub>	17.4	X	7.03759	37.36719	267.77581	6.66157	0.2198898	0.30940024	2.1649886	20	10 2.9	19.2
416633 2004 RA <sub>332</sub>	16.6	X	135.75166	298.31553	76.97852	10.03913	0.1877732	0.21400810	2.7681051	20	2 19.8	21.0
416634 2004 RZ <sub>333</sub>	16.2	X	128.71749	278.12007	135.92473	13.84974	0.2252356	0.21746081	2.73872			



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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>
416641 2004 TW <sub>27</sub>	16.3	X	36.33053	29.72763	14.13989	15.30842	0.1288551	0.19973964	2.8984103	20	—	—
416642 2004 TZ <sub>45</sub>	16.3	X	324.47470	39.22839	25.34776	10.23344	0.0917874	0.18822399	3.0154541	20	11 21.8	20.1
416643 2004 TK <sub>73</sub>	17.2	X	60.66956	27.64358	18.28928	1.99282	0.0707557	0.20243466	2.8726285	20	—	—
416644 2004 TP <sub>76</sub>	18.0	X	347.76942	138.60424	188.20147	3.64845	0.1767594	0.30697581	2.1763728	20	9 21.9	19.2
416645 2004 TV <sub>76</sub>	18.1	X	201.41901	57.31324	24.96266	2.03382	0.0098814	0.29821829	2.2187747	20	7 21.4	20.5
416646 2004 TQ <sub>82</sub>	17.7	X	44.43005	56.92286	215.06363	3.59912	0.1642787	0.30800354	2.1715287	20	10 7.8	20.2
416647 2004 TA <sub>96</sub>	18.5	X	294.84291	121.25071	202.26581	6.28584	0.1722199	0.29594397	2.2301276	20	5 15.5	20.8
416648 2004 TY <sub>99</sub>	17.2	X	88.01597	34.43041	39.74105	5.62708	0.1439051	0.21136842	2.7911037	20	3 1.9	20.9
416649 2004 TP <sub>101</sub>	17.9	X	338.88211	303.73699	16.77755	6.18495	0.2182082	0.30290558	2.1958257	20	8 21.5	18.9
416650 2004 TW <sub>102</sub>	16.4	X	150.83825	75.46974	287.79081	7.13481	0.2961182	0.21243327	2.7817688	20	2 20.8	21.4
416651 2004 TL <sub>117</sub>	17.9	X	245.83127	187.11184	169.53200	3.79995	0.1687078	0.29353729	2.2423008	20	4 30.1	21.2
416652 2004 TX <sub>136</sub>	16.4	X	60.90906	170.28103	254.03586	7.59670	0.3006069	0.20325416	2.8649019	20	1 26.0	19.2
416653 2004 TO <sub>159</sub>	16.3	X	142.02515	337.41001	24.49489	10.34129	0.1366512	0.20957413	2.8070120	20	2 5.4	20.7
416654 2004 TF <sub>174</sub>	16.4	X	131.33640	7.51104	3.98795	8.45292	0.1587543	0.21226066	2.7832767	20	2 6.8	20.6
416655 2004 TJ <sub>185</sub>	16.8	X	28.50663	357.42160	8.61771	9.38949	0.0651732	0.19215878	2.9741479	20	12 9.3	21.0
416656 2004 TZ <sub>189</sub>	17.3	X	130.54429	326.41468	19.35072	2.10846	0.0643487	0.20695785	2.8306192	20	—	—
416657 2004 TU <sub>208</sub>	18.0	X	293.84439	23.86558	354.59504	3.59713	0.1982286	0.30382550	2.1913911	20	8 6.8	19.8
416658 2004 TC <sub>212</sub>	18.1	X	221.20287	242.95837	213.66959	1.72799	0.0590979	0.30175102	2.2014233	20	9 1.6	20.6
416659 2004 TA <sub>226</sub>	18.1	X	231.20270	14.17097	30.54299	5.62890	0.0573299	0.29727921	2.2234448	20	7 1.9	20.8
416660 2004 TQ <sub>234</sub>	17.0	X	122.02728	359.74690	27.75021	4.73536	0.0832119	0.21026350	2.8008733	20	2 5.6	20.9
416661 2004 TQ <sub>266</sub>	16.0	X	284.75354	262.75127	212.19633	14.29908	0.2750430	0.18586174	3.0409507	20	11 2.8	19.5
416662 2004 TO <sub>277</sub>	16.8	X	86.32762	348.29865	43.98066	11.54998	0.1671364	0.20348441	2.8627403	20	1 9.5	20.6
416663 2004 TZ <sub>280</sub>	18.6	X	244.13216	275.03056	118.04751	1.21585	0.1674637	0.29443619	2.2377347	20	6 16.7	21.6
416664 2004 TB <sub>328</sub>	16.4	X	124.31928	300.49917	64.65589	11.18679	0.2950138	0.21000476	2.8031734	20	2 8.3	21.0
416665 2004 TQ <sub>335</sub>	16.7	X	59.43385	192.27755	224.29236	6.92240	0.0767222	0.20179008	2.8787427	20	—	—
416666 2004 TX <sub>350</sub>	16.5	X	124.99644	347.56701	58.80284	4.97365	0.1037582	0.21200665	2.7854994	20	3 6.6	20.5
416667 2004 TH <sub>355</sub>	16.1	X	72.94537	342.70511	60.50634	10.50890	0.2015683	0.20529249	2.8459068	20	1 6.8	19.4
416668 2004 UU <sub>4</sub>	17.0	X	217.70877	117.19242	249.51519	23.32952	0.2252305	0.28738034	2.2742141	20	4 5.5	21.2
416669 2004 UB <sub>8</sub>	16.8	X	55.09035	101.43141	243.63330	11.11943	0.3910687	0.19402475	2.9550486	20	—	—
416670 2004 VG <sub>3</sub>	17.9	X	276.77076	324.35494	60.95347	3.80384	0.1584949	0.29922858	2.2137776	20	7 23.7	20.1
416671 2004 VA <sub>38</sub>	17.3	X	320.42959	318.60103	40.60949	1.59855	0.1696022	0.17576319	3.1563423	20	8 15.9	20.9
416672 2004 VT <sub>40</sub>	16.1	X	170.28495	289.47101	61.60692	7.25321	0.0354815	0.20998990	2.8033056	20	2 12.7	20.2
416673 2004 VG <sub>53</sub>	17.9	X	9.56918	8.48836	56.47406	22.20539	0.1044277	0.38297082	1.8779856	20	—	—
416674 2004 VP <sub>107</sub>	17.4	X	33.50507	44.71115	35.65953	2.45708	0.0461458	0.20181133	2.8785405	20	—	—
416675 2004 XJ <sub>3</sub>	17.5	X	68.56794	153.57832	242.06966	35.93728	0.5571677	0.20293642	2.8678915	20	2 2.6	21.7
416676 2004 XO <sub>5</sub>	17.0	X	316.44821	101.71220	270.02439	21.94196	0.3103599	0.30208354	2.1998075	20	8 16.9	18.7
416677 2004 XQ <sub>5</sub>	18.4	X	285.79123	58.99077	328.96477	4.01859	0.1345750	0.29971850	2.2113646	20	8 16.6	20.5
416678 2004 XT <sub>5</sub>	16.4	X	204.48726	151.95812	241.45752	26.33169	0.2895817	0.28601485	2.2814467	20	5 2.2	20.6
416679 2004 XR <sub>44</sub>	15.9	X	43.99607	136.90984	263.33373	9.24343	0.0963286	0.19444969	2.9507418	20	—	—
416680 2004 XD <sub>50</sub>	18.4	X	51.14936	63.76371	106.05865	20.65660	0.3765388	0.39959884	1.8255199	20	6 28.1	19.5
416681 2004 XE <sub>57</sub>	16.6	X	4.20381	167.88898	278.29774	7.69805	0.0616759	0.19041812	2.9922453	20	—	—
416682 2004 XH <sub>59</sub>	15.9	X	327.02704	71.06171	78.78133	11.88952	0.0909044	0.19258043	2.9698051	20	—	—
416683 2004 XB <sub>79</sub>	15.7	X	293.35892	61.34345	75.82930	17.48330	0.1688535	0.18566066	3.0431460	20	12 30.4	19.2
416684 2004 XG <sub>87</sub>	15.8	X	53.32258	324.48704	94.70560	16.61634	0.1879267	0.19544813	2.9406841	20	—	—
416685 2004 XD <sub>90</sub>	16.8	X	50.60980	18.90223	33.25788	2.44123	0.0898709	0.19579687	2.9371912	20	—	—
416686 2004 XK <sub>97</sub>	17.6	X	127.97026	218.42549	304.67554	5.61255	0.1590911	0.28613826	2.9067907	20	8 11.5	20.9
416687 2004 XJ <sub>126</sub>	15.9	X	145.34296	228.61225	98.89039	3.37219	0.0649001	0.19887374	2.9068174	20	—	—
416688 2004 XM <sub>129</sub>	16.5	X	39.48289	2.90824	58.89837	10.03184	0.1706894	0.19657789	2.9294062	20	—	—
416689 2004 XJ <sub>148</sub>	17.2	X	102.41793	45.95614	108.94508	9.02994	0.1378920	0.28180892	2.3040906	20	7 1.6	20.1
416690 2004 XP <sub>160</sub>	17.6	X	199.02199	109.05388	323.26956	5.32961	0.1273423	0.28625156	2.2801888	20	6 24.3	20.9
416691 2004 YS <sub>7</sub>	18.0	X	240.44071	299.82398	93.51120	4.90180	0.1868839	0.29292279	2.2454356	20	6 10.6	21.0
416692 2004 YO <sub>12</sub>	15.9	X	303.27476	18.25133	106.24232	11.57112	0.0907615	0.18368735	3.0649017	20	—	—
416693 2004 YU <sub>20</sub>	13.3	X	189.84621	288.76839	124.14882	19.30302	0.0143800	0.08505174	5.1209114	20	5 27.8	20.4
416694 2004 YR <sub>32</sub>	17.6	X	310.33329	88.56182	90.34776	20.51756	0.7002903	0.18393816	3.0621150	20	—	—
416695 2005 AM <sub>10</sub>	17.9	X	239.59248	332.13015	123.43905	8.65525	0.2157371	0.29684565	2.2256093	20	9 4.0	20.8
416696 2005 AV <sub>10</sub>	15.7	X	264.43469	216.05361	322.80424	13.45210	0.1926033	0.18214121	3.0822219	20	—	—
416697 2005 AG <sub>20</sub>	16.8	X	70.02340	155.97766	276.82720	5.98794	0.3016296	0.20127699	2.8836328	20	2 23.4	20.1
416698 2005 AV <sub>21</sub>	17.8	X	149.30592	220.89974	113.55139	24.20159	0.0273573	0.38491478	1.8716573	20	—	—
416699 2005 AK <sub>34</sub>	15.9	X	281.88477	234.55344	290.69312	7.96539	0.1567584	0.18466020	3.0541276	20	—	—
416700 2005 AR <sub>34</sub>	16.0	X	110.21539	344.82573	123.11048	17.41825	0.0419215	0.21016633	2.8017365	20	5 2.9	20.3
416701 2005 AA <sub>45</sub>	18.0	X	164.98121	144.16692	337.82196	4.17071	0.1716466	0.28507677	2.2864489	20	7 26.1	21.5
416702 2005 AY <sub>47</sub>	18.4	X	222.30486	305.06832	121.19948	2.52479	0.2001451	0.28965356	2.2622997	20	7 4.9	21.7
416703 2005 AY <sub>59</sub>	16.3	X	302.90654	25.46308	134.32717	11.93480	0.2213703	0.18584614	3.0411209	20	—	—
416704 2005 AK <sub>64</sub>	18.3	X	153.44913	214.01296	282.51498	2.25960	0.0743628	0.28633035	2.2797705	20	7 31.6	21.2
416705 2005 AR <sub>64</sub>	13.8	X	97.24094	2.42257	124.05019	12.73976	0.0663599	0.08214870	5.2408565	20	5 14.0	20.9
416706 2005 AS <sub>65</sub>	17.2	X	290.11298	300.29179	223.13767	0.81457	0.2550021	0.18439245	3.0570834	20	—	—
416707 2005 AL <sub>69</sub>	18.5	X	218.67998	69.73303	25.01602	1.24628	0.3283874	0.29267901	2.2466823	20	7 29.5	22.4
416708 2005 AL <sub>74</sub>	13.0	X	308.35523	149.85231	124.59395	25.78984	0.0382486	0.08060634	5.3074988	20	5 6.2	20.2
416709 2005 AB <sub>77</sub>	16.6	X	359.62741	148.94333	342.83956	7.46572	0.1196606	0.19241727	2.9714837	20	—	—
416710 2005 BR <sub>5</sub>	18.3	X	132.29531	76.22133	70.94800	3.29930	0.1728334	0.28371006	2.2937860	20	7 28.1	21.8
416711 2005 BX <sub>15</sub>	16.0	X	224.07175	78.02876	128.94090	17.31590	0.0695009	0.18161016	3.0882275	20	—	—
416712 2005 BD <sub>28</sub>	17.9	X	30.51890	251.52555	128.93918	23.82327	0.0667156	0.37348098	1.9096644	20	—	—
416713 2005 BR <sub>33</sub>	13.6	X	170.32932	278.22096	128.03525	19.95211	0.0449801	0.08186417	5.2529928	20	5 1.9	21.0
416714 2005 BC <sub>38</sub>	16.1	X	194.30616	97.37022	117.13341	10.27582	0.0325087	0.17832407	3.1260511			

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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>
416721 2005 CW <sub>62</sub>	17.9	X	168.88998	80.48758	54.50930	3.61079	0.1600047	0.28612195	2.2808774	20	8 17.3	21.4
416722 2005 CZ <sub>72</sub>	16.0	X	6.65940	82.08679	337.26900	15.72376	0.1228644	0.18098388	3.0953478	20	—	—
416723 2005 CM <sub>76</sub>	16.0	X	307.98746	59.21910	127.68845	20.21395	0.0596559	0.19218903	2.9738358	20	1 1.1	20.4
416724 2005 CN <sub>76</sub>	15.4	X	261.01559	156.33962	327.30585	27.49907	0.1560182	0.17386793	3.1792382	20	10 8.9	20.4
416725 2005 CQ <sub>78</sub>	17.8	X	189.18532	4.88684	131.86862	5.66314	0.1442829	0.28923893	2.2644612	20	9 10.3	21.0
416726 2005 CY <sub>78</sub>	16.2	X	290.79900	358.47083	168.91574	18.56367	0.2334263	0.18284752	3.0742794	20	—	—
416727 2005 CV <sub>79</sub>	16.3	X	245.08365	38.58017	153.21178	13.45823	0.1898857	0.17719292	3.1393408	20	12 23.8	21.0
416728 2005 CW <sub>80</sub>	17.6	X	106.78273	269.26545	250.14288	5.84856	0.1634525	0.27891428	2.3200048	20	7 14.9	20.9
416729 2005 DC <sub>1</sub>	17.3	X	35.43742	21.78807	78.40156	22.81172	0.0841217	0.38549811	1.8697687	20	—	—
416730 2005 EF <sub>2</sub>	17.5	X	166.24465	341.38879	349.96874	15.95297	0.0499001	0.38371928	1.8755427	20	—	—
416731 2005 EO <sub>8</sub>	16.5	X	269.29467	39.33489	136.83541	12.05823	0.1181929	0.18276279	3.0752295	20	—	—
416732 2005 EJ <sub>17</sub>	17.0	X	318.07511	6.82051	105.93872	0.29250	0.1500379	0.17829184	3.1264279	20	—	—
416733 2005 EA <sub>27</sub>	17.3	X	79.43173	180.21340	353.83480	8.62123	0.1149826	0.27378503	2.3488913	20	6 25.3	20.3
416734 2005 EA <sub>31</sub>	17.4	X	42.24807	205.94110	17.87585	5.28650	0.1557215	0.27354989	2.3502372	20	7 19.5	19.9
416735 2005 EF <sub>34</sub>	17.3	X	51.53587	58.64234	122.51772	4.35794	0.0826886	0.27064762	2.3670090	20	5 18.7	19.9
416736 2005 EJ <sub>43</sub>	15.9	X	309.55993	160.91645	0.25595	9.27799	0.0386866	0.18388664	3.0626869	20	—	—
416737 2005 ER <sub>46</sub>	16.1	X	230.88456	3.17986	171.44248	9.35004	0.1610161	0.17321638	3.1702056	20	11 22.2	21.0
416738 2005 EK <sub>52</sub>	16.0	X	325.71124	136.54753	320.13117	10.25573	0.1000766	0.18105057	3.0945876	20	—	—
416739 2005 EH <sub>53</sub>	16.3	X	323.94160	305.31294	164.28097	16.02668	0.1930539	0.18054226	3.1003934	20	—	—
416740 2005 EP <sub>67</sub>	17.6	X	278.48215	131.94833	164.99102	7.40053	0.1231588	0.26581571	2.3956073	20	3 25.7	20.7
416741 2005 EX <sub>69</sub>	17.7	X	4.04344	60.22925	98.09135	10.61973	0.4530399	0.19435062	2.9517445	20	—	—
416742 2005 EG <sub>70</sub>	17.3	X	257.56255	224.10785	334.12800	17.51510	0.0717319	0.37729748	1.8967647	20	—	—
416743 2005 EY <sub>74</sub>	15.7	X	273.06707	151.16360	3.23564	9.46897	0.0674977	0.17488272	3.1669275	20	12 30.9	20.1
416744 2005 ES <sub>86</sub>	15.3	X	209.43667	110.11304	93.22066	18.40434	0.0660484	0.17076033	3.2176938	20	12 12.5	20.1
416745 2005 EG <sub>93</sub>	15.9	X	243.16734	6.64413	179.61546	17.06337	0.0859502	0.17453256	3.1711618	20	12 17.5	20.7
416746 2005 EO <sub>93</sub>	15.5	X	238.35155	61.45452	102.84919	14.30285	0.1019484	0.17135158	3.2102878	20	11 26.6	20.3
416747 2005 EH <sub>99</sub>	17.8	X	187.54760	242.05953	179.00385	3.31485	0.1721779	0.28376798	2.2934738	20	7 18.2	21.4
416748 2005 ET <sub>103</sub>	17.6	X	162.05383	279.42838	126.42235	5.98042	0.1153949	0.27370179	2.3493675	20	4 12.7	21.0
416749 2005 EK <sub>105</sub>	18.1	X	157.54056	333.33663	143.32673	3.92508	0.1222733	0.28238495	2.3009562	20	7 9.6	21.6
416750 2005 EC <sub>108</sub>	17.5	X	323.80139	286.57976	345.07516	5.11764	0.1205994	0.26937968	2.3744307	20	4 7.6	19.9
416751 2005 ES <sub>117</sub>	16.2	X	292.64090	348.16225	173.63495	17.09934	0.1635879	0.18008361	3.1056554	20	—	—
416752 2005 EL <sub>126</sub>	17.8	X	38.17744	8.82913	178.24384	2.92301	0.1436279	0.26579037	2.3957595	20	5 11.8	19.9
416753 2005 EY <sub>135</sub>	17.7	X	62.08497	63.69277	146.63032	4.19395	0.1834120	0.27427949	2.3460674	20	8 2.9	20.4
416754 2005 EM <sub>137</sub>	16.7	X	287.86917	138.99079	24.68468	5.56397	0.1220424	0.17680657	3.1439125	20	—	—
416755 2005 EB <sub>141</sub>	15.8	X	287.39818	189.35706	298.71179	9.49843	0.1794453	0.17800068	3.1298361	20	12 4.9	19.7
416756 2005 EW <sub>143</sub>	17.8	X	131.86810	145.44674	21.76557	1.64282	0.1407335	0.28170200	2.3046736	20	8 21.6	21.1
416757 2005 EJ <sub>148</sub>	17.3	X	106.74158	355.18593	153.12305	5.38666	0.1561556	0.27345050	2.3508066	20	6 29.4	20.7
416758 2005 EP <sub>155</sub>	16.0	X	292.72921	320.71113	187.68675	23.05091	0.1967269	0.17709573	3.1404893	20	—	—
416759 2005 ET <sub>169</sub>	16.6	X	103.08522	119.45161	120.15997	24.04232	0.2563175	0.28320829	2.2964945	20	11 11.1	21.0
416760 2005 EG <sub>193</sub>	18.0	X	136.26723	194.64164	347.67975	3.95237	0.1482897	0.28486646	2.2875741	20	9 14.8	21.5
416761 2005 EL <sub>200</sub>	15.3	X	263.97183	245.42039	272.80194	23.23184	0.2321550	0.17518878	3.1632379	20	11 30.2	19.7
416762 2005 EL <sub>202</sub>	17.5	X	147.13247	232.85847	68.75275	23.43771	0.0741835	0.37183810	1.9152852	20	—	—
416763 2005 EY <sub>213</sub>	16.3	X	323.80409	248.92983	296.70010	6.38263	0.2461170	0.18855634	3.0119098	20	—	—
416764 2005 EY <sub>215</sub>	17.2	X	341.24577	279.98372	259.28761	0.37080	0.2148421	0.19161433	2.9797790	20	1 14.1	20.5
416765 2005 ET <sub>218</sub>	17.4	X	151.41166	65.26577	104.90848	6.18802	0.1131061	0.28623797	2.2802610	20	9 17.5	20.8
416766 2005 EU <sub>218</sub>	17.6	X	117.53397	98.35770	90.48612	5.73971	0.1728028	0.28249010	2.3003852	20	9 8.9	21.1
416767 2005 EO <sub>233</sub>	15.5	X	255.12606	70.27317	114.01478	10.31908	0.0459934	0.17731350	3.1379174	20	—	—
416768 2005 EB <sub>234</sub>	17.5	X	108.54591	26.23877	124.48317	6.40805	0.1641310	0.27500731	2.3419263	20	7 5.8	20.8
416769 2005 EC <sub>237</sub>	16.5	X	251.14165	148.37005	3.32644	12.19396	0.1497490	0.17159385	3.2072655	20	11 13.1	21.2
416770 2005 ER <sub>245</sub>	15.4	X	45.01653	49.98778	355.47214	13.09197	0.0687854	0.17981080	3.1087958	20	—	—
416771 2005 EJ <sub>261</sub>	17.9	X	114.19494	172.04133	353.54690	2.24334	0.1437006	0.27708837	2.2301856	20	7 31.3	21.1
416772 2005 EQ <sub>272</sub>	14.1	X	65.97305	246.49344	293.92925	4.75426	0.0814509	0.08245736	5.2276995	20	6 6.1	20.9
416773 2005 EW <sub>274</sub>	17.9	X	98.52988	152.75137	24.50212	2.51439	0.1117391	0.27908050	2.3190835	20	7 25.7	20.9
416774 2005 EG <sub>286</sub>	15.9	X	267.55781	84.71294	93.02056	16.50373	0.1842083	0.17729385	3.1381493	20	—	—
416775 2005 EZ <sub>288</sub>	16.7	X	311.96530	184.93218	308.11776	9.99626	0.0855129	0.18338365	3.0682846	20	—	—
416776 2005 EM <sub>298</sub>	14.0	X	240.27324	311.56775	42.13999	1.49010	0.0399710	0.07895301	5.3813378	20	5 8.8	21.2
416777 2005 EM <sub>312</sub>	16.8	X	29.90314	312.88930	160.20658	9.74608	0.1971773	0.19262874	2.9693086	20	1 19.8	20.0
416778 2005 FY <sub>4</sub>	15.7	X	329.47445	239.50505	318.14421	15.17288	0.2911809	0.18905961	3.0065623	20	1 10.5	19.7
416779 2005 GR <sub>7</sub>	16.2	X	271.40067	93.99649	70.40715	25.32710	0.3139946	0.17527608	3.1621875	20	12 4.7	20.3
416780 2005 GZ <sub>9</sub>	17.2	X	358.57694	198.93087	273.21470	16.75648	0.0900612	0.37942659	1.8896624	20	—	—
416781 2005 GH <sub>12</sub>	16.5	X	338.63799	102.80043	40.62643	12.53807	0.2617341	0.18531098	3.0469730	20	—	—
416782 2005 GG <sub>19</sub>	16.3	X	283.99862	297.78298	198.45416	26.94579	0.2250713	0.17369971	3.1812904	20	12 2.7	20.6
416783 2005 GA <sub>37</sub>	16.3	X	264.63041	54.45468	132.31629	18.05869	0.2170973	0.17506600	3.1647167	20	—	—
416784 2005 GU <sub>50</sub>	15.2	X	291.83150	166.75545	21.42150	28.53425	0.1220626	0.18154902	3.0889209	20	—	—
416785 2005 GD <sub>51</sub>	15.4	X	323.29890	200.83257	319.16223	13.05801	0.1837742	0.18388879	3.0626630	20	—	—
416786 2005 GR <sub>53</sub>	17.1	X	150.39713	208.93641	3.44411	5.11526	0.1335050	0.28906770	2.2653554	20	11 6.1	20.6
416787 2005 GY <sub>56</sub>	17.9	X	80.49367	129.70635	65.28819	2.32070	0.1259214	0.27345492	2.3507813	20	7 28.9	20.9
416788 2005 GT <sub>66</sub>	16.7	X	227.84163	7.75434	196.97481	4.63244	0.1395951	0.17137475	3.2099985	20	12 24.2	21.5
416789 2005 GF <sub>68</sub>	15.4	X	307.28283	27.71706	111.81171	18.88271	0.1518949	0.17743185	3.1365219	20	—	—
416790 2005 GG <sub>69</sub>	15.4	X	298.83460	77.00098	96.06862	18.54679	0.1923990	0.18037063	3.1023598	20	—	—
416791 2005 GH <sub>71</sub>	16.9	X	326.23494	297.10487	166.90887	17.21640	0.2295502	0.18097584	3.0954395	20	—	—
416792 2005 GC <sub>83</sub>	16.9	X	323.75540	126.29554	30.35419	1.55368	0.1193983	0.18601434	3.0392874	20	—	—
416793 2005 GR <sub>83</sub>	18.2	X	82.65059	194.55350	336.85288	2.31151	0.1176741	0.27096650	2.3651516	20	6 25.9	21.1
416794 2005 GW <sub>84</sub>	17.6	X	71.01169	221.95916	300.03123	2.22110	0.0490274	0.26664897	2.3906139			

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>
416801 2005 GC <sub>120</sub>	19.6 <sup>m</sup>	X	143.73951	258.25883	67.96578	16.53110	0.4975210	0.75592667	1.1934831	20	—	—
416802 2005 GS <sub>124</sub>	15.3	X	295.51386	115.74829	50.29899	27.73802	0.1751388	0.18002018	3.1063848	20	—	—
416803 2005 GZ <sub>127</sub>	17.7	X	177.29560	293.17459	193.05346	21.81814	0.3104291	0.28437003	2.2902356	20	8 3.6	22.3
416804 2005 GP <sub>128</sub>	18.7	X	121.56342	116.42674	166.83703	5.29269	0.5759044	0.22172040	2.7035368	20	12 30.9	24.6
416805 2005 GB <sub>140</sub>	15.6	X	244.45669	207.18935	23.72138	18.41198	0.1940232	0.17659956	3.1463688	20	—	—
416806 2005 GB <sub>144</sub>	18.0	X	282.65445	65.61655	44.58343	21.81769	0.0974669	0.36038920	1.9556368	20	—	—
416807 2005 GT <sub>148</sub>	16.3	X	320.48033	94.54583	58.16887	13.43422	0.1307344	0.17886375	3.1197598	20	—	—
416808 2005 GR <sub>157</sub>	17.6	X	53.62481	182.72358	68.31084	3.18473	0.1452867	0.26784023	2.3835202	20	6 14.9	20.1
416809 2005 GR <sub>161</sub>	17.6	X	100.86803	38.88581	145.70024	8.48488	0.1389355	0.27648331	2.3335840	20	8 9.6	20.7
416810 2005 GF <sub>165</sub>	17.9	X	89.15720	141.84308	45.24172	3.74999	0.1768071	0.27472355	2.3435386	20	8 5.8	21.1
416811 2005 GL <sub>165</sub>	16.1	X	343.30412	286.16719	201.57389	10.91301	0.0785661	0.18015055	3.1048860	20	—	—
416812 2005 GW <sub>178</sub>	15.7	X	236.50837	304.14813	286.49750	16.88312	0.2407884	0.17429809	3.1740052	20	—	—
416813 2005 GG <sub>179</sub>	15.7	X	265.98962	78.37600	105.52113	14.62719	0.3087900	0.17492207	3.1664525	20	12 22.8	19.8
416814 2005 GP <sub>200</sub>	16.7	X	293.94850	353.03518	152.20465	5.11917	0.1088893	0.18041747	3.1018229	20	—	—
416815 2005 GZ <sub>201</sub>	17.0	X	250.89580	279.95501	3.94220	5.63863	0.0998999	0.25635808	2.4541704	20	2 10.4	20.6
416816 2005 GF <sub>202</sub>	17.6	X	322.54367	80.28828	193.85418	5.98780	0.1077782	0.26700558	2.3884849	20	4 29.4	20.2
416817 2005 GT <sub>215</sub>	15.5	X	332.17597	106.40087	95.65517	12.50842	0.1006909	0.18194029	3.0844907	20	1 2.0	19.7
416818 2005 GJ <sub>215</sub>	17.1	X	131.55115	156.54886	104.71107	10.49169	0.1458052	0.29148494	2.2528138	20	12 21.7	20.5
416819 2005 GW <sub>225</sub>	16.3	X	312.80664	77.12593	19.78272	25.63680	0.2675103	0.17477626	3.1682134	20	11 22.9	19.8
416820 2005 JE <sub>227</sub>	15.8	X	303.82451	38.64838	135.95479	11.30097	0.1665493	0.17828302	3.1265309	20	—	—
416821 2005 HT <sub>4</sub>	15.8	X	247.84908	175.41721	52.31277	19.38170	0.1535245	0.17623197	3.1507425	20	—	—
416822 2005 HQ <sub>6</sub>	17.3	X	189.04689	190.82265	112.16120	24.72844	0.0222401	0.37481580	1.9051279	20	—	—
416823 2005 HJ <sub>9</sub>	17.0	X	347.64978	145.63300	91.33754	8.55938	0.1330136	0.26039359	2.4287484	20	4 19.9	19.5
416824 2005 JW <sub>17</sub>	18.0	X	204.02789	90.42907	217.78587	2.06027	0.2370132	0.24397911	2.5364966	20	1 23.9	22.3
416825 2005 JE <sub>32</sub>	15.6	X	229.75591	211.79500	44.21296	17.32659	0.1600195	0.17566406	3.1575296	20	—	—
416826 2005 JK <sub>34</sub>	17.3	X	346.90480	117.11384	80.44043	15.33177	0.0564553	0.25308349	2.4752943	20	3 4.8	20.6
416827 2005 JU <sub>45</sub>	17.7	X	101.23056	258.38910	107.82430	23.82413	0.1222043	0.37106638	1.9179398	20	—	—
416828 2005 JK <sub>60</sub>	17.3	X	317.78188	182.20547	85.97998	7.83212	0.1490966	0.25933683	2.4353417	20	4 10.1	20.2
416829 2005 JW <sub>75</sub>	15.6	X	301.33413	129.24156	52.55940	12.07489	0.1137669	0.17839345	3.1252405	20	—	—
416830 2005 JE <sub>82</sub>	16.7	X	146.40682	246.03883	65.28355	34.38779	0.3039000	0.23235824	2.6203783	20	—	—
416831 2005 JH <sub>100</sub>	17.7	X	169.84298	82.80828	71.19253	22.69258	0.2328425	0.28279348	2.2987397	20	9 21.9	22.1
416832 2005 JJ <sub>100</sub>	15.9	X	222.61581	215.56206	91.16486	12.36510	0.0864444	0.18301585	3.0723940	20	2 19.9	20.8
416833 2005 JT <sub>101</sub>	17.0	X	26.88701	73.49943	95.75767	15.22118	0.0443874	0.25482022	2.4640345	20	3 27.8	20.3
416834 2005 JY <sub>108</sub>	16.1	X	253.13923	109.78392	80.53466	24.22883	0.2215127	0.17490902	3.1666100	20	12 24.9	20.6
416835 2005 JA <sub>109</sub>	15.1	X	37.75481	315.78968	90.58597	28.44543	0.1892734	0.17577882	3.1561552	20	—	—
416836 2005 JK <sub>111</sub>	15.3	X	271.05426	130.09815	28.03464	19.59114	0.1232056	0.17172957	3.2055753	20	12 22.5	19.9
416837 2005 JU <sub>134</sub>	17.3	X	156.48118	119.07843	229.36892	28.40559	0.3980442	0.23683373	2.5872616	20	2 4.2	22.7
416838 2005 JQ <sub>147</sub>	16.6	X	167.28446	102.79740	118.14272	28.20293	0.3306601	0.23398697	2.6082043	20	1 10.9	21.9
416839 2005 JD <sub>150</sub>	17.8	X	50.33517	133.23719	114.93574	5.06407	0.1054589	0.27296700	2.3535817	20	8 29.6	20.5
416840 2005 JA <sub>164</sub>	15.8	X	59.92154	321.85729	108.54559	10.75557	0.0879921	0.17710107	3.1404263	20	1 13.2	19.7
416841 2005 LZ <sub>8</sub>	17.1	X	148.96667	247.71088	104.55537	13.41239	0.1778377	0.23980475	2.5658476	20	1 29.1	21.0
416842 2005 LD <sub>10</sub>	16.4	X	187.68861	106.33867	231.50918	22.63222	0.3163167	0.24256572	2.5463402	20	2 9.3	21.6
416843 2005 LA <sub>20</sub>	17.2	X	203.92517	168.17808	136.04837	13.08973	0.3527904	0.23945963	2.5683123	20	1 20.9	22.2
416844 2005 LU <sub>21</sub>	17.0	X	226.98736	146.62615	127.18197	13.56735	0.1425679	0.23740177	2.5831329	20	1 4.1	21.1
416845 2005 LQ <sub>23</sub>	15.9	X	191.30162	205.54871	60.63462	13.25410	0.0170346	0.17178273	3.2049140	20	—	—
416846 2005 LM <sub>27</sub>	17.4	X	322.04984	109.73578	161.80600	6.53508	0.0992695	0.26070279	2.4268276	20	4 27.6	20.1
416847 2005 LX <sub>39</sub>	16.7	X	195.80401	226.48408	121.36880	7.90602	0.1879482	0.24176101	2.5519875	20	3 6.9	20.9
416848 2005 LJ <sub>52</sub>	17.8	X	164.64265	82.06355	242.60535	18.76966	0.0876296	0.37032570	1.9204963	20	—	—
416849 2005 MO <sub>3</sub>	16.8	X	210.24324	133.60165	184.14530	12.54046	0.1818036	0.24419804	2.5349804	20	2 6.9	21.2
416850 2005 MN <sub>6</sub>	17.3	X	10.94378	152.73094	85.78543	5.10377	0.1472932	0.26308146	2.4121773	20	6 6.2	19.3
416851 2005 MM <sub>13</sub>	18.9	X	218.23475	254.75932	100.55722	22.99667	0.3182103	0.44675125	1.6946975	20	3 31.4	22.2
416852 2005 MQ <sub>15</sub>	17.7	X	216.45172	139.07758	95.83633	23.79083	0.0534210	0.36704473	1.9319241	20	—	—
416853 2005 MV <sub>16</sub>	17.2	X	287.51932	200.55106	130.82256	8.04040	0.1288058	0.25588782	2.4571762	20	5 25.4	20.3
416854 2005 MW <sub>16</sub>	17.4	X	194.16756	54.87944	279.47326	6.22787	0.2076392	0.23831575	2.5765241	20	2 14.6	21.8
416855 2005 MX <sub>17</sub>	16.7	X	260.07230	174.82157	121.09757	12.30160	0.1017998	0.24564627	2.5250071	20	3 9.8	20.4
416856 2005 MO <sub>23</sub>	17.7	X	335.51826	301.67317	232.16693	21.23273	0.0674598	0.37668754	1.8988116	20	—	—
416857 2005 NH <sub>14</sub>	15.7	X	317.81833	142.69688	185.20547	2.90590	0.2519980	0.12363915	3.9905434	20	6 14.8	20.4
416858 2005 NO <sub>14</sub>	17.4	X	108.05941	285.36891	292.66642	4.12432	0.1762842	0.27179996	2.3603140	20	10 1.6	21.1
416859 2005 NJ <sub>18</sub>	17.2	X	236.82405	190.91910	129.29262	5.72908	0.0959743	0.24512933	2.5285557	20	3 13.6	20.8
416860 2005 NK <sub>25</sub>	16.7	X	268.73729	358.83757	288.23708	14.33315	0.1058521	0.24489992	2.5301345	20	2 26.1	20.6
416861 2005 ND <sub>37</sub>	15.7	X	308.17159	159.05159	165.10561	6.16657	0.2843024	0.12443437	3.9735239	20	5 21.9	20.7
416862 2005 NC <sub>68</sub>	15.5	X	292.29397	214.59725	120.14930	10.23457	0.2812262	0.12405601	3.9815988	20	5 16.0	21.1
416863 2005 NK <sub>68</sub>	17.7	X	154.55352	14.81473	305.49211	3.71728	0.2646427	0.22854490	2.6494457	20	1 4.2	22.0
416864 2005 NV <sub>68</sub>	17.3	X	206.73122	210.93952	121.52239	2.90167	0.1570526	0.24025064	2.5626719	20	2 25.2	21.4
416865 2005 ND <sub>88</sub>	17.7	X	252.25541	114.16646	130.01777	23.12836	0.0496680	0.36784553	1.9291192	20	—	—
416866 2005 NX <sub>92</sub>	17.2	X	196.59002	254.32109	81.25404	2.37229	0.1278970	0.23975764	2.5661837	20	2 19.9	21.3
416867 2005 NG <sub>95</sub>	15.2	X	316.80875	243.56188	297.50074	24.47778	0.2057435	0.17244339	3.1967231	20	—	—
416868 2005 NE <sub>101</sub>	17.3	X	55.68255	90.76048	283.47558	17.14563	0.1137497	0.35215386	1.9860084	20	—	—
416869 2005 OB <sub>1</sub>	16.8	X	152.66193	350.19349	352.99316	14.26685	0.2617725	0.23059887	2.6336897	20	2 2.1	21.3
416870 2005 OO <sub>7</sub>	17.0	X	165.70966	223.03141	110.42889	12.04915	0.2051659	0.23141260	2.6275120	20	1 24.4	21.2
416871 2005 OJ <sub>17</sub>	16.8	X	94.32142	97.33208	294.48091	10.35168	0.2168875	0.22536457	2.6743133	20	1 21.9	20.2
416872 2005 OK <sub>26</sub>	16.6	X	179.67487	64.14304	281.76664	12.18839	0.1848579	0.23620891	2.5918222	20	2 13.6	21.0
416873 2005 OR <sub>27</sub>	16.0	X	184.93928	291.86131	68.95748	15.32277	0.1228385	0.23928886	2.5695342	20	3 18.3	20.3
416874 2005 PW <sub>19</sub>	16.9	X	221.93281	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>
416881 2005 QO <sub>55</sub>	17.0	X	189.85408	357.06886	348.80106	14.62654	0.2760972	0.23561539	2.5961729	20	2 29.7	21.7
416882 2005 QO <sub>56</sub>	16.4	X	199.18258	151.76829	162.47945	33.23277	0.2051606	0.23477181	2.6023882	20	1 27.9	21.2
416883 2005 QZ <sub>62</sub>	17.1	X	139.42867	26.05016	356.28946	4.94899	0.1153789	0.23226366	2.6210896	20	2 19.8	20.9
416884 2005 QF <sub>66</sub>	16.6	X	171.55556	8.86196	324.56154	12.51307	0.1978396	0.23128673	2.6284653	20	1 30.1	21.0
416885 2005 QC <sub>67</sub>	17.7	X	177.67765	238.47467	136.96516	5.62234	0.2650543	0.23720399	2.5845685	20	3 26.8	22.3
416886 2005 QX <sub>82</sub>	17.1	X	194.37080	159.58007	177.18627	10.45502	0.1876006	0.23540014	2.5977553	20	2 17.9	21.5
416887 2005 QS <sub>87</sub>	16.8	X	148.03925	346.81707	17.07457	6.51314	0.3477077	0.22925854	2.6439447	20	2 26.3	21.5
416888 2005 QX <sub>100</sub>	17.0	X	47.53510	325.39535	270.35047	5.23357	0.1048305	0.25817352	2.4426519	20	8 1.9	19.8
416889 2005 QG <sub>116</sub>	15.7	X	326.42939	305.58263	33.86276	6.09433	0.1877602	0.12502359	3.9610295	20	7 10.3	20.2
416890 2005 QY <sub>125</sub>	17.4	X	89.12116	65.13624	347.05817	5.49956	0.1401319	0.22719420	2.6599362	20	1 30.8	20.7
416891 2005 QK <sub>129</sub>	17.1	X	80.50673	16.15748	20.03530	5.26028	0.0661935	0.22344794	2.6895842	20	—	—
416892 2005 QL <sub>130</sub>	16.9	X	177.28267	331.08698	6.24891	10.19793	0.1880309	0.23216298	2.6218474	20	2 9.9	21.3
416893 2005 QU <sub>144</sub>	16.9	X	182.46531	8.93284	15.05869	11.86102	0.1289218	0.24011297	2.5636514	20	4 4.9	20.8
416894 2005 QB <sub>150</sub>	16.9	X	104.29298	81.33182	8.14616	11.58297	0.2373496	0.23221752	2.6214368	20	4 17.1	20.8
416895 2005 QF <sub>150</sub>	16.8	X	68.92387	319.11678	69.25270	2.99979	0.2192955	0.21737028	2.7394872	20	—	—
416896 2005 QM <sub>156</sub>	16.7	X	239.02736	94.69504	274.30016	13.21062	0.1195718	0.24648180	2.5192976	20	5 12.1	20.5
416897 2005 QN <sub>156</sub>	16.6	X	198.78938	353.37614	288.82484	12.98366	0.2272976	0.22737752	2.6585063	20	—	—
416898 2005 QU <sub>166</sub>	17.1	X	167.16825	86.66630	296.34598	11.63768	0.2789213	0.23723206	2.5843647	20	3 20.6	22.0
416899 2005 QB <sub>170</sub>	16.7	X	127.94948	144.09379	269.77714	12.53275	0.2504916	0.23086903	2.6316347	20	3 24.6	21.2
416900 2005 QF <sub>171</sub>	16.9	X	132.86879	31.42272	330.82097	12.74916	0.2778209	0.22640746	2.6660946	20	2 6.9	21.1
416901 2005 QB <sub>172</sub>	17.5	X	122.80617	154.70103	203.02510	4.42593	0.3016626	0.22369674	2.6875896	20	1 23.5	21.6
416902 2005 QG <sub>179</sub>	17.7	X	158.27572	46.21308	340.94962	7.28385	0.2765585	0.23401283	2.6080121	20	3 23.5	22.2
416903 2005 QQ <sub>189</sub>	16.6	X	313.84710	169.33242	4.17385	8.38397	0.1120100	0.22498663	2.6773074	20	—	—
416904 2005 QL <sub>190</sub>	16.8	X	60.78251	257.52940	177.66435	2.34109	0.0237504	0.22616007	2.6680385	20	1 4.9	20.2
416905 2005 RK <sub>7</sub>	16.8	X	127.97712	26.62053	347.67638	17.70347	0.2509721	0.22712321	2.6604905	20	2 16.8	21.0
416906 2005 RH <sub>9</sub>	16.3	X	113.35242	251.03934	116.15420	13.60441	0.2845403	0.22406587	2.6846370	20	1 24.9	20.1
416907 2005 RY <sub>9</sub>	17.4	X	168.93138	82.05224	255.30217	5.18891	0.2861966	0.23020592	2.6366859	20	2 2.9	22.1
416908 2005 RP <sub>28</sub>	17.4	X	87.69629	174.66958	229.28713	2.74651	0.1048831	0.22567254	2.6718797	20	1 11.2	20.8
416909 2005 RN <sub>29</sub>	16.4	X	146.62101	28.04586	296.28600	19.13311	0.2478929	0.22420734	2.6835076	20	1 2.7	20.7
416910 2005 RV <sub>43</sub>	16.7	X	196.47868	241.30176	77.63474	4.53055	0.2197908	0.23332357	2.6131458	20	2 2.2	21.1
416911 2005 RL <sub>44</sub>	17.2	X	144.81871	102.10681	291.93348	12.05394	0.2679331	0.23184192	2.6242673	20	3 16.2	21.9
416912 2005 RA <sub>48</sub>	17.2	X	194.17188	250.41286	74.03651	4.75685	0.1562661	0.23120709	2.6290688	20	2 6.1	21.4
416913 2005 RB <sub>48</sub>	16.8	X	185.71398	337.30027	33.58552	14.57615	0.1037940	0.23611855	2.5924834	20	3 27.6	20.8
416914 2005 RH <sub>48</sub>	16.4	X	212.63110	29.65294	266.47128	11.02879	0.1737745	0.23115680	2.6294501	20	1 16.5	20.8
416915 2005 SH <sub>1</sub>	16.6	X	155.46758	354.69249	15.73545	17.99636	0.2298987	0.23116471	2.6293901	20	3 7.4	21.1
416916 2005 SH <sub>15</sub>	17.4	X	72.31009	216.21228	203.26293	4.70239	0.2259680	0.22138734	2.7062476	20	1 25.5	20.3
416917 2005 SV <sub>31</sub>	16.8	X	29.62389	175.65092	28.60114	13.70552	0.0435980	0.24180218	2.5516978	20	5 9.2	20.0
416918 2005 SA <sub>39</sub>	17.4	X	158.42764	328.84585	9.89566	4.56989	0.1412965	0.22643878	2.6658488	20	1 20.1	21.5
416919 2005 SS <sub>45</sub>	16.6	X	25.71141	208.28924	0.58483	3.43355	0.1659948	0.24254801	2.5464642	20	5 21.9	18.9
416920 2005 SN <sub>49</sub>	17.6	X	191.93192	352.77805	22.33904	5.36827	0.1620907	0.23678510	2.5876158	20	4 3.9	21.7
416921 2005 SF <sub>51</sub>	17.4	X	125.77342	118.60278	261.36279	1.35433	0.1073290	0.22528738	2.6749242	20	1 30.7	21.2
416922 2005 SY <sub>51</sub>	16.6	X	226.34637	267.53254	31.15337	7.82517	0.1959210	0.23160608	2.6260485	20	2 4.0	21.1
416923 2005 ST <sub>53</sub>	17.0	X	104.12263	83.25608	345.80213	6.90483	0.0915140	0.22962008	2.6411687	20	3 4.0	20.3
416924 2005 SD <sub>54</sub>	16.9	X	183.34908	294.56767	21.76100	5.30076	0.2918087	0.22911114	2.6450786	20	1 23.3	21.7
416925 2005 SN <sub>60</sub>	16.9	X	129.25170	19.68331	347.95426	6.15783	0.1111445	0.22600671	2.6692453	20	1 21.7	20.7
416926 2005 SV <sub>62</sub>	17.8	X	171.52542	145.27823	192.67675	4.67375	0.1409026	0.22815713	2.6524469	20	1 29.6	22.0
416927 2005 SY <sub>72</sub>	16.7	X	172.92799	354.76642	342.98241	8.97147	0.2239845	0.23059749	2.6337002	20	2 6.9	21.2
416928 2005 ST <sub>75</sub>	17.4	X	107.01038	188.01721	184.16656	6.17829	0.0467151	0.22237607	2.6982199	20	—	—
416929 2005 SZ <sub>80</sub>	17.4	X	196.27857	309.67345	27.93542	4.03084	0.1811406	0.23445859	2.6047054	20	2 23.8	21.6
416930 2005 SV <sub>84</sub>	16.5	X	131.06620	8.55806	10.64049	14.68835	0.0481182	0.22719172	2.6599556	20	2 3.1	20.4
416931 2005 SY <sub>86</sub>	16.9	X	132.46105	348.72620	14.69195	12.98342	0.1701440	0.22534711	2.6744515	20	1 30.8	21.1
416932 2005 SM <sub>87</sub>	17.2	X	189.23575	171.45729	149.55899	1.91118	0.0843267	0.22863946	2.6487152	20	1 24.8	21.0
416933 2005 SY <sub>104</sub>	16.5	X	118.41813	172.12285	219.40612	13.64468	0.2550418	0.22456939	2.6806226	20	2 19.7	20.9
416934 2005 SC <sub>106</sub>	16.4	X	168.61001	299.41665	25.33249	14.51519	0.2798520	0.22668330	2.6639314	20	1 25.3	21.3
416935 2005 SG <sub>111</sub>	16.7	X	121.14669	269.32873	15.45740	23.96273	0.1993645	0.21130072	2.7916999	20	12 26.3	21.9
416936 2005 SY <sub>112</sub>	17.2	X	172.42164	15.39141	347.79656	15.02653	0.2138225	0.23294573	2.6159707	20	3 5.5	21.5
416937 2005 SJ <sub>113</sub>	16.9	X	184.40313	117.83760	173.09387	13.65395	0.1775258	0.22773467	2.6557261	20	—	—
416938 2005 SB <sub>119</sub>	16.8	X	182.12934	192.18796	125.34575	8.35652	0.3140564	0.23000618	2.6382121	20	1 23.0	21.5
416939 2005 SA <sub>120</sub>	17.2	X	153.48585	17.54925	3.32541	7.43551	0.2045182	0.23207486	2.6225110	20	3 10.8	21.5
416940 2005 SY <sub>121</sub>	17.2	X	86.27562	83.81044	338.89441	7.35811	0.2246391	0.22396761	2.6854222	20	2 22.2	20.3
416941 2005 SH <sub>132</sub>	16.3	X	135.99788	349.00784	40.77172	12.99258	0.2738264	0.22622952	2.6674925	20	3 17.2	20.9
416942 2005 SW <sub>132</sub>	17.1	X	87.29237	233.95575	207.10852	8.91071	0.3004482	0.22382639	2.6865517	20	3 28.3	20.7
416943 2005 SM <sub>135</sub>	17.3	X	158.13533	184.68929	161.62692	1.56240	0.1947363	0.22839945	2.6505704	20	1 31.9	21.6
416944 2005 SY <sub>138</sub>	17.1	X	135.67628	336.06831	29.22215	5.78223	0.0662100	0.22608815	2.6686043	20	1 20.5	20.9
416945 2005 SR <sub>142</sub>	17.0	X	294.00567	119.27525	66.83637	5.16714	0.0217240	0.22201545	2.7011409	20	—	—
416946 2005 SU <sub>146</sub>	16.8	X	261.58342	301.16319	22.48596	9.87059	0.0908136	0.24176394	2.5519669	20	4 14.1	20.2
416947 2005 SD <sub>156</sub>	16.1	X	179.23103	92.15740	259.12138	13.58489	0.1531693	0.23306986	2.6150419	20	2 16.8	20.6
416948 2005 SG <sub>164</sub>	16.6	X	193.23422	298.33373	43.71634	11.54291	0.3145774	0.23407967	2.6075156	20	3 3.1	21.6
416949 2005 SK <sub>165</sub>	16.5	X	181.83924	352.15501	5.38488	16.40558	0.1161893	0.23503130	2.6004724	20	3 6.8	20.5
416950 2005 SR <sub>182</sub>	16.9	X	111.62754	5.52259	1.89723	5.89859	0.0514470	0.22033424	2.7148639	20	—	—
416951 2005 SE <sub>187</sub>	16.2	X	129.51026	353.14665	26.03343	15.65292	0.1419479	0.22614772	2.6681357	20	2 15.1	20.4
416952 2005 SZ <sub>187</sub>	15.8	X	258.58746	274.84756	181.83971	2.93637	0.1802311	0.12727925	3.9140915	20	9 10.2	21.4
416953 2005 SE <sub>196</sub>	17.6	X	82.01112	75.63331	17.91849	4.62403	0.1108080	0.23059050	2.6337534	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>
416961 2005 SC <sub>220</sub>	16.5	X	149.25579	164.81593	288.46712	13.28530	0.2065182	0.23959451	2.5673484	20	6 2.9	20.9
416962 2005 ST <sub>222</sub>	16.0	X	232.54754	72.50948	274.52684	14.18223	0.1599721	0.24025249	2.5626588	20	3 29.8	20.4
416963 2005 SV <sub>222</sub>	17.6	X	106.20983	248.72521	156.47742	2.91860	0.1945620	0.22589807	2.6701011	20	2 20.2	21.3
416964 2005 SG <sub>252</sub>	17.1	X	158.25087	73.07006	288.39575	1.71447	0.1992831	0.23081983	2.6320086	20	2 18.9	21.4
416965 2005 SR <sub>272</sub>	16.8	X	189.94108	105.05538	265.23431	11.63547	0.2075738	0.23889418	2.5723635	20	3 21.2	21.5
416966 2005 SX <sub>277</sub>	16.5	X	112.16475	158.92372	290.66236	8.04203	0.1194778	0.21927188	2.7236257	20	4 9.9	20.6
416967 2005 SU <sub>292</sub>	17.0	X	232.05889	233.04317	54.87907	5.96823	0.1753118	0.23155418	2.6264409	20	1 26.5	21.3
416968 2005 TP <sub>1</sub>	16.6	X	111.37737	44.98897	28.84313	11.89418	0.1605971	0.23008551	2.6376057	20	3 31.5	20.4
416969 2005 TZ <sub>1</sub>	16.7	X	56.12643	93.64432	4.38162	22.00740	0.0689823	0.22749966	2.6575547	20	2 11.2	20.4
416970 2005 TN <sub>7</sub>	16.8	X	175.59934	207.18507	119.16817	4.98582	0.2992235	0.22925356	2.6439830	20	1 28.5	21.6
416971 2005 TW <sub>8</sub>	17.4	X	166.69825	137.59854	180.37509	4.86044	0.1162400	0.22295151	2.6935752	20	—	—
416972 2005 TU <sub>19</sub>	16.9	X	54.85883	263.71583	192.16013	12.24263	0.2372609	0.22344385	2.6896171	20	2 11.4	19.6
416973 2005 TR <sub>21</sub>	17.5	X	117.14703	85.91356	35.13431	5.40395	0.1810597	0.23967389	2.5667815	20	6 5.8	21.4
416974 2005 TR <sub>28</sub>	17.2	X	147.42940	76.43867	321.17823	12.25165	0.1909786	0.23289261	2.6163685	20	3 18.5	21.6
416975 2005 TF <sub>37</sub>	17.9	X	146.27583	48.39490	330.97177	2.13503	0.1236626	0.23074762	2.6325576	20	2 23.3	21.7
416976 2005 TV <sub>46</sub>	17.2	X	165.26847	17.05782	327.51180	5.31966	0.1316378	0.22852500	2.6495995	20	2 1.7	21.1
416977 2005 TF <sub>48</sub>	16.5	X	184.22179	335.78639	29.51561	15.76225	0.1545151	0.23452705	2.6041985	20	3 20.6	20.8
416978 2005 TF <sub>58</sub>	16.4	X	37.86605	70.35074	29.00550	12.93284	0.1265959	0.22019329	2.7160223	20	1 10.9	19.7
416979 2005 TT <sub>65</sub>	17.4	X	88.36183	12.52995	43.56350	2.03767	0.1667550	0.22171851	2.7035521	20	2 8.2	20.8
416980 2005 TD <sub>77</sub>	17.4	X	129.09807	31.48872	331.18223	3.14012	0.1903998	0.22470960	2.6795074	20	1 24.5	21.2
416981 2005 TG <sub>83</sub>	16.4	X	103.43272	21.17339	16.50936	13.26956	0.1498168	0.22187474	2.7022829	20	2 7.1	20.2
416982 2005 TU <sub>83</sub>	17.1	X	189.29989	58.85957	285.40405	2.50863	0.0510569	0.23152790	2.6266396	20	2 20.3	21.0
416983 2005 TH <sub>88</sub>	17.3	X	183.44325	203.70096	141.53706	4.69089	0.1488518	0.23290305	2.6162903	20	2 19.8	21.5
416984 2005 TK <sub>94</sub>	17.3	X	223.34204	3.00036	315.87451	3.61970	0.0473836	0.23319987	2.6140698	20	2 27.3	21.0
416985 2005 TD <sub>103</sub>	17.3	X	138.04628	125.16046	199.58335	4.49565	0.1139916	0.21873147	2.7281099	20	—	—
416986 2005 TO <sub>107</sub>	16.2	X	41.15958	20.49112	98.13459	11.83946	0.2119779	0.21319181	2.7751665	20	2 22.1	19.0
416987 2005 TM <sub>119</sub>	16.9	X	87.64215	357.55138	16.49568	3.42894	0.0502012	0.21745878	2.7387439	20	—	—
416988 2005 TB <sub>126</sub>	16.6	X	204.51540	53.44131	201.59029	12.21262	0.0918616	0.21730463	2.7400389	20	—	—
416989 2005 TV <sub>140</sub>	17.5	X	120.75006	285.11264	159.35700	3.60366	0.1993708	0.23288447	2.6164295	20	4 27.3	21.5
416990 2005 TS <sub>141</sub>	17.1	X	351.34489	50.78847	48.28963	6.23405	0.0472692	0.21367636	2.7709694	20	—	—
416991 2005 TG <sub>144</sub>	17.5	X	46.16692	309.56796	146.18828	3.79498	0.1088482	0.22192491	2.7018756	20	1 16.5	20.5
416992 2005 TJ <sub>149</sub>	17.2	X	145.33960	125.35433	175.01371	7.43940	0.2589971	0.21899544	2.7259173	20	—	—
416993 2005 TO <sub>152</sub>	16.8	X	108.37194	327.63853	94.35492	12.13699	0.2607605	0.21993271	2.7181672	20	3 30.5	21.1
416994 2005 TS <sub>155</sub>	16.7	X	9.95922	300.87431	207.59384	15.18644	0.0998664	0.22675010	2.6634082	20	1 22.3	20.1
416995 2005 TP <sub>157</sub>	17.3	X	149.58181	30.24497	355.01834	3.12324	0.0882520	0.23060184	2.6336671	20	3 2.2	20.9
416996 2005 TY <sub>157</sub>	17.4	X	132.13896	128.58945	236.92505	1.62363	0.1295789	0.22452914	2.6809430	20	1 22.9	21.1
416997 2005 TV <sub>162</sub>	16.9	X	158.15454	338.55808	8.05422	3.37242	0.0963942	0.22542324	2.6738493	20	1 25.8	20.8
416998 2005 TS <sub>163</sub>	16.8	X	102.89348	83.19566	18.14301	14.24028	0.1732630	0.23210940	2.6222508	20	4 22.5	20.5
416999 2005 TO <sub>165</sub>	17.7	X	129.12947	145.81939	274.46844	1.37333	0.2011097	0.23018061	2.6368791	20	4 3.6	21.7
417000 2005 TH <sub>177</sub>	17.6	X	108.83664	73.35677	332.97974	15.19582	0.3440260	0.22531856	2.6746774	20	3 11.0	21.9
417001 2005 TT <sub>179</sub>	16.5	X	156.02761	103.46399	258.69794	12.11389	0.1942085	0.23122915	2.6289016	20	2 12.6	20.9
417002 2005 TY <sub>186</sub>	16.7	X	233.30055	268.11801	11.98507	10.90619	0.0832247	0.22848875	2.6498797	20	1 24.3	20.8
417003 2005 TD <sub>189</sub>	17.9	X	179.55701	65.25194	288.99527	1.79154	0.0710961	0.23042463	2.6350172	20	2 23.1	21.6
417004 2005 TS <sub>191</sub>	16.7	X	315.10341	186.89489	50.74893	15.67058	0.0974663	0.22913791	2.6448726	20	3 11.2	20.4
417005 2005 UL <sub>4</sub>	16.4	X	77.13865	191.30655	220.07817	11.50228	0.1224051	0.21928468	2.7235197	20	1 7.3	19.9
417006 2005 UV <sub>5</sub>	16.2	X	72.17115	306.63726	85.42269	35.19060	0.3173413	0.21466230	2.7624782	20	1 2.8	19.1
417007 2005 UX <sub>7</sub>	17.1	X	81.55269	168.46872	220.34580	10.17958	0.2836238	0.21744577	2.7388531	20	1 9.6	20.4
417008 2005 UV <sub>17</sub>	16.6	X	131.40960	321.68191	58.44304	12.91893	0.1195123	0.22400643	2.6851120	20	2 13.8	20.7
417009 2005 UU <sub>23</sub>	16.9	X	320.61284	152.06207	7.78098	2.35282	0.0291851	0.21761865	2.7374024	20	—	—
417010 2005 UE <sub>41</sub>	16.8	X	172.68293	319.72326	32.80895	6.62348	0.0473413	0.22613503	2.6682355	20	2 16.0	20.6
417011 2005 UF <sub>41</sub>	17.1	X	129.96398	345.96568	22.89328	3.38461	0.1419097	0.22210960	2.7003776	20	1 28.1	21.0
417012 2005 UG <sub>41</sub>	16.9	X	82.56352	343.94504	29.76641	4.88257	0.0827480	0.21321076	2.7750020	20	—	—
417013 2005 UO <sub>44</sub>	16.7	X	14.26973	10.53882	208.96492	10.42759	0.0721676	0.23831205	2.5765508	20	5 12.1	19.6
417014 2005 UP <sub>44</sub>	17.2	X	56.09256	321.12296	94.26489	2.80371	0.1270757	0.21513151	2.7584600	20	—	—
417015 2005 UW <sub>46</sub>	17.1	X	136.59660	308.13977	62.76769	7.38102	0.0598747	0.22244592	2.6976550	20	1 28.7	20.9
417016 2005 UG <sub>49</sub>	16.5	X	26.91215	31.49567	14.60835	13.32160	0.1524805	0.20927700	2.8096683	20	—	—
417017 2005 UJ <sub>54</sub>	17.2	X	164.73255	264.21786	79.51348	3.34003	0.2262733	0.22684546	2.6626617	20	2 6.9	21.6
417018 2005 UH <sub>58</sub>	17.4	X	113.04524	25.13546	35.81479	3.49092	0.0986233	0.22672766	2.6635839	20	3 7.5	21.0
417019 2005 UV <sub>59</sub>	16.9	X	148.04994	80.26156	260.67922	5.70567	0.2657362	0.22300496	2.6931448	20	1 22.2	21.3
417020 2005 UX <sub>64</sub>	17.0	X	84.53514	214.13246	239.42646	11.93008	0.2867440	0.22509393	2.6764565	20	4 5.8	20.7
417021 2005 UU <sub>68</sub>	16.6	X	104.66750	228.22563	232.42799	12.50236	0.2227086	0.23119309	2.6291749	20	5 2.0	20.4
417022 2005 UY <sub>80</sub>	16.1	X	135.46181	326.38189	58.49062	15.31114	0.1295438	0.22414508	2.6840045	20	2 27.9	20.3
417023 2005 UK <sub>82</sub>	17.5	X	81.72392	230.29983	220.88582	1.99502	0.0697231	0.22742722	2.6581190	20	2 27.6	20.9
417024 2005 UH <sub>83</sub>	17.1	X	77.08245	64.74178	34.71064	6.26554	0.0304882	0.22852997	2.6495611	20	3 1.5	20.6
417025 2005 UQ <sub>84</sub>	17.4	X	69.21587	75.44984	49.00736	2.79335	0.0551360	0.23084838	2.6317916	20	3 24.8	20.6
417026 2005 UV <sub>85</sub>	17.6	X	158.99776	186.33059	155.54776	2.42873	0.2132293	0.22554683	2.6728725	20	1 29.0	22.0
417027 2005 UM <sub>88</sub>	16.8	X	125.91444	336.49554	44.19551	6.59071	0.0564559	0.22389696	2.6859871	20	1 27.5	20.5
417028 2005 UZ <sub>89</sub>	17.3	X	92.55944	106.28463	302.94984	4.12507	0.1701916	0.22126191	2.7072703	20	2 4.6	20.6
417029 2005 UV <sub>90</sub>	16.0	X	223.92232	216.65981	12.39457	8.99095	0.0954725	0.21225121	2.7833592	20	—	—
417030 2005 UH <sub>91</sub>	17.4	X	126.25661	54.24137	312.13236	4.46009	0.0906079	0.22065191	2.7122575	20	1 13.6	21.0
417031 2005 UB <sub>98</sub>	17.3	X	58.63161	287.26066	184.72712	4.68654	0.1251389	0.22398541	2.6852799	20	2 28.6	20.4
417032 2005 UL <sub>99</sub>	16.8	X	21.92057	339.99537	107.56931	4.85577	0.0678456	0.21357982	2.7718044	20	—	—
417033 2005 UM <sub>106</sub>	17.1	X	102.03701	280.47756	68.96516	9.05508	0.1347072	0.21288175	2.7778605	20	—	—
417034 2005 UM <sub>106</sub>	16.6	X	160.7									

