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MEMBERSHIP IN THE YOUNG CLUSTER TRUMPLER 37

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ABSTRACT

Astrometric positions for 1387 stars and proper motions for a subset of 1135 stars brighter than $V=15$ in a 1.5° field surrounding the young open cluster Trumpler 37 are presented. Membership probabilities are presented for those stars with measured proper motions, and 486 stars with probabilities of $>80\%$ are identified.

I. INTRODUCTION

The open cluster Trumpler 37 (Co 2137 + 572, $l=99.3°$, $b=3.73°$), identified as the nucleus of the Cepheus OB 2 association (Simonson 1968), is one of the very youngest clusters (log $\tau<6.5$), and its distance of less than 1 kpc makes it also one of the nearest of its age group. Yet it has received little attention in studies of stellar evolution compared to other clusters of comparable ages such as IC 1805, NGC 2244, NGC 2264, and NGC 6530 (Lynga 1985). Of these, it most nearly resembles NGC 2244, which is embedded in the central "hole" of the Rosette Nebula. Tr 37 similarly lies in a region of reduced emission surrounded by the H II region IC 1396. Barnard's Milky Way atlas (1927) describes it thus: "The very center of these nebulous masses is gritty with small stars which are entirely free of nebulosity. All around this stars for some distance are veiled in nebulosity." On the Palomar Sky Survey red photograph, the nebula appears exceedingly Rosette-like, and though it is larger in angular size, this is primarily due to the greater distance of the Rosette. Actually, both the nebula and the cluster are quite comparable to the Rosette in physical extent. A number of recent radio studies of IC 1396 have noted this similarity (Wendker and Baars 1980; Heske and Wendker 1986).

As listed in Lynga's cluster catalog, both NGC 2244 and Tr 37 show similar amounts of visual absorption, about 1.5 mag. The relative neglect of Tr 37 by astronomers to date may be due in part to its general lack of concentration, accentuated by its larger angular extent on the sky. Lynga classifies Tr 37 as a Trumpler class IV object, less distinct from the background than NGC 2244, which he assigns a Trumpler class II. In his original survey of clusters, Trumpler (1930) assigned them both to class IV, and noted that Tr 37 seems to be a more populous grouping of stars.

The central star of the cluster, HD 206267, was included in a recent study of "Trapezium-like" systems by Abt (1986). It is one of the youngest examples of these multiple-star systems, which Abt likens to the Trapezium (θ^1 Orionis) in having components of nearly identical separation. Though not quite as complex and active a region as Orion, the interaction between stars and gas is still quite evident in the vicinity of the cluster (Wendker and Baars 1980). That, together with the relative youth and proximity of Trumpler 37, promises interesting results for studies of the early evolution of stars. However, fundamental observational data is spotty.

Alksinis (1958) has published an extensive set of magnitudes (m_{pg}) and approximate spectral types (no luminosity classes are given) for stars in the Cepheus region, including about a hundred members of the cluster, but these have not been tied to photoelectric *UBV* sequences or modern MK spectral types. Only a few of the brighter stars in the cluster were included in a spectroscopic and photometric study of the Cepheus association by Simonson (1968). The only focused scrutiny of the cluster remains the paper of Garrison and Kormendy (1976), who published MK classifications for 51 stars and photoelectric *UBV* photometry for 37 stars brighter than $V=10.1$ in a region about 3° (48 pc) in diameter surrounding Tr 37. They derive a distance modulus of 9.9 for the cluster, and their earliest main-sequence spectral type of O6 indicates that the cluster is comparable in age ($2-4\times10^6$ yr) to the very youngest open clusters, such as NGC 2244 (Marschall *et al.* 1982) and NGC 6530 (van Altena and Jones 1972). The Garrison and Kormendy photometry has been supplemented by photoelectric *UBVRI* magnitudes of 26 fainter cluster stars $10.5<V<15.75$ by Cardon de Lichtbuer (1982). Most recently, Kun (1986) has identified 155 Hα emission stars fainter than $V=13$ in a 19.5 square degree field centered on Tr 37 (approximately the same coverage as Garrison and Kormendy), and has presented photographic *UBVR* magnitudes for them.

No comprehensive membership studies of the cluster have been undertaken previously. This study presents measurements of astrometric positions of 1387 stars along with proper motions for 1135 stars brighter than $V=15$ within approximately 0.75° (12.5 pc) of the cluster center. The astrometric positions and membership probabilities for Tr 37 should establish a foundation for further photometric and spectroscopic studies of its member stars, adding to the roster of nearby young clusters suitable for studies of stellar evolution.

II. PLATE MEASUREMENT AND REDUCTION

The plate material for this study consisted of 17 Yerkes plates covering seven overlapping fields centered on the star HD 206267 (R.A.(1950) $=21^h37^m24^s$, Dec. (1950) $=57°15'45''$). Table I lists pertinent data for the plates, and Fig. 1 [Plate 5] shows the coverage of the overlapping fields. We refer to these as the center field, east field, northeast field, etc. All star images on the plates, a region roughly 1.5° in diameter, were measured using the PDS microdensitometer at Yale University Observatory. Positions and magnitudes for each image were reduced using a two-dimensional Gaussian fitting program written by Jin-Fuw Lee for the PDP 11/60 computer at Yale.

TABLE I. Yerkes Observatory plate material for Tr 37.

Field	Plate ID	Date	Exposure
Center	F367	July 22, 1937	36 min.
Center	F373	July 24, 1937	22 min.
Center	π24169	Aug. 2, 1973	30 min.
Center	π24185	Aug. 4, 1973	25 min.
East	F374	July 24, 1937	35 min.
East	π24186	Aug. 4, 1973	25 min.
East	π24275	Oct. 19, 1973	30 min.
Northeast	F370	July 22, 1937	30 min.
Northeast	π24189	Aug. 5, 1973	25 min.
Northwest	F369	July 22, 1937	18 min.
Northwest	π24274	Oct. 19, 1973	30 min.
West	F368	July 22, 1937	25 min.
West	π24184	Aug. 4, 1973	25 min.
Southwest	F381	July 26, 1937	20 min.
Southwest	π24187	Aug. 5, 1973	25 min.
Southeast	F380	July 26, 1937	25 min.
Southeast	π24183	Aug. 4, 1973	25 min.

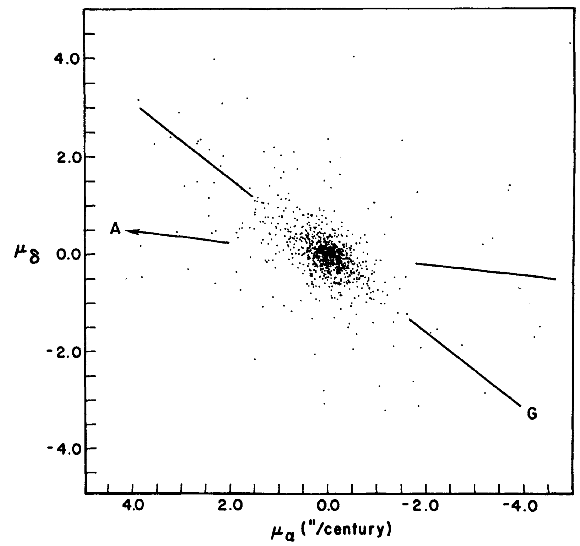

FIG. 2. Observed proper-motion vector-point diagram for Trumpler 37. The direction toward the solar apex and a line parallel to the galactic plane are indicated. The units are in arcseconds per century.

Proper motions were computed by an iterative least-squares-fitting procedure as described in our study of NGC 2244 (Marschall *et al.* 1982). Proper motions for each separate field were computed independently. Thus the solutions for the center field involved four plates, two first epoch (1937) and two second epoch (1973); the east field involved three plates, one first epoch and two second epoch, and all the other fields used a pair of plates. In each case, linear and quadratic terms in the coordinates and magnitude were used, but since color measurements were unavailable for most of the stars, no color terms were included; nor were they found necessary in our previous study, which used both Yerkes and Allegheny plates.

The proper motions derived for each separate field were transformed to the proper motions of stars on the central plate with a linear least-squares fit involving the overlapping stars in each field; only rotation, translation, and scale change were included in the fit. These consolidated values of the proper motions were then used to derive membership probabilities. The consolidated proper-motion vector-point diagram is shown in Fig. 2. The limited number of plates used in each solution compared to our study of NGC 2244, which involved 18 plates, and the smaller epoch difference, 36 yr as opposed to 57 yr, produces a scatter in proper motions that is greater than in our previous work. There is nevertheless a clear concentration of points near zero relative motion which represents the cluster against a more widely dispersed background of field-star motions. The separate distributions are more clearly recognizable on the marginal histograms of the proper motions shown in Fig. 3.

The field and cluster distributions were derived using a program supplied by Dr. E. Green. The program fits two-dimensional Gaussians to both the field and cluster proper-motion distributions, with due account taken for the proper-motion errors of each individual star. Where more than two plates were used in the solutions, the errors used as input to the program were derived from the residuals in the plate solution. In the two-plate solutions, no such formal error was produced (the residuals in these cases are attributed

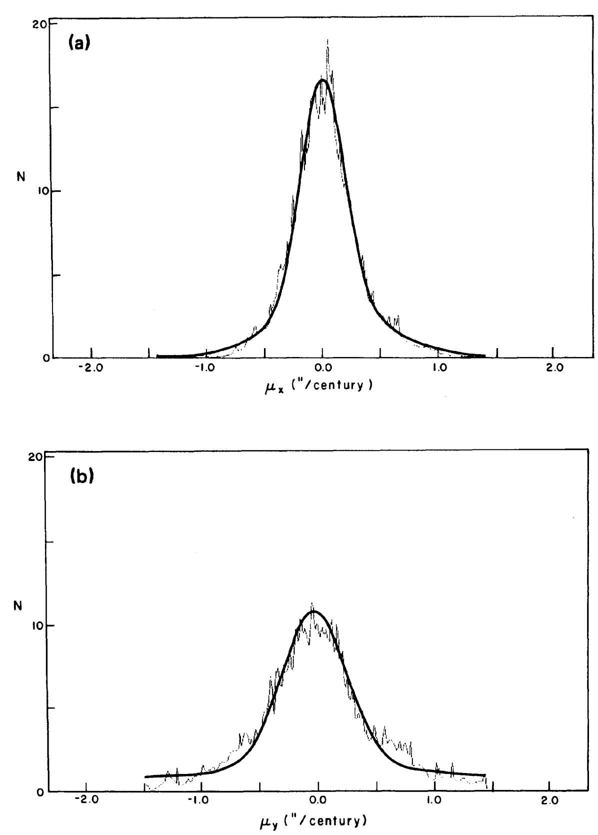

FIG. 3. Marginal distributions of the vector-point diagram rotated 48° to align X and Y with the minor and major axes of the field distribution. The observed distributions are drawn with a thin line, while the computed fits are drawn with a heavy solid line. (a) Histogram for X motions. (b) Histogram for Y motions.

entirely to proper motion), so the error was determined by assuming that the error for a single star was the same as the average for stars of similar magnitude in the multiple-plate solutions scaled to one plate pair.

The fitting program allows one to hold field parameters fixed while searching for a best fit to the cluster parameters. It was found, in accord with Cudworth's analysis of M22 (Cudworth 1986), that a Gaussian was not the best fit to the field-star distribution, and the final fits we present represent a compromise between underemphasizing the peak or overemphasizing the wings of the fitted field distribution. We favored the latter extreme, noting, as Cudworth does, that the derived probabilities are more sensitive to the values of the field-star distribution in the vicinity of the cluster proper-motion peak.

Parameters for cluster and field-star fits are listed in Table II. The proper-motion centers and standard deviations are listed in arcseconds per century. The standard deviations listed for the cluster are a measure of the internal precision of the derived proper motions, not of the internal velocity dispersion of the cluster, which should be smaller by almost an order of magnitude as we discuss later in this paper. The precision is about 4 times less than that of our study of NGC 2244. That study utilized 18 plates in the solution, however, so the results for Tr 37 are consistent with the measurement errors for a single star in the NGC 2244 study.

III. POSITIONS AND MEMBERSHIP PROBABILITIES

The final results of the plate measurement and proper-motion analysis are listed in Table III. Numbers in column 1 refer to the identification charts in Figs. 4 (a)–(g) [Plates 6–12]. Coordinates in columns 2 and 3 were computed with transformations found by fitting the measurements of a dozen stars to positions given in the AGK3 catalog. The listed coordinates are epoch 1950 and refer to the equator and equinox of 1950. They should be reliable to 0.″1, except for stars that have no derived proper motion as noted below. Proper motions in columns 4 and 5 are given in seconds of arc per century. Proper motions are not given for stars where a good image center could be measured on only one plate. This was the case primarily for faint stars that did not appear on the first-epoch exposures. V magnitudes in column 6 were derived by fitting photometric magnitudes from Garrison and Kormendy (1976) and Cardon de Lichtbuer (1982) to instrumental magnitudes derived from the plate scans. These magnitudes should be used with caution: they are only provided to aid in identifying stars on our charts. While the fit of instrumental to observed magnitudes is good to 0.1 mag for the fainter stars ($V > 10$), the PDS photometry reduction we used did not account for saturation in the densest images, systematically affecting the precision of fit for the brighter stars. These may be in error by 0.3 mag. We have made additional photoelectric measurements of about one hundred stars in the cluster, and will publish these data separately when we have accumulated a more complete set of measurements.

Probabilities of cluster membership, computed from the fitted cluster parameters, are listed in column 7, and a quality estimate is listed in column 8. This quality estimate was made as follows. For all stars in the center and east fields (i.e., those with multiple-plate solutions), a quality class of 1 was assigned to those whose residuals from the plate solutions were less than 0.08 arcsec/century (σ for fitting of the center plate series), and a quality class of 2 to those with higher residuals. In all other fields, a quality class of 1 was assigned to all stars brighter than $V = 14.5$, since this is where the scatter in the residuals for the multiple-plate solutions became significantly greater.

TABLE II. Membership probability parameters for Tr 37.

Parameter	Cluster	Field
Number	655	543
μ_x center	+0.″01/cent.	+0.″06/cent.
μ_y center	−0.02	+0.09
μ_x dispersion	±0.19	±0.50
μ_y dispersion	±0.28	±1.56

IV. DISCUSSION

A histogram of the membership probabilities is shown in Fig. 5, illustrating a clear differentiation between field and cluster stars. Since the internal errors in this study are greater than in our previous ones, greater caution must be used in applying these numbers, however, and we would urge that only stars with $P > 80\%$, that is, 486 stars in all, be considered potential cluster members. That this criterion is consistent with the photometric results is borne out by its inclusion of the brighter O and B stars in the area, which are surely cluster members, and its rejection of the brighter stars identified with late spectral types in Alksinis' 1958 study. Kun (1986) has noted that bright early-type stars in this region seem dispersed over an area far larger than that of a typical cluster, and suggests that they may not all be part of the same group, or that the system may not be gravitationally bound. Thus the latter criterion, the rejection of brighter late-type stars, is likely to be more selective than the inclusion of bright early-type stars, as is indicated by our derived probabilities.

More specifically, 149 stars in our study have been identified with those in Alksinis' study. A cross reference to the identification numbers in both studies is given in Table IV; the stars studied by Alksinis are designated Alks, the numbers in the current study MVA. Seven of these stars yielded only positions in the current study, the remaining 142 both positions and proper motions. Of 35 stars in the field with spectral classes earlier than A0 according to Alksinis, 25, or 71%, are probable kinematic cluster members. A notable exception is HD 206267 itself (Alks 466, MVA 460), which has a computed membership probability of 67. This star, having the earliest spectral type in the region, is surely a cluster member, as we note in a footnote to Table III. The image of this multiple system suffers from blending of the components (with star MVA 461) on the first-epoch plates, producing a spurious determination of the image center. This is the only case in this study for which image blending is severe.

Of 49 stars with spectral types later than F0 in Alksinis' study, 42 (86%) turn out to be kinematic nonmembers. Some of the remaining seven stars (MVA 550,555,800,883,1050, 1166, and 1539) may be chance coincidences or spectroscopic misidentifications, but they also deserve further scrutiny as possible evolved or pre-main-sequence members of the cluster. Three radial velocities of MVA 550 obtained by one of us (LAM) with the echelle spectrometer of the Fred L. Whipple Observatory and the Multiple Mirror Telescope indicate that it is a single-line

TABLE III. Observational data for stars in Tr 37.

