

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
60645	1.0	19.0	36494	1.1	17.0	489445	1.1	19.2	408463	1.2	21.1	514330	1.3	20.9	112281	1.4	17.9
84954	1.0	17.5	427861	1.1	21.4	378132	1.1	20.5	234847	1.2	21.0	86715	1.3	19.9	331996	1.4	20.7
33501	1.0	18.6	128216	1.1	19.5	440129	1.1	20.5	405461	1.2	20.4	49327	1.3	18.9	18009	1.4	17.9
420209	1.0	20.7	11922	1.1	15.8	194941	1.1	19.5	405224	1.2	19.2	306169	1.3	20.2	515459	1.4	20.9
18272	1.0	17.9	231655	1.1	20.0	322915	1.1	20.8	130277	1.2	19.2	193041	1.3	19.5	143453	1.4	19.2
348750	1.0	18.7	27734	1.1	18.2	303553	1.1	20.9	387624	1.2	21.1	458474	1.3	21.0	135559	1.4	20.7
486568	1.0	21.4	430913	1.1	20.4	71170	1.1	18.3	53174	1.2	18.6	449707	1.3	20.4	360137	1.4	20.1
124509	1.0	19.9	517856	1.1	20.4	241850	1.1	19.8	316628	1.2	19.0	458454	1.3	20.1	330752	1.4	20.9
409071	1.0	21.1	6330	1.1	17.0	422513	1.1	20.1	12237	1.2	17.7	257924	1.3	20.7	460470	1.4	19.0
129486	1.0	20.3	112764	1.1	19.2	12189	1.1	17.4	379902	1.2	21.0	199611	1.3	20.3	474520	1.4	19.6
511132	1.0	20.7	381021	1.1	20.2	327982	1.1	20.7	204542	1.2	19.4	466953	1.3	19.5	259418	1.4	19.9
518720	1.0	21.2	348749	1.1	20.5	515552	1.1	21.4	453488	1.2	20.5	214811	1.3	20.0	449836	1.4	20.4
348762	1.0	21.1	395048	1.1	20.5	254190	1.1	20.0	351045	1.2	19.7	460177	1.3	20.6	223153	1.4	19.4
429787	1.0	21.8	18571	1.1	17.4	207444	1.1	19.4	426147	1.2	21.1	317700	1.3	21.2	197022	1.4	19.0
226279	1.0	18.7	365704	1.1	19.9	19694	1.1	18.0	112268	1.2	17.2	484501	1.3	20.4	216664	1.4	19.0
327790	1.0	19.8	448003	1.1	22.5	515584	1.1	21.9	408063	1.2	20.0	51579	1.3	19.2	387696	1.4	19.0
514726	1.0	19.6	149795	1.1	19.9	108657	1.1	20.1	74192	1.2	19.0	236881	1.3	19.8	401501	1.4	21.3
151921	1.0	18.6	326852	1.1	20.1	271477	1.2	19.7	128050	1.2	18.8	471010	1.3	21.7	339340	1.4	18.8
171136	1.0	20.3	436511	1.1	20.3	195852	1.2	20.2	26429	1.2	17.7	472000	1.3	20.2	458634	1.4	20.7
496781	1.0	20.7	267242	1.1	20.3	390462	1.2	20.6	455064	1.2	20.2	266152	1.3	20.3	457247	1.4	20.3
18729	1.0	18.1	440899	1.1	19.8	458540	1.2	20.4	489134	1.2	20.9	487175	1.3	20.5	363371	1.4	19.7
398043	1.0	21.4	373349	1.1	21.8	390355	1.2	20.3	326278	1.2	21.1	511896	1.3	20.8	197754	1.4	20.7
348304	1.0	21.3	248811	1.1	20.3	8281	1.2	16.6	225135	1.2	20.7	43014	1.3	17.6	107050	1.4	19.0
485926	1.0	22.4	378000	1.1	19.7	52446	1.2	18.3	275985	1.2	19.0	450374	1.3	21.5	138335	1.4	19.6
281425	1.0	19.4	247585	1.1	19.7	61817	1.2	18.8	3563	1.2	17.3	166369	1.3	20.7	214968	1.4	19.3
326323	1.0	18.9	70725	1.1	17.0	232174	1.2	18.4	79631	1.2	18.6	79120	1.3	17.0	344959	1.4	19.1
215725	1.0	19.9	130236	1.1	20.0	272621	1.2	20.0	126546	1.2	18.9	452679	1.3	20.7	518077	1.4	21.2
205744	1.0	23.6	290863	1.1	20.9	328873	1.2	19.5	478480	1.2	19.7	276180	1.3	20.0	420072	1.4	21.2
412942	1.0	20.1	66504	1.1	19.0	455329	1.2	19.8	278531	1.2	20.0	396950	1.3	21.5	317256	1.4	19.9
399548	1.0	19.6	156037	1.1	17.3	517345	1.2	21.2	364910	1.2	21.1	30151	1.3	17.9	348310	1.4	18.3
394137	1.0	20.3	223360	1.1	19.1	75665	1.2	18.8	300640	1.2	19.6	294294	1.3	20.8	172775	1.4	19.6
151763	1.0	19.2	411069	1.1	20.0	290484	1.2	20.5	44542	1.2	18.1	361335	1.3	19.8	519513	1.4	20.4
32290	1.0	18.3	347350	1.1	18.7	514528	1.2	20.0	376645	1.2	21.8	430598	1.3	21.4	450403	1.4	20.6
493128	1.0	20.8	212163	1.1	20.6	33130	1.2	18.5	408772	1.2	19.5	52246	1.3	17.4	355525	1.4	21.1
268688	1.0	20.1	317928	1.1	20.2	443284	1.2	20.3	241921	1.2	19.6	327986	1.3	20.5	403394	1.4	20.2
243566	1.0	22.7	227264	1.1	21.1	447553	1.2	21.0	142950	1.3	19.4	211378	1.3	20.6	184667	1.4	20.0
12110	1.0	17.1	52609	1.1	18.2	503290	1.2	19.5	157051	1.3	19.5	35310	1.3	17.3	222059	1.4	20.0
449674	1.0	21.0	482930	1.1	18.9	47826	1.2	17.5	60808	1.3	19.6	397257	1.3	19.6	171712	1.4	18.7
239751	1.0	20.3	394191	1.1	20.7	214768	1.2	19.9	418545	1.3	21.1	339104	1.3	19.5	365388	1.4	20.7
176129	1.0	19.2	133774	1.1	19.7	445802	1.2	20.2	101441	1.3	18.5	85753	1.3	19.4	442280	1.4	20.7
456735	1.0	20.1	178	1.1	12.7	261678	1.2	20.5	210357	1.3	20.2	363853	1.3	20.7	149579	1.4	20.2
166241	1.0	20.4	4231	1.1	15.9	230867	1.2	19.1	35399	1.3	17.3	279348	1.3	20.0	347470	1.4	19.4
82950	1.0	19.2	267646	1.1	20.8	50584	1.2	19.8	449206	1.3	20.6	41095	1.3	17.9	445706	1.4	20.7
442440	1.0	20.5	125016	1.1	19.5	207647	1.2	18.5	140603	1.3	19.5	290237	1.3	20.2	199928	1.4	20.4
199122	1.0	20.7	327520	1.1	21.4	378045	1.2	19.9	156769	1.3	19.6	133208	1.3	20.2	271947	1.4	19.4
1043	1.0	14.1	132690	1.1	20.3	394128	1.2	19.8	293012	1.3	20.4	495677	1.3	19.9	152587	1.4	19.8
358356	1.0	20.4	331440	1.1	20.5	71320	1.2	18.7	493679	1.3	20.6	223841	1.3	19.8	221859	1.4	19.7
453705	1.0	19.9	446026	1.1	21.1	291660	1.2	19.6	237983	1.3	19.3	179851	1.3	19.3	159840	1.4	19.2
118534	1.0	19.6	81485	1.1	18.6	324252	1.2	20.4	322089	1.3	20.1	260369	1.3	19.4	380713	1.4	21.9
207875	1.0	19.9	441913	1.1	21.5	475091	1.2	20.8	221599	1.3	20.5	517021	1.3	20.9	408330	1.4	21.3
10224	1.0	17.5	115471	1.1	18.8	484594	1.2	21.9	462634	1.3	19.6	320138	1.3	20.0	367677	1.4	20.2
433428	1.0	19.7	327057	1.1	19.4	3517	1.2	16.0	458501	1.3	20.9	91010	1.3	17.2	492738	1.4	20.6
214914	1.0	20.8	494121	1.1	19.9	161072	1.2	19.8	292342	1.3	20.2	227361	1.3	19.1	452174	1.4	21.1
52300	1.0	18.3	383147	1.1	20.6	267117	1.2	20.3	431772	1.3	20.9	414320	1.3	21.0	34703	1.4	17.7
255569	1.0	20.4	188187	1.1	18.7	60995	1.2	19.5	403355	1.3	21.6	228511	1.3	19.7	370336	1.4	21.7
135685	1.0	20.6	241742	1.1	19.4	43565	1.2	18.9	206032	1.3	19.8	458562	1.3	21.5	523766	1.4	22.1
374877	1.0	19.5	439208	1.1	20.8	204505	1.2	19.9	136773	1.3	20.1	292336	1.3	20.1	399741	1.4	21.2
147363	1.0	19.1	167572	1.1	19.4	284499	1.2	21.0	369140	1.3	20.8	93280	1.3	18.8	259856	1.4	20.0
132886	1.1	20.0	478517	1.1	21.0	160392	1.2	21.3	361860	1.3	20.9	232254	1.4	20.3	239157	1.4	19.8
175053	1.1	19.8	139902	1.1	19.2	1934	1.2	13.9	179643	1.3	20.6	422140	1.4	20.6	274609	1.4	20.1
88406	1.1	17.8	266211	1.1	19.6	481979	1.2	20.0	20994	1.3	16.6	152030	1.4	20.2	212606	1.4	20.1
231213	1.1	20.1	43619	1.1	18.1	483118	1.2	20.9	313267	1.3	19.6	348714	1.4	19.3	59073	1.4	17.6
161912	1.1	20.5	121125	1.1	19.4	408430	1.2	20.0	87051	1.3	18.6	416476	1.4	18.8	155353	1.4	20.2
43582	1.1	16.8	230382	1.1	19.1	49822	1.2	18.0	448890	1.3	20.4	123983	1.4	20.5	237889	1.4	20.6
97129	1.1	19.3	384360	1.1	19.1	177653	1.2	20.2	192629	1.3	19.8	410612	1.4	20.2	54006	1.4	18.7
460570	1.1	20.0	181472	1.1	19.2	121853	1.2	19.8	9633	1.3	17.3	3128	1.4	16.9	175913	1.4	19.8
301209	1.1	20.3	295018	1.1	20.2	366485	1.2	19.1	180035	1.3	18.7	446503	1.4	21.6	333227	1.4	20.5
48175	1.1	18.5	38538	1.1	18.6	113812	1.2	18.4	75285	1.3	17.4	455037	1.4	20.7	479398	1.4	20.1
484536	1.1	21.2	274696	1.1	20.8	18378	1.2	17.5	320063	1.3	21.1	18008	1.4	16.8	141493	1.4	20.3
454708	1.1	21.6	141640	1.1	19.4	248270	1.2	20.5	119400	1.3	18.4	102872	1.4	19.5	14942	1.4	17.5
523425	1.1	20.1	7741	1.1	15.8	520821	1.2	20.5	194584	1.3	19.0	27553	1.4	17.9	230		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
17731	1.4	18.0	353066	1.5	20.5	395519	1.6	20.4	520671	1.6	20.8	94038	1.7	18.8	448965	1.8	20.7
160418	1.4	20.5	421161	1.5	21.0	249939	1.6	20.3	128155	1.6	19.1	305049	1.7	19.9	33354	1.8	18.9
517442	1.4	21.9	86658	1.5	18.6	324336	1.6	20.7	349178	1.6	20.2	35988	1.7	17.4	415641	1.8	20.9
482692	1.4	20.5	137276	1.5	19.1	426473	1.6	21.6	34475	1.6	18.4	46912	1.7	17.6	160861	1.8	19.3
487514	1.4	20.2	401576	1.5	20.5	505645	1.6	20.5	93828	1.6	18.3	176966	1.7	19.4	51520	1.8	19.2
462303	1.4	20.3	50402	1.5	18.1	421002	1.6	19.9	127239	1.6	19.6	220074	1.7	20.2	102016	1.8	19.4
68460	1.4	18.5	181101	1.5	20.7	335380	1.6	18.8	168234	1.6	20.7	98862	1.7	18.0	435606	1.8	20.1
452695	1.4	20.0	491741	1.5	19.8	153150	1.6	20.6	263071	1.6	20.2	10508	1.7	18.2	59350	1.8	19.9
227016	1.4	19.4	249753	1.5	18.8	274519	1.6	20.0	237157	1.6	20.5	223909	1.7	19.3	371298	1.8	22.4
14102	1.4	18.0	443171	1.5	20.6	301905	1.6	18.4	70008	1.6	16.9	452668	1.7	20.9	108782	1.8	19.7
496430	1.4	20.0	207257	1.5	20.7	23097	1.6	17.1	268863	1.6	20.6	134870	1.7	19.3	109145	1.8	20.4
11196	1.4	16.4	282923	1.5	19.6	53623	1.6	19.3	180803	1.6	19.8	485944	1.7	21.7	220886	1.8	18.0
487869	1.4	20.1	18237	1.5	19.3	122171	1.6	19.1	176326	1.6	19.5	298551	1.7	19.1	418644	1.8	21.2
287342	1.4	20.6	135010	1.5	19.6	3005	1.6	17.5	53488	1.6	18.4	267765	1.7	19.2	487365	1.8	21.3
8749	1.4	15.7	368068	1.5	20.2	448993	1.6	20.3	349965	1.6	18.8	199345	1.7	19.6	218177	1.8	18.7
351099	1.4	19.4	363411	1.5	20.0	458683	1.6	20.1	311765	1.6	20.0	158368	1.7	19.4	113289	1.8	18.6
60814	1.4	19.4	80768	1.5	17.9	485709	1.6	20.3	183196	1.6	19.4	103205	1.7	19.3	327513	1.8	21.0
270722	1.4	20.0	184868	1.5	20.6	102708	1.6	19.2	409304	1.6	21.1	230260	1.7	19.3	196030	1.8	20.1
61497	1.4	18.8	147945	1.5	18.6	485928	1.6	20.9	340205	1.6	19.8	184665	1.7	20.7	38483	1.8	19.1
378031	1.4	19.7	295485	1.5	19.9	65844	1.6	18.6	196814	1.6	19.3	403297	1.7	20.6	334481	1.8	20.2
171527	1.4	19.5	236993	1.5	19.8	82185	1.6	19.7	47385	1.6	16.3	107720	1.7	20.0	120192	1.8	20.8
411086	1.4	19.7	252191	1.5	19.6	343985	1.6	20.8	289481	1.6	20.8	101647	1.7	18.0	389498	1.8	20.6
201982	1.4	19.7	202957	1.5	18.6	344627	1.6	21.0	405867	1.6	20.3	318390	1.7	19.9	354657	1.8	20.4
199333	1.4	20.7	515340	1.5	20.7	88302	1.6	19.4	489076	1.6	20.3	242	1.7	12.9	517319	1.8	21.5
226298	1.4	20.2	324689	1.5	20.1	487037	1.6	20.9	191639	1.7	17.5	479475	1.7	20.8	22202	1.8	19.3
337961	1.5	19.1	492358	1.5	22.0	19249	1.6	18.5	331215	1.7	20.0	282272	1.7	19.6	75692	1.8	18.3
240180	1.5	20.4	519879	1.5	21.6	132502	1.6	20.1	209841	1.7	19.4	426413	1.7	21.0	474825	1.8	20.3
164970	1.5	18.4	485952	1.5	21.5	126592	1.6	19.5	448001	1.7	20.8	335474	1.7	19.2	405738	1.8	19.9
270735	1.5	20.1	89410	1.5	18.7	51535	1.6	19.0	449541	1.7	21.5	127508	1.7	19.0	517982	1.8	21.3
189962	1.5	19.1	451488	1.5	20.4	355256	1.6	22.7	408674	1.7	20.2	224599	1.7	20.3	392015	1.8	19.4
104032	1.5	19.7	41542	1.5	16.3	447170	1.6	20.4	257039	1.7	20.4	54806	1.7	19.1	458403	1.8	19.6
39978	1.5	18.4	296320	1.5	19.1	355429	1.6	19.5	457018	1.7	19.9	384923	1.7	20.3	216552	1.8	19.1
245866	1.5	21.0	351011	1.5	19.1	103073	1.6	19.6	391213	1.7	20.6	513588	1.7	20.4	138235	1.8	19.5
505366	1.5	20.5	238593	1.5	20.2	161130	1.6	19.8	381053	1.7	19.4	331844	1.7	19.0	343833	1.8	21.1
147465	1.5	19.9	420152	1.5	21.1	314301	1.6	21.0	22405	1.7	18.5	182662	1.7	19.9	260941	1.8	21.1
267873	1.5	19.1	397612	1.5	20.5	449519	1.6	21.7	370349	1.7	20.5	145019	1.7	18.8	227070	1.8	20.6
365389	1.5	19.5	100045	1.5	16.3	210644	1.6	20.7	474808	1.7	21.5	183721	1.7	19.3	514195	1.8	21.4
43699	1.5	18.6	515491	1.5	21.1	217393	1.6	19.1	252790	1.7	19.3	105568	1.7	19.1	35267	1.8	18.6
511990	1.5	20.6	244796	1.5	19.5	393651	1.6	20.3	14602	1.7	16.7	100003	1.7	19.0	181362	1.8	19.9
346389	1.5	21.5	223312	1.5	20.0	202901	1.6	19.8	1912	1.7	15.2	96944	1.7	19.5	175183	1.8	20.6
436572	1.5	21.9	265526	1.5	19.6	481720	1.6	20.9	174343	1.7	18.8	485946	1.7	21.9	291233	1.8	20.1
303084	1.5	20.4	233110	1.5	19.2	419233	1.6	20.3	79172	1.7	20.5	339043	1.7	20.8	255919	1.8	19.0
181495	1.5	20.1	246	1.5	13.1	18081	1.6	16.3	155542	1.7	19.3	446639	1.7	20.9	94742	1.8	18.7
447651	1.5	20.5	144733	1.5	19.6	22313	1.6	18.6	21363	1.7	18.7	255576	1.7	20.5	400992	1.8	20.0
121211	1.5	19.4	364039	1.5	20.8	413442	1.6	20.8	309036	1.7	20.3	353981	1.7	21.6	32966	1.8	19.4
98353	1.5	18.7	174471	1.5	18.6	821	1.6	16.6	125593	1.7	18.9	73324	1.7	19.2	147898	1.8	19.5
16284	1.5	18.3	291607	1.5	21.0	371849	1.6	20.1	417863	1.7	20.8	273223	1.7	20.8	477883	1.8	20.9
273516	1.5	19.6	303664	1.5	18.9	304154	1.6	20.4	111211	1.7	18.2	368010	1.7	19.8	358304	1.8	20.7
264878	1.5	20.3	261797	1.5	20.2	278250	1.6	21.1	233780	1.7	19.6	483091	1.7	20.6	413443	1.8	19.6
30181	1.5	18.3	74628	1.5	18.6	69396	1.6	18.6	99298	1.7	18.1	48006	1.7	18.5	441062	1.8	22.3
124667	1.5	19.0	18930	1.5	18.1	218068	1.6	20.3	390221	1.7	19.2	78888	1.7	19.1	276684	1.8	19.5
345309	1.5	20.4	233928	1.5	19.8	436440	1.6	20.8	361416	1.7	20.4	110316	1.7	18.4	47290	1.8	18.3
70372	1.5	19.1	328023	1.5	20.5	171557	1.6	19.7	143206	1.7	19.4	517234	1.7	21.3	286646	1.8	19.4
182264	1.5	20.2	283835	1.5	19.1	411645	1.6	20.9	76528	1.7	17.2	182964	1.7	21.0	12749	1.8	17.7
362826	1.5	20.3	452175	1.5	20.6	288512	1.6	21.4	442406	1.7	20.3	84999	1.7	17.8	454776	1.8	20.2
174322	1.5	18.7	391253	1.5	20.9	360912	1.6	20.9	119206	1.7	18.3	484387	1.7	20.9	125160	1.8	18.7
523458	1.5	20.6	158783	1.5	19.0	243032	1.6	20.0	27094	1.7	16.9	328061	1.8	20.0	401054	1.8	21.0
517288	1.5	22.0	256452	1.5	20.2	369003	1.6	22.0	264491	1.7	20.7	522023	1.8	20.8	24150	1.8	18.6
227807	1.5	20.4	300354	1.5	20.3	50134	1.6	18.3	476445	1.7	20.4	16814	1.8	17.2	6789	1.8	16.0
78260	1.5	19.8	252068	1.5	19.9	99584	1.6	19.3	367845	1.7	20.1	514040	1.8	22.4	156160	1.8	19.3
64254	1.5	16.7	358742	1.5	19.8	82712	1.6	18.7	318246	1.7	20.8	187108	1.8	19.8	493276	1.8	21.1
83471	1.5	19.0	232104	1.5	18.8	9069	1.6	15.0	310068	1.7	20.7	199244	1.8	20.5	414686	1.8	19.8
329889	1.5	21.0	97051	1.5	17.5	361817	1.6	19.8	464514	1.7	20.4	40066	1.8	17.0	34077	1.8	19.0
316238	1.5	19.7	49983	1.5	17.6	108647	1.6	19.2	411951	1.7	21.2	128218	1.8	19.3	523450	1.8	20.5
33483	1.5	18.2	243919	1.5	21.0	521500	1.6	20.8	35482	1.7	19.1	142582	1.8	19.6	120923	1.8	19.1
511619	1.5	21.1	449129	1.5	20.8	8070	1.6	16.6	254775	1.7	19.2	81781	1.8	19.2	77228	1.8	19.8
216118	1.5	19.2	134172	1.5	19.3	386882	1.6	20.3	474965	1.7	21.1	66140	1.8	17.3	477485	1.8	19.9
469980	1.5	21.7	457957	1.5	20.4	489166	1.6	21.1	33815	1.7	18.4	183799	1.8	19.3	383187	1.8	20.3
5204	1.5	16.7	403721	1.5	21.0	288075	1.6	19.5	491518	1.7	20.4	429813	1.8	19.2	78899	1.8	18.8
219204	1.5	18.6	410598	1.5	21.9	511032	1.6	19.8	264966	1.7	19.3	53189	1.8	18.7	219248	1.8	18.6
174156	1.5	20.0	241595	1.5	20.3	404981	1.6	20.3	9701	1.7	18.4	357700	1.8	21.0	330742	1.8	20

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
124556	1.9	19.8	520525	1.9	19.8	515621	1.9	20.4	131486	2.1	19.9	79733	2.1	19.1	76921	2.2	19.3
112537	1.9	18.9	217832	1.9	20.1	454705	1.9	20.2	190244	2.1	20.3	158615	2.1	18.7	336783	2.2	20.9
54757	1.9	19.0	490455	1.9	20.1	344962	1.9	19.3	332000	2.1	21.1	391215	2.1	20.4	322326	2.2	20.2
319781	1.9	20.1	171650	1.9	19.4	3327	1.9	16.4	406172	2.1	20.7	30103	2.1	19.7	163537	2.2	19.2
420624	1.9	21.2	19299	1.9	22.6	376077	1.9	20.1	493937	2.1	19.7	12852	2.1	17.8	240143	2.2	19.7
193702	1.9	19.5	447998	1.9	21.1	490960	1.9	20.2	67287	2.1	18.5	57435	2.1	17.9	56612	2.2	18.3
327732	1.9	19.5	517226	1.9	20.5	329187	1.9	19.5	517255	2.1	21.3	81014	2.1	19.4	174629	2.2	19.0
98867	1.9	18.5	37741	1.9	17.7	264481	1.9	20.3	326878	2.1	21.0	165146	2.1	18.5	99138	2.2	18.8
42097	1.9	17.4	352156	1.9	19.5	163861	1.9	19.5	174200	2.1	19.9	400035	2.1	20.1	267529	2.2	20.8
511790	1.9	20.6	86433	1.9	19.6	308834	1.9	19.5	356043	2.1	21.2	186415	2.1	19.2	108131	2.2	19.1
357456	1.9	20.8	363697	1.9	20.2	484418	1.9	20.5	351119	2.1	20.0	232115	2.1	19.5	148354	2.2	17.9
397926	1.9	19.9	295721	1.9	20.3	337679	1.9	20.8	121819	2.1	18.5	484428	2.1	21.4	371189	2.2	21.7
484038	1.9	21.2	241932	1.9	19.0	460739	1.9	19.7	147810	2.1	19.7	338485	2.1	21.3	189228	2.2	20.9
364965	1.9	20.9	514182	1.9	21.8	44188	1.9	17.6	157677	2.1	20.5	442901	2.1	20.8	79920	2.2	17.0
477232	1.9	21.1	359565	1.9	21.2	477896	2.0	20.5	328424	2.1	20.8	520799	2.2	20.2	175222	2.2	20.6
215767	1.9	20.6	438341	1.9	20.1	359310	2.0	20.9	372850	2.1	20.5	284043	2.2	19.6	131386	2.2	19.7
418832	1.9	21.0	31917	1.9	18.6	415254	2.0	21.3	410809	2.1	21.5	230128	2.2	20.3	277134	2.2	19.9
328382	1.9	20.9	351338	1.9	20.0	516086	2.0	21.6	21465	2.1	18.8	31389	2.2	18.3	156593	2.2	20.3
413304	1.9	19.6	104900	1.9	18.5	358767	2.0	21.0	90684	2.1	17.7	422271	2.2	20.1	247554	2.2	19.5
281773	1.9	20.7	516782	1.9	19.3	395675	2.0	20.0	265908	2.1	20.1	450669	2.2	20.4	88684	2.2	19.5
73580	1.9	19.5	273453	1.9	19.3	446036	2.0	20.9	517209	2.1	19.8	381387	2.2	20.0	268736	2.2	19.7
302792	1.9	18.3	248040	1.9	20.9	487205	2.0	21.6	144326	2.1	19.0	124084	2.2	19.8	51409	2.2	19.0
145400	1.9	20.1	516067	1.9	20.6	97634	2.0	19.2	473519	2.1	20.4	133785	2.2	19.2	359324	2.2	20.1
278117	1.9	20.7	478353	1.9	19.6	191119	2.0	19.2	184012	2.1	18.8	509595	2.2	21.4	373498	2.2	19.4
189905	1.9	19.4	413446	1.9	19.6	135152	2.0	18.8	266565	2.1	19.0	400914	2.2	21.3	520174	2.2	21.1
483126	1.9	20.4	339824	1.9	21.0	493063	2.0	20.3	81813	2.1	18.7	12724	2.2	17.4	406660	2.2	20.7
57947	1.9	19.0	219203	1.9	20.2	45889	2.0	18.5	280289	2.1	21.1	112628	2.2	19.0	404099	2.2	20.4
233372	1.9	20.3	76425	1.9	19.8	513585	2.0	20.2	158703	2.1	20.1	435059	2.2	18.9	482509	2.2	21.0
130005	1.9	20.1	477439	1.9	20.4	81374	2.0	19.5	472325	2.1	21.0	36462	2.2	17.2	187668	2.2	20.2
485468	1.9	18.6	65406	1.9	18.9	223032	2.0	18.9	115092	2.1	18.9	390582	2.2	19.9	124064	2.2	20.0
198776	1.9	19.5	93094	1.9	18.1	25032	2.0	18.6	396501	2.1	21.3	216918	2.2	19.3	277442	2.2	19.6
443394	1.9	21.2	228481	1.9	18.9	517289	2.0	21.6	447567	2.1	20.4	411967	2.2	20.7	210891	2.2	18.5
508930	1.9	21.7	510548	1.9	20.6	78605	2.0	18.6	23756	2.1	18.6	282697	2.2	20.5	321472	2.2	19.7
212246	1.9	19.9	450422	1.9	21.3	405524	2.0	20.2	246272	2.1	19.8	518437	2.2	19.9	337760	2.2	20.4
329141	1.9	20.8	508997	1.9	23.2	118533	2.0	20.1	357310	2.1	19.8	16344	2.2	18.1	47270	2.2	19.0
91113	1.9	17.1	108283	1.9	20.2	144504	2.0	19.2	442413	2.1	21.0	29523	2.2	18.0	294030	2.2	20.6
452206	1.9	20.0	302695	1.9	19.9	69048	2.0	18.9	521533	2.1	20.6	302559	2.2	20.2	410139	2.2	20.6
362227	1.9	20.7	132750	1.9	18.9	106612	2.0	17.3	112166	2.1	19.8	265621	2.2	21.0	108341	2.2	18.4
74146	1.9	18.9	265414	1.9	19.4	159848	2.0	18.3	311095	2.1	21.2	49216	2.2	17.2	117294	2.2	18.9
331005	1.9	19.8	244399	1.9	21.7	182820	2.0	19.8	212859	2.1	20.1	258584	2.2	20.0	356678	2.2	20.9
84118	1.9	18.2	110431	1.9	19.1	262463	2.0	20.8	442522	2.1	19.5	5215	2.2	16.0	249723	2.2	18.6
398187	1.9	20.5	450263	1.9	19.5	381106	2.0	20.0	173611	2.1	20.6	157479	2.2	18.2	72559	2.2	18.7
269448	1.9	19.7	319120	1.9	19.5	305204	2.0	19.6	328097	2.1	20.4	456229	2.2	20.9	287901	2.2	19.6
169726	1.9	20.1	285109	1.9	19.4	479636	2.0	20.0	217159	2.1	20.4	205987	2.2	20.4	182616	2.2	18.8
192171	1.9	20.2	484334	1.9	20.4	484526	2.0	21.4	335348	2.1	20.1	207680	2.2	19.6	457466	2.2	20.3
324740	1.9	21.4	512563	1.9	21.6	220488	2.0	19.8	42896	2.1	17.3	194595	2.2	18.8	205967	2.2	20.1
405713	1.9	20.3	46730	1.9	18.1	438707	2.0	20.4	521654	2.1	20.8	303570	2.2	20.5	272449	2.2	20.1
60939	1.9	19.7	403443	1.9	18.8	72549	2.0	17.9	210348	2.1	19.8	53936	2.2	17.8	454666	2.2	19.9
257260	1.9	20.2	11897	1.9	17.4	354269	2.0	19.0	510211	2.1	22.2	475745	2.2	20.6	117542	2.2	19.7
278640	1.9	20.4	66185	1.9	16.8	412305	2.0	21.3	231150	2.1	18.7	97268	2.2	18.0	348743	2.2	20.2
118855	1.9	19.1	452065	1.9	21.3	346535	2.0	19.2	264480	2.1	21.2	186630	2.2	19.6	205437	2.2	20.2
213148	1.9	19.8	107800	1.9	19.1	420926	2.0	20.1	299653	2.1	20.5	365806	2.2	19.8	218412	2.2	19.7
481975	1.9	21.2	148392	1.9	19.0	58268	2.0	18.4	219494	2.1	19.8	107682	2.2	19.4	107836	2.3	19.5
1054	1.9	13.9	427034	1.9	21.0	493068	2.0	19.5	138453	2.1	18.8	437886	2.2	20.4	367451	2.3	19.9
146294	1.9	19.1	137348	1.9	17.3	515581	2.0	21.7	227365	2.1	19.9	365937	2.2	17.6	34171	2.3	17.5
294900	1.9	20.9	512033	1.9	20.6	218065	2.0	20.9	223543	2.1	20.3	81766	2.2	17.8	396943	2.3	20.5
185488	1.9	20.0	163281	1.9	20.2	363992	2.0	20.0	43966	2.1	17.1	167404	2.2	19.3	460437	2.3	20.2
287015	1.9	20.7	166542	1.9	20.0	296780	2.0	18.7	22390	2.1	18.5	478458	2.2	21.0	194558	2.3	19.5
305136	1.9	20.0	18584	1.9	18.1	373084	2.0	20.9	507870	2.1	20.8	223127	2.2	19.1	194868	2.3	19.7
373883	1.9	21.3	402332	1.9	20.9	132456	2.0	19.8	483258	2.1	20.9	139846	2.2	19.4	222017	2.3	20.2
145172	1.9	20.1	37295	1.9	17.0	101372	2.0	19.3	328801	2.1	20.0	127160	2.2	19.3	44283	2.3	17.2
239686	1.9	20.2	487391	1.9	21.1	265560	2.0	20.1	512105	2.1	20.6	455951	2.2	20.9	462970	2.3	21.5
483399	1.9	22.2	141417	1.9	18.7	297297	2.0	19.8	100216	2.1	20.7	293792	2.2	19.8	121026	2.3	19.4
262300	1.9	19.8	458675	1.9	20.1	487579	2.0	20.2	239543	2.1	19.4	407482	2.2	21.3	263856	2.3	20.7
361765	1.9	20.5	420906	1.9	19.9	409070	2.1	20.7	307705	2.1	20.5	261583	2.2	19.8	435475	2.3	21.7
190201	1.9	19.4	461522	1.9	20.7	193340	2.1	18.1	388507	2.1	19.9	447464	2.2	22.1	277623	2.3	19.6
397316	1.9	21.8	152843	1.9	19.6	466004	2.1	21.1	396273	2.1	20.8	42373	2.2	19.1	157171	2.3	19.9
135483	1.9	19.0	342012	1.9	20.9	11387	2.1	17.8	29644	2.1	18.4	327618	2.2	20.7	393731	2.3	20.7
364404	1.9	18.6	127485	1.9	18.5	422131	2.1	21.3	477311	2.1	21.4	187797	2.2	18.6	345414	2.3	19.7
457364	1.9	20.7	144258	1.9	19.9	118963	2.1	17.8	344146	2.1	20.7	40580	2.2	18.4	256574	2.3	19.1
273119	1.9	21.0	329499	1.9	19.8	40210	2.1	18.7	302762	2.1	18.9	203200	2.				

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
487343	2.3	20.7	79922	2.4	19.2	252051	2.4	20.1	51413	2.5	19.6	17229	2.6	19.0	520602	2.6	21.5
79908	2.3	18.9	403607	2.4	20.8	246893	2.4	20.1	78433	2.5	19.4	115854	2.6	18.5	149457	2.7	18.8
330801	2.3	20.6	74748	2.4	18.7	196418	2.4	19.8	286712	2.5	20.5	356055	2.6	20.0	256704	2.7	21.0
181612	2.3	19.7	516570	2.4	20.8	146708	2.4	19.6	397547	2.5	20.8	262404	2.6	20.0	45127	2.7	18.7
197099	2.3	19.3	305079	2.4	19.5	446548	2.4	20.4	175171	2.5	20.3	57293	2.6	17.7	442182	2.7	20.3
19468	2.3	17.7	204474	2.4	19.7	192129	2.4	20.6	331141	2.5	19.7	420553	2.6	21.3	103883	2.7	17.7
144015	2.3	19.9	266660	2.4	20.2	368063	2.4	21.1	341985	2.5	20.0	997	2.6	16.5	416782	2.7	20.6
223836	2.3	19.6	346938	2.4	20.1	405498	2.4	19.8	285270	2.5	18.5	173099	2.6	18.9	486635	2.7	21.1
80296	2.3	18.8	246062	2.4	19.8	266465	2.4	20.0	141054	2.5	18.3	460659	2.6	21.1	430644	2.7	20.6
275331	2.3	20.4	304967	2.4	19.1	461127	2.4	21.2	8283	2.5	16.3	345845	2.6	19.8	4654	2.7	17.4
266493	2.3	20.2	471042	2.4	20.1	352344	2.4	19.6	72830	2.5	18.2	450434	2.6	20.2	516770	2.7	19.2
457307	2.3	20.6	431765	2.4	20.8	203697	2.4	19.9	25845	2.5	16.9	410144	2.6	20.7	19228	2.7	17.2
415632	2.3	20.6	477274	2.4	20.4	484520	2.4	20.6	410987	2.5	21.1	186281	2.6	18.6	170463	2.7	20.5
120691	2.3	20.1	347035	2.4	19.8	359194	2.4	19.9	366001	2.5	20.8	446194	2.6	20.1	316606	2.7	19.8
361851	2.3	20.7	177587	2.4	19.9	473592	2.4	19.7	47090	2.5	18.7	335190	2.6	20.3	378021	2.7	21.5
70612	2.3	18.4	105408	2.4	17.9	393692	2.4	20.1	345491	2.5	19.5	190500	2.6	19.6	64001	2.7	18.4
397579	2.3	20.3	12968	2.4	18.6	413266	2.4	20.5	67555	2.5	18.0	328812	2.6	19.2	154164	2.7	20.9
187054	2.3	20.2	71532	2.4	18.9	492595	2.4	20.4	105336	2.5	20.1	305618	2.6	20.7	389469	2.7	20.7
45020	2.3	17.4	511531	2.4	20.3	3891	2.4	18.3	13923	2.5	15.2	450908	2.6	21.0	225760	2.7	19.1
175544	2.3	19.8	40667	2.4	17.9	268619	2.4	20.2	328702	2.5	20.0	417545	2.6	20.0	166927	2.7	19.5
391230	2.3	20.6	244447	2.4	20.0	131141	2.4	19.8	101029	2.5	19.2	436877	2.6	20.4	451270	2.7	20.5
188808	2.3	19.9	494543	2.4	20.3	12707	2.4	16.6	445695	2.5	20.1	24382	2.6	17.2	261723	2.7	20.4
232938	2.3	19.7	523822	2.4	25.4	513621	2.4	21.9	417966	2.5	19.9	170498	2.6	18.2	86168	2.7	17.0
185965	2.3	19.7	265254	2.4	19.9	14822	2.4	17.2	330797	2.5	20.0	268697	2.6	20.8	345120	2.7	19.4
413804	2.3	20.4	514980	2.4	21.8	274270	2.4	19.5	202	2.5	11.6	508929	2.6	21.1	209333	2.7	20.3
225783	2.3	18.7	383084	2.4	19.7	435536	2.4	21.4	343281	2.5	19.6	520719	2.6	20.9	266065	2.7	19.3
259013	2.3	20.2	216774	2.4	20.4	399009	2.4	20.7	7422	2.5	16.0	305134	2.6	19.3	114454	2.7	19.3
282466	2.3	17.7	472366	2.4	21.2	385281	2.4	19.4	411106	2.5	20.4	191469	2.6	18.7	328435	2.7	20.5
195149	2.3	18.2	18945	2.4	18.7	432914	2.4	20.1	11964	2.5	18.6	54419	2.6	18.0	375130	2.7	20.1
223859	2.3	20.0	65793	2.4	17.8	325541	2.5	20.3	75782	2.5	19.3	173434	2.6	20.1	19422	2.7	16.8
141856	2.3	19.2	70525	2.4	19.3	243987	2.5	19.1	484200	2.5	20.7	3692	2.6	17.8	260466	2.7	20.1
306735	2.3	17.8	342065	2.4	21.6	491279	2.5	20.8	112096	2.5	19.7	265147	2.6	19.4	407149	2.7	19.4
265035	2.3	19.2	515836	2.4	21.1	267944	2.5	19.1	6671	2.5	17.6	313296	2.6	20.6	229410	2.7	20.5
135859	2.3	20.2	465342	2.4	21.4	116931	2.5	19.9	329885	2.5	20.9	33381	2.6	18.4	231147	2.7	20.6
228461	2.3	18.4	329646	2.4	19.8	444635	2.5	20.3	479355	2.5	19.2	91653	2.6	17.8	130274	2.7	20.2
229527	2.3	20.4	227736	2.4	20.2	217392	2.5	20.2	42002	2.5	17.4	266037	2.6	19.9	211722	2.7	19.7
309035	2.3	19.7	336811	2.4	21.2	482943	2.5	20.0	483069	2.5	20.9	263785	2.6	19.4	222641	2.7	19.2
518558	2.3	21.2	78946	2.4	19.2	324693	2.5	22.3	109158	2.5	20.1	179256	2.6	19.2	450680	2.7	20.5
480008	2.3	20.0	408723	2.4	21.1	251629	2.5	20.2	378205	2.6	19.4	350074	2.6	19.8	272338	2.7	20.4
505354	2.3	20.9	119964	2.4	19.1	142176	2.5	19.6	96561	2.6	18.2	387668	2.6	22.8	138366	2.7	19.3
481776	2.3	21.1	233229	2.4	18.1	490845	2.5	20.9	331846	2.6	20.0	124065	2.6	20.8	221744	2.7	20.8
391155	2.3	21.1	487494	2.4	19.9	19930	2.5	18.0	383210	2.6	21.1	223028	2.6	19.1	443801	2.7	20.9
485643	2.3	19.6	360648	2.4	18.8	333541	2.5	19.9	487048	2.6	20.6	349696	2.6	18.6	295962	2.7	20.2
415238	2.3	20.4	388022	2.4	19.9	209783	2.5	20.2	298601	2.6	19.3	220948	2.6	20.5	510260	2.7	21.1
436148	2.3	20.9	40128	2.4	17.8	79436	2.5	17.9	480041	2.6	20.3	321199	2.6	19.4	508928	2.7	20.2
66018	2.3	17.1	256924	2.4	20.3	408171	2.5	21.8	421951	2.6	19.9	158842	2.6	18.2	277776	2.7	20.8
93340	2.3	19.9	324329	2.4	19.5	301971	2.5	19.9	485577	2.6	20.3	149908	2.6	19.9	286248	2.7	19.8
478449	2.3	21.7	439679	2.4	21.0	143733	2.5	16.1	306144	2.6	19.7	290936	2.6	20.5	326085	2.7	20.2
406958	2.3	19.9	186432	2.4	18.6	168763	2.5	19.9	251678	2.6	20.9	484834	2.6	20.5	354396	2.7	19.3
226456	2.3	20.0	224058	2.4	19.6	463689	2.5	20.1	213449	2.6	19.8	440777	2.6	20.4	225085	2.7	20.0
154822	2.3	19.8	453429	2.4	21.0	148624	2.5	18.6	277330	2.6	20.7	195984	2.6	20.4	254085	2.7	20.2
216276	2.3	20.5	434041	2.4	20.6	454245	2.5	20.6	189113	2.6	18.8	4795	2.6	17.1	485345	2.7	22.2
216797	2.3	19.6	428604	2.4	21.2	9372	2.5	17.6	357480	2.6	21.3	261886	2.6	20.0	334333	2.7	19.8
88911	2.3	18.5	219100	2.4	19.1	363447	2.5	20.2	159532	2.6	20.9	495797	2.6	21.4	185717	2.7	20.7
140843	2.3	20.0	480258	2.4	21.7	279306	2.5	20.3	359922	2.6	19.8	415612	2.6	20.3	224653	2.7	19.3
48564	2.3	17.2	112196	2.4	19.3	246597	2.5	20.1	230943	2.6	19.5	485156	2.6	21.0	188664	2.7	20.8
45026	2.3	17.7	452682	2.4	20.9	269917	2.5	20.1	487574	2.6	20.1	472958	2.6	19.7	376392	2.7	21.3
287646	2.3	20.9	51615	2.4	18.9	500764	2.5	20.7	51630	2.6	18.4	192200	2.6	19.7	191546	2.7	19.6
237890	2.3	20.6	233262	2.4	20.8	518070	2.5	21.2	359229	2.6	20.8	209999	2.6	19.6	448795	2.7	20.5
224887	2.3	18.7	265203	2.4	20.2	189786	2.5	19.7	53573	2.6	18.2	101662	2.6	17.3	112534	2.7	19.6
194470	2.3	19.1	446915	2.4	21.3	60193	2.5	17.8	217709	2.6	19.8	105841	2.6	18.8	52056	2.7	19.5
367627	2.3	20.1	230627	2.4	20.7	276574	2.5	19.9	241007	2.6	20.0	226872	2.6	18.9	349689	2.7	19.5
73959	2.3	17.9	297340	2.4	18.4	262997	2.5	20.0	177691	2.6	19.1	199298	2.6	20.6	380343	2.7	20.4
469899	2.3	20.1	189822	2.4	18.1	7953	2.5	17.6	515824	2.6	21.0	329492	2.6	20.1	477434	2.7	19.9
153201	2.3	16.5	48129	2.4	17.2	291565	2.5	20.1	511009	2.6	19.9	366619	2.6	19.5	383470	2.7	19.8
523410	2.3	20.4	263900	2.4	21.0	389507	2.5	21.2	333283	2.6	19.1	175213	2.6	19.5	22890	2.7	17.7
108493	2.3	19.1	367446	2.4	21.1	489973	2.5	20.5	173222	2.6	17.9	25904	2.6	18.8	115838	2.7	18.7
8778	2.3	16.6	145228	2.4	19.5	343165	2.5	19.2	292519	2.6	20.6	38094	2.6	18.9	71505	2.7	18.7
175486	2.3	19.6	391151	2.4	23.9	44092	2.5	19.1	355077	2.6	20.4	124051	2.6	19.2	376389	2.7	20.7
244771	2.3	20.3	197734	2.4	20.3	511881	2.5	21.6	299093	2.6	20.7	479504	2.6	20.4	10544	2.7	17.4
482277	2.3	20.0	158664	2.4	19.4	380347	2.5	20.5	158710	2.6	19.3	28202	2.6	17.2			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
318864	2.7	21.0	366516	2.8	20.5	131255	2.9	19.6	515063	2.9	21.7	291267	2.9	20.3	512392	3.1	19.9
491483	2.7	20.9	292538	2.8	21.0	494579	2.9	20.5	489202	2.9	21.3	78218	2.9	19.4	290211	3.1	20.0
178825	2.7	19.9	367049	2.8	20.3	386990	2.9	19.6	75210	2.9	18.2	249907	2.9	20.6	479366	3.1	20.5
506115	2.7	21.1	333776	2.8	19.9	454746	2.9	20.7	218278	2.9	20.3	404037	2.9	20.7	102436	3.1	18.3
183622	2.7	19.1	109121	2.8	19.6	362867	2.9	20.1	54865	2.9	18.2	404964	2.9	19.6	108605	3.1	18.6
156658	2.7	19.2	272307	2.8	20.1	249903	2.9	20.4	430876	2.9	20.5	211676	2.9	19.7	373909	3.1	20.4
486636	2.7	21.7	270706	2.8	20.1	457450	2.9	20.6	212938	2.9	19.9	297119	2.9	19.6	105318	3.1	18.9
523201	2.7	20.7	277445	2.8	20.1	5503	2.9	15.9	223536	2.9	19.6	334967	2.9	21.0	176072	3.1	19.1
56600	2.7	18.5	75419	2.8	18.0	128598	2.9	19.5	415140	2.9	20.1	27962	2.9	18.4	332304	3.1	19.6
416400	2.7	21.0	306501	2.8	19.9	128112	2.9	19.3	385744	2.9	20.7	113246	2.9	19.0	182056	3.1	19.3
67017	2.7	17.4	453560	2.8	19.4	221731	2.9	21.2	471038	2.9	19.5	451349	2.9	20.8	332273	3.1	19.8
128656	2.7	19.0	139051	2.8	19.5	134569	2.9	18.1	53417	2.9	16.8	359447	2.9	20.6	30546	3.1	18.3
486960	2.7	21.4	513226	2.8	20.1	38301	2.9	17.9	431798	2.9	20.5	401407	2.9	20.5	20980	3.1	18.7
441288	2.7	19.8	515483	2.8	21.1	439178	2.9	20.1	460129	2.9	19.8	77458	2.9	18.7	8658	3.1	16.9
104089	2.7	19.5	521763	2.8	21.4	65586	2.9	18.3	471238	2.9	20.4	147545	2.9	20.2	209253	3.1	18.9
304163	2.7	19.5	132875	2.8	19.3	91654	2.9	18.0	517546	2.9	19.8	411140	2.9	20.2	438362	3.1	20.9
54138	2.7	18.3	271258	2.8	19.4	121292	2.9	19.4	123300	2.9	19.4	119438	2.9	19.6	483870	3.1	20.9
342072	2.7	19.6	117616	2.8	18.4	303054	2.9	19.3	133810	2.9	19.4	412357	2.9	21.4	522092	3.1	20.1
213607	2.7	19.1	328831	2.8	19.0	320125	2.9	20.5	307696	2.9	19.9	385561	3.0	20.6	266007	3.1	21.5
446161	2.7	19.7	440770	2.8	21.1	411902	2.9	20.7	240988	2.9	20.4	491394	3.0	20.2	428524	3.1	20.3
269216	2.7	20.0	379582	2.8	20.5	367012	2.9	20.8	223712	2.9	19.5	212649	3.0	20.0	67084	3.1	19.3
494264	2.7	19.9	271593	2.8	20.6	187951	2.9	20.4	341939	2.9	20.9	139550	3.0	19.5	482252	3.1	19.0
358598	2.7	20.4	476562	2.8	20.3	113024	2.9	19.0	314890	2.9	19.7	443133	3.0	21.3	133421	3.1	19.3
506120	2.7	20.4	356704	2.8	19.7	261447	2.9	20.1	483865	2.9	20.7	259876	3.0	18.8	484064	3.1	21.9
332733	2.7	19.6	248256	2.8	19.2	358664	2.9	21.0	114601	2.9	19.3	404609	3.0	20.4	511847	3.1	20.9
35767	2.7	17.8	371824	2.8	19.8	270724	2.9	20.1	515470	2.9	21.4	269121	3.0	19.5	161708	3.1	20.0
242484	2.7	20.4	70713	2.8	18.4	264478	2.9	20.1	64189	2.9	19.8	126057	3.0	18.6	360645	3.1	20.5
286846	2.7	20.2	419888	2.8	21.1	197246	2.9	19.4	242676	2.9	19.9	519413	3.0	20.4	228851	3.1	19.2
445948	2.7	20.9	130170	2.8	19.2	242047	2.9	20.1	25758	2.9	18.1	411089	3.0	19.5	125028	3.1	18.8
166327	2.7	20.0	270230	2.8	19.2	306486	2.9	20.1	152611	2.9	19.0	261571	3.0	20.6	94482	3.1	18.9
432952	2.7	20.2	363758	2.8	19.9	372938	2.9	21.3	265094	2.9	19.4	461328	3.0	21.1	271355	3.1	20.2
78933	2.7	18.7	33052	2.8	18.8	342073	2.9	20.8	369734	2.9	21.4	402500	3.0	20.3	456063	3.1	21.6
199916	2.7	20.9	74338	2.8	18.2	387295	2.9	20.4	334160	2.9	21.2	73060	3.0	19.9	57679	3.1	19.0
432390	2.7	20.0	6798	2.8	16.2	391499	2.9	20.2	99672	2.9	19.2	74776	3.0	18.9	169100	3.1	19.8
361815	2.7	20.3	301423	2.8	20.3	108654	2.9	20.2	373118	2.9	20.6	95325	3.0	19.0	167269	3.1	18.8
51203	2.7	18.5	159822	2.8	19.8	335394	2.9	20.1	407087	2.9	21.2	307254	3.0	18.0	227681	3.1	19.9
145553	2.7	18.6	224856	2.8	20.0	44787	2.9	17.9	71299	2.9	17.4	82761	3.0	19.0	474241	3.1	21.2
355348	2.7	18.9	286621	2.8	19.7	446073	2.9	20.2	218597	2.9	19.0	252719	3.0	20.1	28634	3.1	18.2
253399	2.7	19.8	343226	2.8	21.0	317433	2.9	19.3	517952	2.9	20.4	73364	3.0	19.2	103594	3.1	18.8
279619	2.7	21.5	92307	2.8	19.3	56269	2.9	19.1	227675	2.9	20.3	88901	3.0	18.5	332966	3.1	20.2
332524	2.7	19.5	154193	2.8	19.0	369795	2.9	20.8	118497	2.9	20.4	139707	3.0	20.7	286830	3.1	19.9
210521	2.7	18.8	307507	2.8	19.2	132922	2.9	19.8	53228	2.9	18.4	175906	3.0	20.5	245878	3.1	20.1
277367	2.7	20.8	53060	2.8	18.9	412382	2.9	20.4	243465	2.9	20.0	359415	3.0	20.4	57262	3.1	17.2
111271	2.7	19.3	60603	2.8	19.7	15991	2.9	16.3	405289	2.9	18.7	226535	3.0	19.8	42931	3.1	16.9
431637	2.7	21.0	13729	2.8	17.7	20290	2.9	18.8	45199	2.9	17.7	307647	3.0	20.2	191897	3.1	19.3
487415	2.8	21.2	107625	2.8	20.9	418463	2.9	21.2	25433	2.9	17.7	199839	3.0	21.0	503889	3.1	20.8
40185	2.8	18.6	517556	2.8	20.7	448870	2.9	20.0	76983	2.9	18.6	303079	3.0	20.4	408616	3.1	21.2
325890	2.8	20.0	507355	2.8	20.1	50087	2.9	18.2	176993	2.9	18.4	80802	3.0	20.1	186935	3.1	18.9
354618	2.8	21.5	451917	2.8	20.3	57493	2.9	17.6	508932	2.9	21.5	300754	3.0	22.0	296771	3.1	19.3
125383	2.8	19.0	479425	2.8	20.1	206423	2.9	18.8	63316	2.9	19.2	199696	3.0	19.7	401079	3.1	20.1
267836	2.8	19.2	274263	2.8	20.3	331979	2.9	19.4	124089	2.9	20.5	521782	3.0	19.8	401326	3.1	21.0
438097	2.8	19.7	35425	2.8	17.8	411515	2.9	20.7	72134	2.9	18.6	74137	3.0	18.4	419380	3.1	19.9
284223	2.8	20.6	511748	2.8	21.2	244200	2.9	19.5	104061	2.9	18.7	211221	3.0	19.2	179203	3.1	19.8
404838	2.8	22.0	484202	2.8	20.8	501620	2.9	19.9	511884	2.9	20.3	366507	3.0	21.0	368857	3.1	21.1
520483	2.8	21.3	226577	2.8	19.3	435163	2.9	21.5	8754	2.9	17.1	133762	3.0	19.5	333755	3.1	19.5
392307	2.8	20.2	340029	2.8	20.8	218781	2.9	19.4	32222	2.9	16.5	311829	3.0	20.2	353248	3.1	20.2
264848	2.8	20.4	168316	2.8	17.0	406267	2.9	20.0	403097	2.9	21.4	228014	3.0	20.5	227040	3.1	19.8
260581	2.8	20.3	261095	2.8	20.5	103433	2.9	19.1	458136	2.9	20.5	470980	3.0	20.4	385754	3.1	20.7
329432	2.8	20.2	381143	2.8	21.3	511858	2.9	21.1	324282	2.9	20.2	184312	3.0	19.5	481838	3.1	21.0
484546	2.8	21.4	184331	2.8	20.4	355445	2.9	20.2	206521	2.9	19.2	63421	3.0	19.2	521666	3.1	21.6
496177	2.8	21.4	507268	2.8	20.7	340194	2.9	20.3	43249	2.9	17.6	482842	3.0	20.9	120315	3.1	19.3
90529	2.8	19.5	102499	2.8	18.2	20338	2.9	18.8	359734	2.9	20.3	261786	3.0	19.7	396551	3.1	19.5
354631	2.8	21.1	270289	2.8	19.1	6506	2.9	17.2	349809	2.9	21.4	520224	3.0	20.7	515818	3.1	21.2
36251	2.8	18.3	168191	2.8	20.0	118653	2.9	19.2	227704	2.9	19.6	276375	3.1	20.1	291149	3.1	20.2
213136	2.8	19.3	381089	2.8	20.2	162327	2.9	18.6	339914	2.9	21.5	511878	3.1	21.2	517045	3.1	20.9
325548	2.8	20.6	353407	2.8	20.8	102998	2.9	17.7	428619	2.9	21.1	263050	3.1	19.7	358335	3.1	20.5
521998	2.8	20.5	472838	2.8	20.1	227699	2.9	18.9	181202	2.9	20.1	340211	3.1	20.0	352989	3.1	19.5
477902	2.8	20.1	113801	2.8	18.7	138017	2.9	18.8	388160	2.9	20.7	233428	3.1	20.3	83345	3.1	18.0
361267	2.8	21.0	80621	2.8	18.2	483033	2.9	20.8	316667	2.9	20.5	151890	3.1	19.9	216216	3.1	20.2
478478	2.8	19.3	280976	2.8	20.0	211596	2.9	19.3	274493	2.9	20.9	315920	3.1	20.7	57973	3.1	19.4
89462	2.8	19.1	24109	2.9	16.5	266017	2.9	20.3	413434	2.9	17.7	59116	3.1				

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
454461	3.1	21.4	358260	3.2	20.4	283632	3.3	19.7	520685	3.4	21.2	130723	3.4	19.4	37662	3.5	18.4
47286	3.1	18.1	247287	3.2	19.1	104307	3.3	17.7	224601	3.4	19.8	168768	3.4	19.8	221498	3.5	19.0
449049	3.2	20.8	387341	3.2	20.6	439874	3.3	20.6	289552	3.4	19.8	76583	3.4	17.6	301585	3.5	20.6
273515	3.2	19.6	484527	3.2	21.9	314231	3.3	20.0	169821	3.4	19.5	144007	3.4	18.6	32527	3.5	17.2
290226	3.2	20.7	441358	3.2	20.0	273764	3.3	20.9	480983	3.4	18.9	75181	3.4	18.6	130004	3.5	19.7
154163	3.2	19.0	8217	3.2	17.8	190212	3.3	19.7	364288	3.4	20.1	70768	3.4	17.8	69943	3.5	18.0
176961	3.2	19.3	220929	3.2	21.4	21596	3.3	17.5	271700	3.4	21.2	249200	3.4	19.8	133783	3.5	18.9
168067	3.2	20.6	434298	3.2	21.1	284637	3.3	20.0	331264	3.4	20.7	73978	3.4	19.0	147015	3.5	20.6
223052	3.2	19.5	347491	3.2	19.4	336077	3.3	21.6	62965	3.4	19.6	326559	3.4	20.7	366508	3.5	21.7
215756	3.2	20.9	302532	3.2	20.9	209030	3.3	20.2	334251	3.4	19.4	102858	3.4	19.0	183484	3.5	20.0
129484	3.2	19.5	300290	3.2	20.4	317210	3.3	20.9	296175	3.4	19.9	119142	3.4	18.7	504045	3.5	20.4
440769	3.2	19.9	514244	3.2	21.7	231154	3.3	20.1	195895	3.4	19.2	293223	3.4	20.9	361821	3.5	20.8
364847	3.2	21.0	266115	3.2	19.8	22418	3.3	17.3	162225	3.4	19.1	273507	3.4	20.5	13247	3.5	17.8
410896	3.2	21.1	408640	3.2	20.9	459365	3.3	20.7	383116	3.4	19.6	300702	3.4	19.2	475720	3.5	19.9
112428	3.2	17.8	320147	3.2	20.3	27880	3.3	18.3	487936	3.4	21.0	41167	3.4	17.7	156873	3.5	20.0
448963	3.2	21.1	308283	3.2	20.0	91539	3.3	18.4	199666	3.4	20.1	448358	3.4	21.2	37341	3.5	19.4
201693	3.2	19.7	80657	3.2	18.3	367448	3.3	22.0	85988	3.4	19.1	68776	3.4	19.3	361012	3.5	21.5
245832	3.2	19.6	89064	3.2	19.6	515502	3.3	20.5	490481	3.4	20.7	196085	3.4	19.8	329562	3.5	20.6
434045	3.2	20.3	494599	3.2	19.6	59644	3.3	17.9	477851	3.4	21.4	129076	3.4	19.2	439701	3.5	20.6
520783	3.2	20.9	460555	3.2	19.8	1318	3.3	16.0	6310	3.4	15.7	143105	3.4	17.4	477788	3.5	21.1
472815	3.2	19.8	133709	3.2	18.5	331183	3.3	20.6	8699	3.4	18.9	97917	3.4	18.7	374636	3.5	22.0
10617	3.2	15.7	406764	3.2	20.5	510134	3.3	20.4	42014	3.4	18.9	475342	3.4	20.7	453006	3.5	21.6
67894	3.2	18.6	484411	3.2	20.9	379146	3.3	20.5	178130	3.4	19.3	223333	3.4	19.4	101062	3.5	19.4
261538	3.2	20.0	103370	3.2	19.8	321507	3.3	20.8	42765	3.4	18.4	301812	3.4	20.2	386681	3.5	19.9
319161	3.2	20.5	134608	3.2	17.6	7131	3.3	15.6	90248	3.4	19.7	414515	3.4	21.4	7863	3.5	17.4
181009	3.2	20.1	491283	3.2	19.8	518100	3.3	20.3	67739	3.4	19.3	180731	3.5	19.7	20492	3.5	17.0
265592	3.2	21.0	446092	3.2	20.9	373029	3.3	21.1	66049	3.4	18.4	486930	3.5	20.8	200190	3.5	20.0
222411	3.2	19.1	189373	3.2	19.9	224063	3.3	19.7	521919	3.4	21.2	55483	3.5	17.8	186625	3.5	20.1
443715	3.2	21.2	178788	3.2	19.7	111178	3.3	19.8	332486	3.4	20.3	288057	3.5	19.9	500597	3.5	20.0
385438	3.2	21.4	214044	3.2	19.3	267549	3.3	20.6	17485	3.4	15.7	267774	3.5	20.0	113208	3.5	19.3
223063	3.2	19.1	265396	3.2	19.2	467833	3.3	21.5	371817	3.4	20.8	276189	3.5	20.9	267541	3.5	20.6
411584	3.2	19.5	251191	3.2	20.0	510561	3.3	21.2	438451	3.4	20.1	351007	3.5	19.7	124063	3.5	19.8
206044	3.2	19.8	409094	3.2	20.5	10603	3.3	17.5	96809	3.4	19.0	389445	3.5	21.0	119027	3.5	20.3
28959	3.2	18.1	359293	3.2	20.8	337314	3.3	18.1	19574	3.4	17.2	513605	3.5	20.8	249457	3.5	19.0
195708	3.2	20.6	150451	3.2	20.2	26460	3.3	18.5	330546	3.4	18.9	13441	3.5	15.8	308856	3.5	21.1
275149	3.2	20.1	119292	3.2	19.2	24388	3.3	16.3	332793	3.4	20.0	185008	3.5	20.3	510268	3.5	21.6
91881	3.2	18.6	222214	3.2	20.3	515285	3.3	20.8	473574	3.4	20.0	115828	3.5	17.9	483860	3.5	20.6
279631	3.2	19.2	111478	3.2	19.5	245977	3.3	18.4	133638	3.4	18.9	224775	3.5	19.8	86625	3.5	19.7
414608	3.2	21.2	132731	3.2	19.6	304092	3.3	20.2	15867	3.4	18.5	520693	3.5	21.2	176615	3.5	20.3
183579	3.2	18.9	409123	3.2	19.3	393539	3.3	20.4	485192	3.4	21.4	143159	3.5	19.1	64876	3.5	19.2
91886	3.2	19.2	395586	3.3	20.1	35351	3.3	18.7	166292	3.4	20.4	98907	3.5	17.5	364330	3.6	20.0
201627	3.2	19.2	33838	3.3	19.5	133145	3.3	19.1	157422	3.4	19.6	292729	3.5	18.7	469368	3.6	20.9
432234	3.2	21.8	187384	3.3	20.6	484212	3.3	20.5	188397	3.4	20.0	220520	3.5	19.1	1466	3.6	16.2
270096	3.2	19.1	358112	3.3	19.5	333060	3.3	20.5	402001	3.4	20.3	188506	3.5	19.7	15204	3.6	16.7
256453	3.2	20.0	445323	3.3	22.2	37428	3.3	17.1	240416	3.4	20.9	349929	3.5	19.5	15232	3.6	16.6
167350	3.2	19.4	364787	3.3	19.6	303519	3.3	20.3	64963	3.4	18.2	150401	3.5	19.0	124092	3.6	20.1
230388	3.2	19.9	325739	3.3	20.3	302709	3.3	19.3	311718	3.4	19.7	246929	3.5	19.9	376978	3.6	20.6
409042	3.2	20.8	209763	3.3	19.9	223384	3.3	19.1	406775	3.4	20.1	238569	3.5	18.9	137522	3.6	19.7
333201	3.2	20.4	53915	3.3	19.1	301790	3.3	20.2	414376	3.4	20.7	356516	3.5	21.2	215311	3.6	20.1
173180	3.2	19.6	48629	3.3	16.6	69532	3.3	19.2	226652	3.4	20.1	271506	3.5	19.7	212156	3.6	19.5
517364	3.2	22.2	190697	3.3	19.6	60479	3.3	19.4	300418	3.4	21.1	171083	3.5	19.5	1363	3.6	15.4
420947	3.2	20.1	463458	3.3	20.6	20758	3.3	16.4	247567	3.4	19.2	226437	3.5	19.5	214867	3.6	21.0
340964	3.2	21.1	328731	3.3	19.7	470966	3.3	20.9	211282	3.4	19.4	480797	3.5	21.0	515936	3.6	21.1
223136	3.2	19.2	51209	3.3	18.3	414340	3.3	20.9	520879	3.4	20.0	318428	3.5	20.4	495794	3.6	20.5
192395	3.2	19.2	399337	3.3	19.9	213388	3.3	20.3	460242	3.4	19.5	325991	3.5	19.7	13833	3.6	16.4
449910	3.2	20.2	104846	3.3	19.1	448501	3.3	20.7	177386	3.4	19.4	41347	3.5	18.0	413191	3.6	20.2
482704	3.2	20.9	422050	3.3	20.7	156871	3.3	19.7	475332	3.4	20.0	516833	3.5	20.8	80874	3.6	19.4
109875	3.2	19.1	449646	3.3	20.8	10125	3.3	17.1	188971	3.4	20.1	459333	3.5	20.2	208808	3.6	19.6
229005	3.2	18.6	217863	3.3	19.4	187593	3.3	20.1	52516	3.4	18.8	242241	3.5	19.6	46861	3.6	17.7
390732	3.2	20.5	438032	3.3	21.9	147258	3.3	19.4	130355	3.4	19.3	293573	3.5	20.0	143888	3.6	18.6
255522	3.2	19.5	109216	3.3	19.6	149357	3.3	18.9	407025	3.4	19.7	30168	3.5	18.7	267006	3.6	20.8
495332	3.2	20.9	150107	3.3	18.0	488162	3.3	20.9	307516	3.4	19.9	102555	3.5	19.2	353775	3.6	21.4
175101	3.2	19.3	122143	3.3	20.4	223921	3.3	19.0	174085	3.4	18.9	178914	3.5	18.4	397979	3.6	20.8
356537	3.2	20.6	5684	3.3	17.0	141459	3.3	19.3	369858	3.4	21.1	399362	3.5	20.5	278120	3.6	20.4
195003	3.2	19.1	160329	3.3	20.0	272877	3.3	20.4	262425	3.4	20.2	366361	3.5	20.6	391534	3.6	20.9
246060	3.2	21.1	414952	3.3	21.2	372204	3.3	20.8	29994	3.4	17.9	283020	3.5	19.0	46055	3.6	19.2
484491	3.2	22.1	482706	3.3	20.5	271372	3.3	19.4	175092	3.4	19.9	216470	3.5	20.1	295180	3.6	21.1
85152	3.2	19.5	187381	3.3	20.4	407189	3.3	19.8	421934	3.4	21.1	231228	3.5	19.1	268229	3.6	19.8
244300	3.2	20.0	325722	3.3	20.1	401550	3.3	21.3	263325	3.4	19.6	82120	3.5	19.4	42551	3.6	18.5
361336	3.2	20.4	458529	3.3	20.8	247054	3.3	18.5	482074	3.4	20.1	515398	3.5	21.6	520587	3.6	21.3
225340	3.2	20.8	60144	3.3	19.3	29778	3.3	18.3	305760	3.4	20.1	329252	3.5	21.0	4		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
400652	3.6	21.1	441886	3.7	21.4	107457	3.7	18.4	401476	3.8	21.0	148647	3.9	19.1	493421	3.9	20.2
477272	3.6	19.9	170530	3.7	19.6	188404	3.7	20.8	277746	3.8	19.9	397302	3.9	21.1	187609	3.9	20.1
135959	3.6	18.5	41820	3.7	18.1	147459	3.7	20.2	497788	3.8	20.9	22594	3.9	18.1	487470	3.9	21.1
48496	3.6	18.3	221994	3.7	18.2	356991	3.7	23.2	118648	3.8	19.6	45648	3.9	17.2	148559	3.9	19.9
480935	3.6	20.2	15187	3.7	18.1	131283	3.7	19.8	269383	3.8	19.6	73070	3.9	20.1	113991	3.9	17.6
309637	3.6	20.4	121589	3.7	20.0	73046	3.7	19.5	448956	3.8	20.8	326789	3.9	19.3	6026	3.9	16.7
443366	3.6	19.8	377312	3.7	20.1	365633	3.7	20.5	460508	3.8	20.5	453486	3.9	20.1	267526	3.9	19.7
97619	3.6	19.1	302713	3.7	19.4	29807	3.7	17.5	160051	3.8	18.4	227837	3.9	19.2	99682	3.9	19.5
58658	3.6	18.5	375189	3.7	19.6	490947	3.7	21.4	226111	3.8	18.0	195047	3.9	19.5	108585	3.9	18.7
520809	3.6	20.7	334210	3.7	21.2	441745	3.7	20.6	364923	3.8	21.2	324778	3.9	20.8	291705	3.9	19.8
509666	3.6	22.4	297205	3.7	20.5	88478	3.7	19.4	250504	3.8	20.1	68172	3.9	18.3	260742	3.9	20.7
267658	3.6	19.7	91572	3.7	18.8	516757	3.7	21.4	61216	3.8	19.1	308932	3.9	18.8	303133	3.9	20.1
483986	3.6	21.7	148281	3.7	20.6	6713	3.7	17.1	482575	3.8	18.5	308940	3.9	20.6	386994	3.9	19.5
211331	3.6	20.2	376744	3.7	19.6	112998	3.7	19.1	33176	3.8	18.9	309603	3.9	19.9	272096	3.9	20.3
19745	3.6	18.1	218069	3.7	20.6	321525	3.7	18.9	460128	3.8	20.1	428591	3.9	21.9	284694	3.9	20.0
120802	3.6	19.5	82303	3.7	19.0	181410	3.7	19.0	514178	3.8	22.2	119442	3.9	18.3	195702	3.9	19.8
69439	3.6	18.8	143792	3.7	19.4	64846	3.7	18.8	391168	3.8	20.4	205953	3.9	20.8	415420	3.9	21.1
361328	3.6	20.9	516420	3.7	23.5	382717	3.7	19.4	515861	3.8	21.0	487750	3.9	19.7	370025	3.9	20.6
445921	3.6	20.6	347954	3.7	19.9	518383	3.7	21.1	4493	3.8	15.1	124728	3.9	20.2	231566	3.9	20.1
328441	3.6	21.5	242055	3.7	20.8	270962	3.7	19.3	51743	3.8	19.3	490805	3.9	20.5	301911	3.9	18.8
209490	3.6	20.5	355326	3.7	20.1	475040	3.7	21.7	222892	3.8	19.8	240128	3.9	21.5	249000	3.9	19.3
485346	3.6	22.2	438217	3.7	20.2	281971	3.7	20.4	378542	3.8	20.9	84837	3.9	17.5	263643	3.9	21.0
492549	3.6	19.8	111821	3.7	17.9	263591	3.7	20.4	407946	3.8	19.7	168421	3.9	19.8	384635	3.9	20.4
77203	3.6	19.1	291088	3.7	19.9	208086	3.7	18.9	836	3.8	14.8	518579	3.9	20.6	402278	3.9	21.3
192100	3.6	17.8	138089	3.7	19.4	208094	3.7	19.8	176062	3.8	18.8	326871	3.9	19.3	227184	3.9	20.2
435409	3.6	20.4	494095	3.7	21.3	223595	3.7	20.0	331073	3.8	20.3	147741	3.9	19.9	445632	3.9	20.7
273554	3.6	20.8	214524	3.7	19.6	186346	3.7	20.2	159687	3.8	19.6	349700	3.9	21.1	191277	3.9	19.5
49851	3.6	17.3	387632	3.7	21.3	234774	3.7	20.2	228728	3.8	19.6	68497	3.9	18.6	199913	3.9	21.0
316685	3.6	20.6	70501	3.7	17.6	406291	3.7	21.0	243995	3.8	19.1	268557	3.9	20.2	420702	3.9	20.8
38101	3.6	19.5	369814	3.7	20.7	470062	3.7	21.5	267491	3.8	20.0	164981	3.9	18.7	144043	3.9	18.7
131526	3.6	18.7	121073	3.7	17.6	215622	3.7	19.5	471543	3.8	21.8	139104	3.9	19.3	20431	3.9	18.1
242416	3.6	19.8	145453	3.7	20.0	457390	3.7	21.2	354403	3.8	19.6	51648	3.9	19.6	11504	3.9	16.0
259537	3.6	20.5	412291	3.7	21.6	215185	3.7	20.2	185716	3.8	18.2	89183	3.9	19.9	213876	3.9	20.3
104395	3.6	19.6	47781	3.7	18.3	9429	3.7	17.5	307466	3.8	19.2	135812	3.9	20.6	456624	3.9	21.0
420673	3.6	20.7	296866	3.7	19.7	39547	3.7	18.7	519711	3.8	20.1	350209	3.9	19.5	493138	3.9	20.6
346548	3.6	19.4	132641	3.7	19.5	206415	3.7	18.7	246809	3.8	20.4	221041	3.9	18.7	266215	3.9	19.6
523752	3.6	21.4	154864	3.7	20.1	277028	3.7	19.8	484569	3.8	21.2	82544	3.9	19.4	298596	3.9	19.1
332819	3.6	20.2	319415	3.7	20.6	75512	3.7	17.9	300714	3.8	19.9	365038	3.9	21.2	475820	3.9	19.1
517385	3.6	22.3	133591	3.7	20.4	177706	3.8	20.4	88322	3.8	19.3	488018	3.9	21.3	60269	3.9	18.2
80684	3.6	18.9	108724	3.7	19.8	229451	3.8	20.3	88387	3.8	19.7	213909	3.9	20.4	215166	3.9	19.3
30166	3.6	17.9	74068	3.7	19.5	21509	3.8	16.9	401590	3.8	20.5	227145	3.9	20.8	184423	3.9	19.4
330181	3.6	21.8	220146	3.7	20.2	414362	3.8	20.4	156909	3.8	19.7	79872	3.9	19.2	43960	3.9	18.1
107844	3.6	19.4	457306	3.7	20.6	66464	3.8	19.0	223866	3.8	19.6	41303	3.9	20.1	89022	3.9	19.5
327097	3.6	20.1	72848	3.7	18.3	298708	3.8	18.8	191267	3.8	19.5	325830	3.9	20.5	54076	3.9	17.8
276897	3.6	21.3	402340	3.7	21.1	273078	3.8	20.9	184637	3.8	19.2	474910	3.9	20.1	354374	3.9	18.8
169803	3.6	19.9	173274	3.7	19.6	512249	3.8	21.4	271527	3.8	19.6	181806	3.9	19.9	265460	3.9	19.2
368017	3.6	20.5	177545	3.7	19.5	300775	3.8	20.3	477279	3.8	21.2	7518	3.9	16.1	412470	3.9	21.3
267121	3.6	20.6	153293	3.7	19.7	30746	3.8	19.6	460857	3.8	20.3	208088	3.9	19.9	493179	3.9	20.5
137096	3.6	19.0	117440	3.7	20.4	300389	3.8	21.1	269205	3.8	21.5	177210	3.9	19.3	494754	3.9	20.6
477857	3.6	21.6	1581	3.7	15.6	490977	3.8	21.3	11291	3.8	18.4	216166	3.9	20.2	320100	3.9	20.5
119361	3.6	19.3	225730	3.7	20.3	3812	3.8	16.1	327507	3.9	20.8	273659	3.9	21.0	442415	3.9	19.8
42648	3.6	18.5	291803	3.7	20.6	482720	3.8	20.9	190512	3.9	20.3	474417	3.9	18.9	240964	3.9	19.8
82755	3.6	18.6	81186	3.7	19.2	145326	3.8	18.8	268796	3.9	20.3	300479	3.9	19.5	447587	4.0	20.4
202261	3.6	17.7	442778	3.7	20.4	227237	3.8	20.4	164926	3.9	17.9	426829	3.9	20.3	327754	4.0	20.8
340213	3.6	20.3	483228	3.7	20.8	382420	3.8	20.1	25826	3.9	18.3	243929	3.9	19.2	124066	4.0	20.0
92147	3.6	18.3	457259	3.7	20.7	507886	3.8	21.2	126307	3.9	19.6	22047	3.9	17.8	161673	4.0	19.8
372730	3.6	20.3	2216	3.7	15.6	387156	3.8	20.6	15352	3.9	16.8	160977	3.9	19.9	177721	4.0	20.1
260248	3.6	19.5	223345	3.7	19.5	234676	3.8	20.4	166362	3.9	19.6	309592	3.9	18.7	515978	4.0	20.8
421528	3.6	21.3	173134	3.7	18.6	509591	3.8	20.7	415611	3.9	20.7	369239	3.9	20.5	215302	4.0	19.9
409168	3.6	20.2	350485	3.7	19.4	34029	3.8	18.2	270899	3.9	19.2	491482	3.9	21.8	186388	4.0	20.4
191190	3.6	19.3	76787	3.7	20.1	101896	3.8	19.1	517356	3.9	20.4	448332	3.9	21.2	386723	4.0	21.6
460517	3.6	20.6	66134	3.7	19.2	331294	3.8	20.7	162028	3.9	19.9	438025	3.9	20.0	220079	4.0	20.8
404442	3.6	20.2	145346	3.7	19.5	504074	3.8	19.6	446450	3.9	20.7	48130	3.9	18.6	251952	4.0	18.7
18561	3.6	18.0	369009	3.7	22.0	9971	3.8	16.9	7553	3.9	17.4	273224	3.9	20.1	43890	4.0	19.7
297993	3.6	19.6	3706	3.7	15.6	299421	3.8	20.6	418693	3.9	20.7	163323	3.9	20.4	522015	4.0	20.6
388257	3.6	20.6	38993	3.7	18.6	112015	3.8	20.2	34271	3.9	18.7	371274	3.9	21.3	61812	4.0	19.1
90682	3.6	18.6	458006	3.7	20.7	180719	3.8	19.8	241255	3.9	20.1	340113	3.9	19.9	441731	4.0	20.7
424577	3.6	22.0	326778	3.7	19.2	337603	3.8	18.9	43326	3.9	18.2	210356	3.9	19.5	224081	4.0	20.5
326499	3.6	21.5	449396	3.7	20.9	154404	3.8	18.9	351369	3.9	20.2	319616	3.9	20.1	326844	4.0	19.9
440077	3.6	21.7	305212	3.7	19.7	56360	3.8	17.3	65187	3.9	19.4	310559	3.9	19.4	180000	4.0	18.1
362718	3.6	20.2	227698	3.7	20.6	107210	3.8	19.3	212997	3.9	19.7	20525	3.9	17.2	230191		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
53374	4.0	17.5	404172	4.1	21.4	103489	4.2	18.9	367396	4.2	21.3	265456	4.3	20.4	268233	4.4	20.4
267838	4.0	19.7	406281	4.1	20.7	260085	4.2	20.9	166257	4.2	21.4	310599	4.3	19.8	476515	4.4	19.7
102219	4.0	19.1	197690	4.1	20.1	181962	4.2	19.8	188569	4.2	20.1	215617	4.3	19.7	224109	4.4	19.1
298631	4.0	18.9	259400	4.1	20.2	158655	4.2	19.8	409723	4.2	20.5	227036	4.3	19.6	408675	4.4	19.9
263224	4.0	20.6	175533	4.1	19.6	487521	4.2	20.2	201166	4.2	20.0	77434	4.3	18.9	243151	4.4	20.7
473382	4.0	20.5	1925	4.1	15.1	484782	4.2	20.4	483356	4.2	20.3	51729	4.3	18.6	209832	4.4	20.3
90423	4.0	19.1	301983	4.1	19.6	84327	4.2	18.2	41241	4.2	18.9	499842	4.3	21.2	422350	4.4	19.6
364007	4.0	19.9	103430	4.1	18.1	389846	4.2	20.0	489177	4.2	21.4	266024	4.3	20.7	113283	4.4	18.9
517392	4.0	21.8	228503	4.1	18.8	390529	4.2	20.0	39514	4.2	16.6	358701	4.3	21.1	302540	4.4	21.2
277110	4.0	19.0	241853	4.1	20.1	132812	4.2	20.3	515897	4.3	20.7	103304	4.3	18.9	487234	4.4	21.7
109973	4.0	18.8	492259	4.1	20.1	109384	4.2	19.4	167113	4.3	20.7	328763	4.3	20.5	191544	4.4	20.5
362716	4.0	20.3	13345	4.1	16.8	88821	4.2	20.5	460487	4.3	19.9	474834	4.3	21.2	28419	4.4	18.9
198792	4.0	19.4	381042	4.1	19.3	231178	4.2	20.0	486751	4.3	20.9	430008	4.3	20.9	256898	4.4	20.1
353148	4.0	20.7	286311	4.1	20.1	337139	4.2	18.6	278976	4.3	20.6	226442	4.3	20.2	271068	4.4	18.9
125154	4.0	18.9	409056	4.1	19.1	447985	4.2	20.6	429762	4.3	21.1	150690	4.3	19.8	177611	4.4	20.2
185897	4.0	20.2	77704	4.1	19.3	139467	4.2	19.4	296015	4.3	20.4	418667	4.3	20.5	356035	4.4	19.8
158743	4.0	19.0	13457	4.1	17.6	241106	4.2	20.3	407153	4.3	19.3	109012	4.3	19.2	78246	4.4	18.6
83682	4.0	19.3	355370	4.1	19.4	51065	4.2	18.9	472065	4.3	19.6	139803	4.3	19.1	482610	4.4	21.0
479561	4.0	19.9	197028	4.1	18.6	152744	4.2	19.1	86172	4.3	18.5	244449	4.3	19.4	219496	4.4	20.2
401604	4.0	20.4	403500	4.1	20.4	325540	4.2	20.3	7602	4.3	17.4	226659	4.3	19.7	167143	4.4	18.6
251270	4.0	20.3	455689	4.1	19.8	297991	4.2	19.7	321466	4.3	19.9	295099	4.3	20.9	501566	4.4	20.6
230688	4.0	20.5	96917	4.1	18.1	517398	4.2	21.2	419323	4.3	20.6	50436	4.3	18.5	355347	4.4	19.8
307896	4.1	20.8	401592	4.1	20.7	275965	4.2	19.5	33831	4.3	18.3	333179	4.3	20.2	263940	4.4	20.3
265191	4.1	19.3	440028	4.1	22.3	448540	4.2	20.3	149926	4.3	19.7	484182	4.3	20.9	74934	4.4	18.1
33326	4.1	19.0	260019	4.1	19.5	410125	4.2	20.9	451533	4.3	20.5	9018	4.3	17.3	5900	4.4	16.5
425584	4.1	21.4	421991	4.1	19.6	233439	4.2	19.3	182046	4.3	20.0	9866	4.3	16.6	207130	4.4	20.3
369465	4.1	20.3	302705	4.1	20.0	167428	4.2	19.4	302663	4.3	19.8	205407	4.3	20.7	485149	4.4	20.8
85760	4.1	19.3	185255	4.1	20.3	112908	4.2	19.8	404382	4.3	20.7	54374	4.3	18.4	13576	4.4	17.9
330354	4.1	19.8	242078	4.1	19.9	361877	4.2	21.4	475095	4.3	20.8	320094	4.3	20.7	483057	4.4	20.2
408732	4.1	20.2	158278	4.1	18.1	318802	4.2	20.9	376135	4.3	19.6	28051	4.3	18.8	305956	4.4	19.8
134914	4.1	19.2	286913	4.1	20.8	375196	4.2	19.5	181397	4.3	19.6	86904	4.3	19.2	403074	4.4	21.2
306851	4.1	20.6	402675	4.1	21.2	5946	4.2	16.6	449640	4.3	19.7	105569	4.3	18.8	94254	4.4	19.1
454074	4.1	19.1	113106	4.1	19.5	246785	4.2	19.9	94203	4.3	19.3	34941	4.3	18.0	331362	4.4	21.0
156866	4.1	18.2	485770	4.1	20.8	448302	4.2	20.2	204993	4.3	20.4	454955	4.3	20.2	370027	4.4	21.9
130160	4.1	20.2	373579	4.1	19.4	216045	4.2	20.7	285309	4.3	20.0	246440	4.3	20.5	266051	4.4	21.0
337854	4.1	19.1	226467	4.1	19.2	227313	4.2	20.9	486193	4.3	19.7	49917	4.4	17.9	484458	4.4	21.8
298202	4.1	18.0	312602	4.1	19.7	205993	4.2	20.9	278155	4.3	21.7	112017	4.4	19.8	427796	4.4	22.0
237019	4.1	19.3	21914	4.1	18.0	253400	4.2	19.8	46411	4.3	18.4	9005	4.4	17.3	509520	4.4	20.7
211997	4.1	20.3	226669	4.1	20.9	519119	4.2	21.1	477306	4.3	21.8	411060	4.4	19.7	114064	4.4	18.6
220812	4.1	19.2	89275	4.1	17.0	287154	4.2	21.0	239964	4.3	20.2	123835	4.4	19.3	156141	4.4	19.3
417408	4.1	21.0	12550	4.1	16.9	390644	4.2	21.4	254858	4.3	19.8	226979	4.4	19.1	331685	4.4	21.9
484513	4.1	21.3	64519	4.1	19.1	483911	4.2	21.6	65641	4.3	17.3	162241	4.4	19.4	340922	4.4	20.3
122077	4.1	20.3	324787	4.1	19.5	522088	4.2	20.7	108527	4.3	20.2	351436	4.4	20.5	194975	4.4	19.4
450373	4.1	21.1	240141	4.1	19.4	517400	4.2	21.6	85233	4.3	20.2	487503	4.4	20.6	395651	4.4	20.4
116650	4.1	19.8	52357	4.1	18.6	302584	4.2	20.7	164714	4.3	18.7	386648	4.4	21.2	96116	4.4	19.2
180272	4.1	19.2	493975	4.1	19.9	128006	4.2	20.1	449413	4.3	20.5	312377	4.4	20.1	493224	4.4	20.3
45352	4.1	16.2	434493	4.1	19.5	362978	4.2	19.6	404763	4.3	21.2	302589	4.4	20.6	117584	4.4	19.3
372856	4.1	19.9	194522	4.1	18.7	206511	4.2	20.1	267950	4.3	20.3	307912	4.4	19.7	228746	4.4	21.0
487909	4.1	20.6	108581	4.1	19.2	490409	4.2	20.7	233645	4.3	20.4	129870	4.4	18.4	228804	4.4	19.7
264312	4.1	19.2	441799	4.1	19.7	150404	4.2	19.8	414613	4.3	20.1	398498	4.4	21.2	517516	4.5	21.5
30270	4.1	18.9	81780	4.1	20.0	268182	4.2	19.9	215902	4.3	20.0	332299	4.4	19.5	293978	4.5	21.2
460730	4.1	19.4	7659	4.1	17.6	16991	4.2	17.8	267872	4.3	19.8	96269	4.4	19.0	294996	4.5	21.2
500	4.1	12.5	319882	4.1	21.2	175306	4.2	20.1	411535	4.3	20.4	477253	4.4	20.9	163484	4.5	18.9
286868	4.1	19.9	318368	4.1	20.5	329143	4.2	20.7	332250	4.3	19.8	278211	4.4	21.5	487945	4.5	20.5
443106	4.1	19.9	15636	4.2	17.7	17765	4.2	17.7	294265	4.3	20.5	311390	4.4	20.0	239025	4.5	19.9
331671	4.1	20.6	487136	4.2	20.9	114550	4.2	18.2	414324	4.3	20.6	254304	4.4	20.8	453735	4.5	20.2
217570	4.1	19.8	150162	4.2	19.0	451971	4.2	20.8	242104	4.3	19.6	279029	4.4	18.8	66045	4.5	20.4
261275	4.1	20.2	422196	4.2	21.3	90660	4.2	19.1	335433	4.3	19.9	458420	4.4	20.8	336575	4.5	19.6
225686	4.1	21.0	241800	4.2	19.2	95643	4.2	18.9	356112	4.3	20.2	392790	4.4	20.4	36128	4.5	17.9
188427	4.1	18.9	357465	4.2	21.2	458469	4.2	21.5	96345	4.3	19.4	197042	4.4	19.9	175420	4.5	20.1
150732	4.1	19.3	330438	4.2	20.5	247096	4.2	20.0	206458	4.3	19.1	104740	4.4	19.8	99377	4.5	19.0
100867	4.1	20.5	27739	4.2	17.3	468733	4.2	20.8	223979	4.3	19.7	27617	4.4	17.7	242193	4.5	19.6
487438	4.1	20.0	267147	4.2	20.3	368361	4.2	21.6	269178	4.3	20.2	115989	4.4	19.4	471937	4.5	20.2
67427	4.1	19.1	444932	4.2	20.0	395107	4.2	19.3	264370	4.3	20.3	253333	4.4	20.0	415407	4.5	21.0
252802	4.1	20.4	376681	4.2	20.6	275572	4.2	20.2	442270	4.3	21.3	196033	4.4	19.7	312809	4.5	20.3
51228	4.1	17.7	120426	4.2	19.7	138952	4.2	19.0	208101	4.3	19.6	5454	4.4	16.5	520635	4.5	21.0
254984	4.1	20.1	496465	4.2	21.4	22028	4.2	18.1	267794	4.3	19.7	181558	4.4	19.8	398030	4.5	19.8
305071	4.1	20.1	296550	4.2	20.5	176923	4.2	18.8	291903	4.3	19.9	308836	4.4	20.4	491370	4.5	19.8
243553	4.1	19.7	131636	4.2	19.6	523465	4.2	20.1	409712	4.3	20.5	152200	4.4	19.7	294193	4.5	19.5
511260	4.1	21.2	44258	4.2	16.6	29886	4.2	17.5	240473	4.3	20.3	230579	4.4	19.0	2356	4.5	15.7
77135	4.1	18.7	495062	4.2	21.0	446132	4.2	20.6	518729	4.3	21.7	473583	4.4	21.1			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
260547	4.5	19.7	455437	4.6	20.2	270275	4.6	20.2	214818	4.7	20.3	398695	4.8	19.6	62674	4.8	19.6
320117	4.5	20.4	294243	4.6	20.0	101264	4.6	18.8	516893	4.7	21.9	228934	4.8	21.3	381040	4.8	19.5
287676	4.5	20.3	333814	4.6	20.7	318290	4.6	19.8	205092	4.7	19.1	25023	4.8	19.1	38168	4.8	16.6
42012	4.5	18.0	99782	4.6	19.3	22874	4.6	16.8	210844	4.7	19.5	490054	4.8	22.0	251362	4.8	18.9
2210	4.5	16.8	105253	4.6	17.7	460845	4.6	21.3	98593	4.7	17.9	196102	4.8	19.3	481954	4.8	20.5
363398	4.5	20.9	71525	4.6	19.3	329549	4.6	20.9	208912	4.7	19.7	212187	4.8	20.4	69146	4.8	18.9
189941	4.5	19.1	265075	4.6	19.8	180097	4.6	20.7	445212	4.7	20.9	514925	4.8	20.8	49389	4.8	17.9
66306	4.5	18.5	28934	4.6	18.0	196168	4.6	19.0	79240	4.7	19.6	90989	4.8	18.0	58075	4.8	18.3
230586	4.5	20.5	62052	4.6	18.0	351102	4.6	19.1	228828	4.7	19.0	484153	4.8	20.5	188215	4.8	19.1
291668	4.5	20.8	98998	4.6	19.9	256618	4.6	20.2	232901	4.7	19.6	191168	4.8	19.6	15796	4.8	17.2
164724	4.5	18.7	19979	4.6	15.5	224881	4.6	19.4	337937	4.7	19.7	125157	4.8	20.5	517109	4.8	20.4
94312	4.5	17.5	193229	4.6	20.1	480831	4.6	19.0	126696	4.7	20.0	407581	4.8	20.6	28497	4.8	19.5
149655	4.5	19.2	415364	4.6	22.4	298514	4.6	18.7	267058	4.7	20.1	331695	4.8	20.2	404345	4.8	20.7
11044	4.5	16.7	393246	4.6	21.8	409824	4.6	20.4	488687	4.7	20.9	368345	4.8	21.7	190236	4.8	20.2
446017	4.5	20.9	58093	4.6	18.3	44827	4.6	17.5	201728	4.7	20.2	39944	4.8	18.6	458075	4.8	20.9
108109	4.5	19.2	368154	4.6	19.8	128709	4.6	18.9	169916	4.7	19.0	314682	4.8	19.0	97816	4.8	18.7
440822	4.5	20.3	25362	4.6	16.5	430552	4.6	22.6	184898	4.7	20.1	240403	4.8	20.7	301925	4.8	19.5
41007	4.5	18.7	98096	4.6	19.0	247762	4.7	19.9	334283	4.7	19.7	353335	4.8	20.3	388166	4.8	19.8
386702	4.5	19.9	148246	4.6	19.5	229791	4.7	19.4	257076	4.7	20.1	422337	4.8	20.8	390224	4.8	21.1
43568	4.5	18.0	459357	4.6	21.4	470188	4.7	20.9	24091	4.7	17.9	293000	4.8	20.0	264921	4.8	19.9
432967	4.5	21.4	98883	4.6	18.8	358253	4.7	20.4	311325	4.7	19.7	456331	4.8	20.7	259076	4.8	19.0
202522	4.5	21.0	280156	4.6	20.1	343698	4.7	21.4	261371	4.7	19.9	473679	4.8	20.0	198747	4.8	18.7
230189	4.5	19.9	144509	4.6	18.9	127408	4.7	19.5	393733	4.7	20.6	49469	4.8	18.7	511673	4.8	20.5
83107	4.5	19.6	223956	4.6	19.2	189160	4.7	20.3	312820	4.7	19.9	78562	4.8	18.7	82231	4.8	19.8
491624	4.5	21.0	381036	4.6	19.0	168751	4.7	19.4	175644	4.7	19.5	14507	4.8	17.5	410162	4.8	21.5
31078	4.5	18.4	404392	4.6	21.0	347573	4.7	18.6	464364	4.7	19.7	91895	4.8	17.7	3090	4.8	17.4
414381	4.5	20.4	510251	4.6	22.0	434620	4.7	21.9	221843	4.7	20.4	470000	4.8	22.0	311302	4.8	20.8
439802	4.5	21.3	146737	4.6	19.2	83194	4.7	18.4	74815	4.7	16.9	227240	4.8	19.4	251490	4.8	19.9
80238	4.5	18.0	69745	4.6	19.7	351395	4.7	19.7	234514	4.7	20.0	445182	4.8	20.7	46724	4.8	18.1
113457	4.5	18.6	73270	4.6	20.6	8075	4.7	17.0	304988	4.7	20.5	108725	4.8	20.6	366794	4.8	19.5
155194	4.5	19.9	112312	4.6	19.4	4251	4.7	17.9	447595	4.7	20.1	210975	4.8	19.9	353017	4.8	20.7
209834	4.5	20.0	453768	4.6	20.8	98964	4.7	18.8	369415	4.7	20.1	72531	4.8	18.8	209329	4.8	20.5
74382	4.5	17.4	306220	4.6	20.2	176223	4.7	18.3	516162	4.7	20.6	318187	4.8	19.6	346519	4.8	20.9
451341	4.5	20.8	482275	4.6	19.2	13917	4.7	16.4	129244	4.7	18.9	246834	4.8	18.7	112210	4.8	20.1
278128	4.5	20.6	33380	4.6	18.2	8959	4.7	18.4	491492	4.7	21.5	287005	4.8	21.3	125928	4.8	18.4
195666	4.5	21.1	455461	4.6	20.1	352634	4.7	19.7	50637	4.7	18.0	75339	4.8	18.9	224899	4.8	19.5
482642	4.5	19.2	252125	4.6	19.9	235916	4.7	20.0	124099	4.7	20.4	223448	4.8	20.1	143444	4.8	18.6
74579	4.5	18.3	477544	4.6	20.0	190857	4.7	19.8	221762	4.7	20.5	217152	4.8	20.2	249393	4.9	21.8
164953	4.5	20.4	178231	4.6	20.3	457284	4.7	20.9	167949	4.7	19.4	308615	4.8	19.6	156844	4.9	19.7
281318	4.5	20.0	399175	4.6	20.4	469480	4.7	20.9	197756	4.7	20.2	298417	4.8	20.8	10148	4.9	17.8
111435	4.5	19.4	48099	4.6	18.7	448017	4.7	20.9	311610	4.7	19.5	447610	4.8	20.6	351407	4.9	20.9
44550	4.5	17.4	92382	4.6	19.4	462266	4.7	20.4	166570	4.7	19.0	213138	4.8	20.9	79666	4.9	19.6
54205	4.5	18.2	40012	4.6	19.6	101169	4.7	19.3	43070	4.7	18.3	458087	4.8	19.5	346434	4.9	20.2
145789	4.5	19.6	32910	4.6	16.8	443721	4.7	21.4	416779	4.7	20.3	252079	4.8	19.5	200101	4.9	19.4
72827	4.5	18.8	294041	4.6	20.5	18065	4.7	18.6	142325	4.7	20.1	191611	4.8	20.4	279632	4.9	21.2
154424	4.5	19.4	451107	4.6	21.4	228865	4.7	20.4	448364	4.7	21.6	192132	4.8	19.8	174960	4.9	19.4
177559	4.5	19.1	176318	4.6	19.2	90526	4.7	19.0	45727	4.7	18.3	34989	4.8	18.5	355075	4.9	20.7
343864	4.5	21.3	8001	4.6	18.1	6856	4.7	17.7	269687	4.7	20.7	7074	4.8	16.8	445370	4.9	21.4
76687	4.5	18.7	328979	4.6	19.3	54598	4.7	19.1	333032	4.7	20.3	48922	4.8	18.3	448881	4.9	21.1
446187	4.5	20.4	354383	4.6	19.5	72840	4.7	17.9	417770	4.7	20.7	102237	4.8	18.8	485975	4.9	22.0
335493	4.5	20.1	412892	4.6	21.2	391618	4.7	21.0	292916	4.7	19.5	79637	4.8	19.2	167747	4.9	18.9
247472	4.5	20.5	447749	4.6	19.2	344624	4.7	21.4	96146	4.7	18.2	168564	4.8	18.4	50105	4.9	17.4
301762	4.5	21.0	394987	4.6	21.9	419869	4.7	20.4	304933	4.7	20.6	140856	4.8	20.0	292421	4.9	20.1
160863	4.5	21.1	171844	4.6	19.9	357401	4.7	19.9	123414	4.7	18.8	112050	4.8	19.7	75122	4.9	19.0
159187	4.5	20.3	447474	4.6	21.7	131398	4.7	20.1	28412	4.7	16.9	167957	4.8	20.0	165603	4.9	19.1
305047	4.5	20.5	348305	4.6	19.7	422654	4.7	20.0	511865	4.7	21.7	43742	4.8	19.1	174182	4.9	17.7
442722	4.5	20.8	328864	4.6	20.5	406756	4.7	20.7	47285	4.7	18.3	244717	4.8	18.7	264818	4.9	19.7
517892	4.5	21.8	3435	4.6	16.0	20651	4.7	18.8	134061	4.7	17.2	144939	4.8	20.0	443912	4.9	21.9
247305	4.5	19.8	509612	4.6	21.7	511640	4.7	20.7	320884	4.7	19.0	219925	4.8	19.7	281176	4.9	21.2
373624	4.5	19.7	381756	4.6	20.7	84149	4.7	18.2	476511	4.7	22.0	462260	4.8	20.3	165590	4.9	19.5
209697	4.5	19.8	355959	4.6	20.4	367561	4.7	20.8	373092	4.7	20.5	448015	4.8	20.7	453903	4.9	20.6
440106	4.5	21.5	330482	4.6	20.7	306164	4.7	21.0	63974	4.7	18.3	103380	4.8	18.0	487886	4.9	20.3
368012	4.5	21.5	484208	4.6	20.9	485272	4.7	20.6	482971	4.7	21.1	57361	4.8	18.7	143882	4.9	19.4
520643	4.5	21.5	127865	4.6	20.1	145521	4.7	19.7	515813	4.7	20.8	268257	4.8	18.7	148265	4.9	20.1
121395	4.5	19.6	258140	4.6	20.6	248758	4.7	19.7	290119	4.7	20.9	294799	4.8	19.5	83528	4.9	18.3
301963	4.5	19.8	220487	4.6	19.4	115710	4.7	19.2	318884	4.7	20.6	487460	4.8	21.2	113862	4.9	18.5
451280	4.5	21.3	223798	4.6	19.7	135588	4.7	20.0	490945	4.7	21.3	335470	4.8	19.2	328014	4.9	19.9
521725	4.5	21.0	479747	4.6	19.8	475239	4.7	20.3	452023	4.7	20.9	36502	4.8	17.7	447540	4.9	20.7
364088	4.5	18.9	307464	4.6	17.3	22457	4.7	17.0	482086	4.7	20.8	94684	4.8	17.8	287058	4.9	20.6
14066	4.5	17.3	120506	4.6	16.8	53146	4.7	18.8	18049	4.7	16.1	125346	4.8	18.8	221446	4.9	19.7
99774	4.5	19.4	58563	4.6	18.7	206527	4.7	19.6	262293	4.7	20.9	474858	4.8	21.6	190864	4.9	19

