

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>276888 2004 RM<sub>323</sub></b>										<b>4947 Ninkasi</b> <i>(continuation)</i>									
3 2	17 33.97	-25 25.0	1.865	1.913	30.4	21.4	77 W	19*	71*	10 28	20 51.92	-1 7.9	0.476	1.174	56.5	18.8	100 E	44	65*
3 12	17 57.84	-25 16.0	1.727	1.870	31.7	21.2	82 W	19*	76*	11 2	21 7.75	-3 0.6	0.484	1.167	57.3	18.8	98 E	42	67*
3 22	18 21.67	-24 49.9	1.593	1.829	33.0	21.0	87 W	19*	81*	11 7	21 24.35	-4 43.2	0.493	1.160	58.0	18.9	97 E	40	68*
4 1	18 45.24	-24 6.2	1.464	1.789	34.0	20.8	91 W	20*	85*	11 12	21 41.62	-6 14.9	0.503	1.154	58.6	18.9	96 E	39	69*
4 11	19 8.35	-23 4.5	1.340	1.750	34.7	20.6	96 W	21*	87*	11 17	21 59.45	-7 34.7	0.515	1.150	59.0	19.0	94 E	37	69*
4 21	19 30.75	-21 45.0	1.224	1.714	35.3	20.4	100 W	22*	86	11 27	22 36.34	-9 36.7	0.540	1.143	59.6	19.1	92 E	35	70*
5 1	19 52.14	-20 8.3	1.115	1.681	35.5	20.1	105 W	24*	84	12 7	23 14.02	-10 48.5	0.570	1.140	59.8	19.2	90 E	34	70*
5 11	20 12.24	-18 15.8	1.014	1.650	35.3	19.9	109 W	26*	82	12 17	23 51.76	-11 12.6	0.604	1.140	59.6	19.3	88 E	34	68*
5 21	20 30.71	-16 9.3	0.921	1.623	34.7	19.6	114 W	28*	80	12 22	0 10.49	-11 8.1	0.622	1.142	59.4	19.4	88 E	34	68*
5 31	20 47.14	-13 51.9	0.837	1.599	33.6	19.3	119 W	31*	78	12 27	0 29.04	-10 53.9	0.641	1.145	59.1	19.4	87 E	34	67*
6 10	21 1.13	-11 27.4	0.763	1.580	31.9	19.1	125 W	33*	75	1 1	0 47.38	-10 30.9	0.660	1.148	58.7	19.5	86 E	34	66*
6 20	21 12.22	-9 1.1	0.698	1.564	29.5	18.8	131 W	36	73	1 6	1 5.48	-9 59.9	0.680	1.153	58.3	19.6	86 E	35	66*
6 25	21 16.54	-7 49.4	0.670	1.558	28.0	18.6	134 W	37	72	1 11	1 23.36	-9 21.9	0.701	1.158	57.8	19.6	85 E	36	65*
6 30	21 19.98	-6 40.1	0.644	1.553	26.3	18.5	137 W	38	71	1 16	1 41.01	-8 37.6	0.723	1.164	57.2	19.7	85 E	36	64*
7 5	21 22.54	-5 34.1	0.621	1.550	24.4	18.4	141 W	39	70	<b>510421 2011 UX<sub>280</sub></b>									
7 10	21 24.21	-4 32.6	0.602	1.547	22.3	18.2	145 W	40	69	3 2	18 3.63	-19 2.5	2.070	1.979	28.2	21.4	71 W	24*	63*
7 15	21 25.00	-3 36.7	0.585	1.546	20.1	18.1	148 W	41	68	3 12	18 26.71	-18 13.8	1.926	1.930	29.9	21.2	75 W	24*	68*
7 20	21 24.95	-2 47.6	0.572	1.546	17.8	18.0	152 W	42	67	3 22	18 49.84	-17 7.3	1.785	1.882	31.4	21.1	80 W	25*	72*
7 25	21 24.17	-2 6.2	0.562	1.547	15.4	17.8	156 W	43	66	4 1	19 12.87	-15 42.6	1.650	1.835	32.8	20.9	84 W	26*	75*
7 30	21 22.81	-1 33.4	0.556	1.549	13.1	17.7	160 W	43	66	4 11	19 35.69	-13 59.6	1.520	1.790	34.0	20.7	88 W	28*	76*
8 9	21 19.07	0 54.0	0.556	1.557	9.7	17.6	165 W	44	65	4 21	19 58.21	-11 58.8	1.398	1.748	35.1	20.5	92 W	30*	76*
8 19	21 15.30	0 48.0	0.571	1.570	9.8	17.7	165 E	44	65	5 1	20 20.25	-9 41.4	1.283	1.708	36.0	20.3	96 W	32*	74
8 29	21 13.14	-1 7.6	0.603	1.587	13.1	18.0	159 E	44	65	5 11	20 41.70	-7 9.1	1.176	1.671	36.6	20.1	99 W	35*	71
9 3	21 13.06	-1 23.3	0.624	1.598	15.2	18.1	155 E	44	65	5 21	21 2.41	-4 24.5	1.078	1.637	37.0	19.8	103 W	38*	68
9 8	21 13.75	-1 41.0	0.650	1.609	17.4	18.3	152 E	43	66	5 31	21 22.15	-1 31.7	0.988	1.608	37.1	19.6	107 W	41*	66
9 13	21 15.24	-1 59.4	0.679	1.621	19.4	18.5	148 E	43	66	6 10	21 40.74	+1 24.4	0.908	1.583	36.9	19.4	111 W	45*	63
9 18	21 17.56	-2 17.2	0.712	1.634	21.3	18.7	144 E	43	66	6 15	21 49.51	+2 51.9	0.870	1.572	36.6	19.3	113 W	47*	61
9 23	21 20.69	-2 33.4	0.748	1.648	23.1	18.8	140 E	42	67	6 20	21 57.87	+4 17.7	0.835	1.562	36.2	19.2	115 W	49*	60
9 28	21 24.59	-2 47.0	0.788	1.663	24.6	19.0	136 E	42	67	6 25	22 5.77	+5 40.9	0.802	1.554	35.7	19.0	117 W	51*	58
10 8	21 34.45	-3 4.6	0.876	1.695	27.2	19.4	129 E	42	67	6 30	22 13.17	+7 0.3	0.772	1.547	35.1	18.9	119 W	52*	57
10 18	21 46.62	-3 7.2	0.976	1.729	29.1	19.7	122 E	42	67	7 5	22 20.03	+8 14.8	0.743	1.541	34.2	18.8	121 W	53	56
10 28	22 0.61	-2 53.7	1.087	1.766	30.3	20.0	116 E	42	67	7 10	22 26.29	+9 23.4	0.716	1.536	33.3	18.7	124 W	54	55
11 7	22 15.94	-2 24.7	1.207	1.805	31.0	20.3	110 E	43	66	7 15	22 31.90	+10 24.6	0.691	1.534	32.1	18.6	127 W	55	54
11 17	22 32.25	-1 41.5	1.336	1.846	31.3	20.6	104 E	43	66*	7 20	22 36.79	+11 17.2	0.669	1.532	30.7	18.5	130 W	56	53
11 27	22 49.25	0 45.7	1.472	1.888	31.1	20.9	98 E	44	63*	7 25	22 44.30	+11 59.9	0.649	1.532	29.2	18.4	133 W	57	52
12 7	23 6.71	+0 20.8	1.614	1.931	30.6	21.1	93 E	45	59*	7 30	22 40.92	+12 31.3	0.631	1.533	27.4	18.3	136 W	58	51
12 17	23 24.47	+1 36.0	1.761	1.976	29.8	21.3	87 E	47	54*	8 4	22 46.91	+12 50.6	0.616	1.536	25.4	18.1	139 W	58	51
12 27	23 42.44	+2 58.1	1.911	2.021	28.8	21.5	82 E	48	49*	8 9	22 48.77	+12 56.9	0.603	1.540	23.2	18.0	143 W	58	51
<b>4947 Ninkasi</b>										8 19	22 50.46	+12 28.5	0.587	1.552	18.4	17.8	151 W	57	52
3 2	17 53.73	-18 47.4	1.576	1.600	36.4	21.5	73 W	24*	65*	8 29	22 50.20	+11 7.4	0.584	1.569	13.4	17.7	159 W	56	53
3 12	18 16.62	-17 13.3	1.480	1.597	37.4	21.4	78 W	26*	69*	9 8	22 49.29	+9 5.4	0.598	1.592	9.7	17.6	165 E	54	55
3 22	18 38.41	-15 16.4	1.383	1.592	38.3	21.2	82 W	28*	73*	9 13	22 49.00	+7 54.9	0.611	1.605	9.2	17.7	165 E	53	56
4 1	18 58.91	-12 56.7	1.286	1.586	39.0	21.1	87 W	30*	75*	9 18	22 49.02	+6 41.7	0.629	1.619	9.8	17.8	164 E	52	57
4 11	19 17.96	-10 14.1	1.189	1.577	39.4	20.9	92 W	33*	74*	9 23	22 49.51	+5 28.7	0.651	1.634	11.3	17.9	161 E	50	59
4 21	19 35.39	-7 8.6	1.095	1.567	39.6	20.7	96 W	36*	71	9 28	22 50.56	+4 18.4	0.678	1.650	13.2	18.1	158 E	49	60
5 1	19 50.93	-3 40.6	1.003	1.554	39.5	20.5	101 W	40*	68	10 3	22 52.21	+3 13.0	0.709	1.667	15.3	18.3	154 E	48	61
5 11	20 4.34	+0 9.1	0.916	1.540	39.1	20.3	106 W	44*	64	10 8	22 54.49	+2 13.9	0.745	1.685	17.4	18.5	150 E	47	62
5 21	20 15.26	+4 19.1	0.835	1.525	38.3	20.1	111 W	49*	60	10 13	22 57.39	+1 22.2	0.784	1.703	19.3	18.7	146 E	46	63
5 31	20 23.23	+8 45.6	0.760	1.507	37.3	19.8	116 W	54*	55	10 18	23 0.90	+0 38.5	0.828	1.723	21.1	18.9	141 E	46	63
6 5	20 25.96	+11 3.2	0.725	1.498	36.8	19.7	118 W	56	53	10 28	23 9.65	-0 24.0	0.927	1.764	24.2	19.3	133 E	45	64
6 10	20 27.77	+13 22.3	0.692	1.489	36.1	19.5	120 W	58	51	11 7	23 20.35	-0 54.9	1.040	1.807	26.4	19.7	126 E	44	65
6 15	20 28.58	+15 41.7	0.661	1.479	35.5	19.4	122 W	61	48	11 17	23 32.60	-0 58.1	1.165	1.853	28.0	20.0	119 E	44	65
6 20	20 28.30	+17 59.3	0.633	1.468	34.9	19.3	124 W	63	46	11 27	23 46.09	-0 37.8	1.300	1.900	28.9	20.3	112 E	44	65
6 25	20 26.89	+20 13.1	0.606	1.458	34.4	19.2	126 W	65	44	12 7	0 0.50	+0 1.3	1.445	1.949	29.2	20.6	105 E	45	64*
6 30	20 24.31	+22 20.3	0.582	1.447	33.9	19.0	127 W	67	42	12 17	0 15.60	+0 54.9	1.597	1.998	29.1	20.9	99 E	46	61*
7 5	20 20.58	+24 18.5	0.560	1.436	33.5	18.9	129 W	69	40	12 27	0 31.24	+1 59.7	1.754	2.049	28.7	21.1	93 E	47	57*
7 10	20 15.74	+26 4.6	0.541	1.424	33.3	18.8	130 W	71	38	1 6	0 47.26	+3 12.3	1.916	2.100	27.9	21.4	87 E	48	53*
7 15	20 9.87	+27 35.7	0.523	1.413	33.3	18.7	130 W	73	36	<b>250315 2003 QZ<sub>107</sub></b>									
7 20	20 3.16	+28 48.6	0.508	1.401	33.5	18.7	131 W	74	35	3 2	18 4.81	-16 49.4	2.178	2.071	26.8	21.4	71 W	26*	62*
7 25	19 55.86	+29 40.7	0.495	1.389	33.9	18.6	130 E	75	34	3 12	18 24.79	-16 37.1	2.035	2.032	28.3	21.2	76 W	26*	67*
7 30	19 48.33	+30 10.4	0.484	1.376	34.5	18.5	130 E	75	34	3 22	18 44.49	-16 15.9	1.892	1.994	29.6	21.1	81 W	26*	72*
8 4	19 40.92	+30 16.9	0.474	1.364	35.3	18.5	129 E	75	34	4 1	19 3.79	-15 47.0	1.751	1.955	30.7	20.9	86 W	27*	76*
8 9																			

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$
<b>250315 2003 QZ<sub>107</sub></b>									<b>16474 1990 QG<sub>3</sub></b>								
<i>(continuation)</i>									<i>(continuation)</i>								
7 10	21 15.72	-14 25.4	0.659	1.625	17.7	18.0	151 W	31 78	4 11	19 25.13	-23 26.9	1.828	2.113	28.3	20.8	92 W	19* 85*
7 20	21 16.93	-16 19.7	0.608	1.603	12.0	17.6	161 W	29 80	4 21	19 40.45	-23 3.8	1.681	2.076	28.6	20.6	98 W	20* 87
7 30	21 15.51	-18 42.8	0.573	1.584	5.7	17.1	171 W	26 83	5 1	19 54.45	-22 40.3	1.538	2.040	28.6	20.3	105 W	21* 87
8 4	21 14.11	-20 0.6	0.562	1.576	3.2	17.0	175 W	25 84	5 11	20 6.86	-22 18.5	1.401	2.003	28.0	20.1	111 W	22* 86
8 9	21 12.49	-21 19.1	0.556	1.568	3.6	16.9	174 E	24 85	5 21	20 17.32	-22 1.3	1.271	1.967	26.9	19.8	119 W	23* 86
8 14	21 10.83	-22 35.7	0.554	1.562	6.5	17.1	170 E	22 87	5 31	20 25.42	-21 51.4	1.149	1.931	25.0	19.5	126 W	23* 86
8 19	21 9.37	-23 47.5	0.557	1.556	9.8	17.2	165 E	21 88	6 10	20 30.71	-21 51.3	1.039	1.895	22.4	19.1	135 W	23 86
8 24	21 8.36	-24 52.3	0.564	1.552	13.2	17.4	160 W	20 89	6 20	20 32.75	-22 3.2	0.941	1.860	18.9	18.8	144 W	23 86
8 29	21 8.01	-25 48.0	0.575	1.548	16.3	17.5	154 E	19 90	7 10	20 31.17	-22 27.3	0.858	1.826	14.3	18.4	154 W	23 86
9 3	21 8.46	-26 33.6	0.589	1.546	19.3	17.7	150 E	18 89	7 30	20 26.04	-23 1.3	0.793	1.793	8.9	18.0	164 W	22 87
9 8	21 9.82	-27 8.2	0.607	1.544	22.0	17.8	145 E	18 89	7 15	20 22.29	-23 20.3	0.767	1.776	5.9	17.7	170 W	22 87
9 18	21 15.46	-27 44.5	0.652	1.544	26.7	18.1	136 E	17 88	7 20	20 17.93	-23 39.5	0.746	1.761	3.2	17.5	175 W	21 88
9 28	21 24.98	-27 38.6	0.708	1.547	30.3	18.4	129 E	17 88	7 25	20 13.17	-23 57.7	0.731	1.745	2.6	17.4	176 E	21 88
10 8	21 37.85	-26 55.4	0.773	1.555	32.9	18.7	122 E	18 89	8 30	20 8.27	-24 14.0	0.720	1.730	5.2	17.5	171 E	21 88
10 13	21 45.31	-26 21.5	0.808	1.560	34.0	18.8	119 E	19 90	8 4	20 3.48	-24 27.3	0.714	1.715	8.5	17.6	166 E	21 88
10 18	21 53.34	-25 40.2	0.846	1.566	34.8	18.9	116 E	19 90	8 9	19 59.08	-24 37.2	0.713	1.701	11.8	17.7	160 E	20 89
10 23	22 1.86	-24 52.3	0.885	1.573	35.4	19.1	113 W	20 89	8 14	19 55.30	-24 43.1	0.716	1.688	15.0	17.8	154 E	20 89
10 28	22 10.78	-23 58.4	0.927	1.581	36.0	19.2	111 E	21 88	8 19	19 52.37	-24 44.8	0.724	1.674	18.1	18.0	149 E	20 89
11 2	22 20.02	-22 59.2	0.969	1.590	36.3	19.3	108 E	22 87	8 24	19 50.48	-24 42.3	0.735	1.662	21.1	18.1	144 W	20 89
11 7	22 29.52	-21 55.2	1.014	1.600	36.6	19.4	106 E	23 86	8 29	19 49.74	-24 35.7	0.750	1.650	23.7	18.2	139 E	20 89
11 12	22 39.22	-20 47.1	1.060	1.610	36.7	19.6	103 E	24 85	9 8	19 51.86	-24 11.2	0.787	1.628	28.4	18.4	130 E	21 88
11 17	22 49.08	-19 35.3	1.108	1.621	36.7	19.7	101 E	25 84	9 18	19 58.69	-23 32.3	0.834	1.609	32.1	18.6	122 E	21 88
11 22	22 59.07	-18 20.4	1.158	1.633	36.7	19.8	99 W	27 82*	9 28	20 9.83	-22 39.2	0.888	1.592	34.9	18.8	115 E	22 87
11 27	23 9.15	-17 2.9	1.209	1.646	36.5	19.9	97 E	28 80*	10 8	20 24.55	-21 31.7	0.948	1.579	36.9	19.0	108 E	23 86
12 2	23 19.29	-15 43.3	1.261	1.659	36.3	20.0	94 E	29 78*	10 18	20 42.16	-20 9.3	1.012	1.570	38.2	19.1	103 E	25 84
12 7	23 29.46	-14 22.0	1.315	1.673	36.0	20.1	92 E	31 75*	10 28	21 2.00	-18 31.6	1.080	1.564	39.0	19.3	98 E	26 83*
12 12	23 39.66	-12 59.4	1.370	1.687	35.7	20.2	90 W	32 72*	11 7	21 23.47	-16 38.9	1.151	1.561	39.3	19.4	93 E	28 79*
12 17	23 49.88	-11 35.9	1.427	1.702	35.3	20.3	88 E	33 68*	11 17	21 46.09	-14 32.1	1.226	1.562	39.3	19.6	89 E	30 73*
12 22	0 0.11	-10 11.9	1.484	1.718	34.8	20.4	86 E	35 65*	11 27	22 9.49	-12 12.5	1.305	1.567	38.8	19.7	85 E	33 68*
12 27	0 10.34	-8 47.6	1.543	1.734	34.3	20.5	84 E	36 62*	12 7	22 33.35	-9 42.4	1.387	1.576	38.2	19.8	81 E	35 62*
1 1	0 20.56	-7 23.5	1.603	1.750	33.7	20.5	81 E	38 59*	12 17	22 57.48	-7 4.0	1.473	1.588	37.3	20.0	78 E	38 56*
1 6	0 30.78	-5 59.8	1.664	1.767	33.1	20.6	79 E	39 56*	12 27	23 21.76	-4 19.8	1.563	1.603	36.2	20.1	74 E	41 50*
1 11	0 41.00	-4 36.7	1.725	1.784	32.5	20.7	77 E	40 54*	1 6	23 46.06	-1 32.7	1.656	1.621	34.9	20.2	71 E	43* 45*
1 16	0 51.21	-3 14.4	1.788	1.802	31.8	20.8	75 E	42* 51*	1 16	0 10.38	+1 14.7	1.752	1.642	33.5	20.3	67 E	45* 40*
<b>16588 Johngee</b>									<b>240570 2004 TZ<sub>9</sub></b>								
3 2	18 13.94	-28 52.8	3.508	3.280	16.3	21.5	69 W	14* 63*	3 2	18 22.97	-24 46.9	1.967	1.814	30.0	21.5	66 W	17* 60*
3 12	18 24.36	-29 9.6	3.346	3.257	17.2	21.4	76 W	14* 70*	3 12	18 49.00	-24 56.0	1.854	1.788	31.6	21.3	71 W	16* 64*
3 22	18 33.60	-29 27.3	3.178	3.233	17.9	21.3	84 W	14* 78*	3 22	19 15.05	-24 52.7	1.743	1.763	33.0	21.2	75 W	16* 69*
4 1	18 41.42	-29 47.1	3.008	3.209	18.1	21.2	92 W	14* 85*	4 1	19 40.91	-24 37.9	1.634	1.740	34.3	21.1	79 W	16* 73*
4 11	18 47.57	-30 10.1	2.838	3.183	18.0	21.0	101 W	14* 86	4 11	20 6.43	-24 13.0	1.529	1.718	35.3	20.9	83 W	16* 77*
4 21	18 51.77	-30 37.3	2.673	3.157	17.4	20.8	110 W	14* 85	4 21	20 31.45	-23 40.0	1.427	1.698	36.2	20.8	87 W	16* 81*
5 1	18 53.71	-31 9.1	2.516	3.129	16.4	20.7	119 W	14* 85	5 1	20 55.73	-23 1.2	1.330	1.681	36.8	20.6	91 W	17* 85*
5 11	18 53.14	-31 45.4	2.369	3.101	14.8	20.5	129 W	13 84	5 11	21 19.09	-22 19.5	1.236	1.666	37.2	20.5	95 W	17* 86
5 21	18 49.85	-32 25.0	2.239	3.072	12.6	20.2	139 W	13 84	5 21	21 41.27	-21 38.1	1.148	1.653	37.1	20.3	100 W	18* 86
5 31	18 43.76	-33 5.2	2.128	3.042	9.9	20.0	149 W	12 83	5 31	22 1.98	-21 0.8	1.065	1.642	36.7	20.1	104 W	20* 85
6 10	18 35.11	-33 42.5	2.040	3.011	6.9	19.8	159 W	11 82	6 10	22 20.87	-20 31.2	0.987	1.635	35.8	19.9	109 W	21* 85
6 15	18 29.98	-33 58.5	2.006	2.995	5.4	19.6	164 W	11 82	6 20	22 37.54	-20 13.2	0.915	1.630	34.4	19.7	115 W	23* 84
6 20	18 24.44	-34 12.2	1.978	2.979	4.2	19.5	167 W	11 82	6 30	22 51.44	-20 10.5	0.849	1.628	32.3	19.5	121 W	24* 84
6 25	18 18.63	-34 23.0	1.958	2.962	3.8	19.5	169 W	11 82	7 10	23 2.03	-20 25.1	0.792	1.628	29.9	19.2	128 W	25* 84
6 30	18 12.68	-34 30.6	1.945	2.946	4.3	19.5	168 E	10 81	7 20	23 8.73	-20 57.5	0.743	1.632	25.8	19.0	136 W	24 85
7 5	18 6.76	-34 34.9	1.939	2.929	5.5	19.5	164 E	10 81	7 25	23 10.44	-21 19.5	0.722	1.635	23.7	18.9	140 W	24 85
7 10	18 1.01	-34 35.8	1.939	2.912	7.1	19.6	159 W	10 81	7 30	23 11.04	-21 44.3	0.705	1.639	21.4	18.8	144 W	23 86
7 15	17 55.58	-34 33.5	1.947	2.895	8.8	19.7	154 W	10 81	8 4	23 10.52	-22 10.7	0.691	1.643	19.0	18.6	148 W	23 86
7 20	17 50.61	-34 28.3	1.960	2.878	10.6	19.7	149 E	11 82	8 9	23 8.94	-22 37.3	0.680	1.648	16.5	18.5	153 W	22 87
7 25	17 46.20	-34 20.6	1.980	2.860	12.2	19.8	143 E	11 82	8 14	23 6.37	-23 2.4	0.673	1.653	14.0	18.4	157 W	22 87
7 30	17 42.46	-34 10.9	2.004	2.842	13.8	19.9	138 E	11 82	8 19	23 2.96	-23 24.3	0.671	1.659	11.8	18.3	160 W	22 87
8 9	17 37.20	-33 47.6	2.067	2.806	16.6	20.0	128 E	11 82	8 24	22 58.93	-23 41.2	0.672	1.666	10.1	18.3	163 W	21 88
8 19	17 35.07	-33 21.7	2.145	2.769	18.8	20.1	118 E	12 83	8 29	22 54.52	-23 51.3	0.679	1.674	9.3	18.3	164 W	21 88
8 29	17 36.09	-32 55.8	2.232	2.731	20.5	20.2	109 E	12* 83	9 3	22 50.02	-23 53.7	0.690	1.682	9.7	18.4	164 W	21 88
9 8	17 40.05	-32 31.1	2.326	2.692	21.6	20.3	100 E	12* 83	9 8	22 45.68	-23 47.8	0.705	1.690	11.1	18.5	161 E	21 88
9 18	17 46.70	-32 7.7	2.422	2.652	22.3	20.4	92 E	12* 83*	9 13	22 41.72	-23 33.4	0.725	1.699	13.0	18.6	158 E	21 88
9 28	17 55.76	-31 44.9	2.517	2.612	22.4	20.5	84 E	12* 77*	9 18	22 38.37	-23 10.8	0.749	1.709	15.1	18.8	154 E	22 87
10 8	18 6.93	-31 21.7	2.609	2.571	22.2	20.5	77 E	12* 70*	9 23	22 35.79	-22 40.5	0.778	1.719	17.3	18.9	149 E	22 87
10 18	18 19.96	-30 56.5	2.696	2.530	21.7	20.5	70 E	12* 64*	9 28</								

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$	
<b>144753 2004 HF<sub>1</sub></b>									<b>283729 2002 UX</b>									
3 2	18 53.26	-8 18.0	3.539	3.147	15.7	21.5	59 W	30* 48*	12 22	6 33.66	+13 31.6	0.524	1.500	8.2	18.0	167 W	59	50
3 12	19 3.54	-7 58.6	3.409	3.142	16.8	21.4	66 W	31* 55*	12 27	6 22.83	+11 14.9	0.535	1.511	7.8	18.1	168 E	56	53
3 22	19 12.77	-7 36.7	3.271	3.137	17.7	21.4	73 W	32* 61*	1 1	6 12.72	+9 11.0	0.552	1.522	10.2	18.3	164 E	54	55
4 1	19 20.78	-7 13.6	3.126	3.130	18.4	21.3	81 W	34* 67*	1 6	6 3.71	+7 22.8	0.575	1.533	13.7	18.5	158 E	52	57
4 11	19 27.38	-6 51.2	2.977	3.122	18.7	21.2	89 W	35* 70*	1 11	5 56.05	+5 51.7	0.603	1.543	17.2	18.8	152 E	51	58
4 21	19 32.38	-6 31.1	2.827	3.114	18.7	21.1	97 W	37* 71	1 16	5 49.92	+4 37.8	0.636	1.554	20.5	19.0	146 E	50	59
5 1	19 35.56	-6 15.7	2.678	3.105	18.2	20.9	106 W	38* 70	<b>434783 2006 MT<sub>14</sub></b>									
5 11	19 36.72	-6 7.3	2.535	3.094	17.3	20.8	115 W	39* 70	3 2	19 20.00	-17 51.0	1.986	1.593	29.6	21.5	53 W	18*	46*
5 21	19 35.69	-6 8.5	2.401	3.083	15.8	20.6	124 W	39	3 12	19 51.20	-16 6.1	1.902	1.561	31.4	21.4	55 W	19*	48*
5 31	19 32.34	-6 21.8	2.280	3.071	13.8	20.4	134 W	39	3 22	20 22.19	-13 58.8	1.824	1.534	33.1	21.3	57 W	19*	50*
6 10	19 26.72	-6 49.3	2.177	3.058	11.2	20.2	144 W	38	4 1	20 52.74	-11 31.7	1.754	1.511	34.6	21.2	59 W	20*	52*
6 20	19 19.06	-7 32.3	2.096	3.044	8.3	20.0	154 W	37	4 11	21 22.66	-8 48.9	1.691	1.494	36.0	21.2	61 W	21*	54*
6 30	19 9.81	-8 30.7	2.041	3.029	5.5	19.8	163 W	36	4 21	21 51.83	-5 54.7	1.635	1.484	37.2	21.1	63 W	22*	55*
7 10	18 59.73	-9 42.4	2.015	3.013	4.4	19.7	167 E	35	5 1	22 20.12	-2 54.1	1.585	1.479	38.2	21.1	65 W	24*	56*
7 20	18 49.67	-11 4.0	2.018	2.997	6.3	19.8	161 E	34	5 11	22 47.45	+0 7.9	1.539	1.481	39.0	21.0	67 W	26*	56*
7 25	18 44.94	-11 47.1	2.030	2.988	7.9	19.9	156 E	33	5 21	23 13.74	+3 6.5	1.497	1.488	39.6	21.0	70 W	28*	56*
7 30	18 40.56	-12 31.1	2.049	2.979	9.4	20.0	151 E	32	5 31	23 38.88	+5 57.4	1.458	1.502	40.0	21.0	72 W	31*	56*
8 4	18 36.61	-13 15.5	2.075	2.970	11.0	20.0	146 E	32	6 10	0 2.77	+8 36.9	1.419	1.522	40.2	21.0	75 W	35*	55*
8 9	18 33.17	-13 59.6	2.106	2.961	12.5	20.1	141 E	31	6 20	0 25.25	+11 2.1	1.381	1.547	40.1	20.9	79 W	39*	53*
8 19	18 28.02	-15 25.8	2.185	2.941	15.2	20.3	130 E	30	6 30	0 46.11	+13 10.4	1.342	1.577	39.7	20.9	83 W	44*	51
8 29	18 25.42	-16 47.3	2.281	2.921	17.4	20.4	120 E	28	7 10	1 5.10	+14 59.7	1.302	1.612	39.0	20.9	87 W	50*	49
9 8	18 25.44	-18 2.5	2.390	2.900	19.0	20.6	110 E	27	7 20	1 21.89	+16 28.9	1.259	1.651	38.0	20.8	92 W	55*	48
9 18	18 27.97	-19 10.5	2.506	2.878	20.0	20.7	101 E	26	7 30	1 36.09	+17 36.1	1.216	1.692	36.4	20.7	98 W	60*	46
9 28	18 32.87	-20 10.9	2.627	2.855	20.5	20.8	93 E	25	8 9	1 47.28	+18 20.2	1.172	1.737	34.3	20.7	105 W	63*	46
10 8	18 39.89	-21 3.2	2.748	2.831	20.6	20.9	84 E	24	8 19	1 55.02	+18 39.7	1.129	1.784	31.5	20.6	113 W	64	45
10 18	18 48.81	-21 47.4	2.866	2.806	20.2	20.9	77 E	23	8 29	1 58.90	+18 32.7	1.091	1.834	28.0	20.4	122 W	64	45
10 28	18 59.42	-22 23.3	2.978	2.781	19.5	21.0	69 E	22	9 8	1 58.78	+17 58.0	1.060	1.884	23.6	20.3	131 W	63	46
11 7	19 11.48	-22 50.6	3.083	2.755	18.5	21.0	62 E	21	9 18	1 54.80	+16 55.6	1.041	1.936	18.5	20.2	142 W	62	47
11 17	19 24.82	-23 9.4	3.178	2.727	17.2	21.0	55 E	19	9 23	1 51.55	+16 14.7	1.037	1.963	15.6	20.1	148 W	61	48
11 27	19 39.26	-23 19.4	3.262	2.699	15.7	21.0	48 E	18	9 28	1 47.64	+15 28.3	1.039	1.989	12.6	20.0	154 W	60	49
12 7	19 54.63	-23 20.7	3.333	2.671	14.1	20.9	41 E	16	10 3	1 43.25	+14 37.5	1.045	2.016	9.6	19.9	160 W	60	49
12 17	20 10.80	-23 13.5	3.390	2.641	12.3	20.9	35	14	10 8	1 38.56	+13 43.6	1.058	2.043	6.5	19.9	167 W	59	50
12 27	20 27.63	-22 57.8	3.433	2.611	10.3	20.8	28 E	11	10 13	1 33.77	+12 48.2	1.076	2.070	3.4	19.8	173 W	58	51
1 6	20 45.01	-22 33.9	3.461	2.580	8.4	20.7	22 E	8	10 18	1 29.07	+11 52.8	1.101	2.097	1.1	19.7	178 E	57	52
1 16	21 2.86	-22 2.3	3.475	2.548	6.4	20.6	17 E	4	10 23	1 24.65	+10 59.0	1.133	2.124	3.0	19.9	174 E	56	53
<b>283729 2002 UX</b>									<b>54660 2000 UJ<sub>1</sub></b>									
3 2	19 18.89	-25 2.1	1.797	1.453	33.4	21.5	54 W	12* 48*	3 2	19 23.68	+2 43.4	1.902	1.526	31.2	21.4	53 W	36*	35*
3 12	19 49.36	-22 21.5	1.713	1.429	35.4	21.4	56 W	13* 50*	3 12	19 51.57	+6 59.0	1.809	1.487	33.3	21.3	55 W	38*	36*
3 22	20 19.17	-19 9.3	1.631	1.406	37.4	21.3	59 W	15* 53*	3 22	20 20.62	+11 39.4	1.726	1.447	35.2	21.2	57 W	41*	36*
4 1	20 48.29	-15 26.5	1.551	1.383	39.3	21.2	61 W	17* 55*	4 1	20 51.10	+16 38.4	1.655	1.406	37.0	21.1	58 W	43*	34*
4 11	21 16.81	-11 14.8	1.475	1.360	41.1	21.1	63 W	20* 56*	4 11	21 23.35	+21 46.0	1.598	1.365	38.5	21.0	58 W	44*	32*
4 21	21 44.88	-6 36.4	1.404	1.338	42.9	21.0	65 W	23* 57*	4 21	21 57.76	+26 50.1	1.554	1.324	39.9	20.9	58 W	45*	29*
5 1	22 12.69	-1 34.8	1.340	1.318	44.6	20.9	67 W	26* 56*	5 1	22 34.66	+31 36.4	1.524	1.283	41.0	20.9	57 W	46*	26*
5 11	22 40.49	+3 45.5	1.282	1.299	46.1	20.9	68 W	30* 54*	5 11	23 14.31	+35 49.9	1.504	1.243	41.8	20.8	55 W	45*	23*
5 21	23 8.58	+9 18.4	1.231	1.282	47.4	20.8	69 W	34* 51*	5 21	23 56.73	+39 17.3	1.491	1.205	42.5	20.7	53 W	44*	20*
5 31	23 37.26	+14 56.4	1.189	1.267	48.6	20.7	70 W	38* 47*	5 31	0 41.54	+41 47.2	1.483	1.170	42.9	20.7	52 W	43*	17*
6 10	0 6.89	+20 30.8	1.153	1.254	49.7	20.7	70 W	43* 43*	6 10	1 27.92	+43 11.4	1.476	1.138	43.3	20.6	50 W	42*	16*
6 20	0 37.84	+25 52.5	1.123	1.244	50.5	20.6	71 W	48* 38*	6 20	2 14.69	+43 26.3	1.468	1.111	43.8	20.5	49 W	41*	15*
6 30	1 10.39	+30 51.8	1.099	1.237	51.2	20.6	71 W	53* 33*	6 30	3 0.54	+42 31.7	1.455	1.089	44.3	20.5	48 W	40*	16*
7 10	1 44.77	+35 19.7	1.078	1.234	51.6	20.5	72 W	57* 29*	7 5	3 22.76	+41 39.0	1.446	1.080	44.6	20.5	48 W	39*	16*
7 20	2 21.05	+39 8.4	1.060	1.233	52.0	20.5	73 W	61* 25*	7 10	3 44.39	+40 30.1	1.437	1.073	45.0	20.5	48 W	39*	17*
7 25	2 39.81	+40 46.0	1.050	1.234	52.1	20.5	73 W	63* 23*	7 15	4 5.36	+39 5.6	1.425	1.068	45.4	20.4	48 W	39*	18*
7 30	2 58.93	+42 11.5	1.041	1.235	52.1	20.5	74 W	65* 22*	7 20	4 25.63	+37 26.1	1.413	1.064	45.8	20.4	49 W	39*	19*
8 4	3 18.31	+43 24.5	1.031	1.238	52.2	20.5	74 W	66* 21*	7 30	5 4.03	+33 24.6	1.384	1.063	46.8	20.4	50 W	39*	22*
8 9	3 37.85	+44 24.8	1.021	1.241	52.2	20.4	75 W	68* 19*	8 9	5 39.68	+28 30.5	1.353	1.068	47.7	20.4	51 W	39*	26*
8 14	3 57.42	+45 12.3	1.010	1.245	52.1	20.4	76 W	69* 19*	8 19	6 12.90	+22 49.4	1.321	1.081	48.6	20.4	53 W	39*	30*
8 19	4 16.88	+45 47.0	0.998	1.249	52.1	20.4	77 W	70* 18*	8 24	6 28.68	+19 43.1	1.306	1.090	48.9	20.4	54 W	39*	33*
8 24	4 36.06	+46 9.3	0.985	1.255	52.0	20.4	78 W	72* 18*	8 29	6 43.96	+16 27.5	1.292	1.100	49.1	20.4	55 W	38*	35*
8 29	4 54.81	+46 19.4	0.970	1.261	51.9	20.4	79 W	73* 17*	9 3	6 58.79	+13 3.8	1.279	1.112	49.3	20.4	57 W	38*	38*
9 3	5 12.99	+46 18.0	0.955	1.267	51.7	20.3	80 W	74* 17*	9 8	7 13.20	+9 33.1	1.268	1.125	49.3	20.4	58 W	37*	40*
9 8	5 30.48	+46 5.8	0.938	1.275	51.5	20.3	82 W	76* 17*	9 13	7 27.22	+5 56.9	1.259	1.140	49.3	20.4	59 W	36*	43*
9 13	5 47.15	+45 43.5	0.920	1.282	51.2	20.3	83 W	77* 18*	9 18	7 40.87	+2 16.5	1.253	1.155	49.1	20.4	60 W	35*	46*
9 18	6 2.87	+45 11.8	0.901	1.291	50.9	20.2	85 W	79* 18*	9 23	7 54.17	+1 26.5	1.248	1.172	48.9	20.5	62 W	33*	48*
9 23	6 17.54	+44 31.6	0.880	1.300	50.4	20.2	87 W	81* 19*	9 28	8 7.14	-5 10.4	1.246	1.189	48.5	20.5	63 W	32*	51*
9 28	6																	

