APPENDIX III.

REDUCTION TABLES

FOR

EQUATORIAL OBSERVATIONS,

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INTRODUCTION.

DIFFERENTIAL REFRACTION.

The formulæ here to be developed are for the purpose of constructing tables of differential refraction for micrometer observations made with an equatorial. Only three cases will be considered: first, when observations are made by directly measuring both differences in right ascension and differences in declination with the micrometer; second, when differences in right ascension are determined by transits; and, third, when observations are made by measuring position angles and distances. For the first case formulæ were derived by Prof. GEORGE C. COMSTOCK in Circular No. 7, of the International Astrophotographic Conference of July, 1900. By methods suggested by his paper it is proposed to develop formulæ similar to those of Professor COMSTOCK, but with certain changes designed to increase their accuracy and convenience for the purpose in view.

Take any point c in the immediate vicinity of the measured objects, as the origin of a system of rectangular coordinates, in which the axis of y is the vertical circle through c , the positive direction being upward, or toward the zenith, z . Let the positive direction of the axis of x lie in position angle 90° from the zenith. Now the action of the micrometer is such that measurements in x and y are necessarily made along their respective axes; but we may here consider that these measurements are made along arcs of great circles perpendicular to the two axes, since the convergence of these circles is always negligible within the range of micrometer measurements.

With the above system let us determine the effect of refraction upon the measurements between any two stars. Let the following angular quantities be expressed in circular measure:

- x'_o, x' = the horizontal distance, true and apparent, between the two stars.
 y'_o, y' = the vertical distance, true and apparent, between the two stars.
 ξ_1, ξ_2 and z_1, z_2 = the true and apparent zenith distances of the stars.
 ξ, z = their mean zenith distance, true and apparent.
 r_1, r_2 = their refractions.

where $r_1 = k_1 \tan z_1;$
 $r_2 = k_2 \tan z_2.$

and $k = \alpha \beta^\lambda \gamma^\lambda$ of BESSEL'S refraction formulæ.

Note.—After this appendix was ready for the press Assistant Astronomer H. L. RICE verified the mathematical formulæ, and made many valuable suggestions in the direction of simplicity which have been incorporated in the text.

The difference between x'_0 and x' is equal to the difference between the x components of r_1 and r_2 . Then, the abscissas being small arcs, we obtain

$$x'_0 = x' + x' \frac{k_1 + k_2}{2} + x'_m (k_1 - k_2).$$

In the last term of this equation x'_m is the mean apparent abscissa of the two stars and k_1 must refer to the star whose abscissa is algebraically the greater of the two. This term disappears if we take the origin midway between the stars; but it is inappreciable in any case, as the value of k changes very slowly with the zenith distance. Thus we may write

$$x'_0 = x' + kx'. \quad (1)$$

In this equation k depends on the apparent zenith distance z .

Similarly the difference between y'_0 and y' is equal to the difference between the y components of r_1 and r_2 . Thus if r_1 refers to the star having the lesser zenith distance, we have

$$y'_0 = y' + r_2 \cos A_2 \sec x_2 - r_1 \cos A_1 \sec x_1,$$

where A_1, A_2 are the azimuths of the two stars with reference to the origin c , and x_1, x_2 their abscissas. Since these are small arcs we may substitute unity for the cosines and secants in the above equation, which becomes

$$y'_0 = y' + r_2 - r_1.$$

A further substitution of $y' \frac{dr}{dz}$ for $r_2 - r_1$ gives

$$y'_0 = y' + y' \frac{dr}{dz}.$$

Differentiating the expression for refraction, namely,

$$r = k \tan z,$$

we obtain

$$\frac{dr}{dz} = k + k \tan^2 z + \frac{dk}{dz} \tan z,$$

which gives the rate of change of the refraction in terms of the apparent zenith distance. In micrometer observations it is generally the true zenith distance that is known; therefore it is necessary to make a transformation by introducing a new quantity κ which shall depend on the true zenith distance. See BESSEL's *Astronomische Untersuchungen*, Bd. I, S. 160, or CHAUVENET's *Spherical and Practical Astronomy*, Vol. II, p. 453. Thus putting

$$\kappa \tan^2 \zeta = k \tan^2 z + \frac{dk}{dz} \tan z,$$

we have

$$y'_0 = y' + (k + \kappa \tan^2 \zeta) y', \quad (2)$$

where

$$\kappa = \alpha'' \beta'' \gamma'',$$

the notation being that of BESSEL. For convenience put

$$K = k + \kappa \tan^2 \zeta,$$

then (2) becomes

$$y'_0 = y' + Ky'. \quad (3)$$

Let us now suppose the origin c of the foregoing investigation to be the point midway between the true positions of the stars in question; and let c' designate the point midway between their apparent positions. Then the equations (1) and (3) may be regarded as expressing the relations between two systems of rectangular coordinates, true and apparent, having c and c' for their respective origins, and the vertical circle through c for their common axis of y . Now take two new rectangular systems, true and apparent, of which also c, c' are the origins, the axis of y being an hour circle in each case.

Let y_0, y = true and apparent differences in declination, measured along an hour circle, the positive direction being northward.

x_0, x = true and apparent differences in right ascension as measured by the micrometer, and not reduced to the equator. They are positive when measured in the direction of increasing right ascensions.

q, q' = parallactic angles of c and c' .

Between the two systems of coordinates which have their common origin at c we have the following relations:

$$\left. \begin{aligned} x_0 &= x'_0 \cos q + y'_0 \sin q, \\ y_0 &= y'_0 \cos q - x'_0 \sin q. \end{aligned} \right\} \quad (4)$$

Substituting in (4) the values of x'_0 and y'_0 given by (1) and (3), we get,

$$\left. \begin{aligned} x_0 &= x' (1+k) \cos q + y' (1+K) \sin q, \\ y_0 &= y' (1+K) \cos q - x' (1+k) \sin q. \end{aligned} \right\} \quad (5)$$

The relations between the two systems of coordinates which have the common origin c' are—

$$\left. \begin{aligned} x' &= x \cos q' - y \sin q', \\ y' &= y \cos q' + x \sin q'. \end{aligned} \right\}$$

Substituting these values in equation (5), we have

$$\left. \begin{aligned} x_0 &= x [\cos (q'-q) + K \sin q \sin q' + k \cos q \cos q'] \\ &\quad + y [K \sin q \cos q' - k \cos q \sin q' - \sin (q'-q)], \\ y_0 &= y [\cos (q'-q) + K \cos q \cos q' + k \sin q \sin q'] \\ &\quad + x [K \cos q \sin q' - k \sin q \cos q' + \sin (q'-q)]. \end{aligned} \right\} \quad (6)$$

These represent the relations between the two systems of rectangular coordinates, true and apparent, in which differences in right ascension and declination are directly measured with the micrometer.

Since the difference between the parallactic angles is small, we may put $\cos (q'-q) = 1$. Also, applying GAUSS'S Equations to the triangle of which the vertices are the pole, c , and c' , we have, approximately,

$$\sin (q'-q) = k' \tan \delta \tan \zeta \sin q,$$

in which, with BESSEL, we let $k' = \alpha' \beta' \gamma'$.

The value of k' depends on the true zenith distance and must be expressed in circular measure, and δ is the declination of the point c . Furthermore, in the coefficients of K and k we may put $q'=q$, the error involving only terms of the order of the square of the small quantities K and k . Making these substitutions, equations (6) become

$$\left. \begin{aligned} x_o &= x + x[(K-k) \sin^2 q + k] + y[(K-k) \sin q \cos q - k' \tan \zeta \tan \delta \sin q], \\ y_o &= y + y[(K-k) \cos^2 q + k] + x[(K-k) \sin q \cos q + k' \tan \zeta \tan \delta \sin q]. \end{aligned} \right\} \quad (7)$$

Now introduce the following auxiliary quantities:

N , n = the sides adjacent to and opposite the pole in the right spherical triangle of which the vertices are the zenith, the north pole of the heavens, and the foot of a great circle drawn from the zenith perpendicular to the hour circle through c .

Then we have

$$\begin{aligned} \tan N &= \cot \varphi \cos \tau, \\ \tan n &= \tan \tau \sin N, \\ \cos n &= \sin \varphi \sec N, \\ \cos \zeta &= \sin (N + \delta) \cos n. \end{aligned}$$

Also put

$$\begin{aligned} X &= \tan n \csc (N + \delta), \\ Y &= \cot (N + \delta). \end{aligned}$$

In these φ is the latitude of the place, and τ is the hour angle of the origin c . For the values of the sine and cosine of q we have

$$\begin{aligned} \sin q &= X \cot \zeta, \\ \cos q &= Y \cot \zeta. \end{aligned}$$

Substituting these expressions and also the value of K , found at the top of page F 7 in equation (7), we obtain

$$\left. \begin{aligned} x_o &= x + [\kappa X^2 + k]x + [\kappa XY - k'X \tan \delta]y, \\ y_o &= y + [\kappa Y^2 + k]y + [\kappa XY + k'X \tan \delta]x. \end{aligned} \right\} \quad (8)$$

The bracketed quantities in these formulæ are given in TABLE I for every degree in declination, from 70° north to 30° south, and for every 10^m in hour angle up to zenith distance, 75° . The quantities are there designated by letters, thus:

$$\left. \begin{aligned} M &= \kappa X^2 + k; & m &= \kappa XY - k'X \tan \delta; \\ W &= \kappa Y^2 + k; & w &= \kappa XY + k'X \tan \delta; \end{aligned} \right\} \quad (9)$$

so that (8) becomes

$$\left. \begin{aligned} x_o &= x + Mx + my, \\ y_o &= y + Wy + wx. \end{aligned} \right\} \quad (10)$$

The values of k and k' are nearly the same, and no appreciable error will be introduced if either one or the other is substituted throughout the formulæ. But as k' is sometimes multiplied by large numbers, and as it depends on the true zenith distance, we substitute k' rather than k in formulæ (8).

The state of the atmosphere assumed as a basis for the tables is temperature 50° Fahrenheit and barometric pressure 30 inches. The values of k' and κ might have been computed from BESSEL'S refraction tables, but it was thought more convenient to form new tables giving k' and κ for the assumed temperature and barometer, with the cosine of the true zenith distance as the argument. Thus the following were derived for use in the present case.

Log Cos ζ .	Log k' .	Log κ .	Cos ζ .	$10^5 k'$.
0.000	6.4511 ₀	6.4499 ₂	0.927	28.3
9.980	6.4511 ₁	6.4497 ₂	0.524	28.2
9.960	6.4510 ₁	6.4495 ₂	0.406	28.1
9.940	6.4509 ₁	6.4493 ₂	0.343	28.0
9.920	6.4508 ₀	6.4491 ₂	0.300	27.9
			0.270	27.8
9.900	6.4508 ₁	6.4489 ₂	0.247	27.7
9.880	6.4507 ₁	6.4487 ₃		27.6
9.860	6.4506 ₂	6.4484 ₄		
9.840	6.4504 ₁	6.4480 ₄		
9.820	6.4503 ₁	6.4476 ₃		
			Cos ζ .	$10^5 \kappa$.
9.800	6.4502 ₂	6.4473 ₄	0.909	28.2
9.780	6.4500 ₁	6.4469 ₅	0.687	28.1
9.760	6.4499 ₂	6.4464 ₆	0.575	28.0
9.740	6.4497 ₂	6.4458 ₆	0.512	27.9
9.720	6.4495 ₃	6.4452 ₇	0.459	27.8
			0.419	27.7
9.700	6.4492 ₂	6.4445 ₆	0.390	27.6
9.680	6.4490 ₃	6.4439 ₇	0.365	27.5
9.660	6.4487 ₃	6.4432 ₈	0.345	27.4
9.640	6.4484 ₃	6.4424 ₈	0.328	27.3
9.620	6.4481 ₃	6.4416 ₁₀	0.314	27.2
			0.301	27.1
9.600	6.4478 ₄	6.4406 ₁₁	0.288	27.0
9.580	6.4474 ₄	6.4395 ₁₂	0.277	26.9
9.560	6.4470 ₅	6.4383 ₁₂	0.267	26.8
9.540	6.4465 ₅	6.4371 ₁₄	0.257	26.7
9.520	6.4460 ₅	6.4357 ₁₆	0.248	26.6
			0.240	26.5
9.500	6.4455 ₆	6.4341 ₁₈		26.4
9.480	6.4449 ₆	6.4323 ₁₇		
9.460	6.4443 ₇	6.4306 ₁₉		
9.440	6.4436 ₈	6.4287 ₂₀		
9.420	6.4428 ₈	6.4267 ₂₀		
9.400	6.4420 ₉	6.4247 ₂₃		
9.380	6.4411 ₁	6.4224 ₂₃		

In forming TABLE I the quantities were computed in general at intervals of 2° in declination and 20^m of hour angle, though the intervals were increased at times to 4° and 40^m , and when it was thought advisable they were diminished to 1° and 10^m . The remaining quantities in the table were obtained by interpolation.

Natural numbers were used as long as three figures in the values of X , Y , and $\tan \delta$ would give sufficient accuracy in the results, the computations being carried to the sixth decimal place. Thus in a general way natural numbers were used up to zenith distances of 50° or 60° . At greater zenith distances the multiplications were performed by the use of four place logarithms.

In order to check the table thus formed about seventy-five sets of the four quantities were independently computed at points well scattered throughout the table, and finally the entire table was differenced in both declination and hour angle. While

no effort has been made to make the last digit exact, it is intended that the error shall in no case exceed one unit.

TABLES II, III, IV, V, and VI were checked in a similar manner.

When observations are made by transits each object is observed on the same hour circle, and therefore the corrections for refraction are the same as for two stars, directly measured, which have no difference in right ascension. Thus we have from (10), when x is zero,

$$\begin{aligned}\Delta x &= my, \\ \Delta y &= Wy.\end{aligned}$$

These are to be applied respectively to the observed interval of time, $\Delta\alpha$, between the passages of the stars, and the measured difference in declination, $\Delta\delta$. But since $\Delta\alpha$ is the equatorial interval between the stars, the correction my must be reduced to the equator. Accordingly, if $\Delta\alpha$ and $\Delta\delta$, are expressed in seconds of time and seconds of arc, respectively, we have the following formulæ for the correction of observations made by transits:

$$\begin{aligned}\Delta\alpha_0 &= \Delta\alpha + m'\Delta\delta, \\ \Delta\delta_0 &= \Delta\delta + W\Delta\delta,\end{aligned}\quad (11)$$

where

$$m' = \frac{m}{15} \sec \delta.$$

The values of m' and W are given in TABLE II.

To derive the formulæ for the case where observations are made by measuring position angle p and distance s , we differentiate the relations between p , s , x , and y . Then, substituting for Δx and Δy the values of $x_0 - x$, and $y_0 - y$ from equations (10) we obtain

$$\begin{aligned}\Delta p &= 57.3 \left[\frac{w+m}{2} \cos 2p - \frac{W-M}{2} \sin 2p - \frac{w-m}{2} \right], \\ \Delta s &= s \left[\frac{w+m}{2} \sin 2p + \frac{W-M}{2} \cos 2p + \frac{W+M}{2} \right],\end{aligned}\quad (12)$$

the numerical coefficient being introduced in order to give Δp in degrees.

Putting

$$h = \frac{w+m}{2} \sin 2p + \frac{W-M}{2} \cos 2p + \frac{W+M}{2}$$

we have

$$\begin{aligned}p_0 &= p + \Delta p, \\ s_0 &= s + hs,\end{aligned}$$

where p_0 and s_0 are the true values of the position angle and distance.

The values of Δp and h are given in TABLE III.

Equations (12) represent BESSEL'S formulæ before the substitution of κ for h , see *Astronomische Untersuchungen*, Bd. I, S. 162. They are very convenient for computing tables of refraction after the values of M , m , W , w , have been computed for TABLE I. When carried to the sixth decimal place there will usually be only three significant figures in the natural values of M , m , W , w ; and three figures are always sufficient in the sines and cosines of $2p$. Thus the formulæ in question are well suited to the use of natural numbers, and these were employed in computing the quantities given in TABLE III.

INSTRUMENTAL CONSTANTS.

Before investigating the effect of the instrumental constants in disturbing the orientation of the micrometer it may not be out of place to give a convenient method for determining them. Let the constants be defined as follows:

η =the distance of the instrumental pole westward from the true pole, measured along the six-hour circle.

ξ =the distance of the instrumental pole above the true pole, measured along the meridian.

i_i =the inclination of the axes. The angle between the polar axis produced northward and the declination axis produced through the telescope tube is $i_i + 90^\circ$. This is the observed angle as affected by the flexure of the declination axis.

c =the collimation. The angle between the optical axis of the telescope produced through the objective and the declination axis produced through the tube is $c + 90^\circ$.

ε =the maximum flexure of the declination axis, positive when the end joining the tube bends downward.

e =the maximum flexure of the telescope tube, positive when the objective end of the tube bends the more.

The collimation, flexure of the declination axis, and flexure of the tube may be determined from observations of equatorial stars. For the collimation we take several transits of an equatorial star, half with the telescope east of the pier, and half with the telescope west, reading the verniers of the hour circle after each transit. The thread over which the transits are taken must be carefully placed in the optical axis of the telescope. This may be done by starting the driving clock and reversing the micrometer a few times upon a star. The collimation so determined will be diminished by a variable component of the flexure of the declination axis. In order to determine the true collimation we make an observation near the meridian, and at large hour angle, say between four and five hours, both west and east. For the meridian observation, let

c_m =the collimation as diminished by the flexure of the declination axis.

θ_m^w, θ_m^e =the mean of the sidereal times of transit taken telescope west and telescope east of the pier, respectively.

τ_m^w, τ_m^e =the mean of the readings of the hour circle plus the index correction for telescope west and east, respectively.

For the observations made at hour angles west and east, the corresponding quantities will be indicated by the subscripts w and e , respectively. We then have

$$\left. \begin{aligned} c_m &= \frac{1}{2}(\theta_m^e - \theta_m^w) - \frac{1}{2}(\tau_m^e - \tau_m^w) - 0.0003 \times \frac{1}{2}(\theta_m^e - \theta_m^w), \\ c_w &= \frac{1}{2}(\theta_w^e - \theta_w^w) - \frac{1}{2}(\tau_w^e - \tau_w^w) - M \frac{1}{2}(\theta_w^e - \theta_w^w), \\ c_e &= \frac{1}{2}(\theta_e^e - \theta_e^w) - \frac{1}{2}(\tau_e^e - \tau_e^w) - M \frac{1}{2}(\theta_e^e - \theta_e^w). \end{aligned} \right\} \quad (13)$$

The last term in each equation is a correction for refraction, the value of M being given in TABLE I. When observing for c_m we may wish to eliminate the differential effect of the flexure of the telescope tube. This may be accomplished by taking the transits, two with the telescope on one side of the pier, four on the opposite side, then two more in the first position. When observing for c_w and c_e , it is not necessary to reverse the telescope more than once, as the flexure of the tube may be sufficiently

eliminated by making the observation at east hour angle in the reverse order from that at west hour angle. Thus, if at τ_w we observe in the order, telescope east, telescope west, at τ_e we would observe in the order, telescope west, telescope east. This is the natural procedure in manipulating the instrument.

The true collimation c , and the flexure of the declination axis, ε , may then be determined from the following relations:

$$\left. \begin{aligned} c - \varepsilon \cos \varphi \cos \tau_m &= c_m, \\ c - \varepsilon \cos \varphi \cos \tau_w &= c_w, \\ c - \varepsilon \cos \varphi \cos \tau_e &= c_e. \end{aligned} \right\} \quad (14)$$

In these equations

$$\begin{aligned} \tau_m &= \tau_m^E + \tau_m^W, \\ \tau_w &= \tau_w^E + \tau_w^W, \\ \tau_e &= \tau_e^E + \tau_e^W. \end{aligned}$$

For the flexure of the tube put

$$\begin{aligned} \theta_w &= \theta_w^E + \theta_w^W, \\ \theta_e &= \theta_e^E + \theta_e^W. \end{aligned}$$

Then we have

$$e \cos \varphi = \frac{\theta_w - \theta_e + \tau_e - \tau_w + \alpha_e - \alpha_w - r_w - r_e}{\sin \tau_w - \sin \tau_e} \quad (15)$$

Here α_e and α_w are the apparent right ascensions of the stars observed at east and west hour angles, respectively. Stars of the seventh or eighth magnitude within fifteen minutes of the equator may be picked up as required and their right ascensions obtained from the Nicolajew A. G. Catalogue. r_w and r_e are the refractions in right ascension at τ_w and τ_e , and are both assumed as positive. The values of M and r for use in equations (13) and (15) may be taken from the following table:

τ_w		M	r	τ_e	
h	m		s	h	m
4	0	0.0011	6.69	20	0
4	10	0.0013	7.41	19	50
4	20	0.0015	8.25	19	40
4	30	0.0019	9.27	19	30
4	40	0.0023	10.52	19	20
4	50	0.0029	12.09	19	10
5	0	0.0041	14.13	19	0

These quantities were computed for latitude $38^\circ 55' 14''$, thermometer 50° Fahrenheit, and barometer 30 inches. To correct a given refraction for other temperatures subtract one per cent for each 5° above 50° , and for other pressures add one per cent for each three-tenths of an inch above 30 inches.

The quantities ξ , η , and $i_i - c$ may be determined from observations on circumpolar stars. α and λ Ursæ Minoris are about six hours apart in right ascension, thus, one is near culmination when the other is near elongation. We may determine η from the star near culmination and ξ from the star near elongation.

Before making the observations we should determine the reading of the micrometer scale when the movable wire is in the optical axis of the telescope, or, better, place the fixed wire in the optical axis so that coincidence is the required reading. To determine η , clamp the telescope at one side of the pier so that the

declination axis will lie in the plane of the six-hour circle. Also clamp the micrometer in a horizontal position. Then point the telescope at the star near culmination. As the star moves slowly across the field set the movable wire immediately ahead of it and note the time of transit; also note the setting of the thread. Two or more such transits should be taken to serve as a check on each other. Then reverse the telescope to the opposite side of the pier and repeat the operation. In setting the telescope for these observations allowance should be made for the bending of the declination axis. For the 26-inch equatorial at the United States Naval Observatory the bending in hour angle is $\varepsilon \cos \varphi = 95'' = 6^s +$. Therefore, when the telescope is east of the pier the hour circle is set 6^s past 0^h , and when it is west, 6^s less than 0^h in order to bring the declination axis into the plane of the meridian. To determine ξ , the star near elongation is observed in a similar manner, with the telescope above the pier and clamped so that the declination axis will lie in the plane of the meridian. The micrometer should remain clamped in position angle and not be disturbed during the observations.

For the reduction of these observations let us define the following quantities:

α_c, ρ_c = the apparent right ascension and polar distance of the star at culmination.

α_e, ρ_e = the apparent right ascension and polar distance of the star at elongation.

r = the refraction at the pole.

φ = the latitude of the observatory.

R_o = the reading of the micrometer scale when the movable wire is in coincidence with the optical axis of the telescope.

R = the mean of the settings of the movable wire in a given position of the telescope.

θ = the mean of the transits, or the sidereal time corresponding to R .

$\tau = \theta - \alpha$.

The position of the telescope may be shown by indices E, W, U (east, west, up), and the position of the micrometer by subscripts E, W, U, D (east, west, up, down). These may refer to the positive direction of the micrometer scale, or to the micrometer head if it is opposite the zero of the scale. Thus R_W^E is the mean of the scale readings taken when the telescope is east of the pier, and the micrometer clamped so the scale increases westward, or head west.

The quantities η, ξ , and $i_1 - c$ are now determined by the following equations: When the micrometer is clamped head outward from the pier,

$$\left. \begin{aligned} \eta &= +\rho_c \sin \frac{1}{2} (\tau_W^W + \tau_E^E) + \frac{1}{2} (R_W^W - R_E^E), \\ i_1 - c &= \pm \rho_c \sin \frac{1}{2} (\tau_W^W - \tau_E^E) + \frac{1}{2} (R_W^W + R_E^E) - R_o, \\ \xi &= +\rho_e \cos \tau_U^U + R_o - R_D^U - (i_1 - c) + e \cos \varphi + r. \end{aligned} \right\} \quad (16)$$

When the micrometer is clamped head inward next the pier,

$$\left. \begin{aligned} \eta &= +\rho_c \sin \frac{1}{2} (\tau_E^W + \tau_W^E) + \frac{1}{2} (R_W^E - R_E^W), \\ i_1 - c &= \pm \rho_c \sin \frac{1}{2} (\tau_E^W - \tau_W^E) - \frac{1}{2} (R_W^E + R_E^W) + R_o, \\ \xi &= +\rho_e \cos \tau_E^U + R_o - R_D^U - (i_1 - c) + e \cos \varphi + r. \end{aligned} \right\} \quad (17)$$

If we wish to eliminate R_o by reversing the micrometer during each observation we have for the reduction,

$$\left. \begin{aligned} \eta &= +\rho_c \sin \frac{1}{4} (\tau_W^W + \tau_W^E + \tau_E^E + \tau_E^W) + \frac{1}{4} (R_W^W + R_W^E - R_E^E - R_E^W), \\ i_1 - c &= \pm \rho_c \sin \frac{1}{4} (\tau_W^W - \tau_W^E - \tau_E^E + \tau_E^W) + \frac{1}{4} (R_W^W - R_W^E + R_E^E - R_E^W), \\ \xi &= +\rho_e \cos \frac{1}{2} (\tau_U^U + \tau_D^U) + \frac{1}{2} (R_U^U - R_D^U) - (i_1 - c) + e \cos \varphi + r. \end{aligned} \right\} \quad (18)$$

In these equations the double sign is to be taken positive when the star is observed at upper culmination, and negative when at lower culmination.

In addition to the constants found above there is still another influence at work to disturb the orientation of the micrometer. This is the torsion of the telescope tube. It is probably caused by the distortion of the central casting of the tube under the weight of the telescope, its circular section becoming deformed. The effect is the same as if the declination axis were less rigid in a plane perpendicular to the tube than in one parallel to it. But for convenience let us assume the torsion is produced by the weight of a finder attached to the eye end of the telescope opposite the declination axis; also as a test of symmetry, suppose a second finder attached 90° in position angle from the declination axis.

Put

μ = the maximum torsion produced by the first finder,
 μ' = the maximum torsion produced by the second finder.

The values of μ and μ' can be determined by means of levels placed on the micrometer box. Two small spirit levels may be secured to the micrometer box in such a way that their respective axes will be parallel and perpendicular to the telescope tube. Then when the level bubbles are in the center of their scales let

p_e^D = the reading of the position circle when the telescope is beneath the pier and the object-glass east.

p_w^U = the reading of the position circle when the telescope is above the pier and the object-glass west.

p_e^U = the reading of the position circle when the telescope is above the pier and the object-glass east.

p_w^D = the reading of the position circle when the telescope is beneath the pier and the object-glass west.

The telescope is set each time with the declination axis as nearly as possible in the instrumental meridian, and the tube as nearly as possible in the instrumental equator. In this position let

f = the component of the torsion due to the first finder, or $f = \mu \sin \varphi'$,

f' = the component of the torsion due to the second finder, or $f' = \mu' \cos \varphi'$,

φ' = the altitude of the instrumental pole.

To determine these quantities we have

$$\left. \begin{aligned} f &= \frac{1}{4} (p_e^U + p_w^D - p_e^D - p_w^U) - i_z, \\ f' &= \frac{1}{4} (p_e^U + p_w^U - p_e^D - p_w^D), \\ \varphi' &= \frac{1}{4} (p_e^U - p_w^U + p_e^D - p_w^D) + 90^\circ, \\ \xi &= \varphi' - \varphi. \end{aligned} \right\} \quad (19)$$

Thus incidentally we have an independent determination of ξ .

Having found the constants we proceed to investigate their effect in disturbing the orientation of the micrometer. Assume the micrometer of a perfect equatorial to be correctly oriented. Then if the constants are introduced they will cause the micrometer to deviate from the true parallel.

Put

λ = the deviation of the micrometer from its true parallel due to the instrumental constants,
 positive when the vertical wire strikes to the east of the true pole of the heavens.

The formula for λ may be obtained by considering each constant separately. Let s be a star at which the telescope is pointed, and p the pole of the heavens. Then for the effect of η and ξ we take the component of each perpendicular to sp and find the angle subtended at s ,

$$\lambda = +\xi \sec \delta \sin \tau - \eta \sec \delta \cos \tau.$$

The deviation produced by the flexure of the tube is the difference of the parallactic angles at the extremities of the arc through which the line of sight is displaced by the bending of the tube,

$$\lambda = -e \cos \varphi \tan \delta \sin \tau.$$

For the inclination of the axes we construct a right triangle upon sp as an hypotenuse, and side i_1 adjacent to the pole, measured eastward when the telescope is east of the pier. The deviation is the angle at s .

$$\lambda = +i_1 \sec \delta.$$

This term becomes negative when the telescope is west of the pier.

For the collimation we construct a right triangle upon sp as an hypotenuse, and side c adjacent s , measured eastward when the telescope is east of the pier. The deviation is the complement of the angle at s ,

$$\lambda = -c \tan \delta.$$

This term becomes positive when the telescope is west of the pier.

The flexure of the declination axis need not be considered, as its component in right ascension does not affect the parallel, and its component in declination is included in i_1 .

The torsion of the tube we assume proportional to the component of gravity taken perpendicular to the plane of the tube and declination axis. When the telescope is east of the pier we have,

$$\lambda = +f \cos \delta - f \cot \varphi \sin \delta \cos \tau.$$

The signs are changed in this expression when the telescope is west of the pier.

If f' is appreciable we have

$$\lambda = \pm f' \sin \tau.$$

The sum of the above expressions for λ gives the deviation produced by the constants when it is assumed that the micrometer was oriented with the perfect equatorial before the introduction of the constants. Now with the actual instrument in which all the constants are present, let

p_m^e = the setting of the position circle determined by the trail of an equatorial star along one of the micrometer wires when the telescope is east of the pier and near the meridian.

If we take p_m^e as a fundamental parallel the value of λ is zero for this position of the telescope. But taking the sum of the above equations when δ and τ are zero,

$$\lambda_0 = i_1 + f - \eta.$$

Therefore, subtracting this quantity from the sum of the preceding expressions for λ , we have the deviation from the true parallel when the position circle of the micrometer is set at the reading p_m^e .

Putting λ_1 for the sum of the terms, the signs of which are independent of the position of the telescope, and λ_2 for the sum of the terms which change sign when the telescope is reversed in position, we have,

$$\left. \begin{aligned} \lambda_1 &= \eta - i_1 - f - \eta \sec \delta \cos \tau + (\xi \sec \delta - e \cos \varphi \tan \delta) \sin \tau, \\ \lambda_2 &= i_1 \sec \delta - c \tan \delta + f \cos \delta - f \cot \varphi \sin \delta \cos \tau \end{aligned} \right\} \quad (20)$$

and

$$\left. \begin{aligned} \lambda^E &= \lambda_1 + \lambda_2, \text{ for telescope east of pier,} \\ \lambda^W &= \lambda_1 - \lambda_2, \text{ for telescope west of pier.} \end{aligned} \right\} \quad (21)$$

These designations for the position of the telescope are not sufficiently general. But if we call the direction of increasing right ascensions, east, for any given part of the sky at which the telescope is pointed, they become general.

The value of p_m^e may be deduced from observations made in any part of the sky, or either position of the telescope, by adding λ and a correction for refraction to the observed parallel.

When observations are made by measuring rectangular coordinates with the micrometer the position circle is set at p_m^e and $90^\circ + p_m^e$. Then we have

$$\left. \begin{aligned} \Delta a_o &= \Delta a + \Delta \delta \sin \lambda, \\ \Delta \delta_o &= \Delta \delta - \Delta a \sin \lambda, \end{aligned} \right\} \quad (22)$$

in which Δa_o , Δa , are true and observed differences in right ascension not reduced to the equator, $\Delta \delta_o$, $\Delta \delta$, are true and observed differences in declination. For this reduction the values of the natural sine of λ in units of the fifth decimal place are given in TABLE IV. In this case the value of p_m^e should be the mean of parallel determinations made on the fixed and movable transverse wires of the micrometer.

When differences in right ascension are determined by transits the formulæ become,

$$\left. \begin{aligned} \Delta \alpha_o &= \Delta \alpha + \frac{1}{15} \Delta \delta \sin \lambda \sec \delta, \\ \Delta \delta_o &= \Delta \delta. \end{aligned} \right\} \quad (23)$$

For this reduction the values of $\frac{1}{15} \sin \lambda \sec \delta$ are given in TABLE V. In this case the quantity p_m^e should be the mean of parallel determinations made on each of the longitudinal wires over which transits are taken. The position circle of the micrometer is set at the reading $p_m^e - 90^\circ$.

When observing position angles the parallel determinations should be made on the same wire used in measuring the angles. The index correction of the position circle will be $90^\circ - p_m^e$. For the reduction of the observations we have,

$$p_o = p + \lambda - p_m^e + 90^\circ, \quad (24)$$

in which p_o and p are the true and observed position angles. The values of λ in thousandths of a degree are given in TABLE VI.

Within the last two years the constants of the 26-inch equatorial were determined from time to time by the methods given above, and the following results were obtained:

Date.	Temp.	η	$i_1 - c$	ξ	c		$\varepsilon \cos \varphi$	$e \cos \varphi$ from Stars.	e from Coll's.
					From Stars.	From Coll's.			
1902	°	"	"	"	"	"	"	"	"
July 13	69 ^F	+116	-54	-71	....	....	...	..	...
27	76	+113	-55	-73	....	....	...	..	...
Aug. 3	80	+115	-51	-73	....	....	...	..	...
11	70	+115	-55	-75	....	....	...	..	...
28	67	+121	-55	-74	....	....	...	..	...
Sept. 23	70	+115	-52	-73	....	+113	...	..	...
Oct. 22	51	+116	-52	-73	+114	....	+94	..	...
27	64	....	...	...	....	+113	...	..	+10
Nov. 5	56	....	...	...	....	....	...	..	+4
28	35	+116	-52	-68	+107	+108	...	..	...
1903									
Jan. 9	27	....	...	...	+113	+119	+96	+2	-2
9	20	+114	-57	-67	....	....	...	..	...
Feb. 17	14	+111	-56	-63	+115	....	+95	+4	...
Mar. 13	55	+114	-50	-70	....	....	...	..	...
Apr. 21	48	+113	-55	-65	+113	....	+98	+6	...
June 21	70	+113	-53	-74	+114	....	+96	+5	...
Oct. 13	60	+114	-55	-72	....	....	...	..	...
1904									
Feb. 3	24	+113	-57	-61	....	...	...	..	...
May 7	65	+115	-53	-72	+111	....	+92	+7	...

The collimators used in the determinations of c and e were attached to the dome in a vertical position and sighted into each other by means of mirrors. They were very unstable, the images of the wires moving as much as ten or fifteen seconds vertically and half as much horizontally during an observation.

The torsion of the telescope tube was determined from levels placed on the micrometer box, with the following results:

Date.	Temp.	f	f'	ξ
1903	°	°	°	"
May 5	..	+0.021	+0.001	-97
26	64 ^F	+0.023	-0.001	-73
June 25	70	+0.017	-0.004	-81
26	68	+0.016	0.000	-80
July 13	74	+0.022	+0.004	-94
13	75	+0.013	+0.002	-69
24	72	+0.014	0.000	-78
24	72	+0.017	+0.002	-79
1904				
May 8	65	+0.020	+0.003	-81
8	65	+0.015	+0.002	-74

For these determinations the levels were fastened to the micrometer box with lead wire. The position circle was read by careful estimation to half hundredths of a degree, the verniers reading only to fiftieths.

It may be seen from these results that the constants of the 26-inch equatorial are very stable, and mean values may be used throughout the year. Thus we adopt the following constants:

$$\begin{array}{rcl} & " & \text{Radians.} \\ \eta & = +115 & = +0.000558 \\ \xi & = -72 & = -0.000349 \\ \epsilon & = +113 & = +0.000548 \\ i_r & = +59 & = +0.000286 \\ e \cos \varphi & = +5 & = +0.000024 \end{array}$$

$$f = +0.018 = +0.000314$$

TABLE IV was computed by substituting these values of the constants, expressed in radians, in equations (20) and (21). The computation was carried out by natural numbers, three figures being usually sufficient to express the quantities to the sixth decimal place. TABLE V was computed by multiplying the quantities in TABLE IV by $1/15 \sec \delta$. TABLE VI was computed by multiplying the quantities in TABLE IV by 0.573.

In view of the evidently stable condition of the constants it is probable that these tables will remain applicable to the reduction of observations for a considerable period of time.

USE OF TABLES.

Differential refraction.—TABLE I is for the correction of observations when differences in right ascension and declination are directly measured with the micrometer. Formulæ for the reductions are given at the foot of each page. In these, Δa_0 , Δa , expressed in seconds of arc, are true and observed differences in right ascension as measured by the micrometer, and not reduced to the equator. They are positive when measured eastward from the origin. $\Delta \delta_0$, $\Delta \delta$ are true and observed differences in declination; positive when measured north from the origin.

M , m , W , w are coefficients, the expressions for which are given in equations (9). The natural values of these coefficients in units of the fifth decimal are given in the table. All four quantities are printed together for each argument in hour angle and declination, the two upper ones being M and m , the two lower W and w . This arrangement is shown to the left at the top of the page.

The signs of M and W are always positive. The sign of w is positive for positive hour angles and negative for negative hour angles. The sign of m is more involved. Draw the arc of a great circle from the zenith perpendicular to any given hour circle and take the middle point of that portion of the hour circle included between the foot of this perpendicular and the equator. Upon the locus of this middle point the value of m is zero. South of this locus the sign of m is positive for positive hour angles and negative for negative hour angles. North of this locus the sign of m is negative for positive hour angles, and positive for negative hour angles.

The effect of temperature may be allowed for by numerically diminishing a given correction for refraction by one per cent for each 5° Fahrenheit above 50° . And the effect of the barometric pressure may be allowed for by numerically increasing a given correction one per cent for each three-tenths of an inch above 30 inches. The

tables were computed for temperature 50° Fahrenheit and barometric pressure 30 inches.

Example: Asteroid (371) Bohemia, October 26, 1903, Washington Mean Time 9^h 24^m 10^s is south following B. D. +25° 438.

$\Delta a = +464.''06$	$\Delta \delta = -555.''49$	$T = 41^\circ F.$
$M = + 0.00042$	$W = + 0.00033$	
$m = + 0.00001$	$w = - 0.00017$	$\delta = +26^\circ 1'$
$M\Delta a = + 0.195$	$W\Delta \delta = - 0.183$	
$m\Delta \delta = - 0.006$	$w\Delta a = - 0.079$	$\tau = -2^h 56^m$
Sum = + 0.189	Sum = - 0.262	
Temp. Corr. = + 0.003	Temp. Corr. = - 0.005	
$\Delta a_0 - \Delta a = + 0.''19$	$\Delta \delta_0 - \Delta \delta = - 0.''27$	

In case rectangular coordinates are measured with the micrometer set at position angles p , and $p+90^\circ$, the measurements may be freed from differential refraction by the formulæ

$$\Delta a_0 = \Delta a + \left[\frac{M+W}{2} + \frac{M-W}{2} \cos 2p - \frac{m+w}{2} \sin 2p \right] \Delta a + \left[\frac{M-W}{2} \sin 2p + \frac{m+w}{2} \cos 2p + \frac{m-w}{2} \right] \Delta d,$$

$$\Delta d_0 = \Delta d + \left[\frac{M+W}{2} - \frac{M-W}{2} \cos 2p + \frac{m+w}{2} \sin 2p \right] \Delta d + \left[\frac{M-W}{2} \sin 2p + \frac{m+w}{2} \cos 2p - \frac{m-w}{2} \right] \Delta a,$$

in which Δd_0 , Δd , are true and observed distances measured along the axis which lies at position angle p , and Δa_0 , Δa , are true and observed distances measured along the axis which lies at position angle $p+90^\circ$.

TABLE II is for the correction of observations when differences in right ascension are determined by transits, and differences in declination are measured with the micrometer. The use of this table is similar to that of TABLE I. It should be noted, however, that the product $m'\Delta\delta$ gives the correction to $\Delta\alpha$ in seconds of time when $\Delta\delta$ is given in seconds of arc—i. e.,

$$m' = \frac{m}{15} \sec \delta.$$

TABLE III is for the correction of observations when position angle and distance are measured. The correction Δp is to be added algebraically to an observed position angle to produce the true position angle. The signs of Δp are given for positive hour angles; they are to be changed for negative hour angles. The sign of h is always positive, and the correction $\Delta s = hs$ must always be added to the apparent distance to produce the true distance. Both Δp and h are printed together for each argument in hour angle and position angle. In entering the table with the measured position angle the left-hand column is to be used when the hour angle is positive, and the right-hand column when the hour angle is negative.

The rate of change of the tabular quantities for a change of 1° in declination is printed at intervals throughout the table. The sign of this change is not printed; but, for purposes of interpolation, it may be noted that both Δp and h increase numerically as one proceeds southward. Exceptions to this rule occur only when the change is small enough to be neglected.

Thermometer and barometer corrections for both position angle and distance may be made in exactly the same way as explained for TABLE I.

In case observations are made outside the limits of this table, differential refraction may be computed by formulæ (12) in which the quantities M , m , W , w are taken from TABLE I.

Instrumental corrections for the 26-inch equatorial.—These corrections have to do with the orientation of the micrometer. The parallel or reading of the position circle p_m^e , that would be determined by the trail of an equatorial star near the meridian when the telescope is east of the pier, is taken as fundamental. Then, when observing by rectangular coordinates or by transits, the position circle is always set at p_m^e , or $p_m^e \pm 90^\circ$, for any part of the sky or either position of the telescope. The instrumental constants will usually cause this orientation of the micrometer to deviate slightly from the correct parallel.

TABLE IV gives the natural sine of the deviation, λ , produced by the constants. The sign of λ is positive when the vertical wire strikes to the east of true north, or the horizontal wire strikes to the south of true east. Formulae for the reduction of measurements made by rectangular coordinates are given at the foot of the table. In these Δa_o , Δa , are the true and observed distances in right ascension as measured by the micrometer and not reduced to the equator; $\Delta \delta_o$, $\Delta \delta$, are the true and observed distances in declination. If the position circle is set at the reading p , differing by a small angle from p_m^e , the quantity $\sin(p - p_m^e)$ must be added to $\sin \lambda$ when computing corrections to the measured coordinates.

TABLE V is for the correction of observations when differences in right ascension are determined by transits. The tabular quantity, L , is such that when $\Delta \delta$ is given in seconds of arc the product $L\Delta \delta$ gives the correction to Δa in seconds of time, i. e.,

$$L = \frac{1}{15} \sin \lambda \sec \delta.$$

TABLE VI gives the values of λ in thousandths of a degree. At the foot of the table is given a formula for correcting measured position angles. In this p_o and p are the true and observed position angles. The quantity $90^\circ - p_m^e$ is the index correction of the position circle when parallel determinations are made on the same wire with which position angles are measured.

Parallel determinations.—These may be made in any part of the sky or either position of the telescope. For their reduction we have,

$$p_m^e = p_i + \Delta p_i + \lambda.$$

in which p_i is the observed parallel, Δp_i is a correction for differential refraction from TABLE III, and λ is taken from TABLE VI, or computed from TABLE IV ($\lambda = 57''.3 \sin \lambda$).

When rectangular coordinates are to be measured with the micrometer the value of p_m^e should be the mean of determinations made on both the fixed and movable transverse wires. But on account of the shortness of these wires it is difficult to make a good determination of the parallel by the usual method of trailing stars. A method used by Dr. HERMANN STRUVE in connection with his observations of Eros is described in the Königsberg Observations, vol. 41, p. 4. The micrometer is set approximately at the correct parallel and the reading of the position circle noted.

Then, with the driving clock of the telescope running, a star is placed in the following side of the field and bisected several times with the movable wire. The clock-work is then stopped or slowed down until the star drifts to the preceding side of the field, when several more bisections are made. From the difference of the bisections and the distance between the two positions of the star we obtain the sine of the small angle by which the setting of the position circle is to be corrected. However, if the fixed and movable wires are not exactly parallel a further correction must be made for half their mutual inclination.

TABLES
OF
DIFFERENTIAL REFRACTION
FOR LATITUDE
 $+ 38^{\circ} 55' 14''$.

F 23

TABLE I.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ	O^h						I^h											
	δ		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	60^m			
	M	W	m	w														
0°	28	0	28	-4	28	-8	29	-11	29	-15	29	-19	30	-22	30	-26	31	-30
$+70$	38	0	38	2	38	5	38	7	38	10	38	12	38	15	37	17	37	20
	28	0	28	-4	28	-7	29	-10	29	-14	29	-17	30	-21	30	-24	31	-28
69	38	0	38	2	38	4	38	7	37	9	37	11	37	14	37	16	36	18
	28	0	28	-3	28	-7	29	-10	29	-13	29	-16	30	-20	30	-23	31	-26
68	37	0	37	2	37	4	37	6	37	8	36	11	36	13	36	15	36	17
	28	0	28	-3	28	-6	29	-9	29	-12	29	-16	30	-19	30	-22	31	-25
67	36	0	36	2	36	4	36	6	36	8	36	10	36	12	35	14	35	16
	28	0	28	-3	28	-6	29	-9	29	-12	29	-15	30	-18	30	-21	31	-24
+66	36	0	36	2	35	4	35	6	35	8	35	9	35	11	35	13	34	15
	28	0	28	-3	28	-6	29	-8	29	-11	29	-14	30	-17	30	-19	31	-22
+65	35	0	35	2	35	4	35	5	35	7	35	9	34	11	34	13	34	14
	28	0	28	-3	28	-5	29	-8	29	-10	29	-13	30	-16	30	-18	31	-21
64	34	0	34	2	34	3	34	5	34	7	34	8	34	10	34	12	34	14
	28	0	28	-2	28	-5	29	-8	29	-10	29	-12	30	-15	30	-18	31	-20
63	34	0	34	2	34	3	34	5	34	6	34	8	33	10	33	11	33	13
	28	0	28	-2	28	-5	29	-7	29	-10	29	-12	30	-14	30	-17	31	-19
62	33	0	33	2	33	3	33	5	33	6	33	8	33	9	33	11	32	12
	28	0	28	-2	28	-5	29	-7	29	-9	29	-11	30	-14	30	-16	31	-18
+61	33	0	33	1	33	3	33	4	33	6	33	7	32	9	32	10	32	12
	28	0	28	-2	28	-4	29	-6	29	-8	29	-11	30	-13	30	-15	31	-17
+60	32	0	32	1	32	3	32	4	32	5	32	7	32	8	32	10	32	11
	28	0	28	-2	28	-4	29	-6	29	-8	29	-10	30	-12	30	-14	31	-16
59	32	0	32	1	32	3	32	4	32	5	32	7	32	8	31	10	31	11
	28	0	28	-2	28	-4	29	-6	29	-8	29	-10	30	-12	30	-14	31	-16
58	32	0	32	1	32	2	31	4	31	5	31	6	31	8	31	9	31	11
	28	0	28	-2	28	-4	29	-6	29	-8	29	-10	30	-12	30	-14	31	-16
57	31	0	31	1	31	2	31	4	31	5	31	6	31	7	31	9	31	10
	28	0	28	-2	28	-4	29	-5	29	-7	29	-9	30	-11	30	-13	31	-15
+56	31	0	31	1	31	2	31	4	31	5	31	6	31	7	30	8	30	10
	28	0	28	-2	28	-4	29	-5	29	-7	29	-9	30	-11	30	-12	31	-14
+55	31	0	31	1	31	2	30	3	30	5	30	6	30	7	30	8	30	10
	28	0	28	-2	28	-3	29	-5	29	-6	29	-8	30	-10	30	-11	31	-13
54	30	0	30	1	30	2	30	3	30	4	30	6	30	7	30	8	30	9
	28	0	28	-2	28	-3	29	-5	29	-6	29	-8	30	-9	30	-11	31	-12
53	30	0	30	1	30	2	30	3	30	4	30	5	30	7	30	8	30	9
	28	0	28	-2	28	-3	29	-4	29	-6	29	-7	30	-9	30	-10	31	-11
52	30	0	30	1	30	2	30	3	30	4	30	5	30	6	30	7	29	9
	28	0	28	-1	28	-3	29	-4	29	-6	29	-7	30	-8	30	-10	31	-11
+51	30	0	30	1	30	2	30	3	30	4	29	5	29	6	29	7	29	8
	28	0	28	-1	28	-3	29	-4	29	-5	29	-7	30	-8	30	-9	31	-10
+50	29	0	29	1	29	2	29	3	29	4	29	5	29	6	29	7	29	8
	28	0	28	-1	28	-3	29	-4	29	-5	29	-7	30	-8	30	-9	31	-10
	29	0	29	1	29	2	29	3	29	4	29	5	29	6	29	7	29	9

The tabular quantities are expressed in units of the fifth decimal.