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
2	21 35 13.74	56 57 55.0			14.7		
3	21 35 11.98	56 58 22.6	-0.17	0.05	13.9	93	1
4	21 35 10.08	56 59 33.0	3.15	-4.90	13.3	0	1
5	21 34 47.68	56 59 26.7	0.13	-0.23	13.6	92	1
6	21 34 56.85	56 59 19.2			14.6		
7	21 35 9.05	57 0 10.2	0.01	0.75	13.9	9	1
8	21 35 7.93	57 0 9.0			15.0		
9	21 35 13.35	56 59 22.9	0.10	-0.13	14.8	94	2
10	21 35 14.26	56 59 31.1	-0.12	0.26	14.5	90	1
11	21 35 17.96	56 59 11.1			14.9		
12	21 34 55.31	57 0 37.5			14.9		
13	21 35 0.30	57 0 50.4	0.65	-0.37	13.6	37	1
14	21 35 0.30	57 1 22.5	0.22	-0.28	13.4	89	1
15	21 35 22.29	57 1 52.3	-0.85	1.14	13.8	0	2
16	21 35 23.16	57 0 8.7	0.32	0.17	14.8	79	2
17	21 35 25.64	57 0 14.8			15.0		
18	21 35 14.23	57 3 40.9			15.0		
19	21 35 2.95	57 4 3.0	0.74	0.04	14.3	14	1
20	21 34 58.22	57 5 55.9	0.05	-0.43	12.6	78	2
22	21 35 8.75	57 5 13.5	0.39	-0.01	14.6	83	2
23	21 35 13.69	57 5 17.2	0.25	0.06	14.6	0	2
24	21 35 17.62	57 5 36.6			14.4		
25	21 35 17.87	57 4 44.4	-0.32	0.21	11.9	86	1
26	21 35 27.52	57 4 56.0	-0.35	0.32	11.8	79	1
27	21 35 22.36	57 6 12.4			14.7		
28	21 35 28.87	57 6 15.7	-1.43	1.09	13.8	0	1
29	21 35 35.89	57 4 31.8	0.12	0.14	13.7	92	1
30	21 35 37.82	57 5 8.3	-0.22	0.33	14.7	84	2
31	21 35 1.89	57 7 23.8			14.8		
32	21 34 41.94	57 8 1.7	-0.17	0.36	12.3	83	1
33	21 34 42.35	57 8 5.5	0.10	0.35	14.3	78	1
34	21 34 56.33	57 9 24.0	-0.01	0.44	14.3	73	1
35	21 35 5.37	57 9 53.0			15.1		
36	21 35 9.56	57 10 0.1			14.9		
37	21 35 20.17	57 9 23.2			15.1		
38	21 35 26.11	57 9 59.2			15.1		
40	21 35 29.74	57 9 7.7			14.9		
41	21 35 39.35	57 9 25.6			14.8		
43	21 34 50.12	57 12 16.7	-0.64	0.45	14.3	24	1
44	21 34 54.41	57 12 42.1			14.5		
45	21 35 7.09	57 12 32.4	-0.10	0.01	12.6	94	1
49	21 35 16.72	57 11 48.2	0.29	-0.59	12.7	52	1
50	21 35 16.40	57 11 10.3			14.8		
51	21 35 21.69	57 11 40.1			14.9		
52	21 35 23.21	57 11 1.5	-0.62	0.97	14.2	0	2
53	21 35 29.77	57 11 20.2	0.09	-0.43	13.2	80	1
54	21 34 42.12	57 14 8.7	-0.28	0.34	13.5	81	1
57	21 35 14.61	57 14 23.5			14.4		
58	21 35 21.63	57 14 27.9	-0.42	0.23	14.7	0	2
59	21 35 8.90	57 16 38.1	-0.70	-0.07	11.0	0	1
60	21 35 18.54	57 17 40.1	-0.01	-0.12	13.3	93	2
61	21 34 46.21	57 19 11.0	-0.35	0.17	13.6	84	1
63	21 35 4.92	57 20 35.9	-0.06	-0.01	10.8	94	1
65	21 34 51.26	57 21 32.6	0.50	-0.40	13.8	62	1
66	21 34 43.49	57 21 58.4	-0.79	1.25	10.5	0	1
67	21 34 53.62	57 22 31.0	-0.98	0.04	10.9	0	1
68	21 34 54.73	57 23 30.7	0.33	0.56	10.7	13	1
69	21 35 5.59	57 21 54.9			14.8		
70	21 35 16.67	57 22 0.7	-0.13	0.14	13.3	93	1
71	21 35 15.85	57 21 31.6	-0.17	-0.27	8.7	84	1
72	21 35 23.78	57 20 12.6			15.0		
73	21 35 23.29	57 20 17.9			15.1		
74	21 35 27.67	57 20 52.9	0.52	-0.58	12.5	34	1
75	21 35 30.27	57 22 5.9	0.50	-0.52	13.8	46	1
77	21 35 15.95	57 23 5.9			15.0		
78	21 35 24.70	57 23 42.9			13.8		
79	21 34 56.84	57 23 50.3			15.0		
80	21 34 59.36	57 24 18.0	0.33	-0.23	13.6	87	1
81	21 34 52.05	57 24 35.8	-0.23	-0.11	11.2	89	1
82	21 35 23.95	57 24 2.9			15.2		
83	21 35 21.29	57 24 34.7	-0.02	0.05	13.9	94	1
84	21 34 58.26	57 25 40.1	0.10	-0.18	13.4	93	2
85	21 34 53.82	57 25 52.8	0.97	-0.20	13.9	2	1
86	21 34 55.64	57 26 4.9	0.25	-0.34	11.9	86	1
87	21 34 44.29	57 25 57.6	0.21	-0.09	13.6	93	1
88	21 34 44.34	57 26 47.0	0.22	-0.03	13.7	92	1
89	21 35 16.01	57 27 1.5	-0.70	0.34	14.8	20	2
90	21 35 16.39	57 25 48.0	0.16	-0.50	10.4	71	1
91	21 35 11.75	57 27 43.0			14.7		
92	21 35 4.36	57 28 21.8			14.9		
93	21 35 3.16	57 28 31.5	-1.01	2.10	14.1	0	1
94	21 34 56.01	57 28 41.8			14.9		
95	21 34 55.55	57 30 12.3	-0.26	0.02	13.1	89	2
96	21 35 1.29	57 30 6.7	-0.12	0.52	14.8	59	2
97	21 35 3.44	57 29 44.9	4.14	7.32	12.7	0	1
98	21 35 18.70	57 31 12.4			14.5		
99	21 35 24.43	57 30 37.2			15.3		
100	21 35 23.51	57 30 21.2	-0.95	1.57	13.4	0	1
101	21 35 19.72	57 28 15.9	2.95	-2.33	10.9	0	1
102	21 35 20.92	57 27 46.3			14.8		
103	21 35 27.22	57 29 15.4	-0.87	-1.05	14.1	0	2
104	21 35 32.63	57 30 43.2	-0.39	0.32	14.4	75	1
105	21 35 30.75	56 58 10.0			14.9		
106	21 35 32.92	56 58 48.3	-3.02	0.36	10.2	0	2
108	21 35 38.73	56 59 24.7	-0.17	0.12	13.1	92	1
110	21 36 5.78	56 57 55.7	0.61	-0.51	13.9	32	1
111	21 36 12.34	56 58 31.5	0.07	0.25	14.3	88	1
112	21 36 9.40	56 58 40.2			14.9		
113	21 35 50.39	56 59 50.7	3.68	1.31	14.3	0	2
114	21 35 55.53	57 0 17.7	-0.12	0.15	12.5	93	1
115	21 36 4.52	57 0 22.2			14.8		
116	21 36 5.16	57 0 21.9	-0.29	0.13	14.5	88	2
117	21 35 39.33	57 1 37.2	0.11	0.20	14.7	90	2
118	21 35 47.26	57 1 5.0	-0.03	-0.18	14.2	92	1
119	21 36 6.06	57 1 9.7	-0.17	0.29	14.9	87	2
120	21 35 47.44	57 2 29.1	0.51	-0.42	14.4	0	1
122	21 36 6.82	57 1 39.8	0.09	-0.49	14.4	70	1
123	21 36 10.61	57 2 11.2	-0.39	0.38	14.8	68	2
124	21 36 25.11	56 59 11.1	-1.19	-0.13	13.8	0	1
125	21 36 14.81	57 2 56.5	-0.10	0.18	14.5	92	1
126	21 36 14.00	57 2 38.7	-0.78	-0.58	15.0	0	2
127	21 36 21.74	57 2 29.2			14.9		
129	21 36 19.69	57 3 41.1	-2.19	0.52	14.7	0	2
131	21 36 0.04	57 3 41.1			13.6		
132	21 36 2.29	57 4 12.4	-0.31	-0.61	13.8	8	1
133	21 35 58.08	57 5 1.8	0.49	-1.07	12.4	0	1
134	21 35 41.62	57 6 49.8	-0.52	0.28	13.3	59	1
135	21 35 46.45	57 7 25.4			13.7		
136	21 35 46.43	57 6 54.2	0.15	-0.39	14.8	0	2
137	21 35 45.36	57 6 29.2			14.8		
138	21 35 52.13	57 7 39.9			15.0		
139	21 35 52.91	57 6 47.0	0.53	0.10	14.7	0	2
140	21 36 1.39	57 6 0.5			14.8		
141	21 36 14.05	57 5 33.3			14.8		
143	21 36 16.75	57 4 34.8			15.1		
144	21 35 51.63	57 9 35.9	0.34	-0.15	11.8	88	1
145	21 36 0.87	57 8 54.0			14.9		
146	21 36 8.52	57 7 53.1	0.21	-0.16	14.3	92	1
147	21 36 10.15	57 7 31.0	0.19	-0.03	11.1	93	1
148	21 36 21.90	57 7 32.6	-0.04	0.29	11.1	89	1
149	21 36 14.97	57 8 14.1	0.20	0.15	13.7	89	1
150	21 36 19.04	57 8 50.3	0.13	-0.03	13.6	0	1
151	21 36 22.02	57 8 42.7	0.49	0.04	11.2	68	1
152	21 36 22.18	57 9 27.2	-2.42	0.79	11.9	0	1
153	21 36 8.52	57 9 36.3	-0.11	0.01	12.0	94	1
154	21 35 51.89	57 10 47.4	-0.46	-0.33	12.6	30	1
155	21 35 52.75	57 10 50.8	0.68	-0.59	13.9	14	1
156	21 36 10.51	57 9 31.0			15.0		
157	21 36 3.00	57 10 25.3	0.18	0.15	14.7	0	2
158	21 36 9.19	57 10 56.5			15.1		
159	21 36 9.01	57 11 18.5			14.7		
160	21 35 38.47	57 11 0.3			15.1		
161	21 35 40.32	57 11 33.8			14.9		
162	21 35 38.24	57 12 39.0	-0.12	-0.19	12.7	91	1
163	21 35 42.32	57 12 20.0	0.21	-0.27	13.3	89	2
164	21 35 47.54	57 11 42.2	-0.06	0.30	12.1	88	1
165	21 35 56.75	57 11 45.7	-0.04	0.28	14.4	0	1
166	21 35 47.08	57 12 42.1	-0.58	0.10	9.9	51	1
167	21 35 39.09	57 13 39.2	-0.76	0.26	14.2	16	2
168	21 35 48.57	57 15 6.3	-0.21	-0.05	14.4	90	2
169	21 35 51.45	57 14 44.9	-0.32	0.20	13.8	86	1
170	21 35 54.53	57 13 34.4	-0.21	0.20	12.9	90	1
171	21 36 2.79	57 14 20.0			14.8		
172	21 36 19.08	57 13 19.4	-0.03	-0.09	12.9	94	1
173	21 36 21.23	57 13 8.9	-0.12	0.06	14.5	0	2
174	21 36 21.70	57 13 0.0			14.9		
175	21 36 14.78	57 12 44.9			15.1		
176	21 36 14.40	57 12 31.6			15.2		
177	21 36 9.27	57 16 1.2	-0.31	0.28	12.6	84	1
179	21 36 2.74	57 16 54.0			14.7		
180	21 35 37.91	57 16 58.7			14.9		
181	21 35 46.03	57 17 48.8	-0.20	0.12	11.5	92	1
182	21 35 47.21	57 17 17.1	-0.19	-0.14	11.6	90	1
183	21 35 51.22	57 17 25.6			14.8		
184	21 35 47.47	57 19 38.9	0.06	-0.19	14.9	0	2
185	21 35 36.84	57 18 47.4	0.09	-0.85	13.3	5	2
186	21 35 36.10	57 20 20.2	-1.34	-1.40	9.4	0	1
188	21 35 59.62	57 18 26.2			14.8		
189	21 36 14.66	57 18 6.4	-0.29	-0.33	14.6	63	2
190	21 35 43.59	57 21 28.9			14.9		
192	21 35 53.68	57 21 0.8			15.1		
193	21 35 52.23	57 21 36.1	0.82	0.01	13.3	6	1
194	21 36 8.54	57 20 4.6	-0.39	-0.23	8.4	61	1
195	21 36 9.45	57 20 5.6	-0.27	-0.14	11.9	86	1
196	21 36 18.85	57 18 45.5			14.8		
197	21 36 26.06	57 18 1.2	0.58	-0.31	14.1	57	1
198	21 36 26.57	57 18 2.0			14.8		
199	21 36 24.60	57 19 0.2			15.1		
200	21 36 24.17	57 19 16.9	-0.17	0.27	14.5	0	2
201	21 36 27.81	57 18 59.0			15.0		

TABLE III. (continued)

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q	MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
202	21 36 28.45	57 19 26.4			14.9			302	21 37 35.87	57 1 58.4	-0.36	-0.03	14.8	81	2
203	21 36 14.88	57 21 21.3	0.19	-0.14	13.3	93	1	303	21 37 41.54	57 1 29.5			15.0		
204	21 35 53.77	57 22 29.5	-0.48	0.04	12.2	70	1	304	21 37 39.38	57 0 37.6			15.0		
205	21 35 46.23	57 22 59.1			15.1			307	21 36 38.92	57 7 37.2			15.0		
206	21 35 45.26	57 23 18.3			15.1			308	21 36 40.92	57 7 41.8			15.1		
207	21 36 0.01	57 22 59.3			15.2			309	21 36 44.81	57 7 31.1			15.0		
208	21 35 51.17	57 24 1.2	-0.07	0.38	14.8	81	2	310	21 37 53.68	57 3 29.8	-0.17	0.60	14.7	43	2
209	21 36 10.41	57 22 59.8	-0.02	-0.14	12.4	93	1	311	21 38 0.91	57 1 41.7	0.39	0.02	14.4	0	1
210	21 36 10.54	57 23 33.8	0.47	-0.20	12.0	78	1	312	21 38 21.85	57 1 10.9	0.22	-0.28	14.5	90	2
211	21 36 4.05	57 23 51.0			15.0			313	21 38 23.75	56 59 55.9			14.4		
212	21 36 15.10	57 23 33.4	-2.34	0.37	14.4	0	1	314	21 38 23.02	56 59 3.5	-0.79	0.16	12.6	9	1
213	21 36 36.92	57 21 52.3			15.2			315	21 38 12.98	56 58 31.9	-0.17	-0.07	14.6	92	2
214	21 36 38.55	57 21 35.4			15.1			316	21 38 34.50	56 58 25.7	-0.15	0.46	12.1	72	1
217	21 36 29.18	57 23 18.9	-0.03	0.05	10.9	94	1	317	21 38 35.88	56 58 4.3	-0.30	0.36	9.6	79	1
218	21 36 24.87	57 23 50.5			15.1			318	21 38 30.49	57 1 3.0	-1.57	-0.06	11.2	0	1
219	21 36 31.46	57 23 1.6	-0.46	0.02	12.7	73	1	319	21 38 4.92	57 3 27.2	-0.61	0.33	11.1	39	1
220	21 36 38.35	57 22 29.6	-0.39	0.14	13.9	81	1	320	21 38 12.61	57 3 21.3	0.32	0.20	13.4	77	1
221	21 36 46.01	57 22 5.9	-0.05	-0.26	12.6	90	1	321	21 38 17.69	57 3 18.1	-0.14	0.25	14.4	90	1
222	21 36 24.16	57 24 35.3			15.1			323	21 38 3.13	57 4 9.5	-2.07	0.72	14.8	0	2
223	21 36 27.63	57 24 33.1	-1.34	0.23	14.7	0	2	325	21 38 16.82	57 4 57.4	0.11	-0.66	14.8	33	2
224	21 36 28.59	57 24 33.3	0.09	-0.23	12.8	92	1	326	21 38 21.45	57 4 3.9	0.10	-0.09	14.4	94	2
225	21 36 25.66	57 25 17.8			14.7			328	21 38 34.41	57 4 36.7	0.01	-0.18	14.7	92	2
226	21 36 38.14	57 24 25.5	-0.82	-0.59	14.4	0	1	329	21 38 45.93	57 4 31.3	1.35	-1.90	14.0	0	1
227	21 35 19.82	57 24 56.7			14.5			330	21 38 37.31	57 0 52.0	0.10	-0.10	13.3	94	1
229	21 35 38.13	57 26 58.6	0.13	-0.36	12.8	87	1	335	21 39 26.23	56 57 58.8	-0.07	0.26	12.2	90	1
230	21 35 46.72	57 26 20.7			14.8			336	21 39 29.18	57 0 35.5	-0.51	-0.02	13.9	60	1
231	21 36 0.44	57 25 34.0			15.1			337	21 39 24.62	57 2 32.5	0.23	-0.34	12.4	87	1
232	21 35 38.71	57 28 43.9	-0.04	0.27	14.2	88	2	338	21 38 9.61	57 6 51.6	0.05	0.15	12.5	93	1
233	21 35 43.99	57 28 16.4	0.11	0.13	14.4	0	1	339	21 38 12.85	57 6 48.6	-0.66	0.32	11.0	29	1
234	21 36 2.22	57 27 8.4	0.29	-0.36	14.1	82	2	340	21 38 10.55	57 7 25.7			14.9		
235	21 35 59.53	57 28 7.7			15.1			341	21 38 14.03	57 7 25.7	0.60	-1.24	13.8	0	1
236	21 35 35.79	57 30 21.4			15.0			342	21 38 16.88	57 7 50.5	0.05	0.04	14.8	94	2
237	21 35 37.20	57 30 24.6			14.2			343	21 38 10.97	57 8 16.0	0.49	-0.37	12.7	67	1
239	21 35 57.48	57 29 34.5			14.8			344	21 38 13.95	57 8 27.9	0.61	-0.47	14.6	37	2
241	21 36 6.57	57 27 52.0	0.11	1.08	14.4	0	1	345	21 38 19.21	57 8 22.0	0.91	-0.40	11.6	3	1
242	21 36 8.56	57 27 43.9			14.6			346	21 38 21.70	57 7 56.9	0.15	0.18	14.8	89	2
243	21 36 20.28	57 27 12.4	-0.26	0.47	14.1	64	2	348	21 38 38.88	57 7 33.3	-0.07	-0.14	13.2	93	1
244	21 36 23.58	57 26 42.5	0.95	-0.93	14.3	0	1	349	21 38 47.10	57 6 13.0			15.1		
245	21 36 26.93	57 26 39.5	-0.03	-0.04	14.2	93	2	350	21 38 36.85	57 5 18.5			15.0		
246	21 36 32.79	57 26 15.3			14.9			352	21 38 49.86	57 6 1.5			15.1		
247	21 36 37.74	57 25 58.6			14.9			353	21 38 52.82	57 5 28.8	-0.26	-0.16	14.8	85	2
248	21 36 14.48	57 28 54.0			14.7			354	21 38 59.73	57 6 0.7	0.94	-1.41	13.2	0	1
249	21 36 1.93	57 30 9.7			14.6			355	21 38 58.78	57 6 2.6	0.66	-0.48	15.0	26	2
251	21 35 55.45	57 30 45.3			14.8			356	21 39 2.31	57 6 11.6	0.51	0.42	14.9	12	2
252	21 35 50.70	57 31 35.1	-0.02	-0.28	11.7	89	1	357	21 39 8.65	57 6 45.4	0.50	-0.06	14.8	70	2
253	21 35 48.82	57 32 1.8	-1.31	0.30	12.7	0	1	358	21 39 10.99	57 6 24.1			15.1		
254	21 36 0.54	57 32 28.5	-0.28	-0.37	13.1	57	1	359	21 39 13.50	57 6 20.0	0.10	-0.16	13.8	93	1
255	21 36 10.89	57 31 31.6			14.8			360	21 39 19.94	57 5 6.9	-0.43	0.39	13.0	64	1
256	21 36 15.05	57 30 40.9	-0.75	0.55	11.2	6	1	361	21 39 24.41	57 6 4.0	-0.01	0.62	13.8	32	1
257	21 36 24.39	57 29 19.0	-0.03	0.22	14.5	91	2	362	21 39 25.49	57 6 0.8	-0.14	0.11	13.8	93	2
258	21 36 23.92	57 28 47.4	0.33	-0.25	13.4	87	1	363	21 39 45.55	57 2 52.8	0.71	-0.44	12.6	21	1
259	21 36 27.53	57 27 58.0	1.23	-0.84	13.6	0	1	364	21 39 38.52	57 7 5.3	-0.80	0.23	14.0	9	1
260	21 36 32.44	57 27 26.3	0.88	-0.36	14.6	5	2	365	21 39 54.67	57 2 52.6			12.9		
261	21 36 29.88	57 30 2.9			14.7			366	21 39 57.48	57 4 31.5	0.17	0.02	12.6	93	1
263	21 36 40.35	56 57 50.0	-0.03	-0.13	13.6	93	1	367	21 39 57.61	57 4 46.7	0.19	0.09	12.4	91	1
264	21 36 52.59	56 58 27.8			14.8			368	21 38 5.09	57 10 27.6	0.16	0.44	14.3	60	1
265	21 36 58.55	56 59 45.9	-0.09	0.02	14.6	0	2	369	21 38 11.84	57 9 51.5	0.22	0.03	11.5	92	1
266	21 36 32.67	57 1 8.0	-0.07	-0.13	13.5	92	2	370	21 38 0.80	57 8 53.6	0.10	0.35	14.7	78	2
267	21 36 43.89	57 1 3.4	0.17	-0.05	14.3	93	1	371	21 38 12.84	57 10 22.8	-0.20	0.25	13.1	89	1
268	21 36 49.37	57 0 55.7	0.05	-0.02	9.1	0	1	372	21 38 17.03	57 11 6.5	0.34	0.15	14.6	77	2
269	21 36 57.60	57 0 45.1	-0.59	0.09	14.8	47	2	373	21 38 20.83	57 16 10.2	0.07	-0.17	14.4	93	1
270	21 37 12.24	56 58 22.5	-0.20	-0.02	14.8	91	2	374	21 38 32.27	57 9 44.8	0.01	0.06	11.8	94	1
272	21 37 19.38	56 59 54.5			14.9			375	21 38 28.84	57 9 27.2	-0.13	-0.61	12.5	27	1
273	21 37 11.01	57 0 34.0	-2.63	2.31	10.1	0	2	376	21 38 42.40	57 8 55.7			15.0		
274	21 37 5.59	57 1 9.9	-2.58	2.34	11.9	0	1	377	21 38 42.43	57 8 53.1			15.1		
275	21 36 53.71	57 1 20.4	-0.15	0.25	14.7	90	2	379	21 38 46.83	57 9 21.7	-0.01	0.14	13.1	93	1
276	21 36 56.35	57 1 31.8	-0.20	-0.01	14.5	92	2	380	21 38 46.84	57 9 49.9			15.1		
277	21 36 52.36	57 2 5.3	0.29	-0.17	12.8	0	2	381	21 38 57.45	57 9 53.2	0.15	-0.20	14.9	92	2
278	21 37 6.69	57 2 12.5	-0.53	0.37	14.8	49	2	383	21 38 56.32	57 9 11.0	0.01	0.32	14.2	86	1
279	21 37 10.60	57 2 20.8			14.9			384	21 38 58.88	57 9 30.5	-0.44	0.27	14.8	72	2
280	21 36 35.51	57 4 11.0			15.0			385	21 39 5.36	57 8 21.2	-0.39	0.47	14.2	57	1
281	21 36 39.88	57 3 47.3	0.11	-0.92	15.0	2	2	386	21 39 7.85	57 9 25.0			15.2		
282	21 36 46.59	57 3 49.1			15.0			389	21 39 16.91	57 6 52.0	-0.27	0.55	14.9	50	2
283	21 36 48.41	57 4 48.3			15.1			390	21 39 23.59	57 8 28.1	-0.13	0.34	14.3	86	1
284	21 36 57.19	57 4 38.6	-0.25	-0.51	15.0	33	2	391	21 39 27.60	57 9 17.8	0.09	0.43	14.5	66	2
285	21 36 59.85	57 5 20.9	-0.39	-0.06	14.8	76	2	392	21 37 54.53	57 12 34.9			15.0		
286	21 37 13.95	57 3 24.1	0.82	-0.61	12.6	4	1	393	21 38 2.14	57 11 56.2	0.15	-0.26	14.8	91	2
287	21 37 17.31	57 1 54.4	0.20	-0.27	13.4	90	2	394	21 38 6.26	57 11 55.6			14.8		
290	21 37 26.51	57 2 52.4	0.29	-0.53	14.1	0	1	395	21 38 8.49	57 12 22.7			15.1		
291	21 37 32.85	57 0 54.9	-0.26	0.37	14.7	79	2	396	21 38 11.18	57 12 9.8			14.2		
292	21 37 39.44	57 0 13.6	-0.67	0.56	14.6	0	2	397	21 38 11.21	57 11 59.7			14.2		
293	21 37 40.27	56 59 17.9	0.02	-0.16	11.4	93	1	398	21 38 12.83	57 12 32.2	0.14	0.01	13.5	94	1
294	21 37 37.11	56 58 24.3	-0.07	0.12	11.4	93	1	399	21 38 14.59	57 12 11.4	0.25	-0.22	14.8	0	2
295	21 37 27.26	57 3 11.0	1.91	-1.93	12.9	0	1	400	21 36 39.05	57 8 5.3	0.12	0.01	14.7	94	2
296	21 37 24.59	57 3 24.8	-0.18	0.07	13.3	93	1	402	21 36 46.84	57 8 20.5	-1.52	1.18	12.3	0	1
297	21 37 23.55	57 4 20.5	-0.34	0.54	12.2	49	1	403	21 36 27.55	57 9 14.4			14.8		
298	21 37 6.63	57 6 9.3	-0.32	0.79	12.8	7	1	404	21 36 34.72	57 9 50.9	-1.31	-1.08	14.4	0	1
299	21 36 44.16	57 6 16.3	0.15	0.04	12.6	93	1	405	21 36 39.29	57 9 28.4	0.11	0.52	14.1	45	1
300	21 36 31.86	57 6 49.3	-0.13	0.18	13.6	92	1	406	21 36 41.93	57 9 23.6	-0.37	-0.04	14.5	0	2
301	21 36 40.25	57 7 9.6	0.05	1.90	12.2	0	1	407	21 36 43.51	57 8 56.2	0.20	-0.17	14.7	92	2

