

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>		
116001	2003	WD <sub>74</sub>	15.7 <sup>m</sup>	X	211.03138	38.28624	19.20857	4.44269	0.0596533	0.21244717	2.7816474	20	6 20.1	19.7
116002	2003	WH <sub>75</sub>	16.2	X	267.14577	253.62126	192.42905	4.82988	0.0862554	0.28530337	2.2852381	20	10 18.5	18.4
116003	2003	WN <sub>75</sub>	15.5	X	255.13823	338.02738	19.80164	3.80426	0.0918226	0.21236847	2.7823346	20	5 21.6	19.3
116004	2003	WB <sub>76</sub>	15.1	X	6.47503	46.47794	320.25489	8.42107	0.0777867	0.17439720	3.1728026	20	11 5.9	19.5
116005	2003	WL <sub>77</sub>	15.1	X	143.79647	301.18971	17.13748	1.49620	0.1081322	0.18669601	3.0318848	20	—	—
116006	2003	WA <sub>78</sub>	14.7	X	199.09829	281.79160	273.11412	8.81431	0.0935413	0.17380380	3.1800201	20	11 17.4	19.5
116007	2003	WJ <sub>78</sub>	15.8	X	6.72878	195.00856	299.72504	5.02704	0.0719414	0.25193689	2.4827989	20	—	—
116008	2003	WE <sub>79</sub>	14.4	X	78.11355	270.91930	37.53372	7.81546	0.0585458	0.17496554	3.1659280	20	11 25.1	19.1
116009	2003	WT <sub>79</sub>	15.0	X	266.59683	133.08093	316.61912	4.09973	0.0952852	0.16823971	3.2497532	20	9 27.1	19.6
116010	2003	WP <sub>80</sub>	14.8	X	25.94288	321.92395	266.84817	12.38414	0.0860003	0.21001916	2.8030452	20	6 13.7	18.1
116011	2003	WQ <sub>80</sub>	15.6	X	293.95237	14.63044	112.60236	16.53717	0.1177084	0.23686646	2.5870232	20	—	—
116012	2003	WU <sub>81</sub>	14.9	X	5.83333	55.76828	70.49156	15.29671	0.1604758	0.18784370	3.0195227	20	—	—
116013	2003	WU <sub>82</sub>	15.2	X	180.40531	293.17681	176.98844	15.60587	0.1343217	0.21296510	2.7771356	20	7 19.3	19.9
116014	2003	WA <sub>83</sub>	15.5	X	272.28987	78.30414	355.60620	12.45976	0.1308321	0.22718966	2.6599717	20	9 20.0	18.6
116015	2003	WE <sub>83</sub>	15.6	X	160.31633	24.59939	147.19594	13.90571	0.1044649	0.22283960	2.6944769	20	9 21.4	19.8
116016	2003	WK <sub>83</sub>	15.4	X	12.25290	32.65268	348.56093	10.50133	0.1401695	0.23572772	2.5953481	20	—	—
116017	2003	WN <sub>84</sub>	15.1	X	125.28316	0.60818	90.64283	10.48583	0.1019787	0.20642749	2.8354654	20	5 3.7	19.4
116018	2003	WS <sub>84</sub>	14.6	X	14.53303	332.67506	99.03685	13.51209	0.1273898	0.18266042	3.0763783	20	—	—
116019	2003	WT <sub>84</sub>	15.7	X	152.17399	318.64213	196.70228	7.68172	0.1480463	0.21625388	2.7489074	20	8 18.3	20.3
116020	2003	WS <sub>86</sub>	14.6	X	290.41577	56.73066	87.53885	11.60141	0.1002185	0.17223482	3.1993033	20	—	—
116021	2003	WG <sub>86</sub>	14.8	X	332.74295	240.67607	175.90455	15.86067	0.0988937	0.17653118	3.1471814	20	11 25.9	19.0
116022	2003	WM <sub>87</sub>	14.7	X	212.31603	18.27310	101.24906	18.42110	0.2124757	0.21606511	2.7505083	20	9 3.0	19.4
116023	2003	WN <sub>87</sub>	16.2	X	247.84553	333.42784	88.39215	9.22602	0.2033182	0.27513069	2.3412261	20	7 27.3	19.4
116024	2003	WR <sub>87</sub>	15.1	X	322.69929	239.07000	133.97854	13.62822	0.1482949	0.22749758	2.6575709	20	9 24.6	18.0
116025	2003	WS <sub>87</sub>	15.2	X	359.38329	261.11619	113.68565	5.47904	0.2082390	0.23310416	2.6147853	20	12 12.0	17.9
116026	2003	WP <sub>88</sub>	16.1	X	115.75907	282.83396	315.37520	2.61067	0.1247782	0.28924601	2.2644242	20	11 5.1	19.5
116027	2003	WV <sub>88</sub>	17.0	X	84.36140	310.16947	138.83543	1.62185	0.1536521	0.25662897	2.4524430	20	3 10.0	19.8
116028	2003	WJ <sub>89</sub>	15.5	X	174.98394	230.17469	234.71173	5.72305	0.0814103	0.21425668	2.7659637	20	7 9.1	19.8
116029	2003	WO <sub>89</sub>	16.8	X	209.44588	83.55454	45.82798	7.35100	0.0504810	0.28442377	2.2899471	20	10 4.9	19.7
116030	2003	WY <sub>90</sub>	15.6	X	345.49893	183.70920	125.16351	3.34934	0.0454852	0.21884182	2.7271928	20	7 30.5	18.7
116031	2003	WR <sub>91</sub>	14.7	X	197.87456	72.21794	130.13052	5.75294	0.0452856	0.17590090	3.1546947	20	12 1.8	19.3
116032	2003	WQ <sub>92</sub>	15.7	X	196.30036	294.96897	268.56695	8.84251	0.0281242	0.23588813	2.5941713	20	12 15.7	19.3
116033	2003	WY <sub>92</sub>	15.8	X	326.09116	327.88954	276.89701	5.70880	0.0794218	0.26417353	2.4055249	20	3 22.9	18.6
116034	2003	WH <sub>95</sub>	16.0	X	304.01014	196.65134	85.35911	2.62329	0.1787091	0.26802576	2.3824202	20	3 30.8	18.9
116035	2003	WN <sub>96</sub>	14.9	X	188.51505	124.59104	46.36621	4.57664	0.0799426	0.16948844	3.2337715	20	10 11.9	19.7
116036	2003	WX <sub>97</sub>	14.0	X	306.57805	35.47788	101.69385	24.61428	0.1248441	0.17328755	3.1863329	20	—	—
116037	2003	WY <sub>99</sub>	15.3	X	240.95804	152.32965	5.24570	13.19739	0.0928285	0.23418241	2.6067530	20	11 30.5	19.0
116038	2003	WU <sub>99</sub>	16.4	X	76.16532	164.03243	47.61307	7.43120	0.0680066	0.27423952	2.3462954	20	8 9.6	19.4
116039	2003	WZ <sub>99</sub>	15.6	X	227.68194	93.63019	305.06186	2.95370	0.1049236	0.21272708	2.7792068	20	6 10.8	19.6
116040	2003	WQ <sub>100</sub>	13.8	X	286.33137	192.48811	274.71936	19.30775	0.1454336	0.17640519	3.1486796	20	11 8.2	18.1
116041	2003	WZ <sub>100</sub>	14.7	X	298.85692	47.67664	93.09681	11.90556	0.0302545	0.18582350	3.0413679	20	—	—
116042	2003	WA <sub>101</sub>	14.3	X	250.78422	161.65982	84.53200	18.30704	0.1402530	0.19727921	2.9224595	20	—	—
116043	2003	WV <sub>101</sub>	16.7	X	112.90075	277.52860	227.76472	10.54172	0.0943662	0.27042505	2.3683076	20	6 24.3	20.0
116044	2003	WE <sub>102</sub>	15.7	X	32.49632	54.42140	48.84068	0.27568	0.1128213	0.18988771	2.9978149	20	1 11.8	19.4
116045	2003	WR <sub>102</sub>	14.4	X	28.56821	64.72499	323.10081	15.21918	0.1537718	0.18078670	3.0975981	20	—	—
116046	2003	WZ <sub>102</sub>	15.2	X	214.64021	3.66985	317.29282	14.34635	0.1563086	0.26074191	2.4265849	20	2 14.5	19.0
116047	2003	WR <sub>104</sub>	15.4	X	68.67931	179.63464	82.32811	6.20004	0.1809099	0.22244017	2.6977016	20	9 24.1	19.1
116048	2003	WC <sub>105</sub>	14.9	X	357.47148	117.46523	232.51590	5.06047	0.1996433	0.22928141	2.6437689	20	10 30.6	17.4
116049	2003	WE <sub>105</sub>	14.8	X	113.71841	156.59343	78.77990	13.92274	0.1036260	0.22740994	2.6582536	20	10 26.6	19.0
116050	2003	WL <sub>105</sub>	15.1	X	27.27328	305.37291	263.69188	5.53038	0.0586114	0.20610936	2.8383824	20	5 16.5	18.7
116051	2003	WM <sub>106</sub>	15.1	X	196.13266	66.72684	359.97771	16.89766	0.1499720	0.20905528	2.8116545	20	6 8.9	20.0
116052	2003	WT <sub>106</sub>	14.5	X	348.12361	52.23622	74.66718	17.66311	0.2034036	0.17746318	3.1361528	20	—	—
116053	2003	WD <sub>107</sub>	14.8	X	296.81694	199.15456	243.17616	21.32022	0.0412837	0.23038553	2.6353153	20	11 18.8	18.0
116054	2003	WO <sub>107</sub>	15.8	X	232.35060	231.65394	181.91116	2.18965	0.0635071	0.21511546	2.7585972	20	7 10.3	19.6
116055	2003	WQ <sub>107</sub>	15.1	X	2.66397	29.49228	39.59496	15.16313	0.0749255	0.23568256	2.5956796	20	—	—
116056	2003	WS <sub>107</sub>	15.0	X	349.41020	30.36978	18.39595	12.99916	0.1626562	0.23142666	2.6274056	20	—	—
116057	2003	WV <sub>107</sub>	14.0	X	52.15715	248.74852	72.74409	30.18232	0.3327191	0.22915666	2.6447283	20	12 23.3	18.4
116058	2003	WB <sub>108</sub>	16.3	X	90.27927	279.03293	273.02689	6.03630	0.0521061	0.27859023	2.3218035	20	7 25.3	19.2
116059	2003	WG <sub>110</sub>	15.9	X	148.28599	43.48894	305.43447	3.73418	0.0927166	0.19391295	2.9561844	20	1 21.2	20.4
116060	2003	WL <sub>111</sub>	15.8	X	225.43665	87.82303	355.70206	2.80443	0.0886303	0.21946852	2.7219985	20	8 8.9	19.8
116061	2003	WO <sub>111</sub>	16.9	X	166.49920	231.36753	327.59735	2.00255	0.0501118	0.28878081	2.2668555	20	11 11.6	19.8
116062	2003	WN <sub>115</sub>	15.1	X	309.03444	131.01125	8.82317	5.19215	0.1150703	0.18065215	3.0991359	20	—	—
116063	2003	WM <sub>117</sub>	15.3	X	114.87680	15.06226	355.03164	4.27507	0.1933668	0.19142182	2.9817765	20	1 23.7	19.6
116064	2003	WA <sub>118</sub>	15.7	X	327.73570	40.14752	1.47054	3.64338	0.2051726	0.23045792	2.6347634	20	11 11.9	17.9
116065	2003	WX <sub>118</sub>	15.7	X	239.82833	32.98908	45.42887	5.67778	0.0904817	0.21950312	2.7217125	20	8 21.5	19.5
116066	2003	WC <sub>119</sub>	14.7	X	45.88019	341.33664	63.28912	11.96732	0.0777705	0.18283841	3.0743815	20	—	—
116067	2003	WF <sub>119</sub>	16.3	X	5.15100	283.37688	54.65756	6.29708	0.1960157	0.28750327	2.2735658	20	11 14.1	18.4
116068	2003	WV <sub>119</sub>	15.0	X	36.48684	47.21450	55.83137	7.46412	0.0860110	0.18923837	3.0046686	20	1 18.4	18.8
116069	2003	WR <sub>120</sub>	14.6	X	119.60261	329.97542	63.03235	11.17453	0.1124349	0.19324504	2.9629920	20	2 18.6	19.1
116070	2003	WV <sub>120</sub>	15.1	X	356.59936									

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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>
116081 2003 WM <sub>124</sub>	15.7	X	11.44015	294.24573	40.36539	6.54749	0.0754798	0.22639853	2.6661648	20	10 18.2	18.8
116082 2003 WZ <sub>124</sub>	14.9	X	211.18394	169.55039	52.66462	7.92606	0.2241432	0.23375034	2.6099642	20	12 31.6	18.8
116083 2003 WA <sub>125</sub>	14.3	X	262.48846	44.49715	291.29678	7.31048	0.3341208	0.21159794	2.7890851	20	4 2.2	19.1
116084 2003 WB <sub>125</sub>	15.6	X	355.33321	76.03069	62.68032	10.93971	0.1157391	0.24544660	2.5263763	20	—	—
116085 2003 WK <sub>125</sub>	15.4	X	238.95242	181.14072	290.16928	7.08405	0.0572213	0.22255174	2.6967999	20	10 1.1	19.2
116086 2003 WU <sub>125</sub>	14.5	X	126.32903	330.96394	70.31975	12.23933	0.1113979	0.19350240	2.9603642	20	3 8.6	19.1
116087 2003 WX <sub>125</sub>	13.9	X	0.63871	328.07169	84.26743	28.59667	0.1757078	0.17503191	3.1651277	20	—	—
116088 2003 WY <sub>125</sub>	15.4	X	68.38765	292.86792	50.12644	3.68307	0.2458676	0.23683377	2.5872613	20	—	—
116089 2003 WA <sub>126</sub>	14.8	X	170.33829	140.60314	79.75278	12.61006	0.1305173	0.22638082	2.6630338	20	11 27.8	18.9
116090 2003 WC <sub>126</sub>	13.7	X	84.46682	286.25161	69.42152	13.40926	0.1498017	0.17966385	3.1104907	20	—	—
116091 2003 WG <sub>126</sub>	14.9	X	338.50920	272.91674	76.53660	13.24664	0.2256763	0.22214126	2.7001210	20	9 26.1	17.5
116092 2003 WJ <sub>126</sub>	15.2	X	250.10845	114.44338	80.80138	11.22958	0.0742563	0.23568134	2.5956886	20	—	—
116093 2003 WK <sub>126</sub>	14.5	X	269.89071	208.70850	86.86150	14.82090	0.0513104	0.19716902	2.9235483	20	4 4.9	18.9
116094 2003 WZ <sub>126</sub>	14.4	X	258.19766	76.82224	70.11661	14.56604	0.0294058	0.17162974	3.2068183	20	12 6.1	19.0
116095 2003 WD <sub>127</sub>	15.6	X	334.37812	350.75661	25.97335	2.49405	0.2152676	0.22652251	2.6651918	20	10 20.5	17.6
116096 2003 WE <sub>127</sub>	14.2	X	229.46726	131.23483	70.32096	6.10909	0.1196641	0.17331010	3.1860565	20	12 25.3	18.9
116097 2003 WJ <sub>127</sub>	15.2	X	239.68543	71.31011	69.48445	12.76584	0.1307372	0.22561914	2.6723013	20	11 6.1	18.9
116098 2003 WU <sub>127</sub>	14.1	X	232.09897	276.68376	289.43722	20.28102	0.1728110	0.17270335	3.1935143	20	12 28.0	18.8
116099 2003 WY <sub>127</sub>	14.3	X	51.76419	87.86380	326.36279	15.17217	0.1345331	0.18393733	3.0621241	20	—	—
116100 2003 WB <sub>128</sub>	14.7	X	310.51263	58.67226	95.88435	18.68495	0.1822599	0.17509565	3.1643595	20	—	—
116101 2003 WM <sub>131</sub>	16.7	X	140.72183	334.19337	324.76456	3.38667	0.0758532	0.30210146	2.1997205	20	—	—
116102 2003 WL <sub>132</sub>	16.6	X	223.10610	322.75632	237.19696	4.28688	0.0805720	0.29677607	2.2259571	20	—	—
116103 2003 WT <sub>132</sub>	16.1	X	324.08477	296.63331	62.34208	1.89993	0.0947482	0.22376352	2.6870549	20	9 4.9	19.1
116104 2003 WB <sub>133</sub>	16.1	X	197.86533	314.57353	208.53447	1.89314	0.0165190	0.22819378	2.6521628	20	10 26.8	19.7
116105 2003 WZ <sub>133</sub>	16.3	X	247.21975	338.48109	251.97331	4.42872	0.1281161	0.30661279	2.1780902	20	—	—
116106 2003 WC <sub>134</sub>	15.9	X	168.52912	53.85886	65.76313	7.18583	0.0453835	0.27480483	2.3430766	20	7 27.9	19.1
116107 2003 WE <sub>134</sub>	16.5	X	215.93734	317.64167	240.43037	5.23978	0.0945513	0.29511038	2.2343253	20	—	—
116108 2003 WR <sub>134</sub>	15.3	X	341.88429	322.57661	68.33532	13.62034	0.0781482	0.23080956	2.6320867	20	11 19.4	18.3
116109 2003 WT <sub>134</sub>	16.6	X	298.83727	66.45905	72.95742	4.12782	0.0700315	0.29912377	2.2142948	20	—	—
116110 2003 WV <sub>134</sub>	16.2	X	192.74188	15.65154	78.12917	5.24096	0.1043183	0.27408180	2.3471955	20	7 17.9	19.6
116111 2003 WD <sub>135</sub>	14.6	X	246.64177	303.17472	253.27221	14.75929	0.1031169	0.17946185	3.1128244	20	—	—
116112 2003 WL <sub>135</sub>	15.2	X	260.51767	154.52163	241.73237	8.71465	0.1619971	0.21805170	2.7337769	20	7 7.7	19.2
116113 2003 WW <sub>135</sub>	15.3	X	196.47573	53.32273	60.09256	9.36199	0.0271256	0.21820508	2.7324957	20	8 22.9	19.2
116114 2003 WZ <sub>135</sub>	15.5	X	280.22793	280.02646	53.44085	4.79081	0.1087427	0.21150533	2.7898991	20	5 19.5	19.3
116115 2003 WL <sub>136</sub>	14.0	X	322.70093	148.59052	248.66617	20.73845	0.0539880	0.16832988	3.2485925	20	10 8.6	18.7
116116 2003 WY <sub>136</sub>	14.7	X	78.01096	123.20281	245.15524	8.53492	0.1000517	0.18313859	3.0710211	20	—	—
116117 2003 WG <sub>137</sub>	14.3	X	315.34778	215.00783	257.84063	8.01502	0.0452007	0.17782119	3.1319420	20	—	—
116118 2003 WH <sub>137</sub>	15.3	X	7.56036	102.17711	345.30784	0.79422	0.1559101	0.18229046	3.0805394	20	—	—
116119 2003 WU <sub>137</sub>	16.0	X	332.19346	297.33650	78.16384	7.47047	0.1269141	0.28637814	2.2795168	20	10 31.7	18.0
116120 2003 WP <sub>138</sub>	15.6	X	32.55880	277.55480	90.75518	4.74176	0.1242848	0.23526358	2.5987604	20	—	—
116121 2003 WU <sub>138</sub>	15.6	X	299.51391	48.89595	72.90510	8.42079	0.1804858	0.23427093	2.6060962	20	—	—
116122 2003 WD <sub>139</sub>	16.2	X	172.81374	263.99882	201.39521	1.76706	0.1705229	0.27068286	2.3668036	20	7 9.8	20.0
116123 2003 WL <sub>139</sub>	15.9	X	41.43589	344.27940	79.15184	3.73025	0.1856843	0.24432277	2.5341175	20	—	—
116124 2003 WU <sub>139</sub>	14.7	X	328.41307	75.00590	76.37238	4.80064	0.2149286	0.18183831	3.0856438	20	—	—
116125 2003 WY <sub>139</sub>	14.9	X	245.73421	19.91277	80.73904	14.40848	0.1298152	0.22271573	2.6954759	20	9 27.8	18.9
116126 2003 WA <sub>140</sub>	15.8	X	50.71096	288.03217	108.89237	2.00812	0.1215398	0.24166476	2.5526651	20	—	—
116127 2003 WL <sub>140</sub>	16.6	X	113.24065	347.78586	63.21572	3.40401	0.0797089	0.25492003	2.4633913	20	2 17.8	19.7
116128 2003 WN <sub>140</sub>	15.0	X	18.51682	225.88348	249.50913	9.86894	0.1234528	0.18789058	3.0190203	20	1 3.6	18.6
116129 2003 WO <sub>140</sub>	15.3	X	61.17661	293.55676	73.05098	3.99041	0.1688517	0.24063266	2.5599590	20	—	—
116130 2003 WB <sub>141</sub>	14.7	X	197.72949	256.57555	82.50298	12.88570	0.0595155	0.19561905	2.9389709	20	3 5.2	19.3
116131 2003 WS <sub>141</sub>	15.0	X	231.60469	223.69574	262.61106	10.72755	0.1459408	0.22244745	2.6976427	20	9 27.7	19.2
116132 2003 WA <sub>142</sub>	14.6	X	25.80673	320.47209	91.49470	12.47897	0.1916207	0.17907246	3.1173353	20	—	—
116133 2003 WO <sub>142</sub>	15.2	X	40.85468	179.78434	87.67308	25.79385	0.1860224	0.27479622	2.3431255	20	10 11.9	18.8
116134 2003 WZ <sub>142</sub>	12.5	X	337.10708	187.43554	53.74774	7.71493	0.0577500	0.08417071	5.1565834	20	4 23.2	19.0
116135 2003 WC <sub>144</sub>	17.0	X	132.05436	301.08744	156.84476	1.20416	0.1464086	0.26589800	2.3951130	20	5 19.7	20.5
116136 2003 WH <sub>144</sub>	16.5	X	92.26253	93.65510	51.61211	8.24628	0.0469198	0.26797325	2.3827314	20	5 20.6	19.5
116137 2003 WC <sub>145</sub>	14.9	X	354.24842	6.56690	58.37735	8.07366	0.2269096	0.17943240	3.1131650	20	—	—
116138 2003 WK <sub>145</sub>	16.1	X	215.03096	281.56744	130.89202	0.61762	0.0657748	0.21322271	2.7748983	20	6 17.9	20.2
116139 2003 WA <sub>146</sub>	14.4	X	310.98083	109.26637	358.89005	15.82129	0.2256579	0.17645386	3.1481006	20	12 17.2	18.0
116140 2003 WP <sub>146</sub>	14.5	X	330.34377	282.12805	185.96309	21.40256	0.2366197	0.17985015	3.1083423	20	—	—
116141 2003 WA <sub>149</sub>	16.4	X	50.49533	193.02338	52.41440	7.96254	0.0812016	0.27728309	2.3290946	20	8 25.1	19.2
116142 2003 WA <sub>150</sub>	16.2	X	311.83590	242.11247	95.02904	7.32565	0.1437241	0.27888853	2.3201476	20	7 11.4	18.1
116143 2003 WO <sub>152</sub>	15.5	X	94.27361	9.20481	268.88084	8.32825	0.0970001	0.23376695	2.6098405	20	11 21.9	19.4
116144 2003 WM <sub>153</sub>	14.6	X	286.75584	327.39058	156.57954	17.73067	0.2242126	0.17332406	3.1858853	20	11 25.8	18.8
116145 2003 WA <sub>156</sub>	14.9	X	258.81429	1.09771	142.25620	7.38780	0.1314894	0.17302284	3.1895819	20	11 21.3	19.3
116146 2003 WJ <sub>156</sub>	15.3	X	257.56892	268.22674	177.67712	13.44076	0.1644581	0.22351812	2.6890212	20	9 8.9	18.8
116147 2003 WM <sub>157</sub>	17.0	X	55.66065	161.18656	176.74477	5.31533	0.2500249	0.29706610	2.2245081	20	—	—
116148 2003 WN <sub>157</sub>	16.3	X	267.63707	89.55690	81.41935	9.60081	0.0606009	0.29983262	2.2108034	20	—	—
116149 2003 WU <sub>158</sub>	16.0	X	6.90362	338.44042	100.38902	3.79906	0.0501864	0.24219643	2.5489279	20	—	—
116150 2003 WD <sub>163</sub>	15.3	X	284.39187	347.30779	113.48531	14.38142	0.1248181	0.22946132	2.6423868	20	11 21.4	18.6
116151 2003 WR <sub>164</sub>	16.0	X	32.97186	348.41120	235.58785	2.49372	0.0322141	0.21010362	2.8022940	20	6 12.7	19.5
116152 2003 WX <sub>165</sub>	14.4	X	329.17298	204.61688	228.08436	6.79615	0.1587866	0.17536444	3.1611251	20	12 8.7	17.9
116153 2003 WO <sub>166</sub>	14.7	X	51.91884	321.03151	53.25332	10.12495	0.0533586	0.18505153	3.0498204	20	—	—
116154 2003 WA <sub>168</sub>	13.7	X	4.60444	258.45665	77.01636	18.43575						

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>		
116161	2003	WS <sub>176</sub>	16.8	X	27.18443	117.79064	82.18617	3.53382	0.1310880	0.26376474	2.4080096	20	5 8.8	19.0
116162	2003	WL <sub>181</sub>	15.4	X	6.75420	348.78275	32.29698	2.62511	0.0959691	0.23188072	2.6239746	20	12 14.8	18.6
116163	2003	WW <sub>181</sub>	15.6	X	348.67246	306.78852	71.27422	4.17232	0.0911576	0.22707087	2.6608993	20	11 12.0	18.6
116164	2003	WD <sub>190</sub>	14.7	X	303.53558	190.91446	322.15612	17.33089	0.1835106	0.18116429	3.0932925	20	—	—
116165	2003	WU <sub>190</sub>	15.2	X	327.91615	260.38132	115.93300	15.64573	0.0424390	0.23084781	2.6317959	20	10 14.9	18.8
116166	Andrémaeder		15.2	X	28.81233	170.14191	222.01091	5.15697	0.2360682	0.17965234	3.1106236	20	—	—
116167	2003	XG <sub>1</sub>	15.5	X	169.08993	18.66200	85.33200	9.08915	0.1857058	0.21081522	2.7959844	20	7 2.9	20.1
116168	2003	XR <sub>1</sub>	16.4	X	341.78054	290.60784	281.50197	8.47366	0.1065426	0.25992384	2.4316737	20	2 26.4	19.3
116169	2003	XL <sub>2</sub>	14.6	X	324.86814	30.57769	79.83845	22.84161	0.1401117	0.17925814	3.1151823	20	—	—
116170	2003	XW <sub>2</sub>	14.9	X	218.70141	260.75227	85.74844	13.71037	0.1436088	0.20478263	2.8506286	20	4 2.5	19.7
116171	2003	XX <sub>2</sub>	14.9	X	122.21793	194.84389	88.12414	12.84927	0.1737362	0.23718830	2.5846826	20	12 29.1	19.0
116172	2003	XE <sub>3</sub>	14.5	X	212.02038	11.78362	94.83151	9.29910	0.1348656	0.16011618	3.3587621	20	8 16.0	19.8
116173	2003	XF <sub>3</sub>	15.8	X	145.99181	231.58180	184.12186	3.88038	0.1502021	0.20181279	2.8785267	20	4 12.5	20.2
116174	2003	XR <sub>3</sub>	15.7	X	59.04522	299.89201	158.34728	5.29405	0.1652516	0.19189477	2.9768752	20	2 21.8	19.0
116175	2003	XZ <sub>3</sub>	15.1	X	100.36227	220.07736	121.08441	10.29388	0.2046023	0.24329554	2.5412455	20	—	—
116176	2003	XC <sub>4</sub>	16.3	X	271.66381	107.41422	124.71819	2.95047	0.1113254	0.31146777	2.1553972	20	—	—
116177	2003	XN <sub>4</sub>	15.3	X	52.11757	276.09987	151.70644	4.82301	0.0754709	0.18785616	3.0193820	20	—	—
116178	2003	XP <sub>4</sub>	15.5	X	249.14117	311.12499	224.32451	11.71783	0.1273027	0.23386465	2.6091137	20	12 31.3	18.9
116179	2003	XU <sub>4</sub>	15.6	X	44.42199	265.45995	117.60031	13.32354	0.1768373	0.23721121	2.5845161	20	—	—
116180	2003	XW <sub>4</sub>	16.1	X	133.76343	167.08145	72.30423	2.82709	0.0474063	0.22965883	2.6408716	20	11 14.9	19.9
116181	2003	XB <sub>5</sub>	14.5	X	158.06893	280.73892	77.18811	12.37401	0.1820635	0.19131694	2.9828662	20	2 22.3	19.6
116182	2003	XQ <sub>5</sub>	15.0	X	33.82438	104.57629	18.43152	9.16836	0.0998229	0.19336369	2.9617798	20	2 10.9	18.7
116183	2003	XD <sub>6</sub>	14.8	X	326.54167	162.91831	313.50354	10.67513	0.0681970	0.17977739	3.1091810	20	—	—
116184	2003	XH <sub>6</sub>	14.7	X	313.10944	71.05148	32.96418	9.25055	0.2302717	0.17403958	3.1771474	20	12 14.8	18.0
116185	2003	XK <sub>6</sub>	15.5	X	204.30781	266.12977	296.09070	11.77608	0.1041827	0.23329626	2.6133497	20	12 13.7	19.3
116186	2003	XZ <sub>7</sub>	15.2	X	240.21111	22.90898	28.17036	13.45341	0.1397618	0.21322829	2.7748499	20	7 9.2	19.6
116187	2003	XG <sub>8</sub>	15.7	X	318.22903	10.60733	119.20454	4.70307	0.1551018	0.23876635	2.5732815	20	—	—
116188	2003	XE <sub>9</sub>	14.6	X	44.97626	12.73067	0.59078	12.93218	0.1752436	0.17951830	3.1121718	20	—	—
116189	2003	XL <sub>9</sub>	15.2	X	81.24393	1.07010	324.01486	13.88908	0.0984178	0.23573366	2.5953045	20	—	—
116190	2003	XS <sub>9</sub>	15.8	X	301.64099	161.65402	308.80281	3.79944	0.0863707	0.23414166	2.6070554	20	—	—
116191	2003	XG <sub>10</sub>	14.8	X	55.77690	359.84552	11.78859	16.97441	0.1736380	0.23709811	2.5853380	20	—	—
116192	2003	XS <sub>10</sub>	14.1	X	129.04470	269.32714	99.93737	16.62012	0.0609747	0.17808435	3.1288557	20	1 23.4	18.6
116193	2003	XK <sub>11</sub>	15.1	X	81.26359	324.06630	128.09319	9.85256	0.2259496	0.19537007	2.9414673	20	3 31.3	19.1
116194	2003	XV <sub>11</sub>	14.4	X	294.13598	289.56486	187.38486	24.82822	0.2416407	0.17480957	3.1678109	20	11 25.4	18.4
116195	2003	XY <sub>11</sub>	14.6	X	159.46406	327.42734	218.52885	23.94106	0.0911027	0.22073518	2.7115753	20	10 2.2	19.0
116196	2003	XD <sub>13</sub>	15.6	X	78.89875	249.45295	146.76902	2.64025	0.1841742	0.18917471	3.0053426	20	1 7.7	19.3
116197	2003	XC <sub>14</sub>	14.5	X	106.34985	0.88764	11.80066	12.04576	0.2812510	0.18911727	3.0059511	20	2 1.4	19.1
116198	2003	XJ <sub>14</sub>	14.5	X	290.15921	62.63332	27.67858	21.95984	0.0975756	0.22875081	2.6478555	20	11 8.9	17.8
116199	2003	XN <sub>14</sub>	14.6	X	337.15337	22.42830	73.28860	25.89385	0.2601047	0.17832433	3.1260481	20	—	—
116200	2003	XY <sub>14</sub>	14.6	X	280.68052	285.65662	27.51300	22.49143	0.2319898	0.26516276	2.3995384	20	4 7.0	18.0
116201	2003	XS <sub>15</sub>	15.5	X	234.06102	77.81277	35.35726	12.93626	0.1302937	0.22067894	2.7120361	20	9 26.0	19.5
116202	2003	XE <sub>19</sub>	15.5	X	273.05543	249.39156	231.56537	14.21397	0.0910000	0.23147667	2.6270272	20	11 30.9	18.6
116203	2003	XQ <sub>20</sub>	16.9	X	105.18904	58.07561	47.63451	3.33678	0.1241759	0.26059836	2.4274759	20	4 25.8	20.0
116204	2003	XD <sub>22</sub>	15.4	X	134.96796	263.81158	170.70921	12.68917	0.1292403	0.20200420	2.8767080	20	4 25.2	19.9
116205	2003	XR <sub>22</sub>	15.7	X	345.91754	300.02766	153.03672	16.01679	0.1529950	0.23863877	2.5741986	20	—	—
116206	2003	XZ <sub>32</sub>	15.4	X	252.17649	21.88057	118.09703	2.56508	0.1272040	0.17190577	3.2033845	20	11 8.3	19.8
116207	2003	XS <sub>34</sub>	15.2	X	219.07398	180.86978	309.30292	14.01298	0.0738770	0.22767608	2.6561817	20	9 25.4	19.3
116208	2003	XY <sub>34</sub>	15.2	X	271.98523	153.48754	337.31486	14.16761	0.0720788	0.23672390	2.5880618	20	12 15.7	18.7
116209	2003	XC <sub>35</sub>	15.6	X	210.70427	263.43360	74.39167	3.19243	0.0687319	0.20056385	2.8904643	20	3 12.5	19.9
116210	2003	XT <sub>35</sub>	15.1	X	356.92881	285.85265	45.81901	15.06709	0.1008271	0.22360758	2.6883039	20	9 29.7	18.4
116211	2003	XA <sub>36</sub>	14.7	X	300.27480	134.62699	3.44435	9.52399	0.0506854	0.17893136	3.1189738	20	—	—
116212	2003	XP <sub>36</sub>	15.0	X	197.32801	119.93907	40.14237	13.58900	0.1395835	0.22337951	2.6901335	20	10 12.9	19.2
116213	2003	XS <sub>36</sub>	15.2	X	90.22793	8.45736	38.12751	9.33602	0.0860090	0.18967120	3.0000958	20	1 25.2	19.4
116214	2003	XA <sub>37</sub>	14.7	X	254.07664	307.50434	303.22346	11.41866	0.0677333	0.18801197	3.0177207	20	1 15.1	19.1
116215	2003	XW <sub>39</sub>	15.5	X	304.58830	187.75072	165.62857	15.09341	0.1294878	0.22145073	2.7057312	20	7 18.2	19.0
116216	2003	XA <sub>41</sub>	16.6	X	79.42570	347.43772	267.16337	4.92075	0.1409762	0.28274841	2.2989839	20	10 18.2	19.8
116217	2003	XK <sub>41</sub>	14.6	X	120.44340	303.88584	94.26075	13.33295	0.1533050	0.19297779	2.9657269	20	3 2.2	19.2
116218	2003	XQ <sub>42</sub>	15.6	X	210.39015	76.29171	7.71497	12.04099	0.1764363	0.21452268	2.7636768	20	7 18.6	20.3
116219	2003	YH	14.8	X	318.45068	281.80757	177.65021	25.15045	0.1988786	0.17519928	3.1631115	20	12 22.9	18.8
116220	2003	YO <sub>2</sub>	16.7	X	258.47796	27.81080	233.37883	1.78974	0.0837315	0.31306428	2.1480631	20	1 11.5	19.6
116221	2003	YU <sub>3</sub>	15.5	X	217.49299	1.24220	306.80742	19.78508	0.0842373	0.37071898	1.9191378	20	1 20.5	17.8
116222	2003	YV <sub>3</sub>	15.8	X	285.97129	14.55500	130.24024	5.52087	0.1914009	0.23585591	2.5944076	20	—	—
116223	2003	YD <sub>4</sub>	15.3	X	37.63945	233.13683	202.92348	9.95488	0.1089590	0.18655972	3.0333612	20	—	—
116224	2003	YN <sub>4</sub>	16.2	X	89.26022	355.01559	92.94542	3.28897	0.0913929	0.25254444	2.4788154	20	3 7.7	19.2
116225	2003	YS <sub>4</sub>	17.0	X	182.99148	205.35556	210.48315	6.10191	0.1360125	0.26796057	2.3828066	20	5 16.3	20.6
116226	2003	YU <sub>4</sub>	14.8	X	340.01668	320.21565	109.23602	10.93984	0.0696255	0.17680912	3.1438823	20	12 19.9	18.9
116227	2003	YX <sub>4</sub>	14.6	X	281.01660	123.38026	96.70952	16.37270	0.0705405	0.19043531	2.9920653	20	1 7.1	18.9
116228	2003	YZ <sub>4</sub>	14.7	X	319.05807	248.39829	173.05145	5.12185	0.1591403	0.17241626	3.1970584	20	11 6.0	18.4
116229	2003	YF <sub>5</sub>	15.3	X	314.11619	236.60093	236.47544	14.16958	0.0934718	0.23719382	2.5846425	20	—	—
116230	2003	YH <sub>5</sub>	16.1	X	333.40649	302.45870	201.22733	3.63208	0.1397678	0.24405695	2.5359573	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>
116241 2003 YE <sub>14</sub>	14.9	X	308.46403	145.14890	46.24123	12.20354	0.1186304	0.18390662	3.0624651	20	—	—
116242 2003 YY <sub>14</sub>	16.1	X	50.83036	330.71367	12.46427	5.13840	0.1870966	0.29304616	2.2448054	20	—	—
116243 2003 YF <sub>15</sub>	14.7	X	264.35129	262.35563	66.36476	12.86248	0.0748546	0.20283579	2.8688400	20	5 1.6	18.8
116244 2003 YZ <sub>15</sub>	16.6	X	27.90402	324.09678	45.67817	6.53120	0.1932714	0.29179675	2.2512087	20	—	—
116245 2003 YC <sub>16</sub>	14.7	X	309.66252	55.71146	68.70664	6.74017	0.1552021	0.17304413	3.1893202	20	—	—
116246 2003 YK <sub>16</sub>	14.4	X	18.51191	334.49202	94.10431	13.55275	0.0375647	0.17484372	3.1673984	20	—	—
116247 2003 YJ <sub>18</sub>	16.1	X	29.12355	287.88049	292.20888	6.08225	0.0712704	0.27000196	2.3707810	20	6 5.4	18.7
116248 2003 YN <sub>20</sub>	15.8	X	321.85406	81.38955	66.08812	4.53215	0.0146735	0.23964657	2.5669766	20	—	—
116249 2003 YS <sub>21</sub>	16.4	X	67.10684	327.50086	80.23738	3.72223	0.1284461	0.24290163	2.5439921	20	—	—
116250 2003 YK <sub>22</sub>	16.0	X	42.05823	357.63479	352.29103	2.74558	0.0511918	0.23320407	2.6140384	20	12 15.9	19.6
116251 2003 YV <sub>23</sub>	15.3	X	15.38314	125.46612	6.74951	9.14309	0.0712164	0.19022000	2.9943226	20	1 25.3	19.2
116252 2003 YW <sub>23</sub>	15.8	X	300.84566	277.07264	157.61127	3.06347	0.0834403	0.22939438	2.6429008	20	11 12.7	18.9
116253 2003 YV <sub>25</sub>	14.7	X	37.11280	61.38014	91.27317	15.75929	0.0817623	0.19328449	2.9625888	20	3 29.5	18.8
116254 2003 YR <sub>26</sub>	15.7	X	161.45845	298.76143	298.37175	22.57787	0.1784903	0.28339771	2.2954711	20	12 18.4	19.5
116255 2003 YA <sub>27</sub>	15.6	X	19.76341	62.55371	78.32714	1.32485	0.2163236	0.18661927	3.0327159	20	2 9.0	18.6
116256 2003 YF <sub>27</sub>	14.8	X	349.38540	45.41437	91.25718	9.25733	0.2435236	0.18352712	3.0666853	20	—	—
116257 2003 YJ <sub>27</sub>	14.9	X	335.61050	75.03858	77.55913	10.27014	0.0963827	0.18663459	3.0325499	20	—	—
116258 2003 YY <sub>29</sub>	15.8	X	63.76070	303.17893	84.17051	7.49240	0.1764493	0.29788498	2.2204294	20	—	—
116259 2003 YB <sub>30</sub>	16.5	X	87.76954	289.56281	291.51130	2.98887	0.0805631	0.27962974	2.3160458	20	9 5.5	19.5
116260 2003 YB <sub>31</sub>	16.4	X	26.55781	301.23521	101.47901	4.91675	0.1623038	0.23668597	2.5883383	20	—	—
116261 2003 YF <sub>32</sub>	15.4	X	301.43210	337.58812	56.81522	6.28934	0.0480731	0.22069310	2.7119200	20	9 23.5	18.9
116262 2003 YJ <sub>32</sub>	15.2	X	307.99767	110.20939	85.32633	10.60964	0.0493952	0.18565453	3.0432130	20	1 13.7	19.4
116263 2003 YR <sub>32</sub>	15.1	X	161.44900	56.05607	61.96838	25.80829	0.1715775	0.21590705	2.7518505	20	7 14.0	20.0
116264 2003 YY <sub>32</sub>	14.9	X	205.34287	88.51964	119.82645	8.98247	0.0436030	0.17681358	3.1438294	20	12 17.1	19.4
116265 2003 YB <sub>33</sub>	15.7	X	303.49998	217.64853	154.07253	6.77981	0.0431619	0.22130472	2.7069211	20	8 23.6	19.1
116266 2003 YF <sub>33</sub>	16.0	X	220.39065	150.42546	180.65962	6.35782	0.1523886	0.26188529	2.4195168	20	3 3.7	19.7
116267 2003 YX <sub>33</sub>	15.3	X	217.77815	274.46237	132.01175	6.77359	0.0241021	0.21191813	2.7862750	20	6 17.5	19.3
116268 2003 YJ <sub>34</sub>	16.2	X	0.56099	122.56261	66.03507	7.49815	0.1041384	0.27283192	2.3543585	20	7 19.3	18.6
116269 2003 YB <sub>35</sub>	14.5	X	280.60794	206.13547	132.00491	10.37740	0.2385677	0.21474671	2.7617542	20	5 10.9	18.6
116270 2003 YJ <sub>35</sub>	16.2	X	209.33540	343.94194	354.45324	3.52635	0.0441406	0.31837591	2.1241047	20	2 27.9	18.7
116271 2003 YQ <sub>35</sub>	14.8	X	310.75455	138.52581	101.88773	6.85435	0.0322667	0.19752705	2.9200144	20	3 15.8	18.8
116272 2003 YA <sub>41</sub>	16.0	X	270.77433	125.38544	104.89032	2.82228	0.0915214	0.24360911	2.5390643	20	—	—
116273 2003 YX <sub>41</sub>	16.0	X	59.89811	44.02388	51.62378	1.50308	0.1419465	0.18807813	3.0170131	20	2 18.4	19.7
116274 2003 YX <sub>42</sub>	15.4	X	193.77225	147.73756	119.63150	5.57920	0.2719047	0.23572018	2.5954034	20	—	—
116275 2003 YH <sub>43</sub>	15.9	X	295.35177	251.48162	243.81370	3.47551	0.0672613	0.23304639	2.6152174	20	—	—
116276 2003 YE <sub>44</sub>	15.5	X	347.23455	230.31679	100.77886	3.39659	0.0774677	0.21511873	2.7585693	20	9 3.8	18.8
116277 2003 YS <sub>45</sub>	15.5	X	209.09020	194.03679	201.03518	3.54218	0.1070258	0.20984234	2.8046183	20	5 17.7	19.8
116278 2003 YJ <sub>45</sub>	14.4	X	249.12235	119.67855	37.64848	14.14663	0.1803063	0.17208934	3.2011062	20	11 24.8	19.0
116279 2003 YG <sub>46</sub>	15.9	X	243.64196	41.34826	60.87148	4.14560	0.0255046	0.22447127	2.6814037	20	10 6.2	19.5
116280 2003 YH <sub>47</sub>	13.8	X	327.63271	254.23303	290.05558	10.62942	0.1473146	0.12483836	3.9649467	20	1 21.6	19.1
116281 2003 YR <sub>47</sub>	15.9	X	344.89332	183.84104	304.10789	1.06263	0.2012304	0.18256069	3.0774987	20	—	—
116282 2003 YU <sub>50</sub>	14.6	X	61.56396	5.32234	90.79310	7.78626	0.1476515	0.19041333	2.9922955	20	2 24.5	18.3
116283 2003 YS <sub>51</sub>	16.7	X	268.03657	327.45589	69.12367	3.23023	0.1717139	0.27660356	2.3329076	20	7 22.5	19.4
116284 2003 YC <sub>52</sub>	15.0	X	14.49197	27.98933	92.94376	11.22223	0.1543428	0.18533612	3.0466975	20	1 4.4	18.3
116285 2003 YG <sub>52</sub>	16.3	X	161.31235	357.67665	350.32700	4.67433	0.1600314	0.30972392	2.1634800	20	1 25.9	19.2
116286 2003 YB <sub>53</sub>	15.9	X	302.90801	262.22785	192.29219	2.09128	0.0439483	0.23444247	2.6048248	20	12 14.7	19.2
116287 2003 YF <sub>54</sub>	15.4	X	261.99031	6.37543	109.84211	2.95751	0.1239375	0.17040581	3.2221552	20	10 23.2	19.8
116288 2003 YV <sub>54</sub>	15.5	X	100.30668	351.62592	120.18942	3.11969	0.0135054	0.20328336	2.8646275	20	4 15.4	19.4
116289 2003 YO <sub>55</sub>	15.8	X	2.18437	341.43873	107.04035	5.87769	0.1623573	0.24153939	2.5535483	20	—	—
116290 2003 YO <sub>56</sub>	15.6	X	316.03967	352.99532	161.40839	0.74156	0.1068269	0.18208200	3.0828901	20	—	—
116291 2003 YD <sub>57</sub>	14.8	X	131.03150	307.87668	256.61926	12.21224	0.1469208	0.21864676	2.7288145	20	9 25.1	19.5
116292 2003 YO <sub>57</sub>	15.2	X	100.71881	89.10650	244.02067	10.44307	0.1997690	0.24190407	2.5509812	20	—	—
116293 2003 YU <sub>57</sub>	15.6	X	344.37063	166.30216	226.53011	1.72424	0.0442966	0.22864751	2.6486530	20	11 21.5	18.8
116294 2003 YS <sub>58</sub>	13.4	X	76.84221	272.30288	99.01894	11.58142	0.1838211	0.122449161	4.0154277	20	—	—
116295 2003 YL <sub>58</sub>	15.2	X	79.46980	154.20760	100.78300	9.65142	0.0284165	0.22024072	2.7156323	20	10 1.9	19.1
116296 2003 YT <sub>58</sub>	14.9	X	323.35475	40.12917	100.35822	11.64331	0.0446454	0.18061486	3.0995625	20	—	—
116297 2003 YR <sub>59</sub>	16.5	X	68.90421	191.08546	46.79090	3.22219	0.1200820	0.27733105	2.3288261	20	9 12.9	19.4
116298 2003 YY <sub>59</sub>	16.1	X	74.52403	123.40930	250.23731	0.53315	0.1976150	0.18531543	3.0469243	20	—	—
116299 2003 YJ <sub>60</sub>	16.5	X	232.08307	317.54437	111.24195	2.51454	0.2172320	0.27701381	2.3306037	20	7 16.2	20.0
116300 2003 YW <sub>60</sub>	14.5	X	304.40924	73.83195	92.54519	26.57637	0.2214081	0.17972514	3.1097835	20	—	—
116301 2003 YZ <sub>60</sub>	15.5	X	16.95028	341.78461	114.37304	1.94026	0.1951678	0.18263368	3.0766787	20	—	—
116302 2003 YH <sub>61</sub>	14.8	X	243.59907	46.30444	141.83961	2.04416	0.1136304	0.17263799	3.1943203	20	12 26.4	19.4
116303 2003 YK <sub>61</sub>	15.8	X	321.63900	24.96653	106.12777	5.28826	0.1415503	0.23738020	2.5832894	20	—	—
116304 2003 YV <sub>61</sub>	15.8	X	123.22336	353.84905	111.30771	7.19696	0.1068963	0.26229150	2.4170181	20	5 17.0	19.2
116305 2003 YL <sub>62</sub>	15.1	X	220.48229	49.22849	104.55882	14.25936	0.1023551	0.22508315	2.6765420	20	11 6.2	19.2
116306 2003 YQ <sub>62</sub>	15.0	X	349.09818	268.39880	109.73756	12.50582	0.2021328	0.22897405	2.6461342	20	11 27.8	17.8
116307 2003 YX <sub>62</sub>	15.5	X	18.00205	354.10731	91.13980	0.70737	0.1677366	0.18026661	3.1035532	20	—	—
116308 2003 YR <sub>63</sub>	15.9	X	98.48308	204.37574	259.13948	3.72216	0.0462557	0.25714972	2.4491310	20	3 30.6	19.1
116309 2003 YF <sub>64</sub>	16.0	X	29.15749	117.48880	269.29529	3.06623	0.1061607	0.23414024	2.6070659	20	—	—
116310 2003 YA <sub>65</sub>	14.5	X	312.76789	253.30740	285.54762	9.59725	0.0680078	0.18127706	3.0920095	20	—	—
116311 2003 YQ <sub>65</sub>	15.2	X	38.16031	342.69449	152.43649	0.75238	0.1046472	0.18927554	3.0042753	20	3 1.5	18.9
116312 2003 YS <sub>65</sub>	14.5	X	341.51136	189.18015	115.36892	13.83209	0.1234115	0.20866230	2.8151836	20	7 15.1	17.6
116313 2003 YT <sub>65</sub>	14.3	X	137.16981	259.90448	100.90297	9.23935	0.2313289	0.19028772	2.9936122	20	2 13.1	19.1
116314 2003 YA <sub>66</sub>	15.7	X	311.75040	313.49275	110.89630	12.55720	0.0997232</					

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>
116321 2003 YB <sub>70</sub>	14.4	X	261.43386	67.14866	131.85680	17.12807	0.0779909	0.17479142	3.1680302	20	—	—
116322 2003 YJ <sub>72</sub>	16.0	X	349.29431	310.77343	281.54965	10.66225	0.1150056	0.26183064	2.4198535	20	4 6.2	18.8
116323 2003 YP <sub>72</sub>	15.0	X	95.19778	280.27765	288.51501	7.51491	0.1563100	0.21361875	2.7714676	20	8 28.7	19.3
116324 2003 YT <sub>72</sub>	14.7	X	251.43950	102.62976	71.59363	11.35594	0.1678369	0.17322889	3.1870521	20	12 11.7	19.1
116325 2003 YV <sub>72</sub>	14.7	X	232.95718	124.75503	77.88382	12.55375	0.1954179	0.23443826	2.6048561	20	—	—
116326 2003 YH <sub>73</sub>	16.1	X	301.25093	328.11931	79.63782	7.49393	0.0947256	0.28394169	2.2925383	20	10 21.9	18.4
116327 2003 YJ <sub>73</sub>	15.9	X	21.19267	335.93155	71.68960	4.50696	0.1599247	0.23800055	2.5787985	20	—	—
116328 2003 YL <sub>73</sub>	16.2	X	7.88725	317.23113	46.90902	1.66926	0.2118298	0.29048826	2.2579639	20	12 29.7	18.5
116329 2003 YZ <sub>73</sub>	15.4	X	302.14459	106.03556	20.13880	2.94335	0.0697803	0.17699572	3.1416722	20	—	—
116330 2003 YN <sub>74</sub>	16.6	X	306.34703	356.09586	10.63534	0.61912	0.2040053	0.28113407	2.3077764	20	8 9.1	18.0
116331 2003 YS <sub>74</sub>	15.8	X	356.65886	343.59348	25.40361	3.04224	0.0922561	0.22846412	2.6500702	20	11 11.7	18.9
116332 2003 YC <sub>75</sub>	15.7	X	144.80865	328.30262	310.28110	5.15892	0.0677790	0.23615003	2.5922530	20	—	—
116333 2003 YC <sub>76</sub>	14.7	X	256.08642	267.35550	303.72280	4.15258	0.0923447	0.18011889	3.1052498	20	—	—
116334 2003 YP <sub>76</sub>	15.3	X	131.56040	63.57435	57.41674	2.82020	0.0833455	0.20523334	2.8464536	20	6 12.1	19.4
116335 2003 YA <sub>77</sub>	14.6	X	300.51638	114.17878	89.11698	17.74636	0.2241497	0.18297939	3.0728021	20	—	—
116336 2003 YB <sub>77</sub>	14.5	X	81.15324	221.38290	84.68191	12.89064	0.0260869	0.16864848	3.2444998	20	11 23.6	19.2
116337 2003 YF <sub>77</sub>	15.6	X	84.73638	20.51808	25.23111	2.00380	0.1072536	0.24702918	2.5155746	20	1 5.8	18.4
116338 2003 YH <sub>78</sub>	15.9	X	65.02910	295.30296	79.22107	3.38484	0.1921543	0.24009729	2.5637630	20	—	—
116339 2003 YZ <sub>78</sub>	15.9	X	47.48862	349.92956	29.29502	3.94838	0.1720449	0.23794823	2.5791765	20	—	—
116340 2003 YC <sub>81</sub>	14.6	X	66.58301	324.49127	281.11820	13.65525	0.1658248	0.21393010	2.7687779	20	9 9.0	18.8
116341 2003 YF <sub>81</sub>	15.4	X	278.81985	322.42350	83.57351	9.47956	0.1062240	0.21917162	2.7244563	20	8 29.9	19.0
116342 2003 YH <sub>81</sub>	14.3	X	267.83067	242.58910	284.19206	15.65118	0.1195409	0.17464005	3.1698605	20	12 31.7	18.4
116343 2003 YY <sub>83</sub>	16.3	X	126.45948	235.53621	34.49058	3.79626	0.1402364	0.29223004	2.2489828	20	12 27.9	19.6
116344 2003 YB <sub>84</sub>	15.5	X	191.84099	317.02419	126.34629	4.83733	0.0690074	0.21206899	2.7849534	20	7 1.1	19.5
116345 2003 YJ <sub>84</sub>	14.5	X	227.71936	82.34886	107.54922	10.57043	0.0474729	0.17482333	3.1676446	20	12 19.8	19.0
116346 2003 YP <sub>84</sub>	15.1	X	347.59798	267.97274	191.17509	4.93110	0.1342817	0.17994568	3.1072421	20	—	—
116347 2003 YQ <sub>86</sub>	14.9	X	263.25313	168.60358	251.96254	13.16675	0.1774333	0.21994321	2.7180806	20	8 6.3	18.9
116348 2003 YF <sub>89</sub>	15.6	X	126.01318	7.68796	108.32868	9.84467	0.1628116	0.19999978	2.8958965	20	6 8.2	20.2
116349 2003 YM <sub>89</sub>	15.5	X	117.43635	50.43123	318.43795	4.02847	0.2639249	0.24573830	2.5243766	20	1 25.8	18.9
116350 2003 YU <sub>89</sub>	16.4	X	188.93315	314.63422	90.74694	7.15174	0.1043922	0.26233876	2.4167278	20	5 10.3	20.0
116351 2003 YW <sub>89</sub>	16.2	X	116.24867	351.22802	6.91816	2.36819	0.2478753	0.24482260	2.5306673	20	1 9.1	19.6
116352 2003 YZ <sub>90</sub>	15.0	X	304.20256	268.98271	229.64664	8.79781	0.1830771	0.17688716	3.1429575	20	—	—
116353 2003 YC <sub>91</sub>	14.2	X	49.12458	276.57032	114.69875	11.33582	0.2534207	0.18281344	3.0746614	20	—	—
116354 2003 YL <sub>91</sub>	14.4	X	310.13969	241.62336	268.61145	14.13856	0.0770746	0.17676978	3.1443487	20	—	—
116355 2003 YT <sub>91</sub>	15.3	X	326.33315	268.25028	111.97350	14.64400	0.1097358	0.21998158	2.7177646	20	10 14.7	18.7
116356 2003 YV <sub>91</sub>	14.7	X	93.94665	224.73202	125.91056	11.91328	0.1163309	0.18762346	3.0218851	20	—	—
116357 2003 YH <sub>92</sub>	14.6	X	330.19348	311.68718	145.85412	10.87284	0.1104151	0.17868586	3.1218301	20	—	—
116358 2003 YJ <sub>94</sub>	16.0	X	235.52825	27.96051	12.14414	3.17377	0.1272925	0.20862730	2.8154984	20	6 19.1	20.3
116359 2003 YX <sub>94</sub>	15.7	X	347.59551	289.85177	124.48979	2.14533	0.1574755	0.17558222	3.1585107	20	12 17.5	19.2
116360 2003 YN <sub>95</sub>	15.5	X	160.50107	212.70723	90.62736	11.28637	0.0334080	0.24434707	2.5339495	20	—	—
116361 2003 YZ <sub>95</sub>	15.6	X	203.45691	213.32784	107.39172	6.30750	0.1627233	0.25653933	2.4530143	20	2 6.9	19.5
116362 2003 YZ <sub>96</sub>	15.2	X	124.43713	318.99535	244.91844	9.11609	0.0796723	0.21923297	2.7239479	20	9 15.7	19.5
116363 2003 YN <sub>100</sub>	16.0	X	112.10608	344.70401	40.71054	3.55081	0.1972525	0.24722604	2.5142391	20	2 1.2	19.3
116364 2003 YQ <sub>101</sub>	14.6	X	35.47910	27.95808	84.54618	9.54975	0.1823272	0.18444738	3.0564764	20	2 4.3	17.9
116365 2003 YU <sub>101</sub>	15.1	X	354.01988	2.20989	126.29679	10.46640	0.0125351	0.18293404	3.0733100	20	—	—
116366 2003 YG <sub>102</sub>	15.3	X	340.91825	249.58757	117.22232	14.80195	0.1501987	0.22313450	2.6921023	20	10 24.0	18.5
116367 2003 YZ <sub>102</sub>	15.7	X	247.49347	26.13187	268.76762	5.09406	0.1319859	0.25229422	2.4804540	20	2 14.7	19.5
116368 2003 YS <sub>104</sub>	15.5	X	50.76101	10.93020	67.40507	1.01766	0.0956825	0.18581233	3.0414887	20	1 8.7	19.3
116369 2003 YS <sub>106</sub>	15.8	X	185.87603	284.45150	86.07831	6.32096	0.1012660	0.25279252	2.4771933	20	3 22.2	19.1
116370 2003 YY <sub>106</sub>	15.4	X	237.06638	332.82583	137.37904	14.33507	0.1756263	0.21802694	2.7339839	20	9 17.8	19.5
116371 2003 YG <sub>107</sub>	15.1	X	355.09397	208.95476	125.78217	13.35711	0.1669831	0.21771409	2.7366023	20	10 3.5	18.2
116372 2003 YJ <sub>108</sub>	15.5	X	335.63458	219.74792	197.73655	12.20357	0.1726774	0.23354653	2.6114824	20	12 22.1	18.4
116373 2003 YK <sub>108</sub>	15.2	X	187.17579	298.40189	199.18297	13.92376	0.0895350	0.21965980	2.7204181	20	8 31.3	19.4
116374 2003 YA <sub>110</sub>	15.1	X	207.17698	147.79432	274.66193	12.46860	0.1798876	0.21243836	2.7817243	20	6 15.2	19.6
116375 2003 YU <sub>111</sub>	14.7	X	1.25111	53.44735	348.66606	4.57042	0.1238948	0.17612577	3.1520090	20	12 20.7	18.6
116376 2003 YF <sub>113</sub>	14.1	X	247.78901	288.48327	298.42826	24.85062	0.1809257	0.17714518	3.1399048	20	—	—
116377 2003 YL <sub>113</sub>	16.2	X	178.99559	321.92092	70.39915	8.09331	0.1182273	0.25834205	2.4415895	20	4 14.4	19.9
116378 2003 YJ <sub>114</sub>	15.9	X	325.70915	340.55614	65.51201	1.77049	0.1605025	0.22410323	2.6843386	20	11 12.3	18.5
116379 2003 YB <sub>115</sub>	15.6	X	331.02185	344.02864	36.68744	6.11845	0.0878876	0.22306898	2.6926295	20	10 16.9	18.8
116380 2003 YU <sub>116</sub>	15.0	X	194.36959	190.47976	79.94236	3.88277	0.0491561	0.17774284	3.1328623	20	—	—
116381 2003 YV <sub>116</sub>	15.6	X	158.46748	167.72556	102.29171	5.23957	0.1729838	0.23100112	2.6306313	20	—	—
116382 2003 YF <sub>121</sub>	15.9	X	281.06776	330.36445	30.24737	7.32876	0.1419652	0.27065208	2.3669830	20	6 22.8	18.7
116383 2003 YG <sub>123</sub>	14.5	X	238.44831	280.37576	314.62218	12.43996	0.1081939	0.17640880	3.1486367	20	—	—
116384 2003 YQ <sub>123</sub>	16.0	X	12.23177	262.25511	90.62839	3.65695	0.0827795	0.22957410	2.6415214	20	11 14.2	19.3
116385 2003 YE <sub>124</sub>	14.6	X	304.88652	177.83591	328.21567	9.66886	0.1340784	0.18173095	3.0868589	20	—	—
116386 2003 YZ <sub>125</sub>	15.2	X	281.90316	18.95947	69.10304	13.44314	0.1183661	0.22501172	2.6771084	20	10 30.5	18.5
116387 2003 YM <sub>126</sub>	15.1	X	288.15649	9.19657	58.51311	12.76047	0.1651724	0.22505874	2.6767355	20	10 8.1	18.3
116388 2003 YQ <sub>1</sub>												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
116401 2003 YA <sub>135</sub>	15.9	X	315.13483	283.85965	316.88682	18.24140	0.0789630	0.37329483	1.9102992	20	2 15.2	17.6
116402 2003 YJ <sub>135</sub>	15.5	X	314.44947	17.93913	49.22234	8.07273	0.2551867	0.22788274	2.6545755	20	11 17.4	17.1
116403 2003 YR <sub>135</sub>	14.8	X	64.07617	319.21588	104.32484	18.54751	0.1350733	0.18148609	3.0896348	20	1 14.9	18.5
116404 2003 YU <sub>135</sub>	16.0	X	293.68842	295.90262	341.53926	8.41022	0.1920954	0.25799000	2.4438102	20	3 7.7	19.3
116405 2003 YX <sub>135</sub>	14.5	X	292.86522	242.47033	298.10904	20.61165	0.0389593	0.18107991	3.0942534	20	—	—
116406 2003 YP <sub>136</sub>	14.9	X	212.85175	188.76366	111.47488	10.97944	0.0530638	0.18628895	3.0362998	20	1 30.9	19.5
116407 2003 YU <sub>136</sub>	14.7	X	359.19024	284.69755	166.51405	11.50975	0.0751705	0.18207581	3.0829599	20	—	—
116408 2003 YX <sub>137</sub>	16.1	X	33.65135	335.48404	99.90058	4.17045	0.0682188	0.23971966	2.5664548	20	—	—
116409 2003 YE <sub>138</sub>	16.2	X	303.32333	295.81424	30.207048	3.26141	0.1838206	0.27026246	2.3692573	20	5 30.4	18.8
116410 2003 YQ <sub>138</sub>	14.2	X	336.67700	78.04140	128.84746	14.80872	0.0838993	0.18634672	3.0356723	20	3 3.0	18.2
116411 2003 YB <sub>139</sub>	15.3	X	318.35026	129.55123	22.66888	0.29482	0.1054844	0.17766240	3.1338079	20	—	—
116412 2003 YC <sub>139</sub>	16.3	X	257.57111	143.56016	213.35460	1.93762	0.2089578	0.26738689	2.3862135	20	5 8.5	19.8
116413 2003 YM <sub>139</sub>	15.3	X	192.65738	179.16895	308.59305	11.90763	0.0916755	0.22055261	2.7130716	20	8 24.9	19.5
116414 2003 YF <sub>141</sub>	14.6	X	357.89147	139.13819	343.06882	10.57281	0.0471826	0.18385453	3.0630435	20	—	—
116415 2003 YX <sub>141</sub>	14.9	X	255.35622	204.67214	44.01747	11.90122	0.0639522	0.18653459	3.0336336	20	1 15.9	19.5
116416 2003 YM <sub>142</sub>	14.8	X	85.74257	333.49336	297.00462	14.59735	0.2205944	0.22266365	2.6958962	20	11 9.9	19.4
116417 2003 YO <sub>143</sub>	15.8	X	304.45827	101.24911	49.75121	12.74081	0.0378472	0.23895732	2.5719104	20	—	—
116418 2003 YW <sub>143</sub>	14.9	X	344.07353	208.19569	52.21210	13.29263	0.1272795	0.20212038	2.8756055	20	5 16.4	18.1
116419 2003 YT <sub>144</sub>	15.2	X	256.81892	65.47206	60.18250	13.56847	0.0802438	0.22564843	2.6720700	20	11 14.6	18.7
116420 2003 YW <sub>146</sub>	14.9	X	241.75742	153.69192	27.99407	13.98817	0.2104038	0.22428233	2.6829094	20	12 13.6	18.7
116421 2003 YF <sub>149</sub>	14.7	X	21.75289	54.84106	23.21950	13.03141	0.1842815	0.18031543	3.1029929	20	—	—
116422 2003 YJ <sub>149</sub>	15.3	X	185.59578	24.38889	28.00949	13.59273	0.1438443	0.20377462	2.8600216	20	5 12.0	19.9
116423 2003 YD <sub>150</sub>	15.7	X	128.04109	308.46592	30.02001	9.13089	0.0850551	0.24266687	2.5456326	20	—	—
116424 2003 YV <sub>150</sub>	14.5	X	224.44065	188.24225	19.56062	11.48114	0.0547769	0.17170036	3.2059390	20	—	—
116425 2003 YX <sub>150</sub>	14.4	X	257.92446	119.11129	77.60413	17.65481	0.1384571	0.17345041	3.1843381	20	—	—
116426 2003 YG <sub>151</sub>	14.7	X	253.64936	146.46685	64.72076	18.76505	0.0968358	0.17535767	3.1612066	20	—	—
116427 2003 YH <sub>151</sub>	14.9	X	61.12578	8.56899	17.49390	14.09694	0.1833565	0.23864465	2.5741563	20	—	—
116428 2003 YJ <sub>151</sub>	15.1	X	135.23299	321.51975	295.62886	5.12457	0.2398099	0.22615657	2.6680660	20	12 7.8	19.7
116429 2003 YB <sub>153</sub>	15.0	X	325.54715	76.94115	74.78388	17.27551	0.1796465	0.17756418	3.1349634	20	—	—
116430 2003 YD <sub>153</sub>	15.3	X	349.04489	26.51895	25.97099	13.94259	0.2480424	0.23133472	2.6281017	20	—	—
116431 2003 YF <sub>153</sub>	16.3	X	101.96566	195.42152	185.41326	3.61107	0.1949330	0.30393996	2.1908409	20	—	—
116432 2003 YM <sub>153</sub>	13.9	X	267.93567	245.91866	292.19869	23.23868	0.3191821	0.17530152	3.1618815	20	12 18.4	18.1
116433 2003 YN <sub>153</sub>	14.8	X	189.56790	222.25421	354.57161	11.90251	0.1385107	0.23035228	2.6355689	20	12 9.9	19.0
116434 2003 YK <sub>154</sub>	15.0	X	312.45202	329.54582	60.66465	13.31750	0.1614519	0.21993539	2.7181451	20	9 30.2	18.1
116435 2003 YJ <sub>155</sub>	15.4	X	28.59700	18.27301	40.51886	13.95129	0.1480647	0.23637034	2.5906419	20	—	—
116436 2003 YK <sub>158</sub>	14.6	X	103.45961	35.06784	9.69477	10.26419	0.1062475	0.19334563	2.9619642	20	2 12.1	18.8
116437 2003 YT <sub>159</sub>	15.6	X	283.62690	242.58789	294.54016	11.57434	0.0310503	0.24121577	2.5558317	20	—	—
116438 2003 YL <sub>160</sub>	15.9	X	264.58629	42.33734	23.19423	5.29704	0.1529874	0.22050905	2.7134288	20	8 26.7	19.5
116439 2003 YN <sub>162</sub>	13.2	X	202.61223	60.34793	342.09466	14.56250	0.0986064	0.08393056	5.1664151	20	5 17.0	20.7
116440 2003 YK <sub>163</sub>	16.5	X	221.32780	315.14789	299.04351	3.40620	0.1269586	0.30574741	2.1821982	20	—	—
116441 2003 YU <sub>166</sub>	16.3	X	166.30559	187.18856	171.73736	1.92709	0.0538751	0.25115237	2.4879665	20	2 10.7	19.8
116442 2003 YR <sub>167</sub>	16.2	X	265.14822	68.52755	56.24674	5.05796	0.0778172	0.23050184	2.6344288	20	11 25.4	19.5
116443 2003 YU <sub>170</sub>	15.3	X	113.47989	355.51372	76.62736	11.58983	0.0214156	0.19327685	2.9626669	20	3 19.7	19.6
116444 2003 YZ <sub>172</sub>	14.9	X	299.24428	33.76356	313.03665	13.58190	0.1544915	0.22340731	2.6899103	20	6 29.5	18.3
116445 2003 YM <sub>175</sub>	16.6	X	225.91665	313.10752	35.13170	1.70789	0.1969075	0.26025548	2.4296075	20	3 29.6	20.6
116446 McDermid	15.9	X	91.91283	129.94559	85.53139	1.77772	0.1005952	0.21364191	2.7712673	20	8 18.9	19.7
116447 2004 AJ	13.9	X	63.21009	238.23997	139.39219	23.71005	0.3269981	0.18404451	3.0609352	20	—	—
116448 2004 AT	14.4	X	100.18678	227.26960	114.10314	14.27716	0.1679067	0.18317446	3.0706202	20	—	—
116449 2004 AU	14.5	X	315.52345	351.28491	127.66923	11.77904	0.1751057	0.17694185	3.1423098	20	—	—
116450 2004 AW	14.0	X	143.18297	305.31308	228.51748	17.93379	0.1017802	0.15673080	3.4069556	20	8 21.2	19.6
116451 2004 AL <sub>1</sub>	15.3	X	41.82165	8.79981	95.92659	1.36953	0.2738456	0.18585396	3.0410356	20	2 13.0	17.9
116452 2004 AN <sub>1</sub>	15.0	X	79.13714	329.49704	125.25708	14.79593	0.0626893	0.18943827	3.0025546	20	3 8.1	19.2
116453 2004 AV <sub>1</sub>	15.0	X	76.55239	277.22703	114.26405	13.30051	0.2189530	0.19755170	2.9197716	20	5 10.2	18.9
116454 2004 AM <sub>2</sub>	15.9	X	299.80352	164.33816	238.24052	0.71486	0.0875551	0.21998415	2.7177434	20	9 24.4	19.2
116455 2004 AT <sub>2</sub>	15.4	X	146.83027	318.97054	289.15555	11.52633	0.1285556	0.22512557	2.6762057	20	12 7.5	19.7
116456 2004 AH <sub>5</sub>	14.9	X	323.47665	5.24977	116.21241	6.05473	0.1386583	0.17364063	3.1820120	20	—	—
116457 2004 AL <sub>5</sub>	15.7	X	91.81297	101.60884	118.16923	2.87993	0.1604055	0.26839292	2.3802469	20	9 19.2	19.0
116458 2004 AX <sub>5</sub>	14.8	X	300.77373	28.53603	117.06737	11.40880	0.0779059	0.17275268	3.1929064	20	—	—
116459 2004 AA <sub>6</sub>	16.5	X	69.17478	341.65452	210.00298	2.04261	0.1358485	0.26173152	2.4204644	20	7 8.2	19.5
116460 2004 AD <sub>7</sub>	14.9	X	46.24037	275.76432	164.23225	9.75889	0.0944238	0.18003761	3.1061843	20	1 4.5	18.9
116461 2004 AL <sub>7</sub>	14.8	X	48.98195	308.41304	118.09935	12.09206	0.1091703	0.18044251	3.1015359	20	—	—
116462 2004 AG <sub>8</sub>	15.8	X	311.20900	341.67130	110.20395	14.43253	0.1249208	0.22755976	2.6570867	20	12 21.2	18.7
116463 2004 AX <sub>8</sub>	15.6	X	185.72179	283.38921	195.04827	7.98522	0.2140585	0.21010889	2.8022471	20	8 1.3	20.5
116464 2004 AH <sub>9</sub>	15.8	X	311.99279	38.99582	129.46041	15.67099	0.0639390	0.24521995	2.5279327	20	—	—
116465 2004 AN <sub>9</sub>	15.2	X	84.18397	215.47407	221.81627	9.33432	0.0792946	0.18765915	3.0215020	20	2 16.9	19.5
116466 2004 AT <sub>9</sub>	14.8	X	274.76311	277.17543	280.74658	4.80294	0.0719330	0.17778874	3.1323230	20	—	—
116467 2004 AK <sub>10</sub>	16.5	X	328.29290	282.72225	180.58245	1.28274	0.0921224	0.23342692	2.6123744	20	—	—
116468 2004 AA <sub>11</sub>	14.5	X	235.48149	174.37615	64.32940	17.00611	0.0538212	0.17370154	3.1812681	20	—	—
116469 2004 AJ <sub>21</sub>	16.1	X	309.72458	281.65842	32.49807	2.36735	0.0549577	0.20504013	2.8482414	20	6 12.1	19.7
116470 2004 AJ <sub>24</sub>	16.2	X	74.22727	138.50196	227.85721	2.39049	0.1498794	0.23765033	2.5813314	20	—	—
116471 2004 AJ <sub>26</sub>	16.1	X	19.64881	208.26251	159.87816	7.01420	0.1337905	0.29323940	2.2438191	20	—	—
116472 2004 BE <sub>2</sub>	15.0	X	338.81652	296.50248	187.38589	1.42189	0.0848167	0.17726741	3.1384614	20	—	—
116473 2004 BA <sub>3</sub>	15.1	X	333.07778	69.32805	127.53500	3.77768	0.0860685	0.18648858	3.0341325	20	2 11.6	18.9
116474 2004 BP <sub>3</sub>	15.7	X	123.04751	133.25124	105.58226	5.59999	0.0658948	0.21954843	2.7213381	20	11	

