

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
246911 1998 QY₉₆										35056 Cullers (continuation)									
12 23	11 45.40	-3 29.2	1.712	2.011	29.2	19.1	93 W	42	63*	10 8	12 50.84	-17 6.0	4.097	3.123	3.6	19.9	11 W	-	-
1 2	11 48.82	-6 37.7	1.629	2.051	28.1	19.0	101 W	38	70*	10 18	13 3.68	-18 49.1	4.107	3.137	3.6	19.9	11 W	-	4*
1 12	11 49.01	-9 40.9	1.550	2.092	26.3	18.8	109 W	35	74	10 28	13 16.56	-20 32.6	4.100	3.149	4.6	20.0	15 W	-	9*
1 22	11 45.60	-12 35.0	1.479	2.133	23.9	18.7	119 W	32	77	11 7	13 29.44	-22 16.2	4.076	3.161	6.1	20.0	20 W	2*	14*
1 27	11 42.45	-13 56.9	1.449	2.153	22.5	18.6	123 W	31	78	11 17	13 42.26	-23 59.7	4.036	3.172	7.7	20.1	25 W	6*	19*
2 1	11 38.34	-15 14.0	1.422	2.174	20.9	18.6	128 W	30	79	11 27	13 54.94	-25 42.9	3.979	3.182	9.4	20.1	32 W	9*	24*
2 6	11 33.30	-16 25.4	1.400	2.194	19.2	18.5	133 W	29	80	12 7	14 7.40	-27 25.6	3.908	3.191	11.0	20.2	38 W	11*	31*
2 11	11 27.40	-17 29.9	1.382	2.215	17.4	18.4	138 W	27	82	12 17	14 19.54	-29 7.8	3.821	3.199	12.5	20.2	45 W	13*	37*
2 16	11 20.76	-18 26.5	1.371	2.236	15.7	18.4	142 W	27	82	12 27	14 31.22	-30 49.4	3.722	3.207	13.9	20.2	52 W	13*	45*
2 21	11 13.51	-19 14.2	1.365	2.256	14.0	18.3	146 W	26	83	1 6	14 42.28	-32 30.6	3.611	3.213	15.2	20.2	59 W	12*	52*
2 26	11 5.86	-19 52.4	1.365	2.277	12.6	18.3	150 W	25	84	1 16	14 52.54	-34 11.4	3.489	3.218	16.2	20.1	66 W	11*	60*
3 2	10 58.04	-20 20.7	1.373	2.297	11.5	18.3	152 W	25	84	333510 2005 MD									
3 7	10 50.26	-20 39.4	1.387	2.318	11.0	18.3	154 E	24	85	12 23	11 47.13	-27 3.3	0.846	1.214	53.5	20.7	83 W	18	76*
3 12	10 42.77	-20 49.1	1.408	2.338	11.0	18.4	153 E	24	85	12 28	11 48.89	-27 16.1	0.847	1.263	51.1	20.7	87 W	18	80*
3 17	10 35.75	-20 50.6	1.435	2.359	11.5	18.5	152 E	24	85	1 2	11 49.54	-27 22.0	0.845	1.311	48.6	20.7	91 W	18	85*
3 22	10 29.38	-20 45.3	1.469	2.379	12.4	18.6	149 E	24	85	1 7	11 48.98	-27 19.7	0.840	1.358	46.0	20.7	96 W	18	89
3 27	10 23.79	-20 34.5	1.509	2.399	13.6	18.7	146 E	24	85	1 12	11 47.16	-27 7.8	0.834	1.405	43.4	20.7	101 W	18	89
4 1	10 19.06	-20 19.8	1.554	2.419	14.8	18.8	142 E	25	84	1 17	11 44.02	-26 44.9	0.826	1.451	40.6	20.7	106 W	18	89
4 6	10 15.24	-20 2.5	1.604	2.440	16.0	18.9	138 E	25	84	1 22	11 39.53	-26 9.2	0.818	1.497	37.6	20.7	112 W	19	90
4 11	10 12.34	-19 44.0	1.659	2.459	17.2	19.1	134 E	25	84	1 27	11 33.75	-25 18.9	0.810	1.541	34.3	20.6	118 W	20	89
4 16	10 10.34	-19 52.3	1.719	2.479	18.2	19.2	129 E	26	83	2 1	11 26.79	-24 12.9	0.804	1.585	30.9	20.6	124 W	21	88
4 21	10 9.20	-19 7.3	1.781	2.499	19.2	19.3	125 E	26	83	2 6	11 18.84	-22 50.3	0.802	1.627	27.3	20.5	131 W	22	87
4 26	10 8.88	-18 50.7	1.847	2.518	20.0	19.4	121 E	26	83	2 11	11 10.17	-21 11.4	0.803	1.669	23.5	20.4	138 W	24	85
5 1	10 9.32	-18 36.2	1.916	2.538	20.7	19.6	117 E	26*	83	2 16	11 1.07	-19 17.7	0.809	1.710	19.8	20.4	144 W	26	83
5 11	10 12.25	-18 14.9	2.060	2.576	21.7	19.8	109 E	26*	82	2 21	10 51.88	-17 11.6	0.821	1.750	16.2	20.4	150 W	28	81
5 21	10 17.49	-18 5.0	2.210	2.614	22.3	20.0	102 E	23*	82	2 26	10 42.95	-14 56.6	0.840	1.789	13.1	20.3	156 W	30	79
5 31	10 24.65	-18 7.4	2.363	2.651	22.4	20.2	95 E	19*	82	3 2	10 34.58	-12 37.2	0.865	1.828	10.8	20.4	160 E	32	77
6 10	10 33.36	-18 21.8	2.518	2.688	22.2	20.3	88 E	14*	81*	3 7	10 27.04	-10 18.0	0.899	1.865	10.0	20.5	161 E	35	74
6 20	10 43.31	-18 47.6	2.672	2.723	21.7	20.5	82 E	9*	76*	3 12	10 20.49	-8 2.9	0.939	1.902	10.6	20.6	159 E	37	72
6 30	10 54.29	-19 23.9	2.824	2.758	20.9	20.6	76 E	5*	70*	3 17	10 15.02	-5 55.3	0.986	1.937	12.2	20.8	156 E	39	70
7 10	11 6.08	-20 9.9	2.971	2.793	20.0	20.7	70 E	1*	63*	3 22	10 10.67	-3 57.3	1.040	1.972	14.1	21.1	151 E	41	68
7 20	11 18.57	-21 4.4	3.114	2.826	18.9	20.8	64 E	-	56*	3 27	10 7.44	-2 10.5	1.100	2.006	16.2	21.3	146 E	43	66
7 30	11 31.63	-22 6.6	3.249	2.859	17.7	20.9	59 E	-	50*	21228 1995 SC									
8 9	11 45.18	-23 15.4	3.377	2.891	16.4	20.9	53 E	-	43*	12 23	11 47.61	-14 27.5	3.115	3.227	17.7	21.0	88 W	31	71*
8 19	11 59.15	-24 30.0	3.497	2.922	15.0	21.0	48 E	-	37*	1 2	11 49.23	-16 8.5	3.000	3.259	17.4	21.0	96 W	29	79*
8 29	12 13.50	-25 49.5	3.606	2.952	13.5	21.0	43 E	-	31*	1 12	11 48.80	-17 41.8	2.888	3.290	16.7	20.9	105 W	27	82
9 8	12 28.18	-27 13.0	3.705	2.981	12.1	21.0	38 E	-	25*	1 22	11 46.16	-19 4.9	2.783	3.320	15.6	20.8	115 W	26	83
9 18	12 43.17	-28 39.7	3.792	3.010	10.7	21.1	34 E	-	20*	2 1	11 41.26	-20 14.6	2.691	3.349	14.0	20.7	125 W	25	84
9 28	12 58.45	-30 9.0	3.867	3.037	9.4	21.1	30 E	-	15*	2 11	11 34.21	-21 7.3	2.616	3.378	12.1	20.6	134 W	24	85
10 8	13 13.98	-31 40.0	3.929	3.064	8.3	21.1	26 E	-	10*	2 11	11 25.38	-21 40.2	2.563	3.405	10.1	20.5	143 W	23	86
10 18	13 29.76	-33 12.2	3.977	3.090	7.4	21.1	24 W	-	6*	3 2	11 15.35	-21 51.2	2.535	3.432	8.2	20.4	150 W	23	86
10 28	13 45.74	-34 44.8	4.011	3.115	7.0	21.1	22 W	-	9*	3 7	11 10.14	-21 48.5	2.532	3.445	7.5	20.3	153 E	23	86
11 7	14 1.90	-36 17.3	4.031	3.139	7.0	21.1	23 W	-	12*	3 12	11 4.93	-21 40.6	2.536	3.458	7.2	20.3	154 E	23	86
11 17	14 18.20	-37 49.3	4.036	3.163	7.4	21.2	24 W	-	16*	3 17	10 59.85	-21 28.2	2.547	3.471	7.1	20.4	154 E	24	85
11 27	14 34.58	-39 20.4	4.026	3.185	8.3	21.2	28 W	-	21*	3 22	10 54.97	-21 11.5	2.565	3.483	7.4	20.4	153 E	24	85
12 7	14 50.98	-40 50.0	4.001	3.207	9.3	21.3	32 W	-	25*	3 27	10 50.41	-20 51.4	2.590	3.496	8.0	20.4	151 E	24	85
12 17	15 7.30	-42 18.3	3.963	3.227	10.5	21.3	37 W	-	30*	4 1	10 46.24	-20 28.6	2.623	3.508	8.8	20.5	148 E	25	84
12 27	15 23.43	-43 45.0	3.910	3.247	11.7	21.3	42 W	-	36*	4 6	10 42.53	-20 4.0	2.661	3.520	9.6	20.6	144 E	25	84
1 6	15 39.24	-45 10.1	3.844	3.266	12.9	21.4	48 W	-	41*	4 11	10 39.31	-19 38.3	2.706	3.531	10.5	20.7	140 E	25	84
1 16	15 54.58	-46 34.0	3.766	3.284	14.0	21.4	54 W	-	46*	4 16	10 36.62	-19 12.2	2.756	3.543	11.4	20.8	136 E	26	83
35056 Cullers										4 21	10 34.47	-18 46.4	2.812	3.554	12.3	20.8	131 E	26	83
12 23	11 46.03	+10 17.3	2.013	2.358	24.4	18.5	98 W	55	51*	4 26	10 32.87	-18 21.5	2.871	3.565	13.1	20.9	127 E	27	82
1 2	11 48.77	+9 13.3	1.916	2.394	23.1	18.4	107 W	54	54*	5 1	10 31.82	-17 58.0	2.935	3.576	13.8	21.0	122 E	27	82
1 12	11 48.57	+8 21.3	1.823	2.430	21.2	18.3	117 W	53	56	5 6	10 31.30	-17 36.4	3.003	3.587	14.4	21.1	118 E	27*	82
1 22	11 45.18	+7 41.4	1.740	2.465	18.5	18.1	127 W	53	56	5 11	10 31.29	-17 16.9	3.073	3.597	14.9	21.1	113 E	27*	81
2 1	11 38.52	+7 13.1	1.672	2.500	15.0	17.9	139 W	52	57	5 16	10 31.76	-16 59.9	3.146	3.607	15.3	21.2	109 E	26*	81
2 11	11 28.88	+6 54.5	1.625	2.534	10.8	17.8	151 W	52	57	5 21	10 32.68	-16 45.4	3.221	3.617	15.7	21.3	105 E	25*	81
2 21	11 16.94	+6																	

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19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
5693 1993 EA										38181 1999 JG₁₂₄									
<i>(continuation)</i>										<i>(continuation)</i>									
3 27	9 38.41	+22 30.6	1.113	1.933	22.4	19.3	132 E	68	41	3 7	13 32.29	+20 6.5	0.794	1.693	20.9	16.2	143 W	65	44
4 1	9 35.06	+22 28.3	1.174	1.946	24.2	19.5	127 E	67	42	3 12	13 34.71	+22 44.0	0.776	1.684	20.3	16.1	144 W	68	41
4 6	9 32.98	+22 20.2	1.237	1.957	25.8	19.7	122 E	67	42	3 17	13 36.29	+25 20.1	0.765	1.677	20.2	16.0	144 W	70	39
4 11	9 32.05	+22 7.1	1.302	1.968	27.1	19.9	117 E	67	42	3 22	13 37.05	+27 50.5	0.758	1.670	20.5	16.0	144 W	73	36
4 16	9 32.17	+21 49.9	1.369	1.977	28.1	20.0	112 E	67	42	3 27	13 37.04	+30 10.8	0.756	1.664	21.2	16.0	143 W	75	34
4 21	9 33.21	+21 29.1	1.437	1.986	28.9	20.1	107 E	66	43	4 1	13 36.39	+32 17.2	0.759	1.659	22.3	16.1	141 W	77	32
4 26	9 35.09	+21 5.2	1.506	1.993	29.4	20.3	103 E	66*	43	4 6	13 35.23	+34 6.6	0.766	1.655	23.6	16.1	139 W	79	30
5 1	9 37.70	+20 38.6	1.575	1.999	29.8	20.4	99 E	65*	43	4 11	13 33.75	+35 37.2	0.776	1.651	25.0	16.2	136 W	81	28
5 11	9 44.76	+19 38.3	1.713	2.009	30.2	20.6	91 E	60*	44	4 16	13 32.13	+36 47.9	0.790	1.648	26.4	16.3	133 E	82	27
5 21	9 53.81	+18 29.9	1.847	2.014	30.0	20.8	84 E	53*	46	4 21	13 30.56	+37 38.1	0.807	1.646	27.8	16.4	130 E	83	26
5 31	10 4.43	+17 14.3	1.976	2.014	29.4	20.9	77 E	46*	47*	4 26	13 29.24	+38 8.1	0.826	1.644	29.1	16.4	127 E	83	26
6 10	10 16.26	+15 52.3	2.098	2.011	28.5	21.0	71 E	39*	47*	5 1	13 28.35	+38 19.0	0.848	1.643	30.4	16.5	124	83	26
6 20	10 29.07	+14 24.4	2.211	2.003	27.3	21.1	65 E	33*	46*	5 6	13 28.02	+38 12.1	0.871	1.644	31.5	16.6	122	83	26
6 30	10 42.70	+12 50.8	2.313	1.991	26.0	21.1	59 E	27*	45*	5 11	13 28.34	+37 49.0	0.896	1.645	32.4	16.7	119	83	26
7 10	10 57.00	+11 12.0	2.404	1.974	24.4	21.1	53 E	22*	42*	5 16	13 29.35	+37 11.3	0.921	1.646	33.3	16.8	117 E	82	27
7 20	11 11.92	+9 28.3	2.483	1.954	22.7	21.1	48 E	18*	39*	5 21	13 31.09	+36 20.4	0.949	1.649	34.0	16.9	114 E	81	28
7 30	11 27.43	+7 39.9	2.549	1.928	20.9	21.1	43 E	15*	35*	5 26	13 33.55	+35 17.9	0.977	1.652	34.6	17.0	112	80	29
8 9	11 43.48	+5 47.1	2.600	1.898	19.0	21.0	37 E	12*	30*	5 31	13 36.72	+34 5.3	1.006	1.656	35.1	17.1	110	79	30
8 19	12 0.13	+3 50.2	2.637	1.864	16.9	21.0	32 E	9*	26*	6 5	13 40.57	+32 43.8	1.036	1.661	35.5	17.1	108	78	31
8 29	12 17.40	+1 49.4	2.659	1.825	14.9	20.9	28 E	7*	21*	6 10	13 45.03	+31 14.9	1.067	1.666	35.8	17.2	106	76	33
9 8	12 35.36	+0 14.8	2.665	1.781	12.7	20.7	23 E	5*	16*	6 15	13 50.07	+29 39.6	1.099	1.673	36.0	17.3	104	75*	34
9 18	12 54.12	+2 22.3	2.657	1.732	10.5	20.6	18 E	4*	12*	6 20	13 55.63	+27 58.8	1.132	1.679	36.2	17.4	103	72*	36
9 28	13 13.80	+4 32.5	2.633	1.678	8.3	20.4	14 E	2*	8*	6 25	14 1.69	+26 13.5	1.166	1.687	36.3	17.4	101	70*	38
10 8	13 34.57	+6 45.0	2.594	1.619	6.1	20.2	10 E	—	3*	6 30	14 8.19	+24 24.7	1.201	1.695	36.3	17.5	99	67*	40
10 18	13 56.65	+8 59.2	2.541	1.554	3.9	19.9	6 E	—	—	7 5	14 15.10	+22 33.2	1.237	1.704	36.2	17.6	98	64*	41
10 28	14 20.31	+11 14.0	2.475	1.484	2.1	19.7	3 E	—	—	7 10	14 22.36	+20 39.9	1.275	1.714	36.1	17.7	96	61*	43
11 7	14 45.87	+13 28.2	2.397	1.408	2.0	19.5	3 W	—	—	7 15	14 29.96	+18 45.4	1.314	1.724	36.0	17.7	95	59*	45
11 17	15 13.79	+15 39.7	2.307	1.325	3.8	19.4	5 W	—	—	7 20	14 37.87	+16 50.4	1.354	1.735	35.8	17.8	93	56*	47
11 27	15 44.60	+17 45.6	2.209	1.237	5.8	19.2	7 W	1*	—	7 25	14 46.07	+14 55.5	1.395	1.746	35.6	17.9	91	54*	49
12 2	16 1.28	+18 44.9	2.158	1.190	6.8	19.2	8 W	1*	—	7 30	14 54.53	+13 1.5	1.439	1.758	35.3	18.0	90	52*	51
12 7	16 18.95	+19 40.9	2.105	1.142	7.7	19.1	9 W	2*	—	8 4	15 3.23	+11 8.8	1.483	1.770	35.0	18.0	88	49*	53
12 12	16 37.70	+20 32.5	2.051	1.092	8.5	18.9	9 W	2*	1*	8 9	15 12.15	+9 18.1	1.529	1.783	34.6	18.1	87	47*	55
12 17	16 57.64	+21 18.5	1.997	1.041	9.3	18.8	10 W	2*	1*	8 19	15 30.60	+5 44.0	1.626	1.809	33.7	18.2	83	44*	58*
12 22	17 18.86	+21 57.2	1.943	0.989	9.9	18.7	10 W	2*	2*	8 29	15 49.80	+2 22.4	1.729	1.838	32.7	18.4	80	41*	59*
12 27	17 41.47	+22 27.0	1.889	0.935	10.2	18.5	10 W	1*	2*	9 8	16 9.64	+0 43.9	1.837	1.867	31.6	18.5	76	38*	59*
1 1	18 5.56	+22 45.6	1.837	0.881	10.3	18.3	9 W	—	2*	9 18	16 30.03	+3 33.3	1.950	1.898	30.2	18.6	72	35*	58*
1 6	18 31.20	+22 50.5	1.786	0.826	10.0	18.1	8 W	—	1*	9 28	16 50.92	+6 4.4	2.066	1.930	28.8	18.8	68	33*	55*
1 11	18 58.41	+22 38.9	1.736	0.771	9.2	17.8	7 W	—	1*	10 8	17 12.18	+8 16.4	2.186	1.962	27.2	18.9	64	31*	52*
1 16	19 27.19	+22 7.6	1.689	0.717	7.8	17.6	6 W	—	—	10 18	17 33.75	+10 9.1	2.307	1.995	25.5	19.0	59	29*	48*
186737 2004 CP₂₆										158105 2000 YH₁₂									
12 23	11 48.32	+3 10.3	2.125	2.411	24.0	20.9	94 W	48	57*	12 23	11 49.06	+25 33.7	2.633	3.007	18.6	20.6	103 W	71	36*
1 2	11 54.52	+3 3.0	2.017	2.438	23.1	20.8	103 W	48	60*	1 2	11 54.39	+26 51.6	2.504	3.004	17.8	20.5	111 W	72	37*
1 12	11 58.33	+3 14.2	1.912	2.463	21.6	20.6	113 W	48	61	1 12	11 57.55	+28 27.8	2.386	3.000	16.5	20.4	120 W	73	36
1 22	11 59.49	+3 45.6	1.814	2.488	19.4	20.5	123 W	49	60	1 22	11 58.21	+30 20.0	2.281	2.996	14.9	20.2	129 W	75	34
2 1	11 57.78	+4 37.7	1.729	2.512	16.5	20.3	134 W	50	59	2 1	11 57.51	+31 20.6	2.236	2.993	14.0	20.1	133 W	76	33
2 11	11 53.22	+5 48.9	1.662	2.534	12.9	20.1	145 W	51	58	2 11	11 56.11	+32 23.2	2.196	2.990	13.1	20.1	137 W	77	32
2 16	11 49.94	+6 30.5	1.636	2.545	10.8	20.0	151 W	52	57	2 6	11 53.99	+33 26.5	2.161	2.987	12.2	20.0	140 W	78	31
2 21	11 46.07	+7 15.0	1.616	2.556	8.7	19.9	157 W	52	57	2 11	11 51.17	+34 29.4	2.132	2.983	11.4	19.9	143 W	79	30
2 26	11 41.72	+8 1.4	1.603	2.566	6.5	19.8	163 W	53	56	2 16	11 47.68	+35 30.6	2.110	2.979	10.7	19.9	146 W	81	28
3 2	11 36.99	+8 48.5	1.597	2.577	4.3	19.7	169 W	54	55	2 21	11 43.58	+36 28.6	2.094	2.975	10.3	19.8	147 W	81	28
3 7	11 32.04	+9 35.1	1.599	2.587	2.6	19.6	173 W	55	54	2 26	11 38.94	+37 22.1	2.084	2.971	10.1	19.8	148 W	82	27
3 12	11 27.01	+10 20.1	1.607	2.596	2.7	19.6	173 E	55	54	3 2	11 33.89	+38 9.7	2.082	2.967	10.3	19.8	148 W	83	26
3 17	11 22.03	+11 2.2	1.623	2.606	4.4	19.7	168 E	56	53	3 7	11 28.56	+38 50.4	2.085	2.962	10.7	19.8	146 W	84	25
3 22	11 17.26	+11 40.7	1.646	2.615	6.5	19.9	163 E	57	52	3 12	11 23.10	+39 23.4	2.096	2.957	11.4	19.9	144 E	84	25
3 27	11 12.83	+12 14.6	1.676	2.624	8.6	20.0	157 E	57	52	3 17	11 17.65	+39 48.1	2.112	2.952	12.3	19.9	141 E	85	24
4 1	11 8.84	+12 43.5	1.713	2.633	10.6	20.1	151 E	58	51	3 22	11 12.38	+40 4.4	2.134	2.946	13.2	20.0	138 E	85	24
4 11	11 2.56	+13 25.3	1.803	2.649	14.1	20.4	140 E	58	51	3 27	11 7.42	+40 12.2	2.161	2.941	14.2	20.0	134 E	85	24
4 21	10 58.79	+13 45.8	1.913	2.665	17.0	20.6	129 E	59	50	4 1	11 2.91	+40 11.9	2.193	2.935	15.2	20.1	130 E	85	24
5 1	10 57.64	+13 46.8	2.038	2.679	19.1	20.9	119 E	59	50	4 6	10 58.95	+40 3.9	2.229	2.929	16.1	20.1	126 E	85	24
5 11	10 58.97	+13 30.7	2.172	2.692	20.6	21.1	110 E	58*	50	4 11	10 55.61	+39 49.0	2.270	2.922	17.0	20.2	122 E	85	24
5 21	11 2.50	+13 0.3	2.314	2.705	21.5	21.2	102 E	56*	51	4 16	10 52.94	+39 27.7	2.313	2.916	17.8	20.3	117 E	84	25
5 31	11 7.94	+12 17.8	2.459	2.716	21.9	21.4	93 E	51*	52	4 21	10 50.97	+39 0.9	2.360	2.909	18.5	20.3			

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
158105 2000 YH₁₂										93751 2000 WH₁									
<i>(continuation)</i>										<i>(continuation)</i>									
7 20	11 46.86	+23 46.2	3.239	2.745	17.1	20.9	53 E	34*	33*	2 21	11 29.11	+45 40.8	1.937	2.782	12.7	19.5	142 W	89	18
7 30	11 59.35	+21 45.0	3.307	2.722	15.9	20.8	47 E	30*	30*	2 26	11 22.44	+46 7.5	1.951	2.795	12.7	19.5	142 W	89	18
8 9	12 12.46	+19 42.8	3.364	2.698	14.6	20.8	42 E	26*	27*	3 2	11 15.53	+46 24.9	1.971	2.807	13.0	19.6	140 W	89	18
8 19	12 26.15	+17 39.9	3.411	2.673	13.2	20.8	37 E	23*	23*	3 7	11 8.62	+46 32.6	1.996	2.819	13.4	19.6	139 E	88	17
8 29	12 40.34	+15 36.9	3.446	2.648	11.7	20.7	32 E	21*	19*	3 12	11 1.89	+46 30.5	2.027	2.831	14.0	19.7	136 E	88	17
9 8	12 54.99	+13 34.3	3.470	2.622	10.3	20.7	28 E	18*	14*	3 17	10 55.55	+46 19.0	2.063	2.843	14.7	19.8	134 E	89	18
9 18	13 10.09	+11 32.7	3.482	2.594	9.0	20.6	24 E	16*	9*	3 22	10 49.75	+45 58.8	2.105	2.854	15.4	19.8	130 E	89	18
9 28	13 25.60	+9 32.7	3.482	2.566	7.8	20.5	20 E	14*	4*	3 27	10 44.61	+45 30.5	2.151	2.865	16.1	19.9	127 E	89	18
10 8	13 41.51	+7 35.0	3.470	2.537	6.9	20.4	18 E	12*	—	4 1	10 40.23	+44 55.2	2.201	2.876	16.8	20.0	124 E	90	19
10 18	13 57.82	+5 40.2	3.447	2.508	6.5	20.4	17 E	9*	—	4 6	10 36.66	+44 13.9	2.255	2.887	17.5	20.1	120 E	89	20
10 28	14 14.52	+3 49.0	3.411	2.477	6.7	20.3	17 E	7*	—	4 11	10 33.91	+43 27.5	2.312	2.898	18.1	20.2	116 E	88	21
11 7	14 31.59	+2 2.1	3.364	2.446	7.5	20.3	19 W	10*	—	4 16	10 31.96	+42 37.0	2.373	2.908	18.6	20.2	112 E	88	21
11 17	14 49.03	+0 20.2	3.305	2.415	8.7	20.3	22 W	15*	—	4 21	10 30.79	+41 43.1	2.436	2.918	19.0	20.3	109 E	87	22
11 27	15 6.81	+1 15.9	3.236	2.382	10.2	20.3	25 W	19*	—	4 26	10 30.37	+40 46.4	2.501	2.928	19.4	20.4	105 E	86	23
12 7	15 24.92	+2 45.6	3.156	2.349	11.9	20.3	30 W	23*	4*	5 1	10 30.63	+39 47.7	2.568	2.937	19.7	20.5	101 E	85	24
12 17	15 43.34	+4 8.5	3.066	2.316	13.7	20.2	34 W	26*	10*	5 6	10 31.54	+38 47.5	2.637	2.947	19.8	20.5	98 E	84*	25
12 27	16 2.01	+5 23.8	2.968	2.282	15.6	20.2	38 W	29*	16*	5 11	10 33.02	+37 46.1	2.706	2.956	19.9	20.6	94	80*	26
1 6	16 20.90	+6 31.5	2.861	2.247	17.4	20.2	43 W	30*	23*	5 16	10 35.02	+36 43.8	2.777	2.965	19.9	20.7	91	76*	27
1 16	16 39.95	+7 31.3	2.746	2.213	19.3	20.1	48 W	31*	30*	5 21	10 37.50	+35 41.0	2.847	2.973	19.9	20.7	87	72*	28
54686 2001 DU₈										6446 Lomberg									
12 23	11 49.24	+19 30.8	1.060	1.385	45.1	19.1	85 W	25	74*	12 23	11 49.55	+1 29.0	1.974	2.241	26.0	19.4	92 W	44	61*
12 28	11 57.77	+18 53.5	1.032	1.407	44.3	19.0	88 W	26	76*	1 2	11 57.55	+1 2.7	1.875	2.276	25.1	19.3	101 W	44	64*
1 2	12 5.59	+18 5.5	1.003	1.429	43.4	19.0	92 W	27	78*	1 12	12 3.16	+0 12.1	1.778	2.309	23.6	19.2	110 W	45	64
1 7	12 12.66	+17 5.7	0.973	1.452	42.4	18.9	96 W	28	80*	1 22	12 6.12	+1 5.3	1.688	2.343	23.3	19.0	120 W	46	63
1 12	12 18.92	+15 52.8	0.942	1.475	41.1	18.8	100 W	29	80*	2 1	12 6.16	+2 50.8	1.610	2.376	18.3	18.9	131 W	48	61
1 17	12 24.29	+14 25.7	0.911	1.498	39.5	18.7	104 W	31	78	2 11	12 3.24	+5 2.5	1.549	2.408	14.5	18.7	142 W	50	59
1 22	12 28.68	+12 42.7	0.880	1.521	37.6	18.6	109 W	32	77	2 16	12 0.74	+6 16.4	1.527	2.424	12.4	18.6	148 W	51	58
1 27	12 32.02	+10 42.7	0.850	1.545	35.5	18.5	114 W	34	75	2 21	11 57.60	+7 34.3	1.511	2.439	10.1	18.5	154 W	53	56
2 1	12 34.25	+8 24.6	0.823	1.568	33.0	18.4	120 W	37	72	2 26	11 53.92	+8 54.5	1.501	2.455	7.9	18.4	160 W	54	55
2 11	12 35.16	+2 53.9	0.777	1.615	26.9	18.2	132 W	42	67	3 2	11 49.81	+10 15.5	1.499	2.470	5.8	18.3	165 W	55	54
2 21	12 31.26	+3 39.1	0.751	1.662	19.8	18.0	145 W	49	60	3 7	11 45.40	+11 35.3	1.504	2.486	4.2	18.2	169 W	57	52
3 2	12 23.03	+10 41.5	0.750	1.708	13.0	17.8	157 W	56	53	3 12	11 40.84	+12 52.2	1.516	2.501	3.9	18.3	170 W	58	51
3 7	12 17.72	+14 7.8	0.761	1.730	10.6	17.8	161 W	59	50										
3 12	12 11.92	+17 21.9	0.780	1.753	9.8	17.8	162 W	62	47										
3 17	12 5.92	+20 18.4	0.806	1.775	10.8	18.0	161 W	65	44										
3 22	11 59.98	+22 53.6	0.839	1.797	12.8	18.1	156 E	68	41										
3 27	11 54.38	+25 5.5	0.879	1.819	15.2	18.4	151 W	70	39										
4 1	11 49.35	+26 53.9	0.924	1.840	17.6	18.6	146 E	72	37										
4 6	11 45.08	+28 19.7	0.975	1.861	19.9	18.8	141 E	73	36										
4 11	11 41.67	+29 25.1	1.030	1.882	21.9	19.0	136 E	74	35										
4 16	11 39.17	+30 12.3	1.089	1.902	23.6	19.2	131 E	75	34										
4 21	11 37.60	+30 43.4	1.151	1.922	25.0	19.4	126 E	76	33										
4 26	11 36.95	+31 0.8	1.215	1.942	26.2	19.6	122 E	76	33										
5 1	11 37.18	+31 6.5	1.282	1.961	27.2	19.7	117 E	76	33										
5 6	11 38.22	+31 2.3	1.350	1.980	27.9	19.9	113 E	76	33										
5 11	11 40.02	+30 49.8	1.420	1.998	28.5	20.0	110 E	76	33										
5 16	11 42.48	+30 30.2	1.490	2.016	28.8	20.2	106 E	76	33										
5 21	11 45.56	+30 4.7	1.561	2.034	29.1	20.3	102 E	75	34										
5 26	11 49.19	+29 34.1	1.632	2.051	29.2	20.4	99	73	34										
5 31	11 53.32	+28 59.1	1.704	2.068	29.2	20.5	96	71	35										
6 5	11 57.87	+28 20.6	1.775	2.084	29.1	20.6	93	68	36										
6 10	12 2.81	+27 39.1	1.846	2.100	28.9	20.7	90	65	36										
6 15	12 8.09	+26 55.0	1.917	2.116	28.6	20.8	87	61	37										
6 20	12 13.68	+26 8.6	1.987	2.131	28.3	20.9	84	58	38										
6 25	12 19.54	+25 20.3	2.056	2.146	27.9	21.0	81	55	39										
6 30	12 25.65	+24 30.6	2.124	2.160	27.4	21.0	78	53	39										
7 5	12 31.98	+23 39.5	2.190	2.174	26.9	21.1	76	50	40*										
7 10	12 38.50	+22 47.5	2.256	2.187	26.4	21.2	73	48	41*										
7 15	12 45.20	+21 54.6	2.321	2.200	25.8	21.2	70	45	41*										
7 20	12 52.07	+21 1.0	2.383	2.213	25.2	21.3	68	43	41*										
7 25	12 59.10	+20 7.0	2.445	2.225	24.6	21.3	66	42	41*										
7 30	13 6.26	+19 12.8	2.504	2.237	23.9	21.4	63	40	41*										
8 4	13 13.56	+18 18.5	2.562	2.248	23.2	21.4	61	38	40*										
8 9	13 20.98	+17 24.2	2.618	2.259	22.5	21.4	58	37	39*										
8 14	13 28.51	+16 30.1	2.673	2.269	21.7	21.5	56	36	38*										
8 19	13 36.16	+15 36.3	2.725	2.279	21.0	21.5	54	34	36*										
12 23	11 49.45	+35 38.6	2.167	2.614	21.2	19.9	106 W	81	26*										
12 28	11 52.42	+36 21.5	2.128	2.629	20.6	19.9	110 W	81	27*										
1 2	11 54.65	+37 8.6	2.091	2.644	19.9	19.8	114 W	82	27*										
1 7	11 56.09	+37 59.5	2.057	2.659	19.1	19.8	118 W	83	26*										
1 12	11 56.69	+38 53.4	2.026	2.673	18.3	19.7	121 W	84	25										
1 17	11 56.40	+39 49.7	1.998	2.688	17.4	19.7	125 W	85	24										
1 22	11 55.18	+40 47.3	1.974	2.702	16.5	19.6	129 W	86	23										
1 27	11 53.01	+41 44.8	1.955	2.716	15.6	19.6	132 W	87	22										
2 1	11 49.89	+42 41.0	1.940	2.729	14.7	19.5	135 W	88	21										
2 6	11 45.86	+43 34.2	1.931	2.743	14.0	19.5	138 W	89	20										
2 11	11 40.98	+44 22.8	1.927	2.756	13.4	19.5	140 W	89	20										
2 16	11 35.35	+45 5.5	1.929	2.769	12.9	19.5	141 W	90	19										