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°									
<b>54660 2000 UJ<sub>1</sub></b> (continuation)									<b>19877 9086 P-L</b> (continuation)																	
11 2	9 29.45	-29 51.2	1.285	1.326	44.6	20.7	70 W	15* 64*	8 4	0 28.75	+11 35.3	0.836	1.607	33.0	18.7	120 W	57 52	8 4	0 28.75	+11 35.3	0.836	1.607	33.0	18.7	120 W	57 52
11 7	9 39.98	-32 58.6	1.295	1.347	44.0	20.7	71 W	12* 65*	8 9	0 34.95	+12 19.0	0.796	1.597	32.0	18.6	123 W	57 52	8 9	0 34.95	+12 19.0	0.796	1.597	32.0	18.6	123 W	57 52
11 12	9 50.18	-35 58.5	1.306	1.368	43.4	20.7	72 W	9* 65*	8 14	0 40.60	+12 56.9	0.759	1.587	30.8	18.4	127 W	58 51	8 14	0 40.60	+12 56.9	0.759	1.587	30.8	18.4	127 W	58 51
11 17	10 0.00	-38 50.7	1.316	1.388	42.8	20.8	73 W	6 66*	8 19	0 45.61	+13 28.1	0.724	1.578	29.4	18.3	130 W	58 51	8 19	0 45.61	+13 28.1	0.724	1.578	29.4	18.3	130 W	58 51
11 22	10 9.42	-41 35.2	1.326	1.409	42.2	20.8	73 W	3 66*	8 24	0 49.92	+13 52.0	0.692	1.570	27.8	18.1	134 W	59 50	8 24	0 49.92	+13 52.0	0.692	1.570	27.8	18.1	134 W	59 50
11 27	10 18.39	-44 12.0	1.334	1.429	41.7	20.8	74 W	1 66*	8 29	0 53.47	+14 7.6	0.662	1.563	25.9	18.0	137 W	59 50	8 29	0 53.47	+14 7.6	0.662	1.563	25.9	18.0	137 W	59 50
12 2	10 26.88	-46 41.1	1.342	1.450	41.1	20.9	75 W	— 65*	9 3	0 56.23	+14 14.5	0.635	1.557	23.8	17.8	142 W	59 50	9 3	0 56.23	+14 14.5	0.635	1.557	23.8	17.8	142 W	59 50
12 7	10 34.82	-49 2.9	1.349	1.470	40.6	20.9	76 W	— 64*	9 8	0 58.15	+14 11.9	0.610	1.551	21.3	17.6	146 W	59 50	9 8	0 58.15	+14 11.9	0.610	1.551	21.3	17.6	146 W	59 50
12 12	10 42.13	-51 17.5	1.353	1.490	40.2	20.9	77 W	— 63*	9 18	0 59.48	+13 37.0	0.572	1.543	15.7	17.3	155 W	59 50	9 18	0 59.48	+13 37.0	0.572	1.543	15.7	17.3	155 W	59 50
12 17	10 48.72	-53 24.9	1.356	1.509	39.7	20.9	79 W	— 62*	9 28	0 57.96	+12 24.2	0.548	1.539	9.2	16.9	166 W	57 52	9 28	0 57.96	+12 24.2	0.548	1.539	9.2	16.9	166 W	57 52
12 22	10 54.48	-55 25.1	1.357	1.528	39.3	20.9	80 W	— 60*	10 8	0 54.84	+10 43.4	0.541	1.539	3.2	16.6	175 W	56 53	10 8	0 54.84	+10 43.4	0.541	1.539	3.2	16.6	175 W	56 53
12 27	10 59.30	-57 18.1	1.356	1.547	38.9	21.0	81 W	— 59	10 13	0 53.17	+ 9 47.6	0.544	1.540	3.5	16.6	175 E	55 54	10 13	0 53.17	+ 9 47.6	0.544	1.540	3.5	16.6	175 E	55 54
1	11 3.04	-59 3.7	1.353	1.566	38.5	21.0	82 W	— 57	10 18	0 51.73	+ 8 51.6	0.551	1.542	6.4	16.8	170 E	54 55	10 18	0 51.73	+ 8 51.6	0.551	1.542	6.4	16.8	170 E	54 55
1	6 11 5.55	-60 41.7	1.348	1.584	38.1	21.0	84 W	— 55	10 23	0 50.74	+ 7 57.9	0.563	1.545	9.7	17.0	165 E	53 56	10 23	0 50.74	+ 7 57.9	0.563	1.545	9.7	17.0	165 E	53 56
1	11 6.63	-62 11.7	1.341	1.601	37.8	21.0	86 W	— 54	10 28	0 50.37	+ 7 9.0	0.579	1.549	12.9	17.2	160 E	52 57	10 28	0 50.37	+ 7 9.0	0.579	1.549	12.9	17.2	160 E	52 57
1	16 11 6.12	-63 32.9	1.332	1.619	37.4	21.0	87 W	— 52	11 2	0 50.72	+ 6 26.7	0.599	1.554	16.0	17.4	154 E	51 58	11 2	0 50.72	+ 6 26.7	0.599	1.554	16.0	17.4	154 E	51 58
11 16	11 6.12	-63 32.9	1.332	1.619	37.4	21.0	87 W	— 52	11 7	0 51.88	+ 5 52.0	0.623	1.560	18.8	17.7	149 E	51 58	11 7	0 51.88	+ 5 52.0	0.623	1.560	18.8	17.7	149 E	51 58
<b>466419 2013 TL<sub>7</sub></b>									<b>249772 2000 VF<sub>62</sub></b>																	
3 2	19 30.60	- 5 18.8	2.250	1.784	25.2	21.5	50 W	28* 38*	3 2	19 44.66	-42 40.4	3.514	3.044	15.3	21.5	54 W	— 44*	3 2	19 44.66	-42 40.4	3.514	3.044	15.3	21.5	54 W	— 44*
3 12	19 55.98	- 3 21.9	2.162	1.757	26.9	21.4	53 W	29* 41*	3 12	20 0.89	-42 34.0	3.405	3.042	16.5	21.5	61 W	— 49*	3 12	20 0.89	-42 34.0	3.405	3.042	16.5	21.5	61 W	— 49*
3 22	20 21.21	+ 1 11.8	2.077	1.733	28.5	21.3	56 W	30* 44*	3 22	20 16.05	-42 30.1	3.286	3.039	17.6	21.4	67 W	— 54*	3 22	20 16.05	-42 30.1	3.286	3.039	17.6	21.4	67 W	— 54*
4 1	20 46.20	+ 1 9.2	1.995	1.710	30.1	21.3	59 W	31* 46*	4 1	20 30.00	-42 30.4	3.160	3.036	18.4	21.4	74 W	— 59*	4 1	20 30.00	-42 30.4	3.160	3.036	18.4	21.4	74 W	— 59*
4 11	21 10.91	+ 3 38.3	1.916	1.690	31.5	21.2	62 W	33* 48*	4 11	20 42.54	-42 36.3	3.028	3.031	19.0	21.3	81 W	— 65*	4 11	20 42.54	-42 36.3	3.028	3.031	19.0	21.3	81 W	— 65*
4 21	21 35.32	+ 6 12.5	1.839	1.673	32.8	21.1	64 W	34* 49*	4 21	20 53.49	-42 49.8	2.893	3.025	19.4	21.2	88 W	— 69*	4 21	20 53.49	-42 49.8	2.893	3.025	19.4	21.2	88 W	— 69*
5 1	21 59.38	+ 8 48.4	1.766	1.658	34.0	21.0	67 W	36* 50*	5 1	21 2.58	-43 12.2	2.757	3.018	19.4	21.1	95 W	— 72*	5 1	21 2.58	-43 12.2	2.757	3.018	19.4	21.1	95 W	— 72*
5 11	22 23.07	+11 22.3	1.694	1.647	35.2	21.0	70 W	38* 50*	5 11	21 9.52	-43 44.6	2.622	3.010	19.1	21.0	103 W	— 72	5 11	21 9.52	-43 44.6	2.622	3.010	19.1	21.0	103 W	— 72
5 21	22 46.36	+13 51.1	1.624	1.638	36.1	20.9	73 W	41* 49*	5 21	21 13.95	-44 27.5	2.492	3.001	18.4	20.8	111 W	— 72	5 21	21 13.95	-44 27.5	2.492	3.001	18.4	20.8	111 W	— 72
5 31	23 9.16	+16 11.0	1.555	1.633	37.0	20.8	76 W	44* 48*	5 31	21 15.44	-45 20.1	2.369	2.991	17.3	20.7	119 W	— 71	5 31	21 15.44	-45 20.1	2.369	2.991	17.3	20.7	119 W	— 71
6 10	23 31.40	+18 18.5	1.486	1.632	37.6	20.7	79 W	47* 46	6 10	21 13.60	-46 19.9	2.258	2.980	15.8	20.5	127 W	— 70	6 10	21 13.60	-46 19.9	2.258	2.980	15.8	20.5	127 W	— 70
6 20	23 52.93	+20 10.4	1.417	1.633	38.1	20.7	83 W	51* 44	6 20	21 8.08	-47 22.3	2.162	2.969	14.0	20.3	135 W	— 69	6 20	21 8.08	-47 22.3	2.162	2.969	14.0	20.3	135 W	— 69
6 30	0 13.53	+21 42.9	1.347	1.638	38.3	20.6	87 W	56* 42	6 30	21 3.87	-47 52.2	2.121	2.962	13.1	20.3	139 W	— 68	6 30	21 3.87	-47 52.2	2.121	2.962	13.1	20.3	139 W	— 68
7 10	0 32.96	+22 52.6	1.276	1.646	38.1	20.6	91 W	61* 41	6 30	20 58.74	-48 19.7	2.085	2.955	12.1	20.2	142 W	— 68	6 30	20 58.74	-48 19.7	2.085	2.955	12.1	20.2	142 W	— 68
7 15	0 42.12	+23 17.8	1.241	1.652	37.9	20.4	94 W	63* 41	7 5	20 52.73	-48 43.6	2.054	2.949	11.3	20.1	145 W	— 67	7 5	20 52.73	-48 43.6	2.054	2.949	11.3	20.1	145 W	— 67
7 20	0 50.85	+23 35.9	1.206	1.658	37.6	20.3	96 W	65* 40	7 10	20 45.95	-49 2.8	2.030	2.941	10.6	20.0	148 W	— 67	7 10	20 45.95	-49 2.8	2.030	2.941	10.6	20.0	148 W	— 67
7 25	0 59.07	+23 46.2	1.170	1.665	37.1	20.2	99 W	67* 40	7 15	20 38.52	-49 16.1	2.011	2.934	10.0	20.0	150 W	— 67	7 15	20 38.52	-49 16.1	2.011	2.934	10.0	20.0	150 W	— 67
7 30	1 6.73	+23 48.2	1.135	1.672	36.4	20.2	102 W	68* 40	7 20	20 30.63	-49 22.5	1.998	2.926	9.8	20.0	151 W	— 67	7 20	20 30.63	-49 22.5	1.998	2.926	9.8	20.0	151 W	— 67
8 4	1 13.78	+23 41.4	1.100	1.680	35.6	20.1	105 W	69* 40	7 25	20 22.49	-49 21.2	1.992	2.918	9.9	20.0	150 W	— 67	7 25	20 22.49	-49 21.2	1.992	2.918	9.9	20.0	150 W	— 67
8 9	1 20.14	+23 25.2	1.066	1.689	34.7	20.0	109 W	68 41	7 30	20 14.34	-49 11.9	1.993	2.910	10.4	20.0	149 E	— 67	7 30	20 14.34	-49 11.9	1.993	2.910	10.4	20.0	149 E	— 67
8 14	1 25.73	+22 58.8	1.032	1.699	33.5	19.9	112 W	68 41	8 4	20 6.42	-48 54.6	2.000	2.902	11.1	20.0	147 E	— 67	8 4	20 6.42	-48 54.6	2.000	2.902	11.1	20.0	147 E	— 67
8 19	1 30.49	+22 21.7	1.000	1.709	32.1	19.8	116 W	67 42	8 9	19 58.92	-48 29.6	2.013	2.893	12.0	20.0	144 E	— 68	8 9	19 58.92	-48 29.6	2.013	2.893	12.0	20.0	144 E	— 68
8 24	1 34.35	+21 33.0	0.969	1.720	30.4	19.7	121 W	67 42	8 14	19 52.05	-47 57.5															

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>249772 2000 VF<sub>62</sub></b>										<b>249103 2007 VO<sub>244</sub></b>									
<i>(continuation)</i>										<i>(continuation)</i>									
12 27	21 8.16	-23 37.8	3.257	2.550	13.6	20.9	38 E	15*	28*	10 3	2 19.19	+21 0.9	0.937	1.871	15.6	19.5	150 W	66	43
1 1	21 15.69	-22 37.5	3.283	2.534	12.7	20.9	34 E	14*	25*	10 8	2 15.23	+20 24.7	0.930	1.885	12.6	19.4	156 W	65	44
1 6	21 23.31	-21 36.2	3.305	2.518	11.7	20.8	31 E	13*	22*	10 13	2 10.69	+19 42.4	0.927	1.900	9.5	19.3	162 W	65	44
1 11	21 30.99	-20 33.7	3.324	2.502	10.7	20.8	28 E	12*	19*	10 18	2 5.78	+18 55.0	0.930	1.915	6.4	19.1	168 W	64	45
1 16	21 38.75	-19 30.1	3.340	2.486	9.7	20.7	25 E	11*	16*	10 23	2 0.74	+18 3.9	0.938	1.930	3.7	19.0	173 W	63	46
<b>143257 2003 AE</b>										<b>434313 2004 GP</b>									
3 2	19 49.00	-15 55.4	2.828	2.249	18.3	21.5	46 W	16*	38*	3 2	20 24.49	-13 47.5	1.362	0.822	46.3	21.4	37 W	13*	30*
3 12	20 8.81	-15 40.3	2.698	2.208	20.4	21.4	51 W	17*	44*	3 7	20 50.96	-12 59.5	1.340	0.781	47.3	21.3	35 W	12*	28*
3 22	20 28.70	-15 20.9	2.562	2.166	22.4	21.3	56 W	17*	49*	3 12	21 18.85	-11 57.4	1.321	0.735	48.0	21.1	33 W	10*	27*
4 1	20 48.66	-14 58.5	2.421	2.125	24.3	21.2	61 W	18*	55*	3 17	21 48.23	-10 39.3	1.308	0.686	48.4	21.0	31 W	8*	25*
4 11	21 8.67	-14 34.9	2.277	2.083	26.1	21.1	66 W	18*	60*	3 22	22 19.18	-9 3.5	1.301	0.633	48.1	20.8	28 W	6*	22*
4 21	21 28.79	-14 11.9	2.132	2.041	27.8	20.9	71 W	18*	64*	3 27	22 51.75	-7 8.1	1.300	0.578	46.8	20.5	25 W	3*	19*
5 1	21 49.02	-13 51.8	1.986	1.999	29.3	20.8	76 W	19*	69*	4 1	23 26.03	-4 51.2	1.306	0.520	44.0	20.3	21 W	1*	15*
5 11	22 9.39	-13 37.3	1.842	1.958	30.6	20.6	81 W	20*	73*	4 6	0 2.13	-2 10.8	1.318	0.463	38.9	19.9	17 W	-	11*
5 21	22 29.98	-13 31.4	1.701	1.917	31.8	20.4	86 W	21*	76*	4 11	0 40.15	+0 55.0	1.334	0.412	30.7	19.4	12 W	-	6*
5 31	22 50.78	-13 37.7	1.563	1.877	32.7	20.2	91 W	22*	78*	4 21	2 1.42	+8 20.0	1.353	0.357	10.7	18.5	4 E	-	-
6 10	23 11.85	-13 59.9	1.432	1.837	33.4	20.0	96 W	23*	78	5 1	3 23.89	+16 12.8	1.326	0.402	31.9	19.4	12 E	3*	4*
6 20	23 33.20	-14 42.6	1.308	1.799	33.7	19.8	101 W	24*	79	5 11	4 41.88	+22 33.7	1.286	0.508	46.9	20.2	22 E	12*	10*
6 30	23 54.76	-15 50.3	1.192	1.762	33.8	19.5	106 W	25*	80	5 16	5 19.11	+24 51.5	1.274	0.565	50.3	20.6	25 E	15*	12*
7 10	0 16.46	-17 27.2	1.087	1.727	33.5	19.3	110 W	25*	81	5 21	5 55.15	+26 32.2	1.268	0.621	52.0	20.8	29 E	18*	15*
7 20	0 38.08	-19 36.4	0.993	1.693	33.0	19.0	115 W	24*	84	5 26	6 29.83	+27 37.3	1.270	0.675	52.6	21.0	32 E	20*	17*
7 30	0 59.26	-22 19.1	0.913	1.662	32.3	18.8	119 W	23*	86	5 31	7 2.92	+28 9.4	1.277	0.725	52.5	21.2	35 E	22*	19*
8 4	1 9.54	-23 52.2	0.877	1.648	31.9	18.7	121 W	21*	88	6 10	8 3.66	+27 50.7	1.306	0.814	51.0	21.4	39 E	24*	22*
8 9	1 19.51	-25 32.2	0.846	1.634	31.5	18.5	123 W	19	90	<b>364639 2007 TY<sub>109</sub></b>									
8 14	1 29.07	-27 18.2	0.817	1.621	31.1	18.4	124 W	18	89	3 2	20 29.57	-22 51.1	2.384	1.710	20.7	21.5	38 W	5*	32*
8 19	1 38.11	-29 8.6	0.793	1.609	30.7	18.3	126 W	16	87	3 12	20 58.17	-21 27.1	2.314	1.693	22.6	21.4	41 W	5*	35*
8 24	1 46.51	-31 1.6	0.772	1.597	30.5	18.3	127 W	14	85	3 22	21 26.36	-19 47.9	2.244	1.677	24.4	21.4	44 W	6*	38*
8 29	1 54.16	-32 55.1	0.754	1.587	30.3	18.2	128 W	12	83	4 1	21 54.03	-17 55.7	2.174	1.664	26.1	21.4	47 W	6*	41*
9 3	2 0.95	-34 46.9	0.739	1.577	30.2	18.1	128 W	10	81	4 11	22 21.12	-15 52.6	2.105	1.654	27.7	21.3	50 W	7*	44*
9 8	2 6.75	-36 34.6	0.728	1.568	30.1	18.1	129 W	8	79	4 21	22 47.59	-13 41.4	2.038	1.646	29.3	21.3	53 W	8*	47*
9 13	2 11.46	-38 15.9	0.719	1.561	30.2	18.1	129 W	7	78	5 1	23 13.40	-11 24.7	1.971	1.640	30.7	21.3	56 W	9*	50*
9 18	2 14.98	-39 48.2	0.713	1.554	30.3	18.0	129 W	5	76	5 11	23 38.53	-9 5.3	1.906	1.638	32.0	21.2	59 W	10*	53*
9 23	2 17.29	-41 9.0	0.710	1.548	30.5	18.0	128 W	4	75	5 21	0 2.98	-6 45.6	1.841	1.638	33.2	21.2	62 W	13*	56*
9 28	2 18.39	-42 16.0	0.708	1.543	30.7	18.0	128 W	3	74	5 31	0 26.70	-4 28.4	1.776	1.641	34.2	21.1	66 W	16*	58*
10 3	2 18.36	-43 7.2	0.709	1.540	31.0	18.0	128 W	2	73	6 10	0 49.65	-2 15.9	1.712	1.647	35.1	21.1	69 W	19*	60*
10 8	2 17.31	-43 41.0	0.712	1.537	31.2	18.0	127 W	1	72	6 20	1 11.76	-0 10.1	1.647	1.655	35.8	21.0	73 W	23*	61*
10 13	2 15.42	-43 56.0	0.717	1.536	31.5	18.1	126 W	1	72	6 30	1 32.90	+1 47.0	1.582	1.667	36.4	21.0	76 W	28*	61*
10 18	2 12.90	-43 51.2	0.723	1.535	31.8	18.1	126 W	1	72	7 10	1 52.93	+3 34.1	1.516	1.680	36.6	20.9	80 W	34*	60*
10 23	2 10.04	-43 25.9	0.731	1.536	32.0	18.1	125 W	2	73	7 20	2 11.66	+5 9.9	1.449	1.696	36.7	20.8	85 W	39*	59
10 28	2 7.14	-42 40.3	0.741	1.538	32.3	18.1	124 E	2	73	7 30	2 28.79	+6 33.8	1.381	1.714	36.3	20.7	90 W	45*	57
11 2	2 4.43	-41 35.2	0.753	1.541	32.5	18.2	123 E	3	74	8 9	2 44.02	+7 45.3	1.312	1.734	35.6	20.6	96 W	50*	56
11 7	2 2.14	-40 11.7	0.767	1.545	32.8	18.2	122 E	5	76	8 19	2 56.93	+8 44.5	1.244	1.756	34.4	20.5	102 W	53*	55
11 12	2 0.42	-38 31.4	0.782	1.550	33.0	18.3	122 E	6	77	8 29	3 7.02	+9 31.7	1.177	1.779	32.5	20.4	109 W	55	54
11 17	1 59.41	-36 35.7	0.800	1.556	33.2	18.4	120 E	8	79	9 8	3 13.80	+10 7.7	1.113	1.804	30.0	20.2	116 W	55	54
11 22	1 59.19	-34 27.0	0.820	1.563	33.4	18.4	119 E	11	82	9 18	3 16.74	+10 33.4	1.055	1.830	26.6	20.0	125 W	56	53
11 27	1 59.81	-32 7.3	0.843	1.571	33.6	18.5	118 E	13	84	9 28	3 15.43	+10 49.9	1.006	1.857	22.3	19.8	135 W	56	53
12 2	2 1.24	-29 39.1	0.868	1.580	33.9	18.6	117 E	15	86	10 8	3 9.88	+10 59.0	0.971	1.885	17.1	19.6	146 W	56	53
12 7	2 3.46	-27 4.4	0.896	1.590	34.1	18.7	115 E	18	89	10 18	3 0.59	+11 2.5	0.953	1.914	11.2	19.4	158 W	56	53
12 12	2 6.43	-24 25.4	0.927	1.601	34.3	18.8	114 E	21	88	10 23	2 54.92	+11 3.2	0.952	1.929	8.0	19.3	164 W	56	53
12 17	2 10.11	-21 43.8	0.960	1.612	34.4	18.9	112 E	23	86	10 28	2 48.84	+11 3.8	0.957	1.943	5.0	19.2	170 W	56	53
12 22	2 14.46	-19 1.4	0.997	1.625	34.6	19.0	110 E	26	83	11 2	2 42.62	+11 4.8	0.968	1.958	2.5	19.1	175 W	56	53
12 27	2 19.41	-16 19.9	1.036	1.638	34.7	19.1	108 E	29	80	11 7	2 36.48	+11 6.8	0.985	1.973	3.0	19.1	174 E	56	53
1 1	2 24.91	-13 40.5	1.079	1.652	34.8	19.2	106 E	31	78	11 12	2 30.66	+11 10.2	1.008	1.988	5.6	19.4	169 E	56	53
1 6	2 30.92	-11 4.4	1.124	1.667	34.8	19.3	104 E	34	75	11 17	2 25.37	+11 15.6	1.038	2.003	8.5	19.6	163 E	56	53
1 11	2 37.38	-8 32.4	1.172	1.682	34.8	19.4	102 E	36	72*	11 27	2 17.01	+11 34.0	1.114	2.034	13.6	20.0	151 E	57	52
1 16	2 44.28	-6 5.2	1.222	1.698	34.8	19.5	100 E	39	70*	12 7	2 12.15	+12 3.6	1.211	2.064	17.9	20.3	140 E	57	52
<b>249103 2007 VO<sub>244</sub></b>										<b>434313 2004 GP</b>									
3 2	20 8.21	-17 8.5	2.331	1.714	22.4	21.5	41 W	13*	35*	3 2	20 24.49	-13 47.5	1.362	0.822	46.3	21.4	37 W	13*	30*
3 12	20 35.14	-15 14.8	2.256	1.696	24.2	21.4	44 W	14*	38*	3 7	20 50.96	-12 59.5	1.340	0.781	47.3	21.3	35 W	12*	28*
3 22	21 1.61	-13 6.1	2.181	1.679	26.0	21.4	48 W	15*	41*	3 12	21 18.85	-11 57.4	1.321	0.735	48.0	21.1	33 W	10*	27*
4 1	21 27.56	-10 44.5	2.107	1.666	27.7	21.4	51 W	16*	44*	3 17	21 48.23	-10 39.3	1.308	0.686	48.4	21.0	31 W	8*	25*
4 11	21 52.95	-8 12.3	2.034	1.654	29.3	21.3	54 W	17*	47*	3 22	22 19.18	-9 3.5	1.301	0.633	48.1	20.8	28 W	6*	22*
4 21	22 17.79	-5 32.2	1.963	1.646	30.8	21.3	57 W	17*	50*	3 27	22 51.75	-7 8.1	1.300	0.578	46.8	20.5	25 W	3*	19*

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$		
<b>471956 2013 SC<sub>25</sub></b>									<b>66146 1998 TU<sub>3</sub></b> (continuation)										
3	20 41.17	-29 15.7	0.597	0.636	106.9	21.1	38 W	31*	5	1	0 21.61	-0 11.6	1.567	0.957	38.2	16.9	36 W	6*	30*
3	4 20 39.30	-29 0.9	0.620	0.653	102.3	21.0	40 W	33*	5	11	0 49.57	+2 20.7	1.599	1.020	37.8	17.1	38 W	7*	32*
3	6 20 38.26	-28 42.4	0.643	0.671	98.0	20.9	42 W	35*	5	21	1 16.81	+4 46.4	1.612	1.072	38.0	17.2	41 W	8*	34*
3	8 20 37.93	-28 21.0	0.665	0.690	94.2	20.9	44 W	37*	5	31	1 43.73	+7 4.7	1.607	1.112	38.6	17.3	43 W	11*	36*
3	10 20 38.20	-27 57.5	0.687	0.710	90.6	20.8	46 W	39*	6	10	2 10.70	+9 15.0	1.587	1.141	39.6	17.4	46 W	13*	38*
3	12 20 38.94	-27 32.5	0.708	0.730	87.4	20.8	47 W	41*	6	20	2 38.11	+11 16.9	1.553	1.160	40.8	17.4	48 W	17*	39*
3	14 20 40.07	-27 6.3	0.728	0.752	84.4	20.8	49 W	42*	6	30	3 6.36	+13 9.5	1.508	1.168	42.3	17.4	51 W	21*	40*
3	16 20 41.51	-26 39.4	0.747	0.773	81.7	20.9	50 W	44*	7	10	3 35.86	+14 51.5	1.452	1.165	44.0	17.3	53 W	25*	40*
3	18 20 43.20	-26 12.0	0.765	0.795	79.2	20.9	52 W	45*	7	20	4 7.16	+16 21.4	1.388	1.152	46.0	17.3	55 W	29*	39*
3	20 20 45.07	-25 44.3	0.783	0.818	76.9	20.9	53 W	47*	7	25	4 23.66	+17 0.8	1.354	1.142	47.1	17.2	55 W	31*	39*
3	22 20 47.07	-25 16.5	0.799	0.841	74.8	20.9	55 W	48*	7	30	4 40.82	+17 36.1	1.318	1.128	48.3	17.2	56 W	33*	38*
3	27 20 52.43	-24 7.2	0.834	0.898	70.2	21.0	58 W	52*	8	4	4 58.76	+18 6.5	1.282	1.112	49.5	17.1	57 W	35*	38*
4	1 20 57.93	-22 59.2	0.864	0.956	66.4	21.1	61 W	55*	8	9	5 17.57	+18 31.4	1.246	1.094	50.8	17.1	57 W	37*	37*
4	6 21 3.26	-21 53.4	0.887	1.013	63.1	21.2	65 W	58*	8	14	5 37.37	+18 49.8	1.210	1.072	52.3	17.0	57 W	38*	36*
4	11 21 8.22	-20 50.3	0.905	1.070	60.3	21.3	68 W	62*	8	19	5 58.24	+19 0.6	1.174	1.048	53.8	16.9	57 W	39*	36*
4	16 21 12.65	-19 50.2	0.918	1.126	57.7	21.4	72 W	66*	8	24	6 20.29	+19 2.4	1.139	1.021	55.5	16.8	56 W	40*	35*
4	21 21 16.43	-18 53.4	0.925	1.182	55.4	21.4	75 W	69*	8	29	6 43.62	+18 53.5	1.107	0.991	57.2	16.8	56 W	40*	33*
4	26 21 19.46	-18 0.2	0.928	1.236	53.1	21.4	79 W	73*	9	3	7 8.31	+18 32.3	1.077	0.958	59.1	16.7	55 W	40*	32*
5	1 21 21.63	-17 10.8	0.927	1.288	51.0	21.5	83 W	76*	9	8	7 34.40	+17 56.6	1.051	0.922	61.0	16.6	53 W	40*	31*
5	6 21 22.87	-16 25.4	0.923	1.340	48.8	21.5	88 W	79*	9	13	8 1.89	+17 4.6	1.030	0.883	62.9	16.5	51 W	39*	29*
5	11 21 23.09	-15 44.2	0.916	1.390	46.5	21.5	92 W	80*	9	18	8 30.74	+15 54.3	1.014	0.841	64.8	16.4	49 W	37*	27*
5	16 21 22.21	-15 7.4	0.907	1.439	44.2	21.5	97 W	79	9	28	9 31.96	+12 34.5	1.004	0.749	67.9	16.3	44 W	33*	23*
5	21 21 20.14	-14 35.3	0.896	1.487	41.7	21.5	102 W	77	10	8	10 36.75	+7 55.9	1.031	0.646	68.8	16.0	37 W	28*	18*
5	26 21 16.79	-14 8.1	0.884	1.534	39.0	21.4	108 W	78	10	18	11 44.04	+2 10.4	1.100	0.540	64.6	16.7	29 W	21*	13*
5	31 21 12.10	-13 45.9	0.873	1.579	36.1	21.4	113 W	78	10	23	12 18.68	-1 1.6	1.150	0.490	59.4	15.4	25 W	17*	10*
6	5 21 6.04	-13 28.7	0.862	1.623	32.9	21.3	120 W	77	10	28	12 54.23	-4 23.0	1.209	0.447	51.4	15.1	21 W	13*	7*
6	10 20 58.64	-13 16.4	0.853	1.666	29.6	21.3	126 W	77	11	2	13 30.89	-7 49.8	1.271	0.418	40.6	14.7	16 W	9*	4*
6	15 20 49.94	-13 8.8	0.847	1.708	25.9	21.2	133 W	77	11	7	14 8.62	-11 15.0	1.332	0.407	27.8	14.4	11 W	4*	—
6	20 20 40.07	-13 5.6	0.845	1.748	22.1	21.1	140 W	77	11	12	14 46.90	-14 28.1	1.386	0.417	15.0	14.1	6 W	—	—
6	25 20 29.24	-13 6.3	0.848	1.788	18.1	21.0	147 W	77	11	17	15 24.98	-17 18.4	1.432	0.445	4.5	13.9	2 W	—	—
6	30 20 17.74	-13 10.2	0.857	1.826	14.1	21.0	154 W	77	11	22	16 2.17	-19 38.7	1.472	0.487	5.6	14.2	3 E	—	—
7	5 20 5.93	-13 16.6	0.872	1.863	10.2	20.9	161 W	77	11	27	16 38.03	-21 26.4	1.508	0.537	11.3	14.7	6 E	—	—
7	10 19 54.17	-13 24.7	0.894	1.900	6.6	20.8	168 W	77	12	2	17 12.29	-22 42.2	1.543	0.590	15.2	15.1	9 E	—	2*
7	15 19 42.81	-13 33.9	0.923	1.935	4.2	20.8	172 W	77	12	7	17 44.83	-23 28.7	1.578	0.643	17.7	15.5	11 E	1*	4*
7	20 19 32.17	-13 43.8	0.959	1.969	4.8	21.0	171 E	78	12	12	18 15.59	-23 49.5	1.615	0.696	19.2	15.7	13 E	2*	6*
7	25 19 22.52	-13 54.1	1.002	2.002	7.3	21.2	166 E	78	12	17	18 44.56	-23 48.3	1.652	0.746	19.9	16.0	15 E	3*	7*
7	30 19 14.02	-14 4.4	1.052	2.034	10.1	21.5	159 E	78	12	22	19 11.78	-23 28.7	1.690	0.794	20.2	16.1	16 E	4*	8*
8	4 19 6.79	-14 14.6	1.108	2.065	12.7	21.7	153 E	78	12	27	19 37.32	-22 53.9	1.729	0.839	20.0	16.3	17 E	5*	9*
8	9 19 0.83	-14 24.7	1.169	2.095	15.1	22.0	147 E	78	1	1	20 1.30	-22 6.8	1.768	0.881	19.6	16.4	17 E	6*	9*
8	14 18 56.13	-14 34.4	1.236	2.125	17.2	22.2	142 E	79	1	6	20 23.85	-21 9.9	1.807	0.920	19.0	16.6	18 E	6*	9*
									1	11	20 45.09	-20 5.1	1.845	0.956	18.3	16.7	18 E	7*	9*
									1	16	21 5.17	-18 54.1	1.882	0.989	17.4	16.8	18 E	7*	8*
<b>162825 2001 BO<sub>61</sub></b>									<b>363116 2001 GQ<sub>2</sub></b>										
3	2 21 15.35	-11 45.1	0.532	0.551	132.3	21.3	24 W	7*	3	2	21 33.36	-23 50.1	1.392	0.650	40.4	21.5	25 W	—	18*
3	4 21 19.97	-11 3.5	0.576	0.529	127.5	20.9	25 W	8*	3	7	22 6.73	-21 17.9	1.418	0.625	37.0	21.3	22 W	—	15*
3	6 21 24.95	-10 25.3	0.622	0.509	122.3	20.5	26 W	8*	3	12	22 38.59	-18 14.9	1.450	0.610	32.7	21.2	19 W	—	12*
3	8 21 30.37	-9 49.6	0.670	0.491	116.7	20.2	26 W	8*	3	17	23 8.71	-14 48.0	1.487	0.603	27.9	21.1	16 W	—	8*
3	10 21 36.27	-9 15.4	0.719	0.477	110.7	19.9	27 W	8*	3	22	23 37.03	-11 4.8	1.528	0.607	22.8	21.0	14 W	—	6*
3	12 21 42.68	-8 42.2	0.769	0.466	104.4	19.6	27 W	9*	3	27	0 3.62	-7 13.3	1.571	0.621	17.9	21.0	11 W	—	3*
3	17 22 0.83	-7 19.6	0.898	0.456	88.2	19.2	27 W	8*	4	1	0 28.65	-3 20.6	1.615	0.644	13.3	21.0	9 W	—	—
3	22 22 21.27	-5 54.2	1.027	0.471	72.9	19.0	27 W	8*	4	6	0 52.31	+0 27.7	1.659	0.674	9.4	21.0	6 W	—	—
3	27 22 42.65	-4 25.7	1.149	0.509	60.0	19.0	26 W	7*	4	11	1 14.83	+4 7.3	1.705	0.709	6.1	21.0	4 W	—	—
4	1 23 3.76	-2 56.4	1.261	0.563	50.2	19.1	26 W	6*	4	16	1 36.39	+7 35.2	1.750	0.749	3.4	21.0	3 W	—	—
4	6 23 23.90	-1 29.1	1.363	0.627	43.1	19.3	25 W	5*	4	21	1 57.19	+10 49.8	1.796	0.791	1.4	21.1	1 E	—	—
4	11 23 42.81	-0 5.6	1.455	0.696	38.0	19.6	25 W	5*	4	26	2 17.37	+13 50.1	1.842	0.836	0.9	21.2	1 E	—	—
4	21 0 16.91	+2 27.2	1.614	0.839	31.9	20.0	26 W	4*	5	1	2 37.04	+16 35.7	1.887	0.881	2.0	21.4	2 E	—	—
5	1 0 46.68	+4 39.5	1.744	0.980	29.1	20.4	28 W	5*											
5	11 1 12.97	+6 32.1	1.850	1.116	28.0	20.8	31 W	6*											
5	21 1 36.45	+8 6.7	1.932	1.245	27.7	21.1	35 W	7*											
5	31 1 57.59	+9 24.9	1.994	1.367	27.9	21.4	39 W	10*											
<b>66146 1998 TU<sub>3</sub></b>									<b>207945 1991 JW</b>										
3	2 21 18.96	-12 45.4	0.779	0.417	108.1	16.1	24 W	6*	3	2	21 50.79	-17 34.1	1.842	0.952	18.9	21.5	18 W	—	12*
3	4 21 21.10	-12 51.0	0.824	0.427	100.0	15.9	25 W	6*	3	7	22 11.95	-15 47.5	1.839	0.945	18.8	21.5	18 W	—	12*
3	6 21 24.57	-12 50.8	0.869	0.439	92.7	15.7	26 W	6*	3	12	22 32.83	-13 52.7	1.837	0.938	18.5	21.4	17 W	—	11*
3	8 21 29.09	-12 45.5	0.913	0.454	86.2	15.6	27 W	6*	3	17	22 53.43	-11 50.7	1.837	0.932	18.2	21.4	17 W	—	11*
3	10 21 34.42	-12 35.8	0.957	0.471	80.3	15.6	28 W	6*	3	22	23 13.76	-9 42.6	1.838	0.927	17.8	21.4	17 W	—	10*
3	12 21 40.35	-12 22.1																	

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2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$
<b>207945</b> 1991 JW (continuation)										<b>452773</b> 2006 DM <sub>14</sub> (continuation)									
6 15	4 53.71	+23 26.0	1.972	0.984	9.6	21.4	9 W	—	2*	6 20	3 40.88	+27 22.7	2.226	1.445	20.9	20.8	30 W	17*	17*
6 20	5 14.75	+24 16.7	1.983	0.993	9.5	21.4	9 W	—	2*	6 30	4 17.69	+29 8.5	2.180	1.418	22.1	20.7	32 W	19*	17*
6 25	5 35.83	+24 56.0	1.993	1.003	9.4	21.4	9 W	1*	1*	7 10	4 55.85	+30 19.2	2.142	1.399	23.1	20.7	33 W	21*	16*
6 30	5 56.89	+25 23.9	2.003	1.013	9.3	21.5	9 W	1*	1*	7 20	5 34.75	+30 50.7	2.113	1.387	24.0	20.7	34 W	24*	15*
7 5	6 17.88	+25 40.3	2.013	1.023	9.4	21.5	9 W	2*	1*	7 30	6 13.54	+30 41.4	2.090	1.383	24.7	20.7	35 W	26*	15*
<b>396730</b> 2003 KX <sub>16</sub>										<b>380091</b> 2013 SH <sub>57</sub>									
3 2	22 3.77	+19 18.4	0.478	0.618	128.8	21.5	29 W	21*	—	3 2	22 52.86	-2 48.7	2.631	1.645	2.7	21.5	4 E	—	—
3 4	21 52.77	+20 2.0	0.478	0.633	125.8	21.2	31 W	24*	—	3 12	23 18.85	-0 6.9	2.637	1.647	2.5	21.5	4 W	—	—
3 6	21 42.20	+20 32.4	0.479	0.649	122.5	21.0	33 W	27*	1*	3 22	23 44.65	+2 36.2	2.641	1.652	3.4	21.5	6 W	—	—
3 8	21 32.22	+20 51.0	0.482	0.666	118.9	20.8	36 W	30*	5*	4 1	0 10.32	+5 17.9	2.644	1.660	4.8	21.6	8 W	—	1*
3 10	21 22.94	+20 59.4	0.485	0.683	115.3	20.6	38 W	32*	8*	4 11	0 35.89	+7 55.8	2.645	1.670	6.3	21.7	11 W	1*	4*
3 12	21 14.42	+20 59.4	0.490	0.702	111.8	20.5	41 W	35*	12*	3 2	22 55.83	-8 42.6	4.279	3.288	0.5	21.4	2 E	—	—
3 14	21 6.68	+20 52.5	0.495	0.721	108.3	20.3	44 W	37*	15*	3 12	23 8.21	-7 24.4	4.231	3.246	2.0	21.5	7 W	—	—
3 16	20 59.70	+20 40.3	0.500	0.741	104.9	20.2	46 W	38*	18*	3 22	23 20.71	-6 4.4	4.166	3.204	4.0	21.6	13 W	—	7*
3 18	20 53.43	+20 24.0	0.505	0.761	101.7	20.1	48 W	40*	21*	4 1	23 33.28	-4 43.2	4.084	3.160	6.1	21.6	20 W	—	14*
3 20	20 47.81	+20 4.7	0.511	0.781	98.7	20.1	51 W	42*	24*	4 11	23 45.88	-3 21.4	3.985	3.115	8.1	21.6	26 W	2*	20*
3 22	20 42.77	+19 43.2	0.516	0.802	95.8	20.0	53 W	43*	26*	3 2	22 59.13	-4 5.6	2.205	1.217	2.9	21.4	4 E	—	—
3 27	20 32.27	+18 43.9	0.527	0.854	89.2	19.9	59 W	46*	32*	3 7	23 16.20	-2 23.2	2.205	1.215	2.6	21.4	3 E	—	—
4 1	20 23.95	+17 41.1	0.535	0.907	83.4	19.9	64 W	48*	38*	3 12	23 33.21	-0 39.9	2.207	1.215	2.3	21.4	3 E	—	—
4 6	20 16.91	+16 37.6	0.540	0.960	78.2	19.8	70 W	50*	42*	3 17	23 50.17	+1 3.7	2.210	1.217	2.1	21.4	3 E	—	—
4 11	20 10.46	+15 33.9	0.541	1.012	73.4	19.8	75 W	51*	46*	3 22	0 7.10	+2 46.7	2.215	1.220	1.8	21.4	2 E	—	—
4 16	20 3.99	+14 29.4	0.539	1.063	68.8	19.7	81 W	52*	49*	3 27	0 23.98	+4 28.5	2.222	1.225	1.5	21.4	2 E	—	—
4 21	19 57.01	+13 22.3	0.534	1.113	64.4	19.7	87 W	53*	51*	4 1	0 40.83	+6 8.4	2.230	1.232	1.3	21.4	2 W	—	—
4 26	19 49.08	+12 10.3	0.527	1.162	59.8	19.6	93 W	54*	52	4 6	0 57.65	+7 45.6	2.240	1.240	1.2	21.4	1 W	—	—
5 1	19 39.87	+10 50.7	0.519	1.210	55.2	19.5	100 W	54*	53	4 11	1 14.42	+9 19.5	2.251	1.249	1.2	21.4	1 W	—	—
5 6	19 29.13	+9 20.9	0.510	1.256	50.2	19.4	107 W	54*	55	4 16	1 31.17	+10 49.7	2.263	1.260	1.3	21.5	2 W	—	—
5 11	19 16.69	+7 38.5	0.502	1.301	45.0	19.3	115 W	53	56	3 2	23 10.94	-10 28.9	3.155	2.171	2.6	21.5	6 E	—	—
5 16	19 2.52	+5 42.0	0.496	1.344	39.4	19.2	123 W	51	58	3 12	23 29.49	-8 15.8	3.159	2.171	2.3	21.4	5 E	—	—
5 21	18 46.73	+3 31.0	0.493	1.386	33.4	19.1	131 W	49	60	3 22	23 47.85	-6 1.8	3.152	2.170	3.7	21.5	8 W	—	1*
5 26	18 29.67	+1 6.9	0.495	1.427	27.4	19.0	140 W	46	63	4 1	0 6.05	+3 47.9	3.134	2.168	5.6	21.6	12 W	—	6*
5 31	18 11.88	+1 26.5	0.504	1.466	21.3	18.9	148 W	44	65	4 11	0 24.13	-1 34.8	3.105	2.165	7.7	21.7	17 W	—	11*
6 5	17 54.06	+4 3.6	0.519	1.504	15.7	18.8	156 W	41	68	3 2	23 30.86	-3 43.6	1.536	0.588	17.5	21.5	10 E	3*	1*
6 10	17 36.88	+6 38.2	0.542	1.541	11.3	18.8	163 W	38	71	3 7	23 58.54	-1 16.2	1.480	0.555	22.9	21.5	13 E	5*	3*
6 15	17 20.93	+9 5.1	0.572	1.576	9.3	18.9	165 E	36	73	3 12	0 16.47	-5 30.1	2.225	1.266	9.3	21.3	12 E	—	6*
6 20	17 6.69	+11 20.6	0.610	1.610	10.4	19.1	163 E	34	75	4 1	0 46.15	-1 26.5	2.208	1.238	8.4	21.2	10 E	—	4*
6 25	16 54.44	+13 23.0	0.655	1.643	13.2	19.4	158 E	32	77	4 11	1 46.73	+2 39.8	2.193	1.213	7.4	21.1	9 E	—	3*
6 30	16 44.27	+15 12.0	0.706	1.675	16.4	19.7	152 E	30	79	4 21	2 18.07	+6 44.4	2.179	1.190	6.3	21.0	8 E	—	1*
7 5	16 36.16	+16 48.6	0.763	1.705	19.3	20.0	146 E	28	81	5 1	2 50.41	+10 42.3	2.168	1.171	5.2	20.9	6 E	—	—
7 10	16 29.97	+18 14.1	0.824	1.734	21.9	20.3	141 E	27	82	5 11	3 23.96	+14 28.0	2.160	1.156	3.9	20.7	4 E	—	—
7 15	16 25.54	+19 30.0	0.889	1.762	24.1	20.6	135 E	25	84	5 21	3 58.90	+17 55.7	2.155	1.145	2.5	20.6	3 E	—	—
7 20	16 22.69	+20 38.0	0.958	1.788	25.9	20.8	130 E	24	85	5 31	4 35.31	+20 59.2	2.152	1.138	1.0	20.5	1 E	—	—
7 25	16 21.26	+21 39.2	1.030	1.814	27.3	21.1	125 E	23*	86	6 10	5 13.16	+23 32.4	2.152	1.137	0.5	20.4	1 W	—	—
7 30	16 21.09	+22 34.8	1.104	1.838	28.5	21.3	120 E	22*	87	6 20	5 52.27	+25 30.1	2.155	1.140	1.9	20.6	2 W	—	—
8 4	16 22.01	+23 25.7	1.180	1.861	29.4	21.5	116 E	21*	87	6 30	6 32.27	+26 48.1	2.161	1.149	3.3	20.7	4 W	—	—
<b>481965</b> 2009 EB <sub>1</sub>										<b>494710</b> 2005 MO <sub>13</sub>									
3 2	22 20.98	+9 19.2	1.579	0.614	12.9	21.4	8 W	—	2*	3 2	23 46.96	-13 13.3	2.260	1.326	11.0	21.5	15 E	—	9*
3 7	22 51.75	+7 23.9	1.586	0.605	8.5	21.2	5 W	—	—	3 12	0 16.47	-9 26.8	2.242	1.295	10.1	21.4	13 E	—	7*
3 12	23 22.23	+5 20.0	1.596	0.605	4.3	21.0	3 W	—	—	3 22	0 46.15	-5 30.1	2.225	1.266	9.3	21.3	12 E	—	6*
3 17	23 52.21	+3 10.3	1.608	0.615	3.5	21.0	2 E	—	—	4 1	1 16.17	-1 26.5	2.208	1.238	8.4	21.2	10 E	—	4*
3 22	0 21.54	+0 57.9	1.622	0.632	6.7	21.3	4 E	—	—	4 11	1 46.73	+2 39.8	2.193	1.213	7.4	21.1	9 E	—	3*
<b>393569</b> 2003 JC <sub>13</sub>										<b>326683</b> 2002 WP									
3 2	22 37.95	+5 31.5	1.765	0.779	5.0	21.4	4 W	—	—	4 21	2 18.07	+6 44.4	2.179	1.190	6.3	21.0	8 E	—	1*
3 7	23 2.29	+3 28.3	1.752	0.762	3.6	21.3	3 W	—	—	5 1	2 50.41	+10 42.3	2.168	1.171	5.2	20.9	6 E	—	—
3 12	23 26.90	+1 21.5	1.740	0.748	2.7	21.2	2 W	—	—	5 11	3 23.96	+14 28.0	2.160	1.156	3.9	20.7	4 E	—	—
3 17	23 51.78	+0 47.0	1.731	0.738	3.2	21.2	2 E	—	—	5 21	3 58.90	+17 55.7	2.155	1.145	2.5	20.6	3 E	—	—
3 22	0 16.91	+2 55.5	1.724	0.732	4.9	21.2	4 E	—	—	5 31	4 35.31	+20 59.2	2.152	1.138	1.0	20.5	1 E	—	—
3 27	0 42.24	+5 1.8	1.718	0.730	7.1	21.3	5 E	—	—	6 10	5 13.16	+23 32.4	2.152	1.137	0.5	20.4	1 W	—	—
4 1	1 7.74	+7 4.1	1.715	0.733	9.4	21.4	7 E	—	—	6 20	5 52.27	+25 30.1	2.155	1.140	1.9	20.6	2 W	—	—
<b>237566</b> 2001 BW <sub>1</sub>										<b>452773</b> 2006 DM <sub>14</sub> (continuation)									
3 2	22 44.78	+10 47.6	4.451	3.522	5.0	21.5	18 W	8*	—	6 30	6 13.54	+30 41.4	2.090	1.383	24.7	20.7	35 W	26*	15*
3 12	22 56.14	+12 14.7	4.471	3.537	4.9	21.5	18 W	11*	—	7 10	4 55.85	+30 19.2	2.142	1.399	23.1	20.7	33 W	21*	16*
3 22	23 7.35	+13 45.7	4.473	3.550	5.4	21.5	20 W	14*	1*	7 20	5 34.75	+30 50.7	2.113	1.387	24.0	20.7	34 W	24*	15*
4 1	23 18.36	+15 20.0	4.459	3.562	6.4	21.6	23 W	16*	7*	7 30	6 13.54	+30 41.4	2.090	1.383	24.7	20.7	35 W	26*	15*
4 11	23 29.09	+16 57.1	4.427	3.574	7.6	21.6	28 W	19*	13*	8 9	6 51.44	+29 52.5	2.073	1.387	25.4	20.7	36 W	27*	15*
3 2	22 48.46	+3 51.6	3.003	2.015	1.7	21.3	3 W	—	—	8 19	7 27.76	+28 28.1	2.061	1.399	26.1	20.7	37 W	29*	15*
3 12	23 9.07	+1 16.7	2.940	1.953	2.8	21.3	5 W	—	—	8 29	8 2.01	+26 33.9	2.052	1.419	26.7	20.7	39 W	31*	15*
3 22	23 30.42	+1 27.2	2.870	1.892	4.7	21.3	9 W	1*											

