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CRPL Exponential Reference Atmosphere



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CRPL Exponential Reference Atmosphere

B. R. Bean and G. D. Thayer



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CRPL Exponential Reference Atmosphere

B. R. Bean and G. D. Thayer

The background and development of an exponential model of atmospheric radio refractivity, the CRPL Exponential Reference Atmosphere, is outlined. A set of ray tracings for the model is presented in the form of tables of refraction variables for the complete range of observed values of surface refractive index. A detailed analysis of the accuracy of the ray tracing and tabulation methods is made for these tables. The variables are presented as numbers between 1 and 10 multiplied by the appropriate power of 10, thus maintaining a maximum number of significant figures. The tables may be used for the solution of practical refraction problems involving elevation angle errors, range errors, and similar quantities.

1. Introduction

Some exponential models of atmospheric radio refractivity have been introduced recently to replace the standard 4/3 earth treatment for applications involving long-range transmission paths, forward scatter predictions, or radar tracking at high altitudes [1, 2, 3, 4, 5].¹ One of these models, developed at the Central Radio Propagation Laboratory and called the "CRPL Exponential Reference Atmosphere," has been

adopted for use by the National Bureau of Standards in predictions of refraction phenomena.

In this monograph, the background of the exponential reference atmosphere will be outlined and a set of radio ray tracings presented. These ray tracings may be used for the solution of many problems involving refraction by means of the exponential reference atmosphere.

2. Background

In dealing with refraction problems it is convenient to use the radio refractivity defined by:

$$N \equiv (n-1) \times 10^6,$$

rather than the radio refractive index n . The basic predictor of refraction effects used in the exponential reference atmosphere is the surface value of refractivity at the transmitting point, N_s . The reasons for this become clear upon examination of the normal, or average, N structure of the atmosphere. It is found that the gradient of N which, with the usual assumption of horizontal homogeneity, is always with respect to height, is, on the average, a function of the surface value, N_s . This is illustrated in figure 1 where values of ΔN , the difference between N_s and the value of N at 1 km above the surface, are plotted against N_s . The data represent 888 six-yr monthly means from 45 U.S. weather stations representing many climatically and geographically diverse locations. As shown, ΔN is approximately an exponential function of N_s , the relationship being expressed by:

$$-\overline{\Delta N} = 7.32 [\exp \{0.005577 \bar{N}_s\}], \quad (1)$$

which is a least squares fit of $\ln(-\overline{\Delta N})$ to \bar{N}_s .

It has also been found that the average decay of N with height is very nearly exponential. This can be seen from inspection of figure 2 where averages and extremes of N structure are shown for medium high elevations on a semi-logarithmic plot.

The exponential reference atmosphere was defined simply as that family of N profiles having a simple exponential decay with height and passing through the values N_s at the surface and $N_s + \Delta N$ at a height of 1 km above the surface where ΔN is found from eq (1). $N(h)$ is then given by:

$$N = N_s \exp \{-c_e(h - h_s)\}, \quad (2)$$

where h_s is the surface elevation, h is the altitude above mean sea level, and c_e is the decay constant given by:

$$c_e = \ln \frac{N_s}{N_s - \Delta N}. \quad (3)$$

Table 1 shows values of N_s , ΔN , c_e , and h_s for those profiles which were used in making up the tables of refraction variables given in appendix B (a more complete table of this sort may be found in appendix A). The values of h_s

¹ Figures in brackets indicate the literature references at the end of this monograph.

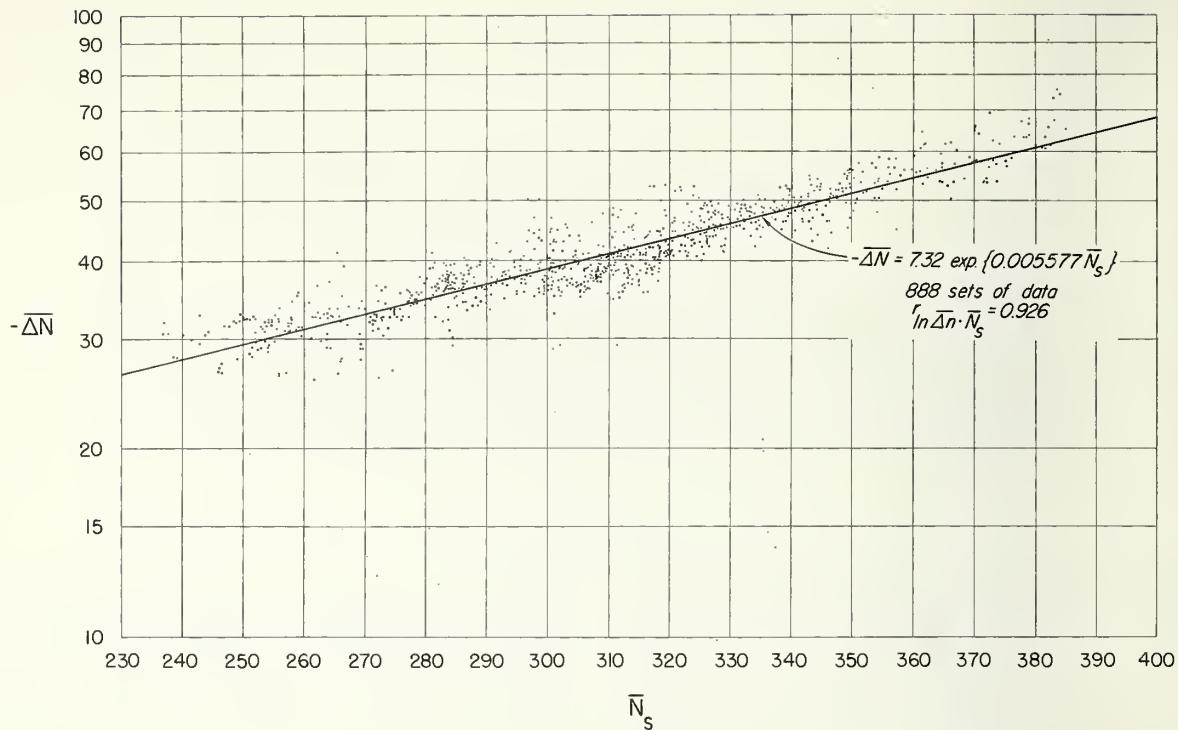


FIGURE 1. Six-year mean ΔN as a function of 8-year mean N_s at 0300 and 1500 G.m.t. for 45 U.S. weather stations.

were chosen to reflect the average elevation dependence of N_s .

It is found that several important advantages accrue from this particular choice of model, among which are:

(1) The N profiles involved prove to be a fairly good representation of average N -structure over

the first 3 km above the surface, a critical range for refraction effects at low angles to the horizon.

(2) The resulting relationship between the N -gradient near the surface and N_s is found to be very close to the observed average relationship (for 5-yr mean profiles), being within ± 3 percent over the normally encountered range of N_s (from 300 to 365 for sea level, temperate zone stations). This agreement is a requirement for the successful prediction of average refraction effects at elevation angles close to the horizontal.

(3) The resulting profiles and their associated gradients are continuous functions of height and are in reasonably good agreement with the actual

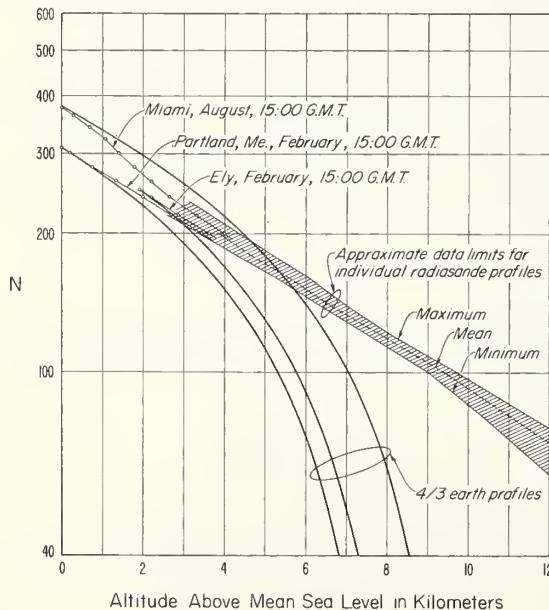


FIGURE 2. Means and extremes of radio-refractivity height structure, and a comparison with extreme $4/3$ earth profiles.

TABLE 1. Exponential reference atmosphere profiles contained in appendix B

N_s	h_s	ΔN	c_s	Effective earth's radius factor, * k
200.0	10,000	-22.3318	0.118400	1.17779
252.9294	5,000	-30.0000	.126255	1.25551
313.0	700	-41.9388	.143859	1.40229
344.5244	0	-50.0000	.156805	1.52479
377.2161	0	-60.0000	.173233	1.71320
404.8565	0	-70.0000	.189829	1.95921
450.0	0	-90.0406	.223256	2.77761
289.0	0	-36.684830	0.1337471	1.3332410

* $k \equiv \frac{1}{1 + \frac{\tau_o}{n_s} \left(\frac{dn}{dh} \right)_{h_s}}$ (note that $\frac{dn}{dh} < 0$). $\tau_o = a + h_s$, where a is taken as 6373.0150 km (3,960 miles).

observed refractivity at all heights at frequencies sufficiently high so that the refractivity is not influenced by the ionization in the ionosphere.

An illustration of the effectiveness of the exponential reference atmosphere in predicting refraction effects is given by figure 3, where the values of angular ray-bending are plotted against height for a ray starting at zero elevation angle. The agreement between the average bending for a large number of profiles and the average of the values predicted by the exponential reference atmosphere is seen to be quite good. Note however that the bending versus height predicted by the 4/3 earth model is markedly in disagreement with the observed for most heights.

The preceding background material is intended only as an outline of the development of the exponential reference atmosphere. The remainder of this monograph will be devoted to an analysis of ray tracing theory and its application to the expo-

nential reference atmosphere with particular emphasis on the preparation of the tables contained in appendix B.

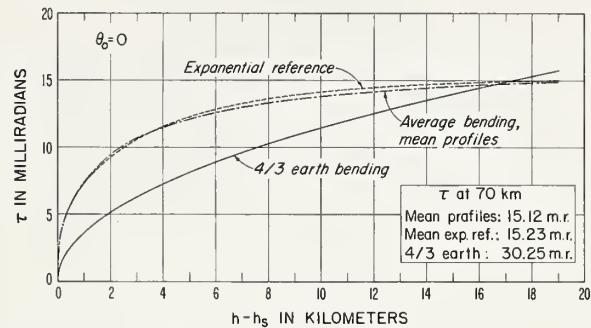


FIGURE 3. Average radio-ray bending for 22 5-yr. mean radio-refractivity profiles as a function of height, compared with the average of the values predicted by the exponential reference atmosphere for each profile and the values predicted by the 4/3 earth treatment.

3. Basic Theory

The geometry of the radio-ray-refraction problem is illustrated in figure 4, and the variables used in the following development are defined in the same figure. The path of the radio ray is the curved line R , which will also be used to represent the length of the ray path from the source at r_0 to the point at r . If the transmitter is a radar set, the observed elevation angle to the target at r would be θ_0 , the true elevation angle would be β ; thus the elevation error angle, ϵ , is given by:

$$\epsilon \equiv \theta_0 - \beta. \quad (4)$$

The angle τ is a basic measure of refraction effects, and will be called the bending since it represents the angle through which the ray has been bent from its original direction due to refraction. It can be seen from inspection of figure 4 that:

$$\theta - \theta_0 = \phi - \tau, \quad (5)$$

from purely geometric considerations.

If it is assumed that the refractive index is spherically stratified with respect to the earth, then Snell's law (for the ray path) may be expressed as:

$$nr \cos \theta = n_0 r_0 \cos \theta_0 = \text{constant}, \quad (6)$$

or

$$(1 + N \times 10^{-6})(a + h) \cos \theta \\ = (1 + N_s \times 10^{-6})(a + h_s) \cos \theta_0, \quad (7)$$

where the radial distance from the center of the earth, r , equals $a + h$. The zero or s subscripts in (7) refer to the initial values at the earth's surface. Equation (7) may be used to calculate the local elevation angle, θ , at any point along the

ray and thus affords a complete description of the ray path. If:

$$n_2 r_2 \cos \theta_2 = n_1 r_1 \cos \theta_1, \quad \text{and}$$

$$n_2 = n_1 + \Delta n,$$

$$r_2 = r_1 + \Delta r,$$

and

$$\theta_2 = \theta_1 + \Delta \theta,$$

where Δn , Δr , and $\Delta \theta$ are infinitesimals, then

$$n_1 r_1 \cos \theta_1 = (n_1 + \Delta n)(r_1 + \Delta r) \cos(\theta_1 + \Delta \theta),$$

and in the limits as Δr approaches zero this becomes:

$$n_1 r_1 \cos \theta_1 = (n_1 + dn)(r_1 + dr)(\cos \theta_1 - d\theta \sin \theta_1). \quad (8)$$

If (8) is expanded and products of differentials are omitted, then one obtains the differential equation:

$$\tan \theta d\theta = \frac{dn}{n} + \frac{dr}{r},$$

$$d\theta = \frac{dn}{n} \cot \theta + \frac{dr}{r} \cot \theta.$$

Noting that $dr \cot \theta / r = rd\phi / r = d\phi$, and, from geometry, $d\theta = d\phi - d\tau$, one obtains the classic expression for the bending of a radio ray [6, 7]:

$$d\tau = -\frac{dn}{n} \cot \theta,$$

or

$$\tau_{[1, 2]} = - \int_{n_1}^{n_2} \frac{dn}{n} \cot \theta. \quad (9)$$

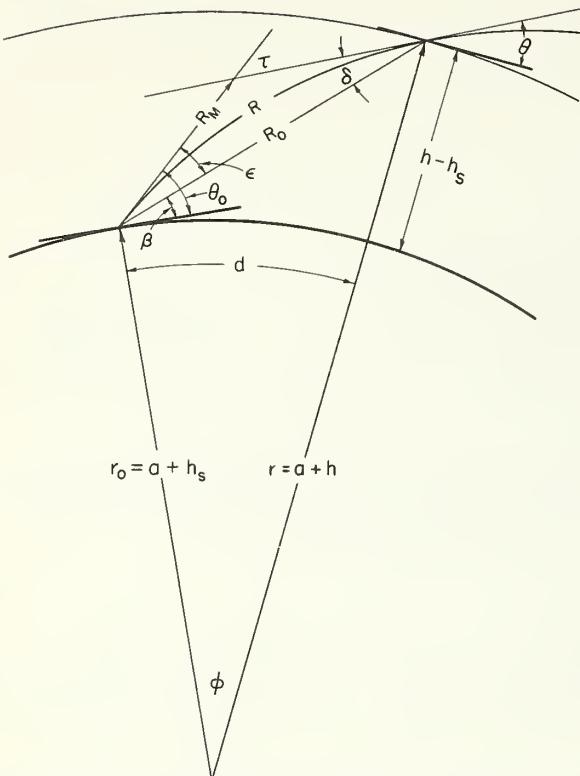


FIGURE 4. The geometry of the radio-ray refraction problem.

Note that (9) defines downward bending as a positive quantity.

If the value of τ has been obtained for some particular point (r, n) then the angle ϵ may be found by the following scheme:

$$nr \cos \theta = n_0 r_0 \cos \theta_0$$

from (6), and:

$$r \cos (\theta + \tau - \epsilon) = r_0 \cos (\theta_0 - \epsilon).$$

(This is the equation of a straight line along the slant range, R_0 .) Combining these two equations, employing sum and difference trigonometric formulae, and solving for ϵ will yield:

$$\epsilon = \text{Arc tan} \left\{ \frac{\cos \tau - \sin \tau \tan \theta - n/n_s}{\frac{n}{n_s} \tan \theta_0 - \sin \tau - \cos \tau \tan \theta} \right\}. \quad (10)$$

A similar expression for the angle δ may be derived:

$$\delta = \text{Arc tan} \left\{ \frac{\frac{n_s}{n} - \cos \tau - \sin \tau \tan \theta_0}{\sin \tau - \cos \tau \tan \theta_0 + \frac{n_s}{n} \tan \theta} \right\}. \quad (11)$$

The distance along the earth's surface from r_0 to r is found by:

$$d = r_0 \phi = r_0 (\theta - \theta_0 + \tau). \quad (12)$$

The true distance from r_0 to r , called the slant range, R_0 , is found from the law of sines or cosines:

$$R_0 = \frac{r \sin \phi}{\cos \beta} \sqrt{r_0^2 + r^2 - 2r_1 r_2 \cos \phi}. \quad (13)$$

The range along the ray path, called the geometric range, R , is found by integrating over the differential path lengths:

$$R = \int_0^R dR = \int_{r_0}^r \frac{dr}{\sin \theta}, \quad (14)$$

while the effective or electrical (actually radio) range, R_e , is found by:

$$R_e = \int_0^R ndR = \int_{r_0}^r \frac{n dr}{\sin \theta}. \quad (15)$$

The radio range error, ΔR_e , and the geometric path length difference, ΔR , are defined as:

$$\Delta R_e \equiv R_e - R_0, \quad (16)$$

and:

$$\Delta R \equiv R - R_0. \quad (17)$$

It should be remembered that the above equations are subject to the two usual restrictions of ray tracing:

- (1) The refractive index does not change appreciably in a wavelength.
- (2) The fractional change in the spacing between neighboring rays (initially parallel) must be small in a wavelength.

Condition (1) will not be violated by the exponential reference atmospheres since there are no discontinuities in dn/dr .² Condition (2) should be satisfied if:

$$\frac{\Delta N}{N_s} < 0.002 f_{kc},$$

which would restrict the ray tracings for the exponential reference atmosphere to frequencies over about 110 kc (for $N_s=450$, for $N_s=200$ the lower limit would be about 55 kc).

² This assumes also that $\left| \frac{dn}{dr} \right| < \frac{1}{r_0}$, and $\theta_0 \geq 0$.

4. Numerical Ray Tracing

Because of the great amount of calculation necessary to obtain a set of ray tracings for the reference atmosphere it was advantageous to resort to digital computing machinery. A complex ray-tracing program had been written for the IBM 650, utilizing the floating point mode (8 digits plus exponent), which was designed to handle arbitrary refractive index profiles having up to 100 layers and it was decided to analyze the exponential reference atmosphere with this program. This section will be devoted to an analysis of the ray tracing techniques employed in the machine program.

The utilization of digital computer techniques for this type of ray tracing necessitates certain changes and alterations in the equations of refraction outlined in the previous section.

To begin with, the basic accuracy of the ray tracing depends upon the accuracy with which the local elevation angles can be calculated using Snell's law. In order to determine an angle in the neighborhood of 1 milliradian (mr) to an accuracy of 8 significant figures from the cosine of that angle, it is necessary to know the value of the cosine to 14 figures ($\cos x = 0.99999999999999$, i.e.: the 6 nines are nonsignificant) or to 1 part in 10^{-14} .

Rather than employ the relatively slow double-precision techniques required for the machine evaluation of eq (6) an alternative formulation of Snell's law was obtained by writing:

$$1 - \cos \theta = 1 - \frac{n_0 r_0}{nr} \cos \theta_0,$$

and taking advantage of the fact that $2 \sin^2 \theta/2 = 1 - \cos \theta$, the following equation was derived:

$$\theta = 2 \operatorname{Arc sin} \left\{ \frac{r_0}{2r} \left[2 \sin^2 \frac{\theta_0}{2} + \frac{r - r_0}{r_0} \right] \right\}^{1/2} \times \frac{(N_s - N)}{n} \times 10^{-6} \cos \theta_0. \quad (18)$$

This equation is exact, and if each of the variables employed is correct to 8 figures, then θ will have an error no greater than 5 parts in the eighth figure. Since in performing ray tracings at initial elevation angles from 0 to 900 mr the value of theta will never be as large as 1 radian, the maximum error in calculating θ by this method should be 5×10^{-8} radians, or in general, not more than about 10^{-5} percent of the elevation angle.

With an accurate method of calculating the local elevation angles at various points along the ray path, the primary remaining problem is to compute accurately the total bending of the ray to each selected point. For this purpose a profile of N versus height is entered into the machine. The local elevation angle for each of the profile points may be calculated by means of eq (18), and if it is assumed that

$$\frac{dN}{dh} = \text{constant} \quad (19)$$

for each layer defined by succeeding pairs of points of the N profile, it can be shown that:

$$\Delta \tau_{[1,2]} = \frac{(N_1 - N_2)}{\bar{n}_{[1,2]}} \times 10^{-6} \cot \bar{\theta}_{[1,2]} \quad (20)$$

where:

$$\bar{\theta}_{[1,2]} = \frac{\theta_1 + \theta_2}{2},$$

and the only approximation is made by letting:

$$\int_1^2 \frac{dn}{n} \cot \theta = \frac{2}{n_1 + n_2} \int_1^2 dn \cot \theta = \frac{1}{\bar{n}_{[1,2]}} \int_1^2 dn \cot \theta.$$

Since $n_1 - n_2$ never exceeds about 80×10^{-6} between layer heights in the profiles, the maximum error entailed by this approximation cannot be very large (it is actually less than $10^{-4}\%$ of $\Delta\tau$ in the worst case).

It is evident from this method that τ is essentially the weighted summation of the profile N gradients, where the $\cot \bar{\theta}_i$ are the weighting factors. It is important to note that, since for small

$\theta \cot \theta \doteq \frac{1}{\theta}$, the weighting factors are very large

for the first few layers if $\theta_0 \doteq 0$. It is thus expected that refraction effects at very-low elevation angles would be extremely sensitive to the initial gradient of N .

The integral for τ was thus computed as the sum of $\Delta\tau$ for each layer:

$$\tau = \sum_{i=1}^m \Delta \tau_i, \quad (21)$$

where the only error of any magnitude is that made by assuming $dn/dh = \text{constant}$ for each layer. In order to minimize this error it is necessary to restrict the thicknesses of each layer of the profile such that: $\Delta\tau_i \leq \text{constant}$, where the constant is some arbitrary angular amount. For the profiles presented in this paper the layer thicknesses were chosen such that $\Delta\tau$ was always less than 2 mr for the first increment, and less than 3 mr for all succeeding increments.

The approximate size of $\Delta\tau_i$ was found from the relation $\Delta\tau_i = \Delta N_i / \theta_A$ where θ_A is the approximate value of $\bar{\theta}_i$. These were calculated for $\theta_0 = 0$, in which case $\theta_A = \sqrt{h_i} / \sqrt{kr_0/2}$ where k is the effective earth's radius factor for the surface gradient and \bar{h} is the mean height of the layer for which $\Delta\tau_i$ is to be calculated.

Thus:

$$\frac{\Delta N_i}{\sqrt{h_i}} \sqrt{kr_0/2} < \text{constant}.$$

It is thus possible to represent the given profile adequately with about 25 or less layers of constant N -gradient. It is also possible to calculate bending using the approximation: $n=\text{constant}$ for each layer. However it has been found that in order to insure sufficient accuracy about 1,000 layers must be used to approximate the profile with this method [8].

The calculation of the distance is straight forward:

$$d_i = r_0 (\theta_i - \theta_0 + \tau_i) \quad (22)$$

where i refers to the value of each variable at the top of the i th layer.

$$\delta = \text{Arc tan} \left\{ \frac{\frac{(N_s - N)}{n} \times 10^{-6} + [1 - \cos \tau] - \sin \tau \tan \theta_0}{\sin \tau - \cos \tau \tan \theta_0 + \frac{n_s}{n} \tan \theta} \right\} \quad (24)$$

for accuracy in calculation.

The slant range is calculated with the law of cosines formulation (13), reduced to:

$$R_0 = \sqrt{(r - r_0)^2 + 2[1 - \cos \phi]} \quad (25)$$

again for accuracy of calculation.

The geometric path length along the ray is calculated by the summation of the incremental path length through each layer (which will be denoted as Δs to avoid confusion with the range error, ΔR):

$$R = \sum_{i=1}^m \Delta s_i, \quad (26)$$

which in turn is calculated by a law of cosines formulation similar to eq (25):

$$\Delta s_i = \sqrt{(r_i - r_{i-1})^2 + 2[1 - \cos(\phi_i - \phi_{i-1})]}. \quad (27)$$

Since the ray path through each layer is very nearly a circular arc, the maximum error in computing Δs_i from (27) (assuming $\Delta \tau$ is exact) is:

$$\begin{aligned} \text{error } (\Delta s_i) &\doteq \left[1 - \frac{2 \sin \left(\frac{\Delta \tau_i}{2} \right)}{\Delta \tau_i} \right] \times 100\% \\ &\doteq -\frac{\Delta \tau_i^2}{24} \times 100\% \text{ (to 7 sig. fig.)}, \end{aligned}$$

and since, as stated earlier, $\Delta \tau_i$ is never as large as 0.003 radians, $\text{error } (\Delta s_i) < 0.0000375\%$, and hence: $\text{error } (R) < 0.00039\% \doteq 2.5 \text{ m maximum}$ since for the "worst case" i.e.: $N_s = 450$, (the errors discussed in this and following sections are generally a maximum for the profile with the largest N gradient, in the case of the exponential reference atmosphere, the $N_s = 450$ profile), $\theta_0 = 0$, total $\tau = 31.5 \text{ mr}$, there would be about 10

Calculations of the elevation error angle are for convenience made to depend on calculations of the angle δ :

$$\epsilon + \tau - \delta, \quad (23)$$

since δ is never larger than $1/2 \tau$ and is thus more easily calculated than ϵ . (Over the first few increments of height the ray path is approximately a circular arc, and thus $\epsilon \doteq \delta \doteq 1/2 \tau$, however as the range increases without limit the elevation angles formed by the ray path and the slant range "path" both approach $\pi/2$ and thus $\delta \rightarrow 0$. This, of course, implies that $\lim_{R_0 \rightarrow \infty} \epsilon = \lim_{h \rightarrow \infty} \epsilon = \tau$ since $\tau = \epsilon + \delta$.) Equation (11) for δ is modified to:

increments of 3 mr each (if calculated with the minimum number of layers), and $R_0 \doteq 650 \text{ km}$ when $\tau = 31.4 \text{ mr}$, essentially the total amount of bending. Actually there are some 30 layers calculated when $\tau = 31.4 \text{ mr}$, and the calculated maximum error in R is only 0.0000514 percent of 650 km or about 0.334 ms. It is felt that calculation of ranges to an accuracy of $\pm 0.5 \text{ ms}$ or less is sufficient for any valid use to which the exponential reference atmosphere might be put. It should also be borne in mind that the accuracy to which the distance along earth's surface, the slant range, the geometric path length, and the radio range, can be calculated is also dependent on the accuracy to which the angle ϕ has been calculated; this point will be discussed further in the section dealing with the accuracy of the tables.

The radio range, (or "electrical path length", "effective path length", etc.), is calculated simply as:²

$$R_e = \sum_{i=1}^m \Delta s'_i, \quad (28)$$

where:²

$$\Delta s'_i \equiv \int_{i-1}^i n dR = \bar{n}_i \Delta s_i \doteq \frac{(n_i + n_{i-1})}{2} \Delta s_i. \quad (29)$$

Assuming that Δs_i has been calculated accurately, the error in eq (29) for $\Delta s'_i$ depends on the extent to which:

$$\frac{1}{R_i - R_{i-1}} \int_{i-1}^i n dR = \frac{n_i + n_{i-1}}{2}$$

Since $n_i - n_{i-1}$ never exceeds 80×10^{-6} , and the error (defined as the difference between the above terms) will never be as large as 2 percent of $n_i - n_{i-1}$, the maximum error in eq (29) should be

less than 1.6×10^{-4} percent. The worst case (again $N_s=450$, $\theta_0=0$) yields a calculated maximum error of 2.8×10^{-5} percent (at $R_e=800$ km) or about 0.224 m. Note that the weighted average of n is always smaller than the arithmetic mean of the end-point values, n_i and n_{i-1} ; this indicates that the errors due to this approximation will be of opposite sign to those due to using eq (26) and (27) to calculate R . Since these two errors will thus oppose each other when calculating R_e , this quantity will tend to be more accurate than R , the calculated error for the $N_s=450$, $\theta_0=0$ case being only -0.110 m (11

cm error in about 800 km, or 1.37×10^{-5} percent).

The errors discussed in the above paragraphs are, of course, much larger percentage-wise when applied to the values of the range errors:

$$\Delta R = R - R_0$$

$$\Delta R_e = R_e - R_0$$

in the case previously mentioned as representing the largest errors ($N_s=450$, $\theta_0=0$, $R_0 \geq 800$ km) the percentages are: Error (ΔR) ≈ -0.67 percent maximum; error (ΔR_e) ≈ -0.06 percent maximum)

5. Accuracy of the Tables

In the preceding section on numerical ray-tracing the errors inherent in the equations and approximations employed were discussed at some length. It is important now to deal with those errors peculiar to the particular mode of computation used in developing the tables, i.e.: those errors which could be avoided by employing a more accurate method of calculation using the same equations and approximations. The following material is a rather detailed analysis of errors; for a concise presentation of the maximum errors likely to occur for each variable the reader is referred to the table at the beginning of appendix B.

The basic source of error of this type is derived from the accuracy in the calculations of the N values used in the refractivity profiles. The profiles for the exponential reference atmosphere were calculated to an accuracy of $\pm 5 \times 10^{-11}$ in n (or $\pm 5 \times 10^{-5}$ in N units). Thus the quantity $N_s - N_{0.01}$, the difference between surface N and N at 10 m above the surface can be calculated to an accuracy of only about 5 significant figures (this is the worst case), resulting in the following maximum errors: Error (θ) $< \pm 0.000047$ mr $\theta_0 < 4$ mr; error (θ) $< \pm 0.00005$ mr $\theta_0 > 4$ mr; and error in $\Delta\tau < 0.0001$ mr (from this cause only). These are random rounding errors and will not accumulate over a large number of height increments. For θ_0 larger than 10 mr the accuracy will be unaffected by the mentioned errors in N , with the result that the largest error in θ (for θ_0 of 400 and 900 mr) would be 3 or 4 units in

the eighth place: Error (θ) < 0.000004 mr 10 mr $< \theta_0 < 100$ mr; error (θ) < 0.00004 mr $\theta_0 > 100$ mr. Hence the maximum error expected to be encountered in θ at any point is less than 5×10^{-8} radians.

The accuracy with which τ can be calculated depends primarily on the accuracy with which $N_i - N_{i-1}$ is known, so that τ can be relied upon to 5 or 6 figures, depending on whether or not it is over 10 mr. Except for the first increment at $\theta_0=0$, an error in the calculated value of $\Delta\tau$ for some particular height increment due to a rounding error in $N_i - N_{i-1}$ will in general be at least $\frac{1}{3}$ offset by an error of opposite sign over the following height increment. An error in the first increment at $\theta_0=0$ will not usually be made up later due to the excessively large weighting factor given the error by $\cot \theta$ in that case. Upon investigating the average error in τ at any height caused by the above mentioned errors, it is found that: partial error (τ) < 0.0003 mr.

This is an additional error in τ due to the difference between the true exponential decay of N and the linear approximation of N versus height assumed by the ray-tracing procedure. Errors of this type will be a maximum for the first increment of τ for $\theta_0=0$, because of the rapid change of $\cot \theta$ near $\theta=0$. An equation has been derived for the difference in the incremental bending for the first layer at $\theta_0=0$ between the linear and exponential profiles (having the same value of N_s and N at $r=r_0+\Delta h_1$), which is the error in $\Delta\tau_1$ due to the linear approximation:

$$\text{error } (\Delta\tau_1) = (\Delta\tau_1) \left[\left(1 - \frac{N_s - N_1}{c_e N_s \Delta h_1} \right) - \Delta h_1 \left(\frac{c_e}{3} - \frac{c_e^2 \Delta h_1}{10} + \frac{c_e^3 (\Delta h_1)^2}{42} - \dots \right) \right],$$

error due solely to difference in N gradient assuming same $\cot \theta$

$$+ (N_s - N_1) N_s \left(c_e - \frac{N_s - N_1}{N_s} \right) \times 10^{-12} \left[\frac{2}{3} - \frac{2}{5} \right] (\Delta h_1)^{3/2} \text{ radians}, \quad (30)$$

$$+ \sqrt{\left(\frac{1}{r_0} - [N_s - N_1] \times 10^{-6} \right)^3} \left[\frac{2}{3} - \frac{2}{5} \right] (\Delta h_1)^{3/2} \text{ radians},$$

error due solely to difference in $\cot \theta$ where the subscript 1 refers to values of the variables at the first height increment, $r - r_0 = \Delta h_1$. In the case of the $N_s=450$ profile the partial error in $\Delta\tau_1$ from the first part of expression (30), amounts to only 0.000760 mr, while the remainder of the error in $\Delta\tau_1$ from the second part of eq (30) amounts to only 0.00000725 mr, or only 1 percent of the first part. These errors drop rapidly with decreasing initial gradient of N , so that for the $N_s=377.22$ profile the error in $\Delta\tau_1$ is only 0.000287 mr, or only about $\frac{1}{3}$ as much as for the $N_s=450$ profile.

Errors in the value of the elevation error angle, ϵ , will be of the same order of magnitude as those in τ at any point, the method of computation being more precise than the values of τ used in the calculation.

Errors in the distance, d , and the ranges, R_0 , R , R_e will be determined by the accuracy to which the angular distance can be calculated,

$$\phi = \theta - \theta_0 + \tau,$$

which in turn depends on the accuracy to which θ and τ are known. Since θ will have a maximum error of about 4×10^{-5} mr and τ a maximum error of about 8×10^{-4} mr, the distance and ranges are calculated at least to an accuracy of about ± 5 m. However, if it is assumed that the profile is exact as represented by linear N layers, the accuracy of the distance and ranges increases, with a maximum error of about ± 0.6 m. Actually the ranges for the $N_s=377.22$ profile are accurate to about ± 1.8 m, for the $N_s=200$ profile the maximum error is of the order ± 0.6 m (about the same as if the profile were actually composed of linear N layers).

The preceding estimates of maximum errors are based on the $\theta_0=0$ ray; for any ray at $\theta_0 > 0$ the errors will in general be no larger than the limits imposed by computational accuracy (i.e.: errors not caused by the difference between exponential and linear N layers). Note that for very large θ_0 the bending of the ray path is so slight that no significant differences can be detected between the arc lengths along the ray path, i.e.: the geometric range, and the slant range. In these cases the reported ΔR values are almost entirely one to four parts of the eighth significant figure of R , inter-

spersed with values given as exactly zero. These are due to random rounding errors, and are often negative. In general, to be considered as significant (or real) a value of ΔR should be at least as large as two parts in the seventh figure of R . An exception to this rule is for $\theta_0=900$ mr; in this case the angle ϕ can only be calculated to two significant figures at the low heights, since $\theta - \theta_0$ is about 10^{-6} radians and $\theta \approx \theta_0$ is about 1 radian, and as a result of internal inconsistencies in the triangles formed by the ϕ_i and r_i , r_0 combinations, erroneous ΔR values as large as 0.002 percent of R_0 are calculated. However, in none of the ray-tracings is there an entirely erroneous value of ΔR or ΔR_e reported which is larger than a few centimeters (almost all such values are in the millimeter class, and differences between R_0 and R as small as 10^{-9} km, or 0.001 mm are found in some of the ray-tracings for $\theta_0=200$ and 400 mr). A good rule to follow in using the values of ΔR and ΔR_e given in these ray-tracings would be to consider that any of the values may be subject to an error of at least ± 10 cm, and (in the case of the larger values of ΔR) possibly as much as ± 50 cm.

The values shown as "DELTA H" in the tables are the corrections necessary to correct the height given by a simple 4/3 earth atmosphere for the distance given (assumed exact) to the height given (also assumed exact). As a result, the values of DELTA H have an error approximately equal to:

error (Δh) $\approx \pm (\text{absolute error in } d) \frac{h}{d}$ since the distances given are not really exact. The values shown as "DELTA THETA" are the corrections necessary to correct the elevation angle given by a simple 4/3 earth atmosphere at the given distance (assumed exact) to the value calculated for the exponential profile. This quantity is found by:

$$\Delta\theta = \tau - \frac{\phi}{4}$$

where τ and ϕ are as calculated for the exponential reference atmosphere at the point where $\Delta\theta$ is desired. The maximum error in this quantity therefore depends mostly on the errors in τ , hence: error ($\Delta\theta$) $< 10^{-6}$ radian.

6. Tables of the CRPL Exponential Reference Atmospheres

The tables themselves are simply a presentation of ray tracing variables. In these tables all angles are given in milliradians and all distances in kilometers. For each different profile ($N_s=200$ through 450) ray tracings are given for θ_0 from 0 to 900 mr, in approximately a geometric progression (i.e.: 0, 0.5, 1, 2, 4, 8, 15, 30, 65, 100, 200, 400, and 900 mr), at fixed heights along the ray path. From left to right: first is given the SURFACE N , or N_s , to 4 figures, *not* rounded.

Exact values of N_s used are given in table 1. The next column is the value of θ_0 , or "INIT(ial) THETA", in milliradians. The "HEIGHT" is given in kilometers. The preceding quantities are given with fixed decimal points, the remaining quantities are listed as floating point numbers in the following fashion: $\pm X.XXXX \pm E$ where the first sign refers to the sign of the number, $X.XXX$ which is to be multiplied by 10 to the power $\pm E$ depending on the second sign.

Examples:

$$\begin{array}{ll} 0.0000 & = \text{zero} \\ 1.2345 & = 1.2345 (\times 10^{\circ}) \\ 1.2345 & = 1.2345 \times 10^3 \\ -1.2345 & = -1.2345 \times 10^3 \\ 1.2345 \times 3 & = 1.2345 \times 10^{-3} \\ -1.2345 \times 3 & = -1.2345 \times 10^{-3}. \end{array}$$

The following quantities are listed as floating point numbers in this manner: "DELTA H"= correction to 4/3 height at same distance to equal "HEIGHT", in kilometers; "THETA"= θ or local elevation angle, in milliradians; "DELTA THETA"=correction to 4/3 earth θ to equal THETA at same distance, in milliradians; "DISTANCE"= $r_0\phi$ or distance along earth's surface, in kilometers; "TAU"= τ , angular bending, in milliradians; "ERROR ANGLE"= ϵ , elevation error angle, in milliradians; "SLANT RANGE"= R_o , straightline distance from ray origin to point at h, d , in kilometers; "DELTA R"= ΔR , difference between distance from $h=0$ to given height along ray path and slant range, in kilometers; "DELTA R-E"= ΔR_e , difference between radiopath length and slant range, in kilometers.

The following ray-tracing variables have not been printed, but can be easily calculated from those given, as follows:

$$\phi = \frac{d}{r_0} = \frac{\text{"DISTANCE"}}{\text{"INITIAL RADIUS"}},$$

where $r_0 = 6373.0150 + h_s$ (kilometers)

$$\phi = \tau - \epsilon = \text{"TAU"} - \text{"ERROR ANGLE"},$$

$$R = R_o + \Delta R = \text{"SLANT RANGE"} + \text{"DELTA R"},$$

$$R_e = R_o + \Delta R_e = \text{"SLANT RANGE"} + \text{"DELTA R-E"}.$$

Values of elevation of the ray starting-point, h_s , are given in table 1.

The last profile, for $N_s=289.0$, is a special profile which was prepared for the purpose of making direct comparisons between 4/3 earth refraction and an exponential profile having the same N gradient at the surface. It is intended for applications where it is desired to replace the 4/3 earth treatment with a single standard atmosphere having the advantage of differing very little from the 4/3 earth near the surface.

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8. Appendix A. Tables of Profile Variables for the CRPL Exponential Reference Atmosphere

The following equations were used in determining the various profile variables:

$$-\Delta N = 7.32 \exp \{0.005577 N_s\}$$

$$c_e = \ln \left\{ \frac{N_s}{N_s + \Delta N} \right\}$$

$$-dN_0 = c_e N_s$$

$$k = \frac{1}{1 + \frac{r_0}{n_s} (c_e N_s) \times 10^{-6}}, \quad n_s \equiv 1 + N_s \times 10^{-6},$$

r_0 is taken as 6373.014987 km for all values of N_s in these tables.

The table giving N_s , $-\Delta N$, c_e , and $-dN_0$ as functions of k was prepared using an iterative method for solution of the transcendental equations involved. In all these tables the accuracy may be taken as ± 1 in the last digit listed.

TABLE A-1.

N_s	$-\Delta N$	c_e	$-dN_0$	k
200	22.3317700	0.118399435	23.6798870	1.17769275
210	23.6125966	0.119280212	25.0488444	1.18991401
220	24.9668454	0.120458179	26.5007993	1.20315637
230	26.3988468	0.121916361	28.0407631	1.21752719
240	27.9129385	0.123642065	29.6740955	1.23314913
250	29.5138701	0.125626129	31.4065323	1.25016295
260	31.2066224	0.127862319	33.2442030	1.26873080
270	32.9964614	0.130346887	35.1936594	1.28904048
280	34.8889558	0.133078254	37.2619112	1.31131073
290	36.8899932	0.136056720	39.4564487	1.33579768
300	39.0057990	0.139284287	41.7852861	1.36280330
310	41.2429556	0.142764507	44.2569972	1.39268608
320	43.6084233	0.146502381	46.8807620	1.42587494
330	46.1095611	0.150504269	49.6664087	1.46288731
340	48.7541501	0.154777865	52.6244741	1.50435338
350	51.5504184	0.159332141	55.7662495	1.55104840
360	54.5070651	0.164177379	59.1038565	1.60393724
370	57.6332884	0.169325150	62.6503054	1.66423593
380	60.9388149	0.174783368	66.4195799	1.73349938
390	64.4339281	0.180581312	70.4267116	1.81374807
400	68.1295015	0.186719722	74.6878887	1.90765687
410	72.0370324	0.193220834	79.2205420	2.01884302
420	76.1686780	0.200103517	84.0434770	2.15232187
430	80.5372922	0.20738355	89.1769927	2.31525447
440	85.1564647	0.215097782	94.6430240	2.51823286
450	90.0405683	0.223256247	100.4653113	2.77761532

TABLE A-2

$-\Delta N$	N_s	c_e	$-dN_0$	k
20	180.226277	0.117626108	21.1993155	1.15617524
22	197.316142	.118216356	23.3259953	1.17457412
24	212.917967	.119594076	25.4637276	1.19366808
26	227.270255	.121491305	27.6113599	1.21348565
28	240.558398	.123746115	29.7681671	1.23406110
30	252.929362	.12625291	31.9336703	1.25543336
32	264.501627	.128950190	34.1075325	1.27764560
34	275.372099	.131783550	36.2895127	1.30074523
36	285.621054	.134721962	38.4794288	1.32478398
38	295.315731	.137741207	40.6771452	1.34981825
40	304.513148	.140823306	42.8825481	1.37500934
42	313.261483	.143955014	45.0955611	1.40312414
44	321.602888	.147125889	47.3161107	1.43153539
46	329.573439	.150329075	49.5441405	1.46122256
48	337.204713	.153555418	51.7796106	1.49227226
50	344.524418	.156803056	54.0224815	1.52477960
52	351.557000	.160067149	56.2727266	1.55884863
54	358.324138	.163344614	58.5803179	1.59459364
56	364.845143	.166633002	60.7952415	1.63214058
58	371.137293	.169930326	63.0674811	1.67162830
60	377.216108	.173234984	65.3470266	1.71321044
62	383.095581	.176545680	67.6333699	1.75705732
64	388.788373	.179861358	69.9280046	1.80335830
66	394.305974	.183181171	72.2294300	1.85232456
68	399.658845	.186504431	74.5381454	1.90419225
70	404.856533	.189830583	76.8541525	1.95922635
72	409.907798	.193159183	79.1774555	2.01772514
74	414.820650	.196489873	81.5080567	2.08002556
76	419.602477	.199822385	83.8459677	2.14650999
78	424.260086	.203156494	86.1911914	2.21761358
80	428.799768	.206492043	88.5437400	2.29383429
82	433.227348	.209828917	90.9036251	2.37574437
84	437.548229	.213167031	93.2708570	2.46400458
86	441.767432	.216506335	95.6454475	2.55938222
88	445.889034	.219846812	98.0274147	2.66277367
90	449.919193	.223188453	100.4167688	2.77523207
92	453.860184	.226531281	102.8135290	2.89800399
94	457.716416	.229875327	105.2177108	3.03257531
96	461.491458	.233220637	107.6293319	3.18073184
98	465.188659	.236567271	110.0184114	3.34463902
100	468.811163	.239915290	112.4749663	3.52694820

TABLE A-3

k	N_s	$-\Delta N$	c_e	$-dN_0$
1.0	0.0	0.0	0.0	0.0
1.2	217.689023	24.6471681	1.20160519	26.1576259
1.3	275.037959	33.9367000	1.31692114	36.2230304
1.4	312.297111	41.7747176	1.43600133	44.8459068
1.5	339.003316	48.4389018	1.54339490	52.3215987
1.6	359.298283	54.2941700	1.63827653	58.8629945
1.7	375.341242	59.3759008	1.72203063	63.649115
1.8	388.391792	63.8586055	1.79626805	69.7655765
1.9	399.243407	67.8426334	1.86242834	74.3562234
2.0	408.424907	71.4070900	1.92172034	78.4878451
2.1	416.304322	74.6148487	1.97514185	82.2260091
2.2	423.146728	77.5171828	2.02351472	85.6243634
2.3	429.148472	80.1557288	2.06751820	88.722277
2.4	434.458411	82.5649192	2.10771674	91.5715264
2.5	439.191718	84.7734613	2.14458304	94.1883108
2.6	443.438906	86.8054237	2.17851443	96.6038056
2.7	447.272272	88.6811868	2.20984823	98.8403838
2.8	450.750273	90.4181120	2.23887193	100.9172131
2.9	∞	93.5109159	2.299603586	156.829534
3.0	289.036274	36.6922523	1.35758874	39.2392391

9. Appendix B. Tables of Refraction Variables for the Exponential Reference Atmosphere

The following table of estimated maximum errors should serve as a guide to the accuracy of the tables.

Errors in elevation angle, θ :

$$\left. \begin{array}{ll} \theta_0 \leq 4 \text{ mr} & \pm 0.00005 \text{ mr} \\ 4 \text{ mr} < \theta_0 < 100 \text{ mr} & \pm .000005 \text{ mr} \\ \theta_0 \geq 100 \text{ mr} & \pm .00004 \text{ mr} \end{array} \right\} \text{nearly independent of } N_s.$$

Errors in τ, ϵ (in milliradians):

$N_s =$	450	404.8	377.2	344.5	313	252.9	200
$\theta_0 = 0$	± 0.001	0.00065	0.0005	0.0004	0.0003	0.0002	0.0002
$\theta_0 = 1^\circ$.0003	.00015	.0001	.00008	.00006	.00005	.00005
$\theta_0 = 3^\circ$.00004	.000025	.00002	.000017	.000015	.000013	.000012

Errors in R_0, R, R_e , or Δh (in meters):

$N_s =$	450	404.8	377.2	344.5	313	252.9	200
$\theta_0 = 0$	± 5.0	2.7	1.8	1.2	0.8	0.65	0.6
$\theta_0 \geq 1^\circ$	0.4	0.3	0.25	0.2	.17	.15	.14

Assume that error in ΔR or ΔR_e is ± 0.5 percent or ± 0.1 m, whichever is larger.

