

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140001	2001	SO ₄₁	15.5	X	238.92643	137.87017	198.83233	10.06654	0.1237260	0.19041795	2.9922471	20	4 4.8	20.0
140002	2001	SF ₄₂	14.9	X	218.17668	113.97851	168.14497	11.02292	0.1469532	0.18041123	3.1018944	20	1 11.9	20.2
140003	2001	SM ₄₂	15.3	X	149.15942	305.28911	106.22446	2.46107	0.0918414	0.18608607	3.0385063	20	4 7.7	19.9
140004	2001	SN ₄₂	15.6	X	310.56580	70.66413	27.12280	5.21320	0.0996512	0.21574901	2.7531941	20	12 23.4	18.8
140005	2001	SR ₄₂	15.9	X	9.11785	144.95992	180.27079	1.97048	0.0627446	0.20695095	2.8306821	20	9 25.9	19.5
140006	2001	SE ₄₃	14.5	X	100.72982	49.96880	14.99825	18.43558	0.0753791	0.18086083	3.0967516	20	3 5.0	19.0
140007	2001	SG ₄₃	14.8	X	8.46651	193.56229	121.98214	3.78264	0.0682810	0.20580991	2.8411349	20	9 13.8	18.3
140008	2001	SS ₄₃	16.4	X	22.35502	223.66673	71.99355	2.25684	0.1823778	0.25950650	2.4342801	20	10 3.9	18.9
140009	2001	SU ₄₄	16.7	X	35.81418	329.77394	104.97195	3.22872	0.1964779	0.27622606	2.3350326	20	—	—
140010	2001	SA ₄₅	15.7	X	179.47867	237.25639	47.59900	4.82987	0.0295272	0.22545453	2.6736019	20	—	—
140011	2001	SA ₄₆	14.8	X	188.29986	252.15935	158.07225	9.11864	0.0857994	0.19092339	2.9869638	20	5 17.8	19.5
140012	2001	SG ₄₇	16.0	X	60.93655	260.49364	106.47059	4.17435	0.0565607	0.21955285	2.7213015	20	—	—
140013	2001	SA ₄₉	15.0	X	262.54221	253.96754	28.35161	9.88525	0.0226530	0.18348125	3.0671964	20	3 11.3	19.4
140014	2001	SG ₄₉	15.7	X	261.75155	239.98137	151.21911	2.47094	0.0554108	0.19812740	2.9141128	20	7 18.4	19.8
140015	2001	SE ₅₀	14.7	X	233.59957	315.57254	48.64122	9.83449	0.1525577	0.19132026	2.9828317	20	4 25.9	19.4
140016	2001	SL ₅₀	15.6	X	14.43667	322.00006	73.63816	7.04589	0.0499284	0.21598408	2.7511961	20	—	—
140017	2001	SE ₅₁	15.3	X	99.70333	259.23445	20.32244	12.14825	0.1730106	0.21613889	2.7498823	20	11 29.7	19.9
140018	2001	ST ₅₁	14.9	X	179.82206	300.01159	29.29293	15.61164	0.1051873	0.18020520	3.1042582	20	2 7.6	20.0
140019	2001	SO ₅₂	15.0	X	68.53571	240.70544	167.47695	4.73874	0.1171040	0.17202640	3.2018869	20	1 2.0	19.1
140020	2001	SQ ₅₂	15.3	X	14.63011	301.24825	180.38713	8.90722	0.1028177	0.22699009	2.6615305	20	—	—
140021	2001	SW ₅₂	15.2	X	143.67038	8.79341	26.60046	13.28033	0.0689317	0.18163464	3.0879500	20	3 15.4	19.8
140022	2001	SH ₅₃	15.6	X	104.69084	264.21729	36.01342	8.00064	0.1300085	0.21697004	2.7428551	20	12 29.0	20.0
140023	2001	SL ₅₄	14.5	X	278.83808	266.64251	51.25473	10.70224	0.0861707	0.19172505	2.9786317	20	5 2.4	18.5
140024	2001	SC ₅₇	14.7	X	177.76987	197.86150	180.33305	10.81401	0.0875636	0.18384320	3.0631693	20	3 27.1	19.4
140025	2001	SD ₅₇	15.2	X	176.18780	196.30381	179.38713	10.26824	0.1127943	0.18339840	3.0681201	20	3 23.1	19.8
140026	2001	SK ₅₈	16.3	X	283.86563	321.66724	179.24474	3.39071	0.0649261	0.26944079	2.3740717	20	—	—
140027	2001	SO ₅₉	14.3	X	185.92040	356.03453	34.16253	16.50132	0.0519215	0.18610600	3.0382893	20	4 19.2	18.8
140028	2001	SZ ₆₁	15.1	X	172.99729	189.63439	187.37576	10.84535	0.1084356	0.18352532	3.0667054	20	3 20.7	20.0
140029	2001	SV ₆₃	15.5	X	66.50467	54.26707	53.39997	2.39732	0.0399457	0.23252393	2.6191334	20	2 25.7	18.7
140030	2001	SA ₆₄	15.2	X	257.01118	201.38307	182.28980	8.93096	0.1096306	0.19568842	2.9382763	20	6 24.5	19.5
140031	2001	SP ₆₄	14.9	X	264.63200	2.70138	38.04513	13.29199	0.1047772	0.19826453	2.9127689	20	8 1.5	19.2
140032	2001	SM ₆₅	15.0	X	105.20270	225.31728	190.78750	9.30281	0.0725218	0.17718433	3.1394423	20	2 19.2	19.6
140033	2001	SK ₆₆	14.5	X	18.80543	161.22903	37.70633	12.72819	0.0736591	0.18524420	3.0477053	20	4 23.1	18.2
140034	2001	SO ₆₆	15.7	X	281.18835	331.67603	32.52046	15.57921	0.2846849	0.19774000	2.9179176	20	5 31.8	20.0
140035	2001	SO ₆₇	16.6	X	81.09615	244.95827	153.03022	3.03581	0.2365850	0.27693053	2.3310709	20	—	—
140036	2001	SB ₇₁	14.6	X	17.67254	328.78121	82.50172	10.34021	0.1545575	0.21463516	2.7627111	20	—	—
140037	2001	SA ₇₂	14.9	X	169.90502	248.99509	190.56836	9.61411	0.1567599	0.18793682	3.0185251	20	6 3.8	19.9
140038	2001	Kurushima	15.7	X	33.44235	244.89716	135.45480	7.28438	0.0501312	0.21569125	2.7536857	20	—	—
140039	2001	SO ₇₃	18.1	X	300.93326	30.90230	197.21034	4.85426	0.5687047	0.40123203	1.8205627	20	—	—
140040	2001	SA ₇₆	15.3	X	98.78453	249.60391	142.16143	1.88739	0.0841645	0.22577109	2.6711021	20	1 8.3	18.7
140041	2001	SZ ₇₇	15.9	X	291.59258	173.56054	209.97910	1.28882	0.0816651	0.20394627	2.8584167	20	8 14.9	19.6
140042	2001	SV ₇₈	15.6	X	267.77981	39.92498	167.23599	2.67761	0.0797459	0.22854251	2.6494642	20	—	—
140043	2001	SE ₈₀	15.1	X	234.23020	263.47958	170.25294	15.14971	0.1292654	0.20411446	2.8568462	20	7 28.6	19.6
140044	2001	SO ₈₀	15.1	X	74.76924	294.55923	312.29592	8.32700	0.1464518	0.21108941	2.7935626	20	9 21.2	19.2
140045	2001	SZ ₈₀	15.7	X	109.76790	122.96770	171.32544	7.32946	0.0457490	0.22095467	2.7097793	20	12 23.4	19.7
140046	2001	SQ ₈₁	15.1	X	32.44902	188.68261	330.14425	8.95989	0.0263591	0.18953832	3.0014978	20	3 16.2	19.2
140047	2001	SR ₈₃	16.3	X	112.60109	114.63122	314.57717	1.68215	0.1940773	0.23635172	2.5907780	20	3 27.4	20.0
140048	2001	SF ₈₄	14.8	X	9.47816	200.14706	333.46315	11.81548	0.2113449	0.24009473	2.5637812	20	2 20.5	17.0
140049	2001	SO ₈₅	16.1	X	55.84247	198.58395	214.40423	4.27398	0.0352093	0.22764717	2.6564066	20	—	—
140050	2001	SN ₈₆	15.9	X	115.08593	77.58276	271.60941	1.63431	0.0227851	0.22868225	2.6483848	20	—	—
140051	2001	SJ ₉₀	15.6	X	242.82179	83.00095	180.58755	9.29886	0.2259415	0.18397695	3.0616845	20	1 7.7	20.9
140052	2001	SS ₉₁	15.4	X	306.79607	251.98668	228.66168	6.74634	0.1623526	0.21855207	2.7296027	20	—	—
140053	2001	SU ₉₅	16.2	X	294.38612	41.98992	291.38549	0.86804	0.0943877	0.19859761	2.9095112	20	6 10.3	19.8
140054	2001	SV ₉₅	15.1	X	340.79362	345.91394	181.30794	10.62850	0.0284132	0.18041670	3.1018317	20	1 21.5	19.6
140055	2001	SU ₉₆	15.3	X	347.60623	283.75595	339.15017	9.20612	0.1016061	0.19696371	2.9255795	20	5 25.7	19.0
140056	2001	SY ₉₆	15.1	X	71.66341	267.48030	201.68449	9.21582	0.1005814	0.18341267	3.0679609	20	3 16.4	19.2
140057	2001	SR ₉₈	16.0	X	143.03323	132.44757	338.99873	3.94495	0.2210014	0.24450341	2.5328692	20	6 21.8	20.2
140058	2001	SA ₁₀₁	15.4	X	169.58942	209.78522	10.74505	6.16266	0.0174696	0.21739943	2.7392423	20	11 29.9	19.2
140059	2001	SZ ₁₀₁	16.3	X	338.65581	196.95464	188.64366	7.22538	0.0856110	0.21091354	2.7951154	20	11 2.5	19.6
140060	2001	SD ₁₀₂	15.0	X	174.49610	131.90315	236.37960	8.43838	0.0882644	0.18415494	3.0597114	20	3 7.9	19.9
140061	2001	SO ₁₀₂	16.2	X	47.57916	176.24102	209.06591	5.72965	0.0328318	0.22118885	2.7078663	20	—	—
140062	2001	SU ₁₀₃	15.1	X	346.44718	200.36805	340.95911	1.47439	0.0926184	0.18229585	3.0804786	20	2 10.9	19.1
140063	2001	SB ₁₀₅	15.1	X	203.14853	78.95887	255.28090	6.96878	0.1274275	0.18404231	3.0609596	20	2 25.2	20.1
140064	2001	SG ₁₀₅	15.3	X	332.33556	325.15141	359.70221	11.53691	0.0963010	0.20026378	2.8933510	20	8 1.7	18.9
140065	2001	SZ ₁₀₅	15.4	X	141.64466	135.77809	291.62028	3.36943	0.1898581	0.18436143	3.0574264	20	4 24.2	20.4
140066	2001	SR ₁₀₈	14.2	X	102.40873	127.90572	317.31180	6.21694	0.2846982	0.17609934	3.1523243	20	4 17.6	19.2
140067	2001	SA ₁₁₁	14.1	X	75.20902	212.00515	257.64904	13.44113	0.2532728	0.17470314	3.1690973	20	4 11.5	18.5
140068	2001	SK ₁₁₁	13.6	X	57.35761	70.75049	43.48243	25.97347	0.2235812	0.17201053	3.2020838	20	4 3.9	17.8
140069	2001	SO ₁₁₁	14.4	X	288.51617	329.70766	0.71747	12.00688	0.1410185	0.19339145	2.9614964	20	5 18.1	18.7
140070	2001	SY ₁₁₁	14.6	X	141.85611	26.31772	13.42811	10.83790	0.					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
140081 2001 SB ₁₂₀	15.6	X	121.43265	334.26246	304.66218	4.62473	0.0520180	0.21826807	2.7319699	20	12 17.3	19.5
140082 2001 SO ₁₂₀	16.1	X	339.64633	203.00031	201.49004	5.29396	0.0234882	0.21470764	2.7620893	20	11 26.1	19.8
140083 2001 SR ₁₂₀	15.7	X	133.55914	357.11968	217.26171	3.46342	0.0451221	0.21019435	2.8014875	20	10 9.9	19.6
140084 2001 ST ₁₂₁	16.0	X	56.38458	175.91092	241.41102	6.00657	0.0839215	0.22669296	2.6638557	20	—	—
140085 2001 SZ ₁₂₁	14.6	X	89.76112	197.35586	227.78216	7.04832	0.1017209	0.17965889	3.1105480	20	2 14.2	19.0
140086 2001 SD ₁₂₂	15.8	X	337.25540	152.06214	250.33717	3.74608	0.0678936	0.21331305	2.7741148	20	11 20.8	19.1
140087 2001 SM ₁₂₃	14.9	X	304.15877	302.97768	330.68534	10.00494	0.0436791	0.19265715	2.9690167	20	4 9.2	19.2
140088 2001 SQ ₁₂₄	15.9	X	25.73258	116.66383	234.24337	3.18283	0.0645428	0.21462196	2.7628244	20	11 23.6	19.5
140089 2001 SG ₁₂₇	15.4	X	221.15429	70.28220	197.74765	3.37566	0.1392504	0.17967444	3.1103686	20	—	—
140090 2001 SL ₁₂₇	15.8	X	256.02520	102.12906	292.14227	0.89915	0.0766735	0.19986158	2.8972313	20	7 12.3	19.7
140091 2001 SN ₁₂₈	15.0	X	59.87932	156.03027	313.51644	9.76294	0.0850874	0.18217173	3.0818776	20	2 26.8	19.1
140092 2001 SR ₁₂₈	15.3	X	197.19589	347.26139	187.95694	9.01369	0.1239052	0.21387252	2.7692748	20	10 29.4	19.5
140093 2001 SE ₁₂₉	15.6	X	327.65451	127.31136	268.97852	2.14647	0.2007944	0.20955592	2.8071746	20	10 27.3	18.3
140094 2001 SH ₁₂₉	15.3	X	322.76805	207.16752	213.19014	6.04350	0.1199955	0.21263528	2.7800667	20	11 23.3	18.4
140095 2001 SO ₁₂₉	15.4	X	237.17716	190.09098	350.71967	14.44314	0.1239501	0.21900800	2.7258131	20	12 20.0	19.4
140096 2001 SQ ₁₂₉	16.5	X	93.42221	123.25072	305.73152	2.41453	0.1649800	0.23210354	2.6222949	20	2 28.7	19.9
140097 2001 SR ₁₃₀	15.9	X	105.59415	299.37752	116.46556	1.35586	0.0349772	0.21172391	2.7879787	20	10 28.8	19.7
140098 2001 SP ₁₃₀	15.1	X	180.60308	69.04382	355.10379	9.49777	0.0316549	0.19332613	2.9621634	20	5 21.8	19.5
140099 2001 SE ₁₃₁	16.1	X	46.62381	253.63311	210.83699	2.99938	0.1704942	0.22990324	2.6389996	20	1 31.0	18.8
140100 2001 ST ₁₃₁	14.9	X	147.33192	26.19918	354.40709	8.77479	0.0601147	0.18235873	3.0797704	20	2 26.5	19.4
140101 2001 SV ₁₃₁	16.2	X	199.04368	198.84747	330.02247	1.90230	0.1127072	0.26410519	2.4059398	20	10 30.5	19.5
140102 2001 SB ₁₃₂	16.0	X	304.90032	106.25965	201.90978	2.08275	0.1076898	0.19659131	2.9292729	20	5 21.2	19.6
140103 2001 SK ₁₃₂	15.5	X	103.69012	90.29542	191.85894	12.80944	0.0027305	0.21447067	2.7641235	20	11 28.1	19.4
140104 2001 SW ₁₃₂	15.2	X	328.13427	69.80225	337.98352	4.38406	0.0590284	0.21218625	2.7839273	20	11 12.4	18.7
140105 2001 SN ₁₃₃	15.6	X	126.05610	306.27867	322.09841	5.44381	0.1269845	0.21764961	2.7371428	20	12 10.8	19.9
140106 2001 SV ₁₃₃	14.8	X	41.52775	288.37906	191.20876	21.85665	0.0529195	0.18038475	3.1021980	20	2 9.6	19.3
140107 2001 SZ ₁₃₃	15.3	X	311.25687	87.86419	201.04791	8.45909	0.0334068	0.19325038	2.9629374	20	5 15.7	19.3
140108 2001 SA ₁₃₅	15.2	X	347.11930	120.05611	185.18170	12.33631	0.0818152	0.20154179	2.8811065	20	7 23.6	19.0
140109 2001 SE ₁₃₅	14.5	X	320.01720	178.83497	358.68318	10.44160	0.1617815	0.17710156	3.1404204	20	—	—
140110 2001 SD ₁₃₆	15.0	X	279.24596	270.07932	3.69474	15.06379	0.0600842	0.18682145	3.0305274	20	3 13.8	19.2
140111 2001 SN ₁₃₆	15.8	X	36.86667	150.14260	204.11011	5.69427	0.0690458	0.21491625	2.7603016	20	12 13.2	19.6
140112 2001 SK ₁₃₇	15.5	X	359.63740	305.51401	302.38804	1.01513	0.0475090	0.19427008	2.9525602	20	5 27.8	19.3
140113 2001 SM ₁₃₇	15.1	X	130.86147	62.62455	354.42099	3.48269	0.1042115	0.18378399	3.0638271	20	3 25.7	19.6
140114 2001 SO ₁₃₇	15.7	X	282.46567	19.79388	320.63978	1.21724	0.1183453	0.19679476	2.9272537	20	5 30.3	19.8
140115 2001 ST ₁₃₇	15.6	X	243.34591	52.72349	351.23933	1.43510	0.0735440	0.19813242	2.9140636	20	7 9.7	19.8
140116 2001 SX ₁₃₇	16.1	X	198.27284	140.36563	257.93655	0.38432	0.1064943	0.24390103	2.5370379	20	5 9.2	20.0
140117 2001 SD ₁₃₈	15.2	X	110.17273	237.46632	186.29289	2.99956	0.2380146	0.17980160	3.1089018	20	3 27.9	20.0
140118 2001 SR ₁₃₈	15.8	X	70.69007	146.31665	209.66476	5.15305	0.0296730	0.21975260	2.7196522	20	—	—
140119 2001 SV ₁₃₈	15.9	X	350.24342	195.90257	205.82469	5.55678	0.0548274	0.21411817	2.7671564	20	12 8.7	19.4
140120 2001 SB ₁₃₉	15.8	X	94.96838	308.98067	350.22441	4.56708	0.0893443	0.21628313	2.7486595	20	12 14.9	20.0
140121 2001 SR ₁₃₉	15.5	X	269.86100	132.45647	242.57396	0.96142	0.0739595	0.19826215	2.9127922	20	7 5.2	19.5
140122 2001 SG ₁₄₀	15.1	X	127.71134	218.31186	189.96370	10.83764	0.0908054	0.18189400	3.0850140	20	3 9.3	19.7
140123 2001 SW ₁₄₀	15.8	X	161.41401	255.75270	194.44387	11.14366	0.1373869	0.19109670	2.9851575	20	6 8.2	20.7
140124 2001 SA ₁₄₁	16.3	X	17.64672	170.20826	194.63959	3.38170	0.1060692	0.21293895	2.7773630	20	12 6.0	19.9
140125 2001 SD ₁₄₁	15.8	X	236.76337	22.94360	32.77813	2.29701	0.0574832	0.19837148	2.9117219	20	7 19.4	20.0
140126 2001 SV ₁₄₁	16.7	X	53.67553	88.74234	271.50539	2.83946	0.0971571	0.21899896	2.7258880	20	—	—
140127 2001 SW ₁₄₁	15.7	X	95.28932	314.87348	326.11043	5.13311	0.0108510	0.21381643	2.6797591	20	11 13.7	19.6
140128 2001 SZ ₁₄₁	15.7	X	277.88880	169.33736	270.03373	2.49385	0.0756699	0.20958420	2.8069221	20	10 9.5	19.2
140129 2001 SG ₁₄₃	14.1	X	43.49334	173.29467	343.02571	11.40710	0.1491853	0.18605069	3.0388915	20	4 7.0	17.9
140130 2001 SD ₁₄₄	16.9	X	339.86826	149.08902	325.06632	3.16237	0.0948685	0.27617408	2.3353256	20	—	—
140131 2001 SB ₁₄₅	15.6	X	298.08455	83.73091	195.43842	10.47802	0.0929388	0.19164228	2.9794893	20	4 5.9	19.6
140132 2001 SK ₁₄₅	15.8	X	108.75788	47.32829	188.45945	7.56027	0.0448796	0.20932647	2.8092255	20	10 8.8	19.6
140133 2001 ST ₁₄₆	15.6	X	294.62684	57.50359	224.40323	1.04894	0.1363027	0.19144642	2.9815211	20	3 29.1	19.7
140134 2001 SS ₁₄₆	15.7	X	105.86482	110.05892	213.97959	8.77180	0.0906730	0.22137326	2.7063624	20	—	—
140135 2001 SH ₁₄₉	15.3	X	358.26096	41.99099	324.59710	5.77682	0.0152342	0.21063123	2.7976124	20	10 28.7	19.1
140136 2001 SQ ₁₅₁	14.2	X	46.69267	287.10779	196.44688	21.81801	0.0942709	0.17948126	3.1126000	20	2 25.2	18.5
140137 2001 SR ₁₅₁	14.6	X	212.84695	28.46875	5.23671	9.40332	0.0641843	0.19195248	2.9762784	20	5 19.5	19.2
140138 2001 SE ₁₅₂	14.7	X	66.33188	50.24408	202.00001	10.19623	0.0823164	0.20414628	2.8565493	20	9 9.2	18.7
140139 2001 SH ₁₅₄	15.8	X	17.08825	247.68238	200.27880	2.87203	0.0431148	0.22341440	2.6898534	20	—	—
140140 2001 ST ₁₅₄	15.3	X	48.96510	285.59417	11.28947	8.69064	0.1366581	0.20901837	2.8119855	20	10 23.9	19.1
140141 2001 SE ₁₅₅	15.2	X	238.59449	53.14493	339.57474	1.26894	0.0981023	0.19497021	2.9454877	20	6 16.0	19.5
140142 2001 SH ₁₅₅	15.1	X	357.77113	144.46341	225.73284	1.96156	0.1527409	0.21012690	2.8020870	20	11 17.5	18.0
140143 2001 SF ₁₅₉	14.8	X	209.47492	30.59213	354.06597	8.28722	0.0889419	0.18963576	3.0004696	20	5 2.9	19.4
140144 2001 SM ₁₅₉	15.5	X	187.20779	193.54046	256.75788	3.32497	0.0928217	0.19507311	2.9444517	20	7 3.3	19.9
140145 2001 SS ₁₆₀	14.9	X	175.34449	125.56423	220.39829	10.53305	0.1369410	0.18038916	3.1021474	20	2 13.7	20.0
140146 2001 SX ₁₆₀	14.8	X	262.91583	332.32162	347.18118	8.06443	0.1140628	0.18948100	3.0021031	20	4 8.1	19.3
140147 2001 SZ ₁₆₀	15.3	X	205.64496	115.53534	205.98840	9.05549	0.0866901	0.18214749	3.0821511	20	2 13.8	20.2
140148 2001 SA ₁₆₁	14.4	X	209.20310	29.10813	358.64465	10.12174	0.1076415	0.18958823	3.0012877	20	5 5.0	19.2
140149 2001 SZ ₁₆₂	14.7	X	226.95257	112.89883	326.13485	1.03244	0.0720335	0.19896690	2.9059100	20	8 4.5	18.9
140150 2001 SC ₁₆₃	15.4	X	163.28343	202.50595	195.70508	12.02033	0.1437525	0.18478691	3.0527313	20	4 7.8	20.3
140151 2001 SS ₁₆₄	14.6	X	263.81648	100.71910	203.05332	10.23354	0.0893219	0.18671198	3.0317119	20	3 25.2	19.0
140152 2001 SS ₁₆₅	15.2	X	277.03669	140.70371	339.64574	10.76948	0.1248116	0.21523411	2.7575834	20	11 24.0	18.8
140153 2001 SX ₁₆₆	16.1	X	282.48544	228.18540	165.3084							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140161	2001	SE ₁₇₅	15.7	X	118.74924	323.49637	107.71593	3.62883	0.0758695	0.23664494	2.5886375	20	3 24.1	19.1
140162	2001	SP ₁₇₆	15.1	X	155.30501	347.32385	91.08625	5.08173	0.1791834	0.18705682	3.0279848	20	5 21.0	20.0
140163	2001	SM ₁₇₇	15.9	X	16.07572	213.47515	147.56755	5.04443	0.0839633	0.21106911	2.7937417	20	11 26.3	19.6
140164	2001	SX ₁₇₇	14.9	X	252.83897	193.34974	174.14565	13.38366	0.0795912	0.19319476	2.9635061	20	6 4.4	19.4
140165	2001	SN ₁₇₈	15.7	X	85.04309	250.91344	189.27526	14.43658	0.1306626	0.22928070	2.6437743	20	2 24.6	19.1
140166	2001	SV ₁₇₈	15.1	X	204.41769	179.08116	200.65333	16.65823	0.1295645	0.18651253	3.0338729	20	4 24.2	19.9
140167	2001	SA ₁₇₉	15.3	X	231.32581	145.18425	199.62164	15.43946	0.2571867	0.18806962	3.0171040	20	3 29.2	20.6
140168	2001	SC ₁₇₉	14.8	X	31.84141	45.84847	65.91266	12.73297	0.1767880	0.22376042	2.6870796	20	1 15.7	17.5
140169	2001	SU ₁₈₁	17.1	X	347.59694	258.17221	150.40691	5.38322	0.2165055	0.26841165	2.3801362	20	—	—
140170	2001	SL ₁₈₂	15.4	X	84.31643	66.36737	350.06497	18.24935	0.1756420	0.23172469	2.6251523	20	2 8.1	18.7
140171	2001	SS ₁₈₄	16.1	X	217.75945	259.32354	338.74815	1.45899	0.0113094	0.22707833	2.6608410	20	—	—
140172	2001	SX ₁₈₄	15.8	X	128.11595	266.84532	22.18044	5.39404	0.0219388	0.22156595	2.7047930	20	—	—
140173	2001	SY ₁₈₇	16.0	X	180.53980	162.98399	112.53387	3.76834	0.0747562	0.22840047	2.6505625	20	—	—
140174	2001	SK ₁₈₈	16.1	X	85.66377	310.55679	37.30296	4.14079	0.0757361	0.22352359	2.6889773	20	—	—
140175	2001	SW ₁₈₉	16.3	X	256.24572	228.80806	356.20190	3.78530	0.0779448	0.23125220	2.6287269	20	—	—
140176	2001	SA ₁₉₂	15.4	X	162.34883	75.89908	349.37057	9.13597	0.0679454	0.19155123	2.9804334	20	5 2.4	19.9
140177	2001	SC ₁₉₂	15.9	X	70.21229	98.81889	190.40024	1.81819	0.0331402	0.21242814	2.7818136	20	10 28.6	19.5
140178	2001	SM ₁₉₅	16.1	X	337.05591	310.69547	120.13167	2.00088	0.0871396	0.21712791	2.7415255	20	12 30.0	19.3
140179	2001	SK ₁₉₆	15.6	X	205.15111	253.64178	176.85034	1.81441	0.0262359	0.19824856	2.9129253	20	7 2.0	19.6
140180	2001	ST ₂₀₀	14.9	X	59.35690	139.75014	358.57533	7.05849	0.1182774	0.18606708	3.0387130	20	4 7.5	18.8
140181	2001	SZ ₂₀₁	15.8	X	76.46963	102.47932	175.20630	5.74226	0.0708010	0.21146198	2.7902804	20	10 27.7	19.8
140182	2001	SO ₂₀₅	16.4	X	43.31288	215.07351	151.75339	3.24745	0.0905526	0.21810254	2.7333520	20	—	—
140183	2001	SP ₂₀₅	15.6	X	48.39953	273.71638	33.18629	4.78329	0.0589108	0.21137548	2.7910416	20	10 26.7	19.4
140184	2001	SO ₂₀₆	15.9	X	301.44272	53.16617	177.40484	8.30185	0.0502210	0.18397101	3.0617504	20	2 15.1	20.2
140185	2001	SV ₂₀₆	15.1	X	153.44189	201.24626	177.25519	13.13680	0.0197101	0.18327490	3.0694982	20	2 23.7	19.5
140186	2001	SZ ₂₀₆	15.9	X	213.44226	299.85998	156.27742	2.44631	0.0236793	0.20270332	2.8700898	20	8 15.6	19.9
140187	2001	SF ₂₁₁	15.9	X	298.68331	53.97752	6.20254	8.10876	0.0952514	0.20910551	2.8112042	20	10 12.6	19.3
140188	2001	SJ ₂₁₁	16.4	X	294.73398	283.01399	176.80123	6.18800	0.0964291	0.26682712	2.3895497	20	12 17.5	18.9
140189	2001	SC ₂₁₃	15.6	X	202.94373	184.12125	16.64009	9.60301	0.0968881	0.21752167	2.7382159	20	12 6.0	19.8
140190	2001	SJ ₂₁₄	15.7	X	210.61217	272.37653	96.46914	2.91779	0.1227813	0.18981901	2.9985381	20	4 17.4	20.4
140191	2001	ST ₂₁₄	15.5	X	199.84953	263.99506	147.54824	9.03331	0.2155199	0.19174138	2.9784626	20	5 26.9	20.7
140192	2001	SM ₂₁₅	15.8	X	4.39492	285.25346	116.54300	5.69804	0.0925966	0.21582722	2.7525290	20	—	—
140193	2001	SE ₂₁₈	16.0	X	4.37638	252.93027	145.94350	4.71272	0.1010685	0.21559895	2.7544715	20	12 30.3	19.4
140194	2001	SO ₂₁₈	16.2	X	319.16130	304.88083	110.19688	0.80634	0.1191387	0.21106823	2.7937496	20	11 9.1	19.2
140195	2001	SE ₂₁₉	15.5	X	146.57596	223.30790	8.26401	8.46004	0.1411473	0.21490477	2.7604000	20	11 13.7	20.1
140196	2001	SM ₂₁₉	15.7	X	258.80459	149.50630	165.65245	1.37683	0.0505607	0.18961124	3.0007282	20	4 8.7	20.0
140197	2001	SC ₂₂₀	15.6	X	210.89094	191.14252	173.91615	8.85463	0.0380944	0.18919840	3.0050918	20	4 17.4	20.0
140198	2001	SH ₂₂₁	15.2	X	344.84092	104.07069	169.72253	2.61514	0.0421424	0.19563064	2.9388549	20	6 10.4	18.9
140199	2001	SV ₂₂₂	15.5	X	150.36124	79.36914	17.17701	8.93596	0.0474529	0.19223867	2.9733238	20	5 28.7	20.0
140200	2001	SS ₂₂₃	15.9	X	64.38109	168.08629	183.39992	7.63978	0.1360130	0.21843552	2.7305735	20	—	—
140201	2001	SP ₂₂₄	15.4	X	251.45659	30.62866	27.48367	8.10525	0.0362334	0.20161470	2.8804118	20	8 16.6	19.5
140202	2001	SU ₂₂₄	15.7	X	341.89424	225.36570	159.58240	6.57650	0.0667601	0.21050924	2.7986931	20	11 6.6	19.3
140203	2001	SC ₂₂₆	15.8	X	181.53402	13.60926	151.27181	2.84452	0.1373610	0.25906280	2.4370588	20	10 5.5	19.5
140204	2001	SE ₂₂₆	15.6	X	99.68940	331.10770	133.87076	2.41256	0.0725337	0.18535857	3.0464515	20	4 15.1	19.8
140205	2001	SQ ₂₂₆	16.0	X	17.55420	69.20692	49.40610	4.12098	0.2027058	0.22589006	2.6701642	20	—	—
140206	2001	SB ₂₂₈	16.4	X	58.53101	281.99385	29.29625	1.09882	0.2898315	0.21457898	2.7631933	20	12 12.9	20.7
140207	2001	SC ₂₂₈	15.7	X	337.56102	297.86235	32.33762	2.36327	0.0661377	0.20187745	2.8779120	20	8 15.7	19.3
140208	2001	SV ₂₂₈	15.4	X	80.26793	132.23373	167.88844	5.02027	0.1756332	0.21485103	2.7608603	20	12 9.3	19.7
140209	2001	SC ₂₃₀	16.9	X	91.30447	106.40033	177.87902	3.93788	0.2145445	0.26765173	2.3846392	20	12 11.8	20.8
140210	2001	SU ₂₃₀	15.4	X	180.66083	349.20358	81.93392	2.47865	0.1498676	0.19063570	2.9899682	20	6 2.4	20.1
140211	2001	SZ ₂₃₀	15.4	X	268.21064	219.66539	142.09719	2.90755	0.1332284	0.19601564	2.9350054	20	6 7.2	19.6
140212	2001	SP ₂₃₂	15.0	X	217.30382	327.33802	25.99641	8.43072	0.0676036	0.18969881	3.0289349	20	4 7.6	19.5
140213	2001	SQ ₂₃₂	15.6	X	115.86758	24.85358	64.79265	1.95375	0.1282951	0.18360047	3.0658685	20	4 21.8	20.0
140214	2001	SV ₂₃₄	15.7	X	297.57144	290.50204	180.83200	3.22492	0.1613214	0.21252903	2.7809331	20	12 15.1	18.7
140215	2001	SY ₂₃₄	16.0	X	7.27593	322.46186	47.38360	2.59740	0.1205335	0.21103453	2.7940470	20	11 28.2	19.2
140216	2001	SW ₂₃₅	15.5	X	41.08007	203.16137	135.66827	5.23163	0.0741733	0.21283317	2.7782832	20	11 30.3	19.2
140217	2001	SA ₂₃₆	15.1	X	188.70943	207.65746	151.44416	8.07554	0.1513100	0.18494710	3.0509684	20	3 16.8	20.0
140218	2001	SD ₂₃₇	16.0	X	18.19831	126.22064	170.34485	4.57724	0.1487313	0.20575973	2.8415969	20	9 10.9	19.2
140219	2001	SS ₂₃₇	15.8	X	281.35047	96.26171	179.11416	9.37202	0.1190715	0.18799819	3.0178682	20	3 7.2	20.2
140220	2001	SH ₂₃₈	14.9	X	123.56573	280.13157	156.12779	10.48742	0.1245189	0.18310421	3.0714056	20	4 15.9	19.6
140221	2001	SC ₂₃₉	15.9	X	106.15271	115.13337	149.74443	3.08039	0.1519466	0.21384490	2.7695132	20	11 19.9	20.2
140222	2001	SU ₂₄₀	16.1	X	303.97946	209.77520	159.80896	2.35958	0.0843121	0.20332059	2.8642778	20	8 14.5	19.7
140223	2001	SX ₂₄₀	16.1	X	267.86926	313.72884	128.10666	2.89891	0.0970138	0.20606068	2.8388294	20	9 27.6	19.9
140224	2001	ST ₂₄₁	15.7	X	272.64389	222.20920	82.15748	2.65496	0.1025642	0.18959445	3.0009054	20	4 5.8	20.0
140225	2001	SU ₂₄₁	15.7	X	238.13943	43.78750	82.82750	3.02933	0.0287251	0.20895373	2.8125654	20	10 26.7	19.6
140226	2001	SX ₂₄₁	15.7	X	171.69868	313.16689	137.58253	0.89515	0.1947318	0.19040799	2.9923514	20	6 18.6	20.8
140227	2001	SC ₂₄₂	15.3	X	133.04089	26.74386	33.35234	8.91833	0.1562343	0.18348291	3.0671779	20	4 7.6	20.1
140228	2001	SV ₂₄₂	15.9	X	304.23761	258.14881	147.98791	2.90816	0.0506720	0.20662301	2.8336764	20	10 8.3	19.4
140229	2001	SC ₂₄₃	15.5	X	186.09096	292.46316	110.19821	2.26653	0.0658521	0.18847552	3.0127708	20	5 4.6	19.9
14														

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140241	2001	SW ₂₄₉	15.6 ^m	X	342.85917	259.09911	71.43593	2.92600	0.0890944	0.20182800	2.8783820	20	8 24.9	19.0
140242	2001	SO ₂₅₀	17.0	X	122.57509	292.83736	144.71938	3.72935	0.2006161	0.28780076	2.2719988	20	4 18.4	20.2
140243	2001	SP ₂₅₀	15.0	X	318.49592	242.09950	42.34897	10.48344	0.0717301	0.19152893	2.9806648	20	5 13.2	18.8
140244	2001	SA ₂₅₁	16.0	X	202.44799	256.60817	134.81055	2.87984	0.1789665	0.18891214	3.0081268	20	5 5.1	21.0
140245	2001	SM ₂₅₂	14.7	X	250.23325	176.06768	194.91466	8.43806	0.0567013	0.19276393	2.9679201	20	6 7.7	19.0
140246	2001	SR ₂₅₂	15.1	X	334.86417	202.99905	197.37680	14.36803	0.1294935	0.20903119	2.8118705	20	11 17.5	18.4
140247	2001	SY ₂₅₂	15.7	X	208.12458	264.33242	71.57823	3.33087	0.2240949	0.18493373	3.0511154	20	3 5.6	20.9
140248	2001	SH ₂₅₃	15.8	X	273.56408	223.53674	38.33295	3.01961	0.2258666	0.19178905	2.9779690	20	3 31.7	20.4
140249	2001	SL ₂₅₃	15.5	X	38.13864	266.31267	65.44388	4.48101	0.0966038	0.21013930	2.8019767	20	11 19.4	19.1
140250	2001	SC ₂₅₅	15.8	X	351.59349	170.44008	184.87483	1.85391	0.0806615	0.20646909	2.8350846	20	10 11.0	19.1
140251	2001	SN ₂₅₅	16.4	X	356.08634	53.59727	128.18396	2.15386	0.1009000	0.28613179	2.2808251	20	2 7.6	18.6
140252	2001	SB ₂₅₆	15.2	X	100.04369	42.36376	41.29428	10.76817	0.0962201	0.18039745	3.1020523	20	3 26.8	19.6
140253	2001	SV ₂₅₆	16.1	X	279.06134	171.21069	65.01171	3.03832	0.0359991	0.23034770	2.6356038	20	1 23.2	19.6
140254	2001	SA ₂₅₇	16.4	X	322.26021	17.84772	35.84291	4.11820	0.0919689	0.20928828	2.8095673	20	11 11.6	19.7
140255	2001	SN ₂₅₇	14.5	X	118.27499	207.96926	177.67167	7.22014	0.1904630	0.17403608	3.1771900	20	2 13.9	19.3
140256	2001	SB ₂₅₈	15.2	X	147.02109	51.61311	24.15944	11.29093	0.1084539	0.18867149	3.0106842	20	5 3.1	19.8
140257	2001	SE ₂₅₈	16.0	X	284.01030	214.96631	346.36136	3.92481	0.0850649	0.23143803	2.6273196	20	—	—
140258	2001	SN ₂₆₀	16.1	X	340.66747	134.74400	224.60326	1.62792	0.0856511	0.20671506	2.8328352	20	9 28.5	19.3
140259	2001	SO ₂₆₀	15.2	X	121.74084	204.26497	193.25552	5.14318	0.1682220	0.17865377	3.1222039	20	2 28.5	20.0
140260	2001	SG ₂₆₃	15.9	X	74.07682	328.54461	76.47808	5.43519	0.1971543	0.22603684	2.6690081	20	1 5.0	18.6
140261	2001	SJ ₂₆₃	14.9	X	98.58215	111.90629	285.83819	10.30961	0.2024797	0.22717210	2.6601087	20	1 31.2	18.4
140262	2001	SZ ₂₆₃	14.2	X	70.73427	153.36018	284.77317	20.84293	0.0852886	0.17700886	3.1415168	20	1 31.5	18.6
140263	2001	SO ₂₆₅	15.6	X	173.18903	141.75190	208.31998	16.31257	0.2035258	0.18084132	3.0969743	20	2 18.3	21.1
140264	2001	SR ₂₆₇	15.6	X	38.30545	261.39405	60.95636	7.98785	0.2154179	0.20934110	2.8090947	20	11 24.7	19.4
140265	2001	SL ₂₇₀	15.5	X	201.27568	225.95747	109.80187	14.73870	0.3561073	0.23837194	2.5761192	20	2 28.0	20.6
140266	2001	SW ₂₇₀	15.3	X	110.45654	154.63574	269.74615	3.68854	0.1352723	0.23081497	2.6320455	20	3 9.9	19.0
140267	2001	SK ₂₇₁	15.0	X	238.16382	86.01311	197.71356	9.00720	0.0537929	0.18027521	3.1034544	20	2 4.9	19.7
140268	2001	SM ₂₇₁	16.2	X	14.27235	349.49755	20.69796	1.08518	0.1262406	0.21245219	2.7816036	20	12 10.3	19.6
140269	2001	SR ₂₇₁	15.5	X	153.19053	67.94197	302.20683	3.48773	0.1605237	0.18119747	3.0929148	20	2 25.8	20.4
140270	2001	ST ₂₇₁	14.9	X	52.92156	50.23348	24.06316	4.34886	0.1637026	0.17151413	3.2082592	20	1 17.1	18.7
140271	2001	SF ₂₇₂	14.8	X	164.94208	130.92977	210.75275	6.75741	0.1626662	0.17857312	3.1231439	20	2 2.7	19.9
140272	2001	ST ₂₇₂	15.5	X	130.52595	51.27120	124.59970	3.82793	0.1304531	0.25557712	2.4591673	20	8 29.1	19.1
140273	2001	ST ₂₇₃	15.9	X	303.77587	292.46197	13.78549	2.91494	0.0987748	0.19454649	2.9497630	20	5 17.3	19.8
140274	2001	SX ₂₇₅	15.4	X	136.16890	254.27218	156.78271	8.25050	0.2274645	0.17882827	3.1201725	20	4 6.6	20.5
140275	2001	SL ₂₇₆	14.9	X	323.20728	51.76624	37.31429	9.28262	0.1357842	0.21187974	2.7866115	20	—	—
140276	2001	SM ₂₇₆	15.0	X	101.06988	297.68931	126.78438	15.74075	0.2251568	0.22979548	2.6398245	20	3 18.6	18.8
140277	2001	SP ₂₇₆	14.7	X	351.00746	85.96523	73.52755	14.25213	0.1356652	0.22868780	2.6483419	20	1 6.6	17.8
140278	2001	SR ₂₇₇	14.7	X	146.41708	129.87660	290.68453	7.62383	0.1765740	0.18279501	3.0748681	20	4 17.5	19.8
140279	2001	SY ₂₇₇	14.5	X	267.74418	0.21517	355.19362	10.58237	0.1021869	0.19302943	2.9651980	20	5 31.1	18.8
140280	2001	SF ₂₇₈	15.0	X	10.03540	219.75844	247.13930	8.13887	0.1476055	0.22184448	2.7025286	20	—	—
140281	2001	SV ₂₈₀	14.7	X	209.04390	31.70711	19.84587	9.95405	0.0888090	0.19202844	2.9754935	20	6 6.4	19.4
140282	2001	SO ₂₈₁	14.5	X	180.13988	27.21209	1.85262	10.18454	0.1442392	0.18520272	3.0481603	20	4 9.9	19.6
140283	2001	ST ₂₈₁	14.7	X	249.62424	212.45676	232.14036	15.37128	0.2153705	0.20057403	2.8903665	20	8 13.3	19.4
140284	2001	SO ₂₈₂	15.7	X	215.60472	204.10181	163.04353	10.70587	0.1380417	0.19086057	2.9876192	20	4 20.9	20.6
140285	2001	SH ₂₈₆	14.8	X	213.94763	261.41148	152.46517	14.53246	0.1526323	0.19289938	2.9665305	20	6 13.7	19.8
140286	2001	SV ₂₈₆	14.4	X	255.45907	265.97576	82.38531	10.44488	0.0858000	0.19223382	2.9733738	20	5 13.9	18.7
140287	2001	SC ₂₈₇	14.4	X	238.29642	242.40189	105.58687	16.32904	0.1338509	0.18950363	3.0018641	20	4 25.0	19.3
140288	2001	SN ₂₈₉	16.7	X	42.69349	225.62377	357.09584	53.22149	0.5077646	0.41358195	1.7841375	20	9 21.5	19.2
140289	2001	SW ₂₈₉	15.0	X	41.95259	51.13280	265.47331	7.88298	0.1513260	0.21169443	2.7882375	20	11 12.1	18.8
140290	2001	SO ₂₉₀	14.2	X	324.22363	188.31127	256.00386	26.93498	0.1843432	0.21414702	2.7669078	20	12 26.9	17.1
140291	2001	SO ₂₉₂	15.4	X	358.69532	123.75575	302.04395	7.89435	0.1631461	0.21983507	2.7189720	20	—	—
140292	2001	SC ₂₉₅	16.2	X	71.75394	141.86145	200.35306	2.29829	0.0378100	0.22043286	2.7140540	20	—	—
140293	2001	SQ ₂₉₉	16.2	X	316.82962	329.35719	217.84231	3.90779	0.0578666	0.23250005	2.6193127	20	1 3.8	19.6
140294	2001	SO ₃₀₂	16.2	X	305.78101	243.32623	186.92534	5.91808	0.0166747	0.21272060	2.7792633	20	11 14.1	19.9
140295	2001	SH ₃₀₄	16.0	X	332.31277	113.50532	224.07181	1.22833	0.0739454	0.20293258	2.8679277	20	8 15.8	19.5
140296	2001	SR ₃₀₅	15.7	X	322.22022	283.09312	13.50206	11.94417	0.0193359	0.19441209	2.9511223	20	6 8.2	20.0
140297	2001	SW ₃₀₅	14.8	X	61.95178	91.01003	4.15924	15.98219	0.0881362	0.17582163	3.1556428	20	2 21.5	19.1
140298	2001	SO ₃₀₇	16.0	X	355.83992	266.30424	159.92251	7.68456	0.0277266	0.21876460	2.7278345	20	—	—
140299	2001	SU ₃₁₁	15.9	X	240.10333	295.84043	192.30326	7.19931	0.1474604	0.21048289	2.7989267	20	10 13.8	19.8
140300	2001	SW ₃₁₁	14.8	X	357.59751	286.31002	231.61124	10.40713	0.0329305	0.17920107	3.1158436	20	1 29.7	19.3
140301	2001	SL ₃₁₂	15.8	X	65.08651	315.97055	38.25864	6.79842	0.0427718	0.22129228	2.7070225	20	—	—
140302	2001	SQ ₃₁₂	16.0	X	240.33453	237.70348	190.74661	1.75283	0.0461236	0.20328256	2.8646350	20	8 10.3	19.9
140303	2001	SK ₃₁₃	14.6	X	98.93874	70.79005	38.02449	16.76875	0.0974642	0.18573060	3.0423820	20	4 22.6	18.8
140304	2001	SR ₃₁₃	14.8	X	188.58030	336.56169	63.24820	11.34153	0.1801572	0.18907999	3.0063463	20	5 4.2	19.8
140305	2001	SA ₃₁₄	16.0	X	16.79850	337.98777	80.18345	6.35829	0.0498877	0.22042271	2.7141374	20	—	—
140306	2001	SB ₃₁₄	15.5	X	339.79695	173.39499	151.09195	9.99853	0.0653687	0.20225194	2.8743584	20	8 9.6	19.0
140307	2001	SM ₃₁₅	15.2	X	116.76780	67.81264	354.72540	15.56358	0.2732461	0.17764951	3.1339595	20	4 1.8	20.3
140308	2001	SK ₃₁₆	15.4	X	221.07281	57.01564	119.34822	11.15349	0.0549039	0.23925291	2.5697915	20	5 4.4	19.3
140309	2001	SL ₃₁₈	16.8	X	83.10879	49.04425	55.57779	4.38378	0.1046893	0.28947308	2.2632399	20	3 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>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140321	2001	<i>SD</i> ₃₃₀	15.3	X	111.10910	299.25901	172.80493	12.06782	0.0594029	0.19096002	2.9865818	20	5 7.7	19.7
140322	2001	<i>SD</i> ₃₃₄	16.2	X	53.46220	273.80328	327.39854	0.69295	0.0682936	0.20018981	2.8940636	20	8 8.4	20.1
140323	2001	<i>SD</i> ₃₃₇	16.2	X	109.25481	74.20506	221.48319	5.71938	0.1186549	0.21822351	2.7323418	20	12 27.1	20.4
140324	2001	<i>SK</i> ₃₃₇	17.3	X	212.45070	297.73499	163.51176	2.15169	0.1915623	0.25216453	2.4813044	20	8 9.0	21.0
140325	2001	<i>SC</i> ₃₃₉	15.1	X	9.75328	82.76758	287.06483	10.47795	0.1057092	0.21573225	2.7533367	20	11 30.7	18.6
140326	2001	<i>SV</i> ₃₃₉	15.2	X	134.75829	206.54629	311.05729	10.89644	0.0162681	0.19969606	2.8988320	20	7 28.3	19.3
140327	2001	<i>SY</i> ₃₃₉	15.4	X	238.35469	77.93619	228.43841	10.00387	0.1267606	0.18631036	3.0360672	20	2 24.4	20.3
140328	2001	<i>SD</i> ₃₄₃	14.7	X	101.23179	5.40181	115.30277	11.30025	0.0527279	0.19101856	2.9859716	20	5 7.3	19.1
140329	2001	<i>SM</i> ₃₄₄	15.5	X	101.66254	44.84004	263.37658	9.05188	0.0650931	0.21955079	2.7213185	20	12 31.7	19.5
140330	2001	<i>SY</i> ₃₄₇	15.5	X	250.54561	129.11437	296.14355	14.05391	0.1254456	0.20269463	2.8701717	20	8 5.8	19.7
140331	2001	<i>SG</i> ₃₄₉	16.1	X	119.26762	289.42339	192.43892	17.01330	0.1211089	0.24075504	2.5590914	20	6 4.4	20.1
140332	2001	<i>SK</i> ₃₅₀	15.4	X	353.25148	249.75499	32.35522	10.18852	0.1365922	0.19635733	2.9315995	20	7 4.6	18.8
140333	2001	<i>TD</i> ₂	19.0	X	24.43787	199.08135	12.84204	19.03407	0.4814906	1.04475249	0.9618938	20	10 19.0	18.7
140334	2001	<i>TU</i> ₃	15.5	X	167.36653	23.15620	214.22179	13.58904	0.1091115	0.21555674	2.7548311	20	12 13.2	19.9
140335	2001	<i>TZ</i> ₃	14.7	X	303.15576	37.57574	216.74605	9.62161	0.1350989	0.18561932	3.0435979	20	3 3.3	19.0
140336	2001	<i>TP</i> ₄	15.4	X	131.12494	193.53854	201.06478	2.35891	0.0684269	0.18087688	3.0965684	20	2 23.9	19.8
140337	2001	<i>TS</i> ₄	16.4	X	292.58118	74.36306	310.74205	1.04430	0.0673140	0.20281401	2.8690453	20	8 19.5	19.9
140338	2001	<i>TX</i> ₄	15.2	X	279.00447	324.17802	163.70625	14.60675	0.1126235	0.21611039	2.7501241	20	12 13.3	18.8
140339	2001	<i>TP</i> ₅	15.5	X	343.42125	325.04684	87.69853	7.73858	0.0701983	0.21602373	2.7508595	20	12 14.6	18.9
140340	2001	<i>TO</i> ₇	15.0	X	110.57347	22.61324	34.64071	10.82633	0.2226936	0.17731666	3.1378802	20	3 22.8	19.8
140341	2001	<i>TR</i> ₇	16.3	X	325.88655	193.81486	219.79357	1.04791	0.1367523	0.26222045	2.4174547	20	12 6.1	18.6
140342	2001	<i>TG</i> ₈	15.1	X	241.14535	87.48785	281.28797	7.47890	0.1075275	0.19003827	2.9962313	20	5 17.3	19.7
140343	2001	<i>TX</i> ₁₀	15.2	X	33.94864	192.21704	250.76261	2.07997	0.1739798	0.22249068	2.6972933	20	—	—
140344	2001	<i>TO</i> ₁₁	15.5	X	321.95326	319.58745	4.75616	1.67777	0.0792296	0.19890770	2.9064866	20	7 12.2	19.0
140345	2001	<i>TI</i> ₁₂	16.3	X	71.26268	323.68805	73.98741	24.16232	0.0954027	0.37557335	1.9025651	20	—	—
140346	2001	<i>TO</i> ₁₄	14.8	X	231.14907	355.05939	353.31691	10.22873	0.0707848	0.18811226	3.0166481	20	4 12.5	19.3
140347	2001	<i>TI</i> ₁₄	14.7	X	251.13510	64.39507	226.44280	13.98143	0.0778526	0.18309149	3.0715477	20	2 22.0	19.5
140348	2001	<i>TK</i> ₁₅	13.8	X	4.43267	357.50298	69.91836	14.24135	0.1997805	0.16302957	3.3186271	20	—	—
140349	2001	<i>TU</i> ₁₅	14.7	X	298.83700	182.21836	141.00532	11.73714	0.1327436	0.19702309	2.9249917	20	5 31.0	18.7
140350	2001	<i>TL</i> ₁₆	15.1	X	30.21517	47.96691	78.39065	16.07240	0.0616134	0.22971274	2.6404584	20	2 1.8	18.6
140351	2001	<i>TD</i> ₁₈	15.0	X	217.90198	309.82342	42.75648	11.06691	0.1185192	0.18476599	3.0529617	20	4 7.1	19.8
140352	2001	<i>TK</i> ₁₈	14.8	X	140.72769	175.25339	241.00952	3.12104	0.1871243	0.23381614	2.6094745	20	4 7.9	18.9
140353	2001	<i>TX</i> ₁₈	14.7	X	196.95493	335.65515	99.71183	13.27435	0.1281556	0.19072322	2.9890534	20	6 23.6	19.4
140354	2001	<i>TM</i> ₁₉	14.6	X	136.31802	87.23223	340.75590	10.79398	0.0745423	0.18238833	3.0794371	20	4 7.2	19.3
140355	2001	<i>TN</i> ₁₉	15.2	X	353.06918	279.97157	277.95195	12.81823	0.0668535	0.23376257	2.6098731	20	2 29.7	18.8
140356	2001	<i>TY</i> ₁₉	14.8	X	270.39797	38.28390	353.40148	12.94005	0.1099570	0.19677169	2.9274825	20	7 26.7	19.0
140357	2001	<i>TY</i> ₂₀	14.7	X	85.36500	114.05186	352.59856	14.00649	0.1667514	0.17870644	3.1215903	20	4 7.8	19.2
140358	2001	<i>TH</i> ₂₁	14.9	X	353.46158	313.80742	354.36548	13.40425	0.1019091	0.19835583	2.9118750	20	8 14.7	18.5
140359	2001	<i>TL</i> ₂₂	15.0	X	333.63349	351.04438	309.95404	1.62783	0.1266783	0.19815560	2.9138363	20	6 24.7	18.3
140360	2001	<i>TD</i> ₂₃	15.9	X	40.64210	41.16490	93.56808	2.08808	0.1718511	0.23347824	2.6119916	20	2 26.3	18.9
140361	2001	<i>TN</i> ₂₃	15.7	X	67.99737	239.98203	352.09511	2.00330	0.1534187	0.25440898	2.4666892	20	9 4.2	18.9
140362	2001	<i>TQ</i> ₂₃	16.3	X	134.25484	356.99726	300.27060	0.59987	0.1740281	0.22122294	2.7075882	20	—	—
140363	2001	<i>TP</i> ₂₄	14.8	X	82.80702	98.66059	319.95955	7.06331	0.0255642	0.17593695	3.1542638	20	1 22.8	19.1
140364	2001	<i>TD</i> ₂₇	14.8	X	83.15492	63.34505	16.24459	14.85665	0.0683047	0.17751024	3.1355984	20	2 28.1	19.2
140365	2001	<i>TL</i> ₂₇	14.3	X	92.40112	48.64542	3.80240	6.67849	0.0687840	0.17533945	3.1614255	20	2 3.3	18.7
140366	2001	<i>TK</i> ₂₈	15.6	X	62.21601	228.48985	286.21015	4.04148	0.0769516	0.23752879	2.5822119	20	4 24.4	18.8
140367	2001	<i>TP</i> ₂₈	15.2	X	153.20858	80.18776	335.12711	6.48211	0.1910227	0.18343120	3.0677543	20	4 18.7	20.4
140368	2001	<i>TC</i> ₂₉	16.2	X	115.99516	35.72524	339.97774	2.79452	0.1902548	0.22684846	2.6626382	20	1 25.8	19.8
140369	2001	<i>TO</i> ₂₉	15.9	X	106.22697	54.15610	242.20024	1.68768	0.0480143	0.21456131	2.7633450	20	12 20.6	19.8
140370	2001	<i>TU</i> ₃₀	15.1	X	183.84751	10.03949	53.76998	16.47791	0.0782327	0.18965089	3.0003099	20	5 26.3	19.7
140371	2001	<i>TY</i> ₃₀	15.1	X	190.76621	247.44740	172.00852	8.90457	0.0905647	0.18983981	2.9983191	20	5 30.9	19.9
140372	2001	<i>TW</i> ₃₂	14.9	X	230.19032	319.45806	9.84749	10.77245	0.1051132	0.18262446	3.0767821	20	3 21.4	19.7
140373	2001	<i>TL</i> ₃₄	14.8	X	88.65446	297.18876	262.56160	14.02077	0.0671898	0.19231251	2.9725628	20	7 26.3	19.2
140374	2001	<i>TM</i> ₃₆	14.6	X	74.40988	73.40649	38.19469	14.94890	0.2508614	0.17432271	3.1737064	20	4 18.8	18.9
140375	2001	<i>TN</i> ₃₆	14.5	X	136.65689	67.67325	17.68188	9.93451	0.0709834	0.18205038	3.0832470	20	4 30.8	19.2
140376	2001	<i>TE</i> ₃₇	14.7	X	224.96919	358.56173	37.21396	13.03692	0.1229300	0.18855671	3.0119058	20	5 31.3	19.4
140377	2001	<i>TN</i> ₃₇	14.7	X	185.40543	67.53232	13.00791	9.55713	0.0613585	0.18762111	3.0219103	20	6 19.3	19.4
140378	2001	<i>TQ</i> ₃₉	14.3	X	67.87102	114.58797	39.20551	17.26703	0.1701564	0.17832327	3.1260605	20	5 16.8	18.5
140379	2001	<i>TD</i> ₄₂	14.2	X	67.16389	175.56707	276.51140	21.41069	0.0952638	0.17003260	3.2268684	20	2 11.0	18.8
140380	2001	<i>TF</i> ₄₅	15.6	X	267.34486	328.34619	17.77032	3.19660	0.0217717	0.18999237	2.9967138	20	6 1.1	19.7
140381	2001	<i>TR</i> ₄₆	15.3	X	101.58589	60.30320	70.73949	27.24383	0.0259434	0.39065416	1.8532802	20	5 14.5	17.1
140382	2001	<i>TV</i> ₄₇	15.2	X	215.11307	139.64311	152.22741	10.65959	0.0686830	0.17727629	3.1383565	20	1 22.6	20.0
140383	2001	<i>TP</i> ₄₈	14.8	X	166.60105	4.26588	29.09413	12.58997	0.1525012	0.18294561	3.0731804	20	4 7.1	19.8
140384	2001	<i>TA</i> ₄₉	16.8	X	197.65660	232.13522	11.12109	20.73423	0.0509167	0.37787645	1.8948267	20	—	—
140385	2001	<i>TU</i> ₄₉	15.3	X	307.19546	255.45190	105.19827	6.84049	0.0873410	0.20157365	2.8808029	20	8 8.2	19.0
140386	2001	<i>TG</i> ₅₁	15.3	X	315.01987	70.77769	28.69036	7.87267	0.1925385	0.21384275	2.7695318	20	—	—
140387	2001	<i>TW</i> ₅₁	15.7	X	198.45520	283.10193	71.95642	6.47680	0.2251370	0.18549288	3.0449808	20	3 21.8	21.1
140388	2001	<i>TZ</i> ₅₂	15.9	X	47.57930	140.51735	187.55386	3.75948	0.1049741	0.212				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
140401 2001 <i>TJ</i> ₇₀	14.9	X	159.89373	145.63053	10.13546	6.24086	0.1714806	0.19841611	2.9112852	20	8 28.9	19.8
140402 2001 <i>TB</i> ₇₁	15.1	X	180.45553	189.21514	177.10494	6.80702	0.1805140	0.18303547	3.0721745	20	3 17.4	20.2
140403 2001 <i>TN</i> ₇₁	16.0	X	87.00052	326.59783	130.07629	2.42713	0.1061551	0.23275705	2.6173843	20	3 20.0	19.3
140404 2001 <i>TH</i> ₇₃	16.9	X	111.97156	147.52883	220.51993	1.75013	0.1247406	0.27821290	2.3239023	20	—	—
140405 2001 <i>TK</i> ₇₃	15.7	X	303.88616	187.60122	234.07047	1.15339	0.0564122	0.20687114	2.8314101	20	10 26.4	19.4
140406 2001 <i>TV</i> ₇₃	15.1	X	211.39747	267.70080	112.02527	0.78826	0.2216347	0.18857934	3.0116648	20	4 26.4	20.2
140407 2001 <i>TQ</i> ₇₄	15.2	X	128.74953	311.00312	162.14816	3.18764	0.1447857	0.18609053	3.0384578	20	6 5.1	19.9
140408 2001 <i>TC</i> ₇₆	15.0	X	169.90394	22.23455	52.61565	12.51990	0.1305639	0.18752647	3.0229271	20	5 26.6	19.8
140409 2001 <i>TO</i> ₇₇	14.9	X	241.00218	265.60494	111.67943	3.71061	0.1715576	0.19163764	2.9795374	20	5 23.3	19.5
140410 2001 <i>TJ</i> ₈₁	15.7	X	259.58456	102.05143	201.94302	20.65293	0.2565047	0.19120549	2.9840251	20	3 1.2	21.0
140411 2001 <i>TT</i> ₈₂	15.8	X	57.05512	147.18609	327.95620	3.23125	0.1655838	0.23199506	2.6231123	20	3 5.7	18.5
140412 2001 <i>TH</i> ₈₃	15.9	X	349.30411	107.46835	283.53827	4.88461	0.0566378	0.21195418	2.7859590	20	11 22.0	19.4
140413 2001 <i>TM</i> ₈₄	16.1	X	260.53750	111.22659	24.13070	2.44650	0.0212065	0.21332492	2.7740119	20	12 5.8	19.9
140414 2001 <i>TO</i> ₈₅	15.0	X	140.17840	208.87681	234.43021	9.12087	0.0790073	0.18772352	3.0208113	20	5 4.4	19.4
140415 2001 <i>TP</i> ₈₅	14.9	X	83.48266	140.79436	321.42725	5.50956	0.1598682	0.180890978	3.0973344	20	3 31.6	19.3
140416 2001 <i>TF</i> ₈₇	14.4	X	242.25013	263.15931	9.70058	21.77401	0.0724189	0.17999827	3.1066369	20	2 7.2	19.4
140417 2001 <i>TQ</i> ₈₇	14.9	X	190.50746	68.40576	272.07921	6.07178	0.0929711	0.18227798	3.0860799	20	2 21.4	19.7
140418 2001 <i>TS</i> ₈₉	15.5	X	11.31522	314.86896	359.41077	10.09090	0.1327501	0.20560955	2.8429804	20	9 21.8	18.7
140419 2001 <i>TY</i> ₈₉	15.7	X	119.69360	58.10919	236.53061	7.54964	0.1261555	0.21870933	2.7282940	20	—	—
140420 2001 <i>TM</i> ₉₀	15.0	X	92.04790	204.94249	248.38443	8.35259	0.0685014	0.18155741	3.0888257	20	3 16.7	19.4
140421 2001 <i>TJ</i> ₉₂	15.5	X	200.93850	243.28993	214.36582	11.19344	0.1420433	0.19644443	2.9307329	20	7 21.6	20.3
140422 2001 <i>TO</i> ₉₂	15.8	X	128.74179	1.49438	284.99043	2.06812	0.0822495	0.21784064	2.7355424	20	—	—
140423 2001 <i>TM</i> ₉₃	14.7	X	264.63583	52.52741	240.28610	8.30585	0.0487055	0.18503112	3.0500446	20	3 15.6	19.2
140424 2001 <i>TO</i> ₉₃	15.4	X	350.34601	345.58559	331.75501	5.21805	0.0712118	0.20134723	2.8829622	20	8 17.5	19.0
140425 2001 <i>TS</i> ₉₃	15.5	X	183.33089	157.91711	265.31646	3.80258	0.1573646	0.18978116	2.9989369	20	5 25.8	20.4
140426 2001 <i>TU</i> ₉₃	15.9	X	24.30632	20.09101	304.07217	3.26965	0.1536358	0.20868042	2.8150206	20	10 27.9	19.5
140427 2001 <i>TE</i> ₉₄	15.0	X	174.49518	7.02461	212.46099	13.27583	0.1382468	0.21418490	2.7665816	20	11 27.8	19.4
140428 2001 <i>TT</i> ₉₄	14.8	X	305.32264	32.71653	237.43101	8.58360	0.0605135	0.18761635	3.0219615	20	4 6.5	19.0
140429 2001 <i>TQ</i> ₉₆	15.1	X	211.84019	160.37255	227.08415	9.59707	0.0556781	0.18947616	3.0021543	20	5 13.9	19.4
140430 2001 <i>TS</i> ₁₀₁	16.0	X	332.20547	309.24965	307.82755	2.18456	0.1209383	0.20247992	2.8722005	20	8 18.7	19.3
140431 2001 <i>TU</i> ₁₀₁	15.1	X	197.31102	123.37318	204.18979	9.27315	0.0921632	0.18089563	3.0963544	20	2 12.8	20.0
140432 2001 <i>TC</i> ₁₀₂	15.1	X	83.54269	21.48431	260.78453	7.95329	0.1196563	0.21112687	2.7932322	20	11 13.5	19.3
140433 2001 <i>TK</i> ₁₀₂	14.5	X	113.15567	318.29087	130.51269	17.03192	0.1434598	0.18410210	3.0602969	20	4 25.9	19.4
140434 2001 <i>TB</i> ₁₀₃	15.0	X	174.57065	36.28306	295.38509	12.46589	0.1361435	0.17714133	3.1399503	20	1 30.3	20.1
140435 2001 <i>TK</i> ₁₀₃	14.9	X	236.42352	58.30810	257.51724	4.99731	0.0741919	0.18408649	3.0604699	20	3 10.2	19.6
140436 2001 <i>TW</i> ₁₀₄	14.9	X	309.82798	274.99575	33.22028	10.99938	0.0997508	0.19299997	2.9654997	20	5 27.3	18.8
140437 2001 <i>TC</i> ₁₀₆	14.5	X	40.42830	353.93202	57.39948	10.91212	0.2052475	0.21716449	2.7412176	20	—	—
140438 2001 <i>TJ</i> ₁₀₈	15.2	X	182.87659	160.97853	333.10052	7.82129	0.1446926	0.20002197	2.8956823	20	8 22.0	19.7
140439 2001 <i>TY</i> ₁₀₉	15.6	X	79.44442	174.95304	293.29229	2.87283	0.1366405	0.23256178	2.6188492	20	3 26.9	18.8
140440 2001 <i>TK</i> ₁₁₂	15.1	X	313.72380	175.54111	234.42952	12.59599	0.1770352	0.20608316	2.8386230	20	10 15.4	18.3
140441 2001 <i>TH</i> ₁₁₃	14.9	X	81.14042	37.00483	23.85417	18.21966	0.1102449	0.17296626	3.1902775	20	2 11.4	19.5
140442 2001 <i>TF</i> ₁₁₄	14.6	X	187.69794	104.00406	260.02290	10.33914	0.0890763	0.18147387	3.0897735	20	3 14.8	19.6
140443 2001 <i>TR</i> ₁₁₄	15.1	X	185.57853	346.14817	19.53143	5.14512	0.1267092	0.23489868	2.6014511	20	3 17.8	19.1
140444 2001 <i>TR</i> ₁₁₅	14.7	X	216.36377	139.87887	248.68547	12.80511	0.0639896	0.18789144	3.0190112	20	5 19.5	19.3
140445 2001 <i>TB</i> ₁₁₆	14.7	X	205.51815	5.74802	37.54119	13.09817	0.2113301	0.18826457	3.0150208	20	5 17.9	19.9
140446 2001 <i>TU</i> ₁₁₈	14.3	X	84.53011	112.39918	313.83569	15.48931	0.1528051	0.17594649	3.1541498	20	2 16.9	18.6
140447 2001 <i>TX</i> ₁₁₈	15.2	X	129.00168	90.73282	316.99757	15.08844	0.1606578	0.18045360	3.1014088	20	3 12.9	20.1
140448 2001 <i>TQ</i> ₁₂₀	15.3	X	108.97937	115.84641	274.16767	10.11565	0.1951710	0.22801079	2.6535816	20	2 1.5	19.0
140449 2001 <i>TS</i> ₁₂₀	15.5	X	224.73881	105.48028	326.12956	11.67134	0.1650370	0.19454761	2.9405889	20	7 15.9	20.2
140450 2001 <i>TE</i> ₁₂₁	14.9	X	224.70943	26.56582	292.94492	10.19475	0.1774577	0.18444925	3.0564558	20	2 24.9	20.1
140451 2001 <i>TQ</i> ₁₂₁	15.0	X	139.50356	89.71668	303.86392	9.21988	0.1258500	0.17941623	3.1133521	20	3 5.8	19.9
140452 2001 <i>TK</i> ₁₂₂	15.1	X	257.58957	47.38841	344.17577	11.47829	0.0663646	0.19559287	2.9392332	20	7 14.8	19.4
140453 2001 <i>TN</i> ₁₂₃	15.0	X	290.15280	346.67431	319.39560	11.26679	0.1027922	0.19300663	2.9654315	20	4 22.8	19.3
140454 2001 <i>TB</i> ₁₂₄	15.0	X	133.38644	112.42234	308.14064	9.27744	0.1355783	0.18342658	3.0678059	20	3 31.4	19.9
140455 2001 <i>TY</i> ₁₂₄	14.6	X	187.55417	156.67921	267.02238	8.92287	0.0739202	0.19132623	2.9827696	20	5 31.4	19.0
140456 2001 <i>TS</i> ₁₂₅	15.4	X	201.45552	100.93162	281.09636	8.55341	0.0763230	0.18807575	3.0170385	20	4 21.3	20.1
140457 2001 <i>TS</i> ₁₂₆	15.9	X	286.26452	110.84595	245.47734	0.99467	0.1050177	0.19628580	2.9323116	20	6 27.9	19.8
140458 2001 <i>TF</i> ₁₂₇	15.2	X	229.70885	86.04866	191.83314	10.19712	0.0448192	0.17839521	3.1252200	20	1 21.1	20.0
140459 2001 <i>TO</i> ₁₂₇	16.4	X	200.41099	298.77104	19.05509	1.45099	0.0860086	0.23316964	2.6142957	20	2 1.6	20.1
140460 2001 <i>TR</i> ₁₂₇	15.6	X	185.26834	200.97727	203.21690	9.93430	0.1104504	0.18912975	3.0058189	20	5 5.7	20.3
140461 2001 <i>TS</i> ₁₂₇	16.9	X	164.44261	282.80744	2.09669	19.69535	0.0575240	0.38005182	1.8875893	20	—	—
140462 2001 <i>TF</i> ₁₂₈	15.1	X	128.03769	282.44665	152.65726	7.58347	0.0740940	0.18493612	3.0510891	20	4 13.1	19.6
140463 2001 <i>TX</i> ₁₂₈	16.0	X	144.64739	62.58642	202.00115	1.46610	0.0378156	0.21774542	2.7363398	20	12 25.5	20.0
140464 2001 <i>TF</i> ₁₂₉	15.8	X	190.16204	60.28794	26.22757	0.69177	0.0769465	0.19305645	2.9649213	20	7 2.4	20.1
140465 2001 <i>TF</i> ₁₃₀	16.7	X	261.53680	157.10153	206.61935	0.78555	0.2371532	0.19515891	2.9435887	20	5 19.3	21.3
140466 2001 <i>TU</i> ₁₃₀	15.2	X	6.69179	231.73091	113.54556	7.80885	0.1255156	0.21091521	2.7951007	20	10 30.3	18.6
140467 2001 <i>TN</i> ₁₃₁	14.9	X	217.25064	239.19507	105.09003	10.25440	0.1137336	0.18923382	3.0047168	20	3 29.5	19.7
140468 2001 <i>TU</i> ₁₃₂	14.8	X	270.13170	51.45448	281.49888	9.25989	0.0873508	0.19320363	2.9634153	20	5 7.2	19.2
140469 2001 <i>TY</i> ₁₃₃	14.5	X	107.92599	317.38685	76.58511	12.76539	0.0834452	0.17506551	3.1647226	20	2 2.9	19.1
140470 2001 <i>TR</i> ₁₃₄	15.3	X	251.70603	324.50973	250.10888	11.22783	0.1542793	0.22684642	2.6626542	20	—	—
140471 2001 <i>TZ</i> ₁₃₄	14.7	X	232.70461	256.24512	350.73224							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
140481 2001 TQ ₁₄₀	15.0 ^m	X	291.55954	245.23613	94.73068	6.56718	0.0690946	0.19858823	2.9096028	20	6 19.1	18.9
140482 2001 TK ₁₄₁	15.7	X	289.60338	151.30068	80.00703	5.18236	0.0637812	0.23368059	2.6104836	20	1 25.9	19.2
140483 2001 TM ₁₄₁	15.7	X	6.20601	54.75515	60.42149	10.22578	0.2711075	0.22258442	2.6965359	20	—	—
140484 2001 TH ₁₄₂	14.9	X	53.15085	223.33100	43.02191	15.90872	0.1155295	0.20559158	2.8431460	20	9 26.0	18.9
140485 2001 TJ ₁₄₂	15.6	X	42.85983	97.64644	45.51217	7.97840	0.1410054	0.23471224	2.6028285	20	3 21.1	18.4
140486 2001 TZ ₁₄₂	15.9	X	97.69666	43.82054	91.71115	4.62120	0.0863107	0.24210359	2.5495795	20	5 22.3	19.2
140487 2001 TP ₁₄₃	15.6	X	193.51262	181.14635	48.79357	10.25005	0.0748683	0.21929342	2.7234473	20	—	—
140488 2001 TS ₁₄₃	15.7	X	69.08628	241.18546	46.25819	13.09085	0.1096799	0.21078106	2.7962865	20	11 4.3	19.7
140489 2001 TU ₁₄₅	15.8	X	160.30274	142.07686	122.28493	5.97340	0.1245019	0.22014037	2.7164576	20	—	—
140490 2001 TJ ₁₄₈	15.6	X	359.44247	281.23272	117.86792	5.73503	0.0736918	0.21347783	2.7726871	20	12 19.9	19.0
140491 2001 TA ₁₄₉	15.8	X	101.08369	326.25167	150.87139	6.78073	0.0730709	0.23890448	2.5722895	20	5 1.6	19.3
140492 2001 TH ₁₅₁	15.7	X	197.28515	305.24539	132.86769	5.54287	0.0488680	0.24725365	2.5140519	20	7 2.9	19.1
140493 2001 TL ₁₅₁	14.8	X	287.16132	132.94636	159.24568	10.36892	0.0754853	0.18820957	3.0156082	20	4 13.9	19.0
140494 2001 TR ₁₅₁	15.0	X	193.80985	278.01916	64.76104	9.80713	0.1468629	0.18261879	3.0768459	20	3 5.9	20.1
140495 2001 TK ₁₅₃	15.7	X	176.04344	176.39449	98.04330	4.54808	0.1534615	0.22401128	2.6850732	20	—	—
140496 2001 TT ₁₅₃	15.0	X	157.56609	82.60920	293.34832	8.76020	0.0652609	0.18157261	3.0886533	20	2 27.5	19.7
140497 2001 TP ₁₅₃	14.7	X	95.81806	91.07318	295.01878	8.90514	0.0816831	0.17374351	3.1807558	20	1 7.3	19.1
140498 2001 TO ₁₅₅	15.9	X	215.19345	330.07494	209.79869	2.46537	0.0761008	0.21509374	2.7587830	20	11 28.2	19.6
140499 2001 TW ₁₅₆	16.3	X	59.98174	136.13826	189.17781	4.04340	0.0717334	0.21317277	2.7753317	20	12 5.8	20.2
140500 2001 TF ₁₅₈	14.9	X	152.08178	273.73915	67.98322	9.09620	0.1262981	0.17485495	3.1672628	20	1 23.6	19.9
140501 2001 TN ₁₅₈	16.2	X	50.86484	298.19245	81.34642	6.53203	0.0848999	0.22088729	2.7103304	20	—	—
140502 2001 TK ₁₆₀	15.0	X	31.02463	310.64905	224.42645	12.32743	0.0071885	0.18327449	3.0695028	20	4 3.5	19.3
140503 2001 TN ₁₆₀	15.8	X	286.72113	71.52750	273.69274	1.12715	0.1026858	0.19432249	2.9520293	20	6 14.0	19.7
140504 2001 TO ₁₆₁	16.3	X	0.50802	153.13565	241.39953	3.03547	0.0817420	0.21449265	2.7639346	20	12 16.6	19.8
140505 2001 TS ₁₆₁	16.6	X	43.54196	100.72617	206.33167	7.48504	0.2822515	0.21248550	2.7813129	20	11 22.8	20.6
140506 2001 TJ ₁₆₃	15.8	X	117.01911	249.00290	3.44701	8.87482	0.2572419	0.21469938	2.7621602	20	11 16.0	20.8
140507 2001 TH ₁₆₄	15.2	X	198.15673	180.10037	207.41199	3.16307	0.1056613	0.18763638	3.0217464	20	4 27.4	19.9
140508 2001 TN ₁₆₅	15.0	X	254.72234	145.14933	221.59174	10.82390	0.1213193	0.19177248	2.9781406	20	5 30.1	19.5
140509 2001 TR ₁₆₅	15.0	X	123.11342	120.31864	283.95467	4.21146	0.1738382	0.17800850	3.1297445	20	3 8.7	19.9
140510 2001 TJ ₁₆₅	14.5	X	25.27341	266.24223	233.51077	14.80857	0.0579104	0.17659355	3.1464403	20	2 10.8	19.0
140511 2001 TF ₁₆₆	14.7	X	95.37439	199.80703	253.48147	16.71412	0.1423649	0.17904526	3.1176509	20	3 28.9	19.5
140512 2001 TN ₁₆₆	14.7	X	241.35287	22.90512	333.38153	9.60102	0.0846433	0.18905991	3.0065592	20	5 1.5	19.3
140513 2001 TY ₁₆₆	15.2	X	204.56276	81.93533	321.71532	8.93437	0.1479552	0.18908950	3.0062455	20	5 19.4	20.3
140514 2001 TF ₁₆₇	15.3	X	118.48109	86.70487	353.71435	9.82684	0.1428123	0.18053102	3.1005220	20	4 11.7	20.0
140515 2001 TA ₁₆₉	14.8	X	152.11086	71.80546	327.77805	8.42297	0.0932366	0.17987997	3.1079988	20	3 23.6	19.6
140516 2001 TU ₁₆₉	15.2	X	175.23710	163.44972	280.85398	10.20950	0.0494531	0.18907286	3.0064218	20	6 13.2	19.6
140517 2001 TV ₁₆₉	14.7	X	170.38610	71.73520	299.98482	10.08769	0.1089303	0.17962562	3.1109321	20	3 8.3	19.7
140518 2001 TJ ₁₆₉	14.8	X	337.54871	193.23057	295.12259	7.53869	0.1808053	0.21757492	2.7377692	20	—	—
140519 2001 TZ ₁₆₉	15.0	X	99.08235	138.10543	314.20558	7.04860	0.2428466	0.17726082	3.1385391	20	4 17.4	19.8
140520 2001 TN ₁₇₀	15.0	X	283.27096	343.17651	329.79449	8.97721	0.0527542	0.19115557	2.9845446	20	5 1.8	19.3
140521 2001 TS ₁₇₀	14.7	X	9.42441	238.50318	344.68207	10.02384	0.0675231	0.18904594	3.0067073	20	5 5.7	18.7
140522 2001 TH ₁₇₁	14.7	X	229.10883	184.61550	145.94384	12.74542	0.1403701	0.18547547	3.0451713	20	3 21.0	19.6
140523 2001 TK ₁₇₁	14.8	X	158.14418	274.49185	104.40543	12.71457	0.1465656	0.18067488	3.0988760	20	3 16.9	19.9
140524 2001 TJ ₁₇₁	15.7	X	237.47101	37.39948	264.53565	10.84137	0.1795728	0.23768309	2.5810942	20	2 10.1	20.2
140525 2001 TF ₁₇₂	15.0	X	357.39961	270.52292	50.87732	13.77562	0.0786567	0.20403623	2.8575765	20	9 11.9	18.8
140526 2001 TE ₁₇₃	15.3	X	196.50753	231.81720	175.19612	0.84574	0.1498541	0.18830428	3.0145970	20	5 18.6	20.2
140527 2001 TN ₁₇₄	15.5	X	246.21669	338.64004	72.12663	6.06237	0.1023349	0.19546491	2.9405158	20	7 18.7	19.8
140528 2001 TY ₁₇₄	15.3	X	165.27608	190.15879	33.45279	7.49921	0.1206988	0.21447921	2.7640502	20	11 23.8	19.6
140529 2001 TG ₁₇₆	15.8	X	186.28089	96.35708	222.02987	2.39552	0.1380960	0.17971422	3.1099096	20	1 26.0	20.8
140530 2001 TY ₁₇₆	15.5	X	68.56339	120.70485	5.38759	10.12280	0.0640498	0.18361074	3.0657541	20	3 29.8	19.7
140531 2001 TC ₁₈₀	15.3	X	224.35155	86.38026	232.96372	10.41846	0.1094640	0.18356945	3.0662138	20	2 27.1	20.3
140532 2001 TJ ₁₈₀	15.3	X	102.61903	59.30221	246.88690	9.01956	0.0816793	0.21599645	2.7510911	20	12 30.2	19.4
140533 2001 TK ₁₈₀	15.5	X	297.35303	67.01962	339.55568	6.71115	0.0969029	0.20451941	2.8530702	20	9 20.9	19.0
140534 2001 TJ ₁₈₀	15.2	X	17.86154	338.97605	248.85860	4.56348	0.0464633	0.19079410	2.9883130	20	5 27.9	19.1
140535 2001 TN ₁₈₂	15.1	X	207.30299	97.29212	313.19682	5.44462	0.1079479	0.19092246	2.9869735	20	6 3.1	19.7
140536 2001 TO ₁₈₂	15.1	X	189.50153	64.58327	0.95644	10.32517	0.1665837	0.18955866	3.0012831	20	6 1.2	20.2
140537 2001 TQ ₁₈₂	14.8	X	277.88669	327.64506	352.73870	8.79762	0.0224179	0.18891137	3.0081350	20	5 9.7	19.2
140538 2001 TX ₁₈₂	14.6	X	218.60019	129.11295	15.33511	15.32095	0.0836874	0.20536369	2.8452489	20	10 14.9	18.8
140539 2001 TJ ₁₈₄	16.2	X	45.01047	93.71233	252.54740	5.26676	0.0571085	0.21357980	2.7718045	20	12 11.2	19.9
140540 2001 TU ₁₈₄	15.4	X	325.53859	220.90413	12.87638	15.73580	0.0850447	0.18509760	3.0493143	20	3 21.1	19.5
140541 2001 TO ₁₈₅	15.9	X	255.34412	250.70150	250.14880	3.78670	0.1031468	0.21164262	2.7886925	20	11 24.4	19.6
140542 2001 TP ₁₈₅	15.8	X	247.05014	74.16317	234.78217	3.94364	0.2087130	0.18775790	3.0204424	20	3 2.5	20.7
140543 2001 TS ₁₈₆	16.1	X	128.76061	221.65213	349.84187	3.63467	0.1322749	0.25840363	2.4412016	20	10 10.7	19.8
140544 2001 TH ₁₈₈	15.8	X	169.24394	64.49416	14.07871	4.64828	0.0813571	0.24159695	2.5531427	20	5 29.6	19.6
140545 2001 TA ₁₉₄	15.5	X	78.96127	157.25835	20.37955	10.12231	0.0336504	0.19151141	2.9808465	20	6 12.8	19.7
140546 2001 TZ ₁₉₄	14.9	X	120.15900	267.52865	155.45347	17.79733	0.2406282	0.18106384	3.0944364	20	4 9.6	20.0
140547 2001 TA ₁₉₅	14.3	X	294.41293	213.74993	90.97096	11.85583	0.0851208	0.19358375	2.9595347	20	5 8.9	18.4
140548 2001 TB ₁₉₇	15.6	X	187.34513	246.87636	179.49645	15.27141	0.1451836	0.24232659	2.5480151	20	6 4.4	19.9
140549 2001 TU ₁₉₈	14.8	X	135.59089	330.88746	136.69259	11.50449	0.0747630	0.19161448	2.9797775	20	6 1.2	19.4
140550 2001 TY ₁₉₈	14.9	X	98.33792	41.63202	56.22724	11.13233	0.0224361	0.18591964	3.0403193	20	4 1.3	19.3
140551 2001 TE ₂₀₀	15.8	X	61.91913	239.64351	118.41405	6.93872	0.0539036	0.21852226	2.7298509	20	—	—
140552 2001 TW ₂₀₁	15.2	X	233.91950	267.83557	89.38482	9.65799	0.1428580	0.19108391	2.9852907	20	4 27.2	20.0
140553 2001 TQ ₂₀₂	14.7	X	285.76166	145.08248	135.93074	12.29779						