TABLE III. (continued)

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
408	21 36 47.27	57 9 4.7	0.04	0.18	14.2	92	1
409	21 36 47.96	57 9 26.0			14.8		
410	21 36 52.30	57 9 37.8	-0.28	-0.03	14.4	89	1
411	21 36 55.84	57 8 45.6	-0.10	0.07	13.8	93	2
412	21 37 6.41	57 8 26.5	0.11	0.01	9.1	93	2
413	21 37 7.05	57 9 52.6	0.83	-0.65	11.8	2	1
414	21 37 12.84	57 8 54.5	-0.35	-0.31	13.3	56	1
415	21 37 18.12	57 6 34.7	-0.01	0.29	13.4	0	1
416	21 36 45.94	57 10 43.1			15.0		
417	21 37 10.51	57 10 27.8			14.8		
418	21 37 14.76	57 10 11.7	0.46	-0.42	13.6	67	1
419	21 37 31.05	57 7 38.0	-0.17	0.11	14.5	92	1
420	21 37 33.99	57 6 17.1	-0.01	0.11	11.1	94	1
421	21 37 34.03	57 7 33.6	-0.27	-0.07	13.3	88	1
422	21 37 43.45	57 5 34.6	0.46	-0.55	11.6	46	1
423	21 37 53.12	57 5 6.6	0.09	0.17	8.9	92	1
425	21 36 30.55	57 13 30.7			15.1		
426	21 36 35.67	57 13 13.8	-0.07	-0.14	11.3	93	1
427	21 36 44.10	57 12 49.6			14.8		
428	21 37 18.51	57 12 54.6			14.9		
430	21 37 36.49	57 11 19.2	0.13	-0.04	11.8	94	1
431	21 37 41.35	57 9 38.3	-0.02	-0.10	13.0	94	1
432	21 37 47.75	57 10 24.4	0.17	-0.28	13.7	90	1
433	21 37 51.27	57 10 15.5	-1.74	0.53	14.5	0	1
434	21 37 55.25	57 8 58.6	-0.14	-0.25	14.3	85	2
435	21 37 54.87	57 10 36.1	-0.31	0.19	13.5	87	1
436	21 38 3.03	57 9 42.5	0.25	0.11	14.1	89	1
437	21 37 45.53	57 12 11.9	0.07	-0.19	11.3	93	1
438	21 36 46.52	57 13 59.7	-1.15	1.15	10.7	0	1
439	21 36 40.95	57 13 47.7			14.8		
440	21 36 30.57	57 14 56.2			14.5		
441	21 36 29.23	57 15 26.3	-0.34	0.36	14.3	74	2
442	21 36 25.28	57 15 38.0			14.8		
443	21 36 37.71	57 15 30.4	0.38	0.17	14.8	0	2
444	21 36 42.40	57 16 0.2	-0.15	-0.47	14.8	0	2
445	21 36 47.84	57 15 37.8	-2.14	3.08	13.1	0	2
446	21 36 54.39	57 15 21.2	-0.25	-2.06	11.9	0	1
447	21 36 53.56	57 15 5.9	-0.03	-0.11	11.5	94	1
448	21 37 9.58	57 14 10.4	0.13	0.18	14.6	89	2
449	21 37 16.69	57 13 58.0	0.10	0.07	14.6	0	2
450	21 37 18.19	57 13 58.9	-0.02	0.22	13.7	91	1
451	21 37 25.33	57 14 49.5	-0.06	-0.10	11.6	94	1
452	21 37 31.70	57 14 40.9			14.7		
453	21 37 38.73	57 14 38.4			15.0		
454	21 37 39.89	57 14 56.9	-0.05	-0.09	12.1	94	1
455	21 37 49.02	57 14 8.0	-0.61	0.98	10.4	0	1
456	21 36 34.34	57 16 55.3			14.9		
457	21 36 37.75	57 16 45.1	0.07	-0.15	14.3	0	2
458	21 36 45.04	57 16 54.1			14.6		
459	21 36 46.74	57 16 36.1	-0.23	0.13	14.3	0	1
460	21 37 24.62	57 15 44.5	-0.37	-0.16	5.1	67	*
462	21 37 23.74	57 16 3.1	-0.01	-0.02	8.1	94	2
463	21 37 38.90	57 16 20.7	-0.55	-0.18	11.7	32	1
464	21 37 54.22	57 15 23.5	-0.04	0.03	8.4	94	1
465	21 37 53.88	57 15 2.8	-0.01	-0.07	11.1	94	1
466	21 37 22.78	57 16 58.1	0.70	-0.69	12.9	5	1
467	21 37 30.42	57 16 52.7	0.18	-0.10	14.1	0	2
468	21 36 35.53	57 17 52.8	-0.14	-0.21	10.5	89	1
469	21 36 44.63	57 17 47.8	-0.19	-0.12	13.7	90	1
470	21 36 53.75	57 17 35.7			14.8		
471	21 36 38.46	57 19 16.6	-0.75	0.46	11.5	10	1
472	21 36 46.56	57 18 22.5	0.39	-0.29	13.4	81	1
473	21 36 49.79	57 18 37.8	-0.03	0.11	14.2	94	1
474	21 36 51.56	57 19 47.7	-0.06	0.03	12.5	94	1
475	21 37 11.27	57 19 32.4			15.2		
476	21 37 4.30	57 19 14.6			15.2		
477	21 37 7.87	57 19 0.6			14.9		
478	21 37 15.41	57 18 37.7			14.7		
479	21 37 26.95	57 18 22.4	1.03	-0.74	11.7	0	1
480	21 37 36.83	57 17 49.5	-0.22	0.26	13.2	88	2
482	21 37 33.25	57 17 28.0			14.9		
483	21 36 49.28	57 20 44.2	0.60	-2.45	13.0	0	1
485	21 36 57.43	57 20 29.1			15.2		
486	21 37 1.43	57 21 25.4	0.16	0.14	13.6	91	2
488	21 37 9.61	57 20 11.7	1.39	-1.07	14.0	0	1
489	21 37 10.74	57 20 8.7			14.8		
490	21 37 16.98	57 19 29.3	0.01	0.10	14.3	94	1
492	21 37 15.56	57 20 38.3	-6.41	2.78	15.0	0	2
493	21 37 24.33	57 19 36.9	-0.61	0.28	13.9	42	1
494	21 37 42.72	57 19 5.6			15.1		
495	21 37 43.74	57 19 28.3			15.0		
497	21 37 49.27	57 18 11.7	0.20	0.05	12.4	92	1
498	21 37 53.03	57 18 10.3	-0.01	-0.12	13.4	94	2
499	21 37 57.23	57 16 22.5			14.6		
500	21 37 59.52	57 17 18.8			15.0		
502	21 37 0.22	57 22 26.2			15.1		
504	21 37 6.71	57 21 27.0			15.0		
507	21 37 40.35	57 20 51.9	0.16	-0.12	13.0	93	1
508	21 37 53.72	57 19 36.0			15.0		
509	21 37 51.95	57 19 52.2			15.2		
511	21 37 51.31	57 20 27.9	-0.90	0.09	14.4	0	1
512	21 37 45.84	57 21 16.7	0.80	-0.25	14.1	0	1
513	21 37 47.58	57 21 26.2	0.75	-0.61	14.0	8	2
514	21 37 51.40	57 21 32.6	-0.06	0.11	12.0	94	1
515	21 37 52.36	57 21 39.8			15.1		
516	21 37 56.50	57 20 43.1	0.40	-0.22	13.9	83	1
517	21 37 44.77	57 22 19.4			14.8		
518	21 37 11.29	57 22 28.2			15.1		
521	21 37 10.08	57 23 46.2	-0.16	-0.33	12.2	80	1
523	21 37 26.73	57 23 14.5	-0.23	0.06	12.4	91	1
525	21 37 38.59	57 22 56.2			14.8		
526	21 37 43.78	57 22 48.6			14.8		
527	21 37 47.96	57 22 48.3	0.01	0.03	13.9	94	1
528	21 36 39.91	57 25 4.5			15.0		
529	21 36 47.29	57 25 12.4			15.0		
530	21 36 53.21	57 24 47.3			15.1		
531	21 36 53.13	57 24 22.0			15.1		
532	21 37 1.84	57 25 9.5	-0.03	-0.02	13.4	94	1
534	21 37 13.75	57 25 13.6	0.14	0.21	14.0	89	1
535	21 37 28.17	57 24 24.7	-0.25	0.18	11.0	90	1
537	21 37 43.84	57 23 44.3	-0.02	0.06	13.8	94	1
538	21 37 45.84	57 23 45.1			14.9		
539	21 37 47.60	57 23 49.5	-0.17	0.16	13.6	92	1
540	21 37 48.19	57 23 52.5			14.9		
541	21 37 57.06	57 23 59.9			15.1		
542	21 37 59.70	57 24 25.2	5.14	0.90	14.9	0	2
544	21 37 39.43	57 25 12.5			15.0		
545	21 36 44.82	57 26 27.9	0.29	-0.31	11.2	87	1
546	21 37 6.68	57 26 13.7	0.26	-0.32	12.5	87	1
547	21 37 5.92	57 27 3.4	-1.84	0.45	12.5	0	1
548	21 37 15.48	57 27 15.1	0.17	-0.04	13.6	93	1
549	21 37 14.74	57 26 36.2			14.7		
550	21 37 18.72	57 26 15.5	0.12	-0.29	11.3	91	1
551	21 37 18.38	57 25 56.0			15.0		
552	21 37 31.35	57 26 17.4	-0.66	0.74	14.5	5	3
553	21 37 29.97	57 25 42.7	0.14	0.88	13.5	0	1
554	21 37 37.45	57 26 43.0	-0.44	0.50	11.4	47	1
555	21 37 49.09	57 25 34.8	-0.21	-0.01	9.1	91	1
556	21 37 52.79	57 26 48.8	-0.42	0.48	11.0	54	1
557	21 37 59.04	57 27 1.3	-0.88	0.90	13.8	0	1
558	21 36 56.77	57 27 48.0	0.23	-0.32	9.9	88	1
559	21 36 57.96	57 28 23.3	-1.17	1.41	14.6	0	2
560	21 37 2.54	57 28 25.5	0.35	-0.26	14.1	82	2
561	21 37 14.21	57 28 23.3	0.32	0.15	14.6	0	2
562	21 37 33.22	57 28 3.5			15.1		
563	21 37 33.61	57 28 6.7			15.1		
564	21 37 35.27	57 28 32.3	0.35	-0.30	11.2	84	1
565	21 37 43.61	57 28 36.6	0.26	-0.05	12.1	92	1
566	21 37 46.21	57 28 52.3	0.27	-0.28	10.6	89	1
567	21 37 59.06	57 28 44.2	0.13	-0.12	13.6	94	1
568	21 36 56.41	57 29 10.9	0.32	0.09	14.1	83	2
569	21 37 3.99	57 29 19.8	-0.11	0.12	12.8	93	1
570	21 37 53.07	57 30 1.3	0.54	0.10	13.8	49	1
571	21 36 56.20	57 29 59.5	0.02	0.10	12.7	94	1
572	21 36 57.14	57 30 7.2	0.02	-0.34	14.2	86	1
573	21 37 25.22	57 30 28.4	0.92	-0.33	14.7	4	2
574	21 37 44.98	57 31 17.9	0.25	-0.11	14.2	0	1
575	21 37 53.54	57 31 35.4	-0.13	-0.13	12.2	91	2
576	21 37 57.71	57 31 21.0	0.43	-0.09	12.1	0	1
577	21 38 6.17	57 30 52.6	0.14	-0.32	12.6	88	2
578	21 36 53.87	57 31 42.5	0.11	-0.13	13.7	94	1
579	21 36 45.76	57 32 4.5	-1.77	-0.74	12.4	0	1
580	21 38 24.16	57 11 59.5	-0.02	-0.06	14.3	94	1
581	21 38 25.09	57 12 4.5			14.9		
582	21 38 30.85	57 11 43.2	0.52	-0.14	14.1	68	2
583	21 38 37.59	57 12 12.5	-0.07	-0.02	10.6	94	1
584	21 38 39.63	57 11 30.3	-0.18	-0.12	14.2	91	1
585	21 38 45.85	57 10 54.0	-0.00	-0.05	13.8	94	1
586	21 38 44.54	57 11 30.5			14.8		
587	21 38 48.71	57 11 45.2	-0.26	0.04	14.7	0	2
588	21 38 55.39	57 11 26.2	0.14	0.10	13.1	92	1
589	21 39 5.60	57 10 57.1			15.0		
590	21 39 21.49	57 10 36.8	-0.03	0.23	13.7	91	1
591	21 39 31.79	57 10 17.2	0.65	-0.51	11.2	25	1
592	21 39 49.81	57 10 28.8	-0.13	-0.11	12.2	93	1
593	21 39 48.60	57 10 48.2	-0.25	-0.25	13.7	81	1
594	21 39 50.74	57 10 35.2	-1.00	0.63	13.8	0	1
595	21 39 51.06	57 11 8.3	0.30	-0.28	13.8	87	1
596	21 38 20.46	57 13 23.1	-2.27	0.48	13.1	0	1
597	21 38 4.07	57 14 7.1	0.17	0.18	14.5	0	2
598	21 38 14.79	57 15 5.9	0.91	-0.92	12.0	0	1
599	21 38 24.76	57 14 55.0	-0.14	-0.32	14.7	82	2
600	21 38 28.32	57 14 29.9	-1.20	0.21	13.1	0	1
601	21 38 45.51	57 13 10.1	0.07	-0.03	14.3	93	2
602	21 38 44.45	57 14 30.2			15.1		
604	21 38 51.23	57 14 5.3	-0.03	0.75	10.4	10	1
605	21 38 55.61	57 14 17.9	-3.20	2.40	14.8	0	2
606	21 38 56.85	57 14 2.6	-0.64	0.34	12.2	32	1
607	21 39 3.74	57 14 5.3			14.8		
608	21 39 9.86	57 14 12.6	0.26	-0.18	13.7	90	2

* HD 206267 Probable Member, Blended Image

TABLE III. (continued)