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$
<b>326683 2002 WP</b>										<b>139345 2001 KA<sub>67</sub></b>									
(continuation)										(continuation)									
8 19	9 46.62	+23 17.3	2.230	1.250	8.6	21.2	11 W	3*	—	7 30	6 58.24	+16 7.4	1.592	0.780	31.7	18.5	24 W	8*	16*
8 29	10 21.32	+21 0.7	2.250	1.278	9.3	21.3	12 W	4*	—	8 4	7 28.19	+16 51.3	1.565	0.720	30.7	18.3	21 W	8*	13*
9 8	10 54.26	+18 26.3	2.269	1.308	10.0	21.4	13 W	5*	—	8 9	7 59.98	+17 19.8	1.546	0.664	28.6	18.0	18 W	7*	9*
<b>163818 2003 RX<sub>7</sub></b>										<b>480880 2001 XA<sub>20</sub></b>									
3 2	23 49.68	+ 3 47.9	2.162	1.258	14.2	21.5	18 E	12*	2*	3 12	0 16.42	+ 4 15.1	2.606	1.660	8.4	21.5	14 E	8*	1*
3 12	0 19.51	+ 6 21.3	2.128	1.204	13.1	21.3	16 E	10*	1*	3 22	0 41.94	+ 7 6.8	2.608	1.642	6.7	21.4	11 E	5*	—
3 22	0 51.05	+ 8 56.9	2.088	1.147	12.2	21.1	14 E	8*	—	4 1	1 8.08	+ 9 56.3	2.609	1.627	5.2	21.3	8 E	2*	—
4 1	1 24.64	+11 30.8	2.041	1.088	11.6	20.9	13 E	6*	—	4 11	1 34.88	+12 40.8	2.610	1.616	3.7	21.2	6 E	—	—
4 11	2 0.65	+13 57.5	1.990	1.029	11.4	20.8	12 E	5*	1*	4 21	2 2.38	+15 17.1	2.610	1.609	2.4	21.1	4 E	—	—
4 21	2 39.45	+16 10.7	1.936	0.972	11.8	20.6	11 E	4*	2*	5 1	2 30.61	+17 42.2	2.611	1.605	1.7	21.0	3 W	—	—
5 1	3 21.29	+18 1.9	1.881	0.918	13.0	20.4	12 E	4*	3*	5 11	2 59.51	+19 53.1	2.612	1.605	2.3	21.1	4 W	—	—
5 6	3 43.39	+18 46.4	1.853	0.893	13.9	20.4	12 E	4*	4*	5 21	3 29.03	+21 47.0	2.613	1.609	3.5	21.2	6 W	—	—
5 11	4 6.24	+19 21.8	1.825	0.870	15.0	20.3	13 E	4*	5*	5 31	3 59.05	+23 21.5	2.615	1.617	4.9	21.2	8 W	—	—
5 16	4 29.83	+19 47.0	1.797	0.849	16.4	20.3	14 E	3*	6*	6 10	4 29.36	+24 34.8	2.617	1.628	6.3	21.3	10 W	1*	2*
5 21	4 54.09	+20 0.9	1.770	0.831	17.9	20.3	15 E	3*	7*	6 20	4 59.78	+25 25.9	2.619	1.643	7.8	21.4	13 W	3*	4*
5 26	5 18.93	+20 2.4	1.744	0.816	19.6	20.3	16 E	3*	8*	<b>303250 2004 RU<sub>10</sub></b>									
5 31	5 44.23	+20 51.1	1.719	0.805	21.5	20.3	17 E	3*	10*	3 12	0 20.85	+ 7 38.1	2.434	1.486	9.0	21.5	14 E	—	7*
6 5	6 9.87	+19 26.3	1.695	0.797	23.5	20.3	18 E	3*	11*	3 22	0 42.79	+ 5 19.4	2.433	1.468	7.4	21.4	11 E	—	5*
6 10	6 35.70	+18 48.2	1.673	0.794	25.5	20.3	20 E	3*	13*	4 1	1 5.03	+ 2 59.8	2.416	1.440	6.5	21.3	9 E	—	2*
6 15	7 1.60	+17 57.2	1.653	0.794	27.4	20.3	21 E	3*	14*	4 11	1 27.83	+ 0 39.2	2.383	1.403	6.6	21.2	9 E	—	—
6 20	7 27.43	+16 53.8	1.635	0.799	29.3	20.4	23 E	3*	16*	4 21	1 51.49	+ 1 42.5	2.334	1.357	7.5	21.1	10 W	—	—
6 25	7 53.06	+15 39.1	1.620	0.808	31.0	20.4	24 E	3*	18*	5 1	2 16.36	+ 4 5.4	2.271	1.301	9.1	21.1	12 W	—	3*
6 30	8 18.38	+14 14.5	1.608	0.820	32.5	20.5	26 E	3*	19*	5 11	2 42.86	+ 6 29.7	2.193	1.234	11.0	20.9	13 W	—	5*
7 5	8 43.30	+12 41.4	1.600	0.836	33.7	20.5	27 E	3*	21*	5 21	3 11.57	+ 8 55.4	2.104	1.155	13.0	20.8	15 W	—	8*
7 10	9 7.76	+11 1.4	1.596	0.855	34.7	20.6	29 E	3*	22*	5 31	3 43.25	+11 22.0	2.004	1.065	15.0	20.6	16 W	—	9*
7 15	9 31.71	+ 9 16.1	1.596	0.876	35.4	20.7	30 E	3*	24*	6 10	4 18.92	+13 48.4	1.896	0.961	16.8	20.3	16 W	—	10*
7 20	9 55.11	+ 7 27.2	1.599	0.900	35.8	20.8	31 E	3*	25*	6 15	4 38.69	+15 0.5	1.840	0.903	17.5	20.1	15 W	—	9*
7 25	10 17.94	+ 5 36.2	1.607	0.926	36.0	20.8	32 E	3*	26*	6 20	5 0.05	+16 10.9	1.783	0.842	18.0	19.9	15 W	—	9*
7 30	10 40.21	+ 3 44.6	1.619	0.952	35.9	20.9	33 E	4*	27*	6 25	5 23.26	+17 18.6	1.725	0.776	18.1	19.7	14 W	—	8*
8 4	11 1.89	+ 1 53.6	1.635	0.980	35.7	21.0	34 E	4*	28*	6 30	5 48.66	+18 21.6	1.667	0.707	17.7	19.4	12 W	—	6*
8 9	11 23.01	+ 0 4.6	1.654	1.009	35.2	21.1	35 E	4*	29*	7 5	6 16.62	+19 17.5	1.608	0.633	16.3	19.0	10 W	—	4*
8 14	11 43.59	+ 1 41.7	1.677	1.038	34.7	21.1	36 E	4*	30*	7 10	6 47.60	+20 2.6	1.549	0.556	13.5	18.6	7 W	—	1*
8 19	12 3.64	+ 3 24.5	1.703	1.067	34.0	21.2	36 E	5*	30*	7 15	7 22.10	+20 31.3	1.487	0.477	8.2	17.9	4 W	—	—
8 24	12 23.20	+ 5 3.0	1.733	1.097	33.1	21.3	36 E	5*	30*	7 20	8 0.53	+20 35.3	1.418	0.402	1.4	17.1	1 E	—	—
8 29	12 42.29	+ 6 36.9	1.764	1.126	32.2	21.4	37 E	5*	31*	7 22	8 17.03	+20 27.5	1.387	0.374	7.0	17.2	3 E	—	—
9 3	13 0.92	+ 8 5.7	1.798	1.155	31.3	21.4	36 E	6*	30*	7 24	8 34.09	+20 13.0	1.353	0.350	13.8	17.3	5 E	—	—
9 8	13 19.14	+ 9 29.1	1.834	1.184	30.3	21.5	36 E	6*	30*	7 26	8 51.59	+19 50.9	1.315	0.331	22.0	17.4	7 E	—	—
<b>470007 2006 OQ<sub>21</sub></b>										<b>139345 2001 KA<sub>67</sub></b>									
3 2	23 53.09	+ 0 46.7	2.516	1.596	10.6	21.5	17 E	10*	4*	7 28	9 9.34	+19 20.3	1.273	0.317	31.3	17.5	9 E	—	2*
3 12	0 18.88	+ 4 1.2	2.548	1.605	8.9	21.4	14 E	8*	2*	7 30	9 27.05	+18 40.7	1.227	0.311	41.5	17.6	12 E	2*	4*
3 22	0 44.68	+ 7 11.8	2.580	1.617	7.2	21.4	12 E	6*	—	8 1	9 44.43	+17 52.0	1.177	0.312	52.0	17.8	14 E	3*	7*
4 1	1 10.56	+10 15.8	2.611	1.632	5.6	21.4	9 E	3*	—	8 3	10 1.25	+16 54.4	1.125	0.322	62.0	18.1	16 E	4*	9*
4 11	1 36.55	+13 10.9	2.641	1.650	4.0	21.4	7 E	1*	—	8 5	10 17.35	+15 48.6	1.072	0.338	71.1	18.4	18 E	5*	11*
4 21	2 2.73	+15 54.7	2.670	1.670	2.6	21.3	4 E	—	—	8 7	10 32.75	+14 35.0	1.020	0.359	78.9	18.7	20 E	6*	13*
5 1	2 29.09	+18 25.5	2.697	1.693	2.1	21.3	4 W	—	—	8 9	10 47.52	+13 13.9	0.970	0.385	85.3	19.0	22 E	7*	15*
5 11	2 55.63	+20 41.4	2.722	1.718	2.8	21.4	5 W	—	—	8 11	11 1.79	+11 45.7	0.922	0.413	90.5	19.2	24 E	8*	17*
<b>250008 2002 AO<sub>31</sub></b>										<b>139345 2001 KA<sub>67</sub></b>									
3 12	0 3.37	+ 1 14.6	2.677	1.705	5.6	21.4	10 E	3*	—	8 13	11 15.71	+10 10.2	0.877	0.443	94.5	19.4	26 E	8*	19*
3 22	0 27.68	+ 4 3.0	2.671	1.684	3.8	21.3	6 E	—	—	8 15	11 29.43	+ 8 27.6	0.835	0.474	97.5	19.6	28 E	9*	20*
4 1	0 52.50	+ 6 51.4	2.662	1.666	2.1	21.2	3 E	—	—	8 17	11 43.07	+ 6 37.7	0.797	0.506	99.6	19.7	30 E	9*	22*
4 11	1 17.89	+ 9 37.3	2.651	1.649	0.8	21.0	1 W	—	—	8 19	11 56.74	+ 4 40.7	0.762	0.537	100.9	19.8	31 E	9*	25*
4 21	1 43.92	+12 18.3	2.637	1.635	1.8	21.1	3 W	—	—	<b>303250 2004 RU<sub>10</sub></b>									
5 1	2 10.67	+14 51.7	2.623	1.623	3.4	21.2	6 W	—	—	3 12	0 20.85	+ 7 38.1	2.434	1.486	9.0	21.5	14 E	—	7*
5 11	2 38.15	+17 14.8	2.607	1.613	5.1	21.2	8 W	—	2*	3 22	0 42.79	+ 5 19.4	2.433	1.468	7.4	21.4	11 E	—	5*
5 21	3 6.39	+19 24.8	2.590	1.607	6.7	21.3	11 W	—	4*	4 1	1 5.03	+ 2 59.8	2.416	1.440	6.5	21.3	9 E	—	2*
5 31	3 35.33	+21 19.1	2.573	1.603	8.3	21.4	13 W	2*	6*	4 11	1 27.83	+ 0 39.2	2.383	1.403	6.6	21.2	9 E	—	—
6 10	4 4.89	+22 55.2	2.556	1.603	9.9	21.4	16 W	4*	8*	4 21	1 51.49	+ 1 42.5	2.334	1.357	7.5	21.1	10 W	—	—
6 20	4 34.94	+24 11.2	2.537	1.605	11.5	21.5	18 W	6*	10*	5 1	2 16.36	+ 4 5.4	2.271	1.301	9.1	21.1	12 W	—	3*
<b>139345 2001 KA<sub>67</sub></b>										<b>303250 2004 RU<sub>10</sub></b>									
3 12	0 11.04	+14 47.0	3.131	2.189	6.9	21.4	15 E	—	8*	5 11	2 42.86	+ 6 29.7	2.193	1.234	11.0	20.9	13 W	—	5*
3 22	0 28.16	+12 53.4	3.065	2.116	6.8	21.3	15 E	—	5*	5 21	3 11.57	+ 8 55.4	2.104	1.1					





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20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°		
<b>31221 1998 BP<sub>26</sub></b>										<b>330659 2008 GG<sub>2</sub></b>											
<i>(continuation)</i>										<i>(continuation)</i>											
1	16	8.16	-34 15.5	2.134	1.459	23.4	20.8	36 W	5*	30*	4	13	13 49.74	-1 44.9	0.146	1.147	8.2	19.6	171 W	43	66
1	6	16 25.16	-35 16.0	2.129	1.475	23.9	20.8	37 W	4*	31*	4	15	13 55.78	+1 1.8	0.148	1.148	10.6	19.7	168 W	46	63
1	11	16 42.22	-36 8.6	2.123	1.492	24.5	20.8	39 W	3*	33*	4	17	14 1.63	+3 43.0	0.150	1.149	13.2	19.8	165 W	49	60
1	16	16 59.29	-36 53.4	2.117	1.509	25.0	20.9	40 W	3*	34*	4	19	14 7.26	+6 16.9	0.152	1.150	15.7	20.0	162 W	51	58
<b>329437 2002 OA<sub>22</sub></b>										<b>506437 2000 WL<sub>10</sub></b>											
3	12	1 14.42	+4 32.7	1.595	0.848	32.7	21.4	27 E	18*	14*	3	12	12 12.22	-13 50.4	4.438	5.381	3.7	25.2	160 W	31	78
3	17	1 34.21	+6 19.2	1.565	0.826	34.1	21.4	28 E	18*	14*	3	22	12 5.82	-13 12.3	4.408	5.385	2.3	25.1	167 W	32	77
3	22	1 54.58	+8 5.6	1.532	0.805	35.7	21.3	28 E	18*	15*	4	1	11 59.40	-12 28.2	4.410	5.388	2.4	25.1	167 E	33	76
3	27	2 15.58	+9 51.1	1.498	0.785	37.6	21.3	29 E	19*	15*	4	11	11 53.37	-11 41.0	4.444	5.390	3.9	25.3	159 E	33	76
4	1	2 37.25	+11 34.7	1.461	0.766	39.7	21.2	29 E	19*	16*	4	21	11 48.04	-10 53.3	4.507	5.391	5.6	25.4	149 E	34	75
4	6	2 59.63	+13 15.1	1.422	0.750	42.1	21.2	30 E	20*	17*	<b>487496 2014 SE<sub>288</sub></b>										
4	11	3 22.74	+14 51.3	1.382	0.735	44.7	21.1	31 E	20*	17*	3	12	12 13.26	+3 0.9	6.348	7.325	1.5	23.2	169 W	48	61
4	16	3 46.60	+16 22.0	1.340	0.724	47.4	21.1	32 E	21*	18*	3	22	12 9.34	+3 31.1	6.336	7.330	0.6	23.1	176 E	49	60
4	21	4 11.21	+17 45.7	1.297	0.715	50.4	21.1	33 E	21*	19*	4	1	12 5.40	+4 0.0	6.357	7.335	1.7	23.3	167 E	49	60
4	26	4 36.55	+19 1.1	1.253	0.710	53.4	21.1	34 E	22*	20*	4	11	12 1.66	+4 26.2	6.407	7.340	3.1	23.4	157 E	49	60
5	1	5 5.27	+20 6.8	1.210	0.708	56.4	21.1	36 E	23*	22*	4	21	11 58.34	+4 48.5	6.487	7.345	4.3	23.5	146 E	50	59
5	6	5 29.21	+21 1.4	1.166	0.710	59.3	21.1	37 E	23*	23*	<b>399632 2004 PL<sub>2</sub></b>										
5	11	5 56.40	+21 43.6	1.124	0.715	62.0	21.1	39 E	24*	24*	3	12	12 17.44	+8 18.5	2.106	3.082	4.2	22.9	167 W	53	56
5	16	6 24.03	+22 12.3	1.083	0.724	64.5	21.2	40 E	24*	25*	3	17	12 12.76	+8 49.9	2.095	3.080	3.1	22.9	170 W	54	55
5	21	6 52.03	+22 26.6	1.044	0.735	66.8	21.2	42 E	25*	27*	3	22	12 7.94	+9 19.7	2.093	3.079	3.2	22.9	170 W	54	55
5	26	7 20.27	+22 25.6	1.008	0.750	68.6	21.2	44 E	25*	28*	3	27	12 3.10	+9 47.2	2.097	3.077	4.3	22.9	167 E	55	54
5	31	7 48.61	+22 8.8	0.975	0.766	70.1	21.2	45 E	26*	30*	4	1	11 58.37	+10 11.7	2.110	3.075	5.9	23.0	162 E	55	54
6	5	8 16.92	+21 35.9	0.945	0.785	71.1	21.2	47 E	26*	32*	4	6	11 53.84	+10 32.7	2.129	3.072	7.5	23.1	156 E	56	53
6	10	8 45.05	+20 47.1	0.920	0.805	71.8	21.3	49 E	26*	34*	4	11	11 49.63	+10 49.8	2.156	3.069	9.2	23.2	151 E	56	53
6	15	9 12.87	+19 43.0	0.898	0.826	72.1	21.3	51 E	27*	36*	<b>442605 2012 HY<sub>33</sub></b>										
6	20	9 40.25	+18 24.5	0.880	0.848	72.0	21.3	53 E	27*	37*	3	12	12 19.16	+20 39.9	1.941	2.890	7.1	23.4	159 W	66	43
6	25	10 7.08	+16 52.8	0.866	0.870	71.7	21.3	54 E	27*	40*	3	17	12 13.25	+21 17.3	1.925	2.876	7.1	23.3	159 W	66	43
6	30	10 33.24	+15 9.8	0.857	0.892	71.1	21.3	56 E	27*	42*	3	22	12 7.10	+21 50.1	1.916	2.863	7.6	23.3	158 W	67	42
7	5	10 58.67	+13 17.5	0.851	0.914	70.2	21.3	58 E	27*	44*	3	27	12 0.88	+22 17.4	1.915	2.848	8.7	23.4	154 E	67	42
7	10	11 23.32	+11 17.9	0.849	0.936	69.2	21.3	59 E	27*	46*	4	1	11 54.72	+22 38.3	1.921	2.834	10.0	23.4	150 E	68	41
7	15	11 47.17	+9 13.3	0.851	0.958	68.1	21.4	61 E	27*	48*	4	6	11 48.80	+22 52.5	1.934	2.819	11.5	23.5	146 E	68	41
7	20	12 10.25	+7 5.5	0.856	0.978	66.9	21.4	62 E	26*	50*	4	11	11 43.23	+22 59.8	1.953	2.803	13.0	23.6	141 E	68	41
7	25	12 32.58	+4 56.6	0.864	0.998	65.6	21.4	64 E	26*	52*	<b>458122 2010 EW<sub>45</sub></b>										
7	30	12 54.19	+2 48.4	0.875	1.017	64.4	21.4	65 E	26*	53*	3	12	12 19.32	-4 35.7	2.431	3.401	4.3	22.6	165 W	40	69
8	4	13 15.12	+0 42.2	0.889	1.035	63.1	21.5	66 E	26*	55*	3	22	12 9.16	-3 29.3	2.417	3.413	0.9	22.3	177 W	42	67
8	9	13 35.45	-1 20.6	0.905	1.052	61.9	21.5	66 E	25*	56*	4	1	11 58.99	-2 20.5	2.436	3.422	3.2	22.5	169 E	43	66
<b>162740 2000 WF<sub>6</sub></b>										<b>518847 2010 DM</b>											
3	12	1 23.73	+22 45.1	1.846	1.230	30.0	21.5	38 E	32*	7*	3	12	12 23.52	+2 12.2	2.854	3.827	3.5	24.5	166 W	47	62
3	22	2 4.87	+22 36.9	1.872	1.222	28.9	21.5	36 E	30*	9*	3	22	12 13.57	+3 22.0	2.833	3.828	1.2	24.3	176 W	48	61
4	1	2 45.31	+21 59.1	1.909	1.225	27.6	21.5	35 E	28*	12*	4	1	12 3.48	+4 29.2	2.847	3.827	3.4	24.5	167 E	49	60
4	11	3 24.47	+20 53.4	1.953	1.237	26.1	21.5	33 E	25*	14*	4	11	11 53.97	+5 29.1	2.893	3.824	6.4	24.7	155 E	50	59
4	21	4 1.98	+19 23.6	2.004	1.258	24.5	21.5	31 E	21*	17*	4	21	11 45.62	+6 18.3	2.969	3.819	9.1	24.9	143 E	51	58
<b>523775 2014 YB<sub>35</sub></b>										<b>396708 2002 UM<sub>74</sub></b>											
3	12	4 13.46	+35 18.8	1.057	1.273	49.4	21.5	77 E	69*	23*	3	12	12 24.02	+4 50.7	1.673	2.649	5.1	22.3	166 W	50	59
3	22	4 40.76	+34 38.2	1.050	1.208	51.8	21.4	72 E	65*	24*	3	17	12 19.11	+5 22.8	1.656	2.644	3.3	22.1	171 W	50	59
4	1	5 11.44	+33 39.2	1.032	1.146	54.3	21.3	69 E	60*	25*	3	22	12 13.97	+5 54.2	1.647	2.639	2.6	22.1	173 W	51	58
4	11	5 45.04	+32 10.6	1.005	1.091	57.0	21.3	66 E	56*	27*	3	27	12 8.75	+6 24.1	1.645	2.634	3.7	22.1	170 E	51	58
4	21	6 21.02	+30 1.4	0.971	1.043	59.7	21.2	64 E	52*	29*	4	1	12 3.59	+6 51.4	1.650	2.629	5.6	22.2	165 E	52	57
5	1	6 58.77	+27 2.1	0.931	1.006	62.6	21.1	62 E	47*	32*	4	6	11 58.65	+7 15.3	1.662	2.623	7.7	22.3	159 E	52	57
5	11	7 37.60	+23 5.2	0.887	0.981	65.2	21.0	62 E	43*	37*	4	11	11 54.05	+7 35.3	1.681	2.617	9.8	22.5	154 E	53	56
5	21	8 17.04	+18 7.7	0.845	0.970	67.4	20.9	62 E	37*	42*	<b>506427 2000 RE<sub>34</sub></b>										
5	31	8 56.92	+12 12.2	0.807	0.975	68.6	20.9	64 E	31*	47*	3	12	12 24.85	-9 13.6	2.471	3.427	5.3	22.6	161 W	36	73
6	10	9 37.31	+5 28.3	0.779	0.994	68.6	20.9	66 E	25*	53*	3	22	12 16.69	-8 26.3	2.420	3.409	2.4	22.3	172 W	37	72
6	20	10 18.58	-1 46.1	0.765	1.027	67.3	20.8	69 E	19*	60*	4	1	12 8.20	-7 31.3	2.400	3.391	2.6	22.3	171 E	37	72
6	30	11 1.14	-9 6.0	0.767	1.071	64.7	20.9	72 E	14*	65*	4	11	12 0.12	-6 33.4	2.411	3.372	5.7	22.5	160 E	38	71
7	10	11 45.15	-16 2.4	0.788	1.123	61.3	20.9	76 E	10*	70*	4	21	11 53.12	-5 37.7	2.450	3.352	8.9	22.7	149 E	39	70
7	20	12 30.46	-22 8.5	0.829	1.183	57.5	21.0	79 E	7*	73*	<b>330759 2008 SO<sub>218</sub></b>										
7	30	13 16.49	-27 6.8	0.889	1.247	53.6	21.2	81 E	5*	74*	3	12	12 9.60	+1 25.9	11.589	12.568	0.8	23.8	170 W	46	63
8	9	14 2.28	-30 50.8	0.968	1.314	50.0	21.4	83 E	4*	74*	3	22	12 5.87	+1 48.7	11.578	12.573	0.2	23.7	178 W	47	62
<b>330759 2008 SO<sub>218</sub></b>										<b>330659 2008 GG<sub>2</sub></b>											
3	12	12 9.60	+1 25.9	11.589	12.568	0.8	23.8	170 W	46	63	3	12	12 10.88	-33 47.0	0.214	1.169	31.9	21.2	142 W	11	82
3	22	12 5.87	+1 48.7	11.578	12.573	0.2	23.7	178 W	47	62	3	14	12 16.16	-33 0.2	0.206	1.166	30.7	21.1	143 W	12	83
4	1	12 2.13	+2 11.0	11.599	12.578	0.9	23.8	168 E	47	62	3	16	12 21.63	-32 4.4	0.198	1.163	29.4	21.0	145 W	13	84
4	11	11 58.52	+2 32.2	11.653	12.583	1.8	23.9	157 E	48	61	3										

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$	2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$		
<b>401840 1999 UH<sub>56</sub></b>										<b>523820 2011 GN<sub>44</sub></b>											
3	12	12 27.04	3 50.0	2.182	3.149	5.0	22.6	164 W	41	68	3	12	12 47.81	+44 34.5	2.810	3.585	11.2	24.0	135 W	90	19
3	22	12 18.43	-2 51.3	2.160	3.155	1.2	22.3	176 W	42	67	3	17	12 39.83	+44 51.5	2.812	3.586	11.3	24.0	135 W	90	19
4	1	12 9.60	-1 50.1	2.168	3.160	2.7	22.5	171 E	43	66	3	22	12 31.64	+45 0.4	2.822	3.586	11.5	24.0	134 W	90	19
4	11	12 1.39	-0 52.3	2.206	3.164	6.4	22.7	159 E	44	65	3	27	12 23.40	+45 0.6	2.837	3.587	11.9	24.1	132 E	90	19
4	21	11 54.50	-0 2.6	2.271	3.167	9.8	22.9	148 E	45	64	4	1	12 15.29	+44 52.3	2.859	3.587	12.3	24.1	130 E	90	19
<b>364273 2006 TW<sub>48</sub></b>										<b>523592 2001 SK<sub>276</sub></b>											
3	12	12 27.13	-10 41.4	1.924	2.877	6.8	22.3	160 W	34	75	3	12	12 48.93	-33 52.3	2.986	3.786	10.1	23.4	138 W	11	82
3	22	12 18.57	-9 32.2	1.865	2.852	3.3	22.1	171 W	35	74	3	17	12 44.50	-33 48.8	2.972	3.809	9.2	23.4	142 W	11	82
4	1	12 9.46	-8 10.5	1.835	2.826	3.1	22.0	171 E	37	72	3	22	12 39.88	-33 39.8	2.965	3.831	8.4	23.4	146 W	11	82
4	11	12 0.77	-6 43.4	1.834	2.799	6.8	22.2	161 E	38	71	3	27	12 35.17	-33 25.6	2.964	3.854	7.7	23.3	149 W	12	83
4	21	11 53.38	-5 18.8	1.861	2.772	10.7	22.3	149 E	40	69	4	1	12 30.46	-33 6.4	2.969	3.876	7.1	23.3	151 E	12	83
<b>468813 2012 OT<sub>5</sub></b>										<b>483472 2002 NX</b>											
3	12	12 28.21	+9 6.7	0.593	1.573	9.9	22.2	164 W	54	55	3	12	12 49.11	-30 59.0	1.532	2.386	15.3	22.9	141 W	14	85
3	17	12 23.30	+10 31.9	0.569	1.555	8.1	22.0	167 W	56	53	3	17	12 42.96	-31 4.4	1.490	2.375	13.9	22.7	145 W	14	85
3	22	12 17.57	+11 58.3	0.549	1.537	8.3	21.9	167 W	57	52	3	22	12 36.16	-31 0.2	1.454	2.363	12.6	22.6	149 W	14	85
3	27	12 11.28	+13 22.1	0.535	1.519	10.6	21.9	164 E	58	51	3	27	12 28.89	-30 45.9	1.424	2.351	11.6	22.5	152 W	14	85
4	1	12 4.76	+14 39.6	0.525	1.500	14.0	22.0	159 E	60	49	4	1	12 21.37	-30 21.6	1.400	2.338	10.9	22.5	154 E	15	86
4	6	11 58.37	+15 47.5	0.519	1.482	17.9	22.1	153 E	61	48	4	6	12 13.83	-29 47.5	1.383	2.325	10.8	22.4	154 E	15	86
4	11	11 52.45	+16 43.2	0.517	1.464	21.8	22.2	147 E	62	47	4	11	12 6.49	-29 4.7	1.372	2.311	11.3	22.4	153 E	16	87
4	16	11 47.31	+17 25.1	0.519	1.446	25.7	22.2	141 E	62	47	4	16	11 59.58	-28 14.4	1.368	2.297	12.3	22.4	151 E	17	88
4	21	11 43.20	+17 52.4	0.523	1.428	29.4	22.3	136 E	63	46	4	21	11 53.28	-27 18.2	1.371	2.282	13.7	22.5	147 E	18	89
<b>366839 2005 PF</b>										<b>463387 2013 CT<sub>82</sub></b>											
3	12	12 31.73	+12 56.7	2.738	3.695	4.8	22.6	162 W	58	51	3	12	12 49.20	-7 58.1	2.419	3.356	6.6	23.2	157 W	37	72
3	17	12 27.77	+13 28.9	2.723	3.690	4.2	22.6	164 W	58	51	3	22	12 39.67	-7 1.1	2.361	3.346	3.1	23.0	169 W	38	71
3	22	12 23.64	+13 59.3	2.715	3.685	4.1	22.6	165 W	59	50	4	1	12 29.42	-5 56.5	2.335	3.333	1.0	22.8	177 E	39	70
3	27	12 19.44	+14 27.2	2.715	3.680	4.6	22.6	163 E	59	50	4	11	12 19.29	-4 49.7	2.342	3.319	4.5	23.0	165 E	40	69
4	1	12 15.24	+14 52.0	2.722	3.675	5.5	22.6	159 E	60	49	4	21	12 10.07	-3 46.2	2.379	3.304	8.0	23.2	153 E	41	68
4	6	12 11.14	+15 13.3	2.737	3.669	6.6	22.7	155 E	60	49	<b>494836 2007 UR<sub>9</sub></b>										
4	11	12 7.21	+15 30.8	2.759	3.663	7.8	22.8	150 E	61	48	3	12	12 51.16	-2 0.6	1.957	2.906	7.1	22.5	159 W	43	66
<b>404670 2014 HD<sub>151</sub></b>										<b>494836 2007 UR<sub>9</sub></b>											
3	12	12 34.35	-6 27.4	1.408	2.370	7.8	22.5	161 W	39	70	3	17	12 47.25	-1 23.2	1.927	2.899	5.2	22.4	165 W	44	65
3	22	12 24.70	-5 25.9	1.353	2.346	2.9	22.1	173 W	40	69	3	22	12 43.00	-0 44.1	1.904	2.892	3.2	22.2	171 W	44	65
4	1	12 14.09	-4 13.9	1.326	2.321	3.0	22.0	173 E	41	68	3	27	12 38.52	-0 4.1	1.888	2.884	1.5	22.1	176 W	45	64
4	11	12 3.88	-3 0.4	1.326	2.296	8.3	22.3	161 E	42	67	4	1	12 33.93	+0 35.8	1.880	2.876	1.9	22.1	174 E	46	63
4	21	11 55.31	-1 54.4	1.351	2.269	13.4	22.5	149 E	43	66	4	6	12 29.36	+1 14.7	1.880	2.869	3.8	22.2	169 E	46	63
<b>402103 2003 WM<sub>109</sub></b>										<b>494836 2007 UR<sub>9</sub></b>											
3	12	12 36.24	-13 2.5	1.963	2.902	7.8	22.4	157 W	32	77	4	11	12 24.91	+1 51.7	1.886	2.860	5.8	22.3	163 E	47	62
3	22	12 27.17	-12 11.6	1.944	2.925	4.3	22.3	167 W	33	76	4	16	12 20.71	+2 26.0	1.900	2.852	7.8	22.4	157 E	47	62
4	1	12 17.81	-11 9.2	1.955	2.947	3.0	22.2	171 E	34	75	<b>496965 2002 PQ<sub>40</sub></b>										
4	11	12 9.11	-10 1.8	1.996	2.968	5.7	22.4	163 E	35	74	3	12	12 54.14	+0 2.2	3.198	4.139	5.0	23.5	159 W	45	64
4	21	12 1.87	-8 56.3	2.064	2.988	9.1	22.7	152 E	36	73	3	22	12 47.76	+1 4.4	3.151	4.135	2.6	23.4	169 W	46	63
<b>267223 2001 DQ<sub>8</sub></b>										<b>411655 2011 WW<sub>4</sub></b>											
3	12	12 36.83	-12 7.2	2.174	3.114	7.1	22.8	157 W	33	76	3	22	12 44.84	-15 22.5	1.595	2.563	6.8	22.2	162 W	30	79
3	22	12 23.05	-11 4.8	2.085	3.069	3.7	22.5	169 W	34	75	4	1	12 33.17	-14 41.8	1.535	2.525	4.1	21.9	170 E	30	79
4	1	12 8.17	-9 46.6	2.032	3.021	3.3	22.4	170 E	35	74	4	11	12 21.06	-13 45.1	1.504	2.485	6.0	21.9	165 E	31	78
4	11	11 53.38	-8 18.8	2.014	2.971	7.0	22.5	159 E	37	72	4	21	12 9.82	-12 39.5	1.500	2.444	10.3	22.1	154 E	32	77
4	21	11 39.83	-6 49.4	2.029	2.917	11.1	22.7	146 E	38	71	<b>422757 2001 TL<sub>7</sub></b>										
<b>405398 2004 LJ<sub>28</sub></b>										<b>422757 2001 TL<sub>7</sub></b>											
3	12	12 37.25	-3 11.7	1.642	2.604	6.9	22.3	162 W	42	67	3	12	12 57.40	-17 9.1	2.561	3.458	8.2	22.4	150 W	28	81
3	17	12 32.98	-2 33.3	1.612	2.593	4.6	22.1	168 W	42	67	3	22	12 49.94	-16 22.0	2.506	3.463	5.4	22.2	161 W	29	80
3	22	12 28.36	-1 52.5	1.589	2.582	2.2	21.9	174 W	43	66	4	1	12 41.77	-15 21.6	2.480	3.466	3.1	22.1	169 E	30	79
3	27	12 23.53	-1 10.3	1.573	2.571	0.5	21.7	179 E	44	65	4	11	12 33.63	-14 12.0	2.484	3.469	3.6	22.1	167 E	31	78
4	1	12 18.62	-0 27.8	1.565	2.559	2.8	21.9	173 E	45	64	4	21	12 26.20	-12 58.8	2.519	3.471	6.2	22.3	158 E	32	77
4	6	12 13.80	+0 13.9	1.563	2.547	5.2	22.0	167 E	45	64	<b>376836 2001 QD<sub>61</sub></b>										
4	11	12 9.20	+0 53.6	1.569	2.535	7.6	22.1	160 E	46	63	3	12	12 59.32	+26 7.7	2.492	3.380	8.8	21.8	149 W	71	38
4	16	12 4.93	+1 30.6	1.581	2.523	9.9	22.2	154 E	47	62	3	17	12 55.52	+27 0.0	2.493	3.389	8.5	21.8	150 W	72	37
4	21	12 1.12	+2 3.8	1.599	2.510	12.1	22.3	148 E	47	62	3	22	12 51.45	+27 47.6	2.501	3.398	8.5	21.8	150 W	73	36
<b>162058 1997 AE<sub>12</sub></b>										<b>433961 1999 RL<sub>41</sub></b>											
3	12	12 39.43	-10 32.9	2.736	3.675	5.9	23.4	158 W	34	75	3	12	12 39.86	-0 44.1	2.627	3.585	4.9	22.3	162 W	44	65
3	22	12 30.86	-9 48.1	2.689	3.672	3.0	23.2	169 W	35	74	3	22	12 31.15	-0 16.0	2.548	3.540	1.8	22.0	174 W	45	64
4	1	12 21.85	-8 55.3	2.673	3.667	1.8	23.1	173 E	36	73	4	1	12 21.69	+0 13.3	2.500	3.494	2.0	21.9	173 E	45	64
4	11	12 13.12	-7 59.1	2.689	3.662	4.4	23.3	164 E	37	72	4	11	12 12.24	+0 40.1	2.483	3.447	5.4	22.1	161 E	46	63
4	21	12 5.29	-7 3.8	2.735	3.655	7.3	23.4	152 E	38	71	4	21	12 3.50	+1 0.7	2.496	3.399	8.7	22.2	149 E	46	63