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>
116481 2004 BW <sub>6</sub>	15.2	X	320.98791	169.20705	94.54967	18.20342	0.0875369	0.19749182	2.9203617	20	4 27.4	19.3
116482 2004 BX <sub>6</sub>	15.7	X	96.50132	201.37242	66.80696	4.88685	0.0273022	0.22195075	2.7016659	20	11 5.0	19.5
116483 2004 BJ <sub>8</sub>	16.0	X	346.03199	91.94490	236.48709	2.58824	0.0977651	0.21353651	2.7721791	20	8 26.2	19.3
116484 2004 BD <sub>10</sub>	16.4	X	129.33536	276.11657	341.57648	5.44400	0.1275383	0.28201957	2.3029432	20	12 12.8	19.9
116485 2004 BS <sub>10</sub>	14.4	X	12.51849	294.02560	154.46617	18.34594	0.1561430	0.17886578	3.1197362	20	—	—
116486 2004 BV <sub>11</sub>	15.2	X	4.09727	13.67252	152.68738	2.35204	0.1257391	0.18658170	3.0331230	20	2 15.7	18.7
116487 2004 BC <sub>12</sub>	15.8	X	169.52452	334.05060	85.72711	2.90826	0.0819548	0.19972391	2.8985625	20	5 7.9	20.2
116488 2004 BG <sub>12</sub>	15.7	X	111.09959	317.76994	334.41855	2.63118	0.0325183	0.22676365	2.6633020	20	12 23.1	19.4
116489 2004 BN <sub>12</sub>	14.4	X	7.97834	202.31224	312.28132	1.28482	0.0632595	0.12633479	3.9335747	20	2 18.3	19.7
116490 2004 BR <sub>12</sub>	15.6	X	107.25530	264.71747	134.51585	1.82073	0.0551134	0.18538810	3.0461280	20	1 31.1	19.9
116491 2004 BU <sub>12</sub>	14.7	X	35.78538	270.86628	128.40428	15.89323	0.1027919	0.17432238	3.1737103	20	—	—
116492 2004 BG <sub>13</sub>	15.7	X	168.50823	92.72156	137.81272	7.36013	0.0758419	0.22522574	2.6754122	20	12 11.1	19.7
116493 2004 BL <sub>13</sub>	14.9	X	289.74841	291.95682	98.23621	3.40704	0.0377629	0.15392518	3.4482304	20	8 23.0	19.6
116494 2004 BE <sub>15</sub>	15.7	X	211.31564	305.85784	67.68641	2.71534	0.0376221	0.19862087	2.9092841	20	4 26.9	19.9
116495 2004 BS <sub>15</sub>	15.3	X	111.03305	151.72462	119.06202	15.12057	0.0713969	0.22347927	2.6893328	20	12 1.4	19.5
116496 2004 BH <sub>16</sub>	14.6	X	138.71017	180.97049	128.13011	13.97245	0.1669875	0.23088746	2.6314946	20	—	—
116497 2004 BG <sub>17</sub>	15.4	X	57.80664	333.34064	44.30983	15.31211	0.1258663	0.23418267	2.6067510	20	—	—
116498 2004 BS <sub>19</sub>	14.2	X	252.87636	36.86945	49.62490	10.71745	0.0508925	0.15523622	3.4287883	20	9 17.8	19.2
116499 2004 BF <sub>21</sub>	15.6	X	201.03856	262.22449	232.02054	4.16287	0.1017742	0.21629529	2.7485565	20	9 11.4	19.7
116500 2004 BG <sub>22</sub>	15.2	X	200.42047	220.53982	134.37752	2.96320	0.1213563	0.19517835	2.9433932	20	3 21.5	19.9
116501 2004 BP <sub>22</sub>	16.2	X	348.58695	166.78576	123.94538	7.30629	0.1203565	0.26622539	2.3931490	20	7 12.7	18.3
116502 2004 BV <sub>22</sub>	14.7	X	297.98472	73.30526	130.89159	14.12840	0.2124585	0.17995399	3.1071465	20	—	—
116503 2004 BN <sub>23</sub>	15.5	X	179.73721	301.49731	123.75238	3.11232	0.0453595	0.20023962	2.8935836	20	5 25.6	19.7
116504 2004 BV <sub>23</sub>	16.0	X	284.98868	152.03703	119.34844	7.06756	0.1077285	0.25257188	2.4786358	20	3 4.5	19.3
116505 2004 BN <sub>25</sub>	16.5	X	127.09896	42.27259	148.51912	2.89600	0.1466771	0.27115573	2.3640511	20	9 16.1	20.1
116506 2004 BQ <sub>25</sub>	14.8	X	69.63748	11.16450	35.28234	17.32773	0.1509903	0.24118163	2.5560729	20	—	—
116507 2004 BL <sub>26</sub>	15.3	X	63.55592	7.45878	137.40077	2.76420	0.0398932	0.19475349	2.9476725	20	4 13.8	19.2
116508 2004 BO <sub>26</sub>	16.9	X	44.62455	37.72211	161.63007	1.34675	0.1364265	0.25878159	2.4388240	20	6 10.3	19.3
116509 2004 BH <sub>27</sub>	15.4	X	94.33462	327.02152	254.81483	23.44783	0.1653671	0.26773888	2.3841217	20	9 11.7	19.6
116510 2004 BK <sub>30</sub>	15.9	X	55.48618	303.87273	95.97824	4.22514	0.0332875	0.23483005	2.6019580	20	—	—
116511 2004 BW <sub>34</sub>	16.0	X	201.39309	340.32647	43.23930	2.66096	0.0721601	0.19874160	2.9081057	20	4 26.3	20.3
116512 2004 BN <sub>38</sub>	14.5	X	354.26881	108.11216	49.85781	2.83104	0.1565648	0.12538724	3.9533671	20	1 30.7	19.4
116513 2004 BM <sub>39</sub>	16.7	X	241.68671	271.71946	166.96511	3.68142	0.1455059	0.27643028	2.3338824	20	8 18.7	19.8
116514 2004 BS <sub>39</sub>	16.8	X	61.95590	120.93265	131.42197	6.12360	0.1846032	0.27105081	2.3646611	20	10 3.6	20.0
116515 2004 BF <sub>40</sub>	15.6	X	113.30790	281.59511	139.04067	3.11102	0.0716938	0.18947922	3.0021219	20	3 6.8	19.8
116516 2004 BA <sub>42</sub>	13.7	X	100.91773	69.00519	129.96480	19.06405	0.0067128	0.14651800	3.5634887	20	8 1.9	18.7
116517 2004 BG <sub>42</sub>	15.0	X	148.42856	216.32696	132.59720	15.84097	0.1683326	0.24105896	2.5569399	20	1 22.1	18.8
116518 2004 BS <sub>42</sub>	14.6	X	252.43837	127.53520	95.44576	7.80649	0.1035235	0.17384332	3.1795382	20	—	—
116519 2004 BF <sub>43</sub>	14.6	X	80.72838	177.55688	134.80865	13.68920	0.2187178	0.22267673	2.6957906	20	12 28.9	19.1
116520 2004 BC <sub>44</sub>	14.8	X	354.95604	59.08323	125.72205	8.69839	0.0630961	0.18542168	3.0457602	20	3 2.4	18.8
116521 2004 BG <sub>44</sub>	15.9	X	16.24637	137.23771	103.90775	4.17371	0.1561697	0.25679564	2.4513818	20	6 22.7	17.9
116522 2004 BV <sub>44</sub>	16.8	X	87.68735	251.35593	132.69245	25.55633	0.1035863	0.36024224	1.9561686	20	—	—
116523 2004 BH <sub>46</sub>	15.5	X	203.32705	51.40768	140.16274	13.37173	0.1116908	0.22412541	2.6841615	20	11 29.6	19.7
116524 2004 BP <sub>46</sub>	14.8	X	62.45104	353.44703	143.54151	11.81875	0.0445695	0.19212282	2.9745190	20	4 5.7	18.9
116525 2004 BG <sub>47</sub>	15.1	X	101.60380	205.37418	113.67849	15.90041	0.1188621	0.23312946	2.6145961	20	—	—
116526 2004 BS <sub>47</sub>	15.0	X	42.31974	261.56349	182.12015	1.69576	0.0704309	0.18291455	3.0735283	20	1 1.9	19.1
116527 2004 BJ <sub>51</sub>	15.9	X	116.88120	293.30951	296.46776	3.79067	0.1808471	0.27392034	2.3481177	20	10 25.6	19.7
116528 2004 BA <sub>52</sub>	16.1	X	157.52091	266.85930	309.18083	9.80322	0.0740451	0.28019178	2.3129476	20	11 18.4	19.4
116529 2004 BV <sub>52</sub>	15.7	X	14.05588	15.73834	181.05775	1.86462	0.0238966	0.19366604	2.9586964	20	4 11.4	19.5
116530 2004 BQ <sub>54</sub>	15.4	X	171.96198	17.56897	114.01613	8.77423	0.0621101	0.20931567	2.8093222	20	8 11.3	19.5
116531 2004 BA <sub>55</sub>	16.0	X	136.06061	322.86910	302.80303	5.26848	0.1553778	0.28451403	2.2894628	20	12 29.8	19.4
116532 2004 BM <sub>56</sub>	16.4	X	93.64369	67.72292	166.18460	2.52122	0.1859635	0.26904192	2.3764176	20	10 11.2	19.9
116533 2004 BY <sub>56</sub>	14.8	X	228.44274	87.67749	139.79723	11.56857	0.0490755	0.17304493	3.1893105	20	—	—
116534 2004 BU <sub>57</sub>	14.7	X	95.10163	300.04295	146.91701	16.88263	0.0747177	0.18800190	3.0178285	20	3 20.1	19.0
116535 2004 BE <sub>58</sub>	14.7	X	129.36754	81.55261	244.49785	7.34235	0.0472008	0.17539325	3.1607790	20	—	—
116536 2004 BF <sub>58</sub>	16.2	X	183.48774	258.43135	174.66128	6.75907	0.1191900	0.26448328	2.4036463	20	6 8.9	19.9
116537 2004 BC <sub>59</sub>	14.8	X	336.23556	268.07247	267.83811	11.07980	0.1121774	0.18257513	3.0773364	20	1 16.3	18.8
116538 2004 BM <sub>59</sub>	15.7	X	247.96200	210.77179	159.50766	3.79304	0.2098980	0.26681592	2.3896166	20	5 16.9	19.3
116539 2004 BU <sub>60</sub>	15.3	X	269.54291	214.02262	340.57960	0.94424	0.0459028	0.17700138	3.1416052	20	—	—
116540 2004 BH <sub>61</sub>	15.5	X	301.38389	4.68100	173.57917	1.06683	0.0964810	0.17858096	3.1230525	20	—	—
116541 2004 BQ <sub>62</sub>	15.5	X	141.26472	95.87636	8.59113	1.66261	0.0254386	0.20200980	2.8766549	20	5 27.8	19.6
116542 2004 BR <sub>68</sub>	14.5	X	313.19208	303.94427	170.79505	27.14280	0.2154309	0.17414622	3.1758502	20	12 31.4	18.5
116543 2004 BZ <sub>69</sub>	16.6	X	47.13101	77.36920	114.14255	2.10011	0.1222272	0.25724349	2.4485358	20	5 31.8	19.0
116544 2004 BK <sub>72</sub>	16.5	X	223.52320	301.28001	251.59218	4.88533	0.1227998	0.28695481	2.2764618	20	—	—
116545 2004 BE <sub>73</sub>	15.4	X	62.72378	140.36754	150.45530	6.91404	0.0437615	0.21827655	2.7318991	20	10 26.1	19.2
116546 2004 BW <sub>73</sub>	13.7	X	7.39196	267.09994	136.66079	15.40296	0.2056583	0.17105172	3.2140386	20	—	—
116547 2004 BK <sub>74</sub>	15.6	X	343.29478	274.29314	134.92791	14.44868	0.0870942	0.22548615	2.6733519	20	12 15.8	19.1
116548 2004 BN <sub>74</sub>	16.6	X	54.96446	290.35323	120.01528	3.30925	0.1596526	0.24015284	2.5633677	20	—	—
116549 2004 BR <sub>74</sub>	14.8	X	346.01424	303.12150	170.94357	5.22292	0.0897438	0.17570336	3.1570588	20	—	—
116550 2004 BT <sub>74</sub>	14.5	X	312.50722	27.65672	150.22686	14.99709	0.1417121	0.17773253	3.1329834	20	—	—
116551 2004 BF <sub>75</sub>	14.5	X	128.85425	348.98173	316.54698	15.74878	0.1301927	0.23113694	2.6296007	20	—	—
116552 2004 BH <sub>75</sub>	15.2	X	107.83267	192.52213	120.46510	14.65909	0.0867527	0.22857964	2.6492005	20	—	—
116553 2004 BZ <sub>75</sub>	15.4	X	305.93482	327.07987	187.86518	5.79451	0.1225772	0.17457915	3.1705977	20	—	—
116554 2004 BY <sub>76</sub>	14.4	X	149.52777	200.52487	170.34124	21.15266	0.0789931					

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>
116561 2004 BV <sub>82</sub>	15.9	X	104.36843	182.76925	83.25509	6.65043	0.1564569	0.27528751	2.3403369	20	11 29.6	19.4
116562 2004 BH <sub>83</sub>	16.9	X	337.49705	27.48609	168.42951	6.20473	0.0795905	0.30816179	2.1707852	20	1 26.2	19.2
116563 2004 BO <sub>83</sub>	14.3	X	13.14813	116.21944	26.28990	15.86581	0.1339507	0.23673937	2.5879491	20	1 25.4	17.4
116564 2004 BA <sub>84</sub>	15.5	X	325.01654	313.01278	201.80828	3.80375	0.2172349	0.23297992	2.6157148	20	—	—
116565 2004 BN <sub>84</sub>	16.1	X	22.04548	208.92551	220.67337	12.75750	0.1461195	0.23654495	2.5893669	20	—	—
116566 2004 BT <sub>84</sub>	15.1	X	313.20767	277.97049	214.71191	12.71746	0.1779651	0.17347056	3.1840914	20	—	—
116567 2004 BV <sub>84</sub>	13.0	X	261.08891	96.93367	257.92308	5.19748	0.0446691	0.08060426	5.3075901	20	6 1.3	19.9
116568 2004 BZ <sub>84</sub>	15.0	X	277.28564	70.33512	158.10470	13.93357	0.1425780	0.17858067	3.1230558	20	1 5.9	19.9
116569 2004 BD <sub>87</sub>	14.3	X	38.69159	0.21479	147.96763	23.62578	0.0278080	0.18595024	3.0399858	20	3 17.3	18.6
116570 2004 BS <sub>87</sub>	16.7	X	287.61662	225.76962	282.65243	3.67208	0.0702596	0.29090255	2.2558196	20	—	—
116571 2004 BW <sub>87</sub>	15.7	X	104.51268	146.12568	116.33074	7.50661	0.0909321	0.27518604	2.3409122	20	11 23.5	19.1
116572 2004 BD <sub>88</sub>	14.8	X	35.20306	332.09043	148.93414	3.55541	0.1923299	0.18403007	3.0610953	20	2 13.4	17.9
116573 2004 BZ <sub>88</sub>	16.4	X	272.89232	234.33513	185.22913	5.51085	0.1808381	0.27763366	2.3271335	20	8 29.9	18.8
116574 2004 BA <sub>90</sub>	15.5	X	136.86186	282.08927	290.70037	1.54131	0.1417232	0.27343365	2.3509032	20	10 22.8	19.1
116575 2004 BZ <sub>90</sub>	16.5	X	190.63783	234.08701	290.15011	1.39596	0.1588082	0.27604314	2.3360640	20	10 12.9	19.9
116576 2004 BA <sub>91</sub>	16.0	X	112.29353	270.86252	334.62942	1.91059	0.1692333	0.27387678	2.3483666	20	11 10.6	19.6
116577 2004 BN <sub>91</sub>	15.9	X	114.82579	294.93597	295.06961	5.41338	0.0767673	0.27384523	2.3485470	20	10 17.9	19.4
116578 2004 BB <sub>92</sub>	15.2	X	71.28888	0.73261	290.49154	8.49268	0.1279675	0.21869973	2.7283739	20	11 12.4	19.3
116579 2004 BD <sub>92</sub>	15.2	X	47.59112	121.87360	142.25745	11.50164	0.2545162	0.26677120	2.3898836	20	10 12.9	18.5
116580 2004 BX <sub>92</sub>	15.6	X	93.31833	143.61834	233.17403	8.29504	0.0939595	0.23872477	2.5735803	20	—	—
116581 2004 BZ <sub>92</sub>	14.9	X	318.00881	319.66964	199.17269	9.94189	0.1783281	0.17732832	3.1377426	20	—	—
116582 2004 BD <sub>93</sub>	15.2	X	148.97119	81.11107	181.38548	14.84491	0.0730425	0.22624695	2.6673555	20	12 28.0	19.4
116583 2004 BJ <sub>94</sub>	15.9	X	49.17909	211.61004	233.10591	12.08825	0.1576467	0.24294527	2.5436875	20	1 2.3	18.5
116584 2004 BZ <sub>94</sub>	15.2	X	167.61504	113.10118	205.39686	11.46938	0.1315761	0.23681283	2.5874138	20	—	—
116585 2004 BX <sub>95</sub>	14.6	X	61.82446	8.51360	68.45329	21.73811	0.2943108	0.18374701	3.0642383	20	3 2.3	18.7
116586 2004 BK <sub>97</sub>	15.9	X	214.48149	281.85793	1.18426	3.60094	0.0775160	0.24215421	2.5492242	20	1 3.3	19.6
116587 2004 BO <sub>97</sub>	14.9	X	224.98021	279.39640	314.49328	4.29187	0.1161409	0.17243945	3.1967718	20	—	—
116588 2004 BJ <sub>98</sub>	16.4	X	151.35806	153.72589	157.13481	6.94662	0.1475461	0.29019537	2.2594829	20	—	—
116589 2004 BV <sub>98</sub>	15.2	X	15.90219	326.45337	138.49744	11.35733	0.2006493	0.17697228	3.1419497	20	—	—
116590 2004 BK <sub>100</sub>	16.0	X	208.91706	131.02606	160.94129	4.42926	0.0915890	0.24200169	2.5502952	20	1 7.7	19.8
116591 2004 BT <sub>102</sub>	15.9	X	78.72284	358.79463	246.58172	1.81624	0.1600396	0.26886752	2.3774451	20	10 6.6	19.3
116592 2004 BF <sub>103</sub>	16.4	X	55.72196	177.70410	16.14102	24.83912	0.0640332	0.37850105	1.8927416	20	5 31.8	18.7
116593 2004 BA <sub>104</sub>	16.1	X	17.53565	339.28522	82.86887	4.27698	0.2010495	0.23384854	2.6092335	20	—	—
116594 2004 BF <sub>104</sub>	14.4	X	294.10262	63.14181	124.16811	27.15994	0.1663139	0.17891453	3.1191694	20	—	—
116595 2004 BL <sub>104</sub>	14.6	X	293.15822	244.47673	270.71114	10.27302	0.0379859	0.17497245	3.1658446	20	—	—
116596 2004 BV <sub>104</sub>	14.5	X	293.49900	56.08139	123.62582	11.37778	0.0975622	0.17923493	3.1154512	20	—	—
116597 2004 BL <sub>105</sub>	15.1	X	333.17685	152.56213	126.59035	3.01094	0.0539567	0.19964620	2.8993147	20	5 31.1	18.7
116598 2004 BN <sub>105</sub>	14.6	X	63.00771	297.70115	135.43229	12.50773	0.1121299	0.18265638	3.0764237	20	1 21.9	18.6
116599 2004 BG <sub>106</sub>	15.5	X	190.95988	148.86561	111.42908	14.90786	0.1257834	0.23277176	2.6172740	20	—	—
116600 2004 BH <sub>106</sub>	15.3	X	89.55071	222.81880	114.52354	12.01703	0.1651120	0.23190523	2.6237897	20	—	—
116601 2004 BP <sub>106</sub>	14.6	X	13.72698	32.19408	316.05863	13.95552	0.1746272	0.22073106	2.7116091	20	11 15.9	18.2
116602 2004 BS <sub>107</sub>	15.2	X	18.06277	251.73242	10.40656	6.68308	0.2568861	0.26121243	2.4236700	20	8 20.1	17.2
116603 2004 BJ <sub>108</sub>	15.4	X	210.34364	53.55475	64.78321	5.62619	0.0196001	0.21317671	2.7752975	20	9 14.7	19.3
116604 2004 BQ <sub>108</sub>	15.9	X	31.42214	181.41998	67.43284	5.34718	0.1037036	0.26275674	2.4141642	20	7 29.4	18.6
116605 2004 BJ <sub>109</sub>	14.9	X	141.07330	185.47686	106.37422	15.56072	0.1206427	0.22806344	2.6531732	20	—	—
116606 2004 BB <sub>110</sub>	14.6	X	216.84716	253.62276	49.49341	12.61245	0.2538258	0.24062052	2.5600450	20	2 1.1	19.3
116607 2004 BT <sub>110</sub>	16.6	X	160.33762	178.16643	36.39594	6.48748	0.2731377	0.27584625	2.3371755	20	11 11.7	20.7
116608 2004 BA <sub>111</sub>	15.1	X	329.00803	282.62213	236.06910	9.08731	0.0632238	0.17917112	3.1161908	20	—	—
116609 2004 BO <sub>111</sub>	16.2	X	99.71874	117.85785	77.53355	6.18406	0.1832314	0.26348268	2.4097279	20	8 29.9	19.9
116610 2004 BO <sub>113</sub>	15.9	X	174.76152	332.84838	218.72742	5.30009	0.0591929	0.27707479	2.3302618	20	11 9.8	18.8
116611 2004 BZ <sub>113</sub>	16.4	X	309.28301	250.29257	256.02556	4.64004	0.0979825	0.29310953	2.2444818	20	—	—
116612 2004 BE <sub>114</sub>	14.7	X	327.92739	308.19699	167.74039	18.02042	0.1664590	0.17152344	3.2081431	20	—	—
116613 2004 BR <sub>114</sub>	15.8	X	97.96715	316.21341	245.32936	5.56625	0.0755286	0.26515381	2.3995924	20	8 18.6	19.2
116614 2004 BT <sub>114</sub>	16.1	X	142.73460	272.96854	295.13702	6.19460	0.0632585	0.27404666	2.3473961	20	10 20.6	19.4
116615 2004 BA <sub>115</sub>	16.6	X	203.33296	198.25137	86.32082	23.47313	0.0825705	0.36286460	1.9467327	20	—	—
116616 2004 BH <sub>115</sub>	14.5	X	276.54966	177.86926	4.95543	19.31293	0.1085579	0.17447938	3.1718062	20	—	—
116617 2004 BJ <sub>115</sub>	14.3	X	97.86963	340.04124	53.03183	18.17107	0.1988596	0.18461548	3.0546208	20	2 8.1	18.9
116618 2004 BU <sub>116</sub>	13.8	X	20.26500	43.07470	75.70386	21.09063	0.1151689	0.18125080	3.0923081	20	1 14.0	17.8
116619 2004 BY <sub>117</sub>	15.7	X	235.54495	294.81749	178.28065	7.12387	0.1772852	0.21883244	2.7272707	20	9 15.9	19.8
116620 2004 BC <sub>118</sub>	15.9	X	23.91004	62.24722	168.22236	12.27342	0.1788537	0.25763340	2.4460647	20	6 24.8	18.4
116621 2004 BG <sub>118</sub>	16.7	X	204.76689	70.00308	161.58999	5.42179	0.0826405	0.29106884	2.2549603	20	—	—
116622 2004 BM <sub>118</sub>	14.8	X	327.59661	3.78612	119.00396	14.19086	0.1222586	0.17097653	3.2149808	20	—	—
116623 2004 BN <sub>118</sub>	16.2	X	129.59033	159.44941	69.42845	7.22536	0.0745679	0.27500165	2.3419585	20	11 6.7	19.5
116624 2004 BR <sub>118</sub>	15.6	X	276.01002	89.70297	43.49938	10.98979	0.0528090	0.22797074	2.6538924	20	12 23.8	19.1
116625 2004 BT <sub>118</sub>	13.9	X	47.18660	348.82611	15.58739	23.29043	0.0833363	0.16859297	3.2452121	20	12 29.1	18.9
116626 2004 BJ <sub>119</sub>	14.9	X	23.98693	296.07999	95.57974	15.03334	0.1744619	0.22952398	2.6419058	20	—	—
116627 2004 BB <sub>121</sub>	14.5	X	5.53947	35.27078	15.97165	14.74942	0.0661420	0.16893511	3.2408289	20	12 30.5	19.1
116628 2004 BB <sub>122</sub>	13.9	X	326.54296	271.52453	259.36353	24.22694	0.2139562	0.17969397	3.1101431	20	—	—
116629 2004 BD <sub>122</sub>	14.6	X	17.43204	53.18387	17.03018	16.73252	0.2287792	0.17919696	3.1158913	20	—	—
116630 2004 BD <sub>124</sub>	14.7	X	297.85941	354.92811	137.30978	13.99851	0.0554210	0.17225105	3.1991024	20	—	—
116631 2004 BK <sub>124</sub>	16.0	X	349.56502	192.71934	104.16843	5.02908	0.1335152	0.27130563	2.3631802	20	7 26.5	18.0
116632 2004 BQ <sub>141</sub>	15.4	X	58.37752	233.01893	158.84303	3.55855	0.1107884	0.17711932	3.1402105	20	—	—
116633 2004 BV <sub>147</sub>	15.6	X	289.66881	282.86808	41.49811	2.57295	0.0662748	0.20316054	2.8657819	20	5 26.7	19.4
116634 2004 BM <sub>150</sub>	15.7	X	200.50365	320.12722	88.73965	3.15469	0.0763248	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>
116641 2004 <i>CL</i> <sub>3</sub>	15.3	X	204.05979	252.20065	22.59330	13.76471	0.1654967	0.23823631	2.5770969	20	—	—
116642 2004 <i>CU</i> <sub>3</sub>	17.1	X	237.99795	31.25376	230.11339	0.94741	0.1599548	0.29982306	2.2108504	20	—	—
116643 2004 <i>CB</i> <sub>4</sub>	15.8	X	309.55234	11.45543	8.70788	2.27147	0.0828710	0.21529222	2.7570871	20	9 9.5	18.9
116644 2004 <i>CV</i> <sub>11</sub>	14.8	X	330.30158	341.40517	136.24954	8.94209	0.0316206	0.17195159	3.2028155	20	—	—
116645 2004 <i>CT</i> <sub>12</sub>	16.6	X	181.84608	306.54770	198.21748	1.78976	0.1061734	0.27226334	2.3576352	20	9 11.6	19.9
116646 2004 <i>CN</i> <sub>13</sub>	16.4	X	167.01858	27.96459	137.13840	2.56416	0.1417006	0.27265132	2.3553981	20	9 22.6	19.9
116647 2004 <i>CY</i> <sub>13</sub>	16.0	X	290.96911	100.17840	136.52615	6.93443	0.1536732	0.24261834	2.5459720	20	1 19.7	19.7
116648 2004 <i>CA</i> <sub>14</sub>	16.2	X	14.88348	144.38408	128.57225	3.62234	0.1941651	0.26206077	2.4184366	20	8 17.2	18.3
116649 2004 <i>CY</i> <sub>17</sub>	15.7	X	177.07303	196.15971	86.38488	3.05774	0.0867845	0.23357303	2.6112849	20	—	—
116650 2004 <i>CL</i> <sub>21</sub>	15.9	X	117.27516	187.24838	84.10081	1.90403	0.0461722	0.22224865	2.6992511	20	12 4.1	19.8
116651 2004 <i>CL</i> <sub>24</sub>	15.3	X	177.95613	359.06801	100.43281	7.41121	0.0375682	0.20435647	2.8545903	20	7 6.4	19.4
116652 2004 <i>CX</i> <sub>24</sub>	16.4	X	173.95750	329.51467	297.50791	5.40497	0.1803940	0.28733566	2.2744498	20	—	—
116653 2004 <i>CJ</i> <sub>29</sub>	15.7	X	270.26953	52.29699	294.12928	0.99287	0.0784406	0.20374675	2.8602824	20	5 28.2	19.7
116654 2004 <i>CV</i> <sub>30</sub>	15.4	X	352.08353	164.45264	142.45108	4.94658	0.1939979	0.20990600	2.8040526	20	8 9.6	17.8
116655 2004 <i>CW</i> <sub>33</sub>	16.6	X	44.68040	149.21413	165.17739	5.49708	0.1695285	0.27570478	2.3379750	20	12 1.4	19.7
116656 2004 <i>CY</i> <sub>35</sub>	16.8	X	202.49964	17.89582	149.99430	1.42245	0.1478973	0.27801716	2.3249930	20	11 1.9	20.0
116657 2004 <i>CM</i> <sub>36</sub>	15.0	X	200.64218	123.24103	146.51141	16.04440	0.0604162	0.17520562	3.1630352	20	—	—
116658 2004 <i>CR</i> <sub>36</sub>	15.0	X	104.80525	138.40910	184.02630	15.19564	0.1413976	0.22924025	2.6440853	20	—	—
116659 2004 <i>CW</i> <sub>36</sub>	15.1	X	99.89970	310.30106	163.94123	13.03033	0.1090913	0.19234731	2.9722042	20	5 3.2	19.5
116660 2004 <i>CV</i> <sub>37</sub>	16.0	X	173.94887	330.11212	291.15670	6.92864	0.0859023	0.28964188	2.2623605	20	—	—
116661 2004 <i>CU</i> <sub>38</sub>	15.6	X	44.55891	303.33674	339.95629	2.17285	0.0722390	0.21222945	2.7835495	20	9 22.6	19.2
116662 2004 <i>CV</i> <sub>39</sub>	14.9	X	298.94419	209.13853	148.35620	13.88846	0.1825865	0.20876987	2.8142165	20	7 6.8	18.5
116663 2004 <i>CJ</i> <sub>40</sub>	14.8	X	328.62933	185.45637	45.16483	13.03555	0.0370176	0.18895981	3.0076209	20	3 29.3	19.0
116664 2004 <i>CL</i> <sub>40</sub>	15.9	X	73.66173	81.63530	152.93985	6.64382	0.0811968	0.26754236	2.3852890	20	9 6.4	19.0
116665 2004 <i>CM</i> <sub>40</sub>	15.8	X	334.82861	245.00022	176.38460	11.93098	0.0566574	0.22412715	2.6841476	20	12 15.3	19.4
116666 2004 <i>CQ</i> <sub>40</sub>	15.8	X	92.01234	271.40643	326.10297	4.57147	0.1888125	0.26891267	2.3771789	20	10 11.8	19.4
116667 2004 <i>CN</i> <sub>41</sub>	13.5	X	86.95084	16.16081	10.57006	17.74428	0.2116903	0.17876835	3.1208696	20	1 18.9	17.9
116668 2004 <i>CQ</i> <sub>42</sub>	16.8	X	310.63553	130.62957	131.77857	4.05405	0.1084131	0.31045228	2.1600948	20	3 20.2	19.1
116669 2004 <i>CQ</i> <sub>46</sub>	15.7	X	82.90598	221.36927	124.41116	10.48100	0.1033054	0.22999381	2.6383067	20	—	—
116670 2004 <i>CK</i> <sub>49</sub>	14.8	X	42.59707	325.53376	131.81348	13.51323	0.0428239	0.18046160	3.1013171	20	1 18.1	19.0
116671 2004 <i>CQ</i> <sub>53</sub>	16.7	X	128.04779	166.86716	138.79544	3.84001	0.1859362	0.28718520	2.2752442	20	—	—
116672 2004 <i>CZ</i> <sub>56</sub>	15.4	X	57.91690	238.69092	15.38211	22.91467	0.2057150	0.26527113	2.3988848	20	10 2.8	18.6
116673 2004 <i>CP</i> <sub>60</sub>	16.3	X	200.23259	198.43322	80.18232	7.95131	0.1973973	0.29576394	2.2310325	20	—	—
116674 2004 <i>CX</i> <sub>61</sub>	15.9	X	179.39274	197.82867	96.33184	5.62298	0.0996307	0.23712521	2.5851410	20	—	—
116675 2004 <i>CH</i> <sub>65</sub>	15.2	X	299.32190	264.68941	342.51418	3.78904	0.0608974	0.18988683	2.9978241	20	3 3.1	19.1
116676 2004 <i>CC</i> <sub>66</sub>	15.9	X	339.84131	335.68890	87.37924	9.09823	0.1335152	0.22835310	2.6509290	20	—	—
116677 2004 <i>CT</i> <sub>67</sub>	16.3	X	271.15451	268.30471	129.59016	7.78006	0.1207503	0.27178499	2.3604007	20	8 6.1	19.0
116678 2004 <i>CV</i> <sub>67</sub>	16.6	X	36.53547	190.86565	37.71643	1.88868	0.1475123	0.25933923	2.4353268	20	7 12.8	19.0
116679 2004 <i>CH</i> <sub>69</sub>	16.3	X	292.13594	256.09887	112.99217	6.54472	0.1106386	0.27077257	2.3662807	20	7 29.9	18.9
116680 2004 <i>CH</i> <sub>69</sub>	15.5	X	82.73080	264.56265	135.63729	15.36783	0.0935092	0.23870183	2.5737452	20	—	—
116681 2004 <i>CF</i> <sub>70</sub>	14.7	X	184.91663	196.23474	99.42923	11.85891	0.0081739	0.17497667	3.1657937	20	—	—
116682 2004 <i>CW</i> <sub>70</sub>	16.8	X	216.81061	153.43119	130.26372	4.35951	0.1426162	0.30060251	2.2070270	20	—	—
116683 2004 <i>CY</i> <sub>71</sub>	14.8	X	50.99943	62.28011	30.79272	9.49644	0.0539649	0.18031799	3.1029636	20	1 28.3	19.1
116684 2004 <i>CO</i> <sub>72</sub>	15.1	X	107.52005	320.86668	356.10992	11.56003	0.1720163	0.22781861	2.6550738	20	—	—
116685 2004 <i>CG</i> <sub>77</sub>	15.7	X	296.71974	255.81951	139.94231	6.69862	0.0614422	0.21382597	2.7696768	20	9 14.3	19.2
116686 2004 <i>CM</i> <sub>77</sub>	15.6	X	138.46137	292.15193	154.71243	2.50697	0.0866543	0.19596632	2.9354978	20	5 8.7	20.0
116687 2004 <i>CE</i> <sub>78</sub>	15.8	X	65.70275	138.21904	124.25367	3.38042	0.1750189	0.26848815	2.3796841	20	10 18.7	19.0
116688 2004 <i>CC</i> <sub>80</sub>	15.6	X	300.11979	264.57885	46.47467	3.13446	0.1923654	0.25569715	2.4583976	20	5 2.4	18.3
116689 2004 <i>CB</i> <sub>83</sub>	15.7	X	154.39342	219.00138	140.99785	15.50815	0.1078264	0.24411666	2.5355437	20	2 4.6	19.3
116690 2004 <i>CM</i> <sub>83</sub>	14.8	X	218.00333	123.34988	145.31949	14.65069	0.0654681	0.17630969	3.1498166	20	—	—
116691 2004 <i>CW</i> <sub>83</sub>	17.0	X	64.55030	94.06797	152.50036	2.98046	0.2018520	0.26547461	2.3976588	20	9 28.5	20.1
116692 2004 <i>CZ</i> <sub>84</sub>	14.5	X	129.68371	276.83558	126.76702	12.18806	0.0409959	0.18356280	3.0662879	20	3 4.0	18.9
116693 2004 <i>CD</i> <sub>85</sub>	15.9	X	273.66251	110.28209	141.44708	15.39597	0.0887331	0.24043832	2.5613382	20	1 26.9	19.6
116694 2004 <i>CV</i> <sub>85</sub>	14.4	X	208.47271	151.29809	143.02638	11.40470	0.1652262	0.17744533	3.1363630	20	1 18.2	19.7
116695 2004 <i>CQ</i> <sub>91</sub>	13.9	X	263.37530	44.06506	301.87419	14.74317	0.2524643	0.20062159	2.8899097	20	4 20.6	18.9
116696 2004 <i>CH</i> <sub>92</sub>	16.2	X	304.91202	319.83809	40.95957	7.62575	0.1378282	0.27234548	2.3571611	20	8 8.8	18.6
116697 2004 <i>CO</i> <sub>92</sub>	15.8	X	307.65490	278.88514	318.77811	15.45939	0.2178832	0.24408612	2.5357552	20	2 1.8	19.0
116698 2004 <i>CZ</i> <sub>97</sub>	15.7	X	27.25500	247.45452	10.68611	11.71539	0.1405054	0.26378208	2.4079041	20	8 15.3	18.4
116699 2004 <i>CP</i> <sub>98</sub>	15.9	X	162.88958	212.70884	359.81228	1.00190	0.1473503	0.21559011	2.7545468	20	11 7.8	20.2
116700 2004 <i>CW</i> <sub>99</sub>	14.8	X	29.31434	311.19541	127.61496	6.54924	0.1094215	0.17388068	3.1790828	20	—	—
116701 2004 <i>CJ</i> <sub>101</sub>	16.3	X	107.25452	300.67682	255.99577	2.22280	0.1176813	0.26392976	2.4070058	20	8 29.3	19.6
116702 2004 <i>CM</i> <sub>101</sub>	15.4	X	216.06283	14.65610	251.45910	13.43407	0.1065218	0.23877243	2.5732378	20	—	—
116703 2004 <i>CS</i> <sub>101</sub>	15.5	X	83.69997	234.32804	238.45939	9.93201	0.0991760	0.19170414	2.9788483	20	4 3.9	19.6
116704 2004 <i>CZ</i> <sub>101</sub>	14.9	X	321.36896	284.27383	258.74890	13.07022	0.0779208	0.18031797	3.1029639	20	1 9.9	19.3
116705 2004 <i>CO</i> <sub>102</sub>	14.9	X	78.63664	278.30647	220.05586	7.88565	0.0264264	0.19306113	2.9648734	20	4 21.9	18.8
116706 2004 <i>CR</i> <sub>102</sub>	15.5	X	207.48925	276.76243	285.85289	10.23429	0.1468163	0.22359372	2.6884150	20	12 10.4	19.5
116707 2004 <i>CD</i> <sub>107</sub>	16.0	X	152.58811	285.82196	213.65175	6.28952	0.0583385	0.26385746	2.4074455	20	7 30.7	19.4
116708 2004 <i>CE</i> <sub>113</sub>	15.6	X	109.06230	358.50601	52.12863	4.86090	0.1400813	0.18918015	3.0052851	20	2 29.5	20.0
116709 2004 <i>CS</i> <sub>113</sub>	14.6	X	5.50335	201.60354	282.39430	10.49288	0.0894463	0.17962471	3.1109426	20	—	—
116710 2004 <i>CF</i> <sub>114</sub>	16.0	X	272.36130	228.25381	197.45023	9.96498	0.1720279	0.21674541	2.7447499	20	8 29.2	19.6
116711 2004 <i>DY</i> <sub>3</sub>	15.1	X	168.07685	278.04872	123.50058	10.40516	0.0847757	0.19253901	2.9702310	20	4 18.1	19.8
116712 2004 <i>DX</i> <sub>4</sub>	14.6	X	257.16498	234.12767								

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>
116721 2004 DT <sub>11</sub>	15.8	X	26.54408	335.31272	318.16242	2.33223	0.2244720	0.26647608	2.3916478	20	10 13.9	18.4
116722 2004 DS <sub>12</sub>	16.6	X	246.35612	127.68621	104.72285	2.75170	0.1207120	0.29275038	2.2463172	20	—	—
116723 2004 DC <sub>13</sub>	16.2	X	108.49223	271.36076	350.60818	6.08115	0.0763415	0.27483260	2.3429187	20	11 22.7	19.6
116724 2004 DE <sub>13</sub>	15.0	X	288.71188	325.68768	359.41206	9.89420	0.1619567	0.25478106	2.4642870	20	5 6.7	18.3
116725 2004 DG <sub>13</sub>	15.5	X	14.66563	18.10758	290.94470	6.48044	0.1194039	0.26579199	2.3957498	20	9 26.1	18.3
116726 2004 DK <sub>14</sub>	16.3	X	74.79842	78.80654	154.79008	3.84938	0.0999839	0.26414880	2.4056750	20	9 8.7	19.2
116727 2004 DL <sub>16</sub>	16.1	X	144.04305	300.03500	196.07520	6.22797	0.0979351	0.26141313	2.4224293	20	7 18.1	19.7
116728 2004 DZ <sub>20</sub>	16.2	X	194.34977	27.12778	222.09800	8.24795	0.1813557	0.28615806	2.2806855	20	—	—
116729 2004 DR <sub>22</sub>	14.9	X	103.59642	281.52324	148.07888	9.03764	0.0778474	0.18468535	3.0538504	20	3 7.9	19.2
116730 2004 DC <sub>23</sub>	15.7	X	130.14415	185.34262	185.41664	21.83099	0.0240536	0.24050086	2.5608941	20	1 8.4	19.7
116731 2004 DC <sub>24</sub>	16.3	X	158.94246	343.59031	250.36787	4.49818	0.0488321	0.28175613	2.3043784	20	12 18.2	19.1
116732 2004 DO <sub>24</sub>	16.7	X	136.00925	241.26015	299.59296	1.38586	0.1519257	0.26747138	2.3857110	20	9 10.6	20.3
116733 2004 DY <sub>25</sub>	14.7	X	192.78863	133.00353	118.99556	7.51958	0.1020669	0.16991180	3.2283977	20	—	—
116734 2004 DD <sub>34</sub>	15.9	X	158.60404	248.06382	6.67781	6.77521	0.0755940	0.28108879	2.3080242	20	—	—
116735 2004 DD <sub>37</sub>	15.6	X	39.48813	148.77307	163.71277	10.07700	0.1496236	0.27028345	2.3691347	20	11 19.9	18.8
116736 2004 DE <sub>37</sub>	15.8	X	164.76397	302.73135	5.76448	6.90460	0.1326065	0.29090964	2.2557829	20	—	—
116737 2004 DO <sub>38</sub>	15.4	X	306.69529	13.24110	141.41127	12.81602	0.1310443	0.22953927	2.6417885	20	—	—
116738 2004 DT <sub>41</sub>	16.3	X	312.94400	245.39790	308.66600	4.08580	0.1103335	0.29887114	2.2155424	20	—	—
116739 2004 DX <sub>41</sub>	16.1	X	179.71266	233.85053	318.47917	6.23587	0.0528486	0.27702111	2.3305628	20	11 15.0	19.3
116740 2004 DA <sub>45</sub>	16.8	X	78.91908	22.43621	348.96966	17.24730	0.0731255	0.35060001	1.9918720	20	—	—
116741 2004 DR <sub>45</sub>	16.2	X	129.53810	198.20362	24.77109	6.16297	0.0942020	0.26992341	2.3712409	20	10 27.4	19.7
116742 2004 DV <sub>47</sub>	14.5	X	112.99434	95.72123	182.50911	10.50863	0.2311186	0.21318979	2.7751840	20	12 14.3	19.5
116743 2004 DB <sub>48</sub>	16.1	X	146.75308	10.57089	163.42153	6.91486	0.0277071	0.26850814	2.3795659	20	9 11.7	19.0
116744 2004 DD <sub>48</sub>	16.1	X	49.28602	119.12969	158.90351	6.70480	0.1177565	0.26747207	2.3857069	20	10 11.0	19.0
116745 2004 DO <sub>48</sub>	16.4	X	99.73915	257.60851	348.30381	3.54463	0.1757088	0.26879043	2.3783774	20	10 29.5	20.0
116746 2004 DC <sub>49</sub>	16.2	X	155.38831	31.56171	173.80132	6.80488	0.0882375	0.27366933	2.3495533	20	11 4.6	19.6
116747 2004 DC <sub>51</sub>	16.1	X	177.75925	289.35291	11.24096	5.83642	0.1801441	0.29232911	2.2484747	20	—	—
116748 2004 DX <sub>51</sub>	15.7	X	85.60596	114.31496	152.89779	9.80921	0.1362796	0.20992093	2.8039196	20	11 3.1	20.0
116749 2004 DE <sub>52</sub>	16.8	X	350.22854	19.93467	134.62296	5.75590	0.0195312	0.29834074	2.2181675	20	—	—
116750 2004 DG <sub>52</sub>	16.2	X	286.97827	62.80124	157.10639	13.30876	0.1952564	0.23549918	2.5970269	20	—	—
116751 2004 DT <sub>52</sub>	15.8	X	237.63576	273.23137	34.80125	4.81683	0.1492241	0.24411094	2.5355833	20	2 25.2	19.7
116752 2004 DZ <sub>52</sub>	15.9	X	224.14609	136.55103	78.02064	4.49638	0.1737467	0.28617879	2.2805753	20	—	—
116753 2004 DD <sub>60</sub>	16.1	X	0.96764	83.08439	183.39866	2.64878	0.1502290	0.25909414	2.4368623	20	6 29.8	18.3
116754 2004 DT <sub>60</sub>	16.7	X	174.22358	144.88215	159.97870	6.75023	0.1478802	0.29509208	2.2344176	20	—	—
116755 2004 DG <sub>66</sub>	16.3	X	20.18634	170.01835	149.04322	7.19043	0.1300538	0.27045671	2.3681228	20	10 29.7	19.0
116756 2004 DV <sub>74</sub>	15.8	X	268.66675	124.23871	239.05748	1.00065	0.0591133	0.20180275	2.8786221	20	6 20.5	19.5
116757 2004 EF <sub>1</sub>	16.2	X	204.84573	280.74239	39.42400	21.84188	0.0935941	0.36145719	1.9517827	20	1 31.3	19.2
116758 2004 EA <sub>3</sub>	16.3	X	277.65848	65.24408	124.84331	7.04569	0.0322769	0.29398761	2.2400104	20	—	—
116759 2004 EH <sub>4</sub>	15.0	X	220.04044	296.06786	104.24793	13.43404	0.2056022	0.26054729	2.4277931	20	5 31.0	19.0
116760 2004 EF <sub>5</sub>	15.2	X	185.92582	182.41181	150.58056	7.45891	0.0241389	0.17971792	3.1098668	20	2 8.6	19.7
116761 2004 ED <sub>6</sub>	16.8	X	154.11548	235.25359	335.20161	1.97634	0.1226763	0.27521515	2.3407471	20	11 6.3	20.4
116762 2004 ER <sub>7</sub>	15.3	X	342.39403	59.74653	171.35802	8.90887	0.1394750	0.18568820	3.0428451	20	4 5.1	18.8
116763 2004 EW <sub>7</sub>	15.7	X	189.43245	124.75891	179.86491	27.15860	0.2653167	0.23152886	2.6266323	20	1 9.9	20.9
116764 2004 EO <sub>8</sub>	16.1	X	256.28367	180.78474	0.18582	5.65075	0.0963687	0.28626744	2.2801045	20	—	—
116765 2004 ES <sub>8</sub>	16.3	X	171.43381	57.87465	172.28948	6.47335	0.0768640	0.27902821	2.3193732	20	12 24.9	19.6
116766 2004 EJ <sub>10</sub>	16.4	X	97.35454	39.70368	176.25864	1.93657	0.1036758	0.26600032	2.3944987	20	9 12.7	19.6
116767 2004 ET <sub>11</sub>	16.1	X	237.18000	240.54242	355.46564	10.82279	0.1791986	0.23047061	2.6346667	20	—	—
116768 2004 EE <sub>13</sub>	16.7	X	256.85502	192.70920	84.19604	3.76118	0.0857381	0.30284209	2.1961326	20	2 2.3	19.5
116769 2004 EN <sub>14</sub>	15.9	X	33.53570	168.73739	138.58556	6.78240	0.1115959	0.26837728	2.3803394	20	10 29.7	18.8
116770 2004 ED <sub>15</sub>	15.0	X	52.54992	243.20011	142.82263	15.05145	0.0868077	0.22729396	2.6591579	20	—	—
116771 2004 EN <sub>17</sub>	15.0	X	58.90541	150.86150	145.16666	13.10480	0.0877057	0.20927567	2.8096802	20	11 3.6	19.1
116772 2004 ET <sub>17</sub>	14.9	X	291.97580	252.17403	53.19249	12.26029	0.1845399	0.18779752	3.0200177	20	4 20.9	19.2
116773 2004 ED <sub>18</sub>	15.8	X	315.27795	72.04814	126.58450	13.87730	0.1028174	0.23772903	2.5807613	20	1 9.2	19.3
116774 2004 EV <sub>18</sub>	14.7	X	264.55400	121.17742	159.51871	11.83449	0.1068348	0.18318091	3.0705548	20	2 26.6	19.3
116775 2004 EW <sub>21</sub>	16.5	X	211.62105	269.62295	324.38653	1.78006	0.0929115	0.28786397	2.2716662	20	—	—
116776 2004 ED <sub>22</sub>	15.5	X	152.39819	293.34720	339.75397	11.20325	0.2472946	0.22078881	2.7111362	20	—	—
116777 2004 EJ <sub>22</sub>	14.7	X	15.98380	55.51949	118.48687	10.11675	0.1533389	0.18193559	3.0845437	20	3 22.5	18.3
116778 2004 EY <sub>25</sub>	15.4	X	84.23790	263.11393	339.12388	8.41746	0.0823843	0.20637367	2.8359585	20	9 19.6	19.4
116779 2004 EM <sub>29</sub>	15.1	X	83.52767	287.67740	357.33076	11.77400	0.2499033	0.21070123	2.7969927	20	11 26.6	20.0
116780 2004 EH <sub>31</sub>	15.8	X	113.29342	296.10062	331.44161	4.76011	0.1174999	0.27477359	2.3432541	20	12 7.6	19.2
116781 2004 EL <sub>31</sub>	15.5	X	333.93430	300.65787	272.81703	7.46633	0.0598551	0.24373673	2.5381779	20	2 25.1	18.8
116782 2004 EV <sub>31</sub>	15.9	X	285.98988	246.29804	358.87253	11.38992	0.1431792	0.23854963	2.5748398	20	1 30.9	19.8
116783 2004 EW <sub>31</sub>	16.3	X	109.11071	289.56039	238.40424	2.38841	0.1624481	0.25950332	2.4343000	20	7 28.2	20.0
116784 2004 EC <sub>34</sub>	14.2	X	27.44914	239.54226	284.05205	1.23154	0.1086391	0.12482904	3.9651441	20	3 27.7	19.3
116785 2004 EJ <sub>34</sub>	15.8	X	176.55596	40.33615	207.96978	1.69465	0.2520820	0.22036488	2.7146122	20	12 26.9	20.6
116786 2004 EN <sub>34</sub>	16.7	X	72.54567	64.90240	181.34037	2.17773	0.1915081	0.26384476	2.4075227	20	10 4.9	20.1
116787 2004 EX <sub>34</sub>	16.5	X	211.02342	25.66852	162.66549	5.51932	0.1149855	0.27959920	2.3162144	20	12 13.7	19.5
116788 2004 EJ <sub>35</sub>	15.0	X	318.46260	303.49873	28.85							

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>
116801 2004 ES <sub>63</sub>	16.7	X	285.64192	288.07790	175.22367	6.79007	0.0638394	0.27945350	2.3170194	20	12 13.5	19.3
116802 2004 EJ <sub>66</sub>	14.3	X	214.79706	148.97524	116.54653	16.34902	0.0291443	0.17233687	3.1980402	20	—	—
116803 2004 EJ <sub>68</sub>	15.8	X	319.79434	330.01740	318.91271	3.85397	0.1545384	0.25497439	2.4630412	20	5 7.3	18.5
116804 2004 EJ <sub>70</sub>	15.9	X	141.35734	115.48770	173.88388	13.68093	0.1937410	0.22160791	2.7044516	20	—	—
116805 2004 EP <sub>71</sub>	16.1	X	344.97727	330.12962	2.98871	3.02947	0.1756749	0.26561284	2.3968269	20	9 15.6	18.0
116806 2004 EB <sub>73</sub>	16.3	X	99.09423	278.07347	327.22930	4.86019	0.0929355	0.26954960	2.3734327	20	10 21.0	19.6
116807 2004 EC <sub>73</sub>	15.0	X	86.66500	184.32582	186.25116	15.91345	0.2173370	0.22996853	2.6385001	20	—	—
116808 2004 ED <sub>73</sub>	16.4	X	47.40607	103.02377	217.61288	2.37712	0.0832266	0.27391687	2.3481375	20	11 29.6	19.2
116809 2004 EV <sub>73</sub>	16.0	X	24.46868	161.94534	76.40871	6.80633	0.0210815	0.25789928	2.4443832	20	6 20.4	18.8
116810 2004 EX <sub>76</sub>	16.1	X	55.41107	235.40334	14.15297	6.77471	0.0890375	0.26372124	2.4082744	20	9 4.8	19.0
116811 2004 EP <sub>77</sub>	15.7	X	1.90652	209.49335	108.51148	3.39573	0.2203043	0.26439427	2.4041858	20	10 7.3	17.7
116812 2004 EV <sub>77</sub>	16.0	X	2.62555	294.38308	27.25165	4.96180	0.2365288	0.26503163	2.4003298	20	10 15.7	18.0
116813 2004 EA <sub>80</sub>	16.0	X	279.07610	104.60155	129.88844	9.31688	0.1488623	0.23960903	2.5672447	20	1 5.4	19.8
116814 2004 EM <sub>80</sub>	15.1	X	303.73453	108.45599	116.82846	11.67401	0.1511664	0.17895315	3.1187207	20	1 31.3	19.5
116815 2004 EQ <sub>80</sub>	15.2	X	349.21180	193.15897	89.75400	15.52895	0.1400994	0.25531774	2.4608325	20	6 30.3	17.3
116816 2004 EY <sub>83</sub>	16.8	X	198.71857	189.39339	347.63801	2.66522	0.1162476	0.27513140	2.3412221	20	11 11.3	20.0
116817 2004 ER <sub>86</sub>	16.4	X	164.77317	182.81756	142.52372	6.93462	0.1265118	0.29538875	2.2329213	20	—	—
116818 2004 ER <sub>94</sub>	14.9	X	166.66121	84.19210	119.25822	14.88663	0.0981372	0.21295010	2.7772660	20	11 7.9	19.4
116819 2004 FM	15.8	X	132.68321	224.76117	189.12477	23.00599	0.0986146	0.36848584	1.9268837	20	3 2.8	18.0
116820 2004 FO	16.1	X	97.40963	258.52469	190.83559	22.81840	0.0530067	0.36713455	1.9316090	20	2 22.8	18.2
116821 2004 FF <sub>12</sub>	16.0	X	298.03713	341.69567	237.27283	7.99363	0.1100326	0.23801659	2.5786827	20	1 11.0	19.7
116822 2004 FR <sub>12</sub>	16.2	X	102.17741	307.89212	294.11757	3.75408	0.1618993	0.26804119	2.3823287	20	10 25.5	19.9
116823 2004 FY <sub>12</sub>	16.2	X	55.62521	38.47091	254.03555	5.22979	0.1179220	0.26913351	2.3758783	20	11 5.2	19.4
116824 2004 FT <sub>14</sub>	16.5	X	204.51014	272.42844	5.31266	2.32883	0.1546743	0.28958295	2.2626674	20	—	—
116825 2004 FG <sub>15</sub>	15.2	X	4.75807	5.85713	203.91610	11.64092	0.1486969	0.18512778	3.0489829	20	4 14.3	18.5
116826 2004 FA <sub>16</sub>	16.1	X	34.55580	321.64020	207.47595	23.72328	0.1113879	0.36893971	1.9253031	20	3 13.4	17.7
116827 2004 FT <sub>17</sub>	16.4	X	94.74845	239.74327	215.47233	19.99821	0.0810470	0.36608781	1.9352892	20	2 29.9	18.7
116828 2004 FD <sub>21</sub>	15.6	X	283.78344	231.82244	357.10909	14.62060	0.1615952	0.23698181	2.5861837	20	1 19.0	19.4
116829 2004 FV <sub>25</sub>	16.4	X	80.89402	27.33908	194.75013	4.75408	0.1962405	0.26020844	2.4299004	20	9 11.1	19.9
116830 2004 FU <sub>26</sub>	14.6	X	306.99886	35.96811	196.06985	17.17031	0.1822842	0.17704226	3.1411217	20	2 3.6	19.3
116831 2004 FA <sub>31</sub>	14.8	X	254.66321	132.29392	176.42896	28.69573	0.1395377	0.23517348	2.5994242	20	3 12.9	18.6
116832 2004 FR <sub>32</sub>	15.4	X	6.18502	265.22753	206.50775	8.67612	0.0661292	0.17500065	3.1655045	20	—	—
116833 2004 FB <sub>35</sub>	14.7	X	216.24295	144.59508	195.39471	12.73041	0.2077252	0.24504963	2.5291040	20	3 9.4	19.1
116834 2004 FB <sub>36</sub>	15.2	X	198.03327	214.87112	152.73084	4.61786	0.1808381	0.24577141	2.5241499	20	3 31.5	19.4
116835 2004 FL <sub>36</sub>	15.4	X	202.10355	21.97533	130.47474	4.81559	0.0399457	0.21072773	2.7967583	20	10 14.9	19.4
116836 2004 FL <sub>38</sub>	16.0	X	324.17812	288.11674	258.63719	3.98720	0.0906355	0.23745057	2.5827789	20	1 7.3	19.3
116837 2004 FZ <sub>38</sub>	16.6	X	274.82890	58.00982	172.60777	4.29897	0.1696950	0.23403142	2.6078740	20	—	—
116838 2004 FA <sub>39</sub>	16.4	X	311.57583	185.91615	339.70081	7.07586	0.1430432	0.29279548	2.2460865	20	—	—
116839 2004 FO <sub>39</sub>	14.7	X	353.60766	56.44212	203.50856	18.01824	0.2247101	0.18783820	3.0195816	20	5 31.5	17.9
116840 2004 FP <sub>39</sub>	15.3	X	194.47829	262.72540	8.59099	13.05017	0.1371547	0.22411597	2.6842369	20	—	—
116841 2004 FQ <sub>39</sub>	15.9	X	322.97089	10.98972	162.80776	4.97456	0.1064147	0.29419579	2.2389535	20	—	—
116842 2004 FN <sub>42</sub>	15.8	X	44.33284	153.79547	150.44437	5.45760	0.1083586	0.21452621	2.7636464	20	10 28.0	19.5
116843 2004 FH <sub>45</sub>	15.8	X	228.36942	264.07486	44.82583	8.78844	0.1380727	0.29886252	2.2155850	20	2 14.2	19.2
116844 2004 FR <sub>48</sub>	15.9	X	88.37093	349.88208	358.04093	6.62400	0.1365971	0.28477264	2.2880765	20	—	—
116845 2004 FY <sub>48</sub>	16.4	X	92.64890	29.65349	255.55305	2.93125	0.1713471	0.27421415	2.3464401	20	12 12.6	20.0
116846 2004 FE <sub>49</sub>	16.8	X	149.58206	88.13873	197.79373	6.03543	0.1302340	0.28449620	2.2895585	20	—	—
116847 2004 FN <sub>51</sub>	16.4	X	160.07379	169.17118	114.00158	6.22181	0.1513691	0.28789239	2.2715167	20	—	—
116848 2004 FE <sub>52</sub>	16.4	X	222.52577	70.99578	177.34479	12.96658	0.2292560	0.22680085	2.6630108	20	—	—
116849 2004 FM <sub>55</sub>	16.0	X	9.71852	259.03100	166.73755	3.91606	0.1760688	0.26798275	2.3826751	20	11 10.5	18.3
116850 2004 FS <sub>60</sub>	15.3	X	42.22850	24.41691	147.80840	9.58478	0.1413977	0.18428885	3.0582290	20	5 3.7	19.1
116851 2004 FJ <sub>64</sub>	16.6	X	337.92257	291.09942	157.23902	5.77893	0.1394571	0.28533585	2.2850646	20	—	—
116852 2004 FL <sub>65</sub>	16.2	X	332.12893	348.94137	163.43469	3.67896	0.0486847	0.23203249	2.6228302	20	—	—
116853 2004 FN <sub>65</sub>	15.8	X	11.29122	13.42756	117.76743	2.75402	0.0309794	0.23490450	2.6014081	20	1 8.4	19.1
116854 2004 FW <sub>65</sub>	15.8	X	240.47654	94.19897	185.60253	7.30443	0.1982317	0.23243624	2.6197920	20	1 20.0	20.3
116855 2004 FW <sub>66</sub>	15.8	X	355.17365	229.63052	129.83969	7.43425	0.1371694	0.27238025	2.3569605	20	11 16.9	18.3
116856 2004 FV <sub>76</sub>	15.8	X	313.10554	303.43439	14.28807	2.25220	0.1893302	0.25694009	2.4504629	20	6 3.6	18.1
116857 2004 FC <sub>78</sub>	16.0	X	254.20122	45.03693	152.81198	2.44129	0.0179905	0.22607961	2.6686715	20	—	—
116858 2004 FZ <sub>84</sub>	15.2	X	108.12212	159.04728	174.98925	14.76020	0.1278827	0.22797497	2.6538596	20	—	—
116859 2004 FB <sub>90</sub>	15.8	X	161.14711	171.22743	113.93113	6.15854	0.1569068	0.22221310	2.6995391	20	—	—
116860 2004 FM <sub>90</sub>	15.2	X	212.21685	39.51854	179.00986	13.32703	0.1301737	0.21989563	2.7184727	20	—	—
116861 2004 FR <sub>90</sub>	14.9	X	267.10010	181.07763	81.50399	10.02778	0.1015655	0.17489970	3.1667225	20	2 12.6	19.7
116862 2004 FZ <sub>91</sub>	16.4	X	160.71219	152.18781	102.76810	8.58773	0.0826504	0.28144458	2.3060787	20	—	—
116863 2004 FK <sub>92</sub>	16.7	X	214.99986	129.25188	195.32208	2.36224	0.1491083	0.30156317	2.2023374	20	2 15.9	20.0
116864 2004 FG <sub>93</sub>	15.0	X	321.66038	155.46558	97.68562	5.16220	0.1431605	0.18384179	3.0631850	20	4 1.8	18.9
116865 2004 FE <sub>98</sub>	15.5	X	28.53912	173.55080	166.36421	23.78685	0.1092006	0.27310606	2.3527827	20	12 7.4	19.1
116866 2004 FA <sub>99</sub>	16.5	X	176.39813	332.18800	327.91749	2.8662	0.1279878	0.29480461	2.2358699	20	—	—
116867 2004 FF <sub>105</sub>	16.4	X	5.37651	219.31595	352.93794	4.10125	0.1008403	0.30661213	2.1780934	20	4 7.6	18.2
116868 2004 FG <sub>105</sub>	15.4	X	261.39454	268.66806	110.14518	21.41437	0.0447158	0.23129811	2.6283790	20	—	—
116869 2004 FJ <sub>105</sub>	14.7	X	76.91695	258.40209	300.44170	15.59405	0.0864087	0.19629559	2.9322142	20	7 18.0	18.8
116870 2004 FR <sub>105</sub>	15.2	X	191.10570	126.59469	53.33651	11.58843	0.1612244	0.21584863	2.7523470	20	10 27.4	19.6
116871 2004 FM <sub>107</sub>	15.5	X	40.01510	349.79534	227.57592	3.67954	0.1254852	0.19157991	2.9801359	20	6 24.6	19.1
116872 2004 FJ <sub>108</sub>	16.5	X	53.80601	127.27343	160.40272	1.71426	0.1701468	0.26783483	2.3835523	20	11 5.2	19.7
116873 2004 FP <sub>108</sub>	15.8	X	202.44550	346.77236	185.58092	1.53323	0.1150784	0.21269354	2.7794989	20	10 30.9	19.8
116874 2004 FZ <sub>109</sub>	15.3	X	313.82908	242.82014	19.52465	16.24970	0.1840415	0.1830				

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>
116881 2004 FT <sub>116</sub>	14.7	X	266.53682	146.17343	115.59948	11.33476	0.1706399	0.17433674	3.1735361	20	2 1.6	19.5
116882 2004 FO <sub>118</sub>	14.8	X	10.80803	33.21556	188.52313	10.32488	0.0458111	0.18749579	3.0232568	20	5 11.5	18.8
116883 2004 FW <sub>120</sub>	14.8	X	221.32223	155.19338	154.39310	15.38404	0.2592553	0.17403945	3.1771490	20	2 12.2	20.3
116884 2004 FY <sub>121</sub>	15.3	X	60.31035	151.50129	192.97641	21.11753	0.1752042	0.27643216	2.3338718	20	—	—
116885 2004 FH <sub>122</sub>	14.5	X	295.32821	224.45483	45.57606	16.67311	0.2120110	0.17905483	3.1175400	20	3 14.9	19.2
116886 2004 FQ <sub>122</sub>	15.1	X	272.00376	279.91836	333.92582	16.13767	0.2044067	0.23567257	2.5957529	20	1 21.1	19.4
116887 2004 FK <sub>123</sub>	16.6	X	293.19393	104.69867	170.73575	4.53678	0.0222058	0.24739639	2.5130848	20	4 1.6	19.6
116888 2004 FW <sub>123</sub>	14.9	X	220.53461	126.84965	68.15974	12.91023	0.2691696	0.22155165	2.7049094	20	11 30.4	19.0
116889 2004 FB <sub>126</sub>	15.4	X	210.36490	336.34688	12.71889	15.30803	0.1312973	0.24431818	2.5341492	20	3 21.7	19.4
116890 2004 FT <sub>126</sub>	15.8	X	1.87472	335.57453	2.19883	4.88140	0.0856427	0.26783357	2.3835598	20	10 15.6	18.4
116891 2004 FS <sub>128</sub>	14.6	X	292.86685	157.39027	111.37982	17.73620	0.1632448	0.17989910	3.1077784	20	3 14.7	19.3
116892 2004 FF <sub>132</sub>	16.1	X	187.40308	339.10684	347.58092	5.64120	0.2011982	0.29859173	2.2169243	20	1 28.3	19.6
116893 2004 FC <sub>137</sub>	15.8	X	153.94792	115.20639	129.86265	8.61040	0.1788249	0.21415535	2.7668360	20	12 8.6	20.5
116894 2004 FA <sub>139</sub>	14.5	X	216.02147	87.57461	213.52895	12.51462	0.2730922	0.17212179	3.2007037	20	1 27.4	20.4
116895 2004 FP <sub>139</sub>	14.9	X	286.90289	45.15688	208.67662	16.75629	0.1836197	0.17679275	3.1440763	20	2 5.6	19.9
116896 2004 FQ <sub>139</sub>	15.4	X	71.06480	37.57568	161.12655	4.30041	0.1132571	0.19332122	2.9622135	20	7 12.8	19.4
116897 2004 FF <sub>140</sub>	15.4	X	260.05293	320.81636	269.89807	10.65325	0.1394736	0.23009741	2.6375147	20	—	—
116898 2004 FF <sub>140</sub>	14.6	X	282.76299	234.44276	71.33179	17.27736	0.2187179	0.18141579	3.0904330	20	4 11.8	19.4
116899 2004 FB <sub>142</sub>	16.4	X	44.07167	157.32683	195.07291	4.49214	0.0415151	0.27871780	2.3210950	20	—	—
116900 2004 FO <sub>143</sub>	15.0	X	95.70513	171.82017	104.88462	13.70025	0.1764880	0.26960585	2.3731026	20	12 6.3	18.9
116901 2004 FX <sub>147</sub>	12.5	X	340.28406	146.81778	210.69611	11.68430	0.0149010	0.08497356	5.1240518	20	9 5.3	19.4
116902 2004 FR <sub>160</sub>	15.2	X	201.48252	212.53117	187.40084	9.33277	0.1004875	0.19633827	2.9317892	20	5 17.4	19.8
116903 Jeromeapt	17.1	X	8.07320	128.88011	147.06635	1.53442	0.1740555	0.25697148	2.4502634	20	8 2.6	19.1
116904 2004 GB <sub>1</sub>	15.6	X	11.16532	176.65600	64.53810	14.16423	0.1820997	0.25380278	2.4706153	20	6 11.9	17.6
116905 2004 GE <sub>1</sub>	14.9	X	91.88409	170.00611	7.212309	16.05790	0.0941357	0.20524914	2.8463075	20	10 9.0	19.4
116906 2004 GV <sub>1</sub>	16.8	X	0.19351	36.97789	147.39441	0.76810	0.1265737	0.30233027	2.1986105	20	2 12.2	18.4
116907 2004 GF <sub>2</sub>	15.5	X	130.35444	40.32546	227.55760	24.77922	0.1922719	0.27513009	2.3412295	20	12 21.4	19.7
116908 2004 GT <sub>2</sub>	14.7	X	248.72167	86.93461	145.68451	37.72241	0.1721840	0.16637643	3.2739711	20	—	—
116909 2004 GG <sub>3</sub>	16.4	X	205.48727	233.79677	202.66760	2.90826	0.0538701	0.25856618	2.4401783	20	7 10.7	19.6
116910 2004 GR <sub>9</sub>	16.0	X	81.22836	248.93936	58.19256	11.52839	0.1750817	0.27259226	2.3557383	20	12 28.7	19.7
116911 2004 GY <sub>10</sub>	14.5	X	285.15958	143.09846	94.24413	17.17653	0.1786232	0.17584828	3.1553241	20	1 21.8	19.4
116912 2004 GF <sub>11</sub>	15.5	X	168.34060	307.24813	325.87486	10.42014	0.1643920	0.21975110	2.7196646	20	—	—
116913 2004 GP <sub>12</sub>	15.9	X	75.39781	70.65179	97.09149	5.62259	0.0609135	0.25051273	2.4921998	20	6 1.1	18.9
116914 2004 GB <sub>14</sub>	14.8	X	275.62122	115.64679	174.83824	14.61061	0.1626422	0.17935999	3.1140028	20	3 15.0	19.3
116915 2004 GG <sub>14</sub>	15.9	X	111.59988	104.49038	94.01127	7.80358	0.0779860	0.26113703	2.4241365	20	9 6.8	19.3
116916 2004 GD <sub>15</sub>	14.5	X	243.74553	225.66874	40.11982	28.00323	0.1715055	0.17192421	3.2031555	20	1 21.6	20.2
116917 2004 GZ <sub>15</sub>	14.9	X	213.37844	267.93998	39.24150	15.80503	0.0988107	0.17420831	3.1750956	20	2 15.1	20.1
116918 2004 GB <sub>17</sub>	14.7	X	179.54727	20.67947	161.80203	19.85189	0.0251636	0.20884338	2.8135561	20	10 29.1	19.0
116919 2004 GZ <sub>22</sub>	15.1	X	206.50652	85.00976	223.87376	7.62485	0.1941023	0.17153019	3.2080590	20	1 31.4	20.7
116920 2004 GW <sub>23</sub>	15.4	X	154.83785	80.28911	170.25996	12.78866	0.1714539	0.21432124	2.7654081	20	12 15.6	20.2
116921 2004 GA <sub>24</sub>	15.0	X	292.34969	92.54700	138.61307	5.96378	0.0704305	0.17481185	3.1677833	20	2 4.7	19.4
116922 2004 GS <sub>24</sub>	15.8	X	240.45053	182.60043	79.90536	5.26394	0.0588221	0.23219559	2.6216018	20	1 7.9	19.6
116923 2004 GK <sub>26</sub>	14.8	X	313.85748	178.81603	107.55885	8.04472	0.1653288	0.18514702	3.0487716	20	4 30.7	18.8
116924 2004 GK <sub>26</sub>	16.0	X	139.27129	48.64602	136.17758	6.69524	0.0770062	0.26361739	2.4089069	20	9 19.5	19.4
116925 2004 GR <sub>26</sub>	14.8	X	242.89127	194.56221	78.57458	8.73323	0.1444541	0.17165824	3.2064633	20	1 27.0	19.9
116926 2004 GY <sub>26</sub>	14.2	X	230.87719	123.73924	177.29293	17.56478	0.1479082	0.17149632	3.1028413	20	2 13.1	19.5
116927 2004 GA <sub>27</sub>	14.8	X	279.61163	129.94893	190.52492	16.44602	0.2317530	0.18038568	3.201872	20	4 17.2	19.4
116928 2004 GL <sub>27</sub>	15.1	X	186.93901	219.02548	122.95630	12.77322	0.2026793	0.23041681	2.6350768	20	2 22.5	19.6
116929 2004 GO <sub>27</sub>	15.1	X	123.17985	159.47955	169.03814	17.64921	0.1299678	0.22037859	2.7144996	20	—	—
116930 2004 GE <sub>29</sub>	12.1	X	27.45437	107.82354	205.18560	18.22271	0.0121174	0.08331334	5.1919006	20	9 9.1	19.0
116931 2004 GS <sub>29</sub>	15.9	X	185.21479	31.35805	179.46999	2.40373	0.0769812	0.21528240	2.7571710	20	12 2.5	19.9
116932 2004 GT <sub>29</sub>	15.3	X	2.20169	85.95231	207.38667	10.05562	0.1373022	0.19537362	2.9414317	20	8 2.2	18.8
116933 2004 GH <sub>30</sub>	15.3	X	175.76121	87.50300	202.61717	12.29307	0.1845225	0.22251655	2.6970842	20	—	—
116934 2004 GF <sub>31</sub>	15.0	X	293.81550	50.77849	209.39276	4.68952	0.1183876	0.17785813	3.1315083	20	3 3.8	19.4
116935 2004 GA <sub>36</sub>	15.7	X	240.03695	78.61111	343.59249	6.48494	0.1150453	0.26156365	2.4214999	20	7 29.8	19.0
116936 2004 GA <sub>38</sub>	14.7	X	146.02583	142.61603	209.14273	12.77657	0.2071031	0.22353235	2.6889071	20	1 25.8	19.2
116937 2004 GP <sub>38</sub>	15.7	X	45.23669	32.94713	295.42037	6.25152	0.1197197	0.27250637	2.3562332	20	12 11.6	18.8
116938 2004 GS <sub>38</sub>	16.1	X	264.22452	258.56799	308.42925	5.55358	0.1136722	0.29013811	2.2597802	20	—	—
116939 Jonstewart	16.0	X	113.85638	23.20054	201.48003	7.85938	0.1631406	0.26413025	2.4057876	20	10 16.1	19.8
116940 2004 GX <sub>39</sub>	14.9	X	258.01944	316.74236	3.19377	11.25046	0.1939846	0.18075702	3.0979372	20	3 28.1	19.8
116941 2004 GE <sub>40</sub>	14.9	X	140.77526	181.87028	99.39383	13.32786	0.1512199	0.21514613	2.7583351	20	—	—
116942 2004 GG <sub>41</sub>	15.2	X	206.60812	334.43692	316.95422	10.94117	0.1704448	0.22907629	2.6453468	20	1 9.3	19.6
116943 2004 GV <sub>42</sub>	14.8	X	283.54023	161.52410	124.69874	12.98242	0.2955184	0.17869317	3.1217449	20	3 5.6	19.7
116944 2004 GK <sub>44</sub>	16.9	X	159.94364	100.94791	198.84656	1.00155	0.1250378	0.28748479	2.2736632	20	—	—
116945 2004 GL <sub>45</sub>	15.9	X	203.82302	110.86824	231.16658	2.90782	0.0221679	0.24324677	2.5415851	20	3 3.6	19.3
116946 2004 GT <sub>45</sub>	16.8	X	334.64808	174.02375	185.92900	5.88883	0.1292211	0.26552205	2.3973732	20	10 3.6	18.9
116947 2004 GH <sub>66</sub>	16.1	X	326.79691	92.07434	228.93530	0.90873	0.1041623	0.19606005	2.9345622	20	7 12.5	19.5
116948 2004 GH <sub>71</sub>	15.1	X	72.26277	297.66593	21.63578	9.56346	0.1667373	0.21026457	2.8008638	20	12 21.7	19.5
116949 2004 GA <sub>74</sub>	16.7	X	307.12057	58.97454	191.32759	3.29266	0.1440878	0.24069970	2.5594836	20	2 27.0	20.0
116950 2004 GL <sub>75</sub>	14.8	X	153.05411	58.14085	114.12903	16.00309	0.0878274	0.20501512	2.8484731	20	9 15.3	19.4
116951 2004 GN <sub>76</sub>	15.6	X	195.54706	209.63319	84.18987	9.97512	0.0664185	0.23053741	2.6341578	20	—	—
116952 2004 GP <sub>76</sub>	14.4	X	163.86181	123.49666	131.44617	16.10391	0.1192249	0.15583656	3.4199767	20	12 20.3	20.0
116953 2004 GA <sub>78</sub>	14.5	X	158.38498	287.07715	288.05604	13.82501	0.2083315	0.21121416	2.7924626	20	11 1.0	19.5
116954 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>
116961 2004 HH <sub>6</sub>	15.1	X	287.61141	109.74186	58.81319	12.36707	0.1401453	0.22442112	2.6818031	20	—	—
116962 2004 HE <sub>7</sub>	15.4	X	58.00669	317.01757	358.57217	4.12655	0.2005792	0.20891621	2.8129021	20	12 6.1	19.7
116963 2004 HC <sub>8</sub>	15.1	X	215.80926	305.69819	30.17631	15.31845	0.0946967	0.24400439	2.5363214	20	3 15.9	19.0
116964 2004 HD <sub>8</sub>	14.7	X	92.60258	243.78411	188.53501	14.04147	0.2787561	0.18133266	3.0913774	20	3 24.6	19.1
116965 2004 HB <sub>9</sub>	16.0	X	177.14598	320.18546	45.30287	7.61130	0.2299349	0.29994193	2.2102663	20	3 11.3	19.7
116966 2004 HH <sub>10</sub>	15.3	X	136.67285	244.84120	31.57197	9.36417	0.1225458	0.21384773	2.7694888	20	12 29.9	19.8
116967 2004 HO <sub>10</sub>	15.6	X	190.88531	216.74470	73.66082	9.74001	0.1355037	0.22462325	2.6801941	20	—	—
116968 2004 HJ <sub>11</sub>	16.0	X	87.23625	279.21303	64.73445	3.48348	0.1915911	0.28014404	2.3132103	20	—	—
116969 2004 HZ <sub>11</sub>	12.0	X	318.23421	183.06310	210.72738	28.16776	0.1255820	0.08277622	5.2143357	20	9 9.8	18.7
116970 2004 HJ <sub>15</sub>	13.5	X	298.75567	182.60754	228.64929	2.92320	0.0230746	0.08545823	5.1046596	20	9 19.2	20.2
116971 2004 HH <sub>16</sub>	15.6	X	322.62241	345.87002	212.17229	4.21435	0.1347838	0.23486195	2.6017223	20	1 13.2	18.9
116972 2004 HZ <sub>16</sub>	15.4	X	322.50560	76.05350	185.50099	0.65837	0.1186776	0.18617890	3.0374962	20	4 14.4	19.1
116973 2004 HZ <sub>17</sub>	16.6	X	247.07376	195.17240	347.70682	4.85807	0.1019393	0.28258083	2.2998928	20	—	—
116974 2004 HK <sub>18</sub>	15.7	X	153.58339	7.39696	286.55637	4.13517	0.1388856	0.22052958	2.7132605	20	—	—
116975 2004 HC <sub>25</sub>	15.2	X	274.68589	124.32314	147.93175	1.92515	0.1110093	0.17803085	3.1294825	20	2 27.9	19.8
116976 2004 HH <sub>26</sub>	14.7	X	104.20121	269.30027	55.46770	13.91387	0.1747876	0.21439832	2.7647453	20	—	—
116977 2004 HZ <sub>27</sub>	16.2	X	197.97949	106.80901	68.01768	6.93395	0.0396421	0.27195246	2.3594316	20	11 17.9	19.0
116978 2004 HK <sub>28</sub>	15.5	X	74.56080	186.94433	127.14031	5.21634	0.0596934	0.21077782	2.7963151	20	12 7.3	19.4
116979 2004 HY <sub>28</sub>	15.4	X	192.43847	59.68998	196.78440	12.15269	0.1375287	0.21747449	2.7386120	20	—	—
116980 2004 HD <sub>29</sub>	16.0	X	30.53175	323.64345	342.62741	1.36542	0.0468474	0.20441355	2.8540589	20	9 28.8	19.6
116981 2004 HP <sub>30</sub>	14.9	X	284.58344	298.79125	39.92408	10.57576	0.1154320	0.18887856	3.0084833	20	5 29.9	19.1
116982 2004 HU <sub>30</sub>	15.0	X	202.28676	95.55490	55.43266	15.71749	0.0936661	0.20568370	2.8422970	20	10 11.8	19.4
116983 2004 HT <sub>33</sub>	15.8	X	270.15894	301.15052	109.07592	7.90286	0.0655239	0.26237411	2.4165108	20	9 2.7	18.7
116984 2004 HW <sub>33</sub>	14.6	X	214.48639	223.49052	95.03845	10.45794	0.0672792	0.17402489	3.1773262	20	2 27.1	19.5
116985 2004 HY <sub>33</sub>	15.5	X	355.34778	75.95999	77.70740	13.05060	0.0276765	0.23297433	2.6157566	20	1 17.6	19.0
116986 2004 HC <sub>34</sub>	15.9	X	226.68681	274.79359	95.87319	10.40683	0.0649932	0.24501903	2.5293145	20	5 10.9	19.6
116987 2004 HF <sub>34</sub>	15.7	X	269.96647	37.41422	158.59804	10.85633	0.1244771	0.22819130	2.6521820	20	—	—
116988 2004 HM <sub>34</sub>	15.0	X	243.71880	159.80176	183.44146	8.22531	0.2043481	0.23898375	2.5717207	20	4 9.5	19.2
116989 2004 HW <sub>42</sub>	14.8	X	319.17555	271.67373	18.63464	6.28988	0.0935120	0.18745334	3.0237132	20	5 18.9	18.8
116990 2004 HT <sub>44</sub>	15.0	X	163.88719	245.54348	33.86132	13.48032	0.1726297	0.21736515	2.7395303	20	—	—
116991 2004 HK <sub>45</sub>	14.8	X	261.42781	72.30660	222.46085	9.07427	0.2018160	0.17703940	3.1411554	20	2 27.6	20.0
116992 2004 HS <sub>45</sub>	14.9	X	277.61494	238.65511	45.01712	9.90222	0.0662663	0.17906541	3.1174171	20	3 25.7	19.4
116993 2004 HZ <sub>45</sub>	14.0	X	201.23542	74.42258	249.73421	24.70552	0.2698118	0.17386283	3.1793003	20	2 5.2	20.1
116994 2004 HC <sub>47</sub>	15.2	X	267.98235	159.98105	137.84673	6.43866	0.1404251	0.17950983	3.1122697	20	3 20.3	19.9
116995 2004 HN <sub>47</sub>	14.4	X	291.91180	161.53116	82.24289	18.50753	0.1465842	0.17608013	3.1525536	20	2 13.9	19.2
116996 2004 HQ <sub>48</sub>	15.2	X	110.41348	320.26382	352.52652	13.13519	0.1313245	0.21611502	2.7500848	20	—	—
116997 2004 HC <sub>50</sub>	16.4	X	238.52275	193.89464	40.42831	4.76501	0.0543860	0.28761764	2.2729630	20	—	—
116998 2004 HV <sub>50</sub>	14.7	X	261.23924	161.70075	124.96669	19.04218	0.1404532	0.17814671	3.1281256	20	3 1.6	19.6
116999 2004 HG <sub>53</sub>	15.7	X	300.71522	309.15248	285.13095	6.21666	0.1511185	0.23630315	2.5911330	20	1 28.7	19.3
117000 2004 HU <sub>54</sub>	14.9	X	247.34066	252.82272	45.15042	4.73550	0.1463800	0.17594095	3.1542160	20	2 28.7	19.9
117001 2004 HS <sub>55</sub>	16.1	X	222.77398	132.48349	146.85596	12.16620	0.1806115	0.22920567	2.6443513	20	1 6.9	20.6
117002 2004 HY <sub>59</sub>	16.2	X	331.18197	43.20996	87.87396	7.46217	0.0397912	0.28627024	2.2800896	20	—	—
117003 2004 HZ <sub>59</sub>	16.2	X	1.18277	343.90333	181.82753	7.92708	0.1975806	0.29790429	2.2203335	20	1 5.4	18.2
117004 2004 HG <sub>60</sub>	15.7	X	141.88212	57.54376	235.33543	4.62572	0.1746214	0.21606564	2.7505037	20	—	—
117005 2004 HU <sub>60</sub>	14.8	X	100.42533	192.88493	185.36358	12.77049	0.1713857	0.22120521	2.7077329	20	1 5.8	18.5
117006 2004 HD <sub>61</sub>	16.1	X	69.49909	314.84870	249.03532	5.72341	0.0812788	0.25480857	2.4641096	20	7 15.9	19.2
117007 2004 HE <sub>61</sub>	15.2	X	259.24558	341.30013	264.13905	4.08286	0.0891739	0.17034960	3.2228640	20	1 13.9	19.9
117008 2004 HS <sub>62</sub>	15.2	X	47.36721	43.50611	173.46406	11.65234	0.0479684	0.18909894	3.0061455	20	6 24.8	19.5
117009 2004 HD <sub>63</sub>	15.1	X	280.01761	153.75509	77.56823	14.88154	0.1109284	0.23204147	2.6227626	20	1 8.2	19.0
117010 2004 JG <sub>1</sub>	14.8	X	276.35699	184.93318	123.66926	16.94575	0.0674505	0.18148823	3.0896106	20	4 27.1	19.5
117011 2004 JZ <sub>2</sub>	15.3	X	222.65379	228.83140	53.94121	1.87182	0.1249165	0.16805512	3.2521324	20	1 20.2	20.5
117012 2004 JZ <sub>4</sub>	15.8	X	182.07048	239.12076	354.22643	6.20231	0.1631948	0.21521217	2.7577708	20	12 19.0	20.0
117013 2004 JA <sub>5</sub>	15.1	X	305.33953	311.49402	333.43517	9.80765	0.2754935	0.18142429	3.0903364	20	3 23.9	19.3
117014 2004 JG <sub>5</sub>	15.3	X	338.63904	304.34115	251.08381	12.43249	0.0477944	0.23693656	2.5865130	20	2 8.4	18.9
117015 2004 JR <sub>6</sub>	15.6	X	217.05750	274.50076	29.00080	2.29683	0.1975827	0.22842138	2.6504007	20	1 31.4	20.2
117016 2004 JH <sub>8</sub>	14.8	X	256.78657	205.52063	104.15407	12.42461	0.1287452	0.17844591	3.1246280	20	3 28.1	19.7
117017 2004 JN <sub>8</sub>	14.4	X	241.69430	231.31708	78.99575	23.62308	0.1007044	0.17661437	3.1461930	20	3 23.4	19.7
117018 2004 JB <sub>9</sub>	15.7	X	235.95403	278.42022	351.79123	2.56919	0.1991784	0.22833946	2.6510347	20	1 7.4	20.1
117019 2004 JB <sub>10</sub>	14.7	X	352.82932	167.49683	119.93960	11.69610	0.0957358	0.18984231	2.9982928	20	7 9.9	18.4
117020 2004 JC <sub>10</sub>	14.9	X	111.62420	246.89533	105.07247	16.11967	0.0752985	0.22187198	2.7023053	20	—	—
117021 2004 JH <sub>10</sub>	14.9	X	171.74146	181.18247	157.82165	12.73564	0.1358395	0.22643522	2.6658767	20	1 30.9	19.2
117022 2004 JX <sub>10</sub>	15.1	X	335.84382	138.41445	153.40384	9.25646	0.0924607	0.18840004	3.0135753	20	6 18.5	19.0
117023 2004 JY <sub>10</sub>	14.3	X	205.57304	224.65881	83.77608	19.75255	0.1243751	0.16859032	3.2452460	20	2 5.9	19.7
117024 2004 JF <sub>11</sub>	15.8	X	21.64370	4.40824	161.18213	12.90758	0.1626069	0.24047194	2.5610994	20	3 8.7	18.1
117025 2004 JH <sub>11</sub>	15.3	X	203.49203	170.66006	114.97260	15.61917	0.0895859	0.22598113	2.6694467	20	—	—
117026 2004 JN <sub>12</sub>	14.5	X	192.78629	193.61953	123.25485	19.20442	0.0879604	0.16948499	3.2338153	20	1 31.4	19.6
117027 2004 JS <sub>12</sub>	14.7	X	261.08793	286.40586	357.65683	12.70046	0.1765191	0.17480331	3.1678866	20	2 23.9	19.7
117028 2004 JW <sub>12</sub>	14.7	X	215.84423	327.01126	339.10189	4.48170	0.1135640	0.17033858	3.2230030	20	2 9.8	19.8
117029 2004 JG <sub>15</sub>	15.5	X	78.85463	146.99848	119.69695	2.45592	0.1451915	0.20180158	2.8786333	20	10 23.9	19.7
117030 2004 JJ <sub>15</sub>	15.6	X	51.14357	250.34567	237.80297	12.84764	0.0582686	0.23675976	2.5878005	20	2 24.5	19.1
117031 2004 JK <sub>17</sub>	16.2	X	190.53933	280.21666	255.64000	4.31110	0.0481203	0.26932271	2.3747655	20	11 6.8	19.4
117032 Davidlane	15.2	X	142.45207	129.47811	200.91394	11.57279	0.1392661	0.22032207	2.7149638	20	—	—
117033 2004 JP <sub>21</sub>	16.4	X	235.34893	249.22659	221.52029	5.31167	0.0627658	0.26731643	2.3866328	20	10 4.9	19.5
117034 2004 JH <sub>23</sub>	15.6	X	0.60714	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>
117041 2004 JX <sub>25</sub>	14.9 <sup>m</sup>	X	162.36384	291.28445	48.98810	17.18915	0.2379259	0.22504187	2.6768693	20	2 7.1	19.7
117042 2004 JF <sub>26</sub>	15.8	X	26.16111	292.28295	225.92819	3.72504	0.1389492	0.23938187	2.5688685	20	3 4.2	18.3
117043 2004 JL <sub>26</sub>	15.3	X	0.91852	52.92553	201.96506	2.00795	0.0619778	0.18714020	3.0270852	20	6 8.5	19.2
117044 2004 JX <sub>27</sub>	15.5	X	313.47107	316.07488	255.20540	6.93098	0.1073256	0.23433757	2.6056021	20	1 21.4	19.1
117045 2004 JD <sub>30</sub>	15.2	X	42.70179	184.52069	106.84926	3.43572	0.0824633	0.19955997	2.9001498	20	10 2.4	19.0
117046 2004 JL <sub>31</sub>	14.2	X	2.96764	190.93448	120.30755	11.70272	0.0887998	0.19348037	2.9605890	20	8 31.6	17.9
117047 2004 JU <sub>31</sub>	15.2	X	221.95498	141.48858	160.97987	13.80721	0.1274717	0.23016786	2.6369765	20	2 2.4	19.4
117048 2004 JT <sub>32</sub>	15.6	X	139.38355	185.94167	121.90108	5.94482	0.1026579	0.21901712	2.7257373	20	—	—
117049 2004 JM <sub>33</sub>	15.1	X	274.90254	123.79890	167.57305	5.23599	0.1156493	0.17812374	3.1283945	20	3 21.9	19.7
117050 2004 JR <sub>34</sub>	15.1	X	318.55761	119.11618	134.13964	5.71992	0.0948245	0.17997167	3.1069429	20	4 3.9	19.2
117051 2004 JT <sub>37</sub>	15.2	X	144.92748	191.21928	110.56623	9.59797	0.1710504	0.21763538	2.7372621	20	—	—
117052 2004 JA <sub>42</sub>	15.5	X	329.38502	197.02821	32.42752	1.75331	0.1408271	0.17775551	3.1327134	20	3 12.8	19.2
117053 2004 JJA <sub>43</sub>	14.5	X	254.29664	87.98149	236.60082	13.35176	0.2193862	0.17600597	3.1534391	20	3 24.4	19.7
117054 2004 JD <sub>44</sub>	15.8	X	152.61883	141.93301	168.47528	9.31334	0.1977310	0.21915832	2.7245665	20	—	—
117055 2004 JT <sub>44</sub>	14.5	X	227.08383	174.01807	111.10616	7.09129	0.0883695	0.16842582	3.2473588	20	1 28.5	19.5
117056 2004 JJA <sub>46</sub>	16.0	X	173.39259	317.41063	44.64484	10.62169	0.1475362	0.23700693	2.5860010	20	3 6.5	20.2
117057 2004 KN	15.4	X	347.04478	184.17512	246.93570	22.90568	0.1324204	0.27637091	2.3342167	20	—	—
117058 2004 KW	14.7	X	334.17851	227.42079	256.53939	20.66315	0.0660586	0.22404250	2.6848237	20	—	—
117059 2004 KP <sub>1</sub>	15.6	X	80.82869	260.77729	320.24452	4.12999	0.1313086	0.19726514	2.9225985	20	8 26.1	19.8
117060 2004 KD <sub>3</sub>	14.7	X	247.35666	43.93405	223.83584	8.94589	0.0254555	0.17072003	3.2182003	20	1 30.5	19.6
117061 2004 KS <sub>3</sub>	14.7	X	269.09106	242.55164	59.22966	3.84986	0.2094708	0.17678872	3.1441241	20	3 18.4	19.6
117062 2004 KT <sub>3</sub>	15.5	X	94.96079	213.32329	30.19231	2.00742	0.0963138	0.20127802	2.8836230	20	10 6.6	19.8
117063 2004 KS <sub>4</sub>	14.8	X	238.92892	167.67173	162.25202	5.56697	0.1782922	0.17659242	3.1464537	20	3 25.5	19.8
117064 2004 KM <sub>5</sub>	16.0	X	257.63466	285.46586	221.10030	6.71496	0.0542318	0.27589262	2.3369136	20	12 29.3	18.7
117065 2004 KD <sub>9</sub>	14.8	X	315.35422	210.26193	94.53340	7.13331	0.0256126	0.18397481	3.0617082	20	5 15.3	18.4
117066 2004 KR <sub>9</sub>	14.9	X	273.29820	217.26405	57.93036	5.70359	0.1231160	0.17412173	3.1761480	20	3 2.4	19.6
117067 2004 KS <sub>10</sub>	15.6	X	109.10400	129.30631	168.27697	10.02534	0.1337008	0.21427024	2.7658469	20	12 29.1	20.1
117068 2004 KP <sub>12</sub>	15.8	X	231.90228	140.17108	180.18428	13.72834	0.0867178	0.23598813	2.5934385	20	3 6.8	19.6
117069 2004 KV <sub>12</sub>	15.0	X	196.82303	290.20446	115.03959	14.80467	0.1800797	0.24399040	2.5364184	20	5 19.8	19.4
117070 2004 KE <sub>13</sub>	15.9	X	224.88613	149.97387	175.02424	13.61103	0.1919910	0.23616714	2.5921278	20	3 1.1	20.3
117071 2004 KO <sub>13</sub>	15.2	X	305.35382	135.72044	155.37821	10.54724	0.1389169	0.18299695	3.0726056	20	4 28.3	19.4
117072 2004 KU <sub>13</sub>	15.8	X	165.32265	266.90469	120.45756	11.83737	0.0060195	0.24042189	2.5614549	20	3 19.8	19.3
117073 2004 KP <sub>14</sub>	15.0	X	267.31673	119.29484	179.70266	14.91652	0.1724435	0.17639675	3.1487801	20	3 15.2	19.7
117074 2004 KS <sub>14</sub>	14.5	X	354.14128	117.29612	103.49957	16.41015	0.0816231	0.17994916	3.1072021	20	4 22.1	18.8
117075 2004 KP <sub>15</sub>	15.0	X	274.98848	127.77861	171.89306	11.78657	0.2113364	0.17683753	3.1435455	20	3 20.3	19.8
117076 2004 KM <sub>17</sub>	15.4	X	345.07580	148.81083	74.60008	2.49270	0.1148286	0.18009588	3.1055143	20	4 1.8	19.1
117077 2004 LU <sub>2</sub>	15.2	X	268.17374	326.98526	314.46580	12.36514	0.2478314	0.23618367	2.5920668	20	2 11.0	19.2
117078 2004 LC <sub>3</sub>	15.6	X	174.87290	161.32459	123.02816	15.42959	0.0347440	0.22003381	2.7173345	20	—	—
117079 2004 LO <sub>3</sub>	14.9	X	323.71633	193.53230	117.23934	16.31441	0.1320725	0.24330278	2.5411950	20	6 23.3	17.7
117080 2004 LE <sub>9</sub>	15.3	X	158.48385	192.95381	166.41491	13.95011	0.1942450	0.22776875	2.6554612	20	2 15.7	19.6
117081 2004 LB <sub>11</sub>	15.3	X	290.53709	98.58437	188.41034	3.84075	0.0706037	0.17954348	3.1118808	20	4 10.4	19.7
117082 2004 LK <sub>11</sub>	15.9	X	163.88288	349.75188	251.90800	10.35256	0.0655953	0.27522529	2.3406896	20	12 30.3	19.1
117083 2004 LN <sub>16</sub>	15.5	X	166.19758	202.63817	119.62590	10.14593	0.2773327	0.21460807	2.7629436	20	1 17.4	20.3
117084 2004 LD <sub>17</sub>	15.5	X	26.90729	287.21179	76.02601	23.52209	0.0957969	0.26813695	2.3817615	20	12 28.1	18.6
117085 2004 LS <sub>17</sub>	15.8	X	134.85996	172.04299	103.64831	10.79099	0.1033618	0.26803226	2.3823817	20	—	—
117086 Lóczy	14.7	X	109.64499	311.94501	149.83022	21.58748	0.0785875	0.17908888	3.1171448	20	4 29.5	19.6
117087 2004 LP <sub>27</sub>	16.0	X	61.74316	207.64945	186.19773	13.78103	0.2033486	0.21811399	2.7332564	20	—	—
117088 2004 LG <sub>30</sub>	15.4	X	47.91205	63.25306	230.09354	11.89967	0.2148243	0.25629592	2.4545672	20	11 8.8	18.6
117089 2004 LK <sub>31</sub>	15.6	X	258.07467	87.41905	178.88610	12.73099	0.2435998	0.22524973	2.6752223	20	1 16.5	20.3
117090 2004 MF <sub>4</sub>	15.8	X	195.90252	229.60849	136.44201	4.88520	0.1625118	0.23520854	2.5991659	20	3 28.8	20.0
117091 2004 NU <sub>6</sub>	15.6	X	126.64857	202.12905	105.31458	5.67357	0.2175089	0.26739833	2.3861455	20	—	—
117092 2004 NB <sub>7</sub>	15.0	X	80.79617	342.51598	46.95388	7.44915	0.1364412	0.26864943	2.3787315	20	—	—
117093 Umbria	15.9	X	12.71878	6.03508	129.20680	5.07928	0.1662307	0.24028892	2.5623997	20	5 21.0	18.0
117094 2004 NN <sub>15</sub>	14.6	X	160.18970	153.24355	289.22321	11.26547	0.0726318	0.17434373	3.1734513	20	5 24.2	19.5
117095 2004 NS <sub>17</sub>	15.4	X	253.81371	188.14958	108.77771	17.37241	0.2597781	0.22801100	2.6535800	20	2 21.7	20.1
117096 2004 NA <sub>22</sub>	15.8	X	99.50140	180.49586	162.68523	4.82339	0.2723956	0.26574807	2.3960137	20	—	—
117097 2004 NJ <sub>22</sub>	14.6	X	289.67881	264.59167	50.10374	5.87636	0.1530498	0.17680170	3.1439702	20	5 2.3	18.8
117098 2004 NF <sub>25</sub>	14.3	X	293.95750	35.90429	349.01654	7.13600	0.2255960	0.17847208	3.1243225	20	7 29.4	18.3
117099 2004 NB <sub>27</sub>	14.8	X	277.43534	274.99819	141.87473	10.86222	0.1515981	0.18688724	3.0298162	20	8 27.7	18.9
117100 2004 NL <sub>30</sub>	15.1	X	157.47805	250.38657	28.55944	26.26775	0.2283363	0.27026945	2.3692165	20	—	—
117101 2004 OC <sub>1</sub>	15.8	X	143.94670	207.60392	138.91940	10.20675	0.2610900	0.27867448	2.3213355	20	1 19.3	19.3
117102 2004 OF <sub>3</sub>	13.6	X	2.75810	142.05354	183.35423	3.89026	0.1245865	0.12502868	3.9609220	20	9 6.9	18.6
117103 2004 OT <sub>3</sub>	15.2	X	5.67570	178.81011	183.90666	1.88736	0.1007475	0.19567458	2.9384148	20	11 10.9	18.8
117104 2004 OB <sub>4</sub>	16.4	X	195.11334	147.33801	157.27006	8.48563	0.1861925	0.28124364	2.3071770	20	1 7.3	20.2
117105 2004 OF <sub>5</sub>	16.1	X	139.52330	182.04796	127.34804	6.71450	0.1478723	0.27339373	2.3511320	20	—	—
117106 2004 OT <sub>6</sub>	14.1	X	350.75212	174.08018	136.48397	3.33633	0.0763635	0.12367319	3.9898112	20	7 31.6	19.2
117107 2004 OL <sub>10</sub>	15.6	X	229.09941	186.48249	92.14087	8.54226	0.0459852	0.22187402	2.7022887	20	1 17.7	19.5
117108 2004 PU <sub>1</sub>	14.1	X	15.05993	200.87464	92.83054	6.33507	0.1229743	0.12409576	3.9807487	20	8 20.3	19.1
117109 2004 PA <sub>4</sub>	16.2	X	70.11611	354.09615	342.04678	0.82322	0.2009731	0.26434238	2.4045004	20	—	—
117110 2004 PE <sub>5</sub>	15.7	X	49.44020	188.27442	182.26095	6.63847	0.2060240	0.26455447	2.4032151	20	—	—
117111 2004 PR <sub>5</sub>	14.7	X	66.04546	15.90090	253.02691	9.88789	0.0738027	0.19098285	2.9863438	20	9 24.9	19.1
117112 2004 PH <sub>9</sub>	14.8	X	203.56860	91.43728	331.85830	4.33701	0.1681188	0.17090813	3.2158385	20	6 12.6	20.0
117113 2004 PG <sub>11</sub>	14.0	X	1.48551	169.29791	143.60675	9.90857	0.1040442	0.12408019	3.9810816	20	8 20.2	18.9
117114 2004 PU <sub>12</sub>	16.4	X	115.55510	178.10551	133.22814	1.92583						