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	2020	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
6446 Lomberg										137099 1998 YW₃									
<i>(continuation)</i>										<i>(continuation)</i>									
3 17	11 36.28	+14 4.6	1.536	2.515	5.1	18.4	167 E	59	50	2 25	15 47.26	+68 10.6	0.550	1.233	51.5	19.3	103 W	67	—
3 22	11 31.86	+15 11.1	1.563	2.530	6.9	18.5	162 E	60	49	2 27	16 2.74	+69 17.7	0.546	1.220	52.8	19.3	101 W	66	—
3 27	11 27.72	+16 10.7	1.598	2.545	8.9	18.6	157 E	61	48	2 29	16 19.35	+70 19.7	0.543	1.207	54.0	19.3	100 W	65	—
4 1	11 23.98	+17 2.8	1.638	2.559	10.9	18.8	151 E	62	47	3 2	16 37.15	+71 16.0	0.540	1.193	55.3	19.3	98 W	64	—
4 11	11 18.07	+18 23.0	1.738	2.587	14.4	19.1	140 E	63	46	3 4	16 56.14	+72 6.0	0.537	1.179	56.7	19.3	96 W	63*	—
4 21	11 14.57	+19 12.6	1.856	2.614	17.2	19.3	130 E	64	45	3 6	17 16.31	+72 49.1	0.535	1.165	58.0	19.3	95 W	62*	—
5 1	11 13.63	+19 34.9	1.990	2.640	19.3	19.6	120 E	65	44	3 8	17 37.55	+73 24.9	0.532	1.151	59.5	19.3	93 W	61*	—
5 11	11 15.13	+19 34.2	2.134	2.666	20.7	19.8	111 E	65	44	3 10	17 59.72	+73 52.9	0.530	1.136	60.9	19.3	91 W	60*	—
5 21	11 18.81	+19 14.8	2.285	2.690	21.6	20.0	102 E	63*	45	3 12	18 22.59	+74 12.7	0.527	1.122	62.4	19.3	90 W	60*	—
5 31	11 24.37	+18 40.4	2.439	2.714	21.9	20.2	94 E	58*	45	3 13	18 34.20	+74 19.4	0.526	1.114	63.1	19.3	89 W	59*	—
6 10	11 31.52	+17 54.3	2.594	2.737	21.7	20.3	87 E	52*	46	3 14	18 45.86	+74 24.0	0.525	1.107	63.9	19.3	88 W	59*	—
6 20	11 39.97	+16 58.8	2.748	2.759	21.3	20.4	80 E	46*	47	3 15	18 57.55	+74 26.5	0.523	1.099	64.6	19.3	87 W	58*	—
6 30	11 49.52	+15 55.9	2.897	2.780	20.5	20.5	73 E	41*	48*	3 16	19 9.21	+74 26.9	0.522	1.091	65.4	19.3	86 W	58*	—
7 10	11 59.95	+14 47.4	3.041	2.800	19.5	20.6	67 E	36*	47*	3 17	19 20.81	+74 25.1	0.521	1.084	66.2	19.3	85 W	58*	—
7 20	12 11.13	+13 34.8	3.177	2.819	18.3	20.7	61 E	31*	44*	3 18	19 32.30	+74 21.3	0.519	1.076	67.0	19.3	84 W	57*	—
7 30	12 22.92	+12 19.0	3.305	2.838	16.9	20.8	54 E	28*	41*	3 19	19 43.64	+74 15.4	0.518	1.068	67.8	19.3	83 W	57*	—
8 9	12 35.23	+11 1.5	3.423	2.855	15.4	20.8	49 E	25*	37*	3 20	19 54.81	+74 7.5	0.516	1.060	68.6	19.3	83 W	56*	—
8 19	12 47.98	+ 9 42.9	3.531	2.871	13.9	20.8	43 E	22*	32*	3 21	20 5.76	+73 57.6	0.515	1.053	69.4	19.3	82 W	56*	—
8 29	13 1.12	+ 8 24.4	3.626	2.887	12.2	20.8	37 E	20*	27*	3 22	20 16.47	+73 45.7	0.513	1.045	70.3	19.3	81 W	56*	—
9 8	13 14.57	+ 7 6.9	3.709	2.901	10.5	20.8	32 E	17*	21*	3 23	20 26.93	+73 31.9	0.512	1.037	71.1	19.3	80 W	55*	—
9 18	13 28.31	+ 5 51.2	3.778	2.915	8.9	20.8	27 E	15*	16*	3 24	20 37.10	+73 16.3	0.510	1.029	72.0	19.3	79 W	55*	—
9 28	13 42.30	+ 4 38.1	3.833	2.927	7.4	20.8	22 E	13*	10*	3 25	20 46.99	+72 58.9	0.508	1.021	72.9	19.3	78 W	55*	—
10 8	13 56.49	+ 3 28.6	3.873	2.939	6.0	20.8	18 E	11*	4*	3 26	20 56.58	+72 39.6	0.507	1.012	73.8	19.3	77 W	54*	—
10 18	14 10.85	+ 2 23.4	3.898	2.950	5.2	20.7	15 E	9*	—	3 27	21 5.86	+72 18.7	0.505	1.004	74.7	19.3	76 W	54*	—
10 28	14 25.34	+ 1 23.5	3.908	2.959	5.0	20.7	15 E	7*	—	3 28	21 14.83	+71 56.0	0.503	0.996	75.6	19.3	75 W	53*	—
11 7	14 39.92	+ 0 29.7	3.902	2.968	5.6	20.8	17 W	8*	—	3 29	21 23.51	+71 31.6	0.501	0.988	76.6	19.3	74 W	53*	—
11 17	14 54.53	+ 0 17.3	3.881	2.976	6.7	20.8	21 W	14*	—	3 30	21 31.88	+71 5.6	0.499	0.980	77.5	19.4	73 W	53*	—
11 27	15 9.10	+ 0 56.6	3.844	2.982	8.1	20.9	25 W	19*	—	3 31	21 39.96	+70 37.9	0.497	0.971	78.5	19.4	72 W	52*	—
12 7	15 23.57	+ 1 27.4	3.793	2.988	9.7	20.9	31 W	24*	4*	4 1	21 47.75	+70 8.6	0.495	0.963	79.5	19.4	71 W	52*	—
12 17	15 37.86	+ 1 49.0	3.727	2.993	11.3	20.9	36 W	29*	10*	4 3	22 2.52	+69 4.9	0.491	0.946	81.6	19.4	69 W	51*	—
12 27	15 51.85	+ 2 0.7	3.648	2.997	12.8	20.9	42 W	33*	17*	4 5	22 16.28	+67 54.6	0.486	0.929	83.7	19.4	67 W	50*	—
1 6	16 5.45	+ 2 2.1	3.556	3.000	14.3	20.9	49 W	36*	25*	4 7	22 29.12	+66 37.5	0.481	0.912	85.9	19.4	65 W	49*	—
1 16	16 18.53	+ 1 52.6	3.453	3.002	15.6	20.9	55 W	39*	32*	4 9	22 41.14	+65 13.3	0.477	0.895	88.3	19.5	63 W	49*	—
191964 2005 VF₇										137099 1998 YW₃									
12 23	11 49.60	+ 6 58.3	1.971	2.205	26.5	20.9	90 W	38	65*	4 11	22 52.43	+63 41.7	0.472	0.878	90.7	19.5	61 W	48*	—
1 2	11 54.06	+ 9 21.4	1.876	2.240	25.7	20.8	98 W	36	72*	4 13	23 3.10	+62 2.3	0.467	0.861	93.2	19.5	59 W	47*	—
1 12	11 55.78	+11 36.7	1.785	2.275	24.4	20.7	107 W	33	76	4 15	23 13.21	+60 14.7	0.463	0.844	95.9	19.6	57 W	45*	—
1 22	11 54.41	+13 41.2	1.699	2.308	22.5	20.5	116 W	31	78	4 17	23 22.85	+58 18.6	0.458	0.827	98.6	19.7	55 W	44*	—
2 1	11 49.68	+15 30.5	1.625	2.342	19.9	20.4	126 W	29	80	4 19	23 32.09	+56 13.6	0.454	0.810	101.5	19.7	52 W	43*	—
2 6	11 46.05	+16 17.8	1.593	2.358	18.4	20.3	131 W	29	80	4 21	23 40.98	+53 59.4	0.451	0.793	104.4	19.8	50 W	41*	—
2 11	11 41.63	+16 59.2	1.565	2.375	16.8	20.2	136 W	28	81	4 23	23 49.60	+51 35.9	0.448	0.776	107.4	19.9	47 W	40*	—
2 16	11 36.48	+17 34.0	1.543	2.391	15.2	20.2	141 W	27	82	4 25	23 58.00	+49 3.2	0.446	0.760	110.4	20.0	45 W	38*	—
2 21	11 30.70	+18 1.7	1.526	2.407	13.5	20.1	145 W	27	82	4 27	0 6.22	+46 21.7	0.445	0.744	113.3	20.2	43 W	36*	1*
2 26	11 24.41	+18 21.6	1.515	2.422	11.9	20.0	150 W	27	82	4 29	0 14.30	+43 32.2	0.445	0.728	116.2	20.3	40 W	34*	3*
3 2	11 17.80	+18 33.6	1.511	2.438	10.5	20.0	153 W	26	83	5 1	0 22.29	+40 35.8	0.447	0.712	118.9	20.5	38 W	32*	5*
3 7	11 11.05	+18 37.9	1.513	2.453	9.4	20.0	156 W	26	83	5 3	0 30.23	+37 34.1	0.451	0.698	121.3	20.6	36 W	30*	7*
3 12	11 4.35	+18 34.9	1.522	2.468	9.0	20.0	157 E	26	83	5 5	0 38.13	+34 29.1	0.456	0.683	123.3	20.8	34 W	28*	10*
3 17	10 57.88	+18 25.3	1.538	2.483	9.1	20.0	157 E	27	82	5 7	0 46.04	+31 23.1	0.464	0.670	124.8	20.9	33 W	25*	12*
3 22	10 51.81	+18 10.0	1.560	2.498	9.8	20.1	155 E	27	82	5 9	0 53.96	+28 18.7	0.474	0.657	125.7	21.0	32 W	23*	14*
3 27	10 46.29	+17 50.3	1.589	2.512	10.9	20.2	152 E	27	82	5 11	1 1.93	+25 18.7	0.486	0.645	126.0	21.0	31 W	20*	16*
4 1	10 41.44	+17 27.3	1.625	2.527	12.2	20.3	148 E	28	81	5 13	1 9.94	+22 25.3	0.501	0.634	125.5	21.0	31 W	18*	18*
4 6	10 37.34	+17 2.4	1.666	2.541	13.5	20.4	143 E	28	81	5 15	1 18.01	+19 41.0	0.518	0.624	124.3	20.9	31 W	16*	20*
4 11	10 34.03	+16 36.8	1.712	2.555	14.9	20.5	139 E	28	81	5 17	1 26.14	+17 7.5	0.538	0.615	122.5	20.8	31 W	13*	21*
4 16	10 31.52	+16 11.5	1.763	2.568	16.2	20.7	134 E	29	80	5 19	1 34.32	+14 46.3	0.560	0.607	120.1	20.7	31 W	11*	23*
4 21	10 29.81	+15 47.2	1.819	2.582	17.4	20.8	130 E	29	80	5 21	1 42.55	+12 38.3	0.584	0.601	117.3	20.6	32 W	9*	24*
4 26	10 28.88	+15 24.8	1.878	2.595	18.4	20.9	125 E	30	79	5 26	2 3.26	+ 8 17.9	0.653	0.592	108.9	20.2	34 W	5*	27*
5 1	10 28.69	+15 4.8	1.941	2.608	19.3	21.0	121 E	30	79	5 31	2 24.01	+ 5 18.7							

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°-26°	
137099 1998 YW₃ (continuation)									7467 1989 WQ₁ (continuation)									
9 13	7 28.18	+10 55.5	1.522	1.323	40.7	21.3	59 W	40* 39*	2 11	13 10.96	+33 45.2	0.668	1.492	31.5	17.0	128 W	79	30
9 18	7 37.85	+11 12.3	1.504	1.350	40.8	21.3	61 W	42* 40*	2 16	13 11.85	+34 55.4	0.656	1.498	30.1	17.0	130 W	80	29
9 23	7 47.20	+11 29.1	1.482	1.377	40.9	21.4	64 W	45* 40*	2 21	13 11.02	+36 2.9	0.646	1.505	28.8	16.9	133 W	81	28
9 28	7 56.23	+11 46.3	1.456	1.401	41.0	21.4	67 W	48* 41*	2 26	13 8.47	+37 4.4	0.639	1.512	27.5	16.9	135 W	82	27
10 3	8 4.93	+12 4.5	1.426	1.425	41.1	21.4	69 W	50* 42*	3 2	13 4.26	+37 56.8	0.634	1.519	26.4	16.8	137 W	83	26
10 8	8 13.30	+12 24.2	1.393	1.446	41.1	21.3	72 W	52* 42*	3 7	12 58.58	+38 36.5	0.633	1.526	25.4	16.8	139 W	84	25
10 13	8 21.31	+12 46.1	1.357	1.467	41.1	21.3	75 W	54* 43*	3 12	12 51.67	+39 0.7	0.634	1.533	24.8	16.8	140 W	84	25
10 18	8 28.95	+13 11.0	1.318	1.486	41.1	21.3	79 W	56* 43*	3 17	12 43.90	+39 7.2	0.639	1.541	24.5	16.8	140 W	84	25
10 23	8 36.17	+13 39.7	1.276	1.504	40.9	21.2	82 W	58* 44*	3 22	12 35.67	+38 54.4	0.647	1.548	24.5	16.8	140 W	84	25
10 28	8 42.95	+14 13.1	1.232	1.520	40.7	21.2	85 W	59* 45*	3 27	12 27.45	+38 21.8	0.659	1.556	24.9	16.9	139 W	83	26
11 2	8 49.25	+14 52.4	1.186	1.535	40.3	21.1	89 W	60 45*	4 1	12 19.67	+37 30.1	0.674	1.564	25.5	17.0	138 E	83	26
11 7	8 55.01	+15 38.6	1.139	1.548	39.7	21.0	93 W	61 45*	4 6	12 12.70	+36 21.1	0.692	1.572	26.4	17.1	136 E	81	28
11 12	9 0.16	+16 33.2	1.090	1.560	39.0	20.9	97 W	62 45*	4 11	12 6.78	+34 57.1	0.714	1.581	27.4	17.2	134 E	80	29
11 17	9 4.61	+17 37.7	1.041	1.571	38.1	20.8	101 W	63 45*	4 16	12 2.04	+33 20.9	0.739	1.589	28.5	17.3	131 E	78	31
11 22	9 8.26	+18 53.8	0.992	1.580	36.9	20.7	106 W	64 45*	4 21	11 58.55	+31 35.0	0.766	1.597	29.6	17.4	128 E	77	32
11 27	9 10.99	+20 23.3	0.943	1.589	35.5	20.5	111 W	65 44*	4 26	11 56.31	+29 41.9	0.797	1.606	30.7	17.6	125 E	75	34
12 2	9 12.66	+22 7.8	0.895	1.595	33.8	20.4	116 W	67 42	5 1	11 55.28	+27 43.8	0.831	1.614	31.7	17.7	123 E	73	36
12 7	9 13.06	+24 9.1	0.849	1.601	31.7	20.2	121 W	69 40	5 6	11 55.37	+25 42.5	0.867	1.623	32.7	17.8	120 E	71	38
12 12	9 11.98	+26 28.5	0.806	1.605	29.3	20.0	127 W	71 38	5 11	11 56.47	+23 39.6	0.905	1.632	33.6	17.9	117 E	69	40
12 17	9 9.14	+29 6.5	0.767	1.607	26.6	19.9	133 W	74 35	5 16	11 58.46	+21 36.3	0.946	1.640	34.3	18.1	114 E	67	42
12 22	9 4.24	+32 2.2	0.732	1.609	23.7	19.7	139 W	77 32	5 21	12 1.27	+19 33.4	0.988	1.649	35.0	18.2	111 E	65	44
12 27	8 56.99	+35 12.7	0.703	1.609	20.7	19.5	145 W	80 29	5 26	12 4.81	+17 31.4	1.033	1.657	35.5	18.3	108 E	62*	46
1 1	8 47.10	+38 32.6	0.680	1.608	17.9	19.3	150 W	84 25	5 31	12 9.00	+15 30.9	1.079	1.665	35.9	18.4	105 E	59*	48
1 6	8 34.34	+41 54.1	0.664	1.605	15.9	19.2	153 W	87 22	6 10	12 19.00	+11 35.6	1.175	1.682	36.5	18.7	100 E	53*	52
1 11	8 18.67	+45 7.3	0.656	1.601	15.3	19.2	155 W	90 19	6 20	12 30.80	+7 49.0	1.275	1.698	36.6	18.9	95 E	46*	56
1 16	8 0.41	+48 1.7	0.656	1.596	16.3	19.2	153 W	87 16	6 30	12 44.08	+4 11.4	1.379	1.714	36.4	19.0	90 E	39*	60
47199 1999 TY₂₀₄									306606 2000 LU₃₆									
12 23	11 50.73	+3 25.8	2.393	2.651	21.7	20.8	94 W	48 56*	7 10	12 58.58	+0 43.1	1.485	1.730	35.9	19.2	85 E	34*	63*
1 2	11 56.33	+2 48.8	2.250	2.646	21.3	20.6	103 W	48 60*	7 20	13 14.13	+2 35.9	1.593	1.745	35.1	19.4	81 E	29*	65*
1 12	11 59.84	+2 24.7	2.111	2.641	20.2	20.4	112 W	47 62	7 30	13 30.66	-5 45.8	1.700	1.759	34.1	19.5	76 E	25*	66*
1 22	12 0.96	+2 15.2	1.979	2.634	18.5	20.2	122 W	47 62	8 9	13 48.06	-8 46.5	1.807	1.772	32.9	19.6	72 E	21*	64*
2 1	11 59.42	+2 21.5	1.859	2.626	16.1	20.0	132 W	47 62	8 19	14 6.33	-11 37.7	1.913	1.785	31.5	19.7	67 E	18*	60*
2 11	11 55.11	+2 43.9	1.757	2.617	12.9	19.8	144 W	48 61	8 29	14 25.45	-14 19.2	2.016	1.797	30.0	19.8	63 E	16*	57*
2 21	11 48.13	+3 20.9	1.675	2.608	9.0	19.5	156 W	48 61	9 8	14 45.40	-16 50.5	2.116	1.808	28.4	19.9	59 E	13*	53*
3 2	11 38.96	+4 9.1	1.619	2.597	4.6	19.2	168 W	49 60	9 18	15 6.21	-19 10.9	2.212	1.818	26.7	19.9	54 E	12*	48*
3 7	11 33.81	+4 35.7	1.602	2.591	2.2	19.0	174 W	50 59	9 28	15 27.88	-21 19.9	2.303	1.827	24.8	20.0	50 E	10*	44*
3 12	11 28.47	+5 2.8	1.592	2.585	0.7	18.9	178 E	50 59	10 8	15 50.39	-23 16.3	2.389	1.835	22.9	20.0	46 E	9*	40*
3 17	11 23.07	+5 29.4	1.589	2.579	2.8	19.1	173 E	50 59	10 18	16 13.74	-24 59.5	2.468	1.842	21.0	20.0	41 E	7*	35*
3 22	11 17.78	+5 54.8	1.594	2.573	5.2	19.2	166 E	51 58	10 28	16 37.89	-26 28.4	2.541	1.848	18.9	20.0	37 E	6*	31*
3 27	11 12.74	+6 18.1	1.605	2.566	7.6	19.3	160 E	51 58	11 7	17 2.77	-27 42.1	2.606	1.854	16.9	20.0	33 E	5*	27*
4 1	11 8.10	+6 38.6	1.623	2.559	9.9	19.4	154 E	52 57	11 17	17 28.31	-28 39.7	2.663	1.858	14.8	20.0	29 E	4*	23*
4 11	11 0.40	+7 9.1	1.678	2.545	14.0	19.6	142 E	52 57	11 27	17 54.40	-29 20.6	2.713	1.861	12.7	20.0	25 E	2*	18*
4 21	10 55.30	+7 23.8	1.752	2.530	17.4	19.8	131 E	52 57	12 7	18 20.90	-29 44.3	2.753	1.863	10.7	19.9	20 E	1*	14*
5 1	10 53.04	+7 22.1	1.842	2.513	20.1	20.0	121 E	52 57	12 17	18 47.68	-29 50.6	2.785	1.864	8.7	19.9	17 E	—	11*
5 11	10 53.56	+7 4.8	1.943	2.496	22.1	20.2	111 E	52 57	12 27	19 14.57	-29 39.6	2.808	1.863	6.8	19.8	13 E	—	7*
5 21	10 56.64	+6 33.1	2.050	2.478	23.5	20.3	103 E	49 57	1 6	19 41.43	-29 11.7	2.822	1.862	5.3	19.7	10 E	—	4*
5 31	11 1.99	+5 48.5	2.160	2.459	24.3	20.5	95 E	44 58	1 16	20 8.13	-28 27.5	2.827	1.860	4.4	19.7	8 E	—	1*
6 10	11 9.30	+4 52.4	2.270	2.440	24.6	20.6	87 E	39 59	306606 2000 LU₃₆									
6 20	11 18.27	+3 46.3	2.377	2.419	24.4	20.6	80 E	33 60*	12 23	11 52.29	+4 40.1	3.412	3.619	15.7	20.8	94 W	50	55*
6 30	11 28.69	+2 31.2	2.481	2.398	24.0	20.7	73 E	27 59*	1 2	11 55.13	+4 45.1	3.273	3.634	15.2	20.7	104 W	50	59*
7 10	11 40.33	+1 8.2	2.579	2.376	23.2	20.7	67 E	22 57*	1 12	11 56.25	+5 2.7	3.139	3.648	14.3	20.6	114 W	50	59
7 20	11 53.05	+0 21.7	2.670	2.353	22.2	20.8	61 E	18 53*	1 22	11 55.53	+5 33.3	3.016	3.661	12.8	20.5	124 W	51	58
7 30	12 6.73	-1 57.6	2.752	2.329	21.0	20.8	55 E	15 48*	2 1	11 52.91	+6 16.5	2.908	3.674	10.9	20.3	135 W	51	58
8 9	12 21.27	-3 38.4	2.826	2.305	19.6	20.8	50 E	12 43*	2 11	11 48.47	+7 10.7	2.821	3.685	8.5	20.2	147 W	52	57
8 19	12 36.62	-5 23.4	2.891	2.280	18.1	20.7	44 E	9 38*	2 21	11 42.45	+8 12.9	2.760	3.696	5.7	20.0	158 W	53	56
8 29	12 52.76	-7 11.5	2.946	2.254	16.4	20.7	39 E	7 33*	3 2	11 35.25	+9 19.0	2.727	3.705	2.9	19.8	169 W	54	55
9 8	13 9.65	-9 1.7	2.991	2.228	14.6	20.6	34 E	5 28*	3 12	11 27.45	+10 24.0	2.726	3.714	1.9	19.8	173 E	55	54
9 18	13 27.30	-10 53.0	3.026	2.202	12.8	20.6	29 E	3 23*	3 22	11 19.70	+11 23.2	2.756	3.722	4.4	19.9	163 E	56	53
9 28	13 45.73	-12 44.3	3.050	2.175	10.8	20.5	24 E	2 18*	4 1	11 12.63	+12 12.5	2.817	3.730	7.2	20.1	152 E	57	52
10 8	14 4.95	-14 34.2	3.064	2.147	8.9	20.4	19 E	— 13*	4 11	11 6.78	+12 49.4	2.903	3.736	9.7	20.3	141 E	58	51
10 18	14 25.01	-16 21.6	3.068	2.119	6.8	20.3	15 E	— 9*	4 21	11 2.49	+13 12.9	3.013	3.741	11.8	20.5	130 E	58	51
10 28	14 45.91	-18 4.9	3.062	2.091	4.7	20.1	10 E	— 4*	5 1	10 59.97	+13 23.1	3.139	3.746	13.5	20.6	120 E	58	51
11 7	15 7.69	-19 42.6	3.047	2.063	2.7	20.0	6 E	— —	5 11	10 59.23	+13 20.9	3.279	3.750	14.6	20.8	110 E	58*	51
11 17	15 30.38	-21 13.1	3.022	2.034	1.1	19.8	2 E	— —	5 21	1								

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
306606 2000 LU₃₆										301964 2000 EJ₃₇									
<i>(continuation)</i>										<i>(continuation)</i>									
11 17	13 37.46	-3 11.8	4.464	3.659	8.2	21.1	32 W	24*	11*	3 2	11 43.16	+0 12.9	2.739	3.707	3.8	18.9	165 W	45	64
11 27	13 48.12	-3 59.6	4.361	3.646	9.8	21.1	39 W	29*	18*	3 12	11 35.89	+1 15.8	2.646	3.639	0.7	18.5	177 W	46	63
12 7	13 58.47	-4 42.1	4.243	3.632	11.3	21.1	46 W	33*	24*	3 22	11 28.09	+2 23.9	2.585	3.570	2.7	18.6	170 E	47	62
12 17	14 8.41	-5 18.4	4.110	3.617	12.7	21.1	54 W	36*	32*	4 1	11 20.42	+3 32.2	2.554	3.501	6.1	18.7	158 E	49	60
12 27	14 17.78	-5 47.8	3.964	3.601	13.9	21.1	62 W	38*	40*	4 11	11 13.55	+4 35.8	2.552	3.430	9.3	18.8	146 E	50	59
1 6	14 26.46	-6 9.5	3.808	3.584	14.9	21.0	69 W	39*	48*	4 21	11 8.02	+5 30.7	2.574	3.359	12.3	18.9	135 E	51	58
1 16	14 34.27	-6 22.8	3.644	3.566	15.6	20.9	78 W	39	56*	5 1	11 4.26	+6 13.8	2.616	3.287	14.7	19.0	124 E	51	58
138970 2001 CV₁₉										159859 2004 LE₂₃									
12 23	11 52.68	-23 8.7	1.324	1.552	39.0	19.8	83 W	22	74*	12 23	11 53.48	+21 55.6	2.559	2.903	19.5	21.0	100 W	67	39*
12 28	12 1.73	-25 26.6	1.287	1.550	39.2	19.8	85 W	20	77*	1 2	11 59.08	+23 13.0	2.438	2.914	18.6	20.9	109 W	68	40*
1 2	12 10.60	-27 44.3	1.251	1.549	39.3	19.7	87 W	17	81*	1 12	12 2.50	+24 49.9	2.327	2.923	17.3	20.8	118 W	70	39
1 7	12 19.27	-30 1.1	1.216	1.548	39.4	19.6	89 W	15	83*	1 22	12 3.45	+26 44.4	2.230	2.931	15.5	20.6	127 W	72	37
1 12	12 27.71	-32 16.9	1.181	1.548	39.4	19.6	91 W	13	83*	2 1	12 1.67	+28 51.8	2.150	2.939	13.5	20.5	136 W	74	35
1 17	12 35.89	-34 31.2	1.147	1.547	39.4	19.5	93 W	10	81*	2 6	11 59.73	+29 58.1	2.119	2.942	12.5	20.4	140 W	75	34
1 22	12 43.75	-36 43.4	1.113	1.546	39.4	19.4	95 W	8	79*	2 11	11 57.11	+31 4.6	2.093	2.945	11.5	20.4	143 W	76	33
1 27	12 51.24	-38 53.1	1.080	1.546	39.2	19.4	97 W	6	77*	2 16	11 53.83	+32 9.9	2.073	2.948	10.7	20.3	147 W	77	32
2 1	12 58.27	-40 59.6	1.048	1.546	39.0	19.3	99 W	4	75*	2 21	11 49.95	+33 12.7	2.060	2.950	10.0	20.3	149 W	78	31
2 6	13 4.79	-43 2.2	1.017	1.546	38.7	19.2	101 W	2	73*	2 26	11 45.54	+34 11.5	2.054	2.953	9.7	20.2	150 W	79	30
2 11	13 10.69	-45 0.4	0.986	1.546	38.4	19.2	103 W	—	71*	3 2	11 40.72	+35 5.0	2.055	2.955	9.7	20.2	150 W	80	29
2 16	13 15.88	-46 53.4	0.956	1.547	38.0	19.1	105 W	—	69*	3 7	11 35.61	+35 52.0	2.062	2.956	10.0	20.3	149 W	81	28
2 21	13 20.20	-48 40.4	0.927	1.547	37.5	19.0	108 W	—	67*	3 12	11 30.36	+36 31.6	2.076	2.958	10.6	20.3	147 W	82	27
2 26	13 23.52	-50 20.2	0.898	1.548	36.9	18.9	110 W	—	66*	3 17	11 25.11	+37 3.3	2.096	2.959	11.4	20.4	144 E	82	27
3 2	13 25.72	-51 51.5	0.870	1.548	36.3	18.8	112 W	—	64*	3 22	11 20.01	+37 26.7	2.123	2.960	12.4	20.4	140 E	82	27
3 7	13 26.66	-53 13.0	0.844	1.549	35.5	18.7	115 W	—	63*	3 27	11 15.18	+37 41.8	2.155	2.961	13.4	20.5	137 E	83	26
3 12	13 26.26	-54 23.0	0.818	1.551	34.7	18.6	117 W	—	62*	4 1	11 10.77	+37 48.8	2.192	2.961	14.4	20.6	133 E	83	26
3 17	13 24.45	-55 19.9	0.794	1.552	33.8	18.6	120 W	—	61*	4 6	11 6.87	+37 48.1	2.234	2.962	15.3	20.6	128 E	83	26
3 22	13 21.22	-56 1.3	0.771	1.553	32.7	18.5	123 W	—	60*	4 11	11 3.56	+37 40.4	2.279	2.962	16.2	20.7	124 E	83	26
3 27	13 16.72	-56 25.0	0.749	1.555	31.7	18.4	125 W	—	60*	4 16	11 0.87	+37 26.4	2.329	2.961	17.1	20.8	120 E	82	27
4 1	13 11.19	-56 28.9	0.729	1.557	30.5	18.3	128 W	—	60*	4 21	10 58.84	+37 6.5	2.382	2.961	17.8	20.9	116 E	82	27
4 6	13 5.04	-56 11.4	0.712	1.558	29.4	18.2	130 W	—	60*	4 26	10 57.49	+36 41.7	2.437	2.960	18.4	20.9	112 E	82	27
4 11	12 58.69	-55 31.7	0.697	1.560	28.2	18.1	133 E	—	60*	5 1	10 56.81	+36 12.4	2.494	2.959	18.9	21.0	108 E	81	28
4 13	12 56.21	-55 9.4	0.691	1.561	27.8	18.1	133 E	—	61	5 6	10 56.77	+35 39.3	2.553	2.958	19.4	21.1	104 E	81	28
4 15	12 53.79	-54 43.6	0.686	1.562	27.3	18.1	134 E	—	61	5 11	10 57.34	+35 3.0	2.613	2.956	19.7	21.1	100 E	80*	29
4 17	12 51.48	-54 14.1	0.682	1.563	26.9	18.0	135 E	—	62	5 16	10 58.50	+34 23.9	2.674	2.954	19.9	21.2	96 E	78*	30
4 19	12 49.30	-53 41.2	0.678	1.564	26.6	18.0	136 E	—	62	5 21	11 0.20	+33 42.4	2.735	2.952	20.0	21.2	92 E	74*	30
4 21	12 47.27	-53 4.9	0.674	1.565	26.2	18.0	137 E	—	63	5 26	11 2.41	+32 58.8	2.796	2.950	20.1	21.3	89 E	70*	31
4 26	12 43.03	-51 20.2	0.668	1.567	25.5	18.0	138 E	—	65	5 31	11 5.08	+32 13.5	2.857	2.947	20.0	21.3	85 E	66*	32
5 1	12 40.16	-49 18.2	0.665	1.570	25.1	17.9	139 E	—	67	6 5	11 8.19	+31 26.7	2.918	2.945	19.9	21.4	82 E	62*	33
5 6	12 38.77	-47 2.7	0.665	1.572	25.0	18.0	139 E	—	69	6 10	11 11.69	+30 38.7	2.977	2.942	19.7	21.4	78 E	58*	33
5 11	12 38.86	-44 37.5	0.670	1.575	25.2	18.0	138 E	—	71	6 15	11 15.54	+29 49.5	3.036	2.938	19.5	21.4	75 E	55*	34
5 16	12 40.36	-42 6.9	0.679	1.578	25.8	18.0	137 E	3	74	6 20	11 19.72	+28 59.3	3.093	2.935	19.2	21.5	72 E	51*	35*
5 21	12 43.17	-39 34.6	0.691	1.580	26.7	18.1	135 E	5	76	6 25	11 24.21	+28 8.4	3.148	2.931	18.8	21.5	68 E	48*	35*
5 26	12 47.17	-37 4.5	0.708	1.583	27.8	18.2	133 E	8	79	12 23	11 54.38	-22 24.9	0.528	1.058	67.3	20.0	83 W	23	73*
5 31	12 52.22	-34 39.8	0.728	1.586	29.1	18.3	131 E	10	81	12 28	12 18.93	-25 34.1	0.532	1.046	68.4	20.0	81 W	19	74*
6 5	12 58.17	-32 22.9	0.752	1.590	30.4	18.4	128 E	13*	84	1 2	12 43.61	-28 21.1	0.539	1.036	69.2	20.0	80 W	17	73*
6 10	13 4.89	-30 15.4	0.779	1.593	31.6	18.5	125 E	14*	86	1 7	13 8.26	-30 44.3	0.548	1.029	69.7	20.1	79 W	14	73*
6 15	13 12.25	-28 18.3	0.809	1.596	32.9	18.6	122 E	16*	88	1 12	13 32.71	-32 43.4	0.558	1.025	69.8	20.1	78 W	12	72*
6 20	13 20.17	-26 32.0	0.843	1.599	34.0	18.8	118 E	17*	89	1 17	13 56.77	-34 19.2	0.570	1.024	69.6	20.2	77 W	11	71*
6 25	13 28.58	-24 56.8	0.879	1.603	35.0	18.9	115 E	18*	89	1 22	14 20.25	-35 32.8	0.582	1.027	69.2	20.2	77 W	9	71*
6 30	13 37.39	-23 32.3	0.917	1.606	35.9	19.0	112 E	19*	88	2 1	14 42.96	-36 25.9	0.594	1.032	68.5	20.2	77 W	9	71*
7 10	13 55.99	-21 13.1	0.999	1.613	37.2	19.2	106 E	20*	85	2 15	15 4.73	-37 0.3	0.605	1.041	67.6	20.3	78 W	8	71*
7 20	14 15.59	-19 28.3	1.088	1.620	38.1	19.5	101 E	21*	83	2 6	15 25.43	-37 18.0	0.616	1.053	66.6	20.3	78 W	8	71*
7 30	14 35.99	-18 11.5	1.181	1.627	38.4	19.7	95 E	21*	82										
8 9	14 57.01	-17 16.0	1.277	1.634	38.3	19.8	90 E	22*	81*										
8 19	15 18.54	-16 36.1	1.375	1.641	37.9	20.0	85 E	22*	77*										
8 29	15 40.56	-16 6.8	1.474	1.648	37.2	20.1	81 E	23*	73*										
9 8	16 2.98	-15 43.5	1.572	1.655	36.3	20.3	76 E	23*	69*										
9 18	16 25.78	-15 22.5	1.669	1.661	35.1	20.4	72 E	24*	64*										
9 28	16 48.95	-15 0.8	1.763	1.668	33.8	20.5	68 E	25*	60*										
10 8	17 12.42	-14 35.5	1.855	1.674	32.4	20.5	64 E	25*	55*										
10 18	17 36.17	-14 4.5	1.943	1.680	30.8	20.6	60 E	26*	50*										
10 28	18 0.15	-13 25.9	2.028	1.685	29.2	20.6	56 E	26*	45*										
11 7	18 24.31	-12 38.2	2.108	1.690	27.5	20.7	52 E	27*	40*										
11 17	18 48.51	-11 40.4	2.183	1.695	25.8	20.7	48 E	27*	34*										
11 27	19 12.95	-10 31.7	2.253	1.699	24.1	20.7	45 E	28*	29*										
12 7	19 37.31	-9 11.8	2.318	1.703	22.3	20.8	41 E	27*	23*										
12 17	20 1.66	-7 40.6	2.378	1.707	20.6	20.8	38 E	27*	18*										
12 27	20 25.95	-5 58.5	2.431	1.710	18.9	20.8	34 E	26*	12*										
1 6	20 50.16	-4 6.0	2.480	1.712	17.2	20.7	31 E	24*	8*										
1 16	21 14.28	-2 4.0																	