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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>
417041 2005 UX <sub>118</sub>	17.7	X	152.86775	121.57451	224.54822	1.82757	0.0682094	0.22245590	2.6975744	20	1 15.6	21.5
417042 2005 UL <sub>122</sub>	16.3	X	124.18777	140.41033	230.58498	4.95121	0.0631123	0.22102729	2.7091858	20	1 11.6	20.1
417043 2005 UE <sub>126</sub>	16.8	X	203.63746	292.08624	41.86206	2.96438	0.1983833	0.23106649	2.6301352	20	2 25.6	21.2
417044 2005 UY <sub>127</sub>	17.7	X	106.13550	34.86121	27.47571	2.35306	0.1293548	0.22527617	2.6750129	20	3 4.7	21.2
417045 2005 UW <sub>129</sub>	16.7	X	31.45393	41.83848	41.55412	14.11158	0.0678577	0.21498417	2.7597203	20	—	—
417046 2005 UR <sub>140</sub>	17.4	X	50.33823	107.03625	43.13415	4.99929	0.1856221	0.22907075	2.6453895	20	4 17.4	20.1
417047 2005 UO <sub>154</sub>	17.5	X	87.55962	255.87814	48.92907	6.58265	0.0960513	0.26877117	2.3780132	20	12 26.1	21.0
417048 2005 UJ <sub>156</sub>	16.5	X	107.39772	277.85656	110.34549	13.75109	0.2308400	0.22086649	2.7105006	20	2 7.8	20.3
417049 2005 UG <sub>158</sub>	16.5	X	107.39929	337.79105	34.99075	11.85927	0.0330049	0.21795640	2.7345737	20	—	—
417050 2005 UG <sub>161</sub>	16.9	X	170.35339	219.11353	131.84610	6.60406	0.3268001	0.23044205	2.6348844	20	2 23.8	21.7
417051 2005 UB <sub>166</sub>	17.2	X	126.54040	161.96729	227.02793	3.96067	0.1135606	0.22534840	2.6744412	20	2 11.3	20.9
417052 2005 UL <sub>181</sub>	16.7	X	64.36256	297.73919	227.22426	10.58372	0.1363586	0.23272047	2.6176585	20	5 23.8	19.8
417053 2005 UO <sub>182</sub>	17.2	X	119.54985	27.84621	54.19334	3.96190	0.1531111	0.22937185	2.6430739	20	4 17.6	21.0
417054 2005 UY <sub>183</sub>	16.9	X	149.09314	106.37705	231.57919	5.98557	0.1589623	0.21932458	2.7231894	20	1 10.8	21.2
417055 2005 UP <sub>184</sub>	17.4	X	25.74415	76.27954	47.78070	9.62298	0.0957648	0.21990630	2.7183848	20	1 23.9	20.7
417056 2005 US <sub>187</sub>	16.8	X	143.73108	108.23555	226.27788	11.37740	0.1343433	0.21916579	2.7245045	20	—	—
417057 2005 UO <sub>194</sub>	17.3	X	345.70301	113.91244	53.89454	5.30159	0.0507716	0.22365580	2.6879175	20	1 22.2	20.7
417058 2005 UA <sub>195</sub>	17.0	X	94.56455	158.21411	205.09337	5.11589	0.0877727	0.21315232	2.7755092	20	—	—
417059 2005 UL <sub>202</sub>	16.6	X	142.19160	333.59584	55.83871	7.37144	0.1559327	0.22755610	2.6571152	20	3 9.8	20.7
417060 2005 UP <sub>205</sub>	17.1	X	5.99692	294.31495	213.65878	4.32884	0.1075774	0.21979081	2.7193370	20	1 19.3	20.3
417061 2005 UK <sub>210</sub>	17.0	X	127.50316	69.21638	280.95333	1.66714	0.0406955	0.21919309	2.7242784	20	—	—
417062 2005 UM <sub>212</sub>	17.2	X	96.49570	302.28318	65.14441	5.10048	0.1135996	0.21437267	2.7649659	20	—	—
417063 2005 UH <sub>218</sub>	16.8	X	347.28449	280.78774	260.19070	5.88708	0.1071758	0.22570254	2.6716430	20	1 31.6	20.2
417064 2005 UK <sub>219</sub>	16.5	X	95.93816	105.87285	272.05068	4.70075	0.0390382	0.21702530	2.7423895	20	—	—
417065 2005 UQ <sub>219</sub>	17.0	X	114.56358	93.37920	275.76833	3.56301	0.137628	0.21993806	2.7181231	20	1 8.5	20.7
417066 2005 UP <sub>222</sub>	17.2	X	51.22589	101.99508	3.79974	4.63059	0.1281291	0.22249204	2.6972823	20	2 10.9	20.3
417067 2005 US <sub>225</sub>	17.0	X	13.59384	180.44867	256.38750	3.65080	0.0891272	0.21156035	2.7894155	20	—	—
417068 2005 UY <sub>227</sub>	17.6	X	136.76148	168.16725	185.19466	1.43662	0.0838772	0.21964246	2.7205613	20	1 8.5	21.4
417069 2005 UX <sub>227</sub>	17.2	X	165.49156	284.66932	56.75837	5.98125	0.0624769	0.22254393	2.6968630	20	1 25.4	21.1
417070 2005 UM <sub>228</sub>	17.4	X	92.16418	35.30379	67.88155	4.32347	0.168013	0.22911395	2.6450569	20	4 6.2	20.8
417071 2005 UX <sub>229</sub>	17.6	X	50.14822	280.31224	163.68682	2.21662	0.2344892	0.21693737	2.7431305	20	1 19.2	20.0
417072 2005 UN <sub>232</sub>	17.5	X	92.68652	202.26874	212.50427	2.39188	0.0446575	0.22156058	2.7048367	20	1 24.1	21.0
417073 2005 UZ <sub>239</sub>	16.3	X	84.99272	39.12872	60.45522	22.70993	0.0397259	0.22765426	2.6563514	20	3 25.4	20.3
417074 2005 UT <sub>240</sub>	16.8	X	146.11530	254.58977	96.37775	6.10736	0.1336112	0.22175985	2.7032161	20	1 22.1	20.7
417075 2005 UT <sub>242</sub>	16.7	X	71.09133	76.91202	37.64667	12.45589	0.1270905	0.22489876	2.6780047	20	3 28.7	20.0
417076 2005 UD <sub>244</sub>	17.1	X	128.82667	347.54844	356.16417	5.57375	0.0347441	0.21341296	2.7732489	20	—	—
417077 2005 UO <sub>247</sub>	16.7	X	67.23109	195.64525	219.75112	5.15189	0.0273240	0.21665851	2.7454838	20	—	—
417078 2005 UQ <sub>251</sub>	16.3	X	71.99358	44.46376	40.12645	26.45380	0.1301498	0.22251310	2.6971120	20	3 3.4	20.3
417079 2005 UU <sub>257</sub>	16.8	X	132.03430	321.97572	54.94740	7.11157	0.0514028	0.22355352	2.6887374	20	1 29.7	20.6
417080 2005 UF <sub>258</sub>	17.9	X	59.67688	293.89155	174.66024	2.32352	0.1658726	0.22369837	2.6875765	20	3 2.7	20.6
417081 2005 UM <sub>260</sub>	17.3	X	182.55579	101.47495	205.82432	4.98074	0.1605537	0.22164750	2.7041296	20	1 5.8	21.7
417082 2005 UN <sub>261</sub>	17.4	X	195.25596	262.16356	78.83962	1.79392	0.0635917	0.23180861	2.6245187	20	2 24.9	21.1
417083 2005 UY <sub>263</sub>	17.0	X	14.49728	92.61288	44.13085	11.91777	0.0161942	0.22403534	2.6848809	20	1 26.1	20.8
417084 2005 UZ <sub>267</sub>	16.6	X	99.93896	54.40824	61.23539	13.75556	0.2112302	0.22839212	2.6506271	20	5 16.2	20.4
417085 2005 UQ <sub>274</sub>	16.7	X	176.80393	359.40184	351.16736	13.95890	0.1899417	0.22989954	2.6390279	20	2 24.5	21.0
417086 2005 UE <sub>291</sub>	16.7	X	160.22957	54.48085	270.01456	5.72777	0.1747106	0.22098851	2.7095027	20	1 7.3	20.9
417087 2005 UC <sub>293</sub>	16.9	X	111.25436	353.51836	6.15904	3.39124	0.1030578	0.21634874	2.7481038	20	—	—
417088 2005 UZ <sub>296</sub>	16.7	X	0.57055	72.06264	48.99683	11.78682	0.2173812	0.21217689	2.7840092	20	—	—
417089 2005 UQ <sub>299</sub>	17.3	X	155.17969	140.59029	212.65052	1.15787	0.0987100	0.22305536	2.6927391	20	1 29.9	21.3
417090 2005 UQ <sub>303</sub>	17.2	X	112.97195	249.14031	203.50293	11.28796	0.1580649	0.22956313	2.6416055	20	4 24.1	20.9
417091 2005 UP <sub>306</sub>	17.0	X	101.35850	33.54447	32.27274	5.03893	0.0910976	0.22578151	2.6710200	20	2 27.8	20.5
417092 2005 UA <sub>309</sub>	17.7	X	131.40869	335.86764	56.13409	2.69669	0.0898983	0.22788385	2.6545670	20	2 20.4	21.5
417093 2005 UE <sub>309</sub>	17.3	X	268.51017	315.93187	98.25492	3.07475	0.1750337	0.25527198	2.4611266	20	8 15.5	20.3
417094 2005 UY <sub>318</sub>	17.5	X	81.07933	121.72419	287.28902	1.45768	0.0852691	0.21898728	2.7259850	20	1 7.5	20.9
417095 2005 UZ <sub>331</sub>	16.8	X	259.21099	152.35414	88.14820	6.07839	0.0589638	0.22015572	2.7163312	20	1 3.7	20.6
417096 2005 UJ <sub>338</sub>	17.7	X	97.37655	241.54589	183.74165	1.81301	0.1253274	0.22526521	2.6750996	20	2 24.3	21.1
417097 2005 UC <sub>347</sub>	17.6	X	117.86477	193.79845	160.79843	0.75846	0.0894083	0.21605380	2.7506043	20	—	—
417098 2005 UY <sub>358</sub>	17.3	X	89.42967	70.30516	35.21721	11.88319	0.2630163	0.22898477	2.6460517	20	4 26.9	20.9
417099 2005 UE <sub>360</sub>	17.6	X	156.67573	60.26868	298.18370	0.90412	0.0718587	0.22285069	2.6943876	20	2 4.6	21.4
417100 2005 UU <sub>372</sub>	17.1	X	102.65348	90.65615	301.27205	1.63309	0.0561088	0.21797464	2.7344211	20	1 11.3	20.8
417101 2005 UC <sub>373</sub>	17.3	X	93.65116	180.46712	253.28324	4.37137	0.0726965	0.22365651	2.6879118	20	2 20.9	21.0
417102 2005 UH <sub>380</sub>	17.7	X	99.37012	256.82497	219.67814	10.71499	0.2574702	0.22945276	2.6424525	20	5 22.3	21.6
417103 2005 UC <sub>383</sub>	17.1	X	135.65643	217.51173	124.64583	3.34922	0.0939237	0.21803631	2.7339055	20	—	—
417104 2005 UV <sub>383</sub>	16.6	X	109.51472	318.82330	60.82618	12.78916	0.1973833	0.22217689	2.6998323	20	1 27.2	20.5
417105 2005 UC <sub>392</sub>	17.2	X	42.34329	354.90864	66.76600	5.21575	0.0634380	0.21511310	2.7586174	20	—	—
417106 2005 UW <sub>392</sub>	16.8	X	68.54306	82.29790	42.42544	5.84819	0.1861040	0.23082351	2.6319806	20	4 12.9	19.7
417107 2005 UD <sub>396</sub>	16.4	X	73.13756	223.07058	215.06291	12.64885	0.1654099	0.22144886	2.7057463	20	2 8.5	19.9
417108 2005 UX <sub>425</sub>	16.7	X	342.37360	133.79430	41.03223	10.10588	0.2067936	0.21920804	2.7241544	20	1 5.8	20.0
417109 2005 UJ <sub>428</sub>	17.2	X	47.34448	202.40306	264.71965	3.62696	0.0142020	0.22155384	2.7048916	20	1 27.5	20.8
417110 2005 UN <sub>428</sub>	16.9	X	94.86208	142.97742	244.02168	5.22517	0.0140427	0.21589724	2.7519339	20	—	—
417111 2005 UM <sub>439</sub>	17.2	X	105.07722	141.36778	263.95036	3.48476	0.1717515	0.22358640	2.6884737	20	2 14.7	20.8
417112 2005 UT <sub>439</sub>	16.5	X	143.63017	24.84326	333.71158	13.06350	0.0953019	0.22526186	2.6751262	20	1 25.6	20.4
417113 2005 UR <sub>449</sub>	17.1	X	315.73960	315.55046	234.98669	7.27290	0.1351748	0.21822716	2.7323113	20	—	—
417114 2005 UT <sub>45</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>
417121 2005 <i>UO</i> <sub>498</sub>	16.4	X	187.16757	232.52710	83.63200	13.65867	0.1855409	0.22707877	2.6608375	20	1 22.5	20.9
417122 2005 <i>UK</i> <sub>501</sub>	16.5	X	25.53026	347.43930	97.62136	14.89613	0.1605970	0.21276682	2.7788607	20	—	—
417123 2005 <i>UM</i> <sub>509</sub>	17.2	X	143.58123	297.44394	47.76281	5.84988	0.2130913	0.22474060	2.6792610	20	1 21.1	21.5
417124 2005 <i>UR</i> <sub>512</sub>	16.3	X	302.58634	311.88952	252.47206	12.35172	0.1420724	0.21723821	2.7405973	20	—	—
417125 2005 <i>UT</i> <sub>512</sub>	16.6	X	142.87193	285.63104	69.75380	12.12282	0.2097255	0.22315592	2.6919301	20	2 3.2	21.0
417126 2005 <i>UT</i> <sub>525</sub>	16.7	X	332.32569	69.40174	61.98256	9.86955	0.0473201	0.20979280	2.8050611	20	—	—
417127 2005 <i>UP</i> <sub>526</sub>	16.4	X	220.59601	241.99301	26.48572	12.50632	0.2451414	0.22338415	2.6900962	20	—	—
417128 2005 <i>UC</i> <sub>527</sub>	17.9	X	89.68325	34.79917	45.20715	3.12896	0.1099882	0.22317557	2.6917720	20	3 3.9	21.3
417129 2005 <i>VG</i>	16.6	X	128.18195	238.04372	201.97606	12.65959	0.1595446	0.23271710	2.6176838	20	4 24.7	20.5
417130 2005 <i>VO</i> <sub>4</sub>	16.6	X	101.70130	34.64373	70.90485	14.61599	0.2118932	0.22815945	2.6524289	20	5 7.8	20.5
417131 2005 <i>VE</i> <sub>24</sub>	17.6	X	352.73362	111.83782	51.70612	5.33361	0.0652332	0.22166160	2.7040148	20	1 25.6	21.0
417132 2005 <i>VW</i> <sub>25</sub>	16.7	X	165.42203	91.21333	243.56519	9.63570	0.2126665	0.22564118	2.6721273	20	1 23.7	21.2
417133 2005 <i>VN</i> <sub>38</sub>	16.8	X	45.12594	252.73218	168.84355	4.63385	0.0637759	0.21238376	2.7822011	20	—	—
417134 2005 <i>VX</i> <sub>43</sub>	17.7	X	144.09201	21.64113	37.24632	7.83407	0.1594783	0.23570614	2.5955065	20	4 14.2	21.6
417135 2005 <i>VE</i> <sub>50</sub>	17.2	X	87.80274	171.51564	255.19291	6.20236	0.1022601	0.22375460	2.6871263	20	2 7.8	20.7
417136 2005 <i>VM</i> <sub>58</sub>	16.9	X	331.06001	190.14178	334.16659	4.71930	0.0156006	0.22067939	2.7120323	20	1 2.4	20.5
417137 2005 <i>VF</i> <sub>70</sub>	17.1	X	69.77464	319.49593	87.80857	5.65993	0.0711535	0.21439590	2.7647661	20	—	—
417138 2005 <i>VY</i> <sub>73</sub>	16.4	X	177.75801	203.72951	79.77869	12.34550	0.1083743	0.21151495	2.7898146	20	—	—
417139 2005 <i>VM</i> <sub>74</sub>	17.0	X	145.10327	171.51159	224.72803	11.22076	0.1847565	0.22697326	2.6616621	20	3 16.0	21.4
417140 2005 <i>VF</i> <sub>76</sub>	17.1	X	95.98433	77.04211	351.14406	10.03600	0.2499135	0.22485357	2.6783635	20	3 15.7	20.7
417141 2005 <i>VF</i> <sub>81</sub>	16.3	X	0.01624	289.70671	244.33676	11.59190	0.1193658	0.22133635	2.7066632	20	2 8.0	19.7
417142 2005 <i>VD</i> <sub>83</sub>	16.5	X	183.15019	115.49885	212.07611	10.72043	0.2056089	0.22520204	2.6755999	20	1 28.9	21.2
417143 2005 <i>VY</i> <sub>83</sub>	16.9	X	126.24014	357.68418	5.59491	2.84837	0.0695517	0.22006250	2.7170983	20	1 6.9	20.6
417144 2005 <i>VE</i> <sub>90</sub>	17.1	X	142.82213	85.88925	270.62105	5.30944	0.2688407	0.22275976	2.6951207	20	2 5.0	21.6
417145 2005 <i>VL</i> <sub>93</sub>	16.4	X	352.56863	97.34620	79.86722	15.05262	0.1422611	0.22032836	2.7149121	20	2 7.1	19.7
417146 2005 <i>VX</i> <sub>103</sub>	16.9	X	260.81541	194.95781	52.77052	10.00665	0.1902075	0.22615855	2.6680505	20	1 2.6	21.3
417147 2005 <i>VN</i> <sub>108</sub>	16.8	X	121.92837	336.89101	4.11830	3.70379	0.1023738	0.21337400	2.7735865	20	—	—
417148 2005 <i>VV</i> <sub>109</sub>	16.7	X	98.14535	22.44114	51.09775	11.58165	0.0849747	0.22601594	2.6691727	20	3 7.8	20.4
417149 2005 <i>VU</i> <sub>111</sub>	17.4	X	112.05523	38.82767	336.62815	2.56842	0.1110064	0.21675074	2.7447049	20	1 11.1	21.2
417150 2005 <i>VM</i> <sub>114</sub>	16.3	X	139.15082	257.65113	62.36815	7.04678	0.0480929	0.21080714	2.7960558	20	—	—
417151 2005 <i>VR</i> <sub>115</sub>	17.4	X	90.34304	214.28733	263.98763	5.43578	0.1144808	0.23046809	2.6346859	20	4 21.0	20.8
417152 2005 <i>VP</i> <sub>116</sub>	16.9	X	78.52453	134.48941	255.69788	7.83549	0.1604426	0.21510340	2.7587004	20	—	—
417153 2005 <i>VA</i> <sub>125</sub>	16.9	X	289.36198	8.69875	157.95084	4.24179	0.0724392	0.19616993	2.9334662	20	—	—
417154 2005 <i>WU</i> <sub>4</sub>	17.1	X	76.30591	72.66663	7.09747	9.71694	0.2896094	0.22009874	2.7168001	20	3 13.4	20.2
417155 2005 <i>WE</i> <sub>12</sub>	17.1	X	64.05348	338.55650	65.47214	5.10043	0.1034681	0.21329275	2.7742909	20	—	—
417156 2005 <i>WM</i> <sub>20</sub>	16.2	X	177.75420	117.42211	253.58232	13.06555	0.1467148	0.22955577	2.6416619	20	3 10.3	20.8
417157 2005 <i>WX</i> <sub>21</sub>	15.4	X	268.48094	207.47837	257.58604	9.50241	0.1090458	0.12447896	3.9725748	20	10 7.1	21.1
417158 2005 <i>WN</i> <sub>23</sub>	16.8	X	71.22643	5.27970	48.71725	8.39387	0.1188640	0.21585270	2.7523124	20	1 4.8	20.1
417159 2005 <i>WK</i> <sub>26</sub>	16.7	X	90.48786	121.21752	262.14603	4.92343	0.0176412	0.21229681	2.7829607	20	—	—
417160 2005 <i>WO</i> <sub>32</sub>	16.7	X	118.67687	180.69396	254.58318	10.13819	0.1615272	0.22686955	2.6624732	20	4 4.1	20.8
417161 2005 <i>WF</i> <sub>35</sub>	17.4	X	62.56811	11.07043	52.98448	0.70210	0.0600436	0.21467494	2.7623698	20	—	—
417162 2005 <i>WK</i> <sub>43</sub>	16.9	X	117.25295	179.36040	196.74609	9.04624	0.2359194	0.22107944	2.7087597	20	1 31.4	21.1
417163 2005 <i>WK</i> <sub>44</sub>	16.3	X	41.42201	86.46324	57.73784	11.49516	0.0239932	0.22732057	2.6589504	20	3 14.7	19.9
417164 2005 <i>WO</i> <sub>50</sub>	17.4	X	171.06098	94.87177	244.09512	5.44083	0.0566054	0.22138954	2.7062297	20	1 25.2	21.3
417165 2005 <i>WG</i> <sub>51</sub>	17.4	X	42.60444	27.68661	65.55590	4.45872	0.0622977	0.21485725	2.7608070	20	1 7.8	20.8
417166 2005 <i>WR</i> <sub>51</sub>	17.1	X	74.56857	337.12850	70.28815	7.16761	0.0395699	0.21276689	2.7788601	20	—	—
417167 2005 <i>WH</i> <sub>57</sub>	19.0	X	204.73114	125.40897	262.09705	40.46451	0.3680937	0.44161615	1.7078095	20	4 12.7	22.9
417168 2005 <i>WS</i> <sub>57</sub>	16.5	X	45.75405	205.59031	261.74059	10.96450	0.1114191	0.21951324	2.7216289	20	1 28.7	19.8
417169 2005 <i>WJ</i> <sub>71</sub>	16.0	X	115.70646	344.67566	65.47767	12.88443	0.1736748	0.22304400	2.6928305	20	3 13.3	20.2
417170 2005 <i>WQ</i> <sub>71</sub>	16.7	X	125.52985	308.08908	49.15386	9.26677	0.3115006	0.21973936	2.7197614	20	1 30.9	21.1
417171 2005 <i>WZ</i> <sub>74</sub>	17.8	X	100.40935	38.70428	327.40226	2.57394	0.2073391	0.21631406	2.7483975	20	—	—
417172 2005 <i>WS</i> <sub>77</sub>	16.6	X	71.52340	327.06003	63.80205	7.53703	0.0603996	0.20979977	2.8049990	20	—	—
417173 2005 <i>WM</i> <sub>81</sub>	17.2	X	99.32439	113.97342	268.59504	2.46175	0.1049832	0.21404827	2.7677588	20	1 2.7	20.6
417174 2005 <i>WV</i> <sub>84</sub>	17.9	X	81.75149	237.05732	262.16478	3.45537	0.3413611	0.22691320	2.6621318	20	6 12.2	21.7
417175 2005 <i>WB</i> <sub>93</sub>	16.4	X	136.28466	187.38057	253.75717	9.59066	0.0956360	0.23091495	2.6312858	20	4 25.7	20.3
417176 2005 <i>WM</i> <sub>94</sub>	16.4	X	165.64296	226.41477	87.78397	6.72306	0.0652943	0.21343768	2.7730348	20	—	—
417177 2005 <i>WD</i> <sub>104</sub>	15.9	X	15.49476	221.63983	242.77919	17.40101	0.1227693	0.21188268	2.7865857	20	—	—
417178 2005 <i>WO</i> <sub>112</sub>	17.2	X	114.37899	52.11851	76.69716	16.70847	0.2488460	0.23231924	2.6206716	20	6 19.5	21.5
417179 2005 <i>WV</i> <sub>114</sub>	17.0	X	98.08587	211.91947	271.67514	7.29732	0.0829854	0.22767612	2.6561814	20	5 3.7	20.6
417180 2005 <i>WQ</i> <sub>124</sub>	17.9	X	50.25667	5.10864	67.02197	4.81391	0.0837461	0.21311543	2.7758295	20	—	—
417181 2005 <i>WC</i> <sub>138</sub>	17.1	X	96.94887	325.07201	61.74356	4.54289	0.0900771	0.21606119	2.7505416	20	1 2.6	20.6
417182 2005 <i>WX</i> <sub>138</sub>	17.6	X	8.51393	98.70365	67.69321	9.75226	0.2084613	0.21906742	2.7253201	20	2 17.2	20.3
417183 2005 <i>WV</i> <sub>139</sub>	17.3	X	90.01753	306.25461	66.23149	2.66681	0.2419021	0.21336929	2.7736273	20	—	—
417184 2005 <i>WQ</i> <sub>141</sub>	16.6	X	259.64382	112.28684	106.17736	15.83312	0.1010660	0.20421621	2.8558973	20	—	—
417185 2005 <i>WB</i> <sub>151</sub>	16.7	X	99.05176	146.02525	284.37701	4.95462	0.2624868	0.22206310	2.7007545	20	3 21.8	20.7
417186 2005 <i>WK</i> <sub>154</sub>	17.2	X	103.28702	129.48284	280.82978	2.26675	0.2599194	0.22256032	2.6967305	20	3 2.7	20.9
417187 2005 <i>WU</i> <sub>154</sub>	16.6	X	97.94495	4.79981	71.52201	6.58396	0.0304687	0.22182424	2.7026930	20	2 29.5	20.3
417188 2005 <i>WA</i> <sub>163</sub>	16.7	X	152.69136	151.28598	245.50679	13.96676	0.1191275	0.23006087	2.6377940	20	3 16.2	21.0
417189 2005 <i>WV</i> <sub>169</sub>	17.0	X	92.55253	296.17899	88.86187	4.53635	0.0997964	0.21397282	2.7684094	20	—	—
417190 2005 <i>WQ</i> <sub>172</sub>	17.5	X	58.46954	269.50134	177.64561	1.58213	0.2446094	0.21744359	2.7388714	20	2 11.9	20.0
417191 2005 <i>WK</i> <sub>173</sub>	17.1	X	14.69794	353.11766	120.41292	2.98244	0.1753817	0.21080604	2.7960655	20	—	—
417192 2005 <i>WT</i> <sub>182</sub>	15.2	X	105.33326	118.70109	266.74436	29.98424	0.0340386	0.21603461				

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>
417201 2005 XM <sub>4</sub>	19.7	X	258.39951	345.42938	81.87710	34.14651	0.0640439	0.66207173	1.3037651	20	—	—
417202 2005 XL <sub>5</sub>	17.7	X	110.98674	99.77580	287.79819	3.80760	0.1681175	0.21905719	2.7254049	20	1 31.6	21.5
417203 2005 XL <sub>11</sub>	16.1	X	346.17157	335.85151	95.57768	10.33113	0.0833081	0.20114318	2.8849115	20	—	—
417204 2005 XS <sub>39</sub>	15.8	X	28.37609	252.83807	282.24545	14.03265	0.4013594	0.21685802	2.7437996	20	5 7.4	17.7
417205 2005 XZ <sub>41</sub>	17.5	X	159.78222	310.68018	73.14147	3.35582	0.1900803	0.22782128	2.6550530	20	3 19.9	21.8
417206 2005 XC <sub>50</sub>	16.6	X	33.36070	185.48120	284.12186	7.19670	0.1833647	0.21372628	2.7705379	20	1 16.8	19.2
417207 2005 XE <sub>58</sub>	17.5	X	53.49189	206.66554	254.32904	3.81852	0.0793833	0.21900715	2.7258200	20	2 1.6	20.7
417208 2005 XW <sub>58</sub>	17.0	X	105.34059	68.42766	283.84352	1.91866	0.2224110	0.21258331	2.7804597	20	—	—
417209 2005 XY <sub>61</sub>	16.7	X	126.21040	36.68590	49.47563	12.98581	0.2335584	0.23068249	2.6330532	20	5 7.2	20.9
417210 2005 XV <sub>77</sub>	20.6	X	62.06216	9.27193	282.25545	16.85013	0.4141837	1.41925544	0.7842039	20	—	—
417211 2005 XL <sub>80</sub>	18.4	X	88.53728	143.60165	53.37320	10.89416	0.4873409	0.43427720	1.7269961	20	9 28.3	21.7
417212 2005 XZ <sub>81</sub>	17.1	X	48.21522	216.05097	221.66564	2.59749	0.0725899	0.21320675	2.7750368	20	—	—
417213 2005 XY <sub>86</sub>	17.4	X	20.28146	81.38029	41.11061	4.48670	0.0462510	0.21555839	2.7548170	20	1 13.7	20.9
417214 2005 XF <sub>102</sub>	16.6	X	59.14010	14.00446	113.54919	10.78848	0.1357248	0.21704549	2.7422194	20	3 30.6	20.0
417215 2005 XM <sub>103</sub>	16.7	X	71.68611	66.71554	113.98342	12.28045	0.1559627	0.22670465	2.6637641	20	6 28.5	20.3
417216 2005 XV <sub>109</sub>	17.4	X	211.06271	146.97134	293.75824	12.52700	0.2189163	0.23987485	2.5653477	20	7 10.5	21.4
417217 2005 YS	19.6	X	221.20782	327.89882	288.62230	19.59059	0.5503936	1.64376428	0.7110656	20	12 5.8	19.1
417218 2005 YL <sub>12</sub>	17.0	X	84.05167	306.20732	83.24799	3.48145	0.1340897	0.21112137	2.7932807	20	—	—
417219 2005 YT <sub>12</sub>	17.1	X	347.24011	112.77426	58.43342	2.71508	0.1585614	0.21132772	2.7914621	20	1 17.5	20.3
417220 2005 YV <sub>24</sub>	16.5	X	125.83531	211.17883	108.51167	16.50230	0.1389194	0.20249130	2.8720928	20	—	—
417221 2005 YJ <sub>28</sub>	16.8	X	133.79897	302.69234	102.99892	7.16744	0.0199591	0.21814330	2.7330115	20	3 5.5	20.6
417222 2005 YW <sub>31</sub>	16.9	X	91.12327	352.42487	110.32942	12.17821	0.1299582	0.22077899	2.7112167	20	4 12.8	20.8
417223 2005 YH <sub>34</sub>	17.1	X	60.14616	141.92432	293.71333	3.25098	0.1844265	0.21192529	2.7862122	20	1 23.3	19.9
417224 2005 YQ <sub>37</sub>	16.2	X	99.23263	127.69303	312.35245	13.58116	0.1673089	0.22075275	2.7114315	20	3 16.9	20.1
417225 2005 YO <sub>41</sub>	16.4	X	87.69424	26.29268	89.16225	14.80229	0.2122971	0.22598814	2.6693916	20	5 6.5	20.2
417226 2005 YE <sub>47</sub>	16.8	X	114.22840	95.98403	303.13531	11.71211	0.2002291	0.21648900	2.7469167	20	2 20.4	20.9
417227 2005 YQ <sub>48</sub>	17.1	X	25.85457	29.33685	104.39449	3.16091	0.1703585	0.21254123	2.7808267	20	2 5.8	19.8
417228 2005 YA <sub>50</sub>	17.3	X	77.00882	215.50494	223.70799	3.08137	0.0730483	0.21887952	2.7268796	20	2 6.9	20.8
417229 2005 YK <sub>52</sub>	17.7	X	277.24416	177.20796	244.32652	2.64039	0.0258608	0.31700122	2.1302411	20	10 11.6	19.8
417230 2005 YW <sub>56</sub>	17.0	X	148.57960	231.14912	60.42554	3.09578	0.0382519	0.20193508	2.8773644	20	—	—
417231 2005 YT <sub>57</sub>	17.4	X	91.54516	88.36574	304.02613	2.44138	0.1413505	0.21102655	2.7941174	20	1 10.7	21.0
417232 2005 YN <sub>70</sub>	16.7	X	318.46557	152.85859	71.41588	9.42660	0.0546816	0.22328657	2.6908799	20	2 29.9	20.4
417233 2005 YB <sub>72</sub>	15.9	X	173.24461	128.90440	280.38959	22.81331	0.1239881	0.23119986	2.6291236	20	4 20.4	20.6
417234 2005 YM <sub>74</sub>	17.5	X	100.22510	144.30507	285.88152	3.86307	0.2546073	0.22121166	2.7076803	20	3 22.5	21.3
417235 2005 YA <sub>77</sub>	16.9	X	145.15590	274.70960	87.00689	8.57783	0.2294400	0.21818911	2.7326290	20	2 14.4	21.4
417236 2005 YS <sub>88</sub>	17.0	X	297.38747	290.69773	288.11068	3.91956	0.0681373	0.21179655	2.7873412	20	1 21.4	20.9
417237 2005 YY <sub>91</sub>	16.6	X	99.62880	312.62792	293.13714	14.22956	0.2241623	0.22050726	2.7134436	20	3 6.6	20.6
417238 2005 YL <sub>92</sub>	16.8	X	342.06378	290.41388	279.44894	3.28254	0.1501777	0.21703524	2.7423058	20	2 27.5	20.0
417239 2005 YF <sub>110</sub>	16.3	X	37.39998	287.28813	275.10532	11.04926	0.2168326	0.22501897	2.6770509	20	6 13.7	18.9
417240 2005 YV <sub>117</sub>	17.1	X	37.83953	110.05128	305.93181	9.61461	0.1215401	0.20314495	2.8659286	20	—	—
417241 2005 YH <sub>122</sub>	16.7	X	84.81394	105.66166	309.36259	9.80495	0.2967041	0.21537267	2.7564005	20	2 20.0	20.3
417242 2005 YY <sub>132</sub>	16.3	X	0.66103	125.14943	299.57675	10.07699	0.0517198	0.19913710	2.9042540	20	—	—
417243 2005 YJ <sub>156</sub>	16.8	X	66.32533	341.95967	112.62319	9.18621	0.1933961	0.21711122	2.7416659	20	3 3.7	20.0
417244 2005 YZ <sub>160</sub>	16.7	X	25.82118	8.26653	124.98341	10.05138	0.2232136	0.21338608	2.7734818	20	2 5.0	19.0
417245 2005 YN <sub>161</sub>	16.5	X	144.65722	143.04633	246.27395	7.97081	0.3564839	0.22625619	2.6672829	20	3 19.5	21.5
417246 2005 YZ <sub>184</sub>	16.7	X	100.94640	311.94380	111.22046	10.48112	0.2743231	0.22029408	2.7151938	20	3 24.2	20.8
417247 2005 YD <sub>188</sub>	16.1	X	45.85490	228.76161	115.90965	12.77170	0.0104002	0.18943537	3.0025852	20	11 30.8	20.4
417248 2005 YY <sub>191</sub>	17.8	X	300.60656	48.68736	322.90502	4.67094	0.1276832	0.31279100	2.1493141	20	8 21.4	19.3
417249 2005 YE <sub>204</sub>	17.3	X	54.17912	11.01963	120.68273	4.47779	0.1434040	0.21719931	2.7409246	20	3 25.7	20.4
417250 2005 YZ <sub>205</sub>	17.0	X	66.59626	250.86847	175.30809	5.03775	0.1526157	0.21180028	2.7873084	20	1 16.9	20.2
417251 2005 YS <sub>207</sub>	17.4	X	56.71872	88.62364	358.92126	1.62965	0.1044705	0.21146714	2.7902351	20	1 25.3	20.6
417252 2005 YN <sub>217</sub>	16.9	X	316.17128	132.82611	30.68041	0.69657	0.1235132	0.20501793	2.8484471	20	—	—
417253 2005 YS <sub>222</sub>	16.0	X	3.06805	219.39771	276.59087	12.36122	0.1373872	0.21300019	2.7768306	20	—	—
417254 2005 YW <sub>227</sub>	16.8	X	290.76398	78.73519	107.80367	13.93542	0.1471023	0.20397158	2.8581802	20	—	—
417255 2005 YQ <sub>229</sub>	16.1	X	58.89252	110.23414	308.35411	6.81127	0.0434675	0.20920348	2.8103265	20	—	—
417256 2005 YA <sub>238</sub>	16.3	X	332.14131	128.30206	125.68614	18.43565	0.1363205	0.22368507	2.6876830	20	4 23.5	19.8
417257 2005 YD <sub>245</sub>	17.2	X	323.76423	43.93064	112.02243	7.72241	0.0568339	0.20597828	2.8395865	20	—	—
417258 2005 YK <sub>245</sub>	16.7	X	170.53834	291.95335	87.12189	7.44990	0.0596416	0.22216668	2.6999151	20	3 20.1	20.7
417259 2005 YM <sub>258</sub>	17.3	X	101.59966	333.23860	110.65515	10.42839	0.1715370	0.22056094	2.7130033	20	4 6.7	21.3
417260 2005 YN <sub>260</sub>	16.7	X	44.27375	116.38263	109.55617	13.32983	0.2631811	0.23001669	2.6381318	20	8 10.2	19.8
417261 2005 YX <sub>260</sub>	17.1	X	79.85197	336.95471	142.76670	5.62287	0.0600511	0.22119072	2.7078511	20	4 5.0	20.6
417262 2005 YG <sub>271</sub>	17.0	X	79.42704	127.62502	286.97765	7.59179	0.1496996	0.21110242	2.7934479	20	1 21.9	20.5
417263 2005 YV <sub>286</sub>	15.9	X	313.56491	292.76404	278.07519	13.41201	0.1058995	0.21722176	2.7407357	20	1 23.2	19.6
417264 2006 AT <sub>2</sub>	17.2	X	52.82439	39.19020	144.11212	21.15053	0.5983290	0.22069825	2.7118778	20	8 11.6	21.4
417265 2006 AQ <sub>6</sub>	16.0	X	340.33813	125.09308	325.85380	9.95014	0.1060081	0.19897662	2.9058154	20	—	—
417266 2006 AD <sub>15</sub>	17.7	X	348.96933	49.57051	298.33325	5.46697	0.0915724	0.31620439	2.1338184	20	10 18.9	19.6
417267 2006 AA <sub>25</sub>	16.7	X	71.41368	76.24657	290.18761	13.63701	0.1648290	0.20331233	2.8643554	20	—	—
417268 2006 AM <sub>29</sub>	17.1	X	16.20727	86.35620	61.69776	9.82862	0.2066516	0.21233862	2.7825954	20	2 8.7	19.9
417269 2006 AQ <sub>31</sub>	16.5	X	104.49709	130.90368	313.72452	12.52899	0.2294170	0.22266761	2.6958642	20	4 6.3	20.7
417270 2006 AG <sub>32</sub>	16.0	X	77.89330	155.55879	305.68504	15.98205	0.2484010	0.22172380	2.7038092	20	5 7.9	20.0
417271 2006 AQ <sub>32</sub>	17.4	X	48.33256	337.09391	181.75125	2.43721	0.2046022	0.22013399	2.7165100	20	4 29.7	20.3
417272 2006 AU <sub>34</sub>	16.7	X	92.90987	292.13317	96.44971	2.71216	0.0880230	0.20907215	2.8115033	20	—	—
417273 2006 AX <sub>42</sub>	16.4	X	76.06951	235.75427	135.95503	10.00363	0.0233415	0.19859247	2.9095615	20	—	—
417274 2006 AL <sub>44</sub>	13.8	X	209.79437									



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>
417281 2006 AG <sub>90</sub>	16.7	X	117.55166	152.79756	267.68660	10.63045	0.1169178	0.22330976	2.6906936	20	3 7.9	20.8
417282 2006 AZ <sub>96</sub>	15.7	X	109.47396	0.24856	105.64898	32.71245	0.1071956	0.22819916	2.6521211	20	5 15.9	20.2
417283 2006 AL <sub>97</sub>	15.5	X	257.22296	40.21537	78.09900	18.40534	0.0501951	0.18569452	3.0427761	20	11 6.9	19.9
417284 2006 AC <sub>105</sub>	16.1	X	329.13567	120.34786	347.42189	9.38110	0.0458895	0.19062257	2.9901054	20	—	—
417285 2006 BH <sub>2</sub>	16.3	X	327.24550	246.82102	310.68862	11.62051	0.1347718	0.20973779	2.8055516	20	1 25.0	19.7
417286 2006 BS <sub>3</sub>	17.0	X	247.61799	97.07841	116.17769	2.33600	0.2358467	0.19653119	2.9298703	20	—	—
417287 2006 BH <sub>5</sub>	16.8	X	53.23041	171.18637	302.41685	7.05451	0.1856220	0.21533184	2.7567489	20	2 28.7	19.8
417288 2006 BB <sub>6</sub>	15.5	X	330.61271	277.54633	288.90811	11.28317	0.2195065	0.21094168	2.7948668	20	1 26.3	18.9
417289 2006 BK <sub>8</sub>	17.0	X	60.08873	0.78566	131.28048	6.29185	0.1158273	0.21742881	2.7389955	20	4 1.7	20.3
417290 2006 BJ <sub>30</sub>	16.6	X	47.75557	2.03118	123.10620	9.98569	0.1111813	0.21398361	2.7683163	20	3 3.4	19.9
417291 2006 BQ <sub>45</sub>	16.4	X	19.82200	253.14460	323.26260	11.76882	0.1733790	0.21935916	2.7229032	20	5 19.4	19.5
417292 2006 BP <sub>57</sub>	17.0	X	357.28057	188.50920	326.00960	7.69007	0.0754377	0.20952156	2.8074815	20	1 21.6	20.6
417293 2006 BV <sub>63</sub>	17.2	X	321.96224	271.62061	297.38467	2.41862	0.0281701	0.21335163	2.7737804	20	2 14.5	20.8
417294 2006 BK <sub>66</sub>	16.7	X	45.02376	64.27196	348.44714	2.73721	0.1626300	0.20339019	2.8636243	20	—	—
417295 2006 BB <sub>69</sub>	16.6	X	321.28661	146.91903	77.65050	4.75928	0.0358328	0.21510983	2.7586454	20	3 6.3	20.2
417296 2006 BH <sub>69</sub>	17.0	X	190.65502	333.37291	15.86663	5.15384	0.0400712	0.21528738	2.7571284	20	3 3.1	20.9
417297 2006 BA <sub>72</sub>	16.4	X	336.50962	214.70527	342.57647	9.04759	0.1512438	0.21054065	2.7984147	20	2 6.4	19.8
417298 2006 BE <sub>80</sub>	16.4	X	335.98848	80.04814	128.82341	12.31446	0.1743147	0.20903046	2.8118770	20	2 16.9	19.7
417299 2006 BT <sub>80</sub>	15.9	X	14.10505	353.26152	140.41286	15.92002	0.0800298	0.20521805	2.8465950	20	1 18.6	19.5
417300 2006 BA <sub>82</sub>	15.6	X	79.32535	26.17998	349.67438	11.47905	0.2069310	0.19805283	2.9148442	20	—	—
417301 2006 BM <sub>86</sub>	16.6	X	39.15609	98.36862	124.19877	13.68519	0.2177019	0.22537703	2.6742148	20	7 17.0	19.5
417302 2006 BV <sub>90</sub>	16.4	X	314.61635	30.34256	116.33522	13.69220	0.2028642	0.20031961	2.8928133	20	—	—
417303 2006 BE <sub>97</sub>	16.2	X	95.76227	342.80486	341.29224	10.76239	0.0340328	0.18689775	3.0297026	20	—	—
417304 2006 BS <sub>97</sub>	16.6	X	49.14789	354.88707	91.76428	4.88268	0.0725937	0.20964480	2.8063811	20	1 10.4	20.1
417305 2006 BA <sub>103</sub>	13.5	X	286.04297	154.18281	145.79844	34.95443	0.0898562	0.08372061	5.1750490	20	4 30.9	20.7
417306 2006 BT <sub>109</sub>	18.3	X	76.19623	234.85063	53.07150	2.15282	0.0868250	0.31785943	2.1264050	20	12 1.1	20.9
417307 2006 BB <sub>111</sub>	16.4	X	61.00151	116.75511	329.02993	13.78652	0.0550495	0.20909006	2.8113427	20	1 27.4	20.1
417308 2006 BC <sub>113</sub>	17.4	X	53.05422	64.77032	358.86451	2.07458	0.1619696	0.20602597	2.8391482	20	—	—
417309 2006 BR <sub>120</sub>	17.8	X	9.37198	101.92332	166.86181	6.76711	0.1409697	0.29784309	2.2206347	20	7 24.5	19.6
417310 2006 BM <sub>133</sub>	16.3	X	124.33402	87.28052	166.18623	8.88566	0.1560463	0.17610369	3.1523052	20	11 18.5	21.5
417311 2006 BF <sub>146</sub>	17.0	X	21.32232	142.91667	27.99873	7.54540	0.1571344	0.21501992	2.7594143	20	3 21.8	19.9
417312 2006 BS <sub>146</sub>	16.3	X	111.35645	21.56376	332.32398	9.22563	0.0645936	0.20173620	2.8792552	20	—	—
417313 2006 BV <sub>153</sub>	18.4	X	149.76750	59.36937	125.84258	4.88416	0.0316901	0.31223255	2.1518761	20	10 10.7	20.9
417314 2006 BR <sub>154</sub>	16.4	X	303.68368	68.58073	116.30691	4.23475	0.0960934	0.20130743	2.8833422	20	—	—
417315 2006 BA <sub>163</sub>	17.0	X	23.81487	141.99155	321.01396	4.55569	0.0308135	0.20436447	2.8545159	20	—	—
417316 2006 BX <sub>163</sub>	16.2	X	307.06348	322.34036	319.44413	9.53543	0.0462301	0.22315353	2.6919493	20	4 21.6	19.9
417317 2006 BL <sub>168</sub>	17.9	X	257.95401	89.51655	331.57065	5.14705	0.0484548	0.30839471	2.1696921	20	9 5.7	20.3
417318 2006 BA <sub>169</sub>	16.3	X	62.74329	239.14561	153.23242	14.88163	0.2196451	0.19941245	2.9015799	20	—	—
417319 2006 BT <sub>181</sub>	16.6	X	53.39939	31.34317	332.54488	9.39999	0.1043261	0.19075549	2.9887163	20	—	—
417320 2006 BP <sub>228</sub>	16.7	X	70.03726	67.38159	328.99598	10.70560	0.0460584	0.20255418	2.8714983	20	—	—
417321 2006 BJ <sub>247</sub>	17.4	X	36.84547	277.54783	329.85253	6.90002	0.0791736	0.30021990	2.2089017	20	8 5.0	19.6
417322 2006 BU <sub>282</sub>	16.1	X	62.63655	331.37332	351.07653	9.91489	0.1361220	0.18468564	3.0538472	20	12 5.5	20.8
417323 2006 BX <sub>283</sub>	17.4	X	337.09791	90.85117	59.25342	1.91764	0.1639586	0.20366311	2.8610655	20	—	—
417324 2006 CE <sub>14</sub>	13.7	X	292.22210	143.16602	143.29514	21.38586	0.0254760	0.08384043	5.1701170	20	4 29.1	20.8
417325 2006 CJ <sub>22</sub>	17.1	X	98.04824	33.62043	41.04616	2.79061	0.0371586	0.21173841	2.7878514	20	2 27.6	20.9
417326 2006 CI <sub>24</sub>	17.2	X	82.70814	94.98460	326.08975	4.42221	0.06172503	0.21207712	2.7848823	20	2 7.6	20.6
417327 2006 CZ <sub>29</sub>	13.6	X	141.24142	119.11832	313.29295	17.77430	0.0435317	0.08339801	5.1883859	20	4 15.3	20.9
417328 2006 CW <sub>46</sub>	16.4	X	34.69218	264.29496	127.15135	10.64287	0.0199932	0.19320083	2.9634440	20	—	—
417329 2006 CH <sub>51</sub>	16.7	X	35.73865	277.94614	139.69613	6.78625	0.0839679	0.20026932	2.8932976	20	—	—
417330 2006 DB <sub>3</sub>	16.6	X	160.19304	274.33359	336.57188	6.63104	0.0998079	0.18423260	3.0588515	20	12 16.5	21.5
417331 2006 DO <sub>5</sub>	17.0	X	57.74108	266.02772	161.23693	2.29179	0.0519835	0.20334465	2.8640519	20	—	—
417332 2006 DQ <sub>17</sub>	16.3	X	271.64900	88.26286	124.28157	7.28564	0.0129800	0.20120950	2.8842777	20	—	—
417333 2006 DY <sub>21</sub>	17.0	X	104.47876	1.50322	43.61817	2.61479	0.0985969	0.20684206	2.8316755	20	2 7.9	20.9
417334 2006 DX <sub>44</sub>	16.8	X	95.43524	314.12430	121.97311	4.74671	0.0758001	0.21073747	2.7966721	20	3 2.9	20.5
417335 2006 DQ <sub>59</sub>	15.9	X	73.96606	343.26815	353.82392	11.30997	0.0683557	0.18187851	3.0851891	20	12 29.0	20.6
417336 2006 DZ <sub>69</sub>	16.5	X	252.14043	134.38195	69.33765	1.35365	0.1086030	0.19069618	2.9893359	20	—	—
417337 2006 DR <sub>79</sub>	17.7	X	74.43245	308.97047	169.74719	7.07295	0.2834860	0.21686392	2.7437498	20	5 1.2	21.3
417338 2006 DE <sub>88</sub>	17.2	X	39.12014	1.35634	161.71342	9.40677	0.2769815	0.21408472	2.7674446	20	5 1.8	19.9
417339 2006 DL <sub>96</sub>	17.6	X	17.87837	268.90918	355.93087	6.51864	0.1241397	0.29371720	2.2413850	20	8 6.1	19.6
417340 2006 DW <sub>108</sub>	16.5	X	10.68794	76.19395	347.47469	15.03426	0.0866289	0.19004185	2.9961936	20	—	—
417341 2006 DW <sub>112</sub>	16.2	X	75.03681	308.55438	342.53843	11.23655	0.1178235	0.17403042	3.1772588	20	11 4.8	21.1
417342 2006 DR <sub>122</sub>	16.4	X	117.08896	357.94146	102.63109	13.45321	0.2263681	0.22390867	2.6858935	20	5 19.6	20.8
417343 2006 DP <sub>133</sub>	17.1	X	70.79296	345.97144	104.10038	3.86081	0.1580797	0.21037495	2.7998840	20	2 27.7	20.4
417344 2006 DR <sub>144</sub>	17.0	X	333.41609	130.81941	2.08437	3.34377	0.0856592	0.19699000	2.9253192	20	—	—
417345 2006 DE <sub>154</sub>	16.1	X	118.97937	60.09685	186.40312	18.76940	0.1331526	0.17150241	3.2084054	20	11 4.1	21.3
417346 2006 DJ <sub>157</sub>	18.3	X	170.54774	95.65702	58.56230	2.08090	0.0825397	0.30744804	2.1741436	20	9 18.8	21.0
417347 2006 DR <sub>182</sub>	17.8	X	262.25273	70.53267	340.87954	5.57246	0.1062591	0.30569254	2.1824593	20	8 19.7	19.9
417348 2006 DD <sub>201</sub>	15.7	X	40.89057	10.59862	77.45369	13.10283	0.0477181	0.20394843	2.8583965	20	—	—
417349 2006 EP <sub>18</sub>	16.5	X	129.77682	299.89006	357.58415	12.05720	0.0276979	0.18559817	3.0438290	20	—	—
417350 2006 EY <sub>18</sub>	16.8	X	342.55995	123.60535	356.92107	11.85453	0.1072423	0.19511375	2.9440429	20	—	—
417351 2006 EM <sub>30</sub>	16.6	X	286.30540	124.36080	5.86603	10.50018	0.0126339	0.18564236	3.0433460	20	12 26.6	21.0
417352 2006 EO <sub>35</sub>	16.1	X	21.79982	29.73667	3.34015	15.44679	0.2177030	0.18736458	3.0246680	20	—	—
417353 2006 EF <sub>41</sub>	16.2	X	25.96607	57.19728	349.62261	9.31176	0.0902496	0.18859234	3.0115265	20	—	—
417354 2006 EB <sub>57</sub>	13.8	X	139.73047	202.10223	247.56962	3.99925	0.0147932	0.08121450	5.2809695	20	5 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>
417361 2006 FT <sub>32</sub>	16.5	X	118.06591	231.31211	53.31449	5.45271	0.1484347	0.17309441	3.1887027	20	12 15.3	21.7
417362 2006 FZ <sub>43</sub>	16.5	X	47.25147	47.24812	125.39404	9.31545	0.1295290	0.21659795	2.7459955	20	5 9.9	19.9
417363 2006 FN <sub>53</sub>	16.4	X	234.69693	27.65606	165.21212	1.68132	0.1880806	0.18252566	3.0778924	20	12 14.4	20.9
417364 2006 FF <sub>55</sub>	16.7	X	277.02889	317.91338	189.28740	14.32221	0.0943299	0.18623878	3.0368450	20	12 25.9	21.0
417365 2006 GZ <sub>1</sub>	15.8	X	166.98318	212.63677	47.72822	10.28473	0.0561133	0.18347741	3.0672392	20	—	—
417366 2006 GK <sub>2</sub>	15.8	X	187.55209	193.45703	28.49963	14.98882	0.1754148	0.17737469	3.1371957	20	11 30.5	21.1
417367 2006 GD <sub>26</sub>	17.6	X	295.45300	337.36629	39.54741	7.19750	0.1223287	0.29789609	2.2203742	20	8 23.0	19.7
417368 2006 GL <sub>27</sub>	16.1	X	206.08040	160.74568	50.69821	6.18789	0.0880639	0.17890000	3.1193384	20	12 16.3	20.8
417369 2006 GS <sub>30</sub>	16.2	X	236.01338	142.14392	42.71226	8.37247	0.1301236	0.18174598	3.0866887	20	12 12.9	20.7
417370 2006 GS <sub>35</sub>	15.3	X	133.30031	272.74804	19.09441	18.41993	0.2838410	0.17691358	3.1426446	20	—	—
417371 2006 GH <sub>39</sub>	16.9	X	136.57912	85.06606	88.95242	22.93634	0.2357244	0.30113958	2.2044021	20	9 20.0	21.2
417372 2006 GD <sub>47</sub>	16.5	X	223.72012	30.04601	200.66960	3.48006	0.0566947	0.18721315	3.0262988	20	—	—
417373 2006 GJ <sub>55</sub>	16.2	X	112.72657	259.90601	33.34593	12.10703	0.0375932	0.17656079	3.1468295	20	12 13.5	21.0
417374 2006 HL <sub>21</sub>	16.6	X	273.98187	19.12503	140.91738	4.03581	0.0842686	0.18395531	3.0619246	20	—	—
417375 2006 HY <sub>23</sub>	16.1	X	268.55274	129.63765	51.66230	9.89761	0.0900920	0.18510355	3.0492490	20	—	—
417376 2006 HJ <sub>29</sub>	16.1	X	59.22613	270.80598	44.75011	19.02086	0.0871180	0.16901648	3.2397887	20	11 14.0	20.7
417377 2006 HK <sub>32</sub>	15.6	X	216.71883	261.88442	315.85105	16.01039	0.1242463	0.18342784	3.0677918	20	—	—
417378 2006 HB <sub>53</sub>	15.5	X	231.54521	97.60116	98.41344	10.67557	0.0497224	0.18156257	3.0887671	20	—	—
417379 2006 HS <sub>55</sub>	15.9	X	201.81216	139.81622	64.61457	18.06991	0.1822820	0.17752452	3.1354303	20	11 25.6	21.0
417380 2006 HM <sub>57</sub>	15.8	X	148.45774	169.37436	95.39032	7.09053	0.1178885	0.17506162	3.1647695	20	12 19.7	20.7
417381 2006 HR <sub>57</sub>	17.2	X	15.67872	217.12619	39.40915	5.89433	0.1406491	0.28841191	2.2687880	20	7 19.5	19.2
417382 2006 HY <sub>59</sub>	17.1	X	0.18919	175.13523	105.77396	7.61056	0.1171729	0.28863951	2.2675952	20	7 23.9	18.9
417383 2006 HZ <sub>67</sub>	15.9	X	336.85439	354.66431	42.95841	11.41619	0.0739752	0.16843194	3.2472801	20	11 3.8	20.1
417384 2006 HR <sub>68</sub>	16.3	X	190.28359	352.72728	207.52522	11.65339	0.0708539	0.17221497	3.1995492	20	11 18.2	21.1
417385 2006 HR <sub>71</sub>	15.8	X	103.45879	239.86646	75.51246	12.72331	0.0613681	0.17569799	3.1571231	20	—	—
417386 2006 HP <sub>75</sub>	16.0	X	10.18652	280.39426	133.34974	11.33444	0.0458691	0.17701144	3.1414862	20	—	—
417387 2006 HK <sub>93</sub>	15.9	X	273.90511	251.96143	212.70886	16.46503	0.2540186	0.17489119	3.1668253	20	10 2.6	20.2
417388 2006 HC <sub>94</sub>	16.2	X	358.93230	245.15116	188.16163	15.97514	0.2110952	0.18079178	3.0975400	20	—	—
417389 2006 HU <sub>100</sub>	17.3	X	50.53433	125.80552	98.88143	4.73786	0.0728916	0.28902269	2.2655906	20	7 20.5	19.6
417390 2006 HA <sub>108</sub>	16.3	X	129.85700	214.46319	76.12682	7.22221	0.0711881	0.17698777	3.1417663	20	12 31.6	21.1
417391 2006 HB <sub>115</sub>	16.0	X	6.69290	44.50795	43.88261	10.84890	0.0827883	0.18740601	3.0242223	20	—	—
417392 2006 HK <sub>115</sub>	16.2	X	124.85575	233.96100	45.67359	10.10072	0.0571594	0.17496717	3.1659084	20	12 11.8	21.0
417393 2006 HW <sub>116</sub>	17.8	X	0.01597	45.53044	226.15508	5.41538	0.1016806	0.28715276	2.2754156	20	7 5.5	19.9
417394 2006 HY <sub>118</sub>	17.9	X	106.00786	22.86220	193.48184	9.66558	0.0457171	0.29955280	2.2121800	20	9 21.6	20.6
417395 2006 HL <sub>122</sub>	15.3	X	153.22668	152.81320	105.68802	28.92867	0.1682451	0.17533192	3.1615160	20	12 19.1	20.7
417396 2006 HM <sub>134</sub>	16.6	X	59.16578	213.09970	188.45211	14.65403	0.1158137	0.19335817	2.9618362	20	—	—
417397 2006 HE <sub>149</sub>	15.9	X	320.67100	231.73758	237.56809	21.99449	0.1134756	0.18030240	3.1031425	20	—	—
417398 2006 HC <sub>154</sub>	15.9	X	181.60094	296.90181	58.76990	9.94040	0.1506129	0.19802293	2.9151376	20	3 9.4	20.8
417399 2006 HD <sub>154</sub>	16.4	X	228.60997	117.03406	45.83889	11.58868	0.0910385	0.17506835	3.1646884	20	11 12.4	21.0
417400 2006 HG <sub>154</sub>	15.4	X	145.90929	210.25094	74.30383	12.86461	0.0296110	0.17855477	3.1233578	20	—	—
417401 2006 JT <sub>3</sub>	16.0	X	325.67820	230.59449	214.26421	10.05646	0.0919763	0.17855580	3.1233458	20	12 18.4	20.0
417402 2006 JO <sub>5</sub>	17.1	X	339.28082	127.38822	39.38985	6.11544	0.1493738	0.19719457	2.9232957	20	1 3.7	20.7
417403 2006 JA <sub>10</sub>	16.5	X	146.88399	246.82615	6.95411	1.57676	0.0614760	0.17251098	3.1958880	20	12 4.9	21.4
417404 2006 JC <sub>12</sub>	17.6	X	341.03795	178.08777	93.50900	7.36749	0.1871332	0.28201734	2.3029553	20	5 22.2	19.2
417405 2006 JR <sub>14</sub>	18.2	X	246.87269	293.10782	12.46913	2.29790	0.2145951	0.26897636	2.3768036	20	2 22.9	21.9
417406 2006 JO <sub>21</sub>	16.1	X	259.36333	80.96905	102.05965	11.13754	0.0176442	0.18106070	3.0944722	20	—	—
417407 2006 JF <sub>30</sub>	15.7	X	72.49866	298.70110	58.81277	10.88597	0.0709269	0.17916750	3.1162328	20	—	—
417408 2006 JT <sub>31</sub>	16.2	X	207.57469	82.23015	117.38157	5.12498	0.0907259	0.17532630	3.1615836	20	12 4.1	21.0
417409 2006 JY <sub>34</sub>	16.7	X	30.63705	254.61926	230.73544	4.91311	0.0345810	0.19700212	2.9251993	20	2 1.2	20.6
417410 2006 JN <sub>35</sub>	16.2	X	219.43252	149.92445	70.67507	14.72532	0.1988327	0.18094570	3.0957832	20	12 28.8	21.0
417411 2006 JG <sub>39</sub>	16.1	X	247.76163	171.83267	68.14568	15.34890	0.0481622	0.18823770	3.0153077	20	—	—
417412 2006 JM <sub>40</sub>	15.5	X	342.28354	41.99051	56.42575	16.13803	0.0922217	0.18431658	3.0579223	20	—	—
417413 2006 JF <sub>48</sub>	16.0	X	178.29062	176.74184	55.26770	16.90094	0.1370030	0.17625935	3.1504163	20	12 7.0	21.0
417414 2006 JP <sub>53</sub>	16.2	X	228.89781	138.31514	74.33390	10.92773	0.1186885	0.18033969	3.1027147	20	—	—
417415 2006 JD <sub>54</sub>	17.1	X	31.74741	197.86677	84.91574	8.34207	0.1456473	0.29349348	2.2425239	20	10 4.9	19.6
417416 2006 KV <sub>4</sub>	17.5	X	202.89945	267.99427	65.04269	7.58319	0.1328910	0.26610078	2.3938960	20	2 22.9	21.3
417417 2006 KM <sub>11</sub>	17.8	X	44.98591	215.88325	64.09779	6.14917	0.1623206	0.29541341	2.2327970	20	10 20.3	20.4
417418 2006 KX <sub>18</sub>	17.5	X	257.83634	139.43197	167.86899	13.37651	0.2656447	0.27108748	2.3644478	20	2 29.4	21.5
417419 2006 KL <sub>21</sub>	20.9	X	160.86390	214.21658	117.20969	9.35555	0.1273212	0.75065893	1.1990601	20	—	—
417420 2006 KK <sub>36</sub>	15.9	X	59.35151	252.95682	126.02200	11.09253	0.0229807	0.18255813	3.0775275	20	—	—
417421 2006 KF <sub>37</sub>	15.3	X	151.46790	174.09815	89.63935	17.90757	0.0619586	0.17707003	3.1407932	20	12 22.3	20.0
417422 2006 KZ <sub>42</sub>	17.4	X	248.33850	77.90979	241.68293	12.02243	0.3022610	0.26793415	2.3829632	20	2 29.8	21.9
417423 2006 KJ <sub>43</sub>	16.5	X	211.19776	86.01777	96.19119	2.46590	0.1297104	0.17312263	3.1883561	20	11 13.1	21.4
417424 2006 KC <sub>47</sub>	17.9	X	274.10064	224.17647	98.83457	3.42863	0.2380882	0.27549494	2.3391620	20	4 9.2	21.3
417425 2006 KQ <sub>49</sub>	16.5	X	232.91632	357.33686	204.98142	4.71457	0.1081863	0.18048099	3.1010951	20	—	—
417426 2006 KS <sub>50</sub>	18.4	X	269.26310	113.62476	218.06768	5.06434	0.1896124	0.27786701	2.3258305	20	4 19.2	21.7
417427 2006 KD <sub>53</sub>	15.6	X	320.80667	66.25963	72.57691	22.83640	0.1015678	0.18548293	3.0450897	20	—	—
417428 2006 KY <sub>59</sub>	16.3	X	63.28408	237.43833	197.31477	10.09853	0.0943974	0.19096517	2.9865281	20	1 19.0	20.3
417429 2006 KG <sub>60</sub>	15.7	X	2.13985	319.83005	101.46447	11.56767	0.0860654	0.17593581	3.1542774	20	—	—
417430 2006 KK <sub>68</sub>	17.4	X	27.40797	225.49377	53.15623	7.66390	0.1148558	0.29255672	2.2473083	20	9 15.4	19.8
417431 2006 KW <sub>70</sub>	15.8	X	202.51650	132.45331	89.80900	9.67800	0.0261892	0.17729139	3.1381784	20	12 31.8	20.3
417432 2006 KL <sub>71</sub>	18.0	X	263.66566	154.49845	153.70268	5.55849	0.1993702	0.27147907	2.3621736	20	3 13.9	21.4
417433 2006 KM <sub>73</sub>	17.8	X	247.10078	178.69405	174.62961	9.39633	0.2281650	0.27542126	2.3395792	20	4 23.1	21.4
417434 2006 KP <sub>73</sub>	15.9	X	334.84510	348.20359	101.93226	17.47829						