N	SURFACE	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E
200.0	0.0	0.0010	1•1714-3	1•63199	-1•9048-1	1•22548	1•90015-1	1•4500-1	1•2254903	0•000	2•450-3
200.0	0.0	0.0020	2•3433-3	2•30816	-2•6959-1	1•73307	1•09935-1	2•0503-1	1•7330831	1•000-6	3•464-3
200.0	0.0	0.0050	5•8628-3	3•65007	-4•2696-1	2•74009	1•47399-1	3•2399-1	2•7401091	1•000-6	5•471-3
200.0	0.0	0.100	1•1742-2	5•16332	-6•0560-1	3•87470	1•13630-1	4•55766-1	3•8747399	1•000-6	7•721-3
200.0	0.0	0.200	2•3534-2	7•30576	-8•6111-1	5•47886	1•28710	6•4614-1	5•4789755	1•000-6	1•087-2
200.0	0.0	0.305	3•5993-2	9•02727	-1•0702	6•76457	1•58204	7•9605-1	6•7647700	1•000-6	1•337-2
200.0	0.0	0.500	5•9310-2	1•37019	-1•6560	8•65807	1•01014	1•0149	8•6584920	1•000-5	1•699-2
200.0	0.0	0.700	8•3461-2	1•02012-1	-2•0105	1•02407	2•35925	1•1957	1•0241430	3•000-5	1•996-2
200.0	0.0	1•000	1•64006	2•02959	-2•5475	1•50886	2•36861	1•4203	1•2234832	5•000-5	2•359-2
200.0	0.0	1•524	1•8546-1	2•43680	-6•6399	3•020742	2•93605	3•3476	3•2096062	4•900-4	2•855-2
200.0	0.0	10•000	1•4158	5•34356	-8•5054	3•801971	2•47135	3•8078	3•8234408	6•900-4	5•548-2
200.0	0.0	2•000	2•4611-1	2•32996	-2•9837	1•72714	2•78826	1•9671	1•7274765	1•000-4	3•213-2
200.0	0.0	3•048	3•8395-1	2•888890	-3•8517	2•12852	2•49402	2•3774	2•1291526	1•800-4	3•819-2
200.0	0.0	5•000	6•5514-1	3•72658	-5•2939	2•71806	2•36331	2•9312	2•7193838	3•300-4	4•572-2
200.0	0.0	7•000	9•4881-1	4•43680	-6•6399	2•0742	2•93605	3•03476	3•2096062	4•900-4	5•548-2
200.0	0.0	10•000	1•4158	5•34356	-8•5054	3•801971	2•47135	3•8078	3•8234408	6•900-4	5•548-2
200.0	0.0	20•000	3•0000	3•1409	7•67811	1•18423	1•50886	1•38961	5•3613885	1•800-4	6•182-2
200.0	0.0	30•480	5•1265	9•55767	1•18423	1•55908	2•29376	5•1501	6•5789120	1•500-3	6•361-2
200.0	0.0	50•000	9•0953	1•23227	-2•5303	8•32494	2•33818	5•6129	8•3665460	1•820-3	6•449-2
200.0	0.0	70•000	1•3379	1•46154	-3•1032	9•78702	2•34185	5•8739	9•8558305	2•040-3	6•472-2
200.0	0.0	90•000	1•7806	1•65849	-3•5955	1•10428	3•34214	6•0435	1•1143014	3•200-3	6•490-2
200.0	0.0	110•000	2•2342	1•83356	-4•0332	1•21590	3•34216	6•1651	1•2294263	3•300-3	6•500-2
200.0	0.0	225•000	4•9830	1•61095	-5•9767	1•71157	3•34217	6•5156	1•7508068	3•500-3	6•520-2
200.0	0.0	350•000	8•1657	1•23422	-7•5349	2•010897	3•34217	6•6797	2•18444487	3•600-3	6•530-2
200.0	0.0	475•000	1•1510	2•74053	-8•8006	2•43180	3•34217	6•7747	2•5501365	3•500-3	6•520-2
200.0	0.5	0•010	6•4279-4	1•70687	-1•4086-1	9•06257	2•14468-1	1•0723-1	9•0625880	0•000	1•812-3
200.0	0.5	0•020	1•5279-3	2•36170	-2•1747-1	1•39782	1•30603-1	1•6536-1	1•3978314	0•000	2•793-3
200.0	0.5	0•050	4•4683-3	3•68416	-3•7257-1	2•39024	1•64624-1	2•8257-1	2•3902624	1•000-6	4•772-3
200.0	0.5	0•100	9•6900-3	5•18747	-5•5003-1	3•51740	1•29108-1	4•1532-1	3•5174450	2•000-6	7•009-3
200.0	0.5	0•200	2•0548-2	7•32285	-8•0470-1	5•16281	1•29135	6•0132-1	5•1163905	4•000-6	7•015-2
200.0	0.5	0•305	3•2257-2	9•04111	-1•0134	6•39951	1•49573	7•5265-1	6•3997755	8•000-6	1•265-2
200.0	0.5	0•500	5•4469-2	1•15796	-1•3274	8•29079	1•92331	9•7111-1	8•2912140	1•400-5	1•626-2
200.0	0.5	0•700	7•7696-2	1•37110	-1•5986	9•87221	1•27215	1•1516	9•8722055	2•100-5	1•921-2
200.0	0.5	1•000	1•1319-1	1•64082	-1•9529	1•18640	2•69885	1•3758	1•1865200	3•000-5	2•283-2
200.0	0.5	1•524	1•7686-1	2•03020	-2•4897	1•47179	2•28106	1•6889	1•4720188	7•000-5	2•779-2
200.0	0.5	2•000	2•3622-1	2•33050	-2•9258	1•69001	2•70060	1•9216	1•6903484	1•000-4	3•137-2
200.0	0.5	3•048	3•7171-1	2•88933	-3•7936	2•01932	2•40622	2•3012	2•0191502	1•700-4	3•741-2
200.0	0.5	5•000	6•3944-1	3•72692	-5•2357	2•68079	2•27542	2•8833	2•6819127	3•700-4	4•493-2
200.0	0.5	7•000	9•3023-1	4•43708	-6•5816	3•17011	2•84811	3•2984	3•17222984	4•700-4	4•993-2
200.0	0.5	10•000	1•3936	5•34380	-8•4469	3•78236	2•38338	3•7568	3•7861004	6•900-4	5•468-2
200.0	0.5	20•000	3•1096	7•67828	-1•3781	5•31345	2•05162	4•6252	5•3240010	1•200-3	6•104-2
200.0	0.5	30•480	5•0681	9•55780	-1•8365	6•52167	2•20576	5•0912	6•5415040	1•460-3	6•215-2
200.0	0.5	50•000	9•0462	1•23228	-2•5244	8•28752	2•25018	5•5498	8•3291190	1•760-3	6•356-2
200.0	0.5	70•000	1•3936	5•34380	-8•4469	3•78236	2•38338	3•7568	3•813940	1•970-3	6•383-2
200.0	0.5	90•000	1•7741	1•65850	-3•5897	1•05073	2•25414	5•9756	1•1105572	1•200-3	6•400-2
200.0	0.5	110•000	2•22691	1•83357	-4•0273	1•21216	3•25417	6•0957	1•2256815	2•200-3	6•410-2
200.0	0.5	225•000	4•9726	1•61095	-5•9708	1•07082	3•25417	6•4414	1•7470607	2•400-3	6•420-2
200.0	0.5	350•000	8•1527	3•23423	-7•5290	2•0523	2•25417	6•6030	2•1807021	3•500-3	6•440-2
200.0	0.5	475•000	1•1494	2•74053	-8•7947	1•42805	3•25417	6•6965	2•54638894	3•400-3	6•430-2

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E
200.0	1.0	0.010	3.7071-4	1.91400	-1.0668-1	6.86339	1.624244-1	8.1212-2	6.8634040	0.000	1.372-3
200.0	1.0	0.020	1.0157-3	2.51547	-1.7704-1	1.13785	2.69096-1	1.3460-1	1.378605	1.000	2.73-3
200.0	1.0	0.050	3.4235-3	3.78457	-3.2588-1	2.09023	1.93673-1	2.4706-1	2.0902465	1.000	4.170-3
200.0	1.0	0.100	8.0116-3	5.25926	-4.9997-1	3.19593	1.753121-1	3.7725-1	3.1959675	1.000	6.363-3
200.0	1.0	0.200	1.7953-2	7.37388	-7.5216-1	4.77925	1.12173	5.6317-1	4.7793630	1.000	9.473-3
200.0	1.0	0.305	2.8919-2	9.08249	-9.5977-1	6.05532	1.41446	7.1178-1	6.0555195	1.000	1.196-2
200.0	1.0	0.500	5.0030-2	1.16120	1.-1.2726	7.93982	1.84052	9.2931-1	7.9402405	1.200-5	1.556-2
200.0	1.0	0.700	7.2332-2	1.37384	1.-1.5431	9.51751	1.18854	1.1092	9.5182110	1.800-5	1.850-2
200.0	1.0	1.000	1.0666-1	1.64311	1.-1.8968	1.15060	2.61453	1.3328	1.1507191	2.000-5	2.212-2
200.0	1.0	1.524	1.6865-1	2.43211	1.-2.4330	1.43567	2.19608	1.6452	1.4358973	2.000-5	2.705-2
200.0	1.0	2.000	2.673-1	2.33210	1.-2.8688	1.65372	2.31529	1.8774	1.6540542	2.000-5	3.062-2
200.0	1.0	3.048	3.5985-1	2.89063	1.-3.7361	2.05480	2.432052	2.2858	2.0554325	2.000-4	3.666-2
200.0	1.0	5.000	6.2407-1	3.72792	1.-5.1777	2.64407	2.18941	2.8364	2.6453897	2.100-4	4.417-2
200.0	1.0	7.000	9.1194-1	4.43793	1.-6.5233	3.13327	2.56197	3.2502	3.1354646	2.450-4	4.918-2
200.0	1.0	10.000	1.3717	5.34450	1.-8.3883	3.74543	2.29715	3.7068	3.7491698	2.500-4	5.393-2
200.0	1.0	20.000	3.0785	7.67876	1.-1.3722	1.27638	2.96533	4.5707	5.2869305	2.120-3	6.023-2
200.0	1.0	30.480	5.0496	9.55819	1.-1.8305	1.84545	2.11947	5.0333	6.5043720	2.480-3	6.204-2
200.0	1.0	50.000	8.969	1.23231	2.-2.5184	1.25033	2.16389	5.4878	8.2919300	2.810-3	6.292-2
200.0	1.0	70.000	70.000	1.3262	1.-3.0913	1.91236	2.16756	5.7434	9.7811735	2.1990-3	6.312-2
200.0	1.0	90.000	1.7675	1.65852	2.-3.5837	1.09681	3.16785	5.9090	1.1068333	3.200-3	6.320-2
200.0	1.0	110.000	2.2196	1.83359	2.-4.0213	1.20843	3.16787	6.0276	1.2219563	3.200-3	6.330-2
200.0	1.0	225.000	4.9621	1.61097	2.-5.9648	1.70410	3.16787	6.3686	1.7433316	3.400-3	6.340-2
200.0	1.0	350.000	8.1394	1.23424	2.-7.5230	1.20149	3.16787	6.5278	2.1769710	3.600-3	6.380-2
200.0	1.0	475.000	1.1479	2.74054	2.-8.7887	1.24232	3.16787	6.6199	2.5426575	3.400-3	6.340-2
200.0	2.0	0.010	1.5282-4	2.58136	-6.7856-2	4.36550	1.03310-1	5.1655-2	4.36555209	0.000	8.727-4
200.0	2.0	0.020	4.9641-4	3.05411	-1.2316-1	7.91443	1.87155-1	9.3616-2	7.9144690	-1.000-7	1.581-3
200.0	2.0	0.050	2.0740-3	4.16209	-2.5311-1	1.62290	1.83215-1	1.9178-1	1.6229189	0.000	3.238-3
200.0	2.0	0.100	5.5431-3	5.53713	-4.1543-1	2.65388	1.25133-1	3.1313-1	2.6539262	1.000-6	5.282-3
200.0	2.0	0.200	1.3764-2	7.57457	-6.5844-1	4.17940	1.80268-1	4.9218-1	4.1795144	1.200-6	8.282-3
200.0	2.0	0.305	2.3297-2	9.24616	-8.6155-1	5.42782	1.26665	6.3744-1	5.4280275	1.400-6	1.071-2
200.0	2.0	0.500	4.2050-2	1.17404	1.-1.1700	7.28609	1.68677	8.5169-1	8.2865100	1.900-6	3.455-2
200.0	2.0	0.700	6.2724-2	1.38471	1.-1.4381	8.84916	1.03156	1.0297	8.8498520	1.1718-2	4.278-2
200.0	2.0	1.000	9.4732-2	1.65221	1.-1.7894	1.08245	2.45475	1.2514	1.0825749	2.000-5	2.077-2
200.0	2.0	1.524	1.5336-1	2.03942	1.-2.3232	1.36625	2.03370	1.5616	1.3664805	2.000-5	2.570-2
200.0	2.0	2.000	2.0886-1	2.33853	1.-2.7576	1.58361	2.45159	1.7924	1.5839508	2.000-5	2.926-2
200.0	2.0	3.048	3.3719-1	2.89581	1.-3.6230	1.98381	2.15525	2.1984	1.9844391	2.1500-4	3.527-2
200.0	2.0	5.000	5.9432-1	3.73194	1.-5.0626	2.57225	2.02294	2.7457	2.5735778	2.900-4	4.278-2
200.0	2.0	7.000	8.7627-1	4.44130	1.-6.4070	3.06102	2.59498	3.1567	3.0632094	4.300-4	4.76-2
200.0	2.0	10.000	1.3285	5.34730	1.-8.2708	3.67279	2.12982	3.6097	3.6765275	6.200-4	5.250-2
200.0	2.0	20.000	3.0165	7.68071	1.-1.3603	5.20318	2.679774	4.4647	5.2137275	2.040-3	5.870-2
200.0	2.0	30.480	4.9725	9.55975	1.-1.8185	6.41109	2.95184	4.9208	6.4309215	2.1340-3	6.050-2
200.0	2.0	50.000	8.8976	1.23243	2.-5.0623	8.17665	2.99626	5.3674	8.2182555	2.6620-3	6.128-2
200.0	2.0	70.000	1.3144	1.46168	2.-3.0792	9.63856	2.99993	5.6176	9.7073770	2.820-3	6.152-2
200.0	2.0	90.000	1.7541	1.65861	2.-3.5715	1.08942	3.00022	5.7794	1.0994457	3.900-3	6.160-2
200.0	2.0	110.000	2.0000	4.4906	2.-5.9525	1.20104	3.00024	5.8951	2.2145631	3.000-3	6.180-2
200.0	2.0	225.000	2.23428	2.61103	2.-6.0227	1.66669	3.00025	6.2270	1.7359225	3.200-3	6.190-2
200.0	2.0	350.000	8.1124	1.23428	2.-7.5106	1.09408	3.00025	6.3816	2.1695547	3.300-3	6.200-2
200.0	2.0	475.000	1.1447	2.74058	2.-8.7764	1.24232	3.00025	6.4708	2.5352370	2.200-3	6.180-2

SURFACE N	INIT THETA A	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
										5.68865-2	2.8443-2
200.0	4.0	0.010	4.9670-5	4.32011	-3.7364-2	2.40379	1.09749-1	5.4897-2	2.4038195	0.000	4.805-4
200.0	4.0	0.020	1.701-4	4.61818	-7.2233-2	4.64133	1.06214	1.250756-1	1.0621560	1.000	9.271-4
200.0	4.0	0.050	9.0235-4	5.41506	-1.6570-1	1.06214	1.47168-1	2.2397-1	1.8992222	1.000	2.118-3
200.0	4.0	0.100	2.8642-3	6.53144	-2.9748-1	1.89918	1.604668	3.0053	1.8992222	1.000	3.778-3
200.0	4.0	0.200	8.3462-3	8.32910	-5.1194-1	3.24512	1.604668	3.9294	1.05819	3.0053	6.427-3
200.0	4.0	0.305	1.5380-2	9.87376	-6.9963-1	4.39874	1.604668	7.60440-1	1.1592-1	4.3989460	1.000
200.0	4.0	0.500	3.0380-2	9.2240-1	-9.9240-1	6.16220	1.604668	1.42374	7.1888-1	6.1626280	1.000
200.0	4.0	0.700	4.7392-2	1.42738	1.-2.511	7.067061	1.75647	8.9029-1	7.6713085	1.100	1.485-2
200.0	4.0	1.000	7.4911-2	1.68813	1.-1.5936	9.59617	1.68897	1.1057	9.5973590	1.200	1.834-2
200.0	4.0	1.524	1.2693-1	2.06862	1.-2.1181	1.23849	1.73788	1.4093	1.2387203	2.300	2.317-2
200.0	4.0	2.000	1.7729-1	2.36404	1.-2.5471	1.45317	1.5061	1.6361	1.4535061	2.600	2.667-2
200.0	4.0	3.048	2.9600-1	2.91645	1.-3.4050	1.84986	2.84812	2.0360	1.8504949	2.100	3.262-2
200.0	4.0	5.000	5.3872-1	5.74798	1.-4.8366	2.43507	2.71102	2.5755	2.4363928	2.300	4.009-2
200.0	4.0	7.000	8.0500-1	4.45478	1.-6.1762	2.92207	2.80994	2.9807	2.9242630	2.400	4.502-2
200.0	4.0	10.000	1.2453	5.35850	1.-8.0354	3.52320	2.81448	3.4266	3.5360393	2.500	4.974-2
200.0	4.0	20.000	2.8940	7.68851	1.-1.3360	1.06045	2.48138	4.2641	5.0710030	2.000	5.592-2
200.0	4.0	30.480	4.8186	9.56601	1.-1.7938	1.26738	2.63535	4.70779	6.2872090	2.100	5.772-2
200.0	4.0	50.000	8.6971	1.23292	2.-2.4813	1.03204	2.67975	5.1393	8.0736405	2.430	5.843-2
200.0	4.0	70.000	1.2905	1.46208	2.-3.0539	1.949346	2.68341	5.3795	9.5622730	2.610	5.870-2
200.0	4.0	90.000	1.7267	1.65897	2.-3.5461	1.07488	3.68370	5.5341	1.0849039	3.700	5.880-2
200.0	4.0	110.000	2.1743	1.83400	2.-3.9837	1.18648	3.68373	5.6444	1.199992	3.800	5.890-2
200.0	4.0	225.000	4.8963	2.61125	2.-5.9268	1.68206	3.68373	5.9591	1.7212955	3.200	5.910-2
200.0	4.0	350.000	8.0663	3.23446	2.-7.4848	1.07942	2.68373	6.1049	2.1548987	3.000	5.910-2
200.0	4.0	475.000	1.1381	2.74074	2.-8.7505	1.40223	3.68373	6.1889	2.5205644	3.200	5.900-2
200.0	8.0	0.010	1.6670-5	8.16476	-1.9231-2	1.23723	2.92794-2	1.4639-2	1.2372731	0.000	2.473-4
200.0	8.0	0.020	5.6217-5	8.32631	-3.8130-2	2.44997	5.79309-2	2.8977-2	2.4500648	0.000	4.895-4
200.0	8.0	0.050	3.0008-4	8.79333	-9.2908-2	5.95462	1.40567-1	7.0345-2	5.948570	-2.000	1.187-3
200.0	8.0	0.100	1.0658-3	9.52151	-1.7886-1	1.14144	2.68684-1	1.3456-1	1.1414974	1.000	2.271-3
200.0	8.0	0.200	3.6341-3	1.08338	-3.3549-1	2.12398	1.97303-1	2.4977-1	2.1241142	1.000	4.202-3
200.0	8.0	0.305	7.4435-3	1.20619	-4.8472-1	3.04112	1.707676-1	3.5621-1	3.0413497	1.000	5.985-3
200.0	8.0	0.500	1.6613-2	1.40654	-7.3255-1	4.53370	1.04507	5.2765-1	4.5341440	1.000	8.834-3
200.0	8.0	0.700	2.8027-2	1.58663	-9.6173-1	5.86987	1.33979	6.7906-1	5.8705970	1.700	1.133-2
200.0	8.0	1.000	4.7824-2	1.82476	-1.2745	7.62838	1.71648	8.7505-1	7.6295940	1.400	1.452-2
200.0	8.0	1.524	8.7859-2	1.8155	-1.7664	1.04234	2.4994	1.1580	1.0245679	2.000	1.902-2
200.0	8.0	2.000	1.2851-1	2.46345	-2.1753	1.22927	2.64379	1.3729	1.2295372	2.000	2.355-2
200.0	8.0	3.048	2.2852-1	2.99759	-3.053	1.61277	3.31822	1.7557	1.6134034	2.000	2.809-2
200.0	8.0	5.000	4.4231-1	3.81145	-4.4065	2.18554	2.16278	2.7662	2.1868635	2.100	3.537-2
200.0	8.0	7.000	6.8718-1	4.50830	-5.7272	2.66568	2.72469	2.6684	2.6678752	2.500	4.019-2
200.0	8.0	10.000	1.0920	5.40306	-7.5680	3.26986	2.25285	3.0996	3.2736005	2.900	4.485-2
200.0	8.0	20.000	2.6575	7.71960	-1.2862	4.78917	2.91571	3.9040	4.7997177	2.000	5.093-2
200.0	8.0	30.480	4.5144	9.50999	-1.7425	5.99216	2.606918	4.3252	6.0119955	2.100	5.261-2
200.0	8.0	50.000	8.2920	1.23485	-2.4286	7.5323	2.1349	4.7291	7.794315	2.140	5.337-2
200.0	8.0	70.000	1.6703	1.46371	-3.04371	9.21269	2.12615	4.9512	9.2815110	2.100	5.354-2
200.0	8.0	90.000	1.6703	1.66041	-3.4922	1.04668	3.11744	5.0931	1.0567027	3.100	5.370-2
200.0	8.0	110.000	2.1113	1.83529	-3.9294	1.15819	3.11746	5.1936	1.1717091	3.100	5.370-2
200.0	8.0	225.000	4.8029	2.61215	-5.8715	1.65352	3.11746	5.4780	1.6927533	3.100	5.390-2
200.0	8.0	350.000	7.9372	3.23518	-7.4291	2.05076	3.11746	5.6083	2.1262403	3.100	5.390-2
200.0	8.0	475.000	1.1240	2.74135	-8.6945	1.37350	3.11746	5.6830	2.4918393	3.100	5.390-2

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E	
519249	0	15.0	0.010	8.02330-6	1.50885	1 -1.0331-2	6.064653-1	1.57292-2	1.8644-3	6.6472930-1	0.000	
0	15.0	0.020	0.000	2.02328-5	1.51765	1 -2.0628-2	1.32543	1.5676-2	1.3255535	0.000	2.649-4	
0	15.0	0.050	1.0806-4	1.54376	1 -5.1259-2	3.28513	7.75480-2	3.2855323	1.000-7	6.552-4		
0	15.0	0.100	3.7603-4	1.58637	1 -1.0155-1	6.47959	1.52507-1	7.6380-2	6.4804135	-2.000-7	1.289-3	
0	15.0	0.200	1.3468-3	1.66844	1 -1.9952-1	1.26237	1.95441-1	1.4840-1	1.2625569	1.000	2.496-3	
0	15.0	0.305	2.9291-3	1.75067	1 -2.9945-1	1.87649	4.36298-1	2.1962-1	1.8767859	1.000	3.688-3	
0	15.0	0.500	7.1745-3	1.89427	1 -4.7712-1	2.94630	6.78099-1	3.4235-1	2.9468425	1.000-6	5.730-3	
0	15.0	0.700	1.3022-2	2.03157	1 -6.5185-1	3.96497	9.02778-1	4.5754-1	3.9658069	1.000-6	7.627-3	
0	15.0	1.000	2.4126-2	2.22252	1 -9.0272-1	5.37503	1.20478	6.1418-1	5.3763690	1.000-6	1.018-2	
0	15.0	1.524	4.8911-2	2.52367	1 -1.3179	7.58228	1.65504	8.5177-1	8.546800	1.000-6	1.400-2	
0	15.0	2.000	7.6097-2	2.77097	1 -1.6770	9.37940	2.000055	1.0388	9.3829280	1.000-5	1.693-2	
0	15.0	3.048	1.4809-1	3.25501	1 -2.4287	1.28553	2.61168	1.3818	1.2861793	2.000-5	2.212-2	
0	15.0	5.000	3.1501-1	4.01701	1 -3.7407	1.82180	3.40244	1.8605	1.8231445	2.000-5	2.890-2	
0	15.0	7.000	5.1729-1	4.68334	1 -5.0036	2.28091	3.93961	2.2268	2.2831191	2.000-4	3.351-2	
0	15.0	10.000	8.6531-1	5.54991	1 -6.7865	2.86605	4.45102	2.6312	2.8698010	2.000-4	3.792-2	
0	15.0	20.000	2.2772	7.82298	1 -1.1981	1.35680	5.10086	3.3819	4.3673693	2.000-4	4.385-2	
0	15.0	30.000	30.480	4.00058	9.67430	1 -1.6496	1.54690	5.25268	3.7686	5.5667455	2.000-4	4.546-2
0	15.0	50.000	7.5891	1.24132	2 -2.3310	1.29607	5.29669	4.1321	7.3376865	2.000-4	4.613-2	
0	15.0	70.000	1.1547	1.46916	2 -2.9003	1.74904	5.30033	4.3280	8.8178800	2.000-4	4.629-2	
0	15.0	90.000	1.5691	1.66520	2 -3.3904	1.99902	5.30062	4.4513	1.0099218	3.000-4	4.630-2	
0	15.0	110.000	1.9971	1.83962	2 -3.8265	1.11111	5.30065	4.5380	1.1246218	3.000-3	4.640-2	
0	15.0	225.000	4.62291	2.61516	2 -5.7653	1.60560	5.30065	4.7792	1.6448328	3.000-3	4.650-2	
0	15.0	350.000	7.7129	3.23758	2 -7.3214	1.00245	5.30065	4.8878	2.0779312	3.000-3	4.640-2	
0	15.0	475.000	1.0972	3.74340	2 -8.5859	1.32497	5.30065	4.9496	2.4433067	3.000-3	4.640-2	
0	30.0	0.010	5.3610-6	3.00443	1 -5.1762-3	3.32996	7.88022-3	3.9400-3	3.3314665-1	0.000	6.660-5	
0	30.0	0.020	1.3002-5	3.00886	1 -1.0357-2	6.65482-1	1.57355-2	7.8704-3	6.6578395-1	1.000-8	1.330-4	
0	30.0	0.050	4.4803-5	3.02211	1 -2.5903-2	1.66005	3.91859-2	1.9609-2	1.6608184	-1.000-7	3.311-4	
0	30.0	0.100	1.3350-4	3.04409	1 -5.1847-2	3.30799	7.78561-2	3.8992-2	3.3095278	0.000	6.583-4	
0	30.0	0.200	4.3521-4	3.08765	1 -1.0384-1	6.56362	1.53701-1	7.7212-2	6.5717735	-3.000-7	1.299-3	
0	30.0	0.305	9.2910-4	3.13283	1 -1.5876-1	9.94336	2.31103-1	1.1633-1	9.9482815	0.000	1.955-3	
0	30.0	0.500	2.3126-3	3.21527	1 -2.6076-1	1.60845	3.69894-1	1.8674-1	1.6092927	1.000	3.127-3	
0	30.0	0.700	4.3378-3	3.29801	1 -3.2206-1	2.22023	1.65607-1	2.2323515	1.000-6	4.272-3		
0	30.0	1.000	8.4680-3	3.41891	1 -5.2493-1	3.11513	6.96479-1	3.5505-1	3.1169764	2.000-6	5.890-3	
0	30.0	1.524	1.8639-2	3.62188	1 -8.0476-1	4.60270	9.99913-1	5.1452-1	4.6057623	1.000-6	8.457-3	
0	30.0	2.000	3.0874-2	3.79830	1 -1.0609	5.88474	1.24639	6.4715-1	5.8890405	1.000-6	1.054-2	
0	30.0	3.048	6.6898-2	4.16452	1 -1.6297	8.51457	1.70873	9.0390-1	8.5220020	1.200-5	1.447-2	
0	30.0	5.000	1.6257-1	4.78364	1 -2.6957	1.28718	2.35122	1.28552	1.2886339	2.000-5	1.994-2	
0	30.0	7.000	2.9164-1	5.35530	1 -3.7794	1.668104	2.81178	1.5908	1.6833705	2.000-5	2.387-2	
0	30.0	10.000	5.3306-1	6.12741	1 -5.3681	2.20237	3.26714	1.9361	2.2062556	1.000-4	2.779-2	
0	30.0	20.000	1.6254	8.24231	1 -1.0203	3.58927	3.86985	2.5842	3.5999897	2.300-4	3.317-2	
0	30.0	30.000	3.0480	3.0672	1.00160	2 -1.4528	4.01532	2.9130	4.7495049	3.100-4	3.465-2	
0	30.0	50.000	6.1998	1.26808	2 -2.1158	6.43133	4.05813	3.2122	6.4731040	2.100-4	3.530-2	
0	30.0	70.000	9.7668	1.49180	2 -6.6748	7.85797	4.06171	3.3677	7.9269620	2.400-4	3.532-2	
0	30.0	90.000	1.3565	1.68516	2 -3.1582	9.09092	4.06199	3.4632	9.1912745	2.100-4	3.534-2	
0	30.0	110.000	1.7533	1.85767	2 -3.5895	1.01908	4.06202	3.5290	1.0326194	3.000-4	3.540-2	
0	30.0	225.000	4.2402	2.62774	2 -5.5147	1.51008	4.06202	3.7068	1.5493325	3.000-4	3.550-2	
0	30.0	350.000	7.2007	3.24762	2 -7.0644	1.90532	4.06202	3.7841	1.9808130	3.000-4	3.540-2	
0	30.0	475.000	1.0354	2.3253	2 -8.3253	2.75198	3.8273	4.06202	2.3452567	3.000-4	3.540-2	

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
200.0	65.0	0.010	4.9230-6	6.50204	1-2.3876-3	1.53605-1	3.63510-3	1.8170-3	1.5393102-1	0.000	3.077-5
200.0	65.0	0.020	1.0784-5	6.50409	1-4.7803-3	3.07154-1	7.26292-3	3.6319-3	3.0780502-1	0.000	6.150-5
200.0	65.0	0.050	2.8625-5	6.51022	1-1.1976-2	7.67537-1	1.81180-2	9.0668-3	7.6916760-1	-3.000-8	1.533-4
200.0	65.0	0.100	6.6440-5	6.52044	1-2.4041-2	1.53386	3.61003-2	1.8079-2	1.5371323	0.000	3.056-4
200.0	65.0	0.200	1.6925-4	6.54087	1-4.8428-2	3.06290	7.16658-2	3.6002-2	3.0694784	0.000	6.068-4
200.0	65.0	0.305	3.1876-4	6.56229	1-7.4471-2	4.6322	1.08369-1	5.4552-2	4.6732979	0.000	9.183-4
200.0	65.0	0.500	0.500	7.1074-4	6.60200	1-1.2360-1	7.62128	1.75221-1	8.8460-2	7.6379705	1.000-7
200.0	65.0	0.700	1.2617-3	6.64265	1-7.533-1	1.03637	1.41724-1	1.71222-1	1.0660292	-1.000-6	2.045-3
200.0	65.0	1.000	2.3835-3	6.70343	1-2.5520-1	1.51251	1.37837-1	1.7222-1	1.05159358	1.000	2.861-3
200.0	65.0	1.524	5.2124-3	6.80907	1-4.0085-1	2.28675	4.95764-1	2.5503-1	2.2921012	1.000-6	4.200-3
200.0	65.0	2.000	8.7436-3	6.90442	1-5.3932-1	2.97968	1.28984-1	3.2655-1	2.9868541	1.000-6	5.327-3
200.0	65.0	3.048	1.9851-2	7.11224	1-8.6211-1	4.47201	1.91324-1	4.7141-1	4.4834466	1.000-6	7.552-3
200.0	65.0	5.000	5.2957-2	7.49118	1-1.5145	7.13892	1.284556	7.0185-1	7.1591645	1.000-6	1.090-2
200.0	65.0	7.000	1.0319-1	7.86813	1-2.2293	9.73578	1.58795	8.9907-1	9.7661525	1.000-5	1.343-2
200.0	65.0	10.000	1.2000	8.41210	1-3.3490	1.34084	2.90833	1.1335	1.3455936	2.000	1.621-2
200.0	65.0	20.000	20.000	7.8523-1	1.00558	2-7.1079	2.41854	2.47926	1.5976	2.4304326	6.000-5
200.0	65.0	30.480	1.6734	1.15529	2-1.0760	1.38091	2.49574	1.8366	3.4022687	2.000-4	2.153-2
200.0	65.0	50.000	3.8351	1.39242	2-1.6660	1.89533	2.53384	2.0476	4.9386620	2.100-4	2.199-2
200.0	65.0	70.000	6.4986	1.59862	2-2.1812	1.621025	2.53712	2.1519	6.2809140	2.200-4	2.204-2
200.0	65.0	90.000	9.4704	1.78023	2-2.6352	1.736824	2.53739	2.2133	7.4703450	2.400-4	2.203-2
200.0	65.0	110.000	1.2671	1.94415	2-3.0450	1.841338	2.53741	2.2542	8.5505440	2.400-4	2.203-2
200.0	65.0	225.000	3.3876	2.68885	2-4.9068	1.31616	3.53741	2.3588	1.3556128	3.000-4	2.202-2
200.0	65.0	350.000	6.0286	3.29664	2-6.4426	1.70369	3.53741	2.4013	1.7793939	3.000-4	2.210-2
200.0	65.0	475.000	8.9067	3.79397	2-7.6696	1.202079	3.53741	2.4242	2.1393572	3.000-4	2.190-2
200.0	100.0	0.010	5.0450-6	1.00013	2-1.5490-3	9.96578-2	2.35847-3	1.1794-3	1.0015841-1	0.000	2.002-5
200.0	100.0	0.020	8.9000-6	1.00026	2-3.1023-3	1.99315-1	4.71265-3	2.3567-3	2.0031696-1	1.000-8	4.003-5
200.0	100.0	0.050	2.6111-5	1.00066	2-7.7731-3	4.98161-1	1.17593-2	5.8843-3	5.0066670-1	0.000	9.988-5
200.0	100.0	0.100	5.4460-5	1.00132	2-1.5611-2	9.96004-1	2.34411-2	1.1739-2	1.0010201	0.000	1.900-4
200.0	100.0	0.200	1.3096-4	1.00265	2-3.1473-2	9.9060	4.65767-2	2.3396-2	1.0065599	1.000-7	3.954-4
200.0	100.0	0.305	2.1799-4	1.00405	2-4.8448-2	3.03360	7.04969-2	3.5487-2	3.0489693	1.000-7	5.989-4
200.0	100.0	0.500	4.4603-4	1.00664	2-8.0551-2	4.96650	1.14180-1	5.7643-2	4.9918055	2.000-7	9.696-4
200.0	100.0	0.700	7.3211-4	1.00931	2-1.1447-1	6.94385	1.57788-1	7.9965-2	6.9794240	4.000-7	1.340-3
200.0	100.0	1.000	1.3102-3	1.01331	2-1.6707-1	9.89973	2.21083-1	1.1270-1	9.9508805	-1.000-7	1.877-3
200.0	100.0	1.524	2.7062-3	1.02032	2-2.6366-1	1.50342	1.25815-1	1.6763-1	1.5113077	1.000-6	2.765-3
200.0	100.0	2.000	4.4210-3	1.02669	2-3.5624-1	1.96673	1.4890-1	2.1540-1	1.9771840	1.000	3.523-3
200.0	100.0	3.048	9.7661-3	1.04075	2-5.7467-1	2.97653	1.92401-1	3.1299-1	2.928077	1.000	1.301-3
200.0	100.0	5.000	1.5942-2	1.06696	2-1.0258	4.82073	1.64334-1	4.7216-1	4.844658	1.000	7.351-3
200.0	100.0	7.000	5.1516-2	1.09370	2-1.5330	6.66313	1.07950	6.1132-1	6.703414	2.000	1.569-2
200.0	100.0	10.000	1.0619-1	1.13339	2-2.3500	9.34260	1.31310	7.8056-1	9.4031670	1.000-5	1.119-2
200.0	100.0	20.000	4.3517-1	1.25998	2-5.2478	1.76411	1.66909	1.1271	1.7731090	2.000	1.432-2
200.0	100.0	30.480	9.9087-1	1.38218	2-8.2277	2.54966	1.76930	1.3101	2.5736922	4.000	1.530-2
200.0	100.0	50.000	2.4654	1.58538	2-1.3283	3.84731	1.80194	1.4714	3.8940188	4.000	1.569-2
200.0	100.0	70.000	4.4115	1.76889	2-1.7868	5.01757	1.80486	5.0920890	6.000	1.574-2	
200.0	100.0	90.000	6.6822	1.93427	2-2.2003	6.07210	1.80512	1.5945	1.784045	2.000	1.574-2
200.0	100.0	110.000	9.2063	2.08584	2-2.5792	7.03849	1.80510	1.6238	7.1801035	2.000	1.579-2
200.0	100.0	225.000	2.6951	1.79181	2-4.3441	1.15398	1.80513	1.6961	1.1939584	3.000	1.570-2
200.0	100.0	350.000	5.0187	1.38010	2-5.8148	1.52907	1.80513	1.7240	1.6053422	3.000	1.570-2
200.0	100.0	475.000	7.6168	1.86581	2-7.0291	1.83876	1.80513	1.7386	1.9579252	3.000	1.570-2

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E	
200.0	200.0	0.010	1.3658-5	2.000006	2 -7.6507-4	4.922869-2	1.16742-3	5.8375-4	5.0291240-2	0.000	1.0005-5	
200.0	200.0	0.020	1.4088-5	2.000113	2 -1.5346-3	9.863776-2	2.33283-3	1.1650-3	1.0064505-1	0.000	2.012-5	
200.0	200.0	0.050	2.6438-5	2.000032	2 -3.8480-3	2.446626-1	5.82193-3	2.9148-3	2.5164443-1	1.000-8	5.019-5	
200.0	200.0	0.100	5.8060-5	2.000065	2 -7.7291-3	4.93188-1	1.16083-2	5.8127-3	5.0322830-1	-2.000-8	1.000-4	
200.0	200.0	0.200	1.1103-4	2.00131	2 -1.5593-2	9.86249-1	2.30768-2	1.1591-2	1.063391	0.000	1.989-4	
200.0	200.0	0.300	1.4715-4	2.00200	2 -2.4021-2	1.50392	3.49463-2	1.7594-2	1.534573	0.000	3.015-4	
200.0	200.0	0.500	2.7839-4	2.00329	2 -3.9974-2	2.46447	5.66550-2	2.8604-2	2.514779	0.000	4.884-4	
200.0	200.0	0.700	4.2966-4	2.00462	2 -5.6864-2	3.44900	7.83684-2	3.9717-2	3.5195075	1.000-7	6.758-4	
200.0	200.0	1.000	6.9090-4	2.00662	2 -8.3121-2	4.92448	1.09963-1	5.6060-2	5.0253745	3.000-7	9.481-4	
200.0	200.0	1.524	1.2690-3	2.01013	2 -1.3152-1	7.49780	1.62453-1	8.3584-2	7.6519980	-1.000-7	1.401-3	
200.0	200.0	2.000	1.8821-3	2.01334	2 -1.7816-1	9.83137	2.07315-1	1.0763-1	1.0034257	1.000	1.787-3	
200.0	200.0	3.048	3.7513-3	2.02048	2 -2.8898-1	1.49546	2.9737-1	1.5726-1	1.5265627	1.000	2.565-3	
200.0	200.0	5.000	9.0044-3	2.03396	2 -5.215-1	2.44453	1.37320-1	2.3887-1	4.9670796	1.000	3.777-3	
200.0	200.0	7.000	1.7028-2	2.04797	2 -7.8695-1	3.40989	5.50034-1	3.1152-1	3.4828367	1.000	4.751-3	
200.0	200.0	10.000	3.4461-2	2.06923	2 -1.2244	4.84467	6.75061-1	4.0148-1	4.9505105	1.000-6	5.833-3	
200.0	200.0	20.000	1.4423-1	2.14047	2 -2.8561	9.51454	8.74372-1	5.9191-1	9.7369840	1.000	7.610-3	
200.0	200.0	30.480	3.4584-1	2.21388	2 -4.6461	1.42331	9.34568-1	6.9587-1	1.4588756	2.000	8.200-3	
200.0	200.0	50.000	9.4177-1	2.34482	2 -7.9037	2.25952	9.55604-1	7.8856-1	2.3227021	2.000	8.460-3	
200.0	200.0	70.000	1.8159	2.47133	2 -1.1065	1.06334	9.57600-1	8.31613044	2.000-5	8.480-3		
200.0	200.0	90.000	2.9219	2.59199	2 -1.4059	1.82993	9.57776-1	8.5831-1	3.9599243	2.000-5	8.490-3	
200.0	200.0	110.000	4.2320	2.70498	2 -1.6906	1.55607	9.577792-1	8.7440-1	4.7240860	2.000-5	8.510-3	
200.0	200.0	225.000	1.4829	3.27498	2 -3.1156	1.19046	9.577793-1	9.1212-1	8.6265865	2.000-5	8.500-3	
200.0	200.0	350.000	3.0637	3.78409	2 -4.3884	1.14365	9.577793-1	9.2561-1	1.2241565	3.000	8.400-3	
200.0	200.0	475.000	4.9663	4.21933	2 -5.4765	1.42117	9.577793-1	9.3229-1	1.5449417	3.000	8.500-3	
200.0	400.0	0.010	-2.3464-5	4.00003	2 -3.7026-4	2.37189-2	5.59733-4	5.9191-1	9.7369840	1.000	5.146-6	
200.0	400.0	0.020	6.8710-6	4.00006	2 -7.3648-4	4.73103-2	1.11851-3	5.6171-4	5.1364190-2	2.300-8	1.029-5	
200.0	400.0	0.050	7.0401-5	4.00015	2 -1.8409-3	1.18148-1	2.79152-3	1.3931-3	1.2829328-1	3.000-8	2.561-5	
200.0	400.0	0.100	3.8400-6	4.00031	2 -3.7111-3	2.36615-1	5.56638-3	2.7874-3	2.5688104-1	6.000-8	5.113-5	
200.0	400.0	0.200	1.3350-4	4.00063	2 -7.4754-3	4.72912-1	1.10670-2	5.5606-3	5.1347185-1	7.000-8	1.015-4	
200.0	400.0	0.305	1.0641-4	4.00096	2 -1.1523-2	7.21387-1	1.67615-2	8.4392-3	7.8323065-1	6.000-8	1.539-4	
200.0	400.0	0.500	2.8028-4	4.00158	2 -1.9174-2	1.81224	2.71803-2	1.3722-2	1.2836759	1.000-7	2.494-4	
200.0	400.0	0.700	3.2454-4	4.00221	2 -2.7290-2	1.65516	3.76065-2	1.9061-2	1.7971819	1.000-7	3.452-4	
200.0	400.0	1.000	5.2630-4	4.00317	2 -3.9905-2	2.36405	5.27780-2	2.6915-2	2.5670260	2.000-7	4.846-4	
200.0	400.0	1.524	8.8670-4	4.00486	2 -6.3188-2	3.60177	7.80336-2	4.0149-2	3.9113237	4.000-7	7.166-4	
200.0	400.0	2.000	1.2396-3	4.00641	2 -8.5646-2	4.72555	9.96388-2	5.1727-2	5.1320445	-1.000-7	9.139-4	
200.0	400.0	3.048	2.1868-3	4.00985	2 -1.3911-1	7.19768	1.43096-1	7.5676-2	7.8180365	5.000-7	1.314-3	
200.0	400.0	5.000	4.4463-3	4.01639	2 -2.5158-1	1.17949	2.10882-1	1.1518-1	1.2815223	1.000	1.938-3	
200.0	400.0	7.000	7.7002-3	4.02321	2 -3.9999-1	1.64948	2.65754-1	2.65502-1	1.7927001	1.000	2.442-3	
200.0	400.0	10.000	1.4169-2	4.03362	2 -5.9539-1	2.35253	3.27099-1	1.9451-1	2.5579440	1.000-6	3.009-3	
200.0	400.0	20.000	5.2257-2	4.06912	2 -1.4084	4.67885	4.26121-1	2.8868-1	5.0951225	1.000-6	3.945-3	
200.0	400.0	30.480	1.2114-1	4.10660	2 -2.3225	7.08858	4.56862-1	3.4079-1	7.7316280	1.000	4.268-3	
200.0	400.0	50.000	3.2960-1	4.17571	2 -4.0417	1.15017	4.67964-1	3.8768-1	1.2582728	2.000	4.400-3	
200.0	400.0	70.000	6.4872-1	4.24509	2 -5.7754	1.59262	4.69054-1	4.1035-1	1.7476143	2.000-5	4.430-3	
200.0	400.0	90.000	1.0708	4.31301	2 -7.4734	2.02569	4.69154-1	4.2305-1	2.2295777	2.000-5	4.450-3	
200.0	400.0	110.000	5.5918	4.37953	2 -9.1365	4.44985	4.69163-1	4.3115-1	2.7045524	2.000-5	4.450-3	
200.0	400.0	225.000	6.3453	4.73792	2 -1.8096	4.73498	4.69164-1	4.4982-1	5.3163065	2.000	4.410-3	
200.0	400.0	350.000	1.4495	5.08846	2 -2.6859	6.97004	4.69164-1	4.5625-1	7.9653850	-1.000-5	4.450-3	
200.0	400.0	475.000	5.25310	1	5.40652	2 -3.4811	8.99799	4.5933-1	1.0460098	3.000	4.400-3	

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
200.0	900.0	0.010	-3.8774-5	9.000001	2-1.2470-4	7.97007-3	1.87795-4	8.4327-5	1.2787582-2	0.000	2.556-6
200.0	900.0	0.020	-7.7581-5	9.000002	2-2.4972-4	1.59401-2	3.75273-4	1.7896-4	2.5575172-2	0.000	5.110-6
200.0	900.0	0.050	2.0737-4	9.000005	2-6.1340-4	3.95315-2	9.36595-4	4.5606-4	6.3739775-2	3.260-7	1.304-5
200.0	900.0	0.100	3.3368-4	9.00010	2-1.2348-3	7.91269-2	1.86762-3	9.2779-4	1.2751930-1	3.300-7	2.569-5
200.0	900.0	0.200	1.0206-4	9.00021	2-2.5091-3	1.58700-1	3.71332-3	1.8611-3	2.5531656-1	5.800-7	5.106-5
200.0	900.0	0.305	-1.9267-4	9.00032	2-3.8758-3	2.42290-1	5.62419-3	2.8292-3	3.8952849-1	7.000-7	7.74-5
200.0	900.0	0.500	2.7211-4	9.00053	2-6.4342-3	3.96718-1	9.12071-3	4.6019-3	6.3827740-1	8.500-7	1.248-4
200.0	900.0	0.700	2.6293-4	9.00074	2-9.1598-3	5.5482-1	1.26201-2	6.3886-3	8.9364130-1	8.900-7	1.724-4
200.0	900.0	1.000	4.6700-4	9.00106	2-1.3393-2	7.93437-1	1.77162-2	9.0238-3	1.2765742	8.000-7	2.416-4
200.0	900.0	1.524	5.6050-4	9.00163	2-2.1218-2	1.20922	2.61938-2	1.3474-2	1.9455435	9.000-7	3.569-4
200.0	900.0	2.000	7.0500-4	9.00215	2-2.8766-2	1.58681	3.34511-2	1.7364-2	2.5531860	9.000-7	4.556-4
200.0	900.0	3.048	1.5280-3	9.00331	2-4.6733-2	2.41754	4.80562-2	2.5410-2	3.8907117	9.000-7	6.545-4
200.0	900.0	5.000	3.1021-3	9.00550	2-8.4568-2	3.96412	7.08616-2	3.8698-2	6.3817410	9.000-7	9.658-4
200.0	900.0	7.000	5.5432-3	9.00780	2-1.2814-1	5.54711	8.93476-2	5.0605-2	8.933210	9.000-7	1.218-3
200.0	900.0	10.000	8.9460-3	9.01132	2-2.0051-1	7.91996	1.10020-1	6.5441-2	1.2760258	1.000-6	1.500-3
200.0	900.0	20.000	2.6160-2	9.02335	2-4.7624-1	1.58090	1.43613-1	9.7313-2	2.5508986	1.000-6	1.970-3
200.0	900.0	30.480	5.5317-2	9.03616	2-7.8854-1	2.40419	1.54116-1	1.1502-1	3.8856261	1.000-6	2.134-3
200.0	900.0	50.000	1.3899-1	9.06003	2-1.3823	3.92833	1.57950-1	1.3101-1	6.3681080	1.000	2.203-3
200.0	900.0	70.000	2.6456-1	9.08432	2-1.9893	5.47747	1.58331-1	1.3875-1	8.9068495	1.000	2.211-3
200.0	900.0	90.000	4.3073-1	9.10842	2-2.5918	7.01412	1.58366-1	1.4309-1	1.1440798	2.000	2.210-3
200.0	900.0	110.000	6.3708-1	9.13233	2-3.1894	8.53844	1.58370-1	1.4586-1	1.3970030	2.000	2.210-3
200.0	900.0	225.000	2.5927	9.26617	2-6.5355	1.07023	1.58370-1	1.5222-1	2.8425023	2.000	2.220-3
200.0	900.0	350.000	6.1744	9.40503	2-1.0007	1.59261	1.58370-1	1.5439-1	4.3976849	2.000	2.200-3
200.0	900.0	475.000	1.1226	1.53750	2-1.3318	1.43728	1.58370-1	1.5542-1	5.9375510	2-2.000-5	2.180-3