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
609	21 39 9.55	57 13 41.4	-0.50	0.16	14.3	0	1
610	21 39 18.79	57 13 30.7			14.0		
611	21 39 17.55	57 12 38.5	0.25	-0.62	14.8	45	2
612	21 39 27.93	57 13 45.2	-0.52	0.28	13.3	60	1
613	21 39 33.06	57 12 49.8	-1.84	-0.37	11.3	0	1
614	21 39 34.94	57 11 46.2	0.23	0.12	14.4	89	2
615	21 39 50.09	57 11 48.4	0.12	-0.02	12.3	94	1
616	21 39 44.77	57 14 23.9	0.07	1.36	10.8	0	1
617	21 39 45.53	57 14 18.5	-0.03	-0.42	13.5	75	2
618	21 38 7.30	57 15 33.1	0.61	-0.56	14.4	27	2
619	21 38 6.80	57 15 55.8	-0.58	0.00	14.4	45	2
620	21 39 5.02	57 15 55.3	0.25	-0.02	14.5	91	2
621	21 39 23.66	57 15 30.7	0.02	0.20	13.4	92	1
622	21 39 25.85	57 15 12.5	-0.22	0.55	14.9	51	2
623	21 39 31.27	57 15 35.7	-0.27	0.01	14.6	0	2
624	21 39 34.24	57 15 11.4	0.09	0.22	14.2	0	2
625	21 39 51.15	57 15 45.8	-0.15	-0.16	14.6	91	2
626	21 38 6.84	57 16 57.2	0.26	-0.16	13.7	91	2
627	21 38 10.76	57 16 53.6	0.26	0.03	13.9	91	1
628	21 38 11.56	57 17 2.1	0.10	-0.38	14.8	84	2
629	21 38 17.44	57 17 18.6			15.0		
630	21 38 29.04	57 17 23.9			14.9		
631	21 38 38.72	57 17 34.9			15.0		
632	21 38 39.55	57 17 19.5	-0.65	0.59	14.1	11	1
633	21 38 44.93	57 17 0.0	-0.15	-0.04	10.0	93	1
634	21 38 47.06	57 17 43.8	-0.23	0.33	13.6	84	1
635	21 39 16.58	57 16 39.8	-0.12	0.17	14.5	0	2
636	21 39 25.73	57 16 27.2	0.33	-0.13	14.6	89	2
637	21 39 26.44	57 16 59.3			14.4		
638	21 39 40.77	57 16 53.6	1.00	-0.13	11.1	1	1
639	21 38 6.71	57 19 4.2	0.79	-0.15	14.8	0	2
640	21 38 13.58	57 19 14.5	-0.07	0.12	10.7	94	1
641	21 38 20.66	57 19 30.3	0.06	0.12	14.2	93	1
642	21 38 8.57	57 20 9.4	-0.20	-0.15	14.5	88	2
643	21 38 25.88	57 19 51.7			14.9		
644	21 38 31.31	57 20 30.9			14.9		
646	21 38 35.97	57 19 44.5	0.30	0.12	14.4	85	1
647	21 38 56.35	57 19 58.5	-0.14	0.26	12.4	90	1
648	21 38 54.02	57 18 38.9	0.19	-0.25	14.6	90	2
649	21 39 4.12	57 19 26.4			15.1		
650	21 39 5.37	57 18 38.3	0.80	0.25	14.8	0	2
651	21 39 14.30	57 19 6.6	-0.36	0.27	12.9	81	1
652	21 39 19.63	57 18 43.6	-0.75	0.10	14.1	15	2
653	21 39 26.65	57 19 24.9	-0.22	0.64	14.7	32	2
654	21 39 35.02	57 18 54.7	-0.82	0.63	13.7	3	2
655	21 39 49.36	57 19 3.4	0.40	-0.06	14.3	81	2
656	21 39 59.00	57 19 26.8	0.48	-0.36	11.5	66	2
657	21 38 4.25	57 21 29.9	-0.05	-0.13	12.7	93	1
658	21 38 7.95	57 21 17.9	-0.14	0.04	10.6	94	1
659	21 38 13.32	57 20 28.3			15.0		
660	21 38 7.82	57 21 31.2	0.09	-0.05	13.2	94	1
662	21 38 14.68	57 22 35.1	-0.14	0.03	10.3	94	1
663	21 38 15.88	57 22 51.1	-0.00	-0.34	13.9	86	1
664	21 38 19.39	57 22 51.0	0.49	0.17	14.2	0	1
665	21 38 27.86	57 23 22.9	-0.11	0.80	14.1	6	1
666	21 38 27.26	57 23 46.3	-0.29	-0.13	14.7	84	2
667	21 38 25.88	57 23 53.5	-0.11	0.66	14.6	27	2
668	21 38 44.36	57 22 0.6	0.31	0.00	14.7	0	2
669	21 38 42.02	57 23 37.0	0.22	0.02	12.4	92	1
670	21 38 49.47	57 23 35.1	0.17	-0.60	12.4	51	1
671	21 38 49.55	57 21 51.8	-0.28	-0.67	12.6	5	1
672	21 38 48.41	57 21 14.8	4.34	-1.49	7.6	0	2
673	21 38 49.73	57 21 21.5	4.22	-1.70	8.1	0	1
674	21 38 49.78	57 21 15.0	0.53	-1.95	13.7	0	2
675	21 38 56.60	57 22 23.5	1.63	-1.23	14.3	0	1
676	21 39 13.29	57 21 48.0	0.38	0.22	11.6	66	1
677	21 39 14.49	57 22 32.2	-0.52	0.44	14.5	0	2
678	21 39 12.34	57 22 47.5	-0.25	-0.19	14.7	84	2
679	21 39 16.77	57 20 48.6	0.10	-0.05	14.8	94	2
680	21 39 23.11	57 22 33.2	-0.67	0.32	10.6	26	1
681	21 39 40.64	57 21 27.3	0.15	0.18	14.6	0	2
682	21 39 40.52	57 21 18.6			14.7		
683	21 39 43.77	57 21 13.8	0.06	-0.13	14.5	0	2
684	21 40 1.90	57 22 14.8	0.46	-0.07	13.5	79	1
685	21 38 57.02	57 23 43.1	-1.20	1.04	14.6	0	2
686	21 39 10.90	57 24 11.7	4.51	4.40	14.8	0	2
687	21 39 16.73	57 24 6.3			14.8		
688	21 39 25.43	57 23 43.2	-0.06	-0.10	13.0	94	1
689	21 39 30.03	57 23 18.4			14.9		
690	21 39 51.49	57 23 15.2	0.14	-0.59	12.3	53	1
691	21 39 50.40	57 24 40.7	-0.36	0.05	12.2	85	1
692	21 38 13.39	57 25 57.2	0.36	-0.18	11.8	87	1
693	21 38 13.72	57 26 7.4	0.16	0.29	14.5	0	1
694	21 38 33.39	57 25 56.3			14.9		
695	21 38 37.95	57 24 8.6			14.9		
696	21 38 53.74	57 25 5.1	-0.40	-0.61	14.1	4	2
697	21 38 54.03	57 25 34.6	-0.02	0.17	11.4	93	1
698	21 38 55.21	57 26 6.2	0.09	-0.75	12.9	14	1
699	21 39 0.34	57 26 35.7	0.60	-0.33	14.3	51	2
700	21 39 10.81	57 25 41.8	-0.01	-0.48	10.8	68	1
701	21 39 14.88	57 25 39.3	-0.42	0.35	14.8	0	2
702	21 39 20.84	57 26 1.4	0.35	-0.10	12.3	88	1
703	21 39 31.94	57 25 55.0	-0.20	0.05	13.5	92	1
704	21 38 17.51	57 27 34.2	-0.04	0.44	14.6	0	2
705	21 38 24.55	57 28 43.4	-0.49	0.33	12.2	62	1
706	21 38 22.75	57 29 27.6	0.46	-0.71	13.6	19	2
707	21 38 28.27	57 29 14.5	-0.07	-0.15	12.7	93	1
708	21 38 29.69	57 28 54.8	0.38	-0.06	13.1	86	1
709	21 38 31.28	57 28 49.5	0.31	0.38	14.3	48	2
710	21 38 32.15	57 29 4.5	0.27	-0.15	14.4	91	2
711	21 38 32.84	57 29 9.6	-1.48	0.82	12.5	0	1
712	21 38 42.07	57 28 50.6	0.12	0.11	12.6	93	1
713	21 38 39.25	57 28 7.5	-0.09	0.15	10.8	93	1
714	21 38 41.27	57 28 11.6	-0.03	0.18	12.6	92	1
715	21 38 42.02	57 27 12.1	0.03	0.11	12.9	94	1
716	21 39 12.02	57 27 3.1	0.35	-0.40	13.8	77	1
717	21 39 22.49	57 27 19.7	-0.68	2.10	13.1	0	1
718	21 39 27.27	57 27 9.8	-0.15	-0.96	12.2	0	1
719	21 39 36.24	57 28 9.0	0.29	0.05	14.3	88	1
720	21 39 7.42	57 28 27.4	-2.30	1.47	14.2	0	1
721	21 39 15.35	57 29 10.8	-0.13	0.09	14.4	93	1
722	21 39 27.64	57 29 23.4	-0.52	0.15	14.4	0	1
723	21 39 33.51	57 29 15.3	-0.31	0.82	13.2	5	1
724	21 38 13.99	57 31 1.8	-0.56	0.93	14.4	1	1
725	21 38 29.25	57 30 39.1	-0.06	-0.01	11.4	94	1
726	21 38 46.88	57 30 28.0			14.8		
727	21 39 1.62	57 30 29.7			14.4		
728	21 39 8.69	57 30 18.4	0.01	-0.52	11.7	62	1
729	21 39 15.28	57 30 7.8	-0.90	1.68	14.2	0	2
730	21 39 31.18	57 30 3.2	-0.21	-0.22	14.7	0	2
731	21 39 33.02	57 31 52.2	-0.10	-0.37	13.9	79	1
732	21 38 16.51	57 32 39.1	-0.16	0.16	11.3	92	1
733	21 38 26.04	57 31 55.2	0.42	-0.09	14.3	0	1
734	21 38 40.75	57 31 18.9	-0.85	0.95	13.7	0	1
735	21 38 54.23	57 31 50.5	0.53	-0.37	14.6	0	2
736	21 38 58.07	57 31 49.6	0.13	-0.07	11.5	94	1
737	21 39 12.39	57 31 50.8	-1.13	0.31	11.8	0	1
738	21 39 13.35	57 31 43.6	0.09	-0.34	14.4	0	2
739	21 39 22.73	57 31 33.3	1.37	-0.48	14.3	0	1
740	21 39 42.12	57 31 48.2	-0.07	-0.12	12.8	0	1
741	21 39 49.54	57 31 34.1	0.17	-0.20	10.7	91	2
742	21 39 51.62	57 31 17.8	0.48	-0.11	14.5	0	1
743	21 39 54.77	57 31 2.2	0.16	0.20	14.0	89	1
744	21 39 54.76	57 30 17.1	0.25	-0.04	14.1	92	1
745	21 39 49.93	57 29 34.7	-2.35	0.44	14.5	0	2
746	21 39 39.46	57 32 48.7	-0.19	-0.06	9.9	91	1
747	21 38 24.47	57 22 38.0	-0.23	-0.14	9.6	88	1
800	21 38 57.63	57 3 1.3	0.02	-0.23	9.9	90	2
801	21 39 53.07	56 59 25.5	-0.05	-0.10	12.6	94	1
802	21 39 58.78	56 59 26.5	-0.80	0.51	13.0	4	1
803	21 40 5.93	57 5 11.3	0.01	0.01	12.9	94	1
804	21 40 4.29	57 6 4.0	-0.79	0.47	13.6	6	1
805	21 40 2.05	57 8 43.2	0.01	0.01	10.8	94	2
806	21 39 58.76	57 9 4.1	0.55	-0.51	13.5	40	1
807	21 40 1.13	57 10 0.6	-0.40	0.13	12.3	81	1
808	21 40 1.46	57 10 6.9	-1.26	-0.13	14.4	0	1
809	21 40 6.74	57 12 4.0	0.30	0.11	13.8	86	1
810	21 40 2.09	57 18 10.5	-0.23	-0.04	12.7	90	1
811	21 40 3.16	57 18 6.0	-0.81	0.63	11.7	2	1
812	21 40 4.54	57 18 52.6	-0.39	0.44	12.1	63	1
813	21 40 6.15	57 19 26.3	0.52	-0.30	13.8	66	1
814	21 40 6.48	57 23 49.7	0.20	-0.32	13.4	88	1
815	21 40 1.29	57 25 43.3	0.62	-0.32	14.6	47	2
816	21 40 16.43	57 4 40.2	-0.02	0.19	14.3	92	1
817	21 40 10.09	57 6 39.8	-0.21	0.11	14.2	92	1
818	21 40 18.77	57 5 36.4	-0.39	0.76	12.4	9	1
819	21 40 24.83	57 5 36.3	-0.61	-0.49	13.6	2	1
820	21 40 24.82	57 7 8.0			13.5		
821	21 40 45.28	57 1 32.6	-0.26	0.11	13.9	90	1
822	21 40 49.32	57 7 2.0	0.13	-0.12	11.1	93	2
823	21 40 51.33	57 7 44.5	0.85	-0.49	13.4	5	1
824	21 40 46.24	57 9 0.9	0.03	0.25	14.4	90	1
825	21 40 40.71	57 9 30.3	0.78	-0.48	12.8	10	1
826	21 40 32.37	57 11 40.5	-3.81	0.17	12.3	0	1
827	21 40 42.07	57 13 0.1	-0.28	-0.12	14.1	86	1
828	21 40 26.80	57 12 42.8	0.37	-0.22	14.6	86	2
829	21 40 20.03	57 12 48.9	0.10	0.36	14.4	79	1
830	21 40 25.01	57 14 7.3	0.03	-0.13	12.2	94	1
831	21 40 43.56	57 13 42.5	0.40	0.02	13.0	81	1
832	21 40 25.05	57 14 21.4	0.02	-0.36	14.6	85	2
833	21 40 26.42	57 14 27.3	-2.65	2.27	14.5	0	2
834	21 40 26.16	57 14 40.7	-0.61	1.75	14.6	0	2
835	21 40 35.13	57 15 56.4	-0.22	-0.65	14.6	10	2
836	21 40 16.00	57 15 45.6	0.21	-0.13	13.1	93	1
837	21 40 21.54	57 16 25.1	-0.07	0.90	13.5	1	1
838	21 40 41.84	57 17 30.4	0.07	-0.42	13.1	81	1
839	21 40 21.96	57 19 9.1	0.22	-0.34	13.6	87	1
840	21 40 8.28	57 20 22.3	0.80	-0.99	13.6	0	1
841	21 40 25.85	57 19 59.5	-1.75	1.33	10.7	0	2
842	21 40 27.94	57 20 10.2	-0.06	-0.09	10.3	0	2

TABLE III. (continued)

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
843	21 40 16.18	57 21 5.8	-0.16	-0.67	12.0	13	1
844	21 40 18.82	57 23 36.6	0.31	-0.02	14.2	87	2
845	21 40 17.76	57 23 47.4	0.28	-0.61	11.8	48	1
846	21 40 17.44	57 23 53.9	0.19	-0.59	11.3	53	2
847	21 40 24.75	57 24 9.1	0.95	-0.23	10.4	0	1
848	21 40 24.71	57 24 8.9			10.3		
849	21 40 28.39	57 23 41.3	-2.65	1.49	14.7	0	2
850	21 40 30.21	57 25 32.7	-0.20	0.02	11.5	91	2
851	21 40 44.69	57 23 21.7	-0.17	0.15	14.4	92	2
852	21 40 47.74	57 24 5.8	-0.13	0.44	14.3	75	1
853	21 40 50.61	57 24 8.5	-0.07	-0.30	13.9	87	1
854	21 40 52.13	57 22 43.8	0.16	0.13	13.4	91	1
855	21 40 9.37	57 26 55.1	0.30	-0.15	12.6	90	1
856	21 40 42.81	57 26 9.4	0.32	-0.20	13.9	88	2
857	21 40 44.29	57 27 25.2	0.20	0.09	14.2	91	1
858	21 40 10.97	57 28 49.8	0.86	-0.71	13.7	1	1
859	21 40 6.77	57 29 42.4	-0.35	-0.46	13.5	26	1
861	21 40 28.93	57 30 58.9	0.21	-0.07	14.4	93	1
862	21 40 17.48	57 31 53.5	0.49	-0.01	14.5	70	2
863	21 40 40.31	57 29 25.3	-0.93	0.76	12.1	0	1
864	21 40 50.42	57 30 25.3	-0.49	-0.39	7.3	16	1
865	21 40 58.05	56 59 20.7	-0.38	0.33	12.1	76	1
866	21 41 8.67	56 58 14.8	0.60	-0.21	10.7	55	1
867	21 41 56.75	56 59 34.7			13.3		
868	21 41 42.56	57 2 0.4	-0.37	-0.19	13.2	67	2
869	21 41 42.48	57 4 48.9	-0.34	0.81	12.7	5	1
870	21 41 15.63	57 6 26.8	-0.30	0.36	14.3	0	1
871	21 41 11.10	57 6 27.9	0.28	0.01	13.8	90	1
872	21 40 56.03	57 6 28.5	0.15	-0.04	12.6	94	1
873	21 41 4.16	57 7 26.7	0.29	0.42	13.9	46	1
874	21 41 23.93	57 7 52.3	-0.51	0.55	13.5	28	1
875	21 41 27.08	57 9 41.6	-0.39	-0.23	14.6	58	2
876	21 41 26.80	57 10 9.2	-0.11	-0.32	14.6	0	2
877	21 41 30.22	57 10 15.3	0.81	-0.82	13.3	1	1
878	21 41 32.13	57 10 29.2	0.65	0.23	12.4	12	1
879	21 41 34.68	57 11 7.5	-3.06	0.46	14.1	0	2
880	21 41 14.69	57 12 23.3	-0.37	0.31	12.9	77	1
881	21 41 32.01	57 14 35.5	-1.48	1.10	10.4	0	1
882	21 41 25.38	57 14 25.6	0.30	-0.84	14.2	9	2
883	21 41 15.77	57 14 46.6	0.01	-0.37	10.7	81	2
884	21 41 10.93	57 15 38.3	-0.09	-0.51	12.9	56	1
885	21 40 55.52	57 15 41.1	-0.32	0.56	12.4	46	1
886	21 41 2.33	57 16 20.1			14.2		
888	21 41 1.29	57 17 12.4			14.6		
889	21 41 7.77	57 16 28.6	-0.40	0.63	13.3	27	1
890	21 41 8.30	57 16 17.2	0.30	0.56	14.5	19	2
891	21 41 23.00	57 16 59.6	0.25	-0.14	12.7	92	1
892	21 41 12.80	57 18 6.8	-0.07	-0.20	13.7	91	1
893	21 40 47.46	57 19 17.4	0.15	0.38	14.7	70	2
894	21 40 59.50	57 19 13.5	1.35	-1.40	14.3	0	1
895	21 41 5.80	57 19 32.6	0.28	0.11	13.3	84	2
896	21 41 13.08	57 20 29.7	-1.26	0.76	14.6	0	2
897	21 41 20.83	57 19 59.1	0.09	0.02	12.8	94	1
898	21 41 33.32	57 21 2.7	0.43	-0.22	10.5	0	2
899	21 41 20.58	57 22 25.0	-0.10	0.00	13.3	94	1
900	21 41 23.50	57 22 49.8	-1.73	0.64	14.1	0	1
901	21 41 18.77	57 23 18.5	-1.08	1.77	10.0	0	1
902	21 41 32.94	57 23 59.3	0.27	-0.32	14.0	87	1
903	21 41 6.70	57 23 54.5	1.00	-0.34	9.9	0	2
906	21 41 28.80	57 26 35.6	0.27	-0.84	13.4	7	2
907	21 41 25.68	57 28 56.5	0.39	-0.27	13.3	83	1
908	21 41 20.08	57 30 1.7	0.74	-0.44	11.6	18	1
909	21 41 13.09	57 30 52.5	0.19	-0.07	12.3	93	1
910	21 41 9.30	57 31 37.3	-0.35	0.16	11.2	83	2
911	21 41 1.89	57 32 33.0	0.68	-0.22	11.9	36	1
912	21 40 58.02	57 32 53.9	-0.29	0.76	12.0	11	1
914	21 42 0.34	57 0 33.1	0.47	-0.58	12.8	41	1
915	21 42 1.91	57 0 38.5	0.25	0.11	12.7	89	2
916	21 42 14.07	57 1 34.4	0.85	-0.52	14.0	5	2
917	21 42 31.36	57 2 4.1	0.16	-0.48	12.1	74	1
918	21 42 39.73	57 1 31.9	1.61	-0.46	12.0	0	1
919	21 42 41.93	57 1 24.6	-0.81	0.25	13.3	8	1
920	21 42 42.48	57 0 23.8	0.28	-0.07	13.7	90	2
921	21 43 2.55	57 2 38.0	-0.17	0.95	10.6	1	1
922	21 42 43.49	57 3 50.4	0.40	0.12	12.5	73	2
923	21 42 3.09	57 5 32.1	0.22	-0.12	14.0	92	2
924	21 42 38.78	57 6 16.0	0.64	-0.42	12.7	37	1
925	21 42 36.55	57 6 27.8	-0.14	-0.23	14.3	0	1
926	21 42 59.66	57 6 19.9	0.32	0.07	13.1	85	1
927	21 42 58.81	57 6 42.8	-0.15	0.35	14.2	0	1
928	21 41 58.40	57 8 28.1	-0.63	0.43	13.8	26	2
929	21 42 13.94	57 10 41.8	0.32	-0.02	14.2	88	2
930	21 42 36.68	57 9 45.1	0.44	-0.17	12.9	0	1
931	21 42 45.45	57 8 35.7	-0.16	0.02	14.1	92	2
932	21 42 58.05	57 8 54.7	0.04	-0.22	13.9	0	2
933	21 43 2.37	57 8 52.3			14.0		
935	21 42 34.86	57 11 29.1	-0.42	0.04	13.7	79	1
936	21 42 27.65	57 12 33.5	0.09	-0.02	10.0	93	2
937	21 42 38.10	57 13 33.8	-0.22	-0.36	12.8	0	2
938	21 43 0.42	57 13 21.8	-2.13	2.01	9.1	0	1
939	21 41 45.22	57 16 5.7	0.55	-0.38	13.3	55	1
940	21 41 52.62	57 15 7.8	0.05	-0.37	14.4	0	2
941	21 41 45.60	57 17 48.6	0.19	0.06	13.0	91	2
942	21 41 41.08	57 18 24.2	0.20	-0.20	14.2	92	1
943	21 42 24.27	57 15 45.4	-0.20	0.40	14.6	0	2
944	21 42 2.90	57 18 35.0	0.20	-0.35	14.2	87	1
945	21 42 5.24	57 19 24.1	0.25	-0.36	11.9	85	1
946	21 41 43.47	57 20 43.6	0.43	0.49	12.1	11	1
947	21 41 51.32	57 20 55.8	0.12	0.49	14.5	50	2
948	21 42 9.74	57 20 19.3	0.09	-0.60	13.5	48	1
949	21 42 19.23	57 22 10.7	-0.31	0.13	12.9	87	2
950	21 42 22.17	57 22 6.9	0.95	-0.75	11.3	0	1
952	21 42 43.10	57 20 54.3	-1.30	1.05	14.0	0	2
953	21 42 56.48	57 19 40.1	0.34	-0.02	14.4	87	1
954	21 42 57.90	57 20 30.3	0.46	-1.43	14.3	0	1
955	21 43 1.25	57 21 12.0	0.44	-1.50	12.4	0	1
956	21 42 39.47	57 22 46.4	-1.17	0.44	13.5	0	2
957	21 42 32.73	57 23 12.2	-0.82	0.25	14.5	8	2
958	21 42 23.22	57 23 29.5	0.34	0.20	14.4	75	1
959	21 41 48.11	57 26 6.9	0.21	-0.40	12.5	81	2
960	21 42 23.93	57 25 25.5	0.87	-0.91	13.5	0	1
961	21 41 46.22	57 28 34.9	-0.04	-0.04	13.0	94	1
962	21 41 50.54	57 28 53.9	-0.00	-0.13	13.8	93	1
963	21 42 18.09	57 28 50.6			13.2		
964	21 42 34.05	57 27 3.1	-0.34	0.09	11.7	86	1
965	21 42 40.91	57 27 18.2	-3.86	3.15	12.1	0	1
966	21 42 50.61	57 27 48.2	0.83	-0.55	10.9	6	2
967	21 42 47.02	57 30 24.6	-0.01	-0.07	9.0	0	1
968	21 41 36.76	57 21 56.5	0.55	-0.74	13.0	10	1
1000	21 40 52.54	57 33 18.6	0.32	-0.10	12.2	89	1
1001	21 38 34.66	57 33 10.1	-0.09	-0.19	11.6	91	1
1002	21 39 18.64	57 32 53.7	0.03	0.35	14.1	81	1
1003	21 38 14.61	57 33 10.5	0.20	-0.36	13.2	86	1
1004	21 40 16.93	57 33 21.3	0.14	-0.18	12.5	93	1
1005	21 37 15.81	57 33 15.4	0.06	0.16	12.9	92	1
1006	21 37 10.02	57 33 15.6	0.25	-0.36	11.9	85	1
1007	21 36 58.05	57 32 51.9	-0.06	-0.40	8.9	77	1
1008	21 36 26.31	57 33 9.2	0.96	1.07	12.4	0	1
1009	21 36 43.84	57 33 33.2	-0.05	-3.08	13.5	0	1
1010	21 36 27.60	57 33 35.9	-0.22	-0.92	12.1	0	1
1011	21 37 6.24	57 34 43.6	-0.07	0.17	11.7	93	1
1012	21 36 36.72	57 35 50.5	0.03	-0.13	12.9	94	1
1014	21 36 59.96	57 36 24.4	-1.82	0.34	13.3	0	1
1015	21 37 20.06	57 36 50.1	-0.21	0.21	13.7	90	1
1016	21 37 21.05	57 37 44.1	0.28	-1.13	11.4	0	1
1017	21 37 13.39	57 38 13.8	-0.35	-0.09	13.6	81	1
1018	21 36 24.62	57 39 40.3	0.18	-0.27	12.8	90	1
1020	21 36 36.01	57 41 48.1	0.26	-0.36	13.3	84	1
1021	21 36 46.90	57 41 41.9	0.42	-0.25	13.7	81	1
1022	21 37 13.10	57 41 5.1	-1.29	2.11	10.4	0	1
1023	21 37 21.66	57 38 58.7	-0.37	0.40	13.8	68	1
1024	21 37 26.96	57 39 24.8	-0.10	-0.25	12.1	89	1
1025	21 36 22.14	57 44 16.7	-0.33	-0.80	12.0	1	1
1026	21 36 47.61	57 44 25.5	0.01	2.35	11.8	0	1
1027	21 36 53.53	57 42 49.7	0.02	0.40	13.8	76	1
1028	21 37 13.66	57 43 9.1			13.4		
1029	21 36 28.12	57 46 0.9			13.1		
1030	21 36 48.37	57 45 57.5	0.30	-0.22	11.1	89	1
1031	21 37 5.82	57 44 44.8	0.22	-0.39	13.7	83	1
1032	21 37 12.53	57 44 56.7	-0.11	-0.13	12.8	92	1
1033	21 36 27.06	57 48 4.1	-0.66	1.43	13.2	0	1
1034	21 37 22.28	57 44 56.1			11.3		
1035	21 36 43.25	57 51 53.6	0.39	-0.09	12.8	84	1
1036	21 37 13.37	57 50 54.8	-0.02	0.02	12.4	94	1
1037	21 37 41.61	57 34 28.1	-0.17	0.06	10.1	93	1
1038	21 38 1.42	57 33 39.5	0.07	0.07	11.7	94	1
1039	21 37 48.14	57 36 0.1	-1.04	0.00	11.8	0	1
1040	21 38 1.04	57 35 39.4	0.44	-0.15	13.7	81	1
1041	21 38 13.75	57 35 32.9	-0.05	0.01	13.3	94	1
1042	21 38 24.86	57 36 7.5	1.48	-0.70	12.2	0	1
1043	21 38 26.03	57 36 13.5	0.10	0.07	12.0	93	1
1044	21 38 36.01	57 34 32.8	-0.06	-0.02	11.8	94	1
1045	21 37 46.78	57 39 6.1	-0.26	-0.02	13.7	90	1
1046	21 37 49.07	57 39 3.1	0.96	-0.37	8.5	2	1
1047	21 37 55.83	57 37 40.6	0.09	-0.15	12.4	94	1
1048	21 37 14.87	57 36 9.0	0.94	1.07	12.5	0	1
1049	21 38 1.47	57 39 27.1	-0.05	0.11	13.8	94	1
1050	21 37 59.18	57 39 53.5	2.75	-1.88	11.1	0	1
1051	21 37 31.85	57 41 28.0	-0.39	0.83	12.2	4	1
1052	21 38 13.67	57 42 2.6	-0.19	0.06	12.9	92	1
1053	21 38 8.20	57 43 36.9	-0.19	-0.26	13.6	84	1
1054	21 38 1.48	57 46 1.3	0.04	-0.39	11.3	82	1
1055	21 37 34.70	57 47 23.6	-0.46	0.32	13.7	67	1
1056	21 37 47.24	57 47 25.0	-0.02	0.26	13.8	90	1
1057	21 37 48.19	57 48 11.4	0.54	-0.20	10.9	66	1
1058	21 38 8.34	57 46 17.4	0.07	-0.26	13.9	91	1
1059	21 38 5.18	57 47 12.8	-0.28	0.13	13.3	89	1
1060	21 38 30.46	57 42 37.3	0.07	-0.07	11.4	94	1
1061	21 38 29.74	57 43 39.5	0.11	-0.19	10.7	93	1
1062	21 38 20.28	57 47 1.5	-0.09	0.12	12.2	93	1