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>
417441 2006 <i>KG</i> <sub>100</sub>	17.8	X	137.27518	289.97057	279.95070	5.80565	0.2160307	0.30464730	2.1874484	20	10 21.9	21.4
417442 2006 <i>KU</i> <sub>101</sub>	17.7	X	269.27307	150.23844	175.43630	7.68327	0.2524941	0.27428612	2.3460297	20	4 5.4	21.1
417443 2006 <i>KX</i> <sub>119</sub>	15.9	X	153.34622	219.03603	135.74184	10.34891	0.0344040	0.19118328	2.9842562	20	1 27.9	20.2
417444 2006 <i>OE</i> <sub>2</sub>	18.4	X	322.82218	108.77624	114.25716	42.04525	0.1909325	0.40800317	1.8003642	20	1 9.1	20.3
417445 2006 <i>OE</i> <sub>11</sub>	16.5	X	301.08127	325.12087	313.14130	14.27151	0.0857572	0.26842456	2.3800598	20	3 26.3	19.8
417446 2006 <i>OZ</i> <sub>11</sub>	16.7	X	293.96028	333.84793	316.58490	10.19796	0.2386181	0.26767874	2.3844788	20	3 13.9	20.0
417447 2006 <i>PQ</i> <sub>5</sub>	17.3	X	196.53166	31.97535	356.29491	3.56366	0.2701493	0.26219162	2.4176319	20	4 20.9	21.7
417448 2006 <i>PM</i> <sub>6</sub>	17.1	X	234.62176	350.67128	354.90610	10.66153	0.2709819	0.26430163	2.4047476	20	3 27.6	21.3
417449 2006 <i>PR</i> <sub>18</sub>	17.9	X	286.14908	258.12103	87.33442	2.26254	0.2123243	0.27497532	2.3421079	20	5 27.4	20.7
417450 2006 <i>PM</i> <sub>25</sub>	16.0	X	263.30750	285.68804	328.82182	11.82417	0.3004659	0.18663846	3.0325079	20	1 11.0	21.4
417451 2006 <i>PP</i> <sub>43</sub>	16.1	X	286.81794	264.52862	67.31002	22.16191	0.2814033	0.26877300	2.3780021	20	5 4.8	19.4
417452 2006 <i>QE</i> <sub>13</sub>	17.0	X	336.75986	188.08273	81.52782	7.65694	0.1148859	0.27175895	2.3605515	20	5 17.7	19.3
417453 2006 <i>QJ</i> <sub>14</sub>	18.0	X	234.56660	293.30948	22.85935	2.44522	0.2260836	0.26041758	2.4285992	20	2 25.9	22.0
417454 2006 <i>QL</i> <sub>14</sub>	17.3	X	209.43929	357.96298	355.58459	3.81519	0.2495168	0.26011321	2.4304934	20	3 20.6	21.6
417455 2006 <i>QX</i> <sub>15</sub>	17.5	X	231.12995	319.15377	31.71589	2.17830	0.2044518	0.26396498	2.4067917	20	4 5.8	21.3
417456 2006 <i>QT</i> <sub>32</sub>	17.5	X	245.34636	124.93509	239.25210	3.41020	0.2529298	0.26700605	2.3884821	20	4 30.9	21.5
417457 2006 <i>QX</i> <sub>34</sub>	17.9	X	207.90750	316.26697	230.03276	3.18086	0.1987089	0.25760183	2.4462645	20	3 4.2	21.8
417458 2006 <i>QN</i> <sub>35</sub>	17.5	X	214.53796	101.82384	261.34356	1.24732	0.2228312	0.26121871	2.4236312	20	4 5.4	21.5
417459 2006 <i>QT</i> <sub>50</sub>	16.8	X	208.40113	17.73252	16.74974	6.31594	0.1906201	0.26297569	2.4128240	20	5 9.7	20.8
417460 2006 <i>QB</i> <sub>51</sub>	17.5	X	266.02625	322.24222	339.41919	10.24877	0.2519363	0.26413265	2.4057731	20	3 2.4	21.1
417461 2006 <i>QX</i> <sub>54</sub>	17.6	X	336.42478	193.34065	84.82348	3.68143	0.2176637	0.27617455	2.3353230	20	5 17.0	19.2
417462 2006 <i>QH</i> <sub>55</sub>	17.1	X	206.90082	73.48387	332.73761	12.13325	0.4077526	0.26372961	2.4082235	20	5 13.9	22.1
417463 2006 <i>QD</i> <sub>59</sub>	17.4	X	220.82660	55.23153	130.65039	4.34192	0.2501686	0.26370537	2.4083711	20	4 11.2	21.5
417464 2006 <i>QY</i> <sub>64</sub>	18.2	X	213.30048	40.26721	332.73282	2.70613	0.2184470	0.26237538	2.4165030	20	4 16.2	22.2
417465 2006 <i>QW</i> <sub>76</sub>	17.7	X	204.15717	292.49772	140.81489	2.94155	0.1719766	0.27021204	2.3695520	20	6 27.7	21.4
417466 2006 <i>QC</i> <sub>92</sub>	17.5	X	231.95407	352.47162	316.07717	4.11815	0.1923514	0.25864333	2.4396931	20	2 14.8	21.4
417467 2006 <i>QN</i> <sub>99</sub>	17.2	X	293.06766	115.93198	173.45314	12.80583	0.1772393	0.26524175	2.3990619	20	3 25.9	20.2
417468 2006 <i>QT</i> <sub>106</sub>	17.4	X	212.03927	194.58520	196.39747	4.07749	0.2419088	0.26404688	2.4062940	20	5 8.5	21.5
417469 2006 <i>QU</i> <sub>128</sub>	17.1	X	248.37447	212.34032	165.27269	2.38452	0.2442323	0.26817879	2.3815138	20	5 23.0	20.6
417470 2006 <i>QK</i> <sub>146</sub>	17.8	X	164.10623	57.49909	346.60029	9.08992	0.2336322	0.25567023	2.4585702	20	4 13.0	22.0
417471 2006 <i>QJ</i> <sub>183</sub>	17.9	X	248.18605	61.22537	270.62472	1.21120	0.1337262	0.26168792	2.4207332	20	4 2.8	21.3
417472 2006 <i>RZ</i> <sub>7</sub>	17.9	X	222.33842	149.53201	175.24123	1.19578	0.2030760	0.25675242	2.4516569	20	2 26.3	21.9
417473 2006 <i>RD</i> <sub>21</sub>	18.3	X	229.75399	95.78599	220.22419	0.61377	0.1973627	0.25580947	2.4576779	20	2 22.1	22.2
417474 2006 <i>RR</i> <sub>22</sub>	18.1	X	195.02063	291.29399	88.82953	3.29002	0.2129472	0.25895206	2.4377536	20	4 12.8	22.1
417475 2006 <i>RF</i> <sub>30</sub>	15.7	X	188.67815	47.28226	248.41888	8.08699	0.0679207	0.17413741	3.1759573	20	—	—
417476 2006 <i>RD</i> <sub>37</sub>	17.7	X	190.66930	265.44568	114.31700	3.37116	0.2018336	0.25700992	2.4500190	20	4 8.9	21.8
417477 2006 <i>RH</i> <sub>38</sub>	17.3	X	302.94596	44.60655	251.30506	4.67992	0.1471099	0.26804121	2.3823251	20	4 20.3	20.2
417478 2006 <i>RV</i> <sub>38</sub>	18.2	X	178.62252	263.26189	109.10811	3.59554	0.2812723	0.25346489	2.4728145	20	3 23.2	22.6
417479 2006 <i>RC</i> <sub>40</sub>	17.4	X	213.69273	223.28067	160.82077	11.72580	0.2701356	0.26117417	2.4239067	20	5 2.9	21.8
417480 2006 <i>RK</i> <sub>41</sub>	18.0	X	203.23229	190.74388	185.74008	0.97880	0.1953264	0.25908675	2.4369086	20	4 13.9	21.9
417481 2006 <i>RP</i> <sub>53</sub>	18.7	X	185.45678	8.13376	33.79539	3.07984	0.2157816	0.25687794	2.4508581	20	4 30.4	22.9
417482 2006 <i>RQ</i> <sub>55</sub>	18.0	X	170.38578	23.51553	52.57569	2.29115	0.1615968	0.25932716	2.4354023	20	5 29.9	21.9
417483 2006 <i>RW</i> <sub>59</sub>	18.0	X	206.59310	334.42433	18.48592	3.27474	0.2523370	0.25527083	2.4611340	20	3 19.0	22.2
417484 2006 <i>RR</i> <sub>64</sub>	15.7	X	6.15960	176.36310	295.19817	10.70347	0.0801331	0.17056847	3.2201063	20	—	—
417485 2006 <i>RN</i> <sub>69</sub>	17.4	X	259.30755	196.49603	188.62643	3.12507	0.1330715	0.27125915	2.3634502	20	6 28.6	20.5
417486 2006 <i>RJ</i> <sub>72</sub>	18.2	X	152.59841	117.45978	1.74297	4.50491	0.1043105	0.26707864	2.3880493	20	7 7.5	21.7
417487 2006 <i>RV</i> <sub>75</sub>	17.6	X	156.49973	47.09555	21.45900	3.84213	0.1563148	0.25702564	2.4499191	20	5 6.1	21.4
417488 2006 <i>RA</i> <sub>84</sub>	17.8	X	261.53582	67.11690	281.57211	0.54344	0.1926474	0.26604410	2.3942360	20	5 3.5	21.1
417489 2006 <i>RW</i> <sub>85</sub>	17.4	X	193.04683	10.84221	11.34795	2.71079	0.2071235	0.25696568	2.4503003	20	4 11.9	21.3
417490 2006 <i>RL</i> <sub>90</sub>	17.9	X	194.64536	209.53644	215.88366	1.93306	0.1755551	0.26259053	2.4151828	20	6 8.1	21.8
417491 2006 <i>SH</i> <sub>1</sub>	17.7	X	215.16741	170.36857	192.68162	6.56325	0.1382421	0.25955763	2.4339604	20	4 9.8	21.5
417492 2006 <i>SX</i> <sub>5</sub>	16.3	X	75.13361	302.72717	305.03825	21.23710	0.1902690	0.28457874	2.2891157	20	9 28.6	20.1
417493 2006 <i>SP</i> <sub>6</sub>	17.3	X	280.87732	84.30746	255.82070	5.04173	0.1869498	0.26995765	2.3710404	20	5 15.9	20.3
417494 2006 <i>SK</i> <sub>33</sub>	17.6	X	259.80957	3.39220	337.32765	6.33097	0.1689211	0.26522393	2.3991694	20	4 21.2	21.0
417495 2006 <i>SK</i> <sub>51</sub>	17.8	X	32.45880	273.57403	158.81726	22.77428	0.1664395	0.37705010	1.8975942	20	—	—
417496 2006 <i>SD</i> <sub>64</sub>	17.6	X	69.22680	253.15513	145.84489	23.74813	0.1288352	0.37926792	1.8901893	20	—	—
417497 2006 <i>SW</i> <sub>66</sub>	17.7	X	261.59116	158.07130	161.71639	1.45139	0.1738338	0.26220349	2.4175589	20	3 29.4	21.3
417498 2006 <i>SE</i> <sub>71</sub>	17.3	X	294.72116	240.25616	28.41184	8.83973	0.1049372	0.25518156	2.4617080	20	3 14.6	20.5
417499 2006 <i>SS</i> <sub>75</sub>	17.8	X	259.37126	226.31703	126.97918	2.24480	0.2014821	0.26505167	2.4002088	20	5 7.3	21.3
417500 2006 <i>SX</i> <sub>112</sub>	18.0	X	240.65908	355.03932	319.34650	0.60488	0.1743018	0.25826749	2.4420594	20	3 1.8	21.9
417501 2006 <i>SN</i> <sub>117</sub>	17.8	X	204.56502	251.13213	161.11279	1.13157	0.1670762	0.26189822	2.4194372	20	5 31.7	21.4
417502 2006 <i>SC</i> <sub>119</sub>	17.5	X	228.13006	9.52738	3.32650	2.44954	0.1979160	0.26497587	2.4006665	20	4 30.4	21.4
417503 2006 <i>SV</i> <sub>127</sub>	16.4	X	308.40946	23.57079	273.51742	11.31851	0.2638780	0.26948411	2.3738172	20	4 5.5	19.5
417504 2006 <i>SH</i> <sub>185</sub>	17.9	X	141.04756	94.24414	337.92084	3.45698	0.2114604	0.25150102	2.4856666	20	4 29.1	22.0
417505 2006 <i>SX</i> <sub>211</sub>	17.8	X	172.73472	240.01714	21.90026	21.99422	0.0246205	0.37201219	1.9146876	20	—	—
417506 2006 <i>SY</i> <sub>221</sub>	17.7	X	190.76401	71.84098	357.26971	2.64160	0.1949134	0.26374059	2.4081566	20	6 8.4	21.7
417507 2006 <i>SD</i> <sub>223</sub>	17.9	X	167.34981	79.08581	11.33746	8.08218	0.0893565	0.26305490	2.4123396	20	6 12.8	21.5
417508 2006 <i>SV</i> <sub>227</sub>	17.6	X	178.98879	146.33101	276.93631	3.30150	0.1546489	0.26051964	2.4279649	20	5 21.1	21.3
417509 2006 <i>SH</i> <sub>259</sub>	17.9	X	262.91721	29.81025	282.51188	0.41554	0.1855272	0.25977726	2.4325884	20	3 19.6	21.6
417510 2006 <i>SD</i> <sub>263</sub>	18.2	X	205.49395	210.04748	130.00799	1.36842	0.2372208	0.25172470	2.4841939	20	3 2.7	22.3
417511 2006 <i>SL</i> <sub>267</sub>	17.3	X	111.98075	233.08347	240.60215	6.19783	0.0678135	0.254952				

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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>
417521 2006 SY <sub>393</sub>	17.4	X	243.30618	89.35297	234.86269	5.53036	0.1274955	0.25350757	2.4725330	20	3 18.2	21.2
417522 2006 SY <sub>404</sub>	15.8	X	292.06073	294.32445	66.70406	3.32209	0.2672309	0.12309529	4.0022887	20	6 15.0	21.2
417523 2006 SA <sub>411</sub>	17.9	X	234.85244	299.72608	16.39689	2.55588	0.1997953	0.25507022	2.4624242	20	2 27.6	21.9
417524 2006 TQ <sub>17</sub>	17.7	X	203.71499	280.51455	164.79614	2.50448	0.1916358	0.26549627	2.3975284	20	7 11.5	21.4
417525 2006 TE <sub>27</sub>	17.8	X	189.96064	347.65655	34.45087	2.67711	0.1796469	0.25395329	2.4696391	20	4 9.9	21.9
417526 2006 TZ <sub>30</sub>	17.8	X	75.35483	76.28497	35.78860	8.20083	0.1471465	0.24509740	2.5287753	20	3 30.7	20.8
417527 2006 TD <sub>31</sub>	15.9	X	309.83189	295.99426	38.26151	3.35757	0.2827186	0.12736620	3.9123100	20	6 4.5	20.7
417528 2006 TP <sub>39</sub>	17.2	X	196.96087	32.18722	33.70674	7.04784	0.1284795	0.26122198	2.4236110	20	6 11.7	20.9
417529 2006 TE <sub>45</sub>	17.4	X	165.35727	265.68576	113.22141	1.46256	0.0611253	0.24621281	2.5211322	20	3 8.4	20.9
417530 2006 TP <sub>46</sub>	16.7	X	163.39153	310.85552	46.56522	12.54863	0.0317217	0.24143845	2.5542599	20	2 10.4	20.4
417531 2006 TR <sub>50</sub>	17.9	X	135.33735	343.32602	46.30542	5.67352	0.2624561	0.24330503	2.5411794	20	3 10.9	22.0
417532 2006 TG <sub>51</sub>	17.5	X	139.25303	336.09876	47.42603	4.85494	0.1182369	0.24185954	2.5512944	20	2 21.5	21.1
417533 2006 TG <sub>76</sub>	17.5	X	242.72562	311.83631	61.70305	5.13231	0.1934580	0.26396405	2.4067974	20	5 16.7	21.1
417534 2006 TR <sub>82</sub>	17.5	X	199.69457	88.06886	19.65656	11.80837	0.1749762	0.26818764	2.3814614	20	8 13.1	21.4
417535 2006 TN <sub>89</sub>	17.5	X	252.25578	358.78739	326.52907	2.28065	0.1786370	0.25676613	2.4515696	20	3 25.6	21.2
417536 2006 TZ <sub>99</sub>	17.0	X	152.39404	253.64492	229.88076	8.24226	0.1608591	0.26212861	2.4180193	20	7 12.2	20.9
417537 2006 TS <sub>102</sub>	17.2	X	276.75227	311.13012	23.21526	5.39829	0.1235779	0.26325520	2.4111158	20	5 11.6	20.2
417538 2006 TQ <sub>120</sub>	17.5	X	215.03690	266.23730	136.80835	8.11360	0.2042509	0.26167814	2.4207935	20	5 29.4	21.6
417539 2006 TH <sub>125</sub>	17.7	X	159.91271	307.72953	41.96264	7.86019	0.1355121	0.24110275	2.5566304	20	2 3.7	21.6
417540 2006 TE <sub>126</sub>	17.4	X	80.78447	37.48441	16.02458	8.72516	0.1771975	0.23547798	2.5971828	20	1 25.6	20.5
417541 2006 TG <sub>127</sub>	17.9	X	158.98863	158.08829	210.37352	11.29491	0.1240936	0.24521792	2.5279467	20	2 17.8	21.9
417542 2006 UA <sub>8</sub>	17.7	X	196.69386	280.52182	112.00721	2.49869	0.1884618	0.25591507	2.4570018	20	4 29.5	21.8
417543 2006 UF <sub>28</sub>	18.3	X	163.31110	188.79273	222.89536	0.97293	0.2379981	0.25271020	2.4777313	20	4 25.4	22.5
417544 2006 UM <sub>33</sub>	16.7	X	27.74248	246.51282	211.01826	16.69798	0.1494496	0.23238059	2.6202103	20	—	—
417545 2006 UK <sub>35</sub>	18.0	X	331.75243	177.95983	210.19085	21.24637	0.0638944	0.35504968	1.9751949	20	12 2.6	20.0
417546 2006 UQ <sub>35</sub>	16.1	X	296.04714	46.75054	301.47458	1.69264	0.2480159	0.12521532	3.9569851	20	6 7.4	21.4
417547 2006 UR <sub>35</sub>	17.2	X	28.76695	241.15060	223.20581	10.65669	0.1233280	0.23402723	2.6079051	20	—	—
417548 2006 UW <sub>44</sub>	17.7	X	73.06807	71.41432	45.05082	12.53964	0.2319543	0.24166848	2.5526389	20	4 17.0	20.7
417549 2006 UZ <sub>48</sub>	17.5	X	84.90384	311.10587	295.62286	5.29917	0.1387008	0.28532842	2.2851043	20	10 13.2	20.8
417550 2006 UM <sub>55</sub>	17.9	X	187.48346	274.52092	38.90884	20.26586	0.1194773	0.38431160	1.8736151	20	—	—
417551 2006 UF <sub>60</sub>	17.5	X	279.65949	44.17802	258.45046	6.27387	0.1744274	0.26007717	2.4307179	20	3 23.6	20.9
417552 2006 UL <sub>78</sub>	17.5	X	101.36191	19.72218	19.41973	12.79825	0.1925026	0.23887501	2.5725011	20	2 10.2	21.0
417553 2006 UO <sub>80</sub>	17.6	X	239.82368	77.82343	207.63978	14.71289	0.1107320	0.24615382	2.5215350	20	1 26.3	21.7
417554 2006 US <sub>82</sub>	17.2	X	131.83212	55.02983	359.88730	5.57640	0.1424438	0.24705366	2.5154085	20	3 23.8	20.7
417555 2006 UK <sub>87</sub>	17.8	X	149.17939	128.67749	232.36391	4.15210	0.2054121	0.24115111	2.5562885	20	2 8.6	21.9
417556 2006 UP <sub>90</sub>	15.7	X	297.38387	313.70075	37.30121	5.17066	0.2548074	0.12398050	3.9832153	20	6 11.3	20.9
417557 2006 UT <sub>96</sub>	18.2	X	177.03366	15.18153	59.16139	4.39938	0.1531736	0.25894903	2.4377726	20	6 2.9	21.9
417558 2006 UF <sub>101</sub>	17.6	X	148.09249	273.94310	90.41470	3.99440	0.1159523	0.24182934	2.5515068	20	2 5.6	21.2
417559 2006 UL <sub>112</sub>	18.4	X	177.14396	64.11596	307.51470	2.03475	0.1932803	0.25327620	2.4740386	20	3 16.1	22.4
417560 2006 UJ <sub>118</sub>	17.7	X	116.71479	32.06783	30.85739	13.64763	0.2445250	0.24485184	2.5304658	20	4 2.3	21.5
417561 2006 UN <sub>132</sub>	17.7	X	150.59504	339.30417	57.14588	1.01900	0.0719903	0.24771477	2.5109310	20	3 14.5	21.0
417562 2006 UJ <sub>142</sub>	17.3	X	149.39232	210.90847	270.37805	4.26326	0.1663646	0.25946056	2.4345675	20	7 7.9	21.2
417563 2006 UH <sub>143</sub>	16.9	X	55.27346	229.11216	215.94409	14.83191	0.1902580	0.23585965	2.5943802	20	1 17.4	19.8
417564 2006 UO <sub>156</sub>	17.9	X	192.88528	327.62229	107.33788	2.49300	0.1606727	0.26332836	2.4106692	20	6 19.3	21.8
417565 2006 UJ <sub>174</sub>	17.1	X	214.36046	44.59685	10.20720	6.73260	0.0657944	0.26236647	2.4165576	20	6 21.4	20.5
417566 2006 UK <sub>185</sub>	17.3	X	89.45668	307.67061	63.66188	24.20993	0.0523232	0.37517132	1.9039241	20	—	—
417567 2006 UT <sub>196</sub>	17.9	X	236.89422	166.41984	213.75876	0.79866	0.2045348	0.26285561	2.4135588	20	5 18.5	21.7
417568 2006 UB <sub>199</sub>	16.9	X	279.18268	252.83356	46.18741	7.07789	0.1109581	0.25461585	2.4653529	20	4 2.4	20.1
417569 2006 UR <sub>212</sub>	17.2	X	129.64273	111.75106	274.06574	4.54355	0.1615736	0.24021924	2.5628953	20	2 14.9	20.9
417570 2006 UA <sub>213</sub>	17.0	X	315.06333	49.13119	247.28803	5.59488	0.1358987	0.26030915	2.4292736	20	5 14.4	19.5
417571 2006 UX <sub>214</sub>	16.6	X	107.59248	4.51529	335.60631	5.33952	0.3065122	0.23146087	2.6271467	20	—	—
417572 2006 UY <sub>231</sub>	16.9	X	154.18454	67.89675	227.44672	13.15236	0.1434837	0.23044930	2.6348291	20	—	—
417573 2006 UA <sub>234</sub>	18.1	X	161.45529	63.46379	44.10018	5.36352	0.1355644	0.26154864	2.4215926	20	7 1.5	21.8
417574 2006 UA <sub>254</sub>	17.6	X	195.94757	96.83798	221.78135	2.20337	0.0492600	0.24135230	2.5548677	20	1 25.7	21.2
417575 2006 UC <sub>269</sub>	16.5	X	270.44994	192.52931	46.93302	13.56630	0.0993862	0.23903051	2.5713853	20	1 8.8	20.4
417576 2006 UK <sub>272</sub>	17.7	X	151.42581	41.07418	39.61655	1.01834	0.2192670	0.25152047	2.4855385	20	5 20.8	21.9
417577 2006 UT <sub>273</sub>	17.6	X	199.58308	330.36236	36.00915	4.95587	0.1866903	0.25160805	2.4849617	20	3 30.9	21.7
417578 2006 UC <sub>291</sub>	17.4	X	21.78511	314.11907	90.36979	23.64512	0.1129859	0.36667646	1.9332174	20	—	—
417579 2006 UN <sub>326</sub>	16.4	X	159.98480	342.36646	73.36361	16.98908	0.2477457	0.25271264	2.4777153	20	5 3.2	20.8
417580 2006 UR <sub>338</sub>	16.0	X	299.73691	282.13644	279.15248	10.39615	0.0824409	0.22367924	2.6877298	20	—	—
417581 2006 VA <sub>3</sub>	17.2	X	199.49550	307.77728	312.94265	53.35802	0.6783834	0.48562947	1.6029969	20	—	—
417582 2006 VX <sub>3</sub>	17.0	X	105.39390	146.58987	240.37843	13.97770	0.0629054	0.23524017	2.5989329	20	1 3.9	20.5
417583 2006 VC <sub>7</sub>	18.3	X	72.76229	134.20810	233.67716	19.94086	0.0885993	0.37034307	1.9204363	20	—	—
417584 2006 VV <sub>9</sub>	17.5	X	102.31292	2.36182	238.11759	4.79466	0.1523004	0.27938296	2.3174095	20	10 25.6	21.0
417585 2006 VO <sub>16</sub>	15.9	X	305.17867	55.83176	296.84046	1.77988	0.2374884	0.12538102	3.9534980	20	6 27.7	20.9
417586 2006 VN <sub>30</sub>	16.5	X	280.48714	270.07228	51.27903	12.04434	0.1608611	0.25854618	2.4403042	20	4 26.2	19.7
417587 2006 VF <sub>45</sub>	18.0	X	170.56382	149.52506	292.92163	1.58087	0.1884174	0.25860996	2.4399029	20	6 7.8	22.0
417588 2006 VH <sub>50</sub>	17.8	X	218.26458	96.37498	287.99952	1.22422	0.1890229	0.25716913	2.4490077	20	5 6.9	21.7
417589 2006 VQ <sub>55</sub>	17.9	X	161.09060	229.56714	112.73463	1.56384	0.1314559	0.23849799	2.5752115	20	1 24.0	21.6
417590 2006 VZ <sub>61</sub>	17.5	X	192.59144	105.64796	243.38883	7.76631	0.1991141	0.24694893	2.5161196	20	2 28.4	21.9
417591 2006 VE <sub>64</sub>	17.7	X	132.52562	36.68125	90.00864	2.32265	0.1315531	0.25527064	2.4611352	20	6 26.0	21.3
417592 2006 VL <sub>69</sub>	16.4	X	173.84509	129.20661	239.99395	5.45655	0.1907850	0.24538795	2.5267789	20	3 8.9	20.7
417593 2006 VB <sub>85</sub>	16.8	X	69.12842	194.03987	257.11053	12.00534	0.1153389	0.23715669	2.5849122	20	2 9.1	20.1

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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>
417601 2006 VR <sub>126</sub>	17.2	X	170.20737	167.90731	281.67611	4.97407	0.1289640	0.25819024	2.4425464	20	6 16.2	20.9
417602 2006 VQ <sub>128</sub>	17.5	X	186.76246	339.98016	1.49377	4.23440	0.1730979	0.24474389	2.5312098	20	2 18.8	21.6
417603 2006 VM <sub>132</sub>	17.8	X	85.20663	247.73826	219.78316	5.30982	0.1688009	0.24279354	2.5447471	20	4 8.2	21.0
417604 2006 VR <sub>138</sub>	17.7	X	140.44734	20.37918	67.06441	8.43239	0.1293493	0.25098392	2.4890796	20	5 14.1	21.3
417605 2006 VH <sub>140</sub>	17.0	X	154.92196	108.00717	238.99557	9.98038	0.1122034	0.23619832	2.5918996	20	1 19.2	21.0
417606 2006 VE <sub>148</sub>	16.9	X	156.58529	326.74654	64.53316	4.27860	0.1644040	0.24084054	2.5584857	20	3 24.0	20.9
417607 2006 WG	18.8	X	95.70540	99.17801	234.63790	20.41929	0.0589928	0.36938760	1.9237465	20	—	—
417608 2006 WS <sub>2</sub>	17.2	X	23.97699	237.38658	231.47211	10.96359	0.2539295	0.22902598	2.6457342	20	—	—
417609 2006 WD <sub>21</sub>	17.2	X	230.72245	239.89238	134.42065	3.27804	0.1200645	0.25686880	2.4509163	20	5 12.9	20.7
417610 2006 WK <sub>21</sub>	17.3	X	104.55057	86.21676	108.25705	5.65199	0.1474204	0.26254927	2.4154359	20	8 29.2	20.8
417611 2006 WY <sub>24</sub>	15.5	X	172.45715	63.54614	106.11524	6.72686	0.1893287	0.12428276	3.9767546	20	9 19.4	21.9
417612 2006 WQ <sub>29</sub>	18.3	X	56.29730	136.59299	112.00250	8.07294	0.3936593	0.48655946	1.6009537	20	11 11.9	20.7
417613 2006 WY <sub>35</sub>	17.4	X	176.84439	237.40373	95.17687	9.13864	0.1838920	0.24045544	2.5612166	20	1 31.6	21.6
417614 2006 WP <sub>50</sub>	16.3	X	223.47979	237.01521	78.55686	15.80799	0.1541107	0.24390758	2.5369925	20	2 25.5	20.6
417615 2006 WQ <sub>51</sub>	17.2	X	241.68040	251.48182	56.45223	6.74467	0.1102876	0.24560451	2.5252933	20	3 3.9	21.0
417616 2006 WB <sub>83</sub>	17.4	X	180.94444	335.95449	52.50492	7.60456	0.1992341	0.25155543	2.4853082	20	4 12.3	21.5
417617 2006 WA <sub>88</sub>	17.7	X	159.71856	214.46338	148.67308	4.03272	0.1472648	0.24175717	2.5520145	20	2 17.9	21.6
417618 2006 WR <sub>93</sub>	15.5	X	312.04981	256.21392	84.33498	6.05234	0.2676025	0.12493138	3.9629783	20	6 18.6	20.4
417619 2006 WE <sub>127</sub>	16.8	X	126.14529	159.85073	287.38637	11.31788	0.1473233	0.24057444	2.5603719	20	4 24.9	20.8
417620 2006 WB <sub>131</sub>	15.9	X	110.97518	90.59246	13.80064	22.05647	0.1108017	0.24265010	2.5457499	20	4 23.3	19.6
417621 2006 WQ <sub>137</sub>	17.9	X	114.88329	186.06463	237.50140	7.14646	0.1402785	0.24197092	2.5505114	20	3 12.6	21.5
417622 2006 WQ <sub>142</sub>	16.6	X	59.60867	11.50268	77.36490	14.28893	0.1108739	0.23552440	2.5968415	20	1 29.9	19.7
417623 2006 WW <sub>143</sub>	17.5	X	93.26479	343.73343	98.78970	2.60362	0.1482055	0.24007972	2.5638881	20	3 16.0	20.7
417624 2006 WP <sub>150</sub>	16.7	X	157.11055	285.83667	107.61770	6.75274	0.2258863	0.24558250	2.5254442	20	4 2.6	21.1
417625 2006 WW <sub>151</sub>	17.0	X	62.74106	134.89567	23.27605	5.42914	0.2298695	0.24516462	2.5283130	20	5 25.7	19.9
417626 2006 WD <sub>164</sub>	17.5	X	229.23113	101.37278	209.39246	3.36052	0.1060763	0.24555904	2.5256050	20	2 18.9	21.4
417627 2006 WH <sub>170</sub>	16.8	X	313.64952	158.92086	73.93718	17.71517	0.0837406	0.24199609	2.5503345	20	3 3.4	20.5
417628 2006 WW <sub>171</sub>	16.9	X	43.18562	270.68182	243.63956	16.12284	0.1124065	0.24263199	2.5458766	20	3 22.9	20.1
417629 2006 WF <sub>181</sub>	17.2	X	193.58867	305.36830	77.79094	7.22528	0.1749433	0.25151423	2.4855796	20	4 17.3	21.3
417630 2006 WB <sub>183</sub>	17.4	X	90.18605	278.08604	84.95340	24.77637	0.0677171	0.36944295	1.9235543	20	—	—
417631 2006 WX <sub>183</sub>	17.4	X	126.07298	314.26051	96.97198	15.42884	0.1244796	0.23653226	2.5894596	20	3 19.5	21.4
417632 2006 WU <sub>184</sub>	17.4	X	61.96166	226.98264	278.85894	3.80036	0.2614889	0.23735462	2.5834750	20	5 12.6	20.2
417633 2006 WZ <sub>189</sub>	16.8	X	209.88942	3.56771	97.97940	10.35421	0.1556236	0.26687431	2.3892680	20	8 13.8	20.4
417634 2006 XG <sub>1</sub>	18.5	X	182.94834	344.10280	38.46837	20.49600	0.5957356	0.25595780	2.4567284	20	4 13.1	24.0
417635 2006 XE <sub>8</sub>	15.6	X	7.30746	283.12168	268.56938	27.42922	0.1799142	0.23851301	2.5751034	20	2 25.9	19.0
417636 2006 XM <sub>10</sub>	16.9	X	154.37102	71.55037	312.63913	3.67958	0.2599540	0.24218954	2.5489763	20	3 15.9	21.2
417637 2006 XM <sub>16</sub>	16.9	X	97.25265	162.46738	287.04618	12.78687	0.1436201	0.23819780	2.5773747	20	3 20.9	20.7
417638 2006 XT <sub>30</sub>	17.3	X	281.36671	347.83717	112.77125	6.09051	0.1654297	0.27746295	2.3280879	20	11 22.6	19.4
417639 2006 XA <sub>37</sub>	16.3	X	172.24282	272.19302	94.33362	8.53979	0.2039084	0.24016918	2.5632514	20	3 11.9	20.7
417640 2006 XN <sub>43</sub>	16.7	X	142.54729	168.77855	286.02460	12.30930	0.0309380	0.24584774	2.5236274	20	5 14.4	20.3
417641 2006 XW <sub>45</sub>	17.3	X	120.13924	146.68672	308.93693	4.28703	0.2145819	0.24656887	2.5187045	20	5 9.4	21.3
417642 2006 XX <sub>53</sub>	17.1	X	153.75922	105.04447	270.34263	12.99763	0.2833232	0.24314301	2.5423082	20	3 1.1	21.8
417643 2006 XL <sub>56</sub>	17.2	X	157.09804	222.83275	264.87294	5.44011	0.0777890	0.25630867	2.4544857	20	7 21.1	20.6
417644 2006 XR <sub>56</sub>	17.7	X	23.44147	11.12159	100.70595	23.93263	0.0785400	0.37734421	1.8966080	20	—	—
417645 2006 XY <sub>57</sub>	16.3	X	93.29866	353.06845	80.57487	15.54313	0.0410555	0.23505701	2.6002828	20	2 22.7	20.0
417646 2006 XS <sub>66</sub>	17.0	X	81.76056	196.77772	224.56702	12.17921	0.2572061	0.23355974	2.6113839	20	2 11.8	20.3
417647 2006 XF <sub>67</sub>	16.7	X	145.28258	186.96916	219.84034	2.87329	0.2181397	0.24100955	2.5572894	20	4 2.9	20.7
417648 2006 XD <sub>70</sub>	16.8	X	341.04510	80.82020	87.89834	13.65668	0.1892322	0.22981435	2.6396801	20	—	—
417649 2006 XV <sub>70</sub>	16.9	X	212.43965	323.24151	279.37300	7.57476	0.1056905	0.21529020	2.7571044	20	—	—
417650 2006 XK <sub>71</sub>	16.3	X	83.58799	126.55383	308.02348	21.46732	0.0461183	0.23055189	2.6340475	20	2 4.0	19.6
417651 2006 XT <sub>71</sub>	17.4	X	120.91927	66.63631	98.10065	6.73860	0.1309914	0.25820932	2.4424261	20	8 4.7	21.0
417652 2006 XV <sub>72</sub>	17.5	X	71.74933	140.50153	268.87387	18.86339	0.1037804	0.37752584	1.8959997	20	—	—
417653 2006 YY <sub>7</sub>	16.6	X	196.41873	62.22998	349.97360	7.97712	0.2145633	0.25439788	2.4667609	20	5 20.3	21.0
417654 2006 YW <sub>12</sub>	16.6	X	145.37227	336.73967	126.82825	15.54626	0.0568577	0.24527116	2.5275808	20	6 6.8	20.4
417655 2006 YF <sub>13</sub>	19.9	X	208.30437	95.41146	205.28401	10.53363	0.4035026	1.11895283	0.9188858	20	—	—
417656 2006 YL <sub>16</sub>	16.9	X	154.57990	72.87386	325.26272	4.55560	0.2252154	0.24183480	2.5514683	20	3 30.5	21.2
417657 2006 YJ <sub>19</sub>	17.4	X	125.92366	139.88520	273.86043	3.60477	0.2263213	0.23900228	2.5715878	20	3 24.1	21.3
417658 2006 YR <sub>20</sub>	17.7	X	150.74296	28.73964	86.63948	5.47089	0.1492497	0.25481293	2.4640815	20	6 30.9	21.3
417659 2006 YN <sub>21</sub>	17.0	X	55.60953	214.04848	280.71431	6.76757	0.1401950	0.23772981	2.5807560	20	3 23.2	19.9
417660 2006 YY <sub>25</sub>	16.6	X	0.75339	231.79332	297.10758	10.64103	0.1348265	0.23110426	2.6298486	20	2 2.7	19.4
417661 2006 YR <sub>30</sub>	17.0	X	67.56297	31.94520	93.32944	10.40718	0.0156360	0.23753685	2.5821535	20	3 22.7	20.6
417662 2006 YF <sub>31</sub>	17.6	X	109.72591	34.61210	10.14861	2.04023	0.0892271	0.23187674	2.6240046	20	2 8.8	21.1
417663 2006 YJ <sub>36</sub>	17.7	X	62.12844	55.36686	75.80633	5.19335	0.1970865	0.23625613	2.5914768	20	4 14.0	20.5
417664 2006 YT <sub>37</sub>	16.8	X	289.49918	126.36211	77.29701	5.77095	0.0785338	0.22137692	2.7063326	20	—	—
417665 2006 YZ <sub>43</sub>	17.4	X	70.76884	265.68847	89.72611	23.57790	0.1118295	0.36189482	1.9502089	20	—	—
417666 2006 YA <sub>53</sub>	17.5	X	127.64479	121.02062	288.04502	2.13340	0.1800119	0.23553449	2.5967674	20	3 16.1	21.3
417667 2006 AJ	16.8	X	79.66262	57.14118	74.61593	31.28144	0.3166089	0.23536228	2.5980339	20	5 30.0	20.5

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
417681 2007 AZ <sub>28</sub>	17.9	X	129.69406	146.64450	310.81533	7.48069	0.1420189	0.24277234	2.5448953	20	5 13.7	21.8
417682 2007 AX <sub>30</sub>	17.7	X	128.63617	174.67637	296.21242	3.06631	0.1689220	0.24581540	2.5238487	20	6 3.7	21.5
417683 2007 AH <sub>31</sub>	16.6	X	59.08204	101.33846	38.23098	12.83136	0.1926631	0.23216715	2.6218160	20	4 19.4	19.5
417684 2007 BN <sub>4</sub>	17.1	X	117.85007	29.93893	314.30841	19.68522	0.0528888	0.36482361	1.9397574	20	—	—
417685 2007 BK <sub>5</sub>	17.2	X	108.74683	227.80896	212.00826	3.48227	0.2245600	0.23870298	2.5737370	20	4 9.8	21.0
417686 2007 BV <sub>8</sub>	17.0	X	11.72632	22.56230	106.28239	8.72281	0.1659016	0.22500119	2.6771919	20	—	—
417687 2007 BM <sub>14</sub>	16.8	X	153.89131	13.63446	328.02207	5.11185	0.1082590	0.22423942	2.6832517	20	1 16.3	20.7
417688 2007 BY <sub>24</sub>	17.7	X	155.20781	98.08305	304.56629	2.07151	0.1283700	0.24592425	2.5231039	20	5 16.6	21.5
417689 2007 BQ <sub>34</sub>	15.6	X	241.68563	9.15528	123.02086	11.24230	0.2151597	0.12484617	3.9647813	20	10 4.5	21.7
417690 2007 BG <sub>42</sub>	17.4	X	61.48987	202.35346	310.25845	0.85185	0.1468922	0.23732980	2.5836551	20	5 2.5	20.2
417691 2007 BM <sub>47</sub>	16.9	X	119.54227	43.64723	337.83137	13.64390	0.1186360	0.22355271	2.6887438	20	1 30.6	20.7
417692 2007 BM <sub>51</sub>	17.8	X	4.73647	127.89864	8.02240	4.66033	0.1332811	0.22354313	2.6888206	20	—	—
417693 2007 BF <sub>52</sub>	17.3	X	22.72260	127.42025	87.40621	5.93170	0.0897317	0.24102266	2.5571967	20	5 20.6	20.2
417694 2007 BA <sub>55</sub>	17.7	X	153.29581	159.79819	254.51341	2.80422	0.2174136	0.24372016	2.5382930	20	4 18.7	22.0
417695 2007 BF <sub>55</sub>	17.2	X	73.17113	27.05253	104.96603	9.54621	0.1742904	0.23801947	2.5786619	20	5 1.1	20.5
417696 2007 BE <sub>56</sub>	17.4	X	118.01324	227.73690	123.75148	24.91042	0.1007090	0.36665426	1.9332954	20	—	—
417697 2007 BT <sub>57</sub>	16.4	X	34.50809	139.49245	341.17039	13.49887	0.2215589	0.22496605	2.6774707	20	2 7.0	18.7
417698 2007 BD <sub>58</sub>	16.2	X	3.63489	240.17443	305.87352	11.72877	0.2025171	0.23030593	2.6359225	20	2 24.2	18.7
417699 2007 BZ <sub>59</sub>	16.9	X	96.86819	265.21393	216.98380	9.24858	0.2762929	0.24068207	2.5596086	20	5 29.3	20.8
417700 2007 BU <sub>63</sub>	16.8	X	136.79508	254.78580	141.81182	9.68637	0.2522107	0.23660401	2.5889360	20	3 20.1	21.0
417701 2007 BU <sub>64</sub>	16.6	X	103.96532	70.50917	308.89792	4.40174	0.0742488	0.21885114	2.7271154	20	—	—
417702 2007 BZ <sub>67</sub>	16.3	X	279.70985	282.07103	341.36830	14.61091	0.0936765	0.22754981	2.6571642	20	2 21.2	19.9
417703 2007 BL <sub>68</sub>	16.4	X	79.78067	211.92776	316.26860	12.84588	0.0629099	0.24256089	2.5463741	20	6 6.9	19.9
417704 2007 BK <sub>71</sub>	17.2	X	68.43112	317.13404	162.97748	4.31037	0.1658070	0.23265231	2.6181698	20	4 2.7	20.1
417705 2007 BU <sub>74</sub>	16.9	X	315.76859	90.39632	141.30688	9.69050	0.1656510	0.22846480	2.6500650	20	2 15.4	20.2
417706 2007 BB <sub>78</sub>	16.8	X	199.28312	323.07555	335.17355	8.21712	0.0815143	0.21886579	2.7269936	20	1 10.5	21.0
417707 2007 BT <sub>78</sub>	17.6	X	48.88529	36.24562	115.41758	3.67668	0.1312248	0.23706781	2.5855583	20	4 9.9	20.4
417708 2007 BQ <sub>90</sub>	16.7	X	329.45637	303.74720	304.44328	8.83632	0.0958070	0.23850895	2.5751326	20	3 31.5	20.1
417709 2007 BG <sub>95</sub>	17.3	X	148.72924	114.84248	300.87126	11.71258	0.1673985	0.24111478	2.5565453	20	4 7.6	21.6
417710 2007 CP <sub>9</sub>	17.2	X	131.91120	126.39980	290.84262	2.45175	0.2218860	0.23898169	2.5717355	20	4 3.4	21.2
417711 2007 CY <sub>9</sub>	17.3	X	92.86279	179.13244	305.40668	7.38120	0.0847868	0.24063096	2.5599710	20	4 26.3	20.8
417712 2007 CJ <sub>10</sub>	17.3	X	47.43008	210.57573	287.37756	1.30747	0.1495446	0.23282805	2.6168521	20	3 18.3	20.0
417713 2007 CK <sub>10</sub>	17.4	X	3.83877	192.58801	314.87963	1.59333	0.0715057	0.22541164	2.6739410	20	1 18.3	20.6
417714 2007 CT <sub>11</sub>	16.6	X	24.47477	223.31719	299.77407	11.98037	0.1223600	0.23168290	2.6254680	20	3 4.5	19.6
417715 2007 CJ <sub>14</sub>	16.8	X	0.20734	343.17991	152.76237	14.38753	0.1078422	0.22060963	2.7126040	20	—	—
417716 2007 CM <sub>15</sub>	17.0	X	108.90474	40.33016	57.60106	7.37963	0.1474175	0.24021539	2.5629226	20	4 25.4	20.5
417717 2007 CZ <sub>15</sub>	17.1	X	93.49352	107.47472	354.35306	7.01954	0.1743897	0.23675977	2.5878004	20	4 11.8	20.5
417718 2007 CL <sub>21</sub>	16.3	X	352.79160	234.47165	295.98534	14.73816	0.1114775	0.22628297	2.6670724	20	1 26.2	19.4
417719 2007 CQ <sub>21</sub>	16.6	X	337.52588	233.82463	294.07660	9.86085	0.0918779	0.22275894	2.6951273	20	1 4.9	19.9
417720 2007 CY <sub>21</sub>	17.3	X	100.38828	44.93268	85.38205	3.72887	0.1540052	0.24180825	2.5516551	20	5 27.9	20.8
417721 2007 CP <sub>22</sub>	16.3	X	177.29964	63.52117	319.45438	11.11782	0.2964371	0.24259919	2.5461060	20	3 28.8	21.1
417722 2007 CV <sub>23</sub>	17.6	X	130.55709	326.49352	147.03493	11.21255	0.2248966	0.24576218	2.5242131	20	6 14.8	21.9
417723 2007 CR <sub>25</sub>	16.1	X	292.50346	302.78230	289.98005	10.38349	0.1071941	0.22957243	2.6415342	20	1 23.9	19.7
417724 2007 CD <sub>29</sub>	16.7	X	278.67509	283.92529	308.39934	8.60671	0.0759267	0.22466990	2.6798231	20	1 13.8	20.4
417725 2007 CQ <sub>32</sub>	14.8	X	251.41221	352.79939	140.04556	17.56625	0.1715562	0.12475599	3.9666916	20	10 21.1	20.8
417726 2007 CJ <sub>37</sub>	16.5	X	18.15758	49.05160	135.39370	13.50428	0.1124813	0.23372575	2.6101472	20	4 4.1	19.6
417727 2007 CP <sub>38</sub>	16.5	X	216.45096	300.78473	311.82764	10.99233	0.0456891	0.21534750	2.7566153	20	—	—
417728 2007 CS <sub>41</sub>	17.0	X	44.75750	156.96147	323.91074	2.91904	0.2140602	0.22842760	2.6503526	20	2 25.5	19.3
417729 2007 CY <sub>41</sub>	16.3	X	52.99402	205.74153	327.50263	12.91326	0.1303548	0.23650093	2.5896882	20	5 10.5	19.7
417730 2007 CS <sub>42</sub>	16.9	X	76.32072	324.23350	148.13328	8.37505	0.1554842	0.23340146	2.6125644	20	4 4.4	20.1
417731 2007 CW <sub>43</sub>	17.8	X	163.63450	207.35963	201.85173	1.12229	0.1728657	0.24070629	2.5594369	20	4 20.3	22.0
417732 2007 CX <sub>43</sub>	17.0	X	4.23217	28.46613	147.69788	13.92930	0.1806659	0.22787704	2.6546198	20	2 17.8	19.6
417733 2007 CO <sub>48</sub>	17.3	X	6.14640	279.07156	267.54735	3.45072	0.1116613	0.23103112	2.6304036	20	3 9.3	20.3
417734 2007 CR <sub>52</sub>	16.2	X	100.68078	349.84692	106.51283	11.36255	0.1969742	0.23530201	2.5984775	20	4 24.0	20.0
417735 2007 CN <sub>53</sub>	16.4	X	23.81839	213.36860	337.96703	13.05231	0.1962026	0.23398887	2.6081901	20	4 16.6	19.0
417736 2007 CP <sub>55</sub>	17.1	X	176.09423	73.27127	303.85784	2.74241	0.2046012	0.24166693	2.5526498	20	3 22.5	21.3
417737 2007 CM <sub>59</sub>	16.5	X	348.26190	21.42496	173.34660	13.78611	0.1786373	0.22698179	2.6615954	20	2 11.4	19.4
417738 2007 CQ <sub>61</sub>	17.1	X	44.95035	216.00991	338.17219	11.87513	0.2189856	0.23754984	2.5820593	20	6 16.3	20.1
417739 2007 CZ <sub>65</sub>	15.8	X	182.62984	288.80178	244.78912	8.06233	0.0793076	0.19180361	2.9778183	20	10 8.2	20.3
417740 2007 CS <sub>75</sub>	17.4	X	94.09296	292.01546	140.80590	3.42404	0.0789978	0.22914746	2.6447991	20	2 23.0	20.6
417741 2007 CM <sub>79</sub>	16.8	X	86.91979	111.07244	46.86840	8.21917	0.1185165	0.24099152	2.5574170	20	6 11.2	20.2
417742 2007 DG	17.0	X	323.63317	211.06885	306.32031	18.25416	0.0432132	0.36521683	1.9383649	20	—	—
417743 2007 DZ <sub>3</sub>	17.9	X	71.49794	240.19689	304.60461	5.32517	0.2698008	0.24089566	2.5580954	20	7 21.9	21.3
417744 2007 DH <sub>5</sub>	16.4	X	170.64142	17.78773	318.50679	13.98807	0.1435577	0.22843239	2.6503156	20	1 29.4	20.6
417745 2007 DL <sub>9</sub>	15.7	X	284.33626	288.18834	266.70939	12.58835	0.1090852	0.21372889	2.7705154	20	—	—
417746 2007 DA <sub>13</sub>	17.2	X	97.13626	148.51194	299.16694	5.06924	0.2660156	0.23473818	2.6026368	20	4 10.4	21.0
417747 2007 DX <sub>15</sub>	17.0	X	33.72418	177.08879	353.55560	11.37333	0.1170420	0.23315408	2.6144120	20	4 3.7	19.9
417748 2007 DC <sub>16</sub>	17.0	X	186.63525	243.40467	25.03183	4.97962	0.0724231	0.20946453	2.8079911	20	—	—
417749 2007 DG <sub>19</sub>	17.5	X	81.03598	120.46429	339.55676	4.18242	0.1984389	0.23153675	2.6265727	20	3 28.4	20.7
417750 2007 DP <sub>20</sub>	16.6	X	84.93352	138.68540	140.00927	14.34916	0.0632331	0.23323834	2.6137824	20	4 3.1	20.1
417751 2007 DE <sub>40</sub>	16.8	X	129.04832	240.93588	96.72258	7.39605	0.0515573	0.21855168	2.7296059	20	—	—
417752 2007 DP <sub>40</sub>	17.3	X	23.54405	309.55980	177.85774	8.90452	0.1528452	0.22159033	2.7045946	20	1 18.9	20.3
417753 2007 DH <sub>44</sub>	17.5	X	32.43634	350.97633	170.14330	13.67908	0.1209865	0.23011726	2.6373631	20	3 23.9	20.2
417754 2007 DV <sub>45</sub>	17.5	X	107.7									

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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>
417761 2007 DR <sub>59</sub>	16.4	X	328.50409	256.10253	339.57309	11.91576	0.2334325	0.22766511	2.6562670	20	2 27.5	19.4
417762 2007 DR <sub>66</sub>	17.8	X	194.43294	340.33904	77.47592	2.39099	0.1007624	0.24347986	2.5399628	20	5 31.0	21.3
417763 2007 DF <sub>69</sub>	17.5	X	99.94995	77.29687	343.07169	3.86153	0.1114819	0.22547073	2.6734738	20	2 20.1	21.1
417764 2007 DK <sub>84</sub>	17.1	X	0.99804	61.65108	173.27634	9.26268	0.1292716	0.23209666	2.6223468	20	5 13.1	19.9
417765 2007 DK <sub>92</sub>	16.3	X	41.86419	128.86599	342.16849	16.51158	0.1115908	0.22397849	2.6853352	20	2 3.9	19.5
417766 2007 DS <sub>92</sub>	17.0	X	38.37305	322.22326	143.26495	5.52460	0.0684349	0.22135055	2.7065474	20	1 15.5	20.2
417767 2007 DX <sub>96</sub>	14.1	X	359.62403	44.40682	177.47416	16.36574	0.0481682	0.08411941	5.1586797	20	5 1.3	20.8
417768 2007 DF <sub>101</sub>	17.7	X	100.63222	133.73199	349.99519	6.85252	0.1560342	0.23912813	2.5706855	20	5 17.1	21.4
417769 2007 DF <sub>110</sub>	16.5	X	7.17067	123.01127	41.08476	12.44716	0.0970243	0.22491678	2.6778617	20	2 19.4	19.9
417770 2007 DN <sub>112</sub>	15.6	X	99.71620	228.52459	60.06384	24.18073	0.1783828	0.17942650	3.1132332	20	12 4.7	20.7
417771 2007 DG <sub>113</sub>	17.0	X	0.94313	96.62379	99.17514	15.83050	0.2598164	0.22673483	2.6635277	20	3 12.0	19.6
417772 2007 DV <sub>113</sub>	16.6	X	121.29425	37.24736	348.43125	8.32357	0.0318764	0.21881548	2.7274116	20	1 25.5	20.3
417773 2007 DZ <sub>115</sub>	17.5	X	138.60466	32.67943	334.68095	5.06454	0.0147698	0.21877933	2.7277120	20	1 20.4	21.3
417774 2007 EY <sub>4</sub>	17.7	X	125.69503	295.39066	173.89464	6.74009	0.2489432	0.24204107	2.5500185	20	6 6.5	22.0
417775 2007 ED <sub>5</sub>	17.2	X	317.47472	4.48480	163.79213	3.01391	0.0410271	0.21721799	2.7407674	20	—	—
417776 2007 ED <sub>13</sub>	16.3	X	347.07261	106.90308	149.54028	11.00244	0.1301924	0.24046237	2.5611674	20	5 19.1	19.2
417777 2007 DV <sub>13</sub>	16.8	X	351.12727	178.27702	357.50634	8.56745	0.1088684	0.22401413	2.6850504	20	2 4.7	20.0
417778 2007 EE <sub>21</sub>	17.4	X	66.07363	146.19587	2.50124	8.56800	0.1846614	0.23366409	2.6106064	20	5 7.9	20.6
417779 2007 ET <sub>23</sub>	16.2	X	20.48820	12.98604	44.74495	6.35951	0.0660535	0.20251403	2.8718779	20	—	—
417780 2007 EX <sub>32</sub>	16.4	X	132.81829	14.84327	16.80571	11.77277	0.1054691	0.22247057	2.6974558	20	2 27.5	20.4
417781 2007 EA <sub>33</sub>	17.7	X	149.74512	209.21365	199.69224	2.61969	0.1704809	0.23555995	2.5965802	20	4 6.9	21.8
417782 2007 EM <sub>35</sub>	16.5	X	70.48319	258.38888	27.06582	8.92021	0.1137913	0.18337733	3.0683551	20	10 28.8	20.8
417783 2007 EL <sub>41</sub>	17.3	X	26.05956	5.64891	153.03123	4.81948	0.1173261	0.23133155	2.6281257	20	3 7.9	20.1
417784 2007 EW <sub>41</sub>	16.7	X	190.62966	133.25190	150.63645	14.10076	0.1097608	0.21375845	2.7702599	20	—	—
417785 2007 EZ <sub>57</sub>	17.4	X	113.93244	272.34675	149.06545	5.52738	0.2561690	0.23575858	2.5951216	20	3 28.9	21.3
417786 2007 EP <sub>72</sub>	16.5	X	308.39706	191.85574	4.40810	12.86712	0.1201057	0.21539174	2.7562378	20	—	—
417787 2007 EK <sub>77</sub>	17.1	X	68.15228	9.17826	152.68195	4.71810	0.1809540	0.23497038	2.6009218	20	6 2.1	20.3
417788 2007 EV <sub>78</sub>	16.3	X	3.63615	146.57893	3.14217	12.26809	0.1123986	0.22015649	2.7163249	20	1 22.6	19.7
417789 2007 EM <sub>79</sub>	16.9	X	333.34218	349.85381	193.55548	13.99142	0.0734341	0.21688204	2.7435970	20	1 19.3	20.8
417790 2007 EK <sub>87</sub>	16.7	X	3.79713	96.59691	42.78431	9.19465	0.0731673	0.21473868	2.7618232	20	1 10.8	20.3
417791 2007 ED <sub>88</sub>	16.6	X	79.88346	70.55439	1.81868	11.77401	0.0862946	0.22050105	2.7134945	20	2 9.2	20.2
417792 2007 ED <sub>95</sub>	16.2	X	98.52368	74.17423	12.57448	22.03807	0.0940453	0.22629995	2.6669390	20	3 23.9	19.7
417793 2007 EA <sub>109</sub>	16.4	X	226.42816	229.41694	17.78924	15.93916	0.2066584	0.20411518	2.8568396	20	—	—
417794 2007 EL <sub>119</sub>	16.6	X	283.79866	234.57091	29.14734	14.19336	0.1370494	0.21859510	2.7292444	20	2 26.9	20.7
417795 2007 ES <sub>120</sub>	16.3	X	27.45808	121.73266	14.82615	15.48144	0.0952422	0.22310079	2.6923735	20	2 16.8	19.7
417796 2007 EJ <sub>121</sub>	16.5	X	52.25500	67.93436	130.76145	13.04268	0.1099976	0.24083668	2.5585130	20	6 18.8	19.8
417797 2007 ER <sub>131</sub>	17.1	X	39.59817	122.57515	4.31867	5.50041	0.0389329	0.22176390	2.7031832	20	2 15.3	20.5
417798 2007 EX <sub>133</sub>	16.9	X	186.39751	117.79484	174.25938	3.55006	0.0649821	0.20914057	2.8108901	20	—	—
417799 2007 EU <sub>134</sub>	16.5	X	359.31940	20.75920	168.45223	14.24901	0.1841992	0.22503769	2.6769025	20	2 25.7	19.1
417800 2007 EC <sub>146</sub>	17.9	X	115.33226	327.70630	152.07124	5.54398	0.2781248	0.24105743	2.5569508	20	6 12.8	22.1
417801 2007 EF <sub>146</sub>	17.2	X	18.71812	316.38279	143.12377	5.47862	0.0754149	0.21352297	2.7722964	20	—	—
417802 2007 EF <sub>152</sub>	16.4	X	133.59723	285.32209	49.91204	4.58764	0.1003835	0.20919117	2.8104367	20	—	—
417803 2007 EQ <sub>166</sub>	17.0	X	67.71132	74.85684	103.13519	8.41845	0.2524919	0.23677794	2.5876680	20	7 4.9	20.3
417804 2007 EU <sub>167</sub>	17.4	X	82.11788	181.65821	319.99520	4.05350	0.1936264	0.23606034	2.5929095	20	5 24.8	20.8
417805 2007 EV <sub>169</sub>	16.5	X	34.87594	106.63625	8.49967	12.82710	0.1754112	0.22170606	2.7036533	20	1 31.5	19.4
417806 2007 ED <sub>171</sub>	17.8	X	90.03973	197.37315	292.36105	3.36333	0.2018906	0.23848545	2.5753018	20	5 20.3	21.4
417807 2007 EV <sub>187</sub>	16.4	X	2.72440	13.49950	128.38085	13.36649	0.2272972	0.22098843	2.7095033	20	—	—
417808 2007 EJ <sub>192</sub>	16.4	X	279.68326	190.11951	4.53811	9.21135	0.1005540	0.21000199	2.8031980	20	—	—
417809 2007 EN <sub>193</sub>	17.3	X	264.54461	272.12205	343.87972	3.39510	0.0234146	0.22385917	2.6862893	20	2 1.9	20.8
417810 2007 EW <sub>205</sub>	16.6	X	207.68781	11.84382	305.29721	8.83253	0.0264952	0.22817057	2.6523427	20	2 7.7	20.3
417811 2007 EB <sub>206</sub>	17.1	X	161.74052	278.84271	108.75711	3.58980	0.1070473	0.22811537	2.6527705	20	3 21.3	21.1
417812 2007 EC <sub>210</sub>	17.3	X	44.00386	225.15059	278.60207	4.09051	0.2098841	0.23057372	2.6338812	20	3 26.1	19.8
417813 2007 EJ <sub>212</sub>	16.2	X	8.34737	337.12132	131.57448	10.98912	0.1555065	0.21619151	2.7494361	20	—	—
417814 2007 EN <sub>216</sub>	16.4	X	3.43670	89.40409	107.39823	12.88440	0.1331007	0.22665302	2.6641686	20	3 27.7	19.5
417815 2007 EL <sub>217</sub>	17.0	X	70.84915	91.45991	3.71198	4.96723	0.1311782	0.22519924	2.6756221	20	2 28.3	20.2
417816 2007 FA	20.1	X	83.99541	135.40883	156.42346	16.32916	0.2658200	0.70507301	1.2502014	20	—	—
417817 2007 FX <sub>2</sub>	16.1	X	123.94385	2.25815	104.25810	15.03039	0.1979866	0.23851637	2.5750792	20	5 30.3	20.3
417818 2007 FT <sub>11</sub>	17.7	X	39.96070	332.23259	165.78716	2.51091	0.1793813	0.22922490	2.6442033	20	3 8.4	20.2
417819 2007 FQ <sub>15</sub>	17.0	X	7.91489	251.06756	276.97056	3.14272	0.1750604	0.22522008	2.6754570	20	2 13.3	19.5
417820 2007 FX <sub>20</sub>	17.0	X	104.23463	49.26100	35.00658	6.62076	0.1316907	0.22823936	2.6518097	20	3 31.5	20.7
417821 2007 FF <sub>22</sub>	16.9	X	307.82767	181.61345	14.85215	7.75056	0.1095553	0.21470620	2.7621017	20	1 1.1	20.9
417822 2007 FJ <sub>23</sub>	16.8	X	35.77395	97.30548	23.47281	10.80472	0.1009624	0.21948359	2.7218739	20	2 7.3	20.1
417823 2007 FQ <sub>29</sub>	17.0	X	33.75947	282.48800	163.09789	4.11071	0.0718029	0.21236549	2.7823607	20	—	—
417824 2007 FU <sub>29</sub>	16.2	X	274.27777	269.37915	5.51980	13.19098	0.1472264	0.22266545	2.6958816	20	2 25.8	20.2
417825 2007 FM <sub>32</sub>	16.6	X	170.57963	260.09672	34.33180	13.95287	0.0692021	0.20104646	2.8858368	20	—	—
417826 2007 FR <sub>38</sub>	16.5	X	345.80845	107.72315	84.09704	9.73769	0.1990665	0.21990404	2.7184034	20	2 6.5	19.5
417827 2007 FG <sub>39</sub>	17.0	X	49.61065	74.67278	119.75160	11.83243	0.2334491	0.23508307	2.6000906	20	6 27.9	20.0
417828 2007 FA <sub>47</sub>	16.2	X	102.19960	56.54897	40.72291	14.74562	0.0688166	0.22719592	2.6599228	20	4 8.3	19.8
417829 2007 FS <sub>48</sub>	14.1	X	129.17055	82.61523	21.57683	10.54104	0.0619559	0.08347367	5.1852502	20	5 16.2	21.2
417830 2007 FE <sub>49</sub>	14.0	X	62.47989	148.71389	19.58993	18.10060	0.0846916	0.08229239	5.2347537	20	5 14.7	20.9
417831 2007 FP <sub>49</sub>	16.4	X	356.51198	112.33407	116.36385	14.06794	0.1103822	0.22883212	2.6472283	20	4 30.8	19.7
417832 2007 FV <sub>49</sub>	16.0	X	3.25208	83.89455	93.85926	15.85546	0.0295780	0.22101327	2.7093003	20	3 7.3	19.8
417833 2007 GG <sub>4</sub>	16.4	X	327.04425	158.14616	43.17939	10.15457	0.1328456	0.21816486	2.7328315	20	1 31.4	20.1
417834 2007 GH <sub>5</sub>	16.3	X	114.81170	309.61247	102.12788	14.99						

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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>
417841 2007 <i>GT</i> <sub>76</sub>	16.1	X	320.38866	235.99253	45.06820	14.50701	0.1401968	0.22943776	2.6425677	20	5 2.4	18.9
417842 2007 <i>GF</i> <sub>77</sub>	16.5	X	289.10374	66.90755	142.38830	13.70748	0.1621187	0.21018113	2.8016050	20	—	—
417843 2007 <i>HS</i> <sub>1</sub>	16.9	X	325.32454	336.58576	207.81229	7.15480	0.1880002	0.21569735	2.7536337	20	—	—
417844 2007 <i>HP</i> <sub>8</sub>	14.3	X	160.24532	69.80456	7.72362	7.49097	0.0742900	0.08406793	5.1607855	20	5 18.7	21.5
417845 2007 <i>HT</i> <sub>32</sub>	16.7	X	19.07153	115.71762	20.22554	9.96051	0.1110931	0.21550344	2.7552853	20	1 30.7	20.0
417846 2007 <i>HL</i> <sub>40</sub>	17.0	X	192.79966	172.61638	96.11902	2.78053	0.0815183	0.19932843	2.9023953	20	—	—
417847 2007 <i>HR</i> <sub>46</sub>	16.1	X	109.51014	231.77231	51.99981	11.81843	0.2490808	0.18168359	3.0873954	20	12 12.7	21.5
417848 2007 <i>HZ</i> <sub>51</sub>	16.7	X	118.96622	206.76746	82.41454	10.17177	0.0894677	0.18637249	3.0353924	20	12 21.5	21.3
417849 2007 <i>HG</i> <sub>57</sub>	16.6	X	90.58391	88.50021	201.73283	11.26425	0.1109364	0.17946388	3.1128010	20	11 25.8	21.4
417850 2007 <i>HV</i> <sub>58</sub>	16.2	X	278.73565	118.96982	80.53410	16.03550	0.0959730	0.20519069	2.8468480	20	—	—
417851 2007 <i>HQ</i> <sub>60</sub>	16.5	X	120.02228	50.18009	46.30721	22.68170	0.0540182	0.22657279	2.6647975	20	4 26.9	20.2
417852 2007 <i>HL</i> <sub>61</sub>	16.9	X	336.20525	347.98756	179.07933	8.35455	0.1572498	0.21109209	2.7935390	20	—	—
417853 2007 <i>HS</i> <sub>96</sub>	16.2	X	164.65166	281.96981	45.38605	15.39090	0.1639295	0.20371990	2.8605338	20	1 19.2	21.0
417854 2007 <i>JM</i>	16.4	X	140.27322	76.63965	198.35755	18.42735	0.1072029	0.18524799	3.0476637	20	12 24.5	21.5
417855 2007 <i>JN</i>	15.6	X	124.52675	195.33997	95.39659	24.16120	0.0946081	0.18557247	3.0441101	20	12 28.7	20.2
417856 2007 <i>JZ</i>	15.4	X	42.65635	253.56973	61.83659	27.18485	0.2935221	0.17132332	3.2106408	20	11 24.4	19.9
417857 2007 <i>JE</i> <sub>9</sub>	17.4	X	53.70803	11.66225	157.66039	5.03217	0.3288437	0.23165384	2.6256876	20	6 15.5	20.4
417858 2007 <i>JK</i> <sub>11</sub>	16.5	X	339.46510	144.61066	44.77393	10.31133	0.1931383	0.21610828	2.7501420	20	1 25.4	19.9
417859 2007 <i>JX</i> <sub>12</sub>	15.5	X	51.46220	230.68700	95.92525	18.65950	0.2490989	0.17362694	3.1821792	20	12 13.1	20.2
417860 2007 <i>JK</i> <sub>16</sub>	15.9	X	346.17508	125.13186	117.86772	15.45690	0.1747730	0.22667183	2.6640213	20	4 28.4	19.0
417861 2007 <i>JW</i> <sub>17</sub>	16.3	X	77.28031	189.98638	129.56013	15.15718	0.0882936	0.18109384	3.0940946	20	12 14.9	21.1
417862 2007 <i>JX</i> <sub>23</sub>	16.6	X	74.48014	332.63616	185.42250	17.80874	0.0568162	0.22655658	2.6649246	20	5 18.7	20.4
417863 2007 <i>JN</i> <sub>45</sub>	16.2	X	63.19585	241.03005	75.23763	18.42265	0.1543649	0.17628917	3.1500609	20	12 1.7	20.8
417864 2007 <i>KQ</i> <sub>3</sub>	16.5	X	41.14333	122.53791	101.58703	13.93685	0.1526665	0.23416437	2.6068868	20	7 12.9	19.3
417865 2007 <i>LA</i> <sub>28</sub>	16.4	X	3.70016	122.78870	107.79517	12.99194	0.2169875	0.22733707	2.6588216	20	5 14.7	18.9
417866 2007 <i>LY</i> <sub>33</sub>	15.3	X	99.99729	230.30860	98.53774	24.18580	0.1983619	0.18620873	3.0371718	20	—	—
417867 2007 <i>MO</i>	15.8	X	18.44209	133.02788	119.38740	32.40478	0.2284548	0.22743373	2.6580683	20	7 22.7	18.0
417868 2007 <i>MX</i> <sub>2</sub>	15.6	X	285.67564	178.31330	282.63735	12.18997	0.0513082	0.17157443	3.2075075	20	11 10.2	20.1
417869 2007 <i>MO</i> <sub>6</sub>	15.8	X	61.23494	142.42471	278.28123	14.67638	0.0754174	0.19095134	2.9866723	20	—	—
417870 2007 <i>ME</i> <sub>9</sub>	15.8	X	80.85511	44.54956	236.77436	26.94644	0.2272921	0.17276816	3.1927156	20	11 15.2	20.9
417871 2007 <i>MB</i> <sub>24</sub>	18.2	X	35.06883	269.15449	271.15778	47.70972	0.6997624	0.38346006	1.8763879	20	7 21.7	21.4
417872 2007 <i>ND</i> <sub>1</sub>	15.5	X	157.80634	152.38909	109.02201	23.12525	0.1982394	0.18184657	3.0855504	20	12 24.9	20.8
417873 2007 <i>NJ</i> <sub>4</sub>	17.6	X	321.79776	69.98074	241.97899	4.27479	0.2244265	0.29944536	2.2127091	20	6 7.6	19.1
417874 2007 <i>NC</i> <sub>5</sub>	18.1	X	144.62993	20.54285	165.84307	19.31994	0.8871538	0.25793295	2.4441705	20	9 30.7	24.4
417875 2007 <i>OG</i> <sub>1</sub>	14.7	X	82.51529	95.18267	261.72838	24.42294	0.2692044	0.17285360	3.1916635	20	—	—
417876 2007 <i>PX</i> <sub>7</sub>	17.8	X	326.71105	12.91609	318.20370	6.59105	0.2078596	0.30256513	2.1974726	20	8 1.2	18.6
417877 2007 <i>PP</i> <sub>19</sub>	18.1	X	307.70315	130.26261	182.82366	4.41248	0.1769151	0.29563087	2.2317020	20	5 20.6	20.3
417878 2007 <i>PV</i> <sub>21</sub>	17.9	X	351.16551	336.84360	335.70286	6.39593	0.2338007	0.30460314	2.1876599	20	9 10.6	18.7
417879 2007 <i>PY</i> <sub>23</sub>	15.6	X	108.67222	357.26266	316.14667	16.31974	0.1782902	0.17437153	3.1731139	20	—	—
417880 2007 <i>PQ</i> <sub>26</sub>	17.6	X	353.09785	317.54680	27.33128	5.26122	0.2269573	0.30682617	2.1770803	20	11 12.2	19.1
417881 2007 <i>PB</i> <sub>46</sub>	18.3	X	335.40524	145.61168	154.57803	5.73962	0.1886490	0.29812973	2.2192141	20	6 27.2	19.8
417882 2007 <i>PS</i> <sub>48</sub>	16.6	X	6.35507	256.55693	69.55927	10.49472	0.2062527	0.23304323	2.6152411	20	10 20.8	19.4
417883 2007 <i>QR</i> <sub>3</sub>	15.5	X	95.81581	33.04589	318.13603	17.13129	0.1560465	0.17804375	3.1293314	20	—	—
417884 2007 <i>QB</i> <sub>12</sub>	17.5	X	342.55968	28.61754	272.23314	5.90817	0.1967089	0.30094806	2.2053373	20	7 18.3	18.7
417885 2007 <i>QZ</i> <sub>16</sub>	17.9	X	288.81181	49.29411	280.79255	4.15393	0.1992830	0.29314633	2.2442939	20	5 9.2	20.6
417886 2007 <i>RF</i> <sub>6</sub>	17.6	X	348.15227	18.68591	298.04697	5.07918	0.1684296	0.30217726	2.1993526	20	8 31.1	19.0
417887 2007 <i>RT</i> <sub>10</sub>	18.2	X	290.65248	151.30717	192.04958	4.06000	0.2002438	0.29447780	2.2375239	20	6 2.7	20.5
417888 2007 <i>RN</i> <sub>11</sub>	17.0	X	142.15242	198.68752	330.49246	7.69440	0.0072408	0.30163832	2.2019716	20	9 1.3	19.4
417889 2007 <i>RO</i> <sub>16</sub>	15.0	X	127.19255	339.17362	337.72817	23.11862	0.2285359	0.17586495	3.1551247	20	—	—
417890 2007 <i>RD</i> <sub>27</sub>	18.7	X	289.10674	101.44469	214.97566	2.70655	0.2427913	0.29094652	2.2555923	20	4 14.0	21.4
417891 2007 <i>RL</i> <sub>32</sub>	15.6	X	101.83729	323.21210	5.99425	15.70686	0.1857292	0.17451878	3.1713288	20	—	—
417892 2007 <i>RQ</i> <sub>34</sub>	18.5	X	288.24582	169.51005	163.23797	3.92463	0.2485546	0.29304091	2.2448322	20	5 6.7	21.2
417893 2007 <i>RX</i> <sub>38</sub>	17.9	X	326.36749	334.74432	349.94212	3.20009	0.2137637	0.29835679	2.2180880	20	7 17.2	19.1
417894 2007 <i>RR</i> <sub>40</sub>	18.3	X	273.84481	322.98756	26.85485	3.55754	0.2631930	0.29085191	2.2560814	20	5 8.8	21.4
417895 2007 <i>RN</i> <sub>43</sub>	17.2	X	273.57717	24.75164	326.04285	6.67485	0.1433443	0.29036130	2.2586220	20	5 26.8	20.1
417896 2007 <i>RU</i> <sub>44</sub>	16.0	X	33.86376	99.80974	305.19184	5.32817	0.0979988	0.17106813	3.2138331	20	—	—
417897 2007 <i>RJ</i> <sub>54</sub>	17.5	X	333.56424	7.42974	287.77846	3.57115	0.1780098	0.29410348	2.2394220	20	6 13.3	18.9
417898 2007 <i>RL</i> <sub>73</sub>	17.8	X	264.48089	3.72906	349.27103	4.65851	0.1414479	0.29057829	2.2574975	20	5 18.0	20.8
417899 2007 <i>RR</i> <sub>98</sub>	17.8	X	267.36585	335.77579	63.79341	3.86235	0.1628319	0.29495613	2.2351041	20	7 29.6	20.4
417900 2007 <i>RE</i> <sub>102</sub>	15.5	X	131.34430	32.95747	335.59570	15.68281	0.1299089	0.18588324	3.0407163	20	2 3.7	20.1
417901 2007 <i>RN</i> <sub>105</sub>	18.1	X	321.28527	296.11102	38.36695	3.93474	0.1883039	0.29749008	2.2223940	20	7 25.7	19.5
417902 2007 <i>RY</i> <sub>109</sub>	16.2	X	355.10910	283.03650	164.96227	4.61478	0.1373830	0.17040410	3.2221767	20	—	—
417903 2007 <i>RZ</i> <sub>111</sub>	18.4	X	282.06142	42.35654	328.60721	0.72543	0.0665311	0.29490121	2.2353816	20	7 25.2	20.7
417904 2007 <i>RO</i> <sub>113</sub>	16.2	X	124.43503	2.14896	334.57074	8.49626	0.0647596	0.17701179	3.1414820	20	—	—
417905 2007 <i>RL</i> <sub>136</sub>	15.8	X	40.35794	40.03021	355.50953	18.92182	0.1629141	0.17098780	3.2148396	20	—	—
417906 2007 <i>RW</i> <sub>138</sub>	18.5	X	272.55563	166.15408	187.78116	3.87967	0.2530596	0.29135951	2.2534603	20	5 15.8	21.5
417907 2007 <i>RU</i> <sub>141</sub>	18.0	X	255.01077	194.98636	187.55019	2.65142	0.2325143	0.28987075	2.2611695	20	6 6.6	21.2
417908 2007 <i>RZ</i> <sub>141</sub>	17.6	X	254.28872	358.31162	11.18382	5.98541	0.1832349	0.28751038	2.2735283	20	5 22.9	20.7
417909 2007 <i>RT</i> <sub>143</sub>	18.1	X	231.24353	57.10033	315.89003	4.44585	0.1846164	0.28544415	2.2844866	20	5 2.7	21.6
417910 2007 <i>RQ</i> <sub>145</sub>	17.1	X	287.50271	10.56771	345.92372	7.38945	0.1936567	0.29258690	2.2471538	20	6 18.4	19.7
417911 2007 <i>RR</i> <sub>149</sub>	17.3	X	335.94253	263.13455	32.58448	8.85690	0.1599692	0.29401639	2.2398642	20	6 22.6	19.1
417912 2007 <i>RX</i> <sub>157</sub>	17.7	X	342.12254	248.09001</								