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
476591	4.9	21.0	406615	4.9	21.2	492773	5.1	21.0	435493	5.1	22.1	482682	5.2	20.3	406015	5.3	21.0
237159	4.9	20.0	371341	4.9	20.3	369525	5.1	19.9	115860	5.1	18.7	479404	5.2	19.7	382891	5.3	20.5
50269	4.9	18.2	308922	4.9	20.9	249926	5.1	20.1	520594	5.1	22.0	270881	5.2	20.3	120662	5.3	18.0
453745	4.9	20.3	361791	4.9	20.9	317716	5.1	20.3	442343	5.1	20.8	214341	5.2	20.3	22017	5.3	16.8
393624	4.9	20.4	97666	4.9	18.0	452636	5.1	20.9	282351	5.1	20.4	390267	5.2	20.1	74660	5.3	18.3
388109	4.9	20.5	345375	4.9	20.3	282883	5.1	21.0	391218	5.1	20.2	22957	5.2	19.3	520882	5.3	20.5
411041	4.9	20.1	385782	4.9	20.2	72904	5.1	18.6	415200	5.1	21.0	315352	5.2	20.5	411127	5.3	20.5
305239	4.9	19.3	288483	4.9	20.5	215746	5.1	20.2	114401	5.1	18.8	514701	5.2	21.6	275651	5.3	21.1
196101	4.9	18.9	421007	4.9	20.5	377557	5.1	21.2	389581	5.1	19.9	15064	5.2	18.2	398174	5.3	21.3
136232	4.9	18.2	56676	4.9	19.6	389425	5.1	20.6	327573	5.1	20.5	364952	5.2	20.8	415215	5.3	21.0
384612	4.9	20.1	236308	4.9	19.6	73219	5.1	20.1	272050	5.1	20.3	403378	5.2	21.1	281874	5.3	20.4
521324	4.9	21.2	106845	4.9	17.6	126359	5.1	19.6	361011	5.1	20.2	168565	5.2	18.3	254777	5.3	20.6
305653	4.9	19.9	484459	4.9	21.5	484360	5.1	19.1	216369	5.1	20.1	112870	5.2	19.4	72205	5.3	17.3
311646	4.9	19.8	189222	4.9	20.3	148157	5.1	18.4	99040	5.2	19.3	227248	5.2	19.9	85391	5.3	19.8
46370	4.9	18.2	180682	4.9	20.2	268835	5.1	19.4	368201	5.2	20.7	314787	5.2	19.6	95614	5.3	18.2
250021	4.9	18.7	180749	4.9	19.9	489082	5.1	21.2	443920	5.2	20.9	444501	5.2	20.9	422354	5.3	20.4
460892	4.9	21.4	141959	4.9	20.6	42164	5.1	18.6	158483	5.2	19.4	256944	5.2	19.8	261335	5.3	21.3
41850	4.9	18.5	227659	4.9	20.7	157747	5.1	19.9	225485	5.2	20.2	196763	5.2	20.2	333259	5.3	20.5
480732	4.9	20.1	43537	4.9	17.9	292687	5.1	20.5	86535	5.2	18.0	249503	5.2	20.1	275514	5.3	20.2
492186	4.9	21.6	138162	4.9	19.3	404677	5.1	20.4	388151	5.2	20.6	85739	5.2	19.0	253401	5.3	19.5
262230	4.9	19.2	391217	5.0	20.8	191906	5.1	19.0	328697	5.2	20.4	74377	5.2	19.3	49724	5.3	18.6
175165	4.9	20.0	259892	5.0	19.5	9116	5.1	17.0	70565	5.2	18.1	514153	5.2	21.8	124302	5.3	20.0
320026	4.9	21.0	158865	5.0	19.8	367810	5.1	21.0	390635	5.2	20.8	409686	5.2	20.7	420081	5.3	20.5
42165	4.9	19.2	161878	5.0	20.6	515116	5.1	21.6	69684	5.2	19.9	398538	5.2	20.4	5159	5.3	17.6
523749	4.9	21.5	177844	5.0	19.7	324896	5.1	20.5	290654	5.2	21.1	334605	5.2	20.8	440856	5.3	20.1
334669	4.9	19.4	71078	5.0	18.9	186486	5.1	19.6	369483	5.2	19.4	172935	5.2	20.2	422552	5.3	19.5
125963	4.9	19.5	179600	5.0	20.5	246538	5.1	19.4	261648	5.2	21.2	371328	5.2	21.9	403492	5.3	19.7
364296	4.9	20.0	265992	5.0	20.3	212161	5.1	19.0	8855	5.2	17.9	522246	5.2	21.2	446700	5.3	20.9
473701	4.9	20.4	501562	5.0	20.3	134939	5.1	19.7	472952	5.2	20.1	180834	5.2	20.2	315297	5.3	20.0
15119	4.9	17.9	152572	5.0	19.9	286951	5.1	20.5	130412	5.2	18.6	405361	5.2	19.7	97194	5.3	19.1
514709	4.9	20.5	289883	5.0	20.4	111029	5.1	18.4	481811	5.2	19.9	251245	5.2	20.8	297977	5.3	21.3
182544	4.9	19.1	44106	5.0	19.2	302631	5.1	19.2	358359	5.2	20.7	265553	5.2	20.8	43736	5.3	19.3
214659	4.9	20.3	372370	5.0	19.8	418752	5.1	20.7	104836	5.2	19.2	270389	5.2	19.1	517367	5.3	21.0
445962	4.9	20.2	96534	5.0	18.8	168192	5.1	20.4	254861	5.2	19.6	178047	5.2	19.7	490392	5.3	20.0
57072	4.9	18.5	404497	5.0	20.8	123884	5.1	18.7	336076	5.2	21.3	188780	5.2	20.4	153288	5.3	19.6
231209	4.9	20.6	407605	5.0	19.8	431761	5.1	21.9	402130	5.2	21.0	232482	5.2	21.1	81090	5.3	19.9
182004	4.9	18.5	192624	5.0	20.4	523300	5.1	20.8	243036	5.2	20.2	279170	5.2	21.2	324253	5.3	20.3
162346	4.9	17.9	355421	5.0	20.0	90077	5.1	19.0	78143	5.2	19.5	76551	5.2	18.7	121295	5.3	20.0
200457	4.9	18.1	57429	5.0	17.9	470126	5.1	19.8	189108	5.2	20.9	191530	5.2	20.0	205931	5.3	19.8
197150	4.9	18.9	377232	5.0	18.9	200547	5.1	20.0	108860	5.2	19.5	523456	5.2	20.5	469759	5.3	21.1
62063	4.9	19.0	482990	5.0	21.5	280568	5.1	21.7	42817	5.2	18.2	170200	5.2	20.0	278182	5.3	20.0
287144	4.9	20.5	90516	5.0	19.4	515115	5.1	20.9	265985	5.2	20.3	231784	5.3	19.9	449713	5.3	20.7
355366	4.9	19.5	207145	5.0	20.3	205977	5.1	19.7	141580	5.2	19.0	355113	5.3	20.1	341929	5.3	21.4
95416	4.9	19.2	196417	5.0	19.6	369220	5.1	20.3	146588	5.2	20.3	362272	5.3	21.9	362865	5.3	21.6
110680	4.9	18.4	6290	5.0	15.7	40063	5.1	18.3	147544	5.2	18.8	360638	5.3	19.5	66964	5.3	18.7
168609	4.9	18.2	160897	5.0	19.5	484138	5.1	20.8	45504	5.2	17.1	277758	5.3	19.7	271165	5.3	20.4
338289	4.9	18.8	449944	5.0	20.1	97186	5.1	18.8	20534	5.2	18.8	403968	5.3	20.6	119825	5.3	19.2
518709	4.9	21.3	517504	5.0	21.0	411115	5.1	20.1	153236	5.2	19.4	513921	5.3	21.9	160035	5.3	19.9
113060	4.9	19.3	262161	5.0	20.7	306156	5.1	20.6	52889	5.2	18.7	285463	5.3	19.4	491549	5.3	20.5
416755	4.9	19.7	145264	5.0	19.5	490812	5.1	20.5	492202	5.2	21.0	101095	5.3	18.8	411994	5.3	20.0
275657	4.9	21.5	73847	5.0	18.7	230878	5.1	20.7	436827	5.2	19.6	186024	5.3	19.7	109512	5.3	17.9
398121	4.9	19.3	38326	5.0	18.6	338407	5.1	19.4	347802	5.2	20.3	224816	5.3	20.6	113692	5.3	19.2
126078	4.9	18.7	517740	5.0	20.8	353330	5.1	21.0	440775	5.2	20.9	396716	5.3	20.3	484482	5.3	20.0
242282	4.9	19.8	486164	5.0	19.5	474239	5.1	21.3	180756	5.2	19.1	276430	5.3	19.3	310365	5.3	19.2
181509	4.9	20.5	413158	5.0	21.7	336772	5.1	20.8	286979	5.2	20.2	389715	5.3	21.1	481631	5.3	20.5
253443	4.9	19.8	112893	5.0	19.8	177997	5.1	19.1	380519	5.2	20.9	213598	5.3	18.9	136119	5.3	19.3
487862	4.9	20.9	326585	5.0	21.3	7674	5.1	16.7	343264	5.2	19.6	133210	5.3	19.3	294309	5.3	20.0
399572	4.9	20.8	139855	5.0	19.2	213330	5.1	20.1	437342	5.2	19.8	1270	5.3	14.6	298421	5.3	19.9
216680	4.9	20.6	55791	5.0	17.3	392005	5.1	20.3	69899	5.2	17.7	177537	5.3	19.7	355373	5.3	20.0
195628	4.9	19.7	151499	5.0	20.4	392381	5.1	19.6	96513	5.2	18.7	30152	5.3	18.8	19495	5.3	16.1
335268	4.9	22.1	308780	5.0	20.5	370560	5.1	19.6	426127	5.2	20.6	95876	5.3	20.2	45915	5.3	17.9
269252	4.9	19.3	520363	5.0	21.8	446843	5.1	20.9	366502	5.2	21.3	218158	5.3	19.9	275919	5.3	20.3
139288	4.9	20.5	88960	5.0	18.4	374649	5.1	20.9	463001	5.2	20.7	272626	5.3	21.0	235716	5.3	19.2
244261	4.9	19.0	401175	5.0	20.5	239158	5.1	20.0	309235	5.2	21.0	13496	5.3	17.7	103062	5.3	18.9
417403	4.9	21.4	404135	5.0	20.4	211933	5.1	19.3	198677	5.2	19.2	191449	5.3	19.6	7552	5.3	18.6
241231	4.9	20.3	247568	5.0	20.0	340243	5.1	19.4	66665	5.2	17.9	228003	5.3	20.5	363589	5.3	20.8
448023	4.9	21.3	275236	5.0	19.8	383517	5.1	19.9	232110	5.2	19.0	396242	5.3	20.3	139140	5.3	18.9
444596	4.9	20.7	243144	5.1	19.3	326101	5.1	19.9	182507	5.2	19.5	90999	5.3	18.6	490966	5.3	21.8
99939	4.9	19.0	423796	5.1	19.9	167869	5.1	19.0	290569	5.2	20.7	331276	5.3	20.9	432621	5.3	20.0
97721	4.9	18.3	486430	5.1	20.8	517402	5.1	21.3	360863	5.2	20.8	495296	5.3	21.2	4991	5.4	17.0
394247	4.9	21.0	143477	5.1	18.7	21779	5.1	18.4	347391	5.2	20.4	110476	5.3				

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
40655	5.4	19.0	238149	5.5	19.3	221439	5.5	19.2	108044	5.6	19.5	268874	5.7	20.9	453890	5.8	20.8
188451	5.4	19.9	486266	5.5	20.1	401137	5.5	20.2	333228	5.6	20.4	473368	5.7	20.6	287981	5.8	19.6
192211	5.4	19.1	101302	5.5	19.0	242015	5.5	21.5	384319	5.6	20.7	222414	5.7	19.9	220419	5.8	19.4
272055	5.4	19.9	376224	5.5	20.9	417322	5.5	20.8	412794	5.6	20.1	133415	5.7	18.7	417217	5.8	19.1
355037	5.4	20.1	278102	5.5	20.0	329478	5.5	21.3	208113	5.6	20.5	70362	5.7	17.0	369000	5.8	20.8
283641	5.4	19.3	154977	5.5	19.5	199032	5.5	20.6	403056	5.6	21.5	140906	5.7	18.4	271438	5.8	21.6
99165	5.4	17.7	307926	5.5	19.6	456961	5.5	20.0	438582	5.6	21.2	92364	5.7	18.4	287771	5.8	20.9
290315	5.4	20.6	55728	5.5	19.7	102978	5.5	18.3	112602	5.6	19.8	402330	5.7	21.4	441877	5.8	21.1
373853	5.4	21.2	106617	5.5	17.9	78077	5.5	19.6	14709	5.6	18.0	331049	5.7	20.3	66791	5.8	18.6
241992	5.4	20.8	123901	5.5	19.1	436476	5.5	22.2	12351	5.6	17.1	8734	5.7	17.3	404706	5.8	20.5
264275	5.4	18.7	404715	5.5	21.4	54119	5.5	18.7	295121	5.6	20.7	158116	5.7	19.6	140413	5.8	19.9
192133	5.4	19.9	45599	5.5	18.4	484310	5.5	20.3	16757	5.6	17.9	6057	5.7	16.6	398931	5.8	20.9
481941	5.4	19.1	520385	5.5	21.0	138356	5.5	18.7	225282	5.6	19.9	334046	5.7	21.2	354651	5.8	20.8
50217	5.4	17.8	206428	5.5	20.4	80604	5.5	18.3	129094	5.6	18.9	516494	5.7	20.8	180642	5.8	20.0
172642	5.4	19.6	11415	5.5	17.2	194274	5.5	18.6	139263	5.6	19.9	191162	5.7	20.0	51072	5.8	18.8
245313	5.4	19.3	491525	5.5	21.9	54212	5.5	19.7	372268	5.6	20.9	448352	5.7	20.6	318215	5.8	19.7
495988	5.4	20.8	273331	5.5	19.0	271338	5.5	19.5	218964	5.6	19.4	331391	5.7	21.0	181828	5.8	20.0
341930	5.4	20.5	54203	5.5	18.7	65604	5.5	19.6	328606	5.6	19.8	83920	5.7	18.8	49513	5.8	17.3
326273	5.4	21.1	104829	5.5	19.3	340894	5.5	19.9	204099	5.6	19.2	172191	5.7	19.5	127744	5.8	19.4
223178	5.4	17.9	140079	5.5	18.6	45226	5.5	18.3	157133	5.6	20.2	80203	5.7	17.8	164484	5.8	20.7
310363	5.4	20.5	112554	5.5	18.3	420100	5.5	20.8	56308	5.6	18.1	326571	5.7	19.9	46296	5.8	19.2
334063	5.4	20.6	331735	5.5	19.3	332562	5.6	21.0	103926	5.6	19.9	442342	5.7	21.7	213321	5.8	20.5
289959	5.4	21.9	364977	5.5	19.6	195995	5.6	19.3	24688	5.6	17.4	241808	5.7	18.9	83954	5.8	19.4
363705	5.4	19.8	133327	5.5	18.6	518936	5.6	21.5	243404	5.6	20.0	46139	5.7	19.3	170353	5.8	18.9
196738	5.4	20.1	124608	5.5	18.9	84838	5.6	17.9	347579	5.6	19.5	226943	5.7	20.7	457435	5.8	20.6
396250	5.4	20.4	63226	5.5	19.1	290440	5.6	21.3	289364	5.6	18.9	447631	5.7	20.4	408266	5.8	21.7
22251	5.4	19.0	486580	5.5	20.1	203951	5.6	20.3	46385	5.6	18.7	401713	5.7	20.5	43028	5.8	15.7
139642	5.4	18.8	492909	5.5	21.1	205498	5.6	19.9	146066	5.6	19.9	7950	5.7	16.8	480981	5.8	19.2
230763	5.4	18.4	8192	5.5	18.0	24247	5.6	18.1	298003	5.6	20.0	52522	5.7	19.5	208889	5.8	20.3
170946	5.4	18.4	125601	5.5	18.1	389401	5.6	19.6	329906	5.6	21.4	196339	5.7	20.6	414348	5.8	20.6
398018	5.4	20.5	441672	5.5	20.8	174397	5.6	19.2	299195	5.6	20.0	101223	5.7	19.3	382716	5.8	19.4
149806	5.4	19.5	257266	5.5	20.4	392619	5.6	21.0	355391	5.6	19.9	334800	5.7	20.7	401472	5.8	19.7
296447	5.4	20.5	241010	5.5	20.4	275029	5.6	21.0	518578	5.6	20.5	153802	5.7	19.4	481953	5.8	21.5
390682	5.4	21.3	476429	5.5	20.5	419310	5.6	20.7	32658	5.6	19.7	448370	5.7	20.7	49554	5.8	17.9
271928	5.4	19.7	197155	5.5	19.9	196948	5.6	19.6	239015	5.6	21.1	520844	5.7	20.4	518250	5.8	19.8
72692	5.4	19.1	117666	5.5	19.3	76623	5.6	18.5	282713	5.6	20.5	107678	5.7	19.6	80287	5.8	18.4
391236	5.4	20.7	191580	5.5	19.6	265096	5.6	20.1	190496	5.6	20.5	15561	5.7	17.2	81629	5.8	18.8
515770	5.4	20.4	166307	5.5	20.6	101342	5.6	19.0	81053	5.6	18.6	178097	5.7	19.7	247834	5.8	20.2
219260	5.4	19.2	463046	5.5	20.2	454355	5.6	21.3	401352	5.6	20.7	493665	5.7	21.0	44017	5.8	17.6
513297	5.4	21.5	513620	5.5	21.0	123758	5.6	19.1	247211	5.6	19.2	99753	5.7	19.3	19890	5.8	18.0
253795	5.4	19.0	447151	5.5	21.3	287936	5.6	19.6	58993	5.6	19.1	4516	5.7	16.3	350026	5.8	21.2
97415	5.4	18.7	139431	5.5	19.9	237857	5.6	21.7	137300	5.6	18.0	110965	5.7	19.4	356688	5.8	20.2
408770	5.4	20.6	89338	5.5	18.9	269479	5.6	19.8	137098	5.6	18.9	249483	5.7	19.7	216938	5.8	19.2
230024	5.4	19.3	483469	5.5	22.2	438820	5.6	19.7	182258	5.6	20.3	79676	5.7	18.2	356840	5.8	20.1
361864	5.4	20.2	366368	5.5	19.4	250030	5.6	19.1	325418	5.6	20.5	302623	5.7	20.7	347355	5.8	19.5
450595	5.4	20.8	314426	5.5	20.6	298411	5.6	20.5	249921	5.6	20.0	489043	5.7	20.8	454767	5.8	20.4
180739	5.4	20.1	447941	5.5	20.5	513964	5.6	21.4	509509	5.6	20.1	130310	5.7	19.5	304096	5.8	21.5
302522	5.4	20.3	334287	5.5	19.2	167253	5.6	20.2	102625	5.7	18.8	443011	5.7	21.1	79715	5.8	18.9
83606	5.4	18.7	385376	5.5	19.0	125109	5.6	19.8	232058	5.7	19.2	405811	5.7	20.3	63368	5.8	19.1
89614	5.4	18.8	232477	5.5	19.7	93176	5.6	19.7	102127	5.7	19.6	244129	5.7	18.7	101843	5.8	17.9
22551	5.4	19.1	385637	5.5	19.4	73050	5.6	19.7	159521	5.7	19.7	107696	5.7	19.6	271164	5.8	19.1
86748	5.4	19.4	444847	5.5	21.3	2048	5.6	16.4	130337	5.7	19.7	21526	5.7	18.5	187942	5.8	20.5
276830	5.4	21.6	393728	5.5	19.3	8029	5.6	16.5	33713	5.7	17.7	391266	5.7	21.0	331689	5.8	20.2
438561	5.4	20.2	117377	5.5	18.2	513611	5.6	21.9	262526	5.7	21.4	491529	5.7	21.1	51136	5.8	18.4
196112	5.4	18.2	522019	5.5	20.7	45165	5.6	18.0	407854	5.7	20.5	229261	5.7	19.3	521499	5.8	21.2
408354	5.4	20.4	323706	5.5	20.6	309077	5.6	19.5	230436	5.7	18.5	67464	5.7	19.4	173063	5.8	19.8
59475	5.4	17.1	237845	5.5	21.0	49214	5.6	17.9	23305	5.7	17.3	56509	5.7	18.7	411081	5.8	20.4
91755	5.4	19.3	252641	5.5	20.2	408030	5.6	20.0	517339	5.7	21.7	331852	5.7	20.6	132528	5.8	19.7
124128	5.4	19.7	403146	5.5	19.9	230624	5.6	19.6	517983	5.7	21.3	487536	5.7	20.4	311823	5.8	20.4
260665	5.4	20.5	412683	5.5	19.5	208309	5.6	20.5	136910	5.7	19.8	251451	5.7	20.1	29242	5.8	16.4
402156	5.4	20.3	268068	5.5	21.1	120339	5.6	20.0	361805	5.7	21.0	396942	5.7	20.7	234592	5.8	19.3
74793	5.4	18.1	515801	5.5	21.1	118618	5.6	18.9	372714	5.7	19.2	51651	5.7	19.1	57817	5.8	19.1
241445	5.4	18.5	209309	5.5	19.9	46025	5.6	18.8	306582	5.7	22.0	521423	5.7	21.0	73293	5.8	19.7
69014	5.4	17.2	373370	5.5	20.6	212621	5.6	20.5	62032	5.7	19.7	69910	5.7	18.5	345209	5.8	20.3
522944	5.4	20.6	141505	5.5	20.8	228554	5.6	19.2	39516	5.7	18.1	289519	5.7	19.3	523269	5.8	20.4
66983	5.4	18.1	73449	5.5	18.8	265046	5.6	19.7	23523	5.7	17.0	24525	5.7	18.9	412966	5.8	20.1
418442	5.4	20.9	408081	5.5	20.3	266067	5.6	19.4	291845	5.7	20.0	453277	5.7	20.6	203926	5.8	19.5
271589	5.4	20.7	74	5.5	11.6	104312	5.6	20.2	75724	5.7	18.4	229402	5.7	21.3	267520	5.8	20.5
305132	5.4	20.1	475767	5.5	19.6	73868	5.6	19.6	185038	5.7	19.6	152891	5.7	19.5	178964	5.8	19.3
452927	5.4	20.7	463374	5.5	19.2	298076	5.6	19.6	421633	5.7	20.6	421931	5.7	21.0	409061	5.8	20.6
217200	5.4	19.1	176097	5.5	20.7	346595	5.6	21.3	328836	5.7	20.0	295455	5.8	19.4	521376	5.8	

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
96818	5.8	18.2	42117	5.9	18.6	250954	5.9	20.2	195168	6.1	19.5	163902	6.1	16.6	101060	6.2	18.6
357089	5.8	20.9	440901	5.9	20.1	410669	5.9	20.2	190653	6.1	18.7	9212	6.1	16.6	86808	6.2	20.5
160370	5.8	20.6	415237	5.9	19.4	441240	5.9	21.5	353927	6.1	20.6	516801	6.1	21.9	227117	6.2	20.6
365836	5.8	20.8	361365	5.9	20.8	295367	5.9	20.6	169644	6.1	20.0	286133	6.1	19.3	129705	6.2	19.7
155749	5.8	19.4	212356	5.9	19.8	470006	5.9	21.1	480118	6.1	21.6	85511	6.1	19.2	227992	6.2	20.6
101274	5.8	18.4	50625	5.9	19.1	6740	5.9	16.4	284238	6.1	19.6	20533	6.1	18.5	273309	6.2	20.4
325459	5.8	20.3	266028	5.9	20.3	323306	6.0	21.0	26538	6.1	16.7	307331	6.1	20.9	325400	6.2	20.4
168829	5.8	20.3	219193	5.9	18.4	140189	6.0	19.8	190013	6.1	19.7	436972	6.1	21.7	351087	6.2	19.4
438487	5.8	22.1	393392	5.9	21.0	339112	6.0	19.5	236393	6.1	19.7	94530	6.1	19.6	20513	6.2	18.1
68104	5.8	19.0	279294	5.9	20.1	46008	6.0	18.6	517522	6.1	20.5	488166	6.2	21.1	483434	6.2	21.2
313218	5.8	19.5	153532	5.9	19.9	260518	6.0	20.2	490062	6.1	21.5	49783	6.2	19.1	379866	6.2	20.7
246895	5.8	20.5	11243	5.9	16.7	20535	6.0	17.7	273609	6.1	19.6	452426	6.2	19.5	225360	6.2	19.4
140499	5.8	20.2	356177	5.9	21.0	210648	6.0	20.3	202587	6.1	19.5	75964	6.2	18.8	516077	6.2	21.1
438531	5.8	20.2	162323	5.9	18.5	422501	6.0	20.7	273535	6.1	19.6	294678	6.2	19.8	335660	6.2	20.3
385107	5.8	19.7	493190	5.9	20.7	298024	6.0	20.1	127699	6.1	19.9	368876	6.2	20.8	88725	6.2	18.8
337938	5.9	19.7	400677	5.9	20.1	90527	6.0	20.4	74186	6.1	17.7	365347	6.2	20.7	412819	6.2	20.4
376857	5.9	21.0	2510	5.9	15.7	332803	6.0	19.7	229266	6.1	19.5	163966	6.2	18.7	370504	6.2	20.5
511350	5.9	21.0	258237	5.9	20.4	99563	6.0	19.1	268460	6.1	19.5	495557	6.2	21.3	298460	6.2	19.7
295014	5.9	20.2	9373	5.9	18.7	108829	6.0	18.7	224417	6.1	20.4	150418	6.2	20.7	399479	6.2	21.1
521197	5.9	21.1	227536	5.9	20.0	439041	6.0	21.6	75386	6.1	18.7	326663	6.2	21.6	104265	6.2	19.0
174291	5.9	19.5	312303	5.9	19.4	432732	6.0	21.4	520563	6.1	21.2	491557	6.2	21.2	227129	6.2	20.3
302759	5.9	19.0	36172	5.9	18.9	520304	6.0	22.0	147693	6.1	19.5	80827	6.2	20.8	45152	6.2	18.9
215306	5.9	20.0	228946	5.9	19.1	140124	6.0	19.9	228419	6.1	19.1	368001	6.2	21.1	291465	6.2	20.1
243394	5.9	20.9	134928	5.9	18.4	159059	6.0	19.8	460674	6.1	20.2	149987	6.2	20.1	328820	6.2	19.5
463961	5.9	21.0	82716	5.9	18.2	233552	6.0	20.0	517799	6.1	20.9	328727	6.2	19.7	168259	6.2	19.5
381041	5.9	20.6	332776	5.9	20.6	487550	6.0	20.6	216492	6.1	19.3	170475	6.2	18.3	309418	6.2	19.6
418651	5.9	21.0	447516	5.9	21.0	397335	6.0	20.8	187954	6.1	19.9	3083	6.2	17.4	48716	6.2	19.5
300464	5.9	20.7	430808	5.9	20.9	448934	6.0	20.1	505309	6.1	20.3	474900	6.2	19.9	306137	6.2	20.9
450358	5.9	19.0	32722	5.9	19.7	322096	6.0	20.6	446467	6.1	21.5	347381	6.2	20.4	227098	6.2	21.1
114937	5.9	17.8	329451	5.9	20.0	114058	6.0	18.9	327105	6.1	19.6	372174	6.2	20.3	264129	6.2	19.5
239273	5.9	19.7	267921	5.9	20.0	47277	6.0	19.9	351101	6.1	20.0	202333	6.2	19.5	422363	6.2	20.6
368481	5.9	20.1	50162	5.9	18.4	319112	6.0	19.3	51057	6.1	16.9	460644	6.2	21.4	273054	6.2	21.2
308804	5.9	20.1	402725	5.9	20.6	177856	6.0	20.3	116094	6.1	19.0	330201	6.2	22.2	158438	6.2	19.8
477448	5.9	20.8	291059	5.9	20.4	199569	6.0	20.9	144177	6.1	20.2	184773	6.2	20.2	48063	6.2	19.0
106894	5.9	17.5	109970	5.9	19.9	43416	6.0	18.4	40444	6.1	19.7	323077	6.2	19.7	107378	6.2	19.4
110617	5.9	20.1	517078	5.9	21.2	470164	6.0	20.8	315021	6.1	20.4	361920	6.2	20.9	373915	6.2	20.3
292589	5.9	19.9	83251	5.9	20.1	32614	6.0	18.2	241874	6.1	21.3	442916	6.2	20.5	375220	6.2	19.6
193091	5.9	19.8	43325	5.9	18.3	110971	6.0	19.7	376742	6.1	19.6	48968	6.2	17.5	408980	6.3	21.2
241786	5.9	20.2	431721	5.9	20.0	336155	6.0	19.6	87365	6.1	19.6	216631	6.2	20.3	184685	6.3	20.2
350448	5.9	20.3	326187	5.9	20.8	279813	6.0	21.2	69429	6.1	20.1	351380	6.2	20.4	260361	6.3	20.0
77412	5.9	18.0	11463	5.9	17.1	283	6.0	12.8	288449	6.1	19.6	352950	6.2	20.5	522080	6.3	20.3
118482	5.9	20.0	84638	5.9	19.1	230754	6.0	19.9	493924	6.1	21.1	271497	6.2	19.6	418575	6.3	19.9
41454	5.9	18.1	366108	5.9	20.7	516607	6.0	22.3	140341	6.1	18.6	77686	6.2	18.5	83410	6.3	18.8
320244	5.9	21.7	408132	5.9	21.7	475129	6.0	20.9	156836	6.1	20.1	519795	6.2	21.1	130305	6.3	18.5
50114	5.9	18.3	518509	5.9	23.5	108339	6.0	20.1	201177	6.1	20.4	83814	6.2	18.6	193830	6.3	19.3
329550	5.9	21.1	410643	5.9	20.2	209696	6.0	20.4	459694	6.1	20.2	356464	6.2	19.6	22731	6.3	17.6
317292	5.9	21.3	132554	5.9	19.9	220710	6.0	19.5	116962	6.1	19.7	426615	6.2	21.0	90615	6.3	20.0
511659	5.9	20.5	333311	5.9	23.6	29476	6.0	17.9	29623	6.1	16.4	487523	6.2	20.4	334034	6.3	18.0
464361	5.9	21.1	333046	5.9	21.7	460777	6.0	21.2	122085	6.1	19.8	221444	6.2	20.5	298578	6.3	19.1
343379	5.9	19.7	247455	5.9	19.3	270683	6.0	20.0	367218	6.1	22.1	452215	6.2	20.4	410140	6.3	20.4
407186	5.9	19.9	518449	5.9	20.0	265209	6.0	19.5	127086	6.1	20.3	129270	6.2	18.9	333331	6.3	20.7
94064	5.9	18.9	250673	5.9	20.4	369605	6.0	20.8	271069	6.1	18.6	399361	6.2	19.7	190080	6.3	19.1
323269	5.9	21.5	493037	5.9	21.1	359861	6.0	19.1	282427	6.1	19.9	124818	6.2	20.4	78466	6.3	20.1
367857	5.9	20.3	187589	5.9	19.5	324142	6.0	21.1	147943	6.1	19.0	211232	6.2	20.7	335381	6.3	21.2
446381	5.9	20.0	492996	5.9	21.1	85408	6.0	17.8	455220	6.1	19.8	143157	6.2	18.6	394992	6.3	21.1
264320	5.9	19.6	405243	5.9	20.4	339070	6.0	18.7	63468	6.1	18.7	197239	6.2	19.9	79103	6.3	19.5
395209	5.9	20.3	304282	5.9	19.9	283442	6.0	19.2	311648	6.1	19.3	341042	6.2	20.2	437972	6.3	21.1
405351	5.9	20.2	83022	5.9	19.0	335613	6.0	20.8	361287	6.1	20.0	260233	6.2	20.4	523355	6.3	21.1
5783	5.9	16.1	277403	5.9	20.9	39224	6.1	18.2	437057	6.1	19.5	339122	6.2	19.7	207106	6.3	18.3
372886	5.9	20.1	151244	5.9	19.2	129831	6.1	20.3	300749	6.1	18.5	26048	6.2	19.4	211335	6.3	19.4
8306	5.9	17.1	416360	5.9	20.5	93805	6.1	19.0	25920	6.1	18.7	361873	6.2	20.3	306102	6.3	20.3
328444	5.9	20.4	372821	5.9	19.6	233653	6.1	20.4	83028	6.1	18.1	272079	6.2	20.2	179032	6.3	18.9
294722	5.9	20.3	421594	5.9	21.7	56635	6.1	17.8	144699	6.1	19.2	321881	6.2	20.5	343710	6.3	20.6
256817	5.9	20.3	202963	5.9	18.9	288170	6.1	19.5	60360	6.1	17.5	190984	6.2	18.8	227600	6.3	20.3
439831	5.9	21.2	2617	5.9	13.5	249548	6.1	19.6	330745	6.1	20.7	297298	6.2	19.7	301488	6.3	20.3
350501	5.9	19.4	443568	5.9	21.0	334675	6.1	19.1	511057	6.1	20.3	212170	6.2	20.5	20763	6.3	17.1
196723	5.9	19.2	477290	5.9	20.1	396522	6.1	21.7	380392	6.1	19.4	451586	6.2	21.1	310121	6.3	20.5
278563	5.9	20.2	317632	5.9	20.4	260370	6.1	18.8	5199	6.1	16.4	68274	6.2	18.9	487903	6.3	20.6
101700	5.9	19.5	411989	5.9	20.3	225717	6.1	19.5	79380	6.1	19.5	151784	6.2	19.4	517734	6.3	20.8
296172	5.9	20.7	477427	5.9	19.7	355329	6.1	20.9	122051	6.1	19.3	473530	6.2	19.8	358228	6.3	20.7
60969	5.9	20.1	313567	5.9	20.3	266866	6.1	19.9	329082	6.1	20.9	484133	6.2	20.5			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
117237	6.3	19.7	311773	6.4	20.2	349236	6.4	20.8	321019	6.5	20.3	520428	6.6	21.0	67010	6.6	17.6
278702	6.3	21.5	275645	6.4	19.7	69693	6.4	19.4	327283	6.5	20.5	329898	6.6	20.3	75913	6.6	18.5
214196	6.3	20.2	454521	6.4	20.7	411139	6.4	19.8	415435	6.5	20.9	168424	6.6	19.0	31588	6.7	18.9
217210	6.3	19.1	59230	6.4	17.4	485990	6.4	21.3	296023	6.5	19.8	490974	6.6	21.3	131179	6.7	19.3
99348	6.3	18.9	414727	6.4	19.9	325378	6.4	19.4	20974	6.5	18.0	151870	6.6	20.0	119827	6.7	19.8
157940	6.3	19.7	485749	6.4	20.2	301904	6.4	18.8	13455	6.5	18.5	281178	6.6	21.3	196927	6.7	18.9
481860	6.3	19.6	198779	6.4	19.3	402746	6.4	21.4	440788	6.5	21.6	108173	6.6	19.9	358679	6.7	20.1
190497	6.3	20.4	272039	6.4	19.3	235746	6.4	19.9	288598	6.5	20.8	487938	6.6	20.6	98892	6.7	18.6
216194	6.3	20.8	48660	6.4	17.0	227830	6.4	20.3	142777	6.5	18.7	35849	6.6	19.1	141567	6.7	19.7
159569	6.3	19.4	475839	6.4	20.8	9300	6.4	16.4	112986	6.5	20.0	515785	6.6	21.7	146277	6.7	18.1
9065	6.3	17.4	298571	6.4	19.0	246734	6.4	20.5	426555	6.5	21.2	202309	6.6	19.5	344421	6.7	21.0
452567	6.3	21.0	484365	6.4	20.2	490949	6.4	21.7	384880	6.5	21.1	145204	6.6	19.8	357426	6.7	18.4
272464	6.3	21.2	321270	6.4	21.4	5840	6.4	16.1	169632	6.5	21.2	81265	6.6	19.3	229653	6.7	19.5
397206	6.3	20.8	97360	6.4	18.1	133455	6.4	19.3	139865	6.5	18.8	40071	6.6	19.2	182240	6.7	20.9
68192	6.3	17.9	366603	6.4	19.6	270716	6.4	20.3	53807	6.5	19.5	22078	6.6	17.8	156636	6.7	20.4
57598	6.3	19.3	431662	6.4	21.3	155974	6.4	18.5	162328	6.5	18.3	24901	6.6	18.3	440841	6.7	20.3
429966	6.3	20.4	7007	6.4	18.9	514838	6.4	21.3	18748	6.5	17.3	367457	6.6	21.2	199752	6.7	20.3
54750	6.3	17.9	212281	6.4	19.6	270909	6.5	20.5	94097	6.5	18.6	67964	6.6	18.9	448563	6.7	20.1
148780	6.3	22.3	265547	6.4	20.6	281164	6.5	20.6	162211	6.5	19.9	509680	6.6	21.3	429772	6.7	21.4
299020	6.3	20.2	180295	6.4	18.7	174878	6.5	19.7	252116	6.5	19.1	191635	6.6	18.8	127015	6.7	20.7
47946	6.3	17.0	12772	6.4	17.3	403687	6.5	20.8	484160	6.5	20.6	405509	6.6	19.5	127171	6.7	19.7
186440	6.3	18.6	335182	6.4	21.2	434348	6.5	21.2	139651	6.5	19.1	218105	6.6	20.5	407084	6.7	19.9
179107	6.3	20.3	84021	6.4	18.7	482537	6.5	20.3	333343	6.5	19.8	393602	6.6	19.5	234692	6.7	21.1
441042	6.3	21.7	296348	6.4	21.1	60104	6.5	18.9	493418	6.5	21.1	281532	6.6	21.7	440130	6.7	21.0
85771	6.3	18.3	329864	6.4	18.2	124085	6.5	19.1	151956	6.5	19.0	275621	6.6	21.5	489033	6.7	20.3
140981	6.3	20.7	73971	6.4	18.6	213329	6.5	20.2	486665	6.5	21.7	4395	6.6	17.5	115169	6.7	18.6
249482	6.3	19.1	477457	6.4	20.3	179613	6.5	19.1	76127	6.5	18.5	427296	6.6	19.9	232052	6.7	19.5
233945	6.3	19.9	283830	6.4	19.8	52786	6.5	19.3	139978	6.5	19.5	385716	6.6	19.9	438155	6.7	19.6
434588	6.3	21.1	517446	6.4	21.8	356927	6.5	19.1	442475	6.5	19.2	138447	6.6	19.9	359567	6.7	20.9
452659	6.3	20.9	427619	6.4	20.9	277108	6.5	20.2	445654	6.5	20.2	12764	6.6	17.4	29089	6.7	18.3
386369	6.3	20.9	363669	6.4	20.4	509647	6.5	22.6	388121	6.5	20.1	248765	6.6	20.5	514693	6.7	21.8
110459	6.3	19.1	450888	6.4	20.4	410538	6.5	21.2	293683	6.5	20.4	187003	6.6	19.3	192024	6.7	20.3
300833	6.3	20.1	143628	6.4	21.3	143761	6.5	19.2	19933	6.5	16.5	294111	6.6	21.2	139777	6.7	19.6
325366	6.3	20.9	458401	6.4	19.8	409140	6.5	21.0	340088	6.5	20.6	243239	6.6	19.6	74180	6.7	19.3
484470	6.3	21.4	125990	6.4	18.7	178653	6.5	20.5	318272	6.5	19.7	158667	6.6	20.3	330815	6.7	20.2
208013	6.3	19.2	335189	6.4	21.0	244404	6.5	21.2	442239	6.5	21.4	487772	6.6	21.2	332216	6.7	20.8
454811	6.3	21.0	368513	6.4	20.3	443586	6.5	20.5	431107	6.5	22.3	274226	6.6	21.4	273735	6.7	21.0
116900	6.3	18.9	323602	6.4	19.6	26367	6.5	16.4	295679	6.5	21.5	350490	6.6	20.3	55260	6.7	19.6
72701	6.3	18.7	174109	6.4	20.9	387132	6.5	20.7	518015	6.5	20.4	352379	6.6	20.2	91323	6.7	18.8
442880	6.3	20.9	272216	6.4	19.4	317675	6.5	20.9	269824	6.5	19.7	26448	6.6	17.5	129617	6.7	19.8
432266	6.3	20.7	266045	6.4	21.6	315547	6.5	19.8	271162	6.5	19.7	329576	6.6	20.4	414309	6.7	20.1
212388	6.3	20.6	293030	6.4	20.4	376649	6.5	20.9	152164	6.5	18.8	48802	6.6	18.0	227135	6.7	19.3
484264	6.3	21.3	463383	6.4	20.9	374642	6.5	20.3	256292	6.5	20.5	75119	6.6	18.1	225432	6.7	19.7
516631	6.3	20.4	403319	6.4	22.6	174684	6.5	19.4	147607	6.5	19.6	393490	6.6	20.7	335016	6.7	19.2
204786	6.3	20.5	217199	6.4	20.3	238274	6.5	19.4	217410	6.5	20.8	490866	6.6	20.5	71123	6.7	18.0
297351	6.3	20.1	256635	6.4	20.6	285026	6.5	19.6	414932	6.5	20.6	441022	6.6	21.5	16817	6.7	17.6
452204	6.3	21.3	325738	6.4	20.0	20666	6.5	18.0	157686	6.5	19.6	99347	6.6	18.8	115007	6.7	18.0
40309	6.3	19.2	413413	6.4	21.3	291492	6.5	19.9	447016	6.5	20.5	420058	6.6	20.2	521915	6.7	21.1
187025	6.3	19.2	322492	6.4	20.5	26713	6.5	17.8	279222	6.5	19.3	100730	6.6	19.7	448913	6.7	20.1
379644	6.3	20.9	181189	6.4	19.5	409159	6.5	19.8	151624	6.5	19.6	514789	6.6	22.1	231237	6.7	19.4
425182	6.3	20.1	248252	6.4	20.5	369865	6.5	20.4	361384	6.5	20.2	226645	6.6	21.0	326739	6.7	19.6
481961	6.3	20.0	42488	6.4	17.0	297223	6.5	20.7	312347	6.5	20.7	220043	6.6	19.2	306761	6.7	18.9
210090	6.3	20.7	414971	6.4	20.5	249138	6.5	19.6	3870	6.5	16.2	317298	6.6	20.8	284956	6.7	21.0
274341	6.3	20.1	109452	6.4	19.5	297969	6.5	21.7	401708	6.6	20.4	189716	6.6	18.5	366557	6.7	20.2
277348	6.3	19.2	183494	6.4	20.5	48507	6.5	17.4	117754	6.6	19.6	414616	6.6	20.4	176963	6.7	19.2
78621	6.3	17.7	26297	6.4	17.6	363535	6.5	20.7	10335	6.6	17.9	28466	6.6	18.8	486415	6.7	19.9
236977	6.3	19.0	362444	6.4	20.7	234588	6.5	19.7	159336	6.6	20.3	77193	6.6	20.5	494085	6.7	20.2
384361	6.3	20.1	292442	6.4	20.3	209238	6.5	19.1	381367	6.6	20.5	222125	6.6	20.6	272019	6.7	20.9
347159	6.3	20.8	71842	6.4	17.7	230771	6.5	19.5	92510	6.6	20.2	357472	6.6	21.3	475826	6.7	20.3
8174	6.3	16.0	99110	6.4	19.9	310581	6.5	19.3	172207	6.6	19.6	442460	6.6	19.4	308773	6.7	19.8
494637	6.3	19.5	334166	6.4	20.0	351343	6.5	18.6	192984	6.6	20.2	230234	6.6	18.5	127470	6.7	19.8
450445	6.3	20.7	8431	6.4	16.5	311756	6.5	20.0	157282	6.6	20.8	232767	6.6	19.6	136470	6.7	19.9
325938	6.3	21.6	286886	6.4	18.9	4638	6.5	16.4	22577	6.6	17.9	448928	6.6	21.0	395931	6.7	19.8
183455	6.3	19.4	96814	6.4	19.2	477869	6.5	20.3	315685	6.6	20.3	97531	6.6	19.4	474199	6.7	20.3
353313	6.3	19.8	433017	6.4	21.0	441203	6.5	21.5	33564	6.6	18.1	414567	6.6	20.1	482061	6.7	20.8
181812	6.3	19.7	25150	6.4	18.1	361215	6.5	20.5	29836	6.6	19.1	172089	6.6	19.6	394202	6.7	22.2
472757	6.3	20.5	49955	6.4	18.0	44118	6.5	18.0	264367	6.6	20.5	408589	6.6	20.8	326779	6.7	20.4
431695	6.3	21.3	474836	6.4	21.7	44584	6.5	19.8	488963	6.6	20.2	309547	6.6	20.6	154522	6.7	19.2
227213	6.3	20.3	505640	6.4	20.4	367863	6.5	20.1	107946	6.6	19.1	400445	6.6	20.6	88408	6.7	18.7
290155	6.3	19.8	337065	6.4	20.3	199547	6.5	19.3	250672	6.6	20.4	291918	6.6	20.0	32657	6.7	18.8
174703	6.4	19.6	39507	6.4	18.5	267984	6.5	21.2	258473	6.6	20.6	443170	6.6	21.1			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
376641	6.7	20.5	371272	6.8	21.4	351605	6.8	19.5	331443	6.9	19.8	141691	6.9	20.0	383024	7.0	19.9
270630	6.7	20.7	482777	6.8	21.5	448767	6.8	22.3	358201	6.9	20.0	267587	6.9	20.5	355503	7.0	20.8
50412	6.7	17.8	266144	6.8	19.3	511738	6.8	21.3	324856	6.9	21.8	191214	6.9	19.0	207539	7.0	20.4
244365	6.7	20.4	385429	6.8	19.5	522133	6.8	20.7	101133	6.9	17.6	321038	6.9	21.1	18271	7.0	17.3
55230	6.7	18.9	460776	6.8	20.5	133804	6.8	18.4	312503	6.9	20.2	335410	6.9	21.3	391577	7.0	21.0
415011	6.7	20.6	293959	6.8	21.1	454580	6.8	21.3	143346	6.9	19.9	474736	6.9	21.7	369173	7.0	20.2
19270	6.7	18.6	169093	6.8	20.1	94890	6.8	18.6	55290	6.9	19.2	396430	6.9	21.2	220085	7.0	18.8
303567	6.7	20.8	129019	6.8	19.5	179708	6.8	20.2	384407	6.9	19.4	273150	6.9	20.4	220081	7.0	18.7
7878	6.7	16.9	217585	6.8	20.6	280141	6.8	19.8	89765	6.9	19.2	510536	6.9	21.2	421536	7.0	20.8
147106	6.7	18.7	281185	6.8	20.9	487890	6.8	20.5	173330	6.9	19.3	188856	6.9	19.3	212297	7.0	20.1
426083	6.7	21.4	430824	6.8	21.7	453516	6.8	19.4	263553	6.9	21.0	331093	6.9	19.4	151876	7.0	19.9
447664	6.7	20.9	78622	6.8	18.4	184508	6.8	20.5	337380	6.9	20.3	481819	6.9	20.7	212271	7.0	20.4
17957	6.7	16.7	117682	6.8	19.3	298889	6.8	18.0	215948	6.9	21.2	80232	6.9	18.6	488609	7.0	21.8
181580	6.7	20.1	75601	6.8	19.5	168241	6.8	18.3	411117	6.9	20.3	162212	6.9	19.7	494138	7.0	20.7
76714	6.7	19.1	189211	6.8	19.8	138506	6.8	20.2	231059	6.9	20.1	399678	6.9	19.5	474733	7.0	21.0
493052	6.7	20.6	513624	6.8	21.8	518500	6.9	20.7	357604	6.9	19.2	339123	6.9	19.7	385044	7.0	20.7
514777	6.7	21.2	296893	6.8	19.6	421471	6.9	20.5	385428	6.9	21.0	455686	6.9	20.9	257718	7.0	19.8
124297	6.7	19.2	493140	6.8	20.8	48929	6.9	18.4	106225	6.9	19.1	435453	6.9	22.6	474743	7.1	21.7
239748	6.7	20.3	287376	6.8	18.8	241382	6.9	19.1	141861	6.9	19.1	209174	6.9	18.8	511814	7.1	21.7
332860	6.7	20.2	316691	6.8	21.2	130375	6.9	19.7	196151	6.9	19.5	43928	6.9	19.5	446916	7.1	22.5
261336	6.7	20.1	44340	6.8	17.5	436871	6.9	20.9	367966	6.9	21.6	106903	6.9	19.2	22641	7.1	18.3
213133	6.7	20.7	278105	6.8	20.6	26550	6.9	19.2	408059	6.9	19.9	384997	6.9	20.5	412787	7.1	20.8
357263	6.7	20.3	494414	6.8	20.9	378022	6.9	20.6	76167	6.9	19.3	168039	6.9	20.2	191626	7.1	19.1
119409	6.7	19.2	487112	6.8	21.2	346196	6.9	19.9	12464	6.9	17.3	211769	6.9	19.7	460735	7.1	19.7
218052	6.7	20.5	147446	6.8	17.6	214063	6.9	20.0	291882	6.9	20.4	60801	6.9	18.0	212070	7.1	19.7
229374	6.7	19.3	32105	6.8	19.2	76680	6.9	19.2	403648	6.9	20.8	250508	6.9	20.2	214967	7.1	20.2
103654	6.7	18.7	454253	6.8	21.6	77718	6.9	19.7	451499	6.9	20.2	97054	6.9	19.5	69905	7.1	18.7
288842	6.7	19.4	269594	6.8	19.7	310278	6.9	20.2	40075	6.9	19.5	276312	6.9	19.6	434807	7.1	19.9
260539	6.7	20.8	315900	6.8	19.9	418561	6.9	20.5	355444	6.9	19.6	511038	6.9	19.8	47827	7.1	17.9
38724	6.7	18.0	272638	6.8	20.0	324151	6.9	19.9	110337	6.9	17.9	325757	6.9	20.9	225443	7.1	20.0
65439	6.7	17.9	333536	6.8	21.1	515473	6.9	19.4	45545	6.9	19.3	520837	6.9	21.2	381751	7.1	20.5
458516	6.7	20.6	455900	6.8	20.9	96584	6.9	17.5	74274	6.9	17.8	226313	6.9	20.0	335505	7.1	19.7
458133	6.7	20.3	328772	6.8	20.5	320855	6.9	20.6	490979	6.9	21.6	513969	6.9	21.8	473705	7.1	20.2
41793	6.7	18.1	259663	6.8	19.3	327549	6.9	20.4	492258	6.9	20.2	321209	6.9	20.2	204555	7.1	20.0
96562	6.7	19.4	228951	6.8	19.2	275385	6.9	20.3	291673	6.9	20.5	283719	6.9	19.9	391146	7.1	20.3
91928	6.7	19.0	147999	6.8	18.8	287740	6.9	21.1	427866	6.9	21.4	71530	6.9	18.7	54357	7.1	18.6
325614	6.7	19.5	479437	6.8	20.8	189918	6.9	18.2	308295	6.9	21.1	333628	6.9	20.8	236868	7.1	20.6
334989	6.8	20.7	16104	6.8	17.7	223332	6.9	20.0	222939	6.9	19.9	158808	6.9	19.5	213838	7.1	20.2
477325	6.8	20.6	287447	6.8	19.3	484398	6.9	19.6	362494	6.9	21.0	286849	6.9	20.2	367429	7.1	21.7
10375	6.8	18.6	6718	6.8	17.0	181283	6.9	19.2	136264	6.9	18.8	233954	7.0	19.6	20710	7.1	17.8
413341	6.8	20.6	25319	6.8	16.8	420126	6.9	20.6	446560	6.9	21.0	12007	7.0	18.0	270121	7.1	19.8
353411	6.8	20.5	191172	6.8	19.8	384367	6.9	19.9	170473	6.9	19.2	46618	7.0	18.4	83220	7.1	18.9
234666	6.8	19.3	364999	6.8	21.6	65248	6.9	20.0	401855	6.9	22.3	61425	7.0	18.1	48110	7.1	19.1
467800	6.8	18.9	107041	6.8	19.1	289761	6.9	21.1	287450	6.9	19.6	284042	7.0	19.3	491275	7.1	19.6
85717	6.8	16.9	96604	6.8	18.2	472421	6.9	21.6	270050	6.9	19.9	430871	7.0	20.5	344596	7.1	20.7
316985	6.8	20.4	437931	6.8	21.1	128286	6.9	19.4	323265	6.9	20.7	466457	7.0	20.6	289546	7.1	20.9
357372	6.8	19.7	265666	6.8	21.1	371316	6.9	20.8	368307	6.9	21.6	371811	7.0	21.9	434168	7.1	20.1
523390	6.8	20.7	488112	6.8	20.7	308748	6.9	21.2	448997	6.9	20.1	283793	7.0	20.3	83881	7.1	19.6
144947	6.8	18.8	97637	6.8	18.1	383162	6.9	20.7	233220	6.9	19.8	274362	7.0	20.0	58023	7.1	17.1
475601	6.8	19.7	63349	6.8	19.9	398632	6.9	20.8	269363	6.9	20.5	460688	7.0	21.0	202547	7.1	20.1
107484	6.8	19.8	187136	6.8	20.7	349566	6.9	21.2	301265	6.9	20.1	113723	7.0	18.6	395914	7.1	20.3
353019	6.8	21.2	377234	6.8	19.4	231373	6.9	20.2	265159	6.9	19.8	373065	7.0	20.1	20699	7.1	17.5
376549	6.8	20.9	164776	6.8	19.6	199957	6.9	20.2	363023	6.9	20.1	481555	7.0	19.3	329873	7.1	19.2
187522	6.8	19.7	60145	6.8	20.3	223530	6.9	20.2	243114	6.9	20.2	518087	7.0	21.3	63526	7.1	18.2
185628	6.8	20.4	517477	6.8	21.9	25534	6.9	19.2	488031	6.9	21.2	22323	7.0	17.6	45955	7.1	18.8
367812	6.8	21.0	64424	6.8	18.2	94674	6.9	17.9	263716	6.9	20.5	333363	7.0	18.6	275359	7.1	19.7
314317	6.8	21.1	451258	6.8	21.1	274414	6.9	19.6	354380	6.9	19.4	385970	7.0	19.4	120500	7.1	18.7
452641	6.8	21.2	168599	6.8	18.5	457362	6.9	21.2	21388	6.9	18.5	151879	7.0	19.1	135888	7.1	18.2
474607	6.8	19.9	59232	6.8	19.4	517404	6.9	21.2	285262	6.9	20.8	391240	7.0	19.9	277874	7.1	20.4
132317	6.8	19.7	443331	6.8	20.3	438574	6.9	18.7	492379	6.9	20.6	82098	7.0	19.2	144670	7.1	18.8
153380	6.8	19.7	251632	6.8	20.6	328817	6.9	20.1	227381	6.9	21.4	225155	7.0	21.0	449303	7.1	21.0
447167	6.8	20.4	144394	6.8	19.6	67354	6.9	19.0	125631	6.9	18.4	425485	7.0	20.0	407095	7.1	20.7
358224	6.8	20.0	136649	6.8	19.5	309405	6.9	20.5	493294	6.9	20.2	226453	7.0	19.9	494040	7.1	20.7
226308	6.8	19.3	317464	6.8	18.6	187764	6.9	19.7	223019	6.9	20.9	408600	7.0	20.9	517961	7.1	20.7
146076	6.8	19.9	245302	6.8	19.6	394954	6.9	20.7	60612	6.9	19.8	156905	7.0	19.9	150155	7.1	19.8
145379	6.8	20.7	453551	6.8	20.0	75584	6.9	17.1	394139	6.9	21.2	402612	7.0	21.0	223542	7.1	19.5
96533	6.8	19.5	516520	6.8	21.9	168641	6.9	19.5	418511	6.9	20.5	162821	7.0	18.5	252556	7.1	19.2
413179	6.8	19.8	411576	6.8	20.0	386006	6.9	20.9	126533	6.9	19.8	42540	7.0	19.7	12113	7.1	16.9
107155	6.8	18.9	358246	6.8	20.9	129632	6.9	20.4	351409	6.9	20.5	104542	7.0	18.3	155888	7.1	20.5
494017	6.8	21.5	223991	6.8	19.5	102171	6.9	19.6	366525	6.9	20.7	417413	7.0	21.0	477362	7.1	20.4
451274	6.8	21.6	484966	6.8	21.0	447588	6.9	21.1	40504	6.9	18.2	406010	7.0</				

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
70015	7.1	17.5	206484	7.2	18.9	329479	7.3	19.5	181855	7.3	23.1	239422	7.4	20.2	310067	7.5	21.0
379627	7.1	19.7	252562	7.2	19.8	92465	7.3	18.9	373392	7.3	20.5	138461	7.4	19.7	265145	7.5	19.6
510540	7.1	21.6	392032	7.2	21.0	394553	7.3	19.8	244822	7.4	20.1	96495	7.4	18.6	268626	7.5	20.8
179097	7.1	19.5	333817	7.2	21.0	441098	7.3	21.3	304323	7.4	20.5	446443	7.4	21.4	2437	7.5	14.8
53506	7.1	18.6	92492	7.2	19.0	266214	7.3	20.2	116865	7.4	19.1	172817	7.4	19.9	110799	7.5	19.3
121106	7.1	20.2	228943	7.2	19.9	4633	7.3	18.0	393782	7.4	22.3	44615	7.4	17.6	269359	7.5	19.5
479396	7.1	19.7	264401	7.2	20.8	324288	7.3	20.2	418779	7.4	20.1	522276	7.4	19.9	197441	7.5	19.8
61279	7.1	18.0	6149	7.2	17.0	198731	7.3	19.7	120256	7.4	19.8	470941	7.4	21.4	127733	7.5	18.7
323331	7.1	20.0	407644	7.2	20.1	212117	7.3	20.6	230291	7.4	19.8	381137	7.4	18.7	211930	7.5	19.1
435451	7.1	20.7	319347	7.2	20.0	24246	7.3	18.0	230770	7.4	19.5	457793	7.4	21.1	199156	7.5	19.8
360909	7.1	20.6	68883	7.2	19.0	136274	7.3	19.2	484570	7.4	20.8	224697	7.4	19.6	125314	7.5	17.6
518868	7.1	20.5	418569	7.2	19.6	442434	7.3	20.4	78790	7.4	18.7	167723	7.4	18.7	25614	7.5	17.8
133789	7.1	19.1	297159	7.2	19.2	24822	7.3	17.8	331393	7.4	20.9	418454	7.4	21.5	124094	7.5	19.8
102184	7.1	18.4	395703	7.2	19.2	113896	7.3	18.5	513928	7.4	20.5	285864	7.4	21.6	48667	7.5	18.7
386878	7.1	19.5	260377	7.2	19.4	159326	7.3	19.5	414295	7.4	20.3	414282	7.4	20.1	30098	7.5	18.4
523622	7.1	22.4	356613	7.2	20.1	29351	7.3	17.7	134524	7.4	18.5	27161	7.4	16.8	285873	7.5	20.2
23367	7.1	18.4	254929	7.2	20.4	442340	7.3	19.9	457267	7.4	20.9	157710	7.4	19.5	282773	7.5	20.6
296471	7.1	20.6	31960	7.2	18.8	183084	7.3	18.9	451848	7.4	21.0	372878	7.4	20.4	314851	7.5	19.4
271697	7.1	20.9	226078	7.2	20.0	103091	7.3	18.6	232142	7.4	19.8	458114	7.4	19.1	137346	7.5	18.3
9317	7.1	16.8	53711	7.2	18.4	66436	7.3	18.9	139921	7.4	18.9	248173	7.4	18.8	28145	7.5	18.7
464414	7.1	20.6	22153	7.2	18.0	398417	7.3	20.5	60274	7.4	18.8	55838	7.4	19.2	426461	7.5	19.7
300396	7.1	20.6	314366	7.2	20.6	504144	7.3	20.5	73922	7.4	19.4	89134	7.4	19.2	492137	7.5	20.5
20674	7.1	16.8	441191	7.2	19.6	301397	7.3	19.7	54276	7.4	17.4	485185	7.4	21.3	515099	7.5	21.3
23073	7.1	18.5	385270	7.2	19.0	187176	7.3	20.4	106133	7.4	18.1	392378	7.4	20.7	116455	7.5	19.7
518086	7.1	20.8	443848	7.2	20.2	209669	7.3	20.3	177320	7.4	20.0	262074	7.4	20.3	69059	7.5	18.2
432957	7.1	20.7	381344	7.2	20.8	299583	7.3	20.2	193250	7.4	18.5	286900	7.4	19.2	506061	7.5	21.0
11713	7.1	16.4	246075	7.2	19.5	116978	7.3	19.4	243449	7.4	20.0	368367	7.4	21.0	454110	7.5	21.1
256097	7.1	19.7	172620	7.2	19.5	454041	7.3	21.2	244199	7.4	18.9	185412	7.4	19.8	182490	7.5	18.2
439117	7.1	20.2	233441	7.2	19.3	483405	7.3	21.1	443975	7.4	19.0	64499	7.4	18.5	278041	7.5	19.8
134226	7.1	18.7	370898	7.2	21.0	477247	7.3	21.8	175237	7.4	20.8	156943	7.4	20.1	391000	7.5	18.5
305176	7.1	19.3	133001	7.2	19.6	71620	7.3	18.1	418601	7.4	21.1	104232	7.4	18.5	404363	7.5	20.7
294768	7.1	20.7	223104	7.2	20.5	129637	7.3	19.8	29295	7.4	19.0	77990	7.4	18.6	411959	7.5	20.0
279675	7.1	20.7	298458	7.2	20.6	450865	7.3	20.0	73300	7.4	19.3	358557	7.4	20.5	79672	7.5	18.6
261907	7.1	19.9	336645	7.2	20.7	135791	7.3	19.2	471207	7.4	19.6	345824	7.4	21.2	473600	7.5	20.6
83290	7.1	19.1	137604	7.2	18.5	224414	7.3	19.0	72782	7.4	18.0	486475	7.4	19.5	403357	7.5	20.5
16381	7.1	20.2	21451	7.2	17.1	31550	7.3	18.1	287652	7.4	20.0	281008	7.4	21.1	351062	7.5	19.7
475847	7.1	20.5	44310	7.2	18.6	24239	7.3	17.5	23614	7.4	18.6	269267	7.4	20.3	456880	7.5	19.2
211820	7.1	20.0	244867	7.2	20.3	480412	7.3	19.5	60224	7.4	19.7	514578	7.4	21.0	274289	7.5	19.9
492787	7.1	20.7	391258	7.2	20.1	482621	7.3	18.9	449352	7.4	20.7	226398	7.4	20.1	197442	7.5	18.9
472011	7.1	19.6	33870	7.2	17.5	372170	7.3	20.0	111002	7.4	18.2	20977	7.4	17.9	272445	7.5	20.7
490937	7.1	22.0	233221	7.2	19.5	266607	7.3	20.2	48830	7.4	17.2	390674	7.4	19.8	418588	7.5	21.6
407652	7.1	20.5	16710	7.2	17.4	484372	7.3	20.4	520827	7.4	20.1	46276	7.4	18.3	407227	7.5	19.0
331297	7.1	20.3	436808	7.2	20.1	255573	7.3	19.6	79261	7.4	19.0	218255	7.4	20.1	265172	7.5	19.3
252657	7.1	19.6	119030	7.2	19.4	270080	7.3	19.1	266000	7.4	20.0	241788	7.4	19.6	450709	7.5	20.6
107970	7.1	19.3	270700	7.2	20.3	386647	7.3	19.9	484906	7.4	21.5	387589	7.4	19.3	78499	7.5	18.4
512008	7.1	21.4	436619	7.2	21.6	273227	7.3	20.1	86189	7.4	18.8	41741	7.4	18.1	121936	7.5	20.1
30013	7.1	19.4	155071	7.2	20.1	58977	7.3	18.8	269242	7.4	19.6	407446	7.4	20.9	81625	7.5	17.6
513772	7.1	19.7	515988	7.2	21.0	66199	7.3	17.7	33350	7.4	17.0	79412	7.4	19.0	279588	7.5	20.6
113158	7.1	19.4	11280	7.2	16.4	480421	7.3	19.9	478448	7.4	21.5	451915	7.4	20.7	125095	7.5	19.1
448957	7.1	20.4	509577	7.2	21.2	352278	7.3	19.4	373024	7.4	20.6	376753	7.4	19.8	209976	7.5	19.7
399697	7.1	20.5	73974	7.2	17.9	155562	7.3	18.8	414690	7.4	20.8	521888	7.4	20.6	382636	7.5	20.2
23716	7.1	19.1	240155	7.2	21.2	472439	7.3	20.7	84634	7.4	19.2	159048	7.4	20.4	580076	7.5	20.6
421627	7.2	21.1	48461	7.2	18.5	436128	7.3	19.4	420706	7.4	19.8	54152	7.4	17.6	260579	7.5	20.0
298207	7.2	19.9	266783	7.2	20.4	263204	7.3	20.1	164161	7.4	18.6	144022	7.4	20.1	412193	7.5	21.5
153617	7.2	18.8	331648	7.2	21.0	210918	7.3	20.7	315570	7.4	19.8	519726	7.4	22.1	50096	7.5	17.4
71731	7.2	16.6	49056	7.2	18.5	507891	7.3	21.0	278124	7.4	21.1	521911	7.4	20.0	50994	7.5	18.2
82788	7.2	18.5	39321	7.2	19.6	46258	7.3	17.1	226537	7.4	19.4	373097	7.4	20.5	297806	7.5	19.3
137955	7.2	17.8	419244	7.2	21.0	415631	7.3	20.6	41306	7.4	19.5	272057	7.4	20.1	65593	7.5	18.0
63553	7.2	18.9	393549	7.2	20.5	262519	7.3	19.7	201685	7.4	19.7	516610	7.4	20.7	210851	7.5	20.3
55594	7.2	18.5	145784	7.2	19.2	405910	7.3	20.2	284623	7.4	20.7	71583	7.4	18.0	271254	7.5	19.3
71274	7.2	18.2	390615	7.2	20.2	202771	7.3	19.8	21094	7.4	18.8	244157	7.4	19.8	73633	7.5	19.7
73603	7.2	18.8	157058	7.2	20.5	447838	7.3	19.7	270904	7.4	19.8	422303	7.5	20.6	254108	7.5	20.0
88239	7.2	18.7	493769	7.2	20.8	147151	7.3	18.4	260769	7.4	20.5	67811	7.5	18.5	247311	7.5	19.1
82884	7.2	18.6	453559	7.2	19.5	474147	7.3	21.1	499166	7.4	20.3	224709	7.5	20.4	185975	7.5	20.4
267961	7.2	20.4	97197	7.2	18.6	156889	7.3	20.1	79696	7.4	18.5	331345	7.5	20.9	196634	7.5	19.2
399738	7.2	20.8	433586	7.2	19.8	311618	7.3	19.7	225203	7.4	20.6	202738	7.5	20.0	361855	7.5	20.4
302637	7.2	19.4	301454	7.2	20.1	412808	7.3	20.2	234897	7.4	19.3	176997	7.5	19.5	172547	7.5	19.0
68174	7.2	19.0	494334	7.2	19.3	461320	7.3	20.9	24288	7.4	17.4	372901	7.5	21.1	26951	7.5	18.6
50556	7.2	17.3	277857	7.3	20.5	145861	7.3	19.1	206084	7.4	20.4	97354	7.5	18.4	100667	7.5	18.0
332577	7.2	19.9	54376	7.3	19.1	173377	7.3	19.4	296944	7.4	20.2	204030	7.5	19.2	485562	7.5	19.5
497535	7.2	20.9	224175	7.3	19.0	490936	7.3	21.1	311104	7.4	19.2	158197	7.5	17.8	230143	7.5	

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
326785	7.5	20.5	346455	7.6	20.8	167105	7.7	19.5	49489	7.8	18.2	339039	7.8	20.1	323242	7.9	20.6
21297	7.5	17.3	522031	7.6	21.3	255122	7.7	19.6	155052	7.8	19.5	229235	7.8	18.9	185114	7.9	19.9
237362	7.5	20.4	331268	7.6	20.4	455973	7.7	20.3	270789	7.8	21.3	187860	7.8	18.7	179680	7.9	20.9
104538	7.5	18.9	503341	7.6	19.4	192036	7.7	20.0	491479	7.8	20.9	41156	7.8	17.9	299025	7.9	19.9
13124	7.5	16.9	182391	7.6	19.5	159761	7.7	20.0	75972	7.8	19.5	446646	7.9	20.6	48735	7.9	17.9
418636	7.5	21.0	287883	7.6	21.3	167777	7.7	19.4	341104	7.8	20.2	698	7.9	14.6	396617	7.9	21.0
396380	7.5	19.6	302701	7.6	18.9	238008	7.7	20.1	232138	7.8	19.0	239121	7.9	21.2	7340	7.9	17.5
316364	7.5	20.2	336091	7.6	21.8	40442	7.7	17.6	267120	7.8	20.1	387131	7.9	20.3	251348	7.9	19.0
182348	7.6	20.0	24893	7.6	18.2	464537	7.7	20.2	516839	7.8	19.9	231575	7.9	20.1	124265	7.9	19.7
320107	7.6	19.8	334162	7.6	19.5	274993	7.7	19.4	115041	7.8	18.4	125295	7.9	18.4	271508	7.9	18.9
85163	7.6	17.8	435385	7.6	19.8	145918	7.7	18.4	253279	7.8	19.6	16251	7.9	18.4	449379	7.9	21.0
45493	7.6	17.5	481940	7.6	20.9	10312	7.7	17.2	73840	7.8	17.7	360089	7.9	20.0	47374	7.9	18.5
293853	7.6	20.6	265534	7.6	20.6	221765	7.7	19.4	75703	7.8	17.0	11920	7.9	16.9	326794	7.9	19.9
130361	7.6	20.6	102759	7.6	19.5	80643	7.7	19.3	468566	7.8	18.7	218553	7.9	19.5	37887	7.9	19.3
133657	7.6	18.6	161727	7.6	18.3	492356	7.7	21.3	5570	7.8	17.1	448878	7.9	20.6	472830	7.9	21.1
474764	7.6	20.9	51478	7.6	18.3	368342	7.7	21.7	135995	7.8	18.7	152836	7.9	19.1	276839	7.9	20.5
82094	7.6	18.9	357682	7.6	21.5	68745	7.7	17.8	35708	7.8	18.7	113539	7.9	18.1	209948	7.9	21.2
286256	7.6	20.3	210126	7.6	19.4	431617	7.7	20.3	350716	7.8	19.2	407096	7.9	20.8	486651	7.9	21.7
24151	7.6	17.7	32870	7.6	18.5	134201	7.7	18.7	377974	7.8	20.4	485183	7.9	20.8	55688	7.9	18.9
122007	7.6	19.4	511679	7.6	20.8	140615	7.7	18.3	404483	7.8	21.0	144396	7.9	18.5	489159	7.9	21.5
415571	7.6	19.5	207365	7.6	20.1	95488	7.7	19.0	169082	7.8	19.8	457175	7.9	19.8	436473	7.9	21.6
152202	7.6	18.4	295368	7.6	21.2	356764	7.7	20.7	192237	7.8	20.5	324869	7.9	19.7	305869	7.9	20.4
217874	7.6	19.4	400113	7.6	20.6	57689	7.7	19.1	266640	7.8	19.9	414335	7.9	19.8	369152	7.9	20.9
303631	7.6	19.8	174888	7.6	19.2	158035	7.7	19.7	211334	7.8	19.9	484369	7.9	19.6	396375	7.9	20.3
294965	7.6	20.3	467916	7.6	19.7	470952	7.7	21.2	194495	7.8	19.3	187600	7.9	18.4	267159	7.9	20.2
179144	7.6	19.8	333249	7.7	21.3	209871	7.7	18.7	478544	7.8	20.1	367263	7.9	20.3	122852	7.9	19.4
117698	7.6	20.2	269506	7.7	19.5	30008	7.7	18.9	384369	7.8	19.5	125196	7.9	17.9	389633	7.9	20.7
329405	7.6	20.6	220252	7.7	18.8	355015	7.7	20.6	414994	7.8	19.5	209876	7.9	20.2	366812	7.9	19.8
148432	7.6	19.6	467556	7.7	20.5	112833	7.7	20.0	129875	7.8	19.0	261334	7.9	20.2	68394	7.9	17.5
127763	7.6	18.5	268547	7.7	19.8	321720	7.7	21.6	65338	7.8	19.6	92774	7.9	17.6	487046	7.9	20.8
18126	7.6	18.5	103060	7.7	16.8	155565	7.7	19.2	197819	7.8	20.2	482014	7.9	20.5	466608	7.9	21.3
132431	7.6	20.0	423425	7.7	20.7	412406	7.7	20.4	171619	7.8	18.5	361240	7.9	20.2	182256	7.9	20.2
279322	7.6	20.0	296856	7.7	20.5	267531	7.7	20.1	367621	7.8	20.2	517340	7.9	21.2	70638	7.9	17.8
34504	7.6	18.3	262350	7.7	20.1	352935	7.7	19.4	418488	7.8	20.9	520691	7.9	20.3	499957	7.9	21.1
441478	7.6	20.1	187675	7.7	19.9	282885	7.7	21.1	496625	7.8	20.4	269353	7.9	20.8	327527	7.9	20.3
113196	7.6	18.6	111203	7.7	19.2	202318	7.7	20.8	177229	7.8	19.2	385638	7.9	19.4	164818	7.9	20.8
280902	7.6	19.4	479386	7.7	20.1	263675	7.7	20.0	332815	7.8	20.2	161923	7.9	21.0	76615	7.9	19.2
124971	7.6	18.1	152045	7.7	18.9	228995	7.7	19.0	89809	7.8	18.6	156812	7.9	18.6	256555	7.9	20.3
168573	7.6	17.7	144261	7.7	19.9	94179	7.7	18.0	517557	7.8	20.4	208110	7.9	19.5	415593	7.9	20.7
31488	7.6	18.2	183071	7.7	19.6	329105	7.7	19.6	84427	7.8	19.0	515864	7.9	21.0	245341	7.9	21.7
77806	7.6	18.2	149016	7.7	19.8	407110	7.7	20.6	516543	7.8	20.0	364516	7.9	20.7	415399	7.9	21.4
23621	7.6	18.7	173135	7.7	19.3	149378	7.7	19.2	223066	7.8	18.5	424710	7.9	21.5	71342	7.9	17.8
401616	7.6	20.9	203225	7.7	19.5	79732	7.7	18.4	31042	7.8	19.2	306272	7.9	18.4	354459	7.9	21.4
197303	7.6	19.3	216343	7.7	19.1	196398	7.7	19.9	351449	7.8	21.5	292120	7.9	19.2	372313	7.9	20.6
383148	7.6	21.2	132769	7.7	18.9	449545	7.7	19.9	215196	7.8	19.7	356481	7.9	20.1	263343	7.9	20.4
53129	7.6	18.4	16600	7.7	17.3	65010	7.7	18.6	59415	7.8	19.4	300545	7.9	20.9	28501	7.9	20.1
256603	7.6	19.5	25650	7.7	18.1	326090	7.7	19.9	66083	7.8	18.1	53617	7.9	18.6	225336	7.9	19.5
413165	7.6	18.9	368989	7.7	21.8	49522	7.7	18.1	127390	7.8	20.2	276687	7.9	18.8	124119	7.9	19.0
145106	7.6	19.4	254437	7.7	19.1	285807	7.7	18.8	286139	7.8	19.2	452306	7.9	22.2	309927	7.9	20.2
218824	7.6	20.8	173435	7.7	19.8	167861	7.7	19.0	375476	7.8	20.8	322207	7.9	20.2	477242	7.9	21.2
102671	7.6	17.7	244099	7.7	19.7	205049	7.7	19.5	2035	7.8	14.6	166357	7.9	20.1	493105	7.9	20.6
451784	7.6	21.4	251698	7.7	18.8	349248	7.7	18.2	228830	7.8	18.4	382417	7.9	20.3	310845	7.9	18.3
384410	7.6	19.8	109555	7.7	18.5	96514	7.7	18.1	319670	7.8	20.5	33344	7.9	17.8	474818	7.9	19.9
367921	7.6	20.3	185020	7.7	18.7	360622	7.7	20.7	486393	7.8	19.9	42131	7.9	18.8	5836	7.9	17.6
409288	7.6	21.5	10485	7.7	17.1	266921	7.7	21.1	397284	7.8	19.4	270162	7.9	20.0	257468	7.9	19.5
133617	7.6	19.2	513367	7.7	20.7	220716	7.7	19.4	341927	7.8	21.0	266136	7.9	18.6	227674	7.9	20.0
70555	7.6	19.2	424872	7.7	20.5	97289	7.7	18.4	383852	7.8	21.1	487796	7.9	20.7	404344	7.9	20.7
137746	7.6	18.0	195863	7.7	19.9	308317	7.7	20.7	82342	7.8	18.7	410662	7.9	20.8	358301	7.9	20.8
444470	7.6	21.2	276808	7.7	20.2	397572	7.7	20.9	69848	7.8	18.0	113117	7.9	18.4	37886	7.9	18.5
352361	7.6	20.6	50794	7.7	18.7	216655	7.7	19.3	431722	7.8	21.1	25675	7.9	16.1	120201	7.9	19.4
23701	7.6	18.9	363707	7.7	20.8	320718	7.7	20.0	350899	7.8	20.7	511168	7.9	20.2	145242	7.9	19.1
329486	7.6	20.8	24576	7.7	18.1	115676	7.7	18.9	49316	7.8	16.8	436801	7.9	20.2	293609	7.9	20.8
478616	7.6	20.3	179241	7.7	19.9	517329	7.8	20.9	280893	7.8	19.8	75356	7.9	17.3	302693	7.9	20.4
143754	7.6	19.1	351091	7.7	20.6	409323	7.8	20.0	342452	7.8	20.4	516090	7.9	20.3	282779	7.9	20.0
270132	7.6	20.2	420222	7.7	20.8	117985	7.8	20.5	317319	7.8	20.0	164481	7.9	20.3	385747	7.9	19.4
38060	7.6	17.8	223732	7.7	20.1	322949	7.8	21.1	341997	7.8	20.1	69534	7.9	18.2	358308	7.9	19.9
142530	7.6	18.8	311841	7.7	19.9	48893	7.8	19.0	384614	7.8	20.6	158201	7.9	20.4	163327	7.9	19.8
460906	7.6	20.7	344875	7.7	20.3	70198	7.8	18.3	49692	7.8	18.6	288116	7.9	19.7	318637	7.9	20.9
68020	7.6	17.0	207240	7.7	20.0	403397	7.8	20.2	316991	7.8	20.5	441162	7.9	20.7	34964	7.9	18.9
267770	7.6	19.6	275157	7.7	19.4	104867	7.8	19.8	359718	7.8	19.3	383588	7.9	21.0	269188	7.9	21.1
295112	7.6	20.8	330556	7.7	19.2	32897	7.8	18.6	242781	7.8	20.3	441148	7.9	21.0			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
440809	7.9	20.0	329508	8.1	19.8	262381	8.1	19.3	289375	8.2	21.0	185159	8.3	19.3	383057	8.3	20.2
43978	7.9	18.5	328748	8.1	20.2	321862	8.1	19.9	384328	8.2	20.4	411938	8.3	20.9	249953	8.3	20.3
360347	7.9	20.0	411110	8.1	20.5	250667	8.1	20.6	473633	8.2	20.4	134140	8.3	20.0	323559	8.3	19.8
193653	7.9	19.5	215523	8.1	19.7	414375	8.1	20.8	485343	8.2	20.2	5863	8.3	20.2	390636	8.3	21.8
139697	7.9	19.5	88367	8.1	18.3	511712	8.1	20.3	343109	8.2	19.8	230924	8.3	19.1	383042	8.3	19.3
423424	7.9	21.4	160480	8.1	19.0	295582	8.1	20.2	209826	8.2	20.1	415211	8.3	21.3	76245	8.3	19.5
174653	7.9	18.7	479389	8.1	19.4	187535	8.1	19.5	328874	8.2	20.3	15406	8.3	18.0	456045	8.3	21.5
133911	7.9	19.7	419920	8.1	19.6	103711	8.1	17.1	192077	8.2	20.5	369773	8.3	20.7	478453	8.3	20.0
477309	7.9	20.2	176263	8.1	19.5	484274	8.1	22.0	329561	8.2	21.2	99730	8.3	19.6	365923	8.3	20.6
199880	7.9	19.9	513247	8.1	20.1	210354	8.1	20.7	159286	8.2	20.6	78653	8.3	19.0	486977	8.3	21.2
399777	7.9	20.7	291871	8.1	20.6	411489	8.1	20.2	26496	8.2	17.8	344090	8.3	19.4	187670	8.3	20.1
295001	8.0	20.3	75948	8.1	18.2	77210	8.1	18.6	418466	8.2	21.6	488377	8.3	19.7	334051	8.3	20.7
518232	8.0	19.3	273979	8.1	20.8	441124	8.2	20.7	147232	8.2	19.7	430777	8.3	18.8	201243	8.3	19.6
79323	8.0	18.5	271257	8.1	20.3	371352	8.2	20.9	16	8.2	9.4	298088	8.3	19.2	495782	8.3	21.5
261924	8.0	20.3	4044	8.1	16.0	309451	8.2	19.8	174168	8.2	19.6	367237	8.3	21.5	457401	8.3	20.2
2112	8.0	13.9	241855	8.1	19.8	29081	8.2	17.0	523349	8.2	20.9	428629	8.3	21.5	516779	8.3	19.9
101675	8.0	18.9	51800	8.1	18.3	212276	8.2	20.8	318852	8.2	19.6	23878	8.3	17.8	475144	8.4	19.5
474259	8.0	21.0	249944	8.1	19.6	36275	8.2	17.9	451965	8.2	21.0	63494	8.3	18.0	115306	8.4	19.1
400600	8.0	20.1	305178	8.1	20.0	201	8.2	12.0	409054	8.2	20.0	386065	8.3	20.4	407478	8.4	20.9
43740	8.0	18.7	78311	8.1	19.0	246778	8.2	19.8	74422	8.2	19.2	214031	8.3	19.5	476576	8.4	20.1
215755	8.0	19.7	194893	8.1	19.3	459682	8.2	20.6	362561	8.2	20.5	321265	8.3	21.3	301372	8.4	20.0
296864	8.0	19.8	516586	8.1	21.0	364917	8.2	20.3	227153	8.2	19.6	484535	8.3	19.3	194820	8.4	18.4
492870	8.0	20.6	395871	8.1	20.0	394927	8.2	20.2	321822	8.2	20.1	381043	8.3	21.0	150684	8.4	19.3
220806	8.0	19.5	336212	8.1	19.8	228414	8.2	20.4	30926	8.2	18.0	307293	8.3	21.2	350964	8.4	21.3
255141	8.0	20.1	316929	8.1	19.2	412004	8.2	20.6	368651	8.2	20.0	299115	8.3	20.1	381033	8.4	21.0
63402	8.0	18.4	442878	8.1	19.6	107285	8.2	18.8	66595	8.2	18.9	79482	8.3	18.7	420241	8.4	20.0
303509	8.0	19.7	485700	8.1	20.1	6491	8.2	24.4	77836	8.2	18.8	70412	8.3	19.3	263931	8.4	20.1
132523	8.0	20.0	117901	8.1	18.9	493257	8.2	20.3	184296	8.2	19.0	146472	8.3	18.1	205030	8.4	19.8
73953	8.0	18.6	279549	8.1	19.9	4120	8.2	17.7	117853	8.2	19.7	419353	8.3	20.0	397987	8.4	21.1
67450	8.0	18.4	283837	8.1	20.1	134509	8.2	20.4	329715	8.2	20.0	130132	8.3	18.4	222552	8.4	18.8
425262	8.0	20.4	238670	8.1	19.8	268320	8.2	21.1	266856	8.2	20.4	221265	8.3	19.7	425904	8.4	20.9
284491	8.0	19.8	446823	8.1	20.7	87174	8.2	18.7	437850	8.2	19.8	302731	8.3	20.9	484230	8.4	22.6
322943	8.0	19.6	280168	8.1	20.9	78268	8.2	19.7	195920	8.2	20.3	99318	8.3	19.2	409665	8.4	21.0
510128	8.0	19.5	76908	8.1	19.4	388075	8.2	18.9	215186	8.2	20.5	328581	8.3	21.1	126776	8.4	19.3
200919	8.0	19.6	34217	8.1	17.3	460067	8.2	20.5	416091	8.2	20.7	25160	8.3	17.8	391612	8.4	20.6
327110	8.0	19.1	259887	8.1	20.1	399600	8.2	18.9	339985	8.2	21.2	342240	8.3	20.0	214919	8.4	19.2
261458	8.0	20.9	490097	8.1	21.4	215619	8.2	19.0	194703	8.2	19.3	501558	8.3	20.7	485652	8.4	23.1
212206	8.0	19.8	460624	8.1	20.4	325743	8.2	20.3	457486	8.2	20.8	190939	8.3	18.8	380357	8.4	19.5
346634	8.0	18.5	96091	8.1	19.6	277539	8.2	20.3	418706	8.2	20.0	458475	8.3	20.7	513187	8.4	20.6
359562	8.0	20.1	487377	8.1	21.0	243289	8.2	19.7	219522	8.2	18.6	158573	8.3	19.9	227085	8.4	20.8
191483	8.0	20.1	113496	8.1	18.8	411947	8.2	20.3	252346	8.2	18.8	430934	8.3	21.2	292512	8.4	20.6
300550	8.0	20.1	456257	8.1	20.4	172353	8.2	19.3	333595	8.2	20.6	253458	8.3	19.5	90033	8.4	19.5
167232	8.0	19.5	403140	8.1	21.0	447542	8.2	20.5	191487	8.2	19.2	4198	8.3	17.2	368045	8.4	19.9
451868	8.0	20.9	214024	8.1	19.6	139436	8.2	19.9	21645	8.2	17.2	384545	8.3	21.4	439916	8.4	20.1
453555	8.0	19.7	51440	8.1	19.2	151946	8.2	20.0	301906	8.2	20.2	16497	8.3	17.5	517055	8.4	21.1
432259	8.0	19.8	129454	8.1	17.9	132790	8.2	19.1	136029	8.2	18.8	242040	8.3	20.4	35218	8.4	16.9
201049	8.0	19.8	281924	8.1	19.9	414656	8.2	20.5	515776	8.2	19.5	88685	8.3	18.7	364093	8.4	19.9
113537	8.0	18.7	267972	8.1	19.7	213297	8.2	19.7	192382	8.2	20.9	10061	8.3	17.4	292975	8.4	19.5
168132	8.0	19.6	342363	8.1	20.3	236995	8.2	20.6	4534	8.2	17.4	378063	8.3	19.6	409756	8.4	20.3
352926	8.0	21.0	225710	8.1	17.8	135513	8.2	19.2	351428	8.2	21.5	421072	8.3	20.3	229847	8.4	18.9
517461	8.0	22.0	23359	8.1	16.5	239271	8.2	20.2	212349	8.3	20.8	83301	8.3	19.5	179350	8.4	19.7
307448	8.0	20.2	121239	8.1	19.5	291717	8.2	21.0	323011	8.3	21.5	118613	8.3	19.5	256738	8.4	20.9
188409	8.0	20.6	441688	8.1	20.0	248278	8.2	20.1	101952	8.3	20.0	137543	8.3	19.3	39572	8.4	19.7
280420	8.0	19.0	17495	8.1	16.8	274725	8.2	20.0	270071	8.3	21.5	214713	8.3	21.1	459770	8.4	20.5
414283	8.0	21.8	242879	8.1	20.3	72705	8.2	18.9	49048	8.3	17.8	331982	8.3	19.9	510261	8.4	21.7
179178	8.0	19.3	326771	8.1	19.6	76116	8.2	18.0	395181	8.3	20.4	486339	8.3	20.9	207833	8.4	20.7
494098	8.0	20.4	363774	8.1	21.3	302734	8.2	20.9	485811	8.3	20.4	152973	8.3	20.6	300643	8.4	19.8
82320	8.0	18.0	415558	8.1	20.4	358296	8.2	20.7	124236	8.3	19.4	328016	8.3	20.8	11316	8.4	16.0
129639	8.0	19.9	458036	8.1	20.5	1463	8.2	14.1	50636	8.3	18.4	522171	8.3	20.8	510178	8.4	21.7
324745	8.0	20.6	25546	8.1	16.0	269316	8.2	19.9	132986	8.3	19.2	405630	8.3	20.8	103770	8.4	20.1
515142	8.1	20.7	114252	8.1	18.5	215743	8.2	20.9	450957	8.3	20.4	46425	8.3	17.2	118823	8.4	18.9
300823	8.1	19.5	446129	8.1	19.9	334253	8.2	19.7	368035	8.3	20.9	52895	8.3	17.6	239525	8.4	19.9
310173	8.1	18.6	97576	8.1	19.4	251584	8.2	20.1	283797	8.3	19.4	303528	8.3	20.8	84749	8.4	17.7
316684	8.1	20.1	176965	8.1	19.1	391622	8.2	21.3	84445	8.3	18.4	267771	8.3	19.6	246422	8.4	20.3
411484	8.1	20.4	443166	8.1	20.1	164454	8.2	20.2	308936	8.3	20.5	320307	8.3	19.6	514740	8.4	21.0
279615	8.1	20.7	495074	8.1	20.7	97102	8.2	19.1	48719	8.3	19.2	449655	8.3	20.8	10356	8.4	16.8
5385	8.1	16.6	397373	8.1	20.5	403163	8.2	20.4	325697	8.3	20.1	9705	8.3	17.0	340749	8.4	20.6
328036	8.1	20.7	26892	8.1	17.4	271529	8.2	19.2	189731	8.3	19.4	422465	8.3	20.3	316568	8.4	20.0
493976	8.1	21.0	447199	8.1	19.5	200928	8.2	19.6	96596	8.3	17.3	460987	8.3	20.5	133352	8.4	19.2
441283	8.1	19.6	273009	8.1	20.2	112819	8.2	19.3	175127	8.3	19.9	286055	8.3	20.8	170537	8.4	19.9
22250	8.1	16.9	138266	8.1	19.4	407254	8.2	19.1	233385	8.3	19.5	283665	8.3	19.3	47		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
515797	8.4	20.8	442309	8.5	21.5	1158	8.5	14.0	81841	8.6	19.6	28858	8.7	17.2	168764	8.8	18.6
444483	8.4	21.4	82242	8.5	19.5	444017	8.6	20.2	240963	8.6	20.4	421082	8.7	21.3	299444	8.8	19.2
70569	8.4	18.6	193065	8.5	19.5	489182	8.6	22.1	471943	8.6	21.3	244336	8.7	21.0	78907	8.8	18.8
239812	8.4	20.7	226013	8.5	19.8	395663	8.6	20.7	7932	8.6	18.0	276846	8.7	20.7	49310	8.8	17.4
158172	8.4	18.0	285938	8.5	19.1	445705	8.6	20.7	184177	8.6	20.2	351353	8.7	19.6	144010	8.8	19.9
249708	8.4	19.4	266668	8.5	19.3	61876	8.6	18.7	274425	8.6	20.5	488180	8.7	20.3	451812	8.8	20.9
317808	8.4	20.5	440744	8.5	21.2	198584	8.6	19.7	14408	8.6	18.2	444170	8.7	21.0	413436	8.8	19.6
287210	8.4	21.5	427821	8.5	21.0	145008	8.6	19.5	359789	8.6	20.2	134751	8.7	19.1	521380	8.8	19.9
246486	8.4	19.1	174260	8.5	17.9	311683	8.6	19.7	446431	8.6	21.5	321061	8.7	20.0	144650	8.8	18.9
523263	8.4	21.7	143092	8.5	19.5	474719	8.6	21.0	356573	8.6	20.0	184320	8.7	20.3	493064	8.8	20.7
208799	8.4	19.3	443410	8.5	20.2	231391	8.6	20.5	42598	8.6	18.8	202148	8.7	20.6	138456	8.8	19.8
294297	8.4	19.6	261680	8.5	19.7	262391	8.6	20.3	173400	8.6	19.2	219243	8.7	18.7	282	8.8	13.5
120200	8.4	20.2	179025	8.5	19.3	420661	8.6	19.5	134825	8.6	19.3	167386	8.7	19.7	50182	8.8	17.9
171334	8.4	20.4	446076	8.5	20.8	15259	8.6	16.9	490061	8.6	21.3	422351	8.7	19.6	39475	8.8	18.0
507293	8.4	20.5	82538	8.5	19.2	141578	8.6	20.6	302628	8.6	19.5	207767	8.7	20.1	371317	8.8	20.1
64372	8.4	19.0	427531	8.5	22.0	487408	8.6	19.4	281795	8.6	19.7	369860	8.7	20.3	157869	8.8	20.8
97334	8.4	18.5	309623	8.5	19.5	269910	8.6	19.5	438484	8.6	21.6	335742	8.7	19.6	120162	8.8	19.6
414698	8.4	20.8	192110	8.5	20.2	202245	8.6	19.7	40881	8.6	19.4	445710	8.7	20.6	304979	8.8	19.9
384787	8.4	20.1	212497	8.5	19.8	356102	8.6	20.0	116893	8.6	20.5	523751	8.7	22.0	34800	8.8	18.9
162174	8.4	18.3	471030	8.5	19.6	147840	8.6	20.8	229762	8.6	19.5	268655	8.7	20.2	415352	8.8	21.2
390736	8.4	20.0	142968	8.5	18.4	195919	8.6	19.4	354443	8.6	18.8	457517	8.7	20.8	234563	8.8	18.4
145192	8.4	19.2	207275	8.5	20.0	414674	8.6	20.5	459396	8.6	20.6	152639	8.7	20.0	436464	8.8	20.1
450180	8.4	21.4	521564	8.5	21.6	485339	8.6	21.6	411188	8.6	21.1	346890	8.7	20.8	515548	8.8	21.5
224076	8.4	19.0	265942	8.5	19.7	244908	8.6	19.5	51795	8.6	18.5	510144	8.7	20.4	478625	8.8	20.7
378056	8.4	20.6	266005	8.5	20.2	142258	8.6	18.1	330775	8.6	20.5	262281	8.7	19.9	289599	8.8	17.1
513150	8.4	20.4	451575	8.5	20.4	489179	8.6	21.6	138282	8.6	19.5	296281	8.7	20.2	494913	8.8	20.4
211723	8.4	19.2	260606	8.5	20.8	53429	8.6	24.0	171530	8.6	20.1	145132	8.7	20.5	72542	8.8	19.4
197773	8.4	20.4	484531	8.5	21.7	169491	8.6	18.5	473181	8.7	19.9	294089	8.7	20.3	79330	8.8	19.8
292546	8.4	19.9	285449	8.5	19.3	139828	8.6	19.2	475176	8.7	20.5	171056	8.7	19.8	163660	8.8	19.3
76692	8.4	19.0	446687	8.5	20.6	77079	8.6	19.4	120735	8.7	17.7	207170	8.7	20.2	477320	8.8	21.5
455642	8.4	19.5	380711	8.5	20.8	24149	8.6	17.8	186494	8.7	20.2	79205	8.7	18.4	97408	8.8	17.4
217268	8.4	19.0	228411	8.5	20.4	454747	8.6	19.8	418514	8.7	20.9	340914	8.7	21.3	157715	8.8	19.0
280145	8.4	20.1	329109	8.5	20.5	305001	8.6	20.9	182680	8.7	19.1	196104	8.7	18.3	175728	8.8	19.5
435439	8.4	20.5	85261	8.5	19.4	339058	8.6	20.4	215763	8.7	19.6	157376	8.7	20.2	369148	8.8	22.0
255095	8.4	19.1	466977	8.5	20.3	112910	8.6	19.1	105356	8.7	19.6	20046	8.7	16.9	203001	8.8	18.6
316733	8.4	19.9	136883	8.5	19.5	248227	8.6	18.9	385722	8.7	20.5	516505	8.7	19.7	115207	8.8	19.0
453703	8.4	20.3	476808	8.5	20.3	227828	8.6	20.1	159370	8.7	19.2	205215	8.7	20.6	368025	8.8	21.0
517333	8.4	21.3	36606	8.5	18.7	470971	8.6	20.9	458108	8.7	19.2	50763	8.7	19.6	271612	8.8	20.2
442267	8.4	22.0	272730	8.5	19.5	151731	8.6	19.2	24693	8.7	15.3	473609	8.7	20.5	437924	8.8	19.8
83005	8.4	19.1	330190	8.5	20.9	413795	8.6	20.6	117480	8.7	17.6	290263	8.7	19.9	463818	8.8	20.8
494633	8.4	21.2	383093	8.5	19.2	327478	8.6	20.2	126005	8.7	18.7	306148	8.7	21.4	343765	8.8	20.6
330913	8.4	20.5	493098	8.5	20.2	361379	8.6	21.1	49078	8.7	18.4	484258	8.7	22.1	523367	8.8	20.5
404096	8.4	19.5	265091	8.5	20.0	328813	8.6	20.1	63428	8.7	18.0	392330	8.7	21.4	515630	8.8	21.9
248286	8.4	19.6	397222	8.5	21.9	77248	8.6	18.6	47351	8.7	18.7	275014	8.7	19.6	69407	8.8	19.3
132727	8.4	19.8	106533	8.5	17.7	325370	8.6	20.9	259656	8.7	19.3	372720	8.7	20.2	374752	8.8	19.6
166323	8.4	20.9	80226	8.5	19.0	231633	8.6	19.6	331451	8.7	20.6	261006	8.7	19.7	247056	8.8	17.5
180836	8.4	18.8	514787	8.5	21.6	424886	8.6	20.2	116152	8.7	17.9	296290	8.7	20.9	329504	8.8	20.2
283819	8.4	20.1	223948	8.5	20.1	113138	8.6	19.5	517334	8.7	21.9	47214	8.7	18.5	268024	8.8	20.2
76340	8.4	19.2	420200	8.5	21.1	295628	8.6	20.1	184934	8.7	19.3	292945	8.7	20.3	412381	8.8	21.1
510760	8.4	20.3	258226	8.5	19.9	310390	8.6	19.3	213916	8.7	20.0	96219	8.8	18.7	275239	8.8	20.1
311805	8.4	20.4	249830	8.5	21.0	212386	8.6	20.0	460561	8.7	20.8	171358	8.8	18.4	324725	8.8	20.6
401377	8.4	19.7	454296	8.5	21.1	144703	8.6	20.4	485367	8.7	21.7	320998	8.8	20.5	478479	8.8	19.9
376303	8.4	21.0	88866	8.5	19.3	287751	8.6	19.5	80757	8.7	18.8	371314	8.8	20.8	352999	8.8	19.9
119329	8.4	19.1	75298	8.5	18.1	280023	8.6	20.1	215296	8.7	20.0	332619	8.8	21.5	475215	8.8	20.3
197435	8.4	19.4	272624	8.5	21.0	132860	8.6	20.1	22488	8.7	18.5	300362	8.8	19.3	19851	8.8	19.0
30631	8.4	19.9	79635	8.5	19.8	323013	8.6	21.8	485469	8.7	20.3	306748	8.8	18.7	96107	8.8	18.8
436578	8.4	22.2	468380	8.5	21.0	76451	8.6	18.9	307059	8.7	19.4	408452	8.8	20.7	515496	8.8	20.5
415239	8.4	20.0	181620	8.5	20.5	445609	8.6	20.4	279608	8.7	20.0	169838	8.8	19.8	359247	8.8	19.7
343973	8.4	20.4	40356	8.5	18.2	28105	8.6	19.1	29340	8.7	18.1	434345	8.8	21.2	501544	8.8	20.3
158335	8.4	19.0	60947	8.5	19.1	28533	8.6	18.6	392616	8.7	21.6	76634	8.8	19.6	248740	8.8	20.6
291543	8.5	20.1	271963	8.5	19.6	265237	8.6	19.7	43752	8.7	16.9	151587	8.8	18.8	289932	8.8	21.0
233066	8.5	19.3	317701	8.5	20.3	189105	8.6	18.4	195931	8.7	19.1	254767	8.8	20.2	108831	8.8	18.4
452009	8.5	20.5	117269	8.5	18.9	515912	8.6	21.2	400734	8.7	19.5	484026	8.8	21.4	12841	8.8	17.9
66514	8.5	18.3	164375	8.5	19.5	279551	8.6	20.8	172151	8.7	18.5	157356	8.8	19.7	108395	8.8	18.8
2187	8.5	16.7	5496	8.5	22.5	69186	8.6	18.5	269172	8.7	19.6	108665	8.8	17.6	398052	8.8	21.7
38505	8.5	18.4	256422	8.5	19.9	337991	8.6	20.5	516168	8.7	19.7	196872	8.8	18.6	45059	8.8	17.5
207780	8.5	19.9	366514	8.5	18.3	232562	8.6	19.4	98896	8.7	18.6	495713	8.8	20.1	517854	8.8	20.9
113144	8.5	18.2	324069	8.5	19.2	320102	8.6	20.5	28535	8.7	18.5	389742	8.8	21.4	177257	8.8	19.6
201774	8.5	19.0	511871	8.5	21.6	153719	8.6	19.2	132725	8.7	20.4	445566	8.8	22.1	435523	8.8	19.7
400075	8.5	21.3	133221	8.5	19.4	234441	8.6	20.2	49027	8.7	18.0	8883	8.8	16.9	143942	8.8	18.9
101314	8.5	18.6	154749	8.5	20.1	517942	8.6	21.0	264072	8.7	20.0	175810	8.8				

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
339161	8.9	19.6	298139	8.9	20.6	148193	8.9	20.8	473780	9.1	20.1	353028	9.1	20.7	324115	9.2	19.9
466985	8.9	20.4	322462	8.9	20.7	418392	8.9	19.5	123057	9.1	18.4	220041	9.1	19.8	25511	9.2	17.4
447494	8.9	21.4	409795	8.9	20.2	148746	8.9	20.3	323634	9.1	18.9	27349	9.1	18.2	411123	9.2	19.6
363193	8.9	21.4	191757	8.9	19.5	138368	9.0	19.8	3300	9.1	15.9	142790	9.1	18.5	195530	9.2	21.4
410107	8.9	20.9	227026	8.9	19.8	144382	9.0	20.3	331439	9.1	20.5	156701	9.1	19.9	182314	9.2	19.8
161808	8.9	20.2	516910	8.9	21.1	439913	9.0	20.6	280026	9.1	19.3	481879	9.1	20.3	516858	9.2	20.8
334320	8.9	19.4	421030	8.9	20.2	100204	9.0	19.1	291810	9.1	18.5	287302	9.1	19.3	134196	9.2	19.3
330929	8.9	20.7	453767	8.9	21.6	195732	9.0	20.1	367239	9.1	21.5	326596	9.1	21.1	364774	9.2	20.4
120211	8.9	19.8	178163	8.9	19.8	453985	9.0	21.2	359912	9.1	20.5	477773	9.1	20.4	53172	9.2	17.8
187227	8.9	20.4	107648	8.9	17.7	521792	9.0	20.1	26050	9.1	19.8	421746	9.1	20.3	458649	9.2	20.8
469721	8.9	21.8	461146	8.9	19.6	185353	9.0	20.2	223802	9.1	20.6	11449	9.1	17.2	399617	9.2	19.9
131376	8.9	19.4	290858	8.9	20.1	132437	9.0	18.7	288185	9.1	19.2	130235	9.1	19.0	413284	9.2	19.4
183581	8.9	19.9	271552	8.9	19.4	169090	9.0	20.1	298028	9.1	21.1	352213	9.1	20.2	80752	9.2	18.5
161680	8.9	19.9	251507	8.9	20.2	464606	9.0	19.6	435438	9.1	20.6	275620	9.1	20.3	210392	9.2	20.4
291569	8.9	21.2	28141	8.9	16.1	348555	9.0	20.1	411076	9.1	20.1	263262	9.1	19.5	79022	9.2	18.1
78867	8.9	19.0	136559	8.9	19.3	314253	9.0	20.1	447521	9.1	18.8	312564	9.1	21.0	421592	9.2	20.2
328386	8.9	21.0	454773	8.9	20.2	418739	9.0	20.1	103796	9.1	19.5	291730	9.1	21.1	171702	9.2	18.8
346614	8.9	20.0	487951	8.9	20.3	237832	9.0	19.7	81411	9.1	19.5	368329	9.1	20.0	409085	9.2	20.6
38329	8.9	18.8	273117	8.9	20.2	373206	9.0	20.7	234313	9.1	18.6	339059	9.1	20.8	485948	9.2	21.2
451269	8.9	21.6	275	8.9	12.6	394557	9.0	20.1	458090	9.1	19.5	416129	9.1	21.2	308890	9.2	20.6
69707	8.9	19.6	25576	8.9	18.1	354447	9.0	18.8	209998	9.1	19.7	227230	9.1	20.2	492972	9.2	21.3
187444	8.9	19.4	196963	8.9	20.0	1540	9.0	14.6	456203	9.1	20.7	490784	9.1	20.9	278196	9.2	20.2
305048	8.9	21.1	48065	8.9	19.6	235994	9.0	19.6	3493	9.1	15.8	56647	9.1	18.0	100986	9.2	19.7
141759	8.9	20.1	136586	8.9	20.2	404774	9.0	20.2	147270	9.1	17.9	494070	9.2	20.3	325559	9.2	20.4
418652	8.9	21.9	488604	8.9	21.5	414660	9.0	20.2	332054	9.1	19.0	414352	9.2	21.0	195587	9.2	19.5
145993	8.9	19.4	326643	8.9	20.5	78891	9.0	18.6	308123	9.1	17.9	153518	9.2	20.1	64686	9.2	18.3
35227	8.9	18.6	429786	8.9	21.4	145751	9.0	19.8	188121	9.1	19.9	206480	9.2	20.1	191284	9.2	20.2
439510	8.9	21.2	445672	8.9	21.6	359300	9.0	20.1	238082	9.1	19.7	95766	9.2	19.8	406728	9.2	21.8
191623	8.9	20.0	27267	8.9	17.0	233302	9.0	20.4	451273	9.1	20.4	496750	9.2	21.7	443622	9.2	20.6
377995	8.9	21.1	409184	8.9	21.0	181796	9.0	20.3	206475	9.1	18.8	64036	9.2	18.8	117461	9.2	20.1
296302	8.9	20.2	15111	8.9	16.2	85881	9.0	17.6	424089	9.1	23.2	187079	9.2	20.1	97387	9.2	18.1
35358	8.9	16.9	185874	8.9	18.3	437784	9.0	20.9	36339	9.1	19.6	193012	9.2	20.5	26150	9.2	18.3
112146	8.9	18.8	228043	8.9	20.7	416144	9.0	19.7	301841	9.1	20.3	328479	9.2	19.5	268763	9.2	19.2
127452	8.9	19.9	368353	8.9	21.3	198828	9.0	19.3	301758	9.1	20.6	81208	9.2	19.5	164871	9.2	19.6
152942	8.9	21.0	350486	8.9	19.1	391633	9.0	21.2	419375	9.1	20.0	32706	9.2	18.4	222905	9.2	20.7
378157	8.9	19.7	213899	8.9	19.7	80667	9.0	17.0	230897	9.1	20.0	243956	9.2	19.4	248240	9.2	20.6
38519	8.9	18.6	457963	8.9	20.3	85268	9.0	19.6	70563	9.1	17.4	513594	9.2	20.7	157056	9.2	19.2
315033	8.9	20.0	203180	8.9	19.3	322142	9.0	20.9	256808	9.1	20.5	405214	9.2	19.9	520423	9.2	21.2
71586	8.9	18.0	230287	8.9	18.5	327985	9.0	21.0	432739	9.1	21.6	523124	9.2	21.4	159766	9.2	19.7
97760	8.9	19.8	300637	8.9	20.2	457962	9.0	20.7	108842	9.1	19.6	288233	9.2	19.7	136575	9.2	19.7
115893	8.9	18.4	79624	8.9	19.2	269452	9.0	19.2	99813	9.1	19.7	316509	9.2	20.2	369202	9.2	21.9
454577	8.9	20.2	411608	8.9	20.2	450676	9.0	20.9	492988	9.1	20.8	209750	9.2	20.6	427076	9.2	20.2
289753	8.9	19.2	15837	8.9	18.7	445651	9.0	20.2	327626	9.1	20.1	516463	9.2	20.9	271185	9.2	20.5
366631	8.9	21.0	149951	8.9	19.5	254757	9.0	19.9	85229	9.1	19.5	471934	9.2	20.5	330150	9.2	20.7
23010	8.9	18.9	445622	8.9	19.8	42105	9.0	18.5	278894	9.1	20.8	144636	9.2	19.2	414704	9.2	20.0
330187	8.9	20.4	439562	8.9	20.4	227712	9.0	20.4	478802	9.1	20.4	94805	9.2	18.2	493333	9.2	19.7
280444	8.9	20.1	262114	8.9	18.8	164336	9.0	19.1	150331	9.1	19.0	385733	9.2	18.9	156668	9.2	19.8
288049	8.9	19.8	148080	8.9	20.0	355010	9.0	20.4	262599	9.1	20.4	517278	9.2	20.5	349764	9.2	19.4
121286	8.9	19.2	153368	8.9	18.5	12677	9.0	18.5	446907	9.1	20.8	387004	9.2	20.0	350909	9.2	20.6
264811	8.9	19.9	228456	8.9	20.3	377553	9.0	20.5	474754	9.1	21.2	105064	9.2	19.0	515139	9.2	20.7
149834	8.9	18.9	80401	8.9	18.1	332259	9.0	20.7	225460	9.1	20.0	365009	9.2	20.5	57734	9.2	18.9
24934	8.9	16.5	303055	8.9	19.0	153742	9.0	19.6	332445	9.1	19.5	237614	9.2	18.8	4141	9.2	16.6
343757	8.9	21.1	155508	8.9	18.9	52045	9.0	18.5	83741	9.1	18.7	366002	9.2	20.6	248303	9.2	20.6
388052	8.9	19.5	113016	8.9	18.8	474188	9.0	18.7	260901	9.1	21.0	97631	9.2	19.3	442822	9.2	20.3
299050	8.9	20.1	301899	8.9	20.0	267780	9.0	19.5	199396	9.1	20.3	21117	9.2	16.2	227980	9.3	19.8
366586	8.9	19.8	471980	8.9	21.1	212912	9.0	20.0	292476	9.1	20.7	26636	9.2	16.2	305137	9.3	20.5
58782	8.9	18.0	41273	8.9	18.3	107898	9.0	18.9	14314	9.1	17.0	426191	9.2	20.2	270726	9.3	20.7
91464	8.9	19.3	29802	8.9	18.5	83346	9.0	18.8	9788	9.1	18.1	129998	9.2	18.3	24668	9.3	16.8
481563	8.9	20.3	76149	8.9	19.1	287167	9.0	19.9	129990	9.1	19.4	253296	9.2	19.8	86812	9.3	19.2
244360	8.9	20.3	434495	8.9	20.6	180386	9.0	18.5	269341	9.1	20.0	55244	9.2	17.1	293888	9.3	20.6
129162	8.9	18.6	183582	8.9	19.3	451827	9.0	21.1	363714	9.1	20.4	274071	9.2	19.4	460491	9.3	20.5
326866	8.9	20.1	136401	8.9	19.9	523748	9.0	22.1	5749	9.1	16.2	12232	9.2	17.7	147535	9.3	19.2
127690	8.9	19.6	345047	8.9	19.5	284501	9.0	20.4	129413	9.1	19.1	219180	9.2	18.9	290581	9.3	20.4
195641	8.9	19.8	229638	8.9	19.8	283326	9.1	19.8	183528	9.1	19.5	5400	9.2	16.8	321102	9.3	20.6
21761	8.9	18.2	181477	8.9	19.8	111993	9.1	18.8	102800	9.1	18.8	112679	9.2	19.0	513609	9.3	21.6
154173	8.9	20.4	244824	8.9	19.3	334057	9.1	19.6	431717	9.1	21.4	412529	9.2	20.3	481835	9.3	19.7
154600	8.9	19.7	128235	8.9	18.4	386737	9.1	19.9	431672	9.1	19.9	378585	9.2	20.3	519001	9.3	21.4
249153	8.9	20.1	200220	8.9	20.1	158275	9.1	18.5	315212	9.1	20.6	271576	9.2	20.4	100889	9.3	18.9
143940	8.9	18.9	306165	8.9	20.5	113270	9.1	19.1	160771	9.1	19.4	114989	9.2	16.7	72690	9.3	18.4
288000	8.9	19.3	203991	8.9	20.7	232494	9.1	19.9	43663	9.1	18.4	115150	9.2	20.0	485740	9.3	20.3
254924	8.9	19.9	179993	8.9	18.5	273495	9.1	19.5	520658	9.1	20.2	247247	9.2	19.			