TABLE III. (continued)

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
1063	21 38 36.70	57 47 11.1	-0.40	0.07	9.7	80	1
1064	21 38 13.19	57 49 55.6	-0.60	-0.28	11.0	13	1
1065	21 37 58.16	57 51 33.6	0.37	-0.47	13.6	67	1
1066	21 38 0.25	57 52 14.8	-0.53	0.37	11.3	49	1
1068	21 38 17.93	57 52 43.3	0.05	-0.06	11.2	94	1
1069	21 38 48.71	57 48 31.4	0.22	-0.19	11.3	91	1
1070	21 38 50.64	57 37 40.4	0.13	0.13	12.3	92	1
1071	21 39 24.75	57 35 45.7	1.13	-0.77	13.8	0	1
1072	21 39 31.31	57 37 35.9	-0.36	0.07	12.0	84	1
1073	21 39 56.75	57 34 30.5	-0.06	1.51	13.4	0	1
1074	21 39 56.98	57 35 49.7	1.21	-0.50	12.2	0	1
1075	21 39 25.61	57 38 42.6			12.3		
1076	21 40 5.23	57 36 57.9	0.06	0.37	13.3	78	1
1077	21 39 18.48	57 42 49.7	-0.28	-0.62	12.8	11	1
1078	21 39 46.80	57 41 12.2	-0.25	0.62	13.2	37	1
1079	21 40 6.92	57 18 44.0			12.1		
1080	21 40 5.63	57 40 51.5			12.9		
1081	21 40 5.58	57 41 43.1	-0.50	0.81	12.0	4	1
1082	21 39 24.52	57 47 23.7	-0.67	0.20	10.8	30	1
1083	21 39 42.54	57 47 0.5	0.03	0.02	13.3	94	1
1084	21 39 29.48	57 48 11.0	-0.07	-0.02	12.7	94	1
1085	21 39 28.77	57 51 8.2	-0.09	0.09	12.8	93	1
1086	21 39 49.03	57 49 59.3	0.55	-0.37	13.4	55	1
1087	21 39 52.01	57 49 44.8	-0.29	-0.07	13.8	86	1
1088	21 40 16.97	57 48 37.7	-0.18	0.10	14.1	92	1
1090	21 39 56.11	57 51 15.3	-0.36	0.32	12.1	77	1
1091	21 40 19.83	57 37 51.6	-2.17	1.81	8.9	0	1
1092	21 40 29.05	57 37 34.1	0.77	0.39	13.6	1	1
1093	21 40 34.46	57 36 38.4	-0.02	-0.22	11.5	91	1
1094	21 40 38.97	57 33 49.7	0.30	0.66	11.3	5	1
1095	21 40 54.02	57 35 0.4	0.42	-0.60	14.2	41	1
1096	21 40 54.26	57 35 53.0	0.63	-0.25	13.6	47	1
1097	21 40 47.93	57 36 8.5	0.50	-1.00	10.4	1	1
1098	21 40 55.55	57 37 5.4	0.15	0.00	9.9	93	1
1099	21 40 26.19	57 40 11.5	-0.01	-0.07	13.5	94	1
1100	21 40 46.76	57 39 22.4	0.20	-0.26	13.7	90	1
1101	21 40 54.44	57 39 27.7	0.05	0.11	13.7	93	1
1102	21 40 58.56	57 40 11.9	0.51	-0.19	12.3	71	1
1a03	21 40 10.94	57 42 13.3	-0.32	0.02	13.6	86	1
1104	21 40 36.53	57 43 33.3	0.49	-0.33	13.1	69	1
1105	21 40 58.79	57 42 47.9	0.09	0.11	12.4	93	1
1106	21 41 4.34	57 43 7.7	0.19	-0.13	12.5	93	1
1107	21 41 18.97	57 42 14.5	0.47	-0.44	12.8	62	1
1108	21 40 15.20	57 44 58.0	-1.79	0.52	13.6	0	1
1109	21 40 20.29	57 46 32.1	0.88	-0.79	13.8	1	1
1110	21 40 44.71	57 45 23.6	3.22	-2.86	10.1	0	1
1111	21 40 42.15	57 46 19.3	3.37	0.33	13.5	0	1
1112	21 41 4.50	57 45 23.6	0.15	-1.30	12.3	0	1
1113	21 40 59.73	57 45 39.4	0.40	0.37	12.9	34	1
1114	21 40 33.96	57 47 9.8	-0.34	0.09	12.9	85	1
1115	21 40 14.66	57 53 37.0	0.60	0.22	12.1	22	1
1116	21 40 27.42	57 52 35.1	0.86	-0.69	13.5	2	1
1117	21 40 43.65	57 53 14.1	-0.49	0.58	13.3	28	1
1118	21 41 21.68	57 37 42.8	-0.78	-0.11	13.1	5	1
1119	21 41 14.59	57 33 48.4	0.22	-0.11	12.7	92	1
1120	21 41 19.89	57 35 0.6	-0.61	0.21	13.7	44	1
1121	21 41 36.47	57 46 9.1			12.7		
1122	21 41 13.10	57 51 50.9			13.3		
1150	21 36 11.94	57 32 43.0			13.4		
1151	21 35 5.46	57 32 45.5	0.35	-0.58	13.9	50	1
1152	21 34 47.66	57 32 23.4	-0.95	2.02	11.2	0	1
1153	21 34 35.78	57 26 15.2	-4.84	0.38	12.3	0	1
1154	21 36 19.54	57 45 55.8	-1.47	-2.15	10.8	0	1
1155	21 33 20.44	57 17 26.4	-0.52	0.44	13.6	44	1
1156	21 33 37.90	57 17 37.9	-0.04	-0.60	12.7	38	1
1157	21 33 39.85	57 18 8.7	1.10	-1.01	13.6	0	1
1158	21 33 51.82	57 18 1.3	-0.27	-0.32	10.1	68	1
1159	21 33 52.69	57 18 48.3	0.30	-0.54	11.6	59	1
1160	21 34 6.33	57 19 35.1	0.05	0.00	14.0	94	1
1161	21 40 36.60	57 20 13.6	0.14	-0.32	13.3	89	1
1162	21 34 27.29	57 19 34.4	0.26	1.64	13.7	0	1
1163	21 34 30.56	57 20 8.5	0.05	0.13	14.3	93	1
1164	21 33 43.88	57 20 28.5	-2.91	1.40	14.2	0	1
1165	21 33 51.15	57 20 37.4	0.14	0.09	14.4	92	1
1166	21 33 35.57	57 21 37.4	-0.03	-0.05	11.7	94	1
1167	21 34 15.65	57 21 24.1	0.44	-0.53	13.5	52	1
1168	21 34 10.30	57 21 48.2	0.06	-0.12	12.0	94	1
1169	21 34 6.23	57 22 22.0	0.23	-0.12	12.8	92	1
1170	21 34 7.85	57 23 1.7	0.62	-0.07	12.7	47	1
1171	21 34 21.83	57 21 48.6	0.68	-0.45	12.6	26	1
1172	21 34 30.39	57 21 29.4	0.02	-0.33	11.9	87	1
1173	21 33 47.73	57 23 11.5	0.27	-0.38	13.0	83	1
1174	21 34 23.19	57 24 24.4	0.14	-0.19	12.4	93	1
1175	21 34 17.14	57 26 4.4	-0.30	-1.32	14.2	0	1
1176	21 34 23.02	57 26 55.8	-0.39	0.07	12.6	81	1
1177	21 33 47.16	57 26 50.9	-0.85	0.52	13.4	2	1
1178	21 33 40.53	57 27 32.2	-5.23	2.35	12.8	0	1
1179	21 34 30.50	57 28 7.0	-1.56	1.33	14.7	0	2
1180	21 34 22.47	57 29 19.0			14.9		
1181	21 34 9.26	57 29 23.4	-0.07	-2.80	14.5	0	1
1182	21 34 1.19	57 30 5.3	1.77	-2.62	14.5	0	1
1183	21 33 51.12	57 30 24.9	-0.04	0.17	12.5	92	1
1184	21 33 42.58	57 31 10.5			14.3		
1185	21 33 34.86	57 30 57.9	0.23	-0.79	10.3	12	1
1186	21 33 40.30	57 32 41.5	-0.31	-0.65	12.1	6	1
1188	21 34 31.30	57 32 5.7	-0.95	-1.80	10.7	0	1
1189	21 34 53.55	57 33 11.7			14.3		
1190	21 34 16.63	57 34 14.8			14.5		
1191	21 34 21.31	57 38 33.4	0.53	4.04	11.1	0	1
1192	21 33 27.66	57 41 10.2	-0.63	-0.40	12.2	4	1
1193	21 33 25.38	57 41 26.6			14.1		
1194	21 33 27.82	57 41 25.2	0.09	-0.99	12.2	1	1
1195	21 33 18.68	57 42 21.7			14.4		
1196	21 33 46.23	57 42 54.5			14.5		
1197	21 33 56.88	57 43 49.3	0.16	-0.90	13.1	3	1
1198	21 34 17.40	57 41 48.0	-0.95	0.50	13.8	1	1
1199	21 33 32.01	57 46 4.6	1.17	-1.01	13.4	0	1
1200	21 33 36.66	57 50 30.1	-0.20	-0.02	13.7	91	1
1201	21 33 43.50	57 50 32.6	0.03	-0.14	12.7	93	1
1202	21 34 58.58	57 36 16.4			14.4		
1203	21 34 38.75	57 39 6.5			14.4		
1204	21 34 36.45	57 39 42.2	-0.34	-0.52	13.1	18	1
1205	21 34 47.30	57 39 16.3			14.6		
1206	21 39 52.08	57 41 30.9	0.09	-0.71	13.7	21	1
1207	21 34 31.17	57 41 32.4			14.6		
1208	21 35 5.07	57 39 40.9	0.35	-0.21	13.8	86	1
1209	21 35 1.51	57 41 45.1			14.5		
1210	21 35 1.75	57 42 40.0	0.09	-0.04	14.3	94	1
1211	21 34 46.16	57 44 0.3	0.61	-1.64	12.3	0	1
1212	21 34 28.96	57 44 22.8	0.02	-0.21	13.4	92	1
1213	21 34 44.65	57 46 45.1	0.25	-0.58	12.1	55	1
1214	21 34 25.74	57 47 53.0	-0.06	-0.45	12.4	69	1
1215	21 34 38.23	57 48 7.5	0.03	-0.47	12.9	72	1
1216	21 34 46.97	57 48 19.7	-0.61	0.70	11.9	6	1
1217	21 34 42.33	57 50 12.7	-0.18	-0.10	12.4	91	1
1219	21 35 31.07	57 33 27.9	-1.82	1.75	12.6	0	1
1220	21 35 58.60	57 34 41.2			14.3		
1221	21 36 0.44	57 35 15.8			14.4		
1222	21 35 24.33	57 36 5.6	0.21	-0.77	13.8	15	1
1223	21 35 48.29	57 36 58.5			14.5		
1224	21 36 13.97	57 37 56.1	-0.31	-0.56	13.4	15	1
1225	21 36 18.53	57 38 45.6	0.01	-0.28	14.0	90	1
1226	21 35 38.02	57 39 38.0	0.12	-0.22	11.5	92	1
1227	21 35 6.44	57 42 6.1	0.25	0.10	13.8	89	1
1228	21 35 19.89	57 43 14.8	-0.16	-0.60	13.4	26	1
1229	21 35 43.63	57 41 15.5			14.5		
1230	21 35 47.05	57 41 11.0			14.4		
1231	21 35 58.30	57 42 16.7			14.4		
1232	21 36 15.58	57 41 47.1	-2.01	2.56	13.3	0	1
1233	21 35 38.26	57 43 47.4			14.5		
1234	21 35 43.62	57 44 2.4			14.7		
1235	21 35 45.07	57 44 49.1	-0.55	0.31	14.7	51	2
1236	21 35 53.48	57 45 16.1	0.44	-0.46	14.3	63	1
1237	21 35 59.28	57 44 6.6	-1.48	-0.50	12.2	0	1
1238	21 36 9.78	57 43 55.5			14.6		
1239	21 36 15.67	57 44 5.6			14.3		
1240	21 35 55.80	57 45 33.2			14.7		
1241	21 36 1.10	57 46 14.4			14.6		
1242	21 36 12.70	57 46 6.9			14.7		
1243	21 35 7.58	57 45 18.0	-0.72	-1.17	13.2	0	1
1244	21 35 1.62	57 48 45.4	-0.68	0.14	10.4	27	1
1245	21 35 17.77	57 49 5.7	-0.04	0.14	13.7	93	1
1246	21 35 25.74	57 48 26.1	-1.03	0.53	13.0	0	1
1247	21 35 38.35	57 49 18.6	-0.13	-0.30	13.0	83	1
1248	21 35 55.43	57 47 37.3	-0.12	0.11	14.0	93	1
1249	21 35 41.43	57 50 48.9	-0.80	0.19	14.3	9	1
1250	21 35 51.69	57 51 6.7	-0.69	-0.06	12.8	16	1
1251	21 32 46.60	56 57 47.6			13.8		
1253	21 32 44.95	56 59 23.0			13.5		
1254	21 32 5.96	57 1 28.4	-0.30	0.42	13.5	72	1
1255	21 32 40.92	57 1 22.1	-0.48	0.00	12.4	66	1
1256	21 32 46.36	57 1 8.6	-0.34	0.50	14.5	56	1
1257	21 32 56.10	57 0 48.5	3.16	0.20	14.4	0	1
1258	21 32 38.73	57 1 56.9	-1.49	0.52	13.6	0	1
1259	21 32 5.72	57 4 46.2	0.29	-0.51	13.9	66	1
1260	21 32 17.21	57 4 32.1	-0.54	0.42	12.5	43	1
1261	21 32 23.12	57 4 14.2	-1.16	0.15	9.5	0	1
1262	21 32 32.76	57 4 32.8	-1.16	0.42	11.8	0	1
1263	21 32 38.22	57 3 38.5	-0.25	0.53	14.3	55	1
1264	21 32 54.40	57 3 6.8	-0.07	-0.10	13.0	93	1
1265	21 33 7.77	57 2 41.6	0.18	-0.48	12.0	73	1
1266	21 32 21.42	57 6 59.6	-0.23	0.05	12.5	91	1
1267	21 32 20.98	57 7 8.5	0.35	-0.18	14.1	87	1
1268	21 32 53.61	57 5 20.0	-0.23	-0.03	13.5	90	1
1269	21 32 28.96	57 7 40.4			13.9		
1270	21 33 2.01	57 6 29.5	-1.14	0.64	11.2	0	1
1271	21 32 8.33	57 9 28.1	-0.34	-0.44	12.2	33	1
1272	21 32 42.04	57 9 19.0	-1.20	0.31	10.3	0	1
1273	21 32 51.52	57 9 42.2			14.3		
1274	21 32 54.44	57 9 39.5	-0.39	0.14	13.1	81	1

TABLE III. (continued)