SURFACE	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
252.9	0.0	0.010	5.8770-4	1.58096	-9.2558-2	1.26505	1	4.03576-1	2.0178-1	1.2650526	1.198-3
252.9	0.0	0.020	1.01758-3	2.23594	-1.3105-1	1.78903	1	5.70579-1	2.8534-1	1.7890367	1.000
252.9	0.0	0.050	2.9456-3	3.53620	-2.0828-1	2.82852	1	9.01017-1	4.5091-1	2.8285360	1.000-6
252.9	0.0	0.100	5.09175-3	5.00294	-2.9723-1	3.99956	1	1.27133	6.3690-1	3.9996035	1.000-6
252.9	0.0	0.200	1.1915-2	7.08080	-4.2736-1	5.65501	1	1.79044	8.9903-1	5.6551180	1.020-5
252.9	0.0	0.305	1.8337-2	8.75200	-5.3805-1	6.98135	1	2.19993	1.1073	6.9815555	1.600-5
252.9	0.0	0.500	3.0554-2	1.12216	1-7.1040-1	8.93394	1	2.79335	1.4112	8.9343610	1.000-5
252.9	0.0	0.700	4.3465-2	1.32976	1-8.6719-1	1.05651	2	3.27630	1.6620	1.0565840	2.000-5
252.9	0.0	1.000	6.3533-2	1.59288	1-1.0831	1.26178	2	3.86538	1.9728	1.2619010	2.000-5
252.9	0.0	1.524	1.0067-1	1.97369	1-1.4350	1.55554	2	4.66554	2.04060	1.5557691	1.071-2
252.9	0.0	2.000	1.3646-1	2.26825	1-1.7412	1.77987	2	5.23915	2.7270	1.7802104	2.000-4
252.9	0.0	3.048	2.2209-1	2.81854	1-2.3989	2.19169	2	6.19654	3.2894	2.1923192	2.000-4
252.9	0.0	5.000	4.0410-1	3.64841	1-3.6019	2.79478	2	7.35877	4.0427	2.7961010	2.000-4
252.9	0.0	7.000	6.1485-1	4.35620	1-4.8075	2.92389	2	8.11066	4.6045	2.960838	2.000-4
252.9	0.0	10.000	9.0786-1	5.26409	1-6.5618	3.91644	2	8.79790	5.9201712	2.330-3	7.119-2
252.9	0.0	20.000	2.4024	7.61198	1-1.1817	5.46527	2	9.61613	6.3692	5.4758190	2.260-3
252.9	0.0	30.480	4.15159	9.50348	1-1.6416	6.68205	2	9.78929	6.9790	6.7018780	2.810-3
252.9	0.0	50.000	7.7745	1.22813	2-3.3237	8.45571	2	9.83440	7.5776	8.4973165	2.410-3
252.9	0.0	70.000	1.1770	1.45812	2-2.9074	1.92195	2	9.83760	7.9152	9.907645	2.760-3
252.9	0.0	90.000	1.5948	1.65553	2-3.4010	1.11803	3	9.83781	8.1350	1.1280568	3.000-3
252.9	0.0	110.000	2.0260	1.83093	2-3.8394	1.22984	3	9.83783	8.2930	1.2433647	3.100-3
252.9	0.0	225.000	4.6726	2.60927	2-5.7853	1.72600	3	9.83783	8.7497	1.7652421	3.600-3
252.9	0.0	350.000	7.6887	1.32301	2-7.3447	1.12361	3	9.83783	8.9643	2.190916	3.700-3
252.9	0.0	475.000	1.1038	2.73961	2-8.6111	1.44654	3	9.83783	9.0889	2.5648865	3.700-3
252.9	0.5	0.010	3.1649-4	1.65814	-6.07804-2	9.26721	1	1.0541	1.0272	9.2672260	0.000
252.9	0.5	0.020	7.5636-4	2.29117	-1.0500-1	1.43313	1	4.57047-1	2.2857-1	1.4331396	1.000
252.9	0.5	0.050	2.2264-3	3.57137	-1.8105-1	2.45659	1	3.9155-1	2.4566098	1.000-6	6.199-3
252.9	0.5	0.100	4.8574-3	5.02786	-2.6937-1	3.61945	1	1.15012	5.7618-1	3.6194939	1.000-6
252.9	0.5	0.200	1.0370-2	7.09843	-3.9905-1	5.26909	1	1.66740	8.3729-1	5.2691951	8.000-6
252.9	0.5	0.305	1.6404-2	8.76628	-5.0952-1	6.59276	1	2.07606	1.0450	6.5929665	1.500-5
252.9	0.5	0.500	2.8047-2	1.12328	1-6.8165-1	8.54287	1	2.666873	1.3483	8.5432920	1.300-5
252.9	0.5	0.700	4.0477-2	1.33070	1-8.3831-1	1.01727	2	3.15127	1.5986	1.0173405	2.400-5
252.9	0.5	1.000	5.9940-2	1.59366	1-1.0541	1.22242	2	3.74001	1.9089	1.2225426	2.700-5
252.9	0.5	1.524	9.6207-2	1.97432	1-1.4059	1.51606	2	4.53985	2.3412	1.5162878	2.300-4
252.9	0.5	2.000	1.3133-1	2.26880	1-1.7120	1.74033	2	5.11330	2.6616	1.7406667	2.800-4
252.9	0.5	3.048	2.3862	7.61215	1-1.1788	1.42545	2	6.07050	3.227	2.1526949	3.400-4
252.9	0.5	5.000	3.0595-1	3.64875	1-3.5724	2.75058	2	3.9737	2.7564034	2.600-4	5.801-2
252.9	0.5	7.000	6.0520-1	4.35649	1-4.7779	3.25416	2	4.5335	3.2563469	2.900-4	6.427-3
252.9	0.5	10.000	9.5934-1	5.26432	1-6.5321	3.87667	2	8.67162	5.1459	3.8804006	2.100-3
252.9	0.5	20.000	2.3862	7.61215	1-1.1788	1.42545	2	9.48983	6.2889	5.4360000	2.200-3
252.9	0.5	30.480	4.1320	9.50361	1-1.6386	1.64221	2	9.66299	6.8939	6.6620380	2.680-3
252.9	0.5	50.000	7.7491	1.22814	2-3.297	8.41585	2	9.70810	7.4865	8.4574590	2.250-3
252.9	0.5	70.000	1.1740	1.45812	2-9.044	9.88208	2	9.71129	7.8202	9.9508965	2.560-3
252.9	0.5	90.000	1.5914	1.65554	2-3.979	1.11405	3	9.71151	8.0372	1.1240693	3.800-3
252.9	0.5	110.000	2.0222	1.83093	2-8.8364	1.22585	3	9.71152	8.1930	1.2393768	3.900-3
252.9	0.5	225.000	4.6672	2.60928	2-5.7823	1.72201	3	8.6429	8.71152	1.761283	4.400-3
252.9	0.5	350.000	7.7620	1.3302	2-7.3416	1.11962	3	9.71152	8.8541	2.1951017	3.500-3
252.9	0.5	475.000	1.1031	2.73961	2-8.6081	1.44255	3	9.71152	8.9766	2.5608961	3.600-3

SURFACE_N	INIT_THETA	HEIGHT	DELTA_H	THETA	DELTA_THETA	DISTANCE	TAU	ERROR_ANGLE	SLANT_RANGE	DELTA_R	DELTA_R-E
252.9	1.0	0.010	1.07992-4	1.087067	-5.0974-2	6.096698	2.022260-1	1.01113-1	6.09669945	0.000	1.0761-3
252.9	1.0	0.020	4.0966-4	2.044938	-8.04985-2	1.015965	1.08494-1	1.01596563	1.0000	2.930-3	5.0401-3
252.9	1.0	0.050	1.6925-3	3.067487	-1.05778-1	2.013937	1.04094-1	2.01393885	1.0000	5.0401-3	8.0258-3
252.9	1.0	0.100	3.9953-3	5.010190	-2.04431-1	3.027871	1.004154	5.02787498	1.0000	5.0401-3	1.0231-2
252.9	1.0	0.200	9.0323-3	7.015106	-3.07266-1	4.091128	1.055346	7.08011-1	4.09113901	1.0000	1.0554-2
252.9	1.0	0.305	1.4678-2	8.080895	-4.08247-1	6.022705	1.095968	9.08653-1	6.02272545	1.0200-5	1.0554-2
252.9	1.0	0.500	2.5745-2	1.012661	1.-6.05395-1	8.016977	1.055010	1.02884	8.01701950	1.200-5	2.0023-2
252.9	1.0	0.700	3.7691-2	1.033352	1.-8.01022-1	9.079554	1.0303144	1.05378	9.07962335	1.3600-5	2.0406-2
252.9	1.0	1.000	5.6541-2	1.059601	1.-1.0256	1.018434	2.061914	1.08472	1.01844635	2.07000-5	2.0875-2
252.9	1.0	1.524	9.1924-2	1.097622	1.-1.3770	1.0477763	2.041802	2.02784	1.04778596	2.100-4	3.013-2
252.9	1.0	2.000	1.2637-1	2.027845	1.-1.6828	1.070171	2.049099	2.05980	1.07020508	2.1800-4	3.0974-2
252.9	1.0	3.048	2.0952-1	2.082031	1.-2.3400	2.011320	2.0594763	2.01576	2.01138377	2.3000-4	4.0748-2
252.9	1.0	5.000	3.08786-1	3.064978	1.-3.05424	2.071600	2.070931	3.09062	2.07173267	2.5800-4	5.0699-2
252.9	1.0	7.000	5.0556-1	4.035735	1.-4.07476	3.021496	2.0786095	4.04640	3.02171523	2.8500-4	6.0323-2
252.9	1.0	10.000	9.4774-1	5.026503	1.-6.05015	3.083737	2.0854804	5.00738	3.08411043	2.10210-3	6.0904-2
252.9	1.0	20.000	2.0000	2.03697	1.-7.01264	1.01756	1.0538601	2.036617	6.02102	5.03965585	2.090-3
252.9	1.0	30.480	4.01115	9.050400	1.-1.06355	1.060270	2.053932	6.08105	6.06225335	2.620-3	7.0878-2
252.9	1.0	50.000	7.07229	1.022817	2.-2.03266	1.087867	2.058443	7.03973	8.04178970	2.140-3	7.0983-2
252.9	1.0	70.000	1.07000	1.045815	2.-2.09013	1.084248	2.058762	7.07271	9.09113040	2.430-3	8.0140-2
252.9	1.0	90.000	1.05879	1.065556	2.-3.03948	1.011008	3.058783	7.09414	1.01201081	3.0600-3	8.0300-2
252.9	1.0	110.000	2.00183	1.083095	2.-3.08333	1.022189	3.058785	8.00950	1.02354142	3.0700-3	8.040-2
252.9	1.0	225.000	4.06616	1.060929	2.-5.07791	1.071805	3.058785	8.05384	1.07572863	3.100-3	8.070-2
252.9	1.0	350.000	7.7549	1.0323303	2.-7.03384	1.0211565	3.058785	8.07461	2.01911332	3.4000-3	8.110-2
252.9	1.0	475.000	1.1022	2.037962	2.-8.06049	1.043858	3.058785	8.08666	2.05569268	3.43000-3	8.100-2
252.9	2.0	0.010	7.3073-5	2.054939	-3.02164-2	8.000020	1.064958	1.02177	1.06283-1	1.03071-1	7.0123-2
252.9	2.0	0.020	2.3907-4	2.099991	-5.08641-2	1.000000	1.06213-1	2.052168-1	2.059780-1	1.040246-1	1.040246-1
252.9	2.0	0.050	1.0120-3	4.062559	-1.02177	1.060270	2.053932	6.08040-1	5.05628530	1.0600-5	4.0162-3
252.9	2.0	0.100	2.7379-3	5.038789	-2.0213-1	2.070769	1.074874	7.01774	7.04770845	1.0600-5	6.0813-3
252.9	2.0	0.200	6.08813-3	7.035783	-3.02555-1	4.027712	1.035186	6.07893-1	4.02772322	1.0000-6	1.0071-2
252.9	2.0	0.305	1.01776-2	8.097761	-4.03284-1	5.056265	1.074874	8.08040-1	5.05628530	1.0000-6	1.3877-2
252.9	2.0	0.500	2.0107-2	1.013985	-1.00179-1	7.047666	1.033043	1.04240	9.00871305	1.2800-5	2.0227-2
252.9	2.0	0.700	3.02684-2	1.034472	-1.05652-1	9.008643	1.080703	1.04240	9.00871305	1.2800-5	2.0693-2
252.9	2.0	1.000	5.0295-2	1.060538	1.-9.07049-1	1.011200	3.039063	1.07306	1.01121247	2.0000-5	1.0111-3
252.9	2.0	1.524	8.03876-2	1.098380	1.-1.03201	1.040391	2.018574	2.01586	1.04041357	2.100-4	3.0328-2
252.9	2.0	2.000	1.01692-1	2.027704	1.-1.06250	1.062724	2.047680	2.04761	1.06275815	2.100-4	3.0785-2
252.9	2.0	3.048	1.09747-1	2.082562	1.-2.02806	2.003777	2.051121	3.00322	2.0384077	2.0000-4	4.0557-2
252.9	2.0	5.000	3.07193-1	3.065388	1.-3.04813	2.063970	2.0687119	3.07758	2.06410200	2.0000-4	5.005-2
252.9	2.0	7.000	5.07634-1	4.036079	1.-4.06853	3.013818	2.0762213	4.03296	3.01403752	2.0000-4	6.0128-2
252.9	2.0	10.000	9.02337-1	5.026788	1.-6.04381	3.076018	2.0830876	4.09341	3.073187940	2.100-3	6.0708-2
252.9	2.0	20.000	2.03358	7.061460	1.-1.01691	1.050824	2.0912656	6.00575	5.01122634	3.0400-3	7.0810-2
252.9	2.0	30.480	4.00691	9.050557	1.-1.06289	1.062468	2.0929968	6.06485	6.05445165	2.0480-3	7.0670-2
252.9	2.0	50.000	7.6680	1.022830	2.-2.03198	1.029804	2.0934478	7.02241	8.03396515	2.0950-3	7.0776-2
252.9	2.0	70.000	1.01643	1.045825	2.-2.08945	1.076411	2.0934797	7.05464	9.08329345	2.0280-3	7.0811-2
252.9	2.0	90.000	1.5804	1.065565	2.-3.03880	1.010224	3.034819	7.07553	1.01122634	3.0400-3	7.0810-2
252.9	2.0	110.000	2.00101	1.083104	2.-3.026246	1.021404	3.034821	7.09049	1.02275638	3.0500-3	7.0830-2
252.9	2.0	225.000	4.06496	1.060935	2.-5.07722	1.0701018	3.034821	8.03545	1.0494201	3.0900-3	7.0860-2
252.9	2.0	350.000	7.7397	1.023307	2.-7.033397	1.0201777	3.034821	8.05367	2.01832597	4.0100-3	7.0000-2
252.9	2.0	475.000	1.1004	2.037966	2.-8.05980	1.0243070	3.034821	8.06531	2.05490493	3.04000-3	7.0870-2

SURFACE N	INIT THETA	HEIGHT	DELTA H	DELTA THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
252.9	4.0	0.010	2.3624-5	4.30109	-1.7627-2	2.40930	7.68615-2	3.8430-2	2.4093275	0.000	6.091-4
252.9	4.0	0.020	8.4302-5	4.58251	-3.4167-2	4.66062	1.48615-1	7.4325-2	4.6606732	1.000-7	1.178-3
252.9	4.0	0.050	4.3374-4	5.33897	-7.9112-2	1.070280	3.40842-1	1.7058-1	1.0708221	1.000	2.701-3
252.9	4.0	0.100	1.3948-3	6.40541	-1.4377-1	1.92225	1.0101-1	3.0561-1	1.9222925	1.000	4.835-3
252.9	4.0	0.200	4.1256-3	8.13249	-2.5205-1	3.29813	1.04142	5.2310-1	3.2982433	1.000	8.253-3
252.9	4.0	0.305	7.7120-3	9.62274	-3.5077-1	4.48085	1.40654	7.0820-1	4.4810546	1.000	1.15-2
252.9	4.0	0.500	1.5543-2	1.19132	1.-5.1065-1	6.29175	1.95688	9.8870-1	6.2921745	1.300	1.552-2
252.9	4.0	0.700	2.4659-2	1.38862	1.-6.5966-1	7.84200	1.41585	1.2255	7.8426995	1.400	1.917-2
252.9	4.0	1.000	3.9830-2	1.64233	1.-8.6793-1	9.82385	1.98385	1.5230	9.8225540	1.500	2.368-2
252.9	4.0	1.524	6.9767-2	2.01381	1.-1.2112	1.26869	3.76440	1.9413	1.2689189	2.000	2.990-2
252.9	4.0	2.000	9.9944-2	2.30324	1.-1.5120	1.48912	4.32802	2.4894559	1.100	3.441-2	
252.9	4.0	3.048	1.7503-1	2.84677	1.-2.1617	1.89587	5.27365	2.8001	1.895062	2.200	4.202-2
252.9	4.0	5.000	3.4115-1	3.67026	1.-3.3554	2.49433	6.42694	3.5324	2.4956498	4.300	5.142-2
252.9	4.0	7.000	5.3842-1	4.37452	1.-4.5550	2.90905	7.17505	4.0776	2.9931368	6.600	5.759-2
252.9	4.0	10.000	8.7730-1	5.27925	1.-6.3032	3.61133	7.85988	4.6717	3.6150616	9.700	6.337-2
252.9	4.0	20.000	20.000	7.62246	1.-1.1548	1.15707	2.67640	5.7700	1.676185	1.690	7.078-2
252.9	4.0	30.480	3.9792	9.51187	1.-1.6142	1.37250	8.84937	6.3434	6.3923320	2.140	7.284-2
252.9	4.0	50.000	7.5494	1.22878	2.-2.3048	1.14494	8.89445	6.8976	8.1865525	2.570	7.379-2
252.9	4.0	70.000	1.1501	1.45866	2.-2.8793	1.61052	2.89764	7.2058	9.6793425	2.850	7.409-2
252.9	4.0	90.000	1.5641	1.65601	2.-3.3726	1.08685	3.89786	7.4047	1.0968727	3.000	7.430-2
252.9	4.0	110.000	1.9918	1.83136	2.-3.8110	1.19863	3.89787	7.5467	1.2121507	3.200	7.450-2
252.9	4.0	225.000	4.6227	1.60957	2.-5.7566	1.69470	3.89787	7.9533	1.7339437	3.600	7.490-2
252.9	4.0	350.000	7.7056	1.23325	2.-7.3158	1.09227	3.89787	8.1423	2.1677544	3.700	7.500-2
252.9	4.0	475.000	1.0964	2.37981	2.-8.5821	1.45158	3.89787	8.2514	2.5335270	3.700	7.490-2
252.9	8.0	0.010	7.9740-6	8.15471	-9.0580-3	1.23800	3.94946-2	1.9747-2	1.2380451	0.000	3.130-4
252.9	8.0	0.020	2.6810-5	8.30658	-1.7983-2	2.45294	7.82172-2	3.9117-2	2.4530278	0.000	6.199-4
252.9	8.0	0.050	1.4321-4	8.74668	-4.4133-2	5.97123	1.90049-1	9.5114-2	5.9714660	0.000	1.506-3
252.9	8.0	0.100	5.1295-4	9.43551	-8.5900-2	1.14708	1.63971-1	1.8231-1	1.171414	1.000	2.885-3
252.9	8.0	0.200	1.1719-3	1.06834	1.-1.7193	1.7120	1.75514-1	3.3971-1	2.143292	1.000	5.354-3
252.9	8.0	0.305	3.6876-3	1.18573	1.-2.4200-1	3.07279	1.63098-1	4.8971-1	3.0730161	3.000	7.639-3
252.9	8.0	0.500	8.4274-3	1.37812	1.-3.7634-1	4.59385	1.42529	7.2009-1	4.5942998	1.000	1.130-2
252.9	8.0	0.700	1.4506-2	1.55185	1.-5.0757-1	5.95887	1.82940	9.2804-1	5.9595885	1.000	1.450-2
252.9	8.0	1.000	2.5400-2	1.78247	1.-6.9693-1	7.75808	1.34567	1.1973	7.7592890	1.600	1.861-2
252.9	8.0	1.524	4.8507-2	2.12964	1.-1.0177	1.04361	2.07512	1.5857	1.0438373	2.000	2.441-2
252.9	8.0	2.000	7.3030-2	2.40517	1.-1.3041	1.35435	2.61167	1.8801	2.537862	2.000	2.868-2
252.9	8.0	3.048	1.3691-1	2.92984	1.-1.9312	1.64609	2.52447	2.0424	1.6467239	1.400	3.601-2
252.9	8.0	5.000	2.8508-1	3.73505	1.-3.0985	2.23126	2.65216	3.1073	2.3235811	3.000	4.515-2
252.9	8.0	7.000	4.6646-1	4.42901	1.-4.2805	2.72061	2.38926	3.6338	2.7228002	4.700	5.117-2
252.9	8.0	10.000	7.8444-1	5.32447	1.-6.0109	3.33463	2.06703	4.2069	3.3383691	2.200	5.684-2
252.9	8.0	20.000	2.1165	7.65382	1.-1.1225	4.87121	2.87846	5.2580	4.8817632	1.330	6.411-2
252.9	8.0	30.480	3.7846	9.53699	1.-1.5804	6.08263	2.05086	5.7994	6.1024640	2.046	6.600-2
252.9	8.0	50.000	7.2855	1.23072	2.-2.2696	1.85143	2.09585	6.3153	7.8930420	2.040	6.92-2
252.9	8.0	70.000	1.1178	1.46029	2.-2.8433	1.31504	2.09904	6.5985	9.38385	2.240	6.178-2
252.9	8.0	90.000	1.5267	1.65744	2.-3.3361	1.05713	2.09925	6.7796	1.0671988	2.400	6.730-2
252.9	8.0	110.000	1.9498	1.83265	2.-3.7742	1.16886	2.09927	6.9082	1.1823876	2.500	6.740-2
252.9	8.0	225.000	4.5596	1.61047	2.-5.7187	1.64649	2.09927	7.2727	1.7039278	2.700	6.760-2
252.9	8.0	350.000	7.6247	1.23397	2.-7.2774	1.06214	2.09927	7.4404	2.1376222	2.800	6.780-2
252.9	8.0	475.000	1.0868	2.37981	2.-8.5436	1.38498	2.09927	7.5366	2.5033282	2.700	6.750-2

SURFACE_N	INIT_THETA	HEIGHT_H	DELTA_H	THETA	DELTA_THETA	DISTANCE	TAU	ERROR_ANGLE	SLANT_RANGE	DELTA_R	DELTA_R-E
252.9	15.0	0.010	3.9100-6	1.50830	1 -4.8641-3	6.64781-1	2.12076-2	1.0603-2	6.6485725-1	0.000	1.681-4
252.9	15.0	0.020	1.1260-5	1.51657	1 -9.7207-3	1.32590	4.22792-2	2.1144-2	1.3260570	0.000	3.350-4
252.9	15.0	0.050	5.1772-5	1.55111	1 -2.4305-2	3.28801	1.04645-1	5.2371-2	3.2884057	0.000	8.293-4
252.9	15.0	0.100	1.8083-4	1.58122	1 -4.8624-2	6.49042	2.05920-1	1.0314-1	6.4912469	0.000	1.632-3
252.9	15.0	0.200	6.5224-4	1.65871	1 -9.7303-2	1.26629	1.99317-1	2.0064-1	1.2664683	1	3.164-3
252.9	15.0	0.305	1.4386-3	1.73664	1 -1.4894-1	1.88470	1.90212-1	2.9721-1	1.8849970	1	4.679-3
252.9	15.0	0.500	3.6068-3	1.86688	1 -2.4439-1	2.96491	1.18404-1	4.6397-1	2.9654468	1	7.278-3
252.9	15.0	0.700	6.6880-3	2.00453	1 -3.4355-1	3.99621	1.22370	6.2074-1	3.9970404	1	2.000-6
252.9	15.0	1.000	1.2748-2	2.18794	1 -4.9419-1	5.42702	1.63420	8.3415-1	5.4283600	1	5.000-6
252.9	15.0	1.524	2.7010-2	2.47894	1 -7.6315-1	7.67182	1.24562	1.158	7.6742075	1	1.600-5
252.9	15.0	2.000	4.3424-2	2.71929	1 -1.0129	9.50229	1.71367	1.4125	9.5057995	1	2.154-2
252.9	15.0	3.008	8.9704-2	3.19273	1 -1.5788	1.30452	3.53729	1.8782	1.3051742	2	6.000-5
252.9	15.0	5.000	2.0672-1	3.94460	1 -2.6687	1.85093	2.59028	2.5237	1.8522675	2	1.600-4
252.9	15.0	7.000	3.5858-1	4.60707	1 -3.7973	2.31806	2.29375	3.0137	2.3202690	2	2.700-4
252.9	15.0	10.000	6.3585-1	5.47344	1 -5.4715	2.91212	2.94934	3.5490	2.9158750	2	4.400-4
252.9	15.0	20.000	1.85334	7.75809	1 -1.0586	1.41917	2.74440	4.5249	4.4297283	2	8.400-4
252.9	15.0	30.000	3.4233	9.62077	1 -1.5115	1.61741	2.91493	5.0186	5.6372550	2	1.080-3
252.9	15.0	50.000	6.7713	1.23721	2 -2.1960	1.37416	2.95961	5.4788	7.4157800	2	1.350-3
252.9	15.0	70.000	1.0538	1.46576	2 -2.7671	1.83122	2.96278	5.7260	8.9000480	2	1.520-3
252.9	15.0	90.000	1.4514	1.66225	2 -3.2584	1.00837	3.96300	5.8820	1.0183978	3	1.600-3
252.9	15.0	110.000	1.8644	1.83699	2 -3.6952	1.11976	3.96301	5.9916	1.1332890	3	1.600-3
252.9	15.0	225.000	4.4274	2.61348	2 -5.6364	1.61474	3.96301	6.2974	1.6539833	3	1.800-3
252.9	15.0	350.000	7.4527	1.23637	2 -7.1937	1.01180	3.96301	6.4355	2.0872885	3	1.800-3
252.9	15.0	475.000	1.0662	2.74247	2 -8.4589	1.33442	3.96301	6.5141	2.4527708	3	1.800-3
252.9	30.0	0.010	2.4880-6	3.00831	1 -4.8793-3	6.65540-1	2.12221-2	1.0613-2	6.6584160-1	0.000	8.422-5
252.9	30.0	0.020	6.4820-6	2.1896-5	3.02076	1 -1.2274-2	1.66042	5.28446-2	2.64446-2	1.6611800	0.000
252.9	30.0	0.050	6.5100-5	3.04141	1 -2.4797-2	3.30945	1.04994-1	5.2590-2	3.3109866	2.000-7	
252.9	30.0	0.100	2.1137-4	3.08240	1 -5.0555-2	6.57432	2.07280-1	1.0415-1	6.5774740	1.000-7	
252.9	30.0	0.200	4.5594-4	3.12501	1 -7.8797-2	9.95616	3.11668-1	1.5695-1	9.9610770	1.000-7	
252.9	30.0	0.305	3.00416	3.20294	1 -1.3325-1	1.61168	1.98829-1	2.5199-1	1.6125275	1	0.000
252.9	30.0	0.500	1.1576-3	2.21342	1 -1.9254-1	2.28282	1.81352-1	3.4561-1	2.295093	1	1.000-6
252.9	30.0	1.000	4.4447-3	3.39654	1 -2.8713-1	3.12633	1.38962-1	4.7927-1	3.128173	1	2.000-6
252.9	30.0	1.524	1.0249-2	3.59086	1 -4.6675-1	4.62527	1.34721	6.9452-1	4.6283269	1	4.000-6
252.9	30.0	2.000	1.7588-2	3.76077	1 -6.4336-1	5.91928	1.67809	8.7342-1	5.9235675	1	7.000-6
252.9	30.0	3.048	4.0709-2	4.11604	1 -1.0680	8.57788	1.29606	1.2189	8.5852820	1	1.800-5
252.9	30.0	5.000	1.0816-1	4.72301	1 -1.9479	1.29889	1.14614	1.7293	1.3003457	2	5.000-5
252.9	30.0	7.000	2.0598-1	5.28874	1 -2.9120	1.69779	2.74646	2.1352	1.7001143	2	1.000-4
252.9	30.0	10.000	4.0791-1	6.05824	1 -4.3993	2.22540	4.32830	5.895	2.2292758	2	1.800-4
252.9	30.0	20.000	1.3571	8.18076	1 -9.1536	3.62533	2.06438	3.4254	3.6360292	2	3.900-4
252.9	30.0	30.0	2.6843	9.96438	1 -1.3490	4.77271	2.22766	3.8407	4.7626977	2	5.000-4
252.9	30.0	50.000	5.6471	1.26406	2 -2.0148	1.648151	2.27112	4.2144	6.5232685	2	6.400-4
252.9	30.0	70.000	9.0722	1.48844	2 -2.5755	1.79120	2.77424	4.4078	7.9809925	2	7.200-4
252.9	30.0	90.000	1.2747	1.68225	2 -3.0600	1.914743	2.27445	4.5265	9.2477840	2	7.300-4
252.9	30.0	110.000	1.6604	1.85507	2 -3.4921	1.02491	2.27446	4.6083	1.0384456	3	8.000-4
252.9	30.0	225.000	4.0965	1.62607	2 -5.4196	1.51638	2.27446	4.8298	1.5556414	3	9.000-4
252.9	30.0	350.000	7.0136	3.24642	2 -6.9704	1.91183	2.27446	4.9264	1.9873262	3	8.000-4
252.9	30.0	475.000	1.0130	2.75106	2 -8.2320	1.23351	2.23351	4.9803	2.3518761	3	4.340-2

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E
519249	0 - 59 - 4	65.0	0•010	2•0180•6	6•50191	1 -1•1241•3	1•53613•1	4•90035•3	2•4487•3	1•5393891•1	0•000
252•9	65.0	0•020	4•01430•6	6•50383	1 -2•2526•3	3•07182•1	9•79464•3	4•8981•3	3•07833754•1	-1•000•8	3•892•5
252•9	65.0	0•050	1•4086•5	6•50959	1 -5•6742•3	7•67577•1	2•44289•2	1•2225•2	7•69207154•1	-1•000•8	1•940•4
252•9	65.0	0•100	3•2750•5	6•51919	1 -1•1494•2	1•53401	4•86670•2	2•4376•2	1•5372817	0•000	3•865•4
252•9	65.0	0•200	8•2500•5	6•53840	1 -2•3563•2	3•06350	9•65824•2	4•8531•2	3•0700710	0•000	7•669•4
252•9	65.0	0•305	1•5685•4	6•55857	1 -3•6934•2	4•66457	1•46002•1	7•3525•2	4•6746473	2•000•7	1•160•3
252•9	65.0	0•500	3•5703•4	6•59602	1 -6•3102•2	7•62482	2•35931•1	1•1918•1	7•6415025	2•000•7	1•874•3
252•9	65.0	0•700	6•4483•4	6•63443	1 -9•2134•2	1•06434	1•06434	1 -6•500•1	1•0667035	1•000•6	2•583•3
252•9	65.0	1•000	1•2479•3	6•69206	1 -1•3948•1	1•51385	1•51385	1 -6•524•1	1•5172697	1•000	3•607•3
252•9	65.0	1•524	2•8470•3	6•79264	1 -2•3287•1	2•28970	6•65524•1	3•43067•1	2•2950381	1•000	5•285•3
252•9	65.0	2•000	4•9460•3	6•88387	1 -3•2729•1	2•98450	8•43186•1	4•3883•1	2•9916664	1•000•6	6•699•3
252•9	65.0	3•048	1•2021•2	7•08399	1 -5•6654•1	4•48206	1•19125	6•3231•1	4•4934807	1•000•6	9•466•3
252•9	65.0	5•000	3•5260•2	7•45266	1 -1•1009	7•16127	1•70757	9•3816•1	7•1814685	1•000•6	1•360•2
252•9	65.0	7•000	7•3287•2	7•82303	1 -1•7324	9•77246	1•1980	9•8027555	1•1980	1•700•5	1•673•2
252•9	65.0	10•000	1•5858•1	8•36191	1 -2•7745	1•34669	2•50702	1•5039	1•3514317	2•000•5	1•998•2
252•9	65.0	20•000	6•6801•1	1•00055	2 -6•4598	2•43043	2•07195	2•0968	2•4423034	2•000•5	2•467•2
252•9	65.0	30•480	1•49490	1•15082	2 -1•0113	1•39709	2•0951	2•3949	3•4184179	2•000•4	2•596•2
252•9	65.0	50•000	3•5593	1•38877	2 -1•6033	1•91641	3•24815	2•6540	4•9596998	2•000•4	2•644•2
252•9	65.0	70•000	6•1402	1•59549	2 -2•1199	1•23435	2•25101	2•7812	6•3049770	2•000•4	2•649•2
252•9	65.0	90•000	9•0393	1•77747	2 -2•5748	1•39439	3•25121	2•8559	7•4964630	2•000•4	2•649•2
252•9	65.0	110•000	1•2174	1•94166	2 -2•9853	1•44104	2•25123	2•9057	8•5781660	2•000•4	2•653•2
252•9	65.0	225•000	3•3073	1•68722	2 -4•8492	1•31936	3•25123	3•0331	1•3588107	3•000•4	2•650•2
252•9	65.0	350•000	5•9218	1•29546	2 -6•3698	1•70708	3•25123	3•0850	1•7827841	3•000•4	2•650•2
252•9	65.0	475•000	8•7770	1•79305	2 -7•6138	1•02428	3•25123	3•1129	2•1428492	3•000•4	2•660•2
252•9	65.0	475•9	8•7770	1•79305	2 -7•6138	1•02428	3•25123	3•1129	2•1428492	3•000•4	2•660•2
252•9	100•0	0•010	-1•3500•6	1•00012	2 -7•3064•4	9•96977	-2•17935	1•5870•3	1•0019813•1	0•000	2•533•5
252•9	100•0	0•020	2•5040•6	1•00024	2 -1•4621•3	1•99331	-1•1757•3	2•0033299	-1•000	5•062•5	
252•9	100•0	0•050	1•3315•5	1•00062	2 -3•6825•3	4•98170	-1•79329	5•0067505	-1•000	1•263•4	
252•9	100•0	0•100	2•8860•5	1•00124	2 -7•4630•3	9•96021	-1•58549	1•58277	-1•0010370	-1•000	2•515•4
252•9	100•0	0•200	6•0450•5	1•00249	2 -1•5313•2	1•99083	6•27635	-2•1537•2	2•0008842	0•000	4•998•4
252•9	100•0	0•305	1•0890•4	1•00380	2 -2•4025•2	3•03396	9•49624	-2•47820	3•0493261	1•000	4•424•3
252•9	100•0	0•500	2•2089•4	1•00625	2 -4•1118•2	4•96755	1•53701	-1•7644•2	4•9928443	2•000	7•569•4
252•9	100•0	0•700	3•7750•4	1•00877	2 -6•0142•2	6•94569	2•12257	-1•0766•1	6•9812615	0•000	1•224•3
252•9	100•0	1•000	6•8270•4	1•01256	2 -9•1305•2	9•90354	2•97097	-1•5164•1	9•9546785	1•000	2•366•3
252•9	100•0	1•524	1•4694•3	1•01922	2 -1•5289•1	1•50427	1•37064	-1•2529•1	1•5121552	1•000	3•479•3
252•9	100•0	2•000	2•4772•3	1•02531	2 -1•620•1	1•96815	1•55677	-1•1919•1	1•9786001	1•000	4•424•3
252•9	100•0	3•048	5•8657•3	1•03883	2 -3•7779•1	2•97958	1•90752	-1•1970•1	1•9958359	0•000	6•300•3
252•9	100•0	5•000	1•7156•2	1•06426	2 -7•4647•1	4•82786	1•0766	-1•0766•1	4•8555593	1•000	9•155•3
252•9	100•0	7•000	3•6158•2	1•09047	2 -1•1933	6•67539	1•42460	2•29732	1•8975	2•000•6	1•137•2
252•9	100•0	10•000	8•0555•2	1•12968	2 -1•9517	9•36335	1•72044	1•0329	5•1044260	2•000	1•879•2
252•9	100•0	20•000	3•7122•1	1•25598	2 -4•7854	1•76895	2•15212	1•4740	6•1922945	2•000	1•375•2
252•9	100•0	30•480	8•8882•1	1•37845	2 -7•7632	2•55683	2•26424	1•7010	2•5808283	2•000	1•733•2
252•9	100•0	50•000	2•3010	1•58217	2 -8•2831	1•855756	2•29732	1•8975	3•9042225	2•000	1•887•2
252•9	100•0	70•000	4•1918	1•76607	2 -1•7426	1•02997	2•29986	1•9919	5•1044260	2•000	1•879•2
252•9	100•0	90•000	6•4129	1•93174	2 -2•1568	1•08605	2•30004	1•4740	6•1922945	2•000	1•884•2
252•9	100•0	110•000	8•8915	2•08353	2 -2•5363	1•05363	2•30005	2•0814	7•1951865	2•000	1•887•2
252•9	100•0	225•000	2•6421	1•79025	2 -4•3031	1•15586	2•30005	2•1685	1•1958368	3•000	1•880•2
252•9	100•0	350•000	4•9467	1•37894	2 -5•7748	1•53113	2•30005	2•2021	1•6073952	3•000	1•880•2
252•9	100•0	475•000	7•5281	1•86491	2 -6•9897	1•84091	2•30005	2•2198	1•9600733	3•000	1•880•2

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R-E	
										DELTA R	DELTA E
252.9	200.0	0.010	1.3658-5	2.00006	2 -3•5875-4	4.92751-2	1.57374-3	7.8654-4	5.0279695-2	0.000	1.271-5
252.9	200.0	0.020	1.4088-5	2.00012	2 -7•2153-4	9.86141-2	1.5728-3	1.0062195-1	-1.000-8	2.541-5	
252.9	200.0	0.050	1.3518-5	2.00003	2 -1•8229-5	2.46630-1	7.84950-3	3.9252-3	2.5164914-1	-1.000-8	6.346-5
252.9	200.0	0.100	3.2210-5	2.00061	2 -3•6945-3	4.93198-1	1.56479-2	7.8414-3	5.0323770-1	-2.000-8	1.265-4
252.9	200.0	0.200	4.6400-5	2.00123	2 -7•5876-3	9.86332-1	1.0948-2	1.5625-2	1.0064205	0.000	2.514-4
252.9	200.0	0.305	6.4170-5	2.00188	2 -1•1912-2	1.50394	4.70699-2	2.3705-2	1.5345957	0.000	3.809-4
252.9	200.0	0.500	1.6195-4	2.00310	2 -2•0399-2	2.46446	7.62534-2	3.8520-2	2.5147648	1.000-7	6.167-4
252.9	200.0	0.700	2.3546-4	2.00435	2 -2•9869-2	3.4913	1.05400-1	3.461-2	3.5196367	1.000-7	8.526-4
252.9	200.0	1.000	3.4090-4	2.00624	2 -4•5424-2	4.92503	1.47728-1	7.5405-2	5.0259080	0.000	1.195-3
252.9	200.0	1.524	6.7014-4	2.00958	2 -7•6266-2	7.49894	2.17830-1	1.128-1	7.65315	5.000-7	1.762-3
252.9	200.0	2.000	1.0503-3	2.01265	2 -1•0812-1	9.83310	2.77516-1	1.4442-1	1.0035953	1	2.245-3
252.9	200.0	3.048	2.1865-3	2.01950	2 -1•9001-1	1.49587	1.9664-3	2.1051-1	1.5269622	1	3.210-3
252.9	200.0	5.000	5.7666-3	2.03256	2 -3•7944-1	2.44552	1.7950-1	3.1837-1	2.4970504	1	4.698-3
252.9	200.0	7.000	1.1723-2	2.04627	2 -6•1318-1	3.41164	1.24812-1	4.1363-1	3.4845499	1	5.874-3
252.9	200.0	10.000	2.5634-2	2.06722	2 -1•0184	4.84774	1.82287-1	5.3030-1	4.9535190	1	7.160-3
252.9	200.0	20.000	1.2186-1	2.013814	2 -2•6107	9.52268	1.12386	7.7181-1	9.7449620	1	9.188-3
252.9	200.0	30.480	3.0888-1	2.21157	2 -4•3961	1.42464	1.9108	9.00010-1	1.4601825	2	9.810-3
252.9	200.0	50.000	8.7882-1	2.34267	2 -7•6576	2.26169	2.12137	1.0122	3.248366	2	2.000-5
252.9	200.0	70.000	1.7279	2.46934	2 -1•0822	1.06923	2.12140	1.0656	3.1641457	2	4.000-5
252.9	200.0	90.000	2.8103	2.58922	2 -1•3819	1.383343	2.121423	1.0956	3.9633634	2	5.000-5
252.9	200.0	110.000	4.0978	2.70321	2 -1•6669	1.456010	2.121424	1.1147	4.7280398	2	6.000-5
252.9	200.0	225.000	1.4580	3.27366	2 -3•0931	1.9645	2.121424	1.1597	8.6324875	2	4.000-5
252.9	200.0	350.000	3.0281	3.78308	2 -4•3666	1.14437	3.21424	1.1758	1.2248613	3	1.000-2
252.9	200.0	475.000	4.9211	4.21852	2 -5•4552	1.42194	3.21424	1.1838	1.5457158	3	1.000-2
252.9	400.0	0.010	3.4810-6	4.00002	2 -1•7295-4	2.36495-2	7.54548-4	3.7408-4	2.5676869-2	0.000	6.491-6
252.9	400.0	0.020	-2.0074-5	4.00005	2 -3•4911-4	4.73628-2	1.50838-3	7.5191-4	5.1412490-2	7.000-9	1.300-5
252.9	400.0	0.050	-1.0435-5	4.00014	2 -8•7630-4	1.8311-1	3.76369-3	1.8795-3	1.2844340-1	1.000-8	3.240-5
252.9	400.0	0.100	3.0790-5	4.00029	2 -1•7716-3	2.36495-1	7.50336-3	3.7586-3	2.5677023-1	1.000-8	6.456-5
252.9	400.0	0.200	2.5700-5	4.00059	2 -3•6404-3	4.73054-1	1.49120-2	7.4910-3	5.1360260-1	0.000	1.283-4
252.9	400.0	0.305	-1.4000-6	4.00006	2 -5•1791-3	7.21470-1	2.25758-2	1.25758-2	7.8330665-1	3.000-8	1.945-4
252.9	400.0	0.500	1.1855-4	4.00148	2 -9•7886-3	1.81234	3.65813-2	1.8477-2	1.2837679	0.000	3.148-4
252.9	400.0	0.700	2.4367-4	4.00209	2 -1•4329	1.65495	5.05755-2	2.5644-2	1.7969936	1.000-7	4.353-4
252.9	400.0	1.000	3.1040-4	4.00299	2 -2•1801-2	2.36399	7.09109-2	3.6191-2	2.5669753	1.000-7	6.103-4
252.9	400.0	1.524	4.8200-4	4.00460	2 -3•6637-2	3.60186	1.04622-1	5.3935-2	3.9114118	0.000	9.000-4
252.9	400.0	2.000	6.4580-4	4.00608	2 -5•1980-2	4.72582	1.33359-1	6.9409-2	5.1322955	3.000-7	1.148-3
252.9	400.0	3.048	1.2681-3	4.00938	2 -9•1476-2	7.19812	1.90823-1	1.0127-1	7.8184485	4.000-7	1.643-3
252.9	400.0	5.000	2.7411-3	4.01571	2 -1•8319	1.79761	2.79430-1	1.5347-1	7.2816327	1	2.409-3
252.9	400.0	7.000	5.0703-3	4.02237	2 -2•9693	1.64970	3.50058-1	1.9978-1	1.7929067	1	3.018-3
252.9	400.0	10.000	1.0010-2	4.03263	2 -4•9538-1	2.35294	1.27402-1	2.56779-1	2.5583248	1	2.000-6
252.9	400.0	20.000	4.2658-2	4.06794	2 -1•2882	4.67996	1.47177-1	3.7608-1	5.0961490	1	4.000-6
252.9	400.0	30.480	1.0553-1	4.10541	2 -2•1993	7.09048	1.81481-1	4.4028-1	7.733825	1	5.101-3
252.9	400.0	50.000	3.0302-1	4.17455	2 -3•9194	1.15050	2.92708-1	4.9688-1	1.2585754	2	5.240-3
252.9	400.0	70.000	6.1097-1	4.24397	2 -5•6541	1.59308	2.93652-1	2.388-1	1.7480407	2	5.240-3
252.9	400.0	90.000	1.0219	4.31193	2 -7•3530	2.2882	4.2702-1	5.37726-1	2.2301225	2	5.240-3
252.9	400.0	110.000	1.52321	4.37849	2 -9•0170	2.45056	5.93733-1	5.4859-1	2.7052066	2	5.250-3
252.9	400.0	225.000	6.2260	4.73709	2 -1•7981	1.43620	5.93733-1	5.7076-1	5.3174685	2	5.270-3
252.9	400.0	400.0	1.4314	5.08774	2 -2•6748	1.97169	2.93733-1	5.7840-1	7.9669425	2	5.290-3
252.9	400.0	475.000	5.05072	5.40591	2 -3•4702	1.89991	2.93733-1	5.8206-1	1.0461940	3	5.200-3

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R-E
252•9	900•0	0•010	1•2184-4	9•00000	2 -5•4342-5	7•84068-3	2•53157-4	1•2413-4	1•2707337-2	0•000
252•9	900•0	0•020	-1•5789-4	9•00002	2 -1•2142-4	1•60000-2	5•06077-4	2•5107-4	2•5612571-2	1•210-6
252•9	900•0	0•050	2•0737-4	9•00004	2 -2•8722-4	3•95221-2	1•26277-3	6•2797-4	6•3733915-2	1•945-6
252•9	900•0	0•100	-2•2853-4	9•00009	2 -6•0248-4	7•95542-2	2•51751-3	1•2673-3	1•2778489-1	2•570-6
252•9	900•0	0•200	-1•3891-4	9•00019	2 -1•2265-3	1•58853-1	5•00341-3	2•5068-3	2•5541189-1	3•470-5
252•9	900•0	0•305	1•2858-4	9•00030	2 -1•9148-3	2•41977-1	7•57510-3	3•80777-3	3•8933393-1	2•640-6
252•9	900•0	0•500	2•7211-4	9•00049	2 -3•2797-3	3•96623-1	1•22752-2	6•2020-3	6•3821845-1	6•760-6
252•9	900•0	0•700	3•4326-4	9•00070	2 -4•8053-3	5•55286-1	1•69721-2	8•6103-3	8•9351915-1	2•780-6
252•9	900•0	1•000	3•0620-4	9•00100	2 -7•3165-3	7•93375-1	2•37984-2	1•2156-2	1•2765355	2•800-6
252•9	900•0	1•524	1•5880-4	9•00154	2 -1•2306-2	1•20925	3•51180-2	1•8112-2	1•9455620	2•800-6
252•9	900•0	2•000	3•8360-4	9•00204	2 -1•7457-2	1•58668	4•47703-2	2•3303-2	2•5531087	2•900-6
252•9	900•0	3•048	1•0458-3	9•00315	2 -3•0723-2	2•41735	6•40811-2	3•4009-2	3•8905902	2•900-6
252•9	900•0	5•000	1•7347-3	9•00528	2 -6•1584-2	3•96426	9•38878-2	5•1568-2	6•3818260	2•700-6
252•9	900•0	7•000	3•5311-3	9•00752	2 -9•9882-2	5•54737	1•17677-1	6•7160-2	8•9334880	2•700-6
252•9	900•0	10•000	5•7230-3	9•01098	2 -1•6685-1	7•92061	1•43776-1	8•6389-2	1•2760668	1•840-3
252•9	900•0	20•000	1•9938-2	9•02295	2 -4•3568-1	1•58101	1•84361-1	1•2674-1	2•5509692	1•375-3
252•9	900•0	30•480	4•5591-2	9•03575	2 -7•4688-1	2•40438	1•96078-1	1•4855-1	3•8857453	2•000-6
252•9	900•0	50•000	1•2276-1	9•05963	2 -1•3408	3•92866	1•9955-1	1•6783-1	6•3683150	1•000-6
252•9	900•0	70•000	2•4208-1	9•08393	2 -1•9480	5•447791	1•0285-1	1•7704-1	8•9071260	1•000-6
252•9	900•0	90•000	4•0232-1	9•10803	2 -2•5507	7•01463	1•00311-1	1•8219-1	1•1441126	2•620-3
252•9	900•0	110•000	6•0188-1	9•13195	2 -3•1485	8•53910	1•00313-1	1•8547-1	1•3970453	2•630-3
252•9	900•0	225•000	2•5216	9•26583	2 -6•4956	1•70735	2•00313-1	1•9302-1	2•84255810	2•630-3
252•9	900•0	350•000	6•0635	9•40473	2 -9•9682	2•59278	2•00313-1	1•9560-1	4•3978034	2•650-3
252•9	900•0	475•000	1•1077	1	9•53725	-1•3281	1	1•9682-1	5•9377005	2•610-3