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
314244	9.3	20.0	74989	9.3	18.1	301751	9.4	20.9	73781	9.5	18.1	245810	9.5	20.9	366721	9.6	19.2
183167	9.3	19.5	435100	9.3	20.5	369646	9.4	20.4	316954	9.5	20.4	51297	9.5	17.9	337728	9.6	19.9
238270	9.3	19.0	492015	9.3	19.7	334957	9.4	20.7	4729	9.5	14.2	1128	9.5	14.8	460744	9.6	20.5
325379	9.3	20.9	301795	9.3	20.2	202785	9.4	20.7	292078	9.5	19.5	83260	9.5	19.4	257013	9.6	20.4
197464	9.3	20.0	416655	9.3	21.0	327755	9.4	20.7	329523	9.5	20.9	243937	9.5	20.4	43782	9.6	16.5
486655	9.3	21.6	240995	9.3	21.0	34963	9.4	19.0	65865	9.5	18.6	506090	9.5	20.1	363590	9.6	19.9
325669	9.3	20.7	403478	9.3	19.6	483241	9.4	20.5	333374	9.5	20.9	43012	9.5	18.7	483516	9.6	19.5
471955	9.3	21.8	115282	9.3	18.3	27398	9.4	17.5	457904	9.5	20.5	447155	9.5	21.2	327675	9.6	19.9
46322	9.3	17.7	404067	9.3	20.3	209673	9.4	20.3	487031	9.5	20.9	88829	9.5	19.0	70098	9.6	18.2
24970	9.3	17.6	136767	9.3	20.0	300627	9.4	20.0	101469	9.5	18.9	229269	9.5	19.7	182359	9.6	19.7
405197	9.3	20.9	10085	9.4	17.4	228190	9.4	20.0	430747	9.5	20.9	266571	9.5	20.1	46445	9.6	18.9
14100	9.3	18.2	98327	9.4	18.6	480339	9.4	20.6	222044	9.5	18.8	375222	9.5	21.0	200061	9.6	19.9
296185	9.3	21.1	143169	9.4	19.0	41277	9.4	17.1	161173	9.5	19.8	517535	9.5	20.5	431766	9.6	21.4
434472	9.3	21.6	256770	9.4	20.6	109181	9.4	19.8	156784	9.5	19.9	487537	9.5	20.8	127244	9.6	19.7
150463	9.3	19.3	138412	9.4	19.5	10961	9.4	19.1	517267	9.5	19.4	47836	9.5	17.7	209819	9.6	20.4
87040	9.3	20.1	413775	9.4	19.8	406998	9.4	20.6	57312	9.5	18.1	266210	9.5	19.6	142897	9.6	19.0
140208	9.3	19.7	134992	9.4	20.7	452581	9.4	21.3	219030	9.5	19.3	109598	9.5	17.8	488244	9.6	20.7
69046	9.3	16.9	289522	9.4	20.4	120029	9.4	18.6	514146	9.5	21.7	369171	9.5	21.2	269893	9.6	20.5
286953	9.3	19.8	163995	9.4	18.8	356003	9.4	20.5	209636	9.5	19.8	494079	9.5	20.8	109453	9.6	19.7
314962	9.3	19.3	158751	9.4	18.9	108484	9.4	19.1	328123	9.5	19.2	120960	9.6	18.9	243	9.6	13.5
69018	9.3	17.5	439783	9.4	21.3	151304	9.4	19.5	378015	9.5	20.7	153032	9.6	20.1	215059	9.6	20.8
193011	9.3	20.1	185650	9.4	20.0	432689	9.4	20.6	472527	9.5	21.0	394925	9.6	19.6	54490	9.6	18.5
455439	9.3	20.4	36129	9.4	17.7	226475	9.4	19.8	169750	9.5	18.4	353100	9.6	20.6	14771	9.6	18.5
302156	9.3	21.3	165576	9.4	19.2	186008	9.4	19.9	160655	9.5	18.6	270238	9.6	20.8	223327	9.6	19.8
333818	9.3	20.2	84315	9.4	17.4	275453	9.4	20.5	80379	9.5	17.6	400659	9.6	20.9	496466	9.6	21.1
319948	9.3	20.5	192474	9.4	17.9	349171	9.4	19.5	446201	9.5	20.2	337497	9.6	20.8	65133	9.6	19.3
30761	9.3	19.6	435476	9.4	21.0	266814	9.4	19.6	443711	9.5	21.0	480053	9.6	20.7	134777	9.6	19.0
117738	9.3	19.6	81037	9.4	19.6	97672	9.4	19.5	313047	9.5	20.4	197041	9.6	19.5	307897	9.6	20.0
283814	9.3	20.9	441002	9.4	21.6	213348	9.4	20.8	229815	9.5	19.8	137985	9.6	18.8	260595	9.6	20.1
400315	9.3	20.5	37980	9.4	18.8	437968	9.4	21.6	485724	9.5	20.6	323894	9.6	19.7	270975	9.6	19.0
449918	9.3	21.1	283283	9.4	20.1	364978	9.4	20.5	363391	9.5	18.6	311877	9.6	19.2	236201	9.6	19.8
265844	9.3	20.0	299614	9.4	20.8	333544	9.4	20.8	157416	9.5	19.6	358161	9.6	20.6	404263	9.6	21.4
24607	9.3	16.2	59193	9.4	19.8	357687	9.4	20.7	487761	9.5	21.0	72695	9.6	18.6	351415	9.6	20.6
269921	9.3	21.5	188528	9.4	20.1	63649	9.4	17.4	161567	9.5	18.1	490693	9.6	21.2	282784	9.6	19.7
489098	9.3	20.6	155578	9.4	19.1	156025	9.4	18.6	410817	9.5	20.9	227592	9.6	20.6	460101	9.6	20.5
474254	9.3	20.4	220070	9.4	19.3	17605	9.4	17.8	438690	9.5	20.8	18078	9.6	16.0	295446	9.6	19.7
76071	9.3	18.6	414976	9.4	20.1	11379	9.4	18.2	90344	9.5	18.3	67487	9.6	19.0	64440	9.6	17.7
274134	9.3	20.9	50384	9.4	18.4	516518	9.4	22.5	287134	9.5	20.2	85918	9.6	19.3	297025	9.6	19.5
91245	9.3	18.5	101776	9.4	18.7	450035	9.4	21.0	183001	9.5	19.2	21239	9.6	18.1	5713	9.6	15.3
228902	9.3	19.0	113762	9.4	18.0	484836	9.4	21.3	249024	9.5	20.1	61694	9.6	18.7	187642	9.7	20.6
80894	9.3	20.2	29453	9.4	18.5	47176	9.4	18.3	298179	9.5	19.6	200325	9.6	20.5	104880	9.7	19.5
168632	9.3	18.9	132086	9.4	19.1	514199	9.4	21.2	233399	9.5	19.9	407980	9.6	20.4	426738	9.7	20.3
57733	9.3	19.2	370262	9.4	22.7	339896	9.4	21.2	251186	9.5	20.0	227128	9.6	20.4	229347	9.7	19.1
332056	9.3	20.3	286851	9.4	19.9	184187	9.4	19.2	318319	9.5	20.5	47823	9.6	17.8	367427	9.7	20.5
256397	9.3	20.1	71674	9.4	18.9	309500	9.4	18.7	499442	9.5	21.3	353841	9.6	19.5	447657	9.7	19.5
77754	9.3	18.7	244674	9.4	17.5	180354	9.4	18.8	340459	9.5	19.7	28887	9.6	15.5	333526	9.7	21.5
201377	9.3	19.7	70624	9.4	19.2	198683	9.4	20.2	480104	9.5	19.9	514704	9.6	21.7	97143	9.7	19.3
197447	9.3	19.0	266559	9.4	21.3	427397	9.4	21.2	195996	9.5	20.9	133171	9.6	18.6	52454	9.7	19.2
296385	9.3	19.6	493984	9.4	20.5	136045	9.4	19.3	366561	9.5	20.0	193478	9.6	16.9	340921	9.7	20.6
333546	9.3	20.2	372104	9.4	21.0	406667	9.4	20.9	351111	9.5	19.9	393546	9.6	19.3	385355	9.7	22.1
28400	9.3	18.7	180794	9.4	19.0	227219	9.4	20.3	119417	9.5	18.6	521327	9.6	20.1	229437	9.7	18.7
138076	9.3	20.2	448532	9.4	20.5	514533	9.4	19.9	16982	9.5	18.1	31516	9.6	18.2	176257	9.7	18.5
23774	9.3	17.8	206419	9.4	20.2	435496	9.4	20.9	322989	9.5	21.0	308920	9.6	20.1	155224	9.7	19.9
36990	9.3	18.8	166346	9.4	20.1	152022	9.4	19.7	470443	9.5	21.1	484101	9.6	20.7	484961	9.7	20.3
60927	9.3	19.2	270235	9.4	20.1	231637	9.4	19.3	93808	9.5	18.6	278948	9.6	19.3	187016	9.7	19.4
331436	9.3	19.9	333091	9.4	20.6	134230	9.4	19.7	317296	9.5	19.7	35742	9.6	18.7	175448	9.7	19.6
482361	9.3	20.1	285160	9.4	21.3	245029	9.4	20.3	409066	9.5	19.9	267819	9.6	20.1	323891	9.7	19.0
431777	9.3	20.6	135527	9.4	19.9	281122	9.5	19.8	133438	9.5	18.6	46489	9.6	19.1	413798	9.7	20.2
251365	9.3	20.8	457388	9.4	20.5	25819	9.5	18.3	522176	9.5	20.3	444784	9.6	20.4	367630	9.7	20.6
140747	9.3	18.8	350533	9.4	19.9	299625	9.5	21.1	332828	9.5	19.8	356823	9.6	19.3	286834	9.7	19.8
1601	9.3	15.4	294032	9.4	20.2	350916	9.5	20.1	402692	9.5	20.1	30269	9.6	18.2	216895	9.7	20.2
413257	9.3	20.3	388226	9.4	21.1	114289	9.5	18.2	132527	9.5	21.0	54459	9.6	18.6	364830	9.7	20.0
308904	9.3	20.0	29613	9.4	19.1	137124	9.5	19.2	272071	9.5	19.4	474745	9.6	20.5	464607	9.7	20.5
166286	9.3	20.6	445161	9.4	20.7	35146	9.5	18.7	414723	9.5	20.6	186261	9.6	19.1	306590	9.7	17.1
388554	9.3	20.8	40867	9.4	18.2	349697	9.5	18.8	432268	9.5	20.3	472299	9.6	20.1	454674	9.7	20.8
261372	9.3	19.7	172627	9.4	18.6	109162	9.5	18.7	157125	9.5	20.1	392750	9.6	19.8	107039	9.7	18.6
444169	9.3	21.3	238035	9.4	18.9	312216	9.5	20.6	119163	9.5	19.5	90584	9.6	18.4	275840	9.7	19.3
384625	9.3	20.4	353977	9.4	19.4	54158	9.5	19.3	113032	9.5	19.4	331171	9.6	21.0	433490	9.7	20.8
147467	9.3	19.5	382026	9.4	21.1	183313	9.5	19.0	487176	9.5	20.9	253524	9.6	20.4	444806	9.7	21.5
481955	9.3	21.1	411096	9.4	20.9	493060	9.5	20.4	123866	9.5	19.1	79413	9.6	20.3	294572	9.7	20.3
51842	9.3	19.0	342114	9.4	19.4	300743	9.5	19.3	177650	9.5	17.8	71211	9.6	17.7	5131		

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
473501	9.7	20.3	187156	9.8	20.5	457914	9.8	20.6	72570	9.9	17.9	175588	9.9	19.8	321644	10.0	20.4
420945	9.7	20.1	383522	9.8	20.3	229967	9.8	19.9	190221	9.9	19.5	383110	9.9	19.3	407259	10.0	19.9
152939	9.7	19.2	58703	9.8	16.9	131397	9.8	20.4	46570	9.9	17.2	30802	9.9	17.0	328438	10.0	20.5
64865	9.7	18.5	415235	9.8	21.0	454907	9.8	20.8	454906	9.9	21.0	174903	9.9	19.2	158257	10.0	19.6
339002	9.7	20.7	232849	9.8	19.6	258027	9.8	20.8	397376	9.9	19.9	40120	9.9	16.9	404871	10.0	20.1
227201	9.7	18.7	296373	9.8	20.8	169844	9.8	19.5	343270	9.9	19.9	256121	9.9	20.8	308915	10.0	19.4
199980	9.7	20.7	407715	9.8	19.8	348764	9.8	20.7	274440	9.9	20.3	45901	9.9	17.8	50204	10.0	18.0
401112	9.7	19.9	372903	9.8	21.0	91699	9.8	19.1	103392	9.9	18.7	463981	9.9	20.0	483194	10.0	20.5
464386	9.7	20.9	372761	9.8	20.0	486572	9.8	21.2	450797	9.9	20.3	280990	9.9	18.3	285917	10.0	20.5
340179	9.7	20.5	323691	9.8	22.0	228199	9.8	19.7	287891	9.9	21.8	89613	9.9	18.7	275001	10.0	18.2
278564	9.7	21.2	48332	9.8	18.3	410469	9.8	21.5	147019	9.9	20.1	421096	9.9	20.4	222903	10.0	19.9
361752	9.7	20.9	253288	9.8	20.4	401536	9.8	21.1	228424	9.9	20.7	154223	9.9	19.6	418637	10.0	20.6
102768	9.7	18.7	326553	9.8	20.4	86050	9.8	19.7	297957	9.9	21.8	419513	9.9	20.8	92924	10.0	19.1
252769	9.7	19.7	172060	9.8	19.5	418438	9.8	19.9	227746	9.9	19.7	145998	9.9	19.1	367406	10.0	20.8
280150	9.7	20.2	142879	9.8	18.3	373860	9.8	20.2	269493	9.9	19.3	460340	9.9	20.0	5953	10.0	17.5
179201	9.7	19.6	263363	9.8	19.4	323348	9.8	20.9	65663	9.9	16.8	57131	9.9	17.3	358793	10.0	21.4
204681	9.7	18.0	328768	9.8	20.4	342090	9.8	20.1	262069	9.9	20.2	314818	9.9	20.5	69830	10.0	17.4
409719	9.7	20.6	13631	9.8	17.2	366519	9.8	21.1	466290	9.9	20.1	116433	9.9	19.0	31862	10.0	17.7
151849	9.7	20.8	451762	9.8	20.8	62447	9.8	19.5	370847	9.9	19.7	350483	9.9	20.3	275660	10.0	21.3
408969	9.7	19.7	139028	9.8	19.2	131823	9.8	18.6	439051	9.9	20.9	500570	9.9	19.9	305727	10.0	20.6
386014	9.7	20.6	184418	9.8	20.1	77702	9.8	19.1	24503	9.9	17.5	466937	9.9	19.5	171613	10.0	19.5
102700	9.7	18.4	234147	9.8	20.4	196372	9.8	19.9	317305	9.9	19.5	85727	9.9	19.6	357411	10.0	18.4
403148	9.7	21.5	489221	9.8	21.6	415434	9.8	21.0	208105	9.9	20.6	449156	9.9	20.7	61552	10.1	19.2
330213	9.7	21.5	330949	9.8	19.6	333239	9.8	20.9	43257	9.9	18.5	181756	9.9	19.5	68259	10.1	19.1
359298	9.7	20.9	517279	9.8	21.7	103668	9.8	19.2	413168	9.9	20.2	77212	9.9	19.3	278703	10.1	21.8
266829	9.7	19.3	359872	9.8	20.9	15675	9.8	16.6	519769	9.9	21.3	139486	9.9	20.0	449710	10.1	20.9
145370	9.7	20.0	62536	9.8	18.7	484118	9.8	21.0	228193	9.9	19.2	206121	9.9	20.6	293797	10.1	19.2
23257	9.7	17.7	401598	9.8	20.9	428617	9.8	21.2	448960	9.9	20.6	427095	9.9	19.9	487538	10.1	20.7
146483	9.7	18.2	218855	9.8	18.8	443947	9.8	20.0	20412	9.9	16.3	477243	9.9	21.9	493077	10.1	21.1
262625	9.7	20.1	233620	9.8	20.9	356169	9.8	20.8	494004	9.9	21.1	21220	9.9	17.4	258694	10.1	19.9
484188	9.7	20.7	71244	9.8	17.6	243936	9.8	19.0	234759	9.9	21.3	68915	9.9	18.9	191471	10.1	20.1
40703	9.7	18.8	297534	9.8	19.2	353850	9.8	19.6	296874	9.9	19.3	489945	9.9	21.1	229824	10.1	19.5
79363	9.7	19.6	82113	9.8	20.5	408979	9.8	21.2	492051	9.9	21.0	393094	9.9	19.8	495330	10.1	20.6
271154	9.7	20.2	319366	9.8	20.6	139967	9.8	20.1	332976	9.9	19.9	102815	9.9	18.8	202810	10.1	20.4
8076	9.7	17.1	300433	9.8	18.1	322161	9.8	20.4	403686	9.9	21.0	443302	9.9	22.4	485007	10.1	20.3
219126	9.7	18.3	473504	9.8	21.2	490932	9.8	20.2	332049	9.9	19.5	334294	9.9	19.2	227241	10.1	19.0
278533	9.7	20.5	71063	9.8	18.0	458606	9.8	21.4	49873	9.9	18.4	348740	9.9	19.2	157795	10.1	21.1
208733	9.7	19.1	460227	9.8	21.3	475247	9.8	20.1	420660	9.9	20.4	122163	9.9	19.2	238282	10.1	19.7
224545	9.7	19.1	407666	9.8	19.7	278188	9.8	21.6	403973	9.9	21.1	474969	9.9	20.7	260245	10.1	20.2
296526	9.7	19.8	220195	9.8	18.8	81439	9.8	19.4	6666	9.9	16.3	321441	9.9	20.0	260064	10.1	20.6
283764	9.7	20.5	32050	9.8	17.5	154463	9.8	20.2	205965	9.9	19.9	281912	9.9	20.6	517417	10.1	21.1
472798	9.7	20.3	451685	9.8	20.9	303104	9.8	19.5	510099	9.9	20.4	480216	9.9	22.2	12249	10.1	17.0
413730	9.7	20.9	321545	9.8	20.2	129657	9.8	20.0	108764	9.9	19.5	119862	9.9	19.7	516532	10.1	21.1
520830	9.7	21.2	155877	9.8	20.0	147316	9.8	17.6	195673	9.9	20.2	409137	10.0	19.5	132563	10.1	21.0
378023	9.7	20.7	201690	9.8	19.5	367442	9.9	20.1	207545	9.9	19.4	514782	10.0	21.5	269132	10.1	19.1
189357	9.7	19.9	488635	9.8	19.6	221615	9.9	19.3	441692	9.9	19.8	365997	10.0	20.1	330489	10.1	20.7
27516	9.7	18.8	419289	9.8	20.5	286933	9.9	20.5	184557	9.9	20.4	484627	10.0	20.6	181368	10.1	19.2
515123	9.7	20.6	456194	9.8	20.7	484302	9.9	20.3	235821	9.9	19.7	470250	10.0	19.7	513618	10.1	21.2
307965	9.7	19.9	320959	9.8	20.6	335337	9.9	20.4	264371	9.9	20.9	40826	10.0	18.7	285384	10.1	19.4
284026	9.7	19.6	35159	9.8	17.6	143378	9.9	18.3	77373	9.9	19.4	197067	10.0	18.4	59103	10.1	18.8
208137	9.7	19.0	312097	9.8	21.0	175960	9.9	20.6	384339	9.9	19.2	367407	10.0	20.8	384664	10.1	21.4
112703	9.7	19.3	285869	9.8	21.1	446348	9.9	21.3	7925	9.9	17.4	59695	10.0	18.4	381117	10.1	19.3
167281	9.7	18.7	240152	9.8	20.2	415638	9.9	21.2	84130	9.9	18.3	88371	10.0	18.5	483116	10.1	19.7
29227	9.7	17.5	308965	9.8	18.7	522085	9.9	20.2	516319	9.9	19.5	328963	10.0	19.7	391962	10.1	20.8
250006	9.7	19.2	142889	9.8	19.1	329182	9.9	20.3	37201	9.9	17.9	94855	10.0	18.9	9133	10.1	17.5
356341	9.7	20.1	138934	9.8	19.0	414292	9.9	20.5	3321	9.9	15.6	111081	10.0	19.5	255861	10.1	20.5
348639	9.7	20.5	378111	9.8	20.9	386901	9.9	21.4	364356	9.9	20.7	325411	10.0	20.6	481410	10.1	19.9
477840	9.7	21.3	265510	9.8	20.0	115784	9.9	18.9	516409	9.9	21.4	187582	10.0	19.9	474645	10.1	19.1
139463	9.7	18.9	216902	9.8	20.1	515629	9.9	21.5	40025	9.9	18.4	23057	10.0	18.9	513590	10.1	20.5
295407	9.7	20.3	173289	9.8	19.7	67206	9.9	18.6	24075	9.9	16.1	50628	10.0	18.4	189998	10.1	20.8
352271	9.7	19.9	252025	9.8	21.0	141852	9.9	19.4	520247	9.9	21.2	351367	10.0	21.0	291223	10.1	19.6
175941	9.7	18.7	27271	9.8	18.0	207290	9.9	20.4	275276	9.9	20.0	89238	10.0	18.5	388269	10.1	21.9
9361	9.7	17.9	191971	9.8	20.4	157143	9.9	20.0	174170	9.9	19.0	135781	10.0	19.6	256821	10.1	20.3
376198	9.7	20.7	2448	9.8	15.2	269702	9.9	21.0	135770	9.9	20.0	286274	10.0	20.1	35466	10.1	19.6
486548	9.7	21.1	364995	9.8	20.2	481437	9.9	20.1	145451	9.9	20.1	176904	10.0	18.6	413771	10.1	20.3
451527	9.7	20.9	226955	9.8	20.4	81366	9.9	18.5	523484	9.9	22.1	489223	10.0	21.1	406736	10.1	20.9
119416	9.7	18.5	278817	9.8	20.2	343811	9.9	21.0	349150	9.9	19.5	157703	10.0	19.5	160882	10.1	19.5
256650	9.7	19.6	213190	9.8	19.1	353030	9.9	21.2	152289	9.9	19.3	493178	10.0	21.2	305761	10.1	20.8
178355	9.8	20.1	69344	9.8	18.1	464370	9.9	20.1	6973	9.9	18.3	14640	10.0	17.6	473648	10.1	20.4
298050	9.8	19.5	197653	9.8	20.1	261495	9.9	20.1	223924	9.9	19.3	187170	10.0	20.1	256565	10.1	19.9
191426	9.8	19.4	403459														

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
449265	10.1	20.9	86705	10.2	18.4	347995	10.3	19.9	416138	10.3	21.1	334187	10.4	19.3	210068	10.5	20.2
141337	10.1	18.8	46664	10.2	18.8	311112	10.3	20.4	118600	10.3	18.9	231734	10.4	20.6	702	10.5	12.0
500759	10.1	19.9	76522	10.2	18.3	188570	10.3	19.6	443039	10.3	20.4	157929	10.4	20.3	357417	10.5	19.5
8343	10.1	17.1	473502	10.2	20.7	106991	10.3	17.6	448342	10.3	20.9	26054	10.4	17.3	93156	10.5	17.9
460679	10.1	20.1	332235	10.2	20.3	307668	10.3	19.6	349385	10.3	19.8	330265	10.4	19.5	178007	10.5	19.5
17980	10.1	17.6	445649	10.2	21.5	296779	10.3	19.4	512192	10.3	21.4	284523	10.4	19.8	21268	10.5	19.6
293583	10.1	21.3	89795	10.2	19.7	101990	10.3	19.7	198687	10.3	19.5	230981	10.4	19.4	47201	10.5	18.0
177165	10.1	19.4	189412	10.2	19.5	102284	10.3	18.5	331453	10.3	20.1	116706	10.4	19.5	91297	10.5	19.0
314790	10.1	20.1	33540	10.2	17.8	295022	10.3	20.5	20614	10.3	17.1	322775	10.4	21.1	207337	10.5	20.1
57355	10.1	18.0	393536	10.2	20.3	75369	10.3	17.5	80445	10.3	19.3	20133	10.4	17.6	7531	10.5	17.4
266492	10.1	20.9	72461	10.2	18.7	158306	10.3	18.7	180997	10.3	20.7	474137	10.4	21.9	10159	10.5	17.4
22918	10.1	18.2	469373	10.2	22.6	50965	10.3	18.6	161244	10.3	18.2	397980	10.4	20.0	212061	10.5	20.9
444551	10.1	21.0	186732	10.2	20.4	326551	10.3	20.0	342234	10.3	20.0	262246	10.4	19.0	514193	10.5	21.2
289142	10.1	18.7	300564	10.2	20.5	214648	10.3	20.6	459884	10.3	21.3	123894	10.4	19.0	215179	10.5	20.5
124688	10.1	18.1	12535	10.2	17.0	385660	10.3	19.3	165114	10.3	19.8	264861	10.4	19.7	511883	10.5	19.7
104479	10.1	20.0	210073	10.2	20.0	299587	10.3	21.9	135802	10.3	18.8	440082	10.4	20.9	279804	10.5	20.1
444836	10.1	21.4	320447	10.2	20.2	367447	10.3	18.7	325597	10.3	20.6	8488	10.4	17.4	269552	10.5	20.1
83630	10.1	18.7	192455	10.2	19.1	231459	10.3	19.4	214610	10.3	20.2	82154	10.4	18.1	291655	10.5	20.6
197410	10.1	18.9	14845	10.2	17.2	23582	10.3	17.5	99314	10.3	19.7	444801	10.4	21.5	43239	10.5	20.0
43474	10.1	18.6	445575	10.2	20.2	228025	10.3	19.8	413809	10.3	21.1	398201	10.4	21.7	235291	10.5	20.2
488109	10.1	19.4	269322	10.2	19.5	485513	10.3	20.0	171852	10.3	19.6	489270	10.4	20.5	220144	10.5	18.9
19739	10.1	17.4	301361	10.2	19.8	40438	10.3	18.4	323943	10.3	18.8	149619	10.4	20.0	411859	10.5	21.1
352235	10.1	20.0	489540	10.2	21.7	307103	10.3	19.7	206020	10.3	20.3	449386	10.4	20.2	373010	10.5	20.5
2474	10.1	16.4	214726	10.2	19.3	22266	10.3	17.7	128068	10.3	19.0	16256	10.4	17.8	60209	10.5	19.3
133686	10.1	19.6	210971	10.2	19.1	378122	10.3	19.1	244566	10.3	20.3	149675	10.4	19.7	216479	10.5	18.9
448582	10.1	20.9	165548	10.2	19.2	11657	10.3	17.3	85691	10.3	19.5	195881	10.4	19.7	177041	10.5	18.6
331676	10.1	21.0	113209	10.2	18.9	39508	10.3	18.4	120850	10.3	19.1	514576	10.4	20.2	269198	10.5	19.6
225143	10.1	20.2	184017	10.2	18.8	124999	10.3	20.2	362354	10.4	20.3	256140	10.4	19.7	332732	10.5	20.9
393065	10.1	20.0	327095	10.2	19.4	454388	10.3	20.0	218123	10.4	18.9	145074	10.4	19.6	234921	10.5	20.8
217568	10.1	19.7	383580	10.2	21.9	230934	10.3	18.5	491470	10.4	21.2	413248	10.4	20.3	199011	10.5	20.4
481757	10.1	21.1	511801	10.2	21.1	471232	10.3	19.7	284508	10.4	20.8	275819	10.4	19.9	119132	10.5	19.3
264263	10.1	20.4	279760	10.2	20.2	484370	10.3	19.4	414989	10.4	20.7	477299	10.4	21.0	354997	10.5	20.4
188803	10.1	19.5	510234	10.2	21.8	442863	10.3	21.5	176089	10.4	18.0	254811	10.4	20.8	180256	10.5	19.3
147619	10.1	17.9	449121	10.2	20.9	330803	10.3	21.0	298611	10.4	18.3	328857	10.4	20.8	488079	10.5	19.8
361401	10.1	20.8	284915	10.2	19.6	22342	10.3	18.1	86742	10.4	19.1	511843	10.4	20.7	267696	10.5	19.4
198818	10.1	19.8	451599	10.2	20.6	329937	10.3	21.0	42618	10.4	17.5	138995	10.4	19.4	206530	10.5	19.4
215177	10.1	19.4	11333	10.2	17.0	283113	10.3	20.1	139754	10.4	18.5	235106	10.4	21.3	486922	10.5	21.3
278134	10.1	19.9	443626	10.2	20.3	3828	10.3	15.9	484518	10.4	21.2	241771	10.4	21.0	14836	10.5	18.1
213939	10.1	19.4	361781	10.2	20.1	363079	10.3	20.7	515277	10.4	20.8	393607	10.4	20.2	47897	10.5	17.9
121456	10.2	18.3	216817	10.2	20.5	461012	10.3	20.3	48317	10.4	17.6	296511	10.4	20.3	419271	10.5	20.1
52034	10.2	18.3	517560	10.2	21.0	39673	10.3	17.5	101609	10.4	18.4	207219	10.4	19.2	315822	10.5	20.2
2233	10.2	14.5	352857	10.2	19.9	461201	10.3	20.0	308869	10.4	20.7	21317	10.4	18.6	237607	10.5	20.2
146028	10.2	19.4	45966	10.2	19.0	468593	10.3	19.8	88501	10.4	18.4	486981	10.4	21.1	233917	10.5	20.3
409157	10.2	20.5	323270	10.2	20.8	215374	10.3	19.7	307065	10.4	20.5	22348	10.4	17.5	286794	10.5	20.8
2475	10.2	15.5	376264	10.2	20.5	44213	10.3	18.8	128291	10.4	19.0	22686	10.4	17.9	354432	10.5	19.0
199138	10.2	20.8	239105	10.2	19.7	40568	10.3	17.4	145130	10.4	19.7	115791	10.4	18.4	83449	10.5	18.8
55384	10.2	18.7	228138	10.2	20.2	39980	10.3	19.0	493980	10.4	20.5	294766	10.4	20.6	332026	10.5	20.2
406779	10.2	21.1	35730	10.2	18.7	394865	10.3	19.5	309548	10.4	19.2	198852	10.4	19.5	28505	10.5	18.6
368190	10.2	20.0	473650	10.2	20.0	369759	10.3	21.6	48927	10.4	18.3	26914	10.4	19.2	333055	10.5	20.5
517421	10.2	21.8	522174	10.2	20.8	111362	10.3	19.7	133293	10.4	19.0	153426	10.4	19.9	294948	10.5	19.5
158101	10.2	17.2	460545	10.2	20.1	389344	10.3	19.0	85997	10.4	19.3	284282	10.4	20.2	232688	10.5	19.8
188576	10.2	19.7	439602	10.2	20.8	207463	10.3	19.3	63238	10.4	18.2	357462	10.4	20.6	75556	10.5	18.6
314832	10.2	20.1	409209	10.2	19.3	148036	10.3	19.1	249480	10.4	19.1	431757	10.4	21.6	175515	10.5	19.4
410630	10.2	18.9	409693	10.2	19.6	215301	10.3	19.5	509216	10.4	21.0	481339	10.4	20.5	353305	10.5	20.7
81312	10.2	20.0	357302	10.2	19.7	281914	10.3	19.0	100890	10.4	19.6	64226	10.4	17.7	74176	10.5	19.8
450376	10.2	21.1	404719	10.2	20.6	410597	10.3	20.4	399143	10.4	20.4	129858	10.4	19.2	334153	10.5	19.2
190205	10.2	18.8	409158	10.2	19.7	412274	10.3	21.0	423706	10.4	20.8	260441	10.4	19.6	457294	10.5	19.7
143771	10.2	20.0	99936	10.2	18.8	484164	10.3	20.5	230225	10.4	18.9	81636	10.4	18.5	350906	10.5	20.3
267299	10.2	20.7	128337	10.2	19.5	140268	10.3	19.6	439948	10.4	20.7	44593	10.4	17.0	97646	10.5	19.0
325584	10.2	20.4	301142	10.2	20.5	453598	10.3	20.9	275261	10.4	19.5	331096	10.4	20.7	190219	10.5	20.3
333829	10.2	20.2	147360	10.2	19.6	434624	10.3	21.5	377066	10.4	21.7	475843	10.4	20.6	225684	10.5	18.2
32089	10.2	19.1	72730	10.2	18.7	320007	10.3	20.4	277232	10.4	19.5	331721	10.4	20.5	488007	10.5	20.5
190306	10.2	19.3	34465	10.2	18.7	220108	10.3	19.8	71623	10.4	18.8	133572	10.4	19.2	217715	10.5	19.5
503292	10.2	18.9	355498	10.2	19.6	136908	10.3	20.2	113895	10.4	18.8	82969	10.4	19.8	303560	10.5	20.3
164410	10.2	19.7	317690	10.2	20.1	37316	10.3	16.7	454755	10.4	21.2	407263	10.4	19.3	495825	10.5	20.6
364154	10.2	21.4	56591	10.2	17.2	411136	10.3	19.5	53082	10.4	18.2	30341	10.4	17.5	327685	10.5	20.1
139220	10.2	20.0	99812	10.2	18.3	259827	10.3	20.1	272093	10.4	20.2	419484	10.4	19.6	332414	10.5	19.6
514137	10.2	20.8	82536	10.2	20.1	410655	10.3	20.1	331249	10.4	20.0	453220	10.4	21.6	124295	10.5	18.5
144040	10.2	19.4	20420	10.2	18.3	328807	10.3	20.0	1								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
271543	10.5	20.1	49966	10.6	17.5	81235	10.7	19.3	507888	10.8	20.0	414353	10.8	20.3	241831	10.9	18.8
26954	10.5	18.2	87341	10.6	18.6	206365	10.7	19.0	367862	10.8	20.1	258047	10.8	21.0	230689	10.9	19.2
149400	10.5	19.3	69987	10.6	23.4	369456	10.7	19.5	453392	10.8	21.3	230422	10.8	20.0	26446	10.9	18.4
235869	10.5	20.2	53117	10.6	18.7	479435	10.7	20.0	140105	10.8	19.9	190478	10.9	19.5	276646	10.9	19.4
506028	10.5	21.0	89019	10.6	19.0	447468	10.7	21.8	355377	10.8	18.6	76440	10.9	17.7	520752	10.9	20.9
37988	10.5	18.7	97078	10.6	18.5	437190	10.7	20.9	457811	10.8	20.0	220098	10.9	18.9	158815	10.9	19.8
190261	10.5	19.8	400572	10.6	20.4	151584	10.7	18.6	112702	10.8	20.3	296296	10.9	20.7	517956	10.9	20.3
49228	10.5	18.4	139360	10.6	20.0	19936	10.7	16.8	160980	10.8	20.1	357705	10.9	20.6	513950	10.9	22.1
280442	10.5	18.8	298488	10.6	19.0	39985	10.7	19.3	454413	10.8	21.9	505641	10.9	21.2	165534	10.9	19.6
303586	10.5	19.6	487149	10.6	21.4	16728	10.7	17.2	82131	10.8	18.9	394573	10.9	19.6	31578	10.9	18.0
517008	10.5	19.6	516558	10.6	20.6	350497	10.7	18.9	173030	10.8	20.3	451803	10.9	20.4	207771	10.9	20.5
389626	10.5	20.2	389083	10.6	19.7	394488	10.7	20.9	44221	10.8	17.9	124893	10.9	18.5	392805	10.9	20.0
410632	10.5	20.6	57850	10.6	19.6	474282	10.7	20.8	450942	10.8	21.1	325696	10.9	20.5	520250	10.9	20.8
401363	10.5	20.9	388170	10.6	20.5	494981	10.7	20.7	307911	10.8	20.4	482736	10.9	20.0	181608	10.9	19.9
431762	10.5	21.2	222036	10.6	19.4	391149	10.7	21.4	273745	10.8	21.2	213828	10.9	18.9	74523	10.9	18.5
154603	10.5	18.6	67011	10.6	18.4	404364	10.7	21.0	517360	10.8	20.7	415006	10.9	20.3	290370	10.9	20.5
354385	10.6	20.3	247267	10.6	19.8	323263	10.7	21.2	415128	10.8	21.5	359306	10.9	21.1	248653	10.9	21.3
420942	10.6	19.4	267124	10.6	19.9	454922	10.7	20.9	395963	10.8	20.2	121749	10.9	20.0	521858	10.9	21.3
515610	10.6	21.6	240136	10.6	20.1	440548	10.7	19.8	492067	10.8	21.3	180904	10.9	20.7	77410	10.9	18.6
200178	10.6	20.1	439691	10.6	20.0	369566	10.7	18.9	140628	10.8	19.7	362732	10.9	20.0	118552	10.9	20.2
317373	10.6	21.7	271285	10.6	19.5	187099	10.7	20.6	222183	10.8	18.4	326492	10.9	21.5	352965	10.9	20.4
301715	10.6	20.6	170736	10.6	18.4	313209	10.7	19.4	18592	10.8	18.7	57522	10.9	18.1	219535	10.9	18.5
86504	10.6	19.7	522109	10.6	20.4	473589	10.7	20.8	90385	10.8	18.3	344937	10.9	20.7	50470	10.9	18.5
423365	10.6	21.4	219235	10.6	18.3	144134	10.7	19.9	296900	10.8	20.2	305919	10.9	20.2	411029	10.9	20.7
477380	10.6	20.1	101138	10.6	20.1	409043	10.7	19.5	230762	10.8	18.5	365000	10.9	20.1	520785	10.9	21.4
192622	10.6	19.0	44984	10.6	18.4	504966	10.7	20.8	3400	10.8	17.0	415394	10.9	21.1	387669	10.9	20.8
136774	10.6	20.1	38692	10.6	17.9	358607	10.7	19.6	108018	10.8	18.9	177202	10.9	19.0	159529	10.9	18.6
226981	10.6	19.2	404585	10.6	19.6	245852	10.7	20.3	164036	10.8	18.8	10974	10.9	18.2	450396	10.9	20.5
510566	10.6	20.2	510279	10.6	21.0	418664	10.7	20.9	267001	10.8	20.2	154931	10.9	19.9	257080	10.9	19.9
69328	10.6	18.8	291598	10.6	20.8	492168	10.7	21.1	35341	10.8	17.8	367441	10.9	19.6	384704	10.9	21.1
195651	10.6	19.3	129644	10.6	20.7	513897	10.7	20.4	139448	10.8	20.5	302107	10.9	20.9	320210	10.9	19.8
223918	10.6	19.5	278658	10.6	20.1	54343	10.7	18.0	89560	10.8	17.3	73737	10.9	19.0	346555	10.9	20.6
44025	10.6	17.9	282896	10.6	21.2	427303	10.7	19.9	245806	10.8	19.2	81121	10.9	19.8	155492	10.9	19.9
355014	10.6	20.3	385673	10.6	19.7	75288	10.7	17.8	487985	10.8	20.4	288879	10.9	20.0	230149	10.9	18.7
107324	10.6	19.5	174866	10.6	19.5	369235	10.7	20.6	436431	10.8	20.6	71407	10.9	17.8	177550	10.9	20.5
100398	10.6	20.1	150095	10.6	19.6	187963	10.7	19.8	518723	10.8	20.8	79959	10.9	17.6	19320	10.9	17.2
309003	10.6	20.4	482714	10.6	20.9	273071	10.7	21.2	261688	10.8	19.0	29058	10.9	19.3	327601	10.9	21.5
128375	10.6	19.9	45281	10.6	18.1	387677	10.7	21.3	169896	10.8	18.1	162263	10.9	19.1	356181	10.9	20.7
75508	10.6	18.3	318969	10.6	20.4	223056	10.7	19.9	227642	10.8	19.6	513606	10.9	21.8	321427	10.9	19.9
76760	10.6	18.1	177695	10.6	19.6	473372	10.7	20.5	373368	10.8	20.3	241567	10.9	19.7	303655	10.9	19.8
460753	10.6	20.6	313038	10.6	20.4	357455	10.7	20.2	340252	10.8	19.9	260142	10.9	19.1	259896	10.9	20.3
148179	10.6	18.1	516571	10.6	21.0	21584	10.7	17.4	348296	10.8	19.3	4839	10.9	16.1	72868	10.9	19.4
71484	10.6	18.2	446898	10.6	19.9	61537	10.7	18.9	458653	10.8	21.7	430745	10.9	21.6	270688	10.9	20.4
327512	10.6	21.2	466274	10.6	20.2	23593	10.7	17.4	32625	10.8	18.3	408605	10.9	20.9	226275	10.9	19.0
216939	10.6	20.2	386048	10.6	20.9	410241	10.7	21.3	449872	10.8	20.1	22667	10.9	17.7	226493	10.9	19.3
185382	10.6	19.5	385721	10.6	19.9	220142	10.7	18.5	446556	10.8	20.7	402126	10.9	21.3	274260	10.9	19.4
408027	10.6	20.4	322960	10.6	19.9	307756	10.7	20.6	478484	10.8	20.0	2093	10.9	16.6	86692	10.9	19.2
290866	10.6	20.4	344214	10.6	21.0	143923	10.7	18.8	15571	10.8	17.4	96190	10.9	18.6	427633	10.9	19.7
514642	10.6	21.6	298383	10.6	19.6	72477	10.7	18.8	271948	10.8	18.8	384347	10.9	20.3	80648	10.9	18.1
311690	10.6	19.3	508907	10.6	17.9	269125	10.7	20.3	483	10.8	13.6	360134	10.9	19.7	202955	10.9	19.6
21866	10.6	18.7	495267	10.7	20.8	384656	10.7	19.6	47294	10.8	16.7	121826	10.9	20.6	436783	10.9	21.7
10386	10.6	17.6	215643	10.7	19.5	298006	10.7	20.7	353048	10.8	19.0	193017	10.9	19.7	131640	10.9	18.4
490414	10.6	21.0	467150	10.7	20.4	226158	10.7	20.2	453192	10.8	21.2	348317	10.9	19.7	186291	10.9	19.3
80800	10.6	18.8	80250	10.7	16.5	358627	10.7	19.8	427526	10.8	21.2	343925	10.9	21.3	136772	10.9	19.6
38002	10.6	19.1	191650	10.7	20.3	28962	10.7	17.6	172752	10.8	19.9	109481	10.9	19.8	106067	10.9	17.2
445599	10.6	20.3	168108	10.7	20.7	403334	10.7	21.0	287380	10.8	20.0	9917	10.9	16.9	266737	10.9	20.4
371339	10.6	20.9	69241	10.7	18.9	296601	10.7	20.2	520741	10.8	20.9	6994	10.9	17.2	101262	10.9	18.7
1615	10.6	14.7	145459	10.7	19.4	45662	10.7	18.6	213162	10.8	19.8	112538	10.9	18.5	257942	10.9	19.8
403731	10.6	19.7	422549	10.7	21.2	154219	10.7	19.8	366767	10.8	20.7	449502	10.9	22.0	10850	10.9	17.2
371741	10.6	21.8	162307	10.7	18.3	107165	10.7	19.1	267233	10.8	19.6	103151	10.9	20.1	241526	10.9	20.0
436836	10.6	21.3	435128	10.7	21.2	40076	10.7	18.8	318929	10.8	19.7	320126	10.9	20.0	146008	10.9	18.5
138926	10.6	18.6	266515	10.7	21.1	110320	10.7	18.8	460952	10.8	20.2	288370	10.9	20.6	120193	10.9	19.4
117371	10.6	18.8	176607	10.7	19.4	488641	10.7	20.5	239363	10.8	20.8	446829	10.9	21.1	458617	10.9	21.1
479178	10.6	19.5	365433	10.7	20.3	179850	10.7	19.7	27079	10.8	19.5	414735	10.9	19.0	145134	10.9	20.7
138386	10.6	19.5	4535	10.7	17.0	380999	10.7	20.3	84273	10.8	19.2	71659	10.9	18.6	412899	10.9	20.2
393412	10.6	20.5	520187	10.7	21.1	506170	10.7	20.4	370047	10.8	20.1	45863	10.9	16.9	83618	10.9	19.7
462720	10.6	19.4	519404	10.7	20.1	330310	10.7	20.0	59397	10.8	18.8	43570	10.9	17.0	196995	10.9	19.3
271382	10.6	19.4	332808	10.7	20.7	278139	10.7	19.4	133814	10.8	19.4	272094	10.9	20.3	364435	10.9	20.7
37445	10.6	18.8	218916	10.7	18.6	139021	10.7	20.3</									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
452056	10.9	20.2	235894	11.1	19.5	156935	11.1	19.5	294002	11.2	19.2	31968	11.3	18.3	99427	11.3	19.0
323211	10.9	20.6	265454	11.1	19.6	480993	11.1	19.4	220429	11.2	19.4	24752	11.3	17.3	373252	11.3	20.6
292118	10.9	20.9	487943	11.1	20.5	294514	11.1	20.7	29518	11.2	17.5	266572	11.3	20.9	227030	11.3	19.5
444507	10.9	20.6	213446	11.1	19.5	201645	11.1	20.6	306589	11.2	20.3	314437	11.3	20.4	490509	11.3	21.1
266043	10.9	20.3	313216	11.1	20.3	152950	11.1	19.5	315848	11.2	20.4	336094	11.3	20.5	358611	11.3	19.3
379114	10.9	20.5	329882	11.1	20.1	190456	11.1	18.7	236901	11.2	19.8	520397	11.3	21.6	124849	11.3	19.8
515134	10.9	22.0	232917	11.1	18.1	394162	11.1	20.1	84440	11.2	17.7	177832	11.3	19.9	189887	11.3	19.2
139384	10.9	19.3	78436	11.1	19.0	52564	11.1	19.3	253841	11.2	20.9	76767	11.3	18.6	520378	11.3	20.9
455436	10.9	21.5	77603	11.1	18.9	516036	11.1	20.0	518809	11.2	20.4	74298	11.3	18.9	147662	11.3	19.6
504496	10.9	21.2	222047	11.1	19.3	292260	11.1	20.6	55127	11.2	18.8	291383	11.3	19.9	390701	11.3	20.0
135885	10.9	19.4	492153	11.1	21.2	161406	11.1	18.6	289102	11.2	20.4	156052	11.3	19.3	273240	11.3	18.8
485970	10.9	21.3	305014	11.1	19.7	114027	11.1	18.9	327589	11.2	21.7	173858	11.3	20.1	182277	11.3	20.9
326837	10.9	20.8	146540	11.1	20.2	289647	11.1	20.2	362781	11.2	19.6	451551	11.3	20.6	309244	11.3	21.4
516739	10.9	21.2	401039	11.1	19.4	487189	11.1	20.8	111979	11.2	20.0	517405	11.3	21.3	479492	11.3	19.9
289854	10.9	20.0	472371	11.1	20.7	414605	11.1	20.6	198837	11.2	19.0	17634	11.3	18.8	357602	11.3	19.5
373648	10.9	19.7	85604	11.1	19.8	377975	11.1	20.0	230464	11.2	19.7	300576	11.3	20.1	427157	11.3	20.4
155704	10.9	19.4	393306	11.1	19.2	495768	11.1	19.8	205113	11.2	17.6	104233	11.3	18.7	262215	11.3	20.9
29115	10.9	18.5	499207	11.1	20.3	323036	11.1	20.5	520867	11.2	21.4	216401	11.3	21.3	167498	11.3	18.1
516740	11.0	22.4	108119	11.1	19.6	306505	11.1	19.7	211301	11.2	20.9	267151	11.3	21.0	150430	11.3	19.6
53630	11.0	18.0	10939	11.1	16.8	518892	11.1	20.8	97287	11.2	19.9	273259	11.3	20.5	414710	11.3	21.0
220047	11.0	19.0	418538	11.1	20.3	162287	11.1	19.9	47194	11.2	18.9	88334	11.3	17.5	98905	11.3	19.2
198834	11.0	20.1	427366	11.1	19.9	191410	11.1	19.0	308742	11.2	20.9	208076	11.3	18.7	187139	11.3	20.0
439474	11.0	20.6	441163	11.1	21.9	40495	11.1	18.9	140539	11.2	19.9	227173	11.3	20.5	145196	11.3	19.2
333629	11.0	21.5	152718	11.1	18.7	245841	11.1	21.0	412369	11.2	20.2	306600	11.3	21.1	226746	11.3	19.7
71006	11.0	18.4	225097	11.1	20.6	206150	11.1	21.3	415246	11.2	20.4	59383	11.3	19.0	67815	11.3	19.1
419516	11.0	20.2	449586	11.1	21.2	384785	11.1	20.0	518460	11.2	21.5	174778	11.3	19.2	387135	11.3	20.0
396760	11.0	19.8	53294	11.1	18.3	85115	11.1	19.6	153347	11.2	18.1	302610	11.3	19.2	169089	11.3	18.6
172260	11.0	18.8	357486	11.1	20.9	125143	11.1	18.1	67452	11.2	17.4	36233	11.3	18.4	325363	11.3	20.8
264796	11.0	20.6	440120	11.1	20.4	369432	11.1	19.6	143298	11.2	19.0	126339	11.3	18.2	325579	11.3	20.6
399653	11.0	19.9	131595	11.1	20.3	120733	11.1	17.7	23645	11.2	18.4	439654	11.3	19.7	254511	11.3	19.4
258639	11.0	19.3	328870	11.1	19.5	294439	11.1	20.4	220374	11.2	18.9	445660	11.3	20.3	461023	11.3	20.2
427288	11.0	20.4	389698	11.1	22.1	478474	11.1	20.2	388074	11.2	19.8	257527	11.3	20.3	86112	11.3	17.6
74782	11.0	18.6	142121	11.1	19.8	464399	11.1	20.5	486984	11.2	20.4	261298	11.3	19.6	235896	11.3	20.2
134075	11.0	19.3	212424	11.1	19.9	288558	11.1	19.6	302533	11.2	20.9	39476	11.3	18.9	450692	11.3	19.6
50047	11.0	18.1	177866	11.1	20.0	70078	11.1	18.9	161857	11.2	19.8	191554	11.3	19.9	122315	11.4	20.2
514258	11.0	21.9	25942	11.1	18.7	414941	11.1	21.0	216043	11.2	20.5	406793	11.3	20.7	333273	11.4	20.1
149896	11.0	19.9	268696	11.1	20.0	38471	11.1	18.1	220856	11.2	18.8	181990	11.3	19.1	297240	11.4	19.5
108031	11.0	17.1	335423	11.1	20.3	146564	11.1	19.0	139416	11.2	20.0	258703	11.3	20.2	172673	11.4	18.8
520872	11.0	20.2	349581	11.1	21.6	263875	11.1	20.8	30846	11.2	18.0	278630	11.3	19.6	414027	11.4	20.2
500294	11.0	20.0	116492	11.1	19.7	172711	11.1	19.0	331682	11.2	21.7	296437	11.3	20.7	451347	11.4	21.0
335428	11.0	19.4	356738	11.1	20.3	303543	11.1	21.0	132943	11.2	19.2	151038	11.3	20.7	202687	11.4	20.4
28286	11.0	17.3	73698	11.1	18.6	213703	11.1	19.9	294338	11.2	19.0	175017	11.3	19.6	247265	11.4	19.4
441056	11.0	21.6	326629	11.1	20.9	245857	11.1	19.3	265484	11.2	20.0	444528	11.3	20.9	245712	11.4	20.4
449558	11.0	21.4	449781	11.1	21.1	197169	11.1	19.1	104569	11.2	18.6	120260	11.3	20.3	517086	11.4	19.9
277434	11.0	20.7	487464	11.1	21.7	389657	11.1	21.8	62811	11.2	18.9	482312	11.3	19.5	165586	11.4	19.3
331289	11.0	20.0	225708	11.1	19.1	308757	11.1	20.0	49480	11.2	18.4	124033	11.3	19.7	414683	11.4	20.5
115594	11.0	19.1	14654	11.1	17.1	185707	11.1	19.3	228050	11.2	18.6	191644	11.3	20.0	17232	11.4	18.1
494363	11.0	20.4	396909	11.1	19.2	294833	11.1	20.9	51684	11.2	18.3	450389	11.3	21.1	391911	11.4	21.1
523268	11.0	20.6	226982	11.1	18.2	58476	11.1	18.7	424554	11.2	20.7	460905	11.3	20.2	477317	11.4	21.6
211381	11.0	20.6	242911	11.1	20.5	268151	11.1	19.1	108336	11.2	20.8	71219	11.3	18.3	436166	11.4	20.7
445484	11.0	19.3	151024	11.1	19.4	271481	11.1	20.3	11872	11.2	16.8	516798	11.3	21.9	444477	11.4	20.6
270712	11.0	20.0	404626	11.1	21.3	28295	11.2	18.0	444475	11.2	20.5	384729	11.3	21.2	373258	11.4	21.6
335407	11.0	21.5	453666	11.1	20.2	118036	11.2	19.7	310123	11.2	20.6	397611	11.3	19.8	494557	11.4	19.8
57619	11.0	18.7	305631	11.1	20.6	107795	11.2	19.6	288219	11.2	19.5	380387	11.3	19.3	159608	11.4	19.1
396127	11.0	19.8	168218	11.1	20.9	9740	11.2	16.2	228438	11.2	19.9	147661	11.3	19.9	220790	11.4	19.4
146768	11.0	18.9	441183	11.1	21.1	90460	11.2	19.4	391515	11.2	20.8	330756	11.3	20.3	482735	11.4	20.6
334174	11.0	20.6	334341	11.1	19.3	308901	11.2	20.4	158933	11.2	19.6	447993	11.3	21.0	64161	11.4	18.3
355278	11.0	19.1	285008	11.1	19.6	520709	11.2	20.5	270266	11.2	20.9	113917	11.3	19.4	318437	11.4	20.6
292292	11.0	20.1	235400	11.1	19.7	352233	11.2	20.1	516619	11.2	20.2	404311	11.3	20.8	324791	11.4	20.1
222009	11.0	19.9	177696	11.1	19.8	161957	11.2	20.1	212099	11.2	20.5	361843	11.3	20.2	280926	11.4	20.1
298277	11.0	18.6	193744	11.1	19.1	227788	11.2	21.1	312890	11.2	19.9	522932	11.3	20.2	305037	11.4	21.2
152016	11.0	19.8	283826	11.1	19.9	481579	11.2	19.1	405270	11.2	19.7	167238	11.3	19.7	291825	11.4	19.9
208301	11.0	20.4	271965	11.1	20.8	130035	11.2	19.7	288255	11.2	18.5	392300	11.3	21.4	473698	11.4	19.5
73985	11.0	18.3	73492	11.1	19.0	415234	11.2	19.9	227247	11.2	19.8	267979	11.3	19.9	243900	11.4	19.7
403766	11.0	19.8	394135	11.1	20.1	400413	11.2	20.4	311320	11.2	19.4	277546	11.3	20.7	240965	11.4	19.2
222109	11.0	20.6	341018	11.1	21.0	123969	11.2	20.6	279255	11.2	20.6	512095	11.3	21.4	457961	11.4	20.9
170452	11.0	19.3	450005	11.1	22.1	450206	11.2	20.9	269176	11.2	20.5	388242	11.3	21.7	381046	11.4	19.4
305165	11.0	18.8	63320	11.1	20.1	188135	11.2	20.2	236707	11.2	20.3	442451	11.3	21.4	194939	11.4	19.1
223358	11.0	18.9	330778	11.1													

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
222392	11.4	19.5	329901	11.5	20.1	168623	11.5	19.1	482679	11.6	21.2	506171	11.7	20.7	130238	11.7	19.3
105845	11.4	18.8	231104	11.5	19.5	218211	11.5	18.6	145086	11.6	20.0	329863	11.7	19.6	84347	11.8	18.7
403645	11.4	20.8	115149	11.5	18.5	150671	11.5	19.3	388124	11.6	19.7	396353	11.7	19.6	351831	11.8	21.2
391531	11.4	20.1	51215	11.5	17.1	102645	11.5	18.5	414306	11.6	20.7	187753	11.7	20.7	408546	11.8	21.2
64525	11.4	19.5	293510	11.5	20.5	423	11.5	11.7	391183	11.6	21.0	291588	11.7	22.1	241653	11.8	20.6
459429	11.4	20.5	194773	11.5	19.2	139277	11.5	20.4	409229	11.6	18.6	289632	11.7	19.1	28748	11.8	17.6
311748	11.4	20.5	413245	11.5	19.7	399771	11.5	20.3	117476	11.6	19.1	444494	11.7	20.1	441285	11.8	19.5
38539	11.4	19.3	46823	11.5	17.9	182695	11.5	18.5	331694	11.6	19.8	154132	11.7	19.3	46004	11.8	19.3
489503	11.4	21.4	99104	11.5	20.0	288031	11.5	19.5	165544	11.6	19.8	514688	11.7	21.2	517515	11.8	20.4
40479	11.4	17.8	188615	11.5	20.2	68254	11.5	19.3	493380	11.6	20.7	106431	11.7	18.7	4854	11.8	17.5
156419	11.4	18.6	135942	11.5	18.7	37340	11.5	18.3	491539	11.6	21.2	255164	11.7	19.9	138234	11.8	19.1
495666	11.4	20.2	318210	11.5	19.7	272026	11.5	20.6	422542	11.6	20.7	292412	11.7	19.5	86098	11.8	18.1
363852	11.4	20.7	225472	11.5	20.3	285027	11.5	21.1	478435	11.6	21.4	485695	11.7	20.3	210656	11.8	19.7
382157	11.4	20.9	205392	11.5	19.0	30120	11.5	18.6	101140	11.6	19.6	193742	11.7	20.8	404352	11.8	21.2
421900	11.4	20.4	274103	11.5	20.4	116937	11.6	18.8	398798	11.6	20.9	349713	11.7	18.6	200047	11.8	20.5
439646	11.4	20.1	315877	11.5	20.7	55094	11.6	19.2	89474	11.6	18.5	208136	11.7	19.7	351842	11.8	20.2
403481	11.4	19.6	177503	11.5	18.9	226393	11.6	19.3	313904	11.6	19.9	402135	11.7	21.7	46223	11.8	18.3
280009	11.4	19.6	368853	11.5	20.6	33513	11.6	16.6	496637	11.6	21.2	454733	11.7	19.8	192135	11.8	20.6
353376	11.4	19.8	326515	11.5	20.5	506633	11.6	19.6	144933	11.6	19.5	336664	11.7	20.8	25445	11.8	17.6
406083	11.4	19.6	521145	11.5	21.2	392271	11.6	20.1	217261	11.6	19.9	175654	11.7	18.4	327529	11.8	21.2
416080	11.4	20.0	248792	11.5	19.2	296392	11.6	20.8	274343	11.6	20.3	356623	11.7	19.6	375132	11.8	20.5
352151	11.4	20.9	358282	11.5	20.6	515784	11.6	21.1	219158	11.6	18.5	420701	11.7	20.7	315706	11.8	20.1
326039	11.4	19.1	297247	11.5	20.1	154155	11.6	19.9	75042	11.6	17.6	159754	11.7	19.6	73125	11.8	19.9
176973	11.4	18.9	29498	11.5	17.6	249054	11.6	20.1	310990	11.6	18.6	302745	11.7	19.9	43099	11.8	18.2
349263	11.4	19.2	263952	11.5	20.6	26471	11.6	15.2	369786	11.6	21.5	32721	11.7	18.8	30655	11.8	17.2
225233	11.4	20.7	512714	11.5	21.2	8688	11.6	17.1	513550	11.6	23.0	490934	11.7	21.0	201729	11.8	20.0
49234	11.4	18.4	234693	11.5	19.1	356133	11.6	21.4	514148	11.6	20.1	271316	11.7	20.1	346441	11.8	20.5
316294	11.4	20.3	223055	11.5	20.4	151986	11.6	20.1	204118	11.6	19.7	112846	11.7	20.0	483510	11.8	20.5
391576	11.4	21.5	414370	11.5	20.8	352254	11.6	19.6	232074	11.6	19.0	247224	11.7	19.2	150723	11.8	19.9
333528	11.4	20.4	421192	11.5	21.1	26880	11.6	18.4	461240	11.6	20.5	484842	11.7	21.4	420695	11.8	21.1
326248	11.4	19.7	98992	11.5	19.9	416120	11.6	20.0	143419	11.6	19.4	276531	11.7	20.4	369604	11.8	20.2
227542	11.4	20.8	368421	11.5	20.3	108394	11.6	19.5	281206	11.6	19.2	497172	11.7	20.5	226620	11.8	20.2
315719	11.4	20.2	246782	11.5	20.6	111192	11.6	19.9	431767	11.6	21.8	476521	11.7	21.0	379872	11.8	21.5
472914	11.4	21.2	473554	11.5	20.5	450410	11.6	20.9	218428	11.6	19.8	38114	11.7	19.1	257944	11.8	19.0
439039	11.4	20.9	454259	11.5	21.3	74799	11.6	18.8	242264	11.6	20.1	36842	11.7	19.0	262328	11.8	20.6
451790	11.4	21.0	398506	11.5	21.6	167203	11.6	19.0	328413	11.6	20.1	139213	11.7	20.1	11979	11.8	19.2
164872	11.4	20.1	7502	11.5	16.6	198806	11.6	19.6	13241	11.6	16.7	359566	11.7	21.0	13675	11.8	18.1
270283	11.4	19.5	449714	11.5	20.2	443859	11.6	19.9	418670	11.6	21.0	116324	11.7	19.1	322959	11.8	21.1
249919	11.4	20.3	308848	11.5	20.0	156852	11.6	18.1	44668	11.6	17.6	129869	11.7	18.4	129138	11.8	20.1
113613	11.4	19.1	289324	11.5	19.9	64849	11.6	19.3	291537	11.6	20.7	41115	11.7	17.7	516784	11.8	20.1
319399	11.4	20.2	58869	11.5	18.8	127161	11.6	20.6	465851	11.6	20.7	205140	11.7	18.7	281448	11.8	20.4
453763	11.4	20.2	195632	11.5	20.4	522050	11.6	21.2	452802	11.6	20.9	477297	11.7	22.2	397517	11.8	20.9
298068	11.4	20.3	175494	11.5	19.5	452400	11.6	20.6	432257	11.6	21.1	511681	11.7	21.1	417392	11.8	21.0
442341	11.4	21.5	69979	11.5	18.4	436838	11.6	20.9	299619	11.6	21.5	145538	11.7	19.3	448503	11.8	20.8
521757	11.4	21.0	458728	11.5	21.0	413747	11.6	20.2	96035	11.6	19.9	80017	11.7	19.6	22738	11.8	17.8
491564	11.4	20.7	184587	11.5	20.6	418446	11.6	19.9	173455	11.6	20.3	519488	11.7	21.7	171672	11.8	19.0
169449	11.4	19.3	400962	11.5	21.1	24363	11.6	18.3	296095	11.6	20.5	458506	11.7	20.7	366196	11.8	20.5
73313	11.4	19.4	135623	11.5	18.0	301254	11.6	20.2	374334	11.6	20.7	391201	11.7	21.1	233899	11.8	20.4
228904	11.4	19.0	333266	11.5	20.8	424281	11.6	20.3	157341	11.6	20.0	296339	11.7	21.2	172656	11.8	19.4
477246	11.4	21.6	151887	11.5	18.7	189208	11.6	20.0	378559	11.6	20.2	291374	11.7	21.4	134053	11.8	19.6
329080	11.4	20.1	519870	11.5	20.7	195616	11.6	19.5	248835	11.7	21.8	156590	11.7	20.2	337963	11.8	20.7
346222	11.5	19.2	104739	11.5	20.2	410860	11.6	20.6	226071	11.7	20.2	147537	11.7	19.3	332963	11.8	20.2
237894	11.5	19.8	207817	11.5	19.9	400848	11.6	22.2	518803	11.7	19.9	264833	11.7	20.6	401731	11.8	20.6
41285	11.5	17.9	361683	11.5	19.9	226556	11.6	18.5	342304	11.7	21.5	101228	11.7	19.6	133715	11.8	18.9
86751	11.5	19.7	580069	11.5	20.5	86218	11.6	18.3	427174	11.7	19.8	201644	11.7	19.8	26323	11.8	17.7
99249	11.5	19.5	112370	11.5	19.4	94859	11.6	18.2	148590	11.7	20.3	297348	11.7	20.0	49768	11.8	18.0
398877	11.5	20.4	139333	11.5	19.5	151984	11.6	19.7	199015	11.7	19.5	249998	11.7	19.5	163623	11.8	20.3
222842	11.5	19.9	319406	11.5	21.3	364882	11.6	20.5	38540	11.7	17.1	63902	11.7	18.6	164945	11.8	18.5
357308	11.5	18.4	242895	11.5	20.2	195927	11.6	18.7	377983	11.7	20.1	277465	11.7	19.9	332025	11.8	21.0
399024	11.5	20.8	418725	11.5	21.7	467053	11.6	20.3	227165	11.7	19.3	463376	11.7	20.0	420937	11.8	20.8
327632	11.5	19.9	325881	11.5	19.0	364997	11.6	20.0	313259	11.7	19.9	269240	11.7	20.3	277194	11.8	20.3
442521	11.5	18.7	437868	11.5	19.9	401470	11.6	20.4	182188	11.7	19.8	14788	11.7	17.6	360738	11.8	20.8
277975	11.5	20.5	440133	11.5	20.4	26781	11.6	18.4	136858	11.7	19.2	358620	11.7	19.9	512472	11.8	20.9
152148	11.5	19.0	291665	11.5	20.8	522125	11.6	21.0	8840	11.7	16.3	448049	11.7	20.2	358290	11.8	20.3
196859	11.5	19.5	261477	11.5	19.9	231561	11.6	19.7	311727	11.7	20.3	77788	11.7	18.3	412500	11.8	21.3
262206	11.5	20.6	227015	11.5	18.9	148282	11.6	19.7	324051	11.7	20.3	485150	11.7	21.1	34707	11.8	17.6
320180	11.5	20.4	326507	11.5	20.7	271357	11.6	18.9	267965	11.7	20.4	403080	11.7	20.7	255893	11.8	19.4
408414	11.5	21.4	319945	11.5	20.2	138442	11.6	18.9	457318	11.7	21.0	332241	11.7	19.8	443274	11.8	21.0
368992	11.5	20.2	414645	11.5	20.4												