M and W are always positive.

m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta,$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

δ	τ	II ^h												III ^h														
		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		60 ^m		
		<i>M</i> <i>W</i>	<i>m</i> <i>w</i>																									
+70		34 36	-44 30	36 35	-47 33	37 35	-50 35	38 34	-54 38	39 34	-57 41	41 33	-60 44	42 33	-62 47	44 32	-65 50	45 31	-68 53	47 31	-71 56	49 30	-73 60	51 30	-75 63	53 29	-78 67	
69		34 35	-41 28	35 34	-44 31	37 34	-47 33	38 34	-50 36	39 33	-53 39	41 33	-56 41	42 32	-59 44	44 32	-61 47	45 31	-64 50	47 31	-66 53	49 30	-69 57	51 30	-71 60	52 29	-73 63	
68		34 34	-39 26	35 34	-42 29	36 34	-45 31	38 33	-47 34	39 33	-50 37	40 32	-53 39	42 32	-56 42	43 31	-58 45	45 31	-61 48	47 30	-63 51	49 30	-65 54	50 29	-67 57	52 29	-69 60	
67		34 34	-37 25	35 33	-39 27	36 33	-42 30	38 33	-45 32	39 32	-47 35	40 32	-50 37	42 31	-53 40	43 31	-55 42	45 30	-57 45	47 30	-59 48	48 30	-61 51	50 29	-63 54	52 29	-65 57	
+66		34 33	-35 24	35 33	-37 26	36 32	-40 28	38 32	-42 30	39 32	-45 33	40 31	-47 35	42 31	-50 38	43 30	-52 40	45 30	-54 43	46 30	-56 46	48 29	-58 49	50 29	-60 52	52 29	-62 55	
+65		34 33	-33 22	35 32	-35 24	36 32	-38 26	37 32	-40 29	39 31	-42 31	40 31	-45 34	41 31	-47 36	43 30	-49 38	45 30	-51 41	46 30	-53 44	48 29	-55 47	50 29	-57 50	52 28	-59 53	
64		34 32	-31 21	35 32	-33 23	36 32	-36 25	37 31	-38 28	39 31	-40 30	40 31	-43 32	41 30	-45 34	43 30	-47 37	44 30	-49 39	46 29	-51 42	48 29	-52 45	50 29	-54 48	52 28	-56 50	
63		34 32	-29 20	35 32	-32 22	36 31	-34 24	37 31	-36 26	38 30	-38 28	40 30	-40 31	41 30	-42 33	43 30	-44 35	44 29	-46 38	46 29	-48 40	48 29	-50 43	50 29	-51 46	52 28	-53 48	
62		34 32	-28 19	35 31	-30 21	36 31	-32 23	37 31	-34 25	38 30	-36 27	40 30	-38 29	41 30	-40 31	43 30	-42 34	44 29	-44 36	46 29	-46 39	48 29	-47 41	50 28	-49 44	52 28	-50 47	
+61		34 31	-27 19	35 31	-29 20	36 31	-31 22	37 30	-33 24	38 30	-34 26	40 30	-36 28	41 30	-38 30	43 29	-40 32	44 29	-42 35	46 29	-43 37	48 29	-45 40	50 28	-46 42	52 28	-48 45	
+60		34 31	-25 18	35 31	-27 20	36 30	-29 21	37 30	-31 23	38 30	-32 25	40 30	-34 27	41 29	-36 29	42 29	-38 31	44 29	-40 34	46 29	-41 36	48 29	-43 38	50 28	-44 41	52 28	-45 44	
59		34 31	-24 17	35 30	-26 19	36 30	-28 20	37 30	-30 22	38 30	-31 24	39 29	-33 26	41 29	-35 28	42 29	-36 30	44 29	-38 32	46 29	-39 35	48 28	-41 37	50 28	-42 40	52 28	-43 43	
58		34 30	-23 16	35 30	-25 18	36 30	-27 20	37 30	-28 21	38 29	-30 23	39 29	-32 25	41 29	-33 27	42 29	-35 29	44 29	-36 31	46 28	-38 34	48 28	-39 36	50 28	-40 39	52 28	-41 41	
57		34 30	-22 16	35 30	-24 18	36 30	-25 19	37 29	-27 21	38 29	-29 22	39 29	-30 24	41 29	-32 26	42 29	-33 28	44 29	-34 30	46 28	-36 33	48 28	-37 35	50 28	-38 38	52 28	-39 40	
+56		34 30	-21 15	34 30	-23 17	35 29	-24 18	37 29	-26 20	38 29	-27 22	39 29	-29 24	41 29	-30 25	42 28	-31 27	44 28	-33 30	46 28	-34 32	48 28	-35 34	50 28	-36 37	52 28	-37 39	
+55		33 30	-20 15	34 29	-22 16	35 29	-23 18	37 29	-24 20	38 29	-26 21	39 29	-27 23	41 29	-29 25	42 28	-30 27	44 28	-31 29	46 28	-32 31	48 28	-33 33	50 28	-34 36	52 28	-35 38	
54		33 29	-19 14	34 29	-21 16	35 29	-22 17	37 29	-23 19	38 29	-25 20	39 29	-26 22	40 28	-27 24	42 28	-29 26	44 28	-30 28	46 28	-31 30	48 28	-32 32	50 28	-33 35	52 28	-34 37	
53		33 29	-18 14	34 29	-20 15	35 29	-21 17	37 29	-22 18	38 29	-24 20	39 29	-25 22	40 28	-26 23	42 28	-27 25	44 28	-28 27	46 28	-29 29	48 28	-30 32	50 28	-31 34	52 28	-32 37	
52		33 29	-17 14	34 29	-19 15	35 29	-20 16	36 29	-21 18	38 28	-22 19	39 28	-24 21	40 28	-25 23	42 28	-26 25	44 28	-27 27	46 28	-28 29	48 28	-29 31	50 28	-30 33	52 28	-30 36	
+51		33 29	-16 13	34 29	-18 14	35 29	-19 16	36 28	-20 17	38 28	-21 19	39 28	-23 21	40 28	-24 22	42 28	-25 24	44 28	-26 26	46 28	-26 28	48 28	-27 30	50 29	-28 33	52 29	-29 35	
+50		33 29	-16 13	34 29	-17 14	35 28	-18 16	36 28	-19 17	38 28	-20 18	39 28	-22 20	40 28	-23 22	42 28	-24 24	44 28	-25 26	46 28	-25 28	48 28	-26 30	50 29	-27 32	52 29	-27 35	

The tabular quantities are expressed in units of the fifth decimal.
M and *W* are always positive.
m and *w* change signs for negative hour angles.

$$\Delta\alpha_0 = \Delta\alpha + M\Delta\alpha + m\Delta\delta.$$

$$\Delta\delta_0 = \Delta\delta + W\Delta\delta + w\Delta\alpha.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

δ	τ	IV ^h						V ^h							
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
		M W m w													
+70		53 — 78 29 67	54 — 80 29 70	56 — 81 29 74	58 — 83 28 78	60 — 85 28 82	62 — 86 28 86	65 — 87 28 90	67 — 88 28 94	69 — 88 29 98	71 — 88 29 102	73 — 88 30 106	75 — 88 31 111	76 — 88 32 116	
69		52 — 73 29 63	54 — 75 29 67	56 — 76 29 70	58 — 78 28 74	60 — 80 28 78	62 — 81 28 82	65 — 82 28 86	67 — 83 29 90	69 — 83 29 94	71 — 83 30 98	74 — 83 30 102	76 — 83 31 107	77 — 83 32 112	
68		52 — 69 29 60	54 — 71 29 64	56 — 72 28 67	58 — 74 28 71	60 — 76 28 75	62 — 76 28 78	65 — 77 28 82	67 — 78 29 86	69 — 78 29 90	72 — 78 30 95	74 — 78 31 99	76 — 78 32 104	78 — 78 33 109	
67		52 — 65 29 57	54 — 67 28 61	56 — 68 28 64	58 — 70 28 68	60 — 72 28 72	63 — 72 28 75	65 — 73 28 79	67 — 74 29 83	69 — 74 29 87	72 — 74 30 92	74 — 74 31 96	77 — 74 32 101	79 — 73 33 106	
+66		52 — 62 29 55	54 — 63 28 58	56 — 65 28 61	58 — 66 28 65	60 — 68 28 69	63 — 69 28 72	65 — 69 28 76	67 — 70 29 80	70 — 70 29 84	72 — 70 30 89	75 — 70 31 93	77 — 70 32 98	79 — 69 34 103	
+65		52 — 59 28 53	54 — 60 28 56	56 — 61 28 59	58 — 63 28 63	60 — 64 28 66	63 — 65 28 70	65 — 65 29 74	68 — 66 29 78	70 — 66 30 82	73 — 66 31 87	75 — 66 32 91	78 — 66 33 96	80 — 65 34 101	
64		52 — 56 28 50	54 — 57 28 53	56 — 58 28 56	58 — 59 28 60	60 — 60 28 64	63 — 61 28 68	65 — 62 29 71	68 — 62 29 75	70 — 62 30 80	73 — 62 31 84	76 — 62 32 89	79 — 62 33 94	81 — 61 35 99	
63		52 — 53 28 48	54 — 54 28 51	56 — 55 28 54	58 — 56 28 58	61 — 57 28 62	63 — 58 29 66	65 — 59 29 69	68 — 59 30 73	71 — 59 30 78	74 — 59 31 82	77 — 59 32 87	79 — 58 34 92	82 — 57 36 97	
62		52 — 50 28 47	54 — 51 28 50	56 — 52 28 53	58 — 53 28 56	61 — 54 28 60	63 — 55 29 64	66 — 56 29 67	68 — 56 30 71	71 — 56 31 76	74 — 55 32 80	77 — 55 33 85	80 — 54 34 90	83 — 53 36 95	
+61		52 — 48 28 45	54 — 49 28 48	56 — 50 28 51	58 — 51 28 55	61 — 52 28 58	63 — 52 29 62	66 — 53 29 66	69 — 53 30 70	72 — 53 31 74	75 — 52 32 79	78 — 52 33 84	81 — 51 35 89	84 — 50 37 94	
+60		52 — 45 28 44	54 — 46 28 47	56 — 47 28 50	58 — 48 28 53	61 — 49 28 56	64 — 50 29 60	66 — 50 29 64	69 — 50 30 68	72 — 50 31 72	75 — 49 32 77	79 — 49 34 82	82 — 48 36 87	85 — 47 38 93	
59		52 — 43 28 43	54 — 44 28 46	56 — 45 28 49	58 — 46 29 52	61 — 47 29 55	64 — 47 29 59	67 — 47 30 63	70 — 47 31 67	73 — 47 32 71	76 — 46 33 76	79 — 46 34 81	83 — 45 36 86	86 — 44 38 92	
58		52 — 41 28 41	54 — 42 28 44	56 — 43 28 47	58 — 43 29 50	61 — 44 29 54	64 — 44 29 58	67 — 44 30 62	70 — 44 31 66	73 — 44 32 70	77 — 44 33 75	80 — 43 35 80	84 — 42 37 86	88 — 41 39 92	
57		52 — 39 28 40	54 — 40 28 43	56 — 41 28 46	59 — 41 29 49	61 — 42 29 53	64 — 42 30 57	67 — 42 30 61	71 — 42 31 65	74 — 42 32 69	78 — 41 34 74	81 — 40 36 79	85 — 39 38 85	89 — 37 40 91	
+56		52 — 37 28 39	54 — 38 28 42	56 — 39 28 45	59 — 39 29 48	62 — 40 29 52	65 — 40 30 56	68 — 40 31 60	71 — 40 32 64	74 — 39 33 68	78 — 38 34 73	82 — 37 36 79	86 — 36 38 85	90 — 34 41 91	
+55		52 — 35 28 38	54 — 36 28 41	56 — 37 29 44	59 — 37 29 47	62 — 38 29 51	65 — 38 30 55	68 — 38 31 59	72 — 38 32 63	75 — 37 33 67	79 — 36 35 72	83 — 35 37 78	88 — 33 39 84	92 — 31 42 90	
54		52 — 34 28 37	54 — 34 28 40	56 — 35 29 43	59 — 35 29 46	62 — 36 30 50	65 — 36 30 54	68 — 36 31 58	72 — 36 32 62	76 — 35 34 67	80 — 34 36 72	85 — 33 38 78	89 — 31 40 84	93 — 28 43 91	
53		52 — 32 28 37	54 — 32 29 39	57 — 33 29 42	60 — 33 29 46	62 — 34 30 49	66 — 34 31 53	69 — 33 32 57	73 — 33 33 62	76 — 32 34 67	81 — 31 36 72	86 — 30 38 78	90 — 28 41 84	95 — 25 44 91	
52		52 — 30 28 36	54 — 31 29 39	57 — 31 29 42	60 — 31 30 45	63 — 32 30 48	66 — 32 31 52	70 — 31 32 56	73 — 31 33 61	77 — 30 35 66	82 — 29 37 72	87 — 27 39 78	92 — 25 42 84	97 — 22 45 91	
+51		52 — 29 29 35	54 — 29 29 38	57 — 29 29 41	60 — 30 30 44	63 — 30 30 48	66 — 30 31 52	70 — 29 32 56	74 — 28 34 61	78 — 27 36 66	83 — 26 38 71	88 — 24 40 77	93 — 22 43 84	99 — 19 47 92	
+50		52 — 27 29 35	54 — 27 29 37	57 — 28 29 40	60 — 28 30 44	64 — 28 31 47	67 — 28 32 51	71 — 27 33 56	75 — 26 34 60	79 — 25 36 65	84 — 24 38 71	89 — 22 41 77	94 — 19 44 84	101 — 16 48 92	

The tabular quantities are expressed in units of the fifth decimal.
 M and W are always positive.
 m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ	δ	VI ^h						VII ^h						
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m
		M W	m w											
	0	76 — 88 32 116	78 — 88 33 120	80 — 87 35 125	81 — 86 37 129	83 — 84 39 133	84 — 82 42 137	85 — 80 45 141	86 — 77 49 146	88 — 75 53 151	88 — 72 57 155	89 — 68 62 158	88 — 66 67 162	88 — 62 73 165
	+70	77 — 83 32 112	79 — 82 34 116	81 — 81 36 121	82 — 80 38 126	84 — 78 40 130	85 — 76 43 134	87 — 74 46 139	88 — 71 50 144	90 — 69 54 149	91 — 66 59 154	91 — 62 64 158	91 — 59 70 162	91 — 55 76 165
	69	78 — 78 33 109	80 — 77 34 113	82 — 76 36 118	83 — 75 39 123	85 — 73 41 128	87 — 71 44 132	89 — 69 48 137	90 — 66 52 142	92 — 63 56 147	93 — 60 61 152	94 — 56 67 157	94 — 53 73 161	94 — 49 80 165
	68	79 — 73 33 106	81 — 72 35 110	83 — 71 37 115	85 — 70 39 120	87 — 68 42 125	89 — 66 45 131	91 — 64 49 136	93 — 61 53 141	94 — 58 58 146	95 — 54 63 152	96 — 51 70 157	97 — 47 77 162	97 — 42 84 166
	67	79 — 69 34 103	82 — 68 36 108	84 — 67 38 113	87 — 65 40 118	89 — 63 43 123	91 — 61 47 129	93 — 59 51 135	95 — 56 55 140	97 — 52 60 146	98 — 49 66 151	99 — 45 73 157	100 — 41 80 163	101 — 36 88 168
	+66	80 — 65 34 101	83 — 64 36 106	86 — 62 38 111	88 — 60 41 116	90 — 58 44 122	93 — 56 48 128	95 — 54 52 134	97 — 51 57 140	99 — 47 62 146	101 — 43 68 152	102 — 39 76 158	104 — 35 84 164	105 — 30 92 170
	+65	81 — 61 35 99	84 — 60 37 104	87 — 58 39 109	89 — 56 42 115	92 — 54 45 121	95 — 52 49 127	97 — 49 54 133	100 — 46 59 140	102 — 42 65 146	104 — 38 71 153	106 — 34 79 160	107 — 29 88 166	109 — 24 97 173
	64	82 — 57 36 97	85 — 56 38 102	88 — 54 40 107	91 — 52 43 113	94 — 50 47 120	97 — 47 51 126	100 — 44 55 133	102 — 41 61 140	105 — 37 67 147	107 — 33 74 154	109 — 28 83 162	111 — 23 93 169	113 — 17 103 177
	63	83 — 53 36 95	86 — 52 38 100	89 — 50 41 106	92 — 48 44 112	96 — 46 48 119	99 — 43 52 126	102 — 40 57 133	105 — 36 63 141	108 — 32 70 148	111 — 27 78 156	114 — 22 87 164	116 — 16 97 173	118 — 10 109 181
	62	84 — 50 37 94	87 — 48 39 100	91 — 46 42 106	94 — 44 46 112	98 — 42 50 119	101 — 39 54 126	105 — 35 59 133	108 — 31 66 141	112 — 27 73 149	115 — 21 82 158	118 — 16 92 167	121 — 10 103 177	124 — 2 116 186
	+61	85 — 47 38 93	89 — 45 40 99	92 — 43 43 105	96 — 40 47 112	100 — 38 51 119	104 — 34 56 126	108 — 30 62 134	112 — 26 69 143	116 — 21 77 151	119 — 16 86 161	123 — 10 97 171	127 — 3 109 181	130 + 5 123 192
	+60	86 — 44 38 92	90 — 42 41 98	94 — 40 44 105	98 — 37 48 112	102 — 34 53 119	107 — 30 58 127	111 — 26 64 136	115 — 21 72 145	120 — 16 80 154	124 — 10 90 164	128 — 3 102 175	133 + 5 115 186	137 + 13 131 198
	59	88 — 41 39 92	92 — 39 42 98	96 — 36 46 105	100 — 33 50 112	105 — 30 54 120	109 — 26 60 128	114 — 21 67 137	119 — 16 75 147	124 — 10 84 157	129 — 4 95 168	134 + 4 108 180	139 + 13 123 193	144 + 22 140 206
	58	89 — 37 40 91	93 — 35 43 98	98 — 32 47 105	103 — 29 51 112	107 — 26 56 120	112 — 22 62 129	118 — 17 70 139	123 — 11 78 150	129 — 4 88 161	135 + 3 100 173	140 + 11 114 186	146 + 21 131 200	152 + 32 150 215
	57	90 — 34 41 91	95 — 32 44 98	100 — 29 48 105	105 — 26 53 112	110 — 22 58 121	116 — 17 65 131	122 — 12 73 141	128 — 6 82 153	134 + 2 93 165	141 + 10 106 178	147 + 19 122 192	154 + 30 140 208	162 + 42 161 226
	+56	92 — 31 42 90	97 — 29 45 97	102 — 26 49 105	107 — 22 54 113	113 — 18 60 123	119 — 13 67 133	126 — 7 76 144	133 — 0 86 156	140 + 8 98 169	147 + 17 112 184	155 + 27 129 200	164 + 39 150 218	172 + 53 174 238
	+55	93 — 28 43 91	99 — 26 47 98	104 — 23 51 106	110 — 19 56 115	116 — 14 62 125	123 — 8 70 135	131 — 2 79 147	138 + 6 90 160	146 + 15 104 174	155 + 25 119 191	164 + 36 138 209	174 + 50 161 229	184 + 66 189 251
	54	95 — 25 44 91	101 — 22 48 98	107 — 19 52 107	113 — 15 58 116	120 — 10 65 127	128 — 3 73 138	136 + 4 83 151	144 + 12 95 165	153 + 22 110 180	163 + 33 127 198	174 + 47 148 218	185 + 62 174 241	198 + 80 205 266
	53	97 — 22 45 91	103 — 19 49 99	109 — 16 54 108	116 — 11 60 117	124 — 5 67 129	132 + 2 76 141	141 + 9 87 155	150 + 19 101 170	161 + 30 117 188	172 + 43 136 207	184 + 58 159 229	198 + 76 188 255	213 + 97 224 284
	52	99 — 19 47 92	105 — 16 51 100	112 — 12 56 109	120 — 7 63 119	128 — 1 70 131	137 + 7 80 144	147 + 15 92 159	157 + 26 107 176	169 + 38 124 196	182 + 53 145 217	197 + 70 172 242	213 + 91 204 271	
	+51	101 — 16 48 92	108 — 13 52 100	115 — 8 58 110	123 — 2 65 121	132 + 4 74 134	142 + 12 84 148	153 + 21 97 164	165 + 33 113 183	179 + 47 132 204	194 + 64 156 228	211 + 84 186 256	230 + 108 223 289	

The tabular quantities are expressed in units of the fifth decimal.
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 m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ δ	O ^h						I ^h																			
	O ^m		I ^m	20 ^m	30 ^m	40 ^m	50 ^m	O ^m	I ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m												
	M W m w																									
+50	28 29	0 0	28 29	-1 1	28 29	-3 2	29 29	-4 3	29 29	-5 4	29 29	-7 5	30 29	-8 6	30 29	-9 7	30 29	-11 8	31 29	-12 9	32 29	-13 10	33 29	-14 12	33 29	-16 13
49	28 29	0 0	28 29	-1 1	28 29	-3 2	29 29	-4 3	29 29	-5 4	29 29	-6 5	30 29	-8 6	30 29	-9 7	30 29	-10 8	31 29	-12 9	32 29	-13 10	33 29	-14 11	33 29	-15 13
48	28 29	0 0	28 29	-1 1	28 29	-3 2	29 29	-4 3	29 29	-5 4	29 29	-6 5	30 29	-7 6	30 29	-9 7	30 29	-10 8	31 29	-11 9	32 29	-12 10	33 29	-13 11	33 29	-14 12
47	28 29	0 0	28 29	-1 1	28 29	-2 2	29 29	-3 3	29 29	-5 4	29 29	-6 5	30 29	-7 6	30 29	-8 7	30 29	-9 8	31 29	-10 9	32 29	-11 10	33 29	-12 11	33 28	-14 12
+46	28 29	0 0	28 29	-1 1	28 29	-2 2	29 29	-3 3	29 29	-4 4	29 29	-6 4	30 29	-7 5	30 29	-8 6	30 28	-9 7	31 28	-10 8	32 28	-11 10	33 28	-12 11	33 28	-13 12
+45	28 29	0 0	28 29	-1 1	28 29	-2 2	29 29	-3 3	29 29	-4 3	29 29	-5 4	30 29	-6 5	30 28	-7 6	30 28	-8 7	31 28	-9 8	32 28	-10 9	33 28	-11 10	33 28	-12 12
44	28 29	0 0	28 29	-1 1	28 29	-2 2	29 29	-3 2	29 29	-4 3	29 28	-5 4	30 28	-6 5	30 28	-7 6	30 28	-8 7	31 28	-9 8	32 28	-10 9	33 28	-11 10	33 28	-12 11
43	28 28	0 0	28 28	-1 1	28 28	-2 2	29 28	-3 2	29 28	-4 3	29 28	-5 4	30 28	-6 5	30 28	-7 6	30 28	-8 7	31 28	-9 8	32 28	-9 9	33 28	-10 10	33 28	-11 11
42	28 28	0 0	28 28	-1 1	28 28	-2 2	29 28	-3 2	29 28	-4 3	29 28	-5 4	30 28	-6 5	30 28	-6 6	30 28	-7 7	31 28	-8 8	32 28	-9 9	33 28	-10 10	33 28	-10 11
+41	28 28	0 0	28 28	-1 1	28 28	-2 2	29 28	-3 2	29 28	-4 3	29 28	-4 4	30 28	-5 5	30 28	-6 6	30 28	-7 7	31 28	-8 8	32 28	-9 9	33 28	-9 10	33 28	-10 11
+40	28 28	0 0	28 28	-1 1	28 28	-2 2	29 28	-2 2	29 28	-3 3	29 28	-4 4	30 28	-5 5	30 28	-6 6	30 28	-6 7	31 28	-7 8	32 28	-8 9	33 28	-9 10	33 28	-9 11
39	28 28	0 0	28 28	-1 1	28 28	-2 2	29 28	-2 2	29 28	-3 3	29 28	-4 4	30 28	-5 5	30 28	-5 6	30 28	-6 7	31 28	-7 8	32 28	-8 9	33 28	-8 10	33 28	-9 11
38	28 28	0 0	28 28	-1 1	28 28	-1 2	29 28	-2 2	29 28	-3 3	29 28	-4 4	30 28	-4 5	30 28	-5 6	30 28	-6 6	31 28	-6 7	32 28	-7 8	33 28	-8 9	33 28	-8 10
37	28 28	0 0	28 28	-1 1	28 28	-1 2	29 28	-2 2	29 28	-3 3	29 28	-3 4	30 28	-4 5	30 28	-5 6	30 28	-5 6	31 28	-6 7	32 28	-7 8	33 29	-7 9	33 29	-8 10
+36	28 28	0 0	28 28	-1 1	28 28	-1 2	29 28	-2 2	29 28	-3 3	29 28	-3 4	30 28	-4 5	30 28	-4 5	30 29	-5 6	31 29	-6 7	32 29	-6 8	33 29	-7 9	33 29	-7 10
+35	28 28	0 0	28 28	-1 1	28 28	-1 2	29 28	-2 2	29 28	-2 3	29 28	-3 4	30 28	-4 5	30 29	-4 5	30 29	-5 6	31 29	-5 7	32 29	-6 8	33 29	-6 9	33 29	-7 10
34	28 28	0 0	28 28	0 1	28 28	-1 2	29 28	-2 2	29 28	-2 3	29 29	-3 4	30 29	-3 4	30 29	-4 5	30 29	-4 6	31 29	-5 7	32 29	-5 8	33 29	-6 9	34 29	-6 10
33	28 29	0 0	28 29	0 1	28 29	-1 2	29 29	-2 2	29 29	-2 3	29 29	-3 4	30 29	-3 4	30 29	-3 5	30 29	-4 6	31 29	-4 7	32 29	-5 8	33 29	-5 9	34 29	-6 10
32	28 29	0 0	28 29	0 1	28 29	-1 2	29 29	-1 2	29 29	-2 3	29 29	-2 4	30 29	-3 4	30 29	-3 5	30 29	-4 6	31 29	-4 7	32 29	-4 8	33 29	-5 9	34 29	-5 10
+31	28 29	0 0	28 29	0 1	28 29	-1 2	29 29	-1 2	29 29	-2 3	29 29	-2 4	30 29	-3 4	30 29	-3 5	30 29	-3 6	31 29	-4 7	32 29	-4 8	33 29	-4 9	34 30	-5 10
+30	28 29	0 0	28 29	0 1	28 29	-1 2	29 29	-1 2	29 29	-2 3	29 29	-2 4	30 29	-2 4	30 29	-3 5	30 29	-3 6	31 29	-3 7	32 29	-4 8	33 30	-4 9	34 30	-4 10

The tabular quantities are expressed in units of the fifth decimal.
 M and W are always positive.
 m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

δ	τ	II ^h												III ^h														
		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		60 ^m		
		<i>M</i> <i>W</i>	<i>m</i> <i>w</i>																									
+50		33 29	-16 13	34 29	-17 14	35 28	-18 16	36 28	-19 17	38 28	-20 18	39 28	-22 20	40 28	-23 22	42 28	-24 24	44 28	-25 26	46 28	-25 28	48 28	-26 30	50 29	-27 32	52 29	-27 35	
49		33 29	-15 13	34 29	-16 14	35 28	-17 15	36 28	-19 17	38 28	-20 18	39 28	-20 20	40 28	-22 21	42 28	-22 23	44 28	-23 25	46 28	-24 27	48 29	-25 29	50 29	-25 32	52 29	-26 34	
48		33 29	-14 12	34 28	-16 13	35 28	-17 15	36 28	-18 16	38 28	-19 18	39 28	-19 19	40 28	-20 21	42 28	-21 23	44 28	-22 25	46 28	-23 27	48 29	-23 29	50 29	-24 31	52 29	-25 34	
47		33 28	-14 12	34 28	-15 13	35 28	-16 15	36 28	-17 16	38 28	-18 17	39 28	-18 19	40 28	-19 20	42 28	-20 22	44 28	-21 24	46 29	-21 26	48 29	-22 28	50 29	-22 31	52 29	-23 33	
+46		33 28	-13 12	34 28	-14 13	35 28	-15 14	36 28	-16 16	38 28	-17 17	39 28	-18 18	40 28	-18 20	42 28	-19 22	44 28	-20 24	46 29	-20 26	48 29	-21 28	50 29	-21 30	53 30	-22 33	
+45		33 28	-12 12	34 28	-13 13	35 28	-14 14	36 28	-15 15	38 28	-16 16	39 28	-17 18	40 28	-17 20	42 28	-18 22	44 29	-19 24	46 29	-19 26	48 29	-20 28	50 29	-20 30	53 30	-20 33	
44		33 28	-12 11	34 28	-13 13	35 28	-14 14	36 28	-14 15	38 28	-15 16	39 28	-16 18	40 28	-16 20	42 29	-17 21	44 29	-18 23	46 29	-18 25	48 29	-19 27	50 30	-19 30	53 30	-19 32	
43		33 28	-11 11	34 28	-12 12	35 28	-13 14	36 28	-13 15	38 28	-14 16	39 28	-15 18	40 29	-16 19	42 29	-16 21	44 29	-17 23	46 29	-17 25	48 30	-18 27	51 30	-18 29	53 30	-18 32	
42		33 28	-10 11	34 28	-11 12	35 28	-12 13	36 28	-13 15	38 28	-13 16	39 28	-14 18	40 29	-15 19	42 29	-15 21	44 29	-16 23	46 29	-16 25	48 30	-16 27	51 30	-16 29	54 31	-16 32	
+41		33 28	-10 11	34 28	-11 12	35 28	-11 13	36 28	-12 14	38 28	-13 16	39 29	-13 17	41 29	-14 19	42 29	-14 21	44 29	-15 23	46 30	-15 25	49 30	-15 27	51 30	-15 29	54 31	-15 32	
+40		33 28	-9 11	34 28	-10 12	35 29	-11 13	36 29	-11 14	38 29	-12 16	39 29	-12 17	41 29	-13 19	42 29	-13 20	44 29	-14 22	46 30	-14 24	49 30	-14 26	51 31	-14 29	54 31	-14 32	
39		33 28	-9 11	34 28	-10 12	35 29	-10 13	36 29	-11 14	38 29	-11 16	39 29	-12 17	41 29	-12 18	43 29	-12 20	45 30	-13 22	47 30	-13 24	49 30	-13 26	52 31	-13 29	54 31	-13 32	
38		33 28	-8 10	34 28	-9 12	35 29	-9 13	36 29	-10 14	38 29	-10 15	39 29	-11 17	41 29	-11 18	43 30	-12 20	45 30	-12 22	47 30	-12 24	49 31	-12 26	52 31	-12 29	55 32	-11 32	
37		33 29	-8 10	34 29	-8 11	35 29	-9 13	37 29	-9 14	38 29	-10 15	39 29	-10 17	41 29	-10 18	43 30	-11 20	45 30	-11 22	47 31	-11 24	49 31	-11 26	52 32	-10 29	55 32	-10 32	
+36		33 29	-7 10	34 29	-8 11	35 29	-8 12	37 29	-9 14	38 29	-9 15	39 29	-9 17	41 30	-10 18	43 30	-10 20	45 30	-10 22	47 31	-10 24	50 31	-10 26	52 32	-9 29	55 33	-9 32	
+35		33 29	-7 10	34 29	-7 11	36 29	-8 12	37 29	-8 14	38 29	-8 15	40 30	-8 17	41 30	-9 18	43 30	-9 20	45 31	-9 22	47 31	-9 24	50 32	-8 26	53 33	-8 29	56 33	-8 32	
34		34 29	-6 10	35 29	-7 11	36 29	-7 12	37 29	-7 14	38 30	-8 15	40 30	-8 16	41 30	-8 18	43 31	-8 20	45 31	-8 22	48 32	-8 24	50 32	-7 26	53 33	-7 29	56 34	-6 32	
33		34 29	-6 10	35 29	-6 11	36 29	-6 12	37 30	-7 14	38 30	-7 15	40 30	-7 16	41 30	-7 18	43 31	-7 20	45 31	-7 22	48 32	-7 24	51 33	-6 26	53 34	-6 29	57 35	-5 32	
32		34 29	-5 10	35 30	-6 11	36 30	-6 12	37 30	-6 14	38 30	-6 15	40 30	-6 16	42 31	-6 18	44 31	-6 20	46 32	-6 22	48 32	-6 24	51 33	-5 26	54 34	-5 29	57 35	-4 32	
+31		34 30	-5 10	35 30	-5 11	36 30	-5 12	37 30	-5 14	38 30	-6 15	40 31	-6 16	42 31	-6 18	44 32	-5 20	46 32	-5 22	48 33	-5 24	51 34	-4 26	54 35	-3 29	58 36	-2 32	
+30		34 30	-4 10	35 30	-4 11	36 30	-5 12	37 30	-5 14	38 31	-5 15	40 31	-5 16	42 32	-5 18	44 32	-4 20	46 33	-4 22	49 33	-4 24	52 34	-3 26	55 35	-2 29	58 36	-1 32	

The tabular quantities are expressed in units of the fifth decimal.
 M and W are always positive.
 m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

δ	τ	IV ^h						V ^h						
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m
		M W	m w											
+50		52 — 27 29 35	54 — 27 29 37	57 — 28 29 40	60 — 28 30 44	64 — 28 31 47	67 — 28 32 51	71 — 27 33 56	75 — 26 34 60	79 — 25 36 65	84 — 24 38 71	89 — 22 41 77	94 — 19 44 84	101 — 16 48 92
49		52 — 26 29 34	55 — 26 29 37	57 — 26 30 40	60 — 26 30 43	64 — 26 31 47	68 — 26 32 51	72 — 25 33 55	76 — 24 35 60	80 — 23 37 65	85 — 21 39 71	90 — 19 42 77	96 — 16 45 84	103 — 13 49 93
48		52 — 25 29 34	55 — 25 30 36	57 — 25 30 39	61 — 25 31 43	64 — 25 32 46	68 — 24 33 50	72 — 23 34 55	76 — 22 36 60	81 — 21 38 65	86 — 19 40 71	92 — 17 43 78	98 — 14 47 85	105 — 10 51 94
47		52 — 23 29 33	55 — 23 30 36	58 — 23 30 39	61 — 23 31 42	64 — 23 32 46	68 — 22 33 50	73 — 21 34 55	77 — 20 36 60	82 — 19 38 65	87 — 17 41 71	93 — 14 44 78	100 — 11 48 86	108 — 7 53 95
+46		53 — 22 30 33	55 — 22 30 36	58 — 22 30 39	61 — 21 31 42	65 — 21 32 46	69 — 20 33 50	73 — 19 35 55	78 — 18 37 60	83 — 17 39 65	89 — 15 42 71	95 — 12 45 78	102 — 8 49 87	110 — 4 54 96
+45		53 — 20 30 33	56 — 20 30 35	58 — 20 31 38	62 — 20 32 42	66 — 19 33 46	70 — 18 34 50	74 — 17 36 55	79 — 16 38 60	84 — 14 40 66	90 — 12 43 72	97 — 9 46 78	104 — 5 50 88	113 — 0 56 97
44		53 — 19 30 32	56 — 19 31 35	59 — 19 31 38	62 — 18 32 42	66 — 18 33 46	71 — 17 34 50	75 — 16 36 55	80 — 14 38 60	86 — 12 41 66	92 — 9 44 73	99 — 6 48 81	107 — 2 52 89	116 + 3 58 99
43		53 — 18 30 32	56 — 18 31 35	59 — 17 32 38	63 — 17 33 42	67 — 16 34 46	71 — 15 35 50	76 — 14 37 55	81 — 12 39 60	87 — 10 42 66	93 — 7 45 74	102 — 3 49 82	110 + 1 54 90	120 + 7 60 101
42		54 — 16 31 32	57 — 16 31 35	60 — 16 32 38	63 — 15 33 42	67 — 14 34 46	72 — 13 36 50	77 — 12 38 55	82 — 10 40 61	88 — 7 43 67	95 — 4 46 74	104 — 0 50 83	113 + 4 56 92	123 + 10 63 103
+41		54 — 15 31 32	57 — 15 32 35	60 — 14 33 38	64 — 14 34 42	68 — 13 35 46	73 — 12 36 50	78 — 10 38 55	84 — 8 41 61	90 — 5 44 67	97 — 2 47 75	106 + 2 52 84	116 + 7 58 94	127 + 14 65 106
+40		54 — 14 31 32	57 — 13 32 35	60 — 13 33 38	64 — 12 34 42	68 — 11 35 46	74 — 10 37 51	79 — 8 39 56	85 — 6 42 62	92 — 3 45 68	99 + 1 49 76	108 + 5 54 86	119 + 11 60 96	131 + 18 67 109
39		54 — 13 31 32	58 — 12 32 35	61 — 12 33 38	65 — 11 35 42	69 — 10 36 46	75 — 8 38 51	80 — 6 40 56	86 — 4 43 62	94 — 1 46 69	102 + 3 50 77	111 + 8 56 87	122 + 15 62 98	135 + 22 70 112
38		55 — 11 32 32	58 — 11 33 35	62 — 10 34 38	66 — 9 35 42	70 — 8 37 46	76 — 6 39 51	81 — 4 41 57	88 — 1 44 63	96 + 2 48 70	104 + 6 52 79	114 + 12 58 89	125 + 19 64 101	139 + 27 73 115
37		55 — 10 32 32	58 — 10 33 35	62 — 9 34 38	66 — 8 36 42	71 — 6 38 47	77 — 4 40 52	83 — 2 42 58	90 + 1 45 64	98 + 4 49 71	106 + 9 54 80	117 + 15 60 91	129 + 23 67 103	144 + 32 76 119
+36		55 — 9 33 32	59 — 8 34 35	63 — 7 35 38	67 — 6 36 42	72 — 4 38 47	78 — 2 40 52	84 — 0 43 58	92 + 3 46 65	100 + 7 50 72	109 + 12 56 82	121 + 18 62 93	134 + 27 70 106	150 + 37 80 123
+35		56 — 8 33 32	60 — 7 34 35	64 — 6 35 38	68 — 4 37 42	73 — 2 39 47	79 — 0 41 53	85 + 2 44 59	93 + 6 48 66	102 + 10 52 74	112 + 15 58 84	125 + 22 64 96	139 + 31 73 110	156 + 42 84 127
34		56 — 6 34 32	60 — 5 35 35	64 — 4 36 39	69 — 3 38 43	74 — 1 40 48	80 + 1 42 53	87 + 4 45 59	95 + 8 49 67	104 + 13 54 75	115 + 19 60 86	129 + 26 67 98	144 + 36 76 113	163 + 48 88 132
33		57 — 5 35 32	61 — 4 36 35	65 — 3 37 39	69 — 2 39 43	75 — 0 41 48	81 + 3 44 54	88 + 7 47 60	97 + 11 51 68	106 + 16 56 77	118 + 22 62 88	133 + 31 70 101	149 + 41 80 117	170 + 54 93 137
32		57 — 4 35 32	61 — 3 36 36	65 — 1 38 40	70 — 0 40 44	76 + 2 42 49	83 + 5 45 55	90 + 9 48 61	99 + 13 52 69	109 + 19 58 79	122 + 26 65 90	137 + 35 73 104	155 + 46 84 121	178 + 61 98 143
+31		58 — 2 36 32	62 — 1 37 36	66 — 0 39 40	71 + 2 41 44	77 + 4 43 50	84 + 7 46 56	92 + 11 49 63	101 + 16 54 71	112 + 22 60 81	125 + 30 67 93	142 + 40 76 107	161 + 52 88 126	186 + 69 104 150
+30		58 — 1 36 32	62 — 0 38 36	67 + 1 40 40	72 + 3 42 45	78 + 6 44 50	85 + 10 47 57	94 + 14 51 64	104 + 19 56 73	115 + 25 62 83	129 + 34 70 96	147 + 45 79 112	168 + 59 92 132	195 + 77 110 157

The tabular quantities are expressed in units of the fifth decimal.
 M and W are always positive.
 m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

δ	τ	VI ^h						VII ^h						
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m
		M W	m w											
+50		101 — 16 48 92	108 — 13 52 100	115 — 8 58 110	123 — 2 65 121	132 + 4 74 134	142 + 12 84 148	153 + 21 97 164	165 + 33 113 183	179 + 47 132 204	194 + 64 156 228	211 + 84 186 256	230 + 108 223 289	
49		103 — 13 49 93	110 — 9 54 102	118 — 4 60 113	127 + 2 68 124	137 + 9 77 137	148 + 18 88 152	160 + 28 102 170	174 + 41 120 190	189 + 57 141 213	206 + 76 168 240	226 + 99 202 273		
48		105 — 10 51 94	113 — 6 56 103	122 — 0 63 115	131 + 6 71 127	142 + 14 80 141	154 + 24 93 157	168 + 36 108 176	183 + 50 128 198	200 + 68 152 224	220 + 90 182 255	244 + 116 220 291		
47		108 — 7 53 95	116 — 2 58 105	126 + 4 65 117	136 + 11 74 130	148 + 19 84 145	161 + 30 98 163	176 + 44 115 184	193 + 60 136 208	213 + 80 163 237	236 + 105 197 272			
+46		110 — 4 54 96	119 + 1 60 107	130 + 8 68 119	141 + 16 77 133	154 + 25 89 150	168 + 37 103 169	185 + 52 122 192	204 + 70 146 218	228 + 93 176 251	255 + 123 214 291			
+45		113 — 0 56 97	123 + 5 62 109	134 + 12 71 122	146 + 21 81 137	160 + 32 94 155	176 + 45 109 176	196 + 61 130 201	217 + 82 156 230	245 + 108 190 267				
44		116 + 3 58 99	126 + 9 65 111	138 + 17 74 125	152 + 27 85 141	167 + 39 99 160	186 + 53 116 183	208 + 72 139 211	232 + 95 168 244	264 + 126 207 286				
43		120 + 7 60 101	130 + 13 68 114	143 + 22 77 129	158 + 32 89 146	175 + 46 104 166	196 + 62 124 191	220 + 83 149 222	249 + 110 182 259					
42		123 + 10 63 103	135 + 18 71 117	149 + 27 81 133	165 + 38 94 151	184 + 53 110 173	206 + 72 132 200	234 + 96 160 235	269 + 127 197 277					
+41		127 + 14 65 106	140 + 22 74 120	155 + 32 85 137	172 + 45 99 157	194 + 61 117 181	219 + 82 141 211	251 + 110 173 249						
+40		131 + 18 67 109	145 + 27 77 124	161 + 38 89 142	180 + 52 104 164	204 + 70 124 190	233 + 94 151 223	269 + 126 187 266						
39		135 + 22 70 112	150 + 32 80 128	168 + 45 94 147	189 + 60 111 171	216 + 80 133 200	248 + 107 163 236							
38		139 + 27 73 115	156 + 38 84 132	176 + 52 99 153	199 + 69 118 179	229 + 92 142 211	266 + 122 176 252							
37		144 + 32 76 119	162 + 44 88 137	184 + 59 104 159	210 + 79 125 188	244 + 105 152 223								
+36		150 + 37 80 123	169 + 50 93 142	193 + 67 110 167	222 + 90 133 198	260 + 119 164 236								
+35		156 + 42 84 127	177 + 56 98 148	203 + 75 117 175	236 + 101 142 209	276 + 134 176 252								
34		163 + 48 88 132	186 + 64 104 155	214 + 85 125 184	251 + 113 153 221									
33		170 + 54 93 137	195 + 72 110 162	227 + 96 133 194	268 + 127 164 235									
32		178 + 61 98 143	205 + 81 117 170	241 + 107 142 205	287 + 143 177 251									
+31		186 + 69 104 150	216 + 91 125 179	256 + 120 152 217										
+30		195 + 77 110 157	228 + 102 133 189	273 + 135 164 232										

The tabular quantities are expressed in units of the fifth decimal.
 M and W are always positive.
 m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ	δ	O ^h						I ^h							
		O ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	O ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
	°	M W	m w												
	+30	28 29	0 0	28 29	0 1	28 29	-1 1	29 29	-1 2	29 3	-2 3	29 29	-2 4	30 30	-4 10
	29	28 29	0 0	28 29	0 1	28 29	-1 1	29 29	-1 2	29 3	-1 3	29 29	-2 4	30 30	-4 10
	28	28 29	0 0	28 29	0 1	28 29	-1 1	29 29	-1 2	29 3	-1 3	29 29	-2 4	30 30	-3 10
	27	28 30	0 0	28 30	0 1	28 30	-1 1	29 30	-1 2	29 3	-1 3	29 30	-1 8	30 31	-3 10
	+26	28 30	0 0	28 30	0 1	28 30	0 1	29 30	-1 2	29 3	-1 3	29 30	-1 8	30 31	-2 10
	+25	28 30	0 0	28 30	0 1	28 30	0 1	29 30	-1 2	29 3	-1 3	29 30	-1 8	30 31	-2 10
	24	28 30	0 0	28 30	0 1	28 30	0 1	29 30	-1 2	29 3	-1 3	29 30	-1 8	30 31	-1 10
	23	28 31	0 0	28 31	0 1	28 31	0 1	29 31	0 2	29 3	0 3	29 31	0 8	30 32	0 10
	22	28 31	0 0	28 31	0 1	28 31	0 1	29 31	0 2	29 3	0 3	29 31	0 8	30 32	0 10
	+21	28 31	0 0	28 31	0 1	28 31	0 1	29 31	0 2	29 3	0 3	29 31	0 8	30 32	0 10
	+20	28 32	0 0	28 32	0 1	28 32	0 1	29 32	0 2	29 3	0 3	29 32	0 8	30 33	+1 10
	19	28 32	0 0	28 32	0 1	28 32	0 1	29 32	0 2	29 3	0 3	29 32	0 8	30 33	+1 10
	18	28 32	0 0	28 32	0 1	28 32	0 1	29 32	0 2	29 3	0 3	29 32	0 8	30 34	+2 10
	17	28 33	0 0	28 33	0 1	28 33	0 1	29 33	0 2	29 3	0 3	29 33	0 8	30 35	+2 10
	+16	28 33	0 0	28 33	0 1	28 33	0 1	29 33	0 2	29 3	+1 3	29 34	+2 8	30 36	+3 11
	+15	28 34	0 0	28 34	0 1	28 34	0 1	29 34	+1 2	29 3	+1 3	29 35	+2 7	30 36	+4 11
	14	28 34	0 0	28 34	0 1	28 34	0 1	29 34	+1 2	29 3	+1 3	29 35	+2 8	30 37	+4 11
	13	28 35	0 0	28 35	0 1	28 35	+1 1	29 35	+1 2	29 3	+1 3	29 36	+2 8	30 38	+5 11
	12	28 36	0 0	28 36	0 1	28 36	+1 1	29 36	+1 2	29 3	+1 3	29 37	+2 8	30 39	+5 11
	+11	28 36	0 0	28 36	0 1	28 36	+1 1	29 36	+1 2	29 3	+2 3	29 37	+2 8	30 39	+6 12
	+10	28 37	0 0	28 37	0 1	28 37	+1 1	29 37	+1 2	29 3	+2 3	29 38	+2 8	30 40	+7 12

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$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

δ	τ	II ^h												III ^h															
		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		60 ^m			
		<i>M</i> <i>W</i>	<i>m</i> <i>w</i>																										
+30		34 30	-4 10	35 30	-4 11	36 30	-5 12	37 30	-5 14	38 31	-5 15	40 31	-5 16	42 32	-5 18	44 32	-4 20	46 33	-4 22	49 33	-4 24	52 34	-3 26	55 35	-2 29	58 36	-1 32		
29		34 30	-4 10	35 30	-4 11	36 30	-4 12	37 31	-4 13	38 31	-4 15	40 31	-4 16	42 32	-4 18	44 32	-4 20	46 33	-3 22	49 34	-3 24	52 35	-2 27	55 36	-1 30	59 37	0 33		
28		34 30	-3 10	35 30	-3 11	36 31	-3 12	37 31	-3 13	39 31	-3 15	40 32	-3 16	42 32	-3 18	44 33	-3 20	47 34	-2 22	49 35	-2 24	52 36	-1 27	56 37	0 30	59 38	+1 33		
27		34 31	-3 10	35 31	-3 11	36 31	-3 12	37 31	-3 14	39 32	-3 15	40 32	-2 16	42 33	-2 18	45 33	-2 20	47 34	-1 22	50 35	-1 24	53 36	0 27	56 37	+1 30	60 38	+2 33		
+26		34 31	-2 10	35 31	-2 11	36 31	-2 12	37 32	-2 14	39 32	-2 15	41 33	-2 16	43 33	-1 18	45 34	-1 20	47 35	0 22	50 36	0 24	53 37	+2 27	57 38	+3 30	61 39	+4 34		
+25		34 31	-2 10	35 31	-2 11	36 32	-2 12	38 32	-1 14	39 33	-1 15	41 33	-1 16	43 34	-1 18	45 34	0 20	48 35	+1 22	51 36	+2 25	54 37	+3 28	57 38	+4 31	61 40	+6 34		
24		34 32	-1 10	35 32	-1 11	36 32	-1 12	38 33	-1 14	39 33	-1 15	41 34	0 17	43 34	0 18	45 35	+1 20	48 36	+2 22	51 37	+3 25	54 38	+4 28	58 39	+5 31	62 41	+7 35		
23		34 32	-1 10	35 32	-1 11	36 33	-1 12	38 33	0 14	39 34	0 15	41 34	+1 17	43 35	+1 19	46 36	+2 21	48 37	+3 23	51 38	+4 26	55 39	+5 29	59 40	+7 32	63 42	+9 36		
22		34 32	0 10	35 33	0 11	36 33	0 12	38 34	0 14	40 34	+1 15	41 35	+1 17	44 35	+2 19	46 36	+3 21	49 37	+4 23	52 38	+5 26	55 40	+6 29	59 41	+8 32	64 43	+10 36		
+21		34 33	0 10	35 33	+1 11	37 34	+1 13	38 34	+1 14	40 35	+2 16	42 35	+2 17	44 36	+3 19	46 37	+4 21	49 38	+5 23	52 39	+6 26	56 41	+8 29	60 42	+10 33	65 44	+12 37		
+20		34 33	+1 10	35 34	+1 11	37 34	+2 13	38 35	+2 14	40 35	+2 16	42 36	+3 17	44 37	+4 19	47 38	+5 21	49 39	+6 24	53 40	+7 27	57 42	+9 30	61 44	+11 34	66 46	+14 38		
19		34 34	+1 10	35 34	+2 12	37 35	+2 13	38 35	+3 14	40 36	+3 16	42 37	+4 18	44 38	+5 20	47 39	+6 22	50 40	+7 24	53 41	+9 27	57 43	+11 30	62 45	+13 34	67 47	+16 38		
18		34 34	+2 10	36 35	+2 12	37 35	+3 13	38 36	+3 14	40 36	+4 16	42 37	+5 18	45 38	+6 20	48 39	+7 22	50 40	+8 25	54 42	+10 28	58 44	+12 31	63 46	+14 35	68 48	+17 39		
17		34 35	+2 10	36 35	+3 12	37 36	+3 13	39 37	+4 15	41 37	+5 16	43 38	+6 18	45 39	+7 20	48 40	+8 22	51 41	+10 25	55 43	+12 28	59 45	+14 32	63 47	+16 36	69 50	+19 40		
+16		34 36	+3 11	36 36	+4 12	37 37	+4 13	39 37	+5 15	41 38	+6 16	43 39	+7 18	45 40	+8 20	48 41	+9 23	52 42	+11 26	56 44	+13 29	60 46	+15 32	64 48	+18 36	70 51	+21 41		
+15		35 36	+4 11	36 37	+4 12	37 37	+5 14	39 38	+6 15	41 39	+7 17	43 40	+8 19	46 41	+9 21	49 42	+10 23	52 44	+12 26	56 45	+14 29	60 47	+17 33	65 50	+20 37	72 53	+23 42		
14		35 37	+4 11	36 37	+5 12	38 38	+6 14	39 39	+7 15	41 40	+8 17	44 41	+9 19	46 42	+10 21	49 43	+12 24	53 45	+14 27	57 47	+16 30	61 49	+18 34	67 52	+22 38	73 55	+26 43		
13		35 38	+5 11	36 38	+5 12	38 39	+6 14	40 40	+7 16	42 41	+8 17	44 42	+10 19	47 43	+11 22	50 44	+13 24	53 46	+15 27	57 48	+17 31	62 50	+20 35	68 53	+24 39	75 57	+28 45		
12		35 38	+5 11	36 39	+6 13	38 40	+7 14	40 41	+8 16	42 42	+9 18	44 43	+11 20	47 44	+12 22	50 45	+14 25	54 47	+16 28	58 49	+19 32	64 52	+22 36	70 55	+26 40	77 59	+30 46		
+11		35 39	+6 12	37 40	+7 13	38 41	+8 14	40 42	+9 16	42 43	+10 18	45 44	+12 20	48 45	+14 23	51 47	+16 26	55 49	+18 29	59 51	+21 33	65 54	+24 37	71 57	+28 42	78 61	+33 48		
+10		35 40	+7 12	37 41	+8 13	39 42	+9 15	41 43	+10 17	43 44	+11 19	45 45	+13 21	48 46	+15 23	52 48	+17 26	56 50	+20 29	60 52	+23 33	66 55	+26 38	72 59	+31 43	80 63	+36 49		

