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Project Kalki—a sky survey with the Schmidt telescope. 2

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Abstract. The region of the sky photographed with the 45cm Schmidt telescope during 1987 March–May and the position of the asteroids detected on these plates are reported in this paper. Out of the 29 asteroids observed four have received new temporary designations from the Minor Planet Centre : 1987 FY1, 1987 FZ1, 1987 HQ2 and 1987 HR2.

Key words : Solar system—asteroids—comets—sky survey

A brief description of the sky survey project for studies of solar system objects with the 45cm Kavalur Schmidt telescope can be found in Rajamohan *et al.* (1987 ≡ Paper 1) of this series. Here we report the measurement of asteroid positions on plates taken during 1987 March–May.

The region of the sky photographed and examined for moving objects is shown in figures 1, 2, 3 and 4. All photographs were obtained on 098–02 plates with an average exposure time of 50 minutes per plate. All the plates were blinked by one of us (PNS). Twentynine asteroids discovered on these plates and their positions were measured as described in paper 1. We list in table 1, the measured coordinates of these asteroids.

Four of the 29 asteroids listed in table 1 have been assigned provisional designations 1987 FY1, 1987 FZ1, 1987 HQ2, and 1987 HR2 by the Minor Planet Centre, Smithsonian Astrophysical Observatory, Cambridge, Massachusettes. A unique number is assigned to a minor planet only after it has been observed at enough oppositions and secure orbital parameters have been derived (Marsden 1985).

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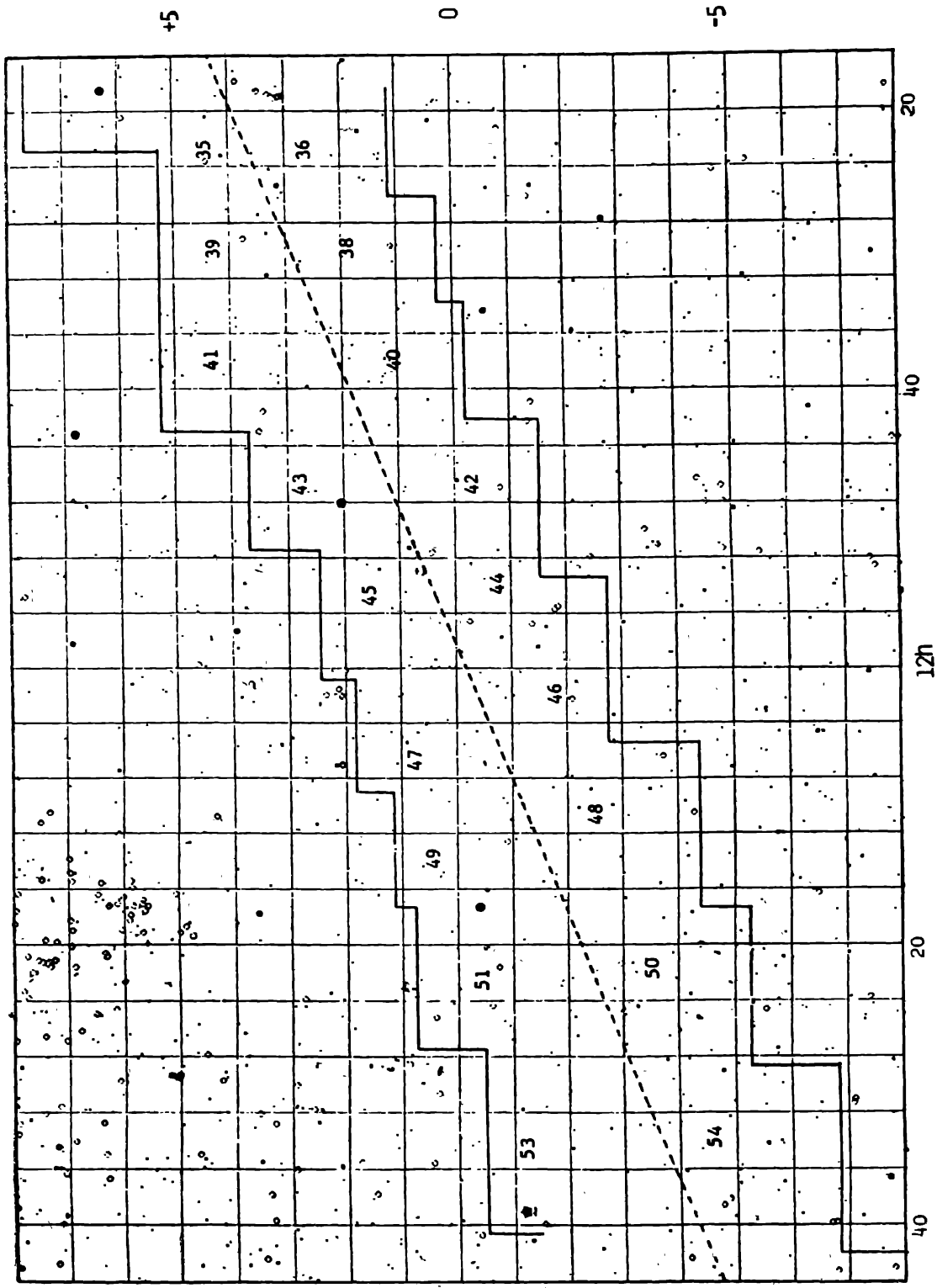