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>
417921 2007 RJ <sub>215</sub>	16.0	X	13.28659	356.09988	353.53286	11.61731	0.1540348	0.15583490	3.4200011	20	10 28.5	20.4
417922 2007 RF <sub>220</sub>	17.8	X	48.57983	29.69849	200.64905	7.16481	0.1033956	0.29255221	2.2473314	20	7 28.7	20.4
417923 2007 RQ <sub>233</sub>	17.6	X	321.99738	254.80346	80.81924	3.49009	0.1906533	0.29840012	2.2178732	20	7 29.0	19.0
417924 2007 RG <sub>236</sub>	17.8	X	267.54277	331.77903	15.80156	4.93312	0.1776505	0.29060049	2.2573825	20	5 9.3	20.9
417925 2007 RS <sub>244</sub>	18.1	X	293.28302	310.19141	52.39844	2.46113	0.1078522	0.29491261	2.2353241	20	7 24.9	20.2
417926 2007 RV <sub>269</sub>	18.0	X	234.70021	167.40116	222.86504	5.20834	0.1591890	0.28724126	2.2749482	20	6 3.1	21.1
417927 2007 RG <sub>278</sub>	15.7	X	132.73690	296.51747	48.66797	16.88837	0.1323031	0.18085915	3.0967707	20	1 7.2	20.6
417928 2007 RX <sub>288</sub>	17.3	X	197.21191	27.29566	50.81009	6.03834	0.1088050	0.28091939	2.3089520	20	6 30.9	20.6
417929 2007 RE <sub>289</sub>	17.9	X	275.41172	103.18980	219.17384	1.99550	0.2333713	0.28137404	2.3064641	20	4 7.8	21.2
417930 2007 RW <sub>290</sub>	15.5	X	289.73221	27.78163	37.12119	10.24761	0.0598917	0.14848371	3.5319687	20	10 3.2	20.3
417931 2007 RG <sub>293</sub>	18.3	X	81.61701	192.44119	46.14491	2.56402	0.0585830	0.30178383	2.2012637	20	9 25.0	20.9
417932 2007 RU <sub>298</sub>	17.9	X	224.84911	205.22743	204.89262	5.10095	0.1569217	0.28309378	2.2971137	20	6 19.3	21.4
417933 2007 RY <sub>308</sub>	18.3	X	246.35868	84.99804	319.03605	4.43461	0.1323616	0.29294069	2.2453441	20	7 10.5	21.0
417934 2007 RU <sub>310</sub>	17.7	X	263.65859	232.07177	90.80964	4.86096	0.2658960	0.28438604	2.2901497	20	3 27.1	21.3
417935 2007 RG <sub>315</sub>	17.9	X	312.10726	316.23245	35.79744	5.46405	0.1796040	0.29857653	2.2169995	20	8 6.4	19.5
417936 2007 RT <sub>317</sub>	18.3	X	232.78678	307.79925	78.06754	2.11863	0.1962899	0.28704545	2.2759826	20	5 22.5	21.5
417937 2007 RM <sub>322</sub>	17.8	X	288.40694	115.63146	224.66776	5.77907	0.1492270	0.29114540	2.2545650	20	6 3.4	20.2
417938 2007 RK <sub>325</sub>	17.4	X	19.79055	228.59552	39.51279	7.28805	0.2173300	0.29488590	2.2354590	20	9 3.0	19.3
417939 2007 SU <sub>3</sub>	17.1	X	290.40565	0.64223	3.54998	5.98725	0.2014489	0.29422738	2.2387932	20	7 5.3	19.4
417940 2007 SE <sub>4</sub>	17.5	X	314.65697	64.72435	246.14012	4.69675	0.1784466	0.29330127	2.2435035	20	5 29.0	19.5
417941 2007 SL <sub>7</sub>	17.6	X	252.04014	357.40247	26.16562	6.59248	0.0991151	0.28971045	2.2620035	20	6 22.5	20.5
417942 2007 SJ <sub>10</sub>	18.7	X	317.49682	259.40282	58.96176	2.16412	0.1860818	0.29366112	2.2416703	20	6 15.5	20.4
417943 2007 SH <sub>13</sub>	15.9	X	21.24686	103.65286	356.72980	9.88521	0.1977586	0.17433477	3.1735599	20	—	—
417944 2007 SS <sub>18</sub>	17.8	X	258.98479	313.41963	357.79374	5.55928	0.2413126	0.27867116	2.3213540	20	3 8.6	21.5
417945 2007 TL <sub>10</sub>	17.9	X	318.96950	320.50218	163.76376	3.44742	0.1982444	0.29793512	2.2201803	20	8 5.9	19.2
417946 2007 TN <sub>10</sub>	17.6	X	325.89988	114.10376	184.98967	4.37302	0.2231804	0.29242470	2.2479847	20	5 26.7	19.2
417947 2007 TJ <sub>16</sub>	17.5	X	312.90028	162.23351	219.75685	5.64727	0.2388503	0.30144186	2.2029282	20	9 22.5	18.4
417948 2007 TY <sub>19</sub>	17.4	X	20.53181	278.27283	10.48440	7.19753	0.1500611	0.30006738	2.2096502	20	9 22.9	19.4
417949 2007 TB <sub>23</sub>	18.7	X	140.79256	173.83252	40.11141	38.28871	0.1977839	0.69511559	1.2621124	20	—	—
417950 2007 TL <sub>33</sub>	17.2	X	302.48534	349.48080	31.36431	7.84894	0.1673331	0.29807847	2.2194684	20	9 7.2	19.0
417951 2007 TU <sub>47</sub>	17.6	X	21.84382	342.38020	283.93931	2.38552	0.1337341	0.29394073	2.2402485	20	8 14.4	19.6
417952 2007 TQ <sub>49</sub>	18.6	X	220.65892	65.91941	343.51793	1.78546	0.2002779	0.28507890	2.2864375	20	6 10.3	22.0
417953 2007 TM <sub>68</sub>	15.8	X	309.95761	45.89879	43.36889	11.83802	0.1934458	0.15513217	3.4303214	20	11 15.3	19.8
417954 2007 TY <sub>69</sub>	17.9	X	282.00332	125.25355	203.54669	2.86519	0.2191117	0.28876458	2.2669404	20	4 26.6	20.7
417955 Mallama	15.4	X	30.98141	107.05384	237.07312	8.61007	0.0959954	0.15487710	3.4340866	20	11 12.6	20.0
417956 2007 TW <sub>74</sub>	17.3	X	228.41172	213.20172	118.71168	7.20274	0.1047292	0.29158929	2.2522763	20	7 28.0	20.4
417957 2007 TF <sub>77</sub>	18.0	X	212.56954	171.39180	226.67118	5.44600	0.1718373	0.28165183	2.3049473	20	5 20.6	21.6
417958 2007 TE <sub>87</sub>	18.2	X	176.10624	264.95836	180.58508	5.25736	0.1466376	0.28063112	2.3105329	20	6 17.4	21.8
417959 2007 TP <sub>87</sub>	17.1	X	133.01258	46.26220	55.05960	7.70271	0.0984149	0.27512797	2.3412416	20	5 19.9	20.4
417960 2007 TW <sub>92</sub>	18.1	X	224.77282	297.62389	136.84773	2.28248	0.1341531	0.29047217	2.2580473	20	7 25.8	21.1
417961 2007 TS <sub>104</sub>	18.1	X	262.77735	121.93782	204.27742	8.43121	0.1786054	0.27951189	2.3166968	20	4 5.6	21.4
417962 2007 TD <sub>106</sub>	17.5	X	255.85878	190.50025	211.53068	6.58145	0.0877650	0.29160480	2.2521965	20	7 25.2	20.3
417963 2007 TQ <sub>109</sub>	17.4	X	250.57575	200.66488	227.76453	4.36450	0.1653534	0.29627145	2.2284840	20	8 13.4	20.1
417964 2007 TL <sub>113</sub>	17.8	X	268.24369	301.90936	61.05605	6.48604	0.2458179	0.28991160	2.2609571	20	5 23.4	20.7
417965 2007 TH <sub>114</sub>	18.1	X	286.47799	41.18281	350.94083	5.25862	0.2121038	0.29679688	2.2258531	20	8 11.3	19.9
417966 2007 TX <sub>119</sub>	17.6	X	14.48440	276.59091	53.58352	5.98941	0.2545043	0.30625022	2.1798090	20	12 2.5	19.9
417967 2007 TB <sub>121</sub>	16.3	X	14.57102	79.51834	1.95156	9.33514	0.0808180	0.17579990	3.1559029	20	—	—
417968 2007 TP <sub>127</sub>	17.5	X	282.00620	226.04400	64.90160	3.18367	0.2022152	0.27804285	2.3248498	20	3 10.9	20.8
417969 2007 TJ <sub>140</sub>	17.8	X	321.21369	141.95784	138.05178	3.24686	0.1763915	0.28415712	2.2913795	20	4 24.3	19.9
417970 2007 TL <sub>142</sub>	16.1	X	28.62259	147.88186	199.43465	7.35110	0.1408959	0.15704032	3.4024776	20	11 20.9	20.6
417971 2007 TC <sub>155</sub>	17.4	X	292.43318	339.43696	3.05683	7.00211	0.1501990	0.29089846	2.2558408	20	6 12.1	19.9
417972 2007 TW <sub>156</sub>	17.9	X	310.11863	43.73609	282.36918	1.91129	0.2560950	0.29328999	2.2435611	20	5 29.7	19.9
417973 2007 TF <sub>165</sub>	17.6	X	267.61525	353.73310	27.20296	5.71348	0.1687915	0.29023815	2.2592609	20	6 29.7	20.5
417974 2007 TX <sub>167</sub>	17.9	X	232.50083	22.50552	10.60632	6.81679	0.1315819	0.28611007	2.2809405	20	6 5.9	21.2
417975 2007 TD <sub>168</sub>	17.9	X	304.26734	337.60218	355.68014	3.56701	0.1886760	0.29243520	2.2479309	20	6 12.1	19.9
417976 2007 TA <sub>172</sub>	17.5	X	269.83186	348.76379	45.00036	8.30653	0.1166752	0.29370971	2.2414231	20	8 4.1	20.1
417977 2007 TM <sub>173</sub>	18.5	X	232.58439	345.04820	16.56943	0.97669	0.1726813	0.28213883	2.3022942	20	4 21.8	21.7
417978 Haslehner	16.1	X	43.53820	65.98583	22.64722	9.79985	0.0700790	0.17636929	3.1491069	20	1 13.2	20.3
417979 2007 TW <sub>186</sub>	17.4	X	246.70795	331.41308	71.94432	7.13793	0.0882700	0.29003295	2.2603264	20	7 16.9	20.2
417980 2007 TP <sub>193</sub>	16.4	X	31.80678	50.28710	357.93675	7.38140	0.1779267	0.17117227	3.2125294	20	—	—
417981 2007 TP <sub>216</sub>	17.3	X	279.38239	345.47106	30.03043	8.40744	0.1521896	0.29107718	2.2549173	20	7 14.1	19.9
417982 2007 TL <sub>217</sub>	18.3	X	246.46507	136.45866	254.47998	2.37279	0.1194396	0.28596819	2.2816949	20	6 22.7	21.1
417983 2007 TY <sub>217</sub>	17.5	X	298.48770	287.71072	28.23368	7.14145	0.1451061	0.28367391	2.2939808	20	5 12.6	19.9
417984 2007 TO <sub>221</sub>	17.8	X	25.86358	246.88713	5.13422	4.72849	0.1268929	0.29782712	2.2207170	20	7 31.9	19.8
417985 2007 TH <sub>224</sub>	15.8	X	86.23160	30.16505	314.78648	11.94968	0.1449037	0.17777036	3.1325390	20	—	—
417986 2007 TU <sub>229</sub>	18.6	X	192.73672	41.25506	35.85434	1.99246	0.1467819	0.28268761	2.2993136	20	6 22.9	21.9
417987 2007 TO <sub>234</sub>	17.7	X	234.99248	10.67252	56.54059	6.82335	0.0801213	0.28938901	2.2636782	20	8 7.9	20.6
417988 2007 TW <sub>274</sub>	17.7	X	69.86787	161.13768	42.76138	3.90676	0.1301860	0.28789806	2.2714868	20	7 29.8	20.5
417989 2007 TN <sub>275</sub>	17.7	X	305.08404	297.82535	55.73269	6.10228	0.1497740	0.29591234	2.2302866	20	7 27.6	19.7
417990 2007 TO <sub>284</sub>	18.5	X	166.45266	326.27036	165.92314	3.02377	0.0921729	0.29301744	2.2449520	20	8 10.4	21.4
417991 2007 TP <sub>302</sub>	18.0	X	329.30705	72.48123	226.47846	4.08812	0.1618904	0.28917572	2.2647912	20	6 12.6	19.6
417992 2007 TJ <sub>346</sub>	17.7	X	247.75438	3.68927	40.97574	7.95602	0.0915193	0.29221687	2.2490504	20	7 21.3	20.5
417993 2007 TG <sub>356</sub>	18.4	X	246.62653	278.67069	90.28200	6.20275	0.1983753	0.28413719	2.2914866	20	5 15.2	21.7

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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>		
418001	2007	TB <sub>405</sub>	17.7	X	297.04693	70.94104	240.21885	6.18265	0.1686384	0.28318973	2.2965948	20	4 29.6	20.4
418002	2007	TR <sub>418</sub>	15.8	X	233.03431	284.30520	219.07913	9.43539	0.0215072	0.15318953	3.4592609	20	10 30.6	20.6
418003	2007	TC <sub>429</sub>	18.0	X	315.76474	137.86211	194.82354	2.87020	0.1380384	0.29259489	2.2471129	20	7 13.2	19.8
418004	2007	TM <sub>433</sub>	17.8	X	281.82780	289.20193	71.54537	6.17354	0.1748244	0.29158661	2.2522901	20	6 19.1	20.4
418005	2007	TA <sub>443</sub>	15.3	X	94.83873	229.82338	109.18760	12.68542	0.1708084	0.17008523	3.2262027	20	—	—
418006	2007	TE <sub>446</sub>	17.8	X	284.42831	268.26403	100.06471	7.52065	0.1848200	0.29289888	2.2455578	20	7 3.5	20.0
418007	2007	TN <sub>446</sub>	17.7	X	325.62278	316.56919	57.66391	6.11402	0.1190813	0.30207818	2.1998335	20	10 19.6	19.4
418008	2007	TW <sub>450</sub>	16.9	X	339.61067	41.50422	240.28025	9.61164	0.1317791	0.28807331	2.2705655	20	6 9.3	18.9
418009	2007	TD <sub>451</sub>	18.1	X	252.46298	90.76311	252.18974	2.00957	0.2380095	0.28048505	2.3113351	20	4 10.7	21.8
418010	2007	TH <sub>451</sub>	17.6	X	249.26221	299.77147	64.60610	7.11059	0.1362984	0.28397418	2.2923635	20	5 17.8	20.7
418011	2007	TC <sub>452</sub>	17.4	X	289.86867	165.27911	231.47937	7.66523	0.2228990	0.29462629	2.2367720	20	8 17.4	19.6
418012	2007	UZ <sub>2</sub>	17.6	X	275.77407	193.95095	181.41137	6.06776	0.1284317	0.29213877	2.2494512	20	7 9.4	20.3
418013	2007	UG <sub>4</sub>	17.1	X	192.88722	159.42024	203.71048	23.24125	0.1994493	0.27134829	2.3629326	20	3 15.7	21.2
418014	2007	UZ <sub>6</sub>	17.9	X	233.69515	141.35145	219.41210	1.10336	0.2421305	0.27980152	2.3150977	20	4 17.1	21.7
418015	2007	UN <sub>24</sub>	17.8	X	267.16001	146.74357	192.68926	6.49855	0.1729930	0.28293489	2.2979737	20	4 30.7	21.0
418016	2007	UG <sub>34</sub>	17.0	X	111.88541	169.19986	296.48479	11.30196	0.2106692	0.27037689	2.3685888	20	5 11.5	20.6
418017	2007	UG <sub>42</sub>	17.7	X	277.80546	31.92316	301.63291	2.92809	0.1590437	0.28377926	2.2934131	20	5 5.7	20.6
418018	2007	UP <sub>43</sub>	18.0	X	244.87046	164.12803	192.21283	6.11342	0.1293091	0.28193815	2.3033865	20	5 3.1	21.1
418019	2007	UA <sub>52</sub>	17.7	X	249.53416	185.49268	209.96480	5.50249	0.1353398	0.28640053	2.2793980	20	6 30.4	20.6
418020	2007	UP <sub>58</sub>	17.6	X	119.09779	132.38576	32.71646	6.36819	0.1005574	0.28665372	2.2780556	20	8 3.9	20.8
418021	2007	UV <sub>60</sub>	18.1	X	300.52914	278.36637	58.40685	4.81684	0.0989567	0.28663995	2.2781286	20	6 26.9	20.5
418022	2007	UV <sub>75</sub>	18.1	X	212.39577	225.98499	264.51281	2.51643	0.1487108	0.29667196	2.2264779	20	9 24.9	21.2
418023	2007	UF <sub>78</sub>	17.7	X	268.43811	114.43676	242.24066	6.23740	0.1376981	0.28779825	2.2720120	20	5 30.9	20.6
418024	2007	UF <sub>84</sub>	17.7	X	166.41856	342.27446	43.55420	2.11573	0.1959096	0.26832490	2.3806492	20	3 25.0	21.4
418025	2007	UZ <sub>87</sub>	18.2	X	248.04826	335.30690	41.88034	3.79999	0.2311376	0.28464043	2.2887850	20	5 22.3	21.4
418026	2007	UP <sub>94</sub>	17.8	X	177.82023	26.90038	28.14457	5.60839	0.1287842	0.27597787	2.3364324	20	5 8.2	21.3
418027	2007	UL <sub>98</sub>	17.3	X	159.34197	84.30469	49.59654	8.57383	0.0753175	0.28555476	2.2838966	20	8 8.0	20.6
418028	2007	UG <sub>102</sub>	18.0	X	262.66979	104.42291	226.34617	6.07813	0.2339178	0.27949526	2.3167887	20	4 4.5	21.5
418029	2007	UB <sub>104</sub>	17.9	X	173.17348	298.51223	81.31625	3.59226	0.1865818	0.26733350	2.3865131	20	3 24.3	21.7
418030	2007	UK <sub>115</sub>	17.2	X	349.42372	275.12125	40.77352	7.96715	0.1916401	0.29533481	2.2331931	20	9 10.8	18.7
418031	2007	UW <sub>118</sub>	17.7	X	336.05801	301.19246	19.09521	5.36559	0.1797533	0.29363076	2.2418249	20	8 9.7	19.1
418032	2007	UQ <sub>119</sub>	18.8	X	239.01671	183.09781	202.88884	6.58979	0.0999558	0.28662869	2.2781883	20	6 9.1	21.9
418033	2007	UV <sub>134</sub>	16.1	X	8.38156	79.23228	45.84852	7.92450	0.1159537	0.17369814	3.1813097	20	1 5.0	20.1
418034	2007	VH	17.8	X	260.08532	342.26827	45.03152	7.15343	0.1804675	0.29206653	2.2498222	20	6 26.5	20.7
418035	2007	VD <sub>9</sub>	17.8	X	240.03417	305.66038	79.41328	9.31592	0.2213584	0.28413082	2.2915209	20	5 26.9	21.3
418036	2007	VO <sub>12</sub>	17.9	X	246.08648	54.91953	323.67546	4.28308	0.1703257	0.28461315	2.2889312	20	5 28.3	21.2
418037	2007	VV <sub>17</sub>	18.1	X	154.33440	315.79398	202.54084	4.44019	0.0622091	0.29325068	2.2437615	20	8 31.8	21.0
418038	2007	VE <sub>22</sub>	16.9	X	118.12194	260.60203	228.30526	7.06564	0.0427422	0.28104401	2.3082694	20	6 2.5	19.7
418039	2007	VG <sub>26</sub>	17.5	X	37.38675	14.72559	241.55060	5.66065	0.0749694	0.29061812	2.2572912	20	8 13.8	20.0
418040	2007	VM <sub>61</sub>	18.0	X	281.41053	329.31426	341.07374	1.78745	0.2215802	0.27897301	2.3196792	20	3 31.0	21.3
418041	2007	VL <sub>75</sub>	17.7	X	17.80213	190.57050	62.30648	5.28021	0.0777442	0.28484829	2.2876714	20	7 8.8	20.0
418042	2007	VU <sub>78</sub>	17.2	X	45.65387	328.98089	223.51388	9.36854	0.1659392	0.27344613	2.3508316	20	6 6.8	19.5
418043	2007	VF <sub>83</sub>	18.0	X	336.63939	68.48480	208.67058	6.87807	0.0968704	0.28291074	2.2981044	20	5 30.3	20.3
418044	2007	VV <sub>95</sub>	17.8	X	199.51142	52.53116	36.53527	6.20220	0.0904681	0.28529455	2.2852851	20	7 21.9	21.0
418045	2007	VL <sub>96</sub>	17.7	X	209.87089	138.69955	267.48818	4.23582	0.2184664	0.28120414	2.3073930	20	5 25.9	21.4
418046	2007	VV <sub>106</sub>	17.7	X	25.07908	9.54286	262.08405	1.76481	0.1686896	0.29145579	2.2529640	20	9 3.6	19.8
418047	2007	VU <sub>107</sub>	17.9	X	266.26949	291.13335	59.40074	1.28996	0.2228490	0.28459243	2.2890423	20	5 7.3	21.1
418048	2007	VW <sub>111</sub>	18.0	X	212.92538	170.25446	230.46642	2.94511	0.1600181	0.27959002	2.3162651	20	5 25.0	21.4
418049	2007	VX <sub>115</sub>	17.9	X	98.45373	255.16172	206.68396	6.14288	0.1236800	0.26390786	2.4071390	20	4 10.7	21.0
418050	2007	VL <sub>121</sub>	17.2	X	290.88778	277.38240	26.14001	8.25839	0.2698894	0.28253200	2.3001578	20	3 28.3	20.3
418051	2007	VG <sub>127</sub>	16.0	X	152.38377	322.14259	8.26471	9.91636	0.0148902	0.18046656	3.1012603	20	—	—
418052	2007	VC <sub>136</sub>	16.1	X	332.45590	154.18704	59.53404	10.94517	0.2227170	0.18647851	3.0342418	20	2 18.2	19.9
418053	2007	VV <sub>141</sub>	18.1	X	240.96596	158.55776	186.63571	2.36404	0.2264086	0.27807579	2.3246662	20	4 5.1	21.7
418054	2007	VS <sub>142</sub>	18.2	X	235.81511	238.97735	196.51738	3.81852	0.1377122	0.29011533	2.2598985	20	8 8.3	21.3
418055	2007	VP <sub>152</sub>	18.2	X	195.63014	104.23630	307.41083	1.74757	0.1789260	0.27653198	2.3333102	20	5 21.4	21.7
418056	2007	VU <sub>154</sub>	17.6	X	351.52331	28.64936	286.92808	3.90529	0.1656167	0.29528262	2.2334563	20	9 4.6	19.2
418057	2007	VS <sub>159</sub>	17.7	X	24.82093	147.56488	97.06950	5.94516	0.1125045	0.28321872	2.2964381	20	7 12.5	19.7
418058	2007	VC <sub>162</sub>	17.9	X	263.45196	296.03691	35.83395	6.18691	0.1854762	0.27845300	2.3225663	20	4 14.4	21.1
418059	2007	VB <sub>164</sub>	18.4	X	148.43440	242.71564	282.92271	1.45278	0.1178394	0.28783748	2.2718055	20	9 4.5	21.7
418060	2007	VD <sub>168</sub>	18.0	X	256.19500	285.80949	56.81129	6.17172	0.2645048	0.27998863	2.3140663	20	4 14.1	21.6
418061	2007	VE <sub>181</sub>	18.1	X	221.15219	73.91914	42.45186	3.69424	0.1631190	0.29566614	2.2315245	20	9 17.1	21.1
418062	2007	VA <sub>189</sub>	18.1	X	242.88883	118.14760	283.69498	1.36484	0.1392377	0.28656508	2.2785254	20	7 1.1	20.9
418063	2007	VE <sub>190</sub>	17.4	X	221.41040	25.06481	22.75545	6.93903	0.1161400	0.28254635	2.3000799	20	6 15.5	20.7
418064	2007	VQ <sub>192</sub>	17.7	X	164.16965	327.57563	92.32439	3.60864	0.1367281	0.26633657	2.3924829	20	5 3.2	21.2
418065	2007	VO <sub>194</sub>	18.3	X	212.25696	350.77895	93.25781	1.42122	0.1734791	0.28125866	2.3070948	20	7 20.8	21.5
418066	2007	VX <sub>197</sub>	17.5	X	155.45684	327.73309	95.34850	7.19450	0.0875966	0.26307264	2.4122312	20	4 27.1	21.0
418067	2007	VJ <sub>199</sub>	17.8	X	79.95933	359.70706	224.28175	4.09089	0.1338250	0.29237678	2.2482303	20	9 7.8	20.9
418068	2007	VY <sub>200</sub>	18.1	X	102.63994	289.57189	222.00719	4.86682	0.1077507	0.27875134	2.3209088	20	6 22.8	21.1
418069	2007	VP <sub>210</sub>	18.1	X	261.19056	85.01693	309.98770	3.51689	0.1545861	0.28983433	2.2613589	20	7 15.2	20.7

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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>
418081 2007 <i>VW</i> <sub>293</sub>	15.6 <sup>m</sup>	X	325.08033	354.86978	71.70581	15.86442	0.0740008	0.15162048	3.4830855	20	11 20.2	20.1
418082 2007 <i>VK</i> <sub>307</sub>	15.9	X	352.69386	99.98475	60.67372	13.66817	0.0853270	0.17637307	3.1490619	20	1 30.3	20.2
418083 2007 <i>VV</i> <sub>307</sub>	16.2	X	71.16897	267.11156	249.15966	20.10731	0.3146182	0.26341199	2.4101590	20	6 18.5	19.4
418084 2007 <i>VR</i> <sub>310</sub>	18.0	X	178.69902	93.47549	358.95819	2.88951	0.1660832	0.27449703	2.3448278	20	6 28.9	21.8
418085 2007 <i>VC</i> <sub>311</sub>	15.6	X	208.27838	18.03775	100.43511	4.61723	0.1196766	0.12545200	3.9520065	20	8 23.9	21.6
418086 2007 <i>VN</i> <sub>312</sub>	17.4	X	249.28477	299.62151	71.92888	7.83819	0.1375241	0.27725756	2.3292375	20	5 27.5	20.6
418087 2007 <i>VP</i> <sub>323</sub>	18.3	X	199.41836	171.09195	282.35832	1.78255	0.1778384	0.28506979	2.2864862	20	7 20.1	21.5
418088 2007 <i>VN</i> <sub>326</sub>	18.0	X	198.55462	3.04527	88.56709	4.14208	0.1301276	0.28401176	2.2921612	20	7 20.2	21.2
418089 2007 <i>VT</i> <sub>327</sub>	17.7	X	270.07233	25.87180	326.11540	6.35284	0.1772730	0.28487618	2.2875221	20	5 18.0	20.8
418090 2007 <i>VB</i> <sub>328</sub>	17.3	X	336.67820	38.45635	278.46768	7.60864	0.1212606	0.29018618	2.2595306	20	7 31.7	19.1
418091 2007 <i>VA</i> <sub>333</sub>	18.0	X	139.35363	72.63947	68.55360	7.78798	0.0435376	0.28154914	2.3055077	20	7 20.3	21.0
418092 2007 <i>VD</i> <sub>333</sub>	15.7	X	35.12989	149.56910	257.67007	9.07632	0.1218516	0.16050687	3.3533095	20	—	—
418093 2007 <i>VH</i> <sub>334</sub>	18.0	X	160.69976	21.08537	39.13340	2.74436	0.1963310	0.27018181	2.3697288	20	5 1.5	21.6
418094 2007 <i>VW</i> <sub>4</sub>	19.6	X	260.23769	297.62652	249.90031	38.33297	0.4409662	0.54387913	1.4863957	20	—	—
418095 2007 <i>WN</i> <sub>6</sub>	17.0	X	191.37074	64.84809	25.16611	7.54165	0.0631288	0.28227547	2.3015511	20	7 14.8	20.2
418096 2007 <i>WN</i> <sub>8</sub>	17.7	X	186.56112	175.31674	277.42894	4.02847	0.1716098	0.28051462	2.3111726	20	7 6.7	21.3
418097 2007 <i>WD</i> <sub>34</sub>	17.6	X	199.77548	152.52537	274.63753	5.51607	0.1031007	0.28001655	2.3139124	20	6 18.9	20.9
418098 2007 <i>WC</i> <sub>58</sub>	17.4	X	126.16797	344.39438	124.94886	9.65200	0.0999417	0.26250926	2.4156813	20	5 25.9	20.9
418099 2007 <i>WS</i> <sub>60</sub>	17.4	X	215.01353	6.23758	19.77043	3.39889	0.1608110	0.27646844	2.3336676	20	5 6.8	21.0
418100 2007 <i>WZ</i> <sub>61</sub>	17.3	X	117.24331	289.91991	252.40627	5.46759	0.1307589	0.28378777	2.2933672	20	8 22.5	20.7
418101 2007 <i>WG</i> <sub>63</sub>	17.7	X	211.25217	134.20458	309.59997	5.18824	0.1288613	0.28508250	2.2864182	20	7 23.7	20.8
418102 2007 <i>XZ</i> <sub>3</sub>	18.1	X	217.48245	122.46792	262.33497	2.61372	0.2361405	0.27691795	2.3311415	20	5 3.9	21.9
418103 2007 <i>XB</i> <sub>12</sub>	18.3	X	162.13872	41.89596	67.79048	3.60591	0.1523118	0.28016697	2.3130841	20	7 5.9	21.8
418104 2007 <i>XP</i> <sub>16</sub>	17.8	X	223.85944	157.02396	281.68661	4.82842	0.1908670	0.28614360	2.2807623	20	7 23.7	21.0
418105 2007 <i>XJ</i> <sub>25</sub>	16.3	X	339.49769	18.63812	259.80500	22.77344	0.1470922	0.27697030	2.3308478	20	6 2.2	18.2
418106 2007 <i>XV</i> <sub>27</sub>	16.5	X	171.71645	146.59263	279.59075	24.33106	0.2525544	0.26902828	2.3764979	20	5 18.8	21.0
418107 2007 <i>XC</i> <sub>43</sub>	17.9	X	35.98220	230.22896	289.17007	1.47931	0.1363320	0.25916897	2.4363932	20	3 23.2	20.0
418108 2007 <i>XS</i> <sub>50</sub>	17.3	X	165.25333	34.46698	106.64575	23.51462	0.2061305	0.27816737	2.3241559	20	8 23.3	21.4
418109 2007 <i>XV</i> <sub>56</sub>	17.2	X	192.72594	18.67283	73.60978	6.64362	0.1577065	0.28168574	2.3047623	20	7 13.5	20.7
418110 2007 <i>XJ</i> <sub>58</sub>	17.2	X	203.21773	76.02110	309.55030	5.95993	0.1290535	0.26641296	2.3920256	20	4 23.7	20.9
418111 2007 <i>YD</i> <sub>2</sub>	18.5	X	201.00064	87.20044	313.59952	25.24833	0.2018905	0.43064162	1.7367023	20	4 25.0	21.7
418112 2007 <i>YU</i> <sub>4</sub>	16.8	X	209.07037	148.69682	272.63309	4.97690	0.1768507	0.27964679	2.3159517	20	6 16.6	20.4
418113 2007 <i>YB</i> <sub>11</sub>	18.2	X	121.78668	177.85196	334.81130	5.21048	0.1226789	0.27286910	2.3541446	20	7 20.3	21.5
418114 2007 <i>YT</i> <sub>12</sub>	17.8	X	160.75193	29.67823	51.66380	6.45183	0.0693484	0.26825335	2.3810724	20	5 23.4	20.9
418115 2007 <i>YA</i> <sub>13</sub>	17.1	X	289.72997	245.86446	59.02374	7.60560	0.0633268	0.26641778	2.3919967	20	4 30.5	20.1
418116 2007 <i>YU</i> <sub>16</sub>	17.1	X	102.81370	107.34621	81.48955	10.43608	0.0475870	0.28190805	2.3035505	20	8 11.3	20.1
418117 2007 <i>YJ</i> <sub>31</sub>	17.6	X	256.36412	295.85009	94.09422	6.55497	0.2104784	0.28322377	2.2964108	20	6 20.9	20.5
418118 2007 <i>YM</i> <sub>32</sub>	17.8	X	229.93588	240.82772	231.34272	1.73277	0.1089645	0.29376489	2.2411424	20	9 27.4	20.6
418119 2007 <i>YN</i> <sub>35</sub>	17.7	X	188.14903	356.71893	93.23708	6.88407	0.0752158	0.27659369	2.3329631	20	7 8.2	20.9
418120 2007 <i>YO</i> <sub>37</sub>	17.6	X	67.72237	140.34605	57.12886	2.97956	0.1702123	0.26904493	2.3763998	20	7 21.8	20.4
418121 2007 <i>YH</i> <sub>40</sub>	17.8	X	92.63541	16.16437	133.91651	5.76582	0.0439957	0.26698563	2.3886038	20	5 29.5	20.9
418122 2007 <i>YQ</i> <sub>42</sub>	17.0	X	136.92186	179.61976	299.72895	8.30019	0.1434312	0.26918459	2.3755778	20	6 22.5	20.5
418123 2007 <i>YY</i> <sub>47</sub>	18.3	X	219.99144	317.21132	128.68314	1.73548	0.1721798	0.28606883	2.2811597	20	7 31.9	21.4
418124 2007 <i>YK</i> <sub>58</sub>	17.8	X	192.85593	6.12893	96.58196	6.53260	0.1162219	0.27895526	2.3197776	20	7 30.2	21.0
418125 2007 <i>YW</i> <sub>61</sub>	17.9	X	76.58274	250.12937	278.19864	1.27016	0.1521320	0.26029994	2.4293309	20	6 18.2	20.9
418126 2007 <i>YD</i> <sub>64</sub>	18.3	X	214.79464	166.97471	277.42292	1.31748	0.1666262	0.28070110	2.3101489	20	7 24.2	21.6
418127 2007 <i>YK</i> <sub>64</sub>	17.2	X	31.17147	153.81566	112.19477	4.63951	0.1211825	0.27623426	2.3349864	20	8 28.7	19.7
418128 2007 <i>YE</i> <sub>64</sub>	18.1	X	149.36106	142.24176	284.72424	1.65218	0.1557440	0.26094088	2.4253512	20	4 26.8	21.8
418129 2007 <i>YF</i> <sub>69</sub>	18.0	X	202.31296	84.65655	300.07540	5.02774	0.1232791	0.26843597	2.3799924	20	4 22.2	21.6
418130 2007 <i>YO</i> <sub>73</sub>	17.8	X	157.48795	148.67029	298.44158	4.37197	0.1971874	0.26755294	2.3852261	20	6 1.9	21.6
418131 2008 <i>AR</i> <sub>9</sub>	17.8	X	167.49542	265.09720	129.58473	8.40317	0.0876078	0.25905467	2.4371098	20	4 4.1	21.4
418132 2008 <i>AY</i> <sub>13</sub>	17.8	X	89.51955	260.59071	268.68031	4.56325	0.1487423	0.26695299	2.3887985	20	7 6.3	20.9
418133 2008 <i>AN</i> <sub>25</sub>	17.4	X	132.40941	36.86149	94.69945	3.65446	0.1187017	0.26797466	2.3827230	20	7 1.9	20.6
418134 2008 <i>AB</i> <sub>27</sub>	18.0	X	190.60306	166.71894	301.28515	1.99189	0.1462961	0.27693313	2.3310564	20	8 1.1	21.3
418135 2008 <i>AG</i> <sub>33</sub>	19.6	X	342.29729	155.62139	38.34776	15.99925	0.3372029	0.55828002	1.4607234	20	—	—
418136 2008 <i>AN</i> <sub>35</sub>	18.2	X	105.20988	17.38109	134.10774	2.11133	0.1180848	0.26752451	2.3853951	20	6 27.1	21.4
418137 2008 <i>AY</i> <sub>35</sub>	17.4	X	155.06764	124.18962	303.57399	5.45277	0.1095218	0.26349681	2.4096417	20	4 28.9	21.0
418138 2008 <i>AK</i> <sub>43</sub>	17.6	X	194.70045	56.54798	101.24473	3.67777	0.1126271	0.29002031	2.2603920	20	10 17.9	20.7
418139 2008 <i>AC</i> <sub>44</sub>	18.1	X	96.41105	157.13629	342.12765	0.99236	0.1198573	0.26120899	2.4236913	20	5 29.7	21.3
418140 2008 <i>AG</i> <sub>50</sub>	18.1	X	132.51611	164.12875	307.54548	4.69035	0.0785037	0.26761014	2.3848863	20	5 31.2	21.3
418141 2008 <i>AR</i> <sub>52</sub>	18.7	X	141.60653	203.34035	272.53762	1.10536	0.1228831	0.26999896	2.3707986	20	6 21.1	21.9
418142 2008 <i>AF</i> <sub>59</sub>	16.0	X	177.33963	316.19753	203.26968	1.71694	0.1963607	0.12454769	3.9711132	20	9 8.3	22.3
418143 2008 <i>AJ</i> <sub>59</sub>	17.8	X	41.63619	302.63911	264.20230	1.49632	0.1489342	0.26327140	2.4110169	20	6 18.4	20.3
418144 2008 <i>AA</i> <sub>60</sub>	17.9	X	132.20178	125.94230	12.14515	7.28598	0.1332505	0.27220438	2.3579756	20	7 13.4	21.4
418145 2008 <i>AA</i> <sub>65</sub>	17.5	X	113.72855	11.86135	142.60363	5.62507	0.1749133	0.26837035	2.3803804	20	7 16.9	21.1
418146 2008 <i>AT</i> <sub>67</sub>	18.2	X	182.10009	298.02954	122.70385	2.60850	0.1736743	0.26827741	2.3809301	20	5 21.9	21.9
418147 2008 <i>AF</i> <sub>72</sub>	18.4	X	120.16116	30.07570	89.16698	4.86958	0.1673543	0.26446448	2.4037602	20	6 6.3	21.9
418148 2008 <i>AK</i> <sub>78</sub>	17.4	X	13.11746	131.46736	92.36209	4.18831	0.1064442	0.26165893	2.4209120	20	5 16.9	19.7
418149 2008 <i>AR</i> <sub>79</sub>	17.8	X	157.86234	302.95369	143.33891	6.36920	0.0767605	0.26540048	2.3981053	20	5 29.0	21.3
418150 2008 <i>AL</i> <sub>84</sub>	18.1	X	157.91543	346.90595	122.05387	3.63009	0.1383015	0.27084845	2.3658388	20	6 29.8	21.8
418151 2008 <i>AV</i> <sub>85</sub>	17.4	X	206.98800	80.23256	320.56152	6.11647	0.1252962					

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>
418161 2008 AU <sub>107</sub>	17.8	X	103.55271	357.89427	131.24801	3.43372	0.1378244	0.26378501	2.4078863	20	5 28.4	21.1
418162 2008 AY <sub>111</sub>	17.9	X	177.94384	28.54472	26.85213	0.77229	0.1878078	0.26589570	2.3951268	20	5 10.6	21.9
418163 2008 AR <sub>113</sub>	17.6	X	194.83896	97.52733	39.93103	10.25538	0.1725566	0.28440738	2.2900351	20	9 17.8	21.2
418164 2008 AK <sub>115</sub>	17.8	X	71.35370	0.20578	155.75299	3.08952	0.1329201	0.25649806	2.4532774	20	5 21.3	20.6
418165 2008 AW <sub>133</sub>	18.3	X	211.57267	195.86677	209.63609	0.72988	0.1752476	0.27303855	2.3531705	20	5 29.1	22.0
418166 2008 AY <sub>137</sub>	17.3	X	286.77158	212.03724	28.38530	9.40783	0.1156258	0.23903096	2.5713821	20	1 28.6	21.1
418167 2008 BA <sub>3</sub>	17.9	X	223.05141	7.85629	35.49877	3.25765	0.2102084	0.27740389	2.3284184	20	6 3.6	21.5
418168 2008 BA <sub>4</sub>	17.4	X	61.07524	211.87938	329.40657	6.16118	0.1215950	0.26344555	2.4099543	20	6 7.8	20.3
418169 2008 BF <sub>4</sub>	18.5	X	102.47034	136.39154	344.56343	4.53604	0.1612373	0.26167055	2.4208404	20	5 16.7	21.8
418170 2008 BD <sub>12</sub>	17.9	X	156.08569	332.31178	131.64865	6.65365	0.1517658	0.26880793	2.3777964	20	6 21.9	21.5
418171 2008 BD <sub>21</sub>	17.5	X	85.55210	171.32602	324.60764	6.33592	0.0496532	0.25642256	2.4537589	20	4 25.9	20.7
418172 2008 BQ <sub>21</sub>	17.8	X	176.57373	288.77381	140.85490	1.69018	0.1629490	0.26529163	2.3987612	20	5 27.9	21.6
418173 2008 BY <sub>21</sub>	17.0	X	290.54977	76.93968	147.47673	12.39438	0.0743201	0.23722225	2.5844359	20	1 14.7	20.6
418174 2008 BU <sub>22</sub>	16.2	X	198.25167	2.66637	332.56237	13.36351	0.1696896	0.24514800	2.5284274	20	2 20.3	20.4
418175 2008 BW <sub>27</sub>	17.9	X	107.41677	357.17187	163.31775	1.69240	0.1247078	0.26984231	2.3717160	20	7 13.1	21.1
418176 2008 BU <sub>30</sub>	18.1	X	121.43321	196.12360	310.61062	1.35652	0.1380056	0.26785425	2.3834370	20	7 12.0	21.4
418177 2008 BX <sub>31</sub>	17.4	X	143.94647	133.28948	335.51562	1.03372	0.1374708	0.26591309	2.3950224	20	6 14.9	20.9
418178 2008 BQ <sub>33</sub>	17.4	X	208.91380	258.00989	163.58562	5.05839	0.1930495	0.27122761	2.3636334	20	6 16.0	21.2
418179 2008 BP <sub>34</sub>	17.8	X	168.25773	298.74295	138.26379	6.79974	0.0537651	0.26353766	2.4093927	20	5 28.1	21.2
418180 2008 BU <sub>34</sub>	17.3	X	99.43755	318.16867	153.44921	7.27749	0.0668831	0.25445313	2.4664038	20	4 20.3	20.5
418181 2008 BD <sub>46</sub>	17.7	X	211.50518	282.97987	141.40499	6.47824	0.0931248	0.27133108	2.3630324	20	6 29.1	21.1
418182 2008 BK <sub>51</sub>	17.9	X	116.60538	282.42908	213.34388	1.82675	0.1407237	0.26588259	2.3952055	20	6 21.7	21.2
418183 2008 CC <sub>2</sub>	16.2	X	120.72321	243.40746	299.89590	21.84840	0.1520601	0.27296547	2.3535905	20	8 24.8	20.4
418184 2008 CU <sub>4</sub>	16.3	X	189.45986	195.36997	310.54983	25.19383	0.1696977	0.28177099	2.3042974	20	9 5.3	20.3
418185 2008 CP <sub>5</sub>	17.3	X	176.15191	357.66802	95.73567	9.01397	0.1806222	0.27266930	2.3552945	20	6 27.5	21.1
418186 2008 CE <sub>8</sub>	17.9	X	107.39580	268.92324	243.28292	2.58650	0.1322284	0.26724995	2.3870286	20	7 2.4	21.1
418187 2008 CH <sub>8</sub>	17.1	X	254.74752	272.15411	326.99578	13.11440	0.1431547	0.23225938	2.6211219	20	—	—
418188 2008 CS <sub>12</sub>	18.1	X	139.14866	151.24528	356.56736	4.86638	0.1758314	0.27127982	2.3633301	20	8 4.6	21.8
418189 2008 CN <sub>16</sub>	17.9	X	183.61725	266.72762	158.18969	3.37118	0.2796267	0.26849366	2.3796515	20	5 28.3	22.2
418190 2008 CO <sub>24</sub>	17.9	X	198.47928	25.40132	56.84906	2.03795	0.1579730	0.27197920	2.3592769	20	7 4.9	21.5
418191 2008 CF <sub>25</sub>	17.8	X	201.10329	345.84154	87.48118	3.05025	0.2038203	0.27149432	2.3620852	20	6 23.3	21.5
418192 2008 CH <sub>28</sub>	17.7	X	143.64158	83.06344	6.86429	5.01675	0.0697806	0.26228291	2.4170709	20	5 13.4	21.0
418193 2008 CV <sub>32</sub>	17.4	X	130.04164	194.19598	339.94365	5.93591	0.1019470	0.27421189	2.3464530	20	8 26.0	20.7
418194 2008 CX <sub>41</sub>	17.4	X	197.50389	119.18986	321.66604	6.76762	0.0782277	0.26921589	2.3753936	20	7 7.2	20.7
418195 2008 CR <sub>43</sub>	17.0	X	230.65885	261.89821	12.00788	7.67985	0.1532185	0.23289051	2.6163842	20	1 9.0	21.3
418196 2008 CB <sub>56</sub>	17.9	X	103.31656	30.24857	114.78662	5.94073	0.1623792	0.26228398	2.4170643	20	6 21.6	21.2
418197 2008 CG <sub>59</sub>	17.3	X	148.73346	36.51727	163.89960	3.79376	0.1779668	0.28245814	2.3005587	20	10 21.1	20.8
418198 2008 CN <sub>60</sub>	19.0	X	136.24725	114.34795	150.69981	24.45283	0.3796536	1.25373652	0.8517887	20	—	—
418199 2008 CY <sub>77</sub>	17.7	X	85.77073	113.03073	44.78314	3.25087	0.1587641	0.25986140	2.4320633	20	6 16.7	20.9
418200 2008 CB <sub>80</sub>	17.7	X	186.72229	330.82536	95.32864	4.10414	0.1449705	0.26730723	2.3866876	20	6 2.3	21.2
418201 2008 CZ <sub>88</sub>	17.2	X	141.47089	220.36199	3.06248	9.59157	0.1850317	0.28312025	2.2969706	20	11 8.2	21.0
418202 2008 CW <sub>92</sub>	16.9	X	273.09489	260.07357	343.76619	10.83830	0.1486393	0.23599790	2.5933669	20	1 13.9	20.9
418203 2008 CD <sub>102</sub>	18.0	X	190.56052	226.24717	153.43241	9.15645	0.1116594	0.25962479	2.4335407	20	4 9.3	21.7
418204 2008 CE <sub>110</sub>	17.5	X	278.66763	52.22790	199.82512	3.39069	0.0489577	0.24030281	2.5623010	20	2 6.8	21.0
418205 2008 CF <sub>122</sub>	18.0	X	107.99952	287.13301	226.91621	3.06528	0.1446999	0.26776525	2.3839652	20	7 6.9	21.4
418206 2008 CQ <sub>127</sub>	17.5	X	352.19657	69.04980	150.94456	6.59577	0.0982282	0.25233374	2.4801951	20	4 4.4	20.1
418207 2008 CY <sub>128</sub>	18.2	X	201.45265	193.47979	250.64239	1.92362	0.1921632	0.27495052	2.3422488	20	7 8.3	22.0
418208 2008 CX <sub>129</sub>	18.3	X	73.94327	272.44839	255.55526	0.93210	0.1008186	0.26041380	2.4286227	20	6 5.3	21.2
418209 2008 CO <sub>139</sub>	17.9	X	130.97683	238.77169	254.70271	1.39125	0.1679082	0.26730470	2.3867027	20	7 6.4	21.5
418210 2008 CN <sub>147</sub>	17.6	X	75.54536	341.19302	167.11427	9.22821	0.1411830	0.25690241	2.4507025	20	5 19.5	20.7
418211 2008 CF <sub>154</sub>	18.0	X	202.77829	347.51106	104.44374	4.45214	0.1225198	0.27325545	2.3519251	20	7 25.2	21.3
418212 2008 CG <sub>158</sub>	18.0	X	92.31445	128.74585	47.59809	2.90345	0.1410787	0.26389944	2.4071902	20	7 19.5	21.3
418213 2008 CB <sub>159</sub>	17.3	X	153.36891	238.21105	294.19443	5.49651	0.1435607	0.27745262	2.3281458	20	9 15.3	21.0
418214 2008 CT <sub>159</sub>	16.6	X	30.73582	150.00411	106.85222	9.39180	0.2042750	0.26789025	2.3832235	20	8 29.1	19.1
418215 2008 CS <sub>160</sub>	16.7	X	190.03030	100.73396	239.41697	3.06664	0.1947986	0.24057169	2.5603915	20	2 18.4	21.1
418216 2008 CQ <sub>164</sub>	17.5	X	216.06318	287.01140	130.35648	5.22673	0.2070504	0.27197480	2.3593023	20	6 16.3	21.3
418217 2008 CO <sub>166</sub>	18.3	X	105.74285	138.78200	356.98813	20.05497	0.0697159	0.42442602	1.7536169	20	5 19.6	20.4
418218 2008 CB <sub>170</sub>	18.1	X	220.44226	135.71890	296.54968	4.33000	0.1639024	0.27580704	2.3373970	20	7 14.0	21.4
418219 2008 CY <sub>170</sub>	16.9	X	67.13895	347.81175	164.26497	10.41076	0.1237353	0.25606505	2.4560423	20	5 9.9	19.9
418220 Kestutis	18.0	X	103.99711	342.27830	150.14037	2.92987	0.1251164	0.26181024	2.4199792	20	5 31.6	21.1
418221 2008 CY <sub>181</sub>	16.7	X	19.40299	125.56060	130.48899	13.37207	0.0556131	0.26468791	2.4024073	20	7 11.9	19.4
418222 2008 CO <sub>186</sub>	17.6	X	174.23070	109.56983	27.30311	7.45826	0.1955831	0.27800352	2.3250690	20	8 25.0	21.4
418223 2008 CN <sub>194</sub>	16.5	X	197.03007	277.35647	11.96359	11.83710	0.1352280	0.22536716	2.6742929	20	—	—
418224 2008 CY <sub>196</sub>	17.9	X	175.08032	93.34158	320.24222	2.38649	0.0632318	0.25978695	2.4325279	20	5 2.0	21.2
418225 2008 CJ <sub>203</sub>	17.3	X	128.14053	168.39627	339.37204	7.43340	0.0613334	0.26455490	2.4032125	20	7 15.8	20.6
418226 2008 CK <sub>203</sub>	16.0	X	193.86531	295.39294	51.90951	4.67494	0.2214346	0.24331521	2.5411085	20	3 4.8	20.3
418227 2008 CC <sub>204</sub>	18.0	X	157.28038	6.20566	119.31232	3.42561	0.1517893	0.26830703	2.3807549	20	7 21.5	21.5
418228 2008 CM <sub>207</sub>	17.6	X	93.73262	159.09914	347.96494	7.16538	0.1158313	0.25812485	2.4429590	20	6 4.5	20.9
418229 2008 CD <sub>208</sub>	17.5	X	245.92781	164.85770	135.43801	1.92177	0.0989805	0.24651102	2.5190985	20	2 26.1	21.1
418230 2008 CJ <sub>208</sub>	14.0	X	319.80994	242.64055	27.84621	17.57751	0.0540051	0.08414265	5.1577300	20	5 1.4	20.6
418231 2008 CR <sub>208</sub>	16.8	X	315.57170	66.03642	121.49650	9.33537	0.0926233	0.23502609	2.6005108	20	—	—
418232 2008 CA <sub>209</sub>	17.9	X	178.12346	303.87707	186.95916	5.05720	0.1478010	0.28014550	2.3132023	20	8 17.7	21.5
418233 2008 DV	18.3	X	99.12778	258.53294	308.97661	31.31030	0.4514537	0.43302157	1.7303330			

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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>
418241 2008 <i>DH</i> <sub>40</sub>	18.4	X	334.54576	349.38432	178.55205	21.78105	0.0882324	0.39446176	1.8413349	20	—	—
418242 2008 <i>DO</i> <sub>40</sub>	18.5	X	156.86403	338.78356	189.21757	6.52732	0.2480768	0.27513042	2.3412276	20	9 13.6	22.6
418243 2008 <i>DF</i> <sub>47</sub>	17.3	X	3.27019	73.49647	101.02266	3.73279	0.1535035	0.24102661	2.5571688	20	2 14.3	19.7
418244 2008 <i>DN</i> <sub>56</sub>	17.2	X	193.18352	225.96449	326.13170	8.00897	0.1745232	0.29025595	2.2591685	20	11 19.7	20.5
418245 2008 <i>DZ</i> <sub>57</sub>	15.0	X	212.71659	121.05918	224.67893	12.31621	0.2031955	0.24496613	2.5296786	20	3 11.5	19.5
418246 2008 <i>DO</i> <sub>61</sub>	17.8	X	156.76481	49.13382	96.29324	2.26906	0.1233711	0.27320559	2.3522113	20	8 17.3	21.3
418247 2008 <i>DT</i> <sub>64</sub>	18.4	X	126.76937	340.35278	142.24926	5.55045	0.1239221	0.26253721	2.4155098	20	6 14.1	21.9
418248 2008 <i>DL</i> <sub>67</sub>	16.9	X	133.86479	58.27498	324.46046	8.25145	0.0099845	0.23662019	2.5888180	20	1 30.4	20.4
418249 2008 <i>DO</i> <sub>72</sub>	18.5	X	123.75870	149.10479	326.03524	1.26470	0.1464779	0.26197700	2.4189521	20	6 2.1	21.9
418250 2008 <i>DM</i> <sub>77</sub>	17.0	X	207.82347	314.12049	14.56124	4.59425	0.1748417	0.24311309	2.5425168	20	2 22.1	21.1
418251 2008 <i>DS</i> <sub>80</sub>	17.3	X	112.98197	154.77276	36.43033	6.11885	0.0997454	0.26900124	2.3766571	20	8 31.6	20.6
418252 2008 <i>DH</i> <sub>82</sub>	17.1	X	58.45631	325.83537	160.05893	12.13687	0.0944135	0.24494858	2.5297995	20	3 14.1	19.9
418253 2008 <i>DU</i> <sub>82</sub>	18.2	X	131.99074	99.39720	53.79894	3.99191	0.1739989	0.26707553	2.3880678	20	8 4.5	21.9
418254 2008 <i>DM</i> <sub>85</sub>	18.0	X	109.25144	77.71708	30.07548	1.88052	0.1517746	0.25473217	2.4646023	20	5 7.2	21.4
418255 2008 <i>DF</i> <sub>88</sub>	17.6	X	170.11599	44.04905	34.15432	6.92423	0.1907136	0.26637652	2.3922437	20	6 1.0	21.5
418256 2008 <i>DE</i> <sub>89</sub>	17.9	X	137.44905	26.19000	84.59721	3.43839	0.1389020	0.26053537	2.4278671	20	6 10.7	21.3
418257 2008 <i>EG</i> <sub>6</sub>	17.4	X	79.01337	93.36093	83.95512	5.95467	0.1667522	0.26261067	2.4150593	20	7 6.9	20.5
418258 2008 <i>EF</i> <sub>7</sub>	13.2	X	340.36292	125.55016	148.21478	31.51604	0.0345772	0.08267322	5.2186657	20	6 9.6	20.4
418259 2008 <i>EF</i> <sub>12</sub>	17.1	X	177.18453	285.31866	16.55931	8.37826	0.1267631	0.22713140	2.6604265	20	—	—
418260 2008 <i>EG</i> <sub>12</sub>	17.7	X	193.98524	5.64208	88.63251	3.20965	0.1833920	0.27212237	2.3584493	20	7 15.4	21.4
418261 2008 <i>EL</i> <sub>14</sub>	16.7	X	211.35749	153.47103	138.09680	8.25491	0.1985671	0.22941927	2.6427096	20	1 11.7	21.3
418262 2008 <i>EO</i> <sub>24</sub>	17.1	X	53.89474	99.62918	18.96766	15.69236	0.0248375	0.24248039	2.5469376	20	2 26.2	20.6
418263 2008 <i>EA</i> <sub>29</sub>	16.7	X	251.67425	213.59657	32.48035	12.33867	0.1360612	0.22632102	2.6667734	20	—	—
418264 2008 <i>EW</i> <sub>29</sub>	17.0	X	340.10805	55.92653	139.43766	15.78607	0.0573980	0.24522816	2.5278763	20	2 14.1	19.9
418265 2008 <i>EA</i> <sub>32</sub>	16.4	X	334.58359	181.84563	100.95613	28.26503	0.3050032	0.203893030	0.6159344	20	—	—
418266 2008 <i>EH</i> <sub>33</sub>	17.6	X	186.12231	195.90758	170.54033	3.05098	0.0335865	0.24469142	2.5315717	20	3 15.0	20.9
418267 2008 <i>ES</i> <sub>38</sub>	17.4	X	248.23793	174.59969	91.73736	6.30144	0.1826364	0.23240718	2.6200105	20	1 13.3	21.3
418268 2008 <i>EO</i> <sub>44</sub>	16.6	X	204.86367	328.20722	12.97836	10.62526	0.0623899	0.24121708	2.5558224	20	3 8.2	20.5
418269 2008 <i>EM</i> <sub>46</sub>	17.4	X	137.01488	168.02383	314.54734	5.60988	0.1587848	0.26490654	2.4010853	20	6 27.8	21.1
418270 2008 <i>EO</i> <sub>47</sub>	17.3	X	288.52964	105.83295	138.29983	4.69441	0.0691063	0.23598132	2.5934883	20	2 7.8	20.8
418271 2008 <i>EW</i> <sub>52</sub>	16.8	X	205.62681	274.07354	6.82460	11.21778	0.1744752	0.22306573	2.6926556	20	—	—
418272 2008 <i>ES</i> <sub>58</sub>	16.9	X	239.89967	333.31590	318.14140	9.02080	0.1778718	0.24382508	2.5375648	20	2 3.8	20.9
418273 2008 <i>EE</i> <sub>80</sub>	16.9	X	282.60439	157.91691	96.25865	3.84243	0.1268592	0.23864667	2.5741417	20	2 6.4	20.5
418274 2008 <i>EB</i> <sub>82</sub>	17.0	X	69.87978	211.72305	352.46657	8.18504	0.1440332	0.26200722	2.4187661	20	7 31.6	20.1
418275 2008 <i>ED</i> <sub>86</sub>	17.7	X	164.48901	74.38166	55.85008	4.74569	0.1729902	0.27080439	2.3660954	20	8 2.6	21.4
418276 2008 <i>EJ</i> <sub>90</sub>	16.0	X	224.48391	315.33242	189.89938	4.13591	0.1989724	0.12511191	3.9591651	20	9 30.8	22.1
418277 2008 <i>EQ</i> <sub>96</sub>	18.0	X	94.87305	321.60886	172.75353	1.25003	0.1352117	0.25909167	2.4368778	20	5 23.7	21.0
418278 2008 <i>EQ</i> <sub>107</sub>	17.4	X	129.26701	105.03808	317.98580	8.62311	0.1553839	0.25806417	2.4433419	20	3 28.1	21.1
418279 2008 <i>EL</i> <sub>111</sub>	16.9	X	111.12879	322.08085	8.38607	14.47964	0.1193639	0.22020830	2.7158989	20	—	—
418280 2008 <i>EX</i> <sub>111</sub>	17.7	X	140.59003	357.26652	81.80852	4.19064	0.1692529	0.25655405	2.4529205	20	5 6.6	21.4
418281 2008 <i>EQ</i> <sub>113</sub>	17.8	X	350.04264	7.24873	194.27939	15.32458	0.0581646	0.24351580	2.5397129	20	3 4.9	21.0
418282 2008 <i>EQ</i> <sub>120</sub>	16.9	X	291.17346	307.62792	13.23655	6.57211	0.1200555	0.25526187	2.4611916	20	5 13.1	19.9
418283 2008 <i>EA</i> <sub>131</sub>	17.2	X	237.77247	125.56942	142.31508	6.56867	0.2710553	0.22736607	2.6585956	20	1 3.3	21.9
418284 2008 <i>EL</i> <sub>132</sub>	16.6	X	176.54532	275.81230	95.96968	3.86782	0.1866288	0.24372886	2.5382326	20	3 19.0	20.8
418285 2008 <i>EC</i> <sub>137</sub>	18.3	X	164.56954	19.63590	108.48923	2.25581	0.1306293	0.26881969	2.3777270	20	8 1.5	21.7
418286 2008 <i>EX</i> <sub>139</sub>	17.2	X	286.51553	358.70853	209.51297	6.98003	0.0796690	0.22904545	2.6455843	20	—	—
418287 2008 <i>EC</i> <sub>153</sub>	16.6	X	164.44842	330.69734	36.54420	12.86500	0.1175360	0.23792839	2.5793199	20	3 3.4	20.7
418288 2008 <i>EU</i> <sub>155</sub>	17.2	X	314.97633	88.85574	151.42016	7.15614	0.0870498	0.23600707	2.5932997	20	3 6.7	20.4
418289 2008 <i>EH</i> <sub>158</sub>	18.1	X	135.22484	77.39495	28.62962	5.18026	0.1906631	0.26011083	2.4305082	20	6 5.2	21.9
418290 2008 <i>EN</i> <sub>161</sub>	17.1	X	199.40716	170.82964	178.08403	4.23880	0.1552737	0.24311016	2.5425372	20	3 8.3	21.2
418291 2008 <i>EY</i> <sub>161</sub>	17.2	X	204.08400	13.18871	35.06978	6.51569	0.1123901	0.25696042	2.4503337	20	5 27.2	20.9
418292 2008 <i>EN</i> <sub>166</sub>	16.1	X	256.22295	189.99704	70.70452	16.83471	0.1348014	0.23219310	2.6216206	20	1 18.2	20.3
418293 2008 <i>FF</i> <sub>175</sub>	17.5	X	119.80781	343.49228	190.84421	2.14347	0.1330824	0.26616373	2.3935185	20	8 15.2	21.0
418294 2008 <i>FS</i> <sub>8</sub>	18.7	X	114.73538	58.16078	36.10011	2.99548	0.1717423	0.25636746	2.4541105	20	4 28.2	22.2
418295 2008 <i>FA</i> <sub>11</sub>	17.8	X	69.69533	189.07437	43.17126	4.02306	0.0912670	0.27047508	2.3680155	20	9 1.2	20.7
418296 2008 <i>FA</i> <sub>25</sub>	17.4	X	106.64939	325.26026	53.59169	7.76676	0.1008581	0.23024485	2.6363887	20	1 4.4	20.8
418297 2008 <i>FU</i> <sub>28</sub>	17.8	X	18.50743	238.85587	329.62315	4.49847	0.1323278	0.25397268	2.4695134	20	5 1.8	20.1
418298 2008 <i>FZ</i> <sub>28</sub>	17.8	X	137.65508	139.46951	12.83233	5.31577	0.1435124	0.27097640	2.3650940	20	8 8.3	21.4
418299 2008 <i>FD</i> <sub>37</sub>	16.7	X	249.43395	170.67393	170.92941	6.47666	0.1678078	0.25268464	2.4778984	20	4 16.2	20.4
418300 2008 <i>FT</i> <sub>38</sub>	17.9	X	158.00141	359.28990	139.56517	4.21177	0.2295911	0.26990171	2.3713680	20	8 9.3	21.7
418301 2008 <i>FJ</i> <sub>40</sub>	17.7	X	274.05815	194.02452	58.42334	4.22883	0.1263920	0.23322695	2.6138675	20	1 26.8	21.5
418302 2008 <i>FO</i> <sub>40</sub>	18.4	X	66.31912	209.48673	190.30313	21.43822	0.0837909	0.38509883	1.8710609	20	—	—
418303 2008 <i>FS</i> <sub>42</sub>	17.7	X	260.77355	102.62514	185.01805	8.01359	0.0528521	0.24295161	2.5436432	20	2 29.5	21.3
418304 2008 <i>FU</i> <sub>49</sub>	17.8	X	333.07218	174.70567	27.48955	3.25368	0.0296210	0.23897332	2.5717955	20	2 18.7	21.1
418305 2008 <i>FU</i> <sub>51</sub>	17.2	X	187.81295	327.11873	29.59091	6.57033	0.1211140	0.24028221	2.5624475	20	3 9.6	21.2
418306 2008 <i>FK</i> <sub>53</sub>	17.9	X	91.14952	123.90636	38.20213	3.61124	0.1265374	0.25714343	2.4491709	20	6 25.0	21.1
418307 2008 <i>FV</i> <sub>53</sub>	17.0	X	16.11016	320.26256	192.71808	12.84287	0.1798144	0.23933074	2.5692344	20	2 2.2	19.6
418308 2008 <i>FL</i> <sub>56</sub>	17.4	X	147.73617	276.49665	64.05738	6.26215	0.0193620	0.22991299	2.6389250	20	—	—
418309 2008 <i>FJ</i> <sub>57</sub>	16.4	X	178.75499	302.87513	33.31356	14.91794	0.0546977	0.22979832	2.6398028	20	2 5.9	20.5
418310 2008 <i>FR</i> <sub>66</sub>	17.0	X	332.77739	151.65133	95.97335	5.71094	0.2021597	0.23625490	2.5914858	20	1 29.9	20.1
418311 2008 <i>FN</i> <sub>70</sub>	17.0	X	57.37516	254.88477	219.68345	9.04832	0.0690747	0.23493782	2.6011622	20	2 19.4	20.4
418312 2008												