SURFACE	N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E
289.0	0.0	0.010	-5.1660-6	1.053377	7.9269-4	1.30397	1.12314-1	1.3039748	1.0000-6	3.766-3	5.325-3
289.0	0.0	0.020	-7.4160-6	2.017000	4.1630-5	1.84396	1.23389-1	1.8439651	1.0000-6	5.320-6	8.406-3
289.0	0.0	0.050	1.2250-6	3.43223	-1.7746-3	2.091497	1.14171	2.91149924	1.0000-6	1.186-2	1.670-2
289.0	0.0	0.100	5.2240-5	4.85567	-6.5937-3	4.012136	1.61013	4.1214038	1.0000-6	1.670-2	2.053-2
289.0	0.0	0.200	2.4351-4	6.877616	-1.9402-2	5.82643	1.26618	5.8265420	1.0000-5	1.0509	1.0509
289.0	0.0	0.305	6.3174-4	8.50209	-3.8272-2	7.19200	1.78300	7.1922045	1.0000-5	2.13182	2.13182
289.0	0.0	0.500	1.7845-3	1.09075	1.-7.9027-2	9.20141	1.53049	9.2018365	1.0000-5	2.5731678	2.5731678
289.0	0.0	0.700	3.5319-3	1.29332	1.-1.3029-1	1.08790	2.13734	1.0879782	1.0000-5	3.055-2	3.604-2
289.0	0.0	1.000	7.1910-3	1.55056	1.-2.1995-1	1.29887	2.87527	1.2989965	1.0000-4	4.349-2	4.884-2
289.0	0.0	1.524	1.6631-2	1.92399	1.-4.0557-1	1.60042	2.87254	1.6006434	1.0000-4	1.071-2	1.071-2
289.0	0.0	2.000	2.8203-2	2.21379	1.-5.9717-1	1.83039	2.58309	1.8307330	1.0000-4	2.13182	2.13182
289.0	0.0	3.048	6.3506-2	2.75748	1.-1.0748	2.5179	7.75842	2.2524212	1.0000-4	2.5731678	2.5731678
289.0	0.0	5.000	1.6119-1	3.58251	1.-2.0855	2.86696	9.16093	5.06452	1.0000-3	6.858-2	7.560-2
289.0	0.0	7.000	2.9510-1	4.29010	1.-3.1886	3.37450	1.00488	5.7503	1.0000-3	8.207-2	9.019-2
289.0	0.0	10.000	5.5035-1	5.20126	1.-4.8736	4.00556	2.08393	6.4936	4.0092910	1.0000-3	9.450-2
289.0	0.0	20.000	1.7240	7.56406	1.-1.0112	1.56811	2.17295	7.8607	5.5786575	1.0000-3	9.460-2
289.0	0.0	30.480	3.2708	9.46594	1.-1.4740	1.79102	1.8996	8.5760	6.8108505	1.0000-3	9.455-2
289.0	0.0	50.000	6.590	1.22535	2.-2.1679	1.57007	1.91389	9.2751	8.6116700	1.0000-3	9.371-2
289.0	0.0	70.000	1.059	1.45583	2.-7.7440	1.0391	1.9412	9.6696	1.0107921	1.0000-3	9.420-2
289.0	0.0	90.000	1.4316	1.65357	2.-3.2383	1.12992	1.9413	9.9270	1.1399467	1.0000-3	9.450-2
289.0	0.0	110.000	1.8439	1.82920	2.-3.6774	1.24185	1.9413	1.0112	1.2553755	1.0000-3	9.460-2
289.0	0.0	225.000	4.4037	2.60823	2.-5.6249	1.73833	1.9413	1.0649	1.7775729	1.0000-3	9.550-2
289.0	0.0	350.000	7.4263	3.23231	2.-7.1851	1.3606	1.9413	1.0903	2.115484	1.0000-3	9.570-2
289.0	0.0	475.000	1.0633	3.73911	2.-8.4521	1.45904	1.9413	1.1050	2.5774034	1.0000-3	9.580-2
289.0	0.5	0.010	-2.7210-6	1.61321	9.46425	1.46724	1.8591-1	1.8591-1	0.0000	2.733-3	4.235-3
289.0	0.5	0.020	-3.8250-6	2.22685	-1.4908-4	1.542075	1.86903-1	1.4672501	1.0000-6	7.267-3	7.000-6
289.0	0.5	0.050	6.5440-6	3.46845	-1.9367-3	2.052075	1.9416-1	2.0207714	1.0000-6	1.070-2	1.070-2
289.0	0.5	0.100	5.8900-5	4.88243	-6.7198-3	3.71820	1.45185	7.2771-1	3.7182411	1.0000-6	1.552-2
289.0	0.5	0.200	2.5136-4	6.889432	-1.9485-2	5.41692	1.0546	1.0578	5.4170305	1.0000-5	1.552-2
289.0	0.5	0.305	6.3966-4	8.51678	-3.8315-2	6.77958	1.62117	1.3203	6.7797820	1.0000-5	1.933-2
289.0	0.5	0.500	1.7912-3	1.09190	1.-7.9017-2	8.78629	1.36766	1.7030	8.7867105	1.0000-5	2.484-2
289.0	0.5	0.700	3.5364-3	1.29428	1.-3.023-1	1.04624	2.97397	1.0463172	2.7000-5	9.394-2	9.700-4
289.0	0.5	1.000	7.1917-3	1.55136	1.-2.1984-1	1.21708	2.71144	2.4087	1.2572041	1.0000-4	3.482-2
289.0	0.5	1.524	1.6624-2	1.92464	1.-4.0538-1	1.55850	2.70829	2.9507	1.5587247	2.0000-4	4.225-2
289.0	0.5	2.000	2.8187-2	2.21436	1.-5.9693-1	1.78841	6.41863	3.3509	1.7887468	3.100-4	4.760-2
289.0	0.5	3.048	6.3470-2	2.75793	1.-1.0745	2.20972	7.59372	4.0485	2.2103490	5.300-4	5.647-2
289.0	0.5	5.000	1.6111-1	3.58286	1.-2.0851	2.82481	8.99606	4.9737	2.8261377	6.733-2	9.230-2
289.0	0.5	7.000	2.9499-1	4.29039	1.-3.1880	3.33231	9.88387	5.6569	3.3344986	2.1390-3	7.428-2
289.0	0.5	10.000	5.0000	5.9619-1	1.20150	-4.8730	3.96333	1.06743	1.960-3	8.085-2	9.310-2
289.0	0.5	20.000	1.7237	7.56422	1.-1.0112	1.52583	2.13731	1.56445	1.7548	3.260-3	9.320-2
289.0	0.5	30.480	3.2704	9.46607	1.-1.4739	1.74872	2.17345	1.4638	1.9810	4.020-3	9.106-2
289.0	0.5	50.000	6.5983	1.22536	2.-1.678	1.52775	2.17738	1.1553	8.5693540	2.810-3	9.230-2
289.0	0.5	70.000	1.0349	1.45584	2.-7.7439	1.99677	1.7761	1.5447	1.0065595	3.200-3	9.280-2
289.0	0.5	90.000	1.4315	1.65358	2.-3.2382	1.12569	1.17763	1.7985	1.357135	3.500-3	9.310-2
289.0	0.5	110.000	1.8437	1.82920	2.-6.6772	1.23762	1.17763	1.9810	1.2511417	3.700-3	9.320-2
289.0	0.5	225.000	4.4035	1.60823	2.-5.6248	1.73409	1.17763	1.0509	1.773380	3.300-3	9.390-2
289.0	0.5	350.000	7.4261	3.23231	2.-7.1850	1.13606	1.17763	1.0758	2.073127	3.500-3	9.410-2
289.0	0.5	475.000	1.0633	3.73911	2.-8.4520	1.245480	1.17763	1.0903	2.5731678	3.500-3	9.400-2

SURFACE_N	INIT THETA	HEIGHT_H	DELTA_H	THETA	DELTA_THETA	DISTANCE	TAU	SLANT RANGE	DELTA_R	DELTA_R-E		
289.0	1.0	0.010	-1.5140-6	1.83097	4.2942-4	7.06470	2.77562-1	1.3878-1	0.000	2.040-3		
289.0	1.0	0.020	-1.9800-6	2.38933	-2.2963-4	1.18036	1.462804-1	2.3168-1	1.000	3.407-3		
289.0	1.0	0.050	8.3750-6	3.57494	-1.9390-3	2.18637	1.855728-1	4.2845-1	2.000	6.303-3		
289.0	1.0	0.100	5.9030-5	4.95865	-6.6193-3	3.35818	1.131072	6.5692-1	3.000	9.658-3		
289.0	1.0	0.200	2.4695-4	6.94850	-1.9258-2	5.03828	1.195715	9.8333-1	1.000	1.442-2		
289.0	1.0	0.305	2.8888-4	8.05039	-2.79232	6.39232	1.2439	6.392560	1.000	1.822-2		
289.0	1.0	0.500	1.7676-3	1.09533	-7.8511-2	8.09099	3.21309	1.6248	8.3914085	1.500	2.317-2	
289.0	1.0	0.700	3.4967-3	1.29718	-1.2959-1	1.00627	2.81780	1.9390	1.0063439	2.000	2.818-2	
289.0	1.0	1.000	7.1318-3	1.55378	-2.1903-1	1.21672	2.55389	2.3281	1.2168381	1.000	3.366-2	
289.0	1.0	1.524	1.6524-2	1.92658	-4.0434-1	1.51775	2.54950	2.86885	1.5179810	4.107-2		
289.0	1.0	2.000	2.8052-2	2.21605	-5.9572-1	1.74746	6.25921	3.2677	1.7478009	2.900	4.641-2	
289.0	1.0	3.048	6.3257-2	2.75929	-1.0730	2.16851	7.43359	3.9632	2.1691445	5.000	5.529-2	
289.0	1.0	5.000	1.6076-1	3.58390	-2.0832	2.78338	8.83539	4.8852	2.7847002	1.000	6.610-2	
289.0	1.0	7.000	2.9450-1	4.29127	-3.1859	3.29075	9.72299	5.5657	3.2929373	1.340	7.309-2	
289.0	1.0	10.000	5.4951-1	20.2222	-4.8705	3.92166	2.05132	1.3019	3.29253975	1.900	7.951-2	
289.0	1.0	20.000	1.7225	7.56472	-1.0109	5.48402	2.14034	1.6513	5.4945655	1.40	8.759-2	
289.0	1.0	30.480	3.2667	9.46647	-1.4736	6.70684	2.15734	1.3542	6.7266740	9.10	8.981-2	
289.0	1.0	50.000	6.5960	1.22539	-2.1675	8.48581	2.16127	1.0381	8.5274160	4.650	9.103-2	
289.0	1.0	70.000	1.0346	1.45587	-2.7435	9.95480	2.16150	1.4227	1.0023626	5.000	9.140-2	
289.0	1.0	90.000	1.4312	1.65360	-3.2378	1.2149	1.16151	1.629	1.1315146	9.180	9.180-2	
289.0	1.0	110.000	1.8433	1.82922	-3.6769	1.23342	1.16152	0.8527	1.2469415	5.600	9.200-2	
289.0	1.0	225.000	4.4029	2.60825	-5.6244	1.72989	1.16152	1.0372	1.7691337	6.200	9.200-2	
289.0	1.0	350.000	7.4253	3.23232	-7.1846	2.12761	1.16152	1.0617	2.031067	6.500	9.290-2	
289.0	1.0	475.000	1.0632	3.73912	-8.4516	2.45060	1.16152	1.0759	2.5689606	6.500	9.280-2	
289.0	2.0	0.010	-5.9500-7	2.95108	-2.3952-4	8.07968	1.65186-1	5.3855-1	8.0797000	1.000	2.332-3	
289.0	2.0	0.020	-6.4500-7	7.4380-6	-3.97242	-1.7175-3	1.67458	1.2801-1	1.6745964	0.060	4.825-3	
289.0	2.0	0.050	4.9980-5	5.02544	-6.0455-3	2.75858	1.07608	5.3926-1	2.7586185	1.000	7.929-3	
289.0	2.0	0.100	0.200	2.1836-4	7.16111	-1.8213-2	4.37010	1.69608	8.5218-1	4.3702146	1.400	1.249-2
289.0	2.0	0.305	5.7436-4	8.73415	-3.6475-2	5.69125	2.19608	1.062	5.6914545	1.000	1.619-2	
289.0	2.0	0.500	1.6602-3	1.10894	-7.6393-2	7.65869	1.92795	1.4805	7.6591165	2.600	2.159-2	
289.0	2.0	0.700	3.3342-3	1.30869	-1.2695-1	9.31307	1.52637	1.7910	9.3137710	4.800	6.02-2	
289.0	2.0	1.000	6.8788-3	1.56340	-1.573-1	4.25704	2.1763	1.403226	1.4399676	8.000	3.144-2	
289.0	2.0	1.524	1.6112-2	1.93435	-4.0012-1	1.43974	2.24768	2.7125	1.4399676	1.600	3.882-2	
289.0	2.0	2.000	2.7495-2	2.22281	-5.9084-1	1.66865	2.95492	3.1089	1.6689849	2.400	4.412-2	
289.0	2.0	3.048	6.2384-2	2.76472	-1.0669	2.08867	2.12642	3.7996	2.0892992	4.500	5.295-2	
289.0	2.0	5.000	1.5932-1	3.58808	-2.0756	2.70260	2.52610	4.7149	2.7039242	8.400	6.373-2	
289.0	2.0	7.000	2.9252-1	4.29476	-3.1772	3.20948	2.1283	5.3898	3.2116670	1.230	7.067-2	
289.0	2.0	10.000	5.4678-1	5.20510	-4.8608	3.83997	2.025	6.1191	3.8437031	7.05	7.05-2	
289.0	2.0	20.000	1.7176	7.56669	-1.0097	5.40172	1.10923	1.4514	5.4122745	2.930	8.503-2	
289.0	2.0	30.480	3.2620	9.46805	-1.4723	6.62429	2.12623	1.1422	6.6441270	3.600	8.718-2	
289.0	2.0	50.000	6.5864	1.22551	-2.1661	8.40303	2.13016	1.8117	8.4446395	4.280	8.830-2	
289.0	2.0	70.000	1.0334	1.45597	-2.7421	9.87189	2.13039	1.1866	9.9407230	4.740	8.884-2	
289.0	2.0	90.000	1.4298	1.65369	-3.2364	1.1319	1.13041	1.4301	1.1232166	5.000	8.910-2	
289.0	2.0	110.000	1.8418	1.82931	-5.6229	1.22511	1.13041	1.6047	1.2386379	5.200	8.930-2	
289.0	2.0	225.000	4.4004	2.60830	-7.1831	1.72157	1.13041	1.0181	1.7608142	5.800	9.000-2	
289.0	2.0	350.000	7.4221	3.23237	-7.1831	2.1929	1.13041	1.0345	2.1947799	6.000	9.010-2	
289.0	2.0	475.000	1.0628	3.73916	-8.4501	2.44227	1.13041	1.0482	2.5606296	6.000	9.000-2	

SURFACE N	INIT THETA	HEIGHT H	DELTA THETA	THETA	DELTA THETA	DISTANCE	TAU ANGLE	ERROR ANGLE	SLOPE RANGE	DELTA R	DELTA R-E
289.0	4.0	0.010	-1.7700-7	4.28397	1.4672-4	2.41428	9.48540-2	4.7427-2	2.4143074	0.000	6.973-4
289.0	4.0	0.020	-1.5100-7	4.55070	-1.6815-4	4.67807	1.83342-1	9.1788-2	4.6781223	-1.000-7	1.350-3
289.0	4.0	0.050	3.9030-6	5.27068	-1.2153-3	1.98771	1.21941-1	2.1122-1	1.87306	1.000	3.107-3
289.0	4.0	0.100	2.9700-5	6.29190	-4.6659-3	1.94354	1.57747-1	3.7969-1	1.9435894	1.000-6	5.581-3
289.0	4.0	0.200	1.4989-4	7.95496	-1.5377-2	3.34760	1.297781	6.5215-1	3.34774038	1.000-6	9.561-3
289.0	4.0	0.305	4.3303-4	9.39601	-3.2119-2	4.55789	1.75584	8.8453-1	4.5580963	1.000-6	1.295-2
289.0	4.0	0.500	1.3574-3	1.16178	1.-6.9810-2	6.41385	1.44621	1.2369	6.4142780	1.500-5	1.803-2
289.0	4.0	0.700	2.8467-3	1.35376	1.-1.1841-1	8.00383	1.02132	1.5344	8.0045235	1.400-5	2.229-2
289.0	4.0	1.000	6.0947-3	1.60132	1.-2.0472-1	1.00341	2.73144	1.9076	1.0035287	6.000-5	2.755-2
289.0	4.0	1.524	1.4775-2	1.96512	1.-3.8556-1	1.29718	2.70300	2.4309	1.2974038	1.000-4	3.477-2
289.0	4.0	2.000	2.5645-2	2.24964	1.-5.7367-1	1.5295	2.40057	2.8195	1.5232921	1.900-4	3.998-2
289.0	4.0	3.000	5.9390-2	2.78633	1.-1.0452	1.93893	2.56079	3.4983	1.9395644	3.600-4	4.871-2
289.0	4.0	5.000	1.5423-1	3.60476	1.-2.0478	2.54918	2.95206	4.3986	2.5505092	6.800-4	5.934-2
289.0	4.0	7.000	2.8541-1	4.30870	1.-3.1452	3.05410	2.83535	5.0621	3.0562877	1.030-3	6.622-2
289.0	4.0	10.000	5.3683-1	5.21660	1.-4.8242	3.68290	2.62298	5.7775	3.6866362	1.500-3	7.254-2
289.0	4.0	20.000	1.6995	7.57460	1.-1.0053	1.24227	2.05113	7.0769	5.2528270	2.520-3	8.037-2
289.0	4.0	30.480	3.2370	9.47437	1.-1.4675	1.46382	2.06812	7.7450	6.4836540	3.180-3	8.248-2
289.0	4.0	50.000	6.5506	1.22600	2.-2.1609	1.24163	2.07204	8.3872	8.2832445	3.750-3	8.352-2
289.0	4.0	70.000	1.0289	1.45638	2.-2.7367	1.71000	2.07227	8.7443	9.7788325	4.090-3	8.389-2
289.0	4.0	90.000	1.4245	1.65405	2.-3.2309	1.09697	3.07228	8.9750	1.069953	4.300-3	8.410-2
289.0	4.0	110.000	1.8357	1.82963	2.-3.6698	1.20887	3.07229	9.1400	1.2223948	4.400-3	8.420-2
289.0	4.0	225.000	4.3911	2.60853	2.-5.6171	1.70526	3.07229	9.6138	1.7445078	4.800-3	8.450-2
289.0	4.0	350.000	7.4099	3.23255	2.-7.1771	1.10295	3.07229	9.8347	2.1784444	5.000-3	8.470-2
289.0	4.0	475.000	1.0613	3.73931	2.-8.4440	1.42591	3.07229	9.9624	2.5442776	4.900-3	8.480-2
289.0	8.0	0.010	-6.8000-8	8.14569	7.5184-5	1.23869	4.86665-2	2.4333-2	1.2387362	0.000	3.577-4
289.0	8.0	0.020	-4.0000-8	8.28907	-9.4026-5	2.45559	9.62338-2	4.8178-2	2.45556806	0.000	7.087-4
289.0	8.0	0.050	1.3280-6	8.70516	-7.0123-4	5.98610	2.34121-1	1.1719-1	5.9863390	-2.000-7	1.724-3
289.0	8.0	0.100	1.1600-5	9.35883	-2.9082-3	1.15217	4.49065-1	2.2500-1	1.1522273	1.-1.000-6	3.307-3
289.0	8.0	0.200	6.9630-5	1.05489	1.-1.0694-2	2.15685	8.35395-1	4.19855-1	2.1569845	1.1.000-6	6.155-3
289.0	8.0	0.305	2.3020-4	1.16740	1.-2.3787-2	3.10177	1.19297	6.0102-1	3.1019995	1.000-6	8.792-3
289.0	8.0	0.500	8.2816-4	1.35267	1.-5.5286-2	4.64930	1.67853	8.9422-1	4.6497428	6.000-6	1.304-2
289.0	8.0	0.700	1.8897-3	1.52073	1.-9.7857-2	6.04121	2.27198	1.1538	6.0419265	1.100-5	1.675-2
289.0	8.0	1.000	4.3809-3	1.74476	1.-1.7607-2	7.87841	2.91451	1.4890	7.87765	2.900-5	2.150-2
289.0	8.0	1.524	1.1515-2	2.08366	1.-3.4450-1	1.06150	2.81955	1.9741	1.0617281	2.800-5	2.820-2
289.0	8.0	2.000	2.0858-2	2.35389	1.-5.2315-1	1.27554	2.48209	2.3400	1.2762774	2.100-4	3.313-2
289.0	8.0	3.048	5.1019-2	2.87115	1.-9.7768-1	1.67685	2.60028	2.9864	1.6774887	2.100-4	4.149-2
289.0	8.0	5.000	1.3896-1	3.67071	1.-1.9571	2.27303	2.95948	3.8508	2.2743591	2.4500-4	5.181-2
289.0	8.0	7.000	2.6324-1	4.36401	1.-3.0380	2.77031	2.82932	4.4900	2.725039	2.700-4	5.850-2
289.0	8.0	10.000	1.0131	1.45802	1.-3.4450-1	1.06150	2.81955	1.9741	1.0617281	2.800-5	2.820-2
289.0	8.0	20.000	1.6387	7.60616	1.-9.8969	4.94246	2.49131	6.4164	4.9530120	1.920-3	7.225-2
289.0	8.0	30.480	3.1510	9.49959	1.-1.4503	6.15993	2.66060	7.0436	6.1797655	2.390-3	7.414-2
289.0	8.0	50.000	6.4257	1.22795	2.-2.1423	1.93407	2.69977	7.6373	7.9756805	2.880-3	7.506-2
289.0	8.0	70.000	1.0131	1.45802	2.-2.7173	1.40045	2.70208	7.9628	9.4692865	3.170-3	7.542-2
289.0	8.0	90.000	1.4057	1.65549	2.-3.2110	1.06589	2.70221	8.1713	1.0759151	3.300-3	7.555-2
289.0	8.0	110.000	1.8143	1.83093	2.-3.6496	1.17770	3.70221	8.3195	1.1912244	3.500-3	7.570-2
289.0	8.0	225.000	4.3575	2.60943	2.-5.5959	1.67384	3.70221	8.7407	1.7130840	3.900-3	7.600-2
289.0	8.0	350.000	7.3660	3.23326	2.-7.1555	1.07141	3.70221	8.9350	2.1469044	3.4000-3	7.610-2
289.0	8.0	475.000	1.0561	3.73931	2.-8.4221	1.39431	3.70221	9.04677	2.5126705	3.4000-3	7.610-2

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
289.0	15.0	0.010	6.5000-8	1.50782	1	4.0613-5	6.64877-1	2.61223-2	1.3061-2	6.6495325-1	1.920-4
289.0	15.0	0.020	-4.1000-8	1.51561	1	-5.1689-5	1.32633	5.19775-2	2.6022-2	1.3264856	3.828-4
289.0	15.0	0.050	4.8100-7	1.53876	1	-3.8968-4	3.29055	1.28692-1	6.4418-2	3.2909525	9.478-4
289.0	15.0	0.100	3.8800-6	1.57666	1	-1.6692-3	6.50009	2.53316-1	1.2691-1	6.5009190	3.000-7
289.0	15.0	0.200	2.5840-5	1.65008	1	-6.5216-3	1.26978	1.491588-1	2.4709-1	1.2696529	0.000
289.0	15.0	0.305	9.2690-5	1.72418	1	-1.5157-2	1.89206	1.727061-1	3.6630-1	1.89235596	5.359-3
289.0	15.0	0.500	3.7376-4	1.85463	1	-3.7393-2	2.98167	1.13225	5.7247-1	2.9822103	3.000-6
289.0	15.0	0.700	9.2998-4	1.98054	1	-6.9312-2	4.02445	1.50939	7.6652-1	4.0252768	1.000-6
289.0	15.0	1.000	2.3710-3	2.15732	1	-1.3106-1	5.47418	1.01633	1.0308	5.4755070	8.000-6
289.0	15.0	1.524	6.9742-3	2.43956	1	-2.7140-1	7.75318	1.77000	1.4314	7.7555585	2.000-5
289.0	15.0	2.000	1.3505-2	2.67404	1	-4.2643-1	9.1395	1.34492	1.7462	9.6174560	4.600-2
289.0	15.0	3.048	3.6314-2	3.13897	1	-8.3500-1	1.32173	2.34989	2.3196	1.3223822	1.000-4
289.0	15.0	5.000	1.0846-1	3.88374	1	-1.7473	1.87766	5.61596	3.1080	1.8784018	4.000-4
289.0	15.0	7.000	2.1582-1	4.54462	1	-2.7778	2.35108	2.644489	3.7005	2.3532796	4.100-4
289.0	15.0	10.000	4.3206-1	5.41304	1	-4.3841	2.95252	2.71980	4.3403	2.9562645	4.800-2
289.0	15.0	20.000	1.4883	7.71107	1	-9.4808	4.47215	2.806251	5.4834	4.4827113	6.102-2
289.0	15.0	30.480	2.9305	9.58370	1	-1.4036	1.67625	2.822995	6.0507	5.6960925	6.279-2
289.0	15.0	50.000	6.0956	1.23445	2	-2.06909	1.743822	2.826835	6.5750	7.4798415	2.910-3
289.0	15.0	70.000	9.7061	1.46349	2	-2.6639	1.89862	2.82715	6.8561	8.9668610	2.000-3
289.0	15.0	90.000	1.3549	1.66030	2	-3.1554	1.01523	3.0336	7.0336	1.0252513	2.100-3
289.0	15.0	110.000	1.7559	1.83527	2	-3.5928	1.12674	3.1584	1.1402618	3.200-3	6.400-2
289.0	15.0	225.000	4.2641	2.61244	2	-5.5357	1.62203	3.27128	7.5074	1.6612741	3.500-3
289.0	15.0	350.000	7.2429	3.23567	2	-7.0938	1.01921	3.27128	7.6655	2.0947047	3.600-3
289.0	15.0	475.000	1.0412	2.74198	2	-8.3596	1.34188	3.27128	7.7555	2.4602475	3.500-3
289.0	30.0	0.010	-3.8400-7	3.00391	1	1.9741-5	3.33028-1	1.30837-2	6.5412-3	3.3317865-1	9.622-5
289.0	30.0	0.020	-4.2200-7	3.00783	1	-2.6572-5	6.65610-1	2.60839-2	1.3058-2	6.6591185-1	1.922-4
289.0	30.0	0.050	-2.4100-7	3.01956	1	-1.9792-4	1.66075	6.49500-2	3.2511-2	1.6615157	4.789-4
289.0	30.0	0.100	7.8000-7	3.03904	1	-8.5555-4	3.31077	1.29019-1	6.4642-2	3.3123107	9.511-4
289.0	30.0	0.200	7.1400-6	3.07777	1	-3.4264-3	6.57939	2.54669-1	1.2801-1	6.5825345	1.877-3
289.0	30.0	0.305	2.7870-5	3.11811	1	-8.1314-3	9.67751	3.82873-1	1.9290-1	9.9724195	2.824-3
289.0	30.0	0.500	1.678-4	3.19208	1	-2.0762-2	1.61456	1.2597-1	3.0971-1	1.6154020	1.000-6
289.0	30.0	0.700	3.0720-4	3.26683	1	-3.9723-2	2.23239	1.36649-1	4.0771-1	2.2348146	1.000-6
289.0	30.0	1.000	8.4230-4	3.37691	1	-7.8225-2	3.13627	1.15206	5.8897-1	3.1381101	3.000-6
289.0	30.0	1.524	2.7466-3	3.56379	1	-1.7117-1	4.64531	1.65108	8.5311-1	4.6483621	7.000-6
289.0	30.0	2.000	5.7264-3	3.72819	1	-2.7986-1	5.94992	1.05416	1.0723	5.9541925	1.400-5
289.0	30.0	3.048	1.7419-2	4.07448	1	-5.8425-1	8.63382	1.80261	1.4943	8.6412000	2.900-5
289.0	30.0	5.000	6.0202-2	4.67231	1	-1.3166	1.30914	2.1131	1.3105944	8.000-5	2.828-2
289.0	30.0	7.000	1.3119-1	5.23445	1	-2.1935	1.71229	2.52340	2.6008	2.146166	4.723-2
289.0	30.0	10.000	2.8690-1	6.00374	1	-3.6168	2.24505	5.18998	3.1402	2.489211	2.600-4
289.0	30.0	20.000	1.1338	8.13620	1	-3.3486	3.65500	2.98914	4.1109	3.6656895	5.500-4
289.0	30.0	30.480	2.3721	9.92860	1	-1.2709	4.80751	2.614940	4.5822	4.8274871	7.100-4
289.0	30.0	50.000	5.2049	1.26136	2	-1.9393	1.52110	6.18724	5.0016	6.5628590	8.500-4
289.0	30.0	70.000	8.5216	1.48621	2	-2.5013	1.95421	6.18948	5.2177	8.0231855	9.400-4
289.0	30.0	90.000	1.2103	1.68032	2	-2.9865	1.9128	6.18961	5.3503	9.2916280	1.030-3
289.0	30.0	110.000	1.5875	1.85336	2	-3.4192	1.02941	6.18962	5.4419	1.0429457	1.000-3
289.0	30.0	225.000	3.9446	2.62503	2	-5.3483	1.52119	6.18962	5.6899	1.5602525	1.200-3
289.0	30.0	350.000	6.8685	1.24571	2	-6.9000	1.91675	6.18962	5.7982	1.9922613	1.100-3
289.0	30.0	475.000	9.9568	1.75056	2	-3.1621	2.23849	6.18962	5.8587	2.35668707	1.100-2

INIT		HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ANGLE	ERROR ANGLE	RANGE	SLANT RANGE	DELTA R-E	DELTA L	
289.0	65.0	0.010	-1.7160-6	8.3023-6	1.53634-1	6.03505-3	3.0185-3	1.5395950-1	0.000	0.000	4.446-5	4.446-5		
289.0	65.0	0.020	-1.2540-6	6.50180	1.20377-2	3.07192-1	1.20377-2	6.02559-3	0.000	0.000	8.885-5	8.885-5		
289.0	65.0	0.050	-1.2840-6	6.50361	1.2781-5	3.07192-1	1.2781-5	3.0764292-1	1.000	0.000	2.215-4	2.215-4		
289.0	65.0	0.100	1.5300-6	6.50904	1.2148-5	7.67629-1	3.00203-2	1.5025-2	7.6925935-1	-1.000	0.000	4.411-4	4.411-4	
289.0	65.0	0.200	4.0700-6	6.51809	1.9615-4	1.53412	5.97843-2	2.9953-2	1.5373927	-1.000	0.000	8.754-4	8.754-4	
289.0	65.0	0.305	6.6600-6	6.53621	1.6006-3	3.06396	1.18592-1	5.9612-2	3.0705357	0.000	0.000	1.324-3	1.324-3	
289.0	65.0	0.500	2.9800-5	6.55529	1.8274-3	4.66574	1.79200-1	9.0287-2	4.6758175	2.000	0.000	1.324-3	1.324-3	
289.0	65.0	0.700	7.9400-5	6.62724	1.9143-2	1.06494	1.06494	1.06494	1.06494	1.06494	1.06494	2.136-3	2.136-3	
289.0	65.0	1.000	2.1550-4	6.68213	1.8354-2	1.51503	1.51503	5.55961-1	2.8422-1	1.5184488	1.5184488	4.104-3	4.104-3	
289.0	65.0	1.524	7.2670-4	6.77838	1.6235-2	2.29227	1.29227	8.12977-1	4.2002-1	2.29761189	2.29761189	6.004-3	6.004-3	
289.0	65.0	2.000	1.5643-3	6.86614	1.4425-1	1.4425-1	1.4425-1	1.4425-1	1.4425-1	1.4425-1	1.4425-1	7.593-3	7.593-3	
289.0	65.0	3.048	5.1258-3	7.05995	1.1464-1	4.49078	1.49078	1.44699	7.7140-1	4.5021836	1.44699	1.070-2	1.070-2	
289.0	65.0	5.000	1.9923-2	7.42066	1.5653-1	7.18039	1.18039	2.06018	1.1394	7.2005520	1.1394	1.526-2	1.526-2	
289.0	65.0	7.000	4.7711-2	7.78646	1.3276	9.80345	1.80345	2.51807	1.4493	9.83336900	1.4493	1.866-2	1.866-2	
289.0	65.0	10.000	1.1656-1	3.32200	1.6556-1	2.98872	1.98872	1.02815	5.3668-1	2.9958711	1.02815	1.000	1.000	
289.0	65.0	20.000	5.7360-1	9.96617	1.9782	1.32200	1.32200	1.32200	1.32200	1.32200	1.32200	2.213-2	2.213-2	
289.0	65.0	30.480	1.3531	1.14772	2.6473	3.40959	2.40959	2.59291	2.4517326	2.4517326	2.59291	2.812-2	2.812-2	
289.0	65.0	50.000	3.3476	1.38631	2.15586	1.93227	1.93227	3.77175	3.4308977	3.4308977	3.77175	4.857-2	4.857-2	
289.0	65.0	70.000	5.86779	1.59341	2.0762	1.25225	1.25225	3.76137	3.11105	4.9755366	3.11105	2.100-4	2.100-4	
289.0	65.0	90.000	8.7138	1.77565	2.5318	1.41366	1.41366	3.76344	3.2495	6.3228475	3.2495	2.860-2	2.860-2	
289.0	65.0	110.000	1.94004	2.1800	1.94004	8.46130	8.46130	3.76555	3.3311	7.5157015	3.3311	2.300-4	2.300-4	
289.0	65.0	225.000	3.2473	2.68621	2.68621	1.32166	1.32166	3.76356	3.5247	1.3611142	3.5247	2.000-4	2.000-4	
289.0	65.0	350.000	5.8422	3.29477	2.5296	1.70950	1.70950	3.76356	3.5815	1.7852048	3.5815	2.860-2	2.860-2	
289.0	65.0	475.000	8.6804	3.79257	2.02675	2.02675	2.02675	3.76356	3.6120	2.1453269	3.6120	1.000-4	1.000-4	
289.0	65.0	70.000	1.0001	2.5040-6	1.00023	6.8269-6	1.99104-5	4.98178-1	7.81067-3	3.9071-3	2.0029557	1.99104-5	2.895-5	2.895-5
289.0	65.0	100.0	5.000	5.1800-7	1.00058	2.50406	1.00117	9.98159-2	9.7505-3	5.0068340	1.00117	1.442-4	1.442-4	
289.0	65.0	100.0	0.000	3.1600-6	1.00116	2.50406	1.00117	3.88159-2	1.9446-2	1.00117	1.00117	2.873-4	2.873-4	
289.0	65.0	200.0	-3.6400-6	1.00339	2.4934-3	1.4934-3	1.4934-3	1.60994	7.0590-2	3.87135-2	1.0011448	-1.000	-1.000	
289.0	65.0	300.0	6.2100-6	1.00539	2.4901-3	3.03425	3.03425	1.16537-1	5.8713-1	3.0496190	1.16537-1	8.633-4	8.633-4	
289.0	65.0	500.0	2.1490-5	1.00559	2.4455-3	4.96833	4.96833	1.88451-1	9.5273-2	4.9936286	1.88451-1	1.395-2	1.395-2	
289.0	65.0	700.0	4.2220-5	1.00830	2.2510-2	6.94735	6.94735	2.60019-1	1.3203-1	6.9829065	1.3203-1	1.925-3	1.925-3	
289.0	65.0	1000.0	1.0000	1.0680-4	1.01191	2.5143-2	9.90685	3.63481-1	1.8582-1	9.9579665	1.8582-1	2.692-3	2.692-3	
289.0	65.0	1524	3.3670-4	1.01628	2.6832-2	1.50502	1.50502	5.33557-1	2.7565-1	1.5129008	1.5129008	3.952-3	3.952-3	
289.0	65.0	2000	7.2960-4	1.02413	2.5519-2	1.96938	1.96938	6.77030-1	3.5339-1	1.9798251	1.9798251	5.050-3	5.050-3	
289.0	65.0	3048	2.3952-3	1.03719	2.0414-1	9.59441-1	9.59441-1	5.1145-1	2.9984503	1.9984503	1.000-6	1.000-6		
289.0	65.0	5000	9.4993-3	1.06203	2.5164-1	4.833392	4.833392	1.38160	7.64C4-1	4.8615899	1.38160	1.026-2	1.026-2	
289.0	65.0	7000	2.32290-2	1.08785	2.1792-1	6.68566	6.68566	1.70471	9.8149-1	6.7258345	1.70471	2.66-2	2.66-2	
289.0	65.0	10000	5.9017-2	1.12677	2.12677	2.04115	2.04115	1.2399	5.1132785	2.12677	1.400-5	1.400-5		
289.0	65.0	20000	3.1997-1	1.25209	2.4469	1.77274	2.50710	1.7452	1.7866922	2.4469	1.880-2	1.880-2		
289.0	65.0	30480	8.0931-1	1.37588	2.4343	2.56227	2.61688	1.9977	2.5862466	2.9977	1.977-2	1.977-2		
289.0	65.0	50000	5.0000	9.4993-3	1.2516	2.1464-1	3.86511	1.38160	2.2124	3.9117429	1.38160	2.009-2	2.009-2	
289.0	65.0	70000	2.32290-2	1.08785	2.1792-1	6.68566	6.68566	1.70471	9.8149-1	6.7258345	1.70471	2.000-5	2.000-5	
289.0	65.0	100000	5.9017-2	1.12677	2.12677	2.04115	2.04115	1.2399	5.1132785	2.12677	1.400-5	1.400-5		
289.0	65.0	200000	3.1997-1	1.25209	2.4469	1.77274	2.50710	1.7452	1.7866922	2.4469	1.880-2	1.880-2		
289.0	65.0	225000	1.0000	2.6028	2.78928	2.42746	2.42746	1.15718	2.64759	2.5053	1.971521	1.971521		
289.0	65.0	350000	3.88934	1.37827	2.57471	1.53255	1.53255	1.53255	2.64759	2.5417	1.6088165	1.6088165		
289.0	65.0	475000	7.46261	3.88944	1.37827	2.57471	1.53255	1.53255	2.64759	2.5417	1.64759	1.64759		
289.0	65.0	700000	10.0000	7.46261	6.2119	1.93007	2.12661	2.12661	2.64758	2.3729	2.022810	2.022810		
289.0	65.0	1100000	11.0000	8.6574	2.08201	2.5064	2.06444	2.06444	2.64758	2.4112	7.2059590	7.2059590		
289.0	65.0	2250000	1.0000	2.6028	2.78928	2.42746	2.42746	1.15718	2.64759	2.5053	1.971521	1.971521		
289.0	65.0	3500000	3.88934	1.37827	2.57471	1.53255	1.53255	1.53255	2.64759	2.5417	1.64759	1.64759		
289.0	65.0	4750000	7.46261	3.88944	1.37827	2.57471	1.53255	1.53255	2.64759	2.5417	1.64759	1.64759		

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
289.0	200.0	0.010	7.4000-7	2.00005	2	3.1412-6	4.93271-2	1.93814-3	9.6889-4	5.0330610-2	1.454-5
289.0	200.0	0.020	-1.1752-5	2.00011	2	-6.1377-6	9.87180-2	3.86636-3	1.9346-3	1.0072376-1	2.906-5
289.0	200.0	0.050	-1.2323-5	2.00029	2	-3.1745-5	2.46699-1	9.64575-3	4.8284-3	2.5171627-1	247-5
289.0	200.0	0.100	-6.5600-6	2.00058	2	-1.2894-4	4.93271-1	1.92210-2	9.6344-3	5.0330950-1	1.445-4
289.0	200.0	0.200	-1.8230-5	2.00116	2	-5.1981-4	9.86415-1	3.81751-2	1.9193-2	1.0065017	2.870-4
289.0	200.0	0.305	-4.9000-7	2.00178	2	-1.2357-3	1.50390	5.7752-2	2.9098-2	1.54555	1.345-4
289.0	200.0	0.500	-6.2500-5	2.00293	2	-3.2035-3	2.46469	9.34814-2	4.7260-2	2.514994	0.000
289.0	200.0	0.700	1.5350-5	2.00412	2	-6.2165-3	3.44943	1.29093-1	6.5556-2	3.5198904	7.027-4
289.0	200.0	1.000	5.5900-5	2.00592	2	-1.2515-2	4.92525	1.80691-1	9.2371-2	5.0261280	704-4
289.0	200.0	1.524	1.1390-4	2.00911	2	-2.8381-2	7.49989	2.65823-1	1.3733-1	6.540440	1.359-3
289.0	200.0	2.000	2.4430-4	2.01205	2	-4.7832-2	7.63470	2.37962-1	1.7641-1	1.0037522	1.000-7
289.0	200.0	3.048	7.6480-4	2.01866	2	-1.0600-1	1.49621	4.80932-1	2.5637-1	1.5272926	1.027-4
289.0	200.0	5.000	2.8938-3	2.03141	2	-2.6210-1	2.44633	1.697544-1	3.8571-1	2.4787455	704-4
289.0	200.0	7.000	7.0254-3	2.04489	2	-4.7269-1	3.41310	1.66187-1	4.9880-1	3.4859748	1.359-3
289.0	200.0	10.000	1.7953-2	2.06565	2	-8.5713-1	4.85025	1.04551	6.3554-1	4.9559881	1.999-3
289.0	200.0	20.000	1.0344-1	2.13646	2	-2.4328	9.52897	1.30518	9.1128-1	9.7511365	2.542-3
289.0	200.0	30.480	2.7940-1	2.20998	2	-4.2215	1.42563	2.37091	1.0532	1.4611569	3.617-3
239.0	200.0	50.000	8.2983-1	2.34123	2	-7.4889	2.26327	1.38941	1.1748	2.3263789	1.050-2
289.0	200.0	70.000	1.6603	2.46801	2	-1.0657	1	3.07128	2	1.2319	5.255-3
289.0	200.0	90.000	2.7251	2.58798	2	-1.3656	1	3.9066	1.2319	1.661611	1.072-2
289.0	200.0	110.000	3.9956	2.70206	2	-1.6508	1	3.9074	1.39074	2.9639	2.000-5
289.0	200.0	225.000	1.4392	1.27284	2	-3.0778	1	2.0050	1.39074	4.7307881	1.072-2
289.0	200.0	350.000	3.0012	1.78248	2	-4.3519	1	1.14484	3	1.3325	3.000-5
289.0	200.0	475.000	4.88688	1.21809	2	-5.4409	1	1.42245	3	1.3497	2.253308
289.0	200.0	500.000	4.75000	4.88688	1	-5.4409	1	1.39074	1	1.3582	1.5462241
289.0	200.0	70.000	1.0000	-1.3100-5	4.00197	-2	-3.879-3	1.65519	6.19420-2	1.24660-2	1.000-7
289.0	200.0	1.524	1.0420-4	4.00437	2	-1.3633-2	3.60190	1.27661-1	6.5959-2	3.9114406	1.021-3
289.0	200.0	2.000	7.8900-5	4.00579	2	-2.3005-2	4.72603	1.62387-1	8.4770-2	5.1324880	1.299-3
289.0	200.0	3.048	2.6860-4	4.00898	2	-5.1059-2	7.19876	2.31333-1	1.2332-1	7.8190360	1.852-3
289.0	200.0	5.000	1.1113-3	4.01514	2	-1.2660-1	1.17971	3.36172-1	1.8588-1	1.2817252	1.695-3
289.0	200.0	7.000	2.0000	-2.5990-5	4.00197	-2	-3.879-3	1.65519	6.19420-2	1.24660-2	1.000-7
289.0	200.0	10.000	1.0000	-1.3100-5	4.00284	-2	-3.8616-3	2.36619	8.67278-2	4.4334-2	1.000-7
289.0	200.0	15.524	1.0420-4	4.00437	2	-1.3633-2	3.60190	1.27661-1	6.5959-2	3.9114406	1.021-3
289.0	200.0	20.000	3.4156-2	4.06709	2	-1.2013	4.72603	1.62387-1	8.4770-2	5.1324880	1.299-3
289.0	200.0	30.480	9.2197-2	4.10459	2	-2.1136	7.09186	6.68382-1	5.1458-1	7.7346545	1.448-3
289.0	200.0	50.000	2.6040-1	4.17378	2	-3.8359	1.15074	6.78132-1	5.7576-1	1.2587950	5.560-2
289.0	200.0	70.000	2.6000	2.6029-3	4.02170	-2	-2.2903-1	1.64989	4.18185-1	2.4083-1	1.7930778
289.0	200.0	10.000	6.2040-3	4.03186	2	-4.1720-1	2.35327	5.05936-1	3.0760-1	2.5586289	1.000-6
289.0	200.0	20.000	3.4156-2	4.06709	2	-1.2013	4.68082	6.34856-1	4.4366-1	5.096940	1.000-6
289.0	200.0	30.480	9.2197-2	4.10459	2	-2.1136	7.09186	6.68382-1	5.1458-1	7.7346545	1.448-3
289.0	200.0	50.000	2.6040-1	4.17378	2	-3.8359	1.15074	6.78132-1	5.7576-1	1.2587950	5.560-2
289.0	200.0	70.000	5.07929-1	4.24323	2	-5.5717	1.59340	2.78812-1	6.0455-1	1.7483423	1.000-5
289.0	200.0	90.000	9.8133-1	4.31122	2	-7.2714	2.02669	6.78856-1	6.2060-1	2.2304994	1.580-3
289.0	200.0	110.000	1.4826	4.37780	2	-8.9360	2.45104	6.78859-1	6.3083-1	2.7056548	1.560-3
289.0	200.0	225.000	6.1275	4.73651	2	-1.7903	4.73705	6.78859-1	6.5442-1	5.3182470	1.570-3
289.0	200.0	350.000	1.4166	5.08731	2	-2.6673	1.97275	6.78859-1	6.6255-1	7.9679570	1.560-3
289.0	200.0	400.0	4.4876	1	5.040559	1	9.00112	1	6.79859-1	1.0463121	1.000-4

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ANGLE	SLANT RANGE	DELTA R	DELTA R-E
289.0	900.0	0.010	-3.8774-5	9.00000	2 -7.2473-7	7.96626-3	3.11775-4	1.6501-4	1.2785208-2	0.000	3.692-6
289.0	900.0	0.020	-2.3820-4	9.00001	2 -8.0365-6	1.60599-2	3.01165-4	2.5650036-2	1.930-7	7.596-6	
289.0	900.0	0.050	-1.9418-4	9.00004	2 -1.0768-5	3.98313-2	1.555173-3	7.6369-4	6.3926115-2	5.180-7	1.893-5
289.0	900.0	0.100	4.9429-4	9.00009	2 -5.1550-6	7.89616-2	3.09234-3	1.2741680-1	1.70-6	3.828-5	
289.0	900.0	0.200	2.1750-5	9.00018	2 -8.2402-5	1.58688-1	6.14259-3	3.0913-3	2.5530902-1	2.410-6	7.520-5
289.0	900.0	0.305	-1.9267-4	9.00028	2 -2.0486-4	2.42174-1	9.29513-3	4.6793-3	3.8945646-1	2.450-6	1.127-4
289.0	900.0	0.500	3.1150-5	9.00047	2 -5.1455-4	3.96720-1	1.50479-2	7.6013-3	6.3827835-1	2.510-6	1.809-4
289.0	900.0	0.700	1.8262-4	9.00066	2 -9.9620-4	5.55280-1	2.07862-2	1.0551-2	8.9351590-1	2.500-6	2.488-4
289.0	900.0	1.000	6.5200-5	9.00095	2 -2.0161-3	7.93376-1	2.91063-2	1.4870-2	1.2765364	2.600-6	3.476-4
289.0	900.0	1.524	-2.4290-4	9.00146	2 -4.5872-3	1.20927	4.28502-2	2.2138-2	1.9455804	2.600-6	5.106-4
289.0	900.0	2.000	2.2270-4	9.00194	2 -7.7190-3	1.58643	5.45134-2	2.8446-2	2.5529522	2.700-6	6.489-4
289.0	900.0	3.048	5.6330-4	9.00301	2 -1.7138-2	7.76812-2	4.1405-2	3.8904688	2.700-6	9.240-4	
289.0	900.0	5.000	5.2810-4	9.00509	2 -4.2565-2	3.96427	1.12944-2	6.2847-2	6.3818310	2.700-6	1.345-3
289.0	900.0	7.000	1.0361-3	9.00729	2 -7.7071-2	5.54802	1.40566-1	8.0943-2	8.9338920	2.700-6	1.673-3
289.0	900.0	10.000	3.3880-3	9.01072	2 -1.4053-1	7.92057	1.70171-1	1.0345-1	1.2760640	1.300-6	2.026-3
289.0	900.0	20.000	1.4363-2	9.02267	2 -4.0637-1	1.58107	1.213846-1	1.4947-1	2.5510080	1.300-6	2.564-3
289.0	900.0	30.480	3.6672-2	9.03547	2 -7.1794-1	2.40451	1.25295-1	1.7355-1	3.8858245	1.400-6	2.724-3
289.0	900.0	50.000	1.0873-1	9.05936	2 -1.3125	3.92882	1.28661-1	1.9438-1	6.3684150	1.200-6	2.785-3
289.0	900.0	70.000	2.2182-1	9.08367	2 -1.9200	5.47818	1.28899-1	2.0419-1	8.9072945	1.600-6	2.794-3
289.0	900.0	90.000	3.7566-1	9.10778	2 -2.5229	7.01501	1.28915-1	2.0967-1	1.1441370	1.000-5	2.800-3
289.0	900.0	110.000	5.6974-1	9.13170	2 -3.1209	8.53953	1.28916-1	2.1315-1	1.3970728	0.000	2.790-3
289.0	900.0	225.000	2.4561	9.26562	2 -6.4689	1.70743	2.29916-1	2.2117-1	2.8426339	2.000-5	2.800-3
289.0	900.0	350.000	5.9622	9.40456	2 -9.9424	2.59289	2.23916-1	2.2390-1	4.3978793	2.000-5	2.780-3
289.0	900.0	475.000	1.0941	1.953711	2 -1.3256	1.43761	2.28916-1	2.2520-1	5.9377915	2.000-5	2.800-3