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
141078 2001 XQ₃₀										101429 1998 VF₃₁									
<i>(continuation)</i>										<i>(continuation)</i>									
2 11	15 44.97	-37 21.1	0.625	1.067	65.4	20.3	79 W	8	72*	8 9	15 43.85	+17 45.5	1.153	1.555	40.7	20.1	92 E	58*	46
2 16	16 3.26	-37 11.6	0.633	1.084	64.1	20.4	81 W	8	73*	8 14	15 51.88	+17 0.5	1.194	1.562	40.4	20.1	90 E	57*	47
2 21	16 20.21	-36 51.2	0.640	1.103	62.6	20.4	82 W	8	74*	8 19	16 0.30	+16 13.4	1.234	1.569	40.2	20.2	88 E	56*	48
2 26	16 35.76	-36 21.3	0.644	1.125	61.1	20.4	84 W	9*	75*	8 24	16 9.09	+15 24.8	1.274	1.575	39.8	20.3	86 E	55*	49*
3 2	16 49.85	-35 43.3	0.647	1.148	59.5	20.4	86 W	9*	77*	8 29	16 18.24	+14 35.4	1.313	1.581	39.5	20.4	85 E	55*	49*
3 12	17 13.57	-34 7.8	0.648	1.199	55.9	20.4	91 W	11*	81*	9 3	16 27.71	+13 45.6	1.352	1.587	39.1	20.4	83 E	54*	49*
3 22	17 31.16	-32 12.4	0.642	1.255	51.9	20.3	98 W	13*	84	9 8	16 37.49	+12 55.7	1.390	1.594	38.7	20.5	82 E	53*	50*
4 1	17 42.23	-30 1.6	0.631	1.315	47.2	20.3	105 W	15	86	9 18	16 57.96	+11 17.3	1.464	1.605	37.9	20.6	79 E	52*	49*
4 11	17 46.56	-27 38.1	0.618	1.376	41.6	20.2	114 W	17	88	9 28	17 19.57	+9 43.2	1.537	1.616	37.0	20.7	76 E	50*	48*
4 21	17 44.06	-25 3.1	0.607	1.439	35.0	20.0	125 W	20	89	10 8	17 42.18	+8 16.3	1.608	1.626	36.0	20.8	73 E	49*	46*
4 26	17 40.31	-23 41.8	0.603	1.471	31.4	20.0	130 W	21	88	10 18	18 5.69	+6 58.7	1.678	1.636	35.0	20.8	70 E	48*	44*
5 1	17 35.06	-22 18.5	0.602	1.503	27.4	19.9	137 W	23	86	10 28	18 30.01	+5 52.4	1.748	1.644	33.9	20.9	67 E	47*	41*
5 6	17 28.51	-20 54.0	0.604	1.535	23.3	19.8	143 W	24	85	11 7	18 54.97	+4 59.2	1.818	1.652	32.7	21.0	64 E	46*	37*
5 11	17 20.92	-19 29.5	0.610	1.566	19.1	19.8	150 W	26	83	11 17	19 20.45	+4 20.1	1.888	1.658	31.5	21.0	61 E	45*	34*
5 16	17 12.61	-18 6.5	0.620	1.598	14.8	19.7	156 W	27	82	11 27	19 46.33	+3 55.8	1.958	1.664	30.3	21.1	58 E	44*	29*
5 21	17 3.92	-16 46.7	0.635	1.629	10.7	19.6	163 W	28	81	12 7	20 12.43	+3 46.4	2.028	1.669	28.9	21.1	55 E	43*	25*
5 26	16 55.22	-15 31.9	0.655	1.660	7.1	19.6	168 W	29	80	12 17	20 38.67	+3 51.5	2.097	1.672	27.4	21.1	52 E	41*	21*
5 31	16 46.87	-14 23.9	0.681	1.691	4.9	19.6	172 W	31	78	12 27	21 1.92	+4 10.3	2.165	1.675	25.9	21.2	48 E	40*	17*
6 5	16 39.18	-13 24.1	0.713	1.721	5.7	19.8	170 E	32	77	1 6	21 31.09	+4 41.5	2.232	1.677	24.2	21.2	44 E	37*	13*
6 10	16 32.34	-12 33.1	0.750	1.751	8.2	20.1	166 E	32	77	1 16	21 57.15	+5 23.5	2.296	1.677	22.5	21.2	41 E	34*	10*
6 20	16 21.72	-11 18.4	0.839	1.810	13.9	20.6	155 E	34	75	444657 2007 CY₁₂									
6 30	16 15.48	-10 37.8	0.947	1.868	18.6	21.1	144 E	34	75	12 23	11 54.85	-5 27.1	1.307	1.630	37.1	20.8	90 W	40	63*
7 10	16 13.39	-10 24.8	1.070	1.924	22.2	21.5	134 E	35	74	1 2	12 9.37	-7 28.7	1.245	1.660	36.1	20.7	96 W	38	69*
7 20	16 14.86	-10 32.3	1.206	1.978	24.7	21.9	126 E	34	75	1 12	12 21.25	-9 13.0	1.182	1.691	34.6	20.6	102 W	36	73*
12 23	11 54.45	-38 32.4	1.222	1.388	43.7	20.0	77 W	6	70*	1 22	12 30.06	-10 36.8	1.121	1.725	32.5	20.5	110 W	34	75
12 28	12 8.17	-40 18.1	1.198	1.385	44.0	20.0	78 W	5	71*	2 1	12 35.29	-11 36.5	1.063	1.759	29.5	20.3	118 W	33	76
1 2	12 22.03	-41 57.0	1.172	1.382	44.4	19.9	79 W	3	71*	2 11	12 36.59	-12 8.0	1.011	1.795	25.7	20.2	128 W	33	76
1 7	12 36.02	-43 28.6	1.146	1.379	44.7	19.9	80 W	2	70*	2 21	12 33.82	-12 8.1	0.971	1.831	21.0	20.0	138 W	33	76
1 12	12 50.13	-44 52.5	1.118	1.377	45.0	19.9	82 W	—	70*	3 2	12 27.29	-11 34.9	0.945	1.869	15.5	19.8	150 W	33	76
1 17	13 4.32	-46 8.2	1.090	1.375	45.2	19.8	83 W	—	69*	3 7	12 22.93	-11 6.4	0.939	1.888	12.5	19.7	156 W	34	75
1 22	13 18.54	-47 15.4	1.060	1.373	45.5	19.7	84 W	—	69*	3 12	12 18.06	-10 31.2	0.938	1.906	9.5	19.6	162 W	34	75
1 27	13 32.73	-48 13.3	1.029	1.372	45.7	19.7	86 W	—	68*	3 17	12 12.89	-9 50.3	0.943	1.925	6.6	19.5	167 W	35	74
2 1	13 46.79	-49 1.5	0.997	1.372	45.9	19.6	88 W	—	67	3 22	12 7.65	-9 5.2	0.953	1.944	4.3	19.4	172 W	36	73
2 6	14 0.65	-49 39.3	0.963	1.371	46.0	19.6	89 W	—	66	3 27	12 2.56	-8 17.7	0.970	1.963	4.0	19.5	172 E	37	72
2 11	14 14.20	-50 6.4	0.928	1.371	46.0	19.5	91 W	—	66	4 1	11 57.84	-7 29.7	0.993	1.983	5.7	19.6	169 E	38	71
2 16	14 27.31	-50 22.1	0.892	1.372	45.9	19.4	94 W	—	66	4 6	11 53.66	-6 43.0	1.022	2.002	8.2	19.8	163 E	38	71
2 21	14 39.83	-50 25.7	0.855	1.373	45.8	19.3	96 W	—	66	4 11	11 50.15	-5 59.0	1.057	2.021	10.7	20.0	158 E	39	70
2 26	14 51.60	-50 16.1	0.816	1.374	45.4	19.2	99 W	—	66	4 16	11 47.38	-5 18.8	1.096	2.039	13.2	20.2	152 E	40	69
3 2	15 2.44	-49 52.2	0.777	1.376	44.9	19.1	101 W	—	66	4 21	11 45.41	-4 43.4	1.141	2.058	15.4	20.4	147 E	40	69
3 7	15 12.21	-49 12.7	0.738	1.378	44.2	18.9	105 W	—	67	5 1	11 43.92	-3 48.9	1.245	2.096	19.2	20.8	137 E	41	68
3 12	15 20.75	-48 15.7	0.698	1.380	43.2	18.8	108 W	—	68	5 11	11 45.52	-3 17.2	1.363	2.133	22.1	21.1	127 E	42	67
3 17	15 27.90	-46 59.2	0.658	1.383	41.9	18.6	112 W	—	69	5 21	11 49.80	-3 6.9	1.494	2.170	24.2	21.4	119 E	42*	67
3 22	15 33.51	-45 20.3	0.619	1.386	40.2	18.5	116 W	—	71	5 31	11 56.36	-3 15.6	1.633	2.206	25.5	21.7	111 E	40*	67
3 27	15 37.44	-43 15.4	0.581	1.389	38.0	18.3	121 W	2	73	7723 Luger									
4 1	15 39.63	-40 40.7	0.545	1.393	35.3	18.1	126 W	4	75	12 23	11 55.26	+5 36.4	2.419	2.672	21.5	19.0	94 W	51	54*
4 6	15 40.10	-37 32.1	0.512	1.397	32.0	17.8	132 W	7	78	1 2	12 0.61	+5 31.3	2.303	2.696	20.8	18.9	103 W	51	58*
4 11	15 38.90	-33 46.2	0.482	1.402	28.0	17.6	139 W	11	82	1 12	12 3.76	+5 42.4	2.191	2.720	19.6	18.8	112 W	51	58
4 16	15 36.14	-29 21.4	0.457	1.406	23.4	17.3	146 W	16	87	1 22	12 4.49	+6 10.7	2.086	2.742	17.6	18.6	122 W	51	58
4 21	15 32.05	-24 19.3	0.437	1.411	18.2	17.1	154 W	21	88	2 1	12 2.60	+6 56.0	1.995	2.764	15.1	18.4	133 W	52	57
4 23	15 30.10	-22 9.5	0.432	1.413	16.0	17.0	157 W	23	86	2 11	11 58.11	+7 56.5	1.922	2.784	11.9	18.3	144 W	53	56
4 25	15 28.01	-19 55.5	0.427	1.415	13.8	16.9	160 W	25	84	2 21	11 51.27	+9 7.9	1.871	2.804	8.2	18.1	156 W	54	55
4 27	15 25.80	-17 38.2	0.424	1.418	11.8	16.8	163 W	27	82	2 26	11 47.12	+9 45.8	1.856	2.813	6.3	18.0	162 W	55	54
4 29	15 23.50	-15 18.7	0.421	1.420	9.8	16.7	166 W	30	79	3 2	11 42.62	+10 24.0	1.847	2.822	4.5	17.9	167 W	55	54
5 1	15 21.14	-12 58.1	0.421	1.422	8.3	16.7	168 W	32	77	3 7	11 37.89	+11 1.4	1.846	2.831	3.1	17.8	171 W	56	53
5 3	15 18.74	-10 37.6	0.421	1.424	7.4	16.6	170 W	34	75	3 12	11 33.04	+11 37.1	1.853	2.840	2.9	17.8	172 W	57	52
5 5	15 16.33	-8 18.3	0.423	1.426	7.3	16.6	170 W	37	72	3 17	11 28.21	+12 10.2	1.867	2.848	4.1	17.9	168 E	57	52
5 7	15 13.93	-6 1.4	0.426	1.429	8.2	16.7	168 W	39	70	3 22	11 23.53	+12 40.0	1.888	2.856	5.8	18.0	163 E	58	51
5 9	15 11.56	-3 47.9	0.430	1.431	9.6	16.8	166 W	41	68	4 1	11 15.05	+13 27.3	1.952	2.872	9.4	18.3	152 E	58	51
5 11	15 9.24	-1 38.8	0.436	1.434	11.4	16.9	164 E	43	66	4 11	11 8.39	+13 56.3	2.040	2.887	12.7	18.5	141 E	59	50
5 13	15 7.00	+0 25.2	0.442	1.436	13.3	17.0	161 E	45	64	4 21	11 3.96	+14 6.8	2.149	2.900	15.4	18.7	130 E	59	50
5 15	15 4.84	+2 23.2	0.450	1.438	15.3	17.1	158 E	47	62	5 1	11 1.93	+14 0.2	2.274	2.913	17.4	18.9	120 E	59	50
5 17	15 2.79	+4 14.9	0.459	1.441	17.2	17.2	155 E	49	60	5 11	11 2.23	+13 38.7	2.410						

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45° - 26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45° - 26°		
7723 Luger (continuation)									275533 1998 MR₁₇ (continuation)										
10 8	13 28.89	-4 25.3	3.964	2.980	2.9	19.6	9 E	1*	1*	8 19	15 7.44	-19 50.5	1.106	1.415	45.3	18.4	84 E	18*	77*
10 18	13 42.65	-5 47.1	3.968	2.976	1.6	19.5	5 E	—	—	8 29	15 41.09	-19 22.6	1.161	1.424	44.6	18.5	82 E	20*	75*
10 28	13 56.58	-7 6.2	3.955	2.970	2.3	19.5	7 W	1*	—	9 8	16 14.87	-18 46.8	1.223	1.438	43.6	18.6	80 E	22*	73*
11 7	14 10.65	-8 21.9	3.925	2.964	4.1	19.6	12 W	6*	—	9 18	16 48.39	-18 1.7	1.294	1.460	42.3	18.7	78 E	23*	70*
11 17	14 24.81	-9 33.7	3.879	2.957	6.0	19.7	18 W	12*	4*	9 28	17 21.34	-17 6.7	1.373	1.487	40.8	18.9	76 E	25*	68*
11 27	14 38.99	-10 40.8	3.817	2.948	8.0	19.7	25 W	16*	9*	10 8	17 53.43	-16 1.4	1.461	1.520	39.1	19.0	74 E	27*	65*
12 7	14 53.14	-11 42.8	3.739	2.939	9.9	19.7	31 W	20*	15*	10 18	18 24.52	-14 46.3	1.556	1.558	37.3	19.1	71 E	29*	61*
12 17	15 7.17	-12 39.1	3.647	2.929	11.8	19.8	38 W	24*	22*	10 28	18 54.51	-13 22.1	1.659	1.599	35.4	19.3	69 E	30*	57*
12 27	15 20.98	-13 29.3	3.541	2.918	13.6	19.8	44 W	26*	29*	11 7	19 23.34	-11 49.6	1.769	1.645	33.5	19.4	66 E	32*	53*
1 6	15 34.47	-14 12.9	3.422	2.905	15.3	19.7	51 W	28*	37*	11 17	19 51.02	-10 9.6	1.885	1.693	31.5	19.6	63 E	33*	48*
1 16	15 47.50	-14 49.9	3.291	2.892	16.8	19.7	58 W	28*	45*	11 27	20 17.59	-8 23.2	2.005	1.744	29.5	19.7	60 E	35*	42*
120966 1998 VT₂₉									210669 2000 QK₁₁₇										
12 23	11 57.60	-1 57.8	1.604	1.887	31.4	19.8	90 W	43	60*	12 23	11 58.74	+2 23.8	1.685	1.978	29.8	20.0	92 W	47	56*
1 2	12 8.14	-3 31.7	1.525	1.919	30.5	19.7	97 W	41	66*	1 2	12 10.04	+3 7.8	1.603	2.017	28.7	19.9	100 W	48	59*
1 12	12 16.06	-4 50.3	1.446	1.952	29.1	19.6	105 W	40	69*	1 12	12 18.86	+4 19.5	1.524	2.056	27.0	19.8	108 W	49	60*
1 22	12 20.97	-5 51.3	1.371	1.986	26.9	19.5	114 W	39	70	1 22	12 24.85	+6 0.7	1.450	2.095	24.6	19.7	118 W	51	58*
2 1	12 22.50	-6 31.8	1.302	2.020	24.0	19.3	123 W	38	71	2 1	12 27.65	+8 11.8	1.387	2.135	21.5	19.5	128 W	53	56
2 11	12 20.45	-6 49.3	1.243	2.054	20.3	19.1	134 W	38	71	2 6	12 27.79	+9 27.5	1.361	2.155	19.6	19.4	133 W	54	55
2 21	12 14.92	-6 42.6	1.199	2.088	15.7	18.9	145 W	38	71	2 11	12 27.08	+10 48.8	1.339	2.174	17.7	19.3	138 W	56	53
3 2	12 6.43	-6 12.3	1.174	2.122	10.5	18.7	157 W	39	70	2 16	12 25.54	+12 14.5	1.322	2.194	15.6	19.3	143 W	57	52
3 7	12 1.42	-5 49.5	1.170	2.139	7.7	18.6	163 W	39	70	2 21	12 23.20	+13 43.0	1.310	2.214	13.5	19.2	148 W	59	50
3 12	11 56.12	-5 22.8	1.173	2.157	5.1	18.5	169 W	40	69	2 26	12 20.15	+15 12.2	1.305	2.233	11.5	19.1	153 W	60	49
3 17	11 50.73	-4 53.3	1.182	2.174	2.9	18.4	174 W	40	69	3 2	12 16.47	+16 40.2	1.306	2.253	9.8	19.1	157 W	62	47
3 22	11 45.42	-4 22.0	1.197	2.190	2.9	18.5	174 E	41	68	3 7	12 12.33	+18 4.6	1.313	2.272	8.5	19.1	160 W	63	46
3 27	11 40.40	-3 50.3	1.219	2.207	4.9	18.7	169 E	41	68	3 12	12 7.85	+19 23.5	1.328	2.292	8.0	19.1	161 W	64	45
4 1	11 35.83	-3 19.4	1.248	2.224	7.4	18.9	163 E	42	67	3 17	12 3.22	+20 35.1	1.349	2.311	8.3	19.1	160 W	66	43
4 6	11 31.84	-2 50.4	1.283	2.241	9.8	19.0	158 E	42	67	3 22	11 58.60	+21 38.2	1.377	2.330	9.3	19.3	158 E	67	42
4 11	11 28.51	-2 24.3	1.323	2.257	12.0	19.2	152 E	43	66	3 27	11 54.16	+22 31.6	1.412	2.349	10.8	19.4	154 E	68	41
4 21	11 24.05	-1 42.6	1.420	2.290	16.0	19.5	141 E	43	66	4 1	11 50.05	+23 15.0	1.452	2.368	12.4	19.5	149 E	68	41
5 1	11 22.61	-1 17.6	1.534	2.323	19.1	19.8	131 E	44	65	4 6	11 46.40	+23 48.4	1.498	2.386	14.0	19.7	145 E	69	40
5 11	11 24.03	-1 9.8	1.663	2.354	21.4	20.1	122 E	44	65	4 11	11 43.31	+24 12.1	1.549	2.405	15.5	19.8	140 E	69	40
5 21	11 27.93	-1 18.1	1.801	2.386	23.0	20.4	113 E	43*	65	4 16	11 40.83	+24 26.8	1.605	2.423	16.9	19.9	135 E	69	40
5 31	11 33.95	-1 41.1	1.948	2.416	23.9	20.6	105 E	40*	66	4 21	11 39.01	+24 33.0	1.665	2.442	18.2	20.1	131 E	70	39
6 10	11 41.72	-2 16.6	2.099	2.446	24.3	20.8	97 E	36*	66	4 26	11 37.87	+24 31.6	1.729	2.460	19.3	20.2	126 E	70	39
6 20	11 50.92	-3 2.8	2.252	2.475	24.2	21.0	90 E	32*	67	5 1	11 37.40	+24 23.5	1.795	2.477	20.3	20.3	122 E	69	40
6 30	12 1.30	-3 57.9	2.406	2.503	23.8	21.1	83 E	27*	68*	5 6	11 37.58	+24 9.4	1.865	2.495	21.0	20.5	117 E	69	40
7 10	12 12.64	-5 0.3	2.558	2.531	23.0	21.3	77 E	22*	66*	5 11	11 38.38	+23 50.1	1.937	2.513	21.7	20.6	113 E	69	40
7 20	12 24.76	-6 8.6	2.707	2.558	22.0	21.4	71 E	19*	63*	5 16	11 39.76	+23 26.3	2.010	2.530	22.2	20.7	109 E	68	41
7 30	12 37.56	-7 21.5	2.852	2.583	20.8	21.5	65 E	15*	58*	5 21	11 41.67	+22 58.5	2.086	2.547	22.5	20.8	105 E	68*	41
275533 1998 MR₁₇									306715 2000 WY₅₀										
12 23	11 58.06	-15 28.4	2.332	2.449	23.6	20.6	85 W	30	70*	12 23	11 58.84	-33 5.7	1.492	1.610	36.7	17.8	78 W	12	72*
1 2	12 7.74	-17 50.7	2.155	2.394	24.2	20.4	92 W	27	78*	12 28	12 11.56	-35 2.1	1.458	1.602	37.1	17.7	79 W	10	73*
1 12	12 16.28	-20 15.6	1.981	2.339	24.6	20.2	99 W	25	84*	1 2	12 24.43	-36 53.7	1.425	1.594	37.5	17.7	81 W	8	74*
1 22	12 23.35	-22 42.3	1.812	2.283	24.5	19.9	106 W	22	87	1 7	12 37.43	-38 39.8	1.393	1.588	37.8	17.6	82 W	6	74*
2 1	12 28.54	-25 9.2	1.651	2.227	24.1	19.7	113 W	20	89	1 12	12 50.52	-40 19.7	1.362	1.583	38.1	17.6	83 W	5	74*
2 11	12 31.40	-27 33.4	1.500	2.171	23.1	19.4	120 W	17	88	1 17	13 3.68	-41 52.8	1.331	1.580	38.3	17.5	85 W	3	73*
2 16	12 31.81	-28 43.4	1.429	2.142	22.5	19.2	124 W	16	87	1 22	13 16.84	-43 18.6	1.300	1.578	38.5	17.5	86 W	2	72*
2 21	12 31.45	-29 50.9	1.361	2.114	21.8	19.0	128 W	15	86	1 27	13 29.92	-44 36.4	1.269	1.576	38.6	17.4	88 W	—	71*
2 26	12 30.26	-30 55.0	1.296	2.086	20.9	18.9	131 W	14	85	2 1	13 42.84	-45 45.7	1.239	1.577	38.7	17.4	90 W	—	70
3 2	12 28.21	-31 54.6	1.236	2.057	20.0	18.7	135 W	13	84	2 6	13 55.50	-46 46.1	1.208	1.578	38.6	17.3	91 W	—	69
3 7	12 25.30	-32 48.4	1.180	2.029	19.1	18.6	138 W	12	83	2 11	14 7.79	-47 37.2	1.177	1.581	38.5	17.3	93 W	—	68
3 12	12 21.53	-33 35.3	1.128	2.000	18.2	18.4	141 W	11	82	2 16	14 19.58	-48 18.8	1.146	1.585	38.3	17.2	96 W	—	68
3 17	12 16.97	-34 13.8	1.080	1.972	17.4	18.3	144 W	11	82	2 21	14 30.73	-48 50.5	1.115	1.590	38.0	17.2	98 W	—	67
3 22	12 11.70	-34 42.4	1.037	1.944	16.7	18.1	146 W	10	81	2 26	14 41.08	-49 12.1	1.084	1.597	37.5	17.1	101 W	—	67
3 27	12 5.91	-34 59.8	0.999	1.916	16.3	18.0	147 E	10	81	3 2	14 50.47	-49 23.0	1.053	1.604	36.9	17.0	103 W	—	67
4 1	11 59.80	-35 5.2	0.965	1.888	16.3	17.9	148 E	10	81	3 7	14 58.79	-49 22.9	1.022	1.613	36.2	17.0	106 W	—	67
4 6	11 53.65	-34 58.3	0.937	1.861	16.8	17.8	148 E	10	81	3 12	15 5.89	-49 11.5	0.991	1.623	35.2	16.9	110 W	—	67
4 11	11 47.72	-34 39.2	0.913	1.833	17.6	17.7	146 E	10	81	3 17	15 11.68	-48 48.1	0.961	1.634	34.0	16.8	113 W	—	67
4 16	11 42.28	-34 8.8	0.893	1.806	18.9	17.7	144 E	11	82	3 22	15 16.04	-48 11.9	0.932	1.646	32.6	16.7	117 W	—	68
4 21	11 37.60	-33 28.1	0.878	1.780	20.4	17.7	142 E	12	83	3 27	15 18.94	-47 22.0	0.904	1.660	30.9	16.6	121 W	—	69
4 26	11 33.91	-32 39.1	0.867	1.753	22.2	17.7	139 E	12	83	4 1	15 20.39	-46 17.4	0.878	1.674	28.9	16.5	126 W	—	70
5 1	11 31.38	-31 43.8	0.859	1.728	24.2	17.7	135 E	13	84	4 6	15 20.46	-44 57.2	0.854	1.689	26.6	16.4	131 W	—	71
5 6	11 30.12	-30 44.6	0.854	1.702	26.2	17.7													