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140561	2001	TL ₂₀₇	16.2	X	253.06622	28.41163	48.23935	0.43745	0.0099690	0.20444357	2.8537795	20	9 12.8	20.0
140562	2001	TS ₂₀₇	15.9	X	265.71305	269.74202	202.36033	2.22130	0.1446249	0.20915423	2.8107677	20	10 26.3	19.6
140563	2001	TE ₂₀₉	14.3	X	359.70790	227.50943	257.19611	12.52328	0.0853904	0.17327385	3.1865008	20	—	—
140564	2001	TY ₂₀₉	15.5	X	21.19441	240.20051	207.04798	21.57797	0.0565216	0.22707076	2.6609001	20	—	—
140565	2001	TO ₂₁₀	15.4	X	117.43996	298.18735	308.68378	11.23272	0.1125758	0.21346198	2.7728244	20	11 1.5	19.9
140566	2001	TR ₂₁₁	15.0	X	120.70840	131.52732	308.81924	10.12423	0.0397372	0.18619613	3.0373088	20	3 29.9	19.6
140567	2001	TN ₂₁₂	14.7	X	322.85011	338.79739	281.50106	8.90225	0.0575708	0.19048233	2.9915729	20	4 16.4	18.9
140568	2001	TZ ₂₁₂	14.6	X	91.40439	151.69667	259.68136	9.55135	0.0509946	0.17487606	3.1670079	20	1 24.9	19.1
140569	2001	TF ₂₁₃	15.1	X	183.36877	91.77734	296.75996	7.96430	0.0547109	0.18658327	3.0331060	20	4 9.3	19.8
140570	2001	TY ₂₁₃	15.2	X	18.57712	281.01714	269.44854	1.29731	0.0274498	0.18457961	3.0550166	20	4 9.2	19.4
140571	2001	TL ₂₁₄	15.1	X	249.44458	118.59121	346.02815	14.72187	0.1002835	0.20492640	2.8492952	20	9 27.0	19.2
140572	2001	TE ₂₁₅	15.4	X	145.63196	42.62272	249.22592	13.32608	0.1876819	0.22170389	2.7036710	20	—	—
140573	2001	TH ₂₁₅	14.9	X	230.74898	358.62172	317.88425	8.16458	0.1650052	0.18452575	3.0556110	20	2 29.3	20.0
140574	2001	TA ₂₁₆	14.7	X	142.22226	42.39782	344.09092	12.10168	0.1206713	0.17859144	3.1229303	20	3 3.6	19.3
140575	2001	TK ₂₁₇	15.3	X	286.30265	157.33626	246.91389	5.13350	0.0643376	0.20671601	2.8328265	20	9 4.6	19.1
140576	2001	TL ₂₁₇	15.0	X	192.33105	158.84276	230.04229	10.12635	0.0447853	0.19052088	2.9911693	20	4 22.6	19.3
140577	2001	TF ₂₁₉	14.7	X	102.91405	334.58348	87.78296	10.24517	0.0972262	0.17837699	3.1254328	20	3 5.2	19.3
140578	2001	TN ₂₂₁	14.8	X	160.67562	332.16680	356.52643	9.38790	0.0254357	0.17381469	3.1798873	20	1 9.1	19.5
140579	2001	TM ₂₂₂	15.4	X	182.13982	259.32198	95.97901	9.71690	0.1852010	0.23822163	2.5772028	20	3 6.3	19.8
140580	2001	TW ₂₂₃	15.0	X	266.27331	318.88143	223.24764	15.74575	0.1637179	0.21908183	2.7252006	20	—	—
140581	2001	TX ₂₂₃	15.8	X	23.55084	83.71718	226.11933	5.54870	0.0505033	0.20453353	2.8529426	20	9 22.5	19.6
140582	2001	TV ₂₂₅	14.6	X	114.48690	313.45357	73.31181	28.17956	0.1951739	0.17503614	3.1650767	20	2 23.8	19.9
140583	2001	TZ ₂₂₅	14.6	X	196.71198	312.01469	93.33819	11.49951	0.1032363	0.19251801	2.9704470	20	5 20.2	19.3
140584	2001	TA ₂₂₆	15.4	X	143.32494	342.65909	119.37158	11.24921	0.1437302	0.24231674	2.5480842	20	6 7.2	19.5
140585	2001	TR ₂₂₇	16.3	X	37.82899	358.03825	71.33438	6.73543	0.2299117	0.27610894	2.3356929	20	—	—
140586	2001	TP ₂₂₈	16.3	X	101.22062	89.61891	206.71648	5.34146	0.0758719	0.21591311	2.7517990	20	12 17.3	20.3
140587	2001	TE ₂₂₉	14.5	X	239.92401	84.82296	318.64588	13.41803	0.1028022	0.19495023	2.9456889	20	7 2.1	18.9
140588	2001	TU ₂₃₀	14.8	X	3.72595	350.61518	63.16287	10.33435	0.1649962	0.21677526	2.7444979	20	—	—
140589	2001	TY ₂₃₀	14.7	X	260.53672	261.69259	72.71927	10.30017	0.0899612	0.19272445	2.9683253	20	5 2.2	19.0
140590	2001	TR ₂₃₁	16.6	X	38.06707	229.60741	91.93684	0.60242	0.0815430	0.21355382	2.7720293	20	12 10.1	20.2
140591	2001	TL ₂₃₂	14.6	X	218.66721	289.44546	103.52716	11.53199	0.0586482	0.19263785	2.9692149	20	5 30.4	19.1
140592	2001	TZ ₂₃₃	15.8	X	264.00406	126.68672	343.43364	8.66954	0.1188356	0.20957207	2.8070303	20	10 21.5	19.6
140593	2001	TA ₂₃₅	14.8	X	217.84435	184.26618	337.25365	9.52539	0.2159745	0.20968101	2.8060580	20	10 18.5	19.3
140594	2001	TC ₂₃₆	15.4	X	143.59280	276.73934	139.86307	9.09742	0.1079187	0.18243489	3.0789132	20	4 11.8	20.2
140595	2001	TE ₂₃₆	14.9	X	159.05360	218.98755	167.00009	11.01791	0.1745040	0.18142330	3.0903477	20	3 23.2	19.9
140596	2001	TO ₂₃₆	14.1	X	85.51075	349.65419	89.98711	19.35966	0.1404393	0.17865010	3.1222466	20	3 15.7	18.8
140597	2001	TZ ₂₃₇	15.0	X	98.72105	123.88760	718.80041	13.29624	0.1550598	0.23506908	2.6001937	20	3 17.4	18.7
140598	2001	TD ₂₃₈	15.1	X	92.25830	349.54865	36.49430	11.29924	0.1889203	0.23228049	2.6209630	20	3 4.7	18.7
140599	2001	TX ₂₃₈	15.0	X	245.50288	206.72005	118.24588	10.48294	0.0417126	0.18901455	3.0070401	20	4 10.9	19.5
140600	2001	TC ₂₃₉	14.7	X	17.23909	89.76593	62.30713	13.92413	0.1303942	0.23378813	2.6096829	20	2 17.2	17.8
140601	2001	TP ₂₃₉	14.9	X	206.92012	277.50649	138.59345	10.30821	0.0704929	0.19298497	2.9656534	20	6 13.7	19.4
140602	Berlind		16.2	X	199.50000	339.96949	135.94791	2.81385	0.0143142	0.20313963	2.8659786	20	8 25.3	20.2
140603	2001	UQ	15.6	X	109.73815	208.25403	70.15949	5.47663	0.0329790	0.21258930	2.7804075	20	12 1.3	19.5
140604	2001	UA ₃	14.9	X	145.66349	152.39626	178.61803	21.60741	0.0706684	0.17434298	3.1734604	20	—	—
140605	2001	UG ₃	15.2	X	174.80083	188.51332	47.48325	14.28410	0.1371427	0.21604797	2.7506537	20	12 15.9	19.7
140606	2001	UL ₃	15.3	X	66.67043	226.30302	71.31069	12.67621	0.1303262	0.21098233	2.7945078	20	11 17.7	19.3
140607	2001	UC ₄	15.2	X	131.25203	206.74878	207.49756	2.29675	0.1198403	0.17908323	3.1172103	20	3 24.6	19.8
140608	2001	UD ₄	15.9	X	147.94356	216.52742	51.41814	6.93166	0.1178376	0.26758684	2.3850247	20	—	—
140609	2001	UE ₄	14.9	X	106.34155	46.05236	64.35781	2.50078	0.1185303	0.18183608	3.0856690	20	5 5.5	19.3
140610	2001	UG ₅	15.1	X	33.92788	211.36083	227.56246	24.73312	0.2268281	0.27390497	2.3482055	20	—	—
140611	2001	UQ ₆	15.0	X	133.37934	134.18391	216.91388	9.30695	0.1144975	0.17173767	3.2054746	20	1 11.6	20.0
140612	2001	UU ₆	14.7	X	130.85824	223.48389	212.63333	2.34712	0.0890518	0.18207867	3.0829276	20	4 16.7	19.3
140613	2001	UX ₆	15.5	X	205.27268	250.92021	141.84449	1.42048	0.1931366	0.18811888	3.0165773	20	5 8.1	20.6
140614	2001	UZ ₆	14.9	X	148.90102	15.46596	45.36426	11.54436	0.2490008	0.18240622	3.0792359	20	4 28.2	20.2
140615	2001	UA ₇	15.4	X	294.76493	59.55061	51.10855	6.38075	0.1571796	0.20994799	2.8036786	20	12 7.7	18.3
140616	2001	UC ₇	14.8	X	187.61461	185.74061	221.70197	7.01776	0.0870588	0.18666393	3.0322321	20	5 11.6	19.3
140617	2001	UQ ₇	15.0	X	9.78652	306.22723	267.08946	5.05646	0.0675305	0.18986387	2.9980658	20	4 25.6	18.8
140618	2001	UC ₉	15.1	X	328.31147	239.61642	24.05710	12.73697	0.0882049	0.19047504	2.9916491	20	4 27.4	19.0
140619	2001	UG ₉	15.5	X	205.04475	290.29860	49.57652	9.22162	0.2044103	0.18433382	3.0577316	20	3 10.9	20.8
140620	Raoulwallenberg		15.4	X	37.14587	285.34070	97.76632	7.25442	0.0677108	0.21240426	2.7820221	20	—	—
140621	2001	UQ ₁₀	14.6	X	152.92753	271.48563	93.26903	6.80681	0.1841787	0.17597689	3.1537865	20	2 24.8	19.7
140622	2001	UO ₁₂	14.4	X	94.91592	194.91957	220.05718	16.93244	0.1357279	0.17334339	3.1856485	20	2 10.9	19.2
140623	2001	UR ₁₂	15.2	X	1.11650	352.32483	78.50833	7.01974	0.0575345	0.21473293	2.7618724	20	—	—
140624	2001	UY ₁₂	14.5	X	81.81591	229.95740	198.70721	3.63186	0.1253261	0.17295065	3.1904694	20	2 14.2	18.8
140625	2001	UZ ₁₂	15.1	X	188.99587	18.99953	80.10699	3.78353	0.2185195	0.19006992	2.9958987	20	7 12.9	20.2
140626	2001	UC ₁₃	14.7	X	171.09513	214.57726	214.93884	10.18296	0.0916832	0.18586369	3.0409295	20	5 22.2	19.4
140627	2001	UR ₁₃	14.9	X	194.34808	190.44708	177.24018	5.22734	0.1980413	0.18214874	3.0821369	20	3 30.8	20.2
140628	Klaipeda		16.4	X	67.63131	45.18417	261.48956	5.79848	0.1442709	0.26538167	2.3982186	20	12 10.8	19.7
140629	2001	UU ₁₄	15.2	X	243.18921	230.93614	134.79920	2.98627	0.1784530	0.19008080	2.9957844	20	5 10.8	20.0
140630	2001	UY ₁₄	14.2	X	240.43520	302.464								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140641	2001	UP ₂₅	15.4	X	220.31261	110.18276	256.44203	7.89416	0.1519165	0.18934483	3.0035423	20	4 18.9	20.4
140642	2001	US ₂₅	15.1	X	347.13335	340.67129	352.48344	11.84613	0.0841750	0.20280266	2.8691524	20	9 4.7	18.6
140643	2001	UW ₂₅	14.2	X	243.06807	111.77114	253.56695	9.52066	0.1265158	0.19209442	2.9748122	20	5 13.5	18.7
140644	2001	UL ₂₆	14.6	X	233.53672	87.85391	261.88957	9.49457	0.0526842	0.18898108	3.0073952	20	4 18.6	19.2
140645	2001	UO ₂₆	14.2	X	215.79387	308.16231	348.38209	12.06706	0.1406706	0.17841950	3.1249363	20	1 30.9	19.4
140646	2001	UX ₂₈	15.6	X	297.28744	330.85416	88.45470	3.33750	0.0482111	0.20703873	2.8298820	20	10 16.5	19.3
140647	2001	UM ₂₉	14.9	X	253.70087	145.83497	152.08842	8.95500	0.1148456	0.18490065	3.0514793	20	3 6.6	19.5
140648	2001	UN ₃₀	15.4	X	299.28165	317.02079	127.43165	8.56674	0.1759006	0.20934998	2.8090153	20	11 12.0	18.5
140649	2001	US ₃₀	15.4	X	153.06311	23.19237	33.63243	11.42114	0.0471456	0.18659987	3.0329261	20	4 14.9	19.8
140650	2001	UZ ₃₁	14.9	X	300.74667	123.21022	157.46235	9.97368	0.1094413	0.18912145	3.0059068	20	4 11.9	19.0
140651	2001	UU ₃₂	14.7	X	237.35383	262.10478	71.55250	11.66939	0.0663713	0.18646386	3.0344008	20	4 10.4	19.3
140652	2001	UC ₃₃	15.0	X	206.13404	270.75506	99.30899	9.32872	0.2086390	0.18724311	3.0259760	20	4 15.4	20.3
140653	2001	UC ₃₅	14.4	X	152.17538	1.15219	63.31408	16.26018	0.1813425	0.18386078	3.0629740	20	5 4.1	19.5
140654	2001	UQ ₃₆	15.2	X	219.69078	171.84150	185.47492	13.94969	0.1729770	0.18750381	3.0231706	20	4 9.7	20.2
140655	2001	UA ₃₇	14.7	X	184.60494	264.50583	108.99653	10.20983	0.1009369	0.18276215	3.0752366	20	4 2.1	19.6
140656	2001	UT ₃₇	14.7	X	302.56752	48.67832	244.09421	8.71951	0.0939503	0.19301668	2.9653285	20	4 27.9	18.7
140657	2001	UC ₃₉	16.1	X	233.19522	335.12973	45.08009	1.91376	0.1404560	0.19244278	2.9712211	20	5 20.9	20.8
140658	2001	UL ₃₉	15.6	X	237.95530	325.85395	200.26487	11.82629	0.1538081	0.21235908	2.7824166	20	11 27.8	19.5
140659	2001	US ₃₉	15.2	X	132.85923	47.86485	89.74660	2.06413	0.1618869	0.19074051	2.9888727	20	7 10.5	19.8
140660	2001	UH ₄₂	14.8	X	260.00797	69.03355	212.64012	21.06889	0.1908297	0.18728879	3.0258480	20	2 8.5	20.1
140661	2001	UY ₄₂	15.4	X	196.13891	58.98382	42.56055	2.45869	0.0194323	0.19753150	2.9199706	20	8 1.8	19.4
140662	2001	UU ₄₃	16.0	X	55.75235	35.87279	107.47518	3.28387	0.0569845	0.23571057	2.5954740	20	3 31.2	19.2
140663	2001	UN ₄₄	15.7	X	315.26858	58.09430	170.99966	1.93807	0.0863310	0.23417095	2.6068380	20	2 27.6	19.1
140664	2001	UG ₄₅	14.7	X	110.26374	104.77324	43.30250	14.60479	0.0946554	0.18948971	3.0020111	20	6 22.3	19.3
140665	2001	UH ₄₅	15.2	X	138.63255	208.93024	204.66830	10.34946	0.0556902	0.18157895	3.0885814	20	3 24.1	19.7
140666	2001	UO ₄₆	14.9	X	219.49883	315.22718	110.31446	2.96417	0.1246832	0.19346174	2.9607790	20	7 4.2	19.4
140667	2001	UT ₄₇	15.8	X	204.40778	232.34882	101.17381	6.26160	0.2337177	0.23574464	2.5952239	20	2 26.1	20.3
140668	2001	UQ ₄₈	14.9	X	227.85764	250.99911	63.95448	10.54971	0.0863310	0.18111824	3.0938168	20	3 7.7	19.8
140669	2001	UV ₄₈	14.4	X	154.85498	313.71115	80.62186	11.01418	0.0976930	0.18060224	3.0997069	20	3 29.3	19.3
140670	2001	UY ₄₈	14.7	X	194.57843	285.21652	89.44601	11.06295	0.1126660	0.18419573	3.0592597	20	4 13.6	19.7
140671	2001	UR ₄₉	15.0	X	189.50248	268.30665	160.94229	9.31555	0.1318846	0.18888997	3.0083621	20	6 9.6	20.0
140672	2001	UH ₅₀	14.7	X	234.10099	275.18108	103.57331	9.80620	0.1039466	0.18970485	2.9997410	20	5 25.7	19.3
140673	2001	UK ₅₀	14.7	X	6.46495	2.67768	65.21032	25.66042	0.0820236	0.21543184	2.7558958	20	—	—
140674	2001	UX ₅₀	15.3	X	348.07748	352.29928	103.27351	10.59039	0.1342863	0.21525546	2.7574010	20	—	—
140675	2001	UR ₅₁	15.7	X	168.51542	218.21683	60.58268	2.88561	0.1650936	0.22230701	2.6987787	20	—	—
140676	2001	UY ₅₁	15.4	X	158.68217	3.60722	55.41470	2.89618	0.0819737	0.18477139	3.0529023	20	4 25.6	20.0
140677	2001	UZ ₅₁	15.9	X	337.98559	244.14040	132.97071	2.83092	0.0967708	0.20634437	2.8362269	20	10 20.3	19.1
140678	2001	UC ₅₂	15.2	X	101.97822	336.91023	131.41304	1.84317	0.1459011	0.18190355	3.0849060	20	5 1.9	19.6
140679	2001	US ₅₂	15.6	X	49.60621	329.30587	60.38603	5.75015	0.1219881	0.21787619	2.7352448	20	—	—
140680	2001	UC ₅₃	15.4	X	52.60063	243.90381	77.87307	14.41583	0.2370425	0.21115079	2.7930212	20	12 13.1	19.5
140681	2001	UL ₅₃	14.8	X	150.07644	296.67398	99.00905	11.25391	0.1761823	0.17943837	3.1130959	20	3 31.5	20.0
140682	2001	UA ₅₄	15.2	X	192.45254	242.08454	159.24097	7.52567	0.1029363	0.18615946	3.0377077	20	5 10.7	20.0
140683	2001	UH ₅₄	15.6	X	156.74686	127.08786	139.98092	14.23269	0.1609107	0.24238003	2.5476406	20	5 29.1	20.0
140684	2001	UW ₅₄	15.7	X	337.17404	148.82133	237.38139	8.32710	0.1608529	0.21081955	2.7959461	20	11 1.4	18.6
140685	2001	UA ₅₅	15.1	X	169.05891	151.11345	188.51721	8.87113	0.0655780	0.17771328	3.1332096	20	1 29.7	20.0
140686	2001	UU ₅₅	14.9	X	342.64796	254.94216	232.11330	5.27134	0.0628337	0.17138017	3.2099307	20	—	—
140687	2001	UX ₅₅	15.4	X	249.73764	133.35483	3.97737	11.04547	0.0996542	0.21138666	2.7909432	20	11 9.4	19.3
140688	2001	UE ₅₇	15.7	X	170.14430	185.27520	270.57932	1.35430	0.1165113	0.19192955	2.9765156	20	6 22.7	20.3
140689	2001	UH ₅₈	14.9	X	242.18851	232.43910	13.12091	4.90818	0.1322078	0.17468604	3.1693041	20	—	—
140690	2001	UO ₆₁	16.4	X	306.46249	83.39845	319.08508	1.13772	0.0679231	0.20614535	2.8380520	20	10 3.6	19.9
140691	2001	UZ ₆₃	15.4	X	136.78956	200.87574	221.86658	8.63881	0.0860033	0.18218090	3.0817742	20	4 5.1	20.0
140692	2001	UF ₆₅	14.6	X	213.97505	105.33789	281.25369	8.13199	0.1239670	0.18752296	3.0229647	20	5 9.2	19.5
140693	2001	UN ₆₅	15.3	X	194.17001	354.17002	30.39261	6.31814	0.2617430	0.18519951	3.0481956	20	4 18.3	20.8
140694	2001	UD ₆₆	14.6	X	116.86784	28.57958	53.04047	14.06846	0.0517315	0.17885594	3.1198506	20	4 8.8	19.2
140695	2001	UD ₇₁	16.3	X	32.90340	88.86880	211.04080	1.23801	0.0627657	0.20310901	2.8662666	20	9 25.6	20.1
140696	2001	UV ₇₂	15.6	X	135.29859	99.48864	71.07249	3.21747	0.0190117	0.20032609	2.8927509	20	8 16.1	19.7
140697	2001	UG ₇₃	15.3	X	231.26597	110.50020	211.75071	12.09407	0.1687490	0.18525117	3.0476288	20	3 5.6	20.4
140698	2001	UO ₇₃	15.2	X	205.71650	330.91844	83.14219	3.31780	0.0828333	0.19131766	2.9828587	20	6 7.9	19.7
140699	2001	UL ₇₄	14.9	X	67.88693	287.09429	204.05212	9.64358	0.0474848	0.18154687	3.0889452	20	4 1.9	19.0
140700	2001	UW ₇₄	15.1	X	67.98405	302.10185	194.79531	9.25948	0.0837299	0.18136004	3.0910662	20	4 15.7	19.2
140701	2001	UJ ₇₅	15.0	X	231.45329	280.62930	85.89885	6.05754	0.1360329	0.18909084	3.0062313	20	5 4.7	19.7
140702	2001	UZ ₇₅	16.3	X	45.99396	274.72086	129.12795	3.08068	0.2031469	0.21867193	2.7286052	20	—	—
140703	2001	UE ₇₇	15.6	X	181.15905	290.33163	124.84593	2.41680	0.1917989	0.18684246	3.0303003	20	5 15.2	20.7
140704	2001	UG ₇₇	15.5	X	359.39434	247.62277	90.68141	3.35617	0.0439596	0.20255517	2.8714890	20	9 28.7	19.2
140705	2001	UG ₇₈	14.5	X	294.98261	185.47679	28.17373	17.69262	0.1412605	0.17689792	3.1428301	20	1 10.9	19.4
140706	2001	UV ₇₉	16.0	X	141.67376	329.29291	79.40789	2.31219	0.0587994	0.23434913	2.6055165	20	3 20.3	19.7
140707	2001	UH ₈₀	15.5	X	287.50041	350.32602	87.59757	3.25086	0.0673141	0.20662969	2.8336153	20	10 24.5	19.1
140708	2001	UH ₈₁	15.6	X	152.98210	4.21343	108.85729	2.00455	0.1855726	0.18836268	3.0139738	20	6 29.6	20.7
140709	2001	US ₈₂	15.7	X	211.56878	311.68500	144.65797	1.88148	0.1279673	0.19557296	2.9394326	20	8 3.4	20.2
140710	2001	UD ₈₂	14.											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140721	2001	UT ₉₃	15.2 ^m	X	177.95692	305.70216	70.11718	18.21160	0.1356871	0.18264151	3.0765906	20	4 4.1	20.4
140722	2001	UU ₉₃	15.0	X	232.02424	294.27580	83.36244	14.74116	0.1481663	0.19072012	2.9890858	20	5 19.0	19.8
140723	2001	UY ₉₃	15.2	X	223.78756	237.35784	148.21616	10.47083	0.0993269	0.18982156	2.9985113	20	5 24.1	19.9
140724	2001	UL ₉₄	15.0	X	218.77001	188.26202	158.44670	10.16802	0.0974630	0.18431223	3.0579704	20	4 1.1	19.7
140725	2001	UX ₉₄	14.6	X	143.73734	286.88391	93.96416	11.49106	0.1072384	0.17754788	3.1351552	20	3 1.7	19.5
140726	2001	UU ₉₅	15.7	X	323.48843	6.10973	64.02170	5.33812	0.0473124	0.21264740	2.7799010	20	12 5.9	19.3
140727	2001	UA ₉₆	15.0	X	270.54260	17.30003	213.96346	5.27750	0.0553137	0.17674732	3.1446151	20	1 11.6	19.7
140728	2001	UC ₉₆	16.1	X	338.15600	287.33887	47.99949	2.66098	0.0738634	0.20177182	2.8789163	20	8 23.8	19.6
140729	2001	UY ₉₇	15.7	X	2.87967	249.40532	95.13632	3.24097	0.0910433	0.20618323	2.8377045	20	10 16.4	19.2
140730	2001	UU ₉₈	15.0	X	136.81592	49.69857	61.06403	10.68109	0.0661611	0.18795009	3.0183830	20	6 2.8	19.4
140731	2001	UW ₉₈	15.4	X	332.69374	354.85800	76.04761	6.81119	0.0479213	0.21171363	2.7880689	20	12 19.7	18.8
140732	2001	UU ₉₉	15.5	X	345.92315	173.69164	148.15020	2.64589	0.0602935	0.19983101	2.8975268	20	8 15.9	19.2
140733	2001	UR ₉₉	15.9	X	239.93966	291.71279	152.58185	2.92018	0.0764706	0.20018431	2.8941166	20	8 26.5	20.0
140734	2001	UF ₁₀₀	15.6	X	264.00011	294.02842	65.41831	3.19915	0.0674703	0.19305522	2.9649339	20	6 7.8	19.8
140735	2001	UH ₁₀₁	15.1	X	56.98553	318.45883	192.22239	11.47134	0.1212886	0.18492729	3.0511862	20	4 23.5	18.9
140736	2001	UJ ₁₀₂	15.0	X	333.32326	307.60677	192.79322	14.72065	0.0759260	0.17063427	3.2192785	20	—	—
140737	2001	UI ₁₀₃	16.2	X	225.64407	284.86881	51.17149	3.57615	0.1736883	0.18705219	3.0280347	20	3 21.2	21.2
140738	2001	UH ₁₀₄	15.9	X	241.66322	349.23996	184.26648	1.20562	0.0498066	0.21493565	2.7601356	20	12 26.1	19.7
140739	2001	UZ ₁₀₄	15.6	X	303.71917	248.06283	76.22556	3.18170	0.0396517	0.19399840	2.9553161	20	6 19.1	19.6
140740	2001	UY ₁₀₅	15.5	X	219.20042	193.55019	139.87425	1.30296	0.1985674	0.18540162	3.0459799	20	3 10.7	20.7
140741	2001	UC ₁₀₇	15.7	X	170.84826	296.26297	159.68027	1.86249	0.0434886	0.19116623	2.9844337	20	6 22.8	20.0
140742	2001	UL ₁₀₇	14.8	X	237.84403	63.50388	211.46074	16.06370	0.1822456	0.17757354	3.1348533	20	1 16.8	20.3
140743	2001	UT ₁₀₇	16.2	X	333.87737	213.12222	153.48483	2.52666	0.0807491	0.20514473	2.8472732	20	9 28.4	19.5
140744	2001	UE ₁₀₈	15.6	X	133.57414	354.40976	138.66938	1.69662	0.0825641	0.19111341	2.9849836	20	6 29.5	20.1
140745	2001	UY ₁₀₈	14.9	X	175.19956	297.64049	71.76830	11.09545	0.1056751	0.17962611	3.1109264	20	3 20.4	19.9
140746	2001	US ₁₀₉	15.6	X	209.38840	205.81723	199.97310	3.67135	0.1240617	0.18885661	3.0087164	20	5 30.6	20.4
140747	2001	UV ₁₀₉	16.5	X	74.41130	60.23100	228.62280	19.27691	0.0731453	0.36465994	1.9403378	20	12 9.3	18.8
140748	2001	UD ₁₁₀	15.2	X	157.49109	286.91194	204.81778	7.95288	0.0591241	0.19707402	2.9244877	20	7 21.8	19.6
140749	2001	UE ₁₁₃	15.0	X	126.45720	63.97757	45.45373	11.95237	0.2776663	0.18173124	3.0868556	20	6 6.8	20.3
140750	2001	UY ₁₁₃	15.3	X	136.93385	81.66095	44.36198	10.84123	0.0524958	0.19075171	2.9887557	20	6 21.3	19.7
140751	2001	UN ₁₁₄	15.2	X	172.93136	208.80525	98.82446	2.68816	0.1326371	0.17312772	3.1882937	20	1 3.2	20.1
140752	2001	UH ₁₁₅	15.1	X	148.58646	205.50468	208.62734	10.30602	0.1059216	0.18231734	3.0802365	20	4 9.8	19.9
140753	2001	UC ₁₁₆	15.1	X	276.55745	255.34812	46.67892	12.37690	0.1058594	0.18639130	3.0351882	20	4 9.1	19.5
140754	2001	UX ₁₁₇	15.3	X	168.61344	353.06573	49.39610	7.39548	0.1712299	0.18356363	3.0662787	20	4 19.8	20.4
140755	2001	UY ₁₁₇	15.4	X	256.50986	346.60037	45.87689	2.50984	0.1073841	0.19453726	2.9498562	20	7 6.2	19.6
140756	2001	UR ₁₁₈	16.0	X	217.40601	286.20417	64.90146	9.11858	0.2614285	0.18678607	3.0309101	20	3 31.2	21.4
140757	2001	UX ₁₁₈	15.8	X	247.53770	310.87329	100.23700	3.43351	0.1679205	0.19496847	2.9455052	20	7 11.5	20.0
140758	2001	UA ₁₁₉	15.8	X	249.84957	318.63612	87.34027	3.21874	0.1774451	0.19487843	2.9464125	20	7 19.8	20.1
140759	2001	UB ₁₁₉	15.2	X	134.34623	231.19460	193.00726	4.56632	0.1515791	0.18050096	3.1008663	20	4 12.4	19.9
140760	2001	UN ₁₁₉	15.5	X	65.14567	37.29075	68.27964	2.29731	0.1658160	0.17444957	3.1721675	20	3 15.6	19.4
140761	2001	UO ₁₂₀	15.1	X	131.25232	207.29564	50.34296	13.58389	0.0669295	0.21084787	2.7956957	20	11 29.5	19.2
140762	2001	UQ ₁₂₀	16.0	X	78.07256	221.02372	75.74015	3.75643	0.0752474	0.20917581	2.8105744	20	11 21.2	20.0
140763	2001	UY ₁₂₀	15.7	X	265.65477	290.69507	152.81287	2.69635	0.2112322	0.20200875	2.8766648	20	9 7.7	19.7
140764	2001	UB ₁₂₂	14.0	X	149.74845	324.81679	51.79348	16.47770	0.1159589	0.17709750	3.1404684	20	3 7.9	19.1
140765	2001	UF ₁₂₂	14.5	X	186.62289	275.73500	56.91495	15.72378	0.0545272	0.17557200	3.1586333	20	2 17.5	19.5
140766	2001	UZ ₁₂₂	14.6	X	212.29891	248.51261	58.47852	22.48870	0.2475867	0.17838245	3.1253690	20	2 11.2	20.5
140767	2001	UA ₁₂₃	14.9	X	238.50416	135.02956	227.67655	7.87736	0.1055295	0.18773574	3.0206801	20	5 8.3	19.5
140768	2001	UL ₁₂₃	14.5	X	93.09834	227.29867	221.68970	9.69986	0.1657133	0.17558527	3.1584741	20	3 28.7	19.1
140769	2001	UA ₁₂₄	15.4	X	295.67977	286.18368	113.15135	13.08613	0.1006908	0.20371281	2.8606002	20	9 14.8	19.2
140770	2001	UU ₁₂₅	15.0	X	260.71764	228.28427	118.89200	11.50229	0.0843369	0.19278225	2.9677320	20	5 20.2	19.4
140771	2001	UJ ₁₂₆	14.6	X	258.12286	261.52565	106.97780	12.66951	0.1203004	0.19320494	2.9634020	20	6 6.7	19.0
140772	2001	UI ₁₂₇	14.6	X	201.15916	294.50917	87.25715	9.94287	0.1028076	0.18461177	3.0546618	20	4 27.3	19.4
140773	2001	UY ₁₂₈	15.3	X	19.20749	260.06495	20.55600	14.81582	0.1396448	0.20401005	2.8578209	20	8 27.8	18.9
140774	2001	UC ₁₃₁	15.4	X	54.02259	79.45712	70.49579	1.91294	0.0555801	0.18191496	3.0847770	20	4 9.6	19.6
140775	2001	US ₁₃₁	15.3	X	309.26199	220.67395	47.59083	6.89633	0.0251836	0.18504526	3.0498892	20	4 17.9	19.5
140776	2001	UU ₁₃₁	15.1	X	69.40186	276.23467	132.98469	2.19531	0.0569510	0.16999100	3.2273948	20	—	—
140777	2001	UZ ₁₃₁	16.2	X	330.29505	175.69659	196.36921	1.64576	0.0782467	0.20401159	2.8578066	20	9 29.0	19.5
140778	2001	UA ₁₃₃	16.4	X	284.14620	149.77296	252.09780	0.99813	0.0672672	0.20288999	2.8683290	20	8 30.6	20.0
140779	2001	UF ₁₃₃	15.5	X	180.29973	349.88979	218.00116	4.19384	0.0907065	0.21262902	2.7800612	20	11 22.0	19.6
140780	2001	UW ₁₃₃	15.1	X	65.31572	41.04916	212.04335	20.71242	0.0478108	0.20214763	2.8753472	20	8 31.2	19.4
140781	2001	UD ₁₃₄	15.4	X	173.02992	350.63181	213.48421	7.25507	0.1520673	0.21051195	2.7986690	20	11 6.7	20.0
140782	2001	UH ₁₃₆	15.6	X	138.72236	1.39668	72.76067	2.24853	0.2384768	0.18113521	3.0936235	20	5 4.9	20.7
140783	2001	UP ₁₃₇	16.1	X	0.51844	84.07427	74.20186	3.41066	0.0323200	0.23117015	2.6293488	20	1 30.3	19.5
140784	2001	UN ₁₃₉	15.1	X	325.49144	34.86426	200.35400	11.34292	0.1143130	0.18473811	3.0532689	20	3 14.3	19.1
140785	2001	UG ₁₄₀	15.0	X	17.24858	112.54792	50.80106	10.38981	0.0617382	0.17995825	3.1070974	20	3 11.2	19.2
140786	2001	UR ₁₄₀	16.6	X	110.60335	14.61857	117.21785	1.46529	0.1494136	0.24011922	2.5636069	20	6 10.2	20.1
140787	2001	UF ₁₄₁	15.9	X	234.03950	319.45286	185.70758	6.22698	0.0064236	0.20977323	2.8052356	20	11 17.4	19.7
140788	2001	UD ₁₄₂	15.4	X	31.89004	166.09433	151.90858	2.39294	0.0741763	0.20639275	2.8357836	20	10 21.2	19.0
140789	2001	UM ₁₄₂	15.4	X	67.82274	263.71389	211.53753	9.99208	0.0627043					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140801	2001	UK ₁₅₁	15.5	X	183.31314	60.54829	100.57984	3.18870	0.0120635	0.20176623	2.8789695	20	10 3.5	19.5
140802	2001	UM ₁₅₁	15.1	X	145.28923	198.68191	206.66175	4.79974	0.1671182	0.17967958	3.1103092	20	3 31.7	20.2
140803	2001	UX ₁₅₁	15.0	X	260.41752	357.86643	56.54461	10.64435	0.1004777	0.19695463	2.9256695	20	8 14.2	19.2
140804	2001	UJ ₁₅₂	15.7	X	80.34440	234.37219	204.11130	5.38406	0.0871850	0.22696409	2.6617338	20	2 10.6	19.2
140805	2001	UQ ₁₅₂	15.6	X	349.89272	220.39494	84.07738	3.31414	0.0833830	0.19523387	2.9428352	20	7 29.8	19.3
140806	2001	UT ₁₅₂	14.9	X	165.50468	307.50040	56.38554	8.59937	0.0668314	0.17660411	3.1463149	20	2 29.9	19.7
140807	2001	UR ₁₅₃	14.6	X	72.42089	2.58271	67.31660	15.44764	0.0914829	0.17129106	3.2110439	20	2 4.3	19.1
140808	2001	UV ₁₅₆	14.9	X	52.87075	101.07398	68.40417	12.59103	0.0583704	0.18317587	3.0706044	20	5 5.4	19.0
140809	2001	UL ₁₅₇	15.5	X	274.83274	330.42305	85.72249	3.36748	0.0786177	0.20009534	2.8949744	20	9 5.8	19.4
140810	2001	UM ₁₅₈	15.4	X	96.30900	248.51463	215.25165	8.84792	0.0749442	0.17950743	3.1122974	20	4 7.9	19.8
140811	2001	UC ₁₅₉	15.8	X	114.88681	359.03788	106.31001	2.97079	0.1908316	0.18098507	3.0953342	20	5 17.3	20.6
140812	2001	UE ₁₅₉	15.1	X	117.87901	211.55061	218.24600	10.38014	0.0860448	0.17822633	3.1271939	20	3 22.9	19.7
140813	2001	UN ₁₅₉	15.7	X	161.71550	248.02643	204.72259	1.88854	0.0543445	0.18750460	3.0231621	20	6 8.5	20.2
140814	2001	US ₁₅₉	14.9	X	326.07707	239.93117	61.63711	11.34014	0.1303123	0.19233243	2.9723574	20	6 10.7	18.4
140815	2001	UL ₁₆₀	15.3	X	266.01534	321.36928	55.95977	12.61334	0.0517470	0.19256452	2.9699686	20	7 6.8	19.6
140816	2001	UD ₁₆₁	15.5	X	187.87859	244.34604	161.51870	3.40831	0.1777779	0.18579361	3.0416940	20	5 10.0	20.6
140817	2001	UR ₁₆₁	15.2	X	196.01822	26.28817	57.20120	9.58483	0.0678810	0.19030702	2.9934098	20	7 5.7	19.8
140818	2001	UC ₁₆₂	14.6	X	272.63776	278.68148	61.49727	7.71992	0.2208987	0.19116846	2.9844104	20	5 4.7	19.0
140819	2001	UR ₁₆₂	15.8	X	119.06810	8.23618	221.84753	4.97404	0.0171894	0.20355025	2.8621230	20	10 9.3	19.7
140820	2001	UO ₁₆₃	14.3	X	200.02325	62.91267	234.08385	25.75780	0.2508417	0.17450904	3.1714468	20	1 9.3	20.3
140821	2001	UA ₁₆₄	14.7	X	334.97921	108.23473	70.37605	9.26351	0.0495313	0.17824378	3.1269898	20	1 30.1	19.1
140822	2001	UO ₁₆₄	15.0	X	330.98716	144.83812	183.47907	10.02717	0.1187687	0.19876912	2.9078373	20	7 27.0	18.6
140823	2001	UT ₁₆₅	14.6	X	324.91442	88.98692	151.24945	10.38145	0.0342796	0.18545814	3.0453610	20	4 3.5	18.8
140824	2001	UC ₁₆₇	15.2	X	168.93729	101.72250	297.58042	10.38715	0.0580301	0.18628530	3.0363395	20	4 5.3	19.9
140825	2001	UZ ₁₆₇	14.7	X	264.75991	79.90842	286.06821	11.25760	0.1784979	0.19273513	2.9682157	20	6 1.3	19.1
140826	2001	UX ₁₆₈	14.5	X	121.58896	125.16959	316.49006	13.42331	0.2150747	0.17730602	3.1380056	20	4 20.5	19.8
140827	2001	UZ ₁₆₉	15.3	X	197.62273	289.83987	19.58907	9.65082	0.0768730	0.17672375	3.1448947	20	1 29.5	20.2
140828	2001	UA ₁₇₂	15.9	X	194.08445	322.06653	34.67063	0.81507	0.0526491	0.18406858	3.0606684	20	3 17.7	20.4
140829	2001	UQ ₁₇₂	16.0	X	136.67284	197.35874	47.53874	5.03761	0.0178238	0.21025579	2.8009418	20	11 20.1	19.8
140830	2001	UL ₁₇₃	15.7	X	191.26030	355.44006	39.86039	11.37871	0.0593655	0.18663832	3.0325095	20	4 30.4	20.3
140831	2001	UV ₁₇₄	15.0	X	21.15366	17.42378	272.15052	0.76063	0.1008008	0.20350421	2.8625546	20	8 30.4	18.3
140832	2001	UC ₁₇₅	15.5	X	234.03716	153.20420	191.92015	10.16014	0.1252830	0.18790429	3.0188735	20	4 10.9	20.3
140833	2001	UE ₁₇₉	15.7	X	31.16507	265.10367	34.69439	2.20761	0.0540640	0.20330972	2.8643799	20	9 21.9	19.4
140834	2001	UF ₁₇₉	15.4	X	60.20399	268.47536	224.97262	9.30652	0.1491299	0.17821033	3.1273811	20	4 7.1	19.4
140835	2001	UL ₁₈₄	16.3	X	53.79105	3.58112	100.83240	4.12957	0.1213906	0.22953265	2.6418393	20	2 10.9	19.3
140836	2001	UD ₁₉₂	14.6	X	252.37859	79.04711	263.24279	13.02387	0.1142087	0.19186273	2.9772066	20	4 23.6	19.2
140837	2001	UP ₁₉₂	15.0	X	324.56302	89.97107	291.70450	11.39549	0.1134212	0.20611315	2.8383476	20	9 25.2	18.6
140838	2001	UO ₁₉₂	14.8	X	194.24036	117.05727	287.34350	8.92914	0.0384000	0.19079542	2.9882993	20	5 13.6	19.2
140839	2001	UH ₁₉₃	15.3	X	134.39581	173.29614	301.86546	11.28893	0.0311179	0.24472566	2.5313355	20	6 2.3	18.8
140840	2001	UO ₁₉₃	14.5	X	44.37365	221.88827	278.52945	11.33939	0.0601380	0.18202626	3.0835194	20	3 8.6	18.8
140841	2001	UO ₁₉₈	15.2	X	310.28773	262.31220	11.40443	10.30718	0.0799395	0.19010357	2.9955452	20	4 15.7	19.2
140842	2001	UH ₁₉₉	14.9	X	190.06437	229.17497	96.36418	7.32492	0.1583802	0.18162768	3.0880289	20	2 8.9	20.0
140843	2001	UP ₂₀₃	16.0	X	85.55791	283.83492	15.72510	3.76696	0.0717767	0.21202149	2.7853694	20	12 2.3	20.0
140844	2001	UE ₂₀₆	15.1	X	187.55164	307.18864	93.97604	8.62198	0.1949668	0.18951844	3.0017077	20	5 5.8	20.2
140845	2001	UK ₂₀₆	16.0	X	233.93495	206.94117	208.53632	10.66742	0.0862688	0.19766610	2.9186448	20	7 9.5	20.5
140846	2001	UX ₂₀₆	15.1	X	31.10183	225.49606	56.83773	16.00844	0.1273287	0.20340546	2.8634810	20	9 19.0	19.0
140847	2001	UR ₂₀₉	16.0	X	63.27369	201.92083	292.95660	4.02536	0.1303143	0.23557337	2.5964816	20	4 5.8	19.1
140848	2001	UJ ₂₁₀	15.4	X	221.71296	65.36640	307.87066	20.52469	0.2567119	0.19069688	2.9893286	20	4 14.7	21.0
140849	2001	UB ₂₁₂	15.3	X	66.56610	300.98028	238.74544	8.31678	0.0643660	0.18870700	3.0103064	20	6 4.8	19.3
140850	2001	UH ₂₁₂	16.0	X	218.62387	101.40709	285.37251	1.64581	0.1154492	0.18949875	3.0019157	20	5 16.0	20.6
140851	2001	UA ₂₁₃	15.0	X	266.14239	219.60733	100.85572	3.06556	0.0389358	0.18772443	3.0208015	20	4 26.9	19.2
140852	2001	UT ₂₁₅	15.0	X	254.85232	217.19506	52.97239	13.39493	0.1688649	0.17827061	3.1266761	20	2 3.6	20.2
140853	2001	UU ₂₁₅	15.0	X	253.81991	107.41555	221.30065	9.45241	0.1533312	0.18543588	3.0456047	20	4 6.4	19.7
140854	2001	UR ₂₁₉	14.8	X	140.14193	286.96064	88.30215	9.38702	0.0697132	0.17556253	3.1587469	20	2 15.3	19.5
140855	2001	US ₂₁₉	14.2	X	176.63903	236.13175	87.94975	18.57610	0.0866596	0.17252664	3.1956946	20	1 24.5	19.2
140856	2001	UY ₂₁₉	16.2	X	248.43609	114.43070	41.05563	9.41826	0.0890350	0.21236083	2.7824013	20	12 4.8	20.0
140857	2001	UZ ₂₂₁	16.0	X	318.34662	298.26009	74.05386	3.05030	0.0827746	0.20052774	2.8908113	20	9 11.6	19.5
140858	2001	UU ₂₂₂	16.1	X	243.79970	246.65170	161.30406	1.76983	0.0486393	0.19364358	2.9589252	20	7 18.0	20.3
140859	2001	VP	14.8	X	114.67504	267.97762	142.56748	26.09306	0.2591029	0.17648999	3.1476710	20	3 23.6	20.0
140860	2001	VW	15.4	X	42.30022	292.60954	120.53315	14.22894	0.3271090	0.22188512	2.7021986	20	—	—
140861	2001	VD ₁	15.3	X	67.29862	274.21655	121.38299	15.42706	0.2612549	0.22411424	2.6842507	20	—	—
140862	2001	VB ₃	14.8	X	222.93980	285.88628	35.79086	11.52331	0.0869252	0.18159814	3.0883638	20	3 10.3	19.6
140863	2001	VZ ₃	16.0	X	39.92485	304.95432	9.04006	1.83028	0.0553516	0.20385077	2.8593094	20	10 22.4	19.8
140864	2001	VL ₄	16.4	X	239.87678	349.79170	239.27540	19.48167	0.0470765	0.37857596	1.8924919	20	—	—
140865	2001	VX ₇	15.0	X	334.47867	84.30429	237.91673	10.97141	0.0564909	0.19672455	2.9279501	20	7 25.9	19.0
140866	2001	VZ ₉	14.9	X	173.56655	168.47235	236.69123	11.64142	0.1901035	0.18706158	3.0279334	20	4 24.9	20.0
140867	2001	VJ ₁₀	14.8	X	111.65819	109.59663	299.32382	9.25877	0.1320629	0.17625789	3.1504336	20	2 25.2	19.5
140868	2001	VQ ₁₀	14.9	X	162.04382	105.77167	288.80276	10.05173	0.1144090	0.18178797	3.0862134	20	3 26.5	19.9
140869	2001	VZ ₁₀	16.4	X	271.37634	182.26482	32.58527	10.64105	0.0252605	0.27764731	2.3270572			