Figure 1. A schematic diagram of the region of the sky photographed during the period 1987 March 22–May 31. The dotted line shows the ecliptic.

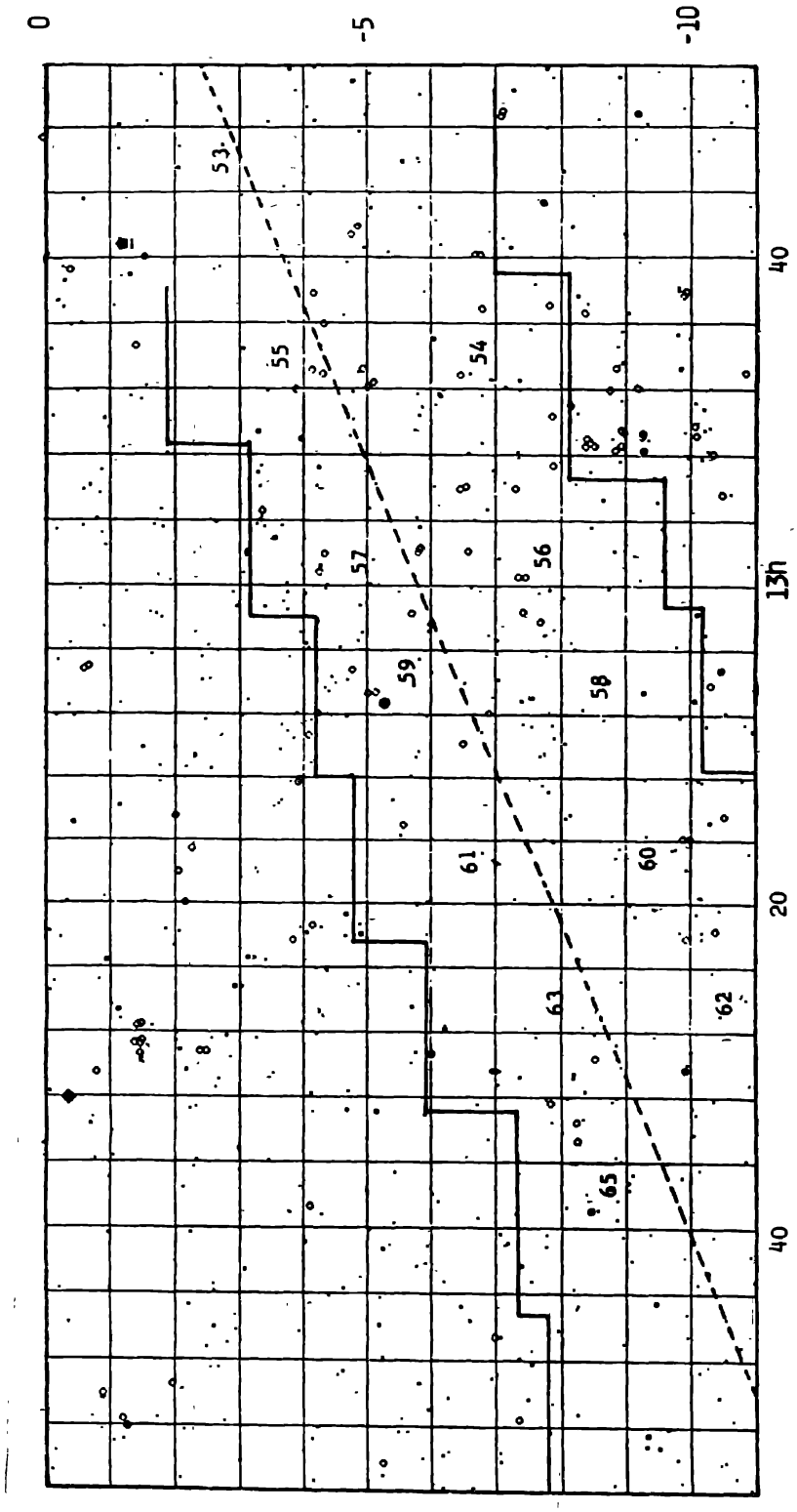

Figure 2. Same as figure 1.