The tabular quantities are expressed in units of the fifth decimal.
 M and W are always positive.
 m and w change signs for negative hour angles.

$$\Delta\alpha_0 = \Delta\alpha + M\Delta\alpha + m\Delta\delta.$$

$$\Delta\delta_0 = \Delta\delta + W\Delta\delta + w\Delta\alpha.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ δ	IV ^h						V ^h																			
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m													
	M W	m w																								
+30	58 36	— 1 32	62 38	0 36	67 40	1 40	72 42	3 45	78 44	6 50	85 47	10 57	94 51	14 64	104 56	19 73	115 62	25 83	129 70	34 96	147 79	45 112	168 92	59 132	195 110	77 157
29	59 37	0 33	63 38	1 36	68 40	3 40	73 43	5 45	80 46	8 51	87 49	12 58	96 53	16 66	106 58	22 75	119 64	29 86	134 73	38 99	153 83	50 116	176 97	65 138	205 116	85 165
28	59 38	1 33	64 39	3 37	69 41	5 41	75 44	7 46	81 47	10 52	89 50	14 59	98 54	19 67	109 60	25 77	123 67	33 88	139 76	43 103	159 87	56 121	184 103	72 144	216 124	94 173
27	60 38	2 33	65 40	4 37	70 42	6 42	76 45	9 47	83 48	13 53	91 52	17 60	101 56	22 68	112 62	29 79	127 70	37 91	144 79	48 107	166 92	62 126	193 109	80 151	228 132	105 183
+26	61 39	4 34	65 41	6 38	71 43	8 43	77 46	11 48	84 49	15 54	93 53	19 61	103 58	25 70	116 65	32 81	131 73	41 94	149 83	53 111	173 97	69 132	203 116	89 158	242 141	117 194
+25	61 40	6 34	66 42	8 38	72 44	10 43	78 47	13 49	86 51	17 55	95 55	22 63	106 60	28 72	119 67	36 84	135 76	46 98	155 87	59 115	181 102	76 138	214 123	99 167	257 151	130 206
24	62 41	7 35	67 43	9 39	73 46	12 44	80 49	16 50	88 52	20 57	98 57	25 65	109 63	32 74	123 70	40 86	140 80	51 101	162 92	65 120	190 108	84 144	226 131	109 176	275 162	145 220
23	63 42	9 36	68 44	11 40	74 47	14 45	81 50	18 51	90 54	22 58	100 59	28 66	112 65	35 77	127 73	44 90	146 84	56 106	169 97	72 126	200 115	92 152	240 140	121 187	294 175	161 235
22	64 43	10 36	69 45	13 41	76 48	16 46	83 52	20 52	92 56	25 59	103 61	31 68	116 68	39 79	132 77	49 93	152 88	62 110	177 102	79 132	210 122	102 160	255 150	134 199		
+21	65 44	12 37	70 47	15 42	77 50	18 47	85 53	22 53	94 58	28 61	106 64	34 70	120 71	43 82	137 80	54 97	158 92	68 115	186 108	87 139	222 130	112 170	272 161	148 212		
+20	66 46	14 38	72 48	17 42	79 51	20 48	87 55	25 55	97 60	31 63	109 66	38 73	124 74	47 85	142 84	59 101	165 97	75 120	196 115	96 146	236 139	124 180	291 174	164 227		
19	67 47	16 38	73 50	19 43	80 53	23 49	89 57	28 56	99 62	34 65	112 69	42 75	128 77	52 88	148 88	65 105	173 103	82 126	206 122	105 154	250 149	137 191	312 188	182 245		
18	68 48	17 39	74 51	21 44	82 55	25 51	91 59	30 58	102 65	37 67	116 72	46 78	133 81	57 92	154 93	71 110	181 109	90 133	218 130	115 163	267 160	151 205				
17	69 50	19 40	76 53	23 46	84 57	28 52	94 62	34 60	105 68	41 69	120 75	50 81	138 85	62 96	161 98	78 115	190 115	99 140	231 139	127 174	286 173	167 220				
+16	70 51	21 41	78 54	25 47	86 59	30 54	96 64	37 62	108 71	45 72	124 79	55 85	143 89	68 101	168 103	85 121	201 123	108 148	245 149	140 185	307 187	185 237				
+15	72 53	23 42	79 56	28 48	88 61	33 55	99 66	40 64	112 74	49 75	128 83	60 88	149 94	74 105	176 109	93 128	212 131	118 157	261 160	154 198						
14	73 55	26 43	81 58	30 50	90 63	36 57	102 69	44 66	116 77	53 78	133 87	65 92	156 99	81 111	185 116	102 135	225 140	129 167	279 173	170 212						
13	75 57	28 45	83 61	33 51	93 66	40 59	105 72	48 69	120 80	58 81	139 91	71 97	163 105	88 117	195 124	111 143	239 150	142 178	300 187	188 229						
12	77 59	30 46	85 63	36 53	95 69	43 62	108 76	52 72	124 84	63 85	145 96	77 102	171 111	96 123	206 132	121 152	255 161	157 191								
+11	78 61	33 48	87 66	39 55	98 72	46 64	112 79	56 75	129 88	68 89	151 101	84 107	180 118	105 130	219 141	132 161	273 174	173 205								
+10	80 63	36 49	90 68	42 57	102 75	50 67	116 83	61 78	134 93	74 93	158 107	91 112	190 126	114 138	233 151	145 172	293 188	191 221								

The tabular quantities are expressed in units of the fifth decimal.

 M and W are always positive. m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer

τ	δ	0 ^h						1 ^h																			
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m						
		<i>M</i> <i>W</i>	<i>m</i> <i>w</i>																								
0		28	0	28	0	28	1	29	1	29	2	29	2	30	3	30	3	31	4	32	4	33	5	34	6	35	7
+10		37	0	37	1	37	2	37	2	37	3	37	4	38	5	38	6	38	7	38	8	39	9	39	10	40	12
9		28	0	28	0	28	1	29	1	29	2	29	2	30	3	30	4	31	4	32	5	33	6	34	6	36	7
		38	0	38	1	38	2	38	2	38	3	38	4	38	5	39	6	39	7	39	8	40	9	40	10	41	12
8		28	0	28	1	28	1	29	2	29	2	29	3	30	3	30	4	31	5	32	5	33	6	34	7	36	8
		38	0	38	1	38	2	38	2	39	3	39	4	39	5	39	6	40	7	40	8	41	9	41	11	42	12
7		28	0	28	1	28	1	29	2	29	2	29	3	30	4	30	4	31	5	32	6	33	7	34	8	36	9
		39	0	39	1	39	2	39	2	40	3	40	4	40	5	40	6	41	7	41	8	42	10	42	11	43	12
+6		28	0	28	1	28	1	29	2	29	2	29	3	30	4	31	5	31	6	32	7	33	8	35	9	36	10
		40	0	40	1	40	2	40	3	41	3	41	4	41	5	41	6	42	8	42	9	43	10	43	11	44	13
+5		28	0	28	1	28	1	29	2	29	3	29	3	30	4	31	5	32	6	33	7	34	8	35	9	36	10
		41	0	41	1	41	2	41	3	42	3	42	4	42	6	42	7	43	8	43	9	44	10	44	11	45	13
4		28	0	28	1	28	1	29	2	29	3	29	4	30	5	31	6	32	7	33	8	34	9	35	10	36	11
		42	0	42	1	42	2	42	3	43	4	43	5	43	6	43	7	44	8	44	9	45	10	46	12	47	14
3		28	0	28	1	28	2	29	2	29	3	29	4	30	5	31	6	32	7	33	8	34	9	35	10	37	12
		43	0	43	1	43	2	43	3	44	4	44	5	44	6	44	7	45	8	46	9	46	11	47	12	48	14
2		28	0	28	1	28	2	29	3	29	3	30	4	30	5	31	6	32	8	33	9	34	10	35	11	37	13
		44	0	44	1	44	2	44	3	45	4	45	5	45	6	46	7	46	8	47	10	48	11	48	12	49	14
+1		28	0	28	1	28	2	29	3	29	4	30	5	30	6	31	7	32	8	33	10	34	11	36	12	37	14
		45	0	45	1	45	2	46	3	46	4	46	5	46	6	47	7	47	9	48	10	49	11	50	13	51	15
0		28	0	28	1	28	2	29	3	29	4	30	5	30	6	31	7	32	9	33	10	34	12	36	13	38	15
		47	0	47	1	47	2	47	3	47	4	47	5	48	6	48	7	49	9	50	10	51	12	52	13	53	15
-1		28	0	28	1	28	2	29	3	29	4	30	6	30	7	31	8	32	9	33	11	34	13	36	14	38	16
		48	0	48	1	48	2	48	3	49	4	49	5	49	6	50	8	50	9	51	10	52	12	53	14	54	16
2		28	0	28	1	28	2	29	3	29	5	30	6	30	7	31	9	32	10	33	12	35	13	36	15	38	17
		49	0	49	1	49	2	50	3	50	4	50	5	51	7	51	8	52	9	53	11	54	12	55	14	56	16
3		28	0	28	1	28	2	29	4	29	5	30	6	30	8	31	9	32	11	34	13	35	14	37	16	39	18
		51	0	51	1	51	2	51	3	52	4	52	6	52	7	53	8	54	10	55	11	56	13	57	15	58	17
4		28	0	28	1	28	3	29	4	29	5	30	7	30	8	31	10	32	12	34	13	35	15	37	17	39	19
		52	0	53	1	53	2	53	3	53	5	54	6	54	7	55	8	56	10	57	12	58	13	59	15	60	17
-5		28	0	28	1	28	3	29	4	29	6	30	7	31	9	32	11	33	12	34	14	35	16	37	18	39	21
		54	0	54	1	54	2	55	4	55	5	56	6	56	7	57	9	58	10	59	12	60	14	61	16	63	18
-6		28	0	28	1	28	3	29	5	29	6	30	8	31	10	32	11	33	13	34	15	36	17	38	20	40	23
		56	0	56	1	56	2	57	4	57	5	58	6	58	8	59	9	60	12	61	14	62	16	63	18	65	19
7		28	0	28	2	28	3	29	5	29	6	30	8	31	10	32	12	33	14	34	16	36	18	38	21	40	24
		58	0	58	1	58	2	59	4	59	5	60	7	60	8	61	10	62	11	63	13	64	15	66	17	68	20
8		28	0	28	2	28	3	29	5	29	7	30	9	31	11	32	13	33	15	35	17	36	20	38	23	41	26
		60	0	60	1	60	3	61	4	61	5	62	7	62	8	63	10	64	12	65	14	67	16	69	18	71	20
9		28	0	28	2	28	4	29	6	29	8	30	10	31	12	32	14	33	16	35	18	37	21	39	24	41	28
		63	0	63	1	63	3	63	4	63	6	64	7	65	9	66	10	67	12	68	14	70	16	72	19	74	21
-10		28	0	28	2	28	4	29	6	29	8	30	10	31	12	32	14	34	17	35	20	37	23	39	26	42	30
		65	0	65	1	65	3	66	4	66	6	67	7	68	9	69	11	70	13	71	15	73	17	75	20	77	23

The tabular quantities are expressed in units of the fifth decimal.

M and *W* are always positive.

m and *w* change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ	δ	II ^h											III ^h														
		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		0 ^m		10 ^m		20 ^m		30 ^m		40 ^m		50 ^m		60 ^m	
		M W	m w																								
	0	35	7	37	8	39	9	41	10	43	11	45	13	48	15	52	17	56	20	60	23	66	26	72	31	80	36
	+10	40	12	41	13	42	15	43	17	44	19	45	21	46	23	48	26	50	29	52	33	55	38	59	43	63	49
	9	36	7	37	8	39	10	41	11	43	12	46	14	49	16	52	19	57	22	62	25	67	28	74	33	82	39
		41	12	42	13	43	15	44	17	45	19	46	21	48	24	50	27	52	30	54	34	57	39	61	45	66	51
	8	36	8	37	9	39	10	41	12	44	14	46	16	49	18	53	20	58	23	63	27	69	31	76	36	84	42
		42	12	43	14	44	15	45	17	46	19	47	22	49	25	51	28	53	31	56	35	59	40	63	46	68	53
	7	36	9	37	10	39	11	41	13	44	15	47	17	50	19	54	22	59	25	64	29	70	33	78	39	87	46
		43	12	44	14	45	16	46	18	47	20	49	22	51	25	53	28	55	32	58	37	62	42	66	48	71	55
	+6	36	10	38	11	40	12	42	14	44	16	47	18	51	21	55	24	60	27	65	31	72	36	80	42	90	49
		44	13	45	14	46	16	47	18	49	20	50	23	52	26	54	29	57	33	60	38	64	43	69	50	74	58
	+5	36	10	38	12	40	13	42	15	45	17	48	19	52	22	56	25	61	29	67	33	74	39	82	45	93	53
		45	13	46	15	47	17	48	19	50	21	52	24	54	27	56	30	59	34	63	39	67	45	72	52	78	60
	4	36	11	38	13	40	14	43	16	46	18	49	21	53	24	57	27	62	31	68	36	75	42	84	49	96	57
		47	14	48	15	49	17	50	19	52	22	54	25	56	28	58	32	61	36	65	41	69	47	75	54	82	63
	3	37	12	39	14	41	16	43	18	46	20	49	23	53	26	58	29	63	34	69	39	77	45	87	53	99	62
		48	14	49	16	50	18	52	20	54	22	56	25	58	29	61	33	64	37	68	42	72	49	78	57	86	66
	2	37	13	39	15	41	17	44	19	47	21	50	24	54	28	59	32	65	37	71	42	80	48	90	57	102	67
		49	14	50	16	52	18	54	20	56	23	58	26	60	30	63	34	66	38	71	44	76	51	82	59	90	69
	+1	37	14	39	16	42	18	44	20	47	23	51	26	55	30	60	34	66	39	73	45	82	52	93	61	107	72
		51	15	52	17	53	19	55	21	57	24	60	27	62	31	65	35	69	40	74	46	79	53	86	62	95	73
	0	38	15	40	17	42	19	45	22	48	25	52	28	56	32	61	37	67	42	75	48	85	56	96	66	111	78
		53	15	54	17	55	19	57	22	59	25	62	28	65	32	68	37	72	42	77	48	83	56	91	65	100	77
	-1	38	16	40	18	42	21	45	24	49	27	53	30	57	34	63	39	69	45	78	52	88	60	100	71	115	84
		54	16	56	18	57	20	59	23	61	26	64	29	67	33	71	38	75	44	81	50	87	59	96	69	106	81
	2	38	17	40	19	43	22	46	25	50	28	54	32	58	37	64	42	71	48	80	56	91	65	104	76	120	90
		56	16	58	18	60	21	62	24	64	27	67	31	70	35	74	40	79	46	85	53	92	62	101	73	112	86
	3	39	18	41	21	44	24	47	27	51	30	55	34	60	39	66	45	74	52	83	60	94	70	108	82	126	97
		58	17	60	19	62	22	64	25	67	28	70	32	73	37	78	42	83	48	89	56	97	65	107	77	119	92
	4	39	19	41	22	44	25	47	29	51	33	56	37	61	42	68	48	76	56	86	64	98	75	113	88	133	105
		60	17	62	20	64	22	66	25	69	29	72	33	76	38	81	44	87	50	94	59	102	69	113	81	127	98
	-5	39	21	42	24	45	27	48	31	52	35	57	39	63	45	70	52	78	60	89	69	102	81	118	95	140	114
		63	18	65	21	67	23	69	26	72	30	76	35	80	40	85	46	91	53	99	62	108	73	120	86	135	104
	-6	40	23	42	26	45	29	49	33	53	37	58	42	64	48	72	56	81	64	92	74	106	87	124	103	148	124
		65	19	67	21	70	24	72	28	75	32	79	36	84	42	89	48	96	56	104	65	115	77	128	92	145	112
	7	40	24	43	28	46	31	50	35	54	40	60	46	66	52	74	60	84	69	96	80	111	94	131	112	156	135
		68	20	70	22	73	26	76	29	79	33	83	38	88	44	94	51	102	59	111	70	122	82	136	99	155	121
	8	41	26	44	30	47	34	51	38	56	43	61	49	68	56	77	64	87	74	101	87	117	102	138	122	166	148
		71	20	73	23	76	27	79	31	83	35	87	40	93	46	100	54	108	63	118	74	130	88	146	106	167	130
	9	41	28	44	32	48	36	52	40	57	46	63	52	71	60	80	69	91	80	105	94	123	111	146	133	177	162
		74	21	77	24	80	28	83	32	87	37	92	42	98	49	105	57	114	67	125	79	139	94	157	114	181	141
	-10	42	30	45	34	49	38	53	43	58	49	65	56	73	64	82	74	94	86	109	101	129	120	155	144	190	177
		77	23	80	26	84	29	88	34	92	39	97	45	104	52	111	60	121	71	133	84	149	101	169	123	196	153

The tabular quantities are expressed in units of the fifth decimal.

M and W are always positive.

m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

δ	τ	IV ^h							V ^h						
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
		<i>M</i> <i>W</i> <i>m</i> <i>w</i>													
+10	0	80 36 90 63 49 68	42 102 57 75	50 116 67 83	61 134 78 93	74 158 93 107	91 112	190 114 233 126 138 151	145 293 172 188	191 221					
9		82 39 92 66 51 71	46 105 59 78	55 120 70 87	66 140 82 98	80 166 98 113	99 119	201 124 248 134 147 162	160 185						
8		84 42 95 68 53 74	50 109 62 82	59 125 73 92	71 147 86 104	87 175 103 120	108 126	213 136 265 143 156 175	176 199						
7		87 46 98 71 55 78	54 112 65 86	64 131 76 97	77 154 90 110	94 184 109 128	117 134	226 149 285 154 168 190	194 215						
+6		90 49 102 74 58 81	58 117 68 90	69 137 80 102	84 162 95 117	103 195 116 137	128 143	241 163 166 180							
+5		93 53 105 78 60 86	62 122 71 95	75 143 84 108	91 170 101 124	112 207 123 147	140 153	258 179 179 194							
4		96 57 109 82 63 90	67 127 74 100	81 150 88 114	99 179 107 133	122 220 131 158	153 164	278 198 194 210							
3		99 62 114 86 66 95	73 132 78 106	88 157 93 122	107 190 113 143	133 235 140 170	168 176								
2		102 67 118 90 69 100	79 139 82 113	95 166 99 130	116 202 121 153	145 252 150 184	184 190								
+1		107 72 124 95 73 106	85 146 87 120	103 175 105 138	127 215 129 164	158 271 161 200	202 206								
0		111 78 129 100 77 112	92 153 92 127	111 185 112 148	137 229 138 177	173 293 173 218	224 224								
-1		115 84 135 106 81 119	100 162 98 136	121 197 120 159	150 246 148 192	190 187									
2		120 90 142 112 86 127	108 171 104 146	132 210 128 172	165 265 160 208	210 204									
3		126 97 150 119 92 135	117 182 111 156	144 225 137 186	181 173										
4		133 105 159 127 98 145	128 194 119 168	158 242 148 202	199 188										
-5		140 114 168 135 104 155	139 207 128 182	173 262 160 220	219 205										
-6		148 124 179 145 112 167	152 222 138 198	190 174											
7		156 135 191 155 121 180	166 240 149 215	209 190											
8		166 148 205 167 130 196	182 162												
9		177 162 220 181 141 213	201 177												
-10		190 177 196 153													

The tabular quantities are expressed in units of the fifth decimal.

M and W are always positive.

m and w change signs for negative hour angles.

$$\Delta\alpha_0 = \Delta\alpha + M\Delta\alpha + m\Delta\delta.$$

$$\Delta\delta_0 = \Delta\delta + W\Delta\delta + w\Delta\alpha.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ	δ	0 ^h						1 ^h							
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
		M W m w													
0															
10	28	28	28	28	28	28	28	31	12	32	14	34	17	35	20
	65	65	65	65	65	65	65	68	9	69	11	70	13	71	15
11	28	28	28	28	28	28	28	31	13	32	15	34	18	35	21
	65	65	65	65	65	65	65	71	9	72	11	73	13	74	16
12	28	28	28	28	28	28	28	31	14	32	16	34	19	36	22
	71	71	71	71	71	71	71	74	10	75	12	76	14	78	16
13	28	28	28	28	28	28	28	31	15	33	18	34	21	36	24
	74	74	74	74	74	74	74	77	10	78	12	80	15	82	17
14	28	28	28	28	28	28	28	32	16	33	19	35	22	37	26
	77	77	77	77	77	77	77	81	11	82	13	84	15	86	18
15	28	28	28	28	28	28	28	32	17	33	20	35	24	37	28
	81	81	81	81	81	81	81	85	12	86	14	88	16	90	19
16	28	28	28	28	28	28	28	32	18	33	22	35	26	37	30
	85	85	85	85	85	85	85	89	12	91	15	93	17	95	20
17	28	28	28	28	28	28	28	32	19	34	23	36	27	38	32
	90	90	90	90	90	90	90	94	13	96	16	98	18	101	21
18	28	28	28	28	28	28	28	32	21	34	25	36	29	38	34
	95	95	95	95	95	95	95	99	14	101	17	104	20	107	23
19	28	28	28	28	28	28	28	33	23	34	27	36	32	39	37
	100	100	100	100	100	100	100	105	15	107	18	110	21	113	24
20	28	28	28	28	28	28	28	33	24	35	29	37	34	40	39
	105	105	105	105	105	105	105	111	16	113	19	116	22	120	26
21	28	28	28	28	28	28	28	33	26	35	31	37	36	40	42
	111	111	111	111	111	111	111	118	16	120	20	123	24	127	28
22	28	28	28	28	28	28	28	33	28	35	33	38	39	41	46
	118	118	118	118	118	118	118	125	18	128	21	132	25	136	30
23	28	28	28	28	28	28	28	34	30	36	36	39	42	42	49
	126	126	126	126	126	126	126	134	19	137	23	141	27	146	32
24	28	28	28	28	28	28	28	34	32	37	39	40	46	43	54
	135	135	135	135	135	135	135	143	21	147	25	152	30	157	35
25	28	28	28	28	28	28	28	35	35	37	42	40	50	44	58
	144	144	144	144	144	144	144	154	22	158	27	163	32	169	38
26	28	28	28	28	28	28	28	35	38	38	45	41	54	46	63
	154	155	156	157	158	159	160	166	24	170	29	176	35	183	41
27	28	28	28	28	28	28	28	36	41	39	49	42	58	47	69
	166	167	168	169	170	171	172	179	26	184	32	191	38	198	45
28	28	28	28	28	28	28	28	36	45	40	54	44	64	49	76
	180	180	181	182	183	184	185	194	29	200	35	208	42	216	50
29	28	28	28	28	28	28	28	37	49	41	60	45	71	51	84
	195	196	197	198	199	200	201	212	32	219	39	227	46	237	55
30	28	28	28	28	28	28	28	38	54	42	66	47	78	53	92
	212	213	214	215	216	217	218	232	35	239	43	249	51	261	61

The tabular quantities are expressed in units of the fifth decimal.
 M and W are always positive.
 m and w change signs for negative hour angles.

$$\Delta a_0 = \Delta a + M \Delta a + m \Delta \delta.$$

$$\Delta \delta_0 = \Delta \delta + W \Delta \delta + w \Delta a.$$

TABLE I—Continued.

To be used when differences in Right Ascension and Declination are determined by the Micrometer.

τ	II ^h											III ^h														
	δ		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m											
0	M	m																								
W	w	w																								
-10	42 77	30 23	45 80	34 26	49 84	38 29	53 88	43 34	58 92	49 39	65 97	56 45	73 104	64 52	82 111	74 60	94 121	86 71	109 133	101 84	129 149	120 101	155 169	144 123	190 196	177 153
11	43 81	32 24	46 84	36 27	50 88	41 31	55 92	47 36	60 97	53 41	67 103	60 48	76 110	69 55	86 118	80 64	99 129	93 76	115 143	110 90	137 160	131 109	165 183	158 134		
12	43 85	34 25	47 88	38 29	51 92	44 33	56 97	50 38	62 102	57 43	69 109	65 50	78 117	75 59	89 126	87 69	104 138	101 81	122 153	119 97	146 173	143 118	177 199	173 146		
13	44 90	36 26	48 93	41 30	52 97	47 35	58 102	54 40	64 108	61 46	72 115	70 54	82 124	81 63	94 135	94 74	109 148	110 88	129 165	130 105	155 187	156 128				
-14	45 94	39 28	49 98	44 32	54 103	50 37	59 108	58 42	66 115	66 49	74 122	75 57	85 132	87 67	98 144	101 79	115 159	119 94	137 178	142 114	166 203	171 140				
-15	46 100	42 30	50 104	47 34	55 109	54 39	61 115	62 45	69 122	71 52	78 131	81 61	89 141	94 72	103 154	110 85	122 171	130 102	146 193	155 124	179 222	188 153				
16	47 105	45 31	52 110	51 36	57 116	58 42	63 122	67 48	71 130	77 56	81 140	88 66	94 151	102 78	109 166	120 92	130 185	142 111	156 121	170 136	193 243	208 169				
17	48 111	48 33	53 117	55 39	59 123	63 45	66 130	72 52	74 139	83 61	85 150	96 71	99 163	112 84	116 180	131 100	138 202	156 121	168 229	188 149						
18	49 118	52 36	54 124	59 41	60 131	68 48	68 139	78 55	78 149	90 65	89 161	104 77	104 176	122 91	123 195	143 109	148 220	171 133	182 252	208 164						
-19	50 126	56 38	56 132	64 44	63 140	73 51	71 149	84 60	81 160	98 71	94 174	114 83	111 191	133 99	131 212	157 120	160 241	189 146								
-20	52 135	60 41	58 142	69 48	65 150	79 56	74 160	91 65	86 173	106 76	100 188	124 91	118 208	146 109	141 232	173 132	173 265	209 162								
21	54 144	65 44	60 152	75 52	68 161	86 60	78 173	100 70	90 187	116 83	106 205	135 99	126 227	160 119	152 255	192 146	188 293	233 181								
22	56 155	70 48	62 164	81 56	71 174	94 65	82 187	109 77	95 203	127 91	113 223	149 109	135 249	177 132	166 282	213 162										
23	58 167	76 52	65 177	88 61	75 189	102 71	86 203	119 84	102 221	139 100	121 245	164 120	146 274	196 147												
-24	60 180	83 56	68 191	96 66	79 205	112 78	92 222	131 92	109 243	153 110	130 270	182 133	159 304	218 164												
-25	63 195	91 62	72 208	106 73	83 224	123 86	98 243	144 102	117 268	170 122	141 299	202 149														
26	66 213	100 68	76 228	116 80	89 246	136 95	105 268	160 113	126 296	189 137																
27	69 233	110 75	80 250	128 89	95 271	150 106	113 297	178 126																		
28	73 256	121 83	86 276	142 98	102 300	167 118	123 331	198 142																		
-29	78 283	134 92	92 306	158 110	111 335	187 132																				
-30	84 314	150 103	100 341	177 124																						

The tabular quantities are expressed in units of the fifth decimal.

 M and W are always positive. m and w change signs for negative hour angles.

$$\Delta\alpha_0 = \Delta\alpha + M\Delta a + m\Delta\delta.$$

$$\Delta\delta_0 = \Delta\delta + W\Delta\delta + w\Delta a.$$

TABLE II.

To be used when differences in Right Ascension are determined by Transits.

τ	δ	O ^h						I ^h						II ^h						III ^h							
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
		m'																									
	°	W																									
	+70	0 38	-1 38	-2 38	-2 38	-3 38	-4 38	-4 38	-5 37	-6 37	-6 37	-7 36	-8 36	-9 36	-9 35	-10 35	-11 34	-11 34	-12 33	-12 33	-13 32	-13 31	-14 31	-14 30	-15 30	-15 29	
	69	0 38	-1 38	-1 38	-2 38	-3 37	-3 37	-4 37	-4 37	-5 36	-6 36	-6 36	-7 35	-8 35	-8 34	-9 34	-9 34	-10 33	-10 33	-11 32	-11 32	-12 31	-12 31	-13 30	-13 30	-14 29	
	68	0 37	-1 37	-1 37	-2 37	-2 37	-3 36	-4 36	-4 36	-5 36	-5 36	-6 35	-6 35	-7 34	-7 34	-8 34	-8 33	-9 33	-9 32	-10 32	-10 31	-11 31	-11 30	-12 30	-12 29	-12 29	
	67	0 36	-1 36	-1 36	-2 36	-2 36	-3 36	-3 36	-4 35	-4 35	-5 35	-5 35	-6 34	-6 34	-7 33	-7 33	-8 33	-8 32	-9 32	-9 31	-9 31	-10 30	-10 30	-11 30	-11 29	-11 29	
	-66	0 36	-1 36	-1 35	-2 35	-2 35	-3 35	-3 35	-4 34	-4 34	-5 34	-5 34	-6 33	-6 33	-7 32	-7 32	-7 32	-8 31	-8 31	-9 30	-9 30	-9 30	-10 29	-10 29	-10 29		
	+65	0 35	-1 35	-1 35	-2 35	-2 35	-3 35	-3 34	-3 34	-4 34	-4 34	-5 33	-5 33	-6 33	-6 32	-6 32	-7 32	-7 31	-7 31	-8 31	-8 30	-8 30	-9 30	-9 29	-9 29	-9 28	
	64	0 34	-1 34	-1 34	-2 34	-2 34	-2 34	-3 34	-3 34	-4 33	-4 33	-4 33	-5 32	-5 32	-5 32	-6 31	-6 31	-7 31	-7 30	-7 30	-7 30	-8 29	-8 29	-8 29	-9 28		
	63	0 34	-1 34	-1 34	-1 34	-2 34	-2 33	-3 33	-3 33	-4 33	-4 32	-4 32	-4 32	-5 32	-5 31	-5 31	-6 30	-6 30	-6 30	-6 30	-7 29	-7 29	-7 29	-7 29	-8 28		
	62	0 33	-1 33	-1 33	-1 33	-2 33	-2 33	-2 33	-3 32	-3 32	-3 32	-4 32	-4 32	-4 31	-4 31	-5 31	-5 30	-5 30	-6 30	-6 30	-6 29	-7 29	-7 29	-7 29	-7 28	-7 28	
	+61	0 33	-1 33	-1 33	-1 33	-2 33	-2 32	-2 32	-2 32	-3 32	-3 32	-3 32	-4 31	-4 31	-4 31	-5 30	-5 30	-5 30	-5 30	-5 29	-5 29	-6 29	-6 29	-6 29	-6 28	-7 28	
	+60	0 32	-1 32	-1 32	-1 32	-1 32	-2 32	-2 32	-2 32	-3 32	-3 31	-3 31	-3 31	-4 31	-4 30	-4 30	-4 30	-5 30	-5 29	-5 29	-5 29	-5 29	-5 29	-6 29	-6 28	-6 28	
	59	0 32	-1 32	-1 32	-1 32	-1 32	-2 32	-2 31	-2 31	-2 31	-3 31	-3 31	-3 31	-3 31	-4 30	-4 30	-4 30	-4 30	-5 29	-5 29	-5 29	-5 29	-5 29	-5 28	-5 28	-6 28	
	58	0 32	-1 32	-1 32	-1 31	-1 31	-2 31	-2 31	-2 31	-2 31	-2 31	-3 30	-3 30	-3 30	-3 30	-4 30	-4 29	-4 29	-4 29	-4 29	-5 29	-5 28	-5 28	-5 28	-5 28	-5 28	
	57	0 31	-1 31	-1 31	-1 31	-1 31	-1 31	-2 31	-2 31	-2 31	-2 30	-2 30	-3 30	-3 30	-3 30	-3 29	-4 29	-4 29	-4 29	-4 29	-4 29	-4 29	-4 28	-5 28	-5 28	-5 28	
	+56	0 31	-1 31	-1 31	-1 31	-1 31	-1 31	-1 30	-2 30	-2 30	-2 30	-2 30	-2 30	-2 30	-3 30	-3 29	-3 29	-3 29	-3 29	-4 29	-4 28	-4 28	-4 28	-4 28	-4 28	-4 28	
	+55	0 31	-1 31	-1 31	-1 30	-1 30	-1 30	-1 30	-2 30	-2 30	-2 30	-2 30	-2 30	-2 30	-3 29	-3 29	-3 29	-3 29	-3 29	-3 29	-3 28	-4 28	-4 28	-4 28	-4 28	-4 28	
	54	0 30	-1 30	-1 30	-1 30	-1 30	-1 30	-1 30	-1 30	-2 30	-2 30	-2 29	-2 29	-2 29	-2 29	-2 29	-3 29	-3 29	-3 29	-3 28	-3 28	-3 28	-4 28	-4 28	-4 28	-4 28	
	53	0 30	-1 30	-1 30	-1 30	-1 30	-1 30	-1 30	-1 30	-2 30	-2 29	-2 29	-2 29	-2 29	-2 29	-2 29	-2 29	-3 29	-3 29	-3 28	-3 28	-3 28	-3 28	-3 28	-3 28	-4 28	
	52	0 30	-1 30	-1 30	-1 30	-1 30	-1 30	-1 30	-1 29	-1 29	-2 29	-2 29	-2 29	-2 29	-2 29	-2 28	-2 28	-3 28	-3 28	-3 28	-3 28	-3 28	-3 28	-3 28	-3 28	-3 28	
	+51	0 30	-1 30	-1 30	-1 30	-1 29	-1 29	-1 29	-1 29	-1 29	-2 29	-2 29	-2 29	-2 29	-2 29	-2 28	-2 28	-2 28	-2 28	-3 28	-3 28	-3 28	-3 28	-3 28	-3 28	-3 29	
	+50	0 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-2 29	-2 29	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-3 28	-3 28	-3 29	-3 29	

The tabular quantities are expressed in units of the fifth decimal.
 m' changes sign for negative hour angles.
 W is always positive.

$$\Delta\alpha_0 = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_0 = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

δ	τ	IV ^h						V ^h						VI ^h						VII ^h							
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
	m'																										
	W																										
+70		-15 29	-15 29	-16 29	-16 28	-17 28	-17 28	-17 28	-17 28	-17 29	-17 29	-17 30	-17 31	-17 32	-17 33	-17 35	-17 37	-16 39	-16 42	-15 45	-15 49	-15 53	-14 57	-13 62	-13 67	-12 73	
69		-14 29	-14 29	-14 29	-14 28	-15 28	-15 28	-15 28	-15 29	-15 29	-15 30	-15 30	-15 31	-15 32	-15 34	-15 36	-15 38	-15 40	-14 43	-14 46	-13 50	-13 54	-12 59	-12 64	-11 70	-10 76	
68		-12 29	-13 29	-13 28	-13 28	-14 28	-14 28	-14 28	-14 29	-14 29	-14 30	-14 31	-14 32	-14 33	-14 34	-14 36	-13 39	-13 41	-13 44	-12 48	-12 52	-11 56	-11 61	-10 67	-9 73	-8 80	
67		-11 29	-11 28	-12 28	-12 28	-12 28	-12 28	-12 28	-13 29	-13 29	-13 30	-13 31	-13 32	-13 33	-12 35	-12 37	-12 39	-12 42	-11 45	-11 49	-10 53	-10 58	-9 63	-9 70	-8 77	-7 84	
+66		-10 29	-10 28	-11 28	-11 28	-11 28	-11 28	-11 28	-11 29	-11 29	-11 30	-11 31	-11 32	-11 34	-11 36	-11 38	-11 40	-10 43	-10 47	-10 51	-9 55	-9 60	-8 66	-7 73	-7 80	-6 88	
+65		-9 28	-9 28	-10 28	-10 28	-10 28	-10 28	-10 29	-10 29	-10 30	-10 31	-10 32	-10 33	-10 34	-10 36	-10 38	-10 41	-9 44	-9 48	-9 52	-8 57	-7 62	-7 68	-6 76	-6 84	-5 92	
64		-9 28	-9 28	-9 28	-9 28	-9 28	-9 28	-9 29	-9 29	-10 30	-10 31	-10 32	-9 33	-9 35	-9 37	-9 39	-9 42	-8 45	-8 49	-7 54	-7 59	-6 65	-6 71	-5 79	-4 88	-4 97	
63		-8 28	-8 28	-8 28	-8 28	-9 29	-9 29	-9 29	-9 30	-9 30	-9 31	-9 32	-9 34	-8 36	-8 38	-8 40	-8 43	-7 47	-7 51	-6 55	-6 61	-5 67	-5 74	-4 83	-3 93	-3 103	
62		-7 28	-7 28	-7 28	-8 28	-8 29	-8 29	-8 29	-8 30	-8 31	-8 32	-8 33	-8 34	-8 36	-7 38	-7 41	-7 44	-7 48	-6 52	-6 57	-5 63	-5 70	-4 78	-3 87	-2 97	-2 109	
+61		-7 28	-7 28	-7 28	-7 28	-7 29	-7 29	-7 29	-7 30	-7 31	-7 32	-7 33	-7 35	-7 37	-7 39	-6 42	-6 46	-6 50	-5 54	-5 59	-4 66	-4 73	-3 82	-2 92	-1 103	0 116	
+60		-6 28	-6 28	-6 28	-6 28	-7 29	-7 29	-7 29	-7 30	-7 31	-7 32	-7 34	-6 36	-6 38	-6 40	-6 43	-5 47	-5 51	-5 56	-4 62	-3 69	-3 77	-2 86	-1 97	0 109	+1 123	
59		-6 28	-6 28	-6 28	-6 29	-6 29	-6 29	-6 30	-6 31	-6 32	-6 33	-6 34	-6 36	-6 38	-5 41	-5 44	-5 48	-4 53	-4 58	-3 64	-3 72	-2 80	-1 90	0 102	+1 115	+2 131	
58		-5 28	-5 28	-5 28	-5 29	-6 29	-6 29	-6 30	-6 31	-6 32	-6 33	-5 35	-5 37	-5 39	-5 42	-5 46	-4 50	-4 54	-3 60	-3 67	-2 75	-1 84	0 95	+1 108	+2 123	+3 140	
57		-5 28	-5 28	-5 28	-5 29	-5 29	-5 30	-5 30	-5 31	-5 32	-5 34	-5 36	-5 38	-5 40	-4 43	-4 47	-4 51	-3 56	-3 62	-2 70	-1 78	0 88	0 100	+1 114	+3 131	+4 150	
+56		-4 28	-5 28	-5 28	-5 29	-5 29	-5 30	-5 31	-5 32	-5 33	-5 34	-5 36	-4 38	-4 41	-4 44	-3 48	-3 53	-3 58	-2 65	-1 73	-1 82	0 93	+1 106	+2 122	+4 140	+5 161	
+55		-4 28	-4 28	-4 29	-4 29	-4 29	-4 30	-4 31	-4 32	-4 33	-4 35	-4 37	-4 39	-4 42	-3 45	-3 49	-3 54	-2 60	-2 67	-1 76	0 86	+1 98	+2 112	+3 129	+5 150	+6 174	
54		-4 28	-4 28	-4 29	-4 29	-4 30	-4 30	-4 31	-4 32	-4 34	-4 36	-4 38	-3 40	-3 43	-3 47	-3 51	-2 56	-2 62	-1 70	0 79	+1 90	+2 104	+3 119	+4 138	+6 161	+7 189	
53		-4 28	-4 29	-4 29	-4 29	-4 30	-4 31	-4 32	-4 33	-4 34	-3 36	-3 38	-3 41	-3 44	-2 48	-2 52	-2 58	-1 65	0 73	0 83	+1 95	+2 110	+3 127	+4 148	+7 174	+9 205	
52		-3 28	-3 29	-3 29	-3 30	-3 30	-3 31	-3 32	-3 33	-3 35	-3 37	-3 39	-3 42	-2 45	-2 49	-2 54	-1 60	-1 67	0 76	+1 87	+2 101	+3 117	+5 136	+6 159	+8 188	+10 224	
+51		-3 29	-3 29	-3 29	-3 30	-3 30	-3 31	-3 32	-3 34	-3 36	-3 38	-3 40	-2 43	-2 47	-2 51	-1 56	-1 63	0 70	+1 80	+2 92	+3 107	+4 124	+6 145	+8 172	+10 204		
+50		-3 29	-3 29	-3 29	-3 30	-3 31	-3 32	-3 33	-3 34	-3 36	-2 38	-2 41	-2 44	-2 48	-1 52	-1 58	0 65	0 74	+1 84	+2 97	+3 113	+5 132	+7 156	+9 186	+11 223		

The tabular quantities are expressed in units of the fifth decimal.
 m' changes sign for negative hour angles.
 W is always positive.

$$\Delta\alpha_s = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_s = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

τ	O ^h						I ^h						II ^h						III ^h												
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m						
δ																															
	m' II'																														
+50	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-2 29	-2 29	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-3 28	-3 28	-3 29	-3 29					
49	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-2 29	-2 29	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-3 29	-3 29	-3 29	-3 29					
48	0 29	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 29	-2 29	-2 29	-2 29					
47	0 29	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 28	-1 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 29	-2 29	-2 29	-2 29	-2 29					
+46	0 29	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 28	-2 29	-2 29	-2 29	-2 29	-2 30					
+45	0 29	0 29	0 29	0 29	0 29	0 29	-1 29	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-2 28	-2 28	-2 28	-2 29	-2 29	-2 29	-2 29	-2 30					
44	0 29	0 29	0 29	0 29	0 29	0 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-2 29	-2 29	-2 29	-2 29	-2 30	-2 30					
43	0 28	0 28	0 28	0 28	0 28	0 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 29	-1 29	-2 29	-2 29	-2 30	-2 30	-2 30					
42	0 28	0 28	0 28	0 28	0 28	0 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 31					
+41	0 28	0 28	0 28	0 28	0 28	0 28	0 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 29	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 30	-1 31					
+40	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 31	-1 31					
39	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 31	-1 31	-1 31					
38	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 28	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 31	-1 31	-1 31	-1 32					
37	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	-1 28	-1 28	-1 28	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 31	-1 31	-1 31	-1 32	-1 32					
+36	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 28	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 31	-1 31	-1 31	-1 32	-1 33					
+35	0 28	0 28	0 28	0 28	0 28	0 28	0 29	0 29	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 31	-1 31	-1 31	-1 32	-1 33	-1 33					
34	0 28	0 28	0 28	0 28	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	-1 29	-1 29	-1 29	-1 30	-1 30	-1 30	-1 31	-1 31	-1 31	-1 32	-1 32	-1 33	0 34					
33	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 32	0 33	0 34	0 35					
32	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 32	0 32	0 33	0 34	0 35					
+31	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 32	0 32	0 33	0 34	0 35	0 36					
+30	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 31	0 32	0 32	0 33	0 33	0 34	0 35	0 36					

The tabular quantities are expressed in units of the fifth decimal.
 m' changes sign for negative hour angles.
 W is always positive.

$$\Delta\alpha_s = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_s = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

τ δ	IV ^h						V ^h						VI ^h						VII ^h							
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
m' W'																										
+50	-3 29	-3 29	-3 29	-3 30	-3 31	-3 32	-3 33	-3 34	-3 36	-2 38	-2 41	-2 44	-2 48	-1 52	-1 58	0 65	0 74	+1 84	+2 97	-3 113	+5 132	-7 156	+9 186	+11 223		
49	-3 29	-3 29	-3 30	-3 30	-3 31	-3 32	-3 33	-2 35	-2 37	-2 39	-2 42	-2 45	-1 49	-1 54	0 60	0 68	+1 77	+2 88	+3 102	+4 120	+6 141	+8 168	+10 202			
48	-2 29	-2 30	-2 30	-2 31	-2 32	-2 33	-2 34	-2 36	-2 38	-2 40	-2 43	-1 47	-1 51	-1 56	0 63	+1 71	+1 80	+2 93	+4 108	+5 128	+7 152	+9 182	+12 220			
47	-2 29	-2 30	-2 30	-2 31	-2 32	-2 33	-2 34	-2 36	-2 38	-2 41	-1 44	-1 48	-1 53	0 58	0 65	+1 74	+2 84	+3 98	+4 115	+6 136	+8 163	+10 197				
+46	-2 30	-2 30	-2 30	-2 31	-2 32	-2 33	-2 35	-2 37	-2 39	-1 42	-1 45	-1 49	0 54	0 60	+1 68	+1 77	+2 89	+4 103	+5 122	+7 146	+9 176	+12 214				
+45	-2 30	-2 30	-2 31	-2 32	-2 33	-2 34	-2 36	-2 38	-1 40	-1 43	-1 46	0 50	0 56	0 62	+1 71	+2 81	+3 94	+4 109	+6 130	+8 156	+10 190					
44	-2 30	-2 31	-2 31	-2 32	-2 33	-2 34	-1 36	-1 38	-1 41	-1 44	-1 48	0 52	0 58	+1 65	+2 74	+3 85	+4 99	+5 116	+7 139	+9 168	+12 207					
43	-2 30	-2 31	-2 32	-2 33	-1 34	-1 35	-1 37	-1 39	-1 42	-1 45	0 49	0 54	+1 60	+1 68	+2 77	+3 89	+4 104	+6 124	+8 149	+10 182						
42	-1 31	-1 31	-1 32	-1 33	-1 34	-1 36	-1 38	-1 40	-1 43	0 46	0 50	0 56	+1 63	+2 71	+2 81	+3 94	+5 110	+7 132	+9 160	+11 197						
+41	-1 31	-1 32	-1 33	-1 34	-1 35	-1 36	-1 38	-1 41	0 44	0 47	0 52	+1 58	+1 65	+2 74	+3 85	+4 99	+5 117	+7 141	+10 173							
+40	-1 31	-1 32	-1 33	-1 34	-1 35	-1 37	-1 39	-1 42	0 45	0 49	0 54	+1 60	+2 67	+2 77	+3 89	+5 104	+6 124	+8 151	+11 187							
39	-1 31	-1 32	-1 33	-1 35	-1 36	-1 38	-1 40	0 43	0 46	0 50	+1 56	+1 62	+2 70	+3 80	+4 94	+5 111	+7 133	+9 163								
38	-1 32	-1 33	-1 34	-1 35	-1 37	0 39	0 41	0 44	0 48	+1 52	+1 58	+2 64	+2 73	+3 84	+4 99	+6 118	+8 142	+10 176								
37	-1 32	-1 33	-1 34	-1 36	-1 38	0 40	0 42	0 45	0 49	+1 54	+1 60	+2 67	+3 76	+4 88	+5 104	+7 125	+9 152									
+36	-1 33	-1 34	-1 35	0 36	0 38	0 40	0 43	0 46	+1 50	+1 56	+1 62	+2 70	+3 80	+4 93	+5 110	+7 133	+9 164									
+35	-1 33	-1 34	0 35	0 37	0 39	0 41	0 44	0 48	+1 52	+1 58	+2 64	+2 73	+3 84	+5 98	+6 117	+8 142	+11 176									
34	0 34	0 35	0 36	0 38	0 40	0 42	0 45	+1 49	+1 54	+1 60	+2 67	+3 76	+4 88	+5 104	+7 125	+9 153										
33	0 35	0 36	0 37	0 39	0 41	0 44	0 47	+1 51	+1 56	+2 62	+2 70	+3 80	+4 93	+6 110	+8 133	+10 164										
32	0 35	0 36	0 38	0 40	0 42	0 45	+1 48	+1 52	+2 58	+2 65	+3 73	+4 84	+5 98	+7 117	+8 142	+11 177										
+31	0 36	0 37	0 39	0 41	0 43	+1 46	+1 49	+1 54	+2 60	+2 67	+3 76	+4 88	+5 104	+7 125	+9 152											
+30	0 36	0 38	0 40	0 42	0 44	+1 47	+1 51	+1 56	+2 62	+3 70	+3 79	+4 92	+6 110	+8 133	+10 164											