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140881	2001	VB ₂₁	15.2	X	88.50541	200.40349	235.19121	4.06098	0.1438269	0.17496027	3.1659916	20	3 3.9	19.5
140882	2001	VG ₂₂	15.0	X	228.03948	294.11014	45.76754	10.06932	0.0563811	0.18294969	3.0731348	20	4 6.4	19.6
140883	2001	VD ₂₄	15.8	X	75.11450	127.23949	261.05052	2.17733	0.1197269	0.22021798	2.7158192	20	—	—
140884	2001	VH ₂₅	14.8	X	173.65899	315.97010	54.12693	11.46534	0.1028029	0.17912324	3.1167461	20	3 19.5	19.8
140885	2001	VH ₂₆	14.9	X	214.86956	108.28125	241.03483	8.02348	0.1369422	0.18292041	3.0734626	20	3 24.6	19.9
140886	2001	VY ₂₇	15.0	X	164.12869	75.24349	44.61385	4.48349	0.1012226	0.18980533	2.9986822	20	7 17.3	19.7
140887	2001	VD ₂₈	15.7	X	136.47869	57.23211	46.92876	1.14945	0.1714195	0.18343609	3.0676998	20	6 2.9	20.5
140888	2001	VX ₂₈	14.1	X	161.73911	287.86647	63.11397	18.48374	0.1576619	0.17511316	3.1641485	20	2 20.3	19.5
140889	2001	VL ₂₉	15.6	X	194.90116	333.92395	89.45331	3.54726	0.1533339	0.18791845	3.0187218	20	6 5.9	20.5
140890	2001	VK ₃₀	15.2	X	181.84666	337.63186	35.85659	1.82487	0.2079876	0.18139128	3.0907113	20	3 27.8	20.5
140891	2001	VB ₃₁	14.9	X	32.27180	349.17917	63.86292	26.91580	0.1326743	0.21585430	2.7522988	20	—	—
140892	2001	VG ₃₁	14.6	X	171.73001	354.23302	67.86383	17.02898	0.0711593	0.18405220	3.0608499	20	5 14.7	19.2
140893	2001	VF ₃₂	14.9	X	64.45990	105.50511	29.12825	2.12982	0.1169581	0.17665546	3.1457050	20	4 12.3	18.8
140894	2001	VT ₃₂	15.5	X	187.60211	187.85493	261.40177	1.78881	0.1651652	0.18847469	3.0127796	20	6 30.6	20.3
140895	2001	VR ₃₃	15.2	X	202.04652	347.54986	49.83862	1.27623	0.2098171	0.18628765	3.0363140	20	5 10.0	20.4
140896	2001	VW ₃₅	14.4	X	137.33152	51.50254	68.65679	19.11963	0.1203583	0.18494662	3.0509736	20	6 18.7	19.2
140897	2001	VC ₃₆	14.3	X	210.82675	288.09979	63.77021	10.18727	0.2980364	0.18420841	3.0591192	20	3 27.4	19.9
140898	2001	VV ₃₇	14.8	X	252.00210	336.85564	92.92882	9.03793	0.2250523	0.19589034	2.9362568	20	8 3.6	19.2
140899	2001	VK ₃₈	15.4	X	312.75705	276.34071	61.02615	15.85733	0.1414628	0.19611278	2.9340361	20	7 7.8	19.1
140900	2001	VW ₃₈	14.5	X	148.34660	99.94959	243.33245	16.02759	0.0870008	0.17130986	3.2108090	20	1 13.4	19.5
140901	2001	VT ₄₀	14.7	X	192.36523	271.70640	54.32740	10.46823	0.2262892	0.17674926	3.1445921	20	2 15.2	20.3
140902	2001	VK ₄₉	15.3	X	109.81209	52.21407	65.35689	10.21903	0.0417520	0.18565321	3.0432274	20	5 9.5	19.7
140903	2001	VO ₄₉	14.8	X	259.77053	33.09109	341.20981	11.48754	0.0759369	0.19452215	2.9500090	20	6 21.2	19.1
140904	2001	VV ₄₉	15.3	X	210.30663	66.42755	2.67717	11.67890	0.1948560	0.19233535	2.9723273	20	6 25.4	20.4
140905	2001	VC ₅₀	14.8	X	267.79256	65.35424	268.66081	10.18961	0.0571749	0.18989922	2.9976937	20	5 10.7	19.2
140906	2001	VG ₅₂	15.2	X	297.47790	227.16577	236.64048	9.27719	0.1406792	0.21057615	2.7981002	20	12 5.7	18.4
140907	2001	VJ ₅₂	15.7	X	102.03372	71.05283	298.51860	2.42044	0.0668387	0.22330984	2.6906930	20	—	—
140908	2001	VP ₅₃	14.6	X	89.94457	193.95012	237.64058	8.06675	0.0978088	0.17631148	3.1497952	20	2 21.5	19.0
140909	2001	VW ₅₄	15.0	X	256.48899	333.53469	334.95746	5.93530	0.1476178	0.18587764	3.0407773	20	3 16.6	19.7
140910	2001	VH ₅₅	14.7	X	129.64029	89.43300	317.95929	4.88447	0.0763919	0.17891203	3.1191986	20	3 9.0	19.3
140911	2001	VO ₅₇	14.9	X	189.53470	313.80775	49.08483	12.63397	0.0755568	0.17962003	3.1109966	20	3 26.2	19.8
140912	2001	VA ₅₈	16.1	X	137.51143	113.66373	291.49718	1.91675	0.2339496	0.23285868	2.6166226	20	3 26.3	20.3
140913	2001	VT ₅₈	14.6	X	286.43964	63.41394	261.84491	9.29633	0.1064327	0.19147213	2.9812542	20	5 16.9	18.7
140914	2001	VH ₆₀	14.9	X	200.48743	16.43916	37.25743	11.69284	0.0301624	0.18931566	3.0038508	20	6 2.3	19.3
140915	2001	VY ₆₁	14.8	X	191.74599	56.06348	263.62376	7.11363	0.1126440	0.17625739	3.1504396	20	1 30.9	19.9
140916	2001	VN ₆₂	14.7	X	141.75152	332.32677	35.26486	9.21715	0.1255953	0.17540393	3.1606507	20	2 14.6	19.6
140917	2001	VG ₆₂	14.5	X	116.40517	216.06846	245.40400	10.44619	0.1339151	0.18206835	3.0830442	20	5 6.3	19.2
140918	2001	VZ ₆₂	14.3	X	37.49130	310.04291	254.86098	12.49793	0.2165668	0.18467347	3.0539813	20	6 15.9	17.7
140919	2001	VM ₆₃	15.1	X	149.06345	137.34541	289.35711	2.70693	0.2011891	0.18270443	3.0758843	20	4 30.9	20.3
140920	2001	VP ₆₅	15.8	X	63.20213	106.65959	300.04826	4.06466	0.1671476	0.22077979	2.7112101	20	—	—
140921	2001	VS ₆₅	14.8	X	256.93010	307.97445	35.28215	9.74762	0.0779575	0.18734225	3.0249084	20	5 7.1	19.2
140922	2001	VW ₆₅	15.3	X	141.87264	89.82392	308.88373	3.18570	0.2052198	0.23170153	2.6253273	20	3 19.7	19.5
140923	2001	VX ₆₆	15.9	X	236.32261	38.79915	330.75880	2.26558	0.1321578	0.24168803	2.5525012	20	5 10.0	19.8
140924	2001	VP ₆₇	14.7	X	77.10673	159.63380	304.78788	10.62081	0.0241835	0.18066970	3.0989352	20	3 5.1	19.1
140925	2001	VR ₆₈	14.1	X	121.96939	87.84055	359.66325	16.77730	0.2216495	0.18073184	3.0982249	20	4 28.4	19.3
140926	2001	VY ₆₉	14.6	X	35.49794	117.50826	27.32936	11.21580	0.1673800	0.17418190	3.1754165	20	3 20.5	18.3
140927	2001	VM ₇₄	15.3	X	193.67379	179.24078	233.31215	8.73293	0.1211201	0.18801335	3.0177060	20	5 23.4	20.0
140928	2001	VG ₇₅	18.2	X	246.33208	257.30540	245.47485	20.66302	0.2971133	0.52660952	1.5187172	20	—	—
140929	2001	VY ₇₇	15.1	X	156.69078	295.01039	43.92263	5.59223	0.0439425	0.17255963	3.1952873	20	1 17.9	19.8
140930	2001	VU ₇₉	15.3	X	128.26166	314.64072	130.32475	6.33049	0.1574677	0.18119239	3.0929277	20	5 4.1	20.2
140931	2001	VO ₈₁	15.5	X	173.82474	321.29727	104.55317	2.16067	0.2004508	0.18599796	3.0394658	20	5 21.7	20.5
140932	2001	VA ₈₂	16.6	X	142.97182	245.46788	71.30138	24.47152	0.0741156	0.37836926	1.8931811	20	—	—
140933	2001	VS ₈₂	15.0	X	224.81679	101.10014	208.24954	11.31883	0.0372886	0.17871422	3.1214998	20	2 20.9	19.8
140934	2001	VK ₈₄	15.8	X	119.81480	322.38167	159.69724	2.35925	0.2576605	0.18224993	3.0809960	20	6 16.7	20.9
140935	2001	VM ₈₄	14.7	X	21.47102	44.53620	255.70632	14.18141	0.1357009	0.20347493	2.8628293	20	9 11.4	18.5
140936	2001	VV ₈₄	15.2	X	109.34333	166.42757	292.24146	8.95243	0.0835148	0.18260975	3.0769474	20	4 15.2	19.8
140937	2001	VS ₈₆	14.5	X	275.52171	127.33529	286.97618	11.80809	0.1874147	0.20316059	2.8657815	20	8 13.1	18.4
140938	2001	VU ₈₈	14.9	X	157.28068	238.98733	170.27522	15.27081	0.2348578	0.18219879	3.0815725	20	4 22.6	20.3
140939	2001	VZ ₈₉	14.9	X	220.79495	43.56291	80.90272	16.98732	0.2110960	0.19991724	2.8966935	20	9 18.8	19.9
140940	2001	VR ₉₀	14.8	X	280.81759	259.70486	94.81336	14.98704	0.2299276	0.19548855	2.9402787	20	6 1.2	19.0
140941	2001	VU ₉₀	14.2	X	134.06927	345.31187	83.59831	17.99823	0.1360189	0.18119470	3.0929463	20	4 24.3	19.2
140942	2001	VS ₉₁	14.7	X	209.30463	200.14789	168.38615	11.58348	0.0536294	0.18396421	3.0618259	20	4 20.3	19.3
140943	2001	VJ ₉₃	14.5	X	75.17759	230.32831	216.75253	25.71739	0.1877947	0.17257796	3.1950610	20	3 2.5	19.1
140944	2001	VU ₉₃	15.2	X	134.06862	282.22423	165.78191	13.84062	0.2036380	0.18141071	3.0904906	20	5 17.7	20.4
140945	2001	VW ₉₃	14.6	X	124.15802	180.42394	199.47683	18.66728	0.1963306	0.17333205	3.1857875	20	2 10.8	19.9
140946	2001	VO ₉₄	15.3	X	259.20543	161.03656	202.40418	18.10978	0.2916239	0.19235397	2.9721355	20	5 12.2	20.2
140947	2001	VM ₉₅	14.7	X	46.39713	33.63240	92.49708	16.81771	0.0757231	0.17594169	3.1542071	20	3 9.5	19.1
140948	2001	VC ₉₈	14.7	X	227.97078	267.76013	136.15564	14.55922	0.2797744	0.18996809	2.9969692	20	6 6.4	20.1
140949	2001	VK ₉₈	14.7	X	178.93905	279.38508	154.71895	14.38722	0.2899805	0.18446371	3.0562961	20	6 6.5	20.5
140950	2001	VP ₉₉												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
140961	2001	VZ ₁₀₆	14.9	X	87.48075	301.10435	252.49466	9.59344	0.0534091	0.19181240	2.9777274	20	7 16.9	19.2
140962	2001	VB ₁₀₇	15.0	X	70.98088	76.08957	36.52963	11.02607	0.0263246	0.17768831	3.1335032	20	3 17.1	19.4
140963	2001	VX ₁₀₇	16.1	X	56.21983	144.68966	265.21193	4.41736	0.0404325	0.21989463	2.7184810	20	—	—
140964	2001	VM ₁₀₈	15.2	X	193.53697	20.44627	312.24201	3.39820	0.0877686	0.17689741	3.1428362	20	2 17.8	20.1
140965	2001	VF ₁₁₁	15.5	X	149.74626	192.33660	256.48980	7.96601	0.1091102	0.18457776	3.0550370	20	5 23.8	20.2
140966	2001	VV ₁₁₂	14.9	X	94.69399	31.41344	35.83264	5.55070	0.1703840	0.17388845	3.1789880	20	3 9.5	19.4
140967	2001	VL ₁₁₃	14.8	X	234.05802	117.11410	256.88939	9.15831	0.1304156	0.18828541	3.0147984	20	5 14.5	19.4
140968	2001	VE ₁₁₆	15.0	X	151.87696	345.16103	40.37002	1.55146	0.1957086	0.17777667	3.1324648	20	3 17.5	20.1
140969	2001	VE ₁₁₈	14.8	X	162.52432	6.07870	70.00864	10.74679	0.0726031	0.18318830	3.0704655	20	5 20.7	19.5
140970	2001	VL ₁₁₈	14.6	X	75.65373	14.75670	60.32904	6.94719	0.1101409	0.17030570	3.2234177	20	2 16.3	19.0
140971	2001	VY ₁₁₈	15.1	X	150.90900	342.83827	22.94761	3.50009	0.1119011	0.17503351	3.1651083	20	2 17.8	20.0
140972	2001	VF ₁₂₀	14.8	X	161.48798	12.60278	49.87659	10.40952	0.0790167	0.18284834	3.0742702	20	5 2.9	19.3
140973	2001	VN ₁₂₀	15.0	X	217.93551	247.15088	71.40858	15.32226	0.1746400	0.22805904	2.6532073	20	2 25.9	19.5
140974	2001	VE ₁₂₀	15.1	X	207.97692	358.31716	76.97584	11.49495	0.0964382	0.18753426	3.0228433	20	7 6.4	19.8
140975	2001	VM ₁₂₁	15.7	X	191.90297	260.66513	193.97776	8.87289	0.2267922	0.19065217	2.9897960	20	7 8.0	21.0
140976	2001	VS ₁₂₁	14.7	X	110.08498	359.05760	92.43267	12.71215	0.1310819	0.17998174	3.1068271	20	4 23.5	19.5
140977	2001	VF ₁₂₂	14.4	X	153.58264	203.25476	188.46817	27.46813	0.1390418	0.17888784	3.1194797	20	3 21.3	19.5
140978	2001	VP ₁₂₂	15.2	X	258.45420	170.89416	173.06790	7.63280	0.1958357	0.19154709	2.9804763	20	4 28.3	19.8
140979	2001	VQ ₁₂₅	15.4	X	222.26025	61.13314	236.51974	12.89243	0.1876556	0.17881975	3.1202716	20	1 28.8	20.9
140980	Blanton		15.2	X	333.30709	180.07540	114.70859	14.26388	0.3036655	0.19698585	2.9253603	20	5 28.3	18.1
140981	2001	WS ₂	15.8	X	132.47033	30.64240	227.94271	6.51402	0.2249308	0.21507433	2.7589489	20	12 6.3	20.7
140982	2001	WJ ₆	15.8	X	191.04255	342.22143	96.14514	2.08292	0.0552707	0.19128645	2.9831831	20	6 23.6	20.1
140983	2001	WO ₈	15.5	X	35.34099	292.47935	75.86239	10.10230	0.1750317	0.21243804	2.7817271	20	—	—
140984	2001	WN ₁₁	15.3	X	101.81329	291.87168	191.93012	4.35582	0.1092457	0.18265509	3.0764382	20	5 16.3	19.7
140985	2001	WZ ₁₁	15.4	X	10.91729	319.10062	180.01313	4.14287	0.1211112	0.17062721	3.2193672	20	1 25.5	19.3
140986	2001	WS ₁₂	15.6	X	93.58440	265.17902	127.39260	6.41122	0.1705820	0.22334245	2.6904310	20	1 15.4	18.8
140987	2001	WS ₁₃	14.9	X	58.71473	274.01030	202.63288	9.20100	0.0615374	0.17321167	3.1872634	20	3 3.6	19.2
140988	2001	WU ₁₆	14.1	X	310.36306	177.53158	31.65510	16.09400	0.1797867	0.17693188	3.1424278	20	1 19.6	18.8
140989	2001	WW ₁₇	15.6	X	230.11702	54.33488	337.25532	2.29795	0.1133684	0.19204880	2.9752833	20	6 3.2	20.1
140990	2001	WP ₁₉	15.7	X	22.19378	98.66585	223.87598	5.09846	0.1836128	0.20674786	2.8325356	20	10 27.9	19.2
140991	2001	WG ₂₀	16.2	X	335.75465	338.28285	16.10318	2.04905	0.0800016	0.20278490	2.8693199	20	9 14.2	19.7
140992	2001	WU ₂₆	16.3	X	208.75008	287.32642	130.51456	2.15345	0.0345899	0.19052860	2.9910885	20	6 19.4	20.7
140993	2001	WE ₂₇	14.4	X	78.08440	4.99948	83.02673	10.21885	0.0745766	0.17481829	3.1677055	20	3 2.7	18.9
140994	2001	WR ₂₇	14.6	X	35.09893	294.82926	188.47976	5.85274	0.1313391	0.17190574	3.2033849	20	2 13.2	18.4
140995	2001	WS ₂₇	15.5	X	260.56430	229.75212	132.26748	2.90698	0.1092933	0.19098771	2.9862932	20	6 1.6	19.7
140996	2001	WE ₂₈	15.8	X	75.36766	290.92431	93.61109	9.02064	0.1424458	0.21993195	2.7181735	20	—	—
140997	2001	WR ₂₈	14.4	X	72.69488	70.31572	74.83604	17.01646	0.1473932	0.17968536	3.1102425	20	5 14.9	18.6
140998	2001	WE ₂₉	14.7	X	130.13186	289.60992	108.07909	7.35519	0.1388615	0.17581731	3.1556946	20	3 9.4	19.6
140999	2001	WK ₂₉	14.3	X	85.31783	27.14718	91.62868	12.24214	0.1898499	0.17720146	3.1392400	20	5 5.2	18.9
141000	2001	WO ₂₉	14.7	X	126.35201	182.01853	186.26398	6.17063	0.1805509	0.17230970	3.1983763	20	1 31.8	19.7
141001	2001	WX ₃₀	15.5	X	79.12034	286.87084	104.09274	5.93686	0.0725776	0.22137160	2.7063759	20	—	—
141002	2001	WY ₃₀	14.5	X	147.43674	278.06171	104.61447	6.59550	0.1343423	0.17792092	3.1307715	20	3 7.9	19.4
141003	2001	WL ₃₁	15.8	X	291.07306	281.69526	92.91974	2.15667	0.1120153	0.19728360	2.9224161	20	7 28.9	19.6
141004	2001	WR ₃₁	15.1	X	114.20900	219.67983	222.97604	8.40898	0.0778349	0.17979877	3.1089345	20	4 3.0	19.6
141005	2001	WP ₃₂	15.4	X	309.78519	205.36922	130.46425	3.08797	0.1215240	0.19517106	2.9434665	20	7 2.9	18.9
141006	2001	WS ₃₂	15.5	X	124.43530	317.06762	136.80815	3.67471	0.0780869	0.23600882	2.5932869	20	4 29.9	19.2
141007	2001	WD ₃₃	15.9	X	229.82639	286.48810	102.40763	2.98630	0.1063154	0.18997102	2.9969384	20	5 31.9	20.3
141008	2001	WA ₃₄	16.3	X	51.28153	35.67132	118.52644	3.99955	0.1586918	0.23195910	2.6233834	20	4 22.0	19.1
141009	2001	WQ ₃₄	15.0	X	266.94114	263.68980	93.02659	9.93360	0.1067394	0.19089818	2.9872267	20	6 3.4	19.2
141010	2001	WT ₃₅	15.5	X	139.41246	240.88792	215.92548	6.84217	0.1554571	0.18340999	3.0679909	20	5 27.3	20.4
141011	2001	WN ₃₈	15.1	X	126.60950	240.76117	174.81593	4.36410	0.1657469	0.17684699	3.1434334	20	3 27.2	19.9
141012	2001	WD ₄₂	16.0	X	79.80572	133.75658	117.90855	3.07177	0.0284627	0.20154941	2.8810339	20	9 21.4	19.9
141013	2001	WO ₄₃	14.9	X	292.41088	347.52372	217.02155	14.88743	0.0419908	0.17193244	3.2030535	20	1 6.0	19.7
141014	2001	WJ ₄₄	16.1	X	71.58341	232.00337	67.68517	3.42940	0.0183549	0.20722094	2.8282228	20	11 9.6	19.9
141015	2001	WT ₄₄	15.5	X	164.17716	245.09792	217.86011	7.99270	0.0632805	0.18877664	3.0095660	20	6 23.9	20.1
141016	2001	WS ₄₅	15.6	X	96.65610	97.32869	53.96431	1.83222	0.1020968	0.18607404	3.0386372	20	6 12.2	19.8
141017	2001	WY ₄₅	15.7	X	254.73554	149.80505	237.36334	3.20599	0.0851397	0.19306127	2.9648720	20	6 29.6	20.0
141018	2001	WC ₄₇	18.9	X	332.49756	101.37871	91.62364	2.86913	0.2411662	0.59575325	1.3988091	20	—	—
141019	2001	WX ₄₇	14.9	X	64.12453	266.89401	82.65871	13.36921	0.3237548	0.21693446	2.7431550	20	—	—
141020	2001	WY ₅₀	15.9	X	145.94480	166.32510	77.27364	4.09069	0.1032444	0.20962291	2.8065765	20	11 29.2	20.1
141021	2001	WQ ₅₁	15.5	X	261.39694	31.31976	21.28479	1.95690	0.0633841	0.19913443	2.9042800	20	8 15.2	19.5
141022	2001	WS ₅₁	15.7	X	174.66158	37.66492	304.99727	0.40906	0.2108471	0.18003442	3.1062210	20	2 15.8	20.9
141023	2001	WV ₅₁	15.9	X	326.11938	37.71978	334.27349	1.17456	0.0819141	0.20371969	2.8605358	20	9 22.0	19.3
141024	2001	WA ₅₂	14.9	X	200.20603	256.98660	31.40964	5.02381	0.0419303	0.17264366	3.1942505	20	1 5.3	19.6
141025	2001	WR ₅₂	14.7	X	4.23561	136.27459	40.46708	17.43898	0.1565661	0.17705600	3.1409591	20	3 10.7	18.6
141026	2001	WH ₅₅	15.9	X	112.13868	68.32142	232.25627	4.54631	0.0894526	0.21476004	2.7616400	20	—	—
141027	2001	WR ₅₅	15.5	X	348.07942	219.81711	45.85445	2.68731	0.0534541	0.19010665	2.9955128	20	6 3.3	19.3
141028	2001	WG ₅₈	15.9	X	118.65747	23.76449	244.09183	3.96132	0.0237556	0.21006091	2.8026738	20	11 27.6	19.6
141029	2001	WD ₅₉	16.2	X	331.75915	97.02628	258.53583	1.15302	0.0729579	0.20110480	2.8852786	20	9 8.2	19.6
141030	2001	WN ₅₉	14.9	X	152.571									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
141041	2001	WW ₇₅	15.9 ^m	X	130.36987	315.80989	167.07726	2.28001	0.0227102	0.18846505	3.0128824	20	6 7.3	20.2
141042	2001	WS ₇₆	15.1	X	9.60365	146.40678	62.92137	7.87734	0.0661839	0.18310657	3.0713792	20	4 24.3	19.0
141043	2001	WT ₇₉	15.3	X	54.43752	66.77460	67.51243	5.43752	0.1147545	0.17640982	3.1486245	20	3 30.6	19.4
141044	2001	WL ₈₀	15.9	X	209.41220	233.02955	107.87719	2.74837	0.1024653	0.18060817	3.0996390	20	3 15.1	20.7
141045	2001	WE ₈₃	16.0	X	220.13113	288.83961	148.87317	0.94091	0.0447520	0.19394347	2.9558742	20	7 28.0	20.3
141046	2001	WR ₈₉	15.1	X	96.38848	237.91573	229.16901	9.15995	0.1952081	0.17745178	3.1362871	20	4 29.4	19.7
141047	2001	WY ₉₀	15.8	X	98.55226	56.22674	287.31611	7.86844	0.2576463	0.22005160	2.7171880	20	—	—
141048	2001	WR ₉₁	14.8	X	84.05827	59.30484	15.66075	5.60154	0.1696400	0.17265420	3.1941204	20	3 5.0	19.1
141049	2001	WM ₉₇	15.2	X	184.34791	228.51550	133.49247	8.08685	0.1602310	0.18238616	3.0794616	20	3 17.7	20.3
141050	2001	WN ₉₉	15.1	X	104.68461	296.16338	176.13832	15.22651	0.1112772	0.18112533	3.0937360	20	5 7.7	19.8
141051	2001	WW ₁₀₁	15.3	X	165.06796	153.93482	171.61722	0.60414	0.1354814	0.17277227	3.1926650	20	1 16.6	20.3
141052	2001	XR ₁	17.4	X	8.22226	304.16230	291.52034	17.66067	0.5501401	0.70901331	1.2455652	20	10 12.3	19.2
141053	2001	XT ₁	18.7	X	313.51224	31.32635	316.25337	2.73144	0.5795162	0.52157416	1.5284762	20	4 24.7	19.5
141054	2001	XW ₂	16.2	X	251.84162	93.19926	30.13794	21.52809	0.0845802	0.35884405	1.9612467	20	12 2.5	18.3
141055	2001	XT ₃	16.2	X	188.01272	224.98354	279.90479	17.77102	0.0670259	0.35659360	1.9694896	20	9 23.3	19.1
141056	2001	XV ₄	17.2	X	110.54437	300.54032	259.18453	28.86281	0.4443095	0.40248206	1.8167912	20	9 22.3	21.4
141057	2001	XS ₅	14.9	X	144.46787	261.14666	148.97227	14.79491	0.1518568	0.17965222	3.1106250	20	4 9.2	20.0
141058	2001	XE ₆	15.1	X	56.87374	9.58081	107.17306	2.34453	0.1628364	0.17219588	3.1997856	20	3 17.0	19.0
141059	2001	XQ ₆	15.3	X	82.23832	260.58484	195.88244	14.44231	0.1383018	0.17492766	3.1663850	20	3 21.3	19.7
141060	2001	XB ₇	15.4	X	224.46121	275.78087	246.79081	6.36250	0.1422740	0.20699961	2.8302385	20	11 6.6	19.7
141061	2001	XN ₉	15.0	X	111.70363	75.89324	5.73016	4.67187	0.1630966	0.17695246	3.1421843	20	4 10.7	19.8
141062	2001	XS ₁₀	16.0	X	138.21359	249.61903	210.87199	0.76971	0.1109690	0.18552265	3.0446550	20	5 26.9	20.6
141063	2001	XZ ₁₁	14.7	X	170.37436	151.14486	328.14959	8.75690	0.2059508	0.18880985	3.0092132	20	7 23.5	19.8
141064	2001	XD ₁₂	15.9	X	270.61744	211.20812	265.33065	18.90172	0.0965298	0.36615290	1.9350598	20	—	—
141065	2001	XS ₁₂	15.3	X	303.57650	44.72588	288.43700	9.48662	0.070932	0.19281995	2.9673452	20	6 23.4	19.1
141066	2001	XF ₁₃	14.8	X	46.37573	97.42223	44.13734	14.36078	0.1245200	0.17237881	3.1975214	20	4 1.3	18.9
141067	2001	XV ₁₃	14.9	X	58.79319	184.60011	56.32910	9.62348	0.0382618	0.19177043	2.9781617	20	8 14.2	19.1
141068	2001	XR ₁₄	14.3	X	82.55080	41.05726	64.22906	22.84283	0.1122562	0.17473112	3.1687590	20	4 11.4	19.1
141069	2001	XX ₁₄	14.9	X	48.78143	118.74658	62.86451	11.96853	0.1161634	0.17959126	3.1113288	20	5 20.3	18.9
141070	2001	XN ₁₅	14.4	X	108.98751	36.56097	40.06611	5.23719	0.2010568	0.17560425	3.1582466	20	4 8.2	19.2
141071	2001	XM ₁₇	14.9	X	232.07370	5.69117	49.42966	9.69154	0.0613746	0.18973027	2.9994731	20	7 12.5	19.3
141072	2001	XF ₁₉	14.7	X	191.75827	13.66007	53.54312	10.25663	0.0894787	0.18503448	3.0500078	20	6 8.2	19.5
141073	2001	XW ₂₁	15.7	X	13.20058	117.40812	326.28214	6.73454	0.1985897	0.21423499	2.7661503	20	—	—
141074	2001	XA ₂₂	14.4	X	187.09398	339.56900	66.17004	11.72204	0.2016620	0.18225942	3.0808891	20	5 9.8	19.7
141075	2001	XT ₂₂	14.8	X	164.13662	4.23276	55.02169	10.73235	0.0865569	0.18099739	3.0951937	20	5 2.8	19.4
141076	2001	XE ₂₅	15.3	X	312.47519	341.78402	79.67700	9.92717	0.3054104	0.20342067	2.8633383	20	10 23.8	17.6
141077	2001	XB ₂₇	14.9	X	129.16040	66.72650	50.17164	7.30891	0.2077985	0.17843591	3.1244747	20	6 13.9	20.0
141078	2001	XQ ₃₀	18.9	X	52.89211	270.55050	234.80078	11.47156	0.4503234	0.38751104	1.8632880	20	6 2.6	19.6
141079	2001	XS ₃₀	17.7	X	130.86431	0.87878	251.45683	28.53819	0.8282197	0.78435266	1.1644704	20	12 24.9	18.7
141080	2001	XV ₃₃	15.2	X	201.97329	134.92147	248.28072	8.16597	0.0910623	0.18286206	3.0741164	20	4 24.8	20.0
141081	2001	XF ₃₄	15.1	X	209.90159	77.14624	354.98412	9.82104	0.0781516	0.19083135	2.9879242	20	7 7.5	19.7
141082	2001	XT ₃₄	15.0	X	151.73029	142.26705	329.16245	8.79784	0.0844836	0.18656356	3.0333196	20	6 22.6	19.7
141083	2001	XE ₃₅	15.1	X	175.73227	94.57495	304.71245	8.33759	0.0971753	0.18145432	3.0899955	20	4 15.4	20.0
141084	2001	XJ ₃₅	14.8	X	123.25553	111.39811	330.82485	8.99375	0.1108786	0.18056963	3.1000800	20	4 14.3	19.5
141085	2001	XQ ₃₅	14.8	X	238.13710	324.06695	12.57735	10.62118	0.1353840	0.18500519	3.0503296	20	4 3.4	19.4
141086	2001	XQ ₃₆	15.0	X	253.42967	358.44717	28.81233	10.78016	0.1062671	0.19162916	2.9796253	20	6 25.3	19.5
141087	2001	XK ₃₇	15.3	X	169.28806	137.43775	325.66226	8.51277	0.1056240	0.18880113	3.0093058	20	7 1.7	20.0
141088	2001	XR ₃₉	14.4	X	161.08080	305.39420	62.91047	23.05245	0.1360773	0.17490474	3.1666616	20	3 14.8	19.9
141089	2001	XA ₄₀	15.0	X	176.00986	8.99913	44.45696	13.63654	0.2663711	0.18343017	3.0677658	20	5 8.6	20.5
141090	2001	XJ ₄₂	14.3	X	97.48305	83.54519	58.11032	16.48191	0.2326353	0.17813291	3.1282871	20	6 15.8	19.2
141091	2001	XZ ₄₂	14.6	X	146.70938	101.35491	297.72077	24.43310	0.2653117	0.17694499	3.1422727	20	3 18.5	20.5
141092	2001	XJ ₄₃	15.1	X	176.97912	115.99328	337.96950	9.11632	0.1155653	0.18726481	3.0257422	20	6 27.9	20.0
141093	2001	XS ₄₄	14.7	X	201.59300	345.89201	50.25954	11.57982	0.0649390	0.18123815	3.0924520	20	5 12.7	19.2
141094	2001	XL ₄₅	15.2	X	113.25872	76.34407	355.11324	8.46499	0.0887199	0.17414375	3.1758802	20	3 22.2	19.6
141095	2001	XW ₄₆	14.4	X	70.43881	72.56427	65.45643	15.26884	0.1776406	0.17333532	3.1857474	20	5 7.0	18.7
141096	2001	XB ₄₈	16.4	X	121.42571	220.43140	325.18048	12.32120	0.1051985	0.34903327	1.9978283	20	9 5.8	19.0
141097	2001	XN ₅₀	14.5	X	203.98755	253.81355	72.06141	17.34284	0.0969509	0.17704019	3.1411461	20	2 28.2	19.7
141098	2001	XO ₅₂	14.8	X	197.70692	318.96976	76.42548	11.37896	0.0768921	0.18476904	3.0529281	20	5 9.8	19.5
141099	2001	XJ ₅₃	15.3	X	226.08590	177.51865	209.18422	1.80221	0.0952497	0.18747532	3.0234769	20	5 25.9	19.8
141100	2001	XV ₅₃	15.1	X	170.59978	250.82959	147.27469	2.58497	0.1990160	0.18176722	3.0864483	20	4 16.8	20.3
141101	2001	XY ₅₃	15.0	X	102.37728	205.28086	216.68452	3.40833	0.1534565	0.17378814	3.1802112	20	3 6.2	19.6
141102	2001	XE ₅₄	15.4	X	283.85673	204.47395	188.21371	1.60222	0.0937702	0.19648856	2.9302940	20	8 13.4	19.2
141103	2001	XM ₅₆	15.6	X	227.49822	209.82634	220.06043	3.24613	0.1544686	0.19196608	2.9758279	20	7 14.5	20.2
141104	2001	XB ₅₇	15.2	X	234.79605	98.40869	261.62198	0.24517	0.1745736	0.18628793	3.0363109	20	4 25.2	20.0
141105	2001	XK ₅₇	14.6	X	164.18419	323.37174	86.87653	13.44253	0.1406092	0.18124574	3.0923657	20	4 28.2	19.7
141106	2001	XP ₅₇	14.2	X	114.43156	331.35392	85.26310	18.83589	0.1516934	0.17471320	3.1689757	20	3 24.2	19.3
141107	2001	XF ₅₈	14.9	X	130.23179	8.93822	81.18682	11.83269	0.1000054	0.18027118	3.1035007	20	5 7.8	19.6
141108	2001	XG ₅₈	15.2	X	175.68028	324.38544	60.08318	1.75681	0.1835543	0.18203856	3.1038751	20	4 4.4	20.3
141109	2001	XZ ₅₉	14.9	X	56.66944	326.73715	134.08877	1.54169	0.2388971	0.16949623	3.2336725	20	3 6.7	18.6
141110	2001	XY ₆₂	15.											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141121 2001 <i>XB</i> ₈₂	16.0	X	249.72363	263.69451	129.24334	3.47181	0.1344980	0.19189550	2.9768676	20	6 24.7	20.4
141122 2001 <i>XC</i> ₈₂	14.7	X	10.38965	103.54195	91.07302	11.54906	0.0538527	0.17859205	3.1229232	20	4 10.8	19.0
141123 2001 <i>XM</i> ₈₂	16.2	X	64.94316	288.37863	155.09816	2.95871	0.0520874	0.22420801	2.6835023	20	1 23.9	19.5
141124 2001 <i>XU</i> ₈₂	16.3	X	142.82129	188.29320	191.14245	6.21656	0.1981454	0.28131891	2.3067654	20	2 20.6	19.8
141125 2001 <i>XJ</i> ₈₃	14.8	X	210.89561	94.19131	242.77294	14.51473	0.2512009	0.18130555	3.0916856	20	2 29.8	20.6
141126 2001 <i>XT</i> ₈₃	15.1	X	95.64732	287.26183	163.00704	5.31679	0.1396119	0.17520818	3.1630044	20	4 2.1	19.5
141127 2001 <i>XC</i> ₈₅	14.7	X	41.23228	356.27816	117.23284	8.00085	0.1721187	0.16789291	3.2542268	20	2 18.1	18.5
141128 2001 <i>XR</i> ₈₈	15.3	X	107.95477	197.13605	227.84003	4.07448	0.1577008	0.17315844	3.1879165	20	3 16.4	20.0
141129 2001 <i>XA</i> ₉₀	15.2	X	107.34154	93.53639	57.69731	18.38697	0.1142828	0.18677185	3.0310639	20	6 24.9	19.9
141130 2001 <i>XE</i> ₉₀	15.1	X	113.98031	290.18584	241.41282	10.21592	0.0256109	0.19245815	2.9710629	20	7 17.6	19.5
141131 2001 <i>XG</i> ₉₀	16.5	X	290.14056	190.67510	59.64241	7.76465	0.0643169	0.28427452	2.2907486	20	2 15.6	19.4
141132 2001 <i>XL</i> ₉₁	14.8	X	96.28753	341.44642	57.74946	12.00708	0.0882664	0.17143780	3.2092114	20	1 27.3	19.4
141133 2001 <i>XM</i> ₉₁	15.1	X	11.53980	1.30043	247.67440	9.61358	0.0525797	0.18941133	3.0028392	20	6 16.0	19.0
141134 2001 <i>XC</i> ₉₁	14.8	X	79.81777	89.56249	46.64332	2.00585	0.1230567	0.18050751	3.1007912	20	5 5.9	19.0
141135 2001 <i>XD</i> ₉₂	14.8	X	274.64259	196.77036	62.67282	17.22027	0.0301976	0.17619019	3.1512406	20	3 2.9	19.6
141136 2001 <i>XX</i> ₉₂	15.3	X	209.58674	90.16959	252.56670	9.96301	0.1106306	0.18070553	3.0985256	20	3 11.2	20.4
141137 2001 <i>XV</i> ₉₃	15.2	X	139.26250	48.45098	42.20987	10.06052	0.0688469	0.18411947	3.0601044	20	5 11.4	19.6
141138 2001 <i>XC</i> ₉₄	14.9	X	100.67121	184.55655	260.48870	13.55726	0.2265345	0.17651522	3.1473710	20	4 6.5	19.8
141139 2001 <i>XQ</i> ₉₅	14.8	X	126.65949	17.30169	63.58306	2.28435	0.1678921	0.17944477	3.1130219	20	4 26.6	19.6
141140 2001 <i>XZ</i> ₉₅	15.6	X	132.57561	103.26612	53.39064	1.84192	0.2646084	0.18680668	3.0306873	20	8 8.5	20.9
141141 2001 <i>XH</i> ₉₆	14.8	X	203.04701	295.83928	73.54495	11.58605	0.1087025	0.18199659	3.0838546	20	4 15.3	19.7
141142 2001 <i>XF</i> ₉₇	14.7	X	95.99638	136.58854	266.72843	21.00694	0.0507982	0.22279242	2.6948573	20	1 9.2	18.4
141143 2001 <i>XL</i> ₉₈	15.0	X	238.08664	132.65162	264.39695	9.04939	0.1129529	0.19012638	2.9953056	20	6 21.8	19.3
141144 2001 <i>XU</i> ₉₉	14.7	X	155.52663	334.75405	93.57664	6.64317	0.1517781	0.17981719	3.1087222	20	5 8.9	19.8
141145 2001 <i>XQ</i> ₁₀₄	15.9	X	248.65014	250.31964	62.32502	1.96206	0.1839947	0.18432396	3.0578407	20	3 13.1	20.7
141146 2001 <i>XU</i> ₁₀₅	14.3	X	141.38072	124.51266	250.59236	14.51758	0.0845979	0.17681501	3.1438125	20	2 8.9	19.3
141147 2001 <i>XT</i> ₁₀₆	15.1	X	146.06505	50.16625	277.90436	10.36045	0.1820700	0.22311372	2.6922695	20	—	—
141148 2001 <i>XV</i> ₁₀₆	15.7	X	154.30068	194.29576	237.64453	3.38307	0.0999626	0.18341342	3.0679526	20	5 7.3	20.4
141149 2001 <i>XB</i> ₁₀₇	14.9	X	115.24525	49.59864	320.86353	4.84860	0.1660865	0.17133548	3.2104890	20	1 23.4	19.5
141150 2001 <i>XK</i> ₁₀₉	15.1	X	105.71937	163.20976	296.47016	8.98230	0.0650318	0.17897429	3.1184751	20	4 9.4	19.8
141151 2001 <i>XG</i> ₁₁₀	15.0	X	166.83894	349.99151	89.28182	9.60905	0.0301343	0.18690975	3.0295730	20	5 28.5	19.4
141152 2001 <i>XX</i> ₁₁₁	14.7	X	111.99267	226.85424	237.77240	15.11929	0.0815106	0.18045679	3.1013722	20	4 28.6	19.3
141153 2001 <i>XL</i> ₁₁₂	15.8	X	156.73443	304.57210	130.01447	3.29539	0.2027265	0.18294088	3.0732334	20	5 18.7	21.0
141154 2001 <i>XZ</i> ₁₁₃	14.5	X	209.23902	278.82575	66.76205	17.22905	0.2463723	0.18116552	3.0932785	20	3 24.8	20.2
141155 2001 <i>XN</i> ₁₁₄	15.1	X	193.98013	349.90708	37.63036	4.68024	0.2934605	0.18368628	3.0649136	20	4 21.5	20.5
141156 2001 <i>XN</i> ₁₁₆	15.7	X	91.90278	98.14789	347.70590	4.09691	0.1594965	0.17385064	3.1794489	20	3 24.2	20.1
141157 2001 <i>XR</i> ₁₂₀	15.5	X	273.86095	262.75430	111.33754	4.42401	0.1000633	0.19501721	2.9450144	20	7 5.2	19.5
141158 2001 <i>XZ</i> ₁₂₀	15.2	X	96.92537	50.68801	94.60666	2.80797	0.1027401	0.18527187	3.0474018	20	6 5.2	19.5
141159 2001 <i>XF</i> ₁₂₂	15.8	X	267.77437	133.69392	219.96286	3.41117	0.1019518	0.19106232	2.9855156	20	5 31.5	19.9
141160 2001 <i>XS</i> ₁₂₄	15.3	X	269.24535	144.52614	177.83932	4.48563	0.0707133	0.18786507	3.0192937	20	4 28.6	19.6
141161 2001 <i>XE</i> ₁₂₅	15.5	X	35.66845	59.83250	102.66704	2.48931	0.0982268	0.17838817	3.1253022	20	4 4.1	19.3
141162 2001 <i>XL</i> ₁₂₇	15.2	X	0.59182	82.97420	93.57785	2.90678	0.1170364	0.17393404	3.1784325	20	2 26.9	19.1
141163 2001 <i>XY</i> ₁₂₇	15.4	X	280.97804	196.32357	121.29626	3.01507	0.2544839	0.19003111	2.9963065	20	4 11.9	19.8
141164 2001 <i>XH</i> ₁₃₆	16.0	X	244.62332	321.65232	73.24676	1.67784	0.1604654	0.19138014	2.9822094	20	6 18.4	20.6
141165 2001 <i>XT</i> ₁₃₉	14.9	X	123.88982	277.88519	99.95598	1.92379	0.0855509	0.17066061	3.2189472	20	1 31.5	19.6
141166 2001 <i>XL</i> ₁₄₂	15.7	X	149.72893	344.33530	132.37432	2.66174	0.0584142	0.18723629	3.0260495	20	6 25.2	20.1
141167 2001 <i>XT</i> ₁₄₅	15.0	X	14.73695	69.92857	84.24827	6.20562	0.1059512	0.17108189	3.2136607	20	2 23.3	19.0
141168 2001 <i>XV</i> ₁₄₅	15.8	X	236.13336	329.02167	259.18494	3.88781	0.0984189	0.21598120	2.7512206	20	—	—
141169 2001 <i>XQ</i> ₁₄₆	15.1	X	138.32736	124.80104	249.83068	3.68953	0.2010348	0.17392833	3.1785021	20	2 20.8	20.3
141170 2001 <i>XX</i> ₁₄₇	15.0	X	325.98351	43.64861	239.44854	7.75468	0.0745408	0.18560751	3.0437269	20	5 23.3	18.8
141171 2001 <i>XT</i> ₁₄₈	15.6	X	139.22994	302.63300	125.47576	3.79219	0.0814388	0.17890523	3.1192776	20	4 17.3	20.3
141172 2001 <i>XL</i> ₁₅₀	15.6	X	9.22061	191.25232	86.64031	3.24754	0.0504587	0.19025802	2.9939237	20	7 21.9	19.4
141173 2001 <i>XQ</i> ₁₅₁	15.9	X	64.21380	195.42441	233.95801	1.35040	0.0710771	0.22119006	2.7078565	20	1 7.3	19.2
141174 2001 <i>XS</i> ₁₅₁	15.4	X	239.08685	303.77361	93.97384	2.99854	0.1026469	0.18941892	3.0027590	20	6 22.5	19.7
141175 2001 <i>XT</i> ₁₅₁	15.6	X	173.14576	144.51836	259.09471	3.80582	0.1592807	0.18140451	3.0905610	20	4 22.4	20.6
141176 2001 <i>XV</i> ₁₅₁	15.4	X	304.24639	359.76601	85.13954	7.39386	0.0635716	0.20553350	2.8436816	20	11 26.2	19.1
141177 2001 <i>XD</i> ₁₅₂	14.9	X	140.11265	84.52646	82.79670	3.07944	0.2117149	0.18986815	2.9980207	20	8 25.8	20.0
141178 2001 <i>XH</i> ₁₅₃	14.7	X	105.31296	77.44551	96.97698	12.49906	0.0603525	0.18748799	3.0233407	20	7 17.5	19.1
141179 2001 <i>XR</i> ₁₅₉	14.9	X	179.98975	313.28192	94.12318	10.35649	0.0723700	0.18099363	3.0952366	20	5 6.8	19.7
141180 2001 <i>XF</i> ₁₆₀	14.4	X	36.53473	273.79954	267.30782	14.54317	0.1734879	0.17506598	3.1647170	20	5 3.7	18.3
141181 2001 <i>XT</i> ₁₆₈	14.9	X	108.59723	262.98109	186.64924	0.47191	0.1597198	0.17622420	3.1508352	20	4 17.5	19.6
141182 2001 <i>XC</i> ₁₆₉	14.7	X	12.55851	69.79165	100.35758	6.83545	0.1107950	0.17164749	3.2065972	20	3 11.6	18.7
141183 2001 <i>XP</i> ₁₇₁	15.8	X	22.56263	260.39979	115.51486	2.65003	0.0576000	0.20718834	2.8285194	20	12 18.1	19.4
141184 2001 <i>XA</i> ₁₇₃	14.9	X	40.86267	257.96983	254.11635	4.10576	0.0812951	0.17299505	3.1899234	20	3 25.3	19.0
141185 2001 <i>XB</i> ₁₇₃	15.7	X	305.34338	250.34709	242.12430	3.10128	0.1449234	0.20979657	2.8050275	20	—	—
141186 2001 <i>XD</i> ₁₇₅	15.5	X	84.06788	50.10005	113.17177	2.49923	0.1629868	0.17910988	3.1169011	20	6 20.7	19.8
141187 2001 <i>XE</i> ₁₇₅	14.7	X	341.07696	145.65875	106.86367	7.71114	0.0539915	0.17967050	3.1104140	20	5 9.8	18.9
141188 2001 <i>XH</i> ₁₇₆	15.2	X	169.43613	146.08145	275.51384	5.72368	0.2305070	0.18179348	3.0861511	20	5 12.2	20.5
141189 2001 <i>XV</i> ₁₇₉	15.1	X	90.97043	5.32110	110.13827	10.40489	0.0406595	0.17523973	3.1626248	20	4 17.4	19.7
141190 2001 <i>XV</i> ₁₈₁	15.5	X	327.54794	6.02454	115.33516	6.16751	0.1185544	0.21112306	2.7932658	20	—	—
141191 2001 <i>XA</i> ₁₈₂	15.1	X	121.04955	336.99710	133.73534	6.98455	0.1					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141201 2001 <i>XD</i> ₂₀₆	14.6	X	116.80472	281.97629	96.39770	16.00459	0.1361116	0.17108210	3.2136580	20	1 31.8	19.4
141202 2001 <i>XV</i> ₂₀₇	15.1	X	172.76216	213.62453	234.80201	11.01679	0.1147528	0.18621369	3.0371178	20	6 15.7	19.9
141203 2001 <i>XB</i> ₂₀₈	15.1	X	187.86580	194.78374	227.11208	10.49375	0.0996447	0.18553791	3.0444881	20	5 29.6	19.9
141204 2001 <i>XJ</i> ₂₀₈	15.8	X	54.67982	291.42861	119.86957	6.28399	0.0578448	0.21775158	2.7362882	20	—	—
141205 2001 <i>XP</i> ₂₀₉	15.0	X	258.83656	227.21572	121.53426	10.12789	0.0978942	0.18635425	3.0355905	20	5 17.9	19.5
141206 2001 <i>XX</i> ₂₀₉	14.9	X	108.26020	316.11981	117.66316	9.82507	0.0850080	0.17482654	3.1676059	20	3 23.5	19.6
141207 2001 <i>XF</i> ₂₁₀	14.5	X	22.78865	109.16469	96.07466	29.69015	0.3348638	0.22915591	2.6447341	20	6 9.1	16.6
141208 2001 <i>XG</i> ₂₁₂	14.9	X	208.07619	305.80498	97.64062	17.24047	0.1281560	0.18646118	3.0344299	20	5 29.1	19.9
141209 2001 <i>XO</i> ₂₁₂	14.8	X	179.87246	172.94131	238.33899	8.12495	0.1414444	0.18244862	3.0787587	20	5 8.1	19.8
141210 2001 <i>XS</i> ₂₁₂	13.9	X	6.33808	91.43211	83.74936	26.39698	0.2044607	0.17253533	3.1955873	20	3 16.4	18.0
141211 2001 <i>XJ</i> ₂₁₈	15.2	X	193.10371	41.63613	294.65695	3.13645	0.2178706	0.18125595	3.0922496	20	2 21.7	20.4
141212 2001 <i>XK</i> ₂₁₈	15.6	X	275.29353	321.74786	32.18280	2.14675	0.0681534	0.19242857	2.9713673	20	6 15.2	19.7
141213 2001 <i>XY</i> ₂₁₈	15.3	X	128.00884	63.12807	36.29444	3.37680	0.0658196	0.18410788	3.0602328	20	5 9.7	19.8
141214 2001 <i>XC</i> ₂₁₉	15.7	X	63.01566	234.00061	47.25968	2.70881	0.0358548	0.20284033	2.8687972	20	10 8.6	19.5
141215 2001 <i>XO</i> ₂₁₉	14.7	X	207.63487	248.94773	38.74506	10.17918	0.1558169	0.17294257	3.1905688	20	1 12.6	20.0
141216 2001 <i>XC</i> ₂₂₀	15.3	X	273.00842	266.50928	48.21541	10.42832	0.0921860	0.18609195	3.0384423	20	4 21.4	19.5
141217 2001 <i>XN</i> ₂₂₀	15.1	X	275.15124	35.99893	285.42466	5.08973	0.2428616	0.19026899	2.9938087	20	4 7.9	19.8
141218 2001 <i>XV</i> ₂₂₀	14.8	X	71.58576	230.44918	255.82709	12.25609	0.0903824	0.17817746	3.1277657	20	4 2.7	19.2
141219 2001 <i>XC</i> ₂₂₁	15.8	X	297.37912	308.79290	238.17504	3.67531	0.0289008	0.22347294	2.6893836	20	—	—
141220 2001 <i>XW</i> ₂₂₁	15.5	X	118.39914	96.76275	272.85300	5.01684	0.0269566	0.22332764	2.6905500	20	—	—
141221 2001 <i>XX</i> ₂₂₃	15.1	X	41.77912	107.28901	63.29425	14.96288	0.0827227	0.17990723	3.1076849	20	4 25.6	19.2
141222 2001 <i>XM</i> ₂₂₅	15.8	X	235.72576	58.86287	40.38584	1.57393	0.0952523	0.19863830	2.9091139	20	9 7.6	20.1
141223 2001 <i>XZ</i> ₂₂₅	15.5	X	210.32186	41.43982	15.02506	0.91486	0.0087183	0.18884655	3.0088233	20	6 21.5	19.6
141224 2001 <i>XK</i> ₂₂₆	15.5	X	337.42044	288.25172	22.33457	2.82325	0.1180703	0.19390541	2.9562610	20	7 16.1	18.9
141225 2001 <i>XH</i> ₂₂₇	14.9	X	185.04212	260.59950	49.05037	5.19455	0.1044707	0.17089314	3.2160266	20	1 16.6	19.9
141226 2001 <i>XJ</i> ₂₃₀	15.5	X	81.87963	77.39728	67.13694	0.45309	0.1093918	0.18060825	3.0996381	20	5 17.2	19.8
141227 2001 <i>XD</i> ₂₃₂	15.7	X	349.14397	319.49682	46.78199	2.71557	0.0793251	0.20285249	2.8686825	20	10 21.2	19.1
141228 2001 <i>XA</i> ₂₃₃	15.8	X	114.00369	192.30788	288.69240	4.12127	0.1180670	0.18182216	3.0858265	20	5 26.5	20.4
141229 2001 <i>XE</i> ₂₃₄	15.4	X	76.12331	51.48140	40.64856	5.22141	0.1501002	0.17284118	3.1918164	20	3 13.4	19.6
141230 2001 <i>XS</i> ₂₃₄	15.3	X	240.95622	102.71628	272.94843	8.18371	0.0799607	0.18765100	3.0215895	20	5 29.7	19.8
141231 2001 <i>XF</i> ₂₃₅	14.7	X	226.89785	256.85489	72.95353	13.54675	0.0690289	0.17887914	3.1195809	20	3 27.5	19.6
141232 2001 <i>XY</i> ₂₃₆	16.3	X	15.19877	84.99164	333.59586	1.26940	0.0979781	0.21313866	2.7756278	20	—	—
141233 2001 <i>XC</i> ₂₃₇	15.0	X	139.95966	68.79845	65.91084	9.30531	0.0266374	0.18808464	3.0169434	20	7 4.9	19.3
141234 2001 <i>XC</i> ₂₄₅	14.7	X	245.92744	254.83166	101.19786	12.39487	0.1469574	0.19004201	2.9961920	20	5 8.2	19.5
141235 2001 <i>XG</i> ₂₄₆	14.7	X	104.61776	217.22993	188.11087	10.92567	0.1399377	0.17309891	3.1886474	20	2 15.1	19.4
141236 2001 <i>XA</i> ₂₄₈	15.3	X	42.52227	42.35964	117.33670	2.34082	0.0924287	0.17403833	3.1771626	20	4 10.6	19.4
141237 2001 <i>XE</i> ₂₅₁	15.5	X	256.87469	250.29757	125.99345	2.77135	0.2003582	0.19071464	2.9891430	20	6 3.8	20.0
141238 2001 <i>XG</i> ₂₅₁	15.0	X	94.59394	11.47007	94.05705	6.56523	0.1430105	0.17602101	3.1532594	20	4 21.8	19.5
141239 2001 <i>XQ</i> ₂₅₁	15.1	X	216.05535	239.07050	131.11449	4.14742	0.2029676	0.18353718	3.0665733	20	4 21.2	20.2
141240 2001 <i>XQ</i> ₂₅₂	15.5	X	114.79731	276.73194	165.10210	1.11516	0.1735131	0.17566361	3.1575350	20	4 16.5	20.3
141241 2001 <i>XK</i> ₂₅₆	15.0	X	77.90429	284.67947	166.78614	9.67600	0.0778668	0.17452860	3.1712098	20	3 2.0	19.1
141242 2001 <i>XV</i> ₂₅₇	14.7	X	152.22625	194.49224	286.71617	12.26297	0.1082633	0.19152171	2.9807397	20	7 6.3	19.3
141243 2001 <i>XA</i> ₂₅₈	14.1	X	51.47369	134.21134	34.24303	22.87866	0.2422343	0.17936591	3.1139343	20	5 19.6	18.1
141244 2001 <i>XM</i> ₂₅₉	14.6	X	70.53233	257.98208	214.99077	13.10954	0.1945222	0.17544942	3.1601044	20	4 2.9	18.7
141245 2001 <i>XX</i> ₂₅₉	15.2	X	179.49184	336.98293	77.64963	17.82527	0.0724109	0.18613426	3.0379819	20	5 15.4	19.9
141246 2001 <i>XK</i> ₂₆₃	15.2	X	108.64615	161.74569	285.00077	8.00037	0.0460729	0.17883519	3.1200919	20	3 25.7	19.8
141247 2001 <i>XU</i> ₂₆₃	15.4	X	205.70065	256.53590	119.76374	12.81030	0.2341417	0.18756178	3.0225477	20	4 22.9	20.8
141248 2001 <i>XE</i> ₂₆₆	14.9	X	106.58207	134.52850	289.12627	10.56864	0.0427759	0.17414191	3.1759027	20	2 24.1	19.5
141249 2001 <i>YP</i> ₅	14.9	X	105.92804	274.26909	185.12074	11.85672	0.1215239	0.17849868	3.1240121	20	4 23.3	19.4
141250 2001 <i>YP</i> ₆	15.3	X	81.03687	298.31489	165.21275	9.99287	0.1272160	0.17531190	3.1617568	20	3 29.9	19.6
141251 2001 <i>YR</i> ₈	14.0	X	35.59416	252.96765	273.35546	14.86127	0.1170380	0.17472651	3.1688148	20	4 2.0	18.2
141252 2001 <i>YU</i> ₈	14.5	X	158.83856	263.91050	80.57169	19.81695	0.1546021	0.16989777	3.2285754	20	2 7.0	19.9
141253 2001 <i>YD</i> ₉	15.1	X	185.68157	316.06533	86.49286	11.85159	0.1684026	0.18278159	3.0750186	20	5 6.9	20.3
141254 2001 <i>YD</i> ₁₀	15.8	X	204.92617	331.85399	66.10411	3.31784	0.0998118	0.18246926	3.0785604	20	5 17.4	20.6
141255 2001 <i>YD</i> ₁₂	15.6	X	93.45301	73.96793	150.55885	2.60583	0.0294456	0.19734823	2.9217781	20	9 2.1	19.6
141256 2001 <i>YO</i> ₁₄	15.1	X	356.70171	194.05288	84.09804	9.84190	0.0584017	0.18996362	2.9970162	20	7 3.3	18.9
141257 2001 <i>YK</i> ₂₀	15.7	X	29.66687	288.02579	26.69805	2.17613	0.0644101	0.20371526	2.8605772	20	10 11.3	19.3
141258 2001 <i>YL</i> ₂₀	15.0	X	202.95913	349.13065	8.24976	2.00064	0.0732120	0.18219181	3.0816513	20	3 27.6	19.7
141259 2001 <i>YV</i> ₂₀	14.8	X	127.87685	304.29725	36.72031	5.37489	0.0865101	0.16849086	3.2465229	20	—	—
141260 2001 <i>YL</i> ₂₁	15.0	X	129.13274	43.73859	42.18072	12.70782	0.1475621	0.18013757	3.1050352	20	5 2.8	19.7
141261 2001 <i>YN</i> ₂₁	15.1	X	103.65148	13.29221	45.13248	9.83151	0.0908215	0.17485629	3.1672465	20	3 1.0	19.7
141262 2001 <i>YT</i> ₂₅	15.5	X	235.73522	286.24318	64.80889	9.20530	0.1300501	0.18539918	3.0460066	20	4 21.7	20.2
141263 2001 <i>YW</i> ₂₅	15.1	X	233.26361	79.07873	255.52147	9.63943	0.0694584	0.18152701	3.0891705	20	3 28.4	19.9
141264 2001 <i>YJ</i> ₂₇	15.6	X	110.70489	105.33037	270.71718	4.81027	0.0358377	0.22169378	2.7037532	20	—	—
141265 2001 <i>YE</i> ₂₈	14.7	X	358.90080	106.51376	94.00731	18.58690	0.0935330	0.17714876	3.1398626	20	4 5.0	19.1
141266 2001 <i>YZ</i> ₃₁	15.2	X	269.83313	274.80833	69.68708	11.22225	0.1288896	0.18889953	3.0082607	20	5 19.1	19.6
141267 2001 <i>YB</i> ₃₂	15.1	X	47.88279	77.26467	51.36694	5.91175	0.1406980	0.17300951	3.1897457	20	3 16.9	19.0
141268 2001 <i>YG</i> ₃₂	14.8	X	162.31182	123.36784	279.63812	9.57008	0.0864278	0.18012555	3.1051733	20	4 5.2	19.7
141269 2001 <i>YK</i> ₃₂	15.4	X	282.83028	220.54927	59.41257	10.82823	0.0706775	0.17945851	3.1128630	20	3 28.1	19.9
141270 2001 <i>YA</i> ₃₈	15.3	X	229.66494	119.36387	273.82346	9.31389	0.1033670	0.18827724	3.0148856	20	6 5.9	19.9
141271 2001 <i>YA</i> ₃₉	16.4	X	3.98284	35.56150	67.54627	3.76490	0.1272534					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141281 2001 YD ₅₆	15.4	X	263.51607	359.89568	345.66356	3.52381	0.1430367	0.18757266	3.0224307	20	5 9.0	19.9
141282 2001 YU ₅₈	15.1	X	274.27016	9.36387	276.52839	9.51362	0.0924545	0.17866972	3.1220180	20	3 11.9	19.9
141283 2001 YV ₅₈	15.5	X	277.76696	264.49030	68.46356	9.74806	0.1488265	0.18781920	3.0197852	20	5 11.7	19.7
141284 2001 YX ₅₉	15.3	X	210.37294	83.69355	290.10252	9.63418	0.0715938	0.18139093	3.0907153	20	4 20.4	20.2
141285 2001 YC ₆₅	15.6	X	120.84951	61.50590	64.19940	2.14890	0.1266366	0.18108003	3.0942519	20	6 10.2	20.1
141286 2001 YF ₆₇	14.9	X	101.62755	39.39312	54.74559	5.40663	0.1386524	0.17485008	3.1673216	20	4 14.1	19.4
141287 2001 YL ₆₉	14.8	X	182.53826	325.78639	83.48601	2.49808	0.1588533	0.18170807	3.0871181	20	5 9.1	19.9
141288 2001 YK ₇₁	14.9	X	291.25467	252.41593	94.71202	12.51799	0.0470484	0.18680809	3.0306719	20	6 30.8	18.8
141289 2001 YX ₇₂	15.5	X	185.19392	278.11858	93.16299	13.38764	0.2109508	0.23139418	2.6276514	20	3 31.9	20.2
141290 2001 YT ₇₄	15.2	X	193.05620	313.31781	67.34067	7.14324	0.1858050	0.18137957	3.0908444	20	4 16.0	20.4
141291 2001 YO ₈₁	15.2	X	149.24080	216.43417	303.90697	0.70783	0.1951163	0.18837882	3.0138016	20	8 22.9	20.2
141292 2001 YR ₈₁	15.1	X	211.39718	80.58002	321.75109	2.94325	0.2752813	0.18593987	3.0400988	20	5 20.1	20.6
141293 2001 YD ₈₆	15.4	X	73.16211	75.23916	86.09101	6.27057	0.1059101	0.17713251	3.1400546	20	5 27.4	19.7
141294 2001 YK ₉₀	14.7	X	146.69230	294.70646	96.47926	16.58961	0.1960311	0.17392711	3.1785170	20	3 27.5	20.2
141295 2001 YD ₉₁	15.2	X	112.08371	4.12669	83.22912	2.69316	0.0900083	0.17423725	3.1747440	20	4 11.2	19.7
141296 2001 YV ₉₁	14.8	X	145.08074	343.52794	111.89211	6.37091	0.1153645	0.17921075	3.1157314	20	5 29.1	19.7
141297 2001 YL ₉₃	16.8	X	89.81630	219.09886	122.35482	24.61115	0.1033796	0.37429738	1.9068866	20	—	—
141298 2001 YH ₉₉	15.9	X	350.34579	16.05060	109.84464	6.74703	0.0597897	0.21789983	2.7350470	20	—	—
141299 2001 YO ₉₉	15.1	X	157.15619	91.62194	259.65278	2.21460	0.0821737	0.17096573	3.2151162	20	2 3.4	19.9
141300 2001 YK ₁₀₄	15.3	X	137.97673	239.93065	252.39808	3.06991	0.0670082	0.18415431	3.0597184	20	7 1.9	19.7
141301 2001 YL ₁₀₄	14.9	X	189.19069	281.33166	111.17485	10.19651	0.1332169	0.18010841	3.1053702	20	4 28.9	20.0
141302 2001 YU ₁₀₆	14.9	X	7.26130	264.18245	269.70457	3.60898	0.0777231	0.16909290	3.2388125	20	3 3.8	19.0
141303 2001 YD ₁₀₈	15.1	X	184.78370	312.39908	124.30365	6.83845	0.2244787	0.18331203	3.0690837	20	6 12.3	20.4
141304 2001 YS ₁₀₈	14.8	X	159.06941	125.69661	275.04334	8.21125	0.0987100	0.17872965	3.1213202	20	3 31.5	19.8
141305 2001 YB ₁₁₁	15.4	X	15.82106	13.13094	48.57418	8.86317	0.2154137	0.21193899	2.7860921	20	—	—
141306 2001 YJ ₁₁₁	15.1	X	107.97341	41.31339	48.02394	8.55988	0.0787314	0.17358025	3.1827499	20	4 8.7	19.7
141307 2001 YK ₁₁₂	14.5	X	340.37969	64.62577	353.87683	9.34317	0.0745878	0.15229079	3.4728574	20	11 28.0	19.2
141308 2001 YT ₁₁₉	15.0	X	101.48897	330.62542	128.23302	6.35576	0.1084395	0.17664238	3.1458604	20	4 16.9	19.5
141309 2001 YP ₁₂₀	15.2	X	254.89381	44.56259	79.04817	4.63671	0.2601061	0.19954158	2.9003280	20	10 9.9	19.3
141310 2001 YK ₁₂₁	15.4	X	2.60178	136.22055	290.32575	8.60166	0.1207862	0.21264181	2.7799498	20	—	—
141311 2001 YD ₁₂₁	14.3	X	91.98742	73.97230	55.34221	12.92977	0.2201669	0.17824807	3.1269396	20	5 24.9	18.9
141312 2001 YU ₁₂₁	14.7	X	166.01167	87.82422	47.78878	12.92542	0.0687796	0.19253108	2.9703126	20	8 12.7	19.4
141313 2001 YK ₁₂₂	14.1	X	24.80431	242.76193	273.90677	17.01467	0.1096440	0.17399706	3.1776650	20	2 29.7	18.5
141314 2001 YR ₁₂₂	15.4	X	206.90094	330.58532	292.05334	9.78101	0.0836084	0.21867034	2.7286183	20	—	—
141315 2001 YZ ₁₂₄	15.4	X	218.56768	9.15744	349.79942	4.23505	0.1815254	0.23672923	2.5880230	20	4 5.8	19.6
141316 2001 YX ₁₂₅	14.6	X	165.51153	333.97198	70.46887	18.01449	0.1341966	0.17972411	3.1097955	20	4 23.9	19.8
141317 2001 YB ₁₂₇	14.8	X	77.55038	63.62633	27.13950	5.08411	0.1393446	0.17150771	3.2083392	20	3 11.7	19.1
141318 2001 YU ₁₂₇	14.5	X	158.73554	349.40703	88.45570	29.08218	0.1155282	0.18127556	3.0920265	20	5 26.8	19.6
141319 2001 YC ₁₂₈	14.6	X	74.00878	109.44727	50.16117	10.34301	0.0894773	0.18094828	3.0957537	20	5 22.4	18.7
141320 2001 YA ₁₂₉	15.1	X	195.53264	335.42413	75.60594	12.47492	0.1426877	0.18406174	3.0607442	20	5 23.7	20.0
141321 2001 YL ₁₃₀	15.6	X	75.55060	109.90759	358.81283	5.03699	0.1413992	0.17209909	3.2009852	20	3 29.2	19.9
141322 2001 YN ₁₃₀	15.1	X	120.57939	45.22995	74.99464	10.43495	0.0475031	0.18025913	3.1036390	20	5 26.1	19.5
141323 2001 YZ ₁₃₁	14.8	X	187.87471	53.27955	303.73537	8.33557	0.0738828	0.17844747	3.1246097	20	3 8.4	19.7
141324 2001 YV ₁₃₃	15.0	X	61.56886	356.19832	50.28342	4.37634	0.0460428	0.16013144	3.3585487	20	—	—
141325 2001 YK ₁₃₄	14.6	X	302.23992	336.78435	271.05248	11.70670	0.0457728	0.17404266	3.1771099	20	3 5.2	19.3
141326 2001 YM ₁₃₆	14.6	X	81.19131	67.45881	47.89893	16.14770	0.0650603	0.17803979	3.1293778	20	4 8.9	19.0
141327 2001 YB ₁₃₇	14.8	X	148.77597	46.31352	304.04148	14.43419	0.1900162	0.22566967	2.6719024	20	1 28.0	19.0
141328 2001 YR ₁₃₈	15.2	X	128.25673	120.11961	358.80085	13.39226	0.0824113	0.18282256	3.0745592	20	6 2.9	20.0
141329 2001 YR ₁₄₄	15.2	X	65.24521	93.61151	41.72358	5.76235	0.1164529	0.17313317	3.1882267	20	4 15.3	19.3
141330 2001 YX ₁₄₅	15.3	X	290.73826	224.41231	289.72622	12.21260	0.1091912	0.21508168	2.7588861	20	—	—
141331 2001 YF ₁₄₆	15.4	X	210.17459	339.81882	60.96471	2.60698	0.0919985	0.18610799	3.0382677	20	5 26.5	20.0
141332 2001 YB ₁₅₃	15.0	X	120.88837	41.89365	37.80457	16.53500	0.0939587	0.17493913	3.1662467	20	4 13.2	19.6
141333 2001 YD ₁₅₃	14.8	X	74.55122	95.29614	44.05385	17.33323	0.0999924	0.17556072	3.1587687	20	4 30.5	19.2
141334 2001 YP ₁₅₄	15.4	X	25.86835	114.54616	101.47358	3.31721	0.1004963	0.17900832	3.1180799	20	5 28.5	19.3
141335 2001 YP ₁₅₆	14.7	X	205.43326	348.85987	57.02334	15.80969	0.0996859	0.18389743	3.0625670	20	5 26.5	19.4
141336 2002 AH ₂	14.1	X	122.40487	71.23813	32.70095	25.68047	0.2521414	0.17818054	3.1277296	20	5 20.7	19.5
141337 2002 AO ₂	17.0	X	269.80253	250.84129	212.50484	20.58285	0.0947110	0.36172208	1.9508297	20	12 10.1	18.8
141338 2002 AD ₄	16.5	X	78.18560	291.60378	352.20551	18.48477	0.0929973	0.35840539	1.9628466	20	12 3.3	19.4
141339 2002 AZ ₄	16.8	X	271.57648	14.62681	99.85924	23.47421	0.0684885	0.36573359	1.9365385	20	—	—
141340 2002 AE ₅	15.9	X	177.97601	143.39239	291.15805	0.67582	0.2416278	0.18278312	3.0750014	20	6 4.1	21.2
141341 2002 AZ ₆	14.9	X	141.52376	277.25190	147.46903	19.81861	0.1643096	0.17561071	3.1581691	20	4 26.7	20.3
141342 2002 AN ₉	15.3	X	143.27649	155.61866	304.50870	4.02683	0.1156667	0.17920668	3.1157786	20	5 31.4	20.1
141343 2002 AK ₁₃	14.7	X	116.48036	303.83815	144.02081	27.79928	0.2289465	0.17916494	3.1162624	20	5 9.1	20.2
141344 2002 AD ₁₅	14.6	X	63.22168	136.14880	48.72435	18.40876	0.1437282	0.17907057	3.1173572	20	6 16.1	19.0
141345 2002 AQ ₁₅	14.3	X	112.47805	159.73005	295.86519	25.99384	0.2854753	0.17710013	3.1404373	20	5 5.7	19.9
141346 2002 AF ₁₆	15.2	X	156.22450	285.91838	116.33443	12.82882	0.3950279	0.17813731	3.1282356	20	4 22.3	21.3
141347 2002 AR ₁₈	14.5	X	83.05685	29.97664	114.34433	28.47161	0.1234717	0.17808360	3.1288646	20	5 29.9	19.4
141348 2002 AJ ₁₉	15.4	X	358.08377	116.08503	285.27389	7.77346	0.1597625	0.20949659	2.8077046	20	12 30.1	18.5
141349 2002 AO ₂₂	15.1	X	179.36787	34.72363	126.94531	1.84571	0.2395609	0.18980598	2.9986754	20	9 17.8	20.4
141350 2002 AR ₂₂	15.5	X	133.08639	52.73799	45.07152	4.79639	0.0861056	0.17717961	3.1394981	20	5 15.6	20.2
141351 2002 AE ₂₅	15.0	X	76.90336	342.04691	155.27946	5.57046	0.0868480	0.17400302	3.1775924	20	4 30.3	19.4
141352 2002 AD ₂₇	14.6	X	145.80524	312.10017	121.89776	18.29692	0.2284561	0.17686048	3.1432736	20	5 15.8	20.2
141353 2002 AD ₂₈	15.0	X	80.95116	134.65433	347.41464	4.75255	0.1484972	0.1725				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141361 2002 AK ₃₇	15.1	X	165.80444	316.42050	116.56893	12.52839	0.2628337	0.18251903	3.0779669	20	5 27.5	20.7
141362 2002 AP ₃₇	15.0	X	286.41065	192.15849	103.50716	9.89934	0.0220919	0.18162350	3.0880763	20	4 27.0	19.4
141363 2002 AJ ₃₈	16.5	X	138.47654	344.69022	121.28977	2.29921	0.0308386	0.28973468	2.2618774	20	5 27.1	19.2
141364 2002 AM ₃₈	15.4	X	11.87214	290.49972	117.94906	4.95733	0.1001138	0.21004539	2.8028118	20	—	—
141365 2002 AE ₃₉	14.9	X	65.14693	246.37376	257.57393	3.81498	0.1142985	0.17318774	3.1875569	20	4 23.8	19.1
141366 2002 AJ ₄₄	16.2	X	297.25036	277.16861	151.34137	2.47820	0.0809653	0.19985833	2.8972627	20	10 23.2	19.8
141367 2002 AL ₄₄	17.4	X	200.52012	20.42752	113.68051	4.49644	0.0712515	0.30092086	2.2054702	20	9 29.4	20.1
141368 2002 AB ₄₅	14.6	X	229.14337	11.35016	284.87367	4.16091	0.0965052	0.16886222	3.2417615	20	2 10.3	19.7
141369 2002 AX ₄₅	15.6	X	30.10286	16.64390	153.71861	1.74240	0.1103260	0.17187845	3.2037241	20	4 6.3	19.5
141370 2002 AG ₄₈	15.2	X	126.09697	128.43264	267.96005	4.67553	0.0597618	0.16850311	3.2463657	20	2 19.5	20.0
141371 2002 AJ ₄₉	15.6	X	131.84832	202.15866	228.74525	1.07234	0.2186623	0.17576168	3.1563604	20	4 23.4	20.6
141372 2002 AA ₅₂	15.7	X	93.84251	291.44197	296.26341	10.24978	0.2535577	0.23956801	2.5675377	20	9 29.4	20.1
141373 2002 AS ₅₂	14.7	X	154.10653	276.30320	128.75536	8.69585	0.0482580	0.17262705	3.1944553	20	4 5.2	19.5
141374 2002 AU ₅₂	15.1	X	38.33891	31.80746	126.86640	5.77239	0.0810961	0.17051857	3.2207346	20	4 3.8	19.3
141375 2002 AL ₅₇	15.3	X	230.51122	237.80757	151.56317	3.88464	0.2638649	0.23892588	2.5721360	20	5 21.1	19.6
141376 2002 AZ ₆₀	16.8	X	354.11584	301.76184	133.35898	23.71738	0.1168933	0.36816813	1.9279921	20	—	—
141377 2002 AA ₆₄	14.2	X	281.50029	76.28306	154.19833	9.04237	0.0917851	0.16139343	3.3410180	20	1 20.8	19.2
141378 2002 AW ₆₅	15.2	X	167.27806	257.65802	124.02100	14.02406	0.1649690	0.17444077	3.1722742	20	3 29.5	20.6
141379 2002 AP ₆₆	14.9	X	116.63894	277.37519	155.44313	26.51370	0.1711594	0.17217393	3.2000576	20	4 12.1	20.1
141380 2002 AF ₆₈	14.6	X	73.56727	192.92973	295.93601	10.43146	0.0256290	0.17450535	3.1714915	20	3 30.2	19.3
141381 2002 AP ₆₉	14.8	X	118.19181	189.08200	273.39545	9.97942	0.0521508	0.18262303	3.0767982	20	4 27.7	19.4
141382 2002 AU ₇₁	15.1	X	119.31154	149.46005	305.78069	8.03451	0.0454613	0.17817530	3.1277910	20	4 18.5	19.8
141383 2002 AY ₇₁	15.5	X	309.79160	303.68664	62.47327	2.71581	0.1047799	0.19659219	2.9292642	20	8 17.4	19.1
141384 2002 AV ₇₄	15.9	X	110.18677	133.67230	350.51771	3.63513	0.0952543	0.17904427	3.1176624	20	5 23.1	20.4
141385 2002 AK ₇₅	15.8	X	217.67314	299.42954	82.92833	2.47864	0.1995545	0.18390268	3.0625088	20	5 6.0	20.9
141386 2002 AV ₇₉	15.7	X	29.86407	37.30426	307.32975	10.73346	0.2998143	0.25881639	2.4386054	20	—	—
141387 2002 AV ₈₀	15.0	X	247.08180	288.72603	109.27453	12.30203	0.1190661	0.19207419	2.9750210	20	6 30.2	19.2
141388 2002 AQ ₈₅	14.9	X	66.41211	331.62901	135.95017	14.32022	0.1124944	0.16975265	3.2304151	20	3 15.4	19.3
141389 2002 AU ₈₅	15.8	X	103.98809	182.72725	232.39030	5.18228	0.0411821	0.22172435	2.7035047	20	2 6.3	19.5
141390 2002 AH ₈₇	14.5	X	180.82555	264.29179	128.41523	27.23176	0.1833915	0.17829420	3.1264002	20	4 28.1	20.2
141391 2002 AA ₁₀₆	15.5	X	295.04876	315.10477	78.62488	2.71773	0.0320796	0.19272092	2.9683616	20	9 9.3	19.4
141392 2002 AO ₁₀₈	15.2	X	150.83197	74.90160	22.54720	1.77582	0.2170730	0.18053919	3.1004286	20	6 9.8	20.5
141393 2002 AU ₁₀₈	15.7	X	314.49719	320.17341	79.46034	2.99756	0.0899204	0.19706868	2.9245406	20	10 10.8	19.2
141394 2002 AS ₁₀₉	15.4	X	64.59499	131.42737	309.72953	1.99211	0.1281378	0.16523152	3.2890776	20	2 8.4	19.7
141395 2002 AX ₁₂₈	14.5	X	137.41468	123.92423	113.76486	10.99846	0.1914176	0.18905244	3.0066383	20	11 15.5	19.7
141396 2002 AC ₁₂₉	16.1	X	76.97070	122.27443	137.19424	25.97264	0.2360988	0.29513636	2.2341941	20	11 13.3	20.2
141397 2002 AS ₁₂₉	14.6	X	165.09905	2.98040	35.69731	23.96852	0.1703926	0.17809364	3.1287470	20	4 15.1	19.8
141398 2002 AV ₁₂₉	17.0	X	358.59592	72.12787	357.35925	20.61053	0.0920359	0.37006854	1.9213859	20	—	—
141399 2002 AN ₁₃₁	16.6	X	254.14828	102.51563	108.49068	23.68638	0.0636409	0.37160054	1.9161014	20	—	—
141400 2002 AD ₁₃₂	15.0	X	140.36099	27.00782	90.98011	5.38888	0.0282249	0.18563314	3.0434468	20	6 13.7	19.3
141401 2002 AD ₁₃₄	15.6	X	213.86686	331.96845	73.46070	0.53203	0.0542383	0.18384445	3.0631554	20	6 7.9	20.1
141402 2002 AE ₁₄₅	16.0	X	147.93618	321.80599	139.69639	1.57903	0.1388656	0.18055673	3.1002277	20	6 8.8	21.0
141403 2002 AH ₁₄₉	16.1	X	90.62363	128.13221	0.35373	0.64538	0.1342181	0.17574761	3.1565288	20	5 11.3	20.4
141404 2002 AV ₁₅₀	14.7	X	326.17911	107.54733	115.07802	6.73728	0.0620355	0.16812929	3.2511758	20	3 12.5	19.1
141405 2002 AP ₁₅₂	15.3	X	83.60971	111.44759	7.41371	0.67352	0.1565031	0.17119113	3.2122935	20	4 23.9	19.7
141406 2002 AR ₁₆₂	16.6	X	33.77643	333.92292	178.38969	3.03154	0.1010456	0.27589623	2.3368933	20	3 4.1	18.7
141407 2002 AC ₁₆₅	15.5	X	55.33512	338.90102	169.02079	5.33415	0.1079170	0.17090570	3.2158690	20	4 16.6	19.6
141408 2002 AH ₁₇₂	16.0	X	172.52882	310.56262	122.31741	5.80071	0.1260587	0.18058474	3.0999071	20	5 28.8	21.0
141409 2002 AV ₁₇₇	16.9	X	43.36695	84.33157	358.47241	1.13757	0.1559625	0.26946052	2.3739558	20	—	—
141410 2002 AZ ₁₇₉	14.5	X	83.65193	77.04997	74.41202	27.27240	0.0915841	0.17654864	3.1469738	20	5 27.9	18.9
141411 2002 AB ₁₈₂	15.1	X	78.41204	124.51695	55.66298	6.91435	0.0845251	0.18056006	3.1001896	20	6 23.8	19.4
141412 2002 AM ₁₈₄	14.9	X	85.25624	306.74927	127.08175	8.48598	0.0788913	0.17296334	3.1903133	20	2 20.9	19.3
141413 2002 AM ₁₉₉	16.0	X	186.46829	355.14637	48.22344	2.72538	0.0575960	0.17997550	3.1069899	20	5 5.4	20.6
141414 Bochanski	15.0	X	114.95893	227.35056	144.91230	11.69523	0.0937637	0.17276514	3.1927529	20	1 14.6	19.6
141415 2002 BR ₄	14.4	X	60.78715	87.27010	83.89821	25.00623	0.3093071	0.17336186	3.1854223	20	6 22.1	18.6
141416 2002 BR ₁₉	14.9	X	132.53872	63.13629	81.41555	4.98123	0.2538365	0.17969862	3.1100895	20	7 24.2	20.2
141417 2002 BM ₂₀	16.3	X	253.39215	335.90243	135.53679	24.31537	0.0826215	0.35910809	1.9602852	20	12 1.9	18.7
141418 2002 BD ₂₁	16.9	X	280.62267	96.36571	47.12180	21.65987	0.0762725	0.36493311	1.9393694	20	—	—
141419 2002 BM ₂₁	14.7	X	120.95209	33.24357	46.37143	27.52260	0.1733581	0.17209577	3.2010264	20	4 24.9	19.7
141420 2002 BG ₂₄	14.7	X	63.07759	5.56827	19.02661	10.50824	0.0872779	0.15780479	3.3914799	20	—	—
141421 2002 BB ₂₉	14.7	X	179.38300	294.89968	86.78729	17.95543	0.2313113	0.17657507	3.1466598	20	4 13.5	20.4
141422 2002 BU ₂₉	14.8	X	25.84018	116.72618	59.26538	11.90923	0.1254939	0.17174253	3.2054141	20	4 11.9	18.8
141423 2002 BZ ₂₉	14.8	X	175.11943	322.15133	81.54010	16.33336	0.1896817	0.17827763	3.1265939	20	5 1.8	20.2
141424 2002 CD	20.5	X	93.07949	331.77915	8.68020	6.87592	0.1767407	0.10160940	0.9798963	20	—	—
141425 2002 CV ₁	16.5	X	66.88033	71.20028	3.39713	5.84031	0.0502854	0.27175837	2.3605548	20	1 6.7	19.2
141426 2002 CX ₆	16.7	X	66.86666	304.06199	52.15169	22.94701	0.0401056	0.36780885	1.9292474	20	—	—
141427 2002 CB ₇	17.4	X	342.83689	87.10020	0.88637	20.25938	0.1398410	0.37034668	1.9204238	20	—	—
141428 2002 CR ₇	16.5	X	44.65115	197.08976	271.22344	1.49975	0.1616927	0.27138331	2.3627293	20	1 22.2	18.1
141429 2002 CL ₉	15.6	X	214.01877	129.81590	124.48000	4.59697	0.0444589	0.20954654	2.8072584	20	—	—
141430 2002 CO ₁₀	16.5	X	319.77561	9.26059	11.15882	19.18982	0.0787639	0.35276517	1.9837133	20	10 22.5	18.1
141431 2002 CS ₁₀	16.2	X	294.22927	24.32562	47.29019	22.34694	0.0994596	0.35532289	1.9741823	20	11 29.5	17.7
141432 2002 CQ ₁₁	20.0	X	47.60775	272.81318	81.35798	2.46413	0.4280712	0.101901358	0.9780238	20	—	—
141433 2002 CC ₁₂	15.8	X	202.00735	15.27624	102.14742	2.14145	0.2645215	0.18949626	3.0019420	20	8 12.4	20.9
141434 2002 CP ₁₄	15.4	X	139.95082	207.34								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141441 2002 CB ₃₃	16.1	X	200.03363	13.03247	39.82109	7.66422	0.1705548	0.28896529	2.2658906	20	5 26.7	19.6
141442 2002 CJ ₃₄	15.1	X	41.21507	204.60364	96.56433	12.02067	0.0558989	0.19335871	2.9618307	20	10 12.8	19.3
141443 2002 CX ₄₂	14.7	X	136.29709	58.75534	94.81694	11.66957	0.1599261	0.18219073	3.0816634	20	8 3.4	19.7
141444 2002 CU ₄₅	16.5	X	252.56559	27.82104	161.11794	22.34885	0.0368195	0.36849541	1.9268504	20	—	—
141445 2002 CA ₅₅	15.6	X	204.69620	209.93077	262.00167	2.23153	0.1876792	0.18821251	3.0155768	20	8 10.8	20.5
141446 2002 CC ₅₈	15.3	X	317.68490	22.99555	321.58529	2.35465	0.0719513	0.18611567	3.0381841	20	8 1.6	19.1
141447 2002 CW ₅₉	17.0	X	337.07468	7.22844	151.12943	32.08932	0.5055971	0.26802083	2.3824494	20	—	—
141448 2002 CF ₆₁	14.8	X	340.02758	136.06032	82.48513	11.72508	0.0176209	0.17042133	3.2219595	20	4 2.3	19.5
141449 2002 CZ ₆₄	15.2	X	220.44756	326.52727	86.17803	12.07240	0.0907073	0.18262173	3.0768129	20	6 21.5	19.7
141450 2002 CT ₆₆	15.7	X	44.70103	160.48317	25.00678	2.23356	0.1042948	0.17521590	3.1629115	20	5 17.0	19.7
141451 2002 CQ ₈₀	15.1	X	97.81516	80.34780	122.40377	3.86186	0.0903540	0.18366202	3.0651835	20	8 17.3	19.6
141452 2002 CR ₈₃	15.8	X	190.11994	76.89527	28.43738	1.31139	0.1506590	0.18405355	3.0608350	20	7 23.2	20.7
141453 2002 CE ₈₇	17.0	X	218.18075	266.29805	122.66455	1.63512	0.0738040	0.28641432	2.2793249	20	5 20.9	20.1
141454 2002 CW ₉₂	15.4	X	67.88742	142.40297	109.94519	4.88669	0.1270801	0.18664497	3.0324375	20	9 20.3	19.7
141455 2002 CE ₉₅	16.6	X	310.88447	170.78916	346.10924	1.82441	0.1137269	0.26246704	2.4159403	20	—	—
141456 2002 CP ₉₅	16.6	X	354.33217	106.28896	150.44734	6.07128	0.0929865	0.28237798	2.3009941	20	6 1.7	18.8
141457 2002 CG ₉₈	17.4	X	201.68182	250.14719	345.37747	0.68445	0.1239689	0.30962329	2.1639487	20	—	—
141458 2002 CB ₁₀₀	15.0	X	106.30279	68.51857	87.19004	2.01608	0.0791037	0.17702483	3.1413278	20	6 26.2	19.6
141459 2002 CQ ₁₀₀	15.1	X	166.56820	85.64497	143.24065	3.00692	0.0268324	0.19659870	2.9291995	20	12 3.3	19.3
141460 2002 CM ₁₁₁	15.1	X	173.32394	1.38916	142.09576	2.63631	0.1007023	0.18500644	3.0503159	20	8 24.1	19.8
141461 2002 CU ₁₁₉	15.3	X	74.45743	274.57252	216.32765	1.35843	0.0540035	0.17292206	3.1908210	20	4 12.4	19.5
141462 2002 CR ₁₂₁	15.8	X	145.02779	309.10392	291.28369	0.95423	0.0322595	0.19924503	2.9032051	20	11 22.3	20.0
141463 2002 CC ₁₂₇	14.9	X	116.91562	309.38582	139.70735	15.06186	0.2704011	0.17502266	3.1652392	20	5 11.5	20.3
141464 2002 CS ₁₄₀	15.3	X	233.60647	180.29230	270.79790	8.60866	0.0569939	0.19144220	2.9815649	20	8 24.9	19.7
141465 2002 CC ₁₄₁	15.3	X	80.45579	268.49509	219.97096	4.29629	0.1094967	0.17142089	3.2094224	20	4 25.1	19.7
141466 2002 CU ₁₄₅	16.8	X	264.09228	282.23287	158.65721	23.63004	0.0873583	0.35255956	1.9844845	20	10 28.1	19.1
141467 2002 CO ₁₅₂	14.6	X	54.54495	277.49428	279.47106	12.85310	0.1788214	0.17285697	3.1916220	20	6 27.3	18.7
141468 2002 CL ₁₆₁	16.8	X	133.23519	27.24163	58.43896	3.20451	0.1300857	0.28312353	2.2969528	20	5 2.5	19.8
141469 2002 CO ₁₆₃	17.2	X	304.11482	97.06700	65.46944	3.06495	0.1500532	0.26319797	2.4114654	20	—	—
141470 2002 CH ₁₈₃	15.6	X	69.13192	266.15913	330.79700	1.98151	0.0568749	0.18619022	3.0373731	20	8 20.7	19.6
141471 2002 CW ₂₀₅	17.0	X	107.99612	277.68074	135.85813	1.00875	0.1731472	0.27430048	2.3459478	20	2 24.5	19.7
141472 2002 CQ ₂₀₇	16.1	X	238.08640	1.58140	67.55185	1.94820	0.2244004	0.18766798	3.0214072	20	7 18.0	21.0
141473 2002 CE ₂₁₅	15.6	X	211.90637	311.40287	134.83000	2.87193	0.0742999	0.18367227	3.0650695	20	7 25.7	20.1
141474 2002 CM ₂₁₉	15.9	X	167.54105	56.66466	92.74610	2.39654	0.0912741	0.18527746	3.0473405	20	8 26.4	20.6
141475 2002 CM ₂₃₆	15.0	X	237.80545	293.57455	117.36808	10.96838	0.1189650	0.18316940	3.0706768	20	7 5.7	19.6
141476 2002 CD ₂₄₁	15.4	X	223.12128	16.10541	328.73876	5.62182	0.0413683	0.22172540	2.7034961	20	3 30.9	19.4
141477 2002 CP ₂₄₅	17.2	X	71.28326	334.22801	334.79104	0.28652	0.1706742	0.29970668	2.2114227	20	12 26.9	20.5
141478 2002 CN ₂₅₆	15.1	X	253.15046	341.97887	77.99900	7.82303	0.0421820	0.18690194	3.0296573	20	8 18.2	19.4
141479 2002 CA ₂₆₅	16.2	X	339.54069	179.51856	96.36852	6.51014	0.2239514	0.27388081	2.3483436	20	5 21.3	17.7
141480 2002 CD ₂₇₃	16.6	X	24.01753	117.06061	63.22638	6.15967	0.1685920	0.27616891	2.3353547	20	4 3.7	18.4
141481 2002 CM ₂₈₈	15.3	X	50.53787	43.89559	332.24542	1.24478	0.0485085	0.15250308	3.4696338	20	—	—
141482 2002 DV ₁	16.8	X	296.68313	41.97530	114.95897	23.94814	0.0644522	0.36936466	1.9238261	20	—	—
141483 2002 DP ₂	16.2	X	88.46816	290.22366	75.90242	23.32258	0.1207434	0.36949823	1.9233625	20	—	—
141484 2002 DB ₄	16.4	X	94.96277	94.13243	234.25627	16.60272	0.3695045	1.24024217	0.8579561	20	—	—
141485 2002 DG ₈	14.6	X	25.12366	110.94652	51.50657	15.26970	0.0844058	0.16831866	3.2487369	20	3 25.8	19.0
141486 2002 DZ ₁₀	14.0	X	248.82265	355.44167	2.22459	27.75488	0.1071459	0.17939596	3.1135866	20	4 30.3	19.2
141487 2002 DP ₁₆	17.3	X	195.34352	32.48777	237.86892	0.92307	0.1706373	0.31367306	2.1452829	20	—	—
141488 2002 DK ₁₈	16.3	X	201.89459	173.56444	12.14259	20.71328	0.0426437	0.35911576	1.9602573	20	—	—
141489 2002 DR ₁₈	18.1	X	233.68871	97.78903	134.69079	1.61148	0.1739180	0.31317166	2.1475721	20	—	—
141490 2002 EH	16.6	X	63.71109	23.00230	53.11829	22.91832	0.0774345	0.37891602	1.8913594	20	—	—
141491 2002 EL	15.8	X	98.22291	245.95751	87.31751	23.90162	0.0736334	0.36704827	1.9319116	20	—	—
141492 2002 EB ₇	17.5	X	143.09721	292.77892	356.26243	2.06689	0.1674970	0.30576353	2.1821215	20	—	—
141493 2002 ES ₇	16.8	X	114.33388	286.07828	332.07581	7.39292	0.1608244	0.29903018	2.2147568	20	12 1.4	20.3
141494 2002 EB ₉	16.5	X	265.20231	228.86783	196.70823	21.62754	0.0498689	0.34914908	1.9973865	20	10 1.7	18.2
141495 2002 EZ ₁₁	18.3	X	293.76627	317.73755	51.91604	2.35428	0.8020572	0.83813802	1.1141039	20	4 14.9	19.4
141496 Bartkeivicius	16.6	X	244.71188	157.52915	44.33049	2.17433	0.1237995	0.25541545	2.4602049	20	—	—
141497 2002 EW ₁₃	15.1	X	123.05559	7.08631	123.54219	2.42796	0.1279633	0.17509328	3.1643880	20	6 18.8	20.0
141498 2002 EZ ₁₆	18.4	X	347.18154	25.34652	262.90657	30.14164	0.5665780	1.11402786	0.9215920	20	1 6.3	19.0
141499 2002 ES ₂₀	16.7	X	126.89076	89.36370	162.52471	7.20034	0.2516538	0.29515551	2.2340975	20	12 6.4	20.7
141500 2002 EO ₃₇	17.2	X	191.36005	257.43796	44.96785	3.19852	0.0420865	0.31828742	2.1244983	20	—	—
141501 2002 ES ₄₂	16.8	X	237.34100	73.87021	179.09540	1.96869	0.1476437	0.26217446	2.4177374	20	—	—
141502 2002 ET ₄₆	16.9	X	302.67477	280.24552	247.51484	1.49639	0.1350545	0.26092014	2.4254797	20	—	—
141503 2002 EW ₅₈	13.4	X	355.94205	112.54121	183.59270	7.49169	0.2037393	0.12464010	3.9691500	20	7 21.1	17.9
141504 2002 ET ₆₆	14.9	X	145.99045	269.80545	178.77308	4.33802	0.1583820	0.17344577	3.1843948	20	5 24.0	20.0
141505 2002 ED ₇₃	17.1	X	140.24068	252.06907	350.74450	7.50895	0.1789988	0.29827023	2.185171	20	12 5.5	20.8
141506 2002 EO ₇₄	17.1	X	223.79707	277.41773	311.76991	0.89827	0.1822806	0.30857106	2.1688653	20	—	—
141507 2002 ER ₇₉	16.5	X	65.98699	289.58946	342.03281	7.33273	0.1710638	0.29049370	2.2579357	20	10 29.4	19.7
141508 2002 EY ₇₉	15.4	X	67.54543	46.48826	152.71619	2.41178	0.0360024	0.17576430	3.1563290	20	6 26.8	19.8
141509 2002 ET ₈₄	16.7	X	59.28066	237.52040	37.17471	3.73113	0.1599043	0.29199246	2.2502026	20	10 27.9	19.7
141510 2002 EU ₈₈	15.5	X	351.23339	135.03869	55.66741	4.82149	0.0928797	0.21538768	2.7562724	20	2 27.4	18.8
141511 2002 EK ₉₀	15.5	X	135.22989	59.64404	89.49595	3.15578	0.1083990	0.17968716	3.1102218	20	7 23.4	20.2
141512 2002 EO ₉₀	17.1	X	152.53610	257.29325	7.79348	5.58880	0.1632498	0.30433983	2.1889215	20	—	—
141513 2002 EZ ₉₃	14.6	X	16.60201	255.99267	163.44069	10.35564	0.0756710	0.15032307	3.5030981	20	—	—
141514 2002 EC ₉₄	15.0	X	243.52496	254.59866	134.37607	2.27101	0.2050377	0.18089986	3.0963062			

