

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>
428001 2006 <i>BM</i> <sub>38</sub>	16.9	X	65.37394	152.23319	345.43724	9.06428	0.1646331	0.21684620	2.7438993	20	4 18.2	20.4
428002 2006 <i>BO</i> <sub>45</sub>	17.2	X	82.82644	353.53063	166.55650	3.29323	0.0694619	0.22377743	2.6869434	20	6 2.1	20.7
428003 2006 <i>BK</i> <sub>67</sub>	17.1	X	147.24304	6.84381	119.81013	8.88289	0.1449279	0.23332277	2.6131518	20	7 11.1	21.1
428004 2006 <i>BX</i> <sub>67</sub>	16.6	X	206.57116	281.34016	121.64568	14.74731	0.1101136	0.23105878	2.6301937	20	5 28.2	20.8
428005 2006 <i>BT</i> <sub>68</sub>	17.5	X	21.07653	187.33903	356.84765	2.03023	0.1228077	0.21834251	2.7313489	20	4 4.9	20.4
428006 2006 <i>BP</i> <sub>84</sub>	17.3	X	159.44076	336.70444	106.95974	3.65280	0.0425124	0.22849569	2.6498261	20	5 25.0	21.0
428007 2006 <i>BA</i> <sub>86</sub>	16.7	X	153.34544	253.05671	120.09040	7.84492	0.0589628	0.21338496	2.7734915	20	2 20.6	20.8
428008 2006 <i>BL</i> <sub>92</sub>	16.3	X	51.68948	239.58912	327.59342	13.45161	0.0393801	0.22886004	2.6470130	20	6 18.5	20.0
428009 2006 <i>BL</i> <sub>108</sub>	17.2	X	320.47467	296.33385	342.01736	3.37420	0.0333316	0.22574720	2.6712906	20	5 11.2	20.5
428010 2006 <i>BK</i> <sub>111</sub>	17.4	X	77.09238	141.00577	353.31008	4.59354	0.0556212	0.22052138	2.7133277	20	4 16.3	21.0
428011 2006 <i>BM</i> <sub>113</sub>	16.4	X	100.87578	290.70737	127.23565	9.91184	0.1543959	0.21392157	2.7688515	20	2 27.6	20.2
428012 2006 <i>BS</i> <sub>114</sub>	17.5	X	80.59375	337.99348	149.47049	3.44692	0.1146821	0.21987638	2.7186314	20	4 23.9	20.9
428013 2006 <i>BW</i> <sub>120</sub>	17.0	X	56.90620	30.47130	153.30723	13.63265	0.1264794	0.22286304	2.6942880	20	6 8.1	20.6
428014 2006 <i>BL</i> <sub>134</sub>	17.2	X	66.94028	113.89132	117.04999	6.66518	0.1940988	0.23388660	2.6089504	20	9 6.9	20.8
428015 2006 <i>BL</i> <sub>143</sub>	17.1	X	189.81831	221.05203	158.03500	6.80113	0.0772144	0.22004000	2.7172835	20	4 8.9	21.2
428016 2006 <i>BE</i> <sub>153</sub>	16.3	X	14.13697	180.77047	329.04964	8.34195	0.0905823	0.21056268	2.7982195	20	2 8.6	19.7
428017 2006 <i>BE</i> <sub>159</sub>	16.9	X	83.94797	228.68527	288.10180	3.45916	0.0144387	0.22447960	2.6813374	20	5 20.3	20.6
428018 2006 <i>BP</i> <sub>159</sub>	17.1	X	41.80561	289.15453	278.39427	2.23435	0.0906741	0.22418757	2.6836653	20	6 10.1	20.1
428019 2006 <i>BO</i> <sub>184</sub>	17.2	X	153.05773	312.51760	94.56935	3.50447	0.0744618	0.22111777	2.7084467	20	4 3.6	21.1
428020 2006 <i>BA</i> <sub>219</sub>	17.2	X	118.58384	334.98401	123.69192	6.22604	0.0282215	0.22190565	2.7020319	20	4 24.3	20.9
428021 2006 <i>BS</i> <sub>219</sub>	17.0	X	13.12980	237.25023	10.68921	5.08073	0.1551951	0.22294977	2.6935892	20	6 25.1	19.8
428022 2006 <i>BS</i> <sub>231</sub>	17.4	X	169.20040	330.24845	87.66553	4.69975	0.1244939	0.22686835	2.6624826	20	5 6.4	21.5
428023 2006 <i>BB</i> <sub>237</sub>	17.4	X	87.78015	347.35487	102.10103	4.66660	0.1676411	0.21703192	2.7423337	20	3 24.1	21.0
428024 2006 <i>BE</i> <sub>257</sub>	17.5	X	116.72094	5.85924	121.62773	5.46026	0.2283466	0.22624976	2.6673334	20	6 18.9	21.8
428025 2006 <i>BB</i> <sub>259</sub>	17.0	X	144.23999	258.85617	130.40880	4.78476	0.1092358	0.21256727	2.7805996	20	3 5.9	21.1
428026 2006 <i>BH</i> <sub>275</sub>	17.4	X	31.12910	220.50314	349.91322	5.31788	0.1132617	0.22377575	2.6869569	20	5 28.8	20.6
428027 2006 <i>BZ</i> <sub>276</sub>	17.6	X	46.53513	359.91184	163.53473	3.80000	0.1308438	0.21655105	2.7463920	20	4 23.4	20.7
428028 2006 <i>BX</i> <sub>279</sub>	16.4	X	247.31300	196.85507	121.77432	11.59352	0.1275802	0.22275427	2.6951650	20	3 24.7	20.6
428029 2006 <i>BX</i> <sub>280</sub>	17.1	X	76.39023	56.33590	63.93874	4.21050	0.1498048	0.21722061	2.7407454	20	4 14.2	20.5
428030 2006 <i>CW</i> <sub>1</sub>	17.1	X	238.23263	282.30102	96.97454	4.08203	0.0260406	0.22936770	2.6431058	20	6 7.4	20.7
428031 2006 <i>CH</i> <sub>46</sub>	16.7	X	239.18827	203.98723	115.65868	5.91565	0.0310925	0.21862443	2.7290003	20	3 24.3	20.5
428032 2006 <i>CG</i> <sub>62</sub>	16.1	X	207.01841	103.00513	329.60761	21.50095	0.0872677	0.23284248	2.6167440	20	7 9.6	20.3
428033 2006 <i>DF</i> <sub>12</sub>	16.3	X	357.64220	49.43134	148.94592	14.39577	0.0428298	0.21496488	2.7598854	20	3 22.3	19.9
428034 2006 <i>DG</i> <sub>16</sub>	16.7	X	309.64915	103.17048	113.37166	4.70471	0.0437606	0.20902485	2.8119274	20	2 7.8	20.5
428035 2006 <i>DC</i> <sub>17</sub>	17.0	X	16.27318	92.43377	127.42166	6.91548	0.0801533	0.22156214	2.7048240	20	5 18.0	20.3
428036 2006 <i>DA</i> <sub>30</sub>	16.5	X	138.60422	241.17976	170.37290	14.31331	0.2175426	0.21546519	2.7556114	20	4 6.8	21.0
428037 2006 <i>DA</i> <sub>31</sub>	17.3	X	6.14973	83.75478	167.62752	2.43075	0.1726833	0.22023081	2.7157138	20	6 16.5	19.9
428038 2006 <i>DL</i> <sub>34</sub>	16.6	X	70.04968	153.52579	358.67147	10.33775	0.1366892	0.21734379	2.7397098	20	5 10.7	20.3
428039 2006 <i>DT</i> <sub>35</sub>	16.6	X	147.96375	62.10575	355.89992	6.49569	0.0428028	0.21373781	2.7704383	20	4 5.9	20.5
428040 2006 <i>DH</i> <sub>43</sub>	17.4	X	351.56187	61.90828	154.34699	12.77543	0.0849918	0.21518415	2.7580101	20	4 3.8	20.8
428041 2006 <i>DB</i> <sub>48</sub>	17.0	X	121.87852	84.85767	333.41163	6.85362	0.1853548	0.21614805	2.7498046	20	3 22.6	21.1
428042 2006 <i>DL</i> <sub>54</sub>	17.3	X	47.90404	356.86856	156.29618	4.25296	0.0518687	0.21357701	2.7718287	20	4 2.8	20.7
428043 2006 <i>DR</i> <sub>82</sub>	16.7	X	54.62451	158.75745	343.53713	7.92494	0.1175325	0.21382641	2.7696729	20	4 1.9	20.0
428044 2006 <i>DJ</i> <sub>85</sub>	16.8	X	236.00993	145.99964	165.75482	6.26902	0.0647245	0.21291388	2.7775810	20	3 5.5	20.8
428045 2006 <i>DP</i> <sub>117</sub>	17.0	X	331.03675	265.21064	7.53308	15.10839	0.2325158	0.21444009	2.7643862	20	4 21.3	19.9
428046 2006 <i>DA</i> <sub>128</sub>	16.5	X	321.48190	122.45341	140.82211	13.79434	0.1646401	0.21882847	2.7273037	20	4 11.2	20.0
428047 2006 <i>DY</i> <sub>128</sub>	16.6	X	75.22638	7.39913	115.67260	5.05362	0.0432535	0.21512286	2.7585340	20	4 1.6	20.2
428048 2006 <i>DD</i> <sub>135</sub>	17.0	X	252.76146	330.77260	346.98544	6.05858	0.0496167	0.21713606	2.7414569	20	4 1.0	20.7
428049 2006 <i>DA</i> <sub>138</sub>	16.9	X	97.58487	293.18859	145.73059	9.22469	0.1292464	0.21233101	2.7826618	20	3 17.6	20.7
428050 2006 <i>DM</i> <sub>142</sub>	16.4	X	80.46836	322.34086	137.33845	5.22793	0.1007978	0.21219175	2.7838792	20	3 16.8	19.9
428051 2006 <i>DG</i> <sub>160</sub>	16.9	X	89.85831	291.29310	162.96432	8.40476	0.0952077	0.21273671	2.7791229	20	3 21.2	20.6
428052 2006 <i>DG</i> <sub>189</sub>	16.6	X	7.41733	204.94759	3.42385	7.89823	0.1558059	0.21365582	2.7711470	20	4 12.8	19.4
428053 2006 <i>DM</i> <sub>197</sub>	15.9	X	42.14173	270.41944	310.76229	15.13955	0.2146779	0.22193939	2.7017580	20	7 21.3	18.9
428054 2006 <i>DZ</i> <sub>203</sub>	16.1	X	90.89767	213.30550	310.36202	13.85248	0.0849502	0.22380288	2.6867398	20	6 20.7	19.9
428055 2006 <i>DF</i> <sub>217</sub>	16.5	X	33.67930	72.86660	154.72316	12.70497	0.1108803	0.22653186	2.6651185	20	6 28.4	19.9
428056 2006 <i>EO</i>	16.9	X	147.81046	265.62388	166.91816	5.14542	0.0267656	0.21767138	2.7369603	20	4 25.9	20.7
428057 2006 <i>ES</i>	16.7	X	343.71757	72.97340	144.61987	8.27625	0.1525386	0.21514881	2.7583122	20	3 15.6	19.7
428058 2006 <i>EO</i> <sub>13</sub>	17.4	X	332.40686	130.10843	167.19582	3.53186	0.1791795	0.22302241	2.6930043	20	6 12.9	20.0
428059 2006 <i>EW</i> <sub>15</sub>	17.2	X	14.83494	21.68974	155.69885	4.74445	0.1364208	0.21051247	2.7986644	20	3 17.3	20.2
428060 2006 <i>EK</i> <sub>18</sub>	17.2	X	337.06328	93.75617	175.89728	11.22582	0.1704244	0.21728604	2.7401951	20	5 15.2	20.2
428061 2006 <i>EJ</i> <sub>20</sub>	16.7	X	50.28339	343.29447	169.09015	6.39521	0.0739384	0.21793362	2.7347643	20	4 7.4	20.1
428062 2006 <i>ER</i> <sub>39</sub>	17.3	X	119.21700	93.83850	348.50749	3.61419	0.0384341	0.21321000	2.7750087	20	4 2.0	21.0
428063 2006 <i>EU</i> <sub>53</sub>	16.7	X	26.74653	245.57136	326.60913	4.52735	0.1012548	0.21914495	2.7246773	20	5 22.6	19.8
428064 2006 <i>EU</i> <sub>64</sub>	17.3	X	8.33220	349.12627	215.89439	3.47616	0.1294180	0.21270645	2.7793865	20	4 11.6	20.1
428065 2006 <i>FL</i> <sub>21</sub>	17.1	X	133.37407	90.91467	351.08848	3.35432	0.0793655	0.21998517	2.7177351	20	4 23.2	20.9
428066 2006 <i>FE</i> <sub>43</sub>	16.4	X	310.37024	264.98972	15.93340	12.54719	0.1864698	0.21321762	2.7749425	20	4 8.9	19.9
428067 2006 <i>GM</i> <sub>3</sub>	17.3	X	35.50357	90.43899	136.29375	4.01561	0.1442372	0.21963798	2.7205983	20	7 4.3	20.3
428068 2006 <i>GE</i> <sub>7</sub>	16.8	X	354.09828	201.24714	48.46711	9.05768	0.0875542	0.21686072	2.7437768	20	5 20.1	20.1
428069 2006 <i>HM</i> <sub>8</sub>	16.8	X	308.66528	266.49983	3.91556	5.27649	0.1313930	0.21196284	2.7858831	20	4 1.2	20.1
428070 2006 <i>HP</i> <sub>22</sub>	16.9	X	18.03241	80.66835	130.15118	2.31987	0.1902922	0.21270463	2.7794023	20	5 13.2	19.4
428071 2006 <i>HY</i> <sub>44</sub>	16.9	X	156.92804	75.57746	32.35174	7.95069	0.1563031	0.22				

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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>		
428081	2006	<i>JR</i> <sub>80</sub>	17.7	X	55.15903	192.29066	106.67970	7.65117	0.1553973	0.29971858	2.2113642	20	11 27.0	20.6
428082	2006	<i>KN</i> <sub>12</sub>	17.1	X	18.39177	103.86495	147.86394	10.35776	0.1505542	0.21779892	2.7358917	20	7 9.8	20.2
428083	2006	<i>KL</i> <sub>46</sub>	16.5	X	250.61766	157.98543	127.82397	2.97223	0.0312169	0.19836766	2.9117593	20	2 24.5	20.5
428084	2006	<i>KT</i> <sub>71</sub>	16.8	X	273.82875	96.75798	150.01977	7.06132	0.0816401	0.19453081	2.9499215	20	1 28.3	21.1
428085	2006	<i>KB</i> <sub>85</sub>	16.5	X	316.10180	206.15476	81.95722	14.41806	0.1557197	0.20891186	2.8129412	20	5 8.1	20.0
428086	2006	<i>NM</i>	16.3	X	348.54524	29.96274	292.61231	14.21466	0.6173400	0.21283067	2.7783049	20	11 10.3	17.7
428087	2006	<i>OP</i> <sub>9</sub>	15.7	X	146.22992	210.50924	137.27073	29.21772	0.2036725	0.17495911	3.1660055	20	1 29.8	20.9
428088	2006	<i>OQ</i> <sub>9</sub>	17.6	X	81.17369	10.21787	309.19925	10.34897	0.2533978	0.30136436	2.2033059	20	—	—
428089	2006	<i>PK</i> <sub>32</sub>	15.4	X	201.11509	301.78303	349.15703	14.21905	0.1169937	0.17665065	3.1457622	20	1 11.8	20.6
428090	2006	<i>PU</i> <sub>32</sub>	17.4	X	105.67099	317.38145	356.97241	25.45783	0.2515081	0.30538152	2.1839409	20	—	—
428091	2006	<i>QH</i> <sub>4</sub>	16.8	X	210.19300	89.79282	357.19318	12.84016	0.1212595	0.27282365	2.3544061	20	7 31.2	20.3
428092	2006	<i>QO</i> <sub>4</sub>	15.9	X	162.56061	347.52057	333.49109	13.48859	0.2174388	0.17567156	3.1574398	20	1 16.7	21.3
428093	2006	<i>QE</i> <sub>16</sub>	17.8	X	275.19152	256.41888	132.79731	2.83077	0.2329091	0.27736094	2.3286587	20	7 10.9	20.3
428094	2006	<i>QK</i> <sub>41</sub>	16.0	X	201.77587	11.70397	308.95417	17.79309	0.2904213	0.18297108	3.0728952	20	2 9.2	21.7
428095	2006	<i>QE</i> <sub>59</sub>	16.2	X	200.46864	149.06140	152.72544	11.75989	0.2210073	0.18049831	3.1008967	20	1 19.7	21.7
428096	2006	<i>QA</i> <sub>63</sub>	16.4	X	227.23059	153.09734	170.94244	10.75789	0.2612369	0.18821494	3.0155509	20	3 2.6	21.6
428097	2006	<i>QT</i> <sub>65</sub>	15.8	X	153.33517	344.80946	337.23454	9.43304	0.0988425	0.17066195	3.2189304	20	—	—
428098	2006	<i>QO</i> <sub>68</sub>	16.0	X	166.66529	328.07099	340.16301	17.14201	0.0701687	0.17116836	3.2125783	20	—	—
428099	2006	<i>QZ</i> <sub>126</sub>	17.3	X	320.84840	34.35899	346.34376	25.38061	0.1754618	0.28340390	2.2954377	20	9 29.6	19.3
428100	2006	<i>QJ</i> <sub>132</sub>	15.3	X	142.77726	180.69183	172.07316	28.38930	0.1654503	0.17258340	3.1949939	20	1 27.8	20.7
428101	2006	<i>QD</i> <sub>135</sub>	15.6	X	173.55159	319.41923	349.56305	13.81712	0.1592266	0.17247045	3.1963887	20	1 9.4	21.0
428102	2006	Rolandwagner	17.9	X	106.07424	319.01851	332.35655	4.82389	0.1620730	0.30200806	2.2001740	20	—	—
428103	2006	<i>QU</i> <sub>162</sub>	17.8	X	346.09264	52.13104	268.45983	3.95198	0.1478588	0.28021294	2.3128311	20	8 26.7	19.8
428104	2006	<i>QT</i> <sub>182</sub>	17.7	X	255.54810	155.63449	357.09283	5.61860	0.0776321	0.29756837	2.2220042	20	—	—
428105	2006	<i>PK</i> <sub>187</sub>	18.2	X	202.50739	22.20391	314.97656	19.67887	0.0736442	0.39816286	1.8299064	20	2 6.4	20.0
428106	2006	<i>RQ</i>	18.0	X	28.42239	188.40520	135.84967	4.10404	0.1842106	0.28950193	2.2630895	20	11 29.3	20.6
428107	2006	<i>RO</i> <sub>6</sub>	17.5	X	255.86032	34.07894	1.96549	14.45190	0.2357701	0.27038614	2.3685348	20	6 25.8	21.2
428108	2006	<i>RY</i> <sub>8</sub>	18.1	X	86.25971	304.48683	10.47521	6.38134	0.2057755	0.29958717	2.1220108	20	—	—
428109	2006	<i>RR</i> <sub>32</sub>	17.2	X	105.31272	244.14713	357.79799	8.19771	0.0644765	0.28491478	2.2873155	20	10 23.8	20.3
428110	2006	<i>RN</i> <sub>52</sub>	16.3	X	165.65268	263.43243	52.42549	1.39137	0.1732931	0.16828175	3.2492119	20	1 9.2	21.6
428111	2006	<i>RM</i> <sub>54</sub>	16.3	X	199.80425	131.89399	185.70779	8.26832	0.1662046	0.17532220	3.1616329	20	2 5.3	21.6
428112	2006	<i>RA</i> <sub>56</sub>	18.0	X	256.94911	323.70516	57.33035	1.79585	0.2179920	0.26843507	2.3799978	20	6 7.9	21.4
428113	2006	<i>RB</i> <sub>66</sub>	18.1	X	228.31154	25.97061	15.24796	6.53929	0.1443181	0.26607127	2.3940731	20	6 11.2	21.6
428114	2006	<i>RS</i> <sub>68</sub>	16.4	X	265.96826	104.90397	136.69121	2.15657	0.1206239	0.17605942	3.1528009	20	1 12.7	21.0
428115	2006	<i>RB</i> <sub>82</sub>	16.2	X	349.20061	151.16422	10.95065	8.63877	0.0178829	0.17329703	3.1862167	20	2 1.7	20.7
428116	2006	<i>RZ</i> <sub>87</sub>	17.8	X	135.20828	113.88816	179.75943	6.54135	0.2729246	0.30609332	2.1805539	20	—	—
428117	2006	<i>RK</i> <sub>99</sub>	18.0	X	307.20677	180.56945	173.03484	2.95863	0.2264844	0.27630226	2.3346033	20	7 13.8	19.9
428118	2006	<i>RP</i> <sub>100</sub>	16.2	X	211.88355	330.28762	7.16477	19.34571	0.2307894	0.18545342	3.0454127	20	3 12.5	21.5
428119	2006	<i>RC</i> <sub>104</sub>	15.7	X	110.61266	2.04482	16.33651	15.63729	0.0496212	0.16847548	3.2467206	20	1 15.8	20.6
428120	2006	<i>RX</i> <sub>108</sub>	17.8	X	155.21494	30.48189	193.71257	1.98025	0.1050066	0.29152607	2.2526019	20	11 29.9	20.8
428121	2006	<i>RZ</i> <sub>110</sub>	18.3	X	179.04205	139.95803	24.13333	1.67646	0.1527326	0.28075410	2.3098582	20	10 3.0	21.7
428122	2006	<i>SJ</i> <sub>2</sub>	18.4	X	114.55314	80.13486	324.77684	18.70612	0.1411181	0.39013857	1.8549126	20	1 31.2	19.8
428123	2006	<i>SD</i> <sub>10</sub>	17.5	X	211.25579	127.28419	257.93016	5.69016	0.2391504	0.26369496	2.4084344	20	4 28.8	21.7
428124	2006	<i>SX</i> <sub>16</sub>	17.3	X	278.09480	38.08800	340.70498	9.06581	0.2483011	0.27211153	2.3585120	20	6 28.1	20.4
428125	2006	<i>SV</i> <sub>41</sub>	17.5	X	272.88969	277.50683	100.74174	5.37258	0.2381378	0.27217518	2.3581442	20	6 20.9	20.3
428126	2006	<i>SW</i> <sub>41</sub>	14.9	X	220.38276	240.39791	22.64443	26.84730	0.1862608	0.17193773	3.2029876	20	—	—
428127	2006	<i>SG</i> <sub>52</sub>	17.8	X	129.08466	298.07168	352.25779	5.31024	0.1956282	0.30417769	2.1896993	20	—	—
428128	2006	<i>SE</i> <sub>65</sub>	15.6	X	77.73760	113.52411	303.85443	10.22602	0.0902556	0.17418056	3.1754328	20	1 22.6	19.6
428129	2006	<i>SZ</i> <sub>67</sub>	16.3	X	227.78608	114.18227	174.71677	10.22686	0.0512638	0.17531132	3.1617637	20	2 1.4	21.0
428130	2006	<i>SO</i> <sub>72</sub>	18.0	X	239.79006	253.87991	132.89433	1.99112	0.1958173	0.26523766	2.3990866	20	5 31.1	21.4
428131	2006	<i>SM</i> <sub>73</sub>	17.8	X	314.92575	286.44814	65.59044	2.35816	0.1748554	0.27521583	2.3407432	20	8 8.2	19.7
428132	2006	<i>ST</i> <sub>75</sub>	18.1	X	223.20302	238.17010	173.25286	5.37182	0.1365985	0.26568275	2.3964064	20	6 20.9	21.6
428133	2006	<i>SK</i> <sub>93</sub>	17.9	X	260.15524	34.75182	20.11118	7.99754	0.0937352	0.27375285	2.3490753	20	8 22.9	20.8
428134	2006	<i>SV</i> <sub>95</sub>	16.4	X	240.46264	256.02445	31.77919	5.58827	0.1316486	0.17595563	3.1540406	20	2 11.7	21.4
428135	2006	<i>SQ</i> <sub>103</sub>	15.7	X	276.62246	235.75161	8.08472	15.28898	0.1776286	0.17791288	3.1308658	20	1 24.7	20.7
428136	2006	<i>SJ</i> <sub>109</sub>	15.6	X	207.82574	295.80518	29.05956	15.50373	0.2373030	0.17864876	3.1222622	20	2 27.7	21.2
428137	2006	<i>SH</i> <sub>123</sub>	15.8	X	240.75877	132.06332	155.68137	20.07046	0.1920063	0.18127534	3.0920290	20	2 4.3	21.0
428138	2006	<i>SR</i> <sub>124</sub>	17.5	X	68.02837	194.64996	130.05331	9.20891	0.2390864	0.29591788	2.2302587	20	—	—
428139	2006	<i>SN</i> <sub>132</sub>	17.5	X	191.36839	83.75688	342.44076	8.34851	0.2359022	0.26157103	2.4214543	20	6 3.4	21.8
428140	2006	<i>SG</i> <sub>145</sub>	16.1	X	271.41906	217.30710	19.76223	4.85946	0.0872787	0.17199593	3.2022650	20	1 18.6	20.9
428141	2006	<i>SB</i> <sub>156</sub>	16.0	X	181.74869	139.32111	188.93507	11.47710	0.1887816	0.17952653	3.1120767	20	2 2.1	21.3
428142	2006	<i>SQ</i> <sub>158</sub>	16.5	X	186.70570	153.15220	174.18948	9.50190	0.0457600	0.17460393	3.1702977	20	2 2.9	21.2
428143	2006	<i>SX</i> <sub>167</sub>	15.9	X	53.07668	244.86834	199.63811	9.37782	0.0739951	0.16919553	3.2375026	20	1 18.9	20.4
428144	2006	<i>SM</i> <sub>168</sub>	15.7	X	268.23942	229.56620	351.63321	15.42801	0.2174327	0.17271164	3.1934122	20	—	—
428145	2006	<i>SN</i> <sub>170</sub>	15.7	X	191.91960	330.02599	2.58840	15.50879	0.1020765	0.17729446	3.1381421	20	2 21.8	20.7
428146	2006	<i>SP</i> <sub>172</sub>	16.2	X	174.79495	344.02454	355.27341	9.83040	0.0688538	0.17497618	3.1657997	20	2 9.6	21.1
428147	2006	<i>SZ</i> <sub>175</sub>	18.1	X	223.06496	170.10031	243.20984	1.94240	0.1883251	0.26695394	2.3887928	20	6 18.7	21.8
428148	2006	<i>ST</i> <sub>185</sub>	17.8	X	46.57225	41.81296	20.56899	22.02021	0.1004559	0.37652384	1.8993619	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>
428161 2006 SD <sub>311</sub>	17.6	X	212.99023	215.57027	224.54459	4.23049	0.1673437	0.26872439	2.3782892	20	7 15.1	21.2
428162 2006 SX <sub>338</sub>	16.1	X	85.47824	217.77897	142.99795	4.99878	0.0844540	0.15952741	3.3670210	20	—	—
428163 2006 SU <sub>346</sub>	18.2	X	247.50786	91.31511	213.93113	21.05069	0.0769076	0.39332086	1.8448939	20	2 10.0	21.0
428164 2006 SB <sub>361</sub>	17.9	X	316.24217	186.81244	197.62611	6.98733	0.1345925	0.27888950	2.3201422	20	10 7.2	19.9
428165 2006 SG <sub>363</sub>	17.4	X	333.81784	190.01531	185.65957	6.59662	0.1996011	0.28102206	2.3083896	20	11 7.6	18.9
428166 2006 SY <sub>366</sub>	17.2	X	187.90152	190.34027	240.99979	5.94605	0.0917887	0.26545478	2.3977782	20	6 11.2	20.5
428167 2006 SM <sub>373</sub>	16.6	X	218.42144	161.25997	110.87904	3.15351	0.0953601	0.17095947	3.2151947	20	1 4.2	21.5
428168 2006 SY <sub>385</sub>	16.2	X	318.77027	157.33946	100.14402	13.54985	0.3033532	0.18759561	3.0221842	20	3 12.3	20.2
428169 2006 SP <sub>392</sub>	17.6	X	178.02447	101.96121	35.53570	4.91054	0.1560515	0.27072749	2.3665435	20	8 29.1	21.2
428170 2006 SO <sub>395</sub>	18.3	X	180.22340	324.45776	174.19326	2.33525	0.1551338	0.27455451	2.3445005	20	8 30.5	21.7
428171 2006 SL <sub>398</sub>	15.9	X	148.68113	324.91447	3.30308	13.93294	0.1138678	0.16859556	3.2451787	20	1 4.9	21.1
428172 2006 SS <sub>411</sub>	17.9	X	236.59455	298.39535	105.26037	2.23853	0.1859157	0.26801239	2.3824994	20	6 20.1	21.2
428173 2006 TZ <sub>21</sub>	17.8	X	243.68184	321.54447	68.60457	3.51568	0.1873082	0.26520094	2.3993080	20	6 9.2	21.4
428174 2006 TC <sub>30</sub>	17.8	X	204.35663	51.17482	47.57301	3.54422	0.1355381	0.26843217	2.3800149	20	8 4.8	21.3
428175 2006 TR <sub>35</sub>	18.2	X	231.89086	71.51546	8.19751	2.57045	0.1658909	0.26986587	2.3715780	20	8 6.2	21.5
428176 2006 TV <sub>46</sub>	17.9	X	195.02084	29.44340	48.49460	1.55687	0.1687421	0.26172482	2.4205057	20	6 24.9	21.7
428177 2006 TT <sub>71</sub>	17.6	X	21.96178	169.92444	150.62540	5.81723	0.2172371	0.28522302	2.2856672	20	11 20.4	20.2
428178 2006 TH <sub>83</sub>	17.6	X	229.33258	91.09601	317.75202	3.33131	0.1707310	0.26529643	2.3987323	20	6 20.8	21.0
428179 2006 TF <sub>88</sub>	17.6	X	253.73926	30.64610	352.15253	3.24116	0.1655312	0.26614901	2.3936068	20	6 13.3	20.8
428180 2006 TT <sub>95</sub>	15.7	X	201.39579	282.16894	33.80113	22.41276	0.1188803	0.17187663	3.2037467	20	2 17.9	21.2
428181 2006 TW <sub>114</sub>	16.4	X	303.15020	86.40859	167.68128	17.01566	0.1848238	0.18013331	3.1050841	20	2 28.1	20.8
428182 2006 UY <sub>3</sub>	17.5	X	319.01710	84.45733	272.17853	5.88336	0.1279715	0.27999307	2.3140418	20	8 25.9	19.7
428183 2006 UY <sub>9</sub>	18.2	X	205.45514	325.82667	106.07489	2.63576	0.1970743	0.26188440	2.4195223	20	6 25.6	22.1
428184 2006 UW <sub>47</sub>	15.6	X	192.93001	86.67610	235.77199	9.52372	0.0811073	0.17647250	3.1478789	20	2 2.4	20.6
428185 2006 UY <sub>60</sub>	18.2	X	216.25692	43.18601	15.99101	4.88527	0.1347820	0.26297529	2.4128265	20	6 23.8	21.8
428186 2006 UO <sub>68</sub>	16.5	X	177.41249	142.81920	187.73640	3.66724	0.1022203	0.16960528	3.2322862	20	1 31.5	21.6
428187 2006 UP <sub>71</sub>	15.8	X	337.21030	266.67955	272.21012	8.46083	0.0382982	0.17510331	3.1642672	20	1 30.6	20.3
428188 2006 UO <sub>84</sub>	17.9	X	259.82286	135.51627	235.37231	0.61434	0.1867761	0.26501245	2.4004456	20	6 1.6	21.0
428189 2006 UE <sub>87</sub>	17.7	X	224.64145	62.00645	39.63132	6.60286	0.1137592	0.27150146	2.3620437	20	9 6.1	20.9
428190 2006 UO <sub>87</sub>	18.6	X	228.81797	19.70787	34.60734	3.22285	0.1608348	0.26427659	2.4048994	20	6 28.7	22.2
428191 2006 UC <sub>103</sub>	17.6	X	195.45247	202.39890	287.61593	4.16017	0.1035059	0.27734462	2.3287501	20	9 6.3	21.0
428192 2006 UL <sub>110</sub>	15.9	X	106.47086	58.01840	346.85711	15.96040	0.0880324	0.17304947	3.1892546	20	2 15.8	20.5
428193 2006 UW <sub>121</sub>	17.6	X	173.42575	69.82011	67.38083	3.19972	0.1469438	0.27031793	2.3689332	20	8 23.7	21.2
428194 2006 UC <sub>133</sub>	18.0	X	234.06655	211.55397	208.55561	4.11757	0.1740013	0.26741436	2.3860501	20	7 10.1	21.4
428195 2006 UW <sub>140</sub>	17.6	X	207.56312	40.81029	15.57273	6.12143	0.1324610	0.26078407	2.4263233	20	6 10.0	21.3
428196 2006 UM <sub>156</sub>	16.1	X	197.50673	271.90123	38.44731	10.66707	0.2313927	0.17466731	3.1695307	20	1 31.9	21.8
428197 2006 UZ <sub>161</sub>	16.4	X	19.33110	5.76036	47.43398	10.67744	0.0584953	0.15337397	3.4564871	20	—	—
428198 2006 UA <sub>164</sub>	18.1	X	169.09489	34.52651	68.93116	3.76709	0.1367952	0.26283696	2.4136730	20	7 3.8	21.7
428199 2006 UN <sub>166</sub>	15.5	X	204.25653	126.16957	200.78535	21.90151	0.2347767	0.17768635	3.1335262	20	2 15.9	21.3
428200 2006 UO <sub>220</sub>	15.8	X	211.48771	96.66984	219.03682	11.25535	0.1838834	0.17749720	3.1357521	20	2 10.2	21.3
428201 2006 UU <sub>230</sub>	17.4	X	174.34691	298.14889	136.06777	1.75355	0.1618626	0.26002704	2.4310303	20	5 31.8	21.1
428202 2006 UO <sub>252</sub>	18.2	X	197.83024	57.88508	38.20622	6.17312	0.1661628	0.26589512	2.3951303	20	7 23.6	21.9
428203 2006 UQ <sub>268</sub>	18.5	X	187.26915	232.13459	239.33133	0.41296	0.1430123	0.26592010	2.3949802	20	8 1.7	22.0
428204 2006 UX <sub>269</sub>	18.0	X	355.03627	331.30126	2.58296	4.69562	0.1786303	0.26782090	2.3234681	20	10 12.1	19.8
428205 2006 UO <sub>278</sub>	18.1	X	238.30429	142.64558	265.51894	1.62841	0.1828242	0.26693099	2.3889298	20	6 28.3	21.6
428206 2006 UL <sub>280</sub>	17.9	X	221.11938	214.87470	164.83345	1.13251	0.1932088	0.25895997	2.4377039	20	5 4.2	21.7
428207 2006 UO <sub>281</sub>	18.0	X	228.80540	201.38246	209.36323	3.13190	0.1530807	0.26430713	2.4047142	20	6 24.3	21.5
428208 2006 UB <sub>330</sub>	18.1	X	236.30007	266.43688	139.85015	1.70507	0.1808912	0.26883551	2.3776337	20	6 23.8	21.5
428209 2006 VC	20.0	X	344.40466	19.20583	87.57788	12.26087	0.4927417	0.36441744	1.9411985	20	—	—
428210 2006 VQ <sub>7</sub>	18.1	X	193.92616	216.48174	226.35405	1.84108	0.1852359	0.26078775	2.4263005	20	6 29.5	22.1
428211 2006 VK <sub>16</sub>	17.8	X	165.40180	80.20043	15.84801	2.92554	0.1245110	0.25833529	2.4416321	20	6 19.6	21.6
428212 2006 VP <sub>18</sub>	17.9	X	175.82729	74.28830	28.24457	5.46792	0.0646600	0.26311911	2.4119471	20	7 11.3	21.2
428213 2006 VQ <sub>20</sub>	18.3	X	200.43738	36.53144	41.71698	1.79422	0.1706965	0.26186226	2.4196587	20	6 30.6	21.9
428214 2006 VS <sub>32</sub>	18.2	X	256.98815	6.30493	45.70295	3.33059	0.1045384	0.27209311	2.3586184	20	8 9.8	21.0
428215 2006 VH <sub>36</sub>	17.4	X	168.85924	251.75045	157.64677	5.00787	0.1774226	0.25277530	2.4773059	20	4 26.7	21.4
428216 2006 VA <sub>48</sub>	16.1	X	45.59067	13.41817	16.01632	5.91234	0.1256963	0.15369191	3.4517186	20	—	—
428217 2006 VP <sub>74</sub>	17.5	X	134.65480	138.66474	73.91971	5.09197	0.0704463	0.27622172	2.3350570	20	10 22.6	20.7
428218 2006 VD <sub>111</sub>	17.4	X	157.15603	116.38483	323.03875	3.11776	0.1077764	0.25295068	2.4761607	20	5 18.2	21.1
428219 2006 VB <sub>114</sub>	17.9	X	234.76134	337.46576	56.74452	2.46133	0.1818185	0.26297083	2.4128537	20	6 5.7	21.5
428220 2006 VR <sub>120</sub>	17.8	X	123.72053	268.96241	245.65314	3.28570	0.0463919	0.26195452	2.4190905	20	7 15.8	21.0
428221 2006 VY <sub>123</sub>	17.7	X	141.16153	239.11344	286.25735	1.52988	0.1652260	0.26379927	2.4077995	20	8 26.5	21.5
428222 2006 VV <sub>136</sub>	17.9	X	226.74303	319.79670	64.66196	2.74605	0.1860981	0.25914453	2.4365464	20	5 15.8	21.7
428223 2006 WW <sub>147</sub>	16.1	X	48.30693	197.89948	88.25232	32.78659	0.8682933	0.22483175	2.6785368	20	12 23.6	22.0
428224 2006 WX <sub>34</sub>	17.0	X	338.63601	192.80155	102.22188	6.73336	0.0972205	0.26333981	2.4105993	20	6 30.3	19.1
428225 2006 WU <sub>35</sub>	17.9	X	292.92878	254.65646	107.34665	6.49013	0.1362604	0.26820892	2.3813354	20	7 15.5	20.4
428226 2006 WW <sub>47</sub>	18.2	X	151.39826	117.06930	20.56965	2.56647	0.1378009	0.26043545	2.4284881	20	7 31.8	21.8
428227 2006 WD <sub>95</sub>	17.6	X	124.70248	116.49353	78.01053	7.08536	0.1958312	0.26802445	2.3824279	20	9 23.7	21.5
428228 2006 WP <sub>114</sub>	18.1	X	223.38036	296.98751	109.79882	5.50518	0.2752988	0.26181999	2.4199191	20	6 4.9	22.2
428229 2006 WU <sub>124</sub>	18.0	X	219.60538	253.50558	163.36367	5.05358	0.1192493	0.26249488	2.4157695	20	6 25.7	21.5
428230 2006 WD <sub>153</sub>	17.6	X	202.13128	105.56590	344.91471	2.09629	0.1548790	0.25810001	2.4431157	20	7 19.5	21.4
428231 2006 WX <sub>153</sub>	17.9	X	100.13713	188.94822	13.05473	5.35976	0.0686732	0.26721986	2.3872078	20	8 26.3	21.1
428232 2006 WP <sub>167</sub>	17.4	X	9.13481	53.06295	242.05160	13.31241	0.0477123	0.26809762	2.3819944	20	8 15.5	20.3
428233 2006 WC <sub>168</sub>	18.2	X	221.33154	226.00574	230.46250	1.53021	0.1287270	0.				

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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>
428241 2006 XF <sub>70</sub>	18.0 <sup>m</sup>	X	178.79293	336.54088	138.33245	1.92321	0.1389153	0.25775852	2.4452730	20	7 28.2	21.8
428242 2006 YF <sub>10</sub>	17.8	X	176.90888	32.12460	48.25873	3.25169	0.1684631	0.25553206	2.4594563	20	6 10.7	21.6
428243 2006 YE <sub>19</sub>	18.1	X	212.92672	96.72408	334.34393	3.41692	0.1594628	0.25743750	2.4473055	20	7 4.4	21.8
428244 2006 YH <sub>22</sub>	18.1	X	197.50528	302.58008	168.00229	2.39258	0.1486660	0.26586279	2.3953245	20	8 10.4	21.6
428245 2006 YQ <sub>31</sub>	17.3	X	100.44808	51.37685	70.49294	3.51899	0.1395971	0.24352824	2.5396264	20	5 14.7	20.6
428246 2006 YS <sub>52</sub>	18.1	X	171.36557	131.86021	321.96140	6.56239	0.1660532	0.25263309	2.4782354	20	6 23.4	22.1
428247 2007 AP <sub>2</sub>	17.5	X	51.49801	153.18389	301.95505	19.50547	0.0649149	0.37578915	1.9018367	20	—	—
428248 2007 AY <sub>15</sub>	17.6	X	165.07171	349.68008	140.97186	2.87555	0.1644402	0.25689684	2.4507379	20	8 4.1	21.4
428249 2007 BE <sub>1</sub>	17.1	X	113.29138	119.51963	333.55294	3.29969	0.2108561	0.24088530	2.5581687	20	4 28.9	21.0
428250 2007 BS <sub>7</sub>	18.0	X	275.85998	281.86530	315.58568	19.67943	0.0197418	0.37316975	1.9107261	20	—	—
428251 2007 BT <sub>21</sub>	15.5	X	113.53253	275.45035	114.84898	18.43397	0.1071296	0.15435076	3.4418891	20	2 9.5	20.6
428252 2007 BC <sub>22</sub>	18.0	X	162.84938	99.21254	48.58575	1.34849	0.1904827	0.25890864	2.4380261	20	8 24.8	22.0
428253 2007 BV <sub>49</sub>	17.3	X	155.36424	0.80125	144.06784	11.34022	0.1929065	0.25501870	2.4627559	20	8 13.4	21.3
428254 2007 BO <sub>58</sub>	18.0	X	113.97921	117.46436	314.63347	19.51872	0.0818141	0.38088711	1.8848286	20	2 23.4	19.7
428255 2007 BQ <sub>61</sub>	17.8	X	172.51493	160.59941	309.19040	6.04722	0.0945596	0.25604106	2.4561958	20	7 16.1	21.4
428256 2007 BS <sub>69</sub>	16.9	X	339.88338	294.07878	327.95210	8.72597	0.1754367	0.23806487	2.5783340	20	4 30.5	19.7
428257 2007 BW <sub>72</sub>	18.2	X	11.87057	21.72404	133.26362	25.01919	0.0988744	0.37608127	1.9008517	20	1 5.5	19.9
428258 2007 BG <sub>100</sub>	17.9	X	162.27818	122.07509	343.99964	2.14641	0.2026669	0.25120834	2.4875969	20	7 1.2	21.9
428259 2007 CA <sub>6</sub>	17.3	X	137.60050	296.09076	132.92866	12.10323	0.2732936	0.24240146	2.5474904	20	5 2.9	21.8
428260 2007 CZ <sub>17</sub>	17.5	X	141.90059	36.92423	122.48510	6.10239	0.1450552	0.25375425	2.4709303	20	8 19.7	21.2
428261 2007 CW <sub>25</sub>	16.2	X	22.94809	236.56314	353.17685	11.90125	0.1193804	0.24484980	2.5304799	20	6 12.8	19.2
428262 2007 CT <sub>60</sub>	16.7	X	64.54998	51.90478	95.54363	8.46106	0.1737691	0.23533697	2.5982201	20	5 8.1	19.8
428263 2007 CR <sub>63</sub>	18.0	X	71.04960	55.15271	336.92919	18.18989	0.0939881	0.36289249	1.9466329	20	—	—
428264 2007 CO <sub>65</sub>	16.8	X	145.01060	249.54594	151.53290	13.54564	0.1823457	0.23693039	2.5865579	20	3 27.7	20.9
428265 2007 CG <sub>66</sub>	17.6	X	84.37292	59.25902	161.20365	6.95978	0.1050699	0.25371233	2.4712025	20	9 1.3	20.8
428266 2007 DG <sub>28</sub>	17.2	X	257.75129	208.46029	141.39806	8.08418	0.0754327	0.24021907	2.5628964	20	5 19.4	20.8
428267 2007 DB <sub>33</sub>	17.2	X	42.23069	214.32772	351.95626	11.13815	0.0881291	0.23867567	2.5739333	20	6 7.2	20.5
428268 2007 DR <sub>43</sub>	17.7	X	280.89133	109.41504	158.41966	23.16635	0.0897200	0.37427493	1.9069628	20	2 6.3	20.0
428269 2007 DW <sub>47</sub>	16.7	X	110.84326	319.85163	161.23060	29.90257	0.1398318	0.23935606	2.5690532	20	5 31.3	21.2
428270 2007 DO <sub>55</sub>	17.6	X	28.83841	199.43907	125.75459	4.83124	0.1003075	0.23897784	2.5717631	20	6 10.5	20.4
428271 2007 DM <sub>61</sub>	17.3	X	320.44958	166.18001	32.93812	21.57847	0.0703820	0.36952084	1.9232840	20	—	—
428272 2007 DN <sub>63</sub>	17.6	X	195.56233	337.46689	114.64151	4.37630	0.1528948	0.25389369	2.4700255	20	7 14.5	21.4
428273 2007 DM <sub>64</sub>	18.1	X	128.87305	352.27888	111.93924	1.38985	0.1317729	0.24053995	2.5606167	20	5 23.3	21.7
428274 2007 DT <sub>91</sub>	17.5	X	65.60464	197.45173	345.60295	4.25761	0.0276421	0.24169996	2.5524172	20	6 1.8	20.7
428275 2007 DM <sub>111</sub>	17.2	X	220.01140	39.08037	345.48516	11.72190	0.0366395	0.24224634	2.5485778	20	5 16.1	20.9
428276 2007 EJ <sub>25</sub>	16.5	X	69.34771	159.05214	7.36290	7.36772	0.1297505	0.23378689	2.6096922	20	5 30.2	19.9
428277 2007 ED <sub>34</sub>	17.3	X	325.76775	306.22817	342.87087	14.49353	0.1035480	0.23955364	2.5676404	20	5 22.8	20.6
428278 2007 EJ <sub>53</sub>	17.2	X	107.16829	142.47704	346.48544	11.16208	0.0498301	0.23689363	2.5868254	20	5 15.6	20.9
428279 2007 EX <sub>59</sub>	17.2	X	354.42759	121.96974	175.52521	7.56993	0.0775928	0.24470500	2.5314780	20	7 29.9	20.2
428280 2007 ED <sub>67</sub>	17.5	X	19.99408	137.03526	121.45680	3.03687	0.1077308	0.24172021	2.5522746	20	7 20.7	20.0
428281 2007 ER <sub>84</sub>	16.8	X	47.30482	90.03553	143.32156	14.59437	0.2212446	0.24105336	2.5569795	20	8 17.7	19.9
428282 2007 EA <sub>85</sub>	17.4	X	72.57840	44.49049	121.98204	6.10552	0.2077480	0.23727394	2.5840606	20	6 18.7	20.8
428283 2007 ET <sub>96</sub>	17.0	X	343.39140	288.06053	9.36788	11.96408	0.1486309	0.23798996	2.5788750	20	7 12.9	19.8
428284 2007 EL <sub>100</sub>	17.7	X	118.28180	118.61280	21.68143	11.46928	0.1203194	0.24164844	2.5527800	20	6 27.1	21.6
428285 2007 EK <sub>102</sub>	16.8	X	77.96158	183.77267	15.92044	15.15897	0.0944354	0.24273529	2.5451542	20	7 30.5	20.5
428286 2007 EN <sub>103</sub>	17.6	X	357.30605	138.64244	113.73817	1.62848	0.0428060	0.23847392	2.5753848	20	5 30.8	20.8
428287 2007 EC <sub>117</sub>	17.6	X	93.44565	138.06776	43.60990	9.28583	0.0958210	0.23985021	2.5655234	20	7 22.2	21.3
428288 2007 EX <sub>120</sub>	16.8	X	17.39888	346.86526	321.95451	16.52889	0.2351612	0.25855670	2.4402380	20	10 11.8	19.8
428289 2007 EJ <sub>126</sub>	17.6	X	142.51847	70.00083	36.81610	2.03081	0.1516665	0.24595299	2.5229074	20	6 11.3	21.3
428290 2007 EH <sub>130</sub>	17.9	X	31.58810	248.37202	353.90792	4.49404	0.2583852	0.23862277	2.5743136	20	8 11.9	20.4
428291 2007 EL <sub>131</sub>	18.0	X	39.69774	61.99322	172.67640	1.57141	0.1593967	0.24042311	2.5614463	20	7 27.1	20.9
428292 2007 EJ <sub>137</sub>	16.6	X	336.96164	241.57720	27.77442	12.48687	0.1536101	0.23256057	2.6188583	20	5 10.2	19.5
428293 2007 EL <sub>139</sub>	16.8	X	273.27039	233.82168	70.55318	4.74358	0.1605487	0.22916762	2.6446439	20	3 28.4	20.6
428294 2007 EL <sub>145</sub>	17.3	X	188.79120	16.59659	8.57153	9.64526	0.1265560	0.23368629	2.6104411	20	4 11.6	21.3
428295 2007 ED <sub>149</sub>	17.3	X	351.49968	196.00069	27.80220	7.94338	0.0907045	0.23022580	2.6365340	20	4 9.7	20.4
428296 2007 EE <sub>174</sub>	16.8	X	59.18717	213.31687	356.35794	8.81179	0.0681090	0.23966772	2.5668256	20	7 8.9	20.2
428297 2007 EN <sub>182</sub>	17.4	X	45.68981	192.65425	2.69426	6.37024	0.1915645	0.23302383	2.6153862	20	6 14.0	20.3
428298 2007 EY <sub>192</sub>	16.4	X	14.71662	289.09441	249.22204	12.11313	0.1196137	0.22807885	2.6530537	20	3 8.4	19.7
428299 2007 EL <sub>198</sub>	17.4	X	108.88262	31.78076	4.85848	20.62148	0.0747515	0.36658766	1.9335296	20	—	—
428300 2007 EB <sub>214</sub>	17.8	X	123.05135	280.04720	223.95154	2.34418	0.0922345	0.24243099	2.5472835	20	7 4.3	21.4
428301 2007 EG <sub>214</sub>	16.3	X	71.30984	106.27410	111.09906	26.18374	0.2114218	0.24074892	2.5591347	20	8 31.6	20.3
428302 2007 EB <sub>218</sub>	18.1	X	161.07023	217.62089	243.40276	0.28196	0.1728218	0.24535326	2.5270170	20	6 22.7	22.1
428303 2007 EF <sub>223</sub>	16.3	X	166.10944	12.08524	75.54041	14.43106	0.1323671	0.24405492	2.5359713	20	6 9.1	20.3
428304 2007 FG <sub>6</sub>	16.7	X	304.23604	322.53424	349.81742	13.41498	0.1785222	0.23873810	2.5734845	20	5 7.5	20.2
428305 2007 FY <sub>12</sub>	16.5	X	18.59323	254.94818	300.28236	8.57166	0.1697172	0.23003550	2.6379879	20	4 11.8	19.2
428306 2007 FN <sub>16</sub>	16.7	X	124.02463	267.64224	157.87192	22.01279	0.1123344	0.23352334	2.6116553	20	3 29.7	20.6
428307 2007 FP <sub>18</sub>	17.6	X	13.17438	159.19138	337.89825	19.86726	0.0233391	0.37208532	1.9144368	20	—	—
428308 2007 FC <sub>25</sub>	17.4	X	121.77499	341.04164	180.57963	7.76241	0.1550131	0.24536541	2.5269336	20	7 30.5	21.3
428309 2007 FX <sub>39</sub>	17.7	X	62.76564	85.72321	26.18648	20.53197	0.1106208	0.37383623	1.9084544	20	2 22.4	19.6
428310 2007 FH <sub>44</sub>	17.1	X	11.01918	122.97974	125.80602	14.00666	0.2365671	0.23051867	2.6343005	20	6 30.1	19.3
428311 2007 FY <sub>49</sub>	16.5	X	27.14793	313.95227	228.46391	11.46525	0.1488523	0.22930329	2.6436007	20	4 12.4	19.2
428312 2007 GF <sub>3</sub>	16.8	X	109.10843	120.40663	5.56139	11.48780	0.0872621	0.23668474	2.5883473	20	5 19.8	20.6
428313 2007 GT <sub>8</sub>	17.6	X	352.05113	54.70203	207.08137	2.46994	0.1862376	0.23188793	2.6239202	20		

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
428321 2007 <i>GL</i> <sub>77</sub>	16.9 <sup>m</sup>	X	0.31577	71.02364	168.58687	9.41727	0.1602167	0.22900576	2.6458899	20	5 18.6	19.6
428322 2007 <i>HC</i> <sub>13</sub>	17.4	X	21.17018	53.44113	183.74733	4.23712	0.2557533	0.23250632	2.6192656	20	7 8.7	19.7
428323 2007 <i>HH</i> <sub>25</sub>	17.2	X	340.27335	187.33068	99.39452	3.00354	0.1047660	0.23179163	2.6246469	20	6 18.8	20.1
428324 2007 <i>HL</i> <sub>30</sub>	17.3	X	88.62036	71.00405	92.76858	1.61277	0.0170886	0.23590079	2.5940785	20	6 6.5	20.7
428325 2007 <i>HL</i> <sub>45</sub>	17.4	X	32.40109	14.61703	182.52759	4.82305	0.1733670	0.22807265	2.6531017	20	5 21.1	20.0
428326 2007 <i>HW</i> <sub>46</sub>	16.8	X	3.96398	221.80454	56.82389	10.14519	0.1116652	0.23677749	2.5876713	20	7 24.0	19.7
428327 2007 <i>HJ</i> <sub>52</sub>	17.2	X	58.02921	352.63714	198.38861	11.05924	0.1864348	0.23249134	2.6193781	20	6 27.0	20.6
428328 2007 <i>HP</i> <sub>56</sub>	16.6	X	5.40088	96.38503	167.80668	12.73820	0.2332778	0.23176761	2.6248282	20	7 9.1	19.0
428329 2007 <i>HW</i> <sub>68</sub>	17.4	X	35.58523	75.85772	117.25622	11.01504	0.1540419	0.22897761	2.6461068	20	5 21.4	20.4
428330 2007 <i>HP</i> <sub>73</sub>	17.3	X	33.87147	30.49367	211.06309	7.77571	0.0443126	0.23635810	2.5907314	20	7 9.3	20.7
428331 2007 <i>HV</i> <sub>73</sub>	16.8	X	29.34392	327.46035	214.05973	10.84460	0.0595023	0.22446960	2.6814170	20	4 10.9	20.2
428332 2007 <i>HV</i> <sub>77</sub>	17.2	X	79.91295	18.68387	180.11745	12.10562	0.1115505	0.24145520	2.5541418	20	7 25.8	20.9
428333 2007 <i>HK</i> <sub>84</sub>	17.0	X	15.28630	265.10344	41.69092	15.26269	0.1180481	0.24517941	2.5282114	20	10 1.1	20.0
428334 2007 <i>HT</i> <sub>86</sub>	16.5	X	302.14265	197.02729	67.68625	11.30920	0.1205293	0.21980775	2.7191972	20	3 23.6	20.3
428335 2007 <i>HA</i> <sub>87</sub>	17.2	X	8.66791	92.19947	170.23060	4.90523	0.1656640	0.23229699	2.6208389	20	7 8.8	19.8
428336 2007 <i>HL</i> <sub>90</sub>	16.4	X	319.11249	163.84722	96.68687	12.84839	0.1491562	0.22429305	2.6828239	20	4 7.7	19.9
428337 2007 <i>HL</i> <sub>97</sub>	16.2	X	353.00197	142.23949	70.45655	14.16139	0.1478426	0.22462015	2.6802188	20	3 31.8	19.4
428338 2007 <i>HC</i> <sub>98</sub>	16.9	X	55.57881	63.56584	170.88094	14.77543	0.0545712	0.23684509	2.5871789	20	8 1.2	20.4
428339 2007 <i>JL</i> <sub>2</sub>	16.6	X	20.55376	143.16864	86.24080	13.63827	0.1246250	0.23071101	2.6328362	20	6 9.7	19.5
428340 2007 <i>KR</i> <sub>4</sub>	17.3	X	327.14226	170.04026	94.80822	4.84570	0.0820129	0.22457450	2.6805819	20	4 30.1	20.6
428341 2007 <i>KS</i> <sub>6</sub>	16.7	X	318.99136	17.36313	236.61187	12.50080	0.1040989	0.22072338	2.7116720	20	3 24.5	20.3
428342 2007 <i>KE</i> <sub>8</sub>	16.6	X	16.40868	145.36318	98.07233	14.67135	0.1695893	0.23058903	2.6337646	20	6 26.7	19.1
428343 2007 <i>LA</i> <sub>2</sub>	17.3	X	32.21743	104.68972	139.62143	5.77039	0.2145576	0.23346318	2.6121040	20	8 5.9	20.0
428344 2007 <i>LB</i> <sub>2</sub>	17.0	X	36.17415	113.00230	127.98688	6.03486	0.1350308	0.23395368	2.6084517	20	7 26.0	19.9
428345 2007 <i>LQ</i> <sub>4</sub>	16.2	X	253.75702	220.28702	84.34098	10.50734	0.1892044	0.21409146	2.7673865	20	3 9.8	20.8
428346 2007 <i>LS</i> <sub>23</sub>	16.7	X	45.19523	64.20543	125.16664	13.20983	0.1171676	0.22741134	2.6582427	20	5 28.2	20.1
428347 2007 <i>LR</i> <sub>30</sub>	14.3	X	96.45643	182.30499	76.47343	6.87640	0.0558690	0.08486391	5.1284647	20	10 8.1	21.2
428348 2007 <i>MV</i> <sub>1</sub>	16.1	X	275.24621	193.25642	101.12430	18.82517	0.1575477	0.21894076	2.7263711	20	3 26.2	20.5
428349 2007 <i>MQ</i> <sub>5</sub>	16.4	X	137.00895	259.51183	112.42708	11.24714	0.0805035	0.19663613	2.9288277	20	2 4.7	20.6
428350 2007 <i>MA</i> <sub>17</sub>	17.0	X	7.51882	66.24560	181.43214	9.19953	0.2029731	0.22870354	2.6482204	20	6 16.1	19.5
428351 2007 <i>OT</i> <sub>5</sub>	16.7	X	22.33486	300.15289	328.75744	16.91100	0.3050652	0.22951526	2.6419728	20	9 5.0	19.3
428352 2007 <i>OV</i> <sub>7</sub>	14.9	X	83.72488	57.24939	277.15570	24.01456	0.2135924	0.17346554	3.1841529	20	—	—
428353 2007 <i>PD</i> <sub>32</sub>	15.2	X	92.67949	218.67606	141.38239	28.23442	0.1502155	0.17879359	3.1205759	20	—	—
428354 2007 <i>PZ</i> <sub>49</sub>	16.8	X	140.04383	280.18975	137.89665	2.92953	0.0661068	0.19952591	2.9004798	20	4 2.7	20.9
428355 2007 <i>QS</i> <sub>13</sub>	16.2	X	40.80916	76.56524	355.68256	10.52681	0.0868392	0.17963913	3.1107761	20	—	—
428356 2007 <i>RW</i> <sub>21</sub>	15.9	X	153.74903	358.22107	353.74116	23.42679	0.2055876	0.18890302	3.0082236	20	2 16.6	21.1
428357 2007 <i>RK</i> <sub>30</sub>	16.0	X	68.19006	91.53611	314.91456	20.60752	0.2532493	0.17803071	3.1294842	20	1 19.8	19.7
428358 2007 <i>RH</i> <sub>47</sub>	16.3	X	23.20255	278.16470	186.12628	10.98731	0.0811730	0.17861214	3.1226890	20	—	—
428359 2007 <i>RT</i> <sub>48</sub>	15.7	X	51.48112	73.50206	7.50610	25.38735	0.2845838	0.17546917	3.1598672	20	2 18.8	19.4
428360 2007 <i>RW</i> <sub>57</sub>	15.9	X	120.50438	197.44146	184.11255	11.85667	0.2313251	0.18255501	3.0775625	20	2 14.1	20.8
428361 2007 <i>RL</i> <sub>59</sub>	16.0	X	137.97014	353.88104	342.25919	9.71435	0.1226854	0.18230085	3.0804223	20	1 1.3	20.8
428362 2007 <i>RW</i> <sub>64</sub>	16.9	X	177.38094	218.48276	160.91416	2.49421	0.1380145	0.19930164	2.9026553	20	3 28.7	21.6
428363 2007 <i>RQ</i> <sub>94</sub>	18.6	X	3.36184	342.87343	36.62022	2.99604	0.1913502	0.31310210	2.1478901	20	—	—
428364 2007 <i>RH</i> <sub>96</sub>	16.5	X	120.92608	230.26700	172.51845	10.82053	0.0849825	0.18675634	3.0312318	20	2 23.1	20.8
428365 2007 <i>RH</i> <sub>102</sub>	15.9	X	45.70989	234.51206	194.08421	13.79384	0.2894569	0.17460592	3.1702736	20	1 5.2	19.2
428366 2007 <i>RR</i> <sub>112</sub>	16.1	X	111.63366	352.05327	9.89336	11.44181	0.1027813	0.17896234	3.1186139	20	—	—
428367 2007 <i>RX</i> <sub>132</sub>	16.3	X	170.21434	22.38312	323.84815	8.60638	0.0659651	0.19024016	2.9941111	20	2 8.6	20.8
428368 2007 <i>RV</i> <sub>136</sub>	16.4	X	55.38070	255.16140	155.56664	5.11819	0.1908398	0.17599767	3.1535383	20	—	—
428369 2007 <i>RQ</i> <sub>182</sub>	15.8	X	98.00512	32.59592	346.74491	27.14613	0.1173462	0.18270914	3.0758314	20	1 13.4	20.5
428370 2007 <i>RL</i> <sub>195</sub>	16.5	X	61.98734	70.06579	340.33942	3.97511	0.1581004	0.17589286	3.1547909	20	—	—
428371 2007 <i>RZ</i> <sub>202</sub>	15.9	X	46.80505	107.22431	7.17684	12.44562	0.0682951	0.18587036	3.0408567	20	2 19.5	20.0
428372 2007 <i>RO</i> <sub>206</sub>	16.7	X	227.36447	206.58411	102.22616	2.47870	0.0707534	0.19348466	2.9605452	20	2 23.9	21.0
428373 2007 <i>RO</i> <sub>212</sub>	16.1	X	160.82326	345.10198	2.59340	13.09199	0.2059560	0.18866204	3.0107847	20	2 14.1	21.2
428374 2007 <i>RQ</i> <sub>215</sub>	18.1	X	286.94920	197.14859	194.46103	5.19929	0.2004466	0.29880924	2.2158483	20	8 10.2	20.0
428375 2007 <i>RB</i> <sub>234</sub>	15.6	X	136.16661	21.82983	328.33797	13.12248	0.3330680	0.18370472	3.0647085	20	2 4.3	20.8
428376 2007 <i>RG</i> <sub>252</sub>	15.9	X	57.33391	59.04098	348.98685	26.16437	0.2538776	0.17192621	3.2031307	20	1 8.0	20.0
428377 2007 <i>RG</i> <sub>253</sub>	18.4	X	268.23394	321.03895	132.37331	1.66088	0.1790967	0.30097988	2.2051818	20	10 20.6	20.1
428378 2007 <i>RL</i> <sub>258</sub>	17.9	X	216.72933	269.36636	1.33225	13.87726	0.1617861	0.34310406	2.0207789	20	—	—
428379 2007 <i>RS</i> <sub>261</sub>	16.2	X	8.85972	94.00627	18.05411	23.53932	0.2616530	0.17325910	3.1866817	20	—	—
428380 2007 <i>RK</i> <sub>280</sub>	15.9	X	95.52934	114.49930	260.06213	14.91276	0.1915237	0.17782108	3.1319433	20	1 5.7	20.2
428381 2007 <i>RE</i> <sub>283</sub>	16.1	X	104.23241	60.71015	334.90327	8.55968	0.1065424	0.18368521	3.0649255	20	1 31.9	20.5
428382 2007 <i>RE</i> <sub>285</sub>	16.2	X	75.68266	8.33090	5.42436	10.78878	0.0519835	0.17483286	3.1675296	20	—	—
428383 2007 <i>RL</i> <sub>292</sub>	16.1	X	4.63004	64.31821	12.80951	19.39609	0.0551877	0.16966561	3.2315199	20	—	—
428384 2007 <i>RX</i> <sub>292</sub>	16.7	X	105.63849	301.08363	51.10163	2.48672	0.1948623	0.17489134	3.1668234	20	—	—
428385 2007 <i>RH</i> <sub>294</sub>	17.1	X	140.61372	32.71343	4.82512	4.94923	0.0878587	0.19101654	2.9859927	20	3 11.4	21.6
428386 2007 <i>RB</i> <sub>299</sub>	16.3	X	142.42142	17.52765	328.80989	8.40892	0.0854909	0.18398885	3.0615526	20	1 13.8	20.8
428387 2007 <i>RH</i> <sub>300</sub>	16.1	X	252.86413	290.88488	28.44841	14.98680	0.1588919	0.20390762	2.8587779	20	3 28.9	20.6
428388 2007 <i>RR</i> <sub>301</sub>	16.4	X	17.67105	273.14449	205.06563	6.68196	0.1782451	0.17226619	3.1989148	20	1 7.7	20.1
428389 2007 <i>RW</i> <sub>315</sub>	16.2	X	84.30843	49.72706	328.11248	9.09472	0.2258704	0.17637164	3.1490789	20	1 3.0	20.3
428390 2007 <i>RM</i> <sub>319</sub>	15.7	X	79.75550	18.35833	9.84222	14.88211	0.0774683	0.17633565	3.1495074	20	—	—
428391 2007 <i>RG</i> <sub>320</sub>	15.7	X	170.53856	283.60121	4.38555	10.23383	0.0689303	0.17624164	3.1506273	20	—	—
428392 2007 <i>RE</i> <sub>321</sub>	18.1	X	301.22897	32.2904								

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>
428401 2007 TZ <sub>14</sub>	15.9	X	73.38348	4.68044	40.91975	10.03637	0.1503262	0.17539626	3.1607428	20	1 10.9	20.1
428402 2007 TQ <sub>32</sub>	16.6	X	130.71189	226.46330	179.55496	14.10846	0.1371038	0.19234725	2.9722047	20	3 15.0	21.0
428403 2007 TL <sub>39</sub>	16.7	X	45.65022	236.32979	190.10963	2.38788	0.1037754	0.17081033	3.2170660	20	—	—
428404 2007 TZ <sub>48</sub>	16.2	X	213.10291	294.85805	13.94260	7.82877	0.0214493	0.18558979	3.0439207	20	2 13.4	20.6
428405 2007 TY <sub>52</sub>	16.0	X	103.26045	192.12420	215.83042	8.33204	0.0741552	0.18123702	3.0924649	20	2 6.1	20.5
428406 2007 TK <sub>55</sub>	15.9	X	169.88240	131.28662	223.04144	9.63787	0.1004530	0.18540875	3.0459018	20	2 16.3	20.8
428407 2007 TF <sub>57</sub>	16.0	X	253.42215	52.42373	215.70989	9.87637	0.0744940	0.18442954	3.0566735	20	1 31.0	20.8
428408 2007 TT <sub>79</sub>	16.3	X	102.85448	0.38894	36.42656	14.65308	0.1655205	0.17856081	3.232874	20	2 14.8	21.0
428409 2007 TP <sub>91</sub>	15.7	X	335.36842	123.19464	21.69297	17.32254	0.0791545	0.17625037	3.1505233	20	—	—
428410 2007 TY <sub>94</sub>	16.0	X	157.81639	306.11288	44.73829	12.43980	0.2986158	0.18661574	3.0327541	20	2 21.8	21.6
428411 2007 TV <sub>96</sub>	16.5	X	70.28468	242.00435	189.18113	8.81546	0.0829866	0.18179842	3.0860951	20	1 25.0	20.7
428412 2007 TX <sub>97</sub>	16.7	X	16.43667	324.94058	191.13268	20.14787	0.1623419	0.18616003	3.0377015	20	2 18.9	20.4
428413 2007 TA <sub>117</sub>	18.4	X	345.87851	146.61839	228.76115	1.94078	0.1964474	0.30839152	2.1697070	20	12 12.7	20.0
428414 2007 TA <sub>119</sub>	15.9	X	359.31702	289.83240	233.00353	10.64477	0.0833607	0.17975831	3.1094010	20	2 6.0	20.3
428415 2007 TS <sub>122</sub>	16.2	X	138.78540	188.96474	201.26578	9.54576	0.0741238	0.18591810	3.0403361	20	2 25.4	20.8
428416 2007 TV <sub>128</sub>	16.0	X	86.75045	24.14032	38.91815	12.52676	0.0744814	0.17908103	3.1172358	20	2 12.7	20.5
428417 2007 TX <sub>130</sub>	17.9	X	291.43063	25.33549	27.39375	4.92971	0.1560844	0.30081400	2.2059924	20	10 5.4	19.6
428418 2007 TR <sub>140</sub>	15.7	X	84.39452	26.56948	44.78842	10.85142	0.0960107	0.18187270	3.0852549	20	2 22.1	20.1
428419 2007 TA <sub>153</sub>	15.7	X	137.90316	167.76320	215.35707	9.93343	0.0621686	0.18699001	3.0287059	20	2 13.6	20.3
428420 2007 TE <sub>173</sub>	16.1	X	132.92060	195.18675	200.02758	9.45203	0.0845636	0.18802708	3.0175591	20	2 25.9	20.6
428421 2007 TR <sub>177</sub>	16.1	X	140.81314	311.14210	42.72703	12.94136	0.0698822	0.17867534	3.1219526	20	1 21.5	20.9
428422 2007 TW <sub>178</sub>	16.7	X	314.23859	24.17189	223.05186	6.19480	0.1819412	0.20066696	2.8894741	20	3 1.2	20.7
428423 2007 TE <sub>192</sub>	16.2	X	190.27702	8.51079	276.62129	3.28129	0.0839636	0.17836512	3.1255714	20	—	—
428424 2007 TY <sub>196</sub>	16.2	X	10.04724	119.32170	352.28040	26.78019	0.1701486	0.17893484	3.1189334	20	—	—
428425 2007 TE <sub>197</sub>	16.5	X	92.05122	97.35040	307.71346	2.93371	0.1702762	0.18317656	3.0705967	20	2 4.8	20.6
428426 2007 TV <sub>199</sub>	16.5	X	51.86899	270.42953	212.56501	7.81135	0.0499435	0.18681119	3.0306384	20	2 28.1	20.7
428427 2007 TD <sub>203</sub>	16.6	X	91.76416	338.20493	47.62266	11.71428	0.1212053	0.17325497	3.1867323	20	1 7.9	21.1
428428 2007 TD <sub>206</sub>	17.7	X	206.72431	310.43527	166.68312	3.91834	0.1734374	0.29453307	2.2372440	20	8 29.4	20.7
428429 2007 TZ <sub>210</sub>	15.9	X	155.86630	343.63635	6.45160	13.01951	0.1852343	0.18399110	3.0615276	20	2 12.1	21.0
428430 2007 TE <sub>214</sub>	15.7	X	174.44150	299.73648	28.85969	14.56295	0.0735400	0.18043390	3.1016346	20	1 29.5	20.6
428431 2007 TA <sub>226</sub>	16.0	X	265.42031	181.24142	36.97731	11.34571	0.1569702	0.17590360	3.1546625	20	—	—
428432 2007 TN <sub>231</sub>	16.6	X	19.84342	77.65599	44.32215	5.55860	0.1031693	0.17872894	3.1213284	20	1 19.1	20.5
428433 2007 TV <sub>233</sub>	16.3	X	135.82606	152.21795	215.29464	9.41731	0.0244401	0.17755312	3.1350935	20	1 23.5	20.9
428434 2007 TL <sub>250</sub>	15.9	X	64.42393	67.10929	6.51078	9.48147	0.0822221	0.17985162	3.1083254	20	1 25.2	20.1
428435 2007 TW <sub>253</sub>	16.3	X	207.49720	287.18970	28.77234	9.94913	0.0844366	0.18881612	3.0091465	20	2 15.5	21.0
428436 2007 TN <sub>267</sub>	16.1	X	139.23847	177.37152	203.16344	9.14512	0.0875896	0.18513818	3.0488687	20	2 15.7	20.8
428437 2007 TE <sub>273</sub>	16.3	X	299.42176	9.37181	230.06847	9.99143	0.0512493	0.18874264	3.1009275	20	2 19.9	20.8
428438 2007 TY <sub>274</sub>	16.3	X	96.23342	3.40564	31.79527	11.05821	0.1113193	0.17878241	3.1207060	20	1 24.9	20.8
428439 2007 TL <sub>275</sub>	15.9	X	180.69422	306.86092	43.65699	10.62493	0.1184378	0.19053832	2.9909868	20	3 2.3	20.8
428440 2007 TK <sub>317</sub>	16.4	X	167.67519	289.30449	64.48989	9.90988	0.1113644	0.18394010	3.0620934	20	2 22.3	21.3
428441 2007 TY <sub>317</sub>	16.3	X	57.48494	198.02912	218.16815	4.49081	0.0886839	0.17041675	3.2220173	20	—	—
428442 2007 TE <sub>322</sub>	18.3	X	350.40969	305.10804	80.49990	3.63546	0.1338069	0.31002249	2.1620907	20	12 26.3	20.4
428443 2007 TP <sub>325</sub>	18.6	X	275.43236	151.13345	283.06013	3.24026	0.1681763	0.30090865	2.2055298	20	10 2.5	20.6
428444 2007 TV <sub>361</sub>	16.3	X	120.74709	317.54830	57.97329	7.14051	0.1217180	0.17614296	3.1518039	20	1 30.7	21.0
428445 2007 TL <sub>377</sub>	16.3	X	169.44962	339.18605	8.19758	10.37140	0.1174595	0.18689609	3.0297205	20	2 15.8	21.1
428446 2007 TJ <sub>381</sub>	16.1	X	270.54645	224.77029	46.61878	12.65027	0.0256980	0.18942864	3.0026563	20	3 9.3	20.5
428447 2007 TF <sub>384</sub>	16.2	X	12.41754	296.09410	189.01815	10.16175	0.0598861	0.17303461	3.1894372	20	1 11.4	20.7
428448 2007 TF <sub>387</sub>	15.8	X	254.13945	207.98988	19.23418	10.52369	0.0358471	0.17800254	3.1298143	20	—	—
428449 2007 TH <sub>388</sub>	16.8	X	215.39332	219.93135	94.37766	2.16202	0.0900935	0.19177866	2.9780766	20	2 17.5	21.4
428450 2007 TM <sub>390</sub>	16.3	X	205.53264	270.95035	42.33680	5.49468	0.1375635	0.18917941	3.0052929	20	2 7.8	21.2
428451 2007 TJ <sub>407</sub>	16.5	X	337.70011	17.73054	173.50039	11.01898	0.0290566	0.18322962	3.0700039	20	2 15.5	20.8
428452 2007 TL <sub>421</sub>	16.0	X	90.08216	271.34159	93.65419	17.28912	0.2590626	0.17317745	3.1876832	20	—	—
428453 2007 TY <sub>425</sub>	16.3	X	36.91935	86.29638	36.43338	4.54787	0.0747556	0.18323340	3.0699617	20	2 13.9	20.2
428454 2007 TD <sub>426</sub>	15.7	X	8.09840	108.28956	12.90774	17.05680	0.0744874	0.18027768	3.1034261	20	1 1.6	20.1
428455 2007 TY <sub>432</sub>	16.3	X	93.13130	131.64111	234.82145	16.88523	0.2075850	0.17486144	3.1671844	20	—	—
428456 2007 TK <sub>443</sub>	16.3	X	154.25909	23.97726	352.10289	6.75601	0.1812675	0.18916094	3.0054885	20	3 6.7	21.1
428457 2007 TL <sub>445</sub>	15.6	X	20.69372	250.21366	185.12053	13.11621	0.1233679	0.17187599	3.2037546	20	—	—
428458 2007 TB <sub>448</sub>	16.1	X	101.46796	122.46197	240.47973	8.78377	0.0630028	0.17160262	3.2071562	20	—	—
428459 2007 TJ <sub>451</sub>	15.8	X	176.26111	245.74901	69.10591	11.22988	0.2299051	0.18246026	3.0786278	20	1 18.7	21.2
428460 2007 TZ <sub>451</sub>	15.7	X	144.09481	262.55982	67.05162	11.94588	0.1812734	0.17733406	3.1376749	20	1 5.4	20.7
428461 2007 US <sub>1</sub>	16.4	X	101.56365	280.16592	95.44849	7.65850	0.2406547	0.17870285	3.1216322	20	1 23.2	20.8
428462 2007 UA <sub>26</sub>	15.9	X	141.42323	155.94888	216.76393	8.39480	0.0657404	0.18060249	3.0997040	20	2 6.8	20.6
428463 2007 UA <sub>42</sub>	16.2	X	187.39470	301.45831	15.47562	9.79756	0.1075388	0.18119575	3.0929345	20	1 28.2	21.2
428464 2007 UE <sub>46</sub>	16.4	X	121.35072	325.97197	38.49722	5.55034	0.1699814	0.17899677	3.1182140	20	1 23.2	21.0
428465 2007 UB <sub>67</sub>	15.8	X	79.71453	223.82153	212.32997	14.83086	0.0607809	0.18353008	3.0666524	20	2 6.7	20.3
428466 2007 UY <sub>75</sub>	17.6	X	197.72512	251.74243	235.58375	6.51788	0.0456566	0.29521728	2.2337858	20	9 12.3	20.5
428467 2007 UA <sub>76</sub>	16.1	X	174.15031	280.16934	30.16201	6.90893	0.1727189	0.17841293	3.1250130	20	1 9.7	21.3
428468 2007 UU <sub>86</sub>	16.0	X	185.46734	89.14483	222.33190	11.19637	0.0925877	0.17723570	3.1388357	20	1 14.5	21.0
428469 2007 UQ <sub>91</sub>	16.2	X	192.39358	289.91584	49.32187	3.98588	0.1187302	0.18570715	3.0426381	20	2 26.1	21.0
428470 2007 UG <sub>96</sub>	18.1	X	318.54371	11.88242	35.04961	1.45729	0.1320584	0.30427500	2.1892324	20	11 25.9	19.8
428471 2007 UN <sub>108</sub>	16.1	X	356.25626	79.40974	46.31243	10.10655	0.0484017	0.17152064	3.2081781	20	—	—
428472 2007 UT <sub>120</sub>	16.4	X	127.64678	168.63927	206.14358	7.62326	0.0792272	0.18139675	3.0906493	20	1 27.3	21.0
428473 2007 VM <sub>24</sub>	16.1	X	75.76964	237.34655	198.20152	10.05704	0.0682904	0.17958037	3.1114546	20	2 4.4	20.4
428474												