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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>
418321 2008 <i>FS</i> <sub>111</sub>	16.5	X	162.47663	206.71332	91.28744	8.17627	0.1214642	0.21386215	2.7693643	20	—	—
418322 2008 <i>FW</i> <sub>116</sub>	17.7	X	41.68505	307.01359	198.91862	5.01887	0.1379623	0.24185909	2.5512975	20	3 16.4	20.3
418323 2008 <i>FP</i> <sub>118</sub>	17.8	X	87.25135	72.84689	124.47403	3.16625	0.1464111	0.26333702	2.4106164	20	8 11.6	20.9
418324 2008 <i>FU</i> <sub>124</sub>	16.8	X	162.18924	289.58019	66.65515	9.51328	0.1405316	0.23026466	2.6362374	20	2 16.6	21.0
418325 2008 <i>FD</i> <sub>127</sub>	17.0	X	180.10265	79.39758	199.94527	12.91883	0.1324226	0.21158625	2.7891878	20	—	—
418326 2008 <i>FO</i> <sub>128</sub>	16.9	X	273.93169	190.61981	56.42850	7.16232	0.1162228	0.23014513	2.6371501	20	1 22.0	20.8
418327 2008 <i>FP</i> <sub>128</sub>	16.7	X	164.52800	4.56638	40.64790	14.64141	0.0430302	0.24262173	2.5459483	20	4 12.5	20.2
418328 2008 <i>FZ</i> <sub>134</sub>	14.0	X	357.52093	169.56338	72.02781	7.65904	0.0914326	0.08371579	5.1752477	20	5 18.7	20.4
418329 2008 <i>GC</i> <sub>3</sub>	16.8	X	332.80870	102.51465	102.39617	14.13778	0.1164319	0.23962604	2.5671232	20	2 11.5	20.0
418330 2008 <i>GF</i> <sub>4</sub>	16.2	X	288.70656	236.33041	341.82483	15.58166	0.1816775	0.22946100	2.6423892	20	—	—
418331 2008 <i>GH</i> <sub>6</sub>	16.7	X	204.41614	195.32191	92.58930	5.07512	0.1851723	0.22332427	2.6905771	20	1 2.9	21.0
418332 2008 <i>GE</i> <sub>7</sub>	17.7	X	163.37805	4.70876	106.70713	2.85918	0.1423484	0.26178309	2.4201465	20	7 8.4	21.5
418333 2008 <i>GH</i> <sub>7</sub>	18.0	X	144.07438	314.02934	173.65657	3.85031	0.2147789	0.26276350	2.4141228	20	7 13.0	22.0
418334 2008 <i>GQ</i> <sub>7</sub>	14.0	X	273.83483	219.28369	87.66108	5.37329	0.0528883	0.08113663	5.2843481	20	4 23.4	20.9
418335 2008 <i>GK</i> <sub>9</sub>	15.7	X	34.90407	216.33779	34.97988	27.71061	0.1275461	0.17688437	3.1429906	20	8 15.9	20.4
418336 2008 <i>GZ</i> <sub>13</sub>	16.8	X	70.58614	27.07331	19.49321	15.39316	0.1605413	0.22932058	2.6434678	20	—	—
418337 2008 <i>GS</i> <sub>16</sub>	17.1	X	171.96823	143.76209	198.45948	12.04356	0.1467510	0.23105365	2.6302326	20	2 2.2	21.4
418338 2008 <i>GD</i> <sub>21</sub>	17.4	X	132.26446	231.69207	46.09796	22.99519	0.0605061	0.36991857	1.9219052	20	—	—
418339 2008 <i>GL</i> <sub>21</sub>	17.5	X	112.93651	291.14595	264.43490	1.79658	0.1410462	0.26880944	2.3777875	20	9 5.7	21.1
418340 2008 <i>GZ</i> <sub>34</sub>	17.0	X	183.71976	69.24890	192.80391	7.65302	0.1672801	0.21456763	2.7632908	20	—	—
418341 2008 <i>GR</i> <sub>35</sub>	13.6	X	338.35194	175.62758	76.13014	12.99864	0.0745152	0.08288344	5.2098377	20	5 7.5	20.2
418342 2008 <i>GF</i> <sub>37</sub>	17.6	X	7.32144	121.97240	45.70159	13.68839	0.1159213	0.23651386	2.5895938	20	2 22.5	20.7
418343 2008 <i>GA</i> <sub>46</sub>	13.8	X	226.26623	305.91965	60.34464	25.70938	0.0428375	0.08283308	5.2119492	20	5 10.8	20.9
418344 2008 <i>GJ</i> <sub>48</sub>	17.3	X	225.19378	67.23689	334.43192	6.31702	0.1114117	0.26541559	2.3980143	20	6 11.7	20.7
418345 2008 <i>GB</i> <sub>61</sub>	17.2	X	257.41260	179.59915	118.97873	7.96109	0.1100348	0.23880145	2.57320294	20	3 8.9	21.0
418346 2008 <i>GX</i> <sub>62</sub>	18.2	X	312.48721	271.34976	210.63680	20.56675	0.0912486	0.37705011	1.8975942	20	—	—
418347 2008 <i>GN</i> <sub>69</sub>	16.7	X	338.43106	160.98131	61.76826	13.75929	0.2307653	0.23928382	2.5695702	20	3 4.6	19.7
418348 2008 <i>GL</i> <sub>76</sub>	16.9	X	151.96977	319.15242	10.58520	4.75668	0.2484086	0.21981087	2.7191716	20	1 13.5	21.4
418349 2008 <i>GM</i> <sub>81</sub>	16.7	X	319.96786	195.08851	70.82446	10.17435	0.0294409	0.24363412	2.5388906	20	4 27.8	20.0
418350 2008 <i>GB</i> <sub>88</sub>	16.7	X	205.18005	245.54029	34.41961	6.77157	0.1555428	0.22231322	2.6987285	20	—	—
418351 2008 <i>GL</i> <sub>90</sub>	17.0	X	191.12532	237.39038	46.01185	5.66386	0.1339836	0.22004873	2.7172117	20	—	—
418352 2008 <i>GC</i> <sub>93</sub>	16.9	X	316.73744	148.44540	39.99142	14.54769	0.1190409	0.23249187	2.6193742	20	—	—
418353 2008 <i>GC</i> <sub>97</sub>	17.0	X	199.65162	139.18249	130.30839	4.51648	0.0642192	0.21914693	2.7246609	20	—	—
418354 2008 <i>GD</i> <sub>97</sub>	17.3	X	11.16197	84.96339	110.56925	3.89926	0.1176099	0.24361387	2.5390312	20	4 2.9	19.8
418355 2008 <i>GM</i> <sub>98</sub>	17.0	X	343.74674	14.03009	184.36544	11.32351	0.1778776	0.23685558	2.5871025	20	2 6.1	20.0
418356 2008 <i>GV</i> <sub>100</sub>	17.4	X	357.95018	118.46437	77.76372	3.10343	0.0882038	0.23996786	2.5646848	20	3 12.9	20.2
418357 2008 <i>GX</i> <sub>100</sub>	16.9	X	257.19203	217.13815	44.98605	11.75916	0.0969067	0.22922514	2.6442015	20	1 26.3	21.0
418358 2008 <i>GA</i> <sub>102</sub>	17.1	X	281.86506	187.12103	64.43738	8.25584	0.1740100	0.23184362	2.6242545	20	1 29.9	21.1
418359 2008 <i>GL</i> <sub>104</sub>	17.1	X	158.24363	238.58337	107.67303	4.22835	0.0984717	0.22839764	2.6505844	20	1 24.5	20.9
418360 2008 <i>GT</i> <sub>107</sub>	16.7	X	123.88746	98.28361	233.17599	6.75294	0.2333351	0.21085781	2.7956078	20	—	—
418361 2008 <i>GO</i> <sub>111</sub>	18.6	X	342.34856	131.94956	26.55816	24.73550	0.1030276	0.39387931	1.8431497	20	—	—
418362 2008 <i>GP</i> <sub>115</sub>	17.3	X	0.57686	196.56241	342.12958	5.23820	0.1469783	0.24086794	2.5582916	20	2 15.5	19.8
418363 2008 <i>GV</i> <sub>117</sub>	16.8	X	332.38455	13.50299	162.76021	14.80861	0.1919812	0.23113507	2.6296149	20	—	—
418364 2008 <i>GI</i> <sub>117</sub>	17.0	X	256.57648	219.59247	49.30250	8.52243	0.1598160	0.23218052	2.6217153	20	1 27.5	21.2
418365 2008 <i>GT</i> <sub>119</sub>	16.4	X	310.57537	202.64721	53.17878	15.54973	0.0721851	0.23915266	2.5705097	20	3 30.7	19.9
418366 2008 <i>GD</i> <sub>123</sub>	17.3	X	355.67618	346.80005	203.45256	7.93383	0.1243951	0.23957262	2.5675048	20	2 21.9	20.1
418367 2008 <i>GB</i> <sub>127</sub>	16.7	X	281.20142	154.92634	73.87534	17.82936	0.1321082	0.22750297	2.6575290	20	1 4.2	20.7
418368 2008 <i>GL</i> <sub>127</sub>	17.7	X	126.52535	314.61286	63.77445	22.55514	0.0665728	0.38872796	1.8593973	20	—	—
418369 2008 <i>GO</i> <sub>132</sub>	16.5	X	355.44254	145.74497	88.16865	15.90971	0.0561757	0.24380856	2.5376794	20	5 7.2	19.7
418370 2008 <i>GJ</i> <sub>133</sub>	16.5	X	190.13582	322.82440	50.87707	10.66663	0.0358771	0.23995330	2.5647885	20	4 3.2	20.1
418371 2008 <i>GU</i> <sub>133</sub>	16.4	X	264.93091	183.78506	71.65096	14.72789	0.2138042	0.22869763	2.6482660	20	1 13.7	20.8
418372 2008 <i>GB</i> <sub>138</sub>	13.8	X	313.53611	64.60898	207.99036	13.78619	0.1452923	0.08400977	5.1631671	20	4 18.1	20.3
418373 2008 <i>GX</i> <sub>138</sub>	14.4	X	314.27431	200.14405	72.87906	6.26572	0.0859602	0.08147391	5.2697540	20	4 28.3	21.1
418374 2008 <i>GM</i> <sub>141</sub>	13.7	X	60.69438	339.25853	189.04815	19.36989	0.0343448	0.08040951	5.3161567	20	5 13.4	20.7
418375 2008 <i>GA</i> <sub>145</sub>	16.3	X	268.32669	163.56906	30.78792	11.89226	0.1338016	0.22222624	2.6994326	20	—	—
418376 2008 <i>GG</i> <sub>146</sub>	17.0	X	2.76892	331.77141	181.91703	14.80080	0.0767149	0.22973354	2.6402990	20	1 20.8	20.6
418377 2008 <i>HA</i> <sub>5</sub>	17.5	X	302.21410	213.85530	31.01067	12.67988	0.1139482	0.23851917	2.5750591	20	2 25.7	21.1
418378 2008 <i>HC</i> <sub>5</sub>	17.5	X	208.88431	81.73253	35.75496	7.72025	0.1552861	0.27576917	2.3376110	20	9 5.4	21.0
418379 2008 <i>HK</i> <sub>6</sub>	17.6	X	102.24255	127.96910	35.91729	5.88886	0.1290559	0.25970644	2.4330306	20	7 12.9	21.0
418380 2008 <i>HF</i> <sub>9</sub>	17.3	X	47.44644	356.35572	151.81997	10.61074	0.1261600	0.24205202	2.5499416	20	4 2.4	20.1
418381 2008 <i>HX</i> <sub>15</sub>	16.5	X	95.44599	273.97840	205.15246	14.55923	0.0717829	0.24294341	2.5437004	20	4 24.4	19.7
418382 2008 <i>HE</i> <sub>16</sub>	16.9	X	1.80268	116.47953	77.55026	14.09605	0.0236925	0.23710648	2.5852771	20	3 26.6	20.5
418383 2008 <i>HM</i> <sub>17</sub>	16.7	X	82.44739	312.24735	83.44620	12.28059	0.0773538	0.22191044	2.7019930	20	—	—
418384 2008 <i>HJ</i> <sub>21</sub>	16.8	X	38.26336	33.84476	132.29492	4.68014	0.1966892	0.24257237	2.5462937	20	4 19.2	19.1
418385 2008 <i>HQ</i> <sub>22</sub>	17.3	X	32.44757	161.11886	286.78642	1.04453	0.0033862	0.22547630	2.6734298	20	—	—
418386 2008 <i>HK</i> <sub>29</sub>	18.4	X	329.16742	329.09692	211.25563	20.71227	0.0313716	0.39265152	1.8469899	20	—	—
418387 2008 <i>HL</i> <sub>34</sub>	17.5	X	340.19604	86.31455	132.62001	11.23360	0.0789294	0.23878984	2.5731128	20	3 18.9	20.6
418388 2008 <i>HE</i> <sub>45</sub>	17.5	X	348.15988	148.86565	72.23486	12.74608	0.1173020	0.24251241	2.5467134	20	4 3.7	20.5
418389 2008 <i>HH</i> <sub>57</sub>	16.9	X	234.04964	149.70813	142.50281	12.60689	0.0096574	0.23125999	2.6286678	20	2 9.4	20.5
418390 2008 <i>HV</i> <sub>57</sub>	16.7	X	134.40597	232.27501	108.87323	12.98431	0.0284039	0.21946534	2.7220249	20	—	—
418391 2008 <i>HP</i> <sub>60</sub>	16.2	X	225.64189	191.85205	83.48217	14.70187	0.1523762	0.22306751	2.6926413	20	1 6.2	20.6
418392 2008 <i>HT</i> <sub>66</sub>	17.6	X	81.73263	209.70547</								

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>
418401 2008 <i>JP</i> <sub>32</sub>	16.9	X	349.32434	346.30132	222.88564	9.55401	0.0655229	0.23850726	2.5751448	20	3 13.6	20.1
418402 2008 <i>KH</i> <sub>7</sub>	16.1	X	94.69798	159.31792	190.28474	12.05679	0.3297347	0.19959668	2.8997942	20	—	—
418403 2008 <i>KD</i> <sub>12</sub>	17.6	X	298.15591	297.07686	239.57658	19.70746	0.0518323	0.38299610	1.8779030	20	—	—
418404 2008 <i>KX</i> <sub>16</sub>	16.5	X	12.63346	91.03484	100.56556	16.40108	0.0764843	0.23884707	2.5727017	20	4 8.3	19.9
418405 2008 <i>KB</i> <sub>18</sub>	17.1	X	106.26966	82.25632	80.17861	11.92883	0.1376224	0.25619542	2.4552090	20	7 16.2	20.7
418406 2008 <i>KF</i> <sub>18</sub>	16.8	X	288.59740	70.45849	132.65673	13.32813	0.2039151	0.22440508	2.6819309	20	—	—
418407 2008 <i>KG</i> <sub>21</sub>	16.8	X	72.94764	323.46920	172.85422	6.31765	0.1309532	0.24272797	2.5452054	20	4 26.8	19.8
418408 2008 <i>KD</i> <sub>29</sub>	16.4	X	94.86133	23.24489	67.28503	29.76428	0.0907874	0.23681605	2.5873904	20	4 8.1	20.5
418409 2008 <i>KC</i> <sub>31</sub>	17.1	X	329.23191	31.64016	177.83023	8.96375	0.0638692	0.23254412	2.6189818	20	2 16.3	20.5
418410 2008 <i>LL</i>	17.6	X	40.69634	263.17632	206.40769	18.92471	0.1116937	0.38961411	1.8565768	20	—	—
418411 2008 <i>LH</i> <sub>3</sub>	17.0	X	182.40036	147.46531	170.66303	13.29557	0.0588978	0.22017515	2.7161715	20	1 12.8	21.1
418412 2008 <i>LP</i> <sub>5</sub>	17.2	X	239.46683	140.75073	143.14549	12.82974	0.1121649	0.22665297	2.6641690	20	1 29.9	21.4
418413 2008 <i>LU</i> <sub>8</sub>	16.7	X	346.36350	160.20308	66.75953	14.18344	0.0716253	0.24131111	2.5551585	20	4 12.8	19.9
418414 2008 <i>LH</i> <sub>10</sub>	16.5	X	71.43118	69.34911	82.31521	15.53074	0.0537738	0.24296779	2.5435303	20	5 7.5	19.9
418415 2008 <i>LV</i> <sub>10</sub>	16.5	X	292.91010	200.77874	77.33662	15.40333	0.1308266	0.23693425	2.5865298	20	3 28.6	20.3
418416 2008 <i>LV</i> <sub>16</sub>	20.3	X	323.25254	121.89135	236.54398	4.71244	0.6254100	0.32633657	2.0894191	20	5 25.9	21.2
418417 2008 <i>LV</i> <sub>17</sub>	17.0	X	134.22598	163.31235	180.16971	12.01935	0.0657184	0.21577879	2.7529408	20	—	—
418418 2008 <i>LW</i> <sub>17</sub>	15.6	X	55.51897	39.60811	293.46048	15.92516	0.2086361	0.17909725	3.1170476	20	12 20.6	20.3
418419 2008 <i>MT</i> <sub>1</sub>	15.7	X	133.12492	80.63203	239.88701	15.76683	0.1105616	0.20447198	2.8535151	20	—	—
418420 2008 <i>MK</i> <sub>5</sub>	16.2	X	197.52196	228.97628	53.30454	13.17199	0.1589237	0.20868859	2.8149472	20	—	—
418421 2008 <i>NB</i> <sub>4</sub>	16.7	X	68.85391	271.39233	34.91698	20.41630	0.4071573	0.18197406	3.0841090	20	12 18.2	22.3
418422 2008 <i>NA</i> <sub>5</sub>	16.5	X	1.75419	257.80733	48.82858	9.04753	0.2006433	0.24771977	2.5108973	20	9 15.1	18.8
418423 2008 <i>NK</i> <sub>5</sub>	16.2	X	85.14764	25.65254	292.15805	9.62981	0.3134499	0.18423030	3.0588770	20	—	—
418424 2008 <i>NM</i> <sub>5</sub>	16.5	X	26.77548	167.05264	225.59836	14.93297	0.2730955	0.18120790	3.0927961	20	—	—
418425 2008 <i>OR</i>	16.2	X	46.96229	276.15010	273.38991	26.41176	0.1103750	0.23570027	2.5955496	20	5 27.1	19.6
418426 2008 <i>OQ</i> <sub>3</sub>	16.2	X	54.45338	197.60505	154.03696	15.74026	0.2820170	0.18306089	3.0718901	20	—	—
418427 2008 <i>OM</i> <sub>7</sub>	15.6	X	60.75511	22.91205	306.48322	19.52209	0.2315245	0.18284626	3.0742935	20	12 26.3	20.5
418428 2008 <i>OF</i> <sub>11</sub>	16.0	X	119.75462	67.24630	306.96042	11.60399	0.0790556	0.20590367	2.8402724	20	1 16.7	19.9
418429 2008 <i>OC</i> <sub>17</sub>	17.7	X	145.30357	3.68052	318.87789	17.97747	0.0748233	0.36691646	1.9323743	20	—	—
418430 2008 <i>OP</i> <sub>22</sub>	16.7	X	98.33400	44.00958	308.84641	1.01264	0.1264861	0.19420036	2.9532669	20	—	—
418431 2008 <i>OO</i> <sub>24</sub>	16.3	X	217.02837	310.50683	341.17196	11.08942	0.1202539	0.20862027	2.8155617	20	1 22.7	20.8
418432 2008 <i>OF</i> <sub>25</sub>	16.1	X	170.65121	17.20440	314.21485	14.40052	0.1407801	0.20463878	2.8519643	20	1 26.1	20.6
418433 2008 <i>PV</i>	16.4	X	357.64270	76.23114	196.34827	7.05797	0.1264876	0.24114368	2.5563411	20	6 30.0	19.1
418434 2008 <i>PX</i> <sub>2</sub>	16.7	X	27.98340	84.11939	293.61483	13.85994	0.2866405	0.18135375	3.0911378	20	—	—
418435 2008 <i>PE</i> <sub>9</sub>	16.4	X	244.76283	312.01490	328.39594	11.89327	0.2002242	0.21593290	2.7516308	20	1 29.2	21.0
418436 2008 <i>PG</i> <sub>10</sub>	16.6	X	51.92030	98.25344	231.97105	5.90452	0.2325034	0.17943075	3.1131840	20	12 15.6	21.2
418437 2008 <i>PX</i> <sub>10</sub>	16.0	X	356.09442	64.58711	293.72067	13.17572	0.2500746	0.17144220	3.2091565	20	10 21.5	19.6
418438 2008 <i>PX</i> <sub>21</sub>	15.9	X	22.53189	240.26605	112.17861	7.97922	0.2588109	0.17406901	3.1767893	20	12 9.8	19.9
418439 2008 <i>QH</i> <sub>5</sub>	16.2	X	44.12738	31.96203	359.82804	8.66964	0.2308892	0.18346194	3.0674116	20	—	—
418440 2008 <i>QM</i> <sub>5</sub>	16.0	X	56.92937	0.27210	0.19400	9.69506	0.1037480	0.18106693	3.0944012	20	—	—
418441 2008 <i>QS</i> <sub>8</sub>	16.9	X	55.96121	8.53628	351.84436	0.47940	0.2337562	0.18403325	3.0610600	20	—	—
418442 2008 <i>QF</i> <sub>11</sub>	15.7	X	55.61208	139.17576	172.03217	24.03548	0.2876646	0.17495239	3.1660866	20	12 5.4	20.9
418443 2008 <i>QC</i> <sub>18</sub>	16.3	X	4.52572	54.16415	348.53069	9.58451	0.2524115	0.17711920	3.1402118	20	—	—
418444 2008 <i>QM</i> <sub>23</sub>	16.5	X	47.08642	54.50688	313.16678	4.14880	0.1665733	0.17932873	3.1143647	20	—	—
418445 2008 <i>QN</i> <sub>26</sub>	16.6	X	83.31787	197.20444	144.33278	10.31836	0.1928071	0.18798131	3.0180488	20	—	—
418446 2008 <i>QA</i> <sub>34</sub>	16.0	X	338.99847	71.09840	351.65853	11.63991	0.1432288	0.17634884	3.1493503	20	12 11.6	19.9
418447 2008 <i>QW</i> <sub>43</sub>	16.1	X	82.00436	248.36821	124.85571	15.10802	0.2857231	0.19199155	2.9758746	20	—	—
418448 2008 <i>QN</i> <sub>45</sub>	16.3	X	52.21245	43.59490	306.39031	10.07109	0.1508923	0.17850578	3.1239292	20	12 29.4	20.8
418449 2008 <i>QR</i> <sub>46</sub>	16.1	X	29.13217	27.39302	327.74552	16.28383	0.1187860	0.17502274	3.1652382	20	11 28.4	20.6
418450 2008 <i>QN</i> <sub>47</sub>	16.7	X	41.57541	265.72019	117.72535	2.12891	0.1832465	0.18248777	3.0783184	20	—	—
418451 2008 <i>QY</i> <sub>47</sub>	16.7	X	56.63950	38.27867	324.20203	8.97185	0.1209854	0.18230301	3.0803979	20	—	—
418452 2008 <i>RN</i> <sub>5</sub>	15.7	X	22.37569	233.00218	176.18279	27.21448	0.1905128	0.18131246	3.0916070	20	—	—
418453 2008 <i>RS</i> <sub>5</sub>	17.1	X	66.33646	224.11809	118.72036	2.40453	0.1743990	0.18051918	3.1006577	20	—	—
418454 2008 <i>RL</i> <sub>9</sub>	16.6	X	148.52282	44.57449	208.42142	9.05255	0.1066400	0.17894293	3.1188395	20	12 7.4	21.5
418455 2008 <i>RB</i> <sub>15</sub>	16.5	X	72.08598	147.49312	198.90360	10.10493	0.1436608	0.18317291	3.0706375	20	—	—
418456 2008 <i>RK</i> <sub>24</sub>	15.7	X	63.72610	45.64336	294.36389	7.12268	0.2875135	0.17920163	3.1158371	20	—	—
418457 2008 <i>RK</i> <sub>28</sub>	16.5	X	6.43264	84.34566	323.44271	3.73052	0.1173537	0.18027800	3.1034224	20	—	—
418458 2008 <i>RY</i> <sub>32</sub>	17.0	X	2.62849	222.23376	207.80600	4.72853	0.1422078	0.18291200	3.0735568	20	—	—
418459 2008 <i>RP</i> <sub>37</sub>	16.1	X	66.81816	328.38355	353.40963	11.67553	0.0609624	0.17623128	3.1507508	20	11 26.8	20.9
418460 2008 <i>RA</i> <sub>40</sub>	16.7	X	49.03593	177.49563	180.78831	8.79128	0.1142433	0.17933428	3.1143004	20	12 29.6	21.2
418461 2008 <i>RR</i> <sub>40</sub>	16.3	X	0.64348	48.08135	1.05396	9.88705	0.1151596	0.17763750	3.1341008	20	12 28.7	20.4
418462 2008 <i>RU</i> <sub>41</sub>	16.8	X	18.66006	235.79755	118.52553	0.46636	0.2163852	0.17124863	3.2115743	20	11 28.5	20.6
418463 2008 <i>RR</i> <sub>42</sub>	16.4	X	101.12307	114.62907	178.44402	12.50127	0.0333595	0.17605329	3.1528740	20	12 2.9	21.2
418464 2008 <i>RX</i> <sub>46</sub>	17.1	X	72.14754	155.88550	192.79562	1.05429	0.1575005	0.18186647	3.0853253	20	—	—
418465 2008 <i>RD</i> <sub>49</sub>	16.4	X	9.42123	171.02364	249.75571	5.98321	0.1685983	0.18455798	3.0552553	20	—	—
418466 2008 <i>RT</i> <sub>52</sub>	16.5	X	104.00074	353.05342	290.97399	5.68702	0.2177632	0.18308734	3.0715942	20	12 8.2	21.6
418467 2008 <i>RM</i> <sub>54</sub>	16.6	X	57.28535	72.48943	303.93992	7.51108	0.1141365	0.18769276	3.0211412	20	—	—
418468 2008 <i>RT</i> <sub>56</sub>	16.8	X	21.75224	157.95219	190.96586	8.82677	0.0837374	0.17180445	3.2046439	20	11 9.9	21.1
418469 2008 <i>RD</i> <sub>64</sub>	16.0	X	78.68994	317.37082	3.72473	16.93500	0.2100871	0.18093686	3.0958841	20	12 29.9	21.2
418470 2008 <i>RV</i> <sub>85</sub>	16.4	X	71.07579	341.38059	334.31469	8.75514	0.0719629	0.17431863	3.1737558	20	11 26.4	21.2
418471 2008 <i>RY</i> <sub>85</sub>	16.6	X	38.25161	48.43227	317.22664	9.76968	0.0859529	0.17731292	3.1379243	20	12 22.1	21.0
418472 2008 <i>RT</i> <sub>87</sub>	16.2	X	109.55302	95.76879	229.10829	9.44916	0.0181476	0.18379205	3.0633736	20	—	—
418473 2008 <i>RZ</i> <sub>87</sub>	16.5	X	335.5									

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>
418481 2008 <i>RF</i> <sub>104</sub>	16.7	X	349.62317	109.94704	325.51979	8.98589	0.2183499	0.17697197	3.1419533	20	—	—
418482 2008 <i>RN</i> <sub>104</sub>	16.5	X	48.08087	121.74668	269.72376	9.08373	0.1525986	0.18425997	3.0585485	20	—	—
418483 2008 <i>RQ</i> <sub>104</sub>	17.2	X	6.38605	18.66083	41.34269	1.05923	0.1874874	0.18074395	3.0980865	20	—	—
418484 2008 <i>RF</i> <sub>106</sub>	16.1	X	10.74594	263.82464	119.17699	14.82199	0.2757163	0.17257907	3.1950474	20	12 31.5	19.9
418485 2008 <i>RT</i> <sub>106</sub>	16.5	X	86.31513	131.97665	193.67609	15.77248	0.0762060	0.17908038	3.1172434	20	12 27.1	21.4
418486 2008 <i>RJ</i> <sub>111</sub>	16.5	X	308.33267	73.23255	16.61968	11.64552	0.0540631	0.17496663	3.1659149	20	11 27.3	20.8
418487 2008 <i>RT</i> <sub>112</sub>	16.6	X	12.66408	147.28634	268.56178	4.84970	0.1382157	0.18083784	3.0970141	20	—	—
418488 2008 <i>RM</i> <sub>114</sub>	16.1	X	190.15911	16.38365	197.98725	15.13795	0.0310977	0.17441531	3.1725830	20	12 7.8	20.9
418489 2008 <i>RA</i> <sub>117</sub>	16.6	X	27.40364	173.68713	212.09034	8.33935	0.0772539	0.17429791	3.1740074	20	12 29.4	21.0
418490 2008 <i>RG</i> <sub>118</sub>	16.8	X	54.29955	168.35815	203.07446	9.20302	0.0793425	0.18014283	3.1049746	20	—	—
418491 2008 <i>RG</i> <sub>122</sub>	16.3	X	321.13895	119.42757	9.53422	8.65888	0.0566074	0.18852146	3.0122812	20	—	—
418492 2008 <i>RG</i> <sub>124</sub>	16.9	X	41.29223	195.67365	180.98840	9.83821	0.1035155	0.18138576	3.0907740	20	—	—
418493 2008 <i>RV</i> <sub>129</sub>	16.5	X	118.74195	235.47131	125.61349	3.01966	0.1198539	0.19714791	2.9237570	20	1 5.7	20.6
418494 2008 <i>RB</i> <sub>131</sub>	16.5	X	62.28702	352.40728	13.09954	9.15567	0.0771522	0.18084489	3.0969335	20	—	—
418495 2008 <i>RF</i> <sub>135</sub>	17.1	X	4.88775	2.89860	50.09520	2.10632	0.2199733	0.17782762	3.1318665	20	—	—
418496 2008 <i>RG</i> <sub>140</sub>	16.2	X	101.81755	10.63601	345.20067	11.36313	0.1115002	0.19052935	2.9910807	20	—	—
418497 2008 <i>RH</i> <sub>141</sub>	16.0	X	82.10163	181.48734	113.94745	2.20751	0.1383015	0.17826033	3.1267962	20	11 27.2	20.7
418498 2008 <i>RR</i> <sub>143</sub>	16.1	X	95.37170	292.90055	356.36480	13.00439	0.1531782	0.17864685	3.1222845	20	11 28.9	21.2
418499 2008 <i>RZ</i> <sub>144</sub>	16.4	X	64.81505	189.31913	189.36130	9.96970	0.1107359	0.18903505	3.0068227	20	—	—
418500 2008 <i>RD</i> <sub>145</sub>	16.9	X	135.08504	13.47946	288.79970	1.33812	0.0708250	0.18853327	3.0121555	20	—	—
418501 2008 <i>RF</i> <sub>146</sub>	16.3	X	56.93839	177.54057	220.58771	15.04860	0.0652607	0.18840185	3.0135561	20	—	—
418502 2008 <i>RK</i> <sub>146</sub>	16.4	X	37.90883	55.11038	8.22415	12.02844	0.1470281	0.18691481	3.0295182	20	—	—
418503 2008 <i>RL</i> <sub>146</sub>	17.0	X	77.87152	110.97541	241.71204	1.96050	0.1856379	0.18686380	3.0300696	20	—	—
418504 2008 <i>SA</i> <sub>3</sub>	15.7	X	77.89761	308.03859	3.56419	17.13800	0.2522290	0.18176563	3.0864663	20	12 20.4	21.0
418505 2008 <i>SZ</i> <sub>4</sub>	17.7	X	36.87623	348.84861	20.38685	14.00727	0.1422037	0.34679282	2.0064237	20	—	—
418506 2008 <i>SA</i> <sub>6</sub>	15.5	X	106.44690	273.36034	35.20224	17.20899	0.1899814	0.18296137	3.0730039	20	—	—
418507 2008 <i>SH</i> <sub>21</sub>	17.1	X	35.80041	58.85398	321.10975	4.73968	0.1689147	0.18316254	3.0707534	20	—	—
418508 2008 <i>SY</i> <sub>26</sub>	16.4	X	162.59825	259.28649	0.09130	10.84219	0.1071120	0.18459892	3.0548035	20	12 29.5	21.3
418509 2008 <i>SA</i> <sub>35</sub>	16.7	X	51.99407	252.39887	151.98900	1.02141	0.1807082	0.18610205	3.0383324	20	—	—
418510 2008 <i>SD</i> <sub>35</sub>	16.9	X	21.04561	249.70822	150.07142	0.32846	0.0706574	0.17878664	3.1206568	20	—	—
418511 2008 <i>SR</i> <sub>38</sub>	16.1	X	289.08969	91.10491	27.05547	9.16157	0.0582855	0.17493570	3.1662880	20	12 6.9	20.5
418512 2008 <i>SR</i> <sub>39</sub>	15.9	X	321.00369	71.85964	29.24203	9.63870	0.0528755	0.17825515	3.1268568	20	—	—
418513 2008 <i>SS</i> <sub>39</sub>	16.7	X	45.91380	306.19293	77.69488	2.12835	0.1842334	0.18142380	3.0903419	20	—	—
418514 2008 <i>ST</i> <sub>40</sub>	16.4	X	44.22129	350.72723	358.86567	9.44007	0.0855246	0.17836058	3.1256245	20	12 8.7	20.9
418515 2008 <i>SB</i> <sub>45</sub>	16.7	X	93.69367	285.42654	33.10942	0.81322	0.1647591	0.18023256	3.1039440	20	—	—
418516 2008 <i>SL</i> <sub>53</sub>	16.0	X	340.77731	264.02220	189.98437	15.65310	0.2330365	0.17748243	3.1359260	20	—	—
418517 2008 <i>SL</i> <sub>56</sub>	16.8	X	76.36652	130.40901	186.25096	3.31362	0.1396961	0.17570177	3.1570779	20	12 13.4	21.6
418518 2008 <i>SO</i> <sub>56</sub>	16.9	X	22.96443	145.79167	201.30848	0.40122	0.1549706	0.16896510	3.2404454	20	11 16.6	21.1
418519 2008 <i>SX</i> <sub>57</sub>	15.9	X	15.55615	359.45428	31.93644	9.54116	0.0674700	0.17394551	3.1782928	20	12 19.8	20.3
418520 2008 <i>ST</i> <sub>59</sub>	16.0	X	15.05455	11.25146	43.37580	9.82539	0.0793080	0.17834070	3.1258568	20	—	—
418521 2008 <i>SY</i> <sub>59</sub>	16.5	X	108.45338	315.03414	14.53585	11.57294	0.2706240	0.18968930	2.9999049	20	—	—
418522 2008 <i>SA</i> <sub>61</sub>	15.7	X	20.18647	74.91065	358.06109	14.73542	0.2989440	0.18243535	3.0789080	20	—	—
418523 2008 <i>SO</i> <sub>62</sub>	16.0	X	29.33422	355.69383	1.32808	28.22553	0.1529618	0.17363487	3.1820823	20	11 30.0	20.8
418524 2008 <i>SS</i> <sub>63</sub>	16.2	X	317.37411	96.11862	358.74494	15.41789	0.0573884	0.17742688	3.1365805	20	12 18.4	20.6
418525 2008 <i>SH</i> <sub>64</sub>	15.9	X	83.31666	296.62601	351.00177	5.91214	0.1399962	0.17078187	3.2174233	20	11 13.9	20.9
418526 2008 <i>SY</i> <sub>65</sub>	15.9	X	8.35581	350.32560	29.33165	27.75347	0.1472017	0.16928137	3.2364081	20	11 25.5	20.3
418527 2008 <i>SW</i> <sub>71</sub>	16.0	X	253.29760	140.90243	20.77056	27.47268	0.1340585	0.17286391	3.1915366	20	11 24.8	20.9
418528 2008 <i>SE</i> <sub>72</sub>	16.4	X	31.20532	98.19863	292.38123	9.14191	0.1677927	0.18018026	3.1045446	20	—	—
418529 2008 <i>SK</i> <sub>73</sub>	16.0	X	42.83504	359.49960	325.09803	8.86031	0.0648867	0.17662060	3.1461190	20	10 31.9	20.5
418530 2008 <i>SS</i> <sub>78</sub>	16.7	X	77.77263	326.91079	336.36665	5.83690	0.1416791	0.17588115	3.1549309	20	11 28.3	21.5
418531 2008 <i>SB</i> <sub>84</sub>	16.6	X	30.29098	177.75361	208.03527	10.96494	0.1266466	0.17925403	3.1152298	20	—	—
418532 Saruman	16.7	X	18.06744	49.86059	301.96285	4.00849	0.1815916	0.16966200	3.2315658	20	11 17.9	20.7
418533 2008 <i>SC</i> <sub>87</sub>	16.8	X	16.42518	158.14802	263.46554	5.20424	0.1538209	0.18179239	3.0861634	20	—	—
418534 2008 <i>SZ</i> <sub>87</sub>	15.9	X	13.30708	58.27872	337.40419	14.86474	0.2551019	0.17887391	3.1196417	20	—	—
418535 2008 <i>SV</i> <sub>88</sub>	16.8	X	66.57812	81.30686	269.89857	2.29571	0.1921977	0.18387051	3.0628660	20	—	—
418536 2008 <i>SW</i> <sub>90</sub>	16.5	X	47.14634	32.60022	7.41799	9.83904	0.1602794	0.18426315	3.0585134	20	—	—
418537 2008 <i>SG</i> <sub>92</sub>	17.0	X	29.41219	16.86690	5.98470	2.91941	0.2971369	0.17794627	3.1304742	20	—	—
418538 2008 <i>SS</i> <sub>98</sub>	16.0	X	34.93075	269.31271	89.48436	3.37985	0.1070524	0.17249508	3.1960844	20	12 11.1	20.3
418539 2008 <i>SK</i> <sub>101</sub>	16.9	X	97.49558	321.73388	40.01841	14.00831	0.1095176	0.18798095	3.0180528	20	—	—
418540 2008 <i>SR</i> <sub>102</sub>	16.2	X	350.14712	75.41115	32.94732	10.45793	0.1100590	0.18168134	3.0874208	20	—	—
418541 2008 <i>SW</i> <sub>102</sub>	16.3	X	349.39887	308.43250	140.70172	5.68088	0.1340117	0.17825475	3.1268615	20	—	—
418542 2008 <i>SY</i> <sub>102</sub>	15.8	X	319.94505	63.52894	41.15914	20.76852	0.1527141	0.17427244	3.1743167	20	—	—
418543 2008 <i>SZ</i> <sub>102</sub>	16.0	X	75.13527	222.29297	176.51707	11.60409	0.1330011	0.18904180	3.0067511	20	—	—
418544 2008 <i>SB</i> <sub>104</sub>	16.0	X	344.86081	29.95621	26.77746	26.47947	0.0917921	0.17128199	3.2111573	20	12 2.6	20.5
418545 2008 <i>SC</i> <sub>107</sub>	16.7	X	52.86560	108.10150	227.06452	8.71846	0.0769456	0.17419131	3.1753022	20	12 1.3	21.1
418546 2008 <i>SS</i> <sub>107</sub>	16.0	X	205.88035	1.08173	212.40978	15.64308	0.0785834	0.18103115	3.0948090	20	12 19.4	20.8
418547 2008 <i>ST</i> <sub>107</sub>	16.6	X	339.85526	233.49209	210.59530	13.35396	0.2841343	0.17496938	3.1658816	20	—	—
418548 2008 <i>SQ</i> <sub>113</sub>	16.1	X	311.97031	304.08783	146.80698	5.62671	0.1757950	0.17136908	3.2100693	20	11 29.9	19.7
418549 2008 <i>SO</i> <sub>115</sub>	15.6	X	90.64765	288.90229	33.54578	16.84744	0.1355688	0.18015636	3.1048192	20	—	—
418550 2008 <i>SF</i> <sub>117</sub>	16.0	X	41.85988	60.07741	17.30950	9.83852	0.0600560	0.19030337	2.9934480	20	—	—
418551 2008 <i>SF</i> <sub>119</sub>	17.2	X	38.94969	343.06635	26.42383	0.59044	0.1599016	0.17590582	3.1546359	20	—	—
418552 2008 <i>SJ</i> <sub>119</sub>	16.4	X	357.96685	15.33393	27.93471	8.37477	0.0339711	0.17250892	3.1959135	20	12 7.0	20.8
418553 2008 <i>SD</i> <sub>121</sub>	16.1	X	322.22943	243.73508	211.61135	7.76898</						



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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>
418561 2008 SE <sub>140</sub>	15.8	X	42.68248	351.82760	341.57791	10.23722	0.2329703	0.17418649	3.1753607	20	12 6.9	20.5
418562 2008 SL <sub>140</sub>	16.1	X	345.88834	171.37524	278.67788	10.12267	0.0695225	0.18291715	3.0734991	20	—	—
418563 2008 SM <sub>140</sub>	16.5	X	88.13622	32.96258	299.02755	10.08786	0.1492951	0.18307502	3.0717320	20	—	—
418564 2008 SY <sub>144</sub>	16.3	X	355.42062	249.04664	173.27337	5.40694	0.1794522	0.17283650	3.1918740	20	—	—
418565 2008 SN <sub>150</sub>	16.1	X	291.24356	123.46903	18.04864	10.27600	0.1799104	0.17732176	3.1378200	20	12 29.4	19.9
418566 2008 SM <sub>154</sub>	15.9	X	55.14285	343.22203	14.33079	9.13069	0.1305529	0.18075621	3.0979464	20	—	—
418567 2008 ST <sub>154</sub>	15.9	X	50.79972	1.62368	14.05274	17.44389	0.1171711	0.18293434	3.0733066	20	—	—
418568 2008 SM <sub>156</sub>	15.2	X	16.75258	15.94697	44.70791	29.33483	0.1653497	0.17790501	3.1309582	20	—	—
418569 2008 ST <sub>157</sub>	16.2	X	342.58919	213.25062	197.13780	8.38556	0.2149804	0.17319019	3.1875269	20	12 7.2	19.6
418570 2008 SD <sub>161</sub>	15.9	X	359.23111	46.87787	9.31890	10.78785	0.1581304	0.17788537	3.1311887	20	—	—
418571 2008 SE <sub>169</sub>	16.1	X	7.83353	50.03617	347.42893	15.57924	0.1792511	0.17745413	3.1362594	20	—	—
418572 2008 SP <sub>172</sub>	16.1	X	349.61847	76.54227	30.10589	10.82225	0.0855651	0.18080202	3.0974231	20	—	—
418573 2008 SA <sub>173</sub>	16.7	X	82.15181	290.36729	32.31558	6.13441	0.1639943	0.17694533	3.1422687	20	12 28.7	21.6
418574 2008 SU <sub>177</sub>	16.0	X	30.37131	42.18633	26.43203	10.43008	0.0657146	0.18261456	3.0768933	20	—	—
418575 2008 SY <sub>184</sub>	16.1	X	330.41979	204.01631	226.73998	16.66281	0.1545453	0.17016826	3.2251531	20	12 6.3	19.9
418576 2008 SD <sub>186</sub>	16.4	X	22.97797	93.94152	335.73753	8.94790	0.1256653	0.18915902	3.0055089	20	—	—
418577 2008 SJ <sub>188</sub>	16.4	X	93.97816	83.44058	212.64550	15.22941	0.2312274	0.17657126	3.1467050	20	12 13.6	21.8
418578 2008 SO <sub>188</sub>	16.3	X	42.36104	150.74702	208.67424	9.89952	0.2179137	0.17646084	3.1480176	20	—	—
418579 2008 SM <sub>196</sub>	17.1	X	351.44493	215.34673	204.41606	5.13599	0.1268167	0.17206720	3.2013807	20	12 26.4	21.2
418580 2008 SB <sub>200</sub>	16.3	X	8.26194	206.44754	233.60179	8.09887	0.0427273	0.18209001	3.0827996	20	—	—
418581 2008 SM <sub>200</sub>	16.6	X	5.93838	195.27635	266.45958	3.45173	0.1329332	0.18400890	3.0613301	20	—	—
418582 2008 SM <sub>201</sub>	16.7	X	9.00837	86.65357	23.25128	14.22293	0.1989231	0.18505192	3.0498161	20	—	—
418583 2008 SS <sub>206</sub>	16.7	X	33.58600	289.94569	65.53940	8.86312	0.2245788	0.17134835	3.2103281	20	12 21.3	21.0
418584 2008 SM <sub>211</sub>	16.2	X	31.62612	160.62981	224.48650	8.55174	0.0810928	0.17444736	3.1721943	20	—	—
418585 2008 SJ <sub>217</sub>	16.6	X	108.30584	48.41818	252.66449	8.57022	0.0415492	0.17959178	3.1113228	20	12 19.6	21.1
418586 2008 SP <sub>218</sub>	16.7	X	41.37333	26.28971	341.41431	6.98303	0.2248981	0.17933159	3.1143316	20	—	—
418587 2008 SL <sub>233</sub>	16.8	X	13.06803	230.33523	178.79024	15.77184	0.1306789	0.17927206	3.1150210	20	—	—
418588 2008 SO <sub>233</sub>	16.5	X	116.01885	251.48378	28.28936	10.75491	0.1434711	0.17889470	3.1194000	20	12 7.5	21.6
418589 2008 SB <sub>235</sub>	16.1	X	1.50542	281.91224	175.10548	11.38942	0.0812479	0.18805453	3.0172654	20	—	—
418590 2008 SM <sub>240</sub>	16.2	X	328.20168	20.47421	158.93683	10.55869	0.0735909	0.17281355	3.1921566	20	12 13.1	20.4
418591 2008 SS <sub>241</sub>	16.4	X	63.47184	259.43369	83.81368	4.30707	0.1967470	0.17963195	3.1108590	20	—	—
418592 2008 SY <sub>242</sub>	16.0	X	21.14486	275.22780	206.28916	12.04366	0.1138176	0.19092223	2.9869759	20	1 13.8	19.8
418593 2008 SY <sub>246</sub>	16.1	X	134.35730	75.26165	264.36814	18.32578	0.2702191	0.19721744	2.9230697	20	1 10.9	21.0
418594 2008 SC <sub>248</sub>	16.8	X	3.52775	208.51283	204.75470	0.73461	0.2221793	0.17534705	3.1613342	20	—	—
418595 2008 SY <sub>253</sub>	15.9	X	341.63838	35.23494	42.55146	9.74079	0.0816734	0.17712431	3.1401515	20	—	—
418596 2008 SO <sub>257</sub>	16.2	X	326.49446	73.27703	29.85268	16.03714	0.2207974	0.17474377	3.1686061	20	—	—
418597 2008 SX <sub>258</sub>	16.7	X	343.44381	254.39601	207.79688	9.18354	0.0572082	0.18519185	3.0482796	20	—	—
418598 2008 ST <sub>259</sub>	16.6	X	76.02239	299.64451	47.80031	5.49382	0.1483798	0.18211612	3.0825050	20	—	—
418599 2008 SC <sub>260</sub>	16.6	X	253.44592	174.67389	114.50366	4.98003	0.1510755	0.21219550	2.7838464	20	2 19.4	21.0
418600 2008 SA <sub>261</sub>	16.1	X	334.91401	24.66404	62.22198	4.67952	0.1164324	0.17435927	3.1732626	20	—	—
418601 2008 SH <sub>262</sub>	16.6	X	61.66963	235.28607	86.25128	2.33521	0.1730565	0.17388220	3.1790642	20	12 7.4	21.1
418602 2008 SP <sub>265</sub>	15.7	X	264.82901	157.54862	3.41856	12.38340	0.0612795	0.17860465	3.1227763	20	12 30.2	20.2
418603 2008 SM <sub>269</sub>	16.2	X	28.15037	48.82531	18.16037	8.97805	0.1221431	0.18307886	3.0716890	20	—	—
418604 2008 SY <sub>270</sub>	16.2	X	97.02652	269.56841	47.00820	10.86798	0.0878584	0.17586601	3.1551120	20	12 29.1	21.1
418605 2008 SM <sub>271</sub>	16.8	X	341.05569	7.80135	89.08828	2.56877	0.1606252	0.17566624	3.1575036	20	—	—
418606 2008 SJ <sub>274</sub>	16.0	X	68.98683	38.79650	342.45480	16.67804	0.1129682	0.18645695	3.0344757	20	—	—
418607 2008 SF <sub>277</sub>	16.8	X	359.26766	20.16276	38.23269	3.16979	0.0999173	0.17762502	3.1342475	20	—	—
418608 2008 SX <sub>277</sub>	16.2	X	358.32972	1.70027	49.92600	12.06357	0.0589432	0.17433476	3.1735601	20	12 20.4	20.5
418609 2008 SZ <sub>279</sub>	16.5	X	356.33160	13.02488	22.87614	15.16555	0.0839367	0.17417711	3.1754748	20	11 27.8	20.8
418610 2008 SV <sub>286</sub>	15.5	X	45.79590	67.72551	253.28976	15.06002	0.1121981	0.16962678	3.2320131	20	11 7.8	20.0
418611 2008 SQ <sub>287</sub>	16.1	X	313.76577	111.51619	0.97185	9.19882	0.0466781	0.17680744	3.1439022	20	—	—
418612 2008 SK <sub>288</sub>	15.7	X	48.02091	67.38829	279.51274	21.06025	0.2784638	0.17697294	3.1419418	20	—	—
418613 2008 SH <sub>291</sub>	16.0	X	1.16656	203.61050	202.27277	17.33421	0.2038912	0.17693819	3.1423532	20	—	—
418614 2008 SJ <sub>291</sub>	15.3	X	45.58460	62.88261	284.67847	15.28317	0.2338174	0.17805337	3.1292187	20	12 29.4	19.7
418615 2008 SH <sub>300</sub>	16.2	X	157.03330	326.29574	35.18270	5.20481	0.1269369	0.20891512	2.8129119	20	2 17.4	20.6
418616 2008 SL <sub>300</sub>	15.8	X	5.84138	145.44818	250.86762	16.53754	0.2134313	0.17593292	3.1543120	20	12 29.9	19.6
418617 2008 SK <sub>302</sub>	16.4	X	323.74868	122.95151	23.94270	7.96088	0.2403240	0.18010846	3.1053697	20	—	—
418618 2008 SO <sub>308</sub>	16.3	X	20.37492	113.33241	277.04912	11.19871	0.1624322	0.17601111	3.1533777	20	—	—
418619 2008 TW <sub>5</sub>	16.2	X	42.49438	326.51715	12.92177	15.11491	0.2590595	0.17316040	3.1878924	20	12 17.0	21.0
418620 2008 TS <sub>7</sub>	16.4	X	350.41328	23.53358	16.57075	25.11777	0.1954688	0.17190587	3.2033834	20	11 27.6	20.4
418621 2008 TJ <sub>10</sub>	16.5	X	45.34308	27.87855	355.16839	6.38663	0.1312599	0.18151736	3.0892800	20	—	—
418622 2008 TO <sub>14</sub>	16.7	X	96.71850	12.44879	0.16901	9.70857	0.0742702	0.19253531	2.9702690	20	—	—
418623 2008 TU <sub>19</sub>	16.6	X	115.33035	305.19018	36.65003	10.54538	0.1183622	0.18586541	3.0409106	20	—	—
418624 2008 TZ <sub>31</sub>	15.9	X	179.75388	211.91343	32.04401	17.46717	0.0621845	0.17872159	3.1214139	20	12 28.9	20.8
418625 2008 TD <sub>33</sub>	16.6	X	344.47279	255.89789	194.57301	14.78658	0.3212696	0.17416643	3.1756046	20	—	—
418626 2008 TX <sub>33</sub>	16.4	X	339.24704	36.19862	61.48811	5.05276	0.1108074	0.17840988	3.1250486	20	—	—
418627 2008 TD <sub>34</sub>	16.1	X	327.38760	260.99012	197.87635	14.86909	0.1150523	0.17559987	3.1582991	20	—	—
418628 2008 TW <sub>34</sub>	15.7	X	276.21116	32.47324	2.02292	5.31139	0.0641143	0.15414171	3.4450003	20	8 7.8	20.6
418629 2008 TC <sub>37</sub>	16.4	X	68.52552	49.35129	341.74820	5.62852	0.1024426	0.18946916	3.0022281	20	—	—
418630 2008 TF <sub>37</sub>	16.5	X	126.40229	302.00675	356.12658	9.86488	0.1517540	0.18543513	3.0456130	20	—	—
418631 2008 TT <sub>40</sub>	16.0	X	18.22270	169.81492	226.52979	14.52022	0.2157809	0.17684494	3.1434577	20	—	—
418632 2008 TM <sub>42</sub>	16.5	X	298.17839	174.54337	303.36777	8.62826	0.0346756	0.17663209	3.1459826	20	12 22.6	20.8
418633 2008 TB <sub>45</sub>	16.1	X	239.89568	158.41887	37.10784	16.72678	0.0596252	0.17739615	3.1369427	20	—	—
418634 2008 TL <sub>47</sub>	16.2	X	11.88973	341.96909	63.61692	9.96497	0.0765240	0.17465498	3.1696799	20	—	—
418635 2008 TA <sub>48</sub>	16.9	X	69.96415	97.05296	223.47944	11.59064	0.1613947	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>
418641 2008 <i>TD</i> <sub>56</sub>	17.2	X	44.30981	144.69355	223.13425	0.77447	0.1691251	0.17755838	3.1350317	20	—	—
418642 2008 <i>TS</i> <sub>58</sub>	16.7	X	62.53287	327.41066	26.66535	10.96482	0.1221051	0.17885799	3.1198268	20	—	—
418643 2008 <i>TO</i> <sub>59</sub>	16.3	X	5.36364	59.96553	33.15677	9.36324	0.1204702	0.18398367	3.0616099	20	—	—
418644 2008 <i>TU</i> <sub>61</sub>	16.2	X	179.32072	9.10001	215.57454	3.33977	0.1292291	0.17504598	3.1649580	20	12 1.8	21.2
418645 2008 <i>TH</i> <sub>63</sub>	16.7	X	95.91350	138.45648	205.80472	10.14233	0.0738714	0.18342372	3.0678377	20	—	—
418646 2008 <i>TT</i> <sub>65</sub>	15.5	X	356.40660	82.75816	11.17943	21.38339	0.1645224	0.18181554	3.0859014	20	—	—
418647 2008 <i>TJ</i> <sub>66</sub>	16.4	X	145.60427	239.73293	38.62905	16.00761	0.1747245	0.18179817	3.0860980	20	—	—
418648 2008 <i>TU</i> <sub>72</sub>	16.0	X	282.92089	271.51602	240.94136	5.08853	0.0500531	0.17743556	3.1364783	20	—	—
418649 2008 <i>TQ</i> <sub>76</sub>	17.0	X	65.98580	186.68565	160.64746	0.71905	0.1674883	0.18046714	3.1012537	20	—	—
418650 2008 <i>TT</i> <sub>76</sub>	16.5	X	105.49800	292.76860	27.55327	3.19596	0.1580417	0.18466386	3.0540873	20	—	—
418651 2008 <i>TQ</i> <sub>83</sub>	16.4	X	33.94989	353.31959	5.79161	10.51498	0.0867253	0.17393100	3.1784696	20	12 5.9	21.0
418652 2008 <i>TZ</i> <sub>83</sub>	16.8	X	67.08178	109.70541	203.35732	16.16241	0.2218960	0.17456751	3.1707385	20	12 8.9	21.9
418653 2008 <i>TT</i> <sub>84</sub>	16.0	X	328.23032	41.12463	20.89068	10.05814	0.0119862	0.17183178	3.2043041	20	11 20.2	20.5
418654 2008 <i>TV</i> <sub>84</sub>	16.8	X	94.13519	4.21822	20.66210	12.26399	0.0940213	0.19259483	2.9696570	20	1 2.5	21.0
418655 2008 <i>TK</i> <sub>87</sub>	16.6	X	351.90974	350.34877	65.09431	6.12225	0.1515359	0.17310738	3.1885433	20	12 24.5	20.4
418656 2008 <i>TN</i> <sub>91</sub>	16.5	X	93.40887	269.82703	36.24391	6.39573	0.2439920	0.18042254	3.1017647	20	12 26.1	21.8
418657 2008 <i>TM</i> <sub>92</sub>	17.0	X	13.01272	258.81218	152.67098	2.02192	0.1811381	0.17915185	3.1164143	20	—	—
418658 2008 <i>TV</i> <sub>93</sub>	16.0	X	143.60103	96.58700	183.10111	9.18587	0.0464346	0.18148772	3.0896163	20	—	—
418659 2008 <i>TJ</i> <sub>101</sub>	16.2	X	4.77712	74.56029	20.86917	11.50031	0.0541646	0.18616195	3.0376806	20	—	—
418660 2008 <i>TF</i> <sub>105</sub>	16.0	X	166.10922	213.92354	21.71789	15.90336	0.0705555	0.17341476	3.1847744	20	11 30.2	21.0
418661 2008 <i>TO</i> <sub>112</sub>	16.4	X	353.37313	36.90081	359.35676	9.56251	0.2761467	0.17074236	3.2179197	20	12 14.9	19.8
418662 2008 <i>TO</i> <sub>118</sub>	16.3	X	190.45219	255.55957	354.78138	8.56161	0.0034851	0.18564820	3.0432822	20	—	—
418663 2008 <i>TW</i> <sub>118</sub>	16.6	X	34.50674	60.50805	0.30303	10.03895	0.1098402	0.18754430	3.0227354	20	—	—
418664 2008 <i>TP</i> <sub>127</sub>	16.7	X	19.78808	42.49977	329.95827	5.69424	0.1323919	0.17322240	3.1871317	20	12 10.7	20.9
418665 2008 <i>TZ</i> <sub>128</sub>	15.9	X	74.89440	92.63821	223.29642	14.56248	0.0307840	0.17341398	3.1847839	20	11 27.9	20.4
418666 2008 <i>TG</i> <sub>130</sub>	16.7	X	203.56820	259.05259	9.02404	10.03195	0.0133846	0.18949507	3.0019545	20	—	—
418667 2008 <i>TO</i> <sub>130</sub>	16.6	X	1.43053	126.51318	260.03743	3.43558	0.1657076	0.17032194	3.2232128	20	12 4.3	20.5
418668 2008 <i>TU</i> <sub>130</sub>	16.7	X	328.55771	257.01890	212.88710	26.15963	0.2370766	0.17542409	3.1604086	20	—	—
418669 2008 <i>TK</i> <sub>131</sub>	15.7	X	133.64649	37.54373	238.82319	7.79452	0.0577425	0.17598768	3.1536576	20	12 18.2	20.4
418670 2008 <i>TV</i> <sub>131</sub>	16.1	X	149.79290	258.78258	358.26042	8.60430	0.0541987	0.17501174	3.1653708	20	12 11.6	21.0
418671 2008 <i>TY</i> <sub>131</sub>	16.8	X	127.76270	11.31696	273.43458	4.15553	0.0753897	0.17731377	3.1379143	20	12 22.8	21.6
418672 2008 <i>TS</i> <sub>138</sub>	16.3	X	356.21525	30.47521	20.02919	18.83737	0.0762422	0.17311258	3.1884795	20	12 15.8	20.8
418673 2008 <i>TJ</i> <sub>147</sub>	16.5	X	203.44781	223.46781	27.06250	10.83434	0.0321274	0.18885689	3.0087134	20	—	—
418674 2008 <i>TD</i> <sub>151</sub>	16.8	X	14.48453	340.29389	70.31592	3.15113	0.0992813	0.18039703	3.1020572	20	—	—
418675 2008 <i>TA</i> <sub>164</sub>	16.7	X	36.94634	211.52297	241.17857	10.87945	0.0206550	0.19454139	2.9498145	20	—	—
418676 2008 <i>TO</i> <sub>164</sub>	16.3	X	165.35798	75.37625	197.81888	13.51206	0.0547902	0.18045165	3.1014312	20	—	—
418677 2008 <i>TZ</i> <sub>166</sub>	16.3	X	307.49249	145.96034	351.68101	15.69371	0.0766745	0.18279597	3.0748574	20	—	—
418678 2008 <i>TE</i> <sub>168</sub>	16.9	X	231.89413	250.01125	21.91337	7.40855	0.0259373	0.19612312	2.9339330	20	1 18.9	21.2
418679 2008 <i>TC</i> <sub>169</sub>	15.9	X	22.88596	315.01369	75.32713	8.69620	0.1563778	0.17307904	3.1888914	20	—	—
418680 2008 <i>TP</i> <sub>171</sub>	15.3	X	20.57573	167.50548	237.13281	25.92635	0.2165637	0.17793061	3.1306579	20	—	—
418681 2008 <i>TB</i> <sub>172</sub>	16.6	X	52.84585	214.01239	139.01607	1.84133	0.1381452	0.17182086	3.2044398	20	12 29.5	21.1
418682 2008 <i>TJ</i> <sub>172</sub>	16.4	X	301.65851	306.55081	195.52499	0.20837	0.0660852	0.17843518	3.1247533	20	—	—
418683 2008 <i>TC</i> <sub>174</sub>	16.9	X	16.75975	354.14648	32.86685	5.86109	0.1293476	0.17700953	3.1415089	20	12 25.4	21.1
418684 2008 <i>TM</i> <sub>175</sub>	16.6	X	33.76551	30.80331	58.18401	13.46819	0.0960867	0.18798326	3.0180280	20	—	—
418685 2008 <i>TB</i> <sub>181</sub>	16.6	X	348.20033	358.80249	76.19282	5.94918	0.2228420	0.17669339	3.1452549	20	—	—
418686 2008 <i>TJ</i> <sub>189</sub>	15.9	X	304.11959	57.20638	61.81457	21.98763	0.1102061	0.17016072	3.2252484	20	12 22.9	20.1
418687 2008 <i>UG</i> <sub>2</sub>	16.2	X	62.78782	106.73248	228.56617	9.80670	0.1421672	0.18066428	3.0989972	20	12 21.8	20.8
418688 2008 <i>UT</i> <sub>3</sub>	16.6	X	26.22875	112.87353	329.55671	8.93852	0.3140712	0.18489515	3.0515398	20	—	—
418689 2008 <i>UQ</i> <sub>4</sub>	15.6	X	2.87866	31.87900	21.42329	27.91449	0.1428552	0.17834003	3.1258646	20	—	—
418690 2008 <i>UE</i> <sub>6</sub>	16.1	X	340.91659	123.12402	318.16998	8.55250	0.2018686	0.17524920	3.1625108	20	—	—
418691 2008 <i>UR</i> <sub>6</sub>	16.7	X	58.47326	85.30802	307.17128	3.38798	0.3152230	0.18517627	3.0484506	20	—	—
418692 2008 <i>UV</i> <sub>7</sub>	16.9	X	48.06633	324.02030	26.96217	1.60610	0.2311658	0.17807031	3.1290202	20	—	—
418693 2008 <i>UP</i> <sub>9</sub>	16.5	X	359.07211	17.94359	15.66310	15.39526	0.1349048	0.17402151	3.1773674	20	12 3.9	20.7
418694 2008 <i>UJ</i> <sub>10</sub>	15.9	X	317.68307	98.15459	4.22136	12.25992	0.1034801	0.17762597	3.1342363	20	12 28.9	20.0
418695 2008 <i>UF</i> <sub>12</sub>	16.9	X	135.16464	357.75313	7.01338	6.03697	0.0736103	0.19912747	2.9043476	20	1 24.5	21.1
418696 2008 <i>UH</i> <sub>14</sub>	16.7	X	334.73577	247.30775	194.31097	10.55840	0.0722207	0.17920669	3.1157785	20	12 26.9	21.0
418697 2008 <i>UV</i> <sub>16</sub>	16.6	X	148.96669	57.93709	201.90713	12.77802	0.0543910	0.17739739	3.1369281	20	12 15.3	21.5
418698 2008 <i>UB</i> <sub>17</sub>	16.2	X	312.47803	314.25834	201.41917	21.66404	0.2323455	0.18466018	3.0541279	20	—	—
418699 2008 <i>UB</i> <sub>24</sub>	16.3	X	329.81800	278.39160	215.17413	9.26058	0.0395967	0.18870382	3.0103402	20	—	—
418700 2008 <i>UM</i> <sub>24</sub>	15.8	X	267.07485	127.30119	41.73716	11.16538	0.0953860	0.17664179	3.1458674	20	—	—
418701 2008 <i>US</i> <sub>29</sub>	16.7	X	52.18893	288.33768	98.47517	2.18224	0.1787577	0.18003063	3.1062646	20	—	—
418702 2008 <i>UY</i> <sub>30</sub>	15.6	X	322.67694	349.32539	50.07808	13.11798	0.0989018	0.16141684	3.3406949	20	10 17.7	19.9
418703 2008 <i>UE</i> <sub>31</sub>	16.4	X	105.15402	232.33366	114.96285	2.06710	0.0931656	0.18399391	3.0614964	20	—	—
418704 2008 <i>UP</i> <sub>36</sub>	16.6	X	344.17232	82.86062	32.58687	11.43088	0.1549857	0.17854891	3.1234261	20	—	—
418705 2008 <i>UU</i> <sub>37</sub>	16.4	X	2.22250	44.93168	35.23587	10.47024	0.2221569	0.17556374	3.1587324	20	—	—
418706 2008 <i>UL</i> <sub>41</sub>	15.5	X	24.61993	318.61973	46.26048	28.13563	0.1810083	0.16906121	3.2392172	20	12 8.2	20.0
418707 2008 <i>UH</i> <sub>42</sub>	16.5	X	333.13721	299.63397	48.37999	12.61475	0.0654681	0.23563989	2.5959929	20	9 13.9	19.8
418708 2008 <i>UO</i> <sub>42</sub>	15.9	X	298.66819	130.96994	51.97490	12.24552	0.0033564	0.18648006	3.0342250	20	—	—
418709 2008 <i>UC</i> <sub>48</sub>	17.0	X	96.00483	89.47313	234.14757	1.63526	0.0719290	0.17900350	3.1181359	20	—	—
418710 2008 <i>UO</i> <sub>48</sub>	16.2	X	279.23453	319.95906	207.18696	15.13709	0.1950992	0.17918130	3.1160728	20	—	—
418711 2008 <i>UG</i> <sub>53</sub>	16.2	X	3.33956	42.31515	57.80428	12.81529	0.0420870	0.17967310	3.1103840	20	—	—
418712 2008 <i>US</i> <sub>60</sub>	15.9	X	37.58643	136.54849	243.72714	8.20779	0.0794097	0.17450737	3.1714670	20	—	—
418713 2008 <i>UK</i> <sub>61</sub>	16.1	X	28.44667	203.97335	250.							