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
24868	11.8	18.5	139973	11.9	18.5	158806	11.9	19.7	69718	12.0	20.0	519218	12.1	21.1	388157	12.2	20.3
44779	11.8	18.1	258599	11.9	19.5	20017	11.9	17.1	364894	12.0	20.6	123660	12.1	19.0	325625	12.2	19.5
86588	11.8	20.0	215512	11.9	18.2	85767	11.9	18.6	308471	12.0	19.7	487481	12.1	21.2	378050	12.2	21.2
358636	11.8	18.4	506124	11.9	20.9	493978	11.9	20.2	478809	12.0	20.2	59984	12.1	18.9	347586	12.2	18.5
474843	11.8	19.9	350221	11.9	19.6	224795	11.9	20.4	84360	12.0	18.1	52523	12.1	19.1	113581	12.2	19.2
163766	11.8	19.8	470201	11.9	20.6	382919	11.9	20.9	422561	12.0	19.6	112627	12.1	19.1	240626	12.2	19.4
455647	11.8	20.5	68962	11.9	18.7	364883	11.9	21.0	220117	12.0	18.8	147975	12.1	19.4	99085	12.2	18.6
140209	11.8	20.8	519527	11.9	21.8	271594	11.9	20.2	179100	12.0	19.8	356966	12.1	19.7	477480	12.2	20.0
480183	11.8	21.4	168145	11.9	20.6	13196	11.9	16.6	508356	12.0	20.6	312862	12.1	20.3	491985	12.2	20.2
198822	11.8	19.9	57375	11.9	18.3	517281	11.9	21.6	369787	12.1	20.0	82027	12.1	18.7	226064	12.2	20.1
463852	11.8	20.3	177590	11.9	19.7	69798	11.9	18.4	95126	12.1	17.9	256672	12.1	19.4	342116	12.2	19.8
57118	11.8	18.1	40175	11.9	18.7	220048	11.9	19.4	108636	12.1	19.4	100608	12.1	20.5	455930	12.2	21.4
258186	11.8	19.6	19351	11.9	17.5	171265	11.9	20.5	295396	12.1	19.5	487315	12.1	21.1	448013	12.2	20.6
489942	11.8	21.8	487532	11.9	20.7	9181	11.9	17.0	414289	12.1	20.4	308253	12.1	20.1	338436	12.2	19.8
22530	11.8	18.1	238241	11.9	19.8	491530	11.9	21.8	302104	12.1	20.5	139925	12.1	18.9	380759	12.2	19.3
42803	11.8	16.3	363009	11.9	21.1	327571	11.9	20.1	149348	12.1	22.6	375159	12.1	19.8	513388	12.2	22.2
80558	11.8	18.1	275797	11.9	19.5	185390	11.9	19.8	520404	12.1	20.5	198833	12.1	20.1	22184	12.2	17.7
170532	11.8	19.4	120552	11.9	18.9	426815	11.9	21.2	456124	12.1	21.4	76112	12.1	19.1	227717	12.2	20.8
81928	11.8	19.1	98982	11.9	19.3	115411	11.9	18.3	22587	12.1	18.9	117421	12.1	18.9	160021	12.2	20.4
99790	11.8	19.9	230602	11.9	20.0	152865	11.9	19.5	72663	12.1	18.4	248494	12.1	19.8	17923	12.2	16.9
92660	11.8	19.3	267994	11.9	19.4	89403	11.9	20.2	447559	12.1	20.5	415164	12.1	20.6	422300	12.2	21.1
409130	11.8	20.8	73290	11.9	19.6	301451	11.9	20.1	373961	12.1	20.0	495801	12.1	20.3	228231	12.2	19.7
311741	11.8	20.3	508883	11.9	20.2	161207	11.9	20.4	395059	12.1	20.2	113058	12.1	18.7	460630	12.2	20.7
351405	11.8	21.0	227397	11.9	20.3	482626	11.9	19.7	81727	12.1	18.4	458716	12.2	21.1	321182	12.2	18.7
237291	11.8	20.0	236232	11.9	19.8	78461	11.9	18.8	458587	12.1	20.3	470253	12.2	19.7	220092	12.2	20.6
484445	11.8	20.7	358732	11.9	20.7	361784	11.9	20.7	325849	12.1	19.3	394460	12.2	20.3	237904	12.2	19.6
487468	11.8	20.2	234656	11.9	19.7	256421	11.9	20.7	248817	12.1	21.0	350513	12.2	23.1	8663	12.2	16.0
352257	11.8	21.0	161871	11.9	20.0	331274	11.9	19.7	29731	12.1	17.5	301667	12.2	20.7	227113	12.2	20.3
193207	11.8	19.2	307483	11.9	19.7	517775	11.9	19.9	106861	12.1	17.2	167190	12.2	19.3	386052	12.2	20.6
440036	11.8	21.3	364048	11.9	21.0	267943	11.9	20.1	505345	12.1	20.5	139840	12.2	19.3	234943	12.2	20.4
464366	11.8	21.5	322107	11.9	19.8	355353	11.9	20.2	403495	12.1	19.9	230706	12.2	18.9	101823	12.2	19.8
262113	11.8	19.7	88392	11.9	18.2	390324	11.9	20.0	292350	12.1	19.9	173785	12.2	19.3	406748	12.2	21.6
25991	11.8	18.7	313244	11.9	19.7	209729	11.9	20.3	302697	12.1	20.4	304178	12.2	21.0	409149	12.2	19.2
30973	11.8	17.8	511033	11.9	20.1	312436	11.9	20.4	440083	12.1	20.3	33705	12.2	17.8	441040	12.2	21.5
467878	11.8	20.1	447787	11.9	21.0	101066	12.0	19.8	446311	12.1	21.8	52264	12.2	17.4	387653	12.2	21.5
404901	11.8	19.9	138966	11.9	18.5	284158	12.0	20.8	344623	12.1	20.6	155256	12.2	20.3	232452	12.2	19.8
141788	11.8	20.0	216111	11.9	20.6	213141	12.0	19.8	324331	12.1	20.5	203035	12.2	19.2	230254	12.2	19.1
164962	11.8	18.0	480270	11.9	21.1	26404	12.0	16.8	435185	12.1	19.5	232095	12.2	19.3	450182	12.2	19.9
177618	11.8	20.5	176074	11.9	18.4	484166	12.0	20.3	311435	12.1	19.9	41135	12.2	19.5	43965	12.2	20.0
107823	11.9	18.3	323365	11.9	19.9	402364	12.0	21.1	388165	12.1	21.2	265274	12.2	20.5	16605	12.2	17.7
210668	11.9	19.1	41450	11.9	19.6	452544	12.0	18.5	330781	12.1	20.3	84959	12.2	18.5	297203	12.2	20.2
309670	11.9	20.1	15360	11.9	19.0	282042	12.0	19.1	166350	12.1	20.6	197735	12.2	19.8	132990	12.2	19.0
513373	11.9	20.9	518099	11.9	21.1	274302	12.0	20.1	311016	12.1	19.0	443490	12.2	20.7	115413	12.2	18.9
328366	11.9	20.0	159804	11.9	19.5	67070	12.0	18.7	136184	12.1	19.4	436424	12.2	20.6	376338	12.2	21.3
167418	11.9	17.9	484810	11.9	21.0	197746	12.0	19.2	270638	12.1	20.3	163286	12.2	19.5	414355	12.2	21.2
322688	11.9	19.7	274955	11.9	19.7	176198	12.0	18.5	272422	12.1	20.8	490463	12.2	20.8	301698	12.2	19.6
273133	11.9	19.5	45312	11.9	18.5	351125	12.0	18.9	341102	12.1	21.6	460476	12.2	20.6	424947	12.2	20.2
276411	11.9	18.7	346277	11.9	21.7	474426	12.0	18.5	286823	12.1	20.6	97836	12.2	18.0	92690	12.2	18.4
212923	11.9	19.5	341901	11.9	21.9	196004	12.0	21.0	397299	12.1	20.6	225100	12.2	20.4	52886	12.2	18.5
452165	11.9	22.0	422534	11.9	19.8	120044	12.0	17.7	310554	12.1	20.0	521668	12.2	20.4	317327	12.2	20.6
369602	11.9	21.2	294790	11.9	20.0	142337	12.0	19.1	43601	12.1	18.3	241269	12.2	19.5	196140	12.2	19.3
185976	11.9	20.0	353069	11.9	20.8	48887	12.0	18.8	126414	12.1	19.6	126299	12.2	19.7	326525	12.2	21.0
44697	11.9	18.9	289743	11.9	19.6	295221	12.0	21.3	121700	12.1	18.9	455670	12.2	21.1	216179	12.2	20.4
10212	11.9	16.8	108409	11.9	19.6	494023	12.0	21.4	412128	12.1	21.7	70718	12.2	18.4	281347	12.2	20.6
515788	11.9	22.0	366510	11.9	20.9	225064	12.0	20.2	215207	12.1	18.6	336628	12.2	19.2	478529	12.2	20.6
516813	11.9	20.9	34048	11.9	18.0	514602	12.0	20.5	189871	12.1	18.7	308958	12.2	19.9	79	12.2	9.9
393609	11.9	20.8	444877	11.9	19.6	323292	12.0	20.2	332990	12.1	21.4	148585	12.2	20.6	493939	12.2	20.4
265946	11.9	20.2	67787	11.9	18.2	53972	12.0	18.5	396025	12.1	21.2	67349	12.2	18.6	443165	12.2	20.6
427274	11.9	20.4	477850	11.9	20.1	78009	12.0	18.7	514695	12.1	21.8	523240	12.2	21.7	349492	12.2	19.6
102043	11.9	18.3	148280	11.9	19.9	116025	12.0	17.9	453812	12.1	20.6	92320	12.2	18.9	475340	12.2	20.3
108378	11.9	20.0	20542	11.9	17.8	414015	12.0	20.7	220183	12.1	19.2	407470	12.2	20.9	63705	12.2	17.5
70116	11.9	18.5	43365	11.9	17.2	278737	12.0	20.9	306370	12.1	19.8	207828	12.2	20.3	394941	12.2	21.2
414637	11.9	20.1	451299	11.9	20.9	332644	12.0	21.0	513625	12.1	22.4	398530	12.2	20.1	358727	12.2	19.9
268327	11.9	20.8	316761	11.9	20.3	149907	12.0	20.3	109333	12.1	20.4	120419	12.2	20.1	288236	12.2	19.5
279459	11.9	20.1	520772	11.9	21.1	59827	12.0	17.4	147953	12.1	19.2	288733	12.2	20.3	437921	12.3	21.8
177582	11.9	19.8	464349	11.9	20.9	276001	12.0	19.6	330741	12.1	21.4	330790	12.2	20.9	281815	12.3	20.1
127445	11.9	19.7	245474	11.9	20.2	300329	12.0	21.9	203640	12.1	19.7	294579	12.2	20.3	362495	12.3	21.0
78354	11.9	19.7	308788	11.9	20.8	238726	12.0	19.7	105072	12.1	19.0	60886	12.2	19.2	267899	12.3	19.7
490016	11.9	20.3	195674	11.9	19.7	150474	1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
12571	12.3	17.9	296851	12.3	20.3	85246	12.4	18.9	228826	12.5	19.0	56136	12.5	18.1	323577	12.6	19.7
397234	12.3	19.3	124074	12.3	19.8	198743	12.4	19.9	233662	12.5	20.3	518822	12.5	21.2	46255	12.6	18.3
501585	12.3	19.1	131345	12.3	19.8	351095	12.4	20.7	3309	12.5	15.9	41393	12.5	17.3	9891	12.6	16.9
311327	12.3	19.9	486647	12.3	21.6	521482	12.4	20.6	209709	12.5	19.9	496669	12.5	20.0	421752	12.6	20.7
132316	12.3	19.5	35682	12.3	17.0	149317	12.4	18.6	232870	12.5	18.6	482899	12.5	20.2	78901	12.6	18.1
143171	12.3	18.9	326832	12.3	19.5	97629	12.4	19.3	73817	12.5	21.3	190470	12.5	20.0	295008	12.6	20.6
407235	12.3	18.9	304128	12.3	21.3	183123	12.4	20.3	77658	12.5	19.0	295020	12.5	20.5	46663	12.6	18.9
9184	12.3	16.4	128105	12.3	19.8	324043	12.4	21.0	62661	12.5	20.6	478128	12.5	19.5	124859	12.6	19.1
360197	12.3	20.8	336588	12.3	20.7	105331	12.4	19.5	164340	12.5	18.8	356124	12.5	20.8	367689	12.6	21.0
142324	12.3	17.4	20260	12.3	16.9	70452	12.4	18.7	414720	12.5	20.1	372225	12.5	21.4	449260	12.6	20.7
272886	12.3	21.2	493893	12.3	20.1	199859	12.4	20.3	323309	12.5	19.8	38032	12.5	19.8	447775	12.6	21.7
116073	12.3	18.2	85253	12.3	20.0	27345	12.4	18.7	229382	12.5	20.3	300603	12.5	19.9	189747	12.6	18.7
286898	12.3	20.1	456549	12.3	21.0	439407	12.4	19.7	320741	12.5	20.3	247488	12.5	20.0	358281	12.6	20.8
411984	12.3	20.6	422414	12.3	20.4	515264	12.4	20.7	484022	12.5	21.0	522114	12.5	21.4	17071	12.6	17.5
193762	12.3	19.9	139950	12.3	18.7	265486	12.4	19.7	480364	12.5	20.0	66750	12.5	18.5	46089	12.6	18.1
389496	12.3	20.5	83358	12.3	18.0	82091	12.4	18.4	438699	12.5	21.5	73515	12.5	19.2	40672	12.6	19.0
19364	12.3	16.8	138976	12.3	19.3	476537	12.4	22.3	71528	12.5	18.0	144882	12.5	19.2	48131	12.6	19.7
327506	12.3	20.0	250674	12.3	19.7	335431	12.4	20.4	395149	12.5	20.9	230186	12.5	19.4	321107	12.6	19.7
121962	12.3	20.1	26759	12.3	19.1	97654	12.4	19.0	337582	12.5	20.1	91656	12.5	18.0	402171	12.6	20.2
42793	12.3	17.3	458441	12.4	20.3	24049	12.4	16.8	442785	12.5	18.6	279404	12.5	19.3	158795	12.6	19.7
474362	12.3	22.0	12066	12.4	18.8	366534	12.4	20.5	365516	12.5	20.7	377011	12.5	20.6	48153	12.6	18.4
493970	12.3	20.2	168188	12.4	20.9	401181	12.4	21.0	398575	12.5	20.3	25658	12.5	17.7	423100	12.6	24.5
392623	12.3	20.1	223533	12.4	19.9	511737	12.4	21.7	115699	12.5	18.6	523320	12.5	20.2	71305	12.6	18.0
442467	12.3	20.3	275375	12.4	20.1	519269	12.4	20.9	42956	12.5	19.4	408761	12.5	20.2	486509	12.6	21.1
63372	12.3	19.5	86889	12.4	19.9	341932	12.4	20.4	327738	12.5	20.6	261501	12.5	20.5	521577	12.6	20.1
517927	12.3	20.3	171327	12.4	19.2	104921	12.4	19.5	217146	12.5	20.1	408071	12.5	20.6	518505	12.6	21.8
490629	12.3	20.4	459741	12.4	21.4	15818	12.4	19.3	479332	12.5	20.3	97610	12.5	19.1	451821	12.6	21.0
232072	12.3	19.1	517210	12.4	20.2	252064	12.4	19.0	337957	12.5	19.4	327540	12.5	20.5	419230	12.6	19.9
81853	12.3	18.9	354023	12.4	20.9	392565	12.4	21.5	316557	12.5	19.8	179349	12.5	19.6	53912	12.6	18.9
397513	12.3	19.7	511022	12.4	19.9	407774	12.4	19.1	297994	12.5	20.5	329674	12.5	18.4	442488	12.6	19.7
227863	12.3	19.8	305930	12.4	20.3	170651	12.4	18.6	291877	12.5	20.4	444904	12.5	20.6	329712	12.6	18.8
421001	12.3	21.6	333085	12.4	21.5	434485	12.4	21.7	193322	12.5	20.5	85099	12.6	18.5	139473	12.6	20.3
403126	12.3	21.7	293242	12.4	20.6	139459	12.4	19.1	135054	12.5	17.9	258740	12.6	20.5	139134	12.6	18.4
77972	12.3	19.0	139972	12.4	19.7	243880	12.4	20.3	38108	12.5	17.0	127465	12.6	19.8	418762	12.6	21.0
518980	12.3	20.9	684	12.4	14.1	175452	12.4	19.8	436425	12.5	19.6	217150	12.6	20.1	514755	12.6	21.6
76796	12.3	19.1	53646	12.4	18.1	377527	12.4	21.3	69442	12.5	17.8	5195	12.6	16.3	285038	12.6	20.1
202435	12.3	19.7	382037	12.4	20.0	299630	12.4	20.2	346898	12.5	21.0	270078	12.6	19.4	213480	12.6	19.5
118641	12.3	19.7	343799	12.4	20.5	78384	12.4	19.6	462349	12.5	20.8	34885	12.6	19.2	494156	12.6	20.6
170507	12.3	20.4	271499	12.4	20.0	487500	12.4	20.9	268181	12.5	19.7	17230	12.6	17.0	332814	12.6	19.6
151561	12.3	18.1	513336	12.4	21.8	189888	12.4	18.8	328799	12.5	19.6	216455	12.6	19.8	281213	12.6	19.9
477315	12.3	20.2	337091	12.4	22.2	262048	12.4	19.0	95965	12.5	19.7	523746	12.6	21.0	326327	12.6	19.7
311345	12.3	20.6	301371	12.4	19.7	285458	12.4	20.3	236705	12.5	20.3	306585	12.6	20.5	227819	12.6	19.2
98973	12.3	18.5	329534	12.4	20.5	370549	12.4	20.8	413782	12.5	20.8	422110	12.6	20.4	32013	12.6	19.4
115210	12.3	17.6	102557	12.4	18.9	422096	12.4	20.3	266818	12.5	19.8	400441	12.6	20.7	67370	12.6	18.3
340916	12.3	20.9	515780	12.4	21.8	84779	12.4	18.6	34967	12.5	17.6	34901	12.6	18.0	229018	12.6	19.0
178435	12.3	18.8	292356	12.4	20.2	187354	12.4	20.3	85132	12.5	19.5	456131	12.6	20.6	221611	12.6	18.8
289040	12.3	19.7	32923	12.4	18.5	249887	12.4	21.4	180853	12.5	20.9	52520	12.6	17.2	440058	12.6	20.9
448903	12.3	20.3	29775	12.4	16.6	182222	12.4	23.1	208798	12.5	19.4	482691	12.6	20.2	391557	12.6	21.0
209066	12.3	19.3	271549	12.4	20.8	357445	12.4	20.3	480328	12.5	20.7	283774	12.6	21.3	121536	12.6	18.7
421070	12.3	21.1	328886	12.4	20.0	193112	12.4	19.8	357478	12.5	20.1	449258	12.6	19.5	415733	12.6	19.8
319486	12.3	20.9	3081	12.4	17.0	163468	12.4	20.2	247089	12.5	18.9	116845	12.6	20.0	434528	12.6	21.4
327702	12.3	20.5	195774	12.4	20.1	70814	12.4	18.7	32894	12.5	18.5	493959	12.6	21.1	422566	12.6	20.6
135808	12.3	18.9	82287	12.4	18.7	129440	12.4	19.5	154043	12.5	19.9	20236	12.6	20.5	520135	12.6	20.9
263929	12.3	20.1	275160	12.4	19.3	116800	12.4	19.7	467007	12.5	20.0	115943	12.6	19.1	318116	12.6	20.8
174595	12.3	19.6	186482	12.4	19.0	185582	12.4	20.6	112139	12.5	19.5	511841	12.6	20.8	56574	12.6	18.6
23368	12.3	18.9	129551	12.4	19.8	494784	12.4	20.6	146079	12.5	18.8	196638	12.6	19.9	51512	12.6	19.1
276680	12.3	20.5	144466	12.4	19.3	1167	12.4	15.0	416744	12.5	20.1	476037	12.6	20.4	30516	12.6	17.5
76977	12.3	19.4	197830	12.4	20.0	460926	12.4	20.3	296294	12.5	19.8	14026	12.6	18.9	220957	12.6	19.9
69411	12.3	19.7	5305	12.4	17.3	145460	12.4	19.6	307496	12.5	18.8	209250	12.6	18.8	108282	12.7	19.6
373096	12.3	20.1	339668	12.4	21.0	330211	12.4	20.1	495745	12.5	20.2	157049	12.6	19.0	367259	12.7	20.6
50688	12.3	18.5	298455	12.4	20.3	493036	12.4	21.2	143100	12.5	19.2	199757	12.6	20.0	333530	12.7	19.6
257417	12.3	20.1	139653	12.4	20.5	156925	12.4	20.0	399331	12.5	18.6	372790	12.6	19.5	26723	12.7	18.2
388155	12.3	20.2	22921	12.4	18.1	129733	12.4	19.1	523347	12.5	21.0	242627	12.6	19.9	288441	12.7	20.8
243399	12.3	21.0	489967	12.4	21.3	52193	12.4	19.5	358221	12.5	20.7	99708	12.6	19.4	237819	12.7	20.1
177527	12.3	19.0	484488	12.4	21.4	493213	12.4	20.3	20999	12.5	17.7	54285	12.6	19.1	160047	12.7	18.8
413337	12.3	19.9	314786	12.4	20.4	282360	12.4	20.1	72032	12.5	18.7	112448	12.6	19.5	393453	12.7	20.4
56886	12.3	19.3	319063	12.4	20.3	411525	12.4	20.1	102249	12.5	18.3	368338	12.6	21.5	282266	12.7	20.4
217712	12.3	19.5	523437	12.4	21.3	470241	12.4	19.4	71273	12.5	18.1	217816	12.6	20.1	242011	12.7	19.7
147374	12.3	19.3	220788	12.4	19.5	332642	12.4	19.6	5116								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
270667	12.7	18.9	122866	12.7	19.7	287087	12.8	19.3	270886	12.9	19.4	188913	12.9	20.9	441244	13.1	19.0
391182	12.7	21.6	442351	12.7	21.8	28684	12.8	19.0	334278	12.9	19.8	305213	12.9	20.2	373958	13.1	19.5
46890	12.7	18.3	477238	12.7	20.4	254990	12.8	21.2	334225	12.9	18.9	181002	12.9	19.9	458479	13.1	20.1
72039	12.7	18.1	485589	12.7	20.4	271377	12.8	19.7	413312	12.9	20.8	38542	12.9	18.8	250683	13.1	20.6
427384	12.7	20.8	8751	12.7	18.3	447577	12.8	20.4	14614	12.9	18.1	367389	12.9	21.0	386899	13.1	21.5
35215	12.7	18.0	447591	12.7	21.8	238912	12.8	19.4	176312	12.9	19.5	117328	12.9	17.7	159809	13.1	19.8
14167	12.7	16.7	482557	12.7	20.6	434652	12.8	19.7	386756	12.9	20.3	243959	12.9	18.7	427586	13.1	21.6
369792	12.7	20.8	228467	12.7	19.3	327927	12.8	20.4	268605	12.9	21.4	218564	12.9	20.3	36287	13.1	18.2
68618	12.7	19.9	13958	12.7	17.3	154478	12.8	19.9	488383	12.9	19.7	191868	12.9	18.6	489829	13.1	20.6
25997	12.7	17.9	32407	12.7	18.2	244414	12.8	20.9	521671	12.9	20.7	9359	12.9	16.8	13921	13.1	16.4
389625	12.7	20.1	302684	12.7	19.8	164109	12.8	19.8	492838	12.9	21.5	16734	12.9	16.7	198734	13.1	19.2
238207	12.7	20.5	191892	12.7	19.5	395461	12.8	20.5	61237	12.9	19.7	126249	12.9	18.9	106933	13.1	18.9
368312	12.7	21.3	185385	12.8	20.3	414931	12.8	20.6	155313	12.9	20.4	95852	12.9	19.9	20662	13.1	16.8
350459	12.7	20.1	453760	12.8	21.1	241997	12.8	21.3	328371	12.9	20.9	448070	12.9	20.4	418590	13.1	20.4
404584	12.7	20.3	285312	12.8	19.8	217232	12.8	19.2	464409	12.9	21.1	105099	12.9	18.7	325636	13.1	20.3
113001	12.7	19.1	75037	12.8	19.1	488202	12.8	20.7	332087	12.9	19.8	61765	12.9	19.0	232152	13.1	20.3
121102	12.7	19.1	155384	12.8	18.5	274591	12.8	20.6	489465	12.9	20.7	71298	12.9	18.2	516548	13.1	21.0
195677	12.7	18.8	492140	12.8	22.2	485625	12.8	20.5	441004	12.9	21.4	288497	12.9	19.7	121613	13.1	18.9
519299	12.7	20.3	237447	12.8	21.1	216132	12.8	20.5	12206	12.9	19.2	78226	12.9	19.4	269680	13.1	20.0
276103	12.7	19.0	138410	12.8	18.6	413733	12.8	20.9	112668	12.9	18.9	374223	12.9	20.2	199372	13.1	19.7
212951	12.7	19.8	333175	12.8	22.1	161994	12.8	19.4	288141	12.9	18.9	486564	12.9	21.7	450694	13.1	20.1
493192	12.7	20.8	292987	12.8	20.1	351374	12.8	20.6	320003	12.9	20.1	438906	12.9	20.4	69770	13.1	17.3
290235	12.7	20.3	100298	12.8	20.0	27378	12.8	18.5	325710	12.9	19.3	325751	12.9	20.0	107843	13.1	19.3
211512	12.7	20.3	263843	12.8	20.2	305209	12.8	20.4	201621	12.9	18.4	13803	12.9	18.1	185659	13.1	19.6
452275	12.7	20.3	78962	12.8	19.7	254055	12.8	20.3	90957	12.9	19.5	68321	12.9	19.0	495814	13.1	20.3
16282	12.7	18.2	118063	12.8	19.8	114340	12.8	18.1	220408	12.9	18.4	2169	13.0	16.0	279682	13.1	20.4
227275	12.7	20.2	278261	12.8	21.2	344890	12.8	20.8	465303	12.9	20.8	149790	13.0	19.8	23799	13.1	19.0
378007	12.7	20.6	145066	12.8	20.3	341936	12.8	20.3	488240	12.9	19.7	139409	13.0	19.0	46285	13.1	17.8
372108	12.7	21.1	244460	12.8	20.0	196896	12.8	19.5	348949	12.9	19.9	138283	13.0	19.3	148254	13.1	19.7
487251	12.7	21.5	84055	12.8	19.3	372944	12.8	20.9	445215	12.9	21.0	332525	13.0	20.8	131353	13.1	18.5
263346	12.7	19.7	270139	12.8	19.8	214881	12.8	19.1	454717	12.9	19.9	175227	13.0	19.5	284510	13.1	19.9
50271	12.7	18.8	522172	12.8	21.0	21464	12.8	18.6	249069	12.9	20.0	175233	13.0	20.3	518527	13.1	20.5
356286	12.7	20.8	281982	12.8	20.1	79663	12.8	18.0	220050	12.9	19.0	298518	13.0	19.3	44782	13.1	18.8
324944	12.7	18.8	230761	12.8	18.8	158794	12.8	19.6	74305	12.9	18.8	84691	13.0	19.0	195381	13.1	19.0
411546	12.7	20.8	285975	12.8	20.6	196355	12.8	20.6	376751	12.9	20.8	109120	13.0	19.3	38377	13.1	20.0
249991	12.7	18.6	186639	12.8	19.3	392600	12.8	20.8	420089	12.9	20.5	307342	13.0	19.9	434602	13.1	21.7
186827	12.7	19.2	355081	12.8	20.0	442337	12.8	21.7	365944	12.9	19.9	490546	13.0	19.8	136652	13.1	18.6
336607	12.7	20.4	124547	12.8	20.0	367115	12.8	20.7	109719	12.9	18.1	226294	13.0	19.8	56201	13.1	18.9
199686	12.7	20.2	155007	12.8	20.1	234764	12.8	19.6	404027	12.9	20.2	482470	13.0	20.5	406271	13.1	20.8
265517	12.7	21.4	454751	12.8	20.3	20884	12.8	18.2	65591	12.9	18.4	44273	13.0	18.7	461322	13.1	19.8
298401	12.7	20.3	121597	12.8	19.7	320489	12.8	20.4	374662	12.9	21.9	212495	13.0	20.2	189963	13.1	18.3
274268	12.7	20.4	116484	12.8	19.9	362782	12.8	19.6	334189	12.9	20.7	127619	13.0	19.6	28619	13.1	18.7
103175	12.7	18.1	405703	12.8	21.5	18118	12.8	17.0	420191	12.9	20.3	12081	13.0	15.9	233285	13.1	20.0
215216	12.7	19.1	488254	12.8	20.7	293969	12.8	19.9	189503	12.9	20.0	163476	13.0	20.0	490901	13.1	20.5
228845	12.7	19.4	216231	12.8	19.8	266033	12.8	19.9	461040	12.9	20.0	414354	13.0	20.6	201837	13.1	19.0
79588	12.7	17.6	487516	12.8	20.8	258164	12.8	20.2	447605	12.9	21.3	68079	13.0	18.5	213852	13.1	18.0
92162	12.7	17.5	444006	12.8	19.5	58848	12.8	20.0	189818	12.9	17.9	33817	13.0	18.3	317708	13.1	21.0
109109	12.7	19.0	242919	12.8	20.7	15874	12.9	21.2	208344	12.9	20.4	464616	13.0	20.7	148333	13.1	19.4
486295	12.7	20.7	76593	12.8	19.5	336810	12.9	21.2	157720	12.9	19.3	330625	13.0	20.1	295319	13.1	20.6
428413	12.7	20.0	455463	12.8	20.9	417369	12.9	20.7	383504	12.9	20.8	422139	13.0	21.2	362462	13.1	20.7
251614	12.7	20.4	32738	12.8	17.6	494306	12.9	21.0	206410	12.9	20.1	197455	13.0	19.6	457297	13.1	21.1
321034	12.7	20.9	349200	12.8	20.7	458610	12.9	20.4	207254	12.9	19.2	43579	13.0	19.3	417859	13.1	20.2
447475	12.7	21.3	264316	12.8	19.5	523413	12.9	20.5	369761	12.9	21.0	279572	13.0	20.1	78750	13.1	18.0
287950	12.7	18.8	135967	12.8	19.6	46242	12.9	18.7	244477	12.9	21.4	471939	13.0	19.6	155964	13.1	18.6
375411	12.7	21.0	215111	12.8	20.3	269979	12.9	18.2	301283	12.9	20.8	169921	13.0	18.0	120961	13.1	19.4
475299	12.7	20.2	328466	12.8	20.9	66911	12.9	18.1	31199	12.9	17.9	187114	13.0	19.8	101046	13.1	18.7
139914	12.7	20.1	47096	12.8	16.9	444841	12.9	19.2	459739	12.9	22.0	163790	13.0	19.8	221812	13.1	19.3
38267	12.7	18.7	259541	12.8	19.7	284576	12.9	19.3	193108	12.9	19.6	57231	13.0	18.2	171354	13.1	19.5
436078	12.7	20.5	242034	12.8	21.0	329095	12.9	20.3	115089	12.9	19.6	98067	13.0	17.5	72334	13.1	17.9
157513	12.7	18.3	448836	12.8	19.9	436051	12.9	19.9	71774	12.9	18.9	159827	13.0	19.8	71424	13.1	17.9
192164	12.7	20.2	183637	12.8	19.6	149625	12.9	19.7	241647	12.9	19.6	395909	13.0	20.3	323303	13.1	20.7
46871	12.7	17.7	257796	12.8	20.3	455051	12.9	20.6	397269	12.9	20.4	256493	13.0	20.2	513726	13.1	21.2
97555	12.7	18.5	270830	12.8	19.1	80881	12.9	19.8	9948	12.9	17.6	329553	13.0	21.6	287246	13.1	19.3
68578	12.7	19.3	512093	12.8	21.3	235674	12.9	19.7	21931	12.9	18.5	463064	13.0	21.2	78385	13.1	19.0
475566	12.7	20.8	327766	12.8	20.0	281059	12.9	20.8	489920	12.9	20.6	172704	13.0	19.7	300780	13.1	20.2
334974	12.7	19.7	452884	12.8	19.8	168257	12.9	19.3	140206	12.9	20.7	151343	13.0	19.6	352975	13.1	21.1
294566	12.7	20.0	318056	12.8	19.9	472678	12.9	20.9	350379	12.9	20.8	4625	13.0	15.6	298414	13.1	21.1
276631	12.7	20.1	189199	12.8	19.5	330773	12.9	19.8	474229	12.9	20.0	159452	13.0	20.4	361316	13.1	20.2
408149	12.7	20.3	331467	12.8	20.2	224873	12.										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
35360	13.1	16.2	217493	13.2	19.7	86209	13.3	17.4	450945	13.3	20.9	245425	13.4	20.4	368523	13.5	19.3
147610	13.1	20.4	336774	13.2	20.5	310279	13.3	19.9	398440	13.3	20.3	210298	13.4	20.2	176321	13.5	19.5
181839	13.1	19.7	372848	13.2	19.8	110399	13.3	18.6	322995	13.3	21.6	223976	13.4	19.1	375683	13.5	20.5
490403	13.1	20.0	493992	13.2	20.7	85501	13.3	20.0	447623	13.3	20.2	211205	13.4	18.7	132389	13.5	18.9
128170	13.1	19.5	351393	13.2	21.1	413252	13.3	20.1	474373	13.4	21.6	121260	13.4	20.2	110533	13.5	19.1
153309	13.1	19.3	43860	13.2	17.6	447544	13.3	19.9	210339	13.4	20.3	285476	13.4	19.3	224056	13.5	20.9
279602	13.1	21.3	419089	13.2	20.6	479202	13.3	20.5	137446	13.4	18.9	340934	13.4	21.0	374722	13.5	20.6
442489	13.1	21.0	43091	13.2	17.5	164274	13.3	19.0	96586	13.4	18.8	243042	13.4	19.9	46211	13.5	18.7
130380	13.1	21.0	207398	13.2	22.2	158338	13.3	20.3	493903	13.4	21.3	14260	13.4	17.1	151556	13.5	18.6
442492	13.1	20.7	197495	13.2	19.2	488030	13.3	20.7	242262	13.4	19.0	418517	13.4	21.6	281082	13.5	20.4
196359	13.1	20.2	191515	13.2	18.9	311645	13.3	18.8	208795	13.4	20.6	474757	13.4	20.3	91672	13.5	18.0
144940	13.1	20.8	140334	13.2	19.9	70721	13.3	19.3	27056	13.4	18.5	420113	13.4	20.2	485704	13.5	20.8
94076	13.1	18.6	356394	13.2	22.2	11843	13.3	16.8	160986	13.4	20.2	486383	13.4	21.2	231586	13.5	20.8
139990	13.1	19.6	496322	13.2	21.4	185616	13.3	19.3	331515	13.4	19.7	402249	13.4	20.7	231687	13.5	20.3
140680	13.1	19.5	173234	13.2	19.8	67242	13.3	18.1	362337	13.4	20.8	88066	13.4	19.4	506082	13.5	20.2
60698	13.1	18.4	113617	13.2	19.0	181304	13.3	19.6	449397	13.4	20.9	310600	13.4	20.3	487108	13.5	21.4
466516	13.1	20.3	216131	13.2	20.5	114854	13.3	18.4	110480	13.4	19.7	68202	13.4	19.3	337329	13.5	19.4
296677	13.1	19.6	365661	13.2	20.1	39971	13.3	20.0	323038	13.4	20.1	55658	13.5	18.9	209946	13.5	20.0
489998	13.1	20.6	316584	13.2	20.1	37365	13.3	18.2	255064	13.4	19.9	97357	13.5	18.6	151928	13.5	20.6
16166	13.1	17.9	80118	13.2	18.2	371516	13.3	20.3	332751	13.4	20.4	247994	13.5	19.7	138394	13.5	19.3
443289	13.1	20.4	516016	13.2	21.4	132524	13.3	19.3	433398	13.4	20.3	488003	13.5	21.0	479466	13.5	20.1
365042	13.1	20.9	230224	13.2	20.5	269222	13.3	19.2	514135	13.4	21.8	515849	13.5	20.5	418635	13.5	21.7
404286	13.1	21.5	150807	13.2	20.3	484395	13.3	19.7	511711	13.4	20.8	90250	13.5	19.2	446435	13.5	21.2
224055	13.1	19.4	240980	13.2	20.4	97523	13.3	18.0	409039	13.4	20.5	269925	13.5	21.0	458064	13.5	20.2
101191	13.1	19.1	55201	13.2	17.6	477254	13.3	19.8	447592	13.4	20.4	153086	13.5	19.3	447662	13.5	20.3
455960	13.1	20.9	389409	13.2	19.8	302655	13.3	21.0	264474	13.4	20.7	366550	13.5	20.3	262573	13.5	19.7
445213	13.1	21.2	262087	13.2	19.8	249489	13.3	19.2	384902	13.4	20.5	47867	13.5	18.4	277094	13.5	20.7
487520	13.1	20.5	392513	13.2	21.7	488440	13.3	19.4	230743	13.4	18.9	361797	13.5	20.7	327153	13.5	20.5
484465	13.1	20.2	199430	13.2	21.2	479591	13.3	20.8	269523	13.4	18.9	427285	13.5	20.4	176288	13.5	19.9
139399	13.1	20.2	66457	13.2	20.2	434423	13.3	21.3	269483	13.4	20.4	116801	13.5	19.3	417373	13.5	21.0
327640	13.1	21.0	436093	13.2	20.3	168665	13.3	19.0	78667	13.4	18.4	1214	13.5	15.1	136536	13.5	19.4
298389	13.2	20.6	306171	13.2	21.2	117924	13.3	20.0	38531	13.4	17.6	517037	13.5	19.6	16883	13.5	18.3
514136	13.2	21.4	46085	13.2	18.8	322180	13.3	19.7	167111	13.4	20.4	14563	13.5	18.3	368292	13.5	20.5
337167	13.2	18.7	487526	13.2	20.6	223423	13.3	20.0	397398	13.4	20.1	67261	13.5	18.1	44020	13.5	16.7
2784	13.2	16.2	329633	13.2	19.9	79403	13.3	18.6	399758	13.4	20.5	224092	13.5	19.6	163879	13.5	19.3
214055	13.2	20.2	41274	13.2	17.9	231082	13.3	20.4	272048	13.4	20.0	427843	13.5	22.2	107603	13.5	19.2
439107	13.2	19.8	140317	13.2	19.0	113818	13.3	18.0	60146	13.4	19.5	427554	13.5	21.2	327557	13.5	20.5
293670	13.2	20.5	169713	13.2	19.4	344964	13.3	18.8	50149	13.4	18.1	152175	13.5	18.4	324085	13.5	20.2
198757	13.2	19.8	77940	13.2	18.6	336544	13.3	20.5	414666	13.4	20.6	77327	13.5	19.2	269862	13.5	19.6
105353	13.2	17.8	96338	13.2	18.9	520562	13.3	21.1	86670	13.4	19.8	207811	13.5	20.1	185585	13.5	20.1
392310	13.2	20.6	254056	13.2	20.8	278238	13.3	20.8	477350	13.4	20.2	48979	13.5	17.6	187913	13.5	19.1
160632	13.2	19.3	268785	13.2	19.9	350885	13.3	20.6	233310	13.4	20.6	137037	13.5	18.9	479565	13.5	20.8
354282	13.2	20.9	34031	13.2	18.9	385436	13.3	21.4	144559	13.4	19.9	155563	13.5	18.9	389494	13.6	21.5
272010	13.2	20.4	409076	13.2	19.9	282655	13.3	20.2	175316	13.4	19.8	61336	13.5	19.0	370363	13.6	20.2
413431	13.2	20.1	152065	13.2	19.5	301385	13.3	20.3	398523	13.4	19.5	399883	13.5	19.5	273971	13.6	20.7
414290	13.2	20.8	456651	13.2	21.8	178937	13.3	19.9	12631	13.4	18.3	182266	13.5	20.6	152597	13.6	20.2
404894	13.2	21.8	103946	13.2	19.7	522978	13.3	20.1	72267	13.4	18.9	21841	13.5	18.2	236766	13.6	19.7
251434	13.2	20.1	297352	13.2	18.5	276176	13.3	19.7	390128	13.4	20.5	242530	13.5	19.9	326562	13.6	20.9
103142	13.2	18.4	227916	13.2	20.3	187952	13.3	20.2	180939	13.4	20.2	436448	13.5	21.0	233923	13.6	20.3
324365	13.2	20.4	58793	13.2	17.9	484155	13.3	21.1	67239	13.4	18.7	222329	13.5	20.4	292897	13.6	20.5
92254	13.2	17.3	510542	13.2	21.7	388604	13.3	20.2	382660	13.4	20.8	485600	13.5	20.6	415130	13.6	20.6
523598	13.2	24.3	51207	13.2	17.1	187161	13.3	19.6	286780	13.4	20.0	66508	13.5	18.6	132861	13.6	19.0
347173	13.2	21.8	259009	13.2	19.5	441155	13.3	20.8	515827	13.4	21.9	339038	13.5	20.3	356064	13.6	20.2
371810	13.2	21.3	441080	13.2	20.1	517548	13.3	20.8	159702	13.4	19.1	55677	13.5	16.7	45584	13.6	19.0
180082	13.2	19.9	86628	13.3	19.0	191459	13.3	19.1	402775	13.4	20.7	515756	13.5	21.1	3935	13.6	14.0
143179	13.2	19.5	305286	13.3	20.6	356750	13.3	20.4	6435	13.4	17.7	56792	13.5	19.5	517240	13.6	20.5
331637	13.2	19.3	255013	13.3	20.0	31134	13.3	18.6	268367	13.4	21.0	363212	13.5	19.9	316346	13.6	19.9
90631	13.2	19.4	396775	13.3	18.5	127396	13.3	20.5	387020	13.4	19.7	273386	13.5	19.3	469326	13.6	20.2
381381	13.2	21.1	53596	13.3	18.4	482703	13.3	21.2	253437	13.4	20.3	346332	13.5	20.8	96264	13.6	17.5
266743	13.2	19.7	442509	13.3	20.1	24533	13.3	17.5	385773	13.4	20.3	461611	13.5	20.6	399106	13.6	20.8
395939	13.2	19.7	125895	13.3	18.3	521935	13.3	21.2	471516	13.4	21.2	51866	13.5	16.2	494892	13.6	21.1
48711	13.2	19.3	469300	13.3	22.2	262156	13.3	19.3	77375	13.4	19.0	365554	13.5	20.8	146979	13.6	18.3
20887	13.2	17.5	320034	13.3	20.2	405551	13.3	21.4	347487	13.4	20.1	458086	13.5	20.0	164035	13.6	20.9
307279	13.2	19.9	485742	13.3	20.1	359932	13.3	20.4	147913	13.4	19.7	132489	13.5	21.1	386057	13.6	20.6
178510	13.2	20.2	23487	13.3	18.8	218096	13.3	20.6	30657	13.4	18.1	139556	13.5	18.3	430929	13.6	21.3
171610	13.2	18.2	253334	13.3	20.2	270707	13.3	20.1	268771	13.4	19.7	26011	13.5	17.7	414317	13.6	21.2
141715	13.2	21.2	207193	13.3	19.4	407118	13.3	19.7	73940	13.4	20.6	130244	13.5	19.5	233713	13.6	19.5
53802	13.2	19.0	493402	13.3	20.4	493350	13.3	20.9	145501	13.4	19.6	180027	13.5	18.8	443323	13.6	19.7
519918	13.2	21.6	18066	13.3	17.8	191871	13										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
443173	13.6	21.0	328842	13.6	20.5	289188	13.7	19.5	416714	13.8	20.7	387018	13.9	20.3	404611	13.9	19.0
201350	13.6	20.0	227205	13.6	20.9	384381	13.7	19.7	121003	13.8	18.3	74165	13.9	19.1	374845	13.9	19.8
367708	13.6	20.0	471117	13.6	17.6	127438	13.7	20.2	409075	13.8	20.2	16548	13.9	17.5	13307	13.9	18.4
212555	13.6	20.1	206505	13.6	19.0	245347	13.7	20.5	8660	13.8	16.0	101015	13.9	19.3	133714	13.9	19.2
247501	13.6	19.2	356053	13.6	20.8	460459	13.7	20.2	414293	13.8	20.8	485941	13.9	21.9	199934	13.9	21.4
351800	13.6	20.0	302106	13.6	20.8	101470	13.7	18.6	459715	13.8	20.4	410883	13.9	20.1	273689	13.9	20.6
198522	13.6	19.5	295051	13.6	20.0	131180	13.7	19.6	369189	13.8	19.4	394587	13.9	21.3	410976	13.9	20.0
333769	13.6	20.7	321948	13.6	20.5	199644	13.7	20.6	493474	13.8	20.9	324757	13.9	20.6	302675	13.9	19.9
287723	13.6	20.1	32596	13.7	18.3	383106	13.7	19.6	74957	13.8	19.6	167449	13.9	17.7	193040	13.9	19.5
418577	13.6	21.8	3954	13.7	17.4	161478	13.7	19.3	92021	13.8	19.1	436663	13.9	20.4	24900	13.9	16.5
290721	13.6	20.5	482551	13.7	21.5	344279	13.7	19.8	49897	13.8	18.8	431339	13.9	19.9	511676	13.9	21.5
73376	13.6	18.8	283815	13.7	18.9	432312	13.7	20.4	390735	13.8	20.0	181553	13.9	19.5	78726	13.9	19.6
76924	13.6	18.6	421050	13.7	20.0	116185	13.7	19.3	415391	13.8	20.2	213633	13.9	19.0	448014	13.9	20.1
157832	13.6	18.6	370485	13.7	21.0	381016	13.7	21.1	487001	13.8	21.3	10621	13.9	17.7	153553	13.9	19.9
214655	13.6	20.3	364484	13.7	20.7	332256	13.7	20.0	395178	13.8	20.2	304212	13.9	20.7	387414	13.9	20.7
114433	13.6	19.5	45666	13.7	17.9	452879	13.7	20.8	386041	13.8	21.3	260586	13.9	19.9	207323	13.9	20.1
517268	13.6	21.1	431652	13.7	21.8	300528	13.7	19.8	293691	13.8	20.5	270126	13.9	20.4	256241	13.9	20.6
274293	13.6	20.4	169988	13.7	19.4	100091	13.7	19.7	56364	13.8	18.2	295459	13.9	20.3	361751	13.9	20.8
187685	13.6	20.0	421061	13.7	19.7	462545	13.7	21.0	73458	13.8	18.1	108528	13.9	18.4	238560	13.9	18.9
160858	13.6	20.8	220949	13.7	20.4	369919	13.7	21.2	493144	13.8	20.8	448678	13.9	20.2	395018	13.9	17.8
27072	13.6	18.2	304221	13.7	19.7	358659	13.7	19.4	397227	13.8	21.3	303557	13.9	21.2	454295	13.9	19.7
441250	13.6	21.3	268728	13.7	20.6	228719	13.7	20.1	386670	13.8	19.2	46150	13.9	19.2	223325	13.9	18.7
413340	13.6	19.9	45030	13.7	19.3	220816	13.7	20.2	286044	13.8	20.1	21829	13.9	17.7	441100	13.9	21.0
439053	13.6	21.0	332626	13.7	20.1	514162	13.7	21.9	487316	13.8	21.2	302718	13.9	19.5	328127	13.9	20.8
224648	13.6	19.9	485576	13.7	19.6	351443	13.7	20.3	197699	13.8	19.4	392559	13.9	19.8	190259	13.9	19.9
369126	13.6	19.5	116787	13.7	19.5	50890	13.7	18.8	262644	13.8	19.7	209829	13.9	20.1	2714	13.9	16.6
145929	13.6	19.2	195004	13.7	18.4	420610	13.7	20.4	460509	13.8	20.6	280123	13.9	21.0	159829	13.9	19.6
413762	13.6	21.0	419413	13.7	19.4	248744	13.7	20.1	343219	13.8	19.7	1634	13.9	16.2	247511	13.9	19.2
129231	13.6	20.3	145387	13.7	20.3	239691	13.7	19.9	115829	13.8	18.7	439069	13.9	21.7	152027	13.9	20.3
197119	13.6	19.6	410836	13.7	21.3	66992	13.7	18.7	127318	13.8	18.8	107383	13.9	18.7	460612	13.9	20.9
252084	13.6	19.4	369546	13.7	20.6	514706	13.8	21.3	517273	13.8	21.6	391630	13.9	20.8	43839	13.9	19.9
164529	13.6	20.8	378078	13.7	20.4	303118	13.8	21.2	474944	13.8	21.9	461653	13.9	21.3	317889	13.9	21.3
444556	13.6	20.3	91018	13.7	18.2	70692	13.8	19.0	175050	13.8	19.3	138237	13.9	18.8	124930	13.9	19.0
3734	13.6	16.3	125292	13.7	18.5	212211	13.8	20.7	297998	13.8	20.1	108587	13.9	18.8	41255	13.9	18.6
91671	13.6	19.5	218120	13.7	20.1	10103	13.8	17.5	305013	13.8	21.0	11411	13.9	17.7	509446	13.9	21.5
487248	13.6	21.0	102394	13.7	19.8	523478	13.8	21.3	485361	13.8	21.4	63216	13.9	18.5	254500	13.9	19.0
67430	13.6	19.1	451899	13.7	21.6	22328	13.8	16.8	412371	13.8	20.6	486483	13.9	21.6	282723	13.9	20.0
246804	13.6	20.2	243883	13.7	19.4	347447	13.8	19.3	228953	13.8	19.2	276287	13.9	20.1	71812	13.9	18.9
316989	13.6	20.0	454329	13.7	21.6	298017	13.8	20.5	189820	13.8	19.4	414995	13.9	20.4	159315	13.9	19.4
226387	13.6	19.4	402990	13.7	20.3	458460	13.8	20.7	307349	13.8	21.4	251613	13.9	20.7	131319	13.9	19.8
259398	13.6	19.1	523380	13.7	20.2	105984	13.8	18.2	363496	13.8	21.0	312613	13.9	20.5	119114	13.9	20.0
316312	13.6	20.8	198672	13.7	20.8	240200	13.8	20.2	404289	13.8	20.7	387847	13.9	20.8	179079	13.9	19.9
306779	13.6	18.3	438481	13.7	21.4	367601	13.8	20.0	375655	13.8	20.8	488080	13.9	21.1	225479	13.9	19.1
117285	13.6	18.9	439106	13.7	20.7	256577	13.8	20.1	511709	13.8	21.4	100037	13.9	18.2	261778	13.9	19.7
510579	13.6	20.5	203036	13.7	20.1	178557	13.8	19.8	358279	13.8	20.8	254100	13.9	20.5	64205	13.9	18.5
231019	13.6	19.4	443983	13.7	19.9	228527	13.8	19.1	271263	13.8	19.9	131312	13.9	20.1	175632	13.9	19.2
183127	13.6	19.9	940	13.7	14.2	65388	13.8	18.4	238223	13.8	20.1	123967	13.9	20.1	200020	13.9	20.0
215758	13.6	20.2	331841	13.7	20.7	486870	13.8	20.5	21861	13.8	18.5	31971	13.9	18.7	385636	13.9	18.7
215666	13.6	20.6	210077	13.7	19.6	483003	13.8	20.3	408693	13.8	20.4	354646	13.9	20.4	260705	13.9	21.2
130903	13.6	17.2	8072	13.7	17.3	290901	13.8	19.3	396275	13.8	19.6	399784	13.9	20.6	327155	13.9	20.9
291922	13.6	20.0	472836	13.7	20.6	168857	13.8	19.4	403708	13.8	21.1	346407	13.9	20.8	4479	13.9	17.0
373070	13.6	21.3	148249	13.7	20.1	332021	13.8	19.9	132494	13.8	20.4	492243	13.9	21.7	272507	13.9	20.8
154194	13.6	19.6	520977	13.7	20.6	111959	13.8	19.5	360655	13.8	21.1	516255	13.9	19.7	10776	13.9	16.8
108972	13.6	19.7	464478	13.7	19.9	260040	13.8	20.4	11827	13.8	16.6	267563	13.9	20.2	184793	13.9	20.4
240433	13.6	19.0	139244	13.7	19.9	35839	13.8	17.5	219953	13.9	19.8	369487	13.9	19.8	47989	13.9	18.6
38495	13.6	18.3	159361	13.7	20.4	279156	13.8	20.6	512215	13.9	20.5	197407	13.9	19.6	332980	13.9	20.0
381365	13.6	21.0	493218	13.7	20.1	73003	13.8	19.2	492345	13.9	21.4	411131	13.9	20.6	212234	13.9	19.8
248199	13.6	20.0	180882	13.7	20.7	441180	13.8	20.2	63324	13.9	19.8	228506	13.9	19.8	459338	13.9	20.7
21132	13.6	18.1	486382	13.7	21.0	369463	13.8	21.7	575	13.9	14.8	442286	13.9	22.1	110265	13.9	19.4
116420	13.6	18.7	453886	13.7	20.7	12700	13.8	17.7	437970	13.9	19.9	516582	13.9	21.2	74415	14.0	17.7
104876	13.6	19.6	486975	13.7	21.3	385731	13.8	20.3	137517	13.9	19.5	113567	13.9	18.7	162895	14.0	17.6
520365	13.6	21.5	50859	13.7	18.7	143984	13.8	19.9	41193	13.9	18.7	135825	13.9	19.6	326328	14.0	20.9
183630	13.6	20.9	125272	13.7	19.6	335293	13.8	21.2	224740	13.9	20.1	484803	13.9	21.6	513738	14.0	21.7
47387	13.6	18.3	348293	13.7	18.6	325397	13.8	21.0	511787	13.9	21.8	21511	13.9	17.6	386020	14.0	19.3
33990	13.6	19.0	164685	13.7	20.6	427295	13.8	20.1	97545	13.9	18.9	104548	13.9	20.4	322291	14.0	19.8
9053	13.6	17.3	269837	13.7	19.4	250470	13.8	20.0	99050	13.9	18.7	513497	13.9	23.9	45396	14.0	17.1
384274	13.6	20.2	226663	13.7	19.6	171143	13.8	19.6	367879	13.9	19.8	253393	13.9	20.3	1759	14.0	15.8
225106	13.6	21.7	470957	13.7	20.9	322920	13.8	20.3	329880	13.9	21.0	232060	13.9	18.7	276875	14.0	21.1
13552	13.6	17.5	77477	13.7	19.2	483292	1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
274389	14.0	21.1	494973	14.1	19.2	522004	14.2	21.0	26019	14.2	19.0	129039	14.3	19.1	33390	14.4	18.8
480385	14.0	20.2	433516	14.1	19.9	229899	14.2	19.5	490732	14.2	21.0	477312	14.3	20.5	165947	14.4	19.3
318326	14.0	20.3	184812	14.1	20.1	99841	14.2	19.5	111085	14.2	19.1	412268	14.3	21.7	145531	14.4	21.2
230767	14.0	18.6	210470	14.1	19.7	390509	14.2	21.0	366477	14.2	21.4	156706	14.3	20.3	56279	14.4	19.2
291593	14.0	21.1	48084	14.1	19.3	107985	14.2	20.7	47705	14.2	19.8	278307	14.3	20.8	17844	14.4	17.7
296772	14.0	20.6	412751	14.1	21.3	25104	14.2	17.6	518356	14.2	21.5	369582	14.3	20.3	312750	14.4	20.2
239145	14.0	20.7	405211	14.1	20.2	477153	14.2	21.8	117546	14.2	19.6	61362	14.3	18.4	420984	14.4	21.4
333910	14.0	20.6	9105	14.1	17.8	286347	14.2	18.3	193753	14.2	20.7	403865	14.3	21.3	286461	14.4	19.9
244186	14.0	20.0	121832	14.1	19.5	517304	14.2	21.8	147359	14.2	19.2	389945	14.3	20.5	394593	14.4	21.0
208849	14.0	20.3	397973	14.1	20.7	492803	14.2	20.8	23198	14.2	18.4	11539	14.3	17.0	200490	14.4	18.9
157649	14.0	21.2	446739	14.1	20.6	267267	14.2	21.3	441257	14.2	19.4	403501	14.3	20.2	102673	14.4	19.6
95879	14.0	20.1	476620	14.1	20.6	216295	14.2	20.3	448031	14.2	20.8	513710	14.3	20.5	54954	14.4	18.6
95080	14.0	18.9	236680	14.1	19.3	109636	14.2	18.2	168143	14.2	20.1	493293	14.3	20.8	486644	14.4	21.6
360649	14.0	21.4	515051	14.1	22.2	517246	14.2	20.9	107692	14.2	18.9	265483	14.3	20.0	161325	14.4	20.0
223476	14.0	19.5	367008	14.1	20.6	346349	14.2	21.7	260988	14.2	20.7	514024	14.3	21.2	521650	14.4	21.1
71540	14.0	19.2	288092	14.1	19.5	473676	14.2	20.7	409112	14.2	19.8	144821	14.3	19.4	232525	14.4	20.3
23370	14.0	17.1	451257	14.1	20.0	302667	14.2	19.5	320115	14.2	21.2	328782	14.3	20.9	417363	14.4	20.9
428568	14.0	21.0	494115	14.1	20.9	425557	14.2	21.0	81908	14.2	19.1	124102	14.3	20.5	72996	14.4	18.8
513125	14.0	18.8	480226	14.1	20.8	304915	14.2	21.4	481970	14.2	20.5	447486	14.3	21.2	283277	14.4	21.3
298430	14.0	19.6	300558	14.1	20.2	302775	14.2	20.2	285447	14.2	19.9	511083	14.3	20.1	262316	14.4	19.9
229869	14.0	19.4	132580	14.1	18.8	271114	14.2	20.4	132378	14.2	20.0	172075	14.3	19.5	52909	14.4	18.6
388209	14.0	20.5	28586	14.1	19.1	101527	14.2	17.7	329680	14.2	19.3	261496	14.3	19.6	523265	14.4	20.7
442388	14.0	20.9	369442	14.1	19.8	261327	14.2	20.8	161721	14.2	20.4	308279	14.3	20.7	405686	14.4	21.0
191182	14.0	19.3	229984	14.1	19.3	518089	14.2	21.2	316331	14.2	20.0	212496	14.3	19.5	48410	14.4	17.9
511042	14.0	20.6	193740	14.1	18.1	478604	14.2	20.9	158678	14.2	21.6	304141	14.3	21.3	289793	14.4	19.0
51307	14.0	18.1	350442	14.1	19.3	251486	14.2	20.1	492669	14.2	20.9	294457	14.3	20.8	381015	14.4	21.1
424753	14.0	20.2	161787	14.1	19.6	124828	14.2	19.9	264473	14.2	21.1	81344	14.3	20.0	379987	14.4	20.7
28873	14.0	17.6	218135	14.1	19.8	66997	14.2	18.0	148309	14.2	19.3	384374	14.3	21.0	192264	14.4	20.7
232742	14.0	19.5	454544	14.1	20.1	316425	14.2	19.9	251762	14.3	20.5	31539	14.3	18.0	205201	14.4	20.2
418770	14.0	20.8	36174	14.1	17.9	292014	14.2	19.4	217407	14.3	19.6	193657	14.3	18.5	321175	14.4	20.0
77478	14.0	16.4	195902	14.1	19.4	42141	14.2	19.1	125042	14.3	17.7	269233	14.3	19.8	333693	14.4	21.0
422426	14.0	20.7	449178	14.1	21.0	44820	14.2	17.6	197160	14.3	19.3	220933	14.3	20.0	314260	14.4	20.6
241219	14.1	19.4	172213	14.1	19.8	304987	14.2	20.5	197680	14.3	19.6	3833	14.3	17.4	70213	14.4	19.5
69920	14.1	18.1	460828	14.1	21.1	273367	14.2	19.4	274854	14.3	20.4	125561	14.3	19.6	137357	14.4	19.4
430904	14.1	20.9	179242	14.1	20.0	328498	14.2	21.2	156780	14.3	19.3	328417	14.3	21.1	384743	14.4	20.3
235289	14.1	20.3	8405	14.1	22.8	158589	14.2	20.4	317223	14.3	20.7	265891	14.3	20.2	69530	14.4	19.3
74115	14.1	18.4	217167	14.1	19.9	302927	14.2	20.3	115575	14.3	18.1	481375	14.3	19.7	21175	14.4	18.4
139014	14.1	18.8	209558	14.1	19.2	157002	14.2	20.0	278454	14.3	20.2	177173	14.3	19.5	431720	14.4	21.4
486581	14.1	20.8	413365	14.1	19.7	146415	14.2	18.4	77980	14.3	19.1	116742	14.3	19.5	397594	14.4	19.5
288145	14.1	18.4	389877	14.1	20.1	273212	14.2	20.8	276383	14.3	20.6	378095	14.3	21.1	172980	14.4	19.5
290423	14.1	21.1	356113	14.1	21.2	78747	14.2	19.2	154734	14.3	19.9	182998	14.4	20.7	133101	14.4	19.9
484074	14.1	22.6	325372	14.1	20.4	54178	14.2	18.5	431686	14.3	21.9	73741	14.4	19.5	51073	14.4	17.5
264785	14.1	20.5	45346	14.1	18.4	219093	14.2	19.1	289757	14.3	20.0	517280	14.4	21.5	85046	14.4	18.3
270672	14.1	19.6	468341	14.1	20.4	12691	14.2	17.2	436908	14.3	22.0	278696	14.4	20.6	345318	14.4	20.1
126683	14.1	18.8	450931	14.1	20.6	295961	14.2	20.9	66042	14.3	19.3	145447	14.4	19.4	372757	14.4	20.6
143777	14.1	18.6	69584	14.1	18.8	472393	14.2	21.2	491532	14.3	22.0	352364	14.4	19.8	213284	14.4	20.9
261748	14.1	19.8	96162	14.1	17.0	117443	14.2	18.5	198674	14.3	19.8	167382	14.4	19.8	343763	14.4	21.9
359574	14.1	20.9	388974	14.1	19.8	20364	14.2	16.5	27526	14.3	17.3	407097	14.4	20.1	26435	14.4	17.3
486882	14.1	20.6	127156	14.1	19.9	403945	14.2	20.6	467022	14.3	21.1	431184	14.4	19.5	68240	14.4	19.7
339952	14.1	18.9	362942	14.1	19.4	269643	14.2	20.0	59832	14.3	19.8	478423	14.4	21.4	176173	14.4	20.1
473580	14.1	20.7	345830	14.1	21.2	332918	14.2	20.4	410855	14.3	20.9	107533	14.4	18.9	176823	14.4	18.6
350083	14.1	20.6	94347	14.1	16.7	129647	14.2	19.9	464425	14.3	20.7	54991	14.4	16.7	24057	14.4	18.7
249928	14.1	20.2	237017	14.1	19.3	218861	14.2	18.9	287832	14.3	20.3	443789	14.4	22.1	514781	14.4	22.0
27705	14.1	16.9	362808	14.1	20.0	321504	14.2	19.7	85021	14.3	19.9	193943	14.4	19.6	13347	14.4	19.1
332268	14.1	19.4	32682	14.1	18.7	102422	14.2	19.3	308793	14.3	19.4	54834	14.4	19.2	478421	14.4	21.4
222230	14.1	18.6	12366	14.1	17.6	41068	14.2	18.8	175093	14.3	19.9	298408	14.4	19.7	69941	14.4	18.4
67645	14.1	18.1	50610	14.1	19.3	31914	14.2	18.0	233243	14.3	20.1	448806	14.4	20.9	107848	14.4	20.0
210661	14.1	18.8	386918	14.1	21.3	163796	14.2	20.2	120376	14.3	18.1	197051	14.4	19.4	163043	14.4	18.6
437978	14.1	20.1	433963	14.1	20.4	296494	14.2	21.0	251237	14.3	20.8	420816	14.4	22.1	322125	14.4	20.5
408125	14.1	19.4	506947	14.1	20.5	224733	14.2	19.5	477958	14.3	19.4	104652	14.4	19.2	266554	14.4	20.9
36429	14.1	16.7	366517	14.2	20.2	74142	14.2	18.4	146806	14.3	19.6	96001	14.4	20.0	202204	14.4	18.7
24713	14.1	18.7	471967	14.2	20.9	230433	14.2	19.0	283856	14.3	20.1	464604	14.4	20.5	450693	14.4	20.9
227270	14.1	19.3	145166	14.2	20.0	9900	14.2	17.3	221925	14.3	20.2	337545	14.4	20.2	216901	14.4	20.3
246327	14.1	19.9	167076	14.2	20.2	239499	14.2	20.4	484177	14.3	20.6	257489	14.4	20.6	348301	14.4	19.5
144460	14.1	20.3	520852	14.2	20.9	97616	14.2	20.5	448787	14.3	21.4	183006	14.4	19.6	311298	14.4	20.5
494010	14.1	19.9	487512	14.2	20.5	171426	14.2	20.4	293604	14.3	20.0	523463	14.4	20.4	68813	14.4	19.4
517721	14.1	21.0	398176	14.2	21.5	243946	14.2	19.6	462713	14.3	20.8	493074	14.4	20.5	411023	14.4	19.9
494422	14.1	21.6	456233	14.2	21.1	40447	14.2	19.5	332211	14.3	20.8	139018	14.4	19.1	514727	14.4	20.2
487898	14.1	20.5	511815	14.2	21.2	523245	1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
5593	14.5	15.8	186718	14.5	18.9	312738	14.6	20.7	477314	14.7	21.0	216113	14.7	20.2	460322	14.8	21.3
83026	14.5	19.3	137503	14.5	19.4	335338	14.6	20.1	273518	14.7	20.9	370352	14.7	21.6	458463	14.8	20.8
325382	14.5	22.0	365274	14.5	20.4	226557	14.6	18.9	330799	14.7	20.9	228146	14.7	19.5	277764	14.8	20.6
511804	14.5	21.3	195093	14.5	19.9	482274	14.6	20.0	71158	14.7	18.4	209165	14.7	19.3	12243	14.8	17.0
414743	14.5	19.6	78969	14.5	20.1	178909	14.6	19.3	460629	14.7	20.8	158650	14.7	20.1	267585	14.8	19.6
262451	14.5	20.1	334158	14.5	19.9	149753	14.6	20.0	22569	14.7	17.1	261646	14.7	20.3	314389	14.8	20.8
27328	14.5	18.4	319763	14.5	21.5	161603	14.6	20.1	438003	14.7	20.1	289776	14.7	21.0	30075	14.8	18.3
223941	14.5	19.5	133890	14.5	18.4	414684	14.6	20.8	224137	14.7	19.9	334080	14.7	20.1	514715	14.8	21.4
156084	14.5	19.0	150710	14.5	20.6	414984	14.6	20.4	378838	14.7	20.6	114389	14.7	19.1	115859	14.8	18.7
100424	14.5	19.3	520316	14.5	19.9	440807	14.6	19.3	378024	14.7	20.9	184345	14.7	20.9	274771	14.8	20.5
482688	14.5	20.5	186720	14.5	19.3	132819	14.6	21.4	67196	14.7	18.9	149344	14.7	18.9	483329	14.8	20.7
78041	14.5	19.3	177751	14.5	19.7	73200	14.6	19.4	486639	14.7	21.5	211945	14.7	20.0	169815	14.8	19.5
472886	14.5	20.3	55271	14.5	18.5	160062	14.6	18.5	422588	14.7	19.9	150153	14.7	19.1	135854	14.8	19.2
409127	14.5	20.2	231037	14.5	20.4	476569	14.6	20.7	420914	14.7	19.2	335342	14.7	21.2	82411	14.8	18.9
451807	14.5	21.4	49571	14.5	19.3	140339	14.6	18.9	498519	14.7	20.5	434556	14.7	21.5	258594	14.8	20.2
133953	14.5	18.4	72655	14.5	19.1	366258	14.6	20.2	151384	14.7	19.6	476552	14.7	22.1	27499	14.8	19.8
50421	14.5	19.8	274991	14.5	19.5	402246	14.6	20.9	154087	14.7	19.1	229215	14.7	19.8	245371	14.8	20.5
138370	14.5	19.4	177486	14.5	19.8	365919	14.6	19.6	108382	14.7	19.0	491683	14.7	21.9	285436	14.8	19.5
485488	14.5	20.9	81170	14.5	19.1	445574	14.6	21.7	449591	14.7	21.0	454750	14.7	19.5	279628	14.8	19.6
238171	14.5	20.4	171616	14.5	20.3	446365	14.6	21.3	205393	14.7	20.0	69342	14.7	18.9	281214	14.8	21.3
118891	14.5	18.3	445229	14.5	20.1	196516	14.6	18.4	24368	14.7	18.0	110750	14.7	19.6	296865	14.8	19.2
139631	14.5	18.7	263925	14.5	21.5	271507	14.6	19.5	381066	14.7	19.2	2950	14.7	14.2	195629	14.8	21.6
212221	14.5	20.7	380380	14.5	20.0	485998	14.6	21.8	83059	14.7	18.9	112595	14.7	19.0	82855	14.8	18.9
30571	14.5	19.5	329127	14.5	19.9	494283	14.6	20.9	508869	14.7	22.1	104345	14.8	19.9	386066	14.8	20.6
296737	14.5	19.7	449489	14.5	20.5	367044	14.6	20.8	434355	14.7	20.7	435685	14.8	21.6	196949	14.8	19.3
252686	14.5	20.1	44603	14.6	17.8	360591	14.6	18.4	218563	14.7	20.2	179717	14.8	19.8	298019	14.8	19.1
130036	14.5	20.6	153022	14.6	19.9	490044	14.6	20.7	432620	14.7	19.4	60536	14.8	19.1	195875	14.8	18.3
446724	14.5	20.4	221567	14.6	20.0	228964	14.6	20.4	306032	14.7	21.3	116162	14.8	18.6	63861	14.8	17.9
300531	14.5	20.3	309375	14.6	20.2	185544	14.6	18.9	159690	14.7	20.5	302679	14.8	19.8	308310	14.8	19.8
475711	14.5	20.9	57102	14.6	18.4	443247	14.6	21.2	21562	14.7	18.8	248913	14.8	20.7	194615	14.8	19.5
469880	14.5	20.2	521972	14.6	21.2	212506	14.6	20.2	57233	14.7	18.2	263935	14.8	21.1	391847	14.8	20.8
60148	14.5	19.6	147358	14.6	19.0	134221	14.6	18.7	41428	14.7	18.1	266521	14.8	20.6	211755	14.8	19.8
385106	14.5	20.3	522443	14.6	21.2	400061	14.6	21.0	251125	14.7	20.4	108415	14.8	18.4	54323	14.8	17.7
142788	14.5	20.0	320985	14.6	20.9	517088	14.6	21.1	222845	14.7	20.3	229753	14.8	19.7	520509	14.8	20.9
44462	14.5	17.5	518658	14.6	21.5	519316	14.6	21.3	165627	14.7	19.8	137477	14.8	19.2	465826	14.8	25.7
414610	14.5	21.0	491522	14.6	22.6	44651	14.6	17.6	365858	14.7	21.3	511683	14.8	20.5	317718	14.8	20.2
484053	14.5	22.1	164613	14.6	19.7	198321	14.6	20.0	340183	14.7	20.2	23176	14.8	17.8	248280	14.8	20.5
341941	14.5	20.9	484812	14.6	21.0	401488	14.6	20.8	191371	14.7	19.1	480957	14.8	20.0	268683	14.8	20.9
156607	14.5	19.4	368311	14.6	20.6	227389	14.6	20.6	13072	14.7	16.5	116184	14.8	18.0	372109	14.8	21.1
484348	14.5	20.2	246462	14.6	20.5	344909	14.6	21.6	485363	14.7	21.5	335408	14.8	21.5	144731	14.8	20.2
219166	14.5	20.0	19381	14.6	17.7	335220	14.6	21.6	450009	14.7	21.2	430889	14.8	19.9	333354	14.8	19.7
74938	14.5	19.3	514987	14.6	20.6	523468	14.6	20.1	38586	14.7	18.1	11535	14.8	18.3	226026	14.8	19.9
112649	14.5	19.5	914	14.6	12.6	378088	14.6	20.9	212247	14.7	20.0	357245	14.8	19.8	522052	14.8	20.6
138005	14.5	18.9	4167	14.6	16.2	494974	14.6	20.2	190004	14.7	21.1	472061	14.8	19.2	248648	14.8	21.2
191534	14.5	19.1	161450	14.6	18.8	89095	14.6	19.1	154144	14.7	20.6	151361	14.8	20.1	505055	14.8	21.1
12585	14.5	18.0	397338	14.6	20.0	332233	14.6	19.7	362528	14.7	20.9	484097	14.8	21.5	262050	14.8	20.1
468307	14.5	19.0	480054	14.6	21.5	278628	14.6	21.3	254052	14.7	20.3	9933	14.8	16.0	327731	14.8	19.7
191428	14.5	19.0	383159	14.6	20.6	404403	14.6	21.0	221614	14.7	19.3	328051	14.8	20.1	334074	14.8	19.3
55093	14.5	18.0	158313	14.6	19.3	108667	14.6	18.6	443089	14.7	20.0	252031	14.8	20.3	184433	14.8	20.5
420006	14.5	20.1	73647	14.6	18.3	289472	14.6	19.5	523455	14.7	19.9	108405	14.8	19.4	108478	14.8	19.5
332713	14.5	21.6	517438	14.6	21.6	327142	14.6	19.8	192204	14.7	20.8	111543	14.8	19.1	418840	14.8	21.3
368492	14.5	20.7	100617	14.6	19.9	480275	14.6	21.3	515658	14.7	21.0	394199	14.8	21.1	89360	14.8	19.2
135976	14.5	19.0	190890	14.6	18.9	301311	14.6	20.3	116286	14.7	19.2	157581	14.8	20.3	344615	14.8	19.9
403116	14.5	20.9	179183	14.6	20.0	286987	14.6	20.5	73497	14.7	18.4	280183	14.8	20.8	443814	14.8	21.3
242007	14.5	20.9	151305	14.6	20.0	337941	14.6	19.7	399207	14.7	20.6	403496	14.8	20.7	452722	14.8	21.0
480979	14.5	18.6	188624	14.6	19.3	270612	14.6	20.5	192391	14.7	19.3	449170	14.8	20.9	266054	14.8	19.6
96593	14.5	18.4	333634	14.6	20.6	326655	14.6	21.1	39557	14.7	20.8	275950	14.8	21.4	283779	14.8	20.7
261165	14.5	20.5	329116	14.6	20.2	305876	14.6	20.5	89452	14.7	19.2	387366	14.8	21.1	103053	14.8	18.1
506491	14.5	22.7	511806	14.6	21.6	112544	14.6	19.8	66632	14.7	17.9	479506	14.8	20.9	423092	14.8	19.7
224193	14.5	19.0	489132	14.6	21.6	444480	14.6	20.4	442782	14.7	19.8	185734	14.8	19.3	20164	14.8	18.5
493465	14.5	20.8	193189	14.6	21.1	191295	14.6	19.0	265995	14.7	21.1	89071	14.8	18.9	480842	14.8	19.8
520400	14.5	22.0	369747	14.6	22.0	336794	14.6	19.5	286511	14.7	19.7	364770	14.8	18.8	12260	14.8	17.3
278587	14.5	19.7	231224	14.6	19.7	522244	14.6	21.0	307322	14.7	21.6	458476	14.8	20.8	212260	14.9	20.3
174220	14.5	20.1	12459	14.6	18.0	28174	14.6	18.6	199879	14.7	20.2	420974	14.8	21.1	144654	14.9	19.6
286716	14.5	21.2	181350	14.6	20.1	304035	14.6	20.1	483042	14.7	20.8	248029	14.8	18.5	451278	14.9	21.0
458613	14.5	20.7	517978	14.6	21.4	381385	14.6	20.5	150881	14.7	20.4	517050	14.8	21.5	266022	14.9	20.8
518373	14.5	20.3	46771	14.6	17.7	321227	14.6	19.9	446238	14.7	20.2	453461	14.8	19.5	329569	14.9	19.8
274089	14.5	21.2	309420	14.6	18.8	76008	14.6	19.2	296696	14.7	19.6	234803	14.8	20.5	470160	14.9	20.2
54963	14.5	18.1	334113	14.6	20.4												

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
290586	14.9	19.5	12857	14.9	17.5	490904	15.0	21.9	133653	15.1	20.2	143413	15.2	19.2	119861	15.2	19.5
289505	14.9	19.8	473587	14.9	21.3	265269	15.0	20.7	427786	15.1	20.6	367228	15.2	19.4	469898	15.2	19.1
222547	14.9	18.9	493120	14.9	20.6	134103	15.0	19.5	487778	15.1	21.2	418731	15.2	20.5	367271	15.2	20.2
374724	14.9	19.7	236768	14.9	20.4	226603	15.0	19.9	478586	15.1	20.1	240979	15.2	21.2	113837	15.2	19.3
56488	14.9	18.5	300584	14.9	20.0	266444	15.0	20.9	394980	15.1	19.5	43272	15.2	18.4	385737	15.2	20.8
330486	14.9	21.2	474847	14.9	20.6	58940	15.0	18.6	121869	15.1	19.3	322250	15.2	20.6	139595	15.2	18.8
206427	14.9	18.9	178897	14.9	19.3	251445	15.0	19.7	253342	15.1	20.2	168321	15.2	20.1	217842	15.2	18.4
176638	14.9	20.4	189519	14.9	19.4	393480	15.0	22.1	480896	15.1	20.4	271570	15.2	20.5	4310	15.2	16.5
485008	14.9	19.7	386619	14.9	19.8	109493	15.0	19.9	135827	15.1	20.2	307936	15.2	19.7	305706	15.2	20.6
385224	14.9	21.6	113382	14.9	19.7	386037	15.0	20.8	515591	15.1	21.5	485612	15.2	20.4	202312	15.2	19.9
455485	14.9	20.8	199079	14.9	20.2	24554	15.0	18.1	112697	15.1	18.2	489235	15.2	21.3	463784	15.2	20.3
373866	14.9	21.1	269424	14.9	20.5	139410	15.0	18.5	117344	15.1	18.3	125070	15.2	19.8	107715	15.2	19.8
149592	14.9	18.2	372843	14.9	19.9	393500	15.0	20.1	220752	15.1	20.4	414663	15.2	20.3	482307	15.2	20.2
119171	14.9	19.2	403516	14.9	17.7	367828	15.0	20.7	140214	15.1	18.7	448048	15.2	20.8	183077	15.2	19.0
369194	14.9	20.6	512868	14.9	20.4	452685	15.0	21.0	60572	15.1	19.0	515557	15.2	21.0	500481	15.2	20.7
517347	14.9	19.9	240961	14.9	20.4	71878	15.0	18.1	251483	15.1	20.2	59597	15.2	18.7	2213	15.3	15.7
337227	14.9	21.0	218139	14.9	20.5	303092	15.0	19.1	517324	15.1	21.6	270805	15.2	20.7	486516	15.3	20.9
401289	14.9	20.5	92806	14.9	19.1	272581	15.0	20.5	48793	15.1	18.8	77308	15.2	18.7	388112	15.3	19.4
190973	14.9	19.8	505649	14.9	21.3	416085	15.0	21.0	484029	15.1	21.4	102603	15.2	18.1	251448	15.3	20.0
63447	14.9	18.3	478445	14.9	22.1	444541	15.0	20.7	386082	15.1	20.2	84501	15.2	18.5	112393	15.3	18.5
63971	14.9	19.3	302743	14.9	19.4	61956	15.0	19.7	147326	15.1	19.7	506779	15.2	19.6	470011	15.3	21.5
331709	14.9	20.2	128580	14.9	18.0	134497	15.0	17.8	40894	15.1	20.1	494648	15.2	20.0	371830	15.3	20.3
377993	14.9	20.4	152741	14.9	19.1	339095	15.0	21.1	419481	15.1	20.1	141618	15.2	19.4	79801	15.3	18.5
301309	14.9	21.0	351397	14.9	19.6	105236	15.0	18.2	185563	15.1	19.5	265509	15.2	20.4	108114	15.3	19.3
74632	14.9	17.6	87026	14.9	20.2	518659	15.0	21.1	151738	15.1	19.7	521901	15.2	20.6	415014	15.3	20.8
412495	14.9	21.5	412897	14.9	20.8	269817	15.0	19.1	288695	15.1	19.3	518311	15.2	20.3	195375	15.3	20.7
487005	14.9	21.4	177597	14.9	20.2	158750	15.0	18.5	318433	15.1	18.4	435488	15.2	20.6	90415	15.3	18.2
478452	14.9	21.3	464476	14.9	20.3	223873	15.0	19.4	328049	15.1	21.4	490897	15.2	21.0	414547	15.3	21.4
328040	14.9	20.3	227122	14.9	19.3	277317	15.0	19.5	449808	15.1	20.8	324975	15.2	20.5	473776	15.3	20.5
75300	14.9	17.1	125813	14.9	19.3	158771	15.0	20.0	71725	15.1	18.5	349484	15.2	20.5	229513	15.3	20.3
332514	14.9	21.3	485446	14.9	19.6	395211	15.0	20.6	210997	15.1	18.9	493075	15.2	20.4	48713	15.3	19.3
405030	14.9	19.3	70508	14.9	18.6	159851	15.0	19.7	209191	15.1	19.1	58828	15.2	19.3	369635	15.3	20.4
172933	14.9	19.4	372099	14.9	21.4	120296	15.0	19.6	420248	15.1	20.4	352954	15.2	20.0	273317	15.3	21.1
519836	14.9	19.8	97779	14.9	18.1	156010	15.0	17.9	128234	15.1	20.2	148611	15.2	20.2	172537	15.3	19.5
401317	14.9	20.6	293011	14.9	20.8	322079	15.0	20.8	162309	15.1	19.6	445227	15.2	20.3	212373	15.3	20.0
485025	14.9	20.3	74961	14.9	18.9	268076	15.0	19.9	494305	15.1	20.4	401557	15.2	19.9	10314	15.3	16.7
219266	14.9	18.7	99181	14.9	18.2	258738	15.0	20.3	63229	15.1	18.6	2003	15.2	15.9	124096	15.3	19.3
163487	14.9	19.7	337687	14.9	20.4	399769	15.0	20.7	119125	15.1	20.6	431325	15.2	20.9	407413	15.3	21.4
13984	14.9	17.8	480885	14.9	19.4	135866	15.0	20.0	393312	15.1	20.3	401196	15.2	19.8	360131	15.3	20.3
513169	14.9	21.1	84689	14.9	19.5	485767	15.0	20.0	168223	15.1	19.0	471016	15.2	20.5	369227	15.3	20.8
487531	14.9	21.0	168831	14.9	18.7	227878	15.0	20.1	406977	15.1	20.8	232085	15.2	19.6	471028	15.3	20.1
6421	14.9	15.9	443272	14.9	21.0	516755	15.0	19.9	292894	15.1	20.2	391200	15.2	20.7	484738	15.3	20.2
154160	14.9	19.5	380156	14.9	18.9	326000	15.1	20.5	361820	15.1	20.2	77720	15.2	17.8	328434	15.3	20.6
416342	14.9	20.8	417861	14.9	21.1	463979	15.1	20.9	323048	15.1	22.1	414648	15.2	20.4	296443	15.3	21.0
473700	14.9	19.8	517581	14.9	21.4	274781	15.1	20.3	305915	15.1	21.0	515657	15.2	21.4	479792	15.3	20.2
105199	14.9	20.4	378564	14.9	21.0	287935	15.1	19.4	307271	15.1	21.2	118601	15.2	18.9	112900	15.3	19.2
159077	14.9	19.8	461375	14.9	21.3	392799	15.1	20.5	6326	15.1	16.1	142642	15.2	19.2	4698	15.3	16.4
418661	14.9	19.8	8394	14.9	16.2	132932	15.1	18.7	164606	15.1	19.7	328449	15.2	19.8	22813	15.3	17.4
149253	14.9	18.7	200895	14.9	19.2	457338	15.1	21.0	443359	15.1	21.0	132287	15.2	19.8	100771	15.3	19.8
140120	14.9	20.0	416409	14.9	19.8	451301	15.1	21.1	400773	15.1	21.1	336573	15.2	20.9	194691	15.3	19.2
444576	14.9	19.7	256573	14.9	20.4	421054	15.1	21.4	331371	15.1	20.4	133345	15.2	19.1	329706	15.3	19.4
421063	14.9	20.6	133035	14.9	18.6	439098	15.1	20.8	265102	15.1	20.5	221286	15.2	20.6	523644	15.3	21.0
55038	14.9	17.9	222415	14.9	19.1	78989	15.1	18.7	457941	15.1	19.7	300546	15.2	19.7	344152	15.3	20.5
160621	14.9	19.3	403045	14.9	20.6	164150	15.1	19.3	265183	15.1	19.9	482517	15.2	21.3	336104	15.3	21.3
315736	14.9	20.3	490611	14.9	20.5	449476	15.1	20.9	59454	15.1	18.6	405753	15.2	19.9	256266	15.3	20.9
70119	14.9	19.5	54073	14.9	18.5	171518	15.1	19.4	206033	15.1	21.0	288235	15.2	19.3	340231	15.3	20.7
288395	14.9	19.8	29136	14.9	18.2	163820	15.1	19.3	293817	15.1	20.2	445324	15.2	21.9	360242	15.3	20.4
299168	14.9	20.0	400839	14.9	20.7	220518	15.1	18.8	493988	15.1	20.7	401380	15.2	20.4	116665	15.3	19.4
60869	14.9	19.9	177138	14.9	19.0	248830	15.1	20.5	217710	15.1	19.2	434576	15.2	20.5	127120	15.3	18.7
281116	14.9	19.5	172929	14.9	20.0	332111	15.1	19.9	10374	15.1	17.0	481285	15.2	19.7	15050	15.3	18.4
514407	14.9	20.5	29194	14.9	17.6	304244	15.1	19.3	113087	15.1	20.8	391233	15.2	20.2	357703	15.3	20.9
42972	14.9	18.4	11263	14.9	19.5	12719	15.1	17.9	475249	15.2	20.5	162364	15.2	18.4	279645	15.3	21.4
480709	14.9	20.9	211790	14.9	19.4	147561	15.1	18.9	242604	15.2	20.6	188755	15.2	19.8	358192	15.3	21.2
6269	14.9	17.3	493316	14.9	20.5	113264	15.1	19.0	513972	15.2	21.2	167974	15.2	19.2	346474	15.3	19.5
73839	14.9	19.4	448918	14.9	20.6	421041	15.1	21.3	152655	15.2	19.6	416417	15.2	20.2	242342	15.3	19.8
331950	14.9	20.0	195869	15.0	20.2	157852	15.1	18.8	462453	15.2	20.5	142975	15.2	16.7	357420	15.3	19.8
443922	14.9	21.0	1348	15.0	14.1	132626	15.1	19.7	77444	15.2	19.6	473346	15.2	21.0	336839	15.3	20.3
505351	14.9	20.6	298166	15.0	18.9	122730	15.1	19.1	476701	15.2	19.4	248306	15.2	19.8	37335	15.3	18.2
274394	14.9	20.4	420917	15.0	20.3												

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
311716	15.3	20.6	26426	15.4	18.0	425031	15.5	21.9	241805	15.5	20.2	181543	15.6	19.4	490975	15.7	21.3
156803	15.3	18.5	60283	15.4	17.9	512343	15.5	20.4	267525	15.5	20.1	94979	15.6	18.2	489822	15.7	20.5
199965	15.3	19.9	127440	15.4	19.9	108023	15.5	17.9	112651	15.5	18.5	26467	15.6	16.9	116208	15.7	18.7
457346	15.3	21.3	209524	15.4	19.8	435612	15.5	21.7	403153	15.5	20.9	94552	15.6	19.1	277064	15.7	19.8
447641	15.3	19.2	134556	15.4	18.0	156249	15.5	19.3	141773	15.5	18.8	406996	15.6	20.5	447975	15.7	20.0
248314	15.3	20.5	266659	15.4	20.9	442353	15.5	21.5	459573	15.5	21.3	442808	15.6	19.5	363735	15.7	19.4
480174	15.3	21.0	304217	15.4	21.1	373907	15.5	20.6	309957	15.5	21.4	105059	15.6	19.9	476976	15.7	17.9
338968	15.3	21.2	177394	15.4	19.0	489881	15.5	20.9	173674	15.5	20.2	431607	15.6	20.3	451567	15.7	20.0
235617	15.3	18.9	138238	15.4	19.4	55882	15.5	18.3	266654	15.5	20.7	218386	15.6	21.2	318443	15.7	18.7
237784	15.3	19.8	495758	15.4	22.1	472296	15.5	19.8	454952	15.5	21.4	48510	15.6	18.4	240700	15.7	20.8
334075	15.3	19.8	403556	15.4	20.3	206442	15.5	20.0	125717	15.5	18.7	327120	15.6	20.0	100263	15.7	18.1
196368	15.3	20.5	301889	15.4	19.7	296384	15.5	20.2	435123	15.5	19.4	432279	15.6	20.5	468862	15.7	21.6
486552	15.3	20.6	154072	15.4	20.5	369781	15.5	21.6	410850	15.5	20.4	164855	15.6	19.9	490032	15.7	21.7
274785	15.3	19.9	300473	15.4	20.3	302733	15.5	20.0	421572	15.5	20.1	48541	15.6	18.6	300596	15.7	20.4
414332	15.3	19.9	373798	15.4	18.6	430861	15.5	22.2	340969	15.5	20.4	68971	15.6	18.6	355401	15.7	19.7
156760	15.3	19.5	372818	15.4	20.3	350510	15.5	19.9	66643	15.5	18.6	45984	15.6	19.9	109267	15.7	18.2
44561	15.3	16.1	139848	15.4	19.7	358278	15.5	20.8	277884	15.5	19.9	191954	15.6	20.5	441196	15.7	20.1
108473	15.3	20.1	198593	15.4	19.4	174270	15.5	18.5	336121	15.5	19.1	510123	15.6	21.2	117645	15.7	20.7
210825	15.3	19.2	133817	15.4	19.4	223390	15.5	19.3	397563	15.5	20.6	161722	15.6	19.0	456688	15.7	20.7
227177	15.3	19.7	268155	15.4	20.1	357031	15.5	20.8	363659	15.5	19.0	459818	15.6	20.8	464460	15.7	20.7
10130	15.3	17.3	414368	15.4	20.1	462986	15.5	20.6	254752	15.5	20.7	201201	15.6	19.7	216690	15.7	20.8
107035	15.3	17.5	358798	15.4	20.6	34718	15.5	19.7	420693	15.5	21.7	444566	15.6	20.6	410624	15.7	21.0
221370	15.3	19.0	54992	15.4	18.9	476594	15.5	20.4	282565	15.5	18.8	20935	15.6	17.4	116032	15.7	19.3
287813	15.3	21.0	463785	15.4	20.5	95813	15.5	20.1	329429	15.5	20.9	339057	15.6	20.4	448906	15.7	21.1
100778	15.3	19.9	325381	15.4	21.2	439763	15.5	20.3	295444	15.5	19.4	247250	15.6	20.5	310354	15.7	20.5
157945	15.3	18.6	363006	15.4	20.3	144361	15.5	19.5	487466	15.5	21.2	402804	15.6	20.6	191866	15.7	20.1
336107	15.3	21.0	172214	15.4	20.3	210389	15.5	20.7	62355	15.6	18.8	173548	15.6	18.8	479589	15.7	20.7
434031	15.3	22.1	326174	15.4	20.6	249152	15.5	19.8	319490	15.6	20.2	35793	15.6	17.9	361349	15.7	20.0
469786	15.3	20.6	114399	15.4	18.9	83902	15.5	18.9	139599	15.6	18.1	391642	15.6	19.7	124574	15.7	18.5
513279	15.3	20.4	437074	15.4	19.6	243727	15.5	20.5	329273	15.6	20.1	212154	15.6	20.8	274987	15.7	19.3
356414	15.3	21.1	350750	15.4	19.8	353000	15.5	20.7	488184	15.6	21.6	158692	15.6	19.9	84910	15.7	17.3
240806	15.3	20.3	50249	15.4	18.9	18252	15.5	18.8	298043	15.6	19.6	29937	15.6	17.1	368643	15.7	20.6
227722	15.3	19.5	483588	15.4	21.3	161507	15.5	20.5	262893	15.6	20.7	45317	15.6	17.7	133661	15.7	20.4
107632	15.3	18.9	401134	15.4	20.2	192065	15.5	19.3	172909	15.6	19.4	274960	15.6	19.4	272182	15.7	21.2
508659	15.3	19.4	224758	15.4	18.8	415266	15.5	19.6	222512	15.6	19.5	332034	15.6	21.0	132849	15.7	19.5
172688	15.3	20.1	326139	15.4	19.2	448335	15.5	20.7	395212	15.6	20.8	218395	15.6	20.4	337802	15.7	20.0
74603	15.3	17.8	130042	15.4	20.2	519787	15.5	21.6	75780	15.6	18.3	354255	15.6	20.3	30401	15.7	17.4
109247	15.3	17.6	42818	15.4	17.5	459322	15.5	20.9	95260	15.6	19.2	510004	15.6	20.8	208207	15.7	20.4
49530	15.3	18.7	252517	15.4	20.6	11971	15.5	16.4	206578	15.6	20.0	418436	15.6	21.2	492792	15.7	20.9
417361	15.3	21.7	481882	15.4	19.7	325728	15.5	20.9	232119	15.6	19.3	137663	15.6	18.9	148220	15.7	20.4
402154	15.3	19.7	497587	15.4	20.6	486897	15.5	21.2	493183	15.6	20.5	311692	15.6	20.0	235886	15.7	19.4
181439	15.3	19.1	490912	15.4	21.0	176256	15.5	20.2	209813	15.6	19.9	332889	15.6	19.7	184571	15.7	20.4
167988	15.3	19.6	172339	15.4	18.8	117891	15.5	19.6	249590	15.6	19.0	108178	15.6	19.7	275527	15.7	19.2
444947	15.3	19.3	118744	15.4	21.1	477305	15.5	22.1	240436	15.6	20.1	485526	15.6	20.6	42145	15.7	18.4
418697	15.3	21.5	8470	15.4	16.7	49516	15.5	18.2	489923	15.6	20.2	175442	15.6	19.5	133172	15.7	18.0
144243	15.3	18.5	437955	15.4	19.2	477440	15.5	18.9	86593	15.6	20.5	12671	15.6	17.7	200515	15.7	19.3
134395	15.3	20.4	142303	15.4	20.4	397367	15.5	19.6	60702	15.6	18.5	330791	15.6	20.4	215368	15.7	19.7
402239	15.3	21.2	146999	15.4	20.2	92076	15.5	18.4	519518	15.6	21.5	474149	15.6	19.9	280997	15.7	20.1
414607	15.3	20.2	94283	15.4	18.4	367234	15.5	20.5	73435	15.6	18.8	335345	15.6	21.0	235903	15.7	19.7
247301	15.3	20.3	307499	15.4	20.0	190007	15.5	20.4	40557	15.6	18.4	426214	15.6	21.2	52832	15.7	19.5
355003	15.3	20.7	3394	15.4	15.8	406706	15.5	20.9	116920	15.6	20.2	160146	15.6	19.7	119096	15.7	19.6
71241	15.3	18.0	132889	15.4	20.3	197724	15.5	20.9	404861	15.6	21.2	276803	15.6	21.1	341964	15.7	21.7
414336	15.3	20.9	373001	15.4	21.4	425651	15.5	20.1	265480	15.6	20.1	63220	15.6	18.3	13952	15.7	17.0
491481	15.3	22.3	291896	15.4	19.9	435525	15.5	21.4	309745	15.6	20.9	220712	15.6	18.9	520564	15.7	21.2
333786	15.3	20.4	274860	15.4	20.1	418778	15.5	21.1	416081	15.6	20.9	29047	15.6	19.7	73413	15.7	19.3
174973	15.4	19.6	416198	15.4	19.9	55654	15.5	19.2	65442	15.6	18.8	286729	15.6	20.8	44883	15.7	18.2
427028	15.4	21.1	493334	15.4	19.7	134955	15.5	18.0	84768	15.6	18.7	190472	15.6	18.9	301788	15.7	20.4
460999	15.4	20.5	481029	15.4	19.7	311681	15.5	20.3	376016	15.6	20.4	398462	15.7	20.7	512862	15.7	20.8
199529	15.4	20.4	411530	15.4	20.4	456177	15.5	20.7	314642	15.6	22.1	302670	15.7	20.1	517885	15.7	21.4
445761	15.4	20.8	303504	15.4	19.8	321741	15.5	19.9	334274	15.6	19.7	375203	15.7	20.3	494439	15.7	21.4
323672	15.4	19.8	77264	15.4	19.2	461626	15.5	21.5	398001	15.6	20.5	230802	15.7	20.1	199917	15.7	20.9
141571	15.4	19.9	64384	15.4	19.3	195946	15.5	20.9	518207	15.6	20.4	83869	15.7	19.3	236394	15.7	19.7
194400	15.4	19.4	251548	15.4	20.5	161033	15.5	19.0	420950	15.6	20.7	144151	15.7	18.5	403089	15.7	20.8
478698	15.4	20.1	454218	15.4	20.9	197949	15.5	20.9	307463	15.6	21.9	449296	15.7	20.5	273722	15.7	20.9
386075	15.4	20.6	97593	15.4	18.7	11790	15.5	18.0	201804	15.6	19.2	91531	15.7	19.3	330521	15.7	20.5
125947	15.4	19.4	414737	15.4	19.0	190010	15.5	19.3	227212	15.6	19.6	11091	15.7	16.7	103170	15.7	17.9
483451	15.4	19.4	454772	15.4	20.7	447656	15.5	20.1	45798	15.6	19.3	517895	15.7	20.7	239174	15.7	20.4
442441	15.4	20.3	21189	15.4	19.3	17772	15.5	17.8	481584	15.6	19.4	517346	15.7	21.2	454395	15.7	19.9
84388	15.4	18.7	518093	15.4	19.6												