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$				
<b>494696 2004 RN<sub>335</sub></b>									<b>215528 2002 VQ<sub>91</sub></b>												
3	12	12 59.38	+ 7 59.5	1.555	2.501	8.9	23.1	157 W	53	56	3	12	13 9.21	+11 49.4	2.271	3.193	7.9	21.6	154 W	57	52
3	17	12 54.84	+ 8 37.1	1.516	2.480	7.2	22.9	162 W	54	55	3	17	13 5.37	+12 21.7	2.243	3.186	6.8	21.5	158 W	57	52
3	22	12 49.73	+ 9 14.5	1.483	2.460	5.9	22.8	165 W	54	55	3	22	13 1.17	+12 52.4	2.221	3.179	5.9	21.4	161 W	58	51
3	27	12 44.18	+ 9 50.3	1.457	2.439	5.4	22.7	167 W	55	54	3	27	12 56.70	+13 20.8	2.207	3.172	5.5	21.4	162 W	58	51
4	1	12 38.35	+10 23.3	1.438	2.417	6.1	22.7	165 E	55	54	4	1	12 52.06	+13 46.2	2.200	3.164	5.7	21.4	162 W	59	50
4	6	12 32.39	+10 52.3	1.426	2.396	7.7	22.7	161 E	56	53	4	6	12 47.36	+14 7.7	2.201	3.156	6.5	21.4	159 E	59	50
4	11	12 26.48	+11 16.3	1.421	2.374	9.7	22.8	157 E	56	53	4	11	12 42.72	+14 24.9	2.209	3.148	7.6	21.5	156 E	59	50
4	16	12 20.79	+11 34.5	1.422	2.352	11.9	22.8	151 E	57	52	4	16	12 38.22	+14 37.4	2.223	3.140	8.8	21.5	151 E	60	49
<b>380785 2005 VW<sub>5</sub></b>									<b>491015 2011 LS<sub>14</sub></b>												
3	12	13 1.56	- 5 28.8	1.494	2.433	9.8	21.9	155 W	40	69	3	12	13 10.22	-10 57.5	1.199	2.123	13.1	21.8	151 W	34	75
3	22	12 53.07	- 4 16.9	1.418	2.401	5.1	21.6	168 W	41	68	3	22	13 1.16	-10 53.0	1.106	2.079	8.1	21.4	163 W	34	75
4	1	12 42.87	- 2 53.6	1.369	2.368	0.7	21.2	178 W	42	67	4	1	12 49.25	-10 31.1	1.037	2.033	3.1	20.9	174 W	34	75
4	11	12 32.18	- 1 27.7	1.348	2.335	5.7	21.4	167 E	44	65	4	11	12 35.88	- 9 55.4	0.994	1.987	5.4	20.9	169 E	35	74
4	21	12 22.28	- 0 8.9	1.354	2.300	11.0	21.7	154 E	45	64	4	21	12 22.80	- 9 13.1	0.975	1.940	11.7	21.1	157 E	36	73
5	1	12 14.35	+ 0 54.5	1.383	2.264	15.9	21.8	142 E	46	63	5	1	12 11.88	- 8 33.7	0.978	1.893	17.9	21.3	145 E	36	73
<b>467835 2010 SS<sub>3</sub></b>									<b>331963 2004 XK<sub>35</sub></b>												
3	12	13 3.54	-17 44.6	0.738	1.668	18.1	22.3	149 W	27	82	3	12	13 11.00	-54 56.7	1.599	2.244	23.0	21.5	118 W	-	61
3	17	13 1.03	-15 31.0	0.696	1.653	14.6	22.0	155 W	29	80	3	17	13 5.65	-55 35.6	1.542	2.223	22.6	21.4	121 W	-	60
3	22	12 57.61	-12 52.8	0.659	1.637	10.7	21.7	162 W	32	77	3	22	12 59.11	-56 3.8	1.489	2.202	22.2	21.2	124 W	-	60
3	27	12 53.43	- 9 50.9	0.629	1.620	6.3	21.4	170 W	35	74	3	27	12 51.51	-56 19.5	1.439	2.180	21.7	21.1	126 W	-	60
4	1	12 48.68	- 6 28.4	0.605	1.604	1.6	21.0	177 W	39	70	4	1	12 43.08	-56 20.9	1.392	2.158	21.4	21.0	128 W	-	60
4	6	12 43.62	- 2 50.8	0.588	1.587	3.5	21.1	174 E	42	67	4	6	12 34.14	-56 6.7	1.349	2.135	21.0	20.9	130 E	-	60
4	11	12 38.54	+ 0 54.6	0.579	1.571	8.6	21.3	166 E	46	63	4	11	12 25.06	-55 36.0	1.310	2.112	20.8	20.8	132 E	-	60
4	16	12 33.70	+ 4 39.6	0.576	1.554	13.8	21.5	158 E	50	59	4	16	12 16.23	-54 48.4	1.275	2.088	20.7	20.7	133 E	-	61
4	21	12 29.38	+ 8 16.0	0.580	1.537	18.7	21.6	151 E	53	56	4	21	12 8.03	-53 44.1	1.244	2.065	20.9	20.7	133 E	-	62
4	26	12 25.84	+11 36.9	0.590	1.520	23.4	21.8	143 E	57	52	4	26	12 0.81	-52 24.2	1.218	2.040	21.2	20.6	133 E	-	64
5	1	12 23.28	+14 37.8	0.604	1.503	27.6	21.9	136 E	60	49	5	1	11 54.83	-50 50.4	1.196	2.016	21.8	20.6	132 E	-	65
<b>459915 2014 MC<sub>27</sub></b>									<b>377470 2004 XX<sub>161</sub></b>												
3	12	13 3.80	+22 20.0	1.918	2.824	10.1	21.7	150 W	67	42	3	12	13 4.44	+ 1 12.4	2.853	3.783	6.1	21.4	156 W	46	63
3	17	12 59.67	+23 16.9	1.916	2.833	9.5	21.7	152 W	68	41	3	22	12 57.08	+ 1 53.1	2.808	3.786	3.4	21.3	167 W	47	62
3	22	12 55.19	+24 8.8	1.920	2.841	9.3	21.7	152 W	69	40	4	1	12 49.03	+ 2 33.0	2.795	3.788	1.9	21.2	173 W	48	61
3	27	12 50.49	+24 54.6	1.931	2.849	9.5	21.7	152 W	70	39	4	11	12 40.92	+ 3 8.2	2.812	3.789	3.9	21.3	165 E	48	61
4	1	12 45.70	+25 33.3	1.948	2.857	10.1	21.8	150 W	71	38	4	21	12 33.35	+ 3 35.7	2.859	3.790	6.6	21.5	154 E	49	60
4	6	12 40.95	+26 4.5	1.972	2.865	10.9	21.8	147 E	71	38	5	1	12 26.86	+ 3 52.9	2.934	3.790	9.1	21.6	143 E	49	60
4	11	12 36.37	+26 27.8	2.002	2.872	11.9	21.9	144 E	71	38	<b>468462 2004 BS<sub>102</sub></b>										
4	16	12 32.08	+26 43.2	2.038	2.880	13.0	22.0	140 E	72	37	3	12	13 5.06	+30 10.4	1.450	2.333	14.2	22.7	145 W	75	34
4	21	12 28.16	+26 50.8	2.079	2.887	14.0	22.1	136 E	72	37	3	17	12 59.34	+31 30.4	1.450	2.339	14.0	22.6	145 W	77	32
4	26	12 24.71	+26 51.0	2.125	2.893	15.1	22.2	132 E	72	37	3	22	12 53.10	+32 41.3	1.457	2.343	14.2	22.7	145 W	78	31
5	1	12 21.79	+26 44.3	2.176	2.900	16.0	22.3	127 E	72	37	3	27	12 46.52	+33 41.2	1.470	2.348	14.7	22.7	143 W	79	30
<b>377470 2004 XX<sub>161</sub></b>									<b>313088 2000 UQ<sub>21</sub></b>												
3	12	13 4.44	+ 1 12.4	2.853	3.783	6.1	21.4	156 W	46	63	3	12	13 7.64	- 5 43.0	2.020	2.944	8.6	22.2	154 W	39	70
3	22	12 57.08	+ 1 53.1	2.808	3.786	3.4	21.3	167 W	47	62	3	22	12 59.89	- 4 40.3	1.959	2.935	4.8	21.9	166 W	40	69
4	1	12 49.03	+ 2 33.0	2.795	3.788	1.9	21.2	173 W	48	61	4	1	12 50.99	- 3 30.6	1.926	2.925	0.8	21.6	178 W	41	68
4	11	12 40.92	+ 3 8.2	2.812	3.789	3.9	21.3	165 E	48	61	4	11	12 41.83	- 2 20.2	1.924	2.914	3.7	21.8	169 E	43	66
4	21	12 33.35	+ 3 35.7	2.859	3.790	6.6	21.5	154 E	49	60	4	21	12 33.31	- 1 15.7	1.950	2.902	7.8	22.0	157 E	44	65
5	1	12 26.86	+ 3 52.9	2.934	3.790	9.1	21.6	143 E	49	60	5	1	12 26.23	- 0 22.5	2.003	2.889	11.5	22.2	145 E	45	64
<b>468462 2004 BS<sub>102</sub></b>									<b>280853 2005 UY<sub>282</sub></b>												
3	12	13 5.06	+30 10.4	1.450	2.333	14.2	22.7	145 W	75	34	3	12	13 7.70	- 3 53.0	1.411	2.347	10.6	21.3	154 W	41	68
3	17	12 59.34	+31 30.4	1.450	2.339	14.0	22.6	145 W	77	32	3	22	12 59.58	- 2 48.9	1.342	2.322	5.8	20.9	166 W	42	67
3	22	12 53.10	+32 41.3	1.457	2.343	14.2	22.7	145 W	78	31	4	1	12 49.64	- 1 36.2	1.299	2.297	1.5	20.6	177 W	43	66
3	27	12 46.52	+33 41.2	1.470	2.348	14.7	22.7	143 W	79	30	4	11	12 39.11	- 0 23.8	1.283	2.271	5.5	20.8	167 E	45	64
4	1	12 39.82	+34 29.2	1.489	2.351	15.5	22.8	141 E	79	30	4	21	12 29.33	+ 0 39.3	1.293	2.245	10.8	21.0	155 E	46	63
4	6	12 33.22	+35 4.7	1.514	2.355	16.5	22.8	138 E	80	29	5	1	12 21.52	+ 1 25.4	1.326	2.218	15.7	21.2	143 E	46	63
4	11	12 26.93	+35 27.7	1.544	2.357	17.6	22.9	135 E	80	29	5	11	12 16.50	+ 1 50.1	1.378	2.190	19.9	21.4	132 E	47	62
4	16	12 21.11	+35 38.7	1.578	2.360	18.8	23.0	131 E	81	28	<b>101931 1999 RZ<sub>20</sub></b>										
<b>313088 2000 UQ<sub>21</sub></b>									3 12 13 12.20 -12 34.3 2.071 2.973 9.7 21.3 150 W 32 77												
3	12	13 7.64	- 5 43.0	2.020	2.944	8.6	22.2	154 W	39	70	3 22 13 4.02 -12 10.5 1.994 2.956 6.1 21.0 161 W 33 76										
3	22	12 59.89	- 4 40.3	1.959	2.935	4.8	21.9	166 W	40	69	4 1 12 54.48 -11 34.2 1.945 2.938 2.6 20.8 172 W 33 76										
4	1	12 50.99	- 3 30.6	1.926	2.925	0.8	21.6	178 W	41	68	4 11 12 44.46 -10 49.1 1.926 2.920 3.0 20.8 171 E 34 75										
4	11	12 41.83	- 2 20.2	1.924	2.914	3.7	21.8	169 E	43	66											
4	21	12 33.31	- 1 15.7	1.950	2.902	7.8	22.0	157 E	44	65											
5	1	12 26.23	- 0 22.5	2.003	2.889	11.5	22.2	145 E	45	64											
<b>280853 2005 UY<sub>282</sub></b>									10 18 17 2.21 - 7 22.4 1.479 1.169 42.2 20.4 52 E 28* 40*												
3	12	13 7.70	- 3 53.0	1.411	2.347	10.6	21.3	154 W	41	68	10 28 17 35.07 - 5 21.3 1.474 1.150 42.3 20.4 51 E 31* 36*										
3	22	12 59.58	- 2 48.9	1.342	2.322	5.8	20.9	166 W	42	67	11 7 18 9.22 - 3 8.3 1.467 1.140 42.4 20.4 51 E 34* 32*										
4	1	12 49.64	- 1 36.2	1.299	2.297	1.5	20.6	177 W	43	66	11 17 18 44.74 - 0 43.8 1										

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2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$	2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$
<b>101931 1999 RZ<sub>20</sub></b>										<b>277473 2005 WD<sub>1</sub></b>									
<i>(continuation)</i>																			
4 21	12 34.94	-10 0.6	1.935	2.900	6.8	21.0	160 E	35	74	3 12	13 24.11	+52 22.3	2.479	3.161	14.8	22.2	125 W	83	12
5 1	12 26.81	-9 14.4	1.972	2.880	10.5	21.1	149 E	36	73	3 17	13 16.51	+52 50.9	2.478	3.159	14.9	22.2	125 W	82	11
5 11	12 20.71	-8 35.8	2.033	2.859	13.8	21.3	137 E	36	73	3 22	13 8.36	+53 10.4	2.481	3.156	15.1	22.2	125 W	82	11
5 21	12 16.99	-8 8.5	2.112	2.837	16.6	21.5	127 E	37	72	3 27	12 59.84	+53 19.9	2.489	3.153	15.3	22.2	124 W	82	11
<b>284752 2008 VF<sub>2</sub></b>										<b>408794 2000 GG<sub>186</sub></b>									
3 12	13 17.79	-11 22.8	1.867	2.768	10.6	22.4	149 W	34	75	4 1	12 51.20	+53 18.8	2.502	3.149	15.6	22.2	122 W	82	11
3 22	13 9.43	-10 44.5	1.816	2.778	6.6	22.2	161 W	34	75	4 6	12 42.67	+53 7.2	2.519	3.145	15.9	22.3	120 E	82	11
4 1	12 59.75	-9 54.5	1.793	2.788	2.5	22.0	173 W	35	74	4 11	12 34.45	+52 45.3	2.540	3.141	16.3	22.3	118 E	82	11
4 11	12 49.76	-8 57.9	1.799	2.796	2.6	22.0	173 E	36	73	4 16	12 26.74	+52 13.6	2.566	3.136	16.7	22.3	116 E	83	12
4 21	12 40.48	-8 1.0	1.834	2.804	6.7	22.3	161 E	37	72	4 21	12 19.70	+51 32.8	2.595	3.131	17.1	22.4	113 E	83	12
<b>455190 2000 QE<sub>25</sub></b>										<b>490070 2008 TM<sub>116</sub></b>									
3 12	13 19.18	-0 44.7	2.129	3.044	8.8	21.5	152 W	44	65	3 12	13 26.68	-11 58.3	1.522	2.417	12.9	21.6	147 W	33	76
3 17	13 15.35	-0 3.2	2.113	3.059	7.0	21.4	158 W	45	64	3 22	13 18.74	-11 45.0	1.437	2.393	8.7	21.3	159 W	33	76
3 22	13 11.18	+0 39.1	2.104	3.073	5.3	21.3	164 W	46	63	4 1	13 8.51	-11 16.6	1.377	2.369	3.9	20.9	171 W	34	75
3 27	13 6.76	+1 21.4	2.103	3.087	3.7	21.2	169 W	46	63	4 11	12 57.09	-10 36.6	1.344	2.344	2.5	20.8	174 E	34	75
4 1	13 2.21	+2 2.7	2.109	3.101	2.7	21.2	172 W	47	62	4 21	12 45.82	-9 51.2	1.339	2.318	7.4	21.0	163 E	35	74
4 6	12 57.63	+2 42.2	2.123	3.115	2.9	21.2	171 E	48	61	5 1	12 36.06	-9 7.8	1.359	2.291	12.4	21.2	151 E	36	73
4 11	12 53.13	+3 19.2	2.144	3.128	4.2	21.3	167 E	48	61	5 11	12 28.86	-8 33.7	1.400	2.264	16.9	21.4	139 E	36	73
4 16	12 48.81	+3 53.1	2.173	3.141	5.8	21.4	162 E	49	60	<b>97886 2000 QK<sub>54</sub></b>									
4 21	12 44.76	+4 23.2	2.209	3.154	7.4	21.6	156 E	49	60	3 12	13 28.51	-13 29.7	2.181	3.056	10.5	21.4	146 W	32	77
4 26	12 41.06	+4 49.2	2.252	3.166	9.0	21.7	150 E	50	59	3 22	13 20.74	-13 6.2	2.109	3.054	7.1	21.2	158 W	32	77
5 1	12 37.79	+5 10.8	2.301	3.178	10.5	21.8	145 E	50	59	4 1	13 11.50	-12 30.3	2.064	3.051	3.5	20.9	169 W	32	77
<b>396810 2004 PS<sub>100</sub></b>										<b>410186 2007 RH<sub>103</sub></b>									
3 12	13 19.30	-18 3.2	2.074	2.947	11.0	22.4	145 W	27	82	3 12	13 20.08	-8 38.5	1.574	2.484	11.6	21.4	150 W	36	73
3 22	13 11.06	-17 45.9	1.995	2.936	7.8	22.2	157 W	27	82	3 22	13 12.96	-7 39.9	1.486	2.452	7.3	21.0	162 W	37	72
4 1	13 1.30	-17 11.4	1.944	2.925	4.6	22.0	166 W	28	81	4 1	13 3.82	-6 26.7	1.424	2.420	2.4	20.7	174 W	39	70
4 11	12 50.96	-16 22.7	1.921	2.912	3.6	21.9	169 E	29	80	4 11	12 53.68	-5 5.4	1.389	2.387	2.9	20.6	173 E	40	69
4 21	12 41.04	-15 24.7	1.928	2.898	6.3	22.0	162 E	30	79	4 21	12 43.75	+3 44.9	1.382	2.353	8.2	20.8	160 E	41	68
5 1	12 32.47	-14 24.1	1.962	2.883	9.8	22.2	151 E	31	78	5 1	12 35.26	-2 34.2	1.400	2.319	13.2	21.0	148 E	42	67
<b>410186 2007 RH<sub>103</sub></b>										<b>455231 2001 SX<sub>111</sub></b>									
3 12	13 20.08	-8 38.5	1.574	2.484	11.6	21.4	150 W	36	73	3 12	13 28.90	-14 12.1	1.831	2.709	12.0	21.8	146 W	31	78
3 22	13 12.96	-7 39.9	1.486	2.452	7.3	21.0	162 W	37	72	3 22	13 20.37	-14 10.6	1.738	2.684	8.3	21.5	157 W	31	78
4 1	13 3.82	-6 26.7	1.424	2.420	2.4	20.7	174 W	39	70	4 1	13 9.76	-13 54.6	1.671	2.657	4.3	21.2	168 W	31	78
4 11	12 53.68	-5 5.4	1.389	2.387	2.9	20.6	173 E	40	69	4 11	12 58.02	-13 26.1	1.633	2.630	2.7	21.1	173 E	32	77
4 21	12 43.75	+3 44.9	1.382	2.353	8.2	20.8	160 E	41	68	4 21	12 46.35	-12 49.5	1.624	2.601	6.5	21.2	163 E	32	77
5 1	12 35.26	-2 34.2	1.400	2.319	13.2	21.0	148 E	42	67	5 1	12 35.94	-12 10.9	1.642	2.572	10.8	21.4	151 E	33	76
5 11	12 29.16	-1 40.4	1.440	2.283	17.6	21.2	137 E	43	66	<b>284711 2008 TL<sub>120</sub></b>									
5 21	12 25.96	-1 7.2	1.496	2.248	21.3	21.4	126 E	44	65	3 12	13 29.23	-4 38.8	1.829	2.729	10.8	22.0	149 W	40	69
<b>141670 2002 JS<sub>100</sub></b>										<b>333270 2146 P-L</b>									
3 12	13 21.43	+5 55.3	2.161	3.073	8.8	21.5	152 W	51	58	3 12	13 30.48	-10 10.3	2.501	3.377	9.2	21.3	147 W	35	74
3 17	13 18.00	+6 41.4	2.116	3.056	7.4	21.4	157 W	52	57	3 22	13 24.29	-9 18.3	2.402	3.350	6.2	21.1	159 W	36	73
3 22	13 14.11	+7 28.2	2.079	3.039	6.1	21.3	161 W	52	57	4 1	13 16.71	-8 16.0	2.332	3.322	2.8	20.8	171 W	37	72
3 27	13 9.83	+8 14.8	2.048	3.021	5.1	21.2	164 W	53	56	4 11	13 8.38	-7 7.3	2.291	3.293	0.9	20.6	177 E	38	71
4 1	13 5.26	+9 0.1	2.026	3.003	4.8	21.1	165 W	54	55	4 21	13 0.04	-5 57.5	2.282	3.263	4.6	20.9	165 E	39	70
4 6	13 0.51	+9 43.3	2.011	2.985	5.4	21.1	164 W	55	54	5 1	12 52.42	-4 51.9	2.301	3.232	8.1	21.0	153 E	40	69
4 11	12 55.68	+10 23.2	2.003	2.966	6.5	21.2	160 E	55	54	5 11	12 46.19	-3 55.6	2.346	3.200	11.3	21.2	142 E	41	68
4 16	12 50.90	+10 59.3	2.002	2.947	8.0	21.2	156 E	56	53	5 21	12 41.76	-3 11.9	2.413	3.168	14.0	21.3	131 E	42	67
4 21	12 46.26	+11 30.6	2.008	2.928	9.6	21.3	151 E	57	52	5 31	12 39.38	-2 42.6	2.497	3.134	16.2	21.4	120 E	42*	67
4 26	12 41.89	+11 56.8	2.021	2.908	11.2	21.3	146 E	57	52	<b>387505 1998 KN<sub>3</sub></b>									
5 1	12 37.89	+12 17.4	2.040	2.888	12.8	21.4	140 E	57	52	3 12	13 30.54	-12 44.0	1.654	2.539	12.7	22.3	146 W	32	77
5 6	12 34.34	+12 32.4	2.064	2.868	14.4	21.5	135 E	58	51	3 17	13 22.67	-12 3.0	1.637	2.563	10.2	22.2	153 W	33	76
<b>499517 2010 PX<sub>24</sub></b>										<b>468804 2012 HF<sub>52</sub></b>									
3 12	13 23.09	-2 13.1	1.524	2.441	11.4	21.6	151 W	43	66	3 22	13 14.30	-11 17.2	1.627	2.586	7.6	22.1	160 W	34	75
3 22	13 16.59	-0 51.1	1.442	2.410	7.2	21.2	162 W	44	65	3 27	13 5.62	-10 27.5	1.626	2.608	4.9	22.0	167 W	35	74
4 1	13 8.05	+0 39.3	1.386	2.379	3.5	20.9	172 W	46	63	4 1	12 56.85	-9 35.1	1.634	2.630	2.4	21.8	174 W	35	74
4 11	12 58.46	+2 9.0	1.357	2.348	4.9	20.9	168 E	47	62	4 6	12 48.19	-8 41.5	1.651	2.650	1.4	21.8	176 E	36	73
4 21	12 49.03	+3 28.2	1.355	2.315	9.6	21.1	157 E	48	61	4 11	12 39.84	-7 48.0	1.676	2.670	3.6	22.0	170 E	37	72
5 1	12 40.96	+4 28.4	1.377	2.283	14.3	21.3	146 E	49	60	4 16	12 31.98	-6 55.9	1.711	2.688	6.1	22.2	164 E	38	71
5 11	12 35.22	+5 4.6	1.419	2.249	18.5	21.5	135 E	50	59	4 21	12 24.73	-6 6.5	1.753	2.706	8.4	22.4	157 E	39	70
<b>416386 2003 UW<sub>19</sub></b>										<b>468804 2012 HF<sub>52</sub></b>									
3 12	13 23.25	+25 40.1	2.241	3.105	10.7	21.7	145 W	71	38	3 12	13 31.35	-10 19.4	1.940	2.823	11.2	21.7	147 W	35	74
3 17	13 19.19	+26 20.4	2.219	3.099	10.2	21.6	147 W	71	38	3 22	13 25.63	-8 53.9	1.837	2.788	7.5	21.4	158 W	36	73
3 22	13 14.69	+26 56.7	2.203	3.093	9.9	21.6	148 W	72	37	4 1	13 18.11	-7 11.7	1.762	2.753	3.4	21.1	171 W	38	71
3 27	13 9.83	+27 27.7	2.194	3.086	9.9	21.6	148 W	72	37	4 11	13 9.55	-5 19.2	1.716	2.716	1.4	20.8	176 E	40	69
4 1	13 4.74	+27 52.7	2.192	3.079	10.1	21.6	147 W	73	36										
4 6	12 59.54	+28 10.9	2.196	3.073	10.7	21.6	145 E	73	36										
4 11	12 54.36	+28 22.0	2.206	3.065	11.4	21.7	143 E	73	36										
4 16	12 49.31	+28 25.8	2.222	3.058	12.2	21.7	140 E	73	36										
4 21	12 44.51	+28																	

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2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$	2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$
<b>468804</b> 2012 HF <sub>52</sub> (continuation)										<b>329275</b> 1999 VP <sub>6</sub> (continuation)									
4 21	13 0.86	-3 25.0	1.699	2.679	5.9	21.1	164 E	42	67	6 10	12 24.84	-0 10.9	0.647	1.349	46.2	21.4	106 E	42*	64
5 1	12 53.03	-1 38.4	1.710	2.642	10.4	21.2	152 E	43	66	6 15	12 29.67	+0 40.9	0.662	1.326	48.4	21.4	102 E	41*	63
5 11	12 46.92	-0 7.4	1.746	2.603	14.4	21.4	140 E	45	64	6 20	12 35.48	+1 22.4	0.676	1.303	50.4	21.5	99 E	41*	63
<b>433873</b> 2015 BQ <sub>311</sub>										<b>461374</b> 2000 WS <sub>21</sub>									
3 12	13 32.93	+18 50.2	7.738	8.580	3.7	21.5	146 W	64	45	3 12	13 39.74	-0 4.4	2.013	2.898	10.7	22.4	147 W	45	64
3 22	13 30.06	+19 22.6	7.682	8.569	3.2	21.4	151 W	64	45	3 22	13 32.03	+1 0.1	1.977	2.927	7.2	22.2	158 W	46	63
4 1	13 26.79	+19 51.0	7.654	8.558	3.0	21.4	153 W	65	44	4 1	13 22.91	+2 4.6	1.970	2.954	4.1	22.1	168 W	47	62
4 11	13 23.31	+20 13.8	7.653	8.547	3.2	21.4	151 W	65	44	4 11	13 13.28	+3 2.8	1.991	2.980	3.8	22.1	169 E	48	61
4 21	13 19.81	+20 30.0	7.680	8.535	3.7	21.4	146 E	65	44	4 21	13 4.05	+3 49.2	2.042	3.005	6.7	22.3	160 E	49	60
5 1	13 16.47	+20 38.9	7.732	8.524	4.4	21.5	140 E	66	43	<b>455224</b> 2001 RW <sub>47</sub>									
5 11	13 13.48	+20 40.2	7.807	8.512	5.1	21.5	132 E	66	43	3 12	13 39.92	-1 17.0	2.162	3.044	10.2	22.2	147 W	44	65
<b>259555</b> 2003 UL <sub>147</sub>										3 22	13 32.27	-0 15.9	2.116	3.064	6.9	22.1	158 W	45	64
3 12	13 33.74	-3 38.8	2.090	2.980	10.1	22.0	148 W	41	68	4 1	13 23.21	+0 46.9	2.097	3.083	3.7	21.9	168 W	46	63
3 22	13 26.65	-2 52.4	2.012	2.967	6.7	21.8	160 W	42	67	4 11	13 13.57	+1 45.4	2.109	3.100	3.3	21.9	170 E	47	62
4 1	13 17.94	-2 0.9	1.962	2.952	3.1	21.5	171 W	43	66	4 21	13 4.23	+2 34.4	2.150	3.117	6.1	22.1	161 E	48	61
4 11	13 8.41	-1 9.6	1.940	2.937	2.6	21.5	172 E	44	65	5 1	12 55.98	+3 9.9	2.220	3.132	9.3	22.3	150 E	48	61
4 21	12 58.96	-0 24.0	1.949	2.920	6.2	21.7	162 E	45	64	<b>306376</b> 1983 TA									
5 1	12 50.50	+0 11.1	1.984	2.903	9.9	21.8	150 E	45	64	3 12	13 40.42	-21 12.2	2.369	3.191	11.7	21.8	140 W	24	85
<b>511096</b> 2013 TO <sub>139</sub>										3 22	13 30.57	-21 37.0	2.324	3.228	8.7	21.7	151 W	23	86
3 12	13 33.78	+0 34.3	2.837	3.723	8.0	22.5	149 W	46	63	4 1	13 19.29	-21 45.5	2.306	3.265	5.8	21.5	161 W	23	86
3 22	13 27.12	+1 16.2	2.773	3.723	5.4	22.3	160 W	46	63	4 11	13 7.49	-21 38.7	2.318	3.300	4.1	21.5	166 E	23	86
4 1	13 19.35	+1 58.4	2.738	3.723	3.0	22.1	169 W	47	62	4 21	12 56.15	-21 19.5	2.361	3.335	5.1	21.6	163 E	24	85
4 11	13 11.09	+2 36.9	2.734	3.723	3.0	22.1	169 E	48	61	5 1	12 46.13	-20 52.6	2.435	3.369	7.6	21.8	154 E	24	85
4 21	13 2.95	+3 8.1	2.760	3.721	5.3	22.3	160 E	48	61	<b>496970</b> 2002 QV <sub>5</sub>									
5 1	12 55.56	+3 29.3	2.815	3.718	7.9	22.5	149 E	48	61	3 12	13 42.07	-13 1.1	1.902	2.763	12.4	22.0	143 W	32	77
<b>31345</b> 1998 PG										3 22	13 35.36	-12 47.2	1.799	2.733	9.0	21.8	155 W	32	77
3 12	13 34.90	-14 33.9	1.934	2.800	12.0	21.8	144 W	30	79	4 1	13 26.48	-12 19.9	1.720	2.702	4.9	21.5	167 W	33	76
3 22	13 26.85	-13 42.4	1.863	2.803	8.3	21.6	156 W	31	78	4 11	13 16.21	-11 41.6	1.669	2.670	1.3	21.1	177 E	33	76
4 1	13 17.07	-12 35.0	1.818	2.804	4.2	21.3	168 W	32	77	4 21	13 5.56	-10 56.7	1.647	2.638	4.7	21.3	168 E	34	75
4 11	13 6.52	-11 16.5	1.803	2.804	1.5	21.1	176 E	34	75	5 1	12 55.70	-10 11.2	1.653	2.604	9.2	21.5	156 E	35	74
4 21	12 56.24	-9 53.9	1.818	2.802	5.2	21.4	165 E	35	74	<b>163683</b> 2002 YP <sub>2</sub>									
5 1	12 47.24	-8 34.9	1.862	2.798	9.3	21.6	153 E	36	73	3 12	13 42.10	+19 28.3	1.217	2.102	16.2	21.9	144 W	64	45
<b>390929</b> 2005 GP <sub>21</sub>										3 22	13 35.51	+20 41.3	1.163	2.071	15.0	21.7	147 W	66	43
3 12	13 36.31	-5 22.5	0.671	1.599	19.7	21.6	147 W	40	69	3 17	13 27.52	+21 54.0	1.114	2.038	14.2	21.6	150 W	67	42
3 22	13 16.25	-6 51.2	0.625	1.601	11.5	21.2	161 W	38	71	3 27	13 18.17	+23 3.4	1.072	2.005	13.9	21.5	151 W	68	41
4 1	12 51.18	-8 12.0	0.604	1.602	2.7	20.7	176 W	37	72	4 1	13 7.60	+24 6.4	1.037	1.970	14.4	21.4	151 W	69	40
4 11	12 24.91	-9 21.1	0.608	1.600	8.3	21.0	167 E	36	73	4 6	12 56.02	+24 59.7	1.009	1.935	15.7	21.3	149 E	70	39
4 21	12 1.68	-10 18.7	0.636	1.595	17.2	21.4	152 E	35	74	4 11	12 43.74	+25 40.5	0.988	1.898	17.6	21.3	145 E	71	38
5 1	11 44.46	-11 10.5	0.684	1.587	24.8	21.8	139 E	34	75	4 16	12 31.13	+26 6.6	0.973	1.860	20.1	21.3	140 E	71	38
<b>357094</b> 2001 TM										4 21	12 18.59	+26 16.6	0.964	1.821	22.9	21.3	135 E	71	38
3 12	13 36.39	-7 31.2	2.031	2.911	10.9	21.8	146 W	37	72	4 26	12 6.55	+26 10.1	0.961	1.780	25.8	21.3	130 E	71	38
3 22	13 28.31	-6 58.8	1.975	2.924	7.2	21.6	158 W	38	71	5 1	11 55.36	+25 47.8	0.962	1.738	28.8	21.4	124 E	71	38
4 1	13 18.69	-6 19.1	1.946	2.936	3.1	21.4	171 W	39	70	5 6	11 45.28	+25 11.1	0.967	1.696	31.6	21.4	118 E	70	39
4 11	13 8.43	-5 36.7	1.946	2.947	1.3	21.3	176 E	39	70	5 11	11 36.47	+24 21.8	0.975	1.651	34.4	21.5	113 E	69	40
4 21	12 58.50	-4 56.6	1.977	2.957	5.3	21.6	164 E	40	69	5 16	11 29.03	+23 21.9	0.985	1.606	37.0	21.5	107 E	68*	41
5 1	12 49.79	-4 23.6	2.036	2.965	9.1	21.8	152 E	41	68	<b>397798</b> 2008 PD									
<b>302193</b> 2001 UA										3 12	13 43.18	-5 55.4	1.593	2.475	13.2	22.1	145 W	39	70
3 12	13 37.13	-2 41.0	1.703	2.597	11.9	21.4	147 W	42	67	3 22	13 36.66	-5 4.6	1.508	2.456	9.2	21.9	157 W	40	69
3 22	13 29.71	-1 59.4	1.621	2.576	8.0	21.2	159 W	43	66	4 1	13 27.80	-4 3.6	1.449	2.437	4.6	21.5	169 W	41	68
4 1	13 20.17	-1 12.7	1.565	2.555	3.9	20.9	170 W	44	65	4 11	13 17.52	-2 58.9	1.417	2.416	2.2	21.3	175 E	42	67
4 11	13 9.43	-0 26.9	1.537	2.533	3.2	20.8	172 E	45	64	4 21	13 7.00	-1 58.3	1.412	2.395	6.5	21.5	164 E	43	66
4 21	12 58.65	+0 11.4	1.537	2.510	7.3	21.0	161 E	45	64	5 1	12 57.51	-1 9.3	1.433	2.373	11.3	21.8	153 E	44	65
5 1	12 49.02	+0 36.6	1.563	2.486	11.8	21.2	150 E	46	63	<b>276392</b> 2002 XH <sub>4</sub>									
5 11	12 41.49	+0 44.8	1.612	2.461	15.8	21.4	139 E	46	63	3 12	13 43.44	+22 10.6	0.874	1.769	20.1	21.3	142 W	67	42
<b>329275</b> 1999 VP <sub>6</sub>										3 17	13 40.09	+23 34.7	0.843	1.753	19.1	21.2	145 W	69	40
3 12	13 39.31	-27 49.5	0.816	1.679	24.4	21.7	136 W	17	88	3 22	13 35.53	+24 56.0	0.817	1.737	18.5	21.1	146 W	70	39
3 17	13 36.24	-27 38.2	0.770	1.665	22.1	21.5	141 W	17	88	3 27	13 29.85	+26 11.1	0.795	1.721	18.4	21.0	147 W	71	38
3 22	13 31.86	-27 13.1	0.727	1.652	19.6	21.3	146 W	18	89	4 1	13 23.19	+27 16.6	0.778	1.704	18.8	21.0	147 W	72	37
3 27	13 26.20	-26 32.1	0.688	1.637	16.8	21.1	152 W	18	89	4 6	13 15.81	+28 9.4	0.765	1.687	19.8	20.9	145 W	73	36
4 1	13 19.41	-25 33.7	0.654	1.622	13.8	20.8	157 W	19	90	4 11	13 7.99	+28 47.1	0.757	1.669	21.3	20.9	143 E	74	35
4 6	13 11.70	-24 16.9	0.625	1.606	11.1	20.6	162 W	21	88	4 16	13 0.06	+29 8.0	0.753	1.652	23.1	21.0	140 E	74	35
4 11	13 3.38	-22 42.0	0.600	1.590	9.3	20.4	165 E	22	87	4 21	12 52.35	+29 11.0	0.753	1.634	25.2	21.0	136 E	74	35
4 16	12 54.81	-20 50.1	0.581	1.573	9.4	20.3	165 E	24	85	4 26	12 45.20	+28 56.0	0.756	1.616	27.4	21.1	132 E	74	35
4 21	12 46.39	-18 44.3	0.568	1.555	11.6	20.3	162 E	26	83	5 1	12 38.91	+28 24.0	0.762	1.597	29.6	21.1	128 E	73	36
4 26	12 38.54	-16 28.9	0.560	1.537	15.0	20.4	157 E	29	80	5 6	12 33.67	+27 36.3	0.771	1.579	31.8	21.2	124 E	73	36
5 1	12 31.62	-14 9.1	0.558	1.518	19.1	20.5	151 E												