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 m' changes sign for negative hour angles.
 W is always positive.

$$\Delta\alpha_0 = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_0 = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

τ δ	0 ^h						I ^h						II ^h						III ^h							
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
m' W'																										
+30	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 32	0 32	0 33	0 33	0 34	0 35	0 36
29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 29	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 33	0 34	0 35	0 36
28	0 29	0 29	0 29	0 29	0 29	0 29	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 33	0 34	0 35	0 36
27	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 33	0 33	0 34	0 35	0 36
+26	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 33	0 33	0 34	0 35	0 36	0 37	0 38
+25	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 33	0 33	0 33	0 34	0 34	0 35	0 36	0 37	0 38
24	0 30	0 30	0 30	0 30	0 30	0 30	0 30	0 31	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 33	0 33	0 33	0 34	0 34	0 35	0 36	0 37	0 38	I 41
23	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 32	0 33	0 33	0 33	0 34	0 34	0 35	0 36	0 37	0 38	0 39	I 40
22	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 32	0 32	0 33	0 33	0 34	0 34	0 34	0 35	0 35	0 36	0 37	0 38	0 40	I 41
+21	0 31	0 31	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 32	0 32	0 32	0 33	0 33	0 33	0 34	0 34	0 35	0 35	0 36	0 37	0 38	0 39	I 41	I 42	I 44
+20	0 32	0 32	0 32	0 32	0 32	0 32	0 32	0 32	0 32	0 32	0 33	0 33	0 33	0 34	0 34	0 35	0 35	0 36	0 36	0 37	0 37	0 38	0 39	I 40	I 42	I 44
19	0 32	0 32	0 32	0 32	0 32	0 32	0 32	0 32	0 33	0 33	0 33	0 33	0 34	0 34	0 35	0 35	0 36	0 37	0 37	0 38	0 39	0 40	I 41	I 43	I 45	I 47
18	0 32	0 32	0 32	0 32	0 32	0 33	0 33	0 33	0 33	0 33	0 34	0 34	0 34	0 35	0 35	0 36	0 36	0 37	0 37	0 38	0 39	I 40	I 42	I 44	I 46	I 48
17	0 33	0 33	0 33	0 33	0 33	0 33	0 33	0 33	0 34	0 34	0 34	0 34	0 35	0 35	0 36	0 37	0 37	0 38	0 39	0 40	I 41	I 43	I 45	I 47	I 50	
+16	0 33	0 33	0 33	0 33	0 33	0 34	0 34	0 34	0 34	0 34	0 35	0 35	0 36	0 36	0 37	0 37	0 38	0 39	I 40	I 41	I 42	I 44	I 46	I 48	I 51	
+15	0 34	0 34	0 34	0 34	0 34	0 34	0 34	0 34	0 35	0 35	0 35	0 36	0 36	0 37	0 37	0 38	0 39	I 40	I 41	I 42	I 44	I 45	I 47	I 50	2 53	
14	0 34	0 34	0 34	0 34	0 34	0 35	0 35	0 35	0 35	0 36	0 36	0 36	0 37	0 37	0 38	0 39	I 40	I 41	I 42	I 43	I 45	I 47	I 49	2 52	2 55	
13	0 35	0 35	0 35	0 35	0 35	0 35	0 35	0 36	0 36	0 36	0 37	0 37	0 38	0 38	0 39	I 40	I 41	I 42	I 43	I 44	I 46	I 48	I 50	2 53	2 57	
12	0 36	0 36	0 36	0 36	0 36	0 36	0 36	0 36	0 37	0 37	0 37	0 38	0 38	0 39	I 40	I 41	I 42	I 43	I 44	I 45	I 47	I 49	I 52	2 55	2 59	
+11	0 36	0 36	0 36	0 36	0 36	0 37	0 37	0 37	0 38	0 38	0 39	0 39	0 40	I 41	I 42	I 43	I 44	I 45	I 47	I 49	I 51	2 54	2 57	2 61		
+10	0 37	0 37	0 37	0 37	0 37	0 38	0 38	0 38	0 38	0 39	0 39	0 40	I 41	I 42	I 43	I 44	I 45	I 46	I 48	I 50	2 52	2 55	2 59	2 63		

The tabular quantities are expressed in units of the fifth decimal.
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$$\Delta\alpha_0 = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_0 = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

τ δ	IV ^h						V ^h						VI ^h						VII ^h							
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
m' W																										
0	0	0	0	0	0	I	I	I	2	3	3	4	6	8	10											
+30	36	38	40	42	44	47	51	56	62	70	79	92	110	133	164											
29	0	0	0	0	I	I	I	2	2	3	4	5	7	9												
	37	38	40	43	46	49	53	58	64	73	83	97	116	142												
28	0	0	0	I	I	I	I	2	2	3	4	5	7	10												
	38	39	41	44	47	50	54	60	67	76	87	103	124	151												
27	0	0	0	I	I	I	2	2	3	4	5	6	8	11												
	38	40	42	45	48	52	56	62	70	79	92	109	132	163												
+26	0	0	I	I	I	I	2	2	3	4	5	7	9													
	39	41	43	46	49	53	58	65	73	83	97	116	141													
+25	0	0	I	I	I	I	2	2	3	4	5	7	9													
	40	42	44	47	51	55	60	67	76	87	102	123	151													
24	I	I	I	I	I	2	2	3	4	5	6	8	10													
	41	43	46	49	52	57	63	70	80	92	108	131	162													
23	I	I	I	I	2	2	3	3	4	5	7	9	12													
	42	44	47	50	54	59	65	73	84	97	115	140	175													
22	I	I	I	I	2	2	3	4	5	6	8	10														
	43	45	48	52	56	61	68	77	88	102	122	150														
+21	I	I	I	2	2	2	3	4	5	6	8	11														
	44	47	50	53	58	64	71	80	92	108	130	161														
+20	I	I	I	2	2	3	3	4	5	7	9	12														
	46	48	51	55	60	66	74	84	97	115	139	174														
19	I	I	2	2	2	3	4	5	6	7	10	13														
	47	50	53	57	62	69	77	88	103	122	149	188														
18	I	I	2	2	3	3	4	5	6	8	11															
	48	51	55	59	65	72	81	93	109	130	160															
17	I	2	2	2	3	3	4	5	7	9	12															
	50	53	57	62	68	75	85	98	115	139	173															
+16	I	2	2	3	3	4	5	6	7	10	13															
	51	54	59	64	71	79	89	103	123	149	187															
+15	2	2	2	3	3	4	5	6	8	11																
	53	56	61	66	74	83	94	109	131	160																
14	2	2	2	3	4	4	5	7	9	12																
	55	58	63	69	77	87	99	116	140	173																
13	2	2	3	4	5	5	6	8	10	13																
	57	61	66	72	80	91	105	124	150	187																
12	2	2	3	4	5	5	7	8	11																	
	59	63	69	76	84	96	111	132	161																	
+11	2	3	3	4	5	6	7	9	12																	
	61	66	72	79	88	101	118	141	174																	
+10	2	3	3	4	5	6	8	10	13																	
	63	68	75	83	93	107	126	151	188																	

The tabular quantities are expressed in units of the fifth decimal.
 m' changes sign for negative hour angles.
 W is always positive.

$\Delta\alpha^s = \Delta\alpha^s + m' \Delta\delta''$.
 $\Delta\delta_o = \Delta\delta + W \Delta\delta$.

The tabular quantities are expressed in units of the fifth decimal.
 m' changes sign for negative hour angles.
 W is always positive.

$$\Delta\alpha_s = \Delta\alpha^s + m' \Delta\delta''.$$

$$\Delta\delta_s = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

τ	δ	O ^h						I ^h						II ^h						III ^h							
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
		<i>m'</i> <i>II'</i>																									
+10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	
	37	37	37	37	37	37	38	38	38	38	39	39	40	41	42	43	44	45	46	48	50	52	55	59	63		
9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	3		
	38	38	38	38	38	38	38	39	39	39	40	40	41	42	43	44	45	46	48	50	52	54	57	61	66		
8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	3		
	38	38	38	38	39	39	39	39	40	40	41	41	42	43	44	45	46	47	49	51	53	56	59	63	68		
7	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	3	3		
	39	39	39	39	40	40	40	40	41	41	42	42	43	44	45	46	47	49	51	53	55	58	62	66	71		
+6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	3	3		
	40	40	40	40	41	41	41	41	42	42	43	43	44	45	46	47	49	50	52	54	57	60	64	69	74		
+5	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	3	3	4		
	41	41	41	41	42	42	42	42	43	43	44	44	45	46	47	48	50	52	54	56	59	63	67	72	78		
4	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	3	3	4		
	42	42	42	42	43	43	43	43	44	44	45	46	47	48	49	50	52	54	56	58	61	65	69	75	82		
3	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4		
	43	43	43	43	44	44	44	44	45	46	46	47	48	49	50	52	54	56	58	61	64	68	72	78	86		
2	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	3	3	4	4		
	44	44	44	44	45	45	45	46	46	47	48	48	49	50	52	54	56	58	60	63	66	71	76	82	90		
+1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	5		
	45	45	45	46	46	46	46	47	47	48	49	50	51	52	53	55	57	60	62	65	69	74	79	86	95		
0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	3	3	4	4	5		
	47	47	47	47	47	47	48	48	49	50	51	52	53	54	55	57	59	62	65	68	72	77	83	91	100		
-1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	5	6		
	48	48	48	48	49	49	49	50	50	51	52	53	54	56	57	59	61	64	67	71	75	81	87	96	106		
2	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	4	4	5	6		
	49	49	49	50	50	50	51	51	52	53	54	55	56	58	60	62	64	67	70	74	79	85	92	101	112		
3	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	5	5	6		
	51	51	51	51	52	52	52	53	54	55	56	57	58	60	62	64	67	70	73	78	83	89	97	107	119		
4	0	0	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	4	4	5	6	7		
	52	53	53	53	54	54	54	55	56	57	58	59	60	62	64	66	69	72	76	81	87	94	102	113	127		
-5	0	0	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	5	5	6	7		
	54	54	54	55	56	56	56	57	58	59	60	61	63	65	67	69	72	76	80	85	91	99	108	120	135		
-6	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	5	6	7	8		
	56	56	56	57	58	58	58	59	60	61	62	63	65	67	70	72	75	79	84	89	96	104	115	128	145		
7	0	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	4	5	5	6	8	9		
	58	58	58	59	60	60	61	62	63	64	66	68	70	73	76	79	83	88	94	102	111	122	136	155			
8	0	0	0	0	1	1	1	1	1	1	2	2	2	2	3	3	3	4	4	5	6	7	8	10			
	60	60	60	61	62	62	63	65	66	67	69	71	73	76	79	83	87	93	100	108	118	130	146	167			
9	0	0	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	4	5	5	6	7	9	11			
	63	63	63	63	64	65	66	67	68	70	72	74	77	80	83	87	92	98	105	114	125	139	157	181			
-10	0	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	4	4	5	6	7	8	10	12			
	65	65	65	66	67	68	69	70	71	73	75	77	80	84	88	92	97	104	111	121	133	149	169	196			

The tabular quantities are expressed in units of the fifth decimal.
m' changes sign for negative hour angles.
W is always positive.

$$\Delta\alpha_0 = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_0 = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

δ	τ	IV ^h						V ^h						VI ^h						VII ^h							
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
		<i>m'</i> <i>W</i>																									
+10	°	2 63	3 68	3 75	4 83	5 93	6 107	8 126	10 151	13 188																	
9		3 66	3 71	4 78	4 87	5 98	7 113	8 134	11 162																		
8		3 68	3 74	4 82	5 92	6 104	7 120	9 143	12 175																		
7		3 71	4 78	4 86	5 97	6 110	8 128	10 154	13 190																		
+6		3 74	4 81	5 90	6 102	7 117	9 137	11 166																			
+5		4 78	4 86	5 95	6 108	7 124	9 147	12 179																			
4		4 82	4 90	5 100	7 114	8 133	10 158	13 194																			
3		4 86	5 95	6 106	7 122	9 143	11 170																				
2		4 90	5 100	6 113	8 130	10 153	12 184																				
+1		5 95	6 106	7 120	9 138	11 164	14 200																				
0		5 100	6 112	7 127	9 148	12 177	15 218																				
-1		6 106	7 119	8 136	10 159	13 192																					
2		6 112	7 126	9 146	11 172	14 208																					
3		6 119	8 135	10 156	12 186																						
4		7 127	9 145	11 168	13 202																						
-5		7 135	9 155	12 182	15 220																						
-6		8 145	10 167	12 198																							
7		9 155	11 180	14 215																							
8		10 167	12 196																								
9		11 181	14 213																								
-10		12 196																									

The tabular quantities are expressed in units of the fifth decimal.
 m' changes sign for negative hour angles.
 W is always positive.

$$\Delta\alpha_0 = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_0 = \Delta\delta + W \Delta\delta.$$

TABLE II—Continued.

To be used when differences in Right Ascension are determined by Transits.

τ δ	O ^h						I ^h						II ^h						III ^a							
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m	
m' W																										
—10	65	65	65	66	66	67	68	69	70	71	73	75	77	80	84	88	92	97	104	111	121	133	149	169	196	12
11	68	68	68	69	69	70	71	72	73	74	76	79	81	84	88	92	97	103	110	118	129	143	160	183	11	
12	71	71	71	72	72	73	74	75	76	78	80	83	85	88	92	97	102	109	117	126	138	153	173	199	10	
13	74	74	74	75	75	76	77	78	80	82	84	87	90	93	97	102	108	115	124	135	148	165	187	11		
—14	77	77	78	78	79	80	81	82	84	86	88	91	94	98	103	108	115	122	132	144	159	178	203	12		
—15	81	81	81	82	83	84	85	86	88	90	93	96	100	104	109	115	122	131	141	154	171	193	222	13		
16	85	85	85	86	87	88	89	91	93	95	98	101	105	110	116	122	130	140	151	166	185	210	243	14		
17	90	90	90	91	92	94	96	98	101	104	107	111	117	123	130	139	150	163	180	202	229	252	15			
18	95	95	95	96	97	99	101	104	107	110	114	118	124	131	139	149	161	176	195	220	252	15				
—19	100	100	100	101	102	103	105	107	110	113	117	121	126	132	140	149	160	174	191	212	241	265	17			
—20	105	105	106	107	108	109	111	113	116	120	124	129	135	142	150	160	173	188	208	232	265	293	17			
21	111	111	112	113	114	116	118	120	123	127	132	138	144	152	161	173	187	205	227	255	293	17				
22	118	118	119	120	121	123	125	128	132	136	141	148	155	164	174	187	203	223	249	282	293	17				
23	126	126	127	128	129	131	134	137	141	146	152	159	167	177	189	203	221	245	274	293	293	17				
—24	135	135	135	136	138	140	143	147	152	157	163	171	180	191	205	222	243	270	304	293	293	17				
—25	144	144	145	146	148	151	154	158	163	169	176	185	195	208	224	243	268	299	293	293	293	17				
26	154	155	156	157	159	162	166	170	176	183	191	201	213	228	246	268	296	293	293	293	293	17				
27	166	167	168	170	172	175	179	184	191	198	208	219	233	250	271	297	293	293	293	293	293	17				
28	180	180	181	183	186	190	194	200	208	216	227	240	256	276	300	331	293	293	293	293	293	17				
—29	195	196	197	199	202	206	212	219	227	237	249	264	283	306	335	293	293	293	293	293	293	17				
—30	212	213	214	217	221	226	232	239	249	261	275	292	314	341	293	293	293	293	293	293	293	17				

The tabular quantities are expressed in units of the fifth decimal.
 m' changes sign for negative hour angles.
 W is always positive.

$$\Delta\alpha_0 = \Delta\alpha + m' \Delta\delta''.$$

$$\Delta\delta_0 = \Delta\delta + W\Delta\delta.$$

TABLE III.

To be used when Position Angle and Distance are determined.

$\delta = +24^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 30	0 30	0 30	- 1 30	- 1 31	- 1 31	- 1 32	- 1 32	0 33	0 34	+ 1 36	+ 2 38	+ 4 41	0 180 360
15 195	0 30	- 1 30	- 1 31	- 1 31	- 1 32	- 1 33	- 1 34	- 1 35	0 37	+ 1 40	+ 2 43	+ 3 47	+ 6 53	15 195 345
30 210	- 1 30	- 1 30	- 1 31	- 1 32	- 1 33	- 1 34	- 2 36	- 2 38	- 1 41	0 44	+ 1 49	+ 2 56	+ 3 65	30 210 330
45 225	- 1 29	- 1 30	- 1 31	- 2 32	- 2 33	- 2 35	- 3 37	- 3 40	- 3 43	- 3 48	- 3 54	- 2 62	- 2 73	45 225 315
60 240	- 1 29	- 1 29	- 2 30	- 2 31	- 3 33	- 3 35	- 4 37	- 4 40	- 5 44	- 6 49	- 6 55	- 8 64	- 9 75	60 240 300
75 255	0 28	- 1 29	- 2 29	- 3 30	- 3 32	- 4 34	- 5 36	- 6 39	- 7 42	- 9 47	- 10 53	- 12 61	- 15 71	75 255 285
90 270	0 28	- 1 28	- 2 29	- 3 30	- 3 31	- 4 32	- 6 34	- 7 36	- 9 39	- 11 43	- 13 48	- 16 54	- 20 62	90 270 270
105 285	0 28	- 1 28	- 1 28	- 2 29	- 3 29	- 4 30	- 6 31	- 7 33	- 9 35	- 11 38	- 14 41	- 17 45	- 21 50	105 285 255
120 300	+ 1 29	0 29	- 1 28	- 2 28	- 3 28	- 4 29	- 5 29	- 6 30	- 8 31	- 10 33	- 12 34	- 15 36	- 19 39	120 300 240
135 315	+ 1 29	0 29	- 1 28	- 1 28	- 2 28	- 3 28	- 4 28	- 5 29	- 6 29	- 8 29	- 10 30	- 12 30	- 14 31	135 315 225
150 330	+ 1 30	0 30	0 29	- 1 29	- 1 29	- 2 29	- 3 29	- 3 28	- 4 28	- 5 28	- 6 28	- 6 28	- 7 28	150 330 210
165 345	0 30	0 30	0 30	- 1 30	- 1 30	- 1 30	- 2 30	- 2 30	- 2 30	- 2 30	- 2 30	- 1 31	0 32	165 345 195
180 360	0 30	0 30	0 30	- 1 30	- 1 31	- 1 31	- 1 32	- 1 32	0 33	0 34	+ 1 36	+ 2 38	+ 4 41	180 360 180

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +22^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
$\frac{\Delta p}{h}$														
0 180	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 33	0 34	+ 1 35	+ 2 37	+ 4 40	+ 6 43	0 180 360
15 195	0 31	- 1 31	- 1 31	- 1 32	- 1 33	- 1 34	0 35	0 36	+ 1 38	+ 2 41	+ 3 45	+ 5 50	+ 7 56	345 165
30 210	- 1 30	- 1 31	- 1 32	- 1 33	- 1 34	- 1 35	- 1 37	- 1 39	- 1 42	0 46	+ 1 52	+ 3 59	+ 4 69	330 150
45 225	- 1 30	- 1 30	- 1 31	- 2 32	- 2 34	- 2 36	- 3 38	- 3 41	- 3 45	- 3 50	- 2 56	- 2 65	- 1 77	315 135
60 240	- 1 29	- 1 30	- 2 31	- 2 32	- 3 33	- 3 35	- 4 38	- 4 41	- 5 45	- 6 50	- 7 57	- 8 67	- 9 79	300 120
75 255	0 28	- 1 29	- 2 30	- 3 31	- 3 32	- 4 34	- 5 36	- 6 39	- 7 43	- 9 48	- 11 54	- 13 63	- 16 74	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 32	- 6 34	- 7 36	- 9 39	- 11 44	- 13 49	- 17 55	- 21 64	270 90
105 285	0 28	0 28	- 1 28	- 2 29	- 3 29	- 4 30	- 6 31	- 7 33	- 9 35	- 11 38	- 14 42	- 17 46	- 22 51	255 75
120 300	+ 1 29	0 28	- 1 28	- 2 28	- 3 28	- 4 29	- 5 29	- 6 30	- 8 31	- 10 32	- 12 34	- 15 36	- 19 38	240 60
135 315	+ 1 30	0 29	0 29	- 1 28	- 2 28	- 2 28	- 3 28	- 4 28	- 6 29	- 7 29	- 9 29	- 11 30	- 13 30	225 45
150 330	+ 1 30	0 30	0 29	- 1 29	- 1 29	- 1 29	- 2 28	- 3 28	- 3 28	- 4 28	- 5 28	- 5 28	- 6 28	210 30
165 345	0 31	0 30	0 30	0 30	0 30	- 1 30	- 1 30	- 1 30	- 1 30	- 1 31	- 1 31	0 32	+ 1 33	195 15
180 360	0 31	0 31	0 31	0 31	0 32	0 32	0 32	0 33	0 34	+ 1 35	+ 2 37	+ 4 40	+ 6 43	180 0
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.														
													$p_0 = p + \Delta p.$ $s_0 = s + h s.$	

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +20^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
	Δp h													
0 180	0 32	0 32	0 32	0 32	0 32	0 33	0 33	+ 1 34	+ 1 35	+ 2 37	+ 3 39	+ 5 42	+ 8 46	0 180 360 180
15 195	0 31	- 1 32	- 1 32	- 1 33	0 34	0 35	0 36	0 38	+ 1 40	+ 2 43	+ 4 47	+ 6 52	+ 9 60	345 165
30 210	- 1 31	- 1 31	- 1 32	- 1 33	- 1 34	- 1 36	- 1 38	- 1 41	0 44	+ 1 49	+ 2 54	+ 3 62	+ 5 73	330 150
45 225	- 1 30	- 1 31	- 2 32	- 2 33	- 2 34	- 2 37	- 2 39	- 2 42	- 2 46	- 2 52	- 2 59	- 2 68	- 1 81	315 135
60 240	- 1 29	- 1 30	- 2 31	- 2 32	- 3 34	- 3 36	- 4 39	- 4 42	- 5 46	- 6 52	- 7 60	- 8 70	- 9 83	300 120
75 255	0 28	- 1 29	- 2 30	- 3 31	- 3 32	- 4 34	- 5 37	- 6 40	- 8 44	- 9 49	- 11 56	- 13 65	- 17 77	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 32	- 6 34	- 7 37	- 9 40	- 11 44	- 14 50	- 17 57	- 21 66	270 90
105 285	0 28	0 28	- 1 28	- 2 29	- 3 29	- 4 30	- 6 31	- 7 33	- 9 35	- 11 38	- 14 41	- 18 46	- 22 52	255 75
120 300	+ 1 29	0 28	- 1 28	- 1 28	- 2 28	- 3 29	- 4 29	- 6 30	- 8 31	- 10 32	- 12 34	- 15 36	- 19 39	240 60
135 315	+ 1 30	+ 1 29	0 29	- 1 28	- 1 28	- 2 28	- 3 28	- 4 28	- 5 28	- 7 29	- 8 29	- 10 30	- 13 30	225 45
150 330	+ 1 31	+ 1 30	0 30	0 29	0 29	- 1 29	- 1 29	- 2 29	- 2 29	- 3 29	- 4 28	- 4 28	- 5 28	210 30
165 345	0 31	0 31	0 31	0 31	0 30	0 31	0 31	0 31	0 31	0 31	+ 1 32	+ 2 33	+ 3 34	195 15
180 360	0 32	0 32	0 32	0 32	0 32	0 33	0 33	+ 1 34	+ 1 35	+ 2 37	+ 3 39	+ 5 42	+ 8 46	180 0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined. $\delta = +18^\circ$

τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 32	0 32	0 32	0 33	0 33	+ 1 34	+ 1 34	+ 2 35	+ 3 36	+ 4 38	+ 5 40	+ 7 44	+ 10 48	360 180
15 195	- 1 32	- 1 32	0 33	0 34	0 35	0 36	0 37	+ 1 39	+ 2 42	+ 3 45	+ 5 49	+ 7 55	+ 11 64	345 165
30 210	- 1 31	- 1 32	- 1 33	- 1 34	- 1 36	- 1 38	- 1 40	0 42	0 46	+ 1 51	+ 2 57	+ 4 66	+ 7 78	330 150
45 225	- 1 30	- 2 31	- 2 32	- 2 34	- 2 36	- 2 38	- 2 40	- 2 44	- 2 48	- 2 54	- 2 62	- 1 72	- 1 86	315 135
60 240	- 1 29	- 2 30	- 2 31	- 3 33	- 3 35	- 4 37	- 4 40	- 5 43	- 5 48	- 6 54	- 7 62	- 8 73	- 9 87	300 120
75 255	- 1 28	- 1 29	- 2 30	- 3 31	- 4 33	- 5 35	- 6 37	- 7 41	- 8 45	- 9 51	- 11 58	- 14 68	- 17 81	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 32	- 6 34	- 7 37	- 9 41	- 11 45	- 14 50	- 18 58	- 22 68	270 90
105 285	+ 1 28	0 28	- 1 28	- 2 29	- 3 29	- 4 30	- 6 31	- 7 33	- 9 35	- 11 38	- 14 41	- 18 46	- 23 53	255 75
120 300	+ 1 29	0 29	0 28	- 1 28	- 2 28	- 3 29	- 4 29	- 5 30	- 7 31	- 9 32	- 12 34	- 15 36	- 19 39	240 60
135 315	+ 1 30	+ 1 30	0 29	0 29	- 1 28	- 2 28	- 2 28	- 3 28	- 5 28	- 6 29	- 8 29	- 9 29	- 11 30	225 45
150 330	+ 1 31	+ 1 31	+ 1 30	0 30	0 30	0 29	- 1 29	- 1 29	- 1 29	- 2 29	- 2 29	- 3 29	- 3 29	210 30
165 345	+ 1 32	+ 1 32	+ 1 31	+ 1 31	+ 1 31	+ 1 31	+ 1 31	+ 1 31	+ 1 32	+ 1 32	+ 2 33	+ 3 34	+ 5 35	195 15
180 360	0 32	0 32	0 32	0 33	0 33	+ 1 34	+ 1 34	+ 2 35	+ 3 36	+ 4 38	+ 5 40	+ 7 44	+ 10 48	180 0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +16^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 33	0 33	0 33	+ 1 34	+ 1 34	+ 1 35	+ 2 36	+ 2 37	+ 3 38	+ 5 40	+ 6 42	+ 9 46	+ 12 51	0 180
15 195	- 1 33	- 1 33	0 34	0 35	0 36	0 37	+ 1 39	+ 2 41	+ 3 44	+ 4 47	+ 6 52	+ 9 59	+ 13 68	345 165
30 210	- 1 32	- 1 33	- 1 34	- 1 35	- 1 37	- 1 39	0 41	0 44	+ 1 48	+ 2 54	+ 3 60	+ 5 70	+ 8 83	330 150
45 225	- 1 31	- 2 32	- 2 33	- 2 34	- 2 36	- 2 39	- 2 42	- 2 46	- 2 50	- 2 57	- 2 65	- 1 76	0 92	315 135
60 240	- 1 30	- 2 31	- 2 32	- 3 33	- 3 35	- 4 37	- 4 41	- 5 45	- 6 50	- 6 56	- 7 65	- 8 77	- 10 93	300 120
75 255	- 1 29	- 1 29	- 2 30	- 3 31	- 4 33	- 5 35	- 6 38	- 7 42	- 8 46	- 10 52	- 12 60	- 15 70	- 18 85	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 32	- 6 34	- 8 37	- 9 41	- 12 46	- 15 52	- 18 60	- 24 70	270 90
105 285	+ 1 29	0 28	- 1 28	- 2 29	- 3 29	- 4 30	- 5 31	- 7 33	- 9 35	- 11 38	- 15 42	- 19 47	- 24 54	255 75
120 300	+ 1 30	+ 1 29	0 28	- 1 28	- 2 28	- 3 28	- 4 29	- 5 30	- 7 31	- 9 32	- 12 34	- 15 36	- 19 39	240 60
135 315	+ 1 31	+ 1 30	+ 1 29	0 29	- 1 28	- 1 28	- 2 28	- 3 28	- 4 28	- 5 28	- 7 29	- 9 29	- 11 30	225 45
150 330	+ 1 32	+ 1 31	+ 1 30	+ 1 30	0 30	0 30	0 29	0 29	- 1 29	- 1 29	- 1 29	- 2 29	- 2 29	210 30
165 345	+ 1 33	+ 1 32	+ 1 32	+ 1 32	+ 1 32	+ 1 32	+ 1 32	+ 2 32	+ 2 33	+ 3 33	+ 4 34	+ 5 35	+ 7 37	195 15
180 360	0 33	0 33	0 33	+ 1 34	+ 1 34	+ 1 35	+ 2 36	+ 2 37	+ 3 38	+ 5 40	+ 6 42	+ 9 46	+ 12 51	180 0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +14^\circ$														
$\begin{array}{c} \tau \\ p_{+\tau} \end{array}$	O ^h			I ^h			II ^h			III ^h				$\begin{array}{c} \tau \\ p_{-\tau} \end{array}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
$\begin{array}{c} \circ \quad \circ \\ \circ \quad 180 \end{array}$	$\begin{array}{c} \Delta p \\ h \end{array}$													$\begin{array}{c} \circ \quad \circ \\ 360 \quad 180 \end{array}$
	0 34	0 34	+1 34	+1 35	+1 35	+2 36	+2 37	+3 38	+4 40	+6 42	+8 45	+11 49	+15 55	
15 195	-1 34	-1 34	0 35	0 36	0 37	+1 39	+1 40	+2 43	+3 46	+5 50	+7 55	+10 63	+15 73	345 165
30 210	-2 33	-1 34	-1 35	-1 36	-1 38	-1 40	0 43	0 46	+1 51	+2 56	+4 64	+6 75	+9 89	330 150
45 225	-2 31	-2 32	-2 34	-2 36	-3 38	-3 40	-3 43	-2 47	-2 53	-2 60	-1 69	-1 81	0 98	315 135
60 240	-2 30	-2 31	-3 32	-3 34	-4 36	-4 39	-5 42	-5 46	-6 52	-7 59	-8 68	-9 81	-10 99	300 120
75 255	-1 28	-2 29	-2 30	-3 32	-4 34	-5 36	-6 39	-7 42	-9 47	-11 54	-13 63	-16 74	-19 89	285 105
90 270	0 28	-1 28	-2 29	-3 30	-4 31	-5 33	-6 35	-8 38	-10 41	-12 46	-15 53	-19 62	-25 73	270 90
105 285	+1 28	0 28	-1 28	-2 28	-3 29	-4 30	-5 31	-7 33	-9 35	-12 38	-15 42	-19 48	-25 55	255 75
120 300	+2 30	+1 29	0 28	-1 28	-1 28	-2 28	-4 29	-5 29	-7 30	-9 32	-12 34	-15 36	-20 39	240 60
135 315	+2 31	+1 30	+1 30	0 29	0 29	-1 28	-1 28	-2 28	-3 28	-5 28	-6 29	-8 29	-10 30	225 45
150 330	+2 33	+1 32	+1 31	+1 31	+1 31	+1 30	+1 30	+1 30	0 29	0 29	0 29	0 29	0 29	210 30
165 345	+1 34	+1 33	+1 33	+1 33	+2 33	+2 33	+2 33	+2 33	+3 34	+4 34	+5 35	+7 37	+9 39	195 15
180 360	0 34	0 34	+1 34	+1 35	+1 35	+2 36	+2 37	+3 38	+4 40	+6 42	+8 45	+11 49	+15 55	180 0
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.														
													$p_0 = p + \Delta p.$ $s_0 = s + h s.$	

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +12^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 36	0 36	+ 1 36	+ 1 36	+ 2 36	+ 3 37	+ 3 38	+ 4 40	+ 5 42	+ 7 44	+ 10 47	+ 13 52	+ 17 58	0 180
15 195	- 1 35	- 1 36	0 36	0 37	+ 1 38	+ 1 40	+ 2 42	+ 3 45	+ 4 48	+ 6 53	+ 9 59	+ 12 67	+ 17 79	345 165
30 210	- 2 34	- 2 35	- 1 36	- 1 37	- 1 39	- 1 42	0 45	+ 1 48	+ 2 53	+ 3 60	+ 5 68	+ 7 80	+ 11 96	330 150
45 225	- 2 32	- 2 33	- 2 34	- 3 36	- 3 38	- 3 41	- 3 45	- 3 50	- 2 55	- 2 63	- 1 73	0 86	+ 1 105	315 135
60 240	- 2 30	- 2 31	- 3 32	- 3 34	- 4 36	- 4 39	- 5 43	- 6 48	- 6 54	- 7 62	- 8 72	- 9 86	- 11 105	300 120
75 255	- 1 29	- 2 30	- 3 31	- 3 32	- 4 34	- 5 36	- 6 39	- 7 43	- 9 49	- 11 56	- 13 65	- 16 78	- 21 94	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 33	- 6 35	- 8 38	- 10 42	- 13 47	- 16 54	- 20 64	- 26 76	270 90
105 285	+ 1 29	0 28	- 1 28	- 2 28	- 3 29	- 4 30	- 5 31	- 7 33	- 9 35	- 12 38	- 15 42	- 20 48	- 26 56	255 75
120 300	+ 2 30	+ 1 29	0 29	0 28	- 1 28	- 2 28	- 3 29	- 5 29	- 6 30	- 8 31	- 11 33	- 15 36	- 20 39	240 60
135 315	+ 2 32	+ 2 31	+ 1 30	+ 1 30	+ 1 29	0 29	- 1 28	- 2 28	- 3 28	- 4 28	- 5 28	- 7 29	- 10 29	225 45
150 330	+ 2 34	+ 2 33	+ 2 32	+ 2 32	+ 2 31	+ 1 31	+ 1 30	+ 1 30	+ 1 30	+ 1 30	+ 1 30	+ 2 30	+ 2 30	210 30
165 345	+ 1 35	+ 1 34	+ 2 34	+ 2 34	+ 2 34	+ 2 34	+ 3 34	+ 3 34	+ 4 35	+ 5 36	+ 7 37	+ 9 38	+ 12 40	195 15
180 360	0 36	0 36	+ 1 36	+ 1 36	+ 2 36	+ 3 37	+ 3 38	+ 4 40	+ 5 42	+ 7 44	+ 10 47	+ 13 52	+ 17 58	180 0
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.														
													$p_0 = p + \Delta p.$ $s_0 = s + h\delta.$	

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +10^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 37	0 37	+ 1 37	+ 1 38	+ 2 38	+ 3 39	+ 4 40	+ 5 42	+ 6 44	+ 8 47	+ 11 50	+ 15 55	+ 21 63	0 180 360 180
15 195	- 1 36	- 1 37	0 38	0 39	0 40	+ 1 42	+ 2 44	+ 3 47	+ 5 51	+ 7 56	+ 10 63	+ 14 72	+ 20 85	345 165
30 210	- 2 34	- 2 36	- 2 37	- 2 39	- 1 41	- 1 44	0 47	+ 1 51	+ 2 56	+ 3 63	+ 6 73	+ 9 86	+ 13 104	330 150
45 225	- 2 32	- 3 34	- 3 36	- 3 38	- 3 40	- 3 43	- 3 47	- 3 52	- 2 58	- 2 66	- 1 77	0 93	+ 1 114	315 135
60 240	- 2 30	- 3 32	- 3 33	- 4 35	- 4 37	- 5 40	- 5 44	- 6 49	- 6 56	- 7 65	- 8 76	- 10 91	- 12 113	300 120
75 255	- 1 29	- 2 30	- 3 31	- 4 32	- 5 34	- 6 37	- 7 40	- 8 44	- 10 50	- 12 58	- 14 68	- 18 82	- 23 100	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 33	- 7 35	- 9 38	- 11 43	- 13 48	- 17 56	- 22 66	- 28 80	270 90
105 285	+ 1 29	0 28	- 1 28	- 2 28	- 3 29	- 4 30	- 5 31	- 7 33	- 9 35	- 12 38	- 16 43	- 21 49	- 27 58	255 75
120 300	+ 2 30	+ 1 30	0 29	0 28	- 1 28	- 2 28	- 3 28	- 4 29	- 6 30	- 8 31	- 11 33	- 15 36	- 20 39	240 60
135 315	+ 2 32	+ 2 32	+ 1 31	+ 1 30	+ 1 29	0 29	0 28	- 1 28	- 2 28	- 3 28	- 4 28	- 6 29	- 9 29	225 45
150 330	+ 2 34	+ 2 34	+ 2 33	+ 2 32	+ 2 32	+ 2 31	+ 2 31	+ 2 31	+ 2 30	+ 3 30	+ 3 30	+ 3 30	+ 4 30	210 30
165 345	+ 1 36	+ 1 36	+ 2 35	+ 2 35	+ 3 35	+ 3 35	+ 4 35	+ 4 36	+ 5 36	+ 7 37	+ 9 38	+ 11 40	+ 15 43	195 15
180 360	0 37	0 37	+ 1 37	+ 1 38	+ 2 38	+ 3 39	+ 4 40	+ 5 42	+ 6 44	+ 8 47	+ 11 50	+ 15 55	+ 21 63	180 0
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.														
													$p_0 = p + \Delta p$ $s_0 = s + h s$	

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +8^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0	20 ^m	40 ^m	60 ^m	
	$\frac{\Delta p}{h}$													
0 180	0 38	+ 1 38	+ 1 39	+ 2 39	+ 3 40	+ 4 41	+ 5 42	+ 6 44	+ 8 46	+ 10 49	+ 13 53	+ 18 59	+ 24 68	360 180
15 195	- 2 38	- 1 38	0 39	0 40	+ 1 42	+ 2 44	+ 3 47	+ 4 50	+ 6 54	+ 8 60	+ 11 68	+ 16 79	+ 23 93	345 165
30 210	- 3 36	- 2 37	- 2 38	- 2 40	- 1 43	- 1 46	0 49	+ 1 54	+ 2 60	+ 4 68	+ 6 78	+ 9 93	+ 15 113	330 150
45 225	- 3 33	- 3 35	- 3 37	- 3 39	- 3 41	- 3 45	- 3 49	- 3 54	- 2 61	- 2 70	- 1 82	0 100	+ 1 124	315 135
60 240	- 2 31	- 3 32	- 3 34	- 4 36	- 4 38	- 5 42	- 5 46	- 6 51	- 7 58	- 8 68	- 9 80	- 11 97	- 13 122	300 120
75 255	- 1 29	- 2 30	- 3 31	- 4 33	- 5 35	- 6 37	- 7 41	- 8 46	- 10 52	- 12 60	- 15 71	- 19 86	- 25 107	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 33	- 7 36	- 9 39	- 11 44	- 14 49	- 18 57	- 23 69	- 30 85	270 90
105 285	+ 1 29	+ 1 28	0 28	- 1 28	- 2 29	- 3 30	- 5 31	- 7 33	- 9 36	- 12 39	- 16 44	- 22 50	- 29 60	255 75
120 300	+ 2 31	+ 2 30	+ 1 29	+ 1 28	0 28	- 1 28	- 2 28	- 4 29	- 6 30	- 8 31	- 11 33	- 15 36	- 21 39	240 60
135 315	+ 3 33	+ 3 32	+ 2 31	+ 2 30	+ 2 30	+ 1 29	+ 1 29	0 28	- 1 28	- 2 28	- 3 28	- 5 28	- 8 29	225 45
150 330	+ 3 36	+ 3 35	+ 3 34	+ 3 33	+ 3 33	+ 3 32	+ 3 32	+ 3 31	+ 4 31	+ 4 31	+ 4 31	+ 5 31	+ 7 31	210 30
165 345	+ 1 38	+ 2 37	+ 2 37	+ 3 36	+ 3 36	+ 4 37	+ 5 37	+ 6 37	+ 7 38	+ 8 38	+ 10 40	+ 13 42	+ 18 46	195 15
180 360	0 38	+ 1 38	+ 1 39	+ 2 39	+ 3 40	+ 4 41	+ 5 42	+ 6 44	+ 8 46	+ 10 49	+ 13 53	+ 18 59	+ 24 68	180 0
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.														
													$p_0 = p + \Delta p.$ $s_0 = s + hs.$	

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +6^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 40	+ 1 40	+ 1 40	+ 2 41	+ 3 42	+ 4 43	+ 6 44	+ 7 46	+ 9 49	+ 12 52	+ 16 57	+ 21 64	+ 28 74	360 180
15 195	- 2 39	- 1 40	0 41	0 42	+ 1 44	+ 2 46	+ 3 49	+ 5 53	+ 7 58	+ 10 64	+ 14 72	+ 19 84	+ 26 102	345 165
30 210	- 3 37	- 2 38	- 2 40	- 2 42	- 1 45	- 1 48	0 52	+ 1 57	+ 3 63	+ 5 72	+ 7 84	+ 11 100	+ 17 124	330 150
45 225	- 3 34	- 3 36	- 3 38	- 4 40	- 3 43	- 3 47	- 3 51	- 3 57	- 2 65	- 2 75	- 1 88	0 107	+ 2 135	315 135
60 240	- 3 31	- 3 32	- 4 34	- 5 37	- 5 40	- 5 43	- 6 48	- 7 54	- 8 61	- 9 71	- 10 85	- 12 104	- 14 132	300 120
75 255	- 2 29	- 2 30	- 3 31	- 4 33	- 5 35	- 6 38	- 7 42	- 9 47	- 11 54	- 13 63	- 16 74	- 21 91	- 27 115	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 31	- 5 33	- 7 36	- 9 40	- 12 44	- 15 51	- 19 60	- 25 72	- 33 90	270 90
105 285	+ 2 29	+ 1 28	0 28	- 1 28	- 2 29	- 3 30	- 5 31	- 7 33	- 10 36	- 13 39	- 17 44	- 23 51	- 31 62	255 75
120 300	+ 3 31	+ 2 30	+ 2 29	+ 1 28	0 28	- 1 28	- 2 28	- 4 29	- 6 30	- 8 31	- 11 33	- 15 36	- 22 40	240 60
135 315	+ 3 34	+ 3 33	+ 3 32	+ 3 31	+ 2 30	+ 2 29	+ 1 29	+ 1 28	0 28	- 1 28	- 2 28	- 4 28	- 7 29	225 45
150 330	+ 3 37	+ 3 36	+ 3 35	+ 4 34	+ 4 34	+ 4 33	+ 4 32	+ 5 32	+ 5 32	+ 5 32	+ 6 32	+ 7 32	+ 9 32	210 30
165 345	+ 2 39	+ 2 38	+ 2 38	+ 3 38	+ 4 38	+ 5 38	+ 6 38	+ 7 39	+ 8 39	+ 10 40	+ 12 42	+ 16 45	+ 22 49	195 15
180 360	0 40	+ 1 40	+ 1 40	+ 2 41	+ 3 42	+ 4 43	+ 6 44	+ 7 46	+ 9 49	+ 12 52	+ 16 57	+ 21 64	+ 28 74	180 0
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.														
													$p_0 = p + \Delta p$ $s_0 = s + h s$	

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +4^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 42	+ 1 42	+ 2 42	+ 3 43	+ 4 44	+ 5 45	+ 7 47	+ 8 49	+11 52	+14 56	+18 61	+24 69	+33 82	360 180
15 195	- 2 41	- 1 42	0 43	+ 1 45	+ 2 47	+ 3 49	+ 4 52	+ 6 56	+ 8 61	+11 68	+15 78	+21 92	+30 112	345 165
30 210	- 3 38	- 3 40	- 3 42	- 2 44	- 1 47	0 51	+ 1 55	+ 2 60	+ 3 67	+ 5 77	+ 8 90	+13 109	+19 137	330 150
45 225	- 4 35	- 4 37	- 4 39	- 4 42	- 4 45	- 4 49	- 3 54	- 3 60	- 3 69	- 2 80	- 1 95	0 117	+ 2 148	315 135
60 240	- 3 32	- 4 33	- 4 35	- 5 38	- 5 41	- 6 45	- 6 50	- 7 56	- 8 64	- 9 75	-11 90	-13 112	-15 144	300 120
75 255	- 2 29	- 3 30	- 4 32	- 5 34	- 6 36	- 7 39	- 8 44	-10 49	-12 56	-14 65	-18 78	-23 97	-30 125	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 32	- 6 34	- 8 37	-10 40	-13 45	-16 52	-20 62	-27 76	-36 96	270 90
105 285	+ 2 29	+ 1 28	0 28	- 1 28	- 2 29	- 4 30	- 5 31	- 7 33	-10 36	-13 40	-18 45	-24 53	-34 65	255 75
120 300	+ 3 32	+ 3 30	+ 2 29	+ 1 29	0 28	- 1 28	- 2 28	- 3 29	- 5 30	- 8 31	-11 33	-16 36	-22 40	240 60
135 315	+ 4 35	+ 4 33	+ 4 32	+ 3 31	+ 3 30	+ 3 30	+ 2 29	+ 2 29	+ 1 28	0 28	- 1 28	- 3 28	- 6 28	225 45
150 330	+ 3 38	+ 4 37	+ 4 36	+ 4 35	+ 5 34	+ 5 34	+ 5 33	+ 6 33	+ 6 33	+ 7 33	+ 8 33	+10 33	+12 33	210 30
165 345	+ 2 41	+ 3 40	+ 3 40	+ 4 39	+ 5 39	+ 6 39	+ 7 40	+ 8 40	+10 41	+12 43	+15 45	+20 48	+26 52	195 15
180 360	0 42	+ 1 42	+ 2 42	+ 3 43	+ 4 44	+ 5 45	+ 7 47	+ 8 49	+11 52	+14 56	+18 61	+24 69	+33 82	180 0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLES OF DIFFERENTIAL REFRACTION.

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TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = +2^\circ$														
τ $p_{+\tau}$	O ^h			I ^h			II ^h			III ^h				τ $p_{-\tau}$
	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	0 ^m	20 ^m	40 ^m	60 ^m	
Δp h														
0 180	0 44	+ 1 44	+ 2 45	+ 3 45	+ 4 46	+ 6 48	+ 8 50	+10 52	+12 55	+16 60	+21 66	+28 76	+38 90	0 180
15 195	- 2 43	- 1 44	0 45	+ 1 47	+ 2 49	+ 3 52	+ 5 55	+ 7 60	+ 9 66	+13 74	+18 85	+24 101	+34 125	345 165
30 210	- 4 40	- 3 42	- 3 44	- 2 46	- 1 49	0 53	+ 1 58	+ 2 64	+ 4 72	+ 6 83	+10 98	+15 119	+21 152	330 150
45 225	- 5 36	- 5 38	- 5 40	- 5 43	- 4 47	- 4 51	- 4 57	- 3 64	- 3 73	- 2 86	- 1 103	0 127	+ 3 164	315 135
60 240	- 4 32	- 4 34	- 5 36	- 6 39	- 6 42	- 7 46	- 7 52	- 8 59	- 9 68	-10 80	-12 97	-14 121	-17 158	300 120
75 255	- 2 29	- 3 30	- 4 32	- 5 34	- 6 37	- 7 40	- 9 45	-11 50	-13 58	-16 69	-20 83	-25 104	-33 136	285 105
90 270	0 28	- 1 28	- 2 29	- 3 30	- 4 32	- 6 34	- 8 37	-10 41	-13 47	-17 54	-22 65	-29 80	-40 102	270 90
105 285	+ 2 29	+ 1 29	0 28	- 1 28	- 2 29	- 3 30	- 5 31	- 8 33	-10 36	-14 40	-19 46	-26 54	-36 68	255 75
120 300	+ 4 32	+ 3 31	+ 3 30	+ 2 29	+ 1 28	0 28	- 1 28	- 3 29	- 5 30	- 7 31	-11 33	-16 36	-23 41	240 60
135 315	+ 5 36	+ 4 34	+ 4 33	+ 4 32	+ 4 31	+ 4 30	+ 3 30	+ 3 29	+ 2 29	+ 1 28	0 28	- 2 28	- 5 28	225 45
150 330	+ 4 40	+ 4 39	+ 5 38	+ 5 37	+ 6 36	+ 6 35	+ 7 34	+ 7 34	+ 8 34	+ 9 34	+10 34	+12 34	+15 34	210 30
165 345	+ 2 43	+ 3 42	+ 4 42	+ 5 41	+ 6 41	+ 7 42	+ 8 42	+10 43	+12 44	+15 46	+18 48	+23 51	+31 57	195 15
180 360	0 44	+ 1 44	+ 2 45	+ 3 45	+ 4 46	+ 6 48	+ 8 50	+10 52	+12 55	+16 60	+21 66	+28 76	+38 90	180 0
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.														
													$p_0 = p + \Delta p.$ $s_0 = s + h s.$	

REDUCTION TABLES FOR EQUATORIAL OBSERVATIONS.