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>
418721 2008 UX <sub>88</sub>	16.1	X	36.46944	347.06051	41.33866	12.01218	0.1245536	0.18003421	3.1062234	20	—	—
418722 2008 UY <sub>90</sub>	16.7	X	12.30188	14.67844	31.63173	2.18748	0.1327377	0.17571025	3.1569762	20	—	—
418723 2008 UG <sub>96</sub>	16.3	X	90.85139	292.57693	45.67796	18.83520	0.2716189	0.18427882	3.0583400	20	—	—
418724 2008 UK <sub>99</sub>	16.4	X	270.43826	199.98164	308.12282	4.65731	0.0662954	0.17675192	3.1445605	20	12 19.7	20.6
418725 2008 UO <sub>103</sub>	17.1	X	52.14581	321.06372	9.90805	1.16194	0.2033386	0.17255564	3.1953366	20	12 11.5	21.7
418726 2008 UN <sub>106</sub>	16.0	X	147.21139	229.45055	15.42034	15.05730	0.0611634	0.17466714	3.1695328	20	11 21.5	21.0
418727 2008 UD <sub>110</sub>	16.1	X	294.53131	243.00910	264.01702	6.94206	0.1801328	0.17508221	3.1645214	20	—	—
418728 2008 UC <sub>111</sub>	16.1	X	237.48083	207.02377	20.66436	12.42454	0.0960158	0.18494280	3.0510156	20	—	—
418729 2008 UX <sub>111</sub>	16.1	X	205.43120	353.19959	244.78501	8.54053	0.0240701	0.18077558	3.0977250	20	—	—
418730 2008 UE <sub>113</sub>	16.7	X	346.30461	136.94059	236.66262	8.82368	0.1149208	0.16230548	3.3284900	20	10 16.3	20.9
418731 2008 UX <sub>114</sub>	16.7	X	349.53976	134.34190	276.87230	6.22315	0.1635980	0.16945810	3.2341575	20	12 15.2	20.5
418732 2008 UK <sub>118</sub>	15.9	X	132.84993	38.36265	248.04470	10.26690	0.0335237	0.17417338	3.1755200	20	12 27.6	20.5
418733 2008 UX <sub>124</sub>	15.8	X	31.83101	114.63905	267.82785	12.84256	0.0499863	0.17089257	3.2160338	20	12 26.9	20.4
418734 2008 UQ <sub>127</sub>	15.9	X	356.94938	16.22653	67.46720	10.66805	0.1101792	0.17317905	3.1876635	20	—	—
418735 2008 UC <sub>130</sub>	17.1	X	32.74784	40.89656	329.23910	1.57159	0.0901718	0.17256874	3.1951749	20	12 19.5	21.4
418736 2008 UU <sub>133</sub>	16.3	X	310.06118	122.87417	45.22061	10.65705	0.1034273	0.18693756	3.0292724	20	—	—
418737 2008 UD <sub>133</sub>	16.9	X	17.38239	349.07030	29.13878	1.56054	0.1604496	0.17019491	3.2248165	20	12 17.7	20.9
418738 2008 UK <sub>135</sub>	16.7	X	25.99210	253.53779	220.07314	7.89570	0.1186966	0.19003455	2.9962704	20	1 12.7	20.3
418739 2008 UH <sub>139</sub>	15.9	X	324.42618	36.78381	44.79686	9.66935	0.0745606	0.16913599	3.2382624	20	12 9.0	20.1
418740 2008 UO <sub>144</sub>	16.6	X	351.84757	297.41991	161.35600	1.09378	0.1343116	0.17763757	3.1340999	20	—	—
418741 2008 UQ <sub>145</sub>	17.0	X	16.88905	284.10830	105.30632	2.08538	0.1344849	0.17118316	3.2123932	20	12 27.5	21.0
418742 2008 UG <sub>149</sub>	16.5	X	28.02412	343.70902	53.41525	23.25790	0.1182835	0.17362011	3.1822627	20	—	—
418743 2008 UO <sub>149</sub>	17.1	X	71.71070	199.64470	133.93701	2.02978	0.1436646	0.17619227	3.1512158	20	12 28.7	21.7
418744 2008 UR <sub>152</sub>	17.0	X	343.03993	36.09817	55.68522	3.91895	0.0670071	0.17841500	3.1249888	20	—	—
418745 2008 UQ <sub>155</sub>	16.2	X	263.74103	105.72721	45.09000	9.54948	0.0155971	0.17411521	3.1762273	20	12 19.5	20.7
418746 2008 UC <sub>157</sub>	15.7	X	63.81659	295.67576	54.62068	10.58489	0.0197854	0.17070092	3.2184404	20	12 22.7	20.3
418747 2008 UP <sub>157</sub>	16.4	X	352.96937	15.53024	64.37854	2.86885	0.0507128	0.17377282	3.1803981	20	—	—
418748 2008 UM <sub>158</sub>	15.7	X	113.86605	45.39812	270.63016	14.76262	0.0553994	0.17366141	3.1817582	20	—	—
418749 2008 UF <sub>162</sub>	16.0	X	294.94445	101.00989	18.96010	11.97318	0.0397779	0.17352357	3.1834429	20	12 18.6	20.5
418750 2008 UB <sub>165</sub>	16.6	X	69.46603	101.77311	237.59977	5.30311	0.1633471	0.17692206	3.1425442	20	—	—
418751 2008 UR <sub>168</sub>	16.3	X	337.98415	23.05495	55.92124	11.08684	0.1045616	0.17220286	3.1996991	20	12 28.1	20.3
418752 2008 UQ <sub>169</sub>	15.7	X	202.50180	151.00122	57.10842	17.58473	0.0936950	0.17060188	3.2196859	20	12 5.1	20.7
418753 2008 UP <sub>177</sub>	16.5	X	307.34340	108.12945	10.16188	5.40081	0.1619521	0.17280046	3.1923178	20	12 27.4	20.2
418754 2008 UA <sub>188</sub>	16.1	X	74.50591	316.97004	81.01731	11.59018	0.0585352	0.18288528	3.0738562	20	—	—
418755 2008 UK <sub>189</sub>	15.7	X	291.51237	108.18307	15.05837	15.41554	0.0458164	0.17882768	3.1201793	20	12 18.7	20.2
418756 2008 UC <sub>197</sub>	15.4	X	8.80599	305.56844	93.34871	23.40923	0.1536986	0.17329466	3.1862457	20	12 30.3	19.3
418757 2008 UJ <sub>199</sub>	15.1	X	215.73080	335.02416	288.94699	32.71415	0.1049266	0.17184154	3.2041828	20	—	—
418758 2008 UT <sub>204</sub>	16.2	X	78.68910	67.43156	293.57060	5.38536	0.2163994	0.18457729	3.0550421	20	—	—
418759 2008 UZ <sub>204</sub>	16.2	X	280.17398	74.33900	45.86687	11.37988	0.0517478	0.16918994	3.2375739	20	11 27.2	20.6
418760 2008 UU <sub>208</sub>	16.5	X	6.60169	108.42342	311.29638	1.85002	0.2146446	0.17496850	3.1658923	20	—	—
418761 2008 UO <sub>209</sub>	16.2	X	300.57044	84.54725	33.59206	11.36203	0.1232811	0.17178795	3.2048491	20	12 17.1	20.3
418762 2008 UF <sub>211</sub>	16.0	X	111.73986	254.47389	38.86855	16.41299	0.0633474	0.17288624	3.1912618	20	12 12.6	21.0
418763 2008 UD <sub>224</sub>	16.2	X	7.52584	66.92850	342.86569	6.02983	0.0728991	0.17132062	3.2106745	20	—	—
418764 2008 UA <sub>227</sub>	16.4	X	22.14864	23.67710	49.11038	16.69842	0.0893787	0.1722350	3.1272270	20	—	—
418765 2008 UY <sub>227</sub>	15.5	X	96.52448	114.55664	253.52015	14.75205	0.0020876	0.18012286	3.1052042	20	—	—
418766 2008 UU <sub>239</sub>	15.7	X	52.74996	58.18206	283.52675	7.44749	0.2023889	0.17117034	3.2125535	20	12 24.5	20.4
418767 2008 UP <sub>242</sub>	15.7	X	298.95987	275.13579	270.34913	15.06246	0.1830737	0.18206698	3.0830596	20	—	—
418768 2008 UX <sub>242</sub>	16.4	X	0.08722	102.10576	338.28793	8.01905	0.1954990	0.17426334	3.1744271	20	—	—
418769 2008 UB <sub>254</sub>	15.5	X	221.85970	329.43850	230.38762	10.06224	0.0906184	0.17227853	3.1987621	20	12 18.0	20.2
418770 2008 UW <sub>262</sub>	16.3	X	30.05417	332.31112	38.05251	5.28638	0.0863973	0.16696029	3.2663340	20	12 14.0	20.8
418771 2008 UZ <sub>262</sub>	15.2	X	252.15672	310.95248	249.51929	27.06922	0.2031404	0.17228798	3.1986452	20	—	—
418772 2008 UM <sub>263</sub>	16.7	X	349.56947	252.89855	212.39465	15.92795	0.1047532	0.18510848	3.0491948	20	—	—
418773 2008 UQ <sub>264</sub>	15.7	X	14.78832	68.25766	14.80386	9.33041	0.0830925	0.18225528	3.0809357	20	—	—
418774 2008 UA <sub>265</sub>	15.5	X	153.42919	245.46781	20.17585	10.03114	0.0358033	0.17485450	3.1672682	20	12 26.8	20.3
418775 2008 UO <sub>267</sub>	16.6	X	20.04922	336.87276	76.43919	1.46895	0.0287729	0.17770343	3.1333255	20	—	—
418776 2008 UZ <sub>267</sub>	16.1	X	20.16660	21.63232	47.93563	11.67144	0.1726485	0.17980066	3.1089127	20	—	—
418777 2008 UX <sub>272</sub>	16.0	X	240.27100	348.79670	235.75903	22.92352	0.1479256	0.18214989	3.0821240	20	—	—
418778 2008 UJ <sub>276</sub>	16.2	X	103.41256	263.53927	37.21466	9.54926	0.0815136	0.17350391	3.1836834	20	12 15.5	21.1
418779 2008 UV <sub>276</sub>	15.6	X	263.22430	105.16978	40.92112	14.45107	0.0449451	0.17150761	3.2083405	20	12 7.4	20.1
418780 2008 UU <sub>280</sub>	16.0	X	356.47566	309.23907	123.98917	6.72804	0.0771020	0.17703994	3.1411491	20	—	—
418781 2008 UP <sub>290</sub>	16.0	X	147.49623	40.77242	243.76141	8.90093	0.0628873	0.17943051	3.1131868	20	—	—
418782 2008 UG <sub>298</sub>	16.1	X	79.58314	78.26870	243.11707	17.63950	0.1435987	0.17202251	3.2019352	20	12 20.5	21.1
418783 2008 UU <sub>302</sub>	16.3	X	223.00026	211.72060	45.79529	8.43880	0.0599985	0.18453631	3.0554944	20	—	—
418784 2008 UB <sub>314</sub>	16.5	X	336.60455	129.02042	320.56092	4.55582	0.1591294	0.17433351	3.1735752	20	—	—
418785 2008 US <sub>322</sub>	16.3	X	49.58673	146.64753	243.86750	10.58874	0.0600054	0.18196021	3.0842656	20	—	—
418786 2008 UU <sub>322</sub>	16.7	X	137.90913	40.14363	245.00375	10.20868	0.1121529	0.18077695	3.0977094	20	—	—
418787 2008 UH <sub>323</sub>	16.0	X	23.62923	171.19425	269.40949	10.60371	0.0970798	0.18220565	3.0814952	20	—	—
418788 2008 UF <sub>330</sub>	16.3	X	343.66381	87.46176	39.34211	9.75837	0.0419170	0.18517911	3.0484194	20	—	—
418789 2008 UR <sub>337</sub>	16.1	X	259.01313	318.93872	217.43732	8.11373	0.1499153	0.17306039	3.1891206	20	12 26.0	20.6
418790 2008 UJ <sub>346</sub>	15.9	X	9.01440	341.98939	117.44087	16.72445	0.1093892	0.17043954	3.2217301	20	—	—
418791 2008 UR <sub>347</sub>	16.5	X	50.77131	132.95791	225.86545	8.24751	0.0590735	0.17380608	3.1799923	20	12 23.5	21.1
418792 2008 UX <sub>357</sub>	15.8	X	25.85541	111.07003	299.02994	9.18597	0.0651846	0.17805473	3.1292027	20	—	—
418793 2008 UD <sub>358</sub>	15.9	X	133.91523	328.90010	348.83193	4.96932	0.1355249	0.18043759	3.1015923	20	—	—
418794 2008 UP <sub>364</sub>	15.7	X	47.61188	283.81220	77.41940	19.80150	0.1713102	0.17528551	3.1620741	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>
418801 2008 VO <sub>15</sub>	16.9	X	39.0503	238.95167	136.13904	0.29463	0.1639052	0.17570597	3.1570275	20	—	—
418802 2008 VN <sub>16</sub>	16.8	X	346.02561	279.06133	158.30099	0.91406	0.0726347	0.17431298	3.1738245	20	—	—
418803 2008 VG <sub>18</sub>	15.8	X	234.85080	151.00878	49.45264	29.29238	0.1741895	0.17581866	3.1556785	20	12 18.6	20.8
418804 2008 VU <sub>20</sub>	15.9	X	13.03857	63.88578	66.18467	14.14811	0.0620937	0.18891181	3.0081303	20	1 18.5	20.0
418805 2008 VT <sub>22</sub>	15.9	X	56.05521	149.68180	212.51413	11.01909	0.0574772	0.17283301	3.1919170	20	—	—
418806 2008 VO <sub>25</sub>	16.3	X	314.95864	25.87856	90.40319	4.53315	0.0779619	0.17633079	3.1495653	20	—	—
418807 2008 VL <sub>26</sub>	15.4	X	175.00534	198.76977	33.51979	17.21430	0.0789370	0.17134077	3.2104228	20	12 4.9	20.5
418808 2008 VB <sub>29</sub>	16.0	X	277.94065	222.17807	280.83631	6.24703	0.0359613	0.17170837	3.2058393	20	12 25.4	20.5
418809 2008 VO <sub>30</sub>	16.2	X	46.04880	333.51671	19.07254	4.22124	0.1535944	0.17086090	3.2164311	20	12 23.2	20.8
418810 2008 VJ <sub>32</sub>	15.9	X	94.51702	279.03734	63.70631	15.38488	0.2103852	0.18191905	3.0847307	20	—	—
418811 2008 VQ <sub>36</sub>	16.7	X	1.41716	47.82199	73.93125	10.69229	0.0538049	0.18622377	3.0370082	20	—	—
418812 2008 VF <sub>39</sub>	15.4	X	126.49001	239.55039	90.66551	18.47390	0.0963675	0.18350376	3.0669456	20	—	—
418813 2008 VP <sub>39</sub>	16.1	X	356.29375	47.23043	52.82647	27.01540	0.1330957	0.17618258	3.1513314	20	—	—
418814 2008 VC <sub>41</sub>	15.5	X	110.47480	45.12193	253.53113	16.11278	0.2001028	0.17514692	3.1637420	20	12 26.6	20.9
418815 2008 VQ <sub>45</sub>	16.1	X	74.44095	348.57204	24.81394	11.39095	0.0947180	0.17922224	3.1155983	20	—	—
418816 2008 VY <sub>46</sub>	17.0	X	41.77782	201.13688	182.72140	0.67453	0.1730758	0.17518460	3.1632883	20	—	—
418817 2008 VE <sub>56</sub>	15.5	X	282.92879	242.36415	300.22361	9.69735	0.0511241	0.18253486	3.0777889	20	—	—
418818 2008 VP <sub>57</sub>	15.9	X	284.11685	125.65359	56.05093	27.30824	0.0682291	0.18104355	3.0946676	20	—	—
418819 2008 VQ <sub>61</sub>	15.8	X	145.66995	213.22845	63.29065	11.73453	0.1141111	0.17691255	3.1426568	20	12 30.7	20.8
418820 2008 VF <sub>66</sub>	15.7	X	341.34820	135.79504	214.63499	8.17163	0.0882939	0.15042445	3.5015238	20	9 5.9	20.4
418821 2008 VH <sub>67</sub>	16.1	X	31.29543	262.41175	183.20903	17.32136	0.2474376	0.18104728	3.0946251	20	—	—
418822 2008 VO <sub>71</sub>	16.4	X	31.71534	9.76215	91.19823	12.63481	0.1428135	0.18451941	3.0556810	20	1 9.5	19.9
418823 2008 VX <sub>76</sub>	16.3	X	94.60551	247.19821	69.65863	17.41279	0.1159073	0.17292365	3.1908014	20	12 27.9	21.3
418824 2008 VY <sub>78</sub>	14.9	X	217.87033	344.18286	282.83373	25.67587	0.1150002	0.17354179	3.1832201	20	—	—
418825 2008 VQ <sub>79</sub>	15.8	X	213.42316	37.09805	281.66656	10.90114	0.0338934	0.19805563	2.9148167	20	2 16.7	20.2
418826 2008 VB <sub>80</sub>	15.8	X	313.40098	241.15060	266.89639	7.45590	0.2037746	0.17340389	3.1849075	20	—	—
418827 2008 VQ <sub>80</sub>	15.7	X	2.87711	44.12112	171.95388	13.45830	0.1344342	0.18242386	3.0790373	20	—	—
418828 2008 WN <sub>3</sub>	16.3	X	109.84368	73.49181	231.11274	8.93699	0.1079602	0.17650048	3.1475462	20	12 28.7	21.2
418829 2008 WB <sub>4</sub>	15.8	X	252.92381	138.23654	46.76865	19.68381	0.1198036	0.17741985	3.1366634	20	—	—
418830 2008 WJ <sub>5</sub>	16.5	X	288.64881	98.00559	49.80971	16.62108	0.1984149	0.17329789	3.1862061	20	12 27.9	20.4
418831 2008 WA <sub>6</sub>	16.5	X	136.13705	39.36135	237.80347	11.30012	0.0551884	0.17400216	3.1776029	20	12 20.9	21.3
418832 2008 WM <sub>8</sub>	16.7	X	282.47871	325.01789	158.06066	2.38104	0.0825540	0.16912277	3.2384311	20	12 1.9	21.0
418833 2008 WJ <sub>18</sub>	16.7	X	55.07961	83.49599	281.41807	2.28824	0.0659455	0.17596813	3.1538912	20	—	—
418834 2008 WH <sub>22</sub>	16.3	X	351.78364	72.51501	44.13174	11.15949	0.1136401	0.18431972	3.0578876	20	—	—
418835 2008 WH <sub>23</sub>	15.6	X	21.13753	358.71490	59.36762	11.47846	0.0710861	0.17687717	3.1430759	20	—	—
418836 2008 WL <sub>28</sub>	15.8	X	69.38679	288.09841	60.11196	10.01345	0.0775572	0.17361031	3.1823825	20	—	—
418837 2008 WM <sub>29</sub>	15.7	X	46.60361	161.36675	259.67623	17.14542	0.1280885	0.18019940	3.1043248	20	—	—
418838 2008 WD <sub>33</sub>	16.2	X	42.46899	341.69274	52.76609	10.71312	0.1849305	0.17795833	3.1303327	20	—	—
418839 2008 WM <sub>33</sub>	16.0	X	351.46922	39.15711	28.20584	9.21942	0.0501214	0.17411045	3.1762852	20	12 30.9	20.4
418840 2008 WX <sub>33</sub>	16.2	X	96.36372	68.06678	234.95062	17.72662	0.1291191	0.17306634	3.1890474	20	12 14.8	21.3
418841 2008 WZ <sub>34</sub>	16.6	X	66.62256	286.22567	55.29651	12.32542	0.0752779	0.17378081	3.1803006	20	12 23.4	21.3
418842 2008 WT <sub>48</sub>	15.9	X	25.20328	27.66833	62.00496	13.23798	0.1220039	0.18368988	3.0648736	20	—	—
418843 2008 WV <sub>51</sub>	16.4	X	352.43758	162.50397	253.31490	3.92804	0.1944240	0.17142629	3.2093551	20	12 29.6	19.9
418844 2008 WZ <sub>55</sub>	15.9	X	243.54711	214.01321	37.58165	10.73727	0.0743884	0.18993139	2.9973553	20	1 4.3	20.5
418845 2008 WM <sub>59</sub>	15.3	X	353.62897	18.57255	64.97655	22.65875	0.1099645	0.17518437	3.1632910	20	—	—
418846 2008 WJ <sub>60</sub>	21.3	X	257.37372	170.01239	259.44015	16.69372	0.2914299	0.48759034	1.5986964	20	8 17.9	22.7
418847 2008 WR <sub>60</sub>	16.2	X	51.25075	200.67999	231.84771	4.75239	0.1288602	0.18653211	3.0336605	20	1 3.8	19.8
418848 2008 WL <sub>62</sub>	16.1	X	358.79295	15.17394	68.54553	28.85212	0.1516407	0.17351968	3.1834905	20	—	—
418849 2008 WM <sub>64</sub>	20.6	X	242.54691	256.60446	91.45010	33.52708	0.1064627	0.97769739	1.0053866	20	11 30.0	21.0
418850 2008 WQ <sub>66</sub>	16.5	X	13.35718	200.06757	242.66758	11.19821	0.2930465	0.17651186	3.1474110	20	—	—
418851 2008 WE <sub>75</sub>	16.2	X	357.38629	50.37110	54.38137	10.27270	0.0754089	0.18342425	3.0678318	20	—	—
418852 2008 WH <sub>78</sub>	16.5	X	1.90485	250.98112	196.60323	4.67047	0.1210927	0.17533096	3.1615276	20	—	—
418853 2008 WJ <sub>87</sub>	15.6	X	154.36131	204.82303	62.45759	17.58300	0.1674231	0.17586031	3.1551801	20	12 26.0	21.0
418854 2008 WO <sub>88</sub>	16.0	X	50.94423	318.12270	64.13156	10.39031	0.0531067	0.17432210	3.1737138	20	—	—
418855 2008 WM <sub>92</sub>	15.8	X	327.94304	263.35989	250.90003	9.82018	0.0805647	0.18328573	3.0693773	20	—	—
418856 2008 WT <sub>92</sub>	15.2	X	84.24437	248.04239	71.61641	17.34386	0.2297445	0.17685624	3.1433238	20	12 31.9	20.4
418857 2008 WD <sub>98</sub>	16.2	X	59.03699	334.81839	50.56560	11.73252	0.1443004	0.17803509	3.1294329	20	—	—
418858 2008 WA <sub>102</sub>	15.6	X	338.40017	41.88525	96.34237	16.35948	0.2006488	0.17519711	3.1631376	20	—	—
418859 2008 WL <sub>102</sub>	15.3	X	75.09124	253.96586	112.56929	19.47169	0.1547792	0.17944109	3.1130645	20	—	—
418860 2008 WF <sub>105</sub>	16.0	X	19.18909	9.85691	74.97664	9.47833	0.1027122	0.17868024	3.1218956	20	—	—
418861 2008 WG <sub>105</sub>	16.1	X	318.56983	33.89348	88.05035	2.89800	0.1103026	0.17145100	3.2090467	20	—	—
418862 2008 WM <sub>109</sub>	16.2	X	97.30790	131.06848	255.69712	8.41086	0.1238953	0.18682340	3.0305064	20	1 11.9	20.4
418863 2008 WA <sub>110</sub>	16.3	X	324.80883	72.05575	60.98752	7.97316	0.2020207	0.17409489	3.1764745	20	—	—
418864 2008 WS <sub>133</sub>	16.0	X	22.40410	138.06248	296.71847	7.03214	0.2096671	0.17778048	3.1324201	20	—	—
418865 2008 WR <sub>134</sub>	16.4	X	302.67741	100.88824	115.38099	16.87959	0.1869103	0.17734212	3.1375799	20	1 14.1	20.7
418866 2008 WR <sub>135</sub>	15.9	X	339.40736	203.62726	270.63992	11.36628	0.0911445	0.17444771	3.1721901	20	—	—
418867 2008 WJ <sub>137</sub>	15.7	X	11.42208	208.17494	266.90687	16.71129	0.1979420	0.18268880	3.0760597	20	—	—
418868 2008 WA <sub>139</sub>	15.6	X	62.47955	307.47080	88.39536	19.22940	0.1395376	0.17927772	3.1149554	20	—	—
418869 2008 WN <sub>139</sub>	15.9	X	344.74026	38.40069	67.41948	15.68823	0.2471906	0.17477605	3.1682159	20	—	—
418870 2008 XV <sub>4</sub>	17.1	X	103.84258	75.17108	286.13759	15.73142	0.1193413	0.35017622	1.9934788	20	—	—
418871 2008 XB <sub>5</sub>	15.6	X	74.92163	135.71601	270.46273	15.06211	0.1385145	0.18600803	3.0393561	20	1 7.5	19.5
418872 2008 XS <sub>7</sub>	16.4	X	347.59516	69.69770	43.15671	17.12427	0.2154042	0.17840737	3.1250780	20	—	—
418873 2008 XL <sub>11</sub>	15.9	X	158.38739	287.13185	24.61272	7.69458	0.0116093	0.18105645	3.0945206	20	—	—
418874 2008 XR <sub>25</sub>	15.7	X	14.01304	223.95663	261.47264	19.70263	0.1861450	0.18467344	3.0539816	20	1 5.1	19.1
418875 2008 XM <sub>44</sub>	16.6	X	349.61674	84.57658	19.03375	9.81544	0.0914540	0.17777				

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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>
418881 2008 YN <sub>65</sub>	15.4	X	60.55027	97.65036	321.77924	15.09656	0.2416673	0.17755544	3.1350663	20	1 21.1	19.0
418882 2008 YD <sub>74</sub>	15.6	X	28.18896	153.81774	303.59812	8.96992	0.0512394	0.17714260	3.1399353	20	—	—
418883 2008 YH <sub>88</sub>	16.0	X	291.55268	286.81911	285.35826	6.34721	0.1112377	0.17914269	3.1165205	20	1 6.3	20.4
418884 2008 YW <sub>99</sub>	18.4	X	291.61204	280.36670	109.56597	4.97528	0.0854733	0.31161392	2.1547232	20	9 11.9	20.3
418885 2008 YQ <sub>104</sub>	15.8	X	142.74513	261.01305	116.46031	11.97576	0.0956987	0.18464553	3.0542894	20	2 21.8	20.4
418886 2008 YV <sub>104</sub>	16.0	X	52.13718	342.34749	118.79115	12.89185	0.1167980	0.18236131	3.0797414	20	2 12.3	19.8
418887 2008 YF <sub>115</sub>	15.9	X	331.91662	231.69994	291.78443	25.81542	0.0883390	0.17673482	3.14447633	20	1 3.1	20.1
418888 2008 YB <sub>126</sub>	17.6	X	48.49126	289.94901	306.48710	3.95701	0.1009593	0.29800256	2.2198453	20	8 9.3	19.7
418889 2008 YP <sub>135</sub>	15.8	X	45.15047	108.56016	287.47005	14.56773	0.2309339	0.17394115	3.1783459	20	—	—
418890 2008 YE <sub>148</sub>	17.8	X	25.10484	347.40313	268.42891	3.86716	0.1579386	0.29543735	2.2326764	20	8 7.2	19.8
418891 Vizi	15.5	X	40.45622	307.62153	73.13220	17.49264	0.2175109	0.17649945	3.1475585	20	—	—
418892 2008 YC <sub>167</sub>	15.1	X	304.34043	79.27042	101.51823	24.83554	0.1832542	0.17365910	3.1817863	20	—	—
418893 2008 YQ <sub>170</sub>	15.8	X	19.28033	122.85011	326.04664	26.11106	0.2310624	0.17263406	3.1943688	20	—	—
418894 2008 YT <sub>171</sub>	16.3	X	95.05650	296.78273	99.82646	6.62366	0.1596551	0.18067200	3.0989090	20	1 29.1	20.5
418895 2009 AM <sub>1</sub>	15.7	X	32.59108	36.81024	99.49491	11.15189	0.0445257	0.18755028	3.0226712	20	2 24.6	19.8
418896 2009 AK <sub>15</sub>	19.4	X	173.87786	6.44546	186.82055	13.83154	0.4289015	0.65722607	1.3101656	20	12 26.9	19.2
418897 2009 AC <sub>25</sub>	15.8	X	46.23090	344.08332	126.87298	28.42477	0.0965406	0.18111954	3.0938020	20	2 13.7	19.8
418898 2009 AT <sub>37</sub>	15.5	X	252.47310	285.53646	296.62124	13.18070	0.0871243	0.16933056	3.2357812	20	—	—
418899 2009 AY <sub>49</sub>	15.8	X	295.12021	77.20380	137.37464	19.22091	0.1012416	0.17303503	3.1894320	20	1 15.3	20.4
418900 2009 BE <sub>2</sub>	19.2	X	189.39061	138.28355	93.09869	23.43464	0.3535543	0.50586112	1.5599662	20	—	—
418901 2009 BX <sub>22</sub>	15.6	X	16.56415	357.47683	126.68993	25.31848	0.0638132	0.17448610	3.1717247	20	1 17.4	19.8
418902 2009 BE <sub>47</sub>	17.8	X	81.60954	263.95861	305.06892	4.03514	0.0542574	0.29492263	2.2352734	20	8 9.5	20.2
418903 2009 BB <sub>48</sub>	17.4	X	116.02175	253.67187	311.26684	3.81195	0.0787677	0.30525503	2.1845442	20	9 21.1	20.2
418904 2009 BZ <sub>69</sub>	17.4	X	64.47181	248.79576	324.85713	7.79251	0.0372647	0.29717166	2.2239812	20	7 21.1	19.8
418905 2009 BX <sub>72</sub>	17.9	X	110.12660	67.02930	126.41137	4.66192	0.0717515	0.29819962	2.2188673	20	8 29.9	20.6
418906 2009 BA <sub>76</sub>	17.6	X	112.33767	173.42826	337.72951	4.53292	0.0792928	0.29245664	2.2478210	20	7 2.4	20.4
418907 2009 BY <sub>79</sub>	15.6	X	315.85980	194.12287	344.15159	9.85361	0.1578180	0.17227079	3.1988579	20	—	—
418908 2009 BX <sub>92</sub>	17.7	X	88.68538	112.67647	132.72819	5.08114	0.0543365	0.30685577	2.1769403	20	10 15.9	20.4
418909 2009 BS <sub>148</sub>	18.0	X	355.40566	206.42868	95.71509	2.66515	0.0837045	0.30120660	2.2040751	20	8 18.5	20.0
418910 2009 BO <sub>158</sub>	18.4	X	216.53277	283.81368	162.31127	1.69387	0.0847514	0.29961668	2.2118655	20	8 7.7	21.3
418911 2009 BZ <sub>164</sub>	17.9	X	168.24349	171.36491	352.24360	4.32731	0.1678412	0.30600882	2.1809553	20	9 23.3	21.1
418912 2009 BR <sub>172</sub>	18.0	X	235.54937	95.03600	315.97746	5.11993	0.1093676	0.29724150	2.2236329	20	7 10.0	20.7
418913 2009 BU <sub>177</sub>	18.0	X	60.95560	120.10853	70.08355	7.28983	0.0474718	0.28547481	2.2843230	20	6 9.3	20.6
418914 2009 BW <sub>177</sub>	18.0	X	296.15900	239.53280	141.16148	4.86768	0.1637828	0.30621590	2.1799719	20	8 21.4	19.4
418915 2009 BN <sub>181</sub>	17.4	X	59.94273	275.91139	334.71202	5.83962	0.0961291	0.29948290	2.2125242	20	9 15.4	20.0
418916 2009 BX <sub>182</sub>	18.0	X	227.64079	282.11876	130.86538	2.93293	0.1064877	0.29666641	2.2265056	20	7 2.3	20.8
418917 2009 BH <sub>188</sub>	17.3	X	34.63293	230.64441	9.70383	5.68260	0.1620587	0.28579129	2.2826363	20	8 3.9	19.5
418918 2009 CT <sub>26</sub>	17.9	X	127.99143	48.39349	98.85865	3.24337	0.1062847	0.29230946	2.2485755	20	7 18.9	21.0
418919 2009 CN <sub>27</sub>	17.5	X	71.37220	114.49442	83.09524	3.40026	0.1607132	0.28762611	2.2729184	20	7 26.9	20.2
418920 2009 CZ <sub>31</sub>	17.7	X	137.57268	179.96052	337.77236	8.53997	0.0787504	0.29582052	2.2307480	20	8 14.0	20.6
418921 2009 CV <sub>32</sub>	17.8	X	16.93883	178.59238	60.00693	1.92562	0.1817561	0.28103437	2.3083222	20	6 24.2	19.3
418922 2009 CL <sub>36</sub>	17.9	X	36.84247	327.54302	338.13135	8.69431	0.0190955	0.31001695	2.1621165	20	10 18.5	20.4
418923 2009 CH <sub>39</sub>	18.3	X	278.02468	55.97366	344.04613	3.76461	0.1609311	0.30691892	2.1766417	20	8 18.5	20.4
418924 2009 CO <sub>39</sub>	16.1	X	24.05890	171.60213	280.98527	8.83646	0.1638962	0.18059039	3.0998424	20	—	—
418925 2009 CZ <sub>45</sub>	18.4	X	292.81995	51.55377	313.98748	1.67773	0.0203020	0.30248298	2.1978704	20	8 10.8	20.6
418926 2009 CG <sub>51</sub>	17.7	X	226.85909	331.60508	111.44782	3.03389	0.1116238	0.30448080	2.1882458	20	8 14.7	20.4
418927 2009 CQ <sub>62</sub>	18.0	X	147.14464	105.13669	70.86285	5.52386	0.0969013	0.30312037	2.1947883	20	9 22.8	21.0
418928 2009 DJ <sub>1</sub>	17.9	X	3.21536	155.34551	37.54102	8.31864	0.1915610	0.27196961	2.3593324	20	3 6.9	19.8
418929 2009 DM <sub>1</sub>	17.0	X	110.82170	219.75536	197.56065	15.20007	0.6403380	0.20026921	2.8932987	20	4 24.2	22.7
418930 2009 DG <sub>2</sub>	15.2	X	258.96640	268.82840	333.01871	18.18627	0.0932160	0.16975101	3.2304360	20	1 13.7	20.3
418931 2009 DM <sub>6</sub>	18.1	X	94.63207	14.92447	140.54133	5.62463	0.0838834	0.28835282	2.2690980	20	6 14.9	20.9
418932 2009 DL <sub>11</sub>	18.2	X	183.87672	337.51846	125.31963	2.22528	0.0583927	0.29668708	2.2264022	20	7 22.9	20.9
418933 2009 DV <sub>20</sub>	15.5	X	25.22471	318.38449	139.26734	28.41592	0.1624282	0.17388932	3.1789774	20	—	—
418934 2009 DL <sub>21</sub>	17.9	X	347.03829	256.33416	34.21689	1.92993	0.1010713	0.29448010	2.2375122	20	7 12.4	19.7
418935 2009 DJ <sub>59</sub>	16.5	X	342.82910	225.26750	350.21406	21.66163	0.1926219	0.26705823	2.3881709	20	2 28.5	18.9
418936 2009 DU <sub>59</sub>	17.4	X	305.85737	143.51841	137.85446	7.17025	0.1053992	0.27436685	2.3455694	20	4 15.2	20.2
418937 2009 DT <sub>72</sub>	18.3	X	218.03194	302.36657	161.96491	3.00869	0.1101190	0.30512646	2.1851578	20	9 2.5	21.0
418938 2009 DB <sub>74</sub>	17.6	X	71.73665	67.89637	158.93377	7.52747	0.0945377	0.29503338	2.2347140	20	8 28.4	20.3
418939 2009 DH <sub>78</sub>	18.4	X	178.55318	102.44779	31.57610	4.42167	0.0945213	0.30202719	2.2000811	20	8 30.7	21.3
418940 2009 DA <sub>89</sub>	18.1	X	152.75819	304.46009	195.97844	2.81622	0.0834916	0.29624796	2.2286018	20	8 5.6	21.1
418941 2009 DJ <sub>92</sub>	17.6	X	343.41778	23.96162	261.56621	2.67795	0.1564550	0.28288168	2.2982618	20	6 22.7	19.1
418942 2009 DC <sub>95</sub>	17.5	X	46.44435	55.11168	139.46246	5.67394	0.0950559	0.27765087	2.3270374	20	6 1.1	20.0
418943 2009 DQ <sub>102</sub>	17.3	X	271.00199	221.57953	97.28612	4.75037	0.2093907	0.27295060	2.3536760	20	4 4.8	20.6
418944 2009 DB <sub>106</sub>	18.0	X	76.92122	348.54128	175.54759	6.38710	0.0589444	0.27860320	2.3217314	20	5 29.3	20.8
418945 2009 DA <sub>129</sub>	17.6	X	117.19317	346.35548	163.73376	3.84793	0.0800796	0.28387666	2.2928884	20	7 5.9	20.6
418946 2009 DV <sub>135</sub>	17.3	X	106.84330	209.89632	312.81291	6.81501	0.0487074	0.28415693	2.2913805	20	7 7.5	20.2
418947 2009 ED <sub>3</sub>	17.7	X	230.13649	21.57036	85.45196	4.51586	0.0828805	0.30593766	2.1812934	20	9 30.0	20.2
418948												

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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>
418961 2009 GH	17.3	X	129.24676	182.04012	355.45113	8.61477	0.1222119	0.29350944	2.2424426	20	9 2.8	20.4
418962 2009 GC <sub>6</sub>	18.3	X	211.14788	73.29637	50.78566	4.59072	0.0913628	0.30020154	2.2089918	20	9 26.0	21.1
418963 2009 HC <sub>4</sub>	15.3	X	186.61745	79.75155	78.12232	9.21809	0.0779368	0.12687089	3.9224859	20	9 23.1	21.3
418964 2009 HL <sub>13</sub>	17.5	X	53.70540	157.25770	76.67819	6.65392	0.1724380	0.28436595	2.2902575	20	8 28.5	20.3
418965 2009 HP <sub>14</sub>	17.0	X	297.44356	150.63241	136.28989	7.26552	0.1077956	0.27007961	2.3703265	20	4 10.6	20.0
418966 2009 HO <sub>21</sub>	17.6	X	52.28697	16.60478	207.61157	9.83084	0.0874288	0.28268190	2.2993445	20	7 21.1	20.4
418967 2009 HE <sub>29</sub>	17.3	X	264.83049	279.59650	35.98983	8.14749	0.1642614	0.26755007	2.3852432	20	3 30.3	20.8
418968 2009 HX <sub>34</sub>	17.5	X	347.74242	312.94280	12.36217	8.29171	0.0131686	0.29125001	2.2540251	20	9 6.6	20.1
418969 2009 HX <sub>50</sub>	17.4	X	293.25127	306.40670	71.17121	7.49530	0.1253482	0.28924890	2.2644092	20	8 17.5	19.7
418970 2009 HA <sub>56</sub>	17.8	X	17.66153	213.84955	23.99451	12.71592	0.1263262	0.27499904	2.3419733	20	6 16.4	20.3
418971 2009 HQ <sub>62</sub>	18.3	X	158.37171	342.83150	138.96829	3.75949	0.1063573	0.28888180	2.2663271	20	7 17.6	21.5
418972 2009 HV <sub>68</sub>	17.8	X	341.29446	226.19013	12.98457	1.18831	0.1502837	0.26595618	2.3947637	20	4 3.4	19.9
418973 2009 HW <sub>74</sub>	17.2	X	232.07058	156.49626	140.08611	6.80772	0.1356151	0.25519044	2.4616508	20	2 3.0	20.9
418974 2009 HE <sub>90</sub>	17.6	X	349.97406	189.95635	55.18943	1.99585	0.1596782	0.27110783	2.3643295	20	4 29.9	19.6
418975 2009 HW <sub>91</sub>	15.7	X	115.30033	302.85803	49.12446	31.65986	0.2323934	0.23113218	2.6296368	20	—	—
418976 2009 HA <sub>100</sub>	18.2	X	46.17000	184.08303	42.51460	7.43308	0.0894362	0.28031422	2.3122740	20	7 19.9	20.9
418977 2009 HM <sub>100</sub>	17.4	X	325.18488	200.09558	64.28117	5.73073	0.0871097	0.26530440	2.3986843	20	4 23.1	19.9
418978 2009 HG <sub>105</sub>	17.3	X	125.14059	5.45884	124.06724	7.17016	0.0651751	0.27672412	2.3322300	20	6 15.9	20.4
418979 2009 HJ <sub>106</sub>	13.6	X	266.63206	248.41182	68.81275	15.21905	0.1245067	0.08314505	5.1989040	20	4 21.5	20.7
418980 2009 JO <sub>7</sub>	16.1	X	239.99833	343.71299	231.72064	14.15006	0.1177540	0.23454472	2.6040677	20	—	—
418981 2009 JG <sub>8</sub>	18.0	X	105.02914	5.74288	177.65392	7.45602	0.1063119	0.28394653	2.2925123	20	8 8.6	21.2
418982 2009 JQ <sub>11</sub>	17.6	X	116.19117	52.81472	120.38542	6.25620	0.0445032	0.28193237	2.3034180	20	8 3.5	20.4
418983 2009 KS <sub>1</sub>	17.8	X	34.07779	169.97431	66.14487	2.98118	0.1804987	0.27686183	2.3314565	20	7 27.9	20.0
418984 2009 KZ <sub>1</sub>	16.8	X	331.78294	207.94586	77.81636	12.22441	0.2420093	0.26769467	2.3843842	20	5 16.8	18.7
418985 2009 KL <sub>6</sub>	17.6	X	266.36465	201.89627	121.78745	7.59193	0.1405573	0.26311992	2.4119422	20	4 16.3	21.0
418986 2009 KJ <sub>9</sub>	13.4	X	291.64984	230.41290	55.30342	22.54535	0.1442177	0.08294880	5.2071009	20	4 14.6	20.3
418987 2009 KX <sub>11</sub>	13.4	X	191.82946	315.56813	65.16210	20.93815	0.0763545	0.08338297	5.1890097	20	4 24.7	20.7
418988 2009 KT <sub>14</sub>	13.8	X	316.30255	111.67130	153.65673	18.34084	0.0916455	0.08422824	5.1542353	20	4 24.5	20.5
418989 2009 KA <sub>16</sub>	17.3	X	116.51469	56.22833	87.91622	9.51610	0.1860275	0.27932539	2.3177729	20	7 8.1	20.8
418990 2009 KY <sub>18</sub>	17.1	X	184.13268	174.82404	113.13779	6.08976	0.2045556	0.22506255	2.6767053	20	—	—
418991 2009 LB <sub>6</sub>	16.9	X	348.60707	350.81239	289.03084	6.19524	0.1105016	0.26511875	2.3998039	20	6 25.6	19.1
418992 2009 ME <sub>3</sub>	16.9	X	173.35200	44.26025	275.36308	5.04820	0.1980893	0.22766055	2.6563025	20	1 13.8	21.2
418993 2009 MS <sub>9</sub>	9.8	X	0.35754	128.56586	220.20670	68.03199	0.9709282	0.00013418	377.8805408	20	11 18.1	22.3
418994 2009 NG	15.8	X	109.22584	79.95713	282.74745	18.28152	0.3308644	0.21047478	2.7989985	20	1 20.1	20.0
418995 2009 OP	16.2	X	167.37582	352.41410	310.55293	13.35104	0.2413101	0.22291732	2.6938506	20	—	—
418996 2009 OH <sub>10</sub>	16.4	X	142.91995	22.33918	304.44613	12.91600	0.1385021	0.21778398	2.7360168	20	—	—
418997 2009 OY <sub>10</sub>	12.9	X	316.58159	155.03503	120.13300	34.56323	0.1510813	0.08311671	5.2000856	20	5 8.9	19.8
418998 2009 OY <sub>10</sub>	17.0	X	152.26139	137.82312	159.39311	12.89359	0.1975325	0.21641101	2.7475767	20	—	—
418999 2009 OE <sub>12</sub>	16.6	X	305.15511	328.90208	285.55659	14.17491	0.0737298	0.24358287	2.5392467	20	3 4.1	20.2
419000 2009 OW <sub>13</sub>	16.7	X	142.72346	353.89389	326.95701	3.99540	0.1569083	0.21828741	2.7318085	20	—	—
419001 2009 OW <sub>21</sub>	17.4	X	172.31784	83.19706	235.11221	9.85137	0.3157715	0.22497063	2.6774343	20	1 15.9	22.4
419002 2009 OS <sub>23</sub>	16.5	X	150.71102	44.48881	280.77666	10.78309	0.1332325	0.22086805	2.7104878	20	—	—
419003 2009 OC <sub>24</sub>	16.9	X	259.28691	30.18089	287.66633	12.59792	0.1197553	0.24704829	2.5154449	20	3 23.7	20.8
419004 2009 PG <sub>2</sub>	16.6	X	165.57233	36.12078	301.66588	10.98827	0.1974023	0.22660166	2.6645712	20	1 28.5	21.0
419005 2009 PQ <sub>4</sub>	16.7	X	123.61848	157.72221	186.58291	4.59472	0.1680533	0.21638685	2.7477811	20	—	—
419006 2009 PV <sub>6</sub>	16.3	X	241.79387	345.78543	272.93232	11.43885	0.0948313	0.23131808	2.6282277	20	1 2.3	20.1
419007 2009 PF <sub>8</sub>	17.0	X	228.29786	6.58687	315.23052	6.59294	0.1921869	0.23834693	2.5762994	20	2 28.2	21.3
419008 2009 PA <sub>11</sub>	16.6	X	141.72943	359.06295	12.94154	6.99467	0.3074996	0.22462205	2.6802036	20	2 28.7	21.2
419009 2009 PO <sub>16</sub>	16.6	X	173.78147	6.59478	347.14715	13.95189	0.2658623	0.22802617	2.6534623	20	2 27.7	21.3
419010 2009 PY <sub>16</sub>	17.0	X	181.20215	265.17845	76.26746	13.04405	0.2873576	0.23145678	2.6271777	20	2 22.9	22.0
419011 2009 PB <sub>17</sub>	16.9	X	164.01266	40.55223	313.06619	10.97052	0.2160337	0.22796836	2.6539108	20	2 14.9	21.3
419012 2009 PY <sub>17</sub>	18.0	X	152.73271	32.46161	2.43265	2.49913	0.1110340	0.23243905	2.6197709	20	3 19.3	21.9
419013 2009 QA <sub>3</sub>	16.4	X	219.40776	344.15351	274.41719	10.76914	0.1512126	0.22460875	2.6803094	20	—	—
419014 2009 QH <sub>5</sub>	16.4	X	62.18295	317.05223	278.52535	23.38897	0.2370313	0.273721160	2.3492541	20	8 31.9	20.2
419015 2009 QF <sub>6</sub>	17.0	X	151.32004	64.89574	256.92173	14.84912	0.3293092	0.21985687	2.7187922	20	1 7.0	21.8
419016 2009 QE <sub>7</sub>	17.4	X	139.53868	148.36923	205.54401	8.91041	0.2840611	0.22266122	2.6959158	20	1 30.5	22.0
419017 2009 QA <sub>10</sub>	17.0	X	103.28048	95.99229	251.56462	6.45705	0.2351308	0.21042922	2.7994025	20	—	—
419018 2009 QS <sub>10</sub>	17.0	X	109.71075	79.70401	267.56474	3.67161	0.1167701	0.21339543	2.7734009	20	—	—
419019 2009 QQ <sub>12</sub>	16.8	X	116.27837	41.89240	329.04188	8.37297	0.1059123	0.21798352	2.7343469	20	1 10.7	20.6
419020 2009 QH <sub>22</sub>	16.5	X	108.54722	356.42036	347.10790	13.45467	0.1904755	0.21118845	2.7926893	20	—	—
419021 2009 QR <sub>22</sub>	16.7	X	150.87069	14.88163	347.48940	11.85055	0.2052242	0.22510153	2.6763963	20	2 17.3	21.0
419022 2009 QF <sub>31</sub>	18.4	X	177.83288	167.83859	306.25062	42.41347	0.1427598	0.54482709	1.4846711	20	9 13.8	20.2
419023 2009 QT <sub>36</sub>	16.8	X	144.24306	342.53274	19.94669	14.43133	0.2006292	0.21957065	2.7211545	20	2 15.6	21.3
419024 2009 QZ <sub>36</sub>	16.9	X	194.77448	282.16437	335.84970	8.46199	0.1186299	0.21409871	2.7673241	20	—	—
419025 2009 QF <sub>39</sub>	16.9	X	11.75677	231.18934	343.72209	6.49292	0.0963061	0.24455270	2.5325289	20	4 27.2	19.7
419026 2009 QJ <sub>40</sub>	17.3	X	122.34388	90.96927	270.81872	0.34486	0.2518675	0.21762930	2.7373131	20	1 24.1	21.3
419027 2009 QP <sub>47</sub>	16.3	X	99.34589	34.79059	18.29417	9.79599	0.2125790	0.21988757	2.7185392	20	2 29.1	20.1
419028 2009 QY <sub>48</sub>	17.1	X	162.88651	22.02587	4.75819	10.31754	0.1756418	0.23161127	2.6260093	20	3 23.7	21.2
419029 2009 QA <sub>54</sub>	15.7	X	316.20163	273.87665	159.94890	9.63520	0.1189009	0.19142002	2.9817952	20	11 25.4	19.4
419030 2009 QX <sub>54</sub>	16.8	X	113.93880	170.64685	201.95269	7.07834	0.1622010	0.21789690	2.7350715	20	1 25.5	20.7
419031 2009 QB <sub>55</sub>	16.5	X	169.76809	252.19872	101.50738	13.45776	0.2829930	0.22567384	2.6718694	20	2 28.4	21.4
419032 2009 QY <sub>55</sub>	17.6	X	150.02313	136.16197	189.19512	8.38110	0.2029655	0.21751304	2.7382884	20	1 1.5	22.1
419033 2009 QT <sub>57</sub>	16.4	X	165.49121	221.85016	123.87594	19.46016	0.3744783	0.22554945	2.6728517	20	2 17.9	21.5
419034 2009 QM <sub>58</sub>	17.2	X	174.04187	125.11901</								

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>
419041 2009 RX <sub>17</sub>	17.1	X	167.86144	181.56562	171.81355	6.29811	0.0703970	0.22298807	2.6932807	20	2 9.6	21.1
419042 2009 RZ <sub>17</sub>	16.4	X	356.02103	167.85234	22.52971	10.97415	0.0349167	0.22845603	2.6501328	20	3 9.7	19.9
419043 2009 RC <sub>20</sub>	17.2	X	125.14255	150.98076	241.01772	5.81609	0.2732145	0.22187382	2.7022903	20	3 2.0	21.5
419044 2009 RT <sub>27</sub>	16.7	X	198.00665	329.58243	356.75679	12.56872	0.2856732	0.22927836	2.6437923	20	2 15.4	21.6
419045 2009 RP <sub>28</sub>	17.2	X	108.86892	254.01349	148.78909	1.69330	0.2705681	0.21940478	2.7225257	20	3 2.3	21.0
419046 2009 RN <sub>36</sub>	17.1	X	120.00975	132.26417	182.83480	11.57391	0.2193451	0.21069572	2.7970415	20	—	—
419047 2009 RT <sub>36</sub>	17.3	X	114.58385	102.00609	287.89588	6.04963	0.2331721	0.21930459	2.7233549	20	2 14.9	21.3
419048 2009 RQ <sub>41</sub>	16.9	X	159.16050	65.09557	292.30749	5.32643	0.0663644	0.22260283	2.6963873	20	2 4.8	20.7
419049 2009 RW <sub>41</sub>	16.4	X	345.74611	206.64119	285.92860	4.84153	0.0193334	0.21168633	2.7883086	20	—	—
419050 2009 RJ <sub>43</sub>	16.8	X	37.03098	256.79536	221.44161	8.23040	0.1236271	0.21749602	2.7384312	20	1 30.3	20.1
419051 2009 RO <sub>46</sub>	17.3	X	54.64678	222.30327	225.44599	2.69054	0.1745083	0.21300003	2.7768320	20	1 27.5	20.2
419052 2009 RS <sub>63</sub>	16.2	X	87.68891	248.46385	154.05815	15.71812	0.3041616	0.21487383	2.7606649	20	2 10.5	19.8
419053 2009 RP <sub>69</sub>	16.7	X	140.90063	72.33918	310.85051	11.17716	0.1736233	0.22602228	2.6691227	20	2 24.9	20.9
419054 2009 RX <sub>69</sub>	16.6	X	122.65301	40.15946	16.79734	15.30579	0.1658192	0.22229318	2.6988906	20	3 24.0	20.6
419055 2009 RX <sub>71</sub>	17.4	X	58.18033	357.08640	37.82052	2.42898	0.0761551	0.20246615	2.8723307	20	—	—
419056 2009 RN <sub>72</sub>	16.7	X	123.71651	349.31024	19.50273	4.36314	0.0860912	0.21467164	2.7623981	20	1 14.5	20.5
419057 2009 RT <sub>73</sub>	17.1	X	79.65797	230.16912	185.28969	8.95960	0.1800589	0.21291677	2.7753559	20	1 26.2	20.6
419058 2009 RS <sub>74</sub>	16.5	X	114.86745	68.95010	353.98994	5.63003	0.1230157	0.22482119	2.6786207	20	3 14.3	20.1
419059 2009 ST <sub>1</sub>	16.4	X	343.77968	238.78686	339.91515	7.56827	0.1134172	0.23846270	2.5754656	20	3 15.3	19.2
419060 2009 SL <sub>9</sub>	17.0	X	207.52944	328.41773	314.99504	5.49512	0.0189472	0.21909729	2.7250724	20	—	—
419061 2009 SX <sub>19</sub>	13.5	X	270.43287	142.01448	173.27700	29.74665	0.0762007	0.08329257	5.1927636	20	4 27.2	20.7
419062 2009 SH <sub>20</sub>	15.8	X	162.61368	65.68899	233.24261	16.65540	0.1793351	0.21301342	2.7767156	20	—	—
419063 2009 SD <sub>21</sub>	16.7	X	143.25933	27.74406	340.34536	14.03181	0.1980668	0.22193241	2.7018147	20	2 16.6	20.9
419064 2009 SY <sub>23</sub>	16.3	X	349.79058	255.19317	315.87431	6.28177	0.1608047	0.23746122	2.5827017	20	3 8.8	19.0
419065 2009 SD <sub>35</sub>	16.7	X	241.80793	55.69188	210.78338	12.79436	0.1411449	0.22104598	2.7090330	20	1 8.8	21.3
419066 2009 SK <sub>45</sub>	17.0	X	142.09166	93.59942	251.09554	3.95541	0.1751395	0.21472316	2.7619562	20	1 14.6	21.2
419067 2009 SY <sub>46</sub>	16.5	X	315.54278	343.29578	214.96514	12.40853	0.1109234	0.21735809	2.7395896	20	1 9.3	20.4
419068 2009 SL <sub>49</sub>	17.1	X	140.73297	173.35951	187.90821	11.02768	0.1516944	0.22440451	2.6819355	20	1 27.6	21.3
419069 2009 SB <sub>51</sub>	17.6	X	88.05879	26.28483	31.27190	2.18709	0.0849747	0.21965452	2.7204617	20	1 28.8	21.1
419070 2009 SR <sub>55</sub>	17.1	X	56.71094	157.98348	322.12623	6.71546	0.1225435	0.22164519	2.7041484	20	3 6.7	20.2
419071 2009 SJ <sub>58</sub>	17.3	X	108.77095	165.11511	262.40323	5.12148	0.1260247	0.22210884	2.7003838	20	3 10.7	21.2
419072 2009 SY <sub>60</sub>	17.2	X	141.51358	89.96094	283.86819	4.03809	0.0768955	0.21999339	2.7176673	20	2 6.6	21.1
419073 2009 SC <sub>61</sub>	16.5	X	85.63543	131.38686	225.04779	9.14750	0.1183079	0.20214212	2.8753993	20	—	—
419074 2009 SL <sub>61</sub>	16.6	X	68.07253	84.66486	3.27360	15.80395	0.2447613	0.21358985	2.7717176	20	3 6.9	19.7
419075 2009 SN <sub>74</sub>	16.0	X	67.54520	77.46797	193.16218	24.87447	0.1426256	0.17641704	3.1485387	20	10 11.3	20.4
419076 2009 SY <sub>78</sub>	17.1	X	156.79154	74.52458	285.39839	4.84607	0.0443745	0.22292638	2.6937776	20	2 3.0	20.8
419077 2009 SN <sub>99</sub>	17.0	X	164.29885	73.27624	218.88511	6.82029	0.2545260	0.21430239	2.7655703	20	—	—
419078 2009 SH <sub>106</sub>	16.5	X	246.77086	292.52980	340.05524	13.63804	0.1128144	0.22915581	2.6447348	20	1 27.2	20.6
419079 2009 SB <sub>110</sub>	16.3	X	153.42945	323.53114	342.79365	15.76380	0.2791281	0.21490364	2.7604096	20	—	—
419080 2009 SH <sub>114</sub>	16.7	X	99.75377	170.94454	222.81374	5.78087	0.0887577	0.21578596	2.7528799	20	1 13.5	20.3
419081 2009 SZ <sub>122</sub>	17.2	X	169.47933	11.21224	305.33058	5.02716	0.1288657	0.21643331	2.7473879	20	1 4.4	21.3
419082 2009 SQ <sub>124</sub>	16.9	X	126.56597	117.05073	218.97764	8.43011	0.1998723	0.21036671	2.7999571	20	—	—
419083 2009 SQ <sub>124</sub>	17.1	X	173.01458	110.90125	232.83613	6.63804	0.0242192	0.22103864	2.7090931	20	1 30.2	21.0
419084 2009 SK <sub>125</sub>	16.5	X	160.43672	112.62186	215.64895	10.58810	0.1363766	0.21622706	2.7491347	20	1 7.9	20.9
419085 2009 SE <sub>126</sub>	16.8	X	160.23697	8.57151	337.62440	5.79042	0.0543456	0.21921892	2.7240643	20	1 24.7	20.6
419086 2009 SY <sub>127</sub>	16.5	X	193.13819	65.34100	311.34618	12.22958	0.2164475	0.23401008	2.6808325	20	3 31.2	21.3
419087 2009 SK <sub>128</sub>	17.1	X	110.25918	129.45871	246.40692	3.32468	0.0835196	0.21273009	2.7791806	20	1 5.4	20.8
419088 2009 SQ <sub>130</sub>	16.7	X	176.10683	266.63638	29.70747	11.54501	0.1522204	0.21282616	2.7783442	20	—	—
419089 2009 SW <sub>133</sub>	16.6	X	316.58917	43.38125	45.76763	9.39901	0.0613439	0.18946704	3.0022505	20	12 13.2	20.6
419090 2009 SF <sub>140</sub>	16.3	X	190.04107	52.47079	221.13976	10.29008	0.1128144	0.21102623	2.7941202	20	—	—
419091 2009 SE <sub>141</sub>	16.9	X	30.81777	69.89587	358.21931	6.37634	0.0479097	0.20497564	2.8488389	20	—	—
419092 2009 SZ <sub>144</sub>	17.1	X	203.89373	273.88886	27.47842	3.57035	0.1339466	0.22479870	2.6787994	20	1 18.3	21.4
419093 2009 SQ <sub>146</sub>	17.0	X	355.87039	187.18297	192.07079	7.24934	0.1899676	0.18289712	3.0737235	20	11 23.2	20.4
419094 2009 SQ <sub>147</sub>	16.8	X	119.95925	233.95908	203.25659	12.80916	0.2424503	0.22732784	2.6588936	20	4 21.3	20.8
419095 2009 SQ <sub>149</sub>	16.6	X	116.66363	6.47036	343.47277	8.36097	0.2093992	0.21195863	2.7859201	20	—	—
419096 2009 SX <sub>155</sub>	16.9	X	159.35551	146.78346	190.99593	12.69706	0.1292122	0.21849306	2.7300941	20	1 16.9	21.3
419097 2009 SE <sub>156</sub>	17.3	X	140.10840	221.63600	159.26988	4.65489	0.1177639	0.22674699	2.6634325	20	2 18.1	21.2
419098 2009 SF <sub>157</sub>	17.0	X	128.39370	106.23956	202.64474	14.14549	0.1552916	0.20265623	2.8705343	20	—	—
419099 2009 SW <sub>158</sub>	17.0	X	78.08378	232.60906	219.76397	9.52596	0.2527722	0.21608061	2.7503767	20	3 22.7	20.5
419100 2009 SA <sub>159</sub>	17.5	X	146.07073	107.49845	248.69328	4.87249	0.0742680	0.21584245	2.7523995	20	1 21.2	21.6
419101 2009 SX <sub>160</sub>	17.3	X	74.63722	146.80782	293.99537	4.95503	0.0559482	0.22197338	2.7014823	20	2 3.5	20.7
419102 2009 SK <sub>165</sub>	17.6	X	147.81237	85.29899	283.58097	4.14507	0.0684707	0.22235952	2.6983538	20	2 6.3	21.4
419103 2009 SF <sub>167</sub>	16.7	X	155.74080	84.73937	263.24204	15.01920	0.2994885	0.22258465	2.6965341	20	2 3.4	21.6
419104 2009 SK <sub>171</sub>	16.9	X	159.48051	315.26510	45.70926	8.54483	0.1398486	0.22508288	2.6765442	20	2 20.2	21.2
419105 2009 SA <sub>173</sub>	16.9	X	129.04128	107.52634	206.68037	10.19734	0.1001432	0.20651878	2.8346298	20	—	—
419106 2009 SG <sub>179</sub>	16.7	X	129.12572	293.93136	158.94246	13.95395	0.0970695	0.23934859	2.5691067	20	5 8.9	20.6
419107 2009 SG <sub>180</sub>	17.3	X	96.57377	88.21741	302.53147	5.33745	0.0548027	0.21559992	2.7544633	20	1 2.4	20.8
419108 2009 SN <sub>183</sub>	16.7	X	115.20868	133.65083	243.01763	7.06301	0.1564958	0.21411990	2.7671415	20	1 20.9	20.7
419109 2009 SS <sub>183</sub>	16.9	X	143.27813	82.71571	252.83820	6.14169	0.1515939	0.21307725	2.7761611	20	1 2.8	21.0
419110 2009 SL <sub>185</sub>	17.3	X	133.06949	122.33105	244.53825	4.13676	0.0787185	0.21607341	2.7504379	20	1 20.0	21.3
419111 2009 SX <sub>188</sub>	16.0	X	148.70776	318.62223	348.62706	12.17779	0.2097934	0.21222603	2.7835794	20	—	—
419112 2009 SQ <sub>192</sub>	17.2	X	84.58292	70.18624	337.27494	4.06858	0.0530425	0.21447019	2.7641276	20	1 7.8	20.8
419113 2009 SZ <sub>192</sub>	16.7	X	87.31608	157.48751	234.02291	2.91513	0.1049974	0.21101838	2.7941895	20	—	—
419114 2009 SA <sub>193</sub>	17.6	X	80.									