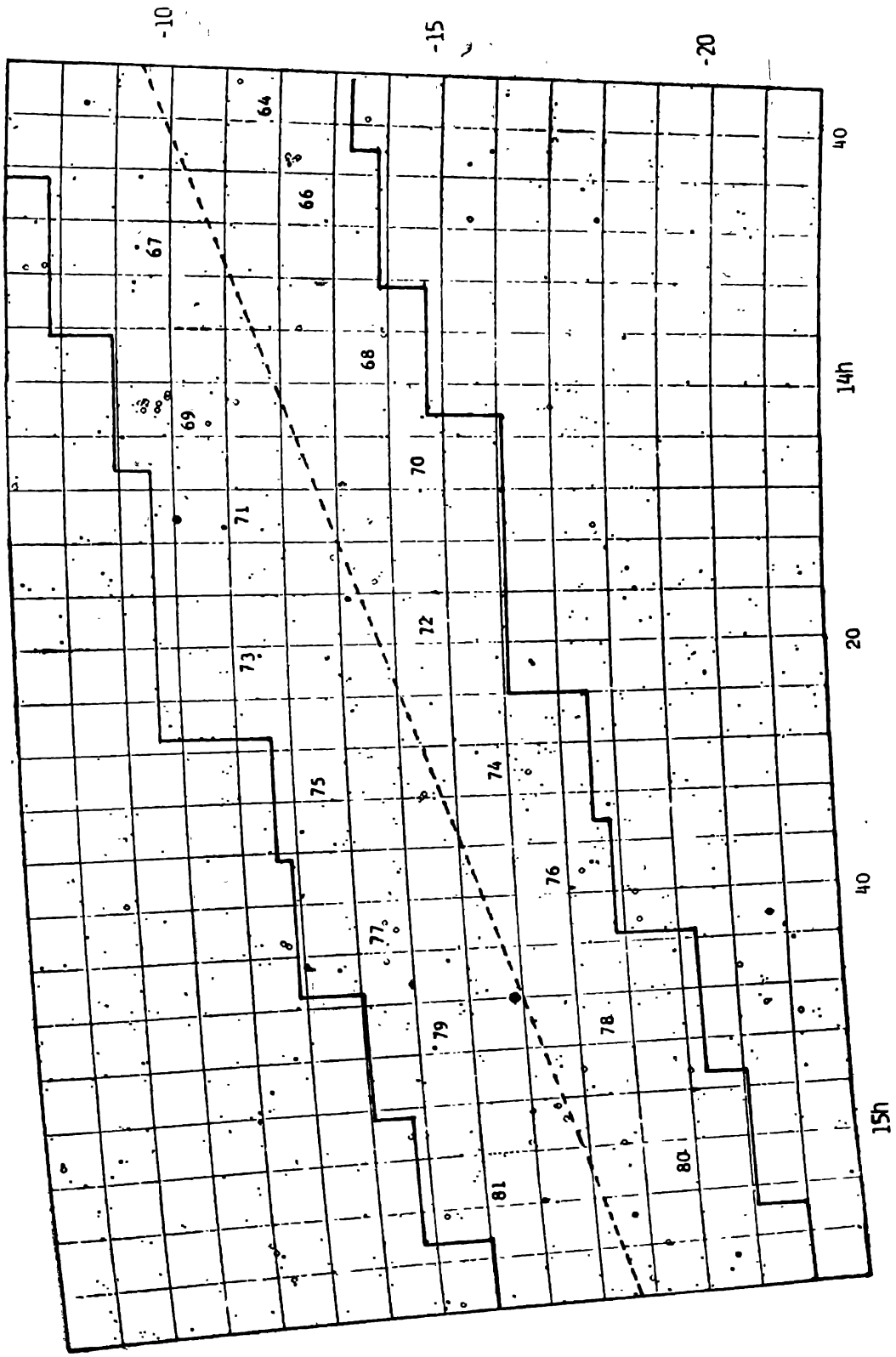

Figure 3. Same as figure 1.