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°-26°				
154029 2002 CY₄₆									60924 2000 JF₄₄												
<i>(continuation)</i>									<i>(continuation)</i>												
5	31	9 41.64	+ 5 8.4	2.060	2.070	28.4	20.8	76 E	33*	58*	4	1	11 36.80	+ 4 43.3	1.347	2.315	8.0	19.0	161 E	50	59
6	10	9 48.54	+ 3 5.6	2.140	2.018	28.1	20.8	69 E	25*	57*	4	6	11 31.96	+ 5 6.5	1.353	2.300	10.6	19.1	155 E	50	59
6	20	9 57.17	+ 0 56.4	2.208	1.963	27.4	20.8	63 E	17*	54*	4	11	11 27.61	+ 5 26.1	1.366	2.285	13.0	19.2	149 E	50	59
6	30	10 7.33	- 1 20.5	2.263	1.907	26.5	20.8	57 E	11*	50*	4	21	11 20.81	+ 5 51.8	1.407	2.253	17.5	19.4	138 E	51	58
7	10	10 18.84	- 3 46.2	2.305	1.848	25.4	20.7	51 E	5*	45*	5	1	11 17.04	+ 5 58.0	1.465	2.222	21.2	19.6	127 E	51	58
7	20	10 31.63	- 6 21.7	2.331	1.788	24.3	20.6	46 E	—	40*	5	11	11 16.47	+ 5 44.4	1.535	2.190	24.2	19.8	117 E	51	58
7	30	10 45.70	- 9 8.3	2.343	1.727	23.2	20.5	42 E	—	35*	5	21	11 18.98	+ 5 12.4	1.612	2.157	26.4	19.9	108 E	49*	59
8	9	11 1.10	- 12 6.8	2.339	1.664	22.1	20.4	38 E	—	30*	5	31	11 24.31	+ 4 23.6	1.694	2.125	28.0	20.0	100 E	45*	60
8	19	11 17.98	- 15 18.3	2.320	1.600	21.3	20.3	35 E	—	25*	6	10	11 32.13	+ 3 19.9	1.777	2.092	29.0	20.1	93 E	40*	61
8	29	11 36.60	- 18 43.4	2.288	1.535	20.7	20.1	32 E	—	21*	6	20	11 42.10	+ 2 3.1	1.859	2.059	29.5	20.2	86 E	35*	62
9	8	11 57.33	- 22 22.2	2.243	1.470	20.5	20.0	31 E	—	17*	6	30	11 53.95	+ 0 34.8	1.939	2.027	29.6	20.3	80 E	25*	63*
9	18	12 20.73	- 26 13.9	2.188	1.405	20.7	19.9	30 E	—	14*	7	10	12 7.45	- 1 3.5	2.015	1.994	29.4	20.3	74 E	25*	62*
9	23	12 33.67	- 28 13.9	2.157	1.372	20.9	19.8	29 E	—	13*	7	20	12 22.42	- 2 50.2	2.086	1.962	28.9	20.3	69 E	21*	60*
9	28	12 47.59	- 30 15.8	2.124	1.340	21.3	19.7	29 E	—	12*	7	30	12 38.74	- 4 44.1	2.152	1.931	28.1	20.3	64 E	18*	56*
10	3	13 2.62	- 32 18.8	2.091	1.309	21.8	19.6	29 E	—	12*	8	9	12 56.31	- 6 43.4	2.212	1.900	27.2	20.3	59 E	15*	52*
10	8	13 18.94	- 34 21.8	2.056	1.278	22.3	19.6	29 E	—	12*	8	19	13 15.10	- 8 46.6	2.267	1.870	26.1	20.3	54 E	13*	48*
10	13	13 36.73	- 36 23.1	2.021	1.248	22.9	19.5	29 E	—	12*	8	29	13 35.09	- 10 51.9	2.316	1.841	24.9	20.3	50 E	11*	44*
10	18	13 56.17	- 38 20.6	1.986	1.219	23.6	19.4	29 E	—	12*	9	8	13 56.27	- 12 57.4	2.360	1.813	23.6	20.3	46 E	10*	40*
10	23	14 17.44	- 40 11.8	1.952	1.190	24.2	19.4	29 E	—	12*	9	18	14 18.67	- 15 0.9	2.399	1.786	22.2	20.2	42 E	8*	36*
10	28	14 40.68	- 41 53.2	1.920	1.163	24.9	19.3	30 E	—	13*	9	28	14 42.32	- 17 0.1	2.433	1.761	20.7	20.2	38 E	7*	32*
11	2	15 5.98	- 43 21.0	1.889	1.138	25.6	19.2	30 E	—	13*	10	8	15 7.21	- 18 52.3	2.463	1.738	19.1	20.1	35 E	6*	29*
11	7	15 33.31	- 44 30.7	1.861	1.114	26.2	19.2	30 E	—	15*	10	18	15 33.35	- 20 34.8	2.489	1.717	17.5	20.1	31 E	6*	25*
11	12	16 2.47	- 45 17.9	1.835	1.093	26.7	19.1	30 E	—	16*	10	28	16 0.72	- 22 4.8	2.512	1.698	15.9	20.0	28 E	5*	22*
11	17	16 33.07	- 45 38.3	1.814	1.073	27.2	19.1	30 E	—	18*	11	7	16 29.22	- 23 19.3	2.531	1.681	14.2	19.9	25 E	4*	18*
11	19	16 45.58	- 45 38.2	1.806	1.066	27.3	19.0	30 E	—	18*	11	17	16 58.73	- 24 15.7	2.549	1.667	12.4	19.9	21 E	3*	15*
11	21	16 58.19	- 45 33.1	1.799	1.060	27.4	19.0	30 E	—	19*	11	27	17 29.07	- 24 51.6	2.564	1.655	10.7	19.8	18 E	3*	12*
11	23	17 10.84	- 45 22.9	1.793	1.053	27.5	19.0	30 E	—	19*	12	7	17 59.99	- 25 5.1	2.578	1.646	8.9	19.7	15 E	2*	8*
11	25	17 23.48	- 45 7.5	1.788	1.048	27.6	19.0	29 E	—	19*	12	17	18 31.21	- 24 55.3	2.591	1.641	7.2	19.7	12 E	1*	5*
11	27	17 36.08	- 44 47.0	1.783	1.042	27.6	19.0	29 E	—	20*	12	27	19 2.44	- 24 21.8	2.602	1.638	5.4	19.6	9 E	—	2*
11	29	17 48.58	- 44 21.3	1.779	1.037	27.7	19.0	29 E	—	20*	1	6	19 33.40	- 23 25.3	2.613	1.638	3.6	19.5	6 E	—	—
12	1	18 0.94	- 43 50.5	1.776	1.033	27.7	19.0	29 E	—	21*	1	16	20 3.84	- 22 7.3	2.623	1.641	1.9	19.4	3 E	—	—
12	3	18 13.12	- 43 14.9	1.774	1.029	27.6	18.9	29 E	—	21*	69311 Russ										
12	5	18 25.09	- 42 34.4	1.772	1.025	27.6	18.9	29 E	—	21*	12	23	12 1.83	+ 23 33.3	2.848	3.160	17.9	21.1	99 W	69	37*
12	7	18 36.81	- 41 49.4	1.771	1.022	27.5	18.9	29 E	—	21*	1	2	12 5.37	+ 24 1.8	2.716	3.163	17.2	21.0	108 W	69	39*
12	12	19 4.90	- 39 38.5	1.773	1.017	27.2	18.9	28 E	—	22*	1	12	12 6.68	+ 24 44.3	2.592	3.165	16.0	20.8	117 W	70	39
12	17	19 31.07	- 37 4.9	1.779	1.015	26.7	18.9	28 E	—	22*	1	22	12 5.52	+ 25 38.9	2.479	3.166	14.5	20.7	127 W	71	38
12	22	19 55.25	- 34 13.1	1.789	1.017	26.1	18.9	27 E	1*	21*	2	1	12 1.69	+ 26 42.1	2.382	3.166	12.5	20.5	136 W	72	37
12	27	20 17.51	- 31 7.5	1.804	1.022	25.4	18.9	26 E	3*	20*	2	11	11 55.19	+ 27 47.9	2.307	3.165	10.3	20.4	145 W	73	36
1	1	20 38.00	- 27 52.4	1.822	1.030	24.5	18.9	26 E	6*	19*	2	16	11 51.02	+ 28 19.6	2.278	3.164	9.3	20.3	149 W	73	36
1	6	20 56.91	- 24 31.3	1.844	1.041	23.6	18.9	25 E	8*	17*	2	21	11 46.31	+ 28 49.2	2.255	3.163	8.4	20.2	152 W	74	35
1	11	21 14.46	- 21 7.0	1.869	1.055	22.7	19.0	24 E	10*	16*	2	26	11 41.14	+ 29 15.5	2.240	3.162	7.8	20.2	154 W	74	35
1	16	21 30.83	- 17 42.0	1.896	1.071	21.7	19.0	24 E	12*	14*	3	2	11 35.62	+ 29 37.6	2.232	3.160	7.5	20.2	155 W	75	34
12	23	12 0.50	- 1 50.8	3.044	3.194	17.9	21.5	90 W	43	60*	3	7	11 29.89	+ 29 54.7	2.231	3.158	7.6	20.2	155 W	75	34
1	1	12 4.04	- 2 41.1	2.895	3.196	17.7	21.4	99 W	42	65*	3	12	11 24.08	+ 30 6.2	2.237	3.156	8.2	20.2	153 E	75	34
1	12	12 5.72	- 3 22.1	2.748	3.196	17.0	21.2	108 W	42	67	3	17	11 18.31	+ 30 11.6	2.250	3.154	9.0	20.3	150 E	75	34
2	1	12 5.34	- 3 52.3	2.608	3.195	15.7	21.1	118 W	41	68	3	22	11 12.73	+ 30 10.9	2.270	3.151	10.0	20.3	147 E	75	34
2	1	12 2.73	- 4 10.5	2.481	3.193	13.9	20.9	129 W	41	68	3	27	11 7.46	+ 30 4.0	2.297	3.148	11.1	20.4	143 E	75	34
2	11	11 57.86	- 4 15.6	2.370	3.190	11.5	20.7	140 W	41	68	4	1	11 2.61	+ 29 51.0	2.329	3.145	12.2	20.5	138 E	75	34
2	21	11 50.90	- 4 7.4	2.282	3.187	8.5	20.5	152 W	41	68	4	6	10 58.27	+ 29 32.5	2.368	3.142	13.3	20.5	134 E	75	34
3	2	11 42.24	- 3 46.9	2.220	3.182	5.1	20.3	163 W	41	68	4	11	10 54.49	+ 29 8.8	2.411	3.139	14.4	20.6	129 E	74	35
3	12	11 32.56	- 3 16.5	2.187	3.176	2.1	20.1	173 W	42	67	4	16	10 51.32	+ 28 40.6	2.458	3.135	15.3	20.7	124 E	74	35
3	22	11 22.69	- 2 39.9	2.185	3.169	3.4	20.1	169 E	42	67	4	21	10 48.78	+ 28 8.3	2.509	3.131	16.2	20.8	120 E	73	36
4	1	11 13.51	- 2 2.0	2.214	3.162	6.9	20.3	158 E	43	66	4	26	10 46.88	+ 27 32.5	2.564	3.126	17.0	20.8	115 E	73	36
4	11	11 5.77	- 1 27.3	2.271	3.153	10.2	20.5	146 E	44	65	5	1	10 45.62	+ 26 53.6	2.622	3.122	17.6	20.9	111 E	72	37
4	21	10 59.98	- 0 59.7	2.351	3.143	13.0	20.7	135 E	44	65	5	6	10 44.97	+ 26 12.2	2.681	3.117	18.1	20.9	106 E	71	38
5	1	10 56.41	- 0 41.8	2.450	3.133	15.4	20.9	125 E	44	65	5	11	10 44.90	+ 25 28.6	2.743	3.112	18.5	21.0	102 E	70*	39
5	11	10 55.12	- 0 34.9	2.563	3.121	17.1	21.0	115 E	44*	65	5	16	10 45.39	+ 24 43.3	2.806	3.107	18.8	21.1	98 E	68*	39
5	21	10 55.98	- 0 39.3	2.685	3.109	18.3	21.2	105 E	42*	65	5	21	10 46.39	+ 23 56.3	2.869	3.101	19.0	21.1	94 E	64*	40
5	31	10 58.81	- 0 55.1	2.812	3.095	19.0	21.3	96 E	38*	65	5	26	10 47.89	+ 23 8.0	2.933	3.096	19.1	21.2	90 E	61*	41

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
69311 Russ										86324 1999 WA₂									
<i>(continuation)</i>										<i>(continuation)</i>									
9 13	12 29.40	+ 3 2.8	3.860	2.907	5.5	21.1	16 E	5*	9*	8 9	11 55.24	-32 16.0	2.966	2.635	19.7	21.2	61 E	—	47*
9 18	12 35.68	+ 2 5.3	3.864	2.896	4.6	21.0	13 E	3*	6*	8 14	12 3.42	-32 26.9	3.001	2.622	19.3	21.2	59 E	—	44*
9 23	12 42.03	+ 1 7.7	3.865	2.884	3.6	21.0	10 E	2*	3*	8 19	12 11.81	-32 40.3	3.034	2.609	18.8	21.2	56 E	—	41*
9 28	12 48.46	+ 0 10.1	3.862	2.872	2.7	20.9	8 E	1*	—	8 24	12 20.42	-32 56.1	3.065	2.596	18.3	21.1	54 E	—	39*
10 3	12 54.96	- 0 47.3	3.854	2.860	1.9	20.8	6 E	—	—	8 29	12 29.22	-33 14.0	3.093	2.582	17.7	21.1	51 E	—	36*
10 8	13 1.52	- 1 44.7	3.843	2.848	1.6	20.8	4 E	—	—	9 3	12 38.22	-33 33.8	3.120	2.567	17.2	21.1	49 E	—	33*
10 13	13 8.16	- 2 41.9	3.827	2.835	1.8	20.8	5 W	—	—	9 8	12 47.42	-33 55.2	3.144	2.553	16.6	21.1	46 E	—	31*
10 18	13 14.86	- 3 39.0	3.808	2.822	2.6	20.8	7 W	1*	—	9 13	12 56.82	-34 18.0	3.165	2.538	15.9	21.1	44 E	—	29*
10 23	13 21.61	- 4 35.8	3.784	2.809	3.5	20.9	10 W	4*	—	9 18	13 6.42	-34 42.1	3.185	2.522	15.3	21.1	42 E	—	26*
10 28	13 28.42	- 5 32.4	3.757	2.796	4.5	20.9	13 W	7*	—	9 23	13 16.22	-35 7.1	3.201	2.506	14.7	21.0	39 E	—	24*
11 2	13 35.29	- 6 28.7	3.725	2.782	5.5	20.9	16 W	9*	2*	9 28	13 26.23	-35 32.9	3.215	2.490	14.0	21.0	37 E	—	22*
11 7	13 42.20	- 7 24.7	3.690	2.769	6.6	20.9	19 W	12*	5*	10 3	13 36.44	-35 59.2	3.226	2.473	13.4	21.0	35 E	—	20*
11 12	13 49.15	- 8 20.4	3.651	2.755	7.6	21.0	22 W	14*	7*	10 8	13 46.86	-36 25.8	3.235	2.455	12.7	21.0	33 E	—	18*
11 17	13 56.15	- 9 15.7	3.608	2.741	8.7	21.0	25 W	16*	10*	10 13	13 57.49	-36 52.4	3.240	2.438	12.1	20.9	31 E	—	16*
11 22	14 3.19	- 10 10.6	3.561	2.726	9.7	21.0	28 W	18*	13*	10 18	14 8.34	-37 18.8	3.243	2.420	11.5	20.9	29 E	—	14*
11 27	14 10.25	- 11 5.1	3.511	2.711	10.7	21.0	31 W	20*	16*	10 23	14 19.40	-37 44.8	3.243	2.401	10.9	20.8	27 E	—	12*
12 2	14 17.34	- 11 59.2	3.458	2.697	11.8	21.0	34 W	22*	19*	10 28	14 30.67	-38 10.1	3.240	2.382	10.3	20.8	25 E	—	10*
12 7	14 24.44	- 12 52.8	3.401	2.682	12.8	21.0	37 W	23*	22*	11 2	14 42.16	-38 34.4	3.234	2.363	9.8	20.8	24 E	—	8*
12 12	14 31.57	- 13 46.0	3.341	2.666	13.8	20.9	40 W	24*	25*	11 7	14 53.87	-38 57.6	3.225	2.343	9.4	20.7	23 E	—	6*
12 17	14 38.69	- 14 38.8	3.279	2.651	14.8	20.9	43 W	25*	29*	11 12	15 5.79	-39 19.2	3.213	2.322	9.0	20.7	22 W	—	5*
12 22	14 45.81	- 15 31.1	3.213	2.635	15.7	20.9	47 W	25*	33*	11 17	15 17.92	-39 39.2	3.199	2.302	8.8	20.6	21 W	—	7*
12 27	14 52.91	- 16 23.1	3.144	2.619	16.7	20.9	50 W	26*	36*	11 22	15 30.25	-39 57.2	3.181	2.280	8.6	20.6	20 W	—	8*
1 1	14 59.99	- 17 14.6	3.074	2.603	17.6	20.8	53 W	26*	40*	11 27	15 42.78	-40 12.9	3.160	2.259	8.6	20.6	20 W	—	9*
1 6	15 7.04	- 18 5.9	3.001	2.586	18.4	20.8	56 W	25*	44*	12 2	15 55.50	-40 26.2	3.136	2.237	8.7	20.5	20 W	—	10*
1 11	15 14.04	- 18 56.9	2.925	2.570	19.3	20.8	59 W	25*	48*	12 7	16 8.40	-40 36.6	3.110	2.214	9.0	20.5	21 W	—	11*
1 16	15 20.97	- 19 47.8	2.848	2.553	20.0	20.7	63 W	25*	52*	12 17	16 34.69	-40 48.3	3.048	2.168	9.8	20.4	22 W	—	14*
12 23	12 1.83	- 6 17.1	2.172	2.347	24.8	21.4	88 W	39	63*	12 27	17 1.50	-40 46.0	2.976	2.120	11.1	20.4	24 W	—	17*
1 2	12 5.51	- 8 31.8	2.080	2.393	24.1	21.3	96 W	36	70*	1 6	17 28.70	-40 27.9	2.893	2.071	12.7	20.3	28 W	—	21*
1 12	12 6.55	- 10 38.5	1.991	2.438	22.9	21.2	105 W	34	75	1 16	17 56.10	-39 52.2	2.800	2.020	14.5	20.3	31 W	—	24*
1 22	12 4.67	- 12 34.8	1.908	2.483	21.1	21.1	114 W	32	77	159928 2005 CV₆₉									
2 1	11 59.66	- 14 17.1	1.835	2.527	18.7	21.0	125 W	31	78	12 23	12 3.32	- 8 36.3	1.300	1.580	38.4	21.1	86 W	36	64*
2 11	11 51.58	- 15 41.2	1.777	2.570	15.8	20.9	135 W	29	80	12 28	12 15.88	- 8 49.2	1.225	1.551	39.3	21.0	89 W	36	66*
2 21	11 40.83	- 16 42.5	1.741	2.613	12.5	20.7	145 W	28	81	1 2	12 29.03	- 8 55.3	1.151	1.521	40.3	20.8	91 W	36	68*
3 2	11 28.24	- 17 17.8	1.729	2.656	9.4	20.6	154 W	28	81	1 7	12 42.85	- 8 53.1	1.079	1.491	41.2	20.6	93 W	36	69*
3 12	11 15.04	- 17 26.8	1.746	2.697	7.6	20.6	159 E	28	81	1 12	12 57.49	- 8 41.1	1.008	1.461	42.2	20.5	94 W	36	70*
3 22	11 2.52	- 17 13.2	1.791	2.738	8.1	20.7	157 E	28	81	1 17	13 13.06	- 8 17.6	0.940	1.430	43.2	20.3	96 W	37	71*
4 1	10 51.84	- 16 43.6	1.865	2.777	10.3	20.9	150 E	28	81	1 22	13 29.73	- 7 40.2	0.874	1.399	44.2	20.1	98 W	37	71*
4 11	10 43.73	- 16 6.4	1.963	2.817	12.8	21.2	141 E	29	80	1 27	13 47.63	- 6 46.5	0.812	1.368	45.3	20.0	99 W	38	70*
4 21	10 38.50	- 15 28.8	2.082	2.855	15.2	21.4	132 E	30	79	2 1	14 6.95	- 5 33.8	0.754	1.338	46.6	19.8	100 W	39	69*
12 23	12 2.88	- 33 8.4	2.814	2.770	20.3	21.2	77 W	12	71*	2 6	14 27.86	- 3 59.7	0.700	1.307	47.9	19.6	100 W	41	68*
1 2	12 7.47	- 35 52.1	2.705	2.782	20.6	21.1	84 W	9	77*	2 11	14 50.51	- 2 2.0	0.652	1.276	49.5	19.4	100 W	43	66*
1 12	12 9.80	- 38 33.2	2.595	2.793	20.6	21.0	91 W	6	77	2 21	15 41.37	+ 3 6.5	0.575	1.216	53.5	19.2	99 W	48	61*
1 22	12 9.44	- 41 8.6	2.488	2.802	20.4	20.9	98 W	4	75	3 2	16 39.02	+ 9 32.6	0.528	1.158	58.6	19.0	94 W	55	54*
2 1	12 5.88	- 43 33.2	2.387	2.809	19.8	20.8	105 W	1	72	3 12	17 40.72	+ 16 11.6	0.515	1.105	64.0	19.0	88 W	60*	46*
2 11	11 58.80	- 45 40.1	2.294	2.814	19.0	20.7	112 W	—	70	3 17	18 11.73	+ 19 10.7	0.520	1.080	66.6	19.1	85 W	62*	43*
2 21	11 48.11	- 47 21.3	2.214	2.818	18.0	20.6	118 W	—	69	3 22	18 42.04	+ 21 46.3	0.532	1.056	68.8	19.2	81 W	62*	40*
3 2	11 34.25	- 48 27.5	2.149	2.820	17.0	20.5	124 W	—	68	3 27	19 11.21	+ 23 55.0	0.548	1.035	70.6	19.2	78 W	62*	37*
3 12	11 18.35	- 48 51.7	2.101	2.821	16.2	20.4	128 E	—	67	4 1	19 38.95	+ 25 36.5	0.569	1.016	72.0	19.3	75 W	61*	35*
3 17	11 10.14	- 48 46.8	2.084	2.820	15.9	20.4	129 E	—	67	4 6	20 5.11	+ 26 52.6	0.592	0.999	72.9	19.4	73 W	59*	34*
3 22	11 2.07	- 48 30.8	2.072	2.820	15.7	20.4	130 E	—	67	4 11	20 29.73	+ 27 46.4	0.616	0.985	73.4	19.5	70 W	57*	33*
3 27	10 54.35	- 48 4.0	2.066	2.819	15.6	20.4	131 E	—	68	4 16	20 52.89	+ 28 21.4	0.642	0.974	73.5	19.6	69 W	56*	32*
4 1	10 47.22	- 47 27.6	2.064	2.817	15.7	20.4	130 E	—	69	4 21	21 14.71	+ 28 40.5	0.667	0.967	73.4	19.6	67 W	54*	32*
4 6	10 40.82	- 46 42.7	2.067	2.815	15.8	20.4	130 E	—	69	4 26	21 35.33	+ 28 46.4	0.692	0.962	72.9	19.7	66 W	52*	32*
4 11	10 35.28	- 45 51.0	2.076	2.813	16.1	20.4	129 E	—	70	5 1	21 54.91	+ 28 41.4	0.715	0.961	72.2	19.7	65 W	51*	32*
4 16	10 30.67	- 44 54.0	2.089	2.810	16.6	20.4	127 E	—	71	5 6	22 13.58	+ 28 27.1	0.737	0.963	71.4	19.8	65 W	50*	33*
4 21	10 27.03	- 43 53.1	2.106	2.807	17.0	20.5	125 E	—	72	5 11	22 31.48	+ 28 5.1	0.757	0.968	70.5	19.8	65 W	48*	33*
4 26	10 24.38	- 42 49.9	2.128	2.804	17.6	20.5	123 E	—	73	5 16	22 48.68	+ 27 36.5	0.774	0.976	69.5	19.8	65 W	47*	34*
5 1	10 22.69	- 41 45.9	2.154	2.800	18.1	20.5	120 E	—	74	5 21	23 5.25	+ 27 2.3	0.789	0.988	68.4	19.9	65 W	47*	35*
5 6	10 21.93	- 40 42.5	2.183	2.795	18.7	20.6	117 E	—	75	5 31	23 36.62	+ 25 38.0	0.811	1.020	66.1	19.9	67 W	46*	37*
5 11	10 22.03	- 39 40.6	2.215	2.790	19.2	20.6	115 E	—	76	6 10	0 5.78	+ 23 53.4	0.823	1.061	63.8	20.0	70 W	45*	39*
5 16	10 22.94	- 38 41.1	2.250	2.785	19.7	20.7	112 E	—	77	6 20	0 32.71	+ 21 47.4	0.824	1.110	61.3	20.0	73 W	46*	42*
5 21	10 24.60	- 37 44.6	2.288	2.780															

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
159928 2005 CV₆₉										137924 2000 BD₁₉									
<i>(continuation)</i>										<i>(continuation)</i>									
9 23	1 51.25	-24 5.9	0.753	1.672	20.7	19.5	144 W	21	88	2 7	16 30.56	+22 36.6	0.128	0.973	92.2	16.0	80 W	66*	32*
9 28	1 44.12	-26 25.7	0.779	1.699	19.8	19.6	145 W	19	90	2 8	17 6.76	+21 46.2	0.121	0.958	100.1	16.1	73 W	62*	28*
10 3	1 36.58	-28 23.1	0.810	1.726	19.6	19.7	145 W	17	88	2 9	17 46.36	+20 15.8	0.116	0.943	108.9	16.5	65 W	56*	23*
10 8	1 28.92	-29 57.1	0.847	1.752	19.9	19.9	143 W	15	86	2 10	18 27.34	+18 4.3	0.114	0.927	118.2	17.0	56 W	49*	18*
10 13	1 21.47	-31 7.8	0.888	1.778	20.6	20.0	141 W	14	85	2 11	19 7.19	+15 20.7	0.116	0.912	127.5	17.8	47 W	41*	13*
10 18	1 14.50	-31 56.4	0.934	1.804	21.6	20.2	138 E	13	84	2 12	19 43.78	+12 22.1	0.121	0.896	136.2	18.8	39 W	33*	8*
10 23	1 8.26	-32 24.6	0.984	1.829	22.6	20.4	135 E	13	84	2 13	20 15.91	+ 9 25.5	0.129	0.880	143.9	19.9	32 W	26*	3*
10 28	1 2.90	-32 34.8	1.038	1.853	23.6	20.5	132 E	12	83	2 14	20 43.32	+ 6 42.8	0.140	0.863	150.4	21.1	26 W	19*	—
11 2	0 58.53	-32 29.6	1.095	1.877	24.6	20.7	128 E	13	84	2 15	21 6.34	+ 4 19.5	0.153	0.846	155.8	22.5	21 W	14*	—
11 7	0 55.18	-32 11.3	1.155	1.900	25.5	20.9	124 E	13	84	2 16	21 25.56	+ 2 16.2	0.167	0.829	160.1	23.9	17 W	10*	—
11 12	0 52.83	-31 42.2	1.218	1.922	26.3	21.0	121 E	13	84	2 17	21 41.63	+ 0 31.3	0.183	0.811	163.4	25.4	14 W	6*	—
11 17	0 51.47	-31 4.0	1.282	1.944	26.9	21.2	117 E	14	85	2 18	21 55.11	- 0 57.6	0.199	0.794	166.0	26.9	11 W	3*	—
11 22	0 51.05	-30 18.5	1.349	1.966	27.4	21.3	114 E	15	86										
11 27	0 51.49	-29 27.3	1.418	1.986	27.8	21.5	110 E	16	87										
276109 2002 GL₅										96315 1997 AP₁₀									
12 23	12 4.30	+ 1 44.7	2.352	2.554	22.7	21.4	90 W	47	56*	12 23	12 6.17	- 5 36.3	1.431	1.692	35.5	20.4	87 W	39	62*
1 2	12 11.68	+ 0 56.3	2.195	2.533	22.6	21.2	98 W	46	61*	1 2	12 24.63	- 8 28.8	1.251	1.614	37.5	20.0	92 W	37	68*
1 12	12 17.26	+ 0 19.3	2.041	2.512	22.0	21.0	107 W	45	64*	1 12	12 44.90	-11 44.1	1.074	1.530	39.7	19.7	96 W	33	74*
1 22	12 20.67	- 0 4.4	1.892	2.490	20.7	20.8	116 W	45	64	1 22	13 8.34	-15 32.9	0.905	1.441	42.4	19.2	99 W	29	79*
2 1	12 21.53	- 0 12.9	1.752	2.466	18.8	20.5	126 W	45	64	1 27	13 21.95	-17 44.5	0.823	1.394	44.0	19.0	101 W	27	82
2 11	12 19.54	- 0 4.6	1.626	2.442	16.0	20.3	137 W	45	64	2 1	13 37.45	-20 10.9	0.745	1.346	45.9	18.8	101 W	25	84
2 21	12 14.52	+ 0 20.9	1.518	2.416	12.4	20.0	148 W	45	64	2 6	13 55.59	-22 54.7	0.670	1.296	48.3	18.5	101 W	22	87
3 2	12 6.60	+ 1 2.3	1.432	2.389	8.0	19.6	160 W	46	63	2 11	14 17.50	-25 58.6	0.600	1.244	51.2	18.3	100 W	19	90
3 7	12 1.71	+ 1 27.9	1.399	2.376	5.5	19.5	167 W	46	63	2 13	14 27.65	-27 17.9	0.574	1.223	52.7	18.2	100 W	18	89
3 12	11 56.36	+ 1 55.6	1.372	2.361	2.9	19.3	173 W	47	62	2 15	14 38.80	-28 40.3	0.548	1.202	54.2	18.1	99 W	16	87
3 17	11 50.67	+ 2 24.7	1.352	2.347	0.6	19.0	179 W	47	62	2 17	14 51.08	-30 5.5	0.524	1.181	56.0	18.0	98 W	15	86
3 22	11 44.83	+ 2 54.1	1.340	2.333	2.7	19.2	174 E	48	61	2 19	15 4.68	-31 32.6	0.501	1.159	57.9	17.9	97 W	13	84
3 27	11 39.00	+ 3 22.7	1.334	2.318	5.4	19.3	167 E	48	61	2 21	15 19.77	-33 0.6	0.479	1.137	60.0	17.8	95 W	12	83
4 1	11 33.38	+ 3 49.5	1.335	2.303	8.2	19.4	161 E	49	60	2 23	15 36.55	-34 27.8	0.459	1.115	62.4	17.8	93 W	11	82*
4 6	11 28.14	+ 4 13.5	1.343	2.287	10.8	19.5	155 E	49	60	2 25	15 55.21	-35 51.9	0.441	1.092	64.9	17.7	91 W	9	80*
4 11	11 23.42	+ 4 33.8	1.356	2.272	13.3	19.6	149 E	50	59	2 27	16 15.88	-37 9.9	0.424	1.070	67.7	17.7	89 W	8	78*
4 21	11 15.99	+ 5 1.8	1.399	2.240	17.9	19.8	137 E	50	59	2 29	16 38.65	-38 17.8	0.410	1.047	70.8	17.6	86 W	7	75*
5 1	11 11.72	+ 5 10.7	1.458	2.207	21.7	20.0	126 E	50	59	3 2	17 3.45	-39 11.4	0.398	1.024	74.0	17.6	83 W	6*	73*
5 11	11 10.76	+ 5 0.1	1.530	2.174	24.6	20.2	116 E	50	59	3 3	17 16.54	-39 31.4	0.393	1.012	75.7	17.6	82 W	5*	71*
5 21	11 12.96	+ 4 31.3	1.608	2.140	26.9	20.3	107 E	48*	59	3 4	17 30.04	-39 46.1	0.389	1.001	77.4	17.7	80 W	5*	70*
5 31	11 18.04	+ 3 45.7	1.690	2.105	28.4	20.4	99 E	44*	60	3 5	17 43.89	-39 55.0	0.386	0.989	79.2	17.7	78 W	4*	68*
6 10	11 25.65	+ 2 45.1	1.773	2.069	29.4	20.5	92 E	39*	61	3 6	17 58.00	-39 57.6	0.383	0.977	81.0	17.7	77 W	4*	67*
6 20	11 35.43	+ 1 31.3	1.853	2.033	29.9	20.6	85 E	33*	62*	3 7	18 12.29	-39 53.8	0.381	0.965	82.8	17.7	75 W	3*	65*
6 30	11 47.14	+ 0 5.7	1.930	1.996	30.0	20.6	79 E	28*	63*	3 8	18 26.68	-39 43.3	0.380	0.953	84.6	17.8	73 W	3*	64*
7 10	12 0.51	+ 1 30.3	2.002	1.959	29.7	20.7	73 E	23*	62*	3 9	18 41.07	-39 25.9	0.379	0.942	86.4	17.8	71 W	3*	62*
7 20	12 15.40	- 3 15.3	2.068	1.922	29.2	20.7	67 E	19*	59*	3 10	18 55.36	-39 1.9	0.379	0.930	88.2	17.8	69 W	2*	60*
7 30	12 31.69	- 5 8.0	2.128	1.884	28.5	20.7	62 E	16*	55*	3 11	19 9.46	-38 31.4	0.381	0.918	90.0	17.9	67 W	2*	58*
8 9	12 49.28	- 7 6.9	2.182	1.847	27.6	20.7	58 E	14*	51*	3 12	19 23.30	-37 54.8	0.382	0.906	91.7	17.9	66 W	2*	57*
8 19	13 8.18	- 9 10.5	2.228	1.810	26.5	20.6	53 E	11*	47*	3 13	19 36.79	-37 12.5	0.385	0.894	93.4	18.0	64 W	1*	55*
8 29	13 28.37	-11 17.2	2.268	1.774	25.4	20.6	49 E	10*	43*	3 14	19 49.88	-36 25.1	0.389	0.882	95.0	18.1	62 W	1*	53*
9 8	13 49.88	-13 24.9	2.301	1.738	24.1	20.5	45 E	8*	39*	3 15	20 2.53	-35 33.1	0.393	0.870	96.6	18.1	60 W	1*	52*
9 18	14 12.76	-15 31.5	2.329	1.703	22.8	20.5	41 E	7*	35*	3 16	20 14.69	-34 37.3	0.398	0.858	98.0	18.2	59 W	1*	50*
9 28	14 37.08	-17 34.4	2.350	1.669	21.4	20.4	37 E	6*	31*	3 17	20 26.35	-33 38.2	0.403	0.846	99.4	18.3	57 W	1*	49*
10 8	15 2.88	-19 30.8	2.367	1.637	20.0	20.3	34 E	5*	28*	3 18	20 37.50	-32 36.5	0.410	0.834	100.8	18.3	55 W	1*	47*
10 18	15 30.20	-21 17.4	2.380	1.606	18.5	20.3	31 E	5*	25*	3 19	20 48.14	-31 32.7	0.417	0.822	102.0	18.4	54 W	—	46*
10 28	15 59.05	-22 50.7	2.389	1.578	17.0	20.2	28 E	4*	22*	3 20	20 58.28	-30 27.4	0.425	0.810	103.1	18.5	52 W	—	45*
11 7	16 29.36	-24 7.1	2.396	1.552	15.5	20.1	25 E	4*	19*	3 21	21 7.93	-29 21.0	0.433	0.798	104.1	18.5	51 W	—	44*
11 17	17 1.01	-25 2.9	2.400	1.529	14.0	20.0	22 E	3*	16*	3 22	21 17.11	-28 14.2	0.442	0.786	105.0	18.6	50 W	—	43*
11 27	17 33.79	-25 34.8	2.404	1.509	12.5	19.9	19 E	3*	13*	3 24	21 34.15	-26 0.1	0.463	0.762	106.5	18.7	47 W	—	40*
12 7	18 7.37	-25 40.3	2.408	1.492	11.0	19.9	17 E	2*	10*	3 26	21 49.61	-23 47.6	0.485	0.738	107.5	18.8	45 W	—	38*
12 17	18 41.43	-25 17.5	2.412	1.479	9.5	19.8	14 E	2*	7*	3 28	22 3.68	-21 38.1	0.510	0.715	108.0	18.9	43 W	1*	36*
12 27	19 15.57	-24 26.2	2.418	1.470	8.0	19.7	12 E	1*	5*	3 30	22 16.58	-19 32.6	0.536	0.692	108.1	18.9	41 W	1*	35*
1 6	19 49.40	-23 7.0	2.425	1.465	6.5	19.6	10 E	—	3*	4 1	22 28.50	-17 31.6	0.565	0.670	107.8	18.9	40 W	1*	33*
1 16	20 22.63	-21 21.9	2.434	1.464	4.9	19.6	7 E	—	1*	4 3	22 39.60	-15 35.0	0.595	0.648	106.9	18.9	38 W	1*	32*
137924 2000 BD₁₉										4 5	22 50.04	-13 42.8	0.628	0.627	105.7	18.9	37 W	2*	31*
12 23	12 5.56	+16 50.5	0.964	1.447	42.6	19.6	96 W	62	43*	4 7	22 59.96	-11 54.7	0.662	0.608	104.0	18.9	36 W	2*	30*
12 28	12 13.31	+16 44.8	0.869	1.411	43.5	19.3	99 W	62	44*	4 9	23 9.47	-10 10.2	0.697	0.589	101.9	18.8	35 W	3*	29*
1 2	12 21.52	+16 44.6	0.772	1.372	44.5	19.0	102 W	62	45*	4 11	23 18.68	- 8 29.1	0.734	0.572	99.4				