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E				
313.0	0.0	0.010	-5.1424-4	1.49613	7.6990-2	1.33678	1	0.000	1.3367819	1	4.181-3				
313.0	0.0	0.020	-1.0273-3	2.11617	1.0849-1	1.890444	1	1.000-6	1.8904449	1	5.912-3				
313.0	0.0	0.050	-2.5545-3	3.34743	1.6960-1	2.98865	1	1.34194	2.988667	1	9.334-3				
313.0	0.0	0.100	-5.0557-3	4.73735	2.3521-1	4.22550	1	1.89273	9.4849-1	4.2255465	1.6000-6				
313.0	0.0	0.200	-9.9458-3	6.70910	3.0235-1	5.97338	1	2.66351	5.973490	1	1.317-2				
313.0	0.0	0.305	-1.4835-2	8.29831	3.7788-1	7.37272	1	3.26995	1.6474	7.3729190	1				
313.0	0.0	0.500	-2.3345-2	1.06519	1	4.4631-1	9.43092	1	4.14574	2.00975	9.4313420	1			
313.0	0.0	0.700	-3.1325-2	1.26373	1	4.8205-1	1.11483	2	4.85517	2.4678	1.1149053	2			
313.0	0.0	1.000	-4.0235-2	1.51633	1	4.9670-1	1.33073	2	5.71671	2.9263	1.3308495	2			
313.0	0.0	1.524	-5.6544-2	1.88405	4.04550-1	1.63885	1	6.5600	1.6474	1.6390785	2				
313.0	0.0	2.000	-6.5784-2	2.17029	1	3.4521-1	1.87356	2	7.69459	4.0267	1.8739072	2			
313.0	0.0	3.048	-7.3319-2	2.70927	1	7.6253-3	2.30289	2	9.04109	4.88367	2.3035214	2			
313.0	0.0	5.000	-4.6267-2	3.53155	1	-8.6062-1	2.92785	2	1.06243	1	5.9039	2.9291690	2		
313.0	0.0	7.000	2.4347-2	4.23994	1	-1.8936	3.44203	2	1.16082	1	6.68559	3.4442178	2		
313.0	0.0	10.000	1.9795-1	5.15471	1	-3.5381	4.07963	2	1.24648	1	7.5264	4.0833598	2		
313.0	0.0	20.000	1.1676	7.53020	1	-8.7861	5.65227	2	1.3857	1	9.0531	5.6628165	2		
313.0	0.0	30.480	2.5569	9.43972	1	-1.3439	6.87953	2	1.3547	1	9.8441	6.899281595	2		
313.0	0.0	50.000	5.6578	1.22337	2	-2.0398	1.66238	2	1.35807	1	1.06151	1.7039820	2		
313.0	0.0	70.000	9.2212	1.45417	2	-2.6167	1	0.01334	3	1.35824	1	1.10511	1.0202252	3	
313.0	0.0	90.000	1.3025	1.65210	2	-3.1115	1	1.13949	3	1.35825	1	1.13351	1.1495090	3	
313.0	0.0	110.000	1.7003	1.82787	2	-3.5509	1	1.25151	3	1.35825	1	1.15401	1.2650293	3	
313.0	0.0	250.000	4.7697	2.74520	2	-5.8443	1	1.83614	3	1.35825	1	1.22101	1.8820256	3	
313.0	0.0	350.000	7.1613	1	3.23154	2	-7.0601	1	2.14610	3	1.35825	1	1.24191	2.2215878	3
313.0	0.0	475.000	1.0321	2	3.73844	2	-8.3274	1	2.46915	3	1.35825	1	1.25841	2.5875153	3
313.0	0.5	0.010	-2.6654-4	1.57746	5.5446-2	9.62709	1	1.49576	1	1.70247	8.5315-1	9.6271050	1		
313.0	0.5	0.020	-6.4259-4	2.17444	8.5774-2	1.49576	1	2.0933	1	1.70247	8.5315-1	3.3637-1	1		
313.0	0.5	0.050	-1.8927-3	3.38457	1.4583-1	2.57513	1	1.15597	5.7863-1	1.2411	2.47022	1.2411	2.5751451	1	
313.0	0.5	0.100	-4.0795-3	4.76366	2.1093-1	3.80235	1	1.0931	2	5.54339	1	3.8023936	1		
313.0	0.5	0.200	-8.5247-3	6.72771	2.9574-1	5.9574	1	1.07247	2	1.2411	1	5.5435005	1		
313.0	0.5	0.305	-1.3058-2	8.31336	3.5134-1	6.93959	1	1.07530	1	1.5494	6.93959	1	1.719-2		
313.0	0.5	0.500	-2.1046-2	1.06637	1	4.2147-1	8.99489	1	1.9984	1	1.9984	8.9953160	1		
313.0	0.5	0.700	-2.8592-2	1.26472	1	4.5717-1	1.07107	2	4.65863	2.36860	1.0711434	2			
313.0	0.5	1.000	-3.8759-2	1.51715	1	4.7182-1	1.28682	2	5.51961	2.8255	1.2869468	2			
313.0	0.5	1.524	-5.2494-2	1.88471	1	4.2064-1	1.59481	2	6.67657	3.4578	1.5950411	2			
313.0	0.5	2.000	-6.1147-2	2.17086	1	3.2038-1	1.82946	2	7.49673	3.9234	1.8297937	2			
313.0	0.5	3.048	-6.7614-2	2.70973	1	-1.7138-2	2.25869	2	8.84294	4.7310	2.2593210	2			
313.0	0.5	5.000	-3.9019-2	3.53190	1	-8.8527-1	2.88356	2	1.04259	1	5.7943	2.8848874	2		
313.0	0.5	7.000	3.2858-2	4.24023	1	-1.9182	3.39770	2	1.14098	1	6.5730	3.3998934	2		
313.0	0.5	10.000	2.0802-1	5.15495	1	-3.5625	4.03527	2	1.22663	1	7.4092	4.0389992	2		
313.0	0.5	20.000	1.1815	7.53036	1	-8.8104	5.60786	2	1.31872	1	8.9251	5.6184050	2		
313.0	0.5	30.480	2.5738	9.43986	1	-1.3463	6.83510	2	1.33485	1	9.7085	6.8549270	2		
313.0	0.5	50.000	5.6791	1.22338	2	-2.0422	1	8.61793	2	1.33822	1	1.0470	8.6595310	2	
313.0	0.5	70.000	9.2461	1.45418	2	-2.6191	1	1.00889	3	1.33839	1	1.0900	1.0157791	3	
313.0	0.5	90.000	1.3054	1.65211	2	-3.1139	1	1.13504	3	1.33840	1	1.1180	1.1450622	3	
313.0	0.5	110.000	1.7033	1	1.82788	2	-5.534	1	1.24706	3	1.33840	1.2605821	3		
313.0	0.5	250.000	4.77453	1	2.74521	2	-5.8467	1	1.83169	3	1.33840	1.8775781	3		
313.0	0.5	350.000	7.1667	1	3.23154	2	-7.0625	1	2.14165	3	1.33840	1.2246	1		
313.0	0.5	475.000	1.0327	2	3.73844	2	-8.3298	1	2.46471	3	1.33840	1.2407	1		

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ANGLE	ERROR	SLANT RANGE	DELTA R-E
313.0	1.0	0.010	-1.4662-4	1.79955	4.1144-2	7.14397	2.21378-1	1.6068-1	0.000	2.235-3	3.745-3
313.0	1.0	0.020	-4.1142-4	2.34055	6.8629-2	1.19747	1.5.38357-1	2.6927-1	1.1974779	1.000	6.947-3
313.0	1.0	0.050	-1.4115-3	3.49361	1.2585-1	2.22592	1.9.99007-1	2.0007-1	2.2259413	1.000	1.067-2
313.0	1.0	0.100	-3.3008-3	4.84174	1.8949-1	3.42560	1.1.53324	7.6833-1	3.4256404	1.000-5	1.695-2
313.0	1.0	0.200	-7.2167-3	6.78322	2.7330-1	5.14661	1.2.9215	1.1517	5.1467240	1.000-5	2.015-2
313.0	1.0	0.305	-1.1506-2	8.35834	3.3032-1	6.53355	1.2.89321	1.4577	6.5337530	1.000-5	2.622-2
313.0	1.0	0.500	-1.8992-2	1.06988	1.9836-1	8.58021	1.3.76408	1.9044	8.5806300	1.200-5	2.622-2
313.0	1.0	0.700	-2.6119-2	1.26768	1.43396-1	1.02913	2.4.47089	2.2726	1.0291996	2.000-5	3.118-2
313.0	1.0	1.000	-3.5765-2	1.51962	1.4857-1	1.24446	2.5.33018	2.7286	1.2445822	2.500-4	3.721-2
313.0	1.0	1.524	-4.8767-2	1.88670	1.9746-1	1.55205	2.6.48563	3.3590	1.5522732	2.800-4	4.537-2
313.0	1.0	2.000	-5.6870-2	2.17259	1.9729-1	1.78647	2.7.30504	3.8232	1.7868113	2.100-4	5.119-2
313.0	1.0	3.048	-6.2346-2	2.71112	1.4007-2	2.1543	2.8.65039	4.6283	2.2160652	2.100-4	6.088-2
313.0	1.0	5.000	-3.2340-2	3.53296	1.9078-1	2.84006	2.1.02328	1.6876	2.8413670	2.280-3	7.251-2
313.0	1.0	7.000	4.0674-2	4.24112	1.9404	3.35408	2.1.12164	1.64630	3.3562645	2.180-3	7.993-2
313.0	1.0	10.000	2.1723-1	5.15568	1.3845	3.99153	2.1.20728	1.72948	3.9952611	2.550-3	8.661-2
313.0	1.0	20.000	1.1940	7.53086	1.8319	5.56397	2.1.29935	1.8000	5.5745145	2.180-3	9.493-2
313.0	1.0	30.480	2.5889	9.44025	1.3484	1.79114	2.1.31548	1.95760	6.8109715	2.060-3	9.715-2
313.0	1.0	50.000	5.6980	1.22341	2.0443	1.57391	2.1.31885	1.0329	8.6155180	2.000-3	9.853-2
313.0	1.0	70.000	9.2681	1.45421	2.6212	1.04449	3.1.31902	1.0752	1.0113748	3.500-3	9.900-2
313.0	1.0	90.000	1.3078	1.65213	2.3160	1.13063	3.1.31903	1.1029	1.1406558	3.800-3	9.930-2
313.0	1.0	110.000	1.7061	1.82790	2.35554	1.24265	3.1.31903	1.1227	1.2561743	3.100-3	9.960-2
313.0	1.0	250.000	4.7784	2.74522	2.8487	1.82728	3.1.31903	1.1874	1.8731647	3.900-3	1.004-1
313.0	1.0	350.000	7.1715	3.23156	2.0646	1.13723	3.1.31903	1.2076	2.2127251	3.100-3	1.006-1
313.0	1.0	475.000	1.0333	3.73845	2.3318	1.46029	3.1.31903	1.2234	2.5786515	3.100-3	1.007-1
313.0	2.0	0.010	-5.6607-5	2.49767	4.6645-2	8.14396	2.5610-2	4.446472	1.0002-1	4.4467427	0.000
313.0	2.0	0.020	-1.8983-4	2.91173	4.6645-2	1.69532	1.6.60666-1	3.80172-1	1.8312-1	1.6953359	1.000-6
313.0	2.0	0.050	-8.1634-3	3.89940	9.5649-2	1.5432-1	2.80128	1.25317	6.2796-1	2.8013258	1.000-6
313.0	2.0	0.100	-2.1964-3	5.14222	1.54298-3	2.3450-1	4.44881	1.97962	9.9478-1	4.4489252	1.800-6
313.0	2.0	0.200	-5.4298-3	7.00085	2.9005-1	5.80046	1.2.56538	2.56538	1.2926	5.8006690	1.500-5
313.0	2.0	0.305	-8.9784-3	8.53592	2.9581-1	3.5697-1	7.81364	1.42199	1.7314	7.8140595	1.900-5
313.0	2.0	0.500	-1.5517-2	1.08381	1.9218-1	9.50611	1.12111	4.9048	9.5068075	1.700-5	2.383-2
313.0	2.0	0.700	-2.1864-2	1.27945	1.52946	1.0666-1	1.16428	2.97376	2.05463	1.1644043	1.700-4
313.0	2.0	1.000	-3.0539-2	1.53720	1.42195	1.5581-1	1.47027	6.12320	3.17114	1.4704987	2.300-4
313.0	2.0	1.524	-4.2195-2	1.89463	1.52946	1.5581-1	1.5601-1	1.70384	6.93963	3.6321	4.282-2
313.0	2.0	2.000	-4.9298-2	2.17948	2.5601-1	2.5601-1	2.13172	2.82157	4.4314	1.7041835	3.500-4
313.0	2.0	3.048	-5.2009-2	2.71664	1.0440-2	1.0440-2	2.0477	1.48717	2.1323490	2.200-4	5.824-2
313.0	2.0	5.000	-2.0563-2	3.53720	1.4688-1	1.4688-1	2.75537	2.86151	5.4823	2.7566948	2.140-3
313.0	2.0	7.000	5.4366-2	4.24465	1.9785	1.9785	3.26887	2.08441	1.2509	3.2710583	2.650-3
313.0	2.0	10.000	2.3220-1	5.15859	1.6215	1.6215	3.90588	2.1699	1.0741	3.9096174	2.350-3
313.0	2.0	20.000	1.2153	7.53285	1.86668	1.86668	5.47771	2.16203	1.5586	5.4882635	2.810-3
313.0	2.0	30.480	2.6142	9.44184	1.3518	1.3518	6.70463	1.27815	1.3201	6.7244605	2.7474742
313.0	2.0	50.000	5.7290	1.22353	2.0477	1.0477	8.48717	1.28152	1.0056	8.5287755	2.560-3
313.0	2.0	70.000	9.3038	1.45431	2.6245	1.6245	9.95806	1.28169	1.0468	1.026881	3.6100-3
313.0	2.0	90.000	1.3118	1.65222	2.1192	1.12194	3.12395	1.28170	1.0736	1.1319611	3.650-3
313.0	2.0	110.000	1.7104	1.82798	2.5586	1.23395	3.181856	1.28170	1.0929	1.2474742	3.700-3
313.0	2.0	250.000	4.7846	2.74527	2.8519	1.21853	3.123160	2.128170	1.1553	1.86444468	3.400-3
313.0	2.0	350.000	7.1788	3.23160	2.0677	1.21851	2.128170	1.1748	1.1748	2.040019	3.600-3
313.0	2.0	475.000	1.0341	3.73849	2.3349	1.45156	2.45156	1.28170	1.1900	2.5699240	3.600-3

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E
313.0	4.0	0.010	-1.6508-5	4.27064	1.3927-2	2.41817	1.08783-1	5.4392-2	2.4181999	0.000	7.564-4
313.0	4.0	0.020	-6.2541-5	4.52528	2.6863-2	4.69193	1.0549-1	4.6919866	0.000	1.467-3	
313.0	4.0	0.050	-3.3283-4	5.21586	6.1117-2	1.08513	1.86779-1	2.4366-1	1.0851525	1	3.385-3
313.0	4.0	0.100	-1.0696-3	6.20019	1.0759-1	1.96107	1.76852-1	4.3935-1	1.9611116	1	6.097-3
313.0	4.0	0.200	-3.1227-3	7.81100	1.7693-1	3.38881	1.50625	7.5703-1	3.3889195	1	4.000-6
313.0	4.0	0.305	-5.6203-3	9.21203	2.662243	1.62243	2.04084	4.6226320	1	9.000-6	1.048-2
313.0	4.0	0.500	-1.0549-2	1.13782	1.9054-1	6.51664	2.84680	1.4403	6.517060	1	1.421-2
313.0	4.0	0.700	-1.5546-2	1.32552	1.2431-1	8.14033	3.51749	1.7880	8.1410320	1	1.982-2
313.0	4.0	1.000	-2.2548-2	1.56819	1.3828-1	1.02143	2.34504	2.2247	1.0215577	2	4.551-2
313.0	4.0	1.524	-3.1932-2	1.92604	1.8845-1	1.32128	5.47140	2.8339	1.3215082	2	3.000-5
313.0	4.0	2.000	-3.7398-2	2.20683	1.9007-1	1.55153	6.27622	3.2852	1.5518713	2	4.300-4
313.0	4.0	3.048	-3.8344-2	2.73864	1.4303-1	1.97513	7.60475	4.698	1.9757654	2	5.338-2
313.0	4.0	5.000	-2.3442-3	3.55412	1.0041	2.59493	9.17492	5.1023	2.5962532	2	6.481-2
313.0	4.0	7.000	7.5097-2	4.25875	1.25875	1.01536	1.0570	5.1023	3.1085745	2	7.000-5
313.0	4.0	10.000	2.5670-1	5.17019	1.6701	3.74166	1.1007	6.6633	3.7453933	2	1.600-4
313.0	4.0	20.000	1.2444	7.54080	1.9075	5.31106	1.19259	8.1081	5.3216105	2	4.389-2
313.0	4.0	30.480	2.6470	9.44817	1.3555	6.53694	2.0870	8.8425	6.5567725	2	8.876-2
313.0	4.0	50.000	5.7665	1.22402	2.0510	1.31855	2.12107	9.5460	8.3601590	2	8.994-2
313.0	4.0	70.000	9.3451	1.45472	2.6276	1.78894	2.12124	9.9373	9.8577665	2	5.270-3
313.0	4.0	90.000	1.3162	1.65258	3.1222	1.10499	3.21224	1.0190	1.1150180	3	7.868-2
313.0	4.0	110.000	1.7151	1.82830	3.5615	1.21698	3.21225	1.0371	1.2035086	3	9.100-2
313.0	4.0	250.000	4.7908	2.74549	8.545	1.80153	3.21225	1.0956	1.8474102	3	9.140-2
313.0	4.0	350.000	7.1858	3.23178	2.0702	1.1145	3.21225	1.1137	2.1869436	3	9.180-2
313.0	4.0	475.000	1.0349	2.73864	2.3374	2.43449	3.21225	1.1278	2.5528492	3	9.160-2
313.0	8.0	0.010	-4.1010-6	8.13869	7.1371-3	1.23923	1.04076	5.57479-2	1.2392728	0.000	3.876-4
313.0	8.0	0.020	-1.6687-5	8.27515	1.4069-2	2.45768	1.0476-1	5.5259-2	2.4577709	-1.000-7	7.682-4
313.0	8.0	0.050	-1.0039-4	8.67208	3.3754-2	5.99799	2.69035-1	1.3466-1	5.9982240	-2.000-7	1.871-3
313.0	8.0	0.100	-3.6849-4	9.29742	6.3280-2	1.15627	5.16847-1	2.5895-1	1.5632771	1	3.594-3
313.0	8.0	0.200	-1.2675-3	1.04408	1.1235-1	2.63417-1	9.63417-1	4.8430-1	2.1697359	1	0.000
313.0	8.0	0.305	-2.5288-3	1.15265	1.5160-1	3.12553	1.37764	6.9431-1	3.1257553	1	4.000-6
313.0	8.0	0.500	-5.32889-3	1.33214	2.0365-1	4.69506	2.04536	1.0348	4.6955070	1	9.000-6
313.0	8.0	0.700	-8.4181-3	1.49565	1.3303-1	6.10944	2.62956	1.3366	6.1101595	1	1.423-2
313.0	8.0	1.000	-1.2991-2	1.71441	1.4542-1	7.97889	1.37527	1.7284	7.9800985	1	2.351-2
313.0	8.0	1.524	-1.9165-2	2.04684	1.9010-1	1.07644	4.42162	2.2902	1.0766673	2	3.083-2
313.0	8.0	2.000	-2.2447-2	2.31301	1.0584-1	1.29470	5.18452	2.7139	1.2950391	2	3.620-2
313.0	8.0	3.048	-2.0166-2	2.82489	1.21479-1	1.70242	6.46325	3.4595	1.7030587	2	4.523-2
313.0	8.0	5.000	1.8692-2	3.62099	1.0554	2.30749	7.99609	4.487	2.3088126	2	6.100-4
313.0	8.0	7.000	9.7182-2	4.31471	1.0671	2.81101	8.95951	5.1741	2.8132030	2	9.500-4
313.0	8.0	10.000	2.7856-1	5.21637	1.36881	3.43946	9.80372	5.9474	3.4431996	2	6.971-2
313.0	8.0	20.000	1.2607	7.57250	1.8937	4.99926	1.0716	7.3193	5.0098140	2	7.743-2
313.0	8.0	30.480	2.6560	9.47346	1.3525	1.22102	1.08772	1.0053	6.2408590	2	7.930-2
313.0	8.0	50.000	5.7627	1.22597	2.0466	7.99889	1.09108	1.6518	8.0405465	2	8.028-2
313.0	8.0	70.000	9.3296	1.45636	2.6224	9.46733	1.09125	9.0063	9.5361635	2	8.065-2
313.0	8.0	90.000	1.3136	1.65402	2.1166	1.07271	1.09125	9.2336	1.0827312	3	4.100-3
313.0	8.0	110.000	1.7115	1.82960	2.5555	1.18461	1.09125	9.3953	1.1981319	3	4.300-3
313.0	8.0	250.000	4.7818	2.74634	5.8474	1.76886	1.09125	9.9108	1.8147498	3	8.130-2
313.0	8.0	350.000	7.1737	3.23250	7.0628	2.07870	1.09125	1.0068	2.1541970	3	8.140-2
313.0	8.0	475.000	1.0334	2.73864	2.3297	2.40167	1.09125	1.0191	2.52003355	2	8.140-2

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	R	DELTA R-E
											DELTA
313•0	15•0	0•010	-8•9500-7	1•50744	1	3•8298-3	6•64963-1	2•99141-2	1•4957-2	0•000	2•080-4
313•0	15•0	0•020	-4•3880-6	1•51485	1	7•5944-3	1•32666	5•96349-2	2•9829-2	1•000-7	4•149-4
313•0	15•0	0•050	-2•9039-5	1•53689	1	1•8524-2	3•29258	1•47681-1	7•3922-2	3•2929806	1•027-3
313•0	15•0	0•100	-1•1419-4	1•57302	1	3•5585-2	6•50780	2•90864-1	1•4572-1	-1•000-7	2•023-3
313•0	15•0	0•200	-4•3005-4	1•64319	1	6•5640-2	1•27259	5•64834-1	2•8396-1	-1•000-6	3•927-3
313•0	15•0	0•305	-9•1811-4	1•71422	1	9•1306-2	1•89799	8•35826-1	4•2126-1	0•000	5•816-3
313•0	15•0	0•500	-2•1202-3	1•83971	1	1•2762-1	2•99524	1•30255	6•5897-1	3•000-6	9•062-3
313•0	15•0	0•700	-3•5734-3	1•96135	1	1•4944-1	4•04738	1	8•8292-1	4•0482079	1•209-2
313•0	15•0	1•000	-5•8865-3	2•13285	1	1•5888-1	5•1282	1	2•32138	1•1889	1•616-2
313•0	15•0	1•524	-9•0834-3	2•40819	1	1•20495-1	7•81987	3•18796	1•6517	7•8222435	1•221-2
313•0	15•0	2•000	-1•0549-2	2•63814	1	3•9925-2	9•70546	1•84704	2•0138	9•7089580	1•688-2
313•0	15•0	3•048	-6•6815-3	3•09671	1	-2•4738-1	1•33580	2•499253	2•6724	1•3364502	2•488-2
313•0	15•0	5•000	2•9646-2	3•83678	1	-1•0288	1•89828	2•41749	3•5715	1•8996205	2•506-2
313•0	15•0	7•000	1•0202-1	4•49730	1	-1•9923	2•37769	2•33451	4•2416	2•3798954	2•300-4
313•0	15•0	10•000	2•7111-1	5•36834	1	-3•5584	2•98478	2•14981	4•9582	2•9885301	2•768-2
313•0	15•0	20•000	1•2065	7•6778	1	-8•6619	4•51366	2•04362	6•180	4•5242242	2•550-3
313•0	15•0	30•0	4•80	2•55553	1	-1•5781	9•55781	1•72191	5•715	5•7417545	2•649-2
313•0	15•0	50•000	5•5862	1•23249	2	-2•0135	1•48758	2•3578	7•4002	7•5291999	2•320-3
313•0	15•0	70•000	9•0861	1•46183	2	-2•5867	1•94937	2•23746	7•7035	9•0182005	2•570-3
313•0	15•0	90•000	1•2833	1•65884	2	-3•0792	1•02049	3•23754	7•8950	1•0305125	3•700-3
313•0	15•0	110•000	1•6758	1•83395	2	-3•5170	1•13209	3•23754	8•0299	1•1456138	3•800-3
313•0	15•0	250•000	4•7164	2•74919	2	-5•8051	1•71540	3•23754	8•4520	1•7612821	3•100-3
313•0	15•0	350•000	7•0915	1•23490	2	-7•0194	1•02495	3•23754	8•5789	2•1004401	3•200-3
313•0	15•0	475•000	1•0233	2•74131	2	-8•2854	2•34769	3•23754	8•6765	2•4660550	3•200-3
313•0	30•0	0•010	-1•9300-7	3•00372	1	1•9177-3	3•0033-1	1•49814-2	7•4915-3	3•318339-1	1•042-4
313•0	30•0	0•020	-9•9700-7	3•00745	1	3•8098-3	6•65651-1	2•99211-2	1•4966-2	6•6595325-1	1•000-8
313•0	30•0	0•050	-6•7860-6	3•01861	1	9•3435-3	1•66102	7•45000-2	3•7291-2	1•6617879	-1•000-7
313•0	30•0	0•100	-2•6910-5	3•03716	1	1•8103-2	3•31179	1•48014-1	7•4157-2	3•3133323	1•030-3
313•0	30•0	0•200	-1•0999-4	3•07408	1	3•3903-2	6•58341	2•92148-1	1•6488-1	6•5865575	-2•000-7
313•0	30•0	0•305	-2•4500-4	3•1262	1	4•7823-2	9•67660	4•39171	2•134-1	9•9814990	3•057-3
313•0	30•0	0•500	-5•9833-4	3•18344	1	6•8291-2	1•61686	7•02530-1	3•5540-1	1•6176964	1•000-6
313•0	30•0	0•700	-1•0538-3	3•25523	1	8•1159-2	2•23784	1•58988-1	4•8741-1	2•2390567	1•000-6
313•0	30•0	1•000	-1•8233-3	3•36133	1	8•6839-2	3•14428	1•32023	6•7631-1	2•1461188	1•000-5
313•0	30•0	1•524	-2•9140-3	3•54239	1	6•1562-2	4•66142	1•89007	9•7881-1	4•6644575	1•316-2
313•0	30•0	2•000	-3•058-3	3•70253	1	5•4559-3	5•97450	1•24904	1•2295	5•9787650	1•600-5
313•0	30•0	3•048	-4•6850-4	4•04202	1	-2•0733-1	8•67858	1•19697	1•110	8•6859425	1•900-5
313•0	30•0	5•000	2•3310-2	4•63337	1	-8•3174-1	1•31729	4•33557	2•4126	1•3187412	1•000-4
313•0	30•0	7•000	7•3879-2	5•19343	1	-1•6492	1•72375	5•11243	2•9612	1•7260652	1•800-4
313•0	30•0	10•000	2•0031-1	5•96348	1	-3•0342	2•26041	5•83254	3•5620	2•26427795	3•100-4
313•0	30•0	20•000	9•6807-1	8•10474	1	-7•7685	3•67769	6•65782	4•6241	3•6883724	2•000-3
313•0	30•0	30•0	2•1439	9•90362	1	-1•2151	1•83383	6•80976	5•1307	4•8538013	2•500-4
313•0	30•0	50•000	4•8866	1•25944	2	-1•8854	6•55082	6•84221	5•5778	6•5925670	2•080-3
313•0	30•0	70•000	8•1290	1•48458	2	-2•4481	1•98581	6•84386	5•8075	8•0547690	1•110-3
313•0	30•0	90•000	1•1646	1•67888	2	-2•9339	1•22410	6•84394	5•9486	9•3244325	1•200-3
313•0	30•0	110•000	1•5360	1•85205	2	-3•6668	1•03278	6•84394	6•0461	1•0463138	1•300-3
313•0	30•0	250•000	4•4599	1•76113	2	-5•6395	1•61215	6•84394	6•3404	1•6580514	1•300-3
313•0	30•0	350•000	6•7690	1•24495	3	-6•8490	1•92050	6•84394	6•4257	1•9960057	1•400-3
313•0	30•0	475•000	9•8386	1•74989	2	-8•1114	1•24231	6•84394	6•4903	2•3606870	1•300-3

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
313•0	65•0	0•010	-1•3010-6	6•50171	1	8•8374-4	1•533633-1	6•91024-3	1•5395826-1	0•000	4•8116-5
313•0	65•0	0•020	2•0680-6	6•50343	1	1•7594-3	3•07151-1	3•38079-2	6•9054-3	0•000	9•622-5
313•0	65•0	0•050	3•7700-7	6•50860	1	4•3186-3	7•667629-1	3•44301-2	1•7354-2	1•000-8	2•399-4
313•0	65•0	0•100	-3•8600-6	6•51721	1	8•3856-3	1•53425	6•85694-2	3•4353-2	1•000-7	4•780-4
313•0	65•0	0•200	-1•6790-5	6•53448	1	1•5774-2	3•06438	1•35980-1	6•8366-2	3•0709559	1•000-7
313•0	65•0	0•305	-4•3130-5	6•55268	1	2•2347-2	4•666666	2•05404-1	1•0352-1	4•6767300	2•000-7
313•0	65•0	0•500	-1•1616-4	6•58658	1	3•2139-2	7•63043	3•31455-1	1•6767-1	7•6470925	3•000-7
313•0	65•0	0•700	-2•1239-4	6•62153	1	3•8402-2	1•06541	4•56329-1	2•3193-1	1•0677743	1•000
313•0	65•0	1•000	-3•7960-4	6•67428	1	4•1189-2	1•51597	1•35854-1	3•2575-1	1•5193872	1•000-6
313•0	65•0	1•524	-6•0790-4	6•76717	1	6•29432	1	9•28197-1	4•8064-1	2•2991979	1•000-6
313•0	65•0	2•000	-6•5540-4	6•85226	1	-1•6020-3	2•99205	1•17207	6•1347-1	2•9991979	1•000-6
313•0	65•0	3•048	3•9550-4	7•04129	1	-1•2012-1	4•49765	1•64415	8•7981-1	4•5090362	1•000
313•0	65•0	5•000	9•1105-3	7•39623	1	-4•9491-1	7•19531	1•232756	1•2946	7•2154475	1•000-5
313•0	65•0	7•000	2•9547-2	7•75898	1	-1•0249	9•82744	1•83007	1•6412	9•8576315	1•300-5
313•0	65•0	10•000	8•6751-2	8•29359	1	-1•9871	1•35526	2•32913	2•0402	1•3599884	2•000-5
313•0	65•0	20•000	5•0798-1	9•49354	1	-5•6400	2•44692	3•95843	2•7802	2•4587630	2•000-4
313•0	65•0	30•480	1•2569	1•14556	2	-9•3246	3•41879	2•0816	3•1345	3•44080894	2•100-4
313•0	65•0	50•000	3•2056	1•38457	2	-1•5276	1•94385	2•11498	3•3432	4•9870894	2•700-4
313•0	65•0	70•000	5•6875	1•59190	2	-2•0460	1•626530	4•11649	3•5793	6•3358650	2•900-4
313•0	65•0	90•000	8•44997	1•77429	2	-2•5019	1•42772	4•11657	3•6645	7•5297300	2•100-4
313•0	65•0	110•000	1•1556	1•93879	2	-2•9132	1•47611	4•11657	3•7214	8•6131790	2•200-4
313•0	65•0	250•000	3•7021	1•81921	2	-5•1143	1•40872	3•11657	3•8826	1•4548119	3•000-4
313•0	65•0	350•000	5•7923	1•29402	2	-6•3013	1•71133	3•9261	1•7870273	3•000-4	
313•0	65•0	475•000	8•6205	1•79191	2	-7•5460	1•02864	4•11657	3•9580	2•1472183	3•000-4
313•0	100•0	0•010	-1•3500-6	1•00011	2	5•7333-4	9•96772-2	4•48333-3	1•0017773	-1•000	3•134-5
313•0	100•0	0•020	-3•88930-6	1•00022	2	1•1391-3	1•99354-1	8•95919-3	4•4790-3	2•0035561	-1•000-8
313•0	100•0	0•050	5•1800-7	1•00055	2	2•8024-3	4•98195-1	2•23449-2	1•1183-2	5•0069995	-1•000-8
313•0	100•0	0•100	3•2500-6	1•00111	2	5•4455-3	9•96071-1	4•5180-2	2•2299-2	1•0010868	-1•000-7
313•0	100•0	0•200	-1•0050-5	1•00224	2	1•099112	8•83507-2	4•4420-2	2•011744	0•000	6•174-4
313•0	100•0	0•305	-1•3030-5	1•00342	2	1•4528-2	3•02454	1•33563-1	6•7318-2	3•0499102	0•000
313•0	100•0	0•500	-3•6400-5	1•00563	2	2•0920-2	4•96907	2•15840-1	1•0919-1	4•9943644	1•000-7
313•0	100•0	0•700	-6•7380-5	1•00792	2	2•5021-2	6•94866	2•97594-1	1•5125-1	6•9842160	-2•000-7
313•0	100•0	1•000	-1•2610-4	1•01139	2	2•6849-2	9•90947	4•15564-1	2•1289-1	9•9605790	-1•000-7
313•0	100•0	1•524	-2•0360-4	1•01753	2	1•8266-2	1•50560	1•08864-1	3•1528-1	1•5134773	1•000-6
313•0	100•0	2•000	-1•9970-4	1•02320	2	-1•5938-3	1•07035	1•7131-1	4•370-1	9•8079116	1•000
313•0	100•0	3•048	3•5540-4	1•03593	2	-8•1418-2	2•98427	1•08920	5•8283-1	3•005620	1•000-6
313•0	100•0	5•000	4•6828-3	1•06033	2	-3•3904-1	4•83862	1•55898	8•6704-1	4•8662662	1•000-6
313•0	100•0	7•000	1•4975-2	1•08589	2	-7•1269-1	6•69356	1•91296	1•1097	3•9171678	9•000-5
313•0	100•0	10•000	4•4894-2	1•12464	2	-1•4103	9•39337	1•27438	1•3952	5•7336930	1•000-4
313•0	100•0	20•000	2•8665-1	1•25105	2	-4•2113	1•77553	2•75345	1•9419	1•7894752	2•000-5
313•0	100•0	30•480	7•5838-1	1•37408	2	-7•2091	2•56623	2•85736	2•2089	2•5901898	2•000-5
313•0	100•0	50•000	2•0977	1•57849	2	-1•2300	1•87056	2•88201	2•4327	3•9171678	2•000-5
313•0	100•0	70•000	3•9245	1•76282	2	-1•6908	1•04544	2•88335	2•5384	5•1198350	2•000-4
313•0	100•0	90•000	6•0883	1•92881	2	-2•1057	6•10333	2•88342	2•5990	6•2095015	2•073-2
313•0	100•0	110•000	8•5146	2•08085	2	-2•4858	1•07230	2•88342	2•6386	7•2137735	2•075-2
313•0	100•0	250•000	3•0090	1•24034	2	-4•5771	1•24034	2•88342	2•7462	1•2869582	2•070-2
313•0	100•0	350•000	4•8625	1•37754	2	-5•7276	1•53364	2•88342	2•7737	1•6098978	2•070-2
313•0	100•0	475•000	7•4251	1•86379	2	-6•9432	1•84353	2•88342	2•7934	1•9626937	3•000-4

SURFACE	N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ANGLE	ERROR	SLANT RANGE	R	DELTA R-E	
313.0	200.0	0.010	7.40000-7	2.0.8419-4	4.93287-2	2.21919-3	1.1074-3	5.0332225-2	0.000	1.574-5				
313.0	200.0	0.020	1.4088-5	2.00011	2.5.6737-4	9.85938-2	4.43487-3	2.2134-3	1.0060207-1	0.000	3.145-5			
313.0	200.0	0.050	5.9800-7	2.00027	2.1.3873-3	2.46643-1	1.10623-2	5.5344-3	2.5166188-1	1.000-8	7.853-5			
313.0	200.0	0.100	1.9290-5	2.00055	2.2.6991-3	4.93160-1	2.20441-2	1.1038-2	5.0322075-1	-1.000-8	1.564-4			
313.0	200.0	0.200	-5.3100-6	2.00111	2.5.0747-3	9.86384-1	4.37672-2	2.203-2	1.0064716	-1.000-7	3.104-4			
313.0	200.0	0.305	-1.3420-5	2.00169	2.7.1960-3	1.50401	6.61935-2	3.3365-2	1.5346673	0.000	4.701-4			
313.0	200.0	0.500	-6.2500-6	2.00279	2.1.0371-2	2.464478	1.07056-1	5.4156-2	2.5150801	1.000-7	7.599-4			
313.0	200.0	0.700	-1.0530-5	2.00393	2.1.2410-2	3.44963	1.47727-1	7.5083-2	3.5201283	1.000-7	1.048-3			
313.0	200.0	1.000	-8.0000-6	2.00566	2.1.3200-2	4.92574	2.06540-1	1.0581-1	0.266015	4.000-7	1.466-3			
313.0	200.0	1.524	2.3100-2	2.00873	2.9.0298-3	7.50058	2.03252-1	1.5703-1	7.6547270	3.000-7	2.152-3			
313.0	200.0	2.000	6.2400-5	2.01158	2.9.4876-4	9.83593	3.84881-1	2.0144-1	1.0038719	1-1.000-6	2.730-3			
313.0	200.0	3.048	2.9530-4	2.01802	2.4.1333-3	1.49649	1.45688-1	2.9199-1	1.5275665	1.0000	3.874-3			
313.0	200.0	5.000	1.7133-3	2.03053	2.1.7338-1	2.44698	1.86480-1	4.3737-1	2.4984878	1.000-6	5.595-3			
313.0	200.0	7.000	4.9800-3	2.04386	2.3.6827-1	3.41420	1.71001-1	5.6342-1	3.4870548	1.000-6	6.905-3			
313.0	200.0	10.000	1.4317-2	2.06449	2.7.3994-1	4.85216	1.16338	7.1420-1	4.9578522	1.000-6	8.285-3			
313.0	200.0	20.000	9.4257-2	2.13528	2.2.3097	9.53537	1.42995	1.0117	9.56395	1.300-5	1.028-2			
313.0	200.0	30.480	2.6455-1	2.0888	2.4.1029	1.42635	2.49211	1.6112	1.4618620	1.000-5	1.080-2			
313.0	200.0	50.000	8.0554-1	2.34021	2.7.3744	2.26439	2.50795	1.2872	2.3274800	1.000-5	1.097-2			
313.0	200.0	70.000	1.6271	2.46704	2.1.0544	1.07275	2.50886	1.3459	3.1676026	2.000-5	1.098-2			
313.0	200.0	90.000	2.6836	2.58706	2.1.3544	1.83766	2.50891	1.3787	3.9675113	2.000-5	1.098-2			
313.0	200.0	110.000	3.9465	2.70117	2.1.6397	1.64949	2.50891	1.3998	4.7327789	2.000-5	1.101-2			
313.0	200.0	250.000	1.7114	3.38155	2.3.3407	1.90112	2.50891	1.4540	9.4050085	2.000-5	1.102-2			
313.0	200.0	350.000	2.9889	3.78183	2.4.3414	1.14522	3.50891	1.4667	1.2257010	3.000	1.100-2			
313.0	200.0	475.000	4.8715	4.21750	2.5.4305	1.42288	3.50891	1.4755	1.5466412	3-1.000-4	1.090-2			
313.0	400.0	0.010	-2.3464-5	4.00002	2.1.3401-4	2.37084-2	1.06401-3	5.4147-4	2.5731100-2	0.000	8.049-6			
313.0	400.0	0.020	-2.0074-5	4.00005	2.2.6886-4	4.73530-2	2.12636-3	1.0689-3	5.1403520-2	4.000-9	1.607-5			
313.0	400.0	0.050	-6.4327-5	4.00013	2.6.5915-4	1.18414-1	5.30415-3	2.6593-3	1.2853841-1	0.000	4.009-5			
313.0	400.0	0.100	3.8400-6	4.00026	2.1.2927-3	2.36510-1	1.05702-2	5.2912-3	2.5678413-1	3.000-8	7.984-5			
313.0	400.0	0.200	-2.8200-5	4.00053	2.2.4312-3	4.73084-1	2.09887-2	1.0549-2	5.1363040-1	2.000-8	1.585-4			
313.0	400.0	0.305	-8.2250-5	4.00081	2.3.4444-3	7.21513-1	3.17469-2	1.6000-2	7.8334610-1	5.000-8	1.400-4			
313.0	400.0	0.500	1.0730-5	4.00134	2.4.9754-3	1.81236	5.13554-2	2.5974-2	1.2837787	1.000-7	3.879-4			
313.0	400.0	0.700	-2.5990-5	4.00188	2.5.004-3	1.65525	7.08804-2	3.6025-2	1.7972672	1.000-7	5.353-4			
313.0	400.0	1.000	-1.3100-5	4.00271	2.6.3870-3	2.36427	9.91295-2	5.0793-2	2.5672320	1.000-7	7.487-4			
313.0	400.0	1.524	7.7300-5	4.00419	2.4.3276-3	3.60208	1.45625-1	7.5407-2	3.9116102	0.000	1.100-3			
313.0	400.0	2.000	7.8900-5	4.00556	2.4.7925-4	4.72619	1.84913-1	9.6778-2	5.1326335	1.000-7	1.397-3			
313.0	400.0	3.048	2.6860-4	4.00867	2.1.9947-2	7.19900	2.62445-1	1.4043-1	7.8192575	3.000-7	1.983-3			
313.0	400.0	5.000	9.5490-4	4.01472	2.0.3838-2	1.17979	3.78953-1	2.01703-1	1.2817967	1.000	2.867-3			
313.0	400.0	7.000	1.1963-3	4.02120	2.1.7859-1	1.65004	4.68656-1	2.7195-1	1.7932166	1.000	3.547-3			
313.0	400.0	10.000	5.5520-3	4.03130	2.3.6044-1	2.35350	1.62759-1	3.4554-1	2.5588423	0.000	4.263-3			
313.0	400.0	20.000	3.2154-2	4.06650	2.1.1413	4.68144	1.95034-1	4.9226-1	5.0975125	1.000-6	5.308-3			
313.0	400.0	30.480	8.3710-2	4.10402	2.2.0555	7.09290	1.76724-1	5.6682-1	7.7356125	-1.000-6	5.592-3			
313.0	400.0	50.000	2.7466-1	4.17323	2.3.7795	1.15091	2.35071-1	6.308-1	1.2589501	2.000	5.690-3			
313.0	400.0	70.000	5.7123-1	4.24269	2.5.5157	1.59364	2.35569-1	6.5957-1	1.7485567	-1.000-5	5.670-3			
313.0	400.0	90.000	9.7094-1	4.31069	2.7.2155	2.02698	2.35596-1	7.35596-1	6.7600-1	2.2307716	2.000	5.690-3		
313.0	400.0	110.000	4.4701	4.37728	2.8.8804	2.45139	2.35598-1	7.35598-1	6.8646-1	2.057986	2.000	5.680-3		
313.0	400.0	250.000	7.4753	4.80914	2.1.9677	1.520376	2.35598-1	7.1292-1	5.8630885	2.300-5	5.660-3			
313.0	400.0	350.000	1.4130	5.08685	2.6.6619	1.693766	2.35598-1	7.1891-1	7.968785	2.000	5.660-3			
313.0	400.0	475.000	2.4828	5.40515	2.3.4577	9.00224	2.35598-1	7.2289-1	1.0464143	3-1.000-4	5.600-3			

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E
313•0	900•0	0•010	4•1536-5	9•000000	2	4•6986-5	7•90280-3	3•56986-4	1•7707-4	1•2745760-2	0•000
313•0	900•0	0•020	-3•1851-4	9•00001	2	8•0916-5	1•61242-2	7•13416-4	3•4930-4	2•5690325-2	1•199-6
313•0	900•0	0•050	-2•7449-4	9•00004	2	2•1461-4	3•98964-2	1•7761-3	8•7930-4	6•3966675-2	1•747-6
313•0	900•0	0•100	1•7305-4	9•00008	2	4•3901-4	7•92192-2	3•54651-3	1•7682-3	1•2757658-1	2•170-5
313•0	900•0	0•200	1•8237-4	9•00017	2	8•2229-4	1•58565-1	7•04229-3	3•5343-3	2•523311-1	4•218-5
313•0	900•0	0•305	-2•7299-4	9•00027	2	1•1497-3	2•42246-1	1•06522-2	5•3815-3	3•8950113-1	2•560-6
313•0	900•0	0•500	-2•9017-4	9•00045	2	1•6600-3	3•96988-1	1•72325-2	8•7277-3	6•3844510-1	1•221-4
313•0	900•0	0•700	1•8262-4	9•00063	2	2•0030-3	5•5299-1	2•37855-2	1•2075-2	8•9352740-1	3•070-6
313•0	900•0	1•000	2•2590-4	9•00091	2	2•1504-3	7•93275-1	3•32679-2	1•7048-2	1•2764737	3•000-6
313•0	900•0	1•524	-1•9000-6	9•00140	2	1•4488-3	1•20912	4•88788-2	2•5317-2	1•9454866	3•100-6
313•0	900•0	2•000	2•2270-4	9•00186	2	-1•5863-4	1•58648	6•20738-2	3•2479-2	2•5529851	3•100-6
313•0	900•0	3•048	3•2220-4	9•00291	2	-6•7021-3	2•41742	8•81253-2	4•7153-2	3•8906378	3•100-6
313•0	900•0	5•000	1•0912-3	9•00494	2	-2•8181-2	3•96395	1•27310-1	7•0814-2	6•3816360	3•200-6
313•0	900•0	7•000	1•5995-3	9•00712	2	-6•0100-2	5•54776	1•57519-1	9•1407-2	8•9337295	3•400-6
313•0	900•0	10•000	3•4680-3	9•01053	2	-1•2144-1	7•92077	1•89263-1	1•1622-1	1•2760765	1
313•0	900•0	20•000	1•4263-2	9•02246	2	-3•8615-1	1•58112	2•34068-1	1•6583-1	2•5510408	1
313•0	900•0	30•480	3•6916-2	9•03528	2	-6•9834-1	2•40457	1•44889-1	1•9113-1	3•8858625	1
313•0	900•0	50•000	1•0849-1	9•05917	2	-1•2934	3•92897	1	2•47771-1	2•1265-1	2•1431-3
313•0	900•0	70•000	2•2149-1	9•08348	2	-1•9010	5•47838	1	2•47944-1	2•2269-1	2•843-3
313•0	900•0	90•000	3•7508-1	9•10759	2	-2•5039	7•01529	1	2•47954-1	2•2828-1	2•847-3
313•0	900•0	110•000	5•6907-1	9•13151	2	-3•1019	8•53987	1	2•47955-1	2•3184-1	2•840-3
313•0	900•0	250•000	3•0356	9•29376	2	-7•1580	1•88801	2	2•47955-1	2•4082-1	2•840-3
313•0	900•0	350•000	5•9602	9•40437	2	-9•9234	2•59299	2	2•47955-1	2•4283-1	2•860-3
313•0	900•0	475•000	1•0938	1	9•53692	-1•3237	1	2•43774	2	2•4416-1	5•9378745
										2•4416-1	2•0000-5

SURFACE N	INIT THETA	HEIGHT H	DELTA THETA	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R-E	
344.5	0.0	0.010	-1.4311-3	1.043492	2.0535-1	1.39380	1	7.52116-1	3.07605-1	4.799-3	
344.5	0.0	0.020	-2.8607-3	2.02967	2.08994-1	1.97106	1	1.06315	5.3174-1	6.783-3	
344.5	0.0	0.050	-7.1318-3	3.21118	4.5581-1	3.121598	1	1.67814	8.4004-1	3.000-6	
344.5	0.0	0.100	-1.4182-2	4.54592	6.3813-1	4.0508	1	2.36616	1.1859	1.071-2	
344.5	0.0	0.200	-2.8106-2	6.44181	8.8536-1	6.22616	1	3.32776	1.6726	1.511-2	
344.5	0.0	0.305	-4.2354-2	7.97284	1.0688	1.0688	1	4.08280	2.0582	2.126-2	
344.5	0.0	0.500	-6.7942-2	1.02450	1	1.30163	9.02419	1	5.17020	2.6111-2	
344.5	0.0	0.700	-9.3047-2	1.21678	1.4939	1.06088	2	6.04783	1.0785	1.000-6	
344.5	0.0	1.000	-1.2862-1	1.46226	1	1.6749	1.38486	2	7.10743	3.6451	1.000-6
344.5	0.0	1.524	-1.8471-1	1.82146	1	1.8380	1.70394	2	8.52223	4.4263	1.000-5
344.5	0.0	2.000	-2.2981-1	2.10257	1	1.8807	1.94645	2	9.51629	4.9987	1.000-5
344.5	0.0	3.048	-3.1035-1	2.63534	1	1.7568	2.38862	2	1.11269	5.9849	1.000-5
344.5	0.0	5.000	-4.0153-1	3.45529	1	1.0935	3.02930	2	1.29756	7.2683	1.000-5
344.5	0.0	7.000	-4.3498-1	4.16656	1	1.5157-1	3.55335	2	1.40906	8.1869	1.000-5
344.5	0.0	10.000	-3.9341-1	5.08857	1	1.4511	4.0063	2	1.50270	9.1822	1.000-5
344.5	0.0	20.000	-2.5305-1	7.5305-1	1	6.7405	5.78744	2	1.59623	1.0939	1.000-5
344.5	0.0	30.480	1.3955	9.40549	1	1.1434	7.02050	2	1.61050	1.1838	1.000-5
344.5	0.0	50.000	4.1413	1.22082	2	1.8422	8.80832	2	1.61304	1.2713	1.000-5
344.5	0.0	70.000	7.4110	1.45204	2	2.4202	1.02819	3	1.61314	1.3209	1.000-5
344.5	0.0	90.000	1.0962	1	1.65024	2	2.9157	1	1.5450	1.3534	1.000-5
344.5	0.0	110.000	1.4712	1.82619	2	3.3556	1.6664	3	1.61315	1.3768	1.000-5
344.5	0.0	225.000	3.8617	2.60615	2	5.3055	1.76371	3	1.61315	1.4453	1.000-5
344.5	0.0	350.000	6.7417	3.23065	2	6.8667	1.6170	3	1.61315	1.4779	1.000-5
344.5	0.0	475.000	9.8271	3.73769	2	8.1343	1.48484	3	1.61315	1.4969	1.000-5
344.5	0.5	0.010	-7.2249-4	1.51953	1.4590-1	9.90323	1	2.6719-1	5.34393-1	0.410-3	
344.5	0.5	0.020	-1.7557-3	2.09035	2.2709-1	1.54435	1	1.659-1	8.32913-1	5.314-3	
344.5	0.5	0.050	-5.228-3	3.24988	3.8987-1	2.66796	1	1.43645	7.1909-1	9.166-3	
344.5	0.5	0.100	-1.1362-2	4.57334	5.7065-1	3.94617	1	2.11865	3.0462081	8.000-6	
344.5	0.5	0.200	-2.393-2	6.46118	8.1663-1	5.75952	1	3.07617	5.7596285	1.353-2	
344.5	0.5	0.305	-3.7206-2	7.98851	9.9990-1	7.21290	1	3.82937	1.9305	2.300-5	
344.5	0.5	0.500	-6.1276-2	1.02572	1	1.2470	9.35074	1	4.91512	2.4893	1.965-2
344.5	0.5	0.700	-8.5117-2	1.21780	1	1.4243	1.11336	2	5.79186	2.9482	1.450-2
344.5	0.5	1.000	-1.1910-1	1.46312	1	1.6052	1.33718	2	6.85071	3.5135	1.333-2
344.5	0.5	1.524	-1.7294-1	1.82214	1	1.7682	1.65611	2	8.26485	4.2927	5.321-2
344.5	0.5	2.000	-2.1634-1	2.10317	1	1.8110	1.89854	2	9.25859	4.8635	4.49-2
344.5	0.5	3.048	-2.9377-1	2.63581	1	1.6871	2.34061	2	1.08688	5.8466	3.145-2
344.5	0.5	5.000	-3.8046-1	3.45565	1	1.0238	2.98091	2	1.27173	7.1247	3.710-2
344.5	0.5	7.000	-4.1025-1	4.16686	1	8.2018-2	3.05021	2	1.38322	8.0488	4.396-2
344.5	0.5	10.000	-3.6416-1	5.08881	1	-1.5206	4.15245	2	1.47685	9.0282	5.321-2
344.5	0.5	20.000	2.9339-1	7.48509	1	-6.8098	5.73920	2	1.57038	1.0771	1.071-1
344.5	0.5	30.480	1.4445	9.40562	1	-1.1504	6.97225	2	1.58465	1.1660	1.095-1
344.5	0.5	50.000	4.2028	1.22083	2	-1.8491	8.76005	2	1.2523	1.3011	1.116-1
344.5	0.5	70.000	7.4831	1.45205	2	-2.4271	1.02337	3	1.58719	1.30025600	9.000-3
344.5	0.5	90.000	1.043	1.65025	2	-2.9226	1.14968	3	1.58729	1.3331	1.000-2
344.5	0.5	110.000	1.4801	1.82620	2	-3.3625	1.26181	3	1.58729	1.3561	1.030-2
344.5	0.5	225.000	3.8744	2.60615	2	-5.3124	1.75888	3	1.58729	1.4233	1.125-1
344.5	0.5	350.000	6.7575	3.23066	2	-6.8736	1.56887	3	1.58729	1.4552	1.138-1
344.5	0.5	475.000	9.8455	3.73770	2	-8.1412	1.48001	3	1.58729	1.4738	1.190-2