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141521 2002 ER ₁₄₄	16.5	X	215.62270	148.79003	138.48788	3.10382	0.2020376	0.26177040	2.4202247	20	1 6.6	20.5
141522 2002 EF ₁₄₇	14.9	X	359.70493	315.27581	298.86905	6.73129	0.0770223	0.17286024	3.1915817	20	6 4.9	19.0
141523 2002 EQ ₁₄₉	12.9	X	342.05202	306.84148	96.99419	2.71241	0.0264331	0.08477244	5.1321531	20	11 1.8	19.6
141524 2002 FE ₅	16.3	X	317.78683	47.25219	29.91895	20.96372	0.0872100	0.35757211	1.9658949	20	—	—
141525 2002 FV ₅	17.9	X	299.61434	308.08855	38.86070	34.03085	0.7245930	0.86972511	1.0869629	20	4 7.5	19.7
141526 2002 FA ₆	19.9	X	156.10257	173.37653	174.67613	30.09897	0.3224125	0.96543703	1.0138804	20	—	—
141527 2002 FG ₇	18.9	X	315.60153	247.68403	187.49831	9.20256	0.6267416	0.52927864	1.5136070	20	—	—
141528 2002 FN ₂₁	14.8	X	139.65827	41.81293	119.33591	11.23865	0.1359432	0.18209404	3.0827542	20	8 14.2	19.7
141529 2002 FG ₂₄	14.7	X	143.24489	39.63693	48.52735	17.83548	0.1988880	0.17751733	3.1355150	20	5 21.9	19.9
141530 2002 FE ₃₇	16.7	X	269.71425	95.04777	18.56458	24.35893	0.0152228	0.35784196	1.9649064	20	—	—
141531 2002 GB	19.0	X	205.99902	8.32239	40.82108	22.55143	0.5289366	0.99745001	0.9920692	20	5 9.4	19.3
141532 2002 GE ₃	16.5	X	112.96934	247.33036	23.60164	7.02962	0.1882831	0.29795612	2.2200760	20	12 17.2	20.1
141533 2002 GG ₃	16.3	X	212.17691	191.60151	102.72319	24.02764	0.0482980	0.37191285	1.9150286	20	—	—
141534 2002 GJ ₃	16.1	X	355.02327	357.95623	64.15799	22.93970	0.1044291	0.35896036	1.9608230	20	—	—
141535 2002 GG ₅	16.4	X	91.70802	98.04038	187.05316	2.33300	0.2790831	0.29414064	2.2392334	20	12 19.9	20.2
141536 2002 GM ₇	16.6	X	152.91787	114.49467	156.19445	6.95646	0.1199250	0.30352960	2.1928151	20	—	—
141537 2002 GY ₁₀	16.6	X	91.32375	250.02769	45.54465	6.44653	0.1918977	0.29690164	2.2532925	20	12 29.4	20.1
141538 2002 GA ₁₁	16.4	X	100.26572	272.00932	32.55739	7.10703	0.2007829	0.29879124	2.2159373	20	—	—
141539 2002 GA ₁₄	17.3	X	186.29219	68.04000	175.84488	1.33210	0.0979889	0.30582355	2.1818360	20	—	—
141540 2002 GC ₁₄	16.4	X	86.01477	44.94324	205.63355	6.42473	0.0809054	0.29020089	2.2594543	20	10 17.1	19.4
141541 2002 GL ₁₄	16.5	X	210.83054	240.23067	40.64955	5.02495	0.1272630	0.31139390	2.1557380	20	—	—
141542 2002 GO ₁₈	16.7	X	166.45747	266.75982	11.59933	7.05803	0.1783374	0.30516385	2.1849793	20	—	—
141543 2002 GX ₂₂	16.9	X	169.18900	304.56842	259.17006	4.60524	0.1008626	0.29670454	2.2263149	20	11 18.9	19.8
141544 2002 GY ₂₂	14.9	X	40.20977	348.76175	269.76703	4.22303	0.1009122	0.17831239	3.1261875	20	8 13.4	19.0
141545 2002 GH ₂₆	16.2	X	162.30944	28.70526	263.20294	6.27067	0.1603876	0.30554277	2.1831724	20	—	—
141546 2002 GD ₄₅	15.8	X	79.47390	77.71100	12.35334	5.38196	0.0582142	0.21380473	2.7698602	20	2 26.0	19.4
141547 2002 GS ₄₆	17.2	X	165.37304	216.50686	35.29830	2.74727	0.0625804	0.30404854	2.1903193	20	—	—
141548 2002 GW ₄₆	16.8	X	219.82519	11.83911	34.09717	2.76024	0.0425391	0.22814761	2.6525206	20	6 17.4	20.5
141549 2002 GT ₅₀	16.8	X	91.94746	69.10772	174.38481	6.54495	0.1282617	0.29118606	2.2543551	20	10 21.0	19.9
141550 2002 GW ₅₂	17.2	X	55.71738	119.44977	162.59898	3.08271	0.2291593	0.28783430	2.2718223	20	11 11.5	20.3
141551 2002 GO ₅₅	17.2	X	97.50991	287.91469	321.73018	2.88548	0.1491823	0.29231519	2.2485461	20	11 2.9	20.5
141552 2002 GC ₅₆	17.2	X	129.43505	83.14803	185.37969	6.33040	0.2142132	0.29719667	2.2238565	20	12 27.8	20.9
141553 2002 GL ₅₈	16.5	X	74.62697	286.59974	330.03292	10.55496	0.1450823	0.29063234	2.2572176	20	10 13.9	19.8
141554 2002 GV ₅₈	16.8	X	56.45234	87.37373	192.35679	5.22952	0.1335137	0.28957979	2.2626839	20	10 27.9	19.7
141555 2002 GW ₆₇	17.2	X	36.03036	214.92811	83.62223	1.89347	0.2501711	0.28690740	2.2767126	20	11 13.0	20.0
141556 2002 GT ₆₉	16.8	X	184.67941	130.08849	180.03523	5.07103	0.1145714	0.31327475	2.1471009	20	—	—
141557 2002 GY ₆₉	14.1	X	81.40986	146.14501	89.56858	4.08225	0.1167565	0.12449983	3.9721308	20	9 6.5	19.8
141558 2002 GZ ₇₃	16.8	X	272.56600	75.91074	114.55807	5.27465	0.0415004	0.31121543	2.1565621	20	—	—
141559 2002 GQ ₇₆	16.6	X	248.18491	259.58019	71.02974	6.88245	0.1735410	0.27220215	2.3579885	20	4 1.1	20.2
141560 2002 GE ₇₈	16.9	X	10.42664	317.16142	279.51213	1.68677	0.1801373	0.27749466	2.3279106	20	6 3.7	18.4
141561 2002 GL ₇₉	16.7	X	212.31169	295.83231	325.81546	3.28531	0.1186605	0.31200219	2.1529352	20	—	—
141562 2002 GY ₈₆	14.8	X	209.00519	324.53670	137.93222	17.51598	0.1008502	0.18152214	3.0892258	20	8 9.7	19.3
141563 2002 GQ ₉₄	16.3	X	250.33824	30.64152	233.85807	5.98997	0.0651645	0.26405438	2.4062484	20	1 14.6	19.6
141564 2002 GE ₁₀₁	16.6	X	68.58634	315.66673	351.37466	2.17791	0.1694276	0.29565473	2.2315819	20	12 20.8	19.8
141565 2002 GS ₁₀₃	16.9	X	108.63491	279.33535	12.25525	3.19958	0.1565783	0.29986409	2.2106487	20	—	—
141566 2002 GB ₁₀₇	16.8	X	77.80336	129.54063	106.38568	4.68097	0.1842192	0.28836703	2.2690234	20	10 1.9	20.0
141567 2002 GC ₁₀₈	16.6	X	49.23840	187.38756	125.01470	6.30684	0.1608929	0.29326196	2.2437040	20	12 6.7	19.7
141568 2002 GG ₁₁₁	16.8	X	142.70537	161.22736	160.05565	4.95930	0.1531579	0.30904964	2.1666257	20	—	—
141569 2002 GT ₁₁₁	17.0	X	42.67250	144.51129	154.63892	6.79482	0.1398564	0.28958399	2.2626620	20	11 8.5	19.8
141570 2002 GT ₁₂₅	17.5	X	6.37604	65.24991	195.74415	2.35236	0.2050496	0.27994872	2.3142862	20	7 9.3	19.0
141571 2002 GA ₁₂₇	16.0	X	54.34516	125.44202	193.59917	2.35408	0.2203332	0.23817004	2.5775749	20	12 15.4	19.9
141572 2002 GB ₁₂₈	15.7	X	128.08100	179.93242	193.53017	8.91944	0.2185030	0.26414433	2.4057021	20	2 1.1	19.2
141573 2002 GC ₁₃₂	15.9	X	114.76198	74.64319	17.41225	4.98802	0.0805680	0.21952892	2.7214992	20	4 14.8	19.6
141574 2002 GZ ₁₃₇	14.9	X	82.44865	128.87447	106.60508	10.09379	0.0533572	0.17965795	3.1105588	20	9 7.2	19.4
141575 2002 GD ₁₄₂	15.8	X	225.96089	25.86718	111.70153	2.49867	0.0864751	0.24151353	2.5537305	20	10 23.2	19.2
141576 2002 GH ₁₄₂	16.2	X	208.86966	237.73377	60.00746	6.68935	0.1158352	0.25965117	2.4333758	20	1 13.9	19.9
141577 2002 GS ₁₄₉	12.7	X	345.40226	42.68380	356.79141	3.53035	0.0456556	0.08214950	5.2408224	20	10 29.5	19.3
141578 2002 GT ₁₅₉	17.3	X	141.76796	267.81567	334.92138	6.47740	0.1434577	0.29893909	2.2152067	20	12 8.6	20.6
141579 2002 GJ ₁₆₁	16.5	X	40.97811	194.49912	70.55327	7.83007	0.0748420	0.28521707	2.2856990	20	9 8.9	19.2
141580 2002 GU ₁₆₄	15.8	X	268.23202	312.82431	169.22246	3.87964	0.0441159	0.24550553	2.5259720	20	12 5.2	19.0
141581 2002 GQ ₁₆₇	16.5	X	27.41599	291.91896	37.33624	5.36048	0.1613403	0.29193831	2.2504808	20	11 30.2	19.1
141582 2002 GC ₁₆₉	16.6	X	49.61670	262.03406	7.58896	6.33400	0.0939194	0.28750111	2.2735771	20	9 27.5	19.3
141583 2002 GB ₁₇₁	16.6	X	69.19108	323.90209	269.77345	3.24338	0.1193559	0.28721221	2.2751015	20	9 5.0	19.5
141584 2002 GU ₁₇₈	12.7	X	316.92334	163.75702	277.91975	3.13385	0.0226781	0.08441397	5.1466720	20	11 12.9	19.5
141585 2002 HE	15.9	X	353.36959	11.14388	49.30411	22.21155	0.0903045	0.35656201	1.9696059	20	—	—
141586 2002 HQ	16.1	X	27.49573	191.59129	94.69685	6.41667	0.1609663	0.28465480	2.2887079	20	10 2.9	18.6
141587 2002 HW ₂	16.8	X	199.68061	53.21870	146.82690	4.96438	0.0782717	0.30204428	2.1999981	20	12 25.6	19.5
141588 2002 HY ₂	17.0	X	179.65588	89.83480	159.55446	4.38722	0.1615838	0.30431896	2.1890216	20	—	—
141589 2002 HA ₃	17.0	X	111.71549	245.95298	48.76196	4.17599	0.1773350	0.29777726	2.2209649	20	—	—
141590 2002 HS ₆	16.8	X	77.28233	339.15060	322.07962	4.31715	0.1934812	0.29386875	2.2406143	20	12 23.5	20.3
141591 2002 HC ₉	17.2	X	171.41835	81.18027	172.37032	6.59273	0.1581957	0.30380788	2.1914759	20	—	—
141592 2002 HN ₁₀	16.9	X	27.96362	41.50133	220.82767	2.58798	0.1539561	0.28201045	2.3029928	20	8 20.7	19.0
141593 2002 HK ₁₂	18.1	X	104.31353	2.22972	307.00797	2.34979	0.5289475	0.34801578	2.0017204	20	—	—
141594 2002 HN ₁₂	17.6	X	157.10874	173.87966	73.16405	0.50096	0.1737842	0.29892546	2.2152740	20	1	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141601 2002 JS ₄	15.6 ^m	X	8.83723	145.91371	132.69176	24.67489	0.2149378	0.27889602	2.3201061	20	8 20.2	17.4
141602 2002 JT ₄	16.4	X	318.53577	105.00591	122.56582	24.04685	0.0430785	0.37532184	1.9034150	20	2 9.9	18.2
141603 2002 JX ₄	17.1	X	36.94247	346.41873	272.86311	2.10225	0.2126043	0.28302625	2.2974791	20	9 11.4	19.5
141604 2002 JB ₅	16.1	X	160.01111	40.87530	230.37992	3.95000	0.1492036	0.30380315	2.1914986	20	—	—
141605 2002 JC ₁₀	16.2	X	76.95171	232.18394	124.95715	24.71013	0.0955047	0.35614875	1.9711292	20	—	—
141606 2002 JD ₁₀	16.1	X	10.12992	60.14570	185.18899	22.22748	0.2363327	0.27382609	2.3486565	20	6 23.1	18.4
141607 2002 JG ₁₁	14.6	X	348.83810	218.44178	64.14656	7.44372	0.0683252	0.16923047	3.2370570	20	6 26.2	18.8
141608 2002 JY ₁₁	16.4	X	153.39655	264.74581	35.13181	7.07401	0.1497343	0.30451897	2.1880629	20	—	—
141609 2002 JB ₁₂	16.3	X	60.97969	255.54622	39.63934	7.39593	0.1894259	0.28929979	2.2641436	20	11 27.7	19.4
141610 2002 JK ₁₂	16.7	X	128.07035	217.38591	85.34661	6.28505	0.1996485	0.30152904	2.2025035	20	—	—
141611 2002 JP ₁₂	15.6	X	41.13072	75.85276	224.50060	20.49773	0.2646181	0.28718444	2.2752482	20	11 23.2	18.7
141612 2002 JA ₁₃	16.7	X	190.11294	105.14043	152.28125	2.89236	0.1742059	0.30452974	2.1880114	20	—	—
141613 2002 JZ ₁₄	16.7	X	130.58266	127.64691	180.10281	4.41568	0.2170978	0.30254143	2.1975874	20	—	—
141614 2002 JV ₁₅	19.3	X	226.85083	127.33402	200.65561	7.18223	0.5362126	0.47653340	1.6233313	20	2 14.2	22.6
141615 2002 JQ ₁₇	16.3	X	186.06869	117.88003	25.07451	3.18068	0.1625161	0.23737654	2.5833159	20	9 8.4	20.3
141616 2002 JU ₂₀	16.6	X	94.47092	185.65625	89.54298	7.71819	0.1939780	0.29269004	2.2466259	20	12 6.6	20.2
141617 2002 JI ₂₄	16.6	X	163.57301	143.98302	97.14513	3.38801	0.1061719	0.29952268	2.2123283	20	—	—
141618 2002 JH ₂₅	16.0	X	81.20702	228.59565	64.74255	7.24696	0.1702782	0.29378142	2.2410583	20	12 15.2	19.4
141619 2002 JI ₂₆	16.4	X	54.63330	160.64787	126.20795	4.36244	0.1815123	0.28838219	2.2689439	20	11 11.5	19.4
141620 2002 JB ₃₀	16.3	X	73.78976	227.88275	74.80625	7.50632	0.1659883	0.29246639	2.2477710	20	12 19.4	19.5
141621 2002 JY ₃₂	16.8	X	189.00939	28.25651	224.27003	4.83121	0.2039742	0.30315446	2.1946237	20	—	—
141622 2002 JH ₃₃	16.7	X	86.04129	91.01387	174.71807	6.06896	0.1303521	0.28942387	2.2634965	20	11 12.8	19.9
141623 2002 JJ ₃₄	16.6	X	24.30191	34.95398	217.61142	8.51701	0.2012465	0.27842495	2.3227223	20	8 3.2	18.8
141624 2002 JP ₃₄	16.5	X	58.29016	205.79056	81.72072	5.63357	0.2021439	0.28729716	2.2746530	20	11 17.9	19.6
141625 2002 JY ₃₄	17.0	X	41.15098	106.23923	142.00615	2.21254	0.1577759	0.28054419	2.3110102	20	8 19.9	19.2
141626 2002 JA ₃₇	16.8	X	178.68392	52.75197	183.95420	23.74224	0.1679045	0.30142727	2.2029993	20	—	—
141627 2002 JM ₃₇	16.6	X	21.23343	24.60128	284.41830	4.62425	0.2025817	0.28535240	2.2849763	20	10 27.5	19.2
141628 2002 JR ₃₈	16.7	X	94.25466	267.09284	3.78453	3.50223	0.1155796	0.29281054	2.2460095	20	11 25.3	19.9
141629 2002 JM ₄₃	16.6	X	20.62007	302.63039	332.14021	4.75799	0.1528632	0.28213459	2.3023172	20	8 27.7	18.8
141630 2002 JY ₄₈	16.3	X	68.84460	353.85204	251.99574	3.99196	0.1190236	0.28546262	2.2843881	20	9 21.1	19.2
141631 2002 JL ₄₉	16.3	X	66.26860	250.38924	7.60125	3.94771	0.1387298	0.28618618	2.2805360	20	10 9.4	19.1
141632 2002 JT ₄₉	16.6	X	80.81032	11.66518	254.17396	2.41056	0.1271890	0.28952999	2.2629433	20	11 4.9	19.8
141633 2002 JG ₅₀	17.0	X	203.71960	57.34124	245.13015	1.47307	0.1037322	0.31252674	2.1505255	20	1 6.6	20.0
141634 2002 JC ₅₁	16.1	X	121.15211	290.91315	349.19636	3.73922	0.2048656	0.24168127	2.5525488	20	12 26.3	20.5
141635 2002 JV ₅₁	16.9	X	218.01610	22.88820	264.44642	0.93874	0.1005122	0.31287570	2.1489262	20	—	—
141636 2002 JF ₅₂	16.3	X	120.90975	16.78766	250.84141	6.76828	0.1608052	0.29487099	2.2355344	20	12 19.8	19.6
141637 2002 JJ ₅₃	16.9	X	160.08111	241.79892	5.46108	3.95620	0.0926666	0.30029511	2.2085329	20	—	—
141638 2002 JA ₅₅	16.2	X	54.89615	46.68819	233.88260	6.73055	0.1164139	0.28780396	2.2719819	20	10 22.3	19.0
141639 2002 JB ₅₅	16.8	X	204.26045	209.86174	18.66583	1.48945	0.0896381	0.30398656	2.1906171	20	—	—
141640 2002 JL ₅₅	16.5	X	44.47929	261.34050	51.91636	6.08516	0.1696900	0.28967165	2.2622055	20	12 1.1	19.4
141641 2002 JF ₅₅	17.2	X	127.30028	240.16484	27.59146	0.42313	0.1509033	0.29655928	2.2270418	20	12 26.4	20.7
141642 2002 JK ₅₆	16.6	X	214.98690	334.26793	243.11310	6.79833	0.0209731	0.30456063	2.1878634	20	—	—
141643 2002 JU ₅₆	17.7	X	195.05660	98.71269	160.05558	1.22200	0.2036579	0.30567623	2.1825369	20	—	—
141644 2002 JY ₅₉	16.8	X	142.75596	257.93924	32.37649	5.69334	0.1210122	0.30107501	2.2047173	20	—	—
141645 2002 JW ₅₉	16.7	X	353.69831	264.92195	39.23117	6.15077	0.1937717	0.27891194	2.3200178	20	8 26.6	18.4
141646 2002 JS ₆₂	15.9	X	57.44006	180.73470	168.78384	5.21421	0.1902549	0.29575696	2.2310676	20	—	—
141647 2002 JT ₆₂	16.6	X	151.10105	75.34777	150.95680	5.18583	0.1156572	0.29474947	2.2361488	20	11 29.1	19.8
141648 2002 JJ ₆₄	16.9	X	301.61492	70.68092	211.15563	1.96580	0.1915874	0.26924699	2.3752107	20	3 22.8	19.6
141649 2002 JI ₆₅	15.6	X	36.78730	58.79392	232.94708	21.03183	0.1816124	0.28376656	2.2934815	20	10 21.8	18.5
141650 2002 JD ₆₆	16.9	X	207.88493	165.28656	100.14622	5.58638	0.1736695	0.30703309	2.1761020	20	—	—
141651 2002 JO ₆₇	16.6	X	148.86900	282.49851	31.48016	7.26489	0.1949338	0.30639681	2.1791137	20	—	—
141652 2002 JL ₇₁	16.5	X	116.87631	80.49961	151.73920	6.29288	0.1760346	0.29147662	2.2528567	20	11 3.8	20.1
141653 2002 JN ₇₁	16.3	X	138.68769	136.80702	132.79078	6.68942	0.1482017	0.29901835	2.2148152	20	—	—
141654 2002 JS ₇₁	16.3	X	77.96510	146.65182	136.03309	6.55540	0.1697177	0.29100454	2.2552925	20	11 29.8	19.6
141655 2002 JP ₇₃	16.7	X	187.04489	56.11948	168.35401	7.14768	0.1777636	0.30029447	2.2085361	20	12 28.8	19.8
141656 2002 JQ ₇₃	16.4	X	70.97427	165.88818	118.81085	8.70976	0.1307101	0.28951546	2.2630190	20	11 22.1	19.6
141657 2002 JS ₇₅	16.9	X	147.96261	222.04475	55.40361	8.07861	0.1437554	0.30032180	2.2084021	20	—	—
141658 2002 JC ₇₆	16.7	X	99.84761	280.41492	20.28412	6.54034	0.1206571	0.30006796	2.2096473	20	—	—
141659 2002 JB ₇₉	16.7	X	80.02378	33.36041	237.29756	6.01477	0.1061235	0.29199558	2.2501866	20	11 8.8	19.6
141660 2002 JK ₈₁	16.9	X	173.72328	95.81113	204.34322	1.73897	0.1558648	0.30961250	2.1639990	20	—	—
141661 2002 JR ₈₂	16.9	X	338.32970	250.65749	48.56486	2.72317	0.2377668	0.27764220	2.3270858	20	6 27.6	18.1
141662 2002 JI ₈₃	18.2	X	147.74817	303.12126	325.91897	0.60937	0.2043953	0.29984625	2.2107364	20	—	—
141663 2002 JX ₈₆	16.7	X	93.63439	226.68456	12.81284	2.32577	0.0629795	0.28877684	2.2668762	20	10 9.2	19.4
141664 2002 JG ₈₈	16.7	X	126.21251	220.36827	40.26354	6.30151	0.0637650	0.29753586	2.2221660	20	12 17.2	19.6
141665 2002 JQ ₈₉	17.3	X	8.87226	72.97225	228.89982	4.20955	0.1942982	0.28271033	2.2991904	20	9 22.2	19.2
141666 2002 JV ₉₂	17.1	X	260.81124	3.46700	270.80090	1.53109	0.1179519	0.31757763	2.1276627	20	1 28.2	19.9
141667 2002 JN ₉₃	16.8	X	98.04433	98.64025	244.44429	2.21711	0.0928350	0.30287936	2.1959525	20	—	—
141668 2002 JR ₉₄	16.4	X	35.36896	13.83509	236.48203	6.88036	0.0960233	0.28022490	2.3127653	20	8 3.3	19.0
141669 2002 JV ₉₅	17.2	X	68.19017	232.26385	354.62517	1.86547	0.1695223	0.28224404	2.3017220	20	9 3.1	20.1
141670 2002 JS ₁₀₀	16.8	X	277.23239	192.10038	144.21067	13.31999	0.4850886	0.26766049	2.3845872	20	4 6.0	21.1
141671 2002 JV ₁₀₁	16.7	X	296.04507	74.78801	230.26425	12.36236	0.2322468	0.27016523	2.3698257	20	4 7.7	19.9
141672 2002 JP ₁₀₃	17.2	X	94.06886	57.60152	192.59062	4.43842	0.1624634	0.28943189	2.2634546	20	11 2.7	20.5
141673 2002 JB ₁₀₅	16.9	X	149.35270	166.08989	80.83948	3.90601	0.1986994	0.29645247	2.2275767	20	12 18.7	20.2
141674 2002 JC ₁₀₅	17.0	X	154.84177	23.77707	223.99364	6.02103	0.1512886	0.29730946	2.22329			