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
1275	21 32 32.53	57 11 23.3	-0.31	-0.45	13.7	36	1
1276	21 33 3.24	57 10 29.0	0.15	-0.01	14.1	93	1
1277	21 32 56.81	57 12 9.7	-0.32	-0.20	11.0	75	1
1278	21 32 48.97	57 12 48.1			14.6		
1279	21 32 32.95	57 15 0.1			14.6		
1280	21 32 37.85	57 15 55.6	0.23	0.09	13.0	90	1
1281	21 32 11.75	57 18 4.7	-0.48	-0.21	13.5	45	1
1282	21 32 37.82	57 20 37.3	-1.31	0.67	12.6	0	1
1283	21 32 1.33	57 22 9.7	-1.42	1.16	12.5	0	1
1284	21 32 29.74	57 22 25.3	-0.38	0.33	10.9	74	1
1285	21 32 19.62	57 23 14.4	-0.48	0.81	12.7	4	1
1286	21 32 31.47	57 23 14.9	0.02	-0.13	13.6	94	1
1287	21 32 33.32	57 23 31.4	-0.19	0.07	13.6	92	1
1288	21 31 58.86	57 27 9.8	-0.34	-0.39	9.8	41	1
1289	21 32 5.84	57 27 40.5	-1.02	0.18	13.9	0	1
1290	21 32 24.68	57 27 21.6	0.31	-0.20	10.9	89	1
1291	21 32 37.98	57 28 15.8	-4.02	2.09	12.1	0	1
1292	21 32 36.07	57 29 5.7			13.8		
1294	21 32 50.30	57 28 1.8	1.10	-0.79	14.2	0	1
1295	21 32 47.02	57 29 36.5			10.0		
1298	21 33 22.65	57 2 14.8	-1.28	0.95	11.9	0	1
1299	21 33 31.10	57 2 0.7	-0.03	0.14	13.4	93	1
1300	21 33 41.62	57 0 36.7	0.21	0.35	13.4	69	1
1301	21 33 42.22	56 59 24.7			14.5		
1302	21 33 51.66	56 57 25.9			12.8		
1303	21 33 57.77	56 56 59.2	0.16	-0.50	12.9	70	1
1304	21 34 1.66	56 59 0.8	0.11	-0.90	12.1	2	1
1305	21 34 13.36	56 59 52.6	-0.33	-0.33	12.2	56	1
1306	21 34 18.85	57 1 21.1	0.42	-0.38	14.4	73	1
1307	21 34 4.42	57 2 44.5	0.02	0.36	13.1	81	1
1308	21 33 20.25	57 4 29.8	1.16	0.42	14.2	0	1
1309	21 33 20.10	57 6 7.9	0.27	-0.79	12.7	12	1
1310	21 33 52.81	57 5 33.8	-0.52	0.27	14.2	59	1
1311	21 33 55.80	57 5 39.8	0.22	-0.12	14.3	92	1
1312	21 34 24.36	57 7 24.6	-0.25	-0.19	10.3	84	1
1313	21 34 33.44	57 6 37.0	0.31	-0.33	12.4	84	1
1314	21 34 35.34	57 7 5.5	-1.33	1.07	12.7	0	1
1315	21 33 24.27	57 9 28.8	0.61	-0.66	10.3	14	1
1316	21 33 23.53	57 9 46.1	0.70	-0.45	13.5	22	1
1317	21 33 35.41	57 9 1.9	0.39	-0.56	13.0	49	1
1318	21 33 48.43	57 8 19.8	-0.23	0.13	11.3	90	1
1319	21 33 52.18	57 7 43.2	-0.07	-0.01	14.4	94	1
1320	21 40 54.47	57 9 26.2	1.45	-1.20	14.4	0	1
1321	21 33 41.68	57 9 30.9	2.25	-1.54	13.3	0	1
1322	21 34 14.14	57 8 51.7	1.09	-0.13	10.1	0	1
1323	21 34 19.44	57 10 11.5	-0.21	-0.20	10.6	86	1
1324	21 33 7.90	57 13 1.7	-0.66	0.36	13.2	27	1
1325	21 33 17.86	57 12 37.3	-0.70	-0.20	14.5	7	1
1326	21 33 29.32	57 13 10.8	-0.50	0.35	13.2	57	1
1327	21 33 56.04	57 13 48.6	0.15	-0.04	14.2	93	1
1328	21 34 11.95	57 14 35.8	-0.31	-0.40	8.9	45	1
1329	21 35 2.50	57 15 34.5	0.53	-0.58	12.7	33	1
1330	21 34 27.10	57 15 24.4	-0.31	0.29	14.3	83	1
1331	21 34 29.37	57 14 46.1	-2.28	-0.60	9.8	0	1
1332	21 34 30.62	57 14 45.6	-2.23	-0.59	9.5	0	1
1333	21 32 46.01	57 17 3.1			14.6		
1334	21 33 9.38	57 17 43.6	0.48	0.13	13.9	59	1
1335	21 33 11.07	57 17 52.6	0.56	-0.90	13.4	2	1
1336	21 33 10.76	57 19 40.2	-0.14	-0.30	11.2	83	1
1337	21 32 58.60	57 20 49.2	0.25	0.26	13.7	78	1
1338	21 33 2.01	57 27 16.0	0.01	0.37	14.1	80	1
1340	21 34 37.43	56 59 23.7	-3.45	1.52	10.9	0	1
1341	21 34 37.14	56 39 1.0			11.6		
1342	21 34 50.77	56 39 21.6	-1.45	-0.98	12.0	0	1
1344	21 34 15.54	56 40 54.4	-0.86	0.37	14.2	4	1
1345	21 34 33.58	56 40 11.8	-0.69	0.87	14.5	1	2
1346	21 34 2.01	56 43 50.9	0.62	-2.01	12.7	0	1
1347	21 34 52.24	56 43 41.4			14.5		
1348	21 34 17.65	56 46 21.1	-0.39	0.13	14.2	81	1
1349	21 34 19.41	56 46 21.9	-0.93	0.79	13.3	0	1
1350	21 34 36.52	56 46 9.6	-0.14	0.06	14.6	93	2
1351	21 34 51.69	56 46 56.6	0.44	-0.29	12.3	77	1
1352	21 34 21.67	56 48 55.8	0.03	-0.37	13.0	84	1
1353	21 34 55.16	56 48 28.8	-0.15	0.26	14.2	89	1
1354	21 34 10.08	56 50 32.2	-0.38	-0.11	10.7	75	1
1355	21 34 24.31	56 49 46.7	-0.35	0.31	14.5	78	2
1356	21 34 38.37	56 50 3.0	-1.10	-0.88	14.3	0	1
1357	21 34 43.79	56 49 41.0	-0.01	0.06	13.1	94	1
1358	21 34 46.72	56 50 2.2	-0.28	0.33	14.5	82	2
1359	21 34 49.50	56 49 51.4	-0.18	0.07	12.8	92	1
1360	21 34 0.82	56 53 2.6			10.0		
1361	21 34 18.10	56 52 40.5	-0.10	-0.06	13.1	93	1
1362	21 34 37.59	56 52 16.6			14.8		
1363	21 34 47.53	56 51 57.2	0.03	-0.05	13.9	94	1
1364	21 34 14.69	56 53 38.2			14.3		
1365	21 34 19.96	56 54 17.9	-0.03	0.34	12.2	84	1
1366	21 34 42.25	56 54 28.1			14.6		
1367	21 34 45.70	56 53 57.6	-2.02	3.25	14.5	0	2
1368	21 34 48.73	56 54 26.7			14.8		
1370	21 34 4.21	56 54 54.2	0.16	0.06	13.4	92	1
1371	21 34 34.43	56 56 4.1	0.20	0.36	14.4	68	1
1372	21 34 37.58	56 56 5.2	0.27	0.06	14.2	89	1
1373	21 35 14.06	56 40 7.5	-0.13	-0.09	12.8	92	1
1375	21 35 31.79	56 39 22.9			14.6		
1376	21 35 28.68	56 40 2.8	0.12	0.27	14.6	86	2
1378	21 35 43.12	56 38 58.0			12.2		
1379	21 35 47.93	56 39 43.5	-0.22	-0.33	14.3	72	1
1380	21 35 51.47	56 39 30.5	-1.11	0.75	13.2	0	1
1381	21 35 58.09	56 40 7.8	-3.03	2.89	13.0	0	1
1382	21 35 26.80	56 42 9.6	0.10	-0.15	12.1	93	1
1383	21 35 24.58	56 42 43.7	-0.36	-0.05	14.4	80	1
1384	21 35 53.25	56 43 14.4	-0.06	0.16	12.9	93	1
1385	21 36 5.32	56 41 37.4	0.21	-0.60	13.0	51	1
1386	21 36 7.31	56 40 24.9	0.19	-0.37	11.5	85	1
1387	21 36 16.74	56 39 43.3	-1.58	0.54	14.2	0	1
1388	21 36 20.94	56 40 49.7	-2.83	-0.31	10.6	0	1
1389	21 35 24.41	56 44 5.7	-0.00	-0.11	12.1	94	1
1391	21 36 2.30	56 45 14.0	-0.78	0.31	13.6	11	1
1392	21 36 9.91	56 45 41.0	-0.32	-5.10	10.0	0	1
1393	21 36 17.13	56 46 14.9	0.49	-0.15	14.3	74	1
1394	21 35 4.47	56 47 27.5	-0.10	0.07	13.8	93	1
1395	21 35 27.34	56 47 13.2	-2.40	2.14	13.0	0	1
1396	21 36 0.76	56 48 25.7	0.31	0.05	11.5	87	1
1397	21 36 0.48	56 48 37.3	0.16	0.49	12.6	47	1
1398	21 36 19.47	56 48 0.6	0.22	-0.11	13.3	92	1
1399	21 36 12.90	56 48 20.6			14.6		
1400	21 36 19.59	56 48 26.4	0.05	0.40	12.7	74	1
1401	21 35 1.80	56 48 42.8	-0.25	0.15	13.2	90	1
1402	21 35 7.51	56 48 8.5	-0.14	-0.46	11.8	60	1
1403	21 35 21.43	56 49 23.4	-0.28	-0.19	12.2	81	1
1404	21 35 20.57	56 49 33.8	-0.38	-0.01	13.2	80	1
1405	21 35 28.77	56 49 21.8	-0.09	0.07	13.7	94	1
1406	21 35 38.16	56 49 36.9	0.02	-0.16	13.3	93	1
1407	21 35 39.12	56 49 57.2	-0.07	0.05	12.9	94	1
1408	21 35 44.35	56 51 4.1	-1.00	1.20	10.9	0	1
1409	21 35 51.86	56 50 51.7	-0.35	0.22	14.6	83	2
1410	21 35 57.41	56 50 38.9	-1.04	0.56	14.3	0	1
1411	21 36 8.53	56 49 48.0	-1.00	0.48	12.7	0	1
1412	21 36 9.65	56 50 44.8			14.7		
1413	21 36 11.75	56 50 57.8	0.29	-0.54	14.0	60	1
1414	21 35 21.46	56 51 48.0	-0.01	0.13	13.5	93	1
1415	21 34 59.87	56 53 3.6	-0.63	0.40	13.3	29	1
1416	21 35 12.26	56 53 23.4	-0.23	-0.02	14.1	90	1
1417	21 35 26.43	56 53 1.5			12.6		
1418	21 36 2.64	56 52 37.1	0.68	0.07	13.8	21	1
1419	21 36 3.07	56 52 51.0			14.7		
1420	21 36 13.37	56 53 32.3	-1.47	0.86	10.3	0	1
1421	21 35 1.07	56 54 50.2	-0.49	0.13	11.9	68	1
1422	21 35 30.20	56 54 38.9	-0.16	-0.11	13.4	91	1
1423	21 35 55.76	56 55 20.6			14.3		
1425	21 36 24.53	56 53 52.4	0.83	0.94	13.3	0	1
1426	21 36 27.81	56 55 24.9	-0.13	0.12	14.2	93	1
1427	21 35 13.22	56 56 46.9	0.12	0.13	12.4	92	1
1428	21 35 40.36	56 56 50.4	-0.17	0.71	11.5	18	1
1429	21 36 7.30	56 56 15.6	0.27	0.23	13.9	78	1
1431	21 37 11.75	56 39 29.9	0.06	0.19	13.0	91	1
1434	21 37 33.21	56 39 55.0	-0.11	0.45	14.2	73	1
1436	21 36 46.70	56 42 34.5	-0.94	1.13	13.9	0	1
1437	21 36 54.52	56 43 40.0	-1.11	-0.13	13.1	0	1
1438	21 37 15.55	56 41 32.0	-0.05	-0.21	13.3	91	1
1439	21 36 52.36	56 44 44.6	0.39	0.29	12.8	52	1
1441	21 36 51.82	56 45 1.9	-1.58	1.35	12.6	0	1
1442	21 37 0.34	56 45 14.5	0.06	-0.18	14.1	93	1
1443	21 37 16.72	56 43 54.6	-1.27	0.64	13.1	0	1
1444	21 37 30.59	56 43 23.6	0.03	-0.25	9.5	91	1
1445	21 37 32.73	56 42 51.9	0.45	0.14	11.9	64	1
1446	21 37 38.18	56 42 15.2	-0.15	0.91	12.0	2	1
1447	21 37 43.64	56 41 4.8	-0.40	0.10	14.5	80	2
1448	21 37 46.07	56 41 14.9	0.07	-0.12	14.1	94	1
1449	21 36 25.18	56 46 35.9	-0.51	0.44	14.5	46	1
1450	21 36 35.45	56 47 16.8	0.33	0.18	13.7	78	1
1451	21 36 40.42	56 47 59.2	-0.21	0.06	14.3	92	1
1452	21 36 47.65	56 48 18.2	0.23	0.03	13.9	91	1
1453	21 36 50.65	56 48 34.5	0.13	0.04	13.6	93	1
1454	21 36 48.63	56 48 55.4	0.04	-0.67	13.5	27	1
1455	21 37 6.06	56 49 22.7	0.10	0.27	14.1	87	1
1456	21 36 41.22	56 49 30.9	-0.26	0.03	14.2	90	1
1457	21 36 27.12	56 51 53.5	-0.74	0.46	14.5	11	2
1458	21 36 30.62	56 51 43.4	0.23	0.39	13.1	59	1
1459	21 36 44.58	56 53 14.3	-0.92	-0.60	10.3	0	1
1461	21 36 52.80	56 52 45.0			14.7		
1462	21 36 59.02	56 52 31.3	0.27	-0.12	12.7	91	1
1463	21 36 48.46	56 53 50.1	1.18	-3.22	13.0	0	1
1464	21 36 50.79	56 54 51.9	-0.00	-0.04	13.3	94	1
1465	21 36 42.98	56 56 37.6	-0.04	-0.34	10.5	85	1
1466	21 36 55.16	56 57 9.7	0.59	0.23	12.2	22	1
1467	21 36 59.54	56 56 22.2	0.21	-0.93	9.5	2	1
1468	21 37 7.42	56 55 46.2	-0.10	-0.05	14.5	93	1
1469	21 37 12.93	56 56 32.3	0.23	-0.09	13.5	92	1
1470	21 37 9.57	56 55 45.6	0.05	0.29	13.6	87	1

TABLE III. (continued)

MVA	α (1950.0)	δ	μ_α	μ_δ	V	P	Q
1471	21 37 14.02	56 53 40.4	-0.04	-0.22	13.4	91	1
1472	21 37 18.75	56 54 19.0	-0.29	0.25	13.5	86	1
1473	21 37 22.84	56 55 31.1	-2.42	1.15	14.2	0	1
1474	21 38 8.80	56 40 42.1	-0.13	0.20	13.1	91	1
1475	21 38 6.63	57 51 4.7	0.56	-0.18	13.7	61	1
1476	21 37 58.26	56 41 35.8	0.12	-0.15	13.2	93	1
1477	21 38 26.29	56 41 10.5	0.46	-0.10	12.1	77	1
1478	21 38 35.49	56 40 58.1	0.37	0.07	11.9	80	1
1479	21 38 36.99	56 41 33.4	-0.37	0.66	12.7	23	1
1480	21 38 32.19	56 41 56.4	-1.23	-0.16	13.1	0	1
1481	21 38 35.22	56 42 32.3	0.22	0.52	13.6	31	1
1482	21 38 45.89	56 41 28.3	0.68	0.34	11.5	4	1
1483	21 37 47.94	56 43 12.0	0.47	0.10	12.7	65	1
1484	21 38 0.59	56 43 39.8	-0.71	0.00	12.7	16	1
1485	21 37 59.74	56 44 22.2	0.02	0.09	13.5	94	1
1486	21 37 34.64	56 45 51.6	-0.10	0.13	13.3	93	1
1487	21 37 46.23	56 45 12.8	-0.37	0.05	12.6	83	1
1488	21 37 56.48	56 45 33.2	0.07	0.09	14.3	93	1
1489	21 37 59.70	56 45 49.9	-3.78	-0.47	12.6	0	1
1490	21 37 35.34	56 46 29.4	0.35	-0.65	14.2	35	1
1491	21 37 51.99	56 46 32.5	0.03	-0.17	12.6	93	1
1492	21 37 47.73	56 46 55.2	-1.05	-0.28	12.3	0	1
1493	21 37 48.04	56 47 10.7	-0.01	0.19	14.0	92	1
1494	21 37 26.03	56 49 15.6	-0.36	0.60	14.5	36	2
1495	21 37 35.45	56 48 37.3	0.38	-0.33	12.9	80	1
1496	21 37 58.83	56 48 14.3	-0.03	-0.49	10.9	64	1
1497	21 38 4.21	56 48 32.4	0.09	0.67	13.5	15	1
1498	21 38 16.06	56 47 20.6	-0.29	-0.21	14.3	79	1
1499	21 38 20.09	56 47 5.4	-0.10	-0.12	13.2	93	1
1500	21 38 28.58	56 45 58.0	-0.75	0.36	13.6	14	1
1501	21 38 38.34	56 46 0.1	-0.14	0.12	14.3	93	1
1502	21 38 19.58	56 48 25.3	0.64	-0.85	14.0	2	1
1503	21 38 22.87	56 48 46.7	-1.36	0.67	13.1	0	1
1504	21 38 23.72	56 48 42.9	0.02	0.14	13.2	93	1
1505	21 38 37.60	56 47 26.4	-0.36	0.13	14.0	84	1
1506	21 38 35.78	56 48 0.6	-0.21	0.79	11.9	8	1
1507	21 37 30.17	56 50 28.0	-0.75	0.33	12.2	14	1
1508	21 37 53.96	56 49 46.8	-0.12	0.07	14.4	93	1
1509	21 37 54.14	56 49 57.2	1.07	-2.72	13.4	0	1
1510	21 38 3.83	56 50 25.5	-0.01	0.26	12.2	90	1
1511	21 38 30.72	56 49 42.1	0.25	0.27	14.3	78	1
1512	21 37 23.50	56 51 43.4	-0.15	-0.05	14.4	93	1
1513	21 37 28.67	56 51 26.8	0.96	-0.55	14.2	1	1
1514	21 37 36.72	56 51 13.4	-0.31	0.27	14.2	84	1
1515	21 37 40.25	56 51 5.0	-0.44	0.31	14.5	71	1
1516	21 37 40.24	56 51 9.7	0.25	-0.26	14.2	90	1
1517	21 37 44.61	56 52 3.5	0.07	-0.21	13.4	92	1
1518	21 37 19.94	56 52 53.1	-0.36	0.05	14.4	84	1
1519	21 37 25.56	56 52 55.2	0.11	0.06	14.6	93	2
1520	21 37 42.87	56 53 33.0	0.04	-0.31	13.1	89	1
1521	21 37 38.23	56 53 51.9	0.93	-0.40	13.9	3	1
1522	21 38 25.94	56 51 48.5	0.43	-0.16	14.5	82	1
1523	21 38 30.91	56 52 48.4	-0.13	0.30	14.4	88	1
1524	21 38 22.23	56 53 37.6	-0.19	0.44	13.3	74	1
1525	21 38 15.47	56 54 1.0	-1.04	0.39	14.5	0	1
1526	21 37 47.64	56 54 53.6	0.65	-0.02	14.6	36	2
1527	21 37 32.80	56 55 49.4			14.6		
1528	21 37 29.14	56 56 32.5			14.8		
1529	21 37 44.45	56 56 9.1	-0.53	-0.95	10.5	0	1
1530	21 38 0.00	56 55 8.0	0.16	0.17	14.3	90	1
1531	21 37 53.34	56 56 0.1	-1.20	0.77	13.3	0	1
1532	21 37 49.47	56 56 35.7	1.30	0.76	12.5	0	1
1533	21 38 16.10	56 54 46.2	-0.37	-0.65	13.2	3	1
1534	21 38 13.99	56 56 14.2	0.12	0.02	13.5	94	1
1535	21 38 12.72	56 56 55.8	0.36	-0.05	11.6	86	1
1536	21 38 27.12	56 55 51.1			14.1		
1537	21 38 21.91	56 57 10.4	-1.64	3.19	11.3	0	1
1538	21 38 15.66	56 57 32.9	-1.46	0.92	13.5	0	1
1539	21 38 45.18	56 57 20.4	0.32	-0.29	12.0	86	1
1540	21 38 58.86	56 51 59.6	-1.09	2.18	12.0	0	1
1541	21 39 2.04	56 47 55.0	-0.10	-0.23	13.8	89	1
1542	21 38 54.86	56 59 2.8	-0.06	0.10	13.5	94	1
1543	21 38 55.55	56 59 29.4	0.62	-0.21	13.8	51	1
1544	21 38 56.23	56 59 46.3	-0.98	0.78	10.5	0	1
1545	21 38 55.40	57 3 40.7	-3.53	2.26	12.6	0	1
1546	21 39 12.32	56 47 13.6	0.07	-0.07	13.4	94	1
1547	21 39 19.91	56 47 5.0	-0.09	-1.11	12.3	0	1
1549	21 39 13.65	56 50 50.4	-0.19	0.26	13.8	88	1
1550	21 39 13.95	56 51 15.6	0.01	-0.03	12.4	94	1
1551	21 39 25.51	56 50 19.4	0.29	0.04	11.0	88	1
1552	21 39 25.92	56 50 10.1	0.32	0.19	14.3	77	1
1553	21 39 31.03	56 48 39.1	0.10	0.09	14.4	93	1
1554	21 39 43.40	56 48 25.3	-0.06	-0.04	14.2	94	1
1556	21 39 46.41	56 49 43.4	0.81	-0.31	10.2	12	1
1557	21 39 55.15	56 49 9.4	0.70	-0.29	11.7	30	1
1558	21 39 28.14	56 51 20.7	0.47	-0.02	13.4	73	1
1559	21 39 14.98	56 52 20.2	-0.01	0.35	13.8	83	1
1560	21 39 48.36	56 52 50.2	-0.05	0.32	14.6	86	2
1561	21 39 21.70	56 54 36.3	-0.64	0.01	14.4	31	1
1562	21 39 14.13	56 55 25.0	0.15	-0.56	14.6	57	2
1563	21 39 26.99	56 54 35.6	-2.30	3.97	8.9	0	1
1564	21 39 43.14	56 53 43.1	-0.14	-0.14	12.6	91	1
1565	21 39 26.92	56 55 42.3	0.16	0.03	13.6	93	1
1566	21 39 47.44	56 54 28.5	1.18	-0.58	12.8	0	1
1567	21 40 9.30	56 51 56.3	0.25	-0.06	11.3	92	1
1568	21 40 12.48	56 50 57.5	-0.63	0.28	13.9	37	1
1569	21 40 13.41	56 49 4.2	-0.49	-0.14	14.1	52	1
1571	21 40 12.98	56 53 43.3	-0.15	0.07	14.3	93	1
1572	21 40 9.49	56 54 26.6	0.26	0.05	13.3	90	1
1573	21 40 7.48	56 54 59.6	2.12	-1.62	12.8	0	1
1574	21 40 4.65	56 56 1.4	-0.18	-0.04	14.4	92	1
1575	21 39 12.29	56 57 8.1	-0.30	0.13	14.2	88	1
1576	21 40 6.47	56 57 1.1	-0.15	0.27	14.1	89	1
1577	21 39 58.52	56 58 2.5	-0.67	0.56	13.8	11	1
1578	21 40 4.60	56 57 50.5	-0.53	0.35	12.7	51	1
1579	21 40 35.27	56 49 38.0	1.86	-3.12	11.0	0	1
1580	21 40 29.08	56 54 16.2	0.72	-0.15	12.2	26	1
1581	21 40 37.76	56 54 19.1	-0.21	-0.06	14.2	90	1
1582	21 40 46.73	56 51 23.7	0.60	0.00	10.7	47	1
1583	21 41 10.29	56 47 27.5			13.3		
1584	21 41 11.40	56 48 1.4	-0.78	1.11	11.0	0	1
1585	21 41 11.34	56 48 13.3	-1.01	0.96	11.8	0	1
1586	21 41 0.81	56 49 50.2	0.65	-0.17	14.2	43	1
1587	21 40 46.87	56 51 43.1	-0.35	0.17	14.0	84	1
1588	21 41 1.22	56 51 28.9	0.29	-0.53	14.4	62	1
1589	21 40 45.13	56 52 14.5	-0.09	0.43	11.7	75	1
1590	21 40 48.94	56 55 12.4	0.45	-0.58	14.3	43	1
1591	21 40 45.01	56 55 43.1	-0.19	0.07	12.7	92	1
1592	21 40 38.05	56 56 34.0	-1.18	-0.03	14.2	0	1
1593	21 40 25.33	56 57 17.9			14.7		
1594	21 40 33.38	56 57 37.4			14.9		
1595	21 40 45.31	56 56 30.2	0.94	-0.77	14.3	0	1
1596	21 40 45.28	56 56 47.7	-0.16	0.15	14.4	92	1
1597	21 41 16.76	56 55 32.2	-0.00	-0.25	13.5	91	1
1598	21 41 13.27	56 56 1.7	0.31	-0.34	13.8	83	1
1599	21 41 13.39	56 56 25.8	0.01	-0.11	14.2	94	1
1600	21 41 12.89	56 56 53.2			13.1		

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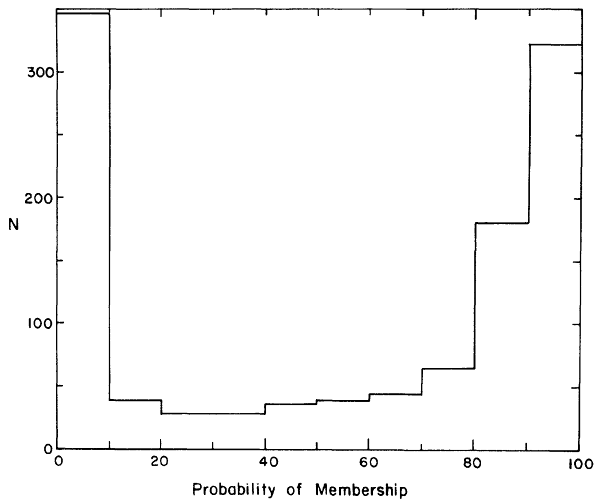

FIG. 5. Histogram of the cluster membership probabilities for all stars in the field with measured proper motions.