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2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$	2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$
<b>463257 2012 GG<sub>1</sub></b>									<b>307615 2003 QR<sub>82</sub></b> (continuation)								
3 12	13 43.44	-25 9.2	1.229	2.068	19.2	21.5	137 W	20 89	4 21	13 35.57	-4 26.5	2.010	3.007	3.0	20.9	171 E	41 68
3 17	13 38.82	-25 31.1	1.184	2.061	17.3	21.3	142 W	19 90	5 1	13 26.79	-3 40.4	2.056	3.022	6.5	21.2	160 E	41 68
3 22	13 33.13	-25 46.0	1.144	2.053	15.2	21.2	147 W	19 90	5 11	13 19.36	-3 5.8	2.128	3.037	10.0	21.4	149 E	42 67
3 27	13 26.47	-25 52.8	1.109	2.046	13.1	21.0	152 W	19 90	<b>363599 2004 FG<sub>11</sub></b>								
4 1	13 18.99	-25 50.6	1.080	2.037	11.1	20.9	157 W	19 90	3 12	14 7.86	-3 5.5	0.460	1.378	27.7	21.2	140 W	42 67
4 6	13 10.92	-25 39.2	1.057	2.028	9.4	20.8	161 W	19 90	3 17	14 13.33	-2 6.8	0.381	1.321	26.7	20.7	143 W	43 66
4 11	13 2.51	-25 18.6	1.040	2.018	8.6	20.7	163 E	20 89	3 22	14 19.64	-0 35.3	0.305	1.262	25.8	20.1	147 W	44 65
4 16	12 54.04	-24 49.4	1.030	2.008	8.8	20.7	162 E	20 89	3 27	14 27.94	+1 55.6	0.231	1.201	25.6	19.4	149 W	47 62
4 21	12 45.81	-24 12.6	1.026	1.998	10.2	20.7	159 E	21 88	4 1	14 41.45	+6 36.9	0.161	1.139	27.5	18.5	148 W	52 57
4 26	12 38.11	-23 30.0	1.028	1.987	12.3	20.8	155 E	21 88	4 2	14 45.49	+8 3.8	0.147	1.126	28.5	18.4	147 W	53 56
5 1	12 31.18	-22 43.7	1.036	1.975	14.7	20.9	150 E	22 87	4 3	14 50.32	+9 47.7	0.133	1.113	29.9	18.2	146 W	55 54
5 6	12 25.22	-21 55.7	1.050	1.963	17.2	21.0	145 E	23 86	4 4	14 56.21	+11 53.7	0.120	1.101	31.7	18.0	145 W	57 52
5 11	12 20.32	-21 8.0	1.068	1.950	19.7	21.1	139 E	24 85	4 5	15 3.57	+14 28.9	0.107	1.088	34.1	17.8	142 W	59 50
5 16	12 16.56	-20 22.4	1.091	1.936	22.0	21.2	134 E	25 84	4 6	15 13.07	+17 43.4	0.095	1.075	37.4	17.6	139 W	63 46
5 21	12 13.95	-19 40.2	1.117	1.922	24.1	21.3	129 E	25 84	4 7	15 25.78	+21 51.1	0.083	1.061	41.9	17.4	135 W	67 42
5 26	12 12.49	-19 2.6	1.146	1.908	26.1	21.4	124 E	26* 83	4 8	15 43.58	+27 10.1	0.072	1.048	47.9	17.2	129 W	72 37
5 31	12 12.13	-18 30.2	1.177	1.893	27.8	21.5	119 E	26* 83	4 9	16 9.97	+33 58.7	0.063	1.035	56.3	17.1	121 W	79 30
<b>513125 1997 GC<sub>32</sub></b>									4 10	16 51.66	+42 16.6	0.055	1.022	67.4	17.1	110 W	87 22
3 12	13 46.87	-8 16.9	1.288	2.170	15.7	21.5	144 W	37 72	4 11	18 0.44	+50 51.3	0.050	1.008	81.6	17.4	96 W	84 13
3 22	13 39.58	-6 54.2	1.146	2.095	11.3	21.0	156 W	38 71	4 12	19 44.68	+56 15.2	0.049	0.995	97.5	18.0	80 W	72* 7*
4 1	13 28.14	-5 0.8	1.028	2.018	5.7	20.4	169 W	40 69	4 13	21 36.71	+55 19.6	0.052	0.981	112.9	18.9	64 W	57* 3*
4 11	13 12.98	-2 40.4	0.937	1.937	3.0	20.0	174 E	42 67	4 14	22 56.97	+50 7.1	0.059	0.968	125.8	20.1	52 W	44* *
4 16	13 4.35	-1 23.2	0.902	1.895	6.3	20.0	168 E	44 65	4 15	23 45.86	+44 9.8	0.067	0.954	135.8	21.4	42 W	34* -
4 21	12 55.33	-0 3.8	0.873	1.852	10.2	20.1	161 E	45 64	<b>380929 2006 HU<sub>30</sub></b>								
4 26	12 46.19	+1 15.1	0.852	1.809	14.3	20.1	154 E	46 63	3 12	14 8.49	+23 8.6	0.875	1.738	23.1	21.6	137 W	68 41
5 1	12 37.26	+2 31.0	0.836	1.765	18.5	20.2	146 E	48 61	3 17	14 2.88	+24 2.9	0.828	1.715	21.8	21.4	140 W	69 40
5 6	12 28.82	+3 41.7	0.826	1.720	22.6	20.2	139 E	49 60	3 22	13 55.46	+24 54.1	0.785	1.692	20.7	21.2	143 W	70 39
5 11	12 21.10	+4 45.4	0.820	1.675	26.6	20.3	132 E	50 59	3 27	13 46.17	+25 38.6	0.747	1.668	19.8	21.1	145 W	71 38
5 16	12 14.31	+5 40.9	0.818	1.628	30.4	20.3	125 E	51 58	4 1	13 35.11	+26 12.1	0.713	1.643	19.5	20.9	147 W	71 38
5 21	12 8.59	+6 27.3	0.819	1.581	34.0	20.4	119 E	51 58	4 6	13 22.48	+26 30.5	0.685	1.617	19.9	20.8	147 W	72 37
5 31	12 0.70	+7 32.2	0.824	1.484	40.7	20.4	107 E	51* 56	4 11	13 8.63	+26 29.7	0.662	1.591	21.1	20.7	145 E	71 38
6 10	11 57.56	+8 2.5	0.827	1.384	46.7	20.5	97 E	47* 56	4 16	12 54.05	+26 6.8	0.644	1.564	23.1	20.7	142 E	71 38
6 20	11 58.78	+8 3.1	0.824	1.282	52.4	20.4	88 E	42* 56	4 21	12 39.31	+25 20.0	0.632	1.536	25.7	20.7	138 E	70 39
6 25	12 0.85	+7 54.0	0.819	1.230	55.2	20.4	83 E	39* 56	4 26	12 25.02	+24 9.3	0.625	1.508	28.8	20.7	134 E	69 40
6 30	12 3.78	+7 39.5	0.809	1.178	58.0	20.4	79 E	37* 56*	5 1	12 11.73	+22 36.7	0.622	1.479	32.1	20.8	129 E	68 41
7 5	12 7.45	+7 20.4	0.796	1.126	61.0	20.3	76 E	34* 56*	5 6	11 59.82	+20 45.1	0.623	1.449	35.5	20.8	124 E	66 43
7 10	12 11.76	+6 57.5	0.779	1.074	64.2	20.3	72 E	32* 55*	5 11	11 49.53	+18 38.2	0.627	1.418	38.8	20.9	118 E	64 45
7 15	12 16.57	+6 31.6	0.757	1.023	67.8	20.2	69 E	30* 54*	5 16	11 40.94	+16 19.6	0.633	1.388	42.1	21.0	113 E	61 48
7 20	12 21.74	+6 3.5	0.730	0.973	71.7	20.2	65 E	28* 52*	5 21	11 34.05	+13 52.3	0.641	1.356	45.2	21.0	108 E	58* 50
7 25	12 27.06	+5 34.3	0.698	0.924	76.2	20.1	62 E	26* 50*	5 26	11 28.79	+11 18.7	0.651	1.324	48.1	21.1	103 E	54* 53
7 30	12 32.24	+5 5.4	0.661	0.877	81.3	20.1	59 E	24* 48*	5 31	11 25.00	+8 40.8	0.661	1.292	50.9	21.1	99 E	49* 55
8 4	12 36.87	+4 38.8	0.619	0.834	87.3	20.0	55 E	22* 45*	6 5	11 22.53	+5 59.7	0.670	1.259	53.4	21.2	95 E	44* 58
8 9	12 40.39	+4 16.6	0.573	0.795	94.3	20.1	51 E	21* 42*	6 10	11 21.20	+3 16.2	0.679	1.226	55.9	21.2	90 E	39* 61
8 14	12 42.03	+4 1.8	0.523	0.761	102.6	20.2	47 E	19* 39*	6 15	11 20.85	+0 30.7	0.687	1.193	58.2	21.3	87 E	33* 63
8 19	12 40.68	+3 58.0	0.471	0.734	112.3	20.4	42 E	17* 34*	6 20	11 21.35	-2 16.8	0.693	1.160	60.4	21.3	83 E	28* 66*
8 24	12 34.90	+4 9.2	0.420	0.715	123.8	20.9	36 E	14* 28*	6 25	11 22.55	-5 6.4	0.698	1.128	62.6	21.3	80 E	23* 68*
<b>461836 2006 CH</b>									6 30	11 24.32	-7 58.4	0.700	1.095	64.7	21.3	77 E	18* 68*
3 12	13 47.87	-26 56.7	1.629	2.434	16.8	21.6	135 W	18 89	7 5	11 26.52	-10 52.8	0.700	1.063	66.8	21.3	74 E	13* 67*
3 17	13 42.77	-27 34.4	1.604	2.450	15.2	21.5	140 W	17 88	7 10	11 29.03	-13 49.8	0.697	1.032	68.9	21.3	71 E	9* 65*
3 22	13 36.91	-28 5.9	1.583	2.466	13.4	21.4	145 W	17 88	7 15	11 31.72	-16 49.5	0.691	1.003	71.1	21.3	69 E	5* 63*
3 27	13 30.42	-28 30.6	1.569	2.482	11.7	21.4	150 W	16 87	7 20	11 34.47	-19 52.0	0.683	0.974	73.3	21.3	67 E	- 60*
4 1	13 23.46	-28 47.9	1.561	2.497	10.2	21.3	154 W	16 87	7 25	11 37.17	-22 57.5	0.671	0.947	75.6	21.3	65 E	- 56*
4 6	13 16.23	-28 57.8	1.560	2.512	8.9	21.3	157 W	16 87	7 30	11 39.64	-26 5.5	0.656	0.923	78.0	21.2	63 E	- 52*
4 11	13 8.92	-29 0.5	1.565	2.527	8.1	21.3	159 E	16 87	8 4	11 41.70	-29 15.5	0.638	0.901	80.5	21.2	61 E	- 48*
4 16	13 1.74	-28 56.4	1.578	2.542	8.0	21.3	159 E	16 87	8 9	11 43.19	-32 26.7	0.618	0.882	83.0	21.2	60 E	- 44*
4 21	12 54.89	-28 46.3	1.597	2.557	8.5	21.3	158 E	16 87	8 14	11 43.89	-35 38.2	0.594	0.867	85.7	21.2	59 E	- 40*
4 26	12 48.55	-28 31.2	1.623	2.571	9.5	21.4	155 E	16 87	8 19	11 43.60	-38 48.8	0.568	0.855	88.3	21.1	58 E	- 36*
5 1	12 42.84	-28 12.5	1.656	2.585	10.8	21.5	151 E	17 88	8 24	11 42.04	-41 57.5	0.539	0.847	90.8	21.1	57 E	- 32*
5 6	12 37.89	-27 51.4	1.695	2.599	12.2	21.7	147 E	17 88	8 29	11 38.91	-45 2.6	0.508	0.844	93.3	21.1	57 E	- 28*
<b>471240 2011 BT<sub>15</sub></b>									9 3	11 33.85	-48 2.6	0.476	0.845	95.5	21.0	56 E	- 24*
3 12	14 0.29	-7 39.3	0.556	1.467	25.4	22.4	141 W	37 72	9 8	11 26.51	-50 56.3	0.441	0.850	97.5	21.0	57 E	- 21*
3 17	13 53.32	-6 50.2	0.546	1.485	21.1	22.3	148 W	38 71	9 13	11 16.40	-53 43.4	0.406	0.860	99.0	20.9	58 W	- 19*
3 22	13 44.99	-5 55.0	0.539	1.502	16.5	22.1	155 W	39 70	9 18	11 2.82	-56 24.3	0.369	0.873	100.0	20.8	59 W	- 24*
3 27	13 35.59	-4 55.5	0.537	1.518	11.7	22.0	162 W	40 69	9 23	10 44.58	-58 59.9	0.331	0.890	100.2	20.6	61 W	- 28*
4 1	13 25.56	-3 54.4	0.541	1.534	7.0	21.8	169 W	41 68	9 28	10 19.56	-61 30.5	0.293	0.910	99.6	20.3	64 W	- 33*
4 6	13 15.35	-2 54.6	0.549	1.548	3.3	21.7	175 W	42 67	9 29	10 13.45	-61 59.9	0					

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ – $26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ – $26^\circ$
<b>380929 2006 HU<sub>30</sub></b> (continuation)									<b>279776 1999 TA<sub>122</sub></b> (continuation)								
10 13	7 30.52	–66 18.5	0.181	0.986	88.4	19.0	81 W	– 49*	4 26	13 32.88	–12 28.6	1.217	2.214	4.6	20.4	170 E	33 76
10 14	7 10.92	–66 1.6	0.174	0.992	86.8	18.8	83 W	– 50*	5 1	13 27.41	–11 53.7	1.214	2.199	7.4	20.5	164 E	33 76
10 15	6 50.37	–65 33.2	0.168	0.998	85.0	18.7	85 W	– 50*	5 6	13 22.31	–11 19.7	1.217	2.183	10.2	20.6	157 E	34 75
10 16	6 29.11	–64 51.2	0.161	1.004	83.0	18.6	88 W	– 51	5 11	13 17.75	–10 47.6	1.226	2.167	12.9	20.7	151 E	34 75
10 17	6 7.46	–63 53.6	0.155	1.010	80.8	18.4	90 W	– 52	5 16	13 13.83	–10 18.5	1.240	2.151	15.4	20.8	146 E	35 74
10 18	5 45.78	–62 38.6	0.149	1.015	78.5	18.2	93 W	– 53	5 21	13 10.67	–9 53.3	1.259	2.135	17.8	20.9	140 E	35 74
10 19	5 24.41	–61 4.4	0.144	1.021	75.8	18.1	96 W	– 55	5 26	13 8.33	–9 32.5	1.283	2.119	20.0	21.0	134 E	35 74
10 20	5 3.71	–59 9.8	0.138	1.027	73.0	17.9	99 W	– 57	5 31	13 6.86	–9 16.7	1.310	2.103	21.9	21.1	129 E	36 73
10 21	4 43.93	–56 53.8	0.134	1.034	69.9	17.8	103 W	– 59	6 5	13 6.25	–9 6.1	1.340	2.086	23.7	21.1	124 E	36* 73
10 22	4 25.30	–54 16.3	0.129	1.040	66.5	17.6	107 W	– 62	6 10	13 6.50	–9 0.7	1.372	2.069	25.3	21.2	119 E	36* 73
10 23	4 7.92	–51 17.6	0.126	1.046	62.9	17.4	111 W	– 65	6 15	13 7.57	–9 0.5	1.406	2.053	26.7	21.3	115 E	35* 73
10 24	3 51.86	–47 58.8	0.123	1.052	59.1	17.3	115 W	– 68	6 20	13 9.45	–9 5.2	1.442	2.036	27.9	21.4	111 E	34* 73
10 25	3 37.11	–44 22.0	0.120	1.058	55.1	17.1	119 W	1 72	6 25	13 12.09	–9 14.7	1.479	2.019	28.9	21.4	106 E	32* 73
10 26	3 23.63	–40 29.8	0.118	1.065	50.9	17.0	124 W	5 76	<b>393908 2005 UH<sub>3</sub></b>								
10 27	3 11.36	–36 26.0	0.118	1.071	46.6	16.9	128 W	9 80	3 12	14 11.80	+53 29.2	1.907	2.551	19.8	21.9	120 W	82 11
10 28	3 0.19	–32 14.5	0.118	1.077	42.3	16.8	133 W	13 84	3 17	14 2.05	+54 14.2	1.911	2.562	19.6	21.9	120 W	81 10
10 29	2 50.05	–28 0.0	0.118	1.084	38.1	16.7	138 W	17 88	3 22	13 51.25	+54 47.3	1.920	2.573	19.5	22.0	121 W	80 9
10 30	2 40.85	–23 46.6	0.120	1.090	34.1	16.6	142 W	21 88	3 27	13 39.68	+55 6.9	1.933	2.583	19.5	22.0	120 W	80 9
10 31	2 32.49	–19 38.6	0.122	1.096	30.3	16.5	146 W	25 84	4 1	13 27.71	+55 12.1	1.950	2.593	19.6	22.0	120 W	80 9
11 1	2 24.89	–15 39.2	0.125	1.103	26.8	16.5	150 E	29 80	4 6	13 15.73	+55 2.5	1.972	2.602	19.8	22.0	118 W	80 9
11 2	2 17.98	–11 51.0	0.129	1.109	23.7	16.5	153 E	33 76	4 11	13 4.11	+54 38.4	1.998	2.611	20.0	22.1	117 E	80 9
11 3	2 11.70	–8 16.0	0.134	1.116	21.1	16.5	156 E	37 72	4 16	12 53.18	+54 0.7	2.029	2.618	20.3	22.1	115 E	81 10
11 4	2 5.98	–4 55.0	0.139	1.122	19.1	16.5	158 W	40 69	4 21	12 43.18	+53 10.6	2.063	2.626	20.6	22.2	113 E	82 11
11 5	2 0.76	–1 48.6	0.145	1.129	17.6	16.6	160 W	43 66	4 26	12 34.32	+52 9.6	2.101	2.633	20.9	22.2	111 E	83 12
11 6	1 56.00	+1 3.6	0.151	1.135	16.7	16.7	161 E	46 63	5 1	12 26.67	+50 59.4	2.142	2.639	21.2	22.3	108 E	84 13
11 7	1 51.66	+3 41.9	0.158	1.142	16.3	16.8	161 E	49 60	5 6	12 20.28	+49 41.7	2.186	2.644	21.5	22.4	106 E	85 14
11 8	1 47.70	+6 7.2	0.166	1.148	16.4	16.9	161 E	51 58	<b>147874 2006 QP<sub>39</sub></b>								
11 9	1 44.09	+8 20.2	0.173	1.155	16.8	17.0	160 E	53 56	3 12	14 14.40	–12 5.5	2.220	3.016	13.2	21.3	136 W	33 76
11 10	1 40.80	+10 21.9	0.181	1.162	17.5	17.1	159 E	55 54	3 22	14 9.84	–11 24.2	2.111	2.998	10.3	21.1	147 W	34 75
11 11	1 37.79	+12 13.3	0.190	1.168	18.3	17.3	158 E	57 52	4 1	14 3.16	–10 30.7	2.025	2.980	6.9	20.8	159 W	34 75
11 12	1 35.06	+13 55.3	0.198	1.175	19.2	17.4	157 E	59 50	4 11	13 54.88	–9 28.0	1.966	2.960	3.0	20.5	171 W	36 73
11 13	1 32.57	+15 28.8	0.207	1.181	20.1	17.5	156 E	60 49	4 21	13 45.74	–8 20.7	1.937	2.940	1.5	20.4	176 E	37 72
11 14	1 30.31	+16 54.5	0.216	1.188	21.0	17.7	154 E	62 47	4 26	13 41.14	–7 47.1	1.933	2.929	3.4	20.5	170 E	37 72
11 15	1 28.27	+18 13.3	0.225	1.195	22.0	17.8	153 E	63 46	5 1	13 36.66	–7 14.6	1.937	2.919	5.5	20.6	164 E	38 71
11 16	1 26.42	+19 25.7	0.235	1.201	22.9	17.9	152 E	64 45	5 6	13 32.43	–6 43.9	1.947	2.908	7.5	20.7	158 E	38 71
11 17	1 24.76	+20 32.5	0.245	1.208	23.7	18.1	151 E	66 43	5 11	13 28.53	–6 15.7	1.965	2.896	9.4	20.8	152 E	39 70
11 19	1 21.94	+22 31.0	0.265	1.221	25.3	18.3	148 E	68 41	5 16	13 25.06	–5 50.5	1.988	2.885	11.2	20.9	146 E	39 70
11 21	1 19.73	+24 12.7	0.285	1.234	26.7	18.5	146 E	69 40	5 21	13 22.06	–5 28.7	2.017	2.873	12.9	21.0	141 E	40 69
11 23	1 18.05	+25 40.5	0.306	1.247	28.0	18.8	144 E	71 38	5 26	13 19.61	–5 10.7	2.051	2.861	14.4	21.1	135 E	40 69
11 25	1 16.84	+26 56.8	0.328	1.260	29.1	19.0	142 E	72 37	5 31	13 17.73	–4 56.7	2.090	2.849	15.8	21.1	130 E	40 69
11 27	1 16.05	+28 3.6	0.350	1.274	30.1	19.1	140 E	73 36	6 5	13 16.44	–4 46.8	2.132	2.837	17.1	21.2	125 E	40 69
11 29	1 15.64	+29 2.5	0.372	1.287	31.0	19.3	138 E	74 35	6 10	13 15.74	–4 40.8	2.178	2.824	18.2	21.3	120 E	40* 69
12 1	1 15.57	+29 54.7	0.395	1.300	31.8	19.5	136 E	75 34	6 15	13 15.62	–4 38.9	2.226	2.811	19.1	21.4	115 E	39* 69
12 3	1 15.81	+30 41.2	0.418	1.312	32.5	19.7	134 E	76 33	6 20	13 16.09	–4 40.7	2.277	2.798	19.9	21.4	110 E	38* 69
12 5	1 16.32	+31 23.0	0.442	1.325	33.1	19.8	133 E	76 33	6 25	13 17.11	–4 46.2	2.329	2.785	20.5	21.5	106 E	37* 69
12 7	1 17.10	+32 0.6	0.465	1.338	33.7	20.0	131 E	77 32	<b>9950 ESA</b>								
12 12	1 20.03	+33 20.3	0.526	1.370	34.8	20.3	127 E	78 31	3 12	14 20.08	–28 15.9	2.525	3.235	14.0	21.5	128 W	17 88
12 17	1 24.21	+34 24.7	0.589	1.401	35.6	20.6	124 E	79 30	3 22	14 15.05	–28 14.2	2.384	3.199	11.9	21.2	139 W	17 88
12 22	1 29.43	+35 18.7	0.653	1.432	36.2	20.9	121 E	80 29	4 1	14 7.67	–27 54.0	2.263	3.162	9.4	21.0	149 W	17 88
12 27	1 35.55	+36 5.2	0.719	1.462	36.6	21.2	118 E	81 28*	4 11	13 58.41	–27 13.4	2.168	3.124	6.6	20.8	159 W	18 89
1 1	1 42.41	+36 46.3	0.785	1.491	36.9	21.4	115 E	82 27*	4 21	13 47.99	–26 12.2	2.101	3.084	4.7	20.6	166 E	19 90
<b>285085 1992 UM<sub>7</sub></b>									5 1	13 37.37	–24 53.2	2.064	3.044	5.4	20.5	164 E	20 89
3 12	14 8.59	–13 43.2	1.553	2.378	16.6	21.4	137 W	31 78	5 11	13 27.56	–23 22.5	2.056	3.001	8.2	20.6	155 E	22 87
3 22	14 4.76	–13 0.3	1.449	2.355	13.0	21.1	148 W	32 77	5 21	13 19.41	–21 47.7	2.075	2.958	11.5	20.7	144 E	23 86
4 1	13 58.08	–11 58.3	1.367	2.331	8.5	20.8	160 W	33 76	5 31	13 13.52	–20 16.5	2.117	2.913	14.6	20.9	134 E	25 84
4 11	13 49.19	–10 40.4	1.309	2.306	3.4	20.4	172 W	34 75	6 10	13 10.19	–18 55.5	2.178	2.866	17.2	21.0	123 E	26* 83
4 16	13 44.22	–9 57.4	1.290	2.294	0.8	20.2	178 W	35 74	6 20	13 9.44	–17 48.5	2.253	2.818	19.3	21.1	114 E	25* 82
4 21	13 39.11	–9 13.0	1.278	2.281	2.1	20.3	175 E	36 73	7 30	13 11.19	–16 57.7	2.337	2.769	20.8	21.2	104 E	23* 81
4 26	13 34.04	–8 28.6	1.273	2.268	4.9	20.4	169 E	37 72	7 10	13 15.23	–16 23.2	2.424	2.718	21.9	21.3	96 E	21* 80
5 1	13 29.18	–7 45.4	1.274	2.255	7.7	20.5	163 E										



EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>506348 2017 OK<sub>52</sub></b>										<b>152941 2000 FM<sub>10</sub></b> (continuation)									
3 12	14 20.64	-19 17.7	1.824	2.598	16.5	21.5	132 W	26	83	5 31	12 17.20	-6 37.6	1.124	1.821	29.8	20.5	117 E	38*	71
3 22	14 16.56	-19 28.4	1.706	2.571	13.5	21.2	143 W	26	83	6 10	12 11.08	-6 13.6	1.172	1.745	34.1	20.6	106 E	35*	70
4 1	14 9.64	-19 23.5	1.608	2.544	9.9	20.9	154 W	26	83	6 20	12 9.31	-6 14.7	1.219	1.664	37.4	20.6	96 E	31*	70
4 11	14 0.34	-19 2.2	1.534	2.516	5.8	20.6	165 W	26	83	6 30	12 11.37	-6 39.2	1.262	1.577	40.1	20.7	87 E	26*	71*
4 21	13 49.52	-18 25.5	1.486	2.487	2.7	20.3	173 E	27	82	7 10	12 16.72	-7 24.5	1.294	1.484	42.3	20.7	79 E	21*	69*
4 26	13 43.92	-18 2.5	1.473	2.472	3.5	20.3	171 E	27	82	7 20	12 24.92	-8 28.1	1.312	1.384	44.2	20.6	72 E	17*	64*
5 1	13 38.41	-17 37.3	1.466	2.457	5.5	20.4	167 E	27	82	7 30	12 35.69	-9 48.1	1.313	1.279	46.1	20.5	65 E	13*	59*
5 6	13 33.17	-17 11.0	1.466	2.442	7.7	20.5	161 E	28	81	8 9	12 48.79	-11 22.5	1.294	1.166	48.3	20.3	59 E	10*	53*
5 11	13 28.33	-16 44.4	1.472	2.427	10.1	20.6	155 E	28	81	8 19	13 4.10	-13 8.9	1.251	1.046	51.3	20.1	54 E	8*	48*
5 16	13 24.02	-16 18.5	1.485	2.411	12.3	20.7	149 E	29	80	8 29	13 21.47	-15 4.0	1.182	0.920	55.8	19.8	49 E	6*	43*
5 21	13 20.34	-15 54.1	1.503	2.395	14.4	20.8	144 E	29	80	9 3	13 30.81	-16 2.6	1.136	0.856	58.9	19.7	47 E	5*	40*
5 26	13 17.38	-15 32.1	1.526	2.380	16.4	20.9	138 E	29	80	9 8	13 40.42	-16 59.9	1.082	0.790	62.9	19.5	44 E	4*	38*
5 31	13 15.18	-15 13.2	1.553	2.364	18.3	21.0	133 E	30	79	9 13	13 50.09	-17 53.3	1.020	0.724	68.1	19.3	42 E	3*	36*
6 5	13 13.77	-14 57.9	1.584	2.347	20.0	21.0	128 E	30	79	9 18	13 59.37	-18 38.5	0.948	0.660	74.9	19.2	39 E	3*	33*
6 10	13 13.14	-14 46.4	1.618	2.331	21.4	21.1	123 E	30*	79	9 20	14 2.81	-18 52.8	0.917	0.636	78.3	19.2	38 E	2*	32*
6 15	13 13.29	-14 38.9	1.655	2.315	22.8	21.2	118 E	29*	79	9 22	14 5.98	-19 4.0	0.885	0.612	82.0	19.1	37 E	2*	31*
6 20	13 14.19	-14 35.6	1.694	2.298	23.9	21.3	114 E	29*	79	9 24	14 8.79	-19 11.4	0.852	0.589	86.3	19.1	36 E	2*	30*
6 25	13 15.83	-14 36.3	1.734	2.281	24.9	21.3	109 E	29*	79	9 26	14 11.12	-19 13.8	0.817	0.567	91.0	19.1	34 E	1*	28*
6 30	13 18.17	-14 41.1	1.776	2.265	25.7	21.4	105 E	26*	79	9 28	14 12.83	-19 10.2	0.782	0.546	96.4	19.2	33 E	1*	27*
7 5	13 21.17	-14 49.8	1.819	2.248	26.4	21.5	101 E	24*	79	9 30	14 13.75	-18 58.9	0.746	0.528	102.4	19.3	31 E	1*	25*
<b>363438 2003 SY<sub>105</sub></b>										<b>313041 2000 QN<sub>70</sub></b>									
3 12	14 22.08	-18 11.8	1.633	2.416	17.7	21.3	132 W	27	82	10 2	14 13.70	-18 38.4	0.710	0.511	109.1	19.5	29 E	—	23*
3 22	14 19.15	-18 19.5	1.515	2.386	14.6	21.0	143 W	27	82	10 4	14 12.48	-18 6.7	0.674	0.497	116.5	19.8	26 E	—	20*
4 1	14 13.17	-18 10.8	1.416	2.355	10.8	20.7	154 W	27	82	10 6	14 9.90	-17 21.8	0.640	0.486	124.7	20.3	24 E	—	17*
4 11	14 4.56	-17 45.1	1.340	2.324	6.2	20.3	165 W	27	82	10 8	14 5.82	-16 21.8	0.608	0.478	133.6	21.0	20 E	—	14*
4 16	13 59.51	-17 26.2	1.311	2.308	4.0	20.2	171 W	28	81	3 12	14 34.45	+8 19.4	2.146	2.922	14.2	21.4	134 W	53	56
4 21	13 54.16	-17 3.7	1.289	2.292	2.3	20.0	175 E	28	81	3 17	14 32.71	+9 18.4	2.112	2.929	13.1	21.3	138 W	54	55
4 26	13 48.68	-16 38.4	1.274	2.276	3.1	20.0	173 E	28	81	3 22	14 30.39	+10 18.0	2.084	2.937	11.9	21.3	142 W	55	54
5 1	13 43.26	-16 11.0	1.265	2.260	5.4	20.1	168 E	29	80	3 27	14 27.51	+11 17.1	2.062	2.944	10.8	21.2	146 W	56	53
5 6	13 38.08	-15 42.7	1.262	2.243	8.0	20.2	162 E	29	80	4 1	14 24.13	+12 14.6	2.046	2.952	9.9	21.1	150 W	57	52
5 11	13 33.31	-15 14.5	1.265	2.227	10.6	20.3	156 E	30	79	4 6	14 20.35	+13 9.4	2.037	2.958	9.1	21.1	152 W	58	51
5 16	13 29.09	-14 47.5	1.274	2.211	13.1	20.4	150 E	30	79	4 11	14 16.23	+14 0.5	2.034	2.965	8.7	21.1	154 W	59	50
5 21	13 25.54	-14 22.6	1.289	2.194	15.5	20.5	145 E	31	78	4 16	14 11.89	+14 46.8	2.039	2.971	8.6	21.1	154 W	60	49
5 26	13 22.75	-14 0.6	1.308	2.178	17.7	20.6	139 E	31	78	4 21	14 7.42	+15 27.5	2.050	2.978	9.0	21.1	153 W	60	49
5 31	13 20.78	-13 42.4	1.331	2.161	19.8	20.7	134 E	31	78	4 26	14 2.95	+16 1.9	2.067	2.984	9.6	21.2	150 E	61	48
6 5	13 19.67	-13 28.3	1.358	2.145	21.6	20.8	129 E	32	77	5 1	13 58.58	+16 29.6	2.092	2.989	10.5	21.2	147 E	61	48
6 10	13 19.40	-13 18.7	1.388	2.128	23.3	20.9	124 E	32*	77	5 6	13 54.44	+16 50.4	2.122	2.995	11.5	21.3	144 E	62	47
6 15	13 19.97	-13 13.6	1.420	2.112	24.8	20.9	119 E	31*	77	5 11	13 50.59	+17 4.2	2.158	3.000	12.6	21.4	140 E	62	47
6 20	13 21.36	-13 13.1	1.455	2.095	26.1	21.0	115 E	30*	77	5 16	13 47.12	+17 11.3	2.199	3.005	13.6	21.5	136 E	62	47
6 25	13 23.55	-13 17.1	1.491	2.078	27.3	21.1	111 E	29*	77	5 21	13 44.09	+17 11.9	2.245	3.010	14.7	21.6	131 E	62	47
6 30	13 26.49	-13 25.5	1.528	2.062	28.2	21.1	107 E	28*	77	<b>162793 2000 YY<sub>43</sub></b>									
7 5	13 30.15	-13 38.0	1.566	2.046	29.0	21.2	103 E	26*	78	3 12	14 40.77	-12 2.5	2.234	2.972	14.8	21.3	130 W	33	76
7 10	13 34.48	-13 54.3	1.604	2.029	29.7	21.3	99 E	25*	78	3 22	14 36.75	-11 32.7	2.142	2.983	12.1	21.2	141 W	33	76
7 15	13 39.44	-14 14.1	1.643	2.013	30.2	21.3	95 E	24*	78	4 1	14 30.45	-10 53.1	2.071	2.993	8.9	21.0	152 W	34	75
7 20	13 45.01	-14 37.0	1.682	1.997	30.6	21.3	92 E	22*	79	4 11	14 22.34	-10 6.2	2.026	3.003	5.2	20.8	164 W	35	74
7 25	13 51.15	-15 2.8	1.720	1.981	30.8	21.4	89 E	21*	78*	4 21	14 13.12	-9 15.9	2.009	3.011	1.7	20.5	175 W	36	73
7 30	13 57.84	-15 31.2	1.758	1.965	31.0	21.4	86 E	20*	77*	5 1	14 3.68	-8 26.6	2.021	3.019	3.3	20.7	170 E	37	72
8 4	14 5.04	-16 1.6	1.796	1.949	31.1	21.5	83 E	19*	75*	5 11	13 54.93	-7 43.4	2.062	3.025	7.0	20.9	159 E	37	72
8 9	14 12.73	-16 33.9	1.833	1.934	31.1	21.5	80 E	18*	73*	5 21	13 47.60	-7 10.0	2.130	3.031	10.4	21.1	147 E	38	71
<b>164222 2004 RN<sub>9</sub></b>										5 31	13 42.20	-6 49.1	2.221	3.036	13.3	21.3	136 E	38	71
3 12	14 24.23	-19 59.1	0.527	1.398	32.4	21.5	131 W	25	84	<b>109226 2001 QH<sub>91</sub></b>									
3 17	14 15.98	-21 45.9	0.513	1.414	28.7	21.4	137 W	23	86	3 12	14 41.35	-17 16.6	2.581	3.291	13.7	21.4	128 W	28	81
3 22	14 5.63	-23 25.3	0.502	1.430	24.8	21.2	143 W	22	87	3 22	14 37.27	-16 50.0	2.495	3.315	11.3	21.3	139 W	28	81
3 27	13 53.40	-24 53.5	0.496	1.445	20.8	21.1	149 W	20	89	4 1	14 31.20	-16 12.2	2.430	3.338	8.4	21.1	151 W	29	80
4 1	13 39.71	-26 6.9	0.494	1.460	17.2	21.0	154 W	19	90	4 11	14 23.61	-15 24.9	2.391	3.361	5.1	21.0	163 W	30	79
4 6	13 25.17	-27 2.6	0.497	1.475	14.4	20.9	159 W	18	89	4 21	14 15.13	-14 30.9	2.380	3.382	1.6	20.7	175 W	30	79
4 11	13 10.50	-27 39.6	0.505	1.488	13.0	20.9	161 E	17	88	5 1	14 6.52	-13 33.9	2.400	3.403	2.0	20.8	173 E	31	78
4 16	12 56.41	-27 58.4	0.519	1.501	13.4	21.0	160 E	17	88	5 11	13 58.54	-12 38.8	2.450	3.423	5.4	21.1	161 E	32	77
4 21	12 43.55	-28 1.3	0.538	1.514	15.3	21.2	157 E	17	88	5 21	13 51.79	-11 49.5	2.527	3.441	8.4	21.3	150 E	33	76
4 26	12 32.39	-27 52.0	0.561	1.526	17.9	21.4	152 E	17	88	5 31	13 46.71	-11 9.4	2.630	3.459	11.1	21.5	139 E	34	75
5 1	12 23.23	-27 34.6	0.589	1.537	20.7	21.6	147 E	17	88	<b>358473 2007 PA<sub>5</sub></b>									
5 6	12 16.13	-27 13.2	0.621	1.548	23.5	21.8	142 E	18	89	3 12	14 45.78	-6 50.2	1.413	2.187	20.4	21.3	130 W	38	71
<b>152941 2000 FM<sub>10</sub></b>										3 22	14 46.34	-5 57.1	1.299	2.156	17.4	21.0	140 W	39	70
3 12	14 24.57	-14 41.3	1.470																

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>358473 2007 PA<sub>5</sub></b> (continuation)										<b>425537 2010 PE<sub>45</sub></b> (continuation)									
5 31	13 55.73	+0 24.9	1.079	1.940	21.4	20.4	136 E	45	64	11 22	18 12.06	-25 17.3	2.505	1.760	17.8	21.1	33 E	10*	26*
6 10	13 53.34	-0 3.6	1.125	1.910	25.4	20.6	126 E	45	64	11 27	18 26.05	-25 1.2	2.518	1.748	16.9	21.1	31 E	10*	24*
6 20	13 54.47	-0 57.3	1.180	1.881	28.6	20.8	118 E	44*	65	12 2	18 40.15	-24 40.3	2.530	1.737	16.1	21.1	29 E	10*	21*
6 30	13 59.05	-2 12.0	1.242	1.853	31.1	20.9	110 E	41*	66	12 7	18 54.34	-24 14.5	2.541	1.726	15.2	21.1	27 E	9*	19*
7 10	14 6.78	-3 43.0	1.308	1.826	32.9	21.1	103 E	37*	68	12 12	19 8.59	-23 43.8	2.551	1.716	14.3	21.0	26 E	9*	17*
7 20	14 17.35	-5 26.4	1.376	1.800	34.1	21.2	96 E	34*	69	12 17	19 22.88	-23 8.2	2.560	1.707	13.5	21.0	24 E	9*	15*
7 30	14 30.49	-7 18.3	1.445	1.775	34.9	21.3	91 E	31*	71	12 22	19 37.17	-22 27.8	2.569	1.698	12.6	20.9	22 E	9*	13*
8 9	14 45.93	-9 15.3	1.514	1.752	35.2	21.4	85 E	28*	72*	12 27	19 51.44	-21 42.5	2.577	1.690	11.7	20.9	20 E	8*	11*
8 19	15 3.45	-11 14.0	1.582	1.731	35.2	21.4	80 E	26*	71*	1 1	20 5.67	-20 52.5	2.584	1.682	10.8	20.9	19 E	7*	9*
8 29	15 22.91	-13 11.4	1.649	1.712	34.9	21.5	76 E	24*	68*	1 6	20 19.84	-19 57.9	2.591	1.676	9.9	20.8	17 E	7*	8*
<b>18109 2000 NG<sub>11</sub></b>										<b>247760 2003 QN<sub>5</sub></b>									
3 12	14 49.64	-15 39.5	1.836	2.559	18.1	21.3	127 W	29	80	3 12	14 51.67	-42 13.2	2.533	3.093	16.9	21.5	115 W	3	74
3 22	14 45.83	-15 22.2	1.723	2.551	15.2	21.1	138 W	30	79	3 22	14 48.02	-43 1.8	2.419	3.091	15.5	21.3	124 W	2	73
4 1	14 38.93	-14 50.8	1.630	2.542	11.5	20.8	149 W	30	79	4 1	14 41.38	-43 32.2	2.320	3.089	13.7	21.2	133 W	1	72
4 11	14 29.31	-14 6.0	1.560	2.531	7.1	20.5	162 W	31	78	4 11	14 32.16	-43 39.3	2.240	3.086	11.7	21.0	141 W	1	72
4 21	14 17.76	-13 10.4	1.516	2.519	2.2	20.2	174 W	32	77	4 21	14 21.10	-43 19.1	2.182	3.081	9.9	20.9	148 W	2	73
4 26	14 11.61	-12 40.1	1.506	2.512	0.4	20.0	179 E	32	77	5 1	14 9.33	-42 30.1	2.149	3.076	8.8	20.8	152 E	2	73
5 1	14 5.44	-12 9.2	1.502	2.504	3.0	20.2	173 E	33	76	5 11	13 58.16	-41 15.4	2.142	3.070	9.0	20.8	152 E	4	75
5 6	13 59.43	-11 38.6	1.506	2.497	5.5	20.3	166 E	33	76	5 21	13 48.67	-39 41.5	2.162	3.062	10.3	20.9	147 E	5	76
5 11	13 53.72	-11 9.2	1.516	2.489	8.0	20.4	160 E	34	75	5 31	13 41.64	-37 57.2	2.206	3.054	12.3	21.0	140 E	7	78
5 16	13 48.46	-10 41.9	1.533	2.480	10.4	20.6	154 E	34	75	6 10	13 37.44	-36 11.8	2.272	3.045	14.4	21.1	132 E	9	80
5 21	13 43.77	-10 17.5	1.556	2.471	12.7	20.7	148 E	35	74	6 20	13 36.10	-34 32.6	2.356	3.035	16.3	21.2	123 E	10*	81
5 26	13 39.73	-9 56.5	1.585	2.462	14.7	20.8	142 E	35	74	6 30	13 37.45	-33 4.8	2.455	3.023	17.8	21.4	115 E	10*	83
5 31	13 36.41	-9 39.4	1.618	2.452	16.7	20.9	136 E	35	74	<b>306703 2000 WT</b>									
6 5	13 33.84	-9 26.6	1.656	2.442	18.4	21.0	131 E	36	73	3 12	14 57.45	-42 25.4	2.384	2.938	17.9	21.5	114 W	3	74
6 10	13 32.04	-9 18.0	1.698	2.431	19.9	21.1	125 E	36*	73	3 22	14 53.39	-43 45.7	2.287	2.951	16.4	21.3	123 W	1	72
6 15	13 31.00	-9 13.8	1.742	2.420	21.2	21.2	120 E	35*	73	4 1	14 46.00	-44 48.7	2.205	2.963	14.6	21.2	131 W	-	71
6 20	13 30.69	-9 13.9	1.790	2.409	22.4	21.2	116 E	35*	73	4 11	14 35.66	-45 28.4	2.142	2.974	12.7	21.1	139 W	-	71
6 25	13 31.11	-9 18.1	1.839	2.397	23.3	21.3	111 E	33*	73	4 21	14 23.19	-45 39.6	2.100	2.984	10.9	21.0	146 W	-	70
6 30	13 32.22	-9 26.2	1.889	2.385	24.1	21.4	106 E	32*	73	5 1	14 9.88	-45 19.8	2.083	2.994	9.9	20.9	149 E	-	71
7 5	13 33.98	-9 38.0	1.940	2.372	24.8	21.5	102 E	30*	74	5 11	13 57.21	-44 31.5	2.090	3.002	10.0	20.9	149 E	-	71
<b>425537 2010 PE<sub>45</sub></b>										<b>297847 2002 CH<sub>7</sub></b>									
3 12	14 50.96	-24 0.5	1.883	2.572	18.7	21.4	124 W	21	88	3 12	14 59.30	-28 36.7	2.028	2.671	18.7	21.4	120 W	16	87
3 22	14 49.60	-24 30.4	1.751	2.544	16.4	21.1	134 W	20	89	3 22	14 54.23	-29 59.2	1.939	2.694	16.4	21.3	130 W	15	86
4 1	14 45.18	-24 46.6	1.635	2.514	13.5	20.8	144 W	20	89	4 1	14 45.86	-31 8.4	1.868	2.715	13.5	21.1	141 W	14	85
4 11	14 37.84	-24 46.5	1.540	2.484	9.8	20.6	155 W	20	89	4 11	14 34.62	-31 59.5	1.819	2.736	10.4	20.9	150 W	13	84
4 21	14 28.11	-24 27.7	1.468	2.454	6.0	20.3	165 W	21	88	4 21	14 21.38	-32 28.1	1.796	2.756	7.7	20.8	159 W	13	84
4 26	14 22.64	-24 11.2	1.442	2.438	4.5	20.1	169 W	21	88	5 1	14 7.46	-32 33.0	1.800	2.774	6.6	20.8	162 E	12	83
5 1	14 16.98	-23 50.4	1.423	2.422	4.0	20.1	170 E	21	88	5 11	13 54.32	-32 17.0	1.833	2.792	8.0	20.9	157 E	13	84
5 6	14 11.32	-23 25.8	1.410	2.406	5.0	20.1	168 E	22	87	5 21	13 43.15	-31 46.5	1.893	2.809	10.7	21.1	149 E	13	84
5 11	14 5.83	-22 58.4	1.404	2.390	6.8	20.1	164 E	22	87	5 31	13 34.79	-31 9.4	1.976	2.825	13.5	21.3	140 E	14	85
5 16	14 0.66	-22 28.9	1.404	2.374	9.0	20.2	158 E	23	86	<b>306869 2001 SH<sub>288</sub></b>									
5 21	13 55.99	-21 58.5	1.411	2.358	11.3	20.3	153 E	23	86	3 12	15 4.77	-5 49.8	1.516	2.242	21.2	21.4	125 W	39	70
5 26	13 51.93	-21 28.2	1.423	2.341	13.5	20.4	147 E	24	85	3 22	15 5.76	-5 18.5	1.389	2.208	18.7	21.1	135 W	40	69
5 31	13 48.59	-20 59.1	1.440	2.325	15.6	20.5	142 E	24	85	4 1	15 3.47	-4 37.2	1.279	2.173	15.4	20.8	145 W	40	69
6 5	13 46.04	-20 32.2	1.462	2.308	17.5	20.6	137 E	24	85	4 11	14 57.83	-3 50.0	1.187	2.137	11.4	20.4	155 W	41	68
6 10	13 44.30	-20 8.1	1.488	2.291	19.4	20.6	132 E	25	84	4 16	14 53.83	-3 25.8	1.148	2.119	9.4	20.3	160 W	42	67
6 15	13 43.39	-19 47.4	1.518	2.274	21.0	20.7	127 E	25*	84	4 21	14 49.13	-3 2.3	1.116	2.101	7.5	20.1	164 W	42	67
6 20	13 43.32	-19 30.5	1.551	2.257	22.5	20.8	122 E	25*	84	4 26	14 43.87	-2 40.7	1.090	2.083	6.3	20.0	167 W	42	67
6 25	13 44.07	-19 17.6	1.586	2.240	23.8	20.9	117 E	24*	83	5 1	14 38.22	-2 22.0	1.070	2.064	6.2	19.9	167 W	43	66
6 30	13 45.61	-19 8.9	1.623	2.223	24.9	20.9	113 E	24*	83	5 6	14 32.36	-2 7.2	1.055	2.046	7.5	19.9	165 E	43	66
7 5	13 47.91	-19 4.3	1.661	2.206	25.9	21.0	109 E	23*	83	5 11	14 26.50	-1 57.3	1.047	2.028	9.6	20.0	161 E	43	66
7 10	13 50.93	-19 3.7	1.701	2.189	26.7	21.1	104 E	22*	83	5 21	14 15.57	-1 54.5	1.048	1.991	14.6	20.1	150 E	43	66
7 15	13 54.62	-19 6.8	1.741	2.172	27.4	21.1	101 E	21*	83	5 31	14 6.91	-2 17.1	1.068	1.954	19.7	20.3	140 E	43	66
7 20	13 58.97	-19 13.5	1.782	2.154	27.9	21.2	97 E	19*	83	6 10	14 1.52	-3 4.9	1.104	1.917	24.1	20.5	130 E	42	67
7 25	14 3.93	-19 23.5	1.823	2.137	28.3	21.2	93 E	18*	83*	6 20	13 59.82	-4 15.0	1.151	1.880	27.8	20.6	120 E	41*	68
7 30	14 9.47	-19 36.4	1.864	2.120	28.6	21.2	90 E	17*	82*	6 30	14 1.87	-5 44.1	1.206	1.844	30.8	20.8	112 E	38*	70
8 4	14 15.56	-19 52.1	1.904	2.102	28.8	21.3	87 E	16*	80*	7 10	14 7.47	-7 28.0	1.266	1.809	33.0	20.9	104 E	34*	71
8 9	14 22.16	-20 10.0	1.944	2.085	28.9	21.3	83 E	16*	77*	7 20	14 16.30	-9 23.1	1.328	1.774	34.6	21.0	98 E	30*	73
8 14	14 29.26	-20 29.9	1.983	2.068	28.9	21.3	80 E	15*	74*	7 30	14 28.10	-11 26.3	1.390	1.741	35.7	21.1	91 E	27*	75*
8 19	14 36.84	-20 51.5	2.021	2.051	28.8	21.4	77 E	14*	71*	8 9	14 42.58	-13 34.2	1.451	1.709	36.3	21.1	86 E	24*	76*
8 24	14 44.88	-21 14.4	2.059	2.033	28.6	21.4	74 E	13*	68*	8 19	14 59.56	-15 43.7	1.510	1.678	36.5	21.2	81 E	21*	73*
8 29	14 53.36	-21 38.3	2.095	2.016	28.4	21.4	72 E	13*	65*	8 29	15 18.91	-17 51.7	1.568	1.650	36.5	21.2	76 E	19*	70*
9 3	15 2.27	-22 2.8	2.130	1.999	28.1	21.4	69 E</												