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
96315 1997 AP₁₀										108182 2001 HY₁₃									
<i>(continuation)</i>										<i>(continuation)</i>									
7 20	5 24.00	+26 53.2	2.072	1.380	25.4	20.4	36 W	23*	20*	1 6	17 38.25	-27 3.8	2.760	1.873	10.7	20.4	21 W	3*	14*
7 30	5 47.69	+27 5.6	2.100	1.473	26.2	20.6	40 W	28*	21*	1 16	18 6.29	-27 23.8	2.690	1.843	12.9	20.4	25 W	4*	18*
8 9	6 9.47	+27 5.4	2.111	1.561	27.1	20.8	45 W	33*	23*	87005 2000 JJ₅₂									
8 19	6 29.41	+26 55.5	2.104	1.642	28.0	20.9	50 W	39*	25*	12 23	12 7.36	+ 7 0.2	2.806	3.000	19.1	20.9	92 W	52	51*
8 29	6 47.49	+26 38.7	2.080	1.719	28.9	21.0	55 W	45*	27*	1 2	12 12.10	+ 6 45.7	2.666	3.006	18.8	20.8	101 W	52	56*
9 8	7 3.66	+26 17.6	2.040	1.790	29.6	21.1	61 W	51*	29*	1 12	12 14.92	+ 6 44.3	2.528	3.011	17.9	20.6	110 W	52	57
9 18	7 17.85	+25 54.5	1.986	1.857	30.1	21.1	68 W	57*	31*	1 22	12 15.56	+ 6 56.7	2.399	3.014	16.4	20.5	120 W	52	57
9 28	7 29.84	+25 31.9	1.918	1.918	30.3	21.1	75 W	62*	33*	2 1	12 13.83	+ 7 23.1	2.282	3.017	14.4	20.3	131 W	52	57
10 8	7 39.41	+25 12.0	1.840	1.976	30.1	21.1	83 W	67*	35*	2 11	12 9.66	+ 8 2.0	2.182	3.018	11.7	20.1	142 W	53	56
10 18	7 46.21	+24 57.1	1.753	2.029	29.4	21.0	91 W	70*	37*	2 21	12 3.18	+ 8 50.5	2.104	3.019	8.5	19.9	153 W	54	55
10 28	7 49.79	+24 49.5	1.661	2.077	28.1	20.9	100 W	70	39*	2 26	11 59.17	+ 9 17.1	2.074	3.019	6.8	19.8	159 W	54	55
11 7	7 49.65	+24 50.7	1.569	2.122	26.0	20.8	110 W	70	39*	3 2	11 54.76	+ 9 44.2	2.052	3.018	5.1	19.7	164 W	55	54
11 17	7 45.20	+25 1.2	1.481	2.163	23.1	20.6	121 W	70	39*	3 7	11 50.03	+10 11.2	2.037	3.018	3.6	19.6	169 W	55	54
11 27	7 36.02	+25 19.5	1.404	2.200	19.1	20.4	133 W	70	39	3 12	11 45.10	+10 37.1	2.030	3.017	2.7	19.5	172 W	56	53
12 7	7 22.08	+25 41.3	1.345	2.233	14.1	20.2	146 W	71	38	3 17	11 40.08	+11 1.3	2.030	3.015	3.2	19.6	170 E	56	53
12 12	7 13.50	+25 51.5	1.324	2.248	11.3	20.1	153 W	71	38	3 22	11 35.09	+11 23.0	2.038	3.014	4.7	19.6	166 E	56	53
12 17	7 4.06	+25 59.8	1.311	2.262	8.3	19.9	161 W	71	38	4 1	11 25.68	+11 57.0	2.076	3.010	8.1	19.8	155 E	57	52
12 22	6 54.01	+26 5.4	1.305	2.276	5.3	19.8	168 W	71	38	4 11	11 17.72	+12 15.9	2.140	3.006	11.4	20.0	144 E	57	52
12 27	6 43.63	+26 7.6	1.307	2.288	2.3	19.6	175 W	71	38	4 21	11 11.76	+12 18.8	2.226	3.000	14.3	20.2	133 E	57	52
1 1	6 33.26	+26 6.3	1.318	2.300	1.8	19.6	176 E	71	38	5 1	11 8.12	+12 6.3	2.331	2.993	16.5	20.4	122 E	57	52
1 6	6 23.19	+26 1.3	1.337	2.310	4.5	19.8	169 E	71	38	5 11	11 6.83	+11 39.8	2.447	2.985	18.2	20.6	113 E	57	52
1 11	6 13.71	+25 53.0	1.364	2.320	7.4	20.0	162 E	71	38	5 21	11 7.77	+11 1.3	2.573	2.977	19.3	20.7	104 E	54*	53
1 16	6 5.06	+25 42.3	1.399	2.329	10.2	20.2	155 E	71	38	5 31	11 10.74	+10 12.3	2.702	2.967	19.9	20.8	95 E	49*	54
12 23	12 6.75	- 9 58.4	0.583	1.099	63.0	21.0	85 W	35	65*	6 10	11 15.49	+ 9 14.5	2.832	2.956	20.1	20.9	87 E	43*	55
1 2	12 24.27	-15 44.1	0.599	1.142	59.4	21.0	89 W	29	74*	6 20	11 21.77	+ 8 9.0	2.961	2.944	19.8	21.0	79 E	37*	56*
1 12	12 37.82	-20 44.5	0.611	1.192	55.4	21.0	94 W	24	83*	6 30	11 29.38	+ 6 57.0	3.084	2.931	19.2	21.1	72 E	31*	55*
1 22	12 46.85	-25 1.1	0.619	1.249	50.9	21.0	100 W	20	89	7 10	11 38.11	+ 5 39.3	3.201	2.917	18.4	21.1	65 E	25*	53*
2 1	12 50.57	-28 32.4	0.624	1.310	46.0	21.0	107 W	16	87	7 20	11 47.81	+ 4 16.8	3.309	2.902	17.3	21.1	58 E	21*	49*
2 11	12 48.39	-31 12.9	0.627	1.375	40.6	21.0	115 W	14	85	7 30	11 58.35	+ 2 50.1	3.407	2.886	16.0	21.1	52 E	17*	44*
2 21	12 40.23	-32 53.8	0.633	1.442	34.6	20.9	124 W	12	83	8 9	12 9.60	+ 1 19.9	3.493	2.869	14.5	21.1	45 E	13*	38*
3 2	12 26.98	-33 24.2	0.645	1.509	28.4	20.9	134 W	12	83	8 19	12 21.51	+ 0 13.3	3.568	2.851	12.9	21.1	39 E	10*	32*
3 12	12 11.00	-32 39.6	0.668	1.578	22.5	20.9	143 W	12	83	8 29	12 33.99	+ 1 48.8	3.629	2.832	11.1	21.1	33 E	8*	26*
3 22	11 55.29	-30 48.9	0.707	1.646	17.8	21.0	150 E	14	85	9 8	12 47.00	+ 3 26.0	3.676	2.812	9.3	21.0	27 E	5*	21*
4 1	11 42.52	-28 14.1	0.764	1.713	15.7	21.1	152 E	17	88	9 18	13 0.50	+ 5 4.4	3.709	2.791	7.3	20.9	21 E	3*	15*
4 11	11 34.18	-25 24.0	0.841	1.780	16.4	21.5	150 E	20	89	9 28	13 14.46	+ 6 43.4	3.727	2.769	5.3	20.8	15 E	1*	9*
12 23	12 7.09	+ 5 25.1	2.729	2.129	21.1	21.4	91 W	50	53*	10 8	13 28.86	+ 8 22.3	3.729	2.746	3.2	20.7	9 E	—	3*
1 2	12 13.22	+ 4 55.0	2.379	2.722	20.9	21.3	100 W	50	57*	10 18	13 43.68	+ 10 0.6	3.717	2.722	1.1	20.5	3 E	—	—
1 12	12 17.42	+ 4 37.7	2.235	2.715	20.1	21.1	109 W	50	59*	10 28	13 58.91	+ 11 37.6	3.689	2.697	1.1	20.5	3 W	—	—
1 22	12 19.38	+ 4 34.5	2.097	2.707	18.7	20.9	118 W	50	59	11 7	14 14.52	+ 13 12.7	3.646	2.671	3.3	20.6	9 W	2*	—
2 1	12 18.79	+ 4 46.2	1.970	2.697	16.6	20.7	129 W	50	59	11 17	14 30.51	+ 14 45.3	3.588	2.644	5.5	20.6	15 W	7*	5*
2 11	12 15.49	+ 5 12.7	1.859	2.687	13.8	20.5	140 W	50	59	11 27	14 46.85	+ 16 14.7	3.516	2.617	7.7	20.7	21 W	11*	10*
2 21	12 9.45	+ 5 52.1	1.767	2.676	10.3	20.2	151 W	51	58	12 7	15 3.51	+ 17 40.3	3.431	2.588	9.8	20.7	27 W	14*	15*
3 2	12 0.98	+ 6 40.7	1.700	2.663	6.3	20.0	163 W	52	57	12 17	15 20.46	+ 19 1.7	3.332	2.558	11.9	20.7	33 W	17*	21*
3 7	11 56.04	+ 7 6.7	1.677	2.657	4.2	19.8	169 W	52	57	12 27	15 37.66	+ 20 18.3	3.222	2.528	14.0	20.7	38 W	18*	28*
3 12	11 50.79	+ 7 32.5	1.661	2.650	2.6	19.7	173 W	53	56	1 6	15 55.05	+ 21 29.8	3.101	2.496	16.0	20.6	44 W	19*	34*
3 17	11 45.34	+ 7 57.5	1.652	2.643	2.5	19.7	173 E	53	56	1 16	16 12.57	+ 22 36.0	2.971	2.464	17.9	20.6	50 W	19*	41*
3 22	11 39.86	+ 8 20.7	1.651	2.636	4.1	19.8	169 E	53	56	44619 1999 RO₄₂									
3 27	11 34.49	+ 8 41.3	1.657	2.628	6.3	19.9	163 E	54	55	12 23	12 7.82	+ 3 39.4	2.340	2.542	22.8	20.9	90 W	49	54*
4 1	11 29.39	+ 8 58.6	1.669	2.620	8.4	20.0	157 E	54	55	1 2	12 15.97	+ 3 14.4	2.192	2.530	22.6	20.7	98 W	48	59*
4 11	11 20.46	+ 9 21.5	1.714	2.604	12.5	20.2	146 E	54	55	1 12	12 22.35	+ 3 4.1	2.046	2.516	22.0	20.5	107 W	48	61
4 21	11 13.84	+ 9 27.3	1.781	2.587	16.1	20.4	134 E	54	55	1 22	12 26.62	+ 3 10.5	1.906	2.501	20.7	20.3	116 W	48	61*
5 1	11 9.93	+ 9 15.8	1.865	2.568	19.0	20.6	124 E	54	55	2 1	12 28.43	+ 3 35.5	1.776	2.486	18.7	20.1	126 W	49	60
5 11	11 8.82	+ 8 48.3	1.962	2.549	21.2	20.7	114 E	54	55	2 11	12 27.49	+ 4 19.6	1.659	2.470	16.0	19.8	136 W	49	60
5 21	11 10.34	+ 8 6.6	2.066	2.529	22.7	20.9	105 E	52	56	2 21	12 23.65	+ 5 22.0	1.560	2.452	12.5	19.6	148 W	50	59
5 31	11 14.24	+ 7 12.4	2.174	2.507	23.7	21.0	97 E	47*	57	3 2	12 17.02	+ 6 38.9	1.483	2.434	8.4	19.3	159 W	52	57
6 10	11 20.22	+ 6 7.4	2.284	2.485	24.1	21.1	89 E	41*	58	3 7	12 12.82	+ 7 20.7	1.454	2.425	6.3	19.1	164 W	52	57
6 20	11 28.00	+ 4 53.0	2.391	2.462	24.1	21.2	82 E	35*	59*	3 12	12 8.15	+ 8 3.3	1.432	2.415	4.4	19.0	169 W	53	56
6 30	11 37.32	+ 3 30.2	2.495	2.439	23.7	21.2	75 E	29*	59*	3 17	12 3.14	+ 8 45.4	1.417	2.405	3.5	18.9	172 W	54	55
7 10	11 47.98	+ 2 0.3	2.593	2.414	23.1	21.3	69 E	24*	57*	3 22	11 57.95	+ 9 25.9	1.408	2.395	4.2	18.9	170 E	54	55
7 20	11 59.79	+ 0 24.0	2.684	2.388	22.1	21.3	62 E	20*	53*	3 27	11 52.74	+ 10 3.5	1.407	2.385	6.1	19.0	165 E	55	54
7 30	12 12.65	+ 1 17.8	2.767	2.362	21.0	21.3	56 E	16*	49*	4 1	11 47.68	+ 10 36.9	1.412	2.375	8.4	19.1	160 E	56	53
8 9	12 26.43	+ 3 4.2	2.841	2.335	19.6	21.3	51 E	13*	44*										

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
44619 1999 RO₄₂										23726 1998 HG₄₈									
<i>(continuation)</i>										<i>(continuation)</i>									
9 8	13 49.86	+ 7 15.0	2.586	1.968	20.3	20.4	43 E	13*	36*	6 30	11 46.66	+ 7 49.9	2.512	2.463	23.6	20.1	76 E	34*	55*
9 18	14 9.63	+ 9 17.5	2.627	1.940	18.7	20.4	38 E	11*	32*	7 10	11 57.24	+ 6 17.5	2.613	2.442	22.9	20.1	69 E	29*	54*
9 28	14 30.40	+11 17.6	2.660	1.914	17.0	20.3	34 E	10*	28*	7 20	12 8.96	+ 4 39.4	2.708	2.419	21.9	20.1	63 E	24*	52*
10 8	14 52.17	+13 13.5	2.687	1.887	15.3	20.3	30 E	8*	23*	7 30	12 21.68	+ 2 56.5	2.795	2.396	20.8	20.2	57 E	21*	48*
10 18	15 14.98	+15 3.3	2.708	1.861	13.5	20.2	26 E	7*	19*	8 9	12 35.29	+ 1 9.8	2.873	2.373	19.5	20.1	51 E	17*	43*
10 28	15 38.83	+16 45.2	2.721	1.836	11.6	20.1	22 E	6*	15*	8 19	12 49.72	+ 0 39.9	2.941	2.348	18.0	20.1	46 E	15*	39*
11 7	16 3.72	+18 16.8	2.729	1.812	9.7	20.0	18 E	4*	11*	8 29	13 4.93	+ 2 31.8	3.000	2.323	16.3	20.1	40 E	12*	34*
11 17	16 29.62	+19 36.3	2.731	1.789	7.8	19.9	14 E	3*	7*	9 8	13 20.87	+ 4 24.9	3.048	2.297	14.6	20.0	35 E	10*	28*
11 27	16 56.47	+20 41.4	2.728	1.767	5.8	19.8	10 E	1*	3*	9 18	13 37.55	+ 6 18.3	3.086	2.270	12.7	20.0	30 E	8*	23*
12 7	17 24.18	+21 30.1	2.721	1.746	3.8	19.6	7 E	—	—	9 28	13 54.96	+ 8 11.2	3.113	2.243	10.8	19.9	25 E	6*	18*
12 17	17 52.61	+22 0.9	2.709	1.727	1.9	19.5	3 E	—	—	10 8	14 13.11	+10 2.4	3.129	2.215	8.8	19.8	20 E	5*	13*
12 27	18 21.60	+22 12.4	2.693	1.710	0.7	19.3	1 W	—	—	10 18	14 32.00	+11 50.9	3.134	2.187	6.7	19.7	15 E	3*	8*
1 6	18 50.95	+22 3.8	2.674	1.695	2.3	19.4	4 W	—	—	10 28	14 51.67	+13 35.5	3.129	2.158	4.7	19.5	10 E	1*	3*
1 16	19 20.48	+21 34.9	2.653	1.681	4.2	19.5	7 W	—	—	11 7	15 12.11	+15 14.8	3.113	2.129	2.6	19.4	6 E	—	—
1134 Kepler										159686 2002 LB₆									
12 23	12 8.33	+ 5 19.2	3.777	3.916	14.5	20.9	91 W	50	53*	12 23	12 8.82	+29 20.4	1.673	1.747	33.3	19.9	77 W	16	71*
1 2	12 10.81	+ 5 3.1	3.613	3.910	14.3	20.8	100 W	50	57*	1 2	12 13.13	+31 51.9	1.643	1.835	32.2	20.0	85 W	13	79*
1 12	12 11.71	+ 4 56.7	3.453	3.903	13.7	20.6	110 W	50	59	1 12	12 13.80	+34 6.9	1.606	1.920	30.8	20.0	93 W	11	82
1 22	12 10.86	+ 5 0.4	3.302	3.895	12.6	20.5	120 W	50	59	1 22	12 10.37	+36 0.7	1.565	2.000	28.9	19.9	101 W	9	80
2 1	12 8.17	+ 5 14.1	3.165	3.886	11.0	20.3	131 W	50	59	1 27	12 6.99	+36 47.4	1.546	2.039	27.8	19.9	105 W	8	79
2 11	12 3.64	+ 5 36.9	3.047	3.876	8.9	20.2	142 W	51	58	2 1	12 2.49	+37 25.6	1.527	2.077	26.5	19.9	110 W	8	79
2 21	11 57.42	+ 6 7.2	2.952	3.866	6.4	20.0	154 W	51	58	2 6	11 56.90	+37 54.0	1.509	2.114	25.2	19.9	114 W	7	78
3 2	11 49.82	+ 6 42.1	2.886	3.854	3.7	19.8	166 W	52	57	2 11	11 50.31	+38 11.4	1.494	2.150	23.8	19.9	119 W	7	78
3 12	11 41.34	+ 7 18.2	2.851	3.841	1.3	19.6	175 W	52	57	2 16	11 42.84	+38 16.6	1.482	2.185	22.2	19.8	123 W	7	78
3 22	11 32.60	+ 7 51.8	2.847	3.828	3.1	19.7	168 E	53	56	2 21	11 34.66	+38 8.4	1.474	2.219	20.7	19.8	127 W	7	78
4 1	11 24.24	+ 8 19.3	2.875	3.814	5.9	19.9	157 E	53	56	2 26	11 26.01	+37 46.4	1.470	2.252	19.2	19.8	132 W	7	78
4 11	11 16.88	+ 8 38.1	2.932	3.798	8.6	20.0	145 E	54	55	3 2	11 17.16	+37 10.3	1.472	2.285	17.8	19.8	135 W	8	79
4 21	11 10.95	+ 8 46.8	3.013	3.782	11.0	20.2	134 E	54	55	3 7	11 8.38	+36 20.7	1.479	2.316	16.5	19.8	138 E	9	80
5 1	11 6.75	+ 8 44.8	3.114	3.765	12.9	20.3	124 E	54	55	3 12	10 59.94	+35 19.1	1.492	2.347	15.5	19.8	141 E	10	81
5 11	11 4.39	+ 8 32.1	3.230	3.747	14.3	20.4	113 E	54	55	3 17	10 52.06	+34 6.9	1.511	2.377	14.9	19.8	142 E	11	82
5 21	11 3.84	+ 8 9.7	3.355	3.728	15.3	20.5	104 E	51	56	3 22	10 44.93	+32 46.5	1.537	2.407	14.5	19.9	143 E	12	83
5 31	11 5.00	+ 7 38.2	3.486	3.708	15.8	20.6	95 E	46	56	3 27	10 38.68	+31 20.1	1.570	2.435	14.6	19.9	142 E	14	85
6 10	11 7.73	+ 6 58.6	3.617	3.687	15.9	20.7	86 E	40	57	4 1	10 33.40	+29 50.3	1.609	2.463	15.0	20.0	140 E	15	86
6 20	11 11.85	+ 6 11.7	3.746	3.666	15.7	20.7	78 E	34	57	4 6	10 29.12	+28 19.4	1.654	2.490	15.6	20.1	138 E	17	88
6 30	11 17.19	+ 5 18.4	3.869	3.643	15.2	20.8	70 E	27	55	4 11	10 25.83	+26 49.4	1.704	2.516	16.3	20.2	135 E	18	89
7 10	11 23.59	+ 4 19.3	3.983	3.619	14.4	20.8	62 E	22	52	4 16	10 23.48	+25 22.1	1.761	2.541	17.1	20.4	132 E	20	89
7 20	11 30.90	+ 3 15.0	4.087	3.595	13.3	20.8	55 E	17	46	4 21	10 22.03	+23 58.7	1.822	2.566	18.0	20.5	128 E	21	88
7 30	11 39.02	+ 2 6.2	4.178	3.569	12.1	20.8	47 E	13	40	4 26	10 21.42	+22 40.2	1.888	2.590	18.7	20.6	124 E	22	87
8 9	11 47.81	+ 0 53.2	4.255	3.542	10.7	20.8	40 E	9	34	5 1	10 21.59	+21 27.4	1.957	2.614	19.5	20.7	120 E	24	85
8 19	11 57.20	+ 0 23.3	4.316	3.515	9.1	20.7	33 E	6*	27*	5 6	10 22.45	+20 20.7	2.031	2.636	20.1	20.8	116 E	25	84
8 29	12 7.11	+ 1 42.9	4.361	3.486	7.4	20.6	26 E	3*	20*	5 11	10 23.93	+19 20.3	2.107	2.658	20.6	21.0	112 E	25	83
9 8	12 17.46	+ 3 5.3	4.388	3.457	5.6	20.6	20 E	—	14*	5 16	10 25.98	+18 26.1	2.185	2.680	21.0	21.1	108 E	25	82
9 18	12 28.20	+ 4 29.9	4.398	3.426	3.8	20.4	13 E	—	7*	5 21	10 28.54	+17 38.1	2.266	2.700	21.3	21.2	104 E	24	82
9 28	12 39.28	+ 5 56.3	4.389	3.395	1.9	20.3	7 E	—	—	5 26	10 31.54	+16 56.2	2.348	2.720	21.5	21.3	100 E	23	81
10 8	12 50.65	+ 7 24.1	4.361	3.363	0.6	20.1	2 W	—	—	5 31	10 34.95	+16 20.0	2.431	2.740	21.6	21.4	97 E	22	80
10 18	13 2.26	+ 8 53.0	4.315	3.329	2.2	20.2	7 W	—	—	6 5	10 38.71	+15 49.3	2.515	2.759	21.6	21.5	93 E	20	80
10 28	13 14.07	+10 22.4	4.250	3.295	4.2	20.3	14 W	5*	5*	40468 1999 RF₄₆									
11 7	13 26.03	+11 52.1	4.168	3.259	6.1	20.3	21 W	11*	10*	12 23	12 8.83	+ 9 12.6	2.027	2.173	26.8	19.3	85 W	36	64*
11 17	13 38.09	+13 21.6	4.068	3.223	8.1	20.4	27 W	15*	16*	1 2	12 19.07	+12 15.4	1.872	2.137	27.4	19.1	91 W	33	72*
11 27	13 50.18	+14 50.6	3.953	3.185	10.0	20.3	34 W	19*	22*	1 12	12 27.93	+15 26.8	1.722	2.101	27.6	18.9	98 W	30	79*
12 7	14 2.23	+16 18.9	3.822	3.147	11.9	20.3	41 W	22*	28*	1 22	12 35.04	+18 47.5	1.577	2.065	27.4	18.7	105 W	26	83
12 17	14 14.16	+17 46.3	3.677	3.107	13.6	20.3	48 W	24*	36*	2 1	12 39.88	+22 17.3	1.441	2.030	26.7	18.4	112 W	23	86
12 27	14 25.86	+19 12.4	3.521	3.067	15.3	20.2	55 W	24*	43*	2 11	12 41.86	+25 54.7	1.316	1.995	25.6	18.2	119 W	19	80
1 6	14 37.22	+20 37.5	3.354	3.025	16.7	20.1	62 W	24*	52*	2 16	12 41.56	+27 45.2	1.259	1.977	24.8	18.0	123 W	17	88
1 16	14 48.08	+22 1.3	3.178	2.983	18.0	20.0	70 W	23*	60*	2 21	12 40.28	+29 35.8	1.205	1.960	24.0	17.9	126 W	15	86
23726 1998 HG₄₈										2 26	12 37.92	+31 25.4	1.155	1.942	23.1	17.8	130 W	14	85
12 23	12 8.40	+ 6 10.0	2.489	2.693	21.4	20.2	91 W	51	52*	3 2	12 34.44	+33 12.3	1.109	1.925	22.2	17.6	133 W	12	83
1 2	12 15.22	+ 5 56.3	2.346	2.690	21.1	20.0	100 W	51	56*	3 7	12 29.80	+34 54.9	1.068	1.909	21.3	17.5	136 W	10	81
1 12	12 20.13	+ 5 57.5	2.206	2.686	20.3	19.9	109 W	51	58*	3 12	12 24.02	+36 31.3	1.032	1.892	20.5	17.4	138 W	8	79
1 22	12 22.85	+ 6 15.0	2.073	2.680	18.9	19.7	118 W	51	58	3 17	12 17.15	+37 59.3	1.000	1.876	19.9	17.3	140 W	7	78
2 1	12 23.07	+ 6 49.8	1.950	2.674	16.8	19.5	128 W	52	57	3 22	12 9.33	+39 16.6	0.974	1.859	19.6	17.2	141 W	6	77
2 11	12 20.59	+ 7 41.0	1.843	2.667	14.1	19.3	139 W	53	56	3 27	12 0.81	+40 21.2	0.953	1.844	19.5	17.1	142 E	5	76
2 21	12 15.40	+ 8 46.2	1.755	2.659	10.7	19.0													

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
40468 1999 RF₄₆										171486 1996 MO									
<i>(continuation)</i>										<i>(continuation)</i>									
5 21	11 9.38	-40 4.4	0.973	1.696	32.0	17.3	117 E	4*	76	8 14	19 20.59	-14 53.1	1.140	2.068	15.3	21.1	147 E	30	79
5 26	11 12.93	-39 40.1	0.989	1.686	33.1	17.4	115 E	4*	76	8 19	19 17.57	-15 27.3	1.202	2.095	17.3	21.3	142 E	30	79
5 31	11 17.83	-39 18.4	1.006	1.676	34.1	17.4	112 E	3*	77	133043 2003 BC₄₃									
6 5	11 23.98	-38 59.9	1.024	1.668	34.9	17.5	110 E	2*	77	12 23	12 11.18	+10 22.3	1.772	2.059	28.5	21.4	92 W	55	48*
6 10	11 31.29	-38 44.5	1.043	1.659	35.7	17.6	107 E	2*	77	1 2	12 22.49	+10 16.7	1.657	2.062	28.1	21.2	100 W	55	51*
6 15	11 39.68	-38 32.4	1.062	1.652	36.4	17.6	105 E	1*	77	1 12	12 31.72	+10 31.0	1.543	2.064	27.0	21.0	107 W	56	53*
6 20	11 49.10	-38 23.3	1.083	1.645	37.0	17.7	103 E	—	78	1 22	12 38.43	+11 7.7	1.435	2.065	25.4	20.8	116 W	56	53
6 25	11 59.46	-38 17.0	1.104	1.639	37.5	17.7	101 E	—	78	2 1	12 42.12	+12 8.1	1.335	2.065	23.0	20.6	125 W	57	52
6 30	12 10.71	-38 13.3	1.125	1.634	37.9	17.7	99 E	—	78*	2 11	12 42.32	+13 31.0	1.247	2.064	19.9	20.3	135 W	59	50
7 5	12 22.77	-38 11.6	1.148	1.630	38.2	17.8	98 E	—	77*	2 16	12 41.00	+14 19.7	1.208	2.063	18.1	20.2	140 W	59	50
7 10	12 35.58	-38 11.3	1.171	1.627	38.5	17.8	96 E	—	77*	2 21	12 38.70	+15 12.0	1.174	2.061	16.1	20.1	145 W	60	49
7 15	12 49.07	-38 11.8	1.195	1.624	38.6	17.9	94 E	—	76*	2 26	12 35.44	+16 6.6	1.145	2.060	14.2	20.0	149 W	61	48
7 20	13 3.20	-38 12.5	1.221	1.622	38.7	17.9	93 E	—	75*	3 2	12 31.27	+17 1.8	1.121	2.058	12.2	19.8	154 W	62	47
7 25	13 17.90	-38 12.9	1.247	1.621	38.8	18.0	91 E	—	74*	3 7	12 26.30	+17 55.6	1.103	2.056	10.6	19.7	158 W	63	46
7 30	13 33.11	-38 12.5	1.275	1.621	38.8	18.0	89 E	—	73*	3 12	12 20.68	+18 46.1	1.091	2.054	9.5	19.7	160 W	64	45
8 4	13 48.75	-38 10.6	1.304	1.622	38.7	18.1	88 E	—	72*	3 17	12 14.57	+19 31.3	1.086	2.051	9.2	19.7	161 W	65	44
8 9	14 4.75	-38 6.6	1.334	1.623	38.6	18.1	86 E	—	71*	3 22	12 8.20	+20 9.5	1.086	2.048	9.9	19.7	159 W	65	44
8 14	14 21.05	-38 0.0	1.366	1.626	38.4	18.2	85 E	—	70*	3 27	12 1.80	+20 39.3	1.093	2.045	11.4	19.7	156 E	66	43
8 19	14 37.58	-37 50.6	1.399	1.629	38.1	18.2	83 E	—	70*	4 1	11 55.62	+20 59.6	1.105	2.042	13.3	19.8	152 E	66	43
8 24	14 54.28	-37 38.0	1.434	1.633	37.8	18.3	82 E	—	69*	4 6	11 49.88	+21 10.1	1.123	2.038	15.3	19.9	147 E	66	43
8 29	15 11.07	-37 21.9	1.470	1.638	37.4	18.3	80 E	—	68*	4 11	11 44.76	+21 10.9	1.146	2.035	17.4	20.1	143 E	66	43
9 3	15 27.88	-37 2.1	1.508	1.644	37.0	18.4	79 E	—	67*	4 16	11 40.39	+21 2.5	1.173	2.031	19.4	20.2	138 E	66	43
9 8	15 44.65	-36 38.5	1.548	1.650	36.5	18.4	77 E	—	67*	4 21	11 36.87	+20 45.4	1.204	2.026	21.3	20.3	133 E	66	43
9 13	16 1.32	-36 11.1	1.589	1.658	36.0	18.5	76 E	—	66*	4 26	11 34.27	+20 20.5	1.240	2.022	23.1	20.4	128 E	65	44
9 18	16 17.86	-35 39.8	1.632	1.666	35.5	18.5	74 E	—	65*	5 1	11 32.60	+19 48.7	1.278	2.017	24.6	20.5	123 E	65	44
9 23	16 34.22	-35 4.8	1.677	1.674	34.9	18.6	72 E	—	64*	5 6	11 31.84	+19 10.8	1.318	2.012	26.0	20.6	119 E	64	45
9 28	16 50.36	-34 26.2	1.722	1.684	34.2	18.6	71 E	—	63*	5 11	11 31.97	+18 27.8	1.361	2.007	27.2	20.7	115 E	63	46
10 3	17 6.23	-33 44.0	1.770	1.694	33.5	18.7	69 E	—	62*	5 16	11 32.93	+17 40.2	1.405	2.001	28.2	20.8	111 E	63	46
10 8	17 21.82	-32 58.5	1.818	1.704	32.8	18.7	67 E	—	61*	5 21	11 34.66	+16 48.8	1.451	1.995	29.0	20.9	107 E	61*	47
10 13	17 37.12	-32 9.8	1.868	1.716	32.0	18.8	66 E	—	60*	5 26	11 37.12	+15 53.9	1.497	1.989	29.7	21.0	103 E	59*	48
10 18	17 52.12	-31 18.2	1.918	1.727	31.2	18.8	64 E	—	58*	5 31	11 40.26	+14 56.1	1.545	1.983	30.3	21.0	100 E	57*	49
10 23	18 6.80	-30 23.8	1.970	1.740	30.3	18.9	62 E	—	56*	6 5	11 43.99	+13 55.8	1.592	1.977	30.7	21.1	96 E	54*	50
10 28	18 21.15	-29 26.8	2.022	1.753	29.4	18.9	60 E	—	54*	6 10	11 48.28	+12 53.3	1.640	1.970	31.0	21.2	93 E	50*	51
11 2	18 35.19	-28 27.4	2.075	1.766	28.5	19.0	58 E	—	52*	6 15	11 53.07	+11 48.8	1.687	1.963	31.2	21.2	90 E	47*	52
11 7	18 48.90	-27 25.9	2.129	1.780	27.6	19.0	56 E	—	50*	6 20	11 58.33	+10 42.6	1.734	1.956	31.2	21.3	87 E	44*	53
11 17	19 15.41	-25 16.8	2.237	1.809	25.6	19.1	52 E	—	45*	6 25	12 4.01	+ 9 34.9	1.781	1.949	31.2	21.3	84 E	41*	54
11 27	19 40.74	-23 0.8	2.345	1.840	23.6	19.2	48 E	—	39*	6 30	12 10.08	+ 8 25.7	1.827	1.941	31.1	21.4	81 E	38*	56*
12 7	20 4.95	-20 39.0	2.451	1.872	21.4	19.3	44 E	—	34*	7 5	12 16.51	+ 7 15.4	1.873	1.934	30.9	21.4	78 E	35*	56*
12 17	20 28.15	-18 12.4	2.555	1.905	19.3	19.3	40 E	—	28*	7 10	12 23.27	+ 6 4.1	1.917	1.926	30.7	21.5	75 E	33*	57*
12 27	20 50.42	-15 41.9	2.655	1.939	17.1	19.4	35 E	—	22*	7 15	12 30.34	+ 4 51.9	1.960	1.918	30.4	21.5	72 E	31*	57*
1 6	21 11.84	-13 8.2	2.751	1.973	14.8	19.4	31 E	—	16*	21893 1999 VL₄									
1 16	21 32.50	-10 32.1	2.840	2.008	12.6	19.4	27 E	—	11*	12 23	12 12.59	+ 1 43.9	2.868	3.005	19.1	20.3	88 W	47	55*
171486 1996 MO										1 2	12 18.66	+ 1 16.8	2.699	2.982	19.1	20.2	97 W	46	60*
12 23	12 10.56	-13 18.8	0.432	1.025	72.3	19.2	83 W	32	66*	1 12	12 23.10	+ 1 1.5	2.532	2.958	18.6	20.0	106 W	46	63*
12 28	12 46.93	-15 49.4	0.431	0.994	76.0	19.2	79 W	29	64*	1 22	12 25.64	+ 0 59.7	2.371	2.933	17.6	19.8	116 W	46	63
1 2	13 23.59	-17 54.9	0.437	0.966	79.2	19.3	75 W	27	62*	2 1	12 25.98	+ 1 12.8	2.220	2.907	16.0	19.6	126 W	46	63
1 7	13 59.60	-19 31.2	0.450	0.942	81.7	19.4	71 W	25	60*	2 11	12 23.94	+ 1 41.5	2.083	2.880	13.6	19.4	136 W	47	62
1 12	14 34.18	-20 38.4	0.469	0.920	83.4	19.5	68 W	24	58*	2 21	12 19.42	+ 2 25.4	1.966	2.852	10.6	19.1	148 W	47	62
1 17	15 6.81	-21 19.5	0.494	0.903	84.2	19.6	66 W	23	56*	3 2	12 12.57	+ 3 22.4	1.873	2.823	7.0	18.8	160 W	48	61
1 22	15 37.28	-21 38.9	0.522	0.889	84.1	19.7	64 W	23	55*	3 7	12 8.40	+ 3 54.4	1.836	2.808	5.1	18.7	166 W	49	60
1 27	16 5.54	-21 41.2	0.554	0.880	83.4	19.8	63 W	22	54*	3 12	12 3.86	+ 4 27.9	1.807	2.793	3.1	18.5	171 W	49	60
2 1	16 31.72	-21 30.4	0.587	0.876	82.0	19.8	62 W	22	53*	3 17	11 59.03	+ 5 2.0	1.784	2.777	1.7	18.4	175 W	50	59
2 6	16 56.01	-21 9.7	0.622	0.877	80.2	19.9	61 W	22	53*	3 22	11 54.04	+ 5 35.9	1.770	2.761	2.5	18.4	173 E	51	58
2 11	17 18.61	-20 41.6	0.658	0.883	78.1	19.9	61 W	22	53*	3 27	11 49.03	+ 6 8.5	1.762	2.745	4.5	18.5	168 E	51	58
2 16	17 39.70	-20 7.9	0.693	0.894	75.8	20.0	61 W	22	53*	4 1	11 44.13	+ 6 38.9	1.762	2.729	6.6	18.6	162 E	52	57
2 21	17 59.42	-19 29.7	0.727	0.909	73.4	20.1	62 W	22	54*	4 6	11 39.47	+ 7 6.5	1.769	2.713	8.7	18.7	156 E	52	57
2 26	18 17.87	-18 48.1	0.759	0.928	71.1	20.1	62 W	22	55*	4 11	11 35.17	+ 7 30.5	1.783	2.696	10.8	18.8	150 E	53	56
3 2	18 35.13	-18 3.7	0.790	0.950	68.7	20.2	63 W	22	56*	4 21	11 28.02	+ 8 6.1	1.827	2.662	14.6	19.0	138 E	53	56
3 7	18 51.27	-17 17.2	0.818	0.976	66.5	20.3	64 W	23	57*	5 1	11 23.25	+ 8 23.7	1.890	2.626	17.8	19.1	127 E	53	56
3 12	19 6.36	-16 29.3	0.843	1.005	64.3	20.3	66 W	23	58*	5 11	11 21.13	+ 8 22.9	1.967	2.590	20.3	19.2	117 E	53	56
3 22	19 33.56	-14 51.0	0.885	1.069	60.4	20.4	69 W	24	61*	5 21	11 21.64	+ 8 5.0	2.054	2.553	22.2	19.4	108 E	52	56
4 1	19 56.90	-13 12.6	0.914	1.140	57.0	20.5	73 W	25	65*	5 31	11 24.64	+ 7 31.6	2.146	2.515	23.5	19.5	99 E		