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA_R	DELTA_R-E
344.5	1.0	0.010	-3.8993-4	1.74899	1.0719-1	7.275336	3.92589-1	1.9629-1	7.2753755	2.505-3
344.5	1.0	0.020	-1.1064-3	2.26265	1.8024-1	1.22608	6.61213-1	3.0722-1	1.2260856	4.218-3
344.5	1.0	0.050	-3.8544-3	3.36329	3.0745-1	2.29262	1.23409	6.1779-1	2.2926342	7.874-3
344.5	1.0	0.100	-9.1288-3	4.65461	5.1114-1	3.53979	1.89973	9.5218-1	3.5398326	1.213-2
344.5	1.0	0.200	-2.0508-2	6.51897	7.5422-1	5.33055	2.84529	1.4302	5.3306445	1.817-2
344.5	1.0	0.305	-3.2714-2	8.03531	9.3598-1	6.7349	3.59308	1.8115	6.736955	3.500-5
344.5	1.0	0.500	-5.5301-2	1.02937	1.1819	8.90161	4.67388	2.3672	8.902085	100-5
344.5	1.0	0.700	-7.7909-2	1.22088	1.3588	1.06791	5.54801	2.8242	1.0679851	400-4
344.5	1.0	1.000	-1.1035-1	1.46568	1.5392	1.29126	6.60463	3.3874	1.2913851	400-4
344.5	1.0	1.524	-1.6201-1	1.82420	1.7020	1.60974	2.01678	4.1640	1.609707	400-4
344.5	1.0	2.000	-2.0376-1	2.10495	1.7447	1.85194	2.00955	4.7329	1.8522752	300-4
344.5	1.0	3.048	-2.7821-1	2.63723	1.6209	2.29372	1.00618	5.7125	2.2943473	100-3
344.5	1.0	5.000	-3.6063-1	3.45674	1.5798-1	2.93374	2.04664	6.9852	2.9350647	159-2
344.5	1.0	7.000	-3.8695-1	4.16776	1.6381-2	3.45791	2.135810	7.9047	3.4600954	237-2
344.5	1.0	10.000	-3.3661-1	5.08955	1.5859	4.10503	2.145172	8.8784	4.1087641	380-3
344.5	1.0	20.000	-3.3130-1	7.48559	1.8746	5.69163	2.154524	1.0607	5.7021755	6020-3
344.5	1.0	30.480	1.4904	9.40602	1.1568	6.92461	2.155950	1.1487	6.9444350	7220-3
344.5	1.0	50.000	4.2605	1.22086	2.8556	8.71235	2.156205	1.2338	8.7539475	8430-3
344.5	1.0	70.000	7.5505	1.452028	2.4335	1.01859	3.156214	1.2819	1.0254781	100-3
344.5	1.0	90.000	1.1119	1.65027	2.9290	1.14490	3.156215	1.3133	1.1549241	100-1
344.5	1.0	110.000	1.4885	1.82622	3.3689	1.25704	3.156215	1.3359	1.2705590	103-1
344.5	1.0	225.000	3.8861	2.60617	5.3188	1.75410	3.156215	1.4019	1.793389	1070-2
344.5	1.0	350.000	6.7722	3.23067	6.8800	2.15209	3.156215	1.4331	2.2275813	1110-2
344.5	1.0	475.000	9.8627	3.73771	7.73771	2.47523	3.156215	1.4513	2.5935896	1130-2
344.5	2.0	0.010	-1.4804-4	2.46150	2.0565-4	2.84948	4.48278	2.094-1	4.48277992	543-3
344.5	2.0	0.020	-5.0065-4	2.5226-1	3.78308	2.5226-1	1.72950	1.30715-1	2.2248-1	2.485765
344.5	2.0	0.050	-2.1912-3	4.96643	4.1391-1	2.87239	1.54069	4.6592-1	1.7295213	937-3
344.5	2.0	0.100	-5.9976-3	6.74514	6.4574-1	4.58082	2.44270	7.7219-1	2.8724357	831-3
344.5	2.0	0.200	-1.5094-2	8.21986	8.2250-1	5.98415	3.16995	1.2280	4.5809298	1559-2
344.5	2.0	0.305	-2.5407-2	1.05041	1.05176-2	1.0641	8.07469	1.5983	5.9843505	2025-2
344.5	2.0	0.500	-4.5176-2	1.23310	1.23310	1.2388	9.05952	2.1432	8.0751100	705-2
344.5	2.0	0.700	-6.5430-2	1.417588	1.4178	1.20464	6.14338	2.5939	9.8320865	3261-2
344.5	2.0	1.000	-9.4936-2	1.83240	1.5797	1.52135	2.754767	3.1509	1.2047588	3938-2
344.5	2.0	1.524	-1.4244-1	2.11206	1.6222	1.76260	2.853659	3.9204	1.5215726	851-2
344.5	2.0	2.000	-1.8106-1	2.64291	1.4988	2.20319	2.101414	4.4847	1.7629364	500-2
344.5	2.0	3.048	-2.4992-1	3.46107	1.3689-1	2.84216	2.19861	5.4564	2.2038197	570-2
344.5	2.0	5.000	-3.2441-1	4.0761	1.1684	1.3689-1	2.15124	1.1153	2.5900-4	7832-2
344.5	2.0	7.000	-3.4437-1	4.17135	1.0373-1	3.36578	2.13095	1.51379	2.8434867	838-2
344.5	2.0	10.000	-2.8628-1	5.0250	1.7049	4.01245	2.40350	1.51389	3.3679723	490-3
344.5	2.0	20.000	4.0024-1	7.48759	1.69915	5.59842	2.149698	1.0292	3.470138	732-2
344.5	2.0	30.480	1.5737	9.40761	1.1684	6.83114	2.151124	1.2971	5.6089700	500-3
344.5	2.0	50.000	4.3645	1.22098	1.8671	8.61864	2.151379	1.1983	8.6602445	1052-1
344.5	2.0	70.000	7.6717	1.45218	2.4450	1.00921	3.151389	1.2449	1.0160955	058-1
344.5	2.0	90.000	1.1255	1.65036	2.9404	1.13551	3.151389	1.2753	1.1455335	063-1
344.5	2.0	110.000	1.5034	1.82630	3.3803	1.24764	3.151389	1.2971	1.2611627	1066-1
344.5	2.0	225.000	3.9071	2.60622	5.3301	1.74468	3.151389	1.3606	1.7839268	075-1
344.5	2.0	350.000	6.7983	3.23071	6.8913	2.14267	3.151389	1.3906	2.181620	040-2
344.5	2.0	475.000	9.8931	3.73771	8.1589	2.46580	3.151389	1.4081	2.5841663	080-2

SURFACE N	INIT THETA A	HEIGHT H	DELTA THETA	DISTANCE	TAU	SLANT RANGE	ANGLE F.	ERROR	DELTA R	DELTA R-E	
									THETA	THETA	
344.5	4.0	0.010	-4.3303-5	4.24958	3.5719-2	2.42434	1.30821-1	6.5410-2	2.4243722	0.000	
344.5	4.0	0.020	-1.6348-4	4.48548	6.9270-2	4.71394	2.54188-1	1.2714-1	4.7139975	0.000	
344.5	4.0	0.050	-8.7826-4	5.12949	1.5964-1	1.09542	5.89358-1	2.9503-1	1.0954403	1.622-3	
344.5	4.0	0.100	-2.8705-3	6.05519	2.8610-1	1.98948	1.06653	5.344-1	1.9895200	760-3	
344.5	4.0	0.200	-8.5000	7.05826	4.3498-1	3.45642	1.84086	9.2559-1	3.4565285	806-3	
344.5	4.0	0.305	-1.5759-2	8.91997	6.4524-1	4.72896	1.50032	1.2608	4.7291691	1.175-2	
344.5	4.0	0.500	-3.0652-2	1.09982	8.7151-1	6.68721	1.49476	1.7700	6.6876290	1.597-2	
344.5	4.0	0.700	-4.6720-2	1.28983	1.0386	8.36736	1.32097	2.1996	8.3680530	2.233-2	
344.5	4.0	1.000	-7.0938-2	1.51598	1.2119	1.05127	2.33586	2.7368	1.0513946	3.417-2	
344.5	4.0	1.524	-1.1098-1	1.86486	1.3703	1.36118	2.71000	3.4854	1.3614093	3.07-2	
344.5	4.0	2.000	-1.4402-1	2.14028	1.4122	1.59878	2.68393	4.0371	1.5991179	4.943-2	
344.5	4.0	3.048	-2.0302-1	2.66551	1.94783	2.03471	2.72181	4.9894	2.0353400	5.993-2	
344.5	4.0	5.000	-2.6388-1	3.47836	1.63245-1	2.66953	2.11044	6.2264	2.6708570	7.237-2	
344.5	4.0	7.000	-2.7314-1	4.18570	1.0431-1	3.19099	2.22132	7.1185	3.1931773	8.011-2	
344.5	4.0	10.000	-2.0236-1	5.10425	1.9010	3.83583	2.31461	8.0586	3.8395680	6.694-2	
344.5	4.0	20.000	5.1378-1	7.49558	1.71794	5.41931	2.40793	9.7092	5.4298570	5.03-2	
344.5	4.0	30.480	3.7095	9.41396	1.1868	1.65097	2.42218	1.0535	6.6708045	7.14-2	
344.5	4.0	50.000	4.521	1.22147	2.8851	1.43754	2.42472	1.1324	8.4791475	9.842-2	
344.5	4.0	70.000	7.8655	1.45259	2.91053	2.42482	1.1763	9.793560	7.210-3		
344.5	4.0	90.000	1.1471	1.65072	2.9581	1.2132	1.2049	1.273418	7.500-3		
344.5	4.0	110.000	1.5270	1.82663	2.3979	1.2942	1.2253	1.2429486	7.800-3		
344.5	4.0	225.000	3.9399	2.60645	2.3475	1.76240	1.242483	1.2844	1.7656491	8.600-3	
344.5	4.0	350.000	6.8388	3.23089	2.9086	1.24336	1.42483	1.3121	1.998552	8.800-3	
344.5	4.0	475.000	9.9402	1.373790	2.1761	2.42483	1.3282	1.5658426	9.900-3	1.008-1	
344.5	0.0	0.010	-1.1353-5	8.12766	1.24008	1.24008	3.3458-2	6.69163-2	1.2401217	4.270-4	
344.5	0.0	0.020	-4.4544-5	8.25345	3.6161-2	2.46098	1.32699-1	6.6374-1	2.4610492	8.465-4	
344.5	0.0	0.050	-2.6483-4	8.62041	8.7652-2	6.01667	3.23674-1	1.6203-1	6.0169080	2.065-3	
344.5	0.0	0.100	-9.7911-4	9.20135	1.6701-1	1.16275	1.23139-1	3.1227-1	1.1628084	3.976-3	
344.5	0.0	0.200	-3.4252-3	1.02711	1.0609-1	2.18995	1.16517	5.8596-1	2.1900938	7.434-3	
344.5	0.0	0.305	-7.0074-3	1.12944	4.2869-1	3.16370	1.66975	8.4205-1	3.1639231	4.000-6	
344.5	0.0	0.500	-1.5405-2	1.29984	1.1408-1	4.69616	2.48492	1.2585	4.7696017	1.587-2	
344.5	0.0	0.700	-2.5379-2	1.45620	1.5838-1	6.22040	1.39852	1.6281	6.2211185	2.043-2	
344.5	0.0	1.000	-4.1497-2	1.66678	1.346-1	8.14161	1.10725	1.067	8.1428165	2.626-2	
344.5	0.0	1.524	-6.9794-2	1.9938	1.0599	1.10072	5.37785	2.7933	1.1009512	3.445-2	
344.5	0.0	2.000	-9.4020-2	2.24960	1.0995	1.32521	6.29804	3.3092	1.3255485	4.041-2	
344.5	0.0	3.048	-1.3765-1	2.75406	1.8213-1	1.74389	7.82305	4.2107	1.7445216	5.038-2	
344.5	0.0	5.000	-1.7839-1	3.54666	1.4089-1	2.36290	9.61007	5.3918	2.3642252	6.233-2	
344.5	0.0	7.000	-1.7285-1	4.24262	1.8090-1	2.87595	2.07008	1.2461	2.8781460	9.800-2	
344.5	0.0	10.000	-8.5662-2	5.15102	1.1600	3.51367	2.16232	1.1436	3.5174026	7.635-2	
344.5	0.0	20.000	6.6471-1	7.52748	1.4059	5.08727	2.15503	1.7013	5.0978195	3.394-2	
344.5	0.0	30.480	1.8837	9.43935	1.2079	6.31475	2.12693	1.4666	6.3345900	4.180-3	
344.5	0.0	50.000	4.7377	1.22342	1.9047	8.09759	2.27177	1.0184	8.1392025	8.685-2	
344.5	0.0	70.000	8.0960	1.45442	2.424816	9.56858	2.27187	1.0578	9.6374120	8.727-2	
344.5	0.0	90.000	1.1723	1.5541	1.82793	2.9765	1.08300	1.27187	1.0831	1.0930203	5.600-3
344.5	0.0	110.000	1.5541	1.9519	1.4159	1.9501	1.27187	1.1012	1.2085371	7.600-2	
344.5	0.0	225.000	3.9752	2.60735	3.3644	1.69174	1.27187	1.1527	1.7309832	8.820-2	
344.5	0.0	350.000	6.8811	2.23161	6.9251	2.08958	1.27187	1.1766	1.650730	8.840-2	
344.5	0.0	475.000	9.9886	3.73851	2.41263	2.1923	1.27187	1.1903	2.5309937	6.600-3	

SURFACE_N	INIT THETA	HEIGHT_H	DELTA_H	THETA	DELTA_THETA	DISTANCE	TAU	ERROR_ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E	
344.5	15.0	0.010	-3.2980-6	1.50684	1.9.7991-3	6.65100-1	3.58896-2	1.7945-2	6.6517630-1	0.000	2.290-4	
344.5	15.0	0.020	-1.2889-5	1.51366	1.9501-2	1.32718	7.15639-2	3.5795-2	1.3273332	0.000	4.566-4	
344.5	15.0	0.050	-7.9350-5	1.533398	4.8008-2	3.29574	1.77293-1	8.8752-2	3.2961394	2.000-7	1.131-3	
344.5	15.0	0.100	-3.0752-4	1.56736	1.9361-2	6.51984	3.49371-1	1.7507-1	6.5206670	2.000-7	2.230-3	
344.5	15.0	0.200	-1.1626-3	1.63246	1.7816-1	1.27698	1.79103-1	3.4155-1	1.2771649	1.000	4.333-3	
344.5	15.0	0.305	-2.5375-3	1.69871	1.90751-1	1.90732	1.00571	5.0720-1	1.907162	1.000	6.420-3	
344.5	15.0	0.500	-6.1161-3	1.81646	1.8552-1	3.01669	1.56891	7.9454-1	3.0172251	1.000	1.002-2	
344.5	15.0	0.700	-1.0801-2	1.93143	4.9158-1	4.08378	2.09356	1.0656	4.0845974	1.000	1.337-2	
344.5	15.0	1.000	-1.9053-2	2.09477	6.1172-1	5.577379	1.79821	1.43535	5.5751160	1.700-5	1.787-2	
344.5	15.0	1.524	-3.4861-2	2.35954	1.73189-1	7.92580	1.84101	1.9948	7.9281680	1.800-5	2.456-2	
344.5	15.0	2.000	-4.9261-2	2.58273	1.76583-1	9.85111	1.63022	2.4328	9.8545950	1.000-5	2.964-2	
344.5	15.0	3.048	-7.5895-2	3.03224	1.66116-1	1.35818	2.98902	3.2239	1.3588233	1.900-4	3.843-2	
344.5	15.0	5.000	-9.6525-2	3.76672	1.6949-2	1.93180	2.64500	4.2914	1.9331323	2.000-4	4.935-2	
344.5	15.0	7.000	-7.8891-2	4.42819	1.6866-1	2.41941	2.6137	5.0764	2.4216052	2.600-4	5.629-2	
344.5	15.0	10.000	-1.7796-2	5.30487	1.62337	3.03483	2.95737	5.9031	3.038562	2.160-3	6.242-2	
344.5	15.0	20.000	7.7242-1	7.63347	1.74748	4.57666	2.04784	7.3215	4.5872212	2.070-3	6.946-2	
344.5	15.0	30.480	1.9835	9.52400	1.2095	5.79045	2.0008	8.0008	5.8102860	2.600-3	7.105-2	
344.5	15.0	50.000	4.8172	1.22995	2.19015	7.56094	2.06440	8.6210	7.6025540	2.040-3	7.177-2	
344.5	15.0	70.000	8.1546	1.45972	2.4759	9.02528	2.06450	8.9529	9.0941125	2.330-3	7.208-2	
344.5	15.0	90.000	1.1761	1.65698	2.9690	1.02824	3.06450	1.6229	1.0382663	3.500-3	7.230-2	
344.5	15.0	110.000	1.5561	1.83228	3.4073	1.13996	1.06450	1.3109	1.1534827	3.600-3	7.230-2	
344.5	15.0	225.000	3.9683	2.61036	5.3525	1.63583	1.06450	1.7264	1.6750787	3.000-3	7.280-2	
344.5	15.0	350.000	6.8664	3.23401	6.9116	2.03328	3.06450	1.9153	2.1087779	3.100-3	7.280-2	
344.5	15.0	475.000	9.9671	3.74056	8.1780	2.35611	3.06450	1.0023	1.4744744	3.200-3	7.300-2	
344.5	30.0	-1.3420-6	4.9062-3	3.00342	1.3020-6	9.7808-3	6.65725-1	1.79714-2	8.9857-3	3.3321049	1.000	
344.5	30.0	-3.8730-6	3.00685	1.0260-5	3.01713	1.4200-2	1.66141	8.93741-2	6.9857-2	6.6620655	-1.000	
344.5	30.0	0.050	-2.0260-5	3.03423	8.0200-5	3.03423	4.7565-2	3.313143	1.77545-1	4.4739-2	6.6621782	1.000-7
344.5	30.0	0.100	-8.0200-5	3.06836	3.0913-4	1.8187-6	6.589866	3.50374-1	1.7622-1	6.5928035	-4.000-7	
344.5	30.0	0.200	-3.0913-4	3.10410	1.9398-4	1.3468-1	9.99066	5.26595-1	2.6557-1	9.9955560	0.000	
344.5	30.0	0.305	-6.9398-4	3.17006	1.7565-3	2.0635-1	1.62043	1.42012-1	4.2640-1	1.6212697	1.000	
344.5	30.0	0.500	-1.7565-3	3.23730	3.2377-3	2.6835-1	2.44445	1.14880	5.8474-1	2.456676	1.000-6	
344.5	30.0	0.700	-3.2377-3	3.33730	1.4193-1	3.415664	1.0521	8.15847	3.15847	5.1052-1	1.000-9-2	
344.5	30.0	1.000	-6.0276-3	3.50951	1.1845-2	4.1994-1	4.68640	2.25832	1.1726	4.6894362	1.000-5	
344.5	30.0	1.524	-1.01845-2	3.66326	1.7547-2	4.4332-1	6.01271	2.80199	1.4721	6.0169585	2.300-5	
344.5	30.0	2.000	-1.7547-2	3.987100	1.8587-2	3.99286	8.74808	1.79815	2.0444	8.7554165	1.500-5	
344.5	30.0	3.048	-2.8587-2	4.05753	1.34251-2	1.0493-1	1.32986	5.11186	2.8697	1.3313063	1.300-4	
344.5	30.0	5.000	-3.4251-2	4.4213	1.276-3	3.23730	1.4193-1	3.415664	1.0521	8.15847	1.000-6	
344.5	30.0	7.000	-1.4871-2	5.13371	1.4515-1	1.84515-1	1.74127	2.98550	3.5071	1.7435851	2.500-4	
344.5	30.0	10.000	6.7707-2	5.90642	1.8524-1	2.1892	2.28366	2.676907	4.1942	2.2875168	3.300-4	
344.5	30.0	20.000	7.2024-1	8.06271	1.69271	1.9528	3.71116	2.60527	5.3761	3.7218314	2.300-4	
344.5	30.0	30.480	1.8068	9.87100	1.1372	1.1372	4.87214	7.73958	5.9254	4.8920974	1.080-3	
344.5	30.0	50.000	4.4213	1.25696	2.18101	1.8101	6.59356	7.76406	6.4052	6.6352910	1.300-3	
344.5	30.0	70.000	7.5576	1.48250	2.1892	2.3738	8.03096	7.76503	6.6510	8.0999115	1.400-3	
344.5	30.0	90.000	1.0983	1.67704	2.8602	1.27081	9.27081	7.76506	6.8021	9.3711355	1.490-3	
344.5	30.0	110.000	1.4615	1.85040	2.936	1.03756	1.03756	7.76507	6.9066	1.0510956	1.500-3	
344.5	30.0	225.000	3.7950	2.62297	2.250	1.52992	1.52992	7.76507	7.1900	1.5691734	1.700-3	
344.5	30.0	350.000	6.6253	3.24406	2.777	1.92574	1.92574	7.76507	7.3141	2.0012476	1.700-3	
344.5	30.0	475.000	9.6678	2.74915	2.04055	1.04055	2.24406	2.777	7.3837	2.3660099	1.600-3	

SURFACE N	INIT THETA	HEIGHT H	DELTA THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E
344•5	65•0	0•010	7•7400-7	6•50158	1•2638-3	1•53596-1	8•28905-3	1•5392134-1	5•300-5
344•5	65•0	0•020	4•0700-7	6•50316	1•5143-3	3•07166-1	1•66398-2	8•2828-3	0•000
344•5	65•0	0•050	-5•4390-6	6•50791	1•1181-2	7•67693-1	4•12961-2	3•0781748-1	1•059-4
344•5	65•0	0•100	-1•6350-5	6•51585	1•2027-2	1•53439	8•22185-2	2•0672-2	2•640-4
344•5	65•0	0•200	-6•6430-5	6•53179	1•42725-2	3•06504	1•62961-1	4•1202-2	5•257-4
344•5	65•0	0•305	-1•5022-4	6•54964	1•2902-2	4•66813	2•46023-1	3•0716104	1•042-3
344•5	65•0	0•500	-3•8618-4	6•58013	1•7108-2	7•63426	3•96584-1	1•2407-1	1•574-3
344•5	65•0	0•700	-7•2324-4	6•61275	1•2718-1	1•06615	1•45414-1	2•0983-1	2•000-7
344•5	65•0	1•000	-1•3768-3	6•66222	1•6351-1	1•51741	1•58764-1	2•761-1	0•000
344•5	65•0	1•524	-2•7924-3	6•75004	2•0233-1	2•29746	1•10458	1•5208241	1•000-6
344•5	65•0	2•000	-4•2322-3	6•63115	1•1567-1	2•99716	1•39139	2•3027901	1•000-6
344•5	65•0	3•048	-7•0957-3	7•01321	1•7316-1	4•50814	1•94160	1•0449	1•000-6
344•5	65•0	5•000	-7•6851-3	7•36018	1•0754-1	7•21788	1•72387	1•5286	1•852-3
344•5	65•0	7•000	1•7101-3	7•71918	1•8425-1	9•86336	1•28493	1•9276	1•064-2
344•5	65•0	10•000	4•1764-2	8•25270	1•5130	1•36076	2•82489	2•3796	1•000-5
344•5	65•0	20•000	4•1203-1	9•90935	1•783	2•45701	2•4596	2•4688327	2•000-5
344•5	65•0	30•480	1•1183	1•14275	2•8892	3•43174	2•57272	3•5701	2•500-4
344•5	65•0	50•000	3•0037	1•38232	2•4862	4•95989	2•59446	3•8841	3•000-4
344•5	65•0	70•000	5•4320	1•58995	2•0052	6•28323	2•59534	4•0352	3•022-2
344•5	65•0	90•000	8•1975	1•77255	2•4617	7•44694	2•59538	4•1239	3•500-4
344•5	65•0	110•000	1•1212	1•93721	2•8733	8•49629	2•59538	4•1831	3•800-4
344•5	65•0	225•000	3•1551	1•68419	2•7408	1•32568	3•59538	4•3346	3•034-2
344•5	65•0	350•000	5•7218	1•29314	2•62632	1•71376	3•59538	4•3965	3•030-2
344•5	65•0	475•000	8•5357	1•79117	2•5082	2•03116	3•59538	4•4298	3•030-2
344•5	100•0	0•010	-1•3500-6	1•00010	2•9272-3	1•99347-1	1•07472-2	2•6902-3	3•449-5
344•5	100•0	0•020	-3•8530-6	1•00020	2•2576-3	4•98178-1	2•68001-2	5•3698-3	6•893-5
344•5	100•0	0•050	5•1800-7	1•00051	2•0000	9•96165-1	5•33763-2	1•3414-2	1•718-4
344•5	100•0	0•100	-9•5600-6	1•00102	2•4298-2	9•96124	1•05868-1	2•6746-2	3•424-4
344•5	100•0	0•200	-2•9280-5	1•00206	2•7755-2	1•99124	1•05868-1	2•0012984	1•000-7
344•5	100•0	0•305	-6•4360-5	1•00316	2•0891-2	3•03495	1•59946-1	8•0665-2	2•000-7
344•5	100•0	0•500	-1•5861-4	1•00521	6•3210-2	4•97012	1•598177-1	3•0503165	1•026-3
344•5	100•0	0•700	-2•9494-4	1•00735	2•8887-2	6•95072	3•55550-1	1•3073-1	1•656-3
344•5	100•0	1•000	-5•7910-4	1•01059	2•10673-1	9•91360	4•95627-1	1•8097-1	3•000-7
344•5	100•0	1•524	-1•1865-3	1•01639	2•3303-1	1•50651	1•24006-1	2•5423-1	5•000-7
344•5	100•0	2•000	-1•7903-3	1•02179	2•4123-1	1•97184	1•1751-1	3•7591-1	1•000-6
344•5	100•0	3•048	-2•9959-3	1•02402	2•1265-1	2•98739	1•28454	6•9131-1	3•036122
344•5	100•0	5•000	-2•961-3	1•05782	2•7•9846-2	4•84569	1•82101	1•0218	4•8733032
344•5	100•0	7•000	1•9882-3	1•08303	2•4152-1	6•70532	1•21522	1•3004	6•7453930
344•5	100•0	10•000	2•3326-2	1•12163	2•0869	9•41237	1•6228	9•4726035	1•000-5
344•5	100•0	20•000	2•3766-1	1•24834	2•8929	1•77950	2•08763	2•2208	1•000-5
344•5	100•0	30•480	6•8491-1	1•37174	2•6•991	2•5174	3•1728	2•5029	2•085-2
344•5	100•0	50•000	1•9861	1•57652	2•12014	3•87800	2•19786	2•7350	3•9245727
344•5	100•0	70•000	1•9882	1•76107	2•6627	5•05422	2•19865	2•8438	1•000-4
344•5	100•0	90•000	5•9138	1•92722	2•0781	6•11309	2•19368	2•9060	1•000-4
344•5	100•0	110•000	8•3129	2•07938	2•4585	7•08281	2•19368	2•9667	1•000-4
344•5	100•0	225•000	2•5467	2•78734	2•2284	1•15946	3•19868	1•1994176	3•000-4
344•5	100•0	350•000	4•8187	2•37669	2•57918	1•53505	3•19857	1•6113097	3•000-4
344•5	100•0	475•000	7•3718	2•86307	2•9177	1•84502	3•19868	1•9641783	3•01060

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
344.5	200.0	0.010	7.40000-7	2.000005	2	7.2696-4	4.93271-2	2.66196-3	1.3329-3	0.000	1.733-5
344.5	200.0	0.020	1.1680-6	2.000010	2	1.4499-3	9.86542-2	5.31991-3	2.6567-3	0.000	3.463-5
344.5	200.0	0.050	1.3518-5	2.000025	2	3.5952-3	2.446571-1	1.32677-2	6.6445-3	2.5159135-1	8.635-5
344.5	200.0	0.100	-1.9470-5	2.000050	2	7.0772-3	4.93335-1	2.64297-2	1.3257-2	5.0337195-1	1.721-4
344.5	200.0	0.200	7.6300-6	2.00102	2	1.3751-2	9.86287-1	5.24415-2	2.6376-2	0.000	3.414-4
344.5	200.0	0.305	-4.9000-7	2.00156	2	2.0066-2	1.50390	7.9210-2	1.534555	1.000-7	5.163-4
344.5	200.0	0.500	-1.9180-5	2.00258	2	3.1347-2	2.46476	1.28034-1	6.4838-2	2.5105618	8.336-4
344.5	200.0	0.700	-1.0116-4	2.00364	2	4.1123-2	3.44996	1.76458-1	8.9816-2	3.5204526	1.149-3
344.5	200.0	1.000	-1.3860-4	2.000526	2	5.3012-2	4.92621	2.46257-1	1.2631-1	5.0270650	1.603-3
344.5	200.0	1.524	-2.7550-4	2.00316	2	6.6159-2	7.50180	3.60439-1	1.8714-1	7.6559180	3.000-7
344.5	200.0	2.000	-4.0550-4	2.01087	2	7.0278-2	9.83789	4.56198-1	2.3967-1	1.0040645	1.000
344.5	200.0	3.048	-6.5650-4	2.01705	2	5.5831-2	1.49690	1.43036-1	3.4605-1	1.5279734	1.000-6
344.5	200.0	5.000	-3.9870-4	2.02923	2	-4.2684-2	2.44793	1.7588-1	5.1484-1	2.4994134	1.000-6
344.5	200.0	7.000	1.3378-3	2.04237	2	-2.1726-1	3.41584	1.1227	6.5925-1	3.4886670	2.000-6
344.5	200.0	10.000	8.2080-3	2.06288	2	-5.7454-1	4.85492	1.32993	8.2906-1	4.9605609	1.000-7
344.5	200.0	20.000	7.9613-2	2.13371	2	-2.1446	9.54006	1.59773	1.1533	9.7620065	1.000-6
344.5	200.0	30.480	2.4172-1	2.20744	2	-3.9466	1.42734	2.65248	1.3103	1.4628281	1.000-5
344.5	200.0	50.000	7.6870-1	2.33890	2	-7.2242	2.26590	2.66441	1.4397	2.3289630	1.000-5
344.5	200.0	70.000	1.5771	2.46580	2	-1.0396	1	3.07471	2.166494	1.4994	3.1695243
344.5	200.0	90.000	2.6212	2.58589	2	-1.3398	1	3.84000	1.66497	1.5328	3.9698038
344.5	200.0	110.000	3.8724	2.70005	2	-1.6252	1	4.56760	1.66497	1.5541	4.7353976
344.5	200.0	225.000	1.4171	1.32121	1	-3.0531	1	8.20755	1.66497	1.6042	8.6434035
344.5	200.0	350.000	2.9702	1.378108	2	-4.3278	1	1.4570	3	1.62261714	3.000
344.5	200.0	475.000	4.8480	1.21685	2	-5.4172	1	1.42341	3	1.6310	1.5471645
344.5	400.0	0.010	-7.7354-5	4.000002	2	-2.0074-5	4.000004	6.9320-4	4.73515-2	2.55070-3	1.27630-3
344.5	400.0	0.020	-1.0425-5	4.000012	2	1.7215-3	1.8283-1	6.36157-3	1.26730-2	1.31787-3	1.2558-3
344.5	400.0	0.050	-8.2080-5	4.000024	2	3.8400-5	3.9555-3	2.30556-3	4.73196-2	2.51481-2	1.2643-2
344.5	400.0	0.200	2.5550-5	4.000075	2	4.000075	9.7207-3	7.21234-1	3.80132-2	1.9152-2	1.9152-2
344.5	400.0	0.305	-4.3180-5	4.00124	2	1.5031-2	1.18244	6.14165-2	3.1093-2	1.2838598	1.000-7
344.5	400.0	0.500	-2.5990-5	4.00175	2	1.9730-2	1.655519	8.46607-2	4.3087-2	1.7972163	1.000-7
344.5	400.0	1.000	-4.0100-5	4.00222	2	2.5438-2	2.36426	1.18183-1	6.0625-2	2.5672179	2.000-7
344.5	400.0	1.524	-3.0600-5	4.00392	2	3.1759-2	3.60221	1.73067-1	8.9857-2	3.9117339	3.000-7
344.5	400.0	2.000	-8.3100-5	4.00522	2	3.3773-2	4.72641	2.19145-1	5.1373325-1	5.1373325-1	1.1945-4
344.5	400.0	3.048	-2.5400-5	4.00820	2	2.6784-2	7.19934	3.019199-1	1.6639-1	7.8308910-1	1.900-7
344.5	400.0	5.000	2.6110-4	4.01409	2	-2.0870-2	1.17991	4.41986-1	2.4798-1	1.2819130	1.000-6
344.5	400.0	7.000	1.0305-3	4.02047	2	-1.0571-1	1.65026	5.41647-1	3.1808-1	1.7934183	1.000-6
344.5	400.0	10.000	3.6750-3	4.03050	2	-2.8041-1	2.35386	6.42953-1	4.0089-1	2.5591749	2.000-6
344.5	400.0	20.000	2.7685-2	4.06571	2	-1.0610	4.68233	7.75739-1	5.6060-1	5.0983255	1.000-6
344.5	400.0	30.480	8.1735-2	4.10328	2	-1.9792	7.09427	8.03641-1	6.3873-1	7.7368740	1.000-6
344.5	400.0	50.000	2.6110-4	4.17252	2	-3.7057	1.15113	8.0000000	1.2591732	0.000	5.750-3
344.5	400.0	70.000	5.5504-1	4.24200	2	-5.4425	1.59394	8.10213-1	7.3337-1	1.7488402	0.000
344.5	400.0	90.000	9.5033-1	4.31001	2	-7.1427	2.02737	8.10226-1	7.4998-1	2.2311260	0.000
344.5	400.0	110.000	1.4449	4.37662	2	-8.8079	2.45186	8.10226-1	7.6056-1	2.7064047	2.000-6
344.5	400.0	225.000	6.0537	4.73542	2	-1.7778	1.73852	8.10226-1	7.8496-1	5.3195995	-2.000-5
344.5	400.0	350.000	1.4056	5.08632	2	-2.6550	1.97478	8.10226-1	7.9336-1	7.9698245	2.000-5
344.5	400.0	475.000	2.4731	5.40466	2	-3.4509	1.00360	8.10226-1	7.9738-1	1.0465401	3.000

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
344.5	900.0	0.010	-3.8774-5	9.00000	2	1.1571-4	7.96626-3	4.28211-4	1.2785208-2	0.000	4.402-6
344.5	900.0	0.020	2.4366-4	9.00001	2	2.4078-4	1.56776-2	8.55787-4	4.1929-4	2.5412368-2	9.534-6
344.5	900.0	0.050	2.8768-4	9.00004	2	5.8688-4	3.94489-2	2.13438-3	1.0547-3	6.3688560-2	1.004-6
344.5	900.0	0.100	-3.0883-4	9.00008	2	1.1295-3	7.95989-2	4.25202-3	2.1473-3	1.2781273-1	2.180-6
344.5	900.0	0.200	1.8237-4	9.00016	2	2.2178-3	1.58560-1	8.43784-3	4.2322-3	2.5522981-1	4.587-5
344.5	900.0	0.305	4.8280-5	9.00025	2	3.2622-3	2.41983-1	1.27547-2	6.4444-3	3.8933759-1	8.924-5
344.5	900.0	0.500	-1.2954-4	9.00041	2	5.0408-3	3.96847-1	2.06083-2	1.0443-2	6.3835760-1	1.33-4
344.5	900.0	0.700	3.4326-4	9.00058	2	6.6319-3	5.55153-1	2.84094-2	1.4449-2	8.9343665-1	2.143-4
344.5	900.0	1.000	-1.5100-5	9.00084	2	8.5364-3	7.93440-1	3.96614-2	2.0348-2	1.2765761	2.90-6
344.5	900.0	1.524	-2.4290-4	9.00131	2	1.0650-2	1.20927	5.80880-2	3.0167-2	1.9455804	2.90-6
344.5	900.0	2.000	-1.8200-5	9.00175	2	1.1322-2	1.58662	7.35623-2	3.8647-2	2.5530710	5.92-4
344.5	900.0	3.048	8.1200-5	9.00275	2	8.9837-3	2.41753	1.03818-1	5.5877-2	3.8907065	3.00-6
344.5	900.0	5.000	1.2600-4	9.00473	2	-7.0482-3	3.96458	1.48474-1	8.3314-2	3.820290	7.582-4
344.5	900.0	7.000	1.0361-3	9.00688	2	-3.5606-2	5.94802	1.82031-1	1.0690-1	8.9338920	2.90-6
344.5	900.0	10.000	2.6630-3	9.01026	2	-9.4530-2	7.92114	2.16199-1	1.3481-1	1.2760997	2.00-6
344.5	900.0	20.000	1.2585-2	9.02219	2	-3.5910-1	1.58121	1.61168-1	1.8879-1	2.5510951	1.00-6
344.5	900.0	30.480	3.4484-2	9.03502	2	-6.7261-1	2.40468	1.70694-1	2.1529-1	3.8859316	2.00-6
344.5	900.0	50.000	1.0368-1	9.05892	2	-1.2684	3.92921	1.72862-1	2.3731-1	6.3686605	3.00-6
344.5	900.0	70.000	2.1542-1	9.08323	2	-1.8762	5.47867	1.72964-1	2.4746-1	8.9076035	6.00-6
344.5	900.0	90.000	3.6748-1	9.10735	2	-2.4791	7.01565	1.72968-1	2.5311-1	1.1441763	0.000
344.5	900.0	110.000	5.5986-1	9.13127	2	-3.0772	8.54029	1.72968-1	2.5670-1	1.3971199	2.000
344.5	900.0	225.000	2.4359	9.26520	2	-6.4255	1.70758	2.72968-1	2.6497-1	2.8427270	2.000
344.5	900.0	350.000	5.9311	9.40416	2	-9.8992	2.59311	2.72968-1	2.6780-1	4.3980176	2.000
344.5	900.0	475.000	1.0898	9.53671	2	-1.3213	3.43790	2.72968-1	2.6914-1	5.9379765	1.000-5

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA_R	DELTA_R-E
377.2	0.0	0.010	-2.8411-3	1.35385	3.8464-1	1.47726	1.64142-1	4.8207-1	1.4772637	1.568-3
377.2	0.0	0.020	-5.6795-3	1.91521	5.4326-1	1.36276	6.8161-1	2.0890596	1.000-6	7.870-3
377.2	0.0	0.050	-1.4164-2	3.03102	8.5513-1	3.0220	2.15051	1.0766	3.022191	1.000-6
377.2	0.0	0.100	-2.8194-2	4.29302	1.1999	4.66754	2.03089	1.595	4.6675825	1.752-2
377.2	0.0	0.200	-5.5947-2	6.08947	1.6719	6.59518	4.25913	2.1418	6.5952885	2.464-2
377.2	0.0	0.305	-8.4471-2	7.54488	2.0293	8.13554	5.22072	2.6339	8.1357405	3.025-2
377.2	0.0	0.500	-1.3599-1	9.71235	2.5221	1.03961	6.60036	3.3472	1.0396533	3.831-2
377.2	0.0	0.700	-1.8696-1	1.15557	1.28922	1.22769	7.70824	3.9308	1.2277659	3.000-4
377.2	0.0	1.000	-2.6000-1	1.39224	1.2975	1.46324	9.03755	4.6467	1.4633601	4.483-2
377.2	0.0	1.524	-3.7781-1	1.7125	1.7426	1.79763	1.07943	5.6274	1.7978525	7.70-2
377.2	0.0	2.000	-4.7552-1	2.01662	1.9662	2.05086	2.021042	6.3404	2.0511974	6.324-2
377.2	0.0	3.048	-6.6141-1	2.54329	1.1094	2.51032	2.139569	7.5582	2.5109521	2.060-3
377.2	0.0	5.000	-9.1885-1	3.36341	1.6794	3.17066	2.161172	9.1168	3.1719709	8.271-2
377.2	0.0	7.000	-1.0951	4.08064	1.8262	3.70762	2.173705	1.0226	3.7097983	9.678-2
377.2	0.0	10.000	-1.2309	5.01383	1.2472	4.36641	2.183758	1.1385	4.3701329	1.054-1
377.2	0.0	20.000	-1.0083	7.43695	1.1234	5.96906	2.192919	1.3414	5.9795835	1.129-1
377.2	0.0	30.480	-1.8594-1	9.36793	1.8674	7.0830	2.194092	1.4439	7.2280980	1.246-1
377.2	0.0	50.000	2.0999	1.21815	2.5883	9.00134	2.194264	1.5438	9.0429080	1.265-1
377.2	0.0	70.000	4.9897	1.44981	2.1657	1.04777	3.194268	1.6007	1.0546526	1.440-2
377.2	0.0	90.000	8.2131	1.64828	2.6636	1.17425	3.194269	1.6381	1.1842749	1.510-2
377.2	0.0	110.000	1.1670	1.82442	2.1040	1.28651	3.194269	1.6652	1.3000346	1.287-1
377.2	0.0	225.000	3.4239	1.60492	2.0553	1.78393	3.194269	1.7448	1.8231668	1.301-1
377.2	0.0	350.000	6.1913	1.22968	2.6171	1.8208	3.194269	1.7829	2.57075	1.307-1
377.2	0.0	475.000	9.1804	1.73686	2.8851	2.50531	3.194269	1.8052	2.6236713	1.310-1
377.2	0.5	0.010	-1.3790-3	1.44323	2.6798-1	1.02921	1.71719-1	3.3586-1	1.0292128	3.879-3
377.2	0.5	0.020	-3.3876-3	1.97940	4.1948-1	1.61355	1.05245	5.2643-1	1.6135582	6.078-3
377.2	0.5	0.050	-1.0187-2	3.07199	7.2485-1	2.80144	1.82380	9.1311-1	2.8014589	3.000-6
377.2	0.5	0.100	-2.2299-2	4.32204	1.06633	4.15386	2.69584	1.3515	4.153899	1.054-2
377.2	0.5	0.200	-4.7337-2	6.10997	1.5361	6.07234	3.918223	1.9705	6.0724450	1.58-2
377.2	0.5	0.305	-7.3690-2	7.56143	1.8925	7.60852	4.87722	2.4608	7.6087220	2.267-2
377.2	0.5	0.500	-1.2203-1	9.72521	2.3845	9.86525	6.25451	3.1719	9.8656670	2.825-2
377.2	0.5	0.700	-1.7035-1	1.15665	1.7542	1.17440	7.36115	3.7539	1.1744701	3.628-2
377.2	0.5	1.000	-2.4008-1	1.39314	1.1592	1.40976	8.68943	4.4679	1.4098815	4.060-2
377.2	0.5	1.524	-3.5320-1	1.74197	1.6040	1.74398	2.04453	5.4457	1.7442019	6.110-2
377.2	0.5	2.000	-4.4735-1	2.01724	1.8304	1.99712	2.16647	6.1569	1.9974572	1.40-3
377.2	0.5	3.048	-6.2682-1	2.54379	1.9708	2.45647	1.36070	7.3695	2.4570999	6.849-2
377.2	0.5	5.000	-8.7504-1	3.36378	1.5407	3.16176	2.157669	8.9207	3.1180229	8.053-2
377.2	0.5	7.000	-1.0438	4.08094	1.6877	3.65362	2.170201	1.0023	3.6558020	9.452-2
377.2	0.5	10.000	-1.1704	5.01408	1.1088	4.31237	2.180253	1.1175	4.3160969	1.031-1
377.2	0.5	20.000	-9.2552-1	7.43712	1.2616	5.91497	2.189414	1.3183	5.9254945	1.05-1
377.2	0.5	30.480	-8.5717-2	9.36987	1.0055	7.15418	2.190587	1.4196	7.1739875	1.193-1
377.2	0.5	50.000	-2.2254	1.21816	2.6022	8.94720	2.190759	1.5179	8.9887780	1.239-1
377.2	0.5	70.000	5.1363	1.44981	2.6877	1.813	2.16778	1.90764	1.042386	1.248-1
377.2	0.5	90.000	8.3779	1.64828	2.6778	1.6884	2.16884	1.61057	1.1788604	1.256-1
377.2	0.5	110.000	1.1851	1.82443	2.11178	1.28110	2.190764	1.6370	1.2946198	1.260-1
377.2	0.5	225.000	3.4494	1.60493	2.0690	1.77851	2.190764	1.7149	1.8177506	1.273-1
377.2	0.5	350.000	6.2232	1.22968	2.6309	2.17667	2.190764	1.7521	2.2521536	1.280-1
377.2	0.5	475.000	9.2177	1.73686	2.8989	2.49990	2.190764	1.7738	2.6182542	1.283-1

SURFACE_N	INIT_THETA	HEIGHT_H	DELTA_H	THETA	DISTANCE	TAU	ERROR_ANGLE	SLANT_RANGE	R	DELTA_R_E
										DELTA_THETA
377.2	1.0	0.010	-7.2334-4	1.068312	1.9408-1	7.45397	4.86487-1	7.4539880	0.000	2.089-3
377.2	1.0	0.020	-2.0842-3	2.16056	3.2899-1	1.026572	1.025512-1	4.1292-1	1.2657323	0.000
377.2	1.0	0.050	-7.3904-3	3.19172	6.1717-1	2.038682	1.155347	7.7778-1	2.03868394	1.000
377.2	1.0	0.100	-1.7697-2	4.40795	9.4945-1	3.070264	1.240192	1.020442	3.0726841	1.000-6
377.2	1.0	0.200	-4.0111-2	6.17104	1.4126	5.594443	1.360727	1.81442	5.5945380	1.388-2
377.2	1.0	0.305	-6.4348-2	7.61086	1.7662	7.11829	1.455856	2.3001	7.1184950	2.086-2
377.2	1.0	0.500	-1.0957-1	9.76369	2.2557	9.363559	1.592887	3.0068	9.3640135	2.640-2
377.2	1.0	0.700	-1.5631-1	1.15989	1.026241	1.012361	2.03184	3.05860	1.01236813	3.437-2
377.2	1.0	1.000	-2.02181-1	1.39582	1.0282	1.035842	2.035703	4.2972	1.0358466	4.085-2
377.2	1.0	1.524	-3.3037-1	1.74412	3.4723	1.069213	2.01102	5.2712	1.06923521	4.666-2
377.2	1.0	2.000	-4.2108-1	2.01910	1.6984	1.094500	2.013283	5.9797	1.09453376	5.911-2
377.2	1.0	3.048	-5.9435-1	2.54526	1.38387	2.040402	2.0132692	7.1873	2.04046454	6.647-2
377.2	1.0	5.000	-8.3373-1	3.36489	1.4089	3.06396	2.054282	8.7308	3.0652799	7.846-2
377.2	1.0	7.000	-9.9535-1	4.08186	1.5560	3.60073	2.066810	9.8276	3.6029123	9.238-2
377.2	1.0	10.000	-1.1132	5.01483	1.7747-1	4.25936	2.076860	1.0970	4.2630867	1.009-1
377.2	1.0	20.000	-8.4716-1	7.43762	1.3925	5.86179	2.086020	1.2960	5.890-3	1.083-1
377.2	1.0	30.480	9.390-3	9.37016	1.9361	7.10094	2.087193	1.87193	8.970-3	1.170-1
377.2	1.0	50.000	2.3441	1.21819	2.6152	1.89390	2.087365	1.4928	1.020-3	1.195-1
377.2	1.0	70.000	5.2748	1.44984	2.1943	1.03702	3.087370	1.87365	1.0225-2	1.213-1
377.2	1.0	90.000	8.5334	1.64831	2.6905	1.16350	3.087370	1.5476	1.0439059	1.223-1
377.2	1.0	110.000	1.2022	1.82445	2.1308	1.27576	3.087370	1.5836	1.1735259	1.229-1
377.2	1.0	225.000	3.4735	1.60494	2.0820	1.77317	3.087370	1.6097	1.2892837	1.234-1
377.2	1.0	350.000	6.2532	1.22969	2.6439	1.17132	3.087370	1.6859	1.8124105	1.247-1
377.2	1.0	475.000	9.2527	1.73687	2.79119	1.49455	3.087370	1.7222	2.468120	1.252-1
377.2	2.0	0.010	-2.6713-4	2.41514	1.1794-1	4.52985	2.95642-1	1.4782-1	4.52986662	1.707-3
377.2	2.0	0.020	-9.1509-4	2.76912	2.1797-1	8.38766	5.47001-1	2.7361-1	8.3876990	2.000-7
377.2	2.0	0.050	-4.0896-3	3.63140	4.5893-1	1.77623	1.15570	5.7863-1	1.7762466	0.000
377.2	2.0	0.100	-1.1377-2	4.73603	7.6072-1	2.97131	1.92630	9.6570-1	2.9713559	4.000-6
377.2	2.0	0.200	-2.9045-2	6.40950	1.2002	4.76681	1.07019	1.5442	4.7669248	1.800-5
377.2	2.0	0.305	-4.9325-2	7.80546	1.5249	6.24424	1.99248	2.0146	6.2444450	1.400-5
377.2	2.0	0.500	-8.8648-2	9.91613	2.0228	8.44554	1.33590	2.7061	8.4459625	9.800-5
377.2	2.0	0.700	-1.2943-1	1.17225	1.3865	1.02297	2.04254	3.2764	1.0294438	1.700-4
377.2	2.0	1.000	-1.8975-1	1.40653	1.7868	1.26204	2.073759	3.9788	1.2621619	3.100-4
377.2	2.0	1.524	-2.8959-1	1.75270	1.2282	1.59370	2.048007	4.9428	1.5939301	5.900-4
377.2	2.0	2.000	-3.7376-1	2.02651	1.4534	1.84551	2.06930	1.6448	1.8458457	6.263-2
377.2	2.0	3.048	-5.3528-1	2.55114	1.5933	2.30319	2.026282	1.8414	2.3038197	7.450-2
377.2	2.0	5.000	-7.5805-1	3.36934	1.6142	2.96198	2.07834	1.3691	2.9633019	8.828-2
377.2	2.0	7.000	-9.0635-1	4.08553	1.3123	3.49816	2.10349	1.4533	3.003494	9.668-2
377.2	2.0	10.000	-1.0080	5.01782	1.3487-1	4.01580	2.10349	1.0580	4.1600416	5.534-2
377.2	2.0	20.000	-7.0303-1	7.43964	1.6329	5.75810	2.179548	1.2533	5.7686350	8.120-3
377.2	2.0	30.480	1.8316-1	9.37186	1.3755	6.99698	2.180721	1.3508	7.0167955	9.690-3
377.2	2.0	50.000	2.5617	1.21831	2.6390	1.88970	2.180892	1.4447	8.8312920	1.148-1
377.2	2.0	70.000	5.5285	1.44994	2.2181	1.02659	3.08097	1.4977	1.0334744	1.200-2
377.2	2.0	90.000	8.8184	1.64840	2.7142	1.15306	3.08097	1.5324	1.1630863	1.179-1
377.2	2.0	110.000	1.2334	1.82453	2.1546	1.26532	3.08097	1.5574	1.278385	1.82-1
377.2	2.0	225.000	3.5175	2.60500	2.1057	1.76271	3.08097	1.6304	1.8019496	1.93-1
377.2	2.0	350.000	6.3079	2.22973	2.6676	1.16085	3.08097	1.6651	2.363436	1.99-1
377.2	2.0	475.000	9.3167	3.73691	2.9355	2.48408	3.08097	1.6853	2.6024389	1.99-1