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
141681	2002	JU ₁₁₂	16.7	X	91.09825	273.88443	34.22502	4.30591	0.1823986	0.29453244	2.2372471	20	—	—
141682	2002	JZ ₁₁₂	16.8	X	5.20464	46.12287	248.94786	4.10508	0.2035162	0.27948988	2.3168184	20	9 2.8	18.6
141683	2002	JG ₁₂₅	16.3	X	36.27169	291.59078	7.48700	6.10388	0.1051343	0.28846352	2.2685174	20	10 20.8	18.8
141684	2002	JS ₁₂₆	16.2	X	29.39599	279.75082	66.65173	8.38874	0.1750435	0.29391458	2.2403814	20	12 29.2	19.0
141685	2002	JG ₁₃₀	16.8	X	48.13187	173.25006	125.85276	4.98021	0.1862475	0.28785121	2.2717333	20	11 20.5	19.8
141686	2002	JX ₁₃₀	18.0	X	180.97176	80.26204	212.71933	4.10648	0.0969398	0.30819713	2.1706193	20	—	—
141687	2002	JB ₁₃₂	16.7	X	101.32450	325.18292	322.99973	5.07093	0.1627940	0.29621617	2.2287612	20	12 28.3	20.0
141688	2002	JE ₁₃₃	16.7	X	309.24723	298.66027	1.90993	3.58787	0.1749640	0.27396902	2.3478395	20	5 2.5	19.1
141689	2002	JN ₁₃₉	16.5	X	197.61212	319.38030	271.29366	4.72991	0.1134160	0.30355816	2.1926776	20	—	—
141690	2002	JM ₁₄₃	17.2	X	85.68847	69.22313	234.08120	2.84858	0.2887274	0.29414067	2.2392332	20	—	—
141691	2002	JB ₁₄₆	15.8	X	97.23723	133.95002	149.66405	15.15773	0.1057710	0.23886905	2.5725439	20	12 6.9	20.0
141692	2002	JN ₁₄₆	16.9	X	280.96842	141.58937	152.40415	7.62787	0.2331769	0.26630219	2.3926889	20	3 10.2	20.4
141693	2002	JZ ₁₄₆	16.4	X	12.59837	219.73979	86.23164	7.65506	0.1304109	0.28485478	2.2876366	20	10 2.9	18.8
141694	2002	JW ₁₄₇	17.1	X	39.17507	268.73315	357.49293	4.17401	0.1897512	0.28215871	2.3021860	20	9 22.1	19.6
141695	2002	KU ₂	17.7	X	153.09528	37.24611	217.43745	3.31316	0.1424337	0.29850479	2.2173547	20	—	—
141696	2002	KE ₄	16.0	X	330.70888	142.92367	165.48694	23.64875	0.2462960	0.27483779	2.3428892	20	6 22.4	18.4
141697	2002	KO ₅	17.0	X	58.89960	130.92645	140.30507	0.74606	0.1384306	0.28586864	2.2822245	20	10 18.9	19.7
141698	2002	KP ₈	17.3	X	329.53662	125.63892	168.40949	6.48824	0.2764009	0.27344020	2.3508657	20	5 18.2	19.0
141699	2002	KY ₁₀	15.2	X	150.20942	246.67756	312.76628	6.50309	0.2873160	0.18445870	3.0563514	20	10 6.4	20.9
141700	2002	KJ ₁₁	16.4	X	67.87482	238.22962	84.69373	7.88202	0.1751605	0.29576574	2.2310235	20	—	—
141701	2002	KM ₁₅	14.5	X	107.05528	48.93877	174.70744	2.69215	0.1254364	0.12418904	3.9787550	20	9 18.6	20.3
141702	2002	LG ₄	17.0	X	35.01029	169.90962	126.63160	3.05825	0.2311759	0.28349403	2.2949511	20	11 6.4	19.8
141703	2002	LJ ₄	16.3	X	39.51305	204.73772	85.10180	6.69382	0.1951743	0.28452927	2.2893811	20	10 30.2	19.1
141704	2002	LK ₄	16.4	X	335.19090	237.92869	100.61795	6.62642	0.1616249	0.28064528	2.3104552	20	9 7.8	18.2
141705	2002	LA ₅	16.3	X	244.45502	353.15823	301.34070	5.43685	0.1899543	0.26233482	2.4167520	20	2 7.9	20.2
141706	2002	LC ₆	15.9	X	204.52881	359.53298	321.94053	2.00390	0.1917725	0.25412228	2.4685441	20	2 8.3	20.0
141707	2002	LD ₇	16.5	X	15.27087	86.20641	185.13289	6.37060	0.0883059	0.27951752	2.3166656	20	7 31.6	18.9
141708	2002	LE ₇	16.7	X	37.19697	246.43784	88.32866	3.91570	0.2045860	0.29011709	2.2598894	20	12 26.2	19.8
141709	2002	LP ₈	16.7	X	171.45149	162.34156	105.17901	6.50525	0.1532282	0.30197883	2.2003160	20	—	—
141710	2002	LQ ₈	16.0	X	10.13690	217.41922	93.07135	8.30450	0.2354271	0.28139719	2.3063376	20	10 22.4	18.2
141711	2002	LX ₉	16.4	X	34.34666	172.34344	123.22666	4.69170	0.2290225	0.28325028	2.2962675	20	11 4.6	19.2
141712	2002	LY ₉	16.3	X	51.78758	158.48031	113.08504	5.13819	0.1702074	0.28379863	2.2933087	20	10 17.1	19.2
141713	2002	LB ₁₀	17.1	X	169.57836	64.31985	183.48623	4.56235	0.0993403	0.29930318	2.2134098	20	—	—
141714	2002	LS ₁₂	16.1	X	63.98466	169.48784	115.74940	6.23074	0.1300072	0.28722519	2.2750330	20	11 13.9	19.2
141715	2002	LJ ₁₃	16.6	X	162.27659	59.11861	182.63387	11.41805	0.2443882	0.24377760	2.5378942	20	12 13.2	21.2
141716	2002	LU ₁₃	17.0	X	145.55064	12.99217	271.85316	3.69275	0.1186509	0.30050994	2.2074802	20	—	—
141717	2002	LC ₁₄	17.3	X	345.22052	346.27190	294.83264	1.52215	0.2079240	0.27479492	2.3431329	20	6 15.9	18.7
141718	2002	LE ₁₇	16.8	X	348.06906	58.02787	247.99674	2.51899	0.2442511	0.27714801	2.3298513	20	8 11.6	17.8
141719	2002	LA ₁₉	16.9	X	329.05596	64.81838	222.93635	2.37841	0.2569135	0.27199897	2.3591626	20	5 7.8	18.7
141720	2002	LS ₁₉	16.5	X	65.51773	193.52353	77.10434	4.10892	0.2065555	0.28426030	2.2908249	20	11 3.9	19.8
141721	2002	LY ₁₉	16.7	X	282.67111	209.98071	62.04923	2.38287	0.1933610	0.26240077	2.4163471	20	2 18.2	20.2
141722	2002	LS ₂₀	16.4	X	105.23571	208.72371	74.04025	4.98739	0.1665863	0.29072098	2.2567587	20	12 23.7	19.9
141723	2002	LB ₂₁	17.0	X	159.06011	13.46169	268.04901	6.42862	0.1863710	0.29894585	2.2151732	20	—	—
141724	2002	LE ₂₁	16.5	X	15.17507	184.66456	101.94684	7.56657	0.2609917	0.27707661	2.3302515	20	9 18.3	18.7
141725	2002	LU ₂₁	16.8	X	100.21920	196.80338	59.08834	9.21125	0.1515258	0.29027684	2.2590602	20	11 15.1	20.2
141726	2002	LA ₂₂	16.8	X	304.21723	264.18914	32.77169	1.58617	0.11864807	0.27052335	2.3677338	20	4 18.4	19.5
141727	2002	LQ ₂₂	16.8	X	343.13690	58.83868	260.95599	5.23429	0.2529969	0.27799185	2.3251341	20	8 21.1	17.9
141728	2002	LK ₂₃	16.3	X	24.78552	220.65149	84.90426	8.06367	0.1446712	0.28142805	2.3061690	20	10 23.4	18.9
141729	2002	LN ₂₃	15.1	X	1.74441	37.31733	276.97991	27.93400	0.1894723	0.27821507	2.3238903	20	9 4.5	18.1
141730	2002	LY ₂₃	16.1	X	325.98097	17.54674	284.67688	5.05128	0.2056201	0.27209110	2.3586300	20	6 2.9	17.9
141731	2002	LF ₂₄	16.7	X	302.59056	133.56198	198.10906	4.19329	0.2550802	0.26978254	2.3720663	20	5 25.7	19.1
141732	2002	LU ₂₅	16.3	X	357.89565	230.93765	91.40642	11.46213	0.2166971	0.28058761	2.3107718	20	10 15.2	18.4
141733	2002	LN ₂₇	16.4	X	7.62280	194.87737	83.39472	6.39914	0.2237820	0.27480339	2.3430847	20	8 18.9	18.1
141734	2002	LK ₂₈	16.5	X	121.55096	54.79289	210.95548	4.38518	0.1476774	0.29352036	2.2423870	20	12 17.9	19.8
141735	2002	LO ₂₈	16.5	X	187.87883	344.64909	206.18179	5.28719	0.1270723	0.29440224	2.2379067	20	11 21.2	19.5
141736	2002	LC ₂₉	16.3	X	84.73514	104.31873	166.21984	4.81029	0.2250058	0.28574937	2.2828596	20	11 23.8	20.0
141737	2002	LD ₂₉	16.3	X	328.47881	143.69859	183.72309	4.77622	0.1940945	0.27339873	2.3511034	20	7 24.4	18.0
141738	2002	LM ₂₉	16.4	X	87.47096	58.00923	247.50635	6.92075	0.1609010	0.28935528	2.2638541	20	—	—
141739	2002	LO ₃₀	16.9	X	154.14326	31.88432	180.82705	4.55153	0.1063296	0.29310949	2.2448820	20	11 14.8	20.1
141740	2002	LO ₃₁	16.2	X	67.50886	248.24281	68.41699	7.22359	0.1789663	0.29365137	2.2417200	20	—	—
141741	2002	LP ₃₆	15.5	X	305.30489	34.73914	273.08519	14.10083	0.2126318	0.26728783	2.3868031	20	4 26.9	18.6
141742	2002	LT ₃₆	16.0	X	55.52878	78.25053	255.37089	6.65690	0.3148045	0.28592208	2.2819402	20	—	—
141743	2002	LD ₃₇	16.3	X	33.01279	120.63493	173.83124	6.81289	0.1369256	0.27934145	2.3176390	20	10 15.8	18.9
141744	2002	LZ ₃₇	16.7	X	136.65204	260.37711	114.62324	24.50593	0.0776187	0.36471343	1.9401481	20	1 10.1	18.6
141745	2002	LA ₄₀	16.2	X	49.51712	206.10878	91.39431	25.75873	0.1982577	0.28626156	2.2801357	20	11 26.5	19.6
141746	2002	LO ₄₄	17.0	X	349.91548	6.03395	295.86795	2.16039	0.1759352	0.27867171	2.3213509	20	8 6.7	18.6
141747	2002	LO ₄₅	16.4	X	88.93452	121.12914	236.27271	4.45930	0.1941699	0.30114790	2.2043615	20	—	—
141748	2002	LK ₄₇	16.2	X	112.28537	172.32553	175.09678	2.41098	0.2102462	0.30293101	2.1957028	20	—	—
141749	2002	LW ₄₇	16.1	X	332.74320	165.31611	163.55245	12.75433	0.2472551	0.27462720	2.3440868	20	8 3.6	17.5
141750	2002	LG ₅₀	16.8	X	143.09379	183.68297	111.57301	7.14069	0.1445858	0.3				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141761 2002 <i>MC</i>	17.2	X	115.02838	159.83813	151.54694	18.89723	0.5083293	0.23808398	2.5781960	20	—	—
141762 2002 <i>MR</i>	16.6	X	309.82553	308.14299	340.29122	1.75699	0.2067723	0.26923279	2.3752942	20	4 10.6	19.4
141763 2002 <i>ML</i> ₁	16.2	X	25.13695	114.66362	178.79167	21.28012	0.2372991	0.28048211	2.3113512	20	10 21.2	18.9
141764 2002 <i>MG</i> ₂	16.9	X	89.27930	39.45767	254.29947	4.12988	0.2014011	0.28914734	2.2649394	20	12 24.2	20.5
141765 2002 <i>MP</i> ₃	16.2	X	57.64584	270.14130	100.33988	33.07041	0.4687909	0.34847760	1.9999515	20	—	—
141766 2002 <i>MB</i> ₄	16.9	X	336.64042	320.77124	0.12942	2.45089	0.2082710	0.27494385	2.3422867	20	8 6.1	18.3
141767 2002 <i>NL</i> ₁	16.5	X	304.11499	105.08247	132.01176	2.06076	0.1471337	0.25925148	2.4358762	20	2 3.7	19.5
141768 2002 <i>NG</i> ₂	16.1	X	4.57604	70.19908	280.65117	6.50187	0.1491072	0.28270191	2.2992360	20	11 21.4	18.5
141769 2002 <i>NN</i> ₂	14.9	X	100.58572	323.03864	316.29891	14.21763	0.1750416	0.17880292	3.1204673	20	11 24.3	20.2
141770 2002 <i>NS</i> ₂	16.7	X	356.11877	341.90386	315.82892	1.75561	0.2177570	0.27513303	2.3412128	20	8 18.8	18.2
141771 2002 <i>NC</i> ₄	17.2	X	8.06345	337.16860	282.37904	1.57125	0.1892431	0.27321100	2.3521802	20	7 9.3	18.9
141772 2002 <i>NM</i> ₅	16.7	X	196.70135	320.16982	284.39934	4.72117	0.0994293	0.29901356	2.2148388	20	—	—
141773 2002 <i>NW</i> ₆	16.4	X	330.55955	253.24540	157.56028	6.91798	0.0848755	0.28696188	2.2764244	20	12 15.5	18.8
141774 2002 <i>NR</i> ₈	16.3	X	266.66432	151.94777	133.21793	15.29473	0.1438512	0.25966209	2.4333076	20	2 24.3	19.8
141775 2002 <i>NR</i> ₈	16.4	X	273.03821	130.63495	213.91050	3.49160	0.2007787	0.26775284	2.3840388	20	5 10.7	19.7
141776 2002 <i>NY</i> ₈	16.3	X	328.62498	242.19459	117.84093	6.31814	0.2864260	0.27678213	2.3319041	20	9 29.8	17.2
141777 2002 <i>NO</i> ₁₀	16.6	X	319.50911	182.78466	133.00221	2.71624	0.2162563	0.27174405	2.3606378	20	6 10.0	18.4
141778 2002 <i>NE</i> ₁₀	16.8	X	327.44189	6.45476	287.22322	1.48710	0.2122650	0.27079488	2.3661508	20	5 21.8	18.5
141779 2002 <i>NP</i> ₁₀	16.8	X	302.06645	231.52918	138.15708	3.02646	0.2295654	0.27472068	2.3435550	20	7 29.1	18.9
141780 2002 <i>NY</i> ₁₁	16.6	X	314.36028	213.50403	114.97226	3.79134	0.1757682	0.27166078	2.3611201	20	6 26.6	18.7
141781 2002 <i>NG</i> ₁₂	16.5	X	284.29603	249.25385	115.18263	6.44593	0.2317517	0.27100780	2.3649113	20	6 18.3	19.4
141782 2002 <i>NN</i> ₁₂	16.4	X	163.25410	180.76095	197.62954	2.15109	0.2022298	0.25480130	2.4641565	20	3 13.0	20.2
141783 2002 <i>NY</i> ₁₂	17.0	X	355.29168	129.40168	175.93808	2.15911	0.2308637	0.27556477	2.3387668	20	9 1.0	18.2
141784 2002 <i>NV</i> ₁₃	16.5	X	168.79337	218.95764	148.19949	1.81987	0.2592022	0.25291016	2.4764251	20	3 7.7	20.7
141785 2002 <i>ND</i> ₁₄	16.6	X	273.75770	184.05731	139.71507	2.55869	0.1895003	0.26471842	2.4022228	20	4 15.9	19.9
141786 2002 <i>NW</i> ₁₄	17.1	X	27.55566	243.17955	75.57678	6.77090	0.2290973	0.28216837	2.3021334	20	11 25.5	19.9
141787 2002 <i>NE</i> ₂₀	14.5	X	43.95973	68.29074	297.67107	9.43202	0.0863464	0.17944246	3.1130486	20	12 30.0	18.8
141788 2002 <i>NL</i> ₂₀	16.8	X	57.20281	147.46929	165.12500	6.96616	0.1430611	0.28551680	2.2840991	20	12 11.8	20.0
141789 2002 <i>NS</i> ₂₀	14.8	X	41.88106	131.66029	188.41753	5.63910	0.1558962	0.17277358	3.1926488	20	11 11.1	19.1
141790 2002 <i>NP</i> ₂₁	16.8	X	175.72209	23.93942	236.19579	4.38123	0.1930758	0.29822169	2.2187578	20	—	—
141791 2002 <i>NK</i> ₂₂	16.5	X	333.46556	207.69798	146.43433	8.46015	0.1929244	0.27663600	2.3327252	20	9 29.9	18.1
141792 2002 <i>NH</i> ₂₃	17.3	X	182.75863	115.81404	151.28008	4.05708	0.1729224	0.29995155	2.2102190	20	—	—
141793 2002 <i>NK</i> ₂₃	16.6	X	141.31566	351.21087	266.85563	6.66607	0.1701821	0.29252374	2.2474772	20	12 25.8	20.1
141794 2002 <i>NP</i> ₂₃	17.0	X	37.71486	93.37954	207.42909	2.13877	0.1874466	0.28111251	2.3078944	20	11 7.5	19.6
141795 2002 <i>NJ</i> ₂₆	16.5	X	348.53902	155.81460	165.91676	6.33942	0.2587301	0.27446998	2.3449819	20	9 16.1	17.6
141796 2002 <i>NO</i> ₂₆	16.0	X	260.62665	67.01757	315.12075	5.94341	0.1322488	0.26774069	2.3841109	20	6 26.8	19.1
141797 2002 <i>ND</i> ₂₉	16.1	X	318.79172	217.03116	107.96627	8.94168	0.1780413	0.27167238	2.3610529	20	6 30.1	17.9
141798 2002 <i>NO</i> ₃₀	16.0	X	104.44566	185.45191	193.43308	3.86937	0.1908228	0.24490442	2.5301036	20	1 11.2	19.2
141799 2002 <i>NS</i> ₃₁	17.3	X	307.91171	157.02142	190.79663	9.54112	0.2347198	0.27225340	2.3576926	20	7 2.9	19.6
141800 2002 <i>NO</i> ₃₃	15.5	X	29.05654	45.10071	307.84569	12.61485	0.1892281	0.22647479	2.6655662	20	12 22.8	19.1
141801 2002 <i>NH</i> ₃₅	16.5	X	179.08811	165.72194	191.58436	6.13259	0.1198328	0.25441615	2.4666428	20	2 25.4	20.2
141802 2002 <i>NV</i> ₃₅	17.0	X	296.05194	139.67252	185.17976	6.34759	0.1460224	0.26796291	2.3827927	20	5 24.9	19.7
141803 2002 <i>NY</i> ₃₅	16.2	X	308.54189	71.14698	235.65312	6.07379	0.1288486	0.26770275	2.3843362	20	5 20.3	18.9
141804 2002 <i>NJ</i> ₃₆	16.1	X	227.99919	163.18049	212.29376	6.89234	0.1973086	0.26400160	2.4065691	20	5 4.8	19.8
141805 2002 <i>NO</i> ₃₆	16.4	X	334.16121	171.50214	178.68466	7.07769	0.2110713	0.27673438	2.3321723	20	9 21.9	17.6
141806 2002 <i>NF</i> ₃₈	15.6	X	239.51549	85.36816	282.96476	10.27161	0.1278305	0.26388736	2.4072636	20	5 10.3	19.3
141807 2002 <i>NM</i> ₃₈	16.4	X	2.57522	59.34447	238.44466	4.14824	0.2446649	0.27480189	2.3430933	20	9 6.9	18.1
141808 2002 <i>NV</i> ₃₈	16.0	X	76.67343	59.71167	284.16293	4.25032	0.3112290	0.28728271	2.2747293	20	—	—
141809 2002 <i>NB</i> ₃₉	15.9	X	189.32202	172.59117	208.01283	8.10000	0.2515070	0.25685289	2.4510175	20	4 6.9	20.2
141810 2002 <i>NB</i> ₄₀	16.7	X	202.66767	249.18081	99.06989	1.37716	0.2461722	0.25595698	2.4567336	20	3 10.3	21.0
141811 2002 <i>NL</i> ₄₂	17.0	X	285.33581	235.44308	84.33129	3.36174	0.2045348	0.26561686	2.3968027	20	4 22.7	20.0
141812 2002 <i>NE</i> ₄₃	16.5	X	55.85625	202.52896	97.11185	6.38152	0.1874465	0.28389728	2.2927774	20	11 28.7	19.6
141813 2002 <i>NN</i> ₄₄	16.2	X	163.88776	354.85736	87.05712	7.37915	0.1084314	0.26762028	2.3848260	20	5 30.5	19.8
141814 2002 <i>NP</i> ₄₄	17.0	X	283.46371	270.09500	41.65530	2.33086	0.2229239	0.26574261	2.3960466	20	4 6.0	20.2
141815 2002 <i>NX</i> ₄₄	16.3	X	333.39443	114.36493	171.52931	6.42431	0.2145133	0.26944060	2.3740728	20	5 24.6	18.2
141816 2002 <i>NY</i> ₄₅	16.9	X	355.92152	105.63517	172.55647	2.01884	0.2056919	0.27327495	2.3518132	20	7 11.2	18.2
141817 2002 <i>ND</i> ₄₆	16.3	X	203.21204	98.32546	258.96584	3.57810	0.2063267	0.25832630	2.4416887	20	3 19.2	20.5
141818 2002 <i>NH</i> ₄₆	17.3	X	156.51388	84.49160	187.20914	2.29696	0.1629418	0.29694548	2.2251104	20	—	—
141819 2002 <i>NA</i> ₄₉	16.3	X	15.37329	198.78727	106.89118	7.72327	0.1326812	0.27847368	2.3224513	20	10 6.1	18.8
141820 2002 <i>ND</i> ₅₁	16.4	X	29.78272	119.48812	139.99625	2.70101	0.1964668	0.27556483	2.3387665	20	8 28.0	18.7
141821 2002 <i>NN</i> ₅₁	16.3	X	326.67986	261.84692	28.85249	3.43152	0.2243303	0.27038511	2.3685408	20	5 12.6	18.1
141822 2002 <i>NO</i> ₅₃	17.0	X	270.61151	289.20541	17.95506	1.77325	0.2289702	0.26238050	2.4164715	20	3 16.6	20.6
141823 2002 <i>NS</i> ₅₃	16.8	X	118.02170	269.34634	315.21211	1.96850	0.1123726	0.28324176	2.2963136	20	10 19.3	20.0
141824 2002 <i>NU</i> ₅₃	17.1	X	86.10957	306.06124	295.80362	1.41383	0.1512446	0.28137111	2.3064801	20	10 10.9	20.3
141825 2002 <i>NG</i> ₅₄	16.3	X	323.44685	263.20659	103.76655	7.42694	0.1448449	0.27851863	2.3222014	20	9 29.3	18.3
141826 2002 <i>NH</i> ₅₄	16.0	X	247.54810	276.81603	77.34919	5.06920	0.2169309	0.26456640	2.4031428	20	4 25.5	19.7
141827 2002 <i>NO</i> ₅₄	16.6	X	287.12954	230.67652	48.07428	2.18915	0.1457484	0.26235529	2.4166263	20	3 9.2	19.8
141828 2002 <i>NV</i> ₅₉	16.8	X	182.60117	251.50111	106.82877	3.32219	0.1917806	0.25525899	2.4612101	20	3 6.5	20.8
141829 2002 <i>OC</i>	16.3	X	305.78308	51.16044	314.31966	2.77230	0.2503365	0.27417329	2.3466732	20	7 26.9	18.1
141830 2002 <i>OH</i>	16.7	X	266.96324	315.99729	50.64559	6.00190	0.2172791	0.26802819	2.3824058	20	5 30.5	20.1
141831 2002 <i>OV</i> ₄	16.7	X	17.36241	83.67391	206.37364	6.86076	0.1255399	0.27712767	2.3299653	20	9 6.9	19.2
141832 2002 <i>OY</i> <												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141841 2002 OD ₂₁	16.2	X	331.68230	33.42016	322.15120	4.67322	0.0989256	0.27734928	2.3287240	20	9 20.6	18.4
141842 2002 OS ₂₁	16.9	X	318.88671	163.78945	141.65146	1.59167	0.1975201	0.26951760	2.3736206	20	5 26.0	19.0
141843 2002 OE ₂₂	16.9	X	323.69650	147.38931	192.55741	3.20794	0.1591591	0.27342981	2.3509252	20	8 6.9	18.9
141844 2002 OL ₂₂	16.0	X	326.04958	31.54460	335.97448	1.85864	0.2381154	0.27624061	2.3349506	20	9 29.4	16.9
141845 2002 OJ ₂₃	17.1	X	230.50882	174.69120	68.19886	3.86283	0.1079945	0.30455598	2.1878857	20	—	—
141846 2002 OE ₂₆	16.4	X	161.52019	77.59836	303.61989	1.23728	0.2735792	0.25321933	2.4744090	20	3 18.8	20.7
141847 2002 OG ₂₆	16.2	X	21.25974	311.88179	23.25718	7.50779	0.1362494	0.28147062	2.3059365	20	11 21.9	18.9
141848 2002 OE ₂₇	17.5	X	92.73915	112.31525	261.13084	1.13794	0.0453594	0.30018901	2.2090533	20	—	—
141849 2002 PC	16.2	X	296.85709	44.23374	325.29930	5.97217	0.2545567	0.27172795	2.3607310	20	7 14.1	18.4
141850 2002 PY ₄	15.8	X	167.16944	49.28805	265.65350	11.71920	0.1580270	0.24641942	2.5197228	20	—	—
141851 2002 PM ₆	17.7	X	248.46746	224.40853	304.12176	19.17245	0.8500831	0.75171724	1.1979344	20	—	—
141852 2002 PU ₈	16.8	X	188.35995	326.08314	229.05504	5.55211	0.0125044	0.28831865	2.2692773	20	12 9.9	19.4
141853 2002 PD ₉	16.4	X	306.32131	5.15799	236.36514	3.94595	0.1597699	0.26003626	2.4309728	20	2 8.6	19.7
141854 2002 PU ₉	16.3	X	254.41441	151.41453	230.25040	3.69839	0.1571212	0.26792319	2.3830282	20	6 14.1	19.5
141855 2002 PP ₁₀	16.5	X	285.02990	173.99298	168.14466	7.12123	0.1212240	0.26763484	2.3847396	20	6 6.4	19.5
141856 2002 PW ₁₁	16.9	X	295.91790	199.60810	243.12864	2.82891	0.0631357	0.28644022	2.2791875	20	12 2.3	19.2
141857 2002 PS ₁₄	16.2	X	284.35504	206.09270	170.70667	6.59191	0.1307240	0.26859332	2.3790628	20	5 27.7	19.2
141858 2002 PO ₁₇	16.8	X	272.71788	182.40423	196.58787	1.87974	0.2253336	0.27020565	2.3695894	20	6 23.6	19.7
141859 2002 PC ₁₈	17.1	X	276.13148	121.38496	216.67499	1.77071	0.1869372	0.26663684	2.3906864	20	5 7.5	20.2
141860 2002 PW ₂₀	17.6	X	82.75491	51.30406	218.49016	1.74413	0.1431574	0.28426090	2.2908218	20	11 13.3	20.8
141861 2002 PD ₂₂	16.7	X	322.44006	137.26985	278.12640	5.79546	0.0874725	0.28485028	2.2876607	20	12 6.9	19.1
141862 2002 PA ₂₃	16.7	X	20.00098	46.20279	251.10331	2.22817	0.1579821	0.27771925	2.3266554	20	9 29.5	18.9
141863 2002 PJ ₂₄	16.8	X	280.79894	62.32001	188.32636	1.33176	0.1509821	0.25679912	2.4513596	20	1 24.4	20.2
141864 2002 PC ₂₈	16.7	X	275.79549	109.77509	157.91248	2.82509	0.1742652	0.25746915	2.4471049	20	1 30.4	20.4
141865 2002 PN ₂₈	16.0	X	311.31247	104.86853	281.73407	6.33289	0.1035497	0.27875509	2.3208880	20	10 7.5	18.5
141866 2002 PL ₃₀	16.5	X	273.00402	106.65112	186.23075	4.74065	0.1044852	0.25999713	2.4312167	20	3 14.9	19.7
141867 2002 PY ₃₀	17.1	X	0.41182	46.37827	226.84192	1.89707	0.1781286	0.27153673	2.3618392	20	7 12.4	18.7
141868 2002 PN ₃₁	16.7	X	287.31583	232.97620	170.57195	3.57812	0.1259565	0.27592850	2.3367111	20	9 10.2	18.8
141869 2002 PK ₃₂	16.8	X	270.60547	202.22035	208.37767	2.12792	0.2145334	0.27254990	2.3559823	20	8 6.7	19.6
141870 2002 PB ₃₃	17.1	X	125.77172	83.59823	164.55483	5.31493	0.1250316	0.28674955	2.2775481	20	11 29.6	20.5
141871 2002 PZ ₃₃	16.9	X	280.95857	146.27961	129.72721	2.15334	0.1709349	0.25863473	2.4397472	20	2 23.9	20.2
141872 2002 PB ₃₄	16.1	X	305.94515	151.42745	134.11798	3.11857	0.2093508	0.26406101	2.4062082	20	4 2.8	18.8
141873 2002 PM ₃₄	15.1	X	76.02773	351.41608	4.35156	34.31329	0.1973875	0.23175685	2.6249095	20	—	—
141874 2002 PO ₃₄	17.7	X	340.40983	291.09814	143.62476	10.98932	0.3486342	0.39665692	1.8345351	20	—	—
141875 2002 PQ ₃₅	17.1	X	286.38732	201.83325	161.18189	1.22414	0.2066543	0.26958812	2.3732066	20	6 23.4	19.7
141876 2002 PW ₃₅	17.2	X	37.25164	51.92136	232.81671	2.87654	0.1423137	0.27798241	2.3251868	20	10 6.2	19.9
141877 2002 PX ₃₈	16.6	X	236.35457	106.72844	301.32556	2.00319	0.1728210	0.26842775	2.3800410	20	6 27.3	20.1
141878 2002 PT ₄₃	15.9	X	248.31927	189.70754	197.43384	4.74407	0.2144910	0.26385904	2.4074359	20	6 7.6	19.5
141879 2002 PG ₄₈	16.4	X	21.79436	63.50473	260.27451	5.98869	0.1328706	0.27880237	2.3206256	20	11 5.9	19.1
141880 2002 PC ₄₉	15.5	X	79.05220	82.99962	305.28621	12.27946	0.1826816	0.23846988	2.5754138	20	—	—
141881 2002 PM ₄₉	16.0	X	16.94055	21.97245	276.48709	6.57622	0.1259099	0.27497297	2.3421213	20	9 16.8	18.6
141882 2002 PO ₅₀	15.9	X	34.53732	4.81733	10.11293	3.48152	0.2598805	0.22839521	2.6560332	20	—	—
141883 2002 PZ ₅₀	15.6	X	104.52892	323.01052	29.25054	12.59686	0.3173762	0.23631688	2.5910327	20	—	—
141884 2002 PT ₅₂	16.1	X	238.84381	105.66653	342.38883	6.37861	0.0565671	0.27717312	2.3297106	20	9 11.3	18.8
141885 2002 PZ ₅₂	16.3	X	277.32908	314.52467	88.98688	3.57313	0.2185394	0.27295139	2.3536715	20	8 8.1	18.9
141886 2002 PK ₅₃	16.9	X	264.01737	246.22411	143.95179	2.00632	0.1830236	0.26914919	2.3757861	20	7 4.4	19.9
141887 2002 PR ₅₃	16.5	X	324.26879	252.55106	114.33105	4.97335	0.1861252	0.27586257	2.3370833	20	9 27.8	18.2
141888 2002 PB ₅₄	16.8	X	269.94946	293.41180	62.84214	2.47123	0.2022347	0.26634206	2.3924500	20	5 22.5	19.8
141889 2002 PU ₅₄	15.3	X	14.76526	237.88737	140.58693	14.08499	0.1883704	0.22375404	2.6871307	20	—	—
141890 2002 PD ₅₅	16.5	X	304.65647	173.07572	186.31994	2.42730	0.2131073	0.27157414	2.3616223	20	7 19.8	18.7
141891 2002 PG ₅₅	16.2	X	278.65747	82.07588	293.34236	5.65880	0.1394287	0.26958705	2.3732129	20	7 11.8	18.7
141892 2002 PU ₅₅	16.4	X	4.02058	111.01719	185.48512	6.62165	0.1233211	0.27382693	2.3486517	20	8 22.4	18.6
141893 2002 PA ₅₆	16.7	X	64.82176	126.77016	279.09095	3.73050	0.1266372	0.29715328	2.2240730	20	—	—
141894 2002 PC ₅₆	15.9	X	212.56900	165.56804	170.67887	6.05590	0.1495412	0.25553852	2.4594149	20	3 3.9	19.6
141895 2002 PP ₅₆	16.3	X	301.75782	149.20048	184.40306	4.91174	0.1951984	0.26837539	2.3803506	20	6 7.3	18.9
141896 2002 PG ₅₇	16.0	X	206.07451	41.91983	313.07570	5.74289	0.1451233	0.25533104	2.4607471	20	3 19.1	20.0
141897 2002 PC ₆₀	15.9	X	307.30306	309.48507	74.50674	3.34567	0.2184043	0.27264037	2.3554611	20	9 8.7	17.5
141898 2002 PC ₆₂	16.5	X	187.27091	249.79641	111.74308	3.06200	0.2273574	0.25495102	2.4631917	20	3 15.1	20.6
141899 2002 PY ₆₂	16.7	X	255.74433	226.22680	116.65883	6.15192	0.1467570	0.26380882	2.4077414	20	4 27.8	20.2
141900 2002 PN ₆₄	16.8	X	110.10195	3.18527	294.14738	8.66166	0.0465258	0.29160270	2.2522072	20	—	—
141901 2002 PO ₆₅	16.7	X	227.68220	171.67660	194.47434	5.81121	0.1652004	0.26302232	2.4125388	20	4 24.9	20.3
141902 2002 PB ₆₇	16.8	X	354.23473	26.35234	295.25385	7.21024	0.1309206	0.27708514	2.3302037	20	9 10.9	19.0
141903 2002 PE ₆₈	16.5	X	58.20736	112.28093	163.12383	6.34407	0.1083724	0.28027611	2.3124836	20	10 20.1	19.4
141904 2002 PH ₇₀	15.5	X	209.62504	32.47339	196.80690	12.25932	0.2027446	0.24221867	2.5487719	20	—	—
141905 2002 PG ₇₂	15.1	X	167.72375	61.78409	221.59076	10.71346	0.1170306	0.18779146	3.0200826	20	—	—
141906 2002 PJ ₇₃	16.4	X	356.77867	139.74610	173.87812	4.88273	0.1519015	0.27419027	2.3465764	20	9 9.1	18.2
141907 2002 PG ₇₅	16.3	X	274.52497	255.33611	148.42141	3.28989	0.1654499	0.27082070	2.3660004	20	8 11.8	18.8
141908 2002 PC ₇₇	16.5	X	10.19263	290.10307	359.66758	6.35311	0.1204932	0.27527874	2.3403866	20	8 27.6	18.8
141909 2002 PA ₇₈	16.3	X	268.28959	192.32033	268.39513	4.83224	0.1020773	0.28368151	2.2939399	20	11 6.2	18.8
141910 2002 PL ₇₈	17.0	X	20.07856	269.21571	37.92312	4.87510	0.1664761	0.27860833	2.3217029	20	10 17.9	19.5
141911 2002 PQ ₇₉	16.3	X	23.13090	0.88712	343.71590	3.00001	0.2629366	0.28261490	2.2997079	20	12 29.2	19.2
141912 2002 PN ₈₀	16.1	X	332.51799	192.52077	100.29985	7.40042	0.1010118	0.26971815	2.3724438	20	6 15.5	18.4
141913 2002 PP ₈₀	17.2	X	245.09476	267.86794	56.02883	3.12025	0.1911594	0.26007254	2.4307468	20	3 18.0	21.0
141914 2002 PW ₈₀	15.8	X	231.18667	205.21207	83.4							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
141921 2002 PY ₈₂	15.5	X	236.12454	77.77654	145.85900	14.57008	0.0161415	0.24190431	2.5509796	20	—	—
141922 2002 PC ₈₄	16.2	X	321.68812	181.39599	137.36821	3.22264	0.1982190	0.26977518	2.3721095	20	6 22.8	18.0
141923 2002 PS ₈₄	16.0	X	254.25725	207.42807	119.08315	3.29678	0.2236067	0.26032072	2.4292016	20	3 27.2	19.8
141924 2002 PU ₈₄	16.3	X	247.88394	323.81665	26.33223	2.71374	0.2295742	0.26167649	2.4208037	20	4 17.9	20.1
141925 2002 PX ₈₅	16.5	X	237.19637	210.52070	107.10502	5.93733	0.1561595	0.25821123	2.4424141	20	3 6.2	20.3
141926 2002 PV ₈₆	16.3	X	268.82660	245.88304	129.97577	3.18208	0.2076902	0.26795025	2.3828678	20	6 16.9	19.4
141927 2002 PY ₈₆	16.4	X	287.44144	16.06241	315.57620	2.54464	0.2087900	0.26687795	2.3892463	20	5 8.9	19.5
141928 2002 PA ₈₇	16.5	X	211.28713	223.32458	184.87832	11.16901	0.2327549	0.26339364	2.4102709	20	5 30.8	20.7
141929 2002 PH ₈₈	17.1	X	228.44969	79.12575	257.80289	0.65342	0.2005619	0.25745628	2.4471864	20	3 17.1	21.1
141930 2002 PH ₈₈	16.3	X	273.26799	3.43897	353.62922	1.97732	0.1371601	0.26614033	2.3936588	20	6 6.8	19.3
141931 2002 PN ₉₂	16.1	X	196.78413	39.72225	330.17390	5.80964	0.1263744	0.25743449	2.4473245	20	3 29.1	19.9
141932 2002 PC ₉₄	17.1	X	338.85925	179.83964	119.06643	3.10950	0.2164572	0.27047932	2.3679908	20	6 29.8	18.7
141933 2002 PF ₉₄	15.8	X	252.80332	24.15271	52.38781	7.24762	0.1731249	0.27347172	2.3506850	20	8 30.8	18.8
141934 2002 PL ₉₄	16.8	X	263.13667	118.34161	211.26537	4.79874	0.2138956	0.26307834	2.4121963	20	4 7.4	20.4
141935 2002 PN ₉₄	16.5	X	246.48795	104.90293	123.54115	5.09358	0.1870740	0.30455409	2.1878947	20	—	—
141936 2002 PM ₉₅	16.5	X	317.59462	96.83869	120.58350	1.77410	0.1923840	0.26936836	2.3744972	20	5 27.3	18.7
141937 2002 PS ₉₅	16.3	X	301.08169	120.74415	269.00895	1.78675	0.2197672	0.27543031	2.3952729	20	8 31.0	17.9
141938 2002 PV ₉₅	16.4	X	296.67313	142.75924	120.67410	3.32513	0.1803339	0.26116281	2.4239770	20	2 24.7	19.5
141939 2002 PH ₉₆	16.7	X	262.73548	10.08567	346.74922	0.69415	0.2006285	0.26504987	2.4002196	20	5 14.8	20.0
141940 2002 PJ ₉₆	16.2	X	293.39335	268.16467	95.90039	3.98778	0.1489892	0.27084647	2.3658503	20	7 17.8	18.7
141941 2002 PW ₉₇	16.4	X	307.62957	318.01453	13.70655	7.88291	0.2506228	0.26915320	2.3757625	20	6 2.3	18.8
141942 2002 PU ₉₉	16.9	X	340.90071	235.05738	69.00605	3.09384	0.2258869	0.27137783	2.3627611	20	7 16.0	18.2
141943 2002 PF ₁₀₀	16.1	X	189.22568	317.08693	85.74076	7.65835	0.2246052	0.25758967	2.4463415	20	5 6.8	20.4
141944 2002 PZ ₁₀₁	15.3	X	183.87869	113.74896	201.78435	8.16703	0.0817754	0.19389026	2.9564149	20	1 15.8	19.9
141945 2002 PR ₁₀₆	16.3	X	13.18889	339.91479	244.58201	6.74279	0.1683912	0.26581921	2.3955862	20	5 19.7	18.2
141946 2002 PF ₁₀₇	17.6	X	339.30505	264.84365	32.71249	1.32635	0.2436790	0.27142537	2.3624852	20	6 26.2	18.8
141947 2002 PN ₁₀₈	16.8	X	324.44773	254.50139	60.08960	3.18435	0.1739383	0.27093787	2.3653182	20	6 25.8	18.7
141948 2002 PK ₁₁₀	16.3	X	277.33708	293.53007	10.87709	6.10242	0.1245951	0.26264104	2.4148731	20	4 2.0	19.3
141949 2002 PN ₁₁₀	14.7	X	280.57731	214.05131	261.84585	8.55042	0.0616672	0.17753628	3.1352919	20	11 24.1	19.0
141950 2002 PK ₁₁₁	16.7	X	77.32708	70.48977	205.39996	8.56246	0.1318411	0.28243341	2.3006930	20	11 14.9	19.9
141951 2002 PH ₁₁₁	16.4	X	193.47452	261.80946	110.09335	6.82177	0.1521116	0.25733605	2.4479486	20	4 3.2	20.3
141952 2002 PR ₁₁₁	16.2	X	340.08762	109.55601	146.91914	6.75338	0.0993944	0.26528448	2.3988043	20	5 6.7	18.8
141953 2002 PU ₁₁₃	16.8	X	329.89685	137.95634	167.41533	1.37475	0.1850536	0.26962699	2.3729785	20	6 21.2	18.5
141954 2002 PZ ₁₁₃	16.8	X	308.74479	149.87384	219.69423	0.46877	0.2001607	0.27295808	2.3536330	20	8 18.3	18.7
141955 2002 PR ₁₁₅	16.1	X	238.04162	233.38852	167.42246	23.32042	0.2679167	0.26603937	2.3942644	20	6 12.1	20.5
141956 2002 PS ₁₁₅	15.3	X	53.79828	142.55861	286.87206	11.60818	0.2392194	0.23904163	2.5713056	20	—	—
141957 2002 PU ₁₁₆	16.4	X	311.64514	35.46573	290.22157	6.09928	0.1081976	0.26746815	2.3857302	20	6 27.2	18.9
141958 2002 PV ₁₁₆	16.6	X	324.61041	33.16980	260.85473	4.44155	0.2244661	0.26689379	2.3891517	20	5 13.6	18.5
141959 2002 PV ₁₁₇	17.2	X	81.64254	80.13024	205.69309	2.59769	0.1671143	0.28566511	2.2833085	20	12 4.9	20.6
141960 2002 PF ₁₁₈	16.5	X	38.89887	20.38323	177.39749	6.32672	0.0669837	0.26999096	2.3708454	20	7 16.9	19.3
141961 2002 PL ₁₁₉	16.4	X	350.93748	94.13549	170.63256	6.55738	0.1001563	0.26747620	2.3856824	20	6 7.2	18.9
141962 2002 PC ₁₂₀	17.0	X	311.81041	106.70356	187.34456	6.12357	0.1089574	0.26531396	2.3986266	20	5 11.3	19.6
141963 2002 PL ₁₂₀	16.0	X	217.28162	142.82926	296.14702	5.78562	0.0858971	0.27000364	2.3707712	20	7 26.9	19.2
141964 2002 PV ₁₂₀	17.0	X	143.76799	85.07669	185.54172	5.77551	0.1910534	0.29259736	2.2471002	20	—	—
141965 2002 PA ₁₂₁	16.6	X	295.31592	132.80713	195.80590	5.76095	0.1350243	0.26687743	2.3892494	20	5 30.8	19.5
141966 2002 PV ₁₂₂	16.1	X	215.24517	154.09093	218.57307	5.71885	0.1256449	0.25955663	2.4339667	20	4 22.3	19.6
141967 2002 PD ₁₂₄	16.3	X	290.88593	261.11180	42.60016	5.45174	0.1973800	0.26424451	2.4050940	20	4 8.9	19.4
141968 2002 PL ₁₂₄	16.4	X	301.40807	18.87318	253.15152	0.78654	0.1689657	0.26181066	2.4199766	20	3 13.5	19.2
141969 2002 PO ₁₂₄	16.2	X	180.03987	248.12214	151.36587	12.21375	0.1875841	0.25751609	2.4468075	20	4 26.7	20.4
141970 2002 PL ₁₂₅	16.9	X	265.48088	22.20986	324.36524	0.45684	0.2025382	0.26506703	2.4001160	20	5 3.9	20.2
141971 2002 PM ₁₂₅	16.2	X	165.43294	104.33062	185.33513	2.88625	0.1981029	0.24321650	2.5417960	20	—	—
141972 2002 PO ₁₂₅	15.8	X	285.64075	43.11118	306.68587	5.66702	0.1538143	0.26814702	2.3817019	20	6 11.7	18.5
141973 2002 PR ₁₂₅	16.1	X	242.05282	213.35281	153.50898	7.96222	0.1261514	0.26376172	2.4080280	20	5 16.3	19.6
141974 2002 PO ₁₂₆	16.1	X	246.90927	355.62953	25.99716	4.10466	0.1960591	0.26559167	2.3969543	20	5 30.7	19.8
141975 2002 PS ₁₂₆	16.7	X	241.22614	222.98085	110.61000	3.50519	0.2008668	0.25960524	2.4336629	20	3 26.2	20.5
141976 2002 PE ₁₂₇	15.6	X	71.56481	109.62640	304.74185	5.72434	0.2815430	0.24211128	2.5495255	20	1 22.9	17.6
141977 2002 PZ ₁₂₇	16.2	X	226.54039	21.79019	6.44227	6.13491	0.1176224	0.26424284	2.4051042	20	5 24.3	19.7
141978 2002 PZ ₁₂₈	15.8	X	275.67904	314.91234	50.71973	8.20503	0.2018376	0.26694983	2.3888174	20	6 11.5	18.8
141979 2002 PU ₁₂₉	16.2	X	113.03811	283.70548	76.34284	5.36750	0.2144599	0.24120001	2.5559430	20	1 3.2	19.4
141980 2002 PZ ₁₃₀	16.3	X	272.63767	306.70800	67.50784	3.10343	0.2194202	0.27022018	2.3695045	20	6 17.6	19.4
141981 2002 PT ₁₃₁	15.3	X	14.73679	170.63985	250.13048	15.93502	0.2474778	0.22928355	2.6437524	20	—	—
141982 2002 PC ₁₃₂	16.4	X	282.49080	271.14331	10.49333	6.51699	0.1509500	0.26049402	2.4281241	20	3 7.5	19.7
141983 2002 PJ ₁₃₂	16.4	X	312.48955	173.27753	124.30863	3.45585	0.1556831	0.26812014	2.3818611	20	5 9.9	19.0
141984 2002 PK ₁₃₃	16.9	X	324.31988	85.11984	270.55213	1.62699	0.1320085	0.27551959	2.3390225	20	9 6.0	19.0
141985 2002 PH ₁₃₄	16.2	X	315.88109	105.03689	269.21713	1.25068	0.2492002	0.27443845	2.3451614	20	9 8.0	17.2
141986 2002 PX ₁₃₆	16.7	X	308.76686	177.62417	193.60673	2.80923	0.1868165	0.27509099	2.3414514	20	8 22.7	18.5
141987 2002 PQ ₁₃₈	16.4	X	31.41396	70.78683	226.37846	4.30387	0.1407240	0.27666785	2.3325462	20	10 14.9	19.1
141988 2002 PB ₁₃₉	16.4	X	255.04055	185.64509	212.76871	4.47580	0.3226083	0.26587674	2.3952407	20	6 16.8	20.2
141989 2002 PC ₁₃₉	16.4	X	348.56897	330.37480	304.77077	7.77266	0.1967355	0.26853420	2.3794120	20	6 14.7	18.1
141990 2002 PG ₁₃₉	16.2	X	86.79180	24.52983	332.64166	9.24289	0.2156609	0.23646978	2.5899157	20	—	—
141991 2002 PO ₁₃₉	16.0	X	310.37055	90.49889	205.25166	6.06151	0.1693127	0.26491147	2.4010555	20	4 30.5	18.7
141992 2002 PA ₁₄₀	16.0	X	130.50230	136.35555	22.90830	2.67480	0.1500656	0.26437023	2.4043315	20	8 9.1	19.5
141993 2002 PP ₁₄₀	16.8	X	242.13133	237.43849	153.89959	1.59282	0.1868250	0.26250590				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
142001	2002	PW ₁₅₉	16.8	X	259.58500	316.86058	50.52021	2.33733	0.2018405	0.26670025	2.3903075	20	5 25.3	20.1
142002	2002	PM ₁₆₀	17.6	X	21.65028	240.15724	82.84453	2.59723	0.0987761	0.28074217	2.3099236	20	11 1.8	20.1
142003	2002	PP ₁₆₀	17.0	X	123.20226	303.46492	326.47671	3.95719	0.1011750	0.28992377	2.2608938	20	12 24.5	20.3
142004	2002	PE ₁₆₁	16.3	X	258.78147	4.46661	114.12402	4.50310	0.1438997	0.28482937	2.2877727	20	11 13.5	18.7
142005	2002	PS ₁₆₁	16.5	X	160.46230	58.24196	346.55548	2.30751	0.1776053	0.25620136	2.4551711	20	4 10.7	20.5
142006	2002	PG ₁₆₂	17.5	X	15.38119	106.49476	151.34091	1.57063	0.1598673	0.27180245	2.3602996	20	7 19.7	19.6
142007	2002	PJ ₁₆₂	17.1	X	304.70031	20.81200	274.90950	0.31812	0.1319477	0.26537752	2.3982436	20	4 26.8	19.8
142008	2002	PT ₁₆₂	16.2	X	49.91896	71.61318	336.17020	2.84295	0.1239228	0.24032670	2.5621312	20	—	—
142009	2002	PE ₁₆₃	16.6	X	232.21309	274.20649	128.36599	5.78490	0.2237768	0.26663806	2.3906791	20	6 11.1	20.3
142010	2002	PX ₁₆₃	16.6	X	49.01064	163.71497	107.55022	5.33442	0.1271218	0.27904560	2.3192769	20	10 5.8	19.4
142011	2002	PW ₁₆₄	16.6	X	264.44299	156.44489	286.99828	5.32927	0.1997721	0.27592202	2.3367476	20	9 15.3	19.4
142012	2002	PF ₁₆₅	16.9	X	220.80922	257.02131	126.87658	6.35300	0.1255457	0.26418173	2.4054751	20	5 15.2	20.5
142013	2002	PC ₁₆₇	17.0	X	311.27655	302.95196	314.47178	1.91197	0.1422766	0.26094698	2.4253134	20	3 11.5	20.0
142014	2002	Neirinc	16.9	X	271.73942	319.39208	352.16095	3.73675	0.0367335	0.26138132	2.4226259	20	4 16.5	20.0
142015	2002	PW ₁₆₉	16.7	X	283.83479	354.41983	47.59193	5.82543	0.0746361	0.27480546	2.3430730	20	9 12.9	19.3
142016	2002	PD ₁₇₂	16.5	X	119.90589	211.34117	133.73162	2.74359	0.0262095	0.24379239	2.5377916	20	—	—
142017	2002	PJ ₁₇₂	15.6	X	310.12720	289.42418	217.77226	2.68075	0.0779142	0.18710832	3.0274291	20	—	—
142018	2002	PK ₁₇₃	17.0	X	201.08473	253.73839	192.73047	5.26434	0.1312328	0.26872070	2.3783109	20	7 13.6	20.6
142019	2002	PX ₁₇₄	16.6	X	241.31138	301.28249	169.56013	6.21488	0.0505201	0.28065454	2.3104044	20	10 21.1	19.3
142020	2002	Xinghaishiyuan	16.1	X	172.77592	149.21185	184.78812	1.45154	0.0686890	0.19433249	2.9519280	20	1 26.7	20.5
142021	2002	QB ₁	16.9	X	265.87610	56.15384	295.20447	4.23826	0.2418681	0.26542579	2.3979528	20	5 4.4	20.4
142022	2002	QE ₁	17.0	X	139.82869	135.05039	139.73662	1.20044	0.1280203	0.29274532	2.2463430	20	—	—
142023	2002	QY ₂	16.3	X	118.42044	97.02353	265.52677	2.78627	0.1202969	0.24345292	2.5401501	20	1 7.7	19.6
142024	2002	QR ₃	16.5	X	195.07633	149.88369	186.72379	6.38730	0.1122760	0.25247360	2.4792790	20	2 15.6	20.3
142025	2002	QO ₄	16.0	X	99.68387	102.45297	295.68220	3.73744	0.0854586	0.24425598	2.5345794	20	—	—
142026	2002	QY ₄	15.9	X	199.65618	337.96116	292.70000	5.74245	0.0861315	0.24418399	2.5350776	20	—	—
142027	2002	QM ₅	16.7	X	296.32558	82.17592	225.41886	4.49624	0.2277015	0.26494670	2.4008427	20	4 14.6	19.6
142028	2002	QU ₅	15.3	X	310.64387	182.47505	214.23653	24.06722	0.2105952	0.27602659	2.3361574	20	10 6.5	17.3
142029	2002	QE ₆	14.9	X	285.47259	35.04622	235.44457	24.61584	0.1359326	0.25613881	2.4555708	20	2 15.4	19.0
142030	2002	QG ₆	15.0	X	281.66903	90.20968	295.68220	22.61965	0.3151619	0.26557914	2.3970297	20	7 3.3	18.0
142031	2002	QR ₆	16.4	X	93.60260	162.69902	188.07661	9.71516	0.1714832	0.23697770	2.5862137	20	—	—
142032	2002	QN ₇	16.5	X	24.19083	204.58695	66.31359	3.25419	0.1421381	0.27465375	2.3439357	20	8 27.4	18.8
142033	2002	QY ₇	16.6	X	131.37866	176.42459	110.77994	4.56997	0.1434684	0.29169017	2.2517570	20	—	—
142034	2002	QJ ₈	16.6	X	246.40414	245.91668	52.47122	3.39787	0.1667724	0.25548713	2.4597447	20	2 18.8	20.5
142035	2002	QT ₉	16.6	X	20.39791	351.05690	309.53496	4.89968	0.1569191	0.27581178	2.3373703	20	10 2.9	19.1
142036	2002	QH ₁₁	16.8	X	49.61257	75.86242	172.94094	4.62486	0.1266045	0.27536603	2.3398920	20	8 31.0	19.4
142037	2002	QJ ₁₃	16.4	X	216.36355	136.56147	190.77702	5.02978	0.1304631	0.25491945	2.4633951	20	2 25.6	20.1
142038	2002	QS ₁₃	16.5	X	180.41817	203.93645	212.19698	4.00821	0.1721746	0.25985245	2.4321191	20	5 14.2	20.3
142039	2002	QX ₁₃	16.0	X	60.03280	312.12882	214.09193	5.68393	0.0426198	0.26131514	2.4230349	20	5 3.6	18.7
142040	2002	QE ₁₅	16.2	X	61.56209	160.51997	226.39599	28.24707	0.3443538	0.45789916	1.6670789	20	—	—
142041	2002	QR ₁₅	16.3	X	166.06953	118.64005	165.64181	12.30820	0.2947522	0.24251564	2.5466908	20	—	—
142042	2002	QS ₁₅	16.6	X	230.72457	194.14865	204.17933	2.06460	0.1997285	0.26332061	2.4107165	20	6 5.7	20.3
142043	2002	QX ₁₅	15.1	X	315.91107	106.38394	292.43267	24.56279	0.2289294	0.27405357	2.3473566	20	10 6.5	17.8
142044	2002	QZ ₁₅	16.9	X	339.09745	157.43594	179.79851	6.16691	0.1353945	0.27491768	2.3424353	20	9 7.8	19.0
142045	2002	QD ₁₆	16.8	X	317.85386	91.17611	257.77562	3.30054	0.1263444	0.27483004	2.3429333	20	8 12.1	18.9
142046	2002	QK ₁₆	17.3	X	47.57746	89.04280	191.33772	4.64941	0.1739379	0.27900203	2.3195183	20	10 21.3	20.1
142047	2002	QK ₁₈	16.5	X	182.83886	144.86974	262.39747	1.39992	0.2202201	0.25691874	2.4505986	20	5 4.8	20.6
142048	2002	QU ₁₈	16.6	X	265.15501	341.13793	87.63196	3.85836	0.1439562	0.27450055	2.3448077	20	9 9.9	19.2
142049	2002	QK ₂₀	16.3	X	311.19888	81.22211	222.59710	5.17896	0.1374682	0.26491717	2.4010211	20	5 19.2	18.9
142050	2002	QP ₂₀	16.3	X	308.02113	260.93708	355.64377	2.04118	0.1685775	0.25960294	2.4336772	20	3 2.7	19.0
142051	2002	QQ ₂₀	16.6	X	292.84255	197.61218	153.19076	4.82836	0.1546447	0.26836818	2.3803932	20	6 24.9	19.2
142052	2002	QS ₂₀	16.2	X	302.64449	171.61915	157.50604	6.95114	0.1260995	0.26733539	2.3865200	20	6 14.2	18.9
142053	2002	QL ₂₁	16.7	X	317.84538	139.48770	176.68052	1.91594	0.2258024	0.26853341	2.3794167	20	6 5.1	18.7
142054	2002	QB ₂₂	16.9	X	273.57911	186.38198	129.98106	4.06848	0.1355254	0.26389463	2.4072194	20	4 14.0	20.1
142055	2002	QP ₂₃	16.5	X	315.55050	302.53364	3.38646	0.94169	0.1893879	0.26780601	2.3837233	20	5 20.8	18.9
142056	2002	QA ₂₄	16.3	X	197.99620	30.13521	345.45124	1.54501	0.0648084	0.25843629	2.4409959	20	4 8.9	19.8
142057	2002	QZ ₂₅	17.3	X	45.76603	275.00026	339.77111	5.06934	0.1887882	0.27473635	2.3434658	20	9 13.3	20.0
142058	2002	QM ₂₇	17.0	X	302.83887	210.43657	100.02514	2.29268	0.1793818	0.26647914	2.3916295	20	5 8.2	19.7
142059	2002	QH ₂₉	17.0	X	358.51124	280.26966	6.90280	4.52327	0.2348527	0.27343055	2.3509210	20	8 10.2	18.3
142060	2002	QH ₃₀	16.7	X	221.89116	47.74380	353.48640	6.11438	0.1073194	0.26557706	2.3970422	20	6 7.2	20.2
142061	2002	QP ₃₁	16.5	X	244.04317	96.73857	4.22212	6.91129	0.0782931	0.27829741	2.3234318	20	10 3.7	19.2
142062	2002	PB ₃₂	16.2	X	259.73854	122.10646	147.64693	6.60478	0.1325673	0.25300229	2.4758239	20	1 28.3	19.9
142063	2002	QS ₃₂	17.0	X	314.66070	115.67840	157.39649	1.73439	0.1730300	0.26255535	2.4153986	20	4 3.8	19.5
142064	2002	QY ₃₂	16.3	X	233.98117	81.39675	346.00408	6.69119	0.1011952	0.26903346	2.3764674	20	8 1.0	19.4
142065	2002	QL ₃₃	17.4	X	335.17412	265.04878	80.55366	2.98804	0.1474769	0.27467917	2.3437911	20	9 16.3	19.3
142066	2002	QC ₃₅	17.0	X	302.08486	270.54423	43.00867	3.01968	0.1851228	0.26602043	2.3943781	20	5 9.6	19.8
142067	2002	QV ₃₅	16.2	X	258.25666	43.37484	44.50430	4.10800	0.1626000	0.27553136	2.3389559	20	9 23.8	18.8
142068	2002	QA ₃₆	16.7	X	217.06831	327.66936	74.14823	3.23787	0.2063141	0.26193431	2.4192149	20	5 27.8	20.6
142069	2002	QH ₃₆	16.3	X	241.02128	19.46618	340.69422	10.89633	0.2568924	0.26326828	2.4110360	20	4 17.6	20.5
142070	2002	QO ₃₆	16.4	X	230.16608	20								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142081 2002 QD ₄₆	16.6	X	321.97494	289.35197	338.02603	1.93627	0.1946420	0.26485055	2.4014237	20	4 2.4	18.9
142082 2002 QQ ₄₆	16.7	X	243.81295	340.93687	11.12474	1.05458	0.2022195	0.26264009	2.4148790	20	4 18.7	20.5
142083 2002 QK ₄₇	16.7	X	341.66410	271.54179	50.23022	6.00423	0.2565124	0.27274086	2.3548825	20	8 27.2	17.9
142084 Jamesdaniel	16.8	X	327.99150	332.78816	331.47797	0.82394	0.1856029	0.26945469	2.3739900	20	6 14.6	18.6
142085 2002 QB ₄₈	17.3	X	273.38539	248.85694	121.39094	2.22820	0.1946732	0.26888734	2.3773282	20	6 16.9	20.3
142086 2002 QK ₅₀	16.4	X	257.87042	297.80017	168.91293	10.42083	0.1686985	0.27988700	2.3146264	20	10 21.3	18.9
142087 2002 QM ₅₀	16.5	X	66.27792	230.47324	195.70251	4.39931	0.1579426	0.24366019	2.5387094	20	1 9.5	19.2
142088 2002 QN ₅₀	17.0	X	155.29807	148.46867	4.07209	2.42555	0.1075039	0.27143552	2.3624263	20	8 24.9	20.4
142089 2002 QE ₅₂	16.6	X	33.23961	243.16529	23.17603	3.36568	0.1632864	0.27456808	2.3444232	20	9 8.4	18.9
142090 2002 QL ₅₂	16.0	X	203.98053	202.67644	87.32831	2.37300	0.0901127	0.19208922	2.9748659	20	1 8.2	20.6
142091 Omerblaes	16.6	X	189.95233	273.48014	146.62695	6.31173	0.1222067	0.26233884	2.4167274	20	5 30.0	20.4
142092 2002 QT ₅₃	15.9	X	33.94447	332.42907	93.24620	2.17373	0.0431707	0.18506376	3.0496860	20	—	—
142093 2002 QM ₅₄	17.0	X	264.70265	294.43596	117.83423	3.03720	0.1923610	0.27116866	2.3639760	20	8 5.3	19.8
142094 2002 QR ₅₅	16.7	X	236.27213	8.09697	124.46451	1.52570	0.1055388	0.28180178	2.3041295	20	11 3.6	19.4
142095 2002 QR ₅₈	16.7	X	204.32370	344.66509	118.16447	7.59445	0.0637933	0.27374079	2.3491444	20	8 17.3	19.8
142096 2002 QR ₅₉	16.9	X	22.73575	31.53152	224.48692	5.33666	0.1190695	0.27097454	2.3651048	20	7 24.3	19.3
142097 2002 QG ₆₂	16.0	X	83.17943	179.96661	335.12797	7.11962	0.1103194	0.26290205	2.4132746	20	5 31.3	19.1
142098 2002 QU ₆₃	16.9	X	241.28042	298.28198	339.53522	2.80794	0.1710733	0.25309361	2.4752283	20	1 19.2	20.9
142099 2002 QO ₆₄	15.9	X	334.05928	166.34380	67.27008	3.01662	0.0142142	0.20333785	2.8641158	20	4 6.2	19.7
142100 2002 QE ₆₆	17.5	X	319.91585	218.26519	115.14182	2.21797	0.1966134	0.27157517	2.3616163	20	7 14.2	19.2
142101 2002 QJ ₆₈	16.8	X	197.33358	229.23814	336.19945	5.00485	0.1032684	0.28968846	2.2621180	20	12 23.2	19.7
142102 2002 QP ₆₉	16.8	X	243.86605	54.09559	347.50427	5.27937	0.1209403	0.26845038	2.3799072	20	7 4.5	20.0
142103 2002 QV ₇₄	17.4	X	92.07293	279.49763	345.50157	2.47987	0.1526049	0.28370901	2.2937916	20	11 16.5	20.9
142104 2002 QM ₇₈	17.2	X	196.20547	297.67676	107.27195	3.49112	0.1789417	0.26107703	2.4245079	20	5 14.9	21.0
142105 2002 QX ₈₃	16.9	X	255.09272	0.80707	13.27587	5.26102	0.1147898	0.26704055	2.3882763	20	6 9.5	20.2
142106 Nengshun	16.4	X	285.85031	245.03265	100.42274	6.61790	0.1450913	0.26779000	2.3838183	20	6 7.9	19.3
142107 2002 QG ₈₆	16.9	X	61.82408	327.79547	295.69042	2.90418	0.0647394	0.27779018	2.3262593	20	9 27.6	19.9
142108 2002 QJ ₈₆	16.0	X	42.57364	225.00594	197.15493	2.24673	0.0653097	0.18633363	3.0358144	20	—	—
142109 2002 QD ₉₂	16.8	X	259.05240	156.95315	112.28322	2.71969	0.1702699	0.25614206	2.4555500	20	1 24.3	20.4
142110 2002 RO	16.4	X	203.05414	109.69839	15.23248	3.58692	0.0986448	0.27082486	2.3659762	20	9 11.1	19.5
142111 2002 RU ₁	15.7	X	133.70671	311.77520	347.48262	12.11429	0.1745571	0.23712772	2.5851227	20	—	—
142112 2002 RS ₂	16.5	X	210.71876	222.91695	141.10013	1.97739	0.1899728	0.25660989	2.4525646	20	4 5.8	20.5
142113 2002 RS ₃	17.0	X	349.50279	132.57663	175.25852	2.42510	0.2130486	0.27303700	2.3531794	20	8 17.2	18.5
142114 2002 RA ₄	16.2	X	285.25109	256.25945	166.16407	20.48594	0.2577041	0.27638724	2.3341247	20	9 13.8	18.1
142115 2002 RC ₅	16.2	X	227.72621	178.12105	222.29766	10.18533	0.2267403	0.26273338	2.4143073	20	6 3.5	20.1
142116 2002 RE ₅	15.8	X	325.41060	150.82082	299.26104	13.32705	0.1155806	0.23032804	2.6357538	20	—	—
142117 2002 RY ₅	16.4	X	286.75452	328.94932	324.79759	0.70797	0.1813867	0.26271992	2.4143898	20	3 22.2	19.4
142118 2002 RE ₆	16.3	X	328.68680	185.93229	170.51042	6.61832	0.1368741	0.27498629	2.3420457	20	9 17.9	18.3
142119 2002 RD ₇	16.8	X	105.88440	224.13129	155.82474	2.98174	0.2144521	0.24358179	2.5392541	20	1 18.7	20.0
142120 2002 RM ₇	16.6	X	351.99144	324.86454	15.62171	3.50088	0.1839541	0.27758454	2.3274081	20	10 17.4	18.5
142121 2002 RD ₈	15.7	X	140.16114	87.31409	166.38228	12.82365	0.0746611	0.23146068	2.6271482	20	12 11.1	19.8
142122 2002 RG ₈	16.1	X	199.85455	60.49741	213.43966	1.77559	0.0896930	0.24383921	2.5374667	20	—	—
142123 2002 RA ₉	16.7	X	165.71910	137.88982	116.06712	1.55952	0.1707072	0.29347980	2.2425936	20	—	—
142124 2002 RP ₉	16.5	X	317.76380	119.37332	146.36564	2.63676	0.2027926	0.26347851	2.4097533	20	3 24.4	19.0
142125 2002 RR ₉	16.2	X	238.24637	68.68889	346.26182	6.59816	0.1025185	0.26910022	2.3760743	20	7 19.6	19.5
142126 2002 RT ₉	17.2	X	335.00475	128.48662	155.22484	2.59047	0.1946304	0.26815431	2.3816587	20	5 26.7	19.0
142127 2002 RY ₉	16.5	X	54.57469	269.11454	154.01063	6.26742	0.2244368	0.24016770	2.5632619	20	—	—
142128 2002 RE ₁₀	16.2	X	148.00131	95.92304	352.94258	6.39988	0.0568261	0.26143569	2.4222900	20	5 15.5	19.6
142129 2002 RD ₁₁	16.0	X	180.69556	170.37179	112.22034	1.48640	0.0693699	0.24247840	2.5469515	20	—	—
142130 2002 RU ₁₁	16.0	X	143.58608	231.77049	247.01102	1.29116	0.0441615	0.26300353	2.4126538	20	6 21.8	19.0
142131 2002 RV ₁₁	16.2	X	335.15787	77.60542	218.52325	1.44103	0.2153782	0.26823222	2.3811975	20	6 14.4	17.7
142132 2002 RN ₁₃	16.2	X	286.97404	182.78656	161.72699	6.15568	0.1461558	0.26558554	2.3969911	20	6 8.3	19.2
142133 2002 RY ₁₃	16.9	X	109.41655	328.39443	14.48309	3.23548	0.2077800	0.23805621	2.5783965	20	—	—
142134 2002 RH ₁₄	16.6	X	231.89461	357.01574	2.78450	0.64401	0.1844972	0.25912840	2.4366475	20	4 18.8	20.5
142135 2002 RY ₁₄	16.0	X	173.20719	31.94135	356.18783	2.79992	0.0624949	0.25411911	2.4685646	20	3 27.9	19.4
142136 2002 RZ ₁₄	16.6	X	67.84250	56.15844	1.63021	1.72218	0.1788133	0.24031484	2.5622155	20	1 5.1	19.0
142137 2002 RN ₁₅	16.3	X	208.64942	81.92947	333.96230	5.66542	0.1143979	0.26278867	2.4139687	20	6 12.1	19.8
142138 2002 RQ ₁₆	17.2	X	11.76766	107.90100	202.70928	0.95705	0.1167008	0.27525624	2.3405141	20	9 29.0	19.3
142139 2002 RR ₁₆	16.8	X	312.67642	141.19271	166.74590	3.14217	0.1315737	0.26596133	2.3947327	20	5 29.4	19.4
142140 2002 RA ₁₇	16.9	X	4.79628	289.24361	343.64119	1.86816	0.1951318	0.27020237	2.3696086	20	7 25.5	18.5
142141 2002 RT ₁₇	16.8	X	258.33986	232.71533	154.00046	3.56706	0.2294227	0.26586059	2.3953376	20	6 16.1	20.2
142142 2002 RW ₁₇	16.1	X	2.95573	138.83276	168.46106	5.55390	0.1482525	0.27345418	2.3507855	20	9 11.6	18.0
142143 2002 RM ₁₈	16.5	X	278.19931	168.63863	125.39467	1.98239	0.1802641	0.25892459	2.4379260	20	3 14.1	19.8
142144 2002 RX ₁₈	16.7	X	91.62070	261.44663	129.14440	3.27844	0.2316139	0.24035884	2.5619028	20	1 16.2	19.5
142145 2002 RD ₁₉	16.0	X	264.43857	153.55368	156.23636	6.68202	0.1305860	0.25794550	2.4440912	20	3 25.9	19.4
142146 2002 RZ ₁₉	15.7	X	162.79073	297.34323	10.14040	14.37192	0.1284775	0.24171047	2.5523432	20	—	—
142147 2002 RR ₂₀	16.5	X	334.87495	211.81542	85.15139	3.46416	0.1796762	0.26796522	2.3827790	20	6 19.2	18.4
142148 2002 RD ₂₁	15.5	X	333.95298	284.38674	162.20078	14.55414	0.0172949	0.23298865	2.6156495	20	—	—
142149 2002 RR ₂₁	16.7	X	243.32109	312.84197	356.12372	5.69186	0.1563539	0.25570832	2.4583260	20	2 29.0	20.5
142150 2002 RT ₂₁	16.2	X	264.73288	347.87477	33.14678	1.76184	0.1889647	0.26677229	2.3898771	20	6 21.5	19.2
142151 2002 RN ₂₄	16.9	X	278.67107	187.62981	175.10903	5.30089	0.2064804	0.26716008	2.3875639	20	6 11.9	19.9
142152 2002 RO ₂₄	16.2	X	51.72157	228.06662	204.75601	2.86627	0.2007304	0.24034956	2.5619687	20	—	—
142153 2002 RS ₂₄	15.8	X	143.60634	199.93556	331.75771	6.33512	0.0632169	0.27326242	2.3518852	20	9 4.7	19.0
142154 2002 RM ₂₈	16.9	X	288.61498	268.91603	354.							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
142161	2002	RR ₃₁	15.9 ^m	X	40.82400	166.02132	256.15450	3.73904	0.1908213	0.23689468	2.5868178	20	—	—
142162	2002	RY ₃₁	16.5	X	119.36830	100.91188	227.56587	3.92055	0.1554962	0.23831927	2.5764988	20	—	—
142163	2002	RF ₃₂	16.5	X	279.11002	326.10465	332.82114	8.51773	0.2072734	0.26016129	2.4301939	20	3 15.0	20.0
142164	2002	RG ₃₂	16.1	X	319.47123	307.83498	324.20613	5.76646	0.1000463	0.26126954	2.4233168	20	4 18.4	19.0
142165	2002	RF ₃₃	16.4	X	305.22869	9.75494	324.30446	6.11807	0.1214482	0.26771037	2.3842909	20	6 26.9	19.0
142166	2002	RK ₃₄	16.4	X	210.29104	301.24295	93.43989	3.39412	0.1982652	0.25904541	2.4371679	20	5 13.7	20.3
142167	2002	RM ₃₄	15.7	X	236.55506	60.14754	32.45945	6.59696	0.0502668	0.27285235	2.3542410	20	9 18.2	18.6
142168	2002	RC ₃₅	16.2	X	206.96355	114.24106	327.77672	9.17548	0.0766814	0.26757068	2.3851208	20	7 21.2	19.4
142169	2002	RS ₃₅	15.7	X	56.85160	79.45603	324.42113	16.05833	0.2204976	0.23767383	2.5811612	20	—	—
142170	2002	RP ₃₆	16.3	X	334.30060	343.16404	346.40497	9.03872	0.1153945	0.27360055	2.3499470	20	8 18.9	18.5
142171	2002	RE ₃₈	16.7	X	315.44739	310.49434	14.06856	3.65483	0.1891546	0.26985490	2.3716422	20	6 19.9	19.0
142172	2002	RK ₃₉	15.9	X	252.34054	286.49437	43.12226	2.57526	0.2115868	0.26050028	2.4280852	20	3 29.6	19.7
142173	2002	RN ₃₉	15.9	X	150.99449	62.79710	349.09473	6.28547	0.1627256	0.25438859	2.4668210	20	4 8.6	19.8
142174	2002	RO ₃₉	16.8	X	270.13927	232.61478	105.07503	2.40081	0.1924422	0.26401591	2.4064822	20	4 29.8	20.2
142175	2002	RB ₄₀	16.5	X	215.68757	247.44170	132.07975	2.80512	0.2210297	0.25975964	2.4326984	20	4 28.6	20.6
142176	2002	RE ₄₀	15.0	X	55.64054	239.44597	80.01473	1.83633	0.2065223	0.17287264	3.1914292	20	12 2.5	19.6
142177	2002	RT ₄₀	15.5	X	141.96303	239.82747	75.35884	2.14733	0.1329405	0.18552564	3.0446223	20	—	—
142178	2002	RW ₄₁	16.4	X	116.35123	356.04432	20.61947	3.44693	0.1371615	0.24432727	2.5340864	20	1 17.5	19.7
142179	2002	RL ₄₃	16.0	X	244.20164	3.55222	80.48506	3.30677	0.1706341	0.27217781	2.3581291	20	8 27.6	19.1
142180	2002	RN ₄₃	16.4	X	36.77289	302.63807	355.01036	6.94783	0.1166886	0.27781452	2.3261234	20	10 18.3	19.1
142181	2002	RP ₄₅	16.2	X	297.29705	257.13044	38.40352	2.67870	0.2036897	0.26288861	2.4133568	20	4 4.7	19.1
142182	2002	RP ₄₅	16.8	X	1.81942	300.33968	67.66721	1.93486	0.2507992	0.28020693	2.3128642	20	12 29.3	19.0
142183	2002	RW ₄₆	16.2	X	219.20339	300.17454	91.92896	2.43250	0.1908828	0.26100189	2.4249732	20	5 18.5	20.1
142184	2002	RC ₄₇	16.0	X	313.14423	356.79888	13.39887	6.44687	0.1397135	0.27319783	2.3522558	20	9 8.4	18.0
142185	2002	RV ₄₇	16.1	X	251.69232	346.95667	59.65098	3.59814	0.1635356	0.26754669	2.3852633	20	7 15.2	19.2
142186	2002	RW ₄₇	16.2	X	227.39301	338.43025	143.39193	5.61123	0.0952185	0.27785808	2.3258803	20	10 10.1	19.1
142187	2002	RZ ₄₇	16.5	X	332.99408	238.29649	54.42726	2.10181	0.1778901	0.26749234	2.3855864	20	6 7.5	18.5
142188	2002	RC ₄₉	16.2	X	299.29599	225.85608	120.39323	2.13875	0.2082520	0.26800559	2.3825397	20	6 19.5	18.8
142189	2002	RO ₄₉	16.1	X	240.00793	295.61654	104.19503	3.62786	0.1845371	0.26441908	2.4040354	20	6 18.7	19.7
142190	2002	RP ₅₀	16.0	X	236.79819	184.19947	145.60229	6.82290	0.1151020	0.25578058	2.4578630	20	3 23.6	19.6
142191	2002	RV ₅₀	16.6	X	255.59282	261.62411	123.30153	3.39662	0.2273439	0.26458955	2.4030027	20	6 10.9	19.9
142192	2002	RU ₅₁	15.9	X	49.05173	225.97131	137.46607	5.11551	0.2053158	0.23042821	2.6349899	20	—	—
142193	2002	RV ₅₂	17.2	X	271.17105	272.95519	73.60124	2.64710	0.1888183	0.26472118	2.4022061	20	5 12.9	20.3
142194	2002	RF ₅₃	16.0	X	282.60560	30.82959	359.18939	4.90386	0.1904055	0.27056953	2.3674644	20	8 1.9	18.5
142195	2002	RK ₅₄	16.5	X	231.37435	179.50093	150.89142	6.84047	0.1389624	0.25494737	2.4632152	20	3 16.7	20.2
142196	2002	RP ₅₄	16.8	X	265.25617	230.32422	134.98848	5.75585	0.1790910	0.26600789	2.3944533	20	6 2.7	20.0
142197	2002	RT ₅₅	17.1	X	283.47752	125.29296	210.80230	5.14564	0.1949943	0.26436765	2.4043472	20	5 13.6	20.0
142198	2002	RN ₅₆	16.0	X	54.90738	262.92999	331.80368	6.37669	0.0842976	0.26834768	2.3805145	20	8 11.8	18.7
142199	2002	RC ₅₇	15.9	X	350.33664	105.60551	313.98858	3.47632	0.1284377	0.22859523	2.6490568	20	—	—
142200	2002	RF ₅₇	16.5	X	256.48456	183.37875	201.90479	6.97415	0.1046852	0.26577320	2.3958627	20	6 28.8	19.8
142201	2002	RN ₅₇	15.9	X	42.95028	177.87856	271.77637	3.26176	0.1348473	0.24106059	2.5569284	20	—	—
142202	2002	RY ₅₇	16.8	X	205.12001	138.46416	214.49379	4.20296	0.2135809	0.25438321	2.4668557	20	3 16.2	21.0
142203	2002	RJ ₅₈	16.4	X	184.69372	209.86749	236.70707	3.51886	0.1878100	0.26154395	2.4216215	20	6 25.8	20.3
142204	2002	RH ₅₉	16.1	X	167.05754	124.99329	212.30694	6.12916	0.0766515	0.25998177	2.4313125	20	5 26.1	19.6
142205	2002	RP ₆₀	16.2	X	161.35063	31.02836	255.72737	4.73812	0.1815591	0.24034595	2.5619944	20	—	—
142206	2002	RD ₆₁	15.6	X	327.34854	256.40804	169.86827	13.03939	0.2586772	0.22348018	2.6893256	20	12 20.7	18.0
142207	2002	RY ₆₁	16.1	X	339.01750	280.69248	25.43478	7.15625	0.1321396	0.26698699	2.3885957	20	7 20.1	18.4
142208	2002	RT ₆₂	15.9	X	80.47553	272.58555	159.02654	4.55275	0.2163532	0.24012336	2.5635775	20	2 20.9	18.8
142209	2002	RX ₆₂	15.9	X	152.80409	232.25145	112.57808	3.54199	0.2390957	0.24282641	2.5445174	20	1 27.9	20.0
142210	2002	RG ₆₃	16.1	X	93.89320	336.88599	66.85735	6.02005	0.2470306	0.23920718	2.5701191	20	2 11.2	19.3
142211	2002	RH ₆₃	15.7	X	312.67083	303.83464	76.84729	6.80033	0.1337712	0.27057911	2.3674085	20	9 26.5	17.9
142212	2002	RG ₆₄	15.4	X	301.10153	271.49195	178.86526	12.38354	0.1274830	0.22235090	2.6984235	20	11 30.3	18.6
142213	2002	RN ₆₅	14.6	X	161.31007	315.57914	53.23305	16.06834	0.2339531	0.24413921	2.5353876	20	3 11.6	19.1
142214	2002	RV ₆₅	16.9	X	341.98489	353.82767	68.90277	14.52453	0.1514509	0.22203993	2.7009424	20	—	—
142215	2002	RD ₆₈	16.3	X	295.56444	137.53304	246.83464	6.49859	0.1672340	0.27226355	2.3576339	20	8 15.9	18.8
142216	2002	RW ₆₉	16.7	X	167.30223	58.48430	356.70725	1.64372	0.0663849	0.25814281	2.4428457	20	4 25.7	20.1
142217	2002	RG ₇₀	16.4	X	231.80197	113.47731	223.22125	6.15132	0.1737114	0.25803777	2.4435086	20	3 19.4	20.4
142218	2002	RG ₇₂	16.4	X	344.57844	259.26139	21.19573	1.38825	0.1712584	0.26853267	2.3794210	20	6 15.1	18.2
142219	2002	RS ₇₂	16.3	X	300.34254	122.98660	171.09584	7.09539	0.1051444	0.26262131	2.4149941	20	4 24.6	19.2
142220	2002	RD ₇₃	16.3	X	119.68050	127.30479	171.70646	5.09859	0.1056446	0.23524674	2.5988845	20	—	—
142221	2002	RL ₇₃	16.5	X	345.18148	95.13114	174.05662	5.34995	0.1212882	0.26616020	2.3933597	20	6 1.8	18.8
142222	2002	RP ₇₄	17.1	X	36.25491	111.77594	169.72953	2.38139	0.2136147	0.27692115	2.3311236	20	10 13.5	19.7
142223	2002	RE ₇₅	16.8	X	322.89560	64.61854	221.44386	0.53917	0.2557102	0.26657004	2.3910858	20	4 22.0	18.7
142224	2002	RF ₇₅	16.8	X	32.22971	339.72590	271.30014	0.71566	0.1934408	0.27164030	2.3612388	20	8 17.5	19.1
142225	2002	RP ₇₆	16.6	X	314.70194	359.15767	6.51645	4.46316	0.1207137	0.27323112	2.3520648	20	9 4.9	18.7
142226	2002	RE ₇₇	16.0	X	201.48222	249.45241	177.92574	5.65358	0.0777245	0.26434474	2.4044861	20	6 22.2	19.4
142227	2002	RA ₈₁	16.4	X	282.33349	119.84020	157.05116	3.19620	0.1807931	0.25733495	2.4479556	20	2 24.9	19.8
142228	2002	RB ₈₁	16.2	X	336.82038	158.21954	141.27573	1.66449	0.1884956	0.26863221	2.3788332	20	6 27.7	18.0
142229	2002	RE ₈₁	16.9	X	347.79156	268.92001	24.71587	2.34130	0.1859096	0.26946238	2.3739449	20	7 17.2	18.6
142230	2002	RR ₈₁	16.5	X	284.10810	1								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142241 2002 RT ₉₆	16.6 ^m	X	270.65786	304.74834	19.72124	1.47140	0.1938142	0.26013881	2.4303339	20	4 11.8	19.8
142242 2002 RP ₉₇	17.0	X	300.77951	74.15810	233.81025	0.91015	0.2479439	0.26335158	2.4105275	20	4 18.7	20.0
142243 2002 RQ ₉₉	14.5	X	71.63432	301.63369	30.79785	5.42216	0.1442224	0.17301769	3.1896452	20	12 26.8	19.4
142244 2002 RD ₁₀₀	15.1	X	54.17324	5.53149	10.20790	12.23345	0.1104021	0.23095417	2.6309878	20	—	—
142245 2002 RL ₁₀₀	16.2	X	124.70135	196.53844	181.19883	13.29880	0.2787959	0.24270541	2.5453631	20	2 12.5	20.2
142246 2002 RR ₁₀₀	16.3	X	89.42613	244.02268	184.99881	11.83021	0.2787421	0.24134484	2.5549204	20	3 10.5	19.6
142247 2002 RS ₁₀₀	16.4	X	236.39758	335.64110	42.08403	1.96124	0.1993566	0.25954776	2.4340222	20	5 15.0	20.1
142248 2002 RX ₁₀₀	16.3	X	53.09490	46.15128	352.40688	2.50951	0.2658130	0.23296485	2.6158276	20	—	—
142249 2002 RE ₁₀₂	15.5	X	100.84111	339.10263	22.67401	12.88594	0.1811611	0.23569958	2.5955546	20	—	—
142250 2002 RO ₁₀₂	15.4	X	125.76508	339.47082	32.25017	10.18758	0.1126696	0.23991899	2.5650330	20	1 22.1	19.1
142251 2002 RX ₁₀₂	14.9	X	317.60246	237.98226	201.72830	25.27941	0.3306453	0.22025075	2.7155499	20	12 11.7	17.2
142252 2002 RA ₁₀₄	15.9	X	157.60432	279.28652	22.74455	12.16986	0.2466323	0.23954553	2.5676983	20	—	—
142253 2002 RN ₁₀₄	16.0	X	130.06765	353.99107	18.41269	4.43081	0.2179017	0.24211481	2.5495008	20	2 8.6	19.8
142254 2002 RE ₁₀₅	15.8	X	60.80594	227.39334	178.26234	3.47806	0.2082751	0.23416635	2.6068721	20	—	—
142255 2002 RQ ₁₀₆	15.8	X	67.62916	356.55991	24.45862	3.86127	0.2263589	0.23168210	2.6254740	20	—	—
142256 2002 RS ₁₀₆	15.0	X	326.85459	183.74775	210.45160	17.99288	0.2930452	0.21729875	2.7400884	20	10 25.4	16.7
142257 2002 RT ₁₀₆	15.2	X	284.16420	15.09145	44.20153	10.48308	0.2315139	0.21293106	2.7774316	20	9 5.9	18.7
142258 2002 RZ ₁₀₆	15.5	X	343.16875	13.30712	23.66809	9.99992	0.2379638	0.21974731	2.7196959	20	12 8.6	18.1
142259 2002 RD ₁₀₇	14.9	X	128.07058	339.26992	38.02205	14.39136	0.2299778	0.23984979	2.5655264	20	2 19.6	19.0
142260 2002 RL ₁₀₇	15.4	X	102.18982	1.43815	38.11036	5.24705	0.2879897	0.23781159	2.5801644	20	2 22.6	18.9
142261 2002 RS ₁₀₇	15.8	X	60.19423	212.39326	218.35708	4.83122	0.2405965	0.23527893	2.5986474	20	1 16.5	18.1
142262 2002 RP ₁₀₇	15.8	X	144.87255	355.59780	348.19681	2.30094	0.2367091	0.23967333	2.5667855	20	1 20.1	19.9
142263 2002 RW ₁₀₈	17.1	X	232.97627	168.49869	156.46498	1.40153	0.1842054	0.25573158	2.4581770	20	3 7.7	21.0
142264 2002 RW ₁₀₈	16.7	X	323.36725	347.05136	324.34990	1.64511	0.1881308	0.26801755	2.3824688	20	6 15.6	18.7
142265 2002 RO ₁₁₁	15.8	X	8.14917	12.26214	26.63642	7.34569	0.1696560	0.22506312	2.6767080	20	—	—
142266 2002 RQ ₁₁₁	15.4	X	184.02883	357.84549	327.82083	7.25919	0.2535936	0.24407060	2.5358627	20	1 31.4	19.9
142267 2002 RN ₁₁₃	16.8	X	334.45296	254.21128	13.99172	4.62312	0.2100568	0.26583424	2.3954959	20	4 25.2	18.8
142268 2002 RW ₁₁₃	16.1	X	150.07606	94.03798	329.47877	5.09710	0.0426799	0.25737650	2.4476921	20	4 12.1	19.4
142269 2002 RE ₁₁₄	16.5	X	182.12717	257.61373	123.95596	3.32980	0.1918743	0.25353087	2.4723815	20	4 3.9	20.5
142270 2002 RJ ₁₁₄	16.2	X	150.19353	252.73116	35.38572	3.89426	0.2043944	0.23821804	2.5772286	20	—	—
142271 2002 RY ₁₁₄	16.5	X	119.95717	14.97206	250.41494	2.99871	0.1702755	0.28727054	2.2747935	20	12 14.9	20.1
142272 2002 RB ₁₁₅	15.0	X	191.44747	342.67998	280.25623	4.99343	0.0709744	0.18492255	3.0512383	20	—	—
142273 2002 RD ₁₁₅	15.3	X	144.44980	257.93733	323.92499	12.21424	0.1171121	0.22763589	2.6564943	20	10 29.8	19.7
142274 2002 RO ₁₁₅	16.0	X	61.91949	146.19100	1.29914	4.78041	0.0505333	0.25741052	2.4474764	20	4 9.7	19.0
142275 Simonyi	16.0	X	103.44855	188.36279	198.47468	21.77902	0.0635954	0.24011615	2.5636288	20	—	—
142276 2002 RX ₁₁₈	16.3	X	341.47525	276.51481	49.60613	10.48950	0.2554452	0.27391845	2.3481285	20	9 8.9	17.8
142277 2002 RJ ₁₁₉	16.0	X	51.15855	98.21852	298.45049	7.52384	0.2015208	0.23715656	2.5849131	20	—	—
142278 2002 RJ ₁₂₀	16.5	X	141.53335	236.08902	199.40663	2.30812	0.1564929	0.25455187	2.4657660	20	5 1.2	20.0
142279 2002 RH ₁₂₁	15.1	X	303.64982	108.97439	335.02140	10.99093	0.1553009	0.22303759	2.6928821	20	11 18.6	18.1
142280 2002 RR ₁₂₁	15.7	X	124.74316	3.37065	329.96125	9.44235	0.2352285	0.23773722	2.5807024	20	—	—
142281 2002 RJ ₁₂₂	15.8	X	159.91653	195.61362	107.00884	8.35775	0.1946375	0.24162743	2.5529279	20	—	—
142282 2002 RT ₁₂₈	15.3	X	353.81550	266.13695	273.47097	13.67674	0.1119426	0.25253535	2.4788749	20	1 31.8	18.3
142283 2002 RJ ₁₃₀	16.2	X	234.67143	338.20932	38.08454	7.41984	0.1319390	0.26311454	2.4119751	20	5 16.6	19.7
142284 2002 RO ₁₃₂	16.7	X	354.33272	35.35205	267.04678	5.86864	0.1460203	0.27072704	2.3665461	20	8 12.4	18.8
142285 2002 RR ₁₃₂	16.2	X	156.63818	94.33976	359.94658	6.27584	0.0869371	0.26196971	2.4189970	20	6 5.5	19.7
142286 2002 RB ₁₃₄	15.9	X	261.53484	252.33829	69.70880	9.22341	0.0917711	0.25885122	2.4383867	20	4 15.1	19.3
142287 2002 RJ ₁₃₄	16.0	X	277.78465	298.85591	6.28814	10.80782	0.2579473	0.26149556	2.4219203	20	3 18.8	19.6
142288 2002 RW ₁₃₅	16.2	X	286.57765	284.37214	51.38536	6.48657	0.2127460	0.26560977	2.3968454	20	5 13.8	19.0
142289 2002 RJ ₁₃₇	15.5	X	104.29707	216.63677	154.22747	14.19349	0.1958156	0.23659141	2.5890280	20	1 3.4	19.0
142290 2002 RB ₁₃₈	15.8	X	113.45681	247.93913	139.05346	12.38761	0.2921365	0.24197424	2.5504880	20	2 17.4	19.5
142291 Dompfaff	17.0	X	259.69171	24.43373	309.79590	3.73791	0.1483748	0.26082826	2.4260493	20	4 15.9	20.5
142292 2002 RF ₁₄₂	16.7	X	173.00846	284.45339	212.26914	6.02815	0.0696108	0.27085574	2.3657963	20	8 21.1	20.0
142293 2002 RH ₁₄₂	16.3	X	174.71416	7.94707	256.96086	3.69106	0.2366313	0.24028925	2.5623974	20	—	—
142294 2002 RJ ₁₄₂	16.0	X	98.54128	141.30169	328.87097	7.01592	0.0868029	0.25453157	2.4658971	20	4 13.9	19.2
142295 2002 RV ₁₄₃	16.6	X	193.38520	157.75753	291.43672	2.89797	0.1810205	0.26350937	2.4095652	20	7 7.8	20.5
142296 2002 RP ₁₄₄	16.3	X	149.54837	134.28800	330.85733	6.56206	0.0719782	0.26121948	2.4232624	20	6 11.7	19.7
142297 2002 RF ₁₄₅	16.2	X	159.58513	56.74344	19.65860	5.26719	0.0816596	0.25866254	2.4395723	20	5 15.2	19.6
142298 2002 RO ₁₄₅	16.6	X	214.23239	340.84681	105.67607	2.22886	0.1551660	0.26693263	2.3889200	20	7 27.1	20.1
142299 2002 RO ₁₄₇	16.8	X	230.09330	192.42000	174.83284	2.66834	0.1089940	0.25976125	2.4326883	20	5 3.3	20.2
142300 2002 RY ₁₄₈	16.2	X	267.16442	125.86284	263.57562	5.35713	0.1132718	0.26974765	2.3722708	20	7 18.5	19.2
142301 2002 RT ₁₄₉	15.9	X	157.51287	234.89677	264.59014	5.88597	0.0564746	0.26833220	2.3806060	20	8 6.3	19.2
142302 2002 RR ₁₅₀	16.0	X	101.09288	74.69695	218.53770	7.48763	0.1351251	0.28613948	2.2807842	20	12 30.4	19.5
142303 2002 RW ₁₅₃	16.3	X	112.97490	82.20619	198.69199	3.36469	0.1102256	0.22947740	2.6422633	20	12 15.4	20.4
142304 2002 RZ ₁₅₄	16.0	X	73.04202	310.02542	119.38745	9.51422	0.2159343	0.23998709	2.5645478	20	2 6.5	18.6
142305 2002 RN ₁₅₅	16.6	X	328.56708	160.04549	188.18233	6.55933	0.1340740	0.27296673	2.3535833	20	9 1.7	18.6
142306 2002 RL ₁₅₇	16.2	X	249.45805	233.39960	317.49959	2.18952	0.1239867	0.23654700	2.5893520	20	—	—
142307 2002 RS ₁₅₈	16.7	X	84.40066	10.26643	273.56319	1.15701	0.1785089	0.22760918	2.6567021	20	11 25.5	20.9
142308 2002 RJ ₁₆₂	16.4	X	151.03607	310.31842	193.34596	2.47463	0.0969545	0.26871126	2.3783667	20	8 6.4	19.9
142309 2002 RZ ₁₆₂	16.7	X	246.43328	137.84919	352.40077	3.84997	0.1838581	0.28027650	2.3124815	20	10 30.7	19.3
142310 2002 RE ₁₆₄	17.1	X	214.49707	129.21090	188.51198	2.33458	0.1620938	0.25200970	2.4823206	20	2 11.8	21.0
142311 2002 RR ₁₆₄	16.5	X	172.75063	71.86532	188.11295	3.68735	0.1065233	0.23694882	2.5864238	20	—	—
142312 2002 RU ₁₆₄	16.8	X	42.63603	71.85688	196.31876	1.79212	0.1371172	0.27423331	2.3463308	20	9 19.6	19.3
142313 2002 RD ₁₆₅	17.4	X	204.51905	233.99978	176.30980	2.28077	0.1933414	0.26053401	2.4278756	20	5 28.3	21.4
142314 2002 RH												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142321 2002 RO ₁₇₁	15.5	X	148.56401	30.44910	27.83507	7.20932	0.1426665	0.25426811	2.4676002	20	4 14.9	19.1
142322 2002 RX ₁₇₁	17.6	X	189.80276	13.93549	358.48174	1.68776	0.2112780	0.25349665	2.4726040	20	3 28.6	21.8
142323 2002 RW ₁₇₂	16.5	X	323.23514	229.51502	54.81830	8.16783	0.2832724	0.26564235	2.3966494	20	4 17.5	18.7
142324 2002 RC ₁₇₃	15.5	X	312.91122	20.05316	50.65973	10.17111	0.1582419	0.27962991	2.3160449	20	12 12.3	17.4
142325 2002 RB ₁₇₅	16.9	X	56.55065	63.08404	242.28418	4.70012	0.1799560	0.28210656	2.3024697	20	12 4.7	20.1
142326 2002 RZ ₁₇₆	16.5	X	255.19741	300.30889	193.95182	8.66158	0.1423935	0.28233118	2.3012484	20	11 29.4	19.0
142327 2002 RH ₁₈₀	16.6	X	167.34193	123.69659	177.22942	5.85578	0.1823584	0.24137864	2.5546818	20	—	—
142328 2002 RL ₁₈₀	17.0	X	331.31147	320.10406	345.56631	1.78483	0.1888981	0.26787413	2.3833191	20	6 24.7	18.8
142329 2002 RW ₁₈₂	16.3	X	138.34038	39.34112	313.12255	14.49802	0.1428851	0.24334789	2.5408810	20	1 14.9	19.9
142330 2002 RE ₁₈₅	15.7	X	200.07538	45.02471	242.82266	8.33144	0.1307638	0.24496711	2.5296719	20	—	—
142331 2002 RL ₁₈₆	17.0	X	5.67774	60.34873	220.79601	8.96642	0.2411212	0.27108685	2.3644516	20	8 12.7	18.8
142332 2002 RG ₁₈₇	16.1	X	10.15564	359.87062	260.08304	5.65957	0.1117785	0.26647148	2.3916753	20	7 6.3	18.4
142333 2002 RX ₁₈₇	16.2	X	153.85710	39.10566	54.93571	1.50369	0.0376035	0.26166231	2.4208912	20	5 30.9	19.5
142334 2002 RM ₁₈₉	16.9	X	297.21833	153.67218	194.21928	6.12408	0.1380872	0.26831987	2.3806789	20	6 30.2	19.5
142335 2002 RU ₁₈₉	16.3	X	238.58483	226.49373	190.78152	6.36748	0.0919393	0.26813135	2.3817947	20	7 21.4	19.5
142336 2002 RL ₁₉₀	17.1	X	35.30074	35.13227	235.95245	1.60048	0.2011252	0.27444153	2.3451439	20	9 23.2	19.6
142337 2002 RG ₁₉₅	16.3	X	231.62521	153.14345	4.78732	7.57403	0.0375274	0.28417672	2.2912741	20	12 12.0	19.1
142338 2002 RT ₁₉₉	17.5	X	313.69549	277.64261	23.74274	1.52672	0.2143283	0.26574437	2.3960360	20	5 5.8	19.8
142339 2002 RX ₂₀₁	16.1	X	296.08263	201.56934	76.78101	7.33654	0.1220129	0.25913717	2.4365925	20	3 27.3	19.2
142340 2002 RP ₂₀₂	15.9	X	154.14065	210.98360	286.45042	4.51808	0.1070553	0.26676853	2.3898996	20	8 1.5	19.3
142341 2002 RM ₂₀₃	16.6	X	320.32697	44.87707	335.95015	6.65916	0.1343276	0.27787697	2.3257749	20	10 6.8	18.8
142342 2002 RR ₂₀₃	16.5	X	331.10609	29.47309	336.81311	5.95911	0.1227574	0.27740957	2.3283866	20	10 6.3	18.7
142343 2002 RK ₂₀₄	16.5	X	210.88947	77.44041	344.34763	2.04277	0.1851053	0.26410193	2.4059596	20	6 18.1	20.4
142344 2002 RM ₂₀₅	16.0	X	118.02619	327.29002	185.67644	7.35694	0.1104091	0.26448972	2.4036073	20	7 12.4	19.5
142345 2002 RC ₂₀₇	16.3	X	128.19767	96.11536	187.69149	14.66631	0.1033678	0.23274360	2.6174851	20	—	—
142346 2002 RN ₂₀₇	16.5	X	7.41507	259.44631	6.03049	1.05625	0.1665644	0.26804690	2.3822949	20	7 15.5	18.3
142347 2002 RT ₂₀₈	17.2	X	318.15591	293.07149	358.40443	1.86988	0.2165610	0.26454467	2.4032744	20	4 28.1	19.6
142348 2002 RX ₂₁₁	18.1	X	318.69567	324.36092	96.65092	6.06870	0.4570816	0.33207423	2.0652815	20	—	—
142349 2002 RR ₂₁₂	16.0	X	93.64599	1.92562	48.19997	13.45712	0.1804028	0.24217128	2.5491044	20	2 12.1	19.4
142350 2002 RA ₂₁₃	16.2	X	252.52772	276.73904	70.10171	7.49021	0.1468870	0.26236105	2.4165909	20	4 28.8	19.7
142351 2002 RJ ₂₁₃	16.6	X	65.77788	344.75579	91.97957	6.19013	0.1968041	0.29946355	2.2126195	20	1 14.6	17.9
142352 2002 RW ₂₁₄	16.8	X	223.75358	308.46970	21.67711	5.82235	0.2074379	0.25571372	2.4582914	20	3 7.0	20.9
142353 2002 RC ₂₁₇	17.1	X	326.84880	86.36125	256.00251	1.07509	0.1883879	0.27291938	2.3538555	20	8 17.2	18.8
142354 2002 RL ₂₁₇	17.1	X	287.91869	20.52797	325.49134	0.99410	0.1436309	0.26738413	2.3862300	20	6 11.5	19.6
142355 2002 RT ₂₁₈	15.5	X	121.62437	112.63272	163.40471	12.02949	0.0249361	0.22816799	2.6523627	20	12 16.3	19.5
142356 2002 RX ₂₁₈	16.5	X	271.90279	220.71786	86.71596	2.94093	0.1686073	0.261112203	2.4242913	20	3 26.6	19.9
142357 2002 RE ₂₁₉	16.6	X	302.05877	216.79863	32.40883	2.58684	0.1713598	0.25826388	2.4420822	20	2 14.7	19.7
142358 2002 RR ₂₂₀	16.4	X	105.74277	157.13558	129.59830	5.49863	0.1284754	0.23141182	2.6275179	20	12 16.8	20.6
142359 2002 RP ₂₂₃	16.3	X	78.67429	221.92460	144.87724	9.76405	0.1072601	0.23583228	2.5945809	20	—	—
142360 2002 RL ₂₂₄	17.2	X	285.93638	101.34264	227.43532	5.63334	0.1207685	0.26448878	2.4036130	20	5 18.5	20.1
142361 2002 RO ₂₂₅	16.0	X	186.47259	53.70880	191.52160	14.42365	0.0505890	0.23554611	2.5966819	20	—	—
142362 2002 RD ₂₂₆	16.6	X	42.87780	188.39778	99.27472	4.27899	0.2400581	0.27785489	2.3258981	20	11 4.8	19.6
142363 2002 RH ₂₂₇	17.2	X	281.16829	338.55268	308.47264	1.81703	0.2232476	0.25936863	2.4351427	20	3 1.8	20.9
142364 2002 RL ₂₂₈	16.0	X	266.50603	300.25130	92.89598	7.48908	0.1219834	0.26942279	2.3741774	20	7 23.2	18.8
142365 2002 RT ₂₂₈	16.2	X	277.97885	230.91342	88.36767	7.63605	0.1441179	0.26243330	2.4161474	20	4 23.9	19.4
142366 2002 RD ₂₃₀	16.0	X	217.54329	286.00773	115.00729	7.10678	0.1596478	0.25956260	2.4339294	20	5 31.3	19.7
142367 2002 RC ₂₃₃	16.9	X	351.66887	204.42022	100.89667	2.73836	0.0840272	0.27113421	2.3641762	20	8 11.9	19.1
142368 Majden	16.5	X	143.30761	306.08948	279.82848	0.94552	0.1285091	0.28422681	2.2910049	20	11 17.0	19.7
142369 Johnhodes	16.7	X	32.03715	7.54738	162.03821	7.12531	0.0836388	0.25668248	2.4521022	20	3 30.5	19.4
142370 2002 RZ ₂₃₉	17.1	X	50.78625	101.63919	131.96322	0.82108	0.1687223	0.27249026	2.3563261	20	8 18.1	19.8
142371 2002 RB ₂₄₀	17.0	X	243.14169	8.13664	212.25317	3.66116	0.1332440	0.29852931	2.2172333	20	—	—
142372 2002 RR ₂₄₃	15.8	X	196.29618	270.39200	323.58932	13.34083	0.0417156	0.23760303	2.5816740	20	—	—
142373 2002 RJ ₂₄₄	17.1	X	309.02237	221.98681	172.75396	3.09805	0.1799474	0.27656404	2.3331298	20	10 5.4	18.8
142374 2002 RK ₂₄₆	17.1	X	265.17691	105.89665	225.06784	2.06086	0.1058775	0.26287359	2.4134487	20	4 25.4	20.2
142375 2002 RL ₂₄₇	16.6	X	265.20811	340.84375	88.01557	6.54570	0.1521594	0.27449745	2.3448254	20	9 10.2	19.3
142376 2002 RM ₂₄₈	16.4	X	183.72192	185.61790	343.27084	4.46859	0.1309750	0.27951258	2.3166930	20	10 13.6	19.8
142377 2002 RW ₂₄₉	16.6	X	54.11835	11.47507	222.82309	4.97600	0.0545166	0.26903022	2.3764865	20	8 2.2	19.5
142378 2002 SJ ₁	16.5	X	133.53852	37.84830	311.67670	3.11090	0.2034523	0.24204629	2.5499819	20	1 11.9	20.3
142379 2002 SN ₃	17.0	X	84.14804	252.16577	106.95163	1.70843	0.1372194	0.23557907	2.5964398	20	—	—
142380 2002 SB ₅	16.1	X	89.63605	30.12386	27.15692	6.90956	0.1840306	0.24237000	2.5477109	20	2 13.3	19.2
142381 2002 SE ₅	15.6	X	256.43678	255.75533	160.60054	5.24810	0.1479206	0.21214156	2.7843182	20	7 31.6	19.4
142382 2002 SS ₅	16.2	X	98.50864	209.57132	182.82983	6.17976	0.2990684	0.24054173	2.5606040	20	2 6.3	19.5
142383 2002 SX ₆	16.7	X	5.33128	83.76123	195.41715	2.07677	0.1953316	0.26878742	2.3779173	20	8 5.3	18.5
142384 2002 SX ₈	16.5	X	209.92042	29.93850	113.39093	1.60715	0.1036684	0.27468893	2.3437356	20	10 14.1	19.6
142385 2002 SZ ₈	16.8	X	257.83500	140.94738	199.06796	1.83719	0.2358159	0.26033265	2.4291274	20	4 14.0	20.4
142386 2002 SU ₉	15.5	X	291.10930	168.12956	22.24633	14.15451	0.0750355	0.24001985	2.5643144	20	—	—
142387 2002 SV ₁₀	16.3	X	113.06798	108.27098	70.10027	3.26871	0.0364640	0.26605024	2.3941992	20	8 5.2	19.4
142388 2002 SL ₁₁	16.3	X	26.78927	273.25564	188.72825	11.74618	0.0450586	0.24010937	2.5636770	20	—	—
142389 2002 SQ ₁₁	16.1	X	158.44442	272.74738	7.41123	4.79623	0.1775569	0.23622494	2.5917049	20	—	—
142390 2002 SR ₁₂	15.6	X	276.65222	182.39084	51.75924	2.56844	0.0472917	0.24491529	2.5300287	20	1 13.6	18.9
142391 2002 SY ₁₃	16.4	X	10.57463	246.34282	7.46518	6.50686	0.0520050	0.26430256	2.4047419	20	6 23.9	19.2
142392 2002 SO ₁₇	16.4	X	303.14823	135.75288	189.75988	6.74883	0.1201136	0.26484699	2.4014452	20	6 10.3	19.1
142393 2002 SW ₁₇	16.1	X	163.29509	72.32661	188.85297	13.69256	0.0573211	0.23261476	2.6184515	20	—	—
142394 2002 SK ₁₈	15.7	X	2									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
142401	2002	SH ₂₃	16.2	X	312.18435	260.81748	16.53113	19.81325	0.2200766	0.26129368	2.4231676	20	3 30.7	19.0
142402	2002	SH ₂₄	16.4	X	249.59972	228.95032	150.73691	6.50328	0.1237761	0.26353733	2.4093947	20	6 10.6	19.7
142403	2002	SQ ₂₄	15.9	X	292.11902	137.97506	66.50736	3.25519	0.0607521	0.24243440	2.5472597	20	—	—
142404	2002	SX ₂₄	16.0	X	227.92315	212.57409	207.46714	5.64834	0.1959526	0.26447985	2.4036671	20	7 1.2	19.7
142405	2002	SQ ₂₅	15.4	X	219.25012	151.76013	51.73777	6.01782	0.1312416	0.23145978	2.6271549	20	12 28.6	19.0
142406	2002	SH ₂₆	15.9	X	40.20605	315.23526	112.16103	4.52592	0.1691278	0.23551075	2.5969418	20	—	—
142407	2002	SA ₂₇	16.3	X	322.24193	256.57463	59.11947	7.24142	0.1443726	0.26600867	2.3944486	20	6 26.4	18.6
142408	Trebur		16.3	X	276.89890	96.91189	179.18359	6.51968	0.0984093	0.25450782	2.4660505	20	2 27.5	19.7
142409	2002	SJ ₂₉	17.0	X	336.68886	115.88793	199.64388	1.81030	0.2081843	0.26935277	2.3745888	20	7 24.4	18.5
142410	2002	SA ₃₀	16.4	X	117.26364	251.92039	44.23688	1.59676	0.1147627	0.23315667	2.6143927	20	—	—
142411	2002	SC ₃₀	16.3	X	291.09898	126.66600	177.79687	9.31316	0.0256364	0.25993401	2.4316103	20	5 9.1	19.4
142412	2002	SO ₃₀	15.8	X	147.60730	277.78336	48.78294	9.48889	0.1462758	0.24121619	2.5558287	20	—	—
142413	2002	SR ₃₀	16.5	X	262.95473	212.44975	136.75258	6.76337	0.1638975	0.26200086	2.4188053	20	5 12.3	19.9
142414	2002	SS ₃₁	15.9	X	82.85054	327.93300	107.22529	6.55085	0.2449796	0.24266542	2.5456428	20	3 8.0	18.9
142415	2002	SQ ₃₂	16.0	X	113.02893	340.65901	21.78768	16.70779	0.1551593	0.23996573	2.5647000	20	—	—
142416	2002	SF ₃₂	16.2	X	137.49658	294.78264	25.35058	11.09176	0.0827126	0.23786142	2.5798040	20	—	—
142417	2002	SA ₃₂	15.8	X	26.42572	98.72294	308.24786	3.20462	0.1076359	0.23148072	2.6269965	20	—	—
142418	2002	SN ₃₃	16.5	X	236.01952	167.47818	216.39203	5.72087	0.1452804	0.26079049	2.4262835	20	5 28.4	20.1
142419	2002	SC ₃₄	16.2	X	202.84330	238.54068	175.21904	6.46885	0.1169128	0.26087092	2.4257848	20	6 4.0	19.9
142420	2002	SQ ₃₄	15.6	X	68.74795	126.86465	157.80871	11.66154	0.1427985	0.22428190	2.6829128	20	11 9.8	19.7
142421	2002	SW ₃₅	15.5	X	10.41270	55.43370	19.03295	13.03449	0.1388782	0.23169652	2.6253651	20	—	—
142422	2002	SY ₃₅	16.0	X	35.63465	199.89533	187.99443	1.47845	0.1751130	0.22992706	2.6388173	20	—	—
142423	2002	SZ ₃₅	16.3	X	85.26072	187.30702	194.50665	4.34224	0.2069823	0.23696834	2.5862817	20	—	—
142424	2002	SC ₃₆	16.5	X	355.23637	69.95262	229.35344	1.49631	0.1351811	0.26828311	2.3808964	20	8 10.2	18.4
142425	2002	SQ ₃₇	16.1	X	99.33618	291.03905	24.92819	11.51630	0.1924207	0.23153602	2.6265782	20	—	—
142426	2002	SH ₃₉	16.3	X	47.72520	318.25748	72.47415	4.64163	0.1693638	0.23222611	2.6213722	20	—	—
142427	2002	SY ₃₉	15.6	X	119.71742	7.72774	73.03622	7.32298	0.1004452	0.25189277	2.4830888	20	4 10.7	19.1
142428	2002	SH ₄₁	16.5	X	234.42677	220.58319	139.69888	3.22355	0.2149638	0.25778526	2.4451039	20	4 21.2	20.4
142429	2002	SH ₄₃	17.2	X	237.29640	9.55446	349.32142	2.17003	0.1823640	0.25865200	2.4396385	20	4 22.4	20.8
142430	2002	SA ₄₄	16.4	X	216.65571	204.53234	132.67612	2.55926	0.1531227	0.25372296	2.4711334	20	3 10.0	20.3
142431	2002	SO ₄₄	16.6	X	132.35607	256.70081	69.97039	2.49599	0.1616567	0.23789800	2.5795395	20	—	—
142432	2002	SD ₄₅	16.6	X	269.07351	303.52471	48.60791	2.89715	0.2334010	0.26280678	2.4138578	20	5 11.6	19.7
142433	2002	SY ₄₅	15.8	X	34.39965	262.89000	47.14377	9.36685	0.1910480	0.22116298	2.7080776	20	11 3.5	19.2
142434	2002	SE ₄₆	16.6	X	80.23814	30.62694	29.02632	4.75875	0.2207601	0.23981846	2.5657498	20	2 7.2	19.4
142435	2002	SC ₄₇	16.5	X	280.55976	111.83389	196.05687	5.26972	0.1977951	0.26077016	2.4264096	20	3 31.5	20.0
142436	2002	SK ₄₈	16.0	X	49.68441	234.25935	159.53779	7.30049	0.1286554	0.23366225	2.6106201	20	—	—
142437	2002	SA ₄₉	16.3	X	80.71343	267.64269	116.90789	2.72876	0.2145803	0.23682243	2.5873440	20	—	—
142438	2002	ST ₅₀	15.1	X	91.26715	292.13631	53.98500	15.74433	0.1563041	0.23167059	2.6255610	20	—	—
142439	2002	SW ₅₃	15.6	X	92.52989	345.47082	91.68225	12.63921	0.2199024	0.24347742	2.5399798	20	3 24.5	19.2
142440	2002	SM ₅₅	16.5	X	124.54662	255.38377	64.30448	3.75600	0.1035123	0.23563491	2.5960295	20	—	—
142441	2002	SQ ₅₅	16.0	X	232.13257	294.62105	57.05402	7.19336	0.1436853	0.25684223	2.4510853	20	4 14.1	19.7
142442	2002	SQ ₅₆	16.5	X	238.45186	256.16486	88.59689	5.31697	0.2172592	0.25727697	2.4483233	20	4 6.6	20.5
142443	2002	SW ₅₆	15.8	X	123.13709	280.48580	82.76759	6.71517	0.0871285	0.24029943	2.5623251	20	1 1.5	19.3
142444	2002	SL ₅₇	16.4	X	275.44707	239.77532	86.72508	4.62127	0.2095151	0.26199763	2.4188251	20	4 19.9	19.8
142445	2002	SR ₅₈	17.2	X	295.26885	95.76248	204.02920	1.06774	0.1826211	0.26211374	2.4181108	20	4 10.5	20.3
142446	2002	SV ₅₈	16.8	X	327.90657	101.79799	177.35152	1.53436	0.1733885	0.26346845	2.4098146	20	5 6.6	19.0
142447	2002	ST ₅₉	16.5	X	234.75152	223.03941	118.83471	7.93517	0.1155937	0.25741029	2.4474779	20	4 7.8	20.2
142448	2002	SS ₆₀	16.3	X	265.97611	21.20924	149.4335	7.83460	0.0692360	0.27402647	2.3475113	20	9 27.6	19.1
142449	2002	TB	15.7	X	293.71036	256.06663	63.86801	6.53962	0.0519972	0.21872309	2.7281796	20	10 14.3	19.2
142450	2002	TV	16.4	X	247.45511	300.67224	141.82222	4.75173	0.1135033	0.27150196	2.3620408	20	9 6.9	19.4
142451	2002	TG ₁	17.1	X	332.00157	273.09696	41.71232	6.03363	0.2062641	0.26929598	2.3749226	20	7 12.1	18.8
142452	2002	TP ₁	16.2	X	86.70931	56.14914	337.46747	0.78943	0.1340096	0.23836664	2.5761574	20	—	—
142453	2002	TS ₁	15.7	X	200.85157	258.56594	23.24566	13.87436	0.1191443	0.24101520	2.5572494	20	—	—
142454	2002	TW ₁	16.3	X	72.38506	129.16648	320.29242	1.53751	0.1722639	0.24269090	2.5454646	20	2 24.9	19.0
142455	2002	TT ₂	16.0	X	126.08975	141.25362	17.16757	6.82643	0.0470805	0.26408765	2.4060463	20	7 27.5	19.3
142456	2002	TQ ₃	15.9	X	353.42259	255.34677	189.51070	9.83872	0.2604296	0.22866398	2.6485258	20	—	—
142457	2002	TX ₄	15.5	X	212.30109	21.63246	48.92834	6.99902	0.1222152	0.26211250	2.4181184	20	7 6.4	19.1
142458	2002	TZ ₅	16.0	X	166.47072	17.26271	59.16276	3.20380	0.1695912	0.25581633	2.4576340	20	5 26.9	19.9
142459	2002	TD ₆	16.2	X	79.55664	290.54869	114.96476	4.47704	0.1799292	0.23806063	2.5783646	20	1 9.4	19.0
142460	2002	TJ ₆	16.6	X	150.43763	217.08851	150.33998	2.97296	0.2159542	0.24604329	2.5222901	20	2 19.5	20.7
142461	2002	TD ₇	16.1	X	126.29821	249.94247	81.16427	1.91670	0.0922322	0.23729086	2.5839377	20	—	—
142462	2002	TT ₇	16.3	X	266.90819	354.11925	72.80769	3.90961	0.1488216	0.27144711	2.3623590	20	9 8.7	18.9
142463	2002	TH ₈	16.3	X	88.53818	212.98835	204.09842	2.41738	0.1991698	0.24194320	2.5507062	20	2 9.8	19.4
142464	2002	TC ₉	18.2	X	113.79756	29.27037	191.84433	16.27840	0.1545121	0.71948707	1.2334476	20	—	—
142465	2002	TJ ₉	16.4	X	265.92765	261.59989	77.64379	4.06015	0.2072089	0.26230573	2.4169307	20	4 25.7	19.8
142466	2002	TO ₉	16.2	X	15.79944	262.78957	178.33828	10.01867	0.1881852	0.23193873	2.6235371	20	—	—
142467	2002	TV ₉	16.3	X	47.59468	231.39376	125.75230	2.55700	0.1378501	0.22851938	2.6496430	20	—	—
142468	2002	TU ₁₁	16.1	X	286.97828	28.60275	13.23639	8.00064	0.1009212	0.27321175	2.3521759	20	9 12.9	18.5
142469	2002	TY ₁₁	16.5	X	235.14679	288.52439	23.17539	6.99410	0.2553004	0.25518844	2.4616637	20	2 22.1	20.8
142470	2002	TE ₁₃	14.6	X	108.01072	107.21753	254.21047	1.79191	0.12291680	0.12573597	3.9460539	20	1 18.6	20.4
142471	2002	TN ₁₃	16.0	X	119.13944	124.50719</								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142481 2002 TU ₂₂	15.8 ^m	X	24.34393	337.91636	217.08025	1.36449	0.1204584	0.25456781	2.4656630	20	4 24.1	18.1
142482 2002 TX ₂₂	16.4	X	175.17831	334.10022	198.02422	5.87306	0.0623038	0.27414390	2.3468410	20	10 14.4	19.5
142483 2002 TQ ₂₄	16.0	X	34.69544	139.83149	203.43045	2.65831	0.0827397	0.22404295	2.6848202	20	11 30.8	19.4
142484 2002 TY ₂₄	16.1	X	163.33020	138.51477	27.27150	7.76468	0.0830642	0.27067666	2.3668397	20	9 22.7	19.4
142485 2002 TJ ₂₅	15.8	X	189.85450	104.03024	25.86157	6.34969	0.0664848	0.26864679	2.3787471	20	9 6.4	19.1
142486 2002 TK ₂₅	16.0	X	197.38729	297.69789	15.40395	7.79145	0.1182776	0.24539304	2.5267439	20	1 24.9	19.9
142487 2002 TC ₂₇	15.6	X	19.11002	132.23670	254.76206	0.73674	0.2024492	0.17189667	3.2034976	20	—	—
142488 2002 TK ₂₇	16.8	X	164.33795	67.32235	348.05594	1.50132	0.2130067	0.25225443	2.4807149	20	4 29.3	21.0
142489 2002 TO ₂₈	16.1	X	184.24849	37.56151	48.65348	3.39022	0.1575308	0.25921558	2.4361011	20	6 25.7	19.9
142490 2002 TU ₂₈	16.2	X	292.47376	249.52658	51.73205	3.37823	0.1727894	0.25910684	2.4367827	20	4 11.5	19.1
142491 2002 TB ₂₉	16.1	X	77.23320	319.40862	38.47510	3.87189	0.0897853	0.23198786	2.6231666	20	—	—
142492 2002 TC ₂₉	15.8	X	128.08405	141.69295	189.05696	4.45811	0.1614761	0.23712505	2.5851421	20	—	—
142493 2002 TY ₂₉	16.7	X	109.37958	147.74182	207.47279	4.61102	0.2396772	0.23763330	2.5814548	20	—	—
142494 2002 TG ₃₀	15.6	X	9.65197	17.95315	16.79241	9.28180	0.1135926	0.22604524	2.6689420	20	—	—
142495 2002 TP ₃₀	16.5	X	297.56515	185.21364	215.72761	1.79491	0.2063266	0.27115397	2.3640613	20	9 12.2	18.4
142496 2002 TK ₃₁	15.9	X	108.79742	20.50179	55.48594	3.94700	0.0941712	0.24701290	2.5156852	20	3 19.5	19.2
142497 2002 TL ₃₁	16.3	X	128.48515	307.51634	47.02381	4.29652	0.1990022	0.24028218	2.5624477	20	1 12.9	19.9
142498 2002 TY ₃₁	16.3	X	204.78197	210.63315	198.17665	6.00105	0.0720914	0.25817181	2.4426627	20	6 1.6	19.7
142499 2002 TE ₃₂	16.0	X	198.91386	34.63835	27.23415	6.94106	0.1003189	0.25866579	2.4395518	20	6 9.5	19.7
142500 2002 TM ₃₂	16.3	X	93.34710	79.36925	17.19636	4.67604	0.0736401	0.30340244	2.1934277	20	3 16.4	18.5
142501 2002 TX ₃₂	16.2	X	228.76528	298.35488	318.66082	1.97898	0.0276024	0.24209418	2.5496456	20	—	—
142502 2002 TA ₃₄	16.5	X	143.57353	315.37686	60.63953	3.04785	0.1387953	0.24567360	2.5248198	20	2 17.7	20.2
142503 2002 TT ₃₄	17.0	X	144.88435	305.52662	13.79132	3.05144	0.2184679	0.23975876	2.5661757	20	—	—
142504 2002 TS ₃₅	15.6	X	61.75990	89.70798	206.90561	13.17962	0.1071250	0.22182199	2.7027112	20	11 9.3	19.3
142505 2002 TT ₃₅	16.7	X	51.88152	164.80883	218.74556	2.98978	0.1291994	0.23175298	2.6249387	20	—	—
142506 2002 TC ₃₆	15.7	X	5.90101	358.99082	38.24474	5.38934	0.1138895	0.22607804	2.6686839	20	—	—
142507 2002 TN ₃₆	16.6	X	95.76096	190.27490	228.63338	3.02486	0.1617123	0.24218337	2.5490196	20	2 16.1	19.8
142508 2002 TP ₃₆	15.5	X	44.22679	16.58457	37.77085	22.68511	0.0394693	0.23376866	2.6098279	20	—	—
142509 2002 TJ ₃₇	16.4	X	130.08504	172.15042	197.05499	2.95907	0.1715085	0.24170132	2.5524076	20	1 27.6	20.0
142510 2002 TM ₃₇	16.3	X	96.47651	247.76133	181.23740	3.23295	0.1437529	0.24338152	2.5406469	20	2 28.3	19.5
142511 2002 TE ₃₈	16.2	X	94.81480	310.60727	38.32648	7.93776	0.2087259	0.23366385	2.6106082	20	—	—
142512 2002 TG ₃₉	15.8	X	142.25909	283.98551	30.03829	7.79955	0.1969547	0.23543809	2.5974761	20	—	—
142513 2002 TK ₃₉	15.0	X	34.82022	336.52592	85.26486	6.37627	0.1913757	0.23070160	2.6329077	20	—	—
142514 2002 TU ₃₉	16.3	X	8.85088	165.69120	220.18490	8.94647	0.2833224	0.22294741	2.6936082	20	—	—
142515 2002 TZ ₃₉	15.3	X	49.36705	316.25946	47.19998	12.38062	0.2093820	0.22609646	2.6685389	20	—	—
142516 2002 TD ₄₀	15.5	X	142.58601	131.04523	246.07254	6.67847	0.1785157	0.24197218	2.5505025	20	2 17.9	19.5
142517 2002 TJ ₄₀	15.2	X	56.63454	134.57936	229.41287	12.47348	0.1268952	0.22617530	2.6679188	20	—	—
142518 2002 TP ₄₀	16.5	X	143.87469	307.85405	37.32826	13.10596	0.2958949	0.24207281	2.5497956	20	1 29.7	20.9
142519 2002 TJ ₄₁	15.9	X	117.90863	168.48940	188.86043	12.38748	0.1682519	0.23781885	2.5801119	20	—	—
142520 2002 TO ₄₁	16.3	X	169.84577	287.28946	49.91115	9.37175	0.2347608	0.24426032	2.5345495	20	2 4.5	20.7
142521 2002 TL ₄₂	15.4	X	273.12398	43.59232	202.06138	12.26051	0.1104214	0.24458981	2.5322727	20	1 13.9	19.3
142522 2002 TM ₄₃	16.2	X	69.99748	167.12776	242.94354	1.96443	0.0923569	0.23682343	2.5873366	20	—	—
142523 2002 TO ₄₃	16.9	X	245.88842	37.32251	344.11887	0.65364	0.1956537	0.26088519	2.4256963	20	5 29.0	20.6
142524 2002 TT ₄₄	16.4	X	164.75236	209.42758	143.32297	2.81399	0.1738881	0.24514803	2.5284271	20	2 11.6	20.2
142525 2002 TA ₄₅	16.5	X	292.50798	138.42275	164.98266	3.25523	0.2645741	0.25999120	2.4312537	20	3 31.3	19.9
142526 2002 TD ₄₅	15.4	X	76.47582	212.92100	204.85833	12.45486	0.1054193	0.23871030	2.5736843	20	1 8.3	18.7
142527 2002 TF ₄₅	15.9	X	139.66185	158.26607	200.10163	8.12501	0.0075180	0.23988856	2.5652500	20	1 3.7	19.4
142528 2002 TL ₄₅	15.8	X	69.23506	115.62229	2.11188	2.36921	0.2485391	0.24320424	2.5418815	20	4 12.1	18.4
142529 2002 TG ₄₇	15.9	X	92.91622	8.19000	24.18922	12.17530	0.1920881	0.23795689	2.5791139	20	1 18.1	19.2
142530 2002 TL ₄₇	15.3	X	0.62212	356.17214	32.59552	9.62194	0.0604783	0.22249168	2.6972852	20	12 7.6	18.8
142531 2002 TN ₄₇	16.0	X	86.82315	145.35521	207.37020	3.86324	0.1301182	0.23178675	2.6246837	20	—	—
142532 2002 TO ₄₇	15.4	X	103.08812	248.89467	82.00866	3.35896	0.0479812	0.23017809	2.6368984	20	—	—
142533 2002 TR ₄₈	16.5	X	141.59063	151.36617	206.82211	5.10910	0.1588528	0.24123456	2.5556990	20	1 24.3	20.3
142534 2002 TY ₄₈	15.1	X	8.21448	141.91467	221.99497	9.06196	0.1293276	0.22085929	2.7105594	20	11 26.5	18.4
142535 2002 TD ₄₉	15.9	X	185.37374	292.63025	30.43016	15.19983	0.1679120	0.24349243	2.5398754	20	1 30.7	20.3
142536 2002 TE ₄₉	15.1	X	46.50471	89.32632	222.01210	14.35176	0.0963938	0.21896569	2.7261642	20	11 6.1	18.8
142537 2002 TV ₅₀	15.4	X	26.62763	203.36295	224.89385	14.25776	0.0598110	0.23111605	2.6297592	20	—	—
142538 2002 TX ₅₀	15.4	X	125.37663	305.82497	36.36788	14.21923	0.2166123	0.23671254	2.5881446	20	—	—
142539 2002 TT ₅₁	15.9	X	141.94223	305.03332	42.86263	18.75829	0.2403107	0.24065969	2.5597672	20	1 27.4	20.3
142540 2002 TN ₅₁	15.5	X	98.38586	313.96981	44.40633	13.16617	0.2345266	0.23465891	2.6032229	20	—	—
142541 2002 TR ₅₁	15.1	X	128.18777	277.14950	106.87920	5.49543	0.1675400	0.24094276	2.5577620	20	2 14.9	18.7
142542 2002 TS ₅₁	16.0	X	102.73367	164.61649	217.78666	17.17004	0.2607272	0.23795077	2.5791581	20	1 20.9	19.8
142543 2002 TT ₅₁	15.6	X	59.65235	58.33136	47.48746	3.22144	0.2351369	0.23888739	2.5724122	20	3 8.9	18.0
142544 2002 TB ₅₂	15.6	X	345.66294	142.41399	210.90113	8.38205	0.1720541	0.21526956	2.7572806	20	10 3.5	18.4
142545 2002 TK ₅₂	15.7	X	112.89107	233.33168	172.10468	4.51994	0.2170532	0.24074527	2.5591606	20	2 29.4	19.3
142546 2002 TS ₅₂	15.1	X	353.45681	180.60643	223.83066	14.69240	0.1053386	0.22194694	2.7019668	20	12 22.6	18.5
142547 2002 TT ₅₂	16.2	X	31.50257	184.80927	160.09536	0.83424	0.2608586	0.27873325	2.3210092	20	—	—
142548 2002 TG ₅₃	16.4	X	280.60028	298.22628	112.59476	4.63111	0.2404125	0.26702110	2.3883923	20	8 20.1	18.7
142549 2002 TJ ₅₃	15.2	X	166.65257	258.50002	49.06426	29.60708	0.0773156	0.23439297	2.6051916	20	—	—
142550 2002 TK ₅₃	16.1	X	92.37821	175.83979	258.57671	3.43869	0.1911692	0.24056030	2.5604723	20	3 7.3	19.4
142551 2002 TV ₅₃	15.6	X	115.12313	108.20313	260.62939	2.49582	0.2223191	0.23722521	2.5844144	20	1 18.1	19.1
142552 2002 TO ₅₄	16.5	X	56.66634	197.25066	196.08306	4.45423	0.2305504	0.23247098	2.6195311	20	—	—
142553 2002 TX ₅₄	16.1	X	344.30434	21.01562	41.57121	5.74806	0.1637011	0.22263233	2.6961491	20	—	—
142554 2002 TB ₅₆	15.8	X	265.01506	31.26662	187.42755	14.92122	0.0578180	0.24270582	2.5453603	20	—	—
142555 2002 TK												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142561 2002 TX ₆₈	18.1	X	129.97451	122.44397	150.15492	16.65219	0.2934267	0.45501515	1.6741157	20	—	—
142562 2002 Graetz	16.3	X	81.77017	39.37240	27.37126	5.94491	0.0570602	0.23944165	2.5684409	20	1 26.0	19.5
142563 2002 TR ₆₉	17.1	X	307.05061	192.19586	341.98592	20.48781	0.3434518	0.46085787	1.6599361	20	—	—
142564 2002 TR ₇₀	15.8	X	100.92729	42.30240	309.55444	13.22311	0.1882395	0.23766839	2.5812006	20	—	—
142565 2002 TN ₇₅	15.9	X	100.02895	2.55885	39.24396	9.65026	0.0474363	0.24441000	2.5335146	20	1 16.3	19.3
142566 2002 TH ₇₇	16.1	X	145.47347	301.50528	349.94938	4.46592	0.2445203	0.23631194	2.5910687	20	—	—
142567 2002 TQ ₇₈	15.7	X	56.38406	248.84228	191.35428	21.97215	0.1007274	0.23906424	2.5711434	20	1 5.4	19.2
142568 2002 TV ₇₈	16.3	X	118.75443	217.60634	120.64696	4.80990	0.2286406	0.23702523	2.5858679	20	—	—
142569 2002 TA ₇₉	15.5	X	23.07024	288.51035	158.40810	8.73500	0.2429853	0.23286706	2.6165599	20	—	—
142570 2002 TG ₇₉	16.1	X	168.17041	242.72447	110.39531	6.11063	0.1988386	0.24618346	2.5213326	20	2 18.0	20.2
142571 2002 TA ₈₀	15.9	X	36.83705	302.59560	115.09680	5.70409	0.2058391	0.23184975	2.6242082	20	—	—
142572 2002 TG ₈₁	15.5	X	15.48226	251.94861	108.95680	6.78792	0.0651514	0.22228113	2.6989882	20	11 25.8	19.0
142573 2002 TC ₈₂	16.0	X	57.14349	317.43157	30.02982	15.03271	0.1854538	0.22986424	2.6392981	20	—	—
142574 2002 TS ₈₂	16.0	X	138.17021	148.19103	30.08752	7.67158	0.0927730	0.26938206	2.3744167	20	9 11.8	19.4
142575 2002 TP ₈₅	15.3	X	302.35154	244.67266	147.67214	9.57632	0.1747906	0.21470006	2.7621543	20	9 3.9	18.3
142576 2002 TZ ₈₅	16.0	X	89.73007	329.34632	300.01396	2.45578	0.1651322	0.27999094	2.3140535	20	11 20.1	19.4
142577 2002 TC ₈₆	16.5	X	125.79641	37.57206	295.42670	2.30787	0.1534982	0.23815918	2.5776533	20	—	—
142578 2002 TB ₈₈	16.8	X	64.87820	55.88305	18.19529	11.97393	0.1656606	0.23995231	2.5647956	20	1 25.4	19.7
142579 2002 TK ₈₈	15.9	X	192.05025	349.62639	275.19518	5.45600	0.2876803	0.24067967	2.5596256	20	—	—
142580 2002 TM ₈₉	15.5	X	294.96382	201.73943	231.81117	8.23269	0.1581503	0.22015037	2.7163752	20	10 28.7	18.4
142581 2002 TH ₉₀	15.6	X	272.62411	126.56153	269.63731	3.32744	0.0725775	0.21119996	2.7925877	20	8 6.5	19.4
142582 2002 TE ₉₅	16.1	X	325.39447	66.12955	356.69121	2.13966	0.0222286	0.22471512	2.6794636	20	12 1.8	19.6
142583 2002 TE ₉₆	15.4	X	109.93944	300.78872	95.26455	4.01036	0.2847966	0.23735801	2.5834504	20	2 25.6	19.1
142584 2002 TF ₉₆	15.0	X	35.28287	45.49276	98.08054	6.59591	0.2907778	0.23504233	2.6003911	20	3 21.3	16.8
142585 2002 TH ₉₆	14.5	X	135.72573	82.37696	257.58285	23.37783	0.1267567	0.23357478	2.6112718	20	1 5.9	18.7
142586 2002 TL ₁₀₀	16.3	X	339.34415	343.30939	319.62914	7.33451	0.1252780	0.26871957	2.3783176	20	7 14.9	18.4
142587 2002 TZ ₁₀₁	16.3	X	16.09918	104.63652	296.27857	2.00099	0.0820587	0.22970129	2.6405461	20	—	—
142588 2002 TD ₁₀₂	16.1	X	336.12351	177.67342	227.09499	6.23413	0.0926184	0.22387148	2.6861909	20	11 26.9	19.3
142589 2002 TY ₁₀₃	16.4	X	60.38695	153.94660	148.67035	2.84179	0.0596864	0.22344689	2.6895926	20	11 8.9	20.0
142590 2002 TB ₁₀₅	16.8	X	324.51777	243.04578	242.59972	3.02177	0.1277456	0.28860328	2.2677850	20	—	—
142591 2002 TG ₁₀₈	14.8	X	239.26412	76.57575	342.87371	12.23131	0.1952380	0.20524884	2.8463103	20	7 13.3	19.3
142592 2002 TL ₁₀₈	16.2	X	221.18840	34.21878	42.90225	4.92183	0.1197388	0.26807829	2.3821090	20	7 27.1	19.6
142593 2002 TK ₁₀₉	16.6	X	222.60244	306.43363	110.11712	3.05482	0.1963493	0.26336073	2.4104717	20	6 21.9	20.2
142594 2002 TZ ₁₀₉	15.1	X	350.98361	319.59807	33.12423	25.35196	0.2231227	0.27605774	2.3359816	20	11 5.2	17.0
142595 2002 TF ₁₁₁	15.5	X	23.08353	96.07882	353.21130	12.73534	0.1309490	0.23560862	2.5962226	20	—	—
142596 2002 TG ₁₁₂	16.5	X	183.18475	351.12360	86.11306	3.51556	0.2065936	0.25993135	2.4316269	20	6 12.4	20.4
142597 2002 TQ ₁₁₂	16.7	X	301.15884	214.38020	56.17906	1.80191	0.1721947	0.25784675	2.4447152	20	3 12.6	19.6
142598 2002 TY ₁₁₂	15.1	X	211.99606	312.84718	227.28123	14.34473	0.0749066	0.22664158	2.6642583	20	11 27.4	18.8
142599 2002 TY ₁₁₅	16.0	X	194.84944	49.25929	241.65314	12.45109	0.1608336	0.24318799	2.5419947	20	—	—
142600 2002 TG ₁₁₆	16.1	X	334.08088	6.80863	271.64836	6.22264	0.1255646	0.26237250	2.4165206	20	5 23.2	18.4
142601 2002 TF ₁₁₇	15.4	X	117.52296	303.30468	336.24284	12.49101	0.1500612	0.22905138	2.6455386	20	12 19.5	19.8
142602 2002 TB ₁₁₈	16.5	X	38.58785	194.33312	292.14601	5.40377	0.1097120	0.30028140	2.2086001	20	1 28.7	18.4
142603 2002 TR ₁₂₄	15.4	X	132.53560	11.74654	10.09295	18.77393	0.1722666	0.24685480	2.5167592	20	2 23.6	19.3
142604 2002 TJ ₁₂₅	16.5	X	218.01404	319.02703	54.09341	6.69452	0.1568632	0.25890121	2.4380728	20	4 25.5	20.2
142605 2002 TQ ₁₂₅	16.0	X	56.99963	359.52741	273.84421	5.45743	0.1163555	0.27547570	2.3392709	20	10 11.2	19.0
142606 2002 TX ₁₂₅	16.5	X	347.34280	290.72556	44.39550	7.41556	0.1654412	0.27437574	2.3455188	20	9 29.2	18.4
142607 2002 TC ₁₂₆	15.2	X	199.46766	331.27886	242.75060	10.51911	0.1297750	0.23149436	2.6268933	20	12 19.1	19.0
142608 2002 TE ₁₂₆	15.7	X	211.58121	292.44152	336.72024	14.09435	0.0790060	0.24185227	2.5513455	20	—	—
142609 2002 TJ ₁₃₁	16.2	X	169.91096	356.25658	348.37294	10.41981	0.0668903	0.24585599	2.5235710	20	2 1.8	19.8
142610 2002 TU ₁₃₂	17.0	X	176.95227	55.74462	327.91590	5.90785	0.1133723	0.25182024	2.4835656	20	3 26.7	20.8
142611 2002 TT ₁₃₅	15.5	X	215.81570	289.19059	350.08124	14.41554	0.0904188	0.24159359	2.5531663	20	1 1.8	19.6
142612 2002 TQ ₁₃₆	15.6	X	71.04551	56.62677	342.93427	12.97861	0.1705446	0.23659530	2.5889996	20	—	—
142613 2002 TH ₁₃₇	15.3	X	7.78792	151.59649	346.17771	12.78644	0.2134406	0.23939060	2.5688061	20	—	—
142614 2002 TJ ₁₃₈	16.3	X	345.59556	205.35887	299.71860	6.34352	0.1044658	0.29502783	2.2347420	20	—	—
142615 2002 TW ₁₃₈	15.6	X	69.13275	94.55176	344.55596	10.07338	0.0840175	0.24082294	2.5586103	20	1 27.8	18.7
142616 2002 TX ₁₄₃	16.2	X	233.87385	270.86465	100.76568	7.32619	0.2234996	0.25835680	2.4414966	20	5 5.8	20.2
142617 2002 TE ₁₄₆	16.4	X	72.22656	78.14074	5.84349	27.67333	0.1784908	0.24283123	2.5444838	20	3 2.2	19.6
142618 2002 TF ₁₄₆	16.2	X	35.79215	54.73988	228.75985	5.03015	0.1985312	0.27450107	2.3448048	20	10 10.7	18.9
142619 2002 TJ ₁₄₆	16.0	X	52.47895	76.59975	275.48645	3.24305	0.1204349	0.28456872	2.2891695	20	—	—
142620 2002 TL ₁₅₄	17.0	X	197.21763	151.46084	228.25738	6.58543	0.2294753	0.25628086	2.4546633	20	4 11.3	21.1
142621 2002 TU ₁₅₇	15.7	X	136.04829	331.99219	64.37133	11.89448	0.1841138	0.24640228	2.5198396	20	3 16.2	19.7
142622 2002 TK ₁₅₈	15.4	X	90.36896	254.43928	142.20824	14.20643	0.1117346	0.23934707	2.5691175	20	1 4.1	18.6
142623 2002 TT ₁₆₀	15.7	X	125.44165	201.33314	88.50483	14.31987	0.2451022	0.23248962	2.6193910	20	—	—
142624 2002 TO ₁₆₀	15.6	X	154.70577	179.65447	92.02718	13.42179	0.0837264	0.23102136	2.6304777	20	—	—
142625 2002 TO ₁₆₅	15.3	X	121.68466	295.50877	113.79179	9.26648	0.2114099	0.24497279	2.5296328	20	3 18.2	19.1
142626 2002 TQ ₁₆₈	15.5	X	20.65518	188.92939	244.34373	11.13516	0.1836971	0.23389855	2.6088616	20	—	—
142627 2002 TZ ₁₆₉	15.8	X	32.75258	175.03250	310.22521	13.24067	0.1014233	0.24406195	2.5359226	20	1 29.7	18.5
142628 2002 TL ₁₇₁	15.3	X	99.15687	172.16123	264.82076	8.92318	0.2092366	0.24515883	2.5283529	20	3 18.8	18.9
142629 2002 TU ₁₇₃	15.9	X	34.11602	238.86273	139.89501	6.66965	0.1000778	0.22954422	2.6417506	20	—	—
142630 2002 TV ₁₇₅	15.6	X	311.61937	217.51354	216.03859	11.06829	0.0670984	0.22324684	2.6911992	20	11 26.7	19.0
142631 2002 TX ₁₇₅	14.8	X	338.34558	295.88220	249.33642	14.22686	0.0344488	0.24504829	2.5291132	20	1 26.4	18.3
142632 2002 TU ₁₇₇	15.0	X	25.40488	154.87912	257.17206	20.89772	0.0527222	0.23135402	2.6279556	20	—	—
142633 2002 TC ₁₇₈	16.2	X	119.16682	81.85545	298.85075	10.22114	0.2868146	0.24168636	2.5525130	20	2 11.9	20.0
142634 2002 TL ₁₇₉	15.2	X	147.47960	57.35620	276.08938							