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
21893 1999 VL₄										133620 2003 UU₁₁₉									
<i>(continuation)</i>										<i>(continuation)</i>									
11 17	15 58.97	-19 33.4	2.761	1.783	3.8	18.5	7 E	—	—	5 21	11 18.58	+21 58.1	2.832	3.186	18.2	21.4	101 E	66*	42
11 27	16 26.05	-20 51.6	2.726	1.742	1.9	18.3	3 E	—	—	5 26	11 19.63	+21 26.4	2.898	3.184	18.4	21.5	97 E	63*	43
12 7	16 54.44	-21 54.8	2.688	1.703	0.4	18.1	1 W	—	—	236184 2005 WX₃									
12 17	17 24.06	-22 40.3	2.646	1.665	2.1	18.2	4 W	—	—	12 23	12 13.23	+25 59.7	2.448	2.759	20.7	21.5	98 W	71	34*
12 27	17 54.76	-23 5.2	2.603	1.630	4.0	18.2	7 W	—	—	1 2	12 19.18	+26 32.2	2.322	2.758	20.1	21.3	106 W	72	36*
1 6	18 26.35	-23 7.6	2.559	1.598	5.8	18.2	10 W	—	3*	1 12	12 22.74	+27 21.3	2.202	2.757	19.0	21.2	114 W	72	37*
1 16	18 58.58	-22 45.6	2.516	1.569	7.7	18.2	12 W	1*	6*	1 22	12 23.56	+28 25.3	2.092	2.754	17.5	21.0	123 W	73	36
160137 2001 BU₄₁										2 1	12 21.26	+29 40.6	1.996	2.750	15.5	20.9	132 W	75	34
12 23	12 12.68	-16 22.0	2.788	2.813	20.2	20.5	81 W	29	67*	2 11	12 15.67	+31 0.4	1.918	2.746	13.4	20.7	140 W	76	33
1 2	12 17.57	-18 15.0	2.674	2.839	20.3	20.4	89 W	27	76*	2 21	12 6.88	+32 15.4	1.861	2.740	11.5	20.5	146 W	77	32
1 12	12 20.46	-20 1.6	2.560	2.864	19.9	20.3	98 W	25	84*	3 2	11 55.43	+33 14.6	1.829	2.734	10.4	20.5	150 W	78	31
1 22	12 21.08	-21 39.7	2.448	2.888	19.1	20.2	107 W	23	86	3 7	11 49.02	+33 35.0	1.823	2.730	10.4	20.4	150 W	79	30
2 1	12 19.19	-23 6.2	2.344	2.911	17.7	20.1	116 W	22	87	3 12	11 42.37	+33 47.9	1.824	2.726	10.7	20.5	149 W	79	30
2 11	12 14.67	-24 17.1	2.252	2.933	16.0	20.0	125 W	21	88	3 17	11 35.07	+33 52.6	1.831	2.722	11.4	20.5	147 E	79	30
2 21	12 7.62	-25 8.3	2.176	2.955	13.8	19.8	135 W	20	89	3 22	11 29.08	+33 48.9	1.844	2.718	12.3	20.5	145 E	79	30
3 2	11 58.42	-25 35.4	2.120	2.975	11.4	19.7	143 W	19	90	3 27	11 22.80	+33 36.7	1.863	2.713	13.4	20.6	141 E	79	30
3 7	11 53.23	-25 39.1	2.101	2.985	10.3	19.6	147 W	19	90	4 1	11 16.98	+33 16.3	1.889	2.708	14.5	20.7	137 E	78	31
3 12	11 47.80	-25 36.1	2.088	2.994	9.3	19.6	151 W	19	90	4 6	11 11.74	+32 48.3	1.919	2.703	15.7	20.7	133 E	78	31
3 17	11 42.26	-25 26.7	2.082	3.004	8.6	19.6	153 E	20	89	4 11	11 7.18	+32 13.5	1.955	2.698	16.8	20.8	129 E	77	32
3 22	11 36.75	-25 11.0	2.083	3.013	8.2	19.6	154 E	20	89	4 16	11 3.36	+31 32.8	1.994	2.692	17.9	20.9	124 E	77	32
3 27	11 31.39	-24 49.8	2.091	3.022	8.2	19.6	154 E	20	89	4 21	11 0.30	+30 46.9	2.038	2.686	18.9	21.0	120 E	76	33
4 1	11 26.32	-24 23.8	2.106	3.030	8.6	19.6	153 E	21	88	4 26	10 58.02	+29 56.6	2.085	2.680	19.8	21.0	116 E	75	34
4 6	11 21.65	-23 54.0	2.127	3.039	9.3	19.7	151 E	21	88	5 1	10 56.51	+29 2.6	2.135	2.674	20.5	21.1	112 E	74	35
4 11	11 17.46	-23 21.5	2.155	3.047	10.2	19.7	147 E	22	87	5 6	10 55.74	+28 5.7	2.186	2.667	21.2	21.2	107 E	73	36
4 16	11 13.83	-22 47.3	2.189	3.055	11.3	19.8	143 E	22	87	5 11	10 55.67	+27 6.5	2.240	2.661	21.7	21.2	103 E	72	37
4 21	11 10.80	-22 12.3	2.229	3.063	12.3	19.9	139 E	23	86	5 16	10 56.25	+26 5.3	2.295	2.654	22.1	21.3	99 E	70	38
4 26	11 8.40	-21 37.5	2.274	3.070	13.4	20.0	135 E	23	86	5 21	10 57.44	+25 2.5	2.352	2.646	22.4	21.3	95 E	67	39
5 1	11 6.64	-21 3.7	2.324	3.077	14.4	20.1	131 E	24	85	5 26	10 59.20	+23 58.5	2.408	2.639	22.6	21.4	92 E	63	40
5 11	11 5.03	-20 1.9	2.437	3.091	16.1	20.3	122 E	25	84	5 31	11 1.48	+22 53.5	2.465	2.631	22.6	21.4	88 E	59	41
5 21	11 5.79	-19 10.8	2.562	3.104	17.4	20.4	113 E	25	83	6 5	11 4.23	+21 47.6	2.522	2.623	22.6	21.5	84 E	55	42
5 31	11 8.70	-18 32.5	2.696	3.116	18.3	20.6	105 E	22	83	79558 1998 QE₅₁									
6 10	11 13.48	-18 8.1	2.836	3.126	18.8	20.7	97 E	19	82	12 23	12 13.73	-1 56.4	2.393	2.533	22.0	20.8	87 W	43	58*
6 20	11 19.84	-17 57.2	2.978	3.136	18.9	20.8	89 E	15	81*	1 2	12 22.21	-2 59.3	2.238	2.513	23.8	20.6	94 W	42	64*
6 30	11 27.56	-17 59.2	3.120	3.145	18.7	20.9	82 E	11	76*	1 12	12 29.08	-3 52.6	2.084	2.493	22.6	20.5	103 W	41	68*
7 10	11 36.42	-18 13.1	3.258	3.153	18.2	21.0	75 E	7	69*	1 22	12 34.00	-4 34.4	1.934	2.471	21.7	20.3	112 W	40	69
7 20	11 46.24	-18 37.7	3.392	3.160	17.4	21.1	68 E	3	62*	2 1	12 36.00	-5 2.6	1.792	2.448	20.2	20.0	121 W	40	69
7 30	11 56.90	-19 12.0	3.518	3.166	16.4	21.1	62 E	—	55*	2 11	12 36.53	-5 15.1	1.661	2.425	17.9	19.8	131 W	40	69
8 9	12 8.26	-19 54.7	3.636	3.171	15.3	21.2	55 E	—	47*	2 21	12 33.56	-5 10.2	1.545	2.401	14.8	19.5	142 W	40	69
8 19	12 20.23	-20 44.7	3.743	3.175	14.0	21.2	49 E	—	41*	3 2	12 27.64	-4 46.8	1.448	2.376	10.8	19.2	153 W	40	69
8 29	12 32.76	-21 41.0	3.839	3.179	12.6	21.2	43 E	—	34*	3 12	12 19.15	-4 6.4	1.375	2.350	6.1	18.8	165 W	41	68
9 8	12 45.76	-22 42.6	3.923	3.181	11.1	21.2	37 E	—	28*	3 17	12 14.16	-3 40.9	1.348	2.337	3.6	18.6	172 W	41	68
9 18	12 59.19	-23 48.5	3.992	3.182	9.6	21.1	32 E	—	22*	3 22	12 8.86	-3 12.8	1.328	2.324	1.2	18.4	177 W	42	67
9 28	13 13.03	-24 57.8	4.048	3.182	8.1	21.1	26 E	—	16*	3 27	12 3.41	-2 43.0	1.315	2.311	2.2	18.5	175 E	42	67
10 8	13 27.21	-26 9.7	4.088	3.181	6.7	21.1	22 E	—	10*	4 1	11 57.99	-2 12.6	1.309	2.297	4.9	18.6	169 E	43	66
10 18	13 41.72	-27 23.4	4.113	3.180	5.5	21.0	18 E	—	4*	4 6	11 52.78	-1 42.9	1.309	2.283	7.6	18.7	163 E	43	66
10 28	13 56.51	-28 38.1	4.121	3.177	4.9	21.0	16 W	—	4*	4 11	11 47.95	-1 14.7	1.316	2.269	10.2	18.8	156 E	44	65
11 7	14 11.55	-29 53.2	4.114	3.174	5.0	21.0	16 W	—	8*	4 16	11 43.62	-0 49.0	1.328	2.255	12.7	18.9	150 E	44	65
11 17	14 26.79	-31 7.9	4.090	3.169	5.7	21.0	19 W	—	12*	4 21	11 39.93	-0 26.7	1.346	2.241	15.1	19.0	144 E	45	64
11 27	14 42.18	-32 21.8	4.049	3.164	7.0	21.1	23 W	—	17*	5 1	11 34.76	+0 5.6	1.396	2.213	19.4	19.2	133 E	45	64
12 7	14 57.65	-33 34.2	3.993	3.157	8.4	21.1	28 W	1*	22*	5 11	11 32.81	+0 19.0	1.461	2.183	22.8	19.4	123 E	45	64
12 17	15 13.13	-34 45.0	3.921	3.150	10.0	21.1	34 W	3*	28*	5 21	11 34.06	+0 13.3	1.536	2.154	25.5	19.6	114 E	45	64
12 27	15 28.52	-35 53.8	3.834	3.141	11.5	21.1	40 W	5*	34*	5 31	11 38.29	+0 11.0	1.618	2.124	27.4	19.7	105 E	42	64
1 6	15 43.69	-37 0.3	3.734	3.132	13.0	21.1	46 W	5*	40*	6 10	11 45.17	-0 52.1	1.702	2.094	28.7	19.8	98 E	38	65
1 16	15 58.52	-38 4.8	3.621	3.121	14.5	21.1	52 W	5*	46*	6 20	11 54.37	-1 48.2	1.786	2.064	29.5	19.9	91 E	33	66
133620 2003 UU₁₁₉										6 30	12 5.61	-2 57.6	1.869	2.034	29.8	20.0	84 E	28	67*
12 23	12 12.73	+14 0.0	2.915	3.129	18.3	21.4	93 W	59	44*	7 10	12 18.60	-4 18.2	1.949	2.003	29.8	20.1	78 E	24	66*
1 2	12 17.91	+14 25.1	2.782	3.139	17.8	21.3	102 W	59	48*	7 20	12 33.17	-5 48.4	2.025	1.973	29.4	20.1	72 E	20	64*
1 12	12 21.21	+15 5.8	2.655	3.149	16.9	21.2	111 W	60	49*	7 30	12 49.18	-7 26.3	2.097	1.943	28.8	20.1	67 E	17	60*
1 22	12 22.40	+16 1.7	2.536	3.157	15.5	21.1	121 W	61	48	8 9	13 6.51	-9 10.3	2.163	1.914	28.0	20.1	62 E	15	56*
2 1	12 21.28	+17 11.5	2.431	3.165	13.6	20.9	131 W	62	47	8 19	13 25.10	-10 58.3	2.223	1.885	26.9	20.1	58 E	13	51*
2 11	12 17.77	+18 31.5	2.344	3.172	11.3	20.8	141 W	64	45	8 29	13 44.94	-12 48.7	2.278	1.857	25.8	20.1	53 E	11	47*
2 21	12 12.00	+19 56.4	2.281	3.177	8.9	20.6	150 W	65	44	9 8	14 5.99	-14 39.1	2.327	1.830	24.5	20.1	49 E	10	43*
3 2	12 4.31	+21 19.2	2.244	3.182	6.8														

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
259101 2002 WS										35368 1997 UB₈									
12 23	12 13.79	+52 20.9	1.009	1.599	36.1	19.2	107W	83	9*	12 7	15 43.60	-11 8.6	3.932	3.030	6.6	20.5	21W	14*	4*
12 28	12 21.45	+52 9.2	0.983	1.598	35.7	19.1	109W	83	10*	12 17	15 57.96	-11 21.9	3.882	3.037	8.4	20.5	27W	18*	10*
1 2	12 27.35	+52 0.3	0.957	1.598	35.1	19.1	111W	83	11*	12 27	16 12.05	-11 26.9	3.816	3.044	10.3	20.6	33W	22*	17*
1 7	12 31.40	+51 53.8	0.932	1.599	34.4	19.0	113W	83	12*	1 6	16 25.79	-11 23.3	3.735	3.049	12.0	20.6	40W	25*	24*
1 12	12 33.48	+51 49.2	0.907	1.601	33.6	18.9	116W	83	12*	1 16	16 39.05	-11 10.5	3.639	3.054	13.6	20.6	47W	28*	32*
1 17	12 33.46	+51 45.4	0.884	1.605	32.6	18.8	118W	83	12	152889 2000 CF₅₉									
1 22	12 31.22	+51 40.8	0.861	1.609	31.5	18.8	121W	83	12	12 23	12 15.10	+10 48.1	2.063	2.307	25.2	21.0	91W	56	47*
1 27	12 26.67	+51 33.1	0.840	1.615	30.3	18.7	124W	83	12	1 2	12 20.38	+12 42.0	1.963	2.356	24.2	21.0	101W	58	49*
2 1	12 19.82	+51 19.0	0.821	1.621	28.9	18.6	127W	84	13	1 12	12 23.02	+15 6.1	1.868	2.401	22.5	20.8	111W	60	49*
2 6	12 10.78	+50 55.1	0.805	1.629	27.4	18.5	131W	84	13	1 22	12 22.59	+18 0.6	1.782	2.444	20.1	20.7	121W	63	46
2 11	11 59.85	+50 17.6	0.792	1.637	25.8	18.4	134W	85	14	2 1	12 18.70	+21 21.5	1.714	2.484	17.1	20.6	132W	66	43
2 16	11 47.43	+49 23.1	0.783	1.647	24.3	18.4	137W	86	15	2 11	12 11.14	+24 58.6	1.669	2.520	14.0	20.4	142W	70	39
2 21	11 34.10	+48 8.9	0.778	1.658	22.9	18.3	139W	87	16	2 16	12 6.02	+26 48.4	1.657	2.538	12.5	20.4	146W	72	37
2 23	11 28.66	+47 33.3	0.777	1.662	22.5	18.3	140W	87	16	2 21	12 0.09	+28 36.1	1.652	2.554	11.3	20.3	150W	74	35
2 25	11 23.23	+46 54.3	0.778	1.667	22.0	18.3	141W	88	17	2 26	11 53.44	+30 19.0	1.655	2.570	10.5	20.3	152W	75	34
2 27	11 17.85	+46 11.9	0.779	1.671	21.6	18.3	142W	89	18	3 2	11 46.23	+31 54.7	1.667	2.586	10.3	20.3	152W	77	32
2 29	11 12.57	+45 26.1	0.780	1.676	21.3	18.3	142W	90	19	3 7	11 38.65	+33 21.2	1.686	2.600	10.6	20.4	151W	78	31
3 2	11 7.41	+44 37.3	0.783	1.681	21.1	18.3	142W	90	19	3 12	11 30.92	+34 36.9	1.713	2.614	11.4	20.5	149W	80	29
3 7	10 55.31	+42 22.6	0.795	1.694	20.8	18.4	143E	87	22	3 17	11 23.23	+35 41.1	1.748	2.627	12.5	20.6	145E	81	28
3 12	10 44.63	+39 53.2	0.812	1.708	20.9	18.4	142E	85	24	3 22	11 15.80	+36 33.2	1.789	2.640	13.7	20.7	141E	82	27
3 17	10 35.60	+37 13.6	0.835	1.723	21.6	18.5	140E	82	27	3 27	11 8.83	+37 13.3	1.837	2.652	15.0	20.8	137E	82	27
3 22	10 28.29	+34 28.4	0.864	1.739	22.5	18.7	138E	79	30	4 1	11 2.47	+37 42.2	1.890	2.663	16.2	20.9	132E	83	26
3 27	10 22.68	+31 41.5	0.899	1.755	23.6	18.8	135E	77	32	4 6	10 56.86	+38 0.7	1.948	2.673	17.4	21.0	127E	83	26
4 1	10 18.69	+28 56.5	0.940	1.771	24.8	19.0	132E	74	35	4 11	10 52.07	+38 9.9	2.010	2.683	18.4	21.1	122E	83	26
4 6	10 16.16	+26 15.8	0.985	1.789	26.0	19.1	128E	71	38	4 16	10 48.14	+38 11.0	2.076	2.692	19.3	21.2	118E	83	26
4 11	10 14.92	+23 41.2	1.035	1.807	27.1	19.3	125E	69	40	4 21	10 45.08	+38 5.1	2.144	2.701	20.0	21.3	113E	83	26
4 16	10 14.81	+21 13.6	1.090	1.825	28.0	19.4	121E	66	43	4 26	10 42.89	+37 53.2	2.214	2.709	20.6	21.4	109E	83	26
4 21	10 15.70	+18 53.3	1.148	1.844	28.9	19.6	118E	64	45	5 1	10 41.52	+37 36.3	2.286	2.716	21.1	21.5	104E	83	26
5 1	10 19.96	+14 34.3	1.274	1.883	30.0	19.9	111E	60	49	124834 2001 TH									
5 11	10 26.81	+10 41.3	1.410	1.923	30.6	20.2	104E	55*	53	12 23	12 15.25	+24 28.3	2.131	2.450	23.5	20.0	97W	69	35*
5 21	10 35.60	+ 7 10.1	1.554	1.965	30.7	20.4	98E	48*	57	1 2	12 23.88	+25 39.4	2.042	2.480	22.6	19.9	105W	71	37*
5 31	10 45.87	+ 3 56.3	1.704	2.008	30.3	20.7	92E	41*	60	1 12	12 30.03	+27 10.8	1.960	2.509	21.2	19.8	113W	72	37*
6 10	10 57.26	+ 0 56.0	1.856	2.051	29.6	20.9	86E	34*	63	1 22	12 33.33	+29 0.5	1.888	2.537	19.4	19.7	121W	74	35
6 20	11 9.53	- 1 53.6	2.011	2.095	28.6	21.1	80E	27*	65*	1 27	12 33.79	+30 0.8	1.856	2.551	18.4	19.6	125W	75	34
6 30	11 22.51	- 4 34.9	2.165	2.140	27.3	21.3	75E	21*	65*	2 1	12 33.41	+31 3.6	1.829	2.565	17.4	19.6	129W	76	33
7 10	11 36.07	- 7 9.7	2.318	2.184	25.9	21.4	70E	15*	62*	2 6	12 32.18	+32 7.6	1.806	2.578	16.3	19.5	133W	77	32
35368 1997 UB₈										2 11	12 30.09	+33 11.7	1.788	2.591	15.3	19.5	136W	78	31
12 23	12 14.46	-18 16.4	2.118	2.178	26.4	19.1	80W	27	68*	2 16	12 27.17	+34 14.3	1.774	2.604	14.3	19.4	139W	79	30
1 2	12 24.62	-19 19.3	2.030	2.215	26.3	19.1	87W	26	76*	2 21	12 23.45	+35 13.8	1.767	2.617	13.5	19.4	142W	80	29
1 12	12 32.63	-20 6.5	1.939	2.252	25.8	19.0	95W	25	83*	2 26	12 19.01	+36 8.6	1.765	2.630	12.8	19.4	144W	81	28
1 22	12 38.19	-20 35.1	1.846	2.288	24.7	18.9	104W	24	85	3 2	12 13.97	+36 57.1	1.769	2.642	12.5	19.4	145W	82	27
2 1	12 40.96	-20 41.4	1.757	2.324	23.0	18.7	113W	24	85	3 7	12 8.48	+37 38.1	1.779	2.654	12.4	19.4	145W	83	26
2 11	12 40.76	-20 21.3	1.675	2.359	20.6	18.6	123W	25	84	3 12	12 2.69	+38 10.4	1.795	2.666	12.6	19.4	144W	83	26
2 21	12 37.56	-19 31.3	1.604	2.393	17.5	18.4	133W	25	84	3 17	11 56.79	+38 33.4	1.817	2.678	13.0	19.5	143W	84	25
3 2	12 31.63	-18 9.0	1.550	2.427	13.6	18.3	145W	27	82	3 22	11 50.94	+38 46.7	1.845	2.689	13.6	19.6	140E	84	25
3 7	12 27.84	-17 16.0	1.531	2.444	11.5	18.2	150W	28	81	3 27	11 45.33	+38 50.4	1.878	2.700	14.4	19.6	138E	84	25
3 12	12 23.65	-16 15.9	1.519	2.461	9.4	18.1	156W	29	80	4 1	11 40.12	+38 44.7	1.917	2.711	15.3	19.7	134E	84	25
3 17	12 19.20	-15 9.4	1.513	2.477	7.2	18.0	162W	30	79	4 6	11 35.43	+38 30.3	1.960	2.722	16.1	19.8	131E	84	25
3 22	12 14.62	-13 57.9	1.514	2.493	5.4	17.9	166W	31	78	4 11	11 31.35	+38 8.0	2.007	2.733	17.0	19.9	127E	83	26
3 27	12 10.08	-12 42.9	1.522	2.509	4.2	17.9	169E	32	77	4 16	11 27.96	+37 38.7	2.059	2.743	17.8	20.0	123E	83	26
4 1	12 5.72	-11 26.1	1.538	2.525	4.5	17.9	169E	34	75	4 21	11 25.28	+37 3.2	2.114	2.753	18.5	20.1	120E	82	27
4 6	12 1.67	-10 9.1	1.561	2.541	5.8	18.1	165E	35	74	4 26	11 23.32	+36 22.4	2.172	2.763	19.1	20.2	116E	81	28
4 11	11 58.04	- 8 53.8	1.591	2.556	7.7	18.2	160E	36	73	5 1	11 22.09	+35 37.2	2.233	2.773	19.7	20.2	112E	81	28
4 16	11 54.92	- 7 41.4	1.629	2.572	9.6	18.3	155E	37	72	5 6	11 21.55	+34 48.2	2.296	2.782	20.1	20.3	108E	80	29
4 21	11 52.37	- 6 33.2	1.672	2.587	11.5	18.5	149E	38	71	5 11	11 21.67	+33 56.3	2.361	2.791	20.5	20.4	105E	79	30
4 26	11 50.43	- 5 30.1	1.722	2.602	13.3	18.6	144E	39	70	5 16	11 22.40	+33 1.8	2.427	2.800	20.8	20.5	101E	78*	31
5 1	11 49.13	- 4 32.9	1.777	2.616	14.9	18.8	138E	40	69	5 21	11 23.70	+32 5.4							