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta=0^{\circ}$																											
τ		O ^h						I ^h						II ^h						τ							
$p_{+\tau}$		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	60 ^m			$p_{-\tau}$				
$\frac{\Delta p}{h}$																											
°	°	0 ₀	+1	+1	+2	+2	+3	+4 ₀	+4	+5	+6	+7	+8	+9 ₁	+10	+11	+12	+14	+16	+18 ₁	°	°	°	°			
0	180	46 ₁	47	47	47	47	47	48 ₁	48	49	50	51	52	53 ₂	54	55	57	59	62	65 ₃	360	180	360	180			
5	185	-1	0	0	+1	-1	+2	+3	+3	+4	+5	+6	+7	+8	+9	+10	+11	+13	+15	+17	355	175	355	175			
10	190	-1	0	0	+1	-1	+2	+3	+3	+4	+5	+6	+7	+8	+9	+10	+11	+13	+15	+17	350	170	350	170			
15	195	-2	-1	-1	0	0	+1	+2	+2	+3	+4	+5	+6	+7	+8	+9	+10	+12	+14	+16	350	170	350	170			
20	200	-2	-1	-1	0	0	+1	+2	+2	+3	+4	+5	+6	+7	+8	+9	+10	+12	+14	+16	345	165	345	165			
25	205	-3	-2	-2	-1	-1	0	+1	+1	+2	+3	+3	+4	+5	+6	+8	+9	+11	+13	+15	345	165	345	165			
30	210	-3	-2	-2	-1	-1	0	+1	+1	+2	+3	+3	+4	+5	+6	+8	+9	+11	+13	+15	340	160	340	160			
35	215	-3	-2	-2	-1	-1	0	+1	+1	+2	+3	+3	+4	+5	+6	+8	+9	+11	+13	+15	340	160	340	160			
40	220	-4	-3	-3	-2	-2	-1	-1	-1	0	0	+1	+1	+2	+3	+4	+5	+7	+8	+10	335	155	335	155			
45	225	-4	-3	-3	-2	-2	-1	-1	-1	0	0	+1	+1	+2	+3	+4	+5	+7	+8	+10	335	155	335	155			
50	230	-5 ₀	-4	-4	-4	-3	-3	-2 ₀	-2	-2	-1	-1	0	+1 ₀	+1	+2	+3	+4	+6	+7 ₀	330	150	330	150			
55	235	-5	-5	-4	-4	-4	-4	-3	-3	-3	-2	-2	-2	-1	0	0	+1	+2	+3	+4	325	145	325	145			
60	240	-5	-5	-5	-5	-5	-4	-4	-4	-4	-4	-3	-3	-3	-2	-2	-1	-1	0	+1	320	140	320	140			
65	245	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-4	-4	-4	-4	-3	-3	-3	-2	315	135	315	135			
70	250	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-4	-4	-4	-4	-3	-3	-3	-2	315	135	315	135			
75	255	-5	-5	-5	-5	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	310	130	310	130			
80	260	-5	-5	-5	-5	-6	-6	-6	-6	-6	-6	-7	-7	-7	-7	-7	-8	-8	-8	-8	305	125	305	125			
85	265	-5 ₀	-5	-5	-5	-6	-6	-6 ₀	-6	-7	-7	-7	-8	-8 ₀	-8	-9	-9	-10	-11	-11 ₁	300	120	300	120			
90	270	-5	-5	-5	-5	-6	-6	-6	-6	-7	-7	-8	-8	-9	-9	-10	-11	-12	-13	-14	295	115	295	115			
95	275	-4	-4	-5	-5	-5	-6	-6	-6	-7	-7	-8	-8	-9	-9	-10	-11	-12	-13	-14	295	115	295	115			
100	280	-4	-4	-5	-5	-5	-6	-6	-6	-7	-7	-8	-8	-9	-9	-10	-11	-12	-13	-14	290	110	290	110			
105	285	-3	-3	-4	-4	-5	-5	-6	-6	-7	-7	-8	-9	-10	-11	-12	-13	-14	-15	-17	285	105	285	105			
110	290	-3	-3	-4	-4	-5	-5	-6	-6	-7	-7	-8	-9	-10	-11	-12	-13	-14	-16	-18	280	100	280	100			
115	295	-2	-2	-3	-3	-4	-4	-5	-6	-6	-7	-8	-9	-10	-11	-12	-13	-14	-16	-18	280	100	280	100			
120	300	-2	-2	-3	-3	-4	-4	-5	-6	-6	-7	-8	-9	-10	-11	-12	-13	-14	-16	-18	275	95	275	95			
125	305	-1	-1	-2	-3	-3	-4	-4	-5	-6	-7	-7	-8	-9	-10	-11	-12	-14	-16	-18	275	95	275	95			
130	310	-1	-1	-2	-3	-3	-4	-4	-5	-6	-7	-7	-8	-9	-10	-11	-12	-14	-16	-18	270	90	270	90			
135	315	0 ₀	-1	-1	-2	-2	-3	-4 ₀	-4	-5	-6	-7	-8	-9 ₀	-10	-11	-12	-14	-16	-18 ₁	270	90	270	90			

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta=0^\circ$																									
τ $p_{+\tau}$		O^h						I^h						II^h								τ $p_{-\tau}$			
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	60^m					
90°	270°	$\frac{4p}{h}$ 0_0 28_0	-1 28	-1 29	-2 29	-2 29	-3 30	-4 30	-4 31	-5 32	-6 33	-7 34	-8 36	-9 38	-10 40	-11 42	-12 45	-14 48	-16 52	-18 56	270°	90°			
95°	275°	+1 28	0 28	0 28	-1 28	-1 28	-2 29	-3 29	-3 30	-4 31	-5 31	-6 32	-7 34	-8 35	-9 37	-10 39	-11 41	-13 44	-15 47	-17 51	265°	85°			
100°	280°	+2 29	+1 29	+1 29	0 28	0 28	-1 29	-2 29	-2 29	-3 30	-4 30	-5 31	-6 32	-7 33	-8 34	-9 36	-10 38	-12 40	-14 43	-16 46	260°	80°			
105°	285°	+3 30	+2 29	+2 29	+1 29	+1 28	0 28	-1 28	-1 29	-2 29	-3 29	-3 30	-4 30	-5 31	-6 32	-8 33	-9 35	-11 37	-13 39	-15 41	255°	75°			
110°	290°	+3 30	+3 30	+2 30	+2 29	+2 29	+1 29	0 28	0 28	-1 28	-1 28	-2 29	-3 29	-4 30	-5 30	-6 31	-7 32	-9 34	-11 35	-13 37	250°	70°			
115°	295°	+4 32	+4 31	+3 31	+3 30	+2 29	+2 29	+1 28	+1 28	0 28	0 28	-1 28	-1 28	-2 29	-3 29	-4 29	-5 30	-7 31	-8 32	-10 34	245°	65°			
120°	300°	+5 33	+4 32	+4 32	+4 31	+3 30	+3 30	+2 29	+2 29	+1 28	+1 28	0 28	0 28	-1 28	-1 28	-2 28	-3 29	-4 30	-6 30	-7 31	240°	60°			
125°	305°	+5 34	+5 34	+4 33	+4 32	+4 31	+4 31	+3 30	+3 30	+3 29	+2 29	+2 29	+2 28	+1 28	0 28	0 28	-1 29	-2 29	-3 29	-4 29	235°	55°			
130°	310°	+5 36	+5 35	+5 34	+5 33	+5 32	+4 32	+4 31	+4 31	+4 30	+4 30	+3 30	+3 29	+3 29	+2 29	+2 28	+1 28	+1 28	0 28	-1 28	230°	50°			
135°	315°	+5 37	+5 36	+5 36	+5 35	+5 34	+5 33	+5 33	+5 32	+5 31	+5 31	+5 31	+4 30	+4 30	+4 30	+4 29	+4 29	+3 29	+3 29	+2 28	225°	45°			
140°	320°	+5 39	+5 38	+5 37	+5 36	+6 36	+6 35	+6 34	+6 34	+6 33	+6 33	+6 32	+6 32	+6 32	+6 31	+6 31	+6 31	+6 31	+6 30	+6 30	220°	40°			
145°	325°	+5 40	+5 40	+5 39	+5 38	+6 37	+6 37	+6 36	+6 36	+6 35	+6 35	+7 34	+7 34	+7 34	+7 33	+7 33	+8 33	+8 33	+8 32	+8 32	215°	35°			
150°	330°	+5 42	+5 41	+5 40	+5 40	+6 39	+6 38	+6 38	+6 38	+7 37	+7 37	+7 36	+8 36	+8 36	+8 36	+9 35	+9 35	+10 35	+11 35	+11 35	210°	30°			
155°	335°	+4 43	+4 43	+5 42	+5 41	+5 41	+6 40	+6 40	+6 40	+7 39	+7 39	+8 39	+8 38	+9 38	+9 38	+10 38	+11 38	+12 38	+13 38	+14 39	205°	25°			
160°	340°	+3 44	+4 44	+4 43	+5 43	+5 42	+6 42	+6 42	+6 42	+7 41	+8 41	+8 41	+9 41	+9 41	+10 41	+11 41	+12 42	+13 42	+14 42	+16 43	200°	20°			
165°	345°	+3 45	+3 45	+4 44	+4 44	+5 44	+5 44	+6 43	+6 43	+7 43	+7 43	+8 44	+9 44	+10 44	+11 44	+12 45	+13 46	+14 46	+15 47	+17 48	195°	15°			
170°	350°	+2 46	+2 46	+3 45	+3 45	+4 45	+4 45	+5 45	+6 45	+6 45	+7 46	+8 46	+9 46	+10 47	+11 48	+12 48	+13 49	+14 50	+16 52	+18 53	190°	10°			
175°	355°	+1 46	+1 46	+2 46	+3 46	+3 46	+4 46	+4 47	+5 47	+6 47	+7 48	+7 48	+8 49	+9 50	+10 51	+11 52	+12 53	+14 55	+16 57	+18 59	185°	5°			
180°	360°	0_0 46_1	+1 47	+1 47	+2 47	+2 47	+3 47	+4 48	+4 48	+5 49	+6 50	+7 51	+8 52	+9 53	+10 54	+11 55	+12 57	+14 59	+16 62	+18 65	180°	0°			

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$$p_0 = p + \Delta p.$$

$$s_0 = s + h s.$$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -2^\circ$																					
τ $p_{+\tau}$		O^h						I^h						II^h						τ $p_{-\tau}$	
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m		
		$\frac{\Delta p}{h}$																			
0	180	0_0 49 ₁	+1 49	+1 49	+2 50	+2 50	+3 50	+4 ₀ 51 ₂	+5 52	+6 52	+7 53	+8 54	+9 55	+10 ₁ 56 ₂	+11 58	+13 60	+14 62	+16 64	+18 ₁ 67 ₃	360	180
5	185	-1 49	0 49	0 50	+1 50	+1 51	+2 51	+3 52	+4 53	+5 54	+6 55	+7 56	+8 57	+9 59	+10 61	+12 63	+13 66	+15 69	+17 72	355	175
10	190	-2 49	-1 49	-1 50	0 50	0 51	+1 52	+2 53	+3 54	+3 55	+4 56	+5 58	+6 59	+8 61	+9 64	+10 66	+12 70	+14 73	+16 77	350	170
15	195	-3 48	-2 48	-2 49	-1 50	-1 51	0 52	0 53	+1 54	+2 56	+3 57	+4 59	+5 61	+6 63	+7 66	+9 69	+10 73	+12 77	+14 81	345	165
20	200	-4 47	-3 47	-3 48	-2 49	-2 50	-1 52	-1 53	0 54	+1 56	+2 58	+2 60	+3 62	+4 65	+5 68	+7 71	+8 75	+10 80	+12 85	340	160
25	205	-5 46	-4 46	-4 47	-3 48	-3 49	-2 51	-2 52	-1 54	-1 56	0 58	+1 60	+2 63	+3 66	+3 69	+5 73	+6 77	+8 82	+9 88	335	155
30	210	-5 ₀ 44 ₁	-5 45	-5 46	-4 47	-4 48	-3 50	-3 ₀ 52 ₂	-2 54	-2 56	-1 58	-1 60	0 63	+1 ₀ 66 ₂	+1 70	+2 74	+4 79	+5 84	+6 ₀ 90 ₄	330	150
35	215	-6 42	-5 43	-5 45	-5 46	-5 47	-4 49	-4 51	-4 53	-3 55	-3 57	-2 60	-2 63	-1 66	-1 70	0 74	+1 79	+2 85	+3 91	325	145
40	220	-6 41	-6 42	-6 43	-6 44	-5 46	-5 48	-5 50	-5 52	-4 54	-4 56	-4 59	-3 62	-3 65	-3 69	-2 74	-2 79	-1 85	0 92	320	140
45	225	-6 39	-6 40	-6 41	-6 42	-6 44	-6 46	-6 48	-6 50	-5 52	-5 54	-5 57	-5 60	-5 64	-5 68	-4 73	-4 78	-4 84	-3 91	315	135
50	230	-6 37	-6 38	-6 39	-6 41	-6 42	-6 44	-6 46	-6 48	-6 50	-6 52	-6 55	-6 58	-6 62	-6 66	-6 71	-6 76	-6 82	-6 89	310	130
55	235	-6 35	-6 36	-6 37	-6 39	-6 40	-7 42	-7 44	-7 46	-7 48	-7 50	-7 53	-8 56	-8 60	-8 64	-8 69	-8 74	-9 80	-9 87	305	125
60	240	-5 ₀ 34 ₀	-6 35	-6 36	-6 37	-6 38	-7 40	-7 ₀ 42 ₁	-7 44	-8 46	-8 48	-8 51	-9 54	-9 ₀ 57 ₁	-9 61	-10 66	-10 71	-11 77	-12 ₁ 84 ₃	300	120
65	245	-5 32	-5 33	-5 34	-6 35	-6 36	-7 38	-7 39	-7 41	-8 43	-8 46	-9 48	-9 51	-10 54	-10 58	-11 62	-12 67	-13 73	-14 80	295	115
70	250	-4 31	-4 32	-5 32	-5 33	-6 34	-6 36	-7 37	-7 39	-8 41	-8 43	-9 45	-10 48	-10 51	-11 55	-12 59	-13 63	-14 69	-16 75	290	110
75	255	-3 30	-3 30	-4 31	-5 32	-5 33	-6 34	-6 35	-7 37	-7 38	-8 40	-9 42	-10 45	-11 48	-12 51	-13 55	-14 59	-15 64	-17 70	285	105
80	260	-2 29	-3 29	-3 30	-4 31	-4 31	-5 32	-6 33	-6 35	-7 36	-8 38	-8 40	-9 42	-10 44	-12 47	-13 51	-14 55	-16 59	-18 64	280	100
85	265	-1 28	-2 29	-2 29	-3 30	-3 30	-4 31	-5 32	-6 33	-6 34	-7 35	-8 37	-9 39	-10 41	-11 44	-13 47	-14 50	-16 54	-18 59	275	95
90	270	0_0 28 ₀	-1 28	-1 28	-2 29	-2 29	-3 30	-4 ₀ 30 ₀	-5 31	-5 32	-6 33	-7 35	-8 36	-9 ₀ 38 ₀	-11 40	-12 43	-13 46	-15 49	-17 ₁ 53 ₁	270	90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined. $\delta = -2^\circ$

τ $p_{+\tau}$	O ^h						I ^h						II ^h						τ $p_{-\tau}$
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	
Δp h																			
90 270	0 ₀ 28 ₀	-1 28	-1 28	-2 29	-2 29	-3 30	-4 ₀ 30 ₀	-5 31	-5 32	-6 33	-7 35	-8 36	-9 ₀ 38 ₀	-11 40	-12 43	-13 46	-15 49	-17 ₁ 53 ₁	270 90
95 275	+1 28	0 28	0 28	-1 29	-1 29	-2 29	-3 29	-3 30	-4 31	-5 32	-6 33	-7 34	-8 35	-10 37	-11 39	-12 42	-14 45	-16 48	265 85
100 280	+2 29	+1 28	+1 28	0 28	0 28	-1 28	-2 28	-2 29	-3 30	-4 30	-5 31	-6 32	-7 33	-8 34	-10 36	-11 38	-13 41	-15 43	260 80
105 285	+3 30	+2 29	+2 29	+1 28	+1 28	0 28	0 28	-1 28	-2 29	-3 29	-3 30	-4 30	-5 31	-7 32	-8 33	-9 35	-11 37	-13 39	255 75
110 290	+4 31	+3 30	+3 30	+2 29	+2 29	+1 28	+1 28	0 28	0 28	-1 28	-2 29	-3 29	-4 30	-5 30	-6 31	-7 32	-9 33	-11 35	250 70
115 295	+5 32	+4 31	+4 31	+3 30	+3 30	+2 29	+2 28	+2 28	+1 28	0 28	0 28	-1 28	-2 29	-3 29	-4 29	-5 30	-6 31	-8 32	245 65
120 300	+5 ₀ 34 ₀	+5 33	+5 32	+4 31	+4 31	+3 30	+3 ₀ 29 ₀	+3 29	+2 29	+2 29	+1 28	+1 28	0 ₀ 28 ₀	-1 28	-2 28	-3 29	-4 29	-5 ₀ 30 ₀	240 60
125 305	+6 35	+5 34	+5 33	+5 32	+5 32	+4 31	+4 30	+4 30	+4 30	+3 29	+3 29	+2 28	+2 28	+1 28	+1 28	0 28	-1 28	-2 29	235 55
130 310	+6 37	+6 36	+6 35	+6 34	+5 33	+5 32	+5 32	+5 31	+5 31	+5 30	+4 30	+4 29	+4 29	+3 29	+3 29	+2 28	+2 28	+1 28	230 50
135 315	+6 39	+6 38	+6 37	+6 36	+6 35	+6 34	+6 34	+6 33	+6 32	+6 32	+6 31	+6 31	+6 30	+5 30	+5 30	+5 29	+5 29	+4 29	225 45
140 320	+6 41	+6 40	+6 39	+6 38	+6 37	+6 36	+7 35	+7 35	+7 34	+7 34	+7 33	+7 33	+7 32	+7 32	+7 32	+7 31	+7 31	+7 31	220 40
145 325	+6 42	+6 41	+6 40	+6 40	+7 39	+7 38	+7 37	+7 37	+8 36	+8 36	+8 35	+8 35	+8 34	+9 34	+9 34	+9 34	+10 33	+10 33	215 35
150 330	+5 ₀ 44 ₀	+6 43	+6 42	+6 42	+6 41	+7 40	+7 ₀ 40 ₀	+8 39	+8 39	+8 38	+9 38	+9 37	+9 ₀ 37 ₀	+10 37	+11 37	+11 37	+12 36	+13 ₁ 36 ₁	210 30
155 335	+5 46	+5 45	+6 44	+6 44	+6 43	+7 42	+7 42	+8 41	+8 41	+9 41	+9 40	+10 40	+10 40	+11 40	+12 40	+13 40	+14 40	+15 40	205 25
160 340	+4 47	+4 46	+5 46	+5 45	+6 45	+6 44	+7 44	+8 44	+8 44	+9 44	+9 43	+10 43	+11 43	+12 44	+13 44	+14 44	+15 44	+17 45	200 20
165 345	+3 48	+3 47	+4 47	+5 47	+5 46	+6 46	+7 46	+7 46	+8 46	+9 46	+9 46	+10 46	+11 47	+12 47	+13 48	+15 48	+16 49	+18 50	195 15
170 350	+2 49	+3 48	+3 48	+4 48	+5 48	+5 48	+6 48	+7 48	+7 48	+8 49	+9 49	+10 49	+11 50	+12 51	+14 52	+15 53	+17 54	+19 56	190 10
175 355	+1 49	+2 49	+2 49	+3 49	+4 49	+4 49	+5 50	+6 50	+7 50	+8 51	+9 51	+10 52	+11 53	+12 54	+13 56	+15 57	+17 59	+19 61	185 5
180 360	0 ₀ 49 ₀	+1 49	+1 49	+2 50	+2 50	+3 50	+4 ₀ 51 ₀	+5 52	+6 52	+7 53	+8 54	+9 55	+10 ₀ 56 ₀	+11 58	+13 60	+14 62	+16 64	+18 ₁ 67 ₁	180 0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLE III—Continued.

To be used when Position Angle and Distance are determined. $\delta = -4^\circ$

τ $p_{+\tau}$	O ^h						I ^h						II ^h						τ $p_{-\tau}$
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	
Δp h																			
0 180	0 ₅₂	0	+1	+2	+3	+4	+5 ₅₂	+6	+7	+8	+9	+10	+11 ₆₀	+13	+15	+17	+19	+21 ₇₂	360 180
5 185	-1 52	-1 52	0	+1	+2	+3	+3 55	+4 56	+5 57	+6 59	+8 60	+9 61	+10 63	+12 66	+13 68	+15 71	+17 74	+20 78	355 175
10 190	-2 52	-2 52	-1 53	0	+1	+1	+2 56	+3 57	+4 58	+5 60	+6 62	+7 64	+8 66	+10 69	+12 72	+14 75	+16 79	+18 83	350 170
15 195	-3 51	-3 51	-2 52	-1 53	-1 54	0	+1 56	+2 58	+3 59	+4 61	+5 63	+6 66	+7 68	+8 71	+10 75	+12 79	+14 83	+16 88	345 165
20 200	-4 50	-4 50	-3 51	-3 52	-2 54	-1 55	-1 56	0 58	+1 60	+2 62	+3 64	+4 67	+5 70	+6 73	+8 77	+9 82	+11 87	+13 92	340 160
25 205	-5 48	-5 49	-4 50	-4 51	-3 53	-3 54	-2 56	-1 58	-1 60	0 62	+1 65	+2 68	+3 71	+4 75	+5 79	+7 84	+8 90	+10 96	335 155
30 210	-6 ₄₆	-6 47	-5 49	-5 50	-4 52	-4 53	-3 ₅₅	-3 57	-2 59	-2 62	-1 65	0 68	+1 ₇₁	+2 75	+3 80	+4 85	+5 91	+7 ₉₈	330 150
35 215	-7 44	-6 46	-6 47	-6 48	-5 50	-5 52	-4 54	-4 56	-4 58	-3 61	-3 64	-2 67	-1 71	-1 75	0 80	+1 86	+2 92	+3 99	325 145
40 220	-7 42	-7 44	-6 45	-6 46	-6 48	-6 50	-5 52	-5 54	-5 57	-5 60	-4 63	-4 66	-3 70	-3 74	-2 79	-2 85	-1 92	0 100	320 140
45 225	-7 40	-7 42	-7 43	-7 44	-7 46	-7 48	-6 50	-6 52	-6 55	-6 58	-6 61	-6 64	-5 68	-5 73	-5 78	-5 84	-4 91	-4 99	315 135
50 230	-7 38	-7 40	-7 41	-7 42	-7 44	-7 46	-7 48	-7 50	-7 53	-7 56	-7 59	-7 62	-7 66	-7 71	-7 76	-7 82	-7 89	-7 97	310 130
55 235	-7 36	-7 38	-7 39	-7 40	-7 42	-7 44	-8 46	-8 48	-8 50	-8 53	-8 56	-8 60	-9 64	-9 68	-9 73	-9 79	-10 86	-10 94	305 125
60 240	-6 ₃₄	-6 36	-7 37	-7 38	-7 40	-7 41	-8 ₄₃	-8 45	-8 47	-9 50	-9 53	-9 57	-10 ₆₁	-10 65	-11 70	-11 76	-12 82	-13 ₉₀	300 120
65 245	-5 33	-6 34	-6 35	-7 36	-7 37	-7 39	-8 41	-8 43	-9 45	-9 47	-10 50	-10 54	-11 57	-11 61	-12 66	-13 72	-14 78	-15 85	295 115
70 250	-4 31	-5 32	-5 33	-6 34	-6 35	-7 37	-7 38	-8 40	-9 42	-9 44	-10 47	-11 50	-11 53	-12 57	-13 62	-14 67	-16 73	-17 80	290 110
75 255	-3 30	-4 30	-4 31	-5 32	-6 33	-6 35	-7 36	-7 37	-8 39	-9 41	-10 44	-11 47	-12 50	-13 53	-14 57	-15 62	-17 68	-18 74	285 105
80 260	-2 29	-3 29	-3 30	-4 31	-5 32	-5 33	-6 34	-7 35	-8 37	-8 39	-9 41	-10 43	-11 46	-13 49	-14 53	-15 57	-17 62	-19 68	280 100
85 265	-1 28	-2 29	-2 29	-3 30	-4 30	-4 31	-5 32	-6 33	-7 35	-8 36	-9 38	-10 40	-11 42	-12 45	-14 48	-15 52	-17 57	-19 62	275 95
90 270	0 ₂₈	-1 28	-1 28	-2 29	-3 29	-3 30	-4 ₃₁	-5 32	-6 33	-7 34	-8 35	-9 37	-10 ₃₉	-11 41	-13 44	-15 47	-17 51	-19 ₅₆	270 90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLES OF DIFFERENTIAL REFRACTION.

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TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -4^{\circ}$																						
τ $p_{+\tau}$		O^h						I^h						II^h						τ $p_{-\tau}$		
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m			
$^{\circ}$	$^{\circ}$	Δp																			$^{\circ}$	$^{\circ}$
90	270	$\frac{p}{h}$																			270	90
95	275	0_0	-1	-1	-2	-3	-3	-4 ₀	-5	-6	-7	-8	-9	-10 ₀	-11	-13	-15	-17	-19 ₀		265	85
		28 ₀	28	28	29	29	30	31 ₀	32	33	34	35	37	39 ₀	41	44	47	51	56 ₀			
100	280	+1	+1	0	-1	-1	-2	-3	-4	-4	-5	-6	-8	-9	-10	-12	-14	-16	-18		260	80
		28	28	28	28	28	29	30	30	31	32	33	34	36	38	40	43	46	50			
105	285	+2	+2	+1	+1	0	-1	-1	-2	-3	-4	-5	-6	-7	-8	-10	-12	-14	-16		255	75
		29	28	28	28	28	28	29	29	30	30	31	32	33	35	37	39	41	44			
110	290	+3	+3	+2	+2	+1	+1	0	-1	-2	-2	-3	-4	-5	-6	-8	-10	-12	-14		250	70
		30	29	29	28	28	28	28	28	29	29	30	30	31	32	34	35	37	39			
115	295	+4	+4	+3	+3	+2	+2	+1	+1	0	-1	-2	-3	-4	-5	-6	-7	-9	-11		245	65
		31	30	30	29	29	29	28	28	28	28	29	29	29	30	31	32	34	35			
120	300	+5	+5	+4	+4	+3	+3	+3	+2	+2	+1	0	-1	-2	-3	-4	-5	-6	-8		240	60
		33	32	31	30	30	29	29	29	28	28	28	28	28	29	29	30	31	32			
125	305	+6	+6	+5	+5	+4	+4	+4	+4	+3	+3	+2	+1	0 ₀	0	-1	-2	-3	-5 ₀		235	55
		34 ₀	33	32	32	31	30	30 ₀	30	29	29	28	28	28 ₀	28	28	29	29	30 ₀			
130	310	+7	+6	+6	+6	+5	+5	+5	+5	+5	+4	+4	+3	+3	+2	+2	+1	0	-1		230	50
		36	35	34	33	32	32	31	31	30	30	29	29	28	28	28	28	28	29			
135	315	+7	+7	+7	+7	+6	+6	+6	+6	+6	+6	+5	+5	+5	+5	+4	+4	+3	+2		225	45
		38	37	36	35	34	34	33	32	31	31	30	30	29	29	29	29	29	28			
140	320	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7	+6	+6	+6	+6		220	40
		40	39	38	37	36	36	35	34	33	33	32	32	31	31	30	30	30	29			
145	325	+7	+7	+7	+7	+8	+8	+8	+8	+8	+8	+8	+9	+9	+9	+9	+9	+9	+9		215	35
		42	41	40	39	38	38	37	36	35	35	34	34	33	33	32	32	32	31			
150	330	+7	+7	+7	+7	+8	+8	+8	+8	+9	+9	+9	+10	+10	+11	+11	+11	+12	+12		210	30
		44	43	42	41	41	40	39	39	38	37	37	36	36	36	35	35	35	34			
155	335	+6 ₀	+6	+7	+7	+8	+8	+8 ₀	+9	+9	+10	+10	+11	+11 ₀	+12	+13	+13	+14	+15 ₀		205	25
		46 ₀	45	44	44	43	42	42 ₀	41	40	40	40	39	39 ₀	39	38	38	38	38 ₀			
160	340	+5	+6	+6	+7	+7	+8	+8	+9	+10	+10	+11	+11	+12	+13	+14	+15	+16	+18		200	20
		48	47	46	46	45	45	44	44	43	43	43	42	42	42	42	42	42	43			
165	345	+4	+5	+6	+6	+7	+7	+8	+9	+10	+10	+11	+12	+13	+14	+15	+16	+18	+20		195	15
		50	49	48	48	47	47	46	46	46	46	46	46	46	46	47	47	47	48			
170	350	+3	+4	+5	+5	+6	+7	+8	+8	+9	+10	+11	+12	+13	+14	+16	+17	+19	+21		190	10
		51	50	50	50	49	49	49	49	49	49	49	49	50	50	51	52	53	54			
175	355	+2	+3	+4	+4	+5	+6	+7	+8	+9	+10	+11	+12	+13	+14	+16	+17	+19	+21		185	5
		52	51	51	51	51	51	51	51	51	52	52	53	53	54	55	57	58	60			
180	360	+1	+2	+3	+3	+4	+5	+6	+7	+8	+9	+10	+11	+12	+14	+15	+17	+19	+21		180	0
		52	52	52	52	52	53	53	53	54	55	56	57	58	59	60 ₀	62	64	66			
		0_0	0	+1	+2	+3	+4	+5 ₀	+6	+7	+8	+9	+10	+11 ₀	+13	+15	+17	+19	+21 ₀			
		52 ₀	52	53	53	53	54	54 ₀	55	56	57	58	59	60 ₀	62	64	66	69	72 ₀			
Δp is expressed in thousandths of a degree and changes sign for negative hour angles. h is expressed in units of the fifth decimal and its sign is always positive.																						
$p_0 = p + \Delta p$ $s_0 = s + h s$																						

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -6^{\circ}$																					
τ $p_{+\tau}$		O ^h						I ^h						II ^h						τ $p_{-\tau}$	
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		
		Δp h																			
0	180	0 ₅₆	+1 56	+2 56	+3 57	+3 57	+4 57	+5 ₅₈	+6 59	+8 60	+9 61	+10 62	+11 64	+13 ₆₅	+15 67	+17 69	+19 72	+21 76	+24 ₈₀	360	180
5	185	-1 56	-1 56	0 57	+1 57	+2 58	+3 58	+4 59	+5 60	+6 62	+7 63	+8 65	+9 67	+11 69	+13 71	+15 74	+17 77	+20 81	+23 86	355	175
10	190	-3 55	-2 56	-1 57	0 57	+1 58	+2 59	+3 60	+4 61	+5 63	+6 65	+7 67	+8 69	+9 72	+11 74	+13 78	+15 82	+18 86	+21 92	350	170
15	195	-4 54	-3 55	-2 56	-2 57	-1 58	0 59	+1 60	+2 62	+3 64	+4 66	+5 68	+6 71	+7 74	+9 77	+11 81	+13 86	+15 91	+18 97	345	165
20	200	-5 53	-4 54	-4 55	-3 56	-2 57	-2 59	-1 60	0 62	+1 64	+2 67	+3 69	+4 72	+5 76	+6 80	+8 84	+10 89	+12 95	+15 102	340	160
25	205	-6 51	-5 52	-5 53	-4 55	-4 56	-3 58	-2 60	-2 62	-1 64	0 67	+1 70	+2 73	+3 77	+4 81	+5 86	+7 91	+9 98	+12 106	335	155
30	210	-7 ₄₉	-6 50	-6 52	-5 53	-5 55	-4 57	-4 ₅₉	-3 61	-3 63	-2 66	-1 69	0 73	+1 ₇₇	+2 82	+3 87	+4 93	+6 100	+8 ₁₀₈	330	150
35	215	-8 47	-7 48	-7 50	-6 51	-6 53	-6 55	-5 57	-5 59	-4 62	-4 65	-3 68	-2 72	-2 76	-1 81	0 87	+1 93	+2 101	+4 110	325	145
40	220	-8 44	-8 46	-7 48	-7 49	-7 51	-7 53	-6 55	-6 57	-6 60	-5 63	-5 67	-4 71	-4 75	-3 80	-3 86	-2 92	-1 100	0 110	320	140
45	225	-8 42	-8 44	-8 45	-8 47	-8 49	-8 51	-7 53	-7 55	-7 58	-7 61	-7 65	-6 69	-6 73	-6 78	-6 84	-5 90	-5 98	-4 108	315	135
50	230	-8 40	-8 41	-8 43	-8 44	-8 46	-8 48	-8 50	-8 53	-8 56	-8 59	-8 62	-8 66	-8 71	-8 76	-8 82	-8 88	-8 96	-8 106	310	130
55	235	-8 37	-8 39	-8 40	-8 42	-8 44	-8 46	-9 48	-9 50	-9 53	-9 56	-9 59	-10 63	-10 68	-10 73	-10 79	-11 85	-11 93	-12 103	305	125
60	240	-7 ₃₅	-7 36	-8 38	-8 39	-8 41	-8 43	-9 ₄₅	-9 47	-10 50	-10 53	-10 56	-11 60	-11 ₆₄	-12 69	-12 75	-13 81	-14 89	-15 ₉₈	300	120
65	245	-6 33	-6 34	-7 36	-7 37	-8 38	-8 40	-9 42	-9 44	-10 47	-10 49	-11 52	-11 56	-12 60	-13 65	-14 70	-15 76	-16 84	-18 93	295	115
70	250	-5 31	-5 32	-6 34	-7 35	-7 36	-8 38	-8 39	-9 41	-10 44	-10 46	-11 49	-12 52	-13 56	-14 60	-15 65	-16 71	-18 78	-20 87	290	110
75	255	-4 30	-4 31	-5 32	-6 33	-6 34	-7 35	-8 37	-8 39	-9 41	-10 43	-11 45	-12 48	-13 52	-14 56	-15 60	-17 66	-19 72	-21 80	285	105
80	260	-3 29	-3 30	-4 30	-5 31	-5 32	-6 33	-7 34	-8 36	-8 38	-9 40	-10 42	-11 45	-12 48	-14 51	-15 55	-17 60	-19 66	-21 73	280	100
85	265	-1 28	-2 29	-3 29	-3 30	-4 30	-5 31	-6 32	-7 34	-7 35	-8 37	-9 39	-10 41	-11 44	-13 47	-15 50	-17 54	-19 60	-21 66	275	95
90	270	0 ₂₈	0 28	-1 28	-2 29	-3 29	-4 30	-4 ₃₁	-5 32	-6 33	-7 34	-8 36	-9 38	-10 ₄₀	-12 42	-14 45	-16 49	-18 54	-21 ₅₉	270	90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -6^\circ$																						
τ $p_{+\tau}$		O^h						I^h						II^h						τ $p_{-\tau}$		
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m			
$^\circ$	$^\circ$	Δp h																			$^\circ$	$^\circ$
90	270	0_0 28 ₀	0 28	-1 28	-2 29	-3 29	-4 30	-4_0 31 ₀	-5 32	-6 33	-7 34	-8 36	-9 38	-10_0 40 ₀	-12 42	-14 45	-16 49	-18 54	-21_1 59 ₁	270	90	
95	275	$+1$ 28	$+1$ 28	0 28	-1 28	-1 28	-2 29	-3 30	-4 30	-5 31	-6 32	-7 33	-8 35	-9 36	-11 38	-13 41	-15 44	-17 48	-19 52	265	85	
100	280	$+3$ 29	$+2$ 29	$+1$ 28	$+1$ 28	0 28	-1 28	-1 29	-2 29	-3 29	-4 30	-5 31	-6 32	-8 33	-9 35	-11 37	-13 39	-15 42	-17 46	260	80	
105	285	$+4$ 30	$+3$ 30	$+3$ 29	$+2$ 29	$+2$ 28	$+1$ 28	0 28	-1 28	-1 28	-2 29	-3 29	-4 30	-6 31	-7 32	-8 34	-10 35	-12 38	-15 41	255	75	
110	290	$+5$ 31	$+5$ 31	$+4$ 30	$+4$ 30	$+3$ 29	$+2$ 28	$+2$ 28	$+1$ 28	0 28	0 28	-1 28	-2 29	-3 29	-5 30	-6 31	-7 32	-9 34	-12 36	250	70	
115	295	$+6$ 33	$+6$ 32	$+5$ 31	$+5$ 31	$+4$ 30	$+4$ 29	$+3$ 29	$+3$ 29	$+2$ 28	$+2$ 28	$+1$ 28	0 28	-1 28	-2 29	-3 29	-4 30	-6 31	-8 32	245	65	
120	300	$+7_0$ 35 ₀	$+7$ 34	$+6$ 33	$+6$ 32	$+6$ 31	$+5$ 30	$+5_0$ 30 ₀	$+4$ 30	$+4$ 29	$+3$ 29	$+3$ 28	$+2$ 28	$+1_0$ 28 ₀	$+1$ 28	0 28	-1 29	-2 29	-4_0 30 ₀	240	60	
125	305	$+8$ 37	$+7$ 36	$+7$ 35	$+7$ 34	$+7$ 33	$+6$ 32	$+6$ 32	$+6$ 31	$+6$ 30	$+5$ 30	$+5$ 29	$+4$ 29	$+4$ 29	$+3$ 28	$+3$ 28	$+2$ 28	$+1$ 28	0 29	235	55	
130	310	$+8$ 39	$+8$ 38	$+8$ 37	$+8$ 36	$+8$ 35	$+7$ 34	$+7$ 34	$+7$ 33	$+7$ 32	$+7$ 31	$+7$ 31	$+6$ 30	$+6$ 30	$+6$ 29	$+6$ 29	$+5$ 29	$+4$ 29	$+4$ 29	230	50	
135	315	$+8$ 42	$+8$ 41	$+8$ 40	$+8$ 39	$+8$ 38	$+8$ 37	$+8$ 36	$+8$ 35	$+8$ 34	$+8$ 33	$+8$ 33	$+8$ 32	$+8$ 32	$+8$ 31	$+8$ 31	$+8$ 31	$+8$ 30	$+8$ 30	225	45	
140	320	$+8$ 44	$+8$ 43	$+8$ 42	$+9$ 41	$+9$ 40	$+9$ 39	$+9$ 38	$+9$ 38	$+9$ 37	$+10$ 36	$+10$ 35	$+10$ 35	$+10$ 34	$+10$ 34	$+11$ 33	$+11$ 33	$+11$ 32	$+12$ 32	220	40	
145	325	$+8$ 47	$+8$ 46	$+8$ 45	$+9$ 44	$+9$ 43	$+9$ 42	$+10$ 41	$+10$ 40	$+10$ 40	$+11$ 39	$+11$ 38	$+12$ 38	$+12$ 37	$+12$ 37	$+13$ 36	$+14$ 36	$+14$ 36	$+15$ 36	215	35	
150	330	$+7_0$ 49 ₁	$+7$ 48	$+8$ 47	$+8$ 46	$+9$ 45	$+9$ 44	$+10_1$ 44 ₁	$+10$ 43	$+11$ 43	$+12$ 42	$+12$ 42	$+13$ 41	$+13_1$ 41 ₁	$+14$ 41	$+15$ 40	$+16$ 40	$+17$ 40	$+18_2$ 41 ₁	210	30	
155	335	$+6$ 51	$+7$ 50	$+7$ 49	$+8$ 49	$+8$ 48	$+9$ 47	$+10$ 47	$+10$ 46	$+11$ 46	$+12$ 45	$+13$ 45	$+13$ 45	$+14$ 45	$+15$ 45	$+16$ 45	$+18$ 45	$+19$ 45	$+21$ 46	205	25	
160	340	$+5$ 53	$+6$ 52	$+6$ 51	$+7$ 51	$+8$ 50	$+9$ 50	$+9$ 49	$+10$ 49	$+11$ 49	$+12$ 49	$+13$ 49	$+14$ 49	$+15$ 49	$+16$ 49	$+17$ 50	$+19$ 50	$+21$ 51	$+23$ 52	200	20	
165	345	$+4$ 54	$+5$ 54	$+5$ 53	$+6$ 53	$+7$ 52	$+8$ 52	$+9$ 52	$+10$ 52	$+11$ 52	$+12$ 52	$+13$ 52	$+14$ 53	$+15$ 53	$+16$ 54	$+18$ 55	$+20$ 56	$+22$ 57	$+24$ 59	195	15	
170	350	$+3$ 55	$+3$ 55	$+4$ 55	$+5$ 55	$+6$ 54	$+7$ 54	$+8$ 54	$+9$ 55	$+10$ 55	$+11$ 55	$+12$ 56	$+13$ 57	$+15$ 57	$+16$ 58	$+18$ 60	$+20$ 61	$+22$ 63	$+25$ 66	190	10	
175	355	$+1$ 56	$+2$ 56	$+3$ 56	$+4$ 56	$+5$ 56	$+6$ 56	$+7$ 56	$+8$ 57	$+9$ 58	$+10$ 58	$+11$ 59	$+12$ 60	$+14$ 61	$+16$ 63	$+18$ 65	$+20$ 67	$+22$ 70	$+25$ 73	185	5	
180	360	0_0 56 ₂	$+1$ 56	$+2$ 56	$+3$ 57	$+3$ 57	$+4$ 57	$+5_0$ 58 ₂	$+6$ 59	$+8$ 60	$+9$ 61	$+10$ 62	$+11$ 64	$+13_1$ 65 ₃	$+15$ 67	$+17$ 69	$+19$ 72	$+21$ 76	$+24_2$ 80 ₄	180	0	

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -8^\circ$																			
τ $p_{+\tau}$	O ^h						I ^h						II ^h						τ $p_{-\tau}$
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	
Δp h																			
0 180	0 ₀ 60 ₂	+1 60	+2 61	+3 61	+4 61	+5 62	+6 ₀ 62 ₂	+7 63	+9 64	+10 66	+11 67	+13 69	+15 ₁ 71 ₃	+17 74	+19 76	+21 79	+24 83	+28 ₂ 87 ₄	0 180 360 180
5 185	-2 60	-1 60	0 61	+1 61	+2 62	+3 63	+5 64	+6 65	+7 66	+8 68	+10 70	+11 72	+13 75	+15 78	+17 81	+20 85	+23 89	+26 95	355 175
10 190	-3 59	-2 60	-1 60	0 61	+1 62	+2 64	+3 65	+4 66	+5 68	+6 70	+8 72	+9 75	+11 78	+13 81	+15 85	+18 90	+21 95	+24 102	350 170
15 195	-5 58	-4 59	-3 60	-2 61	-1 62	0 64	+1 65	+2 67	+3 69	+4 71	+6 74	+7 77	+9 80	+11 84	+13 89	+15 94	+18 100	+21 108	345 165
20 200	-6 57	-5 58	-4 59	-4 60	-3 61	-2 63	-1 65	0 67	+1 69	+2 72	+3 75	+5 78	+6 82	+8 87	+10 92	+12 98	+14 104	+17 113	340 160
25 205	-7 55	-6 56	-6 57	-5 58	-4 60	-4 62	-3 64	-2 66	-1 69	0 72	+1 75	+2 79	+3 83	+5 88	+7 94	+9 100	+11 107	+13 117	335 155
30 210	-8 ₁ 52 ₂	-7 54	-7 55	-6 57	-6 59	-5 61	-4 ₀ 63 ₂	-4 65	-3 68	-2 71	-1 75	0 79	+1 ₀ 84 ₄	+2 89	+3 95	+5 101	+7 109	+9 ₀ 119 ₆	330 150
35 215	-9 50	-8 51	-8 53	-7 55	-7 57	-7 59	-6 61	-6 64	-5 67	-4 70	-4 74	-3 78	-2 83	-1 88	0 94	+1 101	+3 110	+5 120	325 145
40 220	-9 47	-9 49	-9 50	-8 52	-8 54	-8 56	-7 59	-7 62	-6 65	-6 68	-6 72	-5 76	-5 81	-4 87	-3 93	-3 101	-2 110	0 120	320 140
45 225	-9 44	-9 46	-9 48	-9 49	-9 51	-9 54	-8 56	-8 59	-8 62	-8 66	-8 70	-7 74	-7 79	-7 85	-6 91	-6 99	-6 108	-5 119	315 135
50 230	-9 42	-9 43	-9 45	-9 46	-9 48	-9 51	-9 53	-9 56	-9 59	-9 63	-9 67	-9 71	-9 76	-9 82	-9 88	-9 96	-9 105	-9 116	310 130
55 235	-9 39	-9 40	-9 42	-9 44	-9 46	-10 48	-10 50	-10 53	-10 56	-10 59	-10 63	-11 67	-11 72	-11 78	-12 84	-12 92	-13 101	-13 112	305 125
60 240	-8 ₁ 36 ₁	-8 38	-9 39	-9 41	-9 43	-10 45	-10 ₁ 47 ₁	-10 50	-11 53	-11 56	-11 59	-12 63	-12 ₁ 68 ₂	-13 74	-14 80	-15 87	-16 96	-17 ₁ 106 ₅	300 120
65 245	-7 34	-7 35	-8 36	-8 38	-9 40	-9 42	-10 44	-10 46	-11 49	-12 52	-12 55	-13 59	-13 64	-14 69	-15 75	-17 82	-18 90	-20 100	295 115
70 250	-6 32	-6 33	-7 34	-7 35	-8 37	-9 39	-9 41	-10 43	-11 45	-11 48	-12 51	-13 55	-14 59	-15 64	-16 70	-18 76	-20 84	-22 93	290 110
75 255	-5 30	-5 31	-6 32	-6 33	-7 34	-8 36	-9 38	-9 40	-10 42	-11 44	-12 47	-13 50	-14 54	-16 59	-17 64	-19 70	-21 77	-23 85	285 105
80 260	-3 29	-4 30	-5 30	-5 31	-6 32	-7 34	-8 35	-8 37	-9 39	-10 41	-11 43	-13 46	-14 49	-15 53	-17 58	-19 64	-21 70	-24 77	280 100
85 265	-2 28	-2 29	-3 29	-4 30	-5 31	-5 32	-6 33	-7 34	-8 36	-9 38	-10 40	-12 42	-13 45	-15 48	-17 52	-19 57	-21 63	-24 69	275 95
90 270	0 ₀ 28 ₀	-1 28	-1 28	-2 29	-3 30	-4 30	-5 ₀ 31 ₀	-6 32	-7 33	-8 35	-9 36	-10 38	-12 ₁ 41 ₀	-14 44	-16 47	-18 51	-20 56	-23 ₁ 61 ₁	270 90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -8^{\circ}$																							
τ $p_{+\tau}$		O ^h						I ^h						II ^h						τ $p_{-\tau}$			
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m				
Δp h																							
90	270	0 ₀ 28 ₀	-1 28	-1 28	-2 29	-3 30	-4 30	-5 ₀ 31 ₀	-6 32	-7 33	-8 35	-9 36	-10 38	-12 ₁ 41 ₀	-14 44	-16 47	-18 51	-20 56	-23 ₁ 61 ₁	270	90		
95	275	+2 28	+1 28	0 28	-1 28	-1 29	-2 29	-3 29	-4 30	-5 31	-6 32	-7 33	-8 35	-10 37	-12 39	-14 42	-16 45	-18 49	-21 54	265	85		
100	280	+3 29	+3 29	+2 28	+1 28	0 28	-1 28	-1 28	-2 29	-3 30	-4 30	-5 31	-6 32	-8 34	-10 35	-12 38	-14 40	-16 43	-19 47	260	80		
105	285	+5 30	+4 30	+3 29	+3 29	+2 28	+1 28	0 28	0 28	-1 29	-2 29	-3 30	-4 30	-6 31	-7 32	-9 34	-11 36	-13 38	-16 41	255	75		
110	290	+6 32	+5 31	+5 30	+4 30	+4 29	+3 29	+2 28	+2 28	+1 28	0 28	-1 29	-2 29	-3 29	-4 30	-6 31	-8 33	-10 34	-12 36	250	70		
115	295	+7 34	+6 33	+6 32	+6 31	+5 30	+5 30	+4 29	+4 29	+3 29	+2 28	+1 28	0 28	-1 28	-2 29	-3 29	-4 30	-6 31	-8 32	245	65		
120	300	+8 ₁ 36 ₁	+7 35	+7 34	+7 33	+7 32	+6 31	+6 ₁ 30 ₀	+5 30	+5 30	+4 29	+4 29	+3 28	+2 ₀ 28 ₀	+1 28	0 28	-1 28	-2 29	-4 ₀ 29 ₀	240	60		
125	305	+9 39	+8 38	+8 36	+8 35	+8 34	+8 33	+7 32	+7 32	+7 31	+6 30	+6 30	+6 29	+5 29	+4 28	+4 28	+3 28	+2 28	+1 28	235	55		
130	310	+9 42	+9 40	+9 39	+9 38	+9 36	+9 35	+9 34	+9 34	+8 33	+8 32	+8 32	+8 31	+8 31	+7 30	+7 29	+7 29	+6 29	+5 28	230	50		
135	315	+9 44	+9 43	+9 42	+10 40	+10 39	+10 38	+10 37	+10 36	+10 36	+10 35	+10 34	+10 33	+10 33	+10 32	+10 31	+10 31	+10 30	+10 30	225	45		
140	320	+9 47	+9 46	+10 44	+10 43	+10 42	+10 41	+11 40	+11 39	+11 39	+11 38	+12 37	+12 36	+12 36	+13 35	+13 34	+13 34	+14 33	+14 33	220	40		
145	325	+9 50	+9 48	+9 47	+10 46	+10 45	+11 44	+11 43	+12 42	+12 42	+12 41	+13 40	+14 40	+14 39	+15 39	+16 38	+16 38	+17 37	+18 37	215	35		
150	330	+8 ₁ 52 ₂	+9 51	+9 50	+10 49	+10 48	+11 47	+11 ₁ 46 ₁	+12 46	+12 45	+13 44	+14 44	+15 44	+16 ₁ 43 ₁	+17 43	+18 43	+19 43	+20 42	+22 ₂ 42 ₁	210	30		
155	335	+7 55	+8 54	+8 53	+9 52	+10 51	+10 50	+11 49	+12 49	+13 49	+14 48	+15 48	+16 48	+17 48	+18 48	+19 48	+21 48	+23 48	+25 49	205	25		
160	340	+6 57	+7 56	+7 55	+8 54	+9 54	+10 53	+11 52	+12 52	+13 52	+14 52	+15 52	+16 52	+17 52	+19 53	+20 53	+22 54	+24 55	+27 56	200	20		
165	345	+5 58	+5 58	+6 57	+7 56	+8 56	+9 56	+10 55	+11 55	+12 56	+13 56	+14 56	+16 57	+17 57	+19 58	+21 59	+23 60	+25 62	+28 63	195	15		
170	350	+3 59	+4 59	+5 59	+6 58	+7 58	+8 58	+9 58	+10 58	+11 59	+12 59	+14 60	+15 61	+17 62	+19 63	+21 65	+23 67	+26 69	+29 71	190	10		
175	355	+2 60	+3 60	+4 60	+5 60	+6 60	+7 60	+8 60	+9 61	+10 62	+11 63	+13 64	+14 65	+16 67	+18 69	+20 71	+22 73	+25 76	+29 79	185	5		
180	360	0 ₀ 60 ₂	+1 60	+2 61	+3 61	+4 61	+5 62	+6 ₀ 62 ₂	+7 63	+9 64	+10 66	+11 67	+13 69	+15 ₁ 71 ₃	+17 74	+19 76	+21 79	+24 83	+28 ₂ 87 ₄	180	0		

