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SPECIAL DATA-REDUCTION PROCEDURES FOR PRAIRIE NETWORK METEOR PHOTOGRAPHS

R. E. McCrosky and A. Posen

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Smithsonian Institution
Astrophysical Observatory
Cambridge, Massachusetts, 02138

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

ABSTRACT

This report describes the procedures employed to obtain trajectory and luminosity data from photographs of fireballs made with Prairie Network cameras.

Complete trajectory and luminosity results are tabulated for 29 meteors.

RÉSUMÉ

Ce rapport décrit la procédure employée pour obtenir, à partir des photographies faites par les caméras du réseau Prairie, les données relatives à la trajectoire et la luminosité des bolides photographiés.

Des résultats complets sur la trajectoire et la luminosité ont été calculés pour 29 météores.

КОНСПЕКТ

В этом докладе описывается метод употребленный для получения данных траектории и яркости на основании фотографических снимков болидов сделанных с помощью камер сети Прэри.

Полные данные траектории и яркости приведены в виде таблиц для 29 метеоров.

SPECIAL DATA-REDUCTION PROCEDURES FOR PRAIRIE NETWORK METEOR PHOTOGRAPHS

R. E. McCrosky and A. Posen

1. INTRODUCTION

The Prairie Network (McCrosky and Boeschenstein, 1965) is a system of camera stations located in the midwestern United States designed to obtain data on extremely bright meteor events. The nature of the events and their observations have required a number of revisions to standard meteor reduction procedures. We describe the new analysis and photometry procedures and present complete trajectory and photometric data for 29 meteors observed since August 1965.

Successful observations are made of the same meteor from at least two stations at a rate of about one per night. About one in three of these observations is of sufficient interest to warrant reduction. The present selection is, primarily, of objects much brighter than those normally recorded by other meteor patrols or, alternatively, objects of exceptional duration that may be expected to yield superior ballistic quantities. Apart from these two factors we cannot claim any rational procedure for selecting the objects that are represented. We have skipped hither and yon among the existing data, selecting good cases of different characteristics with which we could test the new procedures described in this paper.

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2. TRAJECTORY CORRECTIONS

2.1 General Procedure

To a first approximation, a meteor trajectory is linear in space, projects on the celestial sphere as a great circle, and is recorded on film as a linear trail. The relatively high precision obtainable in meteor trajectories is an immediate consequence of this linearity; all of the measured points on the meteor film can be combined to determine the best straight line representing the trail. This "trail equation" can be used, quite directly, to determine the plane in space defined by the station and the meteor. The intersection of this plane and one similarly determined from a second station defines the meteor trajectory. Point-by-point triangulation, which would require precise identification of common points on the two photographs, is unnecessary. One only requires an appropriate transformation from the rectangular coordinate system (x, y) of the film measures to the spherical equatorial system (α, δ) in the sky. Equatorial coordinates of stars and their measured rectangular coordinates on the film are used to determine a transform (plate constants) between the two systems. Distances along the trajectory line can be determined as a function of time if the trail has been interrupted by a meteor shutter.

The idealized circumstances described above are modified by three different effects, each of which may cause the photographed trail to depart from true linearity: the gravity displacement gives a nonlinear trajectory; refraction effects cause the projection on the sky to depart from a great circle; and imperfections in the optical system distort the trail on the film plane. In many cases of photographic meteor data some or all of these effects can be safely ignored. Whipple and Jacchia (1957) have described the reduction procedures they developed in which only corrections for distortion and a partial correction for gravity are employed. Our procedure is a modification of the Whipple-Jacchia method, and we refer the reader to their paper for a description of measuring techniques and for details of the fundamental computational procedures.

Modifications for meteors observed in the Prairie Network are required because a different class of objects is under observation, the observing techniques have changed, and one of the purposes of the observations is new. Generally, we must contend with a trail of much longer duration and, consequently, greater departure from the linear trajectory. Observations are made at lower elevations to increase the area of sky covered, and thus, refraction and refractive parallax can no longer be ignored. Finally, and most significantly, since one of the aims is to recover any resulting meteorite, we require all possible precision in determining the spatial coordinates of the body at a point near the end of its visible trajectory; in previous meteor work, the spatial coordinates per se were of little interest.

We attempt to compute "corrections" to the trail measures in order to produce the idealized undistorted linear trajectory and trail. The corrections are of two kinds, angular and spatial. In the first case, the correction can be applied directly to the trail measures, once the plate constants are known. In the case of spatial displacements, a determination of the range to the point on the trajectory is required to compute the appropriate angular displacement.

We first correct for the displacements on the film that are independent of the meteor geometry. These displacements are due to astronomical refraction of star positions affecting the plate-constants determination, and to the finite duration of the meteor event against a moving star background. From the measured points of the meteor trail, $(x, y)_0$, we obtain a new set, $(x, y)_1$, by translating these angular displacements to displacements on the film.

A preliminary trajectory solution using these corrected measures yields approximate ranges and heights for computing approximate corrections to the plate measures to account for displacements caused by partial refraction, refractive parallax, and gravity. These corrections give a new set of trail points, $(x, y)_2$, which closely represent the idealized trajectory. At this time, an iterative procedure, using a method of false position, is initiated.

A line through the $(x, y)_2$ is used in a trajectory solution to produce a new set of ranges and heights. With these improved values, the effects of gravity, partial refraction, and refractive parallax are computed and applied point-by-point to the $(x, y)_2$ to yield the set $(x, y)_1'$. The differences $\left[(x, y)_1' - (x, y)_1\right]$ are applied to the $(x, y)_2$, and the procedure is repeated until the straight-line trail $(x, y)_2$ is distorted by the computable displacements into the observed trail $(x, y)_1$, within the accuracy of measurement.

Convergence usually requires fewer than four iterations, except for meteors of unusually low zenith angle and height. For cases where the meteor and the two stations are nearly coplanar, the method fails, but such unfavorable geometry does not yield a satisfactory solution in any case.

2.2 Time-of-flight Correction

A time correction, apparently not recognized in any previous work, is applied to Prairie Network meteor data. The correction has come to be called, if not described, by the term "time-of-flight." It is applicable only to meteors photographed by stationary cameras, and we again refer the reader to Whipple and Jacchia (1957) for details of this kind of meteor reduction problem. Briefly, such photographs are interrupted either at known times to produce fiducial breaks in the star trails or, in the case of Prairie Network films, the shutters are held open for a short period at known times to cause star brightenings for the same purpose. In either case, we can immediately determine the declination of any point on the meteor trail, but the right ascensions of points along the meteor image are defined only relative to the hour angles of the stars at some (usually) different times when the fiducial marks were introduced on the star trails. If the time of occurrence of the meteor is known, the relative shift in right ascension is given by

$$\Delta\theta = \theta_m - \theta_* \quad , \tag{1}$$

where θ_m is the instant of the meteor and θ_* the instant of the fiducial mark. But, meteors do not occur in an "instant," particularly Prairie Network meteors, and θ_m in the above expression should assume a new value for each time segment. If this correction is ignored, the error introduced at the end of a 5-sec meteor can exceed the measuring errors by more than a factor of 10.

To apply this correction, the measured x, y of each dash are displaced westward in right ascension by an angle equivalent to the sidereal time interval measured from some arbitrary time. The zero point for time will be discussed in the section on gravity correction.

2.3 Refraction

In the reduction of most photographic meteor data, the stars that determine the coordinate transformation are very close to the meteor trail, and the plate-constant solution is required to fit over a long but very narrow strip of the film. When fiducial stars are displaced only a few minutes of arc away from the meteor, the differential refraction perpendicular to the trail between stars and meteor is negligible. The differential refraction along the trail can be appreciable, but since the photographs in most previous programs were made at small zenith distances, the distortion introduced by this differential refraction could be easily absorbed in the fitting of plate constants or in field corrections.

On Prairie Network films, stars used for the determination of plate constants may be many degrees from the trail, and the meteor may appear at extremely low elevation. Therefore, in our reductions the plate constants are derived not from the catalog star positions but from refracted positions. We compute the refraction r for an apparent zenith angle z from Garfinkel's (1944) formula

$$r = T^{1/2} \Sigma \beta_i w^{i+1} \quad , \tag{2}$$

ignoring terms beyond the second order. The β_i's are tabular functions of θ, with $\cot \theta = 8.1578\, T^{-1/2} \cot z$; $w = PT^{-2}$ is a "weather factor"; and P and T are the ratios of the ambient pressure and temperature to their standard values, respectively. This relatively complex formulation does not diverge at the horizon as do the usual expansions in tan z. Temperatures and pressures are interpolated from daily weather maps. With plate constants for "refracted" star positions, we compute the equatorial coordinates of each dash on the observed trail, and apply refraction in the opposite sense to these points to obtain the "no atmosphere" plate coordinates of points on the meteor trail.

2.4 Refractive Parallax

The refraction correction given above is the astronomical refraction for which the source is assumed to be at infinity. The refractive parallax is the adjustment σ required for the true direction to the nearby object (Figure 1). It is computed from the range R to the body; and a shift K perpendicular to the corrected line of sight, where K is given by

$$K = R_\oplus \left[n \sin z - \sin (z + r_\infty) \right] \quad , \tag{3}$$

in which $R_\oplus$ is the radius of the earth at the station, n is the index of refraction of the atmosphere at the station, and r_∞ is the astronomical refraction.

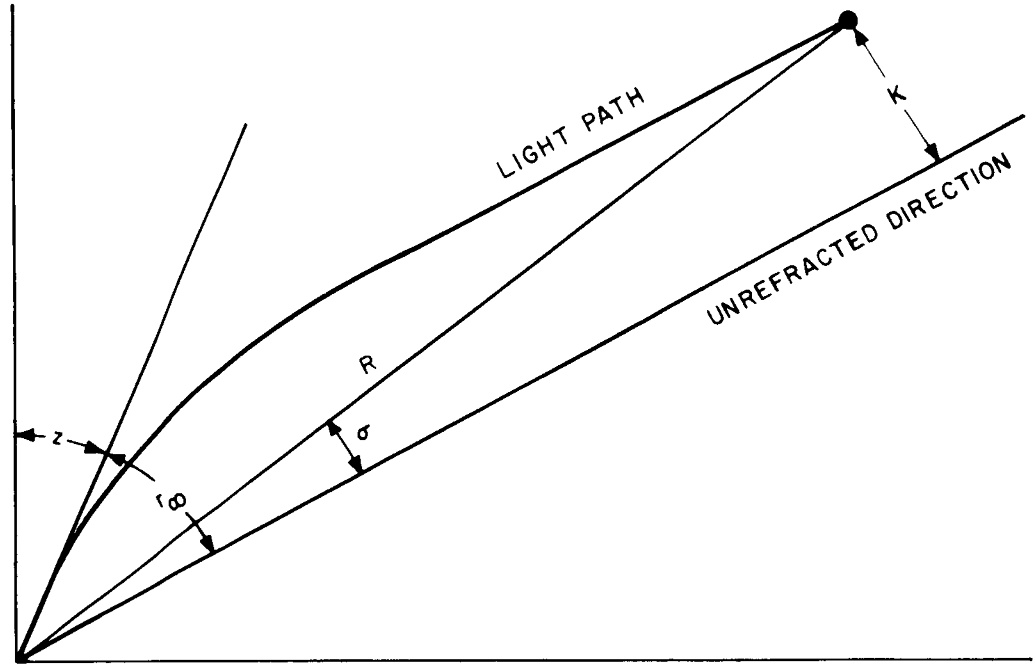

Figure 1. Refractory geometry for an object outside the atmosphere.

The following table of K values for various zenith angles indicates the significance of this apparent displacement.

Table 1. K values for various zenith angles.

z'(true)	K(m)
0	0
45	3
60	8
75	34
80	66
85	215
86	290
87	410
88	600
89	940
90	1550

This correction should be applied when it amounts to about 5 arcsec. For meteors with a range of 50 km, the correction is of slight importance when $K \approx 2$ m, but can become considerable for some special cases with a small range and a moderate zenith angle.

At modest zenith distances, K is a small difference between two large numbers. In recent years a number of attempts have been made to reduce equation (3) to a tractable form for use with geodetic and photogrammetric observations. The expression given by Schmidt (1963),

$$K \propto \frac{r_\infty}{\cos z} \quad , \tag{4}$$

is sufficiently accurate for our purposes to zenith angles of at least 75°, but the cosine term clearly causes trouble at greater zenith angles. The computational difficulties are less at large zenith angles, and a table of z versus K sec z was given by Bessel (1842).

Since the Bessel and the Schmidt values join smoothly and agree in the region of overlap, we have tried to adjust Schmidt's equation to match Bessel's numbers for large z. An obvious way is to use the first-order approximation,

$$\tan z = \frac{r_\infty}{r_{45}} \quad , \tag{5}$$

to remove the divergent cos z term; here r_{45} is the astronomical refraction for z = 45° and for the pertinent meteorological conditions. We then have

$$K \propto \frac{r_\infty^2}{r_{45} \sin z} \quad . \tag{6}$$

The following expression, which we use, is an empirical expression that gives a good approximation to K for z < 88°:

$$K \propto \frac{r_\infty}{\cos z + \dfrac{0.00569}{\sqrt{\cos z}}} \quad . \tag{7}$$

In Figure 2 we show the departures from the true value of K (as given by Bessel for $90° > z > 70°$, and by Schmidt for $75° \geq z \geq 0$) when computed by equations (4) and (6). Attempts to improve the fit still further are hardly worthwhile since refraction anomalies at more extreme zenith distances become so large that no sensible correction can be made for any refraction effects.

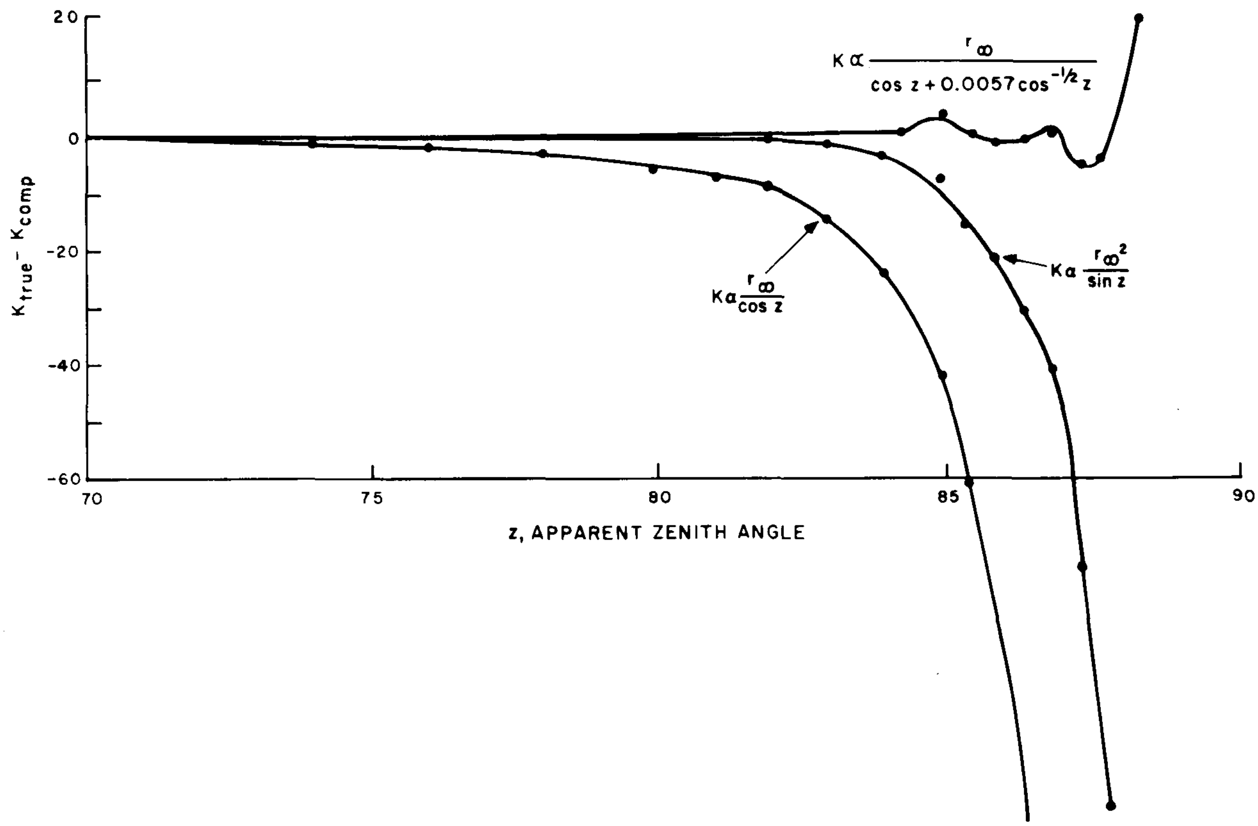

Figure 2. Deviations of three analytic approximations to refractive parallax correction, K.

2.5 Partial Refraction

Some exceptionally large meteoroids will penetrate to very low altitudes. The full astronomical refraction is not applicable in these cases. We wish to determine the refraction that would have occurred from the height of the meteor to outside the atmosphere — this correction to be subtracted from the full refraction applied in the first step and in the expression for refractive parallax. The correction can be ignored for heights greater than 40 km.

The equations for the refraction of a source within the atmosphere have been formulated analytically by Baldini (1963). His results are applicable only for $z < 75°$. Unfortunately, we can expect this correction to be most important for extremely bright objects that may well be photographed very near the horizon. Garfinkel's (1944) refractions, valid at the horizon, are inaccurate for altitudes above 10 km.

To compute the refraction exactly, we would have to integrate Radau's equation numerically. (See, for example, Garfinkel, 1944.) To obtain an analytical solution, Baldini assumes a reasonable exponential atmosphere and an approximate refraction law, $r = A \tan z + B \tan^3 z + C \tan^5 z$, and obtains a solution limited in z. Garfinkel, on the other hand, uses an almost exact form for the relationship between refractive index and density, but assumes an artificial atmosphere (dT/dH = constant) that is not valid at moderate heights.*

Sample calculations indicate that it is possible to retain Garfinkel's well-behaved expression (2) while introducing a realistic atmosphere, and obtain approximate corrections over a large range in height and zenith distance. For simplicity, we set

$$\Delta r = r_\infty (\rho / \rho_0)$$

and $T = T$ (ambient), where ρ is the atmospheric density given by the U.S. Standard Atmosphere (1962) and ρ_0 is the ambient surface density at the station. The correction obtained is exact for the extremes of height ($H = 0$, $H \rightarrow \infty$) and decreases exponentially with increasing height, more or less appropriately. Reasonable agreement (±10 arcsec) is obtained with Baldini's results at $z = 75°$. This crude formulation must fail for objects at large zenith distance and intermediate height, but observations of such objects are already inherently poor because of their large range.

*We note a recent paper by Garfinkel (1967) in which he presents a formulation for computing astronomical refraction valid for all zenith distances and all elevations. We plan to incorporate this improved method in our future reductions.

2.6 Gravity Correction

The departure from a linear trajectory due to gravity is obvious to the eye on long meteor trails. Fitting the trail measures to a straight line can cause a large error in computed position.

Since there are shutter breaks along the trail at known times, t, the magnitude of the deflection, G, due to gravity, g, can be computed with sufficient accuracy from $G = gt^2/2$, where g is given some average value for meteor altitudes. The zero point of time is chosen as the first measured dash of that trail with the greatest beginning height. The height is determined for the first dash of every other trail, and a dash number assigned to that point corresponding to the dash number of the first trail at that height.

The gravity deflection can be resolved into the three orthogonal components

$$G_X = G(-\overline{R} \cdot -\overline{Z}) \quad ,$$

$$G_Y = G(\overline{P} \cdot -\overline{Z}) \quad ,$$

$$G_W = G(-\overline{R} \times \overline{P}) \cdot (-\overline{Z}) \quad ,$$

where $\overline{Z}$, $\overline{P}$, and $\overline{R}$ are the vectors that define the zenith, the pole of the meteor trail, and the radiant, respectively. G_X is in a direction along the trail. G_Y is in the direction of the normal to the station-meteor plane and perpendicular to the trail. This component is reflected in the curvature of the trail, and corrections, primarily in y, can be applied to the measured trail coordinates once an approximate range is determined. When this correction and the correction for the refraction effects are applied, the corrected trail from each station should be a straight line.* G_W acts in the station-meteor plane and is perpendicular to the trail. This component, ignored by Whipple and Jacchia (1957), can, in special cases, cause errors in computed range (and therefore in impact points) of several kilometers.

*If these corrections fail to yield a straight-line trajectory, this may be an indication of aerodynamic "sailing" in the trajectory. A major reason for applying these corrections as accurately as possible is to ascertain whether or not lateral aerodynamic effects must be considered in the computation of impact points of meteorites.

Errors in velocity and acceleration can also be appreciable. Figure 3 illustrates a special case in which G_Y is zero, G_X is moderately large, and G_W is large. The assumption of a straight-line trajectory would yield a range R at the end point. To obtain the true range, the correction

$$\delta R = G_W \operatorname{cosec} r_i \tag{8}$$

is applied, where r_i is the angular distance from the radiant to the ith dash on the trail.

The partial corrections for gravity used by Whipple and Jacchia (1957) were easily incorporated into the results as differential corrections, applied when necessary, to the measures (G_Y) or to the final results (G_X). We compute the total gravity vector for each measured dash and then, with the iterative computation, establish the range and adjust the measured trail coordinates to correspond to a "zero gravity" trajectory. All additional computations are carried out in this zero gravity system. The gravity increments to dV/dt, V, H, and the instantaneous direction of flight are applied after the analysis of the trajectory.

Note that our published values of D (distance along the trajectory) and H (height above sea level) are zero gravity trajectory values, unless otherwise stated. Corrections for gravity should be made with the value of $g = 974$ cm/sec^2, the mean value we chose to represent gravity at altitudes or heights of those meteors for which the gravity deflection is substantial. Gravity is applied in the direction of the zenith at a point midway along the trajectory.

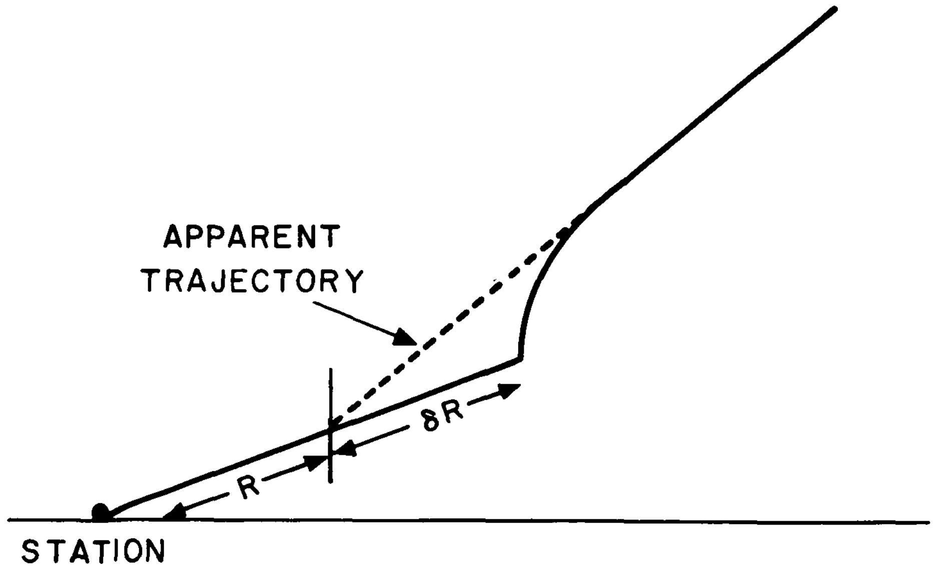

Figure 3. Effect of gravity component G_W on computed meteor trajectory.

3. PHOTOMETRY

3.1 General Procedure

Analysis of meteor light curves (intensity as a function of time) provides major information for studies of the physics of the meteoric process. Whipple and Jacchia (1957) described the visual photometric techniques of meteor photometry whereby meteor intensities are determined by comparison with trailed star images. This method, when employed by an experienced person using the best photographic material, is accurate to about 0.2 mag.

The process, however, is cumbersome at best, requires considerable time of our limited experienced personnel, and becomes quite impractical for Prairie Network data for the following reasons:

A. For accurate photometry most meteors of interest are overexposed at the nearest station. The best results are obtained from distant stations. One must, however, take into account atmospheric absorption for meteors at low elevations, and this requires photometry of stars on that particular frame.

B. Manufacturing differences in the 80 Prairie Network camera lenses cause variations in the image quality, which are particularly evident in the bright objects where a substantial portion of the apparent image occurs outside the primary image core. To accommodate photographs taken with various lenses and of meteors of varying angular velocity and intensity would require several hundred photometric comparison films. Some of these, perhaps several dozen, would have to be repeated every few months to restandardize each new emulsion batch used in the Network.

C. Personal errors, both systematic and individual, are demonstrably present in the visual star comparison technique.

Our new method uses a densitometer to record star and meteor intensities on the same film, and proceeds as follows. When the film is measured for a trajectory solution, additional photometric stars are marked and their plate coordinates measured. These stars are chosen, insofar as possible, to 1) include the entire density range of the meteor, 2) appear on the film at the time of the meteor, 3) appear in the vicinity of the meteor, or 4) permit an independent determination of the atmospheric extinction at various zenith angles.

The procedure is to use the plate constants determined for the meteor to predict the declination of the star and, on this basis alone, select the pertinent data from a list of bright stars taken from the Arizona-Tonantzintla Five Color Bright Star Catalog. The trailing rate of the star as computed from the declination and the plate scale is used to correct the catalog magnitudes to an apparent magnitude on the film. In addition, empirical corrections are applied for vignetting, extinction, color, reciprocity-law failure, and shutter cycle (the star trails are exposed for only about one-third of the exposure duration because of the chopping shutter). All these corrections reduce the stars to a common system of A0 stars outside the atmosphere. Details of these corrections and checks upon them will be given later. Corrections for extinction, trailing rate, vignetting, meteor range, and reciprocity failure are also determined for the meteor at frequent intervals along the trail.

Meteor and star trail densities are measured on a Baird densitometer with a rectangular slit, which, projected on the film, is 30 $\mu \times 180$ μ. Images are scanned with the long dimension of the slit perpendicular to the trails and with the scanning motion parallel to the star or meteor trail. The slit dimensions represent a compromise where the total area is sufficient for the densitometer to operate above its threshold for dense images, the width is small enough to give some resolution on short meteor dashes, and the length is appropriate to use the entire dynamic range of the instrument for images from $3^{m}.5$ to $-1^{m}.0$.

The readings resulting from these tracings are not true densities of the image. They are, however, proportional to the intensity. A plot of densitometer scale readings of stars versus their corrected magnitudes closely resembles a photographic H-D curve. The mean scatter of points about a smooth curve is about 0.1 mag for well-determined cases. Eight or 10 well-chosen stars are sufficient to determine this calibration curve, although as many as 20 are frequently used.

3.2 Corrections to Apparent Stellar Magnitude for Standard Stars

The calibration curve for a meteor film is a plot of the observed densities (above the background) of the star trails against the photographic stellar magnitude (m_p) corrected for various observational effects. The corrections applied transform the catalogue value to a common system characterized by equatorial A0 stars outside the atmosphere as photographed at the field center. The nature and form of the corrections, to be added to m_p, are given below.

3.2.1 Trailing rate and reciprocity-law failure

The trailing velocity of a stellar image depends on its declination and its position and direction of motion on the film. The velocity relative to the standard conditions specified above is

$$v_* = \frac{1}{FS_\phi \sec \delta} ,$$

where F is the focal length of the camera, δ is the declination, and S_ϕ is the local plate scale given by

$$S_\phi = \frac{\sqrt{F^2 + (d \sin \phi)^2}}{F^2 + d^2} \quad ,$$

where d is the distance from the plate center, and ϕ is the angle between the direction of motion of the star and the line joining the plate center and the star. In the absence of failure of the reciprocity law (see below), the correction for trailing rate would be

$$\Delta m_v = -2.5 \log (FS_\phi \sec \delta) \quad .$$

For stars, the direction of motion is given by the great circle (a straight line on the film) tangent to the stellar image, and FS_ϕ is given by

$$FS_\phi = \left[1 + \left(\frac{\sin \delta_c - \cos \sigma \sin \delta_*}{\cos \sigma \cos \delta_*}\right)^2\right]^{1/2} \cos^2 \sigma \quad ,$$

where the subscripts c and * refer to film center and star, respectively, and σ is the angular distance from film center to star.

The reciprocity law for photochemical reactions, which states that the density resulting from an exposure is dependent only on the product of the intensity and the time, is, in fact, an approximation that is useful only over a limited range of exposure times. The degree to which the law fails is a function of the emulsion as well as the exposure time. The effective exposure time for stars depends on the trailing rate and the image diameter. The exposure time can be taken as the time required for the star image to cross itself. Individual corrections can be made for each star, as influenced by declination and scale, since the trailing rates are already known. For effective exposure times in the range from 5 to 100 sec and for emulsions of the type generally used in the Prairie Network, the complete correction for trailing rate and reciprocity-law failure is given by

$$\Delta m_v = -(2.5 - r) \log (FS_\phi \sec \delta) \quad ,$$

where $r \doteq 0.9$.