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
139611	15.7	20.0	411501	15.8	19.8	217867	15.9	18.0	56761	15.9	18.7	160383	16.0	19.9	390472	16.1	19.3
150730	15.7	19.1	157517	15.8	19.6	216580	15.9	20.7	151609	15.9	19.6	7968	16.0	20.8	43585	16.1	17.9
213829	15.7	19.8	365404	15.8	19.1	74581	15.9	20.0	395376	15.9	20.1	235595	16.0	19.7	112438	16.1	17.9
462734	15.7	20.1	159949	15.8	20.7	328393	15.9	19.6	449692	15.9	20.6	441894	16.0	20.6	431647	16.1	21.0
40923	15.7	17.9	328594	15.8	21.0	45075	15.9	18.6	368655	15.9	20.5	203	16.0	12.3	458518	16.1	21.5
332308	15.7	19.6	243695	15.8	19.1	311770	15.9	19.4	265472	15.9	20.2	130012	16.0	19.1	463823	16.1	20.2
2030	15.7	16.6	405473	15.8	20.1	274814	15.9	20.5	283015	15.9	20.6	299624	16.0	21.6	458049	16.1	20.8
397520	15.7	20.1	363550	15.8	19.4	183460	15.9	20.0	356168	15.9	20.1	143818	16.0	19.0	314345	16.1	20.6
385406	15.7	19.9	387841	15.8	20.6	222028	15.9	19.1	145185	15.9	20.4	294209	16.0	20.8	380761	16.1	21.1
117739	15.7	19.9	490553	15.8	21.0	323948	15.9	20.9	228432	15.9	20.5	373949	16.0	19.8	475134	16.1	21.2
266462	15.7	21.2	78778	15.8	19.1	450406	15.9	19.9	95606	15.9	18.3	399480	16.0	21.6	474572	16.1	20.7
329467	15.7	20.2	199835	15.8	20.9	330196	15.9	21.6	501552	15.9	21.0	112546	16.0	18.4	12858	16.1	18.6
283689	15.7	21.0	342324	15.8	21.7	199473	15.9	20.2	68361	15.9	19.5	297328	16.0	19.5	367013	16.1	20.6
343919	15.8	19.7	488814	15.8	20.1	179273	15.9	19.5	404501	15.9	21.3	456198	16.0	21.4	73496	16.1	18.5
479623	15.8	20.5	441536	15.8	20.8	353112	15.9	20.7	491846	15.9	19.9	522049	16.0	20.6	396403	16.1	21.3
223015	15.8	21.1	428650	15.8	21.6	162884	15.9	19.2	271084	15.9	20.4	47933	16.0	18.0	70644	16.1	18.6
116547	15.8	19.1	449811	15.8	21.0	397294	15.9	20.1	478593	15.9	20.8	446566	16.0	20.4	144488	16.1	19.8
245957	15.8	19.5	337434	15.8	20.6	249929	15.9	20.1	473732	15.9	20.4	427348	16.0	20.4	21998	16.1	17.6
104248	15.8	19.2	239489	15.8	20.0	156340	15.9	19.2	452274	15.9	20.8	265479	16.0	19.7	519441	16.1	20.3
17722	15.8	16.5	273442	15.8	20.1	71570	15.9	19.1	467046	15.9	20.9	317323	16.0	21.4	276229	16.1	21.5
105485	15.8	20.2	289361	15.8	20.9	101056	15.9	18.3	51509	15.9	18.9	19371	16.1	16.9	14964	16.1	18.7
329420	15.8	20.8	373941	15.8	21.0	395227	15.9	21.4	59831	15.9	18.1	460587	16.1	20.1	48924	16.1	17.6
104704	15.8	19.2	516847	15.8	21.5	272080	15.9	20.3	271587	15.9	20.0	471929	16.1	21.9	82509	16.1	19.8
257136	15.8	20.3	343860	15.8	21.2	139504	15.9	19.1	328407	15.9	20.1	391331	16.1	21.9	246030	16.1	21.2
83592	15.8	19.1	184334	15.8	19.9	522118	15.9	21.0	351191	15.9	20.3	450626	16.1	20.8	30322	16.1	18.2
77028	15.8	19.4	277037	15.8	19.1	23693	15.9	17.3	10265	15.9	16.9	451313	16.1	21.0	74642	16.1	18.8
492187	15.8	21.4	306510	15.8	20.1	519817	15.9	20.8	257882	15.9	20.8	369654	16.1	20.6	414594	16.1	20.0
84922	15.8	19.9	30615	15.8	18.6	337779	15.9	19.4	268892	15.9	19.2	269439	16.1	20.6	468306	16.1	19.8
9666	15.8	17.8	72407	15.8	18.2	488228	15.9	20.7	78150	15.9	18.5	199555	16.1	21.2	457348	16.1	21.1
191188	15.8	19.3	257741	15.8	18.9	302605	15.9	20.9	164082	15.9	18.5	275044	16.1	20.0	488020	16.1	21.0
481820	15.8	20.5	129885	15.8	20.2	281995	15.9	21.0	193082	15.9	20.9	266120	16.1	19.7	205091	16.1	19.4
197208	15.8	18.5	302629	15.8	20.9	446056	15.9	20.4	274621	15.9	20.4	25643	16.1	17.8	508890	16.1	20.4
458004	15.8	20.3	463523	15.8	21.1	447472	15.9	21.2	436886	15.9	22.1	154361	16.1	19.1	94414	16.1	18.9
210127	15.8	20.0	110364	15.8	19.8	17830	15.9	17.9	177286	15.9	18.9	215509	16.1	19.4	30731	16.1	19.2
323367	15.8	20.1	447482	15.8	21.0	174155	15.9	19.1	162013	15.9	17.8	367414	16.1	19.8	503496	16.1	20.8
460646	15.8	20.5	174731	15.8	20.0	42744	15.9	17.6	291934	15.9	19.6	239424	16.1	21.4	29421	16.1	18.0
218366	15.8	17.7	404910	15.8	20.9	408010	15.9	20.4	177716	15.9	21.3	493392	16.1	20.6	361798	16.1	20.6
108545	15.8	19.9	82402	15.8	19.2	288518	15.9	20.0	332964	15.9	19.9	49631	16.1	18.0	493030	16.1	20.9
279116	15.8	20.9	26945	15.8	18.3	481290	15.9	20.6	486526	15.9	21.3	384357	16.1	20.5	448771	16.1	22.1
77067	15.8	17.8	64209	15.8	19.0	521633	15.9	21.3	486428	15.9	21.5	249331	16.1	20.5	495674	16.1	20.9
385711	15.8	20.1	75106	15.8	18.5	458684	15.9	20.8	288536	15.9	19.8	300557	16.1	20.5	95855	16.1	19.9
309949	15.8	21.2	226243	15.8	19.1	89526	15.9	19.0	101478	15.9	19.7	30146	16.1	19.1	9002	16.1	16.7
156534	15.8	19.8	444496	15.9	20.7	211340	15.9	19.9	420149	15.9	20.4	336078	16.1	21.1	45332	16.1	17.6
323301	15.8	20.1	86230	15.9	17.7	297950	15.9	21.0	296871	15.9	19.8	217525	16.1	20.0	60650	16.1	17.7
128266	15.8	19.0	521616	15.9	20.8	261315	15.9	20.5	231046	15.9	20.0	213175	16.1	20.4	321372	16.1	20.4
61155	15.8	18.4	204732	15.9	20.7	410588	15.9	21.5	342015	15.9	20.9	448319	16.1	19.9	47901	16.2	18.2
420714	15.8	21.3	211307	15.9	19.5	50180	15.9	18.7	198003	15.9	20.1	218152	16.1	20.1	134762	16.2	19.0
360775	15.8	19.5	227673	15.9	21.0	383601	15.9	20.7	290570	15.9	20.7	129716	16.1	20.0	115101	16.2	18.7
143672	15.8	20.2	477283	15.9	19.6	411940	15.9	21.1	354658	15.9	21.0	217488	16.1	18.8	254934	16.2	20.6
469312	15.8	20.9	276139	15.9	21.2	26148	15.9	18.5	291288	16.0	21.3	265518	16.1	20.9	265907	16.2	21.0
514352	15.8	21.3	374671	15.9	20.9	116250	15.9	19.6	209236	16.0	19.0	22219	16.1	18.6	94112	16.2	19.1
194990	15.8	19.5	23923	15.9	18.6	454199	15.9	21.0	486108	16.0	20.5	185611	16.1	20.7	364865	16.2	21.3
418672	15.8	20.8	226581	15.9	18.7	45189	15.9	17.6	400382	16.0	19.4	304151	16.1	20.5	422482	16.2	21.0
133504	15.8	18.2	152967	15.9	20.0	273126	15.9	20.3	133944	16.0	19.3	132658	16.1	20.2	487787	16.2	21.2
236292	15.8	19.0	226664	15.9	21.1	63598	15.9	18.8	195715	16.0	20.0	117437	16.1	18.6	414343	16.2	20.3
414366	15.8	20.7	736	15.9	14.4	244348	15.9	20.0	68380	16.0	19.2	329452	16.1	20.5	263894	16.2	20.8
455996	15.8	20.8	420203	15.9	21.0	31889	15.9	16.2	74797	16.0	18.6	453414	16.1	21.1	444867	16.2	20.5
269861	15.8	20.1	482457	15.9	20.9	391243	15.9	21.5	90026	16.0	19.1	92605	16.1	20.2	107779	16.2	20.1
255263	15.8	20.4	330447	15.9	20.2	86525	15.9	19.9	70359	16.0	19.4	72301	16.1	18.6	277322	16.2	20.7
302527	15.8	21.0	510116	15.9	20.2	350480	15.9	19.3	183070	16.0	17.9	453074	16.1	19.6	160652	16.2	18.8
154813	15.8	20.5	253414	15.9	19.8	452667	15.9	21.3	452571	16.0	19.9	74608	16.1	18.3	356570	16.2	20.4
446479	15.8	21.1	325864	15.9	21.7	188127	15.9	19.6	391251	16.0	20.5	289958	16.1	20.4	409064	16.2	20.7
58789	15.8	17.5	134404	15.9	19.6	264184	15.9	20.8	208313	16.0	20.5	226421	16.1	18.8	72937	16.2	19.6
149993	15.8	19.5	199652	15.9	20.7	308260	15.9	21.1	10860	16.0	19.6	134074	16.1	19.1	228916	16.2	19.3
349715	15.8	19.0	400622	15.9	20.1	3568	15.9	16.5	454616	16.0	21.3	251143	16.1	20.2	383505	16.2	21.1
70095	15.8	17.6	147324	15.9	19.3	354260	15.9	20.7	275143	16.0	19.6	134843	16.1	18.9	270769	16.2	19.8
435472	15.8	21.2	140605	15.9	19.7	146311	15.9	20.0	370858	16.0	20.4	182287	16.1	20.2	447983	16.2	20.1
209762	15.8	20.2	432239	15.9	22.1	482346	15.9	19.9	456353	16.0	20.6	232194	16.1	20.8	256318	16.2	19.9
53810	15.8	19.3	119087	15.9	18.8	324129	15.9										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
70891	16.2	19.1	359814	16.3	19.9	214800	16.3	19.9	97495	16.4	19.0	290781	16.5	19.6	278156	16.5	21.5
137583	16.2	19.3	275089	16.3	20.8	184310	16.3	19.8	457355	16.4	21.9	437982	16.5	20.4	417330	16.5	21.5
471033	16.2	20.1	42149	16.3	19.0	408365	16.3	21.9	133007	16.4	19.8	274184	16.5	21.1	224850	16.5	19.2
477801	16.2	20.5	409814	16.3	19.7	118841	16.3	19.7	136205	16.4	19.4	331708	16.5	20.9	191473	16.5	19.5
255532	16.2	21.0	274738	16.3	20.1	62640	16.3	18.0	17529	16.4	17.8	457283	16.5	20.5	496808	16.5	19.8
70716	16.2	20.1	113889	16.3	19.0	321543	16.3	19.8	4420	16.4	17.1	226239	16.5	19.2	328033	16.5	20.6
109837	16.2	19.4	508892	16.3	20.5	434432	16.3	19.8	32616	16.4	18.7	82355	16.5	19.3	513366	16.6	21.0
41038	16.2	18.2	439938	16.3	20.5	115588	16.3	19.9	130205	16.4	18.5	167490	16.5	19.1	119386	16.6	18.8
444509	16.2	21.0	10059	16.3	17.4	5610	16.3	16.9	336872	16.4	20.6	298027	16.5	19.3	281947	16.6	20.9
43997	16.2	19.0	481944	16.3	20.9	21642	16.3	19.0	94837	16.4	18.2	518643	16.5	21.1	304884	16.6	19.2
149665	16.2	20.5	451330	16.3	21.3	387507	16.3	19.9	199654	16.4	19.9	298595	16.5	17.9	154120	16.6	20.2
95671	16.2	19.6	363230	16.3	20.3	395870	16.3	21.2	80566	16.4	18.1	97759	16.5	17.1	66143	16.6	17.7
298466	16.2	19.2	142355	16.3	19.5	334092	16.3	20.4	395668	16.4	20.6	254604	16.5	21.7	112919	16.6	20.4
444178	16.2	21.0	412377	16.3	20.4	479444	16.3	20.9	300682	16.4	21.3	29234	16.5	17.9	476720	16.6	20.3
469346	16.2	22.8	489858	16.3	20.7	511104	16.3	20.3	259094	16.4	19.0	117917	16.5	18.5	174750	16.6	19.6
422995	16.2	21.5	289740	16.3	20.2	52782	16.3	19.0	31955	16.4	18.2	266029	16.5	20.1	19986	16.6	18.9
228903	16.2	19.6	513445	16.3	20.9	447606	16.3	21.1	107445	16.4	19.9	170914	16.5	19.3	352207	16.6	21.0
231328	16.2	21.3	267941	16.3	20.3	267676	16.3	20.5	235402	16.4	20.5	381342	16.5	20.5	414276	16.6	21.1
367648	16.2	20.1	208797	16.3	21.8	143683	16.3	19.2	295243	16.4	19.9	520306	16.5	21.9	368635	16.6	19.4
33021	16.2	19.7	458549	16.3	20.2	441145	16.3	20.5	90212	16.4	17.0	253353	16.5	18.9	397224	16.6	21.1
286855	16.2	20.0	35206	16.3	18.3	489201	16.3	21.1	321560	16.4	20.1	515765	16.5	21.6	292284	16.6	19.7
491462	16.2	21.8	336113	16.3	20.8	135694	16.3	20.4	48132	16.4	18.6	271891	16.5	20.1	331395	16.6	21.2
520500	16.2	20.5	251761	16.3	20.1	137281	16.4	19.0	177535	16.4	20.5	437857	16.5	21.4	360625	16.6	20.2
330777	16.2	19.8	48534	16.3	17.9	411042	16.4	21.2	401399	16.4	21.5	333251	16.5	19.9	277163	16.6	21.9
70391	16.2	19.8	450071	16.3	21.6	32887	16.4	19.3	21523	16.4	19.0	286816	16.5	19.4	489053	16.6	18.4
85380	16.2	19.5	396308	16.3	21.1	85718	16.4	19.3	236462	16.4	21.4	139961	16.5	19.7	54830	16.6	18.9
445981	16.2	20.1	510545	16.3	21.4	79944	16.4	18.3	98009	16.4	18.6	176370	16.5	19.7	454764	16.6	19.6
234753	16.2	19.4	74594	16.3	18.3	523295	16.4	21.2	27370	16.4	18.8	494472	16.5	20.3	143952	16.6	19.0
56082	16.2	18.1	294100	16.3	21.2	190258	16.4	20.3	272017	16.4	20.4	451298	16.5	21.0	460515	16.6	20.3
455958	16.2	21.0	376110	16.3	20.3	307509	16.4	19.4	443876	16.4	20.3	34522	16.5	19.4	324714	16.6	21.0
191535	16.2	20.8	267834	16.3	20.2	329128	16.4	20.0	9563	16.4	17.5	430952	16.5	21.2	132338	16.6	19.2
12867	16.2	16.7	409495	16.3	21.4	436115	16.4	20.3	66922	16.4	18.3	68006	16.5	18.6	420251	16.6	19.9
329487	16.2	20.3	102068	16.3	17.9	229897	16.4	20.3	161355	16.4	19.8	235232	16.5	19.7	316728	16.6	20.6
442937	16.2	20.5	329570	16.3	19.8	249947	16.4	19.8	489303	16.4	19.8	197097	16.5	19.5	434300	16.6	19.4
311787	16.2	20.1	32270	16.3	18.3	420082	16.4	20.8	265176	16.4	18.3	436824	16.5	21.0	244785	16.6	19.6
40919	16.2	19.2	450393	16.3	21.8	310847	16.4	19.2	332950	16.4	20.4	289514	16.5	19.5	118160	16.6	19.8
414331	16.2	21.1	275176	16.3	21.3	274262	16.4	21.2	288108	16.4	20.6	17035	16.5	16.6	354405	16.6	20.1
503288	16.2	20.1	296806	16.3	20.5	31011	16.4	17.5	265546	16.4	20.2	102842	16.5	18.8	474723	16.6	21.3
70930	16.2	20.4	16926	16.3	16.9	396420	16.4	21.1	358712	16.4	20.7	209545	16.5	20.2	312905	16.6	19.9
118590	16.2	19.8	352167	16.3	20.5	182223	16.4	24.0	406075	16.4	20.5	202902	16.5	20.6	14341	16.6	17.9
259650	16.2	18.8	111112	16.3	19.4	217730	16.4	18.8	332052	16.4	20.7	208807	16.5	20.6	298038	16.6	20.1
492151	16.2	21.6	516709	16.3	21.2	514574	16.4	21.9	40135	16.4	18.7	151407	16.5	20.4	477316	16.6	21.1
513130	16.2	20.6	143202	16.3	18.1	185594	16.4	19.6	121146	16.4	18.9	485991	16.5	22.1	208751	16.6	19.6
486555	16.2	20.3	227086	16.3	21.3	479414	16.4	20.2	298086	16.4	20.4	33517	16.5	19.6	516488	16.6	21.1
231712	16.2	18.3	441166	16.3	20.7	447185	16.4	20.1	187505	16.4	20.3	386274	16.5	21.4	416201	16.6	20.3
128298	16.2	18.6	195879	16.3	19.6	388147	16.4	20.5	474767	16.4	20.6	130297	16.5	20.4	435505	16.6	21.3
490986	16.2	20.5	323279	16.3	21.2	387993	16.4	19.8	83308	16.4	19.3	153699	16.5	20.1	398518	16.6	21.2
265886	16.2	20.0	414302	16.3	20.0	459919	16.4	19.4	443591	16.4	20.3	369461	16.5	21.8	140504	16.6	19.8
123114	16.2	19.0	79128	16.3	19.0	75126	16.4	19.8	380027	16.4	20.3	314910	16.5	20.1	5111	16.6	15.7
19925	16.2	17.9	84706	16.3	18.3	134139	16.4	19.5	415544	16.4	21.6	230970	16.5	19.7	79324	16.6	20.6
1020	16.2	16.2	265821	16.3	20.1	292591	16.4	20.7	72979	16.4	19.6	12647	16.5	18.9	81044	16.6	19.6
328429	16.2	21.3	156826	16.3	19.8	409705	16.4	21.0	398747	16.4	19.8	170645	16.5	19.4	454387	16.6	20.0
478546	16.2	20.6	73664	16.3	19.6	330247	16.4	20.9	206019	16.4	21.1	205353	16.5	18.2	203173	16.6	18.3
22944	16.2	18.7	120380	16.3	18.6	352264	16.4	21.2	326885	16.4	19.6	412634	16.5	21.7	399763	16.6	22.0
101966	16.2	18.9	88743	16.3	18.9	327136	16.4	20.1	75514	16.4	18.0	494159	16.5	20.9	9186	16.6	18.4
453108	16.2	19.0	281184	16.3	21.0	136214	16.4	19.4	287030	16.4	20.1	47719	16.5	19.8	272356	16.6	21.3
188131	16.2	20.1	215724	16.3	19.1	17580	16.4	16.7	176924	16.4	20.0	519500	16.5	22.1	115532	16.6	18.1
207226	16.2	19.6	414350	16.3	20.8	55632	16.4	18.5	97490	16.4	19.9	272867	16.5	21.0	147066	16.6	20.1
79282	16.2	19.7	190626	16.3	19.2	235283	16.4	19.0	3626	16.4	17.2	208895	16.5	20.2	103338	16.6	18.3
264851	16.2	20.3	429808	16.3	20.5	325746	16.4	20.4	437368	16.4	19.6	44272	16.5	18.4	464408	16.6	21.1
363312	16.2	21.5	402466	16.3	19.7	423794	16.4	21.0	199557	16.5	19.9	155130	16.5	21.0	75275	16.6	18.4
350893	16.2	19.9	87304	16.3	18.4	492968	16.4	20.2	280645	16.5	20.3	127518	16.5	19.2	70577	16.6	18.7
341028	16.2	20.4	152940	16.3	19.5	347884	16.4	20.1	108481	16.5	18.4	447529	16.5	21.0	423244	16.6	20.3
297981	16.2	20.1	367576	16.3	21.2	486476	16.4	21.3	461132	16.5	20.2	197729	16.5	20.5	198702	16.6	20.5
435562	16.2	20.0	30320	16.3	17.8	20571	16.4	18.0	296523	16.5	20.4	89854	16.5	19.4	159752	16.6	20.1
367649	16.2	20.0	32081	16.3	18.3	438228	16.4	21.0	6895	16.5	18.0	66378	16.5	17.7	447866	16.6	19.1
488958	16.2	21.0	449860	16.3	20.3	153027	16.4	20.5	115009	16.5	18.0	386972	16.5	21.2	91546	16.6	18.2
296735	16.2	19.3	328421	16.3	20.5	365330	16.4	20.4	361276	16.5	19.7	296748	16.5	19.1	307253	16.6	19.8
129136	16.2	19.1	408080	16.3	20.5	85461	16.4	19.6									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
51737	16.6	19.0	321565	16.7	20.2	512713	16.8	20.9	232969	16.8	19.0	187195	16.9	20.9	247898	16.9	19.6
307395	16.6	19.4	212509	16.7	19.9	180704	16.8	19.4	274378	16.8	20.7	193147	16.9	20.9	413169	16.9	20.1
138900	16.6	18.9	320155	16.7	20.3	330188	16.8	21.5	73407	16.8	19.5	520572	16.9	21.3	515150	16.9	22.2
229299	16.6	19.0	316587	16.7	19.4	152834	16.8	19.2	93115	16.8	18.8	136848	16.9	17.6	270797	16.9	20.2
408033	16.6	20.3	200568	16.7	19.8	439037	16.8	21.7	331031	16.8	19.9	419262	16.9	20.6	252674	16.9	19.2
345528	16.6	19.5	522245	16.7	21.2	464452	16.8	20.2	314947	16.8	18.2	181762	16.9	20.5	180013	16.9	19.1
179653	16.6	19.8	434354	16.7	20.4	55602	16.8	19.1	184617	16.8	20.5	217390	16.9	22.6	198816	16.9	19.2
217902	16.6	19.7	84708	16.7	18.3	358747	16.8	20.6	158500	16.8	20.0	492756	16.9	19.4	30966	16.9	18.8
506163	16.6	21.1	110980	16.7	19.3	45914	16.8	18.7	4979	16.8	17.6	355425	16.9	19.9	413721	16.9	20.8
514750	16.6	21.5	277844	16.7	20.1	231052	16.8	19.6	371335	16.8	20.7	167121	16.9	19.2	75114	16.9	18.3
445737	16.6	20.5	150385	16.7	20.6	293058	16.8	20.6	380083	16.8	20.8	66961	16.9	18.4	510073	16.9	19.9
407231	16.6	19.8	357075	16.7	20.8	445344	16.8	20.1	208887	16.8	19.5	372737	16.9	18.8	27681	16.9	18.0
288050	16.6	20.2	289732	16.7	21.9	362640	16.8	20.1	274232	16.8	20.3	286470	16.9	20.9	271596	16.9	20.5
90603	16.6	20.2	326109	16.7	20.7	88336	16.8	19.0	75526	16.8	18.8	102192	16.9	18.3	427462	16.9	20.4
495719	16.6	20.0	67062	16.7	18.9	332046	16.8	20.1	164492	16.8	19.4	185830	16.9	18.1	409081	16.9	20.9
303490	16.6	20.9	202559	16.7	20.5	18926	16.8	18.2	273910	16.8	20.0	492679	16.9	20.5	492828	16.9	21.1
398189	16.6	21.0	328738	16.7	19.8	84844	16.8	19.5	458065	16.8	20.5	481592	16.9	20.2	164494	16.9	20.7
484187	16.6	20.3	50784	16.7	18.8	471045	16.8	20.3	271551	16.8	21.3	48888	16.9	19.4	44671	16.9	18.8
76059	16.6	18.7	401704	16.7	20.9	422120	16.8	20.5	191547	16.8	19.5	229916	16.9	19.8	262125	16.9	20.1
480813	16.6	20.2	513271	16.7	20.5	474974	16.8	20.6	355045	16.8	20.4	477354	16.9	20.3	136700	16.9	20.1
455411	16.6	19.9	94904	16.7	20.3	199910	16.8	21.7	514707	16.8	21.4	466535	16.9	20.7	348766	16.9	19.5
485620	16.6	19.3	240225	16.7	19.2	452026	16.8	21.3	495484	16.8	21.2	293236	16.9	20.7	402737	16.9	20.9
405918	16.6	19.7	146638	16.7	19.9	96489	16.8	19.1	67334	16.8	17.7	253405	16.9	20.8	137157	16.9	20.0
504976	16.6	20.9	77751	16.7	18.9	144350	16.8	19.5	511544	16.8	20.3	316224	16.9	20.7	317884	16.9	19.4
451893	16.6	22.3	451117	16.7	21.7	279442	16.8	20.7	352345	16.8	20.6	266508	16.9	21.4	87232	16.9	19.8
472457	16.6	21.2	381943	16.7	20.4	45428	16.8	17.8	132031	16.8	19.4	400897	16.9	20.7	795	16.9	14.4
261953	16.6	19.9	434895	16.7	20.4	302703	16.8	19.6	474937	16.8	19.9	187262	16.9	20.1	148497	16.9	20.2
477430	16.6	21.0	249858	16.7	20.0	444469	16.8	22.1	142358	16.8	20.6	309928	16.9	19.6	10038	16.9	17.8
154587	16.6	20.5	316202	16.7	20.6	271522	16.8	19.6	461173	16.8	21.5	76646	16.9	17.6	280631	16.9	19.6
507612	16.6	20.2	225657	16.7	21.7	464343	16.8	21.5	400400	16.8	20.2	72415	16.9	18.5	292640	16.9	19.7
330569	16.6	19.4	481656	16.7	19.3	400415	16.8	21.1	455335	16.8	21.9	225289	16.9	19.9	293860	16.9	21.0
286878	16.6	21.0	449643	16.7	21.1	16414	16.8	16.8	124425	16.8	18.3	215519	16.9	19.3	436982	16.9	21.5
58402	16.6	20.1	347408	16.7	21.0	143050	16.8	19.8	398924	16.8	20.5	283769	16.9	20.7	263574	16.9	20.3
443722	16.6	21.6	304155	16.7	20.9	150865	16.8	20.1	132538	16.8	20.3	168558	16.9	18.2	104491	16.9	19.5
522091	16.6	20.8	264791	16.7	21.0	511498	16.8	21.1	358683	16.8	20.0	363361	16.9	20.0	414636	16.9	20.1
484162	16.6	20.0	230836	16.7	20.0	302692	16.8	19.6	309902	16.8	20.2	39893	16.9	20.1	58985	16.9	17.8
395394	16.6	21.1	322264	16.7	20.0	1073	16.8	16.5	485583	16.8	20.8	111986	16.9	19.1	380967	16.9	20.9
383469	16.6	19.4	199850	16.7	20.2	440159	16.8	19.7	495730	16.8	20.8	419370	16.9	19.5	454093	16.9	20.5
67488	16.6	19.2	58335	16.7	20.4	214754	16.8	20.1	82992	16.8	18.0	482661	16.9	21.6	268701	16.9	19.6
245031	16.6	20.4	57302	16.7	18.3	493042	16.8	21.0	458663	16.8	20.9	381039	16.9	20.8	416135	16.9	21.9
517987	16.6	20.6	489153	16.7	22.3	326539	16.8	20.7	47811	16.8	19.2	211782	16.9	20.2	331042	16.9	20.2
269213	16.6	20.2	68140	16.7	18.3	454187	16.8	21.3	446718	16.8	21.4	300646	16.9	21.5	74802	16.9	18.7
102387	16.6	19.8	490613	16.7	20.3	517943	16.8	21.4	61288	16.8	18.5	119318	16.9	20.7	329709	16.9	20.9
326593	16.6	20.1	53917	16.7	18.8	519741	16.8	21.3	280487	16.8	20.7	270148	16.9	19.7	195630	16.9	20.5
27679	16.6	17.3	348668	16.7	21.2	25789	16.8	18.2	247187	16.8	21.3	193337	16.9	19.9	280894	16.9	21.0
326868	16.6	21.0	82173	16.7	19.0	129239	16.8	19.7	44605	16.8	18.5	421999	16.9	21.3	61102	16.9	18.3
24946	16.6	17.6	447875	16.7	20.1	258775	16.8	20.2	42157	16.8	19.1	291257	16.9	19.6	199687	16.9	20.7
10187	16.6	17.3	215392	16.7	18.8	35121	16.8	18.4	302696	16.8	20.0	15163	16.9	17.0	256342	16.9	20.2
78138	16.6	19.4	106534	16.7	18.1	222023	16.8	19.6	64146	16.8	18.6	464397	16.9	20.5	386304	16.9	20.2
103730	16.7	19.1	495697	16.7	20.9	42704	16.8	16.9	68945	16.8	17.9	450085	16.9	19.7	275638	16.9	20.4
231024	16.7	19.5	193199	16.7	20.2	40726	16.8	18.1	222188	16.8	19.1	407585	16.9	20.1	199278	16.9	21.1
379883	16.7	20.8	332217	16.7	20.9	372197	16.8	20.1	22777	16.8	17.8	298074	16.9	20.8	3775	16.9	16.7
173103	16.7	19.3	361286	16.7	20.5	228538	16.8	18.7	220931	16.8	21.2	481950	16.9	21.5	223535	16.9	19.3
205915	16.7	19.8	81606	16.7	19.5	36692	16.8	18.0	57840	16.9	19.1	276363	16.9	20.0	150062	16.9	19.4
242037	16.7	20.3	412575	16.7	21.1	269660	16.8	21.3	370890	16.9	21.3	393625	16.9	20.3	420551	16.9	21.9
10919	16.7	17.8	385292	16.7	20.1	295281	16.8	20.2	163957	16.9	18.9	408441	16.9	21.7	426143	16.9	19.8
171624	16.7	19.5	435547	16.7	20.9	169054	16.8	20.3	24648	16.9	18.7	165575	16.9	19.6	134162	16.9	19.4
50453	16.7	17.2	146573	16.7	19.6	210121	16.8	20.9	274180	16.9	20.5	420920	16.9	21.0	388980	17.0	20.4
26115	16.7	17.4	292091	16.7	19.9	419376	16.8	20.3	328925	16.9	19.7	133576	16.9	18.9	263933	17.0	20.5
235145	16.7	21.0	360627	16.7	20.2	193316	16.8	19.3	443967	16.9	22.6	8188	16.9	16.6	448541	17.0	20.5
305801	16.7	20.2	309028	16.7	19.5	198745	16.8	19.6	25674	16.9	17.6	385666	16.9	21.0	182723	17.0	20.1
4029	16.7	16.7	452461	16.7	20.7	421018	16.8	20.5	357086	16.9	20.3	56507	16.9	18.6	489716	17.0	20.7
372768	16.7	19.9	172969	16.7	19.1	440360	16.8	19.4	475474	16.9	20.5	44506	16.9	16.7	171260	17.0	20.0
44135	16.7	17.9	482709	16.7	20.7	15402	16.8	18.7	493096	16.9	20.3	80813	16.9	18.3	183989	17.0	19.1
522119	16.7	20.9	464564	16.7	20.8	457982	16.8	20.3	265501	16.9	20.8	390588	16.9	21.7	265798	17.0	20.3
223586	16.7	19.0	265364	16.7	20.4	450706	16.8	19.9	305215	16.9	19.3	50424	16.9	18.6	361989	17.0	22.5
405663	16.7	20.8	487645	16.7	20.0	146555	16.8	19.7	251223	16.9	20.9	166370	16.9	18.5	146656	17.0	19.9
362865	16.7	20.3	367637	16.7	19.6	378560	16.8	20.2	357454	16.9	20.5	220398	16.9	18.5	150461	17.0	20.4
220073	16.7	20.1	167750	16.7	19.6	174394	16.8										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
32171	17.0	18.6	218148	17.1	19.5	493108	17.2	20.0	143549	17.2	18.7	203755	17.3	17.9	192150	17.4	19.5
328598	17.0	20.6	514242	17.1	20.5	335353	17.2	21.2	466560	17.2	20.8	312888	17.3	19.2	196128	17.4	19.4
477785	17.0	21.0	42912	17.1	18.8	261730	17.2	20.8	154793	17.2	19.5	334563	17.3	21.2	207261	17.4	20.5
133640	17.0	18.4	521655	17.1	19.8	13143	17.2	16.5	315863	17.2	20.1	40342	17.3	18.9	73469	17.4	19.2
185856	17.0	18.9	212571	17.1	20.4	1366	17.2	15.0	139465	17.2	20.0	448800	17.3	19.7	352930	17.4	20.0
104004	17.0	19.6	42701	17.1	17.2	415125	17.2	21.3	4336	17.2	15.7	195058	17.3	19.6	134994	17.4	20.0
155645	17.0	18.9	491656	17.1	20.8	255236	17.2	19.8	521724	17.2	20.7	201211	17.3	19.7	402423	17.4	20.5
123883	17.0	19.0	150952	17.1	18.4	394140	17.2	21.4	9783	17.2	16.8	255625	17.3	20.9	389974	17.4	20.1
39316	17.0	19.4	91988	17.1	18.5	310841	17.2	18.9	359925	17.2	19.9	438554	17.3	21.4	78074	17.4	18.4
264856	17.0	19.9	334173	17.1	21.0	173388	17.2	18.9	488250	17.2	19.9	274181	17.3	20.9	481872	17.4	19.7
447801	17.0	21.4	293520	17.1	19.6	419916	17.2	20.4	361285	17.2	20.7	392913	17.3	20.3	127386	17.4	20.3
154440	17.0	19.4	270714	17.1	20.3	132541	17.2	19.6	266503	17.2	19.8	270115	17.3	19.8	229211	17.4	18.9
134041	17.0	19.3	189110	17.1	18.8	518105	17.2	20.9	320758	17.2	20.1	281188	17.3	20.3	373046	17.4	20.6
482656	17.0	20.6	257779	17.1	20.0	452933	17.2	20.7	400771	17.2	20.4	263348	17.3	19.7	477276	17.4	21.1
194708	17.0	18.1	212804	17.1	19.3	143009	17.2	18.8	239131	17.2	20.9	450690	17.3	20.0	49403	17.4	16.6
105759	17.0	18.1	234760	17.1	19.9	141664	17.2	19.6	339105	17.2	20.2	136217	17.3	18.9	494794	17.4	19.2
515877	17.0	19.7	23661	17.1	19.0	108424	17.2	19.3	125666	17.2	19.3	387182	17.3	20.7	94139	17.4	18.7
418619	17.0	21.0	46487	17.1	19.0	141532	17.2	20.1	97484	17.2	19.1	16003	17.3	17.0	311828	17.4	19.3
242641	17.0	19.4	477779	17.1	19.6	275410	17.2	20.6	298422	17.3	20.0	358637	17.3	19.0	77819	17.4	18.2
98689	17.0	17.6	203053	17.1	21.3	70841	17.2	19.0	513339	17.3	20.8	494058	17.3	21.1	145499	17.4	20.1
512846	17.0	21.6	376587	17.1	20.5	358254	17.2	20.5	448343	17.3	20.8	446414	17.3	20.5	476392	17.4	20.9
520482	17.0	21.4	515506	17.1	21.5	504457	17.2	20.1	407792	17.3	20.6	518650	17.3	21.5	462695	17.4	20.6
351069	17.0	19.2	455492	17.1	20.5	515143	17.2	20.6	144702	17.3	18.9	514325	17.3	19.6	491494	17.4	21.2
273132	17.0	20.1	270801	17.1	20.1	80629	17.2	19.1	193102	17.3	20.4	40846	17.3	18.7	142773	17.4	18.7
151860	17.0	19.9	34986	17.1	19.3	478822	17.2	19.9	28590	17.3	18.3	369206	17.3	19.1	327082	17.4	20.4
45454	17.0	17.9	195860	17.1	19.8	209784	17.2	19.9	386735	17.3	20.4	73028	17.3	20.1	163166	17.4	20.3
229350	17.0	20.3	449172	17.1	21.2	146994	17.2	19.0	50795	17.3	17.8	111964	17.3	19.3	157288	17.4	18.9
388518	17.0	20.3	257973	17.1	20.7	465422	17.2	21.0	334291	17.3	19.2	519505	17.3	20.3	342307	17.4	19.1
118665	17.0	19.1	187948	17.1	19.7	294129	17.2	21.3	482529	17.3	19.5	152257	17.3	19.6	289727	17.4	20.8
103116	17.0	18.8	475498	17.1	20.2	419975	17.2	20.0	409078	17.3	20.5	392305	17.3	20.9	382835	17.4	20.3
347247	17.0	21.6	79409	17.1	19.6	27975	17.2	18.6	278666	17.3	20.0	474277	17.3	17.2	115553	17.4	19.2
280378	17.0	19.5	67136	17.1	18.3	410615	17.2	20.3	373085	17.3	20.6	172562	17.3	19.2	449966	17.4	22.2
321598	17.1	19.7	91890	17.1	18.2	420990	17.2	21.0	320055	17.3	20.0	270819	17.3	20.1	55323	17.4	18.2
493198	17.1	21.1	196106	17.1	19.0	88563	17.2	20.0	484495	17.3	20.9	97771	17.3	19.3	283062	17.4	21.1
493438	17.1	21.0	147653	17.1	19.6	278541	17.2	20.9	147085	17.3	18.6	266074	17.3	19.0	150842	17.4	19.4
25089	17.1	18.7	294835	17.1	21.1	269590	17.2	20.6	253991	17.3	20.8	415428	17.3	21.5	1341	17.4	14.7
268401	17.1	21.0	348627	17.1	20.8	76578	17.2	18.9	156342	17.3	18.3	167994	17.3	18.4	201748	17.4	18.8
330346	17.1	20.7	310450	17.1	19.7	138409	17.2	20.2	22760	17.3	17.2	82826	17.3	19.3	493135	17.4	21.0
70558	17.1	19.1	146289	17.1	18.8	210636	17.2	20.4	494566	17.3	20.3	390691	17.3	19.0	484430	17.4	20.8
418761	17.1	20.3	477391	17.1	20.5	147197	17.2	19.3	113749	17.3	19.5	330530	17.3	18.5	176108	17.4	19.4
215422	17.1	20.1	283071	17.1	20.7	403352	17.2	20.5	70331	17.3	19.9	180848	17.3	20.8	215701	17.4	19.1
373873	17.1	21.1	311737	17.1	18.9	384380	17.2	19.3	33331	17.3	18.7	267901	17.3	18.6	194997	17.4	19.9
191543	17.1	19.9	58867	17.1	18.9	2802	17.2	15.4	271603	17.3	20.3	249880	17.3	21.4	30379	17.4	16.8
75336	17.1	18.1	116264	17.1	19.4	51804	17.2	18.2	140081	17.3	19.5	356015	17.3	19.7	293927	17.4	20.7
441732	17.1	19.4	128248	17.1	18.4	414326	17.2	20.5	138278	17.3	19.1	77112	17.3	18.5	326546	17.4	20.9
225351	17.1	19.9	21062	17.1	17.1	305437	17.2	18.6	402710	17.3	20.7	165649	17.3	19.9	262883	17.4	20.9
55755	17.1	18.2	179319	17.1	19.4	302122	17.2	18.8	494151	17.3	20.3	368028	17.3	20.6	4567	17.4	17.6
519762	17.1	21.7	441679	17.1	21.0	484539	17.2	21.6	460962	17.3	20.6	304989	17.3	21.9	328961	17.4	20.1
70815	17.1	17.4	370282	17.1	20.9	224676	17.2	20.3	354998	17.3	19.7	472499	17.3	21.0	50976	17.4	18.3
488906	17.1	21.2	225724	17.1	20.8	118188	17.2	20.4	117846	17.3	19.7	73606	17.3	18.6	202400	17.4	19.2
146023	17.1	17.5	12693	17.1	16.9	13864	17.2	16.3	287851	17.3	21.0	288329	17.3	19.8	212169	17.4	19.6
276832	17.1	20.8	281220	17.1	20.6	214894	17.2	19.2	133510	17.3	18.9	291072	17.4	19.8	394509	17.4	20.9
450661	17.1	20.6	97604	17.1	18.5	124737	17.2	20.5	48969	17.3	17.6	79375	17.4	18.9	229917	17.4	18.6
405118	17.1	19.6	30139	17.1	19.0	382712	17.2	19.8	389914	17.3	20.0	392833	17.4	18.8	98594	17.4	17.0
458569	17.1	21.2	227763	17.1	19.9	273562	17.2	20.9	482566	17.3	20.8	49774	17.4	17.4	484525	17.4	20.0
308798	17.1	20.8	195675	17.1	19.4	443145	17.2	20.5	9906	17.3	17.0	188301	17.4	19.7	45006	17.4	19.4
97660	17.1	18.6	413783	17.1	20.8	248365	17.2	20.5	274460	17.3	20.4	436963	17.4	20.1	83296	17.4	19.6
321489	17.1	20.2	352317	17.1	19.9	232230	17.2	19.8	440889	17.3	19.6	354410	17.4	19.9	280435	17.4	20.1
330772	17.1	20.8	174943	17.1	19.1	220692	17.2	20.3	288051	17.3	19.9	294293	17.4	19.8	44378	17.4	17.7
290089	17.1	20.5	187091	17.1	20.4	503306	17.2	20.9	452173	17.3	20.6	20140	17.4	18.5	361299	17.4	20.5
486293	17.1	20.1	222874	17.1	20.2	376236	17.2	20.6	464278	17.3	19.7	453088	17.4	20.1	33129	17.4	18.6
460854	17.1	21.0	61962	17.1	18.3	485564	17.2	19.6	150708	17.3	19.6	309579	17.4	20.0	264242	17.4	19.5
270988	17.1	20.1	12453	17.1	17.6	263074	17.2	20.6	515759	17.3	20.4	76492	17.4	17.9	227632	17.4	20.3
445334	17.1	21.7	522412	17.2	21.3	2368	17.2	17.3	268714	17.3	20.1	223824	17.4	19.4	149185	17.4	19.9
181669	17.1	19.3	51352	17.2	17.2	269553	17.2	19.3	247336	17.3	19.2	300523	17.4	19.1	179596	17.4	19.9
55379	17.1	18.5	420944	17.2	20.5	91898	17.2	17.8	443998	17.3	19.3	103315	17.4	18.9	171066	17.4	19.2
202637	17.1	20.0	318774	17.2	20.5	158127	17.2	19.8	266633	17.3	19.5	306648	17.4	19.9	397600	17.4	19.6
227757	17.1	19.4	481809	17.2	20.1	416233	17.2	19.1	405783	17.3	20.2	323320	17.4	20.4	482959	17.4	20.3
154459	17.1	19.8	280414	17.2	18.2	228954	17.2										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
445708	17.4	21.3	347569	17.5	18.7	133446	17.6	19.0	130429	17.7	17.5	102544	17.8	18.9	108337	17.8	18.3
130284	17.5	19.2	196960	17.5	18.8	160906	17.6	19.1	168572	17.7	17.5	494140	17.8	20.0	182293	17.8	20.5
43410	17.5	18.5	227630	17.5	20.0	397325	17.6	19.5	480513	17.7	20.8	92074	17.8	18.0	444538	17.8	19.4
140188	17.5	18.9	349199	17.5	19.6	5627	17.6	15.9	332230	17.7	20.9	287756	17.8	19.2	110644	17.8	19.1
30113	17.5	18.4	189517	17.5	19.8	361318	17.6	20.1	160582	17.7	20.9	302685	17.8	19.7	2911	17.8	15.9
209671	17.5	18.1	2536	17.5	14.5	199783	17.6	19.7	26565	17.7	18.1	232092	17.8	19.6	168576	17.8	18.1
309907	17.5	20.1	174262	17.5	19.6	485694	17.6	20.3	225401	17.7	20.7	337641	17.8	20.2	241279	17.8	20.6
180651	17.5	20.6	328880	17.5	20.2	309535	17.6	20.2	317725	17.7	20.5	1370	17.8	16.5	478599	17.8	20.8
103651	17.5	19.4	272539	17.5	21.6	483510	17.6	19.8	53862	17.7	18.1	362378	17.8	20.6	167369	17.8	19.7
116359	17.5	19.2	100954	17.5	18.8	321976	17.6	20.1	149116	17.7	19.0	23336	17.8	17.9	244842	17.8	20.3
93761	17.5	18.7	400125	17.5	20.0	373241	17.6	20.6	22584	17.7	18.4	316663	17.8	20.0	273207	17.8	19.4
382652	17.5	20.0	450625	17.5	20.4	148596	17.6	20.4	274224	17.7	21.7	480833	17.8	18.8	119794	17.8	19.3
80555	17.5	18.2	520127	17.5	21.1	474299	17.6	19.1	52149	17.7	19.5	267969	17.8	19.6	68537	17.8	17.2
440826	17.5	19.6	340927	17.5	20.6	218547	17.6	18.1	407651	17.7	19.9	120326	17.8	19.4	231050	17.8	20.5
399150	17.5	21.1	228477	17.5	19.9	326800	17.6	21.4	316680	17.7	20.8	272314	17.8	18.9	432596	17.8	20.2
18442	17.5	17.2	269502	17.6	19.4	521914	17.6	20.8	77794	17.7	18.8	378010	17.8	20.0	518328	17.9	20.8
255800	17.5	19.8	254844	17.6	19.5	167171	17.6	19.1	160656	17.7	17.3	394541	17.8	21.5	339078	17.9	20.7
74584	17.5	19.6	83161	17.6	18.9	457421	17.6	20.9	481969	17.7	21.3	271341	17.8	19.3	99894	17.9	18.9
454277	17.5	21.8	267548	17.6	19.8	145122	17.6	19.6	259860	17.7	19.9	268197	17.8	20.7	251371	17.9	19.9
373906	17.5	20.4	196298	17.6	20.3	490092	17.6	21.2	57186	17.7	17.6	272229	17.8	19.3	228490	17.9	19.1
181959	17.5	19.1	448314	17.6	19.6	6062	17.6	17.5	25951	17.7	18.8	15912	17.8	17.4	37961	17.9	19.2
108412	17.5	19.8	294251	17.6	18.9	71601	17.6	18.5	219999	17.7	21.3	157215	17.8	20.1	339977	17.9	20.3
129542	17.5	18.7	232695	17.6	19.4	150436	17.6	19.4	368281	17.7	21.4	172314	17.8	18.8	52333	17.9	17.5
373112	17.5	19.6	437088	17.6	21.9	314330	17.6	20.5	302587	17.7	20.1	412364	17.8	22.2	490931	17.9	20.3
150381	17.5	18.4	77074	17.6	19.2	238250	17.6	20.8	298067	17.7	19.5	496607	17.8	21.3	57009	17.9	19.3
393242	17.5	19.8	357788	17.6	21.4	309950	17.6	19.9	127333	17.7	19.3	202107	17.8	20.6	330746	17.9	20.9
466549	17.5	19.8	278675	17.6	21.5	308768	17.6	21.0	127462	17.7	18.8	481905	17.8	20.8	28591	17.9	18.4
396356	17.5	20.4	404481	17.6	20.7	77322	17.6	19.2	123797	17.7	19.0	355413	17.8	20.8	44293	17.9	17.5
334119	17.5	19.5	51262	17.6	17.5	444502	17.6	20.2	409633	17.7	19.8	154727	17.8	20.4	81870	17.9	20.1
476554	17.5	21.5	521793	17.6	20.5	416531	17.6	20.6	304095	17.7	21.5	111360	17.8	19.6	490423	17.9	20.2
236218	17.5	19.8	18301	17.6	16.0	430665	17.6	19.8	439100	17.7	20.2	186948	17.8	20.8	77002	17.9	17.9
250126	17.5	20.6	403127	17.6	20.6	302646	17.6	19.4	491458	17.7	20.6	446529	17.8	20.7	131295	17.9	20.1
216990	17.5	19.2	460863	17.6	20.7	158694	17.6	19.3	515576	17.7	21.0	309996	17.8	20.2	145093	17.9	19.8
22512	17.5	18.5	53149	17.6	18.4	248222	17.6	19.6	214907	17.7	19.2	362695	17.8	20.5	285814	17.9	18.9
370495	17.5	19.8	37692	17.6	18.9	419250	17.6	19.9	20223	17.7	17.3	93520	17.8	19.8	56803	17.9	19.3
229874	17.5	19.6	55792	17.6	18.8	7062	17.6	18.7	341974	17.7	20.2	47265	17.8	19.6	91356	17.9	18.4
402205	17.5	20.9	365427	17.6	19.6	389855	17.6	19.9	199604	17.7	19.6	226913	17.8	20.4	261892	17.9	20.0
51867	17.5	16.4	9952	17.6	16.3	210058	17.6	20.3	443255	17.7	21.5	197432	17.8	18.8	307607	17.9	20.0
130276	17.5	20.1	180950	17.6	20.1	81380	17.6	17.8	433404	17.7	20.1	492878	17.8	21.2	22015	17.9	16.3
327126	17.5	20.9	67180	17.6	18.0	305774	17.6	20.6	278225	17.7	20.9	437763	17.8	20.5	355406	17.9	20.2
156038	17.5	19.4	225357	17.6	19.5	152782	17.7	18.5	91205	17.7	23.8	270203	17.8	19.8	295656	17.9	20.9
47606	17.5	17.7	359754	17.6	20.6	128376	17.7	20.4	446634	17.7	21.1	405394	17.8	22.0	7834	17.9	16.2
523362	17.5	20.7	136454	17.6	19.4	441193	17.7	21.1	231169	17.7	19.1	11286	17.8	16.8	483556	17.9	20.4
248782	17.5	19.9	361684	17.6	19.8	490504	17.7	20.0	444560	17.7	19.9	322259	17.8	19.6	260325	17.9	19.2
477302	17.5	21.7	91607	17.6	18.6	442867	17.7	20.5	53487	17.7	18.8	8097	17.8	16.0	206517	17.9	18.6
332738	17.5	20.1	438896	17.6	20.2	517391	17.7	21.8	10129	17.7	16.7	494133	17.8	21.1	459410	17.9	21.7
448574	17.5	20.8	397189	17.6	19.7	117370	17.7	17.9	152342	17.7	19.2	152951	17.8	19.9	25420	17.9	18.3
259470	17.5	20.1	282148	17.6	19.7	134001	17.7	18.5	411138	17.7	20.5	422187	17.8	20.7	522229	17.9	19.8
278573	17.5	19.9	444598	17.6	20.6	363393	17.7	19.9	490168	17.7	22.1	418554	17.8	21.0	384818	17.9	20.5
101998	17.5	19.2	276776	17.6	20.2	430827	17.7	22.3	458380	17.7	20.8	377203	17.8	19.5	447158	17.9	20.9
437984	17.5	20.7	514013	17.6	20.7	432246	17.7	21.2	373585	17.7	19.7	117889	17.8	19.8	274455	17.9	20.8
16616	17.5	17.3	161566	17.6	20.5	159084	17.7	19.1	489168	17.7	21.1	128175	17.8	18.1	113398	17.9	18.2
15858	17.5	18.4	40882	17.6	18.8	353369	17.7	20.4	82428	17.7	19.6	112632	17.8	20.7	97119	17.9	18.4
53486	17.5	17.7	359877	17.6	19.8	364931	17.7	20.6	261768	17.7	19.4	315624	17.8	20.2	512907	17.9	20.7
494540	17.5	19.4	213279	17.6	20.6	179271	17.7	20.2	233236	17.7	20.2	48386	17.8	18.6	511077	17.9	20.4
185736	17.5	17.9	48439	17.6	15.7	515486	17.7	20.4	268719	17.7	20.3	346334	17.8	20.8	230670	17.9	19.2
404884	17.5	19.7	112084	17.6	18.8	68157	17.7	18.6	523133	17.7	20.6	42096	17.8	18.7	152814	17.9	19.6
148496	17.5	19.1	101316	17.6	19.5	285503	17.7	20.4	12605	17.7	18.3	283311	17.8	19.6	268671	17.9	20.2
517336	17.5	21.2	159417	17.6	19.1	512011	17.7	21.4	92769	17.7	19.7	115415	17.8	17.9	71282	17.9	17.7
354267	17.5	20.2	176634	17.6	19.8	390890	17.7	19.0	405617	17.7	20.9	326555	17.8	20.7	73400	17.9	18.8
519274	17.5	20.0	362676	17.6	20.0	493373	17.7	21.1	81160	17.7	18.4	85088	17.8	18.5	18098	17.9	17.4
242907	17.5	20.6	404887	17.6	20.5	286415	17.7	19.3	457262	17.7	20.9	173426	17.8	19.6	75203	17.9	18.1
7268	17.5	16.3	458507	17.6	21.1	374634	17.7	21.7	447922	17.7	20.8	403899	17.8	19.0	413848	17.9	20.1
27338	17.5	18.8	326644	17.6	20.3	16469	17.7	19.0	420958	17.7	20.6	13279	17.8	17.9	331681	17.9	21.9
91979	17.5	19.1	266494	17.6	20.6	397957	17.7	20.1	10535	17.7	16.9	459379	17.8	20.7	449568	17.9	21.6
66191	17.5	17.5	143005	17.6	19.6	177610	17.7	20.0	493754	17.7	21.1	244276	17.8	18.5	148484	17.9	18.3
457453	17.5	21.0	517393	17.6	20.6	267962	17.7	20.3	209846	17.7	19.7	228710	17.8	20.2	105285	17.9	19.3
514247	17.5	20.5	22277	17.6	17.5	372127	17.7	20.0	219501	17.8	20.5	339898	17.8	21.8	2982	17.9	15.6
84008	17.5	18.4	22169	17.6	18.6	5547	17.7	16.3	19607								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
143321	17.9	18.4	465021	18.0	20.7	283622	18.1	19.5	510338	18.1	21.0	256306	18.2	19.8	493445	18.3	20.4
274645	17.9	19.7	306714	18.0	18.4	89135	18.1	18.8	515293	18.1	20.2	389391	18.2	19.4	518915	18.3	19.3
476545	17.9	21.8	219234	18.0	19.2	382610	18.1	20.0	382022	18.2	20.2	120335	18.2	18.9	497547	18.3	20.6
447637	17.9	20.0	335222	18.0	20.1	383426	18.1	20.1	437132	18.2	21.3	487379	18.2	21.2	174959	18.3	19.0
205974	17.9	20.5	4122	18.0	15.3	112784	18.1	18.5	495356	18.2	21.3	420125	18.2	21.3	231638	18.3	20.2
320989	17.9	20.5	77313	18.0	18.7	127087	18.1	19.4	487549	18.2	20.9	273801	18.2	20.5	120917	18.3	19.2
269001	17.9	20.2	150597	18.0	19.4	384700	18.1	20.9	327739	18.2	20.8	58058	18.2	19.6	445205	18.3	21.2
24816	17.9	17.3	405449	18.0	19.8	70946	18.1	17.1	386062	18.2	20.8	195082	18.2	19.1	307344	18.3	19.6
401150	17.9	20.6	26178	18.0	17.5	38400	18.1	18.7	455672	18.2	22.0	74155	18.2	16.4	5065	18.3	16.5
193205	17.9	18.9	335256	18.0	21.3	192590	18.1	19.8	457243	18.2	20.0	14971	18.2	17.2	24113	18.3	16.6
73466	17.9	18.9	78676	18.0	18.8	395904	18.1	19.0	410873	18.2	19.8	231647	18.2	19.6	390937	18.3	21.1
262545	17.9	20.0	349578	18.0	20.7	485741	18.1	21.0	265143	18.2	19.9	442321	18.2	22.1	247254	18.3	20.5
104914	17.9	19.5	345135	18.0	19.4	141183	18.1	19.4	136824	18.2	18.7	298272	18.2	17.9	471972	18.3	21.8
420659	17.9	20.2	112995	18.0	19.1	327980	18.1	19.8	399638	18.2	20.1	272255	18.2	19.2	523353	18.3	20.7
33486	17.9	17.7	50796	18.0	18.3	61131	18.1	17.8	59436	18.2	18.7	433427	18.2	21.3	451253	18.3	21.1
128430	17.9	20.4	228983	18.0	20.7	288442	18.1	19.8	184302	18.2	20.5	96843	18.2	18.0	344431	18.3	19.7
493961	17.9	20.2	53704	18.0	18.2	350322	18.1	20.5	74418	18.2	19.2	455684	18.2	21.3	414679	18.3	20.5
222158	17.9	19.7	468313	18.0	19.1	485680	18.1	21.0	353024	18.2	19.6	328692	18.2	20.1	349224	18.3	20.4
388589	17.9	21.1	226229	18.0	19.1	48272	18.1	19.1	329042	18.2	20.8	410680	18.2	19.5	196135	18.3	19.3
372239	17.9	20.4	78626	18.0	19.9	452020	18.1	21.1	181511	18.2	20.3	257408	18.2	18.9	259758	18.3	18.5
290040	17.9	18.4	223954	18.0	20.1	189261	18.1	18.0	168008	18.2	19.0	298510	18.2	20.3	136142	18.3	19.7
451513	17.9	20.9	283243	18.0	19.7	517291	18.1	21.4	342277	18.2	21.5	344908	18.2	19.5	217529	18.3	19.8
107863	17.9	18.7	271273	18.0	19.8	438538	18.1	21.3	157057	18.2	19.7	345334	18.2	20.9	171092	18.3	19.8
218154	17.9	18.5	458581	18.0	20.3	46702	18.1	17.4	297126	18.2	20.3	441225	18.2	19.9	521833	18.3	20.7
141734	17.9	19.8	258179	18.0	20.3	177600	18.1	20.4	124440	18.2	19.1	225063	18.2	19.8	516496	18.3	20.6
490437	17.9	20.6	114360	18.0	18.3	381772	18.1	18.1	98311	18.2	18.6	119053	18.2	20.1	293203	18.3	20.6
168470	17.9	19.4	267278	18.0	20.6	202774	18.1	19.5	294474	18.2	18.9	89343	18.2	19.0	361868	18.3	21.5
5293	17.9	14.9	179003	18.0	20.2	197958	18.1	19.9	404902	18.2	20.9	186280	18.2	19.4	386532	18.3	21.4
515708	17.9	20.4	65361	18.0	19.5	27146	18.1	17.3	54005	18.2	18.4	159732	18.2	18.7	206420	18.3	19.2
457292	17.9	19.4	206631	18.0	19.3	329616	18.1	20.8	268667	18.2	20.0	281289	18.2	20.4	493296	18.3	20.6
119189	17.9	19.5	480336	18.0	20.5	72811	18.1	18.8	65261	18.2	18.2	76213	18.2	19.1	298548	18.3	19.8
169590	17.9	20.2	265906	18.0	20.4	70677	18.1	18.5	256930	18.2	20.7	183184	18.2	19.9	455903	18.3	20.8
442505	17.9	20.5	70948	18.0	20.0	228791	18.1	18.7	421286	18.2	20.8	457855	18.2	20.8	24405	18.3	17.9
414701	17.9	19.6	327984	18.0	20.2	42470	18.1	18.0	387717	18.2	21.3	174392	18.2	19.7	1753	18.3	15.6
326505	17.9	20.5	446411	18.0	20.7	227687	18.1	19.6	11830	18.2	15.8	293844	18.2	20.5	414523	18.3	21.7
348148	17.9	19.7	385664	18.0	20.6	500422	18.1	20.9	294117	18.2	18.7	44838	18.2	18.1	408445	18.3	20.5
3877	17.9	16.2	101039	18.0	19.2	216753	18.1	20.9	185815	18.2	19.8	88972	18.2	18.8	267831	18.3	19.7
279190	17.9	20.1	49201	18.0	18.3	487120	18.1	20.8	480061	18.2	21.6	237804	18.2	19.3	134039	18.3	18.0
183236	17.9	19.9	272032	18.0	19.8	310171	18.1	19.8	70437	18.2	18.4	164508	18.2	19.8	131322	18.3	19.4
37399	17.9	18.8	414358	18.0	20.9	229270	18.1	19.3	234304	18.2	17.9	418669	18.2	20.4	251240	18.3	20.0
152837	17.9	19.4	418769	18.0	20.2	300344	18.1	20.8	281994	18.2	19.8	516921	18.2	20.7	105381	18.3	18.2
297970	17.9	20.0	85050	18.0	17.5	307913	18.1	19.5	121071	18.2	18.2	57167	18.2	18.2	97753	18.3	18.7
102602	17.9	17.7	187502	18.0	18.8	363501	18.1	20.5	431317	18.2	21.4	413271	18.2	20.4	321641	18.3	19.9
224657	17.9	19.7	39251	18.0	18.9	454383	18.1	20.5	347171	18.2	21.7	177539	18.2	19.4	115548	18.3	18.0
400863	17.9	21.0	152433	18.0	20.7	164942	18.1	18.0	223472	18.2	19.9	460009	18.2	19.9	493193	18.3	20.6
414721	17.9	19.5	71786	18.0	17.9	404271	18.1	21.1	491554	18.2	21.2	116731	18.2	19.1	215178	18.3	20.1
401779	17.9	20.8	324565	18.0	20.9	79955	18.1	18.6	289154	18.2	19.4	520665	18.2	20.8	20213	18.3	17.6
400209	17.9	20.3	464137	18.0	19.5	85722	18.1	18.4	446701	18.2	21.3	101834	18.2	19.9	85489	18.3	20.1
84140	17.9	18.3	403081	18.0	21.0	80804	18.1	19.5	81140	18.2	19.6	418421	18.2	22.3	474274	18.3	20.6
366656	17.9	20.3	66899	18.0	16.6	394275	18.1	20.5	39669	18.2	19.1	326100	18.2	20.7	492201	18.3	22.2
339781	17.9	21.3	318196	18.0	19.4	522150	18.1	21.1	138435	18.2	19.4	60306	18.2	18.0	214330	18.3	21.2
8098	17.9	16.6	241326	18.0	20.3	519724	18.1	21.1	412383	18.2	20.7	370853	18.3	19.8	52992	18.3	17.9
221422	17.9	18.9	373061	18.0	20.3	178157	18.1	19.7	124098	18.2	20.1	69346	18.3	18.5	454745	18.3	20.6
220287	17.9	18.5	43443	18.0	17.6	96516	18.1	19.1	277905	18.2	20.2	41208	18.3	18.9	450133	18.3	20.1
155047	17.9	19.5	322045	18.1	20.8	37039	18.1	18.3	173206	18.2	18.4	405889	18.3	20.6	411143	18.3	20.3
368538	17.9	19.3	239189	18.1	19.7	66569	18.1	18.6	76878	18.2	18.2	365694	18.3	20.2	312359	18.3	20.2
232696	17.9	19.0	469830	18.1	19.9	355336	18.1	20.0	448999	18.2	20.5	195668	18.3	18.6	35013	18.3	19.3
370357	17.9	20.1	25525	18.1	17.9	441773	18.1	20.1	21325	18.2	17.2	316411	18.3	20.8	517771	18.3	20.8
238318	17.9	19.2	154512	18.1	20.5	60953	18.1	17.7	358289	18.2	20.5	129289	18.3	20.3	211211	18.3	19.8
222005	17.9	18.7	278617	18.1	20.4	51488	18.1	18.7	475770	18.2	19.5	131344	18.3	19.9	419861	18.3	20.6
442883	17.9	20.5	386717	18.1	18.9	442329	18.1	20.5	420195	18.2	19.7	144508	18.3	19.2	218832	18.3	20.0
87191	17.9	19.5	271833	18.1	20.1	118758	18.1	19.6	154422	18.2	18.4	356025	18.3	21.1	127325	18.3	19.3
19453	17.9	17.7	490221	18.1	21.3	484366	18.1	20.7	238859	18.2	18.8	521286	18.3	21.2	82013	18.3	20.2
452638	17.9	20.9	445620	18.1	21.1	181704	18.1	20.5	248237	18.2	20.1	438771	18.3	20.4	369158	18.3	20.1
197415	17.9	19.0	185148	18.1	19.3	10654	18.1	17.6	450039	18.2	20.1	111572	18.3	19.1	118216	18.3	19.3
333335	17.9	20.1	332267	18.1	20.4	191445	18.1	19.6	69698	18.2	19.7	449806	18.3	20.8	233529	18.3	20.2
99781	17.9	19.4	452603	18.1	21.8	383101	18.1	20.8	282002	18.2	20.0	161012	18.3	19.7	520119	18.3	21.1
444152	17.9	20.6	197990	18.1	19.6	120011	18.1	17.9	206540	18.2	19.5	232087	18.3	20.2	489262	18.3	20.5
511827	17.9	20.7	265277	18.1	19.5	12061	18.1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
488439	18.3	18.9	27212	18.4	18.0	362205	18.5	21.3	23822	18.6	17.7	305798	18.6	20.1	442211	18.7	22.0
360624	18.3	20.0	23768	18.4	17.4	497937	18.5	20.2	302708	18.6	19.3	460849	18.6	20.3	20730	18.7	18.3
251252	18.3	19.9	416421	18.4	20.4	364073	18.5	20.5	134119	18.6	20.0	482516	18.6	21.1	251504	18.7	19.9
83127	18.3	19.2	515176	18.4	20.6	411152	18.5	18.7	413766	18.6	20.5	216557	18.6	19.2	60550	18.7	18.6
56610	18.4	17.8	42360	18.4	18.5	354441	18.5	18.3	10232	18.6	18.4	295524	18.6	20.2	223069	18.7	19.9
255278	18.4	20.8	55765	18.4	17.7	150889	18.5	19.5	25912	18.6	17.5	290108	18.6	20.4	105718	18.7	19.4
16263	18.4	19.2	321167	18.4	20.2	298033	18.5	19.3	186759	18.6	20.8	505662	18.6	20.0	49511	18.7	17.4
387351	18.4	19.2	144869	18.4	19.6	177810	18.5	20.3	70273	18.6	18.6	399819	18.6	21.4	447887	18.7	20.9
291576	18.4	21.5	487533	18.4	20.8	150827	18.5	19.2	447485	18.6	20.6	44949	18.6	17.7	517922	18.7	20.0
48705	18.4	17.9	164646	18.4	19.9	48337	18.5	19.4	503415	18.6	18.8	269593	18.6	19.5	396703	18.7	20.5
177308	18.4	19.5	161300	18.4	19.8	145059	18.5	20.4	14139	18.6	16.9	462747	18.6	20.6	74876	18.7	18.5
19521	18.4	21.0	256935	18.4	19.9	486575	18.5	21.1	487998	18.6	20.0	161235	18.6	17.6	447535	18.7	20.5
384860	18.4	20.6	481925	18.4	19.5	82958	18.5	18.9	347370	18.6	19.7	411763	18.6	21.2	489136	18.7	21.4
339121	18.4	19.9	197890	18.4	20.6	27658	18.5	17.9	33015	18.6	18.3	17569	18.6	16.9	478623	18.7	21.1
298605	18.4	18.1	418524	18.4	20.6	407151	18.5	20.2	225126	18.6	20.3	85166	18.6	19.5	115053	18.7	18.7
481938	18.4	18.5	440097	18.4	19.8	366127	18.5	20.6	444562	18.6	19.8	99096	18.6	18.9	215773	18.7	20.5
473590	18.4	21.1	42981	18.4	19.5	407142	18.5	20.0	267171	18.6	19.8	185058	18.6	18.9	191988	18.7	20.4
70853	18.4	18.5	460876	18.4	21.1	332001	18.5	20.0	109189	18.6	20.8	11160	18.6	16.8	302738	18.7	20.4
401258	18.4	20.1	190700	18.4	19.2	110243	18.5	19.2	201328	18.6	19.5	80370	18.6	18.2	168425	18.7	20.6
312357	18.4	19.7	73973	18.4	18.6	274583	18.5	19.8	384341	18.6	19.2	487089	18.6	21.2	42856	18.7	17.4
417401	18.4	20.0	70935	18.4	17.5	61657	18.5	18.6	211325	18.6	19.7	415509	18.6	20.6	486441	18.7	21.1
336831	18.4	21.3	308779	18.4	20.2	513619	18.5	21.5	135728	18.6	19.4	493299	18.6	20.4	489079	18.7	20.6
459523	18.4	21.1	413352	18.4	19.0	385713	18.5	20.0	245913	18.6	21.2	460981	18.6	19.8	97544	18.7	19.2
410090	18.4	20.9	454067	18.4	21.0	168726	18.5	19.6	108644	18.6	19.4	327680	18.6	20.6	154390	18.7	19.0
99898	18.4	20.4	340182	18.4	19.1	328491	18.5	21.1	198175	18.6	19.1	31563	18.6	17.4	158880	18.7	20.1
483468	18.4	21.1	380134	18.4	20.3	110239	18.5	20.3	441249	18.6	19.7	300434	18.6	21.8	168588	18.7	18.7
80903	18.4	19.2	178239	18.4	20.0	118318	18.5	18.3	190950	18.6	19.9	164947	18.6	18.5	450893	18.7	19.7
301825	18.4	21.5	152928	18.4	19.7	400895	18.5	20.8	356744	18.6	20.0	232120	18.6	18.9	244942	18.7	20.6
520203	18.4	20.4	82305	18.4	19.2	138947	18.5	17.8	172088	18.6	19.1	147002	18.6	18.9	139370	18.7	19.5
446022	18.4	19.5	245646	18.4	20.1	53647	18.5	18.9	375133	18.6	19.9	210508	18.6	20.4	199107	18.7	19.3
474970	18.4	21.1	4221	18.4	17.0	317447	18.5	20.3	227838	18.6	19.4	159127	18.6	19.2	274418	18.7	20.1
464372	18.4	19.9	80630	18.4	19.3	490585	18.5	21.3	432691	18.6	21.3	310343	18.6	20.9	112821	18.7	20.0
132318	18.4	20.0	329702	18.4	19.5	34496	18.5	18.5	56255	18.6	19.2	446782	18.6	21.1	185619	18.7	19.9
119119	18.4	19.5	517777	18.4	20.9	174936	18.5	19.6	324208	18.6	21.6	332829	18.6	18.8	74075	18.7	18.9
506439	18.4	22.6	401368	18.4	21.0	152730	18.5	18.5	56300	18.6	19.8	42811	18.6	16.7	231128	18.7	19.7
512131	18.4	21.6	144190	18.4	19.3	295257	18.5	20.9	329668	18.6	20.4	38437	18.6	18.8	421567	18.7	20.8
316231	18.4	20.7	297349	18.4	18.1	477344	18.5	20.1	302662	18.6	18.8	458458	18.6	20.8	477324	18.7	19.6
354491	18.4	18.8	215299	18.4	19.4	225168	18.5	21.0	368055	18.6	20.6	485613	18.6	20.8	484287	18.7	22.2
312740	18.4	20.1	27060	18.4	17.2	330178	18.5	20.1	227099	18.6	20.0	447994	18.6	20.7	263445	18.7	20.0
326497	18.4	20.2	120470	18.4	19.2	225641	18.5	21.1	287997	18.6	20.2	467963	18.6	20.2	151899	18.7	19.5
474755	18.4	22.0	400361	18.4	20.7	75591	18.5	17.6	361196	18.6	19.5	323588	18.7	20.3	57798	18.7	19.6
86814	18.4	20.2	156773	18.4	19.2	102727	18.5	19.3	53360	18.6	17.8	461402	18.7	20.1	369861	18.7	21.1
267564	18.4	20.2	144781	18.4	19.1	221990	18.5	20.5	49294	18.6	17.6	358156	18.7	21.4	86649	18.7	18.2
457400	18.4	21.1	440827	18.5	19.8	366815	18.5	19.7	101770	18.6	18.8	340140	18.7	20.5	152176	18.7	20.3
269663	18.4	19.5	486992	18.5	20.6	58447	18.5	18.6	272060	18.6	20.5	266466	18.7	20.5	168685	18.7	20.4
520736	18.4	20.5	405460	18.5	19.7	262753	18.5	20.6	174055	18.6	20.1	154469	18.7	19.3	313551	18.7	20.0
4173	18.4	15.8	422016	18.5	21.3	77364	18.5	19.6	246387	18.6	20.0	418755	18.7	20.2	243265	18.7	20.0
78815	18.4	17.6	252008	18.5	20.4	291809	18.5	20.6	319457	18.6	20.2	475250	18.7	19.6	97466	18.7	19.2
74711	18.4	17.6	120860	18.5	20.6	325387	18.5	20.8	159006	18.6	20.9	412785	18.7	20.6	447924	18.7	20.3
92949	18.4	17.6	16558	18.5	15.7	31293	18.5	18.4	454663	18.6	20.3	118559	18.7	19.2	519735	18.7	20.7
458079	18.4	20.3	465974	18.5	20.0	14232	18.5	16.5	272344	18.6	20.1	173060	18.7	19.3	280636	18.7	19.2
167321	18.4	19.4	221629	18.5	19.0	113941	18.5	19.0	139394	18.6	18.9	342050	18.7	21.8	460084	18.7	20.5
440894	18.4	20.7	45717	18.5	18.4	122748	18.5	18.8	270762	18.6	20.1	179266	18.7	19.9	436850	18.7	20.8
400117	18.4	21.3	246736	18.5	21.3	488720	18.5	20.6	167336	18.6	20.6	333739	18.7	21.0	19932	18.7	16.9
134816	18.4	18.5	29144	18.5	16.1	334489	18.5	21.1	273588	18.6	20.0	303619	18.7	20.6	462991	18.7	19.9
464603	18.4	21.1	446569	18.5	20.6	352143	18.5	19.7	418803	18.6	20.8	231496	18.7	20.1	197607	18.7	20.5
328026	18.4	20.0	27331	18.5	17.6	484170	18.5	20.3	337069	18.6	22.8	481802	18.7	20.2	47953	18.7	18.9
116254	18.4	19.5	46914	18.5	17.1	314356	18.5	19.9	459917	18.6	20.7	99858	18.7	19.3	404393	18.7	20.5
40131	18.4	17.8	303127	18.5	19.5	358576	18.5	20.1	42580	18.6	18.1	120971	18.7	18.7	473347	18.7	19.6
167807	18.4	19.4	267250	18.5	20.5	475866	18.5	20.4	228918	18.6	19.5	21590	18.7	17.6	21208	18.7	18.0
265434	18.4	19.7	459713	18.5	21.1	449141	18.5	21.0	459354	18.6	20.7	369029	18.7	19.5	373127	18.7	21.2
353039	18.4	20.0	168419	18.5	18.7	64305	18.5	18.8	77185	18.6	20.0	256986	18.7	20.1	406240	18.7	20.9
188503	18.4	19.6	370899	18.5	20.1	172671	18.5	19.2	180056	18.6	20.1	327778	18.7	20.6	97662	18.7	19.2
304139	18.4	21.0	463010	18.5	21.5	33056	18.5	17.1	329444	18.6	21.1	219197	18.7	18.6	490938	18.7	21.1
51016	18.4	18.0	344997	18.5	18.1	337571	18.5	20.9	15596	18.6	17.8	132415	18.7	19.4	401669	18.7	20.9
218137	18.4	20.4	438337	18.5	19.8	517764	18.5	21.5	439519	18.6	20.6	158579	18.7	19.6	141673	18.7	20.2
244298	18.4	20.0	77455	18.5	17.9	478496	18.5	19.9	515042	18.6	21.2	100331	18.7	19.7	483436	18.7	20.4
351037	18.4	20.1	196906	18.5	18.8	471218	18.5	20.2	437979	18.6	21.2	447665	18.7	20.5	340219	18.7	20.1
58903	18.4	19.5	215965	18.5	20.6	197449	18.5										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
490538	18.8	20.6	278712	18.8	20.9	443252	18.9	20.3	202776	18.9	19.5	152236	19.1	19.8	464355	19.1	20.0
390721	18.8	20.7	520620	18.8	21.2	355436	18.9	19.9	394881	18.9	18.8	82823	19.1	18.2	137603	19.1	19.7
296812	18.8	19.8	421136	18.8	21.0	381706	18.9	20.9	116639	18.9	17.9	60277	19.1	18.2	441903	19.1	20.8
488190	18.8	20.6	332995	18.8	20.3	287163	18.9	21.2	212959	18.9	20.8	328810	19.1	20.0	417395	19.1	20.7
208770	18.8	18.8	493948	18.8	21.2	223885	18.9	19.0	443981	18.9	22.6	275917	19.1	20.4	386699	19.1	20.1
453739	18.8	21.0	479530	18.8	20.8	321787	18.9	19.6	226430	18.9	20.0	308812	19.1	20.1	177514	19.1	19.6
231419	18.8	19.5	3780	18.8	16.1	420142	18.9	20.1	495389	18.9	19.6	310166	19.1	20.7	200281	19.1	19.8
396278	18.8	19.6	312234	18.8	20.2	300430	18.9	19.2	210020	19.0	19.1	490051	19.1	20.6	383097	19.1	19.7
320042	18.8	20.3	414010	18.8	20.8	85205	18.9	18.2	204149	19.0	19.2	142607	19.1	19.0	79046	19.1	18.4
185157	18.8	19.7	24296	18.8	18.5	274398	18.9	20.9	326601	19.0	21.0	74873	19.1	17.9	74148	19.1	17.9
329694	18.8	19.5	9995	18.8	18.3	171656	18.9	20.4	47350	19.0	17.0	24833	19.1	18.3	259452	19.1	20.2
517342	18.8	21.6	247776	18.8	19.3	84686	18.9	19.1	354649	19.0	20.5	175242	19.1	19.9	154794	19.1	19.6
302720	18.8	19.6	486287	18.8	20.6	364637	18.9	20.1	387747	19.0	21.3	77613	19.1	17.1	59186	19.1	19.9
439273	18.8	19.4	347978	18.8	19.7	263064	18.9	20.6	326062	19.0	20.0	180250	19.1	19.0	159962	19.1	19.2
202792	18.8	19.5	419422	18.8	20.7	447498	18.9	20.9	519098	19.0	20.7	270264	19.1	20.1	191394	19.1	19.7
103363	18.8	17.2	180727	18.8	20.2	427176	18.9	19.5	146292	19.0	18.6	449549	19.1	21.7	413164	19.1	20.3
59753	18.8	18.4	458582	18.9	20.8	139908	18.9	18.9	287710	19.0	19.9	266530	19.1	20.1	344165	19.1	18.0
521930	18.8	21.3	56233	18.9	17.5	111333	18.9	19.3	361409	19.0	20.8	363678	19.1	20.5	383104	19.1	19.6
272282	18.8	19.9	431755	18.9	21.5	102459	18.9	20.1	179121	19.0	19.7	489335	19.1	20.4	280429	19.1	19.0
197763	18.8	20.5	303035	18.9	18.7	60497	18.9	19.0	366688	19.0	20.4	128247	19.1	19.6	359817	19.1	20.0
269832	18.8	18.1	324880	18.9	19.5	45512	18.9	18.3	181574	19.0	20.1	316601	19.1	19.7	439216	19.1	20.7
493446	18.8	20.8	263471	18.9	20.3	228685	18.9	19.6	296136	19.0	19.5	474344	19.1	21.3	60507	19.1	17.9
250496	18.8	20.0	413773	18.9	20.3	208856	18.9	19.5	491030	19.0	20.0	26788	19.1	19.1	115952	19.1	19.3
215962	18.8	20.4	409030	18.9	21.9	248264	18.9	20.2	420232	19.0	20.2	6065	19.1	16.4	220329	19.1	20.1
113358	18.8	18.9	99603	18.9	18.8	57208	18.9	17.3	248821	19.0	20.2	212878	19.1	20.7	405510	19.1	18.7
518242	18.8	20.1	101634	18.9	18.2	256366	18.9	18.3	16196	19.0	17.6	268627	19.1	19.9	293521	19.1	20.5
147172	18.8	18.5	243027	18.9	19.9	75214	18.9	18.4	251470	19.0	19.9	287363	19.1	21.0	30003	19.1	18.7
43957	18.8	17.0	226408	18.9	19.6	419397	18.9	20.5	155229	19.0	19.8	369150	19.1	20.8	274935	19.1	21.1
239583	18.8	20.0	369191	18.9	19.6	319986	18.9	20.3	441838	19.0	20.5	113312	19.1	20.9	327054	19.1	20.7
456826	18.8	22.4	411067	18.9	20.2	224791	18.9	20.0	196250	19.0	19.8	475703	19.1	21.3	3623	19.1	15.8
374680	18.8	21.0	209891	18.9	19.9	238681	18.9	19.7	112305	19.0	19.0	101281	19.1	18.1	327547	19.1	21.5
179264	18.8	19.8	285280	18.9	19.7	311300	18.9	20.8	460262	19.0	19.7	384344	19.1	19.4	6439	19.1	17.1
172217	18.8	18.5	112932	18.9	19.6	41373	18.9	18.4	187738	19.0	19.1	161495	19.1	19.7	272134	19.1	20.0
156793	18.8	19.8	330372	18.9	20.1	443619	18.9	19.0	14406	19.0	18.3	362514	19.1	20.3	302783	19.1	19.1
134981	18.8	19.9	264789	18.9	20.3	419326	18.9	21.0	368316	19.0	20.8	482504	19.1	20.2	265095	19.1	20.1
230196	18.8	18.8	331084	18.9	20.5	274393	18.9	20.1	364400	19.0	20.1	51403	19.1	19.2	171542	19.2	17.9
265984	18.8	19.9	54042	18.9	18.6	283997	18.9	19.8	104215	19.0	18.9	404984	19.1	20.3	306282	19.2	20.8
493274	18.8	21.3	54295	18.9	17.6	48472	18.9	17.8	278160	19.0	20.7	2298	19.1	15.8	137492	19.2	18.4
11549	18.8	15.6	177979	18.9	19.2	149426	18.9	20.0	517286	19.0	20.5	370506	19.1	20.3	371757	19.2	21.7
132787	18.8	19.0	234606	18.9	20.0	271045	18.9	20.3	484356	19.0	19.9	153467	19.1	18.5	521874	19.2	20.6
229720	18.8	20.5	272631	18.9	21.1	269896	18.9	21.2	43059	19.0	19.4	202575	19.1	20.9	177808	19.2	18.6
222877	18.8	20.0	115395	18.9	18.3	489497	18.9	21.5	68502	19.0	18.7	288971	19.1	21.1	270062	19.2	20.4
309977	18.8	19.8	373064	18.9	20.8	283213	18.9	20.9	369428	19.0	20.5	167784	19.1	18.6	332222	19.2	20.5
305256	18.8	20.2	484461	18.9	20.7	79374	18.9	19.3	117012	19.0	20.0	321254	19.1	20.7	210436	19.2	19.5
515261	18.8	20.4	137439	18.9	20.2	112272	18.9	18.5	272754	19.0	20.4	384273	19.1	21.3	288912	19.2	20.6
320444	18.8	19.5	24183	18.9	17.1	149950	18.9	19.1	457458	19.0	22.0	148170	19.1	17.1	307876	19.2	19.5
456028	18.8	20.3	215352	18.9	18.3	133291	18.9	19.5	137222	19.0	19.4	482282	19.1	20.8	77768	19.2	18.7
249917	18.8	19.3	319696	18.9	19.9	307291	18.9	20.8	7460	19.0	17.9	12305	19.1	16.1	495683	19.2	20.9
465479	18.8	20.4	523325	18.9	20.9	447578	18.9	20.0	271553	19.0	19.5	173506	19.1	19.2	232951	19.2	19.4
190504	18.8	20.3	225333	18.9	19.5	457891	18.9	19.9	52613	19.0	18.2	120547	19.1	18.9	477829	19.2	20.5
86875	18.8	18.8	422546	18.9	21.2	239372	18.9	21.1	179960	19.0	19.3	157147	19.1	20.3	481836	19.2	18.9
297524	18.8	19.6	145138	18.9	18.7	319643	18.9	20.3	516927	19.0	20.0	272451	19.1	19.9	296139	19.2	20.5
243498	18.8	19.6	414956	18.9	20.8	393671	18.9	20.2	277043	19.0	20.4	165557	19.1	19.3	276445	19.2	19.0
480144	18.8	20.1	25503	18.9	17.5	461619	18.9	20.5	53372	19.0	19.1	339946	19.1	21.5	132770	19.2	18.4
25021	18.8	18.9	270243	18.9	19.3	215203	18.9	20.6	407139	19.0	19.7	349291	19.1	20.7	404122	19.2	20.7
458523	18.8	20.6	234579	18.9	18.7	234691	18.9	20.9	414638	19.0	20.3	322446	19.1	19.8	336666	19.2	20.2
422896	18.8	20.7	65778	18.9	19.0	493241	18.9	20.8	118243	19.0	20.4	43722	19.1	16.5	92062	19.2	19.2
101922	18.8	19.4	520743	18.9	21.3	452617	18.9	21.3	464396	19.0	20.7	460581	19.1	20.3	513718	19.2	21.1
292368	18.8	20.7	26401	18.9	17.1	104214	18.9	19.3	329658	19.0	20.5	170517	19.1	20.0	101486	19.2	19.1
223036	18.8	19.6	45519	18.9	19.0	245314	18.9	19.5	266625	19.0	20.7	269884	19.1	20.2	269886	19.2	20.2
268580	18.8	20.3	138467	18.9	19.7	410599	18.9	21.6	512444	19.0	21.0	222201	19.1	19.6	49895	19.2	18.5
82121	18.8	18.7	303072	18.9	18.7	44720	18.9	18.2	104986	19.0	19.1	229295	19.1	18.9	230285	19.2	19.0
3360	18.8	19.6	233685	18.9	19.8	139748	18.9	18.8	255557	19.1	20.7	134934	19.1	19.7	46002	19.2	18.8
77411	18.8	19.5	110649	18.9	19.1	64190	18.9	18.3	229487	19.1	19.4	172270	19.1	19.6	231044	19.2	19.0
275999	18.8	19.9	415412	18.9	19.7	487542	18.9	20.9	15421	19.1	18.3	27248	19.1	18.9	100467	19.2	18.9
95607	18.8	19.5	361280	18.9	20.0	382035	18.9	20.0	385640	19.1	19.4	135950	19.1	19.5	431784	19.2	21.0
296223	18.8	20.4	46544	18.9	19.2	47678	18.9	18.0	74117	19.1	18.9	492157	19.1	21.2	223442	19.2	19.6
44630	18.8	18.3	368503	18.9	19.6	134969	18.9	17.3	40221	19.1	18.7	146641	19.1	19.5	252688	19.2	19.4
78344	18.8	18.0	452586	18.9	21.0	98902											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
487490	19.2	19.7	198022	19.3	19.0	249972	19.3	20.2	339146	19.4	19.2	480331	19.5	21.4	167772	19.5	19.8
196438	19.2	21.3	414700	19.3	20.2	32143	19.3	17.1	97729	19.4	19.7	95952	19.5	17.0	221529	19.5	19.2
342483	19.2	20.8	114685	19.3	19.4	469390	19.3	19.8	304136	19.4	20.4	177477	19.5	19.5	102541	19.5	17.2
449618	19.2	21.4	452907	19.3	21.0	520829	19.3	21.2	220922	19.4	20.5	369005	19.5	20.6	309942	19.5	20.6
364859	19.2	20.5	517752	19.3	19.8	491664	19.3	20.3	47161	19.4	18.0	377071	19.5	20.9	269380	19.5	19.3
110258	19.2	19.1	68459	19.3	18.6	291314	19.3	20.3	398968	19.4	19.9	172894	19.5	19.9	147477	19.5	19.9
515121	19.2	20.8	438094	19.3	19.1	115290	19.3	18.6	173525	19.4	18.5	418745	19.5	20.7	179157	19.5	18.7
353098	19.2	19.9	176294	19.3	19.2	519733	19.3	20.9	462393	19.4	21.2	326856	19.5	19.3	358599	19.5	20.0
177147	19.2	19.2	245656	19.3	19.2	128311	19.3	18.6	58150	19.4	19.2	179674	19.5	20.3	197233	19.5	19.5
63910	19.2	18.2	49352	19.3	17.3	385719	19.3	20.1	42170	19.4	18.8	226485	19.5	19.9	103340	19.5	17.9
102715	19.2	18.9	435480	19.3	21.0	324826	19.3	20.7	134134	19.4	19.3	310863	19.5	20.0	169841	19.5	19.5
163062	19.2	18.4	488000	19.3	21.4	277080	19.3	19.4	433918	19.4	20.9	489991	19.5	21.2	181142	19.5	19.7
269174	19.2	20.4	269923	19.3	20.9	444603	19.3	19.6	435507	19.4	21.5	408604	19.5	20.9	174251	19.5	19.9
283271	19.2	21.2	322185	19.3	20.4	244319	19.3	20.4	385741	19.4	20.4	256004	19.5	21.2	304934	19.5	21.4
393195	19.2	20.1	181551	19.3	19.7	92130	19.3	17.9	266798	19.4	20.5	282935	19.5	20.3	198118	19.5	19.9
84125	19.2	19.2	295090	19.3	20.0	361330	19.3	20.4	403943	19.4	19.9	358564	19.5	19.9	195954	19.5	21.0
120304	19.2	20.7	228796	19.3	18.7	35436	19.3	17.5	114316	19.4	19.2	488256	19.5	20.8	454714	19.5	21.5
253384	19.2	20.5	221485	19.3	18.9	489789	19.3	20.3	514303	19.4	21.3	20484	19.5	17.1	5291	19.5	16.5
15155	19.2	17.2	7144	19.3	17.2	311738	19.3	18.8	398795	19.4	21.2	174253	19.5	20.3	172859	19.5	20.3
266934	19.2	21.0	445668	19.3	20.5	223301	19.3	19.4	340401	19.4	19.4	340997	19.5	19.9	174785	19.5	19.0
161385	19.2	19.0	19846	19.3	16.7	493041	19.3	20.8	78301	19.4	18.2	48548	19.5	16.8	180686	19.5	20.0
212765	19.2	19.5	401205	19.3	20.0	439883	19.3	19.1	403752	19.4	19.5	339010	19.5	21.6	55380	19.5	17.4
294584	19.2	19.8	399666	19.3	20.9	193732	19.4	21.0	298	19.4	13.6	393309	19.5	19.7	132997	19.5	19.8
390765	19.2	20.3	206315	19.3	20.0	485194	19.4	21.1	388090	19.4	19.1	320298	19.5	20.8	241227	19.5	20.1
105124	19.2	19.7	388658	19.3	20.9	253513	19.4	20.0	191386	19.4	19.4	347583	19.5	19.3	317101	19.5	18.6
415461	19.2	21.2	354455	19.3	20.2	207129	19.4	19.8	108401	19.4	19.3	218124	19.5	18.3	345829	19.5	20.9
75949	19.2	19.1	135837	19.3	20.0	418546	19.4	20.8	150428	19.4	20.2	464617	19.5	19.8	400770	19.5	21.2
408267	19.2	21.6	449937	19.3	21.0	508887	19.4	20.8	1391	19.4	15.3	243598	19.5	19.7	318211	19.5	20.1
247721	19.2	19.3	245807	19.3	21.5	274529	19.4	20.9	386986	19.4	19.3	344946	19.5	20.6	195965	19.5	20.4
150457	19.2	20.6	427111	19.3	20.7	462364	19.4	21.0	368005	19.4	21.5	363355	19.5	22.8	311811	19.6	20.1
53918	19.2	18.0	117753	19.3	20.3	102835	19.4	19.3	319703	19.4	18.3	403143	19.5	20.6	230171	19.6	18.9
450870	19.2	20.4	313555	19.3	19.9	361268	19.4	20.0	45049	19.4	18.8	158287	19.5	18.9	318590	19.6	21.3
370039	19.2	20.2	366575	19.3	20.4	493944	19.4	20.3	127971	19.4	20.2	517328	19.5	21.6	297241	19.6	20.4
512584	19.2	21.4	74971	19.3	18.2	287923	19.4	20.0	385762	19.4	20.6	212171	19.5	20.1	332410	19.6	21.3
55455	19.2	18.3	16554	19.3	16.3	90186	19.4	18.0	295078	19.4	19.9	333057	19.5	19.8	8887	19.6	16.7
143851	19.2	20.0	275255	19.3	20.0	101789	19.4	18.3	305704	19.4	21.3	274717	19.5	20.5	426319	19.6	18.9
489214	19.2	21.8	328916	19.3	19.6	114771	19.4	19.6	311691	19.4	19.5	436117	19.5	21.3	350454	19.6	20.0
466026	19.2	20.5	247980	19.3	19.5	392382	19.4	21.2	98729	19.4	19.2	140076	19.5	19.7	361807	19.6	21.0
343490	19.2	20.4	447957	19.3	19.8	174278	19.4	19.7	192119	19.4	19.9	275955	19.5	18.9	299106	19.6	19.6
371388	19.2	20.0	43155	19.3	17.7	517247	19.4	21.3	133597	19.4	18.7	418735	19.5	21.4	325389	19.6	21.2
82800	19.2	19.7	123906	19.3	19.5	413238	19.4	21.0	70217	19.4	17.4	414310	19.5	20.3	452611	19.6	21.5
515122	19.2	20.2	137899	19.3	17.6	332320	19.4	18.9	413268	19.4	20.7	284965	19.5	19.5	51593	19.6	18.6
228670	19.2	20.6	326527	19.3	21.6	268222	19.4	20.2	189929	19.4	19.6	9801	19.5	17.6	228870	19.6	19.8
195855	19.2	20.2	202645	19.3	20.9	141620	19.4	19.5	427027	19.4	20.2	286671	19.5	20.2	170623	19.6	19.0
484343	19.2	20.5	180187	19.3	18.8	424406	19.4	20.7	8631	19.4	17.4	447652	19.5	20.3	264807	19.6	20.7
123781	19.2	18.8	364849	19.3	20.3	47482	19.4	18.7	177673	19.4	19.8	142601	19.5	19.8	253403	19.6	20.1
347238	19.2	18.6	285272	19.3	20.3	441648	19.4	20.8	381722	19.4	19.7	70048	19.5	17.1	72812	19.6	18.4
218577	19.2	20.8	134016	19.3	18.9	217312	19.4	20.0	147082	19.4	18.3	514790	19.5	21.9	415029	19.6	16.8
330508	19.2	21.1	20111	19.3	17.6	248282	19.4	20.1	255109	19.4	19.9	178273	19.5	19.3	220152	19.6	19.9
480325	19.2	21.2	159298	19.3	19.3	118739	19.4	20.7	377256	19.4	19.6	94450	19.5	19.8	487480	19.6	20.8
172674	19.2	19.3	17905	19.3	19.1	98981	19.4	17.6	334707	19.4	20.3	143933	19.5	18.4	270253	19.6	18.9
438023	19.2	21.0	372251	19.3	21.4	359812	19.4	19.8	257843	19.4	20.8	329000	19.5	20.2	303437	19.6	19.5
120724	19.2	18.9	445677	19.3	20.9	503802	19.4	21.0	193759	19.4	19.8	131464	19.5	19.3	180448	19.6	19.9
340142	19.2	19.6	445180	19.3	20.7	505646	19.4	20.3	24711	19.4	18.8	415204	19.5	20.7	486495	19.6	20.9
328065	19.2	19.1	312372	19.3	19.7	480782	19.4	20.6	187957	19.4	19.7	400120	19.5	21.5	333014	19.6	22.2
144254	19.2	19.5	273412	19.3	20.7	120492	19.4	19.9	435578	19.4	21.3	39421	19.5	18.3	266179	19.6	19.4
52241	19.2	18.8	497546	19.3	19.9	90536	19.4	18.8	512081	19.4	19.6	177903	19.5	20.1	357375	19.6	19.0
268817	19.2	19.4	21879	19.3	17.9	384668	19.4	20.0	479748	19.4	20.0	481959	19.5	20.0	255153	19.6	20.0
519417	19.2	21.2	241356	19.3	19.9	230567	19.4	19.6	404530	19.4	20.1	271291	19.5	20.0	448497	19.6	20.8
209787	19.2	20.2	219178	19.3	19.3	184408	19.4	20.1	367980	19.4	21.3	124907	19.5	19.0	245510	19.6	21.0
267886	19.3	18.7	251568	19.3	20.2	46224	19.4	19.4	334548	19.4	21.3	299588	19.5	21.8	514601	19.6	20.6
335466	19.3	19.2	302729	19.3	21.3	343880	19.4	21.3	501676	19.4	20.8	184326	19.5	19.2	197039	19.6	19.7
257110	19.3	20.3	446389	19.3	21.3	273765	19.4	21.1	240167	19.4	19.7	152642	19.5	18.9	352991	19.6	21.9
108586	19.3	19.8	493851	19.3	20.7	404298	19.4	20.6	453186	19.4	21.5	301269	19.5	20.5	108450	19.6	19.8
381010	19.3	20.9	13712	19.3	16.9	339991	19.4	21.2	244201	19.4	19.0	194463	19.5	19.0	414365	19.6	20.3
444156	19.3	21.5	331079	19.3	19.6	408335	19.4	20.8	241448	19.4	21.6	271272	19.5	19.3	360198	19.6	20.8
407207	19.3	19.7	382640	19.3	20.9	409355	19.4	19.6	326510	19.4	20.8	481010	19.5	20.4	84822	19.6	18.2
450	19.3	14.3	82404	19.3	19.0	118614	19.4	18.4	192428	19.4	20.3	489802	19.5	21.2	25822	19.6	18.8
413250	19.3	20.8	197397	19.3	19.1												