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

		$\delta = -10^\circ$																			
τ	$p_{+\tau}$	O^h						I^h						II^h						τ	$p_{-\tau}$
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m		
		$\frac{\Delta p}{h}$																			
0	180	0_0 65 ₃	+1 65	+2 66	+3 66	+4 66	+6 67	+7 68 ₃	+8 69	+9 70	+11 71	+13 73	+15 75	+17 77 ₄	+19 80	+22 83	+25 87	+28 92	+32 97 ₅	360	180
5	185	-2 65	-1 65	0 66	+1 66	+3 67	+4 68	+5 69	+6 71	+8 72	+9 74	+11 76	+13 79	+15 81	+17 85	+20 89	+23 93	+26 99	+30 106	355	175
10	190	-4 64	-3 64	-2 65	0 66	+1 67	+2 69	+3 70	+4 72	+6 74	+7 76	+8 79	+10 82	+12 85	+15 89	+17 94	+20 99	+23 105	+27 114	350	170
15	195	-5 62	-4 63	-3 64	-2 66	-1 67	0 69	+1 71	+2 73	+3 75	+5 78	+6 81	+8 84	+10 88	+12 92	+14 98	+17 104	+20 111	+24 120	345	165
20	200	-7 60	-6 61	-5 63	-4 65	-3 66	-2 68	-1 70	0 73	+1 76	+2 79	+4 82	+5 85	+7 90	+9 95	+11 101	+13 108	+16 116	+20 126	340	160
25	205	-8 58	-8 59	-7 61	-6 63	-5 65	-4 67	-3 69	-2 72	-1 75	0 78	+1 82	+2 86	+4 91	+5 97	+7 103	+9 110	+12 119	+15 130	335	155
30	210	-9 56 ₂	-9 57	-8 59	-7 61	-7 63	-6 65	-5 68 ₂	-4 71	-4 74	-3 77	-2 81	-1 86	+1 91 ₄	+2 97	+4 104	+5 112	+7 121	+10 133 ₇	330	150
35	215	-10 53	-10 55	-9 57	-8 59	-8 61	-7 63	-7 66	-6 69	-6 72	-5 76	-4 80	-3 85	-2 90	-1 96	0 104	+1 112	+3 122	+4 134	325	145
40	220	-10 50	-10 52	-10 54	-9 56	-9 58	-9 60	-8 63	-8 66	-8 70	-7 74	-7 78	-6 83	-5 88	-5 94	-4 102	-3 111	-2 121	-1 133	320	140
45	225	-11 47	-10 48	-10 50	-10 52	-10 54	-10 57	-9 60	-9 63	-9 67	-9 71	-9 75	-9 80	-8 85	-8 91	-7 99	-7 108	-6 119	-6 131	315	135
50	230	-10 43	-10 45	-10 47	-10 49	-10 51	-10 54	-10 57	-10 60	-10 63	-10 67	-10 71	-11 76	-11 82	-11 88	-11 96	-11 104	-11 115	-11 128	310	130
55	235	-10 40	-10 42	-10 44	-10 46	-11 48	-11 50	-11 53	-11 56	-11 59	-11 63	-12 67	-12 72	-13 78	-13 84	-14 92	-14 100	-15 110	-15 123	305	125
60	240	-9 37 ₁	-9 39	-10 41	-10 43	-10 45	-11 47	-11 49 ₁	-12 52	-12 55	-12 59	-13 63	-13 68	-14 73 ₃	-15 79	-16 87	-17 95	-18 104	-19 116 ₆	300	120
65	245	-8 35	-8 36	-9 38	-9 39	-10 41	-10 43	-11 45	-12 48	-12 51	-13 55	-14 59	-14 63	-15 68	-16 74	-17 81	-19 89	-20 98	-22 109	295	115
70	250	-7 33	-7 34	-8 35	-8 36	-9 38	-10 40	-10 42	-11 44	-12 47	-13 50	-14 54	-15 58	-16 63	-17 68	-18 74	-20 82	-22 91	-24 101	290	110
75	255	-5 31	-6 32	-7 33	-7 34	-8 35	-9 37	-9 39	-10 41	-11 43	-12 46	-13 49	-15 53	-16 57	-17 62	-19 68	-21 75	-23 83	-26 92	285	105
80	260	-4 29	-4 30	-5 31	-6 32	-7 33	-8 34	-8 36	-9 38	-10 40	-11 42	-12 45	-14 48	-15 52	-17 56	-19 61	-21 67	-24 74	-27 83	280	100
85	265	-2 28	-3 29	-3 30	-4 30	-5 31	-6 32	-7 33	-8 35	-9 37	-10 39	-11 41	-13 44	-14 47	-16 51	-18 55	-20 60	-23 66	-27 74	275	95
90	270	0_0 28 ₀	-1 28	-2 29	-2 29	-3 29	-4 30	-5 31 ₀	-6 32	-7 34	-8 35	-9 37	-11 39	-13 42 ₁	-15 45	-17 49	-19 53	-22 58	-26 65 ₂	270	90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -10^{\circ}$																								
τ $p_{+\tau}$		O ^h						I ^h						II ^h						τ $p_{-\tau}$				
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m					
		Δp h																						
90	270	0 ₀ 28 ₀	-1 28	-2 29	-2 29	-3 29	-4 30	-5 ₀ 31 ₀	-6 32	-7 34	-8 35	-9 37	-11 39	-13 ₁ 42 ₁	-15 45	-17 49	-19 53	-22 58	-26 ₁ 65 ₂	270	90			
95	275	+2 28	+1 28	0 28	-1 28	-1 28	-2 29	-3 30	-4 30	-5 31	-6 32	-7 34	-9 35	-11 37	-13 40	-15 43	-17 47	-20 51	-23 56	265	85			
100	280	+4 29	+3 29	+2 29	+1 28	0 28	0 28	-1 29	-2 29	-3 30	-4 30	-5 31	-7 32	-8 34	-10 36	-12 38	-14 41	-17 44	-20 48	260	80			
105	285	+5 31	+5 30	+4 30	+3 29	+2 28	+2 28	+1 28	0 28	-1 29	-2 29	-3 29	-4 30	-6 31	-7 32	-9 34	-11 36	-14 39	-17 42	255	75			
110	290	+7 33	+6 32	+6 31	+5 30	+4 29	+4 29	+3 28	+2 28	+1 28	0 28	-1 28	-2 29	-3 29	-4 30	-6 31	-8 32	-10 34	-13 36	250	70			
115	295	+8 35	+8 34	+7 33	+7 32	+6 31	+6 30	+5 29	+4 29	+4 29	+3 28	+2 28	+1 28	0 28	-1 29	-2 29	-4 30	-6 31	-3 32	245	65			
120	300	+9 ₁ 37 ₁	+9 36	+8 35	+8 34	+8 33	+7 32	+7 ₁ 31 ₀	+6 30	+6 30	+6 29	+5 29	+4 29	+3 ₁ 28 ₀	+2 28	+1 28	0 29	-1 29	-3 ₀ 29 ₀	240	60			
125	305	+10 40	+10 39	+9 37	+9 36	+9 35	+9 34	+9 33	+8 32	+8 32	+8 31	+7 30	+7 30	+6 29	+6 29	+5 28	+4 28	+3 28	+2 28	235	55			
130	310	+10 43	+10 42	+10 40	+10 39	+10 38	+10 37	+10 36	+10 35	+10 34	+10 33	+10 32	+10 32	+9 31	+9 31	+9 30	+8 30	+8 29	+8 29	230	50			
135	315	+11 47	+11 45	+11 44	+11 42	+11 41	+11 40	+11 39	+12 38	+12 37	+12 36	+12 35	+12 35	+12 34	+12 33	+12 33	+12 32	+12 31	+13 31	225	45			
140	320	+10 50	+11 48	+11 47	+11 46	+12 44	+12 43	+12 42	+13 41	+13 40	+13 39	+14 38	+14 38	+15 37	+15 36	+15 36	+16 35	+17 35	+18 34	220	40			
145	325	+10 53	+10 51	+11 50	+11 49	+12 48	+12 47	+13 46	+13 45	+14 44	+14 43	+15 42	+16 42	+17 41	+17 40	+18 40	+19 40	+21 40	+22 39	215	35			
150	330	+9 ₂ 56 ₂	+10 54	+10 53	+11 52	+12 51	+12 50	+13 ₁ 49 ₂	+14 49	+14 48	+15 47	+16 47	+17 46	+18 ₁ 46 ₁	+19 45	+20 45	+22 46	+24 46	+26 ₂ 46 ₂	210	30			
155	335	+8 58	+9 57	+9 56	+10 55	+11 54	+12 54	+13 53	+14 53	+15 52	+16 52	+17 51	+18 51	+19 51	+21 51	+22 51	+24 52	+26 52	+29 53	205	25			
160	340	+7 60	+8 60	+8 59	+9 58	+10 57	+11 57	+12 57	+13 57	+14 56	+16 56	+17 56	+18 56	+20 56	+22 57	+23 58	+25 59	+28 60	+31 61	200	20			
165	345	+5 62	+6 62	+7 61	+8 61	+9 60	+10 60	+11 60	+12 60	+13 60	+15 60	+17 61	+18 61	+20 62	+22 63	+24 64	+26 66	+29 68	+33 70	195	15			
170	350	+4 64	+5 64	+6 63	+7 63	+8 63	+9 63	+10 63	+11 63	+12 64	+14 64	+16 65	+17 66	+19 67	+21 69	+24 71	+27 73	+30 76	+34 79	190	10			
175	355	+2 65	+3 65	+4 65	+5 65	+6 65	+7 65	+9 66	+10 66	+11 67	+13 68	+15 69	+16 71	+18 73	+20 75	+23 77	+26 80	+29 84	+33 88	185	5			
180	360	0 ₀ 65 ₃	+1 65	+2 66	+3 66	+4 66	+6 67	+7 ₀ 68 ₃	+8 69	+9 70	+11 71	+13 73	+15 75	+17 ₁ 77 ₄	+19 80	+22 83	+25 87	+28 92	+32 ₂ 97 ₅	180	0			

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$.

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

		$\delta = -12^\circ$																			
τ	$p_{+\tau}$	O^h						I^h						II^h						τ	$p_{-\tau}$
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m		
		Δp																			
		h																			
0°	0°	0_0	$+1$	$+2$	$+4$	$+5$	$+6$	$+8_1$	$+9$	$+11$	$+13$	$+15$	$+17$	$+19_1$	$+22$	$+25$	$+28$	$+32$	$+37_3$	0°	0°
0°	180°	71_3	71	71	71	72	73	74_3	75	76	78	80	82	85_4	88	92	97	102	108_6	360°	180°
5°	185°	-2	-1	0	$+2$	$+3$	$+4$	$+6$	$+7$	$+9$	$+11$	$+13$	$+15$	$+17$	$+20$	$+23$	$+26$	$+30$	$+35$	355°	175°
10°	190°	-4	-3	-2	-1	$+1$	$+2$	$+3$	$+5$	$+6$	$+8$	$+10$	$+12$	$+14$	$+17$	$+20$	$+23$	$+27$	$+32$	350°	170°
15°	195°	-6	-5	-4	-3	-2	0	$+1$	$+2$	$+4$	$+5$	$+7$	$+9$	$+11$	$+13$	$+16$	$+19$	$+23$	$+27$	345°	165°
20°	200°	-8	-7	-6	-5	-4	-3	-1	0	$+1$	$+3$	$+4$	$+6$	$+8$	$+10$	$+12$	$+15$	$+18$	$+22$	340°	160°
25°	205°	-9	-8	-8	-7	-6	-5	-4	-3	-2	0	$+1$	$+3$	$+4$	$+6$	$+8$	$+11$	$+13$	$+16$	335°	155°
30°	210°	-10_1	-9	-9	-8	-8	-7	-6_0	-5	-4	-3	-2	-1	$+1_0$	$+2$	$+4$	$+6$	$+8$	$+11_1$	330°	150°
35°	215°	-11	-10	-10	-10	-9	-9	-8	-7	-7	-6	-5	-4	-3	-2	0	$+1$	$+3$	$+5$	325°	145°
40°	220°	-12	-11	-11	-11	-10	-10	-10	-9	-9	-8	-8	-7	-6	-6	-5	-4	-3	-1	320°	140°
45°	225°	-12	-12	-12	-12	-11	-11	-11	-11	-11	-10	-10	-10	-9	-9	-9	-8	-8	-7	315°	135°
50°	230°	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-13	310°	130°
55°	235°	-11	-11	-12	-12	-12	-12	-13	-13	-13	-13	-14	-14	-14	-15	-15	-16	-17	-18	305°	125°
60°	240°	-10_1	-10	-11	-12	-12	-12	-13_1	-13	-14	-14	-15	-15	-16_1	-17	-18	-19	-21	-22_2	300°	120°
65°	245°	-9	-9	-10	-11	-11	-12	-13	-13	-14	-15	-15	-16	-17	-18	-20	-22	-24	-26	295°	115°
70°	250°	-8	-8	-9	-10	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-21	-23	-26	-29	290°	110°
75°	255°	-6	-7	-8	-8	-9	-10	-11	-12	-13	-14	-15	-16	-18	-20	-22	-24	-27	-30	285°	105°
80°	260°	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-17	-19	-21	-24	-27	-31	280°	100°
85°	265°	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-13	-14	-16	-18	-20	-23	-26	-30	275°	95°
90°	270°	0_0	-1	-2	-3	-4	-5	-6_0	-7	-8	-9	-11	-12	-14_1	-16	-18	-22	-25	-29_2	270°	90°

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -12^{\circ}$																						
τ		O^h						I^h						II^h						τ		
$p_{+\tau}$		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m		$p_{-\tau}$	
$^{\circ}$	$^{\circ}$	Δp																			$^{\circ}$	$^{\circ}$
		h																				
90	270	0 ₀ 28 ₀	-1 28	-2 29	-3 29	-4 30	-5 30	-6 ₀ 31 ₀	-7 32	-8 34	-9 36	-11 38	-12 40	-14 ₁ 43 ₁	-16 47	-18 51	-22 56	-25 62	-29 ₂ 69 ₂	270	90	
95	275	+2 28	+1 28	0 28	-1 28	-1 29	-2 29	-3 29	-5 30	-6 31	-7 33	-9 34	-10 36	-12 39	-14 42	-16 45	-19 49	-22 54	-26 60	265	85	
100	280	+4 29	+3 29	+2 28	+2 28	+1 28	0 28	-1 28	-2 29	-3 30	-4 31	-6 32	-7 33	-9 35	-11 37	-13 39	-16 42	-19 46	-23 51	260	80	
105	285	+6 31	+5 30	+4 29	+4 29	+3 29	+2 28	+1 28	0 28	-1 29	-2 29	-3 30	-4 31	-6 32	-8 33	-10 35	-12 37	-15 40	-19 43	255	75	
110	290	+8 33	+7 32	+6 31	+6 30	+5 30	+4 29	+4 28	+3 28	+2 28	+1 28	0 29	-1 29	-3 30	-4 30	-6 31	-8 33	-11 35	-14 37	250	70	
115	295	+9 36	+9 34	+8 33	+8 32	+7 31	+6 30	+6 29	+5 29	+5 29	+4 28	+3 28	+2 28	+1 29	0 29	-2 29	-4 30	-6 31	-8 32	245	65	
120	300	+10 ₁ 39 ₁	+10 37	+10 36	+9 35	+9 33	+8 32	+8 ₁ 31 ₀	+8 31	+7 30	+7 29	+6 29	+5 29	+4 ₁ 29 ₀	+3 28	+2 28	+1 28	-1 29	-3 ₀ 29 ₀	240	60	
125	305	+11 42	+11 40	+11 39	+11 38	+11 36	+10 35	+10 34	+10 33	+10 32	+9 31	+9 31	+8 31	+8 30	+7 29	+7 28	+6 28	+5 28	+3 28	235	55	
130	310	+12 46	+12 44	+12 42	+12 41	+12 40	+12 38	+12 37	+12 36	+12 35	+12 34	+12 33	+11 33	+11 32	+11 31	+11 30	+11 30	+10 29	+9 29	230	50	
135	315	+12 49	+12 48	+12 46	+13 45	+13 43	+13 42	+13 40	+14 39	+14 38	+14 37	+14 36	+14 36	+14 35	+15 34	+15 33	+15 33	+15 32	+15 32	225	45	
140	320	+12 53	+12 51	+13 50	+13 48	+13 47	+14 46	+14 44	+15 43	+15 42	+16 41	+16 40	+17 40	+17 39	+18 38	+18 37	+19 37	+20 36	+21 36	220	40	
145	325	+11 57	+12 55	+13 54	+13 52	+14 51	+14 50	+15 49	+16 48	+16 47	+17 46	+18 45	+19 45	+19 44	+20 43	+21 42	+23 42	+24 42	+26 42	215	35	
150	330	+10 ₁ 60 ₂	+11 58	+12 57	+13 56	+13 55	+14 54	+15 ₁ 53 ₂	+16 52	+17 51	+18 51	+19 50	+20 50	+21 ₂ 49 ₂	+22 49	+24 48	+26 49	+28 49	+30 ₃ 49 ₂	210	30	
155	335	+9 63	+10 62	+11 61	+12 60	+13 59	+14 58	+15 57	+16 56	+17 56	+18 56	+20 55	+21 55	+22 55	+24 55	+26 55	+28 56	+31 57	+34 57	205	25	
160	340	+8 66	+9 65	+10 64	+11 63	+12 62	+13 61	+14 61	+15 61	+17 61	+18 61	+20 61	+21 61	+23 61	+25 62	+27 63	+30 64	+33 65	+37 67	200	20	
165	345	+6 68	+7 67	+8 66	+9 66	+11 65	+12 65	+13 65	+14 65	+16 65	+17 66	+19 66	+21 67	+23 68	+25 69	+28 70	+31 72	+34 74	+38 77	195	15	
170	350	+4 69	+5 69	+6 68	+8 68	+9 68	+10 68	+12 69	+13 69	+15 69	+16 70	+18 71	+20 72	+22 74	+25 76	+28 78	+31 81	+35 84	+39 88	190	10	
175	355	+2 70	+3 70	+4 70	+6 70	+7 70	+8 71	+10 72	+11 72	+13 73	+15 74	+17 76	+19 77	+21 79	+24 82	+27 85	+30 89	+34 93	+39 98	185	5	
180	360	0 ₀ 71 ₃	+1 71	+2 71	+4 71	+5 72	+6 73	+8 ₁ 74 ₃	+9 75	+11 76	+13 78	+15 80	+17 82	+19 ₁ 85 ₄	+22 88	+25 92	+28 97	+32 102	+37 ₃ 108 ₆	180	0	

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

		$\delta = -14^\circ$																			
τ	$p_{+\tau}$	O ^h						I ^h						II ^h						τ	$p_{-\tau}$
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		
		$\frac{\Delta p}{h}$																			
0	180	0 ₇₇₄	+1	+3	+4	+6	+7	+9 ₁₄	+11	+13	+15	+17	+19	+22 ₂	+25	+29	+33	+38	+43 ₃	360	180
5	185	-2	-1	0	+2	+3	+5	+7	+8	+10	+12	+14	+17	+19	+22	+26	+30	+35	+40	355	175
10	190	-5	-3	-2	-1	+1	+2	+4	+6	+7	+9	+11	+14	+16	+19	+22	+26	+31	+36	350	170
15	195	-7	-6	-4	-3	-2	-1	+1	+3	+4	+6	+8	+10	+12	+15	+18	+22	+26	+31	345	165
20	200	-9	-8	-7	-6	-4	-3	-2	0	+1	+3	+5	+6	+8	+11	+14	+17	+21	+25	340	160
25	205	-11	-10	-9	-8	-7	-6	-5	-3	-2	-1	+1	+3	+5	+7	+9	+12	+15	+19	335	155
30	210	-12 ₁	-11	-10	-10	-9	-8	-7 ₁	-6	-5	-4	-3	-1	0 ₆	+2	+4	+6	+9	+12 ₁	330	150
35	215	-13	-12	-12	-11	-11	-10	-9	-8	-8	-7	-6	-5	-4	-2	-1	+1	+3	+5	325	145
40	220	-14	-13	-13	-12	-12	-12	-11	-10	-10	-9	-9	-8	-7	-7	-6	-5	-3	-2	320	140
45	225	-14	-14	-14	-13	-13	-13	-13	-12	-12	-12	-12	-11	-11	-11	-10	-10	-9	-8	315	135
50	230	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-15	-15	-15	310	130
55	235	-13	-13	-14	-14	-14	-14	-14	-15	-15	-15	-16	-16	-17	-17	-18	-19	-20	-21	305	125
60	240	-12 ₁	-12	-13	-13	-14	-14	-15 ₁	-15	-16	-16	-17	-18	-19 ₁	-20	-21	-22	-24	-26 ₂	300	120
65	245	-11	-11	-12	-12	-13	-14	-14	-15	-16	-17	-18	-19	-20	-21	-23	-25	-27	-30	295	115
70	250	-9	-10	-11	-11	-12	-13	-14	-14	-15	-16	-18	-19	-21	-22	-24	-27	-30	-33	290	110
75	255	-7	-8	-9	-10	-11	-12	-13	-13	-14	-15	-17	-19	-21	-23	-25	-28	-31	-34	285	105
80	260	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-16	-18	-20	-22	-24	-27	-31	-35	280	100
85	265	-2	-3	-4	-5	-6	-7	-9	-10	-11	-12	-14	-16	-18	-20	-23	-26	-30	-34	275	95
90	270	0 ₈₀	-1	-2	-3	-4	-5	-6 ₀	-7	-9	-10	-12	-14	-16 ₁	-18	-21	-24	-28	-33 ₂	270	90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -14^{\circ}$																						
τ $p_{+\tau}$		O ^h						I ^h						II ^h						τ $p_{-\tau}$		
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m			
Δp h																						
90	270	0 ₂₈₀	-1 ₂₈	-2 ₂₉	-3 ₂₉	-4 ₃₀	-5 ₃₁	-6 ₃₂₀	-7 ₃₃	-9 ₃₅	-10 ₃₇	-12 ₃₉	-14 ₄₂	-16 ₄₅₁	-18 ₄₉	-21 ₅₃	-24 ₅₉	-28 ₆₆	-33 ₇₄₃	270	90	
95	275	+2 ₂₈	+1 ₂₈	0 ₂₈	-1 ₂₈	-2 ₂₉	-3 ₂₉	-4 ₃₀	-5 ₃₁	-6 ₃₂	-8 ₃₄	-9 ₃₅	-11 ₃₇	-13 ₄₀	-15 ₄₃	-18 ₄₆	-21 ₅₁	-25 ₅₇	-29 ₆₃	265	85	
100	280	+5 ₂₉	+4 ₂₉	+3 ₂₈	+2 ₂₈	+1 ₂₈	0 ₂₈	-1 ₂₉	-2 ₂₉	-3 ₃₀	-5 ₃₁	-6 ₃₂	-8 ₃₃	-10 ₃₅	-12 ₃₇	-15 ₄₀	-18 ₄₄	-21 ₄₈	-25 ₅₃	260	80	
105	285	+7 ₃₁	+6 ₃₀	+5 ₂₉	+5 ₂₉	+4 ₂₉	+3 ₂₈	+2 ₂₈	+1 ₂₈	0 ₂₉	-2 ₂₉	-3 ₃₀	-5 ₃₀	-6 ₃₁	-8 ₃₃	-11 ₃₅	-14 ₃₈	-17 ₄₁	-20 ₄₄	255	75	
110	290	+9 ₃₄	+8 ₃₂	+8 ₃₁	+7 ₃₁	+6 ₃₀	+5 ₂₉	+5 ₂₉	+4 ₂₉	+3 ₂₈	+2 ₂₈	0 ₂₈	-1 ₂₉	-2 ₂₉	-4 ₃₀	-6 ₃₁	-9 ₃₃	-12 ₃₅	-15 ₃₇	250	70	
115	295	+11 ₃₇	+10 ₃₅	+10 ₃₄	+9 ₃₃	+9 ₃₂	+8 ₃₁	+7 ₃₀	+7 ₃₀	+6 ₂₉	+5 ₂₉	+4 ₂₈	+3 ₂₈	+2 ₂₈	0 ₂₉	-1 ₂₉	-3 ₃₀	-6 ₃₁	-9 ₃₂	245	65	
120	300	+12 ₄₀₁	+12 ₃₉	+11 ₃₇	+11 ₃₆	+11 ₃₅	+10 ₃₃	+10 ₃₂₀	+9 ₃₁	+9 ₃₁	+8 ₃₀	+7 ₂₉	+7 ₂₉	+6 ₂₈₀	+5 ₂₈	+4 ₂₈	+2 ₂₈	0 ₂₉	-2 ₂₉₀	240	60	
125	305	+13 ₄₄	+13 ₄₂	+13 ₄₀	+13 ₃₉	+13 ₃₈	+12 ₃₆	+12 ₃₅	+12 ₃₄	+12 ₃₃	+11 ₃₂	+11 ₃₁	+10 ₃₀	+10 ₂₉	+9 ₂₉	+9 ₂₉	+8 ₂₈	+7 ₂₈	+5 ₂₈	235	55	
130	310	+14 ₄₈	+14 ₄₆	+14 ₄₄	+14 ₄₃	+14 ₄₁	+14 ₄₀	+14 ₃₉	+14 ₃₈	+14 ₃₆	+14 ₃₅	+14 ₃₄	+14 ₃₃	+14 ₃₂	+14 ₃₁	+13 ₃₁	+13 ₃₀	+13 ₃₀	+12 ₂₉	230	50	
135	315	+14 ₅₃	+14 ₅₁	+14 ₄₉	+15 ₄₇	+15 ₄₅	+15 ₄₄	+16 ₄₃	+16 ₄₂	+16 ₄₀	+16 ₃₉	+17 ₃₈	+17 ₃₇	+17 ₃₆	+18 ₃₅	+18 ₃₅	+18 ₃₄	+19 ₃₃	+19 ₃₂	225	45	
140	320	+14 ₅₇	+14 ₅₅	+15 ₅₃	+15 ₅₂	+16 ₅₀	+16 ₄₉	+17 ₄₇	+17 ₄₆	+18 ₄₅	+18 ₄₄	+19 ₄₃	+19 ₄₂	+20 ₄₁	+21 ₄₀	+22 ₄₀	+23 ₃₉	+24 ₃₈	+25 ₃₇	220	40	
145	325	+13 ₆₁	+14 ₅₉	+14 ₅₇	+15 ₅₆	+16 ₅₄	+16 ₅₃	+17 ₅₂	+18 ₅₁	+19 ₅₀	+20 ₄₉	+21 ₄₈	+22 ₄₇	+23 ₄₇	+24 ₄₆	+26 ₄₆	+27 ₄₅	+29 ₄₅	+31 ₄₄	215	35	
150	330	+12 ₆₅₃	+13 ₆₃	+14 ₆₁	+15 ₆₀	+16 ₅₉	+16 ₅₈	+17 ₅₇₂	+18 ₅₆	+20 ₅₅	+21 ₅₄	+22 ₅₄	+23 ₅₃	+25 ₅₃₂	+27 ₅₃	+29 ₅₃	+31 ₅₃	+33 ₅₃	+36 ₅₃₂	210	30	
155	335	+11 ₆₈	+12 ₆₇	+13 ₆₅	+14 ₆₄	+15 ₆₃	+16 ₆₃	+17 ₆₂	+18 ₆₁	+20 ₆₁	+21 ₆₀	+23 ₆₀	+24 ₆₀	+26 ₆₀	+28 ₆₀	+31 ₆₁	+33 ₆₁	+36 ₆₂	+40 ₆₃	205	25	
160	340	+9 ₇₁	+10 ₇₀	+11 ₆₉	+13 ₆₈	+14 ₆₇	+15 ₆₇	+16 ₆₆	+18 ₆₆	+19 ₆₆	+21 ₆₆	+23 ₆₆	+25 ₆₆	+27 ₆₇	+29 ₆₈	+32 ₆₉	+35 ₇₀	+39 ₇₂	+43 ₇₄	200	20	
165	345	+7 ₇₄	+8 ₇₃	+9 ₇₂	+11 ₇₁	+12 ₇₁	+14 ₇₁	+15 ₇₁	+17 ₇₁	+18 ₇₁	+20 ₇₂	+22 ₇₂	+24 ₇₃	+27 ₇₄	+29 ₇₆	+32 ₇₈	+36 ₈₀	+40 ₈₃	+45 ₈₆	195	15	
170	350	+5 ₇₆	+6 ₇₅	+7 ₇₄	+9 ₇₄	+10 ₇₄	+12 ₇₄	+13 ₇₅	+15 ₇₅	+17 ₇₆	+19 ₇₇	+21 ₇₈	+23 ₇₉	+26 ₈₁	+29 ₈₃	+32 ₈₆	+36 ₉₀	+40 ₉₄	+45 ₉₈	190	10	
175	355	+2 ₇₇	+4 ₇₆	+5 ₇₆	+7 ₇₆	+8 ₇₇	+10 ₇₇	+11 ₇₈	+13 ₇₉	+15 ₈₀	+17 ₈₂	+19 ₈₃	+21 ₈₅	+24 ₈₈	+27 ₉₁	+31 ₉₅	+35 ₉₉	+39 ₁₀₄	+44 ₁₁₀	185	5	
180	360	0 ₇₇₄	+1 ₇₇	+3 ₇₇	+4 ₇₈	+6 ₇₉	+7 ₈₀	+9 ₈₁₄	+11 ₈₂	+13 ₈₄	+15 ₈₆	+17 ₈₈	+19 ₉₁	+22 ₉₄₅	+25 ₉₈	+29 ₁₀₃	+33 ₁₀₈	+38 ₁₁₄	+43 ₁₂₂₈	180	0	

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -16^{\circ}$																							
τ $p_{+\tau}$		O ^h						I ^h						II ^h						τ $p_{-\tau}$			
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m				
		Δp h																					
0	180	0 ₈₄	+2 85	+3 85	+5 86	+7 87	+9 88	+10 ₈₉	+12 91	+15 93	+17 95	+19 98	+22 101	+25 ₁₀₅	+29 110	+33 115	+38 122	+44 130	+51 ₁₄₀	360	180		
5	185	-3 84	-1 85	0 86	+2 87	+4 88	+6 89	+7 91	+9 93	+12 96	+14 99	+16 102	+19 106	+22 111	+26 117	+30 124	+35 132	+40 141	+47 153	355	175		
10	190	-6 83	-4 84	-2 85	-1 87	+1 88	+3 90	+4 92	+6 95	+8 98	+10 102	+13 106	+16 111	+18 116	+22 123	+26 131	+30 140	+35 151	+42 164	350	170		
15	195	-8 81	-7 82	-5 84	-4 86	-2 88	-1 90	+1 93	+3 96	+5 100	+7 104	+9 109	+12 114	+14 120	+17 127	+21 136	+25 147	+30 159	+36 174	345	165		
20	200	-10 78	-9 80	-8 82	-7 84	-5 86	-4 89	-2 92	-1 96	+1 100	+3 105	+5 110	+7 116	+9 123	+12 130	+16 140	+20 152	+24 166	+29 182	340	160		
25	205	-12 75	-11 77	-10 79	-9 81	-8 84	-6 87	-5 90	-4 94	-2 99	-1 104	+1 109	+3 116	+5 124	+7 133	+10 143	+13 155	+17 170	+22 188	335	155		
30	210	-14 ₇₁	-13 73	-12 75	-11 78	-10 81	-9 84	-8 ₈₈	-7 92	-6 97	-5 102	-3 108	-1 115	0 ₁₂₃	+2 133	+4 144	+7 157	+10 173	+14 ₁₉₂	330	150		
35	215	-15 66	-14 69	-14 71	-13 74	-12 77	-11 80	-11 84	-10 89	-9 94	-8 100	-7 106	-6 113	-5 121	-3 131	-1 143	+1 157	+3 173	+6 193	325	145		
40	220	-16 62	-15 64	-15 66	-14 69	-14 72	-13 76	-13 80	-12 85	-12 90	-11 96	-10 103	-10 110	-9 118	-8 128	-7 140	-6 154	-4 171	-2 191	320	140		
45	225	-16 57	-16 59	-16 62	-15 65	-15 68	-15 71	-15 75	-14 80	-14 85	-14 91	-13 98	-13 105	-13 114	-12 124	-12 136	-12 150	-11 167	-10 187	315	135		
50	230	-16 52	-16 54	-16 57	-16 60	-16 63	-16 66	-16 70	-16 75	-16 80	-16 86	-16 92	-16 99	-16 108	-16 118	-17 130	-17 144	-17 161	-17 181	310	130		
55	235	-15 47	-15 49	-16 52	-16 55	-16 58	-16 61	-17 65	-17 69	-17 74	-18 80	-18 86	-18 93	-19 101	-20 111	-21 123	-22 137	-23 153	-24 173	305	125		
60	240	-14 ₄₂	-14 44	-15 47	-15 50	-16 53	-16 56	-17 ₅₉	-17 63	-18 68	-19 73	-19 79	-20 86	-21 ₉₄	-23 103	-24 115	-26 128	-28 143	-30 ₁₆₂	300	120		
65	245	-12 38	-13 40	-14 42	-14 45	-15 48	-15 51	-16 54	-17 58	-18 62	-19 67	-20 72	-21 79	-23 86	-25 95	-27 106	-29 118	-32 132	-35 151	295	115		
70	250	-10 35	-11 36	-12 38	-13 41	-14 43	-14 46	-15 49	-16 52	-17 56	-19 60	-20 65	-22 71	-24 78	-26 86	-28 96	-31 107	-34 121	-38 138	290	110		
75	255	-8 32	-9 33	-10 35	-11 37	-12 39	-13 41	-14 44	-15 47	-16 50	-18 54	-19 58	-21 63	-23 70	-26 77	-29 86	-32 96	-36 108	-40 124	285	105		
80	260	-6 30	-7 31	-8 32	-9 34	-10 35	-11 37	-12 39	-13 42	-15 45	-16 48	-18 52	-20 56	-22 62	-25 68	-28 76	-32 85	-36 96	-41 109	280	100		
85	265	-3 29	-4 29	-5 30	-6 31	-7 32	-8 34	-10 35	-11 37	-13 40	-14 43	-16 46	-18 49	-20 54	-23 60	-26 66	-30 74	-35 83	-40 95	275	95		
90	270	0 ₂₈	-1 28	-2 29	-3 29	-4 30	-6 31	-7 ₃₂	-8 34	-10 36	-11 38	-13 40	-15 43	-18 ₄₇	-21 52	-24 57	-28 63	-33 71	-38 ₈₁	270	90		

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLES OF DIFFERENTIAL REFRACTION.

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TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -16^{\circ}$																							
τ		O ^h						I ^h						II ^h						τ			
$p_{+\tau}$		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		$p_{-\tau}$		
	$\begin{smallmatrix} \circ & \circ \\ \Delta p & h \end{smallmatrix}$																						
90	270	$\begin{smallmatrix} 0_0 \\ 28_0 \end{smallmatrix}$	-1 28	-2 29	-3 29	-4 30	-6 31	-7 ₀ 32 ₀	-8 34	-10 36	-11 38	-13 40	-15 43	-18 ₁ 47 ₁	-21 52	-24 57	-28 63	-33 71	-38 ₃ 81 ₃	270	90		
95	275	+3 29	+2 28	+1 28	0 28	-2 29	-3 29	-4 30	-5 31	-7 32	-8 34	-10 36	-12 38	-15 41	-17 44	-20 48	-24 54	-29 60	-34 68	265	85		
100	280	+6 30	+5 29	+4 29	+3 28	+1 28	0 28	-1 29	-2 29	-4 30	-5 31	-7 32	-9 33	-11 35	-13 38	-16 41	-20 45	-24 50	-29 57	260	80		
105	285	+8 32	+7 31	+6 30	+5 29	+4 29	+3 28	+2 28	+1 28	0 29	-1 29	-3 29	-5 30	-7 31	-9 33	-12 35	-15 38	-18 42	-23 47	255	75		
110	290	+10 35	+10 34	+9 32	+8 31	+7 31	+6 30	+6 29	+5 28	+4 28	+2 28	+1 28	0 29	-2 29	-4 30	-6 31	-9 33	-12 35	-16 39	250	70		
115	295	+12 38	+12 37	+11 35	+11 34	+10 33	+9 32	+9 31	+8 30	+7 29	+6 28	+5 28	+4 28	+3 28	+1 28	-1 29	-3 30	-6 31	-9 33	245	65		
120	300	+14 ₁ 42 ₁	+14 41	+13 39	+13 37	+12 36	+12 35	+12 ₁ 33 ₀	+11 32	+11 31	+10 30	+9 29	+8 29	+7 ₁ 29 ₀	+6 28	+5 28	+3 28	+1 28	-1 ₀ 29 ₀	240	60		
125	305	+15 47	+15 45	+15 43	+15 41	+14 40	+14 38	+14 36	+14 35	+14 34	+13 33	+13 32	+13 31	+12 31	+11 30	+11 29	+10 28	+9 28	+7 28	235	55		
130	310	+16 52	+16 50	+16 48	+16 46	+16 44	+16 42	+16 40	+16 39	+16 38	+16 37	+17 36	+17 35	+17 34	+16 33	+16 32	+16 31	+16 30	+15 30	230	50		
135	315	+16 57	+17 54	+17 52	+17 50	+17 49	+18 47	+18 45	+18 44	+19 43	+19 42	+20 41	+20 39	+21 38	+21 37	+21 36	+22 35	+23 34	+23 34	225	45		
140	320	+16 62	+17 59	+17 57	+18 55	+18 54	+19 52	+19 51	+20 49	+21 48	+21 47	+22 46	+23 45	+24 44	+25 43	+26 42	+27 41	+29 40	+31 40	220	40		
145	325	+15 66	+16 64	+17 62	+18 60	+18 59	+19 57	+20 56	+21 55	+22 54	+23 53	+24 52	+25 51	+27 51	+28 50	+30 49	+32 49	+34 48	+37 48	215	35		
150	330	+14 ₁ 71 ₃	+15 69	+16 67	+17 65	+18 64	+19 63	+20 ₁ 62 ₃	+21 61	+23 60	+24 59	+25 58	+27 58	+29 ₂ 58 ₂	+31 58	+34 57	+36 58	+39 58	+43 ₄ 58 ₃	210	30		
155	335	+13 75	+14 73	+15 72	+16 70	+17 69	+18 68	+20 67	+21 67	+23 66	+25 66	+26 65	+28 65	+30 66	+33 66	+36 67	+39 68	+43 69	+48 70	205	25		
160	340	+11 78	+12 77	+13 76	+14 75	+16 74	+17 73	+19 73	+20 72	+22 72	+24 72	+26 73	+28 73	+31 74	+34 75	+37 76	+41 78	+46 80	+51 83	200	20		
165	345	+9 81	+10 80	+11 79	+12 79	+14 78	+16 78	+17 78	+19 78	+21 78	+23 79	+25 80	+28 81	+31 82	+34 84	+38 86	+42 89	+47 93	+53 97	195	15		
170	350	+6 83	+7 82	+9 82	+10 82	+12 82	+14 82	+15 82	+17 83	+19 84	+22 85	+24 86	+27 88	+30 90	+33 93	+37 96	+42 100	+47 105	+54 112	190	10		
175	355	+3 84	+4 84	+6 84	+8 84	+9 85	+11 85	+13 86	+15 87	+17 89	+20 90	+22 92	+25 95	+28 98	+31 102	+36 106	+41 111	+46 118	+53 126	185	5		
180	360	0 ₀ 84 ₄	+2 85	+3 85	+5 86	+7 87	+9 88	+10 ₁ 89 ₄	+12 91	+15 93	+17 95	+19 98	+22 101	+25 ₂ 105 ₆	+29 110	+33 115	+38 122	+44 130	+51 ₁ 140 ₉	180	0		

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -17^\circ$																								
τ $p_{+\tau}$		O^h						I^h						II^h						τ $p_{-\tau}$				
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m					
		$\frac{\Delta p}{h}$																						
0	180	0 ₀ 89 ₅	+ 2 89	+ 3 89	+ 5 90	+ 7 91	+ 9 92	+11 ₁ 94 ₅	+13 96	+15 98	+18 100	+21 103	+24 107	+27 ₂ 111 ₇	+31 116	+36 123	+41 130	+47 139	+55 ₄ 150 ₁₁			360	180	
5	185	- 3 88	- 1 89	0 90	+ 2 91	+ 4 92	+ 6 94	+ 8 96	+10 98	+12 101	+15 104	+18 108	+21 113	+24 118	+28 124	+32 132	+37 140	+43 151	+51 164			355	175	
10	190	- 6 87	- 4 88	- 3 89	- 1 91	+ 1 93	+ 3 95	+ 5 97	+ 7 100	+ 9 103	+11 107	+14 112	+17 117	+20 123	+24 130	+28 139	+33 149	+39 161	+46 176			350	170	
15	195	- 9 85	- 7 87	- 6 88	- 4 90	- 2 92	- 1 95	+ 1 98	+ 3 101	+ 5 105	+ 7 109	+10 114	+12 120	+15 127	+19 135	+23 145	+28 157	+33 170	+39 187			345	165	
20	200	-11 82	-10 84	- 9 86	- 7 88	- 5 90	- 4 93	- 2 97	- 1 101	+ 1 105	+ 3 110	+ 5 116	+ 8 122	+10 130	+13 139	+17 150	+21 162	+26 177	+32 196			340	160	
25	205	-13 78	-12 80	-11 83	-10 85	- 8 88	- 7 91	- 6 95	- 4 99	- 3 104	- 1 110	+ 1 116	+ 3 123	+ 5 131	+ 8 141	+11 152	+15 165	+19 182	+24 202			335	155	
30	210	-15 ₁ 74 ₃	-14 76	-13 79	-12 82	-11 85	-10 88	- 9 ₁ 92 ₅	- 8 97	- 6 102	- 5 108	- 3 114	- 2 122	0 ₀ 131 ₈	+ 2 142	+ 5 153	+ 8 167	+11 185	+15 ₁ 206 ₁₅			330	150	
35	215	-16 69	-16 72	-15 74	-14 77	-13 81	-12 85	-12 89	-11 93	-10 98	- 9 105	- 7 112	- 6 119	- 5 129	- 4 140	- 2 152	0 167	+ 3 185	+ 6 206			325	145	
40	220	-17 64	-17 67	-16 69	-16 72	-15 76	-14 80	-14 84	-13 89	-13 94	-12 101	-11 108	-10 116	-10 125	- 9 136	- 8 149	- 6 164	- 5 182	- 3 205			320	140	
45	225	-17 59	-17 61	-17 64	-17 67	-16 71	-16 75	-16 79	-15 84	-15 90	-15 96	-14 103	-14 111	-14 120	-14 131	-13 144	-13 159	-12 177	-11 200			315	135	
50	230	-17 53	-17 56	-17 59	-17 62	-17 65	-17 69	-17 73	-17 78	-17 84	-17 90	-17 97	-17 105	-18 114	-18 125	-18 138	-19 153	-19 171	-19 193			310	130	
55	235	-16 48	-17 51	-17 53	-17 56	-17 60	-18 64	-18 68	-18 72	-19 77	-19 83	-19 90	-20 98	-21 107	-22 117	-23 130	-24 145	-25 163	-27 184			305	125	
60	240	-15 ₁ 44 ₁	-16 46	-16 48	-16 51	-17 54	-17 58	-18 ₁ 62 ₂	-19 66	-20 71	-20 76	-21 83	-22 90	-23 ₂ 99 ₅	-25 109	-26 121	-28 135	-30 152	-33 ₃ 173 ₁₁			300	120	
65	245	-13 39	-14 41	-15 43	-15 46	-16 49	-17 52	-18 56	-19 60	-20 64	-21 69	-22 75	-23 82	-25 90	-27 100	-29 111	-31 124	-34 140	-38 160			295	115	
70	250	-11 35	-12 37	-13 39	-14 41	-15 44	-16 47	-17 50	-18 54	-19 58	-20 62	-22 68	-24 74	-26 81	-28 90	-30 100	-33 113	-37 128	-41 146			290	110	
75	255	- 9 32	-10 34	-11 35	-12 37	-13 39	-14 42	-15 45	-16 48	-18 51	-19 55	-21 60	-23 66	-25 72	-28 80	-31 90	-34 101	-38 115	-43 131			285	105	
80	260	- 6 30	- 7 31	- 8 32	- 9 34	-10 35	-12 37	-13 40	-14 42	-16 45	-17 49	-19 53	-21 58	-24 64	-27 71	-30 79	-34 89	-38 101	-44 115			280	100	
85	265	- 3 29	- 4 29	- 5 30	- 6 31	- 8 32	- 9 34	-10 36	-12 38	-13 40	-15 43	-17 46	-19 50	-22 55	-25 61	-28 68	-32 77	-37 87	-43 100			275	95	
90	270	0 ₀ 28 ₀	- 1 28	- 2 29	- 3 29	- 5 30	- 6 31	- 7 ₀ 33 ₀	- 9 34	-10 36	-12 38	-14 41	-16 44	-19 ₁ 48 ₁	-22 52	-26 58	-30 65	-35 74	-41 ₃ 85 ₄			270	90	

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined. $\delta = -17^\circ$

τ $p_{+\tau}$	O ^h						I ^h						II ^h						τ $p_{-\tau}$
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	
Δp h																			
90 270	0 ₀ 28 ₆	-1 28	-2 29	-3 29	-5 30	-6 31	-7 ₀ 33 ₀	-9 34	-10 36	-12 38	-14 41	-16 44	-19 ₁ 48 ₁	-22 52	-26 58	-30 65	-35 74	-41 ₃ 85 ₄	270 90
95 275	+3 29	+2 28	+1 28	0 28	-2 29	-3 29	-4 30	-6 31	-7 33	-9 34	-11 36	-13 38	-15 41	-18 45	-22 50	-26 55	-31 62	-37 71	265 85
100 280	+6 30	+5 29	+4 29	+3 28	+2 28	+1 28	-1 28	-2 29	-4 30	-5 31	-7 32	-9 34	-11 36	-14 39	-17 42	-21 46	-26 52	-31 58	260 80
105 285	+9 32	+8 31	+7 30	+6 30	+5 29	+4 28	+3 28	+1 28	0 28	-1 29	-3 30	-5 31	-7 32	-9 34	-12 36	-16 39	-20 43	-25 48	255 75
110 290	+11 35	+10 34	+10 33	+9 32	+8 31	+7 30	+6 29	+5 28	+4 28	+3 28	+1 28	0 29	-2 30	-4 31	-7 32	-10 34	-13 36	-17 39	250 70
115 295	+13 39	+13 38	+12 36	+12 34	+11 33	+10 32	+9 31	+9 30	+8 29	+7 29	+6 28	+5 28	+3 28	+1 28	-1 29	-3 30	-6 31	-9 33	245 65
120 300	+15 ₁ 44 ₁	+15 42	+14 40	+14 38	+14 36	+13 35	+12 ₁ 34 ₀	+12 33	+11 32	+11 31	+10 30	+9 29	+8 ₁ 29 ₀	+7 28	+6 28	+4 28	+2 28	-1 ₀ 29 ₀	240 60
125 305	+16 48	+16 46	+16 44	+16 42	+16 40	+16 39	+15 38	+15 36	+15 35	+14 33	+14 32	+14 31	+13 31	+13 30	+12 29	+11 29	+10 28	+8 28	235 55
130 310	+17 53	+17 51	+17 49	+17 47	+18 45	+18 43	+18 42	+18 40	+18 39	+18 37	+18 36	+18 35	+18 34	+18 33	+18 32	+18 31	+18 30	+17 30	230 50
135 315	+17 59	+18 57	+18 54	+18 52	+19 50	+19 48	+20 47	+20 45	+20 44	+21 42	+21 41	+22 40	+22 39	+23 38	+24 37	+24 36	+25 35	+26 34	225 45
140 320	+17 64	+18 62	+18 60	+19 58	+20 56	+20 54	+21 52	+22 51	+22 50	+23 48	+24 47	+25 46	+26 45	+27 44	+29 43	+30 43	+32 42	+34 41	220 40
145 325	+16 69	+17 67	+18 65	+19 63	+20 61	+21 60	+22 58	+23 57	+24 56	+25 55	+26 54	+28 53	+29 52	+31 52	+33 51	+35 51	+38 50	+41 50	215 35
150 330	+15 ₁ 74 ₃	+16 72	+17 70	+18 68	+19 67	+21 66	+22 ₂ 64 ₃	+23 63	+25 62	+26 62	+28 61	+30 61	+32 ₃ 60 ₃	+34 60	+36 60	+39 60	+43 61	+47 ₄ 61 ₃	210 30
155 335	+14 78	+15 77	+16 75	+17 73	+18 72	+20 71	+21 70	+23 70	+25 69	+27 69	+29 69	+31 69	+33 69	+36 69	+39 70	+43 71	+47 72	+52 74	205 25
160 340	+12 82	+13 81	+14 79	+15 78	+17 77	+19 77	+20 76	+22 76	+24 76	+26 76	+28 76	+31 77	+34 78	+37 79	+41 81	+45 83	+50 85	+56 88	200 20
165 345	+9 85	+10 84	+12 83	+13 82	+15 82	+17 82	+19 81	+21 82	+23 82	+25 83	+27 84	+30 85	+33 87	+37 89	+41 92	+46 95	+51 99	+57 104	195 15
170 350	+6 87	+8 87	+9 86	+11 86	+13 86	+15 86	+17 86	+19 87	+21 88	+23 89	+26 91	+29 93	+32 96	+36 99	+40 103	+45 107	+51 112	+58 119	190 10
175 355	+3 89	+5 89	+6 88	+8 88	+10 89	+12 90	+14 91	+16 92	+18 93	+21 95	+24 97	+27 100	+30 104	+34 108	+39 113	+44 119	+50 126	+57 135	185 5
180 360	0 ₀ 89 ₅	+2 89	+3 89	+5 90	+7 91	+9 92	+11 ₁ 94 ₅	+13 96	+15 98	+18 100	+21 103	+24 107	+27 ₂ 111 ₇	+31 116	+36 123	+41 130	+47 139	+55 ₄ 150 ₁₁	180 0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

REDUCTION TABLES FOR EQUATORIAL OBSERVATIONS.