It will be noted that the higher trailing rates at the edge of the field are already compensated for, in part, by the longer effective exposure times associated with the larger images produced far from the optical axis. The full reciprocity-failure correction is probably unwarranted in these cases, but any small residual error introduced by these factors is largely absorbed in the empirical vignetting corrections discussed in the next section.

3.2.2 Vignetting

The effective exposure on the film for most lens systems viewing an extended line source falls off as $\cos^3 \sigma$. One power of $\cos \sigma$ has already been accounted for exactly in the scale factor above. Measures with our particular lens system have shown that $\cos^2 \sigma$ is indeed a realistic first approximation to the remaining vignetting effects giving a correction of the form

$$\Delta m_\sigma = -5 \log \cos \sigma \quad .$$

However, deviations from this law are observed. The sharper images formed within a few centimeters of the optical axis transmit more light through a given slit than do the broader images formed with the same light source at twice the distance from the center. We have performed calibrations on several different lenses and find that the additional correction required is, fortunately, independent of density and can be expressed with sufficient accuracy by the simple relationship:

$$\Delta m_d = -\mu \left(1 - \frac{d}{k}\right), \qquad 0 \le d \le k$$

$$\Delta m_d = 0 \quad , \qquad d > k \quad ,$$

where d is the distance in centimeters from the optical axis, and μ varies from 0.5 mag for the smallest slit in use to 1.5 mag for the largest; the value of k is of the order of 5 cm. Although the correction can be appreciable, it is seldom required. Fewer than 15% of the meteor trails occurred within 5 cm of the film center and corrections $\Delta m_d < -0.3$ are applicable in fewer than 5% of all cases.

It remains to be seen whether or not k and μ vary significantly from camera to camera. Calibrations of a specific camera will be carried out only if and when meteors of interest are photographed near the field center.

3.2.3 Atmospheric extinction

A minimum correction, derived from films taken under excellent conditions, is applied to all stars:

$$\Delta m_z = 0.22 \sec z \quad ,$$

where z is the zenith distance of the star. The extinction coefficient can be redetermined from the preliminary calibration curve if the residuals suggest a sufficiently strong correlation with sec z. Generally, a re-evaluation is not possible for extinction coefficients less than 0.4. Furthermore, if the stars have been selected judiciously, i.e., near the meteor, the differential extinction correction between meteor and stars will be negligible even if the coefficient is in error by a factor of 2.

3.2.4 Color

We have used, almost universally, panchromatic emulsions for the Prairie Network patrol films. Stellar intensities are never measured over such a broad spectral region in astronomy and, hence, it is necessary to determine a new magnitude scale for panchromatic response from the information available from narrower band observations. Since image diameter is also a function of color, because of chromatic aberration in the lens, we have resigned ourselves to making an empirical correction for all color effects immediately. We find that, for most stars, the effective intensity is adequately determined by an expression of the simple form

$$\Delta m_C = 0.3\,(m_B - m_V) \quad ,$$

where the subscripts refer to the usual photographic and visual passbands. The color index is by definition equal to zero for unreddened AO stars.

3.2.5 Shutter-cycle correction

The intensity of the photometric stars is reduced by the fraction of time that the meteor-chopping shutter remains closed during the course of the exposure. Most meteor cameras use a direct-drive rotating shutter, and the exposure time for stars is rigorously determined by the geometry of the shutter.

The off-on cycle of the coding shutter employed in Prairie Network cameras differs somewhat from camera to camera; it also exhibits a long-term instability associated with temperature changes in solid-state circuitry. To determine the actual off-on cycle of a given shutter we cause the shutter to be held open for a 2-min "star-brightening" period near the end of each exposure, thus permitting the stars to produce a long bright dash. The increase in intensity in this time, as determined from the calibration curve, is then a measure of the off-on ratio. Additionally, it supplies the star brightenings that are particularly useful in calibrating the film for the range of densities common for these very bright meteors. Photometry before June 1966 was accomplished without the benefit of this 2-min brightening and, consequently, the uncertainty in off-on ratio can produce an error of 0.5 mag. However, it is frequently true that a measure of the off-on ratio can be determined to within a few tenths of a magnitude by inspection of the densitometer tracings of the meteor itself. This latter method fails for meteors of very low angular velocity or strong wake.

3.3 Corrections to Meteor Magnitudes

The magnitudes derived from the calibration curve and from the densitometry readings of the meteor trail require additional corrections similar to those applied to the photometric stars and also a correction for the range to the meteor.

3.3.1 Trailing rate and reciprocity-law failure

Effective exposure times for the meteor vary from 10^{-1} to 10^{-3} sec for most of the Prairie Network objects. The reciprocity-failure curve for most emulsions in use is essentially flat in this area, and the only correction required is that which obtains between the average meteor exposure time and the effective exposure time for standard stars, here taken as 10 sec. This correction is +0.7 mag for the film most commonly used.

The correction for trailing rate relative to the standard star is given as

$$\Delta m = -2.5 \log \frac{v_m}{v_*} ,$$

where v_* and v_m are, respectively, the trailing velocities in millimeters per second of the standard star and of the meteor on the film. The former is given by

$$v_* = 2\pi \frac{F}{T_s} ,$$

where T_s = 86164 sec, the earth's sidereal period, and v_m is computed directly from the measures of the meteor dashes. The total correction for these two effects is then

$$\Delta m_v = -2.5 \log \frac{v_m}{v_*} + 0.7 .$$

3.3.2 Vignetting, absorption, and distance

Vignetting and absorption corrections are applied exactly as for stars. In doing so we assume that the absorption is independent of color or, alternatively, that the color of the meteor is the same as that of the stars. Neither assumption is true and we will probably slightly underestimate the brightness of the meteors, if these objects, like faint meteors, are bluer than stars.

It is usual to reduce meteor data to a standard distance of 100 km. A correction of the form

$$\Delta m_R = -5.0 \log \frac{R}{100} \text{(km)}$$

is applied.

3.3.3 Shutter corrections

Density profiles along the meteor dash seldom have flat tops, i.e., the peak density measured is less than that representative of the true intensity. This results from a combination of circumstances that includes the low angular rates of the Prairie Network meteors, the relatively wide slit employed, and instrumental diffusion of the lens system. The necessary correction can, at times, approach 1 mag.

We have, in principle, three ways of determining this correction. In practice, the simplest is almost always adequate. The coding shutter used in the cameras was designed to produce a dash each code cycle (26 dashes per cycle) of 4 times the length of the normal dash to make a zero point in the timing code. This "zero dash" is invariably flat-topped on densitometer tracings. Whenever the light curve is smooth (as it usually is), the difference between the apparent magnitude of the zero dash and a smooth curve drawn through the adjoining measured dashes can be used as a correction to either the density readings or the magnitude scale for all other dashes of similar angular velocity and density. This form of the correction has become so useful that we are inverting our shutter coding procedures. In the past, the zero dash produced by eliminating the shutter break was followed by three missing dashes, which specified the timing code. Now the zero dash has been made a "zero break" by eliminating a dash, and the code is given by three code dashes produced by eliminating an intervening shutter break. Thus, for each 26-dash shutter cycle there are now 3 long dashes that may be used to calibrate the remaining portion of the light curve.

The second method of determining information on effects of the image spread and the finite slit dimensions is by tracing the star brightenings introduced each 10 min for fiducial points. These star pips are of known duration and trailing rate, and have additionally a known exposure ratio to the remaining portion of the star image.

We have laboratory facilities to reproduce on film trails of varying brightness and angular rate so that we can, if necessary, simulate the behavior of a meteor and record it by the same lens that photographs it in the field.

4. ERRORS

The quality of the data available for photometry covers an exceedingly large range. For the best cases, with small extinction and shutter corrections, the mean errors from all sources may be less than 0.2 mag. The worst cases are those objects photographed through an overcast sky and for which there are perhaps one or two comparison stars available. Errors in photometry in these cases can easily exceed 2 mag.

Independent photometry of the same meteor on films from different stations has been performed to test the internal consistency of the method. This test is significant for fewer than 25% of the meteors. In other cases, either the geometry or the sky is markedly better suited for photometry at one station than at the other, and the comparison of the two sets of results is not instructive. When it is reasonable to assign equal weights to light curves from two stations, we find the average difference, without regard to sign, between the two curves is about 0.5 mag. In making a point-by-point comparison between the two curves, we assume that the two shutters were exactly in phase and that the two cameras recorded the same portions of the meteor. In fact, the shutter can be in phase only by chance. Since most meteors display some flaring with a time constant comparable to the shutter cycle, some of the observed discrepancies are real. We can accept 0.5 mag as a safe upper limit to the errors in photometry for an average case. Errors are generally larger than the mean for the very faint and very bright portions of the light curve, and smaller for intermediate brightness. Relative photometry of adjacent segments of the trail is quite accurate. We record magnitudes to 0.1 in order that small but discernible flaring may be exhibited.

The points on the light curve for those dashes eliminated by the coding shutter are interpolated from the adjoining measures unless information is available from another film. Interpolated and doubtful measures are indicated by an asterisk on the punched card and can be later identified if necessary.

The following table lists the errors we estimate to be applicable to our various classes of photometry; the last two entries are reserved for poorly observed objects, unique in some respect, for which even poor photometry may be of interest.

Table 2. Estimated error of photometric classes.

Classes	Estimated error, mag
1	0.2
2	0.4
3	0.7
4	1.0
5 (user beware)	$\geq$ 2.0

5. DATA

Tables 3 and 4 contain the velocity data, as well as dynamic and photometric masses, for 29 meteors reduced as described above.

Table 3:

The title gives the date of occurrence, the two cameras used in the trajectory solution for D (distance along the trail in km) as a function of T (time from an arbitrary zero, $0^s.05$ per shutter break).

A, B, C, and K are parameters obtained by fitting to the data, in the least-squares sense, an expression of the form $D = A + BT + C \exp(KT)$, over a suitable interval in time. DDRMS is the rms deviation of the individual data points from this fit.

We compute velocities, $V = B + CK \exp(KT)$, and decelerations, $\dot{V} = CK^2 \exp(KT)$, for the beginning, middle, and end of such a segment. An internal error of 10% in C is considered acceptable. Only central values of V, $\dot{V}$ are reliable within the quoted uncertainty.

The effect of gravity is inserted at this point to compute a real velocity (VG), height (HG), and deceleration (DVG) for a given T.

A new position, corrected for gravity, is also computed at this time, to serve as input to a computation to predict an impact point for any body that survives to the ground.

The number M/A (mass/area gm/cm^2) is computed as follows:

$$\frac{m}{A} = -\frac{\Gamma \rho (VG)^2}{\dot{V}},$$

where $\Gamma = 0.46$ is the drag coefficient and ρ is the atmospheric density at a height HG, as given by the U. S. Standard Atmosphere 1962 (1962).

Table 4:

This table presents, for the two trails of a pair, the point-by-point D, H, and magnitude (MAG), where MAG incorporates corrections to the photometry as described above. The MASS is computed from

$$m = \frac{2}{\tau_0} \sum \frac{I}{V^3} \Delta t \quad ,$$

where τ_0, the luminous efficiency, is 10^{-19} (cgs) for MAG = -2.5 log I, and V is $\Delta D/\Delta t$ computed over 5-dash intervals, with some accommodation for missing dashes.

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Table 3. Decelerations and dynamic masses for 29 meteors.

		V	VG	HG	DVG	M/A	T
39000 13E (16N) AUGUST 29 1965							
A= -1.38+OR-	.01						
B= 17.96	.01						
C= -2.41E-2	3.75E-4	17.86	17.87	70.25	-.19	6.42E 0	.35
K= 2.00		17.31	17.32	57.88	-1.29	4.23E 0	1.30
DD RMS=	.018	14.41	14.43	47.71	-7.09	1.85E 0	2.15
A= -1.28+OR-	.04						
B= 17.78	.03						
C= -9.63E-3	2.65E-4	17.60	17.60	63.04	-.43	6.84E 0	.90
K= 2.35		16.81	16.82	54.08	-2.28	3.57E 0	1.60
DD RMS=	.019	14.24	14.26	47.71	-8.31	1.54E 0	2.15
39000 16N (13E) AUGUST 29 1965							
A= -.91+OR-	.02						
B= 18.01	.02						
C= -2.43E-2	4.89E-4	17.95	17.95	73.83	-.11	6.75E 0	.05
K= 2.05		17.58	17.59	60.67	-.87	4.57E 0	1.05
DD RMS=	.035	13.48	13.50	46.96	-9.26	1.36E 0	2.20
A= -.90+OR-	.02						
B= 18.11	.03						
C= -5.07E-2	2.66E-3	18.01	18.01	73.83	-.16	4.53E 0	.05
K= 1.75		17.71	17.72	63.32	-.68	4.30E 0	.85
DD RMS=	.033	16.03	16.05	51.32	-3.62	2.85E 0	1.80
A= -.91+OR-	.04						
B= 18.10	.04						
C= -4.47E-2	1.53E-3	17.86	17.86	66.58	-.42	4.72E 0	.60
K= 1.80		17.18	17.19	56.83	-1.64	3.73E 0	1.35
DD RMS=	.035	14.24	14.26	47.44	-6.94	1.91E 0	2.15
39000 6S (16N) AUGUST 29 1965							
A= -.85+OR-	.01						
B= 17.89	.02						
C= -3.09E-2	5.92E-4	17.78	17.78	70.01	-.21	5.87E 0	.35
K= 1.90		17.26	17.27	58.32	-1.19	4.32E 0	1.25
DD RMS=	.018	14.73	14.74	48.10	-6.01	2.16E 0	2.10
A= -.85+OR-	.03						
B= 17.92	.03						
C= -3.51E-2	9.43E-4	17.66	17.66	64.76	-.47	5.12E 0	.75
K= 1.85		16.97	16.98	55.81	-1.75	3.84E 0	1.45
DD RMS=	.019	14.75	14.77	48.10	-5.84	2.23E 0	2.10
39049 8W (14N) OCTOBER 15 1965							
A= -1.54+OR-	.01						
B= 31.80	.01						
C= -9.66E-6	8.14E-7	31.80	31.80	94.48	-.01	1.28E 2	.05
K= 6.10		31.78	31.79	83.46	-.08	5.66E 0	.90
DD RMS=	.024	29.92	29.92	73.32	-11.45	1.99E-1	1.70
39057 6W (13N) OCTOBER 24 1965							
A= -2.59+OR-	.01						
B= 14.55	.02						
C= -2.88E-1	1.21E-2	14.34	14.34	73.54	-.13	3.67E 0	.20
K= .65		14.13	14.14	63.75	-.27	6.52E 0	1.25
DD RMS=	.010	13.80	13.81	55.50	-.49	9.43E 0	2.15
A= -2.81+OR-	.02						
B= 14.41	.01						
C= -6.76E-2	1.26E-3	14.19	14.20	65.13	-.23	6.43E 0	1.10
K= 1.05		13.80	13.82	56.41	-.64	6.50E 0	2.05
DD RMS=	.012	12.67	12.69	47.68	-1.83	5.55E 0	3.05
A= -2.96+OR-	.05						
B= 15.21	.04						
C= -5.46E-1	8.69E-3	13.99	14.00	57.78	-.79	4.58E 0	1.90
K= .65		12.87	12.89	48.94	-1.51	5.90E 0	2.90
DD RMS=	.021	10.88	10.90	41.52	-2.81	6.25E 0	3.85
A= -3.93+OR-	.12						
B= 16.03	.05						
C= -8.82E-1	8.48E-3	12.92	12.94	48.52	-1.86	5.12E 0	2.95
K= .60		10.54	10.56	41.16	-3.29	5.27E 0	3.90
DD RMS=	.023	6.88	6.91	36.22	-5.48	2.82E 0	4.75
A= -1.64+OR-	.16						
B= 20.28	.11						
C= -7.15E 0	7.25E-2	11.14	11.17	42.58	-3.19	4.95E 0	3.70
K= .35		9.20	9.23	38.90	-3.87	4.75E 0	4.25
DD RMS=	.008	7.08	7.11	36.22	-4.61	3.54E 0	4.75
39057 13N (6W) OCTOBER 24 1965							
A= -3.64+OR-	.01						
B= 14.74	.02						
C= -2.83E-1	8.81E-3	14.44	14.45	70.39	-.21	3.79E 0	.60
K= .70		14.18	14.19	61.96	-.39	5.62E 0	1.50
DD RMS=	.010	13.64	13.66	53.28	-.76	7.67E 0	2.45
A= -3.88+OR-	.04						
B= 14.99	.04						
C= -3.09E-1	7.19E-3	14.28	14.29	61.96	-.53	4.21E 0	1.50
K= .75		13.42	13.44	52.41	-1.17	5.39E 0	2.55
DD RMS=	.026	11.79	11.81	44.48	-2.39	5.66E 0	3.50
A= -2.85+OR-	.04						
B= 16.21	.07						
C= -1.98E 0	4.19E-2	14.21	14.22	59.19	-.89	3.49E 0	1.80
K= .45		13.14	13.16	50.67	-1.38	5.45E 0	2.75
DD RMS=	.026	11.40	11.42	42.60	-2.16	7.62E 0	3.75

Table 3. continued

		V	VG	HG	DVG	M/A	T
39060 16N (13S) OCTOBER 27 1965							
A= -1.97+OR-	.04						
B= 32.43	.07						
C= -7.45E-2	4.55E-3	32.26	32.26	89.64	-.30	5.31E-1	.10
K= 1.85		31.38	31.38	70.56	-1.94	1.89E 0	1.10
DD RMS=	.081	28.21	28.22	57.09	-7.80	2.05E 0	1.85
A= -.78+OR-	.12						
B= 30.92	.08						
C= -7.62E-4	2.50E-5	30.77	30.78	70.56	-.51	6.85E 0	1.10
K= 3.60		29.88	29.89	60.52	-3.74	3.15E 0	1.65
DD RMS=	.069	17.97	17.99	49.61	-46.60	3.45E-1	2.35
39060 13S (16N) OCTOBER 27 1965							
A= -3.30+OR-	.02						
B= 31.25	.02						
C= -2.71E-3	7.29E-5	31.23	31.23	85.86	-.07	4.16E 0	.35
K= 3.05		30.88	30.88	69.05	-1.13	3.82E 0	1.25
DD RMS=	.030	26.96	26.97	54.93	-13.08	1.45E 0	2.05
39078 9W (12E) NOVEMBER 14 1965							
A= -1.90+OR-	.15						
B= 10.86	.10						
C= -2.32E-4	1.05E-4	10.82	10.82	62.37	-.10	1.20E 1	1.30
K= 3.00		10.72	10.73	61.09	-.40	3.55E 0	1.75
DD RMS=	.044	10.16	10.17	59.54	-2.07	7.44E-1	2.30
A= -9.64+OR-	16.66						
B= 10.13	.97						
C= 8.21E 0	1.68E 1	10.58	10.59	60.38	.03	6.65E 1	2.00
K= .05		10.61	10.62	57.42	.03	9.11E 1	3.05
DD RMS=	.029	10.62	10.63	55.59	.03	1.10E 2	3.70
A= -.40+OR-	.17						
B= 10.28	.04						
C= -5.64E-7	1.18E-7	10.26	10.27	54.65	-.05	5.25E 1	4.05
K= 2.40		10.19	10.20	53.03	-.23	1.48E 1	4.65
DD RMS=	.031	9.55	9.56	50.78	-1.75	2.24E 0	5.50
A=199.39+OR-	9.62						
B= 24.14	.79						
C= -2.10E 2	1.07E 1	9.23	9.25	47.00	-.74	7.89E 0	7.00
K= .05		8.58	8.60	45.00	-.77	8.60E 0	7.85
DD RMS=	.020	8.03	8.05	43.45	-.80	9.05E 0	8.55
A= 11.90+OR-	.29						
B= 8.39	.03						
C= -2.71E-11	1.24E-12	8.34	8.36	44.66	-.13	5.20E 1	8.00
K= 2.55		8.23	8.25	43.66	-.40	1.85E 1	8.45
DD RMS=	.028	5.43	5.45	41.38	-7.55	5.94E-1	9.60
39078 12E (9W) NOVEMBER 14 1965							
A= -.55+OR-	.01						
B= 10.82	.01						
C= -1.57E-2	1.73E-3	10.80	10.80	65.46	-.02	4.65E 1	.05
K= 1.05		10.71	10.72	60.41	-.11	1.35E 1	1.80
DD RMS=	.024	10.44	10.44	57.03	-.40	5.48E 0	3.00
A= -.01+OR-	.03						
B= 10.52	.01						
C= -2.92E-5	2.76E-6	10.51	10.52	58.44	-.02	1.09E 2	2.50
K= 2.00		10.46	10.47	55.77	-.11	2.23E 1	3.45
DD RMS=	.015	10.05	10.06	52.89	-.95	3.54E 0	4.50
A= 90.10+OR-	12.07						
B= 15.87	.82						
C= -9.13E 1	1.26E 1	10.15	10.16	52.89	-.28	1.20E 1	4.50
K= .05		9.99	10.00	51.41	-.29	1.35E 1	5.05
DD RMS=	.016	9.73	9.75	49.19	-.30	1.62E 1	5.90
A= 23.41+OR-	.94						
B= 14.48	.25						
C= -2.65E 1	1.34E 0	9.89	9.90	50.23	-.46	9.82E 0	5.50
K= .10		9.50	9.52	48.17	-.49	1.08E 1	6.30
DD RMS=	.012	9.14	9.16	46.44	-.53	1.17E 1	7.00
A=156.54+OR-	8.02						
B= 20.58	.63						
C= -1.62E 2	8.76E 0	9.41	9.42	47.68	-.56	1.00E 1	6.50
K= .05		9.04	9.06	46.08	-.57	1.11E 1	7.15
DD RMS=	.016	8.44	8.47	43.76	-.60	1.27E 1	8.15

Table 3. continued

		V	VG	HG	DVG	M/A	T
39113 15E (6S) DECEMBER 19 1965							
A= -.79+OR-	.01						
B= 15.03	.01						
C= -3.14E-4	3.46E-5	15.03	15.03	68.92	-.01	1.94E 2	.30
K= 2.75		15.00	15.01	55.06	-.08	6.81E 1	1.30
DD RMS=	.016	14.55	14.57	41.36	-1.32	2.42E 1	2.30
A= -.82+OR-	.01						
B= 15.06	.01						
C= -8.77E-4	1.48E-5	15.05	15.06	63.42	-.02	7.79E 1	.70
K= 2.40		14.92	14.94	48.85	-.33	3.62E 1	1.75
DD RMS=	.013	12.85	12.87	33.68	-5.31	1.49E 1	2.90
A= -1.12+OR-	.02						
B= 15.31	.01						
C= -9.62E-3	5.89E-5	15.13	15.15	53.69	-.29	2.30E 1	1.40
K= 1.70		14.17	14.19	38.71	-1.94	2.30E 1	2.50
DD RMS=	.018	7.87	7.90	26.55	-12.64	7.16E 0	3.60
39113 6S (15E) DECEMBER 19 1965							
A= -.07+OR-	.03						
B= 15.06	.02						
C= -2.94E-3	6.06E-5	15.03	15.04	59.89	-.07	4.12E 1	.90
K= 2.05		14.70	14.72	44.79	-.74	2.71E 1	2.00
DD RMS=	.031	11.22	11.25	30.32	-7.88	1.30E 1	3.15
39125 5E (4N) DECEMBER 31 1965							
A= -1.19+OR-	.06						
B= 21.65	.04						
C= -3.18E-3	5.77E-5	21.39	21.40	57.54	-.71	1.22E 1	1.20
K= 2.80		20.07	20.08	44.63	-4.42	8.68E 0	1.85
DD RMS=	.024	14.27	14.29	35.31	-20.66	3.67E 0	2.40
39125 4N (5E) DECEMBER 31 1965							
A= -1.14+OR-	.02						
B= 21.96	.03						
C= -4.84E-3	2.25E-4	21.95	21.95	80.87	-.03	6.99E 0	.05
K= 2.75		21.75	21.76	61.15	-.56	1.01E 1	1.00
DD RMS=	.040	18.70	18.72	41.49	-8.95	5.81E 0	2.00
A= -1.00+OR-	.03						
B= 21.95	.02						
C= -1.42E-2	8.07E-5	21.65	21.65	61.15	-.68	8.38E 0	1.00
K= 2.25		19.06	19.08	41.49	-6.48	8.33E 0	2.00
DD RMS=	.022	8.01	8.03	31.55	-31.36	1.38E 0	2.70
39126 1N (4E) DECEMBER 31 1965							
A= -.82+OR-	.02						
B= 18.18	.03						
C= -2.48E-2	4.37E-4	18.03	18.04	60.31	-.45	9.54E 0	.20
K= 3.15		16.85	16.86	48.95	-4.19	3.65E 0	.90
DD RMS=	.012	13.48	13.50	43.26	-14.78	1.42E 0	1.30
39126 4E (1N) DECEMBER 31 1965							
A= 2054+OR-	57.27						
B=123.98	3.00						
C= -2.06E 3	5.73E 1	18.85	18.85	55.94	-5.25	1.56E 0	.45
K= .05		16.46	16.46	48.62	-5.37	2.83E 0	.90
DD RMS=	.020	14.01	14.02	42.34	-5.49	4.70E 0	1.35

Table 3. continued

39128 11E (10W) JANUARY 3 1966

		V	VG	HG	DVG	M/A	T
A= 1.14+OR-	.03						
B= 13.18	.02						
C= -3.13E-2	1.80E-3	13.07	13.07	60.07	-.10	2.24E 1	1.40
K= .95		12.86	12.87	56.17	-.30	1.23E 1	2.50
DD RMS=	.015	12.43	12.44	53.06	-.71	7.04E 0	3.40
A= 1.32+OR-	.05						
B= 13.28	.03						
C= -1.68E-1	5.49E-3	12.82	12.83	56.17	-.27	1.36E 1	2.50
K= .60		12.48	12.49	52.88	-.48	1.08E 1	3.45
DD RMS=	.016	11.73	11.74	49.26	-.93	7.71E 0	4.55
A= 1.47+OR-	.08						
B= 13.55	.03						
C= -5.12E-1	9.99E-3	12.49	12.49	53.06	-.48	1.06E 1	3.40
K= .45		11.92	11.93	49.90	-.73	9.27E 0	4.35
DD RMS=	.015	10.87	10.89	46.49	-1.20	7.27E 0	5.45
A= 3.53+OR-	.09						
B= 15.39	.07						
C= -4.63E 0	6.91E-2	11.96	11.98	49.90	-.86	8.00E 0	4.35
K= .25		10.93	10.95	46.64	-1.11	7.79E 0	5.40
DD RMS=	.016	9.67	9.68	43.84	-1.43	6.96E 0	6.40
A= 7.38+OR-	.12						
B= 16.79	.08						
C= -9.93E 0	1.20E-1	11.00	11.02	46.79	-1.16	7.44E 0	5.35
K= .20		9.72	9.74	43.97	-1.41	7.00E 0	6.35
DD RMS=	.016	8.07	8.09	41.43	-1.74	5.62E 0	7.40

39128 10W (11E) JANUARY 3 1966

		V	VG	HG	DVG	M/A	T
A= -.58+OR-	.01						
B= 13.41	.02						
C= -1.22E-1	1.04E-2	13.31	13.31	65.26	-.07	1.78E 1	.10
K= .75		13.19	13.19	61.42	-.16	1.27E 1	1.15
DD RMS=	.016	12.93	12.94	57.66	-.35	6.81E 0	2.20
A= .80+OR-	.03						
B= 13.84	.03						
C= -1.54E 0	4.45E-2	13.20	13.21	61.60	-.19	1.05E 1	1.10
K= .30		12.95	12.96	57.66	-.27	1.18E 1	2.20
DD RMS=	.009	12.58	12.59	53.64	-.38	1.27E 1	3.35
A= -.25+OR-	.02						
B= 13.54	.02						
C= -4.73E-1	1.09E-2	12.97	12.98	57.66	-.26	1.23E 1	2.20
K= .45		12.64	12.65	54.16	-.40	1.13E 1	3.20
DD RMS=	.008	12.16	12.18	50.94	-.62	1.00E 1	4.15
A=284.89+OR-	19.51						
B= 30.06	1.26						
C= -2.90E 2	2.01E 1	12.40	12.41	51.61	-.88	6.76E 0	3.95
K= .05		12.09	12.10	50.45	-.90	7.30E 0	4.30
DD RMS=	.010	11.45	11.46	48.21	-.93	8.34E 0	5.00
A= -.06+OR-	.06						
B= 14.11	.03						
C= -1.31E 0	1.19E-2	12.19	12.20	51.11	-.67	9.11E 0	4.10
K= .35		11.33	11.35	47.75	-.97	8.30E 0	5.15
DD RMS=	.009	10.17	10.19	44.83	-1.38	6.98E 0	6.15
A= 5.29+OR-	.04						
B= 16.81	.04						
C= -9.71E 0	5.39E-2	11.48	11.49	48.06	-1.06	7.45E 0	5.05
K= .20		10.17	10.18	44.83	-1.33	7.24E 0	6.15
DD RMS=	.010	8.28	8.30	41.69	-1.70	5.83E 0	7.40
A= 67.01+OR-	.43						
B= 24.25	.13						
C= -7.60E 1	6.75E-1	10.66	10.68	45.82	-1.36	6.80E 0	5.80
K= .10		9.53	9.55	43.62	-1.47	6.81E 0	6.60
DD RMS=	.010	7.90	7.92	41.13	-1.63	6.00E 0	7.65