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142641 2002 TU ₁₈₇	16.1	X	159.16059	7.81108	323.55968	4.97494	0.1809851	0.24322293	2.5417512	20	1 13.1	19.9
142642 2002 TX ₁₈₇	15.8	X	5.46115	134.02243	251.64557	5.19189	0.0803552	0.22560243	2.6724332	20	12 15.2	19.2
142643 2002 TS ₁₈₈	15.9	X	41.93149	60.00761	9.03014	7.59508	0.1779058	0.23352168	2.6116677	20	—	—
142644 2002 TT ₁₈₈	16.5	X	55.03815	135.34061	232.90658	6.70064	0.2157240	0.22934917	2.6432482	20	—	—
142645 2002 TX ₁₈₈	15.5	X	104.39340	196.52494	224.25485	14.62357	0.1492859	0.24228403	2.5483135	20	2 23.6	19.2
142646 2002 TG ₁₉₀	15.9	X	73.48718	108.62167	257.61860	3.82511	0.0979495	0.22935067	2.6432366	20	—	—
142647 2002 TH ₁₉₀	15.9	X	268.20591	118.00466	44.19097	12.33354	0.1334781	0.22411097	2.6842769	20	—	—
142648 2002 TC ₁₉₁	15.0	X	247.63181	146.50074	307.27115	12.22364	0.0798969	0.21382907	2.7696499	20	9 12.8	19.0
142649 2002 TA ₁₉₂	16.1	X	103.26927	48.54153	338.22380	11.59435	0.1818888	0.23947136	2.5682285	20	1 23.1	19.4
142650 2002 TH ₁₉₂	15.8	X	70.20161	93.83504	328.68468	11.63891	0.2445074	0.23733602	2.5836100	20	1 29.0	18.3
142651 2002 TR ₁₉₂	15.2	X	117.83656	18.00198	267.80873	13.02405	0.1680225	0.22775016	2.6556057	20	12 26.7	19.6
142652 2002 TY ₁₉₆	16.0	X	120.90076	82.22294	213.78412	6.27289	0.1084475	0.23103433	2.6303793	20	—	—
142653 2002 TM ₁₉₇	16.2	X	32.31222	53.38039	5.07025	9.33077	0.0257006	0.23464638	2.6033155	20	—	—
142654 2002 TP ₂₀₀	16.0	X	267.58902	240.50805	231.78639	6.17229	0.0563879	0.27930612	2.3178344	20	11 28.2	18.4
142655 2002 TB ₂₀₃	16.1	X	304.42584	316.91385	72.36967	7.29072	0.1209639	0.27256847	2.3558753	20	9 25.3	18.5
142656 2002 TF ₂₀₃	16.1	X	109.92385	253.97007	99.82412	5.76440	0.1432455	0.23804750	2.5784594	20	—	—
142657 2002 TJ ₂₀₃	16.6	X	205.11719	246.45223	141.81481	6.14735	0.1175429	0.25692033	2.4505886	20	5 5.1	20.3
142658 2002 TY ₂₀₃	15.5	X	172.90425	127.52201	175.32018	14.68346	0.1299108	0.24045384	2.5612280	20	—	—
142659 2002 TH ₂₀₆	16.2	X	153.21141	322.84097	353.52392	3.25960	0.2450281	0.23998038	2.5645956	20	—	—
142660 2002 TC ₂₀₇	16.3	X	115.14398	98.51825	268.14652	2.33384	0.2098974	0.23925071	2.5698073	20	1 13.5	19.6
142661 2002 TU ₂₀₇	15.6	X	26.28821	27.72022	24.43601	19.40231	0.1675357	0.22976447	2.6400620	20	—	—
142662 2002 TN ₂₀₈	16.6	X	225.16357	298.36288	17.90228	7.57032	0.3286078	0.25177028	2.4838941	20	2 18.6	21.3
142663 2002 TD ₂₀₉	15.9	X	67.29754	285.07566	62.74205	11.89997	0.2111872	0.23099308	2.6306924	20	—	—
142664 2002 TK ₂₁₀	16.2	X	46.27815	114.34117	246.87214	1.62304	0.0962895	0.22759625	2.6568028	20	—	—
142665 2002 TK ₂₁₂	15.5	X	47.95277	276.64359	162.30869	16.12270	0.1632599	0.23724127	2.5842978	20	—	—
142666 2002 TR ₂₁₃	16.7	X	170.48444	247.73598	65.60667	1.93982	0.1544647	0.24209175	2.5496626	20	—	—
142667 2002 TB ₂₁₄	16.3	X	289.13449	98.60771	176.38125	3.65241	0.0714637	0.25351531	2.4724827	20	3 17.5	19.4
142668 2002 TG ₂₁₄	16.5	X	290.14185	282.66542	21.04130	8.81868	0.2553915	0.26376982	2.4079788	20	3 30.5	19.8
142669 2002 TU ₂₁₈	15.9	X	352.69308	134.44711	271.98522	5.72233	0.1238964	0.28254996	2.3000603	20	—	—
142670 2002 TN ₂₁₉	15.3	X	270.49160	240.70764	332.56382	9.48839	0.1184009	0.24023855	2.5627579	20	—	—
142671 2002 TV ₂₁₉	15.2	X	37.80073	128.56214	230.22910	13.40514	0.1093838	0.22661287	2.6644833	20	12 27.1	19.0
142672 2002 TW ₂₁₉	15.2	X	100.69350	271.47341	350.00582	12.61371	0.0093490	0.22045317	2.7138874	20	10 24.4	19.1
142673 2002 TY ₂₁₉	16.4	X	240.34532	177.13153	234.89677	8.74861	0.1108404	0.26689056	2.3891711	20	7 13.2	19.7
142674 2002 TB ₂₂₁	15.6	X	144.64393	142.11081	310.53224	10.22034	0.2170810	0.25447620	2.4662548	20	5 28.6	19.8
142675 2002 TN ₂₂₂	15.6	X	345.44559	134.10079	206.58552	5.33410	0.0710956	0.21526470	2.7573221	20	9 10.7	18.9
142676 2002 TU ₂₂₃	16.6	X	326.51607	113.04854	244.92195	1.12550	0.2308202	0.27094754	2.3652619	20	9 10.8	17.8
142677 2002 TA ₂₂₄	15.7	X	36.26474	197.90430	267.79674	3.48874	0.2473070	0.23678196	2.5876388	20	1 11.7	17.6
142678 2002 TC ₂₂₄	15.9	X	198.98572	30.87851	283.12689	2.65731	0.1077092	0.24402673	2.5361666	20	1 24.8	19.6
142679 2002 TT ₂₂₅	15.7	X	99.96462	136.49262	190.85016	7.96847	0.2079680	0.23081250	2.6320643	20	—	—
142680 2002 TF ₂₂₇	15.9	X	52.49575	281.94054	120.82619	2.99856	0.0851152	0.23263388	2.6183081	20	—	—
142681 2002 TM ₂₂₈	16.2	X	9.88614	328.06069	62.37347	2.73213	0.1013159	0.22588338	2.6702168	20	12 30.7	19.4
142682 2002 TR ₂₂₈	16.1	X	153.98416	136.45314	178.58334	14.63442	0.1288915	0.23879056	2.5731076	20	—	—
142683 2002 TC ₂₃₂	15.2	X	151.06330	73.71989	256.46919	12.80317	0.0876713	0.24117893	2.5560920	20	—	—
142684 2002 TN ₂₃₂	15.3	X	65.71413	69.38691	337.18058	14.71943	0.1208591	0.23730240	2.5838540	20	—	—
142685 2002 TL ₂₃₃	15.8	X	344.13768	51.50625	235.88039	13.50992	0.1058470	0.22080389	2.7110128	20	10 26.3	19.3
142686 2002 TJ ₂₃₅	15.6	X	164.03601	78.68131	263.73471	10.40837	0.1171846	0.24405242	2.5359886	20	1 22.7	19.4
142687 2002 TX ₂₃₅	15.7	X	57.63207	186.02072	256.95998	12.50696	0.2649046	0.23814316	2.5777688	20	1 28.2	18.1
142688 2002 TU ₂₃₈	15.4	X	323.22388	356.95775	46.85290	13.41843	0.0851804	0.21683400	2.7440023	20	11 3.3	18.6
142689 2002 TL ₂₄₀	15.2	X	66.19821	202.06334	202.92708	13.59545	0.2456729	0.23353625	2.6115590	20	—	—
142690 2002 TR ₂₄₁	16.0	X	158.66597	244.71476	115.01530	12.23335	0.1483535	0.24408982	2.5357296	20	2 14.5	19.9
142691 2002 TT ₂₄₁	15.8	X	80.05972	280.72769	172.55400	15.38998	0.1622945	0.24241275	2.5474113	20	3 11.9	18.9
142692 2002 TY ₂₄₂	16.4	X	88.69922	114.68341	242.40755	3.06273	0.2086291	0.23457642	2.6038331	20	—	—
142693 2002 TZ ₂₄₂	16.0	X	76.14137	241.98360	118.72115	8.65781	0.0910068	0.24559750	2.5253414	20	3 1.4	19.3
142694 2002 TW ₂₄₃	16.9	X	94.55049	64.33620	259.87957	2.59586	0.1295778	0.24322857	2.5417119	20	2 18.4	20.0
142695 2002 TU ₂₄₅	16.5	X	29.61802	231.24154	155.42649	3.65699	0.1126285	0.22833920	2.6510367	20	—	—
142696 2002 TM ₂₄₆	16.2	X	295.05859	257.70922	34.39221	9.20681	0.2163193	0.25876012	2.4389589	20	3 28.7	19.4
142697 2002 TT ₂₄₆	16.9	X	134.42851	248.58111	192.57742	3.45459	0.1397034	0.25105365	2.4886187	20	4 29.9	20.6
142698 2002 TO ₂₄₈	16.7	X	290.57928	243.96317	63.46814	5.57341	0.1932890	0.26078369	2.4263257	20	4 15.2	19.8
142699 2002 TU ₂₅₁	16.6	X	289.02940	251.94099	43.84456	6.53747	0.1976139	0.25969751	2.4330864	20	3 28.4	19.9
142700 2002 TK ₂₅₄	15.7	X	304.35921	340.42494	122.19608	3.51658	0.1706872	0.22369345	2.6876159	20	12 19.7	18.2
142701 2002 TL ₂₅₄	15.4	X	146.26016	267.27979	41.56513	14.69654	0.0758778	0.23521989	2.5990822	20	—	—
142702 2002 TY ₂₅₄	16.3	X	115.55114	217.21884	149.51505	4.64905	0.1780570	0.23882143	2.5728858	20	1 9.4	19.8
142703 2002 TJ ₂₅₆	16.1	X	352.77766	177.93360	225.86420	1.23237	0.0830885	0.22450016	2.6811736	20	12 20.4	19.2
142704 2002 TM ₂₅₆	16.4	X	233.64425	130.98719	191.01445	5.70048	0.2324844	0.25312940	2.4749950	20	3 1.3	20.7
142705 2002 TE ₂₅₇	15.6	X	344.26364	163.43385	204.67250	4.63985	0.0802307	0.21793383	2.7347625	20	10 18.9	18.6
142706 2002 TB ₂₅₈	16.0	X	55.55106	318.11169	106.80066	3.93768	0.1599771	0.23568328	2.5956743	20	—	—
142707 2002 TV ₂₅₉	16.7	X	87.03501	38.69869	30.42915	3.83035	0.1689327	0.24151151	2.5537448	20	2 21.7	19.7
142708 2002 TH ₂₆₀	16.6	X	102.10144	174.51050	216.38874	3.74990	0.2739447	0.23940161	2.5687273	20	2 5.4	20.0
142709 2002 TS ₂₆₀	15.6	X	43.73340	352.51823	60.03504	14.83929	0.2336379	0.23077784	2.6323279	20	—	—
142710 2002 TO ₂₆₁	15.9	X	153.91919	248.19205	24.07784	11.76528	0.1872729	0.23339248	2.6126314	20	—	—
142711 2002 TE ₂₆₃	16.4	X	89.24886	209.01546	232.64965	3.96016	0.0990657	0.24519879	2.5280782	20	2 26.6	19.6
142712 2002 TQ ₂₆₄	16.6	X	121.73379	154.10698	244.23068	1.38430	0.0800518	0.24427079	2.5344770	20	2 11.4	19.8
142713 2002 TU ₂₆₄	15.4	X	201.64028	87.08300	237.67145	8.32924	0.0705149	0.24393408	2.5368088	20	2 6.1	19.3
142714 2002 TQ ₂₆₅	15.6	X	109.85571	356.72673	49.52955	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>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142721 2002 <i>TJ</i> ₂₇₉	15.4	X	78.84198	338.51184	8.24431	15.31131	0.0447765	0.22972707	2.6403486	20	—	—
142722 2002 <i>TO</i> ₂₇₉	15.7	X	336.70097	73.63983	8.76048	22.10710	0.0597837	0.22713776	2.6603768	20	—	—
142723 2002 <i>TW</i> ₂₇₉	15.5	X	2.04072	116.77961	358.60968	12.03851	0.2669522	0.23232321	2.6206417	20	—	—
142724 2002 <i>TY</i> ₂₇₉	15.6	X	3.21216	154.68088	253.46878	9.14300	0.0944068	0.22652070	2.6652060	20	—	—
142725 2002 <i>TC</i> ₂₈₁	16.5	X	43.38189	158.71148	245.40769	8.05776	0.1560654	0.23186495	2.6240935	20	—	—
142726 2002 <i>TH</i> ₂₈₁	15.6	X	130.43643	13.60344	355.10070	12.41511	0.1700074	0.24139719	2.5545510	20	2 1.2	19.4
142727 2002 <i>TN</i> ₂₈₃	15.1	X	83.81441	327.41497	6.70135	15.41628	0.1318370	0.22888711	2.6468043	20	—	—
142728 2002 <i>TQ</i> ₂₈₃	16.1	X	352.61278	74.56713	350.18135	3.92827	0.2487335	0.22555114	2.6728384	20	—	—
142729 2002 <i>TD</i> ₂₈₄	15.1	X	63.64114	185.71960	238.28689	11.37521	0.1293064	0.23685102	2.5871357	20	—	—
142730 2002 <i>TN</i> ₂₈₄	15.5	X	79.06817	153.21262	248.29639	6.87110	0.1943223	0.23652498	2.5895127	20	1 4.8	18.2
142731 2002 <i>TA</i> ₂₈₅	15.1	X	19.29748	46.80648	7.85209	14.64259	0.0871639	0.22857399	2.6492209	20	—	—
142732 2002 <i>TZ</i> ₂₈₅	15.7	X	54.76238	123.89288	235.13602	13.21923	0.1201858	0.22711028	2.6605914	20	—	—
142733 2002 <i>TO</i> ₂₈₆	15.7	X	119.55453	136.28927	226.33023	14.43912	0.0954333	0.23745850	2.5827214	20	—	—
142734 2002 <i>TS</i> ₂₈₆	15.4	X	109.69329	153.12921	225.20005	21.51798	0.0852056	0.23789890	2.5795988	20	—	—
142735 2002 <i>TV</i> ₂₈₆	15.5	X	60.18686	321.77222	14.71036	14.00815	0.2624371	0.22700111	2.6614444	20	—	—
142736 2002 <i>TJ</i> ₂₈₉	15.2	X	153.60331	25.20425	355.41201	7.44511	0.1641162	0.24500288	2.5294257	20	3 6.3	19.0
142737 2002 <i>TZ</i> ₂₉₀	15.7	X	206.46057	147.83402	277.49721	6.42483	0.1792852	0.25726550	2.4483961	20	6 18.9	19.7
142738 2002 <i>TD</i> ₂₉₀	14.9	X	268.18592	105.90819	22.29593	8.34454	0.1615342	0.21806786	2.7336418	20	11 17.5	18.2
142739 2002 <i>TK</i> ₂₉₀	14.7	X	51.18925	105.56275	243.89330	25.96046	0.1929823	0.22442152	2.6818000	20	—	—
142740 2002 <i>TC</i> ₂₉₁	15.6	X	267.19768	47.93812	352.87590	3.42878	0.1018333	0.20867371	2.8150810	20	8 2.4	19.3
142741 2002 <i>TE</i> ₂₉₁	16.3	X	166.78990	326.94998	354.42738	4.16510	0.2858609	0.24164448	2.5528079	20	1 15.5	20.7
142742 2002 <i>TZ</i> ₂₉₁	15.5	X	31.19431	53.89631	27.60417	12.97267	0.1596562	0.23162088	2.6259366	20	—	—
142743 2002 <i>TD</i> ₂₉₂	16.2	X	77.84368	125.37098	323.33927	4.87343	0.1345477	0.24253455	2.5465584	20	2 26.3	19.1
142744 2002 <i>TL</i> ₂₉₃	15.8	X	264.45120	171.50455	253.81732	6.31012	0.1352016	0.26621057	2.3932378	20	8 29.0	18.7
142745 2002 <i>TC</i> ₂₉₃	14.8	X	20.47947	334.69493	42.88092	15.56008	0.2195689	0.22214134	2.7001204	20	—	—
142746 2002 <i>TS</i> ₂₉₄	15.3	X	68.74122	103.99315	3.34532	12.84459	0.1705502	0.24147443	2.5540062	20	3 16.4	18.0
142747 2002 <i>TZ</i> ₂₉₅	15.7	X	174.22776	339.78326	338.59684	12.94740	0.1941561	0.24113043	2.5564347	20	1 14.5	20.0
142748 2002 <i>TW</i> ₂₉₅	15.3	X	7.20537	161.17518	334.78784	12.51226	0.2095522	0.23501140	2.6006192	20	—	—
142749 2002 <i>TS</i> ₂₉₆	16.1	X	77.29410	67.29019	42.48670	15.81484	0.2217733	0.24418050	2.5351018	20	4 13.6	19.2
142750 2002 <i>TZ</i> ₂₉₇	16.3	X	172.44835	148.68081	286.14475	3.53561	0.1772638	0.25742754	2.4473685	20	5 30.3	20.3
142751 2002 <i>TG</i> ₃₀₀	17.1	X	323.58405	185.83290	123.17482	4.16571	0.1306316	0.26498842	2.4005907	20	6 20.3	19.3
142752 Boroski	16.0	X	4.94786	50.82592	56.53389	15.00975	0.0443146	0.23641989	2.5902799	20	—	—
142753 Briegel	15.8	X	163.47641	127.12909	159.53725	15.00829	0.1055987	0.23354062	2.6115265	20	—	—
142754 Brunner	16.5	X	56.14940	196.79470	216.55523	6.56698	0.1709893	0.23858821	2.5745623	20	—	—
142755 Castander	16.4	X	234.19026	217.68699	314.10026	5.54233	0.1363719	0.28666082	2.2780180	20	12 21.1	18.9
142756 Chiu	16.4	X	5.50431	243.67624	338.22589	5.35087	0.1401299	0.26046825	2.4282842	20	4 25.0	18.6
142757 Collinge	16.3	X	193.45801	266.44941	28.46598	14.72695	0.1130753	0.24326663	2.5414468	20	—	—
142758 Connolly	16.5	X	141.99661	278.82329	214.13082	0.77283	0.1239432	0.26301425	2.4125882	20	7 14.3	20.0
142759 Covey	16.6	X	93.33996	289.83900	223.67354	0.48797	0.1140857	0.25941683	2.4348411	20	6 14.0	19.7
142760 Csabai	16.5	X	196.60619	88.03540	170.30642	5.27614	0.1974249	0.23971619	2.5664795	20	—	—
142761 2002 <i>UU</i> ₂	15.4	X	10.17058	17.87404	69.38002	34.56442	0.1942951	0.23185302	2.6241836	20	—	—
142762 2002 <i>UF</i> ₃	15.8	X	322.13031	278.84251	133.39494	13.30116	0.1503123	0.21986697	2.7187090	20	11 17.4	18.9
142763 2002 <i>UU</i> ₃	16.1	X	331.87040	234.69217	52.17616	14.46586	0.2194658	0.26301463	2.4125859	20	5 19.1	18.1
142764 2002 <i>UV</i> ₄	15.8	X	43.19797	231.02784	191.53922	31.43206	0.2088504	0.23265748	2.6181310	20	—	—
142765 2002 <i>UX</i> ₄	15.3	X	293.70835	254.39810	174.03105	24.61742	0.1870803	0.21402313	2.7679755	20	10 9.1	18.5
142766 2002 <i>UA</i> ₅	15.9	X	250.96679	286.33806	152.47576	9.63786	0.1464601	0.21208927	2.7847759	20	8 24.3	19.8
142767 2002 <i>UU</i> ₅	16.2	X	208.81595	221.83082	83.50790	8.34791	0.0483465	0.24474130	2.5312276	20	1 25.1	19.8
142768 2002 <i>UA</i> ₆	15.2	X	235.85737	317.44825	167.11240	10.29193	0.1359900	0.21752734	2.7381684	20	10 8.4	19.1
142769 2002 <i>UB</i> ₆	15.3	X	211.55663	320.72090	161.03156	9.28628	0.1336329	0.21324426	2.7747114	20	9 5.7	19.6
142770 2002 <i>UM</i> ₆	15.3	X	340.66342	297.85341	71.37545	11.11147	0.1074323	0.21871778	2.7282238	20	10 21.0	18.5
142771 2002 <i>UQ</i> ₆	14.5	X	160.72633	185.60199	154.44907	11.45020	0.1386637	0.18747821	3.0234458	20	1 26.7	19.3
142772 2002 <i>UU</i> ₇	15.7	X	81.54336	298.47939	68.37416	16.21886	0.2096909	0.23406574	2.6076191	20	—	—
142773 2002 <i>UZ</i> ₇	15.6	X	290.91428	350.03502	125.42886	12.32516	0.1201228	0.22376005	2.6870826	20	12 17.4	18.7
142774 2002 <i>UD</i> ₈	15.4	X	71.55778	281.38483	114.65008	10.63499	0.0820549	0.23503286	2.6004609	20	—	—
142775 2002 <i>UP</i> ₈	16.0	X	2.86600	301.06438	150.48009	13.37889	0.2222253	0.22974045	2.6402461	20	—	—
142776 2002 <i>UQ</i> ₈	15.7	X	355.94840	291.29514	114.33891	14.34447	0.0863860	0.22439986	2.6819726	20	12 28.2	19.0
142777 2002 <i>UX</i> ₈	15.3	X	342.30678	290.48015	113.72310	13.06626	0.0835413	0.22143540	2.7058560	20	12 6.5	18.7
142778 2002 <i>UJ</i> ₉	15.5	X	332.11525	352.70184	114.50422	16.51501	0.2005669	0.22629805	2.6669539	20	—	—
142779 2002 <i>UQ</i> ₉	16.1	X	264.87656	339.25878	58.38817	7.37463	0.1395518	0.26322461	2.4113026	20	7 25.1	19.2
142780 2002 <i>UN</i> ₁₀	15.4	X	60.58267	274.90680	133.03574	6.81422	0.0867946	0.23415766	2.6069366	20	—	—
142781 2002 <i>UM</i> ₁₁	16.1	X	121.56001	229.00975	229.01869	41.03429	0.3876309	0.36167159	1.9510113	20	5 26.6	19.5
142782 2002 <i>UK</i> ₁₂	15.6	X	113.34210	267.10954	190.06802	14.61620	0.3033378	0.24554114	2.5257277	20	5 17.2	19.8
142783 2002 <i>UQ</i> ₁₃	15.5	X	337.47804	196.02502	141.96085	10.22561	0.1660779	0.21322102	2.7749130	20	8 25.9	18.2
142784 2002 <i>UZ</i> ₁₃	14.4	X	52.44386	99.63521	265.23867	27.53009	0.0830810	0.22597389	2.6695038	20	—	—
142785 2002 <i>UG</i> ₁₄	15.6	X	137.82880	263.07800	81.68070	12.19113	0.3421639	0.24071343	2.5593863	20	1 25.9	19.9
142786 2002 <i>UB</i> ₁₅	16.4	X	86.69344	258.82744	167.97506	11.71274	0.2970046	0.24026493	2.5625703	20	3 8.1	19.5
142787 2002 <i>UD</i> ₁₅	14.9	X	248.38692	272.33585	149.21047	12.84433	0.1049073	0.20947969	2.8078556	20	8 3.3	18.9
142788 2002 <i>UD</i> ₁₆	15.5	X	121.77597	78.78974	193.87233	13.23856	0.1467647	0.22645589	2.6657145	20	12 14.5	20.0
142789 2002 <i>UM</i> ₁₆	15.3	X	87.25964	82.03448	289.53739	12.14784	0.1514379	0.23325819	2.6136340	20	—	—
142790 2002 <i>UX</i> ₁₆	15.6	X	319.22895	289.46343	144.34749	9.73359	0.1561265	0.22060701	2.7126256	20	12 9.1	18.5
142791 2002 <i>UQ</i> ₁₉	16.1	X	40.30522	307.42616	123.74860	4.94095	0.2271739	0.23262016	2.6184110	20	—	—
142792 2002 <i>UR</i> ₁₉	15.6	X	343.39735	357.50803	141.01527	5.54898	0.2054946	0.23134028	2.6280596	20	—	—
142793 2002 <i>UV</i> ₁₉	14.9	X	282.75790	318.98342	72.89324	14.84753	0.2310724	0.209793				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
142801	2002	US ₂₆	16.0	X	3.89931	302.89459	112.84440	6.15353	0.1467924	0.22707473	2.6608691	20	—	—
142802	2002	UG ₂₇	15.8	X	161.60237	322.64922	327.10894	2.44291	0.1443543	0.23504578	2.6003656	20	—	—
142803	2002	UM ₂₇	16.3	X	58.85651	36.94754	245.19909	4.46893	0.2911292	0.27647535	2.3336288	20	11 18.4	19.7
142804	2002	UT ₂₇	15.7	X	132.07184	188.37687	45.95215	3.34606	0.0047945	0.21948097	2.7218956	20	11 3.2	19.4
142805	2002	UT ₂₈	15.6	X	27.22830	110.66095	27.39551	32.96732	0.1866404	0.23929211	2.5695109	20	3 5.6	18.9
142806	2002	UJ ₂₉	14.5	X	134.99276	122.94570	265.27361	13.06567	0.1672905	0.24220637	2.5488582	20	2 19.4	18.6
142807	2002	UN ₃₁	15.7	X	153.30832	49.79014	236.18496	13.95838	0.0636970	0.23291724	2.6161840	20	—	—
142808	2002	UQ ₃₃	16.5	X	158.59878	176.39396	267.91112	2.40093	0.1576902	0.25349479	2.4726111	20	5 29.2	20.4
142809	2002	US ₃₄	15.9	X	351.57525	274.88078	56.10406	4.21408	0.0974457	0.21364236	2.7712634	20	9 12.1	19.1
142810	2002	UB ₃₆	15.3	X	97.97465	285.16759	79.66270	15.77711	0.1527171	0.23477760	2.6023454	20	—	—
142811	2002	UX ₃₆	15.7	X	67.47460	285.42309	145.54230	2.10740	0.1718491	0.23687890	2.5869327	20	1 22.5	18.1
142812	2002	UL ₃₇	16.4	X	90.98050	319.64511	34.39977	2.41960	0.0879382	0.23278485	2.6171759	20	—	—
142813	2002	UP ₃₈	16.5	X	59.57219	18.74866	52.65021	5.41430	0.2742282	0.23594890	2.5937259	20	1 24.0	18.6
142814	2002	UR ₃₈	16.9	X	263.98113	343.16540	93.67314	2.47232	0.1456913	0.26930251	2.3748843	20	9 17.9	19.7
142815	2002	US ₃₉	15.7	X	65.11572	343.68551	37.87845	3.32515	0.1077967	0.23132042	2.6282100	20	—	—
142816	2002	UQ ₄₀	16.2	X	296.35992	277.47045	159.25161	8.32659	0.1666554	0.21793638	2.7347411	20	10 29.8	19.2
142817	2002	UJ ₄₅	15.7	X	110.53083	233.30833	95.85247	10.11019	0.1378398	0.23273070	2.6175818	20	—	—
142818	2002	UT ₄₆	15.9	X	169.20318	174.15333	111.89175	6.03289	0.2740220	0.23891141	2.5722398	20	—	—
142819	2002	UX ₄₆	15.8	X	338.63873	59.24656	59.06299	14.15988	0.0237965	0.23368511	2.6104499	20	—	—
142820	2002	UU ₄₉	15.4	X	20.65121	22.34439	3.50427	7.93661	0.3350876	0.22410706	2.6843081	20	—	—
142821	2002	UB ₅₀	15.1	X	354.99219	249.08741	122.30273	14.57492	0.2067187	0.21894516	2.7263346	20	11 27.9	18.2
142822	2002	Czarapata	16.6	X	108.56280	121.41710	69.15019	2.57302	0.1257418	0.26759494	2.3849765	20	8 26.2	20.0
142823	2002	VY ₃	15.2	X	189.61674	0.08388	254.71988	7.96085	0.1487827	0.23138244	2.6277404	20	—	—
142824	2002	VE ₆	15.6	X	41.13849	92.33045	201.68490	3.92804	0.0848136	0.21537123	2.7564128	20	10 4.6	19.2
142825	2002	VV ₆	15.7	X	29.13748	297.31429	30.74590	5.18828	0.1776009	0.21957057	2.7211551	20	11 15.9	19.2
142826	2002	VF ₉	15.8	X	136.83795	87.97605	242.26853	13.27062	0.0903120	0.23604508	2.5930213	20	—	—
142827	2002	VK ₁₀	15.6	X	72.29671	10.60716	275.54585	5.90636	0.1153218	0.21904263	2.7252557	20	11 6.4	19.7
142828	2002	VW ₁₀	15.7	X	60.60126	282.07067	39.17935	10.07683	0.0602447	0.22143485	2.7058605	20	11 29.9	19.4
142829	2002	VZ ₁₀	16.0	X	195.07062	84.02011	236.00280	10.58037	0.2337661	0.24508638	2.5288511	20	1 28.0	20.6
142830	2002	VG ₁₁	15.1	X	248.79148	27.62987	257.44742	6.83025	0.1190490	0.24544745	2.5263704	20	2 5.2	19.0
142831	2002	VT ₁₁	16.0	X	214.18445	240.88033	250.95984	5.54551	0.0694871	0.26877151	2.3780112	20	10 3.9	19.2
142832	2002	VZ ₁₁	15.6	X	353.31635	301.94699	65.79834	7.10222	0.0544687	0.21924557	2.7238436	20	11 1.5	19.0
142833	2002	VC ₁₂	15.9	X	173.37162	325.89280	4.24393	4.36787	0.1696775	0.24257578	2.5462699	20	1 24.5	19.9
142834	2002	VD ₁₂	15.5	X	342.50512	26.67619	329.09543	3.11331	0.0873819	0.21518453	2.7580069	20	9 27.8	18.9
142835	2002	VK ₁₂	15.7	X	280.91062	168.99321	292.51868	3.99541	0.1218997	0.22026190	2.7154582	20	11 8.4	18.9
142836	2002	VN ₁₂	14.9	X	242.08061	217.20981	23.95891	12.68760	0.1383942	0.23805356	2.5784156	20	—	—
142837	2002	VH ₁₃	15.9	X	354.02907	176.76364	306.05059	2.90672	0.0966760	0.23340442	2.6125423	20	—	—
142838	2002	VZ ₁₅	15.6	X	259.64090	187.81711	287.65600	3.15302	0.0674022	0.21927710	2.7235825	20	11 3.5	19.2
142839	2002	VQ ₁₆	15.2	X	110.68255	266.17376	65.91880	15.07990	0.0997147	0.23253410	2.6190570	20	—	—
142840	2002	VV ₁₆	16.0	X	24.67795	188.05297	293.14625	3.73908	0.1028310	0.23860585	2.5744353	20	1 11.3	18.9
142841	2002	UY ₁₇	15.5	X	356.82296	278.63788	186.23435	1.69378	0.2668002	0.22490341	2.6779678	20	—	—
142842	2002	VG ₁₈	16.9	X	256.99923	268.47903	212.33888	2.10035	0.1678749	0.27393214	2.3480503	20	11 5.3	19.5
142843	2002	VW ₁₈	16.8	X	79.44613	323.18258	26.40917	5.64887	0.1522518	0.23124165	2.6288069	20	—	—
142844	2002	VQ ₂₁	15.3	X	139.58823	266.77859	232.33815	22.11966	0.1125280	0.25970223	2.4330569	20	7 12.7	19.4
142845	2002	VZ ₂₁	15.4	X	183.92920	266.15188	267.80097	5.04148	0.0512526	0.21670515	2.7450898	20	10 16.2	19.5
142846	2002	VD ₂₂	15.5	X	141.81086	36.84345	239.55314	6.97341	0.0782443	0.22774012	2.6556837	20	—	—
142847	2002	VB ₂₃	16.1	X	84.17501	289.42060	37.32449	6.42677	0.2135048	0.22814427	2.6525465	20	—	—
142848	2002	VD ₂₃	16.2	X	45.77995	48.97178	33.50169	3.38225	0.1210813	0.23545581	2.5973458	20	—	—
142849	2002	VF ₂₃	15.6	X	53.56899	144.31010	243.58210	3.26902	0.1365047	0.23000576	2.6382153	20	—	—
142850	2002	VX ₂₃	16.9	X	238.82434	65.01680	20.99659	2.09561	0.2327388	0.26471955	2.4022159	20	8 13.9	20.3
142851	2002	VE ₂₄	16.1	X	105.99155	277.49876	55.95994	4.80134	0.2628111	0.23267766	2.6179796	20	—	—
142852	2002	VM ₂₄	16.3	X	95.03914	346.25447	89.60038	1.25410	0.1597290	0.24174907	2.5520715	20	3 10.4	19.5
142853	2002	VS ₂₄	15.7	X	320.18634	326.20735	58.78064	2.66176	0.1330229	0.21457486	2.7632286	20	10 1.4	18.6
142854	2002	VA ₂₅	15.6	X	131.04218	45.68016	274.73864	7.14446	0.0764080	0.23379886	2.6096031	20	—	—
142855	2002	VC ₂₆	15.8	X	316.30933	95.41692	284.06976	3.53337	0.0861761	0.21330960	2.7741447	20	9 16.3	19.2
142856	2002	VS ₂₆	15.7	X	155.43939	154.53904	211.96042	3.45548	0.1123509	0.24261211	2.5460156	20	2 13.4	19.4
142857	2002	VF ₂₇	15.8	X	273.82172	193.72788	248.57387	3.68132	0.0885407	0.21480825	2.7612268	20	10 6.5	19.5
142858	2002	VV ₂₇	15.6	X	60.90901	331.61964	51.67489	4.85190	0.1432944	0.23008508	2.6376089	20	—	—
142859	2002	VB ₂₈	15.5	X	320.35297	4.52206	86.22055	3.43970	0.0477808	0.22326133	2.6910827	20	12 31.3	18.8
142860	2002	VJ ₂₈	16.3	X	138.60819	120.20597	225.66013	0.87775	0.1955550	0.23878011	2.5731827	20	1 11.9	20.2
142861	2002	VU ₂₈	16.6	X	300.56457	221.90898	159.19203	1.32302	0.2003448	0.26835285	2.3804838	20	8 18.2	18.8
142862	2002	VW ₂₈	16.8	X	114.18555	181.92009	191.11124	1.71277	0.2417087	0.23898122	2.5717388	20	1 24.6	20.2
142863	2002	VC ₂₉	16.2	X	241.26132	26.70207	60.19291	4.08169	0.1139225	0.26689218	2.3891614	20	9 5.4	19.3
142864	2002	VR ₂₉	15.8	X	133.38533	301.06238	85.73910	14.46639	0.2175397	0.24256661	2.5463340	20	3 5.5	20.0
142865	2002	VY ₂₉	15.5	X	6.77068	231.81506	234.54885	13.74777	0.1069044	0.23188603	2.6239345	20	—	—
142866	2002	VV ₃₀	15.9	X	3.70318	124.83751	261.09545	3.81709	0.1174763	0.22105414	2.7089664	20	12 16.5	19.2
142867	2002	VW ₃₁	15.6	X	203.39265	62.11359	73.10086	4.77462	0.0409174	0.21105969	2.7938249	20	9 24.8	19.6
142868	2002	VB ₃₂	15.9	X	128.66427	278.87271	64.06668	4.32229	0.1840723	0.23559311	2.5963366	20	—	—
142869	2002	VG ₃₂	16.4	X	37.85856	174.65799	248.20650	0.74742	0.1302599	0.23072490	2.6327305	20	—	—
142870	2002	VQ ₃₂	16.4	X	216.96058	4.77501	103.35269	2.35100	0.1344610	0.26432464	2.4046080	20	8 30.9	19.6
142871	2002	VL ₃₃	15.6	X	351									

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
142881	2002	VH ₄₀	15.7 ^m	X	120.80250	234.48882	167.76964	9.25001	0.1226756	0.24180614	2.5516700	20	2 21.3	19.1
142882	2002	VB ₄₁	15.1	X	98.48345	357.59177	55.55048	15.23406	0.1597153	0.24390122	2.5370366	20	2 20.9	18.6
142883	2002	VQ ₄₁	15.6	X	22.57788	98.39492	220.65319	4.67451	0.0663305	0.21537302	2.7563976	20	10 8.2	19.0
142884	2002	VC ₄₂	16.2	X	288.88054	103.46609	104.25864	6.87060	0.0371492	0.29427627	2.2385453	20	—	—
142885	2002	VT ₄₂	16.2	X	238.07392	101.20356	89.29705	5.59503	0.0547015	0.28330499	2.2959719	20	—	—
142886	2002	VG ₄₃	15.8	X	8.13216	16.52063	84.94974	7.28935	0.1166676	0.23277321	2.6172631	20	—	—
142887	2002	VH ₄₃	16.2	X	107.75068	247.18885	159.08041	5.93911	0.0977593	0.24141484	2.5544265	20	2 6.6	19.5
142888	2002	VO ₄₃	15.5	X	8.39172	285.07505	78.30209	7.77544	0.0953341	0.22032606	2.7149310	20	11 21.8	18.8
142889	2002	VC ₄₅	16.0	X	295.35051	79.47535	26.12835	5.10261	0.1108569	0.22211084	2.7003675	20	12 9.8	19.1
142890	2002	VK ₄₅	16.1	X	29.63980	206.66972	174.57092	5.98809	0.1138010	0.22531796	2.6746822	20	—	—
142891	2002	VT ₄₅	16.1	X	59.30934	60.71595	57.16044	13.21057	0.0393553	0.24409316	2.5357064	20	3 5.1	19.5
142892	2002	VZ ₄₅	17.2	X	245.05482	301.16602	160.66975	1.04594	0.1588060	0.26856306	2.3792415	20	9 22.4	20.1
142893	2002	VA ₄₆	16.8	X	358.09369	143.86796	249.48572	0.94494	0.2115495	0.22228561	2.6989519	20	12 31.3	19.6
142894	2002	VN ₄₆	15.9	X	139.36681	264.86586	60.51312	13.72333	0.1042672	0.23517535	2.5994104	20	—	—
142895	2002	VQ ₄₆	15.7	X	124.25827	217.31476	92.30016	6.70922	0.1817085	0.23171085	2.6252569	20	—	—
142896	2002	VG ₄₇	15.7	X	324.20063	73.76424	62.95906	22.24732	0.0502636	0.23066623	2.6331769	20	—	—
142897	2002	VT ₄₇	15.7	X	339.15485	189.23138	223.72066	7.63846	0.0680113	0.21985982	2.7187679	20	12 9.6	19.0
142898	2002	VV ₄₇	15.2	X	44.61332	348.42579	72.23183	14.69849	0.1639661	0.23117545	2.6293087	20	—	—
142899	2002	VA ₄₈	15.6	X	16.65134	3.12176	80.84548	7.86558	0.1985086	0.22911630	2.6450389	20	—	—
142900	2002	VR ₄₈	15.4	X	82.91271	300.58281	71.95839	17.54142	0.3224921	0.23300696	2.6155124	20	—	—
142901	2002	VG ₄₉	15.6	X	297.19517	266.53333	113.07657	4.64879	0.1052907	0.20986960	2.8043767	20	8 17.1	19.1
142902	2002	VK ₄₉	15.8	X	91.57211	286.08114	70.69780	12.56808	0.2724169	0.23319726	2.6140893	20	—	—
142903	2002	VY ₄₉	16.5	X	169.99311	256.66235	120.95622	4.49797	0.1972172	0.24755921	2.5119827	20	3 20.5	20.7
142904	2002	VD ₅₀	15.6	X	20.83860	333.86086	138.06814	4.45099	0.1356860	0.23511243	2.5998741	20	—	—
142905	2002	VJ ₅₀	16.2	X	286.08865	313.81611	120.80798	3.01493	0.1952973	0.27194859	2.3594540	20	10 16.6	18.3
142906	2002	VE ₅₁	16.6	X	46.81996	210.76120	190.55240	8.32016	0.1667613	0.23169439	2.6253812	20	—	—
142907	2002	VA ₅₂	15.5	X	222.72496	204.49075	64.82502	13.48790	0.0602300	0.23980888	2.5658182	20	—	—
142908	2002	VC ₅₂	15.6	X	316.34686	25.01805	109.88211	5.39017	0.1615030	0.22969608	2.6405860	20	—	—
142909	2002	VL ₅₂	15.6	X	85.64545	139.10285	192.63997	13.70079	0.1115050	0.22896511	2.6462032	20	—	—
142910	2002	VE ₅₃	15.6	X	353.67383	328.08183	69.63222	3.00419	0.0847227	0.22160737	2.7044560	20	12 8.3	18.7
142911	2002	VJ ₅₃	15.8	X	174.10360	121.11372	309.38325	6.01911	0.0960013	0.25468832	2.4648852	20	5 24.2	19.5
142912	2002	VL ₅₄	15.9	X	320.77796	198.88618	263.47008	12.82676	0.2067402	0.22499230	2.6772624	20	—	—
142913	2002	VN ₅₅	16.1	X	107.29051	253.28020	206.23624	3.30200	0.1519804	0.24666581	2.5180445	20	4 24.5	19.4
142914	2002	VW ₅₅	14.6	X	180.57605	18.39509	281.02922	11.96224	0.2646999	0.23753224	2.5821869	20	—	—
142915	2002	VD ₅₆	15.5	X	191.35628	351.93968	162.64745	5.96769	0.0330537	0.21460023	2.7630109	20	10 5.1	19.4
142916	2002	VH ₅₆	16.3	X	65.59020	220.83703	133.30753	5.33264	0.1202044	0.22809581	2.6529222	20	—	—
142917	2002	VP ₅₆	15.4	X	279.85096	263.79631	142.43786	5.89329	0.0665782	0.21130787	2.7916369	20	9 1.9	18.9
142918	2002	VT ₅₆	16.1	X	43.90185	257.10834	208.52103	4.12603	0.2154508	0.23468609	2.6030218	20	1 28.9	18.4
142919	2002	VA ₅₇	15.7	X	25.93728	278.04701	181.67412	3.11510	0.1452151	0.23209284	2.6223755	20	—	—
142920	2002	VG ₅₇	15.6	X	353.70328	42.24129	53.53621	13.81722	0.1201415	0.23050284	2.6344211	20	—	—
142921	2002	VO ₅₇	15.9	X	157.83861	155.86534	151.13333	3.44362	0.2602692	0.23904608	2.5712737	20	—	—
142922	2002	VC ₅₈	15.5	X	223.46289	2.85495	140.67149	4.85904	0.0431697	0.21848162	2.7301894	20	10 30.4	19.2
142923	2002	VF ₅₈	15.4	X	261.71872	0.76853	97.55451	7.99117	0.1756409	0.21355190	2.7720459	20	10 3.1	19.1
142924	2002	VR ₅₈	16.0	X	44.66473	5.38875	79.70637	8.51034	0.2431566	0.23372373	2.6101623	20	1 2.9	17.8
142925	2002	VS ₅₈	15.6	X	159.48210	211.11797	112.07808	4.25408	0.1690371	0.23655313	2.5893073	20	1 2.7	19.4
142926	2002	VD ₆₀	15.7	X	221.55062	78.28518	209.22364	13.69622	0.0824537	0.24135327	2.5548609	20	1 12.9	19.8
142927	2002	VF ₆₀	16.7	X	101.50900	176.79051	155.44698	3.75999	0.2067725	0.28799147	2.2709956	20	—	—
142928	2002	VK ₆₀	15.2	X	88.34907	309.51829	58.40528	13.78706	0.0518465	0.23237090	2.6202831	20	—	—
142929	2002	VS ₆₁	15.8	X	180.70961	349.98112	322.61066	2.30721	0.1121849	0.24010093	2.5637371	20	1 6.1	19.6
142930	2002	VR ₆₃	15.7	X	299.40843	89.60013	280.32648	5.59717	0.0687301	0.20898536	2.8122816	20	8 9.2	19.2
142931	2002	VT ₆₃	15.6	X	18.88051	131.98788	282.74461	4.36429	0.0711059	0.22777259	2.6554314	20	—	—
142932	2002	VH ₆₄	16.1	X	9.37352	217.33484	13.36567	2.20588	0.1022973	0.30959729	2.1640699	20	5 17.4	17.8
142933	2002	VR ₆₅	16.2	X	25.72832	294.04626	82.45340	4.52914	0.1099644	0.22543019	2.6737943	20	—	—
142934	2002	VX ₆₅	16.0	X	67.59950	2.77577	19.48132	15.31638	0.0836331	0.23073911	2.6326224	20	—	—
142935	2002	VX ₆₆	16.3	X	261.19655	140.28769	92.65133	3.14356	0.0612627	0.29387016	2.2406072	20	—	—
142936	2002	VZ ₆₆	16.5	X	132.37166	244.52949	134.45814	1.71123	0.1186553	0.24286506	2.5442475	20	2 5.6	20.0
142937	2002	VC ₆₈	15.9	X	22.86052	236.92843	261.46981	6.44516	0.1357889	0.23857564	2.5746526	20	1 29.1	18.6
142938	2002	VN ₆₈	15.8	X	41.39190	138.64674	341.03441	8.99883	0.1487909	0.24021627	2.5629164	20	2 10.8	18.4
142939	2002	VP ₆₈	15.7	X	70.04204	103.06422	262.92639	11.66140	0.1980632	0.23141924	2.6274618	20	—	—
142940	2002	VX ₆₈	14.6	X	323.93304	295.84369	93.71282	14.67648	0.1835508	0.21622387	2.7491617	20	10 21.3	17.6
142941	2002	VC ₆₉	16.1	X	76.06252	203.65122	270.79336	6.82577	0.0925666	0.24520086	2.5280639	20	3 19.9	19.4
142942	2002	VG ₆₉	16.1	X	63.80842	25.50053	8.87172	4.28837	0.1417606	0.23244875	2.6196981	20	—	—
142943	2002	VK ₆₉	15.6	X	58.44804	3.87340	10.73717	4.85556	0.1200603	0.22863091	2.6487812	20	—	—
142944	2002	VT ₆₉	15.0	X	2.86415	14.67313	23.91977	12.00825	0.2973237	0.28394058	2.2925443	20	—	—
142945	2002	VB ₇₀	16.6	X	51.12136	347.79679	90.63021	6.38722	0.0652064	0.29430540	2.2383976	20	—	—
142946	2002	VD ₇₀	16.3	X	310.63802	229.28571	84.35851	4.09357	0.2000075	0.26315432	2.4117320	20	5 22.6	18.6
142947	2002	VK ₇₂	15.8	X	328.52408	356.81412	96.15727	3.82855	0.0404934	0.22601811	2.6691556	20	—	—
142948	2002	VQ ₇₂	16.4	X	75.00534	345.84450	125.00021	3.91380	0.0920272	0.24451185	2.5328109	20	3 19.2	19.4
142949	2002	VB ₇₃	15.9	X	1.96360	280.48687	210.60741	10.63116	0.1029115	0.23552419	2.5968430	20	—	—
142950	2002	VS ₇₃	15.5	X	57.04342	95.58975	217.32936	10.93584	0.1667943	0.22106473	2.7088799	20	12 1.3	19.4
142951	2002	VU ₇₃	15.9	X	45.39163	357.60868	54.87639	15.47358	0.0477025	0.2				