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>306869 2001 SH<sub>288</sub></b> (continuation)										<b>173530 2000 WF<sub>13</sub></b> (continuation)									
11 17	19 2.17	-26 53.5	1.974	1.524	29.4	21.4	49 E	14*	42*	5 6	14 51.04	-12 31.6	1.395	2.403	1.7	19.7	176 E	32	77
11 27	19 34.99	-26 14.7	2.025	1.524	28.0	21.4	47 E	15*	39*	5 11	14 45.29	-12 21.5	1.384	2.388	3.6	19.8	171 E	33	76
12 7	20 7.64	-25 8.4	2.077	1.528	26.5	21.4	44 E	16*	35*	5 16	14 39.60	-12 12.4	1.380	2.372	6.1	19.9	166 E	33	76
12 17	20 39.80	-23 36.6	2.132	1.536	25.0	21.4	41 E	16*	32*	5 21	14 34.15	-12 4.9	1.381	2.357	8.6	20.1	160 E	33	76
12 27	21 11.19	-21 42.1	2.189	1.547	23.4	21.5	39 E	17*	29*	5 31	14 24.56	-11 57.0	1.403	2.326	13.4	20.2	148 E	33	76
1 6	21 41.63	-19 28.7	2.248	1.562	21.7	21.5	36 E	17*	25*	6 10	14 17.51	-12 1.2	1.446	2.294	17.6	20.4	137 E	33	76
<b>498144 2007 TR<sub>73</sub></b>										<b>196068 2002 TW<sub>55</sub></b>									
3 12	15 10.20	-34 30.1	1.559	2.184	24.2	21.5	116 W	10	81	3 12	15 24.25	+84 16.8	2.620	2.902	19.9	23.4	96 W	51	—
3 17	15 12.38	-35 24.6	1.489	2.163	23.5	21.3	120 W	10	81	3 13	15 16.71	+84 28.9	2.619	2.897	19.9	23.4	96 W	51	—
3 22	15 13.78	-36 17.9	1.422	2.142	22.7	21.2	124 W	9	80	3 14	15 8.39	+84 40.5	2.618	2.892	20.0	23.4	96 W	50	—
3 27	15 14.31	-37 9.7	1.357	2.121	21.8	21.1	128 W	8	79	3 15	14 59.24	+84 51.3	2.618	2.887	20.1	23.4	95 W	50	—
4 1	15 13.88	-37 59.3	1.296	2.100	20.7	20.9	132 W	7	78	3 16	14 49.22	+85 1.4	2.617	2.883	20.1	23.4	95 W	50	—
4 6	15 12.45	-38 45.8	1.239	2.079	19.5	20.7	136 W	6	77	3 17	14 38.31	+85 10.6	2.617	2.878	20.2	23.4	95 W	50	—
4 11	15 9.98	-39 28.3	1.185	2.057	18.2	20.6	140 W	6	77	3 18	14 26.51	+85 18.9	2.616	2.873	20.2	23.4	95 W	50	—
4 16	15 6.43	-40 5.6	1.136	2.036	16.8	20.4	144 W	5	76	3 19	14 13.84	+85 26.0	2.616	2.868	20.3	23.4	94 W	50	—
4 21	15 1.83	-40 36.4	1.092	2.014	15.4	20.3	148 W	4	75	3 20	14 0.37	+85 32.0	2.615	2.863	20.3	23.4	94 W	49	—
4 26	14 56.28	-40 59.2	1.052	1.993	14.2	20.1	151 W	4	75	3 21	13 46.18	+85 36.7	2.615	2.858	20.4	23.4	94 W	49	—
5 1	14 49.94	-41 12.7	1.017	1.971	13.1	20.0	154 W	4	75	3 22	13 31.40	+85 40.0	2.615	2.853	20.4	23.4	93 W	49	—
5 6	14 43.03	-41 16.0	0.987	1.949	12.6	19.9	155 E	4	75	3 23	13 16.21	+85 41.8	2.615	2.848	20.5	23.4	93 W	49	—
5 11	14 35.82	-41 8.6	0.963	1.928	12.6	19.8	155 E	4	75	3 24	13 0.80	+85 42.1	2.614	2.843	20.5	23.4	93 W	49	—
5 16	14 28.61	-40 50.4	0.944	1.906	13.3	19.7	154 E	4	75	3 25	12 45.36	+85 40.9	2.614	2.838	20.6	23.4	92 W	49	—
5 21	14 21.74	-40 21.9	0.930	1.885	14.5	19.7	152 E	5	76	3 26	12 30.12	+85 38.1	2.614	2.833	20.6	23.4	92 W	49	—
5 26	14 15.52	-39 44.5	0.920	1.863	16.3	19.7	149 E	5	76	3 27	12 15.27	+85 33.8	2.614	2.828	20.7	23.4	92 E	49	—
5 31	14 10.23	-38 59.8	0.916	1.842	18.3	19.8	145 E	6	77	3 28	12 0.97	+85 28.1	2.614	2.823	20.7	23.4	92 E	50	—
6 5	14 6.06	-38 10.1	0.915	1.821	20.4	19.8	141 E	7	78	3 29	11 47.37	+85 21.1	2.614	2.818	20.7	23.4	91 E	50	—
6 10	14 3.14	-37 17.5	0.919	1.800	22.7	19.9	137 E	8	79	3 30	11 34.55	+85 12.7	2.614	2.813	20.8	23.4	91 E	50	—
6 15	14 1.53	-36 23.7	0.926	1.779	24.8	19.9	133 E	9	80	3 31	11 22.59	+85 3.1	2.614	2.808	20.8	23.4	91 E	50	—
6 20	14 1.28	-35 30.7	0.936	1.758	26.9	20.0	128 E	9	80	4 1	11 11.51	+84 52.4	2.615	2.802	20.9	23.4	90 E	50	—
6 25	14 2.37	-34 39.8	0.948	1.738	28.9	20.1	124 E	10*	81	4 2	11 1.30	+84 40.8	2.615	2.797	20.9	23.4	90 E	50	—
6 30	14 4.77	-33 52.1	0.963	1.718	30.7	20.1	120 E	10*	82	4 3	10 51.96	+84 28.2	2.615	2.792	21.0	23.3	90 E	51	—
7 5	14 8.40	-33 8.5	0.979	1.698	32.4	20.2	117 E	10*	83	4 4	10 43.44	+84 14.8	2.615	2.787	21.0	23.3	89 E	51	—
7 10	14 13.19	-32 29.0	0.997	1.679	33.9	20.2	113 E	10*	84	4 5	10 35.70	+84 0.7	2.616	2.781	21.1	23.3	89 E	51	—
7 15	14 19.06	-31 53.9	1.016	1.660	35.2	20.3	110 E	10*	84	4 6	10 28.68	+83 45.9	2.616	2.776	21.1	23.3	88 E	51	—
7 20	14 25.96	-31 22.9	1.035	1.642	36.5	20.3	106 E	10*	85	4 7	10 22.35	+83 30.4	2.616	2.771	21.2	23.3	88 E	51	—
7 30	14 42.58	-30 32.4	1.077	1.606	38.4	20.4	100 E	10*	85	4 8	10 16.64	+83 14.5	2.617	2.766	21.2	23.3	88 E	52	—
8 9	15 2.51	-29 53.7	1.119	1.574	39.9	20.5	95 E	10*	86*	4 9	10 11.50	+82 58.1	2.617	2.760	21.3	23.3	87 E	52	—
8 19	15 25.31	-29 21.6	1.163	1.544	41.0	20.6	90 E	11*	82*	4 10	10 6.89	+82 41.2	2.618	2.755	21.3	23.3	87 E	52	—
8 29	15 50.61	-28 51.2	1.207	1.518	41.6	20.6	86 E	12*	79*	4 11	10 2.75	+82 23.9	2.618	2.749	21.3	23.3	87 E	53	—
9 8	16 18.00	-28 17.0	1.252	1.495	41.9	20.7	82 E	13*	76*	4 12	9 59.06	+82 6.2	2.619	2.744	21.4	23.3	86 E	53	—
9 18	16 47.08	-27 34.0	1.298	1.476	41.9	20.7	79 E	14*	72*	4 13	9 55.76	+81 48.2	2.619	2.739	21.4	23.3	86 E	53	—
9 28	17 17.47	-26 38.3	1.346	1.462	41.6	20.8	75 E	16*	69*	4 14	9 52.82	+81 29.9	2.620	2.733	21.5	23.3	86 E	54	—
10 8	17 48.71	-25 26.6	1.396	1.453	41.0	20.8	73 E	17*	66*	4 15	9 50.22	+81 11.4	2.621	2.728	21.5	23.3	85 E	54	—
10 18	18 20.40	-23 57.2	1.448	1.448	40.2	20.9	70 E	19*	63*	<b>344474 2002 PN<sub>113</sub></b>									
10 28	18 52.19	-22 9.3	1.505	1.449	39.3	21.0	67 E	22*	60*	3 12	15 24.27	-27 37.5	3.407	3.939	13.2	21.4	116 W	17	88
11 7	19 23.70	-20 3.4	1.565	1.454	38.1	21.0	65 E	24*	56*	3 22	15 22.64	-27 39.5	3.258	3.924	11.9	21.3	126 W	17	88
11 17	19 54.71	-17 41.2	1.629	1.464	36.8	21.1	62 E	26*	52*	4 1	15 19.02	-27 32.0	3.125	3.907	10.2	21.1	136 W	17	88
11 27	20 25.04	-15 4.9	1.698	1.479	35.3	21.2	60 E	29*	47*	4 11	15 13.56	-27 13.8	3.012	3.890	8.1	20.9	147 W	18	89
12 7	20 54.58	-12 17.2	1.772	1.498	33.8	21.2	58 E	31*	42*	4 21	15 6.56	-26 44.1	2.924	3.872	5.7	20.7	158 W	18	89
12 17	21 23.29	-9 21.0	1.850	1.521	32.1	21.3	55 E	33*	37*	5 1	14 58.51	-26 3.2	2.864	3.854	3.2	20.5	168 W	19	90
12 27	21 51.20	-6 19.2	1.933	1.548	30.3	21.4	53 E	35*	32*	5 11	14 50.05	-25 12.7	2.833	3.834	2.4	20.4	171 E	20	89
1 6	22 18.34	-3 14.7	2.019	1.578	28.5	21.5	50 E	36*	27*	5 16	14 45.87	-24 44.7	2.830	3.824	3.2	20.5	168 E	20	89
<b>74721 1999 RH<sub>167</sub></b>										5 21	14 41.84	-24 15.6	2.833	3.814	4.4	20.6	163 E	21	88
3 12	15 12.94	-17 2.3	2.368	3.005	16.4	21.3	121 W	28	81	5 26	14 38.04	-23 45.7	2.845	3.804	5.7	20.6	158 E	21	88
3 22	15 11.26	-17 0.9	2.236	2.991	14.4	21.1	132 W	28	81	5 31	14 34.54	-23 15.7	2.863	3.793	7.0	20.7	153 E	22	87
4 1	15 7.04	-16 50.2	2.122	2.977	11.8	20.9	142 W	28	81	6 5	14 31.40	-22 46.1	2.887	3.782	8.3	20.8	147 E	22	87
4 11	15 0.43	-16 30.2	2.029	2.962	8.6	20.7	154 W	28	81	6 10	14 28.65	-22 17.4	2.918	3.771	9.5	20.8	142 E	23	86
4 21	14 51.85	-16 1.8	1.961	2.945	4.8	20.4	166 W	29	80	6 15	14 26.34	-21 49.9	2.955	3.760	10.7	20.9	137 E	23	86
5 1	14 42.00	-15 27.0	1.921	2.928	0.7	20.1	178 W	30	79	<b>173530 2000 WF<sub>13</sub></b> (continuation)									
5 6	14 36.90	-15 8.3	1.912	2.919	1.4	20.1	176 E	30	79	3 12	15 22.54	-13 31.1	1.915	2.558	19.7	21.3	120 W	31	78
5 11	14 31.84	-14 49.3	1.910	2.910	3.5	20.3	170 E	30	79	3 22	15 23.07	-13 34.9	1.778	2.531	17.7	21.1	129 W	31	78
5 16	14 26.95	-14 30.7	1.916	2.901	5.6	20.4	164 E	30	79	4 1	15 20.67	-13 30.9	1.655	2.504	14.9	20.8	140 W	31	78
5 21	14 22.33	-14 13.0	1.928	2.891	7.6	20.5	158 E	31	78	4 11	15 15.25	-13 19.9	1.551	2.476	11.3	20.5	151 W	32	77
5 31	14 14.35	-13 42.4	1.972	2.871	11.3	20.7	146 E	31	78	4 21	15 7.04	-13 2.9	1.470						





EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>152756 1999 JV<sub>3</sub></b>										<b>164201 2004 EC</b>									
(continuation)										(continuation)									
1 11	6 21.66	-5 6.4	0.783	1.700	17.7	20.3	148 E	40	69	12 30	19 51.85	-25 11.8	1.036	0.307	71.7	15.7	17 E	3*	10*
1 16	6 14.31	-4 35.8	0.821	1.723	19.1	20.5	145 E	40	69	12 31	19 55.67	-23 45.8	1.004	0.296	77.4	15.8	17 E	4*	9*
<b>515446 2013 UG<sub>5</sub></b>										<b>164201 2004 EC</b>									
3 12	16 0.25	+4 30.4	0.567	1.319	44.2	21.4	112 W	50	59	1 1	19 58.83	-22 14.3	0.973	0.287	83.7	15.9	17 E	5*	9*
3 17	15 57.92	+2 44.5	0.548	1.339	41.3	21.2	117 W	48	61	1 2	20 1.23	-20 37.8	0.941	0.282	90.2	16.0	17 E	6*	7*
3 22	15 53.73	+0 51.0	0.529	1.359	38.0	21.1	123 W	46	63	1 3	20 2.80	-18 57.2	0.910	0.280	96.8	16.2	16 E	7*	6*
3 27	15 47.54	-1 10.8	0.512	1.380	34.1	21.0	129 W	44	65	1 4	20 3.48	-17 13.8	0.881	0.281	103.2	16.5	16 E	8*	5*
4 1	15 39.31	-3 21.3	0.498	1.400	29.8	20.8	136 W	42	67	1 5	20 3.29	-15 28.8	0.852	0.285	109.3	16.7	16 E	9*	3*
4 6	15 29.08	-5 39.3	0.488	1.421	25.1	20.7	143 W	39	70	1 6	20 2.24	-13 43.5	0.825	0.292	114.7	17.1	16 E	9*	1*
4 11	15 17.04	-8 2.5	0.482	1.442	19.9	20.5	151 W	37	72	1 7	20 0.42	-11 59.1	0.800	0.302	119.2	17.4	16 E	9*	—
4 16	15 3.53	-10 26.8	0.481	1.462	14.4	20.3	159 W	35	74	1 8	19 57.92	-10 16.7	0.777	0.314	122.8	17.7	16 E	10*	—
4 21	14 49.06	-12 47.6	0.487	1.483	8.8	20.2	167 W	32	77	1 9	19 54.84	-8 36.9	0.757	0.328	125.3	17.9	16 E	10*	—
4 26	14 34.30	-15 0.1	0.499	1.504	3.4	20.0	175 W	30	79	1 10	19 51.27	-7 0.4	0.738	0.344	126.8	18.1	16 E	9*	—
5 1	14 19.94	-17 0.6	0.517	1.524	2.5	20.1	176 E	28	81	1 11	19 47.33	-5 27.5	0.721	0.361	127.4	18.2	17 E	9*	—
5 6	14 6.61	-18 47.1	0.542	1.544	7.3	20.4	169 E	26	83	1 12	19 43.09	-3 58.4	0.706	0.379	127.3	18.3	18 E	8*	—
5 11	13 54.78	-20 19.2	0.573	1.564	11.8	20.8	162 E	25	84	1 13	19 38.63	-2 33.3	0.693	0.398	126.5	18.3	19 E	8*	—
5 16	13 44.72	-21 37.9	0.609	1.584	15.8	21.1	155 E	23	86	1 14	19 34.01	-1 12.0	0.682	0.417	125.3	18.2	20 W	10*	—
5 21	13 36.57	-22 45.3	0.650	1.603	19.3	21.4	148 E	22	87	1 15	19 29.29	+0 5.4	0.671	0.437	123.7	18.2	22 W	12*	—
5 26	13 30.35	-23 43.5	0.696	1.622	22.3	21.6	143 E	21	88	1 16	19 24.51	+1 19.2	0.662	0.457	121.9	18.1	23 W	15*	—
<b>164201 2004 EC</b>										<b>177255 2003 WC<sub>25</sub></b>									
3 12	16 0.37	-35 21.5	2.843	3.258	17.1	21.4	106 W	10	81	3 12	16 3.34	-31 15.5	2.170	2.629	21.3	21.4	106 W	14	85
3 17	15 59.31	-35 57.2	2.747	3.236	16.7	21.3	111 W	9	80	3 22	16 7.39	-32 23.3	1.998	2.583	20.5	21.2	115 W	13	84
3 22	15 57.46	-36 32.6	2.654	3.213	16.2	21.2	116 W	8	79	4 1	16 8.63	-33 29.6	1.836	2.534	19.1	20.9	124 W	12	83
3 27	15 54.75	-37 7.4	2.564	3.190	15.6	21.1	121 W	8	79	4 11	16 6.58	-34 32.6	1.687	2.485	17.0	20.6	133 W	10	81
4 1	15 51.14	-37 41.1	2.477	3.166	14.8	21.0	126 W	7	78	4 21	16 0.81	-35 28.3	1.554	2.434	14.3	20.3	143 W	10	81
4 6	15 46.58	-38 12.9	2.395	3.142	13.9	20.9	131 W	7	78	4 26	15 56.46	-35 51.6	1.495	2.408	12.8	20.1	148 W	9	80
4 11	15 41.04	-38 42.2	2.318	3.117	12.9	20.8	136 W	6	77	5 1	15 51.17	-36 10.8	1.441	2.382	11.2	20.0	153 W	9	80
4 16	15 34.52	-39 8.0	2.246	3.091	11.8	20.6	141 W	6	77	5 6	15 45.02	-36 24.8	1.393	2.355	9.6	19.8	157 W	9	80
4 21	15 27.05	-39 29.3	2.181	3.064	10.6	20.5	146 W	6	77	5 11	15 38.13	-36 33.0	1.352	2.328	8.3	19.7	160 W	8	79
4 26	15 18.69	-39 44.9	2.123	3.037	9.5	20.4	150 W	5	76	5 16	15 30.67	-36 34.4	1.316	2.301	7.6	19.6	163 E	8	79
5 1	15 9.57	-39 53.9	2.072	3.010	8.5	20.3	154 W	5	76	5 21	15 22.83	-36 28.7	1.287	2.273	7.7	19.5	163 E	9	80
5 6	14 59.84	-39 55.6	2.029	2.981	7.7	20.2	157 W	5	76	5 26	15 14.89	-36 15.8	1.265	2.245	8.7	19.5	160 E	9	80
5 11	14 49.72	-39 49.3	1.994	2.952	7.5	20.1	158 E	5	76	5 31	15 7.10	-35 56.1	1.249	2.217	10.4	19.5	157 E	9	80
5 16	14 39.43	-39 35.0	1.967	2.922	7.9	20.1	157 E	5	76	6 5	14 59.73	-35 30.5	1.239	2.188	12.5	19.5	152 E	9	80
5 21	14 29.20	-39 12.7	1.948	2.892	8.8	20.1	154 E	6	77	6 10	14 53.00	-35 0.3	1.234	2.159	14.7	19.6	147 E	10	81
5 26	14 19.30	-38 43.3	1.938	2.861	10.2	20.1	150 E	6	77	6 15	14 47.09	-34 26.6	1.235	2.130	17.1	19.6	142 E	11	82
5 31	14 9.94	-38 7.8	1.935	2.829	11.7	20.1	145 E	7	78	6 20	14 42.17	-33 51.2	1.241	2.100	19.3	19.7	137 E	11	82
6 5	14 1.30	-37 27.8	1.939	2.796	13.4	20.1	140 E	8	79	6 25	14 38.32	-33 15.4	1.250	2.070	21.5	19.7	132 E	12	83
6 10	13 53.51	-36 44.6	1.949	2.763	15.0	20.2	135 E	8	79	6 30	14 35.62	-32 40.6	1.264	2.040	23.6	19.8	127 E	12	83
6 15	13 46.66	-35 59.8	1.965	2.728	16.7	20.2	130 E	9	80	7 5	14 34.07	-32 7.9	1.280	2.010	25.5	19.8	122 E	12	84
6 20	13 40.81	-35 14.9	1.987	2.693	18.2	20.3	124 E	9	81	7 10	14 33.66	-31 38.2	1.298	1.979	27.2	19.9	117 E	12	84
6 25	13 35.96	-34 31.2	2.012	2.657	19.6	20.3	119 E	9	81	7 20	14 36.14	-30 49.4	1.339	1.918	30.2	20.0	108 E	11	85
6 30	13 32.12	-33 49.8	2.041	2.621	20.8	20.4	114 E	9	82	7 30	14 42.76	-30 16.5	1.382	1.855	32.6	20.0	100 E	10	86
7 5	13 29.24	-33 11.5	2.072	2.583	21.9	20.4	109 E	8	83	8 9	14 53.13	-29 58.7	1.425	1.792	34.4	20.1	93 E	10	84*
7 10	13 27.27	-32 37.0	2.105	2.545	22.8	20.4	104 E	7	83	8 19	15 6.93	-29 53.4	1.465	1.729	35.7	20.1	86 E	9	79*
7 20	13 25.89	-31 40.8	2.172	2.465	24.3	20.5	94 E	5*	83*	8 29	15 23.94	-29 57.2	1.501	1.666	36.7	20.1	81 E	9	73*
7 30	13 27.56	-31 3.1	2.238	2.381	25.1	20.5	85 E	3*	76*	9 8	15 43.93	-30 5.4	1.530	1.604	37.4	20.1	75 E	8	68*
8 9	13 31.89	-30 43.6	2.297	2.294	25.5	20.5	77 E	1*	67*	9 18	16 6.78	-30 13.1	1.553	1.542	37.9	20.0	70 E	9	64*
8 19	13 38.58	-30 41.5	2.346	2.202	25.5	20.4	69 E	—	60*	9 28	16 32.39	-30 14.9	1.569	1.483	38.2	20.0	66 E	9	60*
8 29	13 47.42	-30 55.3	2.381	2.105	25.1	20.4	62 E	—	52*	10 8	17 0.58	-30 4.7	1.579	1.426	38.4	19.9	62 E	10	56*
9 8	13 58.28	-31 23.3	2.399	2.003	24.4	20.2	55 E	—	45*	10 18	17 31.17	-29 36.5	1.584	1.372	38.6	19.8	59 E	11	53*
9 18	14 11.12	-32 3.8	2.400	1.896	23.5	20.1	49 E	—	39*	10 28	18 3.86	-28 44.1	1.584	1.322	38.7	19.8	56 E	12	50*
9 28	14 26.01	-32 55.2	2.380	1.783	22.5	19.9	43 E	—	33*	11 7	18 38.27	-27 22.3	1.581	1.278	38.8	19.7	54 E	14	47*
10 8	14 43.12	-33 55.5	2.339	1.663	21.5	19.7	38 E	—	28*	11 17	19 13.93	-25 26.8	1.577	1.241	38.8	19.6	52 E	16	44*
10 18	15 2.76	-35 2.4	2.275	1.536	20.6	19.4	33 E	—	23*	11 27	19 50.36	-22 55.5	1.573	1.212	38.8	19.6	50 E	19	41*
10 23	15 13.68	-35 37.4	2.235	1.470	20.2	19.3	31 E	—	21*	12 7	20 27.05	-19 48.7	1.573	1.192	38.8	19.5	49 E	22	38*
10 28	15 25.43	-36 12.7	2.189	1.401	19.9	19.1	29 E	—	19*	12 12	20 45.37	-18 2.8	1.574	1.185	38.7	19.5	49 E	24*	37*
11 2	15 38.09	-36 47.7	2.137	1.330	19.7	19.0	27 E	—	17*	12 17	21 3.64	-16 9.3	1.577	1.181	38.5	19.5	48 E	25	35*
11 7	15 51.81	-37 21.5	2.079	1.256	19.7	18.8	25 E	—	16*	12 22	21 21.80	-14 9.1	1.582	1.180	38.4	19.5	48 E	27	33*
11 12	16 6.71	-37 52.8	2.015	1.179	19.8	18.6	24 E	—	14*	12 27	21 39.85	-12 3.0	1.589	1.181	38.1	19.5	48 E	29	32*
11 17	16 22.96	-38 20.1	1.946	1.100	20.2	18.4	23 E	—	13*	1 1	21 57.75	-9 52.0	1.598	1.185	37.9	19.5	48 E	30	30*
11 22	16 40.74	-38 41.2	1.870	1.017	20.8	18.1	21 E	—	12*	1 6	22 15.51	-7 37.3	1.609	1.191	37.5	19.5	47 E	32	28*
11 27	17 0.26	-38 52.9	1.788	0.931															

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

Table with columns for date (20/21), alpha2000, delta2000, Delta, r, beta, V, psi, 45-26 degrees. It is divided into sections for 468647 2008 UC4, 256686 2007 YZ54, 443158 2014 CX9, 414993 2011 EA78, 159414 1999 RN178, and 335024 2004 PD20. Each entry includes numerical values for the listed parameters and a position in Right Ascension (h m s) and Declination (d m s) format.

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>335024 2004 PD<sub>20</sub></b> (continuation)										<b>206924 2004 PP<sub>102</sub></b> (continuation)									
8 19	16 35.37	-37 3.9	0.725	1.397	44.2	19.6	106 E	7*	79	6 20	15 52.95	-27 30.8	1.130	2.084	13.1	19.6	152 E	17	88
8 24	16 47.37	-36 45.7	0.741	1.387	45.1	19.7	104 E	8*	79	6 25	15 48.91	-27 0.1	1.143	2.069	15.7	19.7	147 E	18	89
8 29	17 0.37	-36 24.8	0.757	1.378	45.9	19.7	102 E	8*	80	6 30	15 45.78	-26 30.2	1.159	2.054	18.0	19.8	141 E	18	89
9 3	17 14.26	-36 0.3	0.774	1.370	46.5	19.8	100 E	8*	80	7 5	15 43.63	-26 2.1	1.181	2.039	20.2	19.9	136 E	19	90
9 8	17 28.92	-35 31.5	0.792	1.364	47.1	19.8	98 E	8*	80	7 10	15 42.49	-25 36.4	1.205	2.024	22.3	20.0	131 E	19	90
9 13	17 44.23	-34 57.5	0.810	1.358	47.4	19.9	96 E	10*	81	7 20	15 43.21	-24 54.0	1.263	1.994	25.7	20.2	122 E	20*	89
9 18	18 0.09	-34 17.8	0.829	1.354	47.7	19.9	95 E	11*	82*	7 30	15 47.80	-24 24.6	1.330	1.964	28.4	20.3	113 E	20*	88
9 23	18 16.39	-33 32.0	0.849	1.351	47.9	20.0	93 E	11*	82*	8 9	15 55.92	-24 7.5	1.402	1.934	30.4	20.5	105 E	19*	88
9 28	18 33.00	-32 39.6	0.869	1.349	47.9	20.0	92 E	12*	82*	8 19	16 7.14	-24 0.1	1.477	1.906	31.7	20.6	98 E	19*	88
10 3	18 49.80	-31 40.6	0.891	1.348	47.9	20.1	91 E	13*	83*	8 29	16 21.14	-23 59.4	1.554	1.878	32.5	20.7	92 E	18*	85*
10 8	19 6.70	-30 34.9	0.913	1.349	47.8	20.2	90 E	14	83*	9 8	16 37.54	-24 1.9	1.629	1.850	32.9	20.8	86 E	18*	80*
10 13	19 23.60	-29 22.6	0.937	1.350	47.6	20.2	88 E	16	82*	9 18	16 56.05	-24 4.0	1.703	1.824	32.9	20.8	80 E	18*	74*
10 18	19 40.43	-28 4.0	0.963	1.353	47.3	20.3	87 E	17	81*	9 28	17 16.43	-24 2.4	1.776	1.799	32.6	20.9	75 E	18*	69*
10 23	19 57.12	-26 39.6	0.990	1.358	47.0	20.3	86 E	18	80*	10 8	17 38.40	-23 53.8	1.845	1.775	32.0	20.9	70 E	18*	64*
10 28	20 13.62	-25 9.9	1.018	1.363	46.6	20.4	85 E	20	79*	10 18	18 1.73	-23 35.4	1.912	1.753	31.2	21.0	66 E	19*	59*
11 2	20 29.88	-23 35.4	1.048	1.370	46.1	20.4	84 E	21	77*	10 28	18 26.20	-23 5.0	1.975	1.733	30.2	21.0	61 E	19*	54*
11 7	20 45.85	-21 56.9	1.080	1.377	45.6	20.5	83 E	23	75*	11 7	18 51.54	-22 20.4	2.036	1.714	29.1	21.0	57 E	20*	49*
11 12	21 1.53	-20 14.9	1.113	1.386	45.0	20.6	82 E	25	72*	11 17	19 17.54	-21 20.5	2.094	1.698	27.8	21.0	53 E	20*	44*
11 17	21 16.92	-18 30.1	1.149	1.396	44.4	20.6	81 E	27	70*	11 27	19 43.98	-20 4.4	2.149	1.683	26.4	21.0	49 E	21*	39*
11 22	21 32.01	-16 43.1	1.186	1.407	43.8	20.7	80 E	28	67*	12 7	20 10.65	-18 32.1	2.202	1.671	25.0	21.0	46 E	22*	34*
11 27	21 46.80	-14 54.5	1.225	1.418	43.1	20.8	79 E	30	65*	12 17	20 37.40	-16 43.9	2.254	1.662	23.4	21.0	42 E	23*	29*
12 2	22 1.29	-13 5.1	1.265	1.431	42.3	20.8	78 E	32	62*	12 27	21 4.08	-14 41.0	2.303	1.655	21.9	21.0	39 E	23*	25*
12 7	22 15.49	-11 15.2	1.308	1.444	41.6	20.9	77 E	34	59*	1 6	21 30.57	-12 24.8	2.350	1.651	20.2	21.0	35 E	22*	20*
12 12	22 29.44	-9 25.3	1.352	1.459	40.8	21.0	75 E	36	56*	1 16	21 56.84	-9 57.3	2.397	1.650	18.5	20.9	32 E	21*	16*
12 17	22 43.14	-7 36.0	1.397	1.473	40.0	21.0	74 E	37	53*	<b>247087 2000 SC<sub>145</sub></b>									
12 22	22 56.63	-5 47.4	1.444	1.489	39.1	21.1	73 E	39*	50*	3 12	16 39.28	-22 21.3	1.703	2.118	27.5	21.4	100 W	23	86
12 27	23 9.90	-4 0.0	1.493	1.505	38.3	21.2	72 E	41*	47*	3 22	16 51.73	-22 34.0	1.558	2.084	27.2	21.2	107 W	22	87
1 1	23 22.98	-2 14.2	1.543	1.522	37.4	21.3	70 E	43*	45*	4 1	17 2.28	-22 38.6	1.420	2.050	26.3	20.9	115 W	22	87
1 6	23 35.89	-0 30.1	1.594	1.539	36.5	21.3	69 E	44*	42*	4 11	17 10.49	-22 35.5	1.290	2.016	24.7	20.6	123 W	22	87
1 11	23 48.65	+1 12.0	1.647	1.557	35.6	21.4	67 E	45*	40*	4 21	17 15.86	-22 25.4	1.170	1.982	22.4	20.3	131 W	23	86
1 16	0 1.29	+2 52.0	1.700	1.575	34.7	21.5	66 E	46*	37*	5 1	17 17.89	-22 8.6	1.063	1.949	19.2	20.0	141 W	23	86
<b>411170 2010 EW<sub>80</sub></b>										5 11	17 16.31	-21 45.2	0.971	1.916	15.0	19.6	151 W	23	86
3 12	16 23.71	-13 39.8	1.370	1.889	30.5	21.4	105 W	31	78	5 21	17 11.12	-21 15.5	0.897	1.884	9.8	19.2	161 W	24	85
3 22	16 37.74	-13 8.2	1.249	1.862	29.9	21.1	112 W	32	77	5 26	17 7.32	-20 58.5	0.867	1.868	7.0	19.0	167 W	24	85
4 1	16 49.73	-12 21.6	1.135	1.835	28.6	20.9	118 W	33	76	5 31	17 2.90	-20 40.3	0.842	1.852	4.0	18.7	173 W	24	85
4 11	16 59.22	-11 21.5	1.031	1.809	26.7	20.6	126 W	34	75	6 5	16 58.05	-20 21.3	0.823	1.837	1.4	18.5	178 W	25	84
4 21	17 5.71	-10 10.4	0.938	1.785	24.1	20.2	133 W	35	74	6 10	16 52.99	-20 2.0	0.809	1.822	3.1	18.6	174 E	25	84
5 1	17 8.75	-8 52.7	0.857	1.761	20.8	19.9	142 W	36	73	6 15	16 47.95	-19 42.9	0.800	1.807	6.3	18.7	169 E	25	84
5 6	17 8.91	-8 13.3	0.822	1.750	18.9	19.8	146 W	37	72	6 20	16 43.18	-19 24.8	0.797	1.793	9.6	18.8	163 E	26	83
5 11	17 8.17	-7 34.9	0.790	1.740	16.9	19.6	150 W	37	72	6 25	16 38.91	-19 8.3	0.798	1.779	12.9	18.9	157 E	26	83
5 16	17 6.56	-6 58.6	0.763	1.729	14.8	19.4	154 W	38	71	6 30	16 35.36	-18 54.2	0.804	1.765	16.0	19.0	151 E	26	83
5 21	17 4.14	-6 25.7	0.740	1.720	12.9	19.3	158 W	39	70	7 5	16 32.70	-18 43.0	0.814	1.752	18.9	19.1	146 E	26	83
5 26	17 1.05	-5 57.4	0.721	1.710	11.3	19.2	161 W	39	70	7 10	16 31.03	-18 35.0	0.828	1.739	21.6	19.2	141 E	26	83
5 31	16 57.46	-5 35.2	0.707	1.702	10.3	19.1	163 W	39	70	7 20	16 30.91	-18 29.5	0.865	1.715	26.4	19.5	131 E	27	82
6 5	16 53.58	-5 20.0	0.697	1.693	10.2	19.0	163 W	40	69	7 30	16 35.23	-18 37.3	0.912	1.693	30.2	19.7	123 E	26	83
6 10	16 49.61	-5 12.6	0.692	1.686	11.1	19.0	161 E	40	69	8 9	16 43.77	-18 55.6	0.966	1.673	33.2	19.8	115 E	26*	83
6 20	16 42.30	-5 23.0	0.695	1.672	15.0	19.2	155 E	40	69	8 19	16 56.09	-19 20.2	1.026	1.656	35.4	20.0	109 E	25*	83
6 30	16 37.27	-6 6.5	0.715	1.661	19.7	19.4	147 E	39	70	8 29	17 11.76	-19 46.8	1.090	1.642	36.9	20.2	103 E	25*	84
7 10	16 35.69	-7 17.7	0.748	1.652	24.2	19.6	138 E	38	71	9 8	17 30.29	-20 10.7	1.157	1.630	37.8	20.3	97 E	24*	84
7 15	16 36.38	-8 1.3	0.769	1.648	26.2	19.7	134 E	37	72	9 18	17 51.20	-20 27.6	1.227	1.622	38.2	20.4	93 E	24*	84*
7 20	16 38.08	-8 48.9	0.793	1.645	28.1	19.8	130 E	36	73	9 28	18 14.11	-20 34.0	1.299	1.616	38.3	20.5	88 E	24*	80*
7 25	16 40.81	-9 39.5	0.820	1.643	29.7	19.9	127 E	35	74	10 8	18 38.55	-20 26.8	1.373	1.614	38.0	20.7	84 E	24*	76*
7 30	16 44.53	-10 31.9	0.849	1.642	31.1	20.1	123 E	34	75	10 18	19 4.13	-20 3.7	1.450	1.615	37.5	20.8	80 E	25*	72*
8 4	16 49.20	-11 25.3	0.880	1.641	32.4	20.2	120 E	34	75	10 28	19 30.50	-19 23.6	1.530	1.619	36.6	20.9	77 E	25*	68*
8 9	16 54.75	-12 18.8	0.912	1.641	33.5	20.3	117 E	33*	76	11 7	19 57.29	-18 26.0	1.612	1.626	35.6	21.0	73 E	26*	63*
8 19	17 8.28	-14 3.2	0.983	1.643	35.2	20.5	111 E	31*	78	11 17	20 24.22	-17 11.3	1.697	1.637	34.4	21.0	69 E	28*	58*
8 29	17 24.71	-15 39.8	1.060	1.647	36.2	20.7	105 E	29*	80	11 27	20 51.04	-15 40.6	1.785	1.650	33.1	21.1	66 E	29*	53*
9 8	17 43.55	-17 4.2	1.142	1.654	36.8	20.9	100 E	28*	81	12 7	21 17.57	-13 55.6	1.875	1.667	31.6	21.2	62 E	30*	48*
9 18	18 4.35	-18 13.2	1.230	1.664	36.9	21.1	96 E	27*	82*	12 17	21 43.68	-11 58.4	1.967	1.685	30.0	21.3	59 E	32*	42*
9 28	18 26.71	-19 4.4	1.322	1.676	36.7	21.2	91 E	26*	81*	12 27	22 9.31	-9 51.2	2.061	1.707	28.3	21.4	55 E	33*	37*
10 8	18 50.23	-19 36.4	1.418	1.691	36.2	21.4	87 E	25*	78*	1 6	22 34.40	-7 36.5	2.156	1.730	26.5	21.5	52 E	33*	32*
<b>206924 2004 PP<sub>102</sub></b>										<b>361123 2006 GW&lt;</b>									



EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

2020		$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$	2020		$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$ - $26^\circ$		
<b>361123 2006 GW<sub>2</sub></b> (continuation)										<b>431775 2008 JO<sub>24</sub></b> (continuation)											
6	30	21 38.77	+ 5 52.3	0.287	1.211	42.2	19.5	127 W	51	58	8	24	20 10.32	-34 36.0	0.421	1.373	25.9	18.9	144 E	10	81
7	5	21 43.30	+ 4 9.0	0.280	1.220	38.7	19.4	131 W	49	60	8	29	20 15.20	-37 56.5	0.460	1.388	29.0	19.2	138 E	7	78
7	10	21 46.50	+ 2 4.2	0.274	1.229	34.8	19.3	136 W	47	62	9	3	20 21.11	-40 32.1	0.503	1.403	31.4	19.5	133 E	4	75
7	15	21 48.33	- 0 21.5	0.269	1.239	30.5	19.1	142 W	45	64	9	8	20 27.94	-42 29.6	0.548	1.419	33.4	19.8	129 E	3	74
7	20	21 48.80	- 3 6.0	0.267	1.250	25.6	19.0	148 W	42	67	9	13	20 35.59	-43 55.3	0.596	1.436	34.9	20.0	125 E	1	72
7	25	21 48.01	- 6 5.4	0.267	1.262	20.5	18.9	154 W	39	70	9	18	20 43.96	-44 54.1	0.646	1.453	36.0	20.2	122 E	-	71
7	30	21 46.19	- 9 13.4	0.270	1.273	15.1	18.7	161 W	36	73	9	23	20 52.95	-45 30.6	0.697	1.470	36.8	20.4	119 E	-	70
8	4	21 43.58	-12 22.4	0.276	1.286	9.6	18.6	168 W	33	76	9	28	21 2.43	-45 48.1	0.750	1.488	37.4	20.6	116 E	-	70
8	9	21 40.48	-15 24.8	0.286	1.298	4.6	18.4	174 W	30	79	10	3	21 12.29	-45 49.7	0.804	1.507	37.8	20.8	113 E	-	70
8	14	21 37.20	-18 13.6	0.299	1.311	3.0	18.5	176 W	27	82	10	8	21 22.40	-45 37.7	0.858	1.525	37.9	21.0	110 E	-	70
8	19	21 34.09	-20 43.5	0.315	1.324	7.0	18.8	171 E	24	85	10	13	21 32.70	-45 14.0	0.914	1.544	38.0	21.2	108 E	-	71
8	24	21 31.49	-22 51.1	0.336	1.338	11.5	19.2	165 E	22	87	10	18	21 43.12	-44 40.0	0.971	1.563	37.9	21.3	105 E	-	71
8	29	21 29.67	-24 35.1	0.359	1.351	15.5	19.5	159 E	20	89	10	23	21 53.61	-43 57.3	1.028	1.582	37.8	21.5	103 E	1	72
9	3	21 28.79	-25 56.1	0.386	1.365	19.2	19.8	154 E	19	90	<b>186823 2004 FN<sub>32</sub></b>										
9	8	21 28.90	-26 55.8	0.416	1.379	22.4	20.1	149 E	18	89	3	12	16 57.19	-10 42.5	0.850	1.386	45.3	21.2	97 W	34	75*
9	13	21 30.04	-27 36.3	0.448	1.393	25.3	20.3	144 E	17	88	3	17	17 14.38	- 8 58.1	0.771	1.340	47.3	21.0	98 W	36	73
9	18	21 32.20	-27 59.9	0.483	1.407	27.7	20.6	139 E	17	88	3	22	17 33.72	- 6 45.9	0.696	1.292	49.8	20.7	98 W	38*	71
9	23	21 35.33	-28 8.7	0.520	1.421	29.8	20.8	135 E	17	88	3	27	17 55.86	- 3 59.0	0.625	1.242	52.9	20.5	97 W	41*	68
9	28	21 39.36	-28 4.8	0.559	1.434	31.6	21.1	131 E	17	88	4	1	18 21.63	- 0 30.3	0.562	1.190	56.8	20.3	95 W	44*	65
10	3	21 44.17	-27 50.0	0.601	1.448	33.1	21.3	128 E	17	88	4	6	18 52.09	+ 3 46.0	0.507	1.135	61.8	20.1	92 W	47*	60*
10	8	21 49.68	-27 25.9	0.644	1.462	34.4	21.5	124 E	18	89	4	11	19 28.34	+ 8 49.5	0.464	1.077	68.2	20.0	86 W	50*	55*
<b>322762 2001 FM</b>										4	13	19 44.67	+11 1.4	0.450	1.054	71.1	20.0	84 W	51*	52*	
3	12	16 45.79	-31 21.5	2.578	2.881	20.0	21.5	97 W	14	85	4	15	20 2.08	+13 16.9	0.440	1.030	74.2	20.0	81 W	51*	50*
3	22	16 49.01	-32 40.8	2.460	2.903	19.2	21.3	106 W	12	83	4	17	20 20.54	+15 33.4	0.431	1.005	77.4	20.0	78 W	51*	47*
4	1	16 49.47	-34 0.6	2.348	2.924	17.9	21.2	116 W	11	82	4	19	20 40.01	+17 48.1	0.426	0.980	80.8	20.0	74 W	51*	44*
4	11	16 46.88	-35 19.3	2.248	2.944	16.1	21.1	125 W	10	81	4	21	21 0.35	+19 57.5	0.424	0.955	84.2	20.1	71 W	50*	41*
4	21	16 41.07	-36 33.6	2.162	2.964	13.8	20.9	135 W	8	79	4	23	21 21.40	+21 58.5	0.425	0.929	87.6	20.2	67 W	49*	38*
5	1	16 32.13	-37 38.8	2.097	2.982	11.1	20.8	145 W	7	78	4	25	21 42.94	+23 48.1	0.429	0.903	90.9	20.3	64 W	47*	35*
5	11	16 20.59	-38 29.6	2.056	3.000	8.3	20.6	155 W	7	78	4	27	22 4.70	+25 23.7	0.436	0.877	94.1	20.4	60 W	46*	33*
5	21	16 7.38	-39 1.6	2.042	3.016	6.3	20.5	161 W	6	77	4	29	22 26.42	+26 44.1	0.447	0.850	97.0	20.5	57 W	43*	30*
5	31	15 53.77	-39 12.8	2.056	3.032	6.3	20.6	161 E	6	77	5	1	22 47.84	+27 48.4	0.460	0.823	99.7	20.6	54 W	41*	28*
6	10	15 41.13	-39 5.3	2.098	3.046	8.2	20.7	155 E	6	77	5	3	23 8.72	+28 36.8	0.476	0.795	102.0	20.7	50 W	39*	25*
6	20	15 30.56	-38 43.8	2.166	3.060	10.8	20.9	146 E	6	77	5	5	23 28.88	+29 10.4	0.494	0.767	104.1	20.8	48 W	36*	23*
6	30	15 22.78	-38 14.7	2.257	3.073	13.2	21.1	136 E	6	77	5	7	23 48.21	+29 30.3	0.516	0.739	105.7	20.9	45 W	34*	22*
7	10	15 18.08	-37 44.1	2.366	3.085	15.3	21.3	127 E	7*	78	5	9	0 6.63	+29 38.2	0.539	0.710	107.0	21.0	42 W	32*	20*
7	20	15 16.41	-37 16.6	2.491	3.095	16.9	21.4	118 E	7*	79	5	11	0 24.13	+29 35.8	0.565	0.682	107.8	21.1	40 W	30*	19*
<b>431775 2008 JO<sub>24</sub></b>										5	13	0 40.74	+29 24.5	0.593	0.653	108.3	21.1	38 W	27*	18*	
3	12	16 53.68	+19 2.1	0.974	1.501	40.8	21.3	99 W	64	45	5	15	0 56.52	+29 6.0	0.624	0.624	108.2	21.1	36 W	25*	17*
3	17	17 6.78	+20 32.7	0.940	1.483	41.4	21.2	100 W	66	43	5	17	1 11.56	+28 41.3	0.656	0.595	107.7	21.1	34 W	24*	16*
3	22	17 19.71	+22 5.4	0.909	1.465	42.0	21.2	100 W	67	42	5	19	1 25.96	+28 11.7	0.691	0.567	106.6	21.0	32 W	22*	16*
3	27	17 32.40	+23 38.9	0.880	1.448	42.6	21.1	101 W	69	40	5	21	1 39.84	+27 38.1	0.728	0.539	105.0	21.0	31 W	20*	15*
4	1	17 44.81	+25 12.0	0.852	1.431	43.3	21.0	101 W	70	39	5	23	1 53.32	+27 1.4	0.767	0.512	102.8	20.8	30 W	18*	15*
4	6	17 56.91	+26 43.7	0.826	1.414	44.0	20.9	101 W	72	37	5	25	2 6.53	+26 22.3	0.809	0.487	99.9	20.7	28 W	17*	15*
4	11	18 8.66	+28 12.8	0.800	1.399	44.7	20.9	101 W	73	36	5	27	2 19.60	+25 41.3	0.852	0.463	96.3	20.5	27 W	15*	14*
4	16	18 20.03	+29 38.4	0.776	1.384	45.3	20.8	101 W	75	34	5	29	2 32.63	+24 59.2	0.897	0.441	92.0	20.3	26 W	13*	14*
4	21	18 30.95	+30 59.5	0.752	1.369	46.0	20.7	101 W	76	33	5	31	2 45.74	+24 16.6	0.944	0.422	87.0	20.2	25 W	12*	14*
4	26	18 41.39	+32 15.0	0.729	1.356	46.7	20.6	102 W	77	32	6	2	2 59.00	+23 33.9	0.992	0.407	81.3	20.0	23 W	10*	13*
5	1	18 51.32	+33 23.8	0.705	1.343	47.3	20.6	102 W	78	31	6	4	3 12.46	+22 51.8	1.041	0.397	75.0	19.8	22 W	9*	13*
5	6	19 0.71	+34 24.8	0.682	1.331	47.8	20.5	102 W	79	30	6	6	3 26.12	+22 10.8	1.091	0.391	68.4	19.7	21 W	7*	12*
5	11	19 9.55	+35 17.1	0.658	1.320	48.3	20.4	103 W	80	29	6	8	3 39.94	+21 31.1	1.140	0.390	61.7	19.5	20 W	6*	12*
5	16	19 17.79	+35 59.7	0.633	1.311	48.7	20.3	103 W	81	28	6	10	3 53.84	+20 53.1	1.188	0.394	55.1	19.5	19 W	4*	11*
5	21	19 25.38	+36 31.2	0.608	1.302	48.9	20.2	104 W	82	27	6	12	4 7.71	+20 16.9	1.234	0.404	48.9	19.4	17 W	3*	10*
5	26	19 32.28	+36 49.9	0.582	1.295	49.0	20.1	105 W	82	27	6	14	4 21.45	+19 42.4	1.279	0.418	43.2	19.4	16 W	1*	10*
5	31	19 38.49	+36 53.6	0.556	1.288	48.9	20.0	107 W	82	27	6	16	4 34.95	+19 9.5	1.322	0.435	38.1	19.4	15 W	-	9*
6	5	19 43.98	+36 40.2	0.529	1.283	48.6	19.9	108 W	82	27	6	18	4 48.14	+18 37.9	1.363	0.456	33.8	19.5	14 W	-	8*
6	10	19 48.74	+36 6.0	0.501	1.280	48.0	19.7	110 W	81	28	6	20	5 0.96	+18 7.5	1.402	0.479	30.1	19.5	14 W	-	8*
6	15	19 52.72	+35 10.0	0.473	1.277	47.1	19.6	113 W	80	29	6	25	5 31.23	+16 55.3	1.493	0.545	23.4	19.8	12 W	-	6*
6	20	19 55.90	+33 44.7	0.446	1.276	45.7	19.4	116 W	79	30	6	30	5 58.91	+15 46.7	1.577	0.615	19.3	20.0	12 W	-	5*
6	25	19 58.30	+31 45.2	0.418	1.276	43.8	19.2	120 W	77	32	7	5	6 24.16	+14 40.3	1.655	0.687	16.8	20.3	11 W	-	5*
6	30	19 59.96	+29 4.8	0.392	1.278	41.3	19.0	124 W	74												

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>329244 1992 UA</b>										<b>468826 2012 TL78</b>									
<i>(continuation)</i>										<i>(continuation)</i>									
6 10	17 49.59	-38 53.1	0.701	1.697	10.5	19.4	162 W	6	77	8 9	17 17.14	-14 53.0	1.074	1.831	27.8	19.2	123 E	30	79
6 15	17 42.92	-39 19.3	0.702	1.701	9.5	19.4	164 W	6	77	8 19	17 21.87	-13 36.4	1.127	1.796	31.0	19.4	114 E	31	78
6 20	17 36.14	-39 36.2	0.708	1.706	9.8	19.5	163 E	5	76	8 29	17 30.36	-12 35.4	1.187	1.763	33.3	19.5	107 E	32	77
6 25	17 29.66	-39 43.7	0.718	1.712	11.2	19.5	161 E	5	76	9 8	17 42.17	-11 45.5	1.249	1.733	35.0	19.6	100 E	33	76
6 30	17 23.83	-39 42.7	0.734	1.717	13.1	19.7	157 E	5	76	9 18	17 56.87	-11 2.2	1.312	1.705	36.0	19.7	94 E	34	75
7 5	17 18.93	-39 34.3	0.753	1.723	15.4	19.8	153 E	5	76	9 28	18 14.11	-10 21.1	1.375	1.681	36.6	19.8	89 E	34	72
7 10	17 15.16	-39 19.8	0.777	1.729	17.7	20.0	149 E	6	77	10 8	18 33.50	-9 38.1	1.438	1.660	36.8	19.9	84 E	35	68*
7 15	17 12.63	-39 0.8	0.805	1.735	19.9	20.1	144 E	6	77	10 18	18 54.73	-8 49.9	1.501	1.643	36.6	19.9	79 E	36	64*
7 20	17 11.40	-38 38.5	0.836	1.741	22.0	20.3	140 E	6	77	10 28	19 17.53	-7 53.8	1.563	1.629	36.2	20.0	76 E	37	59*
7 25	17 11.48	-38 14.3	0.870	1.748	23.9	20.4	136 E	7	78	11 7	19 41.58	-6 47.7	1.625	1.620	35.6	20.1	72 E	38	54*
7 30	17 12.83	-37 49.0	0.908	1.755	25.6	20.6	132 E	7	78	11 17	20 6.65	-5 30.6	1.688	1.615	34.7	20.1	69 E	39	49*
8 4	17 15.35	-37 23.3	0.948	1.761	27.1	20.7	128 E	8	79	11 27	20 32.51	-4 1.8	1.753	1.614	33.8	20.2	65	40	43*
8 9	17 18.95	-36 57.6	0.991	1.768	28.4	20.9	124 E	8	79	12 7	20 58.91	-2 21.7	1.819	1.618	32.7	20.2	62	41	38*
8 14	17 23.04	-36 32.0	1.035	1.775	29.6	21.0	120 E	8	79	12 17	21 25.69	0 31.4	1.888	1.626	31.4	20.3	59	42	33*
8 19	17 29.01	-36 6.6	1.082	1.782	30.5	21.1	117 E	8	79	12 27	21 52.66	+1 27.9	1.960	1.638	30.1	20.3	57	42	28*
8 24	17 35.30	-35 41.3	1.131	1.790	31.3	21.3	113 E	9	80	1 6	22 19.69	+3 33.8	2.035	1.653	28.6	20.4	54	42	24*
8 29	17 42.30	-35 16.1	1.181	1.797	31.9	21.4	110 E	10*	81	1 16	22 46.68	+5 44.3	2.113	1.673	27.1	20.5	51	41	20*
<b>247827 2003 SN198</b>										<b>9172 Abhramu</b>									
3 12	17 0.18	-23 0.7	2.238	2.532	23.0	21.4	95 W	22	87*	3 12	17 42.51	-29 9.6	2.438	2.559	22.8	21.5	85 W	15*	79*
3 22	17 9.07	-22 54.3	2.081	2.505	22.8	21.2	103 W	22	87	3 22	17 55.39	-29 19.5	2.246	2.498	23.5	21.3	93 W	15*	85*
4 1	17 15.88	-22 41.0	1.928	2.477	22.0	21.0	112 W	22	87	4 1	18 7.12	-29 26.0	2.056	2.435	23.9	21.0	100 W	15*	87
4 11	17 20.24	-22 20.9	1.783	2.449	20.7	20.7	120 W	23	86	4 11	18 17.42	-29 29.7	1.870	2.371	23.8	20.8	107 W	15*	87
4 21	17 21.78	-21 54.2	1.648	2.420	18.6	20.5	130 W	23	86	4 21	18 25.93	-29 31.2	1.691	2.306	23.2	20.5	115 W	15	86
5 1	17 20.21	-21 20.8	1.528	2.390	15.7	20.2	140 W	24	85	5 1	18 32.17	-29 30.9	1.520	2.240	22.0	20.1	124 W	15	86
5 11	17 15.46	-20 40.5	1.426	2.359	12.0	19.9	151 W	24	85	5 11	18 35.68	-29 28.8	1.361	2.174	20.1	19.8	132 W	16	87
5 21	17 7.74	-19 53.6	1.344	2.328	7.6	19.5	162 W	25	84	5 21	18 35.91	-29 23.8	1.215	2.106	17.3	19.4	142 W	16	87
5 26	17 2.96	-19 28.1	1.312	2.313	5.3	19.3	168 W	26	83	5 31	18 32.35	-29 13.6	1.086	2.038	13.5	18.9	152 W	16	87
5 31	16 57.74	-19 1.6	1.287	2.297	2.9	19.2	173 W	26	83	6 10	18 24.83	-28 53.9	0.975	1.969	8.7	18.4	163 W	16	87
6 5	16 52.25	-18 34.4	1.268	2.281	1.8	19.0	176 E	26	83	6 15	18 19.64	-28 38.8	0.928	1.934	6.0	18.1	168 W	16	87
6 10	16 46.65	-18 7.3	1.255	2.265	3.6	19.1	172 E	27	82	6 20	18 13.62	-28 19.3	0.886	1.899	3.4	17.9	174 W	17	88
6 15	16 41.13	-17 40.7	1.249	2.249	6.1	19.2	166 E	27	82	6 25	18 6.96	-27 54.8	0.850	1.865	2.7	17.7	175 E	17	88
6 20	16 35.87	-17 15.2	1.249	2.233	8.8	19.3	160 E	28	81	6 30	17 59.88	-27 25.0	0.819	1.830	5.2	17.7	171 E	18	89
6 25	16 31.04	-16 51.6	1.255	2.217	11.3	19.4	155 E	28	81	7 5	17 52.68	-26 49.9	0.794	1.795	8.5	17.8	165 E	18	89
6 30	16 26.80	-16 30.5	1.267	2.201	13.8	19.5	149 E	28	81	7 10	17 45.64	-26 10.1	0.775	1.761	12.1	17.8	159 E	19	90
7 10	16 20.50	-15 57.3	1.304	2.168	18.4	19.7	138 E	29	80	7 15	17 39.05	-25 26.2	0.760	1.727	15.8	17.8	153 E	20	89
7 20	16 17.53	-15 37.6	1.358	2.135	22.2	19.9	128 E	29	80	7 20	17 33.20	-24 39.5	0.750	1.692	19.4	17.9	146 E	20	89
7 30	16 18.11	-15 31.7	1.423	2.102	25.2	20.0	118 E	29	80	7 25	17 28.36	-23 51.2	0.744	1.659	22.9	17.9	141 E	21	88
8 9	16 22.10	-15 37.7	1.495	2.070	27.5	20.2	110 E	29	80	7 30	17 24.71	-23 2.5	0.741	1.625	26.3	18.0	135 E	22	87
8 19	16 29.25	-15 53.0	1.572	2.037	29.1	20.3	102 E	28	80	8 4	17 22.37	-22 14.7	0.741	1.592	29.5	18.0	129 E	23	86
8 29	16 39.28	-16 14.8	1.651	2.005	30.1	20.4	95 E	27	80	8 9	17 21.41	-21 28.3	0.743	1.560	32.4	18.1	124 E	24	85
9 8	16 51.87	-16 39.6	1.730	1.973	30.7	20.5	88 E	26	78*	8 19	17 23.75	-20 2.1	0.752	1.497	37.7	18.2	115 E	25	84
9 18	17 6.75	-17 4.5	1.807	1.942	30.8	20.6	82 E	25	74*	8 29	17 31.69	-18 44.8	0.764	1.437	42.1	18.2	107 E	26	82
9 28	17 23.67	-17 26.4	1.882	1.911	30.6	20.6	76 E	25	68*	9 8	17 44.82	-17 33.4	0.776	1.382	45.7	18.3	101 E	27	82
10 8	17 42.39	-17 42.5	1.953	1.882	30.1	20.6	71 E	25	63*	9 18	18 2.73	-16 22.8	0.786	1.332	48.7	18.3	95 E	28	80*
10 18	18 2.71	-17 50.5	2.020	1.853	29.4	20.6	66 E	24	58*	9 28	18 25.03	-15 7.3	0.794	1.290	51.0	18.3	91 E	30	78*
10 28	18 24.44	-17 47.9	2.083	1.826	28.5	20.7	61 E	24	52*	10 8	18 51.26	-13 40.5	0.800	1.255	52.7	18.3	88 E	31	74*
11 7	18 47.35	-17 32.8	2.141	1.800	27.4	20.7	57 E	24	47*	10 18	19 21.03	-11 57.3	0.805	1.230	53.9	18.3	85 E	33	71*
11 17	19 11.26	-17 3.8	2.196	1.776	26.2	20.6	52 E	24	42*	10 28	19 53.94	-9 53.7	0.812	1.215	54.4	18.4	84 E	35	67*
11 27	19 35.99	-16 19.6	2.247	1.754	24.9	20.6	48 E	24	36*	11 7	20 29.41	-7 27.8	0.823	1.211	54.3	18.4	83 E	38	63*
12 7	20 1.32	-15 19.8	2.293	1.733	23.5	20.6	44 E	24	31*	11 17	21 6.86	-4 41.3	0.841	1.218	53.7	18.4	83 E	40	60*
12 17	20 27.10	-14 4.2	2.337	1.715	22.0	20.6	41 E	24	26*	11 22	21 26.11	-3 11.4	0.854	1.226	53.1	18.4	83 E	42	58*
12 27	20 53.18	-12 33.2	2.378	1.700	20.4	20.5	37 E	23	21*	11 27	21 45.58	-1 38.2	0.869	1.236	52.4	18.5	83 E	43	56*
1 6	21 19.42	-10 47.9	2.416	1.686	18.8	20.5	34 E	22	17*	12 2	22 5.17	0 2.7	0.887	1.249	51.6	18.5	83 E	45	54*
1 16	21 45.72	-8 49.7	2.452	1.676	17.2	20.5	30 E	21	13*	12 7	22 24.78	+1 34.0	0.909	1.264	50.8	18.6	84 E	47	52*
<b>468826 2012 TL78</b>										<b>434187 2003 AN2</b>									
3 12	17 30.94	-32 24.4	2.292	2.463	23.8	21.4	88 W	12*	80*	3 12	17 47.78	+6 14.2	1.615	1.832	32.7	21.4	86 W	50*	55*
3 22	17 44.18	-32 23.5	2.123	2.421	24.2	21.2	95 W	13*	84*	3 22	18 3.94	+7 25.7	1.519	1.822	33.2	21.3	90 W	52*	56*
4 1	17 55.83	-32 15.5	1.956	2.377	24.3	21.0	102 W	13*	84	4 1	18 18.31	+8 44.1	1.422	1.810	33.3	21.1	95 W	53*	55
4 11	18 5.53	-32 0.1	1.795	2.334	23.8	20.7	110 W	13	84	4 11	18 30.61	+10 5.9	1.327	1.799	33.2	21.0	100 W	55*	54
4 21	18 12.85	-31 37.0	1.640	2.290	22.8	20.5	118 W	13	84	4 21	18 40.47	+11 26.8	1.232	1.787	32.8	20.8	106 W	56*	53
5 1	18 17.32	-31 5.0	1.494	2.247	21.1	20.2	127 W	14	85	5 1	18 47.43	+12 40.7	1.141	1.775	31.9	20.6	111 W	58	51
5 11	18 18.51	-30 22.4	1.361	2.203	18.6	19.8	136 W	15	86	5 11	18 51.07	+13 39.6	1.053	1.763	30.5	20.4	118 W	59	50
5 21	18 16.10	-29 26.3	1.244	2.159	15.1	19.5	146 W	16	87	5 16									

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ-26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ-26^\circ$
<b>434187 2003 AN<sub>2</sub></b>									<b>205457 2001 QY<sub>12</sub></b>								
<i>(continuation)</i>																	
6 20	18 26.80	+11 2.6	0.782	1.715	20.0	19.3	145 W	56 53	3 12	17 55.13	-28 52.9	2.119	2.224	26.3	21.4	83 W	15* 77*
6 25	18 20.14	+ 9 31.3	0.764	1.709	18.9	19.2	147 W	55 54	3 22	18 11.39	-29 8.9	1.974	2.196	27.0	21.2	89 W	15* 82*
6 30	18 13.25	+ 7 41.5	0.751	1.703	18.1	19.2	149 E	53 56	4 1	18 26.43	-29 21.2	1.829	2.168	27.3	21.0	96 W	15* 87*
7 5	18 6.40	+ 5 34.8	0.743	1.697	18.0	19.1	149 E	51 58	4 11	18 39.95	-29 31.1	1.687	2.140	27.2	20.8	102 W	15* 86
7 10	17 59.86	+ 3 13.8	0.740	1.691	18.5	19.1	148 E	48 61	4 21	18 51.59	-29 40.6	1.549	2.112	26.6	20.6	110 W	15* 86
7 15	17 53.87	+ 0 41.7	0.743	1.686	19.6	19.2	146 E	46 63	5 1	19 0.89	-29 51.1	1.418	2.083	25.5	20.3	117 W	15* 86
7 20	17 48.67	+ 1 57.8	0.752	1.680	21.2	19.2	143 E	43 66	5 11	19 7.37	-30 4.1	1.296	2.054	23.6	20.0	125 W	15 86
7 25	17 44.45	+ 4 40.8	0.766	1.675	23.1	19.3	140 E	40 69	5 21	19 10.53	-30 20.2	1.185	2.025	21.0	19.7	134 W	15 86
7 30	17 41.34	+ 7 23.7	0.784	1.669	25.1	19.4	136 E	38 71	5 31	19 9.87	-30 38.5	1.087	1.997	17.4	19.4	144 W	14 85
8 4	17 39.42	+ 10 3.4	0.808	1.664	27.1	19.6	132 E	35 74	6 10	19 5.21	-30 56.0	1.005	1.968	13.1	19.0	154 W	14 85
8 9	17 38.71	+ 12 37.5	0.835	1.659	29.1	19.7	127 E	32 77	6 15	19 1.42	-31 2.8	0.971	1.954	10.7	18.9	159 W	14 85
8 14	17 39.22	+ 15 4.4	0.866	1.654	30.9	19.8	123 E	30 79	6 20	18 56.76	-31 7.3	0.942	1.940	8.2	18.7	164 W	14 85
8 19	17 40.93	+ 17 23.0	0.900	1.649	32.4	19.9	119 E	28 81	6 25	18 51.39	-31 8.6	0.919	1.926	5.8	18.5	169 W	14 85
8 29	17 47.81	+ 21 33.0	0.976	1.640	35.0	20.2	111 E	23 86	6 30	18 45.52	-31 6.0	0.900	1.912	4.3	18.4	172 W	14 85
9 8	17 58.90	+ 25 5.8	1.059	1.631	36.8	20.4	104 E	20* 89	7 5	18 39.41	-30 59.1	0.888	1.899	4.9	18.3	171 E	14 85
9 18	18 13.72	+ 28 2.4	1.147	1.624	37.8	20.6	98 E	17* 88	7 10	18 33.31	-30 47.5	0.881	1.885	7.0	18.4	167 E	14 85
9 28	18 31.82	+ 30 24.6	1.237	1.617	38.3	20.7	92 E	15* 84*	7 15	18 27.49	-30 31.5	0.879	1.872	9.8	18.5	162 E	14 85
10 8	18 52.69	+ 32 13.7	1.327	1.611	38.2	20.9	86 E	13* 79*	7 20	18 22.22	-30 11.6	0.882	1.859	12.6	18.6	156 E	15 86
10 18	19 15.89	+ 33 31.0	1.417	1.606	37.8	21.0	81 E	11* 75*	7 25	18 17.73	-29 48.3	0.890	1.846	15.5	18.7	151 E	15 86
10 28	19 40.99	+ 34 17.3	1.504	1.602	37.1	21.1	77 E	11* 70*	7 30	18 14.21	-29 22.5	0.903	1.833	18.2	18.8	146 E	16 87
11 7	20 7.50	+ 34 33.5	1.589	1.599	36.2	21.2	72 E	10* 66*	8 4	18 11.78	-28 55.0	0.920	1.821	20.2	18.9	140 E	16 87
11 17	20 34.99	+ 34 20.6	1.670	1.597	35.1	21.3	68 E	11* 62*	8 9	18 10.50	-28 26.7	0.940	1.808	23.1	19.0	136 E	17 88
11 27	21 3.08	+ 33 39.9	1.748	1.596	33.9	21.3	65 E	11* 58*	8 19	18 11.46	-27 29.3	0.989	1.785	27.2	19.3	126 E	18 89
12 7	21 31.38	+ 32 33.1	1.821	1.596	32.7	21.4	61 E	12* 55*	8 29	18 16.95	-26 33.0	1.048	1.763	30.4	19.4	118 E	18 89
12 17	21 59.64	+ 31 2.3	1.891	1.598	31.4	21.4	58 E	14* 51*	9 8	18 26.49	-25 37.6	1.113	1.743	32.8	19.6	110 E	19 90
12 27	22 27.63	+ 29 10.0	1.957	1.600	30.0	21.5	54 E	15* 47*	9 18	18 39.48	-24 41.4	1.183	1.724	34.5	19.8	104 E	20 89
<b>509193 2006 OX<sub>19</sub></b>									<b>159856 2004 JW<sub>6</sub></b>								
3 12	17 47.91	+ 10 13.8	1.740	1.923	31.0	21.4	85 W	34* 70*	3 12	18 2.62	-12 29.9	1.453	1.629	37.1	21.4	81 W	31* 69*
3 22	18 7.93	+ 9 10.2	1.599	1.878	32.0	21.1	90 W	35* 72*	3 22	18 31.69	-11 40.7	1.323	1.568	39.2	21.1	84 W	32* 71*
4 1	18 27.53	+ 7 51.0	1.464	1.833	32.9	20.9	94 W	36* 72*	4 1	19 2.30	-10 30.7	1.203	1.507	41.4	20.9	86 W	32* 72*
4 11	18 46.60	+ 6 16.9	1.335	1.788	33.6	20.7	99 W	38* 70	4 11	19 34.63	- 8 59.4	1.093	1.449	43.7	20.7	87 W	33* 72*
4 21	19 4.98	+ 4 29.3	1.213	1.744	34.1	20.4	103 W	40* 68	4 21	20 8.88	- 7 7.0	0.995	1.393	46.2	20.5	88 W	33* 71*
5 1	19 22.47	+ 2 30.5	1.098	1.702	34.3	20.2	108 W	42* 67	5 1	20 45.13	+ 4 55.6	0.909	1.340	48.8	20.3	88 W	34* 69*
5 11	19 38.93	+ 0 24.0	0.991	1.662	34.2	19.9	112 W	44* 64	5 11	21 23.44	- 2 29.3	0.838	1.291	51.4	20.1	88 W	35* 66*
5 16	19 46.70	+ 0 40.8	0.941	1.642	34.1	19.8	115 W	46* 63	5 16	21 43.36	+ 1 12.4	0.808	1.269	52.8	20.0	88 W	35* 65*
5 21	19 54.13	+ 1 45.7	0.892	1.623	33.8	19.6	117 W	47* 62	5 21	22 3.71	+ 0 5.5	0.781	1.248	54.1	19.9	87 W	36* 64
5 26	20 1.17	+ 2 49.7	0.846	1.605	33.5	19.5	119 W	48* 61	5 26	22 24.45	+ 1 23.3	0.758	1.229	55.4	19.9	87 W	36* 63
5 31	20 7.81	+ 3 51.8	0.802	1.587	33.1	19.3	121 W	49* 60	5 31	22 45.50	+ 2 39.5	0.738	1.211	56.6	19.8	86 W	36* 61
6 5	20 14.01	+ 4 50.8	0.760	1.570	32.5	19.2	124 W	50 59	6 5	23 6.78	+ 3 52.9	0.722	1.196	57.7	19.8	85 W	37* 60
6 10	20 19.76	+ 5 45.6	0.720	1.553	31.8	19.0	126 W	51 58	6 10	23 28.18	+ 5 2.3	0.708	1.183	58.7	19.7	85 W	37* 59
6 15	20 25.01	+ 6 34.7	0.683	1.538	31.0	18.8	129 W	52 57	6 15	23 49.57	+ 6 6.3	0.698	1.172	59.6	19.7	84 W	38* 58
6 20	20 29.72	+ 7 16.3	0.648	1.524	30.1	18.7	131 W	52 57	6 20	0 10.84	+ 7 4.1	0.691	1.163	60.3	19.7	84 W	38* 57
6 25	20 33.87	+ 7 48.7	0.615	1.510	28.9	18.5	134 W	53 56	6 25	0 31.82	+ 7 54.6	0.685	1.157	60.7	19.7	83 W	39* 56
6 30	20 37.45	+ 8 9.9	0.584	1.497	27.6	18.3	137 W	53 56	6 30	0 52.41	+ 8 37.3	0.682	1.153	61.0	19.7	83 W	40* 55
7 5	20 40.50	+ 8 17.9	0.556	1.486	26.1	18.2	140 W	53 56	7 10	1 31.95	+ 9 38.4	0.682	1.154	61.0	19.7	83 W	42* 54
7 10	20 43.00	+ 8 10.9	0.530	1.475	24.4	18.0	143 W	53 56	7 20	2 8.64	+ 10 7.2	0.685	1.165	60.2	19.7	84 W	44* 54
7 15	20 44.99	+ 7 47.1	0.507	1.466	22.6	17.8	146 W	53 56	7 30	2 41.82	+ 10 5.4	0.690	1.186	58.7	19.7	86 W	46* 54
7 20	20 46.53	+ 7 4.8	0.487	1.458	20.5	17.7	150 W	52 57	8 9	3 11.08	+ 9 36.5	0.695	1.215	56.5	19.7	89 W	49* 54
7 30	20 48.72	+ 4 41.5	0.457	1.446	16.2	17.4	157 W	50 59	8 19	3 36.07	+ 8 43.8	0.698	1.252	53.8	19.7	92 W	51* 55
8 9	20 50.73	+ 1 5.4	0.440	1.438	12.6	17.2	162 E	46 63	8 29	3 56.40	+ 7 30.6	0.697	1.296	50.6	19.7	97 W	52* 56
8 19	20 53.81	+ 3 22.3	0.439	1.437	12.3	17.1	162 E	42 67	9 8	4 11.78	+ 6 0.9	0.694	1.346	46.9	19.6	103 W	51* 58
8 24	20 56.17	+ 5 44.4	0.444	1.438	13.6	17.2	160 E	39 70	9 18	4 21.84	+ 4 18.5	0.689	1.399	42.5	19.6	110 W	49 60
8 29	20 59.25	+ 8 5.0	0.454	1.440	15.6	17.3	157 E	37 72	9 23	4 24.74	+ 3 24.1	0.686	1.427	40.0	19.5	114 W	48 61
9 3	21 3.12	+ 10 19.5	0.468	1.444	18.0	17.5	154 E	35 74	9 28	4 26.19	+ 2 28.8	0.684	1.456	37.4	19.5	118 W	47 62
9 8	21 7.79	+ 12 23.9	0.486	1.449	20.4	17.7	150 E	33 76	10 3	4 26.18	+ 1 33.7	0.683	1.485	34.6	19.5	123 W	47 62
9 13	21 13.26	+ 14 15.5	0.508	1.455	22.8	17.8	146 E	31 78	10 8	4 24.74	+ 0 39.9	0.683	1.514	31.6	19.4	127 W	46 63
9 18	21 19.51	+ 15 52.3	0.533	1.463	25.0	18.0	142 E	29 80	10 13	4 21.91	+ 0 11.3	0.685	1.544	28.5	19.4	132 W	45 64
9 28	21 34.10	+ 18 18.2	0.594	1.481	28.7	18.4	135 E	27 82	10 18	4 17.79	+ 0 58.3	0.690	1.575	25.4	19.3	137 W	44 65
10 8	21 50.91	+ 19 42.1	0.667	1.505	31.5	18.8	128 E	25 84	10 23	4 12.54	+ 1 39.5	0.698	1.605	22.2	19.3	142 W	43 66
10 18	22 9.22	+ 20 11.4	0.750	1.532	33.5	19.1	122 E	25 84	10 28	4 6.39	+ 2 13.4	0.709	1.636	19.2	19.3	147 W	43 66
10 23	22 18.76	+ 20 8.2	0.796	1.547	34.2	19.3	119 E	25 84	11 2	3 59.61	+ 2 38.7	0.725	1.667	16.4	19.3	152 W	42 67
10 28	22 28.49	+ 19 54.9	0.844	1.563	34.7	19.4	116 E	25 84	11 7	3 52.49	+ 2 54.6	0.746	1.697	14.1	19.3	155 W	42 67
11 2	22 38.32	+ 19 32.5	0.894	1.580	35.1	19.6	114 E	25 84	11 17	3 38.37	+ 2 56.9	0.803	1.759	12.2	19.5	158 W	42 67
11 7	22 48.22	+ 19 2.3	0.946	1.597	35												

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°	-26°
<b>159856</b> 2004 JW <sub>6</sub> (continuation)										<b>480822</b> 1998 YM <sub>4</sub> (continuation)									
12 12	3 14.39	-0 37.3	1.036	1.910	18.5	20.4	142 E	44	65	6 5	4 39.78	+23 43.4	1.848	0.837	3.9	21.0	3 W	-	-
12 17	3 12.36	+0 6.9	1.097	1.940	20.1	20.6	137 E	45	64	6 10	5 1.43	+24 23.1	1.920	0.908	3.4	21.2	3 W	-	-
12 22	3 11.27	+0 54.2	1.162	1.969	21.4	20.8	133 E	46	63	6 15	5 21.73	+24 49.4	1.989	0.977	3.4	21.5	3 W	-	-
12 27	3 11.08	+1 43.6	1.231	1.999	22.6	21.0	129 E	47	62	<b>185493</b> 2007 PO <sub>42</sub>									
1 1	3 11.72	+2 34.3	1.303	2.027	23.6	21.2	124 E	48	61	3 12	18 55.28	-21 10.2	2.467	2.301	23.7	21.5	69 W	19*	62*
1 6	3 13.12	+3 25.7	1.378	2.056	24.4	21.4	120 E	48	61	3 22	19 12.27	-20 34.0	2.321	2.271	25.0	21.4	75 W	20*	68*
<b>245115</b> 2004 QO <sub>12</sub>										4 1	19 28.46	-19 51.3	2.174	2.241	26.1	21.2	81 W	21*	74*
3 12	18 36.43	-17 34.0	1.825	1.804	31.8	21.4	73 W	24*	65*	4 11	19 43.68	-19 3.3	2.025	2.210	26.9	21.1	87 W	22*	79*
3 22	19 0.21	-17 23.7	1.710	1.778	33.1	21.3	77 W	24*	70*	4 21	19 57.76	-18 11.5	1.878	2.179	27.4	20.9	93 W	24*	82*
4 1	19 23.69	-17 5.0	1.598	1.754	34.3	21.2	81 W	24*	74*	5 1	20 10.47	-17 17.4	1.733	2.147	27.5	20.7	100 W	25*	81
4 11	19 46.76	-16 40.0	1.488	1.732	35.3	21.0	86 W	25*	77*	5 11	20 31.55	-16 23.0	1.592	2.116	27.2	20.5	107 W	27*	80
4 21	20 9.29	-16 11.1	1.382	1.711	36.0	20.8	90 W	25*	79*	5 21	20 30.71	-15 30.6	1.456	2.084	26.4	20.2	114 W	29*	80
5 1	20 31.10	-15 41.6	1.280	1.692	36.4	20.7	95 W	25*	80	5 31	20 37.58	-14 42.8	1.329	2.052	24.9	19.9	122 W	30*	79
5 11	20 52.02	-15 15.1	1.183	1.675	36.5	20.5	99 W	26*	79	6 10	20 41.78	-14 2.4	1.211	2.020	22.6	19.6	130 W	31	78
5 21	21 11.85	-14 56.0	1.090	1.660	36.2	20.3	104 W	27*	79	6 20	20 42.94	-13 32.5	1.105	1.988	19.5	19.3	139 W	31	78
5 31	21 30.28	-14 49.2	1.003	1.648	35.4	20.0	110 W	28*	79	6 30	20 40.76	-13 15.9	1.014	1.956	15.5	18.9	149 W	32	77
6 10	21 47.01	-15 0.0	0.922	1.638	34.0	19.8	115 W	29*	79	7 10	20 35.32	-13 14.2	0.940	1.925	10.7	18.6	159 W	32	77
6 20	22 1.62	-15 33.9	0.849	1.631	32.0	19.6	122 W	29*	80	7 20	20 27.07	-13 27.4	0.886	1.895	5.3	18.2	170 W	32	77
6 30	22 13.56	-16 35.8	0.784	1.627	29.1	19.3	129 W	29*	81	7 25	20 22.22	-13 39.0	0.867	1.880	3.3	18.0	174 W	31	78
7 10	22 22.35	-18 8.4	0.729	1.626	25.4	19.0	137 W	27	82	7 30	20 17.16	-13 53.2	0.853	1.865	3.7	18.0	173 E	31	78
7 15	22 25.40	-19 6.0	0.706	1.626	23.3	18.9	141 W	26	83	8 4	20 12.11	-14 9.3	0.845	1.850	6.1	18.0	169 E	31	78
7 20	22 27.47	-20 10.4	0.687	1.627	20.9	18.8	145 W	25	84	8 9	20 7.28	-14 26.7	0.842	1.836	9.1	18.2	163 E	31	78
7 25	22 28.55	-21 20.2	0.670	1.629	18.5	18.6	149 W	24	85	8 14	20 2.91	-14 44.6	0.844	1.822	12.2	18.3	158 E	30	79
7 30	22 28.65	-22 33.7	0.658	1.632	16.0	18.5	154 W	22	87	8 19	19 59.20	-15 2.5	0.851	1.808	15.2	18.4	152 E	30	79
8 4	22 27.85	-23 48.7	0.650	1.635	13.6	18.4	158 W	21	88	8 24	19 56.33	-15 19.6	0.862	1.795	18.0	18.5	147 E	30	79
8 9	22 26.24	-25 2.5	0.646	1.639	11.5	18.3	161 W	20	89	8 29	19 54.43	-15 35.4	0.877	1.782	20.7	18.6	141 E	29	80
8 14	22 23.95	-26 12.6	0.646	1.643	10.1	18.3	164 W	19	90	9 8	19 53.81	-16 1.2	0.918	1.757	25.4	18.8	132 E	29	80
8 19	22 21.17	-27 16.3	0.651	1.648	9.7	18.3	164 W	18	89	9 18	19 57.54	-16 17.3	0.969	1.733	29.2	19.0	123 E	29	80
8 24	22 18.15	-28 11.3	0.661	1.654	10.4	18.4	163 W	17	88	9 28	20 5.44	-16 21.1	1.028	1.712	32.1	19.2	115 E	29	80
8 29	22 15.15	-28 55.6	0.675	1.661	11.9	18.5	160 E	16	87	10 8	20 17.01	-16 11.0	1.093	1.692	34.2	19.4	108 E	29	80
9 3	22 12.40	-29 28.4	0.693	1.668	14.0	18.6	156 E	16	87	10 18	20 31.69	-15 45.7	1.162	1.675	35.7	19.5	102 E	29	80
9 8	22 10.11	-29 49.1	0.716	1.675	16.2	18.8	152 E	15	86	10 28	20 48.95	-15 3.9	1.234	1.660	36.5	19.6	96 E	30	79*
9 13	22 8.45	-29 58.1	0.742	1.683	18.3	18.9	148 E	15	86	11 7	21 8.24	-14 5.5	1.308	1.648	37.0	19.8	91 E	31	75*
9 18	22 7.53	-29 55.8	0.773	1.692	20.4	19.1	144 E	15	86	11 17	21 29.11	-12 50.4	1.383	1.639	37.0	19.9	86 E	32	69*
9 23	22 7.47	-29 43.0	0.807	1.701	22.3	19.3	140 E	15	86	11 27	21 51.18	-11 19.3	1.460	1.632	36.7	20.0	81 E	34	63*
9 28	22 8.28	-29 20.9	0.844	1.711	24.1	19.4	136 E	16	87	12 7	22 14.13	-9 33.6	1.538	1.629	36.1	20.1	77 E	35	58*
10 3	22 9.95	-28 50.5	0.884	1.721	25.6	19.6	132 E	16	87	12 17	22 37.69	-7 35.0	1.617	1.628	35.3	20.2	73 E	37	52*
10 8	22 12.44	-28 13.0	0.927	1.732	27.0	19.7	128 E	17	88	12 27	23 1.71	-5 25.5	1.698	1.630	34.3	20.2	69 E	39*	47*
10 13	22 15.70	-27 29.2	0.972	1.743	28.2	19.9	124 E	18	89	1 6	23 26.01	-3 7.7	1.779	1.635	33.1	20.3	65 E	41*	42*
10 18	22 19.66	-26 40.0	1.020	1.755	29.1	20.0	121 E	18	89	1 16	23 50.54	-0 44.1	1.862	1.644	31.8	20.4	62 E	42*	37*
10 23	22 24.28	-25 46.1	1.071	1.767	30.0	20.2	118 E	19	90	<b>241662</b> 2000 KO <sub>44</sub>									
10 28	22 29.48	-24 48.2	1.123	1.779	30.6	20.3	114 E	20	89	3 12	18 57.28	-3 9.9	1.808	1.703	32.7	21.4	68 W	36*	53*
11 2	22 35.18	-23 47.0	1.177	1.792	31.1	20.5	111 E	21	88	3 22	19 21.57	-3 1.8	1.677	1.650	34.8	21.2	71 W	36*	57*
11 7	22 41.31	-22 42.8	1.233	1.805	31.5	20.6	108 E	22	87	4 1	19 46.67	-2 51.4	1.548	1.597	37.0	21.1	74 W	35*	60*
11 12	22 47.83	-21 36.2	1.291	1.818	31.7	20.7	105 E	23	86	4 11	20 12.84	-2 41.9	1.420	1.543	39.3	20.9	77 W	35*	62*
11 17	22 54.69	-20 27.5	1.350	1.831	31.9	20.8	102 E	25	84	4 21	20 40.48	-2 36.8	1.296	1.490	41.6	20.7	80 W	34*	64*
11 22	23 1.85	-19 16.9	1.411	1.845	31.9	20.9	99 E	26	83	5 1	21 10.04	-2 40.5	1.176	1.437	44.0	20.4	82 W	33*	65*
11 27	23 9.26	-18 4.9	1.473	1.859	31.8	21.0	96 E	27	81*	5 11	21 42.17	-2 58.4	1.063	1.385	46.5	20.2	84 W	32*	66*
12 2	23 16.88	-16 51.8	1.535	1.873	31.7	21.1	93 E	28	78*	5 21	22 17.60	-3 35.7	0.960	1.335	49.1	20.0	85 W	31*	67*
12 7	23 24.68	-15 37.7	1.599	1.888	31.5	21.2	91 E	29	75*	5 31	22 57.06	-4 37.7	0.868	1.288	51.7	19.8	86 W	29*	69*
12 12	23 32.64	-14 22.9	1.664	1.902	31.2	21.3	88 E	31	71*	6 10	23 41.08	-6 6.8	0.793	1.245	54.5	19.6	86 W	26*	70*
12 17	23 40.75	-13 7.5	1.729	1.917	30.8	21.4	85 E	32	68*	6 15	0 4.82	-7 1.0	0.762	1.225	55.8	19.5	86 W	25*	71*
<b>480822</b> 1998 YM <sub>4</sub>										6 20	0 29.57	-8 0.2	0.737	1.206	57.1	19.4	85 W	23*	72*
3 12	18 50.91	-26 45.6	0.698	1.003	68.8	21.3	70 W	15*	64*	6 25	0 55.16	-9 3.0	0.717	1.189	58.4	19.4	85 W	22*	72*
3 14	19 8.72	-26 24.6	0.684	0.976	71.1	21.3	68 W	14*	62*	6 30	1 21.31	-10 7.4	0.704	1.173	59.5	19.3	84 W	20*	73*
3 16	19 27.09	-25 54.2	0.673	0.949	73.5	21.3	66 W	13*	60*	7 5	1 47.71	-11 11.0	0.695	1.159	60.5	19.3	83 W	19*	73*
3 18	19 45.87	-25 13.7	0.665	0.921	75.8	21.3	64 W	12*	58*	7 10	2 14.01	-12 11.6	0.693	1.147	61.3	19.3	82 W	18*	73*
3 20	20 4.91	-24 22.9	0.659	0.893	78.2	21.3	61 W	12*	55*	7 15	2 39.84	-13 7.5	0.695	1.137	62.0	19.3	81 W	17*	73*
3 22	20 24.05	-23 22.0	0.657	0.865	80.6	21.3	59 W	11*	53*	7 20	3 4.88	-13 57.6	0.702	1.129	62.4	19.3	80 W	16*	73*
3 24	20 43.11	-22 11.5	0.658	0.836	82.8	21.3	56 W	10*	50*	7 25	3 28.88	-14 41.2	0.713	1.124	62.5	19.3	79 W	16*	72*
3 26	21 1.94	-20 52.2	0.662	0.807	84.9	21.3	54 W	9*	48*	7 30	3 51.64	-15 18.3	0.727	1.120	62.5	19.4	78 W	16*	72*
3 28	21 20.39	-19 25.4	0.669	0.778	86.8	21.3	51 W	9*	45*	8 9	4 33.17	-16 14.4	0.760	1.120	61.8	19.5	77 W	16*	70*
3 30	21 38.35	-17 52.4	0.680	0.749	88.5	21.4													