39128 9N (11E) JANUARY 3 1966

		V	VG	HG	DVG	M/A	T
A= -1.03+OR-	.01						
B= 13.19	.02						
C= -3.06E-3	3.62E-4	13.18	13.18	60.57	-.02	9.75E 1	.10
K= 2.45		13.08	13.08	56.94	-.27	1.29E 1	1.10
DD RMS=	.028	12.41	12.41	54.12	-1.92	2.29E 0	1.90
A=169.99+OR-	12.09						
B= 22.11	.67						
C= -1.71E 2	1.22E 1	13.09	13.09	57.13	-.45	7.60E 0	1.05
K= .05		12.82	12.82	54.99	-.46	9.13E 0	1.65
DD RMS=	.025	12.19	12.20	50.54	-.49	1.33E 1	2.95
A= 73.51+OR-	1.78						
B= 22.37	.29						
C= -7.65E 1	1.97E 0	12.05	12.06	50.39	-1.03	6.36E 0	3.00
K= .10		10.97	10.98	47.24	-1.14	7.06E 0	4.00
DD RMS=	.024	9.83	9.84	44.55	-1.25	7.45E 0	4.95
A= 2.24+OR-	.33						
B= 12.49	.13						
C= -4.40E-1	2.48E-2	10.90	10.91	47.39	-.79	9.87E 0	3.95
K= .50		10.40	10.41	45.78	-1.04	8.46E 0	4.50
DD RMS=	.019	9.45	9.47	43.76	-1.52	6.36E 0	5.25
A= 1.85+OR-	.46						
B= 13.69	.16						
C= -1.90E 0	5.76E-2	9.98	10.00	44.68	-1.29	7.31E 0	4.90
K= .35		9.57	9.59	43.88	-1.44	6.76E 0	5.20
DD RMS=	.029	6.61	6.63	40.40	-2.47	3.09E 0	6.75

Table 3. continued

			V	VG	HG	DVG	M/A	T
39129 3N (2S) JANUARY 4 1966								
	A=536.07+OR-	16.81						
	B= 41.70	.96						
	C= -5.39E 2	1.69E 1	12.06	12.08	49.98	-1.48	4.66E 0	1.90
	K= .05		11.31	11.33	46.28	-1.51	6.42E 0	2.40
	DD RMS=	.008	10.54	10.56	42.82	-1.55	8.80E 0	2.90
	A= -.37+OR-	.03						
	B= 14.18	.02						
	C= -1.38E 0	7.12E-3	12.01	12.03	49.98	-1.18	5.76E 0	1.90
	K= .55		10.53	10.55	43.16	-2.00	6.49E 0	2.85
	DD RMS=	.010	7.31	7.34	36.54	-3.77	4.39E 0	4.00
39130 5E (2N) JANUARY 5 1966								
	A= -3.35+OR-	.03						
	B= 28.58	.03						
	C= -5.56E-3	7.06E-5	28.38	28.38	67.48	-.59	7.63E 0	.85
	K= 2.95		26.99	27.00	51.59	-4.67	6.06E 0	1.55
	DD RMS=	.019	20.54	20.56	40.58	-23.70	3.02E 0	2.10
39130 2N (5E) JANUARY 5 1966								
	A= -1.42+OR-	.01						
	B= 28.25	.02						
	C= -1.48E-2	9.73E-4	28.20	28.20	84.46	-.09	3.35E 0	.05
	K= 2.40		28.05	28.06	69.58	-.45	7.34E 0	.70
	DD RMS=	.020	26.94	26.96	51.56	-3.11	9.07E 0	1.50
	A= -1.41+OR-	.01						
	B= 28.13	.01						
	C= -3.20E-3	3.62E-5	28.12	28.12	84.46	-.03	8.33E 0	.05
	K= 3.20		27.73	27.74	59.37	-1.29	9.01E 0	1.15
	DD RMS=	.029	18.16	18.18	38.95	-31.90	2.22E 0	2.15
	A= -1.05+OR-	.04						
	B= 27.77	.03						
	C= -6.91E-4	1.14E-5	27.64	27.65	62.73	-.47	1.61E 1	1.00
	K= 3.85		26.91	26.92	51.56	-3.29	8.56E 0	1.50
	DD RMS=	.025	17.30	17.32	38.95	-40.29	1.60E 0	2.15
39130 4W (2N) JANUARY 5 1966								
	A= -3.59+OR-	.24						
	B= 29.22	.15						
	C= -1.43E-3	3.84E-5	27.26	27.28	48.79	-7.04	5.81E 0	1.65
	K= 3.60		25.20	25.22	44.49	-14.47	4.27E 0	1.85
	DD RMS=	.017	17.38	17.40	39.13	-42.61	1.48E 0	2.15
39130 2N (4W) JANUARY 5 1966								
	A= -1.42+OR-	.01						
	B= 28.35	.02						
	C= -1.84E-2	1.18E-3	28.30	28.30	84.72	-.10	2.84E 0	.05
	K= 2.30		28.14	28.14	69.77	-.48	6.77E 0	.70
	DD RMS=	.020	27.02	27.03	51.69	-3.06	9.15E 0	1.50
	A= -1.06+OR-	.04						
	B= 27.86	.03						
	C= -7.80E-4	1.29E-5	27.73	27.73	62.89	-.49	1.51E 1	1.00
	K= 3.80		26.97	26.98	51.69	-3.36	8.30E 0	1.50
	DD RMS=	.025	17.39	17.41	39.03	-39.78	1.61E 0	2.15
39135 14E (15N) JANUARY 10 1966								
	A= -1.57+OR-	.01						
	B= 28.81	.02						
	C= -1.22E-2	4.30E-4	28.78	28.78	96.29	-.08	4.24E-1	.15
	K= 2.25		28.55	28.56	82.24	-.58	8.52E-1	1.00
	DD RMS=	.026	26.35	26.36	66.26	-5.53	8.23E-1	2.00
	A= -1.15+OR-	.08						
	B= 28.31	.05						
	C= -7.63E-5	2.50E-6	28.28	28.29	82.24	-.11	4.36E 0	1.00
	K= 4.35		27.88	27.89	71.69	-1.89	1.32E 0	1.65
	DD RMS=	.049	19.18	19.19	61.55	-39.73	1.08E-1	2.35
39135 15N (14E) JANUARY 10 1966								
	A= -1.59+OR-	.02						
	B= 28.79	.02						
	C= -1.31E-3	4.62E-5	28.78	28.78	92.95	-.04	1.50E 0	.35
	K= 3.30		28.63	28.63	80.56	-.53	1.27E 0	1.10
	DD RMS=	.026	25.62	25.63	66.20	-10.45	4.15E-1	2.00
	A= -1.70+OR-	.05						
	B= 29.46	.06						
	C= -1.45E-1	5.49E-3	29.07	29.08	90.49	-.52	2.16E-1	.50
	K= 1.35		28.25	28.25	76.46	-1.63	7.81E-1	1.35
	DD RMS=	.059	24.44	24.46	60.27	-6.77	1.20E 0	2.40

Table 3. continued

			V	VG	HG	DVG	M/A	T
39139 7W (16N) JANUARY 14 1966								
A=	-.82+OR-	.01						
B=	19.62	.02						
C=	-3.20E-2	3.09E-3	19.56	19.57	93.03	-.07	4.41E-1	.35
K=	1.20		19.45	19.45	88.03	-.20	3.85E-1	1.25
DD RMS=		.017	19.09	19.09	82.85	-.64	3.08E-1	2.20
A=	-.78+OR-	.02						
B=	19.47	.01						
C=	-1.61E-5	2.11E-6	19.47	19.47	90.80	-.01	6.33E 0	.75
K=	4.30		19.43	19.43	86.66	-.19	5.44E-1	1.50
DD RMS=		.017	18.76	18.76	83.14	-3.07	5.91E-2	2.15
39139 16N (7W) JANUARY 14 1966								
A=	27.00+OR-	8.30						
B=	21.00	.44						
C=	-2.80E 1	8.31E 0	19.60	19.60	94.74	-.07	3.22E-1	.05
K=	.05		19.53	19.54	89.72	-.07	8.03E-1	.95
DD RMS=		.018	19.45	19.46	63.93	-.08	2.19E 0	2.00
A=	-.92+OR-	.01						
B=	19.52	.01						
C=	-3.52E-6	5.15E-7	19.52	19.52	92.77	-.01	6.36E 1	.40
K=	4.70		19.51	19.51	86.95	-.07	1.38E 0	1.45
DD RMS=		.025	18.70	18.71	82.32	-3.84	5.47E-2	2.30
39154 15E (16W) JANUARY 29 1966								
A=	-1.30+OR-	.01						
B=	20.97	.01						
C=	-3.49E-3	1.02E-4	20.96	20.96	69.72	-.03	4.23E 1	.15
K=	2.65		20.80	20.81	54.13	-.48	2.53E 1	1.00
DD RMS=		.017	18.74	18.75	38.19	-6.36	1.33E 1	1.90
A=	-1.33+OR-	.01						
B=	21.03	.01						
C=	-6.21E-3	1.90E-4	20.99	20.99	66.08	-.10	2.83E 1	.35
K=	2.60		20.75	20.76	52.30	-.72	2.09E 1	1.10
DD RMS=		.014	19.05	19.06	39.03	-5.14	1.50E 1	1.85
39154 16W (15E) JANUARY 29 1966								
A=	-1.13+OR-	.01						
B=	20.99	.01						
C=	-4.32E-4	2.74E-5	20.99	20.99	70.52	-.01	1.47E 2	.10
K=	4.15		20.93	20.94	56.73	-.25	3.64E 1	.85
DD RMS=		.017	19.62	19.64	43.14	-5.68	7.95E 0	1.60
A=	-1.22+OR-	.01						
B=	21.25	.01						
C=	-1.94E-2	1.14E-4	21.15	21.16	65.00	-.22	1.52E 1	.40
K=	2.20		20.22	20.23	45.79	-2.27	1.46E 1	1.45
DD RMS=		.019	11.90	11.92	30.43	-20.56	5.50E 0	2.45
A=	-1.61+OR-	.05						
B=	21.71	.04						
C=	-4.71E-2	4.70E-4	20.55	20.56	47.59	-2.20	1.22E 1	1.35
K=	1.90		19.22	19.24	40.55	-4.72	1.33E 1	1.75
DD RMS=		.013	13.15	13.17	30.98	-16.25	7.77E 0	2.40
39179 11E (9N) FEBRUARY 23 1966								
A=	-1.19+OR-	.01						
B=	23.41	.01						
C=	-2.90E-2	7.41E-4	23.35	23.35	75.68	-.11	8.76E 0	.10
K=	1.80		23.15	23.15	64.20	-.47	9.56E 0	.90
DD RMS=		.018	21.32	21.33	48.26	-3.75	7.11E 0	2.05
A=	-1.18+OR-	.02						
B=	23.37	.02						
C=	-2.02E-2	1.15E-4	23.14	23.15	64.20	-.44	1.02E 1	.90
K=	1.95		21.77	21.78	50.25	-3.11	6.99E 0	1.90
DD RMS=		.020	13.19	13.20	39.30	-19.85	1.79E 0	2.85

Table 3. continued

			V	VG	HG	DVG	M/A	T
39180A 8S (13W) FEBRUARY 24 1966								
	A= -3.51+OR-	.17						
	B= 13.53	.11						
	C= -3.29E-5	5.23E-6	13.37	13.38	49.77	-.79	1.09E 1	1.45
	K= 4.80		12.98	13.00	46.49	-2.64	4.71E 0	1.70
	DD RMS=	.017	11.70	11.72	43.36	-8.79	1.78E 0	1.95
39180A13W (8S) FEBRUARY 24 1966								
	A= -3.50+OR-	.01						
	B= 14.53	.02						
	C= -5.60E-2	1.43E-3	14.37	14.38	65.06	-.26	5.84E 0	.30
	K= 1.70		14.05	14.06	55.80	-.80	5.71E 0	.95
	DD RMS=	.012	12.67	12.69	45.02	-3.16	4.58E 0	1.75
	A= -3.63+OR-	.08						
	B= 14.86	.08						
	C= -1.22E-1	3.92E-3	13.85	13.86	52.34	-1.45	4.68E 0	1.20
	K= 1.45		12.63	12.64	45.02	-3.22	4.46E 0	1.75
	DD RMS=	.021	10.25	10.27	39.26	-6.67	3.25E 0	2.25
39180B11S (9N) FEBRUARY 24 1966								
	A=208.55+OR-	31.67						
	B= 30.98	1.64						
	C= -2.10E 2	3.17E 1	20.48	20.48	75.78	-.52	1.42E 0	.05
	K= .05		20.21	20.21	69.31	-.53	3.36E 0	.55
	DD RMS=	.021	19.83	19.83	60.44	-.55	9.41E 0	1.25
39180B11E (9N) FEBRUARY 24 1966								
	A=-27.91+OR-	.05						
	B= 20.14	.03						
	C= -2.51E-2	3.27E-4	19.64	19.64	57.46	-.85	6.70E 0	1.45
	K= 1.70		18.01	18.02	47.25	-3.61	6.00E 0	2.30
	DD RMS=	.024	13.14	13.16	40.12	-11.89	2.63E 0	3.00
	A=-20.70+OR-	.13						
	B= 26.23	.09						
	C= -2.79E 0	2.06E-2	19.13	19.14	49.55	-4.61	3.97E 0	2.10
	K= .65		14.67	14.68	41.45	-7.51	4.29E 0	2.85
	DD RMS=	.031	6.14	6.16	35.63	-13.05	1.03E 0	3.70
39182 4N (1N) FEBRUARY 26 1966								
	A= -.87+OR-	.01						
	B= 17.57	.01						
	C= -1.77E-5	4.71E-6	17.57	17.57	78.29	-.01	7.91E 2	.05
	K= 4.60		17.55	17.56	61.98	-.07	4.57E 1	1.15
	DD RMS=	.026	17.06	17.07	50.94	-2.34	5.23E 0	1.90
	A= 4.72+OR-	.32						
	B= 19.53	.14						
	C= -5.88E 0	3.62E-1	17.78	17.78	68.68	-.43	3.47E 0	.70
	K= .25		17.39	17.40	56.79	-.53	1.18E 1	1.50
	DD RMS=	.027	16.71	16.74	40.93	-.70	6.40E 1	2.60
	A= -.61+OR-	.06						
	B= 17.41	.03						
	C= -7.41E-4	3.22E-5	17.36	17.37	59.03	-.11	3.94E 1	1.35
	K= 2.45		16.67	16.69	43.12	-1.79	1.82E 1	2.45
	DD RMS=	.043	13.80	13.82	34.50	-8.84	9.12E 0	3.10
	A= -4.31+OR-	.22						
	B= 19.85	.10						
	C= -1.76E-1	2.70E-3	17.14	17.16	43.85	-2.98	1.05E 1	2.40
	K= 1.10		15.15	15.17	37.01	-5.16	1.28E 1	2.90
	DD RMS=	.041	7.20	7.23	27.97	-13.91	4.35E 0	3.80
	A= -3.91+OR-	1.11						
	B= 34.19	1.22						
	C= -1.45E 1	7.75E-1	14.91	14.93	35.67	-7.70	1.02E 1	3.00
	K= .40		12.45	12.48	32.25	-8.69	1.08E 1	3.30
	DD RMS=	.042	7.64	7.67	27.97	-10.61	6.42E 0	3.80
39182 1N (4N) FEBRUARY 26 1966								
	A= 2.83+OR-	.02						
	B= 17.45	.01						
	C= -1.33E-3	2.19E-5	17.41	17.42	61.16	-.08	4.01E 1	1.00
	K= 2.45		17.31	17.32	53.13	-.35	2.72E 1	1.55
	DD RMS=	.013	14.35	14.37	35.76	-7.59	9.45E 0	2.80
39197 6W (13N) MARCH 13 1966								
	A= -1.43+OR-	.01						
	B= 28.68	.01						
	C= -2.82E-2	2.25E-4	28.79	28.79	82.75	-.23	1.96E 0	.05
	K= 2.70		28.13	28.13	66.50	-2.03	2.47E 0	.85
	DD RMS=	.014	21.38	21.39	50.86	-20.25	9.59E-1	1.70
39197 13N (6W) MARCH 13 1966								
	A= -1.59+OR-	.01						
	B= 29.06	.02						
	C= -5.67E-2	1.36E-3	28.85	28.85	79.79	-.47	1.67E 0	.20
	K= 2.30		28.48	28.48	70.63	-1.33	2.25E 0	.65
	DD RMS=	.012	26.15	26.16	56.89	-6.68	2.10E 0	1.35

Table 3. continued

			V	VG	HG	DVG	M/A	T
39229 1W (4S) APRIL 14 1966								
A=	.12+OR-	.01						
B=	18.10	.03						
C=	-7.29E-2	1.67E-3	17.90	17.90	65.46	-.43	5.29E 0	.10
K=	2.20		17.27	17.27	56.77	-1.83	3.39E 0	.75
DD RMS=		.014	14.98	14.99	49.35	-6.87	1.67E 0	1.35
A=	.31+OR-	.01						
B=	19.14	.03						
C=	-4.86E-1	4.03E-3	17.76	17.76	59.42	-1.85	2.56E 0	.55
K=	1.35		16.24	16.25	52.34	-3.91	2.39E 0	1.10
DD RMS=		.012	11.68	11.69	44.76	-10.06	1.27E 0	1.80
39229 4S (1W) APRIL 14 1966								
A=	.45+OR-	.02						
B=	19.34	.07						
C=	-1.26E 0	3.25E-2	18.03	18.03	66.09	-1.24	1.74E 0	.10
K=	.95		16.66	16.67	56.21	-2.54	2.44E 0	.85
DD RMS=		.030	14.13	14.14	48.01	-4.94	2.45E 0	1.55
A=	.43+OR-	.03						
B=	16.40	.03						
C=	-2.87E-2	3.83E-4	15.94	15.94	55.55	-1.00	6.12E 0	.90
K=	2.20		14.86	14.87	49.06	-3.37	3.48E 0	1.45
DD RMS=		.018	9.24	9.25	42.35	-15.74	7.14E-1	2.15
39240 5E (2N) APRIL 25 1966								
A=	-.78+OR-	.01						
B=	17.11	.01						
C=	3.06E-6	2.05E-6	17.11	17.11	77.99	.01	4.23E 3	.05
K=	4.75		17.11	17.12	63.80	.02	3.26E 2	1.00
DD RMS=		.025	17.30	17.32	48.89	.93	1.76E 1	2.00
A=	-1.03+OR-	.02						
B=	17.37	.01						
C=	-8.36E-3	1.93E-4	17.29	17.30	63.80	-.12	2.01E 1	1.00
K=	1.70		16.94	16.96	48.89	-.72	2.16E 1	2.00
DD RMS=		.019	15.04	15.06	34.76	-3.95	2.32E 1	3.00
A=	-1.65+OR-	.06						
B=	17.85	.03						
C=	-4.44E-2	3.16E-4	17.07	17.09	48.89	-1.00	1.57E 1	2.00
K=	1.30		14.60	14.63	33.48	-4.21	2.51E 1	3.10
DD RMS=		.029	7.38	7.42	24.29	-13.59	8.37E 0	4.00
A=	-6.95+OR-	.23						
B=	26.12	.15						
C=	-4.85E 0	5.16E-2	15.26	15.29	34.76	-5.42	1.74E 1	3.00
K=	.50		12.52	12.55	29.28	-6.79	2.20E 1	3.45
DD RMS=		.014	8.22	8.25	24.29	-8.94	1.57E 1	4.00
A=	1.24+OR-	.11						
B=	32.10	.14						
C=	-1.67E 1	1.17E-1	15.35	15.38	34.76	-5.85	1.63E 1	3.00
K=	.35		12.15	12.18	28.77	-6.97	2.18E 1	3.50
DD RMS=		.014	6.16	6.20	22.70	-9.07	1.13E 1	4.25
39240 2N (5E) APRIL 25 1966								
A=	-.94+OR-	.02						
B=	17.40	.01						
C=	-1.42E-2	1.58E-4	17.28	17.29	62.19	-.18	1.71E 1	1.10
K=	1.55		16.73	16.75	45.88	-1.02	2.18E 1	2.20
DD RMS=		.015	14.00	14.03	31.52	-5.25	2.51E 1	3.25
A=	-.60+OR-	.02						
B=	17.18	.01						
C=	-5.20E-3	2.63E-5	16.83	16.85	48.80	-.61	2.53E 1	2.00
K=	1.80		15.97	15.99	38.76	-2.16	2.60E 1	2.70
DD RMS=		.008	11.08	11.11	27.66	-10.97	1.37E 1	3.60
39259 12N (11W) MAY 14 1966								
A=	-.68+OR-	.01						
B=	18.54	.01						
C=	-1.61E-4	1.70E-5	18.54	18.54	76.15	-.01	1.55E 2	.10
K=	3.95		18.50	18.51	60.61	-.15	2.82E 1	1.05
DD RMS=		.014	17.90	17.91	49.32	-2.52	6.54E 0	1.75
A=	-.66+OR-	.02						
B=	18.56	.02						
C=	-1.85E-3	2.05E-5	18.47	18.48	60.61	-.24	1.78E 1	1.05
K=	2.75		17.94	17.95	49.32	-1.71	9.63E 0	1.75
DD RMS=		.018	12.08	12.10	37.28	-17.83	2.26E 0	2.60
39259 11W (12N) MAY 14 1966								
A=	-.92+OR-	.01						
B=	18.74	.01						
C=	-4.71E-3	3.06E-4	18.73	18.73	76.36	-.03	1.66E 1	.10
K=	2.40		18.63	18.64	62.34	-.26	1.39E 1	.95
DD RMS=		.018	17.79	17.80	47.79	-2.29	8.59E 0	1.85
A=	-.91+OR-	.02						
B=	18.72	.01						
C=	-2.21E-3	1.97E-5	18.62	18.63	61.53	-.25	1.55E 1	1.00
K=	2.75		17.97	17.98	49.33	-2.05	8.09E 0	1.75
DD RMS=		.014	11.97	11.99	38.09	-18.55	1.89E 0	2.55
A=	-1.02+OR-	.03						
B=	18.80	.02						
C=	-2.97E-3	3.12E-5	18.58	18.59	57.46	-.56	1.16E 1	1.25
K=	2.65		17.74	17.75	47.79	-2.80	6.99E 0	1.85
DD RMS=		.013	12.02	12.04	38.09	-17.95	1.97E 0	2.55

Table 3. continued

39261 9N (10W) MAY 16 1966

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	-.63+OR-	.01						
B=	20.41	.05						
C=	-2.46E-1	1.24E-2	20.04	20.04	72.10	-.51	2.35E 0	.05
K=	1.40		19.66	19.67	64.99	-1.03	2.85E 0	.55
DD RMS=		.018	18.43	18.43	55.38	-2.77	3.03E 0	1.25

39261 10W (9N) MAY 16 1965

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	-.62+OR-	.01						
B=	20.53	.05						
C=	-4.78E-1	1.72E-2	19.95	19.95	71.54	-.64	2.01E 0	.10
K=	1.10		19.26	19.27	61.69	-1.39	3.05E 0	.80
DD RMS=		.020	17.64	17.65	51.71	-3.18	3.74E 0	1.55
A=	-.63+OR-	.03						
B=	19.23	.03						
C=	-9.07E-3	1.82E-4	19.02	19.03	61.69	-.57	7.23E 0	.80
K=	2.70		18.52	18.53	55.63	-1.92	4.26E 0	1.25
DD RMS=		.015	14.50	14.51	47.04	-12.78	1.13E 0	1.95

39302 9N (10S) JUNE 26 1966

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	-1.24+OR-	.03						
B=	29.22	.04						
C=	-1.39E-2	2.76E-4	29.01	29.02	76.07	-.75	1.88E 0	.40
K=	3.60		28.15	28.16	64.56	-3.84	1.67E 0	.85
DD RMS=		.022	21.48	21.49	51.91	-27.88	6.18E-1	1.40

39302 10S (9N) JUNE 26 1966

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	-1.46+OR-	.02						
B=	30.20	.04						
C=	-4.13E-2	1.22E-3	30.06	30.06	85.32	-.44	6.98E-1	.05
K=	3.05		29.62	29.63	73.32	-1.76	1.27E 0	.50
DD RMS=		.028	24.50	24.51	54.62	-17.40	9.32E-1	1.25

39304 16N (13E) JUNE 28 1966

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	-.84+OR-	.01						
B=	24.57	.03						
C=	-3.49E-1	8.38E-3	24.14	24.14	72.64	-.47	3.47E 0	.10
K=	1.10		23.41	23.42	61.38	-1.26	5.14E 0	1.00
DD RMS=		.029	21.10	21.11	49.61	-3.81	5.81E 0	2.00
A=	784.11+OR-	58.76						
B=	64.83	3.18						
C=	-7.86E 2	5.89E 1	23.52	23.53	61.38	-2.06	3.19E 0	1.00
K=	.05		22.37	22.38	54.76	-2.12	6.27E 0	1.55
DD RMS=		.028	21.40	21.41	49.61	-2.17	1.05E 1	2.00

39304 13E (16N) JUNE 28 1966

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	-.66+OR-	.01						
B=	24.29	.02						
C=	-1.71E-1	2.88E-3	23.94	23.95	69.95	-.46	4.98E 0	.30
K=	1.35		23.27	23.28	60.00	-1.37	5.54E 0	1.10
DD RMS=		.016	20.86	20.87	49.50	-4.63	4.73E 0	2.00
A=	-.50+OR-	.07						
B=	23.66	.06						
C=	-2.20E-2	9.29E-4	23.24	23.25	60.62	-.87	8.02E 0	1.05
K=	2.10		22.33	22.34	54.03	-2.79	5.18E 0	1.60
DD RMS=		.021	20.24	20.25	48.98	-7.18	3.06E 0	2.05

39360 9W (12W) AUGUST 23 1966

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	124.51+OR-	45.13						
B=	30.67	2.70						
C=	-1.24E 2	4.58E 1	23.74	23.75	76.72	-.36	2.44E 0	2.75
K=	.05		23.58	23.58	75.80	-.36	2.71E 0	3.20
DD RMS=		.023	23.38	23.38	74.70	-.37	3.04E 0	3.75

39360 12W (9W) AUGUST 23 1966

Parameter	Value	±	V	VG	HG	DVG	M/A	T
A=	50.77+OR-	6.42						
B=	26.52	.34						
C=	-5.20E 1	6.43E 0	23.91	23.91	82.66	-.13	2.48E 0	.10
K=	.05		23.74	23.75	79.83	-.14	3.84E 0	1.35
DD RMS=		.024	23.57	23.57	77.25	-.15	5.36E 0	2.55
A=	-1.04+OR-	.02						
B=	23.74	.01						
C=	-1.04E-2	1.40E-3	23.71	23.71	80.61	-.03	1.64E 1	1.00
K=	1.00		23.65	23.65	78.00	-.09	7.52E 0	2.20
DD RMS=		.015	23.47	23.47	75.81	-.27	3.63E 0	3.25
A=	5.57+OR-	.34						
B=	25.15	.10						
C=	-7.05E 0	4.06E-1	23.74	23.74	78.53	-.21	3.10E 0	1.95
K=	.15		23.47	23.47	76.12	-.25	3.69E 0	3.10
DD RMS=		.019	23.14	23.14	73.73	-.30	4.25E 0	4.30
A=	-.57+OR-	.07						
B=	23.55	.02						
C=	-4.47E-3	2.27E-4	23.44	23.44	76.32	-.12	7.83E 0	3.00
K=	1.05		23.20	23.21	74.13	-.37	3.34E 0	4.10
DD RMS=		.024	22.45	22.45	72.05	-1.16	1.32E 0	5.20
A=	134.77+OR-	9.84						
B=	31.60	.66						
C=	-1.37E 2	1.02E 1	23.21	23.21	74.32	-.42	2.83E 0	4.00
K=	.05		22.76	22.76	72.32	-.44	3.44E 0	5.05
DD RMS=		.033	22.28	22.28	70.44	-.46	4.05E 0	6.10
A=	1.52+OR-	.22						
B=	23.01	.05						
C=	-1.22E-3	8.87E-5	22.81	22.81	72.79	-.21	6.86E 0	4.80
K=	1.05		22.55	22.55	71.33	-.48	3.55E 0	5.60
DD RMS=		.036	21.55	21.55	69.43	-1.53	1.32E 0	6.70