Most of the Hα stars selected by Kun (1986) are too faint to appear on our first-epoch plates or lie outside the region we have studied. Nevertheless, since stars of this type are generally believed to be very young objects, their membership in the cluster should afford another check of our probabilities. Of 11 common stars, seven (63%) have kinematic membership probabilities greater than 80%, one (Kun 60 = MVA 1355) has a probability of 78%, and the remaining three stars appear to be kinematic nonmembers. The high proportion of members among these faint red stars contrasts notably with the low proportion of members among the bright red stars identified by Alksinis.

The internal velocity dispersion of an open cluster would be expected to be of the order of 1 km/s (Mathieu 1985). For the youngest clusters, which may not be relaxed or even bound systems, somewhat larger dispersions may be found. A dispersion of 2.2 km/s has been measured for the young cluster of stars near the Trapezium by McNamara (1976). The observed proper-motion dispersion in X for Tr 37 cluster members corresponds to a velocity dispersion at 1 kpc of 9.5 km/s. Since this is consistent with the measurement er-

spectroscopic binary. Until further observations are obtained of this and other stars in the region, we cannot determine whether the center-of-mass velocity of MVA 550 is consistent with cluster membership. (Heske and Wendker (1986) have measured radial velocities of H_2CO in the IC 1396 region, obtaining heliocentric velocities near Tr 37 of between -13 and -20 km/s. The radial velocities we measure for MVA 550 are -25, -16, and -6 km/s, with precision better than ± 0.5 km/s for each measurement.)

Comparing our memberships with Simonson's (1968) study of Cepheus OB2, we find eight stars in common. Simonson's membership determinations depend on photometric determinations of the distance moduli of individual stars. All four of his definite members are kinematically probable members. His two "possible" members (HD 206773 = MVA 864 and HDE 239710 = MVA 59) are kinematic nonmembers. The remaining two stars (HDE 239724 = MVA 412 and HDE 239727 = MVA 423) were considered by Simonson to be distant nonmembers. We assign them high probabilities of membership. HDE 239724, a B1 V star according to Garrison and Kormendy (1976), is considered a member in their study. HDE 239727, an A2 Ia according to Garrison and Kormendy, is designated a nonmember, in agreement with Simonson but in disagreement with our results.

Garrison and Kormendy's study includes a total of 16 stars in common with ours. They determined *UBV* magnitudes and spectral types for all of these stars, and the derived color excesses were used to construct an H-R diagram for the cluster. Only two stars are considered nonmembers of Tr 37 according to them: MVA 423, mentioned above; and MVA 455, a B5 Ib–II, which we determine to be a probable member. Of the remaining 14 Garrison and Kormendy stars, seven are probable kinematic members and seven are probable nonmembers. All but one (MVA 59) of the latter group (MVA 967,864,1158,1331,1328, and 1584) are found in the outer fields of our study. Two of these (HD 207049 = MVA 967 and HD 205850 = MVA 1331) are giants of class B8 and F3, respectively. The distance of all these stars from the cluster center lends credibility to their indicated nonmembership, but again these stars merit further scrutiny.

TABLE IV. Cross identifications of Alksinis and MVA stars.

ALKS	MVA	ALKS	MVA	ALKS	MVA
158	1360	450	182	502	883
162	106	451	144	503	901
166	1420	452	194	505	898
168	1465	453	147	506	881
169	1459	454	153	507	945
171	1440	455	217	508	950
172	1467	456	468	509	936
174	1444	457	426	510	964
176	1529	458	471	511	938
179	1535	459	438	512	921
181	1537	460	545	703	1183
182	1539	461	268	704	1191
185	1544	462	558	705	1188
188	1563	463	412	708	1216
199	1589	464	273	709	1244
201	1582	465	550	711	1226
204	1584	466	460	712	252
413	1288	467	535	713	1154
414	1261	468	420	715	1030
415	1284	469	564	716	1007
416	1262	470	463	717	1022
417	1272	471	437	718	1034
418	1295	472	566	719	1016
419	1277	473	455	721	1037
420	1270	474	555	722	1046
422	1336	475	423	723	1057
423	1315	476	556	724	576
424	1166	477	464	726	1050
425	1318	478	319	727	732
426	1158	479	577	730	725
427	1328	480	630	731	1061
428	1322	481	662	732	1060
429	1323	482	747	733	1001
431	1331	483	318	734	1044
432	1332	484	583	735	1063
435	81	485	713	736	1069
436	67	486	633	737	736
437	68	488	800	740	728
438	86	489	700	741	737
439	45	490	680	742	1082
440	63	491	638	743	746
441	59	492	616	744	741
442	71	493	656	747	1091
443	90	495	811	748	1110
444	101	496	812	749	1097
445	26	497	846	750	864
446	186	498	847	751	1098
447	166	499	850	752	908
448	181	500	822	763	967
449	164	501	903		

rors in our previous study of NGC 2244, scaled roughly by the square root of the number of plates in the solutions, we conclude that this dispersion is almost entirely accounted for by random error and does not significantly reflect the internal kinematics of the cluster. More plate material over a longer baseline, or alternatively radial-velocity studies such as those reported by Mathieu (1985), will be required for such investigations.

The only anomaly in the observed proper-motion distribution is the inequality between the dispersion of the proper motions in X (0.19 arcsec/century) and in Y(0.28 arcsec /century). We have investigated a number of sources of error in our measurement and reduction procedure and have so far been unable to determine the cause of the discrepancy. It should be noted that the X and Y dispersions refer to a frame rotated 48° to right ascension and declination (see Fig. 2) so as to align the major and minor axes of the field distribution with the coordinate axes. Thus the observed discrepancy cannot be accounted for by an elongation of the star images in right ascension due to improper guiding, or a failure to account for refraction effects in the plate solution. The larger Y dispersion is in the direction of the galactic plane, and it is possible that the distribution of field proper motions in this direction has contaminated the cluster distribution. Nevertheless, the discrepancy between X and Y dispersions was also noted on plate solutions utilizing only brighter stars in the inner regions of the center plates, where one would expect field-star contamination to be diminished. Better proper motions, using new plates at a later epoch, might resolve the issue. The alternative possibility, that the cluster is expanding along the galactic plane, seems untenable, since the velocity of expansion implied by the Y dispersion, almost 14 km/s, would be unrealistically high, as we noted earlier.

Whatever the cause of the discrepancy in the X and Y dispersions, its effect is that our proper-motion membership probabilities are based more on the X proper motions than the Y, but the agreement with other criteria of cluster membership that we have discussed previously bears out the adequacy of the kinematic probabilities. Until a source of the discrepancy is identified, however, interpretation beyond the use of membership probabilities should be made with caution.

No comprehensive photometric or spectroscopic studies exist for the entire region at the scale at which we have studied it, but we can infer from the similarity between the appearance of Tr 37 and NGC 2244 that the former cluster is as entangled with absorbing material as the latter, and that differential absorption across the cluster is likely to cause significant uncertainties in interpreting the spatial distribution, the luminosity function, or the color-magnitude diagram of the cluster (Marschall *et al.* 1982). In the case of IC 1805, which is also similar in age and appearance to Tr 37 and NGC 2244, Johnson *et al.* (1961) noted variations in $E(B-V)$ ranging from 0.62 to 0.98, and Vasilevskis *et al.* (1965) remarked on the scatter this introduced into the color-magnitude diagram of the cluster even when members were selected by proper-motion criteria. Moreover, a recently published study of ultraviolet extinction in the region around Tr 37 (Clayton and Fitzpatrick 1987) indicates considerable variation in the properties of absorbing material across the cluster. We therefore attempt no such color-magnitude analysis here, pending the results of a photoelectric photometric study of the cluster members currently being undertaken by the authors.

Nevertheless, the selection of probable member stars, together with the coordinates and identification charts provided here, should encourage further studies of the population of this relatively accessible young cluster. A set of even larger-scale finding charts for the region, 15 arcmin on a side, especially useful for identifying stars on a TV guider, is available from the authors.

V. SUMMARY

Positions for 1387 stars, along with 1135 proper motions, have been presented for a field of 1.5° diameter including the cluster Trumpler 37. Stars in this sample with derived membership probabilities of $> 80\%$ should provide a reliable subset for further studies of the stellar content and internal kinematics of the cluster.

We thank Drs. Kyle Cudworth and Bob Mathieu for several helpful discussions. Dr. E. Green kindly provided the improved cluster probability programs. Rob Becker and Jim Neilson carried out much of the labor of data entry. The Gettysburg College Computer Center provided time on its B6700 computer for the membership analysis and word processing. We also thank Dr. David Latham and the Center for Astrophysics, Cambridge, MA, for hospitality to one of us (L.M.) during the writing of this paper. This research was carried out in part under NSF grants AST 8311337 and AST 8503236, and with additional support from the NSF-ROA grant program and the Gettysburg College Faculty Self-Renewal Fund.

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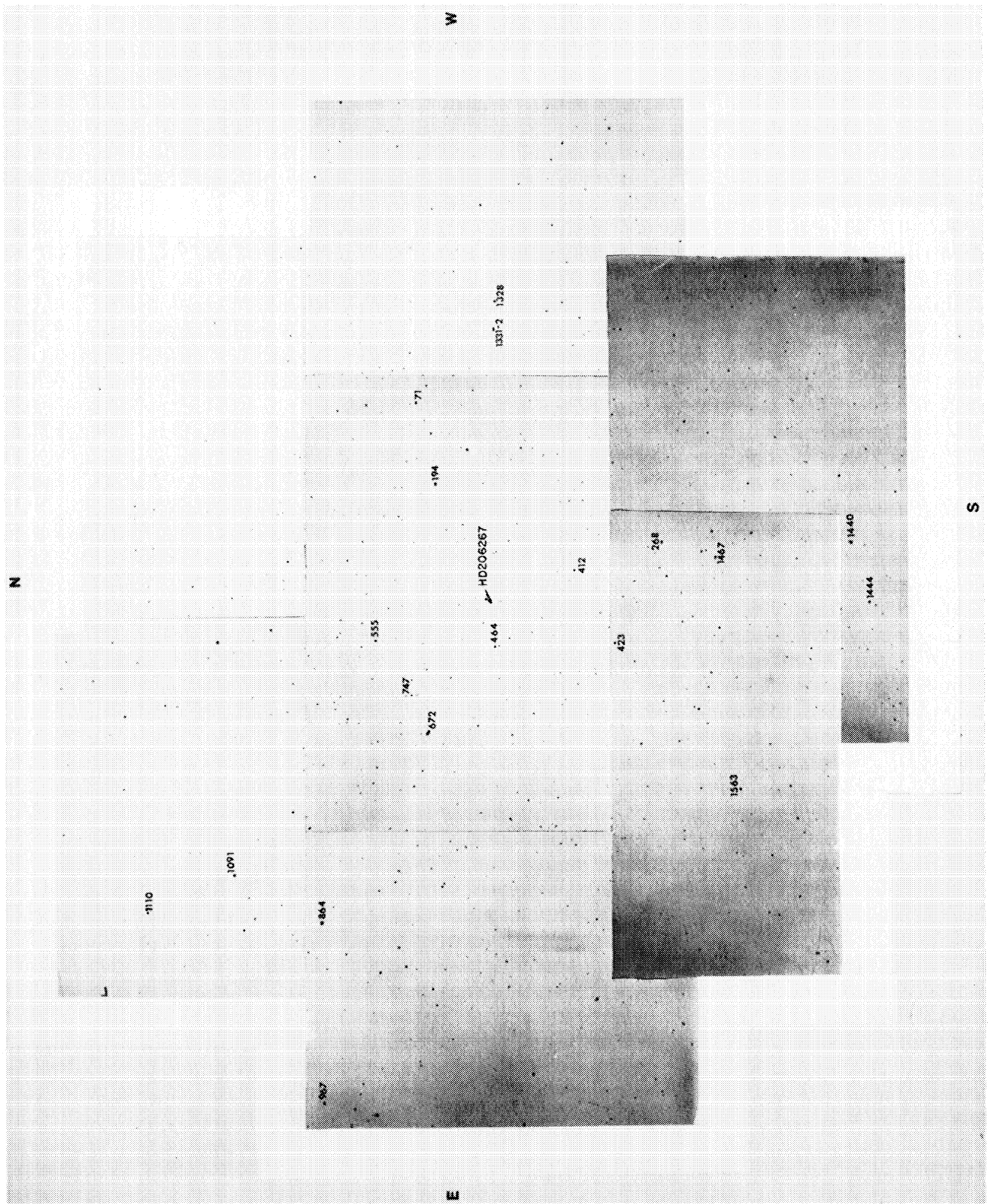

FIG. 1. Overall coverage of the proper-motion survey.

L. Marschall and W. van Altena (see page 71)

(a)

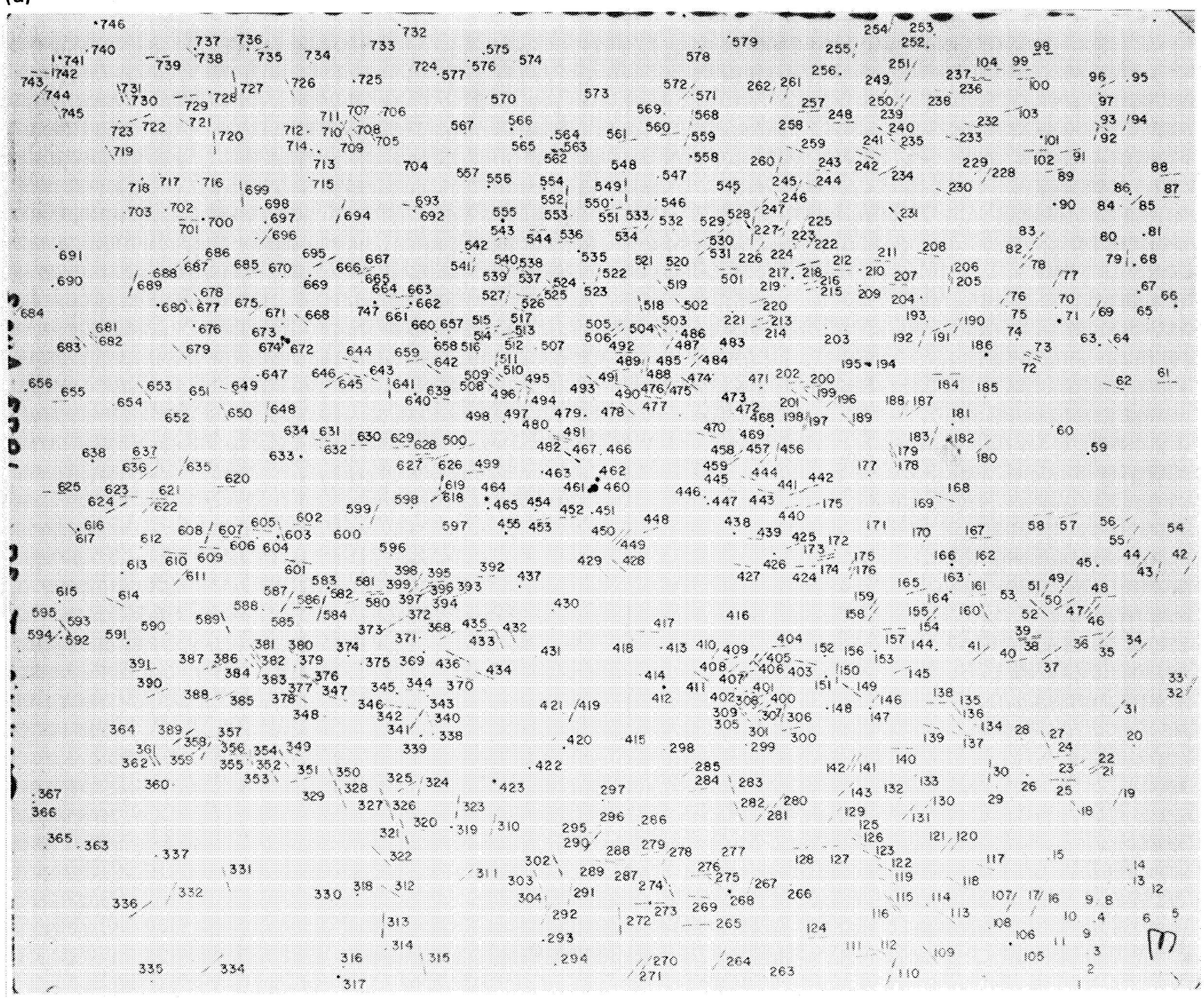

FIG. 4. Identification charts for the stars in Trumpler 37. (a) Center field.

L. Marschall and W. van Altena (see page 73)

(b)

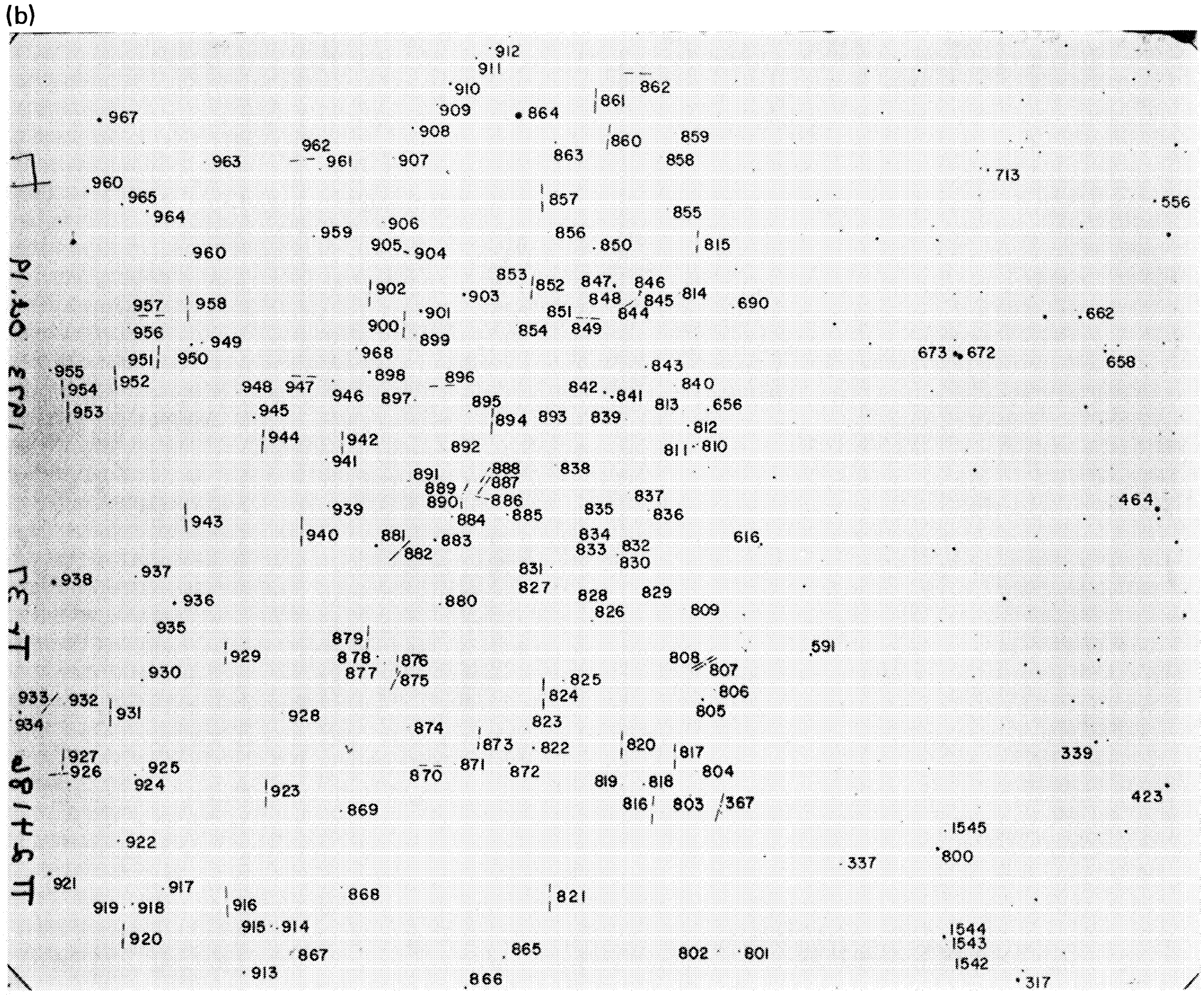

FIG. 4. (b) East field.