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>
117121 2004 PY <sub>24</sub>	14.6	X	288.02383	291.78990	129.46056	15.44571	0.1197716	0.19093018	2.9868930	20	9 27.9	18.6
117122 2004 PZ <sub>34</sub>	15.7	X	152.81374	231.62443	143.68966	8.00115	0.1389737	0.21961103	2.7208209	20	2 28.3	19.9
117123 2004 PZ <sub>35</sub>	15.4	X	134.43884	68.81278	232.04988	4.03050	0.0971733	0.20565126	2.8425959	20	—	—
117124 2004 PA <sub>38</sub>	16.0	X	77.02252	335.92836	4.44219	2.04322	0.2222413	0.26369982	2.4084049	20	—	—
117125 2004 PF <sub>38</sub>	16.1	X	153.05471	197.84096	124.09413	5.86204	0.1618446	0.27448904	2.3448733	20	—	—
117126 2004 PN <sub>39</sub>	15.7	X	155.39331	156.49282	177.17639	2.50737	0.1877163	0.21354783	2.7720812	20	1 15.6	20.1
117127 2004 PQ <sub>40</sub>	14.8	X	274.20294	126.25146	276.71950	6.90121	0.0526396	0.18230961	3.0803236	20	8 16.1	19.2
117128 2004 PL <sub>47</sub>	15.6	X	349.82345	212.92989	145.40067	8.41131	0.0781857	0.19244181	2.9712310	20	10 12.2	19.4
117129 2004 PL <sub>51</sub>	14.8	X	291.46429	176.98769	113.09988	8.60011	0.1373938	0.17045576	3.2215257	20	4 10.3	19.4
117130 2004 PV <sub>58</sub>	16.4	X	36.59718	152.18665	240.88096	1.50440	0.2218108	0.26369603	2.4084279	20	—	—
117131 2004 PW <sub>60</sub>	13.5	X	290.50440	259.94858	183.85687	9.51755	0.2437879	0.12640764	3.9320633	20	9 25.4	18.6
117132 2004 PF <sub>61</sub>	15.6	X	177.11364	124.73320	188.53851	4.84026	0.1508545	0.21434812	2.7651770	20	1 8.4	20.1
117133 2004 PT <sub>64</sub>	16.0	X	354.17961	119.85648	184.99389	2.50216	0.0785735	0.24335408	2.5408379	20	8 10.3	18.7
117134 2004 PY <sub>69</sub>	15.8	X	38.59622	229.47296	200.57262	6.22766	0.0953033	0.26999365	2.3708296	20	—	—
117135 2004 PQ <sub>78</sub>	14.3	X	196.28740	292.00879	152.62562	27.48006	0.1823297	0.17627003	3.1502890	20	7 3.5	19.9
117136 2004 PO <sub>80</sub>	14.7	X	5.99272	263.84980	183.13787	12.04156	0.2392955	0.20256365	2.8714089	20	—	—
117137 2004 PF <sub>81</sub>	15.7	X	110.68555	245.25004	107.69632	3.38168	0.0965008	0.20975966	2.8053566	20	—	—
117138 2004 PS <sub>85</sub>	16.1	X	166.07271	245.10065	77.71513	3.12818	0.2292650	0.27459035	2.3442965	20	1 8.5	19.8
117139 2004 PV <sub>85</sub>	15.9	X	181.62014	173.10991	158.98674	4.96948	0.1892599	0.27671813	2.3322636	20	1 29.6	19.7
117140 2004 PF <sub>88</sub>	16.0	X	228.92522	209.18108	166.16272	3.49856	0.2362908	0.22979576	2.6398224	20	5 4.4	20.4
117141 2004 PA <sub>89</sub>	16.6	X	182.88882	219.11577	166.26239	4.98167	0.1513116	0.28559413	2.2836867	20	4 6.5	20.0
117142 2004 PK <sub>89</sub>	14.7	X	319.71868	150.94509	229.95198	10.36273	0.1439485	0.18869906	3.0103909	20	9 12.8	18.4
117143 2004 PE <sub>90</sub>	15.9	X	126.45029	345.67414	1.43797	6.23466	0.1511214	0.27005731	2.3704570	20	—	—
117144 2004 PF <sub>90</sub>	16.1	X	151.27151	174.48826	171.30575	7.00947	0.2267186	0.27471187	2.3436051	20	1 21.6	19.8
117145 2004 PA <sub>91</sub>	16.3	X	118.83437	222.10634	173.83998	7.81236	0.1969905	0.27424460	2.3462664	20	2 16.6	19.4
117146 2004 PB <sub>91</sub>	15.3	X	254.47736	224.02290	157.80863	3.36000	0.2751508	0.23254126	2.6190032	20	5 31.3	19.3
117147 2004 PZ <sub>97</sub>	14.9	X	58.86760	182.05349	81.20958	12.40794	0.1054673	0.18855719	3.0119007	20	9 24.7	19.3
117148 2004 PJ <sub>99</sub>	16.0	X	166.44123	150.02456	153.89511	6.87707	0.1157602	0.27319067	2.3522969	20	—	—
117149 2004 PW <sub>103</sub>	14.8	X	232.10832	151.76533	244.51006	9.07416	0.1673671	0.22856762	2.6492702	20	6 6.9	18.9
117150 2004 PC <sub>104</sub>	14.6	X	43.39353	57.35478	289.72180	7.00902	0.2136349	0.18973706	2.9994015	20	12 26.3	18.9
117151 2004 PL <sub>105</sub>	14.9	X	2.06328	222.98741	71.78811	10.89333	0.0715414	0.18471404	3.0535341	20	8 6.2	18.9
117152 2004 QO <sub>1</sub>	14.3	X	290.41981	268.99811	47.80299	24.70801	0.0778163	0.17555031	3.1588935	20	5 14.7	18.6
117153 2004 QC <sub>4</sub>	16.0	X	245.59916	24.74136	39.08196	6.26660	0.0843474	0.24018668	2.5631268	20	8 12.4	19.5
117154 2004 QG <sub>4</sub>	14.7	X	251.95675	233.11650	172.78114	19.10158	0.1211128	0.17432599	3.1736665	20	7 13.2	19.7
117155 2004 QT <sub>5</sub>	15.8	X	243.95540	58.79031	265.54669	4.75312	0.0897687	0.22690934	2.6621619	20	3 24.2	19.7
117156 Altschwendt	16.2	X	239.75484	77.71217	304.49538	3.17985	0.0839505	0.23205325	2.6226738	20	6 5.5	19.9
117157 2004 QR <sub>9</sub>	15.7	X	356.84885	346.79149	22.43718	6.61895	0.1366314	0.25425970	2.4676546	20	11 24.0	18.4
117158 2004 QB <sub>11</sub>	15.9	X	304.90411	166.35384	103.17720	9.40266	0.1002699	0.23051149	2.6343552	20	4 3.6	19.4
117159 2004 QE <sub>12</sub>	14.5	X	307.24557	280.41947	86.50174	11.61488	0.0625979	0.18201805	3.0836121	20	8 20.2	18.7
117160 2004 QR <sub>17</sub>	15.1	X	296.97614	38.50513	280.96680	11.10568	0.2016571	0.23268523	2.6179228	20	5 5.6	18.6
117161 2004 QT <sub>17</sub>	14.7	X	89.69782	129.79776	241.85354	13.19548	0.2643529	0.20312531	2.8661133	20	—	—
117162 2004 QU <sub>19</sub>	14.4	X	330.41698	51.96740	285.77365	14.99716	0.0538265	0.18330889	3.0691188	20	8 7.8	18.6
117163 2004 QA <sub>20</sub>	15.3	X	247.89795	292.00049	64.83842	12.46539	0.3195591	0.22971242	2.6404609	20	4 24.0	19.9
117164 2004 RB <sub>3</sub>	14.2	X	326.24071	47.28641	275.87566	21.48543	0.1121634	0.17547877	3.1595202	20	7 10.4	18.1
117165 2004 RZ <sub>4</sub>	15.2	X	152.31481	285.24504	136.05963	12.64424	0.1956976	0.22351972	2.6890084	20	5 1.6	19.9
117166 2004 RU <sub>6</sub>	14.6	X	258.55372	287.41780	139.67203	19.11750	0.1899666	0.18008297	3.1056627	20	8 9.2	18.9
117167 2004 RL <sub>12</sub>	15.8	X	206.24974	96.23839	210.52458	8.45221	0.0715979	0.21904681	2.7254911	20	1 24.1	20.0
117168 2004 RX <sub>15</sub>	16.1	X	141.44857	343.89619	37.10241	3.98965	0.2047913	0.21732447	2.7398721	20	3 2.0	20.4
117169 2004 RZ <sub>33</sub>	15.2	X	333.74925	32.00383	8.98973	10.22526	0.0972338	0.19174799	2.9783942	20	11 6.1	19.0
117170 2004 RK <sub>36</sub>	15.8	X	201.12116	290.09948	31.15903	5.60193	0.0841444	0.22010924	2.7167137	20	2 9.9	20.0
117171 2004 RD <sub>48</sub>	15.7	X	86.30668	235.96320	114.35348	2.02396	0.2299616	0.20307331	2.8666025	20	—	—
117172 2004 RR <sub>50</sub>	16.5	X	172.17690	324.36861	17.103819	3.87514	0.1262468	0.27966441	2.3158544	20	1 29.8	19.9
117173 2004 RK <sub>51</sub>	15.3	X	100.22307	259.18748	124.82989	5.04342	0.1139505	0.21017792	2.8016335	20	1 7.7	19.0
117174 2004 RC <sub>59</sub>	14.0	X	258.01177	20.86759	7.87397	23.75947	0.1083598	0.17423291	3.1747967	20	7 5.6	19.1
117175 2004 RF <sub>59</sub>	15.4	X	114.59773	271.23435	116.93440	4.98045	0.1111620	0.21244408	2.7816744	20	1 30.6	19.3
117176 2004 RN <sub>59</sub>	14.9	X	351.61488	205.64814	128.15772	5.99805	0.1174826	0.18279125	3.0749102	20	9 11.1	18.5
117177 2004 RR <sub>61</sub>	16.1	X	290.60576	7.06188	285.18482	1.42819	0.0921468	0.22998227	2.6383950	20	4 9.6	19.7
117178 2004 RC <sub>65</sub>	15.4	X	359.63545	175.64690	166.22801	9.98782	0.1795686	0.18618307	3.0374509	20	10 11.9	18.7
117179 2004 RH <sub>77</sub>	16.0	X	121.00020	275.34877	154.42125	6.62914	0.0613361	0.28215910	2.3021839	20	3 18.1	18.8
117180 2004 RH <sub>78</sub>	15.6	X	163.19185	343.88550	42.40827	6.69902	0.0352490	0.22031899	2.7149891	20	3 18.1	19.4
117181 2004 RP <sub>78</sub>	14.9	X	276.77711	53.21407	27.20462	22.88189	0.1683166	0.18293804	3.0732652	20	9 30.2	19.1
117182 2004 RV <sub>78</sub>	16.5	X	97.82133	140.08205	194.34814	2.32637	0.1858117	0.26434887	2.4044611	20	—	—
117183 2004 RY <sub>78</sub>	15.7	X	69.31003	283.62426	187.79726	8.98171	0.1385920	0.27842638	2.3227143	20	3 10.5	18.1
117184 2004 RG <sub>79</sub>	15.2	X	326.48108	171.58067	193.07967	0.66229	0.0863548	0.18047591	3.1011532	20	9 8.8	18.9
117185 2004 RS <sub>90</sub>	15.0	X	102.95037	165.58191	211.05430	9.14336	0.2835408	0.21019119	2.8015156	20	1 23.9	19.0
117186 2004 RS <sub>94</sub>	16.1	X	102.88403	131.65525	223.69574	6.05398	0.1220674	0.27008113	2.3703177	20	—	—
117187 2004 RH <sub>99</sub>	16.7	X	47.15083	160.84845	237.92074	2.11438	0.1729273	0.26531619	2.3986132	20	—	—
117188 2004 RN <sub>136</sub>	14.1	X	240.86388	87.54906	296.78214	12.10007	0.1154777	0.17096309	3.2151493	20	6 5.5	19.1
117189 2004 RB <sub>137</sub>	14.5	X	65.45109	161.40719	172.52302	17.26002	0.2436811	0.20098396	2.8864350	20	—	—
117190 2004 RQ <sub>138</sub>	15.6	X	176.51769	157.31842	208.95877	13.91370	0.0791394	0.22220290	2.6996216	20	3 3.8	19.8
117191 2004 RY <sub>139</sub>	14.5	X	266.34167	162.83251	169.40565	22.91056	0.0217655	0.16870152	3.2438198	20	5 17.8	19.5
117192 2004 RE <sub>140</sub>	15.4	X	165.76431	264.33472	84.45471	2.51213	0.1690490	0.21614233	2.7498531	20	2 11.2	19.7
117193 2004 RY <sub>151</sub>	15.5	X	286.01931	259.92976	84.11987	6.87352	0.2502935	0.23263002	2.6183370	20	5 20.5	19.1
117194 2004 RJ <sub>153</sub>	16.2	X	215.83446	7.3								

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>
117201 2004 <i>RB</i> <sub>183</sub>	15.0	X	72.99140	145.02840	343.36275	13.77327	0.1444378	0.22112737	2.7083683	20	4 12.4	18.6
117202 2004 <i>RY</i> <sub>187</sub>	15.8	X	175.07307	67.50026	266.39369	5.83596	0.1427083	0.27799843	2.3250974	20	1 22.3	19.2
117203 2004 <i>RH</i> <sub>188</sub>	15.4	X	232.52588	198.66496	233.25206	8.99614	0.1699617	0.17358889	3.1826442	20	7 18.2	20.5
117204 2004 <i>RD</i> <sub>192</sub>	15.3	X	287.47810	46.14623	348.79909	11.57983	0.2488835	0.17763022	3.1341863	20	7 30.7	19.5
117205 2004 <i>RO</i> <sub>192</sub>	14.3	X	59.42295	346.15459	285.45564	8.71092	0.0576390	0.18166263	3.0876328	20	9 16.1	18.8
117206 2004 <i>RC</i> <sub>193</sub>	15.7	X	177.99292	193.56649	199.85686	12.38359	0.1782093	0.22294791	2.6936042	20	4 14.8	20.1
117207 2004 <i>RH</i> <sub>193</sub>	14.5	X	249.11809	200.92661	284.29039	8.88181	0.0417807	0.18717944	3.0266623	20	10 28.3	18.8
117208 2004 <i>RM</i> <sub>194</sub>	14.3	X	186.47367	257.67535	197.62209	19.37787	0.1959538	0.16822527	3.2499391	20	7 3.4	20.1
117209 2004 <i>RV</i> <sub>200</sub>	15.3	X	273.52847	355.77503	9.59428	14.40477	0.1161050	0.23305560	2.6151485	20	6 21.6	19.1
117210 2004 <i>RM</i> <sub>200</sub>	14.4	X	228.88739	94.64294	6.42041	17.38054	0.1286840	0.17285316	3.1916689	20	8 31.8	19.3
117211 2004 <i>RO</i> <sub>205</sub>	15.2	X	145.99405	336.02081	40.01944	10.52959	0.2093365	0.21506999	2.7589860	20	3 4.1	19.8
117212 2004 <i>RE</i> <sub>214</sub>	14.4	X	265.40037	138.16371	215.21787	18.20871	0.0721938	0.17080619	3.2171179	20	6 1.3	19.1
117213 2004 <i>RK</i> <sub>214</sub>	14.9	X	298.35116	109.07278	227.42793	12.18578	0.3147127	0.17546318	3.1599391	20	5 16.9	19.1
117214 2004 <i>RW</i> <sub>216</sub>	15.2	X	202.99279	41.15691	275.92512	8.74600	0.1747204	0.21732439	2.7398728	20	2 2.9	19.8
117215 2004 <i>RO</i> <sub>224</sub>	15.3	X	223.48459	299.00174	15.33957	5.88332	0.0828690	0.21806542	2.7336622	20	2 24.6	19.4
117216 2004 <i>RM</i> <sub>236</sub>	15.4	X	306.15773	45.76258	199.40962	14.11605	0.1261466	0.22249632	2.6972477	20	2 21.2	19.1
117217 2004 <i>RA</i> <sub>254</sub>	15.0	X	201.10240	261.81963	97.15996	10.84665	0.1321593	0.22407549	2.6845602	20	3 29.7	19.4
117218 2004 <i>RF</i> <sub>255</sub>	14.4	X	4.60070	240.59488	97.00711	12.48939	0.1298778	0.18554422	3.0444190	20	10 14.6	18.3
117219 2004 <i>RF</i> <sub>266</sub>	13.9	X	188.05787	96.06964	16.42787	17.79523	0.1646952	0.16974415	3.2305231	20	8 5.4	19.4
117220 2004 <i>RV</i> <sub>306</sub>	15.0	X	262.87132	280.89331	81.12831	9.31136	0.1773932	0.22930228	2.6436085	20	5 26.5	18.8
117221 2004 <i>RL</i> <sub>307</sub>	16.0	X	168.88678	310.94725	255.07794	5.67894	0.1819163	0.25790418	2.4443523	20	11 9.5	19.9
117222 2004 <i>RD</i> <sub>308</sub>	15.6	X	225.80584	38.66433	257.55741	4.05276	0.1413968	0.21680609	2.7442378	20	1 30.9	20.1
117223 2004 <i>RP</i> <sub>311</sub>	15.7	X	315.14552	219.45269	77.29493	10.08175	0.1822839	0.23532014	2.5983440	20	5 11.1	18.6
117224 2004 <i>RP</i> <sub>322</sub>	13.7	X	13.56770	262.21728	334.27860	17.62524	0.1215556	0.16954366	3.2330692	20	6 3.2	18.0
117225 2004 <i>RV</i> <sub>325</sub>	16.8	X	308.83240	353.27211	222.26254	20.41339	0.0412878	0.40157468	1.8195270	20	—	—
117226 2004 <i>RZ</i> <sub>325</sub>	16.0	X	113.02921	138.09989	249.12877	12.80243	0.1560546	0.27073570	2.3664956	20	1 20.6	19.2
117227 2004 <i>RG</i> <sub>326</sub>	14.3	X	220.02584	136.31927	0.23605	12.98906	0.0685191	0.17893392	3.1189441	20	10 4.0	18.9
117228 2004 <i>RN</i> <sub>328</sub>	16.2	X	5.45529	69.63654	225.10557	8.34007	0.1532718	0.24128911	2.5553138	20	8 18.0	19.0
117229 2004 <i>RP</i> <sub>329</sub>	14.8	X	197.56438	240.96857	214.79042	11.59893	0.0526896	0.17166400	3.2063916	20	7 19.4	19.8
117230 2004 <i>RC</i> <sub>338</sub>	16.4	X	295.63463	26.44930	179.32198	2.25812	0.1147784	0.27332329	2.3515360	20	—	—
117231 2004 <i>RY</i> <sub>341</sub>	16.9	X	327.64628	89.48857	187.71404	6.81141	0.1318116	0.29602175	2.2297369	20	5 9.0	18.9
117232 2004 <i>SN</i> <sub>2</sub>	15.0	X	267.48168	301.75801	48.39424	12.80765	0.2037953	0.22798428	2.6537873	20	5 11.5	18.6
117233 2004 <i>SG</i> <sub>9</sub>	14.5	X	45.05546	309.75658	269.30697	28.14092	0.0861008	0.23175318	2.6249372	20	6 29.3	17.8
117234 2004 <i>SO</i> <sub>11</sub>	15.8	X	307.92854	239.85719	73.35958	11.86307	0.1941832	0.23696418	2.5863120	20	5 19.7	18.8
117235 2004 <i>SM</i> <sub>12</sub>	14.1	X	307.15857	309.85399	317.70946	26.51468	0.1983443	0.17408605	3.1765819	20	3 7.5	18.8
117236 2004 <i>SU</i> <sub>14</sub>	15.9	X	116.20188	200.06328	100.56600	7.36315	0.1342652	0.26298264	2.4127815	20	—	—
117237 2004 <i>SY</i> <sub>14</sub>	16.1	X	63.96086	213.59975	94.37233	6.97109	0.1390681	0.25497570	2.4630327	20	12 6.3	19.7
117238 2004 <i>SY</i> <sub>17</sub>	15.2	X	259.41625	270.52621	126.25529	11.36486	0.1786635	0.23755022	2.5820566	20	7 6.9	18.9
117239 2004 <i>SM</i> <sub>18</sub>	14.8	X	83.96799	324.62172	236.29913	3.88603	0.1067749	0.17129361	3.2110121	20	7 28.9	19.5
117240 2004 <i>Zhytomyr</i>	15.9	X	249.55179	213.28173	126.37731	8.88979	0.1943407	0.22905727	2.6454933	20	4 14.9	20.2
117241 2004 <i>SZ</i> <sub>20</sub>	16.9	X	125.62221	319.05557	36.27029	1.84951	0.2015858	0.27017802	2.3697510	20	1 5.6	19.9
117242 2004 <i>SF</i> <sub>21</sub>	14.8	X	185.78347	268.34803	144.08841	27.00246	0.2244002	0.22385245	2.6863431	20	5 22.0	20.0
117243 2004 <i>SU</i> <sub>25</sub>	14.0	X	81.35193	230.55750	209.46023	9.28435	0.0651120	0.14787247	3.5416951	20	2 20.4	19.1
117244 2004 <i>SG</i> <sub>29</sub>	16.3	X	262.17483	155.30528	194.15409	3.48873	0.1262314	0.29514055	2.2341730	20	5 14.3	19.0
117245 2004 <i>SC</i> <sub>32</sub>	15.7	X	11.37810	140.88462	160.22034	1.94981	0.2352947	0.18228312	3.0806220	20	9 12.0	18.8
117246 2004 <i>SN</i> <sub>33</sub>	16.4	X	142.17035	196.57983	156.87714	5.42283	0.1635454	0.27300580	2.3533588	20	1 15.9	19.6
117247 2004 <i>SO</i> <sub>33</sub>	16.1	X	217.99858	295.92563	42.15614	7.75894	0.1557951	0.28424925	2.2908844	20	3 12.9	19.7
117248 2004 <i>SN</i> <sub>38</sub>	15.3	X	10.63710	62.70983	184.66053	13.30686	0.1305670	0.23351608	2.6117094	20	6 17.9	18.4
117249 2004 <i>SW</i> <sub>38</sub>	14.9	X	228.67237	293.26435	187.31161	11.20639	0.0642745	0.18310188	3.0714316	20	9 27.0	19.4
117250 2004 <i>ST</i> <sub>39</sub>	16.9	X	139.71706	92.12203	10.97160	19.58231	0.1058105	0.35272252	1.9838733	20	5 23.9	19.8
117251 2004 <i>SD</i> <sub>41</sub>	15.3	X	328.43185	256.95865	15.29157	13.78470	0.0812081	0.22814574	2.6525351	20	5 6.2	18.7
117252 2004 <i>SJ</i> <sub>41</sub>	15.8	X	154.28262	214.07926	159.33987	2.26183	0.1974109	0.21512672	2.7585010	20	3 2.3	20.1
117253 2004 <i>ST</i> <sub>45</sub>	15.1	X	210.01488	122.88554	230.27047	11.47249	0.1699877	0.22231233	2.6987356	20	3 20.7	19.8
117254 2004 <i>SJ</i> <sub>45</sub>	14.7	X	243.20407	192.55466	281.20194	6.85782	0.0821544	0.18270031	3.0759306	20	9 29.9	19.2
117255 2004 <i>SJ</i> <sub>46</sub>	16.8	X	175.64400	52.34577	0.49195	7.62051	0.2684117	0.22330508	2.6907312	20	5 5.1	21.7
117256 2004 <i>SQ</i> <sub>50</sub>	14.7	X	212.53341	290.69942	198.15433	9.00323	0.0411560	0.18160345	3.0883036	20	9 19.7	19.1
117257 2004 <i>SV</i> <sub>53</sub>	14.5	X	297.84531	192.58170	160.62900	5.82847	0.0380820	0.17287274	3.1914279	20	7 17.4	19.0
117258 2004 <i>SL</i> <sub>54</sub>	14.7	X	215.22651	233.28505	79.64832	10.10277	0.1284998	0.21561089	2.7543698	20	2 14.9	19.2
117259 2004 <i>SW</i> <sub>54</sub>	14.8	X	258.46698	227.51549	131.30811	13.44721	0.1913999	0.22820524	2.6520741	20	5 19.1	19.0
117260 2004 <i>SD</i> <sub>55</sub>	15.2	X	159.53106	298.22613	119.79846	13.37095	0.1825818	0.21732298	2.7398846	20	5 4.1	19.9
117261 2004 <i>SS</i> <sub>57</sub>	14.7	X	301.47569	191.55943	214.25927	16.05844	0.1304691	0.18022284	3.1040557	20	9 15.4	18.8
117262 2004 <i>ST</i> <sub>57</sub>	16.5	X	120.34138	328.79238	39.05647	4.20558	0.2527509	0.27058064	2.3673996	20	1 23.6	19.6
117263 2004 <i>SB</i> <sub>58</sub>	16.1	X	180.32604	304.75311	33.93135	6.83601	0.1992808	0.27794031	2.3254216	20	2 9.4	19.9
117264 2004 <i>SJ</i> <sub>59</sub>	16.1	X	98.18429	274.75331	50.35071	6.59556	0.2433372	0.26264244	2.4148646	20	—	—
117265 2004 <i>TH</i> <sub>1</sub>	14.8	X	315.18159	241.73147	58.37508	0.37565	0.1550508	0.17191267	3.2032989	20	5 19.3	18.9
117266 2004 <i>TO</i> <sub>7</sub>	15.1	X	188.31187	244.50055	88.54981	12.14190	0.1445011	0.21647714	2.7470171	20	2 14.2	19.6
117267 2004 <i>TA</i> <sub>16</sub>	14.2	X	205.75799	335.04894	149.91542	30.02141	0.2629328	0.17447497	3.1718597	20	8 22.9	19.6
117268 2004 <i>TK</i> <sub>52</sub>	14.1	X	209.55784	235.34722	220.29864	17.42728	0.1599375	0.16993096	3.2281549	20	7 22.8	19.6
117269 2004 <i>TX</i> <sub>53</sub>	14.9	X	338.75978	19.31244	41.72915	10.11105	0.0502409	0.18921930	3.0048706	20	12 8.5	18.9
117270 2004 <i>TT</i> <sub>100</sub>	14.1	X	172.36072	0.90666	136.90748	16.39078	0.2098583	0.17300025	3.1898595	20	8 14.3	19.5
117271 2004 <i>TY</i> <sub>102</sub>	14.6	X	47.17034	330.26187	351.74870	10						



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>
117281 2004 TX <sub>130</sub>	15.4	X	317.64763	31.40136	359.22952	3.00183	0.1109494	0.18070029	3.0985855	20	9 27.5	19.3
117282 2004 TT <sub>139</sub>	15.3	X	203.83785	103.92587	304.52309	5.00697	0.1389230	0.22670291	2.6637777	20	5 26.3	19.5
117283 2004 TQ <sub>168</sub>	15.0	X	331.19692	218.17264	131.85959	3.67514	0.0910571	0.17902327	3.1179063	20	8 28.3	18.9
117284 2004 TA <sub>170</sub>	15.6	X	246.92189	264.03811	111.59892	3.54529	0.2219743	0.23137953	2.6277624	20	5 21.8	19.6
117285 2004 TK <sub>173</sub>	14.6	X	265.68386	168.69286	330.94050	8.53122	0.0058981	0.18971047	2.9996817	20	12 13.6	18.9
117286 2004 TJ <sub>208</sub>	15.4	X	135.31948	356.16656	35.89811	9.76530	0.1862788	0.21282176	2.7783824	20	3 10.8	19.8
117287 2004 TS <sub>221</sub>	15.4	X	266.91249	198.39345	105.48028	7.57499	0.0506254	0.22332826	2.6905450	20	4 5.7	19.2
117288 2004 TU <sub>221</sub>	12.9	X	328.27558	295.72108	131.08157	9.79071	0.2234120	0.12552484	3.9504775	20	11 14.5	17.4
117289 2004 TV <sub>240</sub>	14.9	X	19.91878	235.21470	251.96223	10.64732	0.0656878	0.20893056	2.8127734	20	1 16.7	18.5
117290 2004 TW <sub>247</sub>	15.5	X	198.30951	316.99146	140.44023	13.91422	0.1464547	0.23197276	2.6232804	20	7 22.8	19.6
117291 2004 TK <sub>287</sub>	16.4	X	284.50420	157.52326	141.30501	3.44608	0.1839263	0.28840496	2.2688245	20	3 25.3	19.2
117292 2004 TP <sub>287</sub>	15.4	X	307.10267	121.01968	223.39030	4.43286	0.0891469	0.23415360	2.6069668	20	7 16.6	18.5
117293 2004 TC <sub>328</sub>	15.6	X	235.39688	222.04804	153.21432	14.83224	0.1181209	0.22986292	2.6393082	20	5 22.7	19.8
117294 2004 TY <sub>338</sub>	14.8	X	311.19791	317.90628	126.24319	13.05760	0.0722577	0.18759717	3.0221675	20	12 2.2	18.9
117295 2004 TD <sub>355</sub>	15.4	X	318.79553	165.45349	97.47796	8.23016	0.0156312	0.22593533	2.6698075	20	4 25.2	19.0
117296 2004 UP <sub>7</sub>	15.6	X	146.18448	175.23257	246.53719	9.05076	0.1835486	0.21793965	2.7347138	20	4 19.3	20.1
117297 2004 UH <sub>8</sub>	14.8	X	284.71411	190.19761	243.77390	9.22430	0.0469729	0.18105029	3.0945908	20	10 8.7	19.1
117298 2004 UX <sub>9</sub>	16.6	X	150.85780	329.46865	73.99074	1.14823	0.2386567	0.27989964	2.3145567	20	4 4.2	20.2
117299 2004 UC <sub>10</sub>	16.2	X	240.46429	132.30332	199.85006	3.92546	0.2341812	0.28572565	2.2829859	20	3 17.5	19.9
117300 2004 VG <sub>2</sub>	14.6	X	218.23319	195.94856	246.07556	10.10473	0.1228045	0.16942432	3.2345873	20	7 19.9	19.8
117301 2004 VX <sub>4</sub>	17.0	X	114.17647	116.50836	323.88528	3.46826	0.2062512	0.27724559	2.3293046	20	4 10.8	20.3
117302 2004 VP <sub>5</sub>	14.4	X	316.05987	36.16094	287.77477	7.84497	0.1879433	0.17080654	3.2171135	20	6 17.1	18.3
117303 2004 VB <sub>10</sub>	14.9	X	205.68539	267.46756	83.85615	10.46227	0.2137139	0.21943039	2.7223139	20	3 23.5	19.7
117304 2004 VR <sub>12</sub>	14.9	X	34.79572	10.58676	18.11881	12.40850	0.1478374	0.19264177	2.9691746	20	—	—
117305 2004 VU <sub>15</sub>	15.1	X	7.26171	281.51276	70.35262	11.90273	0.1229751	0.18626732	3.0365349	20	11 2.5	18.9
117306 2004 VF <sub>21</sub>	16.4	X	246.27446	261.42098	82.47803	4.06737	0.2054549	0.28837389	2.2689874	20	4 11.3	19.8
117307 2004 VY <sub>21</sub>	14.3	X	26.90658	66.41782	230.02412	15.49843	0.3076648	0.17933157	3.1143318	20	10 12.3	18.2
117308 2004 VQ <sub>22</sub>	15.8	X	229.60984	357.42419	34.16520	1.95209	0.0852381	0.22756803	2.6570224	20	6 5.8	19.6
117309 2004 VT <sub>22</sub>	15.3	X	63.61339	11.41299	19.66260	2.39701	0.0673869	0.19811637	2.9142209	20	—	—
117310 2004 VA <sub>23</sub>	14.9	X	353.19476	299.72264	88.72526	3.68326	0.1922282	0.18483625	3.0521880	20	11 30.5	18.1
117311 2004 VD <sub>23</sub>	15.0	X	262.90376	358.45466	62.39553	2.32353	0.1922832	0.17231387	3.1983247	20	8 6.5	19.6
117312 2004 VO <sub>24</sub>	15.7	X	158.30192	78.34996	326.05599	6.18371	0.1298418	0.21752948	2.7381504	20	4 5.3	20.0
117313 2004 VR <sub>26</sub>	16.7	X	186.04087	348.08148	0.04450	5.29217	0.1399576	0.27772672	2.3266137	20	2 22.3	20.1
117314 2004 VD <sub>40</sub>	15.9	X	144.10601	97.14097	224.09144	11.43447	0.0605230	0.20072336	2.8889328	20	—	—
117315 2004 VO <sub>55</sub>	14.1	X	125.98156	35.52256	31.07120	10.73574	0.0728176	0.15052585	3.4999512	20	4 2.3	19.2
117316 2004 VM <sub>57</sub>	15.3	X	86.57782	171.01994	271.22728	3.93656	0.0152794	0.20928063	2.8096358	20	2 16.9	19.2
117317 2004 VL <sub>59</sub>	15.6	X	154.25875	66.33741	9.11384	2.81883	0.0791573	0.22026535	2.7154299	20	5 8.9	19.7
117318 2004 VO <sub>62</sub>	15.5	X	351.47504	256.33928	102.49165	16.02305	0.2246980	0.24557432	2.5255002	20	11 16.5	18.1
117319 2004 VR <sub>64</sub>	14.5	X	207.69422	78.62720	68.39371	16.41263	0.0309068	0.17805846	3.1291591	20	10 16.2	19.2
117320 2004 VS <sub>64</sub>	15.6	X	16.63678	287.09266	202.30350	2.35851	0.1009746	0.20309857	2.8663649	20	1 16.6	19.0
117321 2004 VU <sub>64</sub>	15.4	X	27.73528	233.50028	147.99526	1.82589	0.0110825	0.18797724	3.0180924	20	12 20.4	19.5
117322 2004 VJ <sub>72</sub>	15.2	X	17.27913	273.14675	138.88625	2.06358	0.0879922	0.19252562	2.9703687	20	—	—
117323 2004 VE <sub>78</sub>	15.7	X	195.88128	14.79065	104.86654	24.57695	0.0718427	0.35978920	1.9578104	20	9 20.1	18.6
117324 2004 WW <sub>4</sub>	16.1	X	74.74649	30.78350	287.27559	4.58976	0.1673615	0.31442755	2.1418497	20	—	—
117325 2004 WU <sub>8</sub>	14.6	X	312.31015	279.56965	78.35534	9.94656	0.1023314	0.17415660	3.1757240	20	8 9.7	18.7
117326 2004 WV <sub>8</sub>	15.9	X	180.73471	359.30006	54.23698	6.59115	0.1519384	0.28422948	2.2909906	20	5 10.4	19.5
117327 2004 WD <sub>9</sub>	15.4	X	192.32123	193.64122	304.03980	6.97519	0.1452133	0.23600040	2.5933486	20	9 4.8	19.5
117328 2004 WH <sub>9</sub>	14.8	X	332.35736	20.17412	47.33172	10.81020	0.2448827	0.18476426	3.0529808	20	12 12.9	17.7
117329 Spencer	16.0	X	341.68326	238.67521	287.39061	6.92702	0.1593444	0.25960900	2.4336394	20	—	—
117330 2004 XF <sub>8</sub>	14.4	X	162.43678	111.70073	102.10016	10.29137	0.0617174	0.17748946	3.1358432	20	11 8.9	19.2
117331 2004 XF <sub>10</sub>	15.1	X	236.71648	305.95336	100.16227	13.67635	0.1647641	0.22654521	2.6650138	20	6 24.9	19.1
117332 2004 XX <sub>10</sub>	14.7	X	3.30994	13.89932	81.57589	12.85525	0.0837408	0.19212429	2.9745038	20	—	—
117333 2004 XF <sub>11</sub>	15.2	X	228.44851	288.32812	89.84670	5.33994	0.1319390	0.22307833	2.6925543	20	5 15.1	19.3
117334 2004 XK <sub>11</sub>	15.9	X	245.44008	239.55918	279.84785	2.05905	0.0423298	0.24539132	2.5267557	20	12 22.5	19.1
117335 2004 XT <sub>11</sub>	14.9	X	271.33031	261.53296	159.09645	9.65341	0.1969747	0.23706663	2.5855668	20	8 21.4	18.0
117336 2004 XP <sub>15</sub>	15.2	X	36.50708	45.62505	341.14617	2.86121	0.1399212	0.19088687	2.9873447	20	—	—
117337 2004 XD <sub>17</sub>	15.9	X	287.54640	11.26286	32.12396	1.98995	0.0865431	0.23472024	2.6027694	20	9 10.1	18.9
117338 2004 XF <sub>18</sub>	15.0	X	326.63018	114.54469	230.35690	4.13352	0.1613506	0.17248741	3.1961791	20	8 5.6	18.8
117339 2004 XO <sub>20</sub>	14.0	X	228.64507	30.93424	78.73439	14.45840	0.0731353	0.17273241	3.1931562	20	9 19.3	18.9
117340 2004 XM <sub>23</sub>	14.7	X	60.24867	120.49388	126.88731	22.73886	0.2571855	0.28129075	2.3069194	20	10 12.6	18.5
117341 2004 XU <sub>26</sub>	15.2	X	76.81174	222.89472	154.38812	2.48784	0.1092935	0.19647287	2.9304500	20	—	—
117342 2004 XJ <sub>38</sub>	15.7	X	150.62538	260.72050	174.30127	13.08924	0.1146683	0.21832079	2.7315300	20	5 10.4	20.1
117343 2004 XR <sub>38</sub>	15.8	X	300.38440	258.57665	158.48918	15.07005	0.0997226	0.24135290	2.5548635	20	10 23.9	18.9
117344 2004 XY <sub>40</sub>	14.6	X	313.24789	26.91407	69.99534	12.17426	0.1157479	0.18351081	3.0668670	20	12 15.1	18.3
117345 2004 XO <sub>41</sub>	15.2	X	178.59901	129.91152	287.59561	13.33525	0.1732141	0.21695080	2.7430173	20	5 11.9	19.9
117346 2004 XB <sub>48</sub>	14.7	X	159.10930	102.42084	77.68530	10.52611	0.0287366	0.17065202	3.2190552	20	9 27.2	19.5
117347 2004 XF <sub>48</sub>	15.2	X	181.97830	151.81755	271.86690	13.47926	0.1426579	0.21818057	2.7327002	20	5 24.6	19.6
117348 2004 XF <sub>49</sub>	13.7	X	342.00883	275.67635	103.15685	15.83663	0.2241742	0.17907514	3.1173042	20	11 2.8	17.1
117349 2004 XN <sub>61</sub>	15.1	X	253.29580	171.25706	277.43521	9.37040	0.2709613	0.17508022	3.1645454	20	8 16.2	20.1
117350 Saburo	14.1	X	83.18423	313.56352	339.55212	17.00513	0.1233401	0.17654114	3.1470629	20	11 12.8	19.2
117351 2004 XE <sub>63</sub>	15.2	X	181.77491	307.97940	241.01652	13.74910	0.0570165	0.24356182	2.5393929	20	11 7.3	18.7
117352 2004 XQ <sub>69</sub>	15.7	X	259.57106	67.27228	295.14210	2.53956	0.1992983	0.22735482	2.6586833	20	5 18.9	19.7
117353 2004 XS <sub>73</sub>	14.7	X	303.04671	113.58530	323.61597	22.35985	0.0727899	0.17631871	3.1497092	20	10 25.4	19.4
11												

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>
117361 2004 XV <sub>103</sub>	15.1	X	315.38507	296.17470	103.23151	14.58210	0.1377930	0.23629629	2.5911832	20	10 25.4	18.1
117362 2004 XW <sub>103</sub>	15.4	X	106.31848	96.61943	75.68794	9.34248	0.1009322	0.21756994	2.7378109	20	7 23.7	19.4
117363 2004 XX <sub>104</sub>	15.0	X	319.72563	269.11967	92.40284	15.83839	0.1324727	0.23274420	2.6174806	20	9 6.7	18.1
117364 2004 XM <sub>105</sub>	14.6	X	331.64180	135.14674	263.44172	9.79778	0.0416549	0.18222380	3.0812905	20	10 28.8	18.8
117365 2004 XR <sub>106</sub>	14.6	X	257.44414	55.30583	55.88072	11.45025	0.0678663	0.17855245	3.1233849	20	10 22.6	19.0
117366 2004 XK <sub>107</sub>	16.0	X	212.90970	337.54503	48.31932	4.53642	0.1856665	0.28521105	2.2857312	20	5 4.0	19.5
117367 2004 XO <sub>107</sub>	15.7	X	306.61978	347.39149	45.98961	5.20134	0.0586227	0.23675202	2.5878569	20	9 30.6	18.7
117368 2004 XY <sub>119</sub>	16.5	X	315.95569	319.15884	216.89747	0.60172	0.1341710	0.25782255	2.4448682	20	—	—
117369 2004 XL <sub>121</sub>	15.9	X	285.04285	33.90808	3.07584	2.38687	0.0358189	0.23144817	2.6272428	20	9 3.5	19.2
117370 2004 XC <sub>129</sub>	15.0	X	343.82894	350.46243	60.10208	11.16976	0.2666704	0.18324043	3.0698832	20	12 17.7	17.9
117371 2004 XK <sub>144</sub>	13.7	X	209.26311	293.34749	278.29117	24.89562	0.1935150	0.17780309	3.1321545	20	12 10.6	18.8
117372 2004 XH <sub>145</sub>	15.3	X	289.34911	199.97906	189.74483	5.30822	0.2662549	0.23700306	2.5860291	20	7 23.5	18.3
117373 2004 XL <sub>145</sub>	14.6	X	286.15721	220.87350	271.67739	10.26845	0.2046095	0.17977049	3.1092605	20	12 6.3	18.4
117374 2004 XQ <sub>147</sub>	16.6	X	66.57749	187.75567	276.36380	1.83562	0.1618705	0.26702145	2.3883902	20	2 29.4	19.0
117375 2004 XY <sub>148</sub>	14.8	X	299.82873	170.93543	290.50963	15.79819	0.1145493	0.17936194	3.1139803	20	11 28.0	18.8
117376 2004 XP <sub>157</sub>	15.4	X	39.71973	341.49691	54.36355	2.27853	0.2636137	0.19097681	2.9864068	20	—	—
117377 2004 XW <sub>158</sub>	14.2	X	340.09905	308.41650	106.76115	11.21417	0.0856103	0.18164107	3.0878772	20	12 5.5	18.2
117378 2004 XZ <sub>163</sub>	15.5	X	197.25741	97.04551	274.14141	4.17080	0.0764187	0.22001844	2.7174611	20	4 2.9	19.5
117379 2004 XW <sub>169</sub>	15.5	X	356.61334	103.43531	45.05829	3.30815	0.0299908	0.20641653	2.8355658	20	1 16.9	19.2
117380 2004 XT <sub>174</sub>	14.2	X	299.73517	299.01357	85.28063	18.55052	0.1476918	0.17332335	3.1858941	20	8 22.4	18.5
117381 Lindaweiland	15.1	X	249.88649	182.68564	100.57021	3.21669	0.0305101	0.20424486	2.8556302	20	2 20.3	19.2
117382 2004 YE <sub>2</sub>	16.3	X	77.70513	352.28061	115.96970	9.22750	0.1393543	0.27323569	2.3520385	20	3 27.1	19.0
117383 2004 YD <sub>4</sub>	15.2	X	48.39572	224.67103	103.31044	11.86367	0.0396845	0.17581880	3.1556767	20	11 15.8	19.8
117384 Halharrison	15.9	X	322.25652	149.48727	25.34459	1.77357	0.1062248	0.25793344	2.4441674	20	—	—
117385 2004 YN <sub>20</sub>	12.0	X	233.78052	215.99197	125.38077	13.29185	0.0429700	0.08103955	5.2885675	20	4 23.1	19.2
117386 Thomasschlapkohl	15.3	X	101.86606	251.62718	121.80721	10.33859	0.0503765	0.19195398	2.9762630	20	—	—
117387 Javiera	15.4	X	68.96425	342.89079	299.63111	10.26201	0.1920995	0.23133825	2.6280750	20	11 7.6	19.5
117388 Jamiemoore	16.8	X	97.29588	258.17289	124.97009	3.13878	0.2008192	0.25977013	2.4326329	20	1 5.6	19.4
117389 2004 YD <sub>23</sub>	12.3	X	276.96154	194.53909	130.09617	25.18603	0.0739970	0.08393752	5.1661297	20	5 20.1	19.5
117390 Stephanegendron	15.2	X	158.37903	66.10320	160.96694	1.22441	0.1254190	0.17326391	3.1866227	20	11 15.5	20.3
117391 2004 YD <sub>31</sub>	15.7	X	263.20848	280.55229	130.51695	9.72747	0.1159433	0.22981276	2.6396922	20	8 10.0	19.0
117392 2004 YV <sub>31</sub>	14.9	X	10.66734	259.02285	86.42836	16.49739	0.2277025	0.24062778	2.5599936	20	11 28.3	17.7
117393 2004 YQ <sub>32</sub>	16.3	X	0.30001	159.52786	5.42701	2.54454	0.1577517	0.26279661	2.4139200	20	1 19.8	18.7
117394 2004 YS <sub>33</sub>	14.2	X	279.09073	215.93077	312.40754	16.30273	0.2403312	0.17902731	3.1178594	20	—	—
117395 2004 YL <sub>35</sub>	12.6	X	277.91146	228.36006	87.35143	12.36440	0.0352830	0.08462875	5.1379606	20	5 11.2	19.5
117396 2005 AJ <sub>1</sub>	15.5	X	340.52301	318.89427	118.79364	2.66264	0.2271216	0.18573599	3.0423231	20	—	—
117397 2005 AW <sub>1</sub>	16.4	X	13.55352	280.56397	238.67924	1.36064	0.1416323	0.26397252	2.4067459	20	2 6.0	18.6
117398 2005 AZ <sub>2</sub>	14.7	X	334.78581	328.56386	131.12915	11.71984	0.1245538	0.18198583	3.0839761	20	—	—
117399 2005 AO <sub>7</sub>	16.6	X	150.50885	151.43965	344.07726	5.57477	0.0977395	0.28515449	2.2860334	20	7 29.0	19.9
117400 2005 AA <sub>8</sub>	16.3	X	141.85592	142.81592	334.93913	5.47726	0.1205273	0.28042494	2.3116653	20	6 24.3	19.6
117401 2005 AL <sub>8</sub>	15.4	X	122.26589	32.60589	110.59232	9.89567	0.1199051	0.21541764	2.7560169	20	7 4.2	19.5
117402 2005 AM <sub>8</sub>	15.4	X	273.76106	321.72081	110.83746	10.54905	0.0988500	0.23230301	2.6207936	20	10 2.2	18.8
117403 2005 AO <sub>8</sub>	15.9	X	266.23577	120.62129	318.99054	11.70857	0.2160813	0.23378315	2.6097200	20	9 3.1	19.3
117404 2005 AC <sub>9</sub>	12.1	X	203.29818	285.65706	105.02154	22.81357	0.0285952	0.08508607	5.1195336	20	5 19.1	19.3
117405 2005 AY <sub>9</sub>	15.7	X	52.18924	171.27693	352.07054	3.73718	0.1034184	0.20919921	2.8103647	20	4 26.6	19.2
117406 2005 AF <sub>10</sub>	14.7	X	277.13665	332.73352	146.05109	13.41128	0.0766321	0.17733311	3.1376861	20	11 25.2	19.2
117407 2005 AD <sub>11</sub>	15.2	X	88.90772	119.81896	16.27433	9.90019	0.1981707	0.21087087	2.7954924	20	5 25.3	19.3
117408 2005 AL <sub>11</sub>	15.0	X	271.24997	333.92521	150.83466	6.91813	0.0964261	0.17662448	3.1460729	20	11 20.4	19.3
117409 2005 AO <sub>11</sub>	14.8	X	297.40534	220.09961	306.78954	11.59397	0.0809943	0.18706427	3.0279043	20	—	—
117410 2005 AY <sub>11</sub>	16.0	X	353.07982	0.84386	46.23073	5.28470	0.1616719	0.24549642	2.5260345	20	—	—
117411 2005 AH <sub>12</sub>	15.0	X	346.46530	341.52886	103.83751	10.61815	0.0467955	0.18258070	3.0772738	20	—	—
117412 2005 AJ <sub>12</sub>	16.2	X	32.11823	88.13026	42.55465	3.09425	0.1691617	0.19824955	2.9129157	20	2 17.9	19.3
117413 Ramonycajal	16.3	X	0.77480	6.92254	171.92794	2.25721	0.1333318	0.26408020	2.4060916	20	2 11.5	18.4
117414 2005 AG <sub>14</sub>	15.8	X	240.24499	135.30614	355.71756	13.22109	0.1327521	0.23748223	2.5825494	20	10 19.3	19.4
117415 2005 AY <sub>14</sub>	16.7	X	293.08270	29.45284	18.93735	1.36978	0.0906370	0.23527822	2.5986527	20	9 24.8	19.7
117416 2005 AC <sub>15</sub>	15.7	X	258.71649	21.85021	29.88184	4.67922	0.0993834	0.22626889	2.6671831	20	8 8.7	19.4
117417 2005 AS <sub>15</sub>	15.4	X	82.82741	89.43715	137.70578	13.12236	0.0290930	0.22211135	2.7003634	20	8 26.7	19.1
117418 2005 AE <sub>16</sub>	15.0	X	250.89216	187.11305	314.64323	7.14727	0.1314888	0.17605719	3.1528274	20	11 5.4	19.6
117419 2005 AD <sub>17</sub>	14.7	X	324.02112	302.05292	117.91053	13.58539	0.0773226	0.17816894	3.1278653	20	11 19.5	18.9
117420 2005 AM <sub>17</sub>	15.9	X	106.03135	346.23088	147.10591	1.63526	0.0775766	0.21354365	2.7721173	20	5 28.6	19.8
117421 2005 AA <sub>18</sub>	16.2	X	190.77306	269.16104	290.39028	5.89657	0.0859526	0.30184419	2.2009702	20	12 12.1	18.9
117422 2005 AG <sub>18</sub>	16.5	X	55.63106	141.55785	308.68679	2.27587	0.1475653	0.26107580	2.4245156	20	1 19.6	18.7
117423 2005 AP <sub>18</sub>	12.1	X	3.93538	87.82013	140.70761	9.07255	0.0973814	0.08196806	5.2485532	20	5 14.7	18.6
117424 2005 AX <sub>19</sub>	15.3	X	129.32510	200.85572	312.15027	10.80366	0.0915300	0.21932890	2.7231536	20	7 23.5	19.2
117425 2005 AK <sub>20</sub>	15.1	X	336.95974	112.28867	58.28989	2.76088	0.0268084	0.19748635	2.9204156	20	1 20.6	19.1
117426 2005 AM <sub>20</sub>	16.2	X	41.71193	264.36110	198.56982	1.69538	0.1330515	0.26196012	2.4190560	20	1 9.6	18.5
117427 2005 AY <sub>21</sub>	15.3	X	217.00500	194.69861	297.24259	14.12341	0.0836153	0.22975689	2.6401201	20	9 23.8	19.4
117428 2005 AS <sub>22</sub>	16.4	X	16.69712	115.18794	73.23973	6.24726	0.1867812	0.26948162	2.3738318	20	4 1.5	18.2
117429 2005 AR <sub>25</sub>	16.7	X	5.22043	265.31090	258.70224	4.48429	0.1634634	0.26372444	2.4082549	20	1 24.9	18.9
117430 Achosyxx	15.0	X	35.98450	284.96529	116.65747	14.07046	0.1052428	0.18582048	3.0414009	20	—	—
117431 2005 AL <sub>28</sub>	15.7	X	283.27867	293.61121	136.40055	15.60690	0.0440374	0.23307426	2.6150089	20	10 21.1	19.3
117432 2005 AQ <sub>28</sub>	17.2	X	203.18427	65.15364	13.77954	2.87736	0.1215887	0.28710365	2.2756750	20	7 8.6	20.5
117433 2005 AC <sub>29</sub>	14.1	X	257.36621	120.12308	70.13054	29.89011	0.0765247	0.17420509	3.1751347	20	—	—
117434 2005 AE <sub>29</sub>	15.9	X	175.62582	184.58877	117.6							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
117441 2005 AY <sub>38</sub>	15.2	X	61.21903	147.25388	104.11464	10.29557	0.0789874	0.22421440	2.6834513	20	9 10.6	18.9
117442 2005 AP <sub>39</sub>	15.7	X	158.76264	111.56319	154.10374	7.43472	0.1442963	0.24342139	2.5403695	20	—	—
117443 2005 AW <sub>42</sub>	15.9	X	354.73758	241.54289	139.80966	4.91042	0.1972447	0.24172044	2.5522730	20	12 14.2	18.5
117444 2005 AJ <sub>43</sub>	16.8	X	64.66717	260.99900	298.05169	4.67865	0.1124356	0.27864997	2.3214716	20	7 9.9	19.5
117445 2005 AB <sub>45</sub>	16.1	X	353.48990	121.70056	74.68157	2.38669	0.1222905	0.26542809	2.3979390	20	2 26.9	18.5
117446 2005 AV <sub>45</sub>	12.4	X	329.84712	155.38350	112.10660	6.06603	0.0822329	0.08324108	5.1949045	20	5 12.5	18.9
117447 2005 AX <sub>46</sub>	11.7	X	269.85452	186.91162	134.80208	29.47450	0.0565719	0.08186976	5.2527538	20	5 12.7	19.0
117448 2005 AY <sub>46</sub>	16.4	X	54.64351	11.96410	160.96818	2.53546	0.1460425	0.27241084	2.3567841	20	5 20.9	18.9
117449 2005 AM <sub>47</sub>	15.9	X	253.56854	336.37098	67.34716	3.99770	0.1239951	0.22619112	2.6677943	20	7 16.9	19.6
117450 2005 AD <sub>47</sub>	15.0	X	157.46382	208.28465	125.15439	11.00140	0.0916489	0.19084394	2.9877927	20	1 12.5	19.4
117451 2005 AA <sub>50</sub>	16.3	X	152.25600	58.59453	227.44965	3.06882	0.0209485	0.24991373	2.4961804	20	—	—
117452 2005 AV <sub>55</sub>	15.2	X	71.64648	312.31165	301.24066	12.65430	0.1281695	0.22830501	2.6513013	20	9 22.8	19.2
117453 2005 AG <sub>58</sub>	15.5	X	88.58955	21.81280	74.31654	3.10207	0.1537815	0.20570823	2.8420711	20	3 31.7	19.4
117454 2005 AG <sub>59</sub>	15.7	X	310.79841	70.85123	118.12335	3.01886	0.0236751	0.19575122	2.9376478	20	1 10.4	19.8
117455 2005 AL <sub>61</sub>	16.2	X	347.52569	205.63235	341.74371	6.57520	0.0609185	0.26379688	2.4078141	20	2 11.6	18.8
117456 2005 AL <sub>68</sub>	16.7	X	211.04589	308.38467	151.95477	2.05771	0.1069641	0.29015086	2.2597140	20	8 18.5	19.8
117457 2005 AU <sub>68</sub>	16.1	X	330.56012	258.24395	32.24675	3.09737	0.0566785	0.21425831	2.7659496	20	6 10.7	19.4
117458 2005 AN <sub>71</sub>	15.3	X	115.90046	201.62622	114.11381	11.49157	0.0233401	0.18209710	3.0827196	20	—	—
117459 2005 AB <sub>74</sub>	15.8	X	165.44629	11.25463	345.49302	2.08840	0.2088842	0.26692377	2.3889728	20	2 17.7	19.6
117460 2005 AM <sub>74</sub>	15.0	X	86.57202	351.79175	328.13865	4.07743	0.1230926	0.17865222	3.1222219	20	12 26.4	19.9
117461 2005 AO <sub>79</sub>	16.0	X	123.29813	222.30387	43.34226	2.31531	0.1706813	0.23580845	2.5947557	20	12 9.2	20.1
117462 2005 BK <sub>3</sub>	15.2	X	4.80588	99.68668	51.73854	10.98186	0.0654849	0.19926310	2.9030296	20	2 2.7	19.1
117463 2005 BQ <sub>7</sub>	14.8	X	272.41645	100.31716	2.47086	13.13553	0.1236857	0.17307204	3.1889774	20	10 16.2	19.2
117464 2005 BT <sub>8</sub>	15.0	X	184.16661	149.92411	96.96505	10.40177	0.0375499	0.18251508	3.0780113	20	—	—
117465 2005 BJ <sub>9</sub>	15.6	X	264.04638	270.43004	121.88546	14.60312	0.1261607	0.22445386	2.6815424	20	7 13.9	19.2
117466 2005 BO <sub>9</sub>	16.9	X	167.84539	98.00864	12.29036	4.38551	0.1598791	0.28420523	2.2911209	20	7 13.3	20.4
117467 2005 BE <sub>11</sub>	16.3	X	3.40713	199.94345	346.45149	2.28574	0.0767177	0.26585329	2.3953815	20	3 3.4	18.6
117468 2005 BH <sub>11</sub>	15.7	X	179.31506	331.73979	122.39474	10.66485	0.1373826	0.21884291	2.7271837	20	6 30.4	20.0
117469 2005 BO <sub>11</sub>	16.3	X	331.67421	243.92942	315.75614	6.24103	0.0708099	0.26242399	2.4162045	20	2 2.8	19.0
117470 2005 BQ <sub>11</sub>	15.8	X	283.73090	56.91611	54.23115	1.09060	0.2200400	0.17714003	3.1399657	20	11 2.2	19.6
117471 2005 BK <sub>13</sub>	14.6	X	272.35701	217.08264	303.06488	8.91127	0.0370799	0.18146280	3.0898992	20	—	—
117472 2005 BQ <sub>13</sub>	16.0	X	168.77401	299.61368	303.88224	4.96575	0.0765048	0.24044515	2.5612897	20	12 30.0	19.6
117473 2005 BS <sub>13</sub>	16.7	X	39.81090	221.67730	193.04488	1.67175	0.1340617	0.25253181	2.4788980	20	—	—
117474 2005 BE <sub>18</sub>	15.7	X	45.13432	189.30374	53.43505	3.14728	0.1406668	0.22018206	2.7161146	20	8 13.1	19.0
117475 2005 BK <sub>22</sub>	15.7	X	115.93699	254.64071	16.43972	1.70251	0.1022385	0.17238740	3.1974153	20	11 25.4	20.7
117476 2005 BP <sub>22</sub>	14.7	X	39.51080	235.32466	121.09559	10.47609	0.0747260	0.17657133	3.1467043	20	12 11.6	19.1
117477 2005 BC <sub>25</sub>	15.3	X	197.86311	207.57326	340.65189	2.36012	0.1412922	0.17190682	3.2033715	20	11 4.6	20.4
117478 2005 BD <sub>26</sub>	17.0	X	94.52899	1.07023	145.73890	2.60141	0.1611917	0.27485136	2.3428121	20	6 13.6	20.0
117479 2005 BT <sub>26</sub>	14.5	X	37.10904	62.76374	326.12263	9.84644	0.0995937	0.18048387	3.1010620	20	—	—
117480 2005 BO <sub>28</sub>	15.0	X	307.45205	32.90393	53.06780	14.45481	0.1307593	0.24258660	2.5461801	20	12 8.7	17.6
117481 2005 BD <sub>44</sub>	16.6	X	271.99638	234.54106	108.47603	3.93481	0.1897655	0.28193639	2.3033961	20	5 9.6	19.7
117482 2005 CD <sub>2</sub>	15.7	X	295.76580	166.49799	100.40377	3.25070	0.0134027	0.20327160	2.8647380	20	3 30.6	19.7
117483 2005 CZ <sub>3</sub>	16.1	X	352.39377	179.87496	61.15704	3.51067	0.1301304	0.27028371	2.3691331	20	5 1.3	18.0
117484 2005 CE <sub>6</sub>	14.7	X	321.70747	281.33235	153.20148	8.47694	0.0376949	0.17301885	3.1896309	20	11 30.9	19.1
117485 2005 CZ <sub>9</sub>	16.3	X	201.87193	265.33243	73.32506	3.46378	0.0274966	0.26373969	2.4081621	20	2 26.6	19.4
117486 2005 CN <sub>10</sub>	14.9	X	154.67169	179.73076	128.63864	12.06320	0.0584102	0.18416572	3.0595920	20	—	—
117487 2005 CM <sub>13</sub>	15.4	X	282.05960	223.17139	236.22387	11.12563	0.1577288	0.23948755	2.5681127	20	11 8.7	18.0
117488 2005 CT <sub>14</sub>	16.5	X	9.01259	13.37452	30.76295	1.36528	0.0130180	0.24261714	2.5459805	20	—	—
117489 2005 CB <sub>16</sub>	16.0	X	293.03882	232.62372	208.02124	1.51861	0.0673168	0.23710833	2.5852637	20	11 11.0	19.0
117490 2005 CE <sub>16</sub>	15.4	X	284.46937	162.40101	143.65607	4.35393	0.0948098	0.21002744	2.8029715	20	4 23.1	19.2
117491 2005 CC <sub>17</sub>	16.8	X	340.51721	249.44691	163.32483	5.36049	0.1294985	0.30580544	2.1819221	20	—	—
117492 2005 CK <sub>18</sub>	16.7	X	86.51640	189.01101	285.73468	1.87879	0.1202912	0.26995762	2.3710406	20	4 10.1	19.6
117493 2005 CP <sub>19</sub>	16.4	X	134.25498	233.38349	158.90946	2.77379	0.1888571	0.26679312	2.3897527	20	3 1.3	19.9
117494 2005 CU <sub>19</sub>	15.2	X	102.16618	228.43233	160.62499	10.18948	0.0389778	0.19342451	2.9611589	20	1 8.3	19.4
117495 2005 CY <sub>19</sub>	16.4	X	9.04039	198.90231	30.40320	2.56017	0.1650180	0.27055893	2.3675263	20	5 17.3	18.2
117496 2005 CD <sub>20</sub>	15.9	X	130.04053	322.93223	226.88326	4.82397	0.0996281	0.22376010	2.6870822	20	9 7.7	20.1
117497 2005 CL <sub>20</sub>	16.3	X	93.14013	30.17263	67.76501	1.48870	0.0875619	0.26748103	2.3856536	20	3 23.8	19.0
117498 2005 CJ <sub>21</sub>	15.6	X	353.56796	209.14198	352.49279	7.20171	0.1551867	0.26346324	2.4098464	20	3 1.9	18.0
117499 2005 CQ <sub>21</sub>	16.3	X	67.32340	341.83456	148.26262	4.22019	0.0827732	0.26702578	2.3883644	20	3 30.5	19.0
117500 2005 CY <sub>21</sub>	15.1	X	202.21936	299.42948	123.92395	7.90447	0.0293697	0.21685398	2.7438337	20	6 19.9	19.1
117501 2005 CQ <sub>22</sub>	14.2	X	190.97193	232.53477	333.66161	21.88272	0.1459383	0.17253296	3.1956166	20	11 11.5	19.7
117502 2005 CW <sub>22</sub>	14.9	X	133.65988	166.38576	341.18402	14.23540	0.1224023	0.21774582	2.7363365	20	7 26.4	19.3
117503 2005 CA <sub>23</sub>	14.3	X	328.47853	49.07440	343.75712	17.35780	0.2268793	0.17255028	3.1954028	20	10 5.1	17.8
117504 2005 CD <sub>23</sub>	15.3	X	207.79906	6.61899	115.17614	14.80168	0.1359469	0.22682075	2.6628551	20	9 7.4	19.5
117505 2005 CG <sub>25</sub>	14.8	X	139.03840	99.30244	39.24922	14.61829	0.1104065	0.21129201	2.7917766	20	7 18.2	19.3
117506 Wildberg	17.0	X	161.49038	188.22494	72.46435	4.54758	0.1278308	0.30514780	2.1850559	20	—	—
117507 2005 CT <sub>25</sub>	14.4	X	276.06274	147.90933	26.75026	28.41812	0.1495072	0.17493041	3.1663518	20	—	—
117508 2005 CA <sub>36</sub>	14.8	X	252.73235	302.67374	187.43695	22.47498	0.1178047	0.17349279	3.1838195	20	10 30.9	19.4
117509 2005 CV <sub>36</sub>	15.2	X	316.93067	186.74996	123.55375	6.88162	0.0576430	0.21489679	2.7604683	20	6 18.0	18.8
117510 2005 CE <sub>40</sub>	16.2	X	37.47757	260.01918	328.05996	3.18888	0.1329560	0.26018795	2.4300279	20	2 20.1	18.6
117511 2005 CD <sub>41</sub>	16.3	X	130.49911	93.13872	318.77528	0.88140	0.1823618	0.26895515	2.3769286	20	3 21.2	19.8
117512 2005 CZ <sub>42</sub>	15.9	X	114.45700	81.93189	132.67187	9.82431	0.0345918	0.22643974	2.6658412	20	9 22.9	19.7
117513 2005 CA <sub>43</sub>	16.8	X	1.96443	287.90966	291.91486	1.59168	0.1313132	0.26950444	2.3736978	20	4 15.5	18.9
117514 2005 CD <sub>49</sub>	15.1	X	17.55883									