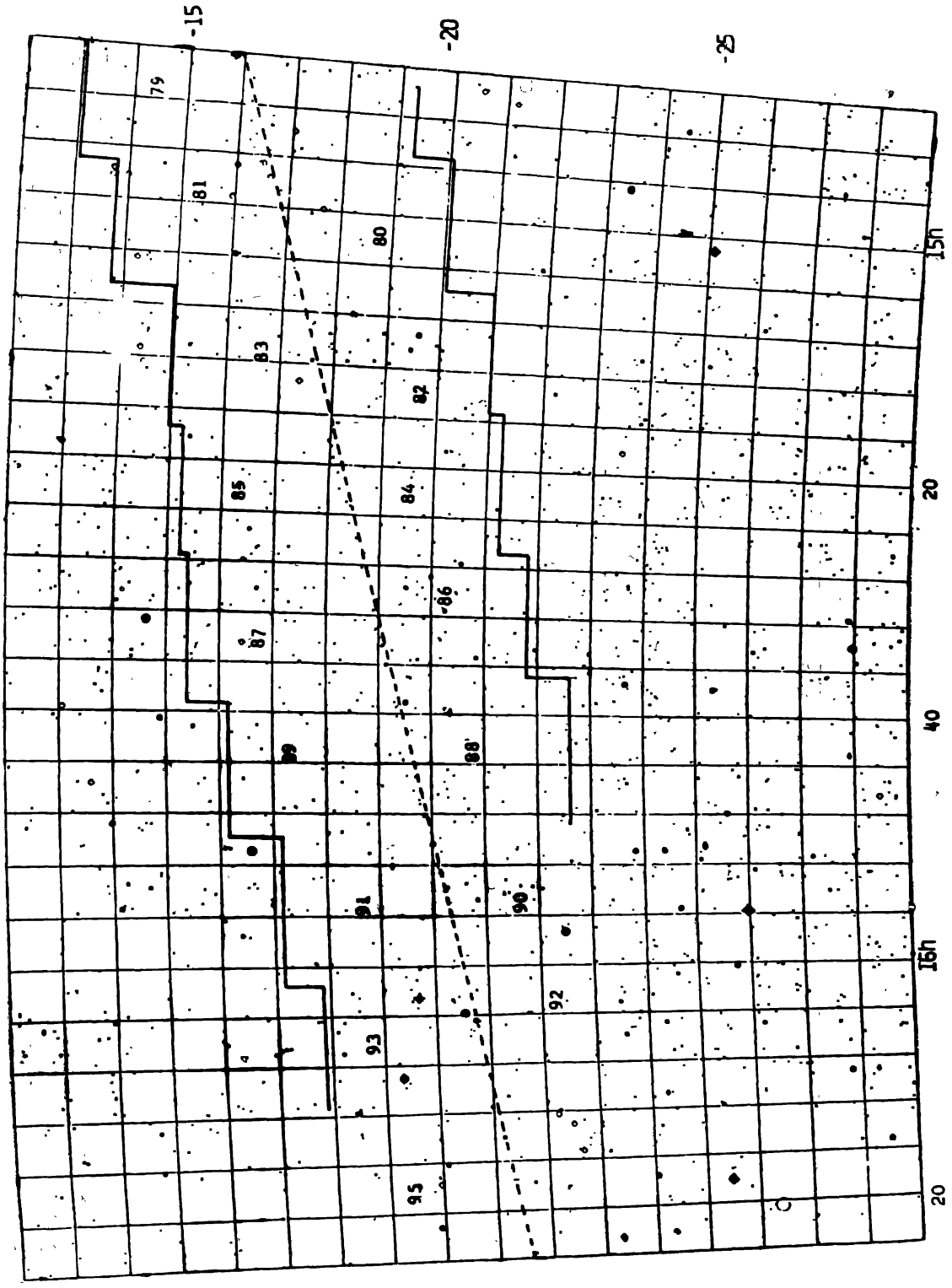

Figure 4. Same as figure 1.