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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>
428481 2007 VK <sub>100</sub>	15.7	X	96.44702	155.19718	251.66892	16.76310	0.1085990	0.17484848	3.1673409	20	1 29.9	20.4
428482 2007 VR <sub>100</sub>	18.0	X	350.07418	11.06121	28.54788	3.12623	0.0694901	0.30768874	2.1730096	20	—	—
428483 2007 VX <sub>121</sub>	15.9	X	259.56578	26.39154	253.77537	9.04642	0.1584063	0.18777967	3.0202090	20	2 11.6	20.7
428484 2007 VS <sub>125</sub>	17.9	X	357.20635	92.42264	255.20570	3.77601	0.1773809	0.30294885	2.1956166	20	11 15.1	19.8
428485 2007 VO <sub>133</sub>	16.1	X	163.28599	63.54468	290.23665	7.40936	0.1374103	0.18399244	3.0615127	20	2 13.3	21.0
428486 2007 VK <sub>149</sub>	17.9	X	292.70105	328.53393	66.95896	7.49854	0.1259378	0.29726050	2.2235381	20	9 17.3	20.0
428487 2007 VW <sub>163</sub>	16.2	X	18.75037	226.31872	248.84871	9.68551	0.0666193	0.17108520	3.2136192	20	1 8.4	20.5
428488 2007 VD <sub>172</sub>	16.7	X	118.47028	212.45896	155.07500	5.90323	0.1264206	0.18013134	3.1051067	20	1 16.1	21.2
428489 2007 VC <sub>188</sub>	15.8	X	46.40818	184.64268	227.21813	14.99248	0.0445699	0.16933667	3.2357034	20	—	—
428490 2007 VZ <sub>203</sub>	16.1	X	245.55079	39.25654	207.04631	10.52770	0.0539422	0.17399126	3.1777356	20	1 2.2	20.9
428491 2007 VG <sub>204</sub>	18.1	X	344.21372	264.32096	95.76191	4.78379	0.1783249	0.30246817	2.1979422	20	11 11.1	19.7
428492 2007 VP <sub>218</sub>	18.4	X	296.26615	25.78694	348.43124	1.84178	0.2465046	0.29360627	2.2419495	20	7 23.9	20.1
428493 2007 VA <sub>241</sub>	15.4	X	66.76390	26.81886	51.00619	30.66817	0.2163407	0.17820040	3.1274972	20	3 8.9	20.0
428494 2007 VM <sub>272</sub>	16.1	X	115.12301	258.43859	123.63000	14.86001	0.1978384	0.17955990	3.1116911	20	2 9.0	20.8
428495 2007 VW <sub>273</sub>	16.0	X	293.73022	349.70763	207.81260	11.87723	0.0454328	0.17250081	3.1960136	20	—	—
428496 2007 VF <sub>319</sub>	16.2	X	311.98280	158.04061	56.06478	12.05068	0.0978327	0.17949225	3.1124729	20	2 8.3	20.7
428497 2007 VQ <sub>325</sub>	17.8	X	327.22647	176.47298	257.00117	4.29562	0.1079837	0.30870934	2.1682176	20	—	—
428498 2007 VO <sub>330</sub>	18.1	X	309.67635	109.85145	267.38413	6.95779	0.1324787	0.29481625	2.2358111	20	9 10.5	20.1
428499 2007 WZ <sub>3</sub>	15.6	X	350.26939	97.05880	36.78801	16.72244	0.0729494	0.17139568	3.2097371	20	—	—
428500 2007 WZ <sub>12</sub>	16.3	X	105.47569	141.97962	241.17560	8.61927	0.0733318	0.17548552	3.1596710	20	1 12.2	20.8
428501 2007 WP <sub>24</sub>	16.4	X	26.42300	303.31253	162.59037	3.76102	0.0323774	0.17377872	3.1803261	20	1 8.2	20.8
428502 2007 WN <sub>31</sub>	16.7	X	10.25705	297.04035	202.05451	10.65680	0.0636524	0.17547421	3.1598067	20	1 23.8	21.0
428503 2007 WQ <sub>34</sub>	16.5	X	28.97743	84.22298	12.75684	4.25206	0.0818502	0.16908376	3.2389291	20	1 3.1	20.6
428504 2007 XS <sub>22</sub>	17.3	X	224.89730	328.28676	88.13357	6.50103	0.1461908	0.28041155	2.3117389	20	6 29.1	20.7
428505 2007 XW <sub>24</sub>	15.6	X	149.03092	292.41398	88.63625	18.20431	0.3092056	0.18355446	3.0663808	20	3 19.2	21.3
428506 2007 XU <sub>52</sub>	17.7	X	258.43931	12.39080	110.30702	5.57022	0.0796306	0.29748426	2.2224230	20	12 1.7	20.0
428507 2007 XQ <sub>56</sub>	18.0	X	292.45782	46.02369	5.97840	7.24823	0.2586421	0.29635718	2.2280542	20	9 18.2	19.1
428508 2007 YE <sub>15</sub>	15.7	X	152.85002	86.76356	270.13009	12.99432	0.0296197	0.17397332	3.1779541	20	1 28.5	20.5
428509 2007 YP <sub>18</sub>	17.5	X	230.59861	3.04748	96.59921	7.05684	0.0375377	0.29029031	2.2589902	20	9 26.2	20.3
428510 2007 YH <sub>21</sub>	16.0	X	2.35543	153.31211	279.00810	4.45228	0.0827176	0.15307752	3.4609482	20	—	—
428511 2007 YK <sub>21</sub>	15.6	X	278.87743	326.72778	279.25198	18.04529	0.0907078	0.17019531	3.2248114	20	1 30.8	20.5
428512 2007 YN <sub>41</sub>	18.2	X	275.36375	313.85292	105.62949	2.48582	0.2398283	0.29155458	2.2524550	20	8 27.8	20.4
428513 2007 YL <sub>51</sub>	15.8	X	205.97399	44.72950	279.84419	9.23324	0.0907301	0.17973720	3.1096444	20	2 17.2	20.8
428514 2007 YO <sub>62</sub>	18.5	X	118.46675	236.65830	282.09221	0.63127	0.1214188	0.27086415	2.3657473	20	7 23.6	21.7
428515 2007 YT <sub>63</sub>	18.8	X	211.05140	80.42081	41.02834	2.32150	0.1338045	0.28491593	2.2873093	20	9 13.7	21.9
428516 2007 YV <sub>64</sub>	17.9	X	211.86328	301.93255	111.84614	3.36120	0.2153102	0.27674129	2.3321335	20	6 7.3	21.7
428517 2007 YW <sub>69</sub>	17.9	X	269.63706	40.32669	89.50357	5.25506	0.0965020	0.30083684	2.2058808	20	12 29.4	19.7
428518 2008 AR <sub>7</sub>	17.7	X	195.27293	349.32951	138.10000	2.98503	0.1447884	0.28371424	2.2937634	20	9 2.5	20.9
428519 2008 AQ <sub>8</sub>	18.6	X	283.79175	112.26979	299.38292	2.77807	0.2650211	0.29145994	2.2529427	20	8 24.0	20.5
428520 2008 AS <sub>21</sub>	18.2	X	137.99652	208.15759	3.78205	2.25872	0.1488862	0.28329990	2.2959994	20	10 24.4	21.7
428521 2008 AA <sub>27</sub>	17.7	X	212.37143	297.28195	135.96200	6.11172	0.1145927	0.27481257	2.3430325	20	7 10.4	20.9
428522 2008 AQ <sub>38</sub>	17.9	X	274.58917	169.33709	240.06174	3.69805	0.2257457	0.28918901	2.2647218	20	8 10.1	20.2
428523 2008 AO <sub>43</sub>	18.1	X	235.04147	298.36028	132.08471	6.56078	0.2223306	0.28176169	2.3043481	20	7 20.9	21.3
428524 2008 AG <sub>74</sub>	17.9	X	305.40090	127.32380	304.10699	6.01087	0.0495318	0.29420858	2.2388886	20	12 3.1	20.3
428525 2008 AD <sub>77</sub>	17.5	X	278.01611	291.79476	98.02664	6.66497	0.2055962	0.28496298	2.2870575	20	7 22.4	19.8
428526 2008 AD <sub>80</sub>	18.1	X	208.06028	181.30462	270.30600	1.71025	0.1335430	0.27811516	2.3244468	20	7 29.3	21.5
428527 2008 AW <sub>82</sub>	17.6	X	99.04932	105.47970	67.56445	2.37293	0.1222995	0.27148739	2.3621254	20	7 20.9	20.6
428528 2008 AJ <sub>89</sub>	15.8	X	117.63948	292.64430	122.17213	15.34007	0.1042983	0.17461781	3.1701297	20	3 14.4	20.6
428529 2008 AO <sub>93</sub>	15.9	X	288.16447	173.31774	108.92362	19.23097	0.1309406	0.17859138	3.1229310	20	4 1.8	20.7
428530 2008 AB <sub>98</sub>	17.4	X	316.34595	310.74640	90.12417	4.89394	0.0301983	0.29139658	2.2532692	20	11 7.6	19.8
428531 2008 AE <sub>103</sub>	18.0	X	233.69964	142.12856	308.36919	4.77254	0.1759530	0.28727084	2.2747920	20	8 21.7	20.9
428532 2008 AA <sub>109</sub>	18.1	X	237.59213	132.03018	281.75903	4.47742	0.2173566	0.28025451	2.3126024	20	7 1.8	21.3
428533 2008 AF <sub>111</sub>	18.3	X	224.69863	192.21990	302.89716	4.60665	0.1032427	0.29035445	2.2586576	20	10 21.2	21.1
428534 2008 AK <sub>127</sub>	16.4	X	304.84020	106.81547	127.55695	17.32489	0.1261315	0.16923490	3.3730004	20	2 18.3	20.9
428535 2008 BW <sub>3</sub>	18.0	X	267.51777	305.81377	94.88267	5.79704	0.1582359	0.28423556	2.2909579	20	7 31.2	20.5
428536 2008 BK <sub>16</sub>	17.9	X	196.32082	206.39125	306.43840	5.10584	0.1230666	0.28763483	2.2728724	20	10 6.9	21.2
428537 2008 BY <sub>20</sub>	18.0	X	161.63256	243.43667	317.37298	0.39323	0.1537956	0.28498523	2.2869385	20	11 2.3	21.4
428538 2008 BF <sub>32</sub>	18.3	X	224.19294	327.98991	143.39325	5.15404	0.1196188	0.28401071	2.2921669	20	9 17.9	21.3
428539 2008 BF <sub>49</sub>	18.0	X	216.85909	113.34414	336.01910	5.23988	0.2011310	0.27890680	2.3197469	20	7 31.0	21.4
428540 2008 CN <sub>7</sub>	15.6	X	316.15603	2.99484	129.36672	11.78423	0.1999466	0.14871661	3.5282802	20	—	—
428541 2008 CT <sub>16</sub>	17.8	X	140.70195	252.50570	326.94767	5.29886	0.1412504	0.28327200	2.2961501	20	11 3.9	21.4
428542 2008 CW <sub>16</sub>	17.5	X	274.50045	76.22746	331.62547	6.75712	0.1109721	0.28018074	2.3130083	20	8 28.6	20.1
428543 2008 CC <sub>19</sub>	17.9	X	206.39595	308.07405	158.86971	3.62205	0.1741407	0.27833726	2.3232101	20	8 13.8	21.3
428544 2008 CM <sub>24</sub>	17.7	X	189.45994	148.76181	335.04230	9.35027	0.2032633	0.27843610	2.3226602	20	8 19.0	21.2
428545 2008 CL <sub>36</sub>	18.5	X	224.91322	235.17294	210.90850	2.29565	0.1337597	0.27908569	3.12190548	20	8 9.6	21.5
428546 2008 CG <sub>37</sub>	17.3	X	231.30528	157.80248	320.66064	9.11588	0.0173722	0.28466258	2.2886652	20	10 16.9	20.3
428547 2008 CF <sub>41</sub>	17.3	X	114.90511	242.31647	319.35834	9.70930	0.1826627	0.27361732	2.3498510	20	9 16.1	21.1
428548 2008 CY <sub>43</sub>	17.6	X	125.90105	119.13068	115.76454	6.28832	0.1775795	0.28110887	2.3079144	20	11 13.6	21.3
428549 2008 CA <sub>60</sub>	18.1	X	160.70694	33.80241	168.34278	6.80749	0.0395832	0.28653843	2.2786667	20	11 11.7	21.0
428550 2008 CP <sub>64</sub>	18.1	X	192.55560	234.42600	254.00065	2.19185	0.1872319	0.28116176	2.3076249	20	8 27.1	21.8
428551 2008 CQ <sub>64</sub>	18.2	X	258.04224	134.90006	286.78892	3.99162	0.1501999	0.28326786	2.2961725	20	8 16.1	21.0
428552 2008 CB <sub>66</sub>	18.3	X	299.55965	269.69144	130.78408	4.46454	0.1259118	0.28651238	2.2788048	20	10 3.7	20.3
428553 2008 CF <sub>73</sub>	18.2	X	207.13204	69.00389	51.15296	5.47026	0.1590310	0.28357183	2.29			

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>
428561 2008 <i>CJ</i> <sub>132</sub>	18.0	X	175.94066	140.24662	326.03702	2.70460	0.0577456	0.27054529	2.3676058	20	7 16.6	21.2
428562 2008 <i>CB</i> <sub>143</sub>	18.1	X	167.83908	19.07622	159.78784	6.21211	0.0646496	0.28147220	2.3059278	20	10 17.6	21.3
428563 2008 <i>CE</i> <sub>145</sub>	17.8	X	130.00626	267.00903	280.86390	1.82911	0.1218723	0.27612291	2.3356141	20	9 13.2	21.2
428564 2008 <i>CJ</i> <sub>152</sub>	17.7	X	146.26521	243.88218	256.55668	2.20283	0.1290071	0.27031072	2.3689753	20	7 29.1	21.3
428565 2008 <i>CT</i> <sub>153</sub>	17.8	X	175.01355	205.25712	7.25239	6.95272	0.0920401	0.28986464	2.2612013	20	12 5.8	21.0
428566 2008 <i>CP</i> <sub>156</sub>	17.8	X	251.05407	284.89915	130.78991	5.66651	0.1777427	0.27783049	2.3260343	20	7 24.9	20.8
428567 2008 <i>CP</i> <sub>158</sub>	18.1	X	200.62192	1.31979	135.46709	7.06273	0.0527863	0.28064865	2.3104367	20	10 2.9	21.1
428568 2008 <i>CQ</i> <sub>165</sub>	16.8	X	163.66692	66.12382	167.47078	23.34101	0.2239253	0.28836357	2.2690416	20	12 14.0	21.0
428569 2008 <i>CA</i> <sub>166</sub>	18.1	X	153.54372	187.18143	328.13808	4.50055	0.1639412	0.27307160	2.3529807	20	8 26.3	21.8
428570 2008 <i>CG</i> <sub>197</sub>	18.1	X	231.48319	298.15300	150.84545	2.73773	0.1435176	0.28002800	2.3138493	20	8 21.5	21.0
428571 2008 <i>DF</i> <sub>6</sub>	17.6	X	112.28391	291.96717	324.10320	5.07486	0.0834783	0.29029032	2.2589902	20	11 23.0	20.8
428572 2008 <i>DZ</i> <sub>11</sub>	17.7	X	125.76291	77.60100	126.58666	6.29454	0.1781690	0.27874589	2.3209390	20	10 6.4	21.4
428573 2008 <i>DE</i> <sub>20</sub>	17.9	X	209.74480	137.80971	359.94764	5.23262	0.1541458	0.28501659	2.2867707	20	9 30.5	20.9
428574 2008 <i>DE</i> <sub>23</sub>	17.5	X	127.32226	170.66016	33.33243	5.35390	0.1890059	0.27704391	2.3304349	20	10 5.9	21.3
428575 2008 <i>DU</i> <sub>23</sub>	17.0	X	290.47345	66.44308	341.63175	22.61152	0.2253909	0.28660035	2.2783384	20	9 7.5	19.0
428576 2008 <i>DM</i> <sub>24</sub>	17.7	X	130.88631	133.58327	78.84783	3.08357	0.1270550	0.27999768	2.3140164	20	10 19.2	21.0
428577 2008 <i>DA</i> <sub>30</sub>	18.3	X	209.58169	268.88720	163.33472	2.89922	0.1646537	0.27261331	2.3556170	20	7 2.1	21.8
428578 2008 <i>DW</i> <sub>86</sub>	17.9	X	197.98788	325.42304	169.21352	5.80292	0.0505942	0.27992066	2.3144408	20	9 24.2	20.8
428579 2008 <i>DE</i> <sub>87</sub>	18.0	X	108.24415	245.50092	338.42787	1.23085	0.1393043	0.27409372	2.3471274	20	10 9.1	21.3
428580 2008 <i>DE</i> <sub>87</sub>	17.8	X	128.95456	86.03338	153.97078	6.73736	0.0714108	0.28543909	2.2845136	20	11 22.8	21.0
428581 2008 <i>DD</i> <sub>88</sub>	18.4	X	180.33297	83.23834	49.31064	4.75855	0.2112983	0.27779599	2.3262269	20	8 23.2	22.2
428582 2008 <i>EH</i> <sub>9</sub>	16.2	X	150.66312	215.62020	356.51158	25.09944	0.2464212	0.28559885	2.2836616	20	10 23.7	20.5
428583 2008 <i>EE</i> <sub>10</sub>	18.6	X	215.04625	32.18471	71.28921	4.29018	0.1719090	0.27867346	2.3213412	20	8 20.9	21.9
428584 2008 <i>EP</i> <sub>12</sub>	17.8	X	175.50170	28.07620	108.01548	3.47032	0.1192189	0.27477525	2.3432447	20	8 25.2	21.2
428585 2008 <i>ED</i> <sub>17</sub>	17.7	X	187.49697	284.26313	200.96284	5.84055	0.1597289	0.27931903	2.3177631	20	9 26.9	21.3
428586 2008 <i>ET</i> <sub>20</sub>	18.1	X	84.33267	358.55760	222.65010	2.11376	0.1716296	0.26711915	2.3878078	20	9 11.8	21.4
428587 2008 <i>EA</i> <sub>26</sub>	17.8	X	228.48660	357.15749	140.11200	9.88676	0.0750532	0.29040557	2.2583925	20	11 9.4	20.7
428588 2008 <i>EZ</i> <sub>30</sub>	18.3	X	182.48150	255.79470	227.47862	3.95201	0.0970485	0.27468121	2.3437795	20	8 13.6	21.7
428589 2008 <i>EP</i> <sub>40</sub>	17.6	X	108.99323	285.32397	327.06350	6.14935	0.1016490	0.27991045	2.3144971	20	11 12.6	21.0
428590 2008 <i>EZ</i> <sub>48</sub>	18.3	X	136.08980	1.06211	219.21041	1.55370	0.1555565	0.28425450	2.2908561	20	11 2.8	21.8
428591 2008 <i>EO</i> <sub>52</sub>	17.9	X	160.91783	225.95078	5.96325	7.21869	0.2597431	0.28421072	2.2910914	20	12 3.9	21.9
428592 2008 <i>EY</i> <sub>52</sub>	17.8	X	154.75813	109.28986	64.87578	5.64958	0.1550432	0.27593103	2.3366967	20	9 24.5	21.4
428593 2008 <i>EE</i> <sub>54</sub>	17.4	X	119.43864	168.05756	76.87765	6.21986	0.1236906	0.28020259	2.3128881	20	11 17.8	20.7
428594 2008 <i>EY</i> <sub>56</sub>	17.5	X	189.52674	90.03437	66.67586	5.01427	0.0967876	0.28170453	2.3046598	20	10 11.1	20.6
428595 2008 <i>EG</i> <sub>57</sub>	17.4	X	272.19501	25.75286	40.93778	5.41377	0.1085623	0.28265601	2.2994849	20	9 25.8	19.9
428596 2008 <i>EN</i> <sub>59</sub>	18.0	X	99.88555	62.27866	172.21231	4.94345	0.1928048	0.27402535	2.3475178	20	10 19.6	21.6
428597 2008 <i>EX</i> <sub>70</sub>	18.1	X	130.46269	65.64919	122.84379	3.05304	0.1195996	0.27490713	2.3424952	20	9 16.5	21.6
428598 2008 <i>EF</i> <sub>73</sub>	17.9	X	78.92270	194.66027	53.07363	3.47523	0.1574401	0.27208936	2.3586401	20	10 12.0	21.1
428599 2008 <i>EE</i> <sub>74</sub>	17.5	X	101.35484	134.97403	79.36491	3.99826	0.1570391	0.27030879	2.3689866	20	9 23.0	21.0
428600 2008 <i>EK</i> <sub>77</sub>	17.1	X	81.21031	287.71434	31.12440	6.95782	0.1516806	0.28735298	2.2743585	20	—	—
428601 2008 <i>ET</i> <sub>92</sub>	17.3	X	165.06707	68.84543	106.16995	21.73415	0.3109881	0.27699863	2.3306888	20	10 8.7	22.0
428602 2008 <i>EP</i> <sub>94</sub>	18.2	X	187.54611	107.80499	41.90768	4.87294	0.1499129	0.28125340	2.3071236	20	9 24.8	21.6
428603 2008 <i>ED</i> <sub>123</sub>	17.7	X	156.31796	114.74262	39.54646	4.66431	0.0793590	0.26931279	2.3748238	20	8 29.9	21.0
428604 2008 <i>ED</i> <sub>124</sub>	17.6	X	91.49132	292.27946	346.02042	5.24801	0.1606508	0.28037415	2.3119445	20	12 2.4	21.2
428605 2008 <i>EX</i> <sub>128</sub>	17.5	X	107.22111	236.46091	26.66580	7.61951	0.0928396	0.28328199	2.2960961	20	11 25.5	20.8
428606 2008 <i>EV</i> <sub>137</sub>	18.1	X	147.73286	37.21674	134.85490	3.07619	0.1379307	0.27302109	2.3532709	20	9 12.5	21.6
428607 2008 <i>EN</i> <sub>143</sub>	17.4	X	169.26274	224.18481	19.04886	6.66805	0.1076156	0.29207060	2.2498012	20	—	—
428608 2008 <i>EK</i> <sub>148</sub>	17.9	X	167.56363	337.42972	181.79409	3.95631	0.1138904	0.27630148	2.3346077	20	9 15.5	21.3
428609 2008 <i>EY</i> <sub>148</sub>	17.4	X	23.86720	325.12462	346.72286	6.27466	0.1180830	0.27259286	2.3557348	20	10 18.1	20.0
428610 2008 <i>EV</i> <sub>149</sub>	18.3	X	91.49125	23.85761	185.54023	2.46714	0.1325530	0.26685658	2.3893739	20	8 30.8	21.5
428611 2008 <i>EW</i> <sub>149</sub>	18.0	X	119.91926	163.82693	7.33265	2.21301	0.1197219	0.26648599	2.3915885	20	8 11.5	21.3
428612 2008 <i>ER</i> <sub>150</sub>	17.6	X	147.38186	314.87948	237.72661	3.37306	0.1459071	0.27601168	2.3362415	20	10 7.1	21.3
428613 2008 <i>EK</i> <sub>160</sub>	18.0	X	20.00511	127.60130	131.79332	7.09160	0.1461703	0.26187045	2.4196083	20	7 28.9	20.4
428614 2008 <i>EX</i> <sub>162</sub>	17.9	X	163.78069	138.44681	7.59078	7.00100	0.0500018	0.27165993	2.3611251	20	8 28.2	21.1
428615 2008 <i>FL</i> <sub>4</sub>	17.6	X	259.10972	357.08794	30.18492	5.31941	0.2347589	0.27157126	2.3616390	20	6 16.5	21.0
428616 2008 <i>FN</i> <sub>5</sub>	16.6	X	76.86503	228.60143	27.97527	24.30523	0.2228133	0.26804886	2.3822833	20	10 24.9	20.2
428617 2008 <i>FQ</i> <sub>10</sub>	17.5	X	80.66776	332.81229	313.69924	2.93163	0.2577932	0.28051957	2.3111454	20	12 9.8	21.2
428618 2008 <i>FA</i> <sub>15</sub>	17.5	X	180.89427	57.85162	84.64574	6.78808	0.1471502	0.27320542	2.3522123	20	9 9.5	21.1
428619 2008 <i>FC</i> <sub>33</sub>	17.7	X	92.86936	95.29871	181.55025	3.76162	0.1452063	0.28292938	2.2980035	20	12 2.9	21.1
428620 2008 <i>FD</i> <sub>38</sub>	18.2	X	152.99201	87.27331	98.10583	3.03053	0.1176923	0.27553946	2.3389100	20	10 6.4	21.7
428621 2008 <i>FL</i> <sub>46</sub>	18.2	X	203.95086	320.42769	162.12404	4.00538	0.1922110	0.27976023	2.3153256	20	8 30.9	21.5
428622 2008 <i>FS</i> <sub>48</sub>	15.0	X	275.64771	76.96729	18.70719	11.03112	0.1166235	0.12449698	3.9721915	20	10 8.0	20.3
428623 2008 <i>FC</i> <sub>50</sub>	17.8	X	164.45424	68.13299	77.41717	7.37325	0.0289698	0.26751335	2.3854615	20	8 29.7	21.0
428624 2008 <i>FA</i> <sub>51</sub>	17.7	X	49.70416	228.76628	24.96022	5.80572	0.1942207	0.26404490	2.4063060	20	9 19.3	20.6
428625 2008 <i>FO</i> <sub>55</sub>	17.8	X	161.58124	110.59865	25.29956	8.31941	0.0983615	0.26712093	2.3877972	20	8 12.1	



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Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
428641 2008 FC <sub>135</sub>	17.8	X	102.59921	85.93800	142.41562	3.05775	0.1258284	0.27101584	2.3648645	20	10 9.2	21.1
428642 2008 GJ <sub>3</sub>	17.3	X	109.18415	174.72220	44.90971	13.91408	0.1878009	0.27336938	2.3512716	20	10 12.2	21.1
428643 2008 GL <sub>4</sub>	17.4	X	120.17817	193.57460	15.66435	2.30559	0.1680503	0.27542312	2.3395686	20	10 4.1	21.0
428644 2008 GW <sub>5</sub>	17.1	X	29.73434	220.59159	46.07461	10.69460	0.1240470	0.26248743	2.4158152	20	8 30.6	20.0
428645 2008 GD <sub>7</sub>	18.1	X	112.56547	140.66962	87.70054	2.66166	0.2227454	0.27190568	2.3597022	20	10 24.3	22.0
428646 2008 GR <sub>9</sub>	18.0	X	148.58669	12.98580	139.23733	1.88356	0.1302868	0.26621215	2.3932284	20	8 16.6	21.6
428647 2008 GH <sub>10</sub>	18.1	X	125.15394	11.31999	176.44294	1.15497	0.1209404	0.26745415	2.3858135	20	9 7.7	21.7
428648 2008 GJ <sub>23</sub>	17.9	X	112.01374	34.04263	161.78573	6.69595	0.0574798	0.26838306	2.3803052	20	8 29.4	20.8
428649 2008 GR <sub>30</sub>	18.2	X	66.25934	142.87716	116.82625	2.08322	0.1576570	0.26977059	2.3721364	20	10 13.1	21.3
428650 2008 GW <sub>35</sub>	17.6	X	87.98912	273.44271	15.38355	8.19473	0.2246959	0.27806689	2.3247158	20	12 15.8	21.6
428651 2008 GK <sub>43</sub>	17.4	X	252.79520	348.31144	35.88212	2.29372	0.1516626	0.26032445	2.4291784	20	6 16.0	20.7
428652 2008 GW <sub>46</sub>	18.2	X	83.30654	107.28377	154.45461	6.72607	0.1477162	0.26943677	2.3740953	20	11 3.7	21.7
428653 2008 GO <sub>50</sub>	18.1	X	141.22036	110.34599	65.02639	2.23844	0.1084991	0.27150570	2.3620191	20	9 9.8	21.4
428654 2008 GE <sub>53</sub>	17.8	X	199.65316	323.92018	164.13241	5.53204	0.1197044	0.27540412	2.3396762	20	9 8.9	20.9
428655 2008 GR <sub>55</sub>	17.9	X	81.47354	210.94824	37.28057	5.10183	0.1600806	0.27009211	2.3702534	20	10 15.1	21.3
428656 2008 GD <sub>72</sub>	18.2	X	59.13946	339.64561	274.45077	4.99228	0.1595404	0.26723995	2.3870882	20	9 25.2	21.3
428657 2008 GB <sub>78</sub>	18.1	X	209.72596	75.51115	83.77309	5.70218	0.1291077	0.28173672	2.3044843	20	11 3.3	21.2
428658 2008 GJ <sub>82</sub>	17.2	X	66.00346	147.80660	153.34213	6.48803	0.3316289	0.27161300	2.3613970	20	12 20.1	21.3
428659 2008 GM <sub>83</sub>	17.8	X	136.66130	178.90533	90.83490	4.15662	0.1519903	0.28550740	2.2841492	20	—	—
428660 2008 GP <sub>91</sub>	17.5	X	164.64727	335.71395	190.86879	6.48256	0.0564790	0.27316065	2.3524693	20	9 23.6	20.6
428661 2008 GJ <sub>92</sub>	17.9	X	59.57883	81.12005	175.17474	2.47078	0.1565132	0.26576993	2.3958823	20	9 28.6	20.8
428662 2008 GF <sub>96</sub>	17.6	X	167.69986	0.13229	171.24081	7.96403	0.1387157	0.27556568	2.3387616	20	10 2.0	21.0
428663 2008 GV <sub>99</sub>	17.6	X	98.72893	97.83165	111.07582	3.16325	0.1208470	0.26553966	2.3972673	20	9 8.0	20.9
428664 2008 GV <sub>99</sub>	17.7	X	198.97945	84.16349	45.12700	12.50919	0.1334794	0.27342164	2.3509720	20	9 15.3	21.3
428665 2008 GS <sub>107</sub>	17.6	X	107.15218	137.83007	112.84909	6.62189	0.1421847	0.27664045	2.3327002	20	11 14.3	21.2
428666 2008 GZ <sub>113</sub>	18.1	X	134.43523	320.12395	244.16408	1.44821	0.1608390	0.27455204	2.3445146	20	10 10.2	21.6
428667 2008 GN <sub>115</sub>	17.9	X	110.80124	352.64242	210.28859	2.83089	0.0751910	0.27073053	2.3665257	20	9 7.8	21.2
428668 2008 GA <sub>121</sub>	17.6	X	124.33255	112.61442	67.52827	3.85913	0.1212677	0.26755128	2.3852360	20	8 29.9	21.0
428669 2008 GA <sub>123</sub>	18.3	X	158.64259	10.84842	124.24601	1.97913	0.1326759	0.26591835	2.3949908	20	8 4.3	21.9
428670 2008 GE <sub>145</sub>	17.3	X	108.30859	64.37315	132.82603	5.72536	0.1518440	0.26592991	2.3949214	20	9 5.9	20.9
428671 2008 GM <sub>146</sub>	17.9	X	61.36934	136.87183	135.66858	7.39452	0.1055379	0.26592069	2.3949767	20	10 18.7	21.1
428672 2008 HV <sub>8</sub>	17.5	X	181.24257	44.00720	91.28599	10.70188	0.1781866	0.27135749	2.3628792	20	8 30.6	21.4
428673 2008 HE <sub>10</sub>	17.9	X	147.71189	132.14849	25.33255	1.64075	0.1177911	0.26872000	2.3783151	20	8 23.3	21.3
428674 2008 HB <sub>11</sub>	18.0	X	89.12740	12.12166	221.23496	2.13748	0.1958609	0.26615197	2.3935891	20	10 5.4	21.7
428675 2008 HL <sub>11</sub>	17.7	X	109.19108	92.35902	126.91260	7.41930	0.0521240	0.26826701	2.3809916	20	9 30.2	20.9
428676 2008 HM <sub>12</sub>	17.1	X	98.26462	139.70369	50.84304	6.82911	0.0813342	0.25894786	2.4377800	20	8 9.6	20.5
428677 2008 HV <sub>15</sub>	17.8	X	165.01774	329.19048	199.19905	10.58761	0.1762957	0.27230920	2.3573705	20	9 21.3	21.6
428678 2008 HV <sub>54</sub>	17.0	X	226.55373	19.62510	74.09749	8.07330	0.0182307	0.26486770	2.4013200	20	9 11.8	20.1
428679 2008 HQ <sub>55</sub>	18.0	X	50.49727	172.48274	76.83125	3.87681	0.2096805	0.25892490	2.4379241	20	9 16.3	21.1
428680 2008 HR <sub>70</sub>	17.7	X	77.07651	166.23283	99.23562	6.18788	0.2034823	0.26831433	2.3807117	20	11 7.1	21.3
428681 2008 JA <sub>8</sub>	18.0	X	140.06511	231.37634	62.50156	24.20801	0.0564707	0.27988272	2.3146500	20	—	—
428682 2008 JV <sub>29</sub>	18.2	X	115.19932	86.15123	158.91910	2.20942	0.1761458	0.27325157	2.3519474	20	11 14.2	21.9
428683 2008 KQ <sub>20</sub>	17.0	X	330.27687	232.49857	85.89128	11.75645	0.1754373	0.25314002	2.4749258	20	7 14.7	19.2
428684 2008 KP <sub>33</sub>	17.6	X	125.12584	15.53209	198.80504	9.93621	0.0733123	0.26928156	2.3750074	20	10 10.9	20.8
428685 2008 KZ <sub>36</sub>	17.2	X	243.77481	129.35253	207.34800	14.51030	0.1564999	0.23611193	2.5925318	20	4 3.4	21.2
428686 2008 KT <sub>38</sub>	17.2	X	260.57571	199.89031	118.02515	2.15493	0.1840517	0.23717641	2.5847689	20	3 27.3	21.1
428687 2008 KC <sub>41</sub>	17.4	X	48.32936	156.62974	118.75857	8.42508	0.1071312	0.26481643	2.4016300	20	9 30.5	20.5
428688 2008 LR <sub>9</sub>	16.9	X	312.10057	181.33455	128.83530	14.10203	0.2175493	0.24507768	2.5289110	20	5 21.8	19.9
428689 2008 LE <sub>15</sub>	17.5	X	315.71477	166.00902	143.96078	13.23432	0.1784788	0.24664389	2.5181938	20	6 2.1	20.4
428690 2008 LH <sub>17</sub>	18.2	X	51.96326	93.27486	157.79495	4.58617	0.1928849	0.25918257	2.4363080	20	9 16.5	21.3
428691 2008 MD <sub>5</sub>	16.9	X	289.22341	353.01754	326.78364	13.19039	0.2665521	0.23367941	2.6104923	20	4 11.7	20.8
428692 2008 NN <sub>3</sub>	17.1	X	304.09399	7.03723	282.88205	3.07927	0.1131495	0.23409510	2.6074010	20	4 21.1	20.2
428693 2008 OZ <sub>4</sub>	16.6	X	348.06224	337.39740	299.49184	13.87107	0.0850920	0.23820106	2.5773511	20	6 20.3	19.6
428694 Saule	19.4	X	268.37662	288.32117	133.42008	19.13799	0.6478962	0.48621071	1.6017192	20	6 28.8	21.9
428695 2008 ON <sub>18</sub>	15.8	X	133.37949	247.05825	115.33916	15.94170	0.1692483	0.20587517	2.8405345	20	1 28.6	20.1
428696 2008 PM <sub>6</sub>	16.8	X	164.05367	86.66016	284.65681	3.44517	0.1703543	0.21300909	2.7767533	20	3 5.3	21.3
428697 2008 PE <sub>19</sub>	17.0	X	153.47937	108.02908	335.21266	12.53857	0.1559314	0.22357150	2.6885932	20	5 19.4	21.6
428698 2008 QG <sub>1</sub>	16.9	X	293.02875	175.62093	138.30662	5.51860	0.2088991	0.23266592	2.6180676	20	4 26.8	20.4
428699 2008 QG <sub>2</sub>	16.4	X	219.07272	3.38398	353.38697	12.90072	0.2019307	0.22096921	2.7096605	20	4 1.6	20.9
428700 2008 QM <sub>19</sub>	16.3	X	243.36267	294.82262	62.25038	12.14935	0.1606540	0.22828573	2.6514506	20	5 2.3	20.3
428701 2008 QU <sub>24</sub>	16.5	X	220.20024	227.10827	129.97084	10.93474	0.3013167	0.22083923	2.7107236	20	4 6.4	21.5
428702 2008 QL <sub>38</sub>	17.8	X	163.96179	220.03855	138.72916	21.61872	0.0655914	0.37730256	1.8967476	20	1 20.3	19.9
428703 2008 QY <sub>38</sub>	16.5	X	129.38204	110.07352	335.31669	7.97818	0.1231741	0.21525343	2.7574184	20	4 25.4	20.7
428704 2008 QT <sub>42</sub>	17.3	X	159.60676	53.00042	331.44809	1.09353	0.1105402	0.20959300	2.8068435	20	3 14.9	21.5
428705 2008 QT <sub>44</sub>	16.4	X	215.87054	26.76463	4.67288	9.30258	0.1074839	0.22724994	2.6595012	20	5 16.6	20.6
428706 2008 QP <sub>45</sub>	15.8	X	173.74787	269.37697	162.23201	22.06404	0.0548985	0.22636831	2.6664020	20	5 30.1	20.2
428707 2008 QZ <sub>45</sub>	16.3	X	247.05732	36.96832	307.67211	12.61941	0.1961592	0.22396680	2.6854287	20	4 8.1	20.9
428708 2008 RR <sub>2</sub>	17.1	X	120.34761	122.94055	347.06592	16.57412	0.0835648	0.22067022	2.7121074	20	5 8.7	21.4
428709 2008 RO <sub>21</sub>	16.2	X	336.42421	246.55728	350.33878	15.42842	0.1385419	0.21935227	2.7229602	20	3 25.4	19.4
428710 2008 RN <sub>24</sub>	15.5	X	36.59307	63.56263	336.37769	15.06728	0.0620908	0.18340446	3.0680525	20	—	—
428711 2008 RR <sub>25</sub>	16.7	X	171.71262	21.38427	8.85398	5.87756	0.1835986	0.21588723	2.7520189	20	4 5.2	21.2
428712 2008 RB <sub>26</sub>	16.5	X	85.39981	142.88501	247.86924	13.10291	0.2144926	0.19624582	2.9327099	20	1 10.9	20.4
428713 2008 RT <sub>32</sub>	17.1	X	191.46840	8.63402	6.04871	3.93776	0.1160597	0.21680983	2.7442062	20	4 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>
428721 2008 <i>RP</i> <sub>53</sub>	17.3	X	318.41689	123.49233	184.19031	10.82970	0.0715572	0.23528651	2.5985916	20	6 15.5	20.6
428722 2008 <i>RQ</i> <sub>57</sub>	17.6	X	163.47413	39.80246	337.08129	3.68151	0.0863853	0.21045908	2.7991378	20	3 7.8	21.8
428723 2008 <i>RK</i> <sub>59</sub>	16.9	X	187.68018	225.24840	151.91788	5.64658	0.1707891	0.21578148	2.7529180	20	4 5.1	21.4
428724 2008 <i>RQ</i> <sub>64</sub>	16.9	X	148.29155	47.94114	8.47855	7.32249	0.1979697	0.21330369	2.7741960	20	4 16.4	21.5
428725 2008 <i>RC</i> <sub>68</sub>	16.6	X	229.69411	208.91870	155.63801	7.00659	0.0243473	0.22197972	2.7014308	20	5 9.9	20.4
428726 2008 <i>RF</i> <sub>70</sub>	17.6	X	354.08584	120.92677	166.31232	4.18125	0.0855350	0.23546037	2.5973123	20	7 14.5	20.5
428727 2008 <i>RJ</i> <sub>74</sub>	16.6	X	275.48881	341.88250	357.93799	12.76038	0.1912358	0.23095526	2.6309796	20	5 4.3	20.5
428728 2008 <i>RB</i> <sub>82</sub>	16.9	X	130.16128	224.72789	184.75764	8.98026	0.1598179	0.21063662	2.7975646	20	3 19.7	21.2
428729 2008 <i>RG</i> <sub>85</sub>	16.8	X	285.45584	330.13890	352.18324	14.98723	0.2399637	0.22896446	2.6462081	20	4 15.5	20.7
428730 2008 <i>RF</i> <sub>87</sub>	16.7	X	292.49409	351.62376	343.98082	15.06534	0.1299743	0.23106807	2.6301232	20	6 2.5	20.4
428731 2008 <i>RN</i> <sub>87</sub>	16.9	X	89.54826	301.99278	224.23048	9.14451	0.0960889	0.22480397	2.6787575	20	6 22.4	20.6
428732 2008 <i>RG</i> <sub>99</sub>	13.4	X	104.59657	64.63138	185.92552	12.78304	0.0448188	0.08303546	5.2034772	20	10 3.5	20.4
428733 2008 <i>RV</i> <sub>104</sub>	16.1	X	223.92574	338.96289	8.11473	13.09174	0.1306136	0.21996325	2.7179156	20	3 31.2	20.4
428734 2008 <i>RW</i> <sub>105</sub>	16.4	X	142.16129	32.61892	29.89498	10.20509	0.0877821	0.20860757	2.8156760	20	4 11.8	20.4
428735 2008 <i>RX</i> <sub>107</sub>	16.6	X	255.82425	39.35165	301.64443	9.67691	0.2341091	0.22448090	2.6813271	20	4 10.0	21.2
428736 2008 <i>RS</i> <sub>109</sub>	17.4	X	14.76748	276.88982	1.08256	6.82966	0.1590592	0.23912022	2.5707421	20	8 18.1	20.1
428737 2008 <i>RJ</i> <sub>110</sub>	17.3	X	127.54125	331.82062	69.18375	2.91443	0.1169835	0.20465903	2.8517762	20	3 4.1	21.4
428738 2008 <i>RG</i> <sub>112</sub>	16.8	X	65.53446	225.40305	296.21378	2.39868	0.0448662	0.21877282	2.7277662	20	5 5.9	20.3
428739 2008 <i>RT</i> <sub>126</sub>	17.2	X	351.88067	80.84975	173.73816	2.02132	0.0259779	0.22701905	2.6613042	20	5 26.3	20.5
428740 2008 <i>RT</i> <sub>129</sub>	17.0	X	295.87517	299.50527	31.03014	5.16339	0.1951094	0.22589831	2.6700992	20	5 22.7	20.2
428741 2008 <i>RO</i> <sub>131</sub>	16.6	X	241.99331	202.13942	160.29088	7.46147	0.1984161	0.22448673	2.6812806	20	5 4.2	20.9
428742 2008 <i>RC</i> <sub>138</sub>	17.3	X	336.55543	356.69765	291.26786	4.78242	0.1081560	0.23091966	2.6312500	20	6 13.5	20.1
428743 2008 <i>RR</i> <sub>145</sub>	16.9	X	86.25774	53.09160	10.37568	4.80423	0.1375151	0.20009719	2.8949566	20	2 14.5	20.6
428744 2008 <i>SL</i> <sub>1</sub>	16.5	X	196.68081	36.06681	338.12010	6.93597	0.2664298	0.21652055	2.7466499	20	4 4.4	21.5
428745 2008 <i>SL</i> <sub>3</sub>	16.8	X	266.23967	180.60941	134.95897	4.34090	0.2010985	0.22400509	2.6851227	20	3 29.8	20.9
428746 2008 <i>SQ</i> <sub>4</sub>	16.7	X	320.83365	309.74747	21.02542	12.15665	0.2088050	0.23841550	2.5758054	20	7 9.4	19.4
428747 2008 <i>SW</i> <sub>5</sub>	16.2	X	173.26047	336.78000	51.23407	8.99973	0.2277690	0.21217334	2.7840402	20	4 8.5	21.1
428748 2008 <i>SX</i> <sub>15</sub>	16.5	X	209.43490	3.17745	338.36327	5.21824	0.2471756	0.21473681	2.7618391	20	3 8.7	21.4
428749 2008 <i>SD</i> <sub>19</sub>	17.0	X	154.87296	85.22515	327.89823	8.71608	0.1692259	0.21732820	2.7398408	20	4 13.7	21.5
428750 2008 <i>SR</i> <sub>23</sub>	16.8	X	103.78582	228.50920	175.60476	5.15228	0.1006046	0.20330303	2.8644427	20	2 4.5	20.7
428751 2008 <i>SH</i> <sub>42</sub>	17.3	X	174.80783	27.40550	341.55617	1.90430	0.1033560	0.20837886	2.8177358	20	3 11.1	21.7
428752 2008 <i>SG</i> <sub>46</sub>	16.7	X	204.94675	179.35392	183.40866	5.94841	0.1244839	0.21408052	2.7674808	20	4 2.4	20.9
428753 2008 <i>SO</i> <sub>58</sub>	16.9	X	243.91240	166.20154	191.08696	14.73791	0.1100863	0.22146632	2.7056042	20	5 8.1	21.0
428754 2008 <i>SX</i> <sub>58</sub>	16.9	X	211.12718	275.71109	108.71638	2.23213	0.1211452	0.21880728	2.7274798	20	5 5.7	21.1
428755 2008 <i>SH</i> <sub>72</sub>	17.0	X	240.29937	102.25505	237.85626	5.34082	0.0756613	0.21591664	2.7517690	20	4 12.3	20.9
428756 2008 <i>SF</i> <sub>73</sub>	16.8	X	352.45805	359.11033	289.63912	8.97091	0.1892310	0.23757697	2.5818628	20	7 15.9	18.9
428757 2008 <i>SC</i> <sub>92</sub>	17.2	X	258.35872	32.45507	319.88200	1.55003	0.1089899	0.22530726	2.6747668	20	5 16.1	20.9
428758 2008 <i>SP</i> <sub>96</sub>	17.2	X	225.99001	16.40805	353.80352	4.56232	0.1001118	0.22060980	2.7126027	20	5 2.2	21.2
428759 2008 <i>SY</i> <sub>101</sub>	16.3	X	95.11505	353.60620	25.66577	10.92829	0.1185279	0.18950711	3.0018274	20	—	—
428760 2008 <i>SN</i> <sub>108</sub>	17.3	X	333.49207	273.05860	331.21581	5.39742	0.0726493	0.22361221	2.6882668	20	4 8.3	20.7
428761 2008 <i>SN</i> <sub>121</sub>	17.0	X	90.16226	50.56499	16.23184	11.23718	0.0887274	0.19863379	2.9091579	20	2 20.1	21.0
428762 2008 <i>SW</i> <sub>121</sub>	16.5	X	76.07244	130.16911	16.15105	6.86156	0.0901513	0.21307867	2.7761487	20	5 6.3	20.2
428763 2008 <i>SA</i> <sub>134</sub>	17.1	X	350.16446	324.28364	312.46299	4.44902	0.1936682	0.23914444	2.5705685	20	6 20.6	19.1
428764 2008 <i>SQ</i> <sub>146</sub>	16.8	X	29.73293	340.61324	261.02757	5.43340	0.1862142	0.23486487	2.6017007	20	7 22.5	19.5
428765 2008 <i>SY</i> <sub>152</sub>	16.7	X	252.93226	350.61830	2.20648	3.60068	0.1213125	0.22713324	2.6604122	20	5 8.1	20.6
428766 2008 <i>SE</i> <sub>155</sub>	16.3	X	277.67217	313.26075	21.37449	13.68037	0.1333271	0.22796260	2.6539556	20	5 10.1	20.1
428767 2008 <i>SO</i> <sub>167</sub>	16.2	X	272.90196	288.40621	26.76184	14.38486	0.1750766	0.22111310	2.7084848	20	4 8.5	20.2
428768 2008 <i>SP</i> <sub>167</sub>	16.2	X	254.09238	313.30899	32.22067	14.09409	0.2838080	0.22409401	2.6844123	20	4 15.7	20.6
428769 2008 <i>ST</i> <sub>173</sub>	16.1	X	290.40835	341.58641	304.99144	11.66899	0.1598644	0.22303368	2.6929136	20	3 17.8	20.1
428770 2008 <i>SQ</i> <sub>181</sub>	17.9	X	307.49626	358.23969	197.93755	21.24992	0.0624967	0.36612322	1.9351644	20	—	—
428771 2008 <i>SE</i> <sub>194</sub>	16.6	X	144.16248	299.33176	123.25929	5.41969	0.0604063	0.21083317	2.7958257	20	4 13.2	20.6
428772 2008 <i>SE</i> <sub>195</sub>	16.8	X	157.42650	166.97872	206.86408	14.97328	0.1442830	0.20337557	2.8637616	20	2 28.1	21.6
428773 2008 <i>SF</i> <sub>200</sub>	17.2	X	305.96324	300.95827	354.04071	4.38842	0.1476236	0.22309738	2.6924009	20	4 25.9	20.6
428774 2008 <i>SF</i> <sub>204</sub>	16.8	X	214.50476	204.02643	169.96429	5.00167	0.1206607	0.21599896	2.7510698	20	4 26.7	21.1
428775 2008 <i>SW</i> <sub>206</sub>	16.3	X	204.03133	294.78212	60.49901	10.34393	0.1013284	0.20968975	2.8059800	20	3 28.8	20.7
428776 2008 <i>ST</i> <sub>217</sub>	16.0	X	35.06844	18.95170	86.35417	11.20137	0.0616746	0.18772223	3.0208251	20	1 18.1	20.0
428777 2008 <i>SW</i> <sub>217</sub>	16.8	X	285.91675	290.11341	355.32547	12.75440	0.1734869	0.21938289	2.7227068	20	3 15.6	20.6
428778 2008 <i>SB</i> <sub>220</sub>	16.7	X	324.42128	282.68131	2.47344	11.31925	0.1689610	0.22974528	2.6402090	20	5 6.2	19.8
428779 2008 <i>SP</i> <sub>226</sub>	17.1	X	242.06007	234.28360	87.52798	5.24225	0.1010821	0.21258178	2.7804731	20	3 24.4	21.3
428780 2008 <i>SA</i> <sub>232</sub>	17.1	X	11.90173	298.91311	337.48932	8.63334	0.1670534	0.23963021	2.5670934	20	8 10.3	19.5
428781 2008 <i>SO</i> <sub>241</sub>	16.9	X	188.86628	304.33267	62.14496	4.96164	0.1171433	0.21305710	2.7763361	20	3 24.5	21.2
428782 2008 <i>SN</i> <sub>256</sub>	17.1	X	244.91007	188.35455	177.86808	2.40106	0.0798535	0.22386572	2.6862369	20	5 22.9	20.8
428783 2008 <i>SN</i> <sub>258</sub>	16.5	X	292.27603	262.80226	42.93819	12.11231	0.2413702	0.22193701	2.7017774	20	4 11.5	20.2
428784 2008 <i>SC</i> <sub>275</sub>	16.8	X	266.08365	262.68848	40.99199	9.52086	0.1580391	0.21748274	2.7385427	20	3 22.4	20.9
428785 2008 <i>SX</i> <sub>275</sub>	17.4	X	248.06476	121.19733	174.78025	4.40604	0.0378982	0.21028370	2.8006939	20	3 1.9	21.5
428786 2008 <i>SV</i> <sub>278</sub>	16.3	X	166.38750	32.14548	6.76452	6.30908	0.0482344	0.21291315	2.7775874	20	4 4.7	20.2
428787 2008 <i>SC</i> <sub>280</sub>	17.1	X	137.13244	5.32504	70.51027	4.42408	0.0728232	0.21356226	2.7719562	20	4 21.8	21.0
428788 2008 <i>SU</i> <sub>280</sub>	16.1	X	347.22767	349.66824	106.85444	6.96331	0.1800168	0.17319169	3.1875085	20	—	—
428789 2008 <i>SE</i> <sub>286</sub>	17.4	X	334.70949	266.44168	52.39133	4.50890	0.1741813	0.23729663	2.5838958	20	7 24.9	19.7
428790 2008 <i>SN</i> <sub>286</sub>	16.7	X	206.62488	344.26097	8.50744	5.98056	0.1274899	0.21080766	2.7960512	20	3 22.9	20.9
428791 2008 <i>SS</i> <sub>287</sub>	16.6	X	243.61492	264.47199	95.46129	4.41984						

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>
428801 2008 <i>TN</i> <sub>5</sub>	16.5	X	94.78822	190.89584	186.57996	10.47820	0.1737835	0.19197443	2.9760516	20	1 3.7	20.6
428802 2008 <i>TB</i> <sub>9</sub>	16.9	X	47.26457	30.14683	43.18026	3.28630	0.2904569	0.18617746	3.0375119	20	1 14.6	19.5
428803 2008 <i>TH</i> <sub>9</sub>	18.6	X	272.68558	120.14897	200.03446	21.23036	0.0468114	0.38940614	1.8572378	20	4 24.2	20.1
428804 2008 <i>TV</i> <sub>9</sub>	17.0	X	4.21479	41.67343	210.30757	5.40144	0.0696578	0.22819996	2.6521150	20	6 10.5	20.1
428805 2008 <i>TC</i> <sub>23</sub>	16.4	X	57.24133	154.69220	350.82309	8.35964	0.0505762	0.21993380	2.7181582	20	4 1.9	19.8
428806 2008 <i>TC</i> <sub>26</sub>	18.0	X	195.77625	318.10133	5.48663	20.30641	0.0673854	0.37268973	1.9123664	20	1 20.7	20.7
428807 2008 <i>TH</i> <sub>33</sub>	16.8	X	220.99665	336.10592	43.97048	6.83032	0.0632746	0.22028523	2.7152665	20	5 13.3	20.6
428808 2008 <i>TA</i> <sub>36</sub>	17.3	X	236.68796	335.10308	348.85680	5.98417	0.0787817	0.21556803	2.7547349	20	3 19.4	21.4
428809 2008 <i>TF</i> <sub>36</sub>	16.9	X	189.21719	41.93244	328.51248	2.75172	0.1089611	0.21378607	2.7700214	20	3 26.2	21.2
428810 2008 <i>TK</i> <sub>36</sub>	16.5	X	6.61015	149.18419	341.32809	3.11312	0.1232676	0.19584274	2.9367326	20	1 3.2	19.9
428811 2008 <i>TE</i> <sub>37</sub>	17.3	X	189.84782	49.34089	305.49169	2.77990	0.1088301	0.21101597	2.7942108	20	3 8.0	21.7
428812 2008 <i>TJ</i> <sub>50</sub>	17.0	X	43.79434	212.73088	194.86202	4.13920	0.2990138	0.18380200	3.0636270	20	—	—
428813 2008 <i>TG</i> <sub>57</sub>	17.1	X	81.21462	32.82793	21.69239	12.83245	0.0809033	0.19539066	2.9412606	20	1 22.5	21.2
428814 2008 <i>TR</i> <sub>62</sub>	17.0	X	172.10194	339.53617	11.45576	1.93060	0.0786158	0.20304523	2.8668668	20	2 15.8	21.2
428815 2008 <i>TP</i> <sub>65</sub>	16.3	X	186.39506	7.81346	358.34281	10.04040	0.2545114	0.21198736	2.7856683	20	3 21.1	21.3
428816 2008 <i>TX</i> <sub>68</sub>	16.9	X	145.81040	295.36390	87.13407	3.30237	0.0818698	0.20256327	2.8714124	20	2 26.9	21.1
428817 2008 <i>TG</i> <sub>73</sub>	16.3	X	306.63961	61.23438	221.80361	12.35668	0.0806729	0.21716442	2.7412182	20	4 22.2	19.7
428818 2008 <i>TT</i> <sub>78</sub>	17.1	X	228.89935	183.85739	123.38378	1.46098	0.0519967	0.20857976	2.8159262	20	2 22.7	21.0
428819 2008 <i>TV</i> <sub>80</sub>	17.1	X	272.15784	260.42223	23.20451	4.59018	0.0227041	0.21237379	2.7822881	20	3 19.1	20.9
428820 2008 <i>TD</i> <sub>91</sub>	15.9	X	339.41099	54.98129	262.46967	14.31280	0.1526954	0.23879027	2.5731097	20	7 27.4	18.7
428821 2008 <i>TM</i> <sub>105</sub>	17.1	X	73.21213	252.23547	213.74296	11.82229	0.1063296	0.20215047	2.8753202	20	3 11.6	21.1
428822 2008 <i>TA</i> <sub>106</sub>	16.7	X	29.56995	212.66703	27.30742	12.24018	0.1396474	0.23181956	2.6244361	20	7 16.7	19.9
428823 2008 <i>TE</i> <sub>109</sub>	17.7	X	98.73606	252.40038	146.82155	6.48028	0.2152635	0.19592679	2.9358926	20	2 10.0	21.8
428824 2008 <i>TH</i> <sub>109</sub>	17.1	X	343.72046	118.05314	162.03632	9.82559	0.2034472	0.23219522	2.6216047	20	6 10.5	19.6
428825 2008 <i>TK</i> <sub>112</sub>	17.7	X	12.54450	308.90061	210.84810	21.84147	0.0866000	0.37259484	1.9126911	20	1 9.5	20.0
428826 2008 <i>TV</i> <sub>116</sub>	16.2	X	195.24420	358.63859	338.93610	9.00062	0.3338443	0.21045491	2.7991748	20	2 24.6	21.4
428827 2008 <i>TZ</i> <sub>117</sub>	16.6	X	324.07893	69.42400	222.83698	10.86081	0.2931243	0.22917059	2.6446211	20	4 29.3	19.3
428828 2008 <i>TF</i> <sub>123</sub>	17.4	X	45.21198	335.53440	294.11066	4.52333	0.2098774	0.24449574	2.5329222	20	9 29.9	20.6
428829 2008 <i>TV</i> <sub>127</sub>	16.9	X	64.65541	172.62667	327.15838	5.72695	0.0112091	0.21271462	2.7793153	20	3 31.2	20.8
428830 2008 <i>TP</i> <sub>141</sub>	17.2	X	115.61452	13.22516	57.12836	0.90592	0.0550198	0.20857143	2.8160012	20	3 17.3	21.1
428831 2008 <i>TC</i> <sub>143</sub>	17.0	X	43.86182	351.77937	177.67096	3.93167	0.0361101	0.21596424	2.7513646	20	4 16.6	20.5
428832 2008 <i>TN</i> <sub>146</sub>	17.0	X	144.77080	316.12905	52.56476	2.86019	0.0819686	0.20252098	2.8718122	20	2 8.8	21.2
428833 2008 <i>TN</i> <sub>163</sub>	17.4	X	167.76828	156.87270	256.19012	2.45418	0.0894681	0.21319911	2.7751031	20	4 26.0	21.6
428834 2008 <i>TF</i> <sub>175</sub>	17.5	X	129.57639	119.37771	259.14177	8.05547	0.1363320	0.19981298	2.8977011	20	2 6.5	21.9
428835 2008 <i>TX</i> <sub>176</sub>	16.4	X	79.44412	60.46704	72.00909	8.54302	0.1716974	0.20337200	2.8637951	20	5 8.8	20.3
428836 2008 <i>TZ</i> <sub>182</sub>	16.7	X	213.12995	310.86179	41.82096	6.70551	0.0542719	0.21294142	2.7773415	20	4 2.5	20.7
428837 2008 <i>TC</i> <sub>186</sub>	16.5	X	300.76162	244.49358	61.94256	15.47756	0.0894549	0.22378058	2.6869182	20	5 15.7	19.8
428838 2008 <i>UC</i> <sub>2</sub>	16.1	X	297.82229	83.54748	250.69977	10.08011	0.2096492	0.23242203	2.6198989	20	5 29.3	19.3
428839 2008 <i>UK</i> <sub>5</sub>	17.8	X	49.03410	251.82865	207.94411	23.05117	0.1142312	0.36410820	1.9422975	20	—	—
428840 2008 <i>UH</i> <sub>10</sub>	16.8	X	185.40904	200.02384	172.10382	4.73490	0.0900700	0.21324194	2.7747315	20	3 25.7	20.9
428841 2008 <i>UG</i> <sub>11</sub>	16.7	X	95.17565	52.17656	3.69334	5.99551	0.0644890	0.20053219	2.8907685	20	2 6.5	20.6
428842 2008 <i>UU</i> <sub>31</sub>	17.0	X	86.45189	302.34227	155.76985	2.24252	0.0660249	0.20224651	2.8744098	20	3 17.6	20.8
428843 2008 <i>UZ</i> <sub>35</sub>	16.7	X	126.27930	351.35189	28.12497	12.52011	0.0716185	0.19800140	2.9153489	20	2 4.1	21.1
428844 2008 <i>UC</i> <sub>44</sub>	17.0	X	107.80946	98.41902	311.80625	1.08917	0.0883238	0.20026529	2.8933363	20	2 16.6	21.0
428845 2008 <i>UH</i> <sub>51</sub>	17.1	X	99.27609	37.04816	52.14567	0.97743	0.0286207	0.20823359	2.8190462	20	3 16.9	20.9
428846 2008 <i>UJ</i> <sub>51</sub>	16.3	X	310.52203	291.15436	238.91966	9.72329	0.0113904	0.18484771	3.0520618	20	—	—
428847 2008 <i>UO</i> <sub>56</sub>	16.7	X	51.80265	269.21040	169.04008	2.51043	0.0928373	0.19164533	2.9794576	20	1 8.2	20.4
428848 2008 <i>US</i> <sub>58</sub>	17.2	X	136.14873	220.14712	214.59659	3.49618	0.0454717	0.21355944	2.7719807	20	4 14.6	21.0
428849 2008 <i>UG</i> <sub>62</sub>	17.0	X	341.82447	250.96185	21.65200	6.66759	0.1497810	0.22309747	2.6924002	20	5 26.7	19.9
428850 2008 <i>UT</i> <sub>65</sub>	16.0	X	30.22317	183.33368	256.62135	8.56663	0.1014838	0.18308101	3.0716650	20	—	—
428851 2008 <i>UT</i> <sub>75</sub>	16.3	X	123.73409	17.39499	19.33249	4.46997	0.1022958	0.19523687	2.9428051	20	2 23.1	20.5
428852 2008 <i>US</i> <sub>84</sub>	16.9	X	227.35022	350.86163	17.85998	6.59162	0.0199158	0.21702663	2.7423783	20	5 9.1	20.8
428853 2008 <i>UD</i> <sub>88</sub>	16.5	X	19.13522	240.37836	217.65756	12.16491	0.3173246	0.18452709	3.0555962	20	—	—
428854 2008 <i>UC</i> <sub>103</sub>	16.4	X	9.56435	197.90931	221.02377	7.07326	0.1377838	0.17739525	3.1369533	20	—	—
428855 2008 <i>UG</i> <sub>106</sub>	16.9	X	225.05538	161.84466	215.02593	5.89447	0.0456568	0.22265244	2.6959867	20	5 16.4	20.6
428856 2008 <i>UJ</i> <sub>109</sub>	16.1	X	326.07615	276.54012	55.73978	13.60770	0.1272873	0.22885329	2.6470651	20	8 2.5	19.2
428857 2008 <i>UC</i> <sub>114</sub>	17.0	X	223.88320	123.16243	252.05810	5.18579	0.0408308	0.21722324	2.7407233	20	5 12.3	20.7
428858 2008 <i>UG</i> <sub>117</sub>	16.1	X	105.95623	108.17256	257.01969	8.32013	0.0276483	0.18644432	3.0346127	20	—	—
428859 2008 <i>UA</i> <sub>121</sub>	15.6	X	333.32441	57.60991	27.15997	15.90962	0.1099880	0.17048240	3.2211901	20	12 27.9	19.9
428860 2008 <i>UT</i> <sub>121</sub>	16.9	X	253.41437	18.27139	305.78462	5.42662	0.0557649	0.21176471	2.7876205	20	4 8.3	21.0
428861 2008 <i>UN</i> <sub>124</sub>	16.4	X	59.48680	67.76491	12.85329	11.44414	0.0692823	0.18929559	3.0040631	20	1 24.8	20.5
428862 2008 <i>UK</i> <sub>125</sub>	16.9	X	112.65063	44.49199	330.90265	6.87600	0.0925980	0.18868554	3.0105347	20	1 14.7	21.1
428863 2008 <i>UW</i> <sub>126</sub>	16.7	X	49.19893	9.39848	74.25304	9.61682	0.2389632	0.18488983	3.0515983	20	1 28.8	19.9
428864 2008 <i>UQ</i> <sub>130</sub>	17.2	X	189.27332	163.98959	223.86566	5.21355	0.0365828	0.21237283	2.7822965	20	4 17.2	21.2
428865 2008 <i>UF</i> <sub>133</sub>	16.5	X	221.74885	325.60444	42.46422	6.48094	0.0359111	0.21454763	2.7634624	20	5 1.4	20.1
428866 2008 <i>UB</i> <sub>143</sub>	17.0	X	58.87624	42.61598	51.13528	10.17837	0.0604315	0.19414689	2.9538091	20	2 7.9	21.0
428867 2008 <i>UE</i> <sub>163</sub>	16.8	X	87.33257	91.53893	305.18432	3.25970	0.1023013	0.19076780	2.9885877	20	1 8.8	20.7
428868 2008 <i>UE</i> <sub>165</sub>	16.6	X	326.27516	188.78929	8.64745	6.19752	0.0633985	0.19994158	2.8964585	20	2 5.7	20.5
428869 2008 <i>UT</i> <sub>167</sub>	16.4	X	3.85784	359.73428	89.93919	2.40096	0.1662116	0.17934967	3.1141222	20	—	—
428870 2008 <i>UA</i> <sub>183</sub>	16.6	X	209.65366	205.65253	158.85676	2.85284	0.0866062	0.21367832	2.7709524	20	4 10.9	20.9
428871 2008 <i>UO</i> <sub>188</sub>	17.2	X	141.25840	327.17062	107.53618	0.62701	0.0464636	0.20883767	2.8136073	20	4 21.6	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>		
428881	2008	UQ <sub>300</sub>	16.6	X	260.83146	242.00547	103.18255	7.90649	0.1323501	0.22346300	2.6894634	20	5 9.9	20.6
428882	2008	UP <sub>304</sub>	16.4	X	186.37267	307.39396	26.84508	5.95685	0.0920043	0.19548996	2.9402646	20	2 13.6	20.9
428883	2008	UL <sub>306</sub>	16.8	X	48.06776	140.96275	278.50875	4.01305	0.1590466	0.18380878	3.0635517	20	—	—
428884	2008	UO <sub>306</sub>	16.3	X	315.92016	229.02721	56.25877	12.97631	0.1648882	0.22255553	2.6967692	20	4 29.6	19.5
428885	2008	UR <sub>306</sub>	16.8	X	160.42052	255.90590	160.61824	9.43163	0.1399556	0.21249755	2.7812078	20	4 28.6	21.3
428886	2008	UJ <sub>315</sub>	16.8	X	120.85949	112.47755	341.97688	6.33961	0.0190094	0.21187828	2.7866244	20	4 15.5	20.7
428887	2008	UG <sub>328</sub>	16.2	X	57.28645	232.82072	248.26996	7.02850	0.0549383	0.20529874	2.8458490	20	3 1.5	20.1
428888	2008	UW <sub>334</sub>	16.8	X	290.54023	188.12064	103.83829	3.59662	0.0494714	0.21343765	2.7730351	20	4 19.2	20.6
428889	2008	UV <sub>335</sub>	17.0	X	184.81932	145.91852	244.39391	2.51505	0.0853117	0.21021463	2.8013073	20	4 15.5	21.2
428890	2008	UD <sub>337</sub>	17.2	X	278.71951	304.56973	29.18973	5.60361	0.1749932	0.22213117	2.7002028	20	5 7.1	21.0
428891	2008	UK <sub>339</sub>	16.8	X	226.13503	149.58443	216.11215	3.03606	0.1009909	0.21631193	2.7484156	20	4 28.3	21.0
428892	2008	UE <sub>341</sub>	16.4	X	23.19661	28.45541	50.26837	11.74416	0.0291675	0.17934717	3.1141512	20	—	—
428893	2008	UN <sub>342</sub>	17.0	X	51.17864	88.39136	57.09041	4.93741	0.0266374	0.20662959	2.8336163	20	3 27.5	20.8
428894	2008	UK <sub>348</sub>	17.2	X	99.01519	98.89411	283.57710	4.50016	0.2699956	0.19171043	2.9787831	20	1 29.2	21.4
428895	2008	UH <sub>350</sub>	16.7	X	292.06597	59.83575	258.39995	6.86107	0.1414076	0.21894548	2.7263319	20	5 9.0	20.4
428896	2008	UK <sub>352</sub>	16.0	X	56.15442	350.58313	98.86943	12.27596	0.0895205	0.18220256	3.0815300	20	2 1.0	20.0
428897	2008	UY <sub>353</sub>	16.6	X	146.57095	99.42255	257.63865	8.91918	0.0865233	0.19217829	2.9739466	20	1 26.1	21.1
428898	2008	UF <sub>357</sub>	16.4	X	80.34566	17.69232	23.91113	6.46792	0.1225824	0.18686331	3.0300748	20	1 9.7	20.4
428899	2008	UJ <sub>357</sub>	16.9	X	64.11178	52.38377	29.42040	7.61037	0.1556311	0.19054742	2.9908916	20	2 11.2	20.6
428900	2008	UP <sub>359</sub>	16.8	X	282.80250	356.11853	310.03911	3.86305	0.0519993	0.21307903	2.7761456	20	4 23.6	20.6
428901	2008	UA <sub>363</sub>	17.8	X	65.83718	135.82423	273.38506	16.84039	0.1027120	0.36066395	1.9546435	20	—	—
428902	2008	UA <sub>369</sub>	15.9	X	9.05694	293.65971	127.95038	5.64699	0.1780424	0.17365174	3.1818763	20	—	—
428903	2008	VZ	16.5	X	108.73666	338.10102	79.67877	9.09720	0.1049802	0.19857941	2.9096890	20	3 5.3	20.7
428904	2008	VG <sub>11</sub>	16.5	X	311.10441	108.95421	155.82207	4.67898	0.0631267	0.20979000	2.8050861	20	4 9.5	20.2
428905	2008	VS <sub>22</sub>	16.6	X	81.69828	352.82150	64.79569	12.28415	0.2425081	0.19078389	2.9884197	20	2 22.0	20.7
428906	2008	VL <sub>24</sub>	16.8	X	142.07396	236.48951	157.39307	3.89258	0.1001477	0.19851231	2.9103447	20	3 8.8	21.1
428907	2008	VV <sub>26</sub>	16.9	X	326.79719	266.90123	354.39543	4.30034	0.0209053	0.21398851	2.7682741	20	4 28.6	20.7
428908	2008	VN <sub>34</sub>	16.7	X	354.63831	65.35746	87.11451	7.75532	0.0782203	0.19056609	2.9906962	20	1 18.0	20.5
428909	2008	VX <sub>39</sub>	15.7	X	96.46635	0.17884	47.46858	10.37955	0.0701850	0.18976659	2.9990903	20	2 2.0	20.0
428910	2008	VE <sub>43</sub>	16.0	X	163.92149	5.48248	326.60737	8.74378	0.0352745	0.19036411	2.9928113	20	1 14.7	20.3
428911	2008	VH <sub>59</sub>	16.7	X	178.25565	350.72415	29.89695	9.91326	0.1691755	0.20913993	2.8108958	20	4 1.6	21.3
428912	2008	VL <sub>62</sub>	17.2	X	70.89420	273.81025	120.83235	0.30590	0.2022008	0.18519442	3.0482515	20	—	—
428913	2008	VY <sub>62</sub>	16.8	X	119.43907	332.20479	57.33891	2.95624	0.1002109	0.19535266	2.9416420	20	2 8.7	21.0
428914	2008	VT <sub>67</sub>	16.1	X	271.14432	317.83430	253.72250	8.35853	0.0331152	0.18371922	3.0645472	20	—	—
428915	2008	VX <sub>69</sub>	16.9	X	125.31049	206.96346	219.77381	4.22937	0.0977519	0.20282392	2.8689519	20	3 28.7	21.1
428916	2008	VA <sub>70</sub>	17.1	X	96.43448	345.87802	75.96925	2.89352	0.0915729	0.19482657	2.9469352	20	2 19.4	21.2
428917	2008	VK <sub>70</sub>	16.5	X	74.83984	202.94606	226.91855	12.64359	0.0543426	0.19124386	2.9836260	20	1 22.7	20.7
428918	2008	VQ <sub>74</sub>	17.0	X	256.76763	18.38327	250.41156	1.05257	0.0148074	0.19836078	2.9118266	20	2 11.7	20.9
428919	2008	WE <sub>10</sub>	16.4	X	79.84766	185.78390	267.61496	4.72405	0.0990052	0.19476565	2.9475497	20	3 5.4	20.3
428920	2008	WX <sub>11</sub>	16.6	X	105.91401	194.32339	173.24884	1.55548	0.1920078	0.18851196	3.0123825	20	1 9.6	20.8
428921	2008	WN <sub>17</sub>	16.9	X	266.63631	150.46396	197.89553	5.00477	0.1551428	0.22452742	2.6809567	20	5 15.9	20.7
428922	2008	WC <sub>43</sub>	16.8	X	139.52227	316.90607	45.31192	3.89418	0.1181844	0.19181289	2.9777223	20	1 31.8	21.3
428923	2008	WY <sub>52</sub>	17.0	X	1.31011	81.68634	47.82259	13.24695	0.2439639	0.18431953	3.0578897	20	—	—
428924	2008	WV <sub>54</sub>	16.4	X	336.73578	350.67037	232.94639	7.75881	0.1548510	0.20308206	2.8665202	20	3 7.5	20.0
428925	2008	WA <sub>61</sub>	17.0	X	95.63630	309.08355	94.45226	2.13189	0.2376641	0.19109815	2.9851425	20	2 16.7	21.1
428926	2008	WE <sub>67</sub>	16.9	X	90.88441	243.99803	175.90056	1.86461	0.1819361	0.19203349	2.9754414	20	2 21.9	20.7
428927	2008	WJ <sub>89</sub>	16.3	X	108.52811	309.26923	108.35362	11.27887	0.0900595	0.18625063	3.0367163	20	3 3.4	20.7
428928	2008	WO <sub>89</sub>	16.0	X	68.97869	117.54106	278.40595	20.95470	0.1401463	0.17789390	3.1310886	20	—	—
428929	2008	WJ <sub>104</sub>	17.0	X	72.94839	22.64598	32.98378	3.50862	0.2641044	0.18733283	3.0250099	20	2 6.3	20.6
428930	2008	WO <sub>110</sub>	16.6	X	310.73107	133.12947	63.89103	5.52134	0.0112047	0.19008062	2.9957862	20	1 24.0	20.7
428931	2008	WB <sub>112</sub>	16.1	X	51.93283	335.50269	69.04916	10.91731	0.1326932	0.17893174	3.1189694	20	—	—
428932	2008	WE <sub>116</sub>	17.1	X	137.21420	83.46030	333.09442	1.03455	0.0783908	0.20017289	2.8942267	20	3 28.2	21.3
428933	2008	WG <sub>118</sub>	16.5	X	88.67773	200.10657	258.01313	11.49015	0.0683067	0.19831087	2.9123151	20	3 14.9	20.7
428934	2008	WU <sub>119</sub>	16.8	X	337.95805	166.87262	27.78733	1.31098	0.0831937	0.19327110	2.9627256	20	2 15.1	20.5
428935	2008	WP <sub>125</sub>	15.7	X	293.06623	294.67419	297.42167	24.01076	0.3300593	0.17367017	3.1816512	20	1 7.9	20.8
428936	2008	WS <sub>128</sub>	16.6	X	8.67399	307.29311	135.02657	1.72443	0.1652398	0.17269534	3.1936131	20	—	—
428937	2008	WF <sub>129</sub>	17.0	X	21.16974	167.61648	301.73783	3.29398	0.1123974	0.18449297	3.0559730	20	1 2.7	20.5
428938	2008	WJ <sub>130</sub>	16.8	X	325.47951	79.52705	73.81375	16.51933	0.2481285	0.17544442	3.1601644	20	—	—
428939	2008	WX <sub>133</sub>	15.9	X	114.17215	336.29311	56.70220	11.13765	0.0481814	0.18978391	2.9989079	20	2 2.8	20.3
428940	2008	XA	13.4	X	342.43145	178.13447	195.34365	27.17303	0.1277163	0.08265090	5.2196052	20	9 25.0	19.8
428941	2008	XU <sub>14</sub>	15.3	X	286.66741	299.85121	246.19341	25.96270	0.1874594	0.17847704	3.1242647	20	—	—
428942	2008	XX <sub>21</sub>	16.2	X	2.00711	5.32733	113.35658	7.11211	0.1366714	0.17610832	3.1522172	20	—	—
428943	2008	XY <sub>21</sub>	16.1	X	239.87038	36.69405	247.34332	4.47056	0.0480287	0.18750721	3.0231341	20	2 7.5	20.6
428944	2008	XY <sub>33</sub>	15.9	X	150.80041	55.23928	267.55165	10.60157	0.0481526	0.18279041	3.0749197	20	—	—
428945	2008	XV <sub>35</sub>	16.8	X	294.12323	32.64535	270.03214	6.87516	0.1257429	0.21394630	2.7686382	20	4 22.2	20.5
428946	2008	XG <sub>48</sub>	16.2	X	113.56523	128.98594	273.19882	8.62918	0.1382702	0.18770651	3.0209937	20	2 18.3	20.7
428947	2008	XT <sub>49</sub>	15.3	X	183.29448	344.58044	304.86146	23.02668	0.0435328	0.16982799	3.2294597	20	—	—
428948	2008	XS <sub>51</sub>	17.0	X	111.53049	337.71508	48.85410	3.89597	0.0981354	0.18873728	3.0099845	20	1 27.6	21.2
428949	2008	YV <sub>8</sub>	16.3	X	121.55303	51.49280	321.68934	15.84841	0.1776200	0.18405931	3.0607711	20	2 2.8	20.8
428950	2008	YG <sub>11</sub>	15.9	X	26.45225	47.63900	83.70835	11.62285	0.0499705					