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>
117521 2005 CU <sub>51</sub>	16.8	X	116.13958	30.61568	147.40667	3.89805	0.1153195	0.28175841	2.3043660	20	8 16.6	20.0
117522 2005 CB <sub>52</sub>	17.0	X	90.00602	295.35031	281.62380	1.58053	0.1606454	0.28216285	2.3021635	20	9 12.9	20.2
117523 2005 CD <sub>52</sub>	15.3	X	246.84793	308.29641	213.60417	2.24020	0.1191083	0.17362519	3.1822006	20	11 28.9	19.6
117524 2005 CA <sub>53</sub>	16.1	X	197.11551	8.46901	20.02297	2.67612	0.2076482	0.27495090	2.3422466	20	4 22.6	19.8
117525 2005 CJ <sub>53</sub>	16.6	X	66.20940	48.64097	117.23984	3.18690	0.1478516	0.27105159	2.3646566	20	5 29.9	19.3
117526 2005 CS <sub>57</sub>	16.0	X	161.14020	307.86361	295.53906	7.60045	0.0523563	0.23912740	2.5706907	20	12 22.8	19.6
117527 2005 CU <sub>58</sub>	16.6	X	272.49973	2.75024	101.43161	0.79798	0.1382323	0.23700609	2.5860071	20	11 2.4	19.5
117528 2005 CZ <sub>58</sub>	15.7	X	178.08396	317.01237	288.48762	4.40516	0.1277739	0.24116041	2.5562228	20	—	—
117529 2005 CM <sub>59</sub>	16.4	X	197.01384	278.13388	282.55412	1.84771	0.1415988	0.23639286	2.5904774	20	11 30.0	20.2
117530 2005 CP <sub>59</sub>	16.2	X	113.19786	200.69036	230.14461	4.80803	0.1456388	0.26745934	2.3857826	20	3 19.9	19.4
117531 2005 CU <sub>59</sub>	16.1	X	318.51235	90.47863	157.64554	6.43282	0.0933456	0.26612905	2.3937265	20	3 18.4	18.8
117532 2005 CA <sub>60</sub>	14.0	X	110.73520	169.52483	124.00270	18.89443	0.1300488	0.17465587	3.1696691	20	12 20.4	19.2
117533 2005 CU <sub>62</sub>	15.4	X	48.45019	312.52787	349.52621	12.67231	0.0773891	0.22869392	2.6482946	20	10 21.4	19.1
117534 2005 CA <sub>64</sub>	15.2	X	130.72677	20.51156	354.57002	11.23641	0.0533380	0.19337236	2.9616913	20	1 31.9	19.6
117535 2005 CC <sub>67</sub>	14.9	X	204.36319	193.74408	29.59346	5.94272	0.0559957	0.17505224	3.1648826	20	12 31.6	19.6
117536 2005 CT <sub>67</sub>	14.8	X	332.13529	95.37261	298.32651	10.38130	0.0452716	0.17095719	3.2152233	20	10 18.6	19.3
117537 2005 CH <sub>76</sub>	16.8	X	168.26126	68.83814	212.38946	4.10729	0.0089649	0.31218291	2.5121042	20	—	—
117538 2005 DU	15.0	X	289.04886	176.82237	86.18971	24.39592	0.1801141	0.26000144	2.4311899	20	2 22.6	18.9
117539 Celletti	15.4	X	348.17593	155.40527	279.75396	0.53161	0.1048822	0.17840579	3.1250964	20	—	—
117540 2005 EN	16.8	X	68.89337	289.62995	317.19885	2.86987	0.2141330	0.28148426	2.3058620	20	10 5.4	20.1
117541 2005 EQ	15.3	X	241.44869	75.88458	102.07775	22.97637	0.0630602	0.24086305	2.5583263	20	—	—
117542 2005 EV	16.1	X	128.14094	168.07777	90.02855	1.56476	0.0414873	0.23327238	2.6135281	20	12 2.2	19.7
117543 2005 EM <sub>1</sub>	16.4	X	347.47394	156.12453	91.66538	2.36784	0.1500856	0.26793903	2.3829343	20	4 30.6	18.6
117544 2005 EZ <sub>1</sub>	15.8	X	64.41005	303.89071	202.27050	22.57741	0.2355621	0.26872672	2.3782754	20	5 13.9	18.6
117545 2005 EN <sub>5</sub>	15.6	X	16.39797	137.56329	144.14653	7.88985	0.1422881	0.21309344	2.7760205	20	8 15.2	18.7
117546 2005 ET <sub>5</sub>	14.9	X	224.79063	38.38890	151.58196	7.10014	0.0613781	0.17184620	3.2041248	20	12 14.2	19.6
117547 2005 ES <sub>7</sub>	15.0	X	93.93709	154.18050	177.17194	10.13911	0.0773169	0.17231351	3.1983292	20	—	—
117548 2005 EY <sub>7</sub>	16.1	X	192.11684	266.20081	15.77950	4.20194	0.0559375	0.24553214	2.5257895	20	—	—
117549 2005 EH <sub>8</sub>	16.4	X	62.58378	243.31641	355.15955	4.91199	0.1445545	0.27838229	2.3229595	20	9 8.1	19.1
117550 2005 EU <sub>8</sub>	16.9	X	328.22806	208.48327	138.25225	7.16167	0.1833592	0.29167526	2.2518337	20	9 5.0	18.2
117551 2005 EL <sub>10</sub>	16.2	X	306.85327	298.70992	330.06329	5.94833	0.1306064	0.26460089	2.4029340	20	3 20.9	19.2
117552 2005 EC <sub>11</sub>	16.4	X	16.16163	278.02859	275.93160	1.95803	0.1754347	0.26521747	2.3992083	20	4 4.4	18.2
117553 2005 EZ <sub>11</sub>	16.6	X	91.05462	341.88609	114.98872	0.74131	0.1344428	0.26659083	2.3909615	20	3 26.6	19.3
117554 2005 EN <sub>13</sub>	16.0	X	63.34760	264.57400	35.81963	3.04669	0.1011675	0.22858820	2.6491112	20	11 15.1	19.7
117555 2005 EP <sub>13</sub>	15.0	X	319.94687	111.81867	118.18456	3.07346	0.0394425	0.19763387	2.9189622	20	3 11.6	19.0
117556 2005 EQ <sub>14</sub>	16.9	X	59.13820	209.13623	359.27811	5.25427	0.1869672	0.27467963	2.3437885	20	7 29.6	19.7
117557 2005 EG <sub>22</sub>	15.1	X	216.88529	97.30160	152.25059	5.12660	0.1076588	0.18138995	3.0907264	20	—	—
117558 2005 EN <sub>23</sub>	16.0	X	54.89069	31.92515	169.86518	12.55798	0.1109988	0.27380747	2.3487629	20	6 27.5	19.0
117559 2005 ED <sub>24</sub>	15.3	X	115.43968	282.81012	290.38473	11.35189	0.1647478	0.22251224	2.6971190	20	9 21.9	19.8
117560 2005 EL <sub>24</sub>	16.5	X	11.42087	145.05143	92.21535	3.41912	0.1552763	0.27057682	2.3674219	20	6 5.8	18.4
117561 2005 EY <sub>24</sub>	16.3	X	2.37605	213.91994	58.96574	4.95320	0.1399375	0.27456108	2.3444631	20	7 15.7	18.3
117562 2005 EB <sub>25</sub>	16.4	X	32.17575	128.78382	84.09722	3.23490	0.1036798	0.27074647	2.3664328	20	6 3.9	18.6
117563 2005 EK <sub>25</sub>	16.0	X	307.81680	152.64654	67.55034	3.66405	0.1236847	0.25661590	2.4525263	20	1 21.9	19.3
117564 2005 EW <sub>26</sub>	16.0	X	101.29445	245.25151	357.72785	2.35997	0.0404589	0.22497341	2.6774123	20	10 10.2	19.6
117565 2005 EN <sub>29</sub>	14.7	X	132.13785	118.79379	21.26401	13.17827	0.0863672	0.21145001	2.7903858	20	7 10.2	19.1
117566 2005 EG <sub>30</sub>	16.8	X	340.53290	164.39767	33.96732	2.57545	0.1444594	0.25999407	2.4312359	20	2 5.1	19.3
117567 2005 EJ <sub>30</sub>	15.2	X	221.05674	295.06540	5.62495	10.13179	0.0929585	0.19125848	2.9834739	20	2 9.8	19.9
117568 Yadame	15.6	X	200.68369	173.87878	84.29966	12.89108	0.2031675	0.24145469	2.5541454	20	—	—
117569 2005 EO <sub>32</sub>	16.0	X	328.71875	170.88403	138.61622	6.17710	0.1882734	0.27341976	2.3509828	20	6 25.4	17.9
117570 2005 ET <sub>32</sub>	15.3	X	135.78509	280.35728	9.52717	22.69382	0.0979697	0.23628060	2.5912979	20	—	—
117571 2005 EQ <sub>33</sub>	15.1	X	69.65607	39.46359	167.05246	8.35774	0.1562843	0.21060228	2.7978688	20	7 28.2	19.0
117572 Hutsebaut	14.1	X	88.84847	145.69308	179.89228	27.42959	0.1794777	0.17133064	3.2105494	20	—	—
117573 2005 EG <sub>34</sub>	16.1	X	147.48061	315.50415	232.14257	0.91020	0.0225101	0.22492436	2.6778016	20	9 24.1	19.8
117574 2005 EJ <sub>34</sub>	15.9	X	203.14047	339.85689	192.08241	4.68482	0.0166494	0.23222089	2.6214115	20	11 15.4	19.5
117575 2005 EN <sub>34</sub>	16.2	X	58.51241	341.62395	197.90581	4.88322	0.2125863	0.27098391	2.3650503	20	6 17.9	18.8
117576 2005 EU <sub>34</sub>	16.1	X	349.38009	319.59250	321.33227	4.19966	0.1176408	0.27238037	2.3569598	20	6 29.4	18.3
117577 2005 EE <sub>35</sub>	15.8	X	177.62065	333.78765	189.62470	13.00845	0.0718257	0.22292457	2.6937922	20	9 27.0	19.8
117578 2005 ET <sub>35</sub>	15.9	X	92.01328	330.47185	227.82371	3.07949	0.1073170	0.21378676	2.7700153	20	8 7.7	19.9
117579 2005 EU <sub>35</sub>	14.8	X	265.09408	239.33084	304.76599	3.87492	0.0947894	0.17801299	3.1296919	20	—	—
117580 2005 EW <sub>36</sub>	14.6	X	25.24082	209.01644	177.93228	12.42776	0.1953782	0.23517489	2.5994138	20	—	—
117581 Devinschrader	16.2	X	157.81681	123.26710	348.61837	3.28139	0.1825786	0.27806423	2.3247306	20	7 5.4	19.9
117582 2005 ED <sub>39</sub>	16.0	X	267.34776	65.57188	188.47306	10.24175	0.1281857	0.25666071	2.4522408	20	1 15.3	19.8
117583 2005 EN <sub>41</sub>	15.9	X	176.29384	27.73071	155.69188	0.22352	0.1392199	0.22685287	2.6626037	20	10 18.3	19.8
117584 2005 EP <sub>41</sub>	14.4	X	234.02118	3.37334	173.66680	14.07885	0.1077257	0.17099774	3.2147149	20	12 4.4	19.3
117585 2005 EH <sub>43</sub>	17.0	X	355.73684	240.73736	10.98969	2.42703	0.1732231	0.26981202	2.3718935	20	5 23.0	18.6
117586 Twilatho	14.9	X	238.56416	286.99898	325.94960	8.07349	0.0930507	0.18455769	3.0552585	20	—	—
117587 2005 EG <sub>46</sub>	15.7	X	194.92257	244.98610	171.02463	4.54225	0.0663268	0.21193246	2.7861494	20	5 31.0	19.8
117588 2005 EY <sub>46</sub>	16.3	X	20.68430	2.02260	246.25510	3.35286	0.1238692	0.27582448	2.3372985	20	7 10.4	18.3
117589 2005 EL <sub>48</sub>	16.5	X	233.79768	120.28394	165.21779	6.08330	0.1223778	0.25590079	2.4570932	20	1 21.8	20.4
117590 2005 EX <sub>48</sub>	16.4	X	333.14485	194.70238	258.55826	2.33104	0.1532790	0.24453868	2.5326257	20	—	—
117591 2005 EL <sub>50</sub>	15.8	X	160.37616	109.84939	358.02085	8.98891	0.1870529	0.21415683	2.7668233	20	7 1.3	20.5
117592 2005 ES <sub>51</sub>	16.1	X	61.91099	66.65096	192.15727	1.90991	0.1942546	0.28284494	2.2984608	20	10 12.6	19.1
117593 2005 EC <sub>52</sub>	14.6	X	257.45862	52.10430	120.92893	6.36752	0.1102083	0.17398801	3.177752	20	12 26.4	19.0
117594 2005 EU <sub>53</sub>	17.1	X	317.52641	87.96748	20.28389	1.90257	0.1328971	0.24265483	2.5457168			

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>
117601 2005 <i>EH</i> <sub>72</sub>	16.1	X	117.82604	33.58605	44.26310	7.50150	0.0823175	0.26708095	2.3880355	20	3 31.1	19.2
117602 2005 <i>EF</i> <sub>76</sub>	15.1	X	200.33429	125.24340	178.01986	11.55964	0.1045964	0.18689564	3.0297254	20	1 18.9	20.1
117603 2005 <i>ER</i> <sub>76</sub>	16.0	X	147.61583	331.13680	305.92402	1.92757	0.0960478	0.23776678	2.5804885	20	—	—
117604 2005 <i>EN</i> <sub>78</sub>	16.2	X	53.97784	134.83797	98.93927	5.02400	0.0943089	0.27812052	2.3244169	20	8 12.3	18.8
117605 2005 <i>EF</i> <sub>86</sub>	16.0	X	46.94398	141.89974	129.55965	5.35217	0.1504956	0.28193474	2.3034051	20	10 7.0	18.8
117606 2005 <i>ES</i> <sub>89</sub>	16.6	X	105.30143	5.03228	198.35587	2.62710	0.0695638	0.28464383	2.2887667	20	9 2.9	19.5
117607 2005 <i>EZ</i> <sub>89</sub>	14.6	X	71.32972	221.32746	144.51183	11.78234	0.2841633	0.24294803	2.5436682	20	—	—
117608 2005 <i>EE</i> <sub>90</sub>	15.1	X	208.67779	96.20563	174.61038	10.18838	0.0793509	0.18191473	3.0847796	20	—	—
117609 2005 <i>EP</i> <sub>90</sub>	16.5	X	267.13763	73.31649	182.59630	3.53901	0.0900489	0.25696446	2.4503080	20	1 22.1	19.8
117610 Keithmahoney	15.1	X	123.93941	100.14364	209.67480	1.06244	0.1142376	0.17654068	3.1470684	20	—	—
117611 2005 <i>EB</i> <sub>92</sub>	16.9	X	106.48267	187.18470	44.09831	4.68610	0.1810875	0.28466018	2.2886791	20	10 21.8	20.3
117612 2005 <i>EW</i> <sub>92</sub>	17.0	X	20.14664	155.50474	12.43665	3.48156	0.1738106	0.26167317	2.4208242	20	3 5.5	18.8
117613 2005 <i>EA</i> <sub>93</sub>	15.3	X	332.92585	301.39393	175.95664	13.38325	0.2732533	0.18321573	3.0701591	20	—	—
117614 Hannahmclain	16.0	X	144.77739	210.91103	158.04961	5.48583	0.0268005	0.19373871	2.9579564	20	2 2.4	20.1
117615 2005 <i>EY</i> <sub>94</sub>	15.9	X	268.47788	237.13143	34.75132	7.73776	0.1252902	0.25889843	2.4380902	20	2 13.2	19.5
117616 2005 <i>EX</i> <sub>95</sub>	14.9	X	274.19950	311.47560	186.42477	31.88864	0.2609315	0.23487519	2.6016245	20	12 2.8	18.4
117617 2005 <i>EJ</i> <sub>96</sub>	15.5	X	205.27713	59.70689	170.97665	15.27720	0.0534464	0.24466650	2.5317435	20	—	—
117618 2005 <i>EN</i> <sub>96</sub>	14.8	X	284.57629	252.59169	288.58647	9.09413	0.0995599	0.18452374	3.0556332	20	—	—
117619 2005 <i>ES</i> <sub>98</sub>	16.2	X	200.58360	338.85913	88.20345	1.84905	0.0504113	0.21388879	2.7691344	20	6 21.0	20.0
117620 2005 <i>EE</i> <sub>100</sub>	14.3	X	301.50572	62.66808	23.62853	12.73583	0.1805651	0.17227417	3.1988160	20	11 1.7	18.1
117621 2005 <i>EU</i> <sub>100</sub>	15.5	X	145.48994	329.05724	139.60621	10.09118	0.1120146	0.20945627	2.8080649	20	6 14.9	19.9
117622 2005 <i>EK</i> <sub>101</sub>	15.7	X	48.49947	142.05026	209.21734	2.29029	0.0761203	0.23166973	2.6255675	20	12 28.8	19.2
117623 2005 <i>ER</i> <sub>115</sub>	14.8	X	308.27124	356.30942	183.70879	14.89373	0.1714928	0.18239728	3.0793364	20	—	—
117624 2005 <i>EX</i> <sub>117</sub>	15.5	X	178.99334	220.80603	298.18237	12.15079	0.1886203	0.22612421	2.6683206	20	9 12.4	20.1
117625 2005 <i>EN</i> <sub>118</sub>	14.8	X	303.35933	208.82242	302.62435	9.17228	0.0978145	0.18111207	3.0938870	20	—	—
117626 2005 <i>EO</i> <sub>118</sub>	16.3	X	286.05474	354.91220	261.69559	5.88820	0.1917194	0.25747433	2.4470721	20	1 31.3	20.0
117627 2005 <i>EW</i> <sub>118</sub>	16.1	X	203.60996	66.84014	189.84049	14.88419	0.0850402	0.24430884	2.5342139	20	—	—
117628 2005 <i>EH</i> <sub>119</sub>	14.9	X	184.41076	309.15958	353.02259	9.12179	0.0486297	0.18279987	3.0748136	20	1 3.8	19.5
117629 2005 <i>ET</i> <sub>121</sub>	16.5	X	319.59676	94.48348	177.77165	6.73604	0.1915323	0.26747549	2.3856866	20	4 7.7	19.0
117630 2005 <i>EE</i> <sub>124</sub>	14.8	X	333.35330	326.72353	157.95469	10.34375	0.0892593	0.18004738	3.1060719	20	—	—
117631 2005 <i>EM</i> <sub>124</sub>	16.8	X	133.42860	99.14610	32.02909	2.76072	0.1586213	0.27592558	2.3367275	20	7 5.9	20.3
117632 2005 <i>ES</i> <sub>126</sub>	15.0	X	137.25637	137.33492	191.42721	12.44917	0.0529358	0.17713342	3.1400438	20	—	—
117633 2005 <i>EM</i> <sub>127</sub>	15.9	X	331.90269	99.39389	123.35328	3.08586	0.0074613	0.20281548	2.8690315	20	3 21.2	19.9
117634 2005 <i>EJ</i> <sub>128</sub>	16.2	X	296.83859	338.25446	317.21382	3.63025	0.1729288	0.26717442	2.3874785	20	4 5.9	19.2
117635 2005 <i>EQ</i> <sub>129</sub>	16.2	X	211.54195	131.18717	151.57602	7.09182	0.1438951	0.25576736	2.4579477	20	—	—
117636 2005 <i>ED</i> <sub>130</sub>	15.8	X	157.48887	145.38471	197.92756	5.57813	0.1388140	0.25299688	2.4758592	20	1 18.9	19.5
117637 2005 <i>EJ</i> <sub>131</sub>	15.3	X	138.36181	54.79399	90.68317	9.76875	0.0829754	0.21718221	2.7410684	20	7 23.1	19.3
117638 2005 <i>EN</i> <sub>132</sub>	16.8	X	269.92508	318.71021	301.14661	1.86675	0.1648305	0.25568055	2.4585040	20	1 23.7	20.3
117639 2005 <i>EE</i> <sub>133</sub>	14.7	X	288.18127	72.07300	112.79775	16.75225	0.0418596	0.18483318	3.0522218	20	—	—
117640 Millsellie	16.6	X	117.65651	306.38538	24.28218	5.42874	0.1534577	0.30279844	2.1963437	20	—	—
117641 2005 <i>EJ</i> <sub>137</sub>	15.7	X	193.60178	159.32383	34.23077	5.34957	0.1372271	0.22957344	2.6415264	20	11 16.5	19.8
117642 2005 <i>EB</i> <sub>138</sub>	15.9	X	162.01609	130.78001	46.46719	3.34042	0.1172882	0.22136780	2.7064069	20	9 28.1	20.0
117643 2005 <i>ED</i> <sub>138</sub>	14.9	X	144.93261	193.54008	21.12957	14.61478	0.0547888	0.22706192	2.6609692	20	10 24.9	18.8
117644 2005 <i>EC</i> <sub>139</sub>	16.3	X	85.71436	240.48458	25.90162	5.53907	0.1367936	0.28518446	2.2858733	20	11 10.6	19.5
117645 2005 <i>ER</i> <sub>139</sub>	15.0	X	174.20803	163.61109	82.84380	2.61062	0.2372328	0.16609903	3.2776153	20	12 15.7	20.7
117646 2005 <i>EW</i> <sub>139</sub>	15.3	X	340.70996	159.98250	108.17802	3.01238	0.0718240	0.20276824	2.8694771	20	5 26.3	18.8
117647 2005 <i>ED</i> <sub>140</sub>	15.7	X	59.10590	182.63556	121.99149	12.18545	0.0728812	0.22495486	2.6775595	20	11 15.4	19.6
117648 2005 <i>EF</i> <sub>147</sub>	16.1	X	50.05407	331.27060	199.65439	9.14295	0.1546177	0.26524566	3.3990383	20	5 11.6	18.5
117649 2005 <i>EG</i> <sub>147</sub>	16.9	X	88.41625	152.35263	33.82540	2.23365	0.1013624	0.27417785	2.3466472	20	7 23.3	19.8
117650 2005 <i>EO</i> <sub>151</sub>	16.8	X	313.05413	85.70274	164.05938	6.47038	0.1124629	0.25998217	2.4313100	20	3 9.4	19.7
117651 2005 <i>EC</i> <sub>153</sub>	16.5	X	29.93168	166.52300	100.26722	1.77307	0.2286325	0.27951128	2.3167001	20	9 15.8	18.8
117652 Joséaponte	16.1	X	99.92143	327.74805	21.25088	8.17970	0.0673685	0.23991279	2.5650773	20	—	—
117653 2005 <i>EG</i> <sub>168</sub>	15.2	X	80.26569	128.11876	217.97747	0.74030	0.1719625	0.17280727	3.1922340	20	—	—
117654 2005 <i>EA</i> <sub>172</sub>	16.6	X	44.14104	351.04438	244.88890	1.87120	0.1242742	0.27495151	2.3422431	20	8 2.6	19.1
117655 2005 <i>EG</i> <sub>182</sub>	15.2	X	115.76954	62.47354	64.98724	2.92299	0.0117311	0.20513988	2.8473181	20	5 24.0	19.0
117656 2005 <i>EJ</i> <sub>187</sub>	15.5	X	55.79121	213.88863	232.52833	1.37489	0.1227667	0.18746522	3.0235855	20	1 28.0	19.2
117657 Jamielsila	16.5	X	311.65146	145.34765	226.38142	1.15135	0.1910437	0.28231504	2.3013360	20	8 31.9	18.0
117658 2005 <i>ER</i> <sub>187</sub>	16.6	X	22.56795	0.81528	195.49426	3.55637	0.1353288	0.26418854	2.4054337	20	4 23.3	18.6
117659 2005 <i>EB</i> <sub>189</sub>	14.4	X	272.60459	227.51168	282.73608	14.64380	0.0886324	0.17574194	3.1565968	20	12 22.6	18.6
117660 2005 <i>ED</i> <sub>197</sub>	17.2	X	193.18655	59.25677	193.50816	5.16426	0.1900304	0.30308872	2.1949411	20	—	—
117661 2005 <i>EH</i> <sub>198</sub>	15.2	X	151.75594	105.82734	198.60299	10.42508	0.0153763	0.17654340	3.1470360	20	—	—
117662 2005 <i>EU</i> <sub>198</sub>	16.9	X	291.68335	333.39009	308.98062	1.25799	0.2032518	0.25921782	2.4360871	20	3 10.1	20.3
117663 2005 <i>EK</i> <sub>199</sub>	15.1	X	102.86803	355.82503	152.82679	10.23255	0.2014082	0.21341404	2.7732396	20	6 28.9	19.5
117664 2005 <i>EF</i> <sub>200</sub>	15.2	X	295.06109	100.64733	194.15374	8.82790	0.1383659	0.19947895	2.9009351	20	4 15.2	19.0
117665 2005 <i>EM</i> <sub>201</sub>	15.3	X	287.10824	87.34223	47.05869	13.54655	0.1357228	0.24259253	2.5461526	20	—	—
117666 2005 <i>ER</i> <sub>201</sub>	14.6	X	265.54630	120.83946	27.29885	24.52301	0.0778163	0.17552232	3.1592293	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>		
117681	2005	ES <sub>226</sub>	14.6	X	114.86255	325.13870	3.34188	17.26922	0.0889515	0.17596348	3.1539467	20	—	—
117682	2005	EW <sub>227</sub>	14.5	X	260.55074	0.54980	147.20101	16.53972	0.0763839	0.17070619	3.2183742	20	12 6.8	19.3
117683	2005	ER <sub>233</sub>	15.6	X	61.76964	249.18556	114.03705	10.48386	0.0720892	0.23950883	2.5679606	20	—	—
117684	2005	EL <sub>246</sub>	17.2	X	51.19406	232.78335	9.12553	2.55723	0.1897186	0.27660555	2.3328964	20	9 4.5	19.9
117685	2005	ED <sub>247</sub>	16.5	X	307.72240	278.43558	18.54661	2.21592	0.1815184	0.26710172	2.3879117	20	4 24.7	19.0
117686	2005	EU <sub>251</sub>	14.7	X	59.64805	174.55109	104.46752	12.64969	0.2031306	0.21760953	2.7374788	20	11 1.4	18.9
117687	2005	EX <sub>259</sub>	16.6	X	22.82118	22.05307	229.78486	2.00254	0.1535157	0.27151691	2.3619541	20	7 24.2	18.7
117688	2005	EX <sub>268</sub>	15.9	X	343.76449	221.89296	52.67622	2.80386	0.0244805	0.20470043	2.8513917	20	6 10.3	19.5
117689	2005	EY <sub>268</sub>	15.7	X	292.90169	287.12842	32.40185	7.18454	0.1200819	0.267011199	2.3884466	20	5 14.1	18.5
117690	2005	EK <sub>270</sub>	16.9	X	71.74400	60.21879	59.17493	2.13633	0.1350808	0.26215621	2.4178496	20	3 30.1	19.5
117691	2005	ES <sub>276</sub>	16.3	X	252.20142	349.49246	175.23883	0.51853	0.0704992	0.23557798	2.5964478	20	12 31.9	19.5
117692	2005	ED <sub>277</sub>	15.8	X	1.92265	334.96894	47.05541	22.72740	0.0696502	0.35997774	1.9571268	20	—	—
117693	2005	EF <sub>279</sub>	16.4	X	102.62269	63.42831	165.97949	6.81257	0.0691019	0.28342263	2.2953365	20	10 7.9	19.5
117694	2005	ED <sub>282</sub>	15.9	X	32.64948	275.88509	24.05871	22.93620	0.2109342	0.28000584	2.3139714	20	10 29.3	18.7
117695	2005	EE <sub>282</sub>	14.9	X	42.50243	3.50124	39.55109	11.97034	0.0145197	0.17329129	3.1862871	20	—	—
117696	2005	EU <sub>282</sub>	14.3	X	245.19766	169.18960	44.77249	24.29116	0.1843331	0.17571705	3.1568948	20	—	—
117697	2005	EA <sub>287</sub>	15.4	X	14.31633	184.90791	42.04117	9.76526	0.0474396	0.20255599	2.8714813	20	5 20.2	19.2
117698	2005	ED <sub>290</sub>	16.4	X	94.10578	125.83360	166.56280	3.17200	0.0760825	0.22711956	2.6605190	20	12 7.6	20.2
117699	2005	EK <sub>290</sub>	15.0	X	90.65421	359.97574	280.09357	11.58524	0.1644925	0.22394617	2.6855936	20	11 24.3	19.3
117700	2005	EZ <sub>292</sub>	16.2	X	284.06734	98.69283	69.46292	4.13407	0.1656160	0.24247531	2.5469732	20	—	—
117701	2005	EC <sub>293</sub>	16.1	X	306.25640	145.27489	78.24038	8.55775	0.0667085	0.25434397	2.4671095	20	2 3.8	19.3
117702	2005	EO <sub>295</sub>	15.9	X	247.45685	290.12553	100.46126	1.76568	0.0795205	0.21334348	2.7738511	20	6 26.8	19.8
117703	2005	EK <sub>300</sub>	16.5	X	136.89196	236.95990	120.27134	1.27902	0.0338165	0.20554547	2.8435712	20	5 1.1	20.3
117704	2005	EN <sub>317</sub>	16.6	X	239.59344	186.64132	53.47941	2.64170	0.0869635	0.24642475	2.5196864	20	—	—
117705	2005	FS <sub>2</sub>	15.2	X	42.15343	199.38141	65.54210	12.15772	0.1821259	0.21218281	2.7839574	20	9 19.5	19.0
117706	2005	FU <sub>2</sub>	15.9	X	29.87401	258.67232	163.88146	23.50504	0.1411726	0.37354351	1.9094513	20	—	—
117707	2005	FP <sub>5</sub>	15.1	X	270.54592	264.57916	180.50593	21.77789	0.0579564	0.22729199	2.6591733	20	10 16.0	18.6
117708	2005	FP <sub>5</sub>	14.9	X	227.54496	166.42933	157.54368	9.94188	0.0725848	0.19351933	2.9601916	20	3 13.5	19.2
117709	2005	FU <sub>6</sub>	14.4	X	170.00988	236.50268	48.42472	16.55620	0.1193577	0.17515051	3.1636986	20	—	—
117710	2005	FC <sub>7</sub>	14.6	X	186.15320	161.07661	170.24614	12.90955	0.0940703	0.18824993	3.0151772	20	2 6.6	19.4
117711	Degenfeld		16.5	X	109.08617	149.42033	94.40537	5.74039	0.0627354	0.22506657	2.6766735	20	10 25.5	20.4
117712	Podmaniczky		17.2	X	187.49045	209.22857	156.43535	3.45416	0.1932132	0.26079951	2.4262276	20	3 18.5	20.2
117713	Gövesligethy		16.0	X	79.15738	163.74029	49.68012	2.73173	0.1547544	0.27580928	2.3373844	20	8 27.4	20.1
117714	Kiskartal		15.4	X	267.28440	42.45829	195.30862	9.63119	0.0605761	0.18333924	3.0687800	20	1 13.3	20.0
117715	Carlkirby		14.5	X	23.65890	265.87670	159.52989	10.33562	0.0878677	0.17826806	3.1267058	20	—	—
117716	2005	GN <sub>1</sub>	14.3	X	82.20021	261.35184	47.69426	30.75602	0.3839700	0.22057952	2.7128509	20	—	—
117717	2005	GD <sub>5</sub>	15.1	X	7.00305	137.18713	183.10858	11.62431	0.2128653	0.21242533	2.7818381	20	10 6.5	17.9
117718	2005	GZ <sub>5</sub>	16.8	X	75.00565	119.42619	100.22472	3.23537	0.1948284	0.27573239	2.3378189	20	9 5.4	20.0
117719	2005	GL <sub>7</sub>	16.1	X	147.83888	108.39060	135.13242	6.90667	0.0921706	0.29291775	2.2454614	20	12 18.1	19.2
117720	2005	GE <sub>8</sub>	16.2	X	265.94664	282.07348	196.22496	3.95048	0.1744238	0.23181476	2.6244723	20	11 4.9	19.3
117721	2005	GE <sub>8</sub>	16.1	X	166.41048	302.42140	3.55937	3.15144	0.1494427	0.30540262	2.1838403	20	—	—
117722	2005	GA <sub>11</sub>	16.4	X	75.45313	139.06768	103.55168	7.35532	0.0860081	0.28094827	2.3087938	20	9 26.2	19.4
117723	2005	GN <sub>11</sub>	16.6	X	223.57952	38.60192	138.26477	6.76888	0.0846001	0.29770658	2.2213164	20	12 24.4	19.2
117724	2005	GW <sub>11</sub>	16.2	X	21.42382	133.09866	96.94502	7.29281	0.0448612	0.26906739	2.3762676	20	6 6.3	18.9
117725	2005	GU <sub>12</sub>	16.7	X	134.75424	124.54095	46.72241	2.64356	0.0724197	0.27963779	2.3160014	20	8 27.6	19.9
117726	2005	GC <sub>13</sub>	15.8	X	315.45724	322.18422	168.45084	13.92000	0.1098752	0.24133497	2.5549901	20	—	—
117727	2005	GJ <sub>13</sub>	15.4	X	145.08380	222.77763	91.90358	14.18489	0.1297657	0.23794294	2.5792148	20	—	—
117728	2005	GT <sub>13</sub>	15.3	X	75.14153	206.45998	58.41831	10.03959	0.0979828	0.21846052	2.7303652	20	10 16.8	19.2
117729	2005	GZ <sub>13</sub>	15.6	X	157.75824	146.99661	155.24050	14.53730	0.1907688	0.23647262	2.5898949	20	—	—
117730	2005	GV <sub>19</sub>	15.1	X	197.36137	290.47172	27.15174	9.30042	0.0721118	0.18428402	3.0582825	20	2 7.2	19.9
117731	2005	GY <sub>19</sub>	15.3	X	163.63568	325.15741	203.68824	12.43187	0.0817854	0.21882194	2.7273580	20	9 15.7	19.6
117732	2005	GA <sub>20</sub>	16.1	X	254.78495	309.16339	201.58798	4.37361	0.1925576	0.23403187	2.6078706	20	11 29.2	19.2
117733	2005	GF <sub>20</sub>	14.9	X	279.05821	102.80954	40.75388	14.39592	0.1033845	0.23564113	2.5959838	20	—	—
117734	2005	GG <sub>20</sub>	17.1	X	335.23185	40.81902	78.29836	2.26337	0.0908884	0.30730379	2.1748239	20	—	—
117735	2005	GQ <sub>20</sub>	14.8	X	135.43022	271.52374	47.99130	5.02946	0.3283279	0.23090413	2.6313679	20	—	—
117736	Sherrad		15.3	X	181.90786	130.92415	36.13472	16.60330	0.0967467	0.22157676	2.7047050	20	10 9.7	19.4
117737	2005	GX <sub>22</sub>	16.0	X	99.82494	180.24243	84.87996	7.57875	0.0919382	0.28926325	2.2643343	20	11 23.6	19.1
117738	2005	GS <sub>26</sub>	15.9	X	210.76939	39.30464	155.48142	5.42114	0.1250965	0.23135362	2.6279586	20	12 9.3	19.6
117739	2005	GD <sub>29</sub>	15.6	X	128.10829	293.45588	335.57912	2.59522	0.1455586	0.22773683	2.6557093	20	12 15.7	19.9
117740	2005	GH <sub>29</sub>	16.8	X	227.03489	281.92679	222.98856	6.65137	0.0674088	0.29231627	2.2485406	20	11 16.1	19.5
117741	2005	GD <sub>31</sub>	15.1	X	317.32331	10.79277	35.12685	13.57266	0.1539283	0.22845032	2.6501769	20	10 27.6	17.8
117742	2005	GW <sub>31</sub>	15.8	X	242.70609	140.22377	195.08253	6.17419	0.1401228	0.26298835	2.4127466	20	4 1.3	19.1
117743	2005	GU <sub>32</sub>	16.7	X	83.61558	24.58036	167.01685	2.45200	0.1693983	0.27348392	2.3506151	20	8 2.3	19.8
117744	2005	GL <sub>33</sub>	16.7	X	174.22396	326.85484	340.29598	3.60728	0.1740733	0.30723394	2.1751536	20	—	—
117745	2005	GP <sub>37</sub>	15.5	X	308.14813	44.56864	229.88274	14.76749	0.1915481	0.26030065	2.4293265	20	3 17.9	18.8
117746	2005	GS <sub>37</sub>	16.1	X	130.29486	312.85947	316.16521	5.38725	0.1406688	0.29294443	2.2453250	20	12 30.7	19.4
117747	2005	GW <sub>43</sub>	16.6	X	96.13396	266.68696	290.05179	2.84326	0.1158278	0.27687824	2.3313644	20	8 17.7	19.8
117748	2005	GC <sub>44</sub>	15.3	X	117.80806	257.31509	255.63910	5.89656	0.0742171	0.20888325	2.8131981	20	7 6.4	19.4
117749	2005	GG <sub>46</sub>	16.3	X	234.17172	196.89150	313.49517	1.00657	0.0264635	0.23076340	2.6324376	20	11 24.4	19.8
117750	2005	GF <sub>48</sub>	16.9	X	63.51085	336.90797	140.97478	1.67317	0.1437873	0.25948739	2.4343997	20	3 15.2	19.2
117751														

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>		
117761	2005	GK <sub>65</sub>	15.6 <sup>m</sup>	X	322.61574	182.43557	100.03013	3.23807	0.0226873	0.20317705	2.8656267	20	5 23.2	19.3
117762	2005	GD <sub>69</sub>	16.1	X	284.90490	342.61528	141.60652	4.46014	0.1284138	0.23549546	2.5970542	20	12 21.3	18.9
117763	2005	GP <sub>72</sub>	16.2	X	324.72565	266.92588	42.89630	6.32284	0.1914418	0.27164005	2.3612403	20	6 15.1	18.2
117764	2005	GG <sub>73</sub>	15.1	X	282.89220	25.37034	151.25111	12.20916	0.1669844	0.17774414	3.1328471	20	—	—
117765	2005	GO <sub>74</sub>	16.6	X	8.37861	338.30459	224.71961	3.99958	0.0791592	0.26246900	2.4159283	20	4 4.2	19.1
117766	2005	GJ <sub>78</sub>	15.2	X	96.55182	186.34338	140.90254	14.99095	0.2594264	0.22899358	2.6459838	20	—	—
117767	2005	GM <sub>78</sub>	15.8	X	125.30348	203.96576	112.17066	14.59429	0.0465944	0.23635162	2.5907788	20	—	—
117768	2005	GK <sub>81</sub>	17.0	X	276.28617	111.49870	146.72165	23.16967	0.0961812	0.38585543	1.8686142	20	1 15.9	19.4
117769	2005	GP <sub>86</sub>	16.6	X	68.55187	37.25743	180.04545	2.26094	0.1683199	0.27373010	2.3492055	20	8 19.0	19.4
117770	2005	GZ <sub>88</sub>	16.9	X	41.94107	23.45115	208.60211	7.02029	0.1243676	0.27194690	2.3594637	20	7 22.2	19.6
117771	2005	GD <sub>93</sub>	15.2	X	86.23526	243.71456	351.84867	13.49038	0.0627747	0.21536415	2.7564732	20	9 13.9	19.0
117772	2005	GZ <sub>95</sub>	16.1	X	168.30075	308.95096	310.04059	5.87612	0.1723810	0.29747738	2.2224573	20	—	—
117773	2005	GJ <sub>97</sub>	16.8	X	30.10373	212.91207	143.33358	24.46758	0.0716063	0.35647989	1.9699084	20	—	—
117774	2005	GP <sub>99</sub>	15.9	X	134.67773	17.62763	211.72496	3.57919	0.0595405	0.22076884	2.7112998	20	11 1.8	19.8
117775	2005	GX <sub>101</sub>	15.6	X	212.01927	294.09684	44.58530	5.54578	0.2099109	0.25546915	2.4598601	20	3 8.3	19.8
117776	2005	GY <sub>102</sub>	17.2	X	42.07053	125.06470	12.95760	2.57917	0.1313098	0.25703435	2.4498638	20	3 4.5	19.4
117777	2005	GW <sub>110</sub>	15.3	X	134.43298	270.55248	346.35170	12.77853	0.2018736	0.22778379	2.6553443	20	12 5.5	20.1
117778	2005	GO <sub>112</sub>	14.9	X	232.08849	315.23729	243.97702	6.46878	0.0700542	0.17080107	3.2171821	20	12 30.9	19.5
117779	2005	GX <sub>112</sub>	14.8	X	276.65417	37.24056	145.38744	18.50503	0.1038081	0.17603519	3.1530901	20	—	—
117780	2005	GY <sub>113</sub>	15.7	X	232.12988	115.37915	128.61193	7.22272	0.1430518	0.24172582	2.5522352	20	—	—
117781	2005	Jamesfisher	15.6	X	97.14947	22.13572	215.72477	4.54676	0.0590704	0.21749806	2.7384141	20	9 28.8	19.4
117782	2005	GL <sub>115</sub>	14.9	X	159.54575	217.78913	88.10972	10.11012	0.0488226	0.17394413	3.1783096	20	—	—
117783	2005	GJ <sub>118</sub>	15.2	X	135.41658	109.70980	180.12368	7.81609	0.0238496	0.17058520	3.2198958	20	—	—
117784	2005	GG <sub>119</sub>	15.5	X	7.00065	191.91685	113.90825	2.85391	0.0654627	0.21411354	2.7671963	20	8 29.8	18.8
117785	2005	GJ <sub>121</sub>	16.9	X	10.13506	238.11021	313.24284	0.49426	0.1109395	0.26048050	2.4282081	20	3 21.2	19.4
117786	2005	GN <sub>121</sub>	16.5	X	130.93737	169.64962	59.31689	4.87390	0.0965455	0.28656138	2.2785450	20	11 9.5	19.6
117787	2005	GM <sub>123</sub>	15.9	X	209.94275	112.21601	40.10109	2.15274	0.2313052	0.22614736	2.6681385	20	10 5.2	20.2
117788	2005	GU <sub>123</sub>	14.1	X	211.13291	202.22326	100.70927	17.28607	0.2387484	0.17954201	3.1118978	20	1 30.8	19.7
117789	2005	GH <sub>127</sub>	15.2	X	196.22253	206.15288	120.23510	11.12469	0.0670990	0.18523020	3.0478589	20	2 13.9	19.8
117790	2005	GO <sub>128</sub>	15.0	X	201.06686	73.62404	156.21423	22.12166	0.1734191	0.16969322	3.2311693	20	12 24.5	20.5
117791	2005	GT <sub>128</sub>	14.6	X	283.91812	24.72438	142.30307	28.62792	0.1432393	0.17770333	3.1333266	20	—	—
117792	2005	GP <sub>132</sub>	16.6	X	276.46297	272.25053	72.87462	3.16918	0.1964161	0.26778136	2.3838696	20	5 16.5	19.7
117793	2005	GB <sub>135</sub>	16.8	X	61.01872	172.62944	336.46211	0.64993	0.1263646	0.26233890	2.4167270	20	4 21.9	19.2
117794	2005	GZ <sub>138</sub>	15.0	X	244.53668	176.68972	15.56559	5.74047	0.1209658	0.17133650	3.2104763	20	12 31.6	19.5
117795	2005	GJ <sub>140</sub>	16.2	X	359.47115	131.17526	67.18985	8.66471	0.0783083	0.25811225	2.4430385	20	3 20.3	19.0
117796	2005	GY <sub>140</sub>	15.3	X	262.88524	183.90286	346.79872	13.42672	0.1661371	0.23836932	2.5761381	20	—	—
117797	2005	GA <sub>141</sub>	16.0	X	175.64795	20.51663	254.29832	5.43975	0.0798209	0.30085213	2.2058060	20	—	—
117798	2005	GK <sub>150</sub>	15.4	X	16.00641	156.20434	198.21403	12.69717	0.1488725	0.21990514	2.7183944	20	11 28.9	18.9
117799	2005	GW <sub>151</sub>	15.6	X	50.93167	87.11185	210.22782	4.33589	0.0983858	0.21837240	2.7310997	20	10 24.9	19.3
117800	2005	GD <sub>161</sub>	15.5	X	81.32945	112.90597	175.42195	6.54223	0.1046613	0.21951800	2.7215895	20	10 25.5	19.5
117801	2005	GX <sub>166</sub>	16.7	X	345.63496	98.45658	175.51214	1.42398	0.1602166	0.26605999	2.3941407	20	6 7.4	18.7
117802	2005	GG <sub>168</sub>	17.1	X	30.57313	64.86832	136.26161	1.92636	0.1293359	0.26343391	2.4100253	20	5 16.9	19.3
117803	2005	GH <sub>168</sub>	16.2	X	181.43420	189.75070	47.58192	6.84860	0.1336362	0.29534876	2.2331228	20	—	—
117804	2005	GK <sub>168</sub>	16.8	X	16.21732	247.41446	229.46304	20.75388	0.0288754	0.37609425	1.9008080	20	—	—
117805	2005	GP <sub>170</sub>	16.0	X	146.47468	279.05596	50.29206	6.33108	0.1846178	0.30448138	2.1882431	20	—	—
117806	2005	GB <sub>172</sub>	15.9	X	202.05557	137.02224	130.32345	4.27683	0.0734292	0.24181662	2.5515962	20	—	—
117807	2005	GC <sub>175</sub>	15.3	X	127.45395	317.80565	245.89752	4.18310	0.0541770	0.21773658	2.7364139	20	9 19.3	19.2
117808	2005	GM <sub>178</sub>	15.4	X	124.31710	33.91464	145.21374	6.99235	0.0882778	0.21114534	2.7930693	20	8 18.9	19.6
117809	2005	GR <sub>178</sub>	15.1	X	255.62545	305.11919	191.74566	12.79440	0.1502477	0.22889922	2.6467109	20	11 18.6	18.5
117810	2005	GS <sub>178</sub>	15.3	X	26.27656	125.34620	159.50999	5.16511	0.0299713	0.21202945	2.7852997	20	8 24.5	18.9
117811	2005	GO <sub>180</sub>	15.9	X	77.00561	152.84527	130.80195	2.69999	0.0332234	0.22407920	2.6845306	20	11 2.0	19.5
117812	2005	GH <sub>182</sub>	14.7	X	100.37440	212.96999	90.87691	15.93071	0.2685615	0.22283253	2.6945339	20	—	—
117813	2005	HO <sub>3</sub>	14.8	X	114.41111	102.60645	226.75325	10.36435	0.2061121	0.22915806	2.6447175	20	—	—
117814	2005	HG <sub>4</sub>	15.4	X	58.18485	114.32910	173.30455	12.16184	0.1108342	0.21652123	2.7466442	20	10 25.7	19.3
117815	2005	HM <sub>5</sub>	16.3	X	88.78204	54.57894	162.60564	3.29331	0.1128659	0.27610728	2.3357022	20	9 6.5	19.5
117816	2005	HB <sub>7</sub>	15.7	X	239.57661	307.61097	238.65389	12.63650	0.1104447	0.23470218	2.6029029	20	—	—
117817	2005	JH <sub>1</sub>	15.9	X	222.70422	153.48219	144.08064	5.00629	0.1754983	0.24462318	2.5320424	20	1 26.6	20.0
117818	2005	JS <sub>3</sub>	14.9	X	203.85379	286.07229	3.13875	11.71800	0.2826592	0.24016241	2.5632995	20	1 5.1	19.7
117819	2005	JJ <sub>4</sub>	16.2	X	129.47443	138.94610	73.07451	7.82725	0.0518386	0.28156164	2.3054395	20	10 17.8	19.4
117820	2005	JY <sub>4</sub>	15.0	X	24.72341	352.05448	178.90713	9.57606	0.0075613	0.19017651	2.9947791	20	3 23.5	19.0
117821	2005	JD <sub>5</sub>	15.9	X	348.46235	155.04709	111.70805	13.29929	0.1581500	0.26377157	2.4079681	20	6 4.6	18.1
117822	2005	JO <sub>5</sub>	13.7	X	221.93378	72.94862	275.13690	24.83343	0.2239154	0.17631365	3.1497694	20	3 15.9	19.6
117823	2005	JY <sub>24</sub>	16.0	X	90.60170	250.58330	216.17474	8.28770	0.0379343	0.25723985	2.4485589	20	3 22.5	19.0
117824	2005	JU <sub>27</sub>	15.5	X	139.98012	135.47834	144.01858	17.73717	0.1256067	0.22940223	2.6428406	20	—	—
117825	2005	JU <sub>29</sub>	15.2	X	205.51382	27.73909	206.95422	4.49556	0.2340182	0.23331434	2.6132147	20	—	—
117826	2005	JV <sub>31</sub>	15.5	X	135.59132	321.12438	232.28601	10.73822	0.1555907	0.21738830	2.7393358	20	9 17.5	20.2
117827	2005	JL <sub>32</sub>	16.5	X	230.76955	134.17900	53.09792	8.70666	0.1156048	0.29741469	2.2227695	20	—	—
117828	2005	JX <sub>32</sub>	15.6	X	254.24377	75.50067	148.24049	2.02361	0.2042203	0.17558267	3.1585053	20	—	—
117829	2005	JE <sub>39</sub>	15.6	X	244.74965	335.30559	48.90079	2.75409	0.0794116	0.20269961	2.8701247	20	6 14.6	19.7
117830	2005	JV <sub>40</sub>	17.0	X	82.18532	79.63585	208.83938	2.56803	0.0959280	0.28563462				

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>
117841 2005 <i>JR</i> <sub>98</sub>	16.6 <sup>m</sup>	X	2.91329	103.47102	166.54188	10.25186	0.2080140	0.26599857	2.3945092	20	7 13.9	18.5
117842 2005 <i>JR</i> <sub>109</sub>	16.3	X	170.39960	209.13020	60.10037	7.31979	0.1103205	0.29697117	2.2249821	20	—	—
117843 2005 <i>JU</i> <sub>123</sub>	16.3	X	91.12578	162.63956	23.35624	6.68497	0.0604485	0.27015240	2.3699008	20	7 21.7	19.4
117844 2005 <i>JR</i> <sub>124</sub>	15.1	X	199.05101	292.58709	211.23536	24.35851	0.1672135	0.21874329	2.7280117	20	9 13.9	19.8
117845 2005 <i>JT</i> <sub>126</sub>	16.6	X	213.87694	268.01931	323.15902	3.44901	0.1107021	0.30028680	2.2085737	20	—	—
117846 2005 <i>JU</i> <sub>127</sub>	16.2	X	206.04862	87.44218	114.04984	3.48018	0.0755224	0.22882947	2.6472487	20	12 17.3	19.7
117847 2005 <i>JK</i> <sub>139</sub>	15.8	X	328.49402	313.84924	263.01988	11.79277	0.1670565	0.25400507	2.4693034	20	2 3.3	18.9
117848 2005 <i>JJ</i> <sub>146</sub>	15.6	X	108.87461	212.13831	160.47068	14.58143	0.1057982	0.23686819	2.5870107	20	—	—
117849 2005 <i>JV</i> <sub>146</sub>	16.0	X	158.40125	226.14923	144.31203	13.97299	0.2553559	0.24485193	2.5304651	20	3 5.3	20.3
117850 2005 <i>JM</i> <sub>150</sub>	15.9	X	66.37065	161.72575	180.12511	6.09787	0.0929124	0.22641304	2.6660508	20	—	—
117851 2005 <i>JE</i> <sub>151</sub>	12.5	X	2.39292	159.86046	182.74662	14.68897	0.0432821	0.08260659	5.2214715	20	9 17.2	19.3
117852 Constance	15.5	X	285.27161	355.86864	178.41045	11.41632	0.0500062	0.23632689	2.5909595	20	—	—
117853 2005 <i>JH</i> <sub>151</sub>	16.3	X	132.33493	70.42765	179.84286	5.90486	0.1366763	0.28682420	2.271529	20	12 8.2	19.7
117854 2005 <i>JE</i> <sub>156</sub>	16.8	X	9.40553	15.65392	227.14769	6.41991	0.0852788	0.26505827	2.4001690	20	6 6.9	19.3
117855 2005 <i>JO</i> <sub>167</sub>	15.3	X	124.75416	359.28528	228.27625	12.53640	0.1250640	0.21710534	2.7417154	20	10 20.4	19.6
117856 2005 <i>KD</i> <sub>5</sub>	16.0	X	241.56905	146.40902	219.43112	3.92708	0.1102331	0.26220856	2.4175278	20	5 13.9	19.2
117857 2005 <i>KQ</i> <sub>6</sub>	15.1	X	253.35803	100.62897	151.84174	16.31774	0.0487851	0.18030401	3.1031240	20	1 17.8	19.8
117858 2005 <i>KQ</i> <sub>9</sub>	15.7	X	80.54752	156.52080	97.13532	16.36658	0.0694723	0.21333070	2.7739618	20	10 9.9	20.0
117859 2005 <i>KV</i> <sub>9</sub>	16.3	X	93.39194	309.47046	251.72872	5.72779	0.0882792	0.27238148	2.3569534	20	8 14.7	19.5
117860 2005 <i>LY</i>	15.6	X	91.84705	78.95716	183.60544	13.67352	0.0430090	0.21750872	2.7383246	20	10 25.3	19.5
117861 2005 <i>LB</i> <sub>2</sub>	15.8	X	175.64503	152.41131	91.33144	14.70222	0.1453197	0.22852694	2.6495845	20	12 29.1	19.8
117862 2005 <i>LB</i> <sub>12</sub>	16.8	X	129.28749	68.83674	200.50200	6.43521	0.1509451	0.28884925	2.2664974	20	12 28.2	20.3
117863 2028 <i>P-L</i>	16.2	X	126.93283	337.39958	344.53221	1.98722	0.2094493	0.31819501	2.1249097	20	—	—
117864 2069 <i>P-L</i>	15.9	X	183.26962	168.13132	248.28087	2.62077	0.1724246	0.22478645	2.6788967	20	5 17.1	20.3
117865 2081 <i>P-L</i>	16.1	X	223.16469	74.02658	264.18713	3.18484	0.2565362	0.24089225	2.5581195	20	3 11.9	20.7
117866 2105 <i>P-L</i>	16.2	X	286.20747	354.89965	342.51584	7.24642	0.1688409	0.29292018	2.2454489	20	5 20.2	19.0
117867 2127 <i>P-L</i>	15.5	X	89.04523	30.66128	314.52237	2.53309	0.1684093	0.18459672	3.0548277	20	—	—
117868 2147 <i>P-L</i>	15.0	X	39.89771	45.66511	358.90692	9.41224	0.2592528	0.21753093	2.7381383	20	—	—
117869 2168 <i>P-L</i>	16.8	X	48.79275	45.35213	357.30448	5.32697	0.1575216	0.28408799	2.2917512	20	—	—
117870 2174 <i>P-L</i>	15.7	X	127.86461	311.34809	325.10329	5.25279	0.3391559	0.23488350	2.6015631	20	12 26.8	20.8
117871 2186 <i>P-L</i>	15.5	X	330.17382	244.10607	358.55959	12.96054	0.1272719	0.24111034	2.5565767	20	3 24.6	18.3
117872 2210 <i>P-L</i>	16.7	X	173.22162	156.20542	257.15316	1.25621	0.2019750	0.27379082	2.3488582	20	5 3.7	20.4
117873 2212 <i>P-L</i>	16.8	X	347.06095	208.23218	193.89391	3.08989	0.1642196	0.29781624	2.2207711	20	—	—
117874 Picodelteide	15.9	X	282.71057	55.25213	13.24822	20.77328	0.1076925	0.36212458	1.9493839	20	10 28.8	17.4
117875 2539 <i>P-L</i>	14.9	X	290.42573	95.78895	357.82423	5.19739	0.1510279	0.18179526	3.0861309	20	10 30.4	18.7
117876 2586 <i>P-L</i>	16.6	X	211.99992	234.19276	165.90356	2.57837	0.1646756	0.27513735	2.3411883	20	5 23.5	20.1
117877 2593 <i>P-L</i>	16.6	X	335.20156	307.40314	17.40921	0.19875	0.2552828	0.27839383	3.3228953	20	8 6.9	17.6
117878 2602 <i>P-L</i>	14.9	X	301.44027	14.20133	61.82073	2.82545	0.1946659	0.18121050	3.0927666	20	10 22.7	18.3
117879 2621 <i>P-L</i>	16.4	X	144.19744	303.94792	18.62905	7.61756	0.1383819	0.28574910	2.2828610	20	—	—
117880 2651 <i>P-L</i>	15.9	X	333.59172	0.38489	355.50766	4.88450	0.2220340	0.24623952	2.5209499	20	9 20.8	17.5
117881 2675 <i>P-L</i>	15.7	X	77.41943	15.22125	14.72089	4.84654	0.1504933	0.21901691	2.7257391	20	—	—
117882 2680 <i>P-L</i>	15.9	X	209.29419	10.39000	22.63943	2.40995	0.1655247	0.22530299	2.6748006	20	5 11.4	20.1
117883 2682 <i>P-L</i>	15.2	X	57.03653	209.57603	152.50580	1.74113	0.1551369	0.16769278	3.2568154	20	—	—
117884 2684 <i>P-L</i>	16.0	X	106.09215	237.86535	182.97473	6.53056	0.0590819	0.23833660	2.5763739	20	2 17.3	19.4
117885 2692 <i>P-L</i>	14.7	X	130.05330	285.18610	168.27683	6.00332	0.1337527	0.17395583	3.1781670	20	5 13.4	19.6
117886 2694 <i>P-L</i>	16.5	X	309.97095	7.14140	16.49343	4.24644	0.1933931	0.26236943	2.4165395	20	9 14.4	18.4
117887 2721 <i>P-L</i>	15.7	X	111.41123	297.80235	59.70427	2.95688	0.0786135	0.20282093	2.8689801	20	—	—
117888 2735 <i>P-L</i>	16.8	X	215.71636	329.15402	11.27702	2.69741	0.2106944	0.25676309	2.4515980	20	3 11.3	21.0
117889 2745 <i>P-L</i>	16.5	X	55.51653	127.40108	187.61320	4.77040	0.1975468	0.28165995	2.3049030	20	12 17.8	19.8
117890 2748 <i>P-L</i>	15.6	X	158.09705	232.78702	170.25562	7.31558	0.1870228	0.23965799	2.5668950	20	4 9.8	19.8
117891 2750 <i>P-L</i>	16.8	X	32.28340	176.70533	158.76019	4.02879	0.1477889	0.29770811	2.2213088	20	12 15.5	19.6
117892 2753 <i>P-L</i>	15.0	X	206.70033	65.58083	177.53205	14.27021	0.1165419	0.23551793	2.5968891	20	—	—
117893 2781 <i>P-L</i>	15.6	X	327.77142	320.28757	28.60903	7.08818	0.2310297	0.27871410	2.3211155	20	9 5.3	16.9
117894 2791 <i>P-L</i>	15.4	X	348.93909	337.41640	21.05932	12.36808	0.1890951	0.24693135	2.5162390	20	10 28.2	17.6
117895 2802 <i>P-L</i>	16.1	X	290.96310	46.89522	15.95935	13.22106	0.2517555	0.22966430	2.6408296	20	9 20.2	18.8
117896 2815 <i>P-L</i>	16.4	X	293.37339	39.69374	357.03531	2.37225	0.1590761	0.26202725	2.4186428	20	9 3.8	18.7
117897 2845 <i>P-L</i>	15.6	X	301.60347	3.66324	29.85588	2.79022	0.1294316	0.17938894	3.1133678	20	9 4.7	19.5
117898 3029 <i>P-L</i>	16.5	X	87.34624	113.52048	252.73919	5.83067	0.3299463	0.28472446	2.2883346	20	—	—
117899 3048 <i>P-L</i>	14.8	X	257.26319	128.98485	214.80939	15.60074	0.2376212	0.17763698	3.1341068	20	4 20.9	19.9
117900 3053 <i>P-L</i>	15.7	X	311.92417	48.19830	266.61509	7.65456	0.1699230	0.29331360	2.2434407	20	5 31.3	17.5
117901 3055 <i>P-L</i>	14.9	X	10.52662	14.35383	356.39763	32.86827	0.1490311	0.23173944	2.6250409	20	12 8.1	18.9
117902 3058 <i>P-L</i>	15.0	X	31.06400	325.04632	325.66722	8.34977	0.2670827	0.21452762	2.7636343	20	10 10.4	18.5
117903 3115 <i>P-L</i>	15.4	X	255.21520	68.77051	281.14888	7.37108	0.1885526	0.22621859	2.6675784	20	4 27.6	19.6
117904 3504 <i>P-L</i>	14.8	X	260.41668	40.04521	330.74376	11.49790	0.1973370	0.22674925	2.6634148	20	5 29.5	19.0
117905 3543 <i>P-L</i>	15.1	X	235.29576	150.40820	238.25266	11.91557	0.1692428	0.22606699	2.6687708	20	5 31.3	19.1
117906 4046 <i>P-L</i>	16.2	X	193.06869	42.09044	350.59901	5.02019	0.2340890	0.27408093	2.3472004	20	4 22.9	20.2
117907 4076 <i>P-L</i>	15.1	X	344.86546	358.25519	350.09219	11.69252	0.0669523	0.19686229	2.9265842	20	9 17.9	18.9
117908 4104 <i>P-L</i>	15.9	X	301.24055	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>
117921 4621 P-L	16.7	X	125.44282	199.26269	155.29377	1.69425	0.1974097	0.26971160	2.3724822	20	1 3.5	19.6
117922 4622 P-L	15.1	X	131.99611	134.02622	178.71624	13.67895	0.1838768	0.23545323	2.5973648	20	—	—
117923 4660 P-L	15.6	X	201.99682	310.67317	9.12705	5.74619	0.1815186	0.25562413	2.4588657	20	2 5.8	19.6
117924 4699 P-L	16.9	X	48.09351	132.53322	187.58641	3.23472	0.1700705	0.28160560	2.3051996	20	12 13.3	20.0
117925 4701 P-L	16.1	X	11.19313	247.31178	33.48695	3.14406	0.0608191	0.27772625	2.3266163	20	8 8.4	18.6
117926 4703 P-L	15.0	X	142.47775	277.63275	8.06820	4.18249	0.1460829	0.18528246	3.0472857	20	—	—
117927 4739 P-L	16.3	X	181.37402	13.04689	359.60216	5.89008	0.1261994	0.27298599	2.3534726	20	3 18.5	19.8
117928 4741 P-L	16.0	X	137.28048	23.24018	352.19745	2.19174	0.0977008	0.27101411	2.3648746	20	1 31.7	19.2
117929 4742 P-L	16.4	X	93.63853	36.30047	15.57384	2.97414	0.1624211	0.27026661	2.3692330	20	2 1.5	18.9
117930 4747 P-L	16.6	X	12.66064	44.41269	8.66736	6.81496	0.0947891	0.28326254	2.2962013	20	—	—
117931 4776 P-L	15.0	X	227.33160	332.77200	123.65762	2.25663	0.1481736	0.17833339	3.1259421	20	8 17.1	19.8
117932 4781 P-L	15.6	X	52.47183	352.59692	1.82462	5.00256	0.1705643	0.21670133	2.7451221	20	—	—
117933 4808 P-L	16.5	X	95.57164	202.96914	147.83392	2.81209	0.1135069	0.28462401	2.2888730	20	—	—
117934 4809 P-L	16.9	X	206.83032	6.12469	42.38006	3.17995	0.1643040	0.27522983	2.3406639	20	5 28.6	20.6
117935 4863 P-L	15.7	X	289.76861	223.24304	179.11278	4.53190	0.1327605	0.22919422	2.6444394	20	9 3.0	18.7
117936 4899 P-L	16.6	X	103.12175	161.74414	176.32047	3.66257	0.1855849	0.21842741	2.7306411	20	—	—
117937 5036 P-L	15.9	X	207.86461	102.92479	262.76629	3.77942	0.2530328	0.24104380	2.5570472	20	4 2.3	20.4
117938 6101 P-L	15.6	X	339.44896	143.49466	214.89775	3.95113	0.1643844	0.21364128	2.7712727	20	9 27.6	18.5
117939 6122 P-L	15.2	X	118.99303	215.71268	180.75980	12.24718	0.2639878	0.23775401	2.5805809	20	2 29.6	19.2
117940 6191 P-L	15.4	X	266.98255	107.10251	222.05422	4.59921	0.1931201	0.17772981	3.1330154	20	4 17.5	20.2
117941 6202 P-L	15.2	X	334.75291	141.35216	234.90210	4.43985	0.1833745	0.18048691	3.1010272	20	10 4.6	18.5
117942 6210 P-L	17.1	X	160.54755	149.91354	239.12906	1.92177	0.1824606	0.27263923	2.3554677	20	3 21.0	20.9
117943 6219 P-L	17.0	X	291.88869	67.08259	277.31117	1.25200	0.2359742	0.27717862	2.3296798	20	5 30.0	19.7
117944 6257 P-L	16.5	X	157.66066	95.09346	324.22106	2.62155	0.2186626	0.24016805	2.5632594	20	4 28.5	20.9
117945 6271 P-L	14.7	X	154.53569	5.84795	132.06080	0.94483	0.0617995	0.15411750	3.4453611	20	—	—
117946 6276 P-L	15.4	X	308.37913	207.54463	204.62688	1.01969	0.2042918	0.18032696	3.1028606	20	10 1.0	18.7
117947 6301 P-L	16.4	X	93.05800	96.39937	356.71617	2.28174	0.1769427	0.27187206	2.3598967	20	3 29.9	19.2
117948 6315 P-L	15.0	X	247.57765	247.61601	0.30106	7.41304	0.1504466	0.18831157	3.0145191	20	—	—
117949 6316 P-L	16.1	X	174.44419	6.58472	349.04189	1.70438	0.1866826	0.25551781	2.4595478	20	2 23.8	19.9
117950 6337 P-L	15.5	X	184.32718	177.17243	190.69514	2.04026	0.0436015	0.20699576	2.8302736	20	3 18.0	19.6
117951 6369 P-L	15.2	X	185.54443	321.65708	314.80345	3.54502	0.0760359	0.18649118	3.0341044	20	—	—
117952 6376 P-L	16.1	X	83.05933	18.13924	347.70867	2.72509	0.1020994	0.21861439	2.7290839	20	—	—
117953 6511 P-L	16.5	X	321.26550	333.34647	31.78759	0.41569	0.2307752	0.26254318	2.4154732	20	9 6.9	18.1
117954 6686 P-L	16.4	X	351.51823	318.44036	12.22701	4.59184	0.1561127	0.29589158	2.2303908	20	10 2.3	18.0
117955 6693 P-L	16.8	X	327.94101	23.68673	16.06648	6.26508	0.2039997	0.26397911	2.4067058	20	11 22.7	18.6
117956 6695 P-L	15.1	X	187.10633	15.69337	11.60798	4.40703	0.1906198	0.17568408	3.1572897	20	4 16.1	20.4
117957 6706 P-L	15.9	X	183.20414	50.09627	23.73473	5.55568	0.2549982	0.24163388	2.5528825	20	6 6.8	20.5
117958 6732 P-L	16.9	X	236.64266	339.84314	58.06381	3.21469	0.1709389	0.27626999	2.3347851	20	6 13.9	20.2
117959 6763 P-L	16.3	X	71.27361	200.54676	179.63475	6.95877	0.1886842	0.28457408	2.2891407	20	—	—
117960 6784 P-L	14.8	X	139.97375	20.12298	11.79685	10.21633	0.0787001	0.18954210	3.0014579	20	3 5.5	19.2
117961 6813 P-L	15.4	X	352.82596	263.30610	49.24099	4.31486	0.0869963	0.21241664	2.7819140	20	8 18.5	18.8
117962 6854 P-L	16.6	X	124.07596	276.98407	22.42530	6.53849	0.0710940	0.30054009	2.2073326	20	—	—
117963 7596 P-L	16.3	X	309.32526	334.16560	23.90622	6.15536	0.2296501	0.29474289	2.2361820	20	8 1.5	17.8
117964 7619 P-L	16.3	X	292.61068	275.34793	111.24698	3.36111	0.2432813	0.26163314	2.4210711	20	8 2.4	18.5
117965 9064 P-L	16.0	X	68.65893	151.66638	218.46995	5.09111	0.2078535	0.28417329	2.2912925	20	—	—
117966 9524 P-L	15.4	X	106.59861	255.47456	114.26122	1.88539	0.1236418	0.23649273	2.5897481	20	—	—
117967 9563 P-L	16.4	X	334.68679	272.37017	93.01755	3.38283	0.1942365	0.26327982	2.4109655	20	10 16.8	18.2
117968 9564 P-L	16.4	X	182.70230	329.68834	60.51937	3.59949	0.2210872	0.27371796	2.3492750	20	4 14.3	20.2
117969 9583 P-L	15.6	X	192.70879	182.29445	171.68994	4.78082	0.1936844	0.25647443	2.4534281	20	3 8.2	19.7
117970 9590 P-L	15.5	X	47.48303	344.11094	50.85870	4.31018	0.1989900	0.21797538	2.7344150	20	—	—
117971 9613 P-L	15.4	X	269.87840	205.12102	193.79171	13.96961	0.1406256	0.21134009	2.7913531	20	7 24.4	19.5
117972 1055 T-1	15.6	X	253.62784	315.38409	199.10591	11.69191	0.2722766	0.23348938	2.6119085	20	11 20.5	18.9
117973 1073 T-1	16.5	X	67.13640	139.09909	345.35678	3.26899	0.1337062	0.28179995	2.3041395	20	3 25.6	18.7
117974 1077 T-1	15.1	X	191.91877	128.33107	343.75935	11.53909	0.0806690	0.21213116	2.7844093	20	11 24.8	19.5
117975 1131 T-1	16.6	X	114.08083	299.96823	292.21925	1.45939	0.1820091	0.28896447	2.2658948	20	10 29.2	20.0
117976 1158 T-1	15.7	X	311.70433	252.02517	359.03373	6.67599	0.0957945	0.26121702	2.4236416	20	3 12.1	18.4
117977 1192 T-1	16.1	X	175.99836	182.24969	2.79871	13.67364	0.1783541	0.23032823	2.6357524	20	10 15.4	20.5
117978 1215 T-1	15.3	X	64.73284	152.79096	3.03824	16.80312	0.1025410	0.24305618	2.5429136	20	4 28.3	18.6
117979 1233 T-1	16.6	X	94.89125	76.48815	188.52782	20.15914	0.2582714	0.28882703	2.2666136	20	11 28.1	20.8
117980 1256 T-1	16.3	X	201.70090	173.42785	3.66477	8.41982	0.0460729	0.29152253	2.2526201	20	11 26.6	19.3
117981 2067 T-1	16.0	X	136.50212	133.00436	37.66368	3.81114	0.0878458	0.28762959	2.2729001	20	8 30.9	19.0
117982 2134 T-1	16.2	X	329.52424	212.86920	25.84221	5.44168	0.0674689	0.26178576	2.4201300	20	3 26.4	18.9
117983 2240 T-1	16.5	X	40.97852	206.22063	26.46923	1.84994	0.1939655	0.26481743	2.4016239	20	8 5.1	19.0
117984 2283 T-1	16.8	X	95.62280	33.71964	174.94729	6.07103	0.2383705	0.26699362	2.3885562	20	9 14.2	20.6
117985 3167 T-1	17.4	X	171.07398	3.53006	217.26471	1.94796	0.1621438	0.29154310	2.2525142	20	12 7.8	20.5
117986 3176 T-1	16.0	X	205.14106	349.59679	189.62086	4.55490	0.1294010	0.23163020	2.6258662	20	11 13.6	19.9
117987 4106 T-1	15.3	X	292.97465	112.83650	66.46642	0.94423	0.1646818	0.17618458	3.1513076	20	—	—
117988 4300 T-1	16.2	X	283.30301	86.83512	129.88956	2.90615	0.1502359	0.25741593	2.4474422	20	—	—
117989 4371 T-1	16.3	X	355.04852	45.27713	152.05273	2.64042	0.1446649	0.28070177	2.3101452	20	2 24.4	18.2
117990 1014 T-2	15.0	X	272.81169	333.18029	357.96615	7.25804	0.2356401	0.18472260	3.0534398	20	4 18.9	19.8
117991 1033 T-2	15.3	X	355.40162	153.52780	185.34779	9.30976	0.1634028	0.21000776	2.8031467	20	10 1.9	18.1
117992 1039 T-2	15.7	X	255.07312	70.33270	358.68438	9.61246	0.2029297	0.22867622	2.6484313	20	8 13.3	19.4
117993 Zambujal	13.2	X	310.03859	350.26508	341.15079	1.85846	0.2681497	0.12198335	4.0265740	20	6 3.5	18.2
117994 1076 T-2	16.2	X	51.83242	32.65096	351.95978	8.66778	0.2248877	0.21497245	2.7598206	20	—	—
117995 1086 T-2	16.0	X	85.52149	101.10715	248.42729	1.41908	0.2132933	0.25788906	2.4444478	20	—	—
117996 1089 T-2	14.8	X	160.00247	249.65040	339.01444	6.45321	0.0744995	0.17084069	3.2166848	20	11 17.0	19.7
117997 Irazu	16.4	X	90.84184	80.09624								