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>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
142961 2002 VQ ₇₉	15.0	X	226.08734	112.82306	69.35964	16.83471	0.2135212	0.21964065	2.7205762	20	11 27.1	18.8
142962 2002 VY ₇₉	15.9	X	25.24024	167.60607	206.57303	11.16147	0.1895356	0.22384380	2.6864123	20	—	—
142963 2002 VH ₈₀	15.5	X	146.61175	274.98608	84.87495	5.74436	0.1565370	0.24054908	2.5605519	20	2 3.2	19.3
142964 2002 VO ₈₀	15.4	X	307.55564	278.37065	94.38412	7.57114	0.1967772	0.26755792	2.3851966	20	8 24.2	17.4
142965 2002 VA ₈₁	15.1	X	228.15441	55.53341	92.06448	12.86882	0.1094638	0.21556758	2.7547387	20	11 3.8	19.2
142966 2002 VE ₈₁	15.6	X	65.58777	306.90847	80.90988	12.79995	0.1619924	0.23106133	2.6301744	20	—	—
142967 2002 VT ₈₁	16.6	X	71.46993	203.22267	198.54747	3.92836	0.2597396	0.23399390	2.6081527	20	1 2.2	18.9
142968 2002 VX ₈₁	16.4	X	351.27226	276.61543	97.46505	5.78570	0.1951747	0.27410828	2.3470443	20	12 8.5	18.4
142969 2002 VF ₈₂	16.3	X	114.69934	232.41449	145.60214	4.84077	0.2291516	0.23768335	2.5810924	20	1 29.9	19.9
142970 2002 VG ₈₂	15.5	X	335.80962	290.52098	104.96405	7.96481	0.2214313	0.21763427	2.7372714	20	11 21.1	18.0
142971 2002 VQ ₈₂	14.9	X	39.52709	174.65271	226.75951	9.93492	0.1700523	0.22733174	2.6588632	20	—	—
142972 2002 VY ₈₂	16.0	X	111.12432	196.67482	167.74308	4.06349	0.1496023	0.23586044	2.5943744	20	—	—
142973 2002 VK ₈₃	16.1	X	268.30628	316.74179	87.63428	6.85290	0.1453949	0.26431710	2.4046537	20	8 8.0	19.1
142974 2002 VO ₈₃	16.3	X	328.14727	325.87027	99.92211	7.55753	0.0921507	0.27656555	2.3331214	20	12 29.6	18.5
142975 2002 VM ₈₄	14.8	X	326.26708	186.98917	239.04107	9.65551	0.2830110	0.21777524	2.7360900	20	12 15.2	16.7
142976 2002 VN ₈₄	15.4	X	284.04456	337.86095	116.50047	10.99386	0.2485451	0.21336550	2.7736602	20	10 21.4	18.7
142977 2002 VT ₈₄	15.8	X	84.21754	265.04369	191.57121	5.17473	0.2741822	0.23930910	2.5693893	20	4 10.4	19.1
142978 2002 VU ₈₄	16.1	X	69.54525	260.82059	152.17627	5.25722	0.2387511	0.23280474	2.6170268	20	1 11.4	18.7
142979 2002 VX ₈₄	15.0	X	32.39321	131.73079	254.93859	11.14227	0.2667767	0.22259787	2.6964273	20	—	—
142980 2002 VZ ₈₄	16.2	X	67.56939	56.51174	196.99861	6.33171	0.0830577	0.26850041	2.3796116	20	9 23.5	19.2
142981 2002 VK ₈₅	15.2	X	334.67822	226.88327	309.77723	12.46908	0.2340677	0.23776118	2.5805290	20	—	—
142982 2002 VD ₈₇	15.6	X	348.54604	12.43189	342.36594	5.13800	0.0872703	0.21481326	2.7611839	20	10 5.7	19.0
142983 2002 VO ₈₇	16.2	X	54.29909	54.26185	43.22744	15.75195	0.0995990	0.23866524	2.5740083	20	2 3.9	19.5
142984 2002 VA ₈₈	16.2	X	348.40941	127.44033	272.33426	3.14927	0.1836184	0.27722334	2.3294293	20	—	—
142985 2002 VF ₈₈	16.2	X	219.98830	175.03662	273.13202	3.54814	0.1115140	0.26283439	2.4136887	20	8 7.7	19.7
142986 2002 VP ₈₉	15.2	X	86.57889	33.66581	42.99529	31.11807	0.2243450	0.23775311	2.5805874	20	3 29.6	19.1
142987 2002 VZ ₈₉	15.6	X	137.55974	92.26156	196.46764	4.28860	0.1264355	0.22920193	2.6443801	20	—	—
142988 2002 VD ₉₀	15.7	X	225.23235	247.45186	163.31102	2.21524	0.0600048	0.20331564	2.8643243	20	6 28.0	19.9
142989 2002 VK ₉₀	16.2	X	321.80677	248.98036	99.40253	11.85403	0.3262086	0.26911042	2.3760143	20	7 26.4	17.2
142990 2002 VZ ₉₂	16.2	X	152.39314	146.15746	178.13942	3.82855	0.2341150	0.23831768	2.5765102	20	1 2.7	20.2
142991 2002 VG ₉₃	16.3	X	15.57826	286.67188	200.14418	4.16914	0.1549963	0.23600185	2.5933379	20	—	—
142992 2002 VZ ₉₃	16.2	X	40.33489	181.29774	296.67353	2.84966	0.0501846	0.23959833	2.5673211	20	1 31.0	19.4
142993 2002 VA ₉₄	15.5	X	55.36070	151.89050	262.87809	7.08977	0.1586271	0.23192851	2.6236141	20	—	—
142994 2002 VB ₉₄	15.2	X	7.47199	138.46117	24.32330	5.97476	0.2264733	0.23753382	2.5821754	20	1 31.5	17.5
142995 2002 VL ₉₄	15.9	X	82.09538	150.69766	308.22936	2.77620	0.1270274	0.24187844	2.5511615	20	3 16.0	18.9
142996 2002 VZ ₉₅	14.9	X	243.63471	270.87494	6.09246	7.99440	0.1739628	0.24363269	2.5389005	20	1 22.9	19.0
142997 2002 VR ₉₆	16.0	X	359.54355	262.50497	183.48352	2.51551	0.0831560	0.22819664	2.6521406	20	—	—
142998 2002 VP ₉₇	15.8	X	350.75151	319.14889	41.95744	6.69233	0.0741159	0.21590698	2.7518511	20	10 19.9	19.0
142999 2002 VZ ₉₈	14.2	X	38.76727	54.19051	13.63140	29.44840	0.1915310	0.23234944	2.6204445	20	—	—
143000 2002 VL ₁₀₁	15.1	X	100.34517	237.08444	77.51410	16.13673	0.1175307	0.22506529	2.6766836	20	—	—
143001 2002 VO ₁₀₁	15.6	X	89.24796	159.49709	239.04740	8.74625	0.0899155	0.23422875	2.6064091	20	1 1.9	19.0
143002 2002 VQ ₁₀₁	15.9	X	57.17505	233.22843	216.67524	3.89735	0.1233262	0.23577001	2.5950377	20	1 24.3	18.7
143003 2002 VC ₁₀₂	15.1	X	157.08164	62.05095	98.31421	14.04001	0.2205162	0.25749442	2.4469448	20	9 9.8	19.5
143004 2002 VD ₁₀₃	15.5	X	128.06473	57.36665	271.52493	4.03396	0.0975412	0.23353890	2.6115393	20	—	—
143005 2002 VG ₁₀₃	16.0	X	45.40108	317.36779	25.39910	4.34412	0.1152117	0.22321272	2.6914734	20	12 17.6	19.6
143006 2002 VK ₁₀₃	16.4	X	352.55139	92.73323	3.31629	3.92676	0.0559744	0.22974720	2.6401944	20	—	—
143007 2002 VO ₁₀₃	15.5	X	121.92025	301.80055	32.02455	13.63375	0.1839541	0.23451880	2.6042596	20	—	—
143008 2002 VQ ₁₀₃	15.5	X	326.36031	43.46555	10.48536	5.43485	0.0683191	0.21969562	2.7201224	20	11 20.1	18.8
143009 2002 VX ₁₀₃	15.4	X	3.24735	85.56361	308.88186	5.22167	0.0369257	0.22219014	2.6997250	20	12 17.2	18.8
143010 2002 VB ₁₀₄	15.5	X	357.24045	344.96480	10.85520	6.38492	0.0562861	0.21572122	2.7534306	20	10 19.1	18.8
143011 2002 VJ ₁₀₄	15.9	X	105.68591	9.14253	345.42821	1.68782	0.1864755	0.23437111	2.6053535	20	—	—
143012 2002 VG ₁₀₅	15.6	X	161.21117	290.18470	19.38184	3.71778	0.1517582	0.23530546	2.5984521	20	—	—
143013 2002 VJ ₁₀₆	15.1	X	306.97568	289.24537	247.88821	15.33990	0.2022917	0.23107803	2.6300476	20	—	—
143014 2002 VT ₁₀₆	15.9	X	334.90595	336.56896	15.75556	5.09900	0.1750378	0.21445061	2.7642959	20	9 11.2	18.5
143015 2002 VN ₁₀₈	15.6	X	43.27307	168.04284	315.42148	3.35934	0.2191308	0.23786141	2.5798041	20	2 24.2	17.6
143016 2002 VQ ₁₀₈	15.4	X	303.96134	70.37204	52.49004	15.03764	0.0809899	0.22387129	2.6861924	20	—	—
143017 2002 VV ₁₀₈	15.6	X	29.33142	312.06379	52.62550	13.72960	0.1674129	0.22230519	2.6987934	20	—	—
143018 2002 VA ₁₀₉	15.7	X	126.64150	59.02695	279.73387	5.73884	0.2017981	0.23403604	2.6078397	20	—	—
143019 2002 VC ₁₀₉	15.3	X	38.24624	97.80740	262.24981	11.15912	0.1987458	0.22303213	2.6929261	20	—	—
143020 2002 VF ₁₁₀	15.1	X	87.71443	356.15552	53.58690	7.88289	0.3038242	0.23565490	2.5958827	20	2 21.7	18.4
143021 2002 VG ₁₁₀	15.3	X	184.90594	296.79389	72.40614	9.61588	0.2837434	0.24590813	2.5232142	20	3 27.5	20.0
143022 2002 VO ₁₁₀	15.1	X	127.76489	326.30887	65.27940	4.95029	0.2945515	0.23818699	2.5774526	20	3 9.9	19.3
143023 2002 VV ₁₁₀	15.9	X	72.65590	148.62797	270.93291	11.10898	0.2752075	0.23835707	2.5762264	20	1 28.8	18.5
143024 2002 VO ₁₁₂	15.6	X	321.10622	59.00507	53.77811	22.59895	0.0902959	0.22751039	2.6574711	20	—	—
143025 2002 VA ₁₁₃	17.1	X	267.96530	156.67760	277.70507	1.65039	0.1500650	0.26875038	2.3781358	20	9 17.3	19.9
143026 2002 VC ₁₁₄	15.4	X	165.84128	278.72793	66.53443	13.94922	0.1419405	0.24149007	2.5538960	20	2 5.9	19.5
143027 2002 VN ₁₁₄	15.2	X	264.98995	231.93674	248.10731	11.57335	0.1307673	0.21734178	2.7397266	20	11 7.2	18.6
143028 2002 VK ₁₁₅	15.9	X	181.62245	195.83197	356.15040	8.13770	0.0391041	0.21855445	2.7295829	20	11 5.8	19.9
143029 2002 VZ ₁₁₈	16.4	X	303.44535	69.80569	0.69010	2.59156	0.1417344	0.27326263	2.3518839	20	11 19.5	18.3
143030 2002 VD ₁₁₉	15.7	X	51.69644	67.59355	19.45974	5.13122	0.2257088	0.23499751	2.6007217	20	1 23.2	17.9
143031 2002 VH ₁₁₉	15.8	X	71.36648	113.00344	19.33519	5.97250	0.1326921	0.24408270	2.5357789	20	4 16.6	18.7
143032 2002 VO ₁₁₉	15.6	X	95.32770	16.40166	2.53553	3.76477	0.2494881	0.23499129	2.6007676	20	1 11.1	18.7
143033 2002 VN ₁₂₁	15.2	X	135.48165	123.08678	279.30670	15.24779	0.2505967	0.24582037	2.5238147	20	3 14.2	19.6
143034 2002 VQ ₁₂₁	15.8	X	267.17778	261.48915	290.59497	5.33951	0.062					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143041 2002 VB ₁₂₇	15.7	X	86.51755	125.17713	259.61422	4.76909	0.0420174	0.23315452	2.6144087	20	—	—
143042 2002 VW ₁₂₇	14.6	X	139.54661	6.43700	73.75749	15.18196	0.1058982	0.18674032	3.0314052	20	5 6.6	19.3
143043 2002 VH ₁₂₈	16.9	X	293.82297	124.56932	286.29083	1.62870	0.1857168	0.26933494	2.3746936	20	9 22.8	18.9
143044 2002 VO ₁₂₈	16.1	X	125.57429	353.99013	60.87242	2.39505	0.0996289	0.24309247	2.5426605	20	3 13.2	19.5
143045 2002 VJ ₁₂₉	15.3	X	111.48030	246.07257	233.28846	6.91296	0.0808582	0.19352359	2.9601481	20	5 17.5	19.5
143046 2002 VR ₁₃₁	16.3	X	129.61486	100.41961	226.27480	4.47050	0.1193940	0.23434553	2.6055431	20	—	—
143047 2002 VW ₁₃₁	16.1	X	217.02880	192.54046	229.50162	1.19938	0.0500961	0.20273535	2.8697874	20	7 3.8	20.1
143048 Margaretpenston	15.8	X	238.02198	226.03056	58.97681	5.04457	0.1200815	0.24473110	2.5312980	20	1 29.2	19.7
143049 2002 VY ₁₃₄	15.7	X	165.84752	3.65501	311.78815	13.08007	0.2114539	0.24106738	2.5568804	20	1 3.7	19.9
143050 2002 VM ₁₃₅	15.3	X	100.27333	227.36573	63.60579	14.63934	0.1771247	0.22440223	2.6819537	20	12 16.8	19.8
143051 2002 WO ₁	15.9	X	212.17847	338.94852	182.83710	4.07863	0.0524109	0.21727076	2.7403236	20	11 6.2	19.8
143052 2002 WY ₂	16.1	X	124.79877	166.37307	88.05293	10.81061	0.0915875	0.27450899	2.3447597	20	12 3.9	19.5
143053 2002 WG ₃	15.0	X	300.24742	292.91834	15.12486	11.09503	0.1489857	0.20223199	2.8745474	20	5 4.4	18.8
143054 2002 WH ₅	15.7	X	243.48133	39.47975	20.46472	1.99725	0.0660793	0.20575658	2.8416259	20	8 1.8	19.6
143055 2002 WQ ₅	15.7	X	230.98640	284.27433	242.01020	10.61117	0.1482070	0.21997495	2.7178193	20	11 20.9	19.4
143056 2002 WB ₆	15.3	X	208.84067	264.03099	20.83818	13.29883	0.1857765	0.24072343	2.5593154	20	1 1.7	19.8
143057 2002 WO ₈	15.6	X	247.69075	266.44324	198.38685	4.52389	0.1278546	0.21244877	2.7816335	20	9 25.3	19.5
143058 2002 WT ₈	16.2	X	87.90293	237.94562	187.67920	14.02692	0.2840286	0.23857312	2.5746708	20	3 4.2	19.4
143059 2002 WQ ₁₀	15.8	X	57.73343	41.81303	116.29261	6.24025	0.1730932	0.24549798	2.5262038	20	5 11.0	18.6
143060 2002 WF ₁₁	16.5	X	14.51145	21.97491	27.47627	4.89308	0.1187701	0.22695204	2.6618280	20	—	—
143061 2002 WH ₁₁	15.7	X	265.90696	38.31854	49.24298	2.99389	0.0355773	0.21476844	2.7615680	20	10 12.4	19.3
143062 2002 WK ₁₁	15.8	X	341.66098	102.72148	70.18576	12.32270	0.1549714	0.23582245	2.5946530	20	1 5.5	18.9
143063 2002 WZ ₁₁	15.6	X	32.25120	250.59855	191.16715	13.76394	0.1787712	0.23130876	2.6282984	20	—	—
143064 2002 WC ₁₂	15.2	X	304.95196	288.89781	195.43438	14.83849	0.0840255	0.22416376	2.6838554	20	—	—
143065 2002 WF ₁₂	15.2	X	111.60770	264.85198	136.22496	13.49635	0.2209330	0.24014230	2.5634427	20	2 24.9	18.7
143066 2002 WZ ₁₃	15.8	X	346.19989	16.82361	139.15283	5.55321	0.1820620	0.23366725	2.6105829	20	—	—
143067 2002 WM ₁₄	15.2	X	306.22948	288.74213	120.89391	10.14785	0.0883365	0.21426434	2.7658978	20	10 18.5	18.7
143068 2002 WC ₁₅	15.0	X	66.69603	258.13677	81.93391	28.92325	0.1294316	0.22478725	2.6788903	20	—	—
143069 2002 WM ₁₅	15.8	X	143.04851	254.52259	85.53506	14.08811	0.12107654	0.23827449	2.5768216	20	1 11.4	19.8
143070 2002 WB ₁₆	15.9	X	350.06287	232.40613	128.44505	5.90636	0.21272482	0.21645702	2.7471873	20	10 24.2	19.0
143071 2002 WE ₁₆	15.5	X	288.06495	306.23318	228.08401	9.36754	0.1001847	0.22834952	2.6509568	20	—	—
143072 2002 WJ ₁₆	16.0	X	148.65082	132.72395	204.96289	10.05887	0.2157987	0.23767405	2.5811597	20	1 12.2	20.2
143073 2002 WD ₁₇	15.6	X	136.38719	233.41471	151.50368	6.66506	0.2713281	0.24249452	2.5468386	20	3 4.9	19.6
143074 2002 WK ₁₉	16.8	X	80.98361	183.11890	161.11039	2.11973	0.1228864	0.22772366	2.6558117	20	—	—
143075 2002 WP ₂₀	15.4	X	53.98344	217.34207	64.24981	14.99092	0.1611959	0.21354051	2.7721445	20	10 22.7	19.4
143076 2002 WE ₂₁	15.7	X	147.60971	41.09501	227.65996	13.51355	0.1530824	0.22560977	2.6723753	20	12 30.5	20.2
143077 2002 XX ₁	15.9	X	309.86822	9.02694	126.59575	5.93557	0.1726105	0.22561945	2.6722988	20	—	—
143078 2002 XM ₂	16.1	X	346.08636	293.24185	222.86691	8.75681	0.1457518	0.23401068	2.6080281	20	—	—
143079 2002 XC ₃	15.5	X	318.30803	24.91090	113.42051	9.93242	0.0623209	0.22850932	2.6497207	20	—	—
143080 2002 XQ ₃	16.6	X	107.79531	12.09015	345.28338	6.34605	0.2872588	0.23715574	2.5849191	20	1 5.5	20.0
143081 2002 XC ₅	15.9	X	15.04899	240.44626	117.61424	9.08051	0.3488680	0.27741195	2.3283733	20	—	—
143082 2002 XJ ₆	16.0	X	79.78837	286.41192	153.35852	5.10455	0.1839062	0.23813196	2.5778497	20	2 26.4	18.9
143083 2002 XV ₆	15.5	X	44.99702	272.42817	98.25701	16.37885	0.3655012	0.22454720	2.6807992	20	—	—
143084 2002 XX ₆	15.8	X	12.40367	191.70960	272.05382	5.19464	0.2327223	0.22751757	2.6574152	20	—	—
143085 2002 XQ ₇	16.3	X	17.57317	210.92182	228.07341	1.06561	0.0659457	0.23072155	2.6327560	20	—	—
143086 2002 XN ₈	15.7	X	31.68819	300.94875	75.38462	8.81402	0.1704680	0.22489960	2.6779981	20	—	—
143087 2002 XP ₉	15.7	X	72.39729	188.28737	265.61646	6.72753	0.1532741	0.23938707	2.5688313	20	2 25.2	18.7
143088 2002 XT ₉	15.1	X	39.90228	154.37449	265.38526	11.15720	0.1404091	0.22837141	2.6507874	20	—	—
143089 2002 XZ ₉	15.2	X	126.92940	315.18777	61.93907	3.49579	0.2354567	0.23738360	2.5832647	20	2 13.5	19.0
143090 2002 XC ₁₀	15.5	X	8.02106	354.21965	67.29913	3.09683	0.1612398	0.22364934	2.6879693	20	—	—
143091 2002 XB ₁₃	16.5	X	242.95409	48.81094	80.82944	7.63259	0.0557332	0.27274793	2.3548418	20	11 15.8	19.4
143092 2002 XD ₁₃	15.9	X	40.23171	141.77249	190.90626	1.99865	0.1847942	0.22059354	2.7127359	20	12 8.5	19.5
143093 2002 XD ₁₄	15.8	X	8.16419	161.48112	262.25734	4.32046	0.0445295	0.22626757	2.6671934	20	—	—
143094 2002 XA ₁₅	15.8	X	144.86283	254.61087	85.91369	4.33324	0.2589045	0.23755505	2.5820216	20	1 18.5	19.9
143095 2002 XB ₁₅	15.9	X	239.07933	265.66624	246.73095	4.47880	0.1189606	0.21643265	2.7473935	20	11 16.5	19.8
143096 2002 XJ ₁₅	15.2	X	354.00108	105.31879	11.23720	14.16482	0.1309934	0.23287892	2.6164710	20	—	—
143097 2002 XN ₁₇	15.4	X	185.45234	316.15500	17.56992	10.87977	0.0857236	0.24106802	2.5568759	20	2 8.6	19.3
143098 2002 XF ₁₈	15.5	X	283.38929	353.36997	78.66172	4.67046	0.0730577	0.21300003	2.7768320	20	10 12.3	19.0
143099 2002 XW ₁₈	15.4	X	196.15043	107.02865	79.56806	10.15474	0.0741360	0.21576693	2.7530417	20	11 16.7	19.5
143100 2002 XQ ₁₉	15.5	X	240.44332	127.49572	37.40801	11.08700	0.0617305	0.22183592	2.7025981	20	12 12.5	19.2
143101 2002 XB ₂₀	15.4	X	333.67768	242.19245	264.05815	12.98183	0.0834094	0.23299648	2.6155909	20	—	—
143102 2002 XS ₂₀	15.7	X	336.84093	101.40058	31.87422	5.36677	0.0945483	0.23102028	2.6304859	20	—	—
143103 2002 XK ₂₁	15.5	X	165.51277	45.90101	303.92337	4.29922	0.1353802	0.24161081	2.5530450	20	2 6.1	19.3
143104 2002 XL ₂₁	15.5	X	105.76865	50.44230	311.14943	3.96389	0.1959814	0.23467750	2.6030854	20	—	—
143105 2002 XS ₂₁	14.8	X	348.74690	104.94640	278.33593	13.53728	0.2530174	0.21730335	2.7400497	20	12 3.4	17.4
143106 2002 XN ₂₂	15.7	X	80.06884	316.88419	6.44351	5.15159	0.0486689	0.22173269	2.7034369	20	12 25.8	19.6
143107 2002 XU ₂₃	15.5	X	236.26008	189.12971	290.83297	12.85750	0.1359759	0.21042897	2.7994048	20	9 22.6	19.8
143108 2002 XV ₂₃	15.7	X	203.38712	145.60186	357.33284	8.21422	0.1066411	0.211465				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143121 2002 <i>XF</i> ₂₉	15.8	X	294.25435	328.01362	117.79431	9.73477	0.1247595	0.21270597	2.7793907	20	11 11.8	19.2
143122 2002 <i>XH</i> ₃₁	15.5	X	283.83964	5.51194	359.30669	2.56552	0.0526952	0.20362966	2.8613788	20	7 14.8	19.3
143123 2002 <i>XS</i> ₃₁	16.2	X	15.38334	50.21823	349.56923	5.65553	0.0319507	0.22307169	2.6926076	20	—	—
143124 2002 <i>XU</i> ₃₁	15.2	X	200.72178	296.24448	5.20901	4.80383	0.2323972	0.23987806	2.5653248	20	1 15.6	19.6
143125 2002 <i>XY</i> ₃₁	15.7	X	136.08354	11.77407	3.01927	3.80972	0.0973931	0.23913023	2.5706704	20	2 3.6	19.2
143126 2002 <i>XV</i> ₃₂	15.1	X	38.12975	294.68874	57.24289	9.70673	0.1814505	0.22081337	2.7109352	20	12 29.1	18.9
143127 2002 <i>XW</i> ₃₂	15.3	X	315.00901	113.71555	65.24518	14.24337	0.1977111	0.23041451	2.6350943	20	—	—
143128 2002 <i>XU</i> ₃₃	16.4	X	77.49249	146.12920	247.82485	0.40475	0.0713216	0.23276092	2.6173552	20	—	—
143129 2002 <i>XA</i> ₃₄	15.5	X	187.19997	266.48337	35.88300	14.18127	0.0751822	0.23723141	2.5843694	20	—	—
143130 2002 <i>XF</i> ₃₄	16.0	X	0.51547	337.23495	59.88229	2.90324	0.0797495	0.22033100	2.7148904	20	12 21.3	19.3
143131 2002 <i>XE</i> ₃₅	15.2	X	261.06898	196.62130	120.73569	10.80150	0.0552772	0.18633489	3.0358007	20	4 18.5	19.7
143132 2002 <i>XN</i> ₃₅	15.6	X	352.93717	48.38601	286.21268	3.90788	0.2172450	0.26612763	2.3937350	20	10 8.9	17.4
143133 2002 <i>XB</i> ₃₆	16.3	X	62.99362	337.78927	112.12819	2.50415	0.1199327	0.23718256	2.5847242	20	2 4.1	19.0
143134 2002 <i>XS</i> ₃₇	16.0	X	150.86422	118.34902	229.74859	27.28569	0.1987578	0.23954233	2.5677212	20	1 17.9	20.6
143135 2002 <i>XY</i> ₃₇	15.2	X	209.37473	70.90112	315.43963	10.13636	0.1122862	0.19754922	2.9197960	20	5 2.4	19.9
143136 2002 <i>XC</i> ₃₈	15.7	X	37.14768	88.41295	10.48906	12.02680	0.0030487	0.23600972	2.5932803	20	1 3.3	19.4
143137 2002 <i>XU</i> ₃₈	16.6	X	113.50035	14.13781	28.65699	2.68326	0.1068787	0.23919358	2.5702165	20	2 13.1	19.9
143138 2002 <i>XU</i> ₃₈	15.2	X	246.83419	163.24342	60.23837	29.63741	0.0955618	0.22702768	2.6612367	20	—	—
143139 2002 <i>XC</i> ₃₉	15.7	X	26.00006	69.13671	269.16754	3.80913	0.0393111	0.21485679	2.7608109	20	11 3.3	19.4
143140 2002 <i>XT</i> ₃₉	15.8	X	49.59801	45.08095	259.03462	6.13093	0.1194413	0.27198339	2.3592527	20	11 14.1	18.9
143141 2002 <i>XY</i> ₄₀	15.3	X	89.36209	348.04755	23.16797	13.58204	0.1730222	0.23258617	2.6186661	20	—	—
143142 2002 <i>XF</i> ₄₁	14.9	X	85.24946	26.83118	326.88389	10.93448	0.1782373	0.22974728	2.6401937	20	—	—
143143 2002 <i>XH</i> ₄₁	15.2	X	144.23967	283.70244	27.54513	13.87094	0.1650599	0.23134602	2.6280161	20	—	—
143144 2002 <i>XU</i> ₄₁	15.5	X	95.41248	49.95039	296.04564	8.27283	0.0997344	0.22852965	2.6495636	20	—	—
143145 2002 <i>XC</i> ₄₂	16.4	X	335.71212	92.52216	294.79522	6.06724	0.1283469	0.27238304	2.3569444	20	11 16.7	18.8
143146 2002 <i>XL</i> ₄₂	15.1	X	214.80236	119.89352	56.68084	12.61548	0.1686216	0.21426374	2.7659029	20	11 12.9	19.3
143147 2002 <i>XT</i> ₄₂	15.9	X	178.46211	263.69674	79.33472	2.70132	0.1667963	0.24284750	2.5443701	20	2 13.1	19.9
143148 2002 <i>XO</i> ₄₃	16.0	X	138.28301	257.33506	74.80449	15.56521	0.1647664	0.23542049	2.5976056	20	—	—
143149 2002 <i>XC</i> ₄₄	15.7	X	308.21313	75.58789	356.50869	5.32625	0.0517172	0.21715655	2.7412844	20	11 16.4	19.3
143150 2002 <i>XJ</i> ₄₅	15.7	X	16.77053	144.49557	329.19008	14.09007	0.2167701	0.23466415	2.6031841	20	—	—
143151 2002 <i>XC</i> ₄₆	14.9	X	334.02996	314.21881	246.35081	29.35969	0.1645940	0.23946164	2.5682980	20	1 16.9	18.7
143152 2002 <i>XE</i> ₄₈	16.8	X	281.43507	147.88330	257.64287	2.22953	0.1861454	0.26610028	2.3938990	20	8 20.8	19.2
143153 2002 <i>XV</i> ₄₈	15.8	X	174.56296	115.84889	232.88328	1.60371	0.2542401	0.24431070	2.5342010	20	2 18.7	20.2
143154 2002 <i>XA</i> ₅₀	16.1	X	346.26525	126.97651	63.40322	5.20814	0.1341282	0.23901159	2.5715210	20	2 10.0	19.0
143155 2002 <i>XS</i> ₅₀	16.0	X	233.65203	202.27598	215.18827	1.28103	0.0548074	0.20256933	2.8713552	20	7 17.5	20.1
143156 2002 <i>XC</i> ₅₁	15.7	X	145.44084	354.29455	7.55322	0.58174	0.2261448	0.23972651	2.5664058	20	2 9.9	19.8
143157 2002 <i>XN</i> ₅₁	15.2	X	359.93943	111.70919	272.21900	7.92067	0.1086283	0.21868346	2.7285093	20	12 6.2	18.6
143158 2002 <i>XO</i> ₅₄	16.4	X	85.10559	281.88524	91.39988	8.00499	0.1951135	0.23226744	2.6210612	20	—	—
143159 2002 <i>XR</i> ₅₄	15.9	X	344.12946	247.45212	152.00668	4.81492	0.1151869	0.21883870	2.7272187	20	12 3.5	19.1
143160 2002 <i>XP</i> ₅₅	15.7	X	57.56430	192.05948	151.50325	4.56718	0.1107817	0.22200291	2.7012427	20	12 31.9	19.6
143161 2002 <i>XA</i> ₅₆	15.2	X	92.21590	248.90902	130.05593	8.29579	0.2049630	0.23391856	2.6087128	20	—	—
143162 2002 <i>XQ</i> ₅₇	14.2	X	352.23737	245.09969	281.69825	20.79394	0.0306604	0.17539541	3.1607531	20	1 31.8	18.8
143163 2002 <i>XY</i> ₅₇	16.4	X	41.85428	253.27625	221.52102	3.92889	0.1550308	0.23652794	2.5894910	20	2 2.3	18.9
143164 2002 <i>XF</i> ₅₈	15.8	X	68.56561	204.03085	247.66040	7.21779	0.1905171	0.23721471	2.5844907	20	2 21.5	18.7
143165 2002 <i>XO</i> ₅₈	15.7	X	84.68988	353.26589	45.83200	4.29421	0.1297653	0.23318806	2.6141580	20	1 3.1	18.7
143166 2002 <i>XZ</i> ₅₉	15.4	X	159.35265	68.07639	69.84296	3.83744	0.0713267	0.20227490	2.8741409	20	8 4.7	19.7
143167 2002 <i>XC</i> ₆₀	15.5	X	103.19632	89.44606	249.66089	6.54966	0.1951418	0.23010549	2.6374530	20	—	—
143168 2002 <i>XO</i> ₆₂	15.4	X	24.67954	313.78162	91.73808	13.97279	0.2563121	0.22678855	2.6631071	20	—	—
143169 2002 <i>XZ</i> ₆₂	16.0	X	281.92234	321.99266	163.28825	3.88143	0.1543801	0.21872659	2.7281505	20	12 9.4	19.0
143170 2002 <i>XJ</i> ₆₄	15.8	X	145.38341	326.01168	22.49031	4.96829	0.0999573	0.23624311	2.5915721	20	1 12.9	19.5
143171 2002 <i>XH</i> ₆₅	14.6	X	47.05993	304.70337	35.93696	31.95564	0.1428831	0.22063447	2.7124004	20	12 12.3	18.9
143172 2002 <i>XA</i> ₆₇	15.9	X	82.05221	282.00345	79.94999	6.58088	0.1323679	0.22907245	2.6453764	20	—	—
143173 2002 <i>XF</i> ₆₇	15.4	X	49.60088	299.27010	113.84503	14.44794	0.1584673	0.23122221	2.6289542	20	—	—
143174 2002 <i>XD</i> ₆₈	15.6	X	126.96651	192.75204	170.17451	6.17040	0.2892733	0.23846499	2.5754491	20	1 30.6	19.7
143175 2002 <i>XJ</i> ₆₈	14.9	X	278.43193	132.15323	359.94114	13.04174	0.2252845	0.21986615	2.7187157	20	11 28.8	18.1
143176 2002 <i>XB</i> ₇₃	14.9	X	156.76413	238.18425	61.68794	14.12506	0.1506955	0.23112610	2.6296829	20	—	—
143177 2002 <i>XF</i> ₇₃	15.8	X	116.74834	339.80288	29.09971	4.53990	0.1971507	0.23657792	2.5891263	20	1 18.2	19.3
143178 2002 <i>XN</i> ₇₃	15.5	X	32.29958	323.76458	57.12689	8.45735	0.1746864	0.22436271	2.6822686	20	—	—
143179 2002 <i>XB</i> ₇₄	15.6	X	213.66976	225.71988	331.83182	2.48073	0.1201637	0.21964582	2.7205335	20	12 13.2	19.5
143180 2002 <i>XE</i> ₇₅	16.0	X	58.01347	150.43874	304.31639	3.48359	0.1190508	0.23622458	2.5917075	20	2 1.9	18.6
143181 2002 <i>XU</i> ₇₅	15.2	X	48.44744	116.27962	281.81802	12.17823	0.1386808	0.22731842	2.6589671	20	—	—
143182 2002 <i>XL</i> ₇₆	16.6	X	256.80298	52.80281	17.84572	2.50052	0.1628688	0.26388075	2.4073039	20	8 25.3	19.6
143183 2002 <i>XE</i> ₇₇	15.1	X	128.57604	251.39809	62.10306	15.14997	0.2140144	0.22930032	2.6436235	20	—	—
143184 2002 <i>XK</i> ₇₇	15.7	X	25.91105	68.95207	305.32865	8.31929	0.0286248	0.22006967	2.7170393	20	12 19.9	19.3
143185 2002 <i>XS</i> ₇₇	15.3	X	228.46717	240.10660	274.80870	14.03062	0.1126884	0.21458226	2.7631652	20	11 4.3	19.5
143186 2002 <i>XP</i> ₇₈	16.0	X	113.05753	39.52339	350.31044	3.61144	0.2621892	0.23771129	2.5808901	20	2 17.3	19.7
143187 2002 <i>XT</i> ₇₈	16.1	X	14.35769	35.13001	54.93102	5.08643	0.1709193	0.22768939	2.6560782	20	—	—
143188 2002 <i>XW</i> ₇₈	15.7	X	351.74571	18.52718	33.53742	3.10934	0.1087272	0.21916953	2.7244736	20	12 31.1	18.9
143189 2002 <i>XB</i> ₇₉	16.0	X	277.72611	150.03127	292.37045	6.27230	0.0890071	0.26795504	2.3828394	20	10 21.9	18.7
143190 2002 <i>XQ</i> ₈₀	15.6	X	328.86929	14.89777	29.30927	5.07349	0.2247787	0.21512297	2.7585330	20	11 13.4	18.0
143191 2002 <i>XO</i> ₈₁	15.9	X	158.05513	344.32508	2.97184	2.88190	0.1927324	0.23725460	2.5842010	20	2 2.0	19.9
143192 2002 <i>XB</i> ₈₃	15.2	X	301.03177	281.85259	156.99163	8.49216	0.1749917</					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143201 2002 XC ₈₈	14.8	X	45.74231	158.65329	344.04855	10.44875	0.0735223	0.18309212	3.0715408	20	3 18.9	18.8
143202 2002 XS ₈₉	15.3	X	350.66919	221.13282	169.23727	6.41160	0.2324889	0.21977089	2.7195013	20	12 16.3	18.1
143203 2002 XX ₈₉	15.1	X	4.11889	242.86038	114.76053	12.65339	0.1596407	0.21700612	2.7425511	20	11 18.5	18.5
143204 2002 XF ₉₀	15.5	X	225.96048	323.97610	112.99711	11.60367	0.2242344	0.26044248	2.4284444	20	7 19.6	19.4
143205 2002 XQ ₉₂	16.6	X	221.68556	301.65752	286.98550	3.40861	0.0619846	0.28560747	2.2836156	20	—	—
143206 2002 XS ₉₂	16.2	X	14.82917	307.99691	47.82872	7.75723	0.1796989	0.21971300	2.7199790	20	12 1.7	19.4
143207 2002 XD ₁₀₁	15.8	X	125.79117	266.43008	105.98710	2.87761	0.0254084	0.23595175	2.5937050	20	1 8.3	19.2
143208 2002 XG ₁₀₁	15.4	X	91.95862	250.50134	77.00387	15.41968	0.1549030	0.22595612	2.6696437	20	—	—
143209 2002 XR ₁₀₅	15.5	X	47.36046	159.21457	267.28707	10.98441	0.1346278	0.22946876	2.6423296	20	—	—
143210 2002 XE ₁₀₇	16.1	X	239.94588	153.99982	262.41494	5.47931	0.1074838	0.25929755	2.4355877	20	7 19.8	19.5
143211 2002 XO ₁₀₉	16.1	X	346.97423	102.66261	328.36335	3.04754	0.0763499	0.22382049	2.6865989	20	—	—
143212 2002 YG	15.7	X	341.44598	60.00849	59.17551	4.81071	0.1241157	0.22495081	2.6775916	20	—	—
143213 2002 YS	14.5	X	174.61331	322.60347	102.47496	15.60265	0.1511303	0.19185720	2.9772638	20	5 24.2	19.5
143214 2002 YY	16.1	X	284.83362	339.40841	104.67692	3.24272	0.1906797	0.26904995	2.3763702	20	10 28.6	18.1
143215 2002 YE ₁	14.9	X	262.70890	11.28351	94.66584	13.72788	0.1358778	0.21015226	2.8018616	20	10 22.6	18.8
143216 2002 YP ₁	15.5	X	119.10350	229.80106	231.50042	3.72016	0.2212858	0.24402480	2.5361800	20	5 17.9	19.4
143217 2002 YG	15.5	X	317.82700	292.33112	115.21541	10.60390	0.1632435	0.21281644	2.7784287	20	10 31.1	18.6
143218 2002 YL ₃	15.8	X	150.56834	337.96925	65.71870	8.16055	0.2610173	0.24302582	2.5431254	20	4 10.2	20.2
143219 2002 YY ₃	15.7	X	104.80997	120.61493	324.16690	55.38533	0.0525792	0.35195786	1.9867456	20	2 17.6	18.0
143220 2002 YY ₄	15.1	X	134.80762	346.64009	78.93843	30.34239	0.1421883	0.24072745	2.5592869	20	4 27.1	19.5
143221 2002 YL ₆	15.4	X	81.06267	293.43154	70.33384	5.49942	0.3464080	0.22798011	2.6538197	20	—	—
143222 2002 YB ₁₀	15.8	X	228.91435	272.22597	291.49571	3.94877	0.0778450	0.22033447	2.7148620	20	—	—
143223 2002 YN ₁₁	14.4	X	340.50853	181.17500	25.41284	22.95232	0.0781944	0.17976531	3.1093203	20	3 16.9	18.7
143224 2002 YX ₁₂	16.1	X	33.08598	267.98612	233.16643	4.21231	0.1496750	0.23810015	2.5780793	20	2 22.0	18.6
143225 2002 YF ₁₃	15.9	X	334.51877	172.92495	254.79212	3.08492	0.0843580	0.21818114	2.7326955	20	12 22.2	19.1
143226 2002 YA ₁₆	16.6	X	247.96147	216.28006	281.13072	1.20061	0.1716178	0.27224387	2.3577476	20	11 13.3	19.3
143227 2002 YK ₁₇	15.7	X	44.01349	73.78357	100.60869	6.50565	0.1581212	0.24462599	2.5320231	20	5 8.1	18.3
143228 2002 YV ₁₇	16.1	X	128.88527	275.07957	96.38385	4.53863	0.2496592	0.23898549	2.5717082	20	2 9.6	20.0
143229 2002 YY ₁₇	16.7	X	186.65735	267.67423	195.67118	1.43374	0.1375012	0.25733280	2.4479692	20	7 20.8	20.3
143230 2002 YK ₁₈	15.7	X	86.72376	144.30076	275.84101	3.99408	0.0953220	0.23643756	2.5901509	20	1 27.3	18.9
143231 2002 YO ₁₈	16.1	X	44.62183	283.45523	78.31735	7.92048	0.2781274	0.22451954	2.6810194	20	—	—
143232 2002 YU ₁₉	16.3	X	206.94532	8.01040	87.41229	4.44812	0.1443872	0.25899519	2.4374829	20	8 1.4	19.9
143233 2002 YK ₂₀	15.7	X	53.71705	123.92270	273.50530	5.47964	0.0691655	0.22704971	2.6610646	20	—	—
143234 2002 YT ₂₀	16.1	X	96.65099	221.01582	241.58937	0.88201	0.1359183	0.24259789	2.5461151	20	4 12.6	19.3
143235 2002 YZ ₂₀	16.7	X	249.06783	143.86853	334.18385	0.77562	0.1385886	0.26986676	2.3715728	20	10 23.7	19.5
143236 2002 YA ₂₁	15.2	X	211.15960	349.38539	103.79026	6.70047	0.1651462	0.20320883	2.8653279	20	7 28.5	19.8
143237 2002 YB ₂₁	15.9	X	57.46812	234.42809	274.48267	7.17579	0.0729423	0.24455541	2.5325102	20	4 5.9	19.1
143238 2002 YF ₂₁	16.4	X	215.15723	58.60060	75.21222	3.58960	0.1429292	0.26595672	2.3947604	20	10 2.4	19.7
143239 2002 YC ₂₂	15.7	X	315.14649	183.39226	277.45189	12.68390	0.1684239	0.21987913	2.7186088	20	—	—
143240 2002 YC ₂₄	14.6	X	289.88299	315.74517	287.88177	8.18801	0.0776302	0.18022792	3.1039973	20	2 12.7	19.0
143241 2002 YV ₂₄	15.3	X	65.47990	303.82452	283.30237	12.81848	0.1981502	0.25335128	2.4735497	20	8 25.1	18.9
143242 2002 YM ₂₅	15.9	X	331.86170	86.36851	96.22298	4.76113	0.0701096	0.23344806	2.6122167	20	1 16.9	19.1
143243 2002 YA ₂₆	13.8	X	45.29745	233.70495	107.05805	19.06339	0.4449253	0.16466315	3.2966418	20	—	—
143244 2002 YJ ₂₆	15.5	X	264.85912	9.44786	111.81550	10.35211	0.1049890	0.21375345	2.7703031	20	11 16.2	19.2
143245 2002 YG ₂₇	15.8	X	188.25704	12.03378	115.72457	3.59420	0.1326074	0.25873939	2.4390892	20	8 25.4	19.4
143246 2002 YK ₂₇	14.6	X	47.10941	215.47074	290.62857	10.35585	0.0494675	0.18267297	3.0762375	20	3 19.0	19.0
143247 2002 YJ ₂₈	15.3	X	188.84291	73.30271	281.80666	7.69052	0.3416167	0.24449324	2.5329395	20	3 5.9	20.2
143248 2002 YS ₂₈	15.6	X	245.18085	337.16109	91.69250	3.48265	0.1890632	0.20344039	2.8631533	20	7 29.9	20.0
143249 2002 YP ₂₉	16.3	X	263.29212	141.77023	339.85881	2.12189	0.1347721	0.26929998	2.3748992	20	11 20.0	18.7
143250 2002 YU ₃₀	15.0	X	249.98451	32.07560	292.50064	8.91896	0.0546944	0.18765037	3.0215962	20	4 4.6	19.5
143251 2002 YY ₃₀	15.7	X	219.60936	3.91300	86.56526	3.17215	0.0357844	0.20125484	2.8838444	20	8 15.8	19.8
143252 2002 YG ₃₁	15.3	X	208.06924	233.25131	304.02746	8.22656	0.1011556	0.21108517	2.7936001	20	11 10.2	19.5
143253 2002 YL ₃₁	15.9	X	311.84459	204.25474	182.14431	1.80451	0.2195171	0.26537413	2.3982640	20	9 20.1	17.3
143254 2002 YL ₃₅	15.7	X	32.78274	244.93685	198.75315	3.76331	0.1579626	0.23024918	2.6363556	20	—	—
143255 2002 YV ₃₅	15.9	X	136.23733	239.47282	123.50013	5.31530	0.3222294	0.23952436	2.5678497	20	2 12.4	20.0
143256 2002 YZ ₃₅	15.8	X	298.48920	300.87456	214.03733	2.95763	0.1543424	0.22257626	2.6966018	20	—	—
143257 2003 AE	16.5	X	322.22266	265.62540	113.92102	21.97674	0.3501940	0.27139516	2.3626605	20	10 27.4	18.1
143258 2003 AU ₁	15.2	X	64.91621	265.04296	111.33297	15.79025	0.0913954	0.23022617	2.6365312	20	—	—
143259 2003 AO ₂	15.6	X	14.39772	283.01868	92.83534	21.80700	0.2777039	0.28150780	2.3057334	20	—	—
143260 2003 AA ₆	15.3	X	315.82088	346.65695	132.99029	15.02669	0.1441350	0.21811974	2.7332084	20	—	—
143261 2003 AB ₇	15.2	X	88.21730	33.24149	0.10084	7.56487	0.1947696	0.23348868	2.6119138	20	1 12.0	18.3
143262 2003 AF ₇	15.3	X	23.84462	357.61251	68.30662	15.63692	0.0680151	0.22606527	2.6687844	20	—	—
143263 2003 AQ ₇	14.8	X	45.19566	336.78810	166.47491	17.51359	0.0633228	0.18140174	3.0905925	20	3 21.4	18.9
143264 2003 AW ₉	14.9	X	26.57239	197.16116	313.19763	4.71200	0.1402480	0.17528845	3.1620387	20	3 4.7	18.5
143265 2003 AN ₁₀	14.9	X	136.73412	284.05139	132.81083	11.14974	0.1787971	0.18777554	3.0202533	20	4 11.9	19.9
143266 2003 AF ₁₁	15.0	X	60.32013	239.79315	127.38897	12.20250	0.1941911	0.22566297	2.6719553	20	—	—
143267 2003 AJ ₁₁	14.7	X	318.16873	278.61678	147.35524	11.54908	0.2484936	0.21667411	2.7453520	20	11 24.8	17.2
143268 2003 AA ₁₂	15.7	X	39.80241	297.49510	141.25969	13.76314	0.2440167	0.22913112	2.6449248	20	—	—
143269 2003 AK ₁₂	15.5	X	75.57822	257.64208	186.34181	7.53931	0.1681064	0.23662139	2.5888092	20	2 21.2	18.4
143270 2003 AG ₁₃	15.1	X	15.77893	302.79780	119.49324	26.78054	0.1102711	0.22338725	2.6900713	20	—	—
143271 2003 AF ₁₄	15.3	X	207.25865	310.06825	88.47183	15.55678	0.2360162	0.25786009	2.4446309	20	5 17.6	19.6
143272 2003 AN ₁₄	15.0	X	186.17700	235.72174	111.08063	15.31428	0.0827725	0.24489008	2.5302023	20	2 24.2	18.9
143273 2003 AB ₁₅	15.6	X	1.97999	66.87425	118.74413	5.65285	0.3076415	0.22983979	2.6394852	20	2 12.2	17.3
143274 2003 AU ₁₅	15.4	X	22.12954	32.44513	97.16599	9.25472	0.16					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143281 2003 AJ ₂₅	16.1	X	233.97494	149.93122	271.17379	4.99982	0.1112357	0.25832715	2.4416834	20	7 18.6	19.5
143282 2003 AL ₂₅	16.1	X	171.69052	120.33388	52.70143	2.41645	0.1753732	0.26263203	2.4149284	20	10 4.7	19.9
143283 2003 AX ₂₅	14.0	X	179.22685	279.50636	282.78608	17.65646	0.1078529	0.15498740	3.4324571	20	10 29.6	19.6
143284 2003 AA ₂₆	16.3	X	212.61618	329.32910	129.09126	1.87123	0.1534039	0.25918894	2.4362681	20	8 9.8	19.7
143285 2003 AS ₂₆	15.7	X	105.30735	128.24840	240.65808	2.88145	0.2731161	0.23234405	2.6204850	20	1 14.3	19.1
143286 2003 AT ₂₉	15.5	X	286.16956	344.09559	98.82590	3.23047	0.1724963	0.21120283	2.7925624	20	10 16.7	18.8
143287 2003 AL ₃₀	15.4	X	249.72624	276.42142	134.34522	9.72169	0.0380008	0.19845275	2.9109269	20	7 31.2	19.3
143288 2003 AK ₃₃	14.8	X	190.39495	258.65314	109.84545	11.05312	0.0501667	0.18339546	3.0681529	20	4 2.1	19.5
143289 2003 AL ₃₃	16.3	X	145.88780	343.57433	75.66579	2.38339	0.1545350	0.24274616	2.5450782	20	4 15.6	20.1
143290 2003 AW ₃₃	14.8	X	264.74686	182.08551	106.03160	10.71962	0.0423380	0.18194018	3.0844920	20	3 19.7	19.4
143291 2003 AZ ₃₃	15.9	X	170.38597	255.88845	322.53859	4.90499	0.1919081	0.26492939	2.4009473	20	11 26.3	19.9
143292 2003 AO ₃₄	16.2	X	326.04636	310.98009	136.20929	6.36027	0.1175227	0.27734167	2.3287666	20	—	—
143293 2003 AS ₃₄	15.7	X	157.77123	167.01362	201.41360	2.98872	0.2652556	0.24299003	2.5433751	20	2 29.6	20.1
143294 2003 AV ₃₄	15.6	X	66.58898	257.26954	218.99713	3.09211	0.1325715	0.23990785	2.5651125	20	3 17.2	18.5
143295 2003 AA ₃₅	15.3	X	84.35028	251.72120	110.51093	12.30031	0.2710143	0.23007242	2.6377057	20	—	—
143296 2003 AF ₃₆	15.7	X	107.68977	286.28649	122.29278	4.14882	0.0719209	0.23742515	2.5829633	20	2 7.5	19.0
143297 2003 AO ₃₇	16.4	X	223.11850	271.05490	219.05657	1.88653	0.161090	0.26440821	2.4041013	20	10 5.1	19.7
143298 2003 AW ₃₈	15.8	X	314.21923	215.43423	228.56859	4.46992	0.0836443	0.21495231	2.7599929	20	12 11.2	19.0
143299 2003 AC ₃₉	16.5	X	216.73812	322.19273	159.21699	7.27839	0.1466832	0.26141879	2.4223944	20	9 15.6	20.0
143300 2003 AD ₃₉	14.9	X	30.14232	184.29799	212.54743	12.75047	0.1847720	0.22277478	2.6949996	20	—	—
143301 2003 AO ₃₉	16.3	X	288.35812	211.53162	249.17242	4.26673	0.1357275	0.21354602	2.7720969	20	11 16.9	19.6
143302 2003 AZ ₃₉	14.3	X	333.28349	22.61606	144.16810	13.36804	0.0717204	0.17167424	3.2062642	20	1 9.6	18.8
143303 2003 AF ₄₀	14.9	X	142.98632	80.18693	285.72331	14.44393	0.3585876	0.23723758	2.5843246	20	2 17.6	19.7
143304 2003 AO ₄₀	14.9	X	50.06023	233.39132	274.43227	9.73962	0.1268870	0.18043719	3.1015969	20	4 3.9	19.0
143305 2003 AD ₄₁	15.9	X	103.88507	207.99947	197.70287	4.91135	0.2343234	0.23434415	2.6055534	20	2 21.3	19.4
143306 2003 AE ₄₁	15.3	X	121.38064	215.72142	276.92932	8.96829	0.1198825	0.18912877	3.0058294	20	6 19.1	19.9
143307 2003 AK ₄₁	16.0	X	124.68495	231.16919	170.74717	4.49778	0.3409196	0.23896615	2.5718470	20	3 21.9	20.3
143308 2003 AQ ₄₁	16.3	X	332.28780	310.96663	151.24690	6.46696	0.0879686	0.27557396	2.3387148	20	—	—
143309 2003 AM ₄₂	16.5	X	347.27998	161.98102	271.68721	4.29708	0.1709875	0.27538345	2.3397933	20	—	—
143310 2003 AV ₄₂	14.8	X	338.00979	62.50308	300.95627	11.70388	0.2234605	0.21272526	2.7792226	20	9 26.4	17.6
143311 2003 AW ₄₅	15.6	X	105.87309	299.10640	70.09506	6.35035	0.2758605	0.23329170	2.6133838	20	1 17.0	19.1
143312 2003 AB ₄₇	15.2	X	108.60966	311.30824	74.50290	5.23772	0.2131789	0.23473841	2.6026350	20	2 1.7	18.7
143313 2003 AC ₄₇	14.6	X	1.40855	245.85055	308.01279	8.59596	0.0268948	0.18339960	3.0681068	20	3 18.2	18.9
143314 2003 AL ₄₇	16.1	X	94.55793	13.92515	26.33222	3.53608	0.1935203	0.23415752	2.6069377	20	1 29.8	19.3
143315 2003 AQ ₄₈	14.9	X	220.94567	278.68094	87.06845	11.50110	0.1186139	0.19083131	2.9879246	20	4 27.3	19.7
143316 2003 AY ₄₈	15.7	X	35.54188	1.75204	29.48142	5.61480	0.1965835	0.22343670	2.6896744	20	—	—
143317 2003 AS ₅₁	15.9	X	250.32104	72.41893	45.09009	4.18876	0.0453984	0.21011550	2.8021884	20	10 27.7	19.8
143318 2003 AQ ₅₃	15.9	X	351.96996	12.97496	62.75906	4.20214	0.0496333	0.21960502	2.7208705	20	—	—
143319 2003 AV ₅₄	15.8	X	256.10948	67.19244	58.30973	5.29859	0.0214329	0.21170821	2.7881165	20	11 17.7	19.3
143320 2003 AY ₅₆	14.5	X	83.59874	143.69108	81.2.12329	15.16799	0.0496710	0.17927692	3.1149647	20	3 4.8	19.0
143321 2003 AP ₅₇	16.0	X	342.74038	320.03805	35.95285	4.60307	0.2153976	0.21561467	2.7543377	20	12 17.9	18.4
143322 2003 AV ₅₇	15.5	X	144.81767	15.72416	84.60294	7.94875	0.1205170	0.18960372	3.0008076	20	6 3.5	20.1
143323 2003 AE ₅₈	15.5	X	143.93646	330.29710	80.97169	6.00007	0.2505204	0.24210908	2.5495410	20	4 12.8	19.8
143324 2003 AO ₆₀	16.2	X	68.61790	247.38055	177.94238	2.85998	0.1607044	0.23466654	2.6031664	20	1 15.4	18.9
143325 2003 AX ₆₁	15.2	X	133.63569	233.34296	252.73653	9.92821	0.0377981	0.19254203	2.9701999	20	6 16.7	19.5
143326 2003 AL ₆₂	15.1	X	6.54481	162.53068	102.46537	17.17526	0.0371053	0.19424907	2.9527640	20	6 30.1	18.8
143327 2003 AV ₆₃	14.7	X	299.55143	196.61390	116.21711	11.29352	0.0847985	0.19270754	2.9684990	20	5 25.7	18.8
143328 2003 AD ₆₄	15.7	X	73.87392	349.94995	131.82902	5.17900	0.1811812	0.24180504	2.5516777	20	4 16.9	18.7
143329 2003 AP ₆₄	15.8	X	257.71695	112.21993	55.23604	14.18246	0.1435088	0.21884939	2.7271299	20	12 27.3	19.3
143330 2003 AL ₆₅	15.1	X	16.64574	114.35627	45.37428	9.43317	0.2608257	0.23427551	2.6060623	20	2 20.9	17.1
143331 2003 AN ₆₅	15.1	X	246.59205	10.58146	13.53057	10.29441	0.3092315	0.20052658	2.8908224	20	5 20.9	20.2
143332 2003 AD ₆₆	15.9	X	104.90168	213.42873	165.49349	6.70916	0.2963601	0.23384581	2.6092537	20	1 28.9	19.5
143333 2003 AJ ₆₆	15.4	X	193.38466	99.54272	47.79360	14.24880	0.0207286	0.20718641	2.8285370	20	10 3.3	19.5
143334 2003 AK ₇₀	15.0	X	53.20585	142.21965	316.06205	16.15863	0.1900130	0.17703972	3.1411517	20	2 15.9	18.6
143335 2003 AA ₇₂	15.1	X	182.84360	296.59526	50.66892	15.19022	0.2024572	0.23959040	2.5673777	20	3 1.5	19.7
143336 2003 AV ₇₃	15.8	X	294.77406	76.74289	45.27016	9.73856	0.0806898	0.21912328	2.7248569	20	—	—
143337 2003 AW ₇₃	15.2	X	82.38816	55.22998	325.56753	10.21242	0.2561225	0.23112614	2.6296826	20	—	—
143338 2003 AX ₇₃	15.7	X	299.72363	34.34909	48.84276	9.28990	0.1178444	0.21489798	2.7604581	20	11 14.5	18.9
143339 2003 AZ ₇₃	15.5	X	291.86284	139.41312	56.59092	14.50386	0.1104674	0.22875573	2.6478176	20	—	—
143340 2003 AC ₇₄	14.9	X	298.71647	42.07252	6.61699	7.67706	0.2293833	0.21110527	2.7934228	20	9 12.4	17.7
143341 2003 AV ₇₅	14.8	X	114.89385	290.15884	53.81755	11.41817	0.1674921	0.22956460	2.6415942	20	—	—
143342 2003 AW ₇₅	15.0	X	65.73386	350.64206	358.04787	8.11256	0.2262070	0.22372736	2.6873443	20	—	—
143343 2003 AH ₇₆	15.3	X	306.57209	359.22293	35.39416	8.72310	0.2228802	0.21099204	2.7944220	20	9 11.6	18.2
143344 2003 AT ₇₇	14.9	X	188.64496	349.75396	72.42614	16.09098	0.1473945	0.19231488	2.9725383	20	5 30.1	19.8
143345 2003 AF ₇₈	15.8	X	133.69655	353.05241	53.70856	7.49282	0.2041864	0.23999678	2.5644788	20	3 26.0	19.8
143346 2003 AS ₇₈	15.8	X	221.88158	309.55865	236.19193	2.46431	0.1200542	0.21329770	2.7742479	20	12 6.9	19.9
143347 2003 AR ₈₀	15.4	X	97.04733	308.31069	93.90994	29.13749	0.2353238	0.22935929	2.6431704	20	2 16.1	19.4
143348 2003 AE ₈₁	14.8	X	113.63035	85.62022	19.21043	16.46351	0.1824860	0.24468959	2.5315842	20	5 7.9	18.7
143349 2003 AG ₈₁	14.9	X	34.35432	13.75747	40.58013	12.61694	0.1818868	0.22678826	2.6631093	20	—	—
143350 2003 AW ₈₁	15.3	X	317.18297	66.24434	37.78589	13.96772	0.1321163	0.21908464	2.7251773	20	—	—
143351 2003 AD ₈₄	16.8	X	135.84045	305.88471	119.06006	4.27188	0.2261844	0.24289288	2.5440532	20	4 20.1	20.9
143352 2003 AB ₈₅	15.4	X	10.56298	183.76739	12.14932	10.28038	0.1147253	0.18072299	3.0983260	20	4 5.9	19.1
143353 2003 AP ₈₆	15.8	X	143.21236	225.28891	140.74926	6.78135	0.3081913	0.24098607	2.5574555	20	2 19.9	20.2
143354 2003 AS ₈₇	14.7	X	37.02720	26								

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143361 2003 <i>BP</i> ₂	15.7	X	47.62057	230.91434	315.81846	3.52834	0.1027437	0.24101528	2.5572489	20	5 21.4	18.6
143362 2003 <i>BC</i> ₆	14.7	X	31.90103	5.65285	133.77226	11.32773	0.0179739	0.17639332	3.1488209	20	2 25.7	19.0
143363 2003 <i>BK</i> ₆	15.2	X	9.54487	340.92272	214.19051	3.19801	0.1783648	0.18092537	3.0960151	20	4 2.8	18.4
143364 2003 <i>BL</i> ₆	15.4	X	349.71678	145.94536	277.61174	11.05891	0.1606049	0.21953823	2.7214223	20	—	—
143365 2003 <i>BH</i> ₇	15.7	X	285.89332	338.90025	116.46650	14.19751	0.1700465	0.21240682	2.7819997	20	11 7.5	19.2
143366 2003 <i>BL</i> ₇	15.7	X	32.15044	198.18754	239.83027	11.86767	0.2586471	0.22752712	2.6573409	20	—	—
143367 2003 <i>BA</i> ₈	15.7	X	91.94132	237.65608	186.75315	13.05231	0.1510323	0.23823991	2.5770709	20	2 15.4	19.1
143368 2003 <i>BT</i> ₈	15.3	X	0.71299	311.09657	186.07133	5.33863	0.1387703	0.17182152	3.2044316	20	1 5.6	19.2
143369 2003 <i>BB</i> ₉	15.0	X	85.83197	289.98275	166.00467	9.06758	0.0875556	0.17941445	3.1133727	20	3 19.9	19.3
143370 2003 <i>BJ</i> ₉	16.6	X	153.15752	137.39432	57.71528	3.35976	0.1384258	0.26110266	2.4243492	20	10 16.2	20.4
143371 2003 <i>BN</i> ₁₀	14.9	X	176.54193	315.17973	110.38703	11.25306	0.0827553	0.18858523	3.0116021	20	5 24.8	19.6
143372 2003 <i>BB</i> ₁₁	14.9	X	50.99469	199.03614	328.82481	8.96623	0.0588807	0.18286310	3.0741048	20	4 23.7	19.1
143373 2003 <i>BK</i> ₁₂	15.2	X	229.26394	302.88739	340.14682	13.07783	0.0770704	0.22800741	2.6536075	20	1 23.9	19.2
143374 2003 <i>BL</i> ₁₃	15.7	X	128.32503	98.63241	89.29029	3.07617	0.1579377	0.25570200	2.4583668	20	9 13.5	19.5
143375 2003 <i>BG</i> ₁₃	14.8	X	345.47087	94.38226	129.74941	11.10249	0.0808189	0.18295173	3.0731119	20	4 9.5	18.9
143376 2003 <i>BB</i> ₁₅	14.9	X	338.51215	187.89951	343.04431	8.00391	0.0482789	0.17132774	3.2105856	20	1 26.3	19.3
143377 2003 <i>BD</i> ₁₅	14.8	X	102.23559	154.26203	303.96167	16.16590	0.1020282	0.18482171	3.0523480	20	5 10.6	19.6
143378 2003 <i>BU</i> ₁₆	15.7	X	314.56031	324.32395	119.29047	8.54784	0.2079311	0.21395856	2.7685324	20	12 9.9	18.3
143379 2003 <i>BA</i> ₁₈	16.2	X	94.27106	159.74427	305.62687	3.07812	0.1573011	0.23903045	2.5713857	20	4 15.3	19.6
143380 2003 <i>BR</i> ₁₉	14.8	X	188.17871	229.92844	108.26487	12.45875	0.0631291	0.17538651	3.1608600	20	2 22.1	19.7
143381 2003 <i>BC</i> ₂₁	16.0	X	94.96139	114.04644	292.15871	5.47407	0.5104040	0.23568472	2.5956637	20	3 17.6	20.2
143382 2003 <i>BT</i> ₂₁	16.4	X	69.16604	95.83314	298.93658	6.70638	0.2074268	0.28339861	2.2954662	20	—	—
143383 2003 <i>BR</i> ₂₄	15.0	X	204.05982	183.77794	268.63668	12.45773	0.0505014	0.19539882	2.9411788	20	7 24.4	19.4
143384 2003 <i>BZ</i> ₂₄	15.3	X	157.39132	195.48416	258.94645	9.90809	0.0766267	0.18846825	3.0128482	20	6 6.5	19.8
143385 2003 <i>BR</i> ₂₅	14.8	X	36.97404	168.21783	212.32801	12.62667	0.1654367	0.22439109	2.6820424	20	—	—
143386 2003 <i>BY</i> ₂₅	14.6	X	98.32813	5.49384	135.06564	16.38328	0.1814607	0.19090956	2.9871080	20	6 13.4	19.3
143387 2003 <i>BG</i> ₂₆	15.8	X	1.25060	299.42645	194.56394	12.59116	0.2052972	0.23104055	2.6303320	20	—	—
143388 2003 <i>BN</i> ₂₆	14.8	X	188.14513	229.70828	159.78250	13.69710	0.0584723	0.18606068	3.0387828	20	4 23.6	19.5
143389 2003 <i>BK</i> ₂₇	14.8	X	113.06952	273.18914	157.43857	20.15814	0.1100700	0.17852683	3.1236838	20	3 26.9	19.4
143390 2003 <i>BM</i> ₂₇	16.1	X	123.07165	165.64837	279.28013	3.54830	0.2264084	0.24063408	2.5599489	20	4 30.2	20.2
143391 2003 <i>BM</i> ₂₈	15.6	X	280.73776	190.42961	310.70134	7.06963	0.1592064	0.21419503	2.7664943	20	12 26.5	18.8
143392 2003 <i>BT</i> ₂₈	15.7	X	49.12961	237.67159	175.92870	11.66514	0.1871316	0.23053395	2.6341841	20	—	—
143393 2003 <i>BX</i> ₂₈	15.7	X	13.93442	16.00210	129.87242	8.46806	0.1079821	0.23639452	2.5904653	20	1 27.2	18.5
143394 2003 <i>BG</i> ₂₉	14.9	X	271.50710	298.60723	305.04281	10.12061	0.0602242	0.17391834	3.1786238	20	1 27.9	19.5
143395 2003 <i>BU</i> ₂₉	14.8	X	237.72972	212.05951	125.38399	24.21050	0.2483420	0.18825569	3.0151156	20	4 4.3	20.3
143396 2003 <i>BP</i> ₃₀	15.7	X	117.32221	209.12236	231.58639	1.05603	0.0400182	0.18218422	3.0817368	20	3 31.6	20.2
143397 2003 <i>BC</i> ₃₂	16.9	X	116.41435	252.95008	158.45251	3.71869	0.1423640	0.29349412	2.2425206	20	2 25.3	19.6
143398 2003 <i>BE</i> ₃₄	15.2	X	110.27007	222.58824	284.56985	9.67017	0.0607615	0.18965091	3.0003098	20	6 18.3	19.5
143399 2003 <i>BU</i> ₃₄	15.4	X	200.43164	12.28927	113.90504	7.29456	0.0268000	0.20272291	2.8699048	20	9 10.1	19.5
143400 2003 <i>BX</i> ₃₄	15.5	X	69.56561	324.91244	224.55085	0.85822	0.1448099	0.18941781	3.0027708	20	7 3.7	19.5
143401 2003 <i>BF</i> ₃₇	14.7	X	338.14807	185.10555	343.85905	5.75809	0.0336066	0.16798278	3.2530661	20	1 24.9	19.1
143402 2003 <i>BL</i> ₄₂	14.5	X	3.55685	237.16136	284.45714	20.36523	0.0600129	0.17450460	3.1715005	20	2 6.9	19.0
143403 2003 <i>BT</i> ₄₂	15.5	X	208.19056	168.54962	271.91508	10.64783	0.0155322	0.19467587	2.9484559	20	7 18.2	19.7
143404 2003 <i>BD</i> ₄₄	16.9	X	31.28419	89.25325	181.29390	2.66291	0.6064927	0.35705687	1.9677856	20	11 23.2	20.3
143405 2003 <i>BE</i> ₄₄	15.2	X	45.41672	326.82150	127.20059	14.71904	0.1154032	0.23628650	2.5912547	20	1 10.1	18.1
143406 2003 <i>BV</i> ₄₄	17.0	X	258.81738	119.10094	187.80097	3.53885	0.1139391	0.27789849	2.3256548	20	—	—
143407 2003 <i>BJ</i> ₄₅	15.9	X	91.78945	296.80613	172.27764	9.10126	0.1889591	0.18235175	3.0798490	20	4 28.3	20.4
143408 2003 <i>BS</i> ₄₅	15.8	X	234.64158	108.60553	154.68854	3.79883	0.0528418	0.22277844	2.6949701	20	1 3.9	19.6
143409 2003 <i>BQ</i> ₄₆	17.8	X	90.40154	44.19953	163.80887	8.16739	0.3513439	0.36216066	1.9492544	20	9 27.4	21.1
143410 2003 <i>BJ</i> ₄₇	14.7	X	57.25624	226.45734	292.24819	28.65230	0.1340921	0.23758956	2.5817716	20	4 19.6	18.6
143411 2003 <i>BS</i> ₄₈	15.1	X	298.19337	327.53238	220.63572	0.75803	0.2048709	0.16475562	3.2954082	20	—	—
143412 2003 <i>BV</i> ₄₈	15.6	X	94.02730	187.29254	324.30207	3.40315	0.1681479	0.18586286	3.0409385	20	6 18.4	20.1
143413 2003 <i>BF</i> ₄₉	14.6	X	324.38026	114.96821	333.84471	14.65806	0.0934388	0.15738374	3.3975262	20	12 15.2	19.2
143414 2003 <i>BQ</i> ₅₀	15.9	X	334.79711	317.83626	124.94919	10.00019	0.1144367	0.21758441	2.7376895	20	—	—
143415 2003 <i>BF</i> ₅₁	15.4	X	78.36307	56.09907	104.78021	3.00811	0.1556667	0.18553612	3.0445076	20	6 9.8	19.7
143416 2003 <i>BG</i> ₅₁	16.4	X	84.54499	33.15838	99.07232	2.71000	0.0562637	0.24061061	2.5601154	20	4 25.5	19.6
143417 2003 <i>BN</i> ₅₂	14.9	X	113.91933	118.35447	342.21305	13.14062	0.1096173	0.18274534	3.0754253	20	4 24.6	19.6
143418 2003 <i>BA</i> ₅₃	15.2	X	199.95623	122.14357	108.47299	8.82470	0.1677985	0.21427222	2.7619214	20	—	—
143419 2003 <i>BQ</i> ₅₃	15.8	X	292.45112	217.93585	249.30548	3.29187	0.0271261	0.21291124	2.7776039	20	12 11.6	19.4
143420 2003 <i>BQ</i> ₅₅	15.1	X	187.01976	271.89323	152.72544	12.21642	0.0918594	0.18901132	3.0070744	20	6 3.1	19.9
143421 2003 <i>BG</i> ₅₆	15.8	X	342.13626	348.15063	104.97701	6.06598	0.1287833	0.21976965	2.7195115	20	—	—
143422 2003 <i>BJ</i> ₅₆	14.8	X	82.39447	86.03324	338.63883	8.36856	0.0951283	0.17423917	3.1747207	20	2 8.4	19.1
143423 2003 <i>BL</i> ₅₆	15.4	X	258.31934	319.31150	123.09479	16.16599	0.1108519	0.20477475	2.8507017	20	9 17.1	19.5
143424 2003 <i>BB</i> ₅₇	15.0	X	233.67161	258.56340	126.81611	11.31348	0.0278030	0.19272172	2.9683534	20	6 10.4	19.3
143425 2003 <i>BG</i> ₅₇	15.4	X	180.22596	291.13702	131.40554	11.32353	0.0546732	0.19001511	2.9964747	20	5 25.2	20.0
143426 2003 <i>BR</i> ₅₇	15.2	X	342.55129	241.21026	291.84190	5.11128	0.0625924	0.17356028	3.1829941	20	1 29.9	19.5
143427 2003 <i>BF</i> ₅₈	16.2	X	172.12767	24.77975	154.13826	1.80204	0.1328199	0.26032161	2.4291961	20	10 14.0	19.8
143428 2003 <i>BV</i> ₅₈	15.4	X	97.95037	357.46428	141.10609	10.35251	0.0898873	0.18566769	3.0430692	20	5 29.3	19.9
143429 2003 <i>BW</i> ₅₈	15.3	X	291.66069	54.67729	183.75067	0.84016	0.1267319	0.17469844	3.1691542	20	2 4.8	19.8
143430 2003 <i>BF</i> ₆₀	15.1	X	91.84182	18.13736	83.80826	6.83094	0.2709152	0.23743082	2.5829222	20	4 28.6	18.7
143431 2003 <i>BC</i> ₆₂	15.3	X	239.43686	113.77292	95.26952	11.11024	0.0838538	0.21918574	2.7243393	20	—	—
143432 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>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143441 2003 <i>BM</i> ₇₂	14.8	X	141.81329	263.87959	108.51972	9.85954	0.0904631	0.17490389	3.1666719	20	2 14.9	19.5
143442 2003 <i>BK</i> ₇₃	15.4	X	88.72496	199.61067	263.81664	14.37090	0.1269511	0.23700555	2.5860110	20	3 25.9	19.1
143443 2003 <i>BV</i> ₇₃	15.0	X	185.31870	323.85646	74.25678	10.23623	0.0385586	0.18581774	3.0414307	20	4 30.4	19.5
143444 2003 <i>BO</i> ₇₄	15.6	X	289.00214	38.30831	77.67232	8.89889	0.1758623	0.21443805	2.7644038	20	12 4.8	18.6
143445 2003 <i>BV</i> ₇₄	15.3	X	358.45612	187.62532	8.54510	12.46047	0.0854738	0.17887324	3.1196495	20	3 20.7	19.3
143446 2003 <i>BY</i> ₇₅	15.0	X	101.37274	178.47841	354.83437	14.33697	0.1199205	0.19105065	2.9856372	20	7 23.0	19.6
143447 2003 <i>BO</i> ₇₈	15.3	X	126.98665	40.37745	85.61084	10.04128	0.0441657	0.19125222	2.9835390	20	6 9.5	19.7
143448 2003 <i>BY</i> ₇₈	16.4	X	86.93381	113.88493	32.54694	3.21082	0.0644899	0.24342179	2.5403667	20	5 17.9	19.7
143449 2003 <i>BG</i> ₇₉	14.8	X	63.96591	43.50964	101.35251	10.64259	0.0275271	0.18310190	3.0714313	20	4 17.6	19.2
143450 2003 <i>BU</i> ₇₉	15.1	X	196.98200	241.33517	350.06299	8.48050	0.0867840	0.21637125	2.7479132	20	—	—
143451 2003 <i>BR</i> ₈₀	15.9	X	261.05690	66.32176	64.78640	6.07085	0.2046328	0.21009436	2.8023763	20	11 5.3	19.6
143452 2003 <i>BX</i> ₈₁	15.5	X	292.11765	302.73885	151.89270	9.08920	0.2948154	0.21131435	2.7915799	20	10 26.7	18.3
143453 2003 <i>BO</i> ₈₂	15.5	X	280.19330	15.77230	96.54736	13.35904	0.0516627	0.21279343	2.7786290	20	12 1.4	19.2
143454 2003 <i>BB</i> ₈₃	15.5	X	71.05900	219.36876	302.30581	1.23475	0.0387359	0.18652985	3.0336850	20	5 14.1	19.6
143455 2003 <i>BL</i> ₈₃	14.9	X	103.83598	9.37712	107.62069	13.32132	0.1000290	0.18368820	3.0648922	20	5 12.8	19.5
143456 2003 <i>BU</i> ₈₃	14.7	X	118.48552	155.85052	4.76439	10.62285	0.0412088	0.19133196	2.9827137	20	7 15.9	19.1
143457 2003 <i>BX</i> ₈₅	15.2	X	176.27105	283.72657	178.34534	10.96701	0.0637735	0.19281035	2.9674437	20	7 5.9	19.8
143458 2003 <i>BF</i> ₈₆	15.2	X	320.09040	335.20845	283.05512	11.93421	0.0624815	0.18290810	3.0736006	20	4 7.8	19.6
143459 2003 <i>BG</i> ₈₈	15.1	X	319.36645	260.86503	306.01540	14.34229	0.1246957	0.23036004	2.6355097	20	1 23.8	18.3
143460 2003 <i>BQ</i> ₈₈	15.5	X	15.17988	72.80079	106.39510	13.42861	0.1093731	0.23332662	2.6131230	20	3 23.9	18.7
143461 2003 <i>BK</i> ₈₉	15.0	X	48.87934	281.92009	151.24205	19.22373	0.1623509	0.17149792	3.2084613	20	1 7.7	19.1
143462 2003 <i>BN</i> ₈₉	14.8	X	54.28186	142.68212	290.14023	11.92916	0.1368303	0.17056038	3.2202082	20	1 13.7	18.6
143463 2003 <i>BG</i> ₉₀	16.2	X	67.61989	24.32241	115.84676	2.85310	0.2912483	0.23700701	2.5860004	20	5 20.3	19.3
143464 2003 <i>BB</i> ₉₁	14.6	X	23.82109	47.50544	140.14474	17.52597	0.1603938	0.17700856	3.1415202	20	4 27.7	18.5
143465 2003 <i>CT</i>	15.4	X	131.18070	5.08448	96.74529	14.53229	0.1321915	0.24420343	2.5349431	20	5 25.6	19.3
143466 2003 <i>CW</i> ₂	15.2	X	250.82558	306.98125	150.83791	15.67774	0.1025296	0.20533529	2.8455113	20	9 26.7	19.2
143467 2003 <i>CH</i> ₃	15.5	X	107.87963	54.38978	94.51790	8.27794	0.2067872	0.24423775	2.5347056	20	7 6.2	19.4
143468 2003 <i>CP</i> ₃	14.3	X	127.77289	44.86147	13.40049	22.42945	0.1453163	0.17813907	3.1282150	20	3 30.3	19.1
143469 2003 <i>CZ</i> ₃	15.1	X	322.48107	266.54332	252.19478	20.55668	0.1280940	0.22974527	2.6402091	20	—	—
143470 2003 <i>CZ</i> ₄	15.1	X	201.77464	113.38803	322.24544	11.14707	0.0166767	0.19459294	2.9492935	20	7 6.9	19.4
143471 2003 <i>CT</i> ₅	14.9	X	154.54061	125.37495	348.04567	9.28748	0.0411632	0.19241349	2.9715226	20	6 26.7	19.4
143472 2003 <i>CJ</i> ₆	14.9	X	9.59043	67.58318	114.17945	6.55069	0.0741178	0.17804221	3.1293495	20	3 21.1	19.0
143473 2003 <i>CR</i> ₆	16.0	X	137.40908	301.13778	106.89172	4.51728	0.2206254	0.23896520	2.5718538	20	3 31.6	20.1
143474 2003 <i>CX</i> ₆	14.9	X	340.68214	213.73697	7.95267	4.76320	0.0905863	0.17802061	3.1296026	20	3 25.1	18.8
143475 2003 <i>CB</i> ₈	15.9	X	42.14610	95.50347	80.95098	4.91932	0.1135576	0.23735562	2.5834677	20	5 1.3	18.7
143476 2003 <i>CB</i> ₉	15.2	X	105.45405	196.51198	291.63225	9.57520	0.0598863	0.18485758	3.0519532	20	5 16.7	19.7
143477 2003 <i>CC</i> ₁₀	16.4	X	317.02363	193.94630	229.56736	2.45982	0.1104505	0.26859718	2.3790400	20	12 5.1	18.7
143478 2003 <i>CJ</i> ₁₀	15.9	X	93.37338	209.65003	270.90573	3.89072	0.2410996	0.23997091	2.5646630	20	5 17.6	19.5
143479 2003 <i>CP</i> ₁₀	14.9	X	284.98708	313.59781	325.97550	13.00835	0.0803884	0.18025235	3.1037168	20	3 18.5	19.5
143480 2003 <i>CU</i> ₁₀	14.9	X	115.91811	246.14914	179.38733	9.69873	0.0984106	0.17881540	3.1203222	20	3 19.5	19.5
143481 2003 <i>CB</i> ₁₁	14.4	X	349.88820	127.51096	66.49934	18.24455	0.1134166	0.17215852	3.2002484	20	3 13.2	18.8
143482 2003 <i>CU</i> ₁₂	15.2	X	17.43747	129.04965	84.15030	4.80737	0.1906167	0.18260028	3.0770538	20	5 16.6	18.4
143483 2003 <i>CF</i> ₁₃	15.0	X	121.53077	71.84867	84.79120	10.05790	0.1073638	0.19042110	2.9922141	20	7 19.2	19.6
143484 2003 <i>CY</i> ₁₃	16.1	X	282.68633	325.85440	137.47164	4.65890	0.0602484	0.21018226	2.8015949	20	11 21.0	19.7
143485 2003 <i>CV</i> ₁₄	16.5	X	321.15580	355.40580	213.46137	2.17506	0.1395722	0.23037695	2.6353807	20	1 25.5	19.8
143486 2003 <i>CJ</i> ₁₅	14.1	X	5.91886	119.50011	39.83676	19.25595	0.0956196	0.17087376	3.2162698	20	2 24.3	18.6
143487 2003 <i>CR</i> ₂₀	18.7	X	180.65518	88.80108	177.11822	4.98851	0.7297823	0.31812588	1.252175	20	—	—
143488 2003 <i>CX</i> ₂₁	16.1	X	90.95777	153.84449	41.04581	1.56673	0.2176078	0.19100298	2.9861340	20	8 15.5	20.7
143489 2003 <i>DS</i>	15.1	X	20.95985	318.00553	303.68843	9.62370	0.0672806	0.19260867	2.9695148	20	7 19.2	19.0
143490 2003 <i>DL</i> ₃	15.4	X	280.48394	153.44919	137.94031	3.12843	0.0592955	0.17990878	3.1076670	20	4 5.8	19.7
143491 2003 <i>DO</i> ₃	15.5	X	106.86835	335.75874	152.47370	6.39103	0.0685397	0.18402301	3.0611737	20	5 23.3	19.9
143492 2003 <i>DP</i> ₄	15.0	X	3.52599	198.36420	34.13435	12.09123	0.0701842	0.18366617	3.0651373	20	5 11.6	18.9
143493 2003 <i>DF</i> ₅	15.6	X	291.67981	149.67054	299.76321	8.63193	0.1526017	0.21127443	2.7919315	20	11 1.3	19.0
143494 2003 <i>DB</i> ₈	15.6	X	199.13546	269.37517	161.24854	13.31130	0.1632180	0.19144621	2.9815233	20	6 19.0	20.7
143495 2003 <i>DW</i> ₉	14.9	X	339.43667	71.28798	80.67398	10.14181	0.0543523	0.16922352	3.2371455	20	1 2.7	19.2
143496 2003 <i>DU</i> ₁₀	15.5	X	28.49113	125.75729	94.07913	2.30840	0.1933663	0.18217554	3.0818347	20	6 16.8	18.9
143497 2003 <i>DB</i> ₁₁	14.6	X	197.88703	324.88448	335.83264	10.93186	0.0544699	0.16889831	3.2412996	20	1 19.6	19.5
143498 2003 <i>DJ</i> ₁₂	15.2	X	261.95756	186.76350	98.34426	2.51296	0.1131954	0.17474605	3.1685786	20	3 1.4	20.0
143499 2003 <i>DQ</i> ₁₂	14.8	X	20.64782	309.87941	176.16228	7.33091	0.0163315	0.16860455	3.2450635	20	1 24.9	19.4
143500 2003 <i>DU</i> ₁₃	15.2	X	162.57978	109.11338	351.50590	9.92696	0.0696956	0.18972681	2.9995095	20	6 19.8	19.9
143501 2003 <i>DY</i> ₁₃	15.0	X	120.07617	310.98989	136.58433	10.06466	0.1358661	0.18229127	3.0805302	20	4 28.2	19.8
143502 2003 <i>DS</i> ₁₄	15.9	X	259.67075	125.39559	98.89398	1.86384	0.0714547	0.22262500	2.6962082	20	—	—
143503 2003 <i>DC</i> ₁₅	15.4	X	243.04288	186.53195	348.40069	10.96928	0.0662868	0.21596096	2.7513925	20	12 28.8	19.2
143504 2003 <i>DL</i> ₁₇	14.9	X	324.38684	301.86236	257.90155	4.39604	0.1043269	0.17098699	3.2148498	20	2 1.7	19.1
143505 2003 <i>DM</i> ₁₇	15.8	X	318.62707	151.18640	311.75498	6.45639	0.0747749	0.21415115	2.7668723	20	—	—
143506 2003 <i>DO</i> ₁₇	14.8	X	332.17400	239.71857	330.81217	8.52651	0.0252202	0.17418925	3.1753272	20	3 4.8	19.1
143507 2003 <i>DL</i> ₂₀	15.7	X	172.24554	289.61741	324.63517	2.14275	0.1471199	0.21126632	2.7920029	20	—	—
143508 2003 <i>DJ</i> ₂₂	15.7	X	289.53558	74.41640	308.58870	6.95308	0.0281671	0.19804383	2.9149325	20	8 17.3	19.7
143509 2003 <i>EG</i> ₁	15.1	X	34.13163	5.29841	150.70477	9.96950	0.0457641	0.17852300	3.1237283	20	3 21.8	19.3
143510 2003 <i>EN</i> ₄	15.7	X	54.31602	179.00877	307.23969	5.01619	0.2658524	0.23306051	2.6151118	20	3 29.8	18.3
143511 2003 <i>EZ</i> ₅	15.3	X	344.11177	99.72885	137.74550	12.46840	0.0242621	0.18207187	3.0830044	20	4 28.6	19.7
143512												