Table 3. continued

		V	VG	HG	DVG	M/A	T
39376 13W (8S) SEPTEMBER 8 1966							
A= 81.01+OR-	6.60						
B= 22.29	.37						
C= -8.19E 1	6.63E 0	17.99	17.99	73.34	-.21	3.82E 0	1.00
K= .05		17.75	17.76	70.96	-.23	4.91E 0	2.05
DD RMS=	.014	17.57	17.57	69.20	-.24	5.86E 0	2.85
A= .03+OR-	.01						
B= 18.32	.04						
C= -7.98E-1	4.08E-2	17.76	17.76	71.08	-.20	5.58E 0	2.00
K= .35		17.57	17.57	69.20	-.26	5.22E 0	2.85
DD RMS=	.013	17.19	17.20	66.75	-.39	4.60E 0	4.00
A= .62+OR-	.09						
B= 17.38	.03						
C= -5.81E-11	1.68E-11	17.38	17.38	68.55	-.02	8.63E 1	3.15
K= 5.15		17.35	17.35	67.59	-.17	9.60E 0	3.60
DD RMS=	.015	16.94	16.94	66.54	-2.28	7.97E-1	4.10
A= 9.65+OR-	.60						
B= 20.57	.34						
C= -1.20E 1	1.07E 0	17.29	17.30	66.75	-.49	3.75E 0	4.00
K= .15		16.34	16.34	63.32	-.63	3.96E 0	5.70
DD RMS=	.019	16.14	16.15	62.74	-.66	3.96E 0	6.00
A= 3.22+OR-	.35						
B= 16.87	.07						
C= -5.28E-3	3.84E-4	16.40	16.41	63.81	-.39	6.10E 0	5.45
K= .85		15.99	16.00	62.37	-.74	3.64E 0	6.20
DD RMS=	.023	15.14	15.15	60.91	-1.46	1.97E 0	7.00
A= -1.45+OR-	.24						
B= 18.41	.05						
C= -4.96E-1	7.85E-3	16.22	16.23	62.74	-.87	3.04E 0	6.00
K= .40		15.08	15.09	60.82	-1.33	2.18E 0	7.05
DD RMS=	.019	13.54	13.55	59.24	-1.95	1.46E 0	8.00
A= 2.02+OR-	.30						
B= 17.32	.05						
C= -8.48E-2	1.15E-3	15.12	15.13	60.91	-1.20	2.39E 0	7.00
K= .55		14.09	14.10	59.72	-1.77	1.64E 0	7.70
DD RMS=	.017	11.73	11.74	58.22	-3.07	7.87E-1	8.70
39376 8S (13W) SEPTEMBER 8 1966							
A= 85.57+OR-	51.68						
B= 23.48	3.11						
C= -9.76E 1	5.25E 1	17.88	17.89	70.67	-.28	4.21E 0	2.75
K= .05		17.71	17.72	69.33	-.29	4.80E 0	3.35
DD RMS=	.040	17.54	17.54	68.02	-.30	5.42E 0	3.95
A=-10.59+OR-	.12						
B= 17.75	.03						
C= -1.12E-4	1.51E-5	17.72	17.72	70.11	-.05	2.35E 1	3.00
K= 1.70		17.62	17.62	68.25	-.22	7.03E 0	3.85
DD RMS=	.040	16.81	16.82	65.81	-1.59	1.24E 0	5.00
A=-10.12+OR-	.30						
B= 17.69	.08						
C= -1.65E-2	2.05E-3	17.42	17.43	67.70	-.20	8.26E 0	4.10
K= .75		17.15	17.15	65.70	-.41	5.06E 0	5.05
DD RMS=	.037	16.58	16.59	63.77	-.83	2.94E 0	6.00
A=211.78+OR-	7.06						
B= 32.07	.50						
C= -2.29E 2	7.46E 0	17.34	17.34	65.81	-.73	2.84E 0	5.00
K= .05		16.62	16.63	63.87	-.77	3.16E 0	5.95
DD RMS=	.021	15.83	15.84	61.95	-.81	3.43E 0	6.95
A= -8.26+OR-	.24						
B= 17.37	.04						
C= -3.81E-2	1.07E-3	16.53	16.54	63.77	-.50	4.85E 0	6.00
K= .60		15.75	15.76	61.67	-.97	2.93E 0	7.10
DD RMS=	.021	14.59	14.60	60.07	-1.67	1.78E 0	8.00
A=-10.92+OR-	.27						
B= 18.10	.05						
C= -2.13E-1	2.66E-3	15.75	15.76	61.67	-1.05	2.70E 0	7.10
K= .45		14.58	14.59	60.07	-1.58	1.88E 0	8.00
DD RMS=	.016	12.59	12.60	58.49	-2.48	1.09E 0	9.00
A=-10.61+OR-	.85						
B= 18.05	.13						
C= -2.12E-1	5.35E-3	14.56	14.57	60.07	-1.57	1.89E 0	8.00
K= .45		13.27	13.28	58.94	-2.15	1.32E 0	8.70
DD RMS=	.026	11.05	11.06	57.73	-3.15	7.21E-1	9.55
39376 14E (13W) SEPTEMBER 8 1966							
A= 92.81+OR-	11.22						
B= 22.86	.62						
C= -9.34E 1	1.13E 1	17.95	17.95	73.67	-.24	3.18E 0	1.00
K= .05		17.72	17.73	71.62	-.26	3.96E 0	1.90
DD RMS=	.026	17.43	17.44	69.21	-.27	5.02E 0	3.00
A= 71.99+OR-	11.50						
B= 21.70	.68						
C= -7.25E 1	1.16E 1	17.69	17.69	71.41	-.20	5.21E 0	2.00
K= .05		17.45	17.46	68.89	-.21	6.71E 0	3.15
DD RMS=	.027	17.28	17.29	67.19	-.22	7.89E 0	3.95
A=104.80+OR-	14.89						
B= 24.28	.93						
C= -1.16E 2	1.52E 1	17.54	17.54	69.21	-.34	4.09E 0	3.00
K= .05		17.23	17.24	67.29	-.35	4.85E 0	3.90
DD RMS=	.037	16.85	16.86	65.12	-.37	5.78E 0	4.95
A= 1.30+OR-	.41						
B= 17.27	.10						
C= -1.23E-3	2.75E-4	17.09	17.10	66.66	-.20	8.93E 0	4.20
K= 1.15		16.94	16.94	65.53	-.38	5.37E 0	4.75
DD RMS=	.047	16.33	16.34	63.73	-1.08	2.21E 0	5.65
A= 4.28+OR-	.40						
B= 16.60	.07						
C= -1.09E-9	1.38E*0	16.60	16.60	64.92	-.01	2.42E 2	5.05
K= 2.75		16.59	16.59	63.84	-.04	6.09E 1	5.60
DD RMS=	.115	12.52	12.53	60.02	-11.23	1.96E-1	7.65

Table 3. continued

			V	VG	HG	DVG	M/A	T
39406A 6W (8W) OCTOBER 8 1966								
A=	-8.25+OR-	.05						
B=	17.10	.03						
C=	-1.21E-4	2.19E-5	17.09	17.10	62.77	-.01	1.44E 2	.90
K=	3.15		17.04	17.05	53.56	-.18	4.80E 1	1.60
DD RMS=		.040	16.10	16.12	41.89	-3.15	1.15E 1	2.50
A=	-8.14+OR-	.06						
B=	17.07	.03						
C=	-3.06E-3	8.56E-5	16.97	16.98	54.82	-.18	3.99E 1	1.50
K=	1.90		16.40	16.42	41.89	-1.27	2.96E 1	2.50
DD RMS=		.040	12.99	13.01	30.75	-7.75	1.65E 1	3.45
39406A 8W (6W) OCTOBER 8 1966								
A=	-.59+OR-	.01						
B=	17.34	.04						
C=	-8.83E-2	1.14E-2	17.23	17.23	67.45	-.10	1.55E 1	.10
K=	1.05		17.06	17.06	54.84	-.29	2.61E 1	1.05
DD RMS=		.031	16.58	16.59	42.47	-.79	4.48E 1	2.00
A=	-.70+OR-	.03						
B=	17.30	.02						
C=	-2.43E-2	3.94E-4	17.11	17.12	55.51	-.30	2.31E 1	1.00
K=	1.60		16.35	16.37	42.47	-1.52	2.27E 1	2.00
DD RMS=		.028	12.58	12.61	30.96	-7.54	1.54E 1	3.00
A=	.74+OR-	.10						
B=	16.36	.04						
C=	-4.12E-4	8.82E-6	16.08	16.09	42.47	-.75	4.40E 1	2.00
K=	2.75		15.26	15.28	36.40	-3.00	2.44E 1	2.50
DD RMS=		.024	9.81	9.84	29.70	-17.99	4.78E 0	3.15
39442 1W (2E) NOVEMBER 13 1966								
A=	-1.34+OR-	.01						
B=	24.78	.02						
C=	-1.13E-2	7.93E-4	24.74	24.74	77.76	-.09	8.50E 0	.10
K=	2.55		24.58	24.59	67.39	-.49	6.91E 0	.75
DD RMS=		.019	23.46	23.47	55.67	-3.36	3.90E 0	1.50
A=	-1.43+OR-	.03						
B=	24.89	.02						
C=	-2.08E-2	1.19E-4	24.47	24.48	63.42	-.90	6.12E 0	1.00
K=	2.20		23.16	23.17	53.39	-3.80	4.41E 0	1.65
DD RMS=		.020	10.90	10.92	41.74	-30.76	5.55E-1	2.60
39442 2E (1W) NOVEMBER 13 1966								
A=	-.05+OR-	.02						
B=	24.59	.03						
C=	-9.33E-3	3.97E-4	24.56	24.56	77.00	-.07	1.19E 1	.10
K=	2.50		24.30	24.31	62.71	-.70	8.43E 0	1.00
DD RMS=		.043	21.13	21.14	47.67	-8.64	3.27E 0	2.00
A=	-.36+OR-	.04						
B=	24.99	.03						
C=	-2.89E-2	2.21E-4	24.50	24.51	62.71	-1.03	5.85E 0	1.00
K=	2.10		22.34	22.35	50.47	-5.57	3.99E 0	1.80
DD RMS=		.029	10.73	10.75	41.14	-29.94	6.02E-1	2.60

COMMENTS ON TABLE 4

An X appearing in any column indicates that the photometry for the entire meteor falls within that class; otherwise, portions fall into various classes as indicated by the dash numbers. Individual cameras are designated by the station and a direction; thus "14E" refers to the east camera of station 14.

	1	2	3	4	COMMENTS
39000		X			
39049	10-45	1-9, 46-50			2 fragments visible at the end of trajectory; photometry confirmed by 14N.
39057		X			
39060		X			
39078			X		12E photometry used to extend that of 9W; poor correlation in intensity fluctuations, but both show continual mild flaring with period < 0.05 sec.
39113			1-35	36-72	large atmospheric absorption correction; meteor triggered all photometers at nearest station (16), through overcast.
39125		1-19, 46-56	20-45		
39126		X			
39128	X				
39129		X			
39130	X				photometry of brightest half confirmed by 5E data operating with an objective filter, density = 1.
39135		0-19, 40-49	20-40		means of 14E and 15N photometry
39139			X		
39154				X	combined data from 16W, 15E; sky was cloudy at 16; meteor overbright at 15 for good photometry.
39179		1-24, 51-59	25-50		9N (operating without shutter) was used to improve and verify data for 11E.
39180A		X			
39180B			1-39, 66-74	34-65	meteor begins on 11S, continues on 11E; photometry was done on both; 9N was operating without shutter.

COMMENTS ON TABLE 4 (Cont.)

	1	2	3	4	COMMENTS
39182		1-29, 61-76	30-60		
39197	X				13N confirms photometry for brighter portions ($M < -6$) of light curve.
39229		14-34	1-13, 35-43		
39240		X			large zenith angle degrades accuracy; relatively high quality is assigned because of good agreement between 5E and 2N.
39259			X		equal weight may be assigned to 12N and 11W photometry data.
39261		X			rapid flaring ($\Delta M \approx 1$) with period ~ 0.01 sec during dashes, 34-37.
39302		X			
39304		X(13E)	X(16N)		poor agreement in photometry between the two films is due, in part, to flaring of the meteor.
39360		X			short-period (≈ 0.01 sec) minor flares are evident throughout the trajectory.
39376	X				14E photometry confirms these data.
39406A			1-12	13-64	beyond dash 12, perhaps ±2 mag.
39442		X			

Table 4. Photometric masses for 29 meteors

	16N				39000		6S	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	.001	73.830	-3.0	3.371E+00				
2	.853	73.200	-3.9	3.369E+00				
3	1.745	72.542	-4.2	3.362E+00				
4	2.623	71.894	-3.9	3.353E+00				
5	3.564	71.200	-3.9	3.347E+00				
6			-4.8	3.341E+00				
7			-4.5	3.325E+00	5.375	70.006		
8			-4.5*	3.314E+00				
9	7.159	68.549	-4.7*	3.302E+00	7.097	68.735		
10	8.021	67.914	-5.4	3.288E+00	8.025	68.049		
11	8.889	67.274	-4.9	3.262E+00	8.898	67.406		
12	9.832	66.579	-5.0	3.244E+00	9.799	66.740		
13	10.642	65.982	-5.2	3.225E+00	10.666	66.100		
14	11.577	65.293	-5.0	3.205E+00	11.549	65.448		
15	12.521	64.597	-6.6	3.187E+00	12.473	64.767		
16	13.400	63.950	-6.1	3.109E+00	13.309	64.150		
17	14.254	63.320	-6.6	3.061E+00	14.211	63.484		
18	15.162	62.651	-7.1	2.985E+00	15.055	62.862		
19	16.101	61.959	-6.8	2.854E+00	15.958	62.196		
20	16.886	61.381	-6.8	2.759E+00				
21	17.839	60.679	-6.6	2.662E+00				
22			-6.6*	2.578E+00				
23	19.569	59.405	-6.6*	2.491E+00				
24	20.443	58.762	-6.6	2.399E+00	20.326	58.974		
25	21.256	58.163	-7.0	2.308E+00	21.205	58.326		
26			-6.8*	2.182E+00	22.040	57.711		
27	23.051	56.841	-6.8*	2.075E+00	22.858*	57.108		
28	23.849	56.254	-7.3	1.968E+00	23.776	56.431		
29	24.706	55.623	-6.9	1.785E+00	24.606	55.820		
30	25.538	55.011	-6.6	1.657E+00	25.427	55.214		
31	26.348	54.415	-7.0	1.562E+00	26.303	54.569		
32			-7.0	1.419E+00				
33			-7.0	1.276E+00	28.006	53.314		
34			-7.0*	1.139E+00				
35	29.705	51.945	-6.9*	1.003E+00	29.620	52.124		
36	30.533	51.336	-6.6	8.720E-01	30.391	51.557		
37	31.344	50.739	-6.4	7.684E-01	31.196	50.964		
38	32.129	50.162	-7.1	6.732E-01	32.009	50.365		
39	32.879	49.610	-6.8	4.964E-01	32.780	49.797		
40	33.686	49.017	-6.5	3.440E-01	33.560	49.223		
41	34.412	48.482	-5.9	2.303E-01	34.335	48.652		
42	35.167	47.927	-5.7	1.530E-01	35.057	48.120		
43	35.797	47.465	-4.7	7.740E-02	35.754	47.608		
44	36.451	46.983	-4.6	4.731E-02				
45			-4.3*	1.988E-02				

Table 4. continued

N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
		8W			39049		14N	
1	0.	94.480	-4.5	5.146E+00				
2	1.627	93.815	-4.7	5.144E+00				
3			-4.7*	5.142E+00				
4	4.827	92.509	-4.7	5.139E+00				
5	6.418	91.861	-4.6	5.137E+00				
6	8.018	91.208	-5.2	5.135E+00				
7	9.597	90.565	-4.7	5.131E+00				
8	11.226	89.902	-5.3	5.128E+00				
9	12.767	89.274	-5.5	5.124E+00				
10			-5.6	5.119E+00				
11			-5.7	5.114E+00				
12	17.552	87.329	-5.0	5.108E+00				
13			-5.3*	5.105E+00				
14	20.732	86.038	-5.7	5.101E+00				
15	22.325	85.392	-5.6	5.094E+00				
16	23.911	84.749	-5.5	5.089E+00	23.642	84.841		
17	25.478	84.113	-5.5	5.083E+00	25.214	84.203		
18	27.074	83.466	-6.9	5.078E+00	26.822	83.552		
19	28.682	82.816	-7.0	5.059E+00	28.408	82.909		
20	30.236	82.187	-8.3	5.039E+00	30.017	82.258		
21	31.835	81.540	-8.1	4.974E+00	31.556	81.636		
22	33.433	80.894	-8.0	4.917E+00	33.191	80.974		
23	35.002	80.260	-9.1	4.864E+00	34.732	80.351		
24	36.568	79.627	-8.4	4.725E+00	36.302	79.717		
25			-8.7*	4.651E+00	37.888	79.077		
26	39.797	78.324	-9.1	4.555E+00	39.503	78.425		
27	41.308	77.715	-9.3	4.410E+00	41.061	77.797		
28	42.841*	77.097	-9.3*	4.232E+00	42.664	77.150		
29			-8.9	4.054E+00	44.228	76.520		
30	46.121	75.776	-9.0	3.936E+00				
31	47.610	75.176	-9.4	3.790E+00				
32	49.155	74.555	-9.4	3.585E+00	48.769*	74.692		
33	50.709	73.930	-9.1	3.393E+00				
34	52.203	73.330	-10.2	3.247E+00				
35	53.818	72.681	-10.6	2.849E+00	53.661*	72.726		
36			-10.6	2.261E+00				
37			-10.3	1.673E+00				
38	58.495	70.804	-10.3*	1.227E+00				
39			-9.1	7.861E-01	59.785	70.268		
40	61.553	69.579	-7.8	6.400E-01				
41	63.179	68.928	-7.4	5.969E-01				
42	64.705	68.317	-7.1	5.654E-01	64.457	68.397		
43	66.244	67.701	-6.7	5.405E-01	65.975	67.789		
44	67.793	67.082	-6.6*	5.227E-01	67.531	67.167		
45			-9.4	5.073E-01	69.058	66.557		
46	70.800	65.880	-9.6	2.941E-01	70.523	65.971		
47	72.044	65.383	-4.5*	4.923E-02	71.967	65.395		
48			-4.5*	4.699E-02				
49			-4.5*	4.476E-02				
50			-7.7	4.253E-02				

Table 4. continued

		6W			39057		13N	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1			-1.1	4.231E+00				
2			-1.1	4.230E+00				
3			-1.6	4.229E+00				
4	0.	73.540	-1.6	4.227E+00				
5	.698	73.082	-1.8	4.226E+00				
6	1.486*	72.566	-1.8	4.224E+00				
7	2.156	72.127	-2.4	4.222E+00				
8	2.837	71.681	-2.5	4.219E+00				
9	3.584	71.192	-2.8	4.215E+00				
10	4.300	70.722	-3.1	4.211E+00				
11	5.022	70.250	-2.6	4.205E+00				
12	5.726	69.788	-3.2	4.201E+00	4.794	70.394		
13	6.430	69.328	-3.5	4.194E+00	5.496	69.934		
14			-3.4*	4.185E+00	6.221	69.459		
15	7.872	68.383	-3.2*	4.177E+00				
16	8.565	67.929	-3.2	4.171E+00	7.644	68.527		
17	9.293	67.453	-3.5	4.164E+00	8.381	68.045		
18	9.990	66.997	-3.8	4.155E+00	9.110	67.567		
19			-3.8	4.143E+00	9.803	67.114		
20			-3.8	4.132E+00				
21	12.115	65.606	-3.8	4.119E+00				
22	12.831	65.138	-3.7	4.108E+00	11.984	65.687		
23	13.536	64.677	-4.0	4.097E+00	12.698	65.219		
24			-4.0*	4.083E+00				
25	14.948	63.753	-3.9	4.069E+00	14.109	64.296		
26	15.662	63.285	-4.2	4.056E+00	14.821	63.831		
27			-4.3*	4.038E+00	15.548	63.355		
28	17.064	62.369	-4.3	4.019E+00	16.249	62.896		
29	17.791	61.894	-4.5	4.001E+00	16.957	62.433		
30	18.479	61.444	-4.5	3.978E+00	17.660	61.973		
31	19.197	60.974	-4.8	3.954E+00	18.375	61.506		
32	19.877	60.530	-4.8	3.923E+00	19.088	61.040		
33	20.584	60.067	-4.8	3.892E+00	19.793	60.579		
34	21.291	59.606	-4.7	3.860E+00	20.499	60.118		
35	22.000	59.142	-4.8	3.832E+00				
36	22.691	58.691	-5.0	3.800E+00	21.895	59.205		
37	23.377	58.242	-5.1	3.762E+00	22.629	58.725		
38	24.065	57.793	-5.0	3.721E+00	23.308	58.282		
39	24.766	57.335	-5.2	3.683E+00	23.998	57.831		
40			-5.2*	3.636E+00	24.700	57.373		
41	26.156	56.427	-5.2*	3.589E+00				
42	26.850	55.974	-5.3	3.544E+00	26.096	56.461		
43	27.542	55.522	-5.5	3.493E+00	26.796	56.003		
44	28.215	55.082	-5.5	3.431E+00	27.471	55.563		
45			-5.5	3.366E+00	28.153	55.117		
46			-5.7	3.299E+00				
47	30.255	53.751	-5.7	3.222E+00				
48	30.919	53.318	-5.4	3.145E+00	30.233	53.760		
49	31.602	52.872	-5.7	3.083E+00	30.917	53.313		
50			-5.7*	3.006E+00				
51	33.001	51.959	-5.6	2.930E+00	32.252	52.442		
52	33.636	51.545	-5.7	2.860E+00	32.920	52.006		
53			-5.7*	2.770E+00	33.591	51.568		
54	34.955	50.684	-5.7	2.685E+00	34.276	51.121		
55	35.600	50.264	-6.1	2.600E+00	34.908	50.709		

Table 4. continued

			6W		39057 (continued)		13N	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56	36.258	49.834	-6.7	2.479E+00	35.605	50.254		
57	36.929	49.397	-6.4	2.252E+00	36.256	49.830		
58	37.560	48.985	-5.8	2.089E+00	36.905	49.406		
59	38.212	48.560	-5.9	1.993E+00	37.560	48.979		
60	38.846	48.146	-5.6	1.884E+00	38.184	48.572		
61	39.496	47.723	-5.8	1.800E+00				
62	40.104	47.326	-5.8	1.688E+00	39.405	47.776		
63	40.712	46.930	-5.6	1.568E+00	40.020	47.376		
64	41.290	46.554	-5.4	1.464E+00	40.662	46.957		
65	41.912	46.148	-5.5	1.382E+00	41.232	46.585		
66			-5.5*	1.300E+00	41.869	46.170		
67	43.205	45.306	-5.4*	1.217E+00				
68	43.788	44.926	-5.4	1.137E+00	43.136	45.344		
69	44.392	44.532	-5.4	1.041E+00	43.754	44.942		
70	44.949	44.169	-5.0	9.486E-01	44.365	44.544		
71			-4.9	8.859E-01	44.941	44.169		
72			-4.8	8.278E-01				
73	46.709	43.023	-4.7	7.748E-01				
74	47.283	42.649	-4.5	7.264E-01	46.690	43.029		
75	47.855	42.277	-5.1	6.845E-01	47.239	42.672		
76			-3.9*	6.025E-01				
77	48.913	41.588	-3.5	5.725E-01				
78	49.455	41.235	-3.4	5.518E-01				
79			-3.4*	5.305E-01				
80	50.473	40.572	-3.4	5.072E-01				
81	50.993	40.234	-3.1	4.838E-01				
82	51.474	39.921	-3.2	4.663E-01				
83	51.970	39.598	-3.9	4.453E-01				
84	52.438	39.293	-3.4	4.036E-01				
85	52.904	38.990	-3.7	3.742E-01				
86	53.343	38.705	-2.8	3.347E-01				
87	53.798	38.409	-3.7	3.166E-01				
88	54.238	38.122	-2.5	2.717E-01				
89	54.657	37.850	-2.0	2.559E-01				
90	55.087	37.570	-2.0	2.454E-01				
91	55.485	37.311	-3.9	2.339E-01				
92			-2.0	1.617E-01				
93	56.248	36.815	-2.0*	1.470E-01				
94	56.620	36.573	-2.0	1.316E-01				
95	56.994	36.330	-2.2	1.152E-01				
96	57.339	36.105	-3.3	9.456E-02				
97			-2.1	3.767E-02				
98			-2.1	1.883E-02				

Table 4. continued

	16[illegible]				39060		135	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	.226*	90.559						
2	1.299	89.642						
3	2.862	58.703						
4	4.461	87.742						
5								
6	7.532	85.897					-5.0	2.022E+00
7	9.137	84.934			7.590	85.863	-5.4	2.019E+00
8	10.639	84.032			9.204	84.894	-5.5	2.014E+00
9	12.485	82.924			10.722	83.962	-5.7*	2.009E+00
10	14.055	81.962					-6.0	2.003E+00
11	15.679	81.008					-6.3	1.994E+00
12							-6.6	1.984E+00
13					17.014	80.207	-7.2	1.969E+00
14					18.554	79.284	-7.7	1.943E+00
15	21.851*	77.308			20.109	78.352	-7.5*	1.902E+00
16	23.603	76.259					-7.5	1.867E+00
17	25.316	75.233			23.217	76.490	-8.0	1.832E+00
18	26.893	74.289			24.786	75.550	-8.6	1.777E+00
19	28.543	73.301			26.344	74.618	-8.6	1.682E+00
20					27.899	73.686	-8.0	1.588E+00
21	31.381*	71.604			29.461	72.752	-8.0	1.533E+00
22	33.114	70.567			31.029	71.813	-7.9*	1.478E+00
23	34.705	69.615					-7.8	1.427E+00
24	36.257	68.688			34.096	69.979	-7.9	1.382E+00
25	37.846	67.738			35.633	69.060	-8.0	1.329E+00
26	39.350	66.839			37.159	68.148	-8.1	1.274E+00
27	40.894	65.917			38.690	67.233	-7.6	1.212E+00
28	42.426	65.003			40.264	66.293	-7.7	1.173E+00
29	43.923	64.109			41.753	65.404	-8.4	1.131E+00
30	45.489	63.174			43.283	64.490	-8.5	1.051E+00
31					44.802	63.583	-9.3	9.596E-01
32	48.344	61.471			46.303	62.688	-7.6	7.700E-01
33	49.918	60.532			47.900	61.735	-8.8	7.301E-01
34	51.527	59.573			49.322	60.887	-8.8	6.078E-01
35	53.003	58.693			50.811	59.999	-8.6*	4.857E-01
36	54.357	57.886					-8.4	3.745E-01
37	55.671	57.103					-8.2	2.679E-01
38							-8.1	1.793E-01
39					56.649	56.519	-8.3	1.021E-01
40					58.032	55.696	-5.8	9.320E-03
41	61.324	53.737			59.286	54.949		
42	62.651	52.948						
43	63.942	52.180						
44	65.223	51.417						
45	66.368	50.737						
46								
47	68.218	49.636						

Table 4. continued

		9w			39078	12E		
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1					0.	65.462	-3.2	1.003E+01
2							-3.5	1.002E+01
3							-3.7	9.998E+00
4							-4.0	9.972E+00
5					2.113	64.896	-4.1	9.940E+00
6					2.706	64.737	-4.1	9.903E+00
7					3.196	64.606	-4.1	9.866E+00
8					3.751	64.457	-4.1	9.829E+00
9					4.261	64.321	-4.1	9.788E+00
10							-3.7	9.755E+00
11							-3.3	9.730E+00
12							-3.3	9.713E+00
13							-3.4	9.696E+00
14							-3.4	9.677E+00
15							-3.5	9.658E+00
16							-3.5	9.638E+00
17							-3.6	9.617E+00
18					9.207	62.999	-3.7	9.595E+00
19					9.777*	62.847	-3.8	9.571E+00
20							-3.9	9.543E+00
21							-4.0	9.511E+00
22							-3.9	9.476E+00
23							-3.8	9.443E+00
24					12.353	62.160	-3.7	9.415E+00
25					12.917	62.010	-3.7	9.389E+00
26	12.269	62.374			13.434	61.872	-3.6	9.365E+00
27	12.704	62.258					-3.6	9.342E+00
28							-3.5	9.320E+00
29							-3.5	9.299E+00
30	14.286	61.838					-3.5	9.279E+00
31							-3.6	9.258E+00
32	15.412	61.539					-3.8	9.235E+00
33	15.986	61.386			17.212	60.867	-4.0	9.208E+00
34	16.515	61.246			17.750	60.725	-3.9	9.176E+00
35	17.042	61.106			18.298	60.579	-3.8	9.150E+00
36	17.663	60.942			18.873	60.426	-4.0	9.124E+00
37							-3.9	9.089E+00
38					19.873	60.161	-4.0	9.056E+00
39	19.204	60.534			20.411	60.018	-3.9	9.020E+00
40	19.701	60.402			20.940	59.876	-3.8	8.993E+00
41	20.247	60.258			21.523	59.724	-3.5	8.968E+00
42							-3.2	8.946E+00
43							-3.1	8.930E+00
44	21.754	59.859					-3.7	8.915E+00
45	22.327	59.707			23.692*	59.149	-3.1	8.889E+00
46	22.861	59.566					-3.2	8.874E+00
47							-3.4	8.858E+00
48							-3.8	8.838E+00
49					25.751	58.604	-4.1	8.811E+00
50					26.274	58.466	-3.9	8.772E+00
51					26.830	58.319	-4.1	8.741E+00
52					27.335	58.185	-4.3	8.705E+00
53					27.884	58.040	-4.4	8.663E+00
54	27.066	58.456					-4.3	8.610E+00
55	27.639	58.305					-4.0	8.562E+00