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>			
118001	1147	T-2	15.7	X	167.89205	290.67845	4.91360	5.85969	0.1562379	0.23902744	2.5714073	20	—	—	
118002	1172	T-2	15.6	X	32.04161	56.02819	358.19780	5.24556	0.1120192	0.21547788	2.7555032	20	—	—	
118003	1190	T-2	16.3	X	23.80128	2.68198	295.73130	1.97933	0.1742806	0.27306086	2.3530424	20	10	9.4	18.7
118004	1192	T-2	15.5	X	266.33463	344.61945	356.49823	2.73187	0.0281871	0.22558615	2.6725618	20	5	22.8	19.0
118005	1214	T-2	15.4	X	335.63462	52.59110	5.24433	4.74781	0.1565523	0.17104252	3.2141538	20	11	28.3	19.0
118006	1252	T-2	16.0	X	59.79309	338.18647	10.83931	2.09714	0.1113214	0.23510032	2.5999634	20	—	—	—
118007	1256	T-2	16.2	X	266.67802	182.20943	203.77615	5.22715	0.1085112	0.26986449	2.3715860	20	7	13.3	19.1
118008	1257	T-2	15.3	X	233.28746	137.84820	355.67551	11.73468	0.1908090	0.23124124	2.6288100	20	10	6.9	19.3
118009	1271	T-2	16.3	X	157.27695	92.96761	255.47804	0.47165	0.1941534	0.26199983	2.4188116	20	1	30.1	20.1
118010	1272	T-2	15.9	X	83.84397	44.36313	4.37541	7.66058	0.2120478	0.26022188	2.4298167	20	1	23.9	18.4
118011	1289	T-2	16.8	X	17.95009	226.06079	211.18630	1.88218	0.1701882	0.25788142	2.4444961	20	—	—	—
118012	1313	T-2	16.2	X	322.47372	30.38507	357.34421	9.46689	0.1777708	0.23099061	2.6307112	20	10	8.6	18.5
118013	1338	T-2	15.5	X	27.83729	354.28475	15.33216	7.35186	0.1171140	0.21306639	2.7762554	20	12	27.4	19.2
118014	1342	T-2	16.4	X	17.95927	218.58732	191.30821	6.93779	0.1857476	0.27742512	2.3282996	20	—	—	—
118015	1430	T-2	15.4	X	158.14134	89.34941	205.19536	0.76320	0.1434444	0.17419551	3.1752511	20	—	—	—
118016	1437	T-2	14.9	X	154.69071	242.45040	352.58572	7.42699	0.0326958	0.17068684	3.2186174	20	11	19.3	19.7
118017	1448	T-2	15.4	X	191.76548	244.89060	158.48479	2.62994	0.0649508	0.20354810	2.8621431	20	5	11.4	19.5
118018	1496	T-2	15.5	X	208.63087	22.37920	35.62677	1.80659	0.1453471	0.18337098	3.0684259	20	6	12.2	20.3
118019	1504	T-2	15.6	X	283.13855	104.98855	221.36240	1.30016	0.0680209	0.20475433	2.8508912	20	5	20.5	19.5
118020	1602	T-2	14.7	X	156.08434	136.39788	202.63820	4.76093	0.1470843	0.17728099	3.1383010	20	1	22.9	19.6
118021	2035	T-2	16.4	X	89.28926	124.17279	179.67519	1.70274	0.0680141	0.29770181	2.2213402	20	12	31.7	19.3
118022	2055	T-2	15.0	X	15.94905	125.04899	193.90881	14.31501	0.1734587	0.21025155	2.8009794	20	10	13.1	18.1
118023	2103	T-2	16.5	X	263.60325	191.59867	199.81944	5.73277	0.1806050	0.29085410	2.2560701	20	7	6.3	19.4
118024	2110	T-2	14.9	X	266.51062	37.96698	358.65440	8.76653	0.1408305	0.18529843	3.0471106	20	7	20.9	19.3
118025	2121	T-2	16.6	X	105.01989	172.59004	188.12523	4.79312	0.2021812	0.30157113	2.2022986	20	—	—	—
118026	2151	T-2	14.2	X	235.77047	40.02397	352.43503	3.89944	0.3396937	0.18409170	3.0604121	20	5	22.2	19.6
118027	2161	T-2	14.8	X	185.10010	104.88696	187.82191	9.47657	0.1575895	0.17561834	3.1580776	20	—	—	—
118028	2283	T-2	16.8	X	294.40018	124.62226	204.89844	0.25976	0.1740282	0.29022420	2.2593333	20	5	22.8	19.0
118029	2295	T-2	17.2	X	307.54483	42.89409	350.30841	1.78675	0.2079573	0.29347087	2.2426391	20	9	30.5	18.3
118030	2325	T-2	15.6	X	148.78825	170.44587	177.66164	4.97627	0.0836476	0.24002106	2.5643058	20	1	11.9	19.3
118031	2330	T-2	15.0	X	127.47929	112.61115	4.26685	4.51495	0.0706537	0.24570637	2.5245953	20	5	31.0	18.5
118032	2410	T-2	16.2	X	90.74131	70.34278	227.16359	2.59532	0.2060053	0.27706243	2.3303310	20	12	28.0	19.8
118033	2904	T-2	15.5	X	276.76478	327.13264	45.34824	1.55236	0.2265299	0.18539050	3.0461017	20	6	17.5	19.9
118034	3015	T-2	15.0	X	104.80432	244.92031	160.49384	10.90907	0.1054434	0.17787624	3.1312957	20	2	11.6	19.4
118035	3031	T-2	15.5	X	190.56482	16.07010	14.08086	2.94351	0.1662578	0.22378076	2.6869168	20	4	20.9	20.0
118036	3038	T-2	15.0	X	67.29098	317.16994	16.05974	9.69714	0.0588816	0.17125341	3.2115145	20	12	11.2	19.7
118037	3041	T-2	14.6	X	338.31742	229.13510	167.48018	16.72411	0.0904453	0.16940891	3.2347834	20	11	8.8	19.0
118038	3051	T-2	15.9	X	61.94281	280.03174	151.46722	5.34954	0.1914765	0.26024062	2.4297000	20	1	8.4	18.0
118039	3075	T-2	16.4	X	57.56644	6.47249	70.32663	1.70257	0.2075942	0.26016532	2.4301688	20	1	9.4	18.2
118040	3104	T-2	15.2	X	204.73545	296.81193	46.05406	2.32921	0.0889065	0.20132390	2.8831849	20	3	11.2	19.7
118041	3179	T-2	16.9	X	29.53717	278.29027	94.84728	1.30201	0.1547903	0.27669471	2.3323952	20	—	—	—
118042	3204	T-2	14.6	X	193.33476	11.62910	21.00172	6.46843	0.1832968	0.18222921	3.0812296	20	4	26.9	19.8
118043	3220	T-2	16.6	X	254.93250	187.60937	147.54899	2.26231	0.1303886	0.26717630	2.3874673	20	4	16.4	19.9
118044	3224	T-2	15.1	X	98.81488	355.78671	79.21689	2.85052	0.1319052	0.19949881	2.9074225	20	3	15.3	19.0
118045	3258	T-2	14.0	X	245.35071	148.26821	13.53493	17.35442	0.1209884	0.17156299	3.2076501	20	11	20.9	18.8
118046	3259	T-2	15.4	X	162.53064	311.37033	57.09591	3.78258	0.1921279	0.17966937	3.1104271	20	3	7.6	20.5
118047	3306	T-2	16.3	X	192.47686	22.46705	37.53374	4.42115	0.1260306	0.30952656	2.1643996	20	5	30.4	19.5
118048	3311	T-2	17.1	X	33.15358	242.52934	124.09635	2.49000	0.2362569	0.27655519	2.3331796	20	2	—	—
118049	4066	T-2	17.0	X	253.20670	235.60356	98.11193	1.53903	0.1566159	0.30925853	2.1656499	20	4	7.1	19.9
118050	4073	T-2	15.2	X	24.13760	28.69551	20.53095	10.10682	0.0871919	0.17308622	3.1888032	20	—	—	—
118051	4102	T-2	15.7	X	243.99100	158.65770	19.01392	6.77491	0.0695108	0.25660375	2.4526037	20	—	—	—
118052	4105	T-2	15.8	X	233.95612	234.30595	174.27183	5.67422	0.3169430	0.18370033	3.0647573	20	6	11.9	21.1
118053	4106	T-2	14.9	X	305.45559	250.42242	88.46386	2.54105	0.1069423	0.18559471	3.0438669	20	7	1.9	18.6
118054	4123	T-2	16.3	X	179.06706	171.69923	170.06752	7.50102	0.1735982	0.26290878	2.4132334	20	2	6.3	20.0
118055	4124	T-2	15.1	X	257.89500	254.13710	151.93098	2.91210	0.0470123	0.18580384	3.0415824	20	8	2.2	19.3
118056	4126	T-2	15.7	X	65.07305	14.49407	89.19186	2.72986	0.1313349	0.26216427	2.4178000	20	2	24.9	18.1
118057	4163	T-2	15.0	X	241.34804	165.74826	166.29007	11.41022	0.1231068	0.18210135	3.0826716	20	4	4.4	19.7
118058	4175	T-2	16.3	X	15.36606	311.50877	14.36433	8.54560	0.1898580	0.29497836	2.2349919	20	11	11.6	18.7
118059	4206	T-2	14.6	X	263.97380	7.41844	20.66917	9.36232	0.1423747	0.18501979	3.0501692	20	7	5.1	19.1
118060	4213	T-2	16.5	X	233.24412	272.24524	125.84986	1.87452	0.1749590	0.26835484	2.3804721	20	6	10.3	19.8
118061	4249	T-2	16.0	X	266.97219	315.37854	20.60104	8.52976	0.1326221	0.28889068	2.2662807	20	4	28.3	19.0
118062	4256	T-2	14.9	X	253.36102	312.57551	28.49919	10.04034	0.1036501	0.18308281	3.0716448	20	4	27.3	19.5
118063	4259	T-2	16.6	X	42.96326	204.63052	113.42709	1.67623	0.2442787	0.27534844	2.3399916	20	12	12.8	19.8
118064	4292	T-2	15.5	X	235.34269	213.01950	138.02275	2.92343	0.0630082	0.22427929	2.6829337	20	4	24.1	19.2
118065	4302	T-2	16.1	X	62.33359	1.81472	66.24750	2.51345	0.1720990	0.25988184	2.4319357	20	1	2.6	18.0
118066	4317	T-2	16.1	X	324.09237	202.18627	141.35105	3.07047	0.2340661	0.27150870	2.3620017	20	8	7.6	17.6
118067	4648	T-2	15.7	X	215.30544	226.83779	163.12781	5.17963	0.1354092	0.22498080	2.6773537	20	5	16.7	19.9
118068	5011	T-2	15.8	X	107.04921	175.10195	214.42486	12.84967	0.1891794	0.23970069	2.5665902	20	1	25.7	19.4
118069	5022	T-2	16.6	X	72.07491	80.00332	233.93392	8.26572	0.2511922	0.27695173	2.3309520	20	—	—	—
118070	5060	T-2	16.1	X	64.98010	53.91561	291.60343	5.57074	0.1350050	0.27745316	2.3281427	20	—	—	—
118071	5062	T-2	15.9	X	238.83530	77.12110	265.346								

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>
118081 5206 T-2	14.3	X	31.95656	2.72855	345.68754	16.20780	0.1160684	0.16922051	3.2371840	20	11 19.9	19.0
118082 5207 T-2	16.0	X	61.89554	50.07029	312.10414	5.54941	0.1259276	0.25682315	2.4512067	20	—	—
118083 5215 T-2	14.8	X	246.39250	63.62152	256.46355	7.91663	0.1175628	0.18164699	3.0878101	20	3 20.9	19.7
118084 5340 T-2	14.8	X	269.91514	131.39848	259.92108	8.57089	0.0970212	0.18547061	3.0452245	20	7 20.6	19.0
118085 1019 T-3	13.8	X	135.54483	100.76383	293.60846	9.03057	0.1989016	0.17190269	3.2034228	20	3 9.5	19.1
118086 1037 T-3	16.0	X	273.11500	49.57824	298.18970	5.59047	0.1395555	0.27036239	2.3686735	20	5 23.0	19.0
118087 1043 T-3	14.3	X	140.25414	87.08525	324.86173	8.43601	0.0666349	0.17288970	3.1912192	20	3 23.8	19.1
118088 1090 T-3	16.1	X	80.56811	330.30748	355.46923	13.04190	0.1633779	0.23375752	2.6099107	20	—	—
118089 1093 T-3	15.0	X	180.47338	345.22376	329.36432	6.81923	0.1495088	0.23944324	2.5684296	20	1 11.4	19.1
118090 1105 T-3	15.5	X	168.89917	291.74750	342.08657	13.41899	0.1653376	0.23637887	2.5905797	20	—	—
118091 1124 T-3	15.9	X	0.99105	94.03274	308.61903	4.88290	0.0862349	0.27878858	2.3207021	20	—	—
118092 1150 T-3	16.2	X	1.14480	8.83611	333.38923	7.64929	0.1201878	0.29869932	2.2163919	20	10 30.7	18.5
118093 1163 T-3	14.2	X	103.95903	96.01049	356.68511	16.81508	0.1801297	0.17155378	3.2077648	20	4 13.3	19.1
118094 1852 T-3	14.4	X	262.17086	288.61207	1.47440	22.20539	0.0878102	0.17352272	3.1834533	20	3 12.7	19.1
118095 2007 T-3	15.5	X	129.46379	355.76011	348.44961	5.19389	0.3151782	0.23799902	2.5788095	20	1 15.5	19.5
118096 2125 T-3	16.5	X	198.83240	359.08694	346.14742	6.22314	0.1354667	0.26550555	2.3974726	20	3 1.9	20.3
118097 2148 T-3	15.1	X	30.74626	191.84117	324.45818	3.82068	0.0950373	0.19539229	2.9412443	20	3 14.8	18.6
118098 2171 T-3	16.4	X	187.52587	204.13289	223.37060	6.80543	0.2591341	0.24475369	2.5311422	20	6 3.2	20.8
118099 2210 T-3	16.0	X	324.75423	78.48025	252.45832	3.58117	0.0423566	0.29527521	2.2334937	20	8 5.1	18.4
118100 2224 T-3	15.6	X	59.49201	199.75079	325.13253	3.71755	0.0163262	0.24439477	2.5336198	20	4 26.1	18.9
118101 2228 T-3	16.5	X	348.08340	186.68029	230.16510	6.55675	0.0850553	0.27875625	2.3208815	20	—	—
118102 Rinjani	16.3	X	341.63347	14.86230	17.26330	21.71715	0.0629670	0.36946906	1.9234637	20	—	—
118103 2279 T-3	15.0	X	5.37959	167.18011	216.08296	8.80950	0.0730320	0.18543326	3.0456334	20	11 30.9	19.0
118104 2294 T-3	16.1	X	85.59329	104.72170	232.40301	2.96702	0.1494287	0.23455756	2.6039727	20	—	—
118105 2309 T-3	15.4	X	146.20129	354.07280	10.56255	13.07051	0.0131631	0.216735983	2.7448324	20	2 12.8	19.7
118106 2343 T-3	15.4	X	163.01317	41.07140	342.62991	1.26944	0.1107547	0.19586102	2.9365498	20	3 18.5	20.0
118107 2361 T-3	15.0	X	197.53308	39.08665	213.65978	12.23918	0.2144072	0.23729823	2.5838842	20	—	—
118108 2398 T-3	15.9	X	90.50747	60.83971	352.36302	4.84039	0.3143134	0.26160097	2.4212696	20	2 25.1	18.6
118109 2445 T-3	14.2	X	194.31427	36.09998	10.30568	16.81078	0.1292707	0.17531475	3.1617225	20	5 10.7	19.5
118110 2493 T-3	16.2	X	137.20883	39.20712	1.84127	6.87531	0.1183645	0.26423983	2.4051225	20	3 7.7	19.5
118111 2633 T-3	16.0	X	233.72771	149.36922	207.98230	8.55382	0.0670895	0.24505068	2.5290968	20	4 28.4	19.5
118112 2665 T-3	16.9	X	335.42335	129.29614	236.06804	1.25910	0.2585467	0.29848233	2.2174660	20	11 6.9	17.9
118113 3091 T-3	16.7	X	194.84434	211.05701	201.32553	7.24777	0.0796563	0.26852560	2.3794628	20	5 25.6	20.0
118114 3117 T-3	17.1	X	186.05317	248.25491	167.92432	1.21669	0.1723752	0.26794013	2.3829277	20	5 19.3	20.9
118115 3118 T-3	16.0	X	90.84809	270.03994	188.84778	3.50517	0.1239065	0.24121802	2.5558158	20	3 29.3	19.2
118116 3161 T-3	15.8	X	43.02605	305.40843	126.84177	1.97798	0.1640128	0.25970788	2.4330216	20	—	—
118117 3168 T-3	16.2	X	95.78004	330.05121	27.77076	4.57146	0.2162018	0.28261081	2.2997301	20	—	—
118118 3169 T-3	16.9	X	147.14593	268.96372	181.07202	1.13028	0.2062682	0.24365935	2.5387152	20	5 28.6	21.1
118119 3177 T-3	15.8	X	48.12251	201.46703	198.79181	7.92633	0.2235230	0.21206385	2.7849984	20	—	—
118120 3181 T-3	14.6	X	192.71912	53.35592	25.70576	13.42258	0.2508384	0.17490263	3.1666871	20	6 19.4	20.4
118121 3211 T-3	16.1	X	319.97084	151.35458	199.95113	3.69635	0.1205924	0.22701899	2.6613047	20	8 13.5	19.0
118122 3228 T-3	15.8	X	88.95865	322.66574	44.28627	3.77891	0.1003922	0.23616684	2.5921299	20	—	—
118123 3238 T-3	14.9	X	292.75834	71.27615	22.26164	15.05007	0.0499455	0.23127497	2.6285543	20	11 23.4	18.4
118124 3253 T-3	16.9	X	34.41663	0.30781	50.27669	0.89627	0.1150004	0.25815426	2.4427734	20	—	—
118125 3278 T-3	15.0	X	326.31102	59.96719	32.35242	4.11021	0.0901065	0.18695373	3.0209078	20	12 31.9	18.8
118126 3344 T-3	16.2	X	12.30386	165.49894	192.34353	3.68789	0.1359292	0.23098957	2.6307190	20	11 28.5	19.2
118127 3399 T-3	16.5	X	28.07268	263.54670	181.15117	5.63684	0.0742816	0.28298257	2.2977155	20	—	—
118128 3457 T-3	16.6	X	164.25582	163.13611	191.64113	1.95139	0.2270062	0.26388438	2.4072817	20	2 14.8	20.5
118129 3459 T-3	17.1	X	248.19134	200.46912	200.62787	1.88554	0.1973900	0.29416012	2.2391345	20	6 28.8	20.2
118130 3469 T-3	15.6	X	140.85142	138.30525	192.36325	9.33981	0.1326798	0.21461333	2.7628984	20	—	—
118131 3501 T-3	16.2	X	98.56182	298.09359	43.69281	2.49000	0.2215309	0.25913637	2.4365975	20	—	—
118132 3505 T-3	16.3	X	135.12689	29.32589	21.46931	2.32797	0.2175334	0.26456722	2.4031379	20	3 29.1	20.0
118133 3523 T-3	15.4	X	164.06240	0.19370	13.76568	0.25850	0.1885467	0.17318254	3.1876208	20	3 13.7	20.5
118134 3533 T-3	16.6	X	96.89171	46.51994	7.11166	0.66034	0.1826794	0.26228891	2.4170340	20	2 12.6	19.2
118135 3559 T-3	17.1	X	202.13873	70.29491	346.97720	0.88173	0.1640642	0.26893482	2.3770484	20	6 4.8	20.7
118136 3756 T-3	16.2	X	109.46818	285.84376	40.66220	3.20176	0.0879160	0.23533954	2.5982012	20	—	—
118137 3813 T-3	16.7	X	230.02663	318.03317	24.81912	1.64297	0.1565814	0.24431973	2.5341385	20	3 29.6	20.7
118138 4036 T-3	15.2	X	202.79689	306.12283	48.24017	6.14339	0.1525078	0.17464512	3.1697991	20	3 25.2	20.3
118139 4041 T-3	15.6	X	166.14430	244.18942	179.29967	8.59754	0.2070348	0.17413711	3.1759611	20	5 14.3	21.0
118140 4042 T-3	15.6	X	29.58082	261.73732	61.70026	4.62592	0.1373857	0.23047267	2.6346510	20	11 8.2	18.7
118141 4048 T-3	15.5	X	302.57510	259.02757	139.35169	5.08780	0.2247705	0.22816623	2.6523763	20	9 8.7	17.9
118142 4117 T-3	15.5	X	10.07512	313.87012	126.37147	4.81229	0.0771093	0.21215411	2.7842085	20	—	—
118143 4124 T-3	15.1	X	205.03985	202.53617	126.50304	3.30883	0.0960376	0.19548348	2.9403295	20	2 24.1	19.6
118144 4136 T-3	17.0	X	6.74308	229.74476	84.28322	3.68604	0.2524858	0.27518801	2.3409010	20	10 19.9	18.9
118145 4142 T-3	15.8	X	319.71565	14.65360	65.94319	7.26206	0.1200091	0.25518315	2.4616977	20	12 30.2	18.2
118146 4161 T-3	16.2	X	174.46120	249.69625	69.95933	5.28679	0.1951200	0.26287940	2.4134132	20	1 11.3	20.1
118147 4183 T-3	16.7	X	37.78021	209.63304	183.91905	11.18977	0.1962857	0.28041366	2.3117273	20	—	—
118148 4204 T-3	16.4	X	204.63854	252.60442	179.64170	7.57425	0.3405296	0.24521565	2.5279623	20	6 18.9	21.3
118149 4298 T-3	14.9	X	96.55985	212.57804	35.94561	16.40407	0.1410514	0.22988111	2.6391690	20	10 23.8	18.9
118150 4325 T-3	16.3	X	72.83053	192.43505	142.46381	5.38121	0.2090465	0.25712717	2.4492741	20	—	—
118151 4391 T-3	15.9	X	72.28482	240.96817	96.31565	5.09368	0.2854199	0.28053493	2.3110611	20	—	—
118152 5076 T-3	14.7	X	53.61136	229.74652	72.39591	10.85802	0.0589064	0.18406508	3.0607072	20	10 26.2	19.1
118153 5083 T-3	16.1	X	120.31477	350.79669	129.74585	7.41879	0.0854131	0.29094185	2.2556165	20	5 31.4	19.1
118154 5110 T-3	14.4	X	274.93263	285.34081	51.15990	15.91257	0.0186329	0.17674235	3.1446740	20	5 28.6	18.9
118155 5141 T-3	15.5	X	358.39977	299.52936	104.31176	9.93200	0.1557761	0.20914503	2.8108501	20	—	—
118156 5146 T-3	15.4	X	290.30881	82.40119	42.82969	22.32970	0.0901196	0.23289374	2.6163600	20	—	—
118157 5157 T-3	15.7	X										

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>
118161 5710 T-3	14.9 <sup>m</sup>	X	128.11976	138.84276	51.92253	14.46345	0.0310803	0.22717535	2.6600834	20	9 13.6	18.9
118162 1951 SX	15.9	X	254.97082	212.29247	194.44230	39.10028	0.2538368	0.38390969	1.8749226	20	7 5.6	19.4
118163 1979 MJ8	15.7	X	181.61738	159.65879	231.47541	4.07073	0.2801639	0.23341966	2.6124286	20	4 14.9	20.4
118164 1981 DC3	16.1	X	107.54170	336.89140	267.70165	5.29123	0.0920719	0.26270018	2.4145107	20	10 28.9	19.5
118165 1981 EH2	15.1	X	178.99348	268.10978	221.19339	10.07085	0.1256814	0.18549203	3.0449901	20	8 7.9	20.2
118166 1981 EG22	16.3	X	93.31363	225.69270	349.21830	9.89537	0.1981096	0.25986498	2.4320409	20	9 15.4	20.0
118167 1981 EJ30	17.3	X	219.19795	28.99685	176.11331	4.55198	0.2963446	0.34313134	2.0206718	20	—	—
118168 1981 EQ37	15.6	X	96.72026	129.00816	315.05209	3.38385	0.0688328	0.22717892	2.6600555	20	3 9.4	19.2
118169 1981 EL40	16.1	X	313.79821	202.92544	341.15053	4.64082	0.1141204	0.22343057	2.6897236	20	—	—
118170 1981 EV40	14.8	X	144.04178	39.63598	357.10350	14.50915	0.1304377	0.22728131	2.6592565	20	3 14.9	18.7
118171 1988 DT1	15.4	X	341.90660	180.93847	278.79800	7.14716	0.1898960	0.20917964	2.8105401	20	—	—
118172 Vorgebirge	15.4	X	356.83140	104.21320	69.60065	14.82233	0.3640151	0.21986271	2.7187441	20	1 3.4	17.8
118173 Barmen	14.7	X	54.24576	170.49641	28.46263	12.35460	0.2112817	0.17513741	3.1638564	20	7 5.8	19.0
118174 1991 RO24	16.2	X	57.64068	179.58745	150.39814	9.58262	0.3083030	0.27929115	2.3179173	20	—	—
118175 1991 TL16	16.6	X	96.35774	308.42307	63.20831	7.17971	0.1493961	0.28288188	2.2982607	20	—	—
118176 1992 BK3	15.8	X	200.36383	248.27678	278.18829	9.99707	0.0959162	0.26626647	2.3929028	20	10 28.4	19.2
118177 1992 EZ13	14.1	X	234.06590	302.02938	182.86362	8.79178	0.1053524	0.12470676	3.9677356	20	9 25.9	19.9
118178 Rinckart	14.8	X	231.85381	336.53876	39.02500	9.08803	0.2398777	0.23658079	2.5891054	20	5 5.2	19.1
118179 1993 FC6	15.7	X	165.62023	266.90789	21.62833	6.63820	0.1110610	0.27961380	2.3161338	20	—	—
118180 1993 FF6	16.0	X	280.30214	21.48319	156.51791	4.94377	0.0498501	0.28159192	2.3052742	20	—	—
118181 1993 FD7	15.6	X	30.80780	56.50711	105.70826	3.06928	0.0519732	0.21885456	2.7270869	20	3 20.8	19.0
118182 1993 FH18	16.1	X	261.88623	52.67911	114.91827	4.22523	0.0989293	0.27847170	2.3224623	20	—	—
118183 1993 FQ22	16.7	X	138.66079	246.93352	139.59397	1.58932	0.1557051	0.26912942	2.3759024	20	10 16.0	20.5
118184 1993 FX22	16.0	X	188.43621	296.45503	299.46169	1.43779	0.1759562	0.27590256	2.3368575	20	—	—
118185 1993 FF29	16.5	X	342.53089	280.97779	225.85613	5.26892	0.1302891	0.28529864	2.2852633	20	—	—
118186 1993 XC	14.6	X	295.60543	31.61580	169.36059	5.50830	0.0679039	0.15406363	3.4461642	20	1 7.1	19.6
118187 1993 YC1	15.8	X	193.41671	337.75202	70.86294	8.33857	0.2499631	0.24236423	2.5477513	20	5 16.1	20.2
118188 1994 GO5	16.0	X	69.35168	121.34733	191.67217	1.98342	0.2307657	0.20487252	2.8497947	20	12 17.2	20.4
118189 1994 PB12	17.0	X	82.16540	117.05031	191.93790	1.64862	0.2211665	0.27480162	2.3430948	20	—	—
118190 1994 PT12	16.4	X	46.86051	97.97184	294.83644	1.95929	0.1658478	0.27722521	2.3294188	20	—	—
118191 1994 PE14	16.3	X	289.90427	197.51832	174.45890	5.28112	0.1056007	0.26318418	2.4115496	20	7 28.8	19.1
118192 1994 RA14	15.2	X	291.34841	121.88956	185.00052	10.84205	0.1002821	0.17992439	3.1074873	20	5 3.8	19.5
118193 1994 RG25	15.1	X	320.09639	62.00019	229.02533	11.60062	0.1951869	0.18250047	3.0781755	20	5 9.1	18.8
118194 Sabinagarroni	16.5	X	24.78066	324.20896	341.96397	5.03890	0.1641996	0.26631678	2.3926014	20	10 18.0	19.1
118195 1994 SP7	15.4	X	154.73755	60.25857	75.00141	1.22516	0.0836782	0.18199130	3.0839143	20	7 25.3	20.1
118196 1994 TK8	16.8	X	80.44132	198.86166	81.63055	1.77786	0.1468987	0.26969070	2.3726048	20	11 22.4	20.2
118197 1994 UU6	16.1	X	68.94428	48.95380	12.01880	4.03827	0.2826809	0.27876369	2.3208403	20	1 17.5	17.5
118198 1994 UA10	16.4	X	129.89807	232.05592	339.03666	2.90263	0.1760646	0.26385922	2.4074348	20	10 13.1	20.3
118199 1995 CY5	16.4	X	190.39699	286.43993	215.26930	1.43014	0.1640814	0.25479639	2.4641881	20	9 10.9	20.1
118200 1995 CA8	16.4	X	87.14271	138.10626	323.84041	16.34909	0.1486923	0.35680306	1.9687187	20	3 11.9	18.3
118201 1995 FQ19	15.4	X	225.47016	319.05569	10.91920	10.81772	0.1762004	0.23615692	2.5922025	20	3 11.4	19.7
118202 1995 HQ3	16.3	X	109.90306	340.12127	138.93748	3.28428	0.0700887	0.23785026	2.5798847	20	5 13.9	19.7
118203 1995 HL4	15.9	X	177.40076	200.81620	134.80576	3.03058	0.2109165	0.22619975	2.6677265	20	2 6.0	20.4
118204 1995 MS1	15.9	X	99.30694	226.67483	224.57625	21.38715	0.0599793	0.23138977	2.6276849	20	3 15.6	19.8
118205 1995 MK7	15.2	X	141.46498	312.09272	99.62673	12.87642	0.1839387	0.23126503	2.6286297	20	4 10.6	19.6
118206 1995 OB6	16.2	X	35.86049	66.21849	445.50672	2.99679	0.1043645	0.21030211	2.8005304	20	—	—
118207 1995 SJ10	17.3	X	327.05091	109.44811	119.02956	0.73370	0.0698096	0.30235625	2.1984845	20	3 1.5	19.7
118208 1995 TH10	15.6	X	5.90983	156.76831	246.61491	1.03464	0.0686800	0.20300975	2.8672009	20	12 30.4	19.2
118209 1995 UH20	16.2	X	78.56962	29.40026	277.81799	0.93379	0.0560380	0.20120526	2.8843182	20	11 30.3	20.2
118210 1995 UG56	16.7	X	251.23800	281.88197	0.47310	2.10616	0.0610986	0.29647180	2.2274799	20	2 5.5	19.5
118211 1995 VE18	16.7	X	129.65366	75.62266	238.75405	3.48995	0.1578333	0.28625177	2.2801877	20	—	—
118212 1995 XM4	15.4	X	125.37567	297.74630	116.93766	5.30996	0.0708467	0.21437839	2.7649167	20	3 12.6	19.3
118213 1995 YO18	15.6	X	255.68518	241.03991	182.75545	3.91988	0.1223714	0.18877278	3.0096071	20	8 10.9	19.8
118214 Agnesedibomia	14.8	X	230.61514	296.16547	85.08897	6.54315	0.1954641	0.17915261	3.1164055	20	5 16.8	19.9
118215 1996 BN1	15.5	X	225.57644	210.41761	78.56709	3.94623	0.0436904	0.20832348	2.8182352	20	1 28.7	19.6
118216 1996 DU1	17.3	X	275.05904	298.63142	189.62921	3.87133	0.1668238	0.27214447	2.3583217	20	12 18.3	19.3
118217 1996 EO7	17.1	X	352.90308	96.49253	357.98148	2.31203	0.1787666	0.27765161	2.3270332	20	—	—
118218 1996 GM17	15.8	X	122.06181	163.84907	36.26001	4.82325	0.1271416	0.25811350	2.4403006	20	9 21.9	19.4
118219 1996 HT20	15.8	X	237.63034	357.61041	135.13982	1.18657	0.0867264	0.26351222	2.4095478	20	11 4.6	18.8
118220 1996 HA21	16.3	X	161.64441	332.89970	187.93716	2.23959	0.1452487	0.25851226	2.4405177	20	9 8.8	19.9
118221 1996 HQ21	15.2	X	80.94919	181.40551	42.52999	11.34855	0.1821568	0.25468010	2.4649382	20	9 18.2	18.9
118222 1996 RR11	15.6	X	93.70918	69.05992	16.69569	3.29178	0.0379332	0.22981999	2.6396369	20	3 4.8	18.9
118223 1996 SO4	14.5	X	68.09919	324.51448	9.21088	35.64778	0.1844384	0.21310235	2.7759431	20	—	—
118224 1996 TT1	14.8	X	167.92292	125.10692	31.51576	5.23528	0.0980841	0.24392387	2.5368796	20	9 11.8	18.5
118225 1996 TP18	15.8	X	299.87945	25.47163	20.55849	2.01879	0.0666412	0.20253003	2.8717266	20	9 28.8	19.2
118226 1996 TA30	15.5	X	52.38976	38.70258	36.67376	9.44739	0.1659099	0.21792322	2.7348513	20	1 6.1	18.5
118227 1996 TR39	14.7	X	108.95246	62.10097	12.05876	22.03752	0.1056745	0.22812186	2.6527202	20	3 22.6	18.3
118228 1996 TQ66	6.9	X	32.63448	17.99724	10.67847	14.65917	0.1205154	0.00400574	39.2657535	20	11 29.8	22.4
118229 1996 VE23	15.5	X	314.39023	155.17869	335.64353	8.22672	0.0829025	0.21449379	2.7639249	20	—	—
118230 Sado	15.6	X	111.44192	323.54304	64.08787	11.13187	0.2812011	0.22075433	2.7114186	20	2 21.5	19.8
118231 1996 XQ18	15.6	X	105.12765	45.99092	9.41150	15.52671	0.2917759	0.22073430	2.7115825	20	3 18.7	19.6
118232 1997 AY6	15.2	X	35.08590	130.02297	303.04789	6.72494	0.2096721	0.21034773	2.8001255	20	—	—
118233 1997 BX6	15.7	X	345.60171	338.21330	324.57466	2.95834	0.0304807	0.31431741	2.1423500	20	7 31.2	17.6
118234 1997 BO7	15.4	X	93.23869	294.50397	286.87448	4.05400	0.2108849	0.18807844	3.0170097	20	9 15.5	20.2
118235 1997 ES7	16.6	X	332.74423	29.21652	168.68043	4.82348	0.1190594	0.29655498	2.2270633	20	1 17.9	19.1
118236 1997 EO26	15.3	X	294.61323	310.00383	357.59572	5.22885	0.1306769	0.17637818	3.1490011	20	5 1.0	19.5
118237 1997 GD16	16.4											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
118241 1997 <i>LJ</i> <sub>9</sub>	16.9	X	31.62766	219.34107	106.37159	2.43590	0.1866046	0.26884165	2.3775976	20	11 30.4	19.7
118242 1997 <i>NM</i> <sub>3</sub>	15.7	X	178.08964	83.06779	150.69150	2.67891	0.1793111	0.27441345	2.3453039	20	12 25.9	19.3
118243 1997 <i>QL</i> <sub>1</sub>	16.7	X	106.97011	81.08928	200.27964	5.05630	0.1498255	0.26858269	2.3791256	20	12 19.0	20.4
118244 1997 <i>RV</i> <sub>10</sub>	16.6	X	331.46260	121.28262	220.49340	1.70616	0.1852844	0.25700451	2.4500534	20	8 24.5	18.5
118245 1997 <i>SF</i> <sub>10</sub>	15.2	X	315.32420	339.38085	64.23077	3.44719	0.1849021	0.25808007	2.4432416	20	10 29.1	16.9
118246 1997 <i>SR</i> <sub>15</sub>	15.6	X	272.25363	172.29455	231.51638	4.09451	0.0707974	0.25189876	2.4830494	20	8 20.2	18.6
118247 1997 <i>TH</i> <sub>1</sub>	16.2	X	354.21608	24.59899	321.83928	1.94604	0.1974100	0.26076304	2.4264538	20	10 27.6	18.4
118248 1997 <i>TS</i> <sub>19</sub>	16.2	X	148.76235	299.82775	245.47783	2.61048	0.1688021	0.25385271	2.4702913	20	9 26.4	20.3
118249 1997 <i>WF</i> <sub>15</sub>	15.9	X	21.53119	139.87834	69.89320	6.15892	0.1443996	0.23950194	2.5680099	20	5 14.5	18.3
118250 1998 <i>BY</i> <sub>1</sub>	15.7	X	118.12701	333.87702	121.21681	8.08376	0.2114813	0.23294303	2.6159909	20	5 11.1	19.8
118251 1998 <i>BF</i> <sub>18</sub>	15.8	X	126.17493	82.31589	13.39895	2.12116	0.1734576	0.23197775	2.6232428	20	5 12.8	19.7
118252 1998 <i>BW</i> <sub>33</sub>	14.9	X	65.02367	141.67872	352.78416	13.45019	0.1902085	0.22741627	2.6582043	20	4 15.1	18.1
118253 1998 <i>BK</i> <sub>43</sub>	16.3	X	144.52102	224.32642	13.92315	2.01249	0.0107495	0.20579863	2.8412387	20	11 20.2	20.2
118254 1998 <i>CU</i>	15.5	X	13.12622	218.83182	301.35925	12.41514	0.1995442	0.22560431	2.6724184	20	2 9.6	18.1
118255 1998 <i>CZ</i> <sub>2</sub>	15.6	X	12.78556	13.58185	153.66337	5.24916	0.2131274	0.22398853	2.6852549	20	2 21.9	17.6
118256 1998 <i>DX</i> <sub>25</sub>	15.7	X	330.93733	17.04723	115.62683	2.79234	0.1690074	0.21585331	2.7523072	20	—	—
118257 1998 <i>FS</i> <sub>17</sub>	15.7	X	57.22741	85.97609	44.38800	3.17640	0.1906858	0.22625109	2.6673229	20	4 2.7	18.4
118258 1998 <i>FG</i> <sub>41</sub>	15.2	X	141.34293	301.12283	171.83009	4.04043	0.2226822	0.23381408	2.6094899	20	6 22.0	19.5
118259 1998 <i>FT</i> <sub>52</sub>	15.1	X	219.72636	184.83850	3.24603	7.45010	0.1872628	0.20557265	2.8433205	20	11 25.8	19.6
118260 1998 <i>FM</i> <sub>54</sub>	15.7	X	296.50823	310.77035	184.07387	11.90949	0.1787205	0.21007919	2.8025113	20	—	—
118261 1998 <i>FF</i> <sub>79</sub>	15.3	X	115.88342	25.02072	121.02608	4.72265	0.1934913	0.23182628	2.6243854	20	7 8.6	19.5
118262 1998 <i>FO</i> <sub>85</sub>	15.1	X	32.38240	111.99999	11.94140	12.01468	0.2220425	0.22256947	2.6965656	20	2 9.7	17.6
118263 1998 <i>FE</i> <sub>90</sub>	15.3	X	31.85117	94.63945	22.32748	11.26681	0.1910798	0.22124814	2.7073826	20	1 27.2	18.1
118264 1998 <i>FB</i> <sub>105</sub>	14.9	X	55.00935	290.75666	307.06393	7.05483	0.2466529	0.18924304	3.0046192	20	8 30.1	19.0
118265 1998 <i>FM</i> <sub>142</sub>	15.4	X	352.83386	283.63823	207.96368	4.57664	0.1061803	0.21532137	2.7858383	20	—	—
118266 1998 <i>HQ</i> <sub>17</sub>	14.8	X	9.87542	353.54140	286.09689	5.27547	0.1629477	0.18757022	3.0224570	20	7 31.9	18.0
118267 1998 <i>HR</i> <sub>56</sub>	14.5	X	13.02372	212.92040	36.09085	12.51028	0.2564810	0.18416794	3.0595675	20	7 4.5	17.6
118268 1998 <i>HG</i> <sub>61</sub>	14.9	X	48.46971	221.57095	24.01567	9.77087	0.2977802	0.18771826	3.0208676	20	9 13.9	19.0
118269 1998 <i>HL</i> <sub>74</sub>	14.9	X	295.44314	357.05775	194.72129	7.23662	0.2395902	0.21351700	2.7723480	20	—	—
118270 1998 <i>HN</i> <sub>129</sub>	15.5	X	277.27291	327.92202	205.63049	7.68217	0.1620892	0.21091611	2.7950926	20	—	—
118271 1998 <i>HO</i> <sub>149</sub>	16.5	X	333.26715	284.64101	343.14625	2.91992	0.2016581	0.31227080	2.1517004	20	4 18.9	18.1
118272 1998 <i>KU</i> <sub>10</sub>	15.0	X	263.34450	213.90100	131.89844	10.95297	0.1065239	0.17980348	3.1088802	20	5 18.7	19.7
118273 1998 <i>OX</i> <sub>9</sub>	16.7	X	162.32330	155.88614	175.87119	2.00262	0.2633173	0.29230812	2.2485823	20	1 16.1	20.2
118274 1998 <i>QE</i> <sub>20</sub>	16.0	X	184.79749	119.18249	229.26367	4.18238	0.1566729	0.29640754	2.2278018	20	2 17.1	19.4
118275 1998 <i>QR</i> <sub>24</sub>	16.3	X	199.47695	149.99124	179.06378	4.05624	0.1320442	0.29641157	2.2277816	20	2 6.7	19.6
118276 1998 <i>QM</i> <sub>33</sub>	16.6	X	162.05871	142.11846	210.48965	2.99694	0.2205399	0.29348447	2.2425698	20	2 6.4	20.1
118277 1998 <i>QE</i> <sub>105</sub>	16.3	X	197.00413	202.30417	125.53618	8.23602	0.1780147	0.29521958	2.2337743	20	2 5.7	19.7
118278 1998 <i>RO</i> <sub>17</sub>	16.5	X	174.81424	86.45314	280.25764	2.28983	0.1805550	0.29671991	2.2262380	20	3 3.9	19.8
118279 1998 <i>RG</i> <sub>23</sub>	16.6	X	303.69330	315.16653	68.16688	2.46580	0.1855332	0.31400288	2.1437804	20	9 13.1	17.7
118280 1998 <i>RQ</i> <sub>31</sub>	16.3	X	33.36967	131.49507	235.06191	4.64609	0.1625552	0.27811168	2.3244662	20	—	—
118281 1998 <i>RH</i> <sub>43</sub>	16.0	X	221.57161	346.34745	244.38123	2.65994	0.1407646	0.28653251	2.2786981	20	—	—
118282 1998 <i>RB</i> <sub>48</sub>	16.6	X	111.12528	50.13129	267.42068	2.37322	0.1580330	0.28281791	2.2986073	20	—	—
118283 1998 <i>RU</i> <sub>55</sub>	16.2	X	72.21829	134.59860	294.82269	3.13122	0.1116674	0.28892182	2.2661178	20	1 8.9	18.3
118284 1998 <i>RC</i> <sub>59</sub>	16.2	X	55.42227	348.70537	344.66105	7.10689	0.1352091	0.27695218	2.3309495	20	—	—
118285 1998 <i>RF</i> <sub>65</sub>	16.4	X	102.73435	213.95653	189.01325	5.21629	0.1160554	0.28977528	2.2616661	20	1 20.1	19.0
118286 1998 <i>RR</i> <sub>66</sub>	15.8	X	231.33353	300.67518	338.25997	5.25683	0.1853098	0.29351651	2.2424066	20	1 6.8	19.4
118287 1998 <i>RY</i> <sub>66</sub>	16.1	X	247.11536	107.38159	281.83650	4.22818	0.1177820	0.30611476	2.1804520	20	6 21.9	18.6
118288 1998 <i>SK</i> <sub>4</sub>	16.5	X	67.88200	328.72163	141.10501	1.61178	0.2164887	0.28320152	2.2965311	20	—	—
118289 1998 <i>SN</i> <sub>10</sub>	16.0	X	45.00427	68.80191	312.49636	6.96954	0.1253905	0.28003174	2.3138287	20	—	—
118290 1998 <i>SZ</i> <sub>26</sub>	16.2	X	128.52988	160.53000	182.10512	4.97075	0.1917999	0.28668387	2.2778959	20	—	—
118291 1998 <i>SU</i> <sub>46</sub>	16.1	X	349.51536	89.65919	24.27470	2.93629	0.2462315	0.27967515	2.3157951	20	—	—
118292 1998 <i>SE</i> <sub>57</sub>	16.1	X	182.46503	263.46583	29.11271	3.90359	0.0971875	0.28861004	2.2677496	20	—	—
118293 1998 <i>SV</i> <sub>62</sub>	16.2	X	29.94335	182.22013	205.03648	5.70184	0.1268975	0.27807118	2.3246919	20	—	—
118294 1998 <i>SD</i> <sub>75</sub>	16.2	X	133.14270	129.18394	188.49194	6.27652	0.1470482	0.28444838	2.2898151	20	—	—
118295 1998 <i>SA</i> <sub>111</sub>	16.2	X	57.18146	357.86506	2.16100	6.97445	0.1428368	0.27895799	2.3197624	20	—	—
118296 1998 <i>SL</i> <sub>122</sub>	16.2	X	14.27139	152.55571	208.31058	4.50447	0.2456814	0.27374306	2.3491313	20	—	—
118297 1998 <i>SY</i> <sub>129</sub>	16.1	X	92.84277	343.70750	20.33946	7.80500	0.1403522	0.28349475	2.2949472	20	—	—
118298 1998 <i>SC</i> <sub>131</sub>	16.4	X	127.81291	183.11587	213.81254	4.33576	0.1825309	0.29095113	2.2555685	20	2 24.1	19.4
118299 1998 <i>SD</i> <sub>148</sub>	16.4	X	249.00507	169.96904	276.45534	3.61352	0.1639142	0.26790994	2.3879223	20	9 3.1	19.5
118300 1998 <i>SL</i> <sub>162</sub>	16.0	X	76.35972	51.85124	232.40406	5.40929	0.1372113	0.27240869	2.3567965	20	11 22.5	19.3
118301 1998 <i>TO</i> <sub>16</sub>	16.6	X	78.62590	174.10412	229.90288	5.38030	0.1356972	0.28536828	2.2848915	20	—	—
118302 1998 <i>TX</i> <sub>36</sub>	16.5	X	113.06691	200.42584	185.26485	6.80226	0.1640314	0.28738482	2.2741904	20	1 19.2	19.3
118303 1998 <i>UG</i>	13.8	X	103.41857	119.16527	304.63780	21.80788	0.2302126	0.28932161	2.2640298	20	2 28.2	16.9
118304 1998 <i>UQ</i> <sub>20</sub>	16.1	X	89.58040	265.07595	96.07695	0.99684	0.2586427	0.28202109	2.3029349	20	—	—
118305 1998 <i>UU</i> <sub>30</sub>	16.1	X	358.32516	286.86160	131.44563	6.65087	0.1088148	0.27525702	2.3405097	20	—	—
118306 1998 <i>US</i> <sub>39</sub>	16.5	X	74.92240	92.66659	242.60609	1.25180	0.2356139	0.27883594	2.3204393	20	—	—
118307 1998 <i>VM</i> <sub>1</sub>	15.6	X	107.29279	309.05995	30.76559	8.47592	0.2868318	0.28237059	2.3010342	20	—	—
118308 1998 <i>VT</i> <sub>7</sub>	16.2	X	41.49580	201.62437	241.70615	5.39501	0.1053242	0.28476657	2.2881090	20	—	—
118309 1998 <i>VR</i> <sub>9</sub>	16.2	X	184.04149	300.27045	17.61599	4.64953	0.1868093	0.29061565	2.2573040	20	1 14.2	19.7
118310 1998 <i>VP</i> <sub>32</sub>	15.2	X	31.79642	6.06340	110.59001	25.64354	0.2166077	0.28401207	2.2921596	20	1 1.2	16.8
118311 1998 <i>VU</i> <sub>36</sub>	16.2	X	150.99813	285.45647	82.65942	6.52601	0.1533447	0.29150411	2.2527150	20	2 12.7	19.3
118312 1998 <i>VM</i> <sub>39</sub>	16.5	X	68.71279	147.28580	194.15628	4.29637	0.1964325	0.27686156	2.3314581	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>
118321 1998 XS <sub>12</sub>	16.2	X	45.73096	299.79418	89.11696	7.64213	0.1179662	0.27695774	2.3309182	20	—	—
118322 1998 XK <sub>48</sub>	16.0	X	92.65256	14.25355	51.06362	5.08774	0.1871397	0.28516363	2.2859845	20	2 22.3	18.4
118323 1998 XU <sub>52</sub>	15.9	X	50.33382	206.59317	288.06372	4.50056	0.2031448	0.28519816	2.2858000	20	3 16.0	17.6
118324 1998 XB <sub>57</sub>	15.9	X	227.12997	344.22805	144.51060	5.17083	0.1353147	0.26354087	2.4093731	20	10 10.7	19.1
118325 1998 XP <sub>71</sub>	16.1	X	104.95104	104.55802	312.16879	8.69633	0.2149768	0.28696853	2.2763893	20	2 26.9	18.9
118326 1998 YR <sub>20</sub>	16.6	X	229.19813	41.41341	72.90313	2.40279	0.1416248	0.25984058	2.4321932	20	9 21.7	19.8
118327 1998 YZ <sub>20</sub>	16.5	X	54.39172	217.65666	131.17440	3.44363	0.1909132	0.27515889	2.3410661	20	—	—
118328 1998 YH <sub>21</sub>	16.0	X	224.81401	204.16766	289.07224	5.94927	0.0357422	0.26115580	2.4240204	20	10 23.0	19.2
118329 1998 YG <sub>24</sub>	16.0	X	311.94130	54.73293	41.18357	2.00216	0.1753132	0.27079162	2.3661697	20	—	—
118330 1999 AP	16.4	X	237.88198	155.94992	348.20345	5.00185	0.1681387	0.26711973	2.3878043	20	11 6.0	19.6
118331 1999 AM <sub>2</sub>	15.6	X	74.70913	52.78962	345.43368	5.67070	0.2129614	0.27889366	2.3201191	20	—	—
118332 1999 AK <sub>14</sub>	15.9	X	241.17288	5.01363	98.40556	2.30174	0.1440843	0.26012698	2.4304076	20	9 21.6	19.0
118333 1999 AB <sub>24</sub>	15.3	X	345.82215	128.65104	348.00218	24.14103	0.2884844	0.27429156	2.3459986	20	—	—
118334 1999 AY <sub>24</sub>	16.4	X	210.31132	11.33143	129.32564	1.65874	0.1068387	0.25756940	2.4464699	20	10 7.8	19.9
118335 1999 BF <sub>2</sub>	15.8	X	5.21167	239.66725	230.50485	26.55454	0.2290380	0.27784866	2.3259329	20	—	—
118336 1999 BB <sub>7</sub>	16.0	X	237.85289	238.51905	242.61771	3.64000	0.1626432	0.26223897	2.4173409	20	10 6.2	19.3
118337 1999 BQ <sub>9</sub>	14.7	X	247.91367	85.25054	63.67449	20.87157	0.3353206	0.26420493	2.4053343	20	11 6.3	18.0
118338 1999 CS	15.7	X	6.78894	96.94080	336.66034	11.98437	0.1297656	0.27131545	2.3631232	20	—	—
118339 1999 CK <sub>18</sub>	15.1	X	173.03593	123.04960	56.63306	6.81597	0.0966537	0.25925467	2.4358563	20	10 19.2	18.6
118340 1999 CL <sub>20</sub>	15.7	X	291.67192	85.36195	41.92421	5.69183	0.1479844	0.26844932	2.3799135	20	—	—
118341 1999 CK <sub>25</sub>	15.5	X	182.83234	80.86628	33.40737	3.65385	0.1086768	0.25231717	2.4803036	20	8 2.8	19.1
118342 1999 CW <sub>26</sub>	16.4	X	241.26872	78.62429	46.81174	2.77665	0.1598364	0.26131716	2.4230224	20	10 18.8	19.2
118343 1999 CT <sub>27</sub>	15.8	X	6.23834	174.73919	6.24403	13.15560	0.2099237	0.23631410	2.5910530	20	2 29.9	18.1
118344 1999 CS <sub>42</sub>	15.9	X	167.21580	295.76966	137.02477	5.52020	0.2225142	0.24624022	2.5209451	20	5 25.7	20.2
118345 1999 CZ <sub>45</sub>	15.9	X	340.17592	328.86504	121.75410	1.98327	0.1930932	0.27005105	2.3704937	20	—	—
118346 1999 CA <sub>48</sub>	15.7	X	317.13746	151.33973	319.87178	2.34735	0.1846435	0.26879377	2.3778799	20	—	—
118347 1999 CM <sub>60</sub>	15.8	X	210.85756	127.29624	321.16980	4.21556	0.0540739	0.25144479	2.4860372	20	8 3.7	19.1
118348 1999 CT <sub>86</sub>	16.1	X	297.15016	48.99178	33.98583	8.99550	0.2359036	0.26589960	2.3951034	20	11 14.1	17.7
118349 1999 CG <sub>88</sub>	15.7	X	308.88246	70.81083	55.00481	7.58875	0.1643599	0.27039699	2.3684714	20	—	—
118350 1999 CR <sub>89</sub>	15.8	X	316.92607	80.88489	37.91698	3.51927	0.1309326	0.26908230	2.3761798	20	—	—
118351 1999 CF <sub>98</sub>	15.5	X	319.58447	278.55175	309.81031	1.46327	0.1024328	0.23482229	2.6020152	20	2 23.1	18.6
118352 1999 CA <sub>101</sub>	15.5	X	337.84369	169.21430	359.05806	13.81248	0.1868793	0.23009667	2.6375204	20	—	—
118353 1999 CZ <sub>104</sub>	15.7	X	85.81248	245.66290	169.38031	6.85399	0.2398356	0.28170399	2.3046628	20	2 1.6	17.8
118354 1999 CY <sub>149</sub>	15.5	X	53.67686	3.48018	165.54982	10.89734	0.0489533	0.23872927	2.5735480	20	5 2.9	18.8
118355 1999 CA <sub>154</sub>	16.0	X	184.40607	330.95871	181.03417	6.51160	0.1680270	0.25512914	2.4620451	20	9 18.3	19.7
118356 1999 EM <sub>3</sub>	15.1	X	78.93837	141.46718	13.22475	15.20410	0.2461528	0.23999169	2.5645150	20	6 14.8	18.9
118357 1999 EM <sub>11</sub>	16.2	X	284.38977	112.24458	346.85117	5.57789	0.1552503	0.26347668	2.4097645	20	11 18.9	18.5
118358 1999 FH <sub>2</sub>	16.6	X	179.17243	334.95159	177.83935	2.05749	0.1304388	0.25371371	2.4711935	20	9 16.2	20.4
118359 1999 FZ <sub>3</sub>	17.2	X	224.44294	101.13800	36.29214	1.03695	0.1660108	0.25949889	2.4343277	20	10 12.3	20.5
118360 1999 FV <sub>4</sub>	16.0	X	224.20144	297.47743	22.19282	1.24182	0.0622608	0.23027079	2.6361906	20	3 1.1	19.9
118361 1999 FX <sub>4</sub>	16.4	X	207.85820	97.37304	20.22171	4.04310	0.1928264	0.25216982	2.4812697	20	8 27.6	20.3
118362 1999 FS <sub>17</sub>	14.8	X	227.49646	358.57570	21.99977	8.48992	0.1637805	0.23940240	2.5687217	20	5 11.4	18.8
118363 1999 FH <sub>46</sub>	15.9	X	350.24365	192.53199	20.42063	4.28130	0.0616701	0.23584016	2.5945231	20	3 25.2	18.9
118364 1999 FT <sub>47</sub>	15.9	X	266.51440	138.51626	309.72254	1.64802	0.1599267	0.25853549	2.4403715	20	10 1.6	18.6
118365 1999 FQ <sub>52</sub>	15.6	X	12.26070	171.85809	4.28717	5.00681	0.0763123	0.23451491	2.6042884	20	3 8.7	18.6
118366 1999 GK	15.5	X	94.36758	332.21387	184.37163	13.22648	0.0836343	0.24201438	2.5502060	20	6 15.2	19.2
118367 1999 GC <sub>4</sub>	15.6	X	55.84821	318.96360	198.43752	11.88641	0.2020762	0.23635488	2.5907550	20	5 11.1	18.5
118368 1999 GE <sub>11</sub>	16.1	X	200.66091	197.56416	123.96781	0.41800	0.0429486	0.22931720	2.6434938	20	2 5.9	19.8
118369 1999 GF <sub>11</sub>	16.7	X	220.09240	56.34128	75.81620	0.32082	0.1551286	0.25621799	2.4550648	20	10 1.3	20.1
118370 1999 GT <sub>13</sub>	16.2	X	120.35808	114.22562	2.95099	3.41061	0.0406176	0.24024878	2.5626852	20	5 18.7	19.7
118371 1999 GE <sub>33</sub>	15.7	X	268.54409	193.97687	46.77567	14.69436	0.2021845	0.22463239	2.6801214	20	—	—
118372 1999 GV <sub>33</sub>	15.5	X	126.29069	334.56924	182.88140	12.41230	0.1826744	0.24476211	2.5310842	20	7 30.7	19.7
118373 1999 GD <sub>41</sub>	16.1	X	60.27027	85.33147	121.45886	4.98105	0.1728682	0.24180576	2.5516726	20	7 22.0	19.1
118374 1999 GU <sub>55</sub>	16.7	X	135.69747	46.82735	26.36174	3.40584	0.1135929	0.23640218	2.5904094	20	4 18.3	20.5
118375 1999 HB <sub>4</sub>	16.4	X	82.01574	317.13391	46.14783	1.33462	0.0935276	0.21572510	2.7533976	20	—	—
118376 1999 HE <sub>4</sub>	16.4	X	85.91771	295.31641	178.76820	0.73624	0.0873498	0.23276252	2.6173433	20	4 7.0	19.7
118377 1999 HW <sub>7</sub>	16.0	X	84.69142	294.43723	212.49263	10.93850	0.1586578	0.23744351	2.5828302	20	5 31.7	19.5
118378 1999 HT <sub>11</sub>	7.6	X	328.09144	188.07838	87.97686	5.04552	0.1190693	0.00337541	44.0133953	20	5 17.3	23.6
118379 1999 HC <sub>12</sub>	7.6	X	67.57433	96.75518	57.01804	15.32214	0.2321217	0.00320771	45.5343622	20	5 28.3	24.0
118380 1999 JQ <sub>5</sub>	16.7	X	356.65630	148.76837	51.74383	22.08161	0.0519335	0.37049776	1.9199017	20	3 17.5	19.0
118381 1999 JU <sub>5</sub>	16.5	X	86.05392	92.64947	47.40545	22.36903	0.0733522	0.37642490	1.8996947	20	5 5.7	17.9
118382 1999 JH <sub>6</sub>	16.3	X	225.97305	142.19040	199.54780	22.34703	0.1245960	0.36943475	1.9235828	20	3 13.1	18.9
118383 1999 JE <sub>7</sub>	15.2	X	17.78169	96.07373	76.20837	13.60861	0.1052108	0.23085803	2.6317183	20	3 20.5	18.4
118384 1999 JA <sub>8</sub>	14.8	X	316.09668	93.50366	58.41394	23.42571	0.1946454	0.26891851	2.3771445	20	—	—
118385 1999 JP <sub>11</sub>	14.9	X	18.45627	121.82355	71.22838	29.18866	0.0963451	0.23300965	2.6154923	20	4 27.2	18.4
118386 1999 JF <sub>14</sub>	16.2	X	56.41241	77.08949	56.48004	23.82446	0.0409547	0.36886603	1.9255595	20	3 17.0	18.7
118387 1999 JC <sub>15</sub>	15.0	X	129.80995	2.87848	86.22666	29.27812	0.0632276	0.23312785	2.6146082	20	5 10.2	19.2
118388 1999 JR <sub>42</sub>	16.0	X	262.40997	285.76781	254.59550	1.47621	0.1538968	0.26324300	2.4111904	20	—	—
118389 1999 JV <sub>42</sub>	15.1	X	104.50696	215.93128	48.12841	17.52059	0.1854959	0.20408275	2.8571421	20	11 16.2	19.8
118390 1999 JS <sub>49</sub>	15.0	X	220.71920	186.58985	63.20375	10.63575	0.1916463	0.21732774	2.7398447	20	—	—
118391 1999 JV <sub>117</sub>	14.9	X	173.43369	111.90251	226.09742	13.79426	0.0828873	0.22252946	2.6969799	20	1 25.4	19.2
118392 1999 JO <sub>124</sub>	15.3	X	338.01865	311.11750	223.62643	10.14803	0.0411043	0.22529097	2.6748957	20	1 17.4	19.0
118393 1999 KB <sub>3</sub>	15.7	X	14.83613	29.76771	70.29659	5.35775	0.1041534	0.22023930	2.7156440	20	—	—
118394 1999 NV <sub>7</sub>	14.6	X	308.84947	179.98119	131.69524	20.77158	0.3352334	0.18314396	3.0709611	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>
118401 LINEAR	15.2	X	203.31742	35.14392	345.88377	0.23476	0.1929646	0.17273230	3.1931575	20	4 22.4	20.4
118402 1999 RK <sub>78</sub>	15.0	X	221.98955	229.73205	179.26891	5.10916	0.1420346	0.17800844	3.1297453	20	6 14.6	19.9
118403 1999 RY <sub>92</sub>	14.7	X	275.47291	252.15127	156.69409	5.63932	0.2723638	0.18128331	3.0919384	20	7 25.1	19.1
118404 1999 RC <sub>93</sub>	14.6	X	276.91072	221.31477	165.19700	9.64737	0.0935884	0.18142384	3.0903415	20	7 24.4	18.9
118405 1999 RM <sub>104</sub>	14.8	X	260.40104	135.32703	230.29863	8.59294	0.1400811	0.17896720	3.1185574	20	6 1.6	19.3
118406 1999 RM <sub>168</sub>	14.9	X	345.03828	117.88556	168.10950	6.83203	0.2415633	0.18354059	3.0665353	20	6 17.6	17.9
118407 1999 RA <sub>201</sub>	14.0	X	311.06407	127.44698	290.92595	13.17005	0.2430231	0.18894046	3.0078262	20	10 4.7	17.4
118408 1999 RV <sub>220</sub>	14.9	X	243.21763	171.82207	221.52704	8.26328	0.0585694	0.17965713	3.1105683	20	6 26.1	19.5
118409 1999 RB <sub>234</sub>	14.6	X	181.21864	256.48229	156.46429	22.30876	0.0929403	0.17247772	3.1962989	20	5 17.0	19.9
118410 1999 RD <sub>239</sub>	14.6	X	231.51613	314.23161	57.47453	7.77896	0.1811398	0.17406458	3.1768432	20	5 6.8	19.7
118411 1999 RV <sub>251</sub>	16.0	X	130.20269	111.67027	310.53495	17.34353	0.1069291	0.35783193	1.9649431	20	3 8.0	18.5
118412 1999 RG <sub>253</sub>	14.4	X	143.01822	148.10543	3.41829	14.45116	0.2325043	0.17917494	3.1161465	20	8 13.3	19.9
118413 1999 SP <sub>1</sub>	15.1	X	212.52927	235.49958	212.38369	13.30707	0.1893383	0.17791560	3.1308339	20	7 16.6	20.5
118414 1999 SU <sub>10</sub>	14.6	X	230.36075	350.08760	73.52152	10.69212	0.2141289	0.17535478	3.1612413	20	7 4.3	19.7
118415 1999 SV <sub>19</sub>	14.5	X	278.15601	191.43842	149.94887	11.52992	0.2239927	0.17833590	3.1259128	20	5 14.7	19.2
118416 1999 TD <sub>9</sub>	14.8	X	183.04029	257.14159	182.30658	7.96672	0.2131780	0.17149304	3.2085221	20	6 14.3	20.4
118417 1999 TW <sub>12</sub>	14.1	X	227.14721	61.37890	34.85441	17.20555	0.2399464	0.17976980	3.1092685	20	8 15.9	19.5
118418 Yangmei	14.7	X	277.02649	127.21209	208.89415	8.90923	0.1040898	0.17488257	3.1669293	20	5 20.9	19.3
118419 1999 TK <sub>53</sub>	14.9	X	353.96374	359.40548	236.95187	4.45457	0.0983640	0.17195605	3.2027601	20	5 3.1	18.8
118420 1999 TF <sub>59</sub>	15.2	X	230.23337	1.74091	3.85486	1.16260	0.1824879	0.17425026	3.1745860	20	4 27.4	20.4
118421 1999 TM <sub>65</sub>	15.7	X	114.92138	33.28429	178.51505	2.13499	0.0405701	0.18727502	3.0256323	20	9 11.8	20.0
118422 1999 TU <sub>71</sub>	15.2	X	289.97563	257.90932	36.83253	1.24821	0.1549881	0.17211885	3.2007402	20	4 7.5	19.7
118423 1999 TJ <sub>84</sub>	14.2	X	121.31646	302.24179	208.80760	25.37859	0.1255795	0.17390030	3.1788437	20	7 7.0	19.6
118424 1999 TL <sub>111</sub>	14.7	X	229.15911	148.27392	253.30141	4.19224	0.1893109	0.17597441	3.1538162	20	6 8.4	19.8
118425 1999 TG <sub>114</sub>	17.0	X	178.22579	173.27618	191.80228	2.99761	0.0684490	0.30951926	2.1644336	20	2 26.6	19.7
118426 1999 TX <sub>136</sub>	15.2	X	298.55936	128.93650	203.01953	4.41765	0.1710541	0.17945389	3.1129165	20	6 3.0	19.2
118427 1999 TM <sub>148</sub>	15.1	X	334.96291	262.17840	353.21316	5.96264	0.0729448	0.22051799	2.7133555	20	4 26.2	18.5
118428 1999 TG <sub>157</sub>	14.9	X	198.58605	269.24873	191.00193	18.07032	0.0547874	0.18070940	3.0984813	20	7 26.1	19.8
118429 1999 TE <sub>163</sub>	15.0	X	200.04647	308.45873	96.45547	3.40788	0.1355404	0.17170531	3.2058774	20	5 20.3	20.2
118430 1999 TZ <sub>171</sub>	15.2	X	209.52302	323.56548	79.97954	3.35917	0.1692356	0.17182585	3.2043779	20	5 25.6	20.4
118431 1999 TD <sub>187</sub>	13.8	X	60.50484	186.72037	246.35456	16.18637	0.1297935	0.15629659	3.4132627	20	1 20.7	18.5
118432 1999 TL <sub>214</sub>	14.8	X	228.11671	335.84984	43.97145	1.39444	0.0795265	0.17311410	3.1884608	20	5 20.8	19.7
118433 1999 TN <sub>235</sub>	14.9	X	277.56150	291.01521	64.80855	6.65032	0.1563902	0.17722890	3.1389160	20	6 7.0	19.3
118434 1999 TY <sub>250</sub>	14.7	X	241.65406	143.90083	248.39220	14.14324	0.1922639	0.17596531	3.1539249	20	6 8.5	19.7
118435 1999 TK <sub>273</sub>	14.0	X	271.79254	116.02187	322.25927	21.83097	0.1613250	0.18594410	3.0400527	20	9 6.6	18.4
118436 1999 TU <sub>275</sub>	14.9	X	135.76564	274.90987	202.11466	5.25602	0.0482546	0.17386236	3.1793061	20	6 8.8	19.6
118437 1999 TB <sub>285</sub>	14.9	X	228.66516	48.81414	49.94769	15.59734	0.1639267	0.18031761	3.1029679	20	8 27.6	20.0
118438 1999 UK <sub>17</sub>	15.1	X	23.43449	69.92162	183.99285	10.43277	0.0785889	0.18120353	3.0928459	20	7 10.7	19.2
118439 1999 UT <sub>20</sub>	15.9	X	26.41453	191.39345	90.22462	2.38334	0.1513355	0.18431354	3.0579559	20	9 2.4	19.5
118440 1999 UM <sub>37</sub>	15.7	X	11.63218	207.21959	59.31320	2.10402	0.1462484	0.18064345	3.0992354	20	7 15.9	19.2
118441 1999 UP <sub>39</sub>	14.5	X	21.95072	194.10000	27.10949	10.90597	0.1586220	0.17499905	3.1655238	20	5 31.0	18.2
118442 1999 UM <sub>54</sub>	15.6	X	126.02577	287.91863	191.25422	9.76211	0.0848931	0.17397639	3.1779167	20	6 4.4	20.4
118443 1999 UZ <sub>62</sub>	14.4	X	264.98320	27.58512	301.82563	11.59196	0.0882531	0.17177858	3.2049656	20	4 24.4	19.3
118444 1999 VK <sub>20</sub>	13.8	X	258.34816	83.57796	339.82023	15.31054	0.2230192	0.17980334	3.1088819	20	8 4.1	18.5
118445 1999 VH <sub>29</sub>	16.9	X	130.42462	178.62614	226.03593	3.07398	0.1450330	0.30440905	2.1885896	20	3 2.5	19.6
118446 1999 VK <sub>69</sub>	14.9	X	145.24567	285.10529	207.48280	3.08387	0.1151840	0.17264429	3.1942427	20	7 12.2	19.8
118447 1999 VM <sub>81</sub>	15.0	X	283.76732	143.58763	206.32448	9.85066	0.2191488	0.17859474	3.1228918	20	5 30.1	19.5
118448 1999 VH <sub>93</sub>	14.9	X	167.16140	74.60666	22.94471	4.77081	0.1380801	0.17275165	3.1929191	20	6 21.8	20.0
118449 1999 VY <sub>94</sub>	14.4	X	212.15354	209.24420	211.69663	17.11727	0.0793584	0.17493714	3.1662707	20	6 22.0	19.4
118450 1999 VV <sub>116</sub>	15.3	X	251.06870	293.13228	27.68954	6.86202	0.1717648	0.17176768	3.2051013	20	3 27.3	20.3
118451 1999 VX <sub>124</sub>	15.3	X	42.24817	247.14113	96.46749	2.32924	0.0532846	0.18859780	3.0114683	20	11 28.4	19.3
118452 1999 VJ <sub>127</sub>	14.4	X	281.49824	145.83783	197.76560	10.02397	0.2342083	0.17727334	3.1330914	20	5 17.8	19.0
118453 1999 VP <sub>159</sub>	15.1	X	281.29398	184.10261	272.57304	2.74298	0.1858538	0.18767296	3.0213538	20	10 16.9	19.0
118454 1999 VU <sub>159</sub>	16.4	X	143.28013	80.91069	9.02870	3.11041	0.0988004	0.31296776	2.1485047	20	5 15.2	19.1
118455 1999 VP <sub>191</sub>	15.0	X	51.27505	149.61836	65.30525	2.31051	0.1319021	0.17182845	3.2043455	20	7 8.9	19.2
118456 1999 VO <sub>205</sub>	14.2	X	255.25216	84.44612	278.99889	20.26808	0.1949024	0.17654210	3.1470516	20	5 15.5	19.3
118457 1999 WP <sub>6</sub>	14.8	X	208.67411	37.26582	89.84283	7.29646	0.1471901	0.17919857	3.1158726	20	9 8.2	19.8
118458 1999 WY <sub>11</sub>	17.0	X	336.37273	172.28581	100.35657	1.72385	0.1041496	0.31277512	2.1493868	20	5 20.9	18.9
118459 1999 XB <sub>6</sub>	17.1	X	258.72642	308.18329	77.87374	0.04190	0.1618445	0.31909054	2.1209321	20	6 26.7	19.6
118460 1999 XM <sub>6</sub>	14.0	X	223.04882	111.54627	52.24877	16.28444	0.3017133	0.18332323	3.0689588	20	10 22.7	19.2
118461 1999 XJ <sub>10</sub>	14.9	X	271.29879	176.14747	258.52181	12.84735	0.1309352	0.18339477	3.0681606	20	9 6.2	19.4
118462 1999 XQ <sub>24</sub>	14.3	X	256.26633	313.36231	59.95598	17.62784	0.2023873	0.17447577	3.1718499	20	5 28.8	19.2
118463 1999 XZ <sub>48</sub>	14.4	X	264.29136	329.28391	63.47411	15.10475	0.2235307	0.17586528	3.1551207	20	6 28.3	19.2
118464 1999 XE <sub>61</sub>	14.7	X	271.86588	315.08467	92.15096	6.33330	0.1648941	0.17766829	3.1337386	20	8 5.2	19.0
118465 1999 XR <sub>70</sub>	14.7	X	282.11030	188.68674	177.74697	2.05042	0.2058379	0.17485096	3.1673110	20	6 19.4	19.2
118466 1999 XK <sub>110</sub>	14.1	X	83.78489	106.44821	56.23140	17.58556	0.1077546	0.16794654	3.2535340	20	6 9.5	18.8
118467 1999 XO <sub>123</sub>	14.2	X	245.00112	161.05464	267.29168	14.62220	0.2005868	0.17691882	3.1425826	20	7 22.3	19.1
118468 1999 XT <sub>216</sub>	14.7	X	239.71183	4.42767	104.20224	6.66106	0.0894638	0.17766284	3.1338027	20	9 24.8	19.3
118469 1999 XW <sub>226</sub>	16.6	X	335.94457	187.69087	116.38168	2.48173	0.0098378	0.31260078	2.1501859	20	7 16.9	18.8
118470 2000 AG <sub>4</sub>	14.7	X	303.38998	60.52896	98.86494	24.67072	0.2325089	0.28340962	2.2954067	20	—	—
118471 2000 AF <sub>15</sub>	14.1	X	183.62698	90.33410	90.50938	17.04943	0.1938603	0.17922821	3.1155290	20	10 21.6	19.6
118472 2000 AJ <sub>31</sub>	16.6	X	249.64387	9.39010	13.00298	1.44043	0.1409657	0.31337758	2.1466312	20	6 11.9	19.1
118473 2000 AO <sub>34</sub>	15.7	X	222.04188	2.07665	26.73112	5.11424	0.1316636</					

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>
118481 2000 BK <sub>32</sub>	16.1	X	200.62266	55.70279	308.39718	8.04596	0.0758474	0.30284189	2.1961336	20	3 20.5	19.3
118482 2000 BT <sub>51</sub>	16.4	X	177.11055	233.54523	344.08799	3.44919	0.1638675	0.27525976	2.3404942	20	12 5.9	20.0
118483 2000 CJ <sub>16</sub>	16.2	X	343.48463	85.71993	153.50970	5.80736	0.0767597	0.30267743	2.1969290	20	4 15.5	18.3
118484 2000 CK <sub>20</sub>	16.7	X	332.11243	313.09139	144.47790	4.58009	0.0860060	0.28317077	2.2966973	20	—	—
118485 2000 CP <sub>27</sub>	15.8	X	60.64743	50.38562	148.47183	8.50070	0.2180678	0.25596894	2.4566571	20	7 19.1	18.9
118486 2000 CN <sub>30</sub>	16.3	X	71.64223	280.73892	181.71624	1.76706	0.0699941	0.29570928	2.2313075	20	2 18.6	18.6
118487 2000 CK <sub>31</sub>	16.1	X	170.41523	355.99404	280.89273	5.43030	0.0925959	0.28327609	2.2961280	20	—	—
118488 2000 CP <sub>37</sub>	15.7	X	188.38048	216.48711	305.73724	7.56817	0.0809550	0.27188734	2.3598083	20	10 10.6	19.1
118489 2000 CR <sub>40</sub>	15.8	X	203.54280	85.98194	45.89540	3.32429	0.1189129	0.26853127	2.3794293	20	9 19.2	19.0
118490 2000 CN <sub>54</sub>	15.9	X	227.75123	33.07423	186.70642	3.27816	0.2006837	0.27964589	2.3159566	20	—	—
118491 2000 CC <sub>88</sub>	15.7	X	210.86817	288.82095	344.66713	7.58845	0.1253204	0.28571282	2.2830543	20	—	—
118492 2000 CK <sub>98</sub>	16.2	X	118.14841	313.22739	333.55191	5.28489	0.1337977	0.27498844	2.3420334	20	—	—
118493 2000 DH <sub>3</sub>	16.3	X	278.72556	339.57664	144.32351	4.90412	0.1783045	0.27790898	2.3255963	20	12 20.4	18.2
118494 2000 DR <sub>8</sub>	15.9	X	166.47644	70.09228	181.43412	6.66284	0.0857362	0.27689863	2.3312500	20	—	—
118495 2000 DV <sub>9</sub>	16.6	X	85.57917	318.87663	149.93386	6.13826	0.0904336	0.29878582	2.2159641	20	3 26.5	18.9
118496 2000 DA <sub>34</sub>	16.6	X	53.92568	301.13259	307.75153	1.69408	0.1647940	0.26063816	2.4272288	20	9 10.5	19.5
118497 2000 DB <sub>34</sub>	16.4	X	126.90192	84.58871	167.51833	5.65748	0.1965023	0.27043400	2.3682553	20	12 2.9	20.4
118498 2000 DD <sub>42</sub>	16.4	X	209.90059	75.35365	149.03887	3.91952	0.1289219	0.27891576	2.3199966	20	—	—
118499 2000 DM <sub>59</sub>	16.8	X	82.90267	308.23655	317.99632	0.82250	0.1547429	0.26618150	2.3934120	20	11 6.5	20.4
118500 2000 DH <sub>64</sub>	16.3	X	82.59479	161.14895	314.60702	2.90474	0.0934730	0.29769956	2.2213513	20	3 29.2	18.7
118501 2000 DO <sub>67</sub>	16.1	X	199.97386	270.46019	353.21297	3.33944	0.1040282	0.28226668	2.3015989	20	—	—
118502 2000 DV <sub>70</sub>	16.2	X	289.34926	128.36885	343.17522	6.70781	0.0493268	0.27568184	2.3381046	20	12 30.7	18.9
118503 2000 DA <sub>71</sub>	16.7	X	202.47303	37.48527	206.37332	2.21982	0.1411208	0.27888391	2.3201732	20	—	—
118504 2000 DS <sub>72</sub>	16.7	X	309.73626	314.95846	159.44610	6.78533	0.0560167	0.27874019	2.3209707	20	—	—
118505 2000 DL <sub>76</sub>	15.8	X	163.09688	58.02157	323.25961	8.00176	0.1771291	0.29811227	2.2193007	20	3 22.6	19.1
118506 2000 DX <sub>80</sub>	16.4	X	197.80060	201.01828	27.88925	4.00134	0.1122077	0.27938558	2.3173950	20	—	—
118507 2000 DV <sub>81</sub>	16.0	X	198.01578	294.32441	83.88363	4.69015	0.1704530	0.30378051	2.1916075	20	4 11.9	19.3
118508 2000 DW <sub>81</sub>	16.2	X	185.15403	230.56336	13.89209	7.06491	0.0741968	0.28042536	2.3116630	20	—	—
118509 2000 DA <sub>85</sub>	16.0	X	333.76521	158.02822	3.86603	6.98037	0.0366330	0.28994255	2.2607962	20	—	—
118510 2000 DC <sub>90</sub>	16.3	X	140.56739	346.87097	313.93505	4.22368	0.1488911	0.28247951	2.3004427	20	—	—
118511 2000 DR <sub>93</sub>	16.9	X	132.02208	212.10322	356.42936	4.56740	0.1548581	0.26727654	2.3868703	20	10 11.8	20.6
118512 2000 DR <sub>94</sub>	16.5	X	300.12814	56.07824	137.71359	5.02129	0.0725206	0.28867618	2.2674031	20	—	—
118513 2000 DD <sub>97</sub>	15.6	X	223.90660	237.50472	343.94882	4.84786	0.2108710	0.28025688	2.3125894	20	—	—
118514 2000 DJ <sub>104</sub>	16.2	X	203.73368	165.77690	109.52327	5.92995	0.1301000	0.28405378	2.2919352	20	—	—
118515 2000 DF <sub>105</sub>	15.8	X	128.76430	193.61333	143.23253	6.70231	0.1592935	0.28457346	2.2891440	20	—	—
118516 2000 DP <sub>105</sub>	16.5	X	5.54078	42.93685	102.82869	4.85533	0.0513002	0.29043807	2.2582240	20	1 6.5	18.8
118517 2000 DM <sub>106</sub>	16.5	X	311.42467	105.02138	112.13376	6.44969	0.0670822	0.29162882	2.2520728	20	1 24.9	19.0
118518 2000 DO <sub>116</sub>	16.0	X	141.04484	98.42597	55.50509	2.89755	0.1481000	0.26148183	2.4220050	20	8 12.6	19.7
118519 2000 EY <sub>10</sub>	15.9	X	91.80603	314.04914	354.12834	13.78928	0.1639510	0.27511415	2.3413199	20	—	—
118520 2000 EY <sub>11</sub>	13.3	X	207.18873	100.23741	44.14284	9.28717	0.1435862	0.12548264	3.9513632	20	9 22.6	19.4
118521 2000 EO <sub>14</sub>	16.1	X	315.78400	74.14501	50.96620	1.50232	0.1698728	0.28159801	2.3052410	20	—	—
118522 2000 EA <sub>16</sub>	16.8	X	86.30409	301.71068	325.63963	0.58084	0.1746874	0.26606323	2.3941213	20	11 13.1	20.4
118523 2000 EW <sub>22</sub>	16.2	X	90.00404	286.39806	329.91064	5.58939	0.1803928	0.26745233	2.3858243	20	11 1.4	19.9
118524 2000 EE <sub>24</sub>	17.0	X	43.07285	275.17082	182.08377	4.24989	0.0996233	0.28858284	2.2678921	20	—	—
118525 2000 ED <sub>30</sub>	15.5	X	202.79298	348.73943	41.60701	6.28404	0.1485372	0.30388822	2.1910896	20	4 30.8	18.8
118526 2000 EP <sub>30</sub>	16.4	X	172.70307	159.16981	37.42140	6.37195	0.1999450	0.26991310	2.3713013	20	11 2.7	20.2
118527 2000 EY <sub>33</sub>	15.8	X	118.67020	285.43599	103.47335	9.40267	0.2277346	0.29151624	2.2526526	20	2 12.8	18.7
118528 2000 EY <sub>39</sub>	15.8	X	71.18865	206.55903	47.19860	1.91927	0.1529913	0.26104298	2.4247188	20	10 8.5	19.0
118529 2000 EQ <sub>41</sub>	15.8	X	144.10312	108.21027	150.96105	2.61215	0.1879842	0.27052025	2.3677519	20	12 25.0	19.7
118530 2000 EW <sub>48</sub>	16.5	X	77.04424	219.16042	347.31796	6.32238	0.1718706	0.25660067	2.4526234	20	8 15.7	19.8
118531 2000 EH <sub>60</sub>	16.4	X	47.57201	63.34541	350.41003	5.84297	0.0807545	0.28219580	2.3019843	20	—	—
118532 2000 EJ <sub>61</sub>	15.7	X	141.65637	275.83753	343.03957	5.97163	0.0945301	0.27233674	2.3572115	20	12 26.4	19.2
118533 2000 EB <sub>69</sub>	16.4	X	115.62249	240.04658	22.09971	5.56097	0.1342500	0.26813395	2.3817793	20	12 2.0	20.1
118534 2000 ES <sub>69</sub>	16.1	X	173.73917	212.19820	4.50057	1.99029	0.1594964	0.27049928	2.3678743	20	12 1.0	19.6
118535 2000 EE <sub>70</sub>	16.6	X	273.92602	15.12238	170.28244	2.20534	0.1072682	0.28110678	2.3079258	20	—	—
118536 2000 EJ <sub>79</sub>	15.8	X	295.68380	201.38325	11.07819	6.62241	0.0909160	0.28935959	2.2638316	20	—	—
118537 2000 EQ <sub>80</sub>	16.4	X	216.24586	188.96494	35.08711	4.03051	0.1226090	0.27938757	2.3173840	20	—	—
118538 2000 ER <sub>86</sub>	15.9	X	326.35925	273.29689	287.00000	3.25328	0.0576835	0.29127709	2.2538854	20	1 23.4	18.3
118539 2000 EE <sub>87</sub>	16.0	X	328.09677	287.69865	212.04909	3.89064	0.0862376	0.28396665	2.2924040	20	—	—
118540 2000 ES <sub>90</sub>	15.7	X	197.65632	29.40447	209.22458	6.67508	0.2176886	0.27616612	2.3353705	20	—	—
118541 2000 EC <sub>96</sub>	16.5	X	11.08289	58.16758	356.03195	5.90302	0.0720955	0.27919679	2.3184395	20	—	—
118542 2000 EL <sub>113</sub>	16.2	X	58.87842	122.98554	181.64544	6.49282	0.1215816	0.26773123	2.3841671	20	11 27.4	19.5
118543 2000 EX <sub>120</sub>	16.4	X	255.15307	104.87362	108.44410	4.42309	0.0867621	0.28470373	2.2884457	20	—	—
118544 2000 EG <sub>121</sub>	15.8	X	231.89875	200.94046	40.09549	5.91880	0.1203180	0.28499457	2.2868885	20	—	—
118545 2000 EC <sub>124</sub>	17.1	X	56.17480	281.83144	1.15790	3.40136	0.1911577	0.26365829	2.4086577	20	11 2.2	20.4
118546 2000 ET <sub>132</sub>	16.7	X	18.15146	89.34854	26.90725	0.72396	0.1513005	0.28892188	2.2661175	20	—	—
118547 2000 EJ <sub>133</sub>	16.0	X	235.03950	358.21656	181.68072	5.66140	0.0629018	0.27598606	2.3363861	20	—	—
118548 2000 EV <sub>139</sub>	16.2	X	341.44489	57.02865	60.58574	7.86427	0.0534009	0.28188848	2.3036571	20	—	—
118549 2000 EG <sub>155</sub>	16.3	X	243.22775	238.35829	338.13984	5.86192	0.0819121	0.28070115	2.3101486	20	—	—
118550 2000 EC <sub>156</sub>	16.1	X	110.02975	278.66981	312.35237	5.74749	0.0732017	0.26477155	2.4019014	20	10 11.7	19.5
118551 2000 EX <sub>157</sub>	15.6	X	231.55310	258.14191	312.48439	4.50784	0.1101270	0.27832738	2.3232651	20	—	—
118552 2000 EZ <sub>164</sub>	16.5	X	81.58246	141.38805	149.82072	2.48196	0.2009194	0.26794132	2.3829207	20	12 10.9	20.2
118553 2000 EB <sub>171</sub>	16.3	X	106.84040	191.95982	61.25146	8.29705	0.0640476	0.26819519	2.3814167	20	11 10.1	19.4
118554 2000 EM <sub>175</sub>	16.3	X	78.99121	337.14200	115.45623	5.15364	0.0982191	0.29416707	2.2390993	20	2 22.4	18.5
118555 2000 FH <sub>4</sub>	16.4	X	153.									