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
139046	19.6	18.4	356749	19.7	20.6	460959	19.7	20.7	61713	19.8	18.9	254798	19.9	20.6	130125	19.9	17.3
394929	19.6	18.6	277032	19.7	19.7	115725	19.7	19.2	486541	19.8	21.4	57395	19.9	18.8	457288	19.9	21.1
403008	19.6	18.9	360209	19.7	18.6	414800	19.7	23.3	132693	19.8	19.0	460554	19.9	20.7	269311	19.9	19.8
317355	19.6	19.5	114795	19.7	18.6	303051	19.7	18.3	49861	19.8	17.9	411806	19.9	20.4	174010	19.9	19.1
256280	19.6	20.0	414619	19.7	20.7	450816	19.7	20.8	406570	19.8	20.3	513913	19.9	20.9	60558	19.9	19.5
388880	19.6	20.6	445396	19.7	20.6	130360	19.8	19.4	385692	19.8	19.6	296346	19.9	20.5	413728	19.9	20.5
281906	19.6	19.8	433382	19.7	20.0	175465	19.8	18.3	116345	19.8	19.0	115720	19.9	19.0	315016	19.9	20.1
307380	19.6	20.8	65449	19.7	18.2	248839	19.8	20.7	268895	19.8	21.2	280153	19.9	20.7	134744	19.9	19.0
19533	19.6	18.2	229291	19.7	19.1	263169	19.8	20.0	230221	19.8	18.9	350155	19.9	19.5	367602	19.9	19.5
78183	19.6	19.4	178049	19.7	19.4	173458	19.8	18.3	469458	19.8	20.3	145544	19.9	21.0	403712	19.9	20.7
192176	19.6	20.0	6476	19.7	16.3	26204	19.8	18.5	482878	19.8	20.9	19470	19.9	18.1	212849	19.9	19.9
307449	19.6	20.2	12250	19.7	17.5	73443	19.8	19.0	274849	19.8	20.9	140490	19.9	19.0	371284	19.9	20.5
300377	19.6	20.0	182600	19.7	18.4	122275	19.8	19.9	489224	19.8	21.2	197400	19.9	19.5	407206	19.9	19.4
298591	19.6	18.9	181208	19.7	20.0	204886	19.8	20.2	174246	19.8	19.5	159602	19.9	19.9	1875	19.9	17.2
272244	19.6	19.8	388644	19.7	21.1	187786	19.8	19.3	209154	19.8	18.5	32926	19.9	17.2	404945	19.9	20.2
73946	19.6	20.0	3466	19.7	16.6	255001	19.8	20.2	325402	19.8	21.2	246454	19.9	20.0	352957	19.9	20.6
312323	19.6	20.3	45761	19.7	18.1	46678	19.8	17.4	216345	19.8	19.7	446540	19.9	21.3	61244	19.9	18.4
96357	19.6	18.9	99253	19.7	19.7	278683	19.8	20.9	441867	19.8	20.3	486536	19.9	20.3	188047	19.9	19.7
188921	19.6	20.0	31142	19.7	18.3	165502	19.8	18.6	518690	19.8	20.9	36548	19.9	18.9	181576	19.9	20.7
516861	19.6	21.3	384786	19.7	20.3	60094	19.8	19.1	27157	19.8	18.2	171226	19.9	19.2	411026	19.9	21.0
486513	19.6	21.4	5602	19.7	16.8	31924	19.8	18.5	195804	19.8	18.3	208295	19.9	21.1	125619	19.9	18.4
225786	19.6	18.3	265971	19.7	20.1	302749	19.8	20.4	295492	19.8	20.2	458669	19.9	21.6	233050	19.9	19.3
20584	19.6	18.5	490472	19.7	20.0	203182	19.8	17.9	494777	19.8	21.0	190918	19.9	20.0	363616	19.9	20.8
47885	19.6	18.3	334905	19.7	19.2	515943	19.8	21.4	76823	19.8	19.0	436161	19.9	20.2	324337	19.9	20.5
418585	19.6	21.1	485630	19.7	20.0	458402	19.8	20.7	238154	19.8	18.9	394494	19.9	19.9	472016	19.9	21.0
23844	19.6	18.6	421000	19.7	20.6	267329	19.8	19.9	386691	19.8	19.1	253365	19.9	20.4	353038	19.9	20.4
505658	19.6	20.9	420080	19.7	21.0	75156	19.8	19.1	68845	19.8	20.0	372808	19.9	21.2	119079	19.9	20.5
356131	19.6	19.4	493341	19.7	20.8	14487	19.8	18.3	14693	19.8	18.2	407062	19.9	19.8	123919	19.9	18.6
224456	19.6	19.2	4615	19.7	16.1	50931	19.8	18.7	115825	19.8	18.5	174752	19.9	17.9	273370	19.9	19.4
268264	19.6	20.4	281989	19.7	20.4	383045	19.8	20.3	182503	19.8	19.3	2008	19.9	15.4	289441	19.9	20.1
194880	19.6	19.1	213879	19.7	20.3	310853	19.8	19.6	218219	19.8	19.5	249313	19.9	19.4	256623	19.9	19.2
111839	19.6	19.4	205400	19.7	20.5	126247	19.8	19.5	187829	19.8	18.6	310815	19.9	20.5	160153	19.9	19.5
58568	19.6	18.8	484040	19.7	22.0	52500	19.8	17.5	41374	19.8	18.4	49298	19.9	18.7	37112	19.9	18.0
223876	19.6	20.0	266650	19.7	20.0	460800	19.8	21.0	150097	19.8	19.1	200127	19.9	21.1	271651	19.9	20.7
44101	19.6	18.3	293094	19.7	19.9	383834	19.8	20.8	364989	19.8	20.7	516103	19.9	21.4	188779	19.9	20.4
447166	19.6	20.7	230564	19.7	19.3	485110	19.8	22.4	441175	19.8	21.1	517510	19.9	20.2	256293	19.9	19.6
35242	19.6	18.4	6499	19.7	16.8	24755	19.8	16.6	220009	19.8	17.8	91355	19.9	18.8	378099	19.9	19.5
522107	19.6	19.9	331445	19.7	19.8	422531	19.8	19.9	18267	19.8	20.3	376500	19.9	21.6	326819	19.9	19.9
135979	19.6	19.7	464660	19.7	20.3	477384	19.8	20.5	438886	19.8	19.2	511652	19.9	20.5	232704	19.9	19.8
216050	19.6	20.3	276342	19.7	20.2	491347	19.8	19.3	454007	19.8	21.0	519951	19.9	20.9	129897	19.9	19.6
198679	19.6	19.6	377181	19.7	20.2	434948	19.8	20.4	245809	19.8	19.4	35758	19.9	19.5	494624	19.9	20.7
475950	19.6	22.4	417380	19.7	20.7	67291	19.8	18.3	274532	19.8	20.7	364834	19.9	20.5	131350	19.9	19.4
435629	19.6	21.1	223040	19.7	18.0	442300	19.8	20.7	102600	19.8	17.6	217809	19.9	19.2	43556	19.9	18.4
26093	19.6	16.6	221783	19.7	19.4	330183	19.8	21.3	227715	19.8	19.3	110824	19.9	19.6	271054	19.9	20.3
486492	19.6	20.2	158740	19.7	19.8	164393	19.8	19.2	480937	19.8	20.6	325409	19.9	20.5	307384	19.9	20.9
487833	19.6	20.9	519744	19.7	21.2	490596	19.8	20.3	298034	19.8	20.1	444970	19.9	20.3	117679	19.9	19.4
393491	19.6	21.5	318199	19.7	21.1	255563	19.8	20.0	285480	19.8	19.0	307246	19.9	19.9	220480	19.9	19.3
484251	19.6	22.0	24379	19.7	18.2	411144	19.8	19.8	515622	19.8	21.4	206532	19.9	20.1	265073	19.9	19.8
192136	19.6	20.4	157003	19.7	19.6	185472	19.8	20.4	11125	19.8	17.2	362841	19.9	20.1	198871	19.9	20.0
85577	19.6	18.3	229876	19.7	19.6	231041	19.8	19.9	382701	19.8	20.2	432958	19.9	20.8	64567	19.9	19.1
267160	19.6	21.7	479452	19.7	19.8	481956	19.8	19.9	36302	19.8	18.9	400656	19.9	20.8	52105	19.9	18.3
113222	19.6	19.8	78103	19.7	19.5	487935	19.8	20.1	8303	19.8	16.5	94212	19.9	18.5	423815	19.9	20.8
501647	19.6	17.4	140731	19.7	18.8	513886	19.8	20.3	46288	19.9	17.9	75802	19.9	18.6	174336	19.9	19.4
373376	19.6	20.5	77188	19.7	18.3	418519	19.8	20.3	52126	19.9	18.9	236269	19.9	20.5	78073	19.9	18.5
204770	19.6	20.4	435324	19.7	20.5	467289	19.8	19.6	1022	19.9	14.9	305114	19.9	19.3	300494	19.9	20.9
258061	19.6	19.8	270868	19.7	20.0	321550	19.8	20.2	325406	19.9	20.1	419284	19.9	20.2	135957	19.9	19.2
138391	19.6	19.9	195873	19.7	18.8	50747	19.8	19.1	427787	19.9	21.2	270669	19.9	20.0	517503	19.9	20.5
335277	19.6	20.8	20353	19.7	18.8	452498	19.8	18.5	85404	19.9	18.5	23209	19.9	16.8	112854	20.0	19.1
451277	19.6	20.8	197922	19.7	20.4	104295	19.8	18.5	396705	19.9	20.6	434406	19.9	21.0	276696	20.0	19.3
246571	19.6	19.7	391643	19.7	21.1	332589	19.8	20.2	40535	19.9	17.8	121847	19.9	19.4	426479	20.0	21.2
168566	19.6	18.2	254821	19.7	20.6	101093	19.8	19.2	337063	19.9	21.2	203222	19.9	19.7	227229	20.0	20.1
56526	19.7	18.1	403839	19.7	20.2	432961	19.8	20.9	450907	19.9	21.0	451773	19.9	20.8	494062	20.0	20.9
128568	19.7	18.9	374711	19.7	20.1	322833	19.8	18.9	213319	19.9	19.6	212076	19.9	19.5	450618	20.0	21.2
336653	19.7	19.7	487619	19.7	19.7	399760	19.8	21.4	55122	19.9	18.7	241066	19.9	18.9	48476	20.0	17.2
113390	19.7	19.0	520498	19.7	21.4	141636	19.8	19.6	141535	19.9	20.2	310851	19.9	19.2	22885	20.0	17.5
464832	19.7	20.0	127384	19.7	19.4	77386	19.8	18.6	519791	19.9	21.7	41848	19.9	18.2	62225	20.0	19.5
429518	19.7	20.9	154735	19.7	19.8	109870	19.8	19.6	275845	19.9	20.3	267133	19.9	19.6	317418	20.0	19.9
47013	19.7	17.8	86909	19.7	19.7	129984	19.8	18.0	152217	19.9	19.3	143184	19.9	19.3	147105	20.0	18.9
270189	19.7	19.7	519794	19.7	21.3	157072	19.8	19.									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
35313	20.0	18.4	271346	20.1	19.2	56567	20.1	18.9	50306	20.2	19.6	321608	20.3	20.3	418504	20.4	21.0
451326	20.0	20.7	136334	20.1	19.6	77463	20.1	19.0	223046	20.2	19.1	99549	20.3	19.1	479824	20.4	20.3
112598	20.0	20.1	97391	20.1	18.1	287955	20.1	19.6	227011	20.2	18.9	376586	20.3	20.9	354464	20.4	21.6
486490	20.0	21.3	73575	20.1	20.8	134387	20.1	18.2	54164	20.2	18.4	209850	20.3	20.0	27195	20.4	18.2
480062	20.0	21.5	523473	20.1	21.4	169030	20.1	20.3	332204	20.2	21.2	133429	20.3	18.7	321450	20.4	20.7
449886	20.0	21.4	410812	20.1	20.9	293971	20.1	19.8	197930	20.2	19.4	231807	20.3	19.3	492842	20.4	21.1
326924	20.0	20.4	449254	20.1	21.3	279606	20.1	20.7	163813	20.2	18.7	273189	20.3	19.9	409307	20.4	20.3
186111	20.0	19.9	230753	20.1	19.2	463749	20.1	19.1	161216	20.2	19.2	327477	20.3	20.3	283763	20.4	21.0
307972	20.0	22.0	422335	20.1	20.3	369409	20.1	20.2	250639	20.2	20.6	493414	20.3	20.8	411148	20.4	19.0
401513	20.0	20.8	161714	20.1	19.5	39715	20.1	19.0	47583	20.2	18.4	479520	20.3	20.6	511782	20.4	21.3
140095	20.0	19.4	295541	20.1	20.4	19873	20.1	17.9	419962	20.2	19.8	523459	20.3	19.8	269829	20.4	19.9
124929	20.0	18.6	119270	20.1	19.4	16136	20.1	17.7	2194	20.2	15.5	167314	20.3	18.0	449190	20.4	20.1
331083	20.0	20.2	445763	20.1	19.7	26724	20.1	17.9	454731	20.2	20.1	315723	20.3	19.9	98651	20.4	18.4
41105	20.0	18.4	243250	20.1	20.2	152114	20.1	19.2	420637	20.2	21.2	405614	20.3	20.4	126679	20.4	18.6
329913	20.0	20.9	488670	20.1	19.1	161317	20.2	20.0	496674	20.2	20.6	113592	20.3	19.4	483264	20.4	20.6
271995	20.0	20.4	219984	20.1	20.7	81873	20.2	19.7	438472	20.2	21.6	84090	20.3	18.4	461013	20.4	20.3
519789	20.0	21.9	316357	20.1	20.9	284932	20.2	19.7	246141	20.2	20.7	49450	20.3	18.5	130403	20.4	18.8
300716	20.0	20.6	56492	20.1	19.6	32048	20.2	18.4	51415	20.2	18.4	202437	20.3	20.5	347776	20.4	20.5
384685	20.0	19.8	482612	20.1	20.4	505651	20.2	20.9	57076	20.2	17.7	330507	20.3	20.5	21444	20.4	16.6
193763	20.0	19.1	386646	20.1	19.3	420962	20.2	20.7	410141	20.2	20.9	302741	20.3	19.7	223393	20.4	19.0
516401	20.0	20.0	179043	20.1	20.0	169705	20.2	21.1	267530	20.2	20.2	17592	20.3	18.7	13	20.4	10.0
463922	20.0	20.0	291042	20.1	20.1	484480	20.2	21.2	54218	20.2	18.5	271255	20.3	19.6	118493	20.4	18.2
495048	20.0	21.9	21056	20.1	16.3	52689	20.2	21.2	335385	20.2	19.0	345144	20.3	20.9	203981	20.4	20.6
313222	20.0	20.4	454601	20.1	21.1	254760	20.2	20.1	282658	20.2	19.9	272085	20.3	20.2	322981	20.4	20.2
99998	20.0	19.8	464853	20.1	20.8	337831	20.2	18.9	10152	20.2	16.8	451793	20.3	20.7	307224	20.4	21.1
284701	20.0	20.2	353961	20.1	19.2	305867	20.2	20.6	83388	20.2	19.5	107734	20.3	19.7	32520	20.4	17.2
251704	20.0	20.4	415580	20.1	21.2	177665	20.2	19.4	327641	20.2	20.7	337455	20.3	20.7	117321	20.4	19.5
40799	20.0	18.9	77790	20.1	18.7	335331	20.2	21.1	460978	20.2	20.4	466958	20.3	20.1	484775	20.4	20.8
449297	20.0	20.3	402709	20.1	20.4	439944	20.2	20.1	199620	20.2	20.0	309571	20.3	20.4	157617	20.4	19.8
34850	20.0	18.4	332926	20.1	19.7	81735	20.2	19.6	54594	20.2	19.3	419966	20.3	21.1	419933	20.4	21.0
514851	20.0	22.2	415671	20.1	20.7	337555	20.2	21.3	410969	20.2	19.9	393520	20.3	21.5	59057	20.4	17.8
197117	20.0	20.1	201699	20.1	19.2	42423	20.2	19.2	151331	20.2	20.0	80230	20.3	18.9	291993	20.4	19.8
29386	20.0	17.4	101211	20.1	18.9	443388	20.2	20.4	1847	20.2	14.6	170606	20.3	19.3	364408	20.4	20.8
297978	20.0	20.6	373379	20.1	20.3	491502	20.2	21.5	291202	20.2	20.3	225281	20.3	19.0	212995	20.4	20.5
373135	20.0	22.6	224707	20.1	19.6	410989	20.2	20.5	212773	20.2	19.6	136011	20.3	18.8	340279	20.4	20.2
430607	20.0	20.1	189936	20.1	19.6	191447	20.2	19.8	189883	20.2	19.4	102649	20.3	18.9	76532	20.4	19.5
421064	20.0	20.5	247291	20.1	19.9	460754	20.2	21.0	271615	20.2	21.6	359904	20.3	20.2	523761	20.4	22.0
121318	20.0	19.6	74293	20.1	18.3	324698	20.2	21.4	70052	20.2	19.5	284542	20.3	18.6	420588	20.4	21.1
224925	20.0	19.7	63878	20.1	17.9	90083	20.2	19.1	4235	20.2	16.3	123922	20.3	19.6	100647	20.4	18.5
23531	20.0	17.0	148287	20.1	19.2	247192	20.2	20.1	35509	20.2	19.4	280000	20.3	19.7	65375	20.4	20.0
289419	20.0	20.3	267922	20.1	19.6	485462	20.2	19.8	366076	20.2	20.6	345348	20.3	20.5	142703	20.4	19.2
207072	20.0	18.5	451944	20.1	22.0	72947	20.2	19.2	515745	20.2	20.9	230790	20.3	20.2	135925	20.4	19.8
520840	20.0	20.9	269871	20.1	20.0	458078	20.2	19.4	245382	20.2	20.0	346333	20.3	21.5	14324	20.4	17.5
180865	20.0	20.8	353681	20.1	20.4	399623	20.2	21.3	137858	20.2	17.9	265934	20.3	20.6	321236	20.4	21.1
451283	20.0	20.1	323558	20.1	20.4	151653	20.2	19.3	436983	20.2	21.4	477808	20.3	20.5	441153	20.4	21.6
280030	20.0	19.1	377898	20.1	22.0	491577	20.2	20.7	136193	20.2	18.7	415685	20.3	20.8	193325	20.4	20.7
324364	20.1	20.3	310447	20.1	20.7	376112	20.2	20.1	276337	20.2	20.8	51024	20.3	18.2	195953	20.4	20.5
189902	20.1	19.2	420434	20.1	20.6	152211	20.2	18.7	401429	20.3	20.7	403300	20.3	20.9	256825	20.4	20.3
283427	20.1	18.8	452599	20.1	20.8	217479	20.2	20.6	344911	20.3	20.0	33424	20.3	18.3	73983	20.4	17.8
311631	20.1	18.7	471997	20.1	20.7	103532	20.2	19.4	222221	20.3	19.7	131437	20.3	19.8	15149	20.4	17.2
160591	20.1	19.9	17218	20.1	17.5	172273	20.2	20.0	200033	20.3	19.3	404254	20.3	20.7	13056	20.4	16.5
258165	20.1	20.8	70556	20.1	18.7	366207	20.2	19.8	454497	20.3	21.2	254808	20.3	20.0	117532	20.4	19.2
240933	20.1	21.2	226091	20.1	19.3	520576	20.2	21.4	98185	20.3	19.2	464501	20.3	19.9	446728	20.4	21.6
49810	20.1	18.2	82400	20.1	19.0	474807	20.2	21.1	24518	20.3	18.1	515118	20.3	21.4	55387	20.4	18.4
454732	20.1	20.7	332373	20.1	20.2	261767	20.2	19.7	320849	20.3	20.6	420151	20.3	20.6	491855	20.4	19.5
329481	20.1	20.5	493586	20.1	21.3	119818	20.2	19.5	426372	20.3	19.4	485167	20.3	21.3	198766	20.4	19.3
69914	20.1	18.0	154039	20.1	19.1	239014	20.2	20.1	407913	20.3	20.6	442398	20.3	20.3	134501	20.4	17.5
372801	20.1	20.1	409599	20.1	20.9	51941	20.2	17.8	407839	20.3	20.7	485567	20.3	19.8	44535	20.4	18.2
83414	20.1	18.5	71042	20.1	18.3	454590	20.2	20.8	187420	20.3	19.9	518091	20.3	20.7	315828	20.4	20.2
229796	20.1	20.1	195631	20.1	20.7	222960	20.2	18.9	409196	20.3	20.7	60446	20.3	19.3	229031	20.4	19.8
66757	20.1	19.2	3636	20.1	15.6	124479	20.2	18.7	10108	20.3	17.4	262021	20.3	19.6	268025	20.4	20.3
447618	20.1	21.0	197960	20.1	19.7	170377	20.2	19.0	54470	20.3	19.3	82765	20.3	18.8	240411	20.4	20.1
197262	20.1	19.2	283847	20.1	19.8	490890	20.2	20.2	394094	20.3	19.5	86765	20.3	19.0	400998	20.4	20.1
522120	20.1	20.7	90715	20.1	18.5	188766	20.2	20.2	79720	20.3	19.4	368402	20.3	21.1	411309	20.4	20.1
274326	20.1	21.7	188627	20.1	19.3	328855	20.2	20.8	22704	20.3	17.7	354303	20.3	19.8	115753	20.4	18.5
290812	20.1	19.6	248700	20.1	20.9	159782	20.2	18.3	88083	20.3	16.6	390429	20.3	20.1	442212	20.4	21.3
128059	20.1	17.9	259902	20.1	20.0	520865	20.2	21.1	484837	20.3	20.4	81831	20.3	19.4	241989	20.4	19.6
77599	20.1	18.6	356806	20.1	20.2	377982	20.2	20.2	46964	20.3	17.8	196123	20.3	19.4	421518	20.4	20.8
446447	20.1	20.5	130372	20.1	20.7	223832	20.2	19.8</									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
163265	20.4	19.2	69611	20.5	18.4	111835	20.6	19.7	484336	20.6	20.5	191066	20.7	18.9	132739	20.8	20.0
116400	20.4	19.0	78349	20.5	18.9	247725	20.6	20.0	410671	20.6	20.8	158719	20.7	20.6	444508	20.8	19.5
71563	20.4	18.8	222898	20.5	19.8	165866	20.6	20.6	366193	20.6	21.5	516426	20.7	20.6	199946	20.8	20.8
240636	20.4	19.8	518410	20.5	20.4	322921	20.6	19.9	6809	20.6	16.7	136688	20.7	19.8	99644	20.8	19.9
21570	20.4	18.1	184292	20.5	19.7	319143	20.6	19.8	199766	20.6	20.1	175210	20.7	19.3	197125	20.8	19.8
7610	20.4	17.3	365032	20.5	21.0	189159	20.6	19.6	23700	20.6	19.3	20532	20.7	16.9	108837	20.8	19.6
107937	20.4	18.4	259497	20.5	19.5	26140	20.6	18.8	488120	20.6	20.7	439492	20.7	20.5	124725	20.8	18.7
225356	20.4	19.9	485737	20.5	21.4	123149	20.6	18.7	493405	20.6	20.8	273233	20.7	20.7	68310	20.8	18.9
496765	20.4	20.4	17190	20.5	16.7	356086	20.6	19.1	378074	20.6	20.3	165611	20.7	20.5	271523	20.8	20.3
354256	20.4	21.1	276263	20.5	20.3	419243	20.6	19.7	267079	20.6	19.2	97235	20.7	18.1	194370	20.8	18.9
481215	20.4	20.6	194572	20.5	19.4	518838	20.6	20.2	302095	20.6	19.5	44631	20.7	17.6	494018	20.8	21.2
274439	20.4	20.5	365537	20.5	21.1	299621	20.6	21.5	150940	20.6	19.0	59560	20.7	18.6	137522	20.8	18.5
418608	20.4	20.5	20675	20.5	17.3	268793	20.6	19.7	396479	20.6	20.2	422224	20.7	20.5	443108	20.8	21.0
276201	20.4	20.9	451508	20.5	20.8	54371	20.6	18.6	58351	20.6	19.0	333131	20.7	20.4	371882	20.8	20.4
42742	20.4	17.6	375106	20.5	20.3	364951	20.6	21.5	39773	20.6	19.3	174073	20.7	19.8	516916	20.8	21.3
23670	20.4	19.0	177698	20.5	19.7	10979	20.6	18.7	195890	20.6	20.3	412115	20.7	21.1	51957	20.8	18.4
484502	20.4	21.2	410634	20.5	20.9	315630	20.6	19.4	277122	20.6	19.7	476593	20.7	20.2	430901	20.8	20.2
107798	20.4	19.6	47389	20.5	17.0	446474	20.6	20.7	196602	20.6	19.4	278184	20.7	20.7	300659	20.8	19.9
296781	20.4	21.1	71999	20.5	19.3	376555	20.6	20.3	139445	20.6	20.3	180840	20.7	20.1	257956	20.8	19.3
28233	20.4	17.4	297204	20.5	20.1	515794	20.6	21.9	286875	20.6	19.8	332650	20.7	19.8	424184	20.8	21.5
165508	20.5	18.6	519766	20.5	20.5	514923	20.6	21.4	65682	20.6	18.6	52287	20.7	18.9	482538	20.8	20.8
351812	20.5	20.2	137212	20.5	20.2	380993	20.6	20.8	294053	20.7	20.9	96980	20.7	18.9	81290	20.8	19.0
509670	20.5	20.3	175853	20.5	19.8	421800	20.6	20.5	219484	20.7	19.1	280826	20.7	19.4	300502	20.8	20.5
217465	20.5	20.3	9550	20.5	16.9	275623	20.6	20.2	248724	20.7	20.8	189814	20.7	18.5	6218	20.8	17.2
252297	20.5	19.3	519307	20.5	24.0	410663	20.6	21.5	461562	20.7	20.5	57812	20.7	19.3	406244	20.8	21.5
432263	20.5	21.6	435516	20.5	21.6	120395	20.6	18.4	161898	20.7	19.9	317243	20.7	21.0	78094	20.8	17.9
414622	20.5	20.7	506137	20.5	21.3	234582	20.6	19.0	277244	20.7	18.2	412873	20.7	21.2	381122	20.8	19.3
88656	20.5	19.7	400858	20.5	21.0	356420	20.6	20.0	398156	20.7	20.0	420960	20.7	21.1	211280	20.8	20.8
127242	20.5	19.9	51254	20.5	17.7	244233	20.6	19.4	2829	20.7	16.0	142206	20.7	18.0	220457	20.8	19.0
396582	20.5	20.2	185049	20.5	19.9	409626	20.6	21.0	14279	20.7	17.8	490950	20.7	21.8	470020	20.8	21.1
187411	20.5	19.9	48127	20.5	19.9	112509	20.6	18.6	392603	20.7	21.3	176115	20.7	20.0	84987	20.8	17.6
282400	20.5	20.0	27000	20.5	16.9	482776	20.6	19.9	386013	20.7	21.1	21894	20.7	17.5	101510	20.8	19.3
329700	20.5	19.8	412422	20.5	21.1	70963	20.6	17.8	314958	20.7	20.2	334306	20.7	18.5	482681	20.8	20.9
96039	20.5	19.8	477878	20.5	21.2	364518	20.6	22.1	14541	20.7	17.7	364019	20.7	21.1	370265	20.8	20.6
418782	20.5	21.1	517387	20.5	21.8	14444	20.6	17.9	121222	20.7	19.3	226396	20.7	19.1	331303	20.8	20.3
492173	20.5	20.3	158597	20.5	21.1	435524	20.6	22.1	316310	20.7	20.3	487513	20.7	21.2	416173	20.8	19.5
170716	20.5	19.8	27776	20.5	16.9	61043	20.6	18.8	522144	20.7	20.6	464104	20.7	20.2	386684	20.8	20.2
281804	20.5	20.2	96327	20.5	18.4	46534	20.6	20.0	108956	20.7	19.8	224115	20.7	19.6	208841	20.8	19.6
396174	20.5	20.4	112637	20.5	18.2	84889	20.6	17.8	446520	20.7	20.2	268665	20.7	20.2	444527	20.8	21.0
477814	20.5	20.7	376512	20.5	21.9	210003	20.6	20.5	277106	20.7	20.9	287578	20.7	19.6	156248	20.8	19.5
32652	20.5	18.9	212371	20.5	20.3	484829	20.6	19.9	495764	20.7	20.6	161949	20.7	20.7	397300	20.8	20.1
410986	20.5	19.3	450031	20.5	20.6	515145	20.6	21.5	421262	20.7	20.5	316456	20.7	20.4	305069	20.8	19.8
345453	20.5	18.9	268721	20.5	20.9	55721	20.6	18.6	263189	20.7	20.3	85723	20.7	19.2	413634	20.8	21.2
521356	20.5	20.9	223547	20.5	19.7	128302	20.6	20.0	213415	20.7	20.3	402359	20.7	21.1	204984	20.8	19.0
425835	20.5	20.6	334304	20.5	19.7	522166	20.6	21.0	104269	20.7	18.4	160560	20.7	19.9	255554	20.8	20.8
132953	20.5	19.5	120659	20.5	19.4	278602	20.6	20.4	129919	20.7	20.3	363851	20.7	20.9	250693	20.8	20.2
169738	20.5	17.6	483792	20.5	21.2	217398	20.6	20.2	116375	20.7	18.6	352840	20.7	20.6	51061	20.8	18.5
516397	20.5	21.9	228947	20.5	19.5	50131	20.6	17.7	92035	20.7	19.6	143985	20.7	19.0	324147	20.8	20.2
252579	20.5	20.1	133673	20.5	19.6	140369	20.6	19.8	77319	20.7	19.3	458583	20.7	20.9	203898	20.8	20.1
54350	20.5	18.6	34880	20.5	19.0	197050	20.6	19.2	238708	20.7	19.4	44513	20.7	17.3	441270	20.8	19.3
371322	20.5	20.4	57742	20.5	19.5	484163	20.6	20.5	516266	20.7	20.5	45828	20.7	18.6	374208	20.8	20.2
121394	20.5	19.4	244004	20.5	20.1	14379	20.6	15.5	302621	20.7	20.8	45333	20.7	18.5	368491	20.8	20.8
66346	20.5	18.7	292147	20.5	20.5	388211	20.6	21.5	492905	20.7	20.2	82260	20.7	18.7	367240	20.8	20.6
42895	20.5	18.9	92733	20.5	19.1	517979	20.6	20.7	226203	20.7	18.4	102338	20.7	17.8	197234	20.8	19.4
331444	20.5	21.1	270092	20.5	20.0	457974	20.6	20.1	459893	20.7	21.4	490161	20.7	20.8	107389	20.8	18.5
441043	20.5	20.7	230263	20.5	19.9	319507	20.6	19.9	367455	20.7	20.0	198662	20.7	19.3	87006	20.8	19.4
482689	20.5	20.7	478682	20.5	20.6	264190	20.6	20.2	220578	20.7	18.5	494567	20.7	20.8	141564	20.8	19.8
178199	20.5	20.4	451726	20.5	21.2	365533	20.6	20.6	327671	20.7	20.4	267939	20.7	20.3	512125	20.8	22.6
157939	20.5	19.2	434643	20.5	19.6	44172	20.6	17.7	78020	20.7	18.6	441083	20.7	21.4	183191	20.8	19.2
460764	20.5	20.5	69068	20.5	17.7	24050	20.6	18.5	269318	20.7	19.7	285896	20.7	21.0	334213	20.8	19.8
493243	20.5	20.4	447793	20.5	22.1	308121	20.6	17.5	483066	20.7	21.4	71178	20.7	17.1	268558	20.8	20.4
422777	20.5	21.6	17866	20.5	17.7	351114	20.6	20.6	83648	20.7	19.6	225466	20.7	19.1	217836	20.8	19.3
487872	20.5	20.2	180988	20.5	20.5	418418	20.6	20.3	385797	20.7	21.3	301611	20.7	20.3	347199	20.8	21.2
384434	20.5	20.7	355002	20.5	20.8	32265	20.6	18.5	404234	20.7	20.4	518612	20.8	20.3	214950	20.8	19.7
486422	20.5	20.8	487118	20.5	20.0	98928	20.6	18.9	278965	20.7	20.4	302742	20.8	19.4	458509	20.8	21.5
356129	20.5	21.0	307721	20.5	19.7	149942	20.6	19.8	10451	20.7	16.5	207284	20.8	19.9	16402	20.8	16.1
152401	20.5	19.8	395468	20.5	20.4	228036	20.6	21.1	81269	20.7	18.8	165605	20.8	19.5	333	20.8	13.5
460586	20.5	20.3	278955	20.5	20.3	339188	20.6	20.6	132994	20.7	19.2	324731	20.8	20.3	159996	20.8	19.5
2042	20.5	15.6	327623	20.5	20.7	247350	20.6	19.2									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
285041	20.8	20.3	225494	20.9	20.0	403647	21.0	21.6	393411	21.1	21.1	405377	21.1	19.8	515291	21.2	21.4
373033	20.8	20.1	167188	20.9	18.3	323252	21.0	20.1	495493	21.1	20.1	130288	21.1	18.9	331818	21.2	19.5
520465	20.8	21.4	122651	20.9	20.2	79900	21.0	18.8	158131	21.1	19.7	436465	21.1	21.4	295597	21.2	21.0
410131	20.8	21.4	485477	20.9	20.2	193173	21.0	20.7	23952	21.1	17.5	351390	21.1	21.4	284113	21.2	21.2
324849	20.8	20.0	325368	20.9	21.7	183185	21.0	20.1	386759	21.1	20.7	484191	21.1	21.7	23408	21.2	16.4
442299	20.8	21.6	124421	20.9	20.7	78231	21.0	18.7	496593	21.1	21.3	304932	21.1	21.6	233876	21.2	19.5
9735	20.8	17.4	110196	20.9	20.2	345739	21.0	21.5	263903	21.1	19.3	490606	21.1	20.1	413756	21.2	21.0
224075	20.8	20.6	238641	20.9	20.2	439843	21.0	21.1	226417	21.1	18.8	43561	21.1	18.2	196930	21.2	18.5
459373	20.8	21.0	297296	20.9	19.0	218561	21.0	21.1	7355	21.1	15.8	9038	21.1	16.6	263029	21.2	19.9
443913	20.8	21.6	228687	20.9	20.7	326589	21.0	19.9	515005	21.1	20.1	76225	21.1	18.3	206500	21.2	20.1
454323	20.8	19.6	196005	20.9	19.7	126917	21.0	19.8	302706	21.1	18.2	298378	21.1	19.0	213129	21.2	20.0
217857	20.8	19.3	312251	20.9	19.4	273205	21.0	20.4	160629	21.1	19.2	450914	21.1	21.2	436920	21.2	21.6
223851	20.8	20.6	228926	20.9	20.3	452670	21.0	20.3	331302	21.1	21.2	89848	21.1	19.4	491086	21.2	19.6
280843	20.8	20.5	342198	20.9	21.6	359918	21.0	20.6	77981	21.1	19.8	129964	21.1	19.7	116462	21.2	18.7
270077	20.9	20.3	260863	20.9	20.2	60539	21.0	18.2	56670	21.1	18.2	459833	21.1	21.3	40149	21.2	18.6
342021	20.9	20.9	37697	20.9	18.8	301886	21.0	21.2	279175	21.1	19.6	523322	21.1	21.0	425092	21.2	20.4
336116	20.9	21.0	102477	20.9	18.2	177381	21.0	19.8	159692	21.1	19.8	417435	21.1	20.6	220468	21.2	19.2
473362	20.9	20.8	45980	20.9	18.5	457255	21.0	20.8	197323	21.1	19.5	54915	21.1	18.6	223043	21.2	19.6
298572	20.9	18.1	77159	20.9	18.6	212180	21.0	20.1	280269	21.1	19.3	25595	21.1	18.8	217520	21.2	19.7
39597	20.9	17.9	522182	20.9	21.1	102205	21.0	18.9	196082	21.1	19.0	104982	21.2	18.6	490174	21.2	21.1
268669	20.9	20.2	389535	20.9	21.8	107556	21.0	19.1	335716	21.1	20.3	449989	21.2	20.1	325744	21.2	19.9
144438	20.9	20.5	266012	20.9	19.4	362849	21.0	19.8	319444	21.1	21.2	278087	21.2	19.7	361343	21.2	20.5
267813	20.9	19.8	247209	20.9	19.1	266205	21.0	19.7	337672	21.1	20.4	47905	21.2	17.7	511824	21.2	20.3
182750	20.9	19.7	14986	20.9	17.5	441205	21.0	20.9	193351	21.1	20.1	32806	21.2	18.4	209771	21.2	19.1
162308	20.9	18.6	456146	20.9	20.8	320322	21.0	20.5	274921	21.1	19.8	515482	21.2	20.5	67182	21.2	17.8
43882	20.9	18.5	362590	20.9	19.8	336593	21.0	20.0	491682	21.1	21.3	413789	21.2	20.5	401504	21.2	20.5
23439	20.9	17.8	193683	20.9	17.7	47771	21.0	19.1	290003	21.1	21.7	53568	21.2	19.5	66376	21.2	17.8
174378	20.9	18.8	4983	20.9	16.2	179294	21.0	19.7	471074	21.1	20.9	225358	21.2	19.2	474235	21.2	21.0
15832	20.9	16.5	188588	20.9	19.9	271277	21.0	19.3	112339	21.1	20.1	443213	21.2	21.3	335332	21.2	20.1
422658	20.9	21.1	289877	20.9	20.9	214851	21.0	20.3	509506	21.1	20.2	386007	21.2	20.5	157429	21.2	19.9
38572	20.9	18.5	168598	20.9	18.2	57112	21.0	16.9	450173	21.1	21.9	158797	21.2	19.9	73955	21.2	18.3
257811	20.9	19.3	251380	20.9	19.6	182288	21.0	20.5	132983	21.1	19.1	273248	21.2	20.0	72717	21.2	18.9
292119	20.9	20.5	444918	20.9	20.6	523344	21.0	20.6	57918	21.1	19.3	335322	21.2	21.1	381343	21.2	20.8
370355	20.9	20.6	47095	20.9	17.4	394565	21.0	19.9	41257	21.1	19.4	191378	21.2	19.6	372125	21.2	21.2
192947	20.9	20.1	453538	20.9	19.8	272771	21.0	20.0	369825	21.1	21.7	231394	21.2	19.7	404391	21.2	21.0
332210	20.9	21.7	328779	20.9	18.8	26935	21.0	19.3	364947	21.1	21.3	253326	21.2	19.5	322617	21.2	20.7
150726	20.9	20.2	243585	20.9	19.5	174909	21.0	19.3	256373	21.1	20.2	436819	21.2	21.6	512252	21.2	19.3
367836	20.9	20.0	367245	20.9	20.6	78287	21.0	17.7	54965	21.1	18.7	481660	21.2	20.3	517559	21.2	20.3
46244	20.9	17.0	416483	20.9	19.4	383846	21.0	20.2	415018	21.1	20.4	52087	21.2	18.5	3273	21.2	16.6
183267	20.9	19.7	67091	20.9	18.6	420575	21.0	20.0	403138	21.1	21.0	90424	21.2	19.0	153806	21.2	19.5
213161	20.9	20.2	119222	20.9	20.6	290649	21.0	20.3	303098	21.1	19.8	88531	21.2	19.6	158560	21.2	20.2
207244	20.9	20.7	335360	20.9	19.3	108762	21.0	19.5	287329	21.1	20.4	511766	21.2	20.2	285490	21.2	19.9
414693	20.9	19.9	416196	20.9	19.1	310346	21.0	19.7	225424	21.1	19.0	97177	21.2	19.1	14486	21.2	17.8
121627	20.9	19.4	195853	20.9	21.0	115519	21.0	18.3	262462	21.1	20.5	76559	21.2	17.4	341976	21.2	21.2
459404	20.9	20.6	434575	20.9	20.6	122630	21.0	19.0	209579	21.1	19.9	405725	21.2	20.2	220691	21.2	19.0
61071	20.9	18.7	139944	20.9	19.6	490998	21.0	21.4	447520	21.1	20.0	375562	21.2	21.7	267596	21.2	19.3
418831	20.9	21.3	152809	20.9	19.0	213009	21.0	20.1	260062	21.1	20.0	5183	21.2	16.2	181650	21.2	19.3
28180	20.9	17.7	450651	20.9	20.8	480654	21.0	19.1	185207	21.1	20.0	270936	21.2	19.4	493803	21.2	20.2
444779	20.9	22.0	113291	20.9	19.7	460874	21.0	21.2	483209	21.1	20.4	407172	21.2	20.2	332431	21.2	21.0
233849	20.9	21.1	215686	20.9	19.2	142755	21.1	18.9	336114	21.1	20.5	61330	21.2	19.2	233545	21.3	20.4
440812	20.9	20.1	249960	20.9	20.2	174470	21.1	18.5	518662	21.1	22.3	3660	21.2	16.5	75041	21.3	18.8
487113	20.9	20.7	207095	20.9	19.4	92632	21.1	20.4	360495	21.1	19.5	523261	21.2	20.9	485521	21.3	19.9
190501	20.9	21.3	6873	20.9	17.0	254957	21.1	19.6	449892	21.1	21.1	267519	21.2	20.1	4161	21.3	17.2
266629	20.9	20.4	380351	20.9	20.7	298189	21.1	19.1	156598	21.1	19.6	76519	21.2	18.3	317935	21.3	19.7
249600	20.9	20.0	399364	20.9	21.1	276837	21.1	21.0	515914	21.1	21.1	14265	21.2	17.6	339093	21.3	19.5
210915	20.9	20.3	383500	20.9	21.3	70942	21.1	17.4	358616	21.1	20.5	414986	21.2	20.2	220049	21.3	18.8
385630	20.9	19.5	287681	20.9	20.1	362488	21.1	20.9	227143	21.1	19.5	178997	21.2	18.4	238234	21.3	21.1
11863	20.9	17.1	210987	20.9	20.7	335213	21.1	20.6	175873	21.1	19.4	103435	21.2	18.6	329363	21.3	20.6
154777	20.9	20.0	189227	20.9	20.3	44752	21.1	17.8	316053	21.1	20.2	135194	21.2	20.3	273655	21.3	21.1
399166	20.9	21.9	449930	20.9	20.3	533	21.1	13.9	93609	21.1	18.0	338995	21.2	19.8	230695	21.3	20.1
437925	20.9	20.5	485483	20.9	19.8	494060	21.1	20.6	66674	21.1	19.2	189754	21.2	18.3	190518	21.3	20.3
448038	20.9	20.2	295596	20.9	20.1	515201	21.1	20.8	414583	21.1	20.8	251426	21.2	20.3	121103	21.3	19.7
429991	20.9	20.7	130268	20.9	19.4	475058	21.1	19.8	282286	21.1	17.6	329374	21.2	19.4	329390	21.3	21.3
322940	20.9	20.5	494527	20.9	19.8	258294	21.1	20.3	159704	21.1	17.8	172194	21.2	19.8	278045	21.3	20.0
115088	20.9	18.8	162938	20.9	19.9	129633	21.1	19.9	47397	21.1	18.4	236879	21.2	20.4	412327	21.3	21.4
434499	20.9	20.5	331831	20.9	20.3	421538	21.1	19.8	264107	21.1	20.4	130013	21.2	19.0	482256	21.3	19.8
237275	20.9	19.9	167900	20.9	19.7	173081	21.1	19.7	73529	21.1	19.2	487908	21.2	20.7	74032	21.3	18.3
97292	20.9	18.9	260504	20.9	20.2	361214	21.1	19.9	130187	21.1	18.4	387895	21.2	21.1	113332	21.3	19.2
22143	20.9	17.5	345038	20.9	19.5	364981	21.1										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
336644	21.3	20.5	430830	21.3	21.2	345433	21.4	20.3	223964	21.5	19.8	159412	21.6	19.5	402297	21.6	21.7
228683	21.3	19.1	494587	21.3	20.5	272504	21.4	19.9	414922	21.5	20.7	145261	21.6	19.7	195667	21.6	19.8
103233	21.3	18.5	185438	21.3	19.6	264873	21.4	20.3	494041	21.5	20.8	291139	21.6	20.4	76475	21.6	17.7
462758	21.3	20.9	21077	21.3	17.8	274723	21.4	20.5	82116	21.5	19.6	39	21.6	9.8	212275	21.6	21.0
125377	21.3	19.1	394205	21.3	21.1	100056	21.4	18.4	13083	21.5	17.8	521701	21.6	20.9	458597	21.6	21.2
153020	21.3	20.6	69402	21.3	20.5	201843	21.4	19.6	47703	21.5	18.4	357452	21.6	20.2	358668	21.6	19.5
414377	21.3	20.1	266190	21.3	19.2	172563	21.4	20.5	416538	21.5	19.9	446285	21.6	22.0	226646	21.6	20.3
366071	21.3	21.2	369629	21.3	20.2	409632	21.4	20.8	46406	21.5	19.6	36616	21.6	18.7	414312	21.6	20.2
156817	21.3	18.9	344164	21.3	17.8	97714	21.4	19.3	67672	21.5	19.0	197583	21.6	20.9	440029	21.6	20.1
231239	21.3	20.1	275886	21.4	19.4	458011	21.4	20.5	458519	21.5	20.2	369653	21.6	20.6	450926	21.6	20.1
186922	21.3	19.8	371321	21.4	21.0	356141	21.4	20.2	372822	21.5	19.8	449411	21.6	20.9	191164	21.6	20.8
418583	21.3	21.0	94798	21.4	19.4	309655	21.4	20.3	450130	21.5	20.9	174095	21.6	20.0	181671	21.6	20.0
9509	21.3	18.3	382663	21.4	20.3	460469	21.4	19.5	484203	21.5	21.1	266108	21.6	20.4	516777	21.6	20.0
464838	21.3	20.4	98053	21.4	18.9	274752	21.4	20.3	386040	21.5	20.8	115744	21.6	19.7	331759	21.6	19.5
443186	21.3	21.3	184294	21.4	20.0	173514	21.4	19.6	120063	21.5	19.6	419941	21.6	20.4	93235	21.6	19.0
36873	21.3	18.6	302562	21.4	21.3	515044	21.4	21.1	421950	21.5	21.2	349698	21.6	18.9	1855	21.6	15.4
282207	21.3	19.4	77242	21.4	19.5	493394	21.4	20.3	407977	21.5	21.2	129161	21.6	19.7	229756	21.6	19.5
51766	21.3	18.4	98921	21.4	19.3	139188	21.4	18.7	101379	21.5	17.6	173671	21.6	20.3	439103	21.6	20.8
354993	21.3	20.4	220350	21.4	20.5	165765	21.4	21.0	359587	21.5	21.1	7788	21.6	18.2	190494	21.6	20.0
413037	21.3	20.7	139248	21.4	19.7	412758	21.4	20.2	288311	21.5	19.9	1490	21.6	15.0	39994	21.6	18.8
115026	21.3	20.4	468318	21.4	19.6	443561	21.4	20.2	484381	21.5	19.7	7571	21.6	17.7	163907	21.6	19.2
425575	21.3	21.8	223231	21.4	19.9	209160	21.4	19.8	485640	21.5	19.2	382722	21.6	20.0	327109	21.6	19.4
267538	21.3	20.1	463909	21.4	20.9	337246	21.4	20.9	422055	21.5	19.8	94101	21.6	17.5	372302	21.6	21.6
511936	21.3	20.5	317931	21.4	19.5	228684	21.4	19.1	209992	21.5	19.9	479326	21.6	20.3	238068	21.6	19.9
70848	21.3	18.6	80002	21.4	18.5	452656	21.4	21.4	111340	21.5	18.5	455698	21.6	20.9	479390	21.6	18.7
239179	21.3	19.9	421837	21.4	20.9	212157	21.4	20.3	261232	21.5	20.1	187464	21.6	19.7	416104	21.6	18.9
202496	21.3	19.5	128072	21.4	19.5	225428	21.4	20.5	5018	21.5	16.4	99329	21.6	19.2	84990	21.6	18.7
286494	21.3	20.2	454536	21.4	20.3	520770	21.5	20.7	460493	21.5	20.8	60587	21.6	17.9	224808	21.6	19.1
238490	21.3	19.7	454155	21.4	20.3	274633	21.5	21.1	78972	21.5	18.7	42538	21.6	16.9	330253	21.6	21.0
312369	21.3	19.3	311839	21.4	20.0	240900	21.5	20.1	189084	21.5	20.1	89539	21.6	17.4	215717	21.6	19.5
486598	21.3	21.6	114231	21.4	19.2	6989	21.5	16.1	367631	21.5	19.9	449576	21.6	21.1	440126	21.6	21.5
106985	21.3	18.6	121191	21.4	19.2	28368	21.5	17.5	170954	21.5	19.9	447626	21.6	20.7	307739	21.6	19.8
32161	21.3	18.2	88121	21.4	19.1	73193	21.5	19.8	99612	21.5	19.1	187225	21.6	19.9	8443	21.7	16.6
474513	21.3	19.3	15075	21.4	16.1	245781	21.5	20.6	197053	21.5	18.6	159209	21.6	20.4	521293	21.7	21.4
409813	21.3	20.0	79194	21.4	18.4	42951	21.5	18.7	57390	21.5	17.7	439090	21.6	21.5	458553	21.7	20.4
40280	21.3	18.5	366199	21.4	19.9	121017	21.5	19.3	302577	21.5	20.9	414612	21.6	20.2	416818	21.7	20.5
216133	21.3	20.3	107869	21.4	19.5	291453	21.5	20.9	225162	21.5	20.0	520681	21.6	21.1	94720	21.7	18.0
149672	21.3	20.5	395016	21.4	20.4	46515	21.5	19.8	146635	21.5	18.9	18270	21.6	18.0	403147	21.7	21.5
375653	21.3	19.5	194940	21.4	18.6	417848	21.5	21.3	378044	21.5	21.4	71771	21.6	19.2	344311	21.7	20.2
25144	21.3	18.7	262233	21.4	19.8	443481	21.5	19.8	245836	21.5	20.0	518941	21.6	21.1	28457	21.7	18.0
446418	21.3	20.2	457286	21.4	20.6	82215	21.5	19.5	105238	21.5	19.3	397344	21.6	20.9	129163	21.7	19.9
78491	21.3	18.8	25424	21.4	18.1	385632	21.5	19.5	271546	21.5	19.5	221839	21.6	20.0	272197	21.7	20.1
146546	21.3	19.5	67187	21.4	18.3	517960	21.5	21.5	164289	21.5	19.5	50272	21.6	18.7	328446	21.7	20.9
402025	21.3	19.2	35688	21.4	17.0	70347	21.5	19.4	392832	21.5	19.3	375157	21.6	19.5	145235	21.7	19.8
318834	21.3	20.8	405479	21.4	19.4	376581	21.5	22.3	449290	21.5	19.9	84605	21.6	18.6	84850	21.7	18.0
122027	21.3	19.5	5719	21.4	16.8	115793	21.5	18.2	517397	21.5	21.6	97476	21.6	19.2	261141	21.7	21.0
521593	21.3	20.1	447145	21.4	21.5	511003	21.5	20.5	146529	21.5	19.5	271920	21.6	20.2	287692	21.7	19.7
303066	21.3	19.6	267989	21.4	20.9	30184	21.5	18.7	331566	21.5	20.3	521552	21.6	21.2	249484	21.7	19.4
213026	21.3	19.1	186918	21.4	20.0	133097	21.5	18.0	211405	21.5	20.3	457894	21.6	20.4	522068	21.7	20.9
268012	21.3	21.3	373095	21.4	19.8	137425	21.5	19.5	350185	21.5	21.4	257435	21.6	21.0	71301	21.7	18.2
136183	21.3	17.0	186851	21.4	18.8	23722	21.5	17.5	52726	21.5	17.8	321318	21.6	20.6	223581	21.7	19.3
143130	21.3	19.3	319474	21.4	20.0	455537	21.5	20.6	300559	21.5	20.5	436387	21.6	19.8	215121	21.7	22.0
152969	21.3	20.5	451093	21.4	21.6	493962	21.5	21.0	163824	21.5	19.0	443176	21.6	20.8	267288	21.7	21.0
473816	21.3	20.3	233697	21.4	19.8	264834	21.5	20.9	52067	21.5	18.4	22271	21.6	18.7	328851	21.7	20.0
136233	21.3	19.2	28198	21.4	17.5	388863	21.5	19.5	213602	21.5	20.3	278104	21.6	21.3	289541	21.7	20.2
293046	21.3	19.8	5994	21.4	16.5	460947	21.5	20.9	174216	21.5	19.7	213354	21.6	20.2	69989	21.7	18.5
490982	21.3	20.3	146469	21.4	17.9	237901	21.5	20.5	383095	21.5	19.9	494150	21.6	20.8	259873	21.7	19.3
441108	21.3	19.4	311761	21.4	20.8	486640	21.5	21.6	354015	21.5	22.1	436413	21.6	20.0	489205	21.7	21.2
215120	21.3	20.5	78544	21.4	18.9	280298	21.5	20.4	147562	21.5	18.0	460507	21.6	19.8	186457	21.7	18.9
256270	21.3	20.5	1118	21.4	14.8	79780	21.5	18.8	320002	21.5	20.2	288531	21.6	20.8	20248	21.7	17.5
9071	21.3	18.2	73341	21.4	19.6	383495	21.5	19.3	352200	21.5	20.8	294031	21.6	20.5	243624	21.7	18.4
409607	21.3	21.3	479700	21.4	19.6	362345	21.5	20.9	153654	21.5	20.3	72884	21.6	19.1	124627	21.7	18.8
196020	21.3	20.6	235201	21.4	20.3	317347	21.5	21.4	197513	21.5	19.1	406211	21.6	20.0	143647	21.7	19.4
270187	21.3	21.2	191514	21.4	19.3	219633	21.5	19.9	368845	21.5	19.6	15325	21.6	18.4	16751	21.7	18.4
458017	21.3	20.6	269831	21.4	20.4	31552	21.5	18.2	473119	21.5	20.4	298090	21.6	19.8	220107	21.7	20.3
238264	21.3	20.1	257815	21.4	21.1	147371	21.5	19.3	230846	21.5	20.8	13686	21.6	18.1	72822	21.7	18.6
309001	21.3	20.1	95639	21.4	19.9	359425	21.5	21.3	75319	21.5	17.8	235130	21.6	20.4	137758	21.7	17.3
179378	21.3	20.4	422578	21.4	20.4	495045	21.5	20.4	177195	21.5	20.1	220427	21.6	19.9	516912	21.7	20.2
455420	21.3	19.7	91564	21.4	18.7	200321	21.5	20.3	32655</								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
282688	21.7	20.5	46818	21.8	16.2	262476	21.9	19.3	272280	21.9	20.2	62476	22.0	18.1	345383	22.1	20.4
72482	21.7	17.9	21935	21.8	16.0	370640	21.9	20.6	493410	21.9	20.9	101019	22.0	20.4	452886	22.1	20.8
442999	21.7	19.4	491433	21.8	21.3	493159	21.9	20.6	103331	21.9	18.5	83050	22.0	18.6	277906	22.1	20.0
20875	21.7	17.7	9580	21.8	16.6	260792	21.9	20.3	184158	21.9	19.7	169908	22.0	18.8	291690	22.1	20.0
157777	21.7	20.4	315814	21.8	20.7	454141	21.9	20.3	218510	21.9	18.7	467060	22.0	20.2	185687	22.1	19.5
401199	21.7	20.7	134493	21.8	18.2	263340	21.9	21.2	439840	21.9	20.4	516411	22.0	21.5	399794	22.1	20.9
441214	21.7	20.5	129464	21.8	20.1	481942	21.9	20.8	47529	21.9	17.7	448462	22.0	21.9	406794	22.1	19.8
490512	21.7	20.3	471523	21.8	21.1	360066	21.9	20.2	316002	21.9	20.6	308969	22.0	19.0	146553	22.1	20.1
224926	21.7	20.1	119083	21.8	20.4	490618	21.9	20.6	177128	21.9	19.9	46188	22.0	18.1	105164	22.1	18.1
494146	21.7	20.6	291353	21.8	21.0	455380	21.9	21.3	108838	21.9	19.4	442292	22.0	21.0	248954	22.1	19.1
327616	21.7	19.9	422523	21.8	20.6	494052	21.9	20.4	489239	21.9	21.0	437856	22.0	20.2	207147	22.1	19.9
231036	21.7	19.7	163123	21.8	18.2	473538	21.9	20.1	7335	21.9	20.2	86737	22.0	19.5	369791	22.1	21.1
13831	21.7	17.0	367458	21.8	20.8	374625	21.9	20.8	512949	21.9	19.8	131331	22.0	19.9	29830	22.1	17.4
2029	21.7	15.9	419407	21.8	19.9	336816	21.9	20.9	336870	21.9	18.8	268659	22.0	20.0	229453	22.1	18.7
442393	21.7	20.9	336671	21.8	20.7	306071	21.9	21.9	155291	21.9	20.1	71438	22.0	19.5	249922	22.1	20.8
40595	21.7	19.1	5362	21.8	16.4	63444	21.9	18.7	327124	21.9	20.9	244153	22.0	20.2	133778	22.1	19.6
131405	21.7	19.9	112727	21.8	19.2	450377	21.9	21.7	92526	21.9	19.6	180318	22.0	19.1	116372	22.1	18.4
84796	21.7	18.5	198604	21.8	19.6	98934	21.9	19.0	150214	21.9	19.1	36601	22.0	17.3	66241	22.1	20.1
296431	21.7	20.0	329436	21.8	21.5	138218	21.9	19.5	180200	21.9	19.7	234550	22.0	19.2	432605	22.1	20.2
487914	21.7	20.8	154733	21.8	20.2	48259	21.9	18.2	492182	21.9	21.4	7331	22.0	16.6	145713	22.1	19.4
459748	21.7	20.7	156095	21.8	19.0	361862	21.9	21.1	6096	21.9	17.6	235972	22.0	19.2	139757	22.1	18.7
284539	21.7	20.3	486918	21.8	20.8	458720	21.9	21.2	415389	21.9	20.2	473828	22.0	20.9	53952	22.1	19.1
103018	21.7	17.7	226478	21.8	19.3	83117	21.9	20.3	19522	21.9	16.5	26831	22.0	18.4	63738	22.1	18.4
29372	21.7	17.8	320139	21.8	21.7	159317	21.9	20.2	381399	21.9	20.0	321791	22.0	20.4	334894	22.1	19.5
60394	21.7	18.3	487435	21.8	21.3	189928	21.9	18.7	250502	21.9	20.2	401805	22.0	20.3	151722	22.1	19.4
367419	21.7	21.3	180058	21.8	19.9	135039	21.9	17.0	168945	21.9	18.4	60781	22.0	19.0	438892	22.1	21.0
196737	21.7	20.2	154783	21.8	27.1	379539	21.9	20.6	110292	21.9	19.5	394595	22.0	21.1	398503	22.1	21.6
301817	21.7	21.7	74479	21.8	18.6	104952	21.9	19.8	427072	21.9	20.6	289113	22.0	18.8	512364	22.1	20.8
385567	21.7	19.9	313949	21.8	20.8	321589	21.9	20.4	171649	21.9	18.8	198763	22.0	18.8	75291	22.1	18.0
221757	21.7	19.5	297224	21.8	20.9	228311	21.9	19.9	47910	21.9	18.1	475812	22.0	20.2	450120	22.1	20.0
190702	21.7	20.3	517341	21.8	21.8	168570	21.9	18.7	15875	21.9	21.7	302980	22.0	20.5	485698	22.1	20.1
512678	21.7	20.5	193760	21.8	20.4	109228	21.9	19.6	11779	21.9	17.4	157035	22.0	20.3	42718	22.1	17.8
66449	21.7	17.9	448291	21.8	18.5	354429	21.9	19.0	414943	21.9	20.6	399761	22.0	21.0	138503	22.1	18.7
518961	21.7	21.3	150787	21.8	19.3	63945	21.9	18.8	239185	21.9	20.8	355341	22.0	19.8	164033	22.1	19.7
421160	21.7	21.4	346895	21.8	20.7	139489	21.9	19.4	43086	21.9	20.9	208762	22.0	19.8	229870	22.1	19.6
49172	21.7	18.4	29482	21.8	17.0	102384	21.9	19.1	293091	21.9	20.8	59253	22.0	18.3	41422	22.1	17.7
245228	21.7	19.1	181383	21.8	19.5	84642	21.9	18.0	194834	21.9	19.1	128255	22.0	19.2	228420	22.1	19.0
167933	21.7	18.2	522108	21.8	20.3	214352	21.9	20.0	72400	21.9	18.7	402674	22.0	19.8	245094	22.1	20.1
452271	21.7	20.3	31455	21.8	17.6	261481	21.9	19.9	153363	21.9	19.1	384870	22.0	20.6	438346	22.1	20.5
13015	21.7	17.4	51052	21.8	18.8	465972	21.9	20.9	273471	21.9	20.1	24273	22.0	17.5	352187	22.1	20.2
411059	21.7	20.0	271755	21.8	20.2	380685	21.9	20.8	228864	21.9	19.7	150722	22.0	18.6	390532	22.1	20.9
386938	21.7	21.0	12428	21.8	16.6	17593	21.9	18.7	218387	21.9	20.1	357071	22.0	20.9	520403	22.1	21.8
377996	21.7	20.9	479373	21.8	19.7	276307	21.9	20.1	480042	21.9	21.4	457377	22.0	20.9	395384	22.1	21.7
153763	21.7	19.6	79540	21.8	18.0	34590	21.9	18.6	216885	21.9	20.6	164975	22.0	18.0	473629	22.1	20.5
317238	21.7	20.3	342615	21.8	20.8	50823	21.9	19.4	406269	21.9	21.4	332981	22.0	21.0	523412	22.1	21.1
296272	21.7	20.4	424372	21.8	19.8	378006	21.9	21.1	138243	21.9	20.0	1204	22.0	15.2	267791	22.1	18.7
290453	21.7	20.5	102921	21.8	18.2	401682	21.9	20.5	37308	21.9	20.2	150443	22.0	20.2	493581	22.1	20.9
107054	21.8	18.4	27989	21.8	17.3	284189	21.9	20.5	207242	21.9	19.7	359275	22.0	20.5	78528	22.1	18.6
57216	21.8	18.2	136166	21.8	19.7	298433	21.9	19.2	84683	21.9	18.2	364256	22.0	20.2	332835	22.1	20.0
418687	21.8	20.8	356379	21.8	21.8	341990	21.9	21.1	28642	21.9	17.1	451764	22.0	21.4	41421	22.1	18.1
366702	21.8	20.2	458566	21.8	21.0	360260	21.9	20.4	365961	21.9	19.1	46813	22.0	18.4	215235	22.1	19.2
198768	21.8	19.8	348680	21.8	20.9	414934	21.9	21.1	348779	21.9	19.8	187664	22.0	19.7	333339	22.1	20.3
514156	21.8	22.0	267884	21.8	19.4	421957	21.9	20.3	464543	21.9	20.6	347256	22.0	21.6	458019	22.1	20.6
320054	21.8	19.6	46932	21.8	20.1	57581	21.9	17.7	23955	21.9	18.5	78054	22.0	19.2	344072	22.1	21.4
447003	21.8	20.5	259881	21.8	20.5	225700	21.9	17.6	305732	21.9	20.2	414739	22.0	19.3	187017	22.1	18.6
339792	21.8	20.6	361402	21.8	20.9	335340	21.9	20.2	13722	21.9	18.6	450165	22.0	21.9	195994	22.1	20.0
370416	21.8	20.9	520826	21.8	20.4	402736	21.9	20.9	416096	21.9	21.9	390314	22.0	20.4	90773	22.1	20.2
124765	21.8	17.9	32537	21.8	19.9	465622	21.9	21.1	231519	21.9	19.6	395979	22.0	19.8	455480	22.1	20.1
148356	21.8	18.7	181653	21.8	19.2	83811	21.9	18.8	14827	21.9	23.8	102837	22.0	19.0	212824	22.1	20.2
422479	21.8	19.8	32737	21.8	19.3	156798	21.9	19.5	459781	21.9	20.9	49779	22.1	17.2	10533	22.1	17.5
136276	21.8	19.0	443044	21.8	19.2	390763	21.9	20.0	383497	21.9	19.6	192251	22.1	20.5	399090	22.1	20.1
489996	21.8	20.9	370415	21.8	20.7	248226	21.9	19.8	162829	21.9	18.7	371844	22.1	19.3	181789	22.1	20.0
416465	21.8	20.6	101094	21.8	19.9	419506	21.9	20.4	6073	21.9	15.3	328693	22.1	21.2	492869	22.1	21.4
24964	21.8	19.4	164876	21.8	19.3	164895	21.9	19.3	255125	21.9	20.3	63979	22.1	19.6	79951	22.1	18.7
60640	21.8	18.8	332708	21.8	19.7	317688	21.9	20.2	100975	21.9	19.9	323224	22.1	20.2	516544	22.1	22.0
390685	21.8	20.4	231839	21.8	20.1	143689	21.9	18.6	449795	21.9	20.8	404248	22.1	20.3	154703	22.1	21.0
386666	21.8	19.8	229239	21.8	19.3	112296	21.9	19.4	263067	21.9	19.7	190476	22.1	18.3	270193	22.1	21.6
515460	21.8	20.7	431456	21.8	19.8	439888	21.9	21.5	309005	21.9	20.5	372872	22.1	19.6	382643	22.1	20.1
359794	21.8	20.1	313693	21.8	20.7	153752	21.9	20.0									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
9938	22.1	17.4	457981	22.2	20.0	420179	22.3	20.1	8714	22.4	17.7	309600	22.4	20.3	78893	22.5	18.4
220176	22.1	19.2	518042	22.2	21.4	128121	22.3	18.6	252410	22.4	19.3	256812	22.4	20.7	8264	22.5	17.5
469450	22.1	20.0	250201	22.2	19.8	435851	22.3	19.4	282768	22.4	20.3	442365	22.4	21.3	131650	22.5	19.3
274587	22.1	19.6	144828	22.2	20.2	157175	22.3	20.6	450674	22.4	21.2	232099	22.4	19.5	439477	22.5	20.6
53229	22.1	17.8	66582	22.2	19.1	485372	22.3	22.1	122184	22.4	19.5	374696	22.4	20.7	439801	22.5	21.7
156887	22.1	19.3	287862	22.2	20.6	331726	22.3	20.0	446717	22.4	20.1	362471	22.4	20.9	466928	22.5	20.8
110583	22.1	19.0	339889	22.2	21.3	108758	22.3	19.4	420156	22.4	19.9	290641	22.4	20.6	176992	22.5	19.0
517312	22.1	20.4	489960	22.2	20.6	378016	22.3	20.2	150793	22.4	21.0	269201	22.4	19.9	416836	22.5	19.9
270033	22.1	20.8	450054	22.2	21.0	461649	22.3	20.4	351020	22.4	20.2	16409	22.4	17.5	408576	22.5	20.8
97062	22.1	17.3	413740	22.2	20.5	413329	22.3	20.5	146658	22.4	19.7	371445	22.4	20.4	77747	22.5	18.9
418471	22.1	21.0	472282	22.2	19.7	153492	22.3	18.6	309256	22.4	20.6	319431	22.4	20.4	74094	22.5	18.5
483330	22.1	20.5	276241	22.2	19.6	389388	22.3	20.9	245800	22.4	21.2	281086	22.4	19.4	263966	22.5	19.9
407579	22.1	20.2	61171	22.2	18.0	335845	22.3	19.5	353008	22.4	20.7	407130	22.4	20.3	30354	22.5	20.0
129191	22.1	20.5	453691	22.2	21.1	414732	22.3	19.3	452124	22.4	20.4	351050	22.4	19.2	226606	22.5	20.8
153775	22.1	19.6	517384	22.2	21.7	398587	22.3	19.8	298630	22.4	19.9	76128	22.4	18.6	384660	22.5	20.9
517170	22.1	22.3	1213	22.2	15.2	154607	22.3	19.3	255032	22.4	20.1	101487	22.4	19.5	319005	22.5	20.6
231730	22.1	20.7	143225	22.2	19.1	187071	22.3	19.9	103102	22.4	18.9	130071	22.4	19.7	322687	22.5	20.0
121604	22.2	20.0	11081	22.2	17.4	180422	22.3	18.9	447611	22.4	20.6	264805	22.4	19.9	358639	22.5	19.8
329510	22.2	21.5	101391	22.2	19.1	216684	22.3	20.1	132823	22.4	19.8	224847	22.4	19.9	321857	22.5	20.5
96313	22.2	19.3	418717	22.2	19.9	337457	22.3	21.1	396386	22.4	21.0	269315	22.4	19.6	334627	22.5	19.9
288089	22.2	20.0	381364	22.2	20.4	128826	22.3	20.7	402354	22.4	20.6	364439	22.4	19.3	261917	22.5	19.8
12785	22.2	17.6	518254	22.2	19.8	176274	22.3	20.4	484538	22.4	20.8	59190	22.4	16.7	337261	22.5	19.5
20085	22.2	18.1	70059	22.2	19.1	407273	22.3	18.8	30677	22.4	19.3	415263	22.4	20.4	78115	22.5	19.1
492148	22.2	21.1	490962	22.2	21.5	270795	22.3	20.4	77876	22.4	19.0	435581	22.4	22.0	324436	22.5	20.7
176639	22.2	20.3	442253	22.2	23.1	417421	22.3	20.0	254697	22.4	20.0	291862	22.4	20.3	282363	22.5	19.7
373892	22.2	19.9	277733	22.2	21.4	159993	22.3	20.0	18043	22.4	18.0	237866	22.4	18.7	387066	22.5	20.6
171096	22.2	19.1	331179	22.2	19.3	452089	22.3	21.1	439092	22.4	21.4	41578	22.4	18.7	117334	22.5	19.1
330560	22.2	19.4	40671	22.2	17.0	83504	22.3	18.6	3777	22.4	16.0	297361	22.4	20.1	224026	22.5	20.7
397557	22.2	20.9	47166	22.2	19.6	182570	22.3	19.7	318139	22.4	20.1	179915	22.4	19.0	82948	22.5	20.0
72481	22.2	18.5	322444	22.2	20.4	40868	22.3	18.5	445670	22.4	19.4	492347	22.4	22.4	244026	22.5	19.9
394503	22.2	20.5	514430	22.2	20.9	369651	22.3	20.7	190217	22.4	19.7	198840	22.4	19.8	520526	22.5	20.7
67592	22.2	18.4	281098	22.2	20.6	279132	22.3	20.2	357801	22.4	20.5	196467	22.4	19.9	404822	22.5	20.7
158819	22.2	20.1	7020	22.2	17.6	184597	22.3	20.1	255119	22.4	19.8	410866	22.4	21.0	413797	22.5	20.9
128211	22.2	18.3	330730	22.2	20.1	332651	22.3	20.5	108221	22.4	19.2	279818	22.4	20.3	521549	22.5	20.5
415560	22.2	21.1	361231	22.2	20.0	166692	22.3	19.9	388530	22.4	20.4	484409	22.4	20.4	519	22.5	13.1
4302	22.2	16.5	454357	22.2	21.1	211414	22.3	20.2	378553	22.4	19.7	204530	22.4	19.4	3211	22.5	15.2
338966	22.2	20.5	463041	22.2	20.7	413181	22.3	21.3	517782	22.4	21.5	89350	22.4	18.2	493110	22.5	20.9
26008	22.2	18.3	398420	22.2	20.4	79440	22.3	18.3	486432	22.4	21.7	20092	22.4	17.5	278613	22.5	19.8
228489	22.2	19.3	97613	22.2	18.8	328457	22.3	19.7	523454	22.4	20.7	206367	22.5	18.7	311061	22.5	20.4
233611	22.2	19.9	145371	22.2	19.9	78909	22.3	19.2	127062	22.4	20.0	517751	22.5	20.3	448846	22.5	20.3
61105	22.2	17.4	519415	22.2	20.2	408664	22.3	20.3	54537	22.4	18.7	229343	22.5	19.5	55456	22.5	17.4
120739	22.2	18.9	470988	22.2	19.9	122289	22.3	19.8	156907	22.4	19.7	163875	22.5	19.3	108622	22.5	19.5
262383	22.2	20.2	227829	22.2	19.8	228868	22.3	20.2	119415	22.4	19.8	447891	22.5	20.1	362302	22.5	21.4
179706	22.2	20.1	453963	22.2	20.5	438657	22.3	20.3	183172	22.4	19.1	2103	22.5	15.0	254481	22.5	19.7
277206	22.2	19.2	300771	22.2	20.0	289243	22.3	19.8	267293	22.4	19.8	443510	22.5	20.8	301733	22.5	20.4
119301	22.2	19.6	311637	22.2	20.9	377484	22.3	21.5	66141	22.4	19.0	135575	22.5	19.5	450886	22.5	21.2
487598	22.2	20.6	481894	22.2	19.8	39783	22.3	17.4	492644	22.4	21.1	290425	22.5	20.7	326591	22.5	20.8
356591	22.2	19.5	399776	22.2	21.2	158942	22.3	19.9	209797	22.4	19.9	365941	22.5	20.4	51048	22.5	18.8
31506	22.2	17.7	516808	22.2	21.3	25538	22.3	18.7	359684	22.4	20.7	461568	22.5	22.6	174448	22.5	18.4
155392	22.2	20.9	414680	22.2	20.2	75743	22.3	18.5	321242	22.4	20.0	485482	22.5	20.1	268731	22.5	21.0
52700	22.2	18.3	206491	22.3	18.8	356517	22.3	20.2	90352	22.4	19.5	328044	22.5	21.2	198680	22.5	19.6
90313	22.2	19.6	23472	22.3	18.1	241822	22.3	18.6	201769	22.4	19.3	52806	22.5	20.2	100666	22.5	18.2
124712	22.2	19.1	153419	22.3	18.6	485373	22.3	21.0	453550	22.4	18.5	474569	22.5	20.4	87632	22.5	19.9
177452	22.2	20.6	209133	22.3	20.1	488232	22.3	21.1	367431	22.4	19.9	446120	22.5	20.8	451780	22.5	20.6
523286	22.2	20.1	438503	22.3	21.3	439025	22.3	21.4	360189	22.4	19.5	300572	22.5	19.8	114469	22.5	18.2
226940	22.2	20.2	24955	22.3	18.3	24689	22.3	18.7	359423	22.4	21.1	487827	22.5	20.7	458593	22.5	20.8
88653	22.2	18.2	126706	22.3	19.4	190775	22.3	20.8	328797	22.4	19.8	515637	22.5	21.7	13514	22.5	18.1
103570	22.2	18.9	248695	22.3	19.6	208308	22.3	20.4	116070	22.4	18.1	475014	22.5	20.0	327600	22.5	20.8
447566	22.2	21.2	297515	22.3	18.9	421897	22.3	20.9	484813	22.4	21.0	213578	22.5	18.7	212231	22.5	19.2
275481	22.2	19.6	119336	22.3	19.5	378108	22.3	20.4	359348	22.4	21.8	457315	22.5	21.3	107828	22.5	20.4
201538	22.2	19.0	455496	22.3	20.5	481918	22.3	20.9	492180	22.4	21.9	481931	22.5	20.3	337969	22.5	19.0
403662	22.2	21.4	317383	22.3	20.8	99393	22.3	18.3	214527	22.4	19.3	459401	22.5	20.4	424188	22.5	21.1
305161	22.2	19.4	268668	22.3	20.5	150206	22.3	19.1	491514	22.4	20.9	137271	22.5	19.8	49871	22.5	16.2
400462	22.2	20.3	127148	22.3	20.3	349707	22.3	19.2	446400	22.4	21.1	65070	22.5	18.2	414711	22.5	20.8
275237	22.2	20.5	68826	22.3	19.9	409846	22.3	21.2	110792	22.4	17.8	331729	22.5	21.0	343805	22.5	21.1
54153	22.2	18.8	60499	22.3	18.9	260685	22.3	20.2	43411	22.4	17.5	96644	22.5	19.6	47548	22.5	17.4
108377	22.2	19.9	422536	22.3	20.0	24120	22.3	18.6	214371	22.4	20.5	518104	22.5	21.4	248229	22.5	19.7
388062	22.2	20.0	347185	22.3	21.4	443733	22.3	20.5	488949	22.4	19.9	77234	22.5	19.6	381128	22.5	20.3
397354	22.2	21.6	460984	22.3	20.1	509073	22.3										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
127613	22.6	19.5	315586	22.6	20.1	441753	22.7	19.8	15840	22.8	17.7	50419	22.8	17.9	262289	22.9	20.5
515866	22.6	21.3	511956	22.6	19.8	361611	22.7	21.9	351712	22.8	19.6	454762	22.8	19.8	62654	22.9	19.8
345108	22.6	21.4	108834	22.6	20.4	14383	22.7	17.3	44137	22.8	19.5	237882	22.8	20.9	193020	22.9	20.0
263272	22.6	19.7	256630	22.6	20.8	337720	22.7	20.0	274000	22.8	19.8	92044	22.8	19.5	331133	22.9	20.4
275862	22.6	19.5	486841	22.6	20.6	350648	22.7	20.1	379570	22.8	20.1	203261	22.8	18.8	298528	22.9	19.9
148572	22.6	19.4	139663	22.6	18.7	412490	22.7	19.7	339882	22.8	21.8	81885	22.8	19.3	4143	22.9	16.9
230471	22.6	19.0	193630	22.6	18.6	110817	22.7	18.1	30343	22.8	18.0	442226	22.8	21.3	176431	22.9	20.1
381380	22.6	20.7	357677	22.6	19.9	76024	22.7	19.5	138179	22.8	20.1	475811	22.8	19.8	116219	22.9	18.8
450451	22.6	20.1	362832	22.6	19.4	265960	22.7	19.4	327080	22.8	20.8	269706	22.8	19.2	230610	22.9	20.3
402229	22.6	21.3	60682	22.6	19.3	346888	22.7	19.6	390574	22.8	21.4	481378	22.8	20.8	13287	22.9	17.5
484636	22.6	20.4	129060	22.6	18.7	119979	22.7	20.7	185516	22.8	20.2	48311	22.8	18.3	427400	22.9	20.1
188643	22.6	20.2	142546	22.6	18.5	91276	22.7	19.7	103386	22.8	17.6	179236	22.8	20.2	233941	22.9	20.2
186427	22.6	19.1	153450	22.6	19.7	191130	22.7	20.6	203683	22.8	20.1	256610	22.8	20.7	425873	22.9	21.0
324704	22.6	19.4	196390	22.6	19.1	256969	22.7	20.4	222045	22.8	18.8	182635	22.8	19.7	478463	22.9	21.9
82913	22.6	19.1	302698	22.6	19.9	310362	22.7	18.9	413794	22.8	20.4	420017	22.8	20.9	366296	22.9	20.9
195839	22.6	20.9	15624	22.6	17.8	461005	22.7	21.2	457908	22.8	20.0	181601	22.8	20.7	361789	22.9	20.1
51708	22.6	21.1	228253	22.6	20.2	430260	22.7	20.7	92852	22.8	19.1	514462	22.8	21.9	74317	22.9	19.7
515888	22.6	21.3	202718	22.6	21.3	276408	22.7	19.7	290533	22.8	20.8	521456	22.8	20.3	332629	22.9	21.0
491127	22.6	21.5	441303	22.6	18.7	263210	22.7	20.0	470077	22.8	20.2	438660	22.8	21.3	287678	22.9	19.1
460552	22.6	20.3	102986	22.6	19.5	294700	22.7	20.6	346313	22.8	21.2	394122	22.8	21.0	360136	22.9	20.5
404401	22.6	21.2	232509	22.6	19.2	13243	22.7	17.2	276541	22.8	20.7	475814	22.8	20.2	228766	22.9	20.6
447149	22.6	20.5	394153	22.6	21.2	326207	22.7	20.8	176679	22.8	20.3	364737	22.8	20.2	475328	22.9	20.6
487329	22.6	21.1	327119	22.6	19.7	310999	22.7	19.8	352168	22.8	20.4	10214	22.8	16.3	420051	22.9	20.9
249570	22.6	19.6	73780	22.6	18.3	106910	22.7	18.8	15334	22.8	17.1	381001	22.8	20.1	370902	22.9	20.3
232273	22.6	20.3	49087	22.6	17.6	137488	22.7	18.9	190510	22.8	20.4	427094	22.8	20.5	254888	22.9	20.2
410552	22.6	21.0	13938	22.6	18.0	119890	22.7	20.1	175804	22.8	19.5	115941	22.8	19.3	24842	22.9	18.1
73623	22.6	18.8	503273	22.6	20.2	330189	22.7	21.5	145333	22.8	19.4	414579	22.8	19.8	495545	22.9	21.3
493234	22.6	20.1	114240	22.6	19.5	269306	22.7	20.3	198576	22.8	19.1	259287	22.8	19.7	519742	22.9	21.3
302592	22.6	21.1	158764	22.6	19.9	171175	22.7	19.2	71324	22.8	18.5	450688	22.8	21.1	454765	22.9	20.6
69170	22.6	18.8	306014	22.6	20.5	472007	22.7	19.9	403696	22.8	20.8	56100	22.8	17.6	443143	22.9	21.4
269191	22.6	20.0	418632	22.6	20.8	50230	22.7	17.6	210239	22.8	20.5	445336	22.8	21.7	113790	22.9	20.3
415242	22.6	21.4	133737	22.6	19.6	493376	22.7	21.1	430440	22.8	22.9	76643	22.8	18.3	323593	22.9	20.0
496766	22.6	21.2	469459	22.6	20.0	363982	22.7	21.0	115203	22.8	18.8	269881	22.8	21.1	107952	22.9	18.9
245216	22.6	18.9	161959	22.6	20.6	376068	22.7	19.7	135378	22.8	18.9	486324	22.8	20.2	145745	22.9	20.2
515133	22.6	22.2	240330	22.6	20.3	236243	22.7	19.8	475112	22.8	20.5	332022	22.8	21.1	82232	22.9	19.9
268715	22.6	20.2	388253	22.6	21.3	403614	22.7	21.6	398159	22.8	20.4	230021	22.8	20.5	377887	22.9	20.0
486973	22.6	21.4	287032	22.6	20.7	414322	22.7	20.7	416813	22.8	19.8	512163	22.8	21.1	79152	22.9	19.5
263061	22.6	20.4	410871	22.6	19.8	271344	22.7	19.6	223919	22.8	18.8	480719	22.8	20.2	312330	22.9	20.0
138066	22.6	20.0	74374	22.6	18.1	398069	22.7	20.6	685	22.8	15.2	418671	22.8	21.6	270056	22.9	20.5
27408	22.6	18.9	132801	22.7	19.2	66061	22.7	19.5	322025	22.8	20.5	334824	22.8	20.2	348689	22.9	20.1
427353	22.6	19.8	86238	22.7	17.6	432280	22.7	21.2	117526	22.8	19.6	193741	22.8	21.1	71625	22.9	18.2
318222	22.6	20.3	223120	22.7	19.7	518673	22.7	20.7	317198	22.8	19.7	450677	22.8	20.3	244101	22.9	20.2
149041	22.6	20.1	241525	22.7	20.6	322977	22.7	20.8	15669	22.8	18.0	104693	22.8	19.9	133779	22.9	19.5
94049	22.6	19.3	265458	22.7	20.2	50498	22.7	18.8	189683	22.8	20.9	441290	22.9	19.3	517320	22.9	20.4
265050	22.6	20.2	505172	22.7	20.3	190220	22.7	19.7	404268	22.8	21.6	103638	22.9	18.3	265207	22.9	18.6
294171	22.6	21.1	241654	22.7	19.8	90865	22.7	20.1	518302	22.8	20.2	83003	22.9	18.9	376104	22.9	20.5
211656	22.6	19.7	277333	22.7	19.5	168731	22.7	19.7	76645	22.8	19.5	391206	22.9	21.7	55043	22.9	17.8
117659	22.6	18.6	515635	22.7	22.0	81399	22.7	18.7	204798	22.8	20.9	172687	22.9	18.8	83906	22.9	18.5
491475	22.6	22.2	458035	22.7	20.8	291107	22.7	20.4	199781	22.8	20.4	792	22.9	13.2	281519	22.9	20.7
421782	22.6	21.2	479597	22.7	20.3	418746	22.7	20.3	323986	22.8	20.9	450878	22.9	20.3	254574	22.9	19.5
363306	22.6	20.5	474225	22.7	18.8	226642	22.7	19.8	439872	22.8	20.5	314082	22.9	22.4	458102	22.9	20.1
129008	22.6	19.9	213223	22.7	19.9	483522	22.7	20.4	468543	22.8	19.6	29689	22.9	17.2	302111	22.9	19.5
440144	22.6	19.9	316340	22.7	20.1	42033	22.7	18.5	269805	22.8	18.9	414736	22.9	19.9	154647	22.9	19.6
280511	22.6	19.9	367974	22.7	19.7	335193	22.7	20.3	137411	22.8	19.4	228989	22.9	19.0	489993	22.9	21.1
183073	22.6	19.0	332628	22.7	20.6	275663	22.7	20.1	9884	22.8	17.4	382170	22.9	21.3	6699	22.9	16.1
475961	22.6	20.9	45435	22.7	18.5	516810	22.7	21.6	363338	22.8	21.0	163947	22.9	18.8	187119	22.9	20.5
320041	22.6	21.3	11525	22.7	16.7	185866	22.7	19.5	286053	22.8	22.0	152634	22.9	20.8	418686	22.9	20.1
456160	22.6	20.3	131305	22.7	19.7	215976	22.7	20.4	520666	22.8	21.2	459417	22.9	21.3	43316	22.9	17.9
458676	22.6	20.1	296074	22.7	18.9	342009	22.7	21.1	214394	22.8	20.9	485033	22.9	21.1	450678	22.9	20.2
453762	22.6	21.1	250267	22.7	20.9	450681	22.7	20.9	223396	22.8	18.8	522021	22.9	20.6	158263	22.9	19.4
78243	22.6	19.1	132526	22.7	19.9	325603	22.7	20.1	419489	22.8	19.6	488124	22.9	20.5	224905	22.9	20.6
222396	22.6	20.0	287775	22.7	21.5	145191	22.7	19.9	213371	22.8	20.0	481489	22.9	20.1	33325	22.9	17.3
354475	22.6	21.0	270986	22.7	18.7	21352	22.7	18.2	241763	22.8	21.4	314352	22.9	20.5	25022	22.9	18.9
451590	22.6	21.0	343320	22.7	20.2	115232	22.7	18.6	158878	22.8	19.8	311674	22.9	19.2	446406	22.9	20.5
213137	22.6	18.9	504016	22.7	20.8	102670	22.7	18.0	84308	22.8	18.5	296814	22.9	20.2	199705	22.9	20.5
99828	22.6	19.8	224978	22.7	20.2	331463	22.7	20.2	141800	22.8	19.1	463368	22.9	21.0	357051	22.9	19.4
360859	22.6	20.8	367652	22.7	19.8	283822	22.7	20.4	358741	22.8	21.1	517873	22.9	21.4	50908	22.9	19.2
55080	22.6	17.6	435500	22.7	22.1	210853	22.7	20.7	344032	22.8	20.6	446504	22.9	20.4	169785	22.9	19.2
516506	22.6	21.2	203974	22.7	18.9	2240											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
510755	22.9	19.1	23671	23.0	17.8	67627	23.1	19.0	383058	23.2	21.1	228987	23.2	19.1	66868	23.3	18.4
465833	22.9	21.3	99208	23.0	19.0	257040	23.1	20.6	142101	23.2	19.7	517363	23.2	21.7	116057	23.3	18.4
15588	22.9	19.1	230027	23.0	19.9	72678	23.1	17.9	359715	23.2	20.5	111336	23.2	19.6	112121	23.3	19.3
277664	22.9	20.1	296376	23.0	20.5	226405	23.1	19.2	348318	23.2	19.0	127481	23.2	19.6	304179	23.3	20.5
386026	22.9	21.2	458668	23.0	21.0	493160	23.1	20.7	369177	23.2	20.5	149266	23.2	19.8	279820	23.3	21.4
196629	22.9	20.1	443159	23.0	21.1	22428	23.1	17.8	174391	23.2	19.5	347641	23.2	20.0	121934	23.3	18.7
367815	22.9	20.5	493346	23.0	20.4	241785	23.1	19.8	326743	23.2	20.7	92603	23.2	20.1	250495	23.3	20.0
230205	22.9	19.7	281345	23.0	19.4	196713	23.1	19.0	273941	23.2	20.3	130206	23.2	18.8	329142	23.3	20.2
295236	22.9	20.4	488001	23.0	20.7	245818	23.1	20.4	488413	23.2	20.3	4995	23.2	15.2	194142	23.3	19.8
267163	22.9	19.7	450703	23.0	20.6	49195	23.1	18.5	418809	23.2	20.8	52812	23.2	17.8	486444	23.3	20.8
48693	22.9	18.2	79651	23.0	19.5	22929	23.1	18.5	326073	23.2	20.3	280533	23.2	20.8	1272	23.3	17.2
210893	22.9	20.5	126231	23.0	19.4	207678	23.1	19.5	186033	23.2	18.1	247944	23.2	19.2	474279	23.3	19.6
184465	22.9	20.5	179777	23.0	20.2	415233	23.1	20.4	369419	23.2	20.2	400614	23.2	21.3	340933	23.3	19.7
78018	22.9	19.6	1281	23.0	15.9	196809	23.1	19.2	487672	23.2	19.6	289261	23.2	19.4	82636	23.3	18.3
34643	22.9	18.2	458657	23.0	20.9	314276	23.1	20.3	335710	23.2	20.5	406686	23.2	21.2	184994	23.3	20.4
513311	22.9	21.8	307260	23.0	20.3	287651	23.1	19.8	32889	23.2	19.7	316212	23.2	20.4	76058	23.3	19.4
346342	22.9	20.9	158203	23.0	19.3	362501	23.1	19.8	329268	23.2	20.1	519215	23.2	21.0	215336	23.3	20.2
556	22.9	12.1	211683	23.0	19.3	267859	23.1	19.7	179290	23.2	19.2	24659	23.2	17.5	387630	23.3	21.4
405689	22.9	20.7	27017	23.0	18.8	449888	23.1	21.6	458044	23.2	20.8	286919	23.2	20.5	209651	23.3	19.5
490526	22.9	20.7	221884	23.0	19.4	41370	23.1	18.4	43140	23.2	17.7	302650	23.3	20.9	180977	23.3	20.4
165098	22.9	21.3	300450	23.0	20.3	500752	23.1	19.9	441223	23.2	21.3	246282	23.3	19.3	79617	23.3	18.8
394106	22.9	21.0	226550	23.0	20.0	269912	23.1	18.7	357272	23.2	19.7	320795	23.3	21.0	486563	23.3	21.0
162203	22.9	20.4	125793	23.0	19.2	436668	23.1	20.2	454658	23.2	21.5	344186	23.3	17.8	51755	23.3	17.9
439594	22.9	20.1	268702	23.0	20.3	158540	23.1	19.4	97389	23.2	17.7	136489	23.3	20.3	280850	23.3	20.2
392366	22.9	20.3	403370	23.0	20.7	56838	23.1	18.3	431225	23.2	21.4	417358	23.3	21.2	349570	23.3	21.1
139699	22.9	18.6	315745	23.0	20.8	116488	23.1	19.4	30748	23.2	18.8	283343	23.3	20.6	487789	23.3	20.9
133239	22.9	19.4	192271	23.0	20.9	518986	23.1	21.6	193751	23.2	19.8	257461	23.3	19.7	12996	23.3	19.0
17100	22.9	17.4	185449	23.0	20.6	177699	23.1	20.3	301405	23.2	20.2	520463	23.3	20.6	38387	23.3	18.0
7753	22.9	15.8	220674	23.0	19.6	448021	23.1	20.0	6905	23.2	15.2	228692	23.3	19.2	467173	23.3	19.4
25599	22.9	17.5	5413	23.0	16.5	159202	23.1	20.5	403652	23.2	21.0	101148	23.3	19.9	36469	23.3	19.7
481235	22.9	20.0	120551	23.0	19.8	44388	23.1	16.9	490918	23.2	20.8	210940	23.3	19.8	421880	23.3	20.8
316990	22.9	20.5	71895	23.0	17.8	484116	23.1	20.0	399803	23.2	20.6	226677	23.3	20.6	59370	23.3	18.3
523234	22.9	21.2	26629	23.0	17.0	373101	23.1	20.7	72211	23.2	18.6	294881	23.3	20.6	220240	23.3	19.5
475213	22.9	20.6	182688	23.0	18.0	300470	23.1	20.8	218104	23.2	20.2	223298	23.3	20.6	383515	23.3	21.4
523498	22.9	21.4	49221	23.0	18.2	197209	23.1	17.8	459777	23.2	21.3	265470	23.3	19.6	344887	23.3	20.5
213429	22.9	19.7	400156	23.0	21.0	500694	23.1	20.4	435553	23.2	21.5	515523	23.3	20.8	421138	23.3	20.3
107714	22.9	18.9	307220	23.0	19.7	126209	23.1	18.7	56839	23.2	19.3	194402	23.3	18.9	135822	23.3	20.1
222909	22.9	20.6	293132	23.0	19.4	271379	23.1	19.7	274059	23.2	20.4	430575	23.3	20.9	368062	23.3	19.3
29512	22.9	17.6	493286	23.0	20.8	445783	23.1	19.8	352869	23.2	19.6	367568	23.3	19.3	229421	23.3	19.7
163970	22.9	19.8	67253	23.0	19.1	14107	23.1	18.6	477832	23.2	20.6	413180	23.3	20.3	23604	23.3	17.3
49610	22.9	17.1	471039	23.0	19.8	265810	23.1	20.5	464595	23.2	20.8	61269	23.3	18.0	363339	23.3	21.1
134038	22.9	18.6	3026	23.0	16.0	107542	23.1	18.9	113139	23.2	19.9	266520	23.3	19.7	5218	23.3	17.1
146664	22.9	19.5	287770	23.0	20.7	443772	23.1	20.3	416350	23.2	21.1	400129	23.3	20.6	225436	23.3	19.7
348516	22.9	19.8	311782	23.0	20.0	156	23.1	12.9	329546	23.2	19.8	212148	23.3	19.4	16714	23.3	17.5
460816	22.9	21.2	303486	23.0	20.1	350316	23.1	21.1	481412	23.2	21.3	482749	23.3	20.0	334108	23.3	20.2
48868	22.9	19.5	507900	23.1	20.4	101397	23.1	18.5	143651	23.2	20.0	155254	23.3	19.7	520578	23.3	20.4
275262	22.9	19.7	27784	23.1	18.2	369517	23.1	20.1	63354	23.2	19.0	396924	23.3	22.2	307905	23.3	20.7
40214	22.9	19.0	421023	23.1	21.8	88682	23.1	20.2	129970	23.2	19.3	300589	23.3	19.1	515144	23.3	21.8
281835	22.9	19.7	387220	23.1	21.3	323174	23.1	21.1	88667	23.2	18.6	458451	23.3	20.7	485484	23.3	20.4
114798	22.9	18.6	319358	23.1	20.1	66175	23.1	18.1	24902	23.2	17.2	520499	23.3	22.0	436404	23.3	20.5
34571	22.9	17.9	460802	23.1	20.2	277060	23.1	19.9	466572	23.2	19.9	407056	23.3	20.9	125848	23.3	18.2
333109	22.9	20.3	324086	23.1	19.6	303550	23.1	19.8	265432	23.2	19.4	13825	23.3	18.4	9381	23.3	16.7
315781	22.9	20.6	513922	23.1	20.0	196699	23.1	19.8	311767	23.2	20.2	508967	23.3	22.3	53959	23.3	19.1
443181	22.9	21.2	249348	23.1	19.4	275106	23.1	19.2	12977	23.2	18.5	199923	23.3	21.7	269779	23.3	20.4
110479	22.9	19.1	187568	23.1	19.2	422278	23.1	20.2	180987	23.2	19.9	87641	23.3	19.0	120675	23.3	19.9
55044	22.9	19.6	77306	23.1	18.9	351041	23.1	20.4	91312	23.2	17.5	251680	23.3	21.1	105091	23.3	19.8
112549	23.0	19.2	304956	23.1	20.1	386031	23.1	19.9	270992	23.2	19.2	207514	23.3	20.7	484772	23.3	21.4
300419	23.0	20.0	257827	23.1	21.5	439324	23.1	21.1	326639	23.2	21.2	317733	23.3	20.8	223422	23.4	19.1
459878	23.0	20.2	54462	23.1	18.8	369559	23.1	20.3	485955	23.2	21.0	155739	23.3	20.9	478504	23.4	21.7
101679	23.0	17.0	416088	23.1	20.5	275130	23.1	20.2	270153	23.2	20.3	419386	23.3	20.8	232764	23.4	20.4
448361	23.0	20.9	178466	23.1	19.0	180797	23.1	20.6	123927	23.2	20.1	100126	23.3	19.7	274128	23.4	20.5
318209	23.0	19.4	523247	23.1	19.3	67243	23.1	17.6	369448	23.2	20.0	295178	23.3	21.5	311888	23.4	19.8
341913	23.0	20.6	118562	23.1	19.1	264829	23.1	20.2	155132	23.2	19.6	43123	23.3	18.2	309594	23.4	19.0
131352	23.0	19.6	384695	23.1	20.5	514798	23.1	22.4	249164	23.2	19.6	517261	23.3	21.6	514721	23.4	20.3
494441	23.0	22.1	111007	23.1	17.5	440794	23.1	20.9	422203	23.2	20.5	256925	23.3	20.1	418841	23.4	21.3
475244	23.0	20.7	149782	23.1	20.3	92855	23.2	20.3	403368	23.2	22.1	23743	23.3	18.9	195940	23.4	19.0
320133	23.0	19.9	373924	23.1	20.3	460553	23.2	20.5	150379	23.2	18.7	95907	23.3	20.4	195947	23.4	19.2
5310	23.0	17.5	265896	23.1	20.3	493059	23.2	21.1	449445	23.2	20.8	441209	23.3	21.8	125227	23.4	19.6
421732	23.0	20.8	302545	23.1	21.2	107987	23.2	18.9									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
195859	23.4	21.1	65346	23.4	20.3	400396	23.5	20.6	82240	23.6	19.5	460544	23.6	20.5	488004	23.7	20.3
339995	23.4	20.0	52922	23.4	18.5	1430	23.5	16.0	290055	23.6	21.1	520299	23.6	22.2	278736	23.7	20.5
373397	23.4	21.8	115904	23.4	18.8	442336	23.5	21.1	332596	23.6	20.6	85502	23.6	19.6	415384	23.7	20.2
83356	23.4	19.3	142398	23.4	20.0	208159	23.5	19.3	12234	23.6	16.8	66837	23.6	18.6	383027	23.7	20.3
225373	23.4	19.2	145116	23.4	18.9	300525	23.5	19.7	22856	23.6	18.8	245733	23.6	20.3	454539	23.7	21.5
446111	23.4	20.5	305952	23.4	20.5	410912	23.5	22.1	341275	23.6	20.5	273032	23.7	20.4	441728	23.7	19.6
487607	23.4	20.9	60720	23.4	19.8	438567	23.5	20.8	487631	23.6	20.6	375447	23.7	21.1	249828	23.7	20.8
132955	23.4	19.3	451989	23.4	21.4	482068	23.5	21.0	205998	23.6	20.6	514177	23.7	21.5	51588	23.7	20.2
480828	23.4	19.7	26517	23.4	18.1	484494	23.5	21.9	489796	23.6	19.8	330557	23.7	19.1	56196	23.7	18.0
363947	23.4	21.4	190453	23.4	19.6	260383	23.5	20.8	448952	23.6	20.9	403694	23.7	20.9	45040	23.7	18.7
276833	23.4	20.9	327647	23.4	20.3	428626	23.5	20.9	226273	23.6	18.6	89880	23.7	18.8	56123	23.7	18.1
66545	23.4	18.7	402066	23.4	20.1	242577	23.5	20.7	4426	23.6	16.3	408462	23.7	21.3	294539	23.7	19.6
240162	23.4	20.7	451837	23.5	20.6	321055	23.5	21.1	197733	23.6	20.8	71363	23.7	19.2	340861	23.7	19.8
88902	23.4	19.5	491435	23.5	21.5	88577	23.5	17.4	419455	23.6	20.1	393510	23.7	21.7	463044	23.7	19.5
78442	23.4	18.9	366503	23.5	20.8	153611	23.5	19.3	442685	23.6	22.4	328394	23.7	21.2	478432	23.7	21.0
416461	23.4	19.3	366326	23.5	20.4	385683	23.5	19.8	336865	23.6	20.5	447956	23.7	20.9	67121	23.7	18.9
338988	23.4	20.9	488462	23.5	21.4	156818	23.5	19.6	265216	23.6	19.9	241781	23.7	21.2	16167	23.7	18.0
517266	23.4	21.4	249209	23.5	19.7	382642	23.5	20.1	345357	23.6	19.5	270784	23.7	20.1	272056	23.7	20.5
45450	23.4	17.0	445678	23.5	21.4	189901	23.5	19.5	427350	23.6	20.5	508358	23.7	20.7	95237	23.7	19.1
422629	23.4	18.2	365993	23.5	20.7	405218	23.5	20.9	324949	23.6	20.2	229074	23.7	20.5	520644	23.7	20.2
69245	23.4	18.7	109903	23.5	19.1	108353	23.5	19.6	421013	23.6	21.8	139559	23.7	19.9	64502	23.7	18.8
347580	23.4	18.6	455484	23.5	20.9	99264	23.5	19.7	295693	23.6	20.3	105419	23.7	20.6	3437	23.7	15.2
511642	23.4	21.0	70819	23.5	18.6	226266	23.5	19.7	330511	23.6	21.8	162936	23.7	19.2	60287	23.7	19.2
14389	23.4	18.3	438537	23.5	19.2	103150	23.5	17.5	400774	23.6	20.4	101055	23.7	19.6	202219	23.7	19.4
140045	23.4	19.7	68818	23.5	17.8	517879	23.5	21.0	342404	23.6	20.3	481291	23.7	19.8	199743	23.7	19.5
60206	23.4	19.7	273245	23.5	20.2	443934	23.5	19.6	456071	23.6	20.3	351044	23.7	20.2	120273	23.7	19.7
381379	23.4	20.8	141590	23.5	20.3	420649	23.5	21.2	476728	23.6	20.0	506085	23.7	19.9	389921	23.7	20.3
264078	23.4	20.7	80997	23.5	19.9	89236	23.5	19.0	60780	23.6	18.8	194905	23.7	19.9	381798	23.7	19.8
519809	23.4	20.6	301734	23.5	20.6	322334	23.5	21.5	82657	23.6	19.1	202685	23.7	21.1	136154	23.7	19.9
192579	23.4	18.1	454002	23.5	20.8	395838	23.5	19.9	401629	23.6	20.6	328018	23.7	20.5	36948	23.7	19.4
484498	23.4	22.2	233785	23.5	20.3	259313	23.5	19.0	270091	23.6	21.1	107984	23.7	20.1	7061	23.7	18.0
489502	23.4	22.1	486302	23.5	19.7	447661	23.5	19.3	488316	23.6	20.0	304243	23.7	19.9	91616	23.7	19.0
287686	23.4	20.2	398987	23.5	20.4	161218	23.5	18.7	185720	23.6	20.6	137383	23.7	19.0	141722	23.7	19.9
25351	23.4	17.5	487009	23.5	21.3	346928	23.5	20.3	128736	23.6	20.1	364028	23.7	21.7	208830	23.7	20.3
115515	23.4	18.7	144994	23.5	19.8	342718	23.5	20.3	412009	23.6	20.6	516521	23.7	21.7	216376	23.7	19.9
119121	23.4	19.7	232800	23.5	20.5	478509	23.5	21.5	333529	23.6	21.0	21988	23.7	18.2	437079	23.7	20.2
81332	23.4	20.0	446127	23.5	20.3	16813	23.5	16.8	438250	23.6	20.2	337432	23.7	19.4	439792	23.7	20.8
39685	23.4	18.6	462998	23.5	21.2	513261	23.5	21.1	492911	23.6	20.7	308117	23.7	19.2	224240	23.7	19.5
268552	23.4	19.3	211013	23.5	20.2	38074	23.5	18.9	162039	23.6	19.2	411108	23.7	20.0	430469	23.7	21.3
4923	23.4	17.7	160356	23.5	19.8	364807	23.5	20.6	159120	23.6	19.4	523304	23.7	20.3	412850	23.8	20.9
213994	23.4	19.7	486242	23.5	20.5	373041	23.5	20.5	234166	23.6	20.0	329993	23.7	19.9	48821	23.8	17.9
109153	23.4	19.6	184752	23.5	21.2	484144	23.5	20.9	434603	23.6	21.1	43830	23.7	17.7	487698	23.8	21.0
331089	23.4	21.1	15066	23.5	17.2	149385	23.5	18.5	428223	23.6	22.0	130313	23.7	19.2	368476	23.8	19.8
164088	23.4	18.4	456461	23.5	20.9	445313	23.5	21.0	148197	23.6	19.9	493423	23.7	20.8	124506	23.8	18.7
484479	23.4	21.0	265039	23.5	20.8	435564	23.5	21.5	157452	23.6	20.0	237810	23.7	19.3	66915	23.8	18.3
140004	23.4	18.8	173690	23.5	19.4	50334	23.5	17.7	154816	23.6	20.9	350867	23.7	20.5	274069	23.8	19.9
179697	23.4	21.2	110618	23.5	19.3	418791	23.5	21.1	210586	23.6	20.1	256815	23.7	19.3	51116	23.8	19.2
503342	23.4	20.7	366324	23.5	21.0	275739	23.5	21.1	181134	23.6	20.0	456143	23.7	21.1	237788	23.8	19.5
416179	23.4	20.8	137463	23.5	19.5	409798	23.5	19.3	73554	23.6	19.1	307470	23.7	20.1	196449	23.8	20.4
260382	23.4	19.4	292736	23.5	20.8	436793	23.5	20.5	493404	23.6	20.9	224072	23.7	20.8	443933	23.8	21.0
320796	23.4	20.9	173395	23.5	19.6	223355	23.6	19.6	64530	23.6	18.9	431159	23.7	20.7	105021	23.8	18.8
98900	23.4	17.4	96014	23.5	19.5	124507	23.6	20.2	99833	23.6	19.3	212227	23.7	20.7	192244	23.8	20.4
420913	23.4	21.2	450695	23.5	20.5	412475	23.6	20.9	247861	23.6	19.9	89984	23.7	19.0	407855	23.8	20.6
106012	23.4	18.8	281209	23.5	21.1	103739	23.6	19.1	26516	23.6	17.7	43003	23.7	19.1	321595	23.8	20.2
228475	23.4	20.1	515779	23.5	20.5	267140	23.6	20.9	97717	23.6	19.0	492918	23.7	20.3	484391	23.8	21.3
449782	23.4	21.2	189881	23.5	19.5	164823	23.6	19.8	454465	23.6	21.2	452863	23.7	20.3	97225	23.8	19.3
398962	23.4	21.2	218131	23.5	19.8	520508	23.6	20.9	368351	23.6	19.9	335301	23.7	21.0	402327	23.8	21.1
34123	23.4	18.3	183142	23.5	19.7	351836	23.6	20.5	9171	23.6	17.0	58154	23.7	20.1	122028	23.8	19.8
96954	23.4	18.4	245284	23.5	20.3	396642	23.6	19.1	25921	23.6	19.0	229665	23.7	20.1	1582	23.8	16.1
448895	23.4	21.2	106397	23.5	18.7	357731	23.6	21.1	31557	23.6	19.0	4178	23.7	17.2	112823	23.8	19.7
137208	23.4	19.7	403090	23.5	20.7	360195	23.6	21.1	271485	23.6	20.6	28746	23.7	18.7	47774	23.8	19.0
495817	23.4	21.2	405995	23.5	20.9	115682	23.6	18.4	367989	23.6	20.8	272654	23.7	20.7	485837	23.8	21.5
208805	23.4	20.2	95331	23.5	18.0	412821	23.6	21.0	438039	23.6	21.6	479720	23.7	19.9	101382	23.8	19.1
458625	23.4	20.5	416199	23.5	20.5	164512	23.6	20.7	81098	23.6	19.1	72899	23.7	18.7	104655	23.8	20.1
450603	23.4	20.8	458121	23.5	20.7	363031	23.6	19.1	272958	23.6	19.8	82389	23.7	19.3	412681	23.8	21.6
305942	23.4	20.4	321839	23.5	20.9	203675	23.6	19.9	179628	23.6	19.9	279672	23.7	19.8	486418	23.8	20.3
250661	23.4	20.4	376218	23.5	19.6	241250	23.6	20.6	168837	23.6	19.5	40747	23.7	18.6	361222	23.8	20.7
40589	23.4	19.0	407216	23.5	21.0	449210	23.6	20.9	314686	23.6	19.8	351401	23.7	20.5	220371	23.8	18.0
40909	23.4	18.9	230587	23.5	19.4	73793	23.6	19.									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
296960	23.8	20.4	75770	23.8	17.6	518504	23.9	21.4	466930	23.9	20.2	242308	24.0	20.3	347395	24.1	21.0
129079	23.8	18.8	328398	23.8	21.4	332967	23.9	20.4	265193	23.9	19.7	419347	24.0	21.3	31065	24.1	18.1
276172	23.8	20.3	108123	23.8	19.0	364006	23.9	20.7	143834	23.9	19.3	331747	24.0	20.7	273095	24.1	20.9
245322	23.8	20.8	448330	23.8	22.0	97121	23.9	19.8	180829	23.9	19.8	139713	24.0	19.7	513390	24.1	21.2
146274	23.8	20.3	298446	23.8	19.2	26192	23.9	19.9	484148	23.9	20.0	449363	24.0	20.9	344321	24.1	20.4
355048	23.8	19.6	459177	23.8	21.1	308777	23.9	19.5	419418	23.9	19.7	480826	24.0	19.7	223880	24.1	19.8
517229	23.8	21.5	384293	23.8	19.7	49416	23.9	17.4	329084	23.9	19.6	293799	24.0	19.6	85598	24.1	17.0
360841	23.8	20.8	51790	23.8	16.9	108819	23.9	19.1	194688	23.9	19.3	69967	24.0	19.0	176208	24.1	19.2
518101	23.8	21.1	196325	23.8	20.7	65142	23.9	18.3	484884	23.9	20.8	156100	24.0	19.2	118838	24.1	19.3
63434	23.8	17.9	375239	23.8	19.8	331701	23.9	20.1	27960	23.9	18.8	188341	24.0	19.1	259312	24.1	20.9
487035	23.8	22.0	297304	23.8	20.8	119104	23.9	19.6	400356	23.9	19.1	193067	24.0	19.1	291364	24.1	20.4
317697	23.8	20.1	402343	23.8	20.8	517933	23.9	20.1	102732	23.9	20.3	238244	24.0	20.9	217700	24.1	20.5
30718	23.8	18.1	90662	23.8	21.5	494161	23.9	21.2	265048	23.9	20.1	131428	24.0	20.1	514753	24.1	21.9
319046	23.8	20.5	450697	23.8	21.4	9744	23.9	18.2	96266	23.9	18.9	82597	24.0	19.9	488225	24.1	20.3
272081	23.8	20.5	481966	23.8	20.4	182323	23.9	19.3	474953	23.9	20.0	172110	24.0	19.3	241537	24.1	20.9
29419	23.8	18.9	442445	23.8	21.1	200055	23.9	19.7	184492	23.9	19.6	515839	24.0	20.2	394194	24.1	21.1
99254	23.8	19.0	265164	23.8	19.0	201663	23.9	20.1	152904	23.9	20.3	265235	24.0	20.3	288313	24.1	20.5
46936	23.8	17.2	119351	23.8	21.0	230168	23.9	20.7	450242	23.9	20.5	213310	24.0	20.4	167304	24.1	19.0
230693	23.8	18.8	280273	23.8	19.4	339015	23.9	21.3	235355	23.9	20.5	355482	24.0	19.4	99674	24.1	19.4
116624	23.8	19.1	233325	23.8	20.4	308781	23.9	19.8	434151	23.9	20.2	293975	24.0	20.9	414630	24.1	20.2
128126	23.8	18.5	180807	23.8	20.4	3712	23.9	14.4	204865	23.9	20.6	104490	24.0	20.0	261158	24.1	20.4
361822	23.8	20.0	520444	23.8	21.0	449585	23.9	21.1	307766	23.9	19.8	69907	24.0	18.7	451602	24.1	20.5
149828	23.8	20.3	359667	23.8	19.9	8831	23.9	17.4	517974	23.9	21.4	410858	24.0	20.7	318933	24.1	20.4
515034	23.8	21.6	458026	23.9	20.7	24235	23.9	17.7	79753	23.9	18.4	391117	24.1	20.0	319965	24.1	21.0
26290	23.8	19.0	385993	23.9	19.9	23188	23.9	16.9	19044	23.9	18.0	63763	24.1	19.4	415676	24.1	20.8
28769	23.8	17.7	57144	23.9	18.2	128446	23.9	20.1	104149	23.9	19.0	133416	24.1	19.6	359738	24.1	19.9
311871	23.8	20.3	190883	23.9	20.6	172246	23.9	18.9	40278	23.9	18.1	427190	24.1	20.3	454638	24.1	21.2
297302	23.8	20.5	63933	23.9	18.5	156828	23.9	18.9	294315	23.9	20.1	206520	24.1	20.1	287820	24.1	20.3
522270	23.8	21.0	519771	23.9	20.3	267829	23.9	20.2	363872	23.9	21.1	181352	24.1	19.8	306758	24.1	19.0
183646	23.8	18.8	482918	23.9	20.4	420698	23.9	20.5	220532	23.9	19.1	227842	24.1	19.9	389091	24.1	20.8
370578	23.8	20.5	18751	23.9	18.2	300446	23.9	20.2	167207	23.9	19.3	49820	24.1	17.8	260624	24.1	20.6
457254	23.8	20.0	278645	23.9	20.8	90425	23.9	19.7	282078	23.9	19.7	175257	24.1	19.8	522179	24.1	20.9
460613	23.8	20.3	297968	23.9	21.9	152643	23.9	20.0	397614	23.9	19.6	131627	24.1	17.7	274620	24.1	20.3
458132	23.8	20.5	485648	23.9	21.4	477429	23.9	20.6	267966	23.9	19.6	347227	24.1	20.9	44212	24.1	19.4
521814	23.8	20.4	156700	23.9	19.4	304196	23.9	20.7	10866	23.9	17.7	493283	24.1	21.4	3039	24.1	16.9
329714	23.8	20.1	440118	23.9	21.1	160488	23.9	19.9	171569	23.9	19.8	486232	24.1	20.1	390486	24.1	20.1
192245	23.8	20.7	491538	23.9	22.2	374824	23.9	19.4	180924	23.9	20.0	84371	24.1	18.9	211300	24.1	20.1
399126	23.8	21.4	158122	23.9	19.5	252508	23.9	20.0	335319	23.9	20.0	25301	24.1	18.4	30416	24.1	18.8
50312	23.8	18.1	411480	23.9	20.8	518364	23.9	21.0	154159	23.9	19.3	282601	24.1	19.4	154421	24.1	19.1
267942	23.8	20.5	421107	23.9	20.7	396466	23.9	20.8	275641	23.9	20.5	506117	24.1	20.6	293816	24.1	20.8
237760	23.8	18.8	488911	23.9	21.0	355029	23.9	20.4	173873	23.9	20.7	298009	24.1	20.3	339800	24.1	20.9
76936	23.8	18.9	228175	23.9	19.1	366073	23.9	20.6	216415	24.0	20.4	44284	24.1	17.9	164929	24.1	17.5
50907	23.8	17.4	22520	23.9	18.6	318156	23.9	20.5	520976	24.0	20.9	18836	24.1	17.7	15572	24.1	18.7
55600	23.8	18.2	324812	23.9	20.5	198035	23.9	20.4	263217	24.0	20.8	355295	24.1	20.6	63352	24.1	19.3
326227	23.8	20.2	112660	23.9	19.5	485716	23.9	20.9	455238	24.0	21.3	178230	24.1	19.5	224853	24.1	19.3
202808	23.8	20.1	226960	23.9	20.3	184380	23.9	20.5	464334	24.0	19.9	416175	24.1	19.2	475043	24.1	20.3
365075	23.8	19.8	207502	23.9	19.8	516577	23.9	20.6	518441	24.0	20.7	520654	24.1	21.9	385687	24.1	19.4
373627	23.8	23.0	301900	23.9	20.8	286189	23.9	20.5	175676	24.0	20.6	11131	24.1	16.0	429809	24.1	21.1
467254	23.8	19.6	326495	23.9	21.0	193254	23.9	20.3	287898	24.0	20.9	37804	24.1	17.3	362749	24.1	20.1
39337	23.8	18.9	520734	23.9	21.4	410537	23.9	21.1	485558	24.0	19.9	96852	24.1	19.6	195729	24.1	19.9
212264	23.8	20.1	69282	23.9	17.3	188782	23.9	21.3	53717	24.0	19.3	272111	24.1	21.2	494014	24.1	21.0
243015	23.8	20.1	139591	23.9	18.9	364382	23.9	20.6	227100	24.0	19.3	395837	24.1	20.5	80352	24.1	18.8
387484	23.8	20.1	470032	23.9	19.9	164542	23.9	20.6	42530	24.0	18.6	283181	24.1	18.6	490917	24.1	19.9
370564	23.8	19.8	42828	23.9	19.1	300457	23.9	20.8	275627	24.0	21.4	485596	24.1	20.3	404335	24.2	21.1
449748	23.8	20.6	480502	23.9	21.0	493252	23.9	21.0	185519	24.0	20.2	517953	24.1	21.2	114202	24.2	17.8
83400	23.8	19.4	38778	23.9	17.8	291917	23.9	20.0	237868	24.0	20.3	336835	24.1	21.0	266833	24.2	20.1
15116	23.8	17.7	259640	23.9	20.6	425525	23.9	20.8	484100	24.0	21.1	171104	24.1	19.5	155414	24.2	20.5
416727	23.8	21.0	223139	23.9	18.3	103019	23.9	18.7	262669	24.0	19.6	283906	24.1	20.5	235161	24.2	19.1
372100	23.8	20.5	27840	23.9	19.9	212375	23.9	20.2	107419	24.0	19.8	273027	24.1	20.6	483659	24.2	20.3
290697	23.8	19.9	388113	23.9	19.2	97311	23.9	17.1	139716	24.0	19.5	69190	24.1	19.1	402727	24.2	20.6
486185	23.8	20.1	365640	23.9	20.6	517386	23.9	20.7	114837	24.0	18.0	74959	24.1	18.8	28068	24.2	18.6
46633	23.8	17.2	476541	23.9	20.3	218129	23.9	20.2	186574	24.0	19.2	133796	24.1	18.8	333001	24.2	20.4
31276	23.8	18.0	392287	23.9	21.5	285984	23.9	19.8	168378	24.0	21.1	484532	24.1	20.7	321602	24.2	20.5
204731	23.8	21.1	254807	23.9	21.2	518427	23.9	21.5	314797	24.0	19.4	178980	24.1	19.7	125918	24.2	20.0
363604	23.8	20.6	522005	23.9	21.2	334072	23.9	20.3	100779	24.0	19.5	206197	24.1	20.6	155876	24.2	19.6
85566	23.8	18.7	60402	23.9	18.3	209128	23.9	19.9	124145	24.0	18.4	27727	24.1	18.2	229446	24.2	19.2
91891	23.8	18.1	141755	23.9	20.3	71899	23.9	19.5	135215	24.0	18.5	518326	24.1	20.2	410080	24.2	21.4
255995	23.8	19.7	78347	23.9	19.5	372450	23.9	19.1	404659	24.0	21.1	248343	24.1	20.0	518080	24.2	21.6
33414	23.8	18.9	246076	23.9	20.5	312268	23										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
457484	24.2	20.7	225647	24.2	21.1	383840	24.3	20.3	390071	24.4	20.0	89170	24.4	18.8	336624	24.5	21.4
461868	24.2	21.4	274323	24.2	20.8	184860	24.3	20.6	12228	24.4	17.8	270250	24.4	20.1	15877	24.5	16.1
240179	24.2	20.9	79582	24.2	19.4	240413	24.3	19.4	400057	24.4	21.1	386652	24.4	20.0	444550	24.5	20.8
517337	24.2	21.2	72362	24.2	17.4	7928	24.3	18.0	398669	24.4	18.7	324776	24.4	20.5	223983	24.5	18.3
107694	24.2	19.1	51454	24.2	19.1	486206	24.3	20.2	296372	24.4	20.4	60447	24.4	18.7	123924	24.5	19.3
233281	24.2	20.5	55062	24.3	17.8	311875	24.3	19.8	14481	24.4	18.5	312278	24.4	19.9	515129	24.5	19.3
165110	24.2	20.4	520878	24.3	20.1	436863	24.3	21.9	270818	24.4	19.5	440035	24.5	20.8	397483	24.5	21.0
22253	24.2	17.9	485154	24.3	21.5	487534	24.3	20.0	4564	24.4	18.2	441033	24.5	21.3	460542	24.5	20.8
276378	24.2	19.7	359218	24.3	21.6	181334	24.3	19.0	133058	24.4	18.1	398373	24.5	21.5	186408	24.5	19.3
74607	24.2	19.4	348797	24.3	20.1	426039	24.3	19.9	298035	24.4	20.9	13050	24.5	17.6	219463	24.5	19.5
252310	24.2	20.4	519182	24.3	21.4	288124	24.3	19.9	207220	24.4	19.9	115406	24.5	18.6	172170	24.5	19.2
420097	24.2	21.0	493268	24.3	20.8	44006	24.3	18.3	105549	24.4	19.1	109838	24.5	19.1	319414	24.5	20.5
251282	24.2	20.4	283285	24.3	21.1	329093	24.3	20.9	154430	24.4	18.8	208319	24.5	20.2	138294	24.5	19.3
466961	24.2	20.6	469479	24.3	19.7	481841	24.3	19.9	52515	24.4	19.2	495069	24.5	21.5	333516	24.5	20.7
494141	24.2	20.9	299071	24.3	20.0	196002	24.3	19.6	196472	24.4	21.0	436769	24.5	21.9	75903	24.5	18.3
236003	24.2	19.9	235401	24.3	18.3	288358	24.3	19.9	134908	24.4	18.2	191568	24.5	19.4	40924	24.5	18.3
449607	24.2	19.6	139758	24.3	19.2	331842	24.3	19.7	164046	24.4	17.6	348229	24.5	20.3	227985	24.5	20.3
416099	24.2	21.1	460945	24.3	21.1	196129	24.3	19.1	268148	24.4	19.7	364939	24.5	21.2	193298	24.5	20.0
141764	24.2	20.5	135790	24.3	19.9	303137	24.3	19.2	113726	24.4	21.3	237852	24.5	19.6	457522	24.5	20.7
128151	24.2	18.7	154695	24.3	20.6	103376	24.3	18.6	269269	24.4	20.6	417854	24.5	21.5	491345	24.5	19.6
375551	24.2	20.9	139023	24.3	19.8	438686	24.3	21.0	100832	24.4	20.0	271478	24.5	20.9	322777	24.5	20.6
111073	24.2	18.7	120405	24.3	19.9	195743	24.3	19.7	101764	24.4	19.8	117790	24.5	20.5	184632	24.5	20.6
399240	24.2	21.4	149688	24.3	19.5	323612	24.3	20.0	317528	24.4	19.7	519425	24.5	21.2	418655	24.5	20.4
382713	24.2	19.7	216894	24.3	20.1	126894	24.3	19.6	216319	24.4	19.5	337262	24.5	20.3	6260	24.5	16.2
34242	24.2	18.1	305221	24.3	19.6	352564	24.3	20.2	354268	24.4	20.8	224736	24.5	18.7	180031	24.5	19.0
448880	24.2	21.1	490633	24.3	20.5	168180	24.3	19.8	156849	24.4	20.4	152612	24.5	20.2	345769	24.5	20.3
129581	24.2	19.6	187551	24.3	20.4	419394	24.3	20.4	185715	24.4	19.9	218950	24.5	21.2	511783	24.5	21.5
236113	24.2	20.3	421829	24.3	21.3	215015	24.3	20.1	10410	24.4	17.6	92217	24.5	18.4	503523	24.5	20.5
245772	24.2	19.9	416375	24.3	21.3	336059	24.3	21.0	268011	24.4	21.1	148509	24.5	19.7	383017	24.5	20.4
85439	24.2	19.0	459281	24.3	20.5	421734	24.3	20.6	428559	24.4	20.1	223144	24.5	19.7	17335	24.5	18.1
263753	24.2	19.8	130397	24.3	19.6	457414	24.3	20.0	157708	24.4	20.6	115671	24.5	19.0	140557	24.5	19.3
255831	24.2	21.1	201550	24.3	18.9	89577	24.3	19.6	393770	24.4	21.4	163284	24.5	20.3	24797	24.5	17.8
470964	24.2	20.3	124335	24.3	20.7	267557	24.3	20.6	50369	24.4	18.6	482745	24.5	20.6	2615	24.5	17.6
347825	24.2	19.1	457826	24.3	20.5	196078	24.3	18.8	44963	24.4	19.8	134757	24.5	19.2	497125	24.5	19.0
27942	24.2	19.9	453208	24.3	20.7	208812	24.3	20.9	8134	24.4	17.1	71213	24.5	18.9	249852	24.5	20.3
464427	24.2	19.9	451925	24.3	21.7	150550	24.3	19.2	231451	24.4	20.5	302558	24.5	19.9	274187	24.5	21.0
132488	24.2	20.4	329857	24.3	19.8	385215	24.3	19.3	470041	24.4	21.3	142003	24.5	20.3	487442	24.5	20.4
218143	24.2	18.6	356291	24.3	18.6	225330	24.3	19.7	439040	24.4	21.6	53797	24.5	18.5	46957	24.5	18.9
66626	24.2	18.5	189154	24.3	19.9	486405	24.3	21.6	27388	24.4	18.4	15793	24.5	18.9	233128	24.5	19.7
113714	24.2	18.7	311872	24.3	20.3	305051	24.3	20.4	12850	24.4	17.6	69597	24.5	17.5	25623	24.5	17.5
98534	24.2	19.5	426534	24.3	21.1	313442	24.3	20.1	239415	24.4	20.4	51709	24.5	19.0	521311	24.5	21.1
273491	24.2	19.7	61146	24.3	18.8	283340	24.3	19.7	470292	24.4	19.8	261602	24.5	20.4	413344	24.5	20.7
265916	24.2	20.4	272142	24.3	21.4	251065	24.3	20.1	187142	24.4	20.2	402594	24.5	21.1	159195	24.5	18.9
46104	24.2	18.5	73340	24.3	19.0	112109	24.3	19.0	278502	24.4	19.2	135819	24.5	21.1	119591	24.5	18.2
315188	24.2	20.5	331464	24.3	20.9	196412	24.3	20.5	308125	24.4	18.5	13993	24.5	17.5	489432	24.5	20.0
114233	24.2	19.1	112839	24.3	18.7	283028	24.3	20.1	369936	24.4	20.2	243268	24.5	20.2	156944	24.6	20.8
88262	24.2	19.9	359314	24.3	20.8	486336	24.3	20.9	223096	24.4	19.3	518034	24.5	20.0	11149	24.6	16.9
397371	24.2	21.9	242390	24.3	20.3	193706	24.3	20.1	316349	24.4	20.8	277321	24.5	19.6	331449	24.6	20.6
27326	24.2	18.9	45246	24.3	18.9	125504	24.4	19.2	210480	24.4	21.0	180818	24.5	20.0	83494	24.6	19.0
451815	24.2	21.1	200462	24.3	18.3	457976	24.4	20.0	509510	24.4	20.4	247600	24.5	19.1	172679	24.6	19.5
416788	24.2	21.5	266347	24.3	20.2	134398	24.4	19.9	272232	24.4	19.6	448445	24.5	20.9	274411	24.6	20.3
51605	24.2	19.6	409135	24.3	19.7	124284	24.4	19.1	145097	24.4	20.1	418766	24.5	20.4	344932	24.6	21.1
51735	24.2	18.5	384620	24.3	20.9	46418	24.4	18.8	415374	24.4	21.7	517157	24.5	22.1	227731	24.6	19.8
23557	24.2	19.4	50237	24.3	18.4	117723	24.4	19.2	11470	24.4	16.8	286298	24.5	19.9	463294	24.6	20.2
449757	24.2	21.5	149751	24.3	20.3	318027	24.4	20.6	27407	24.4	17.8	49497	24.5	18.2	395766	24.6	20.4
474233	24.2	20.8	329690	24.3	19.9	146787	24.4	19.3	248024	24.4	20.1	184538	24.5	19.7	250944	24.6	20.4
488279	24.2	20.1	490971	24.3	21.5	446526	24.4	20.7	339979	24.4	20.7	143779	24.5	19.2	453062	24.6	20.8
218125	24.2	19.9	19137	24.3	18.0	277504	24.4	20.5	185174	24.4	19.4	288843	24.5	20.3	365016	24.6	20.6
50278	24.2	18.9	180571	24.3	20.6	484399	24.4	19.7	310558	24.4	20.2	320053	24.5	20.2	454754	24.6	19.6
264638	24.2	20.3	148199	24.3	19.9	102762	24.4	18.2	132663	24.4	19.8	266002	24.5	21.0	125678	24.6	18.9
453866	24.2	21.5	109543	24.3	19.4	199402	24.4	20.6	513587	24.4	21.2	298462	24.5	19.5	223858	24.6	20.7
2989	24.2	16.1	198785	24.3	19.2	462483	24.4	20.6	64775	24.4	18.8	113133	24.5	19.3	243386	24.6	20.6
475288	24.2	20.6	366325	24.3	20.8	215094	24.4	19.4	27934	24.4	19.5	268948	24.5	20.2	335330	24.6	21.6
245860	24.2	20.2	440023	24.3	21.4	352324	24.4	21.0	149217	24.4	18.4	383123	24.5	19.9	366712	24.6	19.3
419365	24.2	19.3	127251	24.3	19.9	286785	24.4	21.6	432955	24.4	20.9	110194	24.5	20.3	154952	24.6	20.5
186244	24.2	19.3	299022	24.3	19.7	367038	24.4	21.4	482078	24.4	20.1	28826	24.5	17.9	490425	24.6	21.5
20978	24.2	19.1	171837	24.3	20.8	356882	24.4	20.3	434026	24.4	21.2	233619	24.5	20.7	69986	24.6	23.5
517406	24.2	21.9	251289	24.3	19.6	462918	24.4	20.5	477374	24.4	19.6	201367	24.5	19.8	328397	24.6	20.2
461615	24.2	20.0	291750	24.3	20.7	73256											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
131368	24.6	18.8	24776	24.6	17.3	148773	24.7	18.0	147800	24.8	20.0	101669	24.8	17.6	319591	24.9	22.4
269126	24.6	20.1	126190	24.6	18.7	115937	24.7	18.1	88582	24.8	18.2	69527	24.8	18.5	514295	24.9	21.1
20093	24.6	17.4	202086	24.6	19.3	44496	24.7	17.7	259863	24.8	19.9	471248	24.8	20.0	212279	24.9	19.3
489431	24.6	20.9	333325	24.6	19.9	229719	24.7	20.1	130285	24.8	19.7	133765	24.8	18.7	438618	24.9	20.0
451817	24.6	21.2	511879	24.6	20.4	397306	24.7	21.4	446764	24.8	21.2	317683	24.8	20.9	50661	24.9	19.3
60822	24.6	19.6	463829	24.6	20.4	456086	24.7	21.0	420185	24.8	20.3	85222	24.9	19.7	226613	24.9	20.7
105002	24.6	18.5	55026	24.6	18.2	298096	24.7	19.8	182648	24.8	20.0	448337	24.9	20.4	358661	24.9	19.4
15880	24.6	17.9	482857	24.6	20.3	129259	24.7	19.3	175059	24.8	19.3	484128	24.9	21.3	70763	24.9	18.4
277379	24.6	20.5	160670	24.7	19.0	301898	24.7	20.7	490887	24.8	20.4	271648	24.9	21.0	283862	24.9	19.3
453730	24.6	19.8	450371	24.7	20.1	137872	24.7	19.2	155636	24.8	21.2	413347	24.9	20.3	514580	24.9	22.0
274855	24.6	21.1	233445	24.7	19.8	454463	24.7	21.1	77254	24.8	18.9	110615	24.9	19.2	122958	24.9	18.8
60386	24.6	18.1	276279	24.7	20.7	351389	24.7	21.8	212059	24.8	20.1	439548	24.9	20.9	150403	24.9	18.4
487755	24.6	20.8	344406	24.7	20.4	301615	24.7	20.2	274687	24.8	21.4	179588	24.9	20.0	367439	24.9	22.0
482855	24.6	20.9	460703	24.7	19.7	151670	24.7	18.8	333321	24.8	21.8	420147	24.9	20.9	74401	24.9	19.0
444489	24.6	20.3	495187	24.7	21.8	147563	24.7	19.4	52659	24.8	18.3	420197	24.9	20.2	281039	24.9	21.3
378183	24.6	19.0	40194	24.7	19.6	185383	24.7	19.3	518464	24.8	22.5	377141	24.9	21.8	421940	24.9	20.3
197124	24.6	19.1	54176	24.7	17.7	84251	24.7	18.1	278157	24.8	19.9	124469	24.9	19.9	349368	24.9	19.6
444565	24.6	20.4	333795	24.7	20.8	295212	24.7	20.5	192338	24.8	20.0	274247	24.9	20.6	66965	24.9	18.9
383562	24.6	19.4	64442	24.7	18.9	336112	24.7	20.2	459327	24.8	20.6	412880	24.9	20.9	216051	24.9	20.1
247584	24.6	19.9	165130	24.7	20.5	85022	24.7	18.9	400859	24.8	20.5	171032	24.9	19.6	159421	24.9	20.2
43861	24.6	17.9	90903	24.7	19.8	251472	24.7	19.9	460203	24.8	21.2	417872	24.9	20.8	72793	24.9	18.9
170778	24.6	18.1	263449	24.7	20.8	342029	24.7	20.6	486000	24.8	22.1	52372	24.9	18.2	91889	24.9	19.1
361340	24.6	20.3	177593	24.7	20.5	404315	24.7	21.4	60937	24.8	18.8	116765	24.9	19.6	149117	24.9	20.0
77438	24.6	20.0	460639	24.7	20.8	90448	24.7	19.7	106858	24.8	18.4	206636	24.9	18.9	381028	24.9	20.8
517248	24.6	21.5	215662	24.7	19.0	373128	24.7	20.7	57577	24.8	18.7	385184	24.9	19.8	79420	24.9	19.4
207520	24.6	20.3	271317	24.7	19.7	396243	24.7	20.4	131361	24.8	20.2	48554	24.9	18.4	327510	24.9	20.4
73724	24.6	19.5	435035	24.7	20.4	32816	24.7	19.8	180841	24.8	19.9	202151	24.9	21.2	93467	24.9	19.6
218425	24.6	18.8	403456	24.7	19.7	153843	24.7	20.6	421786	24.8	21.8	14511	24.9	17.7	225468	24.9	19.7
462457	24.6	20.4	13027	24.7	16.8	249290	24.7	19.9	435551	24.8	21.9	448322	24.9	21.3	305005	24.9	20.8
289429	24.6	20.1	305196	24.7	19.3	30191	24.7	18.2	33030	24.8	17.8	111519	24.9	18.8	248799	24.9	19.4
458481	24.6	20.8	416101	24.7	20.9	409390	24.7	20.5	221243	24.8	21.2	84564	24.9	19.0	266651	24.9	21.3
369874	24.6	20.3	349716	24.7	18.8	512599	24.7	19.1	60902	24.8	18.6	324367	24.9	20.9	305807	24.9	20.1
298145	24.6	18.9	371478	24.7	19.5	173481	24.7	19.1	76554	24.8	18.5	248867	24.9	20.5	30554	24.9	18.2
8543	24.6	17.2	340158	24.7	19.5	390665	24.7	20.4	144103	24.8	17.8	65542	24.9	18.1	259051	24.9	21.8
216033	24.6	19.7	158843	24.7	19.4	422080	24.7	20.4	89840	24.8	19.2	5939	24.9	16.5	262799	24.9	20.8
273303	24.6	19.4	327708	24.7	20.6	275405	24.7	19.4	346939	24.8	20.3	483647	24.9	19.2	53154	24.9	18.6
31310	24.6	18.1	353484	24.7	20.3	108102	24.7	19.6	324843	24.8	21.5	278939	24.9	20.1	412253	24.9	21.7
108600	24.6	19.4	265092	24.7	20.0	480141	24.7	20.3	4741	24.8	17.1	446212	24.9	20.3	101761	24.9	18.6
213855	24.6	19.9	319692	24.7	21.2	175714	24.7	20.1	474930	24.8	21.0	262346	24.9	20.6	395260	24.9	21.4
350397	24.6	21.3	462997	24.7	21.2	228986	24.7	19.1	308814	24.8	20.6	340161	24.9	20.0	315754	24.9	20.4
514598	24.6	20.4	280735	24.7	19.6	21672	24.7	17.3	513895	24.8	20.0	9898	24.9	16.3	49286	24.9	17.2
479611	24.6	19.9	229010	24.7	19.5	23707	24.7	17.8	515687	24.8	22.2	310794	24.9	19.7	131396	24.9	18.8
438050	24.6	22.0	268761	24.7	18.9	288195	24.7	19.8	170673	24.8	20.0	118591	24.9	18.8	47210	24.9	19.1
520866	24.6	21.1	159033	24.7	19.9	393612	24.7	20.1	3605	24.8	15.1	378067	24.9	19.3	351090	24.9	20.4
3098	24.6	18.3	224679	24.7	19.7	8553	24.7	17.2	97768	24.8	18.7	458480	24.9	21.8	296803	24.9	20.2
212763	24.6	20.1	314339	24.7	20.8	315182	24.7	20.2	408618	24.8	20.3	390768	24.9	19.3	152127	24.9	20.2
112271	24.6	19.3	224021	24.7	21.0	349691	24.7	19.3	189496	24.8	19.3	282537	24.9	21.0	291400	24.9	19.8
47805	24.6	18.5	367021	24.7	21.1	337824	24.7	19.7	198728	24.8	19.6	91280	24.9	20.1	415403	24.9	20.5
6711	24.6	17.0	134382	24.7	19.0	447620	24.7	21.1	482854	24.8	20.4	474252	24.9	21.0	291943	24.9	20.3
161573	24.6	19.6	493081	24.7	20.7	228896	24.7	18.9	520496	24.8	22.1	305252	24.9	19.9	416834	24.9	20.6
406927	24.6	20.8	420630	24.7	22.1	84272	24.8	18.5	191532	24.8	20.1	328680	24.9	19.6	515266	24.9	21.2
276795	24.6	21.2	289763	24.7	21.3	434312	24.8	21.5	184724	24.8	19.7	264806	24.9	20.3	67288	24.9	18.6
483079	24.6	21.4	139741	24.7	18.8	484530	24.8	20.0	405971	24.8	21.5	403660	24.9	21.1	490989	24.9	21.8
518553	24.6	21.0	411956	24.7	20.3	475510	24.8	21.5	48220	24.8	19.3	113707	24.9	19.0	260083	24.9	20.5
279463	24.6	20.0	231013	24.7	19.9	420141	24.8	21.2	484791	24.8	20.2	460194	24.9	20.7	233783	24.9	18.9
124002	24.6	18.9	482647	24.7	20.8	407150	24.8	20.1	302771	24.8	20.6	148614	24.9	20.5	139204	24.9	19.1
393390	24.6	21.3	452574	24.7	20.7	257832	24.8	19.3	252078	24.8	20.2	10756	24.9	15.8	200182	24.9	20.4
312938	24.6	19.9	69109	24.7	19.5	411048	24.8	20.6	457508	24.8	21.3	328796	24.9	19.8	170629	24.9	18.5
307341	24.6	19.7	273059	24.7	20.1	244338	24.8	20.7	167224	24.8	20.1	427889	24.9	19.9	76467	24.9	18.9
276266	24.6	20.5	220946	24.7	20.5	187999	24.8	21.4	307315	24.8	20.2	91458	24.9	18.6	444906	24.9	20.0
263456	24.6	20.1	147645	24.7	20.7	202969	24.8	20.4	194600	24.8	19.3	135140	24.9	18.8	60516	24.9	18.7
175952	24.6	20.0	382168	24.7	21.3	409399	24.8	19.6	439104	24.8	21.0	280740	24.9	19.9	159143	24.9	19.0
25877	24.6	18.5	489632	24.7	19.8	139366	24.8	20.0	307497	24.8	19.3	367262	24.9	21.1	483095	24.9	20.8
440053	24.6	20.8	373291	24.7	20.4	104085	24.8	19.0	135806	24.8	18.9	32568	24.9	19.3	447863	24.9	21.3
193714	24.6	20.7	348394	24.7	19.8	15646	24.8	18.2	347175	24.8	21.5	329537	24.9	21.2	223901	24.9	20.5
307468	24.6	19.5	97536	24.7	19.6	113375	24.8	19.1	202056	24.8	20.7	154839	24.9	19.4	426626	24.9	20.3
295623	24.6	20.9	361393	24.7	21.1	70627	24.8	18.9	390243	24.8	21.2	26462	24.9	17.6	149650	24.9	20.6
349704	24.6	18.7	487621	24.7	20.4	191209	24.8	19.0	184649	24.8	20.3	54220	24.9	18.6	486431	24.9	21.0
366330	24.6	20.4	404320	24.7	20.8	412730	24.8										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
10274	24.9	17.3	166918	25.1	20.3	50704	25.1	18.2	480140	25.2	21.2	411700	25.2	20.8	164005	25.3	19.6
401048	24.9	21.5	520129	25.1	21.1	101105	25.1	18.3	356162	25.2	21.0	187346	25.2	20.6	165057	25.3	19.9
22460	24.9	16.6	333873	25.1	20.2	21191	25.1	18.5	252045	25.2	19.9	408620	25.2	22.5	104979	25.3	19.4
210589	24.9	18.3	500565	25.1	20.9	443730	25.1	20.0	101436	25.2	18.4	180808	25.3	20.6	495935	25.3	21.5
141079	24.9	18.7	306162	25.1	20.7	464500	25.1	20.6	511026	25.2	20.8	220441	25.3	19.0	305974	25.3	20.3
402314	24.9	21.2	146427	25.1	19.3	183102	25.1	19.8	486379	25.2	20.6	389903	25.3	20.4	281926	25.3	21.9
393405	24.9	18.6	452189	25.1	21.2	78799	25.1	22.1	460755	25.2	20.7	498042	25.3	21.0	520367	25.3	21.0
216547	24.9	20.3	77974	25.1	18.5	84902	25.1	18.4	351071	25.2	19.6	103719	25.3	19.9	316314	25.3	20.5
267594	24.9	19.2	38624	25.1	19.0	177887	25.1	20.7	216795	25.2	19.6	15849	25.3	18.8	203190	25.3	18.5
123504	24.9	19.1	447932	25.1	20.3	415414	25.1	21.0	493313	25.2	20.3	97331	25.3	18.9	44196	25.3	18.4
461045	24.9	19.0	275352	25.1	19.8	357714	25.1	21.5	414734	25.2	19.7	348534	25.3	21.3	193214	25.3	20.5
204862	24.9	19.6	42349	25.1	19.3	344882	25.1	20.4	29127	25.2	17.1	318698	25.3	20.4	164032	25.3	19.7
111982	24.9	19.4	445172	25.1	20.9	309514	25.1	20.5	404865	25.2	20.1	186735	25.3	19.9	195721	25.3	19.7
515781	24.9	21.7	64029	25.1	18.7	175492	25.1	18.6	146533	25.2	19.5	523331	25.3	21.0	423295	25.3	20.2
226267	25.0	19.2	388093	25.1	19.9	475198	25.1	20.6	403483	25.2	20.7	185704	25.3	18.8	108939	25.4	19.6
487396	25.0	20.7	254243	25.1	19.4	414556	25.1	21.3	108954	25.2	19.8	284032	25.3	18.8	170048	25.4	19.4
312725	25.0	20.3	223084	25.1	19.3	182719	25.1	19.5	274203	25.2	21.3	483561	25.3	20.4	272042	25.4	19.6
364984	25.0	20.8	412431	25.1	21.1	451581	25.1	20.6	160573	25.2	20.7	110564	25.3	19.2	73943	25.4	18.5
522333	25.0	20.1	120283	25.1	20.2	387479	25.1	20.0	414301	25.2	21.3	329417	25.3	21.2	418808	25.4	20.5
49005	25.0	17.6	460397	25.1	20.5	307378	25.1	22.3	290334	25.2	20.4	508357	25.3	20.1	472880	25.4	21.0
348713	25.0	20.4	179735	25.1	20.3	68265	25.1	17.4	71289	25.2	18.4	160244	25.3	20.3	277226	25.4	19.0
488464	25.0	21.2	329433	25.1	21.0	32126	25.1	17.4	281194	25.2	21.5	136538	25.3	19.9	514175	25.4	21.6
180380	25.0	18.7	484104	25.1	21.0	409367	25.1	19.1	110429	25.2	18.9	330307	25.3	20.9	301892	25.4	20.0
96511	25.0	19.8	434606	25.1	21.6	514795	25.1	20.3	67352	25.2	18.1	178651	25.3	20.2	315650	25.4	21.0
452316	25.0	18.4	517478	25.1	23.1	265418	25.1	20.5	329466	25.2	18.8	482237	25.3	21.7	400881	25.4	21.0
350239	25.0	19.9	199784	25.1	20.8	164828	25.1	20.5	192151	25.2	19.3	70722	25.3	18.3	182194	25.4	19.6
450128	25.0	21.5	509192	25.1	20.4	375145	25.1	19.7	342337	25.2	19.7	260994	25.3	20.4	205139	25.4	19.0
376456	25.0	21.4	11636	25.1	18.8	410864	25.1	21.2	44917	25.2	19.0	100992	25.3	19.0	460924	25.4	20.6
22077	25.0	18.7	41930	25.1	18.2	159270	25.1	19.2	279072	25.2	20.5	36767	25.3	18.6	489815	25.4	21.0
232298	25.0	19.6	335477	25.1	19.8	231219	25.1	20.0	479456	25.2	20.9	220785	25.3	19.9	522187	25.4	21.6
329731	25.0	20.2	196397	25.1	20.4	371774	25.1	22.5	472929	25.2	20.5	342309	25.3	20.1	397220	25.4	21.8
87204	25.0	18.4	274446	25.1	20.3	515871	25.1	21.0	45430	25.2	19.3	335357	25.3	18.9	233081	25.4	18.3
51317	25.0	18.9	113639	25.1	18.4	395192	25.1	21.6	460705	25.2	19.9	78261	25.3	19.1	486454	25.4	21.6
241092	25.0	18.9	216271	25.1	19.7	445996	25.1	20.5	194851	25.2	18.4	131527	25.3	19.7	199322	25.4	20.3
97515	25.0	18.7	199648	25.1	20.3	3407	25.1	15.4	46248	25.2	18.6	405365	25.3	19.7	219191	25.4	21.4
477323	25.0	20.7	489537	25.1	21.3	489351	25.1	21.5	220080	25.2	20.6	199660	25.3	19.1	484290	25.4	19.8
77930	25.0	19.4	208829	25.1	20.6	146993	25.1	20.0	212814	25.2	20.2	329721	25.3	19.6	300620	25.4	20.8
450385	25.0	21.3	86344	25.1	18.3	139219	25.1	19.9	394154	25.2	20.8	491003	25.3	20.8	130690	25.4	18.4
127060	25.0	19.7	171150	25.1	19.2	464565	25.2	21.2	81410	25.2	19.4	443949	25.3	19.4	374200	25.4	20.0
183097	25.0	20.5	460907	25.1	21.1	517867	25.2	21.9	350890	25.2	20.3	445615	25.3	21.1	304888	25.4	20.3
222149	25.0	18.7	493672	25.1	21.5	320639	25.2	19.9	60559	25.2	20.3	437047	25.3	20.5	229620	25.4	20.7
215508	25.0	19.1	86819	25.1	20.6	265947	25.2	20.8	503509	25.2	19.7	5416	25.3	16.7	488058	25.4	21.0
268220	25.0	19.5	274807	25.1	20.4	472461	25.2	20.8	351703	25.2	20.7	447507	25.3	19.7	516387	25.4	19.9
156118	25.0	19.9	103143	25.1	17.8	489163	25.1	20.2	3306	25.2	16.2	276170	25.3	20.0	329104	25.4	21.5
81064	25.0	20.6	279042	25.1	20.1	493072	25.2	20.4	79795	25.2	18.1	340228	25.3	20.1	278520	25.4	20.6
360614	25.0	20.3	219170	25.1	20.3	173700	25.2	19.9	192708	25.2	20.0	331299	25.3	20.7	477263	25.4	20.0
118529	25.0	19.7	120940	25.1	20.2	318170	25.2	19.1	148233	25.2	20.5	33867	25.3	18.7	264888	25.4	21.0
430885	25.0	21.8	51114	25.1	18.1	104699	25.2	19.6	458697	25.2	21.1	431740	25.3	22.0	238601	25.4	18.4
364840	25.0	21.2	380997	25.1	20.9	200497	25.2	19.2	439232	25.2	20.5	267578	25.3	20.0	350496	25.4	19.8
494775	25.0	21.1	506160	25.1	21.0	368554	25.2	19.8	172228	25.2	19.4	508798	25.3	20.8	357036	25.4	21.6
107704	25.0	19.3	493367	25.1	20.5	66308	25.2	18.0	174774	25.2	19.8	150728	25.3	19.5	9982	25.4	16.9
226477	25.0	20.2	339081	25.1	21.9	477209	25.2	21.7	326513	25.2	20.8	213971	25.3	19.4	163927	25.4	19.9
9307	25.0	17.7	322999	25.1	21.1	20680	25.2	16.2	234966	25.2	19.7	206116	25.3	19.8	427090	25.4	20.6
352376	25.0	21.0	490390	25.1	22.0	402577	25.2	21.0	429117	25.2	19.3	439068	25.3	21.3	102468	25.4	19.5
495452	25.0	21.1	523293	25.1	20.7	329685	25.2	19.9	42328	25.2	19.0	459431	25.3	19.1	31985	25.4	19.5
343200	25.0	20.8	410918	25.1	21.8	4121	25.2	16.6	197007	25.2	19.6	283348	25.3	19.2	374237	25.4	19.9
8894	25.0	17.6	118612	25.1	19.4	71458	25.2	18.5	333044	25.2	21.5	235267	25.3	19.7	249966	25.4	19.3
181933	25.0	19.7	302599	25.1	20.2	356533	25.2	20.8	52395	25.2	19.0	342765	25.3	20.7	458500	25.4	20.1
27444	25.0	18.4	316154	25.1	19.7	473428	25.2	19.9	93390	25.2	18.1	53607	25.3	18.1	162277	25.4	19.3
469886	25.0	19.5	504468	25.1	21.2	284285	25.2	19.5	139112	25.2	20.9	285654	25.3	19.6	101293	25.4	19.6
225314	25.0	20.2	49825	25.1	18.2	515713	25.2	21.9	64152	25.2	17.3	176690	25.3	20.1	111917	25.4	18.9
55930	25.0	18.3	208316	25.1	20.5	395908	25.2	20.9	104816	25.2	19.9	420127	25.3	20.9	521712	25.4	21.3
172564	25.0	19.9	22651	25.1	17.5	171921	25.2	19.8	451914	25.2	21.7	460681	25.3	20.1	21717	25.4	18.1
336853	25.0	20.9	257590	25.1	21.0	54405	25.2	19.0	369159	25.2	20.8	489204	25.3	21.5	422117	25.4	21.2
86584	25.0	17.5	241116	25.1	19.5	267149	25.2	20.5	178820	25.2	19.7	266863	25.3	20.5	222386	25.4	19.2
144977	25.0	20.7	445639	25.1	21.5	369224	25.2	20.5	319722	25.2	20.5	55842	25.3	19.8	299443	25.4	20.3
409716	25.0	20.3	37753	25.1	18.9	458536	25.2	21.0	268221	25.2	19.8	153483	25.3	18.1	362711	25.4	20.5
469664	25.1	21.5	448359	25.1	20.4	25581	25.2	17.1	55286	25.2	18.3	294420	25.3	20.5	380988	25.4	20.6
14435	25.1	17.7	108121	25.1	19.2	38693											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
398637	25.4	19.0	460565	25.5	20.5	137177	25.5	19.8	344881	25.6	20.2	45455	25.7	18.1	337249	25.8	19.5
222024	25.4	19.3	146784	25.5	20.0	506092	25.5	20.1	142800	25.6	19.5	251394	25.7	20.0	344194	25.8	19.5
439855	25.4	21.2	458584	25.5	21.4	220015	25.5	19.0	321950	25.6	20.8	486313	25.7	20.9	139419	25.8	19.5
230719	25.4	19.2	289452	25.5	21.6	71026	25.5	18.8	155170	25.6	20.0	373858	25.7	21.0	188414	25.8	20.8
47912	25.4	18.1	146303	25.5	20.4	477419	25.5	20.2	433436	25.6	19.6	190228	25.7	20.2	419269	25.8	20.5
28546	25.4	17.4	125834	25.5	18.6	113793	25.5	19.0	376070	25.6	22.0	199606	25.7	20.0	478499	25.8	21.2
168968	25.4	19.9	104026	25.5	18.9	254855	25.5	20.6	301582	25.6	20.7	373007	25.7	20.0	280827	25.8	19.1
270273	25.4	20.7	484063	25.5	21.4	45749	25.5	17.3	18557	25.6	17.9	271318	25.7	19.5	484380	25.8	21.2
458000	25.4	20.9	200060	25.5	21.2	275507	25.5	20.0	361319	25.6	20.8	51752	25.7	19.3	484555	25.8	21.9
335676	25.4	21.0	152958	25.5	20.3	388525	25.5	21.2	254956	25.6	20.0	272054	25.7	21.2	445648	25.8	20.3
306018	25.4	20.7	37362	25.5	17.8	139900	25.5	20.3	47727	25.6	19.3	324309	25.7	20.6	340188	25.8	20.2
359640	25.4	20.1	240968	25.5	21.5	14363	25.5	18.1	272267	25.6	20.7	98045	25.7	19.6	274728	25.8	20.8
316438	25.4	20.1	63613	25.5	18.2	23957	25.5	17.8	416542	25.6	20.1	41330	25.7	17.8	112425	25.8	19.2
139477	25.4	20.1	453557	25.5	19.8	83440	25.5	19.0	482520	25.6	21.9	49606	25.7	17.7	492144	25.8	21.2
276949	25.4	21.4	491404	25.5	20.2	24954	25.5	19.4	66657	25.6	18.9	110843	25.7	19.4	112997	25.8	20.2
229368	25.4	20.2	321122	25.5	20.3	306168	25.5	20.8	434029	25.6	21.7	199357	25.7	20.3	95174	25.8	19.6
319975	25.4	20.2	229292	25.5	20.4	483541	25.5	19.9	394173	25.6	21.3	19547	25.7	18.7	254398	25.8	19.4
82616	25.4	18.8	298493	25.5	20.4	317800	25.5	20.8	34778	25.6	18.1	386678	25.7	20.5	301741	25.8	20.2
129260	25.4	20.0	488678	25.5	19.8	475064	25.5	20.3	264822	25.6	20.2	413778	25.7	20.3	101739	25.8	19.8
168549	25.4	18.4	212278	25.5	21.1	50769	25.5	18.4	216662	25.6	19.8	435596	25.7	22.0	332872	25.8	20.0
275896	25.4	19.4	98911	25.5	18.2	43826	25.5	17.3	291087	25.6	21.0	293921	25.7	20.6	366352	25.8	19.6
94160	25.4	18.9	356870	25.5	20.4	518956	25.5	20.0	495502	25.6	20.6	274453	25.7	20.6	523260	25.8	20.2
357466	25.4	20.4	311762	25.5	20.3	13403	25.5	17.6	221844	25.6	20.0	264146	25.7	19.6	507887	25.8	21.1
86637	25.4	19.1	88804	25.5	19.4	108630	25.5	20.0	158193	25.6	19.2	404388	25.7	21.3	341099	25.8	20.2
327593	25.4	22.0	98597	25.5	18.4	300760	25.5	19.7	246413	25.6	20.0	246085	25.7	20.0	487084	25.8	21.3
306635	25.4	19.0	20576	25.5	17.5	408767	25.5	21.6	180514	25.6	20.4	372105	25.7	20.1	297531	25.8	20.5
282865	25.4	20.8	329695	25.5	20.3	72471	25.5	19.0	10064	25.6	16.3	250498	25.7	20.2	406156	25.8	20.0
23521	25.4	17.1	448982	25.5	20.2	275207	25.5	19.4	514151	25.6	20.4	523467	25.7	22.2	31180	25.8	16.6
496714	25.4	19.7	42537	25.5	17.3	477823	25.5	19.6	111711	25.6	19.2	464447	25.7	20.9	359867	25.8	20.7
454545	25.4	21.2	228421	25.5	19.0	189283	25.5	19.5	224108	25.6	20.8	144998	25.7	20.6	441060	25.8	20.6
517264	25.4	21.6	420211	25.5	20.2	487544	25.5	20.2	369878	25.6	20.6	392166	25.7	21.4	138164	25.8	20.1
470093	25.4	21.0	309520	25.5	20.3	493171	25.5	21.0	389435	25.6	20.1	10869	25.7	17.9	179907	25.8	20.0
154518	25.4	20.2	514113	25.5	21.1	37849	25.5	18.0	241341	25.6	19.0	191201	25.7	19.7	413318	25.8	20.8
406633	25.4	19.4	308297	25.5	20.6	211392	25.5	19.9	376652	25.6	20.9	227404	25.7	19.9	245955	25.8	19.9
23696	25.4	17.9	196693	25.5	19.5	306215	25.5	19.9	448513	25.6	21.2	284041	25.7	18.7	73150	25.8	19.8
217115	25.4	18.8	120215	25.5	20.2	154729	25.5	19.2	393000	25.6	19.9	129324	25.7	20.5	241662	25.8	18.9
488071	25.4	20.7	415539	25.5	21.0	464354	25.5	19.7	342257	25.6	21.5	294696	25.7	20.6	353984	25.8	20.7
76549	25.4	16.5	360350	25.5	20.8	490583	25.5	21.0	324666	25.6	20.7	363958	25.7	20.3	23481	25.8	17.9
30175	25.4	19.7	357944	25.5	20.9	345369	25.5	21.0	417440	25.6	20.4	376687	25.7	21.0	264867	25.8	20.7
183617	25.4	19.3	24544	25.5	17.5	160277	25.5	19.3	520251	25.6	20.9	158019	25.7	20.0	518649	25.8	21.4
363342	25.4	20.7	256063	25.5	20.8	515806	25.5	21.8	265433	25.6	19.9	149960	25.7	20.2	89677	25.8	19.7
210829	25.4	20.9	140463	25.5	20.0	64002	25.5	18.3	389649	25.6	21.2	416362	25.7	20.8	444799	25.8	22.1
491361	25.4	20.5	282542	25.5	20.1	54055	25.5	19.1	74641	25.6	18.6	484874	25.7	21.4	263947	25.8	21.3
11742	25.4	17.9	479424	25.5	19.9	278806	25.5	20.6	232705	25.6	19.3	384337	25.7	20.5	447950	25.8	20.2
520527	25.4	21.1	268816	25.5	19.8	43761	25.5	17.7	279862	25.6	20.1	44504	25.7	16.6	277085	25.8	20.5
511035	25.4	20.2	156166	25.5	18.9	208843	25.5	20.2	25990	25.6	18.4	109846	25.7	20.0	54400	25.8	18.6
400048	25.4	21.8	356403	25.5	20.9	270237	25.5	21.9	202384	25.6	20.1	50821	25.7	18.3	454543	25.8	20.9
346291	25.4	21.4	326563	25.5	21.0	191009	25.5	18.8	310331	25.6	20.2	408472	25.7	21.3	189713	25.8	20.4
270978	25.4	20.6	514337	25.5	20.6	516551	25.5	20.9	486847	25.6	20.1	517609	25.7	20.9	214257	25.8	20.6
504439	25.4	20.5	14291	25.5	16.4	514197	25.5	21.6	462432	25.6	21.3	113981	25.7	19.6	81615	25.8	18.7
58077	25.4	18.9	274767	25.5	20.5	289542	25.5	19.5	464141	25.6	20.1	199657	25.7	20.0	501608	25.8	20.4
285688	25.4	20.3	40163	25.5	19.0	55813	25.5	18.1	69281	25.6	18.2	243398	25.7	20.6	334269	25.8	20.3
206005	25.4	20.0	483117	25.5	20.5	94905	25.5	20.0	268604	25.6	20.6	278418	25.7	21.1	70482	25.8	20.1
175707	25.4	19.4	378372	25.5	21.7	340806	25.5	20.6	494129	25.6	21.0	297029	25.7	20.8	274681	25.8	19.6
239735	25.4	20.2	296351	25.5	20.5	342048	25.5	21.3	82252	25.6	19.7	43277	25.7	18.6	515058	25.8	22.3
60164	25.4	19.1	91828	25.5	19.2	31103	25.5	20.0	66744	25.6	18.6	331693	25.7	20.3	164389	25.8	19.8
70172	25.4	19.2	220907	25.5	19.4	484771	25.5	20.9	295312	25.6	20.7	483555	25.7	19.6	151120	25.8	19.6
261870	25.4	20.0	75682	25.5	18.2	407543	25.5	21.2	35749	25.7	18.3	191518	25.7	20.4	143106	25.8	19.6
370829	25.4	18.6	228699	25.5	20.9	354427	25.5	19.5	22363	25.7	18.5	413743	25.7	19.6	171295	25.8	20.2
393389	25.4	21.2	311292	25.5	20.1	132907	25.5	19.3	209713	25.7	20.0	50755	25.7	18.1	197702	25.8	20.7
432592	25.4	20.1	434514	25.5	21.1	122160	25.5	20.1	72589	25.7	18.4	40098	25.7	19.0	454554	25.8	20.9
150177	25.4	20.1	308126	25.5	19.1	373923	25.5	20.5	353778	25.7	19.9	249993	25.7	20.0	416484	25.8	18.5
416440	25.4	20.7	66707	25.5	19.6	264278	25.5	20.5	365594	25.7	20.3	145619	25.7	20.0	276334	25.8	19.7
271951	25.4	18.9	335705	25.5	19.8	266732	25.5	19.6	216417	25.7	19.7	361848	25.7	21.5	478468	25.8	21.4
38513	25.4	18.2	114578	25.5	19.6	275864	25.5	20.5	14350	25.7	17.7	461309	25.7	20.3	145224	25.8	19.8
477231	25.4	20.8	27023	25.5	17.1	404473	25.5	21.0	414369	25.7	20.8	332228	25.7	20.6	101878	25.8	20.2
129143	25.5	19.4	45723	25.5	17.9	51566	25.5	19.3	269860	25.7	20.6	230256	25.7	19.5	361341	25.8	20.3
66105	25.5	19.6	373106	25.5	20.8	141587	25.5	19.5	178262	25.7	19.8	237879	25.7	20.5	357333	25.8	19.4
2801	25.5	15.9	441045	25.5	21.5	88693	25.5										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
65394	25.8	19.1	331993	25.9	19.7	185973	25.9	19.9	492189	26.0	22.1	37802	26.1	18.9	271683	26.2	19.8
354400	25.8	19.5	3695	25.9	16.5	18206	25.9	17.6	421165	26.0	19.9	931	26.1	12.5	310258	26.2	20.5
402747	25.8	20.9	37370	25.9	17.5	387347	25.9	21.4	418789	26.0	20.6	236525	26.1	19.9	11645	26.2	17.0
451121	25.8	21.2	102657	25.9	18.8	125132	25.9	18.5	394940	26.0	20.2	197416	26.1	18.9	34443	26.2	18.9
170006	25.8	20.7	378106	25.9	20.7	129040	25.9	19.4	199586	26.0	20.9	195870	26.1	21.1	190684	26.2	19.8
523430	25.8	22.0	254098	25.9	20.3	150408	25.9	18.5	489188	26.0	21.8	238644	26.1	20.0	122078	26.2	20.7
125068	25.8	19.3	88425	25.9	19.2	192985	25.9	19.6	167263	26.0	20.3	60451	26.1	18.4	240698	26.2	20.1
280700	25.8	20.4	340915	25.9	21.3	291560	25.9	21.2	382720	26.0	17.8	99076	26.1	18.8	43435	26.2	17.4
107743	25.8	19.8	146701	25.9	19.6	372151	25.9	19.7	435419	26.0	20.1	418656	26.1	21.8	456863	26.2	21.0
128447	25.8	20.0	317782	25.9	19.9	420576	25.9	20.5	167687	26.0	20.1	342303	26.1	20.6	12469	26.2	17.4
97031	25.8	17.6	398466	25.9	20.2	222127	25.9	19.7	175201	26.1	20.3	265057	26.1	20.5	223784	26.2	20.4
209815	25.8	20.5	383519	25.9	20.1	478587	25.9	20.5	337840	26.1	20.9	357273	26.1	20.4	199950	26.2	20.1
362523	25.8	20.6	254910	25.9	20.3	342357	25.9	20.1	85126	26.1	18.4	154119	26.1	20.1	291794	26.2	20.6
118871	25.8	19.0	456133	25.9	20.5	100395	25.9	19.3	310550	26.1	21.5	455525	26.1	19.4	411130	26.2	19.2
358325	25.8	20.7	10633	25.9	16.7	46250	25.9	18.6	62684	26.1	18.1	292029	26.1	20.9	197287	26.2	20.3
170481	25.8	19.5	118242	25.9	19.3	99916	25.9	18.0	367871	26.1	19.8	347239	26.1	21.5	278636	26.2	21.3
457062	25.8	21.2	472256	25.9	20.4	24286	25.9	17.6	516988	26.1	20.2	42888	26.1	17.6	214411	26.2	21.2
165638	25.8	19.4	485494	25.9	20.8	365023	25.9	21.6	120213	26.1	19.6	91722	26.1	18.0	309997	26.2	20.2
510531	25.8	21.4	356160	25.9	20.2	330532	25.9	21.0	441235	26.1	20.3	261638	26.1	20.4	78625	26.2	18.5
372191	25.8	20.5	362790	25.9	19.7	108570	25.9	19.3	419395	26.1	19.9	332218	26.1	21.0	190127	26.2	18.8
96830	25.8	18.9	216144	25.9	19.9	197465	25.9	19.2	283332	26.1	21.1	396192	26.1	20.2	265089	26.2	21.1
323997	25.8	20.3	274256	25.9	21.5	381054	25.9	19.6	289964	26.1	19.8	388057	26.1	19.5	486309	26.2	20.3
346833	25.8	19.2	89193	25.9	18.4	146437	25.9	18.9	397881	26.1	19.7	23679	26.1	18.5	508885	26.2	21.0
83884	25.8	19.5	368326	25.9	21.8	493058	25.9	20.9	361963	26.1	21.2	385739	26.1	20.1	161455	26.2	18.5
520683	25.8	21.4	425209	25.9	20.2	404351	25.9	21.7	466986	26.1	20.7	213115	26.1	19.1	51774	26.2	18.8
329167	25.8	20.4	15308	25.9	19.2	454930	25.9	20.3	417047	26.1	21.0	408457	26.1	21.2	381363	26.2	20.4
274606	25.8	21.6	78598	25.9	19.3	198297	25.9	20.9	46218	26.1	18.6	140738	26.1	19.7	63267	26.2	19.5
88664	25.8	18.1	518251	25.9	19.9	136826	25.9	20.3	126040	26.1	19.0	303540	26.1	20.4	494677	26.2	22.1
272217	25.9	20.3	303608	25.9	20.3	435636	25.9	20.7	389973	26.1	19.8	307722	26.1	20.0	299600	26.2	20.9
444761	25.9	22.6	419522	25.9	21.2	332244	25.9	21.1	293488	26.1	20.0	360854	26.1	21.1	330501	26.2	21.2
67434	25.9	19.8	133604	25.9	19.3	517520	25.9	20.0	430840	26.1	21.9	385723	26.1	20.9	387150	26.2	19.5
124808	25.9	19.8	51518	25.9	19.7	444852	26.0	21.5	493065	26.1	20.5	27323	26.1	18.9	475346	26.2	20.0
277319	25.9	19.7	265827	25.9	20.1	210056	26.0	20.6	179143	26.1	19.5	444812	26.1	19.8	220965	26.2	20.0
227234	25.9	20.2	217605	25.9	20.6	1069	26.0	13.9	495175	26.1	21.4	464825	26.1	20.1	290161	26.2	20.2
222007	25.9	20.1	146597	25.9	18.1	298525	26.0	21.2	48779	26.1	18.7	420259	26.1	20.1	80993	26.2	19.3
384346	25.9	20.0	47515	25.9	18.2	71974	26.0	18.5	265993	26.1	20.3	115337	26.1	18.7	451542	26.2	21.0
146673	25.9	19.9	404593	25.9	21.0	436149	26.0	19.8	151957	26.1	19.0	124998	26.1	18.8	443734	26.2	21.4
487507	25.9	20.3	293547	25.9	21.7	298415	26.0	18.9	357474	26.1	20.2	171101	26.1	19.2	287782	26.2	20.4
219270	25.9	19.2	464401	25.9	19.8	15487	26.0	18.1	275051	26.1	20.4	458564	26.1	20.9	362447	26.2	20.8
515289	25.9	21.4	448489	25.9	20.6	294198	26.0	20.1	9111	26.1	15.9	169703	26.1	19.9	17369	26.2	17.6
340867	25.9	20.1	13254	25.9	18.3	254755	26.0	21.1	368388	26.1	20.7	407406	26.1	21.5	138449	26.2	19.6
223528	25.9	19.4	99292	25.9	19.1	516390	26.0	21.5	353374	26.1	19.1	398640	26.1	18.7	56817	26.2	19.3
437923	25.9	21.3	123749	25.9	18.8	31094	26.0	17.8	447693	26.1	20.6	383510	26.2	20.8	124965	26.2	18.7
124637	25.9	17.6	167450	25.9	18.8	52123	26.0	19.8	330225	26.1	20.6	342441	26.2	19.5	484332	26.2	20.7
175563	25.9	20.0	101152	25.9	18.5	289778	26.0	20.3	22580	26.1	17.6	141708	26.2	19.8	105116	26.2	19.4
475226	25.9	20.4	256108	25.9	20.4	220190	26.0	19.0	355426	26.1	19.9	7611	26.2	17.1	492922	26.2	20.7
523385	25.9	21.1	81167	25.9	19.4	453951	26.0	19.6	317059	26.1	21.0	191502	26.2	19.4	71267	26.2	18.0
287472	25.9	19.3	305007	25.9	20.6	300496	26.0	21.4	484397	26.1	19.7	192971	26.2	20.3	200454	26.2	18.4
169727	25.9	20.6	507588	25.9	20.6	468742	26.0	21.9	415673	26.1	21.0	335339	26.2	20.0	197047	26.2	19.2
8263	25.9	17.7	311624	25.9	19.3	302711	26.0	20.0	198984	26.1	20.3	17243	26.2	17.3	416156	26.3	21.0
286797	25.9	20.8	274796	25.9	20.4	276448	26.0	20.3	378632	26.1	19.6	375112	26.2	21.5	320238	26.3	21.7
491379	25.9	20.5	78021	25.9	19.3	448576	26.0	21.0	198721	26.1	20.4	455465	26.2	19.1	213443	26.3	18.9
514606	25.9	21.0	324326	25.9	21.3	315748	26.0	20.5	38003	26.1	18.8	515791	26.2	21.2	207256	26.3	20.3
242999	25.9	20.0	403577	25.9	21.0	276257	26.0	20.5	453597	26.1	20.4	414999	26.2	20.2	484962	26.3	20.2
495377	25.9	21.5	52239	25.9	18.8	491467	26.0	20.6	15226	26.1	17.9	32023	26.2	18.8	334254	26.3	20.0
326556	25.9	20.8	76319	25.9	17.8	454775	26.0	19.7	80617	26.1	18.3	329884	26.2	20.7	495672	26.3	21.2
413320	25.9	20.6	439466	25.9	19.7	460406	26.0	20.7	294313	26.1	19.9	79259	26.2	19.1	220550	26.3	21.5
312286	25.9	19.2	273576	25.9	20.5	280525	26.0	21.1	101874	26.1	19.8	12344	26.2	17.2	293103	26.3	20.2
129482	25.9	19.1	79116	25.9	18.7	310169	26.0	20.3	517790	26.1	21.8	270105	26.2	20.1	78318	26.3	18.6
447581	25.9	20.5	71410	25.9	17.1	325594	26.0	20.4	332033	26.1	20.0	402773	26.2	20.4	517250	26.3	21.3
361836	25.9	20.2	66017	25.9	18.4	399534	26.0	19.5	261751	26.1	20.4	159816	26.2	19.9	191161	26.3	20.4
455092	25.9	20.9	137291	25.9	19.8	66243	26.0	18.5	342098	26.1	20.9	509665	26.2	21.5	199384	26.3	20.0
165584	25.9	19.0	99593	25.9	19.4	362512	26.0	21.2	404323	26.1	21.5	286218	26.2	20.5	483480	26.3	21.1
46639	25.9	16.5	317760	25.9	20.3	88559	26.0	19.1	228196	26.1	18.9	357033	26.2	20.4	492171	26.3	21.3
44623	25.9	16.5	182640	25.9	19.8	462755	26.0	20.7	151886	26.1	18.6	272947	26.2	20.8	334232	26.3	19.9
219210	25.9	19.4	97914	25.9	19.1	409413	26.0	21.0	57097	26.1	18.4	104787	26.2	19.5	5957	26.3	17.9
394120	25.9	20.8	149587	25.9	19.9	376170	26.0	21.0	518806	26.1	20.0	362252	26.2	20.8	269335	26.3	21.2
389493	25.9	20.9	287624	25.9	19.9	312861	26.0	19.9	294653	26.1	20.4	69089	26.2	19.8	85200	26.3	18.6
97594	25.9	17.8	215970	25.9	19.7	359288	26.0										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
23008	26.3	18.9	124091	26.3	19.5	176260	26.4	20.5	302544	26.5	20.4	95749	26.6	20.2	217677	26.6	19.9
74869	26.3	18.0	271512	26.3	20.3	72053	26.4	18.6	495651	26.5	21.2	131482	26.6	19.6	267035	26.6	20.2
515583	26.3	21.1	411003	26.3	20.8	447650	26.4	20.3	21331	26.5	19.5	412293	26.6	20.4	418814	26.6	20.9
207187	26.3	20.4	60440	26.3	18.9	453949	26.4	20.4	331663	26.5	19.7	484359	26.6	19.9	130354	26.6	19.3
164721	26.3	20.4	275005	26.3	19.2	117460	26.4	19.9	159134	26.5	18.9	176916	26.6	18.9	484357	26.6	19.8
518939	26.3	22.3	74694	26.3	19.5	216176	26.4	20.0	291864	26.5	20.6	414725	26.6	19.6	239173	26.6	19.8
17570	26.3	17.3	270108	26.3	19.3	249987	26.4	20.5	361403	26.5	20.7	235451	26.6	19.0	121740	26.6	18.6
515959	26.3	20.7	316926	26.3	19.0	156886	26.4	20.0	14566	26.5	18.2	218339	26.6	19.8	298629	26.6	19.1
96252	26.3	18.7	214026	26.3	20.3	172919	26.4	19.5	435069	26.5	20.9	243168	26.6	20.2	206472	26.6	19.9
514152	26.3	22.5	467158	26.3	20.8	514166	26.4	21.8	359480	26.5	20.8	233659	26.6	19.7	287200	26.6	20.1
15287	26.3	17.1	44037	26.3	19.3	140315	26.4	18.5	446900	26.5	20.4	439204	26.6	20.8	460780	26.6	20.3
177551	26.3	19.9	114310	26.3	18.5	516598	26.4	21.7	189628	26.5	19.1	334184	26.6	19.2	74716	26.6	18.8
45728	26.3	19.8	220054	26.3	20.6	373324	26.4	20.8	349130	26.5	20.3	316397	26.6	20.4	371853	26.6	19.5
446824	26.3	21.4	46734	26.3	18.3	328648	26.4	19.0	162952	26.5	19.5	92761	26.6	20.0	268153	26.6	19.9
452762	26.3	21.1	457242	26.3	20.7	329639	26.4	20.2	339040	26.5	21.5	394518	26.6	21.2	170549	26.6	19.6
375204	26.3	20.0	477415	26.3	20.4	439598	26.4	20.5	138241	26.5	19.8	235648	26.6	19.5	218136	26.6	20.3
63659	26.3	19.3	100392	26.3	19.0	395976	26.4	20.8	231241	26.5	20.2	230708	26.6	19.7	401542	26.6	21.1
378008	26.3	19.5	439230	26.3	20.7	414304	26.4	20.0	143391	26.5	18.8	45300	26.6	17.7	202766	26.6	20.4
85054	26.3	18.6	101135	26.3	18.3	391818	26.4	19.8	125234	26.5	19.6	260302	26.6	19.8	492457	26.6	21.4
15955	26.3	17.1	118532	26.4	19.2	266875	26.4	19.8	49769	26.5	18.2	420568	26.6	20.5	174339	26.6	19.1
226617	26.3	20.3	274494	26.4	20.3	305200	26.4	20.1	42008	26.5	18.5	247463	26.6	20.7	105372	26.6	18.7
167959	26.3	19.3	326615	26.4	20.8	507881	26.4	20.7	389873	26.5	19.8	262499	26.6	19.8	408492	26.6	21.8
19255	26.3	23.3	98110	26.4	19.1	72451	26.4	19.1	111163	26.5	18.7	249816	26.6	23.1	196481	26.6	20.2
104428	26.3	19.1	158005	26.4	19.9	208299	26.4	19.6	284831	26.5	21.2	487601	26.6	20.1	442928	26.6	19.7
175679	26.3	19.8	214510	26.4	21.0	203171	26.4	18.7	190131	26.5	18.8	274061	26.6	21.0	298082	26.6	19.9
112994	26.3	19.8	412791	26.4	21.3	222012	26.4	20.9	481132	26.5	20.4	460967	26.6	20.4	394840	26.6	21.0
446571	26.3	21.4	2555	26.4	15.8	220696	26.4	19.4	38158	26.5	19.5	330104	26.6	19.3	490178	26.6	21.1
342053	26.3	20.6	32148	26.4	19.0	438642	26.4	20.4	162268	26.5	18.2	185971	26.6	20.4	38494	26.6	17.9
173682	26.3	19.7	59540	26.4	18.3	261166	26.4	19.8	88790	26.5	18.8	71526	26.6	18.4	484424	26.6	20.7
425315	26.3	20.0	440127	26.4	21.1	15654	26.4	18.1	298475	26.5	19.7	186375	26.6	19.3	367247	26.6	21.8
479434	26.3	19.9	511029	26.4	20.4	130131	26.4	18.5	484373	26.5	20.4	471964	26.6	20.1	52218	26.6	16.8
243525	26.3	20.4	226495	26.4	20.3	425141	26.4	20.7	121982	26.5	20.3	189737	26.6	19.9	75008	26.6	18.8
481317	26.3	20.6	129891	26.4	19.7	520256	26.4	21.2	231594	26.5	19.6	74713	26.6	18.6	161214	26.6	20.0
254848	26.3	19.8	325905	26.4	19.9	116302	26.4	19.4	438497	26.5	21.6	348373	26.6	19.8	336820	26.6	20.8
447934	26.3	20.7	51467	26.4	19.0	329088	26.4	19.8	195737	26.5	19.3	159747	26.6	19.9	60504	26.7	18.3
516427	26.3	22.0	416391	26.4	20.7	191524	26.4	20.0	242014	26.5	19.7	24303	26.6	17.0	196382	26.7	19.3
129931	26.3	19.4	272049	26.4	20.2	379739	26.4	20.7	76331	26.5	19.5	406767	26.6	20.2	68908	26.7	18.5
160352	26.3	19.9	270710	26.4	20.0	359813	26.4	20.3	303047	26.5	19.5	74063	26.6	19.5	488084	26.7	21.1
53619	26.3	18.0	232100	26.4	19.8	117593	26.4	19.0	241347	26.5	21.0	287451	26.6	19.8	211290	26.7	19.7
490204	26.3	20.8	385992	26.4	20.7	251991	26.4	20.3	407021	26.5	20.7	521925	26.6	20.9	99015	26.7	19.3
141634	26.3	20.5	418579	26.4	21.2	494591	26.4	20.1	402298	26.5	21.8	48709	26.6	18.8	350309	26.7	20.3
452016	26.3	21.1	189729	26.4	19.6	474360	26.4	20.8	167374	26.5	18.5	260661	26.6	21.9	9101	26.7	18.1
15161	26.3	16.7	402721	26.4	20.5	163954	26.5	19.7	99817	26.5	19.3	417351	26.6	21.0	257142	26.7	20.5
372086	26.3	21.6	240671	26.4	19.8	84623	26.5	19.1	163773	26.5	20.1	394087	26.6	20.5	468008	26.7	19.4
193242	26.3	20.7	217145	26.4	20.4	287457	26.5	18.8	446911	26.5	21.9	477862	26.6	20.2	181965	26.7	19.1
305225	26.3	19.7	443703	26.4	20.6	195693	26.5	20.7	102194	26.5	17.8	491501	26.6	21.7	522155	26.7	20.5
317411	26.3	20.4	261397	26.4	20.4	194908	26.5	19.1	337369	26.5	21.4	40020	26.6	18.9	302572	26.7	19.8
180620	26.3	20.0	121009	26.4	19.8	352193	26.5	20.2	175782	26.5	19.8	440131	26.6	20.7	259395	26.7	20.0
31489	26.3	17.3	33940	26.4	17.8	47371	26.5	17.5	371325	26.5	21.4	354292	26.6	20.2	218461	26.7	19.1
82508	26.3	19.6	460798	26.4	20.1	194486	26.5	18.5	486369	26.5	20.9	381834	26.6	19.8	485626	26.7	21.2
197367	26.3	19.1	451288	26.4	21.3	83963	26.5	19.6	72676	26.5	19.1	230427	26.6	20.1	56444	26.7	19.2
168931	26.3	18.6	65562	26.4	19.5	306770	26.5	19.6	483539	26.5	19.9	462733	26.6	20.2	434551	26.7	21.8
274335	26.3	19.8	420070	26.4	20.3	406734	26.5	21.5	148207	26.5	20.1	298443	26.6	19.0	263427	26.7	21.0
808	26.3	12.9	329488	26.4	21.1	450881	26.5	20.4	129105	26.5	18.6	319961	26.6	20.3	131470	26.7	17.9
337911	26.3	19.8	296354	26.4	20.0	401780	26.5	21.0	339698	26.5	20.5	435464	26.6	20.5	520819	26.7	21.0
315671	26.3	20.8	409294	26.4	20.5	272024	26.5	20.4	247496	26.5	20.3	99388	26.6	18.6	295127	26.7	20.4
256826	26.3	20.0	209505	26.4	20.2	42510	26.5	19.6	175547	26.5	20.1	73159	26.6	19.2	463088	26.7	20.6
218825	26.3	19.5	424291	26.4	20.1	205427	26.5	20.4	309871	26.5	20.8	392837	26.6	20.2	221949	26.7	19.4
275265	26.3	19.6	323377	26.4	20.3	517295	26.5	22.4	520847	26.5	21.0	75523	26.6	18.1	100783	26.7	17.9
286819	26.3	20.8	339334	26.4	19.1	77911	26.5	17.2	133725	26.5	19.8	112803	26.6	20.3	138642	26.7	19.2
305243	26.3	18.9	97606	26.4	18.8	119342	26.5	18.2	269882	26.5	20.0	43075	26.6	18.6	457705	26.7	20.3
294914	26.3	20.6	362764	26.4	20.1	448531	26.5	20.4	41143	26.5	19.2	92138	26.6	19.0	446153	26.7	20.3
265910	26.3	19.7	47037	26.4	17.6	471965	26.5	21.4	346456	26.5	20.1	352839	26.6	19.1	236531	26.7	21.1
302632	26.3	19.8	405982	26.4	20.0	219998	26.5	19.9	454726	26.5	20.0	354648	26.6	20.4	500305	26.7	19.7
428442	26.3	20.4	389669	26.4	22.0	170439	26.5	18.8	422371	26.5	20.2	444838	26.6	19.2	206571	26.7	19.1
242000	26.3	19.5	283973	26.4	20.1	176419	26.5	19.1	404334	26.5	21.8	473656	26.6	20.8	501591	26.7	19.9
416935	26.3	21.9	359522	26.4	21.2	40460	26.5	18.6	495701	26.5	20.1	314877	26.6	20.3	98979	26.7	17.9
7956	26.3	18.2	484778	26.4	21.1	374214	26.5	21.2	339065	26.5	19.9	87523	26.6	20.3	270912	26.7	20.7
523239	26.3	20.5	141641	26.4	20.7	239414											