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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>
419121 2009 <i>SL</i> <sub>211</sub>	17.0	X	105.85195	189.64410	177.94226	2.57446	0.0993823	0.20992983	2.8038404	20	—	—
419122 2009 <i>SH</i> <sub>213</sub>	16.8	X	73.77423	16.95815	34.67568	6.21678	0.0459011	0.21045393	2.7991835	20	—	—
419123 2009 <i>SK</i> <sub>214</sub>	17.3	X	131.18372	292.92663	70.13282	1.09752	0.0855696	0.21502726	2.7593515	20	1 15.3	21.1
419124 2009 <i>SO</i> <sub>216</sub>	16.4	X	318.60256	207.02782	184.93320	27.49520	0.1312954	0.17887603	3.1196171	20	9 29.4	19.9
419125 2009 <i>SP</i> <sub>227</sub>	17.1	X	141.69412	255.29254	91.66537	1.81739	0.0813635	0.21421100	2.7663569	20	1 7.2	21.0
419126 2009 <i>SK</i> <sub>231</sub>	16.6	X	74.16711	64.23970	353.71763	11.29491	0.0284534	0.21660018	2.7459767	20	1 5.3	20.4
419127 2009 <i>SX</i> <sub>232</sub>	16.9	X	181.60371	320.54458	22.26480	14.30692	0.2266421	0.22770303	2.6559721	20	2 24.4	21.6
419128 2009 <i>SB</i> <sub>239</sub>	16.6	X	124.63365	85.25546	260.24790	12.99909	0.2721862	0.21528396	2.7515762	20	1 8.1	20.9
419129 2009 <i>SU</i> <sub>240</sub>	16.6	X	132.03566	125.22004	260.55628	10.53102	0.1531661	0.22101036	2.7093241	20	2 15.6	20.8
419130 2009 <i>SK</i> <sub>242</sub>	16.8	X	122.29090	32.83559	302.58563	6.63059	0.2269534	0.21079201	2.7961896	20	—	—
419131 2009 <i>SZ</i> <sub>242</sub>	16.8	X	136.30960	41.59651	345.08255	12.95301	0.2779490	0.22260481	2.6963713	20	3 7.9	21.3
419132 2009 <i>SC</i> <sub>245</sub>	16.4	X	113.35653	5.71439	35.79242	14.37892	0.1436885	0.21732758	2.7398460	20	2 25.6	20.5
419133 2009 <i>SO</i> <sub>246</sub>	16.8	X	193.68840	318.84937	21.94079	13.21529	0.1962241	0.22927722	2.6438011	20	2 29.9	21.4
419134 2009 <i>ST</i> <sub>250</sub>	16.7	X	21.03402	138.67049	32.10556	15.38883	0.0565204	0.22667220	2.6640183	20	3 21.8	20.1
419135 2009 <i>SX</i> <sub>254</sub>	16.5	X	109.66405	334.62210	33.32095	8.64700	0.2313358	0.21262032	2.7801370	20	1 18.1	20.5
419136 2009 <i>SR</i> <sub>265</sub>	16.2	X	292.36593	272.46821	20.40317	13.57065	0.1160624	0.23876490	2.5732920	20	4 9.4	19.6
419137 2009 <i>SR</i> <sub>265</sub>	16.5	X	315.97108	244.00772	220.98467	9.46141	0.1639726	0.18845328	3.0130077	20	12 30.2	19.9
419138 2009 <i>SH</i> <sub>269</sub>	17.1	X	130.84527	169.46564	198.12762	5.11360	0.0540485	0.21717729	2.7411098	20	1 14.8	20.9
419139 2009 <i>SV</i> <sub>274</sub>	15.7	X	52.56420	295.29823	17.55218	17.25648	0.2350184	0.18828785	3.0147723	20	11 23.2	20.3
419140 2009 <i>SZ</i> <sub>278</sub>	17.2	X	171.44573	298.63386	51.82364	3.93375	0.1115193	0.22396857	2.6854145	20	2 15.2	21.3
419141 2009 <i>SD</i> <sub>279</sub>	17.0	X	54.88225	286.00788	175.66431	9.85443	0.1218284	0.21751215	2.7382958	20	2 8.3	20.3
419142 2009 <i>SU</i> <sub>282</sub>	16.9	X	151.57122	316.64127	46.04465	7.08836	0.1062831	0.22123404	2.7074976	20	2 10.8	21.0
419143 2009 <i>SX</i> <sub>287</sub>	16.5	X	6.26843	312.82730	218.18649	13.92240	0.0857324	0.22411078	2.6842783	20	2 15.9	20.0
419144 2009 <i>SK</i> <sub>288</sub>	16.7	X	104.69176	114.53297	258.38721	4.12696	0.0572569	0.21002453	2.8029974	20	—	—
419145 2009 <i>SF</i> <sub>290</sub>	17.3	X	83.54631	352.47006	69.16175	5.02903	0.0909455	0.21423464	2.7661534	20	1 30.2	20.9
419146 2009 <i>SC</i> <sub>294</sub>	17.3	X	49.01255	283.86788	131.61457	2.19935	0.1538584	0.20639999	2.8357173	20	—	—
419147 2009 <i>SD</i> <sub>294</sub>	17.1	X	165.17028	308.08809	26.77006	5.26410	0.1239346	0.22029387	2.7151955	20	1 22.2	21.3
419148 2009 <i>SA</i> <sub>302</sub>	16.1	X	31.26417	114.60739	351.69680	24.92904	0.1427834	0.21604777	2.7506554	20	1 16.7	19.7
419149 2009 <i>SG</i> <sub>316</sub>	17.5	X	73.57656	342.19397	63.64180	0.83672	0.0744139	0.21342346	2.7731580	20	—	—
419150 2009 <i>SC</i> <sub>319</sub>	17.0	X	192.95584	41.79352	253.81405	2.91344	0.0749865	0.21452611	2.7636473	20	—	—
419151 2009 <i>SJ</i> <sub>324</sub>	17.1	X	128.95017	175.60949	110.24989	3.78233	0.1398376	0.20026211	2.8933670	20	12 31.1	21.7
419152 2009 <i>SK</i> <sub>325</sub>	17.2	X	148.91460	110.96847	257.90470	5.22134	0.0384714	0.22084230	2.7106984	20	2 3.7	21.0
419153 2009 <i>SB</i> <sub>329</sub>	16.8	X	180.54368	253.85807	95.26041	5.39971	0.2699245	0.23091806	2.6312621	20	2 27.7	21.5
419154 2009 <i>SO</i> <sub>335</sub>	16.8	X	139.06274	91.48305	215.92959	8.50020	0.0630436	0.20320505	2.8653634	20	—	—
419155 2009 <i>SD</i> <sub>337</sub>	16.8	X	83.59078	86.98592	308.51671	6.49914	0.1932598	0.21205459	2.7850795	20	1 11.1	20.2
419156 2009 <i>SM</i> <sub>337</sub>	17.1	X	141.17314	314.27061	65.01416	6.20481	0.2398262	0.22226337	2.6991320	20	3 3.7	21.5
419157 2009 <i>SN</i> <sub>337</sub>	16.7	X	182.62765	332.87213	2.75074	12.89152	0.2996598	0.22954974	2.6417082	20	2 16.7	21.6
419158 2009 <i>SC</i> <sub>341</sub>	17.1	X	100.50078	254.92944	187.82795	2.09748	0.0996912	0.22394320	2.6856173	20	3 18.5	20.7
419159 2009 <i>ST</i> <sub>344</sub>	15.9	X	68.53016	279.71135	26.59201	16.66130	0.1180787	0.18642095	3.0348663	20	11 18.5	20.5
419160 2009 <i>SZ</i> <sub>344</sub>	17.2	X	89.55995	356.79632	55.72135	4.73309	0.0977497	0.21515356	2.7582716	20	1 27.7	20.8
419161 2009 <i>SK</i> <sub>354</sub>	16.7	X	162.15213	99.58025	230.31819	4.79639	0.0573511	0.21145047	2.7903817	20	1 6.6	20.7
419162 2009 <i>SY</i> <sub>354</sub>	16.5	X	122.19011	41.74300	35.61588	14.45231	0.0569643	0.23042492	2.6350150	20	4 5.3	20.1
419163 2009 <i>SY</i> <sub>357</sub>	16.5	X	82.56532	70.04865	38.84027	17.09893	0.1648229	0.22421741	2.6834273	20	4 12.1	20.0
419164 2009 <i>SU</i> <sub>359</sub>	16.4	X	164.80204	191.56863	189.54000	13.46649	0.1672971	0.22629110	2.6670085	20	3 17.1	20.7
419165 2009 <i>SA</i> <sub>361</sub>	16.7	X	161.21591	160.45140	223.09486	13.30196	0.1799571	0.22883527	2.6472040	20	3 14.4	21.2
419166 2009 <i>TB</i> <sub>5</sub>	16.9	X	125.97545	316.00676	46.32400	3.17379	0.2437618	0.21376498	2.7702036	20	1 28.9	21.1
419167 2009 <i>TQ</i> <sub>5</sub>	16.7	X	81.85387	214.85632	206.32635	8.78341	0.2787439	0.21100575	2.7943010	20	2 20.8	20.4
419168 2009 <i>TV</i> <sub>5</sub>	16.9	X	126.40786	209.71267	190.06387	6.27058	0.2154089	0.22136840	2.7064020	20	3 8.4	21.1
419169 2009 <i>TP</i> <sub>9</sub>	16.7	X	45.25551	267.96900	204.63601	14.29049	0.1794118	0.21498341	2.7597268	20	2 8.5	19.9
419170 2009 <i>TK</i> <sub>13</sub>	17.4	X	303.52402	290.41797	106.09173	4.07550	0.1981091	0.26566055	2.3965399	20	9 22.1	19.3
419171 2009 <i>TG</i> <sub>20</sub>	16.5	X	123.14539	77.72384	296.74938	10.47726	0.1673375	0.21783777	2.7355664	20	1 29.1	20.5
419172 2009 <i>TX</i> <sub>25</sub>	16.8	X	123.52394	37.42987	341.56976	8.86624	0.2266097	0.21471277	2.7620453	20	2 13.8	20.9
419173 2009 <i>TY</i> <sub>29</sub>	16.9	X	116.94466	260.98534	164.16537	12.96379	0.2588495	0.22362155	2.6881920	20	4 7.5	21.1
419174 2009 <i>TA</i> <sub>31</sub>	17.5	X	83.10340	138.83110	298.47124	6.03661	0.2930276	0.21476655	2.7615842	20	3 15.9	21.1
419175 2009 <i>TP</i> <sub>32</sub>	16.0	X	59.44659	140.23413	226.83980	11.19642	0.0724108	0.19608749	2.9342883	20	—	—
419176 2009 <i>TH</i> <sub>33</sub>	16.3	X	132.59101	342.38589	47.48706	13.37581	0.1311832	0.21941971	2.7224022	20	3 1.8	20.5
419177 2009 <i>TK</i> <sub>33</sub>	16.7	X	112.21920	229.50579	182.87874	4.86729	0.1655541	0.21748347	2.7385365	20	3 3.6	20.5
419178 2009 <i>TU</i> <sub>33</sub>	16.7	X	99.32207	106.23609	265.36421	6.47253	0.2451401	0.21031652	2.8004025	20	1 9.9	20.4
419179 2009 <i>TJ</i> <sub>39</sub>	16.2	X	121.19220	308.01759	70.45427	29.29630	0.2552859	0.21362801	2.7713875	20	2 24.9	21.1
419180 2009 <i>TM</i> <sub>40</sub>	16.5	X	92.97298	344.42838	96.54687	10.29433	0.1204473	0.22096425	2.7097010	20	3 15.2	20.2
419181 2009 <i>TN</i> <sub>40</sub>	16.2	X	149.73224	317.60761	48.07952	26.20200	0.1130187	0.22053033	2.7132543	20	2 24.6	20.9
419182 2009 <i>TN</i> <sub>42</sub>	16.4	X	62.04375	160.15950	239.00005	11.69147	0.0758100	0.20094828	2.8867767	20	—	—
419183 2009 <i>TL</i> <sub>43</sub>	16.0	X	313.89536	316.50557	124.50919	17.40027	0.2378872	0.18169823	3.0872295	20	11 24.5	19.4
419184 2009 <i>TF</i> <sub>47</sub>	16.0	X	84.32709	76.56797	261.97261	8.76505	0.2149480	0.19728043	2.9224475	20	—	—
419185 2009 <i>UP</i> <sub>2</sub>	15.8	X	6.45544	306.75439	43.34738	23.25962	0.2337399	0.18077609	3.0977193	20	11 7.2	19.0
419186 2009 <i>UY</i> <sub>11</sub>	16.9	X	84.73509	309.15206	59.83662	11.51741	0.3312556	0.20504579	2.8481891	20	1 1.6	20.4
419187 2009 <i>UA</i> <sub>24</sub>	16.5	X	331.64668	270.39912	208.12360	14.38080	0.1315868	0.19726614	2.9225886	20	—	—
419188 2009 <i>UP</i> <sub>27</sub>	16.9	X	108.07878	211.98672	203.08801	9.40500	0.1912440	0.21570138	2.7535994	20	3 4.1	20.9
419189 2009 <i>UG</i> <sub>28</sub>	17.2	X	90.71614	257.91746	106.16147	3.04854	0.1122594	0.20048404	2.8912314	20	—	—
419190 2009 <i>UX</i> <sub>30</sub>	16.5	X	141.84088	343.09959	53.60078	5.35844	0.1364512	0.22124224	2.7074307	20	3 15.8	20.6
419191 2009 <i>UA</i> <sub>33</sub>	16.4	X	45.48589	82.38110	48.78536	8.92391	0.2426925	0.21251410	2.7810634	20	3 25.1	19.1



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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>
419201 2009 UW <sub>82</sub>	17.0	X	117.33764	320.42303	73.01825	5.68435	0.1734679	0.21373396	2.7704716	20	2 19.6	21.1
419202 2009 UV <sub>84</sub>	17.2	X	79.58979	292.66580	135.82821	2.47077	0.2530996	0.20966694	2.8061836	20	2 26.6	20.6
419203 2009 UN <sub>90</sub>	16.4	X	229.13089	247.83063	67.16475	14.14878	0.1873397	0.23349598	2.6118593	20	2 29.8	21.0
419204 2009 UC <sub>96</sub>	16.9	X	143.19836	164.27391	148.52086	2.64482	0.0528866	0.20250371	2.8719755	20	—	—
419205 2009 UN <sub>99</sub>	16.6	X	79.27301	46.35591	50.76897	8.17477	0.1597530	0.21577344	2.7529864	20	3 22.7	20.1
419206 2009 UQ <sub>101</sub>	16.2	X	50.85894	56.19782	56.25947	15.02349	0.1283272	0.21312704	2.7757287	20	2 28.1	19.7
419207 2009 UH <sub>103</sub>	17.3	X	71.42295	1.17962	48.11891	2.73385	0.0963128	0.20453188	2.8529579	20	—	—
419208 2009 UO <sub>107</sub>	16.8	X	13.37442	267.17137	127.91519	11.50625	0.3021306	0.18939273	3.0030358	20	—	—
419209 2009 UJ <sub>110</sub>	17.0	X	88.54254	198.49565	236.28083	7.22433	0.2062767	0.21286546	2.7780022	20	3 6.5	20.8
419210 2009 UD <sub>113</sub>	16.6	X	108.75366	140.47535	239.15121	11.24421	0.1527723	0.21002396	2.8030025	20	1 16.1	20.6
419211 2009 UJ <sub>113</sub>	17.3	X	174.74828	281.87313	41.83381	5.43317	0.1096864	0.21884908	2.7271324	20	1 17.3	21.5
419212 2009 UY <sub>117</sub>	15.8	X	325.03760	168.09407	244.07861	9.97381	0.0661967	0.18116974	3.0932304	20	11 6.8	19.9
419213 2009 UB <sub>130</sub>	16.7	X	182.59507	347.44079	62.36945	15.11841	0.2452357	0.23261738	2.6184318	20	5 10.4	21.4
419214 2009 UO <sub>132</sub>	16.2	X	157.16369	110.69312	266.36448	11.99301	0.1271803	0.22248035	2.6973767	20	2 26.6	20.6
419215 2009 UR <sub>133</sub>	17.5	X	173.92603	255.87741	54.78234	5.21189	0.0568999	0.21136183	2.7911618	20	—	—
419216 2009 UY <sub>134</sub>	17.3	X	117.26581	163.70967	180.43766	9.10528	0.3107617	0.20952744	2.8074290	20	1 5.3	21.6
419217 2009 UH <sub>137</sub>	16.4	X	109.08409	79.72019	300.21811	5.29055	0.0671856	0.21356763	2.7719098	20	1 7.1	20.1
419218 2009 UQ <sub>146</sub>	16.2	X	277.92286	94.00974	59.09790	14.56740	0.1159277	0.18405945	3.0607696	20	12 31.9	20.2
419219 2009 UB <sub>150</sub>	16.4	X	339.95406	127.47603	272.67824	11.16606	0.1842550	0.18004196	3.1061343	20	11 16.6	19.9
419220 2009 UN <sub>151</sub>	17.2	X	149.13548	298.08233	64.11704	6.29853	0.2300989	0.22109141	2.7886619	20	2 18.2	21.7
419221 2009 UY <sub>151</sub>	15.6	X	12.51853	243.42407	253.30107	20.42939	0.1141341	0.21104130	2.7939872	20	1 12.4	19.1
419222 2009 UM <sub>152</sub>	17.0	X	64.70590	76.88897	52.83791	8.90617	0.0539167	0.22240365	2.6979968	20	3 29.1	20.5
419223 2009 UO <sub>154</sub>	16.7	X	348.11479	200.16819	248.36870	3.36418	0.1479299	0.18756637	3.0224983	20	—	—
419224 2009 UY <sub>154</sub>	17.5	X	195.35831	335.88882	22.07913	6.06285	0.1064200	0.22765343	2.6563579	20	3 18.5	21.6
419225 2009 VP <sub>4</sub>	16.9	X	183.36143	342.51033	358.06758	3.17610	0.2313414	0.21752456	2.7381917	20	2 11.6	20.6
419226 2009 VF <sub>7</sub>	16.0	X	309.71999	166.40341	258.42944	8.40824	0.0950787	0.17749157	3.1358184	20	10 27.8	20.2
419227 2009 VL <sub>7</sub>	16.5	X	121.68172	6.42022	39.86498	9.84631	0.1621095	0.21740361	2.7392072	20	3 11.6	20.6
419228 2009 VT <sub>9</sub>	16.7	X	36.77541	147.03278	33.21401	13.68448	0.1852777	0.22701067	2.6613697	20	5 3.1	19.3
419229 2009 VP <sub>11</sub>	16.5	X	64.87195	289.05259	68.65061	9.03711	0.0631189	0.18873386	3.0100208	20	—	—
419230 2009 VB <sub>17</sub>	16.7	X	345.86125	347.52618	60.96655	8.49777	0.2162769	0.18104292	3.0946748	20	12 12.6	19.9
419231 2009 VO <sub>23</sub>	16.5	X	108.33500	352.58040	78.70298	10.31870	0.1558356	0.21654613	2.7464335	20	3 28.1	20.6
419232 2009 VT <sub>23</sub>	17.2	X	28.44342	165.97087	312.77398	3.22902	0.2891157	0.20230380	2.8738671	20	1 24.8	19.1
419233 2009 VW <sub>23</sub>	16.6	X	356.19443	114.31718	276.92510	6.66053	0.1407022	0.17957829	3.1114786	20	12 1.6	20.3
419234 2009 VB <sub>24</sub>	16.2	X	283.91813	53.10892	50.22824	12.61536	0.2413343	0.17363483	3.1820829	20	10 22.4	20.1
419235 2009 VE <sub>24</sub>	16.2	X	31.09239	55.42873	52.89844	11.03316	0.0728504	0.20403376	2.8575995	20	1 13.8	19.9
419236 2009 VN <sub>29</sub>	15.5	X	29.84472	98.19779	239.10992	14.56111	0.0211422	0.17574205	3.1565954	20	10 27.3	20.1
419237 2009 VX <sub>30</sub>	16.8	X	41.50127	39.08159	9.85019	5.81622	0.0888566	0.19635596	2.9316131	20	—	—
419238 2009 VO <sub>31</sub>	17.1	X	31.66339	99.77909	31.23644	9.11359	0.1177839	0.21104257	2.7939760	20	2 15.9	20.4
419239 2009 VJ <sub>39</sub>	16.3	X	170.65756	152.51878	241.36697	7.30312	0.1977913	0.22950671	2.6420384	20	4 6.7	20.8
419240 2009 VY <sub>39</sub>	16.0	X	25.27397	130.13141	105.58863	9.63807	0.0788208	0.18682269	3.0305140	20	12 30.3	20.1
419241 2009 VW <sub>41</sub>	17.1	X	81.59356	331.63715	106.35307	3.79671	0.1651082	0.21172293	2.7879873	20	2 28.8	20.6
419242 2009 VU <sub>42</sub>	16.1	X	356.51194	11.51954	60.37604	10.76854	0.2134774	0.18799934	3.0178559	20	—	—
419243 2009 VR <sub>43</sub>	16.4	X	302.71103	64.56212	61.11236	27.52481	0.2539596	0.18368738	3.0649014	20	12 20.6	19.7
419244 2009 VY <sub>47</sub>	16.4	X	90.01392	94.47414	208.32619	7.39175	0.0833054	0.18262829	3.0767392	20	12 7.2	21.0
419245 2009 VS <sub>50</sub>	15.7	X	19.88364	287.46056	54.67570	16.76478	0.1152665	0.17604623	3.1529583	20	11 4.6	19.8
419246 2009 VP <sub>52</sub>	17.2	X	284.48134	336.99753	229.09006	3.60817	0.0453330	0.20922019	2.8101768	20	—	—
419247 2009 VO <sub>59</sub>	16.4	X	40.88965	332.25610	95.30231	6.77243	0.2170192	0.20026528	2.8933365	20	—	—
419248 2009 VT <sub>61</sub>	15.8	X	60.97830	74.39132	239.04824	17.81865	0.0973279	0.17849375	3.1240697	20	11 18.1	20.1
419249 2009 VJ <sub>62</sub>	16.0	X	264.86154	60.59731	58.82766	10.55250	0.0493174	0.17623943	3.1506536	20	11 10.9	20.3
419250 2009 VP <sub>62</sub>	15.7	X	285.22940	56.99196	68.27411	13.43782	0.0111425	0.18326179	3.0696447	20	12 17.6	19.9
419251 2009 VS <sub>63</sub>	17.2	X	343.92595	29.27497	39.88815	1.07566	0.1754202	0.18340744	3.0680193	20	—	—
419252 2009 VD <sub>64</sub>	16.1	X	69.98788	192.99650	242.34634	14.36458	0.1158369	0.20648596	2.8349302	20	1 26.4	19.9
419253 2009 VB <sub>68</sub>	16.4	X	112.05104	338.82994	49.84344	7.09916	0.0933250	0.20872704	2.8146015	20	1 28.0	20.3
419254 2009 VE <sub>70</sub>	16.7	X	108.39228	356.53961	50.93458	6.72664	0.1514964	0.21177014	2.7875729	20	2 24.8	20.6
419255 2009 VW <sub>77</sub>	14.8	X	241.10213	239.84539	253.67309	25.31308	0.2235300	0.17301909	3.1896280	20	9 26.7	20.2
419256 2009 VP <sub>81</sub>	16.3	X	6.89904	82.72995	36.76847	15.21778	0.1070821	0.20411329	2.8568572	20	—	—
419257 2009 VK <sub>85</sub>	17.2	X	326.82009	303.55473	92.32088	3.19566	0.1722575	0.17429347	3.1740613	20	10 17.6	20.8
419258 2009 VP <sub>87</sub>	17.0	X	35.83394	221.30032	179.70374	3.77002	0.1104881	0.19151731	2.9807853	20	—	—
419259 2009 VX <sub>92</sub>	16.6	X	168.29664	294.27749	74.68079	16.11713	0.2525864	0.22689172	2.6622998	20	3 19.2	21.5
419260 2009 VA <sub>94</sub>	16.7	X	22.07214	330.96555	66.72526	11.02492	0.1354315	0.19083322	2.9879047	20	—	—
419261 2009 VT <sub>94</sub>	17.0	X	115.90139	20.69724	326.45815	1.32909	0.0666418	0.19983447	2.8974933	20	—	—
419262 2009 VT <sub>99</sub>	16.0	X	53.97017	282.34156	53.70975	9.15187	0.1696703	0.18276431	3.0752124	20	12 16.9	20.6
419263 2009 VH <sub>100</sub>	16.0	X	320.27628	9.20749	66.37427	14.66061	0.0940578	0.18004634	3.1060839	20	11 29.2	19.7
419264 2009 VX <sub>101</sub>	16.9	X	109.24622	86.16158	267.71164	7.65785	0.0793386	0.20110815	2.8852465	20	—	—
419265 2009 VU <sub>105</sub>	16.4	X	169.48105	321.50423	22.38143	15.91423	0.2106469	0.21906556	2.7253356	20	2 17.0	21.2
419266 2009 VR <sub>108</sub>	16.8	X	100.75755	64.24263	53.18834	24.18595	0.2605622	0.22483828	2.6784849	20	5 22.5	20.8
419267 2009 VS <sub>109</sub>	16.0	X	24.23476	333.70129	66.38775	13.84744	0.1235423	0.19009930	2.9955900	20	—	—
419268 2009 VW <sub>110</sub>	16.0	X	26.88954	324.35484	31.37949	16.94582	0.1061377	0.18347065	3.0673145	20	11 25.6	20.3
419269 2009 VU <sub>112</sub>	16.7	X	333.73075	11.87302	67.51440	7.99869	0.1104968	0.18260815	3.0769654	20	12 25.8	20.5
419270 2009 VS <sub>114</sub>	16.1	X	325.84548	184.84625	297.12919	9.03073	0.1212336	0.18206850	3.0830424	20	—	—
419271 2009 VX <sub>115</sub>	16.5	X	351.41061	325.33957	78.64488	6.65586	0.1397189	0.18009551	3.1055186	20	12 10.5	20.1
419272 2009 WC <sub>1</sub>	17.8	X	202.70042	351.73609	246.32308	20.06268	0.0754246	0.37925057	1.8902470	20	—	—
419273 2009 WN <sub>3</sub>	16.8	X	297.41215	75.63603	60.34663	10.46107	0.0458498	0.19138284	2.9821814	20	—	—
419274 2009 WY <sub>3</sub>	17.9	X	245.65794	351.10525	104.							

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>
419281 2009 <i>WB</i> <sub>15</sub>	16.6	X	353.02930	180.53701	236.91052	13.93842	0.1210551	0.18306830	3.0718071	20	12 27.7	20.5
419282 2009 <i>WV</i> <sub>15</sub>	15.8	X	341.53824	14.89239	126.46274	6.98816	0.1585912	0.18543577	3.0456059	20	—	—
419283 2009 <i>WM</i> <sub>21</sub>	16.6	X	60.21771	242.33294	170.23753	6.13793	0.0654684	0.20187229	2.8779611	20	—	—
419284 2009 <i>WM</i> <sub>22</sub>	15.9	X	78.47849	241.49684	86.49313	12.31127	0.0482303	0.18188264	3.0851424	20	12 19.9	20.2
419285 2009 <i>WV</i> <sub>23</sub>	16.9	X	84.25598	344.65910	30.09893	3.89666	0.2056220	0.20219923	2.8748579	20	—	—
419286 2009 <i>WN</i> <sub>24</sub>	16.1	X	130.13796	218.71212	68.85158	11.50919	0.0765891	0.19070009	2.9892950	20	12 31.3	20.7
419287 2009 <i>WQ</i> <sub>28</sub>	16.2	X	25.14692	308.81955	244.52762	13.18744	0.0434975	0.22639566	2.6661873	20	4 17.8	19.7
419288 2009 <i>WR</i> <sub>30</sub>	16.5	X	41.95106	152.96904	243.60692	12.78817	0.0896656	0.19176830	2.9781838	20	—	—
419289 2009 <i>WD</i> <sub>31</sub>	17.1	X	343.11682	311.47933	101.48584	2.27362	0.1563986	0.18111242	3.0938831	20	12 9.8	20.5
419290 2009 <i>WB</i> <sub>33</sub>	16.4	X	59.71392	356.97173	72.78211	11.32035	0.0355746	0.20240560	2.8729035	20	1 2.5	20.2
419291 2009 <i>WQ</i> <sub>33</sub>	16.7	X	29.64826	356.51739	97.41091	3.49113	0.1339981	0.19973155	2.8984886	20	—	—
419292 2009 <i>WV</i> <sub>33</sub>	16.7	X	56.86596	127.40643	239.81045	9.16778	0.0629300	0.18706617	3.0278839	20	—	—
419293 2009 <i>WR</i> <sub>34</sub>	16.5	X	335.16286	320.32711	82.85399	2.77989	0.0870592	0.17431713	3.1737741	20	11 10.2	20.4
419294 2009 <i>WR</i> <sub>34</sub>	16.1	X	225.30968	327.00258	267.16635	8.52982	0.0264993	0.19144904	2.9814939	20	—	—
419295 2009 <i>WG</i> <sub>35</sub>	16.9	X	274.41562	276.38748	28.63285	13.91193	0.1056612	0.23841423	2.5758146	20	4 6.1	20.4
419296 2009 <i>WX</i> <sub>35</sub>	17.1	X	66.80385	199.41355	189.99210	1.70661	0.0752996	0.20347813	2.8627992	20	—	—
419297 2009 <i>WK</i> <sub>40</sub>	16.7	X	108.63047	304.67479	41.75303	2.38399	0.0929553	0.19641525	2.9310231	20	—	—
419298 2009 <i>WQ</i> <sub>41</sub>	16.8	X	323.14826	203.54758	300.32455	2.63873	0.1316133	0.19203236	2.9754531	20	—	—
419299 2009 <i>WX</i> <sub>42</sub>	16.2	X	159.58939	305.50487	81.61221	17.80104	0.0640466	0.22059552	2.7127197	20	3 24.4	20.5
419300 2009 <i>WA</i> <sub>47</sub>	16.1	X	43.32503	4.06637	77.31812	16.32967	0.1134508	0.20363369	2.8613411	20	—	—
419301 2009 <i>WG</i> <sub>47</sub>	16.8	X	69.07852	315.85528	105.64140	9.09698	0.3298612	0.20540341	2.8448822	20	2 16.1	19.9
419302 2009 <i>WE</i> <sub>48</sub>	17.4	X	11.01875	333.46016	150.79793	1.82052	0.1620499	0.20073491	2.8888220	20	—	—
419303 2009 <i>WQ</i> <sub>49</sub>	16.8	X	329.40452	333.15753	126.53603	10.51513	0.1198982	0.18607075	3.0386731	20	—	—
419304 2009 <i>WV</i> <sub>50</sub>	16.4	X	203.53126	117.97686	54.39439	12.57358	0.0644437	0.17467212	3.1694725	20	11 2.8	21.0
419305 2009 <i>WO</i> <sub>59</sub>	16.6	X	231.62492	194.38764	77.94821	4.97020	0.0583517	0.21165219	2.7886084	20	1 13.7	20.6
419306 2009 <i>WN</i> <sub>61</sub>	17.0	X	99.06151	240.79252	193.60342	5.41268	0.0597340	0.21645156	2.7472334	20	2 28.6	20.8
419307 2009 <i>WJ</i> <sub>66</sub>	16.5	X	151.05849	310.42494	58.53704	15.30816	0.0758591	0.21693960	2.7431117	20	2 19.6	20.8
419308 2009 <i>WQ</i> <sub>71</sub>	16.7	X	315.09431	66.81431	67.92719	15.69243	0.3617676	0.18508717	3.0494288	20	—	—
419309 2009 <i>WM</i> <sub>72</sub>	17.0	X	83.16226	226.65868	117.07200	2.33768	0.1363852	0.19304678	2.9650203	20	—	—
419310 2009 <i>WN</i> <sub>74</sub>	15.8	X	175.41455	142.51126	87.28484	7.95366	0.1247905	0.18173327	3.0868327	20	12 5.6	20.7
419311 2009 <i>WS</i> <sub>75</sub>	16.3	X	87.67415	287.22242	78.15799	12.58280	0.1256998	0.19795328	2.9158214	20	—	—
419312 2009 <i>WZ</i> <sub>75</sub>	17.0	X	51.53741	334.36779	133.37308	3.43048	0.0860636	0.21003243	2.8029272	20	2 11.1	20.2
419313 2009 <i>WZ</i> <sub>79</sub>	18.1	X	195.84535	359.06965	239.95095	18.68732	0.0596231	0.37556758	1.9025846	20	—	—
419314 2009 <i>WN</i> <sub>82</sub>	16.5	X	199.92414	357.74461	339.84776	5.25944	0.0174966	0.21847259	2.7302646	20	2 26.4	20.2
419315 2009 <i>WH</i> <sub>83</sub>	16.7	X	188.51230	250.66083	21.00074	7.38089	0.0183900	0.19820045	2.9133967	20	—	—
419316 2009 <i>WJ</i> <sub>83</sub>	15.7	X	79.04315	88.12063	271.40778	8.68849	0.1492387	0.19613387	2.9338258	20	—	—
419317 2009 <i>WM</i> <sub>85</sub>	16.5	X	334.27143	34.19889	36.61072	11.27105	0.0338120	0.18225595	3.0809282	20	12 12.0	20.8
419318 2009 <i>WM</i> <sub>87</sub>	16.6	X	11.07353	118.09676	283.62821	6.35196	0.0773647	0.18514819	3.0487588	20	12 31.3	20.6
419319 2009 <i>WS</i> <sub>90</sub>	17.2	X	100.52841	225.97063	191.42777	7.69478	0.2209679	0.21355430	2.7720251	20	3 3.4	21.0
419320 2009 <i>WY</i> <sub>93</sub>	16.0	X	340.01707	233.87367	203.35718	9.43528	0.0495016	0.18591917	3.0403244	20	12 29.6	20.2
419321 2009 <i>WG</i> <sub>96</sub>	16.7	X	317.84271	220.17788	60.93160	6.04943	0.1860361	0.23862913	2.5742679	20	4 21.6	19.4
419322 2009 <i>WO</i> <sub>101</sub>	16.5	X	64.11603	266.22463	228.30935	13.46316	0.1284172	0.22105464	2.7089623	20	4 7.2	19.9
419323 2009 <i>WU</i> <sub>104</sub>	16.1	X	268.94227	123.04800	11.34307	11.89090	0.0294681	0.18022023	3.1040856	20	12 4.3	20.6
419324 2009 <i>WV</i> <sub>104</sub>	15.8	X	325.47659	154.32618	265.98355	8.66139	0.0999511	0.18153089	3.0891264	20	11 17.3	19.6
419325 2009 <i>WY</i> <sub>110</sub>	16.2	X	338.36961	148.96522	72.05537	15.38136	0.0453650	0.22388424	2.6860888	20	3 29.8	19.9
419326 2009 <i>WR</i> <sub>119</sub>	16.4	X	137.16052	207.57720	64.70596	11.55876	0.0786801	0.18573407	3.0423441	20	12 18.9	21.0
419327 2009 <i>WR</i> <sub>128</sub>	17.5	X	92.22795	344.44515	33.54781	2.41944	0.0839167	0.20266243	2.8704758	20	—	—
419328 2009 <i>WZ</i> <sub>131</sub>	16.5	X	124.85242	294.99688	63.90443	2.74588	0.1998474	0.20477005	2.8507454	20	1 19.4	20.8
419329 2009 <i>WX</i> <sub>133</sub>	16.9	X	55.23971	181.40160	252.37535	3.56182	0.1271403	0.20508719	2.8478057	20	1 7.6	20.2
419330 2009 <i>WO</i> <sub>134</sub>	16.2	X	46.00103	304.84943	99.93532	11.82744	0.1193086	0.19620513	2.9331154	20	—	—
419331 2009 <i>WE</i> <sub>149</sub>	15.4	X	280.81842	61.70521	66.69042	27.30442	0.2038658	0.18049553	3.1009285	20	11 24.2	19.2
419332 2009 <i>WV</i> <sub>156</sub>	17.0	X	55.73096	97.66422	329.75360	6.30656	0.0684216	0.20435796	2.8545764	20	—	—
419333 2009 <i>WV</i> <sub>160</sub>	17.0	X	36.90517	107.55367	338.55242	1.36182	0.0377856	0.20252769	2.8717487	20	—	—
419334 2009 <i>WC</i> <sub>161</sub>	16.4	X	22.99994	133.24444	256.81353	8.40038	0.1082432	0.18954431	3.0014345	20	—	—
419335 2009 <i>WS</i> <sub>164</sub>	15.6	X	342.88345	312.91828	68.35673	16.65283	0.0107178	0.17049436	3.2210394	20	10 28.1	20.3
419336 2009 <i>WF</i> <sub>166</sub>	16.2	X	87.88624	271.67680	71.37062	9.47205	0.1423600	0.18993096	2.9973598	20	—	—
419337 2009 <i>WT</i> <sub>169</sub>	15.9	X	346.12064	182.40840	267.29621	11.69848	0.1013585	0.18878717	3.0094541	20	—	—
419338 2009 <i>WN</i> <sub>171</sub>	16.2	X	144.17532	211.05156	35.54850	10.86128	0.0306528	0.18043700	3.1015990	20	11 23.5	20.8
419339 2009 <i>WN</i> <sub>172</sub>	17.3	X	110.79721	24.53711	83.50069	12.49526	0.2679231	0.22371610	2.6874345	20	5 25.0	21.6
419340 2009 <i>WN</i> <sub>176</sub>	16.3	X	85.88747	55.84361	273.61970	8.47934	0.0865595	0.18826318	3.0150356	20	—	—
419341 2009 <i>WH</i> <sub>177</sub>	17.1	X	46.93755	204.92597	290.93975	7.08678	0.2525875	0.21181742	2.7871581	20	3 27.5	20.0
419342 2009 <i>WX</i> <sub>180</sub>	16.4	X	160.08969	273.17893	100.90812	6.36193	0.0512343	0.21607073	2.7504605	20	2 29.4	20.4
419343 2009 <i>WP</i> <sub>181</sub>	15.5	X	290.96346	221.49665	241.38209	20.28055	0.0660180	0.17648796	3.1476951	20	11 21.8	19.6
419344 2009 <i>WE</i> <sub>182</sub>	16.3	X	83.59869	115.68809	278.50465	8.65833	0.1089793	0.20104753	2.8858265	20	—	—
419345 2009 <i>WJ</i> <sub>185</sub>	16.3	X	65.10292	70.85076	228.61260	4.63475	0.1245762	0.17932474	3.1144108	20	11 9.9	20.7
419346 2009 <i>WT</i> <sub>185</sub>	16.9	X	55.41267	57.32698	53.05012	11.10993	0.2468593	0.21122990	2.7923239	20	3 18.3	20.0
419347 2009 <i>WS</i> <sub>186</sub>	16.6	X	82.54884	65.71082	251.77353	7.93074	0.1557065	0.18784779	3.0194788	20	12 24.0	21.3
419348 2009 <i>WS</i> <sub>187</sub>	15.7	X	0.12589	91.33115	241.51297	17.08689	0.1086770	0.16907893	3.2389908	20	9 11.5	20.1
419349 2009 <i>WO</i> <sub>198</sub>	16.6	X	143.42555	269.29630	92.22462	13.90236	0.2099774	0.21335099	2.7737859	20	2 12.0	21.2
419350 2009 <i>WQ</i> <sub>200</sub>	16.7	X	58.36570	120.24968	237.96064	9.57263	0.1140464	0.18721766	3.0262503	20	—	—
419351 2009 <i>WM</i> <sub>208</sub>	16.2	X	358.59302	171.98098	259.20299	12.88663	0.1061764	0.18739360	3.0243558	20	—	—
419352 2009 <i>WB</i> <sub>209</sub>	17.2	X	353.99948	128.74471	316.47232	1.11934	0.17					

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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>
419361 2009 WA <sub>260</sub>	16.9 <sup>m</sup>	X	47.34048	343.77586	69.00912	3.05780	0.0816310	0.19501593	2.9450273	20	—	—
419362 2009 WD <sub>260</sub>	16.4	X	294.29358	54.99796	81.12172	4.58041	0.1207073	0.17594708	3.1541427	20	—	—
419363 2009 WL <sub>260</sub>	15.7	X	34.35108	262.71411	98.52650	17.18643	0.2351710	0.17686746	3.1431909	20	—	—
419364 2009 WE <sub>264</sub>	16.1	X	359.42512	147.79309	308.36867	8.14051	0.1306938	0.17982998	3.1085747	20	—	—
419365 2009 XF <sub>1</sub>	15.7	X	303.80357	49.94486	70.89440	17.43574	0.1716652	0.17787127	3.1313541	20	12 24.2	19.3
419366 2009 XP <sub>1</sub>	15.6	X	326.78530	101.10895	32.62932	11.22300	0.1691945	0.19140017	2.9820013	20	—	—
419367 2009 XQ <sub>3</sub>	15.9	X	355.26086	57.96355	92.05555	16.05385	0.0985019	0.20270448	2.8700788	20	1 10.9	19.5
419368 2009 XL <sub>4</sub>	16.3	X	48.24823	128.68377	249.11876	11.07266	0.0519338	0.18696918	3.0289309	20	—	—
419369 2009 XT <sub>8</sub>	16.1	X	223.88447	127.67980	216.27539	10.96508	0.0395531	0.22348079	2.6893207	20	3 31.0	20.1
419370 2009 XU <sub>12</sub>	16.7	X	305.41315	236.14575	244.74122	11.30052	0.3093494	0.18111726	3.0938279	20	12 16.9	19.5
419371 2009 XJ <sub>13</sub>	16.9	X	132.44418	359.27630	48.62566	5.60150	0.0347431	0.21623170	2.7490954	20	3 8.5	20.7
419372 2009 XC <sub>14</sub>	16.0	X	270.53376	189.08274	55.32897	14.49523	0.1293547	0.21618387	2.7495009	20	1 16.0	20.3
419373 2009 XO <sub>14</sub>	15.1	X	199.55420	84.07747	109.85195	22.30927	0.0078995	0.16931713	3.2359524	20	11 30.7	20.0
419374 2009 XB <sub>16</sub>	15.8	X	284.52225	70.31543	108.89662	17.59728	0.2232077	0.18148096	3.0896931	20	—	—
419375 2009 XK <sub>16</sub>	16.2	X	300.96218	182.53941	288.31876	9.02260	0.1364288	0.17405300	3.1769841	20	12 9.1	20.0
419376 2009 XJ <sub>21</sub>	15.7	X	239.49974	72.79813	102.01171	10.15447	0.0396843	0.17455156	3.1709317	20	12 16.8	20.3
419377 2009 YR <sub>2</sub>	16.2	X	138.18081	130.25451	271.35570	11.85938	0.1779525	0.21318485	2.7752269	20	3 13.6	20.8
419378 2009 YP <sub>5</sub>	16.1	X	284.93958	231.10979	108.98077	13.69673	0.1244911	0.23139936	2.6276122	20	6 4.0	19.6
419379 2009 YN <sub>9</sub>	15.8	X	267.53119	293.83148	269.80422	16.24458	0.0889151	0.18726133	3.0257798	20	—	—
419380 2009 YT <sub>9</sub>	15.6	X	293.91786	199.52779	271.34295	16.29096	0.0826967	0.17261501	3.1946038	20	12 3.1	19.9
419381 2009 YX <sub>11</sub>	16.2	X	95.12688	18.60146	78.29828	6.58240	0.0605765	0.21233033	2.7826677	20	3 28.9	20.0
419382 2009 YM <sub>12</sub>	16.5	X	285.24429	218.45481	303.23083	9.05088	0.0381631	0.18360673	3.0657988	20	—	—
419383 2009 YO <sub>12</sub>	16.4	X	32.49418	2.71203	59.06422	3.98284	0.2459255	0.19125376	2.9835231	20	—	—
419384 2009 YU <sub>12</sub>	16.7	X	82.26668	80.42744	300.44186	9.29681	0.1304222	0.19274200	2.9681452	20	—	—
419385 2009 YA <sub>21</sub>	16.3	X	20.92492	359.44134	84.98648	8.33280	0.2271388	0.19076727	2.9885932	20	—	—
419386 2009 YM <sub>21</sub>	16.2	X	230.42065	238.85500	311.28124	8.60154	0.0469041	0.17456494	3.1707697	20	12 23.3	20.8
419387 2009 YT <sub>21</sub>	17.1	X	354.47801	138.78286	310.37462	7.99902	0.1279559	0.18321733	3.0701411	20	—	—
419388 2009 YM <sub>22</sub>	16.3	X	143.65847	9.83060	76.16195	10.90370	0.0583070	0.22312219	2.6922014	20	5 11.7	20.1
419389 2010 AA <sub>6</sub>	15.2	X	335.27909	354.09756	91.63571	17.99665	0.0745784	0.181472523	3.0897888	20	—	—
419390 2010 AT <sub>10</sub>	16.8	X	345.79948	103.41716	341.08944	5.48625	0.1296344	0.18139225	3.0907004	20	—	—
419391 2010 AO <sub>11</sub>	15.9	X	293.44500	194.74747	303.40757	15.37032	0.0247041	0.17960465	3.1111742	20	—	—
419392 2010 AA <sub>12</sub>	15.4	X	333.96393	169.34951	279.85215	8.07115	0.0626736	0.17543830	3.1602379	20	—	—
419393 2010 AO <sub>13</sub>	17.0	X	29.33069	272.63198	144.90754	2.00800	0.3356606	0.18985993	2.9981073	20	—	—
419394 2010 AN <sub>22</sub>	16.7	X	314.32152	291.19410	174.49272	0.87486	0.1474436	0.17417777	3.1754667	20	12 24.3	20.4
419395 2010 AA <sub>26</sub>	16.4	X	305.07105	48.32039	74.36892	1.88571	0.2059607	0.17443134	3.1723886	20	12 26.1	19.9
419396 2010 AZ <sub>30</sub>	16.5	X	349.35160	145.44591	300.94974	11.02019	0.1422127	0.18174916	3.0866528	20	—	—
419397 2010 AD <sub>32</sub>	15.8	X	232.05056	39.53359	142.95424	11.14367	0.0165456	0.16756156	3.2585154	20	12 18.9	20.5
419398 2010 AV <sub>33</sub>	16.0	X	329.47623	345.73404	110.26705	10.44818	0.0598932	0.17542307	3.1604208	20	—	—
419399 2010 AK <sub>35</sub>	15.8	X	275.73611	295.16863	298.66469	10.50742	0.1408835	0.19053674	2.9910033	20	1 10.0	20.4
419400 2010 AE <sub>38</sub>	17.2	X	60.58885	225.32268	121.79403	24.78084	0.0648880	0.35957403	1.9585914	20	—	—
419401 2010 AY <sub>38</sub>	17.8	X	18.78370	302.63989	128.62723	24.33395	0.1087771	0.37349777	1.9096072	20	—	—
419402 2010 AY <sub>39</sub>	15.9	X	354.47891	131.76548	307.08689	7.76054	0.1863978	0.18274916	3.0753824	20	—	—
419403 2010 AY <sub>41</sub>	17.5	X	305.13469	44.30330	124.30438	24.29433	0.0694412	0.37757534	1.8958340	20	—	—
419404 2010 AM <sub>44</sub>	15.9	X	336.00426	12.33082	113.26186	17.79271	0.1405060	0.18336090	3.0685384	20	—	—
419405 2010 AX <sub>48</sub>	15.7	X	18.83419	181.25593	264.58258	8.20821	0.0619902	0.18579139	3.0417183	20	—	—
419406 2010 AG <sub>55</sub>	16.4	X	4.75703	102.53506	347.23201	6.49841	0.1410055	0.18131043	3.0916301	20	—	—
419407 2010 AC <sub>59</sub>	15.8	X	275.53473	50.14821	106.82623	28.48557	0.2022776	0.17499243	3.1656036	20	12 21.8	19.9
419408 2010 AS <sub>59</sub>	16.9	X	98.77342	14.04381	82.62941	10.14549	0.2568425	0.21196324	2.7858797	20	4 29.8	21.1
419409 2010 AT <sub>64</sub>	15.3	X	18.03140	287.84884	116.65045	9.62742	0.0695901	0.17396992	3.1779955	20	—	—
419410 2010 AR <sub>66</sub>	16.4	X	354.99527	281.81310	144.85651	16.76703	0.2702001	0.17657616	3.1466468	20	—	—
419411 2010 AV <sub>66</sub>	16.1	X	349.01991	134.41441	316.81892	9.33263	0.0765527	0.17471173	3.1689934	20	—	—
419412 2010 AM <sub>67</sub>	16.9	X	41.68865	76.79152	301.53815	6.88269	0.3250406	0.18993295	2.9973388	20	—	—
419413 2010 AK <sub>70</sub>	15.3	X	307.97409	351.16814	111.55359	25.96047	0.1474259	0.17220778	3.1996381	20	12 13.7	19.4
419414 2010 AS <sub>74</sub>	15.4	X	289.61298	246.71588	304.26200	24.51109	0.2796298	0.18090345	3.0962652	20	—	—
419415 2010 AF <sub>78</sub>	16.2	X	133.80502	300.76385	107.46478	8.74152	0.2245479	0.21254020	2.7808356	20	4 1.4	20.8
419416 2010 AN <sub>79</sub>	16.5	X	330.50107	229.98960	284.22479	5.04332	0.2147446	0.18546751	3.0452584	20	—	—
419417 2010 AY <sub>79</sub>	16.2	X	331.66771	115.21515	356.44075	15.44199	0.2480465	0.18092345	3.0960370	20	—	—
419418 2010 AF <sub>81</sub>	15.2	X	20.28576	239.89336	133.26361	27.26176	0.1937568	0.16979509	3.2298768	20	12 23.9	19.7
419419 2010 AR <sub>103</sub>	16.1	X	316.96055	220.91555	343.99534	7.70918	0.1343513	0.18388384	3.0627179	20	1 26.1	20.2
419420 2010 AY <sub>103</sub>	15.8	X	19.40723	286.84954	188.08973	26.44005	0.2623913	0.18543527	3.0456114	20	—	—
419421 2010 AC <sub>116</sub>	16.8	X	104.37394	263.91857	132.61327	6.78305	0.1171428	0.21470901	2.7620775	20	1 28.4	20.5
419422 2010 BA <sub>116</sub>	16.6	X	259.78716	104.67876	64.31441	2.40299	0.1494928	0.17333498	3.1857516	20	12 18.8	20.7
419423 2010 BA <sub>3</sub>	15.6	X	7.89775	54.81912	318.69588	17.48042	0.1017465	0.16862195	3.2448402	20	11 15.5	20.2
419424 2010 BB <sub>6</sub>	15.7	X	318.37336	227.18856	252.97713	13.06060	0.2523249	0.17557366	3.1586133	20	—	—
419425 2010 BC <sub>6</sub>	16.2	X	342.74618	197.95939	285.19162	11.54720	0.3448095	0.18265421	3.0764480	20	—	—
419426 2010 BU <sub>6</sub>	15.8	X	276.56409	279.27464	287.23427	10.65836	0.1236341	0.17251791	3.1958025	20	—	—
419427 2010 BD <sub>8</sub>	15.3	X	342.37222	225.09365	251.32441	14.88404	0.0538812	0.16870600	3.2437623	20	—	—
419428 2010 BR <sub>59</sub>	16.3	X	79.88818	271.21710	222.94815	11.65706	0.2272490	0.22452987	2.809371	20	5 18.6	19.9
419429 2010 BW <sub>62</sub>	16.7	X	142.19924	262.07429	148.29068	13.34333	0.2718919	0.22568215	2.6718038	20	4 13.8	21.4
419430 2010 CD <sub>5</sub>	16.2	X	51.66185	318.51380	134.54589	10.27074	0.0958765	0.19043556	2.9920627	20	1 27.2	19.9
419431 2010 CC <sub>33</sub>	16.3	X	312.31874	205.62149	345.69688	9.12082	0.1345132	0.18878941	3.0094303	20	1 2.1	20.5
419432 2010 CN <sub>33</sub>	16.8	X	313.73612	115.37369	17.58960	5.50203	0.1066623	0.17662543	3.1460617	20	—	—
419433 2010 CL <sub>35</sub>	17.6	X	56.08434	92.34430	348.04562	19.75502	0.1093491	0.38108211	1.8841856	20	—	—
419434 2010 CY <sub>42</sub>	16.2	X	342.07710	113.50830	338.16840	9.24644	0.2101025	0.17680994	3.1438726	20	—	—
419435 2010 CW <sub>43</sub>	15.6	X	345.91291	175.39589	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>
419441 2010 CS <sub>76</sub>	15.2	X	195.11232	207.27400	333.80838	9.17893	0.0138343	0.15070913	3.4971131	20	10 27.8	20.4
419442 2010 CN <sub>82</sub>	17.8	X	28.09875	270.94200	165.93771	23.51233	0.1078411	0.37005699	1.9214259	20	—	—
419443 2010 CS <sub>82</sub>	15.8	X	337.56293	300.88025	175.79707	15.74668	0.0546679	0.17117702	3.2124699	20	—	—
419444 2010 CN <sub>85</sub>	15.5	X	170.58103	283.27300	342.00545	14.81855	0.0321891	0.16835172	3.2483116	20	—	—
419445 2010 CF <sub>99</sub>	16.4	X	358.64892	350.92017	99.56116	2.36151	0.1570522	0.17530186	3.1618775	20	—	—
419446 2010 CZ <sub>100</sub>	16.0	X	311.12060	283.87101	138.08660	13.01215	0.0719964	0.15896053	3.3750212	20	10 30.9	20.7
419447 2010 CX <sub>117</sub>	16.7	X	336.98665	31.30258	84.33561	2.67156	0.1448343	0.18317868	3.0705730	20	—	—
419448 2010 CO <sub>124</sub>	15.9	X	320.11817	203.20411	300.04235	7.39249	0.1345117	0.18070122	3.0985748	20	—	—
419449 2010 CE <sub>128</sub>	16.2	X	336.49003	343.79828	103.70632	16.11584	0.2392118	0.17764062	3.1340640	20	—	—
419450 2010 CW <sub>128</sub>	16.1	X	290.02140	349.78169	166.05686	15.71277	0.2206020	0.17456152	3.1708112	20	—	—
419451 2010 C <sub>J</sub> <sub>129</sub>	15.8	X	283.89286	122.17984	34.16477	15.60421	0.1850095	0.17301031	3.1897360	20	—	—
419452 2010 CC <sub>138</sub>	16.5	X	338.36692	18.21063	133.52877	5.48605	0.2032541	0.18339812	3.0681233	20	—	—
419453 2010 CN <sub>139</sub>	16.3	X	311.04144	20.62234	176.54489	11.57097	0.1478190	0.18407500	3.0605972	20	1 4.5	20.7
419454 2010 CX <sub>141</sub>	16.1	X	125.49807	338.00166	124.08597	26.35563	0.0656848	0.22017209	2.7161966	20	5 19.8	20.6
419455 2010 CY <sub>141</sub>	15.7	X	285.40382	175.07797	320.53037	11.39619	0.0740265	0.17389449	3.1789144	20	12 23.6	20.1
419456 2010 C <sub>J</sub> <sub>142</sub>	16.1	X	344.38827	50.36202	121.97147	13.11301	0.0457721	0.19950960	2.9006379	20	1 29.8	20.0
419457 2010 CO <sub>144</sub>	15.7	X	333.34458	224.55533	289.66196	13.75568	0.0913578	0.18345202	3.0675223	20	—	—
419458 2010 CC <sub>146</sub>	15.9	X	1.51939	355.61002	111.20935	16.92232	0.0695143	0.18286675	3.0740639	20	—	—
419459 2010 CX <sub>147</sub>	16.8	X	359.28880	328.29919	169.77972	10.68949	0.2247805	0.18606413	3.0387452	20	—	—
419460 2010 C <sub>J</sub> <sub>148</sub>	16.9	X	15.07834	220.47047	329.00721	6.82207	0.2324900	0.20494007	2.8491684	20	4 1.5	19.4
419461 2010 C <sub>J</sub> <sub>153</sub>	15.5	X	346.89005	120.35538	5.26125	17.18343	0.1622301	0.18206916	3.0830350	20	—	—
419462 2010 CX <sub>157</sub>	16.2	X	300.24677	171.13185	358.12982	6.40496	0.1673484	0.17634280	3.1494222	20	—	—
419463 2010 CX <sub>157</sub>	18.4	X	18.18454	298.75890	156.94491	22.88291	0.1123036	0.37383668	1.9084529	20	—	—
419464 2010 CC <sub>180</sub>	18.6	X	335.84045	217.00092	352.33937	15.24098	0.3216120	0.38432609	1.8735681	20	—	—
419465 2010 CK <sub>180</sub>	15.9	X	15.18063	105.05573	355.72898	16.13415	0.1933219	0.18526753	3.0474495	20	—	—
419466 2010 CO <sub>181</sub>	16.1	X	277.51844	199.57090	347.86640	10.32841	0.1359979	0.17627755	3.1501994	20	—	—
419467 2010 CA <sub>182</sub>	15.8	X	82.05377	64.68195	321.76333	8.25068	0.0625339	0.18156208	3.0887727	20	—	—
419468 2010 CS <sub>183</sub>	16.4	X	351.37935	114.20718	10.64052	12.48728	0.1918720	0.18146062	3.0899239	20	—	—
419469 2010 CA <sub>184</sub>	16.3	X	327.74724	66.33466	92.30095	14.94905	0.2873490	0.18296659	3.0729455	20	—	—
419470 2010 CE <sub>185</sub>	15.5	X	349.65856	102.01594	343.08176	23.83083	0.1908773	0.17596104	3.1539759	20	—	—
419471 2010 CQ <sub>204</sub>	16.7	X	109.76222	282.38362	106.56584	9.53181	0.2234747	0.21248997	2.7812739	20	2 11.7	20.7
419472 2010 DW <sub>1</sub>	19.9	X	203.41966	9.62918	157.12744	23.76762	0.2002204	0.72693747	1.2250054	20	—	—
419473 2010 DS <sub>5</sub>	16.3	X	79.42929	286.17439	131.54293	9.01136	0.0945462	0.19378875	2.9574472	20	1 21.9	20.3
419474 2010 DN <sub>32</sub>	16.2	X	11.57202	38.56688	82.03380	14.40136	0.2014571	0.17428205	3.1741999	20	—	—
419475 2010 DE <sub>37</sub>	16.9	X	335.81060	127.88575	347.33771	4.41174	0.1146205	0.17618451	3.1513083	20	—	—
419476 2010 DY <sub>40</sub>	16.1	X	270.42260	77.03360	114.34323	10.16631	0.2064118	0.18110232	3.0939981	20	—	—
419477 2010 DD <sub>42</sub>	16.3	X	17.05966	111.77064	323.51058	9.02007	0.1166842	0.18223156	3.0811200	20	—	—
419478 2010 DN <sub>43</sub>	16.3	X	336.38442	235.72351	322.97952	4.67055	0.1609945	0.19170641	2.9788248	20	2 8.1	19.9
419479 2010 DS <sub>49</sub>	16.5	X	317.90540	357.62082	108.23969	11.41437	0.1418690	0.17765083	3.1339440	20	—	—
419480 2010 CD <sub>52</sub>	16.1	X	342.58706	281.78698	243.52894	11.73324	0.2366825	0.17778930	3.1323164	20	—	—
419481 2010 DE <sub>61</sub>	15.6	X	229.84633	106.34624	76.96609	22.76944	0.0440296	0.18079944	3.0974526	20	12 15.1	20.1
419482 2010 DW <sub>66</sub>	15.4	X	103.78562	44.39007	266.89605	21.42155	0.0966302	0.18470265	3.0536596	20	12 30.9	20.1
419483 2010 DA <sub>75</sub>	15.8	X	276.79900	53.48610	169.38116	13.16778	0.0949023	0.18243801	3.0788782	20	1 3.5	20.5
419484 2010 E <sub>J</sub> <sub>7</sub>	15.4	X	258.25883	75.49438	87.30995	15.14408	0.1560268	0.17839494	3.1252231	20	12 10.4	19.6
419485 2010 EK <sub>9</sub>	16.1	X	8.91647	77.19773	351.07799	8.01052	0.1012037	0.18812714	3.0164891	20	—	—
419486 2010 EK <sub>16</sub>	16.3	X	82.82253	344.28173	113.06271	9.43681	0.1117787	0.21321616	2.7749552	20	3 21.4	20.0
419487 2010 EM <sub>29</sub>	16.9	X	9.62805	316.26223	148.95642	4.25166	0.2591423	0.18416120	3.0596420	20	—	—
419488 2010 EB <sub>30</sub>	15.9	X	317.80778	332.36094	156.26926	15.71781	0.2314861	0.17478594	3.1680964	20	—	—
419489 2010 EH <sub>36</sub>	15.5	X	329.39997	134.23487	309.23387	15.34870	0.1027616	0.17445459	3.1721067	20	12 22.8	19.6
419490 2010 ET <sub>43</sub>	16.6	X	353.18442	116.78618	331.23211	10.80588	0.2074275	0.17703128	3.1412515	20	—	—
419491 2010 EY <sub>45</sub>	17.8	X	340.82809	64.15578	20.76360	20.84164	0.0928726	0.35836214	1.9630045	20	—	—
419492 2010 ES <sub>75</sub>	16.2	X	356.49944	312.60476	186.12537	12.28669	0.0983162	0.18218392	3.0817402	20	1 1.8	20.4
419493 2010 EF <sub>105</sub>	16.3	X	280.35675	95.34772	49.37867	18.72526	0.2915362	0.16723534	3.2627516	20	11 23.5	20.4
419494 2010 E <sub>F</sub> <sub>108</sub>	16.2	X	14.14545	288.13125	183.16563	12.64124	0.1767791	0.18242235	3.0790544	20	—	—
419495 2010 E <sub>J</sub> <sub>124</sub>	15.3	X	312.14346	169.35660	1.03137	18.30870	0.0767475	0.17685768	3.1433068	20	—	—
419496 2010 ES <sub>124</sub>	16.3	X	317.04363	144.81329	5.22162	15.84583	0.1636639	0.17664759	3.1457986	20	—	—
419497 2010 EC <sub>126</sub>	17.8	X	347.27883	128.09700	358.77916	19.55323	0.0753317	0.36953775	1.9232254	20	—	—
419498 2010 ES <sub>126</sub>	16.1	X	276.78192	53.59734	122.01520	13.37496	0.2962432	0.16798206	3.2530753	20	12 28.2	20.0
419499 2010 EV <sub>127</sub>	15.8	X	272.68280	108.04354	78.33467	16.00030	0.1862967	0.17318884	3.1875434	20	—	—
419500 2010 EP <sub>140</sub>	15.6	X	344.54025	259.64538	280.95222	9.07082	0.0741261	0.18823692	3.0153161	20	2 5.4	19.6
419501 2010 FZ <sub>25</sub>	15.9	X	306.01969	161.57006	356.64906	11.11193	0.0664925	0.17252422	3.1957246	20	—	—
419502 2010 FY <sub>27</sub>	16.0	X	341.34190	106.23318	29.67659	16.03634	0.1918279	0.17966911	3.1104300	20	—	—
419503 2010 FE <sub>83</sub>	16.0	X	357.61752	308.07640	168.41124	16.60062	0.1528359	0.17867023	3.1220121	20	—	—
419504 2010 FG <sub>83</sub>	15.4	X	309.96530	67.51499	99.45398	26.72002	0.1917739	0.17391544	3.1786592	20	—	—
419505 2010 FG <sub>98</sub>	16.3	X	65.89687	38.07376	54.99219	6.99973	0.0657112	0.18652776	3.0337077	20	2 17.5	20.4
419506 2010 GE <sub>11</sub>	15.8	X	209.33232	102.40076	108.12438	10.03036	0.0558126	0.17437804	3.1730349	20	12 21.9	20.4
419507 2010 GW <sub>27</sub>	16.0	X	299.86475	144.78844	34.10056	20.13687	0.2266398	0.17922192	3.1156019	20	—	—
419508 2010 GR <sub>62</sub>	15.9	X	308.86177	132.82693	49.39392	29.63723	0.3284013	0.17765338	3.1339139	20	—	—
419509 2010 GB <sub>66</sub>	16.3	X	334.75849	313.67734	202.50726	15.62048	0.1960353	0.17962015	3.1109952	20	—	—
419510 2010 GB <sub>113</sub>	15.6	X	20.52808	73.96641	61.20984	10.25424	0.0550655	0.18235578	3.0798037	20	2 7.6	19.8
419511 2010 GR <sub>116</sub>	18.0	X	272.50350	88.82622	203.40937	7.70378	0.2049264	0.28454840	2.2892784	20	2 26.4	21.5
419512 2010 GV <sub>145</sub>	16.0	X	311.68440	119.93507	59.94015	17.47512	0.1794088	0.17971975	3.1098458	20	—	—
419513 2010 GY <sub>163</sub>	16.1	X	202.88228	344.62587	221.60300	7.08677	0.0424456	0.16940363	3.2348507	20	12 9.9	20.8
419514 2010 GY <sub>172</sub>	15.5	X	337.21894	53.29479	95.04532	11.45512	0.0667421	0.18072394	3.0983151	20	—	—
419515 2010 HS <sub>10</sub>	13.1	X	348.46280									

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>
419521 2010 JQ <sub>34</sub>	18.2	X	43.47360	83.83727	178.76591	3.20502	0.1434492	0.31255850	2.1503798	20	9 20.5	20.3
419522 2010 JU <sub>38</sub>	18.4	X	21.21086	145.84660	211.74403	21.91068	0.0642793	0.33762862	2.0425681	20	12 25.9	21.2
419523 2010 JA <sub>65</sub>	15.8	X	334.03969	49.01274	68.77096	19.71663	0.1932858	0.17958197	3.1114361	20	—	—
419524 2010 JV <sub>80</sub>	13.6	X	329.03016	31.98749	245.75360	21.12487	0.1424816	0.08329354	5.1927231	20	5 15.7	19.9
419525 2010 JD <sub>82</sub>	17.8	X	6.47631	196.85327	83.74247	7.83178	0.1676915	0.30633782	2.1793934	20	8 18.1	19.4
419526 2010 JH <sub>123</sub>	16.8	X	250.91043	180.31077	134.74704	16.12323	0.2925493	0.26885317	2.3775297	20	3 5.9	20.9
419527 2010 KN <sub>4</sub>	15.8	X	290.99026	254.86073	260.08443	12.87344	0.1831425	0.17362335	3.1822231	20	—	—
419528 2010 KA <sub>33</sub>	15.7	X	273.40689	270.22353	191.77447	13.64772	0.2723315	0.18030374	3.1031271	20	—	—
419529 2010 KL <sub>73</sub>	17.1	X	238.07296	33.76578	268.48171	9.09542	0.2303061	0.26187735	2.4195657	20	2 7.6	21.4
419530 2010 KF <sub>78</sub>	16.6	X	310.00652	352.40950	202.45374	1.50559	0.1491011	0.18551757	3.0447106	20	—	—
419531 2010 KT <sub>88</sub>	17.5	X	206.64451	221.37422	141.49844	5.80295	0.2461593	0.26336926	2.4104197	20	3 31.9	21.8
419532 2010 KM <sub>94</sub>	17.8	X	258.94207	31.84086	275.04408	4.32975	0.2402654	0.26834040	2.3805575	20	3 1.4	21.8
419533 2010 KJ <sub>104</sub>	15.6	X	341.31256	137.89197	313.00892	15.38405	0.2079157	0.17321465	3.1872268	20	—	—
419534 2010 KT <sub>117</sub>	17.7	X	328.01472	200.33789	93.62178	8.62093	0.2652735	0.29408636	2.2395089	20	5 16.3	19.2
419535 2010 LS <sub>4</sub>	16.8	X	267.24135	357.05319	314.76953	10.89270	0.2636352	0.27123768	2.3635749	20	3 10.5	20.8
419536 2010 LE <sub>82</sub>	17.4	X	264.08732	255.20996	144.73257	11.64581	0.1650880	0.28660970	2.2782889	20	7 22.0	20.1
419537 2010 MO <sub>6</sub>	17.6	X	187.34334	180.97702	217.41449	4.15825	0.2247012	0.26306665	2.4122678	20	4 27.5	21.7
419538 2010 MF <sub>14</sub>	16.4	X	312.94019	117.05542	45.10667	16.95517	0.2190314	0.17724980	3.1386692	20	—	—
419539 2010 MA <sub>65</sub>	17.6	X	272.68299	226.75454	79.53949	4.08832	0.1864906	0.26866217	2.3786564	20	3 23.9	20.9
419540 2010 NO <sub>3</sub>	17.7	X	165.41714	353.43106	7.20681	1.21043	0.2022384	0.25609937	2.4558229	20	2 22.9	21.5
419541 2010 NH <sub>6</sub>	17.1	X	324.06184	2.36866	301.10966	9.93588	0.0619671	0.28794642	2.2712325	20	6 21.6	19.5
419542 2010 NX <sub>21</sub>	17.9	X	280.17492	334.05981	356.10354	5.74848	0.1399663	0.27391148	2.3481683	20	5 6.5	20.9
419543 2010 OC <sub>4</sub>	16.2	X	289.78470	293.71771	277.48341	12.41489	0.2021130	0.17591892	3.1544794	20	—	—
419544 2010 OX <sub>34</sub>	15.8	X	104.94243	322.75009	39.37505	13.28842	0.1831365	0.22961208	2.6412300	20	—	—
419545 2010 OS <sub>50</sub>	17.4	X	269.13225	304.75122	5.16836	5.97760	0.2464498	0.27533039	2.3400939	20	5 17.4	20.7
419546 2010 OG <sub>64</sub>	15.8	X	209.13631	136.07037	140.88792	18.43635	0.0097523	0.16957891	3.2326213	20	1 2.4	20.6
419547 2010 OV <sub>74</sub>	15.5	X	11.11072	9.96204	141.36773	28.63629	0.0995638	0.18210378	3.0826442	20	2 9.6	21.0
419548 2010 OR <sub>81</sub>	17.3	X	118.85734	337.32239	36.83713	11.15176	0.1298324	0.23486631	2.6016901	20	1 19.8	21.4
419549 2010 OZ <sub>83</sub>	15.6	X	255.35531	196.10597	54.98175	12.20523	0.0459885	0.17452151	3.1712957	20	1 22.7	20.4
419550 2010 OM <sub>90</sub>	17.4	X	100.76629	136.07496	246.32781	0.26219	0.2279901	0.23137464	2.6277994	20	1 19.6	20.7
419551 2010 OM <sub>106</sub>	17.0	X	71.25860	102.83383	310.57050	10.44260	0.1969843	0.22850774	2.6497329	20	1 11.9	19.8
419552 2010 OF <sub>118</sub>	17.7	X	126.78327	17.94343	18.34418	11.29308	0.1371260	0.24110597	2.5566076	20	2 28.3	21.4
419553 2010 PA <sub>25</sub>	17.6	X	243.11831	134.98309	174.08145	6.21184	0.1893224	0.26631547	2.3926093	20	2 24.2	21.3
419554 2010 PA <sub>52</sub>	16.8	X	113.34066	83.50730	0.96313	16.80755	0.1872529	0.24581984	2.5238184	20	4 11.4	20.5
419555 2010 PJ <sub>62</sub>	17.3	X	41.43319	135.56692	125.67258	4.74134	0.1864344	0.29703175	2.2246796	20	9 22.5	19.7
419556 2010 PO <sub>73</sub>	18.2	X	245.72630	19.22632	306.32753	0.51116	0.2025095	0.26988626	2.3714585	20	3 17.5	21.9
419557 2010 PC <sub>77</sub>	18.0	X	267.32100	292.44422	31.94410	1.55228	0.1938591	0.27357669	2.3500837	20	4 7.5	21.3
419558 2010 PO <sub>77</sub>	17.2	X	230.13652	356.42376	316.19701	2.18601	0.3072254	0.26146452	2.4221119	20	2 14.5	21.5
419559 2010 QA <sub>1</sub>	17.9	X	221.46522	219.35933	145.25931	2.78601	0.2270326	0.26933425	2.3746977	20	4 14.1	21.8
419560 2010 QX <sub>3</sub>	17.6	X	273.82466	13.93285	2.97120	4.99133	0.1866202	0.28539104	2.2847700	20	6 29.6	20.4
419561 2010 RL <sub>4</sub>	18.0	X	209.77121	271.44381	114.16271	3.52622	0.1993489	0.26884466	2.3775798	20	5 2.0	21.8
419562 2010 RF <sub>5</sub>	17.3	X	235.16029	180.16865	149.91852	6.07986	0.1180985	0.26469878	2.4023416	20	3 20.9	20.9
419563 2010 RS <sub>7</sub>	17.3	X	124.97755	324.19421	148.00924	7.73996	0.0735119	0.27050614	2.3678342	20	5 24.7	20.5
419564 2010 RM <sub>9</sub>	17.8	X	221.86781	40.76868	317.26630	2.83931	0.2346562	0.26578841	2.3957713	20	4 3.7	21.8
419565 2010 RT <sub>10</sub>	17.5	X	267.10087	226.40445	194.98200	5.48689	0.1368285	0.29139829	2.2532604	20	9 1.8	19.9
419566 2010 RN <sub>12</sub>	17.7	X	275.66190	347.34672	326.73370	5.43783	0.2511894	0.27437019	2.3455504	20	3 24.7	21.1
419567 2010 RX <sub>18</sub>	17.3	X	286.25502	107.05318	290.33945	8.76136	0.1799669	0.29333903	2.2433110	20	8 19.7	19.4
419568 2010 RS <sub>47</sub>	17.3	X	275.72026	143.42155	183.67800	6.34950	0.1425674	0.27335465	2.3513561	20	4 29.4	20.4
419569 2010 RQ <sub>48</sub>	18.0	X	241.95013	203.86556	175.83527	0.84101	0.1855375	0.27438578	2.3454616	20	5 24.8	21.3
419570 2010 RY <sub>48</sub>	18.1	X	212.87755	207.02624	175.38928	1.76869	0.1492981	0.26686594	2.3893180	20	5 1.9	21.6
419571 2010 RL <sub>50</sub>	18.0	X	274.34474	305.71510	20.00821	1.45915	0.2032000	0.27268785	2.3551877	20	4 15.7	21.2
419572 2010 RQ <sub>50</sub>	18.1	X	273.56141	116.55997	177.40076	2.18469	0.2197239	0.26635814	2.3923538	20	3 2.9	21.5
419573 2010 RE <sub>52</sub>	18.0	X	214.31893	168.15327	153.70058	3.42867	0.1879306	0.25439904	2.4667534	20	2 16.6	22.1
419574 2010 RE <sub>53</sub>	17.4	X	306.37931	157.74873	198.50638	6.26829	0.1493720	0.28880191	2.2667450	20	7 29.5	19.6
419575 2010 RH <sub>53</sub>	17.4	X	172.75950	80.46345	301.61438	3.59392	0.1945327	0.25888039	2.4382035	20	3 23.9	21.3
419576 2010 RY <sub>58</sub>	17.6	X	333.41312	312.08979	326.63712	6.62657	0.0992822	0.27877336	2.3207866	20	5 23.7	20.0
419577 2010 RB <sub>65</sub>	17.7	X	205.01394	159.62006	228.98443	7.43003	0.2532613	0.26887955	2.3773741	20	4 28.4	21.9
419578 2010 RV <sub>67</sub>	17.6	X	161.88986	177.73829	39.60210	5.38177	0.1768259	0.24070202	2.5594672	20	2 17.6	21.7
419579 2010 RL <sub>71</sub>	17.9	X	212.77404	42.51835	341.09518	2.12246	0.1976632	0.26913653	2.3758606	20	4 29.9	21.8
419580 2010 RA <sub>79</sub>	18.0	X	195.57855	253.77388	148.90624	2.56666	0.2313781	0.26750933	2.3854854	20	5 10.3	22.1
419581 2010 RD <sub>80</sub>	17.9	X	198.13275	157.45762	217.94641	1.98122	0.2187139	0.26289590	2.4133122	20	4 7.4	22.0
419582 2010 RQ <sub>81</sub>	17.6	X	262.54572	176.86296	157.16750	6.86035	0.1485023	0.27194669	2.3594649	20	4 22.8	20.9
419583 2010 RY <sub>81</sub>	17.6	X	231.72402	24.67731	12.77335	7.15184	0.1412156	0.27562436	2.3384297	20	6 10.1	21.0
419584 2010 RC <sub>94</sub>	18.2	X	300.26676	68.62427	235.12542	4.90067	0.1818159	0.27894764	2.3198198	20	4 21.5	20.7
419585 2010 RN <sub>96</sub>	17.5	X	339.76780	299.00464	282.83876	3.67699	0.0572000	0.25978324	2.4325510	20	3 16.4	20.4
419586 2010 RE <sub>98</sub>	17.7	X	191.09109	97.48311	339.97539	8.79748	0.1616106	0.27250325	2.3562512	20	6 21.3	21.5
419587 2010 RK <sub>98</sub>	17.6	X	9.10305	62.41014	204.00094	8.75593	0.1199432	0.28296036	2.2978357	20	7 14.9	19.9
419588 2010 RA <sub>102</sub>	17.8	X	259.75968	39.77604	311.61352	1.56818	0.2294254	0.27383337	2.3486148	20	4 30.1	21.4
419589 2010 RS <sub>103</sub>	17.5	X	256.29432	345.73987	349.87573	2.37785	0.1914457	0.26954515	2.3734588	20	4 10.1	21.1
419590 2010 RD <sub>105</sub>	17.9	X	197.58981	71.11691	0.62504	2.21998	0.1794256	0.27093111	2.3653576	20	6 18.9	21.7
419591 2010 RC <sub>107</sub>	17.5	X	322.80893	245.71866	18.08258	3.50286	0.1757404	0.26908954	2.3761372	20	4 2.3	19.7
419592 2010 RX <sub>110</sub>	18.2	X	213.48572	205.40147	151.45000	1.37819	0.1845958	0.26210211	2.4181823	20	3 29.8	22.1
419593 2010 RV <sub>111</sub>	17.7	X	304.99900	118.02193	164.35957	2.44329	0.2147702	0.27288432	2.3540571	20	3 25.2	20.3