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>
118561 2000 <i>FY</i> <sub>44</sub>	16.3	X	352.78368	356.21090	135.02232	4.82505	0.1127400	0.28607218	2.2811419	20	—	—
118562 2000 <i>FC</i> <sub>47</sub>	15.0	X	120.23182	200.43961	74.04172	9.81972	0.2312491	0.26824357	2.3811303	20	12 23.1	19.1
118563 2000 <i>FJ</i> <sub>47</sub>	16.2	X	36.04857	29.39154	98.24273	6.79679	0.0979675	0.29055806	2.2576022	20	1 29.8	18.3
118564 2000 <i>FO</i> <sub>47</sub>	16.7	X	147.03710	218.78205	53.02316	2.91485	0.2082169	0.27170150	2.3608842	20	—	—
118565 2000 <i>FZ</i> <sub>54</sub>	17.0	X	358.06463	270.91283	22.42306	1.85117	0.1340062	0.25496505	2.4631013	20	8 6.1	19.3
118566 2000 <i>FL</i> <sub>58</sub>	16.8	X	16.06806	31.56169	79.96186	2.91039	0.1721691	0.28740723	2.2740722	20	—	—
118567 2000 <i>FQ</i> <sub>59</sub>	16.0	X	314.64584	32.45114	93.49766	6.53780	0.0536502	0.27925889	2.3180958	20	—	—
118568 2000 <i>GD</i>	16.4	X	93.34084	87.80692	155.62689	0.91706	0.1720886	0.26209442	2.4182296	20	10 20.6	19.9
118569 2000 <i>GF</i> <sub>1</sub>	15.4	X	279.07566	126.04348	56.33503	23.82896	0.2931188	0.28071070	2.3100962	20	—	—
118570 2000 <i>GP</i> <sub>1</sub>	16.1	X	350.98704	143.96726	28.69281	7.27180	0.1602434	0.28931763	2.2640506	20	1 7.8	18.4
118571 2000 <i>GB</i> <sub>5</sub>	15.7	X	190.21889	197.74192	25.22599	6.27733	0.1395504	0.27505465	2.3416576	20	12 29.6	19.0
118572 2000 <i>GA</i> <sub>12</sub>	16.6	X	65.74482	201.24030	47.78179	2.16413	0.1526159	0.25979340	2.4324876	20	9 25.7	19.8
118573 2000 <i>GY</i> <sub>12</sub>	16.4	X	69.33179	229.36349	27.69974	3.48819	0.1566525	0.26101489	2.4248927	20	10 10.9	19.6
118574 2000 <i>GL</i> <sub>18</sub>	15.6	X	84.47495	115.43838	195.93846	11.63868	0.1414181	0.27016185	2.3698455	20	—	—
118575 2000 <i>GL</i> <sub>23</sub>	16.2	X	230.19143	132.41495	21.66244	6.47723	0.0729548	0.27105116	2.3646591	20	11 25.3	19.2
118576 2000 <i>GK</i> <sub>27</sub>	16.4	X	71.48003	218.46702	43.00038	2.76917	0.1367686	0.26126512	2.4233442	20	10 16.9	19.8
118577 2000 <i>GM</i> <sub>31</sub>	16.3	X	327.73195	326.01606	187.61647	5.27808	0.0906327	0.28403586	2.2920316	20	—	—
118578 2000 <i>GL</i> <sub>40</sub>	15.7	X	105.81929	43.97990	196.16629	6.32399	0.1886871	0.26274858	2.4142142	20	10 29.9	19.4
118579 2000 <i>GX</i> <sub>44</sub>	15.8	X	61.71559	93.47880	165.49430	2.40424	0.1830195	0.25874840	2.4390326	20	10 7.9	19.2
118580 2000 <i>GA</i> <sub>46</sub>	16.3	X	338.90071	72.91552	42.43043	2.40031	0.1498535	0.28133758	2.3066634	20	—	—
118581 2000 <i>GO</i> <sub>50</sub>	15.9	X	273.28267	115.68902	37.57366	4.08341	0.1606530	0.27695754	2.3309194	20	—	—
118582 2000 <i>GG</i> <sub>52</sub>	16.1	X	60.60455	274.95778	25.36601	2.74705	0.1884169	0.26320294	2.4114350	20	11 29.3	19.5
118583 2000 <i>GU</i> <sub>54</sub>	16.4	X	177.95831	214.24159	18.11133	6.09836	0.1292349	0.27168517	2.3609789	20	12 28.5	19.8
118584 2000 <i>GE</i> <sub>58</sub>	16.0	X	11.37352	51.31208	222.65705	2.11104	0.1686030	0.25287781	2.4766363	20	8 4.6	18.2
118585 2000 <i>GR</i> <sub>60</sub>	15.5	X	305.39052	227.12253	27.08719	12.32732	0.1987929	0.24159272	2.5531725	20	2 28.4	19.0
118586 2000 <i>GK</i> <sub>65</sub>	16.5	X	257.02366	115.50007	56.44907	3.16103	0.1487738	0.27609017	2.3357987	20	—	—
118587 2000 <i>GM</i> <sub>68</sub>	16.5	X	50.67567	220.22991	51.54373	1.98930	0.1573795	0.25807960	2.4432445	20	10 7.5	19.7
118588 2000 <i>GL</i> <sub>69</sub>	16.7	X	253.18779	99.47414	29.12806	2.15384	0.1656576	0.27081389	2.3660401	20	11 9.5	19.2
118589 2000 <i>GA</i> <sub>71</sub>	15.9	X	141.67889	160.63398	36.16578	2.88787	0.1638106	0.26282545	2.4137434	20	10 7.2	19.8
118590 2000 <i>GR</i> <sub>72</sub>	16.7	X	218.47459	65.84454	123.51723	1.21450	0.1556602	0.27228107	2.3575328	20	12 16.2	19.8
118591 2000 <i>GD</i> <sub>76</sub>	15.7	X	200.41333	175.66824	27.09041	5.00915	0.0570001	0.27073466	2.3665016	20	12 24.9	18.8
118592 2000 <i>GF</i> <sub>76</sub>	16.1	X	269.45595	223.38601	31.75403	5.94772	0.2246900	0.23599394	2.5933959	20	1 16.0	20.3
118593 2000 <i>GQ</i> <sub>76</sub>	15.7	X	248.77283	259.25403	29.45951	12.73947	0.2896520	0.23545109	2.5973805	20	2 7.5	20.5
118594 2000 <i>GZ</i> <sub>89</sub>	16.1	X	156.77347	131.04235	109.64218	7.59182	0.0724692	0.27063049	2.3671089	20	12 20.4	19.3
118595 2000 <i>GZ</i> <sub>91</sub>	15.6	X	283.47790	108.45297	184.11274	17.02932	0.3215462	0.24061427	2.5600894	20	2 29.0	19.9
118596 2000 <i>GD</i> <sub>93</sub>	16.2	X	213.45679	98.51754	118.18095	4.13523	0.1525998	0.27612812	2.3355847	20	—	—
118597 2000 <i>GE</i> <sub>97</sub>	16.2	X	268.37020	153.42113	45.95074	2.37648	0.0551274	0.28285318	2.2984162	20	—	—
118598 2000 <i>GK</i> <sub>101</sub>	16.6	X	16.79163	139.90787	342.34166	5.13986	0.2380837	0.28959160	2.2626224	20	—	—
118599 2000 <i>GZ</i> <sub>103</sub>	15.8	X	155.11543	169.70057	56.66008	3.16087	0.1377628	0.26817311	2.3815474	20	11 26.2	19.5
118600 2000 <i>GD</i> <sub>106</sub>	16.0	X	230.79051	158.89710	12.44106	7.08671	0.1368328	0.27263930	2.3554673	20	12 10.3	18.9
118601 2000 <i>GJ</i> <sub>107</sub>	15.1	X	126.19517	196.14246	67.92720	3.86529	0.1631983	0.26731062	2.3866674	20	12 15.2	18.9
118602 2000 <i>GQ</i> <sub>111</sub>	16.6	X	107.39230	249.53833	321.42018	1.56720	0.1397930	0.26080441	2.4261972	20	9 19.5	20.0
118603 2000 <i>GU</i> <sub>111</sub>	16.6	X	5.53646	291.68314	237.52053	5.50834	0.0454028	0.29113841	2.2546011	20	2 6.8	19.2
118604 2000 <i>GL</i> <sub>114</sub>	16.2	X	2.83988	231.42553	235.33204	3.33373	0.0778509	0.28351775	2.2948231	20	—	—
118605 2000 <i>GR</i> <sub>116</sub>	16.5	X	51.97592	65.71090	201.30998	3.68832	0.1630401	0.26066824	2.4270421	20	10 2.9	19.5
118606 2000 <i>GG</i> <sub>120</sub>	16.8	X	123.37633	200.51876	1.04088	0.28009	0.0143630	0.26244231	2.4160921	20	9 17.0	19.9
118607 2000 <i>GG</i> <sub>130</sub>	16.7	X	354.36139	144.73126	193.87658	1.96490	0.2092202	0.26147186	2.4220666	20	10 18.9	18.4
118608 2000 <i>GQ</i> <sub>134</sub>	15.6	X	167.29553	155.20223	121.82759	4.71115	0.1234832	0.27607679	2.3358742	20	—	—
118609 2000 <i>GZ</i> <sub>137</sub>	16.2	X	110.31134	170.15340	65.71493	3.97232	0.1286371	0.26326657	2.4110464	20	10 25.8	19.8
118610 2000 <i>GC</i> <sub>143</sub>	16.1	X	134.08219	67.66337	155.35805	7.47113	0.0759392	0.26470577	2.4022993	20	11 3.4	19.6
118611 2000 <i>GG</i> <sub>143</sub>	15.6	X	219.97682	148.15491	98.15629	7.13673	0.0728761	0.27895901	2.3197568	20	—	—
118612 2000 <i>GU</i> <sub>143</sub>	15.7	X	113.06456	144.63113	137.42443	7.23340	0.1219311	0.26876438	2.3780532	20	12 25.1	19.4
118613 2000 <i>GE</i> <sub>150</sub>	16.9	X	12.02641	166.32836	192.13087	3.13104	0.1310659	0.26820367	2.3813665	20	12 8.3	19.5
118614 2000 <i>GZ</i> <sub>150</sub>	16.3	X	349.65893	198.64001	187.08038	1.88923	0.1863340	0.27005071	2.3704957	20	12 19.4	18.4
118615 2000 <i>GT</i> <sub>159</sub>	16.2	X	271.58182	181.99910	336.12633	6.88179	0.0595332	0.27671145	2.3323012	20	—	—
118616 2000 <i>GV</i> <sub>159</sub>	16.0	X	231.97518	209.57082	267.90709	4.49423	0.1767732	0.26801010	2.3825130	20	9 21.6	19.3
118617 2000 <i>GP</i> <sub>162</sub>	16.2	X	200.87811	325.70084	268.91147	1.32939	0.1860329	0.27608309	2.3358387	20	—	—
118618 2000 <i>HB</i> <sub>8</sub>	16.1	X	254.21799	288.42225	206.40443	6.38729	0.0683216	0.26986706	2.3715710	20	12 5.6	18.9
118619 2000 <i>HR</i> <sub>9</sub>	16.3	X	118.97106	21.61629	197.66937	4.81754	0.1389452	0.26138324	2.4226140	20	10 12.7	19.9
118620 2000 <i>HR</i> <sub>13</sub>	16.0	X	77.23589	48.13776	227.53124	1.80844	0.1949154	0.26053932	2.4278427	20	11 15.9	19.7
118621 2000 <i>HK</i> <sub>16</sub>	16.6	X	45.55849	47.11383	196.63196	2.24295	0.1511924	0.25674361	2.4517129	20	8 18.9	19.5
118622 2000 <i>HZ</i> <sub>19</sub>	16.1	X	263.29969	239.94916	73.55679	15.38030	0.1515476	0.24145768	2.5541243	20	4 4.4	20.1
118623 2000 <i>HJ</i> <sub>22</sub>	16.1	X	136.50559	208.93068	33.87384	1.70859	0.1309364	0.26685239	2.3893989	20	11 28.5	19.6
118624 2000 <i>HR</i> <sub>24</sub>	13.0	X	296.24584	353.92634	223.32202	15.53834	0.1755627	0.08974758	4.9406893	20	1 18.7	19.8
118625 2000 <i>HF</i> <sub>28</sub>	15.1	X	357.63568	138.73049	44.47451	25.65631	0.2188797	0.28955563	2.2628097	20	2 7.9	17.8
118626 2000 <i>HJ</i> <sub>29</sub>	15.5	X	196.21110	243.27189	317.80440	5.00735	0.1055189	0.27177815	2.3604403	20	12 10.9	18.7
118627 2000 <i>HE</i> <sub>36</sub>	15.5	X	184.08054	33.10167	165.54454	12.32004	0.0591340	0.26798482	2.3826628	20	11 30.5	18.9
118628 2000 <i>HW</i> <sub>40</sub>	15.6	X	173.79858	318.35940	288.97633	4.20571	0.1071302	0.27361440	2.3498677	20	—	—
118629 2000 <i>HC</i> <sub>42</sub>	15.9	X	14.97806	323.75450	19.26180	1.67979	0.1931869	0.26402227	2.4064435	20	11 29.7	18.5
118630 2000 <i>HA</i> <sub>47</sub>	16.1	X	114.18240	346.92696	211.09177	1.53048	0.1396944	0.25857208	2.4401413	20	9 9.5	19.6
118631 2000 <i>HB</i> <sub>48</sub>	15.9	X	28.16531	278.13172	55.74109	3.31053	0.1577734	0.26206374	2.4184183	20	11 30.0	18.7
118632 2000 <i>HR</i> <sub>48</sub>	16.1	X	2.77610	58.69637								

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>
118641 2000 HU <sub>95</sub>	16.3	X	185.030875	231.090757	343.97492	2.14111	0.1535983	0.27053053	2.3676919	20	12 12.3	19.7
118642 2000 HG <sub>102</sub>	16.4	X	4.17754	114.97592	223.78791	2.19886	0.1828807	0.25970488	2.4330403	20	11 2.9	18.7
118643 2000 JR <sub>1</sub>	15.9	X	38.46116	296.54034	359.25035	6.28021	0.1077566	0.25980779	2.4323978	20	10 13.9	18.9
118644 2000 JR <sub>5</sub>	15.6	X	208.03934	64.72705	170.10316	12.01633	0.1472814	0.22600698	2.6692432	20	—	—
118645 2000 JC <sub>14</sub>	16.3	X	284.95687	117.48450	37.05057	2.91565	0.1701833	0.27679374	2.3318389	20	—	—
118646 2000 JL <sub>26</sub>	15.8	X	298.99280	247.10807	297.26677	4.82855	0.2104091	0.28271889	2.2991440	20	—	—
118647 2000 JX <sub>29</sub>	15.6	X	288.38474	163.03457	10.22188	5.06398	0.1738244	0.27945601	2.3170056	20	—	—
118648 2000 JF <sub>31</sub>	15.7	X	111.82043	254.17201	11.04688	2.53577	0.1905414	0.26419874	2.4053718	20	12 3.8	19.6
118649 2000 JM <sub>32</sub>	15.6	X	249.60725	265.57919	49.31082	13.63444	0.2207837	0.23858929	2.5745545	20	3 15.9	20.0
118650 2000 JQ <sub>33</sub>	15.8	X	115.07862	188.68679	22.60753	2.79163	0.0605548	0.25858335	2.4400703	20	9 23.3	19.1
118651 2000 JV <sub>33</sub>	15.7	X	80.23700	347.33754	264.83344	5.56940	0.1079227	0.25933209	2.4353714	20	10 7.7	19.2
118652 2000 JM <sub>36</sub>	15.7	X	165.51377	155.52095	52.37440	8.00101	0.0676246	0.26490633	2.4010866	20	11 16.8	19.1
118653 2000 JU <sub>36</sub>	15.8	X	196.76477	161.59374	37.52684	2.74806	0.1519461	0.26879765	2.3778570	20	12 2.9	19.2
118654 2000 JE <sub>38</sub>	16.9	X	199.36654	310.27157	228.85645	0.54798	0.1268180	0.26736792	2.3863264	20	11 13.0	20.2
118655 2000 JB <sub>40</sub>	15.1	X	58.63673	9.88336	247.12352	7.68476	0.1820179	0.25543143	2.4601022	20	9 26.7	18.6
118656 2000 JR <sub>40</sub>	15.7	X	354.43745	247.48891	75.76789	7.26145	0.1347072	0.25670364	2.4519674	20	9 19.4	18.2
118657 2000 JA <sub>57</sub>	15.4	X	302.46810	68.48886	228.35966	11.05695	0.2684208	0.24247164	2.5469988	20	4 1.2	18.7
118658 2000 JO <sub>58</sub>	15.5	X	263.58881	117.63299	154.03572	5.63129	0.1991021	0.23502411	2.6005254	20	1 30.8	19.7
118659 2000 JH <sub>77</sub>	16.1	X	155.61044	145.64576	33.32292	1.72579	0.1254307	0.26101065	2.4249190	20	9 27.6	19.9
118660 2000 JH <sub>77</sub>	16.5	X	225.74068	168.13179	47.39401	3.35659	0.1196897	0.27457178	2.3444022	20	—	—
118661 2000 KL <sub>6</sub>	16.0	X	199.03941	221.02902	88.29401	6.63940	0.2180262	0.23015748	2.6370558	20	1 23.9	20.5
118662 2000 KD <sub>11</sub>	16.3	X	280.81687	82.66945	240.24623	12.54387	0.1765601	0.24460864	2.5321428	20	4 23.0	19.8
118663 2000 KK <sub>11</sub>	16.7	X	258.85474	296.13745	248.92257	0.40858	0.0746658	0.27528326	2.3403610	20	—	—
118664 2000 KP <sub>15</sub>	15.6	X	229.00153	255.50131	76.62946	6.1942	0.1872081	0.23819781	2.5773745	20	3 17.5	19.9
118665 2000 KE <sub>34</sub>	16.0	X	201.52211	352.84562	203.60262	7.24954	0.0618760	0.26979398	2.3719992	20	12 17.0	19.1
118666 2000 KZ <sub>34</sub>	16.1	X	242.96649	182.44945	148.71469	3.66085	0.2276057	0.23874253	2.5734527	20	3 23.4	20.2
118667 2000 KA <sub>40</sub>	15.7	X	335.59235	320.59874	50.86048	5.35285	0.2075340	0.25989483	2.4318547	20	10 27.7	17.5
118668 2000 KS <sub>43</sub>	14.8	X	249.81806	118.19932	217.04157	7.32718	0.1377826	0.23630118	2.5911474	20	4 9.8	18.8
118669 2000 KO <sub>54</sub>	15.7	X	243.99804	178.96056	110.57485	15.39814	0.1687622	0.23516167	2.5995112	20	2 7.9	19.9
118670 2000 KP <sub>55</sub>	15.4	X	144.84528	96.29096	80.26129	14.81420	0.0961932	0.25778229	2.4451228	20	9 20.9	19.3
118671 2000 KL <sub>63</sub>	16.1	X	159.62528	339.43804	207.85989	10.90094	0.2565540	0.26402261	2.4064415	20	10 8.3	20.2
118672 2000 KS <sub>63</sub>	15.9	X	128.54306	95.44284	118.71460	8.21903	0.1325022	0.26171069	2.4205928	20	10 19.3	19.7
118673 2000 KU <sub>68</sub>	16.6	X	332.49253	237.68864	157.02936	7.00513	0.0843375	0.26322962	2.4112720	20	11 19.7	19.2
118674 2000 KD <sub>78</sub>	15.8	X	180.59986	81.19344	221.68041	12.15547	0.2593495	0.22603300	2.6690383	20	1 2.1	20.6
118675 2000 KW <sub>81</sub>	15.5	X	98.99365	310.38123	304.49525	5.68268	0.0923856	0.26255359	2.4154093	20	10 31.9	19.0
118676 2000 LS <sub>17</sub>	15.2	X	233.36654	3.52800	264.66305	12.18416	0.2614718	0.22787233	2.6546564	20	—	—
118677 2000 LG <sub>19</sub>	16.0	X	193.37147	53.40856	223.66309	7.08920	0.2990896	0.22351403	2.6890540	20	—	—
118678 2000 LH <sub>22</sub>	15.4	X	243.72340	130.93710	178.27407	7.31857	0.1972119	0.23695127	2.5864059	20	2 26.6	19.6
118679 2000 LE <sub>35</sub>	15.5	X	217.04500	218.36500	88.80912	13.93075	0.1787020	0.23411543	2.6072501	20	2 6.3	20.0
118680 2000 LQ <sub>35</sub>	15.6	X	259.01436	144.85826	155.98571	7.95975	0.1973895	0.23331965	2.6131751	20	3 3.0	19.5
118681 2000 NJ <sub>1</sub>	16.0	X	285.26299	35.85566	240.61109	3.47188	0.1513283	0.23531489	2.5983826	20	3 3.1	19.6
118682 2000 NJ <sub>3</sub>	16.0	X	110.05784	215.39511	145.08301	6.65388	0.2112484	0.21850805	2.7299692	20	1 3.4	19.7
118683 2000 NE <sub>11</sub>	15.5	X	253.86279	328.62165	303.92511	13.95265	0.1466816	0.23019043	2.6368041	20	1 27.8	19.6
118684 2000 NX <sub>14</sub>	15.0	X	189.74811	209.96969	130.16331	16.19085	0.1332877	0.22717183	2.6601108	20	2 20.9	19.3
118685 2000 NV <sub>15</sub>	15.2	X	95.47501	268.65165	113.28655	9.91810	0.1513749	0.21839600	2.7309029	20	1 2.7	18.5
118686 2000 NA <sub>20</sub>	15.7	X	221.84316	135.19707	137.04234	11.82910	0.1429553	0.22452888	2.6809450	20	—	—
118687 2000 NF <sub>22</sub>	16.1	X	101.92747	218.43833	97.61715	2.32986	0.1899517	0.26410425	2.4059455	20	—	—
118688 2000 NJ <sub>22</sub>	14.7	X	264.30892	359.13578	302.86768	12.56886	0.2978423	0.23495563	2.6010307	20	2 24.8	19.2
118689 2000 NG <sub>23</sub>	15.1	X	86.39481	219.67682	133.55858	15.10136	0.2503197	0.21315541	2.7754824	20	—	—
118690 2000 OO <sub>20</sub>	14.6	X	99.72471	140.56387	253.17584	11.80861	0.2212024	0.21786430	2.7353443	20	1 29.7	18.5
118691 2000 OJ <sub>23</sub>	15.1	X	332.01516	182.70822	106.82096	8.21057	0.1812027	0.24404328	2.5360520	20	6 1.2	17.5
118692 2000 OS <sub>28</sub>	15.0	X	265.58905	55.14536	273.77167	13.64843	0.1245950	0.23808667	2.5781766	20	4 16.5	19.0
118693 2000 OL <sub>31</sub>	15.5	X	164.07715	200.49681	149.21083	15.76846	0.1392160	0.22538717	2.6741345	20	2 6.3	19.7
118694 2000 OG <sub>42</sub>	15.5	X	178.70955	124.08119	205.72442	5.88657	0.2144497	0.22395538	2.6855200	20	1 29.9	20.2
118695 2000 OW <sub>44</sub>	14.8	X	105.44123	55.18000	289.24053	9.62902	0.2564137	0.21364620	2.7712302	20	—	—
118696 2000 OA <sub>46</sub>	14.3	X	140.01237	94.11198	325.03514	13.08372	0.1938814	0.22599061	2.6693722	20	4 6.3	18.8
118697 2000 OL <sub>47</sub>	15.1	X	158.64143	147.52510	154.86160	11.43804	0.1494434	0.21610765	2.7501473	20	—	—
118698 2000 OY <sub>51</sub>	8.2	X	333.56873	81.01478	284.91900	11.18252	0.2370730	0.00337509	44.0161578	20	8 13.4	23.7
118699 2000 OK <sub>53</sub>	14.6	X	104.18086	73.43953	279.63283	7.83698	0.1761770	0.21398848	2.7682743	20	—	—
118700 2000 OQ <sub>53</sub>	14.6	X	4.07745	29.72739	282.27266	14.23362	0.1010391	0.24559212	2.5253782	20	9 1.2	17.7
118701 2000 OW <sub>59</sub>	15.8	X	160.50050	110.03793	211.29820	3.76843	0.1041138	0.22126237	2.7072665	20	—	—
118702 2000 OM <sub>67</sub>	6.8	X	11.33996	348.83619	326.99630	23.31048	0.6069249	0.00099083	99.6482380	20	9 22.2	23.5
118703 2000 PJ <sub>8</sub>	14.6	X	195.99424	93.63834	292.00026	28.44726	0.2549052	0.23146104	2.6271454	20	4 4.8	19.9
118704 2000 PK <sub>10</sub>	15.1	X	185.53487	291.53975	50.37726	8.44734	0.1827628	0.22535455	2.6743926	20	2 23.1	19.6
118705 2000 PJ <sub>16</sub>	15.4	X	137.87758	229.29370	127.79782	5.52480	0.1354130	0.22273509	2.6953197	20	1 20.2	19.4
118706 2000 PL <sub>17</sub>	15.8	X	166.54147	317.38674	317.02357	7.99164	0.1720841	0.21799468	2.7342535	20	—	—
118707 2000 PC <sub>20</sub>	15.5	X	96.20457	30.21318	3.56025	7.98836	0.3831659	0.21712532	2.7415472	20	2 23.8	19.4
118708 2000 PO <sub>21</sub>	15.5	X	266.70631	318.00017	319.80414	3.98760	0.1743573	0.23220364	2.6215413	20	2 13.2	19.4
118709 2000 QS <sub>5</sub>	15.5	X	108.98319	232.30799	147.30992	6.11741	0.0994698	0.21916384	2.7245207	20	1 9.5	19.2
118710 2000 QN <sub>12</sub>	15.5	X	269.79975	308.66774	161.37618	2.25864	0.1484820	0.25586946	2.4572938	20	11 10.0	18.0
118711 2000 QT <sub>15</sub>	15.0	X	149.76682	258.49861	145.42039	22.34378	0.0694318	0.22980801	2.6397286	20	3 28.9	19.0
118712 2000 QU <sub>16</sub>	15.6	X	72.37460	16.63077	326.42986	7.10662	0.1376074	0.21065250	2.7974241	20	—	—
118713 2000 QY <sub>22</sub>	15.5	X	220.94506	123.29960	168.02104	13.62547	0.0825840	0.22490615	2.6779460	20	1 20.6	19.8
118714 2000 QF <sub>27</sub>	15.2	X	68.33491	224.								

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>
118721 2000 <i>QM</i> <sub>63</sub>	15.3	X	110.53842	264.35240	80.26331	7.47641	0.1106014	0.21453391	2.7635803	20	—	—
118722 2000 <i>QV</i> <sub>64</sub>	15.1	X	158.71129	290.90702	65.65190	7.05450	0.0526358	0.22225373	2.6992100	20	2 5.3	19.0
118723 2000 <i>QC</i> <sub>79</sub>	15.2	X	44.92676	215.54108	152.57122	6.22824	0.0581826	0.20850225	2.8166241	20	—	—
118724 2000 <i>QF</i> <sub>79</sub>	15.4	X	99.09916	194.59470	181.07348	4.11631	0.1374080	0.21630429	2.7484803	20	—	—
118725 2000 <i>QD</i> <sub>82</sub>	14.9	X	262.65273	266.85903	344.42723	12.62321	0.1757785	0.22519807	2.6756313	20	1 12.1	19.3
118726 2000 <i>QO</i> <sub>85</sub>	15.5	X	92.30264	53.10655	293.35356	5.09739	0.0621917	0.21369267	2.7708285	20	—	—
118727 2000 <i>QS</i> <sub>89</sub>	16.0	X	74.08388	44.64587	322.25544	6.77633	0.2371705	0.21179495	2.7873552	20	—	—
118728 2000 <i>QN</i> <sub>93</sub>	16.0	X	321.25610	12.00549	266.76089	3.78305	0.1851789	0.23877534	2.5732169	20	4 20.9	19.0
118729 2000 <i>QC</i> <sub>95</sub>	15.7	X	153.86612	61.31703	235.48038	1.43359	0.0457776	0.21468418	2.7622905	20	—	—
118730 2000 <i>QL</i> <sub>100</sub>	15.5	X	118.78374	152.59284	154.40669	9.50489	0.3080935	0.21258969	2.7804041	20	—	—
118731 2000 <i>QX</i> <sub>115</sub>	14.9	X	131.31060	282.72488	141.49127	27.29915	0.1224327	0.22923983	2.6440886	20	4 10.9	19.3
118732 2000 <i>QY</i> <sub>123</sub>	14.9	X	140.56966	182.39830	217.32407	8.50280	0.0940190	0.17508027	3.1645448	20	3 12.7	19.7
118733 2000 <i>QN</i> <sub>125</sub>	15.2	X	153.26311	109.54893	321.82579	11.83962	0.2697551	0.22853098	2.6495533	20	5 9.2	20.1
118734 2000 <i>QO</i> <sub>126</sub>	15.2	X	180.56573	303.00263	315.17522	11.65916	0.2208056	0.21706485	2.7420564	20	—	—
118735 2000 <i>QM</i> <sub>129</sub>	15.1	X	73.15262	15.44074	340.81216	3.36321	0.1117953	0.20998795	2.8033230	20	—	—
118736 2000 <i>QF</i> <sub>132</sub>	15.1	X	214.98366	352.85414	337.69762	9.00804	0.1150390	0.23048569	2.6345518	20	3 2.0	19.0
118737 2000 <i>QS</i> <sub>132</sub>	16.1	X	83.53368	3.85500	342.50778	6.40842	0.1562354	0.26301766	2.4125673	20	—	—
118738 2000 <i>QF</i> <sub>134</sub>	15.7	X	288.12267	256.34878	19.30341	2.05919	0.1305589	0.23369375	2.6103855	20	3 10.9	19.3
118739 2000 <i>QO</i> <sub>135</sub>	15.7	X	131.22354	256.74396	14.88404	9.21800	0.2462478	0.21230407	2.7828973	20	12 19.4	20.7
118740 2000 <i>QN</i> <sub>137</sub>	15.1	X	147.89174	225.05256	218.44636	8.39211	0.1338441	0.23388010	2.6089988	20	5 17.1	19.1
118741 2000 <i>QH</i> <sub>141</sub>	15.4	X	76.80288	264.15600	97.12310	2.85749	0.2341323	0.21042589	2.7994321	20	—	—
118742 2000 <i>QA</i> <sub>145</sub>	15.5	X	83.83285	242.78170	117.55335	4.77530	0.1293982	0.21181100	2.7872144	20	—	—
118743 2000 <i>QV</i> <sub>146</sub>	15.5	X	116.30958	0.50473	33.44834	4.25151	0.0974909	0.22057255	2.7129081	20	2 7.2	19.2
118744 2000 <i>QA</i> <sub>155</sub>	15.9	X	114.40608	77.98199	199.62838	10.85643	0.2777507	0.21103047	2.7940828	20	12 15.4	21.1
118745 2000 <i>QU</i> <sub>155</sub>	15.1	X	92.17303	110.95260	259.64881	7.86205	0.1122863	0.21628458	2.7486473	20	—	—
118746 2000 <i>QS</i> <sub>156</sub>	15.2	X	151.59890	185.81670	191.13315	14.13813	0.1382604	0.22519428	2.6756613	20	2 24.9	19.4
118747 2000 <i>QB</i> <sub>162</sub>	15.4	X	207.58120	190.64609	175.12707	13.54304	0.0694677	0.23314192	2.6145030	20	4 11.1	19.2
118748 2000 <i>QE</i> <sub>164</sub>	15.5	X	337.14296	61.13185	168.85427	21.79104	0.0314990	0.23343351	2.6123252	20	4 2.9	18.9
118749 2000 <i>QD</i> <sub>171</sub>	15.3	X	121.67757	76.05340	307.30527	6.09409	0.1095589	0.22051032	2.7134185	20	1 31.3	19.1
118750 2000 <i>QY</i> <sub>171</sub>	15.4	X	240.85171	273.95176	338.96780	11.20565	0.1405782	0.22128797	2.7070577	20	—	—
118751 2000 <i>QW</i> <sub>178</sub>	15.4	X	80.52099	117.58236	269.33247	5.09708	0.0544381	0.21691187	2.7433455	20	—	—
118752 2000 <i>QQ</i> <sub>186</sub>	15.5	X	138.46641	231.22866	110.07310	7.08550	0.0639226	0.21961186	2.7208141	20	—	—
118753 2000 <i>QP</i> <sub>188</sub>	15.3	X	155.30662	265.49779	2.53142	9.86814	0.3272832	0.21630952	2.7484360	20	—	—
118754 2000 <i>QA</i> <sub>192</sub>	15.2	X	222.05344	271.06981	12.13062	14.15620	0.1600208	0.22470865	2.6795149	20	1 15.4	19.8
118755 2000 <i>QT</i> <sub>198</sub>	14.9	X	329.70434	211.78986	350.71847	14.23294	0.0259581	0.22672592	2.6635975	20	2 18.9	18.5
118756 2000 <i>QK</i> <sub>200</sub>	15.2	X	326.52688	112.46709	156.05474	14.68006	0.1443452	0.18751975	3.0229992	20	5 1.1	19.1
118757 2000 <i>QE</i> <sub>207</sub>	14.9	X	196.90768	44.17659	352.38357	12.03128	0.1624359	0.18116631	3.0932695	20	5 1.5	20.1
118758 2000 <i>QZ</i> <sub>207</sub>	15.2	X	52.26004	338.08677	359.36429	15.25381	0.1429168	0.20490338	2.8495086	20	12 18.1	19.6
118759 2000 <i>QR</i> <sub>213</sub>	15.9	X	279.42938	201.15198	119.38513	2.53830	0.2065463	0.18669823	3.0318607	20	4 19.9	20.4
118760 2000 <i>QB</i> <sub>213</sub>	15.4	X	44.48792	258.98053	155.94856	5.40905	0.1568647	0.21286169	2.7780350	20	—	—
118761 2000 <i>QU</i> <sub>220</sub>	16.0	X	107.15915	95.47426	286.91780	2.70001	0.2352851	0.21945482	2.7221119	20	1 30.1	19.8
118762 2000 <i>QM</i> <sub>222</sub>	14.3	X	230.20696	263.39785	84.19583	9.30314	0.2972685	0.23311694	2.6146897	20	4 2.3	19.1
118763 2000 <i>QU</i> <sub>222</sub>	14.9	X	73.47348	323.00071	91.22597	10.94867	0.2224911	0.21749638	2.7384282	20	1 23.4	17.9
118764 2000 <i>QC</i> <sub>224</sub>	15.4	X	69.15984	159.66032	278.28987	3.21011	0.0674680	0.22029959	2.7151485	20	1 24.9	18.7
118765 2000 <i>QB</i> <sub>225</sub>	15.3	X	359.90162	135.85166	332.71916	10.70900	0.0986454	0.21720632	2.7408656	20	—	—
118766 2000 <i>QQ</i> <sub>229</sub>	15.6	X	117.81447	316.65171	61.07433	3.11408	0.0939095	0.21950217	2.7217203	20	1 18.3	19.3
118767 2000 <i>QG</i> <sub>230</sub>	15.1	X	154.53266	288.30453	40.74216	9.38060	0.1599947	0.21785535	2.7354192	20	1 7.8	19.4
118768 2000 <i>QY</i> <sub>233</sub>	15.6	X	332.17179	300.59832	166.32028	6.41459	0.0823867	0.21101035	2.7942604	20	—	—
118769 2000 <i>QJ</i> <sub>249</sub>	15.4	X	57.76164	55.33084	335.24004	5.47090	0.0720913	0.21277275	2.7788091	20	—	—
118770 2000 <i>RY</i> <sub>4</sub>	15.3	X	125.85573	295.47690	19.00677	2.20027	0.1390759	0.21170151	2.7881753	20	—	—
118771 2000 <i>RY</i> <sub>18</sub>	15.3	X	153.59851	29.14608	276.26100	7.31206	0.1749831	0.21651480	2.7466985	20	—	—
118772 2000 <i>RL</i> <sub>20</sub>	15.1	X	103.75923	78.44528	226.08365	7.36088	0.1801131	0.20953975	2.8073190	20	—	—
118773 2000 <i>RH</i> <sub>34</sub>	14.9	X	18.25879	166.18250	264.36434	6.15839	0.1098364	0.21058082	2.7980588	20	—	—
118774 2000 <i>RR</i> <sub>35</sub>	15.4	X	57.45837	167.91305	238.98844	6.56995	0.1210483	0.21336706	2.7736467	20	—	—
118775 2000 <i>RR</i> <sub>37</sub>	14.5	X	106.08480	104.81474	267.68291	11.34107	0.2776520	0.21252756	2.7809460	20	1 21.5	18.6
118776 2000 <i>RB</i> <sub>58</sub>	15.1	X	330.96559	294.51969	216.07116	7.00449	0.2636575	0.212334473	2.7825420	20	—	—
118777 2000 <i>RW</i> <sub>59</sub>	15.5	X	331.76308	144.58953	345.57067	9.66139	0.0680361	0.213771150	2.7701472	20	—	—
118778 2000 <i>RW</i> <sub>62</sub>	14.8	X	195.63753	357.60753	333.48728	13.03508	0.1660881	0.22788927	2.6545249	20	2 15.4	19.1
118779 2000 <i>RJ</i> <sub>68</sub>	15.5	X	162.35657	165.95663	145.28500	9.46007	0.1397097	0.21839376	2.7309216	20	—	—
118780 2000 <i>RM</i> <sub>79</sub>	15.9	X	219.08105	135.16244	204.53354	5.41231	0.0536209	0.23019519	2.6367678	20	3 19.4	19.7
118781 2000 <i>RN</i> <sub>79</sub>	15.1	X	118.85484	188.43503	226.21988	13.72808	0.0404010	0.22713330	2.6604117	20	2 20.2	19.1
118782 2000 <i>RP</i> <sub>80</sub>	15.4	X	39.39056	112.07960	266.54594	3.73435	0.1087564	0.20813285	2.8199557	20	—	—
118783 2000 <i>RJ</i> <sub>81</sub>	15.3	X	33.67255	132.70817	326.57483	14.32252	0.1332895	0.21759849	2.7375715	20	1 4.5	18.5
118784 2000 <i>RX</i> <sub>85</sub>	14.8	X	355.07813	97.47698	21.50733	7.78755	0.1797153	0.21159685	2.7890946	20	—	—
118785 2000 <i>RJ</i> <sub>90</sub>	15.7	X	32.63437	97.34887	317.59291	4.62954	0.0605073	0.21197391	2.7857862	20	—	—
118786 2000 <i>RJ</i> <sub>98</sub>	15.0	X	270.78073	85.24935	277.77731	9.79273	0.1387592	0.23779961	2.5802510	20	6 11.5	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
118801 2000 SY <sub>43</sub>	14.8 <sup>m</sup>	X	29.69832	289.58381	197.92911	30.49172	0.1417858	0.22028000	2.7153095	20	1 26.5	18.6
118802 2000 SG <sub>47</sub>	14.6	X	155.71506	49.73189	290.78920	11.43473	0.1333208	0.22129819	2.7069744	20	1 18.3	18.7
118803 2000 SC <sub>48</sub>	15.4	X	100.49449	186.46674	219.34684	11.93188	0.1372860	0.22088796	2.7103249	20	2 2.0	19.2
118804 2000 SN <sub>54</sub>	15.6	X	36.57753	87.56945	345.84523	4.66404	0.0349602	0.21495423	2.7599765	20	—	—
118805 2000 SB <sub>56</sub>	15.2	X	17.96447	82.69887	306.34470	1.23402	0.0497047	0.20635745	2.8361071	20	12 27.1	18.8
118806 2000 SO <sub>57</sub>	15.9	X	239.99773	127.04335	170.56825	1.85472	0.0294328	0.22527599	2.6750143	20	2 22.7	19.5
118807 2000 SC <sub>58</sub>	15.3	X	31.33349	56.42460	27.35339	6.90482	0.0584118	0.21440961	2.7646483	20	—	—
118808 2000 SZ <sub>59</sub>	15.6	X	133.94438	338.96827	348.03102	4.25685	0.1100251	0.21460971	2.7629295	20	—	—
118809 2000 SE <sub>65</sub>	15.4	X	112.13874	341.65578	15.06887	5.42895	0.0766032	0.21477291	2.7615297	20	—	—
118810 2000 SD <sub>69</sub>	15.4	X	55.17128	308.83917	18.99991	1.86868	0.0818379	0.20299681	2.8673227	20	12 1.6	19.4
118811 2000 SS <sub>73</sub>	15.4	X	191.44469	289.63386	110.26400	4.19262	0.1131107	0.22982811	2.6395747	20	5 6.0	19.4
118812 2000 SG <sub>80</sub>	14.8	X	129.71562	101.96689	9.95512	6.22942	0.1725228	0.17937228	3.1138606	20	6 5.3	19.8
118813 2000 ST <sub>80</sub>	15.4	X	131.87343	97.35164	40.74457	7.95012	0.1466688	0.23394611	2.6085079	20	7 11.9	19.5
118814 2000 SB <sub>97</sub>	15.3	X	50.99173	267.08140	232.72618	10.45738	0.1503309	0.22463011	2.6801395	20	3 25.4	18.4
118815 2000 SM <sub>108</sub>	12.2	X	287.22343	279.30199	17.46176	1.97313	0.1773933	0.08170308	5.2598951	20	4 8.9	19.1
118816 2000 SA <sub>109</sub>	14.3	X	107.65673	198.30575	21.91746	7.24181	0.1214388	0.24486876	2.5303492	20	9 30.2	17.9
118817 2000 SC <sub>119</sub>	15.3	X	328.80827	1.38466	47.53524	3.66901	0.1609335	0.19881071	2.9074318	20	11 13.8	18.4
118818 2000 SJ <sub>119</sub>	15.1	X	135.52330	289.90804	30.93160	9.57329	0.1876812	0.21294809	2.7772835	20	—	—
118819 2000 SW <sub>129</sub>	15.1	X	256.26042	109.65622	271.25602	13.64484	0.1337364	0.23927643	2.5696231	20	6 18.1	18.7
118820 2000 SO <sub>131</sub>	14.7	X	175.15169	190.07251	264.50466	15.41142	0.1091325	0.23569379	2.5955972	20	6 26.7	18.7
118821 2000 SM <sub>137</sub>	15.3	X	70.15093	130.98084	285.52832	5.29669	0.0524517	0.21583542	2.7524593	20	—	—
118822 2000 SP <sub>137</sub>	14.8	X	151.23354	65.09986	349.09305	11.13343	0.1027431	0.17628272	3.1501378	20	4 9.6	19.8
118823 2000 SH <sub>139</sub>	15.3	X	1.46523	81.45949	308.51349	4.73922	0.0818874	0.20244903	2.8724926	20	12 8.4	18.9
118824 2000 SY <sub>142</sub>	15.3	X	71.04993	17.81483	350.00395	5.38376	0.1079872	0.20898850	2.8122534	20	—	—
118825 2000 SY <sub>153</sub>	14.4	X	231.78807	77.32286	39.67734	5.65541	0.1299287	0.19309137	2.9645639	20	9 21.8	18.7
118826 2000 SV <sub>154</sub>	14.7	X	129.86487	12.62799	65.88798	1.85142	0.1898289	0.17286616	3.1915089	20	4 28.9	19.8
118827 2000 SY <sub>159</sub>	15.0	X	167.76793	126.00896	213.50636	25.79135	0.1784811	0.22345573	2.6895217	20	1 25.1	19.9
118828 2000 SF <sub>163</sub>	14.9	X	69.54081	287.37486	228.51893	9.08105	0.0709835	0.17417772	3.1754673	20	5 9.9	19.3
118829 2000 SJ <sub>163</sub>	14.7	X	77.96788	129.75071	356.59983	10.59691	0.1531909	0.17467289	3.1694632	20	4 21.9	19.1
118830 2000 SS <sub>169</sub>	15.3	X	244.68978	130.57600	263.27324	1.92147	0.1472496	0.23541855	2.5976199	20	6 19.6	19.2
118831 2000 SX <sub>171</sub>	15.9	X	201.19420	148.47793	277.67899	3.75196	0.0964434	0.23534222	2.5981815	20	6 18.5	19.8
118832 2000 SF <sub>174</sub>	15.3	X	130.70108	187.42523	275.01283	10.69614	0.1915517	0.22774366	2.6556562	20	5 27.4	19.6
118833 2000 SL <sub>180</sub>	14.6	X	8.09977	49.04463	243.80051	9.89201	0.0549180	0.18870786	3.0102973	20	8 4.9	18.7
118834 2000 SY <sub>186</sub>	14.9	X	185.01135	134.10088	294.82152	12.12262	0.1393007	0.23295402	2.6159087	20	6 3.4	19.2
118835 2000 SM <sub>190</sub>	15.4	X	152.05315	61.17392	239.30661	3.54692	0.0951304	0.21571267	2.7535034	20	—	—
118836 2000 SP <sub>197</sub>	15.9	X	80.58361	248.27060	142.01316	2.49521	0.0847011	0.21508515	2.7588564	20	—	—
118837 2000 SQ <sub>202</sub>	15.4	X	266.93871	358.20625	176.14093	5.79681	0.0264369	0.21037862	2.7998514	20	—	—
118838 2000 SO <sub>205</sub>	15.5	X	24.41099	173.36495	204.14264	1.56778	0.0771736	0.20358078	2.8618368	20	12 24.1	19.3
118839 2000 SA <sub>208</sub>	15.3	X	294.83775	353.41531	42.11460	4.99397	0.0840780	0.19268468	2.9687339	20	9 6.1	19.2
118840 2000 SM <sub>213</sub>	14.6	X	321.27149	264.06464	81.13761	11.05765	0.0762623	0.19048113	2.9915855	20	8 11.1	18.5
118841 2000 SR <sub>228</sub>	15.6	X	54.56653	312.13124	29.21752	2.28807	0.0729968	0.20306645	2.8666671	20	12 16.3	19.7
118842 2000 SN <sub>229</sub>	15.6	X	334.31819	63.54746	286.23463	0.92597	0.0981594	0.19254380	2.9701817	20	9 2.7	19.1
118843 2000 SW <sub>239</sub>	15.1	X	334.34450	329.92561	43.32706	2.98547	0.0861827	0.19551660	2.9399975	20	10 6.4	18.7
118844 2000 ST <sub>242</sub>	15.5	X	41.23765	280.80229	146.57662	5.35256	0.0910489	0.21488460	2.7605727	20	—	—
118845 2000 SP <sub>245</sub>	15.7	X	173.86163	53.50155	267.51467	2.05066	0.0702827	0.22006605	2.7170691	20	1 8.9	19.7
118846 2000 SU <sub>245</sub>	16.2	X	269.14201	285.39621	98.73323	2.24137	0.1140840	0.24050805	2.5608431	20	7 12.7	19.3
118847 2000 SF <sub>248</sub>	15.1	X	227.05264	190.35274	11.55338	6.35018	0.0635645	0.21092409	2.7950222	20	—	—
118848 2000 SZ <sub>248</sub>	15.4	X	67.91951	194.12415	175.12375	13.64010	0.0648879	0.21078277	2.7962713	20	—	—
118849 2000 SJ <sub>254</sub>	15.3	X	355.99945	354.93432	104.47455	5.02303	0.1041259	0.21075304	2.7965343	20	—	—
118850 2000 SL <sub>257</sub>	16.3	X	178.94270	189.73477	225.86501	2.16572	0.1239579	0.23015212	2.6370968	20	5 11.9	20.2
118851 2000 SX <sub>270</sub>	14.6	X	316.47937	241.42387	52.24218	13.30994	0.1240802	0.18371803	3.0645605	20	5 16.4	18.4
118852 2000 SY <sub>276</sub>	14.3	X	130.68926	117.36031	26.82654	17.21991	0.1722188	0.18066924	3.0989405	20	7 21.1	19.6
118853 2000 SZ <sub>286</sub>	15.7	X	57.58712	163.51025	232.51502	3.09376	0.0735255	0.21210446	2.7846429	20	—	—
118854 2000 ST <sub>289</sub>	15.6	X	64.48747	214.43384	220.57064	6.70804	0.1392724	0.21692869	2.7432036	20	1 21.4	18.9
118855 2000 SC <sub>298</sub>	15.4	X	320.07597	160.81579	271.79596	5.01696	0.0375753	0.20317873	2.8656109	20	12 1.9	19.1
118856 2000 SS <sub>299</sub>	14.7	X	119.24958	101.59012	357.10716	15.62310	0.0908795	0.17706283	3.1408783	20	4 26.1	19.5
118857 2000 SZ <sub>309</sub>	14.2	X	215.90769	110.13555	308.52658	21.46885	0.0529897	0.23633818	2.5908770	20	7 2.7	18.0
118858 2000 SM <sub>311</sub>	15.0	X	191.40829	2.70118	277.27388	14.29561	0.0525229	0.21898636	2.7259926	20	—	—
118859 2000 SO <sub>316</sub>	14.5	X	167.30407	179.83214	279.04527	12.82221	0.1185943	0.23557049	2.5965028	20	6 25.0	18.4
118860 2000 SW <sub>318</sub>	14.9	X	85.53495	113.84369	288.69974	11.05048	0.2819633	0.21356503	2.7719323	20	2 2.8	18.3
118861 2000 SM <sub>319</sub>	15.0	X	133.63959	179.33374	271.74927	12.45675	0.1374687	0.22609828	2.6685246	20	5 9.8	19.3
118862 2000 SK <sub>343</sub>	15.3	X	35.95415	201.19298	295.18486	4.34139	0.1428974	0.22374548	2.6871992	20	2 23.7	18.1
118863 2000 SK <sub>349</sub>	14.1	X	105.01869	49.49126	84.64163	13.98539	0.1637315	0.17719608	3.1393035	20	6 8.4	18.9
118864 2000 SQ <sub>351</sub>	15.2	X	14.50829	253.29117	74.26376	16.02181	0.2131888	0.19869321	2.9085779	20	10 31.3	18.7
118865 2000 SP <sub>354</sub>	15.0	X	25.16030	17.38579	64.99767	7.40562	0.1568530	0.21386156	2.7693694	20	—	—
118866 2000 SS <sub>354</sub>	15.4	X	183.38994	305.16288	97.46578	5.33958	0.2005987	0.23044461	2.6348648	20	5 2.2	19.8
118867 2000 SB <sub>355</sub>	15.1	X	161.36963	41.65903	69.70564	12.98653	0.2315822	0.23267669	2.6179869	20	7 7.0	19.7
118868 2000 ST <sub>360</sub>	15.3	X	86.81892	335.52501	31.86954	13.13795	0.1272106	0.21422566	2.7662306	20	—	—
118869 2000 SS <sub>362</sub>	15.3	X	92.88895	192.37443	117.72092	10.61728	0.1864621	0.20900679	2.8120893	20	12 31.5	19.9
118870 2000 TE <sub>8</sub>	15.6	X	10.60280	48.63929	29.69488	3.88219	0.0718976	0.21020107	2.8014278	20	—	—
118871 2000 TZ <sub>12</sub>	15.4	X	319.46391	78.79508	12.88542	5.57842	0.0907615	0.20365047	2.8611839	20	12 25.8	19.0
118872 2000 TW <sub>13</sub>	15.9	X	266.94610	169.59931	226.35934	0.26844	0.1443952	0.18823377	3.0153497	20	7 17.7	20.2
118873 2000 TY <sub>14</sub>	16.0	X	222.79401	70.25199	21.55309	1.11075	0.0795848	0.24001678	2.5643363	20	8 19.4	19.3
118874 2000 TK <sub>28</sub>	15.2	X	218.52278									