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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>
428961 2008 YN <sub>105</sub>	16.4	X	356.60946	35.78987	119.59236	18.58733	0.1716943	0.17802803	3.1295156	20	1 18.0	20.0
428962 2008 YD <sub>109</sub>	16.3	X	69.96733	310.71891	112.67418	9.37694	0.1632437	0.17868168	3.1218787	20	1 28.3	20.2
428963 2008 YP <sub>121</sub>	15.6	X	338.38989	6.77293	124.12345	14.75372	0.0349435	0.17170832	3.2058399	20	—	—
428964 2008 YA <sub>122</sub>	16.3	X	288.12434	3.47967	254.08624	4.49355	0.0185644	0.19090421	2.9871639	20	3 5.6	20.5
428965 2008 YL <sub>132</sub>	16.3	X	102.15694	309.34941	86.55860	4.32300	0.0630773	0.18111092	3.0939001	20	1 23.3	20.5
428966 2008 YD <sub>133</sub>	16.2	X	72.93252	350.31713	101.38938	5.06308	0.1092241	0.18522556	3.0479097	20	3 1.0	20.2
428967 2008 YM <sub>139</sub>	15.6	X	133.06154	51.57293	290.60620	8.52978	0.0899672	0.17513870	3.1638409	20	—	—
428968 2008 YF <sub>140</sub>	16.3	X	82.82307	272.08067	133.13876	12.06566	0.1646576	0.17928694	3.1148487	20	1 23.4	20.3
428969 2008 YZ <sub>140</sub>	16.3	X	39.32523	344.89615	132.30679	12.61178	0.0547452	0.18111159	3.0938925	20	2 8.1	20.4
428970 2008 YD <sub>147</sub>	16.4	X	21.61388	48.02113	85.27894	9.97912	0.0628618	0.18540297	3.0459651	20	2 4.9	20.4
428971 2008 YS <sub>150</sub>	16.5	X	220.17224	139.95337	146.56131	2.52812	0.0639360	0.18078302	3.0976401	20	1 21.9	21.3
428972 2008 YT <sub>152</sub>	16.2	X	214.65423	197.26757	128.75423	16.33063	0.0321786	0.18766924	3.0213937	20	3 6.8	20.7
428973 2008 YG <sub>155</sub>	16.8	X	354.86321	343.01116	153.23963	0.74129	0.1339479	0.17451922	3.1713235	20	—	—
428974 2008 YT <sub>157</sub>	15.9	X	294.23746	289.60703	313.87881	22.06075	0.2815165	0.17686507	3.1432192	20	1 26.9	20.7
428975 2008 YV <sub>157</sub>	15.7	X	2.67639	225.86247	282.63920	9.54454	0.0434738	0.17916961	3.1162084	20	1 26.4	19.9
428976 2008 YW <sub>158</sub>	17.1	X	17.08654	354.47688	148.25107	1.41691	0.1406597	0.18047115	3.1012077	20	2 7.8	20.7
428977 2008 YM <sub>160</sub>	16.2	X	260.72609	219.96875	339.31064	9.61744	0.0168498	0.15781988	3.3912638	20	—	—
428978 2008 YP <sub>160</sub>	16.0	X	330.67582	59.01439	153.50976	9.52112	0.0096055	0.18018948	3.1044387	20	3 8.6	20.3
428979 2008 YS <sub>161</sub>	16.8	X	300.00822	59.24643	148.40050	1.85364	0.1429087	0.17881489	3.1203282	20	1 6.3	21.2
428980 2008 YW <sub>162</sub>	16.6	X	9.23991	296.74751	165.75249	1.57140	0.1558250	0.17396846	3.1780133	20	—	—
428981 2008 YF <sub>163</sub>	16.1	X	126.66404	237.12646	117.64757	10.79275	0.0672217	0.17751194	3.1355784	20	1 3.8	20.5
428982 2008 YL <sub>164</sub>	16.1	X	138.23077	280.22071	88.71676	11.51991	0.0822429	0.18556238	3.0442204	20	2 5.3	20.7
428983 2008 YC <sub>168</sub>	16.0	X	13.68764	132.22379	328.62725	16.35119	0.1956232	0.17459911	3.1703561	20	—	—
428984 2009 AC <sub>4</sub>	16.2	X	166.38705	303.33984	38.63424	10.75157	0.0609795	0.18370357	3.0647213	20	2 3.5	20.9
428985 2009 AC <sub>10</sub>	16.0	X	296.52013	88.14104	100.16511	15.05876	0.0288841	0.17447188	3.1718971	20	—	—
428986 2009 AU <sub>12</sub>	15.7	X	350.42044	38.47449	113.11610	27.26155	0.0116676	0.17886789	3.1197117	20	1 18.2	20.0
428987 2009 AY <sub>12</sub>	16.2	X	357.92737	225.83088	273.61554	8.96194	0.0563183	0.17863939	3.1223714	20	1 9.3	20.4
428988 2009 AY <sub>13</sub>	16.3	X	1.17090	11.59837	123.06952	10.51171	0.0664043	0.17777657	3.1324660	20	1 7.8	20.4
428989 2009 AO <sub>25</sub>	16.0	X	332.56165	86.00124	125.72306	9.54886	0.0671129	0.18816915	3.0160400	20	3 4.5	20.0
428990 2009 AU <sub>25</sub>	16.3	X	222.39974	50.89982	287.98345	9.20540	0.1005778	0.19552744	2.9398888	20	3 18.4	21.0
428991 2009 AE <sub>26</sub>	16.3	X	111.46719	259.15428	125.22522	8.71017	0.0796873	0.17951240	3.1122400	20	1 22.5	20.5
428992 2009 AR <sub>30</sub>	15.4	X	284.08685	257.18594	282.57373	10.77328	0.0771419	0.17046588	3.2213982	20	—	—
428993 2009 AH <sub>50</sub>	16.3	X	95.43934	264.32638	139.99244	14.99559	0.0986533	0.17877728	3.1207657	20	1 29.3	20.7
428994 2009 BO <sub>4</sub>	15.9	X	27.02710	183.15907	287.64543	17.72394	0.1642657	0.17707239	3.1407653	20	1 14.9	19.3
428995 2009 BU <sub>10</sub>	15.8	X	74.98553	269.40425	137.53544	26.56401	0.2210108	0.17821881	3.1272818	20	1 23.1	19.7
428996 2009 BL <sub>28</sub>	16.3	X	42.10134	318.89505	107.80154	6.83079	0.1545607	0.17340609	3.1848806	20	—	—
428997 2009 BU <sub>30</sub>	16.5	X	139.98537	59.18881	315.70937	10.44002	0.1497262	0.18378529	3.0638127	20	2 17.6	21.3
428998 2009 BQ <sub>31</sub>	15.7	X	58.02816	126.11001	321.42404	8.44230	0.0703919	0.17850164	3.1239776	20	1 30.3	19.9
428999 2009 BU <sub>35</sub>	16.7	X	333.16700	62.44443	73.61916	3.74462	0.0885791	0.16726460	3.2623710	20	—	—
429000 2009 BD <sub>37</sub>	16.8	X	15.35911	2.14880	102.60076	2.90413	0.0974891	0.17153728	3.2079705	20	—	—
429001 2009 BB <sub>38</sub>	16.3	X	324.42137	66.20307	117.43089	9.58884	0.0312441	0.17568579	3.1572693	20	1 23.3	20.5
429002 2009 BP <sub>46</sub>	16.0	X	303.52270	96.75026	147.26090	26.00591	0.2186839	0.17803172	3.1294724	20	2 12.3	20.3
429003 2009 BN <sub>51</sub>	16.3	X	99.16939	268.78331	120.24194	6.18974	0.1550026	0.17737212	3.1372260	20	1 24.2	20.5
429004 2009 BS <sub>51</sub>	15.8	X	92.20630	278.06592	123.85037	9.85368	0.0538909	0.17579755	3.1559310	20	1 17.1	20.1
429005 2009 BG <sub>52</sub>	18.0	X	169.79707	24.60157	309.59840	17.20810	0.0745170	0.35211112	1.9861691	20	1 1.3	20.4
429006 2009 BA <sub>63</sub>	16.6	X	39.28123	357.82061	86.16757	2.60990	0.1528907	0.17520531	3.1630389	20	1 3.4	20.0
429007 2009 BQ <sub>69</sub>	15.5	X	218.50630	324.26974	305.87841	21.42554	0.1060164	0.17370658	3.1812065	20	1 4.2	20.6
429008 2009 BZ <sub>80</sub>	15.7	X	33.34093	358.05534	81.95529	12.67296	0.1377946	0.17377680	3.1803495	20	—	—
429009 2009 BS <sub>85</sub>	16.1	X	156.22191	40.22786	303.16421	9.12368	0.0592376	0.17648949	3.1476769	20	1 22.4	20.5
429010 2009 BT <sub>93</sub>	16.1	X	45.78428	326.59958	144.88687	10.48383	0.0558202	0.17870533	3.1216033	20	2 9.8	20.3
429011 2009 BL <sub>98</sub>	16.2	X	349.08773	121.33935	354.67868	3.90240	0.0750619	0.16983452	3.2293769	20	—	—
429012 2009 BV <sub>101</sub>	15.8	X	75.39137	310.95477	126.40543	17.26587	0.0909781	0.17779466	3.1322535	20	2 13.3	20.0
429013 2009 BX <sub>103</sub>	16.1	X	311.25012	74.57013	150.47098	11.19774	0.0962417	0.17891000	3.1192222	20	2 16.3	20.3
429014 2009 BC <sub>105</sub>	16.3	X	284.20445	88.68003	155.58693	12.56738	0.1183300	0.17638489	3.1489212	20	2 3.4	20.9
429015 2009 BQ <sub>109</sub>	15.9	X	315.65982	65.87245	133.42921	11.44729	0.0339791	0.17496677	3.1659132	20	1 30.7	20.4
429016 2009 BY <sub>113</sub>	16.5	X	73.42148	74.66471	326.43906	5.11190	0.2070508	0.17759852	3.1345593	20	1 12.3	20.2
429017 2009 BZ <sub>113</sub>	16.8	X	130.49337	3.54529	44.58694	1.74928	0.0840637	0.18964506	3.0003715	20	3 12.9	21.0
429018 2009 BV <sub>114</sub>	16.8	X	357.49085	20.98859	112.67675	3.86003	0.1608169	0.17296145	3.1903366	20	—	—
429019 2009 BS <sub>127</sub>	16.4	X	300.65200	120.66349	141.01102	11.34000	0.0551395	0.18712106	3.0272917	20	3 27.4	20.6
429020 2009 BU <sub>130</sub>	16.2	X	63.89543	80.97965	352.12647	13.61821	0.1233726	0.17271420	3.1933806	20	1 31.2	20.4
429021 2009 BB <sub>136</sub>	16.6	X	247.96694	125.73064	141.46441	11.26466	0.0337565	0.17873899	3.1212114	20	1 31.2	21.2
429022 2009 BU <sub>138</sub>	16.0	X	155.72371	226.96555	137.40070	11.09294	0.0972102	0.18250033	3.0781772	20	2 18.4	20.7
429023 2009 BY <sub>148</sub>	16.3	X	81.81816	282.22469	118.07827	9.03353	0.0566407	0.17352871	3.1833800	20	1 3.1	20.5
429024 2009 BX <sub>155</sub>	16.0	X	349.19695	23.00787	126.10872	9.62413	0.1400704	0.17364552	3.1819523	20	1 2.5	19.9
429025 2009 BN <sub>156</sub>	15.9	X	28.54777	331.00026	153.55873	27.35121	0.1074268	0.17524268	3.1625892	20	2 3.5	19.9
429026 2009 BK <sub>163</sub>	16.3	X	28.88416	135.86519	338.16497	12.57435	0.1679203	0.17654279	3.1470433	20	1 26.9	19.9
429027 2009 BS <sub>165</sub>	16.3	X	201.46687	326.87439	340.00720	11.62509	0.0533883	0.17674177	3.1446810	20	2 8.4	21.1
429028 2009 BB <sub>172</sub>	16.2	X	24.46160	332.81792	160.29522	15.45096	0.2692854	0.17994356	3.1072665	20	2 9.6	19.1
429029 2009 BH <sub>178</sub>	15.8	X	74.43651	260.92330	141.98979	8.72219	0.0235451	0.16763599	3.2575509	20	—	—
429030 2009 BQ <sub>182</sub>	16.5	X	336.35090	42.62261	153.05756	8.86391	0.0310612	0.18148942	3.0895970	20	2 20.8	20.8
429031 Hannavonhoerner	16.4	X	123.40793	336.24564	37.89646	9.71666	0.0934683	0.18103681	3.0947445	20	1 28.8	21.0
429032 Sebvonhoerner	16.2	X	333.99492	63.28588	132.10703	10.06563	0.1353188	0.18219458	3.0816200	20	2 5.4	20.0
429033 Ginterwendt	16.0	X	204.72725	359.55577	289.62260	9.53255	0.1798688	0.17618647	3.1512850	20	1 10.1	21.3
429034 2009 CG <sub>23</sub>	16.4	X	2									

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>
429041 2009 CB <sub>52</sub>	17.1	X	6.97705	3.21980	129.34449	1.98958	0.2032086	0.17476483	3.1683516	20	1 5.3	20.4
429042 2009 CG <sub>54</sub>	16.1	X	4.93941	359.97920	158.94013	18.54063	0.2104133	0.17460491	3.1702857	20	2 3.2	19.6
429043 2009 CC <sub>60</sub>	16.1	X	8.89505	200.46187	297.11279	13.89427	0.2382875	0.17536296	3.1611429	20	1 13.5	19.1
429044 2009 CY <sub>62</sub>	15.8	X	0.30051	353.09022	153.76007	28.91481	0.1242360	0.17539310	3.1607808	20	1 18.3	20.1
429045 2009 DP <sub>1</sub>	16.5	X	46.20885	273.64682	186.70244	11.70908	0.1607622	0.18071398	3.0984290	20	2 1.9	20.2
429046 2009 DC <sub>2</sub>	16.7	X	40.95547	310.13043	150.95999	3.84037	0.1337689	0.17513787	3.1638509	20	1 26.4	20.4
429047 2009 DK <sub>2</sub>	16.5	X	30.84739	340.32569	139.63737	6.35893	0.1052232	0.17611422	3.1521468	20	2 1.6	20.2
429048 2009 DR <sub>4</sub>	16.4	X	46.93970	161.71366	271.96050	6.89558	0.1803847	0.17462698	3.1700187	20	1 5.4	19.9
429049 2009 DU <sub>11</sub>	16.0	X	68.49571	307.90074	144.26888	17.20123	0.1906971	0.18201577	3.0836379	20	3 7.3	19.9
429050 2009 DW <sub>21</sub>	16.7	X	340.81709	66.53320	91.34922	1.83856	0.0818056	0.17402959	3.1772690	20	1 7.7	20.9
429051 2009 DH <sub>46</sub>	15.0	X	265.67234	305.08927	267.12749	23.04405	0.2933401	0.17620740	3.1510354	20	—	—
429052 2009 DE <sub>52</sub>	15.8	X	138.10181	239.26911	138.65209	18.74447	0.0990054	0.18194649	3.0844206	20	2 16.3	20.4
429053 2009 DP <sub>55</sub>	16.6	X	60.55839	315.36161	116.68546	2.89926	0.1885143	0.17251843	3.1957961	20	1 28.7	20.4
429054 2009 DY <sub>61</sub>	15.9	X	218.81786	281.83102	8.37892	10.54889	0.1085989	0.16730729	3.2618161	20	1 28.6	21.1
429055 2009 DS <sub>68</sub>	15.7	X	359.54176	125.10453	26.13518	17.10235	0.1668254	0.17468946	3.1629627	20	1 24.7	19.7
429056 2009 DG <sub>70</sub>	15.5	X	305.71731	265.37836	336.98048	24.93962	0.1880396	0.17706365	3.1408687	20	2 20.2	19.9
429057 2009 DE <sub>110</sub>	15.8	X	42.84569	305.04750	175.86963	27.62938	0.1710246	0.17869518	3.1217215	20	2 25.1	19.6
429058 2009 DV <sub>118</sub>	16.1	X	323.76736	44.64428	168.65147	16.97699	0.1123786	0.17535961	3.1611833	20	2 15.3	20.4
429059 2009 DR <sub>122</sub>	16.3	X	232.94193	138.54887	169.89673	9.59893	0.0737571	0.17493711	3.1662711	20	2 29.6	21.2
429060 2009 DS <sub>122</sub>	15.9	X	224.69128	163.01434	169.40094	12.29144	0.1309928	0.17848555	3.1241653	20	3 17.9	20.8
429061 2009 EP <sub>5</sub>	15.7	X	154.43481	350.74087	8.49350	9.50951	0.0713845	0.17667069	3.1455243	20	2 12.3	20.5
429062 2009 EB <sub>31</sub>	15.9	X	246.12396	280.64521	357.91070	10.58454	0.0304683	0.17575819	3.1564022	20	2 15.8	20.5
429063 2009 FK <sub>4</sub>	15.9	X	30.75154	18.29079	126.54228	12.39568	0.0281122	0.17523818	3.1626434	20	3 3.7	20.3
429064 2009 FQ <sub>19</sub>	16.0	X	310.28942	44.47733	181.17218	16.90630	0.1011196	0.17409687	3.1764503	20	2 13.3	20.5
429065 2009 FY <sub>33</sub>	15.7	X	272.00893	249.40677	337.409379	11.12663	0.0541580	0.16895602	3.2405616	20	1 12.1	20.5
429066 2009 FF <sub>62</sub>	15.8	X	282.54691	266.42534	17.69216	9.56145	0.0761071	0.17926692	3.1150805	20	3 27.9	20.2
429067 2009 FA <sub>75</sub>	15.5	X	308.19447	44.96281	204.77640	16.14367	0.1743056	0.17480396	3.1678786	20	2 28.0	20.1
429068 2009 HM <sub>8</sub>	18.2	X	168.02023	116.77528	92.84473	5.92810	0.1011160	0.30669792	2.1776872	20	11 28.7	21.0
429069 2009 HP <sub>31</sub>	17.8	X	177.44576	127.36622	98.01025	5.50768	0.1126805	0.31252082	2.1505526	20	12 30.1	20.4
429070 2009 HR <sub>67</sub>	17.7	X	60.70905	227.60601	71.23804	9.27819	0.2140445	0.29673107	2.2261822	20	12 6.8	21.0
429071 2009 HM <sub>85</sub>	18.1	X	104.92232	189.30599	74.60930	5.77197	0.1045319	0.30302761	2.1952362	20	11 30.1	21.0
429072 2009 KT <sub>20</sub>	18.3	X	55.60520	209.02587	84.51648	6.51763	0.0993911	0.29258959	2.2471400	20	11 11.5	21.1
429073 2009 ND <sub>1</sub>	17.3	X	99.94138	292.19397	97.99047	11.82500	0.05706132	0.21801455	2.7340874	20	3 17.5	22.2
429074 2009 OD <sub>5</sub>	17.1	X	349.86954	352.99791	302.97148	3.56785	0.1773142	0.26795236	2.3828552	20	7 25.7	18.8
429075 2009 OY <sub>9</sub>	17.6	X	101.54932	37.87016	265.63838	7.33792	0.1655343	0.29612065	2.2292405	20	—	—
429076 2009 OF <sub>14</sub>	17.4	X	116.98789	32.55936	266.70792	6.18714	0.2090655	0.29928762	2.2134865	20	—	—
429077 2009 PP <sub>16</sub>	17.4	X	185.25932	21.82157	354.72598	7.73531	0.1817125	0.23462832	2.6034491	20	3 29.4	21.8
429078 2009 PA <sub>19</sub>	17.6	X	116.19149	60.66600	0.50636	3.74521	0.2984562	0.22397740	2.6853439	20	4 2.9	21.8
429079 2009 QK <sub>23</sub>	17.7	X	84.87323	197.48088	112.79044	3.32083	0.2129131	0.29206746	2.2498174	20	—	—
429080 2009 QW <sub>44</sub>	17.6	X	37.78068	4.59506	325.21130	5.64574	0.1554116	0.28217505	2.3020971	20	12 11.4	20.6
429081 2009 QX <sub>57</sub>	16.7	X	128.03088	74.32345	328.52532	14.17761	0.1054997	0.22979137	2.6398560	20	2 28.6	20.5
429082 2009 RW <sub>7</sub>	17.7	X	158.90476	83.13609	348.26504	4.15703	0.2007230	0.23663591	2.5887034	20	5 13.7	22.0
429083 2009 RP <sub>8</sub>	14.1	X	318.63180	179.10441	203.90725	6.91657	0.0806371	0.08426948	5.1525534	20	9 5.1	20.7
429084 Dietrichex	16.8	X	159.90287	48.48881	4.27019	14.55119	0.1187373	0.23271056	2.6177329	20	4 14.9	20.9
429085 2009 RW <sub>29</sub>	17.5	X	154.00415	80.94043	338.13412	5.19319	0.2272127	0.23215472	2.6219095	20	4 24.8	22.0
429086 2009 RG <sub>42</sub>	16.9	X	73.20708	352.71866	250.10901	4.90143	0.1702149	0.26714200	2.3876716	20	9 26.3	20.4
429087 2009 RX <sub>42</sub>	17.7	X	141.52672	50.16197	342.27876	8.04275	0.2670908	0.22433677	2.6824754	20	3 17.2	22.2
429088 2009 RU <sub>43</sub>	17.6	X	88.55290	16.55491	267.64081	3.11302	0.2030366	0.28291620	2.2980749	20	12 10.9	21.2
429089 2009 RN <sub>45</sub>	17.5	X	189.57535	71.89703	341.11827	2.12729	0.1861256	0.23996331	2.5647172	20	5 17.7	21.8
429090 2009 RQ <sub>47</sub>	17.5	X	136.58674	60.56462	6.57824	5.78332	0.2111011	0.22892236	2.6465325	20	4 19.5	21.8
429091 2009 RJ <sub>51</sub>	17.2	X	85.69961	262.97996	192.31760	8.55549	0.2132100	0.21973214	2.7198211	20	4 2.2	20.5
429092 2009 RP <sub>59</sub>	17.0	X	132.38667	246.88827	145.81591	10.13669	0.2689859	0.22429736	2.6827895	20	3 13.2	21.3
429093 2009 RU <sub>68</sub>	16.4	X	262.69833	281.07078	26.85122	14.10555	0.0198240	0.23327141	2.6133553	20	4 6.9	19.9
429094 2009 SG <sub>2</sub>	20.1	X	79.00239	252.96121	9.08592	25.97802	0.1701851	0.83052855	1.1208986	20	—	—
429095 2009 SU <sub>8</sub>	14.4	X	296.40929	214.66451	183.75657	11.08888	0.0624025	0.08265244	5.2195404	20	8 27.5	21.3
429096 2009 SB <sub>10</sub>	17.6	X	240.32622	199.25853	218.60020	4.66346	0.1531137	0.25751237	2.4468311	20	7 15.9	21.1
429097 2009 SJ <sub>19</sub>	17.5	X	184.80270	315.20455	74.08198	4.21410	0.1996244	0.23454607	2.6040577	20	4 16.6	21.9
429098 2009 SN <sub>21</sub>	16.9	X	291.56801	113.16949	270.61540	5.38441	0.1530307	0.26255444	2.4154041	20	8 9.9	19.4
429099 2009 SD <sub>36</sub>	17.8	X	321.41476	97.58246	209.63211	5.93611	0.1383282	0.25292978	2.4762970	20	6 11.9	20.3
429100 2009 SB <sub>39</sub>	17.4	X	185.79816	6.34554	7.25611	8.32561	0.2116474	0.23181118	2.6244993	20	3 28.1	21.9
429101 2009 SV <sub>42</sub>	17.0	X	133.02793	98.88399	3.84666	11.79622	0.1754556	0.23421201	2.6065333	20	5 26.2	21.3
429102 2009 SZ <sub>45</sub>	15.7	X	192.94437	326.60666	21.23829	13.08553	0.3053544	0.22956504	2.6415909	20	3 8.9	20.7
429103 2009 SN <sub>57</sub>	17.0	X	60.36578	276.57037	328.11035	5.91969	0.0851913	0.25945221	2.4346197	20	8 31.6	19.9
429104 2009 SL <sub>70</sub>	17.7	X	183.83556	202.76867	169.94720	6.93531	0.2323068	0.23070335	2.6328944	20	3 26.7	22.2
429105 2009 SQ <sub>73</sub>	17.6	X	195.16461	268.22114	196.57883	5.69757	0.0622965	0.25887356	2.4382464	20	8 4.1	21.0
429106 2009 SJ <sub>79</sub>	16.8	X	82.66966	291.37960	207.50249	11.65316	0.0893621	0.23790332	2.5795011	20	5 7.2	20.1
429107 2009 SU <sub>136</sub>	17.4	X	161.79638	21.08170	7.37739	3.25306	0.0938126	0.22736385	2.6586129	20	3 20.1	21.4
429108 2009 SY <sub>145</sub>	18.4	X	35.58691	243.57976	46.23986	2.92765	0.1573962	0.27178540	2.3603983	20	10 14.1	21.1
429109 2009 SR <sub>156</sub>	16.9	X	164.19249	41.97721	15.92985	14.95847	0.2273984	0.23435260	2.6054908	20	4 30.0	21.5
429110 2009 SO <sub>163</sub>	17.1	X	130.00101	72.53237	333.13751	11.78323	0.2693003	0.22330961	2.6906948	20	3 21.2	21.7
429111 2009 SQ <sub>173</sub>	16.4	X	179.82331	48.03167	323.66777	10.53110	0.1873052	0.23045909	2.6347545	20	3 16.7	20.9
429112 2009 SE <sub>192</sub>	17.6	X	198.68579	68.46073	298.43777	2.46936	0.1969129	0.23533928	2.5982031	20	3 29.0	22.0
429113 2009 SJ <sub>197</sub>	13.3	X	311.46092	171.99867	213.38991	18.97289	0.0608817	0.08179374	5.2560079	20	8 27.7	20.3
429114												

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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>
429121 2009 SM <sub>278</sub>	17.7	X	227.83695	278.53694	95.70991	2.82718	0.0995575	0.24374806	2.5380993	20	5 11.3	21.2
429122 2009 SG <sub>296</sub>	17.7	X	158.91756	284.51305	128.71785	4.76469	0.1183099	0.23273762	2.6175299	20	4 20.4	21.8
429123 2009 SK <sub>297</sub>	17.5	X	240.20978	40.49740	320.10955	7.75435	0.2617909	0.24421373	2.5348718	20	4 18.8	22.0
429124 2009 SV <sub>304</sub>	17.5	X	249.67252	37.66932	357.25961	6.30062	0.1316917	0.25529401	2.4609850	20	6 30.4	20.9
429125 2009 SX <sub>329</sub>	16.9	X	22.36318	292.49738	29.93412	10.15153	0.2572678	0.27511471	2.3413167	20	11 23.7	19.7
429126 2009 SJ <sub>334</sub>	16.6	X	120.80368	49.84089	9.24958	12.92846	0.1569904	0.22371171	2.6874697	20	3 22.0	20.4
429127 2009 SS <sub>335</sub>	17.3	X	102.78414	260.10888	175.71352	8.44832	0.2369451	0.22004565	2.7172370	20	4 2.3	21.1
429128 2009 SC <sub>339</sub>	16.4	X	127.27527	165.38662	227.45815	13.72892	0.0967843	0.22083261	2.7107777	20	2 11.5	20.5
429129 2009 SP <sub>341</sub>	17.9	X	157.90182	18.13315	36.29612	1.98709	0.2175492	0.23086646	2.6316542	20	4 24.1	22.2
429130 2009 SO <sub>345</sub>	17.9	X	149.28530	157.97572	280.07583	1.45666	0.1219997	0.23622042	2.5917380	20	5 9.7	21.9
429131 2009 SJ <sub>354</sub>	16.5	X	80.40627	131.18692	58.34154	14.26734	0.1840124	0.23459401	2.6037030	20	7 29.9	20.4
429132 2009 SZ <sub>355</sub>	14.2	X	331.79199	345.44986	25.85651	21.42757	0.0881439	0.08480666	5.1307724	20	9 19.2	20.8
429133 2009 SO <sub>361</sub>	16.8	X	136.94181	164.87143	272.23356	8.25721	0.1809013	0.21975976	2.7195931	20	4 28.9	21.3
429134 2009 TP <sub>5</sub>	17.6	X	154.70129	183.68679	204.30849	2.95887	0.2726191	0.22534172	2.6744941	20	3 23.2	22.1
429135 2009 TW <sub>6</sub>	16.6	X	208.39958	349.91618	10.27396	10.59760	0.2150308	0.23450590	2.6043551	20	3 29.9	21.1
429136 2009 TJ <sub>8</sub>	18.1	X	221.83230	5.51361	20.55157	3.14895	0.1700728	0.24599919	2.5225915	20	5 13.6	22.0
429137 2009 TA <sub>9</sub>	16.7	X	136.67679	46.66682	43.23084	13.32786	0.2585214	0.23001906	2.6381136	20	5 20.8	21.3
429138 2009 TY <sub>24</sub>	17.0	X	359.74977	291.14647	42.85705	6.91268	0.1469112	0.26707333	2.3880809	20	10 16.9	19.3
429139 2009 TA <sub>40</sub>	16.9	X	143.77808	249.70429	154.40847	8.53011	0.3103736	0.22596967	2.6695370	20	4 8.3	21.6
429140 2009 TW <sub>46</sub>	16.6	X	173.66084	107.63222	5.44991	11.06139	0.2391596	0.24221940	2.5487668	20	7 22.3	21.2
429141 2009 UV <sub>9</sub>	17.5	X	130.62638	331.78021	104.53636	4.70826	0.1676746	0.22991676	2.6388961	20	4 24.7	21.5
429142 2009 UP <sub>33</sub>	17.5	X	201.85658	322.39587	47.39889	12.57455	0.1808412	0.23167828	2.6255029	20	4 9.7	21.9
429143 2009 UX <sub>34</sub>	17.5	X	101.83636	202.04505	223.68942	3.60658	0.1949875	0.21477649	2.7614990	20	3 11.8	21.5
429144 2009 UH <sub>44</sub>	17.8	X	183.50568	21.03648	36.55829	9.51269	0.1522516	0.23778376	2.5803657	20	5 17.5	22.0
429145 2009 UJ <sub>57</sub>	17.9	X	163.70535	57.80017	26.02781	5.62490	0.0822349	0.23791108	2.5794450	20	5 30.3	21.8
429146 2009 UD <sub>83</sub>	17.5	X	140.05925	271.73866	166.99717	1.99386	0.2529304	0.22701449	2.6613398	20	5 11.7	21.9
429147 2009 UA <sub>91</sub>	17.3	X	141.09557	87.50487	339.97683	10.82702	0.1836612	0.23048577	2.6345511	20	4 18.4	21.7
429148 2009 UQ <sub>94</sub>	17.5	X	171.85846	34.72466	9.65400	9.60890	0.2240488	0.23186632	2.6240832	20	4 21.3	22.0
429149 2009 UJ <sub>102</sub>	17.0	X	174.76474	25.95945	35.20315	12.00165	0.2410313	0.23303518	2.6153013	20	5 14.6	21.6
429150 2009 UE <sub>105</sub>	17.2	X	150.31176	253.50990	148.98736	3.60864	0.0925484	0.22675253	2.6633891	20	3 26.1	21.0
429151 2009 UD <sub>110</sub>	17.3	X	176.57174	36.64655	46.83186	12.15004	0.0943749	0.23832405	2.5764643	20	6 12.9	21.2
429152 2009 UY <sub>110</sub>	17.1	X	178.76021	146.18132	228.47140	5.26873	0.1535608	0.22538882	2.6741215	20	3 20.6	21.5
429153 2009 UK <sub>114</sub>	14.6	X	318.51492	359.28772	26.88487	2.25446	0.0452674	0.08376871	5.1730678	20	9 13.9	21.3
429154 2009 UO <sub>120</sub>	18.1	X	36.77780	232.31969	51.75611	3.02930	0.1965696	0.26800478	2.3825445	20	10 13.7	20.8
429155 2009 UR <sub>121</sub>	16.9	X	283.59815	328.46025	47.28252	14.05787	0.2180908	0.25824007	2.4422322	20	7 6.1	20.1
429156 2009 UB <sub>128</sub>	17.5	X	247.96945	320.69134	28.90693	6.45234	0.1395140	0.24146462	2.5540754	20	4 26.3	21.2
429157 2009 UC <sub>129</sub>	16.3	X	185.97969	344.96123	37.34476	13.84318	0.2911526	0.22961490	2.6412084	20	4 11.1	21.1
429158 2009 UX <sub>137</sub>	16.9	X	129.12719	241.97147	187.87661	7.60571	0.2842008	0.22572650	2.6714539	20	4 24.8	21.3
429159 2009 UJ <sub>149</sub>	17.7	X	126.27585	265.26087	162.48739	1.16584	0.1568373	0.22163307	2.7042469	20	4 6.9	21.7
429160 2009 UY <sub>152</sub>	17.4	X	16.09899	247.94406	59.52201	6.62012	0.1646268	0.26029429	2.4293660	20	10 9.6	19.9
429161 2009 US <sub>154</sub>	17.4	X	209.70515	305.98469	103.40569	4.29659	0.1248583	0.24442986	2.5333773	20	6 4.5	21.2
429162 2009 VW <sub>2</sub>	16.7	X	188.16039	34.60818	352.14011	13.64880	0.1307949	0.23041649	2.6350792	20	4 9.9	21.1
429163 2009 VY <sub>16</sub>	17.1	X	89.43673	191.67635	256.43238	7.78471	0.1414835	0.21410618	2.7672597	20	3 14.2	20.9
429164 2009 VL <sub>21</sub>	17.6	X	13.45489	227.92430	101.14476	3.41531	0.1899081	0.26641663	2.3920036	20	11 9.3	20.0
429165 2009 UV <sub>21</sub>	17.4	X	111.36288	335.39149	91.61675	4.52230	0.1807887	0.21750076	2.7383914	20	3 26.1	21.3
429166 2009 VT <sub>26</sub>	17.7	X	165.61027	353.07822	39.79857	3.71041	0.1353261	0.22932752	2.6434145	20	4 1.5	21.7
429167 2009 VN <sub>30</sub>	17.1	X	55.54616	256.76149	297.46067	5.23227	0.1014572	0.23531184	2.5984051	20	6 14.7	20.2
429168 2009 VD <sub>51</sub>	16.7	X	322.06539	195.02039	114.88733	3.75891	0.1005058	0.24587634	2.5234317	20	6 21.6	19.3
429169 2009 VT <sub>52</sub>	17.4	X	65.19851	1.68156	231.31287	4.34333	0.0773241	0.25332619	2.4737131	20	8 18.4	20.7
429170 2009 VA <sub>60</sub>	16.5	X	117.12357	342.74405	83.15092	10.64550	0.2130280	0.21883024	2.7272890	20	4 6.8	20.8
429171 2009 VY <sub>65</sub>	17.7	X	140.62001	91.95865	296.32072	1.80464	0.3097891	0.22016408	2.7162625	20	3 15.4	22.3
429172 2009 VO <sub>69</sub>	16.6	X	101.88887	31.75775	54.53632	9.54183	0.1000485	0.21855053	2.7296154	20	3 30.1	20.4
429173 2009 VE <sub>72</sub>	17.2	X	182.14254	229.56341	178.28445	5.59620	0.2442948	0.23355932	2.6113871	20	5 7.2	21.8
429174 2009 VY <sub>72</sub>	17.6	X	351.57130	316.20050	4.17067	6.06267	0.1231427	0.25615269	2.4554821	20	9 5.0	20.0
429175 2009 VR <sub>75</sub>	16.4	X	127.23168	24.48347	71.40962	15.87141	0.2454186	0.22525987	2.6751419	20	5 22.3	20.7
429176 2009 VV <sub>80</sub>	17.6	X	231.21619	198.06366	195.92655	5.90826	0.1924181	0.24324965	2.5415651	20	6 1.6	21.6
429177 2009 VB <sub>82</sub>	16.7	X	38.28638	351.61326	234.31973	5.96900	0.0575153	0.23930310	2.5694322	20	6 26.6	19.9
429178 2009 VO <sub>89</sub>	17.4	X	113.04411	152.03887	8.82212	7.29405	0.0460692	0.24134966	2.5548864	20	7 11.4	20.9
429179 2009 VE <sub>96</sub>	16.5	X	130.49050	45.88941	53.65793	9.97376	0.0987632	0.23018168	2.6368709	20	5 15.4	20.2
429180 2009 VV <sub>100</sub>	17.2	X	301.95998	206.38026	130.54315	3.08060	0.2481493	0.25012193	2.4947950	20	6 2.7	19.8
429181 2009 VC <sub>109</sub>	17.2	X	191.89264	49.86024	1.43022	4.60893	0.0977094	0.23743988	2.5828565	20	5 18.4	21.2
429182 2009 VJ <sub>111</sub>	16.0	X	164.35136	178.62239	265.50147	21.25068	0.0431325	0.23174879	2.6249703	20	5 31.2	19.7
429183 2009 WZ <sub>6</sub>	17.2	X	269.90720	272.84154	64.19199	4.62429	0.1906997	0.23980789	2.5658252	20	4 29.8	20.9
429184 2009 WY <sub>9</sub>	16.9	X	130.20569	190.40991	205.92993	7.27128	0.2886418	0.21750854	2.7383262	20	3 14.4	21.4
429185 2009 WH <sub>15</sub>	16.8	X	39.74693	279.09418	226.68151	9.75001	0.2334705	0.21061567	2.7977502	20	3 25.0	19.5
429186 2009 WR <sub>28</sub>	17.2	X	198.92015	324.15126	56.19334	3.31167	0.0927324	0.22952479	2.6418996	20	4 18.5	21.2
429187 2009 WX <sub>32</sub>	16.5	X	322.93969	217.77853	69.79431	5.50423	0.1520194	0.23696672	2.5862935	20	5 14.5	19.2
429188 2009 WL <sub>33</sub>	17.0	X	122.03427	188.96699	238.32721	3.40180	0.1780229	0.21842574	2.7306550	20	4 2.9	21.0
429189 2009 WN <sub>39</sub>	17.5	X	234.53310	5.35415	11.84402	1.27640	0.1816990	0.23922317	2.5700046	20	5 14.2	21.4
429190 2009 WN <sub>40</sub>	16.9	X	181.49605	322.10010	66.60422	14.26212	0.1673064	0.22706952	2.6609098	20	4 17.1	21.4
429191 2009 WL <sub>53</sub>	16.9	X	126.85359	326.68796	90.88019	6.14369	0.1535758	0.22056488	2.7129709	20	3 28.5	21.0
429192 2009 WM <sub>53</sub>	17.1	X	143.60532	305.57866	94.43914	10.04655	0.4207502	0.22253119	2.6969659	20	4 11.9	22.4
429193 2009 WO <sub>78</sub>	16.5	X	272.27988	240.25920	57.49614	13.92102	0.					

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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>
429201 2009 WQ <sub>126</sub>	17.4	X	54.31162	270.43294	241.01983	2.42634	0.0374935	0.22158891	2.7046062	20	4 5.3	20.8
429202 2009 WP <sub>165</sub>	16.8	X	142.43329	327.00435	70.48628	12.50351	0.0916175	0.21603607	2.7507548	20	3 17.9	21.1
429203 2009 WB <sub>168</sub>	17.3	X	172.37500	351.11913	79.98078	5.03481	0.1335370	0.23387655	2.6090252	20	5 25.6	21.3
429204 2009 WK <sub>168</sub>	16.9	X	124.50262	192.44143	225.27457	8.70223	0.0721257	0.21926643	2.7236708	20	3 9.6	20.9
429205 2009 WG <sub>186</sub>	17.2	X	156.15830	182.08504	300.90725	2.85744	0.0337797	0.24449226	2.5329462	20	7 12.8	20.5
429206 2009 WT <sub>190</sub>	17.4	X	256.30612	294.54207	74.77752	7.10120	0.1123153	0.24143794	2.5542635	20	6 5.3	20.9
429207 2009 WK <sub>194</sub>	17.0	X	216.72693	129.21462	225.11283	16.11872	0.1086829	0.22975437	2.6401395	20	3 30.6	21.3
429208 2009 WD <sub>195</sub>	17.0	X	156.70599	200.70952	185.16554	4.81029	0.1715281	0.22082066	2.7108755	20	3 16.9	21.3
429209 2009 WZ <sub>196</sub>	17.0	X	242.42140	91.15204	267.42793	12.82197	0.1774612	0.23798150	2.5789361	20	4 25.4	21.2
429210 2009 WC <sub>207</sub>	17.8	X	122.96412	52.95179	35.39234	3.20071	0.1546326	0.22430916	2.6826955	20	4 28.7	21.8
429211 2009 WR <sub>218</sub>	16.9	X	169.96920	298.16683	67.41759	7.10071	0.0436636	0.21790576	2.7349973	20	3 1.6	20.9
429212 2009 WC <sub>226</sub>	17.6	X	49.00932	206.12481	61.08141	5.28485	0.1507014	0.25887780	2.4382198	20	9 30.1	20.6
429213 2009 WD <sub>233</sub>	17.3	X	206.15840	211.53665	150.30472	3.66549	0.2051124	0.23130450	2.6283306	20	3 31.5	21.8
429214 2009 WX <sub>247</sub>	17.6	X	127.97245	308.35619	112.89185	3.57773	0.1431537	0.22143358	2.7058708	20	3 31.6	21.7
429215 2009 WW <sub>256</sub>	17.0	X	154.04469	165.11789	242.15489	10.08930	0.1811179	0.22307542	2.6925777	20	4 7.4	21.5
429216 2009 WY <sub>262</sub>	16.3	X	191.92288	98.45063	285.11206	11.46163	0.0678093	0.22036176	2.7146378	20	4 9.2	20.6
429217 2009 WW <sub>263</sub>	16.3	X	81.23952	8.95323	98.09689	13.47190	0.2282516	0.21269957	2.7794465	20	4 21.4	20.3
429218 2009 XK <sub>17</sub>	17.1	X	106.56837	157.91877	284.17478	3.96756	0.2760674	0.21323732	2.7747716	20	4 16.4	21.4
429219 2009 XU <sub>18</sub>	16.6	X	197.64222	244.40977	117.70461	7.74515	0.1338675	0.21588457	2.7520415	20	3 28.6	21.1
429220 2009 XZ <sub>22</sub>	16.8	X	201.89997	274.68161	102.73421	6.35154	0.1379443	0.22343595	2.6896804	20	4 19.4	21.1
429221 2009 XG <sub>24</sub>	16.6	X	138.83348	3.18682	93.48892	16.96758	0.2100331	0.22700492	2.6614146	20	6 1.0	21.0
429222 2009 YQ <sub>11</sub>	16.7	X	32.55160	194.27500	343.16098	3.61055	0.1418129	0.21280443	2.7785333	20	4 17.0	19.8
429223 2009 YS <sub>13</sub>	17.2	X	183.50627	343.38069	77.53178	4.74040	0.1364758	0.22741333	2.6582272	20	5 23.6	21.3
429224 2009 YJ <sub>16</sub>	16.8	X	32.49055	324.32328	123.72757	4.26263	0.2199470	0.19077436	2.9885191	20	—	—
429225 2009 YC <sub>24</sub>	16.8	X	128.85423	22.96534	70.41726	3.32974	0.1888487	0.22161354	2.7044058	20	5 14.9	21.0
429226 2009 YL <sub>25</sub>	16.9	X	180.52174	48.56255	315.44508	6.58946	0.2380304	0.21461951	2.7628454	20	3 11.9	21.9
429227 2010 AE <sub>7</sub>	16.2	X	292.67918	27.85969	293.97149	13.40878	0.1135475	0.22695862	2.6617766	20	5 17.5	19.9
429228 2010 AB <sub>20</sub>	16.9	X	44.89104	52.14088	87.37930	5.01655	0.0452661	0.20931218	2.8093535	20	3 12.9	20.5
429229 2010 AA <sub>37</sub>	16.3	X	331.09588	24.86268	113.73882	13.50497	0.2415451	0.18329219	3.0693052	20	—	—
429230 2010 AK <sub>37</sub>	16.8	X	52.57558	61.29936	116.31670	7.62998	0.0158145	0.21591794	2.7517580	20	5 9.6	20.6
429231 2010 AZ <sub>40</sub>	16.5	X	94.52537	28.52963	125.86183	11.26824	0.0893650	0.21907975	2.7252179	20	6 13.7	20.4
429232 2010 AJ <sub>41</sub>	16.7	X	165.38067	288.68645	122.57836	9.65480	0.2922250	0.22358052	2.6885209	20	5 2.6	21.7
429233 2010 AB <sub>42</sub>	16.9	X	62.01413	223.21868	306.10775	6.24215	0.1534418	0.21511462	2.7586045	20	5 27.7	20.4
429234 2010 AK <sub>45</sub>	16.8	X	114.15102	359.40750	89.36995	5.43120	0.0408028	0.21545562	2.7556930	20	4 7.9	20.6
429235 2010 AK <sub>51</sub>	16.6	X	359.58798	258.59118	292.69955	16.28287	0.0752821	0.20349888	2.8626046	20	3 3.4	20.5
429236 2010 AT <sub>52</sub>	17.3	X	131.49158	286.16195	151.81550	4.00562	0.1706389	0.21746568	2.7386859	20	4 27.8	21.6
429237 2010 AB <sub>60</sub>	16.8	X	104.58270	31.33633	70.45368	8.82807	0.1861868	0.21518704	2.7579855	20	5 2.1	20.8
429238 2010 AN <sub>70</sub>	16.9	X	148.87290	30.05924	85.82411	11.08820	0.1355039	0.22833722	2.6510520	20	6 28.2	21.1
429239 2010 AR <sub>75</sub>	16.6	X	160.06085	268.30161	139.37306	13.76086	0.2084010	0.22055784	2.7130287	20	4 22.6	21.4
429240 2010 AL <sub>76</sub>	16.3	X	95.99498	48.93473	109.82014	10.48361	0.0872521	0.22152747	2.7051062	20	6 20.4	20.0
429241 2010 AP <sub>77</sub>	16.5	X	70.91334	155.86773	335.23679	9.17342	0.1673726	0.21064553	2.7974857	20	4 17.9	20.2
429242 2010 AC <sub>86</sub>	15.9	X	242.07047	241.75740	29.65465	15.83530	0.0358108	0.18316857	3.0706860	20	2 4.5	20.6
429243 2010 AF <sub>86</sub>	16.3	X	327.42301	208.04153	357.12569	7.78518	0.0951568	0.18807297	3.0170682	20	2 14.6	20.2
429244 2010 AF <sub>89</sub>	15.6	X	353.16742	350.89092	167.89131	23.09065	0.0837347	0.18438248	3.0571936	20	1 22.1	19.9
429245 2010 AQ <sub>105</sub>	16.1	X	24.87582	359.76248	81.38861	10.38218	0.0850246	0.17245941	3.1965251	20	—	—
429246 2010 AW <sub>105</sub>	16.0	X	324.84751	25.62958	183.55639	13.64507	0.0611326	0.18761331	3.0219941	20	2 15.7	20.2
429247 2010 AR <sub>107</sub>	16.2	X	37.33305	303.53908	118.43647	11.28941	0.0517919	0.16914816	3.2381071	20	—	—
429248 2010 AW <sub>125</sub>	15.7	X	127.78564	226.36513	146.67801	16.12347	0.1091983	0.17855542	3.1233503	20	1 30.8	20.4
429249 2010 BR <sub>7</sub>	16.0	X	298.59831	58.98630	156.09750	21.59186	0.0667157	0.18064632	3.0992026	20	1 22.7	20.6
429250 2010 BP <sub>15</sub>	16.2	X	244.90038	279.91753	3.92643	16.65771	0.2810129	0.17765610	3.1338820	20	2 5.6	21.8
429251 2010 BJ <sub>25</sub>	16.3	X	276.04092	63.12781	179.72370	18.06158	0.0987103	0.18045144	3.1014335	20	1 24.1	21.1
429252 2010 BU <sub>36</sub>	16.6	X	321.52230	66.36351	109.74185	5.80179	0.0990346	0.17762632	3.1342322	20	1 1.3	20.9
429253 2010 BF <sub>61</sub>	15.9	X	54.64252	59.90662	23.19005	18.35183	0.0800064	0.17854872	3.1234284	20	1 27.6	20.3
429254 2010 BU <sub>63</sub>	15.9	X	226.30787	136.98284	166.26494	27.98088	0.2512678	0.17650077	3.1475428	20	2 8.1	21.6
429255 2010 BY <sub>68</sub>	15.8	X	236.91633	270.53389	346.25215	14.16817	0.0755377	0.17250233	3.1959948	20	1 8.1	20.8
429256 2010 BW <sub>71</sub>	16.2	X	269.29388	89.99863	142.93744	18.10362	0.0917833	0.17503650	3.1650723	20	1 9.3	21.1
429257 2010 BM <sub>73</sub>	15.6	X	85.11542	275.81679	122.69663	22.25815	0.0628373	0.17198773	3.2023668	20	1 6.7	20.1
429258 2010 BX <sub>73</sub>	15.8	X	93.93594	44.91304	335.60178	9.41931	0.0378854	0.16891088	3.2411388	20	—	—
429259 2010 BA <sub>78</sub>	16.3	X	252.97298	256.20897	356.08919	11.98834	0.1710790	0.17323063	3.1870308	20	1 11.3	21.6
429260 2010 BB <sub>79</sub>	16.2	X	232.27750	296.91152	307.75483	7.98774	0.0506827	0.16809971	3.2515573	20	—	—
429261 2010 BE <sub>81</sub>	15.6	X	306.14179	175.43179	1.54163	15.90532	0.0336861	0.17105608	3.2139840	20	—	—
429262 2010 CZ <sub>1</sub>	16.4	X	80.64594	166.61741	314.07160	8.81442	0.1625598	0.21007002	2.8025928	20	4 16.9	20.3
429263 2010 CJ <sub>12</sub>	17.1	X	80.65833	213.33725	279.68977	6.75720	0.1666636	0.21101840	2.7941894	20	5 6.6	20.9
429264 2010 CO <sub>14</sub>	16.0	X	264.05361	100.79771	148.85050	25.83141	0.1957200	0.17304414	3.1893202	20	1 13.9	21.3
429265 2010 CV <sub>15</sub>	15.8	X	9.42368	263.66205	102.93618	22.93334	0.2675030	0.17653266	3.1471638	20	—	—
429266 2010 CQ <sub>28</sub>	17.1	X	14.60857	326.00646	131.73217	4.68461	0.2253493	0.18380989	3.0635394	20	—	—
429267 2010 CB <sub>31</sub>	17.4	X	352.49970	16.99397	99.65224	1.28547	0.2677175	0.18217542	3.0818360	20	—	—
429268 2010 CL <sub>40</sub>	16.1	X	268.44511	67.57300	156.56123	15.38719	0.0196561	0.18382937	3.0633230	20	1 4.5	20.7
429269 2010 CB <sub>41</sub>	15.8	X	338.12480	2.94027	165.78065	16.85554	0.0584623	0.18379065	3.0637532	20	1 16.6	20.2
429270 2010 CZ <sub>50</sub>	16.5	X	315.18567	159.27411	70.83047	6.52080	0.1949704	0.18307597	3.0717213	20	2 15.8	20.6
429271 2010 CU <sub>63</sub>	16.7	X	335.04308	39.77993	96.86502	3.13667	0.1469488	0.17978197	3.1091282	20	—	—
429272 2010 CA <sub>67</sub>	16.6	X	157.85174	106.58161	306.91118	3.76798	0.0553106	0.20963135	2.8065012	20	4 12.6	20.6
429273 2010 CV <sub>67</sub>	16.0	X	287.51233	74.07874	149.08912	11.18950	0.0623081	0.18908652	3.0062770	20	1 18.8	20.4
429274 2010 CG												



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>
429281 2010 CQ <sub>132</sub>	16.2	X	298.67688	80.70892	129.30064	12.48718	0.2504064	0.17476539	3.1683448	20	—	—
429282 2010 CR <sub>139</sub>	16.0	X	274.73827	2.36136	343.22113	17.40728	0.0720644	0.22217775	2.6998254	20	5 30.3	20.1
429283 2010 CT <sub>142</sub>	16.3	X	81.97863	278.18328	145.45366	10.96322	0.0878815	0.19280304	2.9675187	20	1 31.7	20.3
429284 2010 CR <sub>143</sub>	16.6	X	154.84814	281.02937	131.42986	9.33096	0.1833638	0.21630225	2.7484976	20	4 21.7	21.2
429285 2010 CX <sub>144</sub>	17.0	X	141.99682	300.13204	150.83715	9.89940	0.2063764	0.21962255	2.7207257	20	5 27.3	21.6
429286 2010 CZ <sub>144</sub>	15.9	X	318.63702	176.36189	332.44342	16.59014	0.1593234	0.17797650	3.1301197	20	—	—
429287 2010 CR <sub>145</sub>	16.5	X	58.23817	217.23340	308.69216	8.48557	0.1404735	0.21370085	2.7707577	20	5 13.5	20.0
429288 2010 CD <sub>146</sub>	16.7	X	152.66260	351.99910	78.04203	4.10180	0.0863322	0.21503698	2.7592684	20	5 2.7	20.7
429289 2010 CV <sub>147</sub>	17.3	X	326.15433	212.71202	2.93695	0.51376	0.2221396	0.19188125	2.9770150	20	2 5.1	20.9
429290 2010 CZ <sub>150</sub>	15.9	X	109.58557	273.24258	127.54374	10.62327	0.0356209	0.18979877	2.9987513	20	2 1.6	19.9
429291 2010 CH <sub>152</sub>	16.1	X	265.80197	69.73973	154.52001	17.10222	0.1874584	0.17765793	3.1338605	20	—	—
429292 2010 CZ <sub>155</sub>	15.9	X	168.78039	344.12636	347.23017	10.95163	0.0721269	0.18591117	3.0404117	20	1 23.9	20.5
429293 2010 CC <sub>161</sub>	15.7	X	342.63986	294.46302	154.73674	17.57949	0.1231923	0.17103302	3.2142729	20	—	—
429294 2010 CU <sub>164</sub>	16.2	X	192.86796	331.20551	328.19491	8.81914	0.1210023	0.18382629	3.0633572	20	1 11.4	21.2
429295 2010 CQ <sub>180</sub>	15.7	X	318.81820	33.92641	116.41287	17.70916	0.2388640	0.18108569	3.0941875	20	—	—
429296 2010 CO <sub>183</sub>	16.1	X	335.35189	116.28524	25.65662	10.45429	0.0800755	0.17787995	3.1312522	20	—	—
429297 2010 CZ <sub>218</sub>	16.5	X	238.97973	228.34522	22.69438	6.06312	0.0942762	0.16845140	3.2470300	20	—	—
429298 2010 CB <sub>220</sub>	16.2	X	336.70353	160.77811	24.23887	28.14304	0.0637937	0.17939881	3.1135536	20	2 21.5	20.9
429299 2010 CV <sub>229</sub>	15.8	X	126.23389	356.31463	33.75760	27.61548	0.0587875	0.17623352	3.1507241	20	2 29.4	20.9
429300 2010 DA <sub>1</sub>	16.3	X	286.93716	252.32943	347.66973	14.68477	0.1360414	0.18730629	3.0252955	20	2 2.9	20.8
429301 2010 DC <sub>14</sub>	16.2	X	276.47264	35.56004	216.64879	12.82362	0.1351898	0.17670610	3.1451041	20	1 30.3	21.2
429302 2010 DU <sub>16</sub>	16.4	X	298.22292	95.81370	134.76033	7.04718	0.1195603	0.17831746	3.1261284	20	2 3.8	20.7
429303 2010 DG <sub>17</sub>	15.8	X	352.40508	98.91331	51.91070	26.04970	0.1461432	0.17596595	3.1539173	20	1 8.3	20.1
429304 2010 DA <sub>19</sub>	15.9	X	319.07983	101.30149	127.90776	22.52540	0.1026243	0.18405184	3.0608540	20	3 5.4	20.2
429305 2010 DH <sub>21</sub>	16.0	X	278.53931	147.46456	85.76770	16.14977	0.1907280	0.17318818	3.1875516	20	1 8.8	21.0
429306 2010 DM <sub>38</sub>	16.8	X	20.38018	86.23695	127.77625	7.56054	0.0605598	0.21381816	2.7697442	20	5 16.0	20.3
429307 2010 DX <sub>45</sub>	16.4	X	346.42844	285.51318	194.75993	4.54558	0.0970484	0.17722828	3.1389232	20	—	—
429308 2010 DY <sub>45</sub>	16.5	X	324.92984	269.79151	294.68415	3.00636	0.0459480	0.19107509	2.9853826	20	2 13.3	20.4
429309 2010 DM <sub>77</sub>	16.0	X	259.19867	146.11507	84.55408	13.51385	0.0954391	0.17570180	3.1570775	20	—	—
429310 2010 DW <sub>91</sub>	16.2	X	129.59863	340.84854	113.07897	6.12569	0.0658466	0.21703415	2.7423149	20	5 6.3	20.1
429311 2010 EU <sub>20</sub>	16.7	X	339.48928	193.12942	332.83485	11.78481	0.1053598	0.18633190	3.0358332	20	1 12.9	20.7
429312 2010 EN <sub>30</sub>	15.3	X	258.74329	71.68508	163.24168	26.26281	0.2411165	0.17420648	3.1751178	20	—	—
429313 2010 EZ <sub>32</sub>	16.7	X	358.19084	20.62709	171.20919	5.85572	0.0085383	0.19826209	2.9127928	20	3 15.0	20.6
429314 2010 ED <sub>40</sub>	16.4	X	117.50697	297.53376	176.28352	23.63282	0.2042935	0.21390314	2.7690106	20	6 2.1	21.2
429315 2010 EP <sub>69</sub>	15.9	X	258.97988	283.56829	304.81591	8.45543	0.1731203	0.17600916	3.1534010	20	—	—
429316 2010 EU <sub>70</sub>	15.9	X	293.81475	209.07736	7.71576	15.13009	0.0559282	0.18102712	3.0948549	20	1 26.6	20.5
429317 2010 EE <sub>71</sub>	16.7	X	54.37646	288.14929	162.58921	6.19302	0.1757724	0.19021541	2.9943709	20	2 5.1	20.1
429318 2010 EO <sub>72</sub>	16.8	X	117.45466	270.15924	162.81810	2.41422	0.0560173	0.19023339	2.9053602	20	3 23.8	20.7
429319 2010 EP <sub>72</sub>	16.7	X	293.52242	79.25729	169.52975	9.42120	0.0287803	0.19425102	2.9527534	20	3 1.4	20.9
429320 2010 EA <sub>81</sub>	16.5	X	59.39677	278.57752	151.60864	3.08092	0.1122089	0.18440316	3.0569650	20	1 12.7	20.2
429321 2010 EL <sub>84</sub>	16.7	X	313.34325	108.14509	96.31210	2.15794	0.1820888	0.18432090	3.0578745	20	1 12.3	20.7
429322 2010 EF <sub>86</sub>	15.9	X	344.73264	298.56982	205.44296	15.44929	0.1741412	0.17920437	3.1158053	20	—	—
429323 2010 EA <sub>88</sub>	15.4	X	296.31579	35.23841	176.71224	28.41794	0.1322283	0.17942781	3.1132181	20	1 7.5	20.5
429324 2010 EH <sub>89</sub>	16.3	X	335.78579	17.55288	165.04616	9.66980	0.0857526	0.18650061	3.0340021	20	1 26.9	20.4
429325 2010 EB <sub>90</sub>	16.0	X	53.01346	266.06817	150.86933	8.27962	0.0489300	0.17402728	3.1772971	20	—	—
429326 2010 EF <sub>99</sub>	16.2	X	340.33680	145.25529	31.67948	12.83727	0.282952	0.18492769	3.0511818	20	1 14.6	20.1
429327 2010 EY <sub>99</sub>	16.3	X	239.77372	66.48910	206.21258	15.86053	0.1836326	0.17494034	3.1662320	20	1 16.4	21.8
429328 2010 EZ <sub>106</sub>	16.8	X	319.98357	108.75670	70.50468	0.34584	0.1269518	0.18065690	3.0990816	20	—	—
429329 2010 ED <sub>113</sub>	16.2	X	301.77759	191.04040	40.18908	10.76807	0.1458544	0.18537786	3.0462401	20	2 8.7	20.6
429330 2010 EO <sub>125</sub>	15.6	X	296.54211	237.36678	332.76143	15.08106	0.1722824	0.18198418	3.0839947	20	1 3.6	20.3
429331 2010 ET <sub>127</sub>	15.5	X	240.20233	178.41091	128.16463	12.90324	0.0190688	0.19437583	2.9514893	20	3 13.4	19.8
429332 2010 EY <sub>129</sub>	16.1	X	340.54081	338.35968	202.71878	8.28794	0.0445512	0.18396057	3.0618662	20	2 4.2	20.4
429333 2010 EZ <sub>130</sub>	16.6	X	0.25043	286.61910	169.24514	12.41618	0.1493662	0.17374512	3.1807361	20	—	—
429334 2010 EM <sub>132</sub>	16.2	X	238.43780	53.35388	184.51364	24.22699	0.0964322	0.17160935	3.2070723	20	—	—
429335 2010 EQ <sub>133</sub>	16.2	X	314.64243	153.07157	57.04849	8.42219	0.1818504	0.18291179	3.0735593	20	1 22.7	20.4
429336 2010 EZ <sub>142</sub>	16.9	X	305.11609	58.72161	126.47070	2.46194	0.1022510	0.17860697	3.1227492	20	—	—
429337 2010 EM <sub>143</sub>	16.2	X	231.90504	282.80197	10.03696	7.73411	0.1431938	0.18194532	3.0844339	20	2 8.8	21.2
429338 2010 FO <sub>12</sub>	16.1	X	44.10089	84.57240	354.97189	9.60850	0.0759015	0.17860582	3.1227626	20	1 1.9	20.3
429339 2010 FP <sub>12</sub>	16.5	X	287.58843	239.31641	338.05419	2.87431	0.1068733	0.18049909	3.1008877	20	1 8.7	21.0
429340 2010 FW <sub>15</sub>	16.0	X	35.77857	71.48127	17.77611	12.85779	0.0288182	0.17526520	3.1623183	20	1 1.2	20.6
429341 2010 FN <sub>18</sub>	16.9	X	5.63216	110.98014	134.52974	7.54086	0.0687971	0.21250131	2.7811749	20	6 4.6	20.4
429342 2010 FN <sub>20</sub>	17.1	X	33.21525	63.00059	83.48566	2.77986	0.1031197	0.19477826	2.9474226	20	3 9.1	20.6
429343 2010 FM <sub>25</sub>	16.5	X	232.54444	123.37611	192.58920	4.94021	0.1140371	0.19459239	2.9492991	20	3 4.2	21.0
429344 2010 FA <sub>26</sub>	16.0	X	346.34710	342.64535	170.15944	20.03535	0.1922778	0.18401493	3.0612632	20	—	—
429345 2010 FX <sub>28</sub>	16.2	X	307.67634	183.76625	38.22563	7.87821	0.2147484	0.18247510	3.0784609	20	1 24.3	20.6
429346 2010 FO <sub>54</sub>	16.4	X	301.63483	150.58951	51.03273	5.71832	0.1266328	0.17784554	3.1316561	20	1 3.9	20.8
429347 2010 FR <sub>55</sub>	15.8	X	285.51480	182.84017	27.60529	10.72121	0.1533349	0.17638477	3.1489227	20	—	—
429348 2010 FN <sub>83</sub>	15.8	X	293.16503	214.34622	39.25074	18.27223	0.1014562	0.18576536	3.0420025	20	3 8.1	20.4
429349 2010 FY <sub>83</sub>	16.1	X	271.72901	114.99589	136.28221	12.21857	0.1162870	0.18462650	3.0544992	20	1 29.0	20.7
429350 2010 FS <sub>89</sub>	16.1	X	216.55176	231.99412	37.68621	11.57116	0.0975705	0.17264791	3.1941980	20	—	—
429351 2010 FS <sub>95</sub>	16.3	X	309.57143	5.53577	198.71798	13.74495	0.1398016	0.17998441	3.1067963	20	1 11.6	20.9
429352 2010 FT <sub>96</sub>	16.5	X	24.49141	289.21549	186.95276	9.66061	0.0649162	0.17993096	3.1074117	20	1 15.7	20.7
429353 2010 GJ <sub>24</sub>	17.0	X	6.98047	279.89025	2.14309	6.53945	0.2850978	0.21448694	2.7639837	20	8 20.3	19.2
429354 2010 GE <sub>28</sub>	15.9	X	331.66133	129.42790	69.60162							

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>
429361 2010 GF <sub>121</sub>	16.4	X	310.30262	163.21159	34.00941	10.51744	0.1485748	0.17854712	3.1234470	20	1 6.5	20.9
429362 2010 GQ <sub>122</sub>	15.8	X	248.53002	241.30813	37.86613	14.99388	0.0588310	0.18059503	3.0997894	20	2 20.1	20.6
429363 2010 GZ <sub>138</sub>	16.7	X	309.96820	33.63850	187.09849	4.84611	0.0794702	0.18512235	3.0490425	20	2 9.8	21.0
429364 2010 GC <sub>142</sub>	16.9	X	359.93653	194.56959	356.77332	3.65931	0.0541517	0.19494988	2.9456924	20	3 15.0	20.6
429365 2010 GW <sub>160</sub>	16.3	X	247.77606	206.86665	79.60356	4.66541	0.1822923	0.17948491	3.1125578	20	2 12.2	21.3
429366 2010 GH <sub>173</sub>	15.9	X	0.89719	71.12438	43.73145	11.23101	0.0566338	0.17540711	3.1606125	20	—	—
429367 2010 HD <sub>13</sub>	16.3	X	156.47964	5.92843	70.56040	12.90261	0.1603557	0.22223972	2.6993235	20	5 18.9	20.7
429368 2010 HC <sub>59</sub>	16.7	X	79.72036	163.30107	118.90055	8.84914	0.1638639	0.21042786	2.7994146	20	4 17.9	20.6
429369 2010 JO <sub>1</sub>	16.6	X	291.07030	99.79677	306.37734	14.39215	0.2426537	0.17377390	3.1803850	20	—	—
429370 2010 JM <sub>16</sub>	16.7	X	127.37420	275.14309	163.73892	4.71475	0.0495572	0.21011198	2.8022197	20	4 11.5	20.6
429371 2010 JH <sub>75</sub>	16.2	X	264.00246	199.92477	82.08680	16.52437	0.1742073	0.18194549	3.0844319	20	2 27.3	21.3
429372 2010 JY <sub>87</sub>	15.9	X	283.97574	164.20907	105.77327	14.80848	0.2108928	0.18354824	3.0664500	20	2 26.3	20.6
429373 2010 JP <sub>114</sub>	16.0	X	265.51613	237.71138	62.58910	17.33810	0.2447802	0.18415044	3.0597613	20	3 16.9	21.2
429374 2010 JT <sub>148</sub>	15.7	X	2.49920	54.48789	210.70940	15.20957	0.1662379	0.20962895	2.8065226	20	6 26.8	18.9
429375 2010 JC <sub>155</sub>	16.6	X	298.15904	15.35150	223.49604	3.98292	0.1277155	0.18172716	3.0869019	20	2 10.5	21.1
429376 2010 KD <sub>128</sub>	15.5	X	259.29502	150.30680	110.71882	28.21878	0.1064725	0.17844753	3.1246090	20	1 30.0	20.3
429377 2010 LP <sub>24</sub>	15.8	X	194.42151	260.11931	46.95138	10.74031	0.0571446	0.18295344	3.0730927	20	1 21.5	20.6
429378 2010 LZ <sub>31</sub>	17.8	X	342.51931	76.71453	279.82637	5.40955	0.1539439	0.30030679	2.2084756	20	10 23.6	19.6
429379 2010 LL <sub>64</sub>	16.5	X	336.91501	68.68168	95.29251	14.60719	0.2502533	0.17420462	3.1751404	20	—	—
429380 2010 MC <sub>5</sub>	17.6	X	282.70189	107.55295	134.24153	23.47397	0.0711095	0.37263690	1.9125471	20	1 6.4	20.0
429381 2010 NZ <sub>65</sub>	15.6	X	325.64099	124.09868	96.68214	10.53226	0.0406012	0.18025111	3.1037311	20	3 13.0	20.0
429382 2010 NW <sub>117</sub>	18.2	X	228.27846	148.53711	252.72904	3.40906	0.5329922	0.27304570	2.3531294	20	5 18.5	23.1
429383 2010 OV <sub>62</sub>	15.8	X	300.67068	186.14496	357.40775	21.29786	0.1318658	0.17128056	3.2111752	20	—	—
429384 2010 ON <sub>70</sub>	16.6	X	305.74508	240.19714	350.29946	8.69482	0.0857140	0.18332982	3.0688852	20	2 18.8	20.9
429385 2010 OM <sub>79</sub>	16.0	X	244.43612	346.84832	302.08263	16.56934	0.1258645	0.17967503	3.1103617	20	2 11.1	20.9
429386 2010 ON <sub>86</sub>	16.1	X	276.72189	238.25522	353.42733	14.68715	0.0657888	0.17508817	3.1644496	20	1 23.4	20.9
429387 2010 OH <sub>116</sub>	16.7	X	226.61014	134.98036	252.06383	23.01977	0.2380545	0.26796115	2.3828031	20	5 14.6	20.7
429388 2010 OD <sub>123</sub>	16.7	X	310.72821	155.02325	61.20387	1.84239	0.1094047	0.18047723	3.1011380	20	2 3.7	20.8
429389 2010 PR <sub>10</sub>	21.6	X	107.39042	65.29537	324.46802	9.16239	0.1759544	0.75155540	1.1981064	20	—	—
429390 2010 PF <sub>70</sub>	17.9	X	263.29247	297.91270	98.96048	5.98613	0.2473067	0.27844385	2.3226171	20	7 3.7	20.8
429391 2010 PW <sub>77</sub>	17.5	X	235.48995	290.95911	121.42607	3.41643	0.1419467	0.28306373	2.2972763	20	7 6.3	20.6
429392 2010 PU <sub>78</sub>	18.1	X	300.13184	256.37773	107.43295	3.41578	0.2449922	0.28925074	2.2643996	20	7 13.8	19.8
429393 2010 RT <sub>12</sub>	17.1	X	238.77798	264.01703	170.61216	22.30023	0.2655638	0.28496987	2.2870207	20	7 24.0	20.9
429394 2010 RJ <sub>47</sub>	18.8	X	278.24353	175.66238	224.70898	1.61106	0.1956388	0.28837379	2.2689880	20	8 8.9	21.3
429395 2010 RK <sub>49</sub>	17.6	X	283.21380	60.15268	337.27286	6.05334	0.1846949	0.29117793	2.2543971	20	8 17.3	19.8
429396 2010 RL <sub>58</sub>	18.3	X	353.84454	23.17509	333.17321	6.76203	0.1515689	0.30343524	2.1932697	20	11 15.9	20.4
429397 2010 RB <sub>78</sub>	17.7	X	309.54370	226.70587	153.65547	4.74765	0.2007461	0.29372101	2.2413656	20	9 14.7	19.0
429398 2010 RE <sub>78</sub>	17.8	X	266.22395	352.59715	36.07232	4.40068	0.1635544	0.28284216	2.2984759	20	7 10.1	20.5
429399 2010 RK <sub>103</sub>	18.5	X	320.05369	38.17964	355.97847	5.97321	0.1304621	0.29942220	2.2128232	20	11 4.1	20.3
429400 2010 RC <sub>128</sub>	17.7	X	258.81754	119.96403	280.21901	4.17398	0.1669126	0.28383932	2.2930895	20	7 15.0	20.5
429401 2010 RC <sub>166</sub>	18.1	X	330.66285	60.89214	323.32081	1.93020	0.1637656	0.30023739	2.2088160	20	11 15.5	19.7
429402 2010 SZ <sub>38</sub>	17.6	X	328.38119	7.98972	336.40018	6.46636	0.1705895	0.29066300	2.2570588	20	8 30.3	18.8
429403 2010 TC <sub>2</sub>	17.8	X	321.47164	306.59123	60.73402	6.13699	0.1593182	0.29316622	2.2441924	20	9 28.0	19.4
429404 2010 TJ <sub>18</sub>	18.3	X	284.72560	143.45018	263.94783	3.81209	0.1030232	0.29509030	2.2344266	20	9 16.2	20.6
429405 2010 TE <sub>48</sub>	17.6	X	247.07775	210.03671	176.23879	7.03008	0.2907492	0.27442002	2.3452664	20	5 29.2	21.5
429406 2010 TK <sub>95</sub>	18.1	X	153.28467	87.55598	17.16678	20.82098	0.2866768	0.26478107	2.4018438	20	6 23.5	22.8
429407 2010 TQ <sub>105</sub>	18.3	X	325.50439	46.98042	332.57887	2.39858	0.1631772	0.29711948	2.2242416	20	10 24.9	19.8
429408 2010 TB <sub>116</sub>	18.0	X	359.73411	37.96884	298.54761	3.56421	0.2052472	0.29686404	2.2255174	20	11 4.4	19.9
429409 2010 TA <sub>138</sub>	17.4	X	237.95232	159.81710	231.72368	6.69844	0.1045468	0.27352419	2.3503844	20	6 18.3	20.6
429410 2010 TZ <sub>138</sub>	14.3	X	234.60550	80.62474	19.50366	18.01752	0.0819771	0.08278644	5.2139068	20	9 3.8	21.5
429411 2010 TW <sub>140</sub>	17.8	X	253.17422	48.31799	3.24481	7.81724	0.1521854	0.28124188	2.3071866	20	7 29.1	20.8
429412 2010 TP <sub>146</sub>	17.9	X	207.12805	116.53185	303.86313	2.31318	0.1803860	0.26938655	2.3743903	20	6 13.0	21.5
429413 2010 TS <sub>146</sub>	18.1	X	233.15032	303.07417	301.19853	2.56049	0.0770089	0.30081976	2.2059643	20	11 23.6	20.6
429414 2010 TO <sub>176</sub>	17.8	X	27.80386	49.77494	304.00240	4.64528	0.1473465	0.30826086	2.1703201	20	—	—
429415 2010 TY <sub>176</sub>	17.3	X	273.94944	171.54383	222.52062	23.53117	0.1835634	0.28117675	2.3075429	20	7 17.1	20.7
429416 2010 TU <sub>181</sub>	17.8	X	318.76953	178.23324	207.27177	2.05036	0.1817585	0.29557207	2.2319980	20	10 19.7	18.9
429417 2010 UU <sub>5</sub>	18.0	X	243.85694	101.82702	342.21288	6.44914	0.1301645	0.28672928	2.2776554	20	9 2.7	20.7
429418 2010 UT <sub>10</sub>	18.3	X	292.94182	186.80993	211.72368	7.00933	0.0918325	0.28936477	2.2638047	20	9 17.7	20.7
429419 2010 UD <sub>13</sub>	18.1	X	259.09702	27.16531	353.25749	0.99663	0.1968796	0.27644408	2.3338047	20	6 12.5	21.1
429420 2010 UW <sub>22</sub>	17.9	X	254.31671	320.68718	84.20717	1.03588	0.2584535	0.27837274	2.3230127	20	7 2.8	21.0
429421 2010 UD <sub>41</sub>	17.8	X	261.00581	41.53310	352.32923	4.57368	0.2337102	0.27714817	2.3298504	20	6 29.0	21.1
429422 2010 UM <sub>51</sub>	18.0	X	229.89753	26.68124	27.51356	3.39174	0.1961534	0.27196889	2.3593366	20	6 26.4	21.6
429423 2010 US <sub>52</sub>	14.2	X	243.41294	203.28642	262.75617	8.23447	0.0619368	0.08571229	5.0945675	20	9 10.7	21.2
429424 2010 UZ <sub>60</sub>	18.3	X	270.76540	81.17797	336.27135	1.58859	0.1382264	0.28714113	2.2754770	20	9 2.6	20.6
429425 2010 UX <sub>62</sub>	17.5	X	1.65762	119.58858	260.56463	3.69646	0.1039684	0.30354682	2.1927322	20	12 29.1	19.6
429426 2010 UT <sub>65</sub>	17.7	X	302.14428	231.87802	159.74716	2.41372	0.1716604	0.29152915	2.2525861	20	9 18.6	19.1
429427 2010 UO <sub>70</sub>	17.7	X	258.01665	287.89907	117.60024	1.73024	0.2585750	0.27897175	2.3196862	20	7 7.8	20.9
429428 2010 UX <sub>74</sub>	17.7	X	247.68407	66.30496	352.39421	7.75067	0.1388360	0.28030826	2.3123068	20	8 2.7	20.7
429429 2010 UV <sub>77</sub>	18.1	X	106.03164	329.53923	303.90213	6.20764	0.1580460	0.30710736	2.1757512	20	12 15.7	21.5
429430 2010 UT <sub>93</sub>	18.2	X	200.74529	161.78656	316.50822	4.97310	0.1751650	0.27811874	2.3244268	20	8 22.8	21.6
429431 2010 UX <sub>101</sub>	17.9	X	292.52723	130.83008	234.01884	4.47293	0.1837712	0.28166494	2.3048758	20	7 10.8	20.1
429432 2010 VZ <sub>14</sub>	17.2	X	246.62004	69.36678	349.16769	6.38786	0.1081390	0.26597352	2.3946596	20	8 3.9	20.3
429433 2010 VF <sub>16</sub>	18.2	X	190.79606	128.96077	270.78527	5.70276	0.1780765	0.26095132				