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143521 2003 EY ₁₂	15.2	X	268.41771	22.88753	175.56761	13.65487	0.0994443	0.21500507	2.7595414	20	—	—
143522 2003 EG ₁₃	15.0	X	307.42005	13.42260	186.53738	4.64959	0.0797130	0.16932441	3.2358596	20	1 15.5	19.5
143523 2003 EH ₁₃	14.7	X	183.00684	197.17704	167.64253	11.23166	0.0955533	0.17846239	3.1244356	20	3 17.2	19.5
143524 2003 ET ₁₃	15.0	X	356.51453	204.70045	312.97406	5.25433	0.0800769	0.17074153	3.2179300	20	1 30.1	19.2
143525 2003 EZ ₁₄	15.4	X	56.23880	6.87317	190.66799	8.58662	0.0841018	0.18611231	3.0382207	20	6 16.7	19.6
143526 2003 EG ₁₅	15.1	X	121.33330	194.98846	318.54331	8.17087	0.1070657	0.18793238	3.0185727	20	7 15.2	19.7
143527 2003 EN ₁₆	18.5	X	92.74679	242.20212	181.72739	17.30735	0.3522532	0.46036447	1.6611220	20	2 8.9	18.6
143528 2003 ET ₁₈	15.2	X	171.53754	227.75670	160.09080	11.18816	0.0473135	0.17826474	3.1267447	20	4 2.0	19.8
143529 2003 EU ₁₈	14.9	X	213.42397	346.47565	342.32676	8.79493	0.0739431	0.17469730	3.1691679	20	3 4.8	19.6
143530 2003 EE ₁₉	15.2	X	95.50360	333.22375	171.50666	11.00962	0.0467750	0.18402412	3.0611613	20	5 27.6	19.7
143531 2003 EC ₂₀	15.4	X	79.30104	49.22141	173.30156	11.76420	0.0542396	0.19239367	2.9717266	20	8 13.4	19.6
143532 2003 EK ₂₀	15.2	X	312.58231	85.62916	164.40939	5.19753	0.1917421	0.17436990	3.1731337	20	3 6.9	19.3
143533 2003 ER ₂₀	15.5	X	123.48475	70.07139	357.40994	14.61613	0.3137822	0.23772793	2.5807696	20	4 13.6	19.9
143534 2003 EC ₂₁	14.6	X	74.54540	302.22340	176.35900	22.52126	0.2025929	0.17745687	3.1362271	20	4 21.6	19.0
143535 2003 EZ ₂₂	14.5	X	299.59493	150.14824	99.18655	2.82262	0.1092855	0.17258639	3.1949570	20	3 2.4	18.8
143536 2003 EZ ₂₃	15.3	X	5.86001	145.72369	47.01919	2.09175	0.1243444	0.17523576	3.1626725	20	3 26.6	19.0
143537 2003 EV ₂₄	15.6	X	201.77399	125.82737	160.39066	12.65208	0.0254675	0.22139718	2.7061674	20	—	—
143538 2003 EG ₂₅	14.9	X	64.75242	45.72930	133.64021	10.38917	0.0324006	0.18292127	3.0734530	20	5 30.5	19.3
143539 2003 EN ₂₅	15.2	X	98.42588	80.55834	18.75682	10.09151	0.0488574	0.17641512	3.1485614	20	4 3.2	19.5
143540 2003 ED ₂₇	15.3	X	247.61015	227.71855	167.05337	9.70228	0.0267928	0.19036926	2.9927574	20	7 7.9	19.7
143541 2003 EL ₂₇	14.4	X	70.22342	121.75116	7.11107	22.45639	0.0393314	0.17574329	3.1565805	20	3 31.7	18.9
143542 2003 EC ₃₀	15.3	X	333.87855	158.74178	40.87649	1.42467	0.1223564	0.17280967	3.1922044	20	2 14.1	19.3
143543 2003 EW ₃₀	15.5	X	35.48449	94.13147	132.11929	2.30256	0.1435024	0.18491689	3.0513006	20	7 1.6	19.1
143544 2003 EX ₃₀	15.1	X	158.79946	269.70557	160.05762	9.79234	0.0801188	0.18280577	3.0747475	20	5 11.2	19.9
143545 2003 EA ₃₁	15.1	X	132.87188	298.48777	168.64870	17.62889	0.1855515	0.18548328	3.0450859	20	6 6.5	20.3
143546 2003 EG ₃₁	15.4	X	23.44136	292.85866	232.66460	1.26450	0.1742247	0.17453610	3.1711190	20	3 21.6	19.0
143547 2003 ES ₃₁	15.3	X	67.45435	279.26528	285.04502	6.50744	0.1415950	0.18796968	3.0181733	20	7 19.5	19.5
143548 2003 ER ₃₅	16.1	X	23.30330	255.26714	257.11880	2.28357	0.1640708	0.22940038	2.6428548	20	2 21.7	18.5
143549 2003 EU ₃₆	15.5	X	266.74733	66.83194	81.33054	14.23655	0.1233830	0.21336204	2.7736902	20	12 17.2	18.7
143550 2003 EC ₃₇	14.8	X	56.52091	9.53182	96.49154	14.58144	0.1494754	0.23141797	2.6274714	20	2 24.9	17.9
143551 2003 EH ₃₇	14.7	X	287.67825	220.21428	56.73050	17.94048	0.1839556	0.17591430	3.1545346	20	3 19.8	19.6
143552 2003 ET ₃₇	15.3	X	173.41011	271.96081	167.75576	8.03264	0.1929042	0.18867852	3.0106094	20	6 7.5	20.5
143553 2003 EG ₃₈	14.3	X	115.20133	152.47286	303.19035	14.25711	0.1451036	0.18143442	3.0902214	20	4 23.8	19.2
143554 2003 ED ₃₉	15.6	X	125.42863	359.07387	132.69329	13.27463	0.1068624	0.24398355	2.5364659	20	6 23.2	19.4
143555 2003 EH ₃₉	15.5	X	22.17785	19.90918	79.98738	12.84440	0.1555628	0.22424962	2.6831703	20	—	—
143556 2003 ED ₄₀	15.6	X	94.51391	288.32900	162.33064	5.66931	0.1186992	0.17634955	3.1493419	20	3 29.1	20.0
143557 2003 ER ₄₀	14.5	X	111.72296	338.51126	163.23392	17.90714	0.1417360	0.18081642	3.0972586	20	6 22.9	19.5
143558 2003 ET ₄₂	14.7	X	130.69686	79.40044	34.63886	17.27077	0.0927948	0.18187239	3.0852584	20	5 30.5	19.6
143559 2003 ET ₄₃	16.8	X	285.27230	277.45031	207.92523	3.45504	0.1500343	0.26802359	2.3824330	20	—	—
143560 2003 EV ₄₄	15.1	X	179.75274	218.17534	191.79666	8.97675	0.1420856	0.18432106	3.0578728	20	5 8.2	20.1
143561 2003 EP ₄₅	16.3	X	289.07249	295.85553	236.65715	2.40088	0.1312245	0.21716569	2.7412075	20	—	—
143562 2003 EZ ₄₅	15.4	X	77.74546	154.94884	303.05091	5.74161	0.3587986	0.23371385	2.6102359	20	4 13.9	18.8
143563 2003 EQ ₄₆	15.1	X	289.83158	289.42198	283.64696	12.39487	0.1556958	0.22309354	2.6924318	20	—	—
143564 2003 ER ₄₇	15.0	X	42.17982	345.90067	227.81818	10.62760	0.1709026	0.18305525	3.0719532	20	6 28.3	18.9
143565 2003 EW ₄₈	15.6	X	345.25442	170.26729	54.86127	2.01819	0.1617439	0.17625250	3.1504979	20	3 31.1	19.3
143566 2003 EP ₅₁	14.8	X	304.25224	203.10906	60.77183	2.44215	0.1453299	0.17508591	3.1644768	20	3 20.7	19.1
143567 2003 ET ₅₁	14.8	X	350.64847	202.99336	357.95338	3.18897	0.1107828	0.17297306	3.1901939	20	3 12.7	18.5
143568 2003 EX ₅₂	14.9	X	352.78660	193.00410	80.16980	11.39399	0.0256451	0.18619010	3.0373744	20	6 20.6	19.8
143569 2003 EG ₅₃	15.0	X	345.85875	234.52520	283.07251	11.85556	0.2032103	0.22381854	2.6866145	20	—	—
143570 2003 ER ₅₃	15.4	X	43.60167	59.72683	146.81352	14.03762	0.2322754	0.23610547	2.5925791	20	7 4.7	18.4
143571 2003 EX ₅₇	15.2	X	244.78834	98.56759	111.24364	13.85801	0.1599880	0.21188308	2.7865823	20	—	—
143572 2003 ET ₅₈	14.7	X	92.69820	124.44351	22.14099	18.15431	0.1446755	0.18013773	3.1050333	20	6 3.1	19.5
143573 2003 EU ₅₈	15.0	X	123.48224	259.57756	159.80755	24.77291	0.1080454	0.17534570	3.1613504	20	3 24.5	19.8
143574 2003 EC ₅₉	15.0	X	57.51593	232.76112	267.61951	20.92763	0.0839685	0.23607369	2.5928117	20	3 19.2	18.8
143575 2003 EB ₆₀	15.3	X	155.15480	119.36895	309.54784	9.74263	0.0564856	0.18079559	3.0974965	20	4 27.9	20.1
143576 2003 FS ₁	15.3	X	346.68418	107.37123	110.75853	28.82384	0.1805583	0.23233738	2.6205351	20	3 27.7	18.8
143577 2003 FG ₂	15.3	X	5.98058	36.90780	174.30915	6.66943	0.0522200	0.17834495	3.1258071	20	4 21.1	19.4
143578 2003 FA ₅	14.4	X	321.90171	30.52523	198.22496	15.72477	0.1621951	0.17196345	3.2026682	20	2 23.4	18.8
143579 2003 Derimiksa	15.8	X	212.88617	340.04065	290.53346	4.19979	0.0779185	0.21743568	2.7389378	20	—	—
143580 2003 FO ₉	15.2	X	290.49996	307.25161	311.46540	12.09743	0.2242761	0.22821659	2.6519861	20	2 8.1	19.2
143581 2003 FV ₁₂	14.9	X	95.58681	3.76338	181.22093	7.55489	0.0411642	0.18694768	3.0291632	20	7 14.8	19.3
143582 2003 FQ ₁₃	15.0	X	108.65533	282.27160	186.08723	8.89649	0.1374523	0.18023321	3.1039366	20	5 9.3	19.7
143583 2003 FY ₁₃	14.7	X	278.59285	96.46586	192.20733	10.83989	0.0456612	0.17620647	3.1510466	20	3 31.9	19.3
143584 2003 FS ₂₃	14.7	X	280.19069	127.77103	166.29827	5.48477	0.1082493	0.17668775	3.1453218	20	4 1.9	19.1
143585 2003 FF ₂₄	14.9	X	179.71363	71.11710	358.08043	11.12713	0.0741986	0.18438080	3.0572122	20	5 27.3	19.7
143586 2003 FD ₂₆	15.5	X	29.71449	73.46883	152.48051	1.78933	0.1321906	0.18333493	3.0688822	20	6 20.1	19.0
143587 2003 FY ₂₈	15.5	X	314.40129	15.00563	149.60959	13.01614	0.0913347	0.21779263	2.7359444	20	—	—
143588 2003 FN ₄₅	15.3	X	359.64700	88.66551	156.12165	1.68160	0.1265123	0.18059706	3.0997662	20	5 23.9	18.8
143589 2003 FJ ₄₆	16.4	X	77.89050	126.03057	14.16697	4.45549	0.1801296	0.23665447	2.5885680	20	5 14.7	19.6
143590 2003 FU ₅₀	15.0	X	142.96070	235.18160	193.60970	18.49798	0.0802975	0.17854369	3.1234870	20	4 21.8	19.7
143591 2003 FF ₅₁	15.0	X	332.18624	105.85442	97.80824	2.95276	0.0789676	0.17239485	3.1973231	20	2 22.3	19.1
143592 2003 FS ₅₂	15.2	X	50.39523	98.35278	31.47240	4.93861	0.1830985	0.17281841	3.1920968	20	3 26.2	18.9
143593 2003 FG ₆₁	15.1	X	76.99583	331.92260	130.39952	5.87074	0.0490564	0.17230136	3.1984796	20	3 12.7	19.5
143594 2003 FD ₆₂	14.9											

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143601 2003 FZ ₇₈	15.3	X	8.10119	117.19771	103.43990	6.40264	0.0884705	0.17903966	3.1177160	20	5 7.5	19.2
143602 2003 FW ₈₁	14.8	X	35.56378	148.86018	136.42579	11.17950	0.1268060	0.19225072	2.9731996	20	9 21.2	18.7
143603 2003 FM ₈₉	15.1	X	22.84435	205.29215	307.51314	3.59292	0.0989027	0.17024878	3.2241362	20	3 1.4	19.2
143604 2003 FK ₉₁	16.2	X	73.46595	197.26447	304.69157	3.83151	0.1492328	0.23501817	2.6005693	20	5 5.3	19.4
143605 2003 FP ₉₁	14.4	X	18.46971	347.83954	174.76321	18.90416	0.0707480	0.16989439	3.2286182	20	3 7.0	18.6
143606 2003 FZ ₉₂	14.8	X	158.37917	33.96949	42.07822	17.33323	0.0880696	0.17955069	3.1117976	20	5 14.3	19.6
143607 2003 FD ₉₄	14.5	X	47.92337	97.49639	41.29498	22.79089	0.0255653	0.17018639	3.2249241	20	3 27.2	19.3
143608 2003 FD ₁₁₂	15.2	X	95.36988	284.33697	209.08638	5.50581	0.0089620	0.17937495	3.1138297	20	5 6.1	19.5
143609 2003 FL ₁₁₄	14.4	X	26.54746	314.96523	218.47582	13.39101	0.2166537	0.17244579	3.1966935	20	4 9.7	17.9
143610 2003 FA ₁₁₇	15.7	X	56.13845	347.49133	188.93907	2.83935	0.1653633	0.17852149	3.1237460	20	5 31.9	19.6
143611 2003 FP ₁₁₇	15.3	X	286.79007	38.25311	101.50124	6.16403	0.1153327	0.21315840	2.7754564	20	—	—
143612 2003 FQ ₁₂₀	16.2	X	230.10221	74.67130	213.25614	1.45965	0.2184110	0.27970558	2.3156271	20	1 16.7	20.0
143613 2003 FD ₁₂₁	15.3	X	81.31072	95.93896	97.44940	2.61597	0.0589527	0.18663791	3.0325139	20	7 11.4	19.4
143614 2003 GO ₂	15.2	X	304.95917	245.31479	349.24834	4.44819	0.0900831	0.16920475	3.2373850	20	2 22.8	19.5
143615 2003 GK ₄	16.8	X	231.51040	144.64076	354.72640	0.19802	0.1550453	0.26028780	2.4294064	20	10 24.8	20.0
143616 2003 GA ₁₁	15.5	X	66.30863	186.06679	8.64795	5.05158	0.1092805	0.18490147	3.0514703	20	7 1.1	19.6
143617 2003 GJ ₁₂	15.0	X	169.61871	232.20982	192.46895	9.03754	0.1172429	0.18263817	3.0766283	20	5 16.0	19.9
143618 2003 GQ ₂₈	15.0	X	156.87586	251.21940	179.94043	10.16546	0.0332319	0.17827599	3.1266132	20	5 7.6	19.6
143619 2003 GC ₄₉	15.9	X	76.17817	38.56799	141.00992	6.65203	0.2070452	0.23756595	2.5819426	20	7 10.6	19.3
143620 2003 GM ₅₀	14.5	X	17.14143	121.51823	72.83117	16.92932	0.0596597	0.17428397	3.1741766	20	4 21.8	18.9
143621 2003 GE ₅₅	14.5	X	7.95059	146.26967	135.96264	3.70037	0.2007789	0.12440974	3.9740482	20	7 28.0	19.1
143622 Robertbloch	16.7	X	311.97419	153.34473	55.27176	7.14438	0.0576046	0.27958335	2.3163020	20	1 18.7	19.6
143623 2003 HJ ₃	15.7	X	341.41111	351.23151	164.48856	1.99081	0.0500074	0.21984076	2.7189251	20	—	—
143624 2003 HM ₁₆	15.9	X	51.13428	47.03553	195.95472	35.60003	0.5764122	0.35735910	1.9666760	20	10 29.9	19.8
143625 2003 HJ ₂₆	14.5	X	72.20184	330.05383	173.95978	19.48263	0.1932570	0.17330452	3.1861248	20	5 19.8	19.1
143626 2003 HU ₂₇	15.6	X	76.79747	306.86166	235.00948	4.93665	0.1050871	0.18154607	3.0889543	20	6 26.8	19.9
143627 2003 HJ ₂₈	14.8	X	97.82570	266.80864	226.12759	14.77425	0.2233652	0.17883025	3.1201494	20	6 5.9	19.6
143628 2003 HG ₃₁	17.3	X	120.52501	218.15257	44.65555	1.89710	0.1520672	0.25555889	2.4592842	20	12 6.4	21.3
143629 2003 HS ₃₂	14.7	X	2.92728	168.24146	86.63759	25.87670	0.1716813	0.18210567	3.0826229	20	6 14.1	17.9
143630 2003 HA ₃₃	16.5	X	353.82495	161.65521	153.78004	1.81534	0.2145382	0.29984131	2.2107607	20	9 21.0	17.6
143631 2003 HS ₃₅	14.4	X	240.37988	180.72631	51.50636	18.09493	0.0478147	0.15687728	3.4048346	20	—	—
143632 2003 HA ₃₇	15.2	X	148.11002	298.97312	234.25357	13.23119	0.2056796	0.19296033	2.9659059	20	9 1.5	20.5
143633 2003 HX ₅₃	15.7	X	1.41623	39.46134	180.45598	0.77234	0.1092029	0.17536857	3.1610755	20	4 23.6	19.4
143634 2003 HR ₅₄	15.2	X	87.86255	304.98772	239.14861	5.65132	0.0898647	0.18369449	3.0648223	20	7 10.9	19.5
143635 2003 HU ₅₄	15.0	X	137.09256	273.59144	199.00222	9.02823	0.1480889	0.18224697	3.0810294	20	6 12.6	20.0
143636 2003 KO ₁₉	14.3	X	53.73715	16.73528	117.90355	18.61564	0.2001467	0.17255011	3.1954049	20	4 17.2	18.6
143637 2003 LP ₆	16.3	X	104.16734	260.65559	149.53732	43.57420	0.8835724	0.42709542	1.7463023	20	4 30.7	20.9
143638 2003 MU ₈	15.2	X	40.44686	41.76854	274.52617	6.09663	0.2769186	0.18322722	3.0700307	20	11 28.6	19.4
143639 2003 MK ₉	16.5	X	82.63887	149.28797	211.93785	22.99838	0.1219597	0.37536487	1.9032695	20	—	—
143640 2003 NR ₄	16.9	X	113.46349	129.13906	207.33277	20.15648	0.1175635	0.37630716	1.9000910	20	—	—
143641 Sapello	17.3	X	145.78101	152.96265	152.47358	4.01786	0.2006080	0.30996842	2.1623422	20	—	—
143642 2003 NV ₆	16.0	X	218.16471	276.94069	59.46560	3.46169	0.1754560	0.27363475	2.3497512	20	3 9.3	19.8
143643 2003 NP ₇	18.3	X	98.28987	323.49996	285.23629	11.11197	0.4172881	0.30614236	2.1803210	20	11 15.4	22.7
143644 2003 OE ₃	16.5	X	253.75030	4.29992	275.53801	1.68575	0.1944610	0.26919316	2.3755273	20	1 28.8	20.3
143645 2003 OP ₄	14.1	X	73.25799	286.64713	293.65432	24.70639	0.2218261	0.17840123	3.1251496	20	8 17.0	19.0
143646 2003 OO ₇	16.4	X	226.05437	65.23623	220.20905	6.01020	0.1124191	0.26845196	2.3798979	20	1 12.4	20.0
143647 2003 OZ ₁₃	16.5	X	51.34488	159.18977	157.19055	23.05271	0.0763581	0.36076170	1.9542904	20	12 21.7	19.4
143648 2003 QP ₁₇	14.4	X	57.58675	265.79511	342.75990	15.08487	0.1365823	0.17476876	3.1683040	20	8 31.9	18.6
143649 2003 QQ ₄₇	17.4	X	219.42207	104.97530	0.99183	62.09886	0.1869518	0.87160988	1.0853953	20	—	—
143650 2003 QZ ₆₁	15.9	X	1.95596	308.32509	24.22144	6.18296	0.3030736	0.23320091	2.6140620	20	10 31.9	18.1
143651 2003 QO ₁₀₄	16.0	X	190.02296	183.54957	58.22692	11.60535	0.5243226	0.31583341	2.1354890	20	12 23.2	20.0
143652 2003 RW ₁₂	16.5	X	34.64242	188.53696	163.73529	3.59414	0.1816066	0.24180984	2.5516439	20	12 30.5	19.9
143653 2003 RT ₁₃	16.9	X	272.15464	334.10852	196.21820	21.30756	0.0479296	0.36893467	1.9253206	20	—	—
143654 2003 SH ₁₁	15.9	X	316.96066	227.37754	153.75623	24.67066	0.2157090	0.28785554	2.2717105	20	10 10.3	17.8
143655 2003 SE ₁₈	17.0	X	86.16828	163.83816	179.63007	22.11818	0.0890096	0.36815939	1.9280227	20	—	—
143656 2003 SJ ₃₉	16.4	X	122.23333	303.43929	337.56070	3.13120	0.0567599	0.24342135	2.5403698	20	12 26.7	20.1
143657 2003 SA ₄₅	17.1	X	78.99880	331.74124	341.10628	2.49083	0.1459417	0.30197326	2.2003430	20	—	—
143658 2003 SB ₄₅	14.7	X	17.02559	138.85350	279.17031	0.95666	0.2532372	0.12555338	3.9498788	20	—	—
143659 2003 SR ₅₅	17.4	X	94.14404	96.53407	232.45604	2.45237	0.1668959	0.30720429	2.1752935	20	—	—
143660 2003 SJ ₇₀	17.7	X	96.89356	330.36551	41.31101	1.62738	0.1902803	0.31217144	2.1521570	20	—	—
143661 2003 SM ₇₃	17.7	X	104.20805	26.16259	359.00151	2.30761	0.1179245	0.31572282	2.1359876	20	—	—
143662 2003 SP ₈₄	16.7	X	351.94800	215.35175	195.95143	22.42154	0.0874239	0.36013530	1.9565559	20	—	—
143663 2003 SW ₈₈	16.9	X	247.95380	139.62667	9.76872	19.53184	0.0656498	0.36092013	1.9537185	20	—	—
143664 2003 SM ₉₃	15.4	X	146.59684	7.33261	292.57788	1.09513	0.0581045	0.18890825	3.0081681	20	—	—
143665 2003 SP ₉₈	16.0	X	234.52642	345.26442	297.13317	5.87878	0.0942169	0.26290066	2.4132831	20	1 19.7	19.5
143666 2003 SR ₁₀₉	16.3	X	340.65812	73.26079	332.61953	6.19420	0.0894483	0.29707011	2.2244880	20	12 29.3	18.5
143667 2003 SQ ₁₂₅	15.5	X	230.34897	242.40416	171.87682	8.18786	0.0686334	0.22119423	2.7078224	20	7 7.9	19.5
143668 2003 SF ₁₂₈	17.0	X	23.75835	231.47215	178.24869	1.86844	0.1341421	0.30373837	2.1918102	20	—	—
143669 2003 SO ₁₄₀	16.6	X	230.11986	345.96538	219.79122	20.22982	0.0445260	0.36510785	1.9387506	20	—	—
143670 2003 SJ ₁₄₅	16.6	X	355.05695	75.22432	351.77591	6.24271	0.0663519	0.30096440	2.2052575	20	—	—
143671 2003 SW ₁₅₁	14.7	X	186.26457	109.41445	36.01570	14.83803	0.0910428	0.17215791	3.2002561	20	9 14.7	19.8
143672 2003 SN ₁₅₅	16.9	X	71.70353	298.56056	3.03401	6.41222	0.1536208	0.29834008	2.2181708	20	12 15.8	20.2
143673 2003 SO ₁₉₅	16.0	X	75.35309	181.63957	341.14130	9.25396	0.0784108	0.27143173	2.3624483	20	5 24.2	19.0
143674 2003 SB ₂₁₀	16.5	X	337.02547	41.03710	320.66624	3.57720	0.0862588	0.2888				

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143681 2003 SX ₂₅₅	17.2	X	111.28421	121.19792	188.03630	5.11444	0.1729106	0.30510461	2.1852621	20	—	—
143682 2003 SQ ₂₆₆	16.7	X	191.02190	162.72353	139.45512	1.87080	0.1948777	0.25955007	2.4340077	20	1 4.4	20.5
143683 2003 SV ₂₈₀	16.5	X	223.97146	183.25534	350.05101	6.32844	0.1073119	0.29970365	2.2114376	20	12 16.3	19.2
143684 2003 SS ₂₉₃	17.2	X	106.56590	298.34637	348.29076	4.67693	0.1714402	0.30272059	2.1967202	20	—	—
143685 2003 SS ₃₁₇	7.8	X	15.24568	197.11281	177.60911	5.90244	0.2365487	0.00447562	36.4670221	20	11 4.4	22.3
143686 2003 TW ₁₁	16.5	X	225.89037	234.20421	194.15298	6.03897	0.0942466	0.28003063	2.3138349	20	7 21.2	19.6
143687 2003 TP ₁₈	16.5	X	303.42586	193.14397	208.58074	4.70786	0.1107496	0.28842203	2.2687350	20	10 12.3	18.4
143688 2003 TH ₃₀	18.0	X	93.46484	208.96316	157.95213	1.81210	0.1073854	0.31000309	2.1621809	20	—	—
143689 2003 UQ ₉	16.6	X	287.68578	63.55640	41.39417	6.41576	0.1042343	0.29545257	2.2325997	20	12 21.9	18.6
143690 2003 UK ₁₃	17.7	X	26.20624	244.87622	217.58709	4.30275	0.0670635	0.31264342	2.1499904	20	—	—
143691 2003 UQ ₁₅	16.6	X	210.24292	256.21043	203.21617	5.07236	0.1040442	0.27985474	2.3148042	20	8 13.0	19.8
143692 2003 UF ₂₀	16.3	X	91.95853	238.01202	96.57262	6.21432	0.2027102	0.30412822	2.1899367	20	—	—
143693 2003 UM ₂₁	16.8	X	328.71313	266.02469	121.34293	7.36891	0.0992181	0.28856768	2.2679715	20	11 11.5	19.0
143694 2003 UK ₂₄	17.2	X	249.33794	89.95762	166.09319	1.54066	0.0712088	0.31589924	2.1351923	20	—	—
143695 2003 UQ ₄₀	16.6	X	290.48956	207.70823	304.51769	1.10801	0.1230967	0.30163216	2.2020016	20	—	—
143696 2003 UU ₄₀	16.9	X	27.73011	3.30549	13.25114	4.05789	0.1587242	0.29872079	2.2162857	20	—	—
143697 2003 UF ₄₄	17.6	X	166.40541	245.04813	31.90345	2.90439	0.1701654	0.31012531	2.1616128	20	—	—
143698 2003 UB ₅₅	16.4	X	256.25552	128.41128	283.82381	4.67134	0.1733205	0.28063221	2.3105270	20	7 27.3	19.3
143699 2003 UN ₅₅	16.6	X	32.50955	134.27294	304.84202	5.18585	0.0429886	0.30742299	2.1742617	20	—	—
143700 2003 UF ₅₇	17.0	X	56.52236	105.80194	150.91329	1.27249	0.1406567	0.30205921	2.1999256	20	—	—
143701 2003 UV ₇₉	15.3	X	98.96532	88.50163	266.70987	1.60262	0.1620788	0.18904413	3.0067265	20	—	—
143702 2003 UG ₉₁	17.3	X	328.59910	307.80989	112.72709	3.64456	0.1136138	0.29560762	2.2318190	20	—	—
143703 2003 UQ ₁₀₁	16.6	X	45.64312	324.43922	53.20081	4.66967	0.1475758	0.30317776	2.1945113	20	—	—
143704 2003 UV ₁₀₉	16.8	X	75.21194	336.48565	331.73765	4.73999	0.1478447	0.29684145	2.2256303	20	12 27.8	19.9
143705 2003 UR ₁₁₅	16.1	X	350.25189	296.17473	344.79076	6.68885	0.1109314	0.27810293	2.3245149	20	7 2.4	18.3
143706 2003 UG ₁₁₇	16.8	X	176.58908	221.43841	95.16572	3.35754	0.1540431	0.31612259	2.1341865	20	—	—
143707 2003 UY ₁₁₇	5.7	X	13.82717	112.02187	265.10780	7.55426	0.4157118	0.00238465	55.4864319	20	11 14.9	21.1
143708 2003 UV ₁₂₆	15.1	X	171.87143	261.16389	30.15988	6.16480	0.0715395	0.19031581	2.9933176	20	—	—
143709 2003 UM ₁₃₂	17.0	X	62.96154	9.63032	8.01363	8.20769	0.1394264	0.30380652	2.1914824	20	—	—
143710 2003 UG ₁₃₄	16.8	X	306.26061	91.76003	297.24882	4.94134	0.1258009	0.28767428	2.2726647	20	9 23.4	18.9
143711 2003 UR ₁₃₆	15.8	X	207.29660	304.88666	23.31762	2.14816	0.0638242	0.20340050	2.8635276	20	2 25.2	20.0
143712 2003 UD ₁₄₂	15.2	X	300.44927	112.20138	60.02347	12.53857	0.0537229	0.19257364	2.9698749	20	—	—
143713 2003 UF ₁₄₃	16.2	X	4.73612	140.61921	254.50974	4.84447	0.0905440	0.29706792	2.2244990	20	—	—
143714 2003 UL ₁₅₈	16.8	X	134.24166	85.09006	229.12586	5.42275	0.1395727	0.30675315	2.1774258	20	—	—
143715 2003 UT ₁₅₈	17.0	X	312.39006	331.48395	219.19635	1.76651	0.0443704	0.31245170	2.1508698	20	—	—
143716 2003 UM ₁₆₄	16.5	X	284.89510	331.62968	66.88872	5.00863	0.0653406	0.28381763	2.2932064	20	9 11.9	19.0
143717 2003 UF ₁₆₅	17.1	X	18.13704	160.99578	232.02032	1.33441	0.1156873	0.29969979	2.2114566	20	—	—
143718 2003 UG ₁₆₇	16.7	X	271.57498	337.38004	276.57955	5.67524	0.0976019	0.31890977	2.1217335	20	1 14.7	19.3
143719 2003 UU ₁₇₇	16.0	X	302.56211	271.50542	33.41554	6.42015	0.0519638	0.21619646	2.7493941	20	5 19.8	19.7
143720 2003 US ₁₈₂	16.7	X	25.55952	229.80070	323.44761	0.42983	0.1306385	0.26772573	2.3841997	20	4 23.3	18.7
143721 2003 UB ₁₈₄	16.9	X	315.12702	59.58964	69.85222	2.56389	0.0906045	0.30312290	2.1947761	20	—	—
143722 2003 UM ₁₈₈	16.7	X	314.57071	205.84474	248.98628	4.36855	0.1196355	0.29726626	2.2235094	20	—	—
143723 2003 UW ₁₉₉	15.2	X	56.83710	219.45339	117.08210	2.38472	0.1389419	0.18084169	3.0969701	20	12 16.9	19.8
143724 2003 UJ ₂₀₀	15.7	X	209.26457	166.82836	107.08866	2.60179	0.0343753	0.20058583	2.8902532	20	2 9.8	19.9
143725 2003 UX ₂₀₀	16.4	X	74.76650	32.39759	181.84463	2.13852	0.1691990	0.28034207	2.3121208	20	8 23.6	19.4
143726 2003 UG ₂₀₁	16.7	X	110.69013	296.58923	173.92772	2.68645	0.0480170	0.26741819	2.3860274	20	4 28.6	19.7
143727 2003 UB ₂₀₄	16.5	X	269.95681	87.82880	46.95206	7.10610	0.0299121	0.29770779	2.2213104	20	—	—
143728 2003 UE ₂₀₆	16.4	X	280.36987	202.16067	251.50348	6.80298	0.0530299	0.29147472	2.2528665	20	11 24.8	18.8
143729 2003 UX ₂₀₉	16.5	X	231.72053	63.76480	21.45965	7.28374	0.0586512	0.28210392	2.3024841	20	9 1.4	19.3
143730 2003 UJ ₂₁₁	16.4	X	77.22867	2.18540	235.28542	4.95172	0.1227138	0.28258725	2.2998579	20	9 20.0	19.4
143731 2003 UH ₂₁₃	16.6	X	173.37540	263.34104	206.38706	6.38107	0.0733235	0.27500558	2.3419361	20	7 16.2	20.0
143732 2003 UD ₂₁₇	17.2	X	20.34019	235.53382	172.99444	4.43675	0.0961317	0.30284497	2.1961187	20	—	—
143733 2003 UB ₂₂₀	15.3	X	316.05761	348.43611	66.04879	26.92842	0.2575402	0.28920029	2.2646629	20	12 2.5	16.1
143734 2003 UK ₂₂₂	16.5	X	109.69605	71.04919	264.70988	4.07243	0.1872703	0.30667467	2.1777972	20	—	—
143735 2003 US ₂₂₃	16.5	X	252.37016	81.06462	19.51903	5.55851	0.1075086	0.28602705	2.2813818	20	10 12.6	19.0
143736 2003 UM ₂₂₆	16.9	X	326.50051	246.12165	273.40777	3.30087	0.0388197	0.31054013	2.1596874	20	—	—
143737 2003 UJ ₂₃₆	15.8	X	59.79340	279.98829	17.74488	19.80657	0.1062863	0.35635965	1.9703515	20	11 29.5	18.6
143738 2003 UK ₂₃₉	16.1	X	38.99302	202.11415	11.04830	4.71697	0.0996720	0.21564248	2.7541009	20	6 14.2	19.4
143739 2003 UB ₂₄₆	16.5	X	312.53946	35.31925	59.42566	6.04191	0.1202104	0.29562396	2.2317367	20	—	—
143740 2003 UF ₂₄₇	17.1	X	227.81824	275.51899	175.72705	1.97039	0.1251416	0.28082961	2.3094441	20	8 22.2	20.0
143741 2003 UX ₂₄₈	17.0	X	35.11585	346.24250	284.33707	3.26470	0.1366927	0.28667615	2.2779368	20	9 11.9	19.4
143742 2003 UZ ₂₅₀	16.9	X	299.95356	36.68766	15.82369	6.71459	0.1051858	0.28804578	2.2707102	20	10 22.2	18.9
143743 2003 UJ ₂₅₃	16.8	X	102.45125	325.71604	60.03793	1.18062	0.0761975	0.31091195	2.1579652	20	—	—
143744 2003 UD ₂₅₈	16.4	X	271.00942	106.47240	98.56112	4.40985	0.1508211	0.30809305	2.1711081	20	—	—
143745 2003 UC ₂₅₉	16.7	X	109.79545	177.91222	306.31806	1.67547	0.1059142	0.26592803	2.3949326	20	5 23.8	19.8
143746 2003 UD ₂₅₉	16.5	X	112.61007	286.27181	247.10580	6.01517	0.0460806	0.27538901	2.3397618	20	7 27.2	19.6
143747 2003 UQ ₂₅₉	16.3	X	230.29841	327.68105	79.70085	8.12168	0.1112274	0.27435648	2.3456285	20	6 26.3	19.5
143748 2003 UA ₂₆₂	16.1	X	315.40654	145.60578	260.79533	4.02155	0.0828884	0.28916543	2.2648449	20	11 11.7	18.2
143749 2003 UR ₂₆₆	17.4	X	112.45803	192.35397	165.00444	1.65816	0.2044785	0.31075497	2.1586919	20	—	—
143750 2003 UJ ₂₈₈	15.7	X	316.28363	237.49696	237.87745	1.81556	0.0887772	0.18310491	3.0713978	20	—	—
143751 2003 US ₂₉₂	8.6	X	21.59308	346.30225	29.18827	7.65059	0.2528495	0.00360580	42.1180364	20	11 14.1	23.8
143752 2003 VJ ₁	15.7	X	304.12950	347.67028	25.60215	27.55330	0.2395432	0.28203049	2.3028837	20	9 1.3	18.3
143753 2003 VN ₈	16.0	X	7.20480	348.11652	205.05565	3.32521	0.0640572	0.31994841	2.1171392	20	3 11.9	18.1
143754 2003 VB ₁₁	16.4	X	48.17451	256.76159	61.06935	6.59962	0.1340244	0.29250299	2.2475835	20	12 7.6	

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>		
143761	2003	WS ₂₂	16.2	X	165.46150	37.23561	180.50969	3.08539	0.0622882	0.29229567	2.2486462	20	12 6.5	19.2
143762	2003	WJ ₂₉	16.4	X	134.28990	303.62561	0.60809	5.17683	0.1011609	0.30372045	2.1918964	20	—	—
143763	2003	WQ ₂₉	16.2	X	22.29096	271.52688	20.77558	6.96153	0.1219928	0.28323977	2.2963243	20	9 23.9	18.5
143764	2003	WS ₃₀	16.3	X	117.45824	230.76955	262.84007	6.05442	0.0568736	0.26964715	2.3728602	20	6 9.8	19.4
143765	2003	WP ₃₁	16.5	X	247.95312	205.69166	336.09628	5.03414	0.0797592	0.30087549	2.2056919	20	—	—
143766	2003	WZ ₃₃	16.3	X	342.42790	337.27759	286.68561	3.30670	0.1593330	0.27088915	2.3656018	20	5 12.9	18.2
143767	2003	WZ ₃₅	17.2	X	21.75873	344.21772	22.91821	4.11398	0.1258587	0.29553247	2.2321973	20	—	—
143768	2003	WH ₃₆	16.7	X	342.64705	35.14248	324.00789	1.88614	0.1152310	0.28683065	2.2771187	20	10 21.7	18.7
143769	2003	WM ₃₇	16.3	X	103.91732	199.26695	301.18998	6.16850	0.0613781	0.26815656	2.3816454	20	6 1.2	19.3
143770	2003	WR ₃₇	16.6	X	23.16362	14.65803	2.91234	6.83176	0.1646196	0.29693941	2.2251408	20	—	—
143771	2003	WS ₃₉	16.8	X	78.50373	278.60085	16.14129	6.56252	0.1232626	0.29386501	2.2406334	20	12 10.2	20.0
143772	2003	WF ₄₁	17.2	X	33.42789	106.62496	273.50162	3.21079	0.1746547	0.29858282	2.2169684	20	—	—
143773	2003	WY ₄₂	16.9	X	46.11323	191.65462	169.97548	6.06019	0.1933943	0.29946739	2.2126006	20	—	—
143774	2003	WF ₄₃	16.4	X	125.05361	352.09794	169.28932	5.72369	0.0456480	0.27668324	2.3324597	20	7 27.6	19.5
143775	2003	WR ₅₇	16.5	X	99.34006	195.01891	47.82253	6.46611	0.1063455	0.28608207	2.2810893	20	10 25.2	19.7
143776	2003	WG ₅₉	16.8	X	9.70752	345.59900	71.58982	4.36051	0.0833255	0.29995981	2.2101784	20	—	—
143777	2003	WL ₆₆	16.8	X	338.97304	344.77036	46.39509	5.04623	0.1816779	0.29152703	2.2525970	20	12 14.1	18.6
143778	2003	WG ₆₇	16.4	X	25.67920	87.51195	27.93382	3.17611	0.0593525	0.30998853	2.1622486	20	—	—
143779	2003	WN ₆₇	16.4	X	46.05257	294.03225	46.73375	2.93594	0.0487253	0.29289634	2.2455708	20	12 24.5	19.2
143780	2003	WT ₆₇	16.7	X	261.06059	336.40324	267.74740	1.66252	0.1079786	0.31163928	2.1546063	20	—	—
143781	2003	WE ₆₈	16.6	X	210.23915	265.89288	246.88522	4.48232	0.1048512	0.28617726	2.2805835	20	10 27.2	19.7
143782	2003	WO ₆₈	17.0	X	63.10016	347.25150	234.12814	5.75378	0.0615879	0.27446014	2.3450379	20	7 29.2	20.0
143783	2003	WC ₇₄	16.8	X	312.69319	30.96811	6.71238	2.75215	0.2099346	0.28755925	2.2732707	20	10 20.7	17.9
143784	2003	WU ₇₄	15.1	X	242.92951	127.89299	349.83958	11.33984	0.1359364	0.22499520	2.6772394	20	10 4.4	18.9
143785	2003	WR ₇₆	16.2	X	77.79552	141.25685	346.40280	6.12115	0.0580513	0.26288449	2.4133820	20	4 5.0	19.1
143786	2003	WZ ₉₀	17.4	X	13.94040	319.10216	88.86386	4.45147	0.0965992	0.29924937	2.2136751	20	—	—
143787	2003	WO ₉₁	16.9	X	168.43462	181.98923	136.60133	3.98531	0.1939531	0.31334706	2.1467706	20	—	—
143788	2003	WL ₉₂	16.8	X	46.56378	233.69525	122.92937	6.64661	0.1948398	0.29799866	2.2198647	20	—	—
143789	2003	WR ₉₂	16.6	X	1.38561	30.69119	24.65545	7.72126	0.0641881	0.29835699	2.2180870	20	—	—
143790	2003	WE ₉₆	16.8	X	156.30813	318.99774	225.66338	3.69241	0.0671959	0.28513292	2.2861487	20	10 9.1	19.7
143791	2003	WT ₁₀₃	16.9	X	226.86819	2.80865	254.08408	4.03561	0.0318824	0.30774106	2.1727633	20	—	—
143792	2003	WL ₁₀₄	17.2	X	5.67852	157.97866	193.83440	1.56544	0.1813852	0.29006615	2.2601539	20	12 3.7	19.4
143793	2003	WQ ₁₀₄	16.7	X	255.67779	127.08171	234.90539	5.54004	0.1122036	0.27195457	2.3594194	20	5 25.5	19.7
143794	2003	WY ₁₀₄	16.8	X	266.83215	100.89611	267.83039	1.92826	0.1697479	0.27541903	2.3395918	20	6 9.9	19.9
143795	2003	WO ₁₀₅	16.1	X	46.35537	234.16923	51.90998	6.76257	0.1318653	0.28416358	2.2913447	20	10 23.1	18.8
143796	2003	WP ₁₀₇	16.1	X	221.84729	19.33334	226.43308	5.90433	0.1123731	0.30479077	2.1867620	20	—	—
143797	2003	WA ₁₁₂	16.3	X	145.83057	330.17005	8.03529	5.42737	0.0141694	0.30891574	2.1672517	20	—	—
143798	2003	WQ ₁₁₃	16.8	X	130.32825	332.16232	327.26556	4.65250	0.1915914	0.30262959	2.1971605	20	—	—
143799	2003	WJ ₁₁₃	14.5	X	102.88172	321.25340	10.67803	3.96032	0.1486345	0.12650273	3.9300927	20	—	—
143800	2003	WM ₁₁₅	16.4	X	3.64155	37.38634	292.66956	4.79307	0.1552758	0.28610785	2.2809523	20	10 19.9	18.5
143801	2003	WR ₁₁₆	16.1	X	55.84964	13.16061	264.14521	6.01797	0.1109275	0.28401323	2.2921534	20	10 16.0	19.1
143802	2003	WV ₁₁₇	16.4	X	292.25589	322.57203	44.11714	5.27122	0.0727456	0.27775638	2.3264480	20	8 3.9	19.0
143803	2003	WA ₁₁₉	16.7	X	221.51176	105.19706	310.26673	1.77822	0.1682215	0.27360616	2.3499149	20	6 21.9	20.0
143804	2003	WE ₁₁₉	16.8	X	62.58683	3.81880	35.23958	2.70895	0.1182543	0.30465909	2.1873920	20	—	—
143805	2003	WZ ₁₂₂	16.3	X	71.25335	317.84731	315.38558	5.86625	0.0882110	0.28518350	2.2858784	20	10 26.9	19.4
143806	2003	WD ₁₂₃	16.2	X	173.77903	210.30844	34.51586	6.90337	0.1427220	0.29609046	2.2293920	20	—	—
143807	2003	WY ₁₂₆	16.5	X	50.44226	322.97770	51.07696	5.37590	0.1398862	0.29789863	2.2203616	20	—	—
143808	2003	WG ₁₂₇	16.4	X	313.68469	340.16783	38.38947	5.58156	0.1232673	0.28152768	2.3056248	20	9 26.3	18.4
143809	2003	WM ₁₂₇	16.6	X	319.98156	351.12144	55.25361	7.38999	0.1714194	0.28800163	2.2709422	20	11 23.9	18.2
143810	2003	WR ₁₂₇	15.1	X	154.93450	226.02188	75.13401	14.68610	0.1916650	0.24220966	2.5488351	20	—	—
143811	2003	WE ₁₃₀	17.1	X	260.37086	120.10485	349.37257	2.12937	0.0587790	0.28842112	2.2687398	20	11 14.3	19.6
143812	2003	WR ₁₃₁	16.1	X	184.03024	156.62372	71.51104	7.01668	0.0851662	0.29654673	2.2271046	20	—	—
143813	2003	WO ₁₃₆	16.1	X	188.28023	188.72047	74.19960	6.57399	0.0708124	0.30219025	2.1992896	20	—	—
143814	2003	WP ₁₃₆	16.5	X	314.82425	212.91157	235.40590	3.85608	0.1129910	0.29354699	2.2422513	20	—	—
143815	2003	WR ₁₃₆	16.3	X	230.18617	31.85246	72.67297	9.90187	0.1312016	0.28137989	2.3064321	20	9 18.7	19.5
143816	2003	WC ₁₃₇	16.4	X	250.01730	331.20311	66.82317	5.98687	0.1134997	0.27564392	2.3383191	20	7 8.5	19.5
143817	2003	WJ ₁₃₇	16.6	X	324.27200	38.61077	62.65593	5.26242	0.1188806	0.29653413	2.2271677	20	—	—
143818	2003	WF ₁₃₈	16.9	X	349.92380	359.85959	21.17107	0.92627	0.1603262	0.29048847	2.2579628	20	12 16.0	19.0
143819	2003	WJ ₁₃₈	16.8	X	143.67775	354.88630	53.03787	4.94245	0.1280579	0.31923417	2.1202959	20	3 23.4	19.5
143820	2003	WS ₁₃₉	16.7	X	290.82138	348.60827	84.08353	5.05976	0.1395217	0.28664420	2.2781061	20	11 4.4	18.7
143821	2003	WR ₁₄₁	16.3	X	76.36738	122.59164	245.48373	4.63953	0.1788940	0.30157270	2.2022910	20	—	—
143822	2003	WC ₁₄₂	15.0	X	110.28156	108.49860	88.18511	22.70501	0.2675330	0.26938734	2.3743857	20	9 26.5	19.5
143823	2003	WU ₁₄₂	15.9	X	247.60152	178.94454	276.99498	9.58593	0.1646779	0.27932056	2.3177546	20	9 12.2	19.0
143824	2003	WX ₁₄₅	17.1	X	332.04901	298.63759	93.63058	2.20828	0.0669314	0.28976957	2.2616959	20	11 20.1	19.2
143825	2003	WK ₁₄₇	16.5	X	308.14209	171.83492	203.79655	6.11289	0.1094735	0.28301583	2.2975355	20	9 7.1	18.8
143826	2003	WH ₁₄₈	16.3	X	108.45993	187.69822	51.50198	8.81073	0.0843429	0.28625702	2.2801598	20	10 29.5	19.3
143827	2003	WM ₁₅₀	16.2	X	52.62008	109.55799	148.18378	6.77382	0.1547340	0.28045500	2.3115001	20	9 25.2	19.0
143828	2003	WP ₁₅₀	16.1	X	224.73935	108.42257	122.80607	7.17738	0.1207657	0.30357735	2.1925852	20	—	—
143829	2003	WP ₁₅₁	16.7	X	219.93269	108.17665	6.45217	7.17689	0.0364748	0.28309134	2.2971269	20	9 27.5	19.6
143830	2003	WV ₁₅₂	15.7	X	85.37158	309.67576	194.08950	25.28424	0.2450660	0.25697450	2.4502442	20	6 9.3	19.6
143														

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143841 2003 XN ₂₀	16.8	X	235.99285	303.63227	264.64999	5.26919	0.0923993	0.29961956	2.2118514	20	—	—
143842 2003 XY ₂₄	17.0	X	253.34978	319.08080	206.13424	6.17878	0.0874740	0.29633154	2.2281827	20	—	—
143843 2003 XG ₃₆	16.3	X	266.20631	149.02150	291.38403	9.43946	0.1298884	0.28385050	2.2930293	20	9 24.4	19.1
143844 2003 XW ₃₇	16.9	X	31.07914	11.89348	28.72118	6.88297	0.1555555	0.30040771	2.2079810	20	—	—
143845 2003 XT ₃₈	16.6	X	261.17567	20.36758	50.24780	7.88699	0.0609468	0.28067291	2.3103036	20	9 23.5	19.3
143846 2003 YA ₃	16.6	X	281.30964	133.54392	286.80908	2.29059	0.2217694	0.28205407	2.3027553	20	9 8.6	18.5
143847 2003 YO ₄	16.6	X	228.28456	146.80031	60.61865	6.47832	0.1335911	0.29697226	2.2249767	20	—	—
143848 2003 YZ ₅	15.7	X	324.04616	69.51124	295.85075	10.19209	0.1876329	0.27865659	2.3214349	20	9 14.4	17.7
143849 2003 YG ₆	16.6	X	180.08718	344.61676	348.28415	5.99063	0.1007031	0.31473095	2.1404729	20	1 20.6	19.5
143850 2003 YV ₆	16.6	X	261.86141	32.38668	47.51048	6.16228	0.1276869	0.28112493	2.3078264	20	9 25.8	19.2
143851 2003 YK ₇	16.2	X	290.53745	62.78266	40.89046	7.73784	0.1556131	0.28681219	2.2772164	20	12 19.2	18.0
143852 2003 YR ₇	16.8	X	70.53428	93.93985	109.05749	4.45838	0.1178904	0.26661548	2.3908141	20	7 24.5	19.6
143853 2003 YX ₇	16.6	X	168.82517	315.75108	136.45855	10.36106	0.1881328	0.26603316	2.3943017	20	6 19.8	20.7
143854 2003 YL ₈	16.7	X	84.62140	140.03600	210.27216	3.29315	0.1985386	0.30102697	2.2049519	20	—	—
143855 2003 YC ₉	16.1	X	42.63752	53.53364	308.38088	4.35979	0.2226615	0.29500208	2.2348720	20	—	—
143856 2003 YN ₁₀	16.0	X	116.30006	358.33139	333.87210	7.77694	0.1601754	0.30350454	2.1929358	20	—	—
143857 2003 YU ₁₁	16.5	X	86.20099	213.41449	12.84548	8.16521	0.0661173	0.27525437	2.3405247	20	9 12.0	19.4
143858 2003 YH ₁₂	15.4	X	288.35692	162.44162	324.22748	11.83750	0.0979994	0.23283718	2.6167837	20	—	—
143859 2003 YD ₁₃	16.3	X	103.77423	121.88207	5.70509	2.38828	0.1711113	0.25991122	2.4317525	20	5 29.8	19.7
143860 2003 YI ₁₃	16.6	X	18.37907	55.79658	319.44560	5.91049	0.2000721	0.29152781	2.2525930	20	—	—
143861 2003 YP ₁₃	15.8	X	94.55948	172.70384	20.30042	5.62017	0.1741422	0.26678882	2.3897784	20	8 19.9	19.2
143862 2003 YQ ₁₃	16.2	X	80.94567	350.08632	39.26439	6.49222	0.1714301	0.30341580	2.1933634	20	—	—
143863 2003 YC ₁₅	16.1	X	135.76959	186.45254	323.55484	6.29895	0.0546446	0.27056680	2.3674803	20	7 27.7	19.3
143864 2003 YN ₁₅	15.9	X	52.94645	19.96367	338.62998	6.75116	0.1991011	0.29568178	2.2314458	20	—	—
143865 2003 YG ₁₆	16.0	X	92.90202	304.83150	50.22812	5.19089	0.1889638	0.29925018	2.2136712	20	—	—
143866 2003 YH ₁₆	16.4	X	88.87091	300.08000	80.52774	8.85563	0.2294650	0.30399747	2.1905646	20	—	—
143867 2003 YZ ₁₆	15.1	X	329.46239	74.94493	64.87182	11.41978	0.0455112	0.23724273	2.5842872	20	—	—
143868 2003 YA ₁₈	16.3	X	194.21822	328.90204	107.87453	8.89851	0.2291635	0.26900228	2.3766510	20	6 21.0	20.2
143869 2003 YM ₂₀	16.6	X	9.01821	239.98390	349.85334	2.77967	0.1963157	0.25796722	2.4439540	20	5 18.9	18.5
143870 2003 YO ₂₂	16.4	X	347.57161	38.92250	357.10837	2.38597	0.2454803	0.29018118	2.2595566	20	—	—
143871 2003 YK ₂₃	16.6	X	307.25719	68.80240	341.76418	6.80492	0.0859844	0.28685136	2.2770091	20	10 31.2	18.9
143872 2003 YU ₂₃	16.8	X	241.35732	220.65126	224.72868	5.96641	0.0765280	0.28117346	2.3075609	20	9 5.9	19.8
143873 2003 YC ₂₄	15.2	X	140.46932	206.99370	25.64979	12.06776	0.1391897	0.22360076	2.6883586	20	11 10.7	19.5
143874 2003 YO ₂₄	16.3	X	278.96362	267.73120	116.99822	7.38972	0.1169871	0.27547398	2.3392806	20	7 31.0	18.7
143875 2003 YR ₂₄	16.8	X	112.32885	305.92571	145.65807	3.48663	0.0989889	0.25709469	2.4494805	20	4 13.4	19.9
143876 2003 YE ₂₆	16.5	X	111.79198	133.36517	349.33160	3.63323	0.1614006	0.26040102	2.4287022	20	5 30.9	20.1
143877 2003 YF ₂₆	16.5	X	226.33441	99.52911	74.33274	6.74894	0.0470930	0.28789444	2.2715059	20	12 26.9	19.3
143878 2003 YG ₂₇	16.2	X	274.48004	31.13690	94.13411	6.86565	0.1064044	0.28037141	2.3119595	20	9 1.3	18.8
143879 2003 YV ₂₇	15.6	X	6.54103	129.12669	338.91933	9.62215	0.1350316	0.24260061	2.5460961	20	—	—
143880 2003 YZ ₂₈	16.4	X	39.27255	111.51377	112.42332	3.27915	0.1066129	0.29986304	2.2106539	20	—	—
143881 2003 YO ₂₉	16.6	X	118.55681	54.78676	112.31747	3.32147	0.1225777	0.26810812	2.3819322	20	8 4.5	20.0
143882 2003 YP ₂₉	16.8	X	238.52706	357.74775	151.82888	0.78170	0.0828281	0.28633622	2.2797393	20	12 4.9	19.4
143883 2003 YB ₃₂	16.8	X	125.93400	130.52631	326.13690	0.82347	0.1376076	0.25981556	2.4323493	20	5 9.7	20.3
143884 2003 YD ₃₄	16.6	X	65.37878	208.89312	150.79442	6.45934	0.1957145	0.30099105	2.2051273	20	—	—
143885 2003 YW ₃₄	16.2	X	344.07531	336.94771	78.19693	5.54809	0.1282757	0.29227583	2.2487480	20	—	—
143886 2003 YE ₃₅	16.3	X	189.42962	307.96403	162.96487	6.27037	0.1971414	0.27409495	2.3471204	20	7 31.3	20.0
143887 2003 YJ ₃₆	16.7	X	66.92350	305.90840	74.67913	2.83957	0.2145029	0.30186487	2.2008697	20	—	—
143888 2003 YL ₄₀	16.2	X	4.24169	245.10648	105.87430	10.71568	0.2010814	0.28480200	2.2879192	20	12 3.6	18.6
143889 2003 YR ₄₀	16.2	X	111.00389	190.67624	101.39169	3.98013	0.0764542	0.22894102	2.6463888	20	12 25.3	20.2
143890 2003 YE ₄₃	15.9	X	232.76475	356.82603	277.60720	3.43598	0.1599150	0.24497499	2.5296177	20	1 8.4	20.0
143891 2003 YP ₄₃	16.6	X	102.26801	6.94395	188.40845	1.81471	0.1387202	0.26908531	2.3761621	20	8 25.1	20.0
143892 2003 YU ₄₃	16.5	X	250.96803	283.74375	112.61499	4.54264	0.1507726	0.27175168	2.3605936	20	7 1.2	19.4
143893 2003 YS ₄₄	16.6	X	189.00039	310.94073	103.24477	7.65236	0.1125124	0.26360038	2.4090105	20	5 21.7	20.2
143894 2003 YT ₄₅	16.3	X	285.54496	61.29885	3.92007	6.54322	0.0838792	0.28534873	2.2849959	20	10 16.4	18.7
143895 2003 YY ₅₀	16.1	X	247.48654	316.97389	88.26289	4.77080	0.1397145	0.27423177	2.3463396	20	7 11.4	19.0
143896 2003 YN ₅₅	16.2	X	342.73901	264.81530	236.50971	3.95283	0.1433272	0.24438972	2.5336547	20	—	—
143897 2003 YV ₅₅	15.7	X	63.56452	132.76994	203.70147	3.20910	0.3128389	0.23951442	2.5679207	20	—	—
143898 2003 YG ₅₆	16.1	X	169.52272	284.55233	250.24737	5.91686	0.0539472	0.28216578	2.3021476	20	10 10.4	19.2
143899 2003 YK ₅₆	16.5	X	110.23651	14.61987	128.64534	2.82022	0.1199108	0.26675311	2.3899917	20	6 22.2	19.6
143900 2003 YJ ₅₈	16.1	X	155.92007	331.77211	112.41365	5.33245	0.1081952	0.26486748	2.4013214	20	5 25.3	19.6
143901 2003 YR ₆₀	17.1	X	128.93761	246.31250	213.67612	1.76057	0.1298210	0.26394977	2.4068841	20	5 17.2	20.5
143902 2003 YR ₆₁	16.0	X	287.85624	204.10268	114.73932	7.08963	0.1252363	0.26785302	2.3834444	20	5 8.9	19.0
143903 2003 YZ ₆₁	16.3	X	13.68048	286.88400	106.91183	8.61953	0.1742142	0.29402414	2.2398248	20	—	—
143904 2003 YM ₆₂	16.4	X	192.68544	193.70193	317.52457	1.18113	0.1788920	0.27797899	2.3252058	20	9 26.9	20.0
143905 2003 YS ₆₂	16.2	X	178.52332	202.22301	280.57251	8.07326	0.1016382	0.27190944	2.3596804	20	8 7.5	19.7
143906 2003 YW ₆₂	16.3	X	229.70669	329.15626	140.88256	4.29901	0.1363684	0.28004638	2.3137481	20	9 20.0	19.2
143907 2003 YV ₆₃	16.2	X	251.26636	343.31954	106.95910	7.08055	0.0789179	0.28071691	2.3100622	20	10 4.0	19.0
143908 2003 YR ₆₅	16.3	X	125.22423	242.36864	281.42391	5.94405	0.0520065	0.26838895	2.3802704	20	7 31.1	19.4
143909 2003 YS ₆₆	16.6	X	233.69421	153.84404	306.08828	4.71296	0.1888525	0.27553362	2.3389430	20	8 31.2	19.7
143910 2003 YD ₆₉	16.5	X	355.74742	195.62800	215.87089	4.62893	0.1552087	0.29169876	2.2517128	20	—	—
143911 2003 YJ ₆₉	16.3	X	190.61699	222.53894	277.94983	5.02941	0.1775376	0.27413933	2.3468670	20	9 8.4	19.9
143912 2003 YN ₇₀	16.6	X	38.18583	227.83111	129.25706	5.38434	0.2074964	0.29377869	2.2410722	20	—	—
143913 2003 YF ₇₄	16.8	X	219.50476	33.91704	359.30404	2.71422	0.1659595	0.27043768	2.3682338	20	5 20.5	20.5
143914 2003 YA ₇₅	16.6	X	225.42967	165.40439	343.21102	2.99553	0.1723867					

ELEMENTS AND OPPOSITION DATES IN 2020

ECLIPTIC AND EQUINOX 2000.0, EPOCH 2020 MAY 31.0 TT

Planet	<i>H</i>	<i>G</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	μ	<i>a</i>	TE	Oppos.	<i>V</i>
143921 2003 YW ₈₅	16.5	X	282.52338	161.21966	226.07080	5.56862	0.1138962	0.27840232	2.3228481	20	8 7.6	19.2
143922 2003 YU ₈₇	16.3	X	121.52897	151.68783	318.19484	6.00499	0.0771947	0.25980481	2.4324164	20	5 13.4	19.6
143923 2003 YE ₈₉	15.2	X	251.21479	205.78141	304.33536	13.19747	0.0589498	0.22627184	2.6671599	20	12 10.7	18.8
143924 2003 YH ₈₉	16.0	X	183.73390	237.18931	39.45124	10.13386	0.0710237	0.23823137	2.5771325	20	—	—
143925 2003 YO ₈₉	16.3	X	267.15078	131.76522	319.32893	9.20260	0.1505818	0.28060625	2.3106694	20	10 8.5	18.9
143926 2003 YX ₈₉	15.8	X	99.30226	257.14258	305.79849	6.81012	0.0573814	0.27060613	2.3672509	20	8 21.7	18.8
143927 2003 YE ₉₀	15.9	X	296.92910	101.55273	84.70170	3.22554	0.0647505	0.24073870	2.5592072	20	—	—
143928 2003 YU ₉₀	16.5	X	15.40376	143.09679	221.00311	5.75353	0.2074221	0.29317883	2.2441281	20	—	—
143929 2003 YP ₉₁	16.7	X	37.68067	226.62152	195.41401	4.78452	0.1317013	0.30023924	2.2088069	20	—	—
143930 2003 YP ₉₈	16.8	X	190.34019	218.12993	222.57288	3.58539	0.1163668	0.27150791	2.3620063	20	6 25.8	20.3
143931 2003 YD ₁₀₂	16.6	X	178.90685	334.41820	173.42330	3.10022	0.1054203	0.27586983	2.3370423	20	9 13.3	19.9
143932 2003 YF ₁₀₂	15.9	X	246.97391	354.19237	220.82320	2.28092	0.0469569	0.23833057	2.5764174	20	—	—
143933 2003 YC ₁₀₄	17.1	X	325.16440	268.44150	143.36537	1.05824	0.1967070	0.29056548	2.2575638	20	12 19.5	18.4
143934 2003 YE ₁₀₅	16.3	X	225.71009	188.81304	283.63887	6.11558	0.1871015	0.27617787	2.3353042	20	9 6.6	19.8
143935 2003 YE ₁₀₅	16.7	X	310.50561	176.63721	219.84706	5.58524	0.0904582	0.28609401	2.2810258	20	10 17.8	19.0
143936 2003 YR ₁₀₅	16.4	X	225.34451	347.74508	112.59428	7.62412	0.1509407	0.27876992	2.3208056	20	8 31.3	19.6
143937 2003 YK ₁₀₆	16.2	X	12.49884	311.73538	276.86900	5.27544	0.0819191	0.26258131	2.4152393	20	5 20.3	18.9
143938 2003 YV ₁₀₆	16.4	X	322.49851	198.43676	274.89906	6.50182	0.1021225	0.29353966	2.2422887	20	—	—
143939 2003 YC ₁₀₇	17.4	X	174.62115	280.83612	166.84471	2.15351	0.1361646	0.26609767	2.3939147	20	6 18.4	21.1
143940 2003 YW ₁₁₃	16.9	X	325.86776	346.56141	65.47053	3.39473	0.0770891	0.28986777	2.2611850	20	12 8.9	18.9
143941 2003 YE ₁₁₅	17.2	X	279.58506	348.24299	63.06882	3.08534	0.1572025	0.27997867	2.3141211	20	9 5.9	19.5
143942 2003 YF ₁₁₅	16.5	X	3.90205	328.44508	33.23058	7.90943	0.1585027	0.28718814	2.2752287	20	12 8.8	18.9
143943 2003 YH ₁₁₅	15.7	X	320.68196	152.70972	22.54388	6.81273	0.2337879	0.24168049	2.5525543	20	—	—
143944 2003 YP ₁₁₅	16.2	X	317.67258	351.51273	59.76800	10.50082	0.0240209	0.28510775	2.2862833	20	11 21.2	18.7
143945 2003 YZ ₁₁₅	16.4	X	139.02407	134.70537	315.76918	4.96774	0.1719596	0.26207785	2.4183315	20	5 17.5	20.2
143946 2003 YB ₁₁₇	16.5	X	281.52033	22.64688	50.56487	6.99481	0.0810830	0.28231990	2.3013096	20	10 24.2	18.9
143947 2003 YQ ₁₁₇	15.3	X	96.42877	135.66182	117.52481	21.02272	0.6544883	0.30584466	2.1817356	20	1 23.0	18.7
143948 2003 YJ ₁₁₈	16.5	X	81.46944	310.07418	66.42311	8.04970	0.2162657	0.30224925	2.1990034	20	—	—
143949 2003 YO ₁₁₉	16.5	X	253.19561	224.51584	293.83621	4.47048	0.0903416	0.29044718	2.2581768	20	—	—
143950 2003 YR ₁₂₀	16.2	X	219.74514	16.80391	15.83888	7.01185	0.1249649	0.26719974	2.3873276	20	6 4.0	19.7
143951 2003 YC ₁₂₁	16.4	X	271.63034	338.22173	28.33850	7.72549	0.1264280	0.27054399	2.3676134	20	6 19.9	19.5
143952 2003 YL ₁₂₁	16.5	X	9.20169	340.50301	15.46064	3.97083	0.1951507	0.28882757	2.2666108	20	12 16.6	19.0
143953 2003 YL ₁₂₂	16.8	X	152.35913	76.78160	252.39056	4.13416	0.0857176	0.30807605	2.1711880	20	—	—
143954 2003 YY ₁₂₂	15.8	X	316.01996	353.83525	68.76452	2.78312	0.0729857	0.22676241	2.6633118	20	11 19.2	18.8
143955 2003 YC ₁₂₃	16.5	X	85.40349	222.73474	358.42395	2.37221	0.1438675	0.26888282	2.3773549	20	9 11.0	19.7
143956 2003 YL ₁₂₃	16.9	X	142.78791	284.02395	203.01419	1.61679	0.1570493	0.26516106	2.3995486	20	7 8.9	20.7
143957 2003 YB ₁₂₅	16.0	X	207.63318	132.13503	303.85495	10.87160	0.0920181	0.27362245	2.3498216	20	7 11.8	19.1
143958 2003 YD ₁₂₆	16.3	X	327.67510	99.70644	2.00894	6.36769	0.0154393	0.29824366	2.2186488	20	—	—
143959 2003 YG ₁₂₆	16.9	X	0.18854	353.52540	26.22841	2.96083	0.2477924	0.29081649	2.2562646	20	—	—
143960 2003 YX ₁₂₆	16.4	X	247.66315	177.31535	326.15935	9.02395	0.1601317	0.28716243	2.2753645	20	11 25.3	19.1
143961 2003 YU ₁₂₈	15.3	X	309.66612	214.54964	355.60805	7.46466	0.1765710	0.24428614	2.5343709	20	1 6.2	18.8
143962 2003 YT ₁₂₉	16.3	X	238.32835	28.41893	4.26248	6.24388	0.1235141	0.26882025	2.3777238	20	6 13.5	19.7
143963 2003 YA ₁₃₀	15.7	X	82.32203	50.06122	73.98655	9.10071	0.0338921	0.25373685	2.4710433	20	4 10.3	18.9
143964 2003 YD ₁₃₀	15.7	X	119.27847	72.81562	54.48378	7.24136	0.0910798	0.25890483	2.4380500	20	6 6.9	19.1
143965 2003 YC ₁₃₃	16.2	X	188.61200	101.52222	65.55223	7.40587	0.0489153	0.28029253	2.3123933	20	10 28.6	19.1
143966 2003 YE ₁₃₃	16.4	X	288.23078	1.02596	82.49559	8.15408	0.0831514	0.28354904	2.2946543	20	11 19.9	18.6
143967 2003 YR ₁₃₄	15.5	X	179.48897	304.63538	335.51274	14.21900	0.0669857	0.23760315	2.5816732	20	—	—
143968 2003 YN ₁₃₆	15.7	X	292.42850	150.14169	283.30629	2.93889	0.0771380	0.22246088	2.6975342	20	10 25.5	19.1
143969 2003 YS ₁₃₆	16.5	X	340.26176	128.99595	286.52497	3.75109	0.1246980	0.28913366	2.2650108	20	—	—
143970 2003 YJ ₁₃₈	15.9	X	100.73667	280.58062	109.54287	10.00638	0.0930382	0.24410464	2.5356269	20	1 6.6	19.0
143971 2003 YV ₁₃₈	16.3	X	174.21750	106.75894	351.58896	10.72946	0.2127270	0.26558530	2.3969926	20	7 3.4	20.5
143972 2003 YK ₁₄₂	15.9	X	74.05974	301.73480	342.41213	12.07910	0.1613128	0.22305545	2.6927383	20	11 8.7	20.1
143973 2003 YP ₁₄₂	16.4	X	77.88909	305.50250	297.88740	5.52544	0.0931282	0.27432589	2.3458029	20	9 23.1	19.6
143974 2003 YA ₁₄₃	15.3	X	234.61206	167.78888	59.45226	13.23346	0.1217978	0.23742825	2.5829408	20	—	—
143975 2003 YP ₁₄₃	15.6	X	219.48792	263.79236	330.47224	12.57576	0.1567175	0.23728141	2.5840063	20	—	—
143976 2003 YG ₁₄₄	16.7	X	301.56107	141.77906	335.56051	5.03377	0.0865991	0.29087089	2.2559833	20	—	—
143977 2003 YM ₁₄₅	16.0	X	161.21208	10.36719	52.33630	8.77703	0.1259561	0.25975572	2.4327228	20	5 3.0	19.5
143978 2003 YS ₁₄₅	15.7	X	294.29488	89.81670	355.52940	12.37634	0.0879462	0.22394605	2.6855946	20	11 9.0	19.1
143979 2003 YF ₁₄₆	15.5	X	144.90083	316.82087	346.56480	14.72105	0.0909468	0.23486120	2.6017279	20	—	—
143980 2003 YT ₁₄₈	15.7	X	193.40959	205.48873	48.96953	14.10756	0.1134751	0.23623286	2.5916470	20	—	—
143981 2003 YH ₁₅₀	16.9	X	260.09211	74.43151	16.74801	6.77960	0.1425051	0.28252941	2.3001718	20	10 4.7	19.4
143982 2003 YK ₁₅₀	17.3	X	162.46068	270.04631	186.99973	0.59556	0.1416732	0.26459247	2.4029850	20	6 18.5	21.0
143983 2003 YE ₁₅₂	15.6	X	108.38380	181.01937	58.97389	14.47338	0.0300395	0.21945130	2.7221410	20	10 19.1	19.5
143984 2003 YZ ₁₅₂	15.3	X	144.59841	218.20039	38.74000	14.25393	0.1592993	0.22486702	2.6782567	20	12 13.8	19.9
143985 2003 YT ₁₅₃	15.2	X	223.76285	143.78952	51.18740	12.84256	0.1374189	0.22880925	2.6474047	20	12 20.7	19.0
143986 2003 YB ₁₅₄	15.6	X	337.87013	153.31503	354.95244	12.89435	0.1013888	0.24118038	2.5560817	20	—	—
143987 2003 YS ₁₅₄	15.2	X	170.33686	125.85500	62.50810	13.08116	0.1245312	0.21609600	2.7502461	20	10 22.3	19.6
143988 2003 YT ₁₅₄	15.2	X	353.56715	346.56730	92.91429	18.69877	0.1513644	0.23230191	2.6208019	20	—	—
143989 2003 YY ₁₅₈	16.2	X	337.25113	298.72755	346.59908	8.36432	0.1226749	0.27129460	2.3632443	20	6 9.5	18.7
143990 2003 YN ₁₇₅	16.4	X	9.47763	33.91373	344.99938	2.39255	0.0506608	0.22683972	2.6627066	20	12 8.3	19.7
143991 2003 YO ₁₇₉	5.9	X	327.74032	66.28094	66.94811	19.42762	0.1339356	0.00333699	44.3506076	20	12 22.8	21.9
143992 2004 AF	16.1	X	355.51879	57.92001	315.64938	27.13706	0.5536046	0.35617852	1.9710194	20	—	—
143993 2004 AG ₂	16.4	X	142.69575	48.90232	45.31527	1.67235	0.0853022	0.26128300	2.4232336	20	5 20.8	19.9
1439												