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>
118881 2000 TK <sub>57</sub>	15.2	X	154.02263	20.52158	48.65126	15.84754	0.1047658	0.22973771	2.6402671	20	5 3.7	19.0
118882 2000 TL <sub>59</sub>	14.9	X	130.43279	347.41669	90.82099	13.91990	0.1344568	0.22482636	2.6785796	20	4 27.9	19.1
118883 2000 US <sub>4</sub>	14.9	X	286.17809	334.99856	40.41195	2.50380	0.1385800	0.18667743	3.0320859	20	7 18.1	19.0
118884 2000 UN <sub>12</sub>	15.2	X	241.62052	39.43858	32.69837	2.57970	0.1602560	0.18628703	3.0363207	20	8 1.9	19.7
118885 2000 UZ <sub>23</sub>	15.2	X	254.08108	2.00083	123.26202	6.33595	0.0674315	0.19705132	2.9247123	20	11 7.6	19.2
118886 2000 UL <sub>27</sub>	14.9	X	328.42034	295.12332	84.75273	11.81790	0.1135938	0.19317159	2.9637431	20	10 10.5	18.6
118887 2000 UH <sub>35</sub>	15.5	X	274.19268	19.37720	31.98227	9.50766	0.0953465	0.19049701	2.9914192	20	8 28.9	19.7
118888 2000 UX <sub>35</sub>	15.2	X	295.05880	348.72298	28.65167	3.38431	0.0829154	0.23973206	2.5663663	20	8 17.9	18.3
118889 2000 UJ <sub>38</sub>	14.8	X	216.42533	131.32115	4.61440	1.99842	0.0928339	0.19267359	2.9688477	20	9 30.2	19.1
118890 2000 UM <sub>41</sub>	14.2	X	98.24943	103.00254	44.58228	11.11975	0.1379373	0.17582031	3.1556587	20	6 12.9	18.9
118891 2000 UA <sub>44</sub>	14.8	X	294.06163	166.33686	310.10037	2.33337	0.1238817	0.20011038	2.8948293	20	12 14.5	18.3
118892 2000 UE <sub>44</sub>	14.9	X	64.16723	66.64421	37.68945	8.46664	0.2459074	0.21562157	2.7542789	20	3 22.2	18.0
118893 2000 UJ <sub>46</sub>	15.9	X	225.39068	111.61877	246.25428	2.04939	0.1002868	0.22685522	2.6625853	20	4 16.5	19.9
118894 2000 UJ <sub>46</sub>	15.1	X	202.13981	223.81879	240.25224	2.30105	0.1965829	0.18381281	3.0635069	20	7 29.4	20.3
118895 2000 UO <sub>53</sub>	14.5	X	11.27158	79.60913	62.79901	12.49577	0.2107166	0.21309145	2.7760378	20	1 17.8	17.3
118896 2000 UQ <sub>59</sub>	15.2	X	180.57163	34.80293	315.26997	7.59298	0.0804293	0.17121695	3.2119705	20	2 24.6	20.1
118897 2000 UR <sub>60</sub>	14.9	X	304.55253	139.75505	357.01308	5.10567	0.0974600	0.20649261	2.8348693	20	—	—
118898 2000 UV <sub>62</sub>	15.1	X	347.89350	66.92641	6.33946	16.69689	0.0670620	0.20480398	2.8504305	20	—	—
118899 2000 UF <sub>66</sub>	14.7	X	359.04984	38.09502	308.84242	3.91282	0.0295236	0.24526356	2.5276331	20	10 12.4	17.9
118900 2000 UA <sub>67</sub>	15.2	X	255.05726	124.21320	338.35256	3.82818	0.0054485	0.19608560	2.9343072	20	10 16.1	19.4
118901 2000 UH <sub>67</sub>	15.0	X	279.61098	299.82438	16.78807	9.64070	0.0944346	0.18044149	3.1015475	20	4 27.9	19.5
118902 2000 UJ <sub>67</sub>	14.9	X	207.56217	175.97157	243.38638	11.15444	0.0845034	0.18191990	3.0847211	20	6 16.1	19.6
118903 2000 US <sub>72</sub>	14.3	X	329.32292	27.91582	338.68725	7.10569	0.2303286	0.19232730	2.9724103	20	9 10.7	16.9
118904 2000 UT <sub>86</sub>	15.9	X	342.00070	268.06360	161.90139	5.50521	0.1646938	0.20170638	2.8795389	20	—	—
118905 2000 UM <sub>87</sub>	15.2	X	200.84139	340.42230	77.57406	11.08517	0.0757547	0.17998718	3.1067645	20	6 7.8	19.9
118906 2000 UE <sub>93</sub>	15.1	X	256.91241	96.76749	282.56587	4.33062	0.0356743	0.18405561	3.0608122	20	6 29.2	19.5
118907 2000 UJ <sub>95</sub>	15.9	X	226.47812	73.68903	359.06527	4.72602	0.1400187	0.18478819	3.0527172	20	7 19.9	20.7
118908 2000 UA <sub>98</sub>	14.7	X	229.49297	28.73906	22.62954	10.18536	0.1046205	0.18258337	3.0772438	20	6 28.9	19.5
118909 2000 UE <sub>106</sub>	14.5	X	341.26154	27.10746	240.02706	9.08635	0.0688196	0.18131403	3.0915892	20	5 25.7	18.4
118910 2000 UR <sub>111</sub>	15.7	X	337.96618	329.23165	72.99008	3.07799	0.0702694	0.19925110	2.9031461	20	11 18.7	19.2
118911 2000 VL <sub>2</sub>	15.3	X	357.36404	269.15415	272.18022	19.98364	0.0804588	0.36308883	1.9459311	20	1 20.5	17.2
118912 2000 VN <sub>16</sub>	15.4	X	280.21265	191.42059	205.26732	6.45175	0.1841886	0.18781271	3.0198548	20	7 28.2	19.6
118913 2000 VM <sub>18</sub>	14.8	X	202.69315	335.13347	70.10971	12.62930	0.0840394	0.17783838	3.1317402	20	5 25.1	19.5
118914 2000 VV <sub>18</sub>	14.5	X	46.54251	306.35854	203.79882	17.59715	0.0440715	0.17122871	3.2118235	20	3 28.1	18.9
118915 2000 VM <sub>25</sub>	15.3	X	186.62683	209.20286	129.46361	2.32873	0.1832758	0.17100825	3.2145832	20	2 21.1	20.5
118916 2000 VR <sub>25</sub>	14.9	X	352.04644	279.86483	47.14945	9.46923	0.0464630	0.18981316	2.9985997	20	9 4.8	19.0
118917 2000 UV <sub>26</sub>	15.7	X	329.40928	233.55915	120.46973	0.83026	0.2692145	0.19153487	2.9806031	20	8 20.4	18.0
118918 2000 VY <sub>26</sub>	14.8	X	50.57617	62.67878	233.50873	7.13011	0.1801072	0.19599470	2.9352144	20	10 29.9	18.8
118919 2000 VR <sub>27</sub>	14.4	X	9.23597	77.05949	67.05857	15.93536	0.1992887	0.21181311	2.7871959	20	1 17.1	17.4
118920 2000 VH <sub>31</sub>	15.5	X	179.31285	132.58148	221.57673	2.35254	0.1262320	0.21956612	2.7211919	20	2 25.8	19.8
118921 2000 VP <sub>45</sub>	15.4	X	17.21555	315.56382	75.27726	3.05748	0.0684331	0.20276828	2.8694768	20	12 29.9	19.1
118922 2000 VE <sub>48</sub>	15.0	X	210.99368	164.60750	324.51006	1.44049	0.1497909	0.18906129	3.0065446	20	9 9.9	19.6
118923 2000 VM <sub>51</sub>	15.3	X	24.01368	342.51320	329.01152	3.90662	0.0678217	0.24297313	2.5434930	20	10 4.9	18.5
118924 2000 VG <sub>53</sub>	14.7	X	184.94604	139.09153	13.20652	10.23584	0.0798696	0.19008149	2.9957772	20	9 19.1	19.2
118925 2000 VH <sub>59</sub>	16.1	X	68.40060	274.28565	255.14931	19.53796	0.0608784	0.37748626	1.8961322	20	5 21.4	17.6
118926 2000 VT <sub>59</sub>	15.8	X	263.67336	79.19117	49.12787	2.58014	0.0565819	0.19983203	2.8975169	20	11 23.4	19.7
118927 2000 WQ <sub>2</sub>	15.0	X	214.97545	288.86987	77.83488	6.17632	0.1605395	0.17433855	3.1735141	20	4 18.9	20.2
118928 2000 WB <sub>3</sub>	16.2	X	38.14512	292.64544	273.29510	18.12502	0.0796914	0.37786050	1.8948800	20	5 31.9	17.5
118929 2000 WK <sub>5</sub>	15.1	X	126.30044	148.79600	353.73246	7.27291	0.0668123	0.17922300	3.1155975	20	7 2.4	19.8
118930 2000 WB <sub>8</sub>	15.1	X	266.66189	301.17379	104.69442	9.22714	0.1066853	0.18685056	3.0302127	20	8 6.1	19.3
118931 2000 WD <sub>21</sub>	16.5	X	270.44515	204.61627	170.76540	0.89927	0.2192260	0.18328565	3.0693782	20	6 14.8	20.9
118932 2000 WC <sub>24</sub>	15.0	X	287.33704	136.76484	271.93505	9.07016	0.0985518	0.18939479	3.0030140	20	9 2.6	19.1
118933 2000 WA <sub>27</sub>	14.6	X	216.17694	249.22477	256.05473	9.57950	0.0791299	0.19254126	2.9702079	20	10 9.3	19.1
118934 2000 WG <sub>31</sub>	14.8	X	173.77622	323.21633	124.56881	6.30413	0.1302517	0.17763696	3.1341070	20	6 16.5	19.8
118935 2000 WE <sub>42</sub>	14.6	X	190.20421	5.53994	67.23954	8.50458	0.0464007	0.18044808	3.1014720	20	6 15.2	19.2
118936 2000 WT <sub>43</sub>	14.5	X	257.80292	177.19883	222.87784	9.24632	0.0860189	0.18368221	3.0649589	20	7 17.4	19.0
118937 2000 WT <sub>46</sub>	14.8	X	119.77038	74.03151	86.53087	11.82331	0.0403386	0.18097964	3.0953961	20	7 14.6	19.3
118938 2000 WM <sub>47</sub>	13.7	X	239.10912	78.82290	88.02859	13.43621	0.1721562	0.19661393	2.9290483	20	11 25.3	18.0
118939 2000 WL <sub>51</sub>	14.6	X	332.54753	210.62579	46.47999	5.51331	0.1005084	0.17744531	3.1363633	20	4 26.9	18.5
118940 2000 WH <sub>58</sub>	14.9	X	226.69772	338.44546	119.71333	2.63079	0.1331418	0.18545605	3.0453838	20	8 20.9	19.4
118941 2000 WV <sub>60</sub>	14.2	X	149.33447	352.53256	95.90673	28.28410	0.1279781	0.17179006	3.2048229	20	5 30.9	19.5
118942 2000 WK <sub>62</sub>	14.4	X	176.43737	337.80109	99.67775	17.85903	0.1084494	0.17835858	3.1256479	20	6 8.1	19.4
118943 2000 WF <sub>67</sub>	16.8	X	289.08252	217.97166	86.84318	23.46808	0.0247674	0.37718669	1.8971361	20	5 11.0	19.0
118944 2000 WU <sub>67</sub>	14.1	X	115.23475	60.09420	84.97879	17.17060	0.1414261	0.17698277	3.1418255	20	6 29.5	19.0
118945 Rikhill	14.8	X	35.83490	127.81853	58.15039	7.83098	0.0481160	0.17349481	3.1837947	20	4 30.7	19.1
118946 2000 WQ <sub>69</sub>	15.2	X	308.98532	338.44290	10.07623	11.02259	0.1274533	0.18778759	3.0201241	20	7 21.4	19.1
118947 2000 WV <sub>69</sub>	14.6	X	195.80969	332.40395	0.54805	9.95181	0.1092106	0.17037568	3.2253500	20	2 24.0	19.7
118948 2000 WN <sub>83</sub>	14.6	X	313.39409	241.17295	43.96627	17.11758	0.0851944	0.17831793	3.1261228	20	5 6.0	18.7
118949 2000 WM <sub>88</sub>	13.9	X	173.78023	53.31259	90.89573	18.51582	0.2056153	0.17977981	3.1091531	20	8 29.3	19.5
118950 2000 WG <sub>89</sub>	15.2	X	295.40014	7.13948	55.15960	12.54581	0.1363653	0.19286141	2.9669200	20	10 9.1	18.9
118951 2000 WU <sub>89</sub>	14.9	X	191.39532	256.44652	255.56179	7.29150	0.0619504	0.18974607	2.9993065	20	9 21.1	19.5
118952 2000 WA <sub>92</sub>	15.8	X	98.34638	107.32740	303.05987	1.44175	0.0671031	0.21427312	2.7658222	20	1 30.9	19.5
118953 2000 WN <sub>94</sub>	15.0	X	275.68991	308.27836	71.08479	13.50562	0.1105283	0.18319671	3.0703716	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>
118961 2000 <i>WO</i> <sub>125</sub>	14.5	X	299.02232	314.79228	89.72196	16.06989	0.1742660	0.18813741	3.0163792	20	9 18.4	18.5
118962 2000 <i>WK</i> <sub>129</sub>	14.9	X	236.44777	288.30473	50.52013	9.61783	0.0961374	0.17537841	3.1609573	20	4 11.1	19.7
118963 2000 <i>WY</i> <sub>132</sub>	14.3	X	295.42580	121.90432	347.14670	9.81090	0.1525777	0.19899996	2.9055882	20	12 2.1	17.8
118964 2000 <i>WW</i> <sub>133</sub>	14.9	X	347.37647	311.27668	14.48544	11.61457	0.1499182	0.19016744	2.9948744	20	8 28.7	18.4
118965 2000 <i>WA</i> <sub>138</sub>	14.4	X	223.61817	142.13938	45.48954	7.90895	0.2195093	0.19953508	2.9003909	20	11 25.4	18.9
118966 2000 <i>WJ</i> <sub>141</sub>	16.0	X	335.30168	222.89445	294.50709	17.91618	0.0695347	0.35802941	1.9642206	20	—	—
118967 2000 <i>WL</i> <sub>144</sub>	14.9	X	35.50285	50.00879	86.66133	10.02201	0.1011791	0.21530873	2.7569462	20	2 28.8	18.3
118968 2000 <i>WP</i> <sub>150</sub>	16.5	X	8.49904	193.17776	46.50422	26.20097	0.0739566	0.37888501	1.8914626	20	5 23.7	17.9
118969 2000 <i>WQ</i> <sub>156</sub>	15.5	X	198.98008	76.07725	6.29990	6.23818	0.2105196	0.17959334	3.1113048	20	6 30.9	20.8
118970 2000 <i>WE</i> <sub>160</sub>	14.8	X	125.39863	21.64330	117.62013	2.71646	0.1324962	0.17728979	3.1381972	20	7 2.3	19.5
118971 2000 <i>WR</i> <sub>162</sub>	14.6	X	170.59775	349.86941	148.76980	11.93409	0.1143060	0.18407838	3.0605597	20	8 14.6	19.4
118972 2000 <i>WV</i> <sub>171</sub>	14.6	X	330.25730	316.11555	94.92148	15.00296	0.1295879	0.19983449	2.8974932	20	11 23.1	18.0
118973 2000 <i>WD</i> <sub>173</sub>	14.1	X	130.61007	47.19639	100.52122	15.85488	0.1309925	0.17297930	3.1901172	20	7 18.0	19.1
118974 2000 <i>WU</i> <sub>173</sub>	14.1	X	129.34210	332.09307	91.93944	14.33092	0.0771787	0.17135515	3.2102433	20	4 7.4	19.1
118975 2000 <i>WB</i> <sub>180</sub>	15.1	X	261.03643	202.94729	145.65585	2.61420	0.1907425	0.18073144	3.0982294	20	5 6.6	19.8
118976 2000 <i>WL</i> <sub>181</sub>	14.8	X	345.68855	9.92810	311.10482	11.40981	0.1171318	0.18866177	3.0107876	20	8 12.1	18.2
118977 2000 <i>WX</i> <sub>183</sub>	15.1	X	261.84630	200.61484	110.12786	2.30923	0.1696760	0.17549511	3.1595558	20	3 25.5	19.9
118978 2000 <i>WW</i> <sub>196</sub>	15.1	X	281.19194	359.11485	67.08303	10.23279	0.1758668	0.18881078	3.0092033	20	9 15.9	19.1
118979 2000 <i>XM</i> <sub>6</sub>	14.5	X	243.94160	93.00428	271.04324	24.58076	0.2342335	0.17969278	3.1101569	20	4 29.5	20.0
118980 2000 <i>XC</i> <sub>11</sub>	14.6	X	203.85607	116.79406	278.03924	21.04372	0.0965877	0.23038527	2.6353173	20	5 7.9	19.0
118981 2000 <i>XS</i> <sub>13</sub>	16.3	X	214.17310	265.61189	63.15366	23.42278	0.0892089	0.36862751	1.9263900	20	2 27.5	19.4
118982 2000 <i>XK</i> <sub>14</sub>	14.7	X	11.88676	41.56360	18.64265	16.54161	0.1876280	0.20349058	2.8626824	20	—	—
118983 2000 <i>XJ</i> <sub>19</sub>	14.7	X	198.04211	112.98834	19.62217	13.73857	0.1698716	0.18630031	3.0361764	20	9 6.1	19.8
118984 2000 <i>XC</i> <sub>21</sub>	14.7	X	237.28417	283.14664	45.71203	16.27859	0.2896623	0.17580794	3.1558067	20	3 22.6	20.4
118985 2000 <i>XW</i> <sub>26</sub>	14.5	X	118.27545	114.94215	43.02991	14.69691	0.1210764	0.17636636	3.1491418	20	7 19.9	19.6
118986 2000 <i>XM</i> <sub>30</sub>	15.0	X	309.99322	8.35894	336.79403	8.62909	0.1450899	0.18450149	3.0558788	20	7 14.2	18.8
118987 2000 <i>XZ</i> <sub>41</sub>	14.7	X	230.17783	24.28753	23.74785	18.25047	0.1638151	0.17849525	3.1240522	20	6 17.4	19.9
118988 2000 <i>XS</i> <sub>44</sub>	15.9	X	38.48009	56.47415	43.28141	21.15930	0.1045388	0.36037480	1.9556889	20	—	—
118989 2000 <i>XO</i> <sub>47</sub>	15.4	X	314.35119	66.12455	329.61289	9.97082	0.0835367	0.19213863	2.9743558	20	9 29.1	19.2
118990 2000 <i>XW</i> <sub>48</sub>	14.9	X	250.50729	29.08276	21.48128	10.15034	0.0744119	0.18174542	3.0866951	20	7 29.3	19.5
118991 2000 <i>YC</i> <sub>5</sub>	16.4	X	227.32525	314.76815	302.05976	16.35373	0.0804266	0.35776560	1.9651860	20	—	—
118992 2000 <i>YW</i> <sub>6</sub>	14.6	X	17.94243	257.17664	309.31567	6.91467	0.2206211	0.21686608	2.7437316	20	5 3.9	17.1
118993 2000 <i>YL</i> <sub>12</sub>	14.9	X	137.50137	294.80937	259.44960	0.60088	0.1242095	0.18494340	3.0510090	20	9 19.5	19.6
118994 2000 <i>YS</i> <sub>28</sub>	16.8	X	57.69955	264.57916	243.00047	18.97616	0.0708206	0.36996678	1.9217382	20	3 15.7	18.9
118995 2000 <i>YH</i> <sub>34</sub>	14.7	X	125.17466	0.85782	144.79190	18.33735	0.1538311	0.17165631	3.2064874	20	7 11.4	19.9
118996 2000 <i>YF</i> <sub>38</sub>	14.5	X	201.32350	331.48233	93.09881	14.94060	0.0444349	0.17630034	3.1499279	20	6 18.4	19.2
118997 2000 <i>YU</i> <sub>39</sub>	15.3	X	160.92667	152.49483	331.81174	0.37652	0.1260436	0.17716759	3.1396401	20	7 18.6	20.3
118998 2000 <i>YC</i> <sub>40</sub>	15.1	X	260.22270	225.57625	171.71143	1.65912	0.1914025	0.18132498	3.0914647	20	7 4.4	19.6
118999 2000 <i>YJ</i> <sub>51</sub>	14.7	X	125.97299	190.20704	279.90318	3.81008	0.0892359	0.16955467	3.2329294	20	5 23.2	19.5
119000 2000 <i>YV</i> <sub>55</sub>	13.6	X	195.80375	38.73795	96.21162	24.09695	0.1083813	0.18499428	3.0504496	20	9 14.9	18.8
119001 2000 <i>YX</i> <sub>60</sub>	14.6	X	130.08412	264.87523	255.30764	4.17000	0.1314882	0.17604093	3.1530217	20	7 31.6	19.5
119002 2000 <i>YW</i> <sub>61</sub>	14.1	X	85.55631	75.52348	115.79223	20.36821	0.1780221	0.17280499	3.1922620	20	7 29.9	18.9
119003 2000 <i>YF</i> <sub>69</sub>	15.2	X	328.89739	88.52706	88.80635	3.84207	0.0318206	0.20959227	2.8068500	20	1 15.7	18.9
119004 2000 <i>YK</i> <sub>69</sub>	14.9	X	286.47911	190.61219	154.01656	1.14116	0.2001413	0.18290147	3.0736749	20	5 29.1	19.2
119005 2000 <i>YP</i> <sub>72</sub>	14.6	X	84.60632	263.87744	266.50322	11.53899	0.0486478	0.17589467	3.1547693	20	6 13.9	18.9
119006 2000 <i>YG</i> <sub>75</sub>	14.8	X	240.00905	307.01837	87.50497	11.20238	0.0407830	0.17905712	3.1175133	20	6 26.5	19.3
119007 2000 <i>YT</i> <sub>75</sub>	14.3	X	341.77727	279.74641	268.64566	13.41343	0.2475649	0.21075659	2.7965029	20	1 15.2	17.5
119008 2000 <i>YH</i> <sub>79</sub>	14.6	X	116.59931	74.02275	83.65549	15.01254	0.1611098	0.17554715	3.1589314	20	7 19.6	19.7
119009 2000 <i>YJ</i> <sub>79</sub>	15.0	X	253.70880	303.55919	101.59731	5.92820	0.2148976	0.18265354	3.0764556	20	7 4.4	19.6
119010 2000 <i>YC</i> <sub>80</sub>	14.6	X	145.37276	19.36524	81.57412	10.10566	0.0368140	0.17395616	3.1781631	20	5 30.3	19.3
119011 2000 <i>YN</i> <sub>82</sub>	14.8	X	188.83001	207.78050	268.78961	7.03126	0.0650603	0.18193309	3.0845721	20	8 5.6	19.5
119012 2000 <i>YK</i> <sub>105</sub>	16.1	X	41.47698	356.17069	129.76316	24.26620	0.0686064	0.36041832	1.9555315	20	1 19.7	17.7
119013 2000 <i>YM</i> <sub>121</sub>	14.8	X	289.34561	265.69226	149.34690	20.93345	0.2873493	0.19163543	2.9795603	20	8 20.8	18.2
119014 2000 <i>YA</i> <sub>124</sub>	14.3	X	241.26003	159.92170	267.00743	20.33105	0.2563183	0.17853501	3.1235883	20	7 11.3	19.4
119015 2000 <i>YX</i> <sub>136</sub>	14.6	X	139.16083	290.76058	207.46721	15.41630	0.1784559	0.17324546	3.1868489	20	7 14.0	20.1
119016 2001 <i>AD</i> <sub>5</sub>	14.2	X	211.60496	144.09678	285.93137	15.91082	0.1646237	0.17606761	3.1527031	20	6 29.2	19.4
119017 2001 <i>AE</i> <sub>27</sub>	14.6	X	258.91750	8.42191	62.68745	10.06107	0.1146789	0.18511213	3.0491547	20	8 31.3	19.0
119018 2001 <i>AQ</i> <sub>27</sub>	16.5	X	213.64446	275.48905	94.44108	24.89555	0.0871038	0.37192065	1.9150018	20	4 28.6	19.5
119019 2001 <i>AJ</i> <sub>35</sub>	14.8	X	254.74960	32.86375	38.69174	8.86824	0.2161934	0.18358845	3.0660023	20	8 11.2	19.5
119020 2001 <i>AH</i> <sub>38</sub>	14.3	X	143.01166	30.87241	78.84466	14.69905	0.0993834	0.17087275	3.2162825	20	6 11.2	19.1
119021 2001 <i>AL</i> <sub>43</sub>	15.2	X	237.14105	59.86611	18.78306	10.44351	0.0838966	0.18163233	3.0879762	20	8 17.6	19.8
119022 2001 <i>AU</i> <sub>46</sub>	16.8	X	157.58401	323.60198	56.69583	23.10576	0.0993562	0.36699810	1.9320877	20	3 6.3	19.8
119023 2001 <i>BW</i> <sub>2</sub>	16.8	X	259.27441	228.91366	334.78315	17.71224	0.0451534	0.35245168	1.9848895	20	—	—
119024 2001 <i>BX</i> <sub>18</sub>	14.9	X	194.70915	253.28660	159.99425	7.86476	0.1551961	0.17250165	3.1960033	20	5 25.9	20.2
119025 2001 <i>BG</i> <sub>30</sub>	14.7	X	82.19824	53.07693	143.22858	6.27837	0.0779955	0.17336737	3.1853548	20	7 17.7	19.3
119026 2001 <i>BC</i> <sub>61</sub>	16.3	X	57.83272	0.00975	166.48971	22.95624	0.0704396	0.36890154	1.9254359	20	5 5.2	18.5
119027 2001 <i>CQ</i> <sub>2</sub>	14.8	X	162.88680	137.10527	103.98988	3.75043	0.2855604	0.18476117	3.0530148	20	12 3.5	20.3
119028 2001 <i>CB</i> <sub>33</sub>	15.4	X	197.51380	56.70904	47.62246	17.45802	0.2572551	0.17819115	3.1276054	20	7 27.9	21.1
119029 2001 <i>CV</i> <sub>39</sub>	14.4	X	33.27703	315.55271	70.91685	9.65573	0.3232005	0.19934348	2.9022491	20	—	—
119030 2001 <i>DO</i> <sub>8</sub>	14.6	X	157.88984	106.81940	135.15498	12.92654	0.0745777	0.18567373	3.0430032	20	12 7.2	19.4
119031 2001 <i>DQ</i> <sub>24</sub>	14.7	X	217.66475	102.68518	133.52384	11.48483	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>
119041 2001 <i>FP</i> <sub>145</sub>	14.8	X	128.77938	123.75192	74.20953	1.90297	0.0576359	0.17557304	3.1586208	20	9 11.7	19.4
119042 2001 <i>HS</i> <sub>1</sub>	16.6	X	227.99393	52.10972	223.03670	1.75575	0.1820681	0.29701972	2.2247396	20	—	—
119043 2001 <i>HS</i> <sub>4</sub>	15.0	X	126.99082	40.36540	200.40359	23.14395	0.1912508	0.28141042	2.3062653	20	11 21.0	19.0
119044 2001 <i>HV</i> <sub>7</sub>	16.8	X	290.07840	264.67288	48.85166	2.00025	0.2563713	0.31242748	2.1509810	20	4 8.7	19.5
119045 2001 <i>HN</i> <sub>8</sub>	16.1	X	176.28998	247.99919	14.74306	24.12336	0.2622987	0.28734952	2.2743767	20	—	—
119046 2001 <i>HL</i> <sub>11</sub>	16.9	X	212.29311	240.73021	25.27035	4.94649	0.1229318	0.29455374	2.2371393	20	—	—
119047 2001 <i>HM</i> <sub>12</sub>	16.4	X	302.74990	154.32667	134.45903	1.79720	0.2324599	0.30850121	2.1691927	20	3 25.3	18.7
119048 2001 <i>HQ</i> <sub>29</sub>	16.5	X	326.67248	26.12789	223.97265	4.85633	0.1527832	0.30744199	2.1741721	20	3 16.4	18.6
119049 2001 <i>HB</i> <sub>63</sub>	16.8	X	6.25095	245.84654	32.31008	0.88222	0.0788858	0.31755983	2.1277422	20	7 31.5	18.4
119050 2001 <i>HA</i> <sub>67</sub>	16.9	X	169.38644	259.57051	43.81793	4.34304	0.1810655	0.29147641	2.2528578	20	—	—
119051 2001 <i>JK</i> <sub>5</sub>	16.8	X	287.25616	248.00223	76.21608	2.18220	0.1314476	0.31193480	2.1532452	20	5 10.9	19.2
119052 2001 <i>KZ</i>	16.6	X	257.27362	214.77228	61.48519	7.26856	0.1052632	0.30001851	2.2098901	20	2 2.1	19.7
119053 2001 <i>KR</i> <sub>11</sub>	16.3	X	103.84157	148.61440	131.08371	3.12696	0.2231288	0.27731472	2.3289175	20	12 18.2	20.1
119054 2001 <i>KY</i> <sub>11</sub>	15.9	X	193.37937	225.04697	88.17364	8.45964	0.2261253	0.29347901	2.2425976	20	1 17.7	19.6
119055 2001 <i>KN</i> <sub>12</sub>	16.6	X	292.54231	158.05771	102.68214	2.66396	0.1185625	0.30288747	2.1959133	20	2 19.7	19.3
119056 2001 <i>KL</i> <sub>13</sub>	15.5	X	137.85191	57.90431	240.23685	11.46212	0.2773586	0.28158276	2.3053242	20	—	—
119057 2001 <i>KT</i> <sub>19</sub>	16.8	X	169.29445	203.28952	104.88503	3.94678	0.2544981	0.29029527	2.2589645	20	—	—
119058 2001 <i>KT</i> <sub>24</sub>	16.6	X	302.08414	235.76168	45.87991	5.50247	0.0975071	0.30711633	2.1757088	20	4 6.9	18.9
119059 2001 <i>KP</i> <sub>25</sub>	16.3	X	134.96422	43.01121	267.40361	5.86057	0.2524779	0.28521729	2.2856978	20	—	—
119060 2001 <i>KM</i> <sub>42</sub>	16.4	X	162.69500	143.90632	158.39221	4.27908	0.2657397	0.28712528	2.2755607	20	—	—
119061 2001 <i>KP</i> <sub>42</sub>	15.9	X	291.36708	172.21740	135.38762	7.87486	0.2086939	0.30858333	2.1688079	20	4 12.7	18.5
119062 2001 <i>KC</i> <sub>43</sub>	16.3	X	218.35857	154.92679	160.53954	7.12132	0.1632082	0.29863171	2.2167264	20	2 7.7	19.8
119063 2001 <i>KF</i> <sub>49</sub>	15.9	X	353.91209	230.64015	83.52431	2.98020	0.2147806	0.26466675	2.4025354	20	9 10.8	17.5
119064 2001 <i>KO</i> <sub>52</sub>	16.6	X	248.29617	24.36973	269.45338	1.60944	0.1164400	0.30295775	2.1955736	20	2 11.1	19.4
119065 2001 <i>KB</i> <sub>72</sub>	17.0	X	200.02279	102.90895	184.90700	1.39290	0.1633097	0.29368894	2.2415288	20	—	—
119066 2001 <i>KJ</i> <sub>76</sub>	6.8	X	318.05494	268.53450	47.65749	6.73083	0.0853412	0.00337257	44.0381540	20	6 17.9	23.0
119067 2001 <i>KP</i> <sub>76</sub>	6.6	X	302.89675	301.97393	42.80327	7.20270	0.1929286	0.00338413	43.9377933	20	6 17.6	22.7
119068 2001 <i>KC</i> <sub>77</sub>	6.7	X	16.52917	180.91179	57.80138	12.89151	0.3640226	0.00236524	55.7894525	20	6 26.6	22.4
119069 2001 <i>KN</i> <sub>77</sub>	7.1	X	324.96352	279.25288	45.40715	2.36153	0.2463139	0.00396850	39.5110484	20	6 19.8	22.2
119070 2001 <i>KP</i> <sub>77</sub>	7.0	X	21.85870	119.52242	22.09092	3.31616	0.1815731	0.00336752	44.0821746	20	6 24.7	22.7
119071 2001 <i>LC</i> <sub>1</sub>	15.8	X	144.76719	216.37594	98.50739	5.52690	0.1893647	0.28647918	2.2789808	20	—	—
119072 2001 <i>LF</i> <sub>4</sub>	15.9	X	163.96149	225.17823	80.49807	8.27996	0.1494952	0.28668659	2.2778815	20	—	—
119073 2001 <i>LD</i> <sub>9</sub>	16.0	X	209.89229	184.85109	165.01646	7.43745	0.1854920	0.30047608	2.2076460	20	3 15.6	19.3
119074 2001 <i>LC</i> <sub>15</sub>	16.7	X	172.38588	90.12933	198.77059	5.52140	0.1498406	0.28905333	2.2654304	20	—	—
119075 2001 <i>LI</i> <sub>15</sub>	16.4	X	193.39401	54.81309	223.59579	3.90712	0.2401270	0.28751707	2.2734930	20	—	—
119076 2001 <i>LE</i> <sub>19</sub>	16.4	X	154.86764	95.99958	173.18161	5.72926	0.2703074	0.28049139	2.3113002	20	—	—
119077 2001 <i>MQ</i> <sub>8</sub>	15.7	X	201.98217	105.22707	258.73098	6.00480	0.1527256	0.29489440	2.2354161	20	3 23.3	19.1
119078 2001 <i>MA</i> <sub>9</sub>	15.9	X	198.69709	282.06045	329.97557	4.73702	0.1810696	0.28514541	2.2860820	20	—	—
119079 2001 <i>MA</i> <sub>17</sub>	16.8	X	80.42935	274.61738	23.57241	4.27176	0.2169018	0.27291332	2.3538903	20	12 19.9	20.5
119080 2001 <i>MG</i> <sub>28</sub>	16.1	X	85.47699	138.71614	181.80028	6.28635	0.1602935	0.27577176	2.3375964	20	—	—
119081 2001 <i>NR</i> <sub>3</sub>	16.4	X	206.39005	323.47299	301.96768	6.93800	0.1073177	0.28725230	2.2748898	20	—	—
119082 2001 <i>NR</i> <sub>4</sub>	17.0	X	152.73481	151.18344	128.79325	3.54003	0.1634787	0.28135126	2.3065886	20	—	—
119083 2001 <i>NT</i> <sub>9</sub>	16.8	X	78.56021	56.68169	245.43768	1.73567	0.1965283	0.27255159	2.3559726	20	12 21.8	20.4
119084 2001 <i>NH</i> <sub>10</sub>	16.4	X	177.24938	303.24472	346.92550	3.38374	0.1912800	0.28579140	2.2826357	20	—	—
119085 2001 <i>NW</i> <sub>15</sub>	16.1	X	52.44232	353.78258	345.68191	6.66724	0.1477200	0.27320921	2.3521905	20	—	—
119086 2001 <i>NR</i> <sub>19</sub>	16.5	X	7.01382	146.01678	185.12691	1.68647	0.2161047	0.26480520	2.4016979	20	11 4.5	18.8
119087 2001 <i>NK</i> <sub>21</sub>	15.8	X	17.82705	205.77815	135.99438	9.47745	0.2676879	0.26553242	2.3973108	20	12 15.9	18.8
119088 2001 <i>NP</i> <sub>21</sub>	16.2	X	102.02628	305.99993	326.20190	5.96938	0.1002668	0.26913731	2.3758560	20	11 29.5	19.7
119089 2001 <i>NR</i> <sub>21</sub>	16.2	X	17.54016	185.23281	148.70461	4.06516	0.1471917	0.26451147	2.4034755	20	11 15.3	18.9
119090 2001 <i>OU</i> <sub>1</sub>	16.7	X	74.61482	300.34129	29.72952	6.25699	0.1565775	0.27471003	2.3436156	20	—	—
119091 2001 <i>OG</i> <sub>9</sub>	15.8	X	24.31510	84.61233	286.42391	3.76449	0.2175003	0.27056057	2.3675167	20	—	—
119092 2001 <i>OU</i> <sub>10</sub>	16.5	X	16.34881	294.30428	39.44156	5.38183	0.2165330	0.26615613	2.3935641	20	11 22.9	19.1
119093 2001 <i>OR</i> <sub>18</sub>	16.3	X	164.74040	90.02552	202.43434	6.42606	0.1201719	0.28409550	2.2917108	20	—	—
119094 2001 <i>OU</i> <sub>24</sub>	17.8	X	18.59406	149.60064	165.62071	3.60569	0.2549974	0.26502401	2.4003758	20	11 7.2	20.3
119095 2001 <i>OE</i> <sub>25</sub>	16.2	X	57.03674	173.58505	164.91576	6.47718	0.1386394	0.27244188	2.3566051	20	—	—
119096 2001 <i>OT</i> <sub>28</sub>	15.8	X	40.83053	351.71278	328.17283	14.95468	0.2784050	0.26870091	2.3784277	20	12 15.7	19.6
119097 2001 <i>OX</i> <sub>34</sub>	15.8	X	95.33947	299.96851	90.93751	7.60510	0.1177568	0.28493544	2.2872049	20	—	—
119098 2001 <i>OD</i> <sub>35</sub>	16.2	X	308.40107	180.87646	356.28817	7.85603	0.0848646	0.28958032	2.2626811	20	—	—
119099 2001 <i>OR</i> <sub>40</sub>	16.3	X	325.71096	321.44512	89.38438	7.38405	0.0927652	0.26670233	2.3902950	20	12 1.4	18.7
119100 2001 <i>OZ</i> <sub>41</sub>	16.3	X	1.57913	61.68895	268.30379	5.56603	0.1199720	0.26011620	2.4304747	20	10 3.9	18.9
119101 2001 <i>OG</i> <sub>47</sub>	16.0	X	45.97105	240.07011	128.33903	8.32402	0.2229809	0.27283020	2.3543684	20	—	—
119102 2001 <i>OB</i> <sub>49</sub>	15.9	X	11.32617	186.76955	180.98222	5.54179	0.2424071	0.26655030	2.3912038	20	—	—
119103 2001 <i>OM</i> <sub>51</sub>	16.2	X	142.22809	186.93812	86.40332	5.82084	0.1234673	0.27858868	2.3218121	20	—	—
119104 2001 <i>ON</i> <sub>53</sub>	16.3	X	53.13057	275.23122	53.92922	7.42585	0.1416075	0.26942125	2.3741864	20	12 23.9	19.6
119105 2001 <i>OM</i> <sub>56</sub>	15.9	X	51.37319	139.70583	234.19557	5.57212	0.1446500	0.27229933	2.3574274	20	—	—
119106 2001 <i>OU</i> <sub>56</sub>	16.2	X	10.81446	220.48871	121.91256	5.93624	0.2169982	0.26602614	2.3943438	20	11 28.6	18.8
119107 2001 <i>OX</i> <sub>56</sub>	16.3	X	85.20231	195.85179	130.91877	3.31380	0.2207671	0.27526341	2.3404735	20	—	—
119108 2001 <i>OC</i> <sub>64</sub>	16.1	X	87.79832	287.19647	110.23439	4.63360	0.2250099	0.28264230	2.2995593	20	1 8.5	18.1
119109 2001 <i>OZ</i> <sub>64</sub>	15.1	X	130.55636	253.37339	152.47286	15.16209	0.1431221	0.23972041	2.5664494	20	3 13.7	18.8
119110 2001 <i>OT</i> <sub>70</sub>	16.1	X	54.76259	285.68634	47.82273	1.87597	0.2005212	0.26878988	2.3779029	20	—	—
119111 2001 <i>OK</i> <sub>71</sub>	15.8	X	341.85429	264.90545	68.27268	3.26000	0.2249834	0.25845684	2.4408665	20	9 10.7	17.3
119112 2001 <i>OV</i> <sub>75</sub>	16.1	X	257.39939	208.21387	39.07491	6.65613	0.1483031	0.29185885	2.2508893	20	—	—
119113 2001 <i>OE</i> <sub>77</sub>	16.2	X	8									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
119121 2001 OD <sub>88</sub>	15.8 <sup>m</sup>	X	88.67399	330.80781	323.73597	4.64284	0.2277847	0.27298520	2.3534771	20	12 23.4	19.7
119122 2001 OU <sub>89</sub>	17.0	X	119.61970	186.72269	103.55374	6.11556	0.1876537	0.27662990	2.3327595	20	—	—
119123 2001 OQ <sub>90</sub>	16.4	X	274.91678	107.20265	141.83391	5.81671	0.1114366	0.29415579	2.2391565	20	1 14.6	19.3
119124 2001 OB <sub>99</sub>	15.8	X	350.29544	264.21693	138.58036	13.72791	0.2267718	0.26897800	2.3767940	20	—	—
119125 2001 OW <sub>99</sub>	16.9	X	65.33248	330.29992	334.06606	2.01625	0.2330833	0.27073079	2.3665242	20	12 15.1	20.6
119126 2001 OK <sub>101</sub>	16.1	X	76.91850	307.62009	100.37755	7.85908	0.1059035	0.28454827	2.2892791	20	—	—
119127 2001 OT <sub>101</sub>	16.7	X	201.29028	233.11093	30.37253	4.10693	0.0584479	0.28544795	2.2844664	20	—	—
119128 2001 OY <sub>101</sub>	16.5	X	35.29388	301.19262	1.23216	1.16035	0.1498366	0.26531630	2.3986125	20	10 27.6	19.4
119129 2001 OL <sub>111</sub>	17.0	X	6.68968	198.15490	139.99182	1.95098	0.2033007	0.26533446	2.3985031	20	11 12.4	19.3
119130 2001 OT <sub>111</sub>	16.3	X	342.75020	207.84652	180.77399	2.41831	0.1975825	0.26758200	2.3850535	20	12 11.4	18.3
119131 2001 PN	16.4	X	290.85156	274.14652	332.35346	5.29035	0.1161372	0.29664668	2.2266044	20	1 30.4	19.3
119132 2001 PS <sub>1</sub>	16.3	X	35.86616	201.50666	126.37104	2.09521	0.2000971	0.26965779	2.3727978	20	12 10.5	19.3
119133 2001 PX <sub>1</sub>	16.7	X	162.96974	232.17163	56.27743	3.65558	0.2360402	0.28333625	2.2958030	20	—	—
119134 2001 PA <sub>5</sub>	16.7	X	133.52533	58.21031	234.14574	6.02305	0.1141232	0.27844100	2.3226330	20	—	—
119135 2001 PZ <sub>9</sub>	16.5	X	68.20947	339.23199	340.26882	5.96286	0.1510553	0.27245572	2.3565252	20	12 30.3	20.0
119136 2001 PC <sub>12</sub>	15.6	X	76.48513	139.50875	148.86452	6.65316	0.1221074	0.26742183	2.3860057	20	11 26.8	19.1
119137 2001 PF <sub>12</sub>	15.7	X	10.44987	288.52237	134.76903	2.72354	0.1411659	0.27346485	2.3507244	20	—	—
119138 2001 PS <sub>15</sub>	16.2	X	265.64089	327.44831	8.24064	5.06998	0.1042694	0.25089178	2.4896889	20	5 1.9	19.5
119139 2001 PY <sub>17</sub>	16.4	X	60.88484	302.41616	58.41477	6.61623	0.1973817	0.27471045	2.3436131	20	—	—
119140 2001 PS <sub>24</sub>	15.9	X	165.32258	153.84894	148.13680	7.29220	0.1281092	0.22998867	2.6383460	20	—	—
119141 2001 PX <sub>25</sub>	16.2	X	321.09723	295.96568	113.78717	5.03902	0.1462860	0.26522990	2.3991334	20	11 23.6	18.3
119142 2001 PL <sub>27</sub>	16.5	X	317.64951	123.36787	298.77884	4.23940	0.1351876	0.26621265	2.3932253	20	12 3.4	18.7
119143 2001 PX <sub>27</sub>	16.5	X	42.44730	316.17844	35.63605	3.15020	0.2318428	0.27147532	2.3621954	20	—	—
119144 2001 PH <sub>32</sub>	16.0	X	341.10096	293.85034	58.67385	6.47749	0.1218365	0.26249666	2.4157586	20	10 6.9	18.4
119145 2001 PS <sub>41</sub>	15.3	X	275.21684	113.71229	326.16753	21.77514	0.2054000	0.26035398	2.4289947	20	9 16.4	18.4
119146 2001 PQ <sub>45</sub>	16.8	X	336.82000	316.04584	36.79560	6.97342	0.2954791	0.26203243	2.4186110	20	10 7.9	17.8
119147 2001 PF <sub>47</sub>	15.5	X	106.10900	126.70562	319.31557	24.65539	0.2654065	0.28985598	2.2612463	20	4 1.6	19.2
119148 2001 PS <sub>49</sub>	15.2	X	2.11208	231.86850	306.16469	22.30073	0.0273190	0.23594299	2.5937692	20	2 18.5	18.8
119149 2001 PY <sub>55</sub>	16.6	X	269.26412	152.44698	229.75956	1.62774	0.1940694	0.25497887	2.4630124	20	6 27.9	19.9
119150 2001 PR <sub>60</sub>	16.2	X	13.17722	261.11063	151.61285	2.55863	0.2078115	0.27433117	2.3457728	20	—	—
119151 2001 PW <sub>61</sub>	15.8	X	256.65164	89.70267	334.97142	11.87974	0.2301718	0.25633676	2.4543064	20	8 6.9	19.2
119152 2001 PB <sub>63</sub>	15.7	X	356.14116	291.28245	110.56000	3.15039	0.2076701	0.26600534	2.3944686	20	—	—
119153 2001 QH <sub>3</sub>	16.2	X	122.82655	180.66303	124.05583	3.17778	0.1719002	0.27849125	2.3223536	20	—	—
119154 2001 QS <sub>3</sub>	16.9	X	134.54259	59.01288	258.60076	1.91865	0.1785688	0.28148715	2.3058462	20	—	—
119155 2001 QJ <sub>7</sub>	16.4	X	341.54458	46.64652	321.48429	5.11661	0.1900342	0.26367599	2.4085499	20	11 1.4	18.4
119156 2001 QM <sub>7</sub>	16.4	X	239.72470	198.60175	146.36341	8.49069	0.2881079	0.24653475	2.5189369	20	4 3.9	20.8
119157 2001 QH <sub>9</sub>	16.2	X	315.99833	23.27394	25.87676	1.27841	0.1819437	0.26456926	2.4031255	20	11 9.9	17.9
119158 2001 QX <sub>21</sub>	16.2	X	205.67731	27.38736	315.59691	3.45612	0.2954956	0.23980547	2.5658425	20	3 5.4	20.9
119159 2001 QX <sub>22</sub>	15.6	X	69.69544	5.17409	15.86973	6.47134	0.1915087	0.27699568	2.3307054	20	—	—
119160 2001 QT <sub>23</sub>	16.4	X	29.23421	204.30943	94.89500	3.36874	0.2125576	0.26300170	2.4126649	20	10 26.1	19.2
119161 2001 QB <sub>24</sub>	16.3	X	150.62830	182.99722	160.08405	4.17137	0.2108465	0.23204570	2.6227307	20	1 21.9	20.6
119162 2001 QD <sub>26</sub>	16.7	X	343.83084	270.16135	80.32783	3.50237	0.2306464	0.26128843	2.4232000	20	10 17.6	18.4
119163 2001 QX <sub>26</sub>	16.0	X	72.97195	178.78441	118.81315	4.38752	0.1816715	0.26854841	2.3793281	20	12 9.5	19.5
119164 2001 QJ <sub>37</sub>	16.4	X	140.40650	79.04826	189.55046	1.87285	0.1854735	0.27757580	2.3274569	20	—	—
119165 2001 QJ <sub>38</sub>	15.8	X	288.22378	164.18896	140.00055	7.08522	0.1242451	0.25177629	2.4838545	20	4 20.1	19.1
119166 2001 QJ <sub>39</sub>	17.1	X	110.22852	124.89201	212.94796	1.98353	0.1723600	0.28089182	2.3091031	20	—	—
119167 2001 QX <sub>39</sub>	16.7	X	15.03088	80.86118	209.87825	1.25347	0.2000744	0.26209284	2.4182393	20	9 14.9	18.9
119168 2001 QK <sub>42</sub>	16.5	X	245.49719	150.40846	103.69881	2.03112	0.1744849	0.29079188	2.2563919	20	—	—
119169 2001 QM <sub>47</sub>	16.1	X	309.91020	204.99657	325.78843	9.52762	0.0718399	0.28549283	2.2842269	20	—	—
119170 2001 QO <sub>48</sub>	16.8	X	349.27538	343.54656	1.79586	1.22063	0.2009211	0.26260639	2.4150856	20	10 16.9	18.7
119171 2001 QH <sub>49</sub>	16.0	X	192.05982	57.27764	145.10351	6.66150	0.0575280	0.27285012	2.3542538	20	12 14.9	19.2
119172 2001 QJ <sub>49</sub>	16.8	X	349.54451	223.50049	141.50240	1.82441	0.2003500	0.26443883	2.4039157	20	11 18.9	18.7
119173 2001 QL <sub>49</sub>	16.1	X	315.87425	271.39919	121.89524	2.85966	0.1717059	0.26292408	2.4131397	20	10 16.6	18.1
119174 2001 QR <sub>51</sub>	16.2	X	219.52249	183.87477	78.46979	4.10107	0.0933718	0.28679917	2.2772854	20	—	—
119175 2001 QU <sub>53</sub>	16.4	X	78.71546	251.55092	61.45475	3.09585	0.2127853	0.27241035	2.3567869	20	—	—
119176 2001 QS <sub>55</sub>	16.2	X	7.29762	308.69252	86.06667	2.33809	0.1843915	0.26972405	2.3724092	20	—	—
119177 2001 QN <sub>61</sub>	17.0	X	164.32184	355.32102	281.54946	1.75305	0.1497443	0.28084966	2.3093342	20	—	—
119178 2001 QW <sub>66</sub>	16.2	X	37.16065	66.45572	234.40440	3.60123	0.1470323	0.26362302	2.4088726	20	10 27.0	19.2
119179 2001 QM <sub>67</sub>	16.8	X	81.18694	135.18062	192.27414	1.76224	0.2107988	0.27476153	2.3433227	20	—	—
119180 2001 QN <sub>68</sub>	15.2	X	354.68082	125.52470	283.74526	10.84839	0.1792239	0.26919710	2.3755042	20	—	—
119181 2001 QX <sub>68</sub>	16.0	X	104.39982	21.84294	289.85058	6.36256	0.1470257	0.27477845	2.3432265	20	—	—
119182 2001 QZ <sub>80</sub>	15.2	X	47.64072	168.92369	240.51594	6.02180	0.2240273	0.27443498	2.3451812	20	—	—
119183 2001 QV <sub>82</sub>	16.0	X	227.27486	187.27502	203.26994	13.53462	0.1978121	0.24596674	2.5228134	20	5 24.4	20.1
119184 2001 QK <sub>87</sub>	15.7	X	282.92262	135.81752	287.00847	11.65338	0.1646340	0.25960757	2.4336483	20	9 14.6	18.7
119185 2001 QJ <sub>88</sub>	17.0	X	10.53486	313.17030	148.94653	3.15052	0.1201285	0.28177046	2.3043003	20	—	—
119186 2001 QM <sub>93</sub>	15.4	X	166.04500	180.29575	227.99683	4.49064	0.2551641	0.23586479	2.5943425	20	4 23.9	19.9
119187 2001 QA <sub>94</sub>	15.5	X	47.45460	23.67318	23.15400	4.71381	0.2431158	0.21924547	2.7238444	20	—	—
119188 2001 QO <sub>97</sub>	15.8	X	332.13668	64.97930	314.89636	3.74263	0.2055518	0.26038148	2.4288237	20	10 29.8	17.5
119189 2001 QO <sub>102</sub>	16.1	X	79.81429	22.59085	276.44613	1.71480	0.1796244	0.27260570	2.3556608	20	12 17.9	19.5
119190 2001 QC <sub>104</sub>	16.2	X	86.48767	64.64722	339.48115	1.28371	0.2261442	0.28089510	2.3090851	20	1 17.0	18.2
119191 2001 QO <sub>104</sub>	15.9	X	188.74802	202.86434	331.50899	6.66023	0.0603604	0.26841012	2.3801452	20	10 29.8	19.2
119192 2001 QM <sub>106</sub>	16.5	X	80.90827	133.46135	199.03784	4.26038	0.0921027	0.27461006	2.3441843	20	—	—
119193 2001 QH <sub>108</sub>	15.7	X	155.00191	162.90428	24.90915	6.18194	0.0268233	0.25975393	2.4327340	20	10 10.2	18.7
119194 2001 QH <sub>109</sub>	16.0	X	217.06432	205.68446	74.80686	8.70207	0.1256049	0.28983775	2.2613411	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>
119201 2001 QL <sub>126</sub>	16.0	X	157.89988	27.40715	239.87129	5.87788	0.0916819	0.27920460	2.3183963	20	—	—
119202 2001 QN <sub>128</sub>	16.2	X	109.19547	56.07944	208.86882	7.62656	0.0887719	0.27040441	2.3684281	20	11 29.4	19.5
119203 2001 QU <sub>128</sub>	15.9	X	4.52634	142.93766	246.83981	5.80746	0.1211786	0.27025088	2.3693250	20	—	—
119204 2001 QV <sub>128</sub>	16.3	X	301.32322	45.63203	216.01743	5.70619	0.1591517	0.29889459	2.2154265	20	2 23.4	19.0
119205 2001 QN <sub>141</sub>	16.4	X	352.95454	357.07171	33.81133	1.83545	0.1843952	0.26665965	2.3905501	20	12 31.3	18.7
119206 2001 QW <sub>145</sub>	16.5	X	326.29216	98.66769	308.59963	1.47837	0.1783706	0.26700745	2.3884737	20	12 1.7	18.3
119207 2001 QB <sub>149</sub>	16.5	X	332.47242	340.50949	33.11628	3.04932	0.1990796	0.26358083	2.4091296	20	10 23.3	18.1
119208 2001 QJ <sub>156</sub>	16.6	X	229.18769	61.44197	228.42225	2.22328	0.1658400	0.23852623	2.5750082	20	1 23.7	20.7
119209 2001 QC <sub>159</sub>	16.1	X	12.56289	318.52961	344.13204	6.61606	0.1127571	0.26053431	2.4278737	20	9 14.5	18.6
119210 2001 QF <sub>160</sub>	16.6	X	30.95747	211.74556	164.33668	1.38313	0.1942530	0.27111066	2.3643131	20	—	—
119211 2001 QD <sub>161</sub>	16.3	X	132.77033	319.08600	332.11045	3.61593	0.0367283	0.27640012	2.3340522	20	—	—
119212 2001 QY <sub>166</sub>	16.1	X	105.65257	150.33066	101.55143	6.44074	0.1879200	0.26959534	2.3731643	20	11 15.2	20.0
119213 2001 QF <sub>168</sub>	17.2	X	145.36446	101.47544	157.61402	2.15632	0.2040530	0.27776337	2.3264090	20	12 26.7	21.1
119214 2001 QS <sub>173</sub>	16.4	X	33.20626	104.83441	251.92502	5.44952	0.1242061	0.26973520	2.3723439	20	—	—
119215 2001 QX <sub>188</sub>	15.8	X	323.77558	312.98891	134.20640	5.96712	0.1426864	0.27245710	2.3565173	20	—	—
119216 2001 QO <sub>191</sub>	16.5	X	80.69645	293.39831	99.70904	7.21543	0.1216464	0.28260522	2.2997604	20	—	—
119217 2001 QV <sub>200</sub>	15.1	X	43.54558	214.77648	258.23811	3.46107	0.0804122	0.28091059	2.3090002	20	1 21.4	17.5
119218 2001 QV <sub>210</sub>	16.0	X	335.81377	101.07059	286.37646	5.01161	0.1239421	0.26432522	2.4046045	20	11 14.5	18.4
119219 2001 QJ <sub>211</sub>	16.7	X	56.28843	331.97498	311.72942	1.89585	0.1793284	0.26421697	2.4052612	20	11 2.0	20.0
119220 2001 QL <sub>211</sub>	15.6	X	154.99749	222.77293	195.77610	4.49084	0.1210143	0.24114285	2.5563469	20	4 21.3	19.3
119221 2001 QS <sub>214</sub>	16.4	X	329.47310	170.21175	226.40046	0.44321	0.1880146	0.26362507	2.4088601	20	11 21.7	18.2
119222 2001 QD <sub>219</sub>	16.8	X	136.30798	353.03183	268.12597	3.14357	0.1263895	0.27426846	2.3461303	20	12 20.9	20.6
119223 2001 QB <sub>220</sub>	15.4	X	255.94408	45.30372	301.14587	12.15026	0.1940009	0.24471092	2.5314371	20	4 19.4	19.6
119224 2001 QE <sub>223</sub>	16.4	X	46.80809	125.58245	330.68448	7.02777	0.0905941	0.28716553	2.2753481	20	1 3.0	18.6
119225 2001 QM <sub>223</sub>	16.5	X	180.97714	283.44919	329.91367	1.93952	0.1499225	0.28072073	2.3100412	20	—	—
119226 2001 QB <sub>224</sub>	16.4	X	8.65891	96.67172	196.85230	8.56725	0.1117110	0.25977363	2.4326110	20	8 21.9	19.0
119227 2001 QD <sub>226</sub>	15.9	X	11.58774	146.92368	291.67974	6.03020	0.0765846	0.27620193	2.3351686	20	—	—
119228 2001 QZ <sub>226</sub>	15.3	X	331.79498	233.63230	299.13046	10.19480	0.0968003	0.28579528	2.2826151	20	—	—
119229 2001 QV <sub>232</sub>	16.0	X	296.61427	139.29511	332.33550	3.84514	0.1303345	0.26967163	2.3727166	20	—	—
119230 2001 QV <sub>236</sub>	16.6	X	50.63514	83.34274	211.89760	1.64252	0.1949783	0.26473780	2.4021055	20	11 13.7	19.8
119231 2001 QQ <sub>238</sub>	15.8	X	194.46676	156.59954	176.09516	15.54461	0.1430695	0.23611965	2.5924753	20	2 11.8	20.0
119232 2001 QA <sub>239</sub>	16.0	X	318.69030	89.84586	351.77775	6.44889	0.1022281	0.26737308	2.3862958	20	—	—
119233 2001 QZ <sub>243</sub>	15.6	X	63.16767	13.87513	359.02979	5.58816	0.0312077	0.22134854	2.7065638	20	—	—
119234 2001 QL <sub>255</sub>	15.9	X	160.82711	7.22236	267.35942	5.43144	0.0902643	0.27854307	2.3220655	20	—	—
119235 2001 QP <sub>261</sub>	15.8	X	16.16427	36.24116	292.14591	5.24433	0.0999838	0.26168914	2.4207257	20	10 24.2	18.7
119236 2001 QO <sub>271</sub>	16.4	X	182.12349	260.24419	352.77243	3.93742	0.1425748	0.28081141	2.3095439	20	—	—
119237 2001 QE <sub>275</sub>	15.3	X	103.50670	330.07790	113.51005	5.18905	0.1263871	0.23766638	2.5812152	20	4 10.9	19.0
119238 2001 QL <sub>277</sub>	15.2	X	0.12143	55.29295	7.71133	22.29433	0.2624026	0.27081412	2.3660387	20	—	—
119239 2001 QY <sub>277</sub>	15.5	X	19.34373	356.87897	49.18666	10.47547	0.2121380	0.27179766	2.3603274	20	—	—
119240 2001 QF <sub>278</sub>	15.6	X	326.15167	284.04711	70.28397	12.75675	0.2745144	0.25862821	2.4397882	20	9 7.4	17.3
119241 2001 QO <sub>282</sub>	16.0	X	186.88576	240.46526	109.84498	5.63581	0.2547104	0.28846658	2.2685014	20	2 29.2	19.9
119242 2001 QL <sub>286</sub>	16.1	X	73.42513	84.18543	260.25788	9.14931	0.0778706	0.27587701	2.3370018	20	—	—
119243 2001 QZ <sub>288</sub>	16.3	X	337.54580	190.00161	237.03615	2.25835	0.1531923	0.27121919	2.3636823	20	—	—
119244 2001 QL <sub>290</sub>	17.0	X	319.60514	217.36958	179.42615	0.82371	0.1836699	0.26398929	2.4066440	20	10 29.7	18.6
119245 2001 QD <sub>293</sub>	14.3	X	334.18542	174.62797	138.66870	24.91957	0.22129924	0.27035444	2.3687200	20	—	—
119246 2001 QH <sub>295</sub>	16.4	X	22.81732	159.12278	166.55950	1.00864	0.2008515	0.26226944	2.4171536	20	11 18.9	19.0
119247 2001 QX <sub>296</sub>	15.4	X	27.42603	160.96315	196.78651	5.17368	0.1326876	0.26509511	2.3999465	20	12 27.5	18.4
119248 2001 RS <sub>10</sub>	16.5	X	294.14926	128.32929	235.10759	7.95370	0.2744093	0.25561587	2.4589187	20	6 23.4	19.2
119249 2001 RR <sub>14</sub>	16.1	X	282.84071	228.94695	238.04456	0.57697	0.1448220	0.26867813	2.3785621	20	12 2.8	18.3
119250 2001 RR <sub>15</sub>	15.5	X	320.54459	150.19461	358.41395	2.39712	0.0275291	0.22846557	2.6500590	20	—	—
119251 2001 RE <sub>20</sub>	16.3	X	58.99706	114.35356	178.29425	6.23693	0.1682584	0.26672253	2.3901744	20	11 17.9	19.6
119252 2001 RD <sub>21</sub>	16.1	X	300.37589	87.27228	347.83811	4.46907	0.1695257	0.26551687	2.3974044	20	11 14.8	18.2
119253 2001 RL <sub>24</sub>	16.9	X	11.38338	156.85482	223.37559	0.56397	0.1887560	0.26843914	2.3799737	20	—	—
119254 2001 RL <sub>28</sub>	16.1	X	334.41696	293.50672	148.14350	3.17195	0.1900973	0.27116812	2.3639791	20	—	—
119255 2001 RP <sub>28</sub>	16.9	X	130.80816	39.31896	231.80142	1.59496	0.1736228	0.27439618	2.3454023	20	12 29.0	20.5
119256 2001 RW <sub>28</sub>	15.7	X	270.24147	178.05783	330.88103	4.31782	0.0782509	0.22119437	2.7078213	20	—	—
119257 2001 RN <sub>34</sub>	15.5	X	115.95144	239.72002	170.69658	12.93948	0.1304819	0.23623409	2.5916380	20	2 27.5	19.1
119258 2001 RK <sub>39</sub>	16.2	X	144.37397	236.73742	355.71317	5.07839	0.1760395	0.27012663	2.3700515	20	11 21.8	20.0
119259 2001 RC <sub>44</sub>	16.2	X	47.94106	132.34129	176.56563	6.02334	0.1231304	0.26471125	2.4022661	20	11 19.6	19.3
119260 2001 RB <sub>45</sub>	15.9	X	20.98723	47.74878	324.25277	6.04244	0.1438378	0.26811462	2.3818937	20	—	—
119261 2001 RG <sub>48</sub>	15.2	X	159.53353	151.11437	23.94376	4.64663	0.1229446	0.25745612	2.4471874	20	9 26.7	19.0
119262 2001 RQ <sub>49</sub>	16.4	X	359.10991	162.15676	309.40995	1.29217	0.1836444	0.27757258	2.3274749	20	—	—
119263 2001 RG <sub>51</sub>	16.0	X	23.24428	215.72137	69.42141	9.79609	0.2485379	0.26094706	2.4253129	20	10 6.5	18.7
119264 2001 RZ <sub>55</sub>	16.0	X	223.29663	346.73768	112.24204	3.58114	0.1603204	0.25665565	2.4522731	20	8 22.2	19.4
119265 2001 RJ <sub>56</sub>	15.8	X	9.17035	20.77418	34.17372	6.27093	0.1392819	0.27210266	2.3585633	20	—	—
119266 2001 RA <sub>58</sub>	16.1	X	18.56213	228.56777	62.79152	5.74372	0.1942323	0.25968768	2.4331477	20	9 25.1	18.6
119267 2001 RZ <sub>65</sub>	15.7	X	355.29264	74.32282	291.02454	4.82890	0.1444451	0.26293215	2.4130904	20	11 19.9	18.1
119268 2001 RC <sub>67</sub>	15.9	X	24.94711	92.49179	219.51456	6.56983	0.1451023	0.26108601	2.4244523	20	10 23.9	18.6
119269 2001 RK <sub>68</sub>	16.0	X	293.20992	170.21232	258.13343	5.42615	0.1057633	0.26104422	2.4247111	20	10 25.6	18.7
119270 2001 RU <sub>72</sub>	15.8	X	129.72374	25.52381	239.57061	2.92478	0.1384247	0.26868094	2.3785456	20	12 20.1	19.4
119271 2001 RB <sub>76</sub>	15.6	X	204.95203	209.34630	198.49899	12.58312	0.1745088	0.24232346	2.5480371	20	5 27.1	19.9
119272 2001 RG <sub>77</sub>	15.1	X	224.93941	253.06112	154.18363	5.19988	0.1829593	0.24469752	2.5315296	20	6 13.2	19.1
119273 2001 RX <sub>78</sub>	15.2	X	142.98131	4.11059	52.42755	18.84861	0.2192219	0.23352388	2.6116513	20	4 19.4	19.6
119274 2001 RY <sub>79</sub>	15.2	X	177.99519	45.16674								

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>
119281 2001 RQ <sub>98</sub>	15.9	X	155.80805	277.11707	41.23719	2.08911	0.2178920	0.28628468	2.2800129	20	—	—
119282 2001 RK <sub>100</sub>	16.7	X	355.48588	345.53105	26.12592	2.88439	0.1185298	0.26600472	2.3944723	20	11 27.2	19.1
119283 2001 RV <sub>100</sub>	16.9	X	36.83435	283.61371	6.30513	5.04734	0.2239639	0.26351347	2.4095402	20	10 23.2	19.8
119284 2001 RR <sub>101</sub>	16.9	X	214.59045	214.26058	43.34816	2.42864	0.1519815	0.28423684	2.2909510	20	—	—
119285 2001 RR <sub>107</sub>	16.4	X	277.95280	220.86843	174.80677	7.28950	0.0933185	0.25710282	2.4494288	20	8 14.6	19.4
119286 2001 RD <sub>109</sub>	16.6	X	40.45769	97.68498	157.97521	2.47451	0.1425341	0.25808649	2.4432010	20	8 27.7	19.4
119287 2001 RU <sub>110</sub>	16.2	X	149.85881	210.01460	10.43369	5.37540	0.1721993	0.26924814	2.3752040	20	11 11.8	20.0
119288 2001 RZ <sub>124</sub>	16.2	X	39.54161	246.82718	46.52396	1.93124	0.1793396	0.26283144	2.4137068	20	10 25.8	19.2
119289 2001 RW <sub>125</sub>	16.5	X	38.48732	220.76528	91.26983	3.65766	0.0860592	0.26405198	2.4062630	20	11 5.4	19.5
119290 2001 RA <sub>127</sub>	16.7	X	98.23044	213.85092	92.99540	3.52874	0.2202753	0.27348078	2.3506331	20	—	—
119291 2001 RK <sub>132</sub>	16.6	X	299.49854	310.70296	82.87927	2.49105	0.1870432	0.25815471	2.4427706	20	9 7.2	18.9
119292 2001 SR <sub>1</sub>	16.4	X	9.12990	107.85943	259.34464	1.66093	0.0549767	0.26507732	2.4000540	20	12 3.2	19.2
119293 2001 SB <sub>2</sub>	15.9	X	30.07919	313.60183	2.27640	6.24427	0.1578041	0.26255095	2.4154256	20	11 6.6	18.9
119294 2001 SV <sub>7</sub>	16.5	X	306.56817	53.00067	358.62949	5.28509	0.1710061	0.26276143	2.4141355	20	10 21.3	18.5
119295 2001 SV <sub>9</sub>	15.6	X	269.32729	307.34693	5.30304	1.09961	0.0436611	0.23870520	2.5737209	20	4 16.1	19.0
119296 2001 SD <sub>10</sub>	15.4	X	130.54539	213.98073	213.19968	13.47275	0.1616164	0.23376366	2.6098650	20	4 9.1	19.4
119297 2001 SR <sub>12</sub>	16.6	X	135.43443	9.70456	271.97353	1.69594	0.2043800	0.27615229	2.3354484	20	—	—
119298 2001 SY <sub>18</sub>	16.4	X	195.41970	255.94959	140.20778	1.38243	0.0811763	0.24367921	2.5385773	20	5 4.5	20.0
119299 2001 SX <sub>19</sub>	16.3	X	259.50836	345.47172	127.89937	3.98293	0.1013900	0.26377883	2.4079239	20	11 8.4	19.0
119300 2001 SO <sub>24</sub>	16.4	X	352.08761	344.24855	315.82338	1.98036	0.1847936	0.25571311	2.4582953	20	8 5.9	18.3
119301 2001 SH <sub>25</sub>	15.8	X	199.13717	193.07878	18.50336	1.37753	0.0493556	0.21789656	2.7350743	20	12 22.2	19.6
119302 2001 SR <sub>26</sub>	16.1	X	304.51491	295.30653	184.06603	2.52295	0.1196866	0.27031353	2.3689589	20	—	—
119303 2001 SZ <sub>26</sub>	15.9	X	262.41795	128.96803	7.36118	5.08569	0.1561338	0.26620262	2.3932854	20	12 5.1	18.5
119304 2001 SQ <sub>33</sub>	15.4	X	351.25564	193.21037	19.75552	4.71502	0.2240146	0.24057281	2.5603835	20	3 10.1	17.7
119305 2001 SH <sub>42</sub>	16.4	X	1.26905	243.30182	78.04842	2.41006	0.1987644	0.25993393	2.4316108	20	10 7.4	18.5
119306 2001 SX <sub>47</sub>	15.8	X	338.64166	27.23240	65.28069	5.61413	0.0732109	0.27167868	2.3610164	20	—	—
119307 2001 SF <sub>48</sub>	15.6	X	226.95116	25.91327	163.72452	2.78793	0.1140050	0.26980189	2.3719529	20	—	—
119308 2001 SR <sub>51</sub>	16.2	X	323.74015	240.85048	157.25423	7.31807	0.1115748	0.26202418	2.4186617	20	11 10.4	18.7
119309 2001 SC <sub>52</sub>	14.9	X	166.73121	19.30269	162.13022	8.35460	0.1504327	0.25875187	2.4390108	20	10 12.4	18.7
119310 2001 SR <sub>62</sub>	16.1	X	133.59636	175.66463	189.68506	4.99693	0.1272385	0.22908511	2.6452790	20	1 22.7	19.9
119311 2001 SL <sub>66</sub>	16.6	X	238.52914	321.92881	33.32665	3.96804	0.2875203	0.24419881	2.5349751	20	4 13.2	20.8
119312 2001 SR <sub>70</sub>	15.0	X	228.09959	263.79291	64.03959	14.45776	0.1416630	0.23600811	2.5932921	20	3 18.5	19.3
119313 2001 SS <sub>72</sub>	15.7	X	216.81081	261.52075	112.33497	5.09986	0.1763819	0.24025058	2.5626724	20	4 26.1	19.8
119314 2001 SW <sub>72</sub>	15.5	X	335.18076	191.60911	44.08692	3.71528	0.1557803	0.23919834	2.5701824	20	3 22.1	18.1
119315 2001 SQ <sub>73</sub>	9.6	X	135.44984	303.36924	16.19932	17.43878	0.1785190	0.01359042	17.3905791	20	1 9.4	22.6
119316 2001 SR <sub>80</sub>	16.1	X	284.70296	263.64119	185.31680	4.08410	0.1638432	0.26624708	2.3930190	20	11 7.1	18.2
119317 2001 SG <sub>97</sub>	16.0	X	282.23777	118.34159	317.67393	6.61892	0.2258558	0.25973955	2.4328238	20	9 27.0	18.6
119318 2001 SL <sub>101</sub>	16.8	X	126.12749	324.62705	300.30547	0.66283	0.1648634	0.27090756	2.3654946	20	12 16.9	20.7
119319 2001 SZ <sub>104</sub>	16.3	X	253.34552	77.39105	233.38990	4.33466	0.2394129	0.24265713	2.5457007	20	3 3.5	20.5
119320 2001 SH <sub>109</sub>	15.5	X	236.46686	113.93040	263.97479	13.09068	0.0877718	0.24133066	2.5550204	20	5 26.2	18.2
119321 2001 SX <sub>114</sub>	14.0	X	246.70285	97.06503	24.95098	3.65769	0.1511158	0.26040983	2.4286474	20	10 22.0	18.9
119322 2001 SA <sub>119</sub>	16.1	X	114.89493	321.41733	276.12071	5.71198	0.1508888	0.26550754	2.3974606	20	10 30.9	19.8
119323 2001 SQ <sub>121</sub>	14.5	X	339.74253	106.66855	329.36117	8.60210	0.1589663	0.21679021	2.7443717	20	—	—
119324 2001 SM <sub>124</sub>	16.1	X	280.46465	238.13307	196.84430	4.88655	0.0469733	0.26349463	2.4096550	20	10 23.8	18.9
119325 2001 SP <sub>125</sub>	16.6	X	280.68675	23.35101	217.88917	4.20713	0.0975560	0.28981149	2.2614777	20	1 12.8	19.5
119326 2001 SS <sub>128</sub>	16.0	X	271.73011	209.22201	314.81116	6.15005	0.0491399	0.27563407	2.3383748	20	—	—
119327 2001 SD <sub>130</sub>	17.0	X	72.12804	26.23869	255.30290	1.33362	0.1686482	0.26550145	2.3974972	20	11 16.2	20.6
119328 2001 SX <sub>131</sub>	16.0	X	223.20566	324.41791	207.09255	1.53537	0.1543973	0.26784814	2.3834733	20	11 27.9	18.9
119329 2001 SV <sub>135</sub>	16.3	X	224.62614	190.91832	344.43234	0.84871	0.1290604	0.26857772	2.3791550	20	12 8.4	19.1
119330 2001 SY <sub>135</sub>	16.1	X	159.99073	264.97573	223.52261	0.85801	0.1118339	0.25063268	2.4914045	20	7 26.4	19.8
119331 2001 SS <sub>136</sub>	16.0	X	233.45204	254.87527	202.79226	6.93575	0.1660984	0.25582662	2.4575681	20	8 27.9	19.7
119332 2001 SA <sub>140</sub>	16.1	X	157.17254	276.41308	191.86237	3.67608	0.0525250	0.24763156	2.5114935	20	6 24.4	19.6
119333 2001 SM <sub>141</sub>	16.5	X	289.14536	113.04542	190.59090	0.21578	0.0521136	0.24424465	2.5346579	20	4 29.3	19.8
119334 2001 SD <sub>143</sub>	16.3	X	287.67988	16.29749	230.52122	4.59083	0.1811068	0.29207074	2.2498005	20	1 17.8	19.5
119335 2001 SN <sub>144</sub>	16.2	X	275.89553	181.91551	320.19629	3.59438	0.1212533	0.27095967	2.3651913	20	—	—
119336 2001 SC <sub>145</sub>	16.4	X	203.53927	356.21742	201.27373	6.54713	0.0514524	0.26987994	2.3714956	20	12 22.3	19.5
119337 2001 SB <sub>146</sub>	16.3	X	203.04565	201.84772	336.19591	2.11341	0.1342638	0.26650111	2.3914981	20	11 14.0	19.7
119338 2001 SR <sub>152</sub>	16.3	X	38.69867	182.54162	224.65702	4.57549	0.0585671	0.22102892	2.7091724	20	—	—
119339 2001 SR <sub>154</sub>	15.4	X	144.14299	169.56348	13.12545	7.70872	0.1854707	0.25585195	2.4574059	20	9 21.8	19.3
119340 2001 SY <sub>161</sub>	16.5	X	52.64127	147.37779	279.30617	1.78337	0.2051480	0.27694315	2.3310001	20	—	—
119341 2001 SL <sub>168</sub>	15.3	X	29.99136	43.54536	228.77811	6.18980	0.1192693	0.25279498	2.4771772	20	8 27.3	18.3
119342 2001 SZ <sub>172</sub>	15.6	X	261.61498	104.81310	44.55887	5.54031	0.1404536	0.26813007	2.3818022	20	12 26.5	18.2
119343 2001 SR <sub>176</sub>	16.1	X	353.40885	152.94409	152.40988	6.73163	0.1465184	0.25446708	2.4663137	20	8 14.9	18.3
119344 2001 SK <sub>179</sub>	15.8	X	80.38750	283.30569	90.62649	7.35374	0.1121332	0.27256346	2.3559042	20	—	—
119345 2001 SB <sub>180</sub>	16.5	X	35.47228	110.47055	326.16201	4.24733	0.1542317	0.28113031	2.3077970	20	—	—
119346 2001 SS <sub>203</sub>	16.8	X	24.93355	250.22489	31.13405	2.73481	0.1592116	0.25850060	2.4405911	20	9 13.0	19.3
119347 2001 SM <sub>204</sub>	16.5	X	156.41159	151.00731	147.48735	4.03780	0.1464246	0.22692795	2.6620164	20	—	—
119348 2001 SQ <sub>2</sub>												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
119361 2001 SK <sub>246</sub>	15.6 <sup>m</sup>	X	320.82062	246.88951	183.77652	4.36216	0.0256634	0.21230406	2.7828973	20	12 3.6	19.3
119362 2001 SQ <sub>246</sub>	16.0	X	184.81327	161.45489	30.96095	6.99946	0.0891863	0.26310066	2.4120599	20	11 15.8	19.5
119363 2001 SX <sub>246</sub>	16.6	X	12.06872	279.30250	31.38034	6.85488	0.1792329	0.25833469	2.4416359	20	10 7.4	19.0
119364 2001 SY <sub>246</sub>	15.9	X	166.98265	40.90565	144.83048	2.83486	0.1504652	0.25902978	2.4372659	20	10 17.2	19.7
119365 2001 SK <sub>250</sub>	15.7	X	198.49262	167.90232	45.50208	7.14778	0.0549571	0.26838097	2.3803176	20	—	—
119366 2001 SZ <sub>252</sub>	15.4	X	91.05189	305.75319	188.67642	9.28627	0.1514912	0.23787123	2.5797330	20	5 22.7	19.0
119367 2001 SO <sub>253</sub>	16.1	X	229.18313	201.57590	122.73014	3.32922	0.1405607	0.23791764	2.5793976	20	3 8.0	20.1
119368 2001 SD <sub>273</sub>	14.9	X	101.44113	328.68038	21.60684	35.85016	0.2117924	0.22005884	2.7171284	20	—	—
119369 2001 SK <sub>277</sub>	15.4	X	62.51627	234.86052	241.92430	11.05238	0.0996659	0.23170237	2.6253209	20	3 3.3	18.8
119370 2001 SL <sub>286</sub>	15.9	X	210.43742	211.20479	156.64094	12.96550	0.1694974	0.24080874	2.5587109	20	4 14.4	20.2
119371 2001 SZ <sub>286</sub>	15.9	X	100.47093	326.04489	94.82934	7.11123	0.2428962	0.28282464	2.2985708	20	3 8.9	18.7
119372 2001 SP <sub>292</sub>	16.1	X	299.66221	127.31876	310.89843	5.71787	0.0686795	0.26656600	2.3911100	20	11 24.4	18.8
119373 2001 SS <sub>308</sub>	15.4	X	23.76265	338.61836	168.55300	14.37139	0.0996461	0.23851736	2.5750721	20	2 12.9	18.3
119374 2001 SL <sub>311</sub>	15.7	X	196.13082	221.51518	178.12711	14.35543	0.1095671	0.24162512	2.5529422	20	4 29.4	19.8
119375 2001 SG <sub>315</sub>	15.4	X	115.16787	173.66443	165.63702	13.56722	0.1801360	0.22380854	2.6866945	20	—	—
119376 2001 SP <sub>316</sub>	15.1	X	136.84824	41.67335	110.08195	13.19836	0.1083243	0.22327856	2.6909442	20	1 10.9	19.0
119377 2001 SK <sub>318</sub>	15.8	X	112.69693	207.02827	287.18439	1.75059	0.0963718	0.24248858	2.5468102	20	6 9.2	19.4
119378 2001 SD <sub>321</sub>	16.1	X	309.03783	281.35337	127.61508	7.32278	0.0776087	0.26349567	2.4096487	20	11 1.8	18.8
119379 2001 SS <sub>323</sub>	15.8	X	96.23444	211.21140	229.19364	11.24935	0.2147029	0.23245646	2.6196402	20	3 22.8	19.4
119380 2001 SK <sub>325</sub>	15.9	X	170.84817	235.06126	167.32926	12.41648	0.2171272	0.23745635	2.5827370	20	4 22.7	20.4
119381 2001 SH <sub>326</sub>	16.3	X	38.99606	77.20259	226.50585	6.45690	0.1004387	0.26474412	2.4020673	20	10 26.2	19.3
119382 2001 SX <sub>346</sub>	15.8	X	31.10904	307.99197	43.04720	9.25488	0.0921247	0.26636231	2.3923288	20	12 17.2	18.8
119383 2001 SC <sub>349</sub>	15.5	X	86.73303	129.13964	180.07706	9.12654	0.1103261	0.21440138	2.7647190	20	12 20.1	19.8
119384 2001 TG	15.5	X	220.32150	30.67480	211.77232	23.54759	0.1611710	0.28119147	2.4074623	20	—	—
119385 2001 TU <sub>7</sub>	15.1	X	127.71430	198.09642	32.92614	5.84399	0.1102787	0.26016718	2.3015737	20	11 3.6	18.7
119386 2001 TB <sub>11</sub>	16.0	X	298.83727	66.54200	28.08570	4.31009	0.0684912	0.26441286	2.4040731	20	12 16.6	18.8
119387 2001 TD <sub>12</sub>	16.8	X	266.02804	181.91800	240.88268	1.10723	0.1190220	0.25483265	2.4639544	20	8 31.9	19.7
119388 2001 TT <sub>12</sub>	15.6	X	163.69819	20.08084	44.93308	9.59802	0.1816600	0.23630738	2.5911021	20	5 10.2	19.9
119389 2001 TG <sub>20</sub>	14.6	X	313.30070	195.44341	274.87615	10.32984	0.1451031	0.26596795	2.3946930	20	—	—
119390 2001 TR <sub>27</sub>	15.5	X	119.63406	301.27194	3.68523	6.97074	0.0165903	0.21677394	2.7445091	20	—	—
119391 2001 TD <sub>32</sub>	16.4	X	78.16752	126.86027	266.87326	7.23626	0.1180397	0.27509490	2.3414291	20	—	—
119392 2001 TK <sub>33</sub>	15.1	X	221.08517	243.71119	29.54465	15.28736	0.0678122	0.22480452	2.6787531	20	1 1.2	19.4
119393 2001 TE <sub>34</sub>	15.8	X	359.53561	249.06407	277.99210	6.15712	0.0490273	0.28122426	2.3072830	20	1 28.1	18.4
119394 2001 TS <sub>38</sub>	15.7	X	240.75567	277.94856	20.83352	12.98483	0.1764934	0.23366495	2.6106000	20	2 19.8	20.1
119395 2001 TC <sub>40</sub>	14.4	X	159.22263	293.69423	42.77729	12.82286	0.2564047	0.22594926	2.6696978	20	1 30.1	19.1
119396 2001 TJ <sub>40</sub>	14.5	X	120.80047	152.63155	258.13011	21.14484	0.0434923	0.22715337	2.6602550	20	2 12.9	18.6
119397 2001 TQ <sub>43</sub>	14.7	X	39.19588	111.07381	56.96417	13.68573	0.1990238	0.22589707	2.6701900	20	4 26.9	17.4
119398 2001 TV <sub>46</sub>	15.4	X	123.64902	106.76562	315.95914	2.25384	0.1779903	0.23356100	2.6113745	20	3 29.1	19.3
119399 2001 TH <sub>49</sub>	15.9	X	61.45349	140.35626	251.77515	6.03257	0.1100935	0.27408631	2.3471697	20	—	—
119400 2001 TM <sub>50</sub>	15.2	X	81.18171	124.15882	172.47806	9.33777	0.0168543	0.26459946	2.4029427	20	12 1.3	18.4
119401 2001 TY <sub>50</sub>	16.8	X	78.48099	130.36147	185.74580	1.01774	0.1948499	0.26973060	2.3723708	20	—	—
119402 2001 TY <sub>51</sub>	15.9	X	77.37777	77.61548	68.35812	2.76364	0.0544901	0.24033543	2.5620691	20	5 3.4	19.0
119403 2001 TU <sub>62</sub>	16.2	X	275.20464	289.79505	168.18155	2.33658	0.1382895	0.26036375	2.4289340	20	11 4.7	18.8
119404 2001 TK <sub>63</sub>	15.2	X	244.45107	38.34986	69.00855	7.28739	0.1045761	0.25686479	2.4509418	20	10 9.4	18.3
119405 2001 TU <sub>64</sub>	16.2	X	231.08535	142.61836	185.99073	4.39600	0.1516371	0.23865456	2.5740850	20	3 12.9	20.1
119406 2001 TY <sub>64</sub>	15.9	X	137.09003	32.54651	51.35760	6.08418	0.0752519	0.23857407	2.5746640	20	4 30.6	19.6
119407 2001 TG <sub>69</sub>	16.1	X	145.28898	287.12875	192.20500	1.64837	0.1695155	0.24443629	2.5333329	20	7 1.2	20.0
119408 2001 TS <sub>70</sub>	15.8	X	125.96416	193.88298	1.90033	1.24293	0.0713919	0.25462541	2.4652912	20	9 15.2	19.3
119409 2001 TH <sub>72</sub>	15.7	X	166.63279	180.60450	43.15336	5.19701	0.0854485	0.26461477	2.4028500	20	12 6.7	19.2
119410 2001 TU <sub>72</sub>	15.7	X	233.25909	324.94002	188.68134	4.25014	0.1388432	0.26164513	2.4209971	20	11 18.7	18.7
119411 2001 TJ <sub>73</sub>	16.3	X	219.06738	327.06284	26.29644	3.35294	0.1843501	0.23989095	2.5652329	20	3 31.7	20.6
119412 2001 TE <sub>76</sub>	15.5	X	63.35934	94.58950	205.99681	8.06613	0.0641319	0.26068802	2.4269193	20	11 18.3	18.6
119413 2001 TF <sub>78</sub>	16.0	X	169.27699	235.82060	198.54975	3.79631	0.2364167	0.23962870	2.5671042	20	5 28.8	20.5
119414 2001 TQ <sub>80</sub>	14.7	X	213.94015	244.21641	162.45627	6.93082	0.2393296	0.24075970	2.5590584	20	5 30.7	19.2
119415 2001 TC <sub>84</sub>	15.7	X	144.47587	17.38091	245.43073	3.85701	0.0734505	0.21764637	2.7371699	20	12 22.4	19.8
119416 2001 TD <sub>87</sub>	16.1	X	255.75315	239.38117	268.73773	3.63451	0.1677420	0.26607526	2.3940491	20	12 9.7	18.5
119417 2001 TH <sub>88</sub>	15.3	X	310.49133	160.90328	286.61664	3.11730	0.0737555	0.21325964	2.7745780	20	12 9.5	18.6
119418 2001 TX <sub>88</sub>	16.1	X	225.64921	259.94105	252.95470	1.77200	0.1281244	0.26283906	2.4136601	20	11 8.6	19.1
119419 2001 TO <sub>91</sub>	16.3	X	84.25611	151.14306	229.76103	4.26311	0.0659077	0.22393914	2.6856498	20	—	—
119420 2001 TL <sub>92</sub>	16.0	X	38.85693	159.93231	235.65138	3.88843	0.1176853	0.21892973	2.7264626	20	—	—
119421 2001 TG <sub>94</sub>	15.9	X	258.37154	140.96182	7.66806	6.56703	0.0775109	0.26704557	2.3882464	20	12 28.7	18.7
119422 2001 TS <sub>94</sub>	15.8	X	91.89430	71.96419	266.93020	5.00711	0.0775712	0.21915675	2.7245795	20	—	—
119423 2001 TH <sub>98</sub>	16.3	X	234.33244	53.92671	288.88358	1.85696	0.1383682	0.24055085	2.5605393	20	4 2.9	20.1
119424 2001 TG <sub>104</sub>	15.3	X	239.78302	292.01581	46.74718	14.57540	0.1216450	0.23909362	2.5709328	20	4 10.6	19.3
119425 2001 TA <sub>107</sub>	15.4	X	344.96545	156.34755	237.81047	9.92987	0.2519252	0.25988894	2.4318915	20	12 28.5	17.6
119426 2001 TW <sub>107</sub>	15.0	X	350.49485	276.36592	80.60777	13.01491	0.2149746	0.25503271	2.4626657	20	11 11.1	17.2
119427 2001 TZ <sub>116</sub>	15.3	X	210.43153	1.22203	25.76778	4.01063	0.1930666	0.23844674	2.5755805	20	5 3.4	19.4
119428 2001 TP <sub>120</sub>	14.7	X	6.52395	234.62920	231.16042	21.26688	0.2784424	0.27304660	2.3531243	20	—	—
119429 2001 TH <sub>123</sub>	15.6	X	56.38634	224.60945	223.26047	14.31315	0.1150746	0.22896244	2.6462237	20	1 17.8	19.0
119430 2001 TK <sub>124</sub>	16.2	X	264.06001	77.33416	244.75421	9.09680	0.1202603	0.24406756	2.5358838	20	4 8.4	20.0
119431 2001 TM <sub>128</sub>	15.7	X	189.35846	323.25317	111.92511	9.63476	0.1189375	0.24467489	2.5316857	20	6 17.5	19.6
119432 2001 TL <sub>131</sub>	16.5	X	327.84185	226.49427	103.98207	6.80437	0.1578675	0.25617221	2.4553574	20	7 31.4	18.5
119433 2001 TT <sub>132</sub>	15.6	X	71.45000	288.05185	232.31731	12.44912	0.0379868	0.24299576	2.5433351	20	5 11.7	18.6
119434												

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>
119441 2001 TR <sub>141</sub>	15.9	X	281.40098	109.82650	40.99170	10.68611	0.1761055	0.27070675	2.3666643	20	—	—
119442 2001 TC <sub>147</sub>	15.6	X	265.35000	46.55776	77.43821	7.24032	0.0807286	0.26457132	2.4031130	20	12 3.9	18.3
119443 2001 TF <sub>147</sub>	15.7	X	111.28709	331.69214	177.06640	12.38321	0.0800920	0.24527857	2.5275300	20	6 25.2	19.5
119444 2001 TY <sub>148</sub>	15.5	X	98.40620	150.18092	80.58067	7.56595	0.0778478	0.25707843	2.4495837	20	10 4.2	19.0
119445 2001 TM <sub>154</sub>	15.6	X	117.27849	71.41268	134.91794	8.58919	0.0728450	0.25739936	2.4475472	20	9 22.3	19.0
119446 2001 TT <sub>154</sub>	15.9	X	294.05419	215.91971	76.49679	9.87924	0.1249577	0.24438824	2.5336649	20	4 14.1	19.3
119447 2001 TC <sub>164</sub>	16.2	X	113.15277	95.70977	23.91392	4.79475	0.1489627	0.23974839	2.5662497	20	5 26.8	19.9
119448 2001 TX <sub>169</sub>	15.4	X	279.94720	304.49633	358.43838	13.97720	0.1049429	0.24071421	2.5593807	20	4 4.7	18.9
119449 2001 TX <sub>170</sub>	15.0	X	63.69282	31.85628	54.89130	14.20129	0.2250683	0.22776504	2.6554900	20	2 25.1	18.1
119450 2001 TO <sub>174</sub>	15.4	X	202.21772	311.95258	26.30454	13.79231	0.2602647	0.24020723	2.5629807	20	3 4.5	20.1
119451 2001 TJ <sub>175</sub>	15.6	X	66.25744	283.73553	238.91510	3.61827	0.0991657	0.24394134	2.5367584	20	5 16.8	18.6
119452 2001 TQ <sub>185</sub>	16.4	X	250.83600	291.64075	259.16367	1.97845	0.1011559	0.27227920	2.3575436	20	—	—
119453 2001 TF <sub>186</sub>	15.5	X	342.07090	230.73071	353.34120	3.19091	0.1161897	0.23809148	2.5781419	20	3 20.9	18.4
119454 2001 TS <sub>189</sub>	15.5	X	93.34842	148.97624	353.56921	5.25904	0.0985680	0.23847940	2.5753453	20	5 25.9	19.0
119455 2001 TV <sub>189</sub>	15.9	X	14.49661	317.21471	261.99338	5.47465	0.1150799	0.29258956	2.2471402	20	5 9.2	17.9
119456 2001 TQ <sub>191</sub>	15.6	X	147.21349	98.03511	243.53887	5.05917	0.0628002	0.22499547	2.6772373	20	1 2.4	19.3
119457 2001 TS <sub>191</sub>	16.1	X	236.43570	130.04676	239.47565	5.41727	0.0679126	0.24211698	2.5494855	20	5 17.4	19.6
119458 2001 TJ <sub>192</sub>	15.8	X	256.73886	45.01095	258.07732	4.84290	0.1843111	0.23831256	2.5765471	20	3 1.5	20.0
119459 2001 TV <sub>192</sub>	14.8	X	42.22642	213.88119	261.57333	20.91908	0.0741114	0.22412950	2.6841289	20	1 26.5	18.4
119460 2001 TQ <sub>194</sub>	15.3	X	194.44290	88.38906	353.59929	5.70092	0.1601368	0.24228734	2.5482903	20	6 30.0	19.4
119461 2001 TA <sub>202</sub>	16.2	X	198.92806	251.70364	108.81684	7.02107	0.1855539	0.29319597	2.2440407	20	3 22.8	19.8
119462 2001 TE <sub>203</sub>	15.8	X	21.56463	240.71398	91.64503	7.75894	0.1431647	0.26364164	2.4087592	20	11 18.7	18.6
119463 2001 TL <sub>208</sub>	15.8	X	152.91646	293.58689	159.73148	8.83399	0.0505082	0.24056449	2.5604426	20	5 31.4	19.5
119464 2001 TX <sub>226</sub>	15.8	X	157.48995	65.14663	35.27503	17.94145	0.2613304	0.24284259	2.5444045	20	6 19.0	20.6
119465 2001 TQ <sub>233</sub>	15.1	X	341.10638	108.61057	62.51392	13.64728	0.1192052	0.22973254	2.6403067	20	1 9.3	18.5
119466 2001 UK <sub>5</sub>	15.9	X	138.61370	32.32616	39.19325	2.39158	0.0775963	0.23589420	2.5941269	20	4 16.2	19.5
119467 2001 UB <sub>7</sub>	15.8	X	243.40043	162.31843	186.18663	2.18454	0.1703411	0.24190786	2.5509546	20	4 17.9	19.7
119468 2001 UH <sub>8</sub>	16.1	X	54.81798	104.16187	82.18800	3.45108	0.1113691	0.29495464	2.2351117	20	6 4.4	18.2
119469 2001 UE <sub>11</sub>	15.6	X	174.82150	257.42719	83.14237	9.83207	0.1350057	0.22824035	2.6518020	20	2 8.4	19.8
119470 2001 UN <sub>13</sub>	15.0	X	157.29358	343.73634	70.70701	3.50903	0.0286335	0.23548381	2.5971399	20	4 13.1	18.4
119471 2001 UZ <sub>13</sub>	15.3	X	191.34441	259.85373	82.41702	13.29786	0.1520521	0.23057243	2.6338910	20	2 29.1	19.8
119472 2001 UN <sub>16</sub>	15.3	X	305.88461	310.24052	80.12415	2.78747	0.1904526	0.25254797	2.4787922	20	9 14.5	17.4
119473 2001 UO <sub>18</sub>	7.8	X	348.70406	47.24930	36.34835	3.67096	0.2823142	0.00398074	39.4300386	20	11 25.8	22.4
119474 2001 UW <sub>19</sub>	16.3	X	206.51531	345.21603	135.72056	7.17062	0.0858895	0.25559579	2.4590475	20	9 10.1	19.6
119475 2001 UF <sub>28</sub>	16.1	X	56.78639	121.61958	124.48956	2.90743	0.0861349	0.25379920	2.4706386	20	8 29.4	19.0
119476 2001 UG <sub>28</sub>	16.0	X	343.16431	127.98773	180.00198	5.93648	0.1481088	0.25330415	2.4738565	20	7 26.2	18.3
119477 2001 UH <sub>30</sub>	16.0	X	17.97023	211.82740	118.79899	6.22121	0.1206693	0.26103900	2.4247434	20	11 7.5	18.8
119478 2001 US <sub>32</sub>	15.9	X	209.10570	37.84348	139.59401	2.78933	0.1530158	0.26353390	2.4094156	20	11 18.8	19.1
119479 2001 UT <sub>33</sub>	16.1	X	69.99413	334.83937	85.27916	7.88973	0.0988224	0.27816211	2.3241852	20	—	—
119480 2001 UE <sub>34</sub>	16.4	X	162.68209	344.14412	98.41912	7.53148	0.3171275	0.23923762	2.5699010	20	6 4.7	21.1
119481 2001 UJ <sub>34</sub>	15.7	X	242.88847	279.44259	66.97247	11.30110	0.2111580	0.24300062	2.5433012	20	4 15.6	19.9
119482 2001 UJ <sub>38</sub>	16.5	X	291.50342	102.91735	188.01164	3.49244	0.2356651	0.24485578	2.5304386	20	3 18.0	20.0
119483 2001 UH <sub>47</sub>	15.8	X	284.19040	96.26345	133.03246	3.12366	0.0075828	0.22862390	2.6488354	20	1 24.1	19.2
119484 2001 UT <sub>50</sub>	15.1	X	148.08729	8.51212	72.16344	14.62776	0.1508240	0.23724928	2.5842396	20	5 16.3	19.1
119485 2001 UJ <sub>53</sub>	15.4	X	312.22741	213.86059	65.53027	5.39334	0.1128776	0.24144370	2.5542229	20	4 21.6	18.3
119486 2001 UD <sub>55</sub>	16.0	X	349.41965	242.48043	89.78193	3.12417	0.1825938	0.25747155	2.4470897	20	9 24.9	18.0
119487 2001 UT <sub>59</sub>	16.4	X	112.68579	3.92072	14.26959	2.77914	0.1348566	0.22709888	2.6606804	20	1 17.2	19.9
119488 2001 UK <sub>63</sub>	15.5	X	243.57391	287.20923	82.38674	6.26272	0.1323719	0.24391074	2.5369706	20	5 19.8	19.3
119489 2001 UM <sub>64</sub>	15.9	X	124.39617	248.08573	223.64822	7.89253	0.1226585	0.23923150	2.5699449	20	5 27.5	19.6
119490 2001 UA <sub>68</sub>	16.4	X	118.43515	157.76823	54.69225	1.96309	0.1307778	0.25659817	2.4526393	20	10 3.1	20.0
119491 2001 UM <sub>72</sub>	15.0	X	131.39120	355.29032	131.28253	14.21215	0.1046887	0.24274445	2.5450902	20	6 23.0	18.9
119492 2001 UF <sub>78</sub>	16.3	X	62.22974	240.03876	41.97417	8.54371	0.2205357	0.26264318	2.4148600	20	11 11.4	19.8
119493 2001 UA <sub>79</sub>	15.9	X	84.15387	72.49673	41.73493	3.16237	0.1686177	0.23329648	2.6133481	20	4 17.8	19.2
119494 2001 UK <sub>80</sub>	16.6	X	122.35522	204.50091	208.97664	2.78006	0.2097787	0.23158090	2.6262389	20	3 20.2	20.6
119495 2001 UW <sub>80</sub>	16.3	X	104.82149	241.93558	198.82665	2.01868	0.1173908	0.23242069	2.6199089	20	3 23.2	19.6
119496 2001 UW <sub>93</sub>	15.5	X	100.80418	30.70190	103.77916	10.57852	0.1349260	0.23833613	2.5763772	20	6 1.8	19.1
119497 2001 UR <sub>105</sub>	15.8	X	291.47888	104.33301	48.80557	2.23148	0.1675882	0.21664968	2.7455584	20	—	—
119498 2001 UU <sub>109</sub>	15.8	X	79.01920	93.93910	81.43166	3.98118	0.1067851	0.29281606	2.2459812	20	6 25.5	18.3
119499 2001 UV <sub>113</sub>	16.0	X	354.42896	186.30977	42.69290	5.19973	0.0547319	0.23977974	2.5660260	20	4 22.9	18.9
119500 2001 UO <sub>116</sub>	15.4	X	199.20389	346.67735	101.25980	2.53539	0.0541933	0.19327799	2.9626553	20	7 15.6	19.7
119501 2001 UL <sub>119</sub>	15.7	X	105.54563	150.66993	60.32812	2.68646	0.0498553	0.25110163	2.4883017	20	9 9.9	18.9
119502 2001 UH <sub>120</sub>	15.9	X	77.24127	20.63995	107.96771	3.60443	0.1417718	0.23462512	2.6034728	20	4 24.5	19.1
119503 2001 UR <sub>124</sub>	15.6	X	336.23724	203.52401	140.29826	11.98684	0.2912359	0.25758938	2.4463434	20	9 16.8	16.7
119504 2001 UR <sub>126</sub>	16.3	X	58.97563	278.56197	208.57772	2.47514	0.1229347	0.23275866	2.6173722	20	3 19.9	19.3
119505 2001 UQ <sub>127</sub>	15.1	X	302.05169	251.63521	72.57315	14.84431	0.1235035	0.24565812	2.5249259	20	6 5.0	18.0
119506 2001 UQ <sub>128</sub>	16.0	X	159.34152	341.30495	55.77699	6.96442	0.2851025	0.23711521	2.5852136	20	4 9.3	20.6
119507 2001 UP <sub>131</sub>	15.7	X	328.85995	167.05607	42.89027	4.81603	0.0849040	0.23203468	2.6228137	20	2 17.6	19.0
119508 2001 UD <sub>132</sub>	15.6	X	244.63439	82.38555	225.62107	11.38809	0.1917695	0.23523807	2.5989483	20	2 23.0	20.0
119509 2001 UH <sub>133</sub>	15.9	X	171.37620	319.60923	241.11651	1.78117	0.1137445	0.26284597	2.4136178	20	11 10.7	19.3
119510 2001 UW <sub>134</sub>	15.5	X	271.09902	259.07691	31.63602	12.75292	0.2373547	0.23815407	2.5776901	20	3 3.5	19.7
119511 2001 UX <sub>134</sub>	15.5	X	185.35055	75.88693	336.63094	1.57926	0.0159944	0.23920652	2.5701238	20	5 13.9	18.8
119512 2001 UC <sub>136</sub>	15.7	X	74.86591	336.22795	205.69023	9.63307	0.1424879	0.24122555	2.5557626	20	7 1.5	19.2
119513 2001 UJ <sub>138</sub>	16.5	X	192.42487	14.52889	169.24343	1.30465	0.1232445					