L. Marschall and W. van Altena (see page 73)

(c)

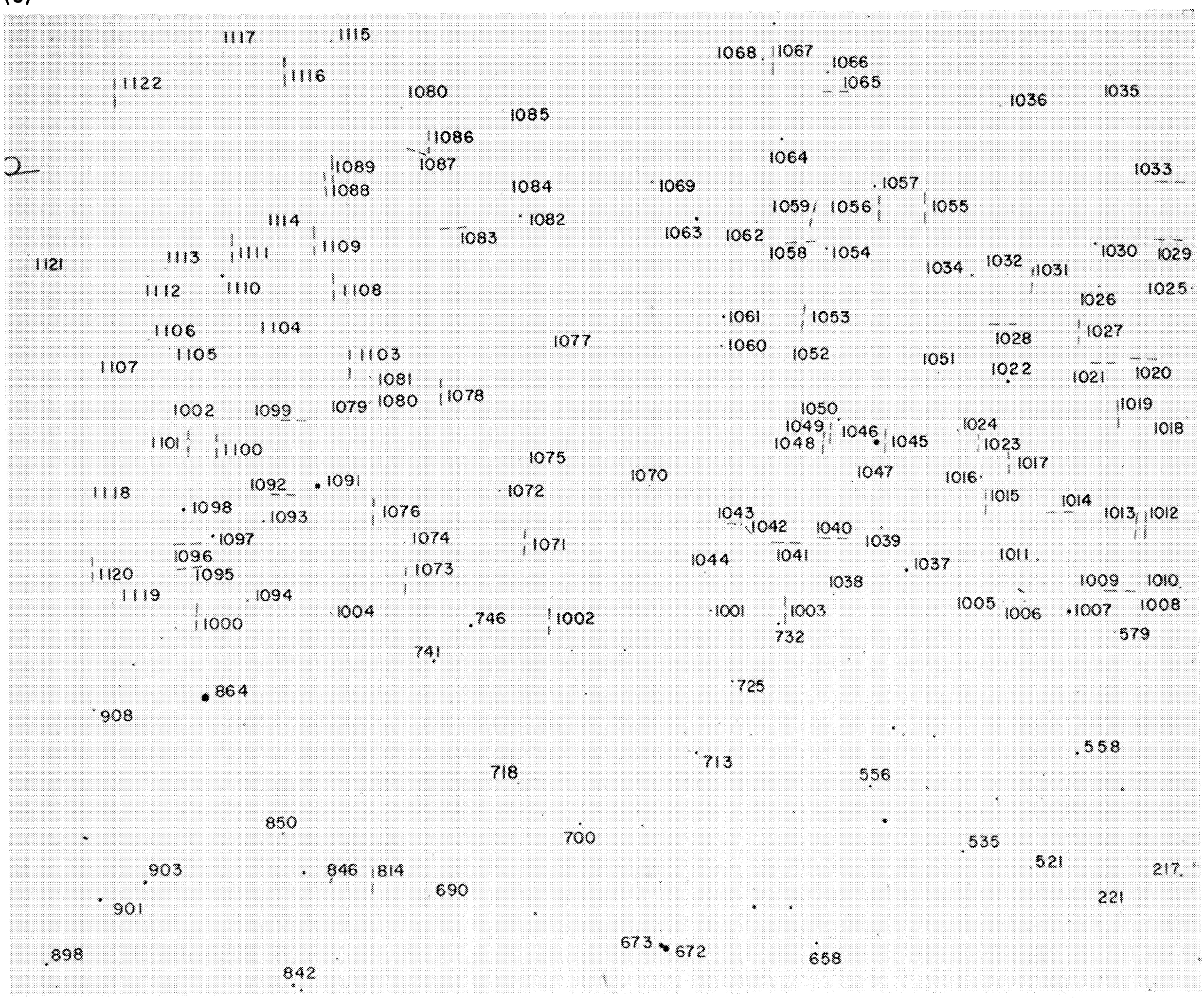

FIG. 4. (c) Northeast field.

L. Marschall and W. van Altena (see page 73)

(d)

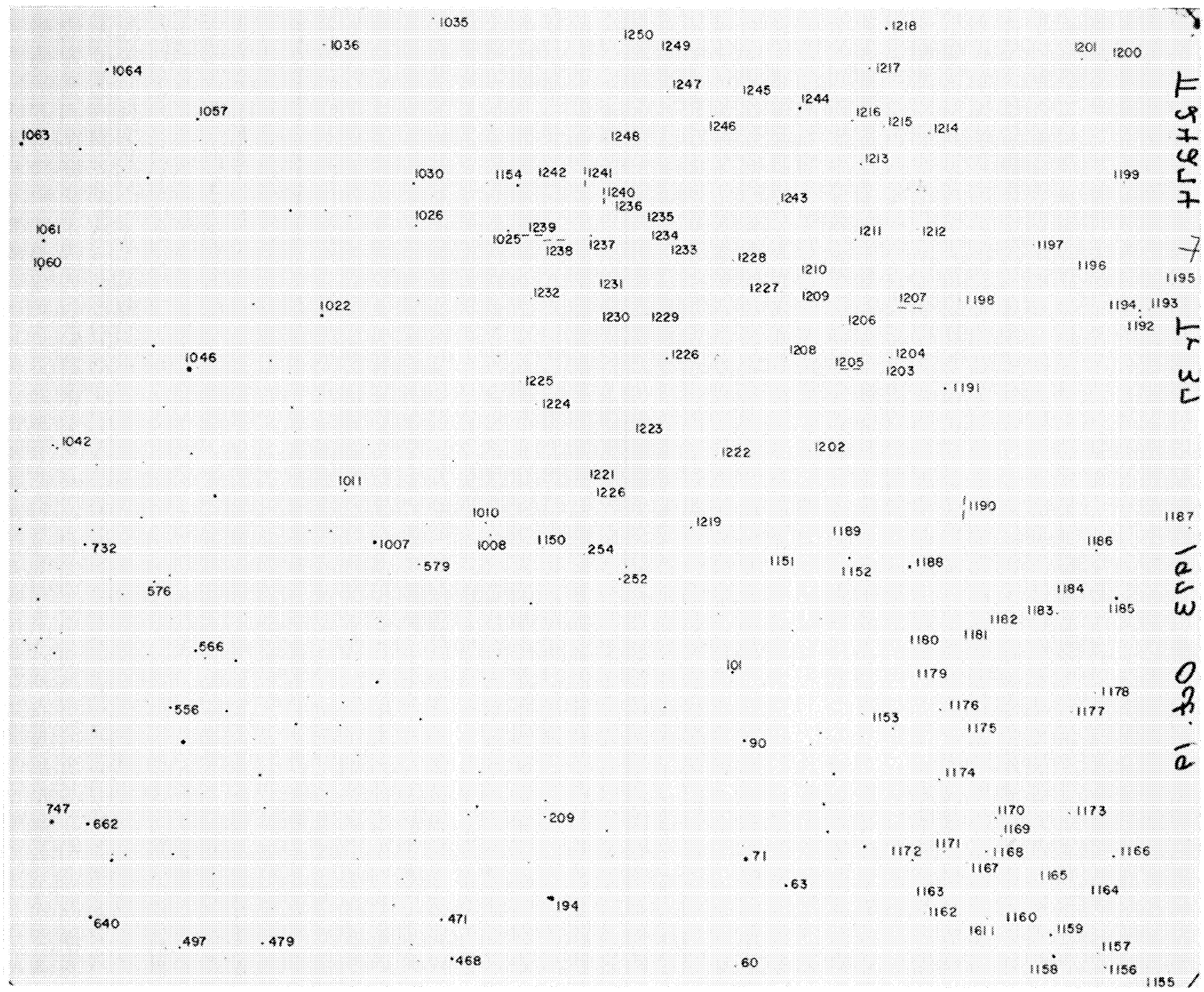

FIG. 4. (d) Northwest field.

L. Marschall and W. van Altena (see page 73)

(e)

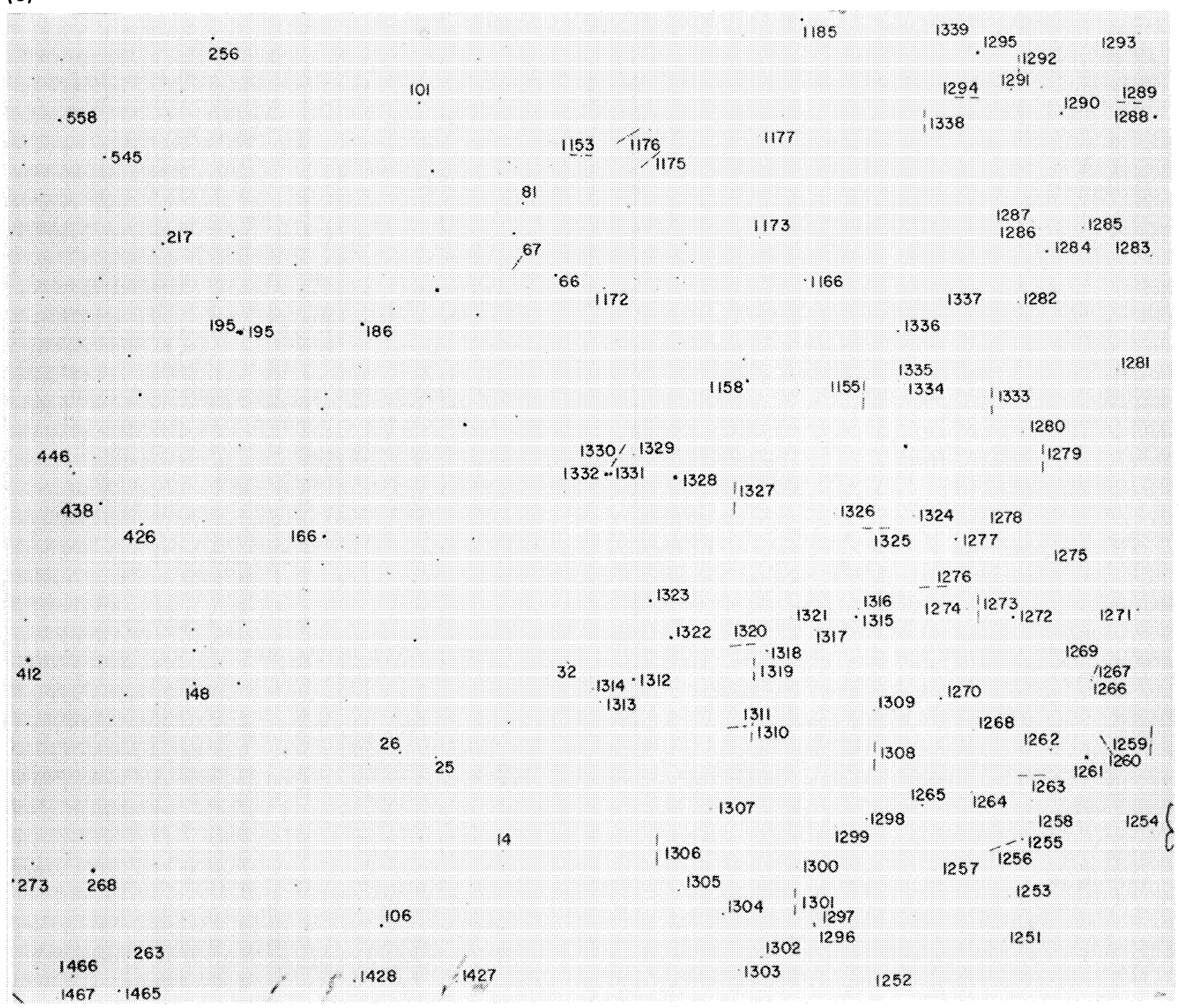

FIG. 4. (e) West field.

L. Marschall and W. van Altena (see page 73)

(f)

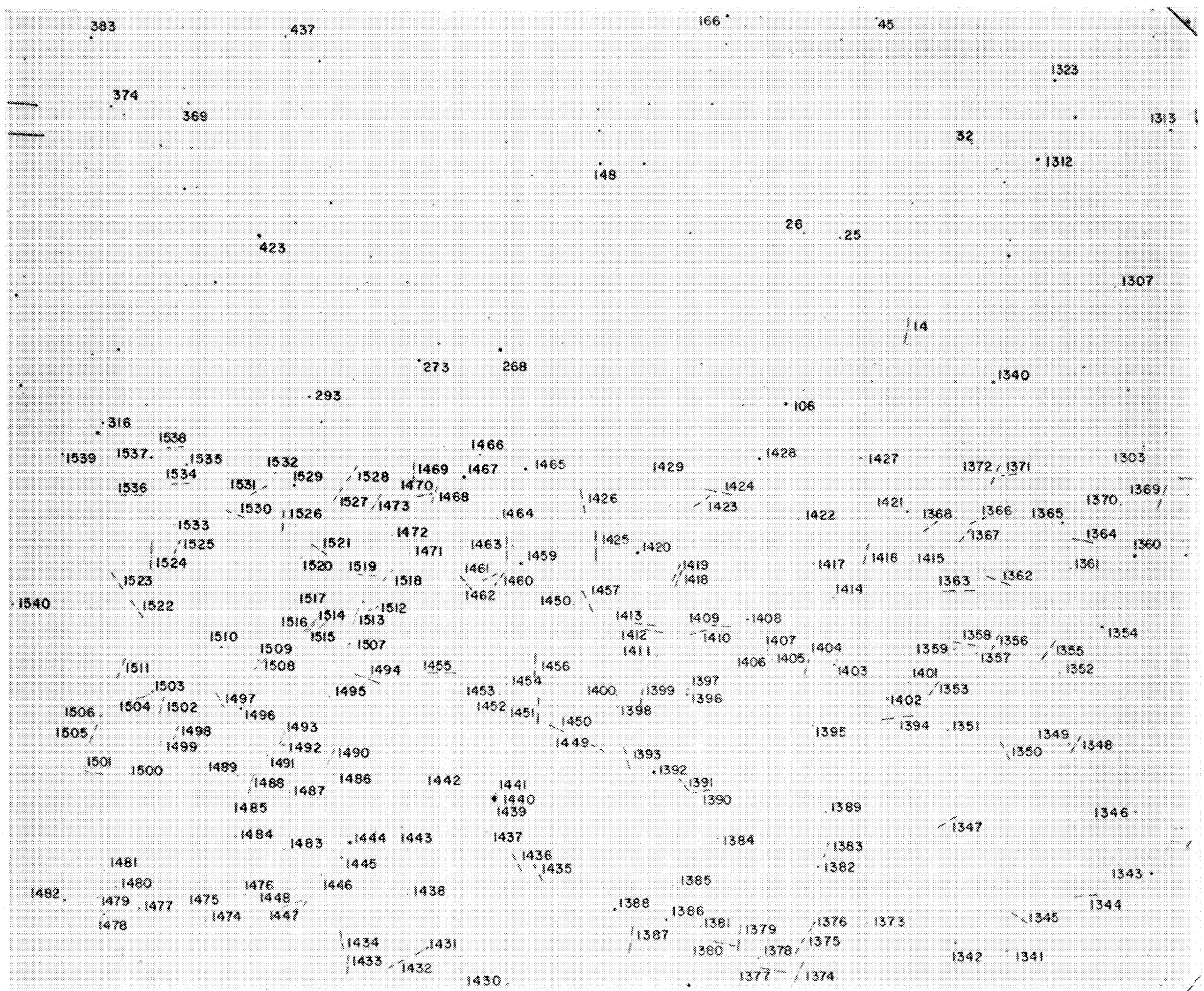

FIG. 4. (f) Southwest field.

L. Marschall and W. van Altena (see page 73)

(see page 73)

(g)

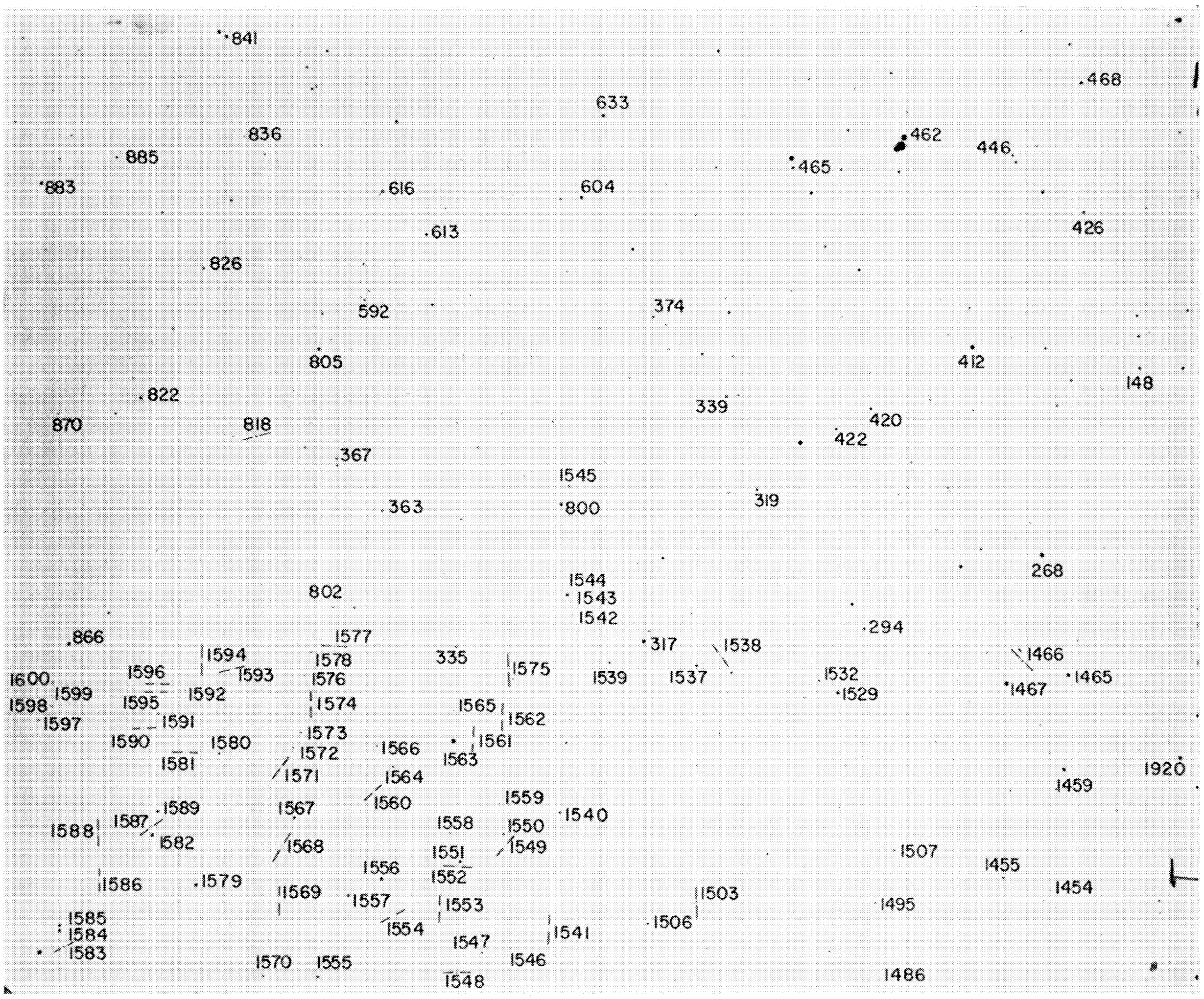

FIG. 4. (g) Southeast field.

L. Marschall and W. van Altena (see page 73)