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
419601 2010 RE <sub>119</sub>	17.3	X	234.39033	333.81761	32.30146	6.67673	0.1438928	0.26874379	2.3781747	20	5 1.9	20.6
419602 2010 RT <sub>120</sub>	18.2	X	292.97357	337.61925	329.79068	5.17590	0.2258922	0.27695559	2.3309303	20	4 7.7	21.3
419603 2010 RO <sub>121</sub>	17.6	X	152.39848	196.96936	253.76599	5.57564	0.0787587	0.26982706	2.3718054	20	5 27.1	20.9
419604 2010 RF <sub>125</sub>	17.7	X	287.23352	156.01084	134.22008	3.05820	0.1690848	0.26858441	2.3791154	20	3 20.8	20.9
419605 2010 RJ <sub>125</sub>	18.2	X	203.28970	259.45632	119.11933	2.25703	0.1961864	0.26358517	2.4091032	20	4 17.4	22.1
419606 2010 RQ <sub>128</sub>	17.8	X	214.93434	128.98791	223.53389	5.67389	0.1500587	0.26236369	2.4165748	20	3 24.5	21.6
419607 2010 RJ <sub>136</sub>	18.4	X	193.28574	222.76265	114.85225	2.99834	0.2410283	0.25207373	2.4819002	20	2 20.0	22.8
419608 2010 RM <sub>140</sub>	16.7	X	270.81721	320.13432	345.36503	20.54525	0.0869357	0.26558529	2.3969927	20	3 24.8	20.0
419609 2010 RX <sub>140</sub>	17.9	X	163.89243	81.49154	343.73116	4.09658	0.2212344	0.26338259	2.4103383	20	5 10.5	22.1
419610 2010 RL <sub>141</sub>	18.1	X	242.02814	84.60016	229.43795	1.12455	0.1858444	0.26225915	2.4172169	20	3 1.2	22.0
419611 2010 RH <sub>142</sub>	17.8	X	184.33797	153.55040	257.99173	3.75039	0.1074783	0.26596077	2.3947361	20	5 10.8	21.4
419612 2010 RJ <sub>146</sub>	18.4	X	231.50344	197.97106	208.58147	2.62350	0.1855663	0.27579758	2.3374505	20	6 18.8	21.9
419613 2010 RY <sub>149</sub>	17.8	X	256.14927	0.52059	332.03220	4.42077	0.1984301	0.27113602	2.3641656	20	4 4.1	21.3
419614 2010 RA <sub>152</sub>	18.0	X	293.88296	110.07829	178.21992	6.86263	0.1115638	0.26743982	2.3858987	20	4 4.6	20.8
419615 2010 RS <sub>164</sub>	17.6	X	21.14107	352.27157	272.58632	4.36149	0.1259619	0.28860944	2.2677527	20	8 7.9	19.8
419616 2010 RT <sub>166</sub>	17.4	X	93.64113	320.79273	77.16251	3.64630	0.1813202	0.23518980	2.5993039	20	1 22.8	20.4
419617 2010 RS <sub>173</sub>	18.0	X	346.55685	353.41233	276.24863	1.23785	0.1907861	0.27797240	2.3252426	20	5 30.7	19.7
419618 2010 RE <sub>175</sub>	17.4	X	162.53759	50.28239	19.40242	7.43859	0.0909659	0.26301342	2.4125933	20	5 9.4	21.0
419619 2010 RC <sub>182</sub>	17.8	X	240.85200	202.21686	145.14556	9.31230	0.2130410	0.26797552	2.3827180	20	4 12.5	21.7
419620 2010 RK <sub>182</sub>	17.3	X	294.83184	20.75710	284.55922	6.27301	0.1200255	0.27567852	2.3381234	20	4 24.4	20.2
419621 2010 SN	17.7	X	223.96377	197.40561	171.52088	6.62854	0.1409302	0.26659681	2.3909257	20	4 27.3	21.3
419622 2010 SQ <sub>11</sub>	17.9	X	297.48138	322.12831	349.45589	6.33235	0.2509348	0.27828533	2.3234991	20	4 15.6	20.8
419623 2010 SR <sub>14</sub>	18.1	X	113.25779	288.34934	156.65327	2.67137	0.1639178	0.25305733	2.4754649	20	4 14.4	21.4
419624 2010 SO <sub>16</sub>	20.5	X	74.23972	109.09040	40.37515	14.51678	0.0754289	0.98065436	1.0033645	20	—	—
419625 2010 SQ <sub>18</sub>	17.5	X	229.84432	47.20010	29.80990	4.70151	0.0801901	0.28372882	2.2936848	20	8 13.9	20.4
419626 2010 SY <sub>18</sub>	18.0	X	209.23863	219.37152	187.66900	6.43061	0.2607629	0.26811520	2.3818903	20	5 26.0	22.1
419627 2010 SM <sub>22</sub>	18.1	X	194.78718	251.25087	165.44996	2.31722	0.1587374	0.26997234	2.3709544	20	5 28.7	21.8
419628 2010 SL <sub>23</sub>	17.5	X	335.18478	286.25984	355.96342	5.77709	0.2092902	0.28187540	2.3037283	20	5 19.0	19.3
419629 2010 SS <sub>29</sub>	17.5	X	248.59628	320.25347	43.17952	2.04909	0.1976553	0.27125604	2.3634682	20	5 8.6	21.1
419630 2010 SK <sub>34</sub>	17.7	X	188.68394	61.95171	8.57184	5.65057	0.1782982	0.26715380	2.3876013	20	6 8.3	21.6
419631 2010 SD <sub>42</sub>	17.9	X	171.80289	275.99634	124.71810	2.01914	0.1913175	0.25781739	2.4449008	20	4 17.9	21.9
419632 2010 TO <sub>3</sub>	17.4	X	281.29284	4.06538	341.75818	6.70468	0.1336834	0.27541689	2.3396039	20	6 1.6	20.3
419633 2010 TU <sub>3</sub>	17.9	X	247.01818	145.91250	176.24230	3.58964	0.1273481	0.26376967	2.4079796	20	3 21.3	21.5
419634 2010 TK <sub>5</sub>	18.0	X	215.06942	216.66628	136.11366	3.29208	0.2088054	0.26147422	2.4220520	20	3 26.3	22.0
419635 2010 TG <sub>9</sub>	18.0	X	302.51932	107.31704	203.76930	2.20658	0.0973610	0.27584546	2.3371800	20	5 22.1	20.4
419636 2010 TF <sub>13</sub>	17.9	X	239.32096	325.14102	340.36769	4.80552	0.1232565	0.25594132	2.4568338	20	2 22.3	21.4
419637 2010 TY <sub>13</sub>	18.1	X	157.92421	153.51415	257.38081	3.37374	0.0924497	0.25820009	2.4424843	20	4 9.8	21.7
419638 2010 TO <sub>17</sub>	17.8	X	156.08174	135.69464	320.61903	3.86699	0.1226743	0.26704545	2.3882471	20	6 9.9	21.5
419639 2010 TU <sub>19</sub>	17.3	X	342.91168	207.90061	89.07585	6.77003	0.1604855	0.28496543	2.2870444	20	7 12.4	18.8
419640 2010 TL <sub>22</sub>	18.3	X	125.71500	116.01868	21.10973	2.85514	0.1349971	0.27021736	2.3695209	20	7 3.7	21.7
419641 2010 TP <sub>22</sub>	17.5	X	3.07703	247.25525	17.98739	6.98359	0.0918263	0.27869259	2.3212349	20	7 1.8	19.8
419642 2010 TY <sub>25</sub>	17.5	X	263.63803	54.60552	227.37801	4.06713	0.0508290	0.25748852	2.4469821	20	2 23.7	20.8
419643 2010 TA <sub>26</sub>	17.9	X	213.34185	207.94877	203.45281	6.29595	0.0904909	0.27593832	2.3366556	20	6 13.8	21.2
419644 2010 TU <sub>28</sub>	18.0	X	228.86334	7.10757	329.34346	1.74990	0.2171880	0.26302484	2.4125234	20	3 15.7	21.9
419645 2010 TP <sub>29</sub>	18.2	X	248.79402	118.79694	215.44318	1.71923	0.0978906	0.26607864	2.3940288	20	4 10.5	21.6
419646 2010 TT <sub>35</sub>	17.4	X	255.38058	284.57965	67.90613	3.36595	0.1237603	0.27082784	2.3659588	20	5 10.6	20.7
419647 2010 TV <sub>35</sub>	17.0	X	34.99544	38.31948	44.08882	5.08996	0.1663380	0.22735837	2.6586556	20	—	—
419648 2010 TW <sub>37</sub>	17.8	X	205.55847	5.10833	0.89977	2.07665	0.2459545	0.26033847	2.4290912	20	4 1.7	21.8
419649 2010 TX <sub>41</sub>	18.0	X	159.38615	78.77794	353.94668	2.77249	0.0591645	0.26329025	2.4109019	20	5 8.9	21.4
419650 2010 TG <sub>49</sub>	17.1	X	333.38051	229.88981	56.93720	3.45906	0.1996319	0.27849868	2.3223123	20	5 26.3	18.7
419651 2010 TJ <sub>58</sub>	18.2	X	187.81131	275.59245	82.85956	2.61499	0.1979165	0.25781959	2.4448869	20	3 11.0	22.3
419652 2010 TG <sub>62</sub>	17.4	X	354.66420	320.26158	275.54996	4.11924	0.0736683	0.26748820	2.3856110	20	4 28.6	20.0
419653 2010 TT <sub>62</sub>	17.8	X	244.09859	113.08355	235.06852	4.51367	0.2018344	0.26870875	2.3783815	20	4 12.8	21.4
419654 2010 TW <sub>69</sub>	18.1	X	195.82226	239.43880	203.45752	4.36655	0.0886538	0.27824288	2.3237354	20	7 6.2	21.4
419655 2010 TC <sub>73</sub>	18.1	X	162.13908	46.58743	11.44622	3.87858	0.1730231	0.25888523	2.4381731	20	4 28.5	22.0
419656 2010 TC <sub>79</sub>	17.8	X	204.13109	321.57192	45.78315	2.12671	0.2048261	0.25903889	2.4372088	20	4 3.7	21.7
419657 2010 TZ <sub>84</sub>	17.5	X	280.87521	275.38337	30.20865	4.87447	0.0805283	0.26747323	2.3857000	20	4 14.9	20.4
419658 2010 TG <sub>88</sub>	17.9	X	285.61021	240.69851	153.90252	2.13866	0.0587307	0.29067779	2.2569823	20	9 6.3	20.3
419659 2010 TH <sub>92</sub>	17.7	X	210.72308	145.11648	229.00615	6.46088	0.1697180	0.26475919	2.4019762	20	4 16.9	21.5
419660 2010 TN <sub>101</sub>	17.4	X	69.70734	56.44486	32.29209	11.40428	0.0670305	0.24398781	2.5364363	20	2 10.7	20.7
419661 2010 TM <sub>102</sub>	17.1	X	310.86112	306.03316	41.29376	6.99928	0.1464657	0.28694992	2.2764877	20	7 29.5	19.2
419662 2010 TV <sub>102</sub>	17.6	X	318.81595	268.49863	40.89612	7.48797	0.1287980	0.28012645	2.3133072	20	6 11.1	19.8
419663 2010 TG <sub>104</sub>	17.8	X	208.05114	315.91279	28.98405	6.63062	0.1541452	0.25742419	2.4473898	20	3 12.9	21.6
419664 2010 TE <sub>110</sub>	17.6	X	108.45484	74.51943	49.74960	6.67579	0.0706523	0.26412333	2.4058297	20	5 17.2	20.7
419665 2010 TS <sub>113</sub>	17.9	X	188.95019	94.88895	206.13251	15.87612	0.1665700	0.24028827	2.5624044	20	—	—
419666 2010 TZ <sub>137</sub>	16.6	X	148.07934	339.17104	42.80598	7.95637	0.3535660	0.23959606	2.5673373	20	3 19.0	21.3
419667 2010 TT <sub>141</sub>	17.5	X	221.79931	108.54870	253.86681	5.94275	0.1282543	0.26201008	2.4187485	20	4 13.6	21.1
419668 2010 TN <sub>142</sub>	17.3	X	190.11926	41.63056	274.26133	4.64290	0.1457541	0.24195112	2.5506505	20	1 19.8	21.4
419669 2010 TC <sub>144</sub>	17.1	X	315.89369	259.88991	10.63974	10.24060	0.2156845	0.26620154	2.3932919	20	3 25.6	19.6
419670 2010 TD <sub>148</sub>	16.8	X	248.45121	184.24386	35.75078	6.56466	0.0946767	0.22729536	2.6591469	20	—	—
419671 2010 TP <sub>153</sub>	16.4	X	18.14731	258.57396	259.03951	3.80724	0.1583234	0.22419443	2.6836106	20	2 19.2	19.2
419672 2010 TB <sub>168</sub>	18.0	X	282.25912	59.90773	239.95297	0.68216	0.1887982	0.26611650	2.3938018	20	3 23.6	21.1
419673 2010 TC <sub>170</sub>	17.5	X	193.63951	308.77500	85.51681	2.41647	0.1832032	0.26089919	2.4256096	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>
419681 2010 TR <sub>185</sub>	17.8	X	212.27951	24.44864	344.80834	6.34755	0.1512294	0.26141103	2.4224423	20	4 11.7	21.5
419682 2010 TF <sub>187</sub>	17.5	X	263.35000	209.43201	113.43582	4.65477	0.1531016	0.26764459	2.3846816	20	4 8.5	20.9
419683 2010 UV	17.9	X	281.79611	325.42137	339.24169	1.71554	0.2091715	0.26723544	2.3871150	20	3 26.4	21.1
419684 2010 UZ	18.1	X	179.06616	72.53579	32.65994	6.52722	0.2006899	0.26905288	2.3763530	20	7 16.5	22.1
419685 2010 UT <sub>3</sub>	16.8	X	26.20361	208.44088	227.94284	13.23864	0.1105338	0.22149973	2.7053321	20	—	—
419686 2010 UY <sub>11</sub>	17.7	X	244.83090	298.57686	27.66712	4.05141	0.2097888	0.26248674	2.4158194	20	3 18.9	21.6
419687 2010 UC <sub>12</sub>	17.1	X	56.48702	225.30021	210.26920	6.87280	0.1757136	0.23035398	2.6355559	20	1 9.3	19.9
419688 2010 UV <sub>12</sub>	17.8	X	258.46035	9.10844	22.65868	6.32667	0.1298026	0.27840113	2.3228548	20	7 9.3	20.9
419689 2010 UJ <sub>15</sub>	17.6	X	185.22072	22.79572	38.63799	10.11626	0.2081970	0.26319943	2.4114564	20	5 23.3	21.6
419690 2010 UW <sub>21</sub>	17.4	X	224.00509	338.50336	63.52908	6.71867	0.2293077	0.27039192	2.3685010	20	6 1.5	21.1
419691 2010 UP <sub>31</sub>	17.5	X	268.29700	194.55897	137.47451	5.19535	0.2445391	0.27272905	2.3549505	20	4 14.8	21.0
419692 2010 UP <sub>37</sub>	16.6	X	156.45508	281.99182	48.67301	11.93757	0.1384199	0.22861120	2.6489335	20	1 8.0	20.8
419693 2010 UY <sub>40</sub>	17.4	X	218.96597	280.74348	75.86789	2.35306	0.1932611	0.26038516	2.4288008	20	4 3.8	21.2
419694 2010 UC <sub>41</sub>	16.7	X	109.30544	156.09106	265.19230	10.60138	0.0664044	0.23880774	2.5729842	20	2 19.3	20.4
419695 2010 UO <sub>41</sub>	17.3	X	149.86790	218.96682	237.51723	5.17811	0.0996808	0.26256905	2.4153145	20	6 2.6	20.6
419696 2010 UV <sub>41</sub>	17.0	X	231.51805	335.31335	47.43567	10.27366	0.1124131	0.27032036	2.3689190	20	5 23.4	20.3
419697 2010 UO <sub>44</sub>	17.4	X	122.79204	184.03288	273.78672	5.99819	0.0648058	0.25607107	2.4560039	20	4 26.9	20.8
419698 2010 UO <sub>50</sub>	16.5	X	254.85393	292.04290	301.76986	10.78508	0.1626527	0.22860126	2.6490103	20	—	—
419699 2010 UF <sub>55</sub>	17.0	X	82.37931	36.29904	43.97544	13.20594	0.1554601	0.23631300	2.5910610	20	3 5.2	20.4
419700 2010 UY <sub>58</sub>	16.6	X	174.06860	98.11180	246.20164	7.74259	0.1293543	0.23800335	2.5787783	20	2 5.2	20.7
419701 2010 UE <sub>59</sub>	16.7	X	169.31102	286.64819	52.03574	12.83453	0.0855946	0.23315353	2.6144162	20	1 28.6	20.8
419702 2010 UY <sub>59</sub>	16.6	X	23.28191	46.23661	56.50691	14.57077	0.1771460	0.22105624	2.7089492	20	—	—
419703 2010 UG <sub>63</sub>	17.0	X	90.62296	42.68630	39.00803	19.04051	0.2079109	0.23856777	2.5747093	20	3 28.1	20.5
419704 2010 UH <sub>69</sub>	17.2	X	65.45021	232.65934	220.36656	12.81023	0.2318319	0.23406759	2.6076053	20	2 23.4	20.2
419705 2010 UO <sub>70</sub>	16.5	X	13.22442	174.48457	270.83219	13.50323	0.1581402	0.22007411	2.7170027	20	—	—
419706 2010 UU <sub>74</sub>	16.9	X	203.12241	328.16210	64.59642	8.13949	0.1135196	0.25901868	2.4373355	20	5 7.8	20.5
419707 2010 UV <sub>75</sub>	17.4	X	248.65764	61.08671	273.26486	5.89921	0.0261647	0.25636389	2.4541333	20	4 17.2	20.7
419708 2010 UO <sub>76</sub>	17.2	X	211.67623	198.50298	232.04081	8.12279	0.1811377	0.27097906	2.3650785	20	6 30.1	20.9
419709 2010 UN <sub>76</sub>	17.9	X	206.13216	105.98414	310.81846	3.68677	0.1837025	0.26680681	2.3896710	20	6 6.9	21.7
419710 2010 UO <sub>79</sub>	17.5	X	123.69583	46.01285	343.13723	5.44130	0.0941296	0.23668094	2.5883750	20	2 6.8	21.0
419711 2010 UW <sub>80</sub>	16.6	X	59.65806	221.97260	227.15686	21.33764	0.0676575	0.23409538	2.6073989	20	1 16.9	20.3
419712 2010 UO <sub>88</sub>	17.2	X	163.92887	193.84455	269.48585	9.50777	0.1602903	0.26418719	2.4054419	20	6 28.4	21.0
419713 2010 UO <sub>93</sub>	17.2	X	158.22813	277.03710	239.53202	20.92996	0.2401353	0.27441237	2.3453100	20	8 22.6	21.7
419714 2010 UK <sub>98</sub>	17.2	X	50.67616	224.47702	264.94495	3.17747	0.1437224	0.23916581	2.5704155	20	3 9.3	20.0
419715 2010 UO <sub>100</sub>	17.3	X	263.01140	57.45442	295.08681	6.81331	0.1454778	0.27042942	2.3682821	20	5 14.9	20.6
419716 2010 UL <sub>105</sub>	18.1	X	120.91792	20.16153	80.59298	3.03770	0.1462131	0.25276780	2.4773549	20	5 11.5	21.5
419717 2010 VC <sub>14</sub>	17.5	X	234.87466	345.57183	52.20902	6.33409	0.1136551	0.27179678	2.3603324	20	6 17.9	20.8
419718 2010 VR <sub>17</sub>	16.6	X	303.82011	311.99976	69.74048	25.51227	0.2608745	0.28833467	2.2691932	20	9 10.6	19.1
419719 2010 VB <sub>18</sub>	17.6	X	284.50828	205.62101	83.83723	5.45795	0.2244101	0.26202576	2.4186520	20	3 11.6	21.1
419720 2010 VY <sub>19</sub>	16.7	X	101.05180	6.04620	105.73674	5.21558	0.1428939	0.23493835	2.6011583	20	5 4.3	20.3
419721 2010 VT <sub>23</sub>	17.0	X	202.07830	283.56262	48.69278	7.87792	0.1201886	0.24379022	2.5378066	20	2 23.5	21.0
419722 2010 VP <sub>24</sub>	17.9	X	176.72028	132.10440	230.53286	6.03855	0.2102212	0.24696261	2.5160267	20	3 4.1	22.2
419723 2010 VE <sub>25</sub>	17.4	X	134.98167	307.21987	60.30931	3.27475	0.1645299	0.23403310	2.6078615	20	2 1.9	21.1
419724 2010 VO <sub>25</sub>	17.7	X	159.95232	21.99168	66.92839	4.37733	0.1614188	0.25857854	2.4401006	20	6 5.7	21.5
419725 2010 VX <sub>25</sub>	18.0	X	166.52932	256.49326	200.39550	1.51973	0.1707573	0.26185744	2.4196884	20	6 22.7	21.7
419726 2010 VM <sub>26</sub>	18.4	X	187.77641	286.52375	145.18332	1.11537	0.1943131	0.26230016	2.4169649	20	6 9.5	22.4
419727 2010 VU <sub>28</sub>	17.4	X	224.74764	304.11696	104.30308	3.40242	0.2035529	0.27102801	2.3647937	20	6 12.9	21.0
419728 2010 VR <sub>29</sub>	16.2	X	79.55313	157.16628	241.09833	12.46502	0.0939140	0.22666886	2.6640445	20	—	—
419729 2010 VX <sub>31</sub>	17.3	X	241.63044	262.51444	88.12728	3.75357	0.1865892	0.26420554	2.4053306	20	4 17.9	21.0
419730 2010 VF <sub>36</sub>	16.4	X	84.41225	228.80337	260.42594	13.62186	0.0565899	0.25284919	2.4768232	20	4 14.5	19.8
419731 2010 VS <sub>46</sub>	17.2	X	143.27294	148.96008	271.10236	4.96866	0.0816463	0.24732961	2.5135372	20	4 3.5	20.8
419732 2010 VW <sub>46</sub>	16.7	X	246.64420	237.17019	44.83475	7.52133	0.1568387	0.23999419	2.5644972	20	2 2.5	20.8
419733 2010 VY <sub>46</sub>	17.3	X	118.93390	227.69976	264.67994	5.35901	0.1115309	0.25699367	2.4501223	20	6 16.4	20.7
419734 2010 VS <sub>51</sub>	16.2	X	227.14293	43.22348	263.10019	14.13436	0.12126946	0.24135712	2.5548337	20	2 7.0	20.4
419735 2010 VY <sub>51</sub>	17.6	X	61.44087	41.94240	57.68553	7.03394	0.2342152	0.23315932	2.6143729	20	3 6.7	20.3
419736 2010 VB <sub>52</sub>	17.7	X	121.31868	143.11136	65.11276	6.44556	0.0714276	0.28582438	2.2824601	20	10 3.9	20.8
419737 2010 VZ <sub>60</sub>	17.5	X	295.70228	179.48909	177.88713	5.80825	0.2622507	0.28097922	2.3086242	20	6 20.6	19.8
419738 2010 VW <sub>66</sub>	17.3	X	262.58959	204.47980	119.79747	6.34324	0.1600576	0.26476902	2.4019167	20	4 9.6	20.8
419739 2010 VY <sub>70</sub>	17.4	X	232.54761	281.74982	122.63547	7.59090	0.2074929	0.27326918	2.3518463	20	6 15.4	21.0
419740 2010 VN <sub>72</sub>	17.8	X	188.32167	136.92728	234.26025	12.79361	0.2423327	0.25540603	2.4602654	20	3 22.1	22.2
419741 2010 VT <sub>73</sub>	17.2	X	165.31715	31.00108	56.75256	8.81378	0.1716176	0.26153691	2.4216650	20	6 9.0	21.2
419742 2010 VG <sub>74</sub>	17.5	X	159.74480	180.63689	169.32640	6.35506	0.2562611	0.24224565	2.5485827	20	2 8.7	21.9
419743 2010 VN <sub>74</sub>	17.1	X	223.06288	16.22893	46.07343	7.64741	0.0713160	0.27340069	2.3510921	20	7 14.3	20.3
419744 2010 VP <sub>77</sub>	18.0	X	175.66362	305.20420	105.44888	6.74404	0.2181609	0.25986101	2.4320657	20	5 5.8	22.1
419745 2010 VH <sub>80</sub>	16.9	X	266.09360	165.28932	58.55945	8.31135	0.1203909	0.22947464	2.6422845	20	—	—
419746 2010 VT <sub>81</sub>	17.1	X	113.13339	45.78308	50.84771	5.71197	0.1614658	0.24474431	2.5312069	20	4 29.3	20.7
419747 2010 VW <sub>83</sub>	17.7	X	96.66725	21.98466	56.06191	7.85640	0.0797935	0.23855972	2.5747672	20	3 7.3	21.1
419748 2010 VD <sub>85</sub>	17.2	X	50.79864	95.79840	62.32770	5.26733	0.2502858	0.24075350	2.5591023	20	5 10.1	19.7
419749 2010 VA <sub>86</sub>	17.2	X	68.72741	31.69583	60.41594	5.69055	0.1685980	0.23195371	2.6234241	20	2 27.0	20.1
419750 2010 VB <sub>87</sub>	18.3	X	176.18397	303.07646	36.26658	9.22401	0.2995234	0.24404604	2.5360329	20	2 15.3	23.0
419751 2010 VB <sub>89</sub>	17.1	X	198.25306	300.53718	29.28800	4.52542	0.1851388	0.24335394	2.5408389	20	2 15.7	21.3
419752 2010 VN <sub>90</sub>	17.5	X	174.21973	69.65083	280.20518	3.33259	0.2792661	0.24397394	2.5365325	20	2 20.2	22.1
419753 2010 VO <sub>90</sub>	16.5	X	22.15183	270.21005	255.60143	9.80984	0.1910942	0.23575698	2.5951334	20	3 4.3	19.0
419754 2010 VF												

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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>
419761 2010 VK <sub>114</sub>	17.5	X	89.80906	73.57851	4.22651	4.21748	0.1867097	0.23580253	2.5947991	20	3 10.7	20.8
419762 2010 VO <sub>114</sub>	17.7	X	208.19587	61.69614	348.20823	3.42505	0.2032852	0.26441076	2.4040858	20	5 29.5	21.7
419763 2010 VQ <sub>114</sub>	17.1	X	143.61895	79.80134	325.76159	3.39620	0.1039270	0.24420309	2.5349454	20	3 20.1	20.8
419764 2010 VP <sub>120</sub>	17.2	X	181.82302	357.37541	73.10943	6.80556	0.0860528	0.26077445	2.4263830	20	6 3.1	20.5
419765 2010 VX <sub>122</sub>	17.5	X	76.13096	293.32734	259.35302	5.68326	0.1550903	0.26528143	2.3988227	20	7 21.7	20.5
419766 2010 VA <sub>131</sub>	17.7	X	159.49889	239.98509	129.76635	6.69125	0.2117027	0.24603169	2.5223694	20	3 2.5	21.7
419767 2010 VC <sub>132</sub>	17.4	X	359.44092	239.27271	50.95754	7.08787	0.1835015	0.28228622	2.3014927	20	8 16.3	19.2
419768 2010 VF <sub>133</sub>	17.6	X	208.49494	65.42599	53.39382	6.15265	0.2060197	0.27866560	2.3213848	20	9 1.7	21.2
419769 2010 VG <sub>133</sub>	17.1	X	156.01857	279.56142	51.61668	10.21606	0.2179795	0.23453668	2.6041273	20	1 14.9	21.4
419770 2010 VC <sub>134</sub>	17.6	X	316.88187	118.92074	212.73759	1.23653	0.2304865	0.28167909	2.3047986	20	6 28.7	19.3
419771 2010 VF <sub>137</sub>	18.0	X	146.16491	273.60491	157.31128	2.10192	0.1958140	0.25195124	2.4827046	20	5 3.2	21.8
419772 2010 VO <sub>146</sub>	16.8	X	272.64508	165.55222	86.65148	8.17299	0.0920601	0.24051896	2.5607656	20	1 27.9	20.5
419773 2010 VR <sub>147</sub>	17.5	X	197.28542	7.80379	79.75545	6.65196	0.0949018	0.27040973	2.3683970	20	7 14.9	20.8
419774 2010 VT <sub>147</sub>	17.8	X	185.42517	254.56169	122.05266	2.55385	0.2105527	0.25255492	2.4787468	20	3 31.6	22.0
419775 2010 VW <sub>151</sub>	16.9	X	13.59932	135.60400	86.76567	8.30358	0.0465663	0.25751855	2.4467919	20	5 14.8	19.7
419776 2010 VF <sub>161</sub>	17.5	X	258.91626	153.24303	241.62899	5.35584	0.0927612	0.27609969	2.3357451	20	7 17.9	20.5
419777 2010 VG <sub>165</sub>	17.5	X	125.64348	154.30296	263.62650	4.99848	0.2152856	0.24199995	2.5503074	20	3 27.1	21.5
419778 2010 VZ <sub>170</sub>	17.3	X	136.35260	129.44255	238.26304	3.49684	0.2847850	0.23723421	2.5843491	20	2 12.9	21.5
419779 2010 VL <sub>172</sub>	17.3	X	241.30751	247.28909	46.72976	3.15167	0.1344855	0.24217525	2.5490765	20	2 11.8	21.1
419780 2010 VQ <sub>173</sub>	17.3	X	133.77724	113.52238	246.23472	6.32944	0.2096156	0.23197834	2.6232384	20	1 24.7	21.3
419781 2010 VP <sub>178</sub>	17.9	X	82.02514	124.81717	357.21103	0.45840	0.0668222	0.24745513	2.5126871	20	4 7.8	21.0
419782 2010 VF <sub>182</sub>	17.5	X	139.02209	14.39343	357.21154	3.77465	0.0812554	0.23534718	2.5981450	20	2 1.4	21.0
419783 2010 VM <sub>185</sub>	17.9	X	193.49064	68.77317	0.74297	6.37485	0.0878926	0.26566087	2.3965380	20	6 14.8	21.4
419784 2010 VN <sub>196</sub>	17.3	X	53.26066	130.44860	22.60291	4.44830	0.1741553	0.24498137	2.5295737	20	4 22.7	19.7
419785 2010 VQ <sub>198</sub>	16.6	X	136.85104	278.40925	71.15245	16.12552	0.0184296	0.22740132	2.6583208	20	—	—
419786 2010 VY <sub>199</sub>	17.4	X	91.60167	350.34258	79.78227	15.10310	0.2324009	0.23564641	2.5959451	20	3 18.4	21.1
419787 2010 VZ <sub>203</sub>	17.5	X	253.46585	289.18100	44.47616	2.96241	0.1991547	0.26461248	2.4028638	20	4 5.7	21.1
419788 2010 VZ <sub>204</sub>	18.1	X	240.24531	204.30041	188.67354	2.03786	0.1586137	0.27186007	2.3599661	20	6 12.8	21.3
419789 2010 VB <sub>206</sub>	18.2	X	160.54828	95.92153	337.16690	0.78739	0.1704466	0.25841837	2.4411088	20	5 16.9	22.0
419790 2010 VX <sub>208</sub>	17.1	X	253.61353	300.81295	22.18146	7.10158	0.1429912	0.26007998	2.4307004	20	3 29.2	20.6
419791 2010 VQ <sub>210</sub>	17.2	X	138.26405	321.78934	239.73550	7.78296	0.1468567	0.28963768	2.2623824	20	10 10.2	20.7
419792 2010 VV <sub>216</sub>	16.6	X	59.16587	340.73287	47.42891	6.30087	0.0691651	0.21754098	2.7380539	20	—	—
419793 2010 VD <sub>217</sub>	17.3	X	179.08629	123.00980	345.03407	6.72873	0.0624062	0.27567870	2.3381224	20	7 24.6	20.5
419794 2010 VT <sub>218</sub>	17.4	X	214.43576	51.19270	271.80758	6.62750	0.2051277	0.25199199	2.4824369	20	2 15.7	21.7
419795 2010 VR <sub>219</sub>	17.3	X	42.33611	217.38250	42.24878	6.89471	0.0877727	0.28095987	2.3087302	20	9 3.6	20.0
419796 2010 WU <sub>3</sub>	17.4	X	255.70170	24.73525	188.15945	2.04283	0.0353357	0.22154121	2.7049944	20	—	—
419797 2010 WP <sub>13</sub>	17.6	X	160.34196	279.71220	44.80311	4.74859	0.3115702	0.23552828	2.5968130	20	1 16.7	22.1
419798 2010 WK <sub>15</sub>	16.8	X	21.89718	206.44494	65.19885	11.98026	0.1524790	0.27618418	2.3352686	20	8 31.9	19.4
419799 2010 WP <sub>29</sub>	17.7	X	223.57539	324.41014	104.95136	6.60409	0.1529915	0.27269633	2.3551389	20	7 14.5	21.0
419800 2010 WH <sub>30</sub>	16.6	X	182.45398	233.03698	69.60273	11.90358	0.1686313	0.22853675	2.6495087	20	—	—
419801 2010 WM <sub>48</sub>	17.8	X	238.47612	329.33658	56.54538	3.45114	0.1806741	0.26734340	2.3864723	20	5 29.5	21.4
419802 2010 WT <sub>48</sub>	17.1	X	262.80367	206.81714	66.78894	7.85623	0.1662955	0.24043819	2.5613391	20	2 6.8	21.1
419803 2010 WH <sub>50</sub>	16.3	X	186.86321	201.48159	280.30186	26.69392	0.2352275	0.27633363	2.3344266	20	8 1.9	20.6
419804 2010 WC <sub>54</sub>	16.7	X	266.44780	331.46085	286.12473	4.57030	0.0492927	0.23442558	2.6049500	20	1 31.2	20.4
419805 2010 WW <sub>54</sub>	16.8	X	348.52175	67.96060	55.08425	13.77671	0.0461911	0.21886548	2.7269962	20	—	—
419806 2010 WN <sub>55</sub>	17.4	X	145.09882	121.08405	269.62031	5.61232	0.3090181	0.24018645	2.5631285	20	3 18.3	22.0
419807 2010 WU <sub>56</sub>	17.3	X	226.83366	309.12893	90.30605	8.54026	0.1110009	0.26681291	2.3896345	20	6 11.4	20.5
419808 2010 WD <sub>59</sub>	17.6	X	119.44424	82.96444	297.68625	2.73607	0.3123804	0.23461945	2.6035148	20	2 17.3	21.6
419809 2010 WD <sub>62</sub>	17.4	X	111.44513	133.11528	315.58616	0.48151	0.0750007	0.24371058	2.5383595	20	4 4.1	20.6
419810 2010 WE <sub>64</sub>	16.9	X	198.25214	255.21310	83.05818	5.14083	0.1689044	0.24292501	2.5438289	20	2 26.1	21.0
419811 2010 WD <sub>67</sub>	17.5	X	120.28611	140.49390	285.24145	3.18513	0.1609593	0.24117283	2.5561351	20	3 25.9	21.2
419812 2010 WL <sub>69</sub>	17.4	X	86.58549	149.69788	306.20901	0.87801	0.1343402	0.23761454	2.5815906	20	3 20.9	20.7
419813 2010 WS <sub>70</sub>	16.3	X	147.76329	236.41921	97.46445	13.41645	0.0782962	0.21564733	2.7540595	20	—	—
419814 2010 WJ <sub>74</sub>	16.8	X	164.27155	246.19173	88.52299	8.79522	0.1436191	0.23690700	2.5867281	20	1 19.9	20.8
419815 2010 XB <sub>5</sub>	17.7	X	109.96766	323.23639	96.05951	2.52511	0.0825704	0.23781569	2.5801347	20	2 26.5	21.1
419816 2010 XO <sub>8</sub>	17.0	X	65.53264	301.27442	107.57586	8.18074	0.1594899	0.22101013	2.7093260	20	—	—
419817 2010 XZ <sub>9</sub>	16.8	X	228.79027	202.42314	95.97811	10.38134	0.1589574	0.23916554	2.5704173	20	2 5.1	21.0
419818 2010 XH <sub>12</sub>	16.9	X	76.20835	270.04244	284.73493	5.24016	0.0710695	0.25431336	2.4673074	20	7 11.8	19.8
419819 2010 XJ <sub>13</sub>	16.6	X	11.31626	355.93548	84.99272	5.02480	0.0748483	0.21329540	2.7742678	20	—	—
419820 2010 XN <sub>14</sub>	16.1	X	118.49683	180.19836	249.44658	12.36665	0.1833320	0.23760523	2.5816581	20	3 28.8	20.1
419821 2010 XG <sub>19</sub>	17.5	X	109.49196	213.11606	216.22801	8.22641	0.1424487	0.23796267	2.5790722	20	3 14.9	21.1
419822 2010 XE <sub>23</sub>	17.7	X	173.14510	279.16517	69.42534	2.62854	0.0166520	0.23613338	2.5923748	20	2 5.9	21.1
419823 2010 XZ <sub>37</sub>	17.0	X	132.54892	353.66681	82.16096	10.46568	0.1193656	0.24110375	2.5566233	20	4 23.2	20.8
419824 2010 XC <sub>42</sub>	16.8	X	76.72240	351.62060	91.05945	12.60775	0.1589043	0.22661715	2.6644497	20	2 28.7	20.2
419825 2010 XH <sub>42</sub>	16.9	X	118.94108	269.90754	101.54532	6.67997	0.0929082	0.21958620	2.7210260	20	1 11.3	20.7
419826 2010 XL <sub>42</sub>	17.9	X	190.36580	1.55034	41.50381	3.30767	0.1620233	0.26555474	2.3971765	20	5 6.0	21.6
419827 2010 XE <sub>43</sub>	16.5	X	128.63020	348.76327	102.37585	13.46552	0.1063009	0.24035102	2.5619583	20	5 7.7	20.4
419828 2010 XX <sub>45</sub>	16.3	X	211.36286	223.41272	117.42957	16.46362	0.1822983	0.23798487	2.5789118	20	3 14.9	20.8
419829 2010 XK <sub>52</sub>	18.0	X	99.10500	210.22042	291.33466	15.63270	0.5178520	0.23868977	2.5738319	20	7 15.6	22.9
419830 2010 XM <sub>54</sub>	16.6	X	14.80950	260.59583	167.47993	9.05395	0.1823673	0.21126944	2.7919755	20	—	—
419831 2010 XH <sub>57</sub>	17.3	X	80.13649	196.57638	319.16585	6.78739	0.1661725	0.23608157	2.5927541	20	6 6.6	20.8
419832 2010 XE <sub>59</sub>	16.4	X	23.88624	13.72170	76.97880	10.21399	0.1282238	0.21760772	2.7374941	20	—	—
419833 2010 XZ <sub>60</sub>	16.8	X	31.41886	83.43232	65.07641	22.41792	0.1183974	0.23795392	2.5791354	20	3 17.2	20.2</



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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>
419841 2010 XB <sub>85</sub>	16.7	X	88.00094	158.40666	239.76658	11.88699	0.1629380	0.22544060	2.6737120	20	1 10.6	20.1
419842 2010 XN <sub>87</sub>	16.9	X	52.07947	189.96512	283.96586	4.02853	0.0742088	0.21944451	2.7221971	20	2 15.9	20.2
419843 2010 YX <sub>2</sub>	16.7	X	160.49371	331.61362	23.27367	6.78902	0.0217460	0.22377170	2.6869893	20	2 2.3	20.4
419844 2010 YP <sub>5</sub>	17.8	X	137.47473	92.43217	308.76392	2.36075	0.2689108	0.23893878	2.5720434	20	3 23.9	22.0
419845 2011 AO	16.6	X	100.37656	341.76120	103.87573	8.53844	0.1048798	0.23303391	2.6153107	20	3 26.9	20.2
419846 2011 AH <sub>4</sub>	15.7	X	79.53736	35.79653	102.58288	28.30849	0.0065013	0.23810116	2.5780720	20	5 3.9	19.8
419847 2011 AO <sub>5</sub>	16.8	X	171.97452	146.84342	350.85061	7.56484	0.0874951	0.26821001	2.3813290	20	8 24.4	20.1
419848 2011 AO <sub>7</sub>	16.8	X	85.61674	297.46951	108.32652	13.83743	0.2606361	0.22324114	2.6912450	20	2 6.2	20.0
419849 2011 AO <sub>8</sub>	17.0	X	58.50230	129.11126	292.83797	4.11905	0.1263036	0.21595462	2.7514464	20	—	—
419850 2011 AT <sub>9</sub>	16.2	X	78.51003	347.09257	109.40850	22.88412	0.0336564	0.22857697	2.6491979	20	3 3.5	20.1
419851 2011 AY <sub>9</sub>	17.5	X	151.54784	184.42021	296.07815	4.43800	0.1277524	0.25596955	2.4566532	20	7 7.9	21.2
419852 2011 AG <sub>10</sub>	17.3	X	134.03727	120.79359	290.12994	1.86596	0.1165145	0.23448092	2.6045401	20	3 18.5	21.1
419853 2011 AM <sub>10</sub>	16.9	X	38.64147	73.68594	289.39458	10.64579	0.1607177	0.19472585	2.9479513	20	—	—
419854 2011 AQ <sub>10</sub>	17.5	X	182.79551	243.43704	139.89799	0.76011	0.2193144	0.24471823	2.5313867	20	4 6.3	21.8
419855 2011 AW <sub>11</sub>	17.5	X	71.79942	190.80620	294.25210	4.88630	0.1248334	0.23334389	2.6129941	20	4 4.3	20.7
419856 2011 AX <sub>11</sub>	16.8	X	327.78429	57.23367	113.35150	14.95183	0.0325320	0.21576390	2.7530675	20	1 4.4	20.4
419857 2011 AB <sub>12</sub>	16.7	X	100.70227	137.84401	293.09495	11.05015	0.1601069	0.22907464	2.6453596	20	3 6.4	20.4
419858 2011 AC <sub>13</sub>	16.0	X	176.70070	228.12909	325.13974	15.09377	0.1562580	0.17278438	3.1925158	20	10 15.3	21.5
419859 2011 AU <sub>14</sub>	16.9	X	93.21098	148.34322	316.64649	14.03433	0.0496561	0.23425521	2.6062128	20	3 22.3	20.5
419860 2011 AX <sub>14</sub>	15.8	X	262.90579	172.93598	313.54603	16.32958	0.1822507	0.18391844	3.0623339	20	10 21.5	20.3
419861 2011 AD <sub>15</sub>	15.7	X	213.81690	178.13693	35.59863	12.67437	0.1578412	0.17683588	3.1435651	20	12 18.3	20.6
419862 2011 AP <sub>15</sub>	15.7	X	309.72590	297.01282	252.05774	12.14377	0.1411803	0.21130062	2.7917008	20	—	—
419863 2011 AV <sub>15</sub>	16.4	X	134.81502	8.73299	56.10660	14.42613	0.1254822	0.23875640	2.5733531	20	4 13.3	20.3
419864 2011 AV <sub>20</sub>	17.0	X	352.68387	210.43159	320.61125	4.16113	0.1484699	0.21935422	2.7229440	20	1 25.7	19.9
419865 2011 AR <sub>21</sub>	17.5	X	102.68605	177.72647	309.55769	9.91539	0.1306768	0.24185514	2.5513253	20	5 20.8	21.3
419866 2011 AB <sub>22</sub>	16.5	X	28.68924	47.35346	114.51111	13.36472	0.1133728	0.22820183	2.6521005	20	3 23.4	19.7
419867 2011 AF <sub>24</sub>	16.8	X	352.02445	41.30289	106.50889	5.29079	0.1808007	0.21370529	2.7707193	20	—	—
419868 2011 AG <sub>24</sub>	17.2	X	121.11232	304.10375	122.60052	5.89472	0.2676602	0.23591279	2.5939905	20	4 11.7	21.3
419869 2011 AL <sub>27</sub>	15.9	X	231.28271	236.38702	299.06886	9.80327	0.0744628	0.18579305	3.0417002	20	12 4.7	20.4
419870 2011 AT <sub>27</sub>	16.6	X	269.79448	291.79390	295.69641	7.66389	0.0193260	0.21450890	2.7637951	20	1 5.4	20.3
419871 2011 AV <sub>27</sub>	17.9	X	126.13926	143.27938	281.70155	4.45977	0.3193722	0.23894937	2.5719674	20	4 15.7	22.3
419872 2011 AW <sub>27</sub>	17.1	X	105.01292	211.72511	122.85546	1.22261	0.1282676	0.22811621	2.6527640	20	3 4.3	20.5
419873 2011 AX <sub>32</sub>	18.0	X	62.08176	48.87646	29.48345	2.47737	0.2674405	0.22235111	2.6985514	20	2 10.8	20.6
419874 2011 AL <sub>32</sub>	17.0	X	89.10758	324.00671	85.87209	6.07071	0.2098002	0.22321913	2.6914218	20	2 8.6	20.3
419875 2011 AP <sub>33</sub>	17.2	X	158.75716	17.36212	336.59935	5.73199	0.0597859	0.22277394	2.6950063	20	2 1.4	20.9
419876 2011 AT <sub>33</sub>	16.9	X	98.19593	353.51799	22.61522	4.91632	0.0861241	0.21262009	2.7801390	20	—	—
419877 2011 AY <sub>33</sub>	17.5	X	83.17329	310.62535	159.57960	7.67912	0.1481105	0.23288604	2.6164177	20	4 9.6	20.8
419878 2011 AF <sub>35</sub>	16.2	X	214.58058	261.16644	99.68810	12.76040	0.2452529	0.24755214	2.5120306	20	4 9.7	20.8
419879 2011 AO <sub>35</sub>	16.2	X	331.69060	224.99598	297.06674	9.11440	0.0639411	0.21261519	2.7801818	20	—	—
419880 2011 AH <sub>37</sub>	19.5	X	128.53097	322.39501	102.07282	9.65819	0.6721110	0.24264111	2.5458127	20	5 11.9	25.1
419881 2011 AW <sub>38</sub>	17.3	X	142.44797	324.76801	96.08264	6.58732	0.1954032	0.24105697	2.5569540	20	4 19.7	21.4
419882 2011 AS <sub>39</sub>	16.0	X	336.91991	125.02230	269.67708	8.31719	0.0882903	0.18149021	3.0895881	20	10 31.9	20.0
419883 2011 AO <sub>40</sub>	15.4	X	328.59599	97.04023	291.01230	25.87296	0.0909412	0.17620158	3.1511049	20	9 25.4	20.1
419884 2011 AL <sub>41</sub>	17.2	X	345.01932	139.27951	8.68054	4.43279	0.0904186	0.21339308	2.7734212	20	—	—
419885 2011 AG <sub>42</sub>	17.9	X	43.52113	118.59006	33.21966	2.57757	0.1396532	0.23057786	2.6338496	20	3 31.7	20.8
419886 2011 AQ <sub>43</sub>	15.9	X	309.43710	326.15844	118.04063	10.60876	0.1217355	0.18619686	3.0373008	20	11 26.5	19.7
419887 2011 AL <sub>45</sub>	16.2	X	140.89392	97.26073	310.80322	21.42104	0.0285057	0.22861607	2.6488958	20	3 4.1	20.2
419888 2011 AW <sub>45</sub>	16.4	X	201.85829	61.45463	138.42095	11.44425	0.0734688	0.18146540	3.0898697	20	12 2.8	21.1
419889 2011 AX <sub>45</sub>	16.5	X	12.44785	353.04664	136.27372	9.03259	0.1661269	0.21363224	2.7713509	20	1 3.3	19.4
419890 2011 AY <sub>49</sub>	17.4	X	39.47938	74.59435	71.70606	3.11429	0.1440714	0.22852542	2.6495963	20	3 18.3	20.1
419891 2011 AW <sub>52</sub>	16.5	X	75.42259	154.80973	325.42388	12.44856	0.1018319	0.22971530	2.6404387	20	3 27.6	20.0
419892 2011 AS <sub>53</sub>	17.0	X	186.23069	60.66802	327.98107	6.99146	0.0458240	0.24410799	2.5356037	20	4 10.2	20.7
419893 2011 AE <sub>54</sub>	17.4	X	142.90012	160.53726	306.69047	6.11416	0.1222002	0.25040188	2.4929352	20	6 10.2	21.1
419894 2011 AU <sub>54</sub>	17.9	X	65.23967	97.63504	15.62919	2.66285	0.0970858	0.22906285	2.6454503	20	3 9.2	21.1
419895 2011 AV <sub>60</sub>	17.5	X	119.58728	332.34320	93.71272	2.52710	0.1554848	0.23421822	2.6064872	20	3 28.6	21.2
419896 2011 AQ <sub>61</sub>	16.9	X	53.54103	30.74485	116.73199	4.96041	0.1687940	0.23229378	2.6208630	20	4 18.4	19.8
419897 2011 AY <sub>61</sub>	17.9	X	85.89479	11.76509	47.45235	3.53622	0.1779413	0.22350929	2.6890920	20	2 10.9	21.2
419898 2011 AO <sub>65</sub>	17.9	X	135.05512	321.71112	103.83125	5.26131	0.2124531	0.23813883	2.5778001	20	4 19.6	22.0
419899 2011 AG <sub>66</sub>	17.2	X	78.80329	297.72187	118.10403	3.93708	0.1643965	0.21767832	2.7369021	20	1 24.3	20.3
419900 2011 AN <sub>67</sub>	16.6	X	223.38171	241.51930	123.95544	5.27459	0.2584037	0.25226413	2.4806513	20	4 17.3	20.9
419901 2011 AQ <sub>67</sub>	17.5	X	15.64197	353.62107	126.44582	1.64711	0.0072822	0.21616881	2.7496285	20	1 4.8	21.1
419902 2011 AT <sub>67</sub>	16.5	X	140.10361	189.05717	121.21159	10.43708	0.0619498	0.20346561	2.8629167	20	—	—
419903 2011 AG <sub>74</sub>	16.3	X	56.92125	255.76319	279.68643	20.56465	0.1474520	0.23591404	2.5939814	20	5 28.1	19.6
419904 2011 AW <sub>74</sub>	17.0	X	126.12843	125.10868	305.16669	10.76138	0.1519007	0.23685163	2.5871313	20	4 2.2	21.0
419905 2011 AY <sub>74</sub>	16.2	X	123.33091	121.62222	136.95086	21.54089	0.0386311	0.23148061	2.6269974	20	3 5.5	20.2
419906 2011 AW <sub>79</sub>	16.2	X	160.03929	9.47305	32.21707	9.01944	0.1788243	0.23990187	2.5651551	20	4 9.2	20.4
419907 2011 BQ <sub>1</sub>	16.9	X	347.37346	318.40016	286.88306	3.56434	0.1503852	0.23975495	2.5662029	20	4 25.5	19.5
419908 2011 BB <sub>6</sub>	17.4	X	117.27765	291.46594	108.01764	2.98759	0.0988905	0.22497622	2.6773900	20	2 13.9	20.9
419909 2011 BC <sub>6</sub>	17.6	X	80.45024	152.53180	311.49771	1.37227	0.1693816	0.23113480	2.6296170	20	3 28.9	20.8
419910 2011 BD <sub>7</sub>	16.6	X	30.98516	297.94352	111.87445	6.14132	0.0740496	0.20159440	2.8806052	20	—	—
419911 2011 BM <sub>8</sub>	17.5	X	134.28434	357.57546	102.51406	4.31777	0.0792703	0.24496936	2.5296564	20	5 19.5	21.1
419912 2011 BR <sub>9</sub>	16.4	X	331.65298	77.90284	307.13569	9.65925	0.1193253	0.17864900	3.1222595	20	10 7.3	20.4
419913 2011 BM <sub>10</sub>	16.8	X	351.44692	359.45708	156.07987	10.18136	0.1460039	0.21011608	2.8021832	20	1 4.5	20.2
419914 2011 BK <sub>12</sub>	16.5	X	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>
419921 2011 <i>BB</i> <sub>23</sub>	17.3	X	23.58206	159.61052	300.76845	5.06964	0.0967892	0.20998776	2.8033246	20	—	—
419922 2011 <i>BJ</i> <sub>24</sub>	17.7	X	194.52325	188.84843	191.06811	8.08556	0.6413075	0.26459234	2.4029858	20	4 10.4	23.3
419923 2011 <i>BF</i> <sub>27</sub>	16.4	X	346.62205	347.46760	126.12623	16.15136	0.0932340	0.20314721	2.8659073	20	—	—
419924 2011 <i>BT</i> <sub>29</sub>	16.6	X	101.20202	313.92897	103.31054	12.82670	0.0142829	0.22139830	2.7061583	20	2 5.5	20.3
419925 2011 <i>BO</i> <sub>31</sub>	16.8	X	128.34465	90.32933	326.83540	10.94171	0.0247456	0.22802356	2.6534825	20	3 7.1	20.5
419926 2011 <i>BD</i> <sub>33</sub>	17.1	X	83.50451	106.72354	313.91812	3.46156	0.0512557	0.21550420	2.7552788	20	1 22.3	20.5
419927 2011 <i>BW</i> <sub>33</sub>	16.9	X	174.30835	58.44771	319.07816	6.38167	0.0293200	0.22892446	2.6465164	20	3 13.9	20.6
419928 2011 <i>BE</i> <sub>35</sub>	17.5	X	137.77715	129.89152	301.59791	1.36472	0.2638297	0.24076944	2.5589893	20	4 30.2	21.9
419929 2011 <i>BL</i> <sub>44</sub>	16.4	X	318.25398	259.65161	296.39626	8.35344	0.0998685	0.21334180	2.7738656	20	1 14.9	19.9
419930 2011 <i>BO</i> <sub>51</sub>	16.9	X	10.06765	145.22642	331.98590	10.70500	0.1949872	0.21148764	2.7900547	20	—	—
419931 2011 <i>BP</i> <sub>51</sub>	17.5	X	148.36900	106.33200	331.37602	9.90706	0.2238239	0.24459134	2.5322622	20	5 11.3	21.9
419932 2011 <i>BC</i> <sub>52</sub>	15.5	X	183.37051	94.70899	322.62451	16.35821	0.1640377	0.17876865	3.1208661	20	11 29.4	20.8
419933 2011 <i>BQ</i> <sub>54</sub>	16.9	X	178.63330	24.10873	19.17362	4.55836	0.1947919	0.24432104	2.5341295	20	4 25.9	21.1
419934 2011 <i>BE</i> <sub>55</sub>	17.3	X	110.17603	8.84618	83.07761	3.68246	0.1764643	0.23513019	2.5997432	20	4 22.9	20.9
419935 2011 <i>BG</i> <sub>55</sub>	16.8	X	30.34593	93.72201	327.56593	13.96136	0.1415153	0.20343033	2.8632476	20	—	—
419936 2011 <i>BK</i> <sub>62</sub>	16.9	X	54.42214	300.83041	95.07279	6.86151	0.0729276	0.20156066	2.8809267	20	—	—
419937 2011 <i>BW</i> <sub>62</sub>	16.7	X	326.80255	0.21390	100.58503	10.64690	0.0878060	0.19282245	2.9673195	20	—	—
419938 2011 <i>BG</i> <sub>68</sub>	17.1	X	31.42812	59.73804	44.51562	4.31525	0.0304384	0.21423134	2.7661817	20	1 5.9	20.7
419939 2011 <i>BL</i> <sub>75</sub>	16.5	X	63.05774	262.08407	157.31028	13.41705	0.1989860	0.21025424	2.8009555	20	1 8.2	19.7
419940 2011 <i>BC</i> <sub>79</sub>	17.0	X	157.19046	310.83826	86.83062	5.25924	0.2790516	0.24130973	2.5551682	20	4 8.2	21.5
419941 2011 <i>BB</i> <sub>80</sub>	15.9	X	202.44804	100.63944	115.09861	12.91470	0.0772643	0.18811989	3.0165665	20	12 21.6	20.4
419942 2011 <i>BD</i> <sub>82</sub>	16.8	X	339.07650	65.08342	86.87174	5.97933	0.1036335	0.21158867	2.7891665	20	—	—
419943 2011 <i>BL</i> <sub>82</sub>	17.1	X	34.42825	120.77261	98.11050	8.54763	0.1897271	0.24267052	2.5456071	20	6 29.2	19.7
419944 2011 <i>BQ</i> <sub>82</sub>	15.9	X	258.36630	211.66209	323.52690	15.90698	0.0410061	0.19589145	2.9362458	20	—	—
419945 2011 <i>BE</i> <sub>82</sub>	16.5	X	36.16280	1.00719	89.87266	4.86572	0.0697107	0.21217484	2.7840271	20	—	—
419946 2011 <i>BX</i> <sub>82</sub>	16.5	X	188.99908	258.70126	115.93863	14.77123	0.1708700	0.23881481	2.5729334	20	4 7.1	21.0
419947 2011 <i>BJ</i> <sub>84</sub>	15.8	X	142.69373	276.39155	338.58274	17.50062	0.0600753	0.18113196	3.0936605	20	11 30.7	20.8
419948 2011 <i>BY</i> <sub>86</sub>	17.1	X	95.32726	282.55620	136.44086	4.11672	0.0846797	0.22117087	2.7080131	20	2 8.5	20.7
419949 2011 <i>BB</i> <sub>89</sub>	16.3	X	323.15280	294.57783	137.82524	10.44268	0.0526453	0.18289952	3.0736967	20	12 2.9	20.5
419950 2011 <i>BE</i> <sub>89</sub>	17.2	X	144.49982	277.89270	141.99995	5.44420	0.1465834	0.23548147	2.5971571	20	4 15.7	21.1
419951 2011 <i>BA</i> <sub>90</sub>	17.5	X	54.26786	337.31883	117.33339	3.02947	0.0620019	0.21635736	2.7480308	20	1 26.0	20.8
419952 2011 <i>BM</i> <sub>94</sub>	17.1	X	74.70047	320.39265	94.60980	7.32144	0.0578315	0.21576021	2.7530989	20	1 3.7	20.5
419953 2011 <i>BF</i> <sub>96</sub>	17.6	X	157.97594	330.84721	78.84973	5.25346	0.1668746	0.24119266	2.5559950	20	4 17.4	21.7
419954 2011 <i>BH</i> <sub>96</sub>	16.0	X	103.19810	300.78630	319.76703	14.91710	0.0714378	0.17502943	3.1651575	20	10 22.2	21.0
419955 2011 <i>BV</i> <sub>96</sub>	16.7	X	323.70821	262.93311	314.42973	9.00553	0.1281959	0.21783328	2.7356040	20	2 12.7	20.0
419956 2011 <i>BM</i> <sub>99</sub>	16.9	X	269.89130	79.87012	224.40688	2.20960	0.0629277	0.23381183	2.6095066	20	4 2.8	20.3
419957 2011 <i>BW</i> <sub>99</sub>	16.0	X	221.16799	222.17574	305.47394	9.66740	0.0276387	0.17704908	3.1410410	20	11 15.9	20.7
419958 2011 <i>BM</i> <sub>100</sub>	16.9	X	80.98618	232.91368	295.26186	8.46161	0.1108935	0.23990931	2.5651021	20	6 17.1	20.3
419959 2011 <i>BO</i> <sub>100</sub>	16.0	X	243.67412	241.47565	298.47504	9.05016	0.0597228	0.18491110	3.0513643	20	12 27.8	20.2
419960 2011 <i>BU</i> <sub>100</sub>	15.7	X	171.30858	259.18759	324.20311	14.76336	0.0461248	0.17594493	3.1541684	20	11 23.1	20.7
419961 2011 <i>BL</i> <sub>102</sub>	17.4	X	112.68308	299.77921	131.88378	4.89858	0.1551263	0.23314334	2.6144923	20	3 28.6	21.1
419962 2011 <i>BT</i> <sub>102</sub>	16.1	X	16.66365	290.50784	87.13196	13.87300	0.1448046	0.19263466	2.9692477	20	12 20.2	19.8
419963 2011 <i>BH</i> <sub>114</sub>	16.6	X	297.31356	69.64736	72.02814	6.57415	0.1908010	0.19315167	2.9639468	20	—	—
419964 2011 <i>BU</i> <sub>117</sub>	17.6	X	115.11282	36.09249	352.44393	4.78840	0.2566628	0.22796642	2.6539259	20	2 18.5	21.5
419965 2011 <i>BU</i> <sub>118</sub>	16.3	X	312.82890	36.13790	93.50346	7.12346	0.0314299	0.19724534	2.9227941	20	—	—
419966 2011 <i>BY</i> <sub>140</sub>	16.6	X	206.47865	135.50782	83.02661	6.88989	0.1558960	0.18884751	3.0088131	20	12 20.3	21.1
419967 2011 <i>BO</i> <sub>154</sub>	15.6	X	168.13013	322.12674	312.95566	12.37489	0.0802798	0.18908758	3.0062658	20	—	—
419968 2011 <i>BN</i> <sub>161</sub>	16.2	X	285.97576	235.19381	261.74997	7.59538	0.0953952	0.18997041	2.9969448	20	12 27.5	19.8
419969 2011 <i>BZ</i> <sub>161</sub>	17.2	X	345.00304	32.15669	117.91564	4.81758	0.0371218	0.21242220	2.7818654	20	—	—
419970 2011 <i>BC</i> <sub>162</sub>	15.5	X	265.21472	154.69710	48.65997	11.53386	0.0580195	0.19310189	2.9644562	20	—	—
419971 2011 <i>BJ</i> <sub>162</sub>	16.8	X	162.00663	234.76841	124.07456	15.66196	0.0425665	0.22168839	2.7037970	20	2 9.8	20.7
419972 2011 <i>CO</i>	16.2	X	50.15257	173.82284	344.39562	14.18338	0.1160381	0.22980961	2.6397163	20	4 11.3	19.4
419973 2011 <i>CQ</i>	17.0	X	353.19928	102.35654	5.97711	7.54408	0.1943641	0.20244896	2.8724932	20	—	—
419974 2011 <i>CK</i> <sub>3</sub>	16.2	X	222.30790	246.96937	291.37384	11.80603	0.0530268	0.18344465	3.0676043	20	11 29.7	20.7
419975 2011 <i>CM</i> <sub>3</sub>	15.5	X	122.73173	359.04139	283.69542	9.72816	0.0725250	0.18564993	3.0432633	20	12 17.2	20.0
419976 2011 <i>CD</i> <sub>4</sub>	17.6	X	90.70812	125.72417	355.78535	5.08612	0.2630043	0.23530228	2.5984755	20	5 17.9	21.4
419977 2011 <i>CL</i> <sub>5</sub>	17.1	X	92.61439	324.62977	163.76186	8.15024	0.1595904	0.23504650	2.6003602	20	5 18.5	20.7
419978 2011 <i>CN</i> <sub>9</sub>	16.5	X	77.77696	283.44738	138.32655	9.62381	0.0851383	0.21398527	2.7683020	20	1 19.7	20.1
419979 2011 <i>CP</i> <sub>10</sub>	16.6	X	357.49767	174.25274	330.23751	11.54025	0.0654255	0.21291941	2.7753292	20	1 10.2	20.3
419980 2011 <i>CX</i> <sub>14</sub>	17.6	X	182.81014	81.95001	308.56776	2.71348	0.2189096	0.24141716	2.5544101	20	4 13.5	21.9
419981 2011 <i>CU</i> <sub>15</sub>	16.9	X	161.07929	347.81471	3.71737	6.07803	0.1473765	0.21810373	2.7333421	20	2 9.6	21.2
419982 2011 <i>CZ</i> <sub>16</sub>	17.2	X	117.22654	354.82113	102.31373	3.57888	0.1532007	0.23637886	2.5905797	20	5 4.6	20.9
419983 2011 <i>CV</i> <sub>19</sub>	17.0	X	49.19078	344.03286	113.63431	7.54015	0.0341581	0.21502963	2.7593313	20	1 21.2	20.7
419984 2011 <i>CP</i> <sub>22</sub>	17.3	X	9.44615	178.47333	305.70734	4.13131	0.1083371	0.21246830	2.7814630	20	—	—
419985 2011 <i>CC</i> <sub>23</sub>	17.5	X	40.76468	106.35719	14.96356	3.23423	0.1537682	0.21955224	2.7213065	20	2 16.0	20.3
419986 2011 <i>CE</i> <sub>26</sub>	16.6	X	75.44773	276.83598	127.94158	4.72048	0.1030817	0.21072311	2.7967991	20	—	—
419987 2011 <i>CK</i> <sub>27</sub>	17.2	X	74.14493	318.12712	125.53128	7.90548	0.1264042	0.21956640	2.7211895	20	2 18.1	20.5
419988 2011 <i>CK</i> <sub>29</sub>	17.4	X	65.43019	99.20982	327.06061	2.89699	0.1662666	0.21413164	2.7670403	20	1 17.7	20.4
419989 2011 <i>CS</i> <sub>29</sub>	16.9	X	153.90631	174.63280	253.20566	4.38635	0.1407936	0.24016296	2.5632956	20	5 1.9	20.8
419990 2011 <i>CF</i> <sub>32</sub>	16.9	X	127.05491	127.10116	295.59355	12.84594	0.1616809	0.22912451	2.6449757	20	3 24.8	21.1
419991 2011 <i>CH</i> <sub>32</sub>	17.5	X	25.30305	323.39343	123.33991	3.06080	0.0332187	0.20339538	2.8635757	20	—	—
419992 2011 <i>CU</i> <sub>32</sub>	17.1	X	89.05369	277.25372</								