Table 1. (*Continued*)

Asteroid	Plate No.	K-region	Date	Mid exp. UT	Mag.	α 1950			δ 1950		
1	2	3	4	5	6	7			8		
						h	m	s	°	′	″
2022 West	135	31	1987 Mar 23	17 50	16.1	11	0	48.51	+8	19	55.16
	138	31	Mar 24	14 42		11	0	7.76	+8	22	17.90
1987 FY1	133	33	Mar 22	18 50	16.1	11	10	2.76	+5	37	14.85
	135	31	Mar 23	17 50		11	9	24.04	+5	41	37.65
	137	33	Mar 23	20 10		11	9	19.44	+5	42	11.61
	138	31	Mar 24	14 42		11	8	48.83	+5	45	46.97
	151	31	Mar 26	16 00		11	7	28.15	+5	55	1.14
	153	33	Mar 26	18 33*		11	7	23.35	+5	55	35.70
1121 Natascha	133	33	Mar 22	18 50	15.9	11	12	9.90	+6	10	53.21
	135	31	Mar 23	17 50		11	11	19.03	+6	13	56.17
	137	33	Mar 23	20 10		11	11	14.35	+6	14	11.28
	138	31	Mar 24	14 42		11	10	34.64	+6	16	38.32
	151	31	Mar 26	16 00		11	8	50.58	+6	22	32.61
	153	33	Mar 26	18 33*		11	8	44.79	+6	22	53.80
1987 FZ1	135	31	Mar 23	17 50	16.5	11	3	38.93	+7	36	39.40
	138	31	Mar 24	14 42		11	2	53.23	+7	43	45.05
1998 Titius	133	33	Mar 22	18 50	15.8	11	9	19.56	+5	11	37.57
	135	31	Mar 23	17 50		11	8	23.91	+5	13	28.65
	137	33	Mar 23	20 10		11	8	18.67	+5	13	38.45
	138	31	Mar 24	14 42		11	7	35.12	+5	15	6.65
1188 Gothlandia	137	33	Mar 23	20 10	16.2	11	16	57.90	+6	22	6.77
	153	33	Mar 26	18 33*		11	14	6.51	+6	33	46.83
421 Zahrigia	145	34	Mar 25	16 16	16.8	11	15	30.32	+1	55	18.88
	157	34	Mar 27	16 00		11	14	0.19	+2	9	54.25
169 Zelia	139	34	Mar 24	16 05	13.9	11	17	36.43	+4	38	56.62
	140	35	Mar 24	17 16		11	17	33.80	+4	39	9.47
	144	35	Mar 25	14 51		11	16	43.45	+4	42	34.58
	145	34	Mar 25	16 16		11	16	39.76	+4	42	46.76
	157	34	Mar 27	16 00		11	14	50.51	+4	50	1.25
299 Thoria	145	34	Mar 25	16 16	16.0	11	17	15.54	+2	1	12.57
	157	34	Mar 27	16 00		11	15	38.42	+2	12	38.83
436 Patricia	143	38	Mar 24	21 12	15.7	11	27	0.63	+1	26	29.06
	146	36	Mar 25	17 25		11	26	24.42	+1	27	14.91
	158	36	Mar 27	17 5		11	24	40.18	+1	29	17.97
1704 Wachmann	154	40	Mar 26	20 13	15.5	11	39	38.58	+0	10	41.58
	163	40	Mar 28	16 3		11	38	1.94	+0	21	47.87
229 Adelinda	161	41	Mar 27	20 45	15.8	11	37	4.82	+4	4	35.47
	167	47	Mar 29	14 50		11	35	56.99	+4	11	26.36
	173	41	Mar 30	17 13		11	35	14.97	+4	15	24.07
892 Seeligeria	161	41	Mar 27	20 45	14.9	11	38	15.42	+3	36	46.60
	167	47	Mar 29	14 50		11	37	12.60	+3	54	17.87
	173	41	Mar 30	17 13		11	36	33.70	+4	5	8.90