Table 4. continued

	9v.				39078 (continued)	12E		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56	28.120	58.178					-3.9	8.526E+00
57					29.958	57.493	-4.4	8.494E+00
58	29.245	57.882			30.485	57.354	-4.6	8.444E+00
59	29.767	57.745			31.027	57.211	-4.5	8.387E+00
60	30.270	57.612			31.559	57.071	-4.4	8.334E+00
61	30.833	57.464			32.073	56.935	-4.2	8.284E+00
62	31.383	57.319			32.582	56.801	-4.1	8.239E+00
63	31.919	57.178					-3.9	8.199E+00
64	32.389	57.055			33.623	56.527	-3.7	8.168E+00
65	32.934	56.912			34.144	56.389	-3.8	8.141E+00
66	33.436	56.780			34.688	56.247	-3.8	8.113E+00
67	33.932	56.650					-4.0	8.086E+00
68							-4.2	8.051E+00
69	35.081	56.348			36.284	55.827	-4.3	8.009E+00
70	35.617	56.207			36.796	55.692	-4.3	7.960E+00
71	36.114	56.077			37.298	55.560	-4.0	7.911E+00
72	36.633	55.940			37.811	55.425	-3.9	7.873E+00
73	37.165	55.801			38.364	55.280	-4.1	7.841E+00
74	37.717	55.656			38.869	55.147	-4.4	7.804E+00
75					39.416	55.004	-4.6	7.756E+00
76					39.931	54.869	-3.6	7.689E+00
77					40.421	54.740	-3.2	7.663E+00
78							-3.9	7.645E+00
79							-4.4	7.613E+00
80	40.827	54.842					-4.6	7.562E+00
81	41.261	54.728			42.480	54.200	-4.7	7.501E+00
82	41.768	54.596					-4.8	7.430E+00
83					43.546	53.921	-4.8	7.357E+00
84							-4.8	7.284E+00
85	43.233	54.213					-4.8	7.205E+00
86	43.785	54.068			45.089	53.517	-4.7	7.125E+00
87	44.327	53.927			45.574	53.390	-4.5	7.053E+00
88	44.782	53.808			46.086	53.256	-4.3	6.986E+00
89	45.319	53.668					-4.4	6.933E+00
90	45.826	53.536			47.106	52.990	-4.5	6.880E+00
91	46.382	53.390			47.630	52.853	-4.7	6.819E+00
92	46.904	53.254			48.144	52.718	-4.7	6.751E+00
93	47.363	53.135			48.660	52.584	-4.2	6.682E+00
94							-3.8	6.636E+00
95					49.652	52.325	-3.9	6.602E+00
96	48.920	52.729			50.149	52.195	-4.1	6.566E+00
97	49.409	52.602			50.669	52.059	-4.2	6.525E+00
98	49.898	52.474			51.182	51.925	-4.4	6.477E+00
99	50.435	52.335			51.684	51.795	-4.5	6.423E+00
100	50.894	52.215			52.190	51.663	-4.6	6.362E+00
101					52.697	51.530	-4.6	6.289E+00
102					53.148	51.413	-4.7	6.213E+00
103					53.646	51.283	-4.7	6.131E+00
104	52.978	51.673			54.144	51.154	-4.5	6.049E+00
105	53.391	51.566			54.647	51.023	-4.2	5.986E+00
106	53.850	51.447					-3.7	5.937E+00
107	54.414	51.300					-3.4	5.905E+00
108							-3.6	5.881E+00
109					56.620	50.510	-4.1	5.853E+00
110	55.856	50.926			57.120	50.379	-4.4	5.807E+00

Table 4. continued

	9W				39078 (continued)	12E		
N	D	H	MAG	MASS (KGM)	D	H	MAG	MASS (KGM)
111	56.356	50.796			57.630	50.247	-4.4	5.751E+00
112	56.810	50.678					-4.5	5.689E+00
113	57.330	50.543			58.599	49.995	-4.5	5.622E+00
114	57.834	50.413			59.105	49.864	-4.5	5.553E+00
115	58.331	50.284					-4.5	5.484E+00
116	58.812	50.159					-4.5	5.412E+00
117					60.575	49.483	-4.6	5.341E+00
118	59.761	49.914			61.051	49.359	-4.6	5.265E+00
119	60.229	49.792					-4.8	5.181E+00
120							-5.0	5.087E+00
121	61.269	49.523			62.478	48.989	-5.0	4.973E+00
122	61.737	49.402			62.957	48.865	-4.6	4.860E+00
123	62.201	49.282			63.448	48.738	-4.4	4.781E+00
124	62.695	49.155			63.937	48.611	-4.5	4.717E+00
125	63.151	49.037			64.413	48.488	-4.7	4.646E+00
126	63.650	48.908			64.906	48.360	-4.6	4.555E+00
127					65.361	48.243	-4.5	4.476E+00
128					65.849	48.116	-4.5	4.402E+00
129					66.311	47.997	-4.4	4.317E+00
130					66.749	47.884	-4.7	4.250E+00
131	65.949	48.314			67.262	47.751	-4.9	4.160E+00
132	66.421	48.193					-4.3	4.042E+00
133	66.880	48.074			68.177	47.515	-4.1	3.972E+00
134	67.349	47.953					-4.1	3.914E+00
135					69.109	47.274	-4.5	3.861E+00
136	68.298	47.709			69.574	47.154	-5.2	3.780E+00
137	68.783	47.584			70.050	47.031	-5.0	3.621E+00
138	69.238	47.467			70.495	46.916	-4.7	3.492E+00
139	69.688	47.351			70.951	46.799	-4.7	3.391E+00
140	70.124	47.238			71.417	46.679	-4.7	3.286E+00
141	70.584	47.120					-4.6	3.184E+00
142	71.037	47.003			72.307	46.449	-3.9	3.087E+00
143	71.510	46.882			72.758	46.333	-3.9	3.034E+00
144	71.936	46.772					-4.0	2.982E+00
145	72.403	46.652					-4.1	2.928E+00
146							-4.3	2.868E+00
147	73.354	46.408			74.567	45.867	-4.5	2.797E+00
148	73.774	46.300			75.021	45.750	-4.6	2.710E+00
149	74.216	46.186			75.463	45.637	-4.7	2.614E+00
150	74.650	46.075					-4.9	2.505E+00
151	75.100	45.959			76.337	45.412	-4.4	2.367E+00
152	75.526	45.850			76.771	45.300	-4.2	2.276E+00
153							-4.1	2.204E+00
154							-4.1	2.136E+00
155					78.086	44.962	-4.1	2.071E+00
156	77.275	45.401					-4.1	2.006E+00
157	77.679	45.298			78.961	44.737	-4.1	1.931E+00
158	78.090	45.192			79.335	44.642	-4.0	1.855E+00
159	78.518	45.083			76.704*	44.547	-3.9	1.790E+00
160	78.951	44.972					-3.8	1.733E+00
161					80.686	44.295	-3.6	1.684E+00
162	79.652	44.741					-3.4	1.643E+00
163	80.267	44.635			81.523	44.060	-4.5	1.609E+00
164	80.659	44.535			81.943	43.973	-3.4	1.514E+00
165	81.062	44.432					-3.5	1.479E+00

Table 4. continued

		9W			39078(continued)	12E		
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
166	81.500	44.319					-4.0	1.439E+00
167	81.867	44.226					-4.0	1.377E+00
168	82.299	44.115					-3.6	1.318E+00
169	82.706	44.011					-3.7	1.275E+00
170	83.107	43.909					-4.0	1.230E+00
171	83.511	43.805					-4.3	1.170E+00
172							-4.1	1.092E+00
173	84.429	43.571					-4.6	1.024E+00
174	84.757	43.487					-4.4	9.203E-01
175	85.170	43.382					-4.1	8.344E-01
176	85.535	43.289					-4.1	7.692E-01
177							-4.3	7.010E-01
178	86.375	43.075					-4.5	6.227E-01
179							-4.6	5.285E-01
180							-4.6	4.252E-01
181							-4.4	3.219E-01
182							-2.8	2.320E-01
183							-3.0	2.123E-01
184							-3.2	1.875E-01
185							-3.1	1.591E-01
186							-2.8	1.319E-01
187							-2.8	1.123E-01
188							-2.9	9.258E-02
189							-3.7	7.101E-02
190							-3.1	2.594E-02
191	90.979	41.902						
192	91.272	41.827						
193	91.682	41.723						
194	92.035	41.633						
195	92.409	41.538						
196	92.736	41.455						
197	93.089	41.365						
198	93.408	41.284						

Table 4. continued

		15t			39113	6S		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0.	72.368	-4.6*	1.876E+02				
2	.709	71.714	-4.9	1.875E+02				
3	1.481	71.003	-5.8	1.875E+02				
4			-6.0*	1.874E+02				
5			-6.1*	1.874E+02				
6	3.737	68.923	-6.2*	1.873E+02				
7	4.505	68.215	-6.3*	1.872E+02				
8	5.242	67.535	-6.5	1.871E+02	6.050	66.763		
9	5.973	66.862	-7.0	1.870E+02	6.773	66.096		
10	6.717	66.176	-7.1	1.868E+02				
11			-7.1*	1.866E+02	8.256	64.729		
12	8.246	64.767	-7.0	1.864E+02	8.996	64.047		
13	8.955	64.113	-7.2*	1.862E+02	9.748	63.354		
14	9.706	63.420	-7.4	1.859E+02	10.518	62.644		
15	10.470	62.716	-7.5	1.856E+02				
16	11.225	62.021	-8.1	1.853E+02	12.079	61.206		
17			-8.0	1.848E+02	12.744	60.592		
18			-8.0	1.844E+02	13.504	59.892		
19	13.491	59.932	-7.9	1.839E+02	14.281	59.175		
20	14.220	59.260	-7.9	1.835E+02				
21			-8.1*	1.831E+02				
22	15.767	57.834	-8.4	1.826E+02	16.446	57.180		
23	16.518	57.142	-8.7	1.819E+02				
24	17.254	56.464	-8.8	1.809E+02	17.998	55.750		
25	18.020	55.757	-8.8	1.800E+02	18.693	55.109		
26	18.768	55.069	-9.1	1.790E+02	19.412	54.446		
27	19.500	54.393	-8.6	1.776E+02	20.237	53.687		
28	20.255	53.698	-8.5	1.767E+02	20.946	53.033		
29	20.986	53.024	-9.3	1.759E+02				
30			-9.3*	1.742E+02				
31	22.476	51.652	-9.2	1.726E+02	23.152	51.001		
32	23.224	50.962	-8.9	1.712E+02	23.939	50.274		
33	23.991	50.255	-9.3	1.700E+02	24.700	49.574		
34	24.740	49.565	-9.4	1.685E+02	25.438	48.894		
35	25.504	48.861	-9.3	1.667E+02	26.169	48.220		
36	26.224	48.198	-9.5	1.651E+02	26.943	47.507		
37	26.972	47.508	-9.1	1.631E+02	27.694	46.815		
38			-9.3*	1.617E+02	28.398	46.167		
39	28.458	46.139	-9.6	1.601E+02	29.159	45.465		
40	29.208	45.449	-9.4	1.580E+02	29.873	44.808		
41	29.949	44.766	-9.7	1.562E+02				
42	30.681	44.091	-9.7	1.538E+02	31.442	43.362		
43			-9.7	1.513E+02	32.098	42.758		
44			-9.8	1.489E+02	32.821	42.092		
45	32.879	42.067	-9.7	1.462E+02	33.554	41.416		
46	33.623	41.381	-9.0	1.438E+02				
47			-9.5*	1.426E+02				
48	35.082	40.038	-10.1	1.406E+02	35.662	39.474		
49	35.776	39.398	-10.5	1.368E+02				
50	36.486	38.744	-10.4	1.312E+02	37.101	38.149		
51	37.197	38.089	-10.5	1.259E+02	37.784	37.519		
52	37.886	37.454	-10.7	1.202E+02	38.496	36.863		
53	38.593	36.803	-10.4	1.133E+02	39.155	36.257		
54	39.293	36.158	-10.5	1.079E+02	39.852	35.615		
55	39.976	35.530	-10.5	1.021E+02				

Table 4. continued

	15E				39113(continued)	6S		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56			-10.4*	9.565E+01	41.201	34.372		
57	41.297	34.312	-10.2	8.979E+01	41.841	33.783		
58	41.944	33.717	-11.0	8.441E+01	42.512	33.164		
59	42.633	33.083	-10.7	7.265E+01	43.143	32.583		
60	43.260	32.505	-10.3	6.392E+01	43.738	32.035		
61	43.893	31.922	-10.2	5.714E+01	44.319	31.500		
62	44.480	31.382	-10.1	5.013E+01	44.915	30.952		
63	45.065	30.842	-9.4	4.382E+01	45.553	30.364		
64			-9.2*	4.036E+01				
65	46.262	29.740	-9.0	3.747E+01				
66	46.761	29.281	-9.1	3.451E+01				
67	47.273	28.809	-9.8	3.032E+01				
68	47.807	28.318	-8.8	2.269E+01				
69			-9.8	1.921E+01	48.517	27.634		
70			-9.6	1.045E+01				
71	49.220	27.016	-8.4	2.830E+00				
72	49.654	26.617	-6.5	4.188E-01				

Table 4. continued

	4N			39125			5E	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0.	80.873	-4.0	6.735E+00				
2	1.165*	79.770	-3.9	6.732E+00				
3			-4.0	6.728E+00				
4			-4.0	6.724E+00				
5			-4.2	6.720E+00				
6	5.466	75.700	-4.3	6.715E+00				
7	6.541	74.683	-4.3	6.710E+00				
8			-4.4*	6.705E+00				
9			-4.6*	6.699E+00				
10			-4.7	6.692E+00				
11	10.870	70.587	-4.9	6.684E+00				
12	11.966	69.551	-5.0	6.676E+00				
13	13.056	68.519	-5.2	6.666E+00				
14	14.148	67.486	-5.2	6.654E+00				
15	15.240	66.453	-5.5	6.642E+00				
16	16.355	65.398	-6.0	6.627E+00				
17	17.449	64.363	-6.1	6.603E+00				
18	18.582	63.292	-7.2	6.577E+00				
19	19.700	62.234	-7.1	6.510E+00				
20	20.843	61.152	-7.4	6.447E+00				
21	21.874*	60.177	-7.1	6.356E+00				
22			-7.3*	6.285E+00				
23	24.063	58.106	-7.7	6.196E+00	23.569*	58.586		
24			-8.0*	6.067E+00	24.670	57.544		
25	26.184	56.100	-8.1	5.896E+00				
26	27.221	55.119	-8.1	5.708E+00	26.858	55.475		
27	28.331	54.069	-8.2	5.518E+00				
28	29.372	53.084	-7.7	5.320E+00				
29			-8.3	5.191E+00	30.019	52.485		
30			-8.4	4.951E+00	31.087	51.475		
31			-8.5	4.689E+00	32.147	50.472		
32			-8.5	4.414E+00				
33	34.589	48.150	-8.5	4.126E+00				
34			-8.6*	3.852E+00	35.187	47.598		
35	36.694	46.159	-8.6	3.534E+00	36.235	46.606		
36	37.706	45.202	-8.1	3.201E+00	37.285	45.614		
37	38.698	44.264	-8.2	2.969E+00	38.304	44.650		
38	39.677	43.339	-8.1	2.712E+00	39.304	43.704		
39	40.657	42.412	-8.1	2.468E+00	40.256	42.804		
40	41.613	41.508	-7.9	2.224E+00	41.275	41.840		
41	42.552	40.620	-8.0	2.017E+00	42.224	40.943		
42	43.497	39.726	-7.8	1.766E+00				
43	44.415	38.858	-7.6	1.544E+00				
44	45.290	38.031	-7.6	1.351E+00	44.924	38.390		
45	46.125	37.241	-7.2	1.129E+00	45.786	37.574		
46	46.956	36.456	-6.9	9.558E-01	46.602	36.804		
47	47.739	35.715	-6.5	8.235E-01	47.371	36.077		
48			-6.3*	7.135E-01	48.146	35.343		
49	49.245	34.291	-6.1	5.916E-01				
50			-5.9*	4.853E-01				
51	50.530	33.076	-5.6	3.472E-01				
52	51.078	32.557	-4.9	2.424E-01				
53	51.613	32.052	-4.8	1.603E-01				
54	52.108	31.584	-4.1	8.878E-02				
55			-3.8	4.949E-02				
56			-3.4*	1.969E-02				

Table 4 continued

	4L				39126		1N	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1			-4.9	2.529E+00	.004*	62.852		
2			-5.3*	2.512E+00	.892*	62.030		
3			-5.8*	2.489E+00				
4	2.908*	60.191	-6.3	2.452E+00	2.764	60.311		
5	3.835*	59.339	-6.8	2.393E+00				
6			-7.0	2.300E+00				
7			-7.3	2.183E+00				
8			-7.5	2.036E+00				
9	7.534	55.941	-7.6	1.858E+00	7.170*	56.263		
10			-7.3*	1.655E+00				
11	9.401	54.226	-6.9	1.507E+00	9.062	54.525		
12	10.322	53.381	-6.8	1.405E+00	9.894	53.762		
13	11.205	52.569	-6.8	1.312E+00	10.792	52.936		
14	12.072	51.773	-6.8	1.213E+00				
15	12.947	50.969	-6.8	1.111E+00	12.541	51.330		
16	13.828	50.160	-6.9	1.007E+00	13.422	50.521		
17	14.683	49.375	-6.9	8.921E-01	14.265	49.747		
18	15.498	48.627	-6.8	7.661E-01	15.126	48.956		
19	16.318	47.874	-6.7	6.416E-01	15.944	48.205		
20	17.110	47.146	-6.8	5.247E-01	16.772	47.444		
21	17.884	46.435	-6.6	3.844E-01	17.596	46.687		
22	18.652	45.731	-5.9	2.645E-01	18.382	45.966		
23	19.396	45.047	-5.6	1.976E-01	19.156	45.255		
24	20.171	44.336	-5.3	1.485E-01	19.889	44.583		
25			-5.3*	1.089E-01	20.629	43.903		
26	21.686	42.945	-5.5	6.933E-02	21.323	43.265		
27	22.333	42.351	-4.7*	2.175E-02				

Table 4. continued

	10W				39128	11E		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0. *	65.426	-2.7*	9.457E+00				
2	.601	65.260	-2.7*	9.452E+00				
3	1.303	65.066	-2.7*	9.447E+00				
4	1.966	64.884	-2.7*	9.442E+00				
5	2.652	64.694	-2.7*	9.437E+00				
6	3.289	64.519	-2.7*	9.432E+00				
7	3.925	64.344	-2.8*	9.427E+00				
8	4.610	64.155	-2.8*	9.421E+00				
9			-2.8*	9.415E+00				
10			-2.8*	9.410E+00				
11	6.646	63.595	-2.8*	9.404E+00				
12			-2.8*	9.398E+00				
13			-2.9*	9.392E+00				
14	8.594	63.060	-2.9*	9.386E+00				
15	9.259	62.877	-2.9*	9.380E+00				
16			-2.9*	9.373E+00				
17	10.595	62.510	-2.9*	9.367E+00				
18	11.235	62.334	-3.0*	9.361E+00				
19	11.880	62.157	-3.0*	9.354E+00				
20	12.560	61.971	-3.0*	9.347E+00				
21	13.257	61.780	-3.0*	9.340E+00				
22	13.894	61.606	-3.1*	9.333E+00				
23	14.549	61.426	-3.1*	9.326E+00				
24	15.212	61.244	-3.1*	9.318E+00				
25	15.871	61.064	-3.1*	9.310E+00				
26	16.512	60.889	-3.1*	9.303E+00				
27	17.179	60.706	-3.2	9.295E+00				
28	17.823	60.530	-3.6	9.286E+00	19.487	60.080	-3.1	1.012E+01
29	18.497	60.346	-3.5	9.275E+00	20.199*	59.886	-3.5	1.012E+01
30	19.168	60.163	-3.5	9.264E+00			-3.5	1.011E+01
31	19.811	59.987	-3.6	9.253E+00	21.437	59.548	-3.5	1.010E+01
32	20.473	59.806	-3.6	9.241E+00	22.064	59.377	-3.5	1.008E+01
33	21.118	59.630	-3.7	9.228E+00	22.715	59.199	-3.6	1.007E+01
34	21.772	59.452	-3.9	9.215E+00	23.380	59.018	-3.6	1.006E+01
35			-4.1	9.198E+00	24.030	58.841	-3.7	1.005E+01
36	23.081	59.095	-4.2	9.179E+00	24.640*	58.674	-4.0	1.003E+01
37			-4.3	9.158E+00			-4.1	1.001E+01
38	24.413	58.732	-4.5	9.135E+00	26.002	58.304	-4.3*	9.993E+00
39			-4.5*	9.106E+00	26.647	58.128	-4.4	9.969E+00
40	25.691	58.383	-4.6	9.076E+00	27.302	57.950	-4.4	9.940E+00
41	26.319	58.213	-4.6	9.042E+00	27.921	57.781	-4.6	9.911E+00
42			-4.7*	9.011E+00	28.573	57.604	-4.6	9.878E+00
43	27.646	57.852	-5.0	8.976E+00	29.223	57.428	-4.6	9.844E+00
44	28.272	57.681	-5.2	8.931E+00	29.895	57.245	-4.5	9.812E+00
45	28.919	57.505	-5.3	8.874E+00	30.538	57.070	-5.1	9.783E+00
46	29.570	57.329	-5.2	8.811E+00			-5.2	9.728E+00
47	30.211	57.154	-5.2	8.756E+00			-5.0*	9.669E+00
48	30.862	56.978	-5.5	8.700E+00			-5.1	9.620E+00
49	31.505	56.803	-5.3	8.626E+00	33.079	56.381	-5.0	9.567E+00
50	32.146	56.629	-5.4	8.564E+00	33.749	56.199	-4.9	9.518E+00
51	32.795	56.453	-5.3	8.497E+00	34.403	56.022	-5.0	9.477E+00
52	33.447	56.276	-5.2	8.437E+00			-5.1	9.430E+00
53	34.095	56.100	-5.5	8.381E+00	35.705	55.669	-5.2*	9.374E+00
54	34.727	55.929	-5.4	8.306E+00	36.331	55.500	-5.4	9.313E+00
55	35.370	55.755	-5.3	8.237E+00	36.945	55.333	-5.4	9.235E+00

Table 4. continued

		10W				39128(continued)	11E		
N	L	H	MAG	MASS(KGM)		D	H	MAG	MASS(KGM)
56	36.003	55.584	-5.6	8.173E+00		37.574	55.163	-5.7	9.157E+00
57	36.635	55.412	-5.5	8.088E+00		38.208	54.992	-5.5	9.058E+00
58	37.268	55.241	-5.5	8.012E+00		38.852	54.818	-5.5	8.978E+00
59	37.928	55.062	-5.6	7.935E+00		39.504	54.641	-5.7	8.901E+00
60	38.545	54.896	-5.7	7.851E+00		40.153	54.466	-5.6	8.807E+00
61			-5.7	7.758E+00		40.785	54.295	-5.7	8.718E+00
62			-5.6*	7.664E+00		41.384	54.133	-5.6	8.616E+00
63			-5.6*	7.579E+00				-5.4	8.524E+00
64	41.085	54.209	-5.5	7.493E+00		42.666	53.788	-5.5*	8.448E+00
65			-5.6*	7.415E+00		43.283	53.621	-5.6	8.364E+00
66	42.346	53.869	-5.7	7.328E+00		43.896	53.456	-5.6	8.268E+00
67	42.975	53.699	-5.7	7.233E+00		44.527	53.286	-5.8	8.175E+00
68			-5.6*	7.138E+00		45.170	53.113	-5.8	8.066E+00
69	44.242	53.357	-5.6	7.052E+00		45.805	52.941	-5.8	7.958E+00
70	44.867	53.189	-5.8	6.965E+00		46.423	52.775	-6.3	7.848E+00
71	45.499	53.019	-6.0	6.860E+00		47.045	52.608	-6.0	7.662E+00
72	46.127	52.849	-6.0	6.733E+00		47.633	52.449	-6.2	7.517E+00
73	46.751	52.681	-5.9	6.604E+00				-5.8	7.353E+00
74	47.365	52.516	-6.0	6.483E+00				-5.6*	7.237E+00
75	47.978	52.351	-5.9	6.349E+00		49.540	51.936	-5.5	7.140E+00
76	48.592	52.186	-5.8	6.226E+00		50.156	51.771	-5.5	7.051E+00
77	49.211	52.019	-5.6	6.113E+00		50.717	51.620	-6.1	6.949E+00
78	49.825	51.855	-5.7	6.020E+00				-5.5	6.789E+00
79	50.444	51.688	-5.7	5.918E+00		51.972	51.283	-5.6*	6.698E+00
80	51.051	51.525	-5.7	5.813E+00		52.560	51.125	-5.8	6.599E+00
81	51.655	51.363	-5.5	5.712E+00		53.168	50.962	-5.7	6.473E+00
82	52.293	51.192	-5.7	5.626E+00		53.775	50.799	-5.2	6.358E+00
83	52.902	51.028	-5.4	5.526E+00		54.376	50.638	-5.4	6.290E+00
84	53.527	50.860	-5.6	5.449E+00		55.016	50.467	-5.3	6.204E+00
85	54.123	50.700	-5.6	5.352E+00		55.582	50.315	-6.0	6.127E+00
86	54.728	50.538	-5.6	5.256E+00		56.208	50.147	-5.7	5.978E+00
87			-5.9	5.153E+00		56.791	49.991	-5.7	5.854E+00
88			-5.8	5.016E+00		57.361	49.838	-5.6	5.734E+00
89			-5.7*	4.892E+00				-5.3	5.624E+00
90			-5.8	4.779E+00		58.573	49.514	-5.7*	5.541E+00
91			-5.7*	4.654E+00		59.146	49.361	-5.8	5.422E+00
92			-5.5	4.541E+00		59.734	49.203	-5.6	5.287E+00
93	58.883	49.426	-5.7	4.446E+00		60.337	49.042	-5.9	5.173E+00
94			-5.5	4.333E+00		60.911	48.889	-5.9	5.027E+00
95	60.079	49.106	-5.3	4.236E+00		61.508	48.729	-5.5	4.872E+00
96	60.647	48.954	-5.4	4.156E+00		62.047	48.585	-5.6	4.761E+00
97	61.242	48.795	-5.4	4.062E+00		62.627	48.431	-5.4	4.640E+00
98	61.814	48.642	-5.4	3.970E+00				-5.4	4.538E+00
99	62.398	48.486	-5.1	3.877E+00				-5.6*	4.437E+00
100	62.964	48.335	-5.5	3.804E+00				-5.7	4.315E+00
101	63.539	48.182	-5.3	3.697E+00		64.934	47.815	-5.3	4.181E+00
102	64.095	48.034	-5.1	3.608E+00		65.519	47.659	-5.5	4.089E+00
103	64.679	47.878	-5.3	3.532E+00		66.057	47.516	-5.5	3.971E+00
104	65.224	47.733	-5.3	3.443E+00				-5.5	3.850E+00
105	65.820	47.574	-5.2	3.353E+00		67.156	47.223	-5.4*	3.726E+00
106	66.368	47.428	-5.1	3.269E+00		67.721	47.073	-5.2	3.613E+00
107	66.926	47.279	-5.1	3.190E+00		68.262	46.929	-5.2	3.523E+00
108	67.462	47.136	-5.1	3.111E+00		68.829	46.778	-5.5	3.430E+00
109	68.045	46.981	-5.2	3.030E+00		69.371	46.634	-5.7	3.306E+00
110	68.581	46.838	-5.1	2.940E+00		69.927	46.486	-5.3	3.154E+00