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
124834 2001 TH										333417 2003 AR₇₂									
<i>(continuation)</i>																			
9 13	13 15.08	+ 9 6.0	3.792	2.941	9.2	21.2	28 E	17*	16*	12 23	12 16.72	-16 27.0	1.650	1.774	33.1	20.2	80 W	29	66*
9 18	13 21.58	+ 8 11.5	3.820	2.944	8.4	21.1	25 E	16*	13*	1 2	12 33.68	-21 27.7	1.533	1.742	34.2	20.1	85 W	24	75*
9 23	13 28.15	+ 7 17.9	3.844	2.946	7.7	21.1	23 E	15*	10*	1 12	12 50.63	-26 45.8	1.425	1.712	35.0	19.9	89 W	18	82*
9 28	13 34.76	+ 6 25.3	3.864	2.949	6.9	21.1	21 E	13*	7*	1 22	13 7.60	-32 19.5	1.327	1.685	35.7	19.7	92 W	13	84*
10 3	13 41.43	+ 5 33.8	3.881	2.951	6.3	21.1	19 E	12*	4*	1 27	13 16.07	-35 11.1	1.282	1.673	35.9	19.6	94 W	10	81
10 8	13 48.14	+ 4 43.4	3.894	2.953	5.7	21.1	17 E	11*	1*	2 1	13 24.53	-38 4.9	1.239	1.662	36.1	19.5	96 W	7	78
10 13	13 54.90	+ 3 54.2	3.903	2.954	5.2	21.0	16 E	10*	—	2 6	13 32.97	-41 0.1	1.200	1.652	36.3	19.5	98 W	4	75
10 18	14 1.69	+ 3 6.2	3.908	2.956	4.9	21.0	15 E	8*	—	2 11	13 41.38	-43 55.9	1.164	1.642	36.4	19.4	99 W	1	72
10 23	14 8.52	+ 2 19.6	3.910	2.957	4.8	21.0	14 E	7*	—	2 16	13 49.75	-46 51.3	1.130	1.634	36.4	19.3	101 W	—	69
10 28	14 15.37	+ 1 34.3	3.908	2.958	4.9	21.0	15 E	5*	—	2 21	13 58.02	-49 45.0	1.099	1.626	36.5	19.2	102 W	—	66
11 2	14 22.24	+ 0 50.4	3.901	2.958	5.2	21.0	16 W	6*	—	2 26	14 6.16	-52 35.8	1.071	1.619	36.5	19.2	103 W	—	63
11 7	14 29.12	+ 0 8.0	3.891	2.958	5.7	21.1	17 W	9*	—	3 2	14 14.10	-55 22.4	1.046	1.614	36.4	19.1	105 W	—	61
11 12	14 36.01	+ 0 32.8	3.877	2.959	6.2	21.1	19 W	12*	—	3 7	14 21.78	-58 3.4	1.023	1.609	36.3	19.1	106 W	—	58
11 17	14 42.90	+ 1 12.1	3.859	2.958	6.9	21.1	21 W	15*	—	3 12	14 29.11	-60 37.6	1.002	1.606	36.2	19.0	107 W	—	55
11 22	14 49.79	+ 1 49.7	3.837	2.958	7.7	21.1	24 W	18*	—	3 17	14 35.95	-63 3.8	0.983	1.604	36.1	19.0	108 W	—	53
11 27	14 56.65	+ 2 25.6	3.811	2.957	8.5	21.1	26 W	20*	2*	3 22	14 42.10	-65 20.8	0.966	1.603	35.9	18.9	109 W	—	51
12 2	15 3.49	+ 2 59.7	3.781	2.956	9.3	21.2	29 W	23*	5*	3 27	14 47.35	-67 27.1	0.951	1.602	35.7	18.9	111 W	—	49
12 7	15 10.29	+ 3 32.1	3.747	2.955	10.1	21.2	32 W	25*	8*	4 1	14 51.47	-69 21.6	0.937	1.603	35.4	18.8	112 W	—	47
12 12	15 17.05	+ 4 2.7	3.710	2.954	10.9	21.2	35 W	27*	11*	4 3	14 52.75	-70 3.9	0.932	1.604	35.2	18.8	112 W	—	46
12 17	15 23.75	+ 4 31.4	3.669	2.952	11.8	21.2	38 W	29*	15*	4 5	14 53.78	-70 44.0	0.927	1.605	35.1	18.8	113 W	—	45
12 22	15 30.37	+ 4 58.1	3.625	2.950	12.6	21.2	41 W	30*	18*	4 7	14 54.57	-71 21.9	0.922	1.606	35.0	18.8	113 W	—	45
12 27	15 36.91	+ 5 23.0	3.577	2.948	13.4	21.2	44 W	32*	22*	4 9	14 55.09	-71 57.5	0.918	1.607	34.8	18.8	114 W	—	44
1 1	15 43.34	+ 5 46.0	3.525	2.946	14.2	21.2	47 W	33*	26*	4 11	14 55.32	-72 30.7	0.913	1.609	34.6	18.8	114 W	—	43
1 6	15 49.67	+ 6 7.0	3.471	2.943	14.9	21.2	50 W	34*	30*	4 16	14 54.58	-73 43.1	0.903	1.613	34.2	18.7	115 W	—	42
1 11	15 55.86	+ 6 26.1	3.413	2.940	15.6	21.2	54 W	35*	34*	4 21	14 51.94	-74 38.8	0.894	1.618	33.7	18.7	117 W	—	41
1 16	16 1.89	+ 6 43.2	3.353	2.937	16.3	21.1	57 W	35*	38*	4 26	14 47.60	-75 16.7	0.887	1.624	33.1	18.7	118 W	—	40
408795 2000 JH₇₅																			
12 23	12 16.55	-25 52.5	1.746	1.802	32.1	21.2	77 W	19	69*	5 1	14 42.11	-75 35.7	0.880	1.632	32.5	18.7	119 W	—	41
12 28	12 26.89	-27 1.5	1.691	1.790	32.7	21.1	79 W	18	72*	5 3	14 39.76	-75 38.0	0.878	1.635	32.3	18.6	120 E	—	40
1 2	12 37.21	-28 7.5	1.637	1.778	33.1	21.0	81 W	17	75*	5 5	14 37.41	-75 37.1	0.876	1.638	32.0	18.6	121 E	—	40
1 7	12 47.50	-29 10.0	1.582	1.767	33.6	20.9	84 W	16	77*	5 7	14 35.11	-75 33.2	0.874	1.642	31.7	18.6	121 E	—	40
1 12	12 57.74	-30 8.6	1.527	1.756	34.0	20.9	86 W	15	80*	5 9	14 32.91	-75 26.2	0.872	1.645	31.4	18.6	122 E	—	41
1 17	13 7.90	-31 2.9	1.473	1.746	34.3	20.8	88 W	14	82*	5 11	14 30.87	-75 16.2	0.871	1.649	31.2	18.6	122 E	—	41
1 22	13 17.95	-31 52.2	1.418	1.736	34.5	20.7	91 W	13	83*	5 13	14 29.02	-75 3.1	0.870	1.653	30.9	18.6	123 E	—	41
1 27	13 27.84	-32 36.0	1.364	1.726	34.7	20.6	93 W	12	83*	5 15	14 27.40	-74 47.2	0.869	1.657	30.6	18.6	123 E	—	41
2 1	13 37.52	-33 13.5	1.311	1.717	34.8	20.5	96 W	12	83	5 17	14 26.06	-74 28.3	0.869	1.662	30.3	18.6	124 E	—	42
2 6	13 46.94	-33 44.3	1.257	1.709	34.8	20.4	99 W	11	82	5 19	14 25.01	-74 6.6	0.868	1.666	30.0	18.6	125 E	—	42
2 11	13 56.05	-34 7.5	1.205	1.701	34.7	20.3	101 W	11	82	5 21	14 24.28	-73 42.1	0.868	1.670	29.7	18.6	125 E	—	42
2 16	14 4.77	-34 22.4	1.153	1.694	34.4	20.2	104 W	11	82	5 26	14 23.87	-72 29.7	0.870	1.682	29.0	18.6	126 E	—	44
2 21	14 13.02	-34 28.2	1.101	1.687	34.0	20.1	108 W	11	82	5 31	14 25.48	-71 2.6	0.875	1.695	28.3	18.6	128 E	—	45
2 26	14 20.70	-34 23.8	1.051	1.681	33.4	19.9	111 W	11	82	6 10	14 28.88	-69 22.8	0.882	1.709	27.7	18.6	128 E	—	47
3 2	14 27.74	-34 8.3	1.002	1.676	32.6	19.8	114 W	11	82	6 15	14 33.78	-67 32.3	0.892	1.723	27.2	18.7	129 E	—	48
3 7	14 34.04	-33 40.4	0.955	1.671	31.6	19.7	118 W	11	82	6 12	14 36.10	-66 45.6	0.897	1.729	27.0	18.7	129 E	—	49
3 12	14 39.53	-32 59.1	0.909	1.667	30.3	19.5	122 W	12	83	6 14	14 38.58	-65 57.5	0.902	1.735	26.9	18.7	129 E	—	50
3 17	14 44.11	-32 3.1	0.866	1.663	28.7	19.4	127 W	13	84	6 16	14 41.23	-65 8.4	0.909	1.741	26.8	18.7	129 E	—	51
3 22	14 47.72	-30 51.1	0.825	1.660	26.9	19.2	131 W	14	85	6 18	14 44.02	-64 18.2	0.915	1.747	26.7	18.7	129 E	—	52
3 27	14 50.30	-29 21.7	0.787	1.658	24.6	19.0	136 W	16	87	6 20	14 46.94	-63 27.2	0.923	1.754	26.6	18.7	129 E	—	53
4 1	14 51.85	-27 34.3	0.753	1.656	22.1	18.8	141 W	17	88	6 25	14 54.73	-61 16.9	0.944	1.770	26.5	18.8	129 E	—	55
4 11	14 52.04	-23 5.3	0.698	1.656	15.8	18.5	153 W	22	87	6 30	15 3.09	-59 4.4	0.969	1.787	26.5	18.9	128 E	—	57
4 21	14 48.98	-17 33.6	0.665	1.657	8.5	18.1	166 W	27	82	7 5	15 11.84	-56 51.8	0.998	1.804	26.7	19.0	127 E	—	59
5 1	14 44.08	-11 28.8	0.656	1.662	2.7	17.8	176 W	34	75	7 10	15 20.88	-54 40.7	1.032	1.822	27.0	19.1	126 E	—	61
5 6	14 41.50	+ 8 27.9	0.661	1.665	5.1	17.9	171 E	37	72	7 15	15 30.10	-52 32.7	1.070	1.841	27.3	19.2	124 E	—	63
5 11	14 39.13	+ 5 35.6	0.673	1.669	8.8	18.2	165 E	39	70	7 20	15 39.46	-50 28.8	1.111	1.860	27.7	19.3	122 E	—	66
5 16	14 37.12	+ 2 56.5	0.690	1.674	12.5	18.4	159	42	67	7 25	15 48.93	-48 30.1	1.157	1.879	28.1	19.4	120 E	—	67
5 21	14 35.63	+ 0 34.1	0.713	1.679	15.9	18.6	153	44	65	7 30	15 58.46	-46 37.2	1.207	1.899	28.4	19.6	117 E	—	69
5 26	14 34.78	+ 1 29.6	0.742	1.685	19.0	18.8	147 E	46	63	8 4	16 8.02	-44 50.3	1.260	1.918	28.8	19.7	115 E	—	71
5 31	14 34.65	+ 3 14.0	0.774	1.692	21.8	18.9	142 E	48	61	8 9	16 17.60	-43 9.7	1.317						

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
411315 2010 TJ₁₆₂										133027 2002 XJ₄									
<i>(continuation)</i>										<i>(continuation)</i>									
3 7	12 58.81	-10 41.5	1.268	2.178	13.7	19.9	149 W	34	75	8 9	13 2.40	-5 59.1	1.928	1.672	31.7	21.2	60 E	17*	53*
3 12	12 55.68	-9 5.6	1.257	2.199	11.0	19.8	155 W	36	73	8 14	13 11.80	-7 30.8	1.955	1.659	31.2	21.2	58 E	15*	51*
3 17	12 52.07	-7 24.6	1.253	2.220	8.1	19.7	162 W	38	71	8 19	13 21.54	-9 2.4	1.981	1.645	30.7	21.2	56 E	14*	50*
3 22	12 48.14	-5 40.7	1.256	2.241	5.2	19.6	168 W	39	70	8 24	13 31.61	-10 33.8	2.005	1.632	30.1	21.2	54 E	12*	48*
3 27	12 44.05	-3 56.2	1.267	2.263	2.3	19.4	175 W	41	68	8 29	13 42.01	-12 4.6	2.028	1.619	29.5	21.2	52 E	11*	46*
4 1	12 39.96	-2 13.6	1.285	2.284	1.0	19.4	178 E	43	66	9 3	13 52.77	-13 34.8	2.050	1.606	28.9	21.2	50 E	10*	44*
4 6	12 36.03	-0 35.0	1.311	2.305	3.7	19.6	172 E	44	65	9 8	14 3.89	-15 3.9	2.070	1.594	28.3	21.1	49 E	9*	43*
4 11	12 32.39	+0 57.5	1.343	2.326	6.3	19.9	165 E	46	63	9 13	14 15.39	-16 31.8	2.089	1.581	27.7	21.1	47 E	8*	41*
4 16	12 29.17	+2 22.4	1.383	2.348	8.8	20.1	159 E	47	62	9 18	14 27.28	-17 58.2	2.107	1.569	27.0	21.1	45 E	7*	39*
4 21	12 26.43	+3 38.8	1.429	2.369	11.1	20.2	153 E	49	60	9 23	14 39.57	-19 22.7	2.123	1.557	26.3	21.1	43 E	6*	37*
5 1	12 22.71	+5 43.6	1.539	2.411	15.1	20.6	141 E	51	58	9 28	14 52.29	-20 45.0	2.138	1.545	25.7	21.1	42 E	6*	36*
5 11	12 21.46	+7 11.5	1.669	2.453	18.1	20.9	131 E	52	57	10 3	15 5.44	-22 4.6	2.153	1.533	25.0	21.0	40 E	5*	34*
5 21	12 22.60	+8 6.3	1.813	2.494	20.3	21.2	121 E	53	56	10 8	15 19.04	-23 21.2	2.166	1.522	24.3	21.0	39 E	4*	33*
5 31	12 25.93	+8 32.7	1.969	2.535	21.7	21.4	112 E	53*	55	10 13	15 33.09	-24 34.2	2.178	1.512	23.6	21.0	37 E	4*	31*
143381 2003 BC₂₁										27057 1998 SP₃₃									
12 23	12 17.24	-6 43.2	2.419	2.513	22.9	21.0	84 W	38	60*	12 23	12 19.03	-0 28.2	1.592	1.812	32.8	18.1	86 W	45	56*
1 2	12 22.85	-7 45.9	2.332	2.569	22.5	21.0	92 W	37	68*	1 2	12 31.65	-2 10.9	1.517	1.846	32.2	18.0	93 W	43	62*
1 12	12 26.21	-8 35.5	2.244	2.623	21.6	20.9	101 W	36	72*	1 12	12 41.81	-3 39.6	1.442	1.880	31.0	17.9	100 W	41	67*
1 22	12 27.08	-9 10.4	2.159	2.677	20.0	20.8	111 W	36	73	1 22	12 49.13	-4 52.6	1.368	1.915	29.3	17.8	108 W	40	69
2 1	12 25.30	-9 28.6	2.081	2.729	17.9	20.7	122 W	36	73	2 1	12 53.19	-5 47.7	1.297	1.951	26.8	17.6	117 W	39	70
2 11	12 20.86	-9 28.8	2.016	2.780	15.2	20.6	133 W	36	73	2 11	12 53.29	-6 23.3	1.234	1.987	23.5	17.5	127 W	39	70
2 21	12 13.99	-9 10.3	1.969	2.830	11.8	20.4	144 W	36	73	2 21	12 50.29	-6 37.9	1.182	2.023	19.3	17.3	137 W	38	71
3 2	12 5.19	-8 33.8	1.945	2.878	8.1	20.3	156 W	36	73	3 2	12 43.35	-6 31.1	1.146	2.060	14.3	17.1	149 W	38	71
3 12	11 55.27	-7 42.8	1.949	2.926	4.3	20.2	167 W	37	72	3 12	12 33.61	-6 5.4	1.131	2.096	8.7	16.9	161 W	39	70
3 17	11 50.19	-7 13.3	1.961	2.949	2.9	20.1	171 W	38	71	3 17	12 28.07	-5 47.0	1.132	2.115	5.8	16.8	168 W	39	70
3 22	11 45.20	-6 42.3	1.982	2.972	2.7	20.1	172 E	38	71	3 22	12 22.33	-5 26.0	1.139	2.133	3.0	16.6	174 W	40	69
3 27	11 40.40	-6 10.5	2.010	2.995	3.8	20.3	169 E	39	70	3 27	12 16.61	-5 3.5	1.154	2.151	1.4	16.6	177 E	40	69
4 1	11 35.92	-5 38.8	2.046	3.017	5.4	20.4	163 E	39	70	4 1	12 11.10	-4 40.6	1.174	2.169	3.6	16.8	172 E	40	69
4 6	11 31.84	-5 8.1	2.088	3.039	7.1	20.5	158 E	40	69	4 6	12 6.01	-4 18.5	1.202	2.187	6.2	17.0	166 E	41	68
4 11	11 28.24	-4 38.9	2.138	3.061	8.7	20.7	152 E	40	69	4 11	12 1.45	-3 58.1	1.235	2.204	8.8	17.2	160 E	41	68
4 16	11 25.14	-4 11.9	2.194	3.082	10.3	20.8	147 E	41	68	4 16	11 57.55	-3 40.2	1.274	2.222	11.2	17.4	154 E	41	68
4 21	11 22.60	-3 47.5	2.255	3.104	11.7	20.9	141 E	41	68	4 21	11 54.38	-3 25.4	1.319	2.240	13.4	17.5	149 E	42	67
4 26	11 20.62	-3 26.0	2.322	3.124	13.0	21.1	136 E	42	67	5 1	11 50.36	-3 6.8	1.423	2.275	17.2	17.9	138 E	42	67
5 1	11 19.22	-3 7.7	2.394	3.145	14.1	21.2	131 E	42	67	5 11	11 49.43	-3 4.0	1.543	2.309	20.1	18.2	128 E	42	67
5 6	11 18.37	-2 52.7	2.470	3.165	15.0	21.3	126 E	42	67	5 21	11 51.30	-3 16.4	1.677	2.342	22.2	18.4	119 E	42*	67
5 11	11 18.07	-2 41.0	2.549	3.185	15.8	21.4	121 E	42	67	5 31	11 55.62	-3 42.9	1.820	2.375	23.5	18.7	111 E	40*	68
133027 2002 XJ₄										27057 1998 SP₃₃									
12 23	12 18.16	+17 11.1	1.813	2.112	27.7	21.4	93 W	62	41*	6 10	12 1.99	-4 21.5	1.969	2.408	24.3	18.9	103 E	36*	68
1 2	12 29.25	+17 11.7	1.690	2.105	27.3	21.3	101 W	62	44*	6 20	12 10.03	-5 10.4	2.122	2.439	24.5	19.1	95 E	32*	69
1 12	12 38.24	+17 31.4	1.569	2.096	26.5	21.1	108 W	63	46*	6 30	12 19.48	-6 8.0	2.277	2.470	24.3	19.3	89 E	27*	70
1 22	12 44.65	+18 11.7	1.454	2.086	25.0	20.9	116 W	63	46*	7 10	12 30.06	-7 12.5	2.433	2.500	23.7	19.4	82 E	23*	70*
2 1	12 47.89	+19 13.1	1.347	2.075	22.9	20.6	125 W	64	45	7 20	12 41.58	-8 22.5	2.586	2.529	22.9	19.6	75 E	19*	67*
2 11	12 47.42	+20 32.8	1.252	2.063	20.2	20.4	134 W	66	43	7 30	12 53.91	-9 36.7	2.736	2.557	21.8	19.7	69 E	16*	62*
2 16	12 45.64	+21 17.8	1.210	2.057	18.6	20.2	138 W	66	43	8 9	13 6.91	-10 53.9	2.880	2.584	20.5	19.8	63 E	13*	57*
2 21	12 42.77	+22 4.6	1.173	2.050	17.0	20.1	143 W	67	42	8 19	13 20.50	-12 13.1	3.019	2.610	19.0	19.8	57 E	11*	51*
2 26	12 38.82	+22 51.7	1.140	2.042	15.3	20.0	147 W	68	41	8 29	13 34.62	-13 33.2	3.150	2.636	17.4	19.9	51 E	9*	45*
3 2	12 33.83	+23 37.1	1.112	2.035	13.8	19.9	151 W	69	40	9 8	13 49.19	-14 53.3	3.272	2.660	15.6	20.0	45 E	7*	39*
3 7	12 27.91	+24 18.6	1.090	2.027	12.6	19.8	153 W	69	40	9 18	14 4.18	-16 12.5	3.384	2.684	13.7	20.0	39 E	5*	33*
3 12	12 21.20	+24 54.1	1.074	2.019	12.0	19.7	155 W	70	39	9 28	14 19.56	-17 30.1	3.485	2.706	11.8	20.0	34 E	3*	27*
3 17	12 13.92	+25 21.8	1.064	2.011	12.0	19.7	155 W	70	39	10 8	14 35.27	-18 45.2	3.573	2.728	9.8	20.0	28 E	2*	22*
3 22	12 6.29	+25 39.9	1.059	2.002	12.7	19.7	154 W	71	38	10 18	14 51.29	-19 57.1	3.649	2.748	7.7	20.0	22 E	—	16*
3 27	11 58.61	+25 47.2	1.061	1.993	14.1	19.7	151 E	71	38	10 28	15 7.58	-21 5.2	3.710	2.768	5.7	19.9	16 E	—	10*
4 1	11 51.17	+25 43.0	1.068	1.984	15.8	19.8	147 E	71	38	11 7	15 24.09	-22 8.9	3.757	2.787	3.6	19.8	10 E	—	4*
4 6	11 44.22	+25 27.3	1.080	1.974	17.7	19.9	143 E	70	39	11 17	15 40.77	-23 7.6	3.788	2.804	1.7	19.7	5 E	—	—
4 11	11 37.97	+25 1.0	1.098	1.965	19.7	20.0	139 E	70	39	11 27	15 57.57	-24 0.8	3.804	2.821	1.5	19.8	4 W	—	—
4 16	11 32.59	+24 24.7	1.119	1.955	21.7	20.1	134 E	69	40	12 7	16 14.40	-24 48.3	3.803	2.836	3.3	19.9	10 W	—	3*
4 21	11 28.19	+23 39.7	1.145	1.944	23.5	20.1	129 E	69	40	12 17	16 31.20	-25 29.8	3.786	2.851	5.3	20.0	16 W	2*	9*
4 26	11 24.84	+22 47.1	1.174	1.934	25.3	20.2	125 E	68	41	12 27	16 47.86	-26 5.2	3.753	2.864	7.3	20.1	22 W	5*	15*
5 1	11 22.54	+21 48.1	1.205	1.923	26.9	20.3	120 E	67	42	1 6	17 4.29	-26 34.6	3.705	2.877	9.3	20.2	28 W	8*	21*
5 6	11 21.28	+20 43.8	1.240	1.912	28.3	20.4	116 E	66	43	1 16	17 20.39	-26 58.2	3.641	2.888	11.2	20.2	35 W	10*	28*
5 11	11 21.01	+19 35.2	1.275	1.901	29.5	20.5	112 E	65	44										
5 16	11 21.66	+18 23.1	1.313	1.889	30.6	20.6	108 E	63*	46										
5 21	11 23.18	+17 8.0	1.352	1.878	31.5	20.7	104 E	61*	47										
5 26	11 25.50	+15 50.4																	

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
357060 2001 OC₉₉										243298 2008 EN₈₂									
12 23	12 19.41	+ 8 44.3	2.356	2.547	22.7	21.5	90 W	54	48*	12 23	12 19.61	-11 4.2	2.419	2.477	23.1	20.5	82 W	34	63*
1 2	12 27.70	+ 9 24.7	2.244	2.572	22.2	21.4	98 W	54	52*	1 2	12 25.64	-11 52.5	2.337	2.537	22.8	20.5	90 W	33	71*
1 12	12 34.00	+10 26.1	2.135	2.597	21.2	21.3	107 W	55	53*	1 12	12 29.41	-12 26.3	2.251	2.596	22.0	20.4	99 W	33	76*
1 22	12 38.03	+11 49.2	2.033	2.621	19.7	21.1	116 W	57	52	1 22	12 30.69	-12 43.8	2.167	2.654	20.5	20.3	109 W	32	77
2 1	12 39.49	+13 33.6	1.942	2.644	17.6	21.0	126 W	59	50	2 1	12 29.31	-12 42.5	2.089	2.710	18.5	20.2	119 W	32	77
2 11	12 38.19	+15 36.0	1.867	2.666	14.9	20.8	136 W	61	48	2 11	12 25.26	-12 20.5	2.023	2.764	15.8	20.1	130 W	33	76
2 21	12 34.13	+17 50.0	1.813	2.687	12.0	20.7	145 W	63	46	2 21	12 18.75	-11 36.9	1.973	2.817	12.6	20.0	142 W	33	76
3 2	12 27.55	+20 6.2	1.783	2.707	9.4	20.5	154 W	65	44	3 2	12 10.25	-10 32.7	1.947	2.869	8.8	19.8	154 W	34	75
3 12	12 19.07	+22 12.8	1.781	2.726	8.0	20.5	158 W	67	42	3 7	12 5.50	- 9 54.0	1.943	2.894	6.9	19.8	160 W	35	74
3 17	12 14.41	+23 9.1	1.790	2.735	8.1	20.5	157 W	68	41	3 12	12 0.58	- 9 11.7	1.947	2.919	5.0	19.7	165 W	36	73
3 22	12 9.62	+23 59.0	1.807	2.744	8.7	20.6	155 W	69	40	3 17	11 55.59	- 8 26.8	1.958	2.943	3.4	19.6	170 W	37	72
3 27	12 4.86	+24 41.8	1.830	2.753	9.7	20.6	152 E	70	39	3 22	11 50.67	- 7 40.3	1.977	2.967	2.7	19.6	172 E	37	72
4 1	12 0.28	+25 16.8	1.860	2.762	10.9	20.7	149 E	70	39	3 27	11 45.93	- 6 53.0	2.004	2.991	3.4	19.7	170 E	38	71
4 6	11 55.99	+25 43.8	1.896	2.770	12.2	20.8	144 E	71	38	4 1	11 41.48	- 6 6.2	2.039	3.015	5.0	19.9	165 E	39	70
4 11	11 52.10	+26 2.9	1.937	2.778	13.5	20.9	140 E	71	38	4 6	11 37.42	- 5 20.7	2.081	3.038	6.7	20.0	159 E	40	69
4 16	11 48.69	+26 14.4	1.983	2.786	14.7	21.0	135 E	71	38	4 11	11 33.81	- 4 37.3	2.130	3.061	8.3	20.1	154 E	40	69
4 21	11 45.83	+26 18.6	2.034	2.793	15.9	21.1	130 E	71	38	4 21	11 28.14	- 3 19.6	2.247	3.105	11.4	20.4	142 E	42	67
4 26	11 43.56	+26 16.1	2.090	2.801	16.9	21.2	126 E	71	38	5 1	11 24.68	- 2 16.6	2.386	3.148	13.8	20.7	132 E	43	66
5 1	11 41.92	+26 7.5	2.148	2.808	17.8	21.3	121 E	71	38	5 11	11 23.44	- 1 29.9	2.543	3.190	15.6	20.9	122 E	44	65
5 6	11 40.89	+25 53.5	2.210	2.815	18.6	21.4	117 E	71	38	5 21	11 24.23	- 0 59.1	2.713	3.231	16.9	21.1	112 E	43*	65
										5 31	11 26.84	- 0 43.3	2.890	3.270	17.6	21.3	103 E	41*	65
										6 10	11 31.02	- 0 40.9	3.073	3.308	17.8	21.5	94 E	37*	65
231707 1998 TP										14222 1999 WS₁									
12 23	12 19.50	+34 5.5	1.207	1.679	35.3	18.5	100 W	79	26*	12 23	12 19.87	-17 7.0	3.764	3.712	15.1	20.6	79 W	28	66*
12 28	12 29.36	+34 13.6	1.178	1.684	34.8	18.4	102 W	79	27*	1 2	12 24.88	-18 4.4	3.573	3.670	15.5	20.4	88 W	27	75*
1 2	12 38.39	+34 25.6	1.151	1.689	34.3	18.4	104 W	79	27*	1 12	12 28.56	-18 55.8	3.381	3.627	15.6	20.3	97 W	26	82*
1 7	12 46.49	+34 41.4	1.124	1.695	33.7	18.3	107 W	80	28*	1 22	12 30.69	-19 39.3	3.191	3.584	15.3	20.1	106 W	25	84
1 12	12 53.62	+35 1.3	1.098	1.702	33.0	18.2	110 W	80	28*	2 1	12 31.03	-20 12.5	3.008	3.539	14.6	20.0	115 W	25	84
1 17	12 59.67	+35 24.9	1.073	1.709	32.2	18.2	112 W	80	28*	2 11	12 29.44	-20 32.7	2.835	3.494	13.4	19.8	125 W	24	85
1 22	13 4.55	+35 52.2	1.050	1.717	31.2	18.1	115 W	81	28*	2 21	12 25.85	-20 37.1	2.678	3.447	11.7	19.5	135 W	24	85
1 27	13 8.16	+36 22.5	1.028	1.726	30.2	18.1	118 W	81	28	3 2	12 20.32	-20 22.7	2.541	3.400	9.6	19.3	145 W	25	84
2 1	13 10.40	+36 54.9	1.007	1.735	29.1	18.0	121 W	82	27	3 12	12 13.16	-19 47.9	2.428	3.352	7.3	19.1	154 W	25	84
2 6	13 11.22	+37 28.1	0.989	1.744	27.9	17.9	124 W	82	27	3 22	12 4.89	-18 52.3	2.342	3.303	5.4	18.9	162 E	26	83
2 11	13 10.55	+38 0.5	0.972	1.754	26.7	17.9	127 W	83	26	3 27	12 0.56	-18 17.2	2.309	3.278	5.0	18.8	163 E	27	82
2 16	13 8.37	+38 30.4	0.959	1.765	25.4	17.8	130 W	84	25	4 1	11 56.22	-17 38.0	2.285	3.253	5.2	18.8	163 E	27	82
2 21	13 4.68	+38 55.7	0.948	1.776	24.1	17.8	133 W	84	25	4 6	11 52.00	-16 55.3	2.267	3.227	6.0	18.8	160 E	28	81
2 26	12 59.55	+39 13.8	0.940	1.787	22.8	17.7	136 W	84	25	4 11	11 47.97	-16 10.0	2.257	3.202	7.2	18.8	157 E	29	80
3 2	12 53.17	+39 22.3	0.936	1.799	21.7	17.7	138 W	84	25	4 16	11 44.24	-15 22.8	2.255	3.176	8.5	18.9	152 E	30	79
3 7	12 45.76	+39 18.9	0.936	1.811	20.7	17.7	140 W	84	25	4 21	11 40.88	-14 34.8	2.258	3.150	10.0	18.9	147 E	30	79
3 12	12 37.64	+39 2.0	0.940	1.824	20.0	17.7	141 W	84	25	4 26	11 37.97	-13 46.9	2.268	3.123	11.4	19.0	142 E	31	78
3 17	12 29.16	+38 30.6	0.949	1.836	19.6	17.7	142 W	84	25	5 1	11 35.56	-12 59.9	2.284	3.097	12.9	19.0	137 E	32	77
3 22	12 20.66	+37 44.4	0.963	1.850	19.6	17.7	141 W	83	26	5 6	11 33.69	-12 14.6	2.305	3.070	14.2	19.1	132 E	33	76
3 27	12 12.51	+36 43.8	0.981	1.863	19.9	17.8	141 E	82	27	5 11	11 32.38	-11 31.8	2.330	3.043	15.4	19.1	127 E	33	76
4 1	12 5.01	+35 30.2	1.004	1.877	20.4	17.9	139 E	81	28	5 21	11 31.48	-10 15.2	2.393	2.988	17.6	19.2	117 E	34*	74
4 6	11 58.40	+34 5.4	1.032	1.891	21.2	18.0	137 E	79	30	5 31	11 32.86	- 9 13.1	2.466	2.933	19.3	19.3	107 E	33*	73
4 11	11 52.80	+32 31.6	1.065	1.905	22.1	18.1	134 E	78	31	6 10	11 36.40	- 8 27.1	2.545	2.876	20.4	19.3	99 E	30*	72
4 16	11 48.29	+30 51.0	1.102	1.920	23.1	18.2	131 E	76	33	6 20	11 41.91	- 7 56.9	2.626	2.819	21.1	19.4	90 E	26*	72
4 21	11 44.88	+29 5.5	1.143	1.934	24.1	18.3	128 E	74	35	6 30	11 49.23	- 7 42.1	2.707	2.761	21.4	19.4	82 E	22*	70*
4 26	11 42.55	+27 16.9	1.189	1.949	25.0	18.5	125 E	72	37	7 10	11 58.15	- 7 41.5	2.783	2.702	21.3	19.4	75 E	13*	66*
5 1	11 41.25	+25 26.6	1.238	1.964	25.9	18.6	122 E	70	39	7 20	12 8.53	- 7 53.7	2.853	2.642	20.9	19.4	68 E	15*	61*
5 6	11 40.89	+23 36.0	1.290	1.979	26.7	18.7	118 E	69	40	7 30	12 20.24	- 8 17.3	2.915	2.581	20.1	19.4	61 E	12*	55*
5 11	11 41.39	+21 46.0	1.346	1.995	27.3	18.9	115 E	67	42	8 9	12 33.17	- 8 50.8	2.967	2.520	19.2	19.3	55 E	10*	49*
5 16	11 42.66	+19 57.2	1.404	2.010	27.9	19.0	112 E	65	44	8 19	12 47.25	- 9 32.7	3.009	2.458	18.0	19.3	49 E	8*	43*
5 21	11 44.63	+18 10.0	1.465	2.025	28.3	19.1	108 E	63*	46	8 29	13 2.45	-10 21.5	3.039	2.396	16.6	19.2	43 E	6*	37*
										9 8	13 18.72	-11 15.7	3.058	2.333	15.1	19.1	37 E	5*	31*
										9 18	13 36.07	-12 13.7	3.065	2.270	13.4	19.0	32 E	4*	26*
										9 28	13 54.53	-13 13.9	3.060	2.206	11.6	18.9	26 E	3*	20*
										10 8	14 14.11	-14 14.5	3.043	2.143	9.7	18.7	21 E		