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
42854	26.7	19.3	355411	26.8	20.6	158857	26.8	19.7	299060	26.9	20.9	265494	26.9	20.2	244076	27.0	20.3
289108	26.7	19.6	97461	26.8	18.1	215718	26.8	19.7	255280	26.9	20.8	323517	26.9	20.0	309578	27.0	19.8
49371	26.7	18.1	245424	26.8	19.9	456496	26.8	21.4	155434	26.9	19.2	161655	26.9	20.3	197156	27.0	20.1
88867	26.7	19.7	22620	26.8	18.6	24350	26.8	17.8	482628	26.9	20.0	246898	26.9	20.5	366532	27.0	20.8
150262	26.7	20.3	161571	26.8	19.6	251253	26.8	20.2	189741	26.9	19.4	452257	26.9	20.6	431287	27.0	21.3
341116	26.7	20.7	279693	26.8	20.8	190464	26.8	19.3	446902	26.9	22.4	516867	26.9	21.7	262128	27.0	19.4
248885	26.7	20.3	147008	26.8	20.6	402155	26.8	20.1	491594	26.9	21.1	439245	26.9	22.0	516595	27.0	20.8
244705	26.7	19.7	126211	26.8	19.9	190465	26.8	20.9	76231	26.9	16.6	3434	26.9	16.8	314256	27.0	20.5
235868	26.7	19.8	332625	26.8	20.7	372113	26.8	20.4	116785	26.9	20.6	361569	26.9	19.0	8884	27.0	16.1
402291	26.7	21.9	256391	26.8	20.0	199803	26.8	20.9	161620	26.9	19.7	273161	26.9	19.5	40757	27.1	19.1
16301	26.7	16.6	158549	26.8	20.5	310019	26.8	19.3	108359	26.9	20.1	272943	26.9	20.7	469363	27.1	19.7
454921	26.7	20.0	267109	26.8	18.5	117870	26.8	20.8	332584	26.9	20.9	161413	26.9	19.5	138492	27.1	18.8
225366	26.7	18.0	316329	26.8	20.9	238193	26.8	20.2	200015	26.9	20.9	182435	26.9	19.9	518425	27.1	20.3
96942	26.7	19.3	56755	26.8	19.6	260037	26.8	19.5	403998	26.9	19.5	223082	26.9	19.5	47825	27.1	18.2
414671	26.7	20.7	314928	26.8	20.2	493471	26.8	19.8	335889	26.9	20.1	484124	26.9	20.5	158236	27.1	18.0
426654	26.7	20.1	474323	26.8	20.1	264802	26.8	20.2	85350	26.9	19.5	51115	26.9	19.1	336102	27.1	22.1
82270	26.7	19.6	168	26.8	12.7	418774	26.8	20.3	337716	26.9	20.2	486663	26.9	20.9	328439	27.1	20.5
221445	26.7	20.1	454760	26.8	21.0	72614	26.8	18.5	333545	26.9	21.1	487522	26.9	20.2	133658	27.1	19.2
35770	26.7	18.2	326892	26.8	20.5	228836	26.8	20.1	464469	26.9	20.2	361827	26.9	20.3	450365	27.1	19.5
464287	26.7	20.9	509922	26.8	21.8	261854	26.8	21.3	3319	26.9	16.1	162294	26.9	19.3	21832	27.1	18.1
5779	26.7	16.4	75338	26.8	18.6	271934	26.8	19.6	147076	26.9	20.9	405850	26.9	20.7	292822	27.1	20.4
200050	26.7	19.7	32559	26.8	18.3	139150	26.8	18.4	431758	26.9	21.8	494135	26.9	21.2	182251	27.1	18.6
326875	26.7	20.5	35443	26.8	16.1	337062	26.8	22.1	213895	26.9	20.5	243481	26.9	20.5	194643	27.1	19.1
486190	26.7	19.6	45383	26.8	17.6	411587	26.8	20.6	212556	26.9	20.5	341884	26.9	22.0	120354	27.1	20.5
220103	26.7	19.1	292502	26.8	20.0	46309	26.8	19.0	15841	26.9	19.6	23737	26.9	17.1	206552	27.1	18.8
249319	26.7	19.5	61053	26.8	18.6	307357	26.8	20.4	195714	26.9	20.4	356173	26.9	20.6	195829	27.1	20.0
309610	26.7	18.8	112630	26.8	19.4	70852	26.8	18.4	340268	26.9	20.1	256172	27.0	20.3	307910	27.1	19.4
44248	26.7	19.0	75456	26.8	20.7	45415	26.8	18.7	246668	26.9	20.3	256549	27.0	20.5	1598	27.1	15.9
341951	26.7	19.8	137231	26.8	19.0	44765	26.8	19.2	231133	26.9	19.4	244120	27.0	19.0	1161	27.1	15.3
168249	26.7	19.9	266930	26.8	21.2	140290	26.9	17.1	72816	26.9	19.2	47995	27.0	18.1	329557	27.1	20.6
51701	26.7	18.1	12728	26.8	17.3	518515	26.9	22.1	194933	26.9	19.4	451750	27.0	20.8	147061	27.1	18.5
386051	26.7	20.0	432701	26.8	20.9	370514	26.9	20.7	31188	26.9	17.7	439010	27.0	20.3	425774	27.1	20.8
401489	26.7	21.8	361322	26.8	20.4	4734	26.9	17.1	46368	26.9	17.8	478507	27.0	20.9	130772	27.1	19.9
78051	26.7	18.6	142243	26.8	19.4	488521	26.9	22.5	418733	26.9	20.4	29294	27.0	18.5	358734	27.1	19.9
485735	26.7	20.9	207544	26.8	20.2	366558	26.9	20.8	220166	26.9	19.5	211281	27.0	19.8	335291	27.1	20.2
85055	26.7	19.8	215262	26.8	19.2	67777	26.9	19.2	333052	26.9	21.3	343282	27.0	19.1	76491	27.1	17.7
261424	26.7	20.6	276904	26.8	22.3	418896	26.9	19.2	40070	26.9	19.2	219229	27.0	19.4	427142	27.1	20.9
324350	26.7	20.8	355923	26.8	20.1	448498	26.9	20.6	305633	26.9	20.1	51243	27.0	18.7	140323	27.1	20.4
300650	26.7	19.5	187375	26.8	20.2	331511	26.9	20.4	347131	26.9	19.4	332745	27.0	19.9	272691	27.1	20.9
142651	26.7	19.6	36945	26.8	19.2	76163	26.9	19.5	405732	26.9	20.5	130389	27.0	18.6	400861	27.1	20.7
228292	26.7	19.4	34690	26.8	18.6	403970	26.9	20.5	196853	26.9	19.0	269177	27.0	20.5	253418	27.1	20.5
70607	26.7	17.8	451293	26.8	20.9	394502	26.9	21.0	293998	26.9	20.0	137618	27.0	18.1	328787	27.1	20.5
391072	26.7	20.3	156888	26.8	19.7	372147	26.9	20.2	77011	26.9	18.3	124529	27.0	19.9	414707	27.1	19.5
449131	26.7	20.0	101564	26.8	19.6	310209	26.9	20.5	2493	26.9	16.7	336797	27.0	20.1	484503	27.1	21.8
249882	26.7	20.3	41243	26.8	18.7	173386	26.9	19.2	405750	26.9	21.0	484437	27.0	21.1	432969	27.1	21.0
1137	26.7	13.8	287305	26.8	19.9	265185	26.9	19.1	132304	26.9	20.2	272360	27.0	20.7	418485	27.1	21.4
137256	26.7	18.4	401353	26.8	21.8	79411	26.9	20.1	141477	26.9	20.5	144593	27.0	20.2	487124	27.1	20.9
430184	26.7	21.2	25239	26.8	18.8	422178	26.9	21.1	291888	26.9	20.0	159842	27.0	20.2	177532	27.1	20.1
109985	26.7	18.6	414378	26.8	20.2	141756	26.9	20.2	523404	26.9	20.2	385645	27.0	20.7	231403	27.1	19.1
311757	26.7	19.5	318497	26.8	20.3	51422	26.9	19.1	218102	26.9	20.4	443414	27.0	19.8	410854	27.1	21.2
362741	26.7	20.7	288117	26.8	19.8	115547	26.9	19.4	351110	26.9	20.2	332231	27.0	19.8	326901	27.1	20.7
398038	26.7	21.8	121554	26.8	19.7	334966	26.9	20.4	286784	26.9	20.7	331288	27.0	20.6	275643	27.1	21.8
414640	26.7	20.4	518113	26.8	21.0	192420	26.9	18.8	430102	26.9	19.8	480308	27.0	20.1	52223	27.1	18.9
223137	26.7	19.4	163948	26.8	18.9	50193	26.9	19.3	167952	26.9	19.8	392371	27.0	21.0	357275	27.1	20.3
74240	26.7	18.3	520442	26.8	21.3	360885	26.9	21.1	418696	26.9	21.0	305102	27.0	20.0	330738	27.1	21.1
372059	26.7	20.7	409374	26.8	20.0	187944	26.9	20.0	233522	26.9	20.7	240939	27.0	18.8	297353	27.1	18.9
523764	26.7	22.1	415409	26.8	20.8	248241	26.9	19.9	42101	26.9	18.4	471945	27.0	20.5	259616	27.1	18.9
437999	26.7	20.2	460838	26.8	21.3	413236	26.9	20.6	503291	26.9	20.7	405739	27.0	19.8	343803	27.1	21.0
271609	26.7	20.6	58619	26.8	18.0	50078	26.9	17.9	52447	26.9	17.9	181413	27.0	19.0	155459	27.1	19.7
143656	26.7	20.1	390678	26.8	20.8	289807	26.9	21.2	125179	26.9	19.4	353966	27.0	18.7	15031	27.1	16.2
295568	26.7	20.4	137250	26.8	20.4	381020	26.9	20.4	36750	26.9	17.6	273424	27.0	19.9	494985	27.1	19.6
470205	26.8	19.9	214937	26.8	19.4	217197	26.9	20.2	486586	26.9	20.8	491605	27.0	22.1	366583	27.1	20.5
137351	26.8	18.9	244091	26.8	19.3	211813	26.9	20.0	44139	26.9	18.5	414966	27.0	20.5	378003	27.1	19.9
251473	26.8	20.8	489917	26.8	20.0	403681	26.9	21.1	214273	26.9	19.7	5492	27.0	16.2	125104	27.1	18.5
115450	26.8	19.5	138928	26.8	19.9	296746	26.9	19.8	47190	26.9	18.1	223596	27.0	19.3	317854	27.1	19.7
380963	26.8	21.8	224052	26.8	19.6	445701	26.9	21.1	444640	26.9	20.0	249898	27.0	19.9	233953	27.1	19.5
185149	26.8	19.6	487561	26.8	20.8	198903	26.9	20.0	143877	26.9	19.3	235751	27.0	19.6	235393	27.1	19.9
238321	26.8	19.5	447164	26.8	21.6	162434	26.9	20.5	234610	26.9	19.5	137662	27.0	18.1	403989	27.1	20.3
299601	26.8	20.6	96726	26.8	19.2	6649	26.9	17									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
129306	27.1	19.6	27246	27.2	18.1	187147	27.3	19.3	155474	27.3	19.2	430588	27.4	21.6	331284	27.5	20.4
474350	27.1	22.5	520548	27.2	21.3	387745	27.3	20.7	490595	27.3	22.0	458058	27.4	19.2	450391	27.5	21.0
132892	27.1	20.0	179685	27.2	20.6	292245	27.3	20.5	55638	27.3	20.2	292261	27.4	19.7	382158	27.5	21.3
136892	27.1	19.1	456129	27.2	20.7	122059	27.3	19.6	492917	27.3	21.0	39661	27.4	19.7	332992	27.5	21.0
221513	27.1	19.8	224827	27.2	20.4	100417	27.3	18.3	412494	27.3	21.3	111836	27.4	19.6	408465	27.5	21.3
266862	27.1	20.0	59416	27.2	17.9	4131	27.3	15.8	46864	27.3	17.5	359312	27.4	20.9	515033	27.5	19.5
261507	27.1	19.6	51807	27.2	17.8	329426	27.3	20.4	233884	27.3	20.0	14258	27.4	17.8	214901	27.5	20.2
74106	27.1	18.2	278968	27.2	20.3	66335	27.3	17.6	219206	27.3	20.1	202518	27.4	20.3	307373	27.5	20.3
142671	27.1	19.0	39248	27.2	18.6	392329	27.3	21.0	422510	27.3	21.0	28911	27.4	17.3	491537	27.5	20.8
488087	27.1	20.7	441262	27.2	19.0	457888	27.3	20.5	195748	27.4	18.9	334303	27.4	19.9	520806	27.5	20.9
271969	27.1	19.9	300708	27.2	21.7	343777	27.3	20.2	53053	27.4	18.9	269355	27.4	21.0	386672	27.5	20.2
74476	27.1	18.0	101451	27.2	18.0	427784	27.3	21.5	105095	27.4	19.5	78239	27.4	19.7	167197	27.5	18.4
106598	27.1	17.8	283187	27.2	19.6	523447	27.3	21.1	28524	27.4	19.1	114631	27.4	19.4	176258	27.5	19.7
70108	27.1	19.0	72132	27.2	18.8	369242	27.3	20.1	308783	27.4	19.8	330158	27.4	19.7	45174	27.5	18.7
199669	27.1	19.7	312392	27.2	21.2	167718	27.3	20.6	30346	27.4	18.0	44559	27.4	17.9	518331	27.5	20.5
247257	27.1	18.4	179798	27.2	20.1	4518	27.3	17.1	120344	27.4	19.5	443850	27.4	21.2	114800	27.5	18.7
482589	27.1	20.1	362678	27.2	19.6	167293	27.3	19.8	418753	27.4	20.2	416166	27.4	20.2	52057	27.5	18.6
52423	27.1	17.7	12664	27.2	17.5	190942	27.3	18.5	271245	27.4	19.2	430844	27.4	21.5	484201	27.5	20.8
134968	27.1	18.4	378068	27.2	20.2	407412	27.3	20.5	458557	27.4	20.0	87964	27.4	19.4	411142	27.5	20.2
29483	27.1	18.4	22950	27.2	18.4	335267	27.3	21.9	103693	27.4	17.9	106433	27.4	18.2	40884	27.5	19.6
118805	27.1	18.8	80270	27.2	18.6	292932	27.3	19.7	214359	27.4	19.5	209881	27.4	20.6	60203	27.5	18.8
202224	27.1	18.7	19717	27.2	17.3	107818	27.3	19.6	201323	27.4	19.5	302101	27.4	20.0	471072	27.5	19.2
22477	27.1	18.8	20838	27.2	18.2	239479	27.3	20.2	453670	27.4	21.0	244874	27.4	19.1	270104	27.5	20.8
113879	27.1	18.7	208772	27.2	19.7	10009	27.3	16.4	233238	27.4	19.7	41626	27.4	19.1	134785	27.5	19.3
293865	27.2	20.6	383503	27.2	20.2	415438	27.3	20.1	204863	27.4	19.5	162305	27.4	18.6	170713	27.5	19.3
138491	27.2	18.3	36283	27.2	17.5	80647	27.3	18.9	283630	27.4	19.8	492577	27.4	21.0	443883	27.5	21.4
270107	27.2	20.9	434164	27.2	19.9	401459	27.3	20.9	383484	27.4	19.2	11256	27.4	18.9	35339	27.5	17.4
108696	27.2	19.6	495	27.2	13.4	227093	27.3	20.7	401105	27.4	21.8	43062	27.4	19.5	403083	27.5	20.6
495294	27.2	20.6	358336	27.2	20.1	112371	27.3	19.7	151715	27.4	19.1	518451	27.4	21.9	464030	27.5	20.7
148307	27.2	19.1	466623	27.2	20.4	21880	27.3	18.0	124896	27.4	19.2	492551	27.4	20.8	366023	27.5	19.3
146674	27.2	19.5	43893	27.2	18.9	306360	27.3	20.9	395332	27.4	20.5	517737	27.4	21.4	335862	27.5	21.5
443423	27.2	20.5	60042	27.2	17.9	466972	27.3	19.4	442225	27.4	21.1	75303	27.4	17.2	225471	27.5	18.7
358116	27.2	20.2	189193	27.2	19.9	23575	27.3	18.3	46196	27.4	17.0	375480	27.4	21.6	441873	27.5	20.6
396882	27.2	20.9	50409	27.2	18.8	438230	27.3	20.0	450854	27.4	20.4	47766	27.4	17.9	353979	27.5	20.4
306495	27.2	20.8	449383	27.2	20.3	211263	27.3	19.1	489218	27.4	21.2	196323	27.4	20.7	186543	27.5	19.4
410916	27.2	20.7	95858	27.2	19.2	171514	27.3	19.7	357638	27.4	20.3	184817	27.4	19.8	73329	27.5	19.1
332749	27.2	20.2	440	27.2	13.1	435470	27.3	21.0	399847	27.4	20.8	46446	27.4	19.6	367670	27.5	20.4
449237	27.2	20.8	354249	27.2	20.6	68214	27.3	18.8	171100	27.4	19.5	15470	27.4	17.6	56721	27.5	18.5
199649	27.2	20.0	208911	27.2	19.7	7141	27.3	17.5	223510	27.4	19.7	180805	27.4	19.1	473740	27.5	21.0
449538	27.2	21.4	455795	27.2	22.9	89033	27.3	17.4	267861	27.4	19.5	451787	27.4	21.4	222110	27.5	19.7
424714	27.2	21.2	55731	27.2	18.1	60674	27.3	19.3	195075	27.4	19.2	94485	27.4	18.6	85130	27.5	19.4
26722	27.2	18.3	268163	27.2	19.3	486183	27.3	19.7	409815	27.4	19.7	369450	27.4	19.9	221452	27.5	19.4
447147	27.2	20.8	32193	27.2	18.3	44176	27.3	18.6	38192	27.4	18.5	447872	27.4	21.1	52785	27.5	19.6
5643	27.2	17.8	252516	27.2	21.3	8413	27.3	16.8	490963	27.4	22.2	487597	27.4	20.7	479552	27.5	19.3
302722	27.2	20.1	273467	27.2	18.9	226480	27.3	19.3	183457	27.4	19.8	287307	27.4	19.2	397591	27.5	19.7
257543	27.2	20.7	422462	27.2	19.9	314305	27.3	19.8	164922	27.4	17.9	386064	27.4	21.2	393019	27.5	19.7
220129	27.2	19.3	15297	27.2	16.4	261760	27.3	19.8	201825	27.4	21.0	151335	27.4	19.6	298363	27.5	20.2
368368	27.2	20.1	92729	27.2	19.7	128406	27.3	19.2	115379	27.4	18.8	168567	27.4	17.4	230174	27.5	18.8
278956	27.2	19.7	186050	27.2	18.4	310584	27.3	20.0	232657	27.4	19.1	226608	27.4	19.5	434614	27.5	21.4
160478	27.2	19.3	174712	27.2	19.9	49763	27.3	17.7	10854	27.4	17.9	65366	27.4	19.1	466246	27.5	20.2
279366	27.2	19.6	136534	27.2	19.1	269328	27.3	20.6	281698	27.4	20.7	227841	27.4	20.5	41385	27.5	17.9
45327	27.2	17.0	295508	27.2	19.5	379709	27.3	20.2	151591	27.4	19.0	270896	27.4	20.0	305129	27.5	20.0
97053	27.2	18.3	454237	27.2	19.5	68428	27.3	19.0	373366	27.4	21.5	340147	27.4	19.9	359429	27.5	21.2
450705	27.2	20.6	458695	27.2	21.0	411061	27.3	20.2	472894	27.4	20.3	305205	27.4	20.4	161659	27.5	18.2
424475	27.2	21.3	453215	27.2	21.1	304993	27.3	20.7	118013	27.4	19.2	367699	27.4	19.7	233763	27.5	20.2
416089	27.2	20.2	510006	27.2	18.6	230493	27.3	19.6	464173	27.4	20.0	268247	27.4	21.0	488238	27.5	20.6
306804	27.2	19.5	133532	27.2	19.0	97776	27.3	18.5	195742	27.4	19.7	453063	27.4	19.9	119247	27.5	18.4
403605	27.2	21.0	388082	27.2	20.1	156363	27.3	19.9	131317	27.4	19.6	413244	27.4	20.8	435511	27.5	22.0
230732	27.2	19.6	517354	27.2	20.9	252440	27.3	19.2	158809	27.4	20.6	387627	27.4	21.6	337482	27.5	21.0
432976	27.2	21.3	236332	27.2	20.0	143329	27.3	19.3	971	27.4	12.5	268324	27.4	20.5	354665	27.5	20.3
318909	27.2	19.7	202336	27.2	20.3	101339	27.3	19.9	343695	27.4	21.1	174431	27.4	19.2	114792	27.5	18.9
305220	27.2	19.9	326380	27.2	21.2	283796	27.3	19.1	213287	27.4	20.9	215940	27.4	19.3	461997	27.5	18.7
158591	27.2	20.5	277730	27.3	21.0	10339	27.3	16.6	374677	27.4	20.6	108071	27.4	18.6	174956	27.5	19.7
115876	27.2	18.9	409255	27.3	20.4	101074	27.3	18.3	367006	27.4	20.1	195191	27.4	19.2	193141	27.5	19.7
56137	27.2	16.9	21581	27.3	16.5	101131	27.3	19.3	307408	27.4	21.8	430567	27.5	20.9	419968	27.5	19.8
159031	27.2	20.2	369788	27.3	20.2	225201	27.3	19.0	26877	27.4	19.0	368359	27.5	21.2	437345	27.5	20.2
90147	27.2	16.0	495542	27.3	20.9	5828	27.3	20.3	131379	27.4	19.8	41051	27.5	16.5	326586	27.5	21.1
31903	27.2	19.9	36809	27.3	19.4	192589	27.3	19.5	455482	27.4	21.0	211703	27.5	19.5	263491	27.5	19.8
224025	27.2	20.7	52177	27.3	19.0	328427	27.3	20.5	462955								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
442419	27.5	20.9	514866	27.6	21.2	227134	27.7	19.4	124527	27.8	19.6	419959	27.8	20.2	104853	27.9	19.7
484493	27.5	20.4	129719	27.6	19.2	254961	27.7	20.8	40312	27.8	19.0	75230	27.8	17.7	519578	27.9	19.6
51604	27.5	17.9	444433	27.6	21.2	339060	27.7	20.9	346430	27.8	20.8	98224	27.8	19.4	15422	27.9	16.5
274534	27.5	20.1	167692	27.6	19.6	65646	27.7	18.9	483575	27.8	19.6	196089	27.8	20.1	361296	27.9	20.8
315800	27.5	20.6	166375	27.6	20.3	104178	27.7	18.3	6934	27.8	16.3	274720	27.8	19.9	420704	27.9	21.1
217397	27.5	20.0	360911	27.6	20.6	195110	27.7	19.2	47655	27.8	19.0	124004	27.8	18.7	23430	27.9	18.8
367341	27.5	19.2	244926	27.6	18.1	335472	27.7	19.6	442868	27.8	20.0	370266	27.8	21.2	74984	27.9	17.8
395426	27.5	20.3	59005	27.6	19.7	113718	27.7	18.5	90268	27.8	19.6	434659	27.8	20.5	30327	27.9	18.3
105083	27.6	20.1	113938	27.6	19.2	460992	27.7	20.7	22501	27.8	19.2	84223	27.8	18.7	311626	27.9	20.4
350530	27.6	20.1	213927	27.6	18.6	216944	27.7	21.3	78286	27.8	18.0	255046	27.8	20.3	314944	27.9	20.2
184333	27.6	19.2	136319	27.6	20.0	366316	27.7	20.4	282117	27.8	18.9	29275	27.8	19.1	167215	27.9	19.0
95428	27.6	18.0	409452	27.6	21.3	92391	27.7	19.6	228709	27.8	20.9	207272	27.8	20.9	339067	27.9	19.7
4793	27.6	17.1	136550	27.6	21.0	448775	27.7	21.4	412673	27.8	20.3	141552	27.8	20.9	450162	27.9	21.2
23764	27.6	18.2	357100	27.6	20.2	27371	27.7	18.8	189708	27.8	18.3	521713	27.8	21.0	418823	27.9	21.3
445583	27.6	21.4	90505	27.6	19.8	42961	27.7	19.5	138139	27.8	18.6	195968	27.8	20.6	59099	27.9	17.1
257780	27.6	20.3	425876	27.6	21.1	409050	27.7	19.7	122073	27.8	19.0	15616	27.8	18.3	106951	27.9	18.2
230430	27.6	20.5	104331	27.7	19.2	224800	27.7	20.1	481815	27.8	21.3	462221	27.8	20.7	56541	27.9	19.6
201809	27.6	19.0	482500	27.7	21.2	5401	27.7	15.3	367244	27.8	20.8	493263	27.8	20.3	195771	27.9	19.6
356017	27.6	21.1	442827	27.7	19.8	375515	27.7	20.3	110896	27.8	19.3	53809	27.8	19.3	449959	27.9	20.4
480280	27.6	20.9	409103	27.7	21.0	104468	27.7	19.4	100974	27.8	18.7	312746	27.9	20.4	89286	27.9	19.0
520248	27.6	21.6	329447	27.7	20.5	243013	27.7	20.1	41077	27.8	18.9	381024	27.9	20.1	386036	27.9	21.3
326023	27.6	19.8	175793	27.7	19.8	511760	27.7	20.4	509972	27.8	21.6	211613	27.9	17.7	487042	27.9	21.2
105068	27.6	19.9	359831	27.7	20.3	384366	27.7	19.9	343650	27.8	20.3	157577	27.9	19.0	289847	27.9	20.2
450571	27.6	21.4	355006	27.7	19.9	251178	27.7	20.8	156373	27.8	19.9	350482	27.9	19.7	246122	27.9	19.3
90488	27.6	19.8	139751	27.7	20.2	340276	27.7	20.0	491449	27.8	21.4	227955	27.9	19.6	180830	27.9	19.9
172638	27.6	20.0	494094	27.7	20.8	487211	27.7	21.4	197800	27.8	20.0	261912	27.9	20.8	431787	27.9	20.1
326847	27.6	20.1	235208	27.7	19.6	338459	27.7	19.1	75484	27.8	18.3	6568	27.9	16.6	305135	27.9	20.8
422520	27.6	21.3	478579	27.7	20.3	67819	27.7	18.2	17023	27.8	16.9	191529	27.9	19.9	350616	27.9	20.1
292277	27.6	20.7	454900	27.7	20.3	277585	27.7	20.3	90667	27.8	18.9	333158	27.9	20.4	487926	27.9	20.5
212225	27.6	19.1	457953	27.7	20.5	270199	27.7	19.7	188754	27.8	20.0	78104	27.9	19.2	250477	27.9	19.7
5250	27.6	16.7	246525	27.7	20.3	176358	27.7	20.0	457948	27.8	19.6	227994	27.9	20.4	32689	27.9	19.0
277647	27.6	20.6	337633	27.7	20.7	364832	27.7	21.2	279278	27.8	19.6	517409	27.9	21.6	71155	27.9	17.1
408285	27.6	21.3	245842	27.7	19.0	199264	27.7	19.3	444946	27.8	19.4	24252	27.9	17.6	411373	27.9	20.6
373639	27.6	21.5	284283	27.7	20.7	518952	27.7	20.6	272343	27.8	19.9	446051	27.9	19.7	22901	27.9	16.5
229478	27.6	19.7	458016	27.7	20.6	82892	27.7	18.7	71551	27.8	19.1	13443	27.9	18.5	328476	27.9	21.4
160873	27.6	19.0	164421	27.7	20.8	412047	27.7	20.0	81259	27.8	18.9	306500	27.9	21.4	452624	27.9	20.3
335405	27.6	20.8	257544	27.7	19.0	482654	27.7	21.1	368955	27.8	21.6	369640	27.9	19.5	448554	27.9	21.3
303564	27.6	20.6	339090	27.7	18.3	247705	27.7	20.0	147597	27.8	19.1	308223	27.9	20.3	196121	27.9	18.6
194788	27.6	19.6	154375	27.7	18.9	295702	27.7	21.1	367123	27.8	20.3	305059	27.9	19.6	311759	27.9	19.4
146414	27.6	18.8	409484	27.7	21.0	176154	27.7	19.8	12438	27.8	16.4	459441	27.9	19.6	293944	27.9	20.1
101418	27.6	18.9	254922	27.7	20.2	162304	27.7	18.5	523492	27.8	20.6	412385	27.9	21.3	464472	27.9	20.1
363203	27.6	20.2	453883	27.7	21.2	157119	27.7	20.6	268575	27.8	20.4	378387	27.9	21.2	40524	27.9	18.6
418732	27.6	20.5	167351	27.7	20.6	240147	27.7	21.0	267119	27.8	20.1	262677	27.9	19.5	520437	27.9	21.4
97573	27.6	17.6	375513	27.7	21.0	97774	27.7	17.9	256785	27.8	20.4	453632	27.9	21.1	329475	27.9	22.1
513725	27.6	21.4	70745	27.7	17.7	79967	27.7	19.3	219208	27.8	18.9	116343	27.9	19.6	479426	27.9	20.4
212010	27.6	20.4	456030	27.7	20.4	452230	27.7	20.9	24129	27.8	17.3	99289	27.9	18.5	418830	27.9	20.4
186583	27.6	19.1	266725	27.7	20.4	184338	27.7	19.3	416210	27.8	21.1	175717	27.9	18.9	165120	27.9	20.1
322146	27.6	20.2	482474	27.7	21.5	58633	27.7	18.6	28757	27.8	19.8	252266	27.9	19.8	71546	27.9	18.5
503820	27.6	21.3	303021	27.7	21.6	356068	27.7	20.5	113127	27.8	19.5	271262	27.9	19.4	145940	27.9	18.4
487899	27.6	20.7	294618	27.7	19.0	509231	27.7	20.6	53511	27.8	18.3	298399	27.9	21.7	516324	27.9	20.0
390100	27.6	19.5	97569	27.7	19.1	206637	27.7	19.5	498918	27.8	22.4	447972	27.9	20.5	469541	27.9	21.2
485592	27.6	21.1	443817	27.7	20.7	487483	27.7	20.8	104154	27.8	19.2	108716	27.9	19.2	332784	27.9	19.5
30614	27.6	17.5	419281	27.7	20.5	455713	27.7	20.3	382181	27.8	20.2	402316	27.9	21.2	71461	27.9	18.6
79332	27.6	19.0	230780	27.7	19.5	67552	27.7	20.1	63669	27.8	18.4	322508	27.9	20.5	238061	27.9	19.7
438026	27.6	20.1	266519	27.7	21.4	129939	27.7	19.6	272101	27.8	19.5	88337	27.9	18.8	84857	27.9	19.3
483478	27.6	20.7	152955	27.7	20.2	268672	27.7	20.0	349223	27.8	20.5	326557	27.9	21.3	217691	27.9	19.9
158066	27.6	20.9	291069	27.7	20.4	498068	27.7	22.7	247033	27.8	20.8	60467	27.9	18.5	15962	27.9	16.5
339021	27.6	20.8	41180	27.7	19.6	59345	27.8	18.1	481050	27.8	20.8	80602	27.9	17.4	444609	27.9	20.8
360636	27.6	20.8	402587	27.7	21.0	450184	27.8	19.5	289411	27.8	20.0	190919	27.9	18.9	442348	27.9	21.2
208834	27.6	20.1	277932	27.7	20.1	349706	27.8	19.4	455162	27.8	20.8	333681	27.9	21.9	518125	27.9	20.9
369800	27.6	20.4	305711	27.7	20.3	42053	27.8	17.8	211438	27.8	18.9	290619	27.9	20.6	493415	27.9	20.9
230620	27.6	20.8	227200	27.7	19.6	201664	27.8	19.1	438021	27.8	20.2	40613	27.9	18.9	366182	27.9	19.8
437990	27.6	20.9	97716	27.7	19.5	238674	27.8	19.9	58920	27.8	18.5	208804	27.9	20.4	506135	27.9	21.1
161494	27.6	18.8	148539	27.7	19.6	484406	27.8	19.3	469769	27.8	19.3	7811	27.9	16.2	520406	27.9	19.6
44109	27.6	17.2	70541	27.7	18.3	325646	27.8	20.1	370376	27.8	20.8	411097	27.9	20.4	457387	27.9	20.6
307412	27.6	21.0	425256	27.7	21.0	450781	27.8	21.7	149791	27.8	20.1	488833	27.9	21.1	398925	27.9	21.2
280670	27.6	21.2	298374	27.7	19.7	32912	27.8	17.5	223614	27.8	19.3	444473	27.9	21.6	407636	27.9	18.6
4468	27.6	15.6	458616	27.7	20.1	108402	27.8	19.3	244459	27.8	21.3	146507	27.9	19.3	261016	27.9	20.2
114050	27.6	18.7	235124	27.7	21.3	348369	27.8										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
434582	27.9	21.5	83176	28.0	19.4	134197	28.1	19.3	205110	28.2	20.1	209198	28.3	18.4	103543	28.3	18.7
112381	27.9	19.3	379140	28.0	19.9	130209	28.1	18.9	362116	28.2	21.0	120357	28.3	19.8	143760	28.3	18.8
462355	27.9	21.0	157181	28.0	20.1	163884	28.1	19.8	124229	28.2	19.3	376505	28.3	22.0	33429	28.3	17.9
326566	27.9	20.6	229353	28.0	19.6	233647	28.1	20.1	182620	28.2	19.8	75459	28.3	18.5	256857	28.3	20.1
414929	27.9	19.6	271460	28.0	20.1	400173	28.1	20.3	447457	28.2	22.1	329512	28.3	20.7	383465	28.3	19.3
33888	27.9	18.1	96710	28.0	19.4	198710	28.1	19.2	420668	28.2	21.8	510240	28.3	21.5	293928	28.3	20.1
28636	27.9	17.6	515510	28.0	20.4	372181	28.1	20.6	253321	28.2	19.7	335011	28.3	19.2	44003	28.3	17.2
380113	27.9	21.0	500455	28.0	21.0	460597	28.1	20.4	94777	28.2	18.7	262406	28.3	21.0	454878	28.3	19.6
457512	27.9	20.8	176357	28.0	19.6	5351	28.1	16.6	454654	28.2	20.3	371343	28.3	20.2	301227	28.3	19.3
281216	27.9	19.4	342081	28.0	20.7	335292	28.1	21.0	484109	28.2	20.9	348374	28.3	19.8	10220	28.3	17.9
360647	27.9	20.6	365281	28.0	20.5	24551	28.1	18.8	92692	28.2	20.1	386974	28.3	20.4	494480	28.3	21.2
405206	27.9	19.9	486037	28.0	20.5	110430	28.1	19.2	366486	28.2	20.0	279704	28.3	21.0	368302	28.3	20.4
407269	27.9	18.9	193154	28.0	20.2	189873	28.1	19.3	35113	28.2	17.6	388603	28.3	21.2	279087	28.3	21.1
456210	27.9	20.1	42035	28.1	18.4	9699	28.1	18.6	275891	28.2	20.2	157722	28.3	19.8	287201	28.3	21.1
438566	27.9	20.6	469477	28.1	20.0	78076	28.1	19.2	493938	28.2	20.7	311647	28.3	20.3	113927	28.3	17.9
187645	27.9	20.1	380516	28.1	19.3	303585	28.1	19.5	245579	28.2	19.7	474740	28.3	21.7	378014	28.3	20.0
172098	27.9	20.0	328388	28.1	21.7	146584	28.1	19.3	149651	28.2	19.1	310553	28.3	19.0	400867	28.3	20.3
234621	27.9	19.4	59152	28.1	17.6	47336	28.1	17.2	396687	28.2	21.0	3860	28.3	15.6	328465	28.3	20.8
232280	27.9	18.9	280555	28.1	20.3	29151	28.1	18.6	190242	28.2	19.8	37483	28.3	18.5	384279	28.3	20.3
493245	27.9	20.3	107788	28.1	20.0	178758	28.1	19.8	405454	28.2	20.1	152962	28.3	20.6	295655	28.3	19.4
145969	27.9	18.2	97116	28.1	17.8	56763	28.1	18.3	329022	28.2	19.9	223035	28.3	19.9	490949	28.3	21.2
366337	27.9	20.6	365097	28.1	20.6	230554	28.1	19.0	66783	28.2	17.1	99001	28.3	18.5	285163	28.3	19.7
523418	27.9	19.7	345743	28.1	22.1	486251	28.1	20.3	480102	28.2	21.1	16983	28.3	17.3	165818	28.3	20.4
77829	27.9	18.6	147534	28.1	19.9	281150	28.1	20.5	391073	28.2	19.5	307446	28.3	20.4	247750	28.3	18.0
339178	27.9	19.9	306587	28.1	21.1	477385	28.1	19.8	26503	28.2	16.5	477331	28.3	20.8	248410	28.3	19.1
62801	27.9	18.9	364895	28.1	21.3	73726	28.1	19.1	43624	28.2	18.3	252034	28.3	20.4	208881	28.3	20.4
229828	27.9	20.6	269214	28.1	21.2	335489	28.1	20.6	71561	28.2	18.3	13041	28.3	16.1	228961	28.3	18.9
454421	27.9	19.9	45483	28.1	18.8	76040	28.1	19.1	117862	28.2	20.3	383435	28.3	20.5	46178	28.3	18.3
330256	27.9	21.2	70401	28.1	19.4	56452	28.1	18.5	273665	28.2	20.6	13066	28.3	17.9	107928	28.3	17.4
47710	27.9	17.3	193726	28.1	19.9	252098	28.1	19.5	142776	28.2	19.0	288252	28.3	19.2	97626	28.3	19.6
209131	27.9	19.3	493466	28.1	21.0	274287	28.1	20.5	184578	28.2	19.4	349656	28.3	19.6	340077	28.3	19.4
248007	27.9	20.2	279576	28.1	20.5	229338	28.1	19.8	282493	28.2	20.3	194000	28.3	19.6	346384	28.4	21.5
178629	27.9	19.7	312381	28.1	20.6	251056	28.1	21.6	22598	28.2	16.6	402252	28.3	22.0	326646	28.4	21.0
379717	27.9	21.1	5490	28.1	16.0	133574	28.1	18.2	215367	28.2	19.9	141687	28.3	20.0	358641	28.4	19.8
357672	27.9	20.5	79266	28.1	17.8	305957	28.1	20.5	430928	28.2	21.1	302665	28.3	19.9	19653	28.4	16.4
170591	27.9	19.5	117084	28.1	18.6	218981	28.1	20.0	480780	28.2	20.8	473419	28.3	20.4	391492	28.4	21.3
65436	27.9	17.6	388900	28.1	19.8	312386	28.1	20.5	489516	28.2	21.8	96793	28.3	18.0	234235	28.4	18.9
520630	28.0	21.0	295168	28.1	20.0	371344	28.1	20.3	399757	28.2	20.6	385742	28.3	20.3	292383	28.4	20.4
477097	28.0	18.8	227115	28.1	19.6	83173	28.1	19.8	28493	28.2	18.7	518632	28.3	20.8	276564	28.4	20.5
116098	28.0	18.8	229249	28.1	19.7	112360	28.1	19.1	271579	28.2	20.4	344153	28.3	20.3	484341	28.4	20.7
100175	28.0	19.0	424346	28.1	20.5	270133	28.1	20.8	466947	28.2	20.3	60800	28.3	19.6	216127	28.4	19.6
200398	28.0	19.1	209818	28.1	20.5	518501	28.1	21.3	76312	28.2	18.1	344942	28.3	19.5	391252	28.4	21.5
284266	28.0	21.6	503838	28.1	20.8	96757	28.1	19.6	197103	28.2	19.5	79394	28.3	19.1	391164	28.4	19.2
118032	28.0	19.8	152932	28.1	20.1	26647	28.2	17.0	322065	28.2	20.2	421484	28.3	21.3	232607	28.4	19.2
485950	28.0	21.6	78281	28.1	20.4	45734	28.2	17.6	401387	28.2	19.0	30683	28.3	18.1	110567	28.4	18.9
115059	28.0	19.7	495063	28.1	21.0	161485	28.2	20.3	499943	28.2	21.2	87172	28.3	16.6	216776	28.4	20.6
350871	28.0	21.1	127524	28.1	19.8	162156	28.2	19.7	30754	28.2	19.7	92096	28.3	16.1	216686	28.4	20.2
129263	28.0	20.3	414303	28.1	20.7	299596	28.2	20.9	110625	28.2	20.0	244809	28.3	19.9	214747	28.4	20.4
389458	28.0	20.6	105234	28.1	16.4	262115	28.2	19.6	40702	28.2	16.3	97396	28.3	18.2	52592	28.4	19.4
94389	28.0	17.6	214410	28.1	20.0	350570	28.2	19.2	391793	28.2	20.0	99027	28.3	18.1	357444	28.4	20.1
13328	28.0	17.8	435561	28.1	21.5	338434	28.2	20.5	479476	28.2	20.6	272136	28.3	20.6	15354	28.4	17.3
422517	28.0	21.4	168457	28.1	18.9	517241	28.2	21.4	67230	28.2	18.3	446059	28.3	20.4	286210	28.4	19.3
513472	28.0	23.1	485540	28.1	20.2	520815	28.2	20.4	451091	28.2	20.9	324108	28.3	20.8	206029	28.4	20.5
459358	28.0	20.4	447503	28.1	20.7	269227	28.2	20.7	295534	28.2	19.8	343624	28.3	19.5	230243	28.4	19.7
146426	28.0	18.9	522138	28.1	21.2	267986	28.2	20.6	406928	28.2	21.1	278227	28.3	19.8	384394	28.4	19.4
464587	28.0	20.4	323004	28.1	21.2	150453	28.2	20.3	440795	28.2	20.5	188633	28.3	19.7	20615	28.4	17.2
274419	28.0	20.1	436804	28.1	21.0	314917	28.2	20.4	239570	28.2	19.6	173204	28.3	19.1	323325	28.4	20.7
229757	28.0	18.8	132900	28.1	20.1	275523	28.2	21.2	98871	28.2	18.8	154244	28.3	21.5	241412	28.4	19.9
342064	28.0	19.9	128711	28.1	19.2	160870	28.2	20.2	420694	28.2	21.3	140234	28.3	19.2	181635	28.4	19.6
161236	28.0	18.5	252554	28.1	19.5	138925	28.2	20.5	432286	28.2	21.4	218736	28.3	20.5	3457	28.4	16.0
343744	28.0	21.1	39022	28.1	18.6	70818	28.2	17.4	383030	28.2	20.1	26579	28.3	17.6	462971	28.4	20.0
61805	28.0	19.2	324674	28.1	21.0	195808	28.2	19.9	368542	28.2	20.2	278159	28.3	21.2	209075	28.4	19.1
248336	28.0	20.9	243012	28.1	19.4	207121	28.2	19.0	494076	28.2	21.3	325988	28.3	20.4	361192	28.4	19.7
486325	28.0	20.5	77550	28.1	18.6	267669	28.2	19.9	180658	28.2	20.2	396540	28.3	19.7	181230	28.4	20.7
271360	28.0	20.1	206310	28.1	19.4	317494	28.2	20.8	46714	28.2	16.5	135820	28.3	20.1	262684	28.4	20.8
340923	28.0	20.2	401438	28.1	20.9	210251	28.2	19.4	168718	28.2	19.2	373978	28.3	18.6	76621	28.4	18.6
220657	28.0	19.9	197944	28.1	20.6	458002	28.2	20.8	431790	28.2	20.2	207092	28.3	19.6	365299	28.4	20.7
511620	28.0	19.9	139809	28.1	19.1	390640	28.2	21.8	113814	28.2	19.6	435440	28.3	20.4	247735	28.4	20.0
415482	28.0	20.1	299089	28.1	19.2	28032	28.2</										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
317751	28.4	20.3	469646	28.4	20.8	32893	28.5	16.9	244358	28.6	20.9	408998	28.7	18.9	523343	28.7	21.0
463358	28.4	21.3	50523	28.4	19.4	356144	28.5	19.9	226204	28.6	20.0	317828	28.7	20.3	471410	28.7	20.0
60815	28.4	17.4	358665	28.4	19.4	295899	28.5	20.5	390752	28.6	21.4	32964	28.7	18.7	226622	28.7	19.6
77985	28.4	18.5	452053	28.4	21.0	20700	28.5	17.9	462736	28.6	21.9	69503	28.7	19.2	266879	28.7	21.0
255203	28.4	20.3	219244	28.4	19.0	454288	28.5	21.5	53835	28.6	18.8	301727	28.7	21.2	176291	28.7	19.4
97694	28.4	18.2	223061	28.4	19.8	479639	28.5	20.0	196855	28.6	20.4	22563	28.7	18.0	322304	28.7	21.4
282259	28.4	21.0	144195	28.4	20.1	442422	28.5	20.2	77376	28.6	19.2	501542	28.7	19.1	16523	28.7	16.0
58080	28.4	19.1	46896	28.4	20.1	153494	28.5	19.4	157514	28.6	18.9	112309	28.7	18.8	64889	28.7	18.7
278243	28.4	20.7	31781	28.4	18.3	333050	28.5	20.3	343630	28.6	20.0	154667	28.7	19.7	119421	28.7	18.7
172972	28.4	19.9	198171	28.4	20.9	174307	28.5	19.3	130395	28.6	19.3	193756	28.7	20.1	330168	28.7	20.5
354051	28.4	21.2	278864	28.5	20.5	244539	28.5	19.5	97706	28.6	19.9	421095	28.7	21.4	30213	28.7	17.1
434123	28.4	20.8	99239	28.5	19.5	483190	28.5	20.8	113686	28.6	19.0	212164	28.7	20.2	384305	28.7	21.2
26524	28.4	18.2	6016	28.5	16.2	293958	28.5	19.4	201811	28.6	20.5	355304	28.7	20.0	42466	28.7	18.8
476533	28.4	20.1	399395	28.5	19.6	520595	28.5	20.9	461189	28.6	20.8	102830	28.7	19.1	455743	28.7	20.1
333821	28.4	19.7	487763	28.5	20.5	401187	28.5	20.3	439328	28.6	21.0	484298	28.7	20.7	189711	28.7	20.9
367410	28.4	21.2	362213	28.5	19.8	324140	28.5	20.7	399785	28.6	21.3	335294	28.7	21.6	187528	28.7	19.5
272041	28.4	20.1	264872	28.5	20.3	175062	28.5	19.1	91691	28.6	18.7	126156	28.7	18.6	269170	28.7	19.4
219284	28.4	19.0	338002	28.5	18.9	212173	28.5	19.4	206333	28.6	20.0	54857	28.7	19.7	243925	28.7	18.1
229245	28.4	18.8	265525	28.5	21.0	385599	28.5	19.7	463083	28.6	19.9	251262	28.7	20.2	16285	28.7	18.1
72427	28.4	17.5	172224	28.5	19.6	354458	28.5	19.5	447280	28.6	21.5	37698	28.7	18.5	174989	28.7	20.5
453643	28.4	21.0	389403	28.5	19.8	232587	28.5	20.2	228731	28.6	20.0	194652	28.7	18.4	277336	28.7	19.2
441790	28.4	18.4	125294	28.5	18.5	89232	28.5	19.1	26912	28.6	18.1	49834	28.7	17.9	355500	28.7	19.5
142471	28.4	20.5	262092	28.5	20.7	324724	28.5	20.2	95860	28.6	19.7	180695	28.7	20.0	468327	28.7	20.2
500746	28.4	19.7	270783	28.5	20.4	306838	28.5	18.9	5160	28.6	16.8	458080	28.7	20.0	411524	28.7	20.0
44800	28.4	18.7	266456	28.5	20.8	119425	28.5	17.6	220096	28.6	18.9	27793	28.7	17.2	19342	28.7	16.7
432308	28.4	20.5	130086	28.5	19.9	64385	28.5	18.4	477778	28.6	19.8	220082	28.7	20.2	336058	28.7	20.8
283762	28.4	20.8	248431	28.5	19.4	425239	28.5	21.4	89961	28.6	18.9	457663	28.7	20.9	199181	28.7	20.1
269504	28.4	19.5	517484	28.5	21.7	115045	28.5	17.4	229459	28.6	20.4	224706	28.7	19.8	435705	28.7	21.3
330776	28.4	21.2	452589	28.5	21.8	469422	28.5	19.7	134127	28.6	19.3	401234	28.7	20.7	103963	28.7	19.4
84461	28.4	18.4	61353	28.5	18.1	410793	28.5	21.3	41411	28.6	18.6	418828	28.7	21.2	377749	28.7	20.9
302704	28.4	18.9	13770	28.5	17.7	14000	28.5	17.7	198801	28.6	19.2	320137	28.7	21.8	418461	28.7	20.4
15633	28.4	16.6	514979	28.5	20.8	276310	28.5	19.8	124373	28.6	19.5	418743	28.7	21.7	266561	28.7	20.4
411049	28.4	20.2	330731	28.5	20.9	420148	28.5	20.6	365218	28.6	20.2	120459	28.7	19.5	358544	28.8	18.4
197286	28.4	19.4	41308	28.5	17.2	316382	28.5	20.7	489890	28.6	20.7	510600	28.7	20.8	221475	28.8	19.6
8136	28.4	18.7	265233	28.5	19.2	162945	28.5	19.9	215251	28.6	20.8	270174	28.7	21.3	334972	28.8	19.5
268625	28.4	19.7	311710	28.5	20.1	474721	28.5	21.9	157305	28.6	20.8	481778	28.7	20.2	483583	28.8	22.0
455680	28.4	21.9	180479	28.5	20.0	434175	28.5	21.3	9976	28.6	16.6	30384	28.7	18.0	186628	28.8	20.2
487479	28.4	20.9	73691	28.5	18.2	16679	28.5	16.8	228528	28.6	18.7	116910	28.7	19.7	484295	28.8	20.6
437556	28.4	19.6	213697	28.5	19.2	287038	28.5	20.7	13120	28.6	17.4	185219	28.7	20.1	18765	28.8	17.5
486353	28.4	19.9	442361	28.5	19.5	87108	28.5	18.6	386715	28.6	20.1	121617	28.7	19.0	407010	28.8	20.0
465394	28.4	20.0	89178	28.5	18.9	302686	28.5	19.3	408262	28.6	21.5	487440	28.7	21.1	104449	28.8	20.3
53252	28.4	19.3	286278	28.5	19.8	19394	28.6	17.6	202815	28.6	19.7	219247	28.7	18.7	319418	28.8	18.7
133297	28.4	18.5	160949	28.5	19.3	279670	28.6	20.6	272387	28.6	19.6	53881	28.7	17.7	377481	28.8	20.6
160987	28.4	19.2	77174	28.5	19.1	441217	28.6	21.2	95342	28.6	19.0	180635	28.7	20.8	324369	28.8	20.3
376699	28.4	20.8	186235	28.5	19.0	370334	28.6	21.2	311854	28.6	19.9	483093	28.7	19.3	76505	28.8	18.8
66610	28.4	18.0	300351	28.5	20.6	337443	28.6	20.9	514410	28.6	21.0	317362	28.7	20.9	223090	28.8	19.8
24649	28.4	18.0	434401	28.5	21.1	176413	28.6	19.4	426611	28.6	22.1	481360	28.7	18.8	359573	28.8	19.8
222029	28.4	19.8	381029	28.5	19.3	128303	28.6	19.4	67058	28.6	17.9	273262	28.7	20.0	52	28.8	10.0
514738	28.4	20.9	17191	28.5	19.0	22286	28.6	16.9	17572	28.6	17.8	218082	28.7	20.8	131618	28.8	19.2
436785	28.4	21.5	385706	28.5	19.8	480173	28.6	20.7	327517	28.6	19.8	359228	28.7	21.4	318737	28.8	19.5
441053	28.4	21.2	407146	28.5	18.8	374024	28.6	20.3	182963	28.6	19.9	156821	28.7	19.0	420038	28.8	21.3
342276	28.4	20.6	416387	28.5	20.4	142405	28.6	19.0	176422	28.6	19.2	97650	28.7	19.6	493696	28.8	20.2
69924	28.4	18.4	456185	28.5	21.1	493207	28.6	20.8	184619	28.6	20.5	91796	28.7	18.6	102331	28.8	18.9
293603	28.4	20.9	364786	28.5	20.0	461491	28.6	21.3	485792	28.6	20.7	449299	28.7	20.5	117622	28.8	19.2
256900	28.4	20.7	323338	28.5	20.1	277295	28.6	19.2	305620	28.6	20.3	484319	28.7	20.5	145747	28.8	19.4
230188	28.4	19.2	70430	28.5	17.6	486240	28.6	20.5	112577	28.6	19.9	439550	28.7	20.7	46217	28.8	19.1
106039	28.4	19.0	118583	28.5	19.8	156998	28.6	19.4	309518	28.6	19.7	46162	28.7	18.4	464498	28.8	20.4
443792	28.4	21.7	379052	28.5	20.2	303141	28.6	19.3	99710	28.6	19.5	474382	28.7	22.2	354258	28.8	21.5
290675	28.4	20.6	103743	28.5	18.6	231828	28.6	20.2	513610	28.6	21.2	418573	28.7	21.6	115638	28.8	18.5
135303	28.4	19.0	161362	28.5	18.9	154446	28.6	20.5	53645	28.6	18.5	129122	28.7	18.5	219109	28.8	18.8
271362	28.4	20.0	7115	28.5	17.1	446078	28.6	20.7	150414	28.6	19.2	417855	28.7	20.2	369438	28.8	19.2
343887	28.4	20.1	445612	28.5	21.5	361806	28.6	20.7	148838	28.6	20.1	176964	28.7	19.6	224836	28.8	19.6
289231	28.4	19.3	357460	28.5	20.2	196164	28.6	19.3	482927	28.6	20.5	400604	28.7	21.3	498522	28.8	21.0
329505	28.4	20.4	84653	28.5	18.5	481210	28.6	20.0	164509	28.7	20.0	285175	28.7	20.6	369012	28.8	20.6
257838	28.4	22.1	513885	28.5	20.7	326504	28.6	20.5	372957	28.7	20.8	448789	28.7	20.5	217396	28.8	19.8
113183	28.4	19.0	517176	28.5	20.5	446832	28.6	20.9	393515	28.7	21.6	447601	28.7	20.2	491487	28.8	21.2
287291	28.4	19.3	203963	28.5	20.4	191434	28.6	20.1	407148	28.7	20.3	172542	28.7	19.4	25464	28.8	16.7
459746	28.4	20.8	427203	28.5	20.9	171380	28.6	19.9	139285	28.7	20.1	298543	28.7	19.2	181873	28.8	19.9
375511	28.4	20.9	275264	28.5	19.9	493235	28.6										