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>
119521 2001 UU <sub>161</sub>	15.1	X	234.99814	221.61233	95.96697	2.47479	0.1849536	0.23488048	2.6015855	20	3 3.1	19.2
119522 2001 UX <sub>162</sub>	15.8	X	149.96421	349.06736	142.27230	1.68687	0.2206880	0.24252793	2.5466047	20	7 22.5	20.0
119523 2001 UV <sub>164</sub>	15.7	X	209.60014	17.85249	126.17518	8.32423	0.0693988	0.26129516	2.4231584	20	10 19.9	19.0
119524 2001 UW <sub>167</sub>	15.0	X	258.02789	296.99241	343.99134	12.18102	0.2048742	0.23355602	2.6114116	20	2 9.0	19.3
119525 2001 UC <sub>169</sub>	13.7	X	206.66502	334.01325	16.15304	14.71939	0.1893077	0.23210142	2.6223109	20	3 20.2	18.1
119526 2001 UF <sub>175</sub>	15.6	X	96.47140	63.68199	150.04951	5.57660	0.0793139	0.25242340	2.4796077	20	9 4.9	19.0
119527 2001 UH <sub>177</sub>	15.8	X	132.85016	357.39792	215.77186	3.54206	0.1466598	0.25820308	2.4424655	20	10 17.8	19.7
119528 2001 US <sub>179</sub>	12.0	X	334.92729	126.94784	128.43412	15.72215	0.1035295	0.08368174	5.1766514	20	5 7.6	18.6
119529 2001 UY <sub>187</sub>	15.8	X	129.04735	333.58520	173.23469	6.72190	0.0378381	0.24544529	2.5263853	20	7 9.8	19.4
119530 2001 VE <sub>1</sub>	15.3	X	312.69102	344.87905	60.27182	24.96091	0.1875856	0.26138473	2.4226048	20	11 3.2	17.5
119531 2001 VX <sub>1</sub>	15.5	X	129.30338	105.50838	20.13478	4.94929	0.2218689	0.23979391	2.5659249	20	6 27.9	19.8
119532 2001 VD <sub>9</sub>	15.6	X	69.12909	36.36081	9.12759	2.59621	0.0653895	0.22054028	2.7131727	20	—	—
119533 2001 VV <sub>9</sub>	15.5	X	11.04137	220.37638	51.51095	7.98995	0.1098053	0.24587484	2.5234420	20	7 27.9	18.3
119534 2001 VL <sub>10</sub>	14.9	X	298.25047	317.86518	272.08356	13.92795	0.0742142	0.23061199	2.6335898	20	1 28.9	18.7
119535 2001 VR <sub>11</sub>	15.1	X	265.36665	73.66019	277.64417	11.00346	0.1882906	0.24522984	2.5278648	20	5 10.4	19.0
119536 2001 VP <sub>12</sub>	15.3	X	310.03106	158.42950	303.17051	7.90238	0.2147656	0.26269732	2.4145283	20	—	—
119537 2001 VF <sub>14</sub>	15.6	X	233.99411	158.15530	290.65492	6.68185	0.0948406	0.25090776	2.4895832	20	8 25.4	19.1
119538 2001 VD <sub>15</sub>	14.9	X	358.11110	132.06976	41.65348	14.06196	0.1250913	0.22663515	2.6643087	20	2 15.6	18.2
119539 2001 VL <sub>15</sub>	15.2	X	331.30538	193.79010	302.25273	7.99198	0.0705146	0.21799573	2.7342448	20	—	—
119540 2001 VJ <sub>18</sub>	15.7	X	271.17886	300.98596	58.22378	4.33603	0.1209833	0.24304764	2.5429732	20	4 29.0	19.2
119541 2001 VP <sub>20</sub>	16.1	X	301.13065	322.42128	270.62658	1.16774	0.0692671	0.28373151	2.2936704	20	2 1.9	18.7
119542 2001 VE <sub>26</sub>	16.1	X	195.28765	358.74181	85.58670	4.65249	0.1782374	0.24378579	2.5378374	20	7 2.7	20.1
119543 2001 VE <sub>26</sub>	15.6	X	146.55623	23.39330	70.06253	15.98800	0.0968753	0.23825654	2.5769510	20	5 26.1	19.3
119544 2001 VR <sub>26</sub>	15.1	X	317.34644	266.13019	242.46522	7.78146	0.1443209	0.21688792	2.7435475	20	—	—
119545 2001 VY <sub>26</sub>	15.3	X	263.97090	327.86451	52.68420	5.61037	0.100093	0.24609219	2.5219560	20	7 8.3	18.6
119546 2001 VC <sub>29</sub>	15.3	X	89.48354	306.64054	65.82327	6.77817	0.0661622	0.21891720	2.7265667	20	—	—
119547 2001 VG <sub>29</sub>	14.9	X	207.73836	283.99601	78.35911	15.61769	0.1379826	0.23650131	2.5896855	20	4 10.9	19.3
119548 2001 VZ <sub>29</sub>	15.4	X	66.30319	66.78574	59.99499	11.21776	0.1125704	0.23015209	2.6370970	20	4 5.1	18.7
119549 2001 VO <sub>33</sub>	15.8	X	9.69134	294.82265	105.64921	3.13758	0.2074739	0.26494778	2.4008361	20	—	—
119550 2001 VG <sub>34</sub>	15.2	X	274.17472	178.92206	70.60922	15.72645	0.0455715	0.22652284	2.6651892	20	2 6.1	19.2
119551 2001 VX <sub>34</sub>	14.3	X	191.68223	219.85188	71.92772	14.46921	0.1707325	0.22224911	2.6992474	20	—	—
119552 2001 VN <sub>35</sub>	15.2	X	233.78693	299.26752	37.48525	3.34961	0.1745258	0.23644701	2.5900819	20	3 25.7	19.2
119553 2001 VH <sub>36</sub>	14.9	X	220.80513	324.50090	50.87541	3.86176	0.1179780	0.23881623	2.5729232	20	5 3.2	18.6
119554 2001 VQ <sub>36</sub>	15.1	X	165.99076	264.63633	63.63254	6.24887	0.2303181	0.22568521	2.6717798	20	1 21.5	19.7
119555 2001 VW <sub>39</sub>	15.2	X	220.06918	57.41178	252.82927	5.10911	0.0809557	0.22940141	2.6428468	20	2 10.7	19.3
119556 2001 VS <sub>41</sub>	15.4	X	214.94637	234.69641	60.13416	15.76853	0.1214622	0.22724112	2.6595701	20	1 22.1	19.8
119557 2001 VV <sub>41</sub>	15.4	X	339.18722	240.93602	53.10091	10.27749	0.0768724	0.24439003	2.5336526	20	6 29.8	18.4
119558 2001 VS <sub>42</sub>	15.3	X	207.08335	143.20289	302.42086	1.86138	0.1220627	0.24462675	2.5320178	20	7 19.5	19.2
119559 2001 VE <sub>45</sub>	15.7	X	79.52107	205.69351	262.39417	10.71934	0.1499731	0.22800341	2.6536389	20	3 25.3	19.2
119560 2001 VM <sub>46</sub>	14.8	X	97.23622	47.42957	76.78805	11.53797	0.1653040	0.23121234	2.6290290	20	5 19.0	18.5
119561 2001 VO <sub>48</sub>	15.5	X	251.71761	110.39461	237.88363	2.73151	0.2890206	0.24189744	2.5510278	20	4 14.1	19.7
119562 2001 VC <sub>66</sub>	15.2	X	344.33440	8.23197	48.53426	17.23089	0.2069095	0.21017521	2.8016576	20	—	—
119563 2001 VF <sub>68</sub>	16.6	X	11.05029	173.78844	307.19761	1.40953	0.1505723	0.27572684	2.3378502	20	—	—
119564 2001 VR <sub>69</sub>	16.1	X	162.67580	14.87808	331.42237	8.55914	0.1727070	0.22920368	2.6443666	20	2 4.7	20.2
119565 2001 VL <sub>72</sub>	16.8	X	236.04547	9.85958	273.26218	3.53719	0.2482640	0.23502936	2.6004867	20	1 19.3	21.4
119566 2001 VN <sub>72</sub>	15.9	X	146.91381	290.47953	243.90904	5.34209	0.1074350	0.25353437	2.4723587	20	9 8.6	19.6
119567 2001 VV <sub>79</sub>	15.3	X	81.80071	250.85384	212.54280	16.68476	0.1137129	0.23019789	2.6367472	20	3 18.4	18.9
119568 2001 VP <sub>81</sub>	15.4	X	32.25858	269.45036	208.79152	10.81664	0.1517521	0.22443754	2.6816724	20	1 20.7	18.5
119569 2001 VD <sub>82</sub>	15.2	X	67.95508	209.59884	266.79382	12.29881	0.1322454	0.22659439	2.6646281	20	3 14.9	18.7
119570 2001 VC <sub>84</sub>	15.5	X	179.68217	307.42906	97.08658	6.63183	0.0926923	0.23703067	2.5858283	20	4 30.4	19.5
119571 2001 VJ <sub>88</sub>	15.5	X	149.59179	268.85186	187.47862	7.48225	0.2451201	0.23523237	2.5989903	20	6 9.7	20.1
119572 2001 VM <sub>88</sub>	16.4	X	81.01910	23.02554	81.44401	5.57668	0.1441756	0.28456232	2.2892038	20	3 25.1	18.8
119573 2001 VP <sub>90</sub>	14.9	X	345.14814	114.94592	103.35947	14.61359	0.0259085	0.23494665	2.6010970	20	4 4.4	18.6
119574 2001 VT <sub>90</sub>	15.6	X	268.51080	248.35488	88.70804	15.25444	0.1057143	0.24295646	2.5436094	20	5 13.7	19.2
119575 2001 VK <sub>91</sub>	15.4	X	52.77810	0.78409	117.79750	12.68784	0.1019070	0.22863238	2.6487699	20	2 29.3	18.6
119576 2001 VF <sub>93</sub>	15.2	X	292.95769	199.87094	121.44299	15.01074	0.1718954	0.24420743	2.5349154	20	5 15.8	18.7
119577 2001 VB <sub>96</sub>	15.4	X	30.73093	323.77224	126.86447	13.18694	0.0782607	0.22082478	2.7108418	20	—	—
119578 2001 VX <sub>96</sub>	15.1	X	237.36182	236.53137	132.75272	14.41281	0.1638920	0.24108208	2.5567765	20	5 13.8	19.3
119579 2001 VU <sub>97</sub>	15.7	X	197.44712	242.42126	149.31497	12.45183	0.2957879	0.23875865	2.5733369	20	5 1.2	20.6
119580 2001 VD <sub>101</sub>	15.2	X	12.91688	306.40009	243.67372	13.90676	0.0892257	0.23432748	2.6056769	20	3 21.9	18.6
119581 2001 VK <sub>103</sub>	15.6	X	38.11172	274.21992	265.37273	6.03293	0.0611681	0.23590902	2.5940182	20	4 19.8	18.9
119582 2001 VL <sub>103</sub>	15.5	X	240.94136	296.45248	335.01380	1.21681	0.0218231	0.22810611	2.6528423	20	1 22.6	18.9
119583 2001 VM <sub>103</sub>	15.8	X	100.06679	205.74695	269.18225	3.94021	0.0874029	0.23572447	2.5953719	20	4 25.6	19.3
119584 2001 VS <sub>108</sub>	15.7	X	167.13307	136.26851	274.23396	2.42364	0.0141934	0.23692018	2.5866322	20	4 16.8	19.2
119585 2001 VX <sub>108</sub>	16.4	X	58.12485	115.25099	5.60101	3.15704	0.0717243	0.22939343	2.6429081	20	3 5.5	19.5
119586 2001 VZ <sub>108</sub>	16.0	X	128.17964	356.06711	309.48995	2.53511	0.0576687	0.21555192	2.7548722	20	—	—
119587 2001 VA <sub>110</sub>	16.0	X	216.42098	284.20823	367.73075	2.48800	0.1995433	0.23344574	2.6122340	20	2 20.1	20.5
119588 2001 VV <sub>110</sub>	15.6	X	180.24906	55.71686	278.35392	3.80213	0.1588968	0.22905730	2.6454930	20	2 3.2	19.8
119589 2001 VK <sub>113</sub>	15.3	X	69.72470	110.41657	41.25468	8.22967	0.1385152	0.23366265	2.6106171	20	5 12.4	18.4
119590 2001 VS <sub>117</sub>	14.6	X	287.04413	250.72960	62.84240	15.61130	0.2219119	0.24079801	2.5587869	20	4 19.9	18.3
119591 2001 VD <sub>118</sub>	16.0	X	336.60989	35.90556	13.37510	1.39620	0.1811785	0.26017691	2.4300966	20	12 24.5	18.2
119592 2001 VJ <sub>125</sub>	15.4	X	78.66042	343.50660	166.86991	10.85367	0.1314884	0.23513054	2.5997406	20	5 25.7	18.9
119593 2001 VA <sub>126</sub>	15.9	X	226.62112	52.54496	228.19904	4.08275	0.0922315	0.22747673	2.6577333	20	1 13.8	19.9
119594												

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>		
119601	2001	WA <sub>14</sub>	15.8 <sup>m</sup>	X	150.53982	284.89412	136.79880	4.61550	0.2208005	0.23230839	2.6207532	20	4 28.7	20.2
119602	2001	WD <sub>15</sub>	15.7	X	43.44386	251.05465	242.73420	1.43930	0.0689270	0.22926294	2.6439109	20	2 27.9	18.9
119603	2001	WV <sub>16</sub>	15.9	X	59.35725	112.65245	33.94655	2.45564	0.1105421	0.23564112	2.5959839	20	4 15.6	18.8
119604	2001	WT <sub>18</sub>	16.0	X	17.66864	158.49134	3.08121	2.26542	0.0149640	0.23244956	2.6196920	20	2 27.1	19.4
119605	2001	WY <sub>18</sub>	15.9	X	283.49717	203.70052	29.43097	2.55532	0.0243487	0.22934063	2.6433138	20	1 26.6	19.4
119606	2001	WM <sub>19</sub>	15.7	X	147.32012	247.12107	242.28259	2.06040	0.1469737	0.24402705	2.5361644	20	7 15.0	19.6
119607	2001	WT <sub>20</sub>	15.0	X	268.08001	214.97635	79.59998	10.75713	0.1645189	0.23648537	2.5898018	20	3 12.7	19.0
119608	2001	WC <sub>23</sub>	15.0	X	306.99235	185.14059	316.39661	23.89893	0.1958586	0.26635629	2.3923649	20	—	—
119609	2001	WV <sub>26</sub>	15.4	X	103.14150	48.15321	56.70841	22.90818	0.0461788	0.23507016	2.6001858	20	4 20.4	19.1
119610	2001	WV <sub>26</sub>	15.4	X	191.41334	50.66656	223.20562	12.29574	0.0991297	0.22133700	2.7066579	20	—	—
119611	2001	WY <sub>26</sub>	15.6	X	231.64546	260.30889	65.05306	13.73780	0.1367467	0.23607368	2.5928118	20	3 18.7	19.9
119612	2001	WY <sub>27</sub>	15.8	X	59.51061	103.34950	98.09357	4.49704	0.0793073	0.24131040	2.5551635	20	6 27.8	19.0
119613	2001	WT <sub>32</sub>	15.7	X	89.70464	269.08760	157.81311	3.49544	0.0441118	0.22741898	2.6581833	20	2 3.9	19.1
119614	2001	WM <sub>35</sub>	16.1	X	197.98697	197.38616	173.66183	4.73467	0.1822702	0.23685707	2.5870917	20	4 4.5	20.3
119615	2001	WO <sub>35</sub>	15.7	X	338.50355	125.78855	116.18878	7.01427	0.0444468	0.28937210	2.2637664	20	4 17.4	18.3
119616	2001	WH <sub>36</sub>	15.7	X	207.30791	322.66552	101.85093	7.20797	0.1018802	0.24313315	2.5423769	20	6 23.0	19.3
119617	2001	WL <sub>38</sub>	14.6	X	315.67780	270.22599	239.02444	23.82280	0.1442613	0.21560721	2.7544012	20	—	—
119618	2001	WL <sub>39</sub>	15.8	X	51.42391	262.06487	109.16917	7.71984	0.1252502	0.26617616	2.3934440	20	—	—
119619	2001	WP <sub>39</sub>	15.4	X	337.07579	299.81458	107.61055	6.79613	0.1614153	0.26002417	2.4310482	20	12 20.3	17.6
119620	2001	WY <sub>42</sub>	15.7	X	128.35511	173.02149	55.57641	7.24199	0.0650254	0.26105017	2.4246742	20	11 1.8	19.0
119621	2001	WQ <sub>43</sub>	16.4	X	130.18708	295.42493	192.02674	2.57424	0.0560622	0.24260828	2.5460424	20	6 17.3	19.9
119622	2001	WY <sub>48</sub>	15.5	X	242.89197	45.56137	259.70755	3.64626	0.1171943	0.23246902	2.6195458	20	2 26.2	19.5
119623	2001	WK <sub>53</sub>	16.0	X	156.70176	80.22653	238.06690	5.57422	0.1661928	0.22550087	2.6732356	20	—	—
119624	2001	WM <sub>73</sub>	16.1	X	62.54417	63.75567	78.00368	2.41293	0.0525913	0.23429532	2.6059154	20	4 6.9	19.3
119625	2001	WZ <sub>81</sub>	15.7	X	179.19141	116.73279	204.47316	2.59053	0.1212051	0.22581018	2.6707939	20	1 17.0	19.8
119626	2001	WD <sub>91</sub>	15.2	X	134.61645	53.59069	37.40752	9.47979	0.0466442	0.23679966	2.5875098	20	5 2.9	18.6
119627	2001	WJ <sub>99</sub>	15.0	X	249.38425	169.21581	95.22600	15.15949	0.0779650	0.22564087	2.6721297	20	1 20.2	19.0
119628	2001	WQ <sub>100</sub>	16.1	X	122.15099	84.58594	238.83091	6.07811	0.1435382	0.21847301	2.7302612	20	—	—
119629	2001	WJ <sub>101</sub>	15.3	X	154.98137	260.33825	71.65868	2.09278	0.1897501	0.17310837	3.1885312	20	1 18.9	20.5
119630	2001	XJ <sub>5</sub>	15.3	X	308.06601	266.16740	69.48331	16.48771	0.0548339	0.24613818	2.5216418	20	7 12.4	18.5
119631	2001	XC <sub>7</sub>	15.2	X	16.45636	345.48784	168.08335	13.56074	0.1789742	0.22533422	2.6745535	20	2 8.9	18.0
119632	2001	XE <sub>11</sub>	15.1	X	263.33505	325.95602	334.86218	13.08489	0.0223121	0.23367718	2.6105089	20	3 22.5	18.7
119633	2001	XR <sub>13</sub>	15.5	X	306.68626	64.13850	50.67235	7.37905	0.0193448	0.21023841	2.8010961	20	—	—
119634	2001	XM <sub>16</sub>	15.4	X	158.08399	302.00431	119.77322	4.10903	0.1435253	0.23286577	2.6165696	20	5 1.3	19.5
119635	2001	XB <sub>17</sub>	15.4	X	203.25001	57.86861	291.19254	8.64233	0.1505984	0.23226159	2.6211052	20	3 8.9	19.8
119636	2001	XB <sub>18</sub>	16.4	X	65.30569	332.01125	60.29617	8.16169	0.2827506	0.21865838	2.7287178	20	—	—
119637	2001	XC <sub>19</sub>	14.8	X	283.62597	132.24933	55.89559	13.44539	0.1059133	0.21478126	2.7614581	20	—	—
119638	2001	XG <sub>24</sub>	15.5	X	317.73414	97.34803	311.08155	5.54345	0.1302050	0.25538789	2.4603819	20	11 7.3	17.9
119639	2001	XV <sub>24</sub>	14.6	X	58.04746	312.31364	90.32040	13.98050	0.1511527	0.21499607	2.7596185	20	—	—
119640	2001	XM <sub>25</sub>	15.3	X	84.63639	12.86032	94.42372	12.67884	0.1315366	0.22582547	2.6706733	20	4 10.6	19.0
119641	2001	XP <sub>25</sub>	15.6	X	222.28148	349.76239	61.08658	6.50974	0.2511074	0.24096257	2.5576218	20	6 9.6	20.0
119642	2001	XX <sub>28</sub>	15.4	X	170.42963	290.94220	124.06063	4.79830	0.2436573	0.23591135	2.5940011	20	5 7.3	19.9
119643	2001	XN <sub>30</sub>	15.5	X	169.23093	53.43579	29.44207	4.38300	0.2849655	0.23547392	2.5972127	20	6 7.9	20.3
119644	2001	XU <sub>36</sub>	15.5	X	60.41518	125.20748	21.68677	11.28016	0.0210592	0.23331272	2.6132268	20	4 6.6	18.8
119645	2001	XF <sub>40</sub>	15.3	X	40.84872	89.22680	63.31193	22.27335	0.0811328	0.22811222	2.6527949	20	4 5.2	19.0
119646	2001	XN <sub>40</sub>	14.6	X	250.78064	40.49771	305.90749	13.78866	0.2117412	0.23973877	2.5663184	20	4 11.1	18.9
119647	2001	XS <sub>40</sub>	15.3	X	76.35058	45.91332	48.23068	13.97950	0.0525551	0.22563946	2.6721409	20	3 1.8	19.0
119648	2001	XV <sub>41</sub>	14.6	X	21.07498	146.56856	55.08930	13.89807	0.1240846	0.23077050	2.6323837	20	5 1.9	17.3
119649	2001	XU <sub>45</sub>	14.2	X	282.72132	291.40812	50.73613	12.91904	0.3078294	0.24275927	2.5449866	20	5 5.1	17.7
119650	2001	XT <sub>48</sub>	15.1	X	271.43010	172.70891	112.40467	12.86500	0.0310393	0.23190880	2.6237627	20	3 21.8	18.9
119651	2001	XE <sub>49</sub>	15.0	X	259.20286	191.73152	66.45105	16.33618	0.0950066	0.22772253	2.6558205	20	1 23.2	19.2
119652	2001	XV <sub>49</sub>	16.1	X	139.65788	73.72780	73.17851	6.28451	0.1024771	0.24411814	2.5355334	20	7 29.8	19.9
119653	2001	XK <sub>54</sub>	16.8	X	44.68112	215.57307	174.25034	1.00491	0.1882340	0.26863653	2.3788077	20	—	—
119654	2001	XO <sub>54</sub>	15.8	X	122.57686	49.48669	74.63821	0.76013	0.0933927	0.23765935	2.5812661	20	6 7.3	19.5
119655	2001	XV <sub>55</sub>	15.4	X	270.09982	276.46686	103.76961	5.66776	0.0817797	0.24605309	2.5222231	20	7 14.2	18.5
119656	2001	XJ <sub>58</sub>	15.7	X	233.85189	324.25108	89.25694	5.17271	0.1388427	0.24476885	2.5310377	20	7 4.8	19.3
119657	2001	XQ <sub>58</sub>	15.5	X	20.55805	279.15461	216.74319	4.34044	0.0513063	0.22409108	2.6844357	20	1 27.4	18.9
119658	2001	XX <sub>58</sub>	15.5	X	35.47509	49.17329	91.56741	3.25483	0.1738825	0.22539282	2.6740898	20	3 5.2	18.0
119659	2001	XE <sub>62</sub>	14.9	X	183.39770	224.71512	91.34798	11.79850	0.1892884	0.22529928	2.6748299	20	1 18.9	19.4
119660	2001	XL <sub>62</sub>	15.4	X	176.76383	144.20729	239.82887	3.84185	0.1519310	0.23223456	2.6213086	20	3 30.3	19.7
119661	2001	XN <sub>62</sub>	15.8	X	74.63012	265.70237	135.66069	6.29133	0.2359406	0.27456818	2.3444227	20	—	—
119662	2001	XN <sub>63</sub>	15.4	X	355.03978	15.14446	95.98494	6.09801	0.1153419	0.21464493	2.7626273	20	—	—
119663	2001	XP <sub>65</sub>	15.3	X	67.09694	331.43194	106.77738	4.87560	0.0802621	0.22092605	2.7100134	20	1 24.5	18.5
119664	2001	XN <sub>67</sub>	15.3	X	131.60248	198.02431	266.54856	12.75179	0.1258267	0.23453058	2.6041724	20	5 25.4	19.2
119665	2001	XR <sub>67</sub>	14.9	X	172.29085	237.22278	103.86041	13.55535	0.1776540	0.22408848	2.6844564	20	2 8.8	19.4
119666	2001	XQ <sub>73</sub>	15.9	X	94.31727	285.31694	169.86592	5.58547	0.2411149	0.22960987	2.6412470	20	4 17.9	19.5
119667	2001	XY <sub>73</sub>	15.5	X	86.00983	73.04910	76.91166	22.69137	0.0619064	0.23728349	2.5839913	20	5 24.9	18.9
119668	2001	XB <sub>74</sub>	16.8	X	18.04241	279.45650	123.13621	2.27691	0.1755570	0.26657638	2.3910479	20	—	—
119669	2001	XR <sub>74</sub>	16.5	X	329.07876	339.80382	141.36006	2.60000	0.1654324	0.26766685	2.3845494	20	—	—
119670	2001	XO <sub>75</sub>	15.8	X	52.52390	66.81382	60.30948	15.36949	0.0882547					

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>		
119681	2001	XY <sub>107</sub>	15.1	X	19.11890	236.36110	274.65189	11.06583	0.0965062	0.22667453	2.6640001	20	2 9.9	18.4
119682	2001	XE <sub>108</sub>	15.1	X	81.27956	342.86991	48.66860	5.59033	0.1209194	0.21857091	2.7294458	20	—	—
119683	2001	XB <sub>110</sub>	15.1	X	273.39605	183.31611	85.05686	13.89817	0.1895576	0.23372837	2.6101277	20	2 10.3	19.3
119684	2001	XC <sub>113</sub>	15.6	X	6.68222	244.68403	238.30327	8.14394	0.1173871	0.21875147	2.7279436	20	—	—
119685	2001	XS <sub>114</sub>	15.4	X	352.45026	104.73828	33.22435	5.98944	0.0280713	0.21883114	2.7272815	20	—	—
119686	2001	XY <sub>116</sub>	15.2	X	122.66028	284.50782	74.53853	10.09648	0.2439700	0.22023182	2.7157055	20	1 21.3	19.3
119687	2001	XQ <sub>121</sub>	15.9	X	167.72842	213.76729	113.72324	1.00710	0.0534662	0.22524076	2.6752932	20	1 8.0	19.7
119688	2001	XK <sub>126</sub>	16.2	X	137.90505	281.36982	219.87248	1.06060	0.0932084	0.24299117	2.5433672	20	7 17.9	19.9
119689	2001	XJ <sub>129</sub>	14.9	X	270.87470	126.50724	73.89237	15.74617	0.1529369	0.21755372	2.7379471	20	—	—
119690	2001	XP <sub>130</sub>	15.8	X	177.46866	198.91638	119.83750	2.58299	0.1682553	0.22577328	2.6710849	20	1 15.3	20.0
119691	2001	XK <sub>132</sub>	15.9	X	186.93856	275.20836	79.93560	5.16832	0.1137020	0.23148211	2.6269860	20	3 7.6	20.0
119692	2001	XN <sub>140</sub>	15.6	X	99.09332	276.99133	91.47799	10.53383	0.1112356	0.21928503	2.7235168	20	—	—
119693	2001	XD <sub>145</sub>	15.8	X	150.69806	215.16793	106.35320	5.82466	0.0814553	0.21929108	2.7234667	20	—	—
119694	2001	XE <sub>146</sub>	15.6	X	114.05470	85.10245	231.91057	4.30528	0.0541127	0.21277481	2.7787912	20	—	—
119695	2001	XP <sub>148</sub>	15.8	X	344.13598	10.40354	109.68043	6.16967	0.0700002	0.21612893	2.7499668	20	—	—
119696	2001	XC <sub>152</sub>	16.4	X	322.77274	327.75556	82.23810	2.34108	0.1725564	0.25792456	2.4442235	20	11 24.6	18.4
119697	2001	XT <sub>152</sub>	16.2	X	253.14271	92.69560	136.52721	3.13011	0.1346996	0.27119087	2.3638469	20	—	—
119698	2001	XA <sub>155</sub>	16.0	X	60.30076	338.65457	150.72739	2.28556	0.1538157	0.22756439	2.6570507	20	3 31.7	19.1
119699	2001	XV <sub>155</sub>	15.0	X	272.71770	111.71458	231.47690	3.44434	0.2237672	0.24242537	2.5473229	20	5 5.5	18.6
119700	2001	XE <sub>156</sub>	15.8	X	284.69424	53.04806	101.30923	4.80154	0.0396381	0.21172032	2.7880102	20	—	—
119701	2001	XW <sub>156</sub>	16.3	X	12.89500	294.95811	89.08751	3.29431	0.1684920	0.26184176	2.4197850	20	—	—
119702	2001	XM <sub>157</sub>	15.4	X	5.26960	13.19752	103.54821	4.79680	0.0479616	0.21812182	2.7331909	20	—	—
119703	2001	XG <sub>158</sub>	15.4	X	142.30905	5.41372	89.07795	11.90710	0.1938350	0.23525784	2.5988027	20	5 30.3	19.7
119704	2001	XW <sub>164</sub>	15.8	X	339.32676	41.05448	82.46909	3.83950	0.0339602	0.21574130	2.7532598	20	—	—
119705	2001	XP <sub>169</sub>	16.5	X	264.78456	38.84902	110.38066	2.43436	0.1370019	0.25968015	2.4331948	20	12 29.1	18.8
119706	2001	XW <sub>183</sub>	15.5	X	109.43123	271.59382	117.16589	13.53756	0.2806050	0.22302671	2.6929697	20	2 17.6	19.5
119707	2001	XA <sub>185</sub>	15.6	X	165.24554	23.23447	134.34219	0.86917	0.1484725	0.19087556	2.9874628	20	9 2.5	20.4
119708	2001	XN <sub>185</sub>	15.6	X	41.92991	272.79426	125.92018	6.52732	0.0510457	0.21213856	2.7843445	20	—	—
119709	2001	XR <sub>186</sub>	15.4	X	89.65911	216.59384	105.18529	3.19853	0.0550437	0.20718880	2.8285153	20	12 31.7	19.4
119710	2001	XP <sub>191</sub>	15.2	X	250.46049	219.84697	272.15957	5.90466	0.2011558	0.25367873	2.4714207	20	10 29.5	18.2
119711	2001	XP <sub>193</sub>	15.5	X	167.62864	258.33281	167.01460	3.14192	0.1882749	0.23413730	2.6070878	20	5 15.6	19.8
119712	2001	XU <sub>195</sub>	15.6	X	8.35167	197.73058	270.12602	6.97278	0.1789676	0.21467217	2.7623935	20	—	—
119713	2001	XV <sub>203</sub>	15.6	X	120.02664	1.19096	137.67315	5.37267	0.1685281	0.24038406	2.5617236	20	7 1.4	19.5
119714	2001	XG <sub>205</sub>	15.5	X	100.53239	307.25661	61.92776	6.00287	0.1760370	0.21991013	2.7183533	20	—	—
119715	2001	XX <sub>207</sub>	15.0	X	208.46838	111.34054	237.89662	13.21685	0.1087259	0.23285534	2.6166476	20	3 13.5	19.3
119716	2001	XH <sub>208</sub>	15.4	X	78.40244	241.74886	170.14313	3.68043	0.1044523	0.22169927	2.7037086	20	1 8.8	18.7
119717	2001	XX <sub>220</sub>	16.0	X	7.01102	114.08701	57.81762	5.15301	0.1188707	0.22823846	2.6518167	20	2 24.2	18.9
119718	2001	XZ <sub>222</sub>	15.5	X	170.03700	223.74385	53.44361	5.77852	0.1351690	0.21776295	2.7361929	20	—	—
119719	2001	XS <sub>228</sub>	15.2	X	192.06864	277.18050	58.70348	9.92566	0.1767942	0.23029703	2.6359904	20	2 21.4	19.7
119720	2001	XB <sub>236</sub>	15.9	X	91.15219	323.46125	19.09839	4.26029	0.0613036	0.21364586	2.7712331	20	—	—
119721	2001	XT <sub>236</sub>	15.7	X	34.09817	15.69767	71.27872	7.10463	0.0081564	0.21956330	2.7212152	20	—	—
119722	2001	XN <sub>238</sub>	15.5	X	349.04154	339.50028	52.14878	3.37285	0.1025748	0.20464676	2.8518902	20	11 24.7	18.9
119723	2001	XO <sub>244</sub>	15.8	X	267.31055	203.07959	40.90920	2.85328	0.0343671	0.22789354	2.6544917	20	1 19.3	19.5
119724	2001	XX <sub>244</sub>	15.4	X	205.47707	322.54680	84.64469	16.08395	0.1100745	0.24290563	2.5439642	20	5 30.3	19.3
119725	2001	XO <sub>256</sub>	15.1	X	232.69918	304.49520	128.18848	9.64811	0.1178952	0.24793457	2.5094468	20	8 1.1	18.4
119726	2001	XB <sub>257</sub>	16.1	X	122.93593	250.34060	193.87960	16.61475	0.1500912	0.23288650	2.6164143	20	4 24.1	19.9
119727	2001	XG <sub>257</sub>	16.1	X	136.00245	309.37732	148.03598	13.70583	0.1147292	0.23710666	2.5852758	20	5 24.1	20.2
119728	2001	XT <sub>259</sub>	15.5	X	309.93337	160.76259	76.91266	12.61244	0.0718602	0.23350193	2.6118149	20	3 4.8	19.1
119729	2001	XX <sub>260</sub>	15.3	X	63.69185	158.47792	264.25267	11.31989	0.0878902	0.21833535	2.7314087	20	—	—
119730	2001	YP <sub>7</sub>	15.2	X	205.21975	17.12627	272.37406	14.02621	0.1147107	0.22442621	2.6817626	20	1 3.7	19.3
119731	2001	YB <sub>8</sub>	15.7	X	105.18887	49.53761	280.56050	1.37346	0.1821400	0.21614427	2.7498366	20	—	—
119732	2001	YM <sub>8</sub>	15.9	X	55.79529	32.59330	148.82549	4.09352	0.1966311	0.23302187	2.6154009	20	6 12.8	18.9
119733	2001	YQ <sub>10</sub>	15.4	X	16.29909	11.98721	50.99190	5.17582	0.0555441	0.21142960	2.7905653	20	—	—
119734	2001	YE <sub>14</sub>	15.6	X	57.66170	108.42328	316.23366	6.57915	0.0408211	0.22119359	2.7078277	20	—	—
119735	2001	YS <sub>17</sub>	15.7	X	306.82734	260.99662	263.25167	2.14515	0.1083999	0.21539263	2.7562302	20	—	—
119736	2001	YM <sub>22</sub>	15.6	X	286.96210	280.94910	269.21336	4.52515	0.0162622	0.21843004	2.7306192	20	—	—
119737	2001	YJ <sub>23</sub>	16.4	X	57.64614	148.16864	329.14878	1.01440	0.0772856	0.22821948	2.6519637	20	2 29.0	19.6
119738	2001	YV <sub>23</sub>	15.5	X	142.81046	186.04399	275.73087	7.91834	0.1224589	0.23814475	2.5777574	20	6 2.8	19.3
119739	2001	YN <sub>24</sub>	15.7	X	354.03295	147.21960	53.52549	5.72452	0.0852844	0.23070815	2.6328579	20	3 15.5	18.8
119740	2001	YP <sub>28</sub>	15.5	X	152.18438	223.85743	61.57804	8.43369	0.2348497	0.21729914	2.7400850	20	—	—
119741	2001	YC <sub>37</sub>	15.7	X	281.40869	117.04972	71.33090	6.23796	0.0446153	0.21730652	2.7400231	20	—	—
119742	2001	YJ <sub>37</sub>	15.4	X	114.34327	250.82213	73.87811	6.92054	0.0375810	0.21416809	2.7667263	20	—	—
119743	2001	YW <sub>40</sub>	15.4	X	90.30681	274.28849	69.36440	7.23253	0.1038157	0.21401986	2.7680037	20	—	—
119744	2001	YN <sub>42</sub>	15.4	X	236.16574	40.30440	297.17570	4.02189	0.2561745	0.23744030	2.5828535	20	3 20.8	20.0
119745	2001	YU <sub>44</sub>	15.0	X	241.28089	284.42767	47.41581	4.17400	0.2186769	0.23651383	2.5895941	20	3 24.1	19.2
119746	2001	YZ <sub>51</sub>	15.7	X	152.11104	10.75388	340.81171	2.57940	0.0913367	0.22352512	2.6889650	20	1 24.6	19.5
119747	2001	YP <sub>52</sub>	16.0	X	314.95619	183.35803	291.47426	1.69229	0.1630108	0.26346133	2.4098581	20	—	—
119748	2001	YO <sub>53</sub>	15.7	X	235.44668	192.74766	72.91946	8.03281	0.0301816	0.22135775	2.7064887	20	1 9.7	19.6
119749	2001	YG <sub>62</sub>	15.9	X	352.51489	26.31681	68.89893	5.44531	0.0359892	0.21284367	2.7781918	20	—	—
119750	2001	YL <sub>64</sub>	15.3	X	162.04103	264.37961	73.61489	10.89874	0.2195884	0.22377572	2.6869572	20	1 30.3	19.9
119751	2001	YL <sub>68</sub>												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	$\mu$	<i>a</i>	TE	Oppos.	<i>V</i>
119761 2001 YK <sub>116</sub>	14.8	X	270.77892	324.12066	353.10448	13.42309	0.1931864	0.23951594	2.5679098	20	3 31.6	18.8
119762 2001 YS <sub>117</sub>	15.2	X	15.74045	352.52515	93.64555	10.00319	0.1571293	0.21350217	2.7724764	20	—	—
119763 2001 YM <sub>120</sub>	15.5	X	148.57573	97.45569	278.78434	2.64723	0.1392883	0.22740400	2.6582999	20	2 22.6	19.4
119764 2001 YO <sub>121</sub>	15.1	X	265.82889	281.89180	32.39794	7.65441	0.2041002	0.23852202	2.5750385	20	3 26.9	19.0
119765 2001 YF <sub>122</sub>	14.6	X	30.34667	145.17124	47.65644	12.36466	0.2351312	0.23188357	2.6239531	20	5 15.9	16.8
119766 2001 YA <sub>130</sub>	15.6	X	333.55277	332.06638	25.94331	5.13893	0.0369020	0.19522955	2.9428786	20	9 16.3	19.5
119767 2001 YQ <sub>133</sub>	16.4	X	31.70050	256.32129	196.54248	0.80189	0.1042971	0.22027927	2.7153155	20	—	—
119768 2001 YA <sub>136</sub>	15.4	X	262.82157	18.15461	327.09785	12.87898	0.1855519	0.24435042	2.5339264	20	4 25.8	19.4
119769 2001 YD <sub>136</sub>	15.7	X	95.20284	165.76633	322.54603	13.60302	0.1271285	0.23592941	2.5938687	20	5 9.3	19.6
119770 2001 YK <sub>136</sub>	15.3	X	21.50489	159.96786	325.07982	11.73305	0.1192264	0.22410941	2.6842893	20	1 16.3	18.3
119771 2001 YV <sub>151</sub>	15.9	X	94.83637	44.09115	3.80715	6.72063	0.1182829	0.22228654	2.6989444	20	1 31.6	19.5
119772 2002 AV <sub>3</sub>	15.2	X	81.50158	346.98610	118.29553	12.18818	0.1381342	0.22445216	2.6815559	20	4 3.5	18.9
119773 2002 AB <sub>11</sub>	14.4	X	4.79873	241.95445	330.25734	16.04793	0.0279696	0.17261031	3.1946619	20	4 10.8	18.9
119774 2002 AP <sub>28</sub>	15.1	X	217.76079	85.06245	359.79351	9.38152	0.2658377	0.18842929	3.0132635	20	7 18.3	20.4
119775 2002 AA <sub>29</sub>	14.6	X	48.49384	156.24133	74.86403	10.30237	0.0918003	0.18304996	3.0720124	20	7 22.3	18.7
119776 2002 AF <sub>35</sub>	15.7	X	66.69043	246.93840	285.52999	3.12710	0.1333726	0.23375252	2.6099480	20	6 5.8	18.9
119777 2002 AN <sub>35</sub>	15.6	X	85.82613	231.22920	162.16207	0.89154	0.0820101	0.21878468	2.7276676	20	—	—
119778 2002 AF <sub>38</sub>	15.2	X	17.63851	275.46840	115.15757	8.01794	0.1939107	0.21024345	2.8010513	20	—	—
119779 2002 AX <sub>44</sub>	16.0	X	119.90101	216.53511	187.54060	1.33219	0.0955939	0.22369197	2.6876778	20	2 21.5	19.5
119780 2002 AA <sub>46</sub>	15.2	X	354.39510	193.16199	107.50196	2.56375	0.0900249	0.18804779	3.0173375	20	7 30.9	18.7
119781 2002 AF <sub>49</sub>	15.1	X	80.33054	319.87850	262.75711	3.59471	0.1712857	0.18609248	3.0384365	20	8 30.4	19.5
119782 2002 AC <sub>51</sub>	15.7	X	341.08616	166.49970	258.94640	0.96077	0.0589611	0.20424291	2.8556483	20	12 23.2	19.3
119783 2002 AZ <sub>51</sub>	15.2	X	191.48968	43.82972	135.60196	2.91732	0.0374032	0.19757325	2.9195952	20	11 1.9	19.4
119784 2002 AQ <sub>55</sub>	15.6	X	265.06579	202.85640	245.98319	9.20293	0.0804635	0.19682405	2.9269633	20	10 2.1	19.5
119785 2002 AM <sub>57</sub>	14.5	X	9.64350	58.92279	150.08849	5.75904	0.1038191	0.17271395	3.1933837	20	4 24.9	18.4
119786 2002 AE <sub>65</sub>	15.0	X	170.61741	205.20569	303.79248	9.33371	0.0421770	0.18800303	3.0178165	20	8 26.3	19.5
119787 2002 AN <sub>76</sub>	15.3	X	123.10209	59.92091	350.09235	4.21467	0.0707389	0.17152864	3.2080783	20	3 6.4	19.9
119788 2002 AJ <sub>81</sub>	15.1	X	174.99440	224.51420	116.31423	11.73275	0.2325907	0.22782900	2.6549930	20	2 12.4	19.6
119789 2002 AG <sub>85</sub>	15.0	X	170.83233	228.42426	259.51257	9.30583	0.0319749	0.18793864	3.0185057	20	7 30.8	19.4
119790 2002 AQ <sub>87</sub>	15.5	X	329.97947	282.34377	237.62753	5.36381	0.0185223	0.21566608	2.7539000	20	—	—
119791 2002 AS <sub>96</sub>	15.4	X	128.29062	218.59213	86.36915	4.57448	0.0649103	0.20834583	2.8180336	20	—	—
119792 2002 AR <sub>103</sub>	15.2	X	39.22835	191.14363	104.14861	10.62805	0.0390715	0.19279518	2.9675994	20	9 29.3	19.4
119793 2002 AE <sub>104</sub>	15.9	X	323.30872	36.28896	106.50651	5.05952	0.0445794	0.21284897	2.7781457	20	—	—
119794 2002 AL <sub>107</sub>	15.5	X	184.21570	113.47858	108.35693	3.21811	0.0107057	0.20322756	2.8651519	20	12 17.8	19.3
119795 2002 AR <sub>109</sub>	15.5	X	67.36373	8.36230	98.26950	2.89999	0.1092537	0.22276334	2.6950919	20	3 6.7	18.7
119796 2002 AB <sub>113</sub>	15.7	X	184.47624	174.33352	74.43760	3.30084	0.1652121	0.25752011	2.4467820	20	—	—
119797 2002 AD <sub>120</sub>	15.3	X	102.38092	88.61286	117.12143	5.60337	0.1907856	0.23823282	2.5771221	20	9 12.3	19.3
119798 2002 AM <sub>127</sub>	15.7	X	352.05801	37.19190	294.65896	0.52493	0.0516553	0.19190061	2.9768148	20	9 6.2	19.6
119799 2002 AH <sub>133</sub>	15.2	X	340.80857	61.01568	37.78454	4.83818	0.0346263	0.21109856	2.7934819	20	—	—
119800 2002 AG <sub>134</sub>	15.9	X	119.69585	269.16639	160.09502	2.44969	0.0521550	0.22870341	2.6482214	20	3 18.6	19.5
119801 2002 AO <sub>135</sub>	15.0	X	8.83968	34.94347	172.12124	5.81991	0.0741837	0.17478118	3.1681539	20	4 20.1	19.1
119802 2002 AZ <sub>138</sub>	15.4	X	29.71971	345.36534	68.97928	4.54961	0.0911068	0.20957908	2.8069678	20	—	—
119803 2002 AE <sub>139</sub>	15.2	X	322.29840	186.37252	105.32729	9.95251	0.0521305	0.23269365	2.6178597	20	6 2.2	18.5
119804 2002 AZ <sub>139</sub>	16.1	X	86.72587	358.80336	110.07485	7.59587	0.1349972	0.23131238	2.6282709	20	4 12.7	19.6
119805 2002 AR <sub>140</sub>	16.0	X	46.73754	207.87908	175.11053	1.90359	0.0815421	0.21000990	2.8031276	20	—	—
119806 2002 AA <sub>149</sub>	15.0	X	201.97455	45.07783	141.22354	4.96476	0.1180392	0.19684284	2.9267770	20	11 14.6	19.5
119807 2002 AD <sub>151</sub>	15.4	X	46.98167	191.56171	342.84948	4.18519	0.1443199	0.17223260	3.1993308	20	5 10.1	19.5
119808 2002 AX <sub>152</sub>	14.8	X	177.02938	141.59545	336.14726	9.09797	0.0479357	0.18438874	3.0571244	20	7 29.5	19.4
119809 2002 AD <sub>154</sub>	15.0	X	83.21347	177.44509	338.63812	6.31951	0.1624938	0.17462463	3.1700471	20	6 9.8	19.6
119810 2002 AA <sub>156</sub>	14.6	X	131.18212	159.21547	341.54952	9.23633	0.0660494	0.17984392	3.1084142	20	7 6.4	19.3
119811 2002 AC <sub>156</sub>	14.9	X	263.59297	316.40718	131.48179	16.21904	0.0854232	0.19328062	2.9626283	20	10 3.9	19.2
119812 2002 AS <sub>157</sub>	15.3	X	28.56494	40.77860	152.63736	1.55353	0.1105109	0.17306336	3.1890841	20	5 3.9	19.1
119813 2002 AV <sub>159</sub>	16.0	X	47.15677	283.37533	149.52066	4.47958	0.0981775	0.21438548	2.7648557	20	—	—
119814 2002 AY <sub>159</sub>	15.0	X	45.41619	80.42501	135.52102	9.50170	0.0897022	0.17882170	3.1202489	20	6 25.9	19.2
119815 2002 AY <sub>169</sub>	15.3	X	54.59100	193.11195	37.16791	1.50093	0.0543066	0.18530245	3.0470666	20	7 23.6	19.3
119816 2002 AC <sub>170</sub>	15.5	X	60.32797	245.73100	69.54554	2.96486	0.0557198	0.20014173	2.8945271	20	11 18.6	19.4
119817 2002 AY <sub>170</sub>	15.1	X	336.90813	171.36123	112.35468	2.09124	0.1437474	0.18154782	3.0889344	20	6 4.7	18.6
119818 2002 AO <sub>172</sub>	15.5	X	67.85632	292.79575	39.40409	2.50320	0.0684089	0.20312300	2.8661350	20	12 20.2	19.5
119819 2002 AE <sub>173</sub>	15.0	X	323.77136	214.23679	8.12909	0.23800	0.1221802	0.16801056	3.2527074	20	2 27.9	19.3
119820 2002 AG <sub>175</sub>	15.4	X	144.76804	17.80589	113.60223	2.28527	0.0984486	0.18240570	3.0792417	20	7 10.3	19.9
119821 2002 AL <sub>195</sub>	14.5	X	229.09478	68.72076	296.83516	16.30971	0.1596185	0.17890836	3.1192412	20	4 21.2	19.8
119822 2002 AY <sub>202</sub>	15.7	X	13.95527	256.11590	184.49242	4.29714	0.0414828	0.21104979	2.7939123	20	—	—
119823 2002 BB <sub>2</sub>	14.6	X	131.64600	46.40324	162.30635	9.67390	0.1167967	0.19205015	2.9752693	20	10 3.9	19.3
119824 2002 BO <sub>3</sub>	14.9	X	34.09321	214.01726	27.15009	11.55570	0.1059603	0.18249714	3.0782131	20	7 17.5	19.0
119825 2002 BZ <sub>8</sub>	15.4	X	319.59051	348.45059	87.17103	2.57469	0.0515440	0.20065366	2.8896018	20	12 5.3	19.2
119826 2002 BX <sub>9</sub>	15.0	X	202.82165	20.15044	358.26146	11.97251	0.2687115	0.23253678	2.6190369	20	4 12.4	19.7
119827 2002 BE <sub>10</sub>	15.7	X	245.19576	200.05501	334.14183	3.32319	0.1959192	0.20145993	2.8818868	20	12 6.7	19.8
119828 2002 BW <sub>19</sub>	15.4	X	57.19914	293.98302	143.62536	12.37843	0.0667431	0.21732016	2.7399084	20	1 7.9	19.0
119829 2002 BP <sub>22</sub>	14.2	X	234.88438	2.17995	16.79894	14.03786	0.1627580	0.24025022	2.5626749	20	5 14.7	18.3
119830 2002 BO <sub>23</sub>	15.4	X	85.69556	74.70851	358.94139	12.95889	0.1447450	0.22316046	2.6918935	20	2 26.4	18.8
119831 2002 BM <sub>28</sub>	14.7	X	42.01773	137.31520	60.59635	16.67398	0.0435558	0.17915933	3.1163276	20	5 22.6	18.7
119832 2002 CL <sub>2</sub>	15.0	X	338.38301	51.30284	90.97451	13.78483	0.0941583	0.21139960	2.7908293	20	—	—
119833 2002 CT <sub>2</sub>	14.9	X	38.26772	294.87449	349.15431	9.79718	0.0583042	0.18949305	3.0019758	20	9 10.2	18.8
119834 2002 CK <sub>3</sub>	15.2	X										



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>
119841 2002 <i>CN</i> <sub>27</sub>	15.7	X	331.66614	96.67318	47.41096	4.47423	0.0400497	0.21432068	2.7654129	20	—	—
119842 2002 <i>CN</i> <sub>35</sub>	15.6	X	4.50780	281.85848	177.90194	3.48382	0.0483445	0.21226815	2.7832112	20	—	—
119843 2002 <i>CO</i> <sub>39</sub>	15.0	X	113.95002	347.09606	148.06228	2.20321	0.1178516	0.17573985	3.1566218	20	6 13.8	19.7
119844 2002 <i>CC</i> <sub>40</sub>	14.3	X	93.13804	313.42916	191.21899	15.13384	0.1316612	0.17338734	3.1851101	20	6 4.5	19.1
119845 2002 <i>CD</i> <sub>46</sub>	14.5	X	124.74643	273.45228	261.15243	13.70217	0.1909868	0.18340800	3.0680130	20	8 12.9	19.7
119846 2002 <i>CL</i> <sub>46</sub>	15.7	X	89.07998	274.86692	287.56652	6.12772	0.1446538	0.23469557	2.6029518	20	8 15.6	19.5
119847 2002 <i>CF</i> <sub>48</sub>	14.4	X	346.71666	327.26455	295.43597	20.89972	0.0417957	0.17778988	3.1323097	20	5 28.1	18.9
119848 2002 <i>CJ</i> <sub>55</sub>	14.8	X	26.58438	341.97845	197.67896	0.74946	0.1107665	0.16842261	3.2474000	20	4 12.4	18.6
119849 2002 <i>CC</i> <sub>60</sub>	15.7	X	80.41211	314.42303	89.03742	4.04285	0.0272802	0.21585857	2.7522625	20	—	—
119850 2002 <i>CY</i> <sub>61</sub>	15.0	X	358.54194	286.74639	34.98249	9.02528	0.0919248	0.18848068	3.0127158	20	9 8.6	18.8
119851 2002 <i>CG</i> <sub>62</sub>	15.1	X	218.09487	27.88369	87.90629	11.78141	0.0695943	0.19114733	2.9846304	20	9 15.5	19.6
119852 2002 <i>CU</i> <sub>65</sub>	15.1	X	218.25906	112.69902	17.77712	12.29235	0.0974118	0.19246692	2.9709726	20	9 27.1	19.6
119853 2002 <i>CR</i> <sub>75</sub>	16.0	X	60.66432	227.10162	57.96868	2.43618	0.0817911	0.24513929	2.5284872	20	10 24.5	19.3
119854 2002 <i>CY</i> <sub>76</sub>	14.8	X	191.24899	13.91696	348.51428	5.37705	0.0410571	0.16978193	3.2300437	20	3 21.6	19.7
119855 2002 <i>CH</i> <sub>78</sub>	14.8	X	73.10070	108.92008	104.71006	5.93275	0.1015615	0.18164920	3.0877850	20	8 2.7	19.0
119856 2002 <i>CJ</i> <sub>83</sub>	15.3	X	14.45665	273.40145	144.78239	15.58149	0.1421575	0.20602486	2.8391584	20	—	—
119857 2002 <i>CC</i> <sub>83</sub>	15.1	X	28.75271	127.77867	108.73328	2.13319	0.1216292	0.17679958	3.1439953	20	7 1.4	18.8
119858 2002 <i>CN</i> <sub>94</sub>	15.5	X	24.75371	333.03454	128.14704	5.94184	0.1242193	0.21306253	2.7762890	20	—	—
119859 2002 <i>CB</i> <sub>110</sub>	15.1	X	217.14058	335.10154	88.88388	2.93442	0.0482643	0.18008638	3.1056235	20	7 5.9	19.6
119860 2002 <i>CE</i> <sub>120</sub>	15.3	X	77.25945	191.07899	142.37659	2.65315	0.0713928	0.20396410	2.8582501	20	—	—
119861 2002 <i>CV</i> <sub>120</sub>	15.7	X	331.27514	227.24447	203.41469	1.42771	0.0483812	0.20305701	2.8667560	20	12 15.2	19.5
119862 2002 <i>CY</i> <sub>121</sub>	15.6	X	213.60133	307.64346	247.96023	2.55739	0.0948969	0.20113095	2.8850286	20	12 9.9	19.7
119863 2002 <i>CU</i> <sub>123</sub>	14.8	X	198.33626	220.95409	148.34481	19.73039	0.1971888	0.17405055	3.1770139	20	4 9.7	20.4
119864 2002 <i>CA</i> <sub>132</sub>	14.7	X	344.50000	355.51987	232.51908	3.44893	0.0790982	0.16922877	3.2370787	20	4 8.5	19.0
119865 2002 <i>CE</i> <sub>140</sub>	14.4	X	41.83870	42.34343	177.08240	8.96448	0.0978740	0.17777669	3.1324646	20	6 25.9	18.6
119866 2002 <i>CL</i> <sub>142</sub>	15.6	X	113.77590	270.86919	223.06092	5.85586	0.3753838	0.22925718	2.6439552	20	7 5.1	20.4
119867 2002 <i>CW</i> <sub>144</sub>	14.9	X	282.40987	227.36706	164.66153	10.25992	0.0646510	0.18602799	3.0391387	20	8 12.8	19.0
119868 2002 <i>CU</i> <sub>149</sub>	15.4	X	304.16246	210.77497	134.97093	13.91247	0.0848233	0.18369223	3.0648475	20	7 11.8	19.4
119869 2002 <i>CY</i> <sub>162</sub>	14.8	X	49.90572	150.61448	71.57639	5.94784	0.0967545	0.18001158	3.1064838	20	7 12.2	18.8
119870 2002 <i>CL</i> <sub>163</sub>	15.0	X	36.15688	142.68916	86.93405	5.29316	0.1137976	0.17880976	3.1203878	20	7 3.3	18.8
119871 2002 <i>CP</i> <sub>167</sub>	14.6	X	189.21429	43.91301	348.26132	15.95621	0.2211878	0.17580790	3.1558072	20	4 17.6	20.3
119872 2002 <i>CN</i> <sub>168</sub>	15.1	X	265.41646	79.30580	357.93481	10.65334	0.0946637	0.19177346	2.9781304	20	9 15.8	19.2
119873 2002 <i>CN</i> <sub>168</sub>	14.7	X	304.06081	214.68858	55.02290	6.42353	0.1150225	0.16968774	3.2312389	20	4 2.9	19.1
119874 2002 <i>CP</i> <sub>170</sub>	14.3	X	149.56096	125.14739	352.22259	21.98250	0.1015547	0.17841294	3.1250129	20	7 1.2	19.5
119875 2002 <i>CT</i> <sub>174</sub>	14.8	X	78.72614	67.31977	83.01772	6.86059	0.1152776	0.17112336	3.2131414	20	5 22.4	19.2
119876 2002 <i>CO</i> <sub>195</sub>	15.5	X	27.43362	119.27827	133.59141	2.51126	0.1506564	0.17994215	3.1072827	20	7 25.1	19.2
119877 2002 <i>CF</i> <sub>202</sub>	15.1	X	311.94661	354.65944	46.46878	2.75174	0.0577204	0.19371220	2.9582263	20	10 9.6	18.8
119878 2002 <i>CY</i> <sub>224</sub>	6.1	X	27.25893	151.17516	317.10935	15.77453	0.3415312	0.00251538	53.5468151	20	2 28.4	22.1
119879 2002 <i>CE</i> <sub>238</sub>	15.4	X	141.94197	295.99023	180.99003	8.36465	0.1182676	0.17737803	3.1371563	20	6 20.6	20.4
119880 2002 <i>CE</i> <sub>238</sub>	15.1	X	134.62695	340.29808	175.85603	9.67800	0.0551608	0.18113788	3.0935931	20	7 25.7	19.8
119881 2002 <i>CA</i> <sub>239</sub>	14.9	X	104.94734	17.60846	178.51822	9.74126	0.0515509	0.18215203	3.0820999	20	8 9.9	19.4
119882 2002 <i>CP</i> <sub>239</sub>	15.3	X	243.71837	69.93039	226.16779	0.99209	0.0466947	0.21724868	2.7405093	20	2 24.4	19.1
119883 2002 <i>CE</i> <sub>241</sub>	14.5	X	128.07712	65.20338	334.60621	13.39941	0.2081158	0.21878242	2.7276864	20	3 8.3	18.8
119884 2002 <i>CJ</i> <sub>241</sub>	14.5	X	314.24848	126.94579	169.16211	22.25917	0.1468601	0.17525410	3.1624519	20	5 17.9	18.9
119885 2002 <i>CZ</i> <sub>244</sub>	14.5	X	74.05755	284.30277	220.22041	9.73635	0.0986671	0.17193148	3.2030653	20	5 5.8	18.8
119886 2002 <i>CC</i> <sub>247</sub>	15.4	X	241.71070	276.98936	183.38402	9.10696	0.0767435	0.18998957	2.9967433	20	9 16.3	19.7
119887 2002 <i>CH</i> <sub>252</sub>	15.5	X	143.94458	258.27750	174.32352	5.54242	0.1914028	0.23127730	2.6285367	20	5 4.2	19.7
119888 2002 <i>CP</i> <sub>254</sub>	15.7	X	113.93578	145.25189	122.46544	3.05049	0.0280694	0.20057291	2.8903773	20	11 20.9	19.8
119889 2002 <i>CX</i> <sub>254</sub>	14.5	X	30.20585	348.83841	224.15584	7.83224	0.0973577	0.17559107	3.1584046	20	5 31.0	18.4
119890 2002 <i>CD</i> <sub>258</sub>	15.8	X	88.68516	180.73286	133.42914	2.97214	0.0812689	0.20170631	2.8795396	20	12 22.7	20.1
119891 2002 <i>CQ</i> <sub>261</sub>	15.9	X	240.32617	305.19339	109.87388	9.57199	0.2036465	0.24086849	2.5582877	20	7 6.5	19.8
119892 2002 <i>CL</i> <sub>266</sub>	14.8	X	348.16519	235.25586	98.53067	4.32874	0.2406439	0.18903950	3.0067755	20	9 10.7	17.5
119893 2002 <i>CF</i> <sub>272</sub>	14.6	X	125.17765	73.01681	92.98478	11.37284	0.0348929	0.18131526	3.0915753	20	7 28.4	19.4
119894 2002 <i>CH</i> <sub>272</sub>	14.8	X	235.72174	0.29484	59.06096	10.45669	0.0606336	0.18299939	3.0725783	20	7 22.9	19.1
119895 2002 <i>CY</i> <sub>272</sub>	14.2	X	36.40452	150.07742	44.28693	11.45771	0.0867671	0.17113369	3.2130122	20	5 13.8	18.3
119896 2002 <i>CV</i> <sub>274</sub>	15.3	X	40.21422	292.18342	343.68623	2.95401	0.0892993	0.18540263	3.0459688	20	9 5.9	19.4
119897 2002 <i>CZ</i> <sub>277</sub>	15.5	X	240.16787	109.50759	279.58535	2.23850	0.0810674	0.18094304	3.0958136	20	6 14.9	20.0
119898 2002 <i>CO</i> <sub>289</sub>	14.6	X	322.48603	249.55259	57.68810	11.92946	0.1209377	0.18259036	3.0771653	20	6 13.1	18.4
119899 2002 <i>CM</i> <sub>299</sub>	15.4	X	105.05034	174.95900	342.30768	3.49794	0.0105847	0.17719733	3.1392888	20	6 17.5	19.4
119900 2002 <i>CK</i> <sub>306</sub>	14.7	X	230.81086	101.36396	237.25423	6.31214	0.0805027	0.17184456	3.2041452	20	4 1.5	19.5
119901 2002 <i>CP</i> <sub>306</sub>	14.8	X	263.07138	261.29359	101.13861	18.46495	0.0593435	0.17974496	3.1095549	20	6 13.3	19.2
119902 2002 <i>DH</i> <sub>8</sub>	14.9	X	220.45107	47.18269	27.68392	13.73031	0.1369317	0.24192913	2.5508051	20	7 22.3	19.0
119903 2002 <i>EE</i> <sub>6</sub>	14.4	X	154.22292	220.93169	89.12612	11.16741	0.0752182	0.15045715	3.5010165	20	—	—
119904 2002 <i>EX</i> <sub>6</sub>	14.2	X	55.26260	77.91726	181.81526	7.90659	0.1718309	0.12539367	3.9532321	20	9 8.9	19.5
119905 2002 <i>EH</i> <sub>10</sub>	15.2	X	197.47398	274.00597	163.76149	22.68056	0.3803151	0.24025405	2.5626477	20	6 21.2	20.6
119906 2002 <i>EO</i> <sub>10</sub>	14.7	X	129.72129	146.96153	22.11871	18.80371	0.1326751	0.18140848	3.0905160	20	8 22.1	19.9
119907 2002 <i>EJ</i> <sub>12</sub>	15.6	X	103.09734	355.15175	188.14375	3.26587	0.1738012	0.23175253	2.6249421	20	8 9.9	19.5
119908 2002 <i>EO</i> <sub>23</sub>	15.2	X	273.25561	11.48299	357.81259	4.08835	0.1479732	0.18142631	3.0903135	20	6 20.4	19.5
119909 2002 <i>EL</i> <sub>28</sub>	14.5	X	108.03034	303.82735	181.27221	11.28261	0.0411392	0.17295149	3.1904591	20	5 17.7	19.2
119910 2002 <i>ET</i> <sub>30</sub>	14.8	X	117.21275	129.17317	49.92833	1.07384	0.1102329	0.17996714	3.1069951	20	8 10.9	19.4
119911 2002 <i>EN</i> <sub>31</sub>	14.9	X	248.62216	207.31190	178.98157	10.78748	0.0451932	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>
119921 2002 EE <sub>101</sub>	14.4	X	96.54509	126.47252	107.16875	10.06371	0.0899875	0.18643713	3.0346908	20	9 28.0	19.0
119922 2002 ES <sub>112</sub>	14.1	X	337.86368	179.41842	135.21719	3.65297	0.2174432	0.12322905	3.9993922	20	7 9.3	18.7
119923 2002 EP <sub>121</sub>	14.8	X	325.26915	24.47222	16.36462	10.11156	0.1018330	0.19274553	2.9681090	20	10 24.9	18.4
119924 2002 EB <sub>125</sub>	15.4	X	127.72187	75.00292	49.26366	3.59803	0.0209565	0.17557719	3.1585711	20	6 4.9	19.9
119925 2002 EY <sub>129</sub>	14.9	X	78.32000	330.87340	248.71370	10.61173	0.0979248	0.18310367	3.0714115	20	8 11.1	19.4
119926 2002 EL <sub>132</sub>	15.5	X	233.10123	101.28776	321.91754	7.92699	0.1214898	0.18379702	3.0636824	20	7 16.9	20.1
119927 2002 EK <sub>135</sub>	14.8	X	205.37555	185.64352	179.33540	11.86825	0.0410642	0.17153327	3.2080205	20	4 11.6	19.5
119928 2002 EZ <sub>140</sub>	15.3	X	284.39357	52.25375	354.73771	9.47243	0.0578956	0.18840975	3.0134718	20	9 7.7	19.4
119929 2002 FE <sub>7</sub>	14.4	X	116.92814	95.81952	59.05647	16.23588	0.0517222	0.17722447	3.1389683	20	7 4.4	19.1
119930 2002 FH <sub>27</sub>	14.2	X	282.80341	159.07889	144.36209	21.44467	0.0324870	0.17086874	3.2163327	20	5 3.8	19.1
119931 2002 FA <sub>34</sub>	14.9	X	72.50336	157.25346	359.11412	4.94052	0.0838160	0.16946712	3.2340427	20	5 14.9	19.4
119932 2002 FS <sub>38</sub>	14.8	X	236.38923	280.85690	146.09124	11.82550	0.0583451	0.18207101	3.0830141	20	7 30.8	19.2
119933 2002 GN	14.5	X	186.59866	308.37491	160.12449	17.97824	0.0935375	0.17951316	3.1122312	20	7 23.6	19.5
119934 2002 GW <sub>4</sub>	15.0	X	89.02456	10.54814	87.92807	18.18545	0.2016860	0.22013347	2.7165143	20	4 18.9	19.0
119935 2002 GD <sub>23</sub>	13.9	X	82.32921	7.35108	236.43543	1.85766	0.1296319	0.12673192	3.9253529	20	9 16.2	19.6
119936 2002 GC <sub>27</sub>	14.6	X	344.18600	15.61429	177.72402	1.21791	0.0624245	0.15686227	3.4050518	20	2 28.4	19.2
119937 2002 GK <sub>49</sub>	14.9	X	89.45799	269.78501	290.14303	8.65217	0.0316565	0.17942629	3.1132356	20	7 24.9	19.3
119938 2002 GQ <sub>54</sub>	15.3	X	207.13278	66.63639	27.71617	2.73645	0.0528076	0.17942846	3.1132106	20	8 2.1	19.8
119939 2002 GN <sub>69</sub>	15.0	X	241.40913	228.36543	201.97560	13.20342	0.1899618	0.18057975	3.0999642	20	7 22.6	20.0
119940 2002 GQ <sub>79</sub>	15.1	X	176.94253	274.20992	119.82582	15.69353	0.0847731	0.22036724	2.7145928	20	4 19.4	19.5
119941 2002 GS <sub>105</sub>	15.0	X	138.17442	37.76795	126.92802	9.98758	0.0516908	0.17989821	3.1077887	20	8 11.6	19.5
119942 2002 GJ <sub>129</sub>	14.0	X	21.16432	62.46560	229.48565	4.03617	0.1204187	0.12364830	3.9903466	20	8 23.3	19.1
119943 2002 GJ <sub>148</sub>	15.0	X	176.16694	97.83610	344.75838	2.50363	0.0688752	0.17380870	3.1799604	20	6 11.6	19.7
119944 2002 GN <sub>171</sub>	13.7	X	41.83092	228.04713	46.65453	5.38783	0.1115830	0.12562973	3.9482783	20	9 4.3	19.0
119945 2002 JH <sub>12</sub>	13.9	X	87.43327	11.09429	220.40145	4.96727	0.1238246	0.12365305	3.9902444	20	9 5.3	19.7
119946 2002 JD <sub>53</sub>	13.2	X	97.94907	187.34227	35.34970	9.50587	0.1539579	0.12476168	3.9665710	20	9 15.2	19.2
119947 2002 JZ <sub>71</sub>	14.6	X	77.66760	171.03106	111.37019	10.42596	0.0972544	0.18249005	3.0782928	20	11 4.9	19.2
119948 2002 JH <sub>121</sub>	14.8	X	60.25215	109.63637	101.97957	14.39669	0.2026218	0.22598681	2.6694021	20	8 2.9	18.3
119949 2002 KD	14.8	X	220.65155	148.18659	97.73984	15.97965	0.1153782	0.20088622	2.8873121	20	—	—
119950 2002 KF <sub>2</sub>	13.8	X	59.18998	78.93061	189.86540	12.45441	0.1128913	0.12534368	3.9542831	20	9 15.9	19.3
119951 2002 KX <sub>14</sub>	4.7	X	275.12940	64.36400	287.18290	0.39736	0.0458036	0.00403643	39.0665199	20	6 12.3	20.6
119952 2002 LD <sub>51</sub>	14.8	X	332.65264	266.37731	119.66463	10.59685	0.0849336	0.18012350	3.1051968	20	10 21.5	18.9
119953 2002 ML	16.5	X	187.02622	186.06066	196.83072	20.07521	0.0927788	0.37478355	1.9052371	20	3 28.8	18.8
119954 2002 NR <sub>24</sub>	16.3	X	106.51040	350.08891	133.51640	24.36221	0.0493776	0.37379343	1.9086001	20	5 18.3	19.0
119955 2002 OB <sub>2</sub>	16.3	X	11.36271	48.32453	155.98224	22.87151	0.0490054	0.37177934	1.9154870	20	4 8.8	18.2
119956 2002 PA <sub>149</sub>	6.1	X	88.55430	154.62556	105.44572	4.04798	0.1763989	0.00340195	43.7841648	20	10 3.7	22.6
119957 2002 RB <sub>106</sub>	16.2	X	108.82516	170.55168	209.99005	5.77642	0.1799826	0.29420445	2.2389096	20	1 7.6	18.6
119958 2002 RU <sub>121</sub>	16.4	X	208.71357	322.61167	311.26771	7.37775	0.2430543	0.30017573	2.2091184	20	—	—
119959 2002 SY <sub>21</sub>	16.3	X	346.86947	273.89864	180.13303	4.93857	0.0858313	0.28874470	2.2670444	20	—	—
119960 2002 TO <sub>25</sub>	16.5	X	82.78584	208.84486	212.04028	4.88093	0.0833284	0.29746455	2.2225212	20	1 7.9	18.8
119961 2002 TQ <sub>57</sub>	16.2	X	100.86737	280.72825	196.96694	21.36225	0.0910569	0.36823841	1.9277468	20	4 28.1	18.0
119962 2002 TM <sub>60</sub>	15.9	X	309.29384	179.48289	54.01897	21.94122	0.0731941	0.36169748	1.9509182	20	2 11.5	18.6
119963 2002 TE <sub>68</sub>	16.3	X	351.12601	32.99104	201.40748	22.49940	0.0373587	0.36917965	1.9244688	20	4 18.1	17.7
119964 2002 TU <sub>226</sub>	16.1	X	34.77109	177.33705	148.10608	5.58107	0.1587563	0.27619257	2.3352213	20	12 2.4	19.1
119965 2002 TT <sub>265</sub>	15.9	X	287.66841	172.78163	257.11574	4.04138	0.1390941	0.27004452	2.3705319	20	10 16.3	18.3
119966 2002 TX <sub>286</sub>	16.6	X	129.59905	26.57444	3.33097	7.70663	0.1403762	0.29887416	2.2155275	20	2 14.6	19.4
119967 Daniellong	16.5	X	334.91868	318.17014	157.25151	9.60928	0.1673995	0.28715292	2.2754147	20	—	—
119968 2002 UF	16.5	X	211.32741	292.18689	208.44115	5.50194	0.1282251	0.27055159	2.3675690	20	10 6.9	19.9
119969 2002 UU <sub>17</sub>	16.1	X	96.98939	92.43562	52.30094	4.18407	0.0564377	0.30827784	2.1702404	20	5 28.1	18.5
119970 2002 VL <sub>21</sub>	16.3	X	275.04588	143.36741	322.22157	5.49926	0.0639346	0.27680567	2.3317719	20	11 27.2	18.9
119971 2002 VZ <sub>70</sub>	16.3	X	164.66447	199.42596	101.42441	5.78102	0.1930652	0.29382775	2.2408228	20	—	—
119972 2002 VG <sub>124</sub>	17.0	X	110.89185	58.90373	314.40734	2.57675	0.1118911	0.29208477	2.2497285	20	—	—
119973 2002 VK <sub>124</sub>	17.0	X	10.38600	356.38891	172.26385	5.43562	0.0802990	0.29928149	2.2135167	20	2 10.9	19.3
119974 2002 VP <sub>127</sub>	16.6	X	117.78235	349.20880	23.35593	20.62882	0.0906170	0.35034792	1.9928274	20	—	—
119975 2002 VB <sub>128</sub>	15.5	X	40.99802	295.40750	266.68060	18.15699	0.0263654	0.36641059	1.9341525	20	5 22.2	17.3
119976 2002 VR <sub>130</sub>	11.1	X	46.40302	218.14582	181.87018	3.52484	0.3831804	0.00848303	23.8105020	20	1 27.7	24.1
119977 2002 WB <sub>3</sub>	16.2	X	228.95841	319.15162	124.83963	7.04486	0.0812421	0.26374986	2.4081002	20	8 19.3	19.2
119978 2002 WK <sub>4</sub>	15.9	X	150.81140	8.03726	247.30122	6.03095	0.0848143	0.27832651	2.3232699	20	—	—
119979 2002 WC <sub>19</sub>	4.7	X	319.48582	45.37139	109.67191	9.20499	0.2581616	0.00300714	47.5371937	20	12 22.7	20.7
119980 2002 XW <sub>3</sub>	16.6	X	24.62608	166.25438	250.82838	4.22623	0.0569878	0.28429681	2.2906288	20	—	—
119981 2002 XP <sub>4</sub>	15.9	X	43.17895	295.85168	217.90371	3.74926	0.2289965	0.23759450	2.5817358	20	4 12.7	18.0
119982 2002 XX <sub>29</sub>	16.0	X	91.37894	186.24035	267.51989	6.30274	0.1033303	0.29586873	2.2305057	20	3 9.9	18.6
119983 2002 XB <sub>39</sub>	16.4	X	106.39794	300.89615	33.47753	2.76552	0.0622326	0.28411559	2.2916028	20	—	—
119984 2002 XE <sub>46</sub>	16.6	X	234.70418	174.34996	193.96295	3.81221	0.1360666	0.31035670	2.1605383	20	5 5.9	19.5
119985 2002 XO <sub>47</sub>	16.1	X	131.66927	181.65314	322.62013	4.24754	0.1354854	0.25604948	2.4561419	20	7 19.5	19.8
119986 2002 XZ <sub>52</sub>	16.0	X	162.08801	246.25378	106.80438	4.77380	0.2244341	0.29601704	2.2297606	20	2 9.1	19.5
119987 2002 XA <sub>54</sub>	14.6	X	269.33597	138.38980	82.44111	13.95990	0.2305191	0.22643966	2.6658418	20	—	—
119988 2002 XT <sub>63</sub>	15.5	X	58.47185	97.95689	16.11336	4.76250	0.1016877	0.23826968	2.5768563	20	2 29.0	18.5
119989 2002 XB <sub>76</sub>	16.3	X	183.29612	300.43099	58.75873	7.16698	0.1267506	0.29920222	2.2139077	20	3 4.7	19.5
119990 2002 XU <sub>78</sub>	16.3	X	307.91940	178.12719	310.89494	4.81737	0.1051744	0.27881320	2.3205655	20	—	—
119991 2002 XV <sub>81</sub>	16.3	X	196.84063	8.04274	7.83868	4.10192	0.1268145	0.30214028	2.1995321	20	4 5.2	19.4
119992 2002 XZ <sub>87</sub>	15.2	X	77.58677	109.20725	312.69649	13.86169	0.0799507	0.23405058	2.6077316	20	1 17.3	18.4
119993 2002 XT <sub>105</sub>	16.4	X	66.04083	106.09181	35.08172	4.26498	0.0574860	0.30286070	2.1960427	20	4 6.1	18.6
119994 2002 YJ	16.2	X	101.39319	323.8283								