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -18^\circ$																						
τ $p_{+\tau}$		O^h						I^h						II^h						τ $p_{-\tau}$		
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m			
		$4p_h$																				
0	180	0_0 94 ₅	+ 2 94	+ 4 95	+ 6 95	+ 8 96	+10 97	+12 ₁ 99 ₅	+14 101	+16 103	+19 106	+22 110	+26 114	+30 ₂ 118 ₇	+34 124	+39 131	+45 139	+51 149	+59 ₅ 161 ₁₂	360	180	
5	185	- 3 93	- 1 94	0 95	+ 2 96	+ 4 97	+ 6 99	+ 8 101	+11 104	+13 107	+16 111	+19 115	+22 120	+26 125	+30 132	+35 140	+40 150	+47 162	+55 176	355	175	
10	190	- 6 92	- 5 93	- 3 94	- 1 96	+ 1 98	+ 3 100	+ 5 103	+ 7 106	+ 9 110	+12 114	+15 119	+18 124	+21 131	+25 139	+30 148	+35 160	+42 173	+50 190	350	170	
15	195	- 9 90	- 8 91	- 6 93	- 5 95	- 3 97	- 1 100	+ 1 103	+ 3 107	+ 5 111	+ 7 116	+10 121	+13 128	+16 136	+20 144	+24 155	+29 168	+35 183	+42 201	345	165	
20	200	-12 86	-11 88	- 9 90	- 8 93	- 6 96	- 5 99	- 3 102	- 1 106	+ 1 111	+ 3 116	+ 5 122	+ 8 130	+11 138	+14 148	+18 160	+22 174	+28 190	+34 210	340	160	
25	205	-14 82	-13 84	-12 87	-10 90	- 9 93	- 8 96	- 7 100	- 5 105	- 3 110	- 1 116	- 1 122	+ 3 130	+ 5 139	+ 8 150	+11 162	+15 177	+20 195	+25 217	335	155	
30	210	-16 ₁ 77 ₄	-15 80	-14 83	-13 86	-12 89	-11 93	-10 ₁ 97 ₅	- 8 102	- 7 108	- 5 114	- 4 121	- 2 129	0 ₀ 138 ₉	+ 2 150	+ 5 163	+ 8 179	+12 198	+16 ₁ 221 ₁₇	330	150	
35	215	-17 72	-17 75	-16 78	-15 81	-14 85	-13 89	-12 93	-11 98	-10 104	- 9 111	- 8 118	- 7 126	- 5 136	- 4 148	- 2 162	0 178	+ 3 198	+ 6 222	325	145	
40	220	-18 67	-18 70	-17 73	-17 76	-16 80	-15 84	-15 88	-14 93	-13 99	-13 106	-12 114	-11 122	-10 133	- 9 144	- 8 158	- 7 175	- 5 196	- 3 220	320	140	
45	225	-19 61	-18 64	-18 67	-18 70	-17 74	-17 78	-17 83	-17 88	-16 94	-16 101	-16 108	-15 117	-15 127	-14 139	-14 153	-14 170	-13 191	-13 215	315	135	
50	230	-18 55	-18 58	-18 61	-18 64	-18 68	-18 72	-18 77	-18 82	-18 88	-19 94	-19 101	-19 110	-19 121	-19 132	-20 146	-20 163	-21 183	-22 208	310	130	
55	235	-17 50	-18 52	-18 55	-18 58	-18 62	-19 66	-19 70	-19 75	-20 81	-21 87	-21 94	-22 103	-22 113	-23 124	-25 138	-26 154	-28 173	-29 197	305	125	
60	240	-16 ₁ 45 ₁	-17 47	-17 50	-18 53	-18 56	-19 60	-19 ₁ 64 ₂	-20 69	-21 74	-22 80	-23 87	-24 95	-25 ₂ 104 ₅	-27 115	-29 128	-31 143	-33 162	-36 ₃ 185 ₁₃	300	120	
65	245	-14 40	-15 42	-16 45	-17 47	-17 50	-18 54	-19 58	-20 62	-21 66	-22 72	-23 79	-25 86	-27 95	-29 105	-31 117	-34 132	-37 149	-41 171	295	115	
70	250	-12 36	-13 38	-14 40	-15 42	-16 45	-17 48	-18 51	-19 55	-20 59	-22 64	-23 70	-25 77	-28 85	-30 94	-33 106	-36 119	-40 136	-45 156	290	110	
75	255	- 9 33	-10 34	-11 36	-12 38	-13 40	-15 42	-16 45	-17 48	-19 52	-21 57	-22 62	-24 68	-27 76	-30 84	-33 94	-37 106	-42 121	-47 139	285	105	
80	260	- 6 30	- 7 31	- 8 32	- 9 34	-10 36	-12 38	-14 40	-15 43	-17 46	-19 50	-21 55	-23 60	-26 66	-29 73	-33 82	-37 93	-42 106	-48 122	280	100	
85	265	- 3 29	- 4 29	- 5 30	- 6 31	- 7 32	- 9 34	-11 36	-13 38	-14 41	-16 44	-18 48	-21 52	-24 57	-27 63	-31 71	-35 80	-40 92	-47 105	275	95	
90	270	0 ₀ 28 ₀	- 1 28	- 2 29	- 3 29	- 5 30	- 6 31	- 8 ₀ 33 ₀	-10 34	-11 36	-13 38	-15 41	-18 45	-21 ₁ 49 ₁	-24 54	-28 60	-32 68	-37 78	-44 ₄ 89 ₅	270	90	

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$.
 $s_0 = s + hs$.

TABLES OF DIFFERENTIAL REFRACTION.

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TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -18^\circ$																					
τ $p_{+\tau}$		O^h						I^h						II^h						τ $p_{-\tau}$	
		c^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m		
$^\circ$	$^\circ$	Δp h																		$^\circ$	$^\circ$
90	270	0_0 28 ₀	-1 28	-2 29	-3 29	-5 30	-6 31	-8 ₀ 33 ₀	-10 34	-11 36	-13 38	-15 41	-18 45	-21 ₁ 49 ₁	-24 54	-28 60	-32 68	-37 78	-44 ₄ 89 ₅	270	90
95	275	+3 29	+2 28	+1 28	0 28	-2 29	-3 29	-4 30	-6 31	-8 32	-10 34	-12 36	-14 39	-17 42	-20 46	-24 51	-28 57	-33 64	-40 74	265	85
100	280	+6 30	+5 30	+4 29	+3 28	+2 28	+1 28	-1 28	-2 29	-4 30	-6 31	-8 32	-10 34	-12 36	-15 39	-19 43	-23 48	-28 53	-34 60	260	80
105	285	+9 33	+8 32	+7 31	+6 30	+5 29	+4 28	+3 28	+2 28	0 28	-1 29	-3 30	-5 31	-7 32	-10 34	-13 36	-17 40	-22 44	-27 49	255	75
110	290	+12 36	+11 34	+10 33	+10 32	+9 31	+8 30	+7 29	+6 29	+4 28	+3 28	+2 28	0 29	-2 29	-4 30	-7 32	-10 34	-14 36	-19 40	250	70
115	295	+14 40	+14 38	+13 37	+13 35	+12 34	+11 32	+10 31	+10 30	+9 29	+7 29	+6 28	+5 28	+4 28	+2 28	0 29	-3 29	-6 31	-10 33	245	65
120	300	+16 ₁ 45 ₁	+16 43	+15 41	+15 39	+14 37	+14 35	+14 ₁ 34 ₀	+13 33	+13 32	+12 31	+11 30	+10 29	+9 ₁ 29 ₀	+8 28	+7 28	+5 28	+3 28	0 ₀ 29 ₀	240	60
125	305	+18 50	+18 48	+17 45	+17 43	+17 41	+17 39	+17 38	+16 37	+16 36	+16 34	+15 33	+15 32	+14 31	+14 30	+13 30	+12 29	+11 28	+9 28	235	55
130	310	+19 55	+19 53	+19 50	+19 48	+19 46	+19 44	+19 43	+19 42	+19 40	+19 38	+19 37	+20 36	+20 35	+20 34	+20 33	+20 32	+19 31	+19 30	230	50
135	315	+19 61	+19 59	+20 56	+20 54	+20 52	+21 50	+21 48	+21 47	+22 45	+22 44	+23 43	+24 41	+25 40	+25 39	+26 38	+27 37	+27 36	+28 35	225	45
140	320	+19 67	+19 64	+20 62	+20 60	+21 58	+22 56	+22 54	+23 53	+24 51	+25 50	+26 49	+27 48	+29 47	+30 46	+31 45	+33 44	+35 43	+37 42	220	40
145	325	+18 72	+18 70	+19 68	+20 66	+21 64	+22 62	+23 61	+24 59	+25 58	+27 57	+28 56	+30 56	+32 55	+34 54	+36 54	+38 53	+41 53	+45 53	215	35
150	330	+16 ₁ 77 ₄	+17 75	+18 73	+19 72	+21 70	+22 68	+23 ₂ 67 ₃	+25 66	+26 65	+28 64	+30 64	+32 64	+34 ₃ 63 ₃	+37 63	+40 63	+43 64	+47 64	+52 ₅ 65 ₄	210	30
155	335	+14 82	+16 80	+17 79	+18 77	+20 76	+21 75	+23 74	+25 73	+27 72	+29 72	+31 72	+33 72	+36 72	+39 73	+42 74	+46 75	+51 77	+57 79	205	25
160	340	+12 86	+14 85	+15 84	+16 82	+18 81	+20 81	+22 80	+24 80	+26 80	+28 80	+30 80	+33 81	+36 82	+40 84	+44 86	+49 88	+54 91	+60 94	200	20
165	345	+9 90	+11 89	+13 88	+14 87	+16 86	+18 86	+20 86	+22 86	+24 87	+27 87	+30 88	+33 90	+36 92	+40 94	+45 97	+50 101	+56 105	+62 111	195	15
170	350	+6 92	+8 91	+10 91	+12 90	+14 90	+16 90	+18 91	+20 92	+22 93	+25 94	+28 96	+31 98	+35 101	+39 105	+44 109	+50 114	+56 120	+63 128	190	10
175	355	+3 93	+5 93	+7 93	+9 93	+11 94	+13 94	+15 95	+17 97	+19 98	+22 100	+25 103	+29 106	+33 110	+37 115	+42 120	+48 127	+54 135	+62 145	185	5
180	360	0 ₀ 94 ₅	+2 94	+4 95	+6 95	+8 96	+10 97	+12 ₁ 99 ₅	+14 101	+16 103	+19 106	+22 110	+26 114	+30 ₂ 118 ₇	+34 124	+39 131	+45 139	+51 149	+59 ₅ 161 ₁₂	180	0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + hs$

REDUCTION TABLES FOR EQUATORIAL OBSERVATIONS.

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

		$\delta = -19^\circ$																			
τ	$p_{+\tau}$	O ^h						I ^h						II ^h						τ	$p_{-\tau}$
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		
		Δp h																			
0	180	0 ₉₉₅	+2	+4	+6	+8	+10	+13 ₁	+15	+18	+21	+24	+28	+32 ₂	+37	+42	+48	+56	+65 ₆	360	180
5	185	-4	-2	0	+2	+5	+7	+9	+11	+14	+17	+20	+24	+28	+32	+37	+44	+51	+60	355	175
10	190	-7	-5	-3	-1	+1	+3	+5	+7	+10	+13	+16	+19	+23	+27	+32	+38	+45	+54	350	170
15	195	-10	-9	-7	-5	-3	-1	+1	+3	+5	+8	+11	+14	+17	+21	+26	+32	+38	+46	345	165
20	200	-13	-12	-10	-8	-7	-5	-3	-1	+1	+3	+6	+9	+12	+15	+19	+24	+30	+37	340	160
25	205	-16	-15	-13	-11	-10	-8	-7	-5	-3	-1	+1	+3	+6	+9	+12	+16	+21	+27	335	155
30	210	-18 ₁	-17	-15	-14	-13	-12	-11 ₁	-9	-8	-6	-4	-2	0 ₀	+2	+5	+8	+12	+17 ₁	330	150
35	215	-19	-18	-17	-16	-16	-15	-14	-13	-12	-10	-9	-7	-6	-4	-2	0	+3	+6	325	145
40	220	-20	-19	-19	-18	-18	-17	-16	-16	-15	-14	-13	-12	-11	-10	-9	-8	-6	-4	320	140
45	225	-20	-20	-20	-19	-19	-19	-18	-18	-18	-17	-17	-17	-16	-16	-16	-15	-15	-14	315	135
50	230	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-21	-21	-21	-22	-22	-23	-24	310	130
55	235	-19	-19	-20	-20	-20	-20	-21	-21	-22	-22	-23	-24	-25	-26	-27	-28	-30	-32	305	125
60	240	-18 ₁	-18	-19	-19	-20	-20	-21 ₂	-22	-23	-24	-25	-26	-27 ₂	-29	-31	-33	-36	-39 ₄	300	120
65	245	-16	-16	-17	-18	-19	-19	-20	-21	-23	-24	-25	-27	-29	-31	-34	-37	-41	-45	295	115
70	250	-13	-14	-15	-16	-17	-18	-19	-20	-22	-23	-25	-27	-29	-32	-35	-39	-44	-49	290	110
75	255	-10	-11	-12	-13	-15	-16	-17	-18	-20	-22	-24	-26	-29	-32	-36	-40	-45	-51	285	105
80	260	-7	-8	-9	-10	-12	-13	-15	-16	-18	-20	-22	-25	-28	-31	-35	-40	-45	-52	280	100
85	265	-4	-5	-6	-7	-9	-10	-12	-13	-15	-17	-19	-22	-25	-29	-33	-38	-44	-51	275	95
90	270	0 ₂₈₀	-1	-3	-4	-5	-7	-8 ₀	-10	-12	-14	-16	-19	-22 ₂	-25	-29	-34	-40	-48 ₄	270	90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -19^\circ$																							
τ $p_{+\tau}$		O^h						I^h						II^h						τ $p_{-\tau}$			
		0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m	0^m	10^m	20^m	30^m	40^m	50^m				
$^\circ$	$^\circ$	Δp h																				$^\circ$	$^\circ$
90	270	0_{280}	-1 ₂₈	-3 ₂₉	-4 ₂₉	-5 ₃₀	-7 ₃₁	-8 ₃₂₀	-10 ₃₄	-12 ₃₆	-14 ₃₉	-16 ₄₂	-19 ₄₆	-22 ₅₀₁	-25 ₅₆	-29 ₆₃	-34 ₇₁	-40 ₈₁	-48 ₉₄₅	270	90		
95	275	+4 ₂₉	+2 ₂₈	+1 ₂₈	0 ₂₈	-2 ₂₈	-3 ₂₉	-5 ₃₀	-6 ₃₁	-8 ₃₂	-10 ₃₄	-12 ₃₆	-15 ₃₉	-18 ₄₃	-21 ₄₇	-25 ₅₂	-30 ₅₉	-36 ₆₇	-43 ₇₇	265	85		
100	280	+7 ₃₀	+6 ₂₉	+5 ₂₉	+3 ₂₈	+2 ₂₈	+1 ₂₈	-1 ₂₈	-2 ₂₉	-4 ₃₀	-6 ₃₁	-8 ₃₂	-10 ₃₄	-13 ₃₇	-16 ₄₀	-20 ₄₄	-25 ₄₉	-30 ₅₅	-36 ₆₃	260	80		
105	285	+10 ₃₃	+9 ₃₂	+8 ₃₁	+7 ₃₀	+6 ₂₉	+5 ₂₉	+3 ₂₈	+2 ₂₈	+1 ₂₈	-1 ₂₉	-3 ₃₀	-5 ₃₁	-7 ₃₂	-10 ₃₄	-14 ₃₇	-18 ₄₀	-23 ₄₄	-29 ₅₀	255	75		
110	290	+13 ₃₇	+12 ₃₅	+11 ₃₃	+10 ₃₂	+9 ₃₁	+8 ₃₀	+7 ₂₉	+6 ₂₉	+5 ₂₈	+4 ₂₈	+2 ₂₈	0 ₂₉	-2 ₂₉	-4 ₃₀	-7 ₃₂	-11 ₃₄	-15 ₃₆	-20 ₄₀	250	70		
115	295	+16 ₄₁	+15 ₃₉	+14 ₃₇	+14 ₃₅	+13 ₃₄	+12 ₃₂	+11 ₃₁	+10 ₃₁	+9 ₃₀	+8 ₂₉	+7 ₂₈	+6 ₂₈	+4 ₂₈	+2 ₂₈	0 ₂₉	-3 ₃₀	-6 ₃₁	-10 ₃₃	245	65		
120	300	+18 ₄₆₁	+17 ₄₄	+17 ₄₂	+17 ₄₀	+16 ₃₈	+15 ₃₆	+15 ₃₅₀	+14 ₃₄	+14 ₃₂	+13 ₃₁	+12 ₃₀	+11 ₂₉	+10 ₂₉₀	+9 ₂₈	+8 ₂₈	+6 ₂₈	+3 ₂₈	0 ₂₉₀	240	60		
125	305	+19 ₅₂	+19 ₄₉	+19 ₄₇	+19 ₄₅	+18 ₄₃	+18 ₄₁	+18 ₃₉	+18 ₃₈	+18 ₃₆	+17 ₃₄	+17 ₃₃	+17 ₃₂	+16 ₃₁	+16 ₃₀	+15 ₂₉	+14 ₂₉	+13 ₂₈	+11 ₂₈	235	55		
130	310	+20 ₅₈	+20 ₅₅	+20 ₅₂	+20 ₅₀	+20 ₄₈	+20 ₄₆	+21 ₄₄	+21 ₄₃	+21 ₄₁	+21 ₃₉	+21 ₃₈	+22 ₃₇	+22 ₃₅	+22 ₃₄	+22 ₃₃	+22 ₃₂	+22 ₃₁	+21 ₃₀	230	50		
135	315	+20 ₆₄	+21 ₆₁	+21 ₅₈	+21 ₅₆	+22 ₅₄	+22 ₅₂	+23 ₅₀	+23 ₄₉	+24 ₄₇	+24 ₄₅	+25 ₄₄	+26 ₄₃	+27 ₄₁	+27 ₄₀	+28 ₃₉	+29 ₃₈	+30 ₃₇	+31 ₃₆	225	45		
140	320	+20 ₇₀	+21 ₆₇	+21 ₆₅	+22 ₆₂	+23 ₆₀	+23 ₅₈	+24 ₅₇	+25 ₅₅	+26 ₅₄	+27 ₅₂	+28 ₅₁	+30 ₅₀	+31 ₄₉	+32 ₄₈	+34 ₄₇	+36 ₄₆	+38 ₄₅	+41 ₄₄	220	40		
145	325	+19 ₇₆	+20 ₇₃	+21 ₇₁	+22 ₆₉	+23 ₆₇	+24 ₆₅	+25 ₆₄	+26 ₆₂	+28 ₆₁	+29 ₆₀	+31 ₅₉	+33 ₅₈	+34 ₅₇	+36 ₅₆	+39 ₅₆	+42 ₅₆	+45 ₅₅	+49 ₅₅	215	35		
150	330	+18 ₈₁₄	+19 ₇₉	+20 ₇₇	+21 ₇₅	+22 ₇₃	+24 ₇₂	+25 ₇₁₃	+27 ₇₀	+29 ₆₉	+30 ₆₈	+32 ₆₇	+35 ₆₇	+37 ₆₆₄	+40 ₆₆	+43 ₆₇	+47 ₆₇	+51 ₆₈	+56 ₆₉₄	210	30		
155	335	+16 ₈₆	+17 ₈₄	+18 ₈₃	+20 ₈₁	+21 ₈₀	+23 ₇₉	+25 ₇₈	+27 ₇₇	+29 ₇₆	+31 ₇₆	+33 ₇₆	+36 ₇₆	+39 ₇₆	+42 ₇₇	+46 ₇₈	+51 ₈₀	+56 ₈₂	+62 ₈₄	205	25		
160	340	+13 ₉₀	+15 ₈₉	+16 ₈₈	+18 ₈₇	+20 ₈₆	+22 ₈₅	+24 ₈₅	+26 ₈₄	+28 ₈₄	+30 ₈₄	+33 ₈₅	+36 ₈₆	+39 ₈₇	+43 ₈₉	+48 ₉₁	+53 ₉₄	+59 ₉₇	+66 ₁₀₁	200	20		
165	345	+10 ₉₄	+12 ₉₃	+14 ₉₂	+16 ₉₁	+18 ₉₁	+20 ₉₁	+22 ₉₁	+24 ₉₁	+26 ₉₁	+29 ₉₂	+32 ₉₄	+35 ₉₆	+39 ₉₈	+43 ₁₀₁	+48 ₁₀₄	+54 ₁₀₈	+61 ₁₁₃	+69 ₁₁₉	195	15		
170	350	+7 ₉₇	+9 ₉₆	+11 ₉₅	+13 ₉₅	+15 ₉₅	+17 ₉₆	+19 ₉₆	+21 ₉₇	+24 ₉₈	+27 ₁₀₀	+30 ₁₀₂	+34 ₁₀₅	+38 ₁₀₈	+42 ₁₁₂	+47 ₁₁₆	+53 ₁₂₂	+61 ₁₂₉	+69 ₁₃₈	190	10		
175	355	+4 ₉₉	+6 ₉₈	+8 ₉₈	+10 ₉₈	+12 ₉₉	+14 ₁₀₀	+16 ₁₀₁	+18 ₁₀₂	+21 ₁₀₄	+24 ₁₀₇	+27 ₁₁₀	+31 ₁₁₃	+35 ₁₁₇	+40 ₁₂₂	+45 ₁₂₈	+51 ₁₃₆	+59 ₁₄₅	+68 ₁₅₆	185	5		
180	360	0 ₉₉₅	+2 ₉₉	+4 ₁₀₀	+6 ₁₀₁	+8 ₁₀₂	+10 ₁₀₃	+13 ₁₀₅₆	+15 ₁₀₇	+18 ₁₀₉	+21 ₁₁₂	+24 ₁₁₆	+28 ₁₂₁	+32 ₁₂₆₈	+37 ₁₃₂	+42 ₁₄₀	+48 ₁₄₉	+56 ₁₆₀	+65 ₁₇₄₄₄	180	0		

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -20^\circ$																							
τ		O ^h						I ^h						II ^h						τ			
$p_{+\tau}$		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	$p_{-\tau}$			
Δp h																							
0° 180°	0° 180°	0 ₁₀₅₆	+ 2 ₁₀₅	+ 4 ₁₀₅	+ 6 ₁₀₆	+ 9 ₁₀₇	+ 11 ₁₀₉	+ 13 ₁₁₁	+ 16 ₁₁₃	+ 19 ₁₁₆	+ 22 ₁₂₀	+ 26 ₁₂₄	+ 30 ₁₂₉	+ 34 ₁₃₅	+ 39 ₁₄₂	+ 45 ₁₅₀	+ 52 ₁₆₀	+ 61 ₁₇₃	+ 71 ₁₈₈	360° 180°	0° 180°		
5° 185°	5° 185°	- 4 ₁₀₄	- 2 ₁₀₅	0 ₁₀₆	+ 3 ₁₀₇	+ 5 ₁₀₉	+ 7 ₁₁₁	+ 9 ₁₁₄	+ 12 ₁₁₇	+ 15 ₁₂₁	+ 18 ₁₂₅	+ 22 ₁₃₀	+ 26 ₁₃₆	+ 30 ₁₄₃	+ 35 ₁₅₁	+ 40 ₁₆₁	+ 47 ₁₇₃	+ 56 ₁₈₈	+ 65 ₂₀₆	355° 175°	5° 175°		
10° 190°	10° 190°	- 8 ₁₀₂	- 6 ₁₀₄	- 3 ₁₀₅	- 1 ₁₀₇	+ 1 ₁₀₉	+ 3 ₁₁₂	+ 5 ₁₁₅	+ 8 ₁₁₉	+ 11 ₁₂₃	+ 14 ₁₂₈	+ 17 ₁₃₄	+ 21 ₁₄₁	+ 25 ₁₄₉	+ 29 ₁₅₉	+ 34 ₁₇₀	+ 41 ₁₈₄	+ 49 ₂₀₁	+ 58 ₂₂₂	350° 170°	10° 170°		
15° 195°	15° 195°	- 11 ₁₀₀	- 9 ₁₀₁	- 7 ₁₀₃	- 5 ₁₀₆	- 3 ₁₀₉	- 1 ₁₁₂	+ 1 ₁₁₆	+ 4 ₁₂₀	+ 6 ₁₂₅	+ 9 ₁₃₀	+ 12 ₁₃₇	+ 15 ₁₄₄	+ 19 ₁₅₄	+ 23 ₁₆₅	+ 28 ₁₇₈	+ 34 ₁₉₃	+ 41 ₂₁₂	+ 50 ₂₃₆	345° 165°	15° 165°		
20° 200°	20° 200°	- 14 ₉₆	- 13 ₉₈	- 11 ₁₀₀	- 9 ₁₀₃	- 7 ₁₀₆	- 5 ₁₁₀	- 3 ₁₁₅	- 1 ₁₂₀	+ 1 ₁₂₅	+ 3 ₁₃₁	+ 6 ₁₃₈	+ 9 ₁₄₇	+ 12 ₁₅₇	+ 16 ₁₆₉	+ 21 ₁₈₃	+ 26 ₂₀₀	+ 32 ₂₂₁	+ 40 ₂₄₇	340° 160°	20° 160°		
25° 205°	25° 205°	- 17 ₉₁	- 16 ₉₃	- 14 ₉₆	- 12 ₉₉	- 11 ₁₀₃	- 9 ₁₀₇	- 7 ₁₁₂	- 5 ₁₁₇	- 4 ₁₂₃	- 2 ₁₃₀	0 ₁₃₈	+ 3 ₁₄₈	+ 6 ₁₅₉	+ 9 ₁₇₁	+ 13 ₁₈₆	+ 18 ₂₀₄	+ 23 ₂₂₇	+ 29 ₂₅₄	335° 155°	25° 155°		
30° 210°	30° 210°	- 19 ₈₆	- 18 ₈₈	- 17 ₉₁	- 15 ₉₅	- 14 ₉₉	- 13 ₁₀₄	- 11 ₁₀₉	- 9 ₁₁₄	- 8 ₁₂₀	- 7 ₁₂₈	- 5 ₁₃₆	- 3 ₁₄₆	- 1 ₁₅₈	+ 2 ₁₇₁	+ 5 ₁₈₇	+ 9 ₂₀₆	+ 13 ₂₃₀	+ 18 ₂₅₉	330° 150°	30° 150°		
35° 215°	35° 215°	- 21 ₈₀	- 20 ₈₂	- 19 ₈₆	- 18 ₉₀	- 17 ₉₄	- 16 ₉₉	- 14 ₁₀₄	- 13 ₁₁₀	- 12 ₁₁₆	- 11 ₁₂₄	- 10 ₁₃₃	- 9 ₁₄₃	- 7 ₁₅₅	- 5 ₁₆₉	- 3 ₁₈₅	0 ₂₀₅	+ 3 ₂₃₀	+ 7 ₂₆₀	325° 145°	35° 145°		
40° 220°	40° 220°	- 22 ₇₃	- 21 ₇₆	- 20 ₈₀	- 20 ₈₄	- 19 ₈₈	- 18 ₉₃	- 17 ₉₈	- 16 ₁₀₄	- 16 ₁₁₁	- 15 ₁₁₉	- 15 ₁₂₈	- 14 ₁₃₈	- 13 ₁₅₀	- 12 ₁₆₄	- 10 ₁₈₁	- 9 ₂₀₁	- 7 ₂₂₆	- 5 ₂₅₇	320° 140°	40° 140°		
45° 225°	45° 225°	- 22 ₆₆	- 22 ₇₀	- 21 ₇₃	- 21 ₇₇	- 20 ₈₁	- 20 ₈₆	- 20 ₉₂	- 19 ₉₈	- 19 ₁₀₅	- 19 ₁₁₂	- 19 ₁₂₁	- 18 ₁₃₂	- 18 ₁₄₄	- 18 ₁₅₈	- 17 ₁₇₅	- 17 ₁₉₅	- 16 ₂₂₀	- 16 ₂₅₁	315° 135°	45° 135°		
50° 230°	50° 230°	- 22 ₆₀	- 22 ₆₃	- 21 ₆₆	- 21 ₇₀	- 21 ₇₄	- 21 ₇₉	- 21 ₈₅	- 21 ₉₁	- 21 ₉₇	- 22 ₁₀₅	- 22 ₁₁₄	- 22 ₁₂₄	- 23 ₁₃₆	- 23 ₁₅₀	- 24 ₁₆₆	- 25 ₁₈₆	- 25 ₂₁₁	- 26 ₂₄₂	310° 130°	50° 130°		
55° 235°	55° 235°	- 21 ₅₃	- 21 ₅₆	- 21 ₅₉	- 21 ₆₃	- 22 ₆₇	- 22 ₇₂	- 22 ₇₇	- 22 ₈₃	- 23 ₈₉	- 24 ₉₇	- 25 ₁₀₅	- 26 ₁₁₅	- 27 ₁₂₇	- 28 ₁₄₀	- 29 ₁₅₆	- 31 ₁₇₆	- 33 ₂₀₀	- 35 ₂₂₉	305° 125°	55° 125°		
60° 240°	60° 240°	- 19 ₄₇	- 19 ₅₀	- 20 ₅₃	- 20 ₅₇	- 21 ₆₁	- 22 ₆₅	- 22 ₇₀	- 23 ₇₅	- 24 ₈₁	- 25 ₈₈	- 26 ₉₆	- 28 ₁₀₅	- 30 ₁₁₆	- 32 ₁₂₉	- 34 ₁₄₅	- 36 ₁₆₃	- 39 ₁₈₆	- 43 ₂₁₄	300° 120°	60° 120°		
65° 245°	65° 245°	- 17 ₄₂	- 17 ₄₄	- 18 ₄₇	- 19 ₅₀	- 20 ₅₄	- 21 ₅₈	- 22 ₆₂	- 23 ₆₇	- 25 ₇₃	- 26 ₇₉	- 27 ₈₆	- 29 ₉₅	- 31 ₁₀₅	- 34 ₁₁₇	- 37 ₁₃₂	- 40 ₁₄₉	- 44 ₁₇₁	- 50 ₁₉₇	295° 115°	65° 115°		
70° 250°	70° 250°	- 14 ₃₇	- 15 ₃₉	- 16 ₄₁	- 17 ₄₄	- 18 ₄₇	- 19 ₅₁	- 21 ₅₅	- 22 ₅₉	- 24 ₆₄	- 25 ₇₀	- 27 ₇₇	- 29 ₈₅	- 32 ₉₄	- 35 ₁₀₅	- 39 ₁₁₈	- 43 ₁₃₄	- 48 ₁₅₄	- 54 ₁₇₉	290° 110°	70° 110°		
75° 255°	75° 255°	- 11 ₃₃	- 12 ₃₅	- 13 ₃₇	- 14 ₃₉	- 16 ₄₂	- 17 ₄₅	- 19 ₄₈	- 20 ₅₂	- 22 ₅₆	- 24 ₆₁	- 26 ₆₇	- 28 ₇₄	- 31 ₈₃	- 35 ₉₃	- 39 ₁₀₄	- 44 ₁₁₉	- 49 ₁₃₇	- 56 ₁₅₉	285° 105°	75° 105°		
80° 260°	80° 260°	- 8 ₃₀	- 9 ₃₁	- 10 ₃₃	- 11 ₃₅	- 13 ₃₇	- 14 ₃₉	- 16 ₄₂	- 18 ₄₅	- 20 ₄₉	- 22 ₅₃	- 24 ₅₈	- 27 ₆₄	- 30 ₇₂	- 34 ₈₀	- 38 ₉₁	- 43 ₁₀₄	- 49 ₁₁₉	- 57 ₁₃₉	280° 100°	80° 100°		
85° 265°	85° 265°	- 4 ₂₉	- 5 ₂₉	- 6 ₃₀	- 8 ₃₁	- 9 ₃₃	- 11 ₃₅	- 13 ₃₇	- 15 ₄₀	- 17 ₄₃	- 19 ₄₆	- 21 ₅₀	- 24 ₅₅	- 27 ₆₁	- 31 ₆₉	- 36 ₇₈	- 41 ₈₉	- 47 ₁₀₂	- 55 ₁₁₉	275° 95°	85° 95°		
90° 270°	90° 270°	0 ₂₈	- 1 ₂₈	- 3 ₂₉	- 4 ₂₉	- 6 ₃₀	- 7 ₃₁	- 9 ₃₃	- 11 ₃₅	- 13 ₃₇	- 15 ₄₀	- 17 ₄₃	- 20 ₄₇	- 23 ₅₂	- 27 ₅₈	- 32 ₆₅	- 37 ₇₄	- 44 ₈₅	- 52 ₉₉	270° 90°	90° 90°		

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

		$\delta = -20^\circ$																			
τ		O ^h						I ^h						II ^h						τ	
$p_{+\tau}$		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		$p_{-\tau}$
Δp h																					
90	270	0 ₀ 28 ₀	-1 28	-3 29	-4 29	-6 30	-7 31	-9 ₀ 33 ₀	-11 35	-13 37	-15 40	-17 43	-20 47	-23 ₂ 52 ₂	-27 58	-32 65	-37 74	-44 85	-52 ₃ 99 ₆	270	90
95	275	+4 29	+2 28	+1 28	0 28	-2 29	-3 29	-5 30	-7 31	-9 33	-11 35	-13 37	-16 40	-19 44	-23 49	-27 54	-32 61	-39 70	-47 81	265	85
100	280	+7 30	+6 29	+5 29	+4 28	+2 28	+1 28	-1 28	-2 29	-4 30	-6 31	-8 33	-11 35	-14 37	-17 41	-21 45	-26 50	-32 57	-40 65	260	80
105	285	+11 33	+10 32	+9 31	+7 30	+6 29	+5 28	+4 28	+2 28	+1 28	-1 29	-3 30	-5 31	-8 32	-11 34	-14 37	-19 41	-24 46	-31 52	255	75
110	290	+14 37	+13 36	+12 34	+11 33	+10 31	+9 30	+8 29	+7 29	+5 28	+4 28	+3 28	+1 28	-1 29	-4 30	-7 32	-11 34	-15 37	-21 41	250	70
115	295	+17 42	+16 40	+15 38	+15 36	+14 34	+13 33	+12 32	+11 31	+10 30	+9 29	+8 28	+7 28	+5 28	+3 28	+1 29	-2 30	-6 31	-11 33	245	65
120	300	+19 ₁ 47 ₁	+18 45	+18 42	+18 40	+17 38	+17 37	+16 ₁ 35 ₀	+15 34	+15 33	+14 31	+14 30	+13 30	+12 ₁ 29 ₀	+10 28	+9 28	+7 28	+4 28	0 ₀ 29 ₀	240	60
125	305	+21 53	+20 51	+20 48	+20 46	+20 44	+20 42	+19 40	+19 38	+19 37	+19 35	+19 34	+18 33	+18 32	+17 31	+16 30	+15 29	+14 28	+12 28	235	55
130	310	+22 60	+22 57	+22 54	+22 52	+22 50	+22 48	+22 46	+22 44	+23 42	+23 41	+23 39	+23 38	+24 36	+24 35	+24 34	+24 33	+24 32	+24 31	230	50
135	315	+22 66	+22 64	+23 61	+23 58	+24 56	+24 54	+25 52	+25 50	+26 48	+27 47	+27 46	+28 44	+29 43	+30 42	+31 40	+32 39	+33 38	+35 37	225	45
140	320	+22 73	+22 70	+23 68	+24 65	+25 63	+26 61	+27 59	+28 57	+29 56	+30 54	+31 53	+32 52	+33 51	+35 50	+37 49	+39 48	+42 47	+45 46	220	40
145	325	+21 80	+22 77	+23 74	+24 72	+25 70	+26 68	+28 67	+29 65	+30 64	+32 63	+33 62	+35 61	+37 60	+40 59	+43 59	+46 59	+50 58	+54 58	215	35
150	330	+19 ₁ 86 ₄	+20 83	+22 81	+23 79	+24 77	+26 76	+28 ₂ 74 ₄	+29 73	+31 72	+33 71	+35 71	+37 71	+40 ₃ 70 ₄	+43 70	+47 70	+51 71	+56 72	+62 ₆ 73 ₅	210	30
155	335	+17 91	+18 89	+20 87	+22 85	+23 84	+25 83	+27 82	+29 81	+31 80	+33 80	+36 80	+39 81	+42 81	+46 82	+50 83	+55 85	+61 87	+68 90	205	25
160	340	+14 96	+16 94	+18 92	+19 91	+21 90	+23 90	+26 89	+28 89	+30 89	+33 89	+36 90	+39 91	+43 92	+47 94	+52 97	+58 100	+65 104	+73 109	200	20
165	345	+11 100	+13 98	+15 97	+17 96	+19 96	+21 96	+23 96	+26 96	+29 97	+32 98	+35 99	+38 101	+42 104	+47 107	+52 111	+59 116	+66 122	+75 129	195	15
170	350	+8 102	+10 102	+12 101	+14 101	+16 101	+18 101	+20 102	+23 103	+26 104	+29 106	+33 108	+37 111	+41 115	+46 119	+51 125	+58 131	+66 139	+76 149	190	10
175	355	+4 104	+6 104	+8 104	+10 104	+13 105	+15 106	+17 107	+20 108	+23 110	+26 113	+30 117	+34 121	+38 125	+43 131	+49 138	+56 146	+64 156	+74 169	185	5
180	360	0 ₀ 105 ₆	+2 105	+4 105	+6 106	+9 107	+11 109	+13 ₁ 111 ₆	+16 113	+19 116	+22 120	+26 124	+30 129	+34 ₃ 135 ₉	+39 142	+45 150	+52 160	+61 173	+71 ₆ 188 ₁₅	180	0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$.
 $s_0 = s + hs$.

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -21^\circ$																					
τ $p_{+\tau}$		O ^h						I ^h						II ^h						τ $p_{-\tau}$	
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		
$\frac{\Delta p}{h}$																					
0	180	0 ₀ 111 ₆	+ 2 111	+ 5 112	+ 7 113	+ 9 114	+12 116	+15 ₁ 118 ₆	+18 120	+21 123	+24 127	+28 132	+32 138	+37 ₃ 144 ₁₀	+43 152	+49 161	+57 173	+66 187	+78 ₇ 205 ₁₈	360	180
5	185	- 4 110	- 2 111	+ 1 112	+ 3 114	+ 5 116	+ 7 118	+10 121	+13 124	+16 128	+19 133	+23 138	+27 145	+32 153	+38 162	+44 173	+51 187	+60 204	+72 224	355	175
10	190	- 8 109	- 6 110	- 4 112	- 2 114	+ 1 116	+ 3 119	+ 5 122	+ 8 126	+11 131	+14 137	+18 143	+22 151	+26 160	+32 171	+38 184	+45 199	+53 218	+64 242	350	170
15	195	-12 106	-10 108	- 8 110	- 6 112	- 3 115	- 1 119	+ 1 123	+ 3 127	+ 6 133	+ 9 139	+12 146	+16 155	+20 165	+25 177	+30 192	+37 209	+45 230	+54 257	345	165
20	200	-15 101	-14 104	-12 106	-10 109	- 8 113	- 6 117	- 4 122	- 2 127	+ 1 133	+ 3 140	+ 6 148	+10 157	+13 168	+17 182	+22 198	+28 216	+35 239	+44 268	340	160
25	205	-18 96	-17 99	-15 102	-13 105	-12 109	-10 114	- 8 119	- 6 125	- 4 131	- 2 139	+ 1 148	+ 3 158	+ 6 170	+10 184	+14 201	+19 221	+25 246	+32 277	335	155
30	210	-20 ₂ 90 ₅	-19 93	-18 97	-16 101	-15 105	-14 110	-12 ₁ 115 ₇	-11 121	- 9 128	- 7 136	- 5 145	- 3 156	- 1 ₀ 169 ₁₂	+ 2 184	+ 5 201	+ 9 222	+14 249	+19 ₁ 281 ₂₄	330	150
35	215	-22 84	-21 87	-20 91	-19 95	-18 99	-17 104	-16 110	-15 116	-14 124	-12 132	-11 141	- 9 153	- 8 166	- 6 181	- 4 199	- 1 221	+ 3 249	+ 7 282	325	145
40	220	-23 77	-22 80	-22 84	-21 88	-20 93	-20 98	-19 104	-18 111	-18 118	-17 126	-16 136	-15 147	-14 160	-13 176	-12 195	-10 217	- 8 245	- 6 279	320	140
45	225	-24 70	-23 73	-23 77	-22 81	-22 86	-22 91	-21 97	-21 104	-21 111	-21 119	-20 129	-20 140	-20 153	-20 169	-19 188	-19 210	-18 238	-18 272	315	135
50	230	-23 62	-23 66	-23 70	-23 74	-23 78	-23 83	-23 89	-23 96	-23 103	-24 111	-24 120	-25 131	-25 144	-26 160	-26 179	-27 201	-28 228	-29 262	310	130
55	235	-22 55	-22 59	-23 62	-23 66	-23 70	-24 75	-24 81	-24 87	-25 94	-26 102	-27 111	-28 122	-29 134	-30 149	-32 167	-34 189	-36 215	-39 248	305	125
60	240	-20 ₂ 49 ₂	-21 52	-22 55	-22 59	-23 63	-24 68	-25 ₂ 73 ₃	-25 78	-26 85	-27 93	-29 101	-30 111	-32 ₂ 123 ₈	-34 137	-37 154	-40 175	-43 200	-48 ₅ 232 ₁₉	300	120
65	245	-18 43	-19 46	-20 49	-21 52	-22 56	-23 60	-24 65	-25 70	-26 76	-28 83	-30 91	-32 100	-34 111	-37 125	-40 141	-44 160	-49 183	-55 213	295	115
70	250	-15 38	-16 41	-17 43	-18 46	-19 49	-21 53	-22 57	-24 62	-26 67	-28 73	-30 80	-32 89	-35 99	-38 111	-42 126	-47 144	-53 165	-59 193	290	110
75	255	-12 34	-13 36	-14 38	-15 40	-16 43	-18 46	-20 50	-22 54	-24 58	-26 64	-28 70	-31 78	-34 87	-38 98	-42 111	-48 127	-54 146	-62 171	285	105
80	260	- 8 31	- 9 32	-11 33	-12 35	-13 37	-15 40	-17 43	-19 46	-21 50	-23 55	-26 61	-29 67	-32 75	-36 85	-41 96	-47 110	-54 127	-62 149	280	100
85	265	- 4 29	- 6 29	- 7 30	- 9 31	-10 33	-12 35	-14 37	-16 40	-18 43	-20 47	-23 52	-26 57	-29 64	-33 72	-38 81	-44 93	-52 108	-61 127	275	95
90	270	0 ₀ 28 ₀	- 2 28	- 3 29	- 5 29	- 6 30	- 8 31	-10 ₁ 33 ₀	-12 35	-14 38	-16 41	-19 44	-22 48	-25 ₂ 54 ₂	-29 60	-34 68	-40 78	-48 90	-57 ₅ 106 ₇	270	90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$.

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -21^\circ$																									
τ $p_{+\tau}$		O ^h						I ^h						II ^h						τ $p_{-\tau}$					
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m						
$\frac{\Delta p}{h}$																									
90	270	0 ₀ 28 ₀	-2 28	-3 29	-5 29	-6 30	-8 31	-10 ₁ 33 ₀	-12 35	-14 38	-16 41	-19 44	-22 48	-25 ₂ 54 ₂	-29 60	-34 68	-40 78	-48 90	-57 ₅ 106 ₇	270	90				
95	275	+4 29	+3 28	+1 28	0 28	-2 28	-3 29	-5 30	-7 31	-9 33	-11 35	-14 38	-17 41	-20 45	-24 50	-29 56	-35 64	-42 74	-51 86	265	85				
100	280	+8 31	+7 30	+6 29	+4 28	+3 28	+1 28	-1 28	-2 29	-4 30	-6 31	-8 33	-11 35	-14 38	-18 41	-23 46	-28 52	-35 59	-43 68	260	80				
105	285	+12 34	+11 32	+10 31	+8 30	+7 29	+6 29	+4 28	+3 28	+1 28	-1 29	-3 30	-5 31	-8 33	-11 35	-15 38	-20 42	-26 47	-34 54	255	75				
110	290	+15 38	+14 36	+13 34	+12 33	+11 31	+10 30	+9 29	+8 29	+6 28	+5 28	+3 28	+1 28	-1 29	-4 30	-7 32	-11 34	-16 38	-23 43	250	70				
115	295	+18 43	+17 40	+16 38	+16 37	+15 35	+14 33	+13 32	+12 31	+11 30	+10 29	+9 28	+8 28	+6 28	+4 28	+1 29	-2 30	-6 31	-11 33	245	65				
120	300	+20 ₂ 49 ₂	+20 46	+19 44	+19 42	+18 40	+18 38	+17 ₁ 36 ₁	+17 35	+16 33	+15 32	+15 31	+14 30	+13 ₁ 29 ₀	+12 28	+10 28	+8 28	+5 28	+1 ₁ 29 ₀	240	60				
125	305	+22 55	+22 52	+22 50	+22 47	+21 45	+21 43	+21 41	+21 40	+21 38	+20 36	+20 35	+20 34	+20 32	+19 31	+18 30	+17 29	+16 29	+14 28	235	55				
130	310	+23 62	+23 59	+24 57	+24 54	+24 51	+24 49	+24 47	+25 46	+25 44	+25 42	+25 40	+26 39	+26 37	+26 36	+26 35	+27 33	+27 32	+27 31	230	50				
135	315	+24 70	+24 66	+25 64	+25 61	+26 58	+26 56	+27 54	+28 53	+28 51	+29 49	+30 47	+31 46	+32 44	+33 43	+34 42	+36 40	+37 39	+39 38	225	45				
140	320	+23 77	+24 74	+25 71	+26 68	+27 66	+28 64	+29 62	+30 60	+31 58	+32 57	+34 56	+35 54	+37 53	+39 52	+41 51	+44 50	+47 49	+50 48	220	40				
145	325	+22 84	+23 81	+24 78	+26 76	+27 74	+28 72	+30 70	+31 68	+33 67	+34 66	+36 65	+38 64	+41 63	+44 62	+47 62	+51 62	+55 62	+60 62	215	35				
150	330	+21 ₂ 90 ₅	+22 88	+23 85	+25 83	+26 81	+28 80	+30 ₂ 78 ₁	+32 77	+34 76	+36 75	+38 75	+41 75	+44 ₄ 74 ₄	+48 74	+52 75	+57 76	+62 77	+68 ₇ 78 ₅	210	30				
155	335	+18 96	+20 94	+22 92	+23 90	+25 88	+27 87	+29 86	+31 86	+34 85	+36 85	+39 85	+42 86	+46 86	+50 87	+55 89	+61 91	+67 94	+75 97	205	25				
160	340	+15 101	+17 99	+19 98	+21 96	+23 95	+25 94	+27 94	+30 94	+33 94	+36 95	+39 96	+42 97	+46 99	+51 101	+57 104	+63 107	+71 112	+80 118	200	20				
165	345	+12 106	+14 104	+16 103	+18 102	+20 101	+22 101	+25 101	+28 102	+31 103	+34 104	+37 106	+41 108	+46 111	+51 115	+57 119	+64 124	+72 131	+83 140	195	15				
170	350	+8 109	+10 108	+13 107	+15 107	+17 107	+19 107	+22 108	+25 109	+28 111	+31 113	+35 116	+39 119	+44 123	+50 128	+56 134	+63 141	+72 150	+83 162	190	10				
175	355	+4 110	+6 110	+9 110	+11 110	+13 111	+16 112	+19 113	+22 115	+25 118	+28 121	+32 125	+36 129	+41 134	+47 140	53 148	+61 157	+70 169	+81 184	185	5				
180	360	0 ₀ 111 ₆	+2 111	+5 112	+7 113	+9 114	+12 116	+15 ₁ 118 ₆	+18 120	+21 123	+24 127	+28 132	+32 138	+37 ₃ 144 ₁₀	+43 152	+49 161	+57 173	+66 187	+78 ₇ 205 ₁₈	180	0				

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$.
 $s_0 = s + h s$.