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	$45^\circ$	$-26^\circ$
<b>241662 2000 KO<sub>44</sub></b>										<b>106577 2000 WB<sub>95</sub></b>									
<i>(continuation)</i>										<i>(continuation)</i>									
11 22	7 12.80	-14 23.7	0.761	1.515	34.6	19.3	120 W	31	78	8 24	20 35.55	-25 17.3	0.890	1.849	14.3	18.3	153 E	20	89
11 27	7 7.31	-13 9.3	0.747	1.541	31.6	19.3	125 W	32	77	8 29	20 32.10	-25 29.5	0.901	1.835	17.1	18.4	148 E	20	89
12 2	7 0.55	-11 38.5	0.736	1.568	28.5	19.2	131 W	33	76	9 3	20 29.57	-25 36.1	0.916	1.821	19.8	18.5	142 E	19	90
12 7	6 52.68	-9 51.0	0.728	1.595	25.1	19.1	137 W	35	74	9 8	20 28.05	-25 37.1	0.934	1.808	22.2	18.6	137 E	19	90
12 12	6 43.95	-7 46.9	0.726	1.622	21.7	19.0	143 W	37	72	9 18	20 28.25	-25 23.6	0.981	1.782	26.5	18.8	128 E	20	89
12 17	6 34.66	-5 28.1	0.728	1.648	18.4	18.9	148 W	40	69	9 28	20 32.83	-24 50.9	1.037	1.758	29.9	19.0	119 E	20	89
12 22	6 25.19	-2 57.4	0.738	1.675	15.5	18.9	153 W	42	67	10 8	20 41.41	-24 0.9	1.100	1.736	32.4	19.2	111 E	21	88
12 27	6 15.91	-0 19.2	0.754	1.701	13.4	18.9	156 E	45	64	10 18	20 53.44	-22 54.6	1.168	1.715	34.2	19.3	105 E	22	87
1 1	6 7.17	+2 21.8	0.778	1.727	12.7	19.0	157 E	47	62	10 28	21 8.33	-21 32.6	1.239	1.697	35.4	19.5	98 E	23	86
1 6	5 59.26	+5 1.1	0.809	1.753	13.2	19.1	156 E	50	59	11 7	21 25.49	-19 55.3	1.313	1.682	36.1	19.6	93 E	25	82*
1 11	5 52.40	+7 34.9	0.847	1.778	14.7	19.3	153 E	53	56	11 17	21 44.43	-18 3.2	1.388	1.669	36.3	19.7	88 E	27	75*
1 16	5 46.73	+10 0.4	0.891	1.803	16.7	19.5	148 E	55	54	11 27	22 4.72	-15 57.1	1.464	1.658	36.2	19.8	83 E	29	69*
<b>416588 2004 JS<sub>31</sub></b>										<b>216464 1974 PB</b>									
3 12	19 12.08	-23 30.2	1.877	1.715	31.7	21.4	65 W	16*	59*	3 12	19 47.70	-16 25.2	2.176	1.816	26.9	21.5	56 W	19*	49*
3 22	19 39.77	-22 13.5	1.768	1.682	33.5	21.3	69 W	16*	63*	3 22	20 13.43	-15 14.9	2.062	1.778	28.9	21.4	60 W	19*	53*
4 1	20 7.24	-20 36.0	1.661	1.651	35.1	21.1	72 W	17*	66*	4 1	20 39.26	-13 51.3	1.951	1.741	30.7	21.3	63 W	20*	56*
4 11	20 34.34	-18 38.6	1.559	1.622	36.7	21.0	75 W	18*	69*	4 11	21 5.14	-12 15.7	1.842	1.707	32.5	21.2	66 W	20*	59*
4 21	21 0.97	-16 22.5	1.461	1.594	38.1	20.9	78 W	20*	71*	4 21	21 31.05	-10 29.5	1.738	1.674	34.2	21.0	69 W	21*	62*
5 1	21 26.98	-13 49.5	1.369	1.570	39.4	20.7	81 W	22*	73*	5 1	21 56.95	-8 34.9	1.637	1.644	35.8	20.9	72 W	22*	64*
5 11	21 52.29	-11 2.0	1.282	1.548	40.5	20.6	84 W	24*	73*	5 11	22 22.83	-6 34.2	1.541	1.616	37.2	20.8	75 W	24*	65*
5 21	22 16.82	-8 2.6	1.201	1.529	41.4	20.4	87 W	27*	72*	5 21	22 48.66	-4 30.1	1.450	1.591	38.5	20.7	78 W	26*	66*
5 31	22 40.44	+4 54.8	1.125	1.514	42.1	20.3	90 W	31*	69	5 31	23 14.38	-2 25.8	1.364	1.570	39.7	20.5	81 W	28*	66*
6 10	23 3.04	+1 42.3	1.054	1.502	42.5	20.1	93 W	35*	66	6 10	23 39.92	-0 25.0	1.284	1.552	40.6	20.4	84 W	31*	64*
6 20	23 24.46	+1 31.3	0.988	1.494	42.5	20.0	96 W	40*	62	6 20	0 5.17	+1 29.0	1.208	1.539	41.3	20.3	87 W	35*	63
6 30	23 44.44	+4 41.3	0.927	1.490	42.2	19.8	100 W	45*	59	6 30	0 29.93	+3 12.0	1.137	1.529	41.7	20.1	90 W	38*	61
7 5	23 53.80	+6 13.6	0.898	1.490	41.9	19.8	102 W	48*	58	7 10	0 53.96	+4 40.4	1.071	1.524	41.8	20.0	94 W	43*	59
7 10	0 2.69	+7 43.5	0.870	1.490	41.4	19.7	104 W	50*	56	7 20	1 16.93	+5 50.7	1.009	1.522	41.4	19.9	97 W	46*	58
7 15	0 11.05	+9 10.3	0.843	1.492	40.8	19.6	106 W	53*	55	7 30	1 38.38	+6 39.5	0.950	1.526	40.6	19.7	102 W	50*	57
7 20	0 18.81	+10 33.5	0.817	1.495	40.1	19.5	109 W	55*	53	8 9	1 57.82	+7 4.5	0.896	1.533	39.3	19.6	107 W	52*	57
7 25	0 25.90	+11 52.3	0.792	1.498	39.2	19.4	111 W	57*	52	8 19	2 14.63	+7 4.1	0.846	1.545	37.3	19.4	112 W	52	57
7 30	0 32.24	+13 6.1	0.768	1.503	38.1	19.3	114 W	58	51	8 29	2 28.11	+6 37.4	0.800	1.561	34.6	19.2	119 W	52	57
8 4	0 37.78	+14 14.4	0.746	1.508	36.8	19.2	117 W	59	50	9 8	2 37.66	+5 45.9	0.761	1.580	31.0	19.0	126 W	51	58
8 9	0 42.44	+15 16.4	0.725	1.515	35.3	19.2	120 W	60	49	9 18	2 42.71	+4 32.9	0.730	1.604	26.5	18.8	135 W	50	59
8 14	0 46.12	+16 11.5	0.705	1.522	33.6	19.1	124 W	61	48	9 23	2 43.45	+3 50.1	0.718	1.616	24.0	18.7	139 W	49	60
8 19	0 48.76	+16 58.7	0.687	1.530	31.6	19.0	128 W	62	47	9 28	2 43.05	+3 4.9	0.709	1.630	21.2	18.7	144 W	48	61
8 24	0 50.31	+17 37.2	0.670	1.540	29.4	18.9	132 W	63	46	10 3	2 41.56	+2 18.5	0.704	1.644	18.4	18.6	149 W	47	62
8 29	0 50.76	+18 6.2	0.656	1.549	27.0	18.7	136 W	63	46	10 8	2 39.10	+1 32.8	0.703	1.659	15.5	18.5	154 W	47	62
9 3	0 50.12	+18 25.1	0.645	1.560	24.4	18.6	140 W	63	46	10 13	2 35.82	+0 49.2	0.706	1.674	12.7	18.4	158 W	46	63
9 8	0 48.46	+18 33.3	0.636	1.572	21.5	18.5	145 W	64	45	10 18	2 31.92	+0 9.7	0.714	1.690	10.3	18.4	162 W	45	64
9 13	0 45.87	+18 30.5	0.630	1.584	18.5	18.4	150 W	64	45	10 23	2 27.65	-0 24.1	0.726	1.707	8.6	18.4	165 W	45	64
9 18	0 42.52	+18 16.7	0.628	1.597	15.4	18.4	155 W	63	46	10 28	2 23.28	-0 50.9	0.744	1.724	8.2	18.4	166 W	44	65
9 23	0 38.64	+17 52.5	0.630	1.610	12.4	18.3	160 W	63	46	11 2	2 19.04	-1 9.6	0.766	1.742	9.1	18.5	166 E	44	65
9 28	0 34.50	+17 19.3	0.637	1.624	9.7	18.2	164 W	62	47	11 7	2 15.14	-1 19.9	0.794	1.760	10.8	18.7	161 E	44	65
10 3	0 30.36	+16 39.0	0.648	1.639	7.8	18.2	167 E	62	47	11 17	2 9.03	-1 15.3	0.864	1.797	15.1	19.1	152 E	44	65
10 8	0 26.47	+15 53.5	0.664	1.654	7.3	18.2	168 E	61	48	11 27	2 5.94	-0 40.0	0.952	1.835	19.2	19.5	142 E	44	65
10 13	0 23.05	+15 5.2	0.684	1.669	8.5	18.4	166 E	60	49	12 7	2 6.12	+0 19.6	1.056	1.874	22.5	19.9	133 E	45	64
10 18	0 20.29	+14 16.3	0.709	1.685	10.6	18.6	162 E	59	50	12 12	2 7.39	+0 56.3	1.114	1.894	23.8	20.0	129 E	46	63
10 23	0 18.33	+13 29.1	0.740	1.702	13.0	18.8	157 E	58	51	12 17	2 9.40	+1 36.8	1.174	1.915	25.0	20.2	125 E	47	62
10 28	0 17.25	+12 45.4	0.774	1.718	15.4	19.0	153 E	58	51	12 22	2 12.11	+2 20.1	1.237	1.935	25.9	20.4	121 E	47	62
11 2	0 17.08	+12 6.5	0.813	1.735	17.8	19.2	148 E	57	52	12 27	2 15.46	+3 5.8	1.303	1.955	26.7	20.5	117 E	48	61
11 7	0 17.80	+11 33.3	0.857	1.753	19.9	19.4	143 E	57	52	1 1	2 19.39	+3 53.2	1.371	1.976	27.3	20.7	113 E	49	60
11 17	0 21.77	+10 45.4	0.954	1.788	23.5	19.8	134 E	56	53	1 6	2 23.85	+4 41.8	1.441	1.996	27.7	20.8	109 E	50	59*
11 27	0 28.76	+10 22.7	1.065	1.824	26.1	20.1	126 E	55	54	1 11	2 28.79	+5 31.1	1.513	2.017	28.0	21.0	106 E	51	58*
12 7	0 38.24	+10 22.9	1.187	1.861	28.0	20.5	118 E	55	54	1 16	2 34.17	+6 20.9	1.587	2.038	28.1	21.1	102 E	51	57*
12 17	0 49.71	+10 42.4	1.318	1.899	29.1	20.8	110 E	56	53*	<b>159402 1999 AP<sub>10</sub></b>									
12 27	1 2.80	+11 17.7	1.456	1.936	29.6	21.0	103 E	56	51*	3 12	19 49.29	-27 41.2	2.917	2.530	19.4	21.4	58 W	9*	51*
1 6	1 17.14	+12 5.0	1.599	1.973	29.7	21.3	97 E	57	49*	3 22	20 6.48	-27 8.3	2.743	2.469	21.2	21.3	64 W	9*	57*
<b>106577 2000 WB<sub>95</sub></b>										4 1	20 23.43	-26 31.5	2.563	2.407	22.9	21.1	70 W	10*	63*
3 12	19 15.04	-22 40.9	2.619	2.365	22.3	21.4	64 W	16*	58*	4 11	20 4.73	-21 17.6	2.177	2.274	25.9	21.1	82 W	19*	76*
3 22	19 32.31	-22 16.6	2.474	2.335	23.7	21.3	70 W	17*	64*	4 21	20 19.61	-20 46.0	2.027	2.243	26.6	20.9	89 W	20*	82*
4 1	19 48.92	-21 48.3	2.327	2.305	24.9	21.2	76 W	18*	70*	5 1	20 33.35	-20 15.7	1.879	2.211	27.0	20.7	95 W	21*	84
4 11	20 7.23	-21 17.6	2.177	2.274	25.9	21.1	82 W	19*	76*	5 11	20 45.75	-19 49.1	1.733	2.179	27.0	20.5	102 W	22*	84
4 21	20 19.61	-20 46.0	2.027																

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°	2020	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°
<b>159402 1999 AP<sub>10</sub> (continuation)</b>									<b>394783 2008 HD<sub>3</sub></b>								
8 4	23 5.59	-19 20.2	0.539	1.504	20.1	16.6	149 W	26 83	3 12	20 10.08	-73 15.1	0.659	1.051	66.5	21.3	76 W	- 36*
8 9	23 7.56	-19 10.5	0.487	1.465	18.1	16.3	153 W	26 83	3 14	20 0.91	-73 12.5	0.643	1.063	66.1	21.3	78 W	- 37*
8 14	23 8.76	-18 57.8	0.439	1.427	16.0	16.0	157 W	26 83	3 16	19 51.09	-73 8.7	0.625	1.074	65.6	21.3	80 W	- 38*
8 19	23 9.13	-18 40.0	0.393	1.390	13.8	15.6	161 W	26 83	3 18	19 40.52	-73 3.5	0.607	1.085	65.0	21.2	81 W	- 39*
8 24	23 8.62	-18 14.1	0.351	1.353	11.4	15.2	165 W	27 82	3 20	19 29.11	-72 56.4	0.589	1.097	64.4	21.1	83 W	- 40*
8 29	23 7.23	-17 35.9	0.312	1.316	9.3	14.8	168 W	27 82	3 22	19 16.77	-72 46.9	0.570	1.108	63.7	21.1	85 W	- 41*
9 3	23 4.95	-16 40.1	0.275	1.281	7.8	14.4	170 W	28 81	3 24	19 3.41	-72 34.2	0.551	1.119	62.9	21.0	88 W	- 42*
9 8	23 1.78	-15 19.9	0.242	1.247	7.8	14.1	170 E	30 79	3 26	18 48.99	-72 17.2	0.532	1.130	62.0	20.9	90 W	- 43*
9 10	23 0.27	-14 39.0	0.229	1.233	8.4	13.9	170 E	30 79	3 28	18 33.48	-71 55.0	0.512	1.141	61.0	20.8	92 W	- 44*
9 12	22 58.63	-13 51.9	0.217	1.220	9.2	13.8	169 E	31 78	3 30	18 16.89	-71 25.8	0.493	1.151	59.8	20.7	95 W	- 45*
9 14	22 56.85	-12 58.0	0.205	1.207	10.2	13.7	168 E	32 77	4 1	17 59.32	-70 48.0	0.473	1.162	58.4	20.6	98 W	- 45
9 16	22 54.96	-11 56.2	0.194	1.195	11.5	13.6	166 E	33 76	4 2	17 50.21	-70 25.2	0.463	1.167	57.7	20.5	99 W	- 46
9 18	22 52.96	-10 45.4	0.183	1.183	12.9	13.5	165 E	34 75	4 3	17 40.92	-69 59.5	0.453	1.172	56.9	20.5	101 W	- 46
9 20	22 50.87	-9 24.3	0.173	1.171	14.4	13.4	163 E	36 73	4 4	17 31.48	-69 30.5	0.443	1.178	56.1	20.4	102 W	- 46
9 22	22 48.69	-7 51.7	0.162	1.159	16.0	13.3	161 E	37 72	4 5	17 21.92	-68 58.0	0.434	1.183	55.1	20.4	104 W	- 47
9 24	22 46.44	-6 5.7	0.153	1.148	17.8	13.2	160 E	39 70	4 6	17 12.28	-68 21.6	0.424	1.188	54.2	20.3	106 W	- 48
9 26	22 44.13	-4 4.7	0.144	1.137	19.7	13.2	158 E	41 68	4 7	17 2.59	-67 41.1	0.415	1.193	53.2	20.2	107 W	- 48
9 28	22 41.77	-1 46.5	0.135	1.126	21.6	13.1	156 E	43 66	4 8	16 52.91	-66 56.0	0.405	1.198	52.1	20.2	109 W	- 49
9 30	22 39.35	+0 51.2	0.126	1.116	23.7	13.0	153 E	46 63	4 9	16 43.27	-66 6.1	0.396	1.203	50.9	20.1	111 W	- 50
10 2	22 36.87	+3 50.9	0.118	1.106	26.0	12.9	151 E	49 60	4 10	16 33.71	-65 11.0	0.387	1.208	49.6	20.0	113 W	- 51
10 4	22 34.33	+7 15.1	0.111	1.097	28.4	12.8	149 E	52 57	4 11	16 24.27	-64 10.5	0.378	1.213	48.3	19.9	115 W	- 52
10 6	22 31.73	+11 6.5	0.104	1.088	31.0	12.7	146 E	56 53	4 12	16 14.99	-63 4.1	0.370	1.218	46.9	19.8	117 W	- 53
10 8	22 29.04	+15 27.1	0.098	1.079	33.9	12.6	143 E	60 49	4 13	16 5.90	-61 51.7	0.362	1.223	45.4	19.8	120 W	- 54
10 10	22 26.25	+20 18.4	0.093	1.071	36.9	12.6	140 E	65 44	4 14	15 57.03	-60 33.0	0.354	1.228	43.8	19.7	122 W	- 55
10 12	22 23.34	+25 40.1	0.089	1.064	40.3	12.6	136 E	71 38	4 15	15 48.41	-59 7.7	0.346	1.233	42.1	19.6	124 W	- 57
10 14	22 20.25	+31 30.0	0.085	1.057	43.8	12.6	133 E	77 32	4 16	15 40.05	-57 35.8	0.339	1.237	40.4	19.5	127 W	- 58
10 16	22 16.94	+37 43.3	0.083	1.051	47.5	12.6	129 E	83 26	4 17	15 31.99	-55 57.0	0.332	1.242	38.5	19.4	130 W	- 60
10 18	22 13.31	+44 12.3	0.081	1.045	51.3	12.6	125 E	89 20	4 18	15 24.22	-54 11.3	0.326	1.247	36.5	19.3	132 W	- 62
10 19	22 11.35	+47 29.8	0.081	1.042	53.2	12.7	123 E	87 16	4 19	15 16.77	-52 18.9	0.320	1.252	34.5	19.2	135 W	- 64
10 20	22 9.24	+50 47.6	0.081	1.040	55.1	12.7	121 E	84 13	4 20	15 9.63	-50 19.7	0.314	1.256	32.3	19.1	138 W	- 66
10 21	22 6.97	+54 4.4	0.081	1.037	56.9	12.8	119 E	81 10	4 21	15 2.81	-48 14.2	0.310	1.261	30.1	19.1	141 W	- 68
10 22	22 4.49	+57 18.9	0.081	1.035	58.6	12.8	117 E	78 7	4 23	14 50.13	-43 45.4	0.302	1.270	25.4	18.9	147 W	1 72
10 23	22 1.73	+60 29.9	0.082	1.033	60.2	12.9	116 E	74 3	4 25	14 38.70	-38 56.9	0.297	1.279	20.5	18.7	154 W	6 77
10 24	21 58.61	+63 36.3	0.083	1.031	61.8	13.0	114 E	71 1	4 27	14 28.45	-33 55.0	0.295	1.288	15.7	18.6	160 W	11 82
10 25	21 55.03	+66 37.3	0.084	1.029	63.3	13.0	112 E	68 -	4 29	14 19.32	-28 47.0	0.296	1.296	11.1	18.4	166 E	16 87
10 26	21 50.80	+69 32.1	0.086	1.028	64.6	13.1	111 E	65 -	5 1	14 11.21	-23 40.9	0.301	1.305	7.8	18.3	170 E	21 88
10 27	21 45.68	+72 20.1	0.087	1.026	65.8	13.2	110 E	63 -	5 2	14 7.52	-21 10.9	0.304	1.309	7.0	18.3	171 E	24 85
10 28	21 39.25	+75 0.6	0.089	1.025	66.9	13.3	108 E	60 -	5 3	14 4.05	-18 44.1	0.308	1.313	7.2	18.4	171 E	26 83
10 29	21 30.86	+77 33.4	0.091	1.024	67.9	13.3	107 E	57 -	5 4	14 0.80	-16 21.1	0.313	1.317	8.1	18.4	169 E	29 80
10 30	21 19.27	+79 57.9	0.093	1.023	68.8	13.4	106 E	55 -	5 5	13 57.74	-14 2.6	0.318	1.321	9.5	18.5	167 E	31 78
10 31	21 2.06	+82 13.4	0.095	1.022	69.5	13.5	105 E	53 -	5 6	13 54.88	-11 49.0	0.325	1.325	11.2	18.7	165 E	33 76
11 1	20 33.82	+84 18.0	0.098	1.021	70.1	13.6	105 E	51 -	5 7	13 52.20	-9 40.7	0.331	1.329	13.0	18.8	163 E	35 74
11 2	19 40.60	+86 6.9	0.100	1.021	70.6	13.6	104 E	49*	5 8	13 49.70	-7 37.9	0.339	1.333	14.8	18.9	160 E	37 72
11 3	17 47.98	+87 23.4	0.103	1.021	71.0	13.7	103 E	47*	5 9	13 47.36	-5 40.7	0.347	1.337	16.5	19.0	158 E	39 70
11 4	14 54.34	+87 29.0	0.106	1.020	71.4	13.8	103 E	45*	5 10	13 45.17	-3 49.3	0.355	1.341	18.3	19.1	155 E	41 68
11 5	12 59.04	+86 28.3	0.109	1.020	71.6	13.8	102 W	47*	5 11	13 43.14	-2 3.5	0.364	1.345	19.9	19.2	153 E	43 66
11 6	12 4.54	+85 5.4	0.112	1.021	71.7	13.9	102 W	49*	5 13	13 39.48	+1 11.3	0.383	1.352	23.0	19.5	148 E	46 63
11 7	11 35.73	+83 38.7	0.114	1.021	71.7	14.0	102 W	50*	5 15	13 36.33	+4 4.9	0.404	1.359	25.8	19.7	144 E	49 60
11 8	11 18.21	+82 13.4	0.118	1.021	71.7	14.0	102 W	52*	5 17	13 33.64	+6 38.8	0.426	1.367	28.2	19.9	140 E	52 57
11 9	11 6.41	+80 51.2	0.121	1.022	71.6	14.1	102 W	53*	5 19	13 31.36	+8 54.8	0.450	1.374	30.4	20.1	137 E	54 55
11 10	10 57.83	+79 32.5	0.124	1.023	71.4	14.1	102 W	55*	5 21	13 29.47	+10 54.9	0.474	1.380	32.3	20.2	133 E	56 53
11 11	10 51.24	+78 17.5	0.127	1.024	71.1	14.2	102 W	56*	5 23	13 27.93	+12 40.7	0.499	1.387	34.0	20.4	130 E	58 51
11 12	10 45.95	+77 6.1	0.130	1.025	70.8	14.2	102 W	57*	5 25	13 26.70	+14 13.8	0.525	1.393	35.5	20.6	127 E	59 50
11 13	10 41.54	+75 58.2	0.133	1.026	70.4	14.3	102 W	59*	5 27	13 25.76	+15 35.8	0.551	1.400	36.7	20.7	124 E	61 48
11 14	10 37.75	+74 53.7	0.137	1.028	70.0	14.3	103 W	60*	5 29	13 25.08	+16 48.0	0.578	1.406	37.8	20.9	122 E	62 47
11 15	10 34.43	+73 52.3	0.140	1.029	69.6	14.3	103 W	61*	5 31	13 24.65	+17 51.5	0.605	1.412	38.8	21.0	119 E	63 46
11 16	10 31.43	+72 53.8	0.143	1.031	69.1	14.4	103 W	62*	6 2	13 24.44	+18 47.4	0.632	1.418	39.6	21.1	117 E	64 45
11 17	10 28.70	+71 58.1	0.146	1.033	68.5	14.4	104 W	63*	6 4	13 24.43	+19 36.5	0.660	1.423	40.3	21.3	115 E	65 44
11 18	10 26.15	+71 5.0	0.150	1.035	67.9	14.4	104 W	64*	6 6	13 24.61	+20 19.7	0.688	1.429	40.9	21.4	113 E	65 44
11 19	10 23.76	+70 14.3	0.153	1.037	67.3	14.5	104 W	65*	6 8	13 24.96	+20 57.5	0.715	1.434	41.4	21.5	111 E	66* 43
11 20	10 21.48	+69 25.9	0.156	1.040	66.6	14.5	105 W	66 -	<b>354374 2003 RR<sub>8</sub></b>								
11 21	10 19.30	+68 39.6	0.159	1.042	66.0	14.5	106 W	66 -	3 12	20 44.06	-17 26.5	2.472	1.870	21.2	21.5	43 W	11* 37*
11 22	10 17.17	+67 55.3	0.163	1.045	65.2	14.6	106 W	67 -	3 22	21 8.97	-15 15.5	2.361	1.824	23.3	21.4	46 W	12* 40*
11 23	10 15.10	+67 12.9	0.166	1.048	64.5	14.6	107 W	68 -	4 1	21 33.93	-12 48.3	2.251	1.779	25.4	21.3	50 W	13* 44*
11 24	10 13.07	+															

EPHEMERIDES OF NEAS AND SOME UNUSUAL MINOR PLANETS

20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°	20/21	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\beta$	$V$	$\psi$	45°-26°	
<b>354374</b> 2003 RR <sub>8</sub> (continuation)									<b>508907</b> 2003 XH <sub>14</sub> (continuation)									
	h	m	s	°	'	°	'	°		h	m	s	°	'	°	'	°	
7 25	2 35.02	+24 10.2	1.329	1.502	41.5	20.2	78 W	55* 40*	11 27	5 33.04	+57 35.2	0.670	1.564	23.6	18.0	141 W	77 6	
7 30	2 48.63	+25 25.1	1.304	1.504	41.6	20.2	80 W	58* 39*	11 29	5 29.81	+56 58.2	0.669	1.569	22.6	18.0	142 W	78 7	
8 4	3 2.09	+26 34.6	1.280	1.508	41.7	20.2	81 W	60* 37	12 1	5 26.53	+56 18.3	0.668	1.575	21.6	18.0	144 W	79 8	
8 9	3 15.38	+27 38.5	1.256	1.513	41.7	20.1	83 W	63* 36	12 3	5 23.23	+55 35.3	0.667	1.581	20.7	17.9	145 W	79 8	
8 14	3 28.41	+28 36.7	1.233	1.520	41.6	20.1	85 W	66* 35	12 5	5 19.94	+54 49.6	0.668	1.587	19.8	17.9	147 W	80 9	
8 19	3 41.11	+29 29.2	1.209	1.528	41.4	20.1	86 W	68* 35	12 7	5 16.72	+54 1.1	0.669	1.594	18.9	17.9	148 W	81 10	
8 24	3 53.40	+30 16.0	1.186	1.537	41.1	20.0	88 W	71* 34	12 9	5 13.58	+53 10.0	0.671	1.600	18.2	17.9	150 W	82 11	
8 29	4 5.20	+30 57.2	1.163	1.548	40.7	20.0	91 W	73* 33	12 11	5 10.57	+52 16.5	0.674	1.606	17.5	17.9	151 E	83 12	
9 3	4 16.44	+31 33.1	1.140	1.559	40.2	19.9	93 W	75* 32	12 13	5 7.71	+51 21.0	0.677	1.613	16.8	17.9	152 E	84 13	
9 8	4 27.03	+32 3.9	1.117	1.572	39.7	19.9	95 W	77* 32	12 15	5 5.02	+50 23.6	0.682	1.619	16.3	17.9	152 E	85 14	
9 13	4 36.87	+32 29.9	1.094	1.586	38.9	19.8	98 W	77* 32	12 17	5 2.52	+49 24.6	0.687	1.626	16.0	17.9	153 E	86 15	
9 18	4 45.87	+32 51.4	1.071	1.601	38.1	19.8	101 W	78 31	12 22	4 57.22	+46 52.5	0.704	1.643	15.6	18.0	153 E	88 17	
9 23	4 53.92	+33 8.7	1.049	1.616	37.1	19.7	104 W	78 31	12 27	4 53.36	+44 17.7	0.727	1.661	16.1	18.1	152 E	89 20	
9 28	5 0.94	+33 22.1	1.026	1.633	35.9	19.7	107 W	78 31	1	1	4 50.93	+41 44.7	0.756	1.680	17.2	18.2	150 E	87 22
10 3	5 6.85	+33 31.7	1.005	1.651	34.5	19.6	111 W	79 30	1	6	4 49.87	+39 17.2	0.790	1.698	18.7	18.4	146 E	84 25
10 8	5 11.57	+33 37.9	0.984	1.669	33.0	19.6	115 W	79 30	1	11	4 50.07	+36 58.1	0.830	1.718	20.4	18.6	142 E	82 27
10 13	5 15.00	+33 40.6	0.964	1.688	31.2	19.5	119 W	79 30	1	16	4 51.41	+34 49.1	0.874	1.737	22.1	18.8	138 E	80 29
10 18	5 17.08	+33 39.8	0.945	1.708	29.2	19.4	123 W	79 30										
10 28	5 17.12	+33 26.5	0.915	1.750	24.6	19.3	133 W	78 31	<b>434677</b> 2006 BZ <sub>7</sub>									
11 7	5 11.90	+32 55.4	0.896	1.793	19.1	19.1	144 W	78 31	3 12	20 54.68	+22 6.4	2.207	1.669	25.1	21.5	46 W	39* 15*	
11 17	5 2.39	+32 3.7	0.893	1.839	12.9	18.9	155 W	77 32	3 17	21 7.08	+24 30.4	2.162	1.647	26.1	21.4	47 W	40* 15*	
									3 22	21 20.06	+26 59.6	2.118	1.624	27.0	21.4	48 W	41* 15*	
11 22	4 56.58	+31 29.9	0.899	1.862	9.8	18.9	161 W	76 33	3 27	21 33.71	+29 33.3	2.077	1.601	27.8	21.3	49 W	42* 15*	
11 27	4 50.47	+30 51.4	0.911	1.886	6.8	18.8	167 W	76 33	4 1	21 48.14	+32 10.5	2.038	1.577	28.6	21.3	49 W	43* 14*	
12 2	4 44.36	+30 9.3	0.929	1.910	4.4	18.7	171 W	75 34	4 6	22 3.47	+34 49.9	2.002	1.553	29.4	21.2	50 W	43* 13*	
12 7	4 38.51	+29 24.7	0.953	1.934	3.9	18.8	172 E	74 35	4 11	22 19.85	+37 29.9	1.970	1.528	30.0	21.2	50 W	44* 12*	
12 12	4 33.18	+28 38.9	0.983	1.958	5.7	19.0	169 W	74 35	4 16	22 37.43	+40 8.7	1.941	1.503	30.7	21.1	50 W	44* 11*	
12 17	4 28.55	+27 53.4	1.020	1.983	8.1	19.2	163 E	73 36	4 21	22 56.37	+42 44.1	1.916	1.477	31.2	21.1	50 W	44* 9*	
12 22	4 24.79	+27 9.5	1.062	2.007	10.6	19.4	158 E	72 37	4 26	23 16.85	+45 13.4	1.894	1.451	31.6	21.0	49 W	43* 8*	
12 27	4 21.96	+26 28.4	1.109	2.032	13.0	19.6	152 E	71 38	5 1	23 39.00	+47 33.8	1.876	1.424	32.0	21.0	48 W	42* 6*	
1	1	4 20.10	+25 50.7	1.162	2.057	15.1	19.8	147 E	71 38	5 6	0 2.94	+49 42.1	1.862	1.397	32.2	20.9	48 W	42* 4*
1	6	4 19.20	+25 16.9	1.220	2.082	17.1	20.0	142 E	70 39	5 11	0 28.72	+51 34.9	1.851	1.370	32.4	20.9	47 W	40* 2*
1	11	4 19.21	+24 47.2	1.283	2.107	18.8	20.2	136 E	70 39	5 16	0 56.26	+53 9.2	1.844	1.342	32.4	20.8	45 W	39* —
1	16	4 20.10	+24 21.7	1.349	2.132	20.2	20.4	132 E	69 40	5 21	1 25.32	+54 21.9	1.839	1.315	32.3	20.8	44 W	38* —
									5 26	1 55.49	+55 10.7	1.836	1.287	32.2	20.7	43 W	36* —	
3 12	20 54.41	-17 42.4	2.717	2.065	18.2	21.5	41 W	9* 34*	5 31	2 26.22	+55 34.0	1.835	1.259	31.9	20.7	41 W	34* —	
3 22	21 14.66	-15 18.7	2.598	2.022	20.4	21.4	45 W	11* 39*	6 5	2 56.85	+55 31.2	1.835	1.231	31.5	20.6	39 W	33* —	
4 1	21 34.69	-12 41.3	2.474	1.979	22.6	21.3	50 W	13* 43*	6 10	3 26.75	+55 2.9	1.835	1.204	31.0	20.6	38 W	31* —	
4 11	21 54.51	-9 49.9	2.348	1.936	24.7	21.2	54 W	16* 47*	6 15	3 55.40	+54 10.7	1.836	1.177	30.5	20.5	36 W	29* —	
4 21	22 14.20	-6 44.0	2.220	1.893	26.8	21.1	58 W	18* 51*	6 20	4 22.42	+52 56.6	1.837	1.151	29.9	20.4	34 W	28* —	
5 1	22 33.78	-3 23.4	2.093	1.851	28.8	21.0	62 W	21* 54*	6 25	4 47.58	+51 22.9	1.836	1.125	29.3	20.4	33 W	26* —	
5 11	22 53.35	+0 12.3	1.968	1.809	30.7	20.9	66 W	25* 55*	6 30	5 10.84	+49 31.7	1.834	1.100	28.7	20.3	31 W	25* —	
5 21	23 13.02	+4 3.3	1.845	1.768	32.4	20.7	70 W	29* 56*	7 5	5 32.26	+47 25.1	1.830	1.076	28.1	20.2	30 W	24* —	
5 31	23 32.88	+8 9.7	1.727	1.728	34.1	20.6	73 W	34* 54*	7 10	5 51.99	+45 4.7	1.823	1.053	27.7	20.2	29 W	23* —	
6 10	23 53.08	+12 30.8	1.615	1.689	35.7	20.4	76 W	39* 51*	7 15	6 10.23	+42 31.8	1.814	1.032	27.4	20.1	28 W	22* —	
6 20	0 13.80	+17 5.9	1.509	1.653	37.1	20.3	79 W	46* 47	7 20	6 27.16	+39 47.1	1.803	1.013	27.4	20.0	27 W	21* 1*	
6 30	0 35.21	+21 52.8	1.411	1.618	38.5	20.1	82 W	53* 42	7 25	6 42.99	+36 51.4	1.788	0.995	27.5	20.0	27 W	21* 3*	
7 5	0 46.26	+24 19.7	1.365	1.602	39.1	20.1	83 W	56* 40	7 30	6 57.90	+33 44.6	1.770	0.980	28.0	19.9	27 W	20* 6*	
7 10	0 57.57	+26 48.3	1.321	1.586	39.6	20.0	84 W	60* 37	8 4	7 12.09	+30 27.0	1.750	0.967	28.7	19.9	27 W	20* 8*	
7 15	1 9.19	+29 17.9	1.280	1.571	40.2	19.9	86 W	64* 35	8 9	7 25.74	+26 58.5	1.727	0.957	29.7	19.9	28 W	20* 11*	
7 20	1 21.14	+31 48.0	1.240	1.557	40.7	19.8	87 W	68* 32	8 14	7 38.99	+23 18.8	1.702	0.950	30.9	19.9	29 W	20* 13*	
7 25	1 33.44	+34 17.5	1.203	1.544	41.1	19.8	88 W	71* 30	8 19	7 52.01	+19 28.0	1.676	0.945	32.3	19.9	30 W	19* 16*	
7 30	1 46.15	+36 45.7	1.168	1.531	41.5	19.7	89 W	75* 27	8 24	8 4.93	+15 26.0	1.649	0.944	33.8	19.9	31 W	19* 19*	
8 4	1 59.29	+39 11.5	1.134	1.520	41.9	19.6	90 W	79* 25	8 29	8 17.86	+11 13.1	1.623	0.946	35.2	19.9	33 W	18* 22*	
8 9	2 12.90	+41 34.0	1.103	1.509	42.2	19.5	91 W	82* 22	9 3	8 30.95	+6 50.0	1.598	0.950	36.6	19.9	34 W	18* 24*	
8 14	2 26.99	+43 52.1	1.073	1.500	42.5	19.5	92 W	85* 20	9 8	8 44.31	+2 17.5	1.575	0.958	37.8	19.9	36 W	16* 27*	
8 19	2 41.55	+46 4.9	1.046	1.491	42.7	19.4	93 W	87* 18	9 13	8 58.04	+2 22.7	1.556	0.968	38.9	19.9	37 W	15* 29*	
8 24	2 56.58	+48 11.1	1.019	1.484	42.8	19.4	94 W	87* 16	9 18	9 12.27	-7 8.4	1.541	0.981	39.7	20.0	39 W	13* 32*	
8 29	3 12.04	+50 9.7	0.994	1.478	42.9	19.3	95 W	85 14	9 23	9 27.08	-11 57.0	1.531	0.997	40.2	20.0	40 W	11* 34*	
9 3	3 27.87																	