Table 4. continued

	10w				39128 (continued)	11E		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
111	69.135	46.691	-5.0	2.860E+00	70.453	46.346	-5.3	3.049E+00
112	69.682	46.546	-4.9	2.783E+00	71.018	46.196	-5.0	2.935E+00
113			-5.2	2.710E+00	71.502	46.068	-5.0	2.844E+00
114			-5.2	2.610E+00	72.025	45.929	-4.8	2.753E+00
115			-4.9*	2.511E+00	72.553	45.788	-5.0	2.672E+00
116	71.808	45.961	-4.9	2.435E+00			-4.5	2.588E+00
117			-5.0*	2.360E+00	73.654	45.496	-4.5*	2.532E+00
118	72.878	45.697	-5.0	2.275E+00			-4.6	2.475E+00
119	73.395	45.559	-5.0	2.191E+00	74.665	45.228	-4.7*	2.405E+00
120			-4.9*	2.103E+00	75.170	45.094	-4.9	2.327E+00
121	74.448	45.280	-4.8	2.021E+00	75.672	44.961	-4.7	2.233E+00
122	74.953	45.146	-4.7	1.945E+00	76.172	44.829	-4.8	2.157E+00
123	75.463	45.011	-4.7	1.871E+00	76.690	44.691	-4.6	2.074E+00
124	75.958	44.880	-4.6	1.799E+00	77.202	44.556	-4.7	2.005E+00
125	76.480	44.741	-4.8	1.732E+00			-4.9	1.926E+00
126	76.976	44.610	-4.8	1.649E+00			-4.7	1.820E+00
127	77.469	44.479	-4.6	1.567E+00	78.678	44.165	-4.9	1.732E+00
128	77.967	44.347	-4.7	1.495E+00	79.134	44.044	-4.6	1.626E+00
129	78.449	44.220	-4.6	1.414E+00	79.617	43.917	-4.2	1.538E+00
130	78.939	44.090	-4.6	1.337E+00			-4.1	1.481E+00
131	79.394	43.970	-4.0	1.261E+00	80.585	43.661	-4.1*	1.424E+00
132	79.906	43.834	-4.0	1.216E+00	81.057	43.536	-4.1	1.367E+00
133	80.381	43.709	-4.2	1.171E+00	81.479	43.425	-4.4	1.308E+00
134	80.852	43.584	-4.0	1.117E+00	81.962	43.297	-4.1	1.230E+00
135	81.312	43.463	-4.0	1.067E+00	82.423	43.175	-4.0	1.168E+00
136	81.769	43.342	-4.0	1.017E+00	82.863	43.059	-4.1	1.116E+00
137	82.234	43.219	-4.2	9.660E-01	83.335	42.935	-4.2	1.055E+00
138	82.691	43.099	-4.3	9.044E-01	83.779	42.817	-4.4	9.873E-01
139			-4.4	8.311E-01	84.232	42.698	-4.2	9.081E-01
140			-4.3	7.437E-01	84.689	42.577	-4.1	8.371E-01
141			-4.1*	6.639E-01	85.116	42.465	-4.2	7.725E-01
142	84.530*	42.613	-4.1	5.976E-01			-4.2	6.915E-01
143			-4.1*	5.313E-01			-4.2*	6.065E-01
144	85.404*	42.383	-4.1	4.649E-01			-4.2*	5.215E-01
145	85.797	42.279	-3.8	3.986E-01	86.789	42.024	-4.2*	4.365E-01
146			-3.6*	3.483E-01	87.213	41.912	-4.2*	3.515E-01
147	86.606	42.066	-3.1*	2.995E-01			-4.2	2.617E-01
148	87.039	41.952	-3.7*	2.687E-01	88.024	41.698	-4.2*	1.718E-01
149	87.450	41.844	-3.7*	2.197E-01	88.456	41.585	-4.1	8.195E-02
150	87.883	41.730	-3.6*	1.679E-01				
151	88.277	41.626	-2.9*	1.161E-01				
152	88.660	41.525	-2.9*	8.866E-02				
153	89.065	41.419	-2.9*	5.911E-02				
154								
155	89.833	41.217	-2.9*	2.955E-02				

Table 4. continued

	3N				39129		2S	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1			-3.3	5.872E+00	0.	64.298		
2			-3.3	5.859E+00	.666	63.876		
3			-3.4	5.846E+00	1.374	63.428		
4			-3.5	5.832E+00				
5			-3.8	5.816E+00				
6			-3.8	5.796E+00	3.235	62.250		
7			-3.9	5.774E+00	3.852	61.859		
8			-3.9	5.752E+00				
9			-3.8	5.730E+00				
10			-3.8*	5.709E+00				
11			-3.8*	5.687E+00				
12			-3.8	5.666E+00				
13			-3.8*	5.645E+00				
14			-3.8*	5.624E+00	8.159	59.135		
15			-3.7	5.603E+00				
16			-3.7	5.584E+00				
17			-3.6	5.565E+00				
18			-3.7	5.548E+00				
19			-3.7	5.528E+00				
20			-4.0	5.509E+00				
21			-4.0	5.485E+00	12.641	56.302		
22			-4.5	5.460E+00	13.253	55.916		
23			-4.3	5.421E+00				
24			-4.6*	5.389E+00	14.278	55.268		
25			-5.0*	5.345E+00				
26			-5.4	5.284E+00				
27			-5.6	5.191E+00				
28			-5.0	5.079E+00				
29			-5.4	5.018E+00				
30			-5.1	4.925E+00				
31			-5.4	4.855E+00				
32			-5.5	4.762E+00				
33			-5.4	4.665E+00				
34			-5.2*	4.576E+00				
35			-5.1	4.503E+00				
36			-5.4*	4.435E+00				
37			-5.6*	4.347E+00				
38			-6.2	4.235E+00				
39			-5.6*	4.041E+00				
40			-4.8*	3.930E+00				
41	24.425	48.863	-4.7	3.879E+00				
42	25.022	48.486	-4.7	3.830E+00				
43	25.604	48.119	-5.1	3.783E+00				
44	26.189	47.750	-6.1	3.716E+00				
45	26.780	47.378	-6.6	3.537E+00				
46	27.332	47.030	-6.3	3.249E+00				
47	27.902	46.670	-5.6	3.027E+00				
48	28.474	46.309	-5.5	2.906E+00	28.149	46.513		
49	29.035	45.955	-5.5	2.792E+00	28.774	46.120		
50			-5.6*	2.682E+00	29.290	45.795		
51			-5.6*	2.554E+00				
52	30.725	44.890	-5.7	2.420E+00				
53	31.269	44.547	-6.0	2.279E+00				
54	31.804	44.210	-4.7	2.077E+00	31.574	44.355		
55	32.338	43.874	-4.7	2.013E+00	32.133	44.003		

Table 4. continued

		3N			39129(continued)		2S	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56	32.877	43.534	-5.7	1.949E+00				
57	33.413	43.197	-5.1	1.787E+00	33.176	43.345		
58	33.950	42.858	-5.2	1.699E+00				
59			-5.4	1.584E+00	34.204	42.698		
60			-5.4	1.438E+00	34.639	42.424		
61	35.455	41.910	-5.4	1.286E+00	35.208	42.066		
62			-5.3*	1.133E+00				
63			-5.3*	9.878E-01				
64	36.943	40.973	-5.0	8.491E-01				
65			-4.7*	7.388E-01				
66			-4.4*	6.469E-01				
67	38.405	40.052	-4.2	5.772E-01				
68	38.868	39.761	-4.2	5.192E-01				
69	39.325	39.474	-4.1	4.568E-01				
70	39.778	39.188	-3.7	3.957E-01				
71	40.193	38.927	-4.0	3.511E-01				
72	40.652	38.638	-3.6	2.935E-01				
73	41.094	38.360	-3.4	2.516E-01				
74	41.517	38.094	-3.1	2.157E-01				
75	41.915	37.844	-2.8	1.865E-01				
76			-2.7*	1.603E-01				
77			-2.6*	1.338E-01				
78	43.113	37.090	-2.6	1.096E-01				
79	43.476	36.861	-2.7	8.538E-02				
80	43.865	36.617	-2.5	5.884E-02				
81			-2.4	3.676E-02				
82			-2.3	1.753E-02				

Table 4. continued

		2N			39130		5E	
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0.	84.464	-4.2	4.796E+00				
2	1.337	83.375	-4.2	4.794E+00				
3	2.818	82.167	-4.5	4.792E+00				
4	4.228	81.019	-4.7	4.789E+00				
5	5.590	79.909	-4.8	4.786E+00				
6			-5.0*	4.782E+00				
7	8.439	77.588	-5.2	4.778E+00				
8	9.859	76.432	-5.2	4.772E+00				
9	11.236	75.310	-5.5	4.766E+00				
10	12.635	74.171	-5.6	4.759E+00				
11	14.052	73.017	-5.7	4.751E+00				
12	15.457	71.873	-5.7	4.743E+00				
13	16.885	70.710	-6.0	4.734E+00				
14	18.270	69.583	-5.9	4.723E+00				
15			-6.3	4.712E+00				
16			-6.4	4.696E+00				
17	22.472	66.163	-8.1	4.679E+00	20.867	67.480		
18			-8.3*	4.600E+00	22.291	66.321		
19	25.276	63.881	-8.6	4.498E+00	23.667	65.201		
20	26.687	62.733	-7.5	4.370E+00	25.011*	64.107		
21	28.035	61.637	-7.8	4.322E+00	26.556	62.850		
22			-8.0*	4.260E+00	27.975	61.696		
23	30.819	59.372	-8.2	4.185E+00	29.348	60.579		
24	32.235	58.221	-8.8	4.094E+00				
25	33.559	57.144	-8.7	3.929E+00				
26	34.958	56.006	-8.8	3.786E+00				
27	36.352	54.873	-8.9	3.623E+00				
28	37.687	53.787	-8.8	3.447E+00	36.341	54.892		
29	39.050	52.679	-8.8	3.283E+00	37.663	53.817		
30	40.411	51.573	-8.5	3.101E+00	39.048	52.691		
31	41.689	50.534	-9.0	2.966E+00	40.391	51.599		
32	42.993	49.475	-9.0	2.736E+00				
33			-9.0*	2.518E+00	43.223*	49.297		
34	45.677	47.293	-9.1	2.293E+00	44.374	48.362		
35	46.965	46.247	-9.1	2.048E+00	45.680	47.301		
36	48.213	45.233	-9.0	1.775E+00	46.965	46.257		
37	49.462	44.218	-9.0	1.509E+00	48.219	45.238		
38	50.682	43.228	-8.9	1.234E+00	49.457	44.232		
39	51.840	42.287	-8.9	9.543E-01	50.632	43.278		
40	52.990	41.353	-8.8	6.616E-01	51.785	42.341		
41			-8.6*	4.068E-01	52.876	41.455		
42			-8.4	1.948E-01	53.930	40.599		
43	55.925	38.969	-5.9	1.846E-02				

Table 4. continued

	14E				39135	15N		
N	D	H	MAG	MASS (KGM)	D	H	MAG	MASS (KGM)
1	0. *	97.859	-3.2	6.401E-01				
2	1.473*	97.009	-3.5	6.393E-01				
3	2.725	96.286	-3.5	6.382E-01	2.889*	96.188		
4	4.183	95.445	-3.6	6.370E-01				
5	5.587	94.635	-3.6	6.358E-01				
6	7.012	93.813	-3.7	6.346E-01				
7	8.483	92.965	-3.8	6.334E-01	8.506	92.948		
8	9.971	92.107	-3.9	6.320E-01	9.930	92.127		
9	11.350	91.313	-4.0	6.304E-01	11.347	91.311		
10	12.814	90.469	-4.2	6.287E-01	12.773	90.490		
11			-4.3	6.267E-01	14.253	89.637		
12			-4.4	6.244E-01				
13	17.147	87.974	-4.5	6.219E-01	17.147	87.971		
14	18.507	87.192	-4.6	6.190E-01	18.516	87.184		
15			-4.7	6.159E-01	19.984	86.338		
16			-4.8	6.125E-01	21.392	85.529		
17	22.836	84.701	-4.9	6.088E-01	22.855	84.688		
18	24.276	83.874	-5.0	6.049E-01	24.297	83.859		
19	25.665	83.075	-5.2	6.006E-01	25.741	83.029		
20	27.105	82.248	-6.2	5.954E-01	27.176	82.204		
21	28.566	81.409	-6.2	5.825E-01				
22			-6.3	5.688E-01	30.025	80.568		
23			-6.3	5.545E-01	31.432	79.760		
24			-6.8	5.401E-01	32.891	78.923		
25			-6.4	5.173E-01	34.283	78.124		
26	35.630	77.353	-6.4	5.009E-01	35.734	77.291		
27	37.055	76.536	-6.6	4.844E-01	37.163	76.472		
28	38.533	75.688	-7.9	4.649E-01	38.613	75.640		
29	39.857	74.930	-7.1	4.015E-01	40.028	74.829		
30	41.304	74.100	-7.7	3.705E-01				
31	42.692	73.305	-7.6	3.147E-01				
32	44.101	72.498	-7.4	2.656E-01				
33	45.491	71.702	-7.0	2.235E-01	45.647	71.610		
34	46.878	70.908	-6.5	1.933E-01	47.032	70.817		
35	48.203	70.149	-6.3	1.737E-01	48.366	70.054		
36	49.562	69.371	-6.2	1.571E-01	49.712	69.284		
37			-6.1	1.419E-01	51.023	68.533		
38			-6.1	1.272E-01				
39	53.645	67.036	-6.1	1.125E-01	53.722	66.990		
40	54.960	66.284	-5.8	9.847E-02	55.064	66.223		
41			-5.5	8.647E-02	56.398	65.461		
42			-5.3	7.673E-02	57.657	64.741		
43	58.831	64.072	-5.2	6.825E-02	58.882	64.041		
44	60.048	63.377	-5.0	6.086E-02	60.156	63.313		
45	61.297	62.664	-6.1	5.296E-02	61.454	62.572		
46	62.327	62.076	-4.8	2.662E-02				
47	63.206	61.574	-4.5	1.867E-02				
48			-4.5	1.235E-02	65.432	60.302		
49			-4.5	6.317E-03				

Table 4. continued

	16h				39139		7h	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0.	94.737	-3.2	4.890E-01				
2			-3.1*	4.864E-01				
3	1.978	94.171	-3.0	4.840E-01				
4	2.941	93.896	-3.1	4.818E-01				
5	3.930	93.614	-3.1	4.794E-01				
6	4.911	93.334	-3.4	4.770E-01				
7	5.907	93.049	-3.5	4.740E-01	5.987	93.031	-3.6	1.208E+00
8	6.873	92.774	-3.7	4.704E-01	6.965	92.752	-4.4	1.205E+00
9	7.829	92.502	-3.8	4.662E-01	7.947	92.472	-4.4	1.197E+00
10	8.824	92.218	-4.1	4.615E-01			-4.8*	1.189E+00
11	9.814	91.936	-4.3	4.555E-01	9.927	91.909	-4.8	1.177E+00
12	10.804	91.655	-4.0	4.484E-01	10.900	91.632	-4.6	1.166E+00
13	11.790	91.374	-4.4	4.429E-01	11.879	91.354	-4.6	1.156E+00
14	12.752	91.101	-4.5	4.349E-01	12.824	91.085	-5.3	1.147E+00
15			-4.3*	4.265E-01	13.827	90.800	-5.1	1.128E+00
16	14.722	90.541	-4.3	4.192E-01	14.794	90.525	-5.2	1.113E+00
17	15.664	90.274	-4.5	4.116E-01	15.755	90.253	-5.1	1.097E+00
18	16.624	90.001	-4.5	4.024E-01	16.712	89.981	-5.1	1.082E+00
19	17.618	89.720	-4.3	3.938E-01	17.732	89.692	-5.2	1.067E+00
20	18.609	89.439	-4.5	3.866E-01			-6.1	1.051E+00
21	19.596	89.159	-4.6	3.785E-01			-5.9	1.015E+00
22			-4.5*	3.691E-01	20.646	88.867	-5.0	9.825E-01
23	21.520	88.614	-4.5*	3.602E-01	21.601	88.596	-4.8	9.687E-01
24	22.499	88.337	-4.5*	3.511E-01			-5.1*	9.576E-01
25			-4.5*	3.422E-01	23.582	88.036	-5.1	9.429E-01
26			-4.6*	3.334E-01	24.539	87.766	-5.5	9.280E-01
27	25.450*	87.504	-4.6*	3.241E-01	25.492	87.497	-5.8	9.053E-01
28			-4.6*	3.148E-01	26.447*	87.227	-5.8	8.767E-01
29	27.381	86.958	-4.6*	3.050E-01			-5.7*	8.478E-01
30	28.342	86.687	-4.7	2.952E-01	28.436	86.666	-5.7	8.214E-01
31	29.327	86.410	-4.8	2.843E-01	29.395	86.396	-5.6	7.951E-01
32	30.287	86.139	-4.7	2.728E-01	30.328	86.133	-5.5	7.694E-01
33	31.253	85.867	-4.4	2.621E-01	31.317	85.854	-5.5	7.471E-01
34	32.241	85.589	-4.7	2.538E-01	32.283	85.582	-5.8	7.240E-01
35	33.199	85.319	-4.8	2.433E-01	33.255	85.309	-5.6	6.945E-01
36	34.213	85.034	-5.7	2.317E-01			-7.1*	6.694E-01
37	35.173	84.764	-6.1	2.070E-01	35.160*	84.773	-7.1	5.739E-01
38	36.196	84.477	-6.3	1.713E-01	36.156	84.494	-7.8	4.778E-01
39	37.149	84.210	-6.0	1.232E-01	37.107	84.227	-5.9	2.860E-01
40	38.079	83.948	-5.2	8.699E-02	38.084	83.952	-6.2	2.543E-01
41			-4.9*	6.844E-02	39.058	83.679	-5.8	2.108E-01
42	39.926	83.430	-4.4	5.370E-02	39.971	83.423	-5.1	1.802E-01
43	40.977	83.136	-5.2	4.546E-02	40.902	83.162	-5.9	1.639E-01
44	41.903	82.877	-4.4	2.922E-02	41.921	82.877	-5.4	1.311E-01
45	42.895	82.599	-3.7	2.086E-02	42.881	82.608	-5.6	1.094E-01
46	43.791	82.348	-3.5	1.631E-02			-5.4	8.328E-02
47	44.795	82.067	-4.8	1.253E-02			-6.6	6.257E-02

Table 4. continued

	16N				39154	15E		
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0	71.381	-4.0*	2.469E+01				
2	.978	70.521	-4.4*	2.469E+01				
3	2.013	69.612	-4.8	2.468E+01	1.889	69.718		
4	3.080	68.674	-5.5	2.467E+01	2.886	68.841		
5	4.132	67.750	-5.7	2.466E+01	3.919	67.934		
6	5.161	66.846	-6.7	2.463E+01	4.980	67.001		
7	6.229	65.908	-6.5	2.458E+01	6.027	66.081		
8	7.265	64.997	-7.1	2.454E+01	7.059	65.175		
9	8.299	64.089	-7.2	2.446E+01	8.134	64.230		
10			-7.6	2.438E+01	9.152	63.335		
11			-7.9	2.425E+01	10.183	62.430		
12	11.474	61.300	-8.1	2.410E+01	11.258	61.486		
13	12.498	60.400	-8.4	2.391E+01	12.299	60.571		
14	13.550	59.477	-8.6	2.364E+01	13.337	59.659		
15			-8.5	2.333E+01	14.381	58.742		
16	15.670	57.615	-8.2	2.305E+01	15.444	57.808		
17	16.675	56.732	-8.4	2.284E+01	16.493	56.887		
18	17.763	55.777	-8.3	2.258E+01				
19			-8.3	2.233E+01				
20	19.742*	54.039	-8.5	2.209E+01	19.623	54.139		
21	20.850	53.066	-8.7*	2.181E+01				
22	21.945	52.105	-9.0	2.146E+01	21.713	52.303		
23	23.000	51.178	-9.1	2.104E+01	22.756	51.387		
24			-9.1	2.055E+01	23.733	50.530		
25	25.056	49.373	-9.0	2.004E+01	24.791	49.600		
26	26.069	48.484	-9.2*	1.957E+01				
27	27.081	47.595	-9.3	1.901E+01	26.849	47.794		
28	28.124	46.680	-9.2*	1.836E+01				
29	29.131	45.796	-9.1	1.779E+01	28.870	46.020		
30	30.134	44.916	-9.2	1.726E+01	29.912	45.105		
31	31.135	44.037	-9.3	1.664E+01	30.912	44.227		
32	32.148	43.148	-9.3	1.595E+01	31.908	43.353		
33	33.113	42.301	-9.2	1.525E+01	32.916	42.469		
34	34.120	41.417	-9.4	1.460E+01	33.912	41.594		
35	35.088	40.568	-9.2	1.384E+01	34.879	40.745		
36			-8.8	1.316E+01	35.838	39.904		
37			-9.4	1.260E+01	36.814	39.048		
38	37.907	38.094	-9.5	1.168E+01	37.770	38.209		
39	38.807	37.304	-8.9	1.061E+01				
40	39.690	36.529	-9.4*	9.943E+00				
41			-9.4*	8.850E+00				
42	41.442	34.992	-9.4*	7.608E+00				
43	42.240	34.292	-9.3*	6.367E+00				
44	43.078	33.557	-9.2*	5.110E+00				
45			-8.9*	3.914E+00				
46	44.619	32.205	-8.5*	2.728E+00				
47	45.311	31.598	-8.2*	1.868E+00				
48	45.983	31.008	-7.8*	1.056E+00				
49	46.613	30.456	-7.6*	4.674E-01				

Table 4. continued

11E 39179 9N

N	D	H	MAG	MASS(KGM)
1	0. *	76.380	-3.7	1.852E+00
2	1.125	75.685	-3.8	1.850E+00
3	2.286	74.967	-4.1	1.847E+00
4	3.442	74.253	-4.2	1.844E+00
5	4.639	73.514	-4.3	1.840E+00
6			-4.5*	1.836E+00
7	6.933	72.097	-4.8	1.830E+00
8	8.114	71.368	-4.8	1.824E+00
9	9.287	70.644	-5.1	1.817E+00
10	10.416	69.948	-4.8	1.808E+00
11	11.580	69.230	-4.7	1.801E+00
12	12.755	68.505	-4.9	1.794E+00
13	13.924	67.784	-4.8	1.787E+00
14	15.103	67.057	-5.1	1.780E+00
15	16.282	66.330	-5.2	1.772E+00
16	17.421	65.628	-5.2	1.762E+00
17	18.589	64.908	-5.4	1.752E+00
18	19.731	64.205	-5.7	1.741E+00
19	20.922	63.471	-6.6	1.724E+00
20	22.035	62.785	-6.0*	1.688E+00
21			-5.8*	1.667E+00
22			-5.4*	1.649E+00
23	25.454	60.680	-5.0*	1.636E+00
24			-6.8*	1.628E+00
25			-6.9	1.585E+00
26			-6.8	1.536E+00
27	30.112	57.814	-6.6	1.494E+00
28	31.202	57.144	-5.5	1.458E+00
29	32.388	56.414	-6.0	1.444E+00
30	33.480	55.743	-6.8	1.422E+00
31	34.608	55.049	-6.5	1.377E+00
32			-6.6*	1.340E+00
33	36.878	53.654	-6.7	1.301E+00
34	37.973	52.982	-6.6	1.259E+00
35	39.068*	52.309	-7.2	1.219E+00
36	40.211	51.607	-7.2	1.149E+00
37	41.304	50.936	-7.2	1.078E+00
38	42.394	50.267	-7.0	1.002E+00
39	43.494	49.591	-7.3	9.417E-01
40	44.576	48.927	-7.0	8.594E-01
41	45.630	48.280	-7.0	7.965E-01
42	46.650*	47.655	-6.2	7.253E-01
43	47.698	47.012	-7.3	6.916E-01
44	48.770	46.354	-7.1	5.990E-01
45	49.789	45.729	-6.9	5.163E-01
46	50.791	45.115	-7.2	4.449E-01
47	51.772	44.514	-6.5	3.502E-01
48			-6.3*	2.943E-01
49	53.638	43.370	-5.9	2.389E-01
50			-5.7*	1.988E-01
51			-5.5	1.591E-01
52			-5.3	1.276E-01
53	57.220	41.176	-4.6	1.002E-01
54	57.994	40.702	-4.6	8.641E-02
55	58.779	40.220	-4.5	6.579E-02
56	59.501	39.778	-4.3	4.704E-02
57	60.218	39.339	-4.1	3.093E-02
58			-3.8*	1.753E-02
59	61.402	38.615	-3.4	7.364E-03

(Shutter was not operating on 9N camera)

Table 4. continued

	13W				39180A		8S	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1								
2								
3								
4								
5	0. *	65.815						
6	.761	65.056	-4.1	2.255E+00				
7	1.494	64.326	-4.1	2.240E+00				
8	2.206	63.616	-5.1	2.226E+00				
9	2.911	62.913	-4.7	2.187E+00				
10			-5.1*	2.160E+00				
11	4.361	61.467	-5.5	2.123E+00				
12	5.106	60.724	-5.5	2.070E+00				
13	5.789	60.043	-5.2	2.010E+00				
14	6.474	59.360	-4.9	1.965E+00				
15			-4.7*	1.932E+00				
16	7.914	57.924	-4.6	1.904E+00				
17	8.604	57.236	-5.0	1.879E+00				
18	9.322	56.521	-5.0	1.844E+00				
19	10.043	55.801	-5.9	1.809E+00				
20			-5.4	1.724E+00				
21	11.427	54.421	-4.8	1.667E+00				
22	12.125	53.726	-5.5	1.634E+00				
23	12.815	53.038	-5.0	1.575E+00				
24	13.511	52.344	-5.6	1.537E+00				
25	14.194	51.662	-5.7	1.471E+00				
26			-5.8	1.398E+00				
27	15.568	50.292	-6.0*	1.313E+00				
28	16.251	49.611	-6.1	1.216E+00				
29			-6.3	1.098E+00	16.079	49.778		
30			-5.7	9.483E-01				
31	18.265	47.603	-5.8*	8.623E-01	17.401	48.460		
32	18.900	46.970	-5.9	7.721E-01	18.080	47.783		
33	19.561	46.311	-5.9	6.652E-01	18.719	47.145		
34	20.199	45.675	-4.8	5.573E-01	19.360	46.507		
35	20.837	45.039	-5.4	5.169E-01	20.051	45.818		
36			-5.4*	4.429E-01	20.678	45.192		
37	22.101	43.779	-5.3	3.617E-01	21.260	44.612		
38	22.667	43.214	-4.7	2.877E-01	21.906	43.967		
39	23.262	42.621	-4.5	2.381E-01	22.498	43.377		
40	23.856	42.028	-4.1	1.987E-01				
41			-3.9*	1.727E-01				
42	25.081	40.807	-3.8	1.472E-01				
43	25.562	40.328	-4.1	1.239E-01				
44	26.107	39.784	-3.7*	8.075E-02				
45	26.610	39.282	-3.6*	5.087E-02				
46			-3.5*	2.485E-02				

Table 4. continued

			11E	39180B	9N
N	D	H	MAG	MASS(KGM)	
1			-2.5	7.034E+00	
2			-2.4*	7.033E+00	
3			-2.4	7.031E+00	
4			-2.4	7.030E+00	
5			-2.4	7.029E+00	
6			-2.6	7.027E+00	
7			-2.5	7.026E+00	
8			-2.8	7.024E+00	
9			-3.0	7.022E+00	
10			-3.7	7.020E+00	
11			-4.5	7.015E+00	
12			-4.5	7.005E+00	
13			-4.4	6.996E+00	
14			-4.2	6.987E+00	
15			-4.0	6.980E+00	
16			-4.1	6.974E+00	
17			-3.0	6.967E+00	
18			-3.0*	6.965E+00	
19			-3.0	6.962E+00	
20			-4.6*	6.960E+00	
21			-5.3	6.949E+00	
22			-5.1	6.930E+00	
23			-5.4	6.914E+00	
24			-4.7	6.892E+00	
25			-4.9	6.881E+00	
26			-4.9*	6.867E+00	
27			-4.9*	6.853E+00	
28	.119	58.034	-4.9*	6.840E+00	(Shutter was not operating
29	1.017	57.466	-4.8	6.826E+00	on 9N camera)
30	1.976	56.859	-4.8	6.813E+00	
31	2.953	56.240	-5.3	6.801E+00	
32	3.908	55.635	-6.3	6.782E+00	
33	4.896	55.011	-7.0	6.735E+00	
34	5.874	54.392	-7.3	6.645F+00	
35	6.850	53.775	-7.5	6.531E+00	
36	7.784	53.183	-7.4	6.383E+00	
37	8.741	52.578	-7.2	6.245E+00	
38	9.680	51.984	-7.3	6.134E+00	
39	10.645	51.375	-7.1	6.013E+00	
40			-7.4	5.913E+00	
41			-7.5	5.774E+00	
42	13.497	49.571	-7.5	5.622E+00	
43			-7.6	5.470E+00	
44	15.329	48.414	-7.6*	5.288E+00	
45			-7.8	5.106E+00	
46	17.139	47.271	-7.7*	4.885E+00	
47	18.075	46.680	-7.6	4.674E+00	
48	18.958	46.122	-7.6	4.480E+00	
49	19.852	45.557	-7.6	4.285E+00	
50	20.699	45.023	-7.6	4.080E+00	
51			-7.5	3.861E+00	
52	22.381	43.961	-7.5*	3.614E+00	
53	23.163	43.467	-7.3	3.366E+00	
54	23.936	42.980	-7.2	3.137E+00	
55	24.721	42.485	-7.1	2.941E+00	
56	25.525	41.977	-7.1	2.762E+00	
57	26.301	41.488	-7.1	2.563E+00	
58	27.017	41.036	-7.1	2.358E+00	