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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>
429441 2010 VW <sub>71</sub>	17.4	X	246.93287	147.10669	292.72206	6.27006	0.1828014	0.28377874	2.2934159	20	8 20.8	20.3
429442 2010 VV <sub>79</sub>	13.5	X	272.64093	11.35142	58.16406	10.72765	0.0345493	0.08393225	5.1663460	20	9 14.6	20.4
429443 2010 VP <sub>83</sub>	18.1	X	195.09179	56.82752	53.56559	8.19230	0.2353516	0.27173443	2.3606935	20	8 6.7	22.1
429444 2010 VS <sub>100</sub>	17.8	X	355.17345	304.03517	46.41219	3.27986	0.1920386	0.29477847	2.2360021	20	11 15.8	19.7
429445 2010 VU <sub>111</sub>	17.6	X	306.27732	252.67193	98.36565	3.31141	0.2184157	0.28173703	2.3044826	20	7 10.1	19.2
429446 2010 VU <sub>114</sub>	18.0	X	311.08388	133.37330	267.75792	5.27406	0.1336973	0.29159597	2.2522419	20	10 24.9	19.9
429447 2010 VG <sub>118</sub>	18.0	X	251.18539	39.27019	345.32620	3.57414	0.2353793	0.27279048	2.3545970	20	6 3.9	21.5
429448 2010 VL <sub>124</sub>	18.7	X	248.93758	106.82388	3.81661	2.45060	0.1424232	0.29143518	2.2530702	20	10 16.7	21.3
429449 2010 VA <sub>127</sub>	18.1	X	341.05492	113.28119	243.13797	2.38952	0.1855399	0.28952054	2.2629926	20	10 22.5	19.6
429450 2010 VK <sub>131</sub>	17.7	X	330.66618	253.36323	104.12428	5.38870	0.2130342	0.29180711	2.2511554	20	10 4.9	18.9
429451 2010 VX <sub>159</sub>	18.2	X	251.74309	305.47341	142.06834	3.96226	0.1247648	0.28355373	2.2946290	20	9 20.7	20.7
429452 2010 VG <sub>161</sub>	17.8	X	41.68911	47.12330	257.14882	3.36289	0.0292358	0.29124338	2.2540593	20	10 24.3	20.5
429453 2010 VS <sub>172</sub>	18.4	X	214.84580	46.00499	26.88836	1.50145	0.1614719	0.27023539	2.3694155	20	7 9.0	22.0
429454 2010 VW <sub>172</sub>	18.3	X	192.89477	25.05321	63.45421	2.14274	0.1546582	0.26668854	2.3903774	20	7 7.7	22.0
429455 2010 VP <sub>189</sub>	18.3	X	164.41795	243.78641	241.01314	1.73768	0.1384477	0.26784853	2.3834710	20	7 27.0	22.0
429456 2010 VD <sub>205</sub>	17.5	X	287.20528	53.22549	336.76652	7.66849	0.0889533	0.28671065	2.2777541	20	8 27.8	19.9
429457 2010 VQ <sub>213</sub>	17.9	X	205.65737	158.76226	296.42080	4.87554	0.2006855	0.27548942	2.3391932	20	7 26.4	21.6
429458 2010 VR <sub>215</sub>	18.0	X	27.25867	44.48077	269.48449	6.76035	0.1607751	0.29654526	2.2271120	20	11 8.7	20.5
429459 2010 VK <sub>216</sub>	18.3	X	225.16287	18.03588	64.16187	3.51434	0.1131154	0.27740800	2.3283954	20	8 9.3	21.3
429460 2010 VQ <sub>216</sub>	18.3	X	291.47665	3.13202	59.88127	8.88896	0.0925953	0.29237607	2.2482340	20	10 28.5	20.4
429461 2010 WD <sub>28</sub>	17.4	X	41.07409	228.65353	50.58355	8.21275	0.0998728	0.28187033	2.3037559	20	10 2.6	20.1
429462 2010 WA <sub>31</sub>	18.2	X	145.77916	79.08595	74.92332	2.38861	0.1236534	0.27021042	2.3695615	20	8 17.2	21.7
429463 2010 WV <sub>39</sub>	17.2	X	272.23307	245.92334	119.11050	6.72253	0.3081837	0.27583382	2.3372457	20	5 24.3	20.5
429464 2010 WK <sub>52</sub>	18.5	X	192.16020	92.17512	15.70331	1.49084	0.1330090	0.27134213	2.3629683	20	8 3.5	21.9
429465 2010 WY <sub>54</sub>	17.9	X	204.77202	95.39544	318.52530	2.66457	0.1467733	0.26352156	2.4094909	20	6 3.5	21.5
429466 2010 WW <sub>64</sub>	18.6	X	193.68093	63.14762	29.49275	2.82227	0.1543207	0.26766682	2.3845496	20	7 14.5	22.2
429467 2010 WQ <sub>69</sub>	18.0	X	265.77395	327.46319	59.59386	3.16289	0.2219121	0.27543940	2.3394764	20	6 26.7	21.1
429468 2010 XK <sub>17</sub>	17.6	X	243.14561	359.51327	98.78704	6.95765	0.0651515	0.27907850	2.3190946	20	10 5.7	20.5
429469 2010 XW <sub>17</sub>	17.5	X	146.06046	257.90479	140.81345	3.52704	0.1896833	0.23876063	2.5733226	20	3 24.4	21.4
429470 2010 XA <sub>49</sub>	17.4	X	240.70124	190.26687	248.02556	6.23298	0.0660287	0.27319660	2.3522629	20	8 25.9	20.5
429471 2010 XE <sub>56</sub>	17.9	X	269.45424	3.10969	36.50529	1.19833	0.2282989	0.27883771	2.3204295	20	7 19.2	20.8
429472 2010 XT <sub>66</sub>	17.5	X	258.88971	334.22840	98.26953	7.20164	0.2106716	0.28139709	2.3063381	20	8 27.0	20.3
429473 2010 XC <sub>67</sub>	17.8	X	177.80806	40.80970	116.33717	7.41419	0.2129060	0.27577322	2.3375881	20	9 22.3	21.6
429474 2010 XB <sub>71</sub>	17.7	X	117.74093	292.29848	349.21361	5.73589	0.1674454	0.30634867	2.1793420	20	—	—
429475 2010 YS <sub>2</sub>	18.1	X	277.55332	71.68304	353.04749	6.51306	0.0946526	0.28014342	2.3132138	20	9 29.9	20.4
429476 2011 AA <sub>1</sub>	17.5	X	99.28248	137.82538	56.37769	1.62050	0.1629089	0.25711597	2.4493453	20	8 22.9	21.0
429477 2011 AD <sub>6</sub>	17.8	X	75.84725	247.67247	19.28733	6.71925	0.1003916	0.27649002	2.3335462	20	10 25.9	21.0
429478 2011 AV <sub>7</sub>	17.9	X	188.97259	138.69846	299.68479	0.67636	0.1585720	0.25802739	2.4435741	20	6 19.9	21.8
429479 2011 AR <sub>15</sub>	17.8	X	282.89040	274.74800	149.86904	4.87716	0.2000222	0.28692369	2.2766264	20	9 26.8	19.8
429480 2011 AR <sub>18</sub>	17.0	X	66.38538	238.77124	330.32856	6.13819	0.1130572	0.25162943	2.4848209	20	7 26.2	20.1
429481 2011 AU <sub>20</sub>	17.7	X	146.22344	11.00852	80.67924	2.34395	0.1358481	0.24673250	2.5175908	20	5 25.6	21.4
429482 2011 AD <sub>21</sub>	17.1	X	42.50898	319.52489	326.83728	6.16767	0.0331635	0.27086339	2.3657518	20	9 25.5	20.1
429483 2011 AA <sub>22</sub>	16.6	X	36.26873	268.36067	276.08037	10.26376	0.1362325	0.23707879	2.5854784	20	4 30.0	19.6
429484 2011 AX <sub>30</sub>	18.1	X	169.79695	204.46155	299.83218	0.78211	0.1437393	0.26527940	2.3988349	20	8 27.2	21.8
429485 2011 AF <sub>31</sub>	17.9	X	189.56663	319.42768	128.02411	1.92329	0.1494937	0.25824443	2.4422048	20	7 2.6	21.6
429486 2011 AO <sub>32</sub>	18.2	X	205.08806	92.28949	351.41619	2.63509	0.2097126	0.26382134	2.4076652	20	7 10.4	22.0
429487 2011 AX <sub>35</sub>	17.5	X	177.44382	210.59688	285.93539	6.37055	0.1680443	0.26425998	2.4050002	20	8 21.6	21.3
429488 2011 AX <sub>40</sub>	17.6	X	214.62196	296.20899	92.08515	5.75758	0.1969447	0.25354830	2.4722682	20	5 10.3	21.7
429489 2011 AD <sub>44</sub>	17.7	X	156.49093	61.82006	94.30026	3.58688	0.1212289	0.26303362	2.4124697	20	8 31.2	21.2
429490 2011 AH <sub>44</sub>	17.8	X	85.67599	88.60809	124.90880	2.26736	0.1364552	0.25673758	2.4517513	20	8 30.1	21.0
429491 2011 AL <sub>44</sub>	17.9	X	173.74937	358.98832	128.97134	1.66984	0.1556414	0.26184822	2.4197452	20	8 9.5	21.4
429492 2011 AZ <sub>52</sub>	18.0	X	203.47602	16.53854	73.16363	4.06354	0.1924591	0.26133401	2.4229183	20	7 17.7	21.9
429493 2011 AF <sub>53</sub>	15.9	X	152.22370	354.88551	327.67125	14.89994	0.1364966	0.20506266	2.8480328	20	—	—
429494 2011 AB <sub>54</sub>	18.3	X	223.55419	318.22952	96.48112	3.90245	0.1649422	0.26252653	2.4155753	20	6 22.9	21.8
429495 2011 AA <sub>56</sub>	17.6	X	142.81844	219.23506	329.42953	6.35291	0.0600258	0.27163267	2.3612830	20	9 25.1	20.9
429496 2011 AT <sub>57</sub>	17.9	X	157.67325	333.45537	169.15749	1.70187	0.1231699	0.26238825	2.4164239	20	8 12.5	21.4
429497 2011 AX <sub>57</sub>	17.7	X	266.93966	82.15826	279.68301	5.93398	0.1433211	0.25939316	2.4349892	20	6 3.9	20.9
429498 2011 AK <sub>58</sub>	17.8	X	189.81946	157.76516	336.40233	2.26097	0.1432407	0.27114346	2.3641224	20	9 3.9	21.3
429499 2011 AG <sub>68</sub>	17.5	X	147.59135	290.80877	134.10408	9.36391	0.1503197	0.23828005	2.5767815	20	4 27.4	21.6
429500 2011 AX <sub>68</sub>	17.8	X	209.93780	201.35589	237.32163	1.25621	0.1445031	0.25929660	2.4355936	20	7 12.0	21.3
429501 2011 AQ <sub>76</sub>	17.6	X	143.36313	111.37994	48.42581	1.84320	0.1246291	0.26185521	2.4197021	20	8 21.6	21.1
429502 2011 BZ <sub>2</sub>	18.1	X	130.51952	168.76557	0.44339	3.58311	0.1446439	0.26187752	2.4195647	20	8 21.7	21.7
429503 2011 BP <sub>3</sub>	17.4	X	96.98241	286.46576	313.00201	4.52039	0.1910040	0.26841745	2.3801019	20	10 18.9	21.1
429504 2011 BN <sub>9</sub>	18.0	X	191.54509	340.14884	79.58066	2.30848	0.1724003	0.25346824	2.4727888	20	5 28.9	22.0
429505 2011 BM <sub>12</sub>	17.0	X	50.72883	324.97308	267.23959	5.06135	0.1548807	0.25282893	2.4769555	20	8 9.3	19.9
429506 2011 BS <sub>13</sub>	17.5	X	211.33542	29.44641	8.74325	4.22548	0.1398001	0.25237255	2.4799407	20	5 20.2	21.4
429507 2011 BH <sub>15</sub>	17.1	X	161.14240	264.79616	228.92785	5.18015	0.1286599	0.25790495	2.4443474	20	8 2.4	20.9
429508 2011 BO <sub>17</sub>	17.5	X	281.57692	245.99651	123.29508	6.43141	0.1375751	0.26301285	2.4125967	20	7 6.9	20.4
429509 2011 BE <sub>18</sub>	17.0	X	125.08642	166.60281	127.87441	8.72895	0.1215329	0.29541267	2.2328007	20	—	—
429510 2011 BR <sub>20</sub>	17.8	X	291.95266	292.98743	116.96032	5.75295	0.0452600	0.27737304	2.3285910	20	10 11.6	20.4
429511 2011 BG <sub>21</sub>	17.8	X	133.83291	195.36751	245.31499	0.95309	0.2305155	0.24274611	2.5450786	20	5 6.2	21.9
429512 2011 BM <sub>25</sub>	15.9	X	99.85027	339.66276	112.42495	22.79889	0.0312804	0.22845122	2.6501699	20	3 29.8	20.0
429513 2011 BO <sub>26</sub>	17.9	X	164.63824	55.06581	76.84873	2.96082	0.1294357	0.26104078	2.4247324	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>
429521 2011 <i>BB</i> <sub>63</sub>	17.0	X	33.94726	57.05975	153.10042	12.28022	0.1282087	0.23431767	2.6057497	20	6 7.8	20.2
429522 2011 <i>BU</i> <sub>63</sub>	16.8	X	67.29335	59.53542	132.09836	12.54082	0.0192554	0.24403599	2.5361025	20	6 17.2	20.3
429523 2011 <i>BV</i> <sub>65</sub>	17.5	X	142.33837	101.99440	60.78352	3.46491	0.1745047	0.25961204	2.4336204	20	8 26.5	21.4
429524 2011 <i>BZ</i> <sub>70</sub>	16.6	X	213.86553	23.54720	311.42618	12.65514	0.1927461	0.22623202	2.6674728	20	3 1.1	21.3
429525 2011 <i>BN</i> <sub>78</sub>	17.4	X	222.65163	119.53713	286.60714	3.25202	0.1762373	0.25827842	2.4419905	20	6 9.6	21.3
429526 2011 <i>BK</i> <sub>80</sub>	17.1	X	58.34472	90.51858	151.89442	5.17658	0.1566547	0.25445752	2.4663754	20	9 6.6	20.3
429527 2011 <i>BL</i> <sub>80</sub>	17.3	X	106.83186	306.09819	294.88677	4.91188	0.1686127	0.26785295	2.3834448	20	10 28.6	21.0
429528 2011 <i>BO</i> <sub>81</sub>	17.0	X	117.56324	169.18635	129.51942	6.67956	0.1652405	0.23613309	2.5923769	20	4 21.4	20.8
429529 2011 <i>BN</i> <sub>87</sub>	17.7	X	123.54365	344.98763	271.27104	7.58226	0.1047569	0.24259471	2.5461374	20	5 19.1	21.4
429530 2011 <i>BG</i> <sub>92</sub>	17.1	X	76.14282	355.60446	268.38988	5.53834	0.1074048	0.26927569	2.3750420	20	10 20.6	20.4
429531 2011 <i>BN</i> <sub>95</sub>	17.5	X	108.49036	173.94526	4.80558	2.42089	0.1230900	0.25594562	2.4568063	20	8 8.3	21.1
429532 2011 <i>BW</i> <sub>95</sub>	16.6	X	271.93869	337.54290	315.44933	14.98382	0.1111034	0.22755170	2.6571495	20	3 10.0	20.7
429533 2011 <i>BM</i> <sub>114</sub>	17.8	X	144.12560	15.12812	160.02672	4.26613	0.1728152	0.26440569	2.4041166	20	9 12.0	21.5
429534 2011 <i>BM</i> <sub>116</sub>	17.4	X	167.50353	13.09401	119.36418	3.00729	0.1025270	0.26173977	2.4204135	20	8 10.2	20.7
429535 2011 <i>BH</i> <sub>132</sub>	18.1	X	127.83286	14.73198	189.96677	1.78476	0.0410860	0.26671990	2.3901901	20	9 29.3	21.1
429536 2011 <i>BS</i> <sub>133</sub>	17.8	X	89.01452	186.28534	101.93420	5.11898	0.1018148	0.28602290	2.2814039	20	12 10.9	20.9
429537 2011 <i>BB</i> <sub>141</sub>	17.7	X	237.70821	35.67367	11.71960	4.29699	0.1124951	0.26193969	2.4191818	20	7 5.5	21.0
429538 2011 <i>CM</i> <sub>1</sub>	17.4	X	58.37323	135.04952	140.87312	7.29860	0.1744965	0.26330705	2.4107993	20	10 28.4	20.8
429539 2011 <i>CS</i> <sub>1</sub>	17.3	X	175.39577	82.56230	79.75053	5.55362	0.1322138	0.26826273	2.3810170	20	9 29.5	20.9
429540 2011 <i>CL</i> <sub>3</sub>	17.4	X	194.30577	171.71998	275.53667	6.66855	0.0769170	0.25745584	2.4471892	20	7 10.4	20.7
429541 2011 <i>CB</i> <sub>4</sub>	18.2	X	119.70696	139.44878	75.77649	3.54116	0.1515343	0.26446036	2.4037852	20	10 10.8	21.8
429542 2011 <i>CF</i> <sub>5</sub>	17.9	X	195.13389	116.48592	346.69601	0.53970	0.1568448	0.26150410	2.4218675	20	7 28.9	21.7
429543 2011 <i>CG</i> <sub>7</sub>	17.3	X	160.53556	170.05920	318.70428	0.53641	0.1390061	0.25805749	2.4433841	20	7 28.3	21.1
429544 2011 <i>CM</i> <sub>9</sub>	17.6	X	132.25805	325.77809	128.72992	4.05830	0.1970452	0.24137332	2.5547194	20	5 20.9	21.7
429545 2011 <i>CL</i> <sub>16</sub>	16.8	X	57.30822	21.56081	141.12534	14.85222	0.2066433	0.23383099	2.6093640	20	5 25.1	20.1
429546 2011 <i>CU</i> <sub>17</sub>	16.5	X	337.70831	187.55245	91.25495	3.74769	0.1340818	0.24204093	2.5500195	20	5 31.2	18.9
429547 2011 <i>CD</i> <sub>18</sub>	16.5	X	131.89501	271.62988	129.05595	11.72062	0.0858523	0.22404637	2.6847928	20	3 4.1	20.3
429548 2011 <i>CF</i> <sub>28</sub>	17.4	X	235.50594	121.19211	287.29938	6.28226	0.1050593	0.26209803	2.4182074	20	7 4.8	20.6
429549 2011 <i>CY</i> <sub>32</sub>	16.4	X	297.92115	340.51762	325.42331	14.91307	0.1403188	0.23977836	2.5660359	20	4 22.9	20.0
429550 2011 <i>CB</i> <sub>34</sub>	17.2	X	88.91198	23.54552	126.01126	10.94270	0.1066916	0.24238012	2.5476399	20	6 3.5	20.7
429551 2011 <i>CR</i> <sub>34</sub>	17.6	X	149.73499	266.83848	314.49389	4.77409	0.1794389	0.27248968	2.3563295	20	11 12.9	21.5
429552 2011 <i>CL</i> <sub>37</sub>	17.4	X	144.79851	58.79890	109.67645	4.06998	0.0702784	0.26263866	2.4148877	20	9 3.1	20.7
429553 2011 <i>CR</i> <sub>39</sub>	17.8	X	241.12648	130.84853	310.09024	2.15013	0.1050395	0.26994180	2.3711332	20	9 1.0	20.6
429554 2011 <i>CM</i> <sub>54</sub>	17.8	X	45.15184	235.57870	325.67155	4.83155	0.0876282	0.23972815	2.5663942	20	6 5.7	20.9
429555 2011 <i>CM</i> <sub>56</sub>	16.3	X	262.15664	159.90571	143.26628	14.11416	0.1642186	0.22829891	2.6513486	20	3 14.9	20.3
429556 2011 <i>CW</i> <sub>72</sub>	16.2	X	12.08281	223.29102	294.99061	12.34682	0.1402883	0.21722421	2.7407152	20	2 9.2	19.3
429557 2011 <i>CE</i> <sub>74</sub>	16.7	X	61.83575	350.53512	165.94558	13.95706	0.1816768	0.23024262	2.6364057	20	5 18.5	20.1
429558 2011 <i>CB</i> <sub>75</sub>	17.2	X	162.46905	12.35041	122.65949	5.81535	0.1415818	0.25865926	2.4395929	20	8 7.9	21.0
429559 2011 <i>CM</i> <sub>76</sub>	17.6	X	192.20562	352.23486	136.56737	5.70523	0.1814470	0.26461186	2.4028676	20	8 28.1	21.4
429560 2011 <i>CS</i> <sub>84</sub>	17.4	X	40.13173	225.08674	310.35386	2.57511	0.1640136	0.22956744	2.6415724	20	4 30.0	20.2
429561 2011 <i>CX</i> <sub>85</sub>	16.9	X	103.49873	310.63935	160.06395	12.65698	0.1098727	0.23353339	2.6115804	20	5 3.0	20.7
429562 2011 <i>CK</i> <sub>86</sub>	17.5	X	42.55539	2.90879	197.46453	6.82265	0.1212401	0.23727527	2.5840509	20	6 6.1	20.5
429563 2011 <i>CO</i> <sub>89</sub>	17.3	X	18.51849	17.87054	295.55245	7.73944	0.1360318	0.26590174	2.3950905	20	10 11.1	20.1
429564 2011 <i>CZ</i> <sub>104</sub>	18.2	X	91.01041	331.19473	280.56856	1.93373	0.1791011	0.26240027	2.4163502	20	10 28.4	21.8
429565 2011 <i>CK</i> <sub>106</sub>	18.2	X	104.13861	141.49792	332.18737	2.83310	0.1247726	0.23421262	2.6065288	20	5 4.9	21.8
429566 2011 <i>DK</i> <sub>8</sub>	17.8	X	75.80213	161.36969	356.12062	3.84463	0.1487561	0.23193864	2.6235377	20	5 31.0	21.1
429567 2011 <i>DY</i> <sub>8</sub>	17.0	X	161.50970	304.42172	150.91060	11.03208	0.1895530	0.24194488	2.5506944	20	6 17.1	21.4
429568 2011 <i>DC</i> <sub>21</sub>	17.7	X	139.13800	337.93557	129.33585	1.84217	0.1212826	0.24423556	2.5347207	20	6 6.6	21.5
429569 2011 <i>DT</i> <sub>26</sub>	18.0	X	91.15593	85.73753	146.39807	6.31809	0.1562162	0.25912340	2.4366789	20	10 3.9	21.6
429570 2011 <i>DZ</i> <sub>37</sub>	17.6	X	117.14875	97.78136	325.17106	5.16278	0.0690367	0.22112993	2.7083473	20	3 8.8	21.4
429571 2011 <i>DL</i> <sub>42</sub>	16.7	X	104.84698	154.00511	357.02183	9.59240	0.1400526	0.23680044	2.5875041	20	6 28.8	20.6
429572 2011 <i>EF</i> <sub>1</sub>	16.7	X	317.06224	133.02869	149.58942	22.97829	0.1056397	0.23862943	2.5742658	20	5 10.9	20.3
429573 2011 <i>EK</i> <sub>1</sub>	17.4	X	68.25231	313.30883	136.60185	7.22642	0.0925388	0.26710832	2.3878723	20	10 14.9	20.7
429574 2011 <i>EP</i> <sub>3</sub>	17.5	X	87.14054	154.89772	355.89381	4.54457	0.1811638	0.23432763	2.6056758	20	6 11.3	21.1
429575 2011 <i>EW</i> <sub>6</sub>	17.8	X	124.85335	272.47042	161.81722	9.03011	0.1699769	0.23273510	2.6175488	20	4 16.8	21.8
429576 2011 <i>EF</i> <sub>7</sub>	17.9	X	144.74764	334.02801	178.53927	2.54201	0.1308412	0.25697817	2.4502208	20	8 11.7	21.5
429577 2011 <i>EP</i> <sub>8</sub>	17.8	X	158.96809	40.99951	106.01116	3.39515	0.1309904	0.25984034	2.4321947	20	8 20.8	21.4
429578 2011 <i>EC</i> <sub>14</sub>	16.0	X	133.30146	64.23124	33.09778	12.20041	0.0412174	0.22745269	2.6579206	20	5 8.1	19.7
429579 2011 <i>EO</i> <sub>16</sub>	17.1	X	281.70039	168.42990	122.68264	4.82928	0.0564309	0.22624968	2.6673340	20	4 5.2	20.7
429580 2011 <i>EC</i> <sub>19</sub>	17.9	X	94.81620	345.60060	160.65419	5.33276	0.2015681	0.23869289	2.5738094	20	6 18.0	21.7
429581 2011 <i>ET</i> <sub>22</sub>	17.5	X	45.87315	182.21181	21.94767	5.16018	0.1726660	0.23488865	2.6015251	20	6 24.9	20.4
429582 2011 <i>EE</i> <sub>23</sub>	17.5	X	85.54693	137.72117	44.01280	6.74536	0.2389007	0.24041170	2.5615273	20	7 31.7	21.4
429583 2011 <i>EL</i> <sub>28</sub>	17.1	X	29.74980	58.74439	141.26430	5.88491	0.0933132	0.22512044	2.6762464	20	5 13.0	20.2
429584 2011 <i>EU</i> <sub>29</sub>	19.8	X	136.78205	251.21526	177.20756	2.57578	0.7000782	0.24941219	2.4995257	20	5 17.8	25.5
429585 2011 <i>EQ</i> <sub>36</sub>	16.8	X	64.40186	146.06129	11.63205	14.29768	0.0492968	0.22700355	2.6614253	20	4 26.0	20.3
429586 2011 <i>ET</i> <sub>38</sub>	16.5	X	167.45754	64.75263	12.02102	22.80495	0.0446397	0.23253573	2.6190448	20	5 16.1	20.6
429587 2011 <i>EP</i> <sub>39</sub>	17.3	X	88.46935	47.40927	126.89629	4.09956	0.1359674	0.23666790	2.5884701	20	7 8.8	20.9
429588 2011 <i>EJ</i> <sub>40</sub>	17.5	X	105.99594	129.70790	24.17463	6.25179	0.1574985	0.23990131	2.5651591	20	7 5.9	21.3
429589 2011 <i>ED</i> <sub>46</sub>	17.1	X	329.45675	173.84541	108.92672	4.92437	0.1919590	0.22821710	2.6519821	20	5 15.2	19.7
429590 2011 <i>EY</i> <sub>53</sub>	17.0	X	339.05230	115.02870	155.42444	9.03154	0.2364853	0.22383168	2.6865093	20	5 12.7	19.5
429591 2011 <i>EB</i> <sub>55</sub>	16.6	X	61.60210	322.82569	162.81269	9.72463	0.1666556	0				

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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>
429601 2011 EJ <sub>77</sub>	16.8	X	147.84309	157.09300	329.09965	11.22315	0.0788436	0.24631832	2.5204122	20	7 12.1	20.5
429602 2011 EF <sub>80</sub>	17.5	X	91.03095	255.65091	231.47935	5.63308	0.1016643	0.23016951	2.6369639	20	5 3.6	20.9
429603 2011 EX <sub>84</sub>	17.1	X	341.50104	76.03207	151.83808	6.04521	0.1189874	0.22197806	2.7014443	20	3 28.9	20.2
429604 2011 FP <sub>3</sub>	16.5	X	124.60228	274.46880	170.42092	21.98908	0.1051561	0.22665635	2.6641425	20	4 24.4	20.6
429605 2011 FQ <sub>3</sub>	16.6	X	310.38745	84.62978	154.48385	8.22722	0.1669850	0.21253018	2.7809230	20	2 17.7	20.3
429606 2011 FE <sub>4</sub>	16.8	X	35.27775	203.08130	14.73784	28.71229	0.1573654	0.23277146	2.6172762	20	6 20.8	20.5
429607 2011 FD <sub>7</sub>	17.4	X	78.23769	25.80008	176.80462	6.85063	0.0878942	0.24284382	2.5443959	20	7 26.2	20.8
429608 2011 FH <sub>7</sub>	16.6	X	335.25399	38.45057	179.30818	8.20162	0.1561071	0.21424211	2.7660891	20	2 26.8	19.9
429609 2011 FH <sub>11</sub>	17.1	X	209.15528	49.80433	354.01780	7.16941	0.1604006	0.23858179	2.5746085	20	5 23.5	21.3
429610 2011 FW <sub>11</sub>	16.7	X	78.90855	143.42149	30.60972	13.55304	0.1942872	0.23276829	2.6173000	20	7 6.1	20.6
429611 2011 FS <sub>13</sub>	17.3	X	67.34863	194.98559	29.47853	6.23551	0.1225151	0.24207634	2.5497709	20	8 20.6	20.7
429612 2011 FG <sub>18</sub>	17.1	X	62.40629	297.97038	275.33048	2.98132	0.2043583	0.23811482	2.5779734	20	8 7.1	20.5
429613 2011 FB <sub>19</sub>	17.3	X	1.46090	206.51514	60.65295	4.26573	0.1771454	0.23249411	2.6193573	20	7 1.8	19.5
429614 2011 FK <sub>19</sub>	16.5	X	329.51875	111.03051	113.21550	4.98644	0.0432050	0.21344007	2.7730141	20	3 16.0	20.1
429615 2011 FO <sub>22</sub>	16.9	X	166.68466	349.43643	64.19376	4.34906	0.0849234	0.22596655	2.6695616	20	4 26.6	20.8
429616 2011 FD <sub>23</sub>	16.7	X	48.97622	171.69887	24.14657	19.54186	0.1199232	0.23194627	2.6234802	20	6 4.2	20.2
429617 2011 FT <sub>30</sub>	16.9	X	310.85908	172.46713	93.68155	5.44342	0.1660145	0.21503175	2.7533131	20	3 27.6	20.4
429618 2011 FK <sub>32</sub>	17.2	X	60.36179	133.44041	49.56089	5.21134	0.2145918	0.23035232	2.6355686	20	6 24.9	20.4
429619 2011 FB <sub>33</sub>	17.1	X	354.78036	190.35394	90.93851	5.70989	0.1264127	0.23019619	2.6367602	20	7 7.9	19.8
429620 2011 FP <sub>34</sub>	17.3	X	39.90886	359.49575	174.63674	14.99502	0.0690289	0.22386975	2.6862047	20	4 21.9	20.7
429621 2011 FG <sub>38</sub>	17.0	X	250.64566	116.61130	218.46135	4.10470	0.0156442	0.22406980	2.6846056	20	4 26.4	20.6
429622 2011 FD <sub>39</sub>	17.0	X	72.76386	22.46412	164.87559	8.96561	0.0226757	0.23532984	2.5982726	20	6 18.4	20.6
429623 2011 FK <sub>44</sub>	17.8	X	132.32711	353.13988	145.77214	2.08847	0.1385897	0.24294019	2.5437229	20	7 11.9	21.5
429624 2011 FV <sub>44</sub>	18.0	X	112.78728	356.09618	172.31928	6.38767	0.1580320	0.24431838	2.5341479	20	7 30.8	21.8
429625 2011 FE <sub>54</sub>	16.9	X	23.24073	57.34156	165.83511	13.60947	0.0482590	0.23332141	2.6131619	20	6 1.1	20.4
429626 2011 FG <sub>60</sub>	16.7	X	50.76127	356.48446	192.75017	13.69519	0.1773570	0.22937038	2.6430852	20	6 12.4	20.0
429627 2011 FN <sub>64</sub>	17.1	X	133.52509	91.96460	341.19616	4.44102	0.0086238	0.22221955	2.6994868	20	4 3.1	20.7
429628 2011 FR <sub>67</sub>	17.0	X	59.15470	4.32595	126.46131	7.38440	0.0116603	0.21783191	2.7356155	20	3 17.1	20.7
429629 2011 FG <sub>68</sub>	17.1	X	304.19954	148.91233	118.03364	5.56019	0.0612126	0.22154843	2.7049356	20	4 3.5	20.6
429630 2011 FM <sub>80</sub>	16.6	X	5.95785	245.48138	10.47946	10.87525	0.1587384	0.23212601	2.6221257	20	6 22.9	19.4
429631 2011 FN <sub>80</sub>	16.7	X	50.08357	312.50320	184.40414	9.02531	0.0658729	0.21791595	2.7349121	20	3 13.9	20.0
429632 2011 FU <sub>92</sub>	17.1	X	305.91434	276.89992	350.83236	1.54879	0.2315718	0.21571407	2.7534915	20	3 9.6	20.8
429633 2011 FO <sub>93</sub>	17.4	X	22.96064	170.37604	31.70927	0.68404	0.1383450	0.22550547	2.6731993	20	5 5.0	20.1
429634 2011 FB <sub>105</sub>	16.9	X	191.91076	258.54171	137.74954	9.20852	0.0727368	0.23304338	2.6152399	20	5 4.3	20.9
429635 2011 FZ <sub>110</sub>	16.6	X	40.74571	245.76516	240.57685	4.57465	0.0477156	0.21050797	2.7987043	20	2 14.3	20.2
429636 2011 FH <sub>120</sub>	16.8	X	89.63944	150.47938	354.21022	9.01994	0.0687667	0.23027564	2.6361536	20	5 17.7	20.5
429637 2011 FP <sub>120</sub>	17.6	X	23.68526	250.67199	353.82513	3.17194	0.1753475	0.23436815	2.6053755	20	7 15.3	20.2
429638 2011 FH <sub>131</sub>	17.7	X	77.50707	208.82767	346.94908	6.65705	0.1374899	0.24142900	2.5543266	20	7 26.6	21.1
429639 2011 FB <sub>134</sub>	17.6	X	117.11253	267.83296	176.82845	2.35474	0.1201058	0.22732350	2.6589275	20	4 13.8	21.2
429640 2011 FT <sub>134</sub>	17.0	X	177.13701	78.27437	353.02613	5.59229	0.1102827	0.23870002	2.5737582	20	5 28.8	21.0
429641 2011 FX <sub>138</sub>	17.5	X	146.05721	96.00557	349.72039	11.57132	0.1402924	0.23526377	2.5987591	20	5 13.8	21.7
429642 2011 FK <sub>143</sub>	17.5	X	64.74466	138.72182	21.59267	4.60281	0.1956882	0.22801665	2.6535362	20	5 26.4	20.7
429643 2011 FQ <sub>144</sub>	17.3	X	14.93004	257.84796	356.77195	11.24825	0.1579456	0.23435995	2.6054362	20	7 13.2	20.1
429644 2011 FV <sub>147</sub>	16.8	X	351.14857	202.71823	59.01650	9.21533	0.1936470	0.22539013	2.6741112	20	5 28.3	20.1
429645 2011 FH <sub>148</sub>	17.0	X	7.39777	245.04009	33.75366	11.93969	0.2476460	0.23274569	2.6174694	20	8 19.0	19.5
429646 2011 FB <sub>150</sub>	17.0	X	44.49745	167.45211	74.57769	9.91807	0.1163921	0.23804343	2.5784888	20	8 11.2	20.3
429647 2011 FX <sub>155</sub>	17.2	X	352.05122	297.57091	8.47076	14.98047	0.1494908	0.24478280	2.5309415	20	8 20.0	19.9
429648 2011 GT <sub>1</sub>	17.1	X	125.41744	186.83813	333.99308	6.82005	0.1248718	0.24465611	2.5318152	20	8 2.9	20.8
429649 2011 GU <sub>3</sub>	16.9	X	65.33723	57.34713	79.50387	6.10725	0.0663502	0.21724588	2.7405329	20	4 9.5	20.5
429650 2011 GF <sub>4</sub>	16.8	X	139.22964	282.69887	183.65754	12.76739	0.1395678	0.23273312	2.6175637	20	6 7.5	21.1
429651 2011 GE <sub>12</sub>	17.3	X	270.07092	311.19292	338.81813	3.11117	0.0680104	0.21376426	2.7702097	20	3 16.7	21.2
429652 2011 GG <sub>13</sub>	17.1	X	309.10567	297.47268	341.48995	4.80703	0.1025015	0.22099962	2.7094119	20	4 15.5	20.6
429653 2011 GF <sub>25</sub>	17.0	X	348.08857	324.34222	293.83594	3.65514	0.1535461	0.22520407	2.6755838	20	5 17.9	19.8
429654 2011 GR <sub>27</sub>	17.0	X	86.14721	61.28664	78.33451	13.95857	0.1081382	0.22709742	2.6606919	20	5 17.8	20.6
429655 2011 GS <sub>31</sub>	16.5	X	75.66436	158.42843	10.74952	14.22370	0.0273371	0.22976629	2.6400481	20	5 24.1	20.2
429656 2011 GK <sub>32</sub>	16.7	X	40.73951	32.11711	188.41062	6.95979	0.1857506	0.22941472	2.6427446	20	7 10.6	19.7
429657 2011 GF <sub>44</sub>	18.2	X	33.79599	245.64572	12.14262	4.55707	0.1454424	0.24428471	2.5343808	20	8 20.5	21.0
429658 2011 GP <sub>45</sub>	17.2	X	4.13963	265.84504	8.33873	11.34460	0.1851319	0.23513413	2.5997142	20	7 24.7	19.8
429659 2011 GR <sub>46</sub>	16.3	X	227.54750	218.69402	125.90975	6.04345	0.1312792	0.21984074	2.7189252	20	4 3.8	20.5
429660 2011 GJ <sub>53</sub>	16.5	X	138.21094	55.04530	95.16033	14.04169	0.0974645	0.24472097	2.5313679	20	8 1.6	20.3
429661 2011 GK <sub>55</sub>	16.9	X	48.52021	152.72523	56.77118	7.62476	0.0852277	0.22959900	2.6413304	20	6 22.7	20.1
429662 2011 GR <sub>60</sub>	16.7	X	97.09012	89.38700	15.56131	13.86034	0.1100891	0.22182451	2.7026908	20	4 12.6	20.2
429663 2011 GZ <sub>60</sub>	16.9	X	30.44845	88.96493	175.91585	13.17741	0.1415348	0.23736548	2.5833961	20	8 19.5	19.9
429664 2011 GA <sub>61</sub>	16.5	X	317.03324	174.85741	70.45895	9.56683	0.1458757	0.21084942	2.7956820	20	3 15.2	20.2
429665 2011 GW <sub>61</sub>	17.1	X	22.46948	128.66655	143.46595	12.67197	0.2930762	0.23355707	2.6114038	20	9 15.4	19.7
429666 2011 GL <sub>64</sub>	16.5	X	352.99237	103.27482	137.05529	9.74998	0.0351407	0.22286251	2.6942922	20	5 11.3	20.1
429667 2011 GN <sub>64</sub>	17.0	X	333.55743	134.70343	126.54838	10.26387	0.2347973	0.21934835	2.7229926	20	4 19.1	19.9
429668 2011 GB <sub>67</sub>	16.8	X	51.97760	331.90025	239.14101	12.94730	0.1992229	0.23129052	2.6284365	20	7 15.6	20.2
429669 2011 GK <sub>67</sub>	16.4	X	79.39101	87.02415	96.19405	13.37098	0.2147526	0.23636604	2.5906734	20	7 21.7	20.0
429670 2011 GA <sub>68</sub>	16.1	X	315.38748	130.76581	80.17797	15.95583	0.0935269	0.20328870	2.8645773	20	2 4.8	20.2
429671 2011 GN <sub>75</sub>	17.1	X	331.28326	90.51898	164.35539	9.62852	0.1273118	0.21910050	2.7250458	20	4 18.6	20.3
429672 2011 GN <sub>81</sub>	17.1	X	106.36799	10.38269	114.50876	2.91550	0.1095422	0.22490786	2.6779325	20	5 22.4	20.7
429673 2011 GK <sub>84</sub>	16.9	X	294.33585	34.32705	213.89602	14.62305	0.0937741	0.20465783	2.8517873			

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>
429681 2011 HZ <sub>6</sub>	16.7	X	276.79290	132.59940	140.45189	14.44470	0.0642814	0.20349458	2.8626449	20	3 7.9	20.8
429682 2011 HV <sub>9</sub>	17.0	X	311.64443	200.78651	81.04688	9.97053	0.0884927	0.22022974	2.7157226	20	4 30.9	20.6
429683 2011 HC <sub>10</sub>	16.6	X	249.39016	219.88661	139.30419	7.29524	0.0834087	0.22541356	2.6739258	20	5 20.2	20.5
429684 2011 HY <sub>10</sub>	17.5	X	26.51683	63.24152	168.00973	2.29926	0.1470071	0.23092010	2.6312466	20	6 25.7	20.2
429685 2011 HA <sub>25</sub>	16.7	X	21.68776	54.35285	191.84613	7.99212	0.1548566	0.22723423	2.6596238	20	7 8.4	19.7
429686 2011 HJ <sub>25</sub>	16.0	X	334.86748	252.49627	93.53746	19.01041	0.2340599	0.23368430	2.6104559	20	9 16.1	18.6
429687 2011 HU <sub>29</sub>	17.2	X	20.83145	152.94912	52.94934	8.49447	0.2175966	0.22099655	2.7094369	20	5 13.0	19.3
429688 2011 HL <sub>33</sub>	15.9	X	27.51801	286.55949	164.40985	10.30377	0.0536549	0.18750600	3.0231470	20	—	—
429689 2011 HT <sub>38</sub>	17.1	X	49.91407	92.13546	161.73791	9.65340	0.0887757	0.24023766	2.5627642	20	8 27.8	20.4
429690 2011 HG <sub>43</sub>	17.1	X	27.36388	204.71496	80.89595	10.54215	0.0264660	0.24577176	2.5241475	20	9 6.1	20.5
429691 2011 HK <sub>43</sub>	16.9	X	91.74794	69.28395	133.66678	11.87048	0.0994614	0.23833321	2.5763984	20	8 16.6	20.5
429692 2011 HT <sub>43</sub>	16.3	X	13.92561	61.57020	110.38365	15.88248	0.0934670	0.20538311	2.8450696	20	3 15.1	20.0
429693 2011 HN <sub>51</sub>	16.0	X	326.49672	338.67224	150.67186	11.88794	0.1201835	0.18042776	3.1017049	20	—	—
429694 2011 HW <sub>51</sub>	16.0	X	326.13392	46.38371	106.51066	12.13059	0.0725202	0.18599634	3.0394835	20	—	—
429695 2011 HZ <sub>51</sub>	16.7	X	338.90127	117.69443	164.73656	14.05734	0.0887438	0.22461395	2.6802680	20	6 12.4	20.1
429696 2011 HB <sub>55</sub>	16.8	X	201.24186	313.88773	97.58015	12.73474	0.0479892	0.22991051	2.6389439	20	6 3.2	20.6
429697 2011 HC <sub>57</sub>	16.7	X	38.69552	154.60687	85.47219	14.11196	0.1750199	0.23191172	2.6237407	20	8 7.9	19.9
429698 2011 HK <sub>58</sub>	16.7	X	25.84446	78.43354	109.96911	8.72422	0.1187765	0.21716160	2.7412419	20	4 24.4	19.9
429699 2011 HX <sub>62</sub>	16.3	X	72.91887	164.78477	58.47287	12.90251	0.1230041	0.23846329	2.5754613	20	8 30.2	20.1
429700 2011 HL <sub>63</sub>	17.1	X	332.19099	107.59699	134.12719	2.96396	0.0341721	0.21725865	2.7404255	20	4 11.4	20.6
429701 2011 HO <sub>74</sub>	16.8	X	64.39371	73.83285	66.79971	5.98235	0.1371016	0.21916237	2.7245329	20	4 22.1	20.0
429702 2011 HM <sub>75</sub>	17.3	X	109.35603	358.53786	134.24018	13.33903	0.0768473	0.23075054	2.6325355	20	6 3.5	21.2
429703 2011 HD <sub>76</sub>	17.2	X	127.30910	56.28237	114.21037	7.52045	0.1085155	0.24060571	2.5601501	20	8 16.4	21.0
429704 2011 HL <sub>77</sub>	16.7	X	15.42397	106.42499	74.41987	6.01102	0.0876056	0.21236345	2.7823785	20	3 25.4	20.0
429705 2011 HL <sub>79</sub>	15.8	X	124.73122	235.93563	100.31747	10.41827	0.0677941	0.174777159	3.1682697	20	—	—
429706 2011 HU <sub>81</sub>	16.5	X	55.05490	199.20855	52.51283	17.86947	0.1960403	0.23897373	2.5717926	20	9 28.7	20.3
429707 2011 HO <sub>89</sub>	17.3	X	49.16465	12.86122	185.25860	2.40571	0.1311842	0.22876178	2.6477709	20	6 14.8	20.4
429708 2011 HA <sub>95</sub>	17.0	X	0.43456	153.73438	82.63219	8.65735	0.0705402	0.21897209	2.7261111	20	5 14.8	20.3
429709 2011 HN <sub>98</sub>	17.4	X	354.75205	184.17658	68.64322	3.60533	0.0896761	0.22803900	2.6533628	20	5 26.4	20.3
429710 2011 HC <sub>100</sub>	16.8	X	254.85127	207.49940	87.82697	7.19475	0.0207457	0.21045958	2.7991333	20	3 15.6	20.8
429711 2011 HB <sub>101</sub>	16.5	X	67.73296	65.05987	162.04854	17.25633	0.1141047	0.23631918	2.5910158	20	8 18.5	20.1
429712 2011 JF <sub>1</sub>	16.7	X	356.61993	304.82133	267.75615	2.31168	0.2834104	0.21429575	2.7656274	20	3 16.5	18.8
429713 2011 JB <sub>2</sub>	17.0	X	94.73498	45.00283	145.05883	14.83686	0.1711158	0.24037650	2.5617773	20	8 10.8	20.7
429714 2011 JS <sub>5</sub>	17.0	X	110.76654	61.50916	138.05468	10.27115	0.0839689	0.24491802	2.5300099	20	9 3.8	20.6
429715 2011 JD <sub>7</sub>	17.4	X	86.31849	106.54372	56.22837	10.44272	0.2149914	0.23332392	2.6131432	20	7 1.7	21.2
429716 2011 JH <sub>12</sub>	16.6	X	31.72179	63.01888	176.65053	13.00061	0.2141922	0.22986281	2.6393090	20	7 26.2	19.6
429717 2011 JT <sub>26</sub>	16.4	X	207.67822	296.76336	85.11433	13.76620	0.1443126	0.21425490	2.7659790	20	5 2.6	21.0
429718 2011 JJ <sub>27</sub>	16.0	X	217.43595	39.03001	230.90109	10.31537	0.1549491	0.18354733	3.0664602	20	—	—
429719 2011 JB <sub>29</sub>	16.0	X	228.10720	55.53734	240.69119	10.54309	0.2075779	0.18991452	2.9975327	20	1 30.8	21.3
429720 2011 JG <sub>29</sub>	16.8	X	114.23307	40.17527	158.18041	4.37709	0.1040114	0.24340241	2.5405016	20	9 6.3	20.5
429721 2011 KW	16.6	X	302.95328	195.42531	82.92059	10.74193	0.1249590	0.21102703	2.7941132	20	4 10.9	20.4
429722 2011 KA <sub>2</sub>	17.0	X	334.83131	69.79812	231.50041	8.37064	0.1947865	0.22483119	2.6785413	20	6 22.1	19.5
429723 2011 KS <sub>5</sub>	15.8	X	190.08007	247.44907	59.24979	11.04157	0.0606156	0.18783089	3.0196599	20	1 14.8	20.4
429724 2011 KA <sub>14</sub>	16.2	X	83.45487	331.00959	238.26586	18.26320	0.2377558	0.23697419	2.5862391	20	8 23.1	20.6
429725 2011 KW <sub>22</sub>	16.3	X	1.28855	315.64401	146.01738	12.39913	0.0181768	0.17619578	3.1511740	20	—	—
429726 2011 KH <sub>24</sub>	17.1	X	346.72940	83.25457	189.48093	5.68962	0.1872902	0.22170374	2.7036722	20	6 6.1	19.7
429727 2011 KC <sub>26</sub>	17.1	X	76.15288	135.44696	86.41621	7.48538	0.1426868	0.23690515	2.5867416	20	8 31.4	20.8
429728 2011 KC <sub>28</sub>	16.4	X	73.48093	112.12974	106.27329	12.75961	0.0202449	0.23384356	2.6092705	20	8 1.9	19.8
429729 2011 KF <sub>29</sub>	16.6	X	50.88891	9.34759	270.51245	12.32232	0.2761148	0.24247626	2.5469665	20	10 28.1	20.4
429730 2011 KQ <sub>43</sub>	17.2	X	330.73209	120.47210	137.87007	3.71398	0.1612828	0.21479626	2.7613295	20	4 17.2	20.3
429731 2011 KP <sub>47</sub>	17.3	X	21.55039	78.89746	87.39756	7.33537	0.1509475	0.20643614	2.8353862	20	3 18.7	20.4
429732 2011 LZ <sub>8</sub>	15.8	X	123.22604	230.33366	139.66301	27.65488	0.2601194	0.17647255	3.1478784	20	2 9.1	20.8
429733 2011 LX <sub>10</sub>	16.6	X	103.12477	306.56309	293.06039	22.55523	0.4947632	0.24309935	2.5426126	20	10 31.1	22.2
429734 2011 LM <sub>11</sub>	16.3	X	26.65242	92.27835	117.90975	9.83383	0.0856981	0.21633916	2.7481580	20	5 22.6	19.7
429735 2011 MA	16.4	X	43.78151	343.80561	248.81838	13.89591	0.2962094	0.22901739	2.6458004	20	8 15.4	19.9
429736 2011 MB <sub>2</sub>	20.3	X	63.62725	321.16426	64.76164	12.61004	0.4154635	0.92386008	1.0440755	20	—	—
429737 2011 NC <sub>1</sub>	15.8	X	222.63090	166.81150	145.66586	18.13007	0.1382978	0.17984115	3.1084461	20	2 21.3	20.7
429738 2011 OD <sub>3</sub>	15.4	X	249.81273	281.35129	321.01516	24.14330	0.2363123	0.17324105	3.1869030	20	—	—
429739 2011 OA <sub>6</sub>	16.1	X	182.65937	34.33527	263.99181	7.37993	0.1033697	0.16161254	3.3379975	20	1 1.5	21.4
429740 2011 OD <sub>25</sub>	15.9	X	214.53697	155.10870	160.04628	10.39286	0.1235544	0.17766734	3.1337498	20	2 16.7	20.9
429741 2011 OT <sub>59</sub>	15.9	X	220.97562	121.60011	170.41340	16.73685	0.2213612	0.17448452	3.1717439	20	1 23.4	21.5
429742 2011 QG <sub>28</sub>	15.9	X	213.09938	152.87281	154.79996	27.80015	0.1664258	0.17315579	3.1879490	20	2 6.3	21.3
429743 2011 QP <sub>52</sub>	16.3	X	261.31974	90.04657	196.42920	4.67595	0.2463472	0.18670804	3.0317546	20	2 15.2	21.3
429744 2011 QN <sub>53</sub>	16.2	X	280.47257	306.84440	331.06408	16.43188	0.1431758	0.18795970	3.0182802	20	3 4.1	20.6
429745 2011 QC <sub>66</sub>	16.0	X	207.00527	336.36045	344.27544	10.15423	0.2150167	0.17587033	3.1550602	20	2 17.3	21.4
429746 2011 SA <sub>16</sub>	17.3	X	32.45220	317.60216	275.39742	20.12045	0.5327214	0.21810703	2.7333145	20	9 2.5	21.2
429747 2011 SM <sub>61</sub>	16.3	X	276.07739	306.49327	314.80409	14.09141	0.1286405	0.17903197	3.1178053	20	2 12.8	20.8
429748 2011 SD <sub>97</sub>	18.1	X	140.89178	13.51185	346.76035	19.35217	0.0904152	0.38161936	1.8824168	20	—	—
429749 2011 SC <sub>113</sub>	17.9	X	92.31297	246.20201	169.93537	22.33742	0.1336662	0.38626949	1.8672786	20	1 1.2	19.8
429750 2011 SC <sub>202</sub>	15.9	X	269.94061	305.91159	341.02584	10.04893	0.2481668	0.18364364	3.0653880	20	2 25.1	20.7
429751 2011 SS <sub>249</sub>	17.2	X	288.07764	262.39394	287.29401	18.04841	0.0995291	0.37168222	1.9158207	20	—	—
429752 2011 UO <sub>10</sub>	15.6	X	227.41438	155.76689	204.87754	27.36533	0.1612627	0.17963489	3.1108250	20	4 20.8	20.7
429753 2011 UZ <sub>20</sub>	17.6	X	58.77404	37.40617	40.19975	23.57358	0.1705505	0.37675002	1.8986017	20	—	—
429754 2011 UB <sub>29</sub>	18.0	X	27									

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>
429761 2012 BP <sub>134</sub>	17.8	X	204.15789	196.60292	157.32195	22.92384	0.0784971	0.37535885	1.9032899	20	3 9.4	19.9
429762 2012 DN <sub>13</sub>	18.0	X	99.15426	291.16750	342.32647	6.58654	0.0939909	0.30156451	2.2023309	20	12 4.3	21.1
429763 2012 DN <sub>15</sub>	17.5	X	117.70160	166.71232	93.05626	6.70821	0.1754310	0.29745129	2.2225872	20	12 8.1	20.8
429764 2012 DZ <sub>43</sub>	18.0	X	122.53061	227.50906	173.65081	26.41653	0.1321576	0.35910188	1.9603078	20	2 4.9	20.4
429765 2012 DF <sub>45</sub>	17.9	X	85.95396	240.64481	26.09724	6.06725	0.0840437	0.29424741	2.2386917	20	11 8.1	20.7
429766 2012 DY <sub>45</sub>	18.2	X	66.96512	246.03131	37.65201	4.23094	0.1537632	0.29096858	2.2554783	20	11 16.1	21.4
429767 2012 DA <sub>56</sub>	18.5	X	212.37932	11.75832	133.56601	3.42243	0.1543795	0.30360005	2.1924759	20	10 18.8	21.2
429768 2012 DX <sub>73</sub>	18.4	X	264.89165	141.55253	153.48533	2.34990	0.0844575	0.30882345	2.1676835	20	11 4.5	20.6
429769 2012 DJ <sub>76</sub>	18.1	X	220.04715	317.29463	150.50833	6.43697	0.0958489	0.29504305	2.2346652	20	9 11.9	20.8
429770 2012 DP <sub>79</sub>	17.3	X	8.34245	4.09099	124.59397	24.57423	0.0558542	0.35401571	1.9790390	20	—	—
429771 2012 EF <sub>1</sub>	18.1	X	154.51299	295.97473	208.33061	2.77124	0.1109713	0.28386477	2.2929525	20	8 12.2	21.4
429772 2012 EO <sub>12</sub>	18.4	X	138.35768	350.07835	250.62014	3.22241	0.0821500	0.30606271	2.1806992	20	12 6.7	21.4
429773 2012 FU <sub>4</sub>	18.7	X	259.17749	134.90626	325.73695	3.04646	0.0420670	0.30524136	2.1846694	20	11 5.6	21.1
429774 2012 FT <sub>29</sub>	18.9	X	218.09482	143.45154	44.19823	4.12501	0.0310929	0.31544794	2.1372283	20	—	—
429775 2012 FT <sub>52</sub>	17.7	X	220.77402	279.10966	162.45627	5.40752	0.1234399	0.28637957	2.2795093	20	7 31.1	20.7
429776 2012 GK <sub>1</sub>	17.5	X	31.44559	139.57152	138.32298	9.54813	0.2165390	0.26926432	2.3751088	20	10 3.5	20.2
429777 2012 GS <sub>21</sub>	17.5	X	91.39274	252.34197	44.16105	8.28067	0.1655375	0.29848708	2.2174425	20	12 29.9	20.9
429778 2012 GK <sub>22</sub>	17.4	X	64.27916	124.25105	155.76174	6.37689	0.1020708	0.28537093	2.2848773	20	11 3.5	20.4
429779 2012 GZ <sub>26</sub>	17.7	X	53.19747	353.26708	1.23360	6.07802	0.0306200	0.30740967	2.1743245	20	—	—
429780 2012 GB <sub>37</sub>	17.7	X	85.43002	204.87184	34.80535	9.77693	0.0805800	0.27845542	2.3225528	20	10 2.7	20.7
429781 2012 GX <sub>37</sub>	18.0	X	69.09643	137.16744	128.55001	6.02533	0.2122914	0.27860924	2.3216979	20	11 2.4	21.4
429782 2012 GY <sub>39</sub>	17.0	X	87.59057	316.67776	238.24093	10.84351	0.1924825	0.26798722	2.3826486	20	8 9.7	20.6
429783 2012 HZ <sub>6</sub>	18.3	X	138.83492	46.26130	174.88380	3.77035	0.1209438	0.29420107	2.2389268	20	11 9.4	21.4
429784 2012 HJ <sub>7</sub>	17.8	X	124.96415	126.33005	107.89898	6.81271	0.0680109	0.28810192	2.2704152	20	11 11.7	20.9
429785 2012 HA <sub>18</sub>	17.6	X	74.87782	174.33777	113.69727	8.70673	0.0320885	0.29019010	2.2595103	20	11 20.3	20.5
429786 2012 HO <sub>21</sub>	17.8	X	113.58716	139.14182	123.93900	7.57697	0.1932098	0.29431955	2.2383259	20	12 8.9	21.4
429787 2012 HP <sub>23</sub>	18.3	X	97.52656	87.69395	181.29773	3.68490	0.1902848	0.28895288	2.2659555	20	12 1.0	21.8
429788 2012 HN <sub>27</sub>	18.4	X	118.16496	46.78634	192.41015	3.74488	0.1359786	0.28727189	2.2747864	20	11 10.6	21.7
429789 2012 HR <sub>27</sub>	18.0	X	158.05938	187.98234	44.96825	4.79688	0.1581686	0.30075608	2.2062756	20	12 11.9	21.2
429790 2012 HT <sub>27</sub>	18.5	X	86.31828	149.26191	102.20229	3.22846	0.1730005	0.28079965	2.3096084	20	10 27.8	22.0
429791 2012 HB <sub>29</sub>	18.5	X	170.50092	92.80128	154.78298	3.66755	0.0920503	0.31113892	2.1569156	20	—	—
429792 2012 HJ <sub>37</sub>	18.2	X	185.76227	216.64931	6.96524	1.82774	0.1489088	0.30808430	2.1711492	20	—	—
429793 2012 HU <sub>37</sub>	17.6	X	255.83623	53.30832	39.29351	20.50637	0.0484047	0.29345510	2.2427194	20	10 21.4	20.1
429794 2012 HH <sub>39</sub>	17.8	X	114.40616	250.82366	351.82070	4.71419	0.1828660	0.29005049	2.2602353	20	11 10.9	21.4
429795 2012 HE <sub>55</sub>	18.0	X	158.00419	120.65119	67.16790	6.70008	0.1564960	0.28921552	2.2645834	20	10 16.5	21.5
429796 2012 HW <sub>55</sub>	18.0	X	123.54956	256.84157	348.50719	6.64132	0.1828142	0.29310226	2.2445189	20	11 22.5	21.7
429797 2012 HQ <sub>58</sub>	18.4	X	82.30903	73.00967	186.96723	6.53634	0.1266038	0.28472971	2.2883065	20	10 30.7	21.5
429798 2012 HN <sub>67</sub>	18.1	X	175.91801	112.25291	95.97598	9.35621	0.0885198	0.29298058	2.2451403	20	11 9.2	21.1
429799 2012 HJ <sub>82</sub>	15.7	X	213.20916	195.58041	95.11245	19.47297	0.1862035	0.21376370	2.7702146	20	1 14.4	20.4
429800 2012 HT <sub>83</sub>	17.9	X	70.39043	178.55413	95.28819	1.51299	0.2020458	0.27707058	2.3302854	20	11 10.6	21.2
429801 2012 JW <sub>1</sub>	16.9	X	310.79944	180.14557	109.43290	9.27707	0.2004459	0.24057510	2.5603672	20	4 22.7	20.0
429802 2012 JL <sub>2</sub>	17.2	X	348.47332	162.62640	135.50866	7.32981	0.1994863	0.26013797	2.4303391	20	7 24.8	18.9
429803 2012 JX <sub>8</sub>	17.8	X	119.61148	200.20528	27.69495	6.74723	0.1271371	0.29033698	2.2587482	20	10 27.5	21.2
429804 2012 JM <sub>12</sub>	16.7	X	3.37251	141.50439	43.56990	5.41117	0.1386373	0.23221753	2.6214367	20	3 5.6	19.4
429805 2012 JY <sub>15</sub>	17.9	X	72.08364	232.37481	8.78601	1.31820	0.1524191	0.27414412	2.3468397	20	9 24.0	21.0
429806 2012 JB <sub>17</sub>	18.0	X	130.52628	81.28450	113.01962	7.00739	0.0748713	0.28144647	2.3060684	20	9 25.7	21.2
429807 2012 JT <sub>20</sub>	17.8	X	160.89129	154.54859	52.33554	4.51074	0.1168091	0.29227321	2.2487614	20	11 12.7	21.0
429808 2012 JD <sub>24</sub>	17.0	X	44.95048	175.09808	144.16008	12.06441	0.2297863	0.27792519	2.3255059	20	12 16.3	20.5
429809 2012 JH <sub>24</sub>	17.6	X	86.06109	203.84801	92.08502	7.15806	0.1947175	0.29098299	2.2554038	20	12 24.1	21.1
429810 2012 JY <sub>25</sub>	18.0	X	82.33968	183.30768	56.77000	4.53766	0.0974270	0.27444694	2.3451131	20	9 30.0	21.0
429811 2012 JM <sub>50</sub>	18.3	X	30.16634	149.06843	156.69113	1.27491	0.1913571	0.27707466	2.3302625	20	11 4.1	21.0
429812 2012 JP <sub>50</sub>	18.3	X	188.59327	83.75468	105.40024	1.68189	0.1185971	0.30043962	2.2078246	20	11 21.6	21.1
429813 2012 JH <sub>58</sub>	17.6	X	324.64832	0.21910	43.17151	8.82531	0.1710254	0.29527085	2.2335157	20	12 1.8	19.2
429814 2012 KB <sub>3</sub>	17.5	X	101.89347	116.48563	94.39198	6.79235	0.1548927	0.27552507	2.3389914	20	9 20.9	21.0
429815 2012 KM <sub>15</sub>	17.0	X	299.96942	168.85506	149.98720	4.89641	0.2366192	0.24335283	2.5408466	20	5 7.9	20.1
429816 2012 KR <sub>32</sub>	17.9	X	14.17429	183.53600	100.90152	3.84652	0.0799430	0.26646460	2.3917165	20	8 19.7	20.4
429817 2012 KG <sub>38</sub>	17.7	X	253.69952	172.13442	164.46160	4.18696	0.2354633	0.23785870	2.5798237	20	4 7.9	21.8
429818 2012 KN <sub>43</sub>	18.4	X	50.05379	164.30305	113.25514	2.80608	0.1804615	0.27083906	2.3658935	20	10 20.9	21.4
429819 2012 KR <sub>46</sub>	17.6	X	105.16690	149.56897	94.91954	7.35652	0.1525480	0.28149848	2.3057843	20	11 6.3	21.2
429820 2012 KC <sub>48</sub>	17.9	X	188.10167	306.83370	231.47990	4.32018	0.0910288	0.29035866	2.2586357	20	11 7.1	20.6
429821 2012 KO <sub>48</sub>	17.8	X	103.66096	146.67892	78.62951	6.42242	0.1153320	0.27651431	2.3334036	20	10 8.4	21.2
429822 2012 KK <sub>51</sub>	17.0	X	30.93906	330.76031	246.23647	3.66685	0.1714960	0.24048086	2.5610361	20	6 16.3	19.5
429823 2012 LX <sub>21</sub>	16.5	X	82.55986	235.33384	252.44287	9.88881	0.0810537	0.23785457	2.5798535	20	4 16.4	19.9
429824 2012 MC <sub>8</sub>	16.5	X	328.50008	354.63836	288.29211	12.28885	0.0679767	0.23592640	2.5938908	20	5 25.9	19.8
429825 2012 NW <sub>1</sub>	16.4	X	296.85597	16.98440	293.20810	14.35630	0.1942040	0.22673479	2.6635281	20	4 20.5	20.3
429826 2012 PS	15.9	X	134.74222	13.68287	306.34991	16.44932	0.0894227	0.17053789	3.2204913	20	—	—
429827 2012 PS <sub>3</sub>	16.5	X	1.41432	262.63979	325.17649	6.46646	0.0739462	0.21606059	2.7505467	20	4 29.5	20.0
429828 2012 PC <sub>4</sub>	16.3	X	83.74158	263.40379	174.00235	9.16871	0.0911725	0.18559224	3.0438939	20	2 20.9	20.5
429829 2012 PU <sub>4</sub>	16.9	X	346.67097	330.14279	293.99773	6.64280	0.1755467	0.23274069	2.6175069	20	5 21.9	19.4
429830 2012 PK <sub>12</sub>	16.0	X	36.30706	182.09051	313.55820	8.68455	0.0338856	0.19068735	2.9894282	20	2 22.4	19.9
429831 2012 PB <sub>15</sub>	16.4	X	121.34949	126.45395	221.95124	2.80336	0.2861350	0.17207832	3.2012428	20	1 16.4	21.4
429832 2012 PF <sub>22</sub>	16.7	X	221.98701	249.99330	166.89256	11.52768	0.1281970	0.23075084	2.6325332	20	6 26.5	20.9
429833 2012 PM <sub>30</sub>	17.1	X	36.70920	350.02593	282.30008	10.08220	0.2311736	0.25520647	2.4615477	20	9 23.2	20.3

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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>
429841 2012 QN <sub>34</sub>	17.0	X	359.76229	312.72792	266.19398	5.06426	0.0503774	0.20996420	2.8035343	20	4 16.6	20.6
429842 2012 QP <sub>34</sub>	15.7	X	231.66899	294.56228	317.71908	10.25234	0.1071522	0.17880144	3.1204845	20	—	—
429843 2012 QB <sub>35</sub>	15.9	X	147.06356	145.75971	177.44798	27.49527	0.1597800	0.17277368	3.1926477	20	—	—
429844 2012 QL <sub>39</sub>	16.6	X	274.22409	134.35722	182.90325	17.51553	0.1460408	0.21731901	2.7399180	20	4 17.3	20.6
429845 2012 QX <sub>40</sub>	17.1	X	26.94077	295.03309	5.26040	11.14037	0.3549160	0.25776149	2.4452543	20	11 9.7	20.3
429846 2012 QK <sub>41</sub>	15.8	X	264.05066	310.47991	320.52737	14.19861	0.1212846	0.20311686	2.8661928	20	2 10.8	20.2
429847 2012 QK <sub>44</sub>	17.2	X	59.81587	7.55253	257.66406	5.52865	0.1025125	0.25645311	2.4535641	20	9 28.3	20.4
429848 2012 QA <sub>46</sub>	16.5	X	160.58083	152.81501	258.01429	3.27020	0.0712977	0.20936312	2.8088977	20	4 14.1	20.6
429849 2012 QC <sub>51</sub>	15.8	X	137.76809	193.59922	154.31470	16.24657	0.1955439	0.17689106	3.1429113	20	1 20.7	20.9
429850 2012 RA <sub>4</sub>	16.9	X	233.41499	206.26911	148.52778	2.79493	0.0923729	0.21129561	2.7917450	20	4 24.4	21.0
429851 2012 RP <sub>5</sub>	16.5	X	235.12506	351.86614	333.56336	5.43949	0.0628124	0.20328351	2.8646261	20	3 20.9	20.8
429852 2012 RW <sub>7</sub>	16.3	X	308.98545	307.11004	345.43804	12.37036	0.1801941	0.22364703	2.6879878	20	4 17.8	19.9
429853 2012 RH <sub>9</sub>	16.1	X	118.90496	44.66837	348.02228	10.74466	0.0801421	0.17581778	3.1556689	20	2 13.1	20.6
429854 2012 RD <sub>15</sub>	16.9	X	263.57790	132.31188	192.83561	3.90892	0.0705546	0.21282033	2.7783949	20	4 23.5	20.7
429855 2012 RF <sub>18</sub>	16.4	X	279.77738	253.34195	353.23193	8.70982	0.0741881	0.18692397	3.0294192	20	2 8.8	20.8
429856 2012 RH <sub>18</sub>	16.4	X	331.05278	292.14512	312.79358	3.34597	0.0649456	0.20454833	2.8528050	20	5 8.6	20.2
429857 2012 RW <sub>20</sub>	16.7	X	275.84263	32.40363	302.64926	4.42106	0.0781525	0.22222246	2.6994633	20	4 19.3	20.4
429858 2012 RC <sub>28</sub>	16.2	X	96.91686	48.82104	339.55870	25.99665	0.1985131	0.17077936	3.2174548	20	2 4.7	20.9
429859 2012 RA <sub>31</sub>	16.0	X	101.80193	56.65739	348.96528	9.89245	0.1225971	0.17641322	3.1485841	20	2 14.0	20.4
429860 2012 RN <sub>31</sub>	17.0	X	61.54125	271.75045	7.57866	15.87212	0.1831756	0.25849078	2.4406529	20	10 28.6	20.6
429861 2012 RG <sub>38</sub>	15.5	X	205.87611	150.76700	110.82795	7.40785	0.0073078	0.16816874	3.2506674	20	—	—
429862 2012 SO <sub>6</sub>	12.9	X	313.59728	344.14738	296.66677	23.93245	0.0237252	0.08329119	5.1928209	20	5 5.4	20.0
429863 2012 SQ <sub>9</sub>	16.2	X	196.64210	270.16179	21.17833	10.25470	0.0931182	0.17497803	3.1567774	20	1 6.1	21.3
429864 2012 SQ <sub>10</sub>	13.8	X	272.40258	86.11115	340.45394	17.32608	0.0574862	0.08388760	5.1681787	20	9 2.7	20.6
429865 2012 SX <sub>11</sub>	17.2	X	273.25569	123.01361	182.58145	1.80631	0.0557292	0.20558949	2.8431653	20	4 12.6	21.0
429866 2012 SH <sub>14</sub>	16.2	X	249.16887	310.68905	342.38641	11.34086	0.0379371	0.18829900	3.0146533	20	3 2.5	20.3
429867 2012 SV <sub>15</sub>	15.8	X	124.33519	18.80844	4.39612	15.73857	0.0795959	0.17279244	3.1924166	20	2 11.8	20.6
429868 2012 SO <sub>18</sub>	15.8	X	211.82195	328.95478	357.86756	9.99702	0.1043775	0.18743162	3.0239468	20	2 29.9	20.6
429869 2012 ST <sub>19</sub>	16.2	X	98.65833	193.44189	198.70201	10.68737	0.0365778	0.17555865	3.1587934	20	1 9.5	20.8
429870 2012 SC <sub>21</sub>	15.6	X	283.45326	279.36485	325.72455	10.32372	0.0921886	0.18253537	3.0777832	20	2 7.8	20.0
429871 2012 SX <sub>24</sub>	15.7	X	40.25571	98.49472	6.87688	9.24376	0.0610846	0.17534749	3.1613289	20	1 29.9	20.0
429872 2012 SC <sub>30</sub>	16.2	X	4.93615	171.19713	3.42957	9.23448	0.0570904	0.18833869	3.0142298	20	3 3.6	20.0
429873 2012 SZ <sub>31</sub>	16.0	X	165.16677	181.56876	180.97829	11.00442	0.0610484	0.18635267	3.0356077	20	2 20.6	20.7
429874 2012 SS <sub>39</sub>	16.3	X	308.92613	210.96329	354.76597	16.95222	0.0704419	0.18399656	3.0614670	20	1 29.9	20.8
429875 2012 SY <sub>40</sub>	17.5	X	346.14120	15.65971	284.47315	2.51545	0.1615103	0.23519502	2.5992655	20	7 19.4	20.0
429876 2012 SO <sub>42</sub>	16.3	X	267.94501	71.59354	216.35824	5.38533	0.0660097	0.20024831	2.8934999	20	3 11.8	20.6
429877 2012 SL <sub>46</sub>	17.4	X	18.42101	75.76083	185.77630	12.82095	0.1420219	0.23266958	2.6180402	20	7 22.6	20.5
429878 2012 SO <sub>51</sub>	16.4	X	255.68490	14.07176	302.93807	5.77588	0.0437817	0.20592981	2.8400320	20	4 3.7	20.5
429879 2012 SR <sub>51</sub>	15.9	X	355.92584	340.58158	207.10179	10.23266	0.0403237	0.19479073	2.9472967	20	3 2.4	19.9
429880 2012 SM <sub>62</sub>	16.2	X	111.25307	248.80516	130.51465	9.72586	0.0946905	0.17444022	3.1722808	20	1 18.8	20.7
429881 2012 TL <sub>3</sub>	16.5	X	71.79680	171.83928	243.53099	8.44564	0.0535276	0.17718165	3.1394740	20	1 6.2	20.8
429882 2012 TM <sub>7</sub>	16.4	X	9.82111	308.36099	228.87083	8.95728	0.0444460	0.19057115	2.9906433	20	3 7.9	20.5
429883 2012 TD <sub>14</sub>	15.8	X	47.80223	255.46325	161.12427	9.91974	0.0196586	0.15757521	3.3947734	20	—	—
429884 2012 TE <sub>16</sub>	16.8	X	299.37629	294.53793	16.77865	9.40977	0.2175503	0.22020883	2.7158945	20	4 26.9	20.3
429885 2012 TT <sub>16</sub>	16.3	X	226.84746	117.65906	193.26054	10.80109	0.1034505	0.19015767	2.9949769	20	2 21.2	21.0
429886 2012 TG <sub>21</sub>	15.8	X	302.86983	197.37262	253.00263	1.85454	0.1802984	0.12599297	3.9406861	20	10 30.1	20.6
429887 2012 TS <sub>25</sub>	16.5	X	188.41121	169.98357	183.12714	3.64332	0.0983928	0.18930529	3.0039605	20	3 6.7	21.1
429888 2012 TY <sub>35</sub>	16.7	X	14.22085	88.54294	191.94692	14.76045	0.0829597	0.23387581	2.6090306	20	8 4.7	20.1
429889 2012 TH <sub>38</sub>	16.4	X	138.76159	61.90248	314.28625	3.84912	0.1336609	0.17857429	3.1231303	20	2 17.7	21.2
429890 2012 TQ <sub>42</sub>	16.1	X	190.38574	4.21984	336.78876	9.17788	0.0954277	0.18674239	3.0313828	20	2 24.2	20.7
429891 2012 TY <sub>49</sub>	16.0	X	19.49704	302.52214	202.17436	9.86109	0.0379455	0.18004148	3.1061398	20	2 11.5	20.3
429892 2012 TU <sub>69</sub>	16.7	X	315.89747	57.53366	197.63493	14.64177	0.1016519	0.20314532	2.8659251	20	3 27.1	20.4
429893 2012 TB <sub>70</sub>	16.2	X	192.45774	282.41038	31.04142	5.67221	0.1466380	0.17968336	3.1102656	20	1 28.4	21.3
429894 2012 TO <sub>72</sub>	16.1	X	34.89005	346.82282	218.55875	11.13942	0.0593538	0.21071955	2.7968306	20	5 24.3	19.6
429895 2012 TB <sub>79</sub>	15.9	X	352.45944	327.94214	344.01651	12.49655	0.3289933	0.23642638	2.5902326	20	9 6.6	17.1
429896 2012 TU <sub>87</sub>	16.4	X	236.78902	266.75281	19.44908	8.24067	0.1033823	0.18311130	3.0713263	20	2 8.3	21.2
429897 2012 TS <sub>90</sub>	16.1	X	169.91800	303.31595	31.70812	8.12800	0.1070040	0.17880183	3.1204800	20	2 1.4	21.0
429898 2012 TR <sub>91</sub>	16.2	X	233.36587	232.90728	105.21939	3.21754	0.0735992	0.20136043	2.8828362	20	4 6.1	20.4
429899 2012 TR <sub>91</sub>	16.3	X	248.38612	162.13503	179.81978	12.40632	0.1548168	0.20938890	2.8086672	20	4 19.3	20.7
429900 2012 TG <sub>94</sub>	17.1	X	0.68035	94.03426	177.56529	12.88344	0.2507955	0.23151348	2.6267487	20	7 9.3	19.4
429901 2012 TO <sub>96</sub>	16.1	X	48.95207	266.34435	209.50677	15.85691	0.0247505	0.17803626	3.1294192	20	2 12.4	20.7
429902 2012 TZ <sub>96</sub>	17.2	X	355.40324	300.83447	350.71536	3.25273	0.2289905	0.23227720	2.6209878	20	7 30.7	19.0
429903 2012 TF <sub>101</sub>	15.4	X	122.80827	22.12775	17.51318	23.90360	0.1128503	0.17520211	3.1630774	20	3 8.7	20.3
429904 2012 TG <sub>103</sub>	16.7	X	252.14257	264.42487	355.64619	6.57686	0.1086188	0.18045036	3.1014460	20	1 22.6	21.4
429905 2012 TA <sub>108</sub>	17.1	X	5.99565	279.01681	21.28361	16.53108	0.1897232	0.23612300	2.5924508	20	9 12.8	19.8
429906 2012 TV <sub>126</sub>	16.0	X	228.00972	121.54527	152.73307	7.80564	0.1146769	0.18095503	3.0956767	20	1 13.1	20.9
429907 2012 TU <sub>134</sub>	17.1	X	14.04524	57.54555	216.43813	1.45582	0.2059999	0.23184897	2.6242141	20	8 12.6	19.5
429908 2012 TN <sub>138</sub>	15.8	X	223.35825	50.37369	266.26645	6.77333	0.0369774	0.18437775	3.0572460	20	2 27.7	20.4
429909 2012 TK <sub>139</sub>	15.9	X	175.05468	1.81066	111.21169	5.18823	0.1472957	0.17152784	3.2080882	20	1 12.6	20.9
429910 2012 TK <sub>141</sub>	16.3	X	110.65881	248.35180	365.32690	10.34602	0.0612953	0.18213948	3.0822414	20	2 22.1	20.6
429911 2012 TG <sub>148</sub>	16.6	X	153.72274	33.80510	326.84814	9.20855	0.0381610	0.17851565	3.1238141	20	2 7.4	21.1
429912 2012 TM <sub>152</sub>	16.6	X	220.63074	262.19093	20.84700	2.54660	0.1392396	0.18101755	3.0949640	20	1 16.8	21.6
429913 2012 TR <sub>152</sub>	16.6	X	202.86594	326.41185	15.47456	9.23028	0.0821640	0.19154734	2.9804738	20		



ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
429921 2012 <i>TT</i> <sub>210</sub>	16.1	X	139.36532	260.83112	112.41475	6.45085	0.1553814	0.17975456	3.1094443	20	2 18.7	21.0
429922 2012 <i>TN</i> <sub>218</sub>	16.0	X	60.16289	63.42075	14.99896	8.93649	0.0609004	0.17029503	3.2235524	20	1 24.6	20.4
429923 2012 <i>TQ</i> <sub>221</sub>	16.6	X	22.02571	105.68513	18.18410	1.63689	0.0474753	0.17473270	3.1687398	20	1 24.9	20.7
429924 2012 <i>TR</i> <sub>223</sub>	16.4	X	200.59931	260.11976	38.96267	9.35664	0.0557160	0.17677231	3.1443187	20	1 19.1	21.2
429925 2012 <i>TD</i> <sub>228</sub>	16.0	X	265.04531	53.02275	194.38868	8.90244	0.0290453	0.17498814	3.1656554	20	1 26.5	20.7
429926 2012 <i>TF</i> <sub>234</sub>	16.6	X	258.63456	146.25273	172.81315	11.99027	0.1141826	0.20582482	2.8409977	20	4 6.1	20.8
429927 2012 <i>TW</i> <sub>238</sub>	16.0	X	182.68237	234.08447	73.95369	6.49129	0.0723228	0.17084306	3.2166550	20	1 10.8	21.0
429928 2012 <i>TP</i> <sub>240</sub>	16.3	X	199.09126	133.23216	181.52467	10.03237	0.0929191	0.17964746	3.1106800	20	1 31.6	21.3
429929 2012 <i>TD</i> <sub>253</sub>	16.5	X	214.62980	336.67780	304.80245	4.72724	0.1261702	0.17375044	3.1806712	20	1 10.7	21.6
429930 2012 <i>TX</i> <sub>265</sub>	16.5	X	136.26455	198.00151	181.17333	7.84337	0.0669068	0.17643454	3.1483305	20	2 10.7	21.3
429931 2012 <i>TF</i> <sub>274</sub>	15.9	X	135.19887	346.57042	32.96689	10.73335	0.0418291	0.17569958	3.1571041	20	2 13.5	20.6
429932 2012 <i>TS</i> <sub>275</sub>	15.5	X	194.55520	99.24386	219.32682	19.87868	0.0652473	0.17790849	3.1309173	20	1 27.4	20.7
429933 2012 <i>TS</i> <sub>284</sub>	16.4	X	202.87615	172.51793	111.98305	13.02558	0.1496477	0.17103982	3.2141877	20	1 3.9	21.6
429934 2012 <i>TD</i> <sub>286</sub>	15.3	X	311.81470	25.77608	47.95958	2.12249	0.0963035	0.12428048	3.9768031	20	11 1.1	20.4
429935 2012 <i>TD</i> <sub>287</sub>	16.1	X	182.53465	345.85665	346.87075	7.87724	0.1056821	0.18418578	3.0593699	20	2 9.0	20.9
429936 2012 <i>TW</i> <sub>287</sub>	15.6	X	59.79968	111.61492	264.41116	7.82755	0.0942699	0.14914396	3.5215371	20	—	—
429937 2012 <i>TG</i> <sub>302</sub>	16.0	X	138.55986	357.03531	354.12814	10.10693	0.1285629	0.17160679	3.2071042	20	1 22.9	21.0
429938 2012 <i>TU</i> <sub>307</sub>	15.4	X	276.83347	297.06571	292.77432	8.15393	0.0360613	0.17434483	3.1734379	20	1 20.4	20.0
429939 2012 <i>TG</i> <sub>309</sub>	15.6	X	130.64135	261.45857	159.01665	21.13506	0.1826536	0.18186576	3.0853333	20	4 10.9	20.7
429940 2012 <i>TU</i> <sub>312</sub>	15.9	X	171.43182	278.95490	14.69659	15.60614	0.1261120	0.17271257	3.1934007	20	—	—
429941 2012 <i>TC</i> <sub>313</sub>	16.8	X	47.77490	216.88514	109.91381	17.77935	0.2901717	0.26354631	2.4093400	20	12 31.2	20.5
429942 2012 <i>TC</i> <sub>313</sub>	15.8	X	224.70193	106.27024	206.89994	14.13063	0.1316684	0.19036897	2.9927603	20	2 18.8	20.8
429943 2012 <i>TZ</i> <sub>314</sub>	16.8	X	329.89012	138.18082	177.73746	12.18180	0.3394922	0.23589220	2.5941415	20	6 13.6	18.9
429944 2012 <i>UZ</i> <sub>4</sub>	16.4	X	276.35504	128.48966	133.54726	6.13063	0.0953554	0.18927777	3.0042517	20	2 18.7	20.8
429945 2012 <i>UP</i> <sub>8</sub>	16.4	X	216.88151	149.27107	182.43172	9.84460	0.0610616	0.19012097	2.9953624	20	3 10.4	21.0
429946 2012 <i>UA</i> <sub>11</sub>	17.2	X	325.78694	274.59950	31.88646	12.85619	0.2667225	0.22924780	2.6440273	20	5 27.1	19.8
429947 2012 <i>UH</i> <sub>24</sub>	16.0	X	197.88417	344.80731	335.29078	8.77043	0.0708397	0.17908992	3.1171327	20	2 8.8	20.8
429948 2012 <i>UK</i> <sub>37</sub>	15.9	X	210.50655	321.18136	344.71762	8.91221	0.0691801	0.17450971	3.1714387	20	2 6.4	20.7
429949 2012 <i>UO</i> <sub>46</sub>	17.3	X	322.48121	198.89271	107.54490	2.79786	0.2129520	0.22241403	2.6979129	20	6 1.5	19.9
429950 2012 <i>UA</i> <sub>99</sub>	16.2	X	203.11302	288.26002	34.44054	14.31513	0.1035073	0.17950187	3.1123617	20	2 22.4	21.3
429951 2012 <i>UU</i> <sub>112</sub>	15.5	X	44.36923	41.40008	22.70828	10.52560	0.1107145	0.15557663	3.4237849	20	—	—
429952 2012 <i>UZ</i> <sub>113</sub>	16.2	X	211.73378	325.78141	330.19824	1.71225	0.0956708	0.17680587	3.1439207	20	1 24.6	21.0
429953 2012 <i>UR</i> <sub>139</sub>	16.0	X	179.26459	24.41429	304.65776	8.91535	0.0656016	0.17531102	3.1617673	20	1 29.7	20.8
429954 2012 <i>UL</i> <sub>140</sub>	16.3	X	200.27987	15.74683	329.21080	9.47017	0.0589984	0.18869042	3.0104828	20	3 7.6	20.8
429955 2012 <i>UM</i> <sub>157</sub>	16.4	X	216.47418	318.73105	344.87444	9.91816	0.2359579	0.18494467	3.0509951	20	2 4.8	21.7
429956 2012 <i>US</i> <sub>168</sub>	15.7	X	186.80951	280.11346	65.96528	17.11649	0.1026869	0.18350653	3.0669147	20	3 6.8	20.8
429957 2012 <i>UG</i> <sub>172</sub>	15.6	X	330.20707	203.07036	225.50285	8.46177	0.1470643	0.12493429	3.9629168	20	11 19.9	20.3
429958 2012 <i>UJ</i> <sub>176</sub>	15.6	X	260.45106	24.28406	246.19553	15.91401	0.1747117	0.17825868	3.1268155	20	1 29.8	20.9
429959 2012 <i>VB</i> <sub>14</sub>	17.2	X	349.36625	103.04022	187.15683	4.15470	0.2260007	0.22742045	2.6581718	20	7 8.8	19.4
429960 2012 <i>VD</i> <sub>29</sub>	16.1	X	200.68437	53.14610	247.25253	8.86573	0.0959748	0.17050825	3.2208645	20	1 17.7	21.1
429961 2012 <i>VS</i> <sub>50</sub>	16.1	X	209.34048	104.35529	196.10966	9.44877	0.0602605	0.17357291	3.1828396	20	1 25.9	21.0
429962 2012 <i>VV</i> <sub>61</sub>	16.0	X	169.41044	136.54811	226.57111	10.10681	0.0713740	0.17607287	3.1526403	20	2 25.2	20.9
429963 2012 <i>VR</i> <sub>64</sub>	16.3	X	222.80213	259.75007	43.99455	13.64412	0.0939535	0.18244565	3.0787921	20	2 18.8	21.3
429964 2012 <i>VF</i> <sub>64</sub>	16.4	X	6.15864	159.34208	25.59271	10.65405	0.0378292	0.18760186	3.0221171	20	3 20.1	20.5
429965 2012 <i>VG</i> <sub>65</sub>	16.3	X	175.42695	331.24212	28.41387	9.34332	0.0723179	0.18306060	3.0718933	20	3 5.5	21.0
429966 2012 <i>VK</i> <sub>81</sub>	15.3	X	0.87511	333.32726	70.14833	5.57824	0.1164401	0.12512056	3.9589825	20	12 6.3	20.4
429967 2012 <i>XC</i> <sub>51</sub>	17.5	X	95.66100	251.59802	54.74815	4.38025	0.2851060	0.27214474	2.3583201	20	—	—
429968 2012 <i>XF</i> <sub>114</sub>	15.7	X	219.46061	234.61702	106.84561	10.74331	0.0709879	0.18340985	3.0679924	20	3 31.1	20.5
429969 2013 <i>AX</i> <sub>32</sub>	13.5	X	326.14309	71.21991	133.18451	9.03721	0.0312751	0.08270243	5.2174368	20	9 17.7	20.4
429970 2013 <i>AQ</i> <sub>54</sub>	13.8	X	236.76197	155.06667	308.34604	21.84514	0.0566994	0.08115639	5.2834900	20	8 28.2	21.1
429971 2013 <i>AH</i> <sub>60</sub>	15.1	X	30.67645	266.81768	194.12419	31.75881	0.0676478	0.16952642	3.2332885	20	1 5.6	20.0
429972 2013 <i>AR</i> <sub>131</sub>	15.8	X	199.18748	231.92060	99.31761	17.35241	0.2337317	0.17539887	3.1607115	20	2 26.8	21.5
429973 2013 <i>AH</i> <sub>144</sub>	14.1	X	197.21149	291.61085	212.97064	14.77403	0.0395240	0.08147769	5.2695912	20	9 7.0	21.4
429974 2013 <i>BM</i> <sub>26</sub>	14.1	X	282.30692	250.33120	170.37342	7.82354	0.0860469	0.08484251	5.1293268	20	9 3.5	20.8
429975 2013 <i>CP</i> <sub>210</sub>	13.4	X	279.00802	290.18800	140.23980	16.43107	0.0770457	0.08281799	5.2125823	20	9 14.8	20.3
429976 2013 <i>JG</i> <sub>1</sub>	17.9	X	142.42530	272.44978	70.24885	23.38786	0.1584231	0.37843776	1.8929526	20	—	—
429977 2013 <i>LN</i> <sub>7</sub>	17.9	X	188.38040	215.71544	133.24912	22.22967	0.0643670	0.39286748	1.8463130	20	2 6.1	19.6
429978 2013 <i>LC</i> <sub>11</sub>	17.4	X	314.98846	233.40913	97.34095	8.76088	0.1686572	0.28877984	2.2668605	20	7 4.1	19.1
429979 2013 <i>LH</i> <sub>30</sub>	17.6	X	243.93903	120.28649	153.53787	23.52242	0.0578228	0.36655504	1.9336443	20	1 4.4	20.3
429980 2013 <i>MM</i> <sub>4</sub>	17.9	X	339.27975	215.88944	130.25835	3.26961	0.2307915	0.28732516	2.2745053	20	10 6.9	19.1
429981 2013 <i>NE</i>	18.2	X	242.38334	138.01522	107.48723	26.84677	0.1194974	0.36765232	1.9297950	20	—	—
429982 2013 <i>NV</i> <sub>11</sub>	16.7	X	264.12935	63.10824	270.45413	8.76470	0.2634878	0.25685084	2.4510306	20	4 4.9	20.7
429983 2013 <i>OA</i> <sub>5</sub>	17.9	X	273.49776	277.30963	88.14637	2.52116	0.1943506	0.27145256	2.3623274	20	6 10.3	20.6
429984 2013 <i>PF</i> <sub>3</sub>	17.2	X	101.64454	272.12590	153.45381	24.50222	0.0977116	0.37235109	1.9135257	20	2 1.8	18.9
429985 2013 <i>PS</i> <sub>7</sub>	18.4	X	142.66758	261.62032	311.43658	5.20692	0.0876598	0.30029135	2.2085513	20	11 1.1	21.5
429986 2013 <i>PE</i> <sub>28</sub>	16.7	X	163.82897	100.38555	326.62274	12.47113	0.1428476	0.23915995	2.5704574	20	5 6.7	21.0
429987 2013 <i>PC</i> <sub>36</sub>	17.4	X	139.20758	252.50521	144.71204	8.82791	0.1702700	0.22068153	2.7120148	20	3 16.3	21.6
429988 2013 <i>PZ</i> <sub>36</sub>	17.7	X	11.30674	248.57495	102.86814	5.83021	0.2106604	0.29580532	2.2308245	20	12 18.4	20.0
429989 2013 <i>PK</i> <sub>37</sub>	17.6	X	184.26238	298.49711	79.26449	6.61529	0.2487196	0.23387731	2.6090195	20	4 4.5	22.2
429990 2013 <i>PL</i> <sub>37</sub>	17.0	X	353.60897	28.26817	268.82003	11.72425	0.1554353	0.27023680	2.3694073	20	7 31.5	19.1
429991 2013 <i>PR</i> <sub>37</sub>	18.0	X	28.57904	8.44542	328.53554	4.56102	0.197825					