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
377.2	4.0	0.010	-7.7008-5	4.22290	6.3328-2	2.43221	1.58739-1	7.9369-2	2.4322364	0.000	9.167-4
377.2	4.0	0.020	-2.9248-4	4.43486	1.2322-1	4.74226	3.09252-1	1.5469-1	4.7423100	0.000	1.786-3
377.2	4.0	0.050	-1.5929-3	5.1867	2.8634-1	1.10891	1.21346-1	3.6115-1	1.1089322	1.000	4.166-3
377.2	4.0	0.100	-5.2885-3	5.86770	5.1830-1	2.02747	1.31363	6.5851-1	2.0275147	1.000	7.589-3
377.2	4.0	0.200	-1.6048-2	7.28570	8.9043-1	3.54862	2.28248	1.1482	3.5487277	1.000	1.319-2
377.2	4.0	0.305	-2.9919-2	8.53961	1.1982	4.87566	3.11087	1.5699	4.8758696	1.000	1.799-2
377.2	4.0	0.500	-5.9100-2	1.05037	1.05037	6.92407	4.36089	2.2116	6.9244885	1.000	2.524-2
377.2	4.0	0.700	-9.1124-2	1.22284	1.9908	8.68373	5.39734	2.7525	8.6844250	1.000	3.127-2
377.2	4.0	1.000	-1.4030-1	1.44856	1.44856	1.09301	6.66502	3.4274	1.0931308	2.000	3.870-2
377.2	4.0	1.524	-2.436-1	1.78660	1.8084	1.41689	2.86558	4.3625	1.417126	4.000	4.872-2
377.2	4.0	2.000	-2.9668-1	2.05590	3.0298	1.66454	9.55955	5.0471	1.6648796	2.000	5.585-2
377.2	4.0	3.048	-4.3713-1	2.57455	3.1681	2.11700	1.14727	1.2116	2.1176325	2.000	6.747-2
377.2	4.0	5.000	-6.3057-1	3.38710	1.7420	2.77124	1.36130	1.7114	2.7725652	2.000	8.093-2
377.2	4.0	7.000	-7.5568-1	4.10019	1.8937	3.30510	2.48589	1.7706	3.3072877	2.000	8.913-2
377.2	4.0	10.000	-8.2962-1	5.02975	1.2086-1	3.96133	2.58603	1.8681	3.9650600	2.000	9.618-2
377.2	4.0	20.000	-4.5892-1	7.44768	1.0384	5.56053	2.67743	1.1752	5.5710785	2.000	1.043-1
377.2	4.0	30.480	-4.721-1	9.37824	1.7769	6.79835	2.68915	1.2681	6.811740	2.000	1.064-1
377.2	4.0	50.000	2.97278	1.21880	1.6788	8.59012	1.69086	1.3567	8.6317280	2.000	1.079-1
377.2	4.0	70.000	5.9541	1.45035	2.2577	1.00658	1.69091	1.4063	1.0134675	3.000	1.086-2
377.2	4.0	90.000	9.2953	1.64876	2.7537	1.13302	1.69091	1.4386	1.1430476	3.000	1.091-1
377.2	4.0	110.000	1.2857	1.82486	2.1939	1.24525	1.69091	1.4618	1.2587772	3.000	1.094-1
377.2	4.0	225.000	3.5908	2.60522	5.1448	1.74258	1.69091	1.5290	1.7818247	3.000	1.104-1
377.2	4.0	350.000	6.3988	3.22991	6.7066	2.14070	1.69091	1.5607	2.2161897	3.000	1.108-1
377.2	4.0	475.000	9.4226	1.73706	7.9744	2.46391	1.69091	1.5792	2.5822683	3.000	1.250-2
377.2	8.0	0.010	-2.0040-5	8.11374	3.2316-2	1.24114	8.10041-2	4.0501-2	1.2411879	0.000	4.678-4
377.2	8.0	0.020	-7.9012-5	8.22605	6.4051-2	2.46512	1.60752-1	8.0410-2	2.4652068	0.000	9.284-4
377.2	8.0	0.050	-4.7251-4	8.55493	1.5593-1	6.04052	3.92891-1	1.9670-1	6.0407510	4.000-7	2.269-3
377.2	8.0	0.100	-1.7627-3	9.07907	2.9913-1	1.17111	7.58539-1	3.8022-1	1.1711680	1.000	4.381-3
377.2	8.0	0.200	-6.2472-3	1.000539	1.2941-2	5.5467-1	1.42419	7.1661-1	2.2167223	1.000	8.225-3
377.2	8.0	0.305	-1.2941-2	1.09665	1.8602-1	3.21659	2.04688	1.0921	3.2144056	1.000	1.184-2
377.2	8.0	0.500	-2.8964-2	1.25828	1.1463	4.86833	3.05613	1.5498	4.8687662	1.000	1.767-2
377.2	8.0	0.700	-4.8420-2	1.40546	1.4417	6.36992	3.94051	2.0095	6.3706291	1.000	2.280-2
377.2	8.0	1.000	-8.0654-2	1.60570	1.7844	8.36265	5.06489	2.6047	8.3638505	1.000	2.934-2
377.2	8.0	1.524	-1.3968-1	1.91622	2.1803	1.13376	6.62782	3.4558	1.1339866	2.000	3.849-2
377.2	8.0	2.000	-1.9290-1	2.16949	2.3885	1.366667	7.74976	4.0921	1.3670082	2.000	4.511-2
377.2	8.0	3.048	-2.9942-1	2.666612	2.5209	1.79992	9.58164	5.1942	1.8005533	2.000	5.606-2
377.2	8.0	5.000	-4.4679-1	3.45720	1.2016	2.43688	1.16654	1.6141	2.4382018	2.000	6.892-2
377.2	8.0	7.000	-5.3663-1	4.15828	1.2716	2.96173	2.82902	1.6232	2.9639178	2.000	7.671-2
377.2	8.0	10.000	-5.6972-1	5.07720	1.8304-1	3.61044	1.38799	1.6647	3.6141735	2.000	8.339-2
377.2	8.0	20.000	-1.0711-1	7.47978	1.6086	5.19946	1.47877	1.0427	5.2100110	2.000	9.081-2
377.2	8.0	30.480	8.9627-1	9.40372	1.0330	6.43303	1.49045	1.1278	6.4528670	2.000	9.268-2
377.2	8.0	50.000	-3.4419	1.22076	1.7327	8.22105	1.49216	1.2074	1.380-3	1.380-3	9.375-2
377.2	8.0	70.000	6.5458	1.45200	2.3108	9.69476	1.49221	1.2512	1.2512	1.2512	9.425-2
377.2	8.0	90.000	9.9536	1.65020	2.8063	1.09579	1.49221	1.2794	1.2794	1.2794	9.460-2
377.2	8.0	110.000	1.3575	1.82616	2.4621	1.07050	1.49221	1.2959	1.2959	1.2959	9.480-2
377.2	8.0	225.000	3.6894	2.60612	1.961	1.70500	1.49221	1.3573	1.7442442	3.000	5.540-2
377.2	8.0	350.000	6.5201	3.23063	6.7574	2.10300	1.49221	1.3842	2.1784924	3.000	5.707-2
377.2	8.0	475.000	9.5633	3.73768	8.0250	2.42614	1.49221	1.3997	2.5445044	3.000	5.580-2

SURFACE_N	INIT_THETA	HEIGHT_H	DELTA_H	THETA	DELTA_THETA	DISTANCE	TAU	ERROR_ANGLE	SLANT_RANGE	DELTA_R	DELTA_R-E
377.0	15.0	0.010	-5.8930-6	1.50609	1	1.7321-2	6.65272-1	4.34187-2	2.1709-2	6.6534835-1	2.508-4
377.0	15.0	0.020	-2.2838-5	1.51217	1	3.4501-2	1.32783	8.65894-2	4.3312-2	1.3279896	-1.000-7
377.0	15.0	0.050	-1.4104-4	1.53031	1	8.5175-2	3.29975	2.14618-1	1.0745-1	3.3001476	1.000-7
377.0	15.0	0.100	-5.4862-4	1.56022	1	1.6687-1	6.53513	4.23238-1	2.1214-1	6.5359540	1.000-7
377.0	15.0	0.200	-2.0895-3	1.61888	1	3.2056-1	1.28260	8.23699-1	4.1449-1	1.2827789	1.000-6
377.0	15.0	0.305	-4.6029-3	1.67905	1	4.6819-1	1.91929	1.22109	6.6320-1	1.9195854	1.000-6
377.0	15.0	0.500	-1.1266-2	1.78696	1	7.1319-1	3.04443	1.90746	9.6726-1	3.0449603	1.000-6
377.0	15.0	0.700	-2.0189-2	1.89347	1	9.2686-1	4.13110	1.2990	4.1319152	1.000-5	1.472-2
377.0	15.0	1.000	-3.6345-2	2.04650	1	1.1885	5.65380	1.40639	1.7518	5.6551165	1.000-5
377.0	15.0	1.524	-6.8900-2	2.29820	1	1.5093	8.06520	1.67317	2.4363	8.0675550	1.000-5
377.0	15.0	2.000	-1.0049-1	2.51326	1	1.6862	1.00428	2	5.62583	2.9707	1.0046346
377.0	15.0	3.048	-1.6746-1	2.95260	1	1.8031	1.38755	2	7.24623	3.9290	1.3881911
377.0	15.0	5.000	-2.6210-1	3.68261	1	1.4203	1.97533	2	9.16915	5.0208	1.9766659
377.0	15.0	7.000	-3.1403-1	4.34745	1	6.2893-1	2.47302	2	1.03301	1	6.1236
377.0	15.0	10.000	-3.0717-1	5.23322	1	-8.7024-1	3.09830	2	1.12837	1	7.0751
377.0	15.0	20.000	-2.3010-1	7.58644	1	-6.0874	4.65459	2	1.21715	1	8.6624
377.0	15.0	30.480	-1.2784	9.48869	1	-1.0756	1.07426	2	1.22870	1	9.4061
377.0	15.0	50.000	-3.8800	1.22730	2	-1.7704	1.64982	2	1.23040	1	1.0081
377.0	15.0	70.000	-7.0259	1.45749	2	-2.3459	1.11685	2	1.23045	1	1.0442
377.0	15.0	90.000	-1.0468	1.65503	2	-2.8397	1.03757	3	1.23045	1	1.0672
377.0	15.0	110.000	-1.4119	1.83051	2	-3.2784	1.14941	3	1.23045	1	1.0834
377.0	15.0	225.000	-3.7570	2.60914	1	-5.2250	1.64563	3	1.23045	1	1.1289
377.0	15.0	350.000	-6.5984	3.23303	2	-6.7847	1.04324	3	1.23045	1	1.1497
377.0	15.0	475.000	-9.6508	3.73973	2	-8.0514	1.36615	3	1.23045	1	1.1616
377.0	30.0	0.010	-2.2990-6	3.00305	1	8.6710-3	3.33092	-1	2.17375	-2	1.0868-2
377.0	30.0	0.020	-6.5590-6	3.00610	1	1.7297-2	6.65814-1	4.34164-2	2.1716-2	6.6611575-1	0.000
377.0	30.0	0.050	-3.6045-5	3.01526	1	4.0877-2	1.66194	1.08092	-1	5.4117-2	0.000
377.0	30.0	0.100	-1.4160-4	3.03055	1	8.4653-2	3.31545	2.1471-1	1.0762-1	3.3169928	1.000-7
377.0	30.0	0.200	-5.5261-4	3.06116	1	1.6481-1	6.59757	4.23625	-1	2.1318-1	6.6007085
377.0	30.0	0.305	-1.2505-3	3.09339	1	2.4390-1	1.00085	1.36515	-1	3.2126-1	1.00013393
377.0	30.0	0.500	-3.2009-3	3.15325	1	3.7976-1	1.62496	1.01720	5.1580-1	1.6257925	1.000-6
377.0	30.0	0.700	-5.9758-3	3.21480	1	5.0319-1	2.25283	1	1.38693	7.0726-1	2.2540476
377.0	30.0	1.000	-1.1344-2	3.30722	1	6.6111-1	3.117240	1	1.90558	9.8004-1	3.1742251
377.0	30.0	1.524	-2.3155-2	3.46858	1	8.6673-1	4.71759	1.4166	4.72313	1.50165	1.572-2
377.0	30.0	2.000	-3.5590-2	3.61463	1	9.8684-1	6.06130	1.36457	1.7766	6.0655330	1.700-5
377.0	30.0	3.048	-6.4160-2	3.93273	1	1.0713	8.83617	1.53760	2.4603	8.8434700	1.7500-5
377.0	30.0	5.000	-1.0651-1	4.50656	1	7.7042-1	1.34564	2	6.04911	3.4335	1.3470785
377.0	30.0	7.000	-1.2527-1	5.06425	1	1.0570-1	1.76305	2	7.02178	4.1733	1.7653512
377.0	30.0	10.000	-9.5073-2	5.84217	1	-1.2117	2.31213	2	7.85830	4.9554	2.3159798
377.0	30.0	20.000	-4.2475-1	8.01821	1	-6.0392	3.75097	2	8.67505	6.2582	3.7616365
377.0	30.0	30.480	-1.4106	9.83695	1	-1.0503	4.91709	2	8.78542	6.8467	4.9370363
377.0	30.0	50.000	-3.8811	1.25437	2	-1.7257	1.64316	2	8.80193	7.3558	6.6848825
377.0	30.0	70.000	-6.8984	1.48031	2	-2.2905	1.80431	2	8.80241	7.6161	8.1520241
377.0	30.0	90.000	-1.0221	1.67511	2	-2.7776	1.932461	2	8.80242	7.7763	9.4249205
377.0	30.0	110.000	-1.3761	1.84865	2	-3.2114	1.04306	3	8.80242	7.8871	1.0565917
377.0	30.0	225.000	-3.6677	2.62175	2	-5.1442	1.53575	3	8.80242	1.5750072	1.700-3
377.0	30.0	350.000	-6.4626	3.24309	2	-6.6975	1.93173	3	8.80242	2.0072375	2.000-3
377.0	30.0	475.000	-9.4748	3.74832	2	-7.9606	2.25372	3	8.80242	8.3947	2.3720899

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R_E
377.2	65.0	0.010	1.1880-6	6.50140	1	4.0005-3	1.53589-1	1.00255-2	5.0152-3	1.5391498-1	0.000
377.2	65.0	0.020	-4.2300-7	6.50281	1	7.9821-3	3.07179-1	2.00321-2	1.0025-2	3.0783020-1	0.000
377.2	65.0	0.050	-6.6850-6	6.50705	1	1.9817-2	7.67712-1	4.99328-2	2.5000-2	7.6934200-1	0.000
377.2	65.0	0.100	-2.8410-5	6.51414	1	3.9183-2	1.53458	9.93821-2	4.9814-2	1.5378505	1.000-7
377.2	65.0	0.200	-1.1858-4	6.52842	1	7.6579-2	3.06584	1.96846-1	9.9062-2	3.0724055	0.000
377.2	65.0	0.305	-2.7030-4	6.54358	1	1.377-1	4.66996	2.96965-1	1.4988-1	4.6800277	1.000-7
377.2	65.0	0.500	-7.0584-4	6.57205	1	1.7840-1	7.69311	4.06966-1	2.4424-1	7.6557545	0.000
377.2	65.0	0.700	-1.3356-3	6.60177	1	2.3799-1	1.06707	1	3.3482-1	1.0694279	1.000
377.2	65.0	1.000	-2.5861-3	6.64722	1	3.1562-1	1.51922	1	4.6883-1	1.5226284	1
377.2	65.0	1.524	-5.4544-3	6.72887	1	4.1965-1	2.30139	1	1.32243	6.8929-1	2.3067071
377.2	65.0	2.000	-8.6049-3	6.80522	1	4.8244-1	3.00353	1	1.66066	8.7687-1	3.0106539
377.2	65.0	3.048	-1.6231-2	6.97920	1	5.2858-1	4.52110	1	2.30212	1.2481	4.5324392
377.2	65.0	5.000	-2.7977-2	7.31755	1	3.5114-1	7.24541	1	1.8122	7.2564465	1
377.2	65.0	7.000	-3.1586-2	7.67321	1	-7.3564-2	9.90669	1	3.81262	2.703	9.9367215
377.2	65.0	10.000	-1.1237-2	8.20689	1	-9.7832-1	1.36727	2	4.38522	2.7788	1.3719733
377.2	65.0	20.000	3.0284-2	9.87321	1	-4.6810	2.46857	2	5.00264	3.6617	2.4803676
377.2	65.0	30.480	9.6346-1	1.13981	2	-8.4240	3.44632	2	5.09519	4.0566	3.4675597
377.2	65.0	50.000	2.7812	1.37996	2	-1.4416	1	4.97771	5.10984	4.3802	5.0208955
377.2	65.0	70.000	5.1526	1.58791	2	-1.9615	1	6.30304	2	5.11027	6.3735435
377.2	65.0	90.000	7.8682	1.77073	2	-2.4185	1	5.11028	4.6260	7.5700650	4.100-4
377.2	65.0	110.000	1.09388	1.93554	2	-2.8305	1	8.51848	4.6867	8.6554790	4.200-4
377.2	65.0	225.000	3.0971	2.68301	2	-4.97152	1.32820	3	5.11028	4.8422	1.3676419
377.2	65.0	350.000	5.6462	3.29291	2	-6.2222	1	1.71644	3	5.11028	4.9057
377.2	65.0	475.000	8.4451	3.79035	2	-7.4676	1	2.03392	3	5.11028	4.9399
377.2	100.0	-1.3500-6	1.00009	2	5.1798-3	2	-4.9742-2	1.99143	1.27862-1	6.4345-2	2.0014886
377.2	100.0	0.020	-2.5040-6	1.00018	2	1.2861-2	4.98178-1	3.24038-2	1.6223-2	5.0068340-1	0.000
377.2	100.0	0.050	5.1800-7	1.00045	2	2.5434-2	9.96229-1	6.5140-2	3.2337-2	1.0012439	0.000
377.2	100.0	0.100	-1.5960-5	1.00091	2	4.9742-2	1.99143	1.97423-2	1.5775-1	4.99677992	1.000-7
377.2	100.0	0.200	-4.8500-5	1.00184	2	7.3946-2	3.03546	3.11110-1	1.5775-1	4.9968675	1.000-7
377.2	100.0	0.305	-1.1571-4	1.00283	2	1.1608-1	4.97152	4.27810-1	2.1815-1	5.00174489	1.000-6
377.2	100.0	0.500	-3.0013-4	1.00468	2	1.5504-1	6.95334	5.95044-1	3.0603-1	9.966975	6.000-7
377.2	100.0	0.700	-5.6383-4	1.00663	2	2.0595-1	9.91864	8.655961-1	4.5135-1	1.5155008	1.000-7
377.2	100.0	1.000	-1.4092-3	1.00961	2	2.7454-1	1.50763	1.904046	5.7579-1	1.9840993	1.000-6
377.2	100.0	1.524	-2.3322-3	1.01499	2	3.1622-1	1.97368	1.09046	8.2437-1	3.0074489	3.000-6
377.2	100.0	2.000	-3.6819-3	1.02006	2	3.4715-1	2.99125	1.52056	2.6017417	4.8818331	7.000-6
377.2	100.0	3.048	-7.0028-3	1.03173	2	6.5932	2.57784	2.8268	1.2086	4.8326645	1.200-4
377.2	100.0	5.000	-1.2096-2	1.05486	2	2.2581-1	4.85426	2.13003	1.0632	3.53163	3.000-4
377.2	100.0	7.000	-1.3246-2	1.07979	2	-7.2056-2	6.71937	1	2.56381	1.5274	6.7593775
377.2	100.0	10.000	-1.6130-3	1.11827	2	-7.2474-1	9.43470	1	2.97628	1.8887	9.4948270
377.2	100.0	20.000	1.24548	1.2810-1	1.25541	1.78397	2	3.44398	2.5341	1.7978753	7.000-5
377.2	100.0	30.480	6.0466-1	1.36930	2	-6.5932	2.57784	3.51912	2.8268	3.53202	3.0772
377.2	100.0	50.000	1.8662	1.57446	2	-1.1712	1	3.88613	2	3.53163	3.0632
377.2	100.0	70.000	3.6251	1.75924	2	-1.6332	1	5.06375	2	3.53201	3.1732
377.2	100.0	90.000	5.7284	1.92555	2	-2.0489	1	6.12365	2	3.53202	3.2360
377.2	100.0	110.000	8.0995	2.07783	2	-2.4296	1	7.09417	2	3.53202	3.53202
377.2	100.0	225.000	2.5123	2.78620	2	-4.2005	1	1.6085	3	1.53658	3.4177
377.2	100.0	350.000	4.7730	3.37576	2	-5.6745	1	1.84664	3	1.84664	3.4382
377.2	100.0	475.000	7.3164	3.86227	2	-6.8907	1	2.1164	1	1.6128337	3.000-4
377.2	100.0	700.0	4.75	1.9657837	3	1.164	1	1.000-4	2.100-2	2.100-2	2.100-4

NO	SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E
377.2	200.0	0.010	7.40000-7	2.00004	1.2846-3	4.93271-2	3.21960-3	1.6132-3	5.0330610-2	0.000	1.0897-5	
377.2	200.0	0.020	1.4088-5	2.00009	2.5662-3	9.85205-2	6.433371-3	3.2179-3	1.0059884-1	0.000	3.789-5	
377.2	200.0	0.050	5.9800-7	2.00022	2.46635-3	1.60415-2	1.60415-2	8.058-3	2.516380-1	1.000-8	9.453-5	
377.2	200.0	0.100	-6.5600-6	2.00045	2.2593-2	4.93271-1	3.9432-1	1.6008-2	5.0330950-1	1.000-8	1.883-4	
377.2	200.0	0.200	-5.3100-6	2.00091	2.4638-2	9.86351-1	6.33311-2	1.0064393	-1.000-7	3.731-4		
377.2	200.0	0.305	-2.6360-5	2.00140	2.6639-2	1.50403	9.56395-2	4.8265-2	1.5346805	0.000	5.640-4	
377.2	200.0	0.500	-7.0930-5	2.00232	5.7556-2	2.46501	1.54254-1	7.8211-2	2.5153117	0.000	9.090-4	
377.2	200.0	0.700	-1.2704-4	2.00329	7.6922-2	3.45009	2.12262-1	1.0823-1	3.5205774	1.000-7	1.251-3	
377.2	200.0	1.000	-2.6810-4	2.00477	1.0227-1	4.92685	2.95540-1	1.5199-1	5.0276895	2.000-7	1.742-3	
377.2	200.0	1.524	-5.4810-4	2.00746	2.3653-1	7.50314	4.30870-1	2.04757-1	7.6572295	4.000-7	5.540-3	
377.2	200.0	2.000	-9.1250-4	2.01000	2.15743-1	9.84038	5.43447-1	2.8695-1	1.0043082	1-1.000-6	3.203-3	
377.2	200.0	3.048	-1.6998-3	2.01589	2.7303-1	1.49741	7.60436-1	4.1226-1	1.5284731	1.000-6	4.486-3	
377.2	200.0	5.000	-2.7603-3	2.02771	2.1105-1	2.44907	1.07177	6.0813-1	2.5005378	1.000-6	6.340-3	
377.2	200.0	7.000	-2.6871-3	2.04065	2.3740-2	3.41779	1.29698	7.7293-1	3.4905723	1.000-6	7.672-3	
377.2	200.0	10.000	1.4840-3	2.06107	2.9011-1	4.85814	1.51563	9.6272-1	4.9637156	1.000-6	8.974-3	
377.2	200.0	20.000	6.4040-2	2.13206	2.19705	9.54731	1.77465	1.3111	9.7691100	1.000-5	1.061-2	
377.2	200.0	30.480	2.1783-1	2.20594	2.7839	1.42842	1.81949	1.4728	1.4638877	2.000-5	1.096-2	
377.2	200.0	50.000	7.3091-1	2.33752	2.0675	2.6753	1.82751	1.6032	2.3305599	2.000-5	1.104-2	
377.2	200.0	70.000	1.5263	2.46451	2.0241	1.0241	3.07681	1.82777	1.6627	3.171591	2.000-5	1.104-2
377.2	200.0	90.000	2.5580	2.58465	2.3245	1.3245	3.84250	2.82778	1.6960	3.9722548	3.000-5	1.103-2
377.2	200.0	110.000	3.7976	2.69887	2.6101	1.6101	4.57044	2.82778	1.7173	4.7381881	2.000-5	1.107-2
377.2	200.0	225.000	1.4038	2.27024	2.0385	1.2179	8.21179	2.82778	1.7672	8.6475585	2.000-5	1.100-2
377.2	200.0	350.000	2.9517	1.78026	2.3135	1.14621	3.14621	1.82778	1.7851	1.2266745	3.000	1.100-2
377.2	200.0	475.000	4.8249	1.21612	2.40321	1.42399	1.42399	1.82778	1.7939	1.5477265	3.000	1.100-2
377.2	400.0	0.010	-2.3464-5	4.00002	2.1366-4	2.37076-2	1.54366-3	7.9360-4	2.5730370	-2.000	9.698-6	
377.2	400.0	0.020	-4.7020-5	4.00004	2.2247-3	4.74152-2	3.08472-3	1.5429-3	5.1460775	-2.000	1.938-5	
377.2	400.0	0.050	-3.7381-5	4.00010	2.0490-3	1.18346-1	7.69153-3	3.8447-3	1.2847605	-1.000	4.827-5	
377.2	400.0	0.100	3.0790-5	4.00021	2.0416-3	2.36438-1	1.53166-2	7.6607-3	2.5671816	-1.000	9.604-5	
377.2	400.0	0.200	-2.8200-5	4.00043	2.1812-2	4.73068-1	3.03696-2	1.5282-2	5.1361585	-1.000	1.905-4	
377.2	400.0	0.305	-8.2250-5	4.00067	2.7564-2	7.21489-1	4.58668-2	2.3147-2	7.8332390	-1.000	2.878-4	
377.2	400.0	0.500	-7.0130-5	4.00111	2.7602-2	1.8251	7.39896-2	3.7518-2	1.2839185	0.000	4.639-4	
377.2	400.0	0.700	-5.2960-5	4.00157	2.6899-2	1.65526	1.01831-1	5.1717-2	7.7972750	0.000	6.386-4	
377.2	400.0	1.000	-4.2100-5	4.00229	2.9075-2	2.36426	1.41820-1	7.2928-2	2.5672179	1.000-7	8.894-4	
377.2	400.0	1.524	-1.6560-4	4.00358	2.5535-2	3.60253	2.06855-1	1.0781-1	3.9120275	1.000-7	1.298-3	
377.2	400.0	2.000	-1.9110-4	4.00480	2.5592-2	4.72667	2.61010-1	1.3782-1	5.1330745	6.000-7	1.638-3	
377.2	400.0	3.048	-2.4480-4	4.00764	2.3116-2	7.19997	3.65556-1	1.9817-1	7.8201515	1.000-7	2.295-3	
377.2	400.0	5.000	-3.7130-4	4.01335	2.3145-2	1.18006	1.16060-1	2.9280-1	1.2820481	1.000	3.247-3	
377.2	400.0	7.000	-2.6900-5	4.01964	2.2039-2	1.65050	1.25420-1	3.7274-1	1.7936472	1.000-6	3.936-3	
377.2	400.0	10.000	1.9360-3	4.02961	2.9129-1	2.9129-1	4.32233-1	4.6522-1	2.5595506	2.000-6	4.612-3	
377.2	400.0	20.000	2.3516-2	4.06488	2.7659-2	4.68329	1.60561-1	6.3659-1	5.0992180	1.000-6	5.469-3	
377.2	400.0	30.480	7.5205-2	4.10250	2.19001	7.09577	1.83395-1	7.1687-1	7.7382595	1.000-6	5.654-3	
377.2	400.0	50.000	2.5241-1	4.17178	2.6289	1.15137	2.87621-1	7.8189-1	1.2593793	0.000	5.690-3	
377.2	400.0	70.000	5.4032-1	4.24128	2.3662	1.59427	8.87763-1	8.1152-1	1.7491426	2.000	5.700-3	
377.2	400.0	90.000	9.3151-1	4.30930	2.0668	2.02778	8.87767-1	8.2800-1	2.2315065	2.000	5.690-3	
377.2	400.0	110.000	1.4223	4.37592	2.7322	2.45234	8.87767-1	8.3849-1	2.7068557	2.000-5	5.700-3	
377.2	400.0	225.000	6.0096	4.73478	2.7703	4.73940	2.97599	8.6270-1	5.3204085	2.000-5	5.680-3	
377.2	400.0	350.000	1.3990	5.08573	2.6477	6.97599	8.87767-1	8.7103-1	7.9079365	2.000-5	5.780-3	
377.2	400.0	475.000	4.76466	5.40412	2.44371	9.00507	2.87767-1	8.7502-1	1.04666755	3.000	5.700-3	

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
377.2	900.0	0.010	-2.7970-4	9.00000	2	1.9791-4	8.15745-3	5.17913-4	2.71102-4	1.2905203-2	4.864-6
377.2	900.0	0.020	1.6335-4	9.00001	2	4.1746-4	1.57413-2	1.03495-3	5.2557-4	2.5451735-2	3.991-6
377.2	900.0	0.050	4.6749-5	9.00003	2	1.0256-3	3.96401-2	2.58060-3	1.2993-3	6.3807165-2	4.254-6
377.2	900.0	0.100	-6.7900-5	9.00007	2	2.0239-3	7.94077-2	5.13898-3	2.5786-3	1.2769375-1	4.290-6
377.2	900.0	0.200	-5.8580-5	9.00014	2	3.9622-3	1.58751-1	1.01897-2	5.1410-3	2.5534864-1	4.300-6
377.2	900.0	0.305	-1.1237-4	9.00022	2	5.8922-3	2.42110-1	1.53897-2	7.7726-3	3.8941682-1	4.310-6
377.2	900.0	0.500	-4.5081-4	9.00037	2	9.2494-3	3.97102-1	2.48269-2	1.2593-2	6.3851610-1	4.350-6
377.2	900.0	0.700	-2.5938-4	9.00053	2	1.2373-2	5.55663-1	3.41708-2	1.7424-2	8.9375360-1	4.390-6
377.2	900.0	1.000	-2.5610-4	9.00076	2	1.6460-2	7.93631-1	4.75929-2	2.4475-2	1.2766949	4.400-6
377.2	900.0	1.524	-8.2200-5	9.00120	2	2.1993-2	1.20915	6.94261-2	3.6182-2	1.9455011	4.400-6
377.2	900.0	2.000	6.2100-5	9.00161	2	2.5373-2	1.58656	8.76114-2	4.6256-2	2.5530314	4.400-6
377.2	900.0	3.048	9.0000-7	9.00256	2	2.7895-2	2.41760	1.22733-1	6.6533-2	3.8907461	4.400-6
377.2	900.0	5.000	3.6730-4	9.00448	2	1.7824-2	3.96439	1.73339-1	9.8337-2	6.3819100	4.800-6
377.2	900.0	7.000	6.3360-4	9.00660	2	-7.4934-3	5.54834	2.10156-1	1.2524-1	8.9340900	4.500-6
377.2	900.0	10.000	1.8560-3	9.00996	2	-6.4578-2	7.92178	2.46176-1	1.5641-1	1.2761393	1
377.2	900.0	20.000	1.1857-2	9.02191	2	-3.3067-1	1.58127	1	2.1431-1	2.5511308	1
377.2	900.0	30.480	3.2782-2	9.03476	2	-6.4594-1	2.40481	1	2.4152-1	3.8860147	1
377.2	900.0	50.000	1.0172-1	9.05866	2	-1.2425	3.92937	1	2.6359-1	6.3687555	1
377.2	900.0	70.000	2.1140-1	9.08298	2	-1.8503	5.47898	1	2.7366-1	8.9077980	1
377.2	900.0	90.000	3.6236-1	9.10710	2	-2.4533	7.01604	1	2.98927-1	1.1442008	2
377.2	900.0	110.000	5.5388-1	9.13102	2	-3.0514	8.54075	1	2.8281-1	1.3971484	2
377.2	900.0	225.000	2.4230	9.26496	2	-6.3999	1.70767	2	2.98928-1	2.9101-1	2.8427864
377.2	900.0	350.000	5.9126	9.40392	2	-9.8738	2.59324	2	2.98928-1	4.3981000	2
377.2	900.0	475.000	1.0872	1	9.53648	2	-1.3187	1	2.98928-1	3.43809	2
										5.9380890	2
										3.000-5	2.8880-3

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E		
										ANGLE	ANGLE	ANGLE
404.8	0.0	0.010	-4.6404-3	1.26793	5.8837-1	1.57737	1	1.20714	6.0357-1	0.000	6.380-3	
404.8	0.0	0.020	-9.2765-3	1.79390	8.3111-1	2.23057	1	1.70612	8.05338-1	2.2305762	9.0117-3	
404.8	0.0	0.050	-2.3135-2	2.84020	1.3087	3.52549	1	2.69170	1.3477	3.5255038	1.424-2	
404.8	0.0	0.100	-4.6048-2	4.02555	1.8374	4.98198	1	3.79175	1.9014	4.9820193	2.007-2	
404.8	0.0	0.200	-9.1356-2	5.71788	2.5630	7.03660	1	5.32335	2.6784	7.0367050	2.821-2	
404.8	0.0	0.305	-1.3792-1	7.09480	3.1152	8.67582	1	6.51857	3.2913	8.6760220	3.461-2	
404.8	0.0	0.500	-2.2023-1	9.15487	3.8809	1.0769	2	8.22616	4.1769	1.10773	2	
404.8	0.0	0.700	-3.0525-1	1.01985	1	4.4626	1	1.30699	9.58971	4.8988	1.000-4	
404.8	0.0	1.000	-4.2460-1	1.31987	1	5.11113	1	1.12147	1	5.7803	1.000-4	
404.8	0.0	1.524	-6.1764-1	1.65938	1	5.8553	1	1.90759	2	1.33384	1	
404.8	0.0	2.000	-7.7853-1	1.92980	1	6.2714	2	2.17272	2	1.47945	1	
404.8	0.0	3.048	-1.0885	2.45230	1	6.6733	2	2.65086	2	1.70720	1	
404.8	0.0	5.000	-1.5362	3.27566	1	6.4534	3	3.3181	2	1.95234	1	
404.8	0.0	7.000	-1.8716	4.00097	1	5.6659	3	3.88122	2	2.08911	1	
404.8	0.0	10.000	-2.2010	4.94690	1	4.0875	4	4.5089	2	2.19396	1	
404.8	0.0	20.000	-2.4324	7.39625	1	1.3796	6	6.16762	2	1.29090	1	
404.8	0.0	30.480	-1.9503	9.33958	1	-6.1671	7	4.1213	2	2.29050	1	
404.8	0.0	50.000	-1.5326-1	1.21588	2	-1.3206	1	9.20960	2	1.8322	1	
404.8	0.0	70.000	-2.3326	1.44791	2	-1.9007	1	1.06883	3	2.29207	1	
404.8	0.0	90.000	5.2075	1.646661	2	-2.3974	1	1.19546	3	2.29207	1	
404.8	0.0	110.000	8.3525	1.822293	2	-2.8382	1	1.30783	3	2.29207	1	
404.8	0.0	225.000	2.9501	1	2.60389	2	-4.7906	1	1.80553	3	1.8447685	3
404.8	0.0	350.000	5.978	1.228885	2	-6.3530	1	2.03082	3	2.29207	1	
404.9	0.0	475.000	8.4845	1	3.73616	2	-7.6213	1	2.52713	3	2.29207	1
404.8	0.5	0.010	-2.1495-3	1.36295	4.0045-1	1.07356	1	1.69366	1	1.29528	4.1079-1	
404.8	0.5	0.020	-5.3472-3	1.86228	6.3089-1	1.1304	1	2.25757	1	1.1304	4.1079-1	
404.8	0.5	0.050	-1.6275-2	2.88387	1.0972	2.95800	1	2.05649	1	1.39884	4.1079-1	
404.8	0.5	0.100	-3.5853-2	4.05649	1.6202	1.6202	1	3.45880	1	1.6778	4.1079-1	
404.8	0.5	0.200	-7.6437-2	7.11239	2.3419	6.46912	1	8.07657	1	6.06067	4.1079-1	
404.8	0.5	0.305	-1.1923-1	9.16851	3.6556	1.04730	2	7.76498	3	9.9429	4.1079-1	
404.8	0.5	0.500	-1.9782-1	1.09299	1	4.2376	1	1.24635	2	4.6625	4.1079-1	
404.8	0.5	0.700	-2.7646-1	1.32082	1	4.8857	1	1.49502	2	1.07504	5.555-2	
404.8	0.5	1.0000	-3.9010-1	1.66013	1	5.6293	1	1.84653	2	1.28729	1	
404.8	0.5	1.524	-5.7509-1	1.93045	1	6.0452	1	2.11157	2	1.43284	1	
404.8	0.5	2.0000	-7.2991-1	2.45281	1	6.4470	2	2.58958	2	1.66054	1	
404.8	0.5	3.048	-1.0290	3.27604	1	6.2271	3	3.27042	1	1.90563	1	
404.8	0.5	5.0000	-1.4611	5.4397	1	5.4397	3	8.1978	2	2.04240	1	
404.8	0.5	7.0000	-1.7840	4.00129	1	4.4792	2	1.9233	1	1.06267	2	
404.8	0.5	10.000	-2.0982	4.94715	1	3.8614	4	4.8940	2	2.14724	1	
404.8	0.5	20.000	-2.2927	7.39642	1	-1.6055	6	1.0608	2	2.23473	1	
404.8	0.5	30.480	-1.7820	9.33972	1	-6.3929	7	3.5057	2	2.24418	1	
404.8	0.5	50.000	5.6567-2	1.21589	2	-1.3432	1	9.14802	2	2.24532	1	
404.8	0.5	70.000	-1.7840	4.00129	1	4.4792	3	1.9233	1	1.06267	2	
404.8	0.5	90.000	5.4817	1.64662	1	-2.64662	4	1.38193	3	1.9052	1	
404.8	0.5	110.000	8.6535	1.82293	2	-2.8608	1	1.30167	3	2.24534	1	
404.8	0.5	225.000	2.924	1	2.60389	2	-4.8132	1	1.79937	3	2.24534	1
404.8	0.5	350.000	5.6504	1	3.22885	2	-6.3756	1	2.19766	3	2.24534	1
404.9	0.5	475.000	8.5460	1	3.73616	2	-7.6439	1	2.52097	3	2.24534	1
404.9	0.5	475.000	8.5460	1	3.73616	2	-7.6439	1	2.0894	1	2.400-2	1.436-1

SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E
404•8	1•0	0•010	-1•09111-3	1•61482	2•8530-1	7•64869	5•85347-1	2•9267-1	0•000	3•094-3
404•8	1•0	0•020	-3•1987-3	2•05379	4•8789-1	1•31003	1•00179	5•0111-1	1•3100353	5•296-3
404•8	1•0	0•050	-1•1571-2	3•01110	9•2484-1	2•49478	1•90349	9•5313-1	2•4947953	1•007-2
404•8	1•0	0•100	-2•8031-2	1•4318	4•14790	3•89161	1•95848	3•8916488	1•400-5	1•565-2
404•8	1•0	0•200	-6•4071-2	5•04667	2•1421	5•90297	1•45778	2•2431	5•9030805	2•360-2
404•8	1•0	0•305	-1•0520-1	7•16492	2•68746	7•52236	5•63852	2•8473	7•522361	2•90-2
404•8	1•0	0•500	-1•7641-1	9•20932	3•4474	9•90520	1•33309	3•7237	9•9056245	1•180-4
404•8	1•0	0•700	-2•5059-1	1•09642	1•0263	1•18882	2•68986	4•4394	1•1888970	3•700-4
404•8	1•0	1•000	-3•5867-1	1•32365	1•6727	1•43684	2•03092	1•3141	1•4369650	6•400-4
404•8	1•0	1•524	-5•3584-1	1•66239	1•4151	1•78776	2•24281	1•5032	1•7879853	1•150-3
404•8	1•0	2•000	-6•8479-1	1•93239	1•8305	2•05249	2•38819	1•3614	2•0528216	1•670-3
404•8	1•0	3•048	-9•7336-1	2•45434	1•2319	2•53012	2•61571	1•8084	2•057439	2•800-3
404•8	1•0	5•000	-1•3906	3•27118	1•6122	3•21064	1•86069	1•0626	3•2119560	4•770-3
404•8	1•0	7•000	-1•7015	4•02222	1•2250	3•75985	2•99741	1•1898	3•7620217	6•550-3
404•8	1•0	10•000	-2•0012	4•94791	1•6470	4•42934	2•10223	1•3204	4•4330533	8•680-3
404•8	1•0	20•000	-2•1607	7•39692	1•8194	6•04585	2•18972	1•5441	6•0563685	1•281-2
404•8	1•0	30•480	-1•6231	9•34012	1•6065	7•29027	2•19916	1•6556	7•3100615	1•503-2
404•8	1•0	50•000	2•5476-1	1•21593	2•13645	1•08766	2•20030	1•7640	9•1292240	1•718-2
404•8	1•0	70•000	2•8078	1•44795	2•9446	1•05663	2•20033	1•8258	1•063128	1•850-2
404•8	1•0	90•000	5•74006	1•64664	2•4213	1•13236	2•20033	1•8665	1•1932803	1•930-2
404•8	1•0	110•000	8•93777	1•82295	2•8821	1•29562	3•20033	1•8961	1•3091422	1•990-2
404•8	1•0	225•000	3•0323	1•60390	2•48345	1•79332	3•20033	1•9830	1•8325627	2•160-2
404•8	1•0	350•000	5•7001	1•22886	2•3969	1•19161	3•20033	2•0246	2•670987	2•230-2
404•9	1•0	475•000	8•6040	1•73617	2•6651	2•51492	3•20033	2•0490	2•6332751	2•270-2
404•8	2•0	0•010	-3•9099-4	2•36804	3•1782-1	2•68664	8•53539	1•39395	6•52653-1	1•7520-1
404•8	2•0	0•020	-1•3576-3	3•47372	6•7703-1	1•82757	1•82757	1•39395	3•2647-1	1•857084
404•8	2•0	0•050	-6•2051-3	3•49500	1•1325	3•08246	1•34173	6•9798-1	8•5354290	4•000-7
404•8	2•0	0•100	-1•7559-2	4•49500	1•8022	4•97926	1•75547	1•1742	1•8275861	1•000-6
404•8	2•0	0•200	-4•5478-2	6•05757	1•37130	2•3290	6•54325	1•49581	3•0825010	1•000-6
404•8	2•0	0•305	-7•7806-2	7•37130	9•0721	8•87368	6•55306	3•3276	4•9793735	2•700-5
404•8	2•0	0•500	-1•4084-1	9•37078	1•46044	2•41645	1•53125	1•30446	6•5434495	6•100-5
404•8	2•0	0•700	-2•0652-1	1•11001	1•6425	1•082789	7•89009	4•0309	8•8741070	1•560-4
404•8	2•0	1•000	-3•0299-1	1•33494	1•42823	1•32828	9•49294	4•8936	1•028625	2•700-4
404•8	2•0	1•524	-4•6625-1	1•67139	1•0196	1•67683	1•5975	1•0690	1•6770565	9•200-4
404•8	2•0	2•000	-6•0406-1	1•94014	1•4331	1•94033	2•30446	1•69183	1•9406659	1•370-3
404•8	2•0	3•048	-8•7274-1	2•46044	1•8333	2•41645	2•1325	8•3502	2•4170850	2•380-3
404•8	2•0	5•000	-1•2620	3•28175	1•6139	3•09571	2•77578	1•0147	3•0970329	4•160-3
404•8	2•0	7•000	-1•5507	4•00597	1•48277	3•64429	2•191235	1•1401	3•6464719	5•780-3
404•8	2•0	10•000	-1•8235	4•95094	1•2508	4•31328	2•01709	1•2687	4•3169976	7•720-3
404•8	2•0	20•000	-1•9184	7•39895	1•2133	5•92912	2•10453	1•4875	5•936510	1•152-2
404•8	2•0	30•480	-1•3312	9•34172	1•6994	7•17327	2•11398	1•5958	7•1930750	1•354-2
404•8	2•0	50•000	6•1863-1	1•21605	2•14037	8•97043	2•11512	1•7005	9•0120010	1•549-2
404•8	2•0	70•000	3•2313	1•44805	2•19837	1•04489	2•11514	1•7599	1•0517781	1•071-1
404•8	2•0	90•000	6•2158	1•64673	2•4804	1•17152	2•11514	1•7989	1•1815375	1•46-1
404•8	2•0	110•000	9•4591	1•82303	2•9212	1•28387	2•11514	1•8271	1•2973940	1•770-2
404•8	2•0	225•000	3•1056	1•60396	2•48735	1•78156	2•11514	1•9099	1•8207989	1•930-2
404•8	2•0	350•000	5•7911	1•22891	2•4359	2•17984	2•11514	1•9494	2•553274	2•000-2
404•9	2•0	475•000	8•7102	1•73621	2•7041	2•50314	2•11514	1•9726	2•6214995	2•030-2