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
29767	28.8	17.4	348552	28.9	19.7	333258	28.9	20.4	53888	29.0	17.9	516848	29.1	21.2	340150	29.1	20.6
131381	28.8	19.2	97330	28.9	19.3	514255	28.9	21.1	377933	29.0	20.9	198851	29.1	18.8	25038	29.1	18.7
395214	28.8	20.3	53897	28.9	18.7	365371	28.9	19.7	370434	29.0	20.3	274227	29.1	20.6	117067	29.1	20.1
515872	28.8	21.2	397488	28.9	20.4	58195	28.9	18.3	321969	29.0	20.3	191571	29.1	18.5	13618	29.1	17.3
329091	28.8	20.3	278720	28.9	20.2	64710	28.9	17.8	386692	29.0	20.5	267524	29.1	20.8	411755	29.1	20.8
244667	28.8	20.2	79277	28.9	18.8	107965	28.9	19.7	327479	29.0	20.0	51642	29.1	18.7	49175	29.1	17.7
213357	28.8	19.4	226320	28.9	18.8	72643	28.9	18.1	140022	29.0	20.0	7059	29.1	17.3	459382	29.1	20.9
99255	28.8	19.7	369430	28.9	19.5	225075	28.9	20.1	255337	29.0	19.5	101633	29.1	19.0	411852	29.1	21.0
127578	28.8	19.5	13446	28.9	16.9	108081	28.9	19.1	438008	29.0	20.4	289786	29.1	19.5	301551	29.1	19.7
143503	28.8	19.2	79751	28.9	19.2	155042	28.9	19.1	196309	29.0	21.0	243051	29.1	18.9	438493	29.1	22.0
241083	28.8	19.2	362974	28.9	19.5	521892	28.9	20.5	412000	29.0	19.9	406216	29.1	20.5	265060	29.1	19.6
239148	28.8	20.6	293756	28.9	20.8	337445	28.9	20.9	475460	29.0	20.7	309576	29.1	19.7	186511	29.1	18.5
262030	28.8	20.2	511059	28.9	20.2	457938	28.9	20.5	348253	29.0	21.1	289069	29.1	20.7	450689	29.1	21.5
456377	28.8	21.1	75823	28.9	18.8	76456	28.9	19.0	48324	29.0	18.4	112266	29.1	18.8	166334	29.1	21.3
395001	28.8	21.0	329947	28.9	20.2	271619	28.9	21.2	425268	29.0	20.8	75446	29.1	18.7	191367	29.1	18.4
446425	28.8	21.6	266857	28.9	20.1	195989	28.9	20.4	76102	29.0	18.3	495060	29.1	20.9	279635	29.1	19.8
383629	28.8	21.3	456458	28.9	20.1	199774	28.9	20.2	490429	29.0	20.8	196007	29.1	20.4	65339	29.1	18.7
145623	28.8	19.7	214414	28.9	20.6	298638	28.9	19.2	522329	29.0	21.1	487450	29.1	21.1	84885	29.2	20.3
362661	28.8	20.5	418694	28.9	20.0	244364	28.9	20.1	320865	29.0	21.8	362727	29.1	20.2	60641	29.2	18.7
279374	28.8	19.8	71277	28.9	19.3	401556	28.9	20.3	231407	29.0	18.8	304939	29.1	21.1	224032	29.2	20.2
470989	28.8	21.1	457402	28.9	20.4	52128	28.9	19.1	180964	29.0	20.1	66153	29.1	17.1	60368	29.2	18.7
444611	28.8	20.0	6954	28.9	17.3	201025	28.9	20.0	462741	29.0	20.8	431753	29.1	20.9	427171	29.2	19.6
514249	28.8	21.1	316426	28.9	20.4	110473	28.9	18.8	163030	29.0	19.5	473665	29.1	20.9	33374	29.2	17.9
374250	28.8	21.1	227848	28.9	19.0	515842	28.9	20.9	149565	29.0	20.3	275020	29.1	19.7	517252	29.2	20.1
18273	28.8	18.1	118480	28.9	19.6	305034	28.9	19.5	115672	29.0	18.0	139212	29.1	20.0	59410	29.2	19.0
35658	28.8	19.2	408691	28.9	21.4	22614	28.9	19.0	491092	29.0	19.8	220658	29.1	19.7	248249	29.2	20.5
72718	28.8	18.9	27105	28.9	18.5	172745	28.9	20.0	259326	29.0	18.6	401364	29.1	20.6	123152	29.2	20.3
91574	28.8	18.5	99704	28.9	18.8	270718	28.9	20.1	475240	29.0	21.1	345442	29.1	20.2	932	29.2	12.7
332236	28.8	20.2	110593	28.9	17.1	504372	28.9	20.0	193289	29.0	17.6	116625	29.1	18.9	376043	29.2	19.8
451986	28.8	21.2	429436	28.9	19.9	144407	28.9	19.8	362977	29.0	20.0	154720	29.1	19.1	117929	29.2	20.0
46237	28.8	18.3	44740	28.9	17.1	412857	28.9	20.3	4962	29.0	16.2	400993	29.1	19.4	70598	29.2	19.7
181492	28.8	20.3	215498	28.9	18.6	90639	28.9	19.5	186324	29.0	18.5	24661	29.1	17.9	303518	29.2	20.2
489908	28.8	20.4	435531	28.9	21.3	65369	28.9	18.2	23826	29.0	18.7	177526	29.1	19.6	218830	29.2	20.1
21498	28.8	17.1	295567	28.9	19.9	391532	28.9	20.0	339085	29.0	20.1	418604	29.1	21.1	230594	29.2	20.2
394136	28.8	21.4	303638	28.9	19.5	69058	28.9	18.4	179251	29.0	20.3	117861	29.1	19.8	494499	29.2	20.7
27620	28.8	18.4	469473	28.9	20.5	346438	28.9	20.5	372943	29.0	21.3	352984	29.1	19.6	517316	29.2	21.4
307366	28.8	21.0	191517	28.9	19.4	517910	28.9	21.6	170479	29.0	19.5	389917	29.1	19.5	268644	29.2	19.7
388118	28.8	19.9	453106	28.9	20.3	157124	28.9	19.3	411107	29.0	19.9	176700	29.1	19.7	404461	29.2	20.1
417410	28.8	21.0	370482	28.9	21.1	279290	28.9	20.8	457331	29.0	20.8	474281	29.1	19.3	312849	29.2	19.9
269870	28.8	18.4	152047	28.9	20.4	296044	28.9	19.6	450050	29.0	21.6	11385	29.1	17.7	460847	29.2	20.1
373675	28.8	20.8	131716	28.9	19.4	449346	28.9	19.8	487129	29.0	20.5	176643	29.1	20.1	421692	29.2	20.5
356536	28.8	20.6	203983	28.9	20.8	376313	28.9	20.6	119255	29.0	20.5	331657	29.1	21.5	398425	29.2	21.1
334559	28.8	20.0	60677	28.9	19.7	322585	28.9	20.1	115971	29.0	19.4	283294	29.1	20.9	132568	29.2	20.4
196371	28.8	20.2	337985	28.9	19.7	370885	28.9	19.6	53855	29.0	18.4	281067	29.1	19.1	412759	29.2	21.3
401215	28.8	20.2	249936	28.9	19.2	331975	28.9	19.7	313263	29.0	19.1	46551	29.1	18.0	376585	29.2	20.7
373870	28.8	20.6	43406	28.9	16.7	107904	28.9	20.1	81217	29.0	18.4	514119	29.1	21.5	485723	29.2	19.8
23587	28.8	17.0	441416	28.9	21.4	43442	28.9	18.8	460977	29.0	20.3	194540	29.1	20.0	338320	29.2	19.7
264460	28.8	20.1	229601	28.9	20.4	30208	28.9	18.6	417335	29.0	20.6	69872	29.1	18.5	34004	29.2	17.6
141655	28.8	19.8	463381	28.9	20.5	132837	28.9	19.6	208871	29.0	19.6	23265	29.1	17.9	459737	29.2	20.7
198080	28.8	20.5	19899	28.9	18.9	132534	28.9	19.8	68538	29.1	19.2	106212	29.1	18.5	506161	29.2	20.5
985	28.8	15.3	227132	28.9	20.1	485590	28.9	20.7	132724	29.1	20.8	365609	29.1	20.6	178954	29.2	19.0
137151	28.8	18.3	363343	28.9	20.2	482523	28.9	21.3	460651	29.1	19.6	164006	29.1	18.9	73406	29.2	18.8
351075	28.8	21.1	296759	28.9	20.8	295262	28.9	20.3	60244	29.1	18.6	431221	29.1	21.0	2628	29.2	16.6
60751	28.8	18.9	53479	28.9	18.4	394157	28.9	21.6	351402	29.1	20.8	347575	29.1	18.6	339232	29.2	19.1
442499	28.8	21.2	198841	28.9	18.5	312341	28.9	20.4	26368	29.1	17.3	95976	29.1	19.2	310814	29.2	19.9
188394	28.8	19.7	354234	28.9	20.8	355273	28.9	20.9	269626	29.1	19.7	456132	29.1	21.6	250641	29.2	21.6
4928	28.8	16.9	201379	28.9	18.1	411837	28.9	20.8	314355	29.1	21.2	189764	29.1	19.6	168202	29.2	20.3
44401	28.8	17.8	420258	28.9	20.1	4642	28.9	17.4	365518	29.1	20.3	13672	29.1	18.4	443064	29.2	20.1
327817	28.8	21.4	237873	28.9	20.3	477237	28.9	20.6	116171	29.1	19.0	132848	29.1	20.1	98697	29.2	18.6
135850	28.8	19.6	80429	28.9	17.5	133870	28.9	19.7	332931	29.1	19.8	156799	29.1	18.5	440200	29.2	20.9
49563	28.9	18.3	344148	28.9	20.0	460916	28.9	20.3	519052	29.1	20.4	493419	29.1	20.4	200620	29.2	20.4
208084	28.9	18.8	418624	28.9	20.8	296085	28.9	20.5	216844	29.1	18.5	372236	29.1	21.1	25497	29.2	17.9
272074	28.9	20.9	152001	28.9	19.0	60787	28.9	18.5	40908	29.1	18.3	279421	29.1	20.5	141911	29.2	19.2
116519	28.9	19.1	489225	28.9	21.5	518815	28.9	20.4	168113	29.1	20.8	414518	29.1	21.6	474791	29.2	21.8
63501	28.9	17.4	363554	28.9	19.9	77497	28.9	19.3	429425	29.1	19.6	490405	29.1	20.7	240803	29.2	19.8
359898	28.9	20.0	376075	28.9	20.3	39785	28.9	18.7	31445	29.1	16.5	332595	29.1	20.6	202755	29.2	20.3
280720	28.9	19.8	96633	28.9	17.5	490506	28.9	21.1	308822	29.1	20.6	130383	29.1	20.2	193422	29.2	16.9
131383	28.9	19.6	282216	28.9	18.8	368037	28.9	21.1	82886	29.1	19.3	57380	29.1	17.9	58492	29.2	18.6
226974	28.9	19.3	73569	28.9	18.7	39626	28.9	18.0	43547								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
455557	29.2	19.2	131334	29.3	20.6	191905	29.3	19.6	167248	29.4	19.5	66684	29.5	18.2	353065	29.5	19.7
256679	29.2	19.2	304891	29.3	20.3	285301	29.3	19.9	233801	29.4	20.0	421451	29.5	20.7	193028	29.5	19.0
337748	29.2	20.9	252716	29.3	18.9	493149	29.3	20.5	176619	29.4	19.6	326260	29.5	20.7	357680	29.5	20.6
366213	29.2	19.4	38064	29.3	18.8	142182	29.3	19.0	8860	29.4	16.6	272002	29.5	20.2	25221	29.5	17.6
3224	29.2	15.7	75505	29.3	17.8	45699	29.3	18.0	453732	29.4	20.7	9204	29.5	16.1	132599	29.5	19.7
11534	29.2	17.4	304162	29.3	19.8	476509	29.3	21.0	296867	29.4	17.5	181998	29.5	20.0	460006	29.5	20.8
280564	29.2	21.0	267847	29.3	19.1	274809	29.3	20.9	413466	29.4	19.8	491974	29.5	19.9	275127	29.5	20.8
79036	29.2	18.1	14806	29.3	17.4	81300	29.3	18.0	172758	29.4	19.2	365924	29.5	20.8	35753	29.5	18.3
130359	29.2	19.9	170960	29.3	20.0	385043	29.3	20.2	13683	29.4	17.8	211374	29.5	20.1	460623	29.5	21.3
136277	29.2	19.0	75986	29.3	18.4	450576	29.3	21.2	256046	29.4	20.6	17586	29.5	17.7	366663	29.5	20.7
247857	29.2	19.8	108432	29.3	19.5	24254	29.3	16.2	290710	29.4	20.5	418508	29.5	21.3	70278	29.5	17.7
347486	29.2	20.6	335302	29.3	20.2	231017	29.3	18.8	56708	29.4	18.7	279513	29.5	20.3	183039	29.5	19.3
96572	29.2	17.0	244479	29.3	20.9	76736	29.3	19.0	452475	29.4	19.4	230017	29.5	19.8	354417	29.5	20.3
406678	29.2	21.5	328535	29.3	20.3	24329	29.3	17.9	478562	29.4	19.4	370348	29.5	20.5	15191	29.5	18.1
58676	29.2	17.3	24624	29.3	19.3	104302	29.3	18.5	270158	29.4	20.6	459361	29.5	19.9	405674	29.5	21.4
187736	29.2	20.7	225099	29.3	21.0	372722	29.3	20.1	405692	29.4	21.2	376639	29.5	21.6	443716	29.5	21.6
486560	29.2	21.5	132985	29.3	19.1	286922	29.3	21.0	112012	29.4	18.5	18056	29.5	17.0	477235	29.5	22.3
267540	29.2	20.1	486367	29.3	21.2	148263	29.3	19.5	113467	29.4	19.6	282057	29.5	19.3	69927	29.5	18.2
506096	29.2	20.3	77033	29.3	18.8	426443	29.3	19.8	490948	29.4	20.5	335400	29.5	20.6	457415	29.5	20.8
328467	29.2	20.9	430408	29.3	20.3	453206	29.3	21.0	514843	29.4	21.9	113713	29.5	18.6	457535	29.5	20.6
442993	29.2	20.3	377808	29.3	21.8	329434	29.3	20.8	365028	29.4	19.8	195944	29.5	18.7	474272	29.5	20.7
13965	29.2	19.1	101318	29.3	20.4	257820	29.3	21.6	484393	29.4	20.3	329516	29.5	20.1	174129	29.5	19.5
307333	29.2	20.5	9466	29.3	16.9	313274	29.3	19.5	369223	29.4	20.9	287689	29.5	20.0	168595	29.5	18.3
388142	29.2	20.4	181127	29.3	19.8	227654	29.3	19.2	224883	29.4	19.4	60738	29.5	19.0	418681	29.5	21.1
262779	29.2	20.1	376558	29.3	20.9	40129	29.3	18.2	88834	29.4	19.8	350862	29.5	19.5	410436	29.5	20.8
490524	29.2	19.6	195657	29.3	20.1	261486	29.3	20.6	200034	29.4	19.6	392315	29.5	20.5	75746	29.6	18.3
461073	29.2	20.2	431670	29.3	20.7	11440	29.3	17.1	474889	29.4	20.5	150694	29.5	19.8	425047	29.6	22.5
490206	29.2	21.1	433419	29.3	21.0	287897	29.3	21.3	331076	29.4	21.1	268269	29.5	20.6	43748	29.6	19.8
271988	29.2	20.2	416042	29.3	20.7	70527	29.3	19.4	63823	29.4	19.1	30628	29.5	18.4	506105	29.6	20.1
107726	29.2	19.7	111824	29.3	18.4	504476	29.4	21.2	216749	29.4	20.1	145952	29.5	18.3	285293	29.6	21.2
192166	29.2	20.9	145634	29.3	19.0	212145	29.4	20.5	99816	29.4	18.6	483572	29.5	20.8	121454	29.6	19.0
442313	29.2	20.0	137979	29.3	18.8	254751	29.4	19.8	319411	29.4	19.5	367000	29.5	20.2	501554	29.6	20.1
312431	29.2	20.6	414012	29.3	21.3	379916	29.4	20.8	109207	29.4	19.8	372088	29.5	20.8	131424	29.6	20.6
402335	29.2	20.8	296714	29.3	21.1	418448	29.4	20.8	269337	29.4	21.3	7962	29.5	17.0	56881	29.6	18.3
25407	29.2	16.7	463844	29.3	20.6	82170	29.4	20.2	67643	29.4	17.6	102405	29.5	17.9	486618	29.6	20.1
434553	29.2	22.2	154192	29.3	20.3	150438	29.4	19.5	494043	29.4	20.4	487099	29.5	21.3	355284	29.6	19.7
128398	29.2	20.5	516580	29.3	20.9	339850	29.4	19.4	5721	29.4	16.6	279319	29.5	19.6	200026	29.6	20.1
210889	29.2	19.0	342082	29.3	19.7	274554	29.4	20.0	521970	29.4	20.9	108574	29.5	19.5	356005	29.6	20.5
122144	29.2	20.4	243024	29.3	20.2	90613	29.4	19.8	442891	29.4	20.4	434599	29.5	21.2	173058	29.6	19.5
518012	29.2	20.9	214404	29.3	20.0	248255	29.4	19.9	6035	29.4	18.2	3987	29.5	15.9	305255	29.6	20.1
381405	29.2	20.9	489489	29.3	22.4	418565	29.4	19.9	451101	29.4	20.7	337403	29.5	20.5	271041	29.6	19.4
128489	29.2	19.4	269926	29.3	21.7	189712	29.4	19.7	428517	29.4	19.7	291570	29.5	21.0	521555	29.6	20.1
412345	29.2	21.1	439822	29.3	20.7	774	29.4	13.8	374783	29.4	19.7	104882	29.5	18.0	449703	29.6	22.1
221756	29.2	20.8	518007	29.3	21.4	97735	29.4	19.0	154482	29.4	19.9	481801	29.5	19.9	177482	29.6	19.9
270869	29.2	20.8	33171	29.3	17.7	77504	29.4	19.0	141537	29.4	20.1	235351	29.5	20.1	109510	29.6	18.4
355319	29.2	20.3	2370	29.3	17.3	447667	29.4	20.3	5287	29.4	15.3	107832	29.5	19.6	299044	29.6	19.9
179310	29.2	19.7	143666	29.3	18.5	292829	29.4	20.3	103177	29.4	18.6	368344	29.5	20.0	108856	29.6	19.7
48343	29.2	19.0	21812	29.3	18.5	315662	29.4	20.3	115600	29.4	19.0	99185	29.5	19.2	263282	29.6	20.6
181015	29.2	20.1	261030	29.3	20.6	82784	29.4	18.2	113145	29.4	19.5	286313	29.5	20.1	281898	29.6	19.5
69298	29.2	19.1	117064	29.3	18.7	485374	29.4	20.2	40038	29.4	18.1	441154	29.5	21.2	410540	29.6	20.2
404180	29.2	21.2	329693	29.3	19.1	495709	29.4	19.5	403640	29.4	21.1	523409	29.5	22.3	266911	29.6	19.4
262255	29.2	19.9	146980	29.3	19.6	483045	29.4	21.9	418614	29.4	19.7	79052	29.5	17.8	405650	29.6	20.5
175744	29.2	20.3	53332	29.3	18.8	286620	29.4	19.8	518774	29.4	21.0	234599	29.5	19.1	278070	29.6	19.3
444524	29.2	19.9	457790	29.3	19.9	311659	29.4	20.7	494664	29.4	19.9	271572	29.5	20.6	150	29.6	12.3
141684	29.2	19.0	264291	29.3	19.7	422865	29.4	21.0	161350	29.4	20.0	367408	29.5	20.2	174381	29.6	18.9
207531	29.2	20.3	206514	29.3	19.2	479610	29.4	19.4	226939	29.4	19.4	69290	29.5	17.9	373072	29.6	19.8
306762	29.2	17.9	198070	29.3	20.0	386661	29.4	20.1	257292	29.4	20.5	305028	29.5	19.6	491526	29.6	21.5
443871	29.2	20.5	199502	29.3	20.3	210645	29.4	21.5	339170	29.4	19.9	404708	29.5	20.9	294521	29.6	19.5
115433	29.3	18.3	517010	29.3	20.3	181624	29.4	19.9	291714	29.4	20.0	189130	29.5	18.1	354992	29.6	20.0
112805	29.3	18.9	220031	29.3	20.5	455008	29.4	20.5	457360	29.4	20.7	523438	29.5	21.2	102740	29.6	19.7
421017	29.3	21.2	471983	29.3	20.8	318797	29.4	20.7	461024	29.4	20.4	270620	29.5	20.6	485122	29.6	20.1
481201	29.3	20.8	122428	29.3	19.9	458430	29.4	20.8	249280	29.4	19.6	246007	29.5	20.2	419320	29.6	20.2
170015	29.3	18.6	35925	29.3	17.3	276110	29.4	19.6	456166	29.4	19.7	477341	29.5	20.6	101981	29.6	19.6
189445	29.3	19.2	88973	29.3	19.6	74994	29.4	19.3	273179	29.4	19.3	366627	29.5	20.7	329130	29.6	19.1
269866	29.3	19.4	57155	29.3	18.0	494432	29.4	21.9	443635	29.5	20.4	413221	29.5	20.9	474245	29.6	20.9
240438	29.3	20.0	110803	29.3	19.6	485806	29.4	21.5	197385	29.5	19.5	322545	29.5	19.8	28649	29.6	17.8
88626	29.3	19.2	148111	29.3	19.3	471996	29.4	20.2	96692	29.5	19.7	27051	29.5	18.5	175282	29.6	20.4
239046	29.3	19.7	460118	29.3	21.3	43888	29.4	19.4	328452	29.5	20.2	459796	29.5	20.9	394496	29.6	18.9
91770	29.3	18.7	515258	29.3	20.9	418489	29.4	2									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
418843	29.6	19.9	520661	29.7	21.7	179611	29.7	20.0	363498	29.8	19.6	457807	29.9	20.7	415262	29.9	20.6
97538	29.6	19.2	217578	29.7	20.0	25767	29.7	18.4	171074	29.8	19.7	349732	29.9	20.4	245982	29.9	20.0
220942	29.6	20.5	242038	29.7	21.4	326623	29.7	20.5	294886	29.8	20.8	164550	29.9	19.6	228413	29.9	20.6
35665	29.6	18.7	450066	29.7	21.2	394522	29.7	21.3	157300	29.8	20.5	248692	29.9	19.6	454835	29.9	20.9
233891	29.6	20.7	383174	29.7	19.4	414924	29.7	19.9	464044	29.8	21.1	53327	29.9	19.1	43520	29.9	18.9
358673	29.6	20.3	74868	29.7	17.8	356154	29.7	19.5	12568	29.8	17.5	463876	29.9	20.2	126798	29.9	20.0
494401	29.6	21.0	303195	29.7	18.2	249846	29.8	20.9	74048	29.8	18.6	170465	29.9	20.8	113202	29.9	19.3
233227	29.6	18.8	134130	29.7	20.0	216318	29.8	19.6	191877	29.8	19.3	50483	29.9	18.7	148487	29.9	19.9
294185	29.6	20.7	189673	29.7	19.7	411120	29.8	20.3	43254	29.8	18.7	205121	29.9	19.6	279822	29.9	21.1
418460	29.6	21.2	389613	29.7	19.7	447594	29.8	21.6	319026	29.8	21.2	231640	29.9	20.6	332432	29.9	20.9
95711	29.6	16.9	201318	29.7	19.0	203686	29.8	18.6	281165	29.8	20.9	427136	29.9	20.7	474865	29.9	20.4
118571	29.6	19.0	504958	29.7	20.3	275310	29.8	21.2	447533	29.8	20.1	189886	29.9	20.2	267573	29.9	21.1
481330	29.6	20.4	51288	29.7	18.5	399260	29.8	20.6	77494	29.8	19.1	448448	29.9	22.2	197805	29.9	20.4
344012	29.6	20.5	2996	29.7	15.9	210524	29.8	20.4	401445	29.8	20.8	337723	29.9	20.6	189295	29.9	20.1
486593	29.6	21.5	189937	29.7	19.2	457827	29.8	20.9	399438	29.8	18.9	128832	29.9	18.8	5055	29.9	17.4
281359	29.6	19.0	281179	29.7	19.5	187742	29.8	20.0	451290	29.8	20.1	270664	29.9	19.9	354315	29.9	20.4
308212	29.6	18.7	72621	29.7	17.7	411109	29.8	20.0	372244	29.8	21.5	487628	29.9	21.2	484121	29.9	21.2
403646	29.6	21.0	444612	29.7	20.0	189726	29.8	19.2	171697	29.8	19.6	80135	29.9	18.2	313	29.9	11.2
481803	29.6	20.1	324797	29.7	20.7	79086	29.8	20.1	193188	29.8	20.1	126865	29.9	19.1	188266	29.9	19.1
518984	29.6	21.0	133517	29.7	19.4	103895	29.8	20.1	81925	29.8	19.3	496624	29.9	20.6	99808	29.9	20.0
142974	29.6	18.5	281193	29.7	21.3	457379	29.8	21.1	68196	29.8	18.2	36055	29.9	19.0	134305	29.9	19.7
74419	29.6	18.0	67364	29.7	19.1	251129	29.8	20.2	195899	29.8	17.8	389000	29.9	20.7	19676	29.9	17.7
266202	29.6	20.6	415323	29.7	22.5	520130	29.8	20.8	408193	29.8	20.4	6410	29.9	17.0	82190	29.9	19.4
7761	29.6	18.2	488127	29.7	19.7	44927	29.8	18.0	513396	29.8	21.4	128131	29.9	19.7	416070	29.9	20.8
482242	29.6	21.3	69280	29.7	18.1	139671	29.8	19.0	273247	29.8	19.6	315831	29.9	20.5	264124	29.9	19.9
212794	29.6	19.0	339948	29.7	20.5	137708	29.8	18.6	24360	29.8	18.4	305828	29.9	19.8	459787	29.9	20.8
398173	29.6	22.3	27858	29.7	17.3	322991	29.8	20.0	407876	29.8	20.3	91520	29.9	18.1	7295	29.9	16.6
115328	29.6	18.0	66304	29.7	17.9	116531	29.8	19.4	197177	29.8	20.2	420160	29.9	20.1	460531	29.9	21.1
410594	29.6	20.9	460610	29.7	20.7	180153	29.8	19.6	132880	29.8	18.5	393056	29.9	20.7	211338	29.9	19.8
14118	29.6	17.3	16149	29.7	17.8	420223	29.8	20.5	35970	29.8	18.2	438051	29.9	21.7	52911	29.9	18.2
240169	29.6	20.9	493996	29.7	20.6	434407	29.8	21.2	489869	29.8	21.1	76122	29.9	19.0	60562	29.9	18.7
6584	29.6	16.6	461493	29.7	20.4	439314	29.8	20.8	300535	29.8	21.1	462496	29.9	20.9	300478	29.9	20.4
10359	29.6	16.6	293562	29.7	21.1	162934	29.8	19.6	439031	29.8	20.7	1275	29.9	14.2	204705	29.9	20.1
370610	29.6	19.4	203211	29.7	19.0	178731	29.8	20.2	357616	29.8	19.9	158811	29.9	18.9	460699	29.9	20.2
231388	29.6	19.0	133799	29.7	19.2	175967	29.8	20.0	45976	29.8	19.0	199815	29.9	20.7	439551	29.9	20.6
355468	29.6	20.3	274708	29.7	20.3	259480	29.8	19.0	304123	29.8	21.1	90506	29.9	18.9	294993	29.9	20.2
249272	29.6	19.5	99491	29.7	19.4	461840	29.8	21.4	209211	29.8	19.5	128020	29.9	20.1	289027	29.9	19.8
439203	29.6	21.4	76374	29.7	19.0	33985	29.8	15.7	151724	29.8	18.4	358275	29.9	20.4	156937	29.9	20.0
197228	29.6	19.0	300476	29.7	20.8	77635	29.8	18.6	87454	29.8	19.1	286214	29.9	20.8	418616	29.9	19.6
60284	29.6	17.9	58274	29.7	17.4	318962	29.8	21.1	196003	29.8	19.8	64135	29.9	18.3	358657	29.9	19.8
82129	29.6	18.8	81516	29.7	19.6	212172	29.8	20.3	405238	29.8	20.0	349072	29.9	19.9	116696	29.9	19.8
261055	29.6	20.0	139491	29.7	19.5	160862	29.8	21.0	95191	29.8	18.2	337726	29.9	20.6	373067	29.9	20.7
120556	29.6	19.4	354232	29.7	20.9	129726	29.8	19.4	257926	29.8	18.9	380490	29.9	20.4	474154	29.9	20.7
216628	29.6	18.7	196057	29.7	20.2	427120	29.8	20.8	138148	29.8	19.5	112151	29.9	19.1	53321	29.9	18.1
522148	29.6	20.5	262998	29.7	19.6	227155	29.8	20.9	430382	29.8	19.0	462489	29.9	19.9	317681	29.9	19.5
46593	29.6	17.1	354397	29.7	19.9	132558	29.8	21.0	280724	29.8	19.5	459069	29.9	20.2	232950	29.9	19.8
104606	29.6	19.7	249891	29.7	20.7	178790	29.8	20.9	277854	29.8	20.7	172204	29.9	19.5	346310	29.9	21.7
477853	29.6	20.6	420904	29.7	21.6	397956	29.8	20.5	178961	29.8	18.9	78691	29.9	18.6	240723	29.9	19.9
112007	29.6	18.8	195779	29.7	20.1	255108	29.8	20.2	157207	29.9	19.9	151364	29.9	19.4	196815	29.9	19.8
277288	29.6	21.6	362674	29.7	20.0	490459	29.8	20.4	116876	29.9	19.9	458486	29.9	20.3	288773	29.9	19.8
28881	29.6	17.6	515904	29.7	21.8	420208	29.8	19.6	133886	29.9	17.6	388064	29.9	19.8	164894	29.9	19.3
63420	29.6	17.4	249888	29.7	20.0	133739	29.8	20.0	224726	29.9	19.5	97447	29.9	18.6	414678	29.9	20.7
404942	29.6	19.9	448487	29.7	22.4	488349	29.8	20.3	454911	29.9	20.5	324768	29.9	20.7	399893	29.9	20.9
489150	29.6	20.7	329339	29.7	20.6	359472	29.8	20.7	328367	29.9	19.4	197884	29.9	19.1	329087	29.9	19.8
44514	29.6	17.3	276206	29.7	20.9	352896	29.8	20.2	266770	29.9	19.4	35457	29.9	17.2	324164	29.9	20.4
336100	29.6	21.3	393485	29.7	21.5	4285	29.8	16.8	481935	29.9	20.7	355363	29.9	20.7	331679	29.9	20.9
47269	29.6	16.8	357468	29.7	20.7	157853	29.8	20.1	350559	29.9	19.0	351826	29.9	20.9	239088	29.9	19.9
459810	29.6	20.2	442236	29.7	22.2	200170	29.8	19.0	39986	29.9	17.6	273474	29.9	19.3	332579	29.9	20.3
185978	29.6	20.2	191608	29.7	19.3	408042	29.8	20.7	257340	29.9	21.4	352987	29.9	19.7	475906	29.9	20.3
377494	29.6	20.1	370584	29.7	20.3	489438	29.8	20.7	58159	29.9	17.4	316389	29.9	20.9	462368	29.9	19.6
109434	29.6	18.7	390741	29.7	20.7	336803	29.8	20.7	326634	29.9	21.5	73323	29.9	19.1	172930	29.9	20.0
447528	29.6	20.3	85925	29.7	18.0	122031	29.8	20.0	329683	29.9	21.1	376241	29.9	20.5	124028	29.9	18.5
82849	29.6	19.6	32458	29.7	18.3	254708	29.8	20.2	271288	29.9	18.7	50631	29.9	18.6	486487	29.9	21.3
1725	29.6	15.2	167877	29.7	19.4	421069	29.8	21.4	429777	29.9	20.9	118921	29.9	19.1	194314	29.9	18.9
520757	29.6	21.5	203568	29.7	20.2	248262	29.8	20.5	418469	29.9	21.2	279257	29.9	19.7	412535	29.9	20.4
228941	29.7	19.8	260328	29.7	20.4	5613	29.8	16.3	153572	29.9	19.3	114535	29.9	18.8	409289	29.9	21.6
477255	29.7	20.7	2170	29.7	16.5	240708	29.8	20.1	449291	29.9	20.7	44911	29.9	17.4	408378	29.9	20.6
344078	29.7	20.9	490968	29.7	21.8	227125	29.8	20.3	448326	29.9	21.0	54173	29.9	18.1	257840	29.9	20.4
22514	29.7	17.0	449324	29.7	19.9	327789	29.8	20.9									

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
368412	30.0	19.9	63766	30.1	18.5	176898	30.1	19.5	57775	30.2	18.4	405434	30.3	20.6	1365	30.3	14.8
28011	30.0	16.3	390745	30.1	20.8	452045	30.1	20.7	112239	30.2	20.1	63480	30.3	19.1	507523	30.3	19.4
326031	30.0	20.5	138262	30.1	18.6	477293	30.1	20.3	189916	30.2	18.7	24651	30.3	18.6	79620	30.3	19.4
104087	30.0	19.1	388102	30.1	19.5	319771	30.1	20.3	432602	30.2	20.4	367413	30.3	22.1	337492	30.3	20.4
50329	30.0	17.4	389448	30.1	19.5	195089	30.1	19.6	326541	30.2	21.0	214331	30.3	20.1	171655	30.3	19.5
204487	30.0	19.1	399201	30.1	21.2	323617	30.1	19.7	49790	30.2	17.1	272972	30.3	19.6	188316	30.3	20.2
117472	30.0	19.6	420671	30.1	21.4	366926	30.1	20.3	323538	30.2	20.0	335392	30.3	20.6	220039	30.3	19.6
515146	30.0	22.0	88635	30.1	18.5	108076	30.1	19.1	436821	30.2	21.1	239150	30.3	20.4	181602	30.3	20.5
82268	30.0	18.7	404074	30.1	20.5	176822	30.1	18.9	397346	30.2	21.2	13453	30.3	16.5	419240	30.3	20.1
326094	30.0	20.3	191460	30.1	19.9	81904	30.1	18.1	54397	30.2	17.4	217567	30.3	20.1	173807	30.3	18.7
457258	30.0	20.8	303472	30.1	20.1	167943	30.1	19.1	424759	30.2	20.3	383523	30.3	19.4	369117	30.4	20.3
233887	30.0	19.0	228301	30.1	20.0	41441	30.1	18.2	16376	30.2	19.2	183365	30.3	20.0	142302	30.4	19.5
329704	30.0	21.0	25970	30.1	18.1	488092	30.1	20.1	43107	30.2	16.7	190987	30.3	19.2	160618	30.4	19.3
469799	30.0	19.9	485580	30.1	20.3	183619	30.1	20.0	311652	30.2	19.9	119135	30.3	20.0	183228	30.4	19.7
493990	30.0	20.4	165091	30.1	20.2	213164	30.1	19.6	489484	30.2	21.5	139195	30.3	17.7	399987	30.4	20.4
41260	30.0	18.5	228811	30.1	18.6	281640	30.1	21.3	394219	30.2	20.3	275062	30.3	20.0	364316	30.4	19.2
36195	30.0	18.9	184421	30.1	20.1	113369	30.1	19.8	502750	30.2	21.5	260089	30.3	20.2	247239	30.4	19.5
247219	30.0	19.7	31978	30.1	18.8	521882	30.1	20.3	65047	30.2	18.6	517060	30.3	21.3	232710	30.4	19.1
493188	30.0	20.8	445756	30.1	20.0	141348	30.1	18.5	301735	30.2	21.2	90626	30.3	20.4	179041	30.4	19.4
307398	30.0	21.1	262282	30.1	20.2	285641	30.1	19.9	226119	30.2	19.0	402238	30.3	19.5	75564	30.4	17.2
457405	30.0	20.1	80347	30.1	18.0	139762	30.1	19.6	493050	30.2	20.1	29847	30.3	17.7	15856	30.4	17.0
413319	30.0	20.5	504949	30.1	19.7	289774	30.1	21.0	454328	30.2	19.7	59786	30.3	19.7	114628	30.4	19.4
129068	30.0	19.5	105217	30.1	19.4	206439	30.1	20.5	293724	30.2	21.6	43750	30.3	19.1	296844	30.4	21.2
291775	30.0	20.2	523219	30.1	20.7	511940	30.1	20.4	134117	30.2	18.9	322925	30.3	20.4	39015	30.4	18.0
215202	30.0	21.3	450657	30.1	20.8	349589	30.1	21.2	475023	30.2	20.2	514180	30.3	20.9	13359	30.4	17.6
109399	30.0	19.8	132968	30.1	19.6	134188	30.1	19.6	45369	30.2	18.5	255033	30.3	20.9	26726	30.4	19.0
400090	30.0	20.9	273528	30.1	19.4	404508	30.1	21.0	234751	30.2	20.5	171201	30.3	19.3	151337	30.4	19.6
140178	30.0	19.3	194875	30.1	18.8	488257	30.1	20.3	83799	30.2	19.6	102156	30.3	19.0	216229	30.4	20.4
291196	30.0	20.6	17694	30.1	17.2	195731	30.2	20.1	62331	30.2	18.6	185719	30.3	20.7	372261	30.4	20.4
493259	30.0	20.3	229339	30.1	20.0	477236	30.2	20.8	247625	30.2	19.3	17567	30.3	16.8	216375	30.4	20.0
299163	30.0	19.4	73476	30.1	19.2	178243	30.2	20.8	145988	30.2	18.7	455872	30.3	19.7	220223	30.4	19.0
1252	30.0	15.3	286290	30.1	19.7	256297	30.2	20.7	503625	30.2	20.0	320912	30.3	20.5	30522	30.4	15.4
402312	30.0	21.2	300512	30.1	19.6	355379	30.2	19.4	319997	30.2	20.0	140193	30.3	19.4	50517	30.4	17.6
339098	30.0	20.7	96315	30.1	19.6	457272	30.2	20.6	439063	30.2	21.4	461669	30.3	20.5	179297	30.4	19.4
127467	30.0	20.3	499194	30.1	20.9	59047	30.2	17.1	480878	30.2	20.8	117082	30.3	19.1	329290	30.4	21.2
399088	30.0	21.1	434017	30.1	20.8	247626	30.2	19.4	153519	30.2	20.4	9926	30.3	17.5	329862	30.4	19.7
4165	30.0	17.8	470128	30.1	21.1	262086	30.2	20.4	419137	30.2	19.9	177874	30.3	19.7	123043	30.4	20.1
267012	30.0	20.7	294979	30.1	21.1	383512	30.2	20.0	20209	30.2	18.7	331306	30.3	19.8	364911	30.4	20.8
311723	30.0	20.4	156013	30.1	18.9	24717	30.2	18.2	164269	30.2	19.7	113301	30.3	18.0	452924	30.4	20.9
152971	30.0	19.7	112582	30.1	19.3	158046	30.2	20.9	238981	30.2	20.6	249895	30.3	20.5	244888	30.4	19.9
486276	30.0	20.0	189730	30.1	19.4	13268	30.2	18.5	269185	30.2	21.1	34375	30.3	17.9	438059	30.4	21.9
141787	30.0	18.8	15042	30.1	16.9	443939	30.2	19.3	299595	30.2	21.1	231033	30.3	20.1	293528	30.4	20.6
74656	30.0	18.2	137950	30.1	19.6	421166	30.2	19.9	385668	30.2	19.6	36340	30.3	17.4	281510	30.4	19.6
170636	30.0	19.1	429069	30.1	20.4	82707	30.2	18.6	150386	30.2	19.5	513389	30.3	21.5	167066	30.4	18.4
130332	30.0	19.9	355412	30.1	19.9	271314	30.2	19.6	125010	30.2	18.2	219882	30.3	20.1	210753	30.4	19.8
366198	30.0	20.5	510532	30.1	20.8	259966	30.2	19.6	327563	30.2	19.5	57822	30.3	19.0	198723	30.4	19.7
77933	30.0	19.0	388172	30.1	21.4	458633	30.2	20.6	173523	30.2	19.1	474250	30.3	19.8	15450	30.4	17.8
226084	30.0	19.2	217282	30.1	20.8	232864	30.2	21.1	15021	30.2	17.1	28346	30.3	17.7	480510	30.4	21.0
147034	30.0	20.3	100376	30.1	18.9	485588	30.2	20.5	460773	30.2	21.3	210818	30.3	20.5	115759	30.4	19.1
313224	30.0	19.9	108588	30.1	19.5	380128	30.2	18.8	149815	30.2	19.6	418756	30.3	19.3	460230	30.4	20.9
64075	30.0	17.2	8138	30.1	16.9	129640	30.2	20.3	60435	30.2	18.8	265936	30.3	20.0	457927	30.4	20.8
372093	30.0	21.4	43165	30.1	18.9	174315	30.2	18.7	272655	30.2	19.9	92514	30.3	19.6	396629	30.4	20.8
8120	30.0	17.6	24327	30.1	17.7	202277	30.2	18.8	118145	30.2	18.2	493303	30.3	20.6	369620	30.4	20.5
400994	30.0	20.3	329412	30.1	20.2	22368	30.2	17.8	342062	30.2	20.6	458626	30.3	21.2	73622	30.4	19.5
41130	30.0	18.8	442228	30.1	21.7	337857	30.2	19.6	145032	30.2	19.4	33332	30.3	17.9	204274	30.4	20.0
244321	30.0	20.0	448006	30.1	19.7	307870	30.2	19.9	436901	30.2	21.6	14731	30.3	18.5	15562	30.4	17.5
72854	30.0	18.6	115354	30.1	18.8	137392	30.2	19.0	57040	30.2	19.8	21698	30.3	18.1	322132	30.4	20.3
150938	30.0	19.7	146864	30.1	19.2	461017	30.2	20.3	492382	30.2	20.3	18076	30.3	17.9	190549	30.4	18.4
201325	30.0	19.7	21709	30.1	16.5	40115	30.2	17.7	356132	30.2	21.2	212505	30.3	20.1	494774	30.4	21.5
270639	30.0	20.6	123970	30.1	19.3	82364	30.2	19.4	23024	30.2	18.6	264254	30.3	20.4	43509	30.4	17.5
422573	30.0	21.0	3333	30.1	17.2	52757	30.2	18.5	389441	30.2	21.3	396742	30.3	19.9	180253	30.4	19.4
385407	30.0	18.8	368366	30.1	20.7	448327	30.2	20.1	63857	30.2	18.9	89034	30.3	17.9	169770	30.4	19.2
367611	30.0	20.5	160044	30.1	20.0	56584	30.2	18.6	127037	30.2	17.2	153716	30.3	19.2	461305	30.4	20.8
394586	30.0	19.1	455774	30.1	21.2	436806	30.2	21.6	390968	30.2	19.5	64737	30.3	18.9	356395	30.4	20.5
354011	30.0	19.5	488939	30.1	20.5	52560	30.2	19.0	518469	30.2	24.3	351080	30.3	19.8	326598	30.4	22.0
436823	30.0	21.3	426204	30.1	21.0	30130	30.2	17.7	14906	30.2	19.2	306105	30.3	21.2	40023	30.4	19.2
170042	30.0	19.5	155549	30.1	20.4	462958	30.2	20.3	179135	30.2	19.1	278840	30.3	20.6	7434	30.4	15.8
458570	30.1	21.1	367436	30.1	20.8	490270	30.2	20.1	97671	30.2	19.7	471220	30.3	21.6	307281	30.4	20.7
37262	30.1	18.3	9820	30.1	17.6	456574	30.2	21.1	4346								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
442851	30.4	20.3	144420	30.5	20.2	50582	30.5	19.1	328083	30.6	20.0	138499	30.7	19.7	139956	30.7	19.3
312309	30.4	19.8	220067	30.5	18.6	223439	30.5	18.9	74259	30.6	18.1	368194	30.7	20.4	371838	30.7	19.5
204987	30.4	19.2	346483	30.5	20.4	483132	30.5	21.2	164137	30.6	19.2	356720	30.7	20.0	196611	30.7	20.9
80879	30.4	18.9	208328	30.5	20.7	152251	30.6	20.2	165629	30.6	19.5	118502	30.7	18.9	102227	30.7	18.9
361818	30.4	21.2	355520	30.5	20.6	309923	30.6	20.2	17858	30.6	17.8	260822	30.7	20.4	117746	30.7	19.4
357490	30.4	21.9	196055	30.5	20.1	37029	30.6	18.2	334041	30.6	20.5	321092	30.7	20.2	418819	30.7	20.8
452099	30.4	20.1	346318	30.5	20.8	341003	30.6	20.6	101345	30.6	19.4	400662	30.7	21.3	89061	30.7	18.6
277848	30.4	20.6	138317	30.5	19.3	217689	30.6	19.8	367221	30.6	20.3	87202	30.7	18.5	455187	30.7	21.0
320960	30.4	20.7	484760	30.5	19.7	328483	30.6	22.1	514784	30.6	21.7	105905	30.7	19.3	407270	30.7	19.4
365046	30.4	20.5	514381	30.5	20.4	284023	30.6	20.7	155976	30.6	18.5	331415	30.7	19.7	330833	30.7	19.9
354632	30.4	19.4	354082	30.5	19.9	369490	30.6	20.2	267555	30.6	19.8	101234	30.7	19.7	234580	30.7	19.9
30052	30.4	18.5	181887	30.5	19.3	515153	30.6	21.6	490957	30.6	20.4	389456	30.7	20.2	197044	30.7	19.6
25947	30.4	18.2	461321	30.5	20.0	245778	30.6	21.3	259884	30.6	19.7	33874	30.7	17.1	280951	30.7	20.0
42448	30.4	18.7	174416	30.5	19.8	92141	30.6	18.4	323185	30.6	20.7	212434	30.7	19.5	223843	30.7	19.5
409508	30.4	21.7	481736	30.5	21.8	373283	30.6	20.3	107089	30.6	18.8	13507	30.7	17.6	95853	30.8	19.8
358264	30.4	20.2	159296	30.5	19.6	283075	30.6	19.8	420130	30.6	20.6	403173	30.7	20.7	203673	30.8	20.0
517260	30.4	20.5	399394	30.5	20.7	281095	30.6	21.1	409316	30.6	20.3	460490	30.7	20.2	91255	30.8	18.7
42018	30.4	18.0	80782	30.5	19.6	403363	30.6	21.2	218996	30.6	20.4	48641	30.7	17.6	261526	30.8	20.4
227149	30.4	20.4	374206	30.5	20.4	14325	30.6	18.6	465445	30.6	21.1	434552	30.7	19.8	196888	30.8	19.9
370617	30.4	20.0	399762	30.5	20.7	510628	30.6	20.2	160978	30.6	19.4	68923	30.7	18.8	198971	30.8	21.2
354450	30.4	19.9	268613	30.5	20.7	344422	30.6	20.1	3684	30.6	16.0	271479	30.7	19.7	18623	30.8	18.1
158450	30.4	18.7	366533	30.5	19.8	57966	30.6	19.9	464461	30.6	19.8	350856	30.7	19.6	47940	30.8	17.5
486258	30.4	20.6	121587	30.5	19.7	275175	30.6	19.6	214046	30.6	19.5	100633	30.7	18.9	334103	30.8	20.7
259467	30.4	19.3	328794	30.5	19.9	211692	30.6	19.4	160142	30.6	18.3	493143	30.7	20.5	481789	30.8	20.6
78509	30.4	18.8	92826	30.5	19.9	254739	30.6	20.1	481915	30.6	20.4	113047	30.7	17.8	7690	30.8	17.9
95806	30.4	19.4	241774	30.5	20.8	520873	30.6	21.1	46138	30.6	18.8	358190	30.7	20.8	480223	30.8	20.8
47589	30.4	18.6	461300	30.5	20.8	487594	30.6	20.5	332867	30.6	20.1	522131	30.7	20.6	154487	30.8	19.3
318404	30.4	20.0	405800	30.5	20.4	452614	30.6	20.9	34723	30.6	18.4	133394	30.7	19.7	381371	30.8	20.6
476494	30.4	21.5	145001	30.5	20.0	11592	30.6	18.7	237956	30.6	19.8	22316	30.7	18.4	174094	30.8	19.3
460980	30.4	21.7	453183	30.5	21.4	274685	30.6	20.5	26228	30.6	17.2	293730	30.7	18.9	345817	30.8	20.4
22895	30.4	17.2	244242	30.5	19.9	35694	30.6	17.0	420025	30.6	20.9	133233	30.7	19.0	457455	30.8	20.7
451494	30.4	20.2	446720	30.5	21.2	147580	30.6	19.1	168628	30.6	19.2	226360	30.7	19.3	290455	30.8	20.3
112938	30.4	20.2	287323	30.5	19.2	154998	30.6	19.9	78758	30.6	18.2	16316	30.7	18.9	3236	30.8	15.0
244792	30.4	21.8	331995	30.5	20.2	13604	30.6	19.1	268700	30.6	20.2	51240	30.7	18.9	88811	30.8	20.2
416683	30.4	19.2	82465	30.5	18.9	31887	30.6	17.6	101383	30.6	18.6	110269	30.7	20.3	482479	30.8	21.1
312682	30.5	19.9	456951	30.5	20.5	482669	30.6	20.3	421682	30.6	22.0	164358	30.7	19.6	396146	30.8	19.4
196818	30.5	19.5	249095	30.5	19.9	455490	30.6	20.4	222020	30.6	18.5	382381	30.7	21.6	484468	30.8	20.5
455536	30.5	20.1	373308	30.5	21.0	397181	30.6	20.5	300380	30.6	20.4	265974	30.7	20.4	56489	30.8	19.1
421753	30.5	20.5	28899	30.5	17.8	391511	30.6	20.8	27423	30.6	18.2	196267	30.7	20.4	275025	30.8	20.9
111462	30.5	19.0	86895	30.5	18.7	197989	30.6	19.9	73138	30.6	19.5	260831	30.7	20.7	445640	30.8	20.9
260597	30.5	18.9	457358	30.5	20.4	29276	30.6	19.5	494082	30.6	21.2	516864	30.7	20.7	474244	30.8	20.1
164103	30.5	19.0	458265	30.5	20.2	19714	30.6	18.3	184510	30.6	20.2	356088	30.7	21.0	215171	30.8	20.5
435021	30.5	20.7	256429	30.5	20.2	297533	30.6	19.6	87862	30.6	18.5	349726	30.7	18.2	384638	30.8	20.6
137232	30.5	19.6	329662	30.5	21.2	275812	30.6	19.8	46115	30.6	18.3	165754	30.7	20.4	112624	30.8	19.9
20335	30.5	18.0	164040	30.5	19.4	53834	30.6	19.3	212220	30.6	20.0	494379	30.7	21.3	58477	30.8	18.8
11375	30.5	16.9	85894	30.5	19.3	232094	30.6	19.1	421787	30.6	20.1	261206	30.7	19.9	458704	30.8	20.4
193015	30.5	19.2	244899	30.5	19.2	523232	30.6	21.4	489191	30.6	21.6	298536	30.7	19.7	14038	30.8	18.3
494634	30.5	20.5	77436	30.5	18.6	312689	30.6	20.2	442367	30.6	21.5	278916	30.7	21.2	288764	30.8	20.8
100069	30.5	19.4	444740	30.5	20.5	4643	30.6	17.3	262158	30.6	19.4	6875	30.7	16.0	47545	30.8	18.4
375659	30.5	20.7	516983	30.5	20.0	134985	30.6	19.8	45427	30.6	18.6	142681	30.7	19.4	243219	30.8	18.4
243147	30.5	21.1	231236	30.5	20.0	77924	30.6	19.7	43516	30.7	18.6	363579	30.7	19.5	258096	30.8	19.1
6092	30.5	17.1	143652	30.5	19.9	215194	30.6	20.1	200470	30.7	18.8	139746	30.7	19.2	232423	30.8	20.7
458678	30.5	21.3	447635	30.5	20.5	89592	30.6	19.5	440375	30.7	19.5	501563	30.7	20.1	267954	30.8	21.4
220076	30.5	20.5	443379	30.5	20.0	249016	30.6	20.5	460431	30.7	20.7	10373	30.7	18.1	449948	30.8	20.9
129149	30.5	19.8	152934	30.5	20.0	3661	30.6	16.0	442428	30.7	21.5	230417	30.7	20.5	520445	30.8	21.4
40259	30.5	17.8	32723	30.5	18.9	391621	30.6	20.2	433748	30.7	20.9	444864	30.7	20.7	192300	30.8	20.3
73308	30.5	19.5	198127	30.5	20.5	81883	30.6	19.5	132733	30.7	20.2	263696	30.7	20.1	66022	30.8	17.3
373083	30.5	20.5	1631	30.5	15.3	6547	30.6	18.1	8507	30.7	20.3	113407	30.7	19.6	185239	30.8	19.6
80522	30.5	17.4	218141	30.5	19.6	249413	30.6	20.7	134043	30.7	19.5	139730	30.7	18.2	57892	30.8	18.8
98906	30.5	19.0	176201	30.5	19.6	97471	30.6	19.4	163805	30.7	19.6	325375	30.7	21.4	330814	30.8	20.4
313881	30.5	20.6	129906	30.5	19.8	494110	30.6	21.3	408386	30.7	21.4	154254	30.7	19.6	14110	30.8	16.8
404480	30.5	20.7	232683	30.5	19.7	57839	30.6	19.5	49696	30.7	17.9	357469	30.7	21.1	212861	30.8	20.3
36024	30.5	19.0	143076	30.5	20.2	191651	30.6	20.0	215283	30.7	20.2	158352	30.7	19.0	275653	30.8	21.4
393347	30.5	19.7	2286	30.5	15.5	463925	30.6	21.0	307878	30.7	19.4	169837	30.7	19.1	217851	30.8	19.2
492152	30.5	20.8	308304	30.5	19.3	234732	30.6	21.7	2404	30.7	16.7	261749	30.7	19.6	191184	30.8	18.3
355399	30.5	19.2	99920	30.5	18.1	286207	30.6	19.5	145642	30.7	18.9	250676	30.7	20.5	277387	30.8	21.4
112376	30.5	19.5	126457	30.5	19.1	434172	30.6	19.6	489379	30.7	21.5	311700	30.7	19.3	174898	30.8	19.2
235905	30.5	19.1	43118	30.5	18.0	71373	30.6	18.6	272570	30.7	20.7	149591	30.7	18.8	16035	30.8	17.0
383088	30.5	20.9	138407	30.5	18.7	192385	30.6	20.4	43327								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
178941	30.8	18.6	215323	30.9	20.1	254064	30.9	20.8	159322	31.0	19.1	229489	31.1	18.6	191373	31.2	19.3
432950	30.8	20.4	47806	30.9	18.4	22022	30.9	17.3	234401	31.0	19.5	178219	31.1	19.6	225412	31.2	20.1
97527	30.8	19.2	369180	30.9	21.0	255711	30.9	20.6	519757	31.0	21.9	209208	31.1	19.6	48904	31.2	18.8
405495	30.8	20.5	136518	30.9	21.5	45071	30.9	18.2	340052	31.0	20.3	421221	31.1	21.2	154364	31.2	18.8
229683	30.8	20.2	4278	30.9	16.0	2610	30.9	16.1	103824	31.0	19.3	67178	31.1	18.7	517941	31.2	21.4
303150	30.8	19.2	411000	30.9	21.0	102013	30.9	18.1	381030	31.0	19.4	421499	31.1	20.5	216818	31.2	20.1
311613	30.8	19.5	334312	30.9	20.2	317103	30.9	21.2	189271	31.0	20.3	354293	31.1	20.5	506107	31.2	19.8
153562	30.8	19.2	410157	30.9	21.0	268079	30.9	19.9	104981	31.0	19.7	126335	31.1	18.9	152720	31.2	19.2
208906	30.8	20.2	342203	30.9	20.7	49323	30.9	17.5	439451	31.0	19.4	76963	31.1	18.6	9691	31.2	18.9
453126	30.8	19.4	100724	30.9	19.5	108151	30.9	19.5	215025	31.0	20.9	207966	31.1	19.7	75208	31.2	19.2
202598	30.8	20.5	450702	30.9	20.9	455478	30.9	20.5	68961	31.0	19.8	38129	31.1	19.1	464534	31.2	20.3
32239	30.8	18.6	256858	30.9	20.8	130672	30.9	19.4	486440	31.0	21.6	420922	31.1	19.2	514622	31.2	21.7
121672	30.8	19.2	411161	30.9	19.9	71739	30.9	18.9	405853	31.0	20.0	72435	31.1	17.8	75490	31.2	17.9
420057	30.8	20.7	32202	30.9	18.3	404384	30.9	21.7	133830	31.0	20.8	412396	31.1	21.4	459852	31.2	20.9
43910	30.8	19.2	445641	30.9	19.9	710	30.9	15.9	327084	31.0	19.6	419151	31.1	21.7	78033	31.2	19.4
448500	30.8	20.6	361826	30.9	20.1	396601	30.9	20.7	256844	31.0	19.9	454436	31.1	21.6	232244	31.2	18.5
260717	30.8	21.0	288581	30.9	21.2	485176	30.9	21.5	368308	31.1	19.6	490155	31.1	21.1	83258	31.2	19.1
250690	30.8	20.3	105968	30.9	18.9	358146	30.9	20.3	211426	31.1	19.4	33580	31.1	17.0	73448	31.2	18.5
21997	30.8	16.5	293364	30.9	20.3	244378	30.9	20.9	247514	31.1	19.8	403353	31.1	22.4	226271	31.2	19.4
467077	30.8	20.4	366590	30.9	20.8	275914	30.9	19.4	113825	31.1	19.1	284252	31.1	20.6	260743	31.2	19.4
270744	30.8	20.3	347174	30.9	20.3	92464	30.9	19.8	489229	31.1	21.1	485569	31.1	20.8	85223	31.2	19.7
265976	30.8	20.4	380510	30.9	19.4	312863	30.9	20.5	364901	31.1	20.7	488111	31.1	20.6	257287	31.2	20.7
294578	30.8	19.5	396607	30.9	20.5	135579	30.9	19.2	283043	31.1	19.3	331442	31.1	20.6	494560	31.2	19.2
281661	30.8	20.7	416804	30.9	24.6	127277	30.9	19.8	56712	31.1	19.7	356127	31.1	19.8	256388	31.2	20.0
14308	30.8	17.7	18859	30.9	17.3	42608	30.9	18.3	404429	31.1	21.3	516567	31.1	20.4	45937	31.2	18.8
266436	30.8	20.6	494644	30.9	20.3	147041	30.9	18.4	448855	31.1	20.3	329558	31.1	20.0	391196	31.2	21.4
260714	30.8	20.2	156926	30.9	20.3	369484	30.9	19.7	449636	31.1	21.2	26499	31.1	16.9	148887	31.2	19.9
163542	30.8	20.0	521867	30.9	20.5	131445	30.9	19.7	266381	31.1	19.6	367235	31.1	21.6	330609	31.2	20.3
523262	30.8	20.0	91430	30.9	18.3	292877	30.9	20.1	73131	31.1	18.8	115468	31.1	19.1	299130	31.2	19.9
440151	30.8	20.8	448004	30.9	20.4	270933	30.9	21.8	147515	31.1	19.1	152993	31.1	19.9	329941	31.2	20.9
341002	30.8	21.1	111442	30.9	19.1	42509	30.9	16.7	55357	31.1	18.3	343927	31.1	20.4	55907	31.2	18.2
127705	30.8	18.6	418839	30.9	20.4	302415	30.9	20.2	485250	31.1	20.7	64383	31.1	18.7	426080	31.2	21.5
435595	30.8	20.6	337918	30.9	19.5	276244	30.9	20.0	81507	31.1	18.4	60512	31.1	19.7	429941	31.2	20.5
313876	30.8	21.0	324779	30.9	20.8	473559	30.9	20.8	458008	31.1	20.3	211762	31.1	18.8	146513	31.2	19.6
183178	30.8	20.8	272562	30.9	20.9	221867	30.9	20.1	97600	31.1	18.8	97807	31.1	18.5	97372	31.2	19.5
180590	30.8	20.1	264797	30.9	21.1	235811	30.9	20.0	407351	31.1	20.4	396387	31.1	20.0	70929	31.2	19.9
352830	30.8	20.6	124738	30.9	18.7	335283	30.9	21.6	411582	31.1	19.6	48347	31.1	17.6	258142	31.2	20.6
434489	30.8	21.8	27226	30.9	16.6	329664	30.9	19.5	321870	31.1	20.6	278123	31.1	19.3	159826	31.2	20.1
518027	30.8	21.2	220193	30.9	19.1	150406	30.9	19.4	148490	31.1	20.4	351370	31.1	19.8	483435	31.2	23.2
288284	30.8	19.2	209810	30.9	19.4	490803	30.9	20.8	452575	31.1	20.0	92629	31.1	19.9	405672	31.2	20.9
177522	30.8	19.6	25219	30.9	19.4	485534	30.9	20.0	227001	31.1	18.9	18662	31.1	18.1	320783	31.2	20.5
178566	30.8	19.6	287715	30.9	20.4	78130	30.9	19.5	365570	31.1	21.1	52943	31.1	17.8	285010	31.2	20.3
132444	30.8	19.2	196336	30.9	20.6	488096	31.0	21.6	487987	31.1	20.1	493018	31.1	20.3	367395	31.2	20.4
209861	30.8	20.2	192195	30.9	20.0	235533	31.0	19.3	76762	31.1	19.1	364936	31.1	21.3	306473	31.2	20.3
103995	30.8	19.4	420165	30.9	20.1	305159	31.0	20.9	482051	31.1	20.2	481983	31.1	20.2	178670	31.2	20.2
211583	30.8	20.6	346648	30.9	20.8	231232	31.0	19.1	173358	31.1	18.8	445985	31.2	20.4	422425	31.2	19.8
454147	30.8	20.6	44215	30.9	17.7	188040	31.0	19.7	373508	31.1	22.3	488823	31.2	21.7	225679	31.2	20.6
88352	30.8	18.8	212846	30.9	19.2	52505	31.0	16.6	85523	31.1	19.5	199175	31.2	19.2	379894	31.2	20.0
409142	30.8	19.8	346477	30.9	19.7	335327	31.0	19.8	278774	31.1	20.8	34412	31.2	17.9	486523	31.2	20.0
160872	30.8	19.6	148349	30.9	20.3	52779	31.0	18.9	386679	31.1	19.7	302682	31.2	18.9	345767	31.2	20.1
449896	30.9	21.6	66362	30.9	18.0	336060	31.0	20.8	112180	31.1	19.3	444479	31.2	21.3	382310	31.2	19.7
311324	30.9	20.2	483653	30.9	20.6	458427	31.0	21.1	198583	31.1	19.5	427069	31.2	20.5	53946	31.2	17.9
52616	30.9	18.3	402646	30.9	19.8	28138	31.0	17.9	335457	31.1	19.7	196011	31.2	20.4	269808	31.2	19.3
388543	30.9	19.6	256967	30.9	20.5	454587	31.0	21.6	151704	31.1	19.5	520708	31.2	20.4	42280	31.2	18.4
473508	30.9	20.6	308240	30.9	20.4	50737	31.0	18.5	22959	31.1	17.3	459459	31.2	19.7	445387	31.2	20.3
261803	30.9	20.1	391211	30.9	22.2	370248	31.0	20.5	438042	31.1	22.3	440111	31.2	20.9	307297	31.2	21.5
15626	30.9	17.4	249924	30.9	20.0	424358	31.0	20.3	197459	31.1	18.9	179651	31.2	20.5	36491	31.2	17.3
481779	30.9	20.4	29997	30.9	18.7	169754	31.0	19.9	69519	31.1	18.7	215344	31.2	19.8	79441	31.2	19.8
419482	30.9	20.1	441716	30.9	19.8	481784	31.0	19.7	296204	31.1	19.5	362413	31.2	21.1	348151	31.2	21.9
325811	30.9	21.0	25718	30.9	18.0	310126	31.0	19.8	277880	31.1	21.3	28866	31.2	16.9	90624	31.2	20.3
82690	30.9	18.6	121622	30.9	19.3	48379	31.0	17.5	234619	31.1	19.5	83532	31.2	18.2	23014	31.2	18.7
240857	30.9	20.2	86401	30.9	18.0	275649	31.0	21.6	357059	31.1	21.0	481243	31.2	19.4	434157	31.2	21.5
11199	30.9	17.3	11068	30.9	17.1	421059	31.0	21.1	103243	31.1	17.3	382680	31.2	21.2	273225	31.2	20.5
337515	30.9	21.4	138242	30.9	19.1	274663	31.0	20.0	149637	31.1	18.9	356644	31.2	20.4	291846	31.2	20.1
373908	30.9	20.5	61849	30.9	19.3	342	31.0	12.9	266502	31.1	20.5	189919	31.2	18.8	138042	31.2	19.2
216489	30.9	19.1	460904	30.9	20.9	216393	31.0	21.1	152756	31.1	20.0	50282	31.2	19.3	98172	31.2	18.4
273778	30.9	20.6	1682	30.9	15.8	271212	31.0	20.4	59414	31.1	19.3	272270	31.2	20.7	55205	31.2	19.3
42996	30.9	18.4	486602	30.9	20.7	345752	31.0	20.8	97227	31.1	17.8	170553	31.2	19.0	180666	31.2	19.3
251417	30.9	19.9	178203	30.9	19.7	366660	31.0	21.1	22								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
79879	31.3	19.4	416720	31.3	19.9	456174	31.4	20.8	136422	31.5	19.3	294211	31.6	20.1	22875	31.6	18.6
106834	31.3	19.2	264827	31.3	19.9	21428	31.4	18.1	41094	31.5	19.4	446303	31.6	21.4	197174	31.6	19.8
355458	31.3	20.3	355982	31.3	20.8	88929	31.4	19.3	3569	31.5	15.5	521926	31.6	20.8	202010	31.6	20.9
490086	31.3	21.2	322069	31.3	20.1	54332	31.4	19.1	434016	31.5	21.5	29625	31.6	18.7	450592	31.6	21.1
122119	31.3	19.6	128893	31.3	19.9	73576	31.4	18.5	449961	31.5	21.0	156578	31.6	20.4	184383	31.6	19.9
419286	31.3	20.7	194122	31.3	19.4	447586	31.4	21.7	325925	31.5	21.2	282908	31.6	20.0	229682	31.6	19.4
280535	31.3	21.7	22806	31.3	18.5	75653	31.4	17.6	366335	31.5	19.9	65888	31.6	19.9	460783	31.6	20.9
286906	31.3	20.5	401092	31.3	21.3	70719	31.4	18.5	227182	31.5	20.5	116082	31.6	18.8	17601	31.6	17.8
260732	31.3	20.3	311807	31.3	19.8	301529	31.4	20.2	160599	31.5	18.4	77600	31.6	18.9	64584	31.6	19.0
119205	31.3	18.7	81914	31.3	19.1	116542	31.4	18.5	407141	31.5	20.4	440123	31.6	21.7	500566	31.6	21.5
76384	31.3	18.8	385405	31.3	19.0	416128	31.4	21.1	480295	31.5	19.5	274706	31.6	19.6	109108	31.6	19.0
165537	31.3	18.9	350876	31.3	20.1	27480	31.4	16.7	493448	31.5	21.3	239746	31.6	20.0	326567	31.6	21.3
319859	31.3	20.2	37705	31.3	18.6	199323	31.4	20.9	249982	31.5	19.6	215506	31.6	19.0	266455	31.6	19.8
517220	31.3	20.1	142893	31.3	19.6	478420	31.4	21.8	138069	31.5	20.2	147379	31.6	19.5	463822	31.6	20.1
42257	31.3	18.4	185240	31.3	19.4	387233	31.4	20.9	269159	31.5	19.1	362228	31.6	20.1	358244	31.6	20.6
231846	31.3	19.3	107125	31.3	19.7	36256	31.4	16.0	483279	31.5	20.8	417390	31.6	21.1	1939	31.6	15.8
221332	31.3	20.4	21887	31.3	17.5	396594	31.4	20.6	89478	31.5	18.9	431731	31.6	22.1	290997	31.6	20.0
213961	31.3	19.2	357081	31.3	19.7	443935	31.4	19.6	80535	31.5	18.5	274130	31.6	21.0	51107	31.6	19.3
15065	31.3	17.9	454741	31.3	20.3	366608	31.4	19.9	400621	31.5	21.8	31900	31.6	18.9	228917	31.6	20.1
172650	31.3	18.1	305068	31.3	21.1	199663	31.4	20.2	496326	31.5	20.6	473317	31.6	20.6	102042	31.6	19.1
300756	31.3	20.3	419318	31.3	20.6	51009	31.4	19.2	234680	31.5	20.8	230213	31.6	18.1	125262	31.6	19.1
520703	31.3	20.6	242825	31.4	20.6	218820	31.4	19.8	358133	31.5	20.6	270149	31.6	20.4	84748	31.6	18.9
182997	31.3	19.5	400052	31.4	20.1	113366	31.4	18.5	302960	31.5	20.5	176300	31.6	19.6	346515	31.6	19.6
116178	31.3	18.9	228676	31.4	19.9	339046	31.4	21.4	175051	31.5	20.4	210837	31.6	20.6	360245	31.6	18.8
300454	31.3	19.0	265941	31.4	20.5	288101	31.4	19.1	51185	31.5	18.9	456183	31.6	21.5	356043	31.6	20.4
223108	31.3	20.3	33878	31.4	18.5	12823	31.4	17.9	122484	31.5	20.1	228788	31.6	19.2	92167	31.6	17.7
507566	31.3	20.4	516125	31.4	20.8	344923	31.4	20.6	165969	31.5	18.4	65429	31.6	16.5	512243	31.6	20.4
411080	31.3	20.3	394168	31.4	21.7	397366	31.4	20.1	82553	31.5	19.4	411015	31.6	20.6	117535	31.6	19.6
100629	31.3	19.7	43253	31.4	18.6	79534	31.4	19.2	483687	31.5	20.7	112642	31.6	19.7	27945	31.6	16.2
403136	31.3	20.8	488945	31.4	21.6	475114	31.4	20.7	247606	31.5	19.9	204466	31.6	18.1	376071	31.6	20.6
105574	31.3	19.4	66126	31.4	18.6	267647	31.4	20.0	499392	31.5	20.6	195827	31.6	20.2	226242	31.6	20.3
353490	31.3	19.6	13629	31.4	16.7	298598	31.4	20.0	85779	31.5	18.7	232425	31.6	20.7	264274	31.6	20.1
190526	31.3	19.3	457496	31.4	20.3	442439	31.4	20.6	359377	31.5	20.0	320140	31.6	20.2	368404	31.6	20.7
167903	31.3	20.5	354421	31.4	19.6	455712	31.4	21.2	215511	31.5	18.7	482671	31.6	19.0	300421	31.6	19.7
211287	31.3	20.2	469476	31.4	22.0	249512	31.4	19.6	198308	31.5	20.5	109045	31.6	18.0	414364	31.6	21.0
260238	31.3	19.9	518071	31.4	20.9	379667	31.4	21.1	8328	31.5	17.9	393293	31.6	20.6	40943	31.6	18.8
75350	31.3	19.0	280873	31.4	19.5	87822	31.4	18.8	516528	31.5	21.4	34268	31.6	18.2	226559	31.6	19.3
287759	31.3	20.5	77832	31.4	19.0	457417	31.4	20.5	448784	31.5	22.3	159756	31.6	19.4	477396	31.7	20.5
96274	31.3	19.1	144524	31.4	18.7	462478	31.4	20.9	181109	31.5	21.0	293229	31.6	20.3	346321	31.7	20.7
213672	31.3	20.1	251277	31.4	20.1	20343	31.4	17.7	59549	31.5	19.0	149868	31.6	20.0	483034	31.7	21.0
196794	31.3	20.3	427289	31.4	19.9	88350	31.4	19.7	150806	31.5	20.5	351801	31.6	20.6	324081	31.7	20.0
474598	31.3	21.0	74093	31.4	18.7	48021	31.4	18.8	410677	31.5	19.5	157008	31.6	19.9	485738	31.7	20.2
40347	31.3	18.8	16829	31.4	16.6	107774	31.4	20.0	148252	31.5	18.8	76568	31.6	17.5	33153	31.7	18.1
367009	31.3	20.3	14449	31.4	17.7	167576	31.4	18.8	361362	31.5	21.0	458023	31.6	20.9	384615	31.7	19.5
302669	31.3	19.6	214290	31.4	20.5	364803	31.4	19.5	185686	31.5	19.8	114369	31.6	19.0	515138	31.7	20.3
331719	31.3	19.6	270113	31.4	20.5	447869	31.4	20.8	135016	31.5	20.2	459700	31.6	21.1	205126	31.7	19.1
520859	31.3	20.7	174414	31.4	19.2	421303	31.4	20.8	125060	31.5	19.1	90027	31.6	19.7	89545	31.7	19.5
55833	31.3	19.4	82615	31.4	19.4	278620	31.4	19.8	161574	31.5	19.7	349745	31.6	19.0	248995	31.7	20.7
254560	31.3	19.8	266146	31.4	19.5	196141	31.4	19.1	298552	31.5	20.4	389399	31.6	20.0	129360	31.7	19.2
432956	31.3	22.2	80863	31.4	19.3	226412	31.4	20.3	18454	31.5	16.8	8862	31.6	15.8	447795	31.7	23.2
51911	31.3	18.1	279085	31.4	19.5	273369	31.4	21.4	425077	31.5	20.8	317264	31.6	20.1	460774	31.7	20.3
399796	31.3	20.9	265467	31.4	19.9	244570	31.4	20.1	516846	31.5	20.9	220135	31.6	19.6	386042	31.7	21.2
108835	31.3	18.7	523306	31.4	20.1	517292	31.4	21.4	158891	31.5	19.5	455212	31.6	21.4	457301	31.7	20.7
179803	31.3	20.1	218327	31.4	18.8	382700	31.4	19.9	361769	31.5	20.6	334576	31.6	21.5	503350	31.7	21.0
495068	31.3	21.7	108309	31.4	19.7	517216	31.4	20.7	247221	31.5	19.5	164651	31.6	19.8	367400	31.7	22.1
16836	31.3	17.4	190482	31.4	19.6	416155	31.4	21.1	222531	31.5	19.1	490964	31.6	21.5	50280	31.7	18.6
514636	31.3	20.7	426589	31.4	20.2	167984	31.4	18.6	110852	31.5	19.6	44912	31.6	17.1	76060	31.7	18.8
280432	31.3	19.6	1301	31.4	14.5	517897	31.4	21.7	418484	31.5	19.9	58387	31.6	20.1	121630	31.7	18.8
280710	31.3	20.2	24557	31.4	18.2	216474	31.4	20.4	267795	31.5	19.5	521827	31.6	21.4	301091	31.7	20.6
9001	31.3	17.8	461095	31.4	21.2	411861	31.4	20.6	6296	31.5	15.9	33877	31.6	18.8	84429	31.7	19.2
271600	31.3	20.6	343727	31.4	19.9	322108	31.4	20.5	236244	31.5	19.6	295609	31.6	20.4	187943	31.7	20.6
163675	31.3	19.5	457454	31.4	20.8	518386	31.4	21.6	82224	31.5	19.0	182994	31.6	21.0	249273	31.7	20.3
282012	31.3	20.5	218098	31.4	19.1	186444	31.4	19.2	290523	31.5	19.9	337811	31.6	20.9	101462	31.7	18.6
386063	31.3	20.1	306056	31.4	20.9	362934	31.5	20.1	106914	31.5	18.1	244828	31.6	20.1	496532	31.7	20.8
80325	31.3	18.1	359132	31.4	19.8	229231	31.5	19.4	74514	31.5	19.4	263824	31.6	20.0	393267	31.7	20.6
146663	31.3	19.5	18276	31.4	19.1	307761	31.5	20.0	5915	31.5	15.7	167381	31.6	20.2	71645	31.7	18.2
94931	31.3	18.6	140476	31.4	18.3	197762	31.5	20.0	414697	31.5	20.2	57161	31.6	17.9	159338	31.7	19.8
6648	31.3	16.2	336692	31.4	20.0	144125	31.5	19.6	519298	31.5	21.5	122899	31.6	19.1	139048	31.7	19.8
28485	31.3	18.5	377195	31.4	20.3	163659	31.5	20.0	3								

LIST OF ALL MINOR PLANETS IN ORDER OF OPPOSITION DATES IN 2020

№	12	V	№	12	V	№	12	V	№	12	V	№	12	V	№	12	V
460667	31.7	20.9	116342	31.7	18.4	129030	31.8	19.6	331400	31.8	20.7	266053	31.9	20.1	369015	31.9	20.9
437382	31.7	20.0	345384	31.7	20.4	83067	31.8	19.7	361776	31.8	21.1	255559	31.9	20.7	55870	31.9	18.0
481794	31.7	19.6	365751	31.7	20.1	288106	31.8	20.5	412173	31.8	21.5	226246	31.9	19.2	196936	31.9	19.6
470186	31.7	19.9	140329	31.7	19.5	417431	31.8	20.3	379792	31.8	20.5	442726	31.9	19.8	251093	31.9	20.5
80724	31.7	19.3	369139	31.7	20.7	89341	31.8	19.3	211939	31.8	20.2	359396	31.9	21.1	81524	31.9	18.5
155361	31.7	19.5	18354	31.7	18.8	232989	31.8	19.5	321606	31.8	20.8	80966	31.9	18.9	282703	31.9	20.9
344459	31.7	21.1	279150	31.7	20.6	426762	31.8	20.4	384354	31.8	19.2	445294	31.9	20.9	8028	31.9	17.5
365922	31.7	20.1	119709	31.7	19.4	307427	31.8	20.5	494530	31.8	20.0	159274	31.9	19.6	327765	31.9	20.2
493369	31.7	20.2	307492	31.7	18.7	481968	31.8	20.7	149903	31.8	19.6	185287	31.9	18.6	121268	31.9	19.8
521596	31.7	20.8	351980	31.7	20.3	184612	31.8	20.5	496044	31.9	20.7	131404	31.9	20.0	213365	31.9	21.3
187183	31.7	20.1	228144	31.7	20.6	454499	31.8	20.9	216601	31.9	19.5	68269	31.9	19.2	323532	31.9	20.8
120623	31.7	19.8	264198	31.7	20.6	78870	31.8	19.7	454782	31.9	20.1	190003	31.9	19.5	4430	31.9	16.6
130307	31.7	19.4	462962	31.7	21.5	381027	31.8	20.5	161433	31.9	19.9	343953	31.9	20.6	486826	31.9	21.3
195811	31.7	19.9	421340	31.7	20.8	516889	31.8	21.6	514656	31.9	21.6	57412	31.9	17.7	304152	31.9	20.7
278515	31.7	21.2	330821	31.7	20.0	345158	31.8	19.9	220709	31.9	20.0	518833	31.9	20.9	188318	31.9	20.4
84964	31.7	18.2	22543	31.7	19.6	276536	31.8	19.9	377196	31.9	20.1	75177	31.9	19.0	330818	31.9	20.7
372067	31.7	20.7	23212	31.7	18.3	178875	31.8	18.8	146626	31.9	19.6	295822	31.9	19.6	305073	31.9	19.3
464488	31.7	21.4	329636	31.7	20.9	486558	31.8	21.8	292225	31.9	20.5	228846	31.9	19.3	198138	31.9	19.6
26291	31.7	19.2	450608	31.7	20.7	202857	31.8	20.9	123858	31.9	19.6	418856	31.9	20.4	395878	31.9	20.6
499201	31.7	20.9	365699	31.7	21.1	194556	31.8	19.5	231188	31.9	18.4	522037	31.9	21.3	294347	31.9	20.0
350875	31.7	20.6	250669	31.7	21.2	447534	31.8	20.7	446568	31.9	20.4	37981	31.9	18.3	269692	31.9	20.4
335390	31.7	19.8	273327	31.8	21.0	19637	31.8	17.9	4202	31.9	16.4	281076	31.9	20.1	45350	31.9	17.5
273104	31.7	20.5	228460	31.8	19.4	112946	31.8	19.2	495691	31.9	19.4	227262	31.9	20.3	179176	31.9	19.5
32384	31.7	17.7	25374	31.8	17.4	232344	31.8	20.0	380153	31.9	19.4	65105	31.9	19.3	124273	31.9	20.3
104581	31.7	18.5	470022	31.8	20.5	370420	31.8	19.8	92226	31.9	18.1	220721	31.9	19.4	267588	31.9	20.5
271542	31.7	21.2	256017	31.8	20.3	438692	31.8	19.6	267222	31.9	19.7	158259	31.9	19.3	369499	31.9	21.0
485951	31.7	20.9	403831	31.8	21.5	194817	31.8	18.3	118125	31.9	18.8	181823	31.9	19.1	65855	31.9	18.8
313256	31.7	20.3	480869	31.8	21.3	359485	31.8	20.5	458670	31.9	21.0	380966	31.9	21.1	291147	31.9	20.9
332832	31.7	19.9	358693	31.8	21.0	273237	31.8	20.6	520828	31.9	21.2	223425	31.9	19.9	179185	31.9	19.7
30111	31.7	18.3	108319	31.8	18.7	63992	31.8	17.1	285024	31.9	19.9	332252	31.9	20.5	89081	31.9	18.5
276798	31.7	21.5	32069	31.8	17.9	352166	31.8	20.6	179223	31.9	19.9	213127	31.9	19.9	256947	31.9	19.9
103522	31.7	18.6	393702	31.8	19.6	460323	31.8	20.6	449529	31.9	20.7	279620	31.9	21.0	257358	31.9	19.9
6254	31.7	16.7	125771	31.8	19.4	258560	31.8	20.1	445538	31.9	21.4	117691	31.9	19.5	420713	31.9	21.2
307338	31.7	21.0	74834	31.8	20.4	169061	31.8	19.3	350576	31.9	21.0	493717	31.9	20.4	394266	31.9	20.2
73871	31.7	19.5	477229	31.8	20.5	287734	31.8	20.6	185280	31.9	19.4	395160	31.9	19.7	35315	31.9	18.7
118021	31.7	19.3	189797	31.8	19.6	175153	31.8	20.0	308738	31.9	20.7	324332	31.9	20.3	268722	31.9	21.0
458591	31.7	20.2	198845	31.8	18.8	481329	31.8	20.8	223494	31.9	19.7	198791	31.9	19.4	359624	31.9	19.4
371285	31.7	21.6	335446	31.8	20.7	494142	31.8	20.6	66844	31.9	17.6	358189	31.9	20.8	46483	31.9	18.8
283773	31.7	19.3	20254	31.8	18.1	398942	31.8	20.9	460089	31.9	21.2	225250	31.9	19.7	441882	31.9	20.2
460599	31.7	21.2	267930	31.8	19.4	412596	31.8	20.5	29279	31.9	16.1	162906	31.9	20.4	193087	31.9	20.3
39633	31.7	18.3	477301	31.8	21.7	137211	31.8	19.4	451088	31.9	21.1	486247	31.9	20.6	337634	31.9	18.9
452646	31.7	21.0	67255	31.8	16.6	298468	31.8	19.8	462723	31.9	20.1	260273	31.9	18.8	197511	31.9	19.6
455156	31.7	20.4	246246	31.8	20.4	318897	31.8	20.1	507304	31.9	19.7	172869	31.9	19.5	333706	31.9	20.4
108566	31.7	19.0	285118	31.8	20.9	109867	31.8	19.9	125620	31.9	18.7	439015	31.9	21.0	169443	31.9	19.4
338479	31.7	20.6	447613	31.8	21.5	383460	31.8	20.3	479564	31.9	20.2	314254	31.9	20.8	454737	31.9	19.9
125858	31.7	19.2	298457	31.8	20.1	332994	31.8	19.3	345377	31.9	20.5	81744	31.9	18.6	342107	31.9	19.7
495809	31.7	20.5	370417	31.8	21.6	171015	31.8	20.0	518079	31.9	20.8	427359	31.9	19.4	487061	31.9	20.3
488588	31.7	21.5	9903	31.8	19.1	20609	31.8	18.7	139553	31.9	19.3	36961	31.9	18.9	248585	31.9	20.4
424889	31.7	20.4	189449	31.8	19.2	115950	31.8	19.4	143160	31.9	19.6	329656	31.9	18.9	75159	31.9	18.2
360631	31.7	20.5	493038	31.8	20.4	316108	31.8	21.2	398081	31.9	21.0	419218	31.9	20.2	376417	31.9	20.3
393578	31.7	20.1	75981	31.8	20.6	97255	31.8	18.2	446023	31.9	20.4	272082	31.9	20.2	1036	31.9	13.2
227926	31.7	21.0	452616	31.8	21.6	327252	31.8	20.2	13523	31.9	18.9	287776	31.9	19.5	224016	31.9	21.5
110599	31.7	18.9	326910	31.8	20.1	518503	31.8	21.4	506945	31.9	21.0	115264	31.9	19.7	448348	31.9	20.7
354480	31.7	20.2	404226	31.8	21.8	47754	31.8	19.0	443205	31.9	20.4	115246	31.9	18.3			
357693	31.7	20.8	370488	31.8	20.3	414341	31.8	20.7	446515	31.9	20.3	111425	31.9	19.4			
41	31.7	11.7	291816	31.8	21.5	347649	31.8	19.8	421251	31.9	20.5	199269	31.9	20.1			
84615	31.7	18.6	412505	31.8	20.2	72838	31.8	18.4	315757	31.9	20.4	341940	31.9	20.8			
317698	31.7	20.5	405385	31.8	21.3	43995	31.8	18.4	427119	31.9	20.7	121450	31.9	19.0			
102960	31.7	18.4	271629	31.8	21.1	337590	31.8	21.1	45446	31.9	18.3	239693	31.9	19.9			
38485	31.7	18.0	198826	31.8	19.9	153000	31.8	20.2	490454	31.9	21.4	364906	31.9	20.4			