Continued

Table 1. (*Continued*)

Asteroid	Plate No.	K-region	Date	Mid exp. UT	Mag.	α 1950			δ 1950		
1	2	3	4	5	6	7			8		
						h	m	s	°	′	″
90	184	47 1987	Apr 1	19 30	13.9	12	9	20.99	+2	9	3.68
Antiope	185	47	Apr 2	16 50		12	8	45.92	+2	12	30.42
1142	184	47	Apr 1	19 30	15.5	12	9	15.31	+1	27	21.13
Aetolia	187	43	Apr 2	16 50		12	8	37.30	+1	31	49.90
1458	169	47	Mar 29	17 40	15.6	12	9	48.00	+0	5	10.06
Mineura	185	47	Apr 2	16 50		12	6	43.12	+0	46	25.21
1720	169	47	Mar 29	17 40	16.5	12	3	14.06	+0	50	40.91
Niels	184	47	Apr 1	19 30		12	0	17.92	+1	10	4.61
	185	47	Apr 2	16 50		11	59	28.37	+1	15	29.85
2165	169	47	Mar 29	17 40	16.7	12	3	48.47	+0	0	12.45
Young	184	47	Apr 1	19 30		12	1	31.35	+0	13	49.72
	185	47	Apr 2	16 50		12	0	51.90	+0	17	54.54
2361	169	47	Mar 29	17 40	16.6	12	10	13.40	+0	37	9.87
Gogol	184	47	Apr 1	19 30		12	8	1.08	+0	47	38.00
34	194	49	Apr 5	21 5	12.3	12	9	38.65	−0	27	7.49
Circe	196	49	Apr 7	21 32		12	8	13.89	−0	12	24.39
2236	198	52	Apr 20	17 50	16.4	12	27	9.55	−5	53	37.12
Austrasia	200	52	Apr 21	17 35		12	26	11.17	−5	51	37.14
1987	198	52	Apr 20	17 50	15.5	12	34	7.58	−5	27	41.48
HR2	200	52	Apr 21	17 35		12	33	48.45	−5	26	26.63
1987	198	52	Apr 20	17 50	16.0	12	29	32.79	−5	52	25.40
HQ2	200	52	Apr 21	17 35		12	28	54.48	−5	49	21.46
757	206	60	Apr 22	19 17	14.4	13	19	0.42	−9	13	51.40
Portlandia	211	58	Apr 24	16 7		13	17	7.55	−9	9	0.74
24	221	86	May 23	17 39	12.3	15	35	18.38	−19	44	13.91
Themis	225	86	May 25	18 26		15	33	39.50	−19	38	54.08
	230	86	May 26	17 55		15	32	52.63	−19	36	24.56
673	222	87	May 23	18 40	15.0	15	34	48.17	−18	22	24.94
Edda	223	87	May 25	15 23		15	33	13.01	−18	15	10.18
	229	87	May 26	16 2		15	32	21.53	−18	11	17.01
418	224	88	May 25	17 25	14.5	15	49	17.31	−21	28	38.50
Alemannia	231	88	May 26	19 0		15	48	16.73	−21	23	5.67
	233	88	May 30	17 59		15	44	37.91	−21	02	14.18
X3044	224	88	May 25	17 25	16.2	15	40	44.07	−20	34	26.31
1983 RE_3	231	88	May 26	19 0		15	39	49.32	−20	25	27.94
2440	232	89	May 26	19 50	16.6	15	49	1.58	−17	51	25.70
Educatio	234	89	May 30	18 57		15	45	5.79	−17	26	58.89
150	227	91	May 25	20 42	13.5	15	55	37.39	−18	27	10.81
Nuwa	235	91	May 30	20 10		15	51	29.35	−18	12	19.35
	237	91	May 31	17 59		15	50	44.03	−18	9	42.38

*Time slightly uncertain.

In general our measurements of asteroid positions are accurate to ± 3 arcsec. However, some accidental errors larger than 10 arcsec are present (B. G. Marsden, personal communication). This error does not seem to be due to the procedures adopted since on the same plate other minor planets have accurate positional measurements. We are looking into the possible sources of such accidental errors in our positional measurements.

Acknowledgement

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References

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