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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>
430001 2013 QV <sub>45</sub>	18.2	X	147.46383	170.09504	252.05348	2.09401	0.1604669	0.22952193	2.6419216	20	4 20.3	22.4
430002 2013 QP <sub>47</sub>	16.8	X	150.72641	39.31417	320.27509	14.63836	0.2367269	0.20970482	2.8058456	20	2 14.5	21.4
430003 2013 QY <sub>66</sub>	18.2	X	240.97075	99.26443	296.17599	2.44735	0.1314249	0.26172583	2.4204994	20	6 19.9	21.7
430004 2013 QZ <sub>66</sub>	17.5	X	116.79950	114.25555	292.08070	2.20488	0.2430830	0.21126750	2.7919926	20	3 10.8	21.8
430005 2013 QG <sub>72</sub>	17.8	X	328.80540	262.16116	90.99311	5.26078	0.1621149	0.28293093	2.2979951	20	9 18.0	19.5
430006 2013 QN <sub>73</sub>	17.8	X	253.27602	316.36502	120.70227	3.91228	0.2071306	0.28025997	2.3125274	20	8 24.3	20.6
430007 2013 QF <sub>74</sub>	17.2	X	263.01776	198.81957	162.86378	6.49266	0.1458651	0.25737043	2.4477306	20	5 30.9	20.7
430008 2013 QP <sub>74</sub>	18.3	X	25.21316	167.10069	162.63537	3.56086	0.1780500	0.30162209	2.2020506	20	12 4.3	20.9
430009 2013 QU <sub>81</sub>	18.0	X	280.31422	68.26491	344.13835	8.54135	0.2309950	0.28078682	2.3096787	20	8 30.4	20.0
430010 2013 QB <sub>82</sub>	18.4	X	253.58460	158.21367	279.57350	6.58207	0.1191504	0.28405963	2.2919037	20	9 5.0	21.3
430011 2013 QK <sub>90</sub>	17.0	X	106.33356	272.48297	155.72553	22.34521	0.0531445	0.22362930	2.6881298	20	3 1.1	20.7
430012 2013 QZ <sub>92</sub>	17.7	X	184.50156	232.29240	166.74049	11.02433	0.1333875	0.24153963	2.5535466	20	4 29.0	21.8
430013 2013 RC	16.7	X	189.49497	184.65018	204.60410	11.35975	0.2196117	0.23061666	2.6335542	20	4 19.3	21.3
430014 2013 RY	17.7	X	217.19158	66.72065	342.52005	3.61651	0.1547590	0.25201139	2.4823096	20	6 9.4	21.6
430015 2013 RT <sub>3</sub>	17.3	X	138.68219	252.13308	166.53491	4.86162	0.1065394	0.22095874	2.7097460	20	4 4.4	21.2
430016 2013 RP <sub>4</sub>	18.1	X	8.29523	26.29270	355.31471	7.85823	0.1671319	0.30312361	2.1947726	20	—	—
430017 2013 RD <sub>12</sub>	17.9	X	216.65857	94.86660	318.05185	14.10233	0.1111776	0.25920765	2.1361508	20	6 18.5	21.7
430018 2013 RT <sub>23</sub>	17.1	X	234.65128	209.73357	200.52016	2.15722	0.1907520	0.25666815	2.4521934	20	6 25.9	20.8
430019 2013 RK <sub>24</sub>	17.0	X	147.49623	56.86315	326.41293	9.48311	0.2191451	0.21300753	2.7767668	20	3 7.6	21.6
430020 2013 RP <sub>25</sub>	17.6	X	163.67956	54.97831	345.38925	4.66491	0.1438064	0.22396971	2.6854054	20	4 7.2	21.9
430021 2013 RH <sub>28</sub>	16.8	X	70.18004	294.03137	184.13309	8.97181	0.1147548	0.21282908	2.7783188	20	3 26.9	20.2
430022 2013 RO <sub>28</sub>	16.8	X	182.58071	264.39414	62.73198	2.97675	0.0915887	0.20602924	2.8391182	20	1 29.6	21.2
430023 2013 RH <sub>32</sub>	16.6	X	78.46450	237.22715	137.26352	10.36027	0.2927540	0.18579975	3.0416270	20	—	—
430024 2013 RR <sub>33</sub>	17.0	X	153.28669	79.35336	321.40831	11.86473	0.1843003	0.22322358	2.6913861	20	3 27.3	21.5
430025 2013 RN <sub>34</sub>	18.0	X	272.29524	140.52652	222.82400	1.22140	0.2074024	0.26102152	2.4248516	20	6 3.7	21.1
430026 2013 RR <sub>36</sub>	17.5	X	220.31878	248.22432	172.46321	0.88865	0.1594232	0.25490910	2.4634617	20	6 27.8	21.3
430027 2013 RD <sub>41</sub>	17.5	X	273.19858	312.83422	158.35179	2.22061	0.2068894	0.26089740	2.4256207	20	6 15.8	20.6
430028 2013 RE <sub>49</sub>	16.4	X	24.23572	73.39702	345.22262	10.95596	0.2222208	0.17438893	3.1729028	20	—	—
430029 2013 RB <sub>52</sub>	16.8	X	148.24745	95.78112	303.45919	4.44789	0.0812117	0.22376416	2.6870497	20	3 15.8	20.7
430030 2013 RP <sub>53</sub>	18.0	X	97.94782	270.67678	333.66029	6.19091	0.0809450	0.28651230	2.2788052	20	10 19.7	21.1
430031 2013 RY <sub>59</sub>	18.0	X	153.90483	288.18651	316.84009	6.56116	0.0671069	0.31515095	2.1385708	20	—	—
430032 2013 RE <sub>60</sub>	17.5	X	328.41695	57.19869	331.31681	5.23883	0.0697540	0.29052846	2.2577556	20	11 5.9	19.9
430033 2013 RO <sub>62</sub>	18.0	X	184.90118	167.98003	344.56571	5.49880	0.0783343	0.28659722	2.2783550	20	9 28.7	20.9
430034 2013 RE <sub>69</sub>	16.1	X	118.41868	7.15489	2.87252	10.71106	0.1244710	0.19236418	2.9720304	20	1 20.5	20.5
430035 2013 RJ <sub>69</sub>	16.0	X	59.83432	76.80571	304.69346	11.16453	0.1536083	0.17627952	3.1501759	20	—	—
430036 2013 RN <sub>69</sub>	17.0	X	161.87140	319.45855	77.66512	8.78468	0.2563635	0.22049823	2.7135176	20	4 12.3	21.8
430037 2013 RW <sub>71</sub>	17.2	X	161.01524	348.29393	46.50596	6.07944	0.0718589	0.22384588	2.6863957	20	3 28.1	21.1
430038 2013 RY <sub>78</sub>	17.8	X	301.38063	350.42143	37.07936	3.06179	0.1299856	0.28109353	2.3079983	20	9 13.9	19.8
430039 2013 RA <sub>80</sub>	17.3	X	187.63297	48.42617	353.47399	10.45911	0.1066983	0.23434874	2.6055193	20	4 29.0	21.5
430040 2013 RH <sub>83</sub>	16.5	X	41.93735	107.10611	345.84927	14.88193	0.1582083	0.19196212	2.9761789	20	1 20.3	20.1
430041 2013 RK <sub>83</sub>	16.2	X	298.44567	274.86013	346.34126	14.40998	0.1049312	0.23084397	2.6318251	20	3 8.4	19.7
430042 2013 RN <sub>83</sub>	17.6	X	310.61152	34.34491	313.52597	5.55511	0.1199909	0.26838361	2.3803020	20	7 28.7	20.0
430043 2013 RK <sub>85</sub>	17.2	X	227.33181	21.70024	298.19472	4.15579	0.0979413	0.22301698	2.6930480	20	3 1.6	21.4
430044 2013 RE <sub>86</sub>	16.9	X	134.34559	41.18166	357.65213	13.78880	0.1095561	0.21097423	2.7945793	20	3 7.8	21.0
430045 2013 RX <sub>86</sub>	17.6	X	179.61988	281.04767	309.09396	3.49335	0.0791836	0.31266067	2.1499113	20	—	—
430046 2013 RR <sub>87</sub>	17.1	X	125.83032	85.08138	315.95166	4.88858	0.0596562	0.21119977	2.7925894	20	2 21.1	20.8
430047 2013 RB <sub>88</sub>	17.0	X	153.78941	71.87471	334.93703	5.85867	0.1206661	0.22297634	2.6933752	20	4 3.3	21.1
430048 2013 RF <sub>88</sub>	18.0	X	22.48078	127.18642	246.76870	2.91629	0.1047857	0.30642647	2.1789731	20	—	—
430049 2013 RS <sub>88</sub>	16.7	X	172.80939	20.22860	343.75371	8.90606	0.0845698	0.21645768	2.7471817	20	3 1.8	20.9
430050 2013 RL <sub>92</sub>	17.6	X	210.27502	212.31757	219.91320	2.47664	0.1252465	0.25295232	2.4761499	20	7 4.9	21.2
430051 2013 RH <sub>93</sub>	17.3	X	143.60028	33.43779	354.32183	3.51689	0.1136193	0.21183201	2.7870301	20	3 3.1	21.3
430052 2013 RP <sub>95</sub>	16.9	X	270.12892	156.02100	249.64266	4.43164	0.2639445	0.27984453	2.3148605	20	7 21.6	19.6
430053 2013 RZ <sub>96</sub>	15.8	X	78.07542	141.14409	219.43180	16.30750	0.0484297	0.17815408	3.1280393	20	—	—
430054 2013 RC <sub>97</sub>	17.2	X	173.80533	310.15852	69.54390	2.99657	0.2530885	0.22051666	2.7133664	20	3 28.9	22.0
430055 2013 SL <sub>15</sub>	16.7	X	166.31045	8.96319	350.93880	3.35589	0.1115249	0.21382250	2.7697067	20	2 21.4	20.8
430056 2013 SG <sub>22</sub>	16.6	X	171.39512	228.13048	187.22589	13.28169	0.1616074	0.22815792	2.6524407	20	5 7.1	21.0
430057 2013 SJ <sub>22</sub>	16.4	X	67.09043	249.17703	115.30907	1.99296	0.2044098	0.17560873	3.1581928	20	—	—
430058 2013 SK <sub>22</sub>	17.2	X	189.67181	220.66742	164.86861	3.49716	0.1743040	0.23101166	2.6305514	20	4 15.6	21.5
430059 2013 SN <sub>26</sub>	16.9	X	228.12779	41.65331	318.13434	15.15324	0.2089261	0.23779915	2.5802543	20	4 6.7	21.5
430060 2013 SB <sub>27</sub>	16.5	X	88.14091	288.53131	76.04175	2.34081	0.2550557	0.18199577	3.0838638	20	—	—
430061 2013 SS <sub>27</sub>	15.9	X	75.93229	74.30944	288.48013	11.82515	0.1977514	0.17157603	3.2074875	20	—	—
430062 2013 SC <sub>28</sub>	16.0	X	73.60409	67.02045	333.54568	10.51449	0.2337453	0.18065729	3.0990771	20	1 16.7	19.8
430063 2013 SE <sub>30</sub>	17.8	X	14.47867	266.20914	73.48602	3.91152	0.1718357	0.28978779	2.2616010	20	11 28.3	20.0
430064 2013 SQ <sub>31</sub>	17.3	X	244.95359	352.28570	59.09734	3.09903	0.2041219	0.26018139	2.4300688	20	7 7.6	20.9
430065 2013 SL <sub>32</sub>	17.7	X	308.35706	144.21339	176.15227	2.55752	0.1479950	0.26203485	2.4185961	20	6 6.7	20.3
430066 2013 SM <sub>35</sub>	17.1	X	134.09691	156.88146	344.38434	2.00198	0.1224357	0.25633184	2.4543378	20	7 17.0	20.7
430067 2013 SC <sub>36</sub>	16.6	X	42.37405	107.63120	336.61355	1.21459	0.0909321	0.19561235	2.9390380	20	1 1.0	20.3
430068 2013 SC <sub>37</sub>	17.7	X	257.25477	250.91663	129.93766	3.51364	0.0919212	0.25905125	2.4371312	20	6 25.9	20.8
430069 2013 SF <sub>37</sub>	17.0	X	91.48728	293.90400	156.46979	8.02015	0.2010974	0.21157672	2.7892715	20	4 4.3	20.8
430070 2013 SU <sub>37</sub>	17.0	X	173.49379	275.69601	136.84064	5.24027	0.2092163	0.23242852	2.6198501	20	5 6.2	21.5
430071 2013 ST <sub>38</sub>	17.9	X	91.83644	238.08946	31.17329	6.11390	0.1072598	0.29827392	2.2184988	20	11 20.9	20.9
430072 2013 SG <sub>39</sub>	17.9	X	354.11122	189.55050	152.11487	6.31736	0.2020494	0.28498480	2.2869408	20	11 1.3	19.8
430073 2013 SQ <sub>42</sub>	16.1	X	99.51521	313.69489	84.72033	8.09869	0.1485453	0.19850704	2.9103962	20	2 2.6	20.1
430074 2013 SE <sub>43</sub>	17.4	X	31.7799									

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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>
430081 2013 <i>SD</i> <sub>52</sub>	17.2	X	255.86712	331.04329	50.20136	8.62842	0.1162962	0.25231962	2.4802876	20	6 20.3	20.5
430082 2013 <i>SO</i> <sub>55</sub>	16.9	X	235.32880	328.96851	43.92238	7.94962	0.2196077	0.23872892	2.5735505	20	5 6.6	21.1
430083 2013 <i>SY</i> <sub>55</sub>	16.5	X	6.82388	170.01027	66.65609	15.95932	0.0739647	0.24120530	2.5559056	20	5 23.9	19.2
430084 2013 <i>SB</i> <sub>57</sub>	16.5	X	33.50829	332.91069	120.47628	4.61438	0.2342863	0.18525031	3.0476383	20	1 4.8	19.2
430085 2013 <i>SD</i> <sub>57</sub>	16.0	X	52.77040	232.50888	150.90723	6.85478	0.0520297	0.17507057	3.1646616	20	—	—
430086 2013 <i>SC</i> <sub>58</sub>	16.4	X	126.60892	63.68455	310.40328	15.66949	0.1241996	0.19924151	2.9032393	20	1 30.6	20.7
430087 2013 <i>SM</i> <sub>58</sub>	16.3	X	140.19574	75.00453	295.13876	13.63463	0.1166561	0.20141355	2.8823293	20	2 5.6	20.7
430088 2013 <i>SP</i> <sub>59</sub>	16.8	X	162.46638	276.67617	123.37015	4.67870	0.1050283	0.21279490	2.7786163	20	4 7.8	21.1
430089 2013 <i>SC</i> <sub>61</sub>	16.8	X	151.47431	252.57749	120.41687	10.89619	0.1445349	0.21055326	2.9983030	20	2 27.1	21.2
430090 2013 <i>SD</i> <sub>61</sub>	15.4	X	15.34258	348.17244	93.28682	12.00312	0.0308827	0.18085332	3.0968374	20	—	—
430091 2013 <i>SV</i> <sub>61</sub>	18.1	X	284.44229	25.08204	0.14885	6.39714	0.1040414	0.27185348	2.3600042	20	8 13.6	20.7
430092 2013 <i>SK</i> <sub>62</sub>	18.1	X	44.89410	296.60219	49.40309	2.42505	0.0651259	0.30755915	2.1736200	20	—	—
430093 2013 <i>SG</i> <sub>63</sub>	17.9	X	122.81572	231.74938	10.43504	5.51473	0.0480324	0.29899279	2.2149414	20	11 17.7	20.7
430094 2013 <i>SL</i> <sub>64</sub>	16.7	X	213.02745	193.20740	204.41771	7.26573	0.1836588	0.23565617	2.5958734	20	5 20.9	21.0
430095 2013 <i>ST</i> <sub>65</sub>	16.4	X	106.39280	97.57787	350.00818	22.04774	0.0541817	0.23274593	2.6174676	20	3 20.9	20.1
430096 2013 <i>SX</i> <sub>66</sub>	16.2	X	128.77066	37.52493	6.26326	13.01686	0.1582955	0.21327512	2.7744437	20	3 13.5	20.3
430097 2013 <i>SM</i> <sub>71</sub>	17.3	X	297.29055	271.33907	119.14057	6.59745	0.1266913	0.27619874	2.3351866	20	9 11.5	19.5
430098 2013 <i>SX</i> <sub>72</sub>	16.5	X	32.81572	283.85315	152.67246	14.84151	0.2199836	0.17949134	3.1124834	20	—	—
430099 2013 <i>SF</i> <sub>74</sub>	17.6	X	202.29436	334.15608	180.18215	5.59214	0.0784864	0.29192382	2.2505553	20	10 26.3	20.5
430100 2013 <i>SV</i> <sub>74</sub>	18.0	X	291.16347	72.09308	345.12722	2.45999	0.1495871	0.28494525	2.2871524	20	10 6.9	20.1
430101 2013 <i>SO</i> <sub>75</sub>	16.1	X	65.18575	108.23666	314.28173	15.61326	0.2143881	0.19258573	2.9697506	20	1 24.8	19.4
430102 2013 <i>SZ</i> <sub>81</sub>	17.4	X	325.46546	141.12270	282.64329	7.31613	0.0309878	0.30579773	2.1819588	20	12 26.9	19.8
430103 2013 <i>SG</i> <sub>84</sub>	16.9	X	179.50170	241.78630	159.71584	6.93879	0.2376066	0.22921835	2.6442538	20	4 28.3	21.6
430104 2013 <i>SH</i> <sub>84</sub>	17.1	X	331.62002	293.95825	45.10189	7.67637	0.1423863	0.27157484	2.3616182	20	8 30.7	19.2
430105 2013 <i>SZ</i> <sub>86</sub>	16.8	X	142.17662	145.34333	251.61391	2.66569	0.1072491	0.21171962	2.7880163	20	3 10.5	21.0
430106 2013 <i>TV</i>	17.8	X	84.72937	125.88014	127.37232	4.17359	0.1090818	0.28579194	2.2826329	20	10 23.6	20.9
430107 2013 <i>TP</i> <sub>1</sub>	16.8	X	152.70827	103.32269	303.82500	13.11360	0.2342990	0.22339132	2.6900386	20	4 5.1	21.6
430108 2013 <i>TM</i> <sub>2</sub>	16.1	X	32.52022	289.81149	134.12583	10.67307	0.2592527	0.17714087	3.1399558	20	—	—
430109 2013 <i>TO</i> <sub>2</sub>	17.6	X	194.35219	290.40291	162.32301	6.16205	0.0464186	0.25744001	2.4472895	20	7 19.3	21.0
430110 2013 <i>TX</i> <sub>3</sub>	17.0	X	183.66694	73.00450	333.15603	7.79739	0.1970848	0.23002090	2.6380996	20	5 1.7	21.5
430111 2013 <i>TH</i> <sub>8</sub>	16.6	X	173.10325	257.99615	97.77190	5.02729	0.1162765	0.21347925	2.7726748	20	2 24.7	20.9
430112 2013 <i>TL</i> <sub>8</sub>	17.0	X	247.10772	318.96383	82.42383	3.69312	0.1851059	0.25719346	2.4488533	20	6 28.5	20.6
430113 2013 <i>TJ</i> <sub>9</sub>	16.5	X	231.23130	5.88401	356.31622	14.94497	0.1138527	0.23348463	2.6119439	20	4 21.8	20.6
430114 2013 <i>TB</i> <sub>10</sub>	16.4	X	149.02636	125.64809	273.22500	9.24543	0.1562022	0.21862200	2.7290206	20	3 19.9	20.9
430115 2013 <i>TO</i> <sub>10</sub>	17.5	X	283.26396	240.70646	156.09385	7.18166	0.1221373	0.27289761	2.3539807	20	8 23.6	19.9
430116 2013 <i>TO</i> <sub>12</sub>	16.2	X	68.64366	324.57182	77.16042	5.79073	0.1384084	0.18042726	3.1017106	20	—	—
430117 2013 <i>TA</i> <sub>13</sub>	16.9	X	136.53521	5.63994	302.03663	6.90325	0.0717290	0.21219558	2.7838457	20	3 5.6	20.9
430118 2013 <i>TJ</i> <sub>14</sub>	17.9	X	275.99721	254.06168	109.55124	3.06957	0.1708103	0.25763498	2.4460547	20	6 14.8	20.9
430119 2013 <i>TK</i> <sub>14</sub>	17.8	X	332.58922	222.97152	157.85459	5.03858	0.1323027	0.28600192	2.2815154	20	11 9.2	19.7
430120 2013 <i>TF</i> <sub>25</sub>	16.6	X	98.00627	84.38632	22.69026	7.71411	0.1915271	0.21150610	2.7898924	20	4 28.8	20.6
430121 2013 <i>TK</i> <sub>25</sub>	17.0	X	173.54262	28.06081	12.83118	5.77040	0.0972695	0.22827291	2.6515499	20	4 16.3	21.0
430122 2013 <i>TZ</i> <sub>27</sub>	17.7	X	202.50874	186.99947	193.22841	2.87231	0.1345629	0.23369353	2.6103872	20	4 20.5	21.9
430123 2013 <i>TN</i> <sub>28</sub>	17.5	X	222.05709	62.10420	34.40888	7.35271	0.0659004	0.26376050	2.4080355	20	9 1.6	20.7
430124 2013 <i>TU</i> <sub>29</sub>	17.5	X	253.94310	11.94100	22.86687	1.52331	0.1868923	0.25769694	2.4456626	20	6 27.3	20.9
430125 2013 <i>TL</i> <sub>31</sub>	17.6	X	321.67291	115.25959	272.25324	5.73679	0.1055027	0.28805120	2.2706817	20	10 23.4	19.8
430126 2013 <i>TV</i> <sub>31</sub>	15.9	X	22.20984	222.57145	287.81690	5.68290	0.0523160	0.20957065	2.8070431	20	2 19.2	19.6
430127 2013 <i>TJ</i> <sub>32</sub>	16.1	X	68.05350	353.63191	12.74820	6.30226	0.0548306	0.16841054	3.2475552	20	—	—
430128 2013 <i>TH</i> <sub>34</sub>	16.9	X	171.22339	307.51359	67.30552	4.73445	0.1159326	0.21327354	2.7744575	20	3 17.5	21.2
430129 2013 <i>TA</i> <sub>35</sub>	16.6	X	134.35002	223.49671	213.20323	12.41043	0.1353385	0.21987420	2.7186494	20	4 24.3	20.6
430130 2013 <i>TV</i> <sub>35</sub>	17.5	X	96.61172	308.81641	331.57361	4.33706	0.1093364	0.29313027	2.2443760	20	12 10.2	20.7
430131 2013 <i>TD</i> <sub>36</sub>	16.8	X	136.88755	267.75192	168.29246	13.58726	0.2093004	0.21938379	2.7226994	20	5 5.5	21.4
430132 2013 <i>TA</i> <sub>37</sub>	17.0	X	144.26624	313.00853	92.50382	3.87148	0.2189767	0.21553221	2.7550401	20	4 4.3	21.5
430133 2013 <i>TV</i> <sub>38</sub>	16.9	X	53.64827	284.26306	11.13547	7.17562	0.1281446	0.29102853	2.2551685	20	11 11.4	20.8
430134 2013 <i>TW</i> <sub>38</sub>	17.3	X	300.32894	291.25499	19.54869	12.71284	0.2024335	0.24473321	2.5312834	20	4 28.1	19.5
430135 2013 <i>TT</i> <sub>39</sub>	17.9	X	267.01458	298.13367	137.23781	0.98374	0.0185063	0.27852308	2.3221766	20	10 11.2	20.5
430136 2013 <i>TB</i> <sub>40</sub>	16.9	X	145.62013	203.09551	209.90137	4.00756	0.1190413	0.21728881	2.7401719	20	4 4.5	21.0
430137 2013 <i>TZ</i> <sub>42</sub>	16.3	X	71.71648	164.27276	234.51379	4.22157	0.1197195	0.18213247	3.0823205	20	—	—
430138 2013 <i>TA</i> <sub>43</sub>	17.3	X	223.68437	238.62668	128.95453	4.61135	0.1975094	0.23847000	2.5754130	20	4 23.2	21.5
430139 2013 <i>TZ</i> <sub>43</sub>	16.7	X	105.20180	86.52084	17.53531	12.78361	0.1499781	0.21836959	2.7311231	20	4 26.0	20.6
430140 2013 <i>TJ</i> <sub>44</sub>	16.6	X	352.25211	84.28151	17.29967	13.28591	0.1219119	0.17158090	3.2074268	20	—	—
430141 2013 <i>TS</i> <sub>44</sub>	16.9	X	97.39087	196.85117	229.93557	1.20237	0.0948607	0.20375150	2.8602380	20	2 24.3	20.7
430142 2013 <i>TG</i> <sub>46</sub>	17.6	X	239.93203	39.47549	8.48173	1.78275	0.1711883	0.25505512	2.4625214	20	6 30.9	21.0
430143 2013 <i>TK</i> <sub>46</sub>	17.3	X	168.16716	33.87617	14.78109	6.36126	0.0556852	0.22799761	2.6536839	20	4 18.5	21.1
430144 2013 <i>TQ</i> <sub>46</sub>	16.9	X	59.61257	282.12355	203.46994	8.00906	0.1023136	0.21141969	2.7906526	20	3 17.5	20.4
430145 2013 <i>TY</i> <sub>46</sub>	17.6	X	313.82975	338.79353	11.73964	2.54336	0.2220890	0.26931611	2.3748043	20	7 25.8	19.4
430146 2013 <i>TT</i> <sub>48</sub>	17.0	X	92.28867	218.00276	207.77206	1.39201	0.0687260	0.20251754	2.8718447	20	2 12.9	20.7
430147 2013 <i>TN</i> <sub>49</sub>	17.0	X	163.06753	31.96337	29.75790	4.19331	0.1761354	0.22691673	2.6621041	20	5 5.4	21.3
430148 2013 <i>TH</i> <sub>50</sub>	16.6	X	63.22307	189.63554	198.18567	1.03219	0.2020241	0.17479053	3.1680409	20	—	—
430149 2013 <i>TP</i> <sub>50</sub>	16.7	X	125.70660	25.01652	41.78682	2.38720	0.2266669	0.21019367	2.8014935	20	4 12.9	21.0
430150 2013 <i>TR</i> <sub>50</sub>	16.9	X	77.52573	282.04863	136.32795	1.39864	0.2062001	0.18796479	3.0182257	20	2 6.2	20.6
430151 2013 <i>TJ</i> <sub>51</sub>	17.1	X	135.04619	48.67684	5.01252	3.33590	0.1784855	0.21319530	2.7751362	20	3 31.5	21.5
430152 2013 <i>TR</i> <sub>53</sub>	17.											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
430161 2013 TV <sub>74</sub>	17.8	X	213.62806	354.86975	41.08646	1.81691	0.0847193	0.23964217	2.5670080	20	5 24.0	21.4
430162 2013 TP <sub>75</sub>	16.2	X	179.84793	355.37981	45.19542	10.05326	0.1922833	0.21921475	2.7240989	20	4 25.9	20.7
430163 2013 TR <sub>76</sub>	16.3	X	38.92447	164.07366	247.49734	4.58923	0.1675999	0.17107672	3.2137254	20	—	—
430164 2013 TT <sub>79</sub>	16.7	X	199.34769	259.51968	135.67920	17.76351	0.2871809	0.23195265	2.6234321	20	5 9.1	21.8
430165 2013 TQ <sub>80</sub>	17.4	X	201.79565	195.01481	171.89454	6.30302	0.0862515	0.22801023	2.6535859	20	4 5.0	21.3
430166 2013 TZ <sub>82</sub>	17.0	X	59.85060	199.38908	236.50127	8.76459	0.2204737	0.18661052	3.0328107	20	1 30.4	20.6
430167 2013 TA <sub>83</sub>	17.1	X	323.78516	312.61421	316.72208	4.91134	0.1177845	0.23915445	2.5704968	20	4 20.9	20.3
430168 2013 TV <sub>83</sub>	17.1	X	124.70993	223.30196	215.14190	14.54538	0.0579627	0.21984813	2.7188643	20	4 5.1	21.0
430169 2013 TO <sub>87</sub>	17.3	X	126.06838	254.74067	179.77162	2.34961	0.0393954	0.22440429	2.6819372	20	3 31.9	21.1
430170 2013 TB <sub>89</sub>	16.6	X	107.27398	35.08513	14.11075	11.96441	0.0338341	0.19933126	2.9023677	20	2 12.2	20.8
430171 2013 TN <sub>89</sub>	17.4	X	216.90110	101.34092	276.83893	2.25598	0.0772388	0.23442481	2.6049556	20	5 4.4	21.1
430172 2013 TT <sub>91</sub>	17.4	X	72.79351	209.12420	195.48702	0.98510	0.1785138	0.18720251	3.0264136	20	1 8.7	21.1
430173 2013 TL <sub>94</sub>	17.8	X	19.10237	3.50621	307.55232	7.06811	0.1469865	0.28483778	2.2877276	20	10 15.2	20.4
430174 2013 TL <sub>95</sub>	16.3	X	52.26442	220.73149	201.91136	10.09060	0.2205745	0.17699692	3.1416580	20	1 3.2	19.8
430175 2013 TZ <sub>96</sub>	17.5	X	244.66403	39.66379	341.89794	6.56561	0.1179704	0.26066574	2.4270576	20	6 6.0	21.0
430176 2013 TE <sub>98</sub>	17.8	X	329.35524	172.93331	174.06019	2.87813	0.0775645	0.26915212	2.3757688	20	9 3.2	20.2
430177 2013 TV <sub>98</sub>	16.9	X	176.51349	208.15674	173.14334	6.38287	0.0626441	0.21774519	2.7363417	20	3 26.6	20.8
430178 2013 TW <sub>98</sub>	17.1	X	197.03553	312.05550	72.77923	4.50904	0.1279367	0.22801066	2.6535827	20	4 22.4	21.2
430179 2013 TA <sub>101</sub>	17.4	X	147.56711	72.38878	0.96104	4.09939	0.1493375	0.22657656	2.6647680	20	5 3.2	21.5
430180 2013 TA <sub>103</sub>	17.4	X	183.07056	278.34226	97.90765	0.95095	0.1365707	0.22156873	2.7047704	20	3 28.8	21.7
430181 2013 TJ <sub>105</sub>	17.3	X	351.48380	197.62847	116.12822	6.76493	0.1087744	0.27372813	2.3492168	20	8 28.1	19.5
430182 2013 TC <sub>106</sub>	17.7	X	115.13340	179.46452	4.60751	3.83735	0.1357970	0.26032246	2.4291907	20	8 24.7	21.2
430183 2013 TD <sub>107</sub>	16.9	X	191.10847	173.74800	196.84733	5.89341	0.0250274	0.21985779	2.7187847	20	3 27.9	20.7
430184 2013 TG <sub>109</sub>	18.1	X	55.62913	280.37268	41.69052	3.09726	0.1561430	0.30134802	2.2033855	20	12 26.7	21.2
430185 2013 TS <sub>109</sub>	16.7	X	182.76021	26.69569	357.82180	6.10360	0.0935796	0.22039446	2.1434693	20	4 5.3	20.8
430186 2013 TD <sub>110</sub>	16.7	X	143.14081	95.15758	329.23670	3.99099	0.1372684	0.21756754	2.7378311	20	4 16.4	20.9
430187 2013 TN <sub>110</sub>	17.4	X	207.93162	30.98774	1.55641	4.32191	0.1230668	0.23384384	2.6092685	20	5 10.3	21.5
430188 2013 TU <sub>110</sub>	16.8	X	137.79855	186.48110	269.04219	3.99370	0.1039975	0.22579505	2.6709131	20	5 18.6	20.8
430189 2013 TL <sub>115</sub>	17.7	X	29.62304	263.80274	36.82102	6.60202	0.1034753	0.27226564	2.3576219	20	10 12.3	20.3
430190 2013 TW <sub>121</sub>	17.1	X	153.79928	205.35483	215.46565	4.46711	0.1531126	0.21821138	2.7324430	20	4 25.3	21.4
430191 2013 TB <sub>122</sub>	15.9	X	147.52114	293.70254	48.10658	10.04676	0.0717582	0.18660430	3.0328781	20	1 11.9	20.5
430192 2013 TJ <sub>123</sub>	17.9	X	37.13953	333.56523	13.82173	6.21475	0.1077177	0.30313710	2.1947075	20	—	—
430193 2013 TV <sub>127</sub>	16.5	X	65.01364	45.56132	10.06714	8.92743	0.1542103	0.18221579	3.0813808	20	1 10.3	20.4
430194 2013 TH <sub>128</sub>	17.6	X	118.33302	152.31794	281.11633	2.07003	0.1718960	0.21761945	2.7373957	20	4 6.1	21.7
430195 2013 TZ <sub>129</sub>	16.3	X	68.15118	359.22322	13.85438	6.15595	0.1418439	0.17754178	3.1352271	20	—	—
430196 2013 TT <sub>130</sub>	16.5	X	156.63532	147.62962	244.71120	11.28425	0.1128938	0.21963296	2.7206397	20	3 16.2	20.9
430197 2013 TC <sub>131</sub>	16.3	X	25.56903	84.21327	24.48449	25.21097	0.2898094	0.17416469	3.1756257	20	1 20.2	19.7
430198 2013 TU <sub>131</sub>	16.5	X	143.16927	348.34512	75.69705	7.66947	0.0671797	0.21906682	2.7253251	20	4 14.9	20.5
430199 2013 TA <sub>132</sub>	17.4	X	216.93298	56.54547	21.04864	2.30233	0.1598976	0.25647698	2.4534119	20	7 17.4	21.1
430200 2013 TL <sub>136</sub>	17.4	X	270.39146	247.68358	157.37838	4.94305	0.1811476	0.26638036	2.3922207	20	8 3.5	20.2
430201 2013 TX <sub>137</sub>	16.6	X	153.16562	300.98255	104.14948	6.01577	0.1599206	0.21278398	2.7787113	20	4 9.1	21.1
430202 2013 TH <sub>139</sub>	17.4	X	324.50746	338.90508	29.60675	6.93298	0.2389578	0.27673543	2.3321664	20	9 29.9	18.5
430203 2013 TL <sub>139</sub>	16.6	X	237.25894	215.23949	142.26569	5.69775	0.3121553	0.23768042	2.5811135	20	4 15.6	21.2
430204 2013 TU <sub>141</sub>	17.8	X	168.99325	21.50871	65.23803	1.63509	0.0836037	0.24255039	2.5464475	20	6 10.2	21.3
430205 2013 TW <sub>142</sub>	17.2	X	238.28533	167.38907	228.86445	3.98803	0.0837765	0.24764653	2.5113922	20	6 23.3	20.6
430206 2013 TX <sub>142</sub>	16.5	X	240.61780	278.74391	30.59150	12.31747	0.1961648	0.22182160	2.7027144	20	3 3.0	21.1
430207 2013 TB <sub>143</sub>	16.1	X	61.50543	190.09501	225.04577	14.92075	0.0885818	0.17583193	3.1555196	20	—	—
430208 2013 TJ <sub>143</sub>	16.9	X	150.88965	333.96476	134.05043	5.68884	0.1721812	0.24431856	2.5341466	20	6 22.3	20.9
430209 2013 TZ <sub>143</sub>	17.7	X	307.02560	175.35269	172.29465	2.66360	0.1421097	0.26467463	2.4024877	20	7 17.0	20.1
430210 2013 TM <sub>145</sub>	17.1	X	168.25027	48.03728	346.00587	8.24798	0.1723313	0.22054964	2.7130959	20	4 4.1	21.5
430211 2013 UX <sub>4</sub>	17.5	X	209.81865	261.81657	101.53736	3.53619	0.2253636	0.22960525	2.6412824	20	4 5.6	22.0
430212 2013 UN <sub>6</sub>	16.0	X	76.22834	109.59297	273.56194	9.97856	0.1373775	0.17633039	3.1495700	20	—	—
430213 2013 UB <sub>12</sub>	16.0	X	225.93066	191.24584	193.34926	15.00379	0.1736631	0.23818028	2.5775010	20	5 17.9	20.2
430214 2013 UG <sub>12</sub>	16.5	X	225.08212	209.46396	170.83416	7.40962	0.2118419	0.23677871	2.5876624	20	5 9.4	20.9
430215 2013 UF <sub>14</sub>	16.2	X	79.90721	203.03466	195.00604	13.52798	0.1314415	0.18690039	3.0296740	20	1 3.2	20.3
430216 2013 VU	17.7	X	327.16375	316.68868	44.05815	2.40376	0.1963516	0.27149003	2.3621100	20	9 21.1	19.1
430217 2013 VS <sub>2</sub>	17.1	X	172.16073	123.00134	289.66543	4.20515	0.1951678	0.22475622	2.6791369	20	5 1.8	21.6
430218 2013 VV <sub>3</sub>	16.0	X	56.87504	276.80531	148.60981	10.35674	0.2327017	0.17636335	3.1491776	20	1 17.8	19.5
430219 2013 VZ <sub>5</sub>	17.3	X	292.67901	7.82703	13.00211	6.81461	0.1091760	0.26456955	2.4031238	20	8 19.9	19.9
430220 2013 VA <sub>9</sub>	17.7	X	237.79811	259.52522	66.79985	22.35069	0.1040978	0.37043400	1.9201220	20	3 24.9	20.7
430221 2013 VH <sub>10</sub>	17.1	X	214.18554	48.49265	345.59559	7.87491	0.1898489	0.24155451	2.5534417	20	5 13.6	21.4
430222 2013 VC <sub>11</sub>	16.4	X	135.01885	301.66668	121.33987	6.06542	0.1661285	0.21221172	2.7837046	20	4 13.9	20.8
430223 2013 VF <sub>14</sub>	16.0	X	45.83696	177.28905	246.12129	10.06717	0.1913192	0.17540324	3.1606590	20	—	—
430224 2013 VL <sub>14</sub>	16.0	X	93.37368	328.07663	52.71397	11.37848	0.1109307	0.17738035	3.1371290	20	—	—
430225 2013 VW <sub>14</sub>	18.0	X	246.08026	68.44771	339.56116	6.65823	0.1108863	0.25993631	2.4315960	20	7 18.1	21.3
430226 2013 VE <sub>15</sub>	16.0	X	124.74934	5.16688	49.61726	16.14150	0.1306500	0.20592275	2.8400970	20	3 26.1	20.4
430227 2013 VG <sub>18</sub>	16.4	X	106.22783	95.82773	276.47444	2.37269	0.1565454	0.18080703	3.0973658	20	1 12.2	20.6
430228 2013 VO <sub>18</sub>	16.5	X	222.85306	312.08512	29.96834	13.47045	0.1812573	0.22547167	2.6734664	20	3 25.8	20.9
430229 2013 VS <sub>18</sub>	16.4	X	172.40594	272.20702	107.14163	10.46004	0.2472520	0.21641719	2.7475244	20	3 31.1	21.4
430230 2013 VL <sub>19</sub>	16.8	X	244.03216	263.48099	95.72096	5.13047	0.2586074	0.23871596	2.5736436	20	4 26.4	21.1
430231 2013 VL <sub>20</sub>	15.8	X	66.84878	251.32868	173.96067	15.76814	0.0943808	0.18209618	3.0827300	20	1 14.6	20.1
430232 2013 VV <sub>21</sub>	17.6	X	319.62609	129.09290	224.44367	5.62525	0.1448778	0.26859263	2.3790669	20	8 19.1	19.7
430233 2013 VW <sub>21</sub>	16.6	X	189.45954	137.10111	129.15579	13.70573	0.1908836	0.21693659	2.7431371	20	3 6.8	21.

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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>
430241 2013 <i>WN</i> <sub>9</sub>	16.7 <sup>m</sup>	X	72.19811	37.92626	6.82226	3.23629	0.1094586	0.17670232	3.1451489	20	1 1.8	20.9
430242 2013 <i>WP</i> <sub>9</sub>	17.3	X	28.17014	28.88418	264.32256	5.12425	0.0639707	0.26393292	2.4069866	20	9 17.1	20.3
430243 2013 <i>WG</i> <sub>11</sub>	16.1	X	69.17333	250.04239	173.99329	9.67314	0.1061155	0.17949175	3.1124787	20	1 18.4	20.3
430244 2013 <i>WQ</i> <sub>11</sub>	17.0	X	67.56266	315.28834	96.36742	2.67386	0.1732317	0.17524958	3.1625063	20	1 11.6	20.9
430245 2013 <i>WY</i> <sub>11</sub>	16.2	X	247.65975	315.89007	91.21502	15.49499	0.0840883	0.23951865	2.5678905	20	7 20.8	19.7
430246 2013 <i>WZ</i> <sub>11</sub>	16.5	X	195.48489	308.70063	60.22396	11.08361	0.1939194	0.21651225	2.7467200	20	4 4.9	21.2
430247 2013 <i>WL</i> <sub>13</sub>	16.5	X	9.55649	34.10402	132.17601	2.98758	0.1017873	0.19169284	2.9789654	20	2 25.3	20.0
430248 2013 <i>WT</i> <sub>14</sub>	16.9	X	148.17586	333.71398	99.06280	5.41947	0.0529602	0.21529526	2.7570612	20	4 29.6	20.9
430249 2013 <i>WV</i> <sub>15</sub>	16.9	X	313.74663	104.20422	208.85536	3.27584	0.1458857	0.24074843	2.5591382	20	6 5.4	19.7
430250 2013 <i>WR</i> <sub>19</sub>	16.9	X	208.27961	277.83884	89.80826	7.22393	0.0769888	0.21665135	2.7455442	20	4 16.2	21.0
430251 2013 <i>WS</i> <sub>19</sub>	16.2	X	232.17961	111.78713	232.89649	10.89420	0.1424133	0.22019989	2.7159680	20	4 2.1	20.5
430252 2013 <i>WT</i> <sub>20</sub>	17.2	X	88.93539	62.35126	78.58952	3.11177	0.0394688	0.21468918	2.7622477	20	5 11.1	20.8
430253 2013 <i>WD</i> <sub>22</sub>	16.2	X	127.14513	302.64944	100.64766	13.15685	0.0592128	0.19843240	2.9111260	20	3 3.5	20.5
430254 2013 <i>WE</i> <sub>26</sub>	15.7	X	129.73250	78.03345	273.78844	8.15290	0.1135364	0.18368832	3.0648909	20	1 8.0	20.2
430255 2013 <i>WA</i> <sub>29</sub>	16.6	X	135.19685	156.50520	243.25498	10.70827	0.0651805	0.19981890	2.8976439	20	2 28.1	21.0
430256 2013 <i>WV</i> <sub>30</sub>	15.8	X	126.02994	323.47963	69.92784	10.68234	0.0370022	0.19199149	2.9758753	20	2 16.4	20.2
430257 2013 <i>WV</i> <sub>31</sub>	16.0	X	334.39205	280.11787	241.91341	10.75886	0.0636155	0.17921069	3.1157321	20	1 3.8	20.3
430258 2013 <i>WV</i> <sub>31</sub>	17.0	X	168.51127	153.36645	218.25318	1.25938	0.0818772	0.20377722	2.8599973	20	3 6.9	21.3
430259 2013 <i>WY</i> <sub>32</sub>	17.3	X	99.36668	325.40562	155.35857	0.95206	0.0173841	0.21619652	2.7493936	20	4 24.5	20.9
430260 2013 <i>WV</i> <sub>35</sub>	17.7	X	57.63866	256.66396	65.64070	1.57712	0.1190068	0.29084624	2.2561108	20	12 22.7	20.7
430261 2013 <i>WK</i> <sub>36</sub>	15.5	X	68.38774	299.84442	112.12269	12.35518	0.0572247	0.17099403	3.2147614	20	—	—
430262 2013 <i>WA</i> <sub>38</sub>	16.5	X	131.43718	23.61012	54.19846	15.44256	0.1713316	0.21338257	2.7735123	20	4 28.9	20.9
430263 2013 <i>WE</i> <sub>40</sub>	16.6	X	58.22161	68.56641	357.33524	1.63394	0.1465078	0.17498584	3.1656831	20	1 11.8	20.5
430264 2013 <i>WN</i> <sub>40</sub>	16.3	X	78.49067	324.09819	83.76772	17.33397	0.0555617	0.18684672	3.0302543	20	1 5.0	20.4
430265 2013 <i>WA</i> <sub>41</sub>	16.5	X	294.02978	132.45900	283.75778	2.22616	0.1289359	0.19274505	2.9681139	20	2 15.6	20.6
430266 2013 <i>WQ</i> <sub>41</sub>	17.1	X	246.78875	100.21302	291.10061	0.95288	0.0607650	0.24066880	2.5597026	20	6 30.5	20.3
430267 2013 <i>WM</i> <sub>42</sub>	16.6	X	212.20806	305.79406	59.76823	6.83977	0.0255674	0.21368004	2.7709376	20	4 19.1	20.5
430268 2013 <i>WY</i> <sub>42</sub>	16.3	X	174.93043	285.29764	65.75173	11.36169	0.1716531	0.19338537	2.9615585	20	2 24.1	20.9
430269 2013 <i>WQ</i> <sub>46</sub>	16.4	X	201.23756	270.09059	105.43428	6.51988	0.0958199	0.22227498	2.6990380	20	4 17.5	20.6
430270 2013 <i>WQ</i> <sub>47</sub>	16.2	X	121.21747	312.30867	47.65261	12.45507	0.1444655	0.18935072	3.0034799	20	1 13.3	20.7
430271 2013 <i>WJ</i> <sub>48</sub>	15.4	X	130.03231	78.35732	284.27272	13.18754	0.0296412	0.18464265	3.0543212	20	1 10.6	19.8
430272 2013 <i>WS</i> <sub>48</sub>	15.8	X	150.59199	0.15489	0.39157	10.30944	0.1436079	0.19594508	2.9357100	20	2 13.7	20.4
430273 2013 <i>WJ</i> <sub>50</sub>	15.9	X	93.85300	74.99219	322.48515	8.09496	0.1166657	0.18323011	3.0699984	20	1 22.4	20.0
430274 2013 <i>WF</i> <sub>53</sub>	16.0	X	86.43591	182.00528	275.14195	12.38468	0.0660534	0.20060507	2.8900684	20	3 9.1	20.2
430275 2013 <i>WC</i> <sub>54</sub>	16.5	X	246.87174	85.89101	291.55417	11.70386	0.2181740	0.24276425	2.5449518	20	5 21.9	20.6
430276 2013 <i>WD</i> <sub>54</sub>	16.6	X	24.04238	109.49685	10.30597	10.04407	0.1925845	0.17769756	3.1333944	20	1 25.6	20.1
430277 2013 <i>WG</i> <sub>55</sub>	15.9	X	63.51592	154.86417	231.74043	16.20063	0.2194736	0.17196754	3.2026174	20	—	—
430278 2013 <i>WK</i> <sub>55</sub>	16.5	X	213.31607	344.16566	61.09736	14.53889	0.1553105	0.23540675	2.5977067	20	5 30.8	20.7
430279 2013 <i>WV</i> <sub>55</sub>	16.8	X	274.58288	81.21096	254.87885	7.70190	0.1834297	0.23920985	2.5700999	20	5 2.7	20.4
430280 2013 <i>WL</i> <sub>56</sub>	15.7	X	101.45082	318.09656	59.99443	10.69443	0.0941675	0.17729030	3.1381912	20	1 5.8	20.1
430281 2013 <i>WV</i> <sub>56</sub>	17.2	X	219.93724	102.82475	290.80200	3.30783	0.1585382	0.23404177	2.6077971	20	5 22.4	21.2
430282 2013 <i>WT</i> <sub>57</sub>	15.9	X	220.92800	219.14352	56.84206	10.88403	0.0486020	0.18604177	3.0389886	20	1 11.3	20.6
430283 2013 <i>WD</i> <sub>61</sub>	16.8	X	234.60152	210.59684	179.70516	6.17978	0.1404544	0.24211753	2.5494817	20	6 5.2	20.6
430284 2013 <i>WM</i> <sub>62</sub>	17.0	X	139.31540	209.15612	243.68618	8.15683	0.1294656	0.22099383	2.7094592	20	5 19.3	21.2
430285 2013 <i>WV</i> <sub>64</sub>	16.1	X	105.11822	303.96602	113.76336	6.91197	0.0754225	0.19280433	2.9675055	20	2 23.7	20.2
430286 2013 <i>WX</i> <sub>64</sub>	16.4	X	247.05395	153.20751	228.80946	16.61540	0.1919308	0.24219134	2.5489636	20	6 1.5	20.3
430287 2013 <i>WM</i> <sub>65</sub>	17.1	X	231.97376	286.92813	91.10406	10.52516	0.1203725	0.23348469	2.6119435	20	5 20.6	21.1
430288 2013 <i>WH</i> <sub>66</sub>	16.8	X	267.86160	131.36447	222.49086	3.89377	0.2443598	0.24327797	2.5413678	20	5 11.8	20.3
430289 2013 <i>WG</i> <sub>68</sub>	16.4	X	230.36529	65.62426	328.29019	7.25353	0.1016945	0.23922648	2.5699808	20	6 7.7	20.3
430290 2013 <i>WO</i> <sub>69</sub>	16.7	X	154.33005	92.02481	248.55295	4.82988	0.1054693	0.19176248	2.9782441	20	1 18.0	21.3
430291 2013 <i>WH</i> <sub>71</sub>	17.2	X	225.91440	305.20540	60.15946	5.19561	0.0999899	0.22396659	2.6854303	20	4 28.3	21.2
430292 2013 <i>WU</i> <sub>73</sub>	16.9	X	210.87147	34.76140	11.64174	4.45369	0.1241942	0.23485108	2.6018026	20	5 31.6	20.8
430293 2013 <i>WG</i> <sub>75</sub>	16.8	X	37.73739	314.62707	247.37957	13.31347	0.1373398	0.21991864	2.7182831	20	6 1.6	19.7
430294 2013 <i>WA</i> <sub>76</sub>	15.8	X	134.24305	277.44255	74.72768	11.26185	0.0460259	0.17881655	3.1203087	20	1 6.7	20.3
430295 2013 <i>WF</i> <sub>81</sub>	16.6	X	182.52119	117.71677	280.64446	6.14632	0.0675536	0.21910221	2.7250316	20	4 20.8	20.8
430296 2013 <i>WB</i> <sub>82</sub>	16.6	X	114.16332	291.26695	114.80771	4.88077	0.1260132	0.19100350	2.9861286	20	2 26.8	20.9
430297 2013 <i>WG</i> <sub>84</sub>	17.1	X	261.71101	158.37573	211.18959	5.65459	0.1098982	0.23970802	2.5665378	20	6 13.1	20.5
430298 2013 <i>WX</i> <sub>84</sub>	15.9	X	82.42662	330.44871	89.38689	11.89739	0.1084368	0.18149885	3.0894900	20	2 4.1	20.1
430299 2013 <i>WC</i> <sub>97</sub>	16.9	X	244.64251	200.55231	178.52449	4.70017	0.1941328	0.23875064	2.5733944	20	5 26.8	20.9
430300 2013 <i>WL</i> <sub>97</sub>	15.6	X	110.85418	113.14249	259.25337	12.01960	0.0089158	0.17391025	3.1787224	20	—	—
430301 2013 <i>WR</i> <sub>98</sub>	16.9	X	185.21219	332.43995	63.89942	4.90950	0.0185276	0.21782517	2.7356719	20	4 24.7	20.6
430302 2013 <i>WQ</i> <sub>99</sub>	16.6	X	172.63105	26.89480	21.08973	9.63381	0.0453806	0.21884490	2.7271671	20	4 22.6	20.4
430303 2013 <i>WC</i> <sub>103</sub>	16.6	X	155.12738	26.28053	56.63402	13.93672	0.1347863	0.22663972	2.6642729	20	5 22.7	20.6
430304 2013 <i>WO</i> <sub>104</sub>	17.0	X	139.48445	21.88318	86.71737	6.88086	0.1481729	0.22191162	2.7019835	20	6 10.3	21.0
430305 2013 <i>WX</i> <sub>106</sub>	17.0	X	222.04792	237.85714	127.67615	6.92222	0.3979750	0.23518043	2.5993730	20	4 12.4	22.1
430306 2013 <i>WS</i> <sub>107</sub>	15.5	X	85.86729	129.80161	269.13304	9.66734	0.0333344	0.18128614	3.0919062	20	1 1.8	19.9
430307 2013 <i>XZ</i>	17.5	X	160.16879	271.19866	182.52134	3.98050	0.1258915	0.23203923	2.6227795	20	6 11.2	21.5
430308 2013 <i>XU</i> <sub>2</sub>	15.6	X	100.14776	28.91725	355.99452	11.59575	0.1190588	0.17201680	3.2020060	20	1 19.4	20.2
430309 2013 <i>XG</i> <sub>3</sub>	15.5	X	8.22565	167.02682	251.16986	9.24474	0.1327975	0.15305805	3.4612417	20	—	—
430310 2013 <i>XS</i> <sub>10</sub>	16.8	X	348.48947	282.01169	292.15835	3.20194	0.0430195	0.20963044	2.8065093	20	3 25.6	20.4
430311 2013 <i>XU</i> <sub>10</sub>	16.2	X	64.40585	25.37673	43.69821	8.49729	0.0728472	0.18086031</				

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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>
430321 2013 YJ <sub>18</sub>	16.9	X	209.47644	291.14483	70.68844	4.25124	0.1909537	0.21758929	2.7376486	20	4 5.0	21.4
430322 2013 YB <sub>23</sub>	16.2	X	103.51460	320.38731	69.49940	10.16170	0.1445428	0.18334254	3.0687433	20	1 30.4	20.6
430323 2013 YY <sub>24</sub>	16.3	X	69.67165	10.74994	69.07557	3.88029	0.0873997	0.18449875	3.0559091	20	2 7.3	20.3
430324 2013 YF <sub>25</sub>	15.7	X	317.59182	272.54382	257.79846	15.21437	0.0241017	0.17484014	3.1674416	20	—	—
430325 2013 YD <sub>26</sub>	15.8	X	153.67786	270.70137	67.72657	11.27122	0.1280897	0.18478326	3.0527715	20	1 20.2	20.6
430326 2013 YE <sub>33</sub>	16.5	X	157.40951	320.34099	59.69177	2.80396	0.0965580	0.19887914	2.9067648	20	3 8.8	20.9
430327 2013 YJ <sub>33</sub>	16.4	X	277.98108	282.81607	98.25039	14.60344	0.1703236	0.23837624	2.5760883	20	7 11.7	19.5
430328 2013 YH <sub>35</sub>	16.8	X	191.28775	309.09452	83.00570	5.76374	0.1274352	0.22669874	2.6638104	20	4 26.5	21.0
430329 2013 YC <sub>36</sub>	16.5	X	227.44727	225.78562	136.30421	12.73368	0.1909929	0.23492072	2.6012884	20	4 23.3	20.9
430330 2013 YH <sub>37</sub>	16.4	X	66.25485	238.13387	216.30490	14.75677	0.0693300	0.18462571	3.0545080	20	2 11.9	20.7
430331 2013 YR <sub>38</sub>	15.9	X	296.48293	217.92564	111.54446	14.32072	0.0763430	0.22036948	2.7145744	20	6 12.9	19.5
430332 2013 YZ <sub>38</sub>	17.0	X	331.03997	93.97137	218.24990	1.58942	0.0910444	0.24284401	2.5443945	20	7 11.5	19.6
430333 2013 YK <sub>40</sub>	15.8	X	100.83537	157.68807	267.32109	6.81308	0.0470635	0.17345143	3.1843255	20	2 20.8	20.5
430334 2013 YX <sub>41</sub>	17.2	X	15.79469	270.48924	61.94869	5.04774	0.1272179	0.27336416	2.3513015	20	11 8.7	19.6
430335 2013 YM <sub>47</sub>	16.1	X	173.04067	74.03329	278.51766	10.52692	0.1360481	0.19250029	2.9706293	20	2 17.7	21.0
430336 2013 YR <sub>51</sub>	16.5	X	356.32743	71.64376	109.76895	12.41985	0.1250077	0.17655846	3.1468571	20	2 23.9	20.2
430337 2013 YJ <sub>52</sub>	16.8	X	67.53686	168.07445	289.59375	8.81739	0.0731654	0.18925903	3.0044500	20	2 19.5	20.9
430338 2013 YP <sub>53</sub>	16.4	X	275.79963	277.11006	74.47865	6.57525	0.2060360	0.24133478	2.5549914	20	5 23.6	19.7
430339 2013 YG <sub>57</sub>	16.6	X	250.57608	334.71372	4.55685	5.25252	0.0506474	0.21074853	2.7965742	20	4 26.5	20.6
430340 2013 YV <sub>65</sub>	15.6	X	80.58552	247.27319	257.77612	11.46246	0.0400124	0.20383576	2.8594497	20	5 3.2	19.6
430341 2013 YZ <sub>65</sub>	16.8	X	139.94768	326.49004	115.96893	14.94749	0.2231647	0.22034404	2.7147834	20	5 18.6	21.5
430342 2013 YQ <sub>70</sub>	16.3	X	197.69194	305.99318	90.79237	15.64252	0.1221159	0.22297171	2.6934125	20	5 11.9	20.7
430343 2013 YT <sub>70</sub>	17.1	X	294.85637	338.33333	78.09205	6.99808	0.1147317	0.26987794	2.3715073	20	10 17.8	19.6
430344 2013 YD <sub>73</sub>	16.1	X	215.57540	180.52446	133.77214	8.50061	0.1058978	0.18074823	3.0980376	20	2 18.3	21.0
430345 2013 YG <sub>78</sub>	16.0	X	73.94796	180.32842	282.80439	9.26501	0.0831205	0.18146229	3.0899050	20	3 6.6	20.3
430346 2013 YO <sub>81</sub>	17.4	X	74.89103	307.21752	290.48883	1.92621	0.0629756	0.23806965	2.5782995	20	9 4.3	20.8
430347 2013 YK <sub>104</sub>	16.1	X	81.75042	354.85330	96.73697	10.57126	0.0629721	0.17557976	3.1585403	20	3 10.1	20.6
430348 2013 YX <sub>106</sub>	15.9	X	209.62991	33.68980	283.82413	8.45569	0.0577125	0.17923190	3.1154863	20	2 14.0	20.6
430349 2013 YU <sub>108</sub>	16.2	X	175.31450	250.07716	131.68183	11.13653	0.0473999	0.18789540	3.0189688	20	3 30.9	20.8
430350 2013 YJ <sub>126</sub>	16.6	X	185.98806	306.83431	72.80439	8.55249	0.1075084	0.21202868	2.7853064	20	4 8.2	21.0
430351 2013 YV <sub>127</sub>	16.6	X	37.09855	9.32871	217.85790	4.43607	0.0958157	0.21467361	2.7623812	20	6 30.3	19.9
430352 2013 YU <sub>129</sub>	16.4	X	70.81011	20.64118	164.22270	14.96433	0.0326915	0.23849441	2.5752373	20	6 14.7	20.1
430353 2013 YA <sub>142</sub>	16.0	X	53.53719	166.75157	267.42126	9.44431	0.0539439	0.17276910	3.1927040	20	1 6.2	20.2
430354 2013 YH <sub>142</sub>	15.6	X	62.93435	298.35327	77.39045	4.51826	0.1379864	0.15753215	3.3953920	20	—	—
430355 2013 YX <sub>148</sub>	17.1	X	266.37112	344.75580	10.87907	2.77319	0.1845365	0.24316321	2.5421674	20	5 19.4	20.8
430356 2013 YB <sub>149</sub>	16.4	X	173.33751	120.32719	312.52621	5.71811	0.0415479	0.21472844	2.7619109	20	5 25.9	20.4
430357 2013 YO <sub>149</sub>	16.4	X	176.75472	324.26252	87.53626	8.32795	0.1187788	0.21994204	2.7180903	20	5 7.5	20.7
430358 2014 AD	16.5	X	293.21075	221.28859	81.42852	13.18399	0.1071443	0.22520021	2.6756144	20	5 1.8	20.1
430359 2014 AY <sub>9</sub>	16.8	X	294.04023	194.07946	147.93223	2.53823	0.1374004	0.24363487	2.5388853	20	6 16.1	19.8
430360 2014 AG <sub>12</sub>	16.3	X	46.75339	292.29349	139.34701	5.67751	0.1653562	0.17220670	3.1996516	20	1 1.9	20.1
430361 2014 AU <sub>20</sub>	16.4	X	143.01604	348.03696	75.57549	8.31452	0.1069498	0.20942066	2.8083832	20	4 18.3	20.7
430362 2014 AU <sub>26</sub>	15.9	X	149.64422	21.95762	95.08581	22.76739	0.0736799	0.22097703	2.7095965	20	6 27.4	19.9
430363 2014 AT <sub>29</sub>	16.3	X	43.24101	14.47128	93.42114	13.39692	0.2695670	0.17869974	3.1216684	20	2 26.9	19.6
430364 2014 AA <sub>34</sub>	15.9	X	28.42755	309.36442	125.07537	10.81329	0.1003029	0.15265185	3.4673792	20	—	—
430365 2014 BY <sub>15</sub>	15.9	X	311.47327	271.64493	319.58483	13.70010	0.1470571	0.17646876	3.1479234	20	2 16.3	20.2
430366 2014 BR <sub>18</sub>	16.0	X	181.35055	61.51679	304.41934	9.69960	0.0679133	0.18273444	3.0755476	20	3 10.9	20.9
430367 2014 BW <sub>19</sub>	16.2	X	124.09169	289.53783	137.17386	10.61160	0.2743022	0.19070515	2.9892422	20	4 20.1	21.3
430368 2014 BD <sub>26</sub>	15.5	X	120.02006	266.59377	127.15340	17.29904	0.1024299	0.17374566	3.1807295	20	2 17.7	20.2
430369 2014 BU <sub>28</sub>	16.5	X	186.66711	187.20530	163.94672	3.79396	0.0741862	0.18340952	3.0679961	20	3 3.2	21.0
430370 2014 BJ <sub>33</sub>	15.7	X	40.32134	354.38247	152.98397	20.48605	0.1157683	0.18058727	3.0998782	20	3 26.3	19.7
430371 2014 BV <sub>46</sub>	17.6	X	201.68061	320.03260	217.94386	1.48919	0.1660644	0.25436911	2.4669469	20	11 7.6	21.0
430372 2014 BU <sub>50</sub>	16.2	X	308.76130	217.85267	79.76978	9.14884	0.1247638	0.21257871	2.7804998	20	5 11.6	19.6
430373 2014 BS <sub>54</sub>	14.1	X	257.68516	212.28374	217.41336	1.57808	0.0339243	0.08266284	5.2191028	20	8 22.9	21.0
430374 2014 CU <sub>10</sub>	15.8	X	262.36861	191.68903	100.10201	14.95288	0.1305193	0.17764859	3.1339702	20	3 12.8	20.8
430375 2014 DS <sub>26</sub>	14.1	X	201.50243	178.45518	324.92089	9.70406	0.0522857	0.08454624	5.1413028	20	9 11.2	21.2
430376 2014 DR <sub>51</sub>	14.0	X	284.45522	266.13989	163.15579	9.58768	0.0860295	0.08203611	5.2456502	20	9 16.5	20.8
430377 2014 DW <sub>87</sub>	15.5	X	117.07809	266.66598	150.81063	18.53821	0.1197777	0.17417025	3.1755582	20	3 16.7	20.2
430378 2014 EG <sub>6</sub>	15.9	X	125.28508	261.71085	171.01485	12.78985	0.0491917	0.17293543	3.1906566	20	4 4.3	20.5
430379 2014 GG <sub>48</sub>	13.5	X	334.90866	234.46797	156.58044	23.82992	0.1048227	0.08166485	5.2615365	20	10 9.9	20.1
430380 2014 SY <sub>142</sub>	17.5	X	238.82032	324.20848	237.57904	19.88352	0.0435351	0.38244158	1.8797178	20	—	—
430381 2014 SU <sub>211</sub>	16.5	X	51.83682	312.77405	105.54699	9.26973	0.2004842	0.20307017	2.8666321	20	—	—
430382 2014 TY <sub>84</sub>	15.4	X	298.24602	256.83330	242.79535	24.40101	0.2271578	0.17835511	3.1256884	20	12 29.8	19.0
430383 2014 US <sub>54</sub>	16.2	X	147.04442	59.33186	292.09393	11.06630	0.3154445	0.23645192	2.5900461	20	2 4.2	20.6
430384 2014 VO <sub>108</sub>	16.7	X	125.88117	339.54566	58.39186	8.33316	0.1883895	0.23317946	2.6142223	20	3 7.1	20.7
430385 2014 VO <sub>11</sub>	16.8	X	114.79333	282.86829	124.47216	12.99716	0.1664239	0.23065059	2.6332959	20	3 2.8	20.6
430386 2014 VO <sub>23</sub>	15.8	X	131.87517	248.92393	57.26395	5.29573	0.0420686	0.18607255	3.0386535	20	—	—
430387 2014 WA <sub>18</sub>	16.9	X	192.41796	175.98595	255.93546	7.75672	0.1550361	0.27630267	2.3346010	20	6 15.1	20.4
430388 2014 WL <sub>73</sub>	18.0	X	168.41882	190.59321	345.68478	2.95117	0.0594831	0.31393548	2.1440872	20	10 17.5	20.8
430389 2014 WB <sub>397</sub>	16.0	X	172.76004	275.45957	74.27779	15.69817	0.1435867	0.23609058	2.5926881	20	2 20.7	20.3
430390 2014 WB <sub>423</sub>	16.3	X	113.34225	286.88927	98.59969	12.80622	0.1159727	0.21639202	2.7477374	20	1 26.6	20.1
430391 2014 WX <sub>478</sub>	16.4	X	31.25946	251.69512	201.80863	6.94982	0.0905811	0.18283387	3.0744324	20	—	—
430392 2014 XD <sub>14</sub>	15.6	X	312.71234	34.93776	83.20015	10.38909	0.0577471	0.17538717	3.1608520	20	—	—
430393 2014 XQ <sub>26</sub>	17.8	X	168.60186	186.60340	283.04009	4.19509	0.0707985	0.27779900	2.3			

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>
430401 2014 <i>YS</i> <sub>24</sub>	15.8	X	27.49532	306.25854	123.76226	11.38666	0.1335409	0.18107513	3.0943078	20	—	—
430402 2014 <i>YS</i> <sub>28</sub>	17.2	X	196.82233	351.99056	69.79839	8.07040	0.1320624	0.26692586	2.3889604	20	6 6.6	20.8
430403 2014 <i>YH</i> <sub>30</sub>	15.7	X	1.17001	343.64944	118.90482	15.42552	0.2058153	0.18213378	3.0823058	20	—	—
430404 2015 <i>AT</i> <sub>3</sub>	15.3	X	6.46452	162.50624	303.39684	14.57898	0.0749702	0.18236428	3.0797080	20	—	—
430405 2015 <i>BZ</i> <sub>302</sub>	16.7	X	44.29116	120.05157	29.47877	14.04107	0.2142942	0.20190855	2.8776165	20	4 12.2	19.6
430406 1994 <i>VZ</i> <sub>4</sub>	17.0	X	191.91336	7.40002	20.68265	7.72416	0.1530762	0.21283939	2.7782290	20	4 19.7	21.6
430407 1995 <i>FM</i> <sub>10</sub>	16.1	X	185.93700	276.72744	38.68175	10.03897	0.0696801	0.18934666	3.0035229	20	1 22.1	20.8
430408 1995 <i>MX</i> <sub>6</sub>	17.5	X	195.39803	44.78177	161.24854	7.22618	0.0534581	0.29387184	2.2405986	20	12 29.3	20.3
430409 1995 <i>SC</i> <sub>86</sub>	16.4	X	101.84049	204.49113	184.60924	27.11556	0.1464415	0.17332104	3.1859224	20	1 23.6	21.4
430410 1995 <i>TL</i> <sub>7</sub>	17.2	X	119.11402	0.48542	25.34936	11.46862	0.3087488	0.21333644	2.7739120	20	3 1.3	21.7
430411 1995 <i>UV</i> <sub>74</sub>	17.8	X	105.32848	80.42263	169.33039	6.55081	0.1880581	0.27812813	2.3243745	20	11 13.4	21.5
430412 1995 <i>WL</i> <sub>40</sub>	16.6	X	123.86467	182.13108	188.97950	5.30356	0.1726310	0.17124143	3.2116644	20	2 1.0	21.4
430413 1996 <i>EM</i> <sub>5</sub>	18.2	X	180.30397	121.79720	18.11168	1.32471	0.1492169	0.26208173	2.4183076	20	9 1.1	21.8
430414 1996 <i>TX</i> <sub>15</sub>	15.6	X	64.40824	144.14954	321.09012	10.50694	0.0342550	0.18609794	3.0383771	20	2 22.6	19.7
430415 1996 <i>TW</i> <sub>19</sub>	16.2	X	147.17292	354.24192	347.54229	17.09108	0.1107436	0.18206255	3.0831096	20	1 19.8	21.1
430416 1997 <i>EG</i> <sub>4</sub>	17.4	X	28.16440	192.42056	0.79881	3.24418	0.1298976	0.21691832	2.7432911	20	4 30.7	20.5
430417 1997 <i>TG</i> <sub>12</sub>	17.1	X	23.22406	289.78397	13.88082	7.92693	0.1690042	0.25632542	2.4543789	20	10 12.2	19.7
430418 1997 <i>YQ</i> <sub>17</sub>	16.2	X	245.64014	68.04001	300.87887	12.84499	0.0837602	0.23826742	2.5768726	20	5 24.3	20.0
430419 1998 <i>BN</i> <sub>28</sub>	16.7	X	19.90556	17.57879	116.15989	2.72017	0.1171162	0.17895149	3.1187400	20	2 1.8	20.2
430420 1998 <i>SD</i> <sub>48</sub>	17.0	X	304.81955	300.61164	11.35112	9.07618	0.2957553	0.21578670	2.7528736	20	4 22.9	20.4
430421 1998 <i>TA</i> <sub>3</sub>	18.0	X	138.23810	43.47788	13.37120	21.07575	0.1065427	0.38550507	1.8697462	20	3 22.7	19.8
430422 1999 <i>RU</i> <sub>144</sub>	16.0	X	249.82749	145.42802	184.42378	15.19230	0.3306633	0.17548930	3.1596256	20	3 22.4	21.4
430423 1999 <i>TO</i> <sub>34</sub>	16.8	X	153.79628	211.15059	180.10294	12.04585	0.3497190	0.21265680	2.7798191	20	4 1.0	21.8
430424 1999 <i>TV</i> <sub>44</sub>	18.3	X	239.31439	181.28311	268.65662	2.11328	0.1543501	0.27730895	3.2289498	20	8 29.8	21.2
430425 1999 <i>UV</i> <sub>74</sub>	17.9	X	218.95295	69.79107	82.13214	2.38372	0.1821979	0.28474912	2.2882025	20	11 4.2	20.8
430426 1999 <i>TL</i> <sub>78</sub>	18.3	X	280.40284	195.86910	193.89552	5.25392	0.1702534	0.27801314	2.3250154	20	7 29.7	21.0
430427 1999 <i>TY</i> <sub>127</sub>	17.6	X	278.93020	355.17626	5.61564	5.56708	0.2785145	0.27506626	2.3415917	20	5 27.3	20.8
430428 1999 <i>TR</i> <sub>130</sub>	16.8	X	231.98345	201.32954	193.06096	7.93576	0.1688711	0.22418587	2.6836789	20	6 4.9	21.0
430429 1999 <i>TX</i> <sub>311</sub>	16.1	X	8.27403	293.47311	29.72599	12.89848	0.1961518	0.23346813	2.6120670	20	10 15.3	18.7
430430 1999 <i>UF</i> <sub>38</sub>	18.0	X	189.92983	127.72213	192.39363	21.54375	0.0699978	0.35405352	1.9788981	20	1 1.4	21.0
430431 1999 <i>UT</i> <sub>40</sub>	18.0	X	220.79781	60.80395	37.24456	5.98356	0.1942851	0.27586823	2.3370513	20	8 18.1	21.5
430432 1999 <i>VL</i> <sub>116</sub>	17.0	X	205.41497	297.93331	93.51151	3.28991	0.0792795	0.21669396	2.7451843	20	5 10.6	21.2
430433 1999 <i>VO</i> <sub>117</sub>	16.6	X	173.99808	26.31761	24.98091	6.11374	0.0500429	0.21859518	2.7292438	20	4 29.1	20.6
430434 1999 <i>VM</i> <sub>212</sub>	17.3	X	164.28742	190.11948	231.19251	3.36338	0.1338039	0.21477392	2.7615210	20	5 5.0	21.6
430435 1999 <i>XV</i> <sub>239</sub>	16.4	X	190.39196	322.27154	68.47069	9.10691	0.2288750	0.21565748	2.7539732	20	4 24.7	21.2
430436 2000 <i>EQ</i> <sub>101</sub>	18.2	X	159.07686	244.51459	296.55502	1.51689	0.1301077	0.26622132	2.3931733	20	10 3.1	21.8
430437 2000 <i>GP</i> <sub>40</sub>	17.0	X	108.55562	202.52625	16.41419	5.46309	0.1851082	0.26117803	2.4238828	20	10 4.9	20.8
430438 2000 <i>GH</i> <sub>120</sub>	18.0	X	70.61602	59.12974	193.82407	2.29981	0.2040545	0.25963761	2.4334606	20	10 12.3	21.4
430439 2000 <i>LF</i> <sub>6</sub>	19.8	X	354.60313	151.42852	87.61467	15.58239	0.5920198	0.19383338	2.9569932	20	3 2.1	21.7
430440 2000 <i>OH</i>	17.5	X	98.76268	355.41066	283.78125	18.68466	0.5919430	0.26159412	2.4213119	20	12 22.8	22.9
430441 2000 <i>PX</i> <sub>18</sub>	17.2	X	168.31051	33.31751	321.21776	8.23262	0.3432943	0.22479687	2.6788139	20	2 25.4	22.2
430442 2000 <i>PF</i> <sub>23</sub>	16.6	X	286.67067	65.08402	286.44490	4.79861	0.2771584	0.24161802	2.5529943	20	5 25.5	19.9
430443 2000 <i>PW</i> <sub>28</sub>	15.8	X	277.47948	19.92491	330.14812	33.03112	0.2552618	0.24008468	2.5638528	20	4 27.0	20.4
430444 2000 <i>QR</i> <sub>64</sub>	16.7	X	233.35454	202.83635	146.93209	15.06219	0.2724606	0.23245756	2.6196318	20	4 8.0	21.4
430445 2000 <i>QZ</i> <sub>106</sub>	16.3	X	220.41192	148.23752	179.86187	15.80963	0.2160699	0.18047635	3.1011482	20	3 3.6	21.6
430446 2000 <i>QV</i> <sub>137</sub>	16.6	X	259.89095	197.12978	138.56412	3.69240	0.3496717	0.18550924	3.0448018	20	4 5.0	21.8
430447 2000 <i>SF</i> <sub>79</sub>	17.1	X	188.64158	208.79176	180.13962	12.53367	0.2004053	0.22891825	2.6465642	20	4 19.9	21.6
430448 2000 <i>SE</i> <sub>97</sub>	16.9	X	276.58554	15.20898	344.78787	12.11811	0.1935176	0.23853750	2.5749271	20	6 4.5	20.6
430449 2000 <i>SB</i> <sub>194</sub>	17.1	X	274.48730	190.19171	171.40678	5.67234	0.2469720	0.23888927	2.5723987	20	5 30.2	20.8
430450 2000 <i>SN</i> <sub>232</sub>	18.5	X	86.56742	70.53297	348.35874	19.24894	0.1769637	0.36742844	1.9305788	20	1 14.9	20.1
430451 2000 <i>TH</i> <sub>31</sub>	18.8	X	100.74907	52.85018	19.00090	20.54632	0.0992092	0.37249270	1.9130407	20	2 25.7	20.9
430452 2000 <i>UX</i> <sub>74</sub>	17.2	X	258.28533	341.42018	26.35804	5.00480	0.2412340	0.23539085	2.5978236	20	5 19.2	21.3
430453 2000 <i>UP</i> <sub>106</sub>	17.1	X	233.38870	300.31442	78.11112	7.29107	0.3613251	0.23294329	2.6159890	20	5 4.9	21.9
430454 2000 <i>VD</i> <sub>2</sub>	17.9	X	145.62557	355.75975	48.97767	22.87514	0.0799822	0.37212389	1.9143045	20	3 23.6	20.6
430455 2000 <i>WX</i> <sub>11</sub>	16.5	X	29.14057	218.68899	39.43323	14.81058	0.0437306	0.23877242	2.5732379	20	8 2.2	20.1
430456 2000 <i>WQ</i> <sub>63</sub>	16.9	X	171.65359	46.41265	32.46205	7.72968	0.1553179	0.23012622	2.6372946	20	6 2.6	21.2
430457 2000 <i>WV</i> <sub>63</sub>	16.3	X	178.34819	65.15822	40.12800	12.09008	0.1244902	0.23405432	2.6077039	20	7 16.7	20.6
430458 2000 <i>YK</i> <sub>5</sub>	17.2	X	46.90566	352.15603	90.19717	23.99745	0.0788314	0.35974725	1.9579626	20	—	—
430459 2001 <i>DH</i> <sub>96</sub>	16.8	X	80.06251	177.03428	336.84867	15.82192	0.2248139	0.21668682	2.7452446	20	6 12.8	20.9
430460 2001 <i>EO</i> <sub>15</sub>	16.4	X	24.32338	232.60310	22.53068	14.74637	0.1722401	0.21457302	2.7632445	20	8 5.4	19.8
430461 2001 <i>FW</i> <sub>176</sub>	16.7	X	232.98554	101.53640	22.09368	24.02051	0.2460559	0.28497795	2.2869774	20	10 2.5	19.9
430462 2001 <i>PH</i> <sub>14</sub>	17.1	X	58.20520	172.66628	150.13254	24.58125	0.2607990	0.27084277	2.3658719	20	—	—
430463 2001 <i>PQ</i> <sub>18</sub>	17.3	X	358.24660	344.85109	345.26366	17.06968	0.2447537	0.26274940	2.4142092	20	10 10.9	19.5
430464 2001 <i>PL</i> <sub>25</sub>	15.3	X	90.91646	316.89073	33.40307	8.66529	0.2787125	0.17289702	3.1911291	20	—	—
430465 2001 <i>QV</i> <sub>99</sub>	15.6	X	132.32324	160.46280	184.46191	30.60666	0.2468962	0.17941182	3.1134030	20	1 15.3	21.1
430466 2001 <i>QZ</i> <sub>196</sub>	16.5	X	272.65509	257.02083	61.29083	6.95960	0.2397038	0.19631085	2.9320622	20	4 7.0	21.0
430467 2001 <i>QR</i> <sub>236</sub>	16.1	X	165.71553	200.79189	175.03407	16.09605	0.2158350	0.18470475	3.0536365	20	3 17.7	21.3
430468 2001 <i>RW</i> <sub>18</sub>	16.1	X	131.18868	33.16761	334.29406	16.36095	0.2321083	0.18055367	3.1002627	20	2 12.2	21.0
430469 2001 <i>RG</i> <sub>58</sub>	17.6	X	80.81215	194.35074	108.18272	3.55936	0.1947185	0.27003081	2.3706121	20	12 23.7	21.3
430470 2001 <i>RW</i> <sub>64</sub>	15.9	X	168.13025	153.97312	206.32461	12.59255	0.1771846	0.18294046	3.0732381	20	2 25.7	21.1
430471 2001 <i>RJ</i> <sub>116</sub>	16.3	X	235.40661	153.95796	156.44166	6.23233	0.2875578	0.19009975	2.9955			