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
402010 2003 QP₁₀₄										301988 2000 NN₁₀									
<i>(continuation)</i>										<i>(continuation)</i>									
3 17	11 59.69	-2 32.4	1.352	2.344	2.1	19.5	175 W	42	67	2 11	12 37.10	-30 43.9	2.389	2.973	17.2	20.5	117 W	14	85
3 22	11 53.52	-2 24.4	1.371	2.366	1.5	19.6	176 E	43	66	2 21	12 33.01	-31 19.4	2.283	2.976	15.5	20.3	126 W	14	85
3 27	11 47.62	-2 15.7	1.397	2.388	3.8	19.8	171 E	43	66	3 2	12 26.52	-31 30.5	2.192	2.978	13.6	20.2	135 W	13	84
4 1	11 42.14	-2 7.3	1.431	2.409	6.2	20.0	165 E	43	66	3 7	12 22.50	-31 25.7	2.154	2.979	12.5	20.1	139 W	14	85
4 11	11 32.93	-1 54.3	1.517	2.452	10.7	20.3	153 E	43	66	3 12	12 18.09	-31 13.6	2.121	2.979	11.4	20.0	144 W	14	85
4 21	11 26.53	-1 49.3	1.626	2.493	14.5	20.7	142 E	43	66	3 17	12 13.38	-30 53.9	2.094	2.979	10.4	19.9	147 W	14	85
5 1	11 23.11	-1 54.6	1.754	2.534	17.4	21.0	131 E	43	66	3 22	12 8.49	-30 26.7	2.073	2.979	9.6	19.9	150 W	15	86
5 11	11 22.53	-2 10.9	1.898	2.575	19.5	21.2	122 E	43	66	3 27	12 3.55	-29 52.4	2.059	2.979	9.0	19.8	152 E	15	86
5 21	11 24.47	-2 37.9	2.052	2.614	20.9	21.5	113 E	42*	67	4 1	11 58.71	-29 11.6	2.052	2.978	8.7	19.8	153 E	16	87
410002 2006 WW₂₉										301988 2000 NN₁₀									
12 23	12 20.78	-26 4.2	1.945	1.957	29.2	20.6	76 W	19	68*	4 6	11 54.10	-28 25.2	2.051	2.978	8.8	19.8	153 E	17	88
1 2	12 34.56	-27 24.7	1.877	1.997	29.2	20.5	82 W	18	75*	4 11	11 49.82	-27 34.1	2.057	2.976	9.2	19.9	152 E	17	88
1 12	12 46.17	-28 27.9	1.803	2.037	28.9	20.5	89 W	17	83*	4 16	11 45.97	-26 39.6	2.070	2.975	10.0	19.9	149 E	18	89
1 22	12 55.26	-29 11.4	1.727	2.078	28.1	20.4	96 W	16	87	4 21	11 42.63	-25 42.8	2.089	2.974	11.0	20.0	146 E	19	90
1 27	12 58.74	-29 24.6	1.688	2.099	27.5	20.4	100 W	16	87	4 26	11 39.87	-24 45.1	2.114	2.972	12.1	20.0	142 E	20	89
2 1	13 1.44	-29 31.5	1.649	2.120	26.8	20.3	104 W	15	86	5 1	11 37.72	-23 47.5	2.145	2.970	13.2	20.1	138 E	21	88
2 6	13 3.33	-29 31.4	1.610	2.141	25.9	20.3	109 W	15	86	5 6	11 36.20	-22 51.1	2.182	2.968	14.3	20.2	134 E	22	87
2 11	13 4.40	-29 23.9	1.573	2.162	24.8	20.2	113 W	16	87	5 11	11 35.32	-21 56.9	2.223	2.965	15.3	20.2	129 E	23	86
2 16	13 4.61	-29 8.2	1.538	2.183	23.5	20.1	118 W	16	87	5 21	11 35.41	-20 17.7	2.317	2.959	17.2	20.4	120 E	24*	84
2 21	13 3.97	-28 43.8	1.504	2.204	22.1	20.1	123 W	16	87	5 31	11 37.83	-18 53.7	2.425	2.953	18.6	20.5	112 E	24*	83
3 2	13 0.25	-27 26.3	1.446	2.247	18.7	19.9	134 W	18	89	6 10	11 42.32	-17 46.9	2.541	2.945	19.6	20.7	103 E	22*	82
3 12	12 53.79	-25 29.0	1.405	2.289	14.6	19.8	145 W	20	89	6 20	11 48.62	-16 57.5	2.663	2.936	20.2	20.8	95 E	19*	81
3 22	12 45.52	-22 54.6	1.387	2.331	10.1	19.6	156 W	22	87	6 30	11 56.48	-16 24.7	2.788	2.927	20.3	20.9	88 E	16*	79*
3 27	12 41.08	-21 25.9	1.387	2.352	8.1	19.5	161 W	24	85	7 10	12 5.67	-16 7.0	2.911	2.916	20.1	20.9	80 E	12*	74*
4 1	12 36.68	-19 51.9	1.395	2.373	6.4	19.5	165 E	25	84	7 20	12 16.00	-16 2.9	3.032	2.905	19.6	21.0	73 E	10*	67*
4 6	12 32.47	-18 14.6	1.410	2.394	5.6	19.5	166 E	27	82	7 30	12 27.31	-16 10.7	3.147	2.892	18.7	21.1	66 E	7*	60*
4 11	12 28.58	-16 36.3	1.433	2.415	6.1	19.6	165 E	28	81	8 9	12 39.48	-16 28.5	3.255	2.879	17.7	21.1	60 E	5*	53*
4 16	12 25.13	-14 59.1	1.463	2.436	7.4	19.7	162 E	30	79	8 19	12 52.40	-16 54.7	3.354	2.864	16.4	21.1	53 E	3*	47*
4 21	12 22.20	-13 24.8	1.500	2.457	9.1	19.8	157 E	32	77	8 29	13 6.01	-17 27.7	3.443	2.849	15.0	21.1	47 E	1*	40*
4 26	12 19.87	-11 55.2	1.543	2.477	11.0	20.0	152 E	33	76	9 8	13 20.23	-18 6.1	3.520	2.833	13.4	21.1	41 E	—	34*
5 1	12 18.16	-10 31.7	1.594	2.498	12.8	20.2	147 E	34	75	9 18	13 35.01	-18 48.3	3.585	2.816	11.7	21.0	35 E	—	28*
5 6	12 17.10	-9 15.0	1.650	2.518	14.5	20.3	141 E	36	73	9 28	13 50.33	-19 33.0	3.637	2.797	9.8	21.0	28 E	—	22*
5 11	12 16.67	-8 5.9	1.711	2.538	16.0	20.5	136 E	37	72	10 8	14 6.14	-20 18.9	3.675	2.778	7.9	20.9	23 E	—	16*
5 21	12 17.61	-6 10.5	1.847	2.578	18.5	20.7	126 E	39	70	10 18	14 22.42	-21 4.8	3.698	2.758	6.0	20.8	17 E	—	10*
5 31	12 20.78	-4 44.8	1.998	2.618	20.2	21.0	117 E	40*	69	10 28	14 39.14	-21 49.3	3.705	2.737	4.0	20.7	11 E	—	4*
6 10	12 25.85	-3 46.0	2.160	2.657	21.3	21.2	108 E	39*	68	11 7	15 56.26	-22 31.2	3.698	2.716	2.4	20.6	6 E	—	—
6 20	12 32.52	-3 10.2	2.328	2.695	21.8	21.4	100 E	36*	67	11 17	15 13.75	-23 9.5	3.675	2.693	2.1	20.5	6 W	—	—
306614 2000 QL₂										153474 2001 RK₄₃									
12 23	12 21.49	-22 16.9	2.513	2.540	22.4	21.1	77 W	23	67*	12 23	12 22.87	+ 8 6.2	2.226	2.411	24.1	21.0	89 W	53	48*
1 2	12 28.68	-24 39.8	2.444	2.544	22.6	21.1	84 W	20	76*	1 2	12 33.29	+ 7 29.8	2.059	2.373	24.3	20.8	96 W	52	53*
1 12	12 33.87	-26 57.2	2.347	2.575	22.4	21.0	92 W	18	86*	1 12	12 42.33	+ 7 5.8	1.894	2.333	24.2	20.6	104 W	52	56*
1 22	12 36.72	-29 6.9	2.250	2.605	21.8	20.9	100 W	16	87	1 22	12 49.65	+ 6 55.9	1.734	2.293	23.5	20.3	112 W	52	57
2 1	12 36.87	-31 5.5	2.158	2.635	20.8	20.8	108 W	14	85	2 1	12 54.80	+ 7 1.9	1.582	2.251	22.1	20.0	121 W	52	57
2 11	12 34.07	-32 48.4	2.074	2.663	19.4	20.7	116 W	12	83	2 11	12 57.31	+ 7 24.8	1.441	2.208	20.0	19.7	130 W	52	57
2 21	12 28.22	-34 10.2	2.001	2.691	17.6	20.6	125 W	11	82	2 21	12 56.73	+ 8 4.3	1.313	2.165	17.1	19.4	140 W	53	56
3 2	12 19.57	-35 4.4	1.944	2.718	15.5	20.5	133 W	10	81	3 2	12 52.63	+ 8 58.2	1.203	2.120	13.5	19.0	150 W	54	55
3 7	12 14.39	-35 19.3	1.922	2.731	14.4	20.4	137 W	10	81	3 7	12 49.24	+ 9 28.8	1.155	2.098	11.4	18.8	155 W	54	55
3 12	12 8.79	-35 25.6	1.906	2.744	13.4	20.4	140 W	10	81	3 12	12 44.99	+ 10 0.4	1.113	2.075	9.4	18.6	160 W	55	54
3 17	12 2.93	-35 23.0	1.895	2.756	12.5	20.3	143 W	10	81	3 17	12 39.94	+ 10 31.8	1.077	2.052	7.7	18.5	164 W	56	53
3 22	11 56.96	-35 11.6	1.890	2.769	11.8	20.3	145 E	10	81	3 22	12 34.22	+ 11 1.6	1.047	2.029	6.6	18.3	166 W	56	53
3 27	11 51.06	-34 51.7	1.891	2.781	11.3	20.3	147 E	10	81	3 27	12 27.98	+ 11 28.0	1.024	2.006	7.0	18.3	166 W	56	53
4 1	11 45.39	-34 24.1	1.899	2.793	11.1	20.3	147 E	11	82	4 1	12 21.45	+ 11 49.6	1.006	1.983	8.5	18.3	163 E	57	52
4 6	11 40.10	-33 49.7	1.912	2.805	11.2	20.3	147 E	11	82	4 6	12 14.86	+ 12 4.9	0.995	1.960	10.9	18.3	158 E	57	52
4 11	11 35.32	-33 9.9	1.932	2.816	11.6	20.4	146 E	12	83	4 11	12 8.45	+ 12 12.9	0.989	1.937	13.6	18.4	153 E	57	52
4 16	11 31.15	-32 26.0	1.958	2.827	12.2	20.4	143 E	13	84	4 16	12 2.43	+ 12 13.0	0.989	1.913	16.3	18.5	148 E	57	52
4 21	11 27.64	-31 39.1	1.989	2.838	13.0	20.5	141 E	13	84	4 21	11 57.03	+ 12 4.8	0.993	1.890	19.1	18.5	142 E	57	52
4 26	11 24.85	-30 50.7	2.026	2.849	13.8	20.6	137 E	14	85	5 1	11 48.70	+ 11 23.7	1.015	1.843	24.2	18.7	131 E	56	53
5 1	11 22.81	-30 2.0	2.068	2.860	14.7	20.7	134 E	15	86	5 11	11 44.31	+ 10 12.4	1.048	1.796	28.7	18.8	122 E	55	54
5 6	11 21.50	-29 14.2	2.114	2.870	15.6	20.8	130 E	16	87	5 21	11 44.02	+ 8 35.6	1.090	1.750	32.3	19.0	113 E	53*	55
5 11	11 20.91	-28 28.2	2.165	2.880	16.4	20.9	126 E	17	88	5 31	11 47.68	+ 6 37.4	1.135	1.704	35.1	19.1	105 E	49*	57
5 16	11 21.00	-27 44.6	2.220	2.890	17.2	20.9	122 E	17*	88	6 10	11 54.90	+ 4 21.6	1.182	1.659	37.3	19.2	98 E	44*	60
5 21	11 21.74	-27 4.1	2.278	2.900	17.9	21.0	118 E	17*	89	6 20	12 5.24	+ 1 50.9	1.229	1.616	38.9	19.2	92 E	38*	6

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°-26°	
153474 2001 RK₄₃ (continuation)									165144 2000 QO₇ (continuation)									
10 23	17 35.56	-30 39.1	1.686	1.386	36.2	19.5	55 E	9* 49*	4 11	12 27.31	+10 58.9	1.303	2.259	10.0	19.3	157 E	56	53
10 28	17 55.00	-30 49.4	1.712	1.394	35.5	19.5	55 E	10* 49*	4 16	12 23.26	+12 14.4	1.312	2.243	12.5	19.4	151 E	57	52
11 2	18 14.47	-30 49.3	1.739	1.403	34.8	19.6	54 E	10* 48*	4 21	12 19.61	+13 21.9	1.326	2.227	14.9	19.5	145 E	58	51
11 7	18 33.86	-30 39.1	1.769	1.414	34.0	19.6	53 E	11* 47*	4 26	12 16.48	+14 20.6	1.346	2.211	17.1	19.6	140 E	59	50
11 12	18 53.09	-30 19.0	1.800	1.425	33.2	19.6	52 E	11* 46*	5 1	12 13.98	+15 10.0	1.371	2.195	19.2	19.7	134 E	60	49
11 17	19 12.07	-29 49.4	1.833	1.438	32.4	19.7	51 E	12* 45*	5 11	12 11.13	+16 21.0	1.431	2.162	22.8	19.8	124 E	61	48
11 22	19 30.72	-29 11.0	1.867	1.452	31.6	19.7	50 E	13* 44*	5 21	12 11.29	+16 57.0	1.502	2.130	25.7	20.0	114 E	62	47
11 27	19 48.98	-28 24.3	1.903	1.467	30.7	19.8	49 E	14* 42*	5 31	12 14.45	+17 2.3	1.579	2.097	27.7	20.1	106 E	61*	47
12 2	20 6.79	-27 30.1	1.941	1.483	29.8	19.8	48 E	15* 41*	6 5	12 17.09	+16 54.9	1.619	2.080	28.5	20.2	102 E	60*	47
12 7	20 24.13	-26 29.2	1.981	1.500	28.9	19.8	47 E	16* 39*	6 10	12 20.39	+16 41.7	1.659	2.064	29.1	20.2	98 E	57*	47
12 12	20 40.97	-25 22.4	2.021	1.518	28.0	19.9	46 E	16* 38*	6 15	12 24.30	+16 23.1	1.699	2.047	29.6	20.3	95 E	55*	48
12 17	20 57.32	-24 10.5	2.064	1.536	27.0	19.9	45 E	17* 36*	6 20	12 28.79	+15 59.6	1.738	2.031	30.0	20.3	91 E	53*	48
12 22	21 13.17	-22 54.2	2.107	1.556	26.0	20.0	44 E	18* 34*	6 30	12 39.38	+14 59.7	1.815	1.998	30.4	20.4	85 E	48*	49
12 27	21 28.52	-21 34.3	2.152	1.575	25.0	20.0	43 E	19* 32*	7 10	12 51.88	+13 45.2	1.888	1.966	30.5	20.5	79 E	43*	50*
1	21 43.39	-20 11.4	2.197	1.596	24.0	20.0	41 E	19* 30*	7 20	13 6.05	+12 18.6	1.957	1.935	30.3	20.5	74 E	39*	51*
1	21 57.80	-18 46.3	2.244	1.617	22.9	20.1	40 E	20* 29*	7 30	13 21.74	+10 42.1	2.019	1.904	29.8	20.5	69 E	36*	50*
1	22 11.78	-17 19.4	2.291	1.638	21.9	20.1	38 E	20* 27*	8 9	13 38.80	+ 8 57.9	2.076	1.873	29.2	20.5	64 E	34*	48*
1	22 25.36	-15 51.3	2.338	1.660	20.8	20.2	37 E	20* 25*	8 19	13 57.13	+ 7 7.8	2.127	1.844	28.4	20.5	60 E	32*	46*
67502 2000 RE₄₄									348612 2005 YP									
12 23	12 23.83	- 8 12.6	3.051	3.070	18.5	21.3	82 W	37 60*	12 23	12 24.50	-10 40.8	1.358	1.544	39.0	20.9	81 W	34	62*
1	12 29.55	- 9 6.2	2.908	3.076	18.6	21.2	90 W	36 68*	1	12 45.64	-14 19.2	1.270	1.533	39.7	20.7	85 W	31	69*
1	12 33.60	- 9 50.5	2.765	3.081	18.4	21.1	99 W	35 73*	1	12 13 6.46	-17 57.3	1.184	1.523	40.2	20.6	89 W	27	76*
1	12 35.76	-10 24.9	2.625	3.085	17.6	21.0	109 W	35 74	1	12 13 26.88	-21 33.4	1.101	1.514	40.5	20.4	93 W	23	83*
2	12 35.79	-10 44.4	2.492	3.088	16.3	20.8	119 W	34 75	1	12 13 36.87	-23 20.0	1.061	1.510	40.5	20.3	95 W	22	87*
2	12 33.56	-10 23.4	2.625	3.085	17.6	21.0	109 W	35 74	2	12 13 46.66	-25 5.2	1.022	1.507	40.4	20.2	97 W	20	89
2	12 29.06	-10 39.9	2.266	3.090	11.8	20.4	140 W	34 75	2	12 13 56.22	-26 48.7	0.984	1.504	40.3	20.1	100 W	18	89
2	12 22.47	-10 12.7	2.183	3.090	8.8	20.2	152 W	35 74	2	12 14 5.51	-28 30.3	0.946	1.502	40.0	20.0	102 W	16	87
3	12 14.27	- 9 29.6	2.125	3.089	5.4	20.0	163 W	36 73	2	12 14 14.46	-30 9.7	0.910	1.500	39.7	19.9	104 W	15	86
3	12 5.15	- 8 33.6	2.097	3.087	2.6	19.8	172 E	36 73	2	12 14 22.98	-31 46.5	0.875	1.498	39.2	19.8	107 W	13	84
3	12 0.50	- 8 2.2	2.094	3.085	2.6	19.8	172 E	37 72	2	12 14 31.00	-33 20.3	0.841	1.497	38.6	19.7	109 W	12	83
4	11 55.96	- 7 29.5	2.099	3.083	3.8	19.9	168 E	38 71	2	12 14 38.41	-34 50.5	0.808	1.496	37.9	19.6	112 W	10	81
4	11 51.62	- 6 56.4	2.111	3.081	5.5	20.0	163 E	38 71	3	12 14 45.11	-36 16.9	0.777	1.496	37.0	19.5	115 W	9	80
4	11 47.58	- 6 23.6	2.130	3.079	7.2	20.1	157 E	39 70	3	12 14 50.99	-37 38.7	0.746	1.496	35.9	19.4	118 W	7	78
4	11 43.93	- 5 51.9	2.156	3.077	8.9	20.2	152 E	39 70	3	12 14 55.91	-38 55.3	0.718	1.497	34.8	19.3	121 W	6	77
4	11 40.72	- 5 21.8	2.189	3.074	10.5	20.3	146 E	40 69	3	12 14 59.74	-40 5.8	0.691	1.498	33.4	19.2	124 W	5	76
5	11 35.86	- 4 29.1	2.270	3.067	13.4	20.5	135 E	41 68	3	12 15 2.33	-41 8.9	0.665	1.499	31.9	19.0	128 W	4	75
5	11 33.22	- 3 48.8	2.371	3.060	15.8	20.7	125 E	41 68	4	12 15 3.60	-42 3.3	0.642	1.501	30.1	18.9	131 W	3	74
5	11 32.81	- 3 22.2	2.485	3.052	17.5	20.8	115 E	41* 67	4	12 15 3.49	-42 47.6	0.621	1.503	28.3	18.8	135 W	2	73
5	11 34.52	- 3 9.9	2.608	3.042	18.7	21.0	106 E	39* 67	4	12 15 2.00	-43 20.1	0.602	1.506	26.3	18.7	138 W	2	73
6	10 38.14	- 3 11.1	2.737	3.032	19.4	21.1	97 E	35* 67	4	12 14 59.19	-43 39.0	0.586	1.509	24.2	18.6	142 W	1	72
6	10 43.45	- 3 24.8	2.867	3.020	19.7	21.2	89 E	30* 67	4	12 14 55.21	-43 42.6	0.573	1.513	22.0	18.5	146 W	1	72
6	10 50.25	- 3 49.9	2.996	3.008	19.5	21.3	81 E	25* 67*	4	12 14 50.34	-43 29.6	0.563	1.517	20.0	18.4	149 W	2	73
7	10 58.32	- 4 24.9	3.120	2.994	19.0	21.3	73 E	21* 64*	5	12 14 44.94	-42 59.5	0.556	1.521	18.1	18.3	152 W	2	73
7	10 7.49	- 5 8.6	3.238	2.980	18.2	21.4	66 E	17* 59*	5	12 14 39.44	-42 13.0	0.553	1.526	16.8	18.2	154 E	3	74
7	10 12.74	- 5 59.9	3.348	2.964	17.2	21.4	59 E	13* 53*	5	12 14 34.24	-41 11.7	0.554	1.531	16.0	18.2	155 E	4	75
8	9 28.63	- 6 57.5	3.448	2.948	15.9	21.4	53 E	10* 47*	5	12 14 29.68	-39 57.9	0.558	1.536	16.0	18.2	155 E	5	76
8	9 12.40	- 8 0.4	3.536	2.930	14.5	21.4	46 E	8* 40*	5	12 14 26.06	-38 34.6	0.567	1.542	16.8	18.3	154 E	6	77
8	9 52.79	- 9 7.6	3.612	2.911	12.9	21.4	40 E	5* 34*	5	12 14 23.59	-37 5.6	0.579	1.548	18.1	18.4	152 E	8	79
9	8 13 5.83	-10 18.0	3.675	2.892	11.1	21.3	34 E	3* 28*	5	12 14 22.38	-35 34.4	0.596	1.554	19.9	18.5	149 E	9	80
9	8 13 19.43	-11 30.8	3.724	2.871	9.3	21.3	28 E	1* 21*	6	12 14 22.47	-34 4.4	0.616	1.560	21.8	18.7	145 E	11	82
9	8 13 33.57	-12 45.1	3.758	2.850	7.4	21.2	21 E	— 15*	6	12 14 23.78	-32 37.9	0.639	1.567	23.8	18.8	142 E	12	83
10	8 13 48.21	-13 59.8	3.777	2.827	5.4	21.1	15 E	— 9*	6	12 14 26.26	-31 16.7	0.666	1.574	25.7	19.0	138 E	14	85
10	8 14 3.34	-15 14.3	3.781	2.803	3.4	21.0	10 E	— 3*	6	12 14 29.80	-30 2.1	0.696	1.582	27.5	19.1	134 E	15	86
10	8 14 18.91	-16 27.4	3.769	2.779	1.4	20.8	4 E	— —	6	12 14 34.32	-28 54.9	0.729	1.589	29.1	19.3	130 E	16*	87
11	7 14 34.92	-17 38.4	3.741	2.753	1.3	20.7	4 W	— —	6	12 14 39.72	-27 55.4	0.764	1.597	30.6	19.4	127 E	17*	88
11	7 14 51.34	-18 46.3	3.698	2.727	3.3	20.8	9 W	— 2*	7	12 14 45.90	-27 3.4	0.802	1.605	31.9	19.6	123 E	18*	89
11	7 15 8.12	-19 50.4	3.640	2.699	5.4	20.9	15 W	5* 7*	7	12 14 52.74	-26 18.3	0.842	1.613	33.0	19.8	120 E	18*	90
12	7 15 25.24	-20 49.7	3.568	2.671	7.6	20.9	21 W	9* 12*	7	12 15 8.15	-25 7.1	0.927	1.629	34.8	20.0	114 E	19*	89
12	7 15 42.65	-21 43.6	3.481	2.641	9.7	21.0	27 W	12* 17*	7	12 15 25.45	-24 16.7	1.019	1.646	35.9	20.3	108 E	19*	88
12	7 16 0.29	-22 31.2	3.381	2.611	11.8	20.9	33 W	14* 23*	8	12 15 44.21	-23 41.7	1.117	1.664	36.5	20.5	103 E	19*	88
1	16 18.08	-23 11.9	3.270	2.580	13.9	20.9	39 W	16* 30*	8	12 16 4.11	-23 16.7	1.219	1.681	36.7	20.7	97 E	19*	87
1	16 35.94	-23 45.2	3.147	2.548	15.8	20.9	45 W	17* 37*	8	12 16 24.95	-22 57.4	1.325	1.699	36.4	20.9	92 E	20*	86*
165144 2000 QO₇									348612 2005 YP									
12 23	12 23.96	- 6 8.1	2.508	2.574	22.3	21.4	83 W	39 59*	7 10	14 52.74	-26 18.3	0.842	1.613	33.0	19.8	120 E	18	

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

19/20	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°	19/21	α_{2000}	δ_{2000}	Δ	r	β	V	ψ	45°	-26°
348612 2005 YP										9572 1988 RS₆									
<i>(continuation)</i>										<i>(continuation)</i>									
9 18	17 8.63	-22 21.1	1.543	1.734	35.1	21.3	83 E	20*	77*	3 17	12 23.96	-2 44.7	1.652	2.637	3.8	19.1	170 W	42	67
9 28	17 31.20	-21 58.3	1.654	1.751	34.1	21.4	78 E	21*	72*	3 22	12 19.10	-2 11.2	1.634	2.629	1.4	19.0	176 W	43	66
338445 2003 ET₄₇										52007 2002 EQ₄₇									
12 23	12 24.64	-4 19.3	2.056	2.171	26.7	21.4	83 W	41	57*	12 23	12 26.09	-5 8.0	4.841	4.813	11.7	20.9	83 W	40	58*
1 2	12 35.66	-7 19.9	1.885	2.121	27.6	21.1	90 W	38	65*	1 2	12 28.88	-5 45.6	4.694	4.827	11.7	20.9	92 W	39	65*
1 12	12 45.60	-10 33.2	1.718	2.071	28.2	20.9	96 W	34	73*	1 12	12 30.44	-6 16.4	4.547	4.840	11.5	20.8	101 W	39	70*
1 22	12 54.16	-14 2.3	1.557	2.021	28.3	20.6	103 W	31	78	1 22	12 30.69	-6 40.0	4.406	4.853	10.9	20.7	111 W	38	71
2 1	13 0.87	-17 50.3	1.404	1.972	28.0	20.4	110 W	27	82	2 1	12 29.58	-6 55.6	4.275	4.865	9.9	20.6	122 W	38	71
2 11	13 5.16	-21 59.9	1.262	1.923	27.2	20.0	117 W	23	86	2 11	12 27.11	-7 3.1	4.159	4.878	8.6	20.5	132 W	38	71
2 21	13 6.27	-26 32.7	1.135	1.875	26.0	19.7	124 W	18	89	2 21	12 23.38	-7 2.4	4.063	4.890	7.0	20.4	143 W	38	71
2 26	13 5.33	-28 57.3	1.077	1.852	25.2	19.6	127 W	16	87	3 2	12 18.58	-6 54.0	3.991	4.903	5.0	20.3	154 W	38	71
3 2	13 3.22	-31 26.2	1.024	1.829	24.4	19.4	130 W	14	85	3 12	12 13.02	-6 39.1	3.947	4.914	3.0	20.1	165 W	38	71
3 7	12 59.80	-33 58.3	0.976	1.806	23.7	19.2	133 W	11	82	3 22	12 7.05	-6 19.2	3.934	4.926	1.2	20.0	174 W	39	70
3 12	12 54.95	-36 31.4	0.934	1.783	23.0	19.1	135 W	8	79	4 1	12 1.08	-5 56.6	3.951	4.938	2.1	20.1	170 E	39	70
3 17	12 48.57	-39 3.0	0.896	1.761	22.6	19.0	137 W	6	77	4 11	11 55.52	-5 33.5	3.999	4.949	4.1	20.3	159 E	39	70
3 22	12 40.59	-41 29.8	0.864	1.740	22.4	18.9	138 W	3	74	4 21	11 50.71	-5 12.3	4.076	4.960	6.1	20.4	148 E	40	69
3 27	12 31.05	-43 48.1	0.838	1.719	22.5	18.8	139 W	1	72	5 1	11 46.92	-4 55.0	4.178	4.971	7.8	20.5	138 E	40	69
4 1	12 20.12	-45 54.2	0.817	1.699	23.0	18.7	138 E	-	70	5 11	11 44.33	-4 43.1	4.301	4.982	9.2	20.7	128 E	40	69
4 6	12 8.10	-47 45.1	0.801	1.679	23.9	18.7	137 E	-	68	5 21	11 43.00	-4 37.5	4.441	4.992	10.3	20.8	118 E	40*	69
4 11	11 55.41	-49 18.6	0.790	1.660	25.1	18.6	135 E	-	67	5 31	11 42.95	-4 38.9	4.593	5.002	11.1	20.9	108 E	38*	69
4 16	11 42.60	-50 33.7	0.784	1.642	26.5	18.6	133 E	-	65	6 10	11 44.11	-4 47.5	4.754	5.012	11.5	21.0	99 E	34*	69
4 21	11 30.27	-51 30.5	0.781	1.625	28.0	18.7	131 E	-	64	6 20	11 46.41	-5 2.9	4.917	5.022	11.7	21.1	90 E	29*	69
4 26	11 19.01	-52 10.9	0.781	1.609	29.6	18.7	128 E	-	64	6 30	11 49.75	-5 25.0	5.081	5.031	11.5	21.1	81 E	24*	68*
5 1	11 9.32	-52 37.7	0.784	1.593	31.2	18.7	125 E	-	63	7 10	11 54.01	-5 53.2	5.241	5.041	11.1	21.2	73 E	19*	64*
5 6	11 1.55	-52 54.2	0.789	1.579	32.7	18.8	122 E	-	63	7 20	11 59.07	-6 27.0	5.394	5.050	10.5	21.2	65 E	14*	58*
5 11	10 55.90	-53 3.6	0.796	1.566	34.1	18.8	120 E	-	63	7 30	12 4.83	-7 6.0	5.537	5.059	9.7	21.3	57 E	10*	51*
5 16	10 52.46	-53 8.8	0.804	1.553	35.4	18.8	117 E	-	63	8 9	12 11.20	-7 49.4	5.669	5.067	8.7	21.3	49 E	7*	43*
5 21	10 51.27	-53 12.1	0.813	1.542	36.6	18.9	115 E	-	63	8 19	12 18.07	-8 36.8	5.786	5.076	7.6	21.3	42 E	4*	36*
5 26	10 52.30	-53 15.5	0.823	1.532	37.6	18.9	113 E	-	63	8 29	12 25.37	-9 27.5	5.887	5.084	6.4	21.3	34 E	1*	28*
5 31	10 55.50	-53 20.5	0.833	1.524	38.5	19.0	111 E	-	63	9 8	12 33.00	-10 21.1	5.970	5.092	5.1	21.2	27 E	-	20*
6 5	11 0.77	-53 28.1	0.843	1.516	39.2	19.0	109 E	-	63	9 18	12 40.90	-11 17.1	6.035	5.099	3.8	21.2	20 E	-	13*
6 10	11 8.04	-53 38.3	0.853	1.510	39.9	19.0	108 E	-	62	9 28	12 49.00	-12 14.9	6.079	5.107	2.5	21.1	13 E	-	5*
6 15	11 17.26	-53 51.0	0.863	1.505	40.4	19.1	106 E	-	62	10 8	12 57.21	-13 14.0	6.103	5.114	1.4	21.1	7 E	-	-
6 20	11 28.41	-54 5.7	0.873	1.502	40.8	19.1	105 E	-	62*	10 18	13 5.46	-14 14.0	6.106	5.121	1.5	21.1	8 W	-	2*
6 25	11 41.46	-54 21.6	0.884	1.500	41.1	19.1	104 E	-	61*	10 28	13 13.68	-15 14.4	6.087	5.128	2.6	21.2	14 W	2*	7*
6 30	11 56.35	-54 37.8	0.895	1.500	41.3	19.2	103 E	-	61*	11 7	13 21.78	-16 14.8	6.047	5.134	4.0	21.2	21 W	8*	13*
7 5	12 13.01	-54 52.8	0.906	1.500	41.4	19.2	102 E	-	61*	11 17	13 29.68	-17 14.8	5.987	5.141	5.3	21.3	29 W	13*	19*
7 10	12 31.35	-55 4.7	0.919	1.503	41.5	19.2	102 E	-	60*	11 27	13 37.26	-18 13.8	5.907	5.147	6.5	21.3	36 W	18*	26*
7 15	12 51.26	-55 11.8	0.932	1.506	41.5	19.3	101 E	-	60*	12 7	13 44.44	-19 11.6	5.809	5.152	7.7	21.3	44 W	21*	33*
7 20	13 12.56	-55 12.4	0.947	1.511	41.4	19.3	101 E	-	60*	12 17	13 51.08	-20 7.6	5.694	5.158	8.7	21.3	53 W	23*	41*
7 25	13 35.02	-55 4.7	0.964	1.518	41.2	19.3	100 E	-	60*	12 27	13 57.07	-21 1.5	5.565	5.163	9.6	21.3	61 W	24*	50*
7 30	13 58.34	-54 47.5	0.982	1.525	41.0	19.4	100 E	-	61*	1 6	14 2.27	-21 52.7	5.425	5.168	10.3	21.3	70 W	23	60*
8 4	14 22.18	-54 19.7	1.003	1.534	40.8	19.4	99 E	-	61*	1 16	14 6.54	-22 40.8	5.276	5.173	10.7	21.3	79 W	22	70*
8 9	14 46.19	-53 40.6	1.027	1.545	40.5	19.5	98 E	-	62*										
8 14	15 10.04	-52 50.2	1.053	1.556	40.2	19.6	98 E	-	63*										
8 19	15 33.44	-51 49.1	1.082	1.568	39.8	19.6	97 E	-	64*										
8 24	15 56.17	-50 38.3	1.115	1.582	39.5	19.7	96 E	-	65*										
8 29	16 18.05	-49 19.0	1.151	1.597	39.0	19.8	95 E	-	66*										
9 3	16 38.96	-47 52.8	1.190	1.612	38.6	19.9	94 E	-	68*										
9 8	16 58.86	-46 20.9	1.232	1.629	38.2	19.9	93 E	-	69*										
9 13	17 17.75	-44 44.9	1.278	1.646	37.7	20.0	91 E	-	71*										
9 18	17 35.67	-43 6.0	1.327	1.665	37.1	20.1	90 E	1*	72*										
9 23	17 52.67	-41 25.5	1.379	1.684	36.6	20.2	88 E	3*	73*										
9 28	18 8.82	-39 44.2	1.434	1.703	36.0	20.3	87 E	5*	74*										
10 3	18 24.17	-38 3.0	1.491	1.724	35.3	20.4	85 E	7*	74*										
10 8	18 38.79	-36 22.3	1.552	1.745	34.7	20.5	83 E	8*	74*										
10 13	18 52.76	-34 42.6	1.614	1.766	34.0	20.6	81 E	10*	74*										
10 18	19 6.14	-33 4.2	1.679	1.788	33.2	20.7	79 E	12*	73*										
10 23	19 19.01	-31 27.3	1.746	1.811	32.4	20.8	77 E	13*	71*										
10 28	19 31.39	-29 52.0	1.814	1.834	31.6	20.9	75 E	15*	69*										
11 2	19 43.34	-28 18.3	1.884	1.857	30.7	20.9	73 E	17*	67*										
11 7	19 54.90	-26 46.3	1.955	1.881	29.9	21.0	71 E	18*	64*										
11 12	20 6.11	-25 15.9	2.027	1.905	28.9	21.1	69 E	19*	61*										
11 17	20 17.01	-23 46.9	2.100	1.929	28.0	21.2	66 E	21*	58*										
11 22	20 27.62	-22 19.4	2.173	1.953	27.0	21.3	64 E	22*	55*										
11 27	20 37.97	-20 53.2	2.246	1.978	26.0	21.3	62 E	23*	52*										
12 2	20 48.07	-19 28.3	2.320	2.002	25.0	21.4	59 E	25*	48*										
12 7	20 57.96	-18 4.5	2.393	2.027	24.0	21.5	57 E	26*	45*										
9572 1988 RS₆										9572 1988 RS₆									
12 23	12 25.57	-3 13.3	2.668	2.736	20.9	20.9	83 W	42	57*	12 23									