Table 4. continued

11E 39180B(continued) 9N

N	D	H	MAG	MASS(KGM)
59	27.722	40.592	-6.9	2.125E+00
60	28.399	40.164	-6.8	1.894E+00
61	29.055	39.751	-6.7	1.661E+00
62	29.682	39.356	-6.2	1.425E+00
63	30.292	38.971	-6.1	1.264E+00
64	30.903	38.586	-6.0	1.110E+00
65	31.483	38.220	-6.0	9.575E-01
66			-5.8	7.440E-01
67			-5.4	5.019E-01
68	32.973	37.281	-5.0	3.345E-01
69			-4.6	2.239E-01
70	33.901	36.697	-3.9*	1.242E-01
71			-3.1	7.185E-02
72	34.744	36.166	-2.4*	3.528E-02
73	35.116	35.931	-1.8	1.608E-02
74	35.486	35.698	-1.1	5.535E-03

Table 4. continued

				4..	39182		1N		
N	D	H	MAG	MASS (KGM)	D	H	MAG	MASS (KGM)
1	0.	78.268						
2	.883	77.543						
3	1.809	76.762						
4	2.680	76.027	-3.5	2.492E+01				
5	3.534	75.306	-3.7	2.492E+01				
6	4.364	74.607	-4.2	2.491E+01				
7			-4.3*	2.490E+01				
8			-4.4	2.489E+01				
9			-4.4	2.488E+01				
10	7.844*	71.671	-4.5*	2.487E+01				
11			-4.5*	2.486E+01				
12			-4.7*	2.485E+01				
13	10.506	69.426	-5.0	2.484E+01				
14	11.384	68.686	-4.9	2.482E+01				
15	12.296	67.917	-4.9	2.480E+01				
16	13.196	67.158	-5.3	2.478E+01				
17			-5.8	2.476E+01				
18			-6.0	2.472E+01				
19			-6.1	2.467E+01				
20			-6.2*	2.462E+01	20.296	61.166		
21	17.589	63.454	-6.3*	2.456E+01	21.124	60.468		
22	18.451	62.728	-6.4	2.450E+01	22.021	59.711		
23	19.334	61.984	-6.4	2.443E+01	22.866	58.999		
24	20.212	61.244	-7.0	2.436E+01	23.725	58.276		
25	21.069	60.521	-7.2	2.424E+01	24.621	57.520		
26	21.975	59.758	-7.6	2.410E+01	25.472	56.803		
27	22.829	59.038	-7.3	2.390E+01	26.357	56.058		
28	23.737	58.273	-7.5	2.375E+01	27.208	55.341		
29	24.637	57.514	-7.6	2.356E+01	28.080	54.606		
30	25.491	56.796	-7.6	2.334E+01	28.952	53.872		
31	26.326	56.092	-7.5	2.312E+01	29.820	53.140		
32	27.187	55.367	-7.9	2.291E+01	30.695	52.404		
33			-7.9*	2.262E+01				
34	28.965	53.868	-7.9	2.234E+01	32.428	50.944		
35	29.817	53.151	-7.8	2.206E+01				
36	30.643	52.455	-8.0	2.176E+01	34.136	49.505		
37			-8.1*	2.144E+01	34.975	48.798		
38	32.421	50.957	-8.1	2.109E+01	35.853	48.059		
39	33.087*	50.397	-7.8	2.074E+01	36.706	47.341		
40	33.898*	49.713	-8.2	2.047E+01				
41	34.774*	48.976	-8.5	2.007E+01	38.410	45.906		
42	35.624*	48.260	-8.4	1.952E+01				
43			-8.3	1.904E+01				
44			-8.4	1.859E+01				
45			-8.6	1.809E+01				
46			-8.5*	1.751E+01				
47	40.036	44.544	-8.5*	1.699E+01				
48	40.825	43.881	-8.4	1.646E+01				
49	41.698	43.145	-8.3	1.598E+01				
50	42.564	42.416	-8.5	1.555E+01				
51	43.419	41.697	-8.7	1.507E+01				
52	44.292	40.962	-8.7	1.445E+01	47.414	38.326		
53	45.099	40.282	-8.3	1.378E+01	48.191	37.671		
54	45.866	39.637	-8.6	1.325E+01	48.957	37.027		
55	46.635	38.989	-8.4	1.248E+01	49.721	36.384		

Table 4. continued

		4[illegible]			39182 (continued)		1N	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56	47.394	38.351	-8.6	1.184E+01	50.419	35.797		
57	48.166	37.701	-8.6	1.108E+01				
58	48.941	37.049	-9.5	1.033E+01				
59			-8.8*	8.604E+00				
60	50.527	35.715	-8.2	7.554E+00				
61	51.097	35.235	-9.6	6.976E+00				
62	51.920	34.542	-8.4	4.370E+00				
63	52.605	33.966	-8.1	3.507E+00				
64			-8.0*	2.864E+00				
65	53.926	32.853	-7.6	2.145E+00				
66	54.585	32.300	-6.9	1.625E+00				
67	55.209	31.775	-6.6	1.338E+00				
68			-6.1	1.016E+00				
69			-6.0	7.459E-01				
70			-6.0	4.881E-01				
71			-5.9	2.418E-01				
72								
73	58.358	29.127						
74	58.797	28.757						
75	59.237	28.387						
76	59.648	28.042						

Table 4. continued

		6W			39197		13N	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0.	82.746	-3.5	2.671E-01				
2	1.439	81.722	-4.1	2.660E-01				
3			-4.4	2.640E-01				
4			-4.7	2.615E-01	4.141	79.794		
5			-4.9*	2.583E-01	5.585	78.767		
6	7.168	77.646	-5.2	2.542E-01	7.000	77.761		
7			-5.4*	2.487E-01	8.441	76.736		
8	10.014	75.622	-5.5	2.425E-01	9.882	75.712		
9	11.446	74.605	-5.5	2.357E-01	11.307	74.698		
10	12.878	73.587	-5.5	2.290E-01	12.750	73.673		
11	14.314	72.567	-5.6	2.223E-01	14.195	72.646		
12	15.753	71.544	-5.5	2.146E-01	15.632	71.625		
13	17.192	70.522	-5.9	2.075E-01	17.025	70.635		
14	18.611	69.514	-5.6	1.977E-01	18.461	69.615		
15	20.029	68.507	-5.8	1.898E-01	19.874	68.611		
16	21.441	67.504	-5.9	1.805E-01	21.322	67.583		
17	22.849	66.504	-5.9	1.703E-01	22.716	66.593		
18	24.240	65.517	-5.8	1.594E-01				
19	25.651	64.516	-5.8	1.495E-01	25.509	64.611		
20	27.044	63.527	-5.8	1.394E-01				
21	28.425	62.546	-5.8	1.298E-01				
22			-5.8*	1.193E-01				
23	31.162	60.605	-5.8	1.082E-01	31.014	60.704		
24	32.511	59.648	-6.0	9.717E-02	32.367	59.745		
25	33.836	58.709	-6.1	8.391E-02	33.728	58.780		
26	35.162	57.769	-6.0	6.846E-02	35.056	57.838		
27	36.469	56.842	-5.8	5.453E-02	36.374	56.903		
28	37.758	55.928	-5.4	4.283E-02				
29			-5.3	3.318E-02				
30			-5.1	2.477E-02				
31			-5.0*	1.745E-02				
32	42.673	52.446	-4.8	1.107E-02				
33			-4.3*	5.520E-03				
34	44.886	50.878	-3.7	2.016E-03				

Table 4. continued

N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
			45		39229		1W	
1	.014*	66.832	-4.5*	3.036E+00			-5.7	4.636E+00
2	.991	66.092	-4.6*	3.025E+00	1.835	65.457	-6.0	4.600E+00
3	1.879	65.421	-4.8*	3.013E+00			-6.8	4.553E+00
4	2.802	64.724	-5.2*	2.998E+00			-6.8	4.457E+00
5	3.698	64.047	-5.5*	2.978E+00	4.545	63.409	-5.8	4.360E+00
6	4.605	63.362	-5.6*	2.951E+00	5.416	62.751	-6.7	4.320E+00
7	5.496	62.688	-5.7*	2.921E+00	6.302	62.082	-6.9	4.232E+00
8			-5.9*	2.886E+00	7.184	61.416	-7.0	4.122E+00
9			-6.0	2.843E+00	8.067	60.748	-7.0	4.005E+00
10			-6.3*	2.794E+00	8.930	60.096	-7.1	3.884E+00
11	8.954	60.076	-6.4	2.733E+00	9.821	59.423	-7.2	3.750E+00
12	9.818	59.424	-6.6	2.661E+00	10.693	58.765	-7.4	3.603E+00
13	10.656	58.791	-6.8	2.571E+00	11.580	58.095	-7.3	3.435E+00
14	11.494	58.158	-6.6	2.458E+00	12.447	57.441	-7.1	3.281E+00
15			-6.5*	2.366E+00	13.335	56.770	-7.1	3.148E+00
16	13.188	56.879	-6.5	2.279E+00	14.209	56.111	-7.0	3.014E+00
17	14.076	56.209	-6.4	2.202E+00	15.038	55.485	-7.0	2.887E+00
18	14.950	55.549	-6.5	2.128E+00	15.914	54.824	-6.9	2.752E+00
19	15.780	54.923	-6.4	2.042E+00	16.732	54.206	-6.9	2.624E+00
20	16.574	54.324	-6.5	1.960E+00	17.565	53.577	-6.9	2.501E+00
21	17.355	53.734	-6.4	1.862E+00	18.386	52.958	-6.9	2.365E+00
22	18.145	53.138	-6.6	1.768E+00	19.200	52.344	-7.0	2.236E+00
23	18.920	52.553	-6.4	1.651E+00			-6.9*	2.082E+00
24	19.675	51.984	-6.4	1.553E+00	20.817	51.124	-6.9	1.942E+00
25			-6.4*	1.454E+00	21.609	50.526	-6.9	1.791E+00
26			-6.4*	1.355E+00	22.376	49.947	-6.9	1.631E+00
27	22.007	50.224	-6.4	1.257E+00	23.153	49.361	-6.7	1.467E+00
28	22.767	49.651	-6.8	1.158E+00	23.900	48.798	-6.9	1.332E+00
29	23.538	49.069	-6.3	9.980E-01			-7.3	1.137E+00
30	24.235	48.544	-6.1	8.920E-01			-6.9	8.547E-01
31	24.932	48.018	-5.9	8.035E-01	26.017	47.202	-6.6	6.595E-01
32	25.688	47.448	-5.9	7.225E-01	26.694	46.691	-6.1	4.910E-01
33	26.367	46.936	-5.8	6.426E-01	27.388	46.167	-6.0	3.762E-01
34			-5.7	5.648E-01	28.026	45.687	-5.8	2.645E-01
35			-5.7	4.904E-01	28.638	45.225	-5.8	1.618E-01
36			-5.6*	4.194E-01	29.229	44.780	-5.2	5.909E-02
37	29.102	44.874	-5.6	3.516E-01				
38	29.705	44.419	-5.2	2.741E-01				
39	30.295	43.974	-5.0	2.013E-01				
40	30.876	43.537	-4.5	1.408E-01				
41			-4.3*	9.617E-02				
42	31.950	42.727	-4.2	5.729E-02				
43	32.414	42.377	-3.8	2.343E-02				

Table 4. continued

5: 39240 2N

N	D	H	MAG	MASS (KGM)	D	H	MAG	MASS (KGM)
1	0.	77.993	-4.5	1.974E+02	.060	77.931	-5.0	1.433E+02
2	.832*	77.269	-4.4	1.974E+02	.944	77.161	-4.8	1.433E+02
3	1.785	76.440	-4.5*	1.974E+02	1.840	76.383	-4.9	1.432E+02
4			-4.8	1.974E+02	2.686	75.647	-5.0	1.432E+02
5			-5.0	1.973E+02	3.539	74.905	-4.9	1.432E+02
6			-5.0*	1.973E+02	4.386	74.168	-5.1	1.432E+02
7	5.244	73.433	-5.1	1.973E+02			-5.2	1.432E+02
8	6.047	72.734	-5.3	1.973E+02			-5.4	1.431E+02
9	6.953	71.947	-5.5	1.973E+02			-5.6	1.431E+02
10	7.816	71.196	-5.9	1.972E+02			-5.9	1.431E+02
11	8.619	70.498	-6.0	1.972E+02			-6.2*	1.430E+02
12	9.495	69.737	-6.2	1.971E+02	9.555	69.673	-6.5	1.430E+02
13	10.362	68.982	-6.5	1.971E+02	10.383	68.954	-6.7	1.429E+02
14	11.208	68.247	-6.9	1.970E+02	11.242	68.206	-7.1	1.428E+02
15	12.075	67.493	-6.7	1.969E+02	12.098	67.463	-7.4	1.426E+02
16	12.927	66.753	-6.6	1.968E+02			-7.3*	1.425E+02
17	13.812	65.983	-6.4	1.967E+02	13.824	65.962	-7.2	1.423E+02
18	14.637	65.266	-6.9	1.966E+02	14.697	65.203	-8.2	1.421E+02
19	15.480	64.534	-6.7	1.965E+02	15.557	64.456	-8.0	1.417E+02
20	16.320	63.803	-7.0	1.964E+02	16.387	63.734	-8.5	1.414E+02
21	17.169	63.066	-7.4	1.962E+02	17.259	62.976	-8.7	1.409E+02
22	18.009	62.336	-7.2	1.960E+02	18.155	62.197	-8.4	1.403E+02
23	18.887	61.573	-7.4	1.959E+02	18.968	61.491	-8.5	1.398E+02
24			-7.6*	1.957E+02	19.853	60.722	-8.9	1.393E+02
25	20.608	60.077	-7.7	1.955E+02	20.731	59.959	-8.8	1.386E+02
26	21.425	59.367	-8.7	1.952E+02			-8.9*	1.379E+02
27	22.324	58.585	-8.2	1.946E+02	22.417	58.494	-9.0	1.372E+02
28	23.175	57.846	-8.1	1.943E+02	23.291	57.734	-9.2	1.364E+02
29			-8.3*	1.939E+02	24.129	57.006	-9.2	1.355E+02
30			-8.7	1.935E+02	25.006	56.244	-9.3	1.345E+02
31			-8.8	1.929E+02	25.886	55.480	-9.4	1.334E+02
32			-9.3*	1.922E+02	26.699	54.773	-9.8*	1.322E+02
33	27.454	54.129	-9.8	1.912E+02			-10.0	1.306E+02
34	28.308	53.387	-8.8	1.895E+02			-9.8	1.285E+02
35	29.185	52.625	-8.3	1.889E+02			-9.6	1.268E+02
36	30.044	51.879	-9.2	1.885E+02			-9.3	1.254E+02
37	30.903	51.133	-9.5	1.875E+02			-9.4*	1.243E+02
38	31.767	50.382	-9.0	1.862E+02	31.871	50.280	-9.4	1.232E+02
39	32.623	49.639	-9.4	1.854E+02	32.695	49.564	-9.7	1.220E+02
40	33.468	48.905	-8.9	1.842E+02	33.556	48.817	-9.5	1.203E+02
41	34.302	48.180	-9.8	1.835E+02	34.384	48.098	-10.2	1.190E+02
42	35.148	47.446	-9.5	1.817E+02			-10.3*	1.165E+02
43	36.007	46.700	-9.7	1.804E+02	36.089	46.617	-10.3	1.138E+02
44	36.834	45.982	-11.0	1.787E+02	36.913	45.901	-10.8	1.109E+02
45	37.685	45.243	-10.6	1.731E+02	37.758	45.168	-10.2	1.063E+02
46	38.495	44.539	-11.2	1.693E+02	38.576	44.458	-10.5	1.036E+02
47	39.327	43.817	-10.9	1.626E+02	39.400	43.742	-10.3	9.993E+01
48	40.143	43.108	-10.9	1.572E+02	40.212	43.037	-10.2	9.681E+01
49	40.971	42.390	-10.5	1.521E+02	41.046	42.313	-10.0	9.401E+01
50			-10.8*	1.484E+02	41.876	41.592	-10.1	9.173E+01
51	42.596	40.978	-11.1	1.433E+02	42.678	40.896	-10.2	8.926E+01
52	43.447	40.240	-10.9	1.369E+02			-10.3*	8.645E+01
53	44.218	39.570	-11.1	1.310E+02	44.294	39.493	-10.5	8.314E+01
54	44.996	38.895	-10.6	1.243E+02	45.095	38.797	-10.0	7.934E+01
55			-10.6*	1.198E+02	45.900	38.098	-10.3	7.679E+01

Table 4. continued

	5E				39240 (continued)		2N	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56			-10.6	1.150E+02	46.698	37.406	-10.0	7.335E+01
57			-10.7	1.103E+02	47.472	36.734	-10.0	7.065E+01
58			-10.7*	1.053E+02	48.241	36.067	-9.8	6.789E+01
59	46.945	35.468	-10.6	1.003E+02			-10.0	6.544E+01
60	49.708	34.605	-10.5	9.554E+01			-10.1	6.211E+01
61	50.473	34.142	-10.8	9.077E+01			-10.1	5.862E+01
62	51.184	33.525	-10.6	8.433E+01			-10.1	5.497E+01
63	51.908	32.896	-10.2	7.862E+01			-10.2*	5.132E+01
64	52.652	32.251	-10.6	7.460E+01	52.707	32.191	-10.2	4.732E+01
65	53.356	31.638	-10.3	6.825E+01	53.415	31.576	-9.9	4.332E+01
66	54.026	31.058	-10.4	6.337E+01	54.105	30.977	-9.8	3.967E+01
67	54.694	30.478	-10.1	5.746E+01	54.775	30.396	-10.0	3.634E+01
68	55.349	29.910	-10.1	5.272E+01			-10.3*	3.183E+01
69	56.005	29.341	-11.4	4.730E+01	56.066	29.276	-10.7	2.474E+01
70	56.596	28.828	-9.7	2.836E+01	56.669	28.753	-9.7	1.448E+01
71	57.180	28.322	-9.4	2.383E+01	57.273	28.228	-9.3	9.748E+00
72	57.762	27.817	-9.0	2.023E+01	57.850	27.728	-8.9	6.307E+00
73	58.345	27.311	-8.9	1.752E+01	58.405	27.247	-9.0	3.927E+00
74	58.871	26.855	-8.5	1.499E+01			-8.4*	1.434E+00
75	59.437	26.363	-8.2	1.319E+01				
76			-8.1*	1.138E+01				
77	60.412	25.518	-8.0*	9.256E+00				
78	60.874	25.117	-7.8*	7.320E+00				
79	61.309	24.739	-7.0*	5.418E+00				
80	61.740	24.366	-7.0*	4.508E+00				
81			-6.8*	3.598E+00				
82			-6.7*	2.805E+00				
83			-6.5*	2.114E+00				
84			-6.4*	1.513E+00				
85	63.564	22.764	-6.4*	9.645E-01				
86			-6.1*	4.160E-01				

Table 4. continued

		12N			39259		11W	
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1					.001*	77.212	-5.5	2.592E+01
2	1.197	76.146	-5.8	6.526E+01	.965	76.361	-6.3	2.589E+01
3	2.108	75.343	-6.6	6.522E+01	1.893	75.543	-6.8	2.584E+01
4	3.034	74.526	-7.2	6.515E+01	2.835	74.711	-7.2	2.575E+01
5	3.949	73.718	-7.9	6.502E+01	3.775	73.881	-7.7	2.563E+01
6	4.884	72.894	-8.5	6.479E+01	4.685	73.079	-7.8	2.545E+01
7			-8.8*	6.438E+01	5.608	72.265	-8.3	2.523E+01
8	6.793*	71.209	-8.9	6.385E+01	6.556	71.428	-8.5	2.490E+01
9	7.683	70.425	-9.5	6.327E+01	7.483	70.610	-9.2	2.451E+01
10	8.586	69.629	-9.8	6.221E+01	8.402	69.800	-8.9	2.378E+01
11	9.489	68.832	-9.8	6.088E+01	9.344	68.969	-9.1	2.321E+01
12	10.449	67.985	-10.1	5.955E+01			-9.3*	2.252E+01
13	11.362	67.180	-10.0	5.772E+01			-9.5	2.169E+01
14	12.278	66.372	-9.9	5.616E+01			-9.8	2.069E+01
15	13.211	65.549	-10.5	5.463E+01	13.115	65.643	-9.8	1.944E+01
16			-10.5	5.206E+01	14.063	64.807	-9.5	1.812E+01
17			-10.5	4.947E+01	14.982	63.996	-9.6	1.718E+01
18			-10.6*	4.689E+01	15.945	63.147	-9.9	1.612E+01
19	16.985*	62.221	-10.6*	4.419E+01	16.854	62.345	-9.6	1.469E+01
20			-10.5*	4.149E+01	17.770	61.538	-9.9	1.361E+01
21	18.810	60.611	-10.4	3.902E+01			-9.4*	1.216E+01
22	19.705	59.823	-10.3	3.667E+01	19.644	59.885	-9.0	1.123E+01
23	20.653	58.986	-9.7	3.452E+01	20.562	59.076	-8.4	1.058E+01
24	21.559	58.188	-9.8	3.329E+01	21.540*	58.214	-8.4	1.019E+01
25	22.479	57.377	-9.5	3.196E+01	22.390	57.464	-8.4*	9.809E+00
26	23.389	56.574	-10.0	3.092E+01			-8.4*	9.430E+00
27	24.301	55.771	-9.4	2.931E+01			-8.4*	9.052E+00
28	25.239	54.944	-10.0	2.834E+01	25.187	54.998	-8.8	8.675E+00
29	26.154	54.138	-10.2	2.665E+01	26.083	54.209	-9.0	8.153E+00
30	27.066	53.333	-10.2	2.462E+01	27.022	53.381	-8.6	7.505E+00
31	27.981	52.527	-10.2	2.255E+01	27.935	52.576	-8.8	7.037E+00
32	28.887	51.729	-10.1	2.055E+01	28.857	51.763	-8.5	6.472E+00
33			-10.2*	1.875E+01	29.746	50.980	-8.6	6.036E+00
34	30.717	50.115	-10.2	1.675E+01	30.664	50.171	-8.5	5.588E+00
35	31.602	49.335	-10.1	1.465E+01	31.602	49.345	-8.7	5.139E+00
36	32.524	48.523	-10.3	1.261E+01	32.462	48.586	-8.0	4.619E+00
37	33.386	47.764	-9.8	1.019E+01	33.344	47.809	-8.3	4.328E+00
38	34.237	47.014	-9.8	8.645E+00			-8.3*	3.936E+00
39	35.112	46.242	-9.5	6.974E+00			-8.3	3.502E+00
40	35.994	45.466	-9.5	5.758E+00			-8.3	3.069E+00
41	36.850	44.712	-9.1	4.506E+00	36.844	44.726	-8.3	2.655E+00
42			-8.8	3.586E+00	37.687	43.982	-8.3	2.241E+00
43			-8.5	2.847E+00	38.493	43.272	-8.1	1.773E+00
44			-8.2*	2.287E+00	39.315	42.548	-7.7	1.374E+00
45	40.234	41.730	-7.8	1.861E+00	40.110	41.847	-7.6	1.069E+00
46			-7.6*	1.553E+00	40.897	41.154	-7.2	7.897E-01
47	41.798	40.352	-7.4	1.226E+00			-6.7*	5.818E-01
48	42.526	39.711	-7.7	9.403E-01	42.395	39.835	-6.3	4.095E-01
49	43.227	39.093	-6.8	5.275E-01	43.061	39.248	-5.7	2.903E-01
50	43.941	38.464	-6.5	3.302E-01	43.753	38.638	-5.8	1.994E-01
51	44.613	37.872	-5.7	1.654E-01	44.345	38.117	-5.8	9.968E-02
52	45.252	37.310	-5.8	8.648E-02				

Table 4. continued

		10N		39261			9N	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	0.	72.208	-3.0	1.464E+00	.152	72.097		
2	.930	71.541	-3.9	1.462E+00	1.118	71.404		
3			-5.2	1.457E+00	2.123	70.683		
4			-5.7	1.441E+00	3.099	69.983		
5	3.861	69.439	-6.2	1.416E+00	4.090	69.272		
6			-5.8*	1.377E+00	5.123	68.532		
7	5.895	67.981	-5.6	1.349E+00				
8	6.826	67.313	-5.7	1.325E+00	7.132	67.091		
9	7.817	66.602	-5.5	1.299E+00	8.080	66.412		
10	8.795	65.901	-7.4	1.276E+00	9.067	65.704		
11	9.790	65.188	-7.7	1.158E+00	10.056	64.996		
12	10.777	64.481	-6.3	9.986E-01	11.050	64.283		
13	11.742	63.789	-6.4	9.529E-01	12.015	63.592		
14			-6.6*	9.050E-01	13.011	62.878		
15	13.722	62.371	-6.9	8.426E-01	13.987	62.179		
16	14.668	61.693	-6.7	7.640E-01	14.918	61.512		
17	15.627	61.007	-7.0	6.912E-01				
18	16.576	60.327	-7.2	6.016E-01				
19	17.557	59.624	-5.9	4.873E-01				
20	18.487	58.958	-6.0	4.542E-01	18.790	58.739		
21	19.438	58.277	-5.6	4.174E-01	19.714	58.077		
22	20.370	57.610	-6.3	3.895E-01				
23	21.296	56.947	-5.7	3.369E-01	21.579	56.742		
24	22.238	56.273	-6.0	3.052E-01	22.541	56.053		
25	23.133	55.633	-5.7	2.650E-01	23.472	55.387		
26			-5.5	2.340E-01				
27	24.962	54.323	-5.3	2.070E-01				
28	25.883	53.664	-5.4	1.846E-01				
29			-5.4	1.605E-01				
30			-5.2	1.332E-01				
31	28.598	51.722	-4.4	1.115E-01				
32			-4.1*	1.011E-01				
33			-3.8	9.154E-02				
34	31.192	49.868	-4.6	8.430E-02				
35	32.019	49.276	-4.5	6.983E-02				
36	32.811	48.710	-4.7	5.492E-02				
37	33.619	48.132	-4.9	3.628E-02				
38	34.386	47.584	-3.4	1.179E-02				
39	35.120	47.059	-3.2	5.356E-03				

Table 4. continued

		9N				39302	10S	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1					.001	85.324	-3.1	2.894E-01
2					1.536	83.956	-3.2	2.887E-01
3					2.993	82.658	-3.5	2.880E-01
4					4.478	81.335	-4.0	2.871E-01
5	5.941*	80.032			6.008	79.972	-4.4	2.855E-01
6					7.474	78.666	-4.5	2.833E-01
7	8.951*	77.351			8.985	77.320	-4.8	2.809E-01
8	10.386	76.073			10.478	75.990	-5.3	2.777E-01
9	11.866	74.756			11.947	74.682	-5.5	2.726E-01
10	13.297	73.481			13.477	73.320	-7.0	2.662E-01
11					14.923	72.032	-6.7	2.418E-01
12	16.137	70.952			16.393	70.723	-6.6	2.226E-01
13	17.568	69.678					-6.5*	2.043E-01
14	19.021	68.385					-6.7*	1.875E-01
15	20.473	67.092			20.798	66.801	-6.7	1.672E-01
16	21.898	65.823			22.220	65.536	-6.7	1.478E-01
17	23.313	64.564					-6.8*	1.261E-01
18	24.717	63.314					-6.8	1.021E-01
19	26.125	62.060			26.492	61.733	-6.7	7.710E-02
20	27.466	60.867			27.897	60.482	-6.2	5.427E-02
21	28.843	59.641			29.222	59.303	-6.1	3.941E-02
22	30.151	58.477					-5.7	2.376E-02
23							-5.5	1.294E-02
24	32.622*	56.278			33.098	55.854	-4.1	3.932E-03
25	34.000	55.052			34.474	54.629	-3.6	1.564E-03
26	35.272	53.920						
27	36.405	52.912						
28	37.523	51.917						