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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>
430481 2001 SQ <sub>198</sub>	16.2	X	244.21897	163.64399	170.97721	16.04966	0.2537018	0.19276928	2.9678652	20	3 29.8	21.2
430482 2001 SJ <sub>240</sub>	16.2	X	175.53107	156.34156	184.95862	18.25614	0.2332521	0.18197077	3.0841462	20	2 12.7	21.7
430483 2001 SE <sub>245</sub>	17.5	X	155.16347	56.45741	17.04472	13.01264	0.2495146	0.23895833	2.5719031	20	5 12.9	22.0
430484 2001 ST <sub>246</sub>	17.0	X	313.87859	246.41417	128.29246	2.17896	0.1992948	0.25673814	2.4517478	20	9 6.2	19.0
430485 2001 SF <sub>264</sub>	17.6	X	197.42355	42.19678	7.75990	30.52548	0.2855089	0.24323216	2.5416869	20	5 5.2	22.7
430486 2001 SU <sub>304</sub>	16.0	X	153.65285	359.62202	356.18468	12.00144	0.1753266	0.17997024	3.1069594	20	2 15.2	21.1
430487 2001 SE <sub>305</sub>	17.5	X	48.44330	25.16451	271.77380	2.54932	0.1928289	0.26322857	2.4112785	20	11 11.9	20.7
430488 2001 TG <sub>39</sub>	15.3	X	144.76594	143.33541	247.23719	26.69841	0.1636657	0.17767366	3.1336755	20	3 2.9	20.8
430489 2001 TS <sub>53</sub>	15.9	X	126.79925	190.94102	198.09053	17.67131	0.2066533	0.17840744	3.1250772	20	2 25.2	21.0
430490 2001 TD <sub>140</sub>	16.7	X	145.49254	227.95588	165.06194	11.18526	0.1470084	0.23625598	2.5914779	20	3 12.7	20.4
430491 2001 TL <sub>163</sub>	15.4	X	147.39509	300.44450	12.06521	21.19568	0.1313621	0.17283547	3.1918867	20	—	—
430492 2001 TB <sub>185</sub>	16.4	X	79.67456	42.86733	1.61274	6.97946	0.1805011	0.17277063	3.1926853	20	1 23.9	20.6
430493 2001 TA <sub>208</sub>	18.1	X	357.45879	283.30324	45.12352	1.78415	0.1928265	0.25903633	2.4372248	20	10 6.9	20.2
430494 2001 TZ <sub>224</sub>	15.6	X	101.09725	5.31906	38.62914	30.55181	0.2234347	0.17373720	3.1808328	20	3 12.9	20.9
430495 2001 TF <sub>256</sub>	16.6	X	0.49475	272.66885	62.22650	16.56258	0.1188489	0.25928401	2.4356725	20	10 20.2	19.4
430496 2001 TM <sub>259</sub>	16.1	X	147.15117	17.86710	22.65904	11.91295	0.0919252	0.18243865	3.0788709	20	3 24.9	20.7
430497 2001 UD <sub>31</sub>	16.2	X	103.20078	340.50901	45.00888	6.21822	0.1837539	0.17493242	3.1663276	20	1 31.0	20.8
430498 2001 UP <sub>57</sub>	16.3	X	204.05733	314.33852	21.02722	11.04374	0.1682259	0.18426821	3.0584575	20	3 5.1	21.4
430499 2001 UC <sub>59</sub>	17.2	X	28.60793	94.40961	207.72711	14.85602	0.3077074	0.26147370	2.4220552	20	11 12.7	20.2
430500 2001 UX <sub>61</sub>	16.4	X	122.36326	15.24360	357.42724	2.28205	0.1489698	0.17562024	3.1580549	20	1 30.9	21.1
430501 2001 UF <sub>70</sub>	17.1	X	112.99653	187.32668	24.12874	5.90866	0.0861348	0.25592737	2.4569231	20	9 23.6	20.5
430502 2001 UR <sub>85</sub>	17.4	X	26.48915	239.68023	50.18667	3.18532	0.1824176	0.25829804	2.4418668	20	10 2.3	20.0
430503 2001 UE <sub>166</sub>	16.4	X	167.46872	94.60789	216.65634	16.95580	0.1131571	0.17455718	3.1708637	20	—	—
430504 2001 UW <sub>173</sub>	16.1	X	144.91475	149.46055	219.45266	9.93745	0.1989361	0.17754028	3.1352448	20	2 17.6	21.4
430505 2001 UM <sub>176</sub>	16.3	X	253.10617	281.45326	37.81007	10.62288	0.1029350	0.18772702	3.0207737	20	4 3.7	20.8
430506 2001 UF <sub>213</sub>	16.2	X	217.18891	309.85005	37.05236	10.98117	0.1375407	0.18903881	3.0067829	20	3 29.9	21.1
430507 2001 UG <sub>221</sub>	17.1	X	200.37160	7.94753	45.16380	15.87699	0.1063575	0.24256148	2.5463699	20	5 28.5	21.1
430508 2001 UM <sub>228</sub>	17.6	X	190.75053	134.56162	264.95653	6.63649	0.1806716	0.24252547	2.5466220	20	4 30.8	22.0
430509 2001 VR <sub>127</sub>	17.1	X	278.22594	248.96010	149.76820	6.42115	0.1330868	0.25373683	2.4710434	20	8 13.6	19.9
430510 2001 WQ <sub>15</sub>	18.1	X	44.91354	64.82935	55.90039	22.99201	0.0848185	0.38671138	1.8658558	20	1 10.7	19.9
430511 2001 WA <sub>16</sub>	16.6	X	115.75594	69.70202	48.86594	29.13700	0.3500475	0.23322711	2.6138662	20	6 10.8	21.5
430512 2001 WQ <sub>25</sub>	17.6	X	164.65841	194.65647	224.17812	6.36581	0.2765060	0.23792843	2.5793196	20	5 6.7	22.2
430513 2001 WA <sub>44</sub>	15.6	X	81.68129	18.82602	36.19118	29.35494	0.1995746	0.17430815	3.1738830	20	2 26.9	20.5
430514 2001 XH <sub>9</sub>	17.5	X	133.06864	68.72308	319.18952	5.66971	0.3062157	0.23011785	2.6373585	20	3 7.5	21.9
430515 2001 XJ <sub>93</sub>	17.0	X	136.19429	39.21216	70.37749	11.74367	0.2147404	0.23742942	2.5829324	20	6 12.4	21.1
430516 2001 XM <sub>116</sub>	17.6	X	176.01816	359.00641	48.63373	5.66913	0.2864336	0.23680490	2.5874716	20	5 1.8	22.1
430517 2001 XA <sub>217</sub>	16.9	X	183.38785	156.14968	247.60405	8.81788	0.1979130	0.23655640	2.5892834	20	4 30.2	21.4
430518 2001 YS <sub>23</sub>	18.4	X	314.25425	114.81360	284.32085	2.76755	0.2045260	0.31010315	2.1617158	20	11 6.3	19.5
430519 2001 YA <sub>94</sub>	16.4	X	116.42705	355.71239	35.50685	20.91156	0.0973071	0.17685128	3.1433826	20	2 18.7	21.3
430520 2001 YE <sub>157</sub>	16.4	X	194.08591	87.96980	310.75005	13.53058	0.1203991	0.23425301	2.6062291	20	4 29.7	20.8
430521 2002 AD <sub>19</sub>	17.5	X	120.51318	129.97395	335.87751	11.84135	0.2760668	0.23286629	2.6165656	20	5 27.5	22.1
430522 2002 AT <sub>78</sub>	17.2	X	140.07386	359.99189	97.64123	12.85380	0.2180068	0.23457792	2.6038220	20	6 3.0	21.5
430523 2002 AX <sub>129</sub>	16.3	X	162.49302	121.67849	352.23061	21.83189	0.0986634	0.23971022	2.5665222	20	7 16.3	20.6
430524 2002 AL <sub>171</sub>	16.8	X	136.35256	173.55810	313.02483	8.49790	0.0998505	0.23567327	2.5957478	20	6 27.8	20.7
430525 2002 BH <sub>11</sub>	16.5	X	102.75499	205.60271	313.95385	12.04961	0.1198115	0.23268177	2.6179488	20	7 5.8	20.3
430526 2002 BR <sub>20</sub>	16.7	X	158.44541	102.45045	332.26445	28.89679	0.3151097	0.23403836	2.6078224	20	5 12.0	22.1
430527 2002 CK <sub>2</sub>	16.8	X	121.66381	8.39102	116.09940	17.14974	0.1289919	0.23248947	2.6193922	20	6 12.9	20.8
430528 2002 CL <sub>12</sub>	18.1	X	356.18373	14.52519	142.54006	23.59742	0.0567373	0.37783823	1.8949545	20	—	—
430529 2002 CC <sub>16</sub>	17.7	X	123.89057	94.76028	38.75123	0.36160	0.2472861	0.23327570	2.6135033	20	7 4.5	22.0
430530 2002 CV <sub>157</sub>	16.6	X	125.38453	349.44212	133.74524	14.96462	0.2035518	0.23206728	2.6225681	20	6 20.7	21.0
430531 2002 CV <sub>184</sub>	16.3	X	113.30815	300.64318	134.96526	22.48552	0.0741904	0.22401970	2.6850059	20	3 28.5	20.3
430532 2002 CX <sub>232</sub>	16.6	X	104.41300	314.50688	138.61632	18.43408	0.1277531	0.22471991	2.6794255	20	4 17.0	20.7
430533 2002 CN <sub>241</sub>	17.0	X	133.75840	335.76327	170.73426	11.86984	0.1182284	0.23403584	2.6078412	20	7 20.0	21.1
430534 2002 CQ <sub>282</sub>	16.8	X	34.78756	126.41693	133.85756	17.04852	0.1818614	0.23681789	2.5873770	20	8 31.4	19.8
430535 2002 CS <sub>289</sub>	18.0	X	128.28392	44.43562	332.50328	24.30236	0.0893521	0.38044890	1.8862757	20	1 5.4	20.3
430536 2002 DW <sub>9</sub>	16.7	X	59.48233	176.12229	21.89434	14.67643	0.1956763	0.22997651	2.6384390	20	7 14.9	20.3
430537 2002 EB <sub>72</sub>	16.6	X	17.14529	268.51089	359.29322	13.69261	0.1429828	0.22966493	2.6408248	20	8 7.3	19.7
430538 2002 EF <sub>103</sub>	17.2	X	83.89047	163.06979	4.72540	3.08170	0.1196163	0.22851225	2.6496981	20	6 21.4	20.7
430539 2002 EF <sub>124</sub>	16.9	X	62.32707	35.68676	192.07524	5.80644	0.1563219	0.23176844	2.6248219	20	8 17.7	20.5
430540 2002 ED <sub>131</sub>	17.9	X	296.80227	110.79618	7.83731	5.69171	0.0697737	0.30773420	2.1727956	20	—	—
430541 2002 EL <sub>131</sub>	17.8	X	158.20996	100.74528	173.16702	6.24573	0.0908506	0.30760581	2.1734001	20	—	—
430542 2002 FX <sub>28</sub>	17.4	X	66.46173	47.85063	136.84218	7.79092	0.2879862	0.22660127	2.6645743	20	7 16.8	21.0
430543 2002 GB <sub>2</sub>	16.5	X	124.70789	120.04489	28.44633	31.20581	0.3114897	0.23303029	2.6153379	20	8 12.3	21.8
430544 2002 GM <sub>2</sub>	18.6	X	232.81775	84.63617	339.11267	3.34665	0.8068040	0.30188855	2.2007546	20	6 3.9	23.9
430545 2002 GM <sub>36</sub>	17.7	X	99.85969	205.34177	188.77737	22.18124	0.0862078	0.37190904	1.9150417	20	—	—
430546 2002 GA <sub>49</sub>	16.9	X	54.12094	196.85403	18.99298	12.25784	0.1276622	0.22679439	2.6630614	20	7 20.9	20.5
430547 2002 GB <sub>58</sub>	17.3	X	54.85041	196.09009	12.80802	4.73406	0.0353219	0.22715120	2.6602719	20	6 24.3	20.8
430548 2002 GZ <sub>123</sub>	16.9	X	81.32505	356.29401	185.86401	10.39769	0.1828761	0.22988749	2.6391201	20	7 15.1	20.8
430549 2002 GQ <sub>127</sub>	16.7	X	145.84658	288.35687	196.79240	23.95565	0.2276275	0.23229537	2.6208511	20	7 7.8	21.7
430550 2002 GY <sub>134</sub>	16.7	X	346.95039	252.21450	14.66995	13.79110	0.1468406	0.22326465	2.6910560	20	5 25.9	19.8
430551 2002 GO <sub>171</sub>	18.5	X	241.74575	46.91375	191.26926	10.47158	0.2161646	0.36664424	1.9333307	20	—	—
430552 2002 HU <sub>11</sub>	17.9	X	36.68348	174.30836	115.33744	20.75852	0.5625718	0.22726892	2.6593532	20	12 4.6	22.6
430553 2002 JS <sub>9</sub>	17.7	X	350.84531	112.19863	68.24972	23.60830	0.0876741	0.37625984</				



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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>		
430561	2002	NB <sub>52</sub>	17.8	X	126.08721	154.63291	130.25446	2.90013	0.1720445	0.29306874	2.2446901	20	—	—
430562	2002	NX <sub>72</sub>	17.7	X	137.76820	125.75987	141.84527	7.09785	0.1475574	0.29345664	2.2427116	20	—	—
430563	2002	NF <sub>74</sub>	17.0	X	265.10059	222.38319	113.05077	4.09978	0.1727117	0.20977431	2.8052260	20	4 26.6	21.1
430564	2002	PW <sub>32</sub>	16.8	X	337.17036	171.99416	146.29575	9.65816	0.2075591	0.21762305	2.7373655	20	7 22.8	19.2
430565	2002	PU <sub>112</sub>	16.9	X	320.70970	142.85350	175.74533	7.92786	0.3154173	0.21554954	2.7548924	20	5 30.3	19.7
430566	2002	PK <sub>162</sub>	16.8	X	341.11163	131.97757	139.97740	8.59249	0.1914648	0.21334027	2.7738788	20	5 24.8	19.7
430567	2002	PO <sub>169</sub>	17.5	X	94.93207	193.70446	99.12593	6.09735	0.1944896	0.28771453	2.2724527	20	12 27.5	20.9
430568	2002	PW <sub>172</sub>	18.2	X	107.13049	175.82549	121.70657	2.16728	0.1270832	0.29052040	2.2577974	20	—	—
430569	2002	PA <sub>183</sub>	16.6	X	193.00187	227.08615	151.64168	10.87248	0.1018361	0.20246412	2.8723499	20	4 14.2	21.1
430570	2002	QT <sub>43</sub>	17.7	X	349.32212	340.92538	8.05605	7.60148	0.2770791	0.27780552	2.3261737	20	11 7.3	19.3
430571	2002	QG <sub>51</sub>	16.1	X	346.10106	328.89710	315.78605	11.77845	0.1488675	0.21374293	2.7703941	20	6 25.4	19.2
430572	2002	QV <sub>52</sub>	17.7	X	247.58552	329.61176	19.67957	2.82913	0.2101673	0.26182195	2.4199070	20	4 18.1	21.5
430573	2002	QU <sub>55</sub>	17.7	X	256.05539	306.76613	51.85150	0.63269	0.2192019	0.26387215	2.4073562	20	5 7.9	21.3
430574	2002	QC <sub>67</sub>	16.5	X	210.45747	204.27471	145.30199	17.34710	0.2165383	0.20135217	2.8829150	20	3 24.3	21.6
430575	2002	QT <sub>76</sub>	17.8	X	38.08821	186.17608	149.54042	6.58027	0.1736640	0.28497446	2.2869961	20	12 23.3	20.9
430576	2002	QG <sub>79</sub>	17.6	X	186.95997	346.12943	65.04484	2.16985	0.1835139	0.26081203	2.4261500	20	5 13.6	21.4
430577	2002	QV <sub>80</sub>	17.7	X	18.00763	337.76922	10.63365	6.62132	0.1262462	0.28188123	2.3036966	20	12 4.6	20.5
430578	2002	QL <sub>84</sub>	17.2	X	334.83952	111.90575	170.71685	7.46835	0.2000383	0.21311806	2.7758066	20	5 25.6	20.1
430579	2002	QP <sub>107</sub>	17.9	X	276.23267	201.24983	145.44051	3.57436	0.1929347	0.26652316	2.3913661	20	5 19.7	21.1
430580	2002	QA <sub>112</sub>	18.0	X	88.04667	337.62556	289.76012	4.38178	0.1404378	0.28364274	2.2941489	20	11 14.1	21.4
430581	2002	QY <sub>116</sub>	16.4	X	158.73578	263.06679	117.32600	3.18924	0.1092743	0.19707502	2.9244778	20	3 11.5	21.0
430582	2002	QV <sub>123</sub>	17.4	X	19.35272	353.21944	338.92500	5.97177	0.1970469	0.28011590	2.3133653	20	11 24.7	20.1
430583	2002	QK <sub>134</sub>	18.2	X	21.23248	213.69987	109.23911	3.77308	0.1578635	0.27921290	2.3183503	20	11 10.9	20.7
430584	2002	QP <sub>135</sub>	16.8	X	313.00548	301.02393	17.33899	7.79237	0.2256558	0.21325340	2.7746321	20	5 27.5	20.0
430585	2002	QA <sub>139</sub>	16.9	X	359.90395	311.41357	293.60941	2.84862	0.1472673	0.21232425	2.7827209	20	5 23.3	19.7
430586	2002	RM <sub>66</sub>	17.1	X	346.22695	183.60368	184.94410	24.37209	0.2294303	0.27675906	2.3320337	20	11 28.3	19.7
430587	2002	RL <sub>137</sub>	19.4	X	85.57015	275.54171	337.89238	19.26181	0.1678893	0.44630920	1.6958164	20	11 16.5	22.1
430588	2002	RK <sub>177</sub>	18.1	X	84.40610	6.15342	293.19932	2.64884	0.2204327	0.28577448	2.2827258	20	12 27.4	21.6
430589	2002	RT <sub>217</sub>	16.7	X	245.12112	165.61603	176.94870	11.82533	0.2401344	0.20510404	2.8476498	20	4 9.4	21.5
430590	2002	RA <sub>268</sub>	18.0	X	91.37321	278.25192	355.67545	8.2806	0.2063466	0.28417660	2.2912748	20	11 29.2	21.8
430591	2002	SY <sub>12</sub>	16.5	X	310.49387	291.18455	24.05690	13.02672	0.2149423	0.20977230	2.8052439	20	5 18.9	20.0
430592	2002	SZ <sub>18</sub>	17.9	X	105.93939	223.89303	89.94629	8.49314	0.2801591	0.29129214	2.2538078	20	—	—
430593	2002	SK <sub>38</sub>	16.8	X	106.05425	25.13834	20.23763	3.23124	0.2616182	0.18816525	3.0160817	20	3 5.1	21.2
430594	2002	SC <sub>40</sub>	17.6	X	306.30285	296.33715	86.16499	3.47714	0.2260445	0.27211652	2.3584831	20	9 2.0	19.2
430595	2002	SG <sub>54</sub>	17.3	X	288.15686	63.89040	331.94930	11.93565	0.1915726	0.27197066	2.3593263	20	8 19.9	19.3
430596	2002	SD <sub>62</sub>	16.9	X	320.62511	225.01501	96.80376	8.52566	0.3230112	0.21478139	2.7614570	20	6 2.2	19.4
430597	2002	SP <sub>71</sub>	16.4	X	112.15280	17.67823	4.20333	9.83937	0.0906906	0.18690148	3.0296623	20	1 23.7	20.8
430598	2002	SZ <sub>74</sub>	18.2	X	78.25252	212.25301	76.48639	2.12404	0.1324903	0.28113597	2.3077660	20	12 1.3	21.4
430599	2002	TA <sub>20</sub>	16.4	X	351.55619	91.55109	194.18546	19.51545	0.2292033	0.21269241	2.7795088	20	7 3.5	19.4
430600	2002	TN <sub>181</sub>	16.1	X	85.16522	356.86090	336.58279	15.93073	0.2768651	0.17670050	3.1451706	20	—	—
430601	2002	TF <sub>204</sub>	17.2	X	38.70659	295.67918	70.91531	6.83003	0.2732399	0.28425534	2.2908516	20	—	—
430602	2002	TM <sub>310</sub>	18.1	X	213.08208	311.94694	132.41221	7.25543	0.0824747	0.26476312	2.4019524	20	7 29.3	21.5
430603	2002	TH <sub>338</sub>	16.5	X	101.45057	358.01728	45.29003	9.22345	0.0739244	0.18738813	3.0244146	20	2 3.6	20.8
430604	2002	TO <sub>353</sub>	16.4	X	127.80589	207.95321	203.05936	7.71153	0.0712959	0.19507061	2.9444769	20	3 8.8	20.7
430605	2002	TF <sub>367</sub>	16.5	X	148.07027	261.71379	126.44998	8.24808	0.0845605	0.19149535	2.9810132	20	3 9.5	21.0
430606	2002	TU <sub>60</sub>	16.8	X	208.17075	246.94332	86.66814	11.69006	0.1281545	0.19332869	2.9621372	20	3 7.9	21.7
430607	2002	UC <sub>72</sub>	17.5	X	18.49671	283.74465	68.68458	6.29192	0.1831253	0.27811072	2.3244715	20	12 20.0	20.1
430608	2002	VD <sub>13</sub>	17.7	X	357.74377	324.88539	38.77382	1.83781	0.2006994	0.27574367	2.3377551	20	12 5.8	20.0
430609	2002	WP <sub>1</sub>	16.9	X	51.46658	336.24407	116.90581	2.99422	0.3091944	0.17964687	3.1106867	20	2 25.5	19.9
430610	2002	WM <sub>7</sub>	16.4	X	47.08663	10.09933	59.92876	13.93277	0.2076004	0.17699760	3.1416500	20	1 2.9	19.9
430611	2002	WT <sub>19</sub>	16.5	X	125.33116	195.33682	219.05086	9.67197	0.1125403	0.18804182	3.0174014	20	3 14.6	21.1
430612	2002	WU <sub>21</sub>	16.2	X	59.33025	49.91454	69.73704	18.86245	0.1908616	0.18444456	3.0565077	20	4 6.1	20.3
430613	2002	WE <sub>30</sub>	17.0	X	7.05992	239.13632	107.44815	6.07178	0.1514433	0.27292688	2.3538124	20	11 19.9	19.5
430614	2002	XL <sub>51</sub>	16.1	X	118.17906	160.53420	240.10508	4.83187	0.2927775	0.18501868	3.0501814	20	3 11.3	21.1
430615	2002	XK <sub>117</sub>	16.4	X	28.05024	223.43967	231.71254	9.20027	0.2019261	0.17674459	3.1446475	20	—	—
430616	2002	YJ <sub>6</sub>	15.6	X	35.45950	24.07278	56.82538	29.75354	0.1981224	0.17386866	3.1792292	20	—	—
430617	2003	BP	16.8	X	155.03479	342.87479	93.59287	12.90139	0.2045498	0.24545199	2.5263393	20	5 20.9	21.1
430618	2003	BX <sub>8</sub>	16.2	X	39.17344	335.52929	140.50630	18.22226	0.2406416	0.17551328	3.1593377	20	2 22.1	19.3
430619	2003	CX	15.7	X	343.58808	211.57868	322.73255	17.16838	0.1719712	0.17195513	3.2027715	20	1 24.7	19.6
430620	2003	DT <sub>9</sub>	15.8	X	65.32086	333.64221	116.35883	16.72331	0.2707433	0.17565293	3.1576630	20	3 16.8	19.9
430621	2003	EH <sub>19</sub>	16.0	X	10.19680	350.28885	170.02310	15.27894	0.1910193	0.17257940	3.1950433	20	2 16.8	19.6
430622	2003	EO <sub>63</sub>	16.3	X	311.23312	27.74130	189.04833	6.55020	0.0917578	0.16905366	3.2393136	20	2 6.8	20.8
430623	2003	FG <sub>133</sub>	13.9	X	209.39940	302.33357	195.74691	14.22753	0.0218461	0.08333453	5.1910203	20	9 16.1	21.0
430624	2003	GA <sub>28</sub>	17.6	X	56.93546	33.56116	200.81016	6.52528	0.1007308	0.24431256	2.5341881	20	8 11.2	20.8
430625	2003	GZ <sub>50</sub>	16.9	X	56.21178	124.55256	116.70581	9.75842	0.1877660	0.24320975	2.5418430	20	9 8.5	20.3
430626	2003	QH <sub>8</sub>	16.5	X	325.17096	127.37456	172.43699	13.00148	0.2656485	0.22593866	2.6697813	20	5 21.8	19.3
430627	2003	QM <sub>15</sub>	17.5	X	317.21285	160.52200	223.62413	5.92436	0.2390248	0.29171890	2.2516092	20	10 8.2	18.3
430628	2003	QN <sub>23</sub>	17.3	X	44.61486	105.17146	185.58468	4.82719	0.2745385	0.23920107	2.5701629	20	11 7.9	20.8
430629	2003	QW <sub>27</sub>	16.6	X	335.27326	319.75140	359.21281	13.66043	0.2775740	0.22967114	2.6407772	20	7 21.2	18.8
430630	2003	QU <sub>72</sub>	18.0											

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>
430641 2003 <i>SM</i> <sub>69</sub>	17.0	X	229.48848	0.33918	353.51649	4.27487	0.0858885	0.21329955	2.7742318	20	4 16.9	21.1
430642 2003 <i>SE</i> <sub>89</sub>	16.4	X	289.74697	346.43634	342.36571	13.52904	0.1805295	0.22242005	2.6978643	20	5 9.2	20.3
430643 2003 <i>SU</i> <sub>105</sub>	16.1	X	204.74817	149.80146	228.67296	7.85932	0.3230891	0.21244373	2.7816775	20	4 15.5	21.3
430644 2003 <i>SZ</i> <sub>132</sub>	18.0	X	25.82919	324.11418	16.79503	5.54988	0.0868023	0.29487008	2.2355390	20	12 2.7	20.6
430645 2003 <i>SU</i> <sub>135</sub>	16.7	X	251.55916	25.28026	308.42791	8.58841	0.0973155	0.21636113	2.7479989	20	4 11.6	20.8
430646 2003 <i>SH</i> <sub>139</sub>	16.4	X	199.99375	55.60736	296.11687	13.43153	0.2653120	0.21115340	2.7929982	20	3 7.9	21.7
430647 2003 <i>SO</i> <sub>174</sub>	16.6	X	254.43258	162.83847	181.33420	15.01185	0.1949949	0.21749625	2.7384293	20	4 24.1	20.9
430648 2003 <i>SX</i> <sub>186</sub>	16.3	X	301.55816	308.24659	29.79501	11.99880	0.1960966	0.22398538	2.6852801	20	6 10.1	19.6
430649 2003 <i>SN</i> <sub>193</sub>	16.7	X	233.16856	38.62435	323.59956	8.48288	0.1939468	0.21576995	2.7530161	20	4 20.2	21.4
430650 2003 <i>SR</i> <sub>205</sub>	16.7	X	271.81148	327.39296	5.59578	9.46205	0.1982677	0.21847977	2.7302048	20	4 22.9	20.7
430651 2003 <i>SO</i> <sub>229</sub>	16.8	X	340.49390	274.82611	38.11467	9.00633	0.1416196	0.22411204	2.6842683	20	7 30.2	19.7
430652 2003 <i>SJ</i> <sub>238</sub>	16.7	X	307.63399	334.79200	353.61411	14.86932	0.2835389	0.22516015	2.6759318	20	5 18.4	20.2
430653 2003 <i>SO</i> <sub>274</sub>	16.6	X	213.57428	198.30975	192.73724	14.80533	0.1564257	0.21440523	2.7646859	20	5 15.8	21.2
430654 2003 <i>SJ</i> <sub>293</sub>	16.1	X	238.10351	153.52385	199.88348	14.55578	0.1535922	0.21540929	2.7560881	20	4 21.9	20.3
430655 2003 <i>SG</i> <sub>325</sub>	17.9	X	338.06464	274.41631	359.00049	20.47461	0.0517040	0.39560520	1.8377851	20	5 18.7	19.9
430656 2003 <i>SD</i> <sub>335</sub>	17.5	X	282.93888	203.59704	106.34483	2.06481	0.0566259	0.21530761	2.7569557	20	4 30.7	21.3
430657 2003 <i>SC</i> <sub>338</sub>	16.4	X	201.85467	354.27574	17.50175	15.70644	0.2264867	0.21204778	2.7851391	20	4 8.2	21.3
430658 2003 <i>SO</i> <sub>353</sub>	16.7	X	134.45897	55.54686	339.70756	14.39254	0.1560388	0.20408348	2.8571354	20	3 6.1	21.0
430659 2003 <i>SH</i> <sub>360</sub>	16.9	X	323.11688	109.92400	175.82451	13.43155	0.1717048	0.22002051	2.7174440	20	5 12.3	20.1
430660 2003 <i>SG</i> <sub>362</sub>	18.2	X	290.83940	46.62500	17.16751	4.10332	0.1529051	0.28946893	2.2632616	20	10 18.2	19.7
430661 2003 <i>ST</i> <sub>363</sub>	17.3	X	152.53198	191.50181	231.57371	4.06616	0.1558750	0.21155669	2.7894476	20	4 26.9	21.7
430662 2003 <i>SP</i> <sub>421</sub>	17.3	X	140.93528	292.20364	160.22050	4.83250	0.0369302	0.21377221	2.7701411	20	5 14.3	21.2
430663 2003 <i>UO</i> <sub>3</sub>	17.1	X	251.17559	24.30969	21.02065	25.35761	0.3777952	0.28109150	2.3080094	20	6 11.8	21.4
430664 2003 <i>UB</i> <sub>4</sub>	17.9	X	75.68437	63.64439	8.59391	20.74623	0.1221235	0.37381144	1.9085388	20	—	—
430665 2003 <i>UQ</i> <sub>76</sub>	17.9	X	325.56400	79.20544	332.72900	9.11816	0.1590041	0.29473804	2.2362066	20	12 17.6	19.8
430666 2003 <i>UW</i> <sub>95</sub>	16.5	X	318.43974	117.37664	200.33668	12.15325	0.2807652	0.22390031	2.6859603	20	5 30.3	19.4
430667 2003 <i>UD</i> <sub>196</sub>	16.8	X	236.57769	333.37476	29.22809	18.20552	0.1505231	0.21341112	2.7732649	20	4 29.1	21.2
430668 2003 <i>US</i> <sub>197</sub>	16.4	X	261.04921	312.38877	35.51783	13.22664	0.1685450	0.21630585	2.7484671	20	5 5.2	20.4
430669 2003 <i>UZ</i> <sub>242</sub>	16.2	X	211.78320	273.62832	38.11871	15.21307	0.1579484	0.20272231	2.8699105	20	2 14.6	21.2
430670 2003 <i>UR</i> <sub>269</sub>	16.4	X	255.42223	307.23252	29.89954	8.18423	0.2324465	0.21371730	2.7706155	20	4 11.3	20.7
430671 2003 <i>UC</i> <sub>294</sub>	16.5	X	328.63543	49.29003	235.19680	10.85971	0.2485546	0.22162854	2.7042838	20	5 5.1	19.1
430672 2003 <i>UJ</i> <sub>324</sub>	17.0	X	328.76155	38.21227	233.68445	13.50954	0.1692960	0.22418110	2.6837170	20	4 28.4	20.0
430673 2003 <i>UL</i> <sub>324</sub>	16.6	X	1.52851	13.92396	240.74241	13.50357	0.0993609	0.22595048	2.6696882	20	6 9.8	19.7
430674 2003 <i>UJ</i> <sub>332</sub>	17.3	X	290.55313	90.95443	193.92745	12.88079	0.1947593	0.21646780	2.7470961	20	3 16.1	21.2
430675 2003 <i>UF</i> <sub>348</sub>	17.1	X	348.66534	160.57896	90.44132	2.91581	0.0136729	0.21530117	2.7570107	20	5 17.6	20.7
430676 2003 <i>VD</i>	17.1	X	10.62774	282.25010	247.05202	19.89106	0.0758149	0.38019179	1.8871260	20	1 19.3	19.1
430677 2003 <i>VV</i> <sub>4</sub>	16.6	X	292.80956	281.55881	44.63889	8.35675	0.1429106	0.21570397	2.7535775	20	5 20.9	20.3
430678 2003 <i>VM</i> <sub>10</sub>	17.5	X	247.25900	254.19805	52.35094	21.18910	0.0931862	0.38283051	1.8784444	20	3 5.7	20.3
430679 2003 <i>WE</i> <sub>24</sub>	17.5	X	81.73550	353.49270	65.46535	22.64510	0.0916305	0.37067608	1.9192859	20	—	—
430680 2003 <i>WM</i> <sub>51</sub>	18.4	X	228.60911	105.16730	358.95049	5.12409	0.1784633	0.28253678	2.3001318	20	9 4.6	21.5
430681 2003 <i>WJ</i> <sub>54</sub>	16.6	X	76.27280	184.77749	246.90583	10.16403	0.1338146	0.19467980	2.9484162	20	2 5.4	20.6
430682 2003 <i>WV</i> <sub>72</sub>	17.4	X	324.22864	353.67572	14.97522	3.15025	0.2605827	0.28669408	2.2778418	20	9 30.9	17.9
430683 2003 <i>WC</i> <sub>93</sub>	17.1	X	326.40456	295.07036	44.20472	6.83404	0.2527274	0.28381553	2.2932176	20	8 11.9	18.3
430684 2003 <i>WR</i> <sub>93</sub>	18.0	X	222.79420	79.12744	22.75497	4.95720	0.2038762	0.28050372	2.3112325	20	8 23.9	21.3
430685 2003 <i>WP</i> <sub>99</sub>	16.2	X	189.69767	99.86379	257.33745	13.50262	0.1729081	0.20335045	2.8639974	20	3 6.4	21.3
430686 2003 <i>WM</i> <sub>110</sub>	17.9	X	281.23415	40.23161	36.86670	4.04119	0.1812892	0.28749162	2.2736272	20	10 15.9	19.8
430687 2003 <i>WX</i> <sub>158</sub>	17.8	X	1.73038	307.46110	58.58758	5.51697	0.1415313	0.29229455	2.2486519	20	12 11.2	20.0
430688 2003 <i>WB</i> <sub>166</sub>	17.9	X	236.60758	81.03735	211.76372	20.68188	0.0436147	0.37606253	1.9009149	20	1 14.2	20.6
430689 2003 <i>XL</i> <sub>10</sub>	16.7	X	50.82526	44.37544	9.92904	19.66913	0.3351302	0.18354913	3.0664401	20	1 6.2	19.9
430690 2003 <i>XR</i> <sub>32</sub>	17.4	X	51.34109	310.97381	120.35143	2.25028	0.2394995	0.18881048	3.0092064	20	1 13.1	20.2
430691 2003 <i>YO</i> <sub>17</sub>	17.8	X	156.13696	283.64978	79.85637	23.17423	0.1237426	0.37653268	1.8993322	20	1 28.6	20.3
430692 2003 <i>YB</i> <sub>25</sub>	17.2	X	74.77693	350.07400	83.52749	3.08608	0.3244291	0.19139289	2.9820770	20	3 12.1	20.9
430693 2003 <i>YN</i> <sub>39</sub>	17.1	X	182.72303	199.61759	298.99278	8.71773	0.1923558	0.27416998	2.3466921	20	8 28.2	21.0
430694 2003 <i>YZ</i> <sub>39</sub>	16.2	X	173.03468	271.39962	97.94775	7.18023	0.0382730	0.19265342	2.9690549	20	3 11.7	20.6
430695 2003 <i>YX</i> <sub>117</sub>	17.4	X	3.36807	100.96924	71.44004	23.10808	0.0763844	0.37193854	1.9149404	20	1 24.9	19.5
430696 2004 <i>BS</i> <sub>5</sub>	18.2	X	220.47799	359.44487	126.38456	2.60279	0.1694518	0.27858102	2.3218547	20	9 25.6	21.4
430697 2004 <i>BK</i> <sub>58</sub>	16.3	X	64.12133	179.34456	278.41991	8.65071	0.1883152	0.18783727	3.0195916	20	2 28.9	20.1
430698 2004 <i>BD</i> <sub>90</sub>	16.4	X	203.58292	341.54940	148.53638	25.42625	0.1972472	0.27306559	2.3530152	20	9 10.7	20.1
430699 2004 <i>BM</i> <sub>100</sub>	18.0	X	135.33128	238.23462	321.62556	4.43277	0.1731222	0.27310496	2.3527890	20	10 4.0	21.8
430700 2004 <i>BW</i> <sub>135</sub>	18.2	X	129.14025	154.12494	58.95837	2.48443	0.1274569	0.27526603	2.3404587	20	10 17.1	21.7
430701 2004 <i>CU</i> <sub>9</sub>	15.9	X	119.13102	69.60680	330.97234	9.04451	0.0629146	0.18715613	3.0269135	20	2 17.0	20.2
430702 2004 <i>CR</i> <sub>158</sub>	17.4	X	190.12007	40.79427	104.05555	5.02097	0.1849304	0.27421953	2.3464094	20	9 18.4	21.0
430703 2004 <i>CY</i> <sub>20</sub>	16.1	X	198.29472	286.02839	125.49439	15.72970	0.1429137	0.20348922	2.8626952	20	5 29.6	21.0
430704 2004 <i>CT</i> <sub>39</sub>	15.5	X	5.88187	20.17172	159.41526	20.55876	0.3139562	0.18354474	3.0664890	20	2 25.7	17.8
430705 2004 <i>CB</i> <sub>48</sub>	16.2	X	348.54945	173.99559	334.02941	24.61914	0.2647732	0.17867248	3.1219859	20	—	—
430706 2004 <i>CG</i> <sub>55</sub>	18.1	X	201.04884	196.37182	315.31013	1.83453	0.1304808	0.27592458	2.3367332	20	10 10.1	21.3
430707 2004 <i>DZ</i> <sub>45</sub>	17.8	X	182.97649	1.02762	160.35118	4.85194	0.1848778	0.27546758	2.3393169	20	10 1.6	21.3
430708 2004 <i>DB</i> <sub>56</sub>	18.2	X	224.70028	169.05230	267.67966	2.06889	0.1700700	0.27028992	2.3690969	20	7 23.7	21.6
430709 2004 <i>DF</i> <sub>56</sub>	18.3	X	150.45923	359.18620	170.37884	4.73801	0.1175076	0.27014401	2.3699499	20	9 10.6	21.7
430710 2004 <i>DL</i> <sub>57</sub>	16.0	X	42.53319	138.87081	325.64146	27.19891	0.1325735	0.18437435	3.0572835	20	2 5.1	19.7
430711 2004 <i>EY</i> <sub>3</sub>	17.8	X	339.68307	130.80820	28.86027							

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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>
430721 2004 EO <sub>76</sub>	16.3	X	290.90371	219.44856	2.16422	20.13447	0.2935443	0.17445895	3.1720538	20	—	—
430722 2004 FG <sub>3</sub>	17.1	X	106.65774	49.36738	181.28814	23.93658	0.2000751	0.26759097	2.3850001	20	10 21.7	21.1
430723 2004 FY <sub>4</sub>	17.7	X	278.30183	73.35651	183.47376	22.27976	0.0507659	0.36223469	1.9489889	20	1 22.1	20.4
430724 2004 FY <sub>40</sub>	17.7	X	167.75976	190.31306	340.19328	5.90297	0.1762254	0.26977265	2.3721243	20	9 26.3	21.6
430725 2004 FB <sub>53</sub>	16.4	X	342.27251	28.69660	158.66365	4.19791	0.2466090	0.17829236	3.1264218	20	1 23.9	19.9
430726 2004 FV <sub>84</sub>	16.4	X	40.39791	290.92514	199.76240	8.16289	0.1388672	0.18286327	3.0741029	20	2 29.6	20.2
430727 2004 FU <sub>90</sub>	15.8	X	311.75492	218.32109	7.90219	8.95074	0.0724235	0.18243258	3.0789392	20	2 24.3	20.0
430728 2004 FR <sub>100</sub>	17.8	X	119.91466	187.10528	5.64092	4.60452	0.1344460	0.26493776	2.4008967	20	9 10.3	21.2
430729 2004 FD <sub>130</sub>	16.0	X	327.77382	175.71168	39.65267	15.48442	0.2232496	0.17878940	3.1206247	20	2 16.7	20.2
430730 2004 GE <sub>15</sub>	17.2	X	305.19498	100.18232	85.82453	23.75825	0.0346655	0.35477643	1.9762090	20	—	—
430731 2004 GL <sub>23</sub>	17.5	X	113.95510	51.62361	185.72792	3.37280	0.1950384	0.26744578	2.3858633	20	11 3.5	21.3
430732 2004 GW <sub>34</sub>	17.4	X	160.55785	260.00577	245.66359	10.08579	0.2041816	0.26536099	2.3983432	20	8 15.3	21.6
430733 2004 GS <sub>41</sub>	15.7	X	326.35104	206.20438	54.95566	16.37199	0.1399763	0.18515791	3.0486521	20	4 21.8	19.5
430734 2004 GA <sub>44</sub>	18.0	X	88.60060	231.61860	22.34985	2.43190	0.1801584	0.26700215	2.3885053	20	10 30.1	21.5
430735 2004 GD <sub>47</sub>	17.5	X	207.03445	70.87231	26.80743	4.25438	0.1198537	0.26360910	2.4089574	20	8 7.7	21.0
430736 2004 GN <sub>57</sub>	16.7	X	315.28495	61.90840	196.73934	15.99856	0.1580917	0.18461637	3.0546110	20	3 24.1	20.6
430737 2004 GR <sub>74</sub>	15.9	X	302.77421	176.94385	75.75312	14.77697	0.16212561	0.17865712	3.1221649	20	2 22.1	20.6
430738 2004 HH <sub>21</sub>	13.7	X	180.63701	130.37946	32.40109	25.18596	0.0363688	0.08499043	5.1233737	20	9 25.4	20.9
430739 2004 HA <sub>32</sub>	17.1	X	87.66547	215.62506	49.64803	6.77794	0.1424067	0.26696445	2.3887301	20	11 9.6	20.5
430740 2004 HQ <sub>47</sub>	16.1	X	336.12875	81.14246	145.47844	16.51536	0.1867556	0.18068367	3.0987755	20	3 15.9	19.8
430741 2004 HM <sub>56</sub>	15.8	X	283.72043	71.63196	171.86141	25.97830	0.2930477	0.17197921	3.2024725	20	1 13.7	21.3
430742 2004 HN <sub>56</sub>	17.4	X	72.22945	113.51670	161.64796	20.17366	0.1914140	0.26334796	2.4105496	20	11 15.1	21.4
430743 2004 JP <sub>31</sub>	15.5	X	295.89196	178.07275	75.17020	9.40406	0.0729336	0.17657697	3.1466372	20	3 10.9	20.0
430744 2004 JG <sub>42</sub>	16.6	X	294.60503	127.38650	150.07664	16.33217	0.3371340	0.17763407	3.1341411	20	2 27.8	21.4
430745 2004 KX <sub>8</sub>	17.7	X	77.07449	213.46750	77.61322	11.01329	0.26687186	0.26462068	2.4028142	20	12 10.9	21.6
430746 2004 LN <sub>1</sub>	16.1	X	293.66646	60.41213	203.86398	21.81840	0.2937225	0.17528736	3.1620518	20	2 11.1	21.2
430747 2004 NE	17.1	X	61.02758	15.69162	288.07737	16.35884	0.2386844	0.26004837	2.4308974	20	12 9.5	20.9
430748 2004 NJ <sub>30</sub>	16.7	X	347.88815	123.31161	98.03742	28.40414	0.2970214	0.23739813	2.5831593	20	3 18.2	19.7
430749 2004 NW <sub>33</sub>	16.6	X	348.76892	298.76229	3.28795	13.90609	0.0777389	0.24649323	2.5192198	20	8 4.0	19.7
430750 2004 PZ <sub>11</sub>	17.2	X	284.91246	58.68595	293.02466	1.74178	0.1935887	0.24042192	2.5614547	20	6 6.3	20.4
430751 2004 PJ <sub>20</sub>	16.7	X	355.26198	163.43662	125.76483	12.52343	0.1617348	0.24558136	2.5254520	20	7 23.6	18.8
430752 2004 PR <sub>27</sub>	16.6	X	310.35181	247.64318	64.64027	5.33661	0.2427722	0.24034251	2.5620189	20	5 12.8	19.2
430753 2004 PX <sub>104</sub>	16.7	X	239.98586	74.03230	280.75657	10.12246	0.2227988	0.23180635	2.6245357	20	4 13.9	21.2
430754 2004 QQ <sub>13</sub>	16.5	X	274.04009	297.82083	12.42896	13.19773	0.1826421	0.23248195	2.6194486	20	3 31.5	20.4
430755 2004 RH <sub>16</sub>	16.7	X	221.19321	210.92492	168.53157	15.80902	0.2011485	0.23079201	2.6322201	20	5 7.3	21.3
430756 2004 RO <sub>20</sub>	17.7	X	172.65261	23.30705	334.73666	5.63731	0.2598417	0.21945362	2.7221218	20	3 1.4	22.6
430757 2004 RW <sub>52</sub>	17.2	X	281.68938	183.58557	152.28326	4.28720	0.1984463	0.23544603	2.5974177	20	5 12.1	20.6
430758 2004 RU <sub>52</sub>	16.8	X	224.17411	17.86736	356.14866	12.77508	0.2986368	0.22943328	2.6426021	20	4 20.3	21.8
430759 2004 RE <sub>65</sub>	16.8	X	259.21785	1.58303	3.14430	7.32348	0.2057974	0.23452162	2.6042387	20	5 19.2	20.8
430760 2004 RF <sub>66</sub>	16.3	X	262.23540	195.42321	178.23306	14.90567	0.1988038	0.23578490	2.5949284	20	6 7.8	20.4
430761 2004 RL <sub>03</sub>	16.9	X	163.51519	215.91267	182.88992	12.87926	0.3375128	0.22183062	2.7026412	20	4 15.9	21.9
430762 2004 RP <sub>136</sub>	16.9	X	277.78906	71.65770	269.89249	7.38087	0.2667733	0.23554939	2.5966579	20	5 1.8	20.7
430763 2004 RF <sub>146</sub>	16.5	X	291.40442	153.50215	161.79754	14.74743	0.1264427	0.23451397	2.6042953	20	5 11.2	20.1
430764 2004 RM <sub>156</sub>	17.0	X	325.49604	344.43160	312.69688	7.33249	0.1674456	0.23757332	2.5818892	20	5 29.5	19.9
430765 2004 RU <sub>174</sub>	17.0	X	228.51288	67.71539	296.87730	10.46417	0.1997564	0.23056763	2.6339276	20	4 16.9	21.6
430766 2004 RC <sub>184</sub>	16.7	X	212.51838	180.55548	223.44059	3.87539	0.1801969	0.23051281	2.6343451	20	5 28.1	21.0
430767 2004 RY <sub>243</sub>	17.2	X	165.59256	20.76426	21.22152	2.26694	0.2045315	0.22302202	2.6930074	20	4 14.9	21.6
430768 2004 RV <sub>246</sub>	16.9	X	359.09250	28.54658	272.38008	12.66581	0.2667432	0.24420175	2.5349547	20	8 23.5	19.0
430769 2004 RW <sub>248</sub>	16.7	X	151.05904	95.87267	293.50208	15.68305	0.3357396	0.21629282	2.7485774	20	3 18.1	22.0
430770 2004 RZ <sub>250</sub>	16.9	X	290.88402	16.42170	317.01173	13.29764	0.1730062	0.23636812	2.5906582	20	5 20.4	20.6
430771 2004 RE <sub>276</sub>	16.6	X	215.04120	68.18904	344.81779	11.10064	0.1437654	0.23587696	2.5942532	20	6 12.3	20.8
430772 2004 RY <sub>299</sub>	17.1	X	208.82943	2.05350	359.06036	5.93087	0.0543923	0.22533498	2.6745474	20	4 4.4	20.9
430773 2004 RV <sub>331</sub>	16.9	X	99.14000	66.71854	356.48946	13.43957	0.1990409	0.21405196	2.6777269	20	3 8.9	20.7
430774 2004 RT <sub>346</sub>	15.9	X	167.95668	148.59526	277.26259	11.79906	0.1651028	0.22582059	2.7607118	20	5 13.2	20.4
430775 2004 SN <sub>12</sub>	16.9	X	310.61814	280.77404	21.73779	6.40487	0.2778827	0.23821707	2.5772356	20	4 21.8	19.6
430776 2004 SZ <sub>38</sub>	16.6	X	203.49340	194.94459	190.30909	13.35749	0.2687236	0.22551500	2.6731239	20	4 26.0	21.4
430777 2004 TS <sub>10</sub>	17.5	X	295.41896	258.97668	187.58896	22.26054	0.3148505	0.30950806	2.1644858	20	12 8.3	18.8
430778 2004 TB <sub>31</sub>	16.8	X	244.69142	359.59889	9.26377	18.44383	0.2014262	0.23078713	2.6322572	20	5 5.6	21.2
430779 2004 TP <sub>92</sub>	16.9	X	142.09301	227.60174	212.80828	7.78634	0.1445756	0.22154651	2.7049512	20	5 8.2	21.1
430780 2004 TN <sub>100</sub>	16.7	X	252.05332	91.65807	273.40453	13.84965	0.2636853	0.23177642	2.6247617	20	5 5.7	21.2
430781 2004 TA <sub>105</sub>	16.6	X	132.50567	229.53911	206.35197	12.45960	0.1430201	0.22042644	2.7141068	20	4 22.4	20.5
430782 2004 TJ <sub>120</sub>	16.7	X	313.55211	81.48953	232.71347	10.45191	0.2030875	0.23612105	2.5924650	20	5 28.4	19.5
430783 2004 TA <sub>169</sub>	16.8	X	226.76683	319.16436	59.71988	5.27712	0.2233118	0.22862293	2.6488428	20	5 7.2	21.2
430784 2004 TW <sub>173</sub>	16.1	X	252.10185	355.24679	24.34286	13.66353	0.2901897	0.22940027	2.6428556	20	5 20.9	20.7
430785 2004 TJ <sub>196</sub>	16.4	X	155.53985	233.34463	216.46822	9.27475	0.1461669	0.22460624	2.6803294	20	6 2.4	20.6
430786 2004 TT <sub>244</sub>	17.4	X	191.67433	153.24115	237.50493	2.37053	0.0915988	0.22473216	2.6793281	20	4 23.0	21.3
430787 2004 TL <sub>263</sub>	17.5	X	192.68164	48.91489	351.35822	2.67962	0.1827584	0.22403600	2.6848756	20	5 4.6	21.9
430788 2004 TH <sub>279</sub>	16.7	X	164.40172	163.80678	224.61240	12.66828	0.2138644	0.22032554	2.7149353	20	3 26.1	21.4
430789 2004 TK <sub>292</sub>	16.9	X	122.55346	46.49078	28.35554	11.74084	0.1787789	0.21770333	2.7366925	20	4 14.7	21.0
430790 2004 TS <sub>292</sub>	17.0	X	232.98107	20.09069	343.89552	7.35134	0.2420433	0.22751034	2.6574716	20	4 19.7	21.7
430791 2004 TY <sub>295</sub>	18.5	X	344.47378	0.29582	349.78757	1.00731	0.1975764	0.30671784	2.1775929	20	10 27.9	19.9
430792 2004 TG <sub>309</sub>	16.3	X	152.70093	175.92838	229.46778	15.71593	0.1979698	0.21844429	2.7305004	20	4 5.0	20.9
430793 2004 TW <sub>327</sub>	16.9	X	344.62373	37.15509	279.76136	12.6874						

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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>
430801 2004 VU <sub>95</sub>	16.8 <sup>m</sup>	X	355.96484	204.98002	41.64127	15.34401	0.0779673	0.22373858	2.6872545	20	5 17.5	20.0
430802 2004 XK <sub>4</sub>	21.0	X	73.78168	50.61101	69.34329	8.45359	0.3524877	0.39900759	1.8273228	20	5 6.7	22.0
430803 2004 XW <sub>18</sub>	16.5	X	170.81596	344.19443	79.48877	11.67813	0.2508801	0.22041402	2.7142087	20	5 18.6	21.3
430804 2005 AD <sub>13</sub>	17.9	X	256.41814	263.57110	102.80188	12.37852	0.7548092	0.36223911	1.9489730	20	4 14.6	22.6
430805 2005 AJ <sub>67</sub>	17.2	X	120.00068	169.84623	280.11802	7.54842	0.1747759	0.21048335	2.7989226	20	4 27.8	21.6
430806 2005 BG <sub>49</sub>	16.4	X	43.75867	69.68786	134.01356	10.08427	0.0960586	0.21123432	2.7922849	20	6 9.9	20.0
430807 2005 CY <sub>31</sub>	17.2	X	151.71748	352.79759	85.32010	2.73619	0.0458511	0.20905154	2.8116881	20	5 8.9	21.3
430808 2005 CH <sub>63</sub>	18.5	X	235.34491	99.60922	61.47023	3.33404	0.1722225	0.30240858	2.1982309	20	12 5.9	20.9
430809 2005 EE <sub>72</sub>	16.8	X	353.47849	112.95547	90.78039	7.14148	0.2459205	0.19765436	2.9187604	20	3 8.9	19.7
430810 2005 ES <sub>106</sub>	16.2	X	283.57850	168.90450	145.55146	21.17199	0.0778124	0.20998790	2.8033234	20	5 10.7	20.5
430811 2005 ED <sub>123</sub>	16.0	X	155.40342	27.13320	320.26373	8.01941	0.0780911	0.18779485	3.0200462	20	1 26.9	20.5
430812 2005 EK <sub>161</sub>	16.9	X	57.55774	356.52075	161.46122	2.63319	0.1159423	0.19981653	2.8976667	20	5 2.1	20.4
430813 2005 ET <sub>164</sub>	17.1	X	310.38870	185.61864	42.75145	2.24176	0.0917412	0.19250608	2.9705697	20	2 19.3	21.2
430814 2005 EN <sub>188</sub>	19.2	X	67.03465	301.91486	186.70730	23.34753	0.1655552	0.39293598	1.8460984	20	3 22.9	19.6
430815 2005 EQ <sub>224</sub>	18.1	X	45.19579	163.46969	11.71642	22.14425	0.0600905	0.39702509	2.1634008	20	4 10.6	19.3
430816 2005 EE <sub>259</sub>	16.7	X	300.31862	229.02572	11.13888	8.45573	0.0634142	0.19217736	2.9739562	20	2 26.9	20.8
430817 2005 EO <sub>32</sub>	16.6	X	233.63577	109.53711	195.42330	8.50500	0.1059979	0.19055539	2.9080882	20	2 20.9	21.4
430818 2005 GU <sub>54</sub>	16.9	X	46.84628	237.78931	259.59830	0.85137	0.0491677	0.19498404	2.9453484	20	3 11.7	20.9
430819 2005 GZ <sub>70</sub>	18.5	X	163.71380	348.12767	236.49477	2.39052	0.1130401	0.29336798	2.2431634	20	12 9.2	21.4
430820 2005 GJ <sub>73</sub>	17.8	X	177.94290	198.04969	36.33302	9.89116	0.3030037	0.29869792	2.2163989	20	—	—
430821 2005 GG <sub>75</sub>	16.8	X	255.78742	22.92459	207.95524	3.72130	0.0916861	0.18010996	3.1053525	20	—	—
430822 2005 GS <sub>96</sub>	16.8	X	246.28323	164.45592	105.30857	1.88328	0.1150589	0.18425717	3.0585796	20	1 25.6	21.5
430823 2005 GK <sub>134</sub>	16.9	X	333.03117	57.67523	131.87170	2.74486	0.1317138	0.18796764	3.0181952	20	1 26.9	20.7
430824 2005 GN <sub>147</sub>	18.1	X	126.45342	268.86332	345.19366	2.39077	0.1629153	0.28972053	2.2619510	20	12 6.8	21.7
430825 2005 GQ <sub>154</sub>	16.3	X	28.15494	102.72379	36.59833	9.46578	0.0714079	0.18892951	3.0079424	20	2 23.8	20.2
430826 2005 GQ <sub>205</sub>	18.8	X	150.97432	142.99552	77.32715	2.71392	0.1844622	0.28875048	2.2670142	20	11 16.9	22.5
430827 2005 JT <sub>2</sub>	18.9	X	138.15483	65.85484	188.40396	0.90434	0.1814349	0.29037114	2.2585710	20	12 17.7	22.3
430828 2005 JS <sub>37</sub>	18.3	X	148.58848	67.33239	188.79291	4.13611	0.1376293	0.29600635	2.2298143	20	—	—
430829 2005 JN <sub>49</sub>	16.0	X	145.52387	287.98454	62.83369	11.59453	0.0610982	0.17892091	3.1190954	20	1 21.0	20.7
430830 2005 JF <sub>59</sub>	18.2	X	164.79648	25.35766	206.61861	4.86549	0.1005685	0.29572121	2.2312474	20	12 21.3	21.2
430831 2005 JP <sub>63</sub>	15.6	X	294.69985	176.78373	110.51275	27.02058	0.2760532	0.19184554	2.9773844	20	3 27.5	20.4
430832 2005 JL <sub>68</sub>	17.1	X	348.44679	140.20350	125.92500	7.96748	0.3086189	0.19887174	2.9068370	20	5 23.0	19.3
430833 2005 JT <sub>74</sub>	16.5	X	33.24517	301.70151	214.79016	9.32109	0.1217336	0.19153341	2.9806182	20	3 19.9	20.2
430834 2005 JW <sub>93</sub>	17.9	X	12.88968	88.53339	83.87163	23.13300	0.0878504	0.38549877	1.8697666	20	2 11.3	19.8
430835 2005 JF <sub>94</sub>	15.6	X	285.53762	153.11393	82.04643	19.33293	0.1890018	0.18374376	3.0642743	20	1 17.3	20.4
430836 2005 JO <sub>99</sub>	15.6	X	96.97433	253.20669	153.39971	9.33729	0.0721310	0.17955241	3.1117777	20	1 29.8	20.0
430837 2005 JF <sub>113</sub>	17.3	X	222.64566	94.15320	60.86687	7.66487	0.0591525	0.29092722	2.2556921	20	11 24.6	20.0
430838 2005 JX <sub>118</sub>	16.8	X	279.62581	1.48765	261.52978	0.82771	0.2105077	0.18496692	3.0507503	20	2 9.3	21.6
430839 2005 JO <sub>120</sub>	13.9	X	12.94732	253.48152	82.75390	14.67382	0.0359888	0.08544932	5.1050146	20	10 1.1	20.7
430840 2005 JH <sub>121</sub>	18.3	X	145.37968	103.77334	151.68948	3.23021	0.1696654	0.29108101	2.2548975	20	12 26.1	21.9
430841 2005 JC <sub>139</sub>	17.9	X	218.20408	326.77438	233.16450	5.30505	0.1156575	0.29646935	2.2274921	20	—	—
430842 2005 KG <sub>8</sub>	16.3	X	230.61422	204.99523	102.72497	14.22502	0.2638714	0.24155147	2.5534631	20	2 14.9	20.9
430843 2005 LX <sub>4</sub>	16.2	X	192.80749	203.94461	117.04490	6.47391	0.1629280	0.17953729	3.1119524	20	2 5.3	21.3
430844 2005 LE <sub>8</sub>	17.9	X	109.30715	182.01000	100.88556	4.48662	0.2292925	0.28391836	2.2926639	20	12 27.4	21.5
430845 2005 LL <sub>13</sub>	17.6	X	183.44064	62.82777	134.74507	5.51973	0.0702618	0.28880862	2.2667099	20	11 30.6	20.5
430846 2005 LG <sub>16</sub>	15.8	X	185.05651	73.60795	265.12273	9.42364	0.1285427	0.17327772	3.1864534	20	2 14.5	21.0
430847 2005 LA <sub>19</sub>	17.8	X	5.85823	176.27912	133.70042	6.70336	0.1144584	0.27267900	2.3552386	20	9 19.4	20.1
430848 2005 LW <sub>25</sub>	16.3	X	298.42641	65.53172	200.67773	11.34025	0.1212146	0.18914683	3.0056380	20	3 15.0	20.5
430849 2005 LH <sub>32</sub>	16.3	X	190.69077	70.35076	215.18616	11.82667	0.0235736	0.17350154	3.1837124	20	—	—
430850 2005 LF <sub>46</sub>	15.6	X	304.00192	158.28600	110.13655	24.00302	0.0561308	0.18430120	3.0580925	20	4 18.1	20.3
430851 2005 LT <sub>53</sub>	13.5	X	3.05000	138.42547	216.93684	19.46302	0.0559052	0.08339965	5.1883179	20	9 30.8	20.2
430852 2005 MX <sub>15</sub>	16.0	X	234.83891	136.11396	152.99793	17.07977	0.2349789	0.17883944	3.1200426	20	1 30.3	21.5
430853 2005 MZ <sub>23</sub>	15.5	X	199.12518	185.37645	96.71618	29.28402	0.1526669	0.17273454	3.1931299	20	—	—
430854 2005 MP <sub>26</sub>	17.2	X	37.28908	181.47271	132.19671	6.44144	0.1498551	0.27378234	2.3489067	20	11 18.9	20.2
430855 2005 MR <sub>50</sub>	16.1	X	214.00003	217.20366	130.45452	4.78087	0.1712805	0.17719468	3.1393201	20	3 25.8	21.2
430856 2005 MF <sub>54</sub>	15.9	X	240.91760	152.70185	151.34099	17.48718	0.1852819	0.17682034	3.1437493	20	2 25.2	21.0
430857 2005 NG <sub>15</sub>	16.0	X	243.66262	175.16926	108.11074	5.64591	0.1878704	0.17611035	3.1521929	20	2 4.2	21.1
430858 2005 NZ <sub>22</sub>	17.5	X	79.63345	209.48997	117.48401	5.65059	0.2545314	0.28673853	2.2776064	20	—	—
430859 2005 NR <sub>30</sub>	16.0	X	200.39182	222.53689	114.70845	11.98013	0.2847307	0.17377102	3.1804200	20	3 3.5	21.8
430860 2005 NY <sub>44</sub>	15.3	X	270.69748	165.63088	148.52439	34.72298	0.2964718	0.18076488	3.0978474	20	3 27.3	20.6
430861 2005 NS <sub>56</sub>	18.4	X	85.63432	175.71815	113.73617	1.46673	0.2227145	0.27954247	2.3165278	20	12 15.5	22.2
430862 2005 NZ <sub>75</sub>	16.2	X	169.00429	253.81883	120.75138	11.04070	0.0862339	0.17668879	3.1453095	20	3 17.9	21.1
430863 2005 NJ <sub>123</sub>	17.4	X	75.93847	50.16184	228.83888	3.87557	0.2191932	0.27558861	2.3386319	20	11 23.5	21.0
430864 2005 OM <sub>14</sub>	16.6	X	344.13251	211.77051	149.26719	24.04630	0.2084720	0.26638827	2.3921733	20	11 10.9	19.4
430865 2005 PW <sub>2</sub>	17.6	X	52.50792	332.35043	314.57041	1.89731	0.1969979	0.27210915	2.3585257	20	11 5.7	20.9
430866 2005 PP <sub>9</sub>	17.5	X	1.23553	240.42240	110.77385	2.14207	0.2046376	0.26992268	2.3712452	20	11 23.2	19.7
430867 2005 PB <sub>20</sub>	16.2	X	254.90939	330.61818	320.31460	13.65474	0.1710886	0.17674305	3.1446657	20	2 21.5	21.1
430868 2005 PU <sub>23</sub>	15.7	X	238.06477	147.98892	155.34945	27.05383	0.2020620	0.17426088	3.1744570	20	2 20.6	21.1
430869 2005 QP <sub>3</sub>	17.8	X	76.47918	107.25798	176.49239	4.66296	0.2254087	0.27462212	2.3441157	20	11 30.8	21.5
430870 2005 QR <sub>13</sub>	18.0	X	332.69053	34.41582	315.99307	1.95246	0.2114401	0.26325200	2.4111354	20	9 13.1	19.5
430871 2005 QJ <sub>21</sub>	17.4	X	44.35153	202.09272	112.90846	3.42822	0.2200176	0.27233322	2.3572318	20	12 7.0	20.5
430872 2005 QD <sub>22</sub>	17.3	X	326.79911	213.24422	164.72848	10.83442	0.1264987	0.26675058	2.3900068	20	10 19.1	19.6
430873 2005 QU <sub>45</sub>	17.3	X	355.31177	333.35167	1.84648	6.13677	0.1220672	0.26516445				

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>		
430881	2005	QE <sub>108</sub>	17.7	X	34.90628	5.66472	303.81606	1.31594	0.2156463	0.26964035	2.3729001	20	11 16.8	20.8
430882	2005	QC <sub>114</sub>	17.4	X	172.60822	132.87151	168.98234	22.82446	0.0766884	0.35789968	1.9646952	20	—	—
430883	2005	QO <sub>114</sub>	17.4	X	315.19343	172.74552	190.66097	0.81774	0.1997186	0.25997302	2.4313670	20	8 20.8	19.1
430884	2005	QM <sub>141</sub>	15.4	X	271.37894	72.87513	245.43427	14.68029	0.1384630	0.17985887	3.1082419	20	4 12.7	20.1
430885	2005	QY <sub>141</sub>	17.9	X	55.24058	120.01396	193.95421	5.95909	0.3071514	0.27406533	2.3472895	20	12 25.0	21.8
430886	2005	QX <sub>148</sub>	18.0	X	176.04534	50.61640	317.18564	17.81707	0.0955777	0.36973596	1.9225379	20	2 20.1	20.3
430887	2005	QE <sub>149</sub>	16.8	X	289.84876	76.39598	204.71017	8.94491	0.3734173	0.18525185	3.0476214	20	2 19.6	21.9
430888	2005	QD <sub>180</sub>	17.9	X	17.16305	83.54220	248.02181	3.89909	0.2487120	0.26949919	2.3737287	20	11 28.1	20.3
430889	2005	QH <sub>180</sub>	17.2	X	9.12469	320.20379	42.53100	7.08561	0.1614885	0.27160786	2.3614268	20	12 14.8	19.9
430890	2005	QN <sub>180</sub>	17.6	X	2.16930	296.09220	53.99648	5.94784	0.2424231	0.26890659	2.3772148	20	11 28.6	19.7
430891	2005	QK <sub>188</sub>	17.8	X	327.06649	326.94197	15.74923	6.12126	0.1307945	0.25976013	2.4326953	20	8 22.9	20.1
430892	2005	QT <sub>188</sub>	16.4	X	261.99939	118.20391	173.93210	9.97202	0.2166183	0.17733710	3.1376391	20	2 26.0	21.4
430893	2005	RZ <sub>20</sub>	16.9	X	11.34992	75.11409	264.05121	5.44761	0.1402307	0.26728859	2.3867986	20	11 9.9	19.4
430894	2005	RF <sub>40</sub>	17.2	X	75.43200	354.49866	285.92326	4.81623	0.2247721	0.27457804	2.3443665	20	11 24.2	20.9
430895	2005	RO <sub>44</sub>	16.5	X	159.93135	220.10961	153.04657	14.32364	0.2671902	0.23076692	2.6324109	20	3 11.1	21.1
430896	2005	SS <sub>3</sub>	17.0	X	116.25737	246.02919	190.49303	11.22620	0.1764303	0.23041757	2.6350710	20	4 9.3	20.9
430897	2005	SD <sub>16</sub>	16.2	X	158.47528	112.19076	194.02591	17.34542	0.1148132	0.15432051	3.4423388	20	—	—
430898	2005	SC <sub>17</sub>	16.0	X	283.77694	258.22495	6.12950	25.13685	0.2536485	0.17304172	3.1893499	20	2 22.6	21.2
430899	2005	SW <sub>25</sub>	17.5	X	354.66851	345.80304	185.08178	22.46225	0.0557049	0.36517348	1.9385183	20	1 6.1	20.0
430900	2005	SA <sub>29</sub>	17.8	X	127.74165	63.37275	348.40483	5.95306	0.3651383	0.22905101	2.6455414	20	4 5.4	22.4
430901	2005	SQ <sub>46</sub>	17.2	X	18.45106	355.71016	4.28573	8.82113	0.1376927	0.27007080	2.3703781	20	12 20.8	20.2
430902	2005	SW <sub>49</sub>	17.5	X	63.60100	97.92497	200.43155	5.90886	0.1614769	0.26886107	2.3774831	20	11 29.2	20.8
430903	2005	SR <sub>51</sub>	17.1	X	7.52069	330.91511	24.40885	6.47232	0.1241316	0.26618854	2.3933698	20	11 23.6	19.8
430904	2005	SA <sub>69</sub>	16.8	X	62.13655	294.61881	7.09529	13.00144	0.2999060	0.27295092	2.3536742	20	12 14.1	20.9
430905	2005	SO <sub>87</sub>	18.0	X	57.41584	119.61156	171.66460	2.47137	0.1912056	0.26865595	2.3786931	20	11 16.9	21.4
430906	2005	SQ <sub>125</sub>	17.3	X	333.91441	145.46828	186.25678	14.49669	0.1775199	0.25896931	2.4376453	20	8 10.9	19.6
430907	2005	SF <sub>161</sub>	16.5	X	326.74401	256.31262	5.02965	15.48143	0.3153671	0.18294855	3.0731475	20	3 22.9	19.7
430908	2005	SS <sub>168</sub>	17.1	X	97.18164	86.62207	316.76575	4.43577	0.0914105	0.22518648	2.6757232	20	1 22.7	20.4
430909	2005	SM <sub>173</sub>	17.1	X	297.59357	90.84389	208.21054	8.59643	0.0074488	0.24436563	2.5338212	20	5 12.6	20.3
430910	2005	SY <sub>205</sub>	17.6	X	34.09008	156.16597	162.26294	9.94760	0.1975602	0.26910609	2.3760397	20	11 27.4	20.8
430911	2005	ST <sub>240</sub>	17.5	X	355.98677	347.99025	346.96350	6.47221	0.1139094	0.26149553	2.4219204	20	10 2.3	19.9
430912	2005	SU <sub>256</sub>	17.5	X	123.16709	295.94523	354.66295	6.63594	0.1706150	0.28148518	2.3058569	20	—	—
430913	2005	SL <sub>259</sub>	17.2	X	35.87798	198.38790	114.51042	8.29868	0.2624821	0.26938826	2.3743803	20	12 1.1	20.4
430914	2005	SA <sub>271</sub>	17.4	X	1.72272	257.45096	85.20507	5.56279	0.2101723	0.26585697	2.3953594	20	11 12.1	19.6
430915	2005	SA <sub>278</sub>	16.2	X	212.43715	124.33535	196.05386	9.80449	0.1825610	0.16496699	3.2925927	20	2 18.7	21.8
430916	2005	SN <sub>290</sub>	17.5	X	263.81008	212.67354	204.19724	6.05861	0.1241879	0.25681881	2.4512344	20	8 17.8	20.7
430917	2005	TP <sub>14</sub>	17.1	X	302.00282	323.58648	55.06771	6.43330	0.2119334	0.25994035	2.4315708	20	8 17.9	19.4
430918	2005	TN <sub>16</sub>	17.6	X	89.45934	277.47009	357.99595	6.37822	0.1539438	0.27166980	2.3610679	20	11 24.2	21.3
430919	2005	TM <sub>32</sub>	16.2	X	271.80289	261.51265	37.53703	10.26421	0.2398027	0.17703472	3.1412108	20	3 16.9	21.2
430920	2005	TZ <sub>40</sub>	15.2	X	230.82299	25.25316	285.60199	14.38014	0.2078946	0.17239632	3.1973049	20	2 17.9	20.8
430921	2005	TO <sub>54</sub>	17.4	X	334.44088	277.24324	70.80527	5.24192	0.1979654	0.25983814	2.4322084	20	9 17.4	19.2
430922	2005	TV <sub>58</sub>	17.5	X	152.15281	230.54573	193.58687	6.26931	0.2996994	0.23427931	2.6060341	20	5 5.9	22.1
430923	2005	TS <sub>59</sub>	15.8	X	140.66186	334.24285	21.74344	15.10952	0.0932634	0.15611906	3.4158498	20	1 31.9	21.2
430924	2005	TY <sub>63</sub>	17.7	X	168.48721	35.64784	9.37873	5.30581	0.2399402	0.23688494	2.5868887	20	4 20.7	22.3
430925	2005	TD <sub>99</sub>	17.0	X	358.82982	27.81011	320.11087	6.52183	0.1250522	0.26660342	2.3908862	20	10 27.7	19.7
430926	2005	TC <sub>113</sub>	17.9	X	174.06272	78.77641	356.64698	4.23847	0.2881365	0.24066289	2.5597446	20	6 2.0	22.5
430927	2005	TC <sub>134</sub>	18.1	X	172.77103	284.73742	172.84901	0.52521	0.0812528	0.24677411	2.5173078	20	6 29.1	21.8
430928	2005	TA <sub>163</sub>	17.6	X	67.62060	18.38993	295.86417	1.95555	0.2136214	0.27306469	2.3530204	20	12 28.2	21.1
430929	2005	TK <sub>190</sub>	17.8	X	70.39158	293.87961	11.12987	5.48144	0.1585720	0.27070245	2.3666894	20	12 13.6	21.3
430930	2005	TP <sub>194</sub>	17.1	X	119.85208	253.47086	217.17333	13.68520	0.0521144	0.23771457	2.5808664	20	5 12.4	20.5
430931	2005	UW <sub>39</sub>	16.6	X	325.69759	238.62109	59.27703	4.86930	0.1300930	0.24460948	2.5321370	20	6 6.1	19.2
430932	2005	UJ <sub>45</sub>	17.6	X	234.00665	255.82105	104.88456	3.61655	0.0750726	0.23990791	2.5651120	20	5 3.5	21.1
430933	2005	UR <sub>53</sub>	17.1	X	152.69196	302.30991	69.39933	4.35266	0.2574999	0.22890143	2.6466939	20	3 4.0	21.6
430934	2005	UJ <sub>61</sub>	17.9	X	60.25065	246.35146	59.94741	3.04797	0.1963452	0.26677126	2.3898833	20	12 8.3	21.2
430935	2005	UJ <sub>85</sub>	17.6	X	172.45878	238.80759	209.23501	13.39426	0.0933834	0.24301634	2.5431915	20	6 15.6	21.6
430936	2005	UV <sub>92</sub>	17.6	X	235.87211	323.84281	357.07186	3.95263	0.1356485	0.23433312	2.6056351	20	3 10.1	21.7
430937	2005	UZ <sub>105</sub>	16.9	X	112.18510	268.82023	222.04177	24.92690	0.1216062	0.23635453	2.5907575	20	6 5.9	20.9
430938	2005	UM <sub>117</sub>	17.7	X	315.38796	82.07616	221.27860	13.44776	0.0875269	0.24616241	2.5214763	20	6 2.4	20.7
430939	2005	UA <sub>127</sub>	18.0	X	159.57576	226.41712	224.67661	9.41029	0.2498168	0.23780935	2.5801806	20	6 10.7	22.5
430940	2005	UE <sub>139</sub>	18.1	X	264.04550	304.70619	78.42623	3.53896	0.0668180	0.24827400	2.5071590	20	7 12.5	21.2
430941	2005	UT <sub>218</sub>	17.5	X	107.80581	317.61869	327.01269	3.12679	0.1767945	0.27282331	2.3544080	20	12 25.5	21.3
430942	2005	UD <sub>234</sub>	17.3	X	338.72811	191.72678	134.68671	3.49299	0.2070132	0.25542049	2.4601725	20	8 17.4	19.0
430943	2005	UP <sub>236</sub>	17.1	X	318.68158	276.33581	61.68980	15.09820	0.1464133	0.25208134	2.4818503	20	7 27.5	19.9
430944	2005	UG <sub>241</sub>	16.8	X	134.02153	25.15749	71.80474	10.31793	0.0959133	0.23567694	2.5957209	20	5 17.1	20.5
430945	2005	UZ <sub>243</sub>	17.4	X	188.37839	314.68907	32.96729	7.12098	0.1434199	0.22759612	2.6568038	20	3 1.4	21.7
430946	2005	UC <sub>249</sub>	18.0	X	355.82590	121.90570	206.42876	3.65731	0.1898793	0.25858657	2.4400501	20	10 1.3	19.9
430947	2005	UV <sub>296</sub>	17.7	X	61.55389	169.38530	47.08020	4.82848	0.0242447	0.24507194	2.5289505	20	7 14.5	20.9
430948	2005	UP <sub>309</sub>	17.3	X	142.37655	227.44264	237.55893	6.63845	0.1523861	0.23736879	2.5833722	20	6 8.9	21.4
430949	2005	UQ <sub>325</sub>	16.9	X	99.48744	301.28252	202.75955	12.44047	0.0533907	0.24155546	2.5534			