REDUCTION TABLES FOR EQUATORIAL OBSERVATIONS.

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$$\delta = -22^\circ$$

τ $p_{+\tau}$	O ^h						I ^h						II ^h						τ $p_{-\tau}$
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	
Δp h																			
0 180	0 ₁₁₈₇	+2 ₁₁₈	+5 ₁₁₉	+7 ₁₂₀	+10 ₁₂₁	+13 ₁₂₃	+16 ₁₂₅₈	+19 ₁₂₈	+22 ₁₃₂	+26 ₁₃₆	+30 ₁₄₁	+35 ₁₄₇	+40 ₁₅₅₁₁	+46 ₁₆₄	+54 ₁₇₄	+62 ₁₈₇	+72 ₂₀₃	+85 ₂₂₃₂₀	360 180
5 185	-5 ₁₁₇	-2 ₁₁₈	+1 ₁₁₉	+3 ₁₂₁	+6 ₁₂₃	+8 ₁₂₆	+11 ₁₂₉	+14 ₁₃₂	+17 ₁₃₇	+21 ₁₄₂	+25 ₁₄₈	+30 ₁₅₅	+35 ₁₆₄	+41 ₁₇₅	+48 ₁₈₇	+56 ₂₀₂	+66 ₂₂₁	+78 ₂₄₅	355 175
10 190	-9 ₁₁₅	-6 ₁₁₆	-4 ₁₁₈	-2 ₁₂₀	+1 ₁₂₃	+3 ₁₂₇	+6 ₁₃₁	+9 ₁₃₅	+12 ₁₄₀	+15 ₁₄₆	+19 ₁₅₃	+24 ₁₆₂	+29 ₁₇₂	+34 ₁₈₄	+41 ₁₉₈	+49 ₂₁₅	+58 ₂₃₇	+70 ₂₆₄	350 170
15 195	-13 ₁₁₂	-11 ₁₁₄	-9 ₁₁₆	-7 ₁₁₉	-4 ₁₂₂	-2 ₁₂₆	+1 ₁₃₁	+3 ₁₃₆	+6 ₁₄₂	+9 ₁₄₉	+13 ₁₅₇	+17 ₁₆₆	+22 ₁₇₈	+27 ₁₉₁	+33 ₂₀₇	+40 ₂₂₆	+49 ₂₅₀	+60 ₂₈₀	345 165
20 200	-17 ₁₀₈	-15 ₁₁₀	-13 ₁₁₃	-11 ₁₁₆	-9 ₁₂₀	-6 ₁₂₄	-4 ₁₂₉	-2 ₁₃₅	+1 ₁₄₂	+4 ₁₄₉	+7 ₁₅₈	+10 ₁₆₉	+14 ₁₈₁	+19 ₁₉₆	+24 ₂₁₃	+30 ₂₃₄	+38 ₂₆₁	+48 ₂₉₃	340 160
25 205	-20 ₁₀₂	-18 ₁₀₅	-16 ₁₀₈	-15 ₁₁₂	-13 ₁₁₆	-11 ₁₂₁	-9 ₁₂₆	-7 ₁₃₃	-5 ₁₄₀	-2 ₁₄₈	0 ₁₅₈	+3 ₁₆₉	+6 ₁₈₂	+10 ₁₉₈	+15 ₂₁₇	+20 ₂₃₉	+27 ₂₆₇	+35 ₃₀₂	335 155
30 210	-22 ₉₅	-21 ₉₉	-19 ₁₀₂	-18 ₁₀₆	-17 ₁₁₁	-15 ₁₁₆	-14 ₁₂₂₈	-12 ₁₂₉	-10 ₁₃₆	-8 ₁₄₅	-6 ₁₅₅	-4 ₁₆₇	-1 ₁₈₁₁₃	+2 ₁₉₇	+6 ₂₁₇	+10 ₂₄₁	+15 ₂₇₀	+21 ₃₀₇₂₈	330 150
35 215	-24 ₈₉	-23 ₉₂	-22 ₉₆	-21 ₁₀₀	-20 ₁₀₅	-19 ₁₁₀	-18 ₁₁₆	-16 ₁₂₃	-15 ₁₃₁	-13 ₁₄₀	-12 ₁₅₁	-10 ₁₆₃	-8 ₁₇₈	-6 ₁₉₅	-4 ₂₁₅	-1 ₂₄₀	+3 ₂₇₀	+7 ₃₀₈	325 145
40 220	-25 ₈₁	-24 ₈₅	-24 ₈₉	-23 ₉₃	-22 ₉₈	-22 ₁₀₃	-21 ₁₀₉	-20 ₁₁₇	-19 ₁₂₅	-18 ₁₃₄	-17 ₁₄₅	-16 ₁₅₇	-15 ₁₇₂	-14 ₁₈₉	-13 ₂₁₀	-11 ₂₃₅	-9 ₂₆₆	-7 ₃₀₄	320 140
45 225	-26 ₇₃	-25 ₇₇	-25 ₈₁	-24 ₈₅	-24 ₉₀	-24 ₉₆	-23 ₁₀₂	-23 ₁₀₉	-23 ₁₁₇	-23 ₁₂₆	-22 ₁₃₇	-22 ₁₄₉	-22 ₁₆₄	-22 ₁₈₁	-21 ₂₀₂	-21 ₂₂₇	-21 ₂₅₈	-20 ₂₉₆	315 135
50 230	-25 ₆₅	-25 ₆₉	-25 ₇₃	-25 ₇₇	-25 ₈₂	-25 ₈₈	-25 ₉₄	-25 ₁₀₁	-26 ₁₀₈	-26 ₁₁₇	-26 ₁₂₈	-27 ₁₄₀	-28 ₁₅₅	-28 ₁₇₂	-29 ₁₉₂	-30 ₂₁₇	-31 ₂₄₇	-33 ₂₈₅	310 130
55 235	-24 ₅₈	-24 ₆₁	-24 ₆₅	-25 ₆₉	-25 ₇₄	-26 ₇₉	-26 ₈₅	-27 ₉₂	-28 ₉₉	-29 ₁₀₈	-30 ₁₁₈	-31 ₁₃₀	-32 ₁₄₄	-33 ₁₆₀	-35 ₁₈₀	-37 ₂₀₄	-40 ₂₃₃	-44 ₂₇₀	305 125
60 240	-22 ₅₁₂	-23 ₅₄	-23 ₅₇	-24 ₆₁	-24 ₆₆	-25 ₇₁	-26 ₇₆₄	-28 ₈₂	-29 ₉₀	-30 ₉₈	-32 ₁₀₇	-33 ₁₁₈	-35 ₁₃₁₉	-37 ₁₄₇	-40 ₁₆₆	-44 ₁₈₈	-48 ₂₁₆	-53 ₂₅₂₂₂	300 120
65 245	-20 ₄₄	-21 ₄₇	-21 ₅₀	-22 ₅₄	-23 ₅₈	-24 ₆₂	-25 ₆₇	-27 ₇₃	-29 ₈₀	-30 ₈₇	-32 ₉₆	-34 ₁₀₆	-37 ₁₁₈	-40 ₁₃₃	-44 ₁₅₀	-48 ₁₇₂	-54 ₁₉₈	-60 ₂₃₁	295 115
70 250	-17 ₃₈	-18 ₄₁	-19 ₄₄	-20 ₄₇	-21 ₅₀	-22 ₅₄	-24 ₅₉	-26 ₆₄	-28 ₇₀	-30 ₇₇	-32 ₈₅	-34 ₉₄	-37 ₁₀₅	-41 ₁₁₈	-46 ₁₃₄	-51 ₁₅₄	-57 ₁₇₈	-65 ₂₀₈	290 110
75 255	-13 ₃₄	-14 ₃₆	-15 ₃₈	-17 ₄₁	-18 ₄₄	-20 ₄₇	-22 ₅₁	-24 ₅₆	-26 ₆₁	-28 ₆₇	-30 ₇₄	-33 ₈₂	-37 ₉₂	-41 ₁₀₄	-46 ₁₁₈	-52 ₁₃₅	-59 ₁₅₇	-68 ₁₈₄	285 105
80 260	-9 ₃₁	-10 ₃₂	-11 ₃₄	-13 ₃₆	-15 ₃₈	-17 ₄₁	-19 ₄₄	-21 ₄₈	-23 ₅₂	-25 ₅₇	-28 ₆₃	-31 ₇₀	-35 ₇₉	-40 ₈₉	-45 ₁₀₁	-51 ₁₁₇	-59 ₁₃₆	-69 ₁₆₀	280 100
85 265	-5 ₂₉	-6 ₃₀	-7 ₃₁	-9 ₃₂	-11 ₃₄	-13 ₃₆	-15 ₃₈	-17 ₄₁	-19 ₄₄	-22 ₄₉	-25 ₅₄	-28 ₅₉	-32 ₆₆	-37 ₇₅	-42 ₈₆	-49 ₉₉	-57 ₁₁₅	-67 ₁₃₆	275 95
90 270	0 ₂₈₀	-2 ₂₈	-3 ₂₉	-5 ₃₀	-6 ₃₁	-8 ₃₂	-10 ₃₄₀	-12 ₃₆	-14 ₃₈	-17 ₄₁	-20 ₄₅	-23 ₅₀	-27 ₅₅₂	-32 ₆₂	-37 ₇₁	-44 ₈₂	-52 ₉₅	-62 ₁₁₃₈	270 90

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$$p_0 = p + \Delta p.$$

$$s_0 = s + hs.$$

TABLES OF DIFFERENTIAL REFRACTION.

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TABLE III—Continued.

To be used when Position Angle and Distance are determined.

$\delta = -22^\circ$																							
τ		O ^h						I ^h						II ^h						τ			
$p_{+\tau}$		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		$p_{-\tau}$		
		Δp h																					
90	270	0 ₀ 28 ₀	-2 28	-3 29	-5 30	-6 31	-8 32	-10 ₁ 34 ₀	-12 36	-14 38	-17 41	-20 45	-23 50	-27 ₂ 55 ₂	-32 62	-37 71	-44 82	-52 95	-62 ₆ 113 ₈	270	90		
95	275	+5 29	+3 28	+2 28	0 28	-1 28	-3 29	-5 30	-7 32	-9 33	-12 35	-15 38	-18 42	-22 46	-27 51	-32 58	-38 67	-46 77	-55 91	265	85		
100	280	+9 31	+7 30	+6 29	+5 28	+3 28	+2 28	0 28	-2 29	-4 30	-7 31	-9 33	-12 35	-16 38	-20 42	-25 47	-31 53	-38 61	-47 72	260	80		
105	285	+13 34	+11 32	+10 31	+9 30	+7 29	+6 29	+5 28	+3 28	+1 28	-1 29	-3 30	-6 31	-9 33	-12 35	-17 38	-22 42	-28 48	-37 56	255	75		
110	290	+16 38	+15 36	+14 35	+13 33	+12 32	+11 31	+10 30	+9 29	+7 28	+5 28	+3 28	+1 28	-1 29	-4 30	-8 32	-12 35	-17 38	-25 43	250	70		
115	295	+19 44	+19 42	+18 40	+17 38	+16 36	+15 34	+15 33	+14 31	+13 30	+11 29	+10 29	+8 28	+6 28	+4 28	+1 29	-2 30	-6 32	-12 34	245	65		
120	300	+22 ₂ 50 ₂	+22 48	+21 46	+21 43	+20 41	+19 39	+19 ₂ 37 ₁	+19 35	+18 34	+17 32	+16 31	+15 30	+14 ₁ 30 ₀	+13 29	+11 28	+9 28	+6 28	+2 ₁ 29 ₀	240	60		
125	305	+24 57	+24 55	+24 52	+24 49	+23 47	+23 44	+23 42	+23 40	+23 39	+23 37	+22 35	+22 34	+22 33	+21 32	+20 30	+19 30	+18 29	+16 28	235	55		
130	310	+25 65	+25 62	+26 59	+26 56	+26 53	+26 51	+26 49	+27 47	+27 45	+28 43	+28 41	+28 40	+29 38	+29 37	+29 35	+29 34	+30 33	+30 32	230	50		
135	315	+26 73	+26 70	+27 67	+27 64	+28 61	+28 59	+29 57	+30 55	+31 53	+32 51	+33 49	+34 48	+35 46	+36 45	+37 43	+39 42	+41 41	+43 40	225	45		
140	320	+25 81	+26 78	+27 75	+28 72	+29 69	+30 67	+31 65	+32 63	+34 62	+35 60	+37 58	+38 57	+40 56	+42 54	+45 53	+48 52	+51 51	+55 51	220	40		
145	325	+24 88	+25 85	+26 83	+28 80	+29 78	+30 76	+32 74	+34 72	+36 71	+38 70	+40 68	+42 67	+45 67	+48 66	+52 66	+56 65	+60 65	+66 66	215	35		
150	330	+22 ₂ 95 ₅	+24 93	+25 90	+27 88	+28 86	+30 85	+32 ₃ 83 ₅	+34 82	+37 81	+39 80	+41 79	+44 79	+48 ₁ 79 ₅	+52 79	+57 80	+62 81	+68 82	+76 ₈ 84 ₆	210	30		
155	335	+20 102	+22 100	+23 97	+25 95	+27 94	+29 93	+31 92	+34 91	+36 90	+39 90	+42 90	+46 91	+50 92	+55 93	+60 95	+66 98	+74 101	+83 105	205	25		
160	340	+17 107	+19 105	+21 103	+23 102	+25 101	+27 100	+30 100	+33 100	+36 100	+39 101	+42 102	+46 103	+51 105	+56 108	+62 111	+69 115	+78 121	+88 128	200	20		
165	345	+13 112	+15 110	+17 109	+20 108	+22 107	+25 107	+28 108	+31 108	+34 109	+37 111	+41 113	+45 115	+50 118	+56 122	+62 128	+70 134	+79 142	+91 152	195	15		
170	350	+9 115	+11 114	+13 114	+16 113	+18 113	+21 114	+24 115	+27 116	+30 118	+34 120	+38 123	+43 127	+48 132	+54 137	+61 144	+69 152	+79 163	+92 176	190	10		
175	355	+5 117	+7 117	+9 117	+12 117	+14 118	+17 119	+20 121	+23 123	+26 126	+30 129	+35 133	+40 138	+45 144	+51 151	+58 160	+67 170	+77 183	+90 200	185	5		
180	360	0 ₀ 118 ₇	+2 118	+5 119	+7 120	+10 121	+13 123	+16 ₁ 125 ₈	+19 128	+22 132	+26 136	+30 141	+35 147	+40 ₃ 155 ₁₁	+46 164	+54 174	+62 187	+72 203	+85 ₈ 223 ₂₀	180	0		

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLES OF DIFFERENTIAL REFRACTION.

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TABLE III—Continued.

To be used when Position Angle and Distance are determined.

		$\delta = -23^\circ$																			
τ	$p_{+\tau}$	O ^h						I ^h						II ^h						τ	$p_{-\tau}$
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		
		$\frac{\Delta p}{h}$																			
90	270	0 ₀ 28 ₀	-2 28	-3 29	-5 30	-7 31	-9 32	-11 ₁ 34 ₀	-13 36	-15 39	-18 42	-21 46	-25 51	-30 ₂ 58 ₂	-35 65	-41 75	-48 87	-57 102	-69 ₇ 121 ₉	270	90
95	275	+5 29	+3 28	+2 28	0 28	-2 28	-4 29	-6 30	-8 32	-10 34	-13 36	-16 39	-19 43	-24 47	-29 53	-34 61	-41 70	-50 82	-61 97	265	85
100	280	+10 31	+8 30	+6 29	+5 28	+3 28	+2 28	0 28	-2 29	-5 30	-7 31	-10 33	-13 36	-17 39	-22 43	-27 49	-33 55	-41 64	-52 76	260	80
105	285	+14 35	+13 33	+11 31	+10 30	+8 29	+7 29	+5 28	+3 28	+1 28	-1 29	-3 30	-6 31	-9 33	-13 36	-18 39	-24 44	-31 50	-40 58	255	75
110	290	+18 40	+17 37	+16 35	+15 34	+13 32	+12 31	+11 30	+9 29	+8 28	+6 28	+4 28	+2 28	-1 29	-4 31	-8 33	-13 35	-19 39	-27 44	250	70
115	295	+21 46	+20 43	+20 40	+19 38	+18 36	+17 35	+16 33	+15 32	+14 30	+13 29	+11 28	+9 28	+7 28	+5 28	+2 29	-2 30	-7 32	-13 34	245	65
120	300	+24 ₂ 53 ₂	+23 50	+23 47	+23 44	+22 42	+21 40	+21 ₂ 38 ₁	+20 36	+20 34	+19 33	+18 31	+17 30	+16 ₂ 30 ₀	+14 29	+12 28	+10 28	+7 28	+3 ₁ 29 ₀	240	60
125	305	+26 60	+26 57	+26 54	+26 51	+25 48	+25 46	+25 44	+25 42	+25 40	+25 38	+24 36	+24 35	+24 34	+23 32	+23 31	+22 30	+20 29	+18 28	235	55
130	310	+28 68	+28 65	+28 62	+28 59	+28 56	+28 53	+29 51	+29 49	+30 47	+30 45	+30 43	+31 41	+31 40	+32 38	+32 36	+33 35	+33 33	+33 32	230	50
135	315	+28 77	+29 73	+29 70	+29 67	+30 64	+31 61	+32 59	+33 57	+34 55	+35 53	+36 51	+37 50	+38 48	+40 46	+41 45	+43 44	+45 42	+48 41	225	45
140	320	+28 86	+29 82	+29 79	+30 76	+31 73	+32 70	+34 68	+35 66	+37 65	+38 63	+40 61	+42 60	+44 59	+47 57	+50 56	+53 55	+57 54	+62 54	220	40
145	325	+26 94	+28 90	+29 87	+30 84	+32 82	+33 80	+35 78	+37 76	+39 75	+41 74	+43 72	+46 71	+49 71	+52 70	+57 70	+61 70	+67 70	+74 70	215	35
150	330	+24 ₂ 101 ₆	+26 98	+28 95	+29 93	+31 91	+33 89	+35 ₃ 88 ₅	+37 87	+40 86	+42 85	+45 84	+49 84	+53 ₅ 84 ₅	+57 84	+62 85	+68 86	+75 88	+84 ₉ 91 ₇	210	30
155	335	+21 108	+23 105	+25 103	+27 101	+29 100	+32 98	+34 97	+37 97	+40 96	+43 96	+46 96	+50 97	+55 98	+60 100	+66 102	+73 105	+82 109	+92 114	205	25
160	340	+18 114	+20 112	+22 110	+25 109	+27 108	+30 107	+32 106	+35 107	+38 107	+42 108	+46 109	+50 111	+55 113	+61 116	+68 120	+76 125	+86 131	+98 139	200	20
165	345	+14 119	+16 117	+19 116	+21 115	+24 115	+27 115	+30 115	+33 116	+36 117	+40 119	+44 121	+49 124	+54 128	+61 132	+68 138	+77 145	+87 154	+101 166	195	15
170	350	+10 123	+12 122	+15 121	+17 121	+20 121	+23 122	+26 123	+29 124	+33 126	+37 129	+41 132	+46 136	+52 142	+59 148	+67 156	+76 165	+87 177	+101 192	190	10
175	355	+5 125	+7 125	+10 125	+13 125	+16 126	+19 127	+22 129	+25 131	+29 134	+33 138	+38 142	+43 148	+49 155	+56 163	+64 173	+73 185	+85 200	+99 219	185	5
180	360	0 ₀ 126 ₀	+3 126	+5 127	+8 128	+11 129	+14 131	+17 ₁ 134 ₉	+20 137	+24 141	+28 146	+33 151	+38 158	+44 ₄ 167 ₁₃	+51 177	+59 189	+68 203	+80 222	+94 ₉ 245 ₂₃	180	0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + \Delta s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined.

		$\delta = -24^\circ$																			
τ	$p_{+\tau}$	O ^h						I ^h						II ^h						τ	$p_{-\tau}$
		0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m		
	Δp																				
0	0	0 ₀	+3	+6	+9	+12	+15	+18 ₁	+22	+26	+31	+36	+42	+48 ₁	+55	+64	+75	+88	+104 ₁₁	0	0
0	180	134 ₉	134	135	136	138	140	143 ₁₀	147	152	157	163	171	180 ₁₄	191	205	222	243	270 ₂₇	360	180
5	185	-5	-2	0	+3	+6	+9	+13	+17	+21	+25	+30	+35	+41	+48	+56	+67	+80	+96	355	175
		134	135	136	138	140	143	147	152	157	163	171	180	191	205	221	240	265	296		
10	190	-10	-7	-5	-2	+1	+4	+7	+10	+14	+18	+23	+28	+34	+40	+48	+58	+70	+85	350	170
		131	133	135	138	141	145	150	155	161	168	177	188	201	216	234	256	284	319		
15	195	-15	-12	-10	-8	-5	-2	+1	+4	+7	+11	+15	+20	+25	+31	+39	+48	+58	+71	345	165
		127	129	132	135	139	144	150	156	163	171	181	193	207	224	244	269	300	339		
20	200	-19	-17	-15	-13	-10	-8	-5	-2	+1	+4	+7	+11	+16	+22	+28	+36	+45	+57	340	160
		122	125	128	132	136	142	148	155	163	172	183	196	211	229	251	279	312	355		
25	205	-23	-21	-19	-17	-15	-13	-11	-8	-6	-3	0	+3	+7	+12	+17	+23	+31	+41	335	155
		115	119	123	127	132	138	144	152	160	170	182	196	212	231	255	284	320	365		
30	210	-26 ₂	-25	-23	-21	-19	-18	-16 ₁	-14	-12	-10	-8	-5	-2 ₀	+2	+6	+11	+17	+24 ₂	330	150
		108 ₇	112	116	121	126	132	139 ₁₀	147	156	167	179	193	210 ₁₇	231	256	286	324	371 ₃₇		
35	215	-29	-28	-26	-25	-23	-22	-21	-19	-18	-16	-15	-13	-11	-8	-5	-2	+2	+7	325	145
		100	104	108	113	119	125	132	141	150	161	174	189	206	227	253	284	323	372		
40	220	-30	-29	-28	-27	-26	-25	-25	-24	-23	-22	-21	-20	-19	-18	-16	-14	-12	-10	320	140
		91	95	99	104	110	117	124	133	142	153	166	181	199	220	246	278	317	368		
45	225	-30	-30	-29	-29	-29	-28	-28	-28	-28	-27	-27	-27	-27	-27	-26	-26	-26	-26	315	135
		82	86	90	95	101	108	115	124	133	144	157	172	190	211	237	268	307	358		
50	230	-30	-30	-30	-30	-30	-30	-30	-30	-31	-31	-32	-32	-33	-34	-35	-37	-39	-41	310	130
		72	76	81	86	92	98	105	114	123	134	146	161	178	199	224	255	294	343		
55	235	-29	-29	-29	-30	-30	-30	-31	-32	-33	-34	-35	-36	-38	-40	-43	-46	-50	-55	305	125
		63	67	72	77	82	88	95	103	112	122	134	148	165	185	209	239	277	324		
60	240	-26 ₂	-27	-28	-29	-29	-30	-31 ₃	-32	-34	-35	-37	-39	-42 ₄	-45	-49	-53	-59	-66 ₈	300	120
		55 ₂	58	62	67	72	78	85 ₅	92	100	110	121	134	150 ₁₁	170	193	221	256	302 ₂₉		
65	245	-23	-24	-25	-26	-28	-29	-30	-32	-34	-36	-38	-41	-44	-48	-53	-59	-66	-75	295	115
		47	50	54	58	63	68	74	81	88	97	108	120	135	153	174	200	234	277		
70	250	-19	-21	-22	-23	-25	-27	-29	-31	-33	-35	-38	-41	-45	-50	-55	-62	-70	-81	290	110
		40	43	46	50	54	59	64	70	77	85	94	105	119	135	155	179	209	248		
75	255	-15	-17	-18	-20	-22	-24	-26	-28	-30	-33	-36	-40	-44	-49	-55	-63	-72	-84	285	105
		35	37	40	43	46	50	55	60	66	73	81	91	103	117	135	157	184	218		
80	260	-10	-12	-14	-16	-18	-20	-22	-24	-26	-30	-33	-37	-42	-47	-54	-62	-72	-84	280	100
		31	33	35	37	40	43	47	51	56	62	69	78	88	100	115	134	158	188		
85	265	-5	-7	-9	-11	-13	-15	-17	-19	-22	-25	-29	-33	-38	-43	-50	-58	-69	-82	275	95
		29	30	31	33	35	37	40	43	47	52	58	65	73	84	96	112	133	159		
90	270	0 ₀	-2	-3	-5	-7	-10	-12 ₁	-14	-17	-20	-24	-28	-32 ₃	-38	-45	-53	-63	-76 ₈	270	90
		28 ₀	28	29	30	31	32	34 ₀	37	40	43	48	54	60 ₂	68	79	92	109	130 ₁₀		

Δp is expressed in thousandths of a degree and changes sign for negative hour angles.
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLE III—Continued.

To be used when Position Angle and Distance are determined. $\delta = -24^\circ$

τ $p_{+\tau}$	O ^h						I ^h						II ^h						τ $p_{-\tau}$
	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	0 ^m	10 ^m	20 ^m	30 ^m	40 ^m	50 ^m	
Δp h																			
90 270	0 ₂₈	-2 ₂₈	-3 ₂₉	-5 ₃₀	-7 ₃₁	-10 ₃₂	-12 ₃₄	-14 ₃₇	-17 ₄₀	-20 ₄₃	-24 ₄₈	-28 ₅₄	-32 ₆₀	-38 ₆₈	-45 ₇₉	-53 ₉₂	-63 ₁₀₉	-76 ₁₃₀	270 90
95 275	+5 ₂₉	+3 ₂₈	+2 ₂₈	0 ₂₈	-2 ₂₉	-4 ₂₉	-6 ₃₀	-8 ₃₂	-11 ₃₄	-14 ₃₆	-17 ₃₉	-21 ₄₄	-25 ₄₉	-31 ₅₅	-38 ₆₃	-45 ₇₃	-55 ₈₇	-67 ₁₀₄	265 85
100 280	+10 ₃₁	+9 ₃₀	+7 ₂₉	+5 ₂₉	+3 ₂₈	+2 ₂₈	0 ₂₈	-2 ₂₉	-5 ₃₀	-7 ₃₂	-10 ₃₄	-14 ₃₇	-18 ₄₀	-23 ₄₄	-29 ₅₀	-36 ₅₈	-45 ₆₈	-56 ₈₁	260 80
105 285	+15 ₃₅	+14 ₃₃	+12 ₃₂	+11 ₃₁	+9 ₃₀	+7 ₂₉	+6 ₂₈	+4 ₂₈	+2 ₂₈	0 ₂₉	-3 ₃₀	-6 ₃₁	-10 ₃₃	-14 ₃₆	-19 ₄₀	-26 ₄₅	-34 ₅₂	-44 ₆₁	255 75
110 290	+19 ₄₀	+18 ₃₈	+17 ₃₆	+16 ₃₄	+14 ₃₃	+13 ₃₁	+12 ₃₀	+10 ₂₉	+9 ₂₈	+7 ₂₈	+5 ₂₈	+2 ₂₈	-1 ₂₉	-4 ₃₁	-8 ₃₃	-14 ₃₆	-21 ₄₀	-30 ₄₅	250 70
115 295	+23 ₄₇	+22 ₄₄	+21 ₄₁	+20 ₃₉	+19 ₃₇	+18 ₃₅	+17 ₃₄	+16 ₃₂	+15 ₃₁	+14 ₃₀	+13 ₂₉	+11 ₂₈	+8 ₂₈	+6 ₂₈	+3 ₂₉	-1 ₃₀	-7 ₃₂	-14 ₃₄	245 65
120 300	+26 ₅₅	+25 ₅₁	+25 ₄₈	+24 ₄₅	+24 ₄₃	+23 ₄₁	+23 ₃₉	+22 ₃₇	+22 ₃₅	+21 ₃₃	+20 ₃₂	+19 ₃₁	+18 ₃₀	+16 ₂₉	+14 ₂₈	+11 ₂₈	+8 ₂₈	+3 ₂₉	240 60
125 305	+29 ₆₃	+28 ₅₉	+28 ₅₆	+28 ₅₃	+28 ₅₀	+28 ₄₈	+28 ₄₅	+28 ₄₃	+28 ₄₁	+27 ₃₉	+27 ₃₇	+27 ₃₆	+26 ₃₄	+26 ₃₃	+25 ₃₁	+24 ₃₀	+23 ₂₉	+21 ₂₈	235 55
130 310	+30 ₇₂	+30 ₆₈	+30 ₆₅	+30 ₆₂	+31 ₅₉	+31 ₅₆	+32 ₅₃	+32 ₅₁	+33 ₄₉	+33 ₄₇	+33 ₄₅	+34 ₄₃	+34 ₄₁	+35 ₃₉	+36 ₃₇	+36 ₃₆	+37 ₃₄	+38 ₃₂	230 50
135 315	+30 ₈₁	+31 ₇₇	+31 ₇₄	+32 ₇₁	+33 ₆₈	+34 ₆₅	+35 ₆₂	+36 ₆₀	+37 ₅₈	+38 ₅₆	+39 ₅₄	+40 ₅₂	+42 ₅₀	+44 ₄₉	+46 ₄₇	+48 ₄₆	+51 ₄₄	+54 ₄₂	225 45
140 320	+30 ₉₀	+31 ₈₆	+32 ₈₃	+33 ₈₀	+34 ₇₇	+36 ₇₅	+37 ₇₂	+38 ₇₀	+40 ₆₈	+42 ₆₆	+44 ₆₅	+46 ₆₃	+49 ₆₂	+52 ₆₁	+55 ₆₀	+59 ₅₉	+63 ₅₈	+69 ₅₇	220 40
145 325	+29 ₉₉	+30 ₉₅	+31 ₉₂	+33 ₈₉	+34 ₈₇	+36 ₈₅	+38 ₈₃	+40 ₈₁	+42 ₇₉	+44 ₇₈	+47 ₇₇	+50 ₇₆	+54 ₇₅	+58 ₇₅	+62 ₇₄	+68 ₇₄	+74 ₇₅	+82 ₇₆	215 35
150 330	+26 ₁₀₇	+28 ₁₀₄	+30 ₁₀₁	+32 ₉₉	+34 ₉₇	+36 ₉₅	+38 ₉₃	+41 ₉₂	+43 ₉₁	+46 ₉₀	+49 ₉₀	+53 ₉₀	+57 ₉₀	+62 ₉₀	+68 ₉₁	+75 ₉₃	+83 ₉₅	+94 ₉₈	210 30
155 335	+23 ₁₁₅	+25 ₁₁₂	+27 ₁₁₀	+30 ₁₀₈	+32 ₁₀₆	+34 ₁₀₅	+37 ₁₀₄	+40 ₁₀₃	+43 ₁₀₃	+46 ₁₀₃	+50 ₁₀₃	+54 ₁₀₄	+59 ₁₀₅	+65 ₁₀₇	+72 ₁₁₀	+80 ₁₁₄	+90 ₁₁₈	+102 ₁₂₃	205 25
160 340	+19 ₁₂₂	+22 ₁₁₉	+24 ₁₁₇	+27 ₁₁₆	+29 ₁₁₅	+32 ₁₁₄	+35 ₁₁₄	+38 ₁₁₄	+42 ₁₁₄	+46 ₁₁₅	+50 ₁₁₆	+55 ₁₁₈	+60 ₁₂₁	+67 ₁₂₅	+75 ₁₂₉	+84 ₁₃₅	+95 ₁₄₃	+109 ₁₅₂	200 20
165 345	+15 ₁₂₇	+18 ₁₂₅	+20 ₁₂₄	+23 ₁₂₃	+26 ₁₂₃	+29 ₁₂₃	+32 ₁₂₃	+36 ₁₂₄	+40 ₁₂₅	+44 ₁₂₇	+48 ₁₃₀	+53 ₁₃₃	+59 ₁₃₇	+66 ₁₄₃	+75 ₁₄₉	+85 ₁₅₇	+97 ₁₆₈	+112 ₁₈₂	195 15
170 350	+10 ₁₃₁	+13 ₁₃₀	+16 ₁₂₉	+19 ₁₂₉	+22 ₁₂₉	+25 ₁₃₀	+28 ₁₃₁	+32 ₁₃₃	+36 ₁₃₅	+40 ₁₃₈	+45 ₁₄₂	+51 ₁₄₇	+57 ₁₅₃	+64 ₁₆₀	+73 ₁₆₉	+84 ₁₈₀	+96 ₁₉₄	+112 ₂₁₂	190 10
175 355	+5 ₁₃₄	+8 ₁₃₃	+11 ₁₃₃	+14 ₁₃₃	+17 ₁₃₄	+20 ₁₃₆	+23 ₁₃₈	+27 ₁₄₁	+31 ₁₄₄	+36 ₁₄₈	+41 ₁₅₃	+47 ₁₆₀	+53 ₁₆₇	+60 ₁₇₆	+69 ₁₈₈	+80 ₂₀₂	+93 ₂₁₉	+109 ₂₄₁	185 5
180 360	0 ₁₃₄	+3 ₁₃₄	+6 ₁₃₅	+9 ₁₃₆	+12 ₁₃₈	+15 ₁₄₀	+18 ₁₄₃	+22 ₁₄₇	+26 ₁₅₂	+31 ₁₅₇	+36 ₁₆₃	+42 ₁₇₁	+48 ₁₈₀	+55 ₁₉₁	+64 ₂₀₅	+75 ₂₂₂	+88 ₂₄₃	+104 ₂₇₀	180 0

Δp is expressed in thousandths of a degree and changes sign for negative hour angles
 h is expressed in units of the fifth decimal and its sign is always positive.

$p_0 = p + \Delta p$
 $s_0 = s + h s$

TABLES
OF
INSTRUMENTAL CORRECTIONS
FOR THE
TWENTY-SIX-INCH EQUATORIAL.

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TABLES OF INSTRUMENTAL CORRECTIONS.

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TABLE IV—Sin λ .*To be used when differences in Right Ascension and Declination are determined by the Micrometer.*

TELESCOPE EAST OF PIER.														
τ	—VI ^h	—V ^h	—IV ^h	—III ^h	—II ^h	—I ^h	O ^h	+I ^h	+II ^h	+III ^h	+IV ^h	+V ^h	+VI ^h	
δ	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m
0														
+60							—172	—180	—186	—189	—189	—186	—181	—173
55							—144	—151	—156	—158	—158	—156	—151	—144
50							—121	—128	—132	—134	—134	—132	—128	—121
45							—103	—109	—113	—114	—114	—112	—108	—102
40							—87	—92	—96	—97	—97	—95	—91	—86
+35							—72	—77	—81	—82	—82	—80	—77	—72
+30							—59	—64	—67	—69	—69	—67	—64	—60
25							—48	—52	—55	—57	—57	—56	—53	—49
20							—37	—41	—44	—46	—46	—45	—42	—38
15		+68	+59	+49	+39	+29	+19	+10	+1	—7	—15	—21	—27	—31
10		+73	+64	+55	+45	+36	+27	+18	+9	+1	—6	—12	—17	—21
+5			+70	+61	+52	+43	+34	+25	+17	+10	+3	—3	—8	—12
0			+75	+67	+58	+50	+41	+33	+25	+18	+11	+5	0	—4
—5				+72	+64	+56	+48	+40	+32	+25	+19	+13	+8	+4
10					+71	+63	+55	+47	+40	+33	+27	+21	+16	+11
15						+70	+62	+54	+47	+40	+34	+28	+23	+18
20						+76	+69	+61	+54	+47	+41	+35	+30	+25
25						+76	+68	+61	+54	+48	+42	+37	+32	+27
—30						+83	+76	+68	+61	+54	+48	+43	+38	+34
TELESCOPE WEST OF PIER.														
τ	—VI ^h	—V ^h	—IV ^h	—III ^h	—II ^h	—I ^h	O ^h	+I ^h	+II ^h	+III ^h	+IV ^h	+V ^h	+VI ^h	
δ	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m
0														
+60	+92	+81	+69	+56	+43	+29	+15	+1	—13	—26	—38	—49	—60	
55	+70	+61	+51	+40	+29	+17	+5	—6	—18	—29	—40	—50	—60	
50	+54	+46	+37	+27	+17	+7	—4	—14	—24	—34	—44	—53	—61	
45	+40	+32	+25	+16	+7	—2	—12	—21	—31	—39	—48	—56	—63	
40	+28	+21	+14	+6	+2	—11	—20	—29	—37	—45	—53	—60	—67	
+35	+18	+12	+5	—3	—11	—19	—27	—36	—44	—52	—59	—66	—72	
+30	+9	+3	—4	—11	—19	—27	—35	—43	—51	—58	—65	—72	—78	
25	+1	—5	—12	—19	—27	—35	—42	—50	—58	—65	—72	—78	—84	
20	—6	—13	—20	—27	—34	—42	—50	—58	—65	—72	—79	—85	—90	
15		—20	—27	—34	—41	—49	—57	—65	—72	—79	—86	—92	—97	
10		—26	—33	—40	—48	—56	—64	—72	—80	—87	—93	—99	—104	—108
+5		—39	—47	—55	—64	—72	—80	—87	—94	—101	—107	—112	—116	—119
0		—45	—53	—62	—70	—79	—87	—95	—102	—109	—115	—120	—124	—127
—5			—59	—69	—78	—87	—95	—103	—110	—117	—123	—128	—132	—135
10				—75	—84	—94	—103	—111	—119	—126	—132	—137	—141	—144
15					—92	—102	—111	—120	—128	—135	—141	—147	—151	—154
20					—100	—110	—120	—129	—137	—144	—151	—157	—161	—164
25					—119	—129	—138	—147	—155	—162	—168	—172	—175	—176
—30					—128	—139	—149	—158	—167	—174	—180	—184	—187	—188
TELESCOPE ABOVE PIER.														
τ			—IX ^h	—VIII ^h	—VII ^h	—VI ^h		+VI ^h	+VII ^h	+VIII ^h	+IX ^h			
δ			30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	
0														
+60			+125	+125	+124	+121	+116	+109	+101	+92	—100	—80	—60	—39
55					+97	+94	+90	+85	+78	+70	—79	—61	—43	—24
50						+74	+71	+66	+61	+54	—62	—46	—30	—13
45							+56	+51	+46	+40	—48	—34	—19	—4
40								+39	+34	+28	—36	—23	—9	
35									+24	+18	—26	—14		
+30									+14	+9	—17	—6		
The tabular quantities are expressed in units of the fifth decimal.														
												$\Delta a_0 = \Delta a + \Delta \delta \sin \lambda$ $\Delta \delta_0 = \Delta \delta - \Delta a \sin \lambda$		

This table is based upon the adopted values of the instrumental constants found on page Fr8.

TABLE V—L.

To be used when differences in Right Ascension are determined by Transits.

TELESCOPE EAST OF PIER.																											
δ	τ	$-VI^h$		$-V^h$		$-IV^h$		$-III^h$		$-II^h$		$-I^h$		O^h			$+I^h$		$+II^h$		$+III^h$		$+IV^h$		$+V^h$		$+VI^h$
		0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m
0																											
+60														-23	-24	-25	-25	-25	-25	-24	-23	-22	-20	-18	-16	-13	
55														-17	-18	-18	-18	-18	-18	-17	-16	-15	-13	-11	-9	-6	
50														-13	-13	-14	-14	-14	-14	-13	-13	-12	-11	-9	-8	-4	
45														-10	-10	-11	-11	-11	-11	-10	-10	-9	-8	-7	-6	-4	
40														-8	-8	-8	-8	-8	-8	-8	-8	-7	-6	-5	-4	-3	
+35														-6	-6	-7	-7	-7	-7	-6	-5	-5	-4	-3	-2	-1	
+30														-5	-5	-5	-5	-5	-5	-5	-5	-4	-4	-3	-2	-1	
25														-4	-4	-4	-4	-4	-4	-4	-4	-3	-3	-2	-1	-1	0
20														-3	-3	-3	-3	-3	-3	-3	-3	-2	-2	-1	-1	0	0
15														-2	-2	-2	-2	-2	-2	-2	-2	-2	-1	-1	0	0	0
10														-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0
+5														0	0	0	0	0	0	0	0	0	0	0	0	0	0
0														0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5														0	0	0	0	0	0	0	0	0	0	0	0	0	0
10														0	0	0	0	0	0	0	0	0	0	0	0	0	0
15														0	0	0	0	0	0	0	0	0	0	0	0	0	0
20														0	0	0	0	0	0	0	0	0	0	0	0	0	0
25														0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30														0	0	0	0	0	0	0	0	0	0	0	0	0	0

TELESCOPE WEST OF PIER.																											
δ	τ	$-VI^h$		$-V^h$		$-IV^h$		$-III^h$		$-II^h$		$-I^h$		O^h			$+I^h$		$+II^h$		$+III^h$		$+IV^h$		$+V^h$		$+VI^h$
		0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m
0																											
+60		+12	+11	+9	+7	+6	+4	+2	0	-2	-3	-5	-7	-8													
55		+8	+7	+6	+5	+3	+2	+1	-1	-2	-3	-5	-6	-7													
50		+6	+5	+4	+3	+2	+1	0	-1	-2	-4	-5	-6	-6													
45		+4	+3	+2	+2	+1	0	-1	-2	-3	-4	-5	-5	-6													
40		+2	+2	+1	+1	0	-1	-2	-3	-3	-4	-5	-5	-6													
+35		+1	+1	0	0	-1	-2	-2	-3	-4	-4	-5	-5	-6													
+30		+1	0	0	-1	-1	-2	-3	-3	-4	-4	-5	-6	-6													
25		0	-1	-1	-2	-2	-3	-3	-4	-4	-5	-5	-6	-6													
20		-1	-1	-2	-2	-3	-4	-4	-5	-5	-6	-6	-7	-7													
15		-2	-2	-3	-3	-4	-4	-5	-5	-6	-6	-7	-7	-8													
10		-3	-3	-4	-4	-5	-5	-6	-6	-7	-7	-8	-8	-9													
+5		-3	-4	-4	-5	-5	-6	-6	-7	-7	-8	-8	-9	-9													
0		-3	-4	-4	-5	-5	-6	-6	-7	-7	-8	-8	-9	-9													
-5		-4	-5	-5	-6	-6	-7	-7	-8	-8	-9	-9	-10	-10													
10		-5	-6	-6	-7	-7	-8	-8	-9	-9	-10	-10	-11	-11													
15		-6	-7	-7	-8	-8	-9	-9	-10	-10	-11	-11	-12	-12													
20		-7	-8	-8	-9	-9	-10	-10	-11	-11	-12	-12	-13	-13													
25		-8	-9	-9	-10	-10	-11	-11	-12	-12	-13	-13	-14	-14													
+30		-9	-10	-10	-11	-11	-12	-12	-13	-13	-14	-14	-15	-15													

TELESCOPE ABOVE PIER.																											
δ	τ	$-IX^h$		$-VIII^h$		$-VII^h$		$-VI^h$		$+VI^h$		$+VII^h$		$+VIII^h$		$+IX^h$											
		30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m	0^m	30^m
0																											
+60				+17	+17	+16	+16	+15	+15	+13	+12	-13	-11	-8	-5	-2	+1	+3	+6								
55				+11	+11	+10	+10	+9	+9	+7	+8	-9	-7	-5	-3	-1	+2										
50						+8		+7	+7	+6	+6	-6	-5	-3	-1	0											
45						+5		+5	+5	+4	+4	-4	-3	-2	-1												
40						+3		+3	+3	+2	+2	-3	-2	-1													
35						+2		+2	+2	+1	+1	-2	-1														
+30						+1		+1	+1			-1	0														

The tabular quantities are expressed in units of the fifth decimal.

$\Delta\alpha^s_0 = \Delta\alpha^s + L\Delta\delta''$.

This table is based upon the adopted values of the instrumental constants found on page F18.

TABLE VI—λ.

To be used when Position Angle and Distance are determined.

TELESCOPE EAST OF PIER.																											
τ	-VI ^h		-V ^h		-IV ^h		-III ^h		-II ^h		-I ^h		O ^h			+I ^h		+II ^h		+III ^h		+IV ^h		+V ^h		+VI ^h	
	δ	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	
0																											
+25														-27	-30	-32	-33	-33	-32	-30	-28	-25	-21	-16	-11	-5	
20														-21	-23	-25	-26	-26	-24	-22	-19	-16	-11	-6	-1		
15			+39	+34	+28	+22	+17	+11	+6	+1	-4	-8	-12	-15	-17	-19	-20	-20	-19	-17	-14	-11	-7	-2			
10			+42	+37	+31	+26	+21	+15	+10	+5	+1	-3	-7	-10	-12	-14	-15	-15	-15	-14	-12	-9	-6	-3	+1		
+5				+40	+35	+30	+25	+19	+14	+10	+6	+2	-2	-5	-7	-9	-10	-10	-10	-9	-7	-5	-2	+1			
0				+43	+38	+33	+28	+23	+19	+14	+10	+6	+3	0	-2	-4	-5	-6	-6	-5	-3	-1	+1	+4			
-5					+41	+37	+32	+27	+23	+18	+14	+11	+8	+5	+2	0	-1	-1	-2	-1	0	+2	+4				
10						+41	+36	+31	+27	+23	+19	+15	+12	+9	+6	+5	+3	+3	+2	+3	+4	+6					
15							+40	+36	+31	+27	+23	+19	+16	+13	+10	+9	+7	+6	+6	+7	+8						
20							+44	+39	+35	+31	+27	+23	+20	+17	+14	+12	+11	+10	+10	+10	+11						
-25								+43	+39	+35	+31	+27	+24	+21	+18	+16	+14	+13	+13	+13							
TELESCOPE WEST OF PIER.																											
τ	-VI ^h		-V ^h		-IV ^h		-III ^h		-II ^h		-I ^h		O ^h			+I ^h		+II ^h		+III ^h		+IV ^h		+V ^h		+VI ^h	
	δ	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	30 ^m	0 ^m	
0																											
+25	0	-3	-7	-11	-16	-20	-24	-29	-33	-37	-41	-45	-48														
20	-4	-7	-11	-15	-20	-24	-29	-33	-37	-41	-45	-49	-52														
15		-11	-15	-19	-24	-28	-33	-37	-41	-45	-49	-53	-56	-58	-60	-62	-63	-63	-63	-62	-60	-58	-56	-53			
10		-15	-19	-23	-28	-32	-37	-41	-46	-50	-55	-57	-60	-62	-64	-65	-66	-66	-66	-65	-63	-61	-58	-55			
+5			-22	-27	-32	-36	-41	-46	-50	-54	-58	-61	-64	-66	-68	-69	-70	-70	-70	-68	-66	-64	-61				
0			-26	-31	-36	-40	-45	-50	-54	-58	-62	-66	-69	-71	-73	-74	-74	-74	-74	-72	-70	-68	-64				
-5				-34	-39	-44	-49	-54	-59	-63	-67	-71	-74	-76	-78	-79	-79	-79	-78	-76	-74	-71					
10					-43	-48	-54	-59	-64	-68	-72	-76	-79	-81	-83	-84	-83	-82	-80	-78							
15						-53	-58	-64	-69	-73	-77	-81	-84	-86	-88	-89	-89	-88	-87	-85							
20						-57	-63	-69	-74	-79	-83	-87	-90	-92	-93	-94	-95	-94	-92	-90							
-25							-68	-74	-79	-84	-89	-93	-96	-98	-99	-100	-101	-100	-98								
The tabular quantities are expressed in thousandths of a degree.																											
$p_0 = p + \lambda + (90^\circ - p_m)$.																											

This table is based upon the adopted values of the instrumental constants found on page F 18.