Table 4. continued

		13E		39304		16N		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1					.001	73.304	-5.6	4.056E+00
2					1.262	72.639	-5.6	4.044E+00
3					2.413	72.033	-5.4	4.031E+00
4					3.599	71.408	-5.7	4.020E+00
5					4.830	70.761	-5.6	4.006E+00
6	6.380	69.950	-5.8	2.686E+00	6.104	70.090	-5.8	3.994E+00
7	7.561	69.328	-6.0	2.670E+00	7.256	69.464	-6.0	3.979E+00
8	8.764	68.696	-7.0	2.651E+00	8.444	68.859	-7.5	3.960E+00
9	9.949	68.073	-6.5	2.604E+00			-7.1*	3.883E+00
10	11.147	67.443	-5.8	2.575E+00	10.802	67.619	-6.6	3.832E+00
11	12.351	66.810	-6.1	2.559E+00	12.008	66.985	-6.4	3.798E+00
12			-5.6*	2.539E+00	13.203	66.357	-6.4	3.772E+00
13	14.720	65.565	-5.4	2.525E+00	14.410	65.723	-6.4	3.745E+00
14	15.889	64.952	-6.0	2.514E+00	15.581	65.108	-6.3	3.718E+00
15	17.103	64.314	-6.0	2.494E+00	16.765	64.466	-6.7	3.693E+00
16	18.284	63.694	-6.4	2.474E+00			-6.8	3.657E+00
17	19.452	63.081	-6.7	2.446E+00			-6.9	3.617E+00
18	20.609	62.475	-6.7	2.408E+00	20.317	62.622	-7.0	3.574E+00
19			-6.6*	2.372E+00	21.525	61.988	-7.9	3.524E+00
20	23.035	61.202	-6.4	2.339E+00	22.678	61.383	-7.7	3.408E+00
21	24.130	60.628	-6.4	2.309E+00	23.850	60.769	-8.0	3.312E+00
22	25.310	60.010	-7.5	2.280E+00	24.975	60.179	-8.0	3.176E+00
23	26.525	59.373	-6.9	2.197E+00			-7.5*	3.054E+00
24			-6.8	2.150E+00	27.381	58.918	-7.1	2.974E+00
25			-6.8	2.103E+00			-7.4*	2.921E+00
26	29.957	57.576	-6.8	2.059E+00	29.686	57.711	-7.7	2.841E+00
27	31.077	56.990	-7.2	2.015E+00	30.800	57.128	-6.9	2.731E+00
28	32.228	56.387	-6.9	1.947E+00	31.893	56.556	-7.3	2.678E+00
29	33.309	55.822	-7.2	1.893E+00			-6.8	2.600E+00
30			-6.3	1.825E+00	34.167	55.367	-7.4	2.554E+00
31	35.624	54.611	-7.5	1.796E+00	35.299	54.774	-7.8	2.471E+00
32	36.711	54.043	-7.6	1.704E+00	36.406	54.196	-7.3	2.353E+00
33	37.811	53.468	-7.5	1.597E+00	37.516	53.615	-7.2	2.278E+00
34	38.930	52.883	-7.4	1.501E+00	38.635	53.030	-7.6	2.209E+00
35	40.070	52.287	-8.3	1.412E+00			-7.5*	2.112E+00
36	41.129	51.734	-8.1	1.215E+00	40.895	51.850	-7.4	2.015E+00
37	42.207	51.171	-8.5	1.048E+00	41.960	51.293	-8.7	1.926E+00
38			-8.2*	7.889E-01	42.990	50.756	-8.4	1.605E+00
39	44.334	50.061	-7.8	5.764E-01	44.062	50.196	-8.8	1.367E+00
40	45.367	49.522	-8.8	4.294E-01	45.152	49.627	-9.9	1.007E+00
41	46.364	49.002	-6.0	4.270E-02			-6.9	5.974E-02
42			-5.3	1.469E-02				

12 39360 9W

N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1			-3.8	1.734E+00				
2	1.162	82.657	-3.9	1.732E+00				
3			-3.9	1.729E+00				
4	3.590	82.423	-3.6	1.726E+00				
5	4.790	82.307	-3.5	1.724E+00				
6	5.961	82.195	-3.9	1.722E+00				
7			-4.2	1.719E+00				
8	8.291	81.972	-3.8	1.716E+00				
9	9.494	81.857	-4.0	1.713E+00				
10	10.784	81.734	-3.7	1.711E+00				
11			-3.8*	1.709E+00				
12	13.167	81.507	-4.0*	1.706E+00				
13	14.313	81.399	-4.2	1.703E+00				
14	15.519	81.265	-4.5	1.699E+00				
15			-4.4	1.695E+00				
16			-4.5	1.690E+00				
17	19.100*	80.947	-4.5	1.685E+00				
18	20.289	80.835	-4.7	1.681E+00				
19	21.450	80.727	-4.5	1.675E+00				
20	22.661	80.613	-4.5	1.670E+00				
21			-4.6*	1.665E+00				
22	25.036	80.392	-4.8*	1.660E+00				
23	26.241	80.280	-4.8	1.654E+00				
24			-4.9*	1.647E+00				
25	28.598	80.062	-4.9*	1.640E+00				
26	29.790	79.951	-5.0	1.633E+00				
27	30.987	79.841	-5.1	1.626E+00				
28	32.193	79.730	-5.4	1.618E+00				
29	33.364	79.622	-4.9	1.607E+00				
30	34.533	79.515	-5.2	1.599E+00				
31	35.709	79.408	-5.3	1.590E+00				
32	36.905	79.298	-5.3	1.580E+00				
33	38.055	79.194	-5.2	1.569E+00				
34	39.260	79.084	-5.8	1.560E+00				
35	40.438	78.977	-5.6	1.544E+00				
36	41.613	78.871	-5.3	1.531E+00				
37			-5.3*	1.521E+00				
38	43.999	78.655	-5.4*	1.511E+00				
39	45.177	78.549	-5.8	1.500E+00				
40	46.338	78.445	-5.6	1.483E+00				
41			-5.6	1.469E+00				
42			-5.7	1.455E+00				
43	49.941*	78.122	-5.7	1.441E+00				
44	51.096	78.019	-5.6	1.427E+00				
45	52.303	77.912	-5.9	1.414E+00				
46	53.481	77.807	-5.4	1.397E+00				
47			-5.4*	1.386E+00				
48	55.841	77.599	-5.5*	1.375E+00				
49	56.997	77.497	-5.3	1.362E+00				
50			-5.4*	1.352E+00				
51	59.386	77.286	-5.6*	1.340E+00				
52	60.557	77.184	-5.9	1.327E+00				
53	61.737	77.081	-5.4	1.310E+00				
54	62.913	76.978	-6.0	1.298E+00				
55	64.081	76.876	-5.6	1.278E+00	66.793	76.759		

Table 4. continued

	12w				39360 (continued)	9w		
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56	65.244	76.775	-6.0	1.264E+00				
57	66.416	76.673	-6.4	1.244E+00	69.180	76.554		
58	67.617	76.569	-6.4	1.215E+00	70.388	76.450		
59	68.798	76.467	-6.1	1.186E+00	71.535	76.352		
60	69.976	76.366	-6.3	1.164E+00	72.721	76.251		
61	71.159	76.264	-6.1	1.139E+00	73.941	76.147		
62	72.335	76.163	-6.6	1.117E+00	75.100	76.048		
63			-6.6*	1.082E+00	76.303	75.946		
64	74.688	75.961	-6.6*	1.046E+00	77.467	75.848		
65	75.842	75.863	-6.4	1.011E+00				
66	76.988	75.765	-6.3	9.796E-01	79.824	75.649		
67			-6.2	9.534E-01	80.938	75.555		
68			-6.2	9.288E-01	82.140	75.454		
69	80.521*	75.466	-6.1	9.053E-01	83.335	75.354		
70	81.677	75.368	-5.8	8.828E-01				
71	82.839	75.270	-6.0	8.666E-01				
72	84.018	75.171	-6.1	8.461E-01	86.859	75.060		
73			-6.2*	8.243E-01	88.071	74.959		
74	86.339	74.977	-6.4*	8.005E-01	89.207	74.865		
75	87.520	74.878	-6.3	7.720E-01	90.354	74.770		
76			-5.9*	7.442E-01				
77	89.821	74.687	-5.5*	7.266E-01	92.702	74.577		
78	91.063	74.584	-5.5	7.139E-01	93.795	74.487		
79	92.226	74.487	-6.1	7.014E-01	95.037	74.385		
80	93.319	74.397	-6.1	6.796E-01	96.259	74.285		
81	94.482	74.301	-5.9	6.564E-01	97.394	74.192		
82	95.629	74.207	-6.0	6.375E-01				
83	96.820	74.109	-5.7	6.174E-01				
84	97.959	74.016	-5.6	6.022E-01				
85	99.134	73.920	-5.3	5.878E-01				
86	100.293	73.825	-5.1	5.772E-01				
87	101.445	73.731	-5.2	5.685E-01				
88	102.621	73.636	-5.8	5.589E-01				
89			-5.8*	5.426E-01				
90	104.968	73.446	-5.9*	5.246E-01				
91	106.087	73.356	-5.6	5.059E-01				
92	107.228	73.264	-6.0	4.901E-01				
93			-5.8	4.685E-01				
94			-5.7	4.506E-01				
95	110.630*	72.991	-5.3	4.343E-01				
96	111.771	72.900	-5.3	4.230E-01				
97	112.906	72.810	-5.4	4.112E-01				
98	114.036	72.720	-5.5	3.982E-01				
99			-5.6*	3.839E-01				
100	116.308	72.540	-5.6*	3.693E-01				
101	117.462	72.449	-5.8	3.541E-01				
102			-5.8*	3.364E-01				
103	119.724	72.271	-5.7*	3.190E-01				
104	120.881	72.181	-5.6	3.024E-01				
105	122.048	72.089	-5.4	2.879E-01				
106	123.211	71.999	-5.6	2.757E-01				
107	124.279	71.915	-5.1	2.601E-01				
108	125.414	71.827	-5.1	2.500E-01				
109	126.560	71.738	-5.1	2.401E-01				
110	127.661	71.653	-5.3	2.305E-01				

Table 4. continued

		12N		39360 (continued)		9w		
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
111	128.780	71.567	-5.1	2.180E-01				
112	129.876	71.483	-5.1	2.075E-01				
113	131.000	71.396	-5.0	1.975E-01				
114	132.099	71.312	-5.1	1.882E-01				
115			-5.2*	1.785E-01				
116	134.431	71.134	-5.2*	1.685E-01				
117	135.585	71.046	-4.8	1.579E-01				
118	136.675	70.963	-5.1	1.502E-01				
119			-5.1	1.398E-01				
120			-5.1	1.297E-01				
121	140.002	70.712	-5.1	1.200E-01				
122	141.169	70.624	-4.7	1.103E-01				
123	142.286	70.540	-5.0	1.036E-01				
124			-4.6	9.465E-02				
125			-4.7*	8.741E-02				
126	145.595	70.293	-4.8*	7.983E-02				
127	146.597	70.218	-4.4	7.152E-02				
128			-4.4*	6.602E-02				
129			-4.7*	6.029E-02				
130	149.971	69.968	-4.8	5.275E-02				
131	150.996	69.893	-5.3	4.484E-02				
132	152.077	69.813	-4.9	3.145E-02				
133	153.187	69.732	-5.2	2.222E-02				
134	154.330	69.648	-5.1	1.060E-02				

Table 4. continued

		85			39376 (continued)		13k	
N	L	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1					.001	75.561	-3.6*	1.883E+00
2					.924	75.441	-3.7	1.878E+00
3					1.878	75.317	-3.9	1.873E+00
4					2.789	75.199	-3.4	1.867E+00
5					3.657	75.086	-3.6	1.863E+00
6							-3.8*	1.858E+00
7							-4.2	1.853E+00
8							-4.2	1.845E+00
9							-4.1	1.837E+00
10					8.138	74.508	-4.1	1.829E+00
11					9.082	74.387	-4.1	1.821E+00
12					10.003	74.268	-3.6	1.814E+00
13							-3.5*	1.810E+00
14							-3.5	1.805E+00
15					12.693	73.923	-3.3	1.801E+00
16					13.610	73.806	-3.5	1.797E+00
17					14.507	73.691	-3.5	1.793E+00
18					15.423	73.574	-3.5	1.789E+00
19					16.323	73.459	-3.6	1.784E+00
20					17.203	73.347	-3.6	1.779E+00
21					18.078	73.236	-3.7	1.774E+00
22							-3.8*	1.769E+00
23					19.897	73.005	-3.8	1.763E+00
24					20.777	72.893	-3.9	1.757E+00
25							-3.8*	1.751E+00
26					22.601	72.662	-3.7*	1.745E+00
27					23.459	72.553	-3.7	1.740E+00
28					24.362	72.439	-3.7	1.735E+00
29					25.277	72.324	-3.8	1.729E+00
30					26.166	72.212	-4.0	1.723E+00
31					27.067	72.098	-4.5	1.716E+00
32							-4.2*	1.705E+00
33							-4.1	1.696E+00
34							-4.0	1.689E+00
35							-4.0	1.681E+00
36					31.538	71.537	-4.4	1.674E+00
37					32.372	71.433	-4.0	1.664E+00
38					33.288	71.318	-3.9	1.656E+00
39							-4.0*	1.649E+00
40					35.071	71.096	-4.3	1.642E+00
41					35.976	70.983	-4.1	1.633E+00
42					36.856	70.874	-4.0	1.625E+00
43					37.710	70.768	-4.1	1.618E+00
44					38.624	70.654	-4.2	1.609E+00
45					39.493	70.546	-4.0	1.600E+00
46					40.389	70.435	-4.3	1.593E+00
47					41.287	70.324	-4.4	1.584E+00
48					42.159	70.216	-4.2	1.573E+00
49					43.045	70.107	-4.2	1.564E+00
50					43.906	70.001	-3.9	1.554E+00
51							-3.7*	1.547E+00
52					45.688	69.781	-3.9*	1.542E+00
53					46.578	69.672	-4.0	1.535E+00
54					47.440	69.566	-4.0	1.527E+00
55	38.156	70.704			48.345	69.455	-4.1	1.520E+00

Table 4. continued

	85				39376 (continued)	13W		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56	39.040	70.595			49.209	69.349	-4.3	1.512E+00
57					50.087	69.242	-4.2	1.502E+00
58							-4.3*	1.493E+00
59	41.747	70.260			51.988	69.009	-4.1	1.483E+00
60	42.603	70.154					-4.2	1.475E+00
61	43.537	70.039					-4.1	1.465E+00
62					54.451	68.709	-4.2	1.455E+00
63					55.357	68.599	-4.2	1.445E+00
64	46.177	69.714			56.229	68.493	-4.2	1.436E+00
65	47.071	69.604					-4.2*	1.427E+00
66	47.870	69.506			57.980	68.281	-4.0	1.418E+00
67	48.825	69.388			58.847	68.176	-4.1	1.410E+00
68					59.692	68.074	-3.9	1.401E+00
69	50.689	69.160			60.583	67.966	-4.0	1.394E+00
70	51.485	69.063			61.441	67.863	-4.0	1.386E+00
71					62.310	67.758	-4.0	1.378E+00
72					63.165	67.655	-4.2	1.370E+00
73	54.136	68.740			64.046	67.549	-4.0	1.361E+00
74	54.999	68.635			64.908	67.445	-4.0	1.353E+00
75	55.911	68.524			65.763	67.343	-4.1	1.345E+00
76	56.819	68.414			66.642	67.237	-4.1	1.337E+00
77	57.586	68.321					-4.0	1.329E+00
78	58.502	68.210			68.397	67.027	-3.9	1.320E+00
79	59.463	68.093			69.245	66.926	-4.0	1.313E+00
80					70.068	66.828	-3.9	1.305E+00
81					70.906	66.728	-3.9	1.297E+00
82	62.045	67.782			71.807	66.621	-4.0	1.290E+00
83							-3.9	1.281E+00
84							-3.8	1.274E+00
85	64.766*	67.454					-3.7	1.267E+00
86	65.487	67.368					-3.9	1.260E+00
87	66.468*	67.250					-3.9	1.252E+00
88							-4.0	1.244E+00
89							-3.9	1.236E+00
90	69.053	66.941					-3.8	1.228E+00
91	69.914	66.838					-3.7	1.221E+00
92	70.775	66.735					-4.0	1.214E+00
93	71.688	66.627					-3.9	1.205E+00
94	72.505	66.530					-4.1	1.197E+00
95	73.334	66.431					-4.0	1.188E+00
96	74.154	66.334					-4.0	1.180E+00
97							-3.8	1.171E+00
98							-3.7	1.164E+00
99	76.775	66.023					-3.7	1.158E+00
100	77.585	65.927					-3.8	1.151E+00
101	78.446	65.826					-3.9	1.144E+00
102	79.306	65.724					-3.8	1.136E+00
103	80.201	65.619					-3.8	1.129E+00
104	81.054	65.518					-3.8	1.122E+00
105	81.983*	65.409					-3.8	1.115E+00
106							-3.9	1.108E+00
107							-4.0	1.100E+00
108	84.511	65.113					-4.0	1.091E+00
109					94.574	63.951	-4.1	1.083E+00
110							-4.1	1.073E+00

Table 4. continued

		83			39376 (continued)	13h		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
111	87.035	64.818					-4.1	1.063E+00
112	87.897	64.717					-4.0	1.053E+00
113	88.716	64.622					-4.1	1.043E+00
114					98.687	63.477	-4.2*	1.033E+00
115					99.494	63.384	-4.3*	1.021E+00
116	91.234	64.329			100.303	63.291	-4.4*	1.009E+00
117	92.030	64.237					-4.5*	9.958E-01
118	92.856	64.141			101.978	63.100	-4.6*	9.810E-01
119	93.730	64.040			102.730	63.014	-4.8*	9.640E-01
120	94.544	63.946			103.546	62.920	-5.0	9.425E-01
121	95.450*	63.841			104.333	62.831	-5.2	9.161E-01
122	96.182	63.757			105.146	62.738	-5.2	8.856E-01
123					105.941	62.648	-5.1	8.541E-01
124					106.721	62.559	-5.1	8.265E-01
125	98.704	63.467			107.548	62.465	-5.0	7.997E-01
126	99.504	63.375			108.345	62.374	-4.8	7.748E-01
127	100.340	63.279			109.122	62.286	-4.8	7.545E-01
128	101.132	63.188			109.923	62.196	-4.8	7.335E-01
129	101.965	63.093					-4.6*	7.138E-01
130	102.742	63.004			111.579	62.008	-4.5	6.957E-01
131	103.574	62.909			112.299	61.927	-4.9	6.798E-01
132					113.094	61.838	-5.0	6.546E-01
133					113.882	61.749	-4.8	6.261E-01
134	105.955	62.638			114.620	61.666	-4.7	6.031E-01
135					115.418	61.576	-4.9	5.827E-01
136							-4.8*	5.573E-01
137	108.360	62.364					-4.7	5.335E-01
138	109.176	62.272					-4.8	5.117E-01
139	109.971	62.182					-4.8	4.879E-01
140					119.243	61.148	-4.7	4.629E-01
141					120.021	61.061	-4.7	4.402E-01
142	112.345	61.914			120.728	60.982	-4.3	4.159E-01
143	113.151	61.823					-4.3*	3.998E-01
144	113.977	61.730			122.254	60.812	-4.3	3.838E-01
145	114.744	61.643			123.003	60.729	-4.7	3.679E-01
146	115.498	61.559			123.703	60.651	-4.2	3.424E-01
147	116.244	61.475			124.445	60.568	-4.4	3.269E-01
148	117.044	61.385			125.168	60.488	-4.4	3.083E-01
149					125.919	60.405	-3.9	2.892E-01
150					126.637	60.326	-4.0	2.771E-01
151	119.340	61.128			127.372	60.244	-4.0	2.633E-01
152	120.083	61.045			128.064	60.168	-3.9	2.497E-01
153	120.853	60.959			128.777	60.089	-4.0	2.366E-01
154	121.626	60.873			129.492	60.010	-3.8	2.225E-01
155	122.347	60.793					-3.6*	2.112E-01
156	123.109	60.708			130.928	59.853	-3.4	2.004E-01
157	123.852	60.626			131.601	59.779	-3.8	1.914E-01
158					132.268	59.705	-3.7	1.776E-01
159					132.935	59.632	-3.5	1.649E-01
160	126.062	60.381			133.638	59.555	-3.6	1.542E-01
161					134.306	59.482	-3.6	1.435E-01
162					135.008	59.405	-3.5	1.331E-01
163	128.241	60.140					-3.5*	1.215E-01
164	128.937	60.063					-3.5	1.092E-01
165	129.653	59.964					-3.6	9.698E-02

Table 4. continued

	85				39376 (continued)	13W		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
166					137.579	59.125	-3.4	8.416E-02
167					138.234	59.053	-3.3	7.299E-02
168	131.767	59.752					-3.1	6.220E-02
169	132.437	59.678					-3.0*	5.274E-02
170	133.145	59.600			140.111	58.849	-3.0	4.372E-02
171	133.822	59.526			140.718	58.783	-3.1	3.509E-02
172	134.490	59.453			141.297	58.721	-3.2	2.518E-02
173	135.182	59.378			141.920	58.653	-2.9	1.404E-02
174	135.802	59.310			142.540	58.586	-2.5*	5.585E-03
175								
176								
177	137.795	59.093						
178	138.440	59.022						
179	139.074	58.953						
180	139.739	58.881						
181	140.313	58.819						
182	140.979	58.747						
183	141.576	58.682						
184								
185								
186	143.332	58.492						
187								
188								
189	145.184	58.292						
190	145.617	58.245						
191	146.229	58.179						

Table 4. continued

	6W				39406A	8W		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1					.273*	68.032	-5.9	1.810E+03
2					1.025	67.451	-5.9	1.810E+03
3					1.949	66.736	-6.7	1.810E+03
4					2.749	66.118	-7.1	1.810E+03
5					3.642	65.428	-7.1	1.810E+03
6					4.362*	64.872	-7.2	1.809E+03
7							-7.4	1.809E+03
8					6.235	63.424	-7.6	1.809E+03
9					7.077	62.773	-8.3	1.809E+03
10					7.846	62.179	-8.1	1.808E+03
11					8.788	61.452	-8.2	1.808E+03
12					9.607	60.819	-8.9	1.808E+03
13							-8.9*	1.807E+03
14					11.243*	59.555	-8.9*	1.806E+03
15							-8.9*	1.806E+03
16					13.100	58.121	-8.9*	1.805E+03
17					13.970	57.449	-9.0	1.804E+03
18	7.138	62.772			14.771	56.830	-10.0	1.803E+03
19					15.647	56.154	-10.0	1.801E+03
20	8.921	61.395			16.475	55.514	-10.7	1.799E+03
21	9.625	60.851			17.337	54.849	-9.9	1.795E+03
22					18.230	54.159	-10.5	1.793E+03
23	11.377	59.498			19.042	53.533	-9.7	1.790E+03
24	12.294	58.790			19.911	52.862	-10.4	1.789E+03
25	13.038	58.215			20.732	52.228	-10.0	1.786E+03
26	13.998	57.474					-10.0*	1.784E+03
27	14.821	56.838			22.478	50.881	-9.9	1.781E+03
28					23.277	50.264	-10.6	1.780E+03
29	16.533	55.516			24.133	49.604	-10.4	1.776E+03
30	17.424	54.828			24.968	48.959	-10.2	1.773E+03
31	18.242	54.197			25.871	48.263	-10.8	1.770E+03
32	19.056	53.568			26.591	47.707	-11.0	1.765E+03
33	20.065*	52.789					-11.2	1.760E+03
34	20.831	52.198			28.373	46.332	-11.3	1.754E+03
35	21.626	51.584			29.219	45.680	-11.8	1.747E+03
36	22.518	50.896			30.034	45.052	-12.0	1.735E+03
37					30.844	44.427	-10.7	1.721E+03
38					31.713*	43.756	-11.1	1.716E+03
39	25.043	48.948					-10.8*	1.710E+03
40	25.815	48.352			33.361	42.486	-10.4	1.705E+03
41	26.776*	47.611					-10.3*	1.702E+03
42					34.959	41.254	-10.2	1.698E+03
43					35.710	40.675	-11.9	1.695E+03
44	29.242	45.708			36.556	40.023	-12.0	1.680E+03
45	30.113	45.037			37.323	39.432	-11.3	1.663E+03
46	30.889	44.438			38.115	38.822	-11.3	1.655E+03
47	31.702	43.811			38.943	38.183	-12.4	1.646E+03
48	32.589	43.127			39.720	37.584	-11.8	1.623E+03
49	33.389	42.510			40.483	36.996	-12.5	1.609E+03
50	34.155	41.920			41.217	36.430	-12.4	1.580E+03
51	34.972	41.290			41.983	35.841	-12.3	1.554E+03
52	35.851*	40.612					-12.4*	1.527E+03
53	36.575	40.054			43.433	34.724	-12.4	1.499E+03
54					44.197	34.135	-12.1	1.470E+03
55	38.213	38.792			44.944	33.560	-12.7	1.447E+03

Table 4. continued

	6W				39406A (continued)	8W		
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
56	38.951	38.223			45.634	33.028	-13.2	1.407E+03
57	39.817	37.556					-15.7*	1.333E+03
58	40.556*	36.986					-14.7*	3.862E+02
59	41.457	36.291			47.620	31.498	-9.9	9.254E+00
60	42.088	35.806			48.261	31.004	-8.6	4.727E+00
61	42.919	35.165			48.793	30.595	-8.2*	2.894E+00
62	43.746*	34.528			49.339	30.175	-7.8*	1.603E+00
63	44.426	34.004			49.898	29.744	-7.5*	7.095E-01
64	45.177	33.426						
65	45.936	32.841						
66	46.607	32.324						
67	47.245	31.833						
68	47.937	31.300						
69	48.571	30.811						

Table 4. continued

		2E			39442		1W	
N	D	H	MAG	MASS(KGM)	D	H	MAG	MASS(KGM)
1	1.223*	77.708			.018*	78.460	-2.8	9.159E-01
2	2.321	76.998			1.125	77.763	-2.8	9.149E-01
3					2.349	76.970	-2.7	9.141E-01
4	4.771	75.412			3.611	76.154	-2.8	9.132E-01
5	6.128	74.533			4.825	75.368	-2.9	9.123E-01
6	7.384	73.721			6.060	74.569	-3.5	9.113E-01
7	8.578	72.948			7.270	73.785	-3.6	9.095E-01
8	9.813	72.149			8.549	72.958	-3.6	9.077E-01
9	11.039	71.356					-4.4	9.057E-01
10	12.221	70.592					-4.8	9.019E-01
11	13.400	69.829					-5.1	8.960E-01
12							-5.5	8.886E-01
13	15.783	68.289			14.690	68.988	-5.3	8.780E-01
14	17.115	67.428			15.907	68.201	-5.3	8.687E-01
15	18.289	66.670			17.158	67.393	-5.3	8.599E-01
16	19.523	65.873					-5.3*	8.509E-01
17					19.666	65.773	-5.2	8.417E-01
18	22.012	64.265			20.852	65.006	-5.2	8.333E-01
19	23.258	63.460					-5.2*	8.248E-01
20	24.414	62.715			23.296	63.429	-5.2	8.159E-01
21	25.637	61.925			24.486	62.661	-5.6	8.070E-01
22	26.848	61.144			25.660*	61.903	-5.0	7.945E-01
23					26.958	61.065	-5.3	7.875E-01
24					28.138	60.304	-6.0	7.777E-01
25	30.464	58.811			29.329	59.536	-5.7	7.580E-01
26	31.645	58.049					-5.7*	7.442E-01
27	32.916	57.229			31.757	57.970	-5.9*	7.300E-01
28	34.061	56.491			32.947	57.203	-6.1	7.136E-01
29							-5.0	6.928E-01
30	36.429	54.965			35.306	55.683	-5.9	6.848E-01
31	37.679*	54.160			36.528	54.895	-6.3	6.674E-01
32	38.754	53.467			37.667	54.161	-6.6	6.408E-01
33	39.902	52.728			38.840	53.406	-6.6*	6.056E-01
34	41.097	51.958			40.007	52.654	-6.5	5.706E-01
35	42.292	51.169					-6.8	5.364E-01
36	43.382	50.487					-6.6	4.873E-01
37	44.478	49.781					-6.5	4.446E-01
38							-6.5	4.057E-01
39	46.678	48.365			45.602	49.052	-6.3	3.685E-01
40	47.727	47.691			46.678	48.360	-5.7	3.361E-01
41	48.747	47.034			47.723	47.688	-5.8	3.152E-01
42	49.765	46.380					-5.8*	2.889E-01
43							-5.8*	2.576E-01
44	51.699	45.136			50.675	45.789	-5.8	2.263E-01
45	52.591	44.562					-5.7*	1.950E-01
46	53.486	43.987					-5.6*	1.570E-01
47	54.342	43.436			53.373	44.055	-5.4	1.206E-01
48	55.128	42.931			54.191	43.529	-5.2	9.038E-02
49					54.953	43.039	-4.6	5.782E-02
50					55.692	42.564	-4.1	3.601E-02
51	57.246	41.570			56.358	42.136	-3.3	1.889E-02
52	57.863	41.173			56.924	41.772	-3.5	1.031E-02

BIOGRAPHICAL NOTES

ANNETTE G. POSEN received her B.A. in physics from the University of Toronto in 1953. Since 1955 she has worked with Dr. McCrosky; on the Harvard Meteor Project until 1964, and at SAO from 1964 to the present.

DR. RICHARD McCROSKY holds joint Smithsonian-Harvard appointments as Astronomer, Smithsonian Astrophysical Observatory, and Research Associate, Harvard University. He is also Scientist-in-charge of the Smithsonian's optical meteor projects. His primary research specialties include photographic and spectral meteor studies.

Dr. McCrosky received his B.S. degree in physics from Harvard University in 1952, and his Ph.D. in astronomy from that university in 1956.

NOTICE

This series of Special Reports was instituted under the supervision of Dr. F. L. Whipple, Director of the Astrophysical Observatory of the Smithsonian Institution, shortly after the launching of the first artificial earth satellite on October 4, 1957. Contributions come from the Staff of the Observatory.

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