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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>		
430961	2005	VT <sub>123</sub>	17.6	X	113.87782	236.54415	281.24861	2.71844	0.2500125	0.23714981	2.5849622	20	7 26.4	21.9
430962	2005	WX <sub>18</sub>	17.0	X	125.35078	32.97436	74.21436	14.74904	0.1248451	0.23225475	2.6211567	20	5 23.7	20.8
430963	2005	WN <sub>27</sub>	17.3	X	256.73936	337.20061	44.95600	3.73198	0.1767009	0.24586060	2.5235394	20	6 14.2	20.8
430964	2005	WY <sub>36</sub>	17.8	X	189.48627	286.30973	155.60141	1.21304	0.1198320	0.24105173	2.5569911	20	6 25.7	21.7
430965	2005	WX <sub>42</sub>	17.4	X	113.00782	260.50471	255.15748	6.80751	0.2081735	0.23692587	2.5865908	20	7 18.4	21.6
430966	2005	WW <sub>48</sub>	18.2	X	194.34975	12.23775	52.56282	2.23307	0.1623541	0.23917275	2.5703657	20	6 9.9	22.3
430967	2005	WA <sub>50</sub>	17.6	X	233.75653	333.15519	66.52612	6.15503	0.0988819	0.24413017	2.5354502	20	6 20.4	21.0
430968	2005	WD <sub>51</sub>	16.9	X	226.69345	75.72554	263.78669	6.95098	0.1768170	0.23215265	2.6219251	20	3 18.2	21.3
430969	2005	WT <sub>51</sub>	17.6	X	124.34728	32.51447	63.58892	3.12152	0.1571467	0.23025258	2.6363296	20	5 10.6	21.6
430970	2005	WD <sub>56</sub>	17.8	X	124.57537	350.37882	70.13689	25.25630	0.0663931	0.36302077	1.9461743	20	3 18.6	20.7
430971	2005	WL <sub>78</sub>	16.2	X	281.41281	133.38764	326.62816	1.87230	0.1739163	0.12381508	3.9867625	20	10 11.2	21.5
430972	2005	WM <sub>79</sub>	17.8	X	217.24232	337.51715	68.45381	3.07369	0.1826687	0.24091432	2.5579633	20	6 3.6	21.8
430973	2005	WT <sub>91</sub>	18.0	X	127.30762	298.43274	58.24718	10.21837	0.1875489	0.35634371	1.9704102	20	—	—
430974	2005	WQ <sub>93</sub>	17.3	X	226.06260	327.38094	77.22172	13.78450	0.0670219	0.24110073	2.5566446	20	6 21.4	20.8
430975	2005	WX <sub>94</sub>	17.0	X	38.33264	125.46527	80.35502	16.02438	0.1373262	0.23350945	2.61117589	20	6 8.6	19.9
430976	2005	WA <sub>96</sub>	16.9	X	314.08571	70.44770	253.26521	2.39505	0.1616860	0.24514341	2.5284589	20	6 19.5	19.6
430977	2005	WL <sub>111</sub>	16.6	X	304.50191	40.35204	245.14161	10.88111	0.0573860	0.23488064	2.6015843	20	4 23.6	20.0
430978	2005	WP <sub>115</sub>	15.8	X	175.01801	296.56116	95.50744	22.45241	0.0050302	0.22558064	2.6726054	20	4 17.0	20.0
430979	2005	WN <sub>119</sub>	16.7	X	139.81897	18.97891	58.41717	14.83391	0.2291000	0.23161543	2.6259779	20	5 9.1	21.1
430980	2005	WL <sub>135</sub>	17.6	X	250.20275	299.13140	103.64608	8.31207	0.1650823	0.24246398	2.5470525	20	7 6.0	21.2
430981	2005	WU <sub>140</sub>	17.0	X	230.13665	82.95180	282.82045	11.41608	0.1222596	0.23260796	2.6185025	20	4 26.4	21.2
430982	2005	WV <sub>141</sub>	17.5	X	126.30951	16.45989	19.55678	21.29223	0.0676144	0.36663411	1.9333663	20	2 4.9	20.0
430983	2005	WA <sub>147</sub>	17.7	X	222.82785	332.59626	64.61302	10.83142	0.1400094	0.24046077	2.5611787	20	5 31.5	21.4
430984	2005	WY <sub>152</sub>	17.4	X	290.78221	92.45934	295.35302	1.50279	0.1282052	0.25233901	2.4801605	20	8 19.0	19.9
430985	2005	WW <sub>153</sub>	16.7	X	304.86895	243.23483	65.39401	13.06514	0.1977929	0.24107291	2.5568413	20	5 8.2	19.7
430986	2005	WS <sub>157</sub>	16.6	X	261.09377	276.92471	99.89942	10.57072	0.1918428	0.24144047	2.5542457	20	6 11.1	20.1
430987	2005	WP <sub>160</sub>	17.2	X	329.36256	273.54297	40.63986	16.46159	0.0573900	0.25150830	2.4856187	20	7 18.2	20.5
430988	2005	WV <sub>160</sub>	16.8	X	220.67838	91.38655	268.11589	10.60519	0.1786588	0.23542420	2.5975783	20	4 4.9	21.2
430989	2005	WX <sub>172</sub>	17.8	X	186.06849	23.35058	88.53901	2.32712	0.0829991	0.24587349	2.5234512	20	8 3.1	21.4
430990	2005	WC <sub>183</sub>	16.5	X	234.44503	63.79091	320.63187	12.50142	0.1676483	0.24486627	2.5303664	20	5 21.9	20.6
430991	2005	XO <sub>12</sub>	17.6	X	43.30339	206.80283	90.14765	2.21160	0.1855097	0.26056808	2.4276640	20	11 5.5	20.8
430992	2005	XS <sub>24</sub>	16.0	X	81.58067	285.65502	280.76978	13.21478	0.1208612	0.23651592	2.5895788	20	8 6.5	19.7
430993	2005	XO <sub>37</sub>	17.3	X	206.22779	352.01577	68.18579	3.69311	0.1868334	0.23786368	2.5797877	20	6 15.5	21.1
430994	2005	XG <sub>44</sub>	17.1	X	203.13837	343.31975	68.12172	15.72218	0.0838734	0.23918355	2.5702883	20	6 1.5	20.7
430995	2005	XV <sub>45</sub>	17.3	X	200.05486	76.64772	321.88627	2.93927	0.2196534	0.23767662	2.5811410	20	5 7.6	21.8
430996	2005	XP <sub>47</sub>	17.2	X	234.51565	48.87918	15.55820	4.21502	0.0809216	0.24486458	2.5303780	20	7 29.1	20.7
430997	2005	XR <sub>65</sub>	16.9	X	257.10178	92.87847	276.83357	9.83779	0.2014208	0.24414336	2.5353589	20	5 25.2	20.7
430998	2005	XA <sub>78</sub>	16.7	X	147.72824	339.24272	50.45891	10.08097	0.2915107	0.22570738	2.6716047	20	3 25.9	21.4
430999	2005	XL <sub>86</sub>	17.7	X	169.42146	35.06936	81.33769	5.66015	0.1575879	0.24029338	2.5623681	20	7 20.7	21.7
431000	2005	YT <sub>16</sub>	16.4	X	50.62165	292.26377	117.24127	13.96813	0.1992945	0.20624333	2.8371532	20	—	—
431001	2005	YD <sub>21</sub>	17.9	X	78.02115	229.06929	314.86625	1.27806	0.1752833	0.23073376	2.6326631	20	7 14.4	21.4
431002	2005	YY <sub>23</sub>	17.5	X	141.02348	338.07718	108.46044	3.36585	0.1822014	0.22944307	2.6425269	20	5 17.8	21.7
431003	2005	YJ <sub>26</sub>	17.6	X	205.00962	102.44250	303.01696	4.64585	0.2316874	0.23692670	2.5865847	20	5 19.9	22.2
431004	2005	YF <sub>47</sub>	17.1	X	235.51577	327.17610	101.07315	6.88151	0.0883447	0.24232981	2.5479926	20	8 2.9	20.5
431005	2005	YF <sub>68</sub>	17.2	X	211.74904	88.36901	305.23614	6.84928	0.1593032	0.23465632	2.6032420	20	5 12.9	21.4
431006	2005	YM <sub>73</sub>	17.0	X	273.16965	303.77002	62.23747	2.88041	0.1784585	0.24288671	2.5440963	20	6 12.6	20.2
431007	2005	YR <sub>73</sub>	16.9	X	165.32950	132.54891	272.86125	12.56559	0.2541397	0.23318853	2.6141545	20	4 15.7	21.7
431008	2005	YN <sub>78</sub>	17.5	X	119.79382	41.60742	79.03612	3.82136	0.0771245	0.23079202	2.6322200	20	5 28.5	21.2
431009	2005	YR <sub>78</sub>	17.2	X	126.26114	255.50084	288.18368	5.18142	0.1449441	0.24166463	2.5526660	20	8 31.2	21.2
431010	2005	YR <sub>85</sub>	16.9	X	53.06060	95.46797	104.29059	16.77290	0.1689537	0.22864853	2.6486451	20	6 29.8	20.1
431011	2005	YA <sub>87</sub>	18.1	X	140.34019	176.75156	291.21516	2.11018	0.1500425	0.23179395	2.6246294	20	6 10.4	22.0
431012	2005	YU <sub>97</sub>	17.2	X	240.51928	35.09395	336.74759	3.20252	0.1936103	0.23762303	2.5815364	20	5 11.4	21.2
431013	2005	YM <sub>105</sub>	16.7	X	109.03098	56.38650	104.13831	14.18305	0.0945359	0.23443534	2.6048776	20	7 9.9	20.5
431014	2005	YU <sub>121</sub>	17.5	X	185.56400	16.59837	64.68044	3.27444	0.1787427	0.23651577	2.5895799	20	6 19.6	21.8
431015	2005	YD <sub>130</sub>	16.8	X	305.27545	248.38129	93.59854	6.68753	0.2666326	0.24598957	2.5226573	20	6 12.5	19.2
431016	2005	YX <sub>130</sub>	17.2	X	120.96262	140.31496	319.04378	1.86192	0.1528527	0.22538291	2.6741683	20	5 9.8	21.3
431017	2005	YQ <sub>132</sub>	17.1	X	219.90788	18.07890	4.25659	4.40342	0.1684169	0.23534993	2.5981248	20	5 6.7	21.3
431018	2005	YH <sub>139</sub>	17.0	X	178.06623	328.57135	95.92820	13.27117	0.1682199	0.23425735	2.6061969	20	5 25.3	21.3
431019	2005	YF <sub>145</sub>	16.6	X	218.76927	28.76750	14.74542	11.11735	0.1654709	0.23280273	2.5773391	20	5 31.7	20.8
431020	2005	YJ <sub>146</sub>	17.4	X	177.16203	59.75017	12.31680	2.43698	0.1735547	0.23426483	2.6061415	20	5 30.9	21.8
431021	2005	YH <sub>148</sub>	17.1	X	54.67311	243.50557	318.98348	6.27139	0.2458989	0.22748349	2.6576806	20	7 19.8	20.4
431022	2005	YM <sub>175</sub>	17.0	X	301.24065	261.59892	95.95872	8.29939	0.1235214	0.24294321	2.5437018	20	7 23.9	19.8
431023	2005	YL <sub>199</sub>	17.1	X	109.50175	191.35528	283.27801	3.06991	0.1835077	0.22634363	2.6665959	20	5 20.7	21.1
431024	2005	YR <sub>201</sub>	17.2	X	246.44499	227.28887	148.91389	0.50422	0.1783764	0.23831894	2.5765011	20	5 25.8	21.0
431025	2005	YA <sub>212</sub>	16.9	X	138.55325	34.91471	83.56590	13.75405	0.2037776	0.23139641	2.6276346	20	6 25.2	21.2
431026	2005	YB <sub>238</sub>	17.1	X	170.98241	317.30617	133.94729	13.04432	0.2537665	0.23252448	2.6191292	20	6 20.6	21.8
431027	2005	YV <sub>282</sub>	17.2	X	147.54145	143.26864	286.91614	4.69024	0.1396622	0.23067945	2.6330763	20	4 27.8	21.3
431028	2006	AX <sub>14</sub>	16.6	X	268.54524	222.48611	127.56735	18.06272	0.2075726	0.23446789	2.6046365	20	5 18.7	20.8
431029	2006	AT <sub>35</sub>	17.1	X	202.58278	253.10163	127.68144	2.12302	0.2992313	0.23226385	2.6			

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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>
431041 2006 BT <sub>19</sub>	17.4	X	234.69952	255.36438	128.35262	4.86692	0.1598211	0.23577111	2.5950297	20	5 26.2	21.4
431042 2006 BV <sub>20</sub>	17.4	X	66.33130	33.72775	136.03710	1.96355	0.1438274	0.22404833	2.6847771	20	6 3.7	20.7
431043 2006 BP <sub>22</sub>	17.1	X	79.00051	62.86160	123.12973	7.16692	0.0970428	0.22963175	2.6410792	20	7 6.2	20.6
431044 2006 BU <sub>23</sub>	16.7	X	129.60236	195.04004	291.53363	12.24362	0.1861199	0.23037920	2.6353635	20	6 26.9	20.9
431045 2006 BH <sub>40</sub>	16.3	X	249.42787	62.60378	331.64277	21.93954	0.0759309	0.23311064	2.6147368	20	7 11.7	20.2
431046 2006 BG <sub>48</sub>	17.4	X	187.43617	97.64453	311.37309	16.38815	0.2718925	0.23284133	2.6167526	20	5 5.5	22.5
431047 2006 BM <sub>50</sub>	17.6	X	357.26158	235.92966	340.06377	4.79895	0.1017428	0.21990441	2.7184004	20	4 6.1	20.7
431048 2006 BM <sub>52</sub>	16.4	X	233.61175	0.17578	318.48109	12.27735	0.1905456	0.21703039	2.7423466	20	2 29.2	21.1
431049 2006 BR <sub>64</sub>	17.0	X	216.44535	277.99281	126.88319	6.95625	0.0977246	0.23332936	2.6131026	20	6 8.2	21.0
431050 2006 BJ <sub>72</sub>	16.9	X	221.40292	320.46245	86.39818	5.42499	0.1570573	0.23467200	2.6031261	20	6 10.7	20.7
431051 2006 BX <sub>82</sub>	16.8	X	130.95313	304.01094	125.65351	23.99795	0.1883174	0.22375429	2.6871287	20	4 26.9	21.5
431052 2006 BZ <sub>90</sub>	17.3	X	76.66511	334.64058	155.07054	5.22189	0.1221710	0.21884457	2.7271700	20	4 23.2	20.8
431053 2006 BW <sub>119</sub>	17.2	X	101.10686	218.51155	299.67455	5.08644	0.0689029	0.22730907	2.6590400	20	6 23.4	20.8
431054 2006 BM <sub>122</sub>	17.2	X	41.97714	189.29141	329.09242	7.67474	0.1465936	0.21580155	2.7527472	20	4 5.1	20.3
431055 2006 BW <sub>127</sub>	17.0	X	118.62866	147.10687	293.49203	2.76981	0.1344048	0.21876517	2.7278298	20	4 10.6	21.1
431056 2006 BY <sub>127</sub>	17.1	X	166.43056	77.19685	296.93834	2.53387	0.1106559	0.21397208	2.7684158	20	3 8.0	21.4
431057 2006 BL <sub>135</sub>	17.1	X	15.38332	241.37062	12.85360	1.70601	0.1753610	0.22795227	2.6540358	20	7 12.1	19.5
431058 2006 BG <sub>138</sub>	17.0	X	235.19228	44.33895	319.86145	5.47372	0.0505696	0.22447554	2.6813697	20	5 9.1	20.9
431059 2006 BA <sub>158</sub>	17.1	X	113.65352	331.76578	129.92922	3.32913	0.0633471	0.21901236	2.7257768	20	4 25.6	20.8
431060 2006 BU <sub>168</sub>	16.6	X	135.97562	334.67490	150.48878	11.27213	0.0323330	0.22701399	2.6613437	20	6 19.6	20.5
431061 2006 BK <sub>174</sub>	17.0	X	305.03757	263.60172	80.63337	5.53548	0.1954723	0.23776638	2.5804914	20	6 27.8	19.8
431062 2006 BL <sub>184</sub>	17.3	X	159.98765	346.29247	74.20126	2.46702	0.0541053	0.22449687	2.6811999	20	4 25.9	21.1
431063 2006 BL <sub>185</sub>	17.6	X	137.88139	68.76836	67.22003	2.13988	0.1055756	0.23272445	2.6176287	20	7 11.7	21.4
431064 2006 BK <sub>192</sub>	17.4	X	113.65216	208.56096	273.51394	1.65310	0.1274726	0.22542364	2.6738461	20	5 28.8	21.3
431065 2006 BR <sub>207</sub>	16.7	X	141.68927	26.08979	136.97429	13.62124	0.0969508	0.23849547	2.5752296	20	8 21.0	20.4
431066 2006 BD <sub>208</sub>	16.0	X	111.76907	181.14088	311.34208	16.32395	0.0823088	0.22505972	2.6767277	20	6 2.9	20.1
431067 2006 BB <sub>221</sub>	17.3	X	124.50309	6.15971	124.18210	3.37388	0.0880141	0.22901868	2.6457905	20	6 17.3	21.1
431068 2006 BP <sub>232</sub>	17.1	X	170.86491	310.35108	101.95010	7.71869	0.1181909	0.22590857	2.6700184	20	5 2.6	21.3
431069 2006 BJ <sub>233</sub>	17.3	X	263.45010	319.66082	57.09675	2.20903	0.1099491	0.23645263	2.5900409	20	6 25.0	20.7
431070 2006 BL <sub>243</sub>	17.2	X	241.65161	11.16737	47.51549	3.16194	0.1370255	0.23865208	2.5741028	20	7 26.2	20.7
431071 2006 BW <sub>257</sub>	17.3	X	135.61480	337.97827	112.43496	4.35678	0.0336440	0.22149881	2.7053395	20	5 4.7	21.0
431072 2006 BW <sub>262</sub>	17.5	X	89.79884	31.33399	118.26731	3.47655	0.1280914	0.22298642	2.6932941	20	6 6.1	21.2
431073 2006 CQ <sub>13</sub>	17.3	X	63.09904	240.20080	305.09485	3.61814	0.1098654	0.22543084	2.6737892	20	6 14.7	20.6
431074 2006 CW <sub>21</sub>	16.8	X	165.33284	7.76722	88.57628	6.26168	0.2017100	0.23084054	2.6318511	20	6 20.8	21.0
431075 2006 CY <sub>46</sub>	16.8	X	197.08802	313.75795	76.23136	3.04838	0.0950530	0.22571205	2.6715679	20	4 28.9	20.9
431076 2006 CG <sub>61</sub>	16.8	X	74.43151	339.74142	127.63812	13.32158	0.2719309	0.21533472	2.7567244	20	4 18.5	20.5
431077 2006 CA <sub>67</sub>	17.1	X	78.76494	165.24632	339.64220	1.58065	0.0285419	0.21926438	2.7236878	20	4 29.6	20.8
431078 2006 DR <sub>22</sub>	17.2	X	90.11308	53.83445	124.24143	2.97338	0.0306711	0.22695525	2.6618029	20	6 30.0	20.6
431079 2006 DO <sub>23</sub>	16.7	X	217.51777	217.18950	145.21404	6.84102	0.0590681	0.21881178	2.7274424	20	4 19.9	20.7
431080 2006 DO <sub>25</sub>	17.3	X	141.66397	100.15553	357.63372	1.67529	0.1723386	0.22567107	2.6718863	20	5 30.9	21.6
431081 2006 DE <sub>29</sub>	16.3	X	68.35730	196.39838	340.18230	14.18135	0.0848868	0.22446097	2.6814858	20	6 4.1	20.1
431082 2006 DK <sub>29</sub>	17.3	X	267.92002	297.83034	91.20072	3.36467	0.0831667	0.23660952	2.5888958	20	7 22.9	20.5
431083 2006 DO <sub>34</sub>	17.0	X	295.56730	110.83751	172.43616	14.09454	0.1648590	0.21158066	2.7892369	20	3 27.9	20.7
431084 2006 DL <sub>43</sub>	17.0	X	249.74102	351.75068	353.94808	5.19593	0.0919791	0.22241440	2.6979099	20	4 27.9	21.0
431085 2006 DL <sub>57</sub>	16.7	X	24.77053	170.13044	343.90056	8.69040	0.0947211	0.20939044	2.8086534	20	3 1.8	20.1
431086 2006 DM <sub>75</sub>	17.0	X	354.48736	287.25361	355.42088	4.87341	0.0672296	0.23006398	2.6377702	20	7 9.5	20.2
431087 2006 DM <sub>94</sub>	17.1	X	69.66861	11.63022	168.00941	3.15690	0.1871531	0.22058060	2.7128420	20	6 28.5	20.7
431088 2006 DH <sub>97</sub>	17.2	X	47.68163	21.80743	185.99176	7.89937	0.1646391	0.22027234	2.7153724	20	6 30.5	20.5
431089 2006 DH <sub>103</sub>	16.6	X	184.07992	235.15961	160.12659	8.96200	0.1341305	0.21984621	2.7188801	20	4 24.4	21.0
431090 2006 DP <sub>103</sub>	17.1	X	124.00861	312.68841	163.29096	12.71029	0.2677025	0.22544549	2.6736733	20	6 14.9	21.8
431091 2006 DU <sub>108</sub>	17.0	X	38.90952	355.61274	184.28402	7.58441	0.0607829	0.21616875	2.7496291	20	4 26.4	20.4
431092 2006 DF <sub>112</sub>	16.7	X	46.26674	95.65201	170.97258	14.94618	0.1249992	0.23353441	2.6115727	20	9 14.7	20.0
431093 2006 DQ <sub>138</sub>	16.9	X	69.55948	143.00546	0.80523	12.51397	0.1121463	0.21740576	2.7391891	20	4 23.9	20.5
431094 2006 DD <sub>165</sub>	17.1	X	291.69262	179.07038	134.03133	4.91220	0.1080853	0.22147207	2.7055574	20	5 23.0	20.7
431095 2006 DN <sub>168</sub>	17.0	X	153.71592	0.82322	39.73840	5.71761	0.1215691	0.21388845	2.7691373	20	3 31.0	21.3
431096 2006 DY <sub>170</sub>	17.2	X	346.83043	269.33207	15.04553	6.76689	0.0484960	0.22520019	2.6756146	20	6 28.9	20.6
431097 2006 DK <sub>185</sub>	16.7	X	179.88523	31.32284	12.38184	14.00705	0.0487005	0.21705550	2.7421352	20	4 23.5	20.7
431098 2006 DL <sub>205</sub>	17.6	X	106.65683	140.32836	1.79138	2.58270	0.0409132	0.22536384	2.6743191	20	6 4.3	21.2
431099 2006 DH <sub>212</sub>	17.3	X	58.69149	347.80781	183.27255	16.76704	0.1995920	0.21741489	2.7391124	20	6 4.2	21.0
431100 2006 EL <sub>4</sub>	17.2	X	290.72039	189.25642	146.30821	6.61832	0.0951948	0.22709795	2.6606877	20	6 9.2	20.7
431101 2006 EP <sub>8</sub>	17.6	X	117.98570	91.08737	8.64316	3.99296	0.0815816	0.21818652	2.7326506	20	4 28.4	21.5
431102 2006 EH <sub>22</sub>	17.4	X	118.99960	327.44201	130.41079	2.60038	0.0293912	0.21896663	2.7261564	20	4 22.4	21.0
431103 2006 EX <sub>28</sub>	17.5	X	129.29746	314.48447	169.62526	5.52871	0.2343730	0.22714194	2.6603442	20	6 26.1	22.0
431104 2006 FP <sub>1</sub>	16.9	X	16.87879	246.67619	356.29773	7.32468	0.1599419	0.22047930	2.7136729	20	6 25.8	19.8
431105 2006 FM <sub>28</sub>	16.9	X	27.13485	166.80078	49.13237	3.58304	0.0356719	0.21542544	2.7559504	20	5 24.2	20.3
431106 2006 FH <sub>43</sub>	16.2	X	10.73674	229.93244	19.49356	19.02754	0.1442996	0.21940577	2.7225176	20	6 19.4	19.6
431107 2006 GU <sub>4</sub>	17.7	X	29.52417	146.10922	149.12106	17.68709	0.5855477	0.22316242	2.6918778	20	12 6.5	22.3
431108 2006 GW <sub>23</sub>	16.5	X	302.90189	273.97393	32.64593	13.96824	0.1029864	0.21514939	2.7583072	20	5 13.4	20.0
431109 2006 GC <sub>25</sub>	16.8	X	96.75083	95.38823	30.81427	9.01442	0.0989870	0.21476940	2.7615598	20	5 8.8	20.7
431110 2006 GV <sub>32</sub>	16.9	X	104.94764	179.93718	353.84093	10.07804	0.1563588	0.22876040	2.6477815	20	8 1.8	20.9
431111 2006 GQ <sub>39</sub>	16.6	X	41.81278	62.06634	168.74563	17.23099	0.2207431	0.22054041	2.7131716	20	7 31.5	20.0
431112 2006 GM <sub>43</sub>	16.9	X	305.52051	263.20717	69.68206	6.14697	0.0187098	0.22320405	2.6915431	20	7 7.4	20.5
431113 2006 HJ <sub>10</sub>	16.3	X	66.48369	333.33713	177.83623	12.67969	0.1058155					

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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>
431121 2006 HT <sub>86</sub>	17.2	X	83.89983	104.34728	39.24696	8.58409	0.2432479	0.21817518	2.7327453	20	6 5.8	21.1
431122 2006 JJ <sub>17</sub>	17.2	X	56.03384	306.15498	219.13606	13.28652	0.0947676	0.21057954	2.7980702	20	5 5.6	20.6
431123 2006 JD <sub>81</sub>	15.9	X	44.79861	104.12515	85.43075	25.72270	0.1190856	0.21265464	2.7798379	20	5 29.1	19.4
431124 2006 KA <sub>9</sub>	16.7	X	192.49554	133.24882	240.17238	1.09640	0.0832428	0.20354924	2.8621325	20	4 3.3	20.9
431125 2006 KM <sub>13</sub>	16.3	X	128.70890	354.22954	137.58843	10.58392	0.0797326	0.21896718	2.7261518	20	6 23.5	20.4
431126 2006 KY <sub>15</sub>	16.7	X	353.79733	215.06645	69.08436	20.99700	0.2236542	0.21590286	2.7518861	20	7 10.0	19.4
431127 2006 KT <sub>33</sub>	16.6	X	49.83267	32.10753	64.61260	11.91387	0.0493268	0.19352308	2.9601534	20	1 28.2	20.7
431128 2006 KL <sub>37</sub>	17.0	X	16.37901	121.89761	166.29852	13.45065	0.1493726	0.22321674	2.6914411	20	8 29.1	19.8
431129 2006 KW <sub>41</sub>	17.1	X	284.20437	250.39019	84.24936	1.70422	0.0802432	0.21361669	2.7714854	20	5 31.1	20.5
431130 2006 KD <sub>44</sub>	16.9	X	63.23560	38.06244	164.86229	10.04554	0.1760753	0.21975558	2.7196276	20	7 18.5	20.6
431131 2006 KJ <sub>53</sub>	17.5	X	24.17763	41.26262	186.32698	5.09188	0.1466468	0.21335154	2.7737812	20	6 15.3	20.6
431132 2006 KX <sub>53</sub>	16.0	X	262.40131	251.73961	79.79354	11.51926	0.1486399	0.20644559	2.8352998	20	4 24.6	20.3
431133 2006 KN <sub>58</sub>	16.4	X	143.31482	302.73735	104.00658	7.18955	0.0655255	0.20134177	2.8830143	20	3 25.6	20.7
431134 2006 KA <sub>59</sub>	17.0	X	314.66039	137.16076	187.35133	5.42912	0.2307919	0.21412281	2.7671164	20	6 10.1	19.9
431135 2006 KD <sub>88</sub>	16.2	X	332.18789	203.39892	68.64165	10.49134	0.1147968	0.21073061	2.7967327	20	5 14.6	19.4
431136 2006 KO <sub>93</sub>	17.2	X	281.02342	119.22946	178.24271	2.03409	0.0116551	0.20737142	2.8268544	20	4 18.6	21.1
431137 2006 QE <sub>11</sub>	16.2	X	233.76899	115.81848	163.21483	13.78043	0.1104230	0.18041023	3.1019059	20	1 23.5	21.2
431138 2006 QN <sub>16</sub>	18.8	X	113.61124	165.81911	133.49818	6.01760	0.2022388	0.30512686	2.1851559	20	—	—
431139 2006 QJ <sub>26</sub>	17.8	X	332.62791	70.46682	304.52615	2.05278	0.1882377	0.28604589	2.2812816	20	11 1.3	19.3
431140 2006 QC <sub>32</sub>	16.2	X	236.99583	140.63032	164.93478	11.13446	0.1156043	0.18667312	3.0321326	20	2 26.3	20.9
431141 2006 QJ <sub>44</sub>	17.3	X	130.72028	336.92983	296.68109	4.77202	0.1995488	0.30463521	2.1875063	20	—	—
431142 2006 QU <sub>58</sub>	16.5	X	306.82825	250.90557	47.11713	7.91846	0.2792295	0.20249492	2.8720586	20	4 14.7	20.1
431143 2006 QB <sub>65</sub>	16.2	X	160.90812	173.40473	162.59859	4.67937	0.1089822	0.17589496	3.1547658	20	1 21.4	21.2
431144 2006 QD <sub>69</sub>	16.8	X	111.98754	265.32402	128.83548	2.45010	0.0735979	0.17520858	3.1629996	20	2 3.7	21.2
431145 2006 QZ <sub>87</sub>	18.8	X	136.89500	133.61917	166.30846	3.03778	0.2357868	0.30890145	2.1673186	20	—	—
431146 2006 QW <sub>108</sub>	18.1	X	268.31684	190.71197	208.28936	2.92509	0.2229936	0.27551652	2.3390399	20	7 16.3	21.0
431147 2006 QJ <sub>115</sub>	15.9	X	136.21120	44.33320	325.43875	13.84041	0.1585339	0.17492762	3.1663855	20	2 11.5	20.6
431148 2006 QR <sub>117</sub>	18.0	X	104.16382	307.90897	350.03863	5.95099	0.2603854	0.30193852	2.2005118	20	—	—
431149 2006 QM <sub>136</sub>	17.3	X	103.03924	68.67293	253.69465	5.83545	0.1943726	0.30399521	2.1905755	20	—	—
431150 2006 QN <sub>151</sub>	16.4	X	201.85569	126.60324	167.12510	2.08833	0.0459315	0.17573069	3.1567314	20	1 12.0	20.9
431151 2006 QO <sub>157</sub>	16.2	X	130.01080	185.46532	161.85940	9.40665	0.1053725	0.17068923	3.2185873	20	1 4.1	21.0
431152 2006 QD <sub>160</sub>	16.5	X	102.50044	260.51185	170.44938	8.76127	0.0571083	0.17953373	3.1119935	20	3 4.3	20.8
431153 2006 QE <sub>162</sub>	16.4	X	203.88532	238.55265	103.26445	3.69486	0.1786833	0.18289472	3.0737504	20	3 9.9	21.6
431154 2006 QV <sub>165</sub>	18.1	X	12.36326	16.84620	285.09298	4.85920	0.2393444	0.28351165	2.2948560	20	10 6.6	20.3
431155 2006 QC <sub>186</sub>	17.3	X	358.09428	272.68155	49.09291	6.73894	0.1437949	0.28130189	2.3068585	20	9 29.6	19.4
431156 2006 QG <sub>186</sub>	16.5	X	202.32207	303.57679	12.28698	11.20842	0.0632596	0.17675403	3.1445354	20	2 11.7	21.4
431157 2006 QL <sub>186</sub>	16.3	X	85.45817	234.08391	171.86700	5.22135	0.1205723	0.17005765	3.2265515	20	1 22.6	20.6
431158 2006 RO <sub>2</sub>	15.7	X	180.53639	79.75353	252.62890	10.32840	0.1059081	0.18051206	3.1007392	20	2 1.9	20.7
431159 2006 RR <sub>8</sub>	17.5	X	44.59507	346.48057	343.01995	9.80425	0.1638118	0.29312059	2.2444253	20	12 23.7	20.7
431160 2006 RL <sub>14</sub>	16.5	X	244.76864	95.62382	196.97870	14.20374	0.1440246	0.18611982	3.0381390	20	2 13.7	21.5
431161 2006 RN <sub>14</sub>	16.7	X	240.25861	83.96645	232.00843	9.01974	0.1027384	0.18848331	3.0126877	20	3 10.7	21.5
431162 2006 RN <sub>20</sub>	15.5	X	184.31977	174.01479	184.48074	24.15268	0.2195571	0.18145100	3.0900332	20	3 10.9	21.0
431163 2006 RP <sub>41</sub>	16.5	X	235.43608	142.07658	189.52337	14.35368	0.1213305	0.18529882	3.0471064	20	3 26.6	21.2
431164 2006 RD <sub>44</sub>	18.0	X	261.45944	221.87424	176.89179	4.22438	0.2239501	0.27171841	2.3607863	20	7 6.7	21.2
431165 2006 RC <sub>45</sub>	16.3	X	233.37710	304.53454	20.69836	10.21358	0.1735755	0.18417009	3.0595436	20	3 16.7	21.3
431166 2006 RT <sub>46</sub>	17.7	X	225.23539	67.00993	22.80775	5.28465	0.1953218	0.27275347	2.3548099	20	8 10.7	21.1
431167 2006 RZ <sub>46</sub>	16.2	X	187.61263	170.91588	178.83062	10.54649	0.0980009	0.17823867	3.1270496	20	3 2.3	21.0
431168 2006 RN <sub>56</sub>	17.9	X	266.52799	82.17381	14.24125	5.53738	0.1453277	0.28287870	2.2982780	20	10 21.4	20.1
431169 2006 RM <sub>57</sub>	18.3	X	95.01353	91.59948	230.31527	2.96578	0.1603363	0.30429133	2.1891541	20	—	—
431170 2006 RL <sub>78</sub>	16.6	X	251.81866	159.17451	142.85482	3.19231	0.0939419	0.18367466	3.0650429	20	3 11.6	21.3
431171 2006 RL <sub>85</sub>	16.7	X	256.80895	312.47363	8.22078	4.38429	0.2834373	0.19090236	2.9871831	20	3 20.3	21.8
431172 2006 RG <sub>85</sub>	18.4	X	126.22776	142.66719	179.14886	3.31924	0.2305853	0.30784463	2.1722760	20	—	—
431173 2006 RF <sub>91</sub>	16.5	X	248.27180	301.44654	351.13608	1.72816	0.2655080	0.18403494	3.0610413	20	2 12.4	21.6
431174 2006 RX <sub>92</sub>	17.9	X	232.95969	258.16100	204.40377	2.06439	0.0725615	0.27965945	2.3158818	20	9 21.5	20.6
431175 2006 RV <sub>122</sub>	16.2	X	189.41570	288.27223	79.46219	7.40580	0.1805955	0.18431010	3.0579940	20	3 30.0	21.4
431176 2006 SS	17.9	X	74.61028	45.50519	290.55206	3.92794	0.2148731	0.29937049	2.2130780	20	—	—
431177 2006 SJ <sub>11</sub>	18.0	X	120.03831	288.69053	29.21459	6.23412	0.2766026	0.30722127	2.1752133	20	—	—
431178 2006 SZ <sub>32</sub>	17.5	X	248.05981	19.86746	333.85899	2.02222	0.2113215	0.26458554	2.4030270	20	4 23.4	21.1
431179 2006 SW <sub>40</sub>	16.4	X	184.56318	167.57962	174.29683	4.34185	0.1336709	0.17739727	3.1369296	20	2 20.5	21.5
431180 2006 SG <sub>41</sub>	18.0	X	261.63303	260.41329	138.05824	1.80875	0.1862006	0.27266068	2.3553441	20	7 12.7	20.9
431181 2006 SC <sub>45</sub>	16.3	X	106.77338	179.98241	232.78845	10.34950	0.0810439	0.17856082	3.1232873	20	2 15.9	20.9
431182 2006 SD <sub>45</sub>	16.2	X	106.33712	93.85919	298.21458	13.50437	0.0862369	0.17435301	3.1733386	20	1 26.5	20.6
431183 2006 SX <sub>54</sub>	17.3	X	39.40936	328.65436	43.15827	8.48291	0.1560638	0.29666882	2.2264936	20	—	—
431184 2006 SL <sub>59</sub>	17.2	X	356.84661	196.60932	169.58541	6.75083	0.2106011	0.28729106	2.2746852	20	12 14.4	19.5
431185 2006 SE <sub>62</sub>	16.2	X	148.91432	300.20983	54.87029	5.97081	0.2689600	0.17364398	3.1819711	20	2 16.3	21.7
431186 2006 SV <sub>75</sub>	16.4	X	193.43691	253.54984	86.44780	2.94768	0.1988100	0.17771310	3.1332118	20	2 28.5	21.7
431187 2006 SM <sub>76</sub>	17.8	X	340.45535	194.41074	162.85323	3.66777	0.1488556	0.28146621	2.3059606	20	10 18.4	19



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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>
431201 2006 <i>ST</i> <sub>137</sub>	15.9	X	165.70415	310.31073	34.10047	17.46900	0.2339863	0.17597138	3.1538524	20	2 20.5	21.6
431202 2006 <i>SV</i> <sub>149</sub>	18.1	X	125.63772	13.45724	231.11458	2.56512	0.1387919	0.28921668	2.2645773	20	11 24.5	21.5
431203 2006 <i>SZ</i> <sub>150</sub>	17.6	X	207.87226	151.55999	11.03457	7.43247	0.0708955	0.28612085	2.2808832	20	11 10.2	20.5
431204 2006 <i>SY</i> <sub>153</sub>	16.6	X	297.13908	287.68296	52.26989	12.75021	0.2175603	0.20084468	2.8877693	20	6 2.4	20.3
431205 2006 <i>SZ</i> <sub>157</sub>	18.3	X	263.38532	43.13771	38.76053	3.29755	0.1557048	0.28082179	2.3094869	20	9 24.6	20.8
431206 2006 <i>SR</i> <sub>164</sub>	15.9	X	338.41617	324.72050	202.35379	11.29932	0.0937423	0.17208772	3.2011262	20	1 12.4	20.3
431207 2006 <i>SZ</i> <sub>170</sub>	18.6	X	220.47145	234.88010	198.66320	2.16602	0.1683412	0.27009376	2.3702438	20	7 14.5	22.1
431208 2006 <i>SE</i> <sub>179</sub>	17.5	X	51.98238	298.05042	18.24984	7.76114	0.1858963	0.29081665	2.2562638	20	12 15.6	20.8
431209 2006 <i>SP</i> <sub>179</sub>	16.6	X	257.03040	97.52807	185.20267	9.35783	0.0487025	0.17922430	3.1155743	20	2 26.1	21.2
431210 2006 <i>SA</i> <sub>187</sub>	17.9	X	242.61678	31.08892	35.62968	2.81833	0.1973743	0.26893554	2.3770442	20	7 27.9	21.3
431211 2006 <i>SB</i> <sub>204</sub>	16.1	X	185.18811	114.45923	188.29149	25.51092	0.1687593	0.17069494	3.2185156	20	1 7.6	21.9
431212 2006 <i>SJ</i> <sub>206</sub>	15.7	X	206.28493	318.51894	27.10448	11.74931	0.1038508	0.18037323	3.1023300	20	3 20.1	20.6
431213 2006 <i>SW</i> <sub>215</sub>	18.0	X	161.39263	117.72798	158.10199	3.87832	0.2024029	0.30589083	2.1815161	20	—	—
431214 2006 <i>SU</i> <sub>220</sub>	18.0	X	20.58374	321.47539	5.60492	4.90079	0.1777934	0.28648548	2.2789474	20	11 18.1	20.5
431215 2006 <i>SE</i> <sub>228</sub>	16.2	X	208.37598	316.77129	349.25891	11.80181	0.1512779	0.17664622	3.1458148	20	2 4.2	21.4
431216 2006 <i>SS</i> <sub>233</sub>	16.5	X	166.52701	138.52952	208.24816	8.77409	0.1227494	0.17480112	3.1679130	20	2 7.5	21.6
431217 2006 <i>SV</i> <sub>240</sub>	16.4	X	233.26216	113.67876	168.69913	5.69248	0.1112828	0.17593296	3.1543115	20	1 27.8	21.4
431218 2006 <i>SK</i> <sub>242</sub>	18.1	X	228.22315	109.73275	32.85114	4.90081	0.0636920	0.28812900	2.2702729	20	11 13.1	20.8
431219 2006 <i>SW</i> <sub>244</sub>	16.8	X	252.71914	116.30306	174.93950	11.26512	0.1385594	0.18236342	3.0797176	20	2 22.6	21.6
431220 2006 <i>SE</i> <sub>251</sub>	17.7	X	176.46426	176.12829	11.81797	6.97030	0.1381848	0.28646809	2.2790397	20	10 31.3	21.0
431221 2006 <i>SF</i> <sub>259</sub>	18.1	X	30.25377	141.40623	202.68739	5.36367	0.1982440	0.29037568	2.2585474	20	12 29.1	21.0
431222 2006 <i>SC</i> <sub>267</sub>	16.2	X	265.86911	69.86735	217.36282	17.18387	0.1795242	0.18182819	3.0857583	20	2 22.7	21.3
431223 2006 <i>SA</i> <sub>284</sub>	15.8	X	214.65291	285.85470	40.57011	14.29535	0.2179694	0.18101866	3.0949513	20	3 5.5	21.3
431224 2006 <i>SN</i> <sub>297</sub>	17.8	X	256.74367	29.09430	7.52045	1.21035	0.1926278	0.27148973	2.3621118	20	7 3.0	20.8
431225 2006 <i>SE</i> <sub>299</sub>	18.0	X	83.87081	274.15578	23.64646	4.64824	0.1616632	0.29428335	2.2385094	20	12 23.2	21.4
431226 2006 <i>SK</i> <sub>323</sub>	17.9	X	190.20033	98.72893	48.84033	5.24299	0.2019733	0.27725760	2.3292373	20	9 21.0	21.5
431227 2006 <i>SK</i> <sub>324</sub>	16.3	X	126.43043	358.02004	32.75279	7.57849	0.1118090	0.17217458	3.2000495	20	2 24.2	21.1
431228 2006 <i>ST</i> <sub>326</sub>	16.0	X	236.55520	236.95229	34.84599	10.46454	0.0759419	0.17062301	3.2194201	20	1 25.5	21.0
431229 2006 <i>SJ</i> <sub>330</sub>	16.1	X	181.26559	159.51157	192.73870	15.64384	0.0793872	0.17556744	3.1586881	20	2 26.0	21.1
431230 2006 <i>SR</i> <sub>343</sub>	16.3	X	165.92732	348.27402	351.37722	4.96386	0.1736059	0.17178870	3.2048397	20	2 5.8	21.5
431231 2006 <i>SC</i> <sub>360</sub>	17.6	X	0.25199	260.45706	122.36502	2.43551	0.1494132	0.28614176	2.2807721	20	—	—
431232 2006 <i>SW</i> <sub>364</sub>	18.0	X	47.54441	59.92333	285.95351	3.18113	0.1877157	0.29463229	2.2367416	20	—	—
431233 2006 <i>SG</i> <sub>375</sub>	16.4	X	29.27240	1.52042	177.98839	17.81473	0.0196676	0.18434980	3.0575549	20	4 12.0	20.6
431234 2006 <i>SP</i> <sub>388</sub>	16.1	X	103.81363	313.99611	106.23574	10.78770	0.0350123	0.17079322	3.2172808	20	2 23.3	20.7
431235 2006 <i>SV</i> <sub>389</sub>	16.3	X	145.81739	257.53726	117.88812	13.04237	0.1027640	0.17029256	3.2235836	20	2 25.4	21.3
431236 2006 <i>SC</i> <sub>394</sub>	18.1	X	11.55897	91.24099	256.81500	4.48717	0.0290378	0.28425793	2.2908377	20	11 10.7	20.7
431237 2006 <i>SS</i> <sub>399</sub>	15.7	X	152.50104	350.82140	14.87739	16.82566	0.0961768	0.17432363	3.1736951	20	2 23.9	20.7
431238 2006 <i>SJ</i> <sub>400</sub>	16.4	X	204.30568	297.08489	10.48903	7.63387	0.1314714	0.17405430	3.1769683	20	2 2.2	21.5
431239 2006 <i>TR</i> <sub>15</sub>	16.0	X	246.84368	111.82768	204.45113	21.03306	0.1213151	0.18373990	3.0643173	20	3 17.3	20.9
431240 2006 <i>TR</i> <sub>17</sub>	17.6	X	273.89854	296.82298	69.88840	2.25256	0.2091207	0.26915970	2.3757242	20	6 10.2	20.3
431241 2006 <i>TX</i> <sub>25</sub>	16.0	X	148.49656	346.70978	30.86720	8.64258	0.0333190	0.17131642	3.2102721	20	2 25.0	20.7
431242 2006 <i>TE</i> <sub>39</sub>	18.0	X	178.23037	89.15526	25.67431	1.91481	0.1850909	0.26446821	2.4037376	20	7 27.6	21.9
431243 2006 <i>TT</i> <sub>40</sub>	16.4	X	237.17977	261.16928	32.57690	3.32989	0.0690418	0.17304148	3.1893528	20	2 19.2	21.2
431244 2006 <i>TE</i> <sub>48</sub>	16.4	X	213.90419	276.73805	46.85102	2.04514	0.1837662	0.17645375	3.1481020	20	2 25.8	21.6
431245 2006 <i>SF</i> <sub>57</sub>	15.6	X	211.99829	300.29176	22.53850	26.92180	0.2107552	0.17955062	3.1117983	20	3 6.4	21.3
431246 2006 <i>TX</i> <sub>64</sub>	18.3	X	281.99218	185.83722	220.06771	6.93353	0.2195144	0.27816353	2.3241773	20	8 15.7	20.9
431247 2006 <i>TM</i> <sub>70</sub>	17.5	X	329.77774	253.24689	90.75127	8.07635	0.1571450	0.27762994	2.3271543	20	9 4.5	19.5
431248 2006 <i>TK</i> <sub>80</sub>	17.9	X	283.80644	68.44613	330.47029	3.79264	0.1346417	0.27482598	2.3429563	20	8 26.2	20.3
431249 2006 <i>TH</i> <sub>81</sub>	16.1	X	242.87015	306.55125	23.39586	17.99994	0.1844974	0.18376892	3.0639947	20	3 30.6	21.1
431250 2006 <i>TM</i> <sub>118</sub>	15.9	X	199.68284	221.57795	158.04920	15.32608	0.0676892	0.18036970	3.1023705	20	4 24.5	20.8
431251 2006 <i>TZ</i> <sub>120</sub>	16.2	X	171.03062	208.64486	132.99420	12.40102	0.0643869	0.16875157	3.2431784	20	2 6.4	21.0
431252 2006 <i>UT</i> <sub>123</sub>	18.6	X	216.48363	358.72367	127.01945	2.57510	0.1492541	0.27657027	2.3330948	20	9 23.1	21.8
431253 2006 <i>UK</i> <sub>2</sub>	18.6	X	260.75399	12.28434	48.32764	3.25154	0.1918916	0.27444121	2.3451457	20	8 13.4	21.4
431254 2006 <i>UT</i> <sub>4</sub>	16.3	X	198.07123	297.87897	38.34917	9.35857	0.0982513	0.17670186	3.1451544	20	3 2.1	21.3
431255 2006 <i>UZ</i> <sub>12</sub>	18.0	X	187.26801	284.58161	150.55879	2.93080	0.1496876	0.26032559	2.4291713	20	6 14.4	21.7
431256 2006 <i>UD</i> <sub>15</sub>	18.0	X	217.68416	318.67058	125.55555	2.06148	0.1595180	0.26691144	2.3890464	20	7 27.1	21.5
431257 2006 <i>UQ</i> <sub>19</sub>	16.0	X	305.21968	2.71664	220.63415	12.25078	0.0830996	0.17316885	3.1877887	20	2 5.1	20.7
431258 2006 <i>UF</i> <sub>23</sub>	15.8	X	252.28847	275.56791	15.64132	11.84771	0.0834750	0.17770016	3.1333639	20	3 4.2	20.5
431259 2006 <i>UO</i> <sub>23</sub>	15.8	X	196.87121	333.29198	19.90157	10.00996	0.1099909	0.17860537	3.1227679	20	3 18.7	20.7
431260 2006 <i>UM</i> <sub>34</sub>	18.3	X	215.68816	73.58705	40.72875	4.76756	0.0756929	0.27535979	2.3399273	20	9 16.7	21.4
431261 2006 <i>UH</i> <sub>37</sub>	18.1	X	235.28244	79.89533	26.11421	5.27353	0.1623545	0.27498015	2.3420805	20	9 17.5	21.2
431262 2006 <i>UU</i> <sub>37</sub>	18.1	X	211.01806	73.22975	23.93965	1.56520	0.1322125	0.26869024	2.3784907	20	8 9.6	21.3
431263 2006 <i>UV</i> <sub>44</sub>	15.6	X	323.83098	182.44824	50.16533	27.45344	0.0618256	0.17447521	3.1718568	20	4 2.9	20.3
431264 2006 <i>UV</i> <sub>48</sub>	15.8	X	228.23216	68.63506	228.78928	8.55107	0.1362929	0.18001264	3.1064716	20	2 5.6	20.9
431265 2006 <i>UT</i> <sub>58</sub>	16.3	X	176.32272	167.96249	184.37946	9.66102	0.1190132	0.17950289	3.1123499	20	2 23.4	21.2
431266 2006 <i>UL</i> <sub>68</sub>	16.6	X	229.76487	108.56834	205.59754	10.49179	0.0546938	0.17575627	3.1564251	20	3 3.0	21.4
431267 2006 <i>UE</i> <sub>76</sub>	16.3	X	186.82886	294.87295	37.34811	10.77025	0.0861431	0.17283574	3.1918834	20	2 16.3	21.4
431268 2006 <i>UF</i> <sub>77</sub>	16.0	X	278.78905	280.65869	18.68339	14.88068	0.1904516	0.18675725	3.0312219	20	3 27.5	20.5
431269 2006 <i>UQ</i> <sub>89</sub>	17.8	X	279.31758	19.77740	32.39161	9.10462	0.1977527	0.27451957	2.3446994	20	9 1.9	20.3
431270 2006 <i>UX</i> <sub>91</sub>	18.0	X	211.93342	8.27758	45.17507	2.94508	0.2024379	0.26264628	2.4148411	20	6 7.0	21.9
431271 2006 <i>UX</i> <sub>93</sub>	16.2	X	256.35305	244.48578	76.29676							

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>
431281 2006 UY <sub>170</sub>	15.4	X	247.71104	248.65504	41.83553	26.58116	0.1909345	0.17823465	3.1270966	20	2 29.6	20.9
431282 2006 UC <sub>177</sub>	15.8	X	192.28988	197.91418	178.47122	17.48612	0.1218113	0.18193009	3.0846060	20	4 10.0	20.8
431283 2006 UN <sub>194</sub>	16.4	X	205.70384	166.17966	184.56871	0.93678	0.1366125	0.17984668	3.1083824	20	3 21.1	21.5
431284 2006 UQ <sub>202</sub>	16.1	X	225.98042	291.05323	59.86590	12.49667	0.1998071	0.18540392	3.0459547	20	4 10.1	21.3
431285 2006 UR <sub>213</sub>	17.6	X	181.37696	249.65911	250.61332	4.77843	0.0887866	0.26990033	2.3713761	20	9 3.6	21.0
431286 2006 UF <sub>218</sub>	16.4	X	215.20794	321.70838	8.82192	5.73892	0.2580295	0.18007835	3.1057158	20	3 3.9	21.8
431287 2006 UG <sub>218</sub>	17.9	X	129.99383	249.62078	17.06596	6.35705	0.1456696	0.29216495	2.2493169	20	12 27.0	21.3
431288 2006 UQ <sub>226</sub>	18.0	X	334.87011	312.38071	72.24126	3.75572	0.1696209	0.28437577	2.2902048	20	11 21.3	19.6
431289 2006 UL <sub>268</sub>	18.3	X	237.35260	38.44599	55.36609	3.28796	0.0485529	0.27487577	2.3426734	20	9 20.6	21.1
431290 2006 UZ <sub>270</sub>	18.2	X	224.16753	353.64971	50.02749	2.10478	0.1508144	0.26211651	2.4180937	20	6 9.9	21.9
431291 2006 UU <sub>272</sub>	16.2	X	207.95602	355.68715	330.07989	3.83758	0.1903132	0.17425953	3.1744734	20	2 22.6	21.4
431292 2006 UY <sub>274</sub>	16.0	X	239.38839	59.74092	216.83635	16.33136	0.2067920	0.17518080	3.1633340	20	1 18.5	21.6
431293 2006 UL <sub>287</sub>	16.0	X	243.04843	25.34385	244.27546	4.16351	0.1193555	0.17203876	3.2017335	20	1 22.4	20.9
431294 2006 UV <sub>287</sub>	15.9	X	230.86821	105.48740	214.21002	25.19960	0.2109283	0.18057518	3.1000166	20	2 26.7	21.5
431295 2006 UO <sub>320</sub>	17.9	X	257.87935	195.33601	192.07080	1.78338	0.1811966	0.26566993	2.3964836	20	6 22.8	21.0
431296 2006 UO <sub>327</sub>	16.8	X	210.48568	36.81424	80.46447	13.03290	0.1212796	0.26438506	2.4042416	20	9 12.7	20.5
431297 2006 UC <sub>331</sub>	16.1	X	208.73067	132.11900	170.48359	16.60136	0.2160520	0.17248235	3.1962417	20	1 26.6	21.8
431298 2006 UP <sub>337</sub>	16.8	X	228.63678	80.82439	231.36683	2.13565	0.2404185	0.17816611	3.1278985	20	2 20.5	22.3
431299 2006 UX <sub>337</sub>	15.6	X	150.22311	311.27528	67.62476	17.75286	0.1434860	0.17094597	3.2153640	20	3 14.4	21.0
431300 2006 UV <sub>345</sub>	18.3	X	155.83382	82.29795	29.73455	0.74547	0.1664550	0.25930292	2.4355541	20	7 2.3	22.0
431301 2006 VX <sub>1</sub>	17.5	X	319.83105	316.86591	64.04693	23.83986	0.2491851	0.28019152	2.3129490	20	10 23.9	19.3
431302 2006 VU <sub>19</sub>	16.0	X	247.88004	288.33306	38.40096	6.03605	0.2367557	0.18348262	3.0671811	20	3 25.7	21.0
431303 2006 VP <sub>56</sub>	18.1	X	265.97513	219.82733	191.81840	2.11175	0.1624560	0.27098507	2.3650435	20	8 10.2	20.7
431304 2006 VQ <sub>60</sub>	16.5	X	293.46422	279.59336	47.78148	4.10650	0.2086879	0.19096247	2.9865562	20	5 14.2	20.4
431305 2006 VN <sub>67</sub>	17.8	X	242.55866	345.17747	66.31063	4.37881	0.1612907	0.26545071	2.3978028	20	7 10.8	21.0
431306 2006 VG <sub>69</sub>	15.9	X	213.78457	253.23662	70.03372	26.72057	0.2687673	0.17369189	3.1813859	20	3 6.6	22.0
431307 2006 VK <sub>78</sub>	17.7	X	112.44981	203.48608	86.30076	5.73534	0.1587137	0.29135360	2.2534908	20	—	—
431308 2006 VC <sub>80</sub>	17.9	X	200.74192	288.20736	132.31592	2.81042	0.1667548	0.25921098	2.4361299	20	6 7.9	21.8
431309 2006 VV <sub>86</sub>	17.8	X	78.73482	244.24061	17.29636	3.31560	0.1119519	0.27862031	2.3216364	20	10 24.4	20.9
431310 2006 VV <sub>116</sub>	16.3	X	204.67725	277.22873	38.16434	5.09357	0.1476947	0.16987001	3.2289270	20	2 11.2	21.5
431311 2006 VS <sub>132</sub>	17.6	X	94.85176	112.63020	80.60564	6.05477	0.1181921	0.26228978	2.4170287	20	8 13.3	20.9
431312 2006 VM <sub>150</sub>	15.9	X	190.79587	347.66950	38.03330	12.23571	0.0789479	0.18015384	3.1048482	20	4 19.4	20.7
431313 2006 VH <sub>152</sub>	17.5	X	88.04589	264.21808	53.72173	7.72417	0.1453299	0.29344485	2.2427716	20	—	—
431314 2006 WX <sub>12</sub>	17.8	X	186.43466	20.28260	114.77596	3.38317	0.1336892	0.26734347	2.3864719	20	9 3.1	21.3
431315 2006 WQ <sub>55</sub>	15.1	X	212.29903	277.23238	69.10352	20.84125	0.1541337	0.17478952	3.1680532	20	4 2.1	20.6
431316 2006 WD <sub>56</sub>	17.9	X	228.95994	93.25336	0.82487	1.32651	0.1415620	0.26823777	2.3811647	20	8 24.9	21.1
431317 2006 WV <sub>57</sub>	17.9	X	57.91018	294.29978	13.96940	6.43164	0.2577937	0.28708223	2.2757882	20	12 18.2	21.4
431318 2006 WT <sub>91</sub>	18.2	X	223.10486	9.71012	75.05856	3.29746	0.1753745	0.26725306	2.3870101	20	8 2.1	21.6
431319 2006 WL <sub>103</sub>	18.0	X	165.79780	262.34001	238.15936	3.16249	0.1700923	0.26344019	2.4099870	20	8 16.6	21.9
431320 2006 WY <sub>113</sub>	15.3	X	163.70421	306.17784	74.21942	13.80087	0.1310568	0.17178050	3.2049418	20	3 25.5	20.6
431321 2006 WL <sub>130</sub>	16.9	X	181.98873	82.38661	82.53868	18.41595	0.3131304	0.26818078	2.3815020	20	10 7.1	21.5
431322 2006 WW <sub>132</sub>	16.0	X	117.90635	100.60629	241.34082	8.91605	0.0934056	0.15584689	3.4198256	20	—	—
431323 2006 WR <sub>134</sub>	17.8	X	191.67131	192.90582	284.55898	4.68137	0.1788497	0.26744381	2.3858750	20	8 11.2	21.5
431324 2006 WR <sub>139</sub>	17.9	X	243.60969	261.45470	182.47846	1.00638	0.1414196	0.27075362	2.3663912	20	8 29.0	20.7
431325 2006 WQ <sub>141</sub>	17.7	X	122.05032	177.96377	86.60195	8.12096	0.0728021	0.28515711	2.2860194	20	12 15.2	20.9
431326 2006 WH <sub>155</sub>	17.9	X	145.94978	94.38154	65.39448	3.51468	0.1349412	0.26531621	2.3986131	20	8 25.6	21.5
431327 2006 WP <sub>176</sub>	15.6	X	234.57844	74.05425	221.72716	21.90956	0.2595674	0.17330581	3.1861091	20	1 31.2	21.6
431328 2006 WM <sub>199</sub>	15.6	X	197.09851	256.84694	79.12361	7.79613	0.1038812	0.16934370	3.2356138	20	2 29.8	20.8
431329 2006 XN <sub>9</sub>	18.0	X	223.58844	85.48137	331.83476	1.82138	0.1909521	0.26024463	2.4296751	20	6 24.2	21.7
431330 2006 XG <sub>18</sub>	17.7	X	273.30241	345.69946	70.98796	3.29382	0.1875739	0.26916725	2.3756798	20	8 27.1	20.4
431331 2006 XH <sub>20</sub>	17.3	X	203.28409	214.35455	277.32973	6.14097	0.0460118	0.26690327	2.3890952	20	9 21.2	20.5
431332 2006 XR <sub>21</sub>	17.4	X	220.52286	15.35519	81.36265	3.33693	0.1730681	0.26670016	2.3903080	20	8 15.9	20.9
431333 2006 XM <sub>29</sub>	17.6	X	229.11624	0.58223	95.17605	7.85287	0.0920537	0.26896859	2.3768494	20	9 6.8	20.8
431334 2006 XL <sub>45</sub>	17.8	X	245.57855	178.89004	271.06969	2.79891	0.0686537	0.27071557	2.3666129	20	9 19.4	20.6
431335 2006 XR <sub>45</sub>	17.2	X	199.06938	79.10694	43.74750	7.41043	0.1538245	0.26769881	2.3843596	20	9 1.5	20.8
431336 2006 XH <sub>50</sub>	14.8	X	293.65647	14.23131	112.00092	20.40948	0.2438187	0.13448207	3.7730549	20	11 27.6	19.7
431337 2006 XO <sub>55</sub>	18.0	X	231.48089	11.78726	83.11813	2.42766	0.1564612	0.26600383	2.3944777	20	8 27.7	21.3
431338 2006 XS <sub>55</sub>	17.8	X	255.41772	4.65488	17.02031	1.40448	0.1913626	0.25940268	2.4349296	20	6 10.3	21.0
431339 2006 XT <sub>59</sub>	17.5	X	0.62239	282.49572	88.64648	10.52202	0.1487721	0.27744196	2.3282054	20	12 13.9	19.9
431340 2006 YM <sub>7</sub>	17.8	X	178.85136	268.65807	194.83723	5.85242	0.3107772	0.25810180	2.4431044	20	7 9.9	22.5
431341 2006 YM <sub>55</sub>	17.6	X	170.66483	113.72615	42.39112	2.34188	0.1153378	0.26189915	2.4194315	20	9 14.4	21.2
431342 2007 AK	16.2	X	11.37906	213.12693	18.09826	33.50849	0.1898807	0.23388377	2.6089715	20	5 9.4	19.3
431343 2007 AE <sub>22</sub>	17.3	X	151.80629	28.80661	97.52690	4.39355	0.1085890	0.25087139	2.4898239	20	7 15.1	20.9
431344 2007 BC <sub>56</sub>	17.6	X	197.27725	52.63278	27.29241	2.30638	0.1961590	0.25493903	2.4632689	20	6 28.5	21.7
431345 2007 BK <sub>62</sub>	17.5	X	275.70492	177.86722	127.50852	24.04549	0.0214539	0.38605642	1.8679656	20	4 21.1	20.1
431346 2007 BT <sub>72</sub>	17.2	X	191.87908	353.29956	101.76623	9.73844	0.1699137	0.25477093	2.4643523	20	7 14.2	21.0
431347 2007 BA <sub>76</sub>	15.7	X	279.77093	290.31010	177.68518	2.97229	0.1911035	0.12460924	3.9698055	20	10 17.5	21.1
431348 2007 BQ <sub>77</sub>	18.1	X	159.22128	190.85884	314.79059	5.67461	0.1325237	0.25799744	2.4437632	20	8 17.6	21.9
431349 2007 BU <sub>77</sub>	18.2	X	112.80829	299.35885	268.81984	0.70501	0.1370094	0.25550513	2.4596291	20	9 20.9	21.8
431350 2007 BA <sub>79</sub>	17.6	X	236.86481	268.76984	146.21703	8.32158	0.1773281	0.25644437	2.4536198	20	7 5.8	21.3
431351 2007 BF <sub>81</sub>	17.5	X	211.62185	350.02111	58.49976	2.05355	0.2688046	0.25288475	2.4765910	20	5 28.4	21.8
431352 2007 CQ <sub>1</sub>	18.5	X	64.23094	163.58742	321.98786	19.87365	0.0580276	0.38058067	1.8858402	20	2 22.4	19.8
431353 2007 CU <sub>10</sub>	18.0	X	182.17145	341.31605	139.93025	2.87452	0.1394960</					

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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>
431361 2007 DJ <sub>82</sub>	15.9 <sup>m</sup>	X	289.81817	34.85057	62.01812	3.72146	0.1543066	0.12314790	4.0011488	20	10 22.9	21.1
431362 2007 DQ <sub>83</sub>	18.0	X	107.29077	280.97432	145.52498	22.72001	0.0893662	0.37677648	1.8985128	20	2 11.8	19.2
431363 2007 DU <sub>85</sub>	17.7	X	65.38553	183.33238	334.55756	5.61856	0.1543526	0.23695619	2.5863701	20	5 15.8	20.9
431364 2007 DV <sub>88</sub>	17.4	X	7.24784	243.99829	350.45155	9.40680	0.0764028	0.23826163	2.5769143	20	5 17.6	20.6
431365 2007 DR <sub>94</sub>	17.8	X	172.94346	29.65921	87.51460	4.28612	0.1668788	0.25139640	2.4863562	20	7 25.4	21.8
431366 2007 DP <sub>98</sub>	17.9	X	155.80519	153.44094	354.67066	2.42227	0.1427716	0.25413707	2.4684483	20	8 18.3	21.8
431367 2007 DS <sub>102</sub>	17.6	X	257.52141	272.93784	345.55149	19.11479	0.0687455	0.36976990	1.9224203	20	1 1.4	20.3
431368 2007 DN <sub>103</sub>	16.1	X	289.51646	285.31452	169.78914	0.45592	0.1627543	0.12384534	3.9861129	20	10 18.6	21.1
431369 2007 DM <sub>111</sub>	16.1	X	292.74579	274.37445	181.67943	3.88302	0.2676991	0.12565273	3.9477965	20	10 8.8	20.9
431370 2007 ES <sub>1</sub>	17.9	X	70.02243	310.37443	306.26886	1.59311	0.1614700	0.25474272	2.4645343	20	10 9.6	21.2
431371 2007 EH <sub>17</sub>	16.8	X	22.11265	221.05136	351.02706	14.72536	0.0679593	0.23530633	2.5984457	20	5 6.4	20.2
431372 2007 ES <sub>22</sub>	16.9	X	156.46388	266.36973	170.90899	22.02839	0.0228957	0.23684992	2.5871437	20	5 14.8	20.9
431373 2007 ES <sub>64</sub>	17.1	X	346.65133	288.26605	9.17068	12.59822	0.0621287	0.24452353	2.5327303	20	7 22.6	20.3
431374 2007 EN <sub>67</sub>	16.7	X	204.30021	321.72644	7.88739	9.14822	0.1629466	0.22078850	2.7111388	20	2 23.5	21.1
431375 2007 EN <sub>77</sub>	17.4	X	106.20907	231.21286	13.04142	12.63670	0.1793206	0.25508430	2.4623336	20	10 29.9	21.3
431376 2007 EX <sub>96</sub>	16.7	X	47.42483	320.87849	198.20014	10.90019	0.0527260	0.22718438	2.6600129	20	4 7.7	20.0
431377 2007 EF <sub>101</sub>	17.6	X	45.50183	186.57233	49.58576	5.45093	0.1171270	0.24232767	2.5480076	20	8 3.5	20.7
431378 2007 EP <sub>110</sub>	17.1	X	14.81543	217.99510	39.39117	7.69098	0.1162235	0.23795479	2.5791291	20	7 11.5	20.0
431379 2007 EQ <sub>120</sub>	17.1	X	132.45568	40.32204	76.85172	5.67763	0.2297166	0.24310558	2.5425691	20	6 20.2	21.1
431380 2007 EN <sub>136</sub>	17.5	X	187.16441	65.89390	355.40645	14.01932	0.1361941	0.24257756	2.5462574	20	5 22.9	21.8
431381 2007 ER <sub>136</sub>	16.9	X	81.54774	191.88297	348.18526	6.55631	0.1267971	0.23953764	2.5677547	20	7 7.9	20.4
431382 2007 EL <sub>152</sub>	17.4	X	36.10804	180.39874	140.90946	6.66770	0.1448647	0.25966290	2.4333026	20	11 23.4	20.6
431383 2007 EE <sub>170</sub>	17.5	X	92.03992	358.19461	178.98807	6.16456	0.1700078	0.24344533	2.5402030	20	7 20.9	21.1
431384 2007 ET <sub>177</sub>	16.8	X	338.46128	56.29622	205.02379	11.48312	0.0924513	0.23159258	2.6261506	20	5 11.5	19.8
431385 2007 EG <sub>193</sub>	17.6	X	0.03025	271.49441	346.87635	6.53432	0.1943625	0.23956338	2.5675708	20	6 14.1	19.8
431386 2007 EK <sub>197</sub>	17.8	X	107.92941	174.60439	341.67590	0.96332	0.1680643	0.24034469	2.5620034	20	7 11.8	21.5
431387 2007 EM <sub>198</sub>	17.6	X	142.93390	175.04205	183.72790	22.84420	0.0708262	0.36562367	1.9369267	20	—	—
431388 2007 EW <sub>198</sub>	18.1	X	8.96280	121.46308	45.31390	22.06485	0.0764973	0.37364955	1.9090900	20	1 31.6	20.3
431389 2007 EE <sub>199</sub>	17.5	X	342.53288	131.01939	61.72256	23.06147	0.0805305	0.37174193	1.9156155	20	1 20.4	19.8
431390 2007 EM <sub>201</sub>	17.3	X	348.94240	141.03693	58.81584	23.55851	0.0516001	0.37301203	1.9112646	20	3 1.6	19.8
431391 2007 EQ <sub>215</sub>	17.9	X	87.04866	27.81918	123.14934	22.80366	0.0648735	0.38889003	1.8588807	20	6 1.2	20.2
431392 2007 FJ <sub>8</sub>	16.6	X	264.13188	194.88003	169.80956	4.41930	0.2307399	0.24188030	2.5511484	20	5 24.5	20.3
431393 2007 FX <sub>21</sub>	17.4	X	94.72901	231.21756	11.57454	14.79060	0.0781749	0.25400678	2.4692924	20	10 9.9	20.7
431394 2007 FS <sub>35</sub>	19.5	X	282.21196	107.37458	183.03085	0.31943	0.3901073	0.36981750	1.9222553	20	2 10.9	22.8
431395 2007 FG <sub>37</sub>	16.4	X	225.68042	181.03884	204.52745	21.97890	0.0753949	0.23308295	2.6149439	20	5 25.9	20.4
431396 2007 FG <sub>47</sub>	17.7	X	339.98805	89.93359	160.95054	20.72996	0.1190226	0.38029712	1.8867775	20	4 19.8	19.3
431397 Carolinregina	17.1	X	333.36283	51.43682	209.71207	11.24548	0.1580836	0.22754057	2.6572362	20	4 23.9	19.8
431398 2007 GR <sub>17</sub>	18.0	X	15.85053	283.42035	343.60212	3.93216	0.1816194	0.23649834	2.5897071	20	8 4.5	20.4
431399 2007 GJ <sub>21</sub>	17.6	X	114.06149	126.25328	45.98581	6.22466	0.1621459	0.24181632	2.5515983	20	8 10.2	21.6
431400 2007 GR <sub>33</sub>	17.5	X	63.91741	335.96232	200.11200	4.95228	0.1296873	0.23204015	2.6227725	20	6 6.8	20.8
431401 2007 GX <sub>38</sub>	17.7	X	55.27339	23.97409	194.30396	8.89829	0.1038284	0.23831417	2.5765356	20	7 17.2	21.1
431402 2007 GD <sub>40</sub>	17.1	X	147.18696	83.34064	41.80190	14.63654	0.0591424	0.23811912	2.5779424	20	7 5.9	21.0
431403 2007 GU <sub>41</sub>	17.8	X	30.57003	203.62085	33.86946	4.32961	0.2129862	0.23460504	2.6036213	20	7 25.1	20.4
431404 2007 GL <sub>42</sub>	17.1	X	256.35141	317.61362	33.49104	3.60974	0.0416845	0.23151959	2.6267025	20	5 21.1	20.5
431405 2007 GQ <sub>46</sub>	16.4	X	169.25169	37.28513	50.65018	22.77348	0.0793361	0.23365274	2.6106909	20	6 7.9	20.5
431406 2007 GP <sub>51</sub>	16.4	X	329.77682	162.17167	105.13889	14.12569	0.1611310	0.22834333	2.6510047	20	5 2.7	19.6
431407 2007 GO <sub>61</sub>	16.3	X	178.02753	209.31825	221.83323	21.53431	0.0564969	0.23356031	2.6113797	20	5 30.3	20.2
431408 2007 GM <sub>65</sub>	17.6	X	38.42430	229.44647	28.25796	7.93742	0.1308044	0.23973268	2.5663618	20	8 27.2	20.7
431409 2007 GC <sub>67</sub>	16.9	X	86.38504	143.21969	42.06678	7.14400	0.0488508	0.23616545	2.5921401	20	7 9.1	20.5
431410 2007 HX <sub>27</sub>	17.9	X	63.99396	195.22347	55.86849	7.10331	0.2377675	0.24242349	2.5473361	20	10 7.4	21.6
431411 2007 HD <sub>53</sub>	17.5	X	23.03296	202.79863	87.75226	7.36539	0.1714450	0.24049488	2.5609366	20	9 25.3	20.4
431412 2007 HV <sub>69</sub>	17.3	X	129.86334	54.15923	98.39269	9.37967	0.1766489	0.24114925	2.5563017	20	7 30.9	21.3
431413 2007 HG <sub>76</sub>	17.3	X	343.87825	212.54074	55.13047	4.25080	0.2554489	0.22749801	2.6575676	20	5 14.5	19.2
431414 2007 HL <sub>83</sub>	16.7	X	348.93554	50.61927	228.55799	11.91656	0.2131719	0.23224987	2.6211934	20	6 19.5	19.0
431415 2007 HM <sub>87</sub>	17.5	X	87.37007	90.16314	104.46978	3.60711	0.1110618	0.23823001	2.5771423	20	8 1.3	20.9
431416 2007 HS <sub>87</sub>	17.1	X	346.88552	187.18485	62.89117	13.39030	0.1164727	0.22764735	2.6564052	20	5 9.0	20.1
431417 2007 HB <sub>90</sub>	16.6	X	44.37007	141.39216	119.68929	9.56128	0.1079546	0.24457755	2.5323573	20	9 6.1	19.8
431418 2007 HZ <sub>97</sub>	16.7	X	21.56167	168.16832	93.05669	15.33324	0.1269801	0.23438951	2.6052172	20	8 5.9	19.6
431419 2007 JF <sub>15</sub>	17.2	X	39.40606	132.43603	47.40218	13.53201	0.0983343	0.22671109	2.6637137	20	4 29.9	20.3
431420 2007 JV <sub>25</sub>	17.2	X	300.99300	138.76511	164.70661	5.67196	0.1727521	0.22473682	2.6792910	20	4 29.5	20.6
431421 2007 JE <sub>41</sub>	17.3	X	22.10617	223.49194	66.85735	14.29949	0.2504456	0.23958880	2.5673892	20	10 10.4	20.4
431422 2007 LM <sub>2</sub>	16.9	X	310.25539	154.39141	182.88328	13.88872	0.2758993	0.23160917	2.6260252	20	6 13.2	19.9
431423 2007 LY <sub>5</sub>	17.0	X	277.37374	202.93018	139.46759	15.50386	0.0892022	0.22874872	2.6478716	20	6 3.3	20.8
431424 2007 LU <sub>9</sub>	16.6	X	312.92966	92.06692	233.17368	13.91862	0.1206580	0.23163344	2.6258417	20	6 23.7	19.8
431425 2007 LL <sub>15</sub>	16.3	X	337.05170	243.49778	88.24919	14.72585	0.2154221	0.23619903	2.5918945	20	8 24.3	18.7
431426 2007 LE <sub>17</sub>	16.5	X	358.97142	170.08016	66.89106	13.86389	0.1928129	0.22637593	2.6663422	20	5 10.7	19.0
431427 2007 LS <sub>17</sub>	17.1	X	279.09172	127.47090	146.01911	15.47022	0.1150019	0.2144				

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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>
431441 2007 RE <sub>48</sub>	16.3	X	153.27423	15.50271	10.29838	10.06779	0.1033362	0.19130944	2.9829441	20	3 13.3	20.8
431442 2007 RX <sub>49</sub>	16.4	X	108.75044	225.70673	189.58066	9.75587	0.0492337	0.18778894	3.0201096	20	2 17.9	20.8
431443 2007 RU <sub>51</sub>	16.3	X	222.01119	331.93787	334.88512	10.20823	0.0874271	0.19250573	2.9705733	20	2 15.4	20.8
431444 2007 RL <sub>82</sub>	17.0	X	327.66889	263.57990	352.61721	11.02997	0.0381429	0.20671174	2.8328655	20	4 18.9	20.9
431445 2007 RR <sub>129</sub>	16.3	X	358.08314	107.20869	22.34826	9.08101	0.2106605	0.17550410	3.1594480	20	—	—
431446 2007 RD <sub>135</sub>	16.0	X	111.52891	168.19588	173.36406	11.05564	0.0734163	0.17730786	3.1379840	20	—	—
431447 2007 RE <sub>140</sub>	16.8	X	281.52285	308.46132	8.04335	3.66826	0.1942526	0.21095032	2.7947905	20	4 15.9	20.8
431448 2007 RK <sub>141</sub>	16.0	X	152.18833	329.22144	9.06383	19.11638	0.2520967	0.18494431	3.0509990	20	2 2.8	21.4
431449 2007 RL <sub>162</sub>	17.0	X	287.77827	137.26526	178.49362	4.50944	0.1028778	0.21170408	2.7881527	20	5 8.3	20.8
431450 2007 RF <sub>174</sub>	16.5	X	153.95756	247.73405	103.38710	4.15191	0.1161898	0.18562209	3.0435675	20	2 2.2	21.1
431451 2007 RF <sub>176</sub>	17.0	X	227.18583	128.03706	186.47466	1.68542	0.1009549	0.19468248	2.9483892	20	2 27.6	21.6
431452 2007 RH <sub>201</sub>	16.5	X	102.07161	60.26137	303.07437	1.78199	0.1125120	0.17654974	3.1469607	20	—	—
431453 2007 RL <sub>201</sub>	16.3	X	84.26086	213.39391	191.68734	14.71109	0.2940788	0.17804250	3.1293461	20	2 10.4	20.7
431454 2007 RB <sub>203</sub>	16.6	X	268.16165	88.27785	194.66332	12.20297	0.0566481	0.19556364	2.9395260	20	3 7.1	20.9
431455 2007 RG <sub>209</sub>	16.4	X	131.54463	21.45906	21.57596	8.98569	0.0769847	0.19105508	2.9855911	20	3 9.3	20.8
431456 2007 RX <sub>232</sub>	18.0	X	351.97371	239.67085	135.07922	1.53284	0.1851493	0.31088334	2.1580976	20	12 21.8	19.8
431457 2007 RT <sub>266</sub>	17.1	X	312.57837	267.44618	33.27668	4.74670	0.0361820	0.20989348	2.8041641	20	5 30.9	20.9
431458 2007 RG <sub>274</sub>	15.8	X	47.09181	289.71743	166.76080	25.82965	0.2852268	0.18069918	3.0985982	20	2 14.0	19.0
431459 2007 RV <sub>279</sub>	15.9	X	236.38614	324.77795	22.66649	15.65238	0.1548301	0.20640621	2.8356603	20	4 12.3	20.2
431460 2007 RA <sub>281</sub>	16.4	X	89.72714	62.41757	323.00610	15.40951	0.2547330	0.17704904	3.1410414	20	1 24.8	20.6
431461 2007 RU <sub>284</sub>	16.8	X	211.53457	157.68761	180.85732	4.72124	0.0550040	0.19546016	2.9405634	20	3 13.2	21.0
431462 2007 RH <sub>287</sub>	16.8	X	132.48801	2.81114	5.40073	4.16294	0.0683099	0.18380847	3.0635551	20	1 26.6	21.2
431463 2007 RZ <sub>287</sub>	16.9	X	183.01352	181.07340	178.72921	11.24516	0.1200989	0.19293469	2.9661686	20	3 9.4	21.7
431464 2007 RV <sub>288</sub>	15.7	X	198.63071	72.68536	236.98468	6.65406	0.0733781	0.17738270	3.1371013	20	1 25.5	20.5
431465 2007 RW <sub>289</sub>	15.6	X	98.75866	324.47435	62.98921	15.32719	0.2443924	0.17937217	3.1138619	20	2 7.7	20.3
431466 2007 RY <sub>297</sub>	16.4	X	311.73077	230.70967	117.90019	8.50313	0.2676635	0.22167429	2.7039117	20	7 3.8	19.0
431467 2007 RW <sub>301</sub>	16.8	X	155.27343	221.74626	127.39300	2.17250	0.1103397	0.18375856	3.0641098	20	1 31.4	21.6
431468 2007 RY <sub>313</sub>	16.1	X	104.73996	353.28299	359.37494	17.01045	0.2116102	0.17915392	3.1163903	20	—	—
431469 2007 RE <sub>316</sub>	16.1	X	107.63562	144.51083	238.63868	9.60906	0.2092782	0.18273553	3.0755353	20	1 30.2	20.8
431470 2007 RE <sub>319</sub>	16.2	X	117.01644	186.40892	230.42101	8.29880	0.1279619	0.18857726	3.0116870	20	3 9.8	20.8
431471 2007 RL <sub>319</sub>	16.5	X	171.67318	174.83273	179.21200	10.09791	0.1331999	0.19007196	2.9958773	20	2 20.9	21.4
431472 2007 RH <sub>321</sub>	16.0	X	191.76705	319.08038	350.55037	19.65725	0.1775701	0.18894603	3.0077671	20	1 27.7	21.3
431473 2007 SO <sub>2</sub>	16.0	X	81.98694	238.41642	179.60791	27.42769	0.1957810	0.18244617	3.0787863	20	2 8.5	20.4
431474 2007 SE <sub>13</sub>	16.8	X	285.27406	104.31648	216.71580	6.15827	0.1530085	0.20940323	2.8085391	20	5 3.4	20.5
431475 2007 SD <sub>21</sub>	16.0	X	170.35803	31.75882	331.80622	12.08380	0.1371254	0.19149897	2.9809756	20	3 2.1	20.7
431476 2007 TY <sub>1</sub>	16.9	X	26.72509	260.53995	2.63741	11.50994	0.2533778	0.22473189	2.6793302	20	9 2.1	19.7
431477 2007 TT <sub>8</sub>	16.6	X	103.23924	203.88922	212.73561	8.95152	0.0800577	0.18336242	3.0685214	20	2 16.8	21.1
431478 2007 TG <sub>21</sub>	16.3	X	62.66957	52.53042	347.43449	15.58874	0.2302276	0.17295294	3.1904412	20	—	—
431479 2007 TJ <sub>25</sub>	16.6	X	104.86104	178.19807	201.80046	13.05373	0.1884384	0.17960337	3.1111890	20	1 21.3	21.3
431480 2007 TZ <sub>25</sub>	16.6	X	300.03402	301.24055	18.63779	13.61247	0.1801308	0.21160684	2.7890069	20	5 13.8	20.3
431481 2007 TP <sub>28</sub>	16.1	X	117.61154	354.21676	26.81858	9.71226	0.0819907	0.17979903	3.1089315	20	1 29.3	20.7
431482 2007 TK <sub>29</sub>	16.5	X	113.86367	207.94345	209.18666	10.37407	0.1212330	0.18546320	3.0453056	20	3 6.5	21.0
431483 2007 TO <sub>40</sub>	15.9	X	39.03979	49.29863	43.07052	14.03395	0.0849934	0.17336387	3.1853976	20	1 12.5	20.2
431484 2007 TU <sub>40</sub>	16.5	X	275.01638	105.94871	203.85809	4.39764	0.1832902	0.20103739	2.8859236	20	4 2.4	20.6
431485 2007 TM <sub>45</sub>	17.5	X	317.62533	10.66870	26.46110	6.76182	0.1347397	0.30465194	2.1874262	20	11 6.9	19.2
431486 2007 TD <sub>48</sub>	16.1	X	263.59383	87.44266	231.24830	5.64885	0.0771270	0.20025478	2.8934376	20	4 13.3	20.2
431487 2007 TT <sub>51</sub>	16.2	X	128.14307	164.99554	215.80746	10.31450	0.0873593	0.18214206	3.0822123	20	2 3.6	20.9
431488 2007 TP <sub>55</sub>	16.0	X	78.76051	218.26883	219.44162	10.08371	0.0672419	0.18056388	3.1001459	20	2 9.7	20.5
431489 2007 TN <sub>58</sub>	16.3	X	208.49219	78.71249	218.32150	17.65051	0.0761720	0.18088417	3.0964852	20	1 17.7	21.4
431490 2007 TR <sub>61</sub>	16.5	X	105.54102	200.86055	211.48604	4.57199	0.1324652	0.18248565	3.0783423	20	2 23.2	20.9
431491 2007 TV <sub>63</sub>	16.3	X	90.23031	41.20756	46.48863	7.68289	0.1627751	0.18339612	3.0681455	20	3 27.8	20.6
431492 2007 TQ <sub>70</sub>	15.7	X	100.69832	327.12158	70.42122	14.70893	0.1724321	0.17819777	3.1275280	20	2 12.4	20.4
431493 2007 TW <sub>71</sub>	15.9	X	213.00926	190.33034	104.32622	11.51372	0.0543132	0.18509666	3.0493246	20	1 24.5	20.4
431494 2007 TF <sub>78</sub>	16.4	X	44.88148	233.79772	219.37669	18.21922	0.1387430	0.17566485	3.1575202	20	1 18.3	20.6
431495 2007 TQ <sub>84</sub>	16.7	X	232.89612	13.72480	61.71734	4.82231	0.0786444	0.21270463	2.7794023	20	8 9.0	20.6
431496 2007 TX <sub>91</sub>	16.7	X	76.97618	268.55410	92.92449	1.13925	0.2902574	0.17205725	3.2015042	20	—	—
431497 2007 TH <sub>95</sub>	15.6	X	301.19356	288.81261	43.73459	20.76760	0.2173140	0.21281546	2.7784373	20	5 26.8	19.2
431498 2007 TH <sub>98</sub>	16.3	X	359.64811	285.63564	195.33025	9.22493	0.0080992	0.17700652	3.1415445	20	—	—
431499 2007 TO <sub>112</sub>	17.0	X	88.49601	70.51617	19.59354	2.11250	0.0683215	0.18981335	2.9985977	20	3 11.9	21.2
431500 2007 TQ <sub>113</sub>	16.0	X	99.86197	326.89854	45.00357	17.98997	0.2051286	0.17648716	3.1477046	20	1 13.7	20.7
431501 2007 TU <sub>123</sub>	16.6	X	100.58609	217.37725	187.51923	6.46619	0.1089991	0.17987177	3.1080933	20	2 5.5	21.0
431502 2007 TE <sub>126</sub>	16.5	X	254.11094	271.11346	34.64271	6.46579	0.2134498	0.19752902	2.9199950	20	3 8.2	21.3
431503 2007 TQ <sub>136</sub>	15.8	X	116.41586	65.77447	310.59264	9.63279	0.1856072	0.18116444	3.0932908	20	2 1.1	20.2
431504 2007 TT <sub>136</sub>	16.2	X	345.40216	78.73599	246.49518	11.90875	0.2002401	0.22264425	2.6960528	20	8 18.2	19.0
431505 2007 TR <sub>145</sub>	15.6	X	76.73781	234.90090	209.73163	17.06993	0.2130253	0.18044431	3.1015153	20	3 6.9	19.9
431506 2007 TW <sub>162</sub>	16.6	X	299.47857	296.81814	18.10738	12.38606	0.2261914	0.21100324	2.7943232	20	4 29.9	20.4
431507 2007 TB <sub>166</sub>	15.8	X	106.67524	315.33518	59.42100	18.62316	0.2593235	0.17830558	3.1262672	20	2 3.7	20.8
431508 2007 TD <sub>173</sub>	16.7	X	263.85022	177.70656	174.06738	4.02875	0.1133045	0.21303751	2.7765063	20	5 23.1	20.6
431509 2007 TD <sub>177</sub>	16.5	X	283.50511	139.55382	179.37628	5.97665	0.0690390	0.20354882	2.8621364	20	5 12.4	20.4
431510 2007 TR <sub>179</sub>	16.9	X	34.65816	32.02882	64.75267	1.26722	0.1893054	0.17299810	3.1898859	20	1 13.9	20.2
431511 2007 TU <sub>179</sub>	16.5	X	24.68769	301.99420	196.72600	4.38830	0.2343920	0.17754223	3.1352218	20	2 17.6	19.6
431512 2007 TQ <sub>183</sub>	18.6	X	175.13753	149.24357	85.82767	2.75090	0.0628206	0.31515405	2.1385568	20	—	—
431513 2007 TU <sub>185</sub>	15.7	X	268.96089	265.87728	60.75869	6.98135	0.0659489	0.20476860	2.8507588			

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>
431521 2007 <i>TD</i> <sub>215</sub>	15.7	X	189.03463	89.16885	232.43016	15.50547	0.0240410	0.18039744	3.1020525	20	1 24.9	20.5
431522 2007 <i>TL</i> <sub>228</sub>	16.8	X	215.00600	358.54155	336.49903	1.35998	0.0763311	0.19144748	2.9815101	20	3 12.3	21.1
431523 2007 <i>TM</i> <sub>228</sub>	16.1	X	9.16419	320.89841	216.54445	11.57371	0.1328913	0.18642565	3.0348154	20	3 5.7	19.8
431524 2007 <i>TV</i> <sub>254</sub>	16.6	X	71.19246	21.20385	38.02113	7.04659	0.1422161	0.17704601	3.1410772	20	1 23.9	20.6
431525 2007 <i>TZ</i> <sub>256</sub>	16.5	X	153.59660	182.34616	196.21077	11.17198	0.0786094	0.18740237	3.0242614	20	2 27.8	21.2
431526 2007 <i>TR</i> <sub>268</sub>	18.0	X	48.46055	93.35256	181.90060	1.45168	0.1432329	0.30243187	2.1981180	20	10 14.6	20.5
431527 2007 <i>TX</i> <sub>268</sub>	16.3	X	117.97835	184.60734	191.32127	5.30960	0.1692964	0.18043974	3.1015676	20	1 30.0	21.0
431528 2007 <i>TP</i> <sub>270</sub>	16.1	X	112.83675	162.67652	228.94025	8.25577	0.2181951	0.18061416	3.0995704	20	2 15.9	20.9
431529 2007 <i>TC</i> <sub>287</sub>	16.5	X	294.72250	282.45861	39.85715	12.46250	0.1768129	0.21348418	2.7726322	20	5 12.5	20.0
431530 2007 <i>TY</i> <sub>299</sub>	16.6	X	62.38514	63.71699	359.55691	0.89112	0.1730979	0.17435704	3.1732897	20	1 18.3	20.4
431531 2007 <i>TB</i> <sub>307</sub>	16.6	X	37.32435	249.50136	189.94416	5.26553	0.1668312	0.17295333	3.1904364	20	—	—
431532 2007 <i>TE</i> <sub>317</sub>	16.3	X	156.84609	216.36963	197.51693	8.81142	0.1572150	0.19214703	2.9742692	20	4 21.5	21.0
431533 2007 <i>TN</i> <sub>323</sub>	15.9	X	33.35118	203.30955	241.98140	11.30605	0.1004316	0.17308939	3.1887643	20	—	—
431534 2007 <i>TJ</i> <sub>343</sub>	15.4	X	346.75017	128.51647	43.28055	27.87551	0.0974868	0.18148161	3.0896857	20	2 11.8	20.0
431535 2007 <i>TJ</i> <sub>344</sub>	16.3	X	165.83761	153.09585	195.88823	15.19499	0.0485151	0.18273332	3.0755601	20	2 2.9	21.1
431536 2007 <i>TZ</i> <sub>369</sub>	15.7	X	87.47801	284.07304	82.79667	23.00813	0.2225724	0.17263542	3.1943521	20	—	—
431537 2007 <i>TK</i> <sub>381</sub>	16.1	X	172.95724	331.68923	40.81863	11.76490	0.1860607	0.19114481	2.9846567	20	3 22.3	21.1
431538 2007 <i>TK</i> <sub>381</sub>	16.1	X	16.10641	286.12871	201.75202	16.61686	0.1958579	0.17531760	3.1616882	20	1 13.9	19.9
431539 2007 <i>TP</i> <sub>381</sub>	16.3	X	174.52336	168.87515	191.54490	9.76066	0.1177874	0.18872047	3.0101632	20	3 1.2	21.2
431540 2007 <i>TF</i> <sub>383</sub>	15.7	X	79.39236	8.67928	43.95461	23.00333	0.0732355	0.17505122	3.1648948	20	1 20.9	20.4
431541 2007 <i>TN</i> <sub>399</sub>	16.4	X	21.49836	126.93559	20.99213	10.68854	0.0450790	0.18298073	3.0727871	20	2 25.4	20.6
431542 2007 <i>TL</i> <sub>405</sub>	16.0	X	181.30494	112.09667	231.29339	9.34766	0.1162140	0.18489480	3.0515436	20	2 15.0	21.0
431543 2007 <i>TS</i> <sub>427</sub>	16.5	X	55.16206	58.15775	47.22063	13.68023	0.2186200	0.17803652	3.1294161	20	3 13.0	20.4
431544 2007 <i>TY</i> <sub>431</sub>	15.9	X	162.43796	293.30611	60.56479	16.97781	0.2373513	0.18562539	3.0435315	20	2 27.9	21.4
431545 2007 <i>TF</i> <sub>433</sub>	16.6	X	99.71154	256.44368	152.95715	3.90118	0.1019808	0.17921722	3.1156564	20	2 10.3	21.0
431546 2007 <i>TK</i> <sub>433</sub>	15.9	X	66.96052	16.98027	41.67824	22.34608	0.1974219	0.17643704	3.1483008	20	1 29.4	20.2
431547 2007 <i>TD</i> <sub>435</sub>	16.3	X	96.72996	333.76353	75.39607	13.43158	0.2682479	0.17905660	3.1175194	20	3 7.2	21.1
431548 2007 <i>TU</i> <sub>440</sub>	16.1	X	130.75681	51.16205	348.33489	9.34137	0.1559376	0.18648324	3.0341905	20	3 9.9	20.8
431549 2007 <i>TD</i> <sub>442</sub>	15.9	X	64.25381	38.13334	56.93243	17.84931	0.2006849	0.18101728	3.0949670	20	3 14.7	20.1
431550 2007 <i>TQ</i> <sub>442</sub>	16.2	X	90.49858	104.09052	301.54554	14.57728	0.2457648	0.17732826	3.1377434	20	2 12.0	20.5
431551 2007 <i>TR</i> <sub>444</sub>	15.8	X	241.18695	64.22870	247.15008	9.40287	0.0709497	0.19097453	2.9864305	20	3 7.7	20.4
431552 2007 <i>TS</i> <sub>444</sub>	17.4	X	298.04861	133.99106	345.51569	6.51088	0.0894902	0.31385768	2.1444415	20	—	—
431553 2007 <i>TC</i> <sub>445</sub>	15.9	X	99.04807	6.02379	34.87183	18.77245	0.0810364	0.18075121	3.0980035	20	2 3.7	20.6
431554 2007 <i>TT</i> <sub>446</sub>	16.3	X	114.36286	340.41091	66.50542	10.74667	0.1919413	0.18450316	3.0558604	20	3 12.1	21.1
431555 2007 <i>TU</i> <sub>448</sub>	16.1	X	107.73439	359.97465	47.40917	14.29659	0.1052532	0.18192209	3.0846964	20	2 25.1	20.7
431556 2007 <i>TN</i> <sub>449</sub>	17.0	X	264.92827	272.33094	48.73786	2.64077	0.0623713	0.19888641	2.9066939	20	4 21.6	20.9
431557 2007 <i>TC</i> <sub>450</sub>	16.3	X	287.26210	80.95390	221.03225	9.45336	0.1764029	0.19947621	2.9009616	20	4 6.6	20.4
431558 2007 <i>UW</i> <sub>13</sub>	16.5	X	288.20258	310.10977	23.68349	16.52795	0.1519001	0.21203423	2.852578	20	5 19.5	20.5
431559 2007 <i>UP</i> <sub>38</sub>	16.4	X	252.47540	346.38430	353.24517	18.32892	0.1261972	0.20679650	2.8320914	20	4 14.5	20.9
431560 2007 <i>UK</i> <sub>39</sub>	16.1	X	118.65645	160.36138	228.76060	9.25217	0.0732868	0.18101793	3.0949597	20	2 1.3	20.7
431561 2007 <i>UR</i> <sub>42</sub>	16.6	X	131.14602	19.54088	22.73134	11.53108	0.0556830	0.18483243	3.0522300	20	3 7.4	21.1
431562 2007 <i>UR</i> <sub>42</sub>	16.1	X	203.24540	95.12029	251.80649	8.92570	0.1130933	0.19142564	2.9817368	20	3 9.7	21.0
431563 2007 <i>UF</i> <sub>45</sub>	16.6	X	187.64637	328.04956	13.09128	3.75157	0.1101683	0.18944444	3.0024894	20	2 22.7	21.2
431564 2007 <i>UV</i> <sub>83</sub>	16.0	X	358.22857	246.18974	228.76551	13.80930	0.0633052	0.16894733	3.2406726	20	—	—
431565 2007 <i>UE</i> <sub>92</sub>	16.5	X	48.16175	84.51254	26.49376	5.66799	0.1735430	0.17848969	3.1241171	20	2 26.1	20.1
431566 2007 <i>UZ</i> <sub>102</sub>	16.3	X	45.27998	50.20429	39.18556	5.76644	0.1839288	0.17278575	3.1924989	20	1 25.9	19.9
431567 2007 <i>UC</i> <sub>103</sub>	16.3	X	80.79048	39.92848	39.35175	8.06133	0.1746234	0.17905138	3.1175800	20	3 8.2	20.5
431568 2007 <i>UO</i> <sub>105</sub>	18.3	X	355.08512	247.23662	139.41178	2.54523	0.1894299	0.30806005	2.1712631	20	—	—
431569 2007 <i>UO</i> <sub>111</sub>	15.9	X	137.22948	341.23769	36.82555	17.41054	0.1150949	0.18348706	3.0671317	20	2 25.3	20.8
431570 2007 <i>UU</i> <sub>115</sub>	16.9	X	71.40360	114.57818	339.63884	0.99217	0.0796474	0.18057002	3.1000756	20	2 25.7	21.0
431571 2007 <i>UR</i> <sub>126</sub>	18.6	X	330.72180	22.24927	40.91866	2.95552	0.0902524	0.30792093	2.1719171	20	—	—
431572 2007 <i>UR</i> <sub>126</sub>	15.8	X	207.92050	232.40331	61.22492	17.44837	0.2324051	0.18069586	3.0986362	20	1 18.6	21.4
431573 2007 <i>UF</i> <sub>128</sub>	16.0	X	159.34197	279.51361	48.23895	11.94658	0.0811462	0.17708896	3.1405694	20	1 10.2	20.9
431574 2007 <i>VQ</i> <sub>2</sub>	16.2	X	129.51968	137.02301	265.21670	4.57747	0.1798026	0.18384062	3.0631980	20	3 12.4	21.0
431575 2007 <i>VV</i> <sub>4</sub>	17.3	X	322.82027	348.38511	33.18587	24.19236	0.1584289	0.30069266	2.2065859	20	10 25.1	18.8
431576 2007 <i>VH</i> <sub>24</sub>	15.9	X	10.29869	83.71729	64.11402	10.12912	0.1918833	0.17711875	3.1402172	20	2 4.6	19.4
431577 2007 <i>VH</i> <sub>26</sub>	16.2	X	94.12192	23.00144	31.78953	9.79677	0.0696474	0.17930983	3.1145835	20	2 9.8	20.7
431578 2007 <i>VW</i> <sub>32</sub>	16.4	X	251.89052	293.69459	27.00277	10.55286	0.1489313	0.19749820	2.9202988	20	3 29.3	20.9
431579 2007 <i>VX</i> <sub>35</sub>	16.1	X	128.43115	103.04359	238.75615	16.46402	0.1315497	0.17381353	3.1799015	20	—	—
431580 2007 <i>VE</i> <sub>44</sub>	15.8	X	36.97458	205.59270	281.74732	6.53662	0.0819666	0.18021519	3.1041435	20	2 16.3	19.8
431581 2007 <i>VA</i> <sub>56</sub>	16.3	X	26.57790	268.28353	206.23674	8.92426	0.0553117	0.17459325	3.1704269	20	1 17.2	20.7
431582 2007 <i>VD</i> <sub>56</sub>	16.0	X	272.61253	136.40795	69.81611	16.49438	0.0631366	0.17016579	3.2251844	20	—	—
431583 2007 <i>VO</i> <sub>72</sub>	16.0	X	105.26990	332.17551	63.42945	12.02854	0.1518556	0.17529475	3.1619629	20	2 12.5	20.7
431584 2007 <i>VV</i> <sub>97</sub>	15.7	X	125.11989	127.73013	251.15595	9.38412	0.1417603	0.17873641	3.1212414	20	2 4.8	20.5
431585 2007 <i>VQ</i> <sub>98</sub>	16.3	X	29.61374	67.66117	34.37922	11.50928	0.1227561	0.17254776	3.1954339	20	1 11.4	20.4
431586 2007 <i>VM</i>												

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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>
431601 2007 VJ <sub>202</sub>	16.2	X	106.41987	12.40281	359.47281	5.77597	0.1717653	0.17291384	3.1909221	20	1 16.6	20.8
431602 2007 VK <sub>211</sub>	16.3	X	205.41866	241.44363	37.49180	11.10951	0.0445943	0.17295448	3.1904223	20	—	—
431603 2007 VN <sub>213</sub>	16.1	X	211.02842	257.24452	78.02130	10.35026	0.1148376	0.18886445	3.0086332	20	3 13.1	21.0
431604 2007 VW <sub>215</sub>	15.8	X	57.37366	30.59197	49.36370	11.41769	0.1187142	0.17264179	3.1942735	20	1 28.5	20.0
431605 2007 VS <sub>232</sub>	15.9	X	217.02082	55.73079	237.86663	9.90695	0.0463519	0.17759660	3.1345818	20	1 25.1	20.7
431606 2007 VL <sub>233</sub>	16.0	X	201.57519	280.82262	62.18169	10.84230	0.0434097	0.18584063	3.0411810	20	3 14.9	20.6
431607 2007 VN <sub>238</sub>	18.5	X	335.72048	156.02567	240.00997	4.38517	0.1451057	0.30502498	2.1856424	20	12 15.6	20.3
431608 2007 VS <sub>247</sub>	16.4	X	23.77853	307.76563	190.53349	10.17414	0.0281451	0.18036165	3.1024628	20	2 9.7	20.8
431609 2007 VB <sub>248</sub>	16.2	X	158.19255	294.23981	91.66383	10.76962	0.0887291	0.18702790	3.0282969	20	3 21.3	21.0
431610 2007 VX <sub>248</sub>	16.3	X	308.20696	103.16114	162.26060	10.28609	0.1531410	0.19573903	2.9377698	20	3 25.3	20.1
431611 2007 VF <sub>254</sub>	16.4	X	108.56229	198.88798	201.62756	10.69990	0.2234337	0.17923450	3.1154561	20	2 23.2	21.1
431612 2007 VE <sub>255</sub>	16.7	X	235.83153	143.16547	203.64150	14.63544	0.1590048	0.20439367	2.8542439	20	4 10.5	21.3
431613 2007 VX <sub>273</sub>	15.9	X	68.27249	315.15601	94.55816	16.82385	0.2497412	0.17291201	3.1909447	20	1 22.4	19.8
431614 2007 VO <sub>276</sub>	16.0	X	323.12776	296.07402	256.43368	8.85753	0.0457074	0.18109080	3.0941294	20	1 27.0	20.4
431615 2007 VU <sub>279</sub>	15.9	X	184.98911	245.38746	53.16900	10.71001	0.0568336	0.17340517	3.1848918	20	—	—
431616 2007 VR <sub>291</sub>	16.1	X	185.36716	84.69045	241.79320	8.93845	0.1207339	0.17812448	3.1283858	20	1 31.8	21.3
431617 2007 VE <sub>307</sub>	18.3	X	270.41244	226.57560	243.43273	4.42448	0.0444728	0.30454179	2.1879536	20	12 7.7	20.3
431618 2007 VT <sub>309</sub>	17.6	X	340.28998	280.93746	71.82009	9.18460	0.1839438	0.29361623	2.2418989	20	10 21.4	19.3
431619 2007 VB <sub>310</sub>	16.6	X	157.71383	313.52667	56.46545	2.35719	0.1426691	0.18117735	3.0931438	20	3 1.6	21.6
431620 2007 VS <sub>318</sub>	16.6	X	217.64924	307.61254	21.40623	10.66099	0.0755166	0.18795408	3.0183404	20	3 11.9	21.3
431621 2007 VT <sub>318</sub>	16.4	X	127.04731	14.49021	20.60925	8.81223	0.0971055	0.18086351	3.0967210	20	2 27.5	21.0
431622 2007 VV <sub>321</sub>	15.8	X	91.85249	111.67331	260.16801	18.02939	0.1678874	0.17075208	3.2177975	20	—	—
431623 2007 VG <sub>328</sub>	15.8	X	110.38214	108.54938	275.02025	8.57908	0.0882025	0.17525850	3.1623989	20	1 20.9	20.4
431624 2007 WE <sub>1</sub>	15.9	X	107.48017	130.13758	246.06231	15.94076	0.2563183	0.17712597	3.1401319	20	1 26.4	20.8
431625 2007 WX <sub>3</sub>	19.2	X	95.64843	255.66919	27.65416	11.11261	0.1473396	0.46588837	1.6479656	20	—	—
431626 2007 WW <sub>21</sub>	16.2	X	315.38344	321.89314	263.23137	9.31736	0.0379745	0.18534621	3.0465869	20	2 24.3	20.6
431627 2007 WH <sub>22</sub>	18.6	X	317.73437	136.71976	302.95685	3.69134	0.0935945	0.31066449	2.1591110	20	—	—
431628 2007 WW <sub>23</sub>	16.0	X	54.44283	231.99282	127.16552	10.76347	0.0638847	0.17619813	3.1511460	20	1 23.3	20.4
431629 2007 WN <sub>25</sub>	16.4	X	74.24501	354.46286	85.65389	5.89044	0.1297701	0.17756955	3.1349002	20	2 21.6	20.5
431630 2007 WB <sub>32</sub>	16.2	X	144.75930	104.36815	277.25648	7.15457	0.0874357	0.18126734	3.0921200	20	2 22.9	20.9
431631 2007 WJ <sub>49</sub>	15.8	X	127.18789	156.63398	231.20043	15.01794	0.0814872	0.17863815	3.1223858	20	2 8.2	20.7
431632 2007 WK <sub>50</sub>	15.8	X	94.95272	32.67730	73.23761	17.40701	0.0447493	0.18680862	3.0306662	20	4 14.1	20.3
431633 2007 XQ <sub>1</sub>	16.0	X	134.22248	350.23772	75.75123	16.32942	0.0538779	0.18598490	3.0396680	20	4 12.6	20.7
431634 2007 XT <sub>11</sub>	16.4	X	148.91371	323.36933	65.68565	10.54895	0.1485875	0.18613817	3.0379393	20	3 20.2	21.3
431635 2007 XF <sub>19</sub>	16.0	X	83.92244	36.32648	46.20435	10.24329	0.1684506	0.17921626	3.1156675	20	3 16.6	20.3
431636 2007 YQ <sub>62</sub>	17.9	X	13.51383	15.21172	346.18439	2.09586	0.0843805	0.29652688	2.2272040	20	12 14.7	20.4
431637 2007 YS <sub>69</sub>	17.6	X	90.14867	341.34252	296.40743	5.30559	0.1631814	0.29001842	2.2604019	20	12 2.7	21.0
431638 2007 YZ <sub>69</sub>	18.4	X	218.16296	290.23591	231.61032	1.15038	0.0992283	0.29447948	2.2375153	20	11 22.6	21.0
431639 2008 AM <sub>6</sub>	16.1	X	92.26554	321.20261	80.83099	14.16906	0.1028390	0.17362711	3.1821771	20	1 26.4	20.6
431640 2008 AU <sub>14</sub>	18.5	X	206.53766	318.45111	212.37218	1.74505	0.0786735	0.29382464	2.2408386	20	11 22.7	21.2
431641 2008 AY <sub>27</sub>	17.9	X	278.23340	102.22372	341.62240	6.63203	0.0711800	0.28719965	2.2751678	20	11 1.2	20.4
431642 2008 AR <sub>34</sub>	18.9	X	271.61126	319.42346	107.07320	3.41834	0.2172196	0.29098084	2.2554149	20	9 6.0	21.2
431643 2008 AZ <sub>36</sub>	18.4	X	255.32433	27.92465	77.48297	3.52018	0.1826209	0.29209962	2.2496522	20	10 14.5	20.8
431644 2008 AK <sub>52</sub>	15.5	X	111.29949	268.04251	77.65897	22.47358	0.2199982	0.16915674	3.2379976	20	—	—
431645 2008 AG <sub>83</sub>	17.9	X	272.59782	3.73069	92.90535	6.07795	0.1144066	0.29616458	2.2290200	20	11 12.8	20.0
431646 2008 AF <sub>99</sub>	15.7	X	67.85282	33.89496	338.56311	8.90357	0.1024556	0.15085069	3.4049249	20	—	—
431647 2008 AB <sub>114</sub>	18.3	X	221.07226	37.69140	139.24472	1.51224	0.1102002	0.29569961	2.2313561	20	12 16.1	21.0
431648 2008 AD <sub>116</sub>	18.6	X	257.77967	132.78497	314.88519	5.68355	0.1565320	0.28896649	2.2658843	20	9 21.4	21.1
431649 2008 BM <sub>8</sub>	18.0	X	208.51778	86.56873	64.61065	4.42706	0.0722599	0.28863306	2.2676290	20	10 29.9	20.7
431650 2008 BY <sub>18</sub>	17.7	X	265.44542	354.18821	150.89774	6.06772	0.0767613	0.30184811	2.2009512	20	—	—
431651 2008 BH <sub>21</sub>	17.9	X	176.22142	85.92501	150.61875	4.26998	0.1294065	0.29531309	2.2333027	20	—	—
431652 2008 BL <sub>32</sub>	18.2	X	139.40453	95.62503	154.53443	2.16292	0.1703445	0.28758951	2.2731112	20	12 13.7	21.8
431653 2008 BP <sub>39</sub>	17.5	X	322.37287	78.14806	354.65112	6.88190	0.0685557	0.30066566	2.2067180	20	—	—
431654 2008 BG <sub>49</sub>	17.8	X	113.85930	237.78513	342.86063	3.64839	0.2479672	0.27355670	2.3501981	20	10 14.8	21.8
431655 2008 BC <sub>52</sub>	18.1	X	196.94740	163.35110	350.56264	6.40085	0.1418820	0.28730289	2.2746228	20	10 8.2	21.2
431656 2008 CD <sub>5</sub>	17.1	X	202.64200	153.59243	324.20865	24.45370	0.1990088	0.28046768	2.3114305	20	8 21.3	20.6
431657 2008 CJ <sub>17</sub>	18.6	X	178.60878	14.84216	167.53176	3.97567	0.1573543	0.28515954	2.2860064	20	10 27.5	22.1
431658 2008 CR <sub>21</sub>	17.8	X	197.91284	108.19164	29.63941	5.34364	0.1717263	0.28394670	2.2925114	20	9 18.3	21.1
431659 2008 CE <sub>25</sub>	17.8	X	140.74497	163.51996	43.91150	3.29536	0.1749034	0.28021503	2.3128196	20	10 21.8	21.4
431660 2008 CS <sub>29</sub>	15.9	X	70.52691	252.46998	123.54817	6.88295	0.0398958	0.14896203	3.5244038	20	—	—
431661 2008 CQ <sub>43</sub>	17.7	X	287.68926	36.46730	12.58835	6.18452	0.1245256	0.28297783	2.2977412	20	9 22.3	19.8
431662 2008 CG <sub>45</sub>	18.0	X	168.35759	157.42647	62.53236	3.71279	0.1209043	0.28880475	2.2667302	20	12 6.4	21.3
431663 2008 CC <sub>60</sub>	18.6	X	198.17459	288.99339	177.76084	2.38522	0.1123071	0.27610425	2.3357193	20	8 9.2	21.7
431664 2008 CX <sub>75</sub>	17.9	X	184.50459	72.55666	86.55052	3.22788	0.1465772	0.28128791	2.3069349	20	10 4.1	21.3
431665 2008 CZ <sub>75</sub>	17.5	X	283.30145	75.26675	6.43744	8.10359	0.0914620	0.28767046	2.2726848	20	11 4.7	19.9
431666 2008 CR <sub>95</sub>	18.0	X	148.20246	176.66124	41.41920	1.57945	0.1498061	0.28299931	2.2976249	20	11 11.3	21.4
431667 2008 CB <sub>97</sub>	17.7	X	77.70511	60.19261	111.73773	2.02631	0.1461972	0.26179587	2.4200677	20	6 23.9	20.6
431668 2008 CU <sub>98</sub>	17.6	X	251.32657	196.73838	323.86321	4.45300	0.0875230	0.29895861	2.2151102	20	—	—
431669 2008 CQ <sub>109</sub>	17.7	X	127.83141	22.61469	198.73229	3.57855	0.1960272	0.27853462	2.3221125	20	10 27.7	21.5
431670 2008 CJ <sub>112</sub>	18.1	X	192.17888	158.82751	54.69632	2.39895	0.1027897	0.29633068	2.2281870	20	12 29.3	20.7
431671 2008 CQ <sub>119</sub>	17.8	X	172.23391	89.80516	141.14678	4.78195	0.1288897	0.29503990	2.2346811	20	12 25.5	21.0
431672 2008 CT <sub>137</sub>	17.9	X	292.53676	316.39336	133.87511	4.88144	0.1004093	0.29365626	2.2416951	20	12 9.1	19.9
431673 2008 CL <sub>143</sub>	18.5	X	193.55910	144.20416	348.15987	3.41047	0.1594798	0.27923484	2.3182289	20	9 5.3	22.0

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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>
431681 2008 DW <sub>17</sub>	18.1	X	242.12456	345.36151	138.11803	4.12585	0.0731556	0.28843148	2.2686854	20	11 7.1	20.6
431682 2008 DE <sub>18</sub>	18.1	X	210.12391	90.45346	124.24276	3.04726	0.0989805	0.29874075	2.2161870	20	—	—
431683 2008 DY <sub>19</sub>	18.6	X	264.61800	326.97643	137.07581	4.19891	0.0957031	0.29236903	2.2482700	20	11 11.4	20.9
431684 2008 DM <sub>23</sub>	18.1	X	207.65031	344.30869	171.85269	4.19461	0.1711706	0.28718797	2.2752296	20	10 22.7	21.2
431685 2008 DL <sub>30</sub>	17.3	X	176.78155	157.99011	355.36642	11.14825	0.1555586	0.27688199	2.3313434	20	9 16.2	20.9
431686 2008 DP <sub>34</sub>	17.4	X	148.47804	271.87325	335.87223	21.33564	0.2804561	0.28644834	2.2791444	20	12 14.3	21.9
431687 2008 DZ <sub>34</sub>	17.8	X	151.47882	73.73997	190.62681	4.95654	0.1569018	0.29096631	2.2554900	20	—	—
431688 2008 DC <sub>35</sub>	18.0	X	221.25403	278.46894	198.93961	2.53233	0.1807672	0.28170881	2.3046365	20	9 12.2	21.2
431689 2008 DP <sub>35</sub>	18.3	X	122.06410	43.04495	191.83252	6.94007	0.1492877	0.27865024	2.3214701	20	11 8.3	21.8
431690 2008 DZ <sub>35</sub>	17.5	X	163.23731	42.28053	166.41206	6.84916	0.0723663	0.28457004	2.2891624	20	11 20.7	20.6
431691 2008 DM <sub>44</sub>	17.5	X	176.70961	66.89450	138.80243	6.24546	0.1003506	0.28903398	2.2655315	20	11 30.4	20.6
431692 2008 DU <sub>60</sub>	18.1	X	119.71441	225.40405	20.65593	3.19767	0.1333473	0.28334752	2.2957422	20	11 18.8	21.4
431693 2008 DW <sub>63</sub>	18.0	X	339.47180	229.93025	131.34890	5.36772	0.1500550	0.28223509	2.3017706	20	10 24.7	19.9
431694 2008 DB <sub>70</sub>	17.7	X	175.00482	60.47111	139.23203	3.51105	0.1024619	0.28705235	2.2759461	20	11 19.8	20.8
431695 2008 DJ <sub>82</sub>	17.8	X	86.35345	254.95368	31.23880	6.61805	0.1421901	0.28160920	2.3051799	20	12 6.3	21.3
431696 2008 DE <sub>85</sub>	18.3	X	137.48663	105.50656	32.68876	1.93197	0.1270077	0.26574993	2.3960026	20	7 17.4	21.8
431697 2008 DU <sub>87</sub>	18.1	X	243.66800	12.79035	70.58703	4.06278	0.1419067	0.27797972	2.3252017	20	8 31.7	21.0
431698 2008 ES	18.3	X	149.77481	164.72808	134.26153	9.11614	0.7569325	0.28315395	2.2967883	20	1 3.5	23.4
431699 2008 EL <sub>10</sub>	17.8	X	120.05859	109.67868	127.15110	6.17439	0.1326442	0.28036971	2.3119689	20	11 9.9	21.3
431700 2008 EF <sub>23</sub>	17.4	X	127.33332	161.50909	33.09645	8.64396	0.1405553	0.27491993	2.3242225	20	9 24.0	20.9
431701 2008 EF <sub>31</sub>	17.9	X	288.73445	121.74610	282.99778	4.25724	0.1425454	0.28263568	2.2995952	20	9 10.9	20.1
431702 2008 EW <sub>55</sub>	18.5	X	151.54815	20.39673	166.53407	5.57266	0.1715183	0.28033081	2.3121828	20	10 6.3	22.2
431703 2008 EN <sub>67</sub>	17.9	X	222.25325	191.19546	317.65086	3.91493	0.0806786	0.28707774	2.2758119	20	11 9.7	20.6
431704 2008 EF <sub>69</sub>	19.6	X	121.84165	101.85577	18.36760	25.01422	0.1799692	0.42199332	1.7603499	20	6 4.1	22.3
431705 2008 EZ <sub>76</sub>	18.2	X	249.88444	357.00044	123.94558	2.42931	0.1310810	0.28720928	2.2751170	20	11 4.7	20.7
431706 2008 ET <sub>82</sub>	17.8	X	185.45017	319.52376	224.37761	5.62595	0.1307580	0.28582295	2.2824677	20	11 6.8	21.1
431707 2008 EJ <sub>88</sub>	18.0	X	162.97030	310.62081	222.17775	0.88735	0.1214967	0.27875344	2.3208971	20	9 28.7	21.2
431708 2008 EO <sub>88</sub>	17.8	X	233.32207	326.82802	168.44727	7.02936	0.1061671	0.28774017	2.2723177	20	11 5.9	20.6
431709 2008 EN <sub>116</sub>	18.4	X	117.96581	174.50945	61.46742	2.05048	0.1383747	0.27715694	2.3298012	20	11 4.3	21.9
431710 2008 EF <sub>117</sub>	18.0	X	204.87636	152.26810	17.30101	3.15383	0.1011744	0.28500980	2.2868071	20	11 12.8	21.0
431711 2008 ER <sub>120</sub>	18.2	X	190.03103	359.19396	165.54237	5.13469	0.1507990	0.28214348	2.3022688	20	10 16.6	21.6
431712 2008 ES <sub>120</sub>	17.7	X	253.15108	48.65655	65.89673	1.22183	0.1496743	0.28732652	2.2744981	20	10 27.7	20.2
431713 2008 EJ <sub>128</sub>	17.8	X	73.60533	144.13149	140.57597	6.25080	0.1632191	0.27899492	2.3195577	20	11 25.4	21.3
431714 2008 ED <sub>131</sub>	17.0	X	277.09404	267.36984	136.99596	5.78290	0.2988125	0.28186688	2.3037747	20	7 24.8	19.6
431715 2008 ET <sub>143</sub>	17.6	X	148.75865	110.77410	163.17583	10.26512	0.1847972	0.29202565	2.2500321	20	—	—
431716 2008 EK <sub>147</sub>	18.0	X	138.68167	176.19696	12.61379	2.13339	0.1519204	0.27482382	2.3429686	20	9 25.1	21.6
431717 2008 EQ <sub>147</sub>	18.0	X	73.12942	150.77371	142.72703	0.52235	0.2191043	0.27823281	2.3237915	20	12 9.1	21.4
431718 2008 EZ <sub>147</sub>	18.3	X	178.96535	171.92223	1.94859	4.52464	0.1646491	0.28091380	2.3089826	20	10 13.8	21.8
431719 2008 EL <sub>151</sub>	18.3	X	109.45289	251.30525	10.91978	2.85231	0.1744235	0.28062715	2.3105547	20	11 30.1	21.9
431720 2008 EF <sub>152</sub>	17.9	X	97.03443	81.14280	202.45986	7.32838	0.1312229	0.28275742	2.2989351	20	12 14.4	21.4
431721 2008 EF <sub>163</sub>	17.8	X	319.68791	286.26518	129.90209	5.69182	0.1140157	0.28515191	2.2860472	20	12 5.9	20.0
431722 2008 EM <sub>166</sub>	17.0	X	132.29065	224.37115	31.15673	23.01657	0.1825563	0.28427332	2.2907550	20	12 7.8	21.1
431723 2008 ET <sub>167</sub>	17.9	X	196.66045	264.97479	247.74932	5.13197	0.1939549	0.28240099	2.3008691	20	9 30.3	21.4
431724 2008 FA <sub>4</sub>	17.8	X	87.92327	250.47473	22.00910	2.68001	0.1969108	0.27912868	2.3188166	20	11 24.5	21.5
431725 2008 FH <sub>18</sub>	17.9	X	216.45445	328.43207	153.07454	5.00503	0.1041101	0.28114792	2.3077006	20	9 23.7	20.9
431726 2008 FP <sub>24</sub>	16.5	X	93.74560	87.43383	168.65532	11.17730	0.1034142	0.27458453	2.3443296	20	11 5.1	19.9
431727 2008 FZ <sub>35</sub>	18.3	X	110.04575	215.81229	16.31063	2.19687	0.1519618	0.27642596	2.3339068	20	10 22.6	21.8
431728 2008 FC <sub>41</sub>	17.5	X	56.66507	206.04534	87.39059	3.56913	0.190513	0.27185185	2.3600137	20	11 20.2	20.7
431729 2008 FF <sub>48</sub>	18.3	X	125.88368	159.85003	33.76614	1.90136	0.1201229	0.27174486	2.3606331	20	9 17.5	21.8
431730 2008 FG <sub>52</sub>	17.9	X	166.55591	171.62051	31.90799	4.00920	0.1836171	0.28229052	2.3014693	20	11 8.2	21.3
431731 2008 FG <sub>56</sub>	18.3	X	109.35112	108.33494	178.32808	0.82133	0.2314363	0.28170641	2.3046495	20	12 31.6	22.1
431732 2008 FF <sub>56</sub>	18.1	X	134.42371	323.89226	189.22998	4.48327	0.1252396	0.26521013	2.3992526	20	8 1.3	21.6
431733 2008 FH <sub>61</sub>	17.8	X	63.02795	207.17458	71.86775	5.66182	0.1324749	0.27229196	2.3574700	20	11 1.5	20.9
431734 2008 FF <sub>69</sub>	17.8	X	34.02305	211.10637	74.85759	3.33649	0.1888541	0.26312288	2.4119241	20	10 10.8	20.5
431735 2008 FB <sub>82</sub>	18.4	X	218.83172	307.91167	142.53441	1.65087	0.1518718	0.27367052	2.3495465	20	8 6.9	21.8
431736 2008 FP <sub>87</sub>	18.1	X	85.54446	97.29317	162.99361	1.54884	0.1607237	0.27377723	2.3489359	20	11 4.2	21.6
431737 2008 FV <sub>106</sub>	18.1	X	57.17858	155.85134	159.07312	3.32750	0.0836660	0.28029225	2.3123948	20	12 6.1	21.2
431738 2008 FC <sub>107</sub>	17.8	X	132.42805	136.68031	49.92395	3.76538	0.1850696	0.27137419	2.3627822	20	9 18.4	21.5
431739 2008 FL <sub>108</sub>	17.9	X	258.99451	286.44838	168.97662	5.64755	0.1308217	0.28317059	2.2966983	20	10 12.4	20.3
431740 2008 FC <sub>112</sub>	18.2	X	132.86050	240.99350	24.30906	4.87111	0.1808350	0.28272474	2.2991122	20	12 25.3	22.0
431741 2008 FN <sub>123</sub>	18.4	X	101.37355	214.38983	28.50209	1.82094	0.1425558	0.27283272	2.3543539	20	10 26.9	22.0
431742 2008 FW <sub>128</sub>	18.5	X	144.75810	109.09045	122.66331	3.68344	0.1438588	0.27935098	2.3175863	20	11 25.6	22.1
431743 2008 FN <sub>137</sub>	17.8	X	211.94749	246.47523	206.44226	13.97353	0.0658299	0.26441813	2.4040411	20	8 6.0	21.4
431744 2008 GH <sub>2</sub>	15.8	X	69.50956	35.38066	52.46521	26.53984	0.2706606	0.17900732	3.1180914	20	3 30.1	20.2
431745 2008 GY <sub>4</sub>	18.0	X	256.71772	323.46788	144.15055	5.50293	0.0480906	0.28679764	2.2772934	20	11 10.2	20.6
431746 2008 GW <sub>10</sub>	18.1	X	106.52975	12.29886	192.41741	1.08732	0.1043103	0.26577808	2.3958334	20	9 8.1	21.2
431747 2008 GF <sub>22</sub>	18.0	X	211.06799	325.71678	180.32212	6.30038	0.1682970	0.28093680	2.3088566	20	10 12.2	21.1
431748 2008 GO <sub>28</sub>	18.3	X	226.62854	77.25396	40.81450	5.51756	0.1526285	0.28009714	2.3134685	20	9 25.9	21.4
431749 2008 GZ <sub>32</sub>	17.9	X	241.88083	5.06995	97.70197	6.31938	0.1842126	0.27895166	2.3197975	20	9 20.6	20.9
431750 2008 GS <sub>55</sub>	18.0	X	74.14308	283.63559	35.90170	6.76737	0.2096562	0.28241593	2.3007879	20	—	—
431751 2008 GS <sub>64</sub>	18.2	X	130.32406	177.56293	95.99889	2.84747	0.1960429	0.28562601	2.2835168	20	—	—
431752 2008 GZ <sub>72</sub>	17.9	X	22.10497	149.63977	156.82516	1.61277	0.1822223	0.26888352	2.3773507	20	10 20.6	20.3
431753 2008 GH <sub>74</sub>	17.6	X	51.17205	197.42701	130.69297	6.80165	0.2046805	0.2767995				

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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>
431761 2008 HU <sub>1</sub>	18.0	X	111.44007	124.41297	139.37188	6.34562	0.1931877	0.27578749	2.3375075	20	12 5.1	21.9
431762 2008 HP <sub>12</sub>	17.7	X	147.42401	44.10537	198.49386	2.10656	0.1608640	0.28003605	2.3138050	20	12 10.5	21.2
431763 2008 HN <sub>15</sub>	17.3	X	184.38490	55.35385	105.40844	6.66306	0.1319997	0.27450439	2.3447859	20	10 8.1	20.8
431764 2008 HU <sub>27</sub>	17.9	X	223.16813	281.69686	216.12844	5.59559	0.0991671	0.28179674	2.3041570	20	10 24.2	20.8
431765 2008 HB <sub>28</sub>	17.7	X	136.57841	18.93136	223.51912	3.98073	0.0744643	0.28224108	2.3017380	20	12 2.4	20.8
431766 2008 HT <sub>39</sub>	17.6	X	119.46277	56.11270	205.75561	9.27198	0.1895369	0.28091323	2.3089857	20	12 9.6	21.4
431767 2008 HZ <sub>50</sub>	18.2	X	113.79378	145.72562	122.89072	2.32574	0.1594842	0.27720665	2.3295228	20	12 11.6	21.8
431768 2008 HL <sub>54</sub>	15.6	X	116.47509	211.80220	116.08132	4.10546	0.2053200	0.12419728	3.9785791	20	—	—
431769 2008 HQ <sub>54</sub>	17.6	X	35.98942	163.06419	94.01852	3.52245	0.1640998	0.25704694	2.4497838	20	8 27.9	20.3
431770 2008 HH <sub>59</sub>	18.2	X	107.52117	61.70355	198.78974	4.53597	0.1931968	0.27517531	2.3409730	20	11 27.2	21.9
431771 2008 HH <sub>65</sub>	17.8	X	131.49351	145.43297	95.88027	3.62658	0.1708655	0.27553232	2.3389504	20	11 24.1	21.5
431772 2008 JN <sub>1</sub>	17.4	X	52.12228	285.10358	20.88086	11.27148	0.2184733	0.27440690	2.3453412	20	12 1.3	20.9
431773 2008 JK <sub>11</sub>	17.5	X	45.32236	164.58493	132.82712	7.35026	0.1106911	0.26823685	2.3811701	20	11 1.5	20.6
431774 2008 JT <sub>16</sub>	18.3	X	123.15914	119.00855	83.30356	7.04822	0.0644237	0.26794383	2.3829058	20	9 26.0	21.7
431775 2008 JO <sub>24</sub>	18.9	X	351.11231	142.93327	132.82826	26.66220	0.2911976	0.40807275	1.8001595	20	7 20.7	18.0
431776 2008 JQ <sub>24</sub>	17.9	X	123.85295	238.14960	87.83496	9.59150	0.4304563	0.28602976	2.2813674	20	—	—
431777 2008 JC <sub>35</sub>	16.6	X	105.96240	166.54210	101.81650	27.94008	0.1801506	0.27460326	2.3442230	20	12 9.3	20.6
431778 2008 KR <sub>1</sub>	18.3	X	101.13566	95.42100	160.11324	5.32887	0.2052591	0.27064404	2.3670299	20	11 16.4	22.2
431779 2008 KD <sub>9</sub>	18.1	X	144.98414	117.36062	91.99434	3.28235	0.1423731	0.27424850	2.3462442	20	10 28.4	21.6
431780 2008 LR	17.8	X	32.69084	224.60258	78.12625	2.73084	0.1544049	0.26733065	2.3865482	20	10 26.8	20.6
431781 2008 LY <sub>3</sub>	17.8	X	106.27027	64.60123	158.06415	9.70865	0.1760966	0.26844704	2.3799270	20	10 10.2	21.5
431782 2008 LF <sub>13</sub>	18.1	X	118.73612	113.18189	128.69944	2.84922	0.1726859	0.27287448	2.3541137	20	11 13.5	21.8
431783 2008 LC <sub>17</sub>	17.8	X	52.81572	131.86879	135.04712	6.88037	0.1260301	0.26218009	2.4177028	20	10 1.7	20.9
431784 2008 MF	17.5	X	112.49036	149.30259	126.52999	6.93353	0.1438097	0.27716891	2.3297342	20	12 19.2	21.0
431785 2008 OZ <sub>9</sub>	17.8	X	192.67920	239.28914	138.77265	24.94993	0.0760600	0.39057710	1.8535239	20	4 5.6	20.4
431786 2008 OY <sub>19</sub>	16.2	X	190.14372	48.27939	328.69575	13.59425	0.2118138	0.21841911	2.7307103	20	3 30.3	21.1
431787 2008 PG <sub>4</sub>	15.9	X	49.32315	253.40574	101.69285	11.25579	0.1113111	0.18572080	3.0424891	20	12 27.9	20.1
431788 2008 PH <sub>4</sub>	17.0	X	306.03683	265.42507	66.02816	4.96426	0.2505907	0.24023209	2.5628039	20	5 31.5	19.5
431789 2008 PM <sub>8</sub>	16.7	X	319.89190	4.56546	299.24789	13.33814	0.1515642	0.23804252	2.5784953	20	5 31.5	19.7
431790 2008 PA <sub>11</sub>	16.8	X	21.63022	305.07512	40.06398	12.37421	0.3062472	0.25986357	2.4320497	20	12 28.2	20.2
431791 2008 PK <sub>14</sub>	16.6	X	163.52992	252.17020	153.02585	14.02794	0.1631301	0.21837038	2.7311165	20	4 19.8	21.2
431792 2008 PK <sub>22</sub>	16.8	X	97.08969	61.04382	188.68089	10.89258	0.1375714	0.25907288	2.4369956	20	10 30.4	20.4
431793 2008 QX <sub>3</sub>	18.1	X	275.91809	324.80088	323.23141	19.56257	0.0784003	0.38953302	1.8568345	20	2 26.0	20.0
431794 2008 QX <sub>7</sub>	16.6	X	330.16416	235.33044	104.13494	9.14350	0.0820459	0.24799941	2.5090094	20	8 24.3	19.4
431795 2008 QW <sub>15</sub>	16.1	X	277.29099	31.30423	293.50496	13.13748	0.2745570	0.22794624	2.6540826	20	4 3.9	20.4
431796 2008 QR <sub>18</sub>	17.2	X	187.32350	63.76762	338.46546	1.00202	0.1891432	0.22192540	2.7018716	20	5 2.9	21.6
431797 2008 QY <sub>22</sub>	16.3	X	282.47033	169.72989	167.69718	33.73969	0.1954610	0.23370679	2.6102884	20	5 19.2	20.6
431798 2008 QY <sub>26</sub>	17.4	X	31.04911	290.23719	36.24797	3.27747	0.2520751	0.25735472	2.4478302	20	12 2.9	20.5
431799 2008 QJ <sub>34</sub>	18.0	X	59.49720	139.28347	154.95252	1.33527	0.1771263	0.25900044	2.4374500	20	11 19.2	21.3
431800 2008 QN <sub>35</sub>	16.5	X	57.94604	306.22147	26.63689	23.82003	0.2917152	0.26353347	2.4094182	20	—	—
431801 2008 QV <sub>35</sub>	16.7	X	248.33599	187.16037	160.51815	14.94444	0.0386207	0.22730946	2.6590370	20	5 11.3	20.6
431802 2008 QW <sub>38</sub>	18.6	X	323.02798	32.73523	175.67745	20.81939	0.0459054	0.37836159	1.8932066	20	1 13.2	21.0
431803 2008 QL <sub>40</sub>	17.1	X	245.23561	97.59084	278.16936	3.39759	0.1388496	0.23036548	2.6354682	20	5 27.9	21.0
431804 2008 QC <sub>46</sub>	17.2	X	332.24382	329.37706	327.47429	16.86209	0.2192796	0.23806471	2.5783352	20	6 4.9	20.0
431805 2008 RN <sub>6</sub>	17.0	X	235.89428	137.84624	192.86031	12.17716	0.1682037	0.22343162	2.6897152	20	3 19.4	21.4
431806 2008 RD <sub>14</sub>	13.7	X	355.39776	7.33383	345.90155	20.70349	0.0299891	0.08097177	5.2915181	20	9 17.9	20.6
431807 2008 RO <sub>15</sub>	13.8	X	77.43391	76.72928	198.19700	13.97970	0.0457564	0.08317881	5.1974968	20	9 29.9	20.6
431808 2008 RK <sub>18</sub>	17.4	X	19.27036	324.74207	312.52985	4.85259	0.2062652	0.24354792	2.5394896	20	8 29.9	19.8
431809 2008 RS <sub>23</sub>	16.5	X	169.91731	137.37481	262.65140	8.09712	0.2743344	0.21343413	2.7730655	20	4 15.8	21.6
431810 2008 RF <sub>24</sub>	16.2	X	252.65491	126.05909	215.18063	10.98277	0.2691947	0.22487014	2.6782319	20	4 8.2	20.7
431811 2008 RY <sub>29</sub>	17.8	X	357.71147	122.20321	172.19331	5.02364	0.2145643	0.24217692	2.5490649	20	8 9.2	19.7
431812 2008 RF <sub>36</sub>	17.2	X	265.30421	35.05616	291.97731	1.00296	0.0915868	0.22409142	2.6844330	20	4 23.7	20.8
431813 2008 RL <sub>36</sub>	17.2	X	136.49479	84.99499	332.40286	2.13463	0.1624742	0.21100313	2.7943241	20	4 4.6	21.3
431814 2008 RL <sub>46</sub>	17.0	X	60.59574	222.24231	13.17306	7.33944	0.1686081	0.24050782	2.5608447	20	9 2.2	20.5
431815 2008 RM <sub>59</sub>	17.0	X	221.38957	145.52136	204.59153	5.05555	0.0642790	0.21799088	2.7342853	20	4 5.3	20.9
431816 2008 RD <sub>62</sub>	17.4	X	189.24023	54.18688	336.06820	5.85356	0.0287366	0.22246006	2.6975408	20	4 17.8	21.3
431817 2008 RS <sub>64</sub>	17.1	X	217.00307	243.76844	141.78510	3.61168	0.1988638	0.22402902	2.6849315	20	5 9.2	21.6
431818 2008 RL <sub>68</sub>	16.0	X	224.19206	346.55412	14.39294	15.94672	0.1825993	0.22043132	2.7140667	20	4 13.1	20.4
431819 2008 RW <sub>95</sub>	16.9	X	235.53360	187.65181	181.98725	5.88913	0.1765753	0.22797702	2.6538437	20	5 7.9	21.1
431820 2008 RD <sub>105</sub>	16.7	X	283.74267	202.04558	138.22556	6.65491	0.2706227	0.23279709	2.6170841	20	5 10.9	20.5
431821 2008 RL <sub>107</sub>	17.7	X	67.95968	165.60049	147.99297	10.31392	0.3838448	0.26306761	2.4122619	20	—	—
431822 2008 RC <sub>110</sub>	14.3	X	281.87329	264.50790	185.12148	19.19821	0.0921194	0.08406730	5.1608111	20	10 5.8	21.0
431823 2008 RO <sub>114</sub>	17.2	X	359.20607	261.59565	14.50761	3.28266	0.0778101	0.23040177	2.6351914	20	7 7.7	20.3
431824 2008 RV <sub>120</sub>	17.0	X	140.82226	38.81793	41.82140	5.65535	0.1122784	0.20921271	2.8102438	20	5 4.3	21.2
431825 2008 RF <sub>122</sub>	16.9	X	194.68621	352.60624	9.33313	5.52513	0.0895718	0.21491173	2.7603404	20	3 22.5	20.9
431826 2008 RL <sub>126</sub>	13.9	X	355.80977	188.66289	180.82537	22.08196	0.0800388	0.08357136	5.1812086	20	10 12.3	20.4
431827 2008 RU <sub>131</sub>	17.3	X	151.29215	22.09465	27.31561	4.75774	0.2343847	0.21190292	2.786			



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>
431841 2008 SS <sub>45</sub>	16.5	X	243.46609	164.22807	193.71921	15.90576	0.0919649	0.22196022	2.7015891	20	5 10.3	20.6
431842 2008 SO <sub>51</sub>	17.0	X	138.83611	177.23577	231.05200	3.61703	0.1063169	0.20908681	2.8113718	20	3 20.9	21.3
431843 2008 SB <sub>53</sub>	17.5	X	138.10916	241.33303	181.47678	2.57541	0.1708792	0.21002339	2.8030076	20	4 14.8	21.8
431844 2008 SJ <sub>53</sub>	17.5	X	321.77861	210.03930	90.84221	0.57402	0.1229804	0.23059895	2.6336890	20	6 4.5	20.4
431845 2008 SP <sub>57</sub>	17.0	X	231.29213	349.30956	28.99521	5.85722	0.0358733	0.22284521	2.6944317	20	5 25.6	20.7
431846 2008 SF <sub>59</sub>	16.1	X	316.98332	296.97607	28.86875	15.18293	0.1237341	0.23232893	2.6205987	20	7 3.9	19.4
431847 2008 SQ <sub>59</sub>	16.6	X	212.69687	330.37649	49.04646	4.84680	0.1219050	0.21801370	2.7340946	20	4 30.5	20.9
431848 2008 SU <sub>59</sub>	16.4	X	79.45408	64.81720	193.56398	13.27171	0.0999222	0.24431353	2.5341814	20	10 15.0	19.9
431849 2008 SV <sub>60</sub>	16.8	X	201.77256	31.67557	349.35611	11.98494	0.2434780	0.21880860	2.7274688	20	4 14.5	21.7
431850 2008 SJ <sub>65</sub>	16.4	X	313.12405	289.05577	23.11567	12.56593	0.0589190	0.22586649	2.6703499	20	6 12.8	20.0
431851 2008 SS <sub>67</sub>	17.2	X	295.46421	139.60033	195.50510	3.83677	0.2556306	0.23167081	2.6255593	20	5 19.9	20.6
431852 2008 SA <sub>72</sub>	16.5	X	334.30777	301.38848	42.12871	13.82363	0.1832604	0.23693907	2.5864947	20	9 9.5	19.1
431853 2008 SO <sub>72</sub>	16.6	X	268.31962	314.29372	7.29591	5.90463	0.0604346	0.21811244	2.7332693	20	4 23.9	20.3
431854 2008 SC <sub>84</sub>	16.9	X	309.74209	306.84375	353.61243	12.61352	0.2662793	0.23163879	2.6258013	20	4 15.7	20.2
431855 2008 SW <sub>84</sub>	16.5	X	173.77509	17.58091	30.49042	8.46865	0.2243691	0.21222758	2.7835659	20	4 29.2	21.4
431856 2008 SJ <sub>94</sub>	16.8	X	290.83169	299.20827	251.03338	11.14802	0.1107572	0.22369962	2.6875665	20	4 2.5	20.4
431857 2008 SL <sub>95</sub>	16.5	X	74.40230	283.57599	209.07375	15.90199	0.0451527	0.21122970	2.7923256	20	4 10.2	20.3
431858 2008 ST <sub>97</sub>	16.8	X	248.06887	80.61725	257.07092	1.54359	0.1052808	0.21929666	2.7234205	20	4 15.6	20.8
431859 2008 SW <sub>100</sub>	17.1	X	15.21428	156.10731	154.11161	5.02960	0.2399882	0.24623568	2.5209761	20	10 20.4	19.6
431860 2008 SW <sub>106</sub>	16.4	X	212.25935	346.82149	34.39059	6.46035	0.0615687	0.21732466	2.7398705	20	5 4.7	20.3
431861 2008 SA <sub>109</sub>	17.6	X	9.52454	318.19553	314.35778	3.71669	0.1164587	0.23944836	2.5683930	20	7 23.7	20.2
431862 2008 SP <sub>112</sub>	16.7	X	57.15438	198.22397	41.02588	9.62185	0.0801003	0.23545699	2.5973371	20	8 21.5	20.2
431863 2008 SF <sub>114</sub>	17.0	X	192.65158	307.54608	60.57182	5.55923	0.1299802	0.21308211	2.7761188	20	3 30.3	21.5
431864 2008 SW <sub>115</sub>	17.0	X	152.77747	290.21999	131.64094	5.58671	0.0606235	0.21410279	2.7672889	20	4 21.9	21.0
431865 2008 SO <sub>121</sub>	16.9	X	66.42356	319.23414	220.00768	4.22249	0.0445236	0.22013892	2.7164694	20	6 1.3	20.3
431866 2008 SM <sub>122</sub>	17.1	X	201.71926	139.82094	209.62895	5.26188	0.0713037	0.20928097	2.8096327	20	3 13.2	21.2
431867 2008 SL <sub>124</sub>	17.5	X	313.90248	37.51521	279.30754	1.95096	0.1460379	0.23057876	2.6338428	20	6 10.7	20.2
431868 2008 SP <sub>134</sub>	13.7	X	132.73718	16.67082	205.66042	16.65129	0.0400213	0.08172874	5.2587941	20	9 29.1	20.8
431869 2008 SV <sub>142</sub>	16.5	X	327.75841	292.58180	37.27043	12.55684	0.1956548	0.23579582	2.5948484	20	7 28.0	19.2
431870 2008 SA <sub>143</sub>	16.7	X	108.12900	351.58278	44.81065	8.29451	0.1456424	0.19518648	2.9433115	20	2 12.4	21.0
431871 2008 SS <sub>151</sub>	16.4	X	219.37776	5.74444	17.85346	14.45960	0.2532618	0.22394920	2.6855694	20	5 1.5	21.1
431872 2008 SK <sub>161</sub>	16.7	X	154.40801	86.11489	13.52760	13.31027	0.0916265	0.22430599	2.6827207	20	6 8.8	21.0
431873 2008 SO <sub>164</sub>	17.3	X	349.40614	130.36279	187.39806	12.61678	0.3040918	0.24374990	2.5380865	20	9 2.6	18.7
431874 2008 SH <sub>169</sub>	17.1	X	18.05791	208.21172	330.35791	5.67086	0.0136235	0.21536210	2.7564907	20	3 20.3	20.9
431875 2008 SM <sub>170</sub>	14.0	X	226.64037	290.06610	197.75333	11.90713	0.0451952	0.08233855	5.2327973	20	9 21.2	21.0
431876 2008 SH <sub>184</sub>	16.5	X	298.37056	321.78443	43.48619	14.19778	0.1946059	0.23220730	2.6215137	20	7 20.3	19.7
431877 2008 SO <sub>191</sub>	16.8	X	249.64037	286.60679	32.73981	13.13005	0.2157331	0.21785945	2.7353849	20	3 20.9	21.4
431878 2008 SR <sub>192</sub>	18.4	X	39.69025	69.78163	24.91865	22.41844	0.0931381	0.36290258	1.9465968	20	—	—
431879 2008 SZ <sub>200</sub>	16.9	X	148.21857	44.60483	9.19050	4.52604	0.0615981	0.20874344	2.8144540	20	4 4.1	20.9
431880 2008 SW <sub>202</sub>	16.8	X	182.62997	162.19861	218.06309	1.91730	0.1849000	0.21092706	2.7949959	20	4 2.7	21.4
431881 2008 SX <sub>202</sub>	17.4	X	319.94500	295.39342	28.74348	7.76071	0.1599894	0.23232509	2.6206275	20	7 1.7	20.2
431882 2008 SP <sub>204</sub>	16.6	X	356.78952	174.57152	69.67961	7.81743	0.0253598	0.21768490	2.7368469	20	5 19.5	20.2
431883 2008 SE <sub>218</sub>	16.4	X	230.09605	5.30180	343.23095	12.41456	0.1964931	0.21643896	2.7473401	20	3 31.5	21.1
431884 2008 SL <sub>232</sub>	17.3	X	343.43133	338.34522	321.71798	5.24408	0.1651937	0.23788126	2.5796606	20	7 14.4	19.6
431885 2008 SW <sub>242</sub>	16.7	X	72.53366	180.54594	204.29886	10.37739	0.2452228	0.18560512	3.0437531	20	—	—
431886 2008 SK <sub>258</sub>	17.0	X	202.40575	316.05493	49.11846	7.29746	0.0546939	0.20899473	2.8121975	20	4 6.6	21.1
431887 2008 SU <sub>261</sub>	16.9	X	111.27813	50.82141	14.98104	1.86451	0.0605377	0.20645117	2.8352486	20	3 7.2	20.8
431888 2008 SA <sub>262</sub>	17.5	X	87.96843	60.83439	188.47080	5.75133	0.1233158	0.24673623	2.5175654	20	10 16.0	21.1
431889 2008 SL <sub>264</sub>	17.2	X	252.32695	172.96360	142.54518	4.03909	0.0812254	0.21408517	2.7674407	20	3 28.3	21.2
431890 2008 SB <sub>265</sub>	17.2	X	177.55988	16.45358	26.84999	4.77397	0.0699775	0.21441485	2.7646032	20	4 24.0	21.2
431891 2008 SM <sub>265</sub>	17.3	X	328.82270	285.70502	5.93282	6.30981	0.2295738	0.22797161	2.6538856	20	5 17.9	20.0
431892 2008 SG <sub>277</sub>	17.3	X	161.63604	328.75129	58.00982	0.96673	0.0828165	0.20946172	2.8080162	20	3 18.7	21.5
431893 2008 SH <sub>280</sub>	16.8	X	200.08166	303.53272	73.16198	3.96696	0.1896321	0.21795069	2.7346214	20	4 14.7	21.3
431894 2008 SN <sub>284</sub>	17.1	X	240.90498	103.78618	264.12314	4.56585	0.0737601	0.22093279	2.7099583	20	5 20.0	21.1
431895 2008 SO <sub>284</sub>	17.2	X	251.79186	333.51456	358.09438	7.32373	0.1556940	0.21841254	2.7307650	20	4 5.9	21.4
431896 2008 SY <sub>285</sub>	17.1	X	226.59716	89.16990	271.11201	5.02502	0.0380027	0.21908455	2.7251780	20	4 25.0	21.0
431897 2008 SZ <sub>287</sub>	17.5	X	310.22165	65.40436	263.60621	1.96758	0.1268597	0.23121611	2.6290005	20	6 25.1	20.4
431898 2008 SO <sub>302</sub>	18.4	X	205.15463	151.67923	193.67894	22.28980	0.0907909	0.37892229	1.8913386	20	2 20.9	21.2
431899 2008 SL <sub>305</sub>	16.5	X	182.95029	328.37425	79.05840	5.81193	0.1074409	0.21566672	2.7538944	20	5 7.1	20.8
431900 2008 SZ <sub>305</sub>	17.2	X	208.95498	313.37738	60.10727	4.01975	0.1947140	0.21706524	2.7420531	20	4 17.7	21.8
431901 2008 TN <sub>2</sub>	17.3	X	335.04094	301.29507	225.65071	20.70986	0.0510184	0.36719026	1.9314136	20	—	—
431902 2008 TO <sub>5</sub>	16.6	X	250.21780	296.67854	14.32777	6.00408	0.2324114	0.21824616	2.7321528	20	3 7.0	21.1
431903 2008 TF <sub>8</sub>	16.2	X	206.48723	333.57412	51.71839	6.31444	0.0547974	0.21874047	2.7280351	20	5 4.5	20.0
431904 2008 TR <sub>8</sub>	18.4	X	23.61033	100.78180	20.96868	19.08088	0.0828352	0.36680207	1.9327760	20	—	—
431905 2008 TQ <sub>9</sub>	17.5	X	331.37185	264.12613	26.30923	4.63072	0.1343081	0.23077893	2.6323195	20	6 4.4	20.3
431906 2008 TL <sub>23</sub>	17.1	X	16.97449	18.54143	18.24689	1.48456	0.1707231	0.17666843	3.1455511	20	—	—
431907 2008 TY <sub>30</sub>	17.2	X	9.33230	119.74126	45.93709	2.67439	0.0266595	0.20408286	2.8571412	20	2 25.4	20.9
431908 2008 TF <sub>31</sub>	17.0	X	166.16526	14.78168	33.33327	6.81333	0.0142026	0.213366473	2.7710700	20	4 15.4	20.7
431909 2008 TH <sub>34</sub>	17.3	X	109.33163	239.37863	171.74782	3.79757	0.1786102	0.19915160	2.9041131	20	3 2.8	21.3
431910 2008 TB <sub>36</sub>	13.6	X	60.48003	97.47089	195.73890	24.18820	0.0871766	0.08300890	5.2045869	20	10 7.1	20.4
431911 2008 TM <sub>39</sub>	17.0	X	271.44947	283.47122	16.65681	4.70992	0.0426198	0.21295797	2.7771976	20	4 4.4	20.7
431912 2008 TQ <sub>46</sub>	17.0	X	217.47672	280.62667	82.78429	4.38951	0.1043755	0.21464743	2.7626058	20	4 17.9	21.2
431913 2008 TQ <sub>47</sub>	17.2	X	186.72503	197.40603	180.71306	7.67271	0.1594199	0.21090283	2.7952100			

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>
431921 2008 TC <sub>73</sub>	16.3	X	243.38534	323.77819	23.94657	8.71554	0.1676249	0.21905979	2.7253834	20	4 17.5	20.6
431922 2008 TM <sub>75</sub>	17.1	X	89.31058	126.29212	34.51414	3.35607	0.0476454	0.21835856	2.7312151	20	6 7.5	20.8
431923 2008 TL <sub>91</sub>	16.6	X	191.85440	222.70172	203.14692	12.26316	0.1215354	0.22251061	2.6971322	20	6 7.5	21.0
431924 2008 TM <sub>91</sub>	16.8	X	219.90967	34.99194	25.70275	11.22601	0.0338493	0.23081540	2.6320423	20	7 10.6	20.6
431925 2008 TR <sub>100</sub>	17.1	X	273.82878	110.99374	226.14745	1.00590	0.0980775	0.22534527	2.6744661	20	5 17.5	20.7
431926 2008 TW <sub>100</sub>	17.2	X	291.78233	20.04218	259.08507	1.19154	0.0379801	0.21500086	2.7595774	20	4 3.3	20.8
431927 2008 TZ <sub>125</sub>	17.1	X	143.96574	102.81301	336.64730	5.84579	0.0251974	0.21692388	2.7432442	20	4 25.9	21.0
431928 2008 TZ <sub>129</sub>	16.9	X	299.18546	302.11847	342.49381	4.82647	0.0137885	0.21621168	2.7492651	20	4 22.5	20.6
431929 2008 TF <sub>130</sub>	16.9	X	138.88444	168.11770	256.65430	3.65189	0.1193248	0.20921834	2.8101934	20	4 11.7	21.1
431930 2008 TA <sub>131</sub>	16.8	X	260.59012	105.00907	218.47386	13.22032	0.1346161	0.21907277	2.7252758	20	4 7.1	20.9
431931 2008 TF <sub>140</sub>	16.3	X	307.57366	291.16181	3.46529	16.29716	0.2230337	0.22778121	2.6553643	20	4 12.3	19.6
431932 2008 TO <sub>144</sub>	17.4	X	179.05984	320.88716	67.94289	1.17413	0.0806098	0.21468891	2.7622499	20	4 8.4	21.6
431933 2008 TE <sub>145</sub>	17.4	X	144.37014	310.02049	117.59359	1.46615	0.0557406	0.21502315	2.7593867	20	4 17.3	21.3
431934 2008 TH <sub>158</sub>	16.8	X	269.34919	52.98553	282.69361	12.59864	0.2101666	0.22574715	2.6712910	20	4 19.4	21.1
431935 2008 TR <sub>158</sub>	14.2	X	252.16252	284.68001	196.05163	24.48865	0.0816963	0.08298266	5.2056843	20	10 7.5	21.2
431936 2008 TR <sub>161</sub>	16.5	X	266.57817	245.87996	88.26301	4.34952	0.0818159	0.21888157	2.7268626	20	5 7.9	20.3
431937 2008 TM <sub>167</sub>	17.3	X	300.83234	284.47578	3.39161	4.51219	0.0883435	0.21902023	2.7271115	20	4 18.7	20.9
431938 2008 TO <sub>168</sub>	16.6	X	340.01159	263.22105	44.29762	14.79178	0.0594852	0.22788440	2.6545627	20	7 24.6	20.1
431939 2008 TL <sub>174</sub>	17.2	X	89.01673	297.75987	200.54351	8.12836	0.1189757	0.21586909	2.7521731	20	5 20.3	21.0
431940 2008 TF <sub>177</sub>	16.9	X	309.47243	119.45808	175.49069	14.12741	0.1791721	0.22722605	2.6596876	20	4 30.7	20.3
431941 2008 TP <sub>184</sub>	17.3	X	346.01109	20.33740	199.82701	1.07037	0.0375932	0.21185714	2.7868097	20	3 31.9	21.0
431942 2008 TR <sub>188</sub>	18.2	X	67.91222	46.67028	12.10235	20.13271	0.0939191	0.36095040	1.9536092	20	—	—
431943 2008 UG <sub>8</sub>	16.9	X	63.42039	206.78369	7.32072	5.75303	0.0175535	0.23233094	2.6205836	20	7 12.4	20.3
431944 2008 UN <sub>11</sub>	17.2	X	157.14219	104.10432	284.82383	2.60181	0.1058102	0.20911851	2.8110877	20	3 16.4	21.5
431945 2008 UR <sub>22</sub>	17.2	X	79.26733	282.72866	185.53661	1.42417	0.0511779	0.20584230	2.8408369	20	3 18.1	21.0
431946 2008 UA <sub>30</sub>	16.9	X	246.04936	157.80210	191.97465	3.99060	0.1286538	0.21819085	2.7326144	20	4 27.6	21.0
431947 2008 UC <sub>30</sub>	17.2	X	226.42222	213.07229	146.87619	1.46299	0.0896212	0.21480233	2.7612775	20	4 22.8	21.2
431948 2008 UH <sub>31</sub>	16.7	X	221.84810	291.09932	68.55259	5.00783	0.1164345	0.21473853	2.7618244	20	4 16.9	20.9
431949 2008 UH <sub>37</sub>	16.3	X	290.24780	309.74758	35.73383	9.54869	0.0486421	0.22487932	2.6781591	20	6 28.8	20.0
431950 2008 UY <sub>39</sub>	17.3	X	285.88095	306.28028	32.33801	5.40194	0.1676374	0.22579223	2.6709354	20	5 23.9	20.7
431951 2008 UJ <sub>52</sub>	17.0	X	271.84370	302.93663	47.95855	6.97275	0.1596437	0.22274587	2.6952327	20	5 23.6	20.6
431952 2008 UD <sub>61</sub>	17.2	X	200.44433	42.83088	334.03715	2.81435	0.1071085	0.21248355	2.7813299	20	4 14.3	21.5
431953 2008 UZ <sub>65</sub>	17.5	X	166.83095	274.57874	35.76934	21.44226	0.0605107	0.35815108	1.9637757	20	—	—
431954 2008 UT <sub>67</sub>	18.2	X	335.12040	134.10967	40.26749	21.67423	0.0628264	0.36276938	1.9470733	20	—	—
431955 2008 UQ <sub>68</sub>	16.8	X	215.33379	310.45518	84.19301	6.70810	0.0184365	0.22241908	2.6978721	20	5 30.2	20.6
431956 2008 UB <sub>75</sub>	16.9	X	248.04052	324.37239	16.69191	4.43990	0.0845002	0.21291288	2.7775897	20	4 22.4	20.8
431957 2008 UF <sub>87</sub>	17.8	X	338.26445	317.30826	227.74387	19.89487	0.0601196	0.36546047	1.9375033	20	—	—
431958 2008 UB <sub>89</sub>	17.0	X	206.86985	287.62834	72.64521	4.94767	0.0860565	0.21443808	2.7644036	20	4 4.2	21.1
431959 2008 UC <sub>96</sub>	17.8	X	57.68909	49.33978	39.59622	22.38790	0.0804805	0.36615061	1.9350679	20	—	—
431960 2008 UJ <sub>102</sub>	17.4	X	183.03008	26.53310	8.77068	2.13290	0.0694325	0.21408249	2.7674638	20	4 19.8	21.6
431961 2008 UF <sub>108</sub>	16.8	X	283.30675	146.43060	169.58786	13.65877	0.1266651	0.22385158	2.6863501	20	4 25.3	20.6
431962 2008 UX <sub>108</sub>	16.8	X	31.09834	51.01907	37.36881	9.07612	0.0607378	0.18334619	3.0687026	20	—	—
431963 2008 UB <sub>109</sub>	17.4	X	44.08050	80.98895	53.84618	22.07749	0.0607196	0.36783756	1.9291471	20	2 21.8	19.8
431964 2008 UM <sub>116</sub>	17.1	X	312.59788	286.64978	25.15979	12.99299	0.2039334	0.22700924	2.6613809	20	5 19.2	20.3
431965 2008 US <sub>118</sub>	17.1	X	336.77311	271.71047	31.01728	16.86737	0.2387493	0.23182809	2.6243717	20	6 24.4	19.7
431966 2008 UD <sub>121</sub>	17.1	X	20.71744	341.95404	323.11542	5.72276	0.3176456	0.24441009	2.5335139	20	10 30.7	20.0
431967 2008 UT <sub>127</sub>	16.2	X	32.28444	56.00060	65.34321	10.45332	0.0683106	0.19024462	2.9940643	20	2 5.5	20.2
431968 2008 UP <sub>130</sub>	17.8	X	9.94334	264.79049	33.63165	3.75157	0.1827229	0.23864708	2.5741388	20	9 11.2	20.2
431969 2008 UB <sub>134</sub>	16.6	X	213.43966	331.64160	42.03554	6.00835	0.0994626	0.21461183	2.7629113	20	4 25.3	20.7
431970 2008 UV <sub>136</sub>	16.1	X	233.70616	107.03568	218.55613	14.03192	0.3270024	0.21551642	2.7551747	20	2 29.7	21.5
431971 2008 UJ <sub>138</sub>	17.0	X	176.98946	349.63489	67.95875	1.91523	0.0619452	0.21460324	2.7629850	20	5 12.0	20.8
431972 2008 UX <sub>141</sub>	17.4	X	87.43316	24.48486	66.29284	1.00827	0.1890430	0.19772566	2.9180587	20	3 28.2	21.3
431973 2008 UO <sub>142</sub>	16.8	X	187.38344	174.18011	187.51456	1.77438	0.0772665	0.20469887	2.8514061	20	3 14.7	21.0
431974 2008 UO <sub>150</sub>	16.6	X	56.74233	192.54407	41.71377	13.73242	0.1344464	0.23190279	2.6238081	20	8 24.9	20.0
431975 2008 UL <sub>152</sub>	17.0	X	24.48767	179.75503	53.00685	4.46030	0.0408771	0.22278802	2.6948928	20	6 13.0	20.3
431976 2008 UJ <sub>157</sub>	16.9	X	166.77953	175.19580	209.36506	1.33224	0.0794190	0.20380705	2.8597183	20	3 20.9	21.3
431977 2008 UR <sub>165</sub>	17.1	X	165.55518	46.70372	49.48369	4.43768	0.0809923	0.22023829	2.7156523	20	6 18.2	21.2
431978 2008 UC <sub>173</sub>	16.8	X	348.62682	257.01969	42.08769	13.72016	0.1953003	0.23175662	2.6249112	20	7 28.6	19.4
431979 2008 UB <sub>174</sub>	16.7	X	232.76297	70.87258	302.29508	4.83721	0.0478631	0.22172536	2.7034964	20	5 19.2	20.6
431980 2008 UM <sub>180</sub>	16.5	X	199.66941	331.07879	41.75180	8.89053	0.1151967	0.20985649	2.8044935	20	4 11.5	20.8
431981 2008 UV <sub>185</sub>	16.7	X	218.34822	294.18346	72.23831	5.93115	0.0764606	0.21122997	2.7923232	20	4 24.4	20.8
431982 2008 UJ <sub>187</sub>	16.1	X	60.37952	349.17800	69.76256	19.20356	0.1879194	0.18408737	3.0604601	20	1 8.8	19.8
431983 2008 UC <sub>192</sub>	16.7	X	263.47737	272.87733	81.09513	5.83616	0.2749724	0.22580910	2.6708024	20	5 5.7	20.9
431984 2008 UK <sub>197</sub>	17.1	X	344.93078	266.08291	69.38234	5.48134	0.3116472	0.24291396	2.5439060	20	9 28.8	18.4
431985 2008 UG <sub>208</sub>	17.2	X	153.62689	41.74318	14.35609	4.33496	0.0664446	0.20971594	2.8057465	20	4 13.4	21.2
431986 2008 UN <sub>209</sub>	17.3	X	282.49606	314.46465	17.60726	3.21435	0.0745492	0.22299961	2.6931879	20	5 25.4	20.8
431987 2008 UR <sub>214</sub>	16.5	X	270.55704	346.37157	351.99444	15.84192	0.1728462	0.22579489	2.6709145	20	4 27.2	20.7
431988 2008 UX <sub>237</sub>	16.4	X	214.33164	294.13907	32.47795	15.34540	0.1697266	0.20654014	2.8344344	20	3 5.1	21.3
431989 2008 UE <sub>251</sub>	17.1	X	244.78070	77.33032	264.31750	0.93210	0.1196199	0.21613909	2.7498806	20	4 15.9	21.2
431990 2008 UM <sub>251</sub>	16.8	X	245.63203	115.57196	232.63843	5.45483	0.0437151	0.21580521	2.7527162	20	5 3.8	20.5
431991 2008 UN <sub>253</sub>	17.0	X	280.00214	268.83856	48.07143	5.48767	0.1118528	0.21860071	2.7291978	20	4 27.3	20.7
431992 2008 UX <sub>256</sub>	16.6	X	173.30956	146.32807	223.20669	14.35927	0.1522602	0.20447774	2.8534616	20	3 8.2	21.5
431993 2008 UY <sub>265</sub>	16.9	X	245.51420	69.16574	255.14120	5.13622	0.0469239	0.21				