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
404.8	4.0	0.010	-1.1105-4	4.19614	9.1020-2	2.44015	1.86742-1	9.3371-2	2.4401779	0.000	9.871-4
404.8	4.0	0.020	-4.2418-4	4.38384	1.7764-1	4.77114	3.64805-1	1.8248-1	4.7711917	1.000-7	1.928-3
404.8	4.0	0.050	-2.3417-3	4.90578	4.1581-1	1.12300	1.56347-1	2.878-1	1.1230245	1.000	4.526-3
404.8	4.0	0.100	-7.8930-3	5.67494	7.5887-1	2.06810	1.57015	7.8728-1	2.0681458	1.000-6	8.301-3
404.8	4.0	0.200	-2.4366-2	6.97811	1.3168	3.64962	1.74856	1.3834	3.6497295	1.000-5	1.453-2
404.8	4.0	0.305	-4.5919-2	8.14468	1.7846	5.03836	1.76109	1.8995	5.0385675	1.000-5	1.992-2
404.8	4.0	0.500	-9.1778-2	9.99056	2.47704	7.18961	1.80774	2.6866	7.1900305	1.000-5	2.805-2
404.8	4.0	0.700	-1.4254-1	1.16281	1.0105	9.00404	1.55674	3.3498	9.0407440	1.590-4	3.481-2
404.8	4.0	1.000	-2.2106-1	1.37915	1.6258	1.14011	0.98260	4.1750	1.1402366	1.000-4	4.311-2
404.8	4.0	1.524	-3.5649-1	1.70691	1.3440	1.47965	1.01484	1.5311	1.4798813	2.000-4	5.426-2
404.8	4.0	2.000	-4.7422-1	1.97082	1.7500	1.73841	1.15695	1.61371	1.7387473	2.000-4	6.213-2
404.8	4.0	3.048	-7.0729-1	2.48470	1.453	2.02866	2.08094	1.5336	2.0292928	1.770-3	7.481-2
404.8	4.0	5.000	-1.0473	3.29998	1.9275	2.88293	1.62367	1.2863	2.8842511	2.30-3	8.924-2
404.8	4.0	7.000	-1.2971	4.02091	1.4448	3.42901	1.75961	1.0507	3.4312005	2.580-3	9.781-2
404.8	4.0	10.000	-1.5234	4.96303	1.5726	4.09598	1.86403	1.1753	4.097100	2.220-3	1.050-1
404.8	4.0	20.000	-1.5084	7.40704	1.8826	5.70918	1.95132	1.3853	5.197180	2.420-3	1.132-1
404.8	4.0	30.480	-8.3742-1	9.34812	1.6646	6.95224	1.96075	1.4878	6.9720640	1.112-2	1.156-1
404.8	4.0	50.000	1.2334	1.21654	2.4699	8.74845	1.96190	1.5857	8.7900410	1.272-2	1.172-1
404.8	4.0	70.000	3.9462	1.44846	2.0497	1.0265	1.96192	1.6407	1.0295316	1.360-2	1.181-1
404.8	4.0	90.000	7.0171	1.64710	2.5463	1.14924	1.96192	1.6766	1.1592590	1.420-2	1.187-1
404.8	4.0	110.000	1.0337	1.82336	2.9869	1.26157	1.96192	1.7026	1.250928	1.470-2	1.193-1
404.8	4.0	225.000	3.2290	2.60419	4.9309	1.75199	1.96192	1.7780	1.7984340	1.590-2	1.204-1
404.8	4.0	350.000	5.9439	3.22909	6.50120	2.15744	1.96192	1.8138	2.2329336	1.640-2	1.209-1
404.9	4.0	475.000	8.8885	3.73636	7.7694	2.48073	1.96192	1.8347	2.5990890	1.660-2	1.211-1
404.8	8.0	0.010	-2.8767-5	8.09985	4.6336-2	1.24221	9.50659-2	4.7532-2	1.24225592	0.000	5.025-4
404.8	8.0	0.020	-1.1362-4	8.19865	9.1936-2	2.46929	1.88801-1	4.4444-2	2.4693815	1.000-7	9.980-4
404.8	8.0	0.050	-6.88278-4	8.48920	2.2450-1	6.06465	4.624410-1	2.0533-1	6.0648850	2.000-7	2.444-3
404.8	8.0	0.100	-2.5661-3	8.95571	4.3257-1	1.17967	8.05339-1	4.4890-1	1.1779292	1.000	4.732-3
404.8	8.0	0.200	-9.1970-3	9.83328	8.0795-1	2.24435	1.68837	8.4998-1	2.2444824	1.000-6	8.924-3
404.8	8.0	0.305	-1.9234-2	1.06927	1.1524	3.26745	1.243425	1.2295	3.2676700	1.000-6	1.288-2
404.8	8.0	0.500	-4.3606-2	1.21577	1.6964	4.97448	1.64783	1.8522	4.9749193	1.700-5	1.931-2
404.8	8.0	0.700	-7.3591-2	1.35355	1.507	6.53133	1.71284	2.4077	6.5320415	1.200-5	2.497-2
404.8	8.0	1.000	-1.2386-1	1.54338	1.6903	8.60287	1.606508	1.1270	8.6040680	1.250-4	3.218-2
404.8	8.0	1.524	-2.1734-1	1.84214	1.3449	1.16978	1.93379	1.1522	1.170058	1.000-4	2.244-2
404.8	8.0	2.000	-3.0295-1	2.08903	1.7248	1.41985	2.6319	4.19147	1.4121855	5.000-4	4.947-2
404.8	8.0	3.048	-4.788-1	2.57947	4.1019	1.86063	1.4008	6.2228	1.8612637	1.000-3	6.131-2
404.8	8.0	5.000	-7.4102-1	3.37190	1.8902	2.51600	1.37600	7.8779	2.5173283	1.980-3	7.491-2
404.8	8.0	7.000	-9.3089-1	4.08013	1.1211	3.05245	1.50952	9.0369	3.0546450	2.950-3	8.295-2
404.8	8.0	10.000	-1.0872	5.01112	1.5674	3.71153	2.61270	1.0211	3.7152638	1.130-3	8.966-2
404.8	8.0	20.000	-9.1241-1	7.43931	1.8529	5.31426	2.69937	1.2157	5.3248105	6.440-3	9.691-2
404.8	8.0	30.480	-1.2266-1	9.37368	1.6183	6.55303	2.70878	1.3084	6.5728635	7.670-3	9.877-2
404.8	8.0	50.000	2.1175	1.21850	1.5638	1.34544	2.70992	1.3951	3.870510	8.820-3	1.001-1
404.8	8.0	70.000	4.9696	1.45011	2.1428	1.82148	2.70994	1.4430	9.8903065	4.400-3	1.007-1
404.8	8.0	90.000	8.1602	1.64854	2.6389	1.10861	1.4739	1.4739	1.186301	8.800-3	1.011-1
404.8	8.0	110.000	1.5287	1.82466	2.0792	1.22085	1.70994	1.4960	1.2343734	1.010-2	1.014-1
404.8	8.0	225.000	3.4023	2.60509	5.0302	1.71821	1.70994	1.5597	1.7574597	1.090-2	1.021-1
404.8	8.0	350.000	6.1585	3.22981	6.5920	2.11635	1.70994	1.5894	2.1918424	1.130-2	1.025-1
404.9	8.0	475.000	9.1381	3.73697	7.8599	2.43957	1.70994	1.6067	2.5579309	1.150-2	1.028-1

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E	
404.8	15.0	0.010	-8.2960-6	1.50534	1	2.4821-2	6.65431-1	5.09247-2	2.5461-2	6.6550765-1	2.692-4	
404.8	15.0	0.020	-3.2884-5	1.51068	1	4.9461-2	1.322849	1.01576-1	5.0811-2	1.3286523	5.368-4	
404.8	15.0	0.050	-2.0253-4	1.52665	1	1.2229-1	3.30375	2.51893-1	1.2612-1	3.3041432	1.331-3	
404.8	15.0	0.100	-7.9116-4	1.55307	1	2.4014-1	6.55051	4.97109-1	2.4923-1	6.5513305	6.628-3	
404.8	15.0	0.200	-3.0277-3	1.60527	1	4.6332-1	1.288828	1.68687-1	4.8771-1	1.2884592	5.120-3	
404.8	15.0	0.305	-6.0780-3	1.65931	1	6.790-1	1.93148	1.43758	7.2613-1	1.9317751	1.604-3	
404.8	15.0	0.500	-1.6568-2	1.75728	1	1.0434	3.07293	2.24892	1.1418	3.0734545	1.89-2	
404.8	15.0	0.700	-2.9926-2	1.85527	1	1.3664	4.18004	1.00620	1.5357	4.1808514	1.591-2	
404.8	15.0	1.000	-5.4429-2	1.99798	1	1.7718	5.73711	4.02236	2.0739	5.7384125	2.130-2	
404.8	15.0	1.524	-1.0478-1	2.23681	1	2.2950	8.21115	5.51608	2.8866	8.2134980	9.900-5	
404.8	15.0	2.000	-1.5469-1	2.44415	1	2.6139	1.02439	6.63248	3.51193	1.0247441	1.800-4	
404.8	15.0	3.048	-2.6436-1	2.87460	1	2.9448	1.41828	8.50842	4.6457	1.4189183	4.200-4	
404.8	15.0	5.000	-4.3588-1	3.60265	1	2.7503	2.02041	2.06760	1	2.0217380	9.400-4	
404.8	15.0	7.000	-5.5840-1	4.27277	1	2.0220	2.52795	2.19387	1	2.501422	1.500-3	
404.8	15.0	10.000	-6.4056-1	5.16914	1	2.5685-1	3.16248	2.19316	1	2.1662186	2.000-3	
404.8	15.0	15.0	-3.1288-1	7.54655	1	4.7822	4.73160	2.37788	1	4.7421557	3.640-3	
404.8	15.0	20.000	5.8036-1	9.45893	1	9.4934	5.95629	1.38718	1	1.0761	5.9761225	
404.8	15.0	30.480	2.9605	1.22506	2	-1.6464	1.73615	2	1.38831	1	1.483	
404.8	15.0	50.000	7.0000	1.45561	2	-2.2227	1	2.02547	2	1.38833	1	
404.8	15.0	70.000	5.9239	1.65337	2	-2.7171	1	1.04658	3	1.38833	1	
404.8	15.0	90.000	9.2088	1.82902	1	1.2719	1	1.2116	1	1.2116	1	
404.8	15.0	110.000	1.8036-1	2.82902	2	-3.1563	1	1.5852	3	1.2290	1	
404.8	15.0	225.000	3.5529	2.60810	2	-5.1040	1	1.65503	3	1.2781	1	
404.8	15.0	350.000	6.3404	3.23221	2	-6.6642	2	2.05277	3	1.3006	1	
404.8	15.0	475.000	9.3467	1.73902	2	-7.9313	1	2.37577	3	1.38833	1	
404.8	15.0	915.000	9.3467	1	3.1347	1	1.3134	1	2.4941324	3	6.400-3	8.050-2
404.8	30.0	0.010	-2.4900-6	3.00267	1	1.2423-2	3.33098-1	2.54906-2	1.2743-2	3.3324872	1.348-4	
404.8	30.0	0.020	-8.4760-6	3.00535	1	2.4790-2	6.65878-1	5.09119-2	2.5466-2	6.6617940-1	2.693-4	
404.8	30.0	0.050	-5.1637-5	3.01341	1	6.1536-2	1.666245	1.26751-1	6.3465-2	1.6632166	6.703-4	
404.8	30.0	0.100	-2.0322-4	3.02688	1	2.1616-1	3.31748	2.60503-1	1.2621-1	3.31186	-1.000-7	
404.8	30.0	0.200	-7.9650-4	3.05398	1	2.3747-1	6.605049	4.96592-1	3.67697	6.6086265	2.000-7	
404.8	30.0	0.305	-1.8063-3	3.08272	1	3.5265-1	1.000263	1	7.45966-1	1.0031204	3.947-3	
404.8	30.0	0.500	-4.6497-3	3.13653	1	5.5227-1	1.62949	1.19149	6.0496-1	1.6303282	6.301-3	
404.8	30.0	0.700	-8.7261-3	3.19245	1	7.3655-1	2.26125	1	1.62359	8.2944-1	2.2624622	
404.8	30.0	1.000	-1.6695-2	3.27742	1	9.7775-1	3.18825	2.22844	1.1490	3.1900696	1.000-6	
404.8	30.0	1.524	-3.4562-2	3.42822	1	1.3080	4.75026	2.17145	1.6594	4.7532665	1.679-2	
404.8	30.0	2.000	-5.3800-2	3.56693	1	1.5214	6.11027	3.91835	2.0791	6.1144810	2.077-2	
404.8	30.0	3.048	-1.00000-1	3.87453	1	1.7576	8.92471	1	2.8715	8.9319765	2.793-2	
404.8	30.0	5.000	-1.7877-1	4.44147	1	1.6061	1.36135	6.94651	3.9849	1.3627850	2.600-4	
404.8	30.0	7.000	-2.3464-1	5.00030	1	9.9776-1	1.78451	2	7.99802	4.8182	1.7868045	
404.8	30.0	10.000	-2.5424-1	5.78485	1	3.1274-1	2.33981	2	8.86584	5.6829	2.3436506	
404.8	30.0	20.000	1.4324-1	7.98048	1	-5.2183	3.78867	2	9.64383	7.0823	3.7993239	
404.8	30.0	30.480	1.0377	9.80824	1	-9.7211	4.95917	2	9.73267	7.6998	4.9791006	
404.8	30.0	50.000	3.3773	1.25217	2	-1.6496	1.688919	9.74366	8.2303	6.730245	1.424-2	
404.8	30.0	70.000	6.2864	1.47845	2	-2.2153	1.81310	9.74389	8.5015	8.2002230	5.437-2	
404.8	30.0	90.000	9.5156	1.67348	2	-2.7029	1.937419	9.74390	8.6686	9.4744895	2.180-3	
404.8	30.0	110.000	1.2972	1.84718	2	-3.1371	1.04811	9.74390	8.7842	1.0616486	4.782-2	
404.8	30.0	225.000	3.5506	2.62072	2	-5.0710	1.54109	9.74390	9.0992	1.5803496	5.450-2	
404.8	30.0	350.000	6.3134	3.24227	2	-6.6248	1.93721	9.74390	2.0277	2.0127126	5.470-2	
404.8	30.0	475.000	9.2982	3.74762	2	-7.8882	1	9.74390	9.3154	2.3776413	5.470-2	

SC	SURFACE	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E	
404.8	65.0	0.010	1.1880-6	6.50123	1.53589-1	1.17559-2	5.8789-3	1.5391498-1	0.000	6.226-5	1.244-4	
404.8	65.0	0.020	-2.0830-6	6.50247	1.1437-2	3.07204-1	2.34882-2	1.1750-2	3.0785564-1	1.000-8	1.244-4	
404.8	65.0	0.050	-1.0423-5	6.50619	1.8420-2	7.67769-1	5.85381-2	2.9308-2	7.6939925-1	3.100-8	3.100-4	
404.8	65.0	0.100	-4.3390-5	6.51243	1.6262-2	1.53481	1.16469-1	5.8395-2	1.5380795	6.169-4	6.169-4	
404.8	65.0	0.200	-1.7031-4	6.52506	1.1023-1	3.06663	2.30536-1	1.1607-1	3.0731940	0.000	1.221-3	
404.8	65.0	0.305	-3.9330-4	6.53855	1.6428-1	4.667184	3.47549-1	1.7555-1	4.6818974	1.000-7	1.842-3	
404.8	65.0	0.500	-1.0229-3	6.56406	1.5892-1	7.64391	5.5876-1	2.81779	7.66422-1	2.000-7	2.960-3	
404.8	65.0	0.700	-1.9432-3	6.59093	1.4747-1	1.06799	1.06799	1.9153-1	1.0703417	1.000-6	4.061-3	
404.8	65.0	1.000	-3.7893-3	6.63246	1.6532-1	1.06198	1.5244232	1.1600-6	5.628-2	5.628-2	5.628-2	
404.8	65.0	1.524	-8.0860-3	6.70818	1.7031-4	2.30527	1.53544	8.0333-1	2.3105789	1.000-6	8.139-3	
404.8	65.0	2.000	-1.2914-2	6.78003	1.4167-1	3.00981	1.92236	1.0200	3.0169179	1.000-6	1.019-2	
404.8	65.0	3.048	-2.5175-2	6.94660	1.6948-1	8.6948-1	4.53379	1.64799	1.4459	4.5451059	1.000-5	1.405-2
404.8	65.0	5.000	-4.7599-2	7.27769	1.8105-1	7.277203	1.63372	2.0844	7.2920120	1.800-5	1.936-2	
404.8	65.0	7.000	-6.3934-2	7.63120	1.94805	1.94805	2.29761	2.5949	9.7808659	1.200-5	2.292-2	
404.8	65.0	10.000	-6.1097-2	8.16623	1.9962-1	1.37340	1.88794	3.1511	1.37808659	1.200-4	6.14-2	
404.8	65.0	20.000	-2.0326-1	9.84263	1.42513	2.47912	5.47359	4.0855	2.4908730	2.600-4	2.963-2	
404.8	65.0	30.480	8.2414-1	1.13734	2.0225	3.45942	5.4799	4.908	3.4806288	3.000-4	3.020-2	
404.8	65.0	50.000	2.5832	1.37797	2.4030	4.99355	5.55774	4.8189	5.0367065	4.00-4	3.039-2	
404.8	65.0	70.000	4.9050	1.58619	2.9236	6.32057	5.55795	4.9755	6.3910410	2.100-4	3.038-2	
404.8	65.0	90.000	7.5773	1.76918	2.3811	7.48681	5.55795	5.0674	7.5887165	2.400-4	3.042-2	
404.8	65.0	110.000	1.0508	1.93413	2.7934	8.53803	5.55795	5.1288	8.6749865	2.900-4	3.051-2	
404.8	65.0	225.000	3.0461	2.68200	4.6631	1.303042	5.55795	5.2862	1.3698502	3.000-4	3.050-2	
404.8	65.0	350.000	5.5800	3.29138	6.1866	1.71877	5.55795	5.3505	1.7944636	3.000-4	3.050-2	
404.8	65.0	475.000	8.3659	3.78966	7.4323	2.03633	5.55795	5.3852	2.1548922	3.000-4	3.050-2	
404.8	100.0	0.010	-7.7450-6	1.00008	2.7145-3	9.97376-2	7.62707-3	3.8147-3	1.0023783-1	0.000	4.055-5	
404.8	100.0	0.020	-3.8930-6	1.000016	2.4195-3	1.99347-1	1.52395-2	7.6208-3	2.0034898-1	1.000-8	8.097-5	
404.8	100.0	0.050	-5.8800-6	1.000040	2.8441-2	4.98242-1	3.79868-2	1.9017-2	5.0074680-1	1.000-8	2.018-4	
404.8	100.0	0.100	-2.2350-5	1.000080	2.6518-2	9.96293-1	7.56008-2	3.7908-2	1.0013073	0.000	4.016-4	
404.8	100.0	0.200	-6.7740-5	1.00162	2.1596-2	1.99163	1.49723-1	7.5382-2	2.0016789	0.000	7.955-4	
404.8	100.0	0.305	-1.6706-4	1.00250	2.0675-1	3.03597	2.25849-1	1.1408-1	3.0513311	2.000-7	1.201-3	
404.8	100.0	0.500	-4.3521-4	1.00416	2.6842-1	4.97286	3.63503-1	1.8456-1	4.9981309	1.000-7	1.931-3	
404.8	100.0	0.700	-8.1530-4	1.00592	2.2627-1	6.95582	4.99133-1	2.5498-1	6.9913405	3.000-7	2.652-3	
404.8	100.0	1.000	-1.6078-3	1.00864	3.0347-1	9.92374	6.92761-1	3.5720-1	9.9747710	3.000-7	3.680-3	
404.8	100.0	1.524	-3.4519-3	1.01362	2.1263-1	1.50873	1.00448	5.2552-1	1.5165916	1.000	5.337-3	
404.8	100.0	2.000	-5.5473-3	1.01838	2.8576-1	1.97550	1.26082	6.6900-1	1.9859067	1.000-6	6.701-3	
404.8	100.0	3.048	-1.0897-2	1.02953	2.7136-1	2.99499	1.74623	9.55051-1	3.0111779	1.000-6	9.290-3	
404.8	100.0	5.000	-2.0811-2	1.05211	2.1105-1	4.86247	2.41850	1.3872	4.8900015	1.100-5	1.291-2	
404.8	100.0	7.000	-2.7674-2	1.07682	2.4113-1	6.73268	2.88222	1.7413	6.7726200	1.200-5	1.540-2	
404.8	100.0	10.000	-2.4808-2	1.11530	2.0282-1	9.45547	3.30635	2.1350	9.5154910	1.300-5	1.769-2	
404.8	100.0	20.000	1.3406-1	1.24306	2.2650	1.78800	2.74892	2.8145	1.8018795	2.000-5	2.027-2	
404.8	100.0	30.480	5.2360-1	1.36724	2.3242	2.58324	3.80928	3.1124	2.6071168	2.100-4	2.073-2	
404.8	100.0	50.000	1.7611	1.57272	2.1454	3.89325	3.81760	3.495	3.97456	2.100-4	2.079-2	
404.8	100.0	70.000	3.0000	1.75768	2.6078	5.07205	3.81779	3.593	1.463165	2.000-4	2.081-2	
404.8	100.0	90.000	5.56793	1.92413	2.0240	6.13283	3.81779	3.5221	6.2388600	2.100-4	2.083-2	
404.8	100.0	110.000	7.9143	2.07652	2.4049	7.10403	3.81779	3.5631	7.2453640	2.100-4	2.087-2	
404.8	100.0	225.000	2.4825	2.78523	2.1767	1.6206	3.81779	3.6643	1.2020075	3.000-4	2.080-2	
404.8	100.0	350.000	4.7336	3.37497	2.6511	1.53790	3.81779	3.7035	1.6141469	3.000-4	2.080-2	
404.9	100.0	475.000	7.2686	3.86159	2.8676	1.84802	3.81779	3.7240	1.9671648	3.000-4	2.080-2	

N	INIT THETA	HEIGHT H	DELTA THETA	DELTA DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTAR-E
								DELTAR-E
0	0.010	-2.5098-5	2.00003	2	4.94545-2	3.77525-3	1.8870-3	2.041-5
0	0.020	2.7008-5	2.00007	2	9.85268-2	7.54353-3	3.7594-3	4.066-5
0	0.050	1.3518-5	2.00019	2	2.46571-1	1.88050-2	9.4104-3	1.014-4
0	0.100	-1.9470-5	2.00039	2	4.93335-1	3.74312-2	1.8775-2	2.020-4
0	0.200	-3.1160-5	2.00080	2	3.5455-2	9.86478-1	7.41529-2	4.000-4
0	0.305	-3.9280-5	2.00124	2	5.2888-2	1.50409	5.6518-2	6.039-4
0	0.500	-2.0975-4	2.00206	2	8.46520	1.80195-1	1.1484-2	1.000-7
0	0.700	-2.0473-4	2.00293	2	1.1222-1	3.45047	2.47582-1	1.2647-1
0	1.000	-3.9770-4	2.00429	2	1.5064-1	4.92748	3.43943-1	1.7734-1
0	1.524	-8.7260-4	2.00678	2	2.0512-1	7.50473	4.99522-1	2.6135-1
0	2.000	-1.3934-3	2.00916	2	2.4180-1	9.84273	6.27919-1	3.3318-1
0	3.048	-2.6779-3	2.01477	2	2.8487-1	1.49789	8.72471-1	4.7639-1
0	5.000	-5.0297-3	2.02629	2	2.5412-1	2.45018	1.21528	6.9704-1
0	7.000	-6.5009-3	2.03910	2	1.1411-1	3.41963	1.45556	8.7973-1
0	10.000	-4.7602-3	2.05947	2	-2.86297	1.48613	1.67994	0.85895
0	20.000	5.0232-2	2.13066	2	-1.8232	9.55373	1.92450	1.4513
0	30.480	1.9699-1	2.20467	2	-3.6466	1.42936	2.96047	1.6147
0	50.000	6.9828-1	2.33636	2	-6.9347	2.6894	1.96581	1.7442
0	70.000	1.4825	2.46341	2	-1.0110	1	3.07862	2.196593
0	90.000	2.5038	2.58361	2	-1.3115	1	3.84464	2.96594
0	110.000	3.7336	2.69792	2	-1.5972	4.57288	1.96594	1.85568
0	200.0	225.000	1.3925	1	3.26943	2	-3.0261	1
0	350.000	2.9359	1.77957	2	-4.3014	1	1.14665	3
0	475.000	4.8051	1.21551	2	-5.3913	1	1.42447	3
0	0.010	3.4810-6	4.00001	2	8.8257-4	2.36438-2	1.81007-3	8.9880-4
0	0.020	6.8710-6	4.00003	2	1.7618-3	4.72877-2	3.61683-2	1.8211-3
0	0.050	-1.0435-5	4.00005	2	4.3764-3	1.18283-1	9.01649-3	4.5035-3
0	0.100	-1.0395-4	4.00019	2	8.6604-3	2.36757-1	1.79479-2	9.0075-3
0	0.200	-1.2400-6	4.00038	2	1.7003-2	4.73005-1	3.55583-2	1.7911-2
0	0.305	-1.4000-6	4.00059	2	2.5364-2	7.21297-1	5.36591-2	2.7109-2
0	0.500	-1.6230-5	4.00099	2	4.0045-2	1.18238	8.64284-2	4.3887-2
0	0.700	-1.0687-4	4.00140	2	5.3802-2	1.65539	1.18767-1	6.0680-2
0	1.000	-1.3100-5	4.00205	2	7.2289-2	2.36419	1.65032-1	8.5079-2
0	1.524	-2.1950-4	4.00325	2	9.8456-2	3.60266	2.39781-2	1.2544-2
0	2.000	-2.9910-4	4.00440	2	1.1610-1	4.72692	3.01528-1	1.5999-1
0	3.048	-5.4210-4	4.00710	2	1.3684-1	7.20067	4.1931-1	2.2895-1
0	5.000	-9.9380-4	4.01266	2	1.2197-1	1.18021	5.84951-1	3.3550-1
0	7.000	-1.0029-3	4.01888	2	5.4011-2	1.65073	1.01561-1	4.2406-1
0	10.000	1.9700-4	4.02883	2	-1.0258-1	2.35468	1.1109-1	2.2449-1
0	20.000	1.9787-2	4.06417	2	-9.0531-1	4.68416	1.32183-1	7.0393-1
0	30.480	6.9449-2	4.10185	2	-8.8335	7.09710	1.50498-1	7.394810-1
0	50.000	4.4321-1	4.17116	2	-3.5641	1.15158	2	9.5305-1
0	70.000	5.2770-1	4.24067	2	-5.3017	1.59455	2	9.53374-1
0	90.000	9.1550-1	4.30870	2	-7.0025	2.02813	2.53375-1	8.9462-1
0	110.000	1.4030	4.37533	2	-8.6683	4.62576	2.93375-1	5.0494-1
0	225.000	5.9722	4.73423	2	-1.7641	1.47014	7.2873-1	5.3210925
0	350.000	1.39351	5.08524	2	-2.6415	1.697701	7.9718805	2
0	475.000	2.45731	5.40366	2	-3.43761	9.00632	1.0467905	3

SURFACE_N	INIT THETA	HEIGHT	DELTA_H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA_R	DELTA_R-E
404•8	900•0	0•010	-1•9939•4	9•000000	2•8979•4	8•09372•3	6•07296•4	2•7848•4	1•2865013•2	0•000	5•204•6
404•8	900•0	0•020	2•7310•6	9•00001	2•59098•4	1•058688•2	1•21348•3	5•7688•4	2•5530763•2	1•220•6	1•154•5
404•8	900•0	0•050	-1•9418•4	9•000003	2•1•4626•3	3•98313•2	3•02513•3	1•4970•3	6•3926115•2	1•304•6	2•707•5
404•8	900•0	0•100	2•5336•4	9•000006	2•9167•3	7•91528•2	6•02178•3	2•9985•3	1•2753537•1	1•930•6	5•309•5
404•8	900•0	0•200	2•6268•4	9•000112	5•7130•3	1•58496•1	1•19305•2	6•0060•3	2•5519023•1	1•970•6	1•034•4
404•8	900•0	0•305	1•2858•4	9•000119	8•5141•3	2•41919•1	1•80041•2	9•1025•3	3•89297799•1	2•040•6	1•052•4
404•8	900•0	0•500	2•7211•4	9•00033	2•3445•2	3•96528•1	2•90003•2	1•4707•2	6•3815955•1	2•030•6	2•486•4
404•8	900•0	0•700	3•4326•4	9•00047	2•8075•2	5•55153•1	3•98532•2	2•0341•2	8•9343665•1	2•080•6	3•409•4
404•8	900•0	1•000	3•0620•4	9•00069	2•4625•2	7•93185•1	5•53809•2	2•8524•2	1•2764176	2•100•6	4•730•4
404•8	900•0	1•524	7•8400•5	9•00109	2•3046•2	1•20902	8•04739•2	4•2084•2	1•9454219	2•100•6	6•865•4
- 404•8	900•0	2•000	2•2270•4	9•00147	2•8974•2	1•58643	1•011207•1	5•3683•2	2•5529522	2•100•6	8•630•4
404•8	900•0	3•048	9•00007	9•00238	2•45934•2	2•41760	1•40771•1	7•6858•2	3•8907461	2•200•6	1•201•3
404•8	900•0	5•000	2•0640•4	9•00425	2•0940•2	3•96452	1•96460•1	1•1267•1	6•3819895	2•400•6	1•680•3
404•8	900•0	7•000	2•3120•4	9•00634	2•8049•2	5•54866	2•35712•1	1•4247•1	8•9342880	2•500•6	2•015•3
404•8	900•0	10•000	1•6150•3	9•00970	2•8114•2	7•92197	2•72647•1	1•7631•1	1•2761512	1	2•332•3
404•8	900•0	20•000	1•1291•2	9•02167	2•0668•1	1•58131	3•13631•1	2•3692•1	2•5511585	1	2•707•3
404•8	900•0	30•480	3•0835•2	9•03453	2•62353•1	2•40497	3•19882•1	2•6435•1	3•8861099	1	2•777•3
404•8	900•0	50•000	9•9196•2	9•05845	2•1•2206	3•92956	1•20850•1	2•8618•1	6•3688785	1	2•798•3
404•8	900•0	70•000	2•0894•1	9•08276	2•1•8284	5•47918	1•20874•1	2•9607•1	8•9079170	1	1•000•6
404•8	900•0	90•000	3•5815•1	9•10688	2•2•4314	7•01637	1•20875•1	3•0156•1	1•1442211	2	2•790•3
404•8	900•0	110•000	5•4864•1	9•13081	2•3•0296	8•54115	3•20875•1	3•0506•1	1•3971734	2	2•790•3
404•8	900•0	225•000	2•4130	9•26475	2•6•3782	1•70775	3•20875•1	3•1310•1	2•8428328	2	2•800•3
404•8	900•0	350•000	5•8961	9•40372	2•9•8523	2•59336	3•20875•1	3•1585•1	4•3981733	2	2•780•3
404•9	900•0	475•000	1•0851	1	9•53629	2•-1•3166	1	3•438823	2	1•000•5	2•800•3
								3•1715•1	5•9381790	2	1•000•5

SURFACE_N	INIT_THETA	HEIGHT	DELTA_H	THETA	DELTA_THETA	DISTANCE	TAU	ERROR_ANGLE	SLANT_RANGE	DELTA_R	DELTA_R-E
450.0	0.0	0.010	-1.0789-2	1.06401	1.1480	1.87966	1.88540	9.4270-1	1.8796694	1.000	8.449-3
450.0	0.0	0.020	-2.1565-2	1.50620	1.6216	2.65780	2.66420	1.3327	2.6578123	1.500	1.194-2
450.0	0.0	0.050	-5.3740-2	2.38850	2.5528	4.19884	4.19996	2.01034	4.1988523	1.800	1.885-2
450.0	0.0	0.100	-1.0679-1	3.39418	3.5823	5.92822	5.90789	2.9642	5.9282630	1.800	2.656-2
450.0	0.0	0.200	-2.1126-1	4.84547	4.9929	8.36010	8.27249	4.1667	8.3601965	1.280	3.729-2
450.0	0.0	0.305	-3.1797-1	6.04424	6.0643	1.02891	1.01005	1.01005	1.0289293	2.400	4.569-2
450.0	0.0	0.500	-5.0915-1	7.866667	7.5443	1.30952	1.26813	1.4561	1.3095632	2.600	5.770-2
450.0	0.0	0.700	-6.9655-1	9.46073	8.6681	1.54047	1.47111	1.5424	1.5405412	2.370	6.731-2
450.0	0.0	1.000	-9.6252-1	1.15666	1.9234	1.82609	1.70868	1.8514	1.8261990	2.220	7.881-2
450.0	0.0	1.524	-1.3865	1.47898	1.1379	1.22371	2.01028	1.0594	1.2239217	2.70	9.391-2
450.0	0.0	2.000	-1.7355	1.74218	1.224	1.51915	2.1065	1.1827	1.5194642	2.210	1.043-1
450.0	0.0	3.048	-2.4012	2.26306	1.3173	3.04236	2.51075	1.3855	3.0429521	2.208	1.208-1
450.0	0.0	5.000	-3.3663	3.10366	1.3320	1.76916	2.81060	1.6315	3.7704297	2.301	1.393-1
450.0	0.0	7.000	-4.1164	3.85224	1.2600	4.34412	2.96419	1.7984	4.3462336	2.697	1.502-1
450.0	0.0	10.000	-4.9361	4.82865	1.0961	5.03451	3.07108	1.9664	5.0381470	2.143	1.595-1
450.0	0.0	20.000	-6.2916	7.32964	1.2916	5.26773	6.67584	3.14552	6.6862485	2.969	1.714-1
450.0	0.0	30.480	-6.6485	9.29047	1.0741	4.0741	7.92906	3.15114	7.9487200	3.391	1.760-1
450.0	0.0	50.000	-6.0574	1.21218	2.66676	9.73381	3.15160	2.5344	9.752275	3.821	1.804-1
450.0	0.0	70.000	-4.05685	1.44481	2.2483	1.12163	3.15160	1.6170	1.1284991	4.070	1.829-1
450.0	0.0	90.000	-2.5541	1.64390	2.7460	1.24851	3.15160	1.6722	1.2585107	4.070	1.846-1
450.0	0.0	110.000	-1.7916-1	1.82048	2.1874	1.36104	3.15160	1.7127	1.3745450	4.370	1.858-1
450.0	0.0	225.000	1.7459	2.60219	4.1417	1.85923	3.15160	2.8338	1.8984506	4.730	1.895-1
450.0	0.0	350.000	4.0974	3.22750	5.7050	1.25774	3.15160	2.8930	3.3332083	9.000	1.911-1
450.0	0.0	475.000	6.7306	3.73501	6.9738	1.58118	3.15160	1.9281	2.6995115	4.990	1.922-1
450.0	0.5	0.010	-4.3505-3	1.17564	1.0200	1.7080	4.87120	1.01950	1.19357	1.19721	5.9860-1
450.0	0.5	0.020	-1.1222-2	1.58702	1.1695	1.91750	1.92176	1.6137	1.9175113	1.000	5.365-3
450.0	0.5	0.050	-3.5371-2	2.44027	2.0701	3.40776	3.40690	1.7063	3.4077829	1.500	8.614-3
450.0	0.5	0.100	-7.9274-2	3.43081	3.0841	5.11111	5.08911	2.5534	5.1111520	1.500	1.528-2
450.0	0.5	0.200	-1.7080-1	4.87120	4.4840	7.52465	7.43584	3.7456	7.5247535	1.690	2.286-2
450.0	0.5	0.305	-2.6722-1	6.06489	5.5508	9.445457	9.25615	4.6816	9.4456675	3.10	4.182-2
450.0	0.5	0.500	-4.4347-1	7.88254	7.0269	1.22442	1.18301	1.0230	1.2244651	7.100	5.372-2
450.0	0.5	0.700	-6.1860-1	9.47394	8.01489	1.45499	1.38565	1.047	1.4550564	1.050	6.324-2
450.0	0.5	1.000	-8.6942-1	1.15774	1.4027	1.74027	1.62295	1.4027	1.7403886	1.910	7.464-2
450.0	0.5	1.524	-1.2723	1.47982	1.0557	1.13761	1.92433	1.0143	2.1378222	3.330	8.957-2
450.0	0.5	2.000	-1.6057	1.74290	1.1702	2.43290	2.12460	1.1369	2.4332227	4.660	9.990-2
450.0	0.5	3.048	-2.2439	2.26361	1.2650	1.2650	2.42461	1.3384	2.9565469	7.450	1.162-1
450.0	0.5	5.000	-3.1706	3.10406	1.2797	1.68262	2.72440	1.5825	3.6838984	1.190	1.343-1
450.0	0.5	7.000	-3.8904	3.85256	1.2078	1.25752	2.87798	1.7477	4.2596443	1.564	1.450-1
450.0	0.5	10.000	-4.6737	4.82891	1.0439	4.94786	2.98486	1.9136	4.9515139	1.540	1.762-1
450.0	0.5	20.000	-5.9425	7.32981	1.7452	6.58913	3.05930	2.1926	6.5995625	1.758	1.776-1
450.0	0.5	30.480	-6.2328	9.29060	1.1460-1	7.84233	3.06492	2.32322	7.8620130	3.160	1.788-1
450.0	0.5	50.000	-5.5449	1.21219	2.1896	9.64706	3.06537	2.4704	9.6885040	3.558	1.822-1
450.0	0.5	70.000	-3.9756	1.44482	2.3005	1.1296	3.06538	2.5506	1.198258	3.790	1.838-1
450.0	0.5	90.000	-1.8918	1.64390	2.7982	1.23983	3.06538	2.6041	1.2498369	3.940	1.846-1
450.0	0.5	110.000	5.4542-1	1.82048	2.1939	1.35237	3.06538	2.6433	1.3658708	4.660	1.788-1
450.0	0.5	225.000	1.84668	2.60220	2.1939	1.85055	3.06538	2.7603	1.8897533	3.390	1.822-1
450.0	0.5	350.000	4.2224	3.2224	2.57572	2.24906	3.06538	2.8174	2.3245324	3.550	1.838-1
450.0	0.5	475.000	6.8762	1.73501	2.0259	2.57250	3.06538	2.8511	2.6908355	3.630	1.846-1

ID	SURFACE_N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	ERROR ANGLE	SLANT RANGE	DELTA R	DELTA R-E
												0.000
450.0	1.0	0.010	-2.0182-3	1.046018	4.9652-1	8.12947	8.15426-1	4.0771-1	8.1294830	3.654-3	3.654-3	
450.0	1.0	0.020	-6.1964-3	1.80794	8.6895-1	1.042491	1.042791	7.01434-1	1.04249204	1.000-6	6.400-3	
450.0	1.0	0.050	-2.3691-2	2.58939	1.6936	2.78970	1.278798	1.3963	2.7897204	1.000-6	1.250-2	
450.0	1.0	0.100	-5.9262-2	3.53843	2.6651	4.42167	1.439969	2.0275	4.4217167	1.300-5	1.975-2	
450.0	1.0	0.200	-1.3854-1	4.94759	4.0345	6.78269	1.669524	3.3728	6.7828005	1.220-4	3.012-2	
450.0	1.0	0.305	-2.2511-1	6.12641	5.0880	8.67958	1.849286	4.2958	8.6797820	1.520-4	3.831-2	
450.0	1.0	0.500	-3.6696-1	7.9997	6.5526	1.04566	1.10468	1.6244	1.1457034	1.700-4	5.006-2	
450.0	1.0	0.700	-5.5026-1	9.51344	7.6689	1.37507	1.30631	1.6981	1.3751447	1.700-4	5.950-2	
450.0	1.0	1.000	-7.8651-1	1.16098	1.89185	1.0370	1.04352	1.7934	1.6595053	1.640-3	7.078-2	
450.0	1.0	1.524	-1.1692	1.48235	1.01692	1.1213	1.35072	1.0937	2.0560730	2.920-3	8.555-2	
450.0	1.0	2.000	-1.4878	1.74505	1.74505	1.2160	1.04350	1.0937	2.3510461	1.130-3	9.573-2	
450.0	1.0	3.048	-2.0997	2.26527	2.26527	1.2160	2.87327	1.2939	2.8738753	1.720-3	1.118-1	
450.0	1.0	5.000	-2.9002	3.10527	3.10527	1.2308	1.54279	1.5360	3.0008420	1.090-2	1.296-1	
450.0	1.0	7.000	-3.6815	3.83534	1.1589	4.17427	2.79638	1.6997	4.1764097	1.440-2	1.400-1	
450.0	1.0	10.000	-4.4306	4.82969	1.9500	4.86448	2.90324	1.8636	4.8681418	1.835-2	1.489-1	
450.0	1.0	20.000	-5.6181	7.33032	1.42567	6.50557	2.97767	1.381	6.5160205	2.556-2	1.598-1	
450.0	1.0	30.480	-5.8461	9.29100	1.0281-1	7.75870	2.98329	1.2748	7.7784045	2.935-2	1.639-1	
450.0	1.0	50.000	-5.0678	1.21222	2.6776	9.56337	2.98375	1.4096	9.6048390	3.304-2	1.677-1	
450.0	1.0	70.000	-3.4234	1.44485	2.13493	1.010458	1.98375	1.4876	1.1114563	3.520-2	1.698-1	
450.0	1.0	90.000	-1.2747	1.64393	2.18470	1.23146	2.98375	1.5395	1.2414653	3.670-2	1.713-1	
450.0	1.0	110.000	1.2206	1.82050	2.2884	1.34399	2.98375	1.5775	1.3574980	3.770-2	1.722-1	
450.0	1.0	225.000	1.9409	1.60221	2.4427	1.84217	2.98375	1.6906	1.8813989	4.080-2	1.753-1	
450.0	1.0	350.000	4.3389	3.22752	5.8059	2.24068	2.98375	1.7456	2.3116540	4.230-2	1.769-1	
450.0	1.0	475.000	7.0119	1.73502	2.0747	1.56411	2.98375	1.7781	2.6824561	3.310-2	1.778-1	
450.0	2.0	0.010	-6.7140-4	2.26542	2.8638-1	4.68885	4.70315	2.3515-1	4.6888728	0.000	2.108-3	
450.0	2.0	0.020	-2.4075-3	2.50372	5.4159-1	8.88246	8.90034-1	4.4526-1	8.8824995	2.000-7	3.988-3	
450.0	2.0	0.050	-1.1641-2	3.11527	1.1868	1.95620	1.95422	9.7879-1	1.9562141	1.000-6	8.761-3.	
450.0	2.0	0.100	-3.4448-2	3.93960	2.0306	3.35412	3.35412	1.6827	3.37355	1.500-5	1.505-2	
450.0	2.0	0.200	-9.2706-2	5.24200	2.2956	5.55527	5.474786	2.7583	5.5552386	6.600-5	2.459-2	
450.0	2.0	0.305	-1.6147-1	6.36654	4.3005	7.36476	7.18963	3.6369	7.3649660	1.550-4	3.238-2	
450.0	2.0	0.500	-2.9673-1	8.11692	5.7217	1.00597	9.66801	4.9225	1.0060180	3.800-4	4.370-2	
450.0	2.0	0.700	-4.3792-1	9.66982	6.8165	1.23095	1.16453	5.9715	1.2310266	6.900-4	5.287-2	
450.0	2.0	1.000	-6.4684-1	1.17382	1.0493	1.51148	1.39785	1.2433	1.5115965	1.220-3	6.388-2	
450.0	2.0	1.524	-9.9187-1	1.49244	1.4888	1.90453	2.69599	1.9419	1.9047541	2.280-3	1.830-2	
450.0	2.0	2.000	-1.2826	1.75363	1.0327	1.27188	1.89482	1.0144	1.980336	3.310-3	8.842-2	
450.0	2.0	3.048	-1.8458	2.1270	1.1270	2.71827	2.19341	1.2118	2.7188932	5.560-3	1.039-1	
450.0	2.0	5.000	-2.6697	3.11009	1.1417	3.44302	2.49240	1.4500	3.4443207	9.220-3	1.212-1	
450.0	2.0	7.0000	-3.3088	3.85743	1.0699	4.01702	2.64574	1.6107	4.0191710	1.233-2	1.312-1	
450.0	2.0	10.000	-3.9956	4.83279	1.0618	4.70666	2.75251	1.7709	4.7103501	1.587-2	1.396-1	
450.0	2.0	20.000	-5.0353	7.33237	1.3709	6.34706	2.82691	2.0371	6.3575390	2.322-2	1.497-1	
450.0	2.0	30.480	-5.1503	9.29261	1.4875	7.59991	2.83252	2.1684	7.6196515	2.558-2	1.534-1	
450.0	2.0	50.000	-4.2083	1.21235	2.85614	9.40435	2.83298	2.2968	9.4458485	2.886-2	1.568-1	
450.0	2.0	70.000	-2.4281	1.44495	1.4376	1.06867	2.83299	1.3707	1.095447	3.070-2	1.586-1	
450.0	2.0	90.000	-1.6211-1	1.64402	1.0327	1.021553	2.83299	1.4197	1.255461	3.190-2	1.599-1	
450.0	2.0	110.000	2.4384	1.82059	2.3767	1.32805	2.83299	1.4555	1.3415730	3.290-2	1.608-1	
450.0	2.0	225.000	2.1107	2.60227	4.3309	1.82623	2.83299	2.5615	1.8654583	3.550-2	1.633-1	
450.0	2.0	350.000	4.5492	3.22756	5.8941	2.22473	2.83299	2.6128	2.60302065	3.670-2	1.646-1	
450.0	2.0	475.000	7.2570	1.73506	2.1629	2.54816	2.83299	2.6128	2.6665043	3.740-2	1.654-1	

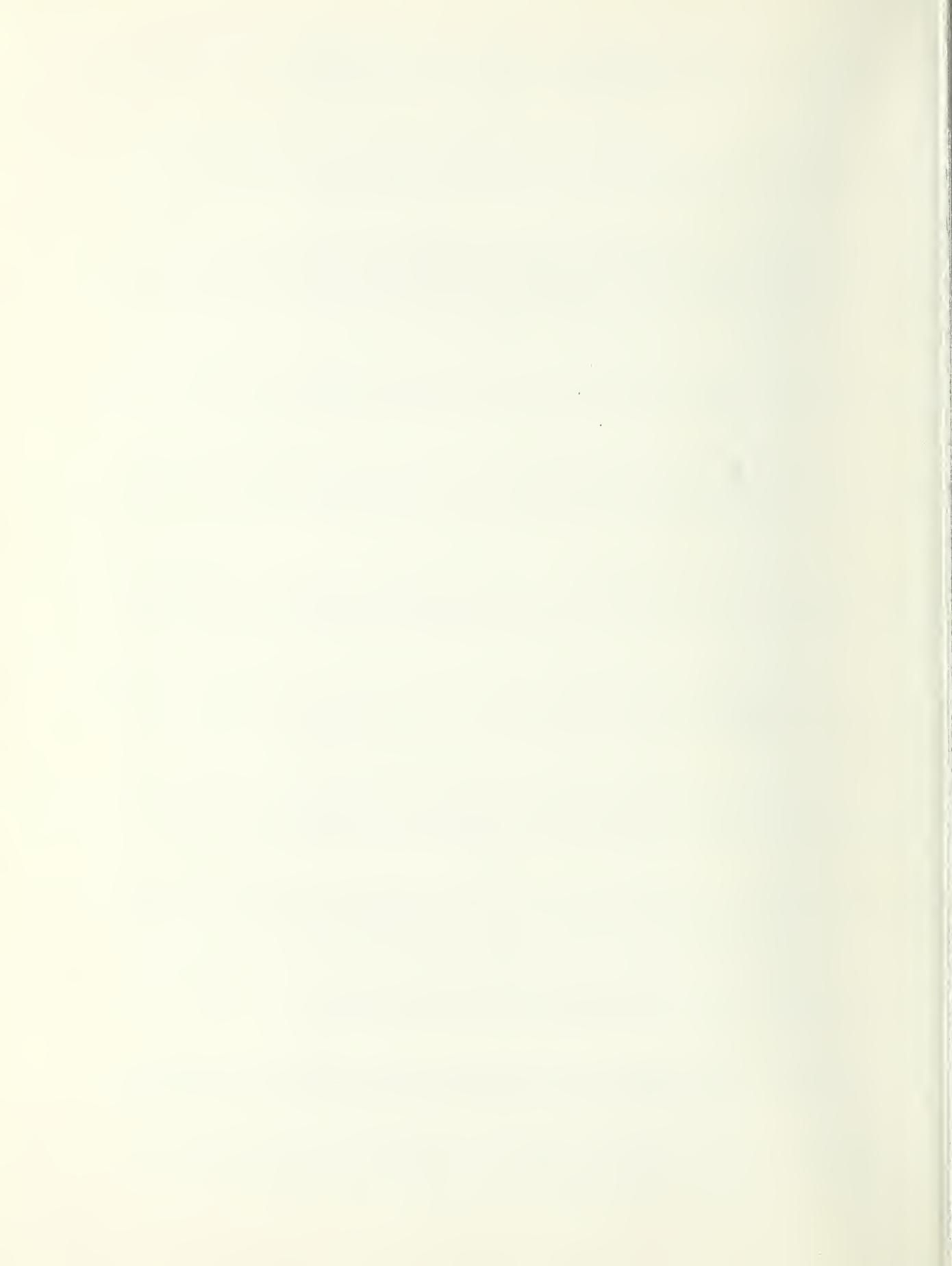
SURFACE_N	INIT THETA	HEIGHT_H	DELTA THETA	DELTA DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E
450.0	4.0	0.010	-1.8439-4	4.13909	1.5008-1	2.45725	2.46475-1	1.2323-1
450.0	4.0	0.020	-7.1312-4	4.27418	2.9475-1	4.83495-1	4.2323-1	2.000-7
450.0	4.0	0.050	-4.0576-3	4.65885	7.0055-1	1.15513	1.15513	0.000
450.0	4.0	0.100	-1.4165-2	5.24599	1.3015	2.15074	5.7783-1	5.170-3
450.0	4.0	0.200	-4.5602-2	6.28319	2.3077	3.90112	1.9340	4.000-6
450.0	4.0	0.305	-8.8144-2	7.24794	3.1697	5.45338	5.30904	5.642-3
450.0	4.0	0.500	-1.8081-1	8.82520	4.4499	7.88140	7.54164	2.000-5
450.0	4.0	0.700	-2.8485-1	1.02715	5.4694	9.97672	1.38307	1.000-6
450.0	4.0	1.000	-4.4674-1	1.22378	6.6415	1.26443	2.16016	1.400-6
450.0	4.0	1.524	-7.2604-1	1.53211	8.0340	1.64468	1.44858	1.200-5
450.0	4.0	2.000	-9.6830-1	1.78751	8.8537	1.90315	1.64300	1.200-5
450.0	4.0	3.048	-1.4471	2.29813	9.7836	2.44426	2.93719	1.000-4
450.0	4.0	5.000	-2.1568	3.12932	9.9292	3.16293	2.23368	1.3017
450.0	4.0	7.000	-2.7073	3.87294	9.2144	3.73407	2.38624	1.4567
450.0	4.0	10.000	-3.2893	4.84518	1.75820	4.42150	2.49266	1.6103
450.0	4.0	20.000	-4.0831	7.34053	1.9006	6.05912	2.56693	1.8617
450.0	4.0	30.480	-4.0110	9.2905	1.9535	7.30106	2.57254	1.9835
450.0	4.0	50.000	-2.7985	1.21284	2.0235	9.11433	2.57299	1.010
450.0	4.0	70.000	-7.9440-1	1.44536	2.15836	1.05962	2.57300	1.6178
450.0	4.0	90.000	1.6651	1.64438	2.0812	1.18645	2.57300	1.2118
450.0	4.0	110.000	4.4388	1.82091	2.5225	1.29895	2.57300	1.2437
450.0	4.0	225.000	2.3897	1.60249	2.4764	1.79706	2.57300	1.3376
450.0	4.0	350.000	4.8950	1.322774	2.0396	2.19553	2.57300	1.3827
450.0	4.0	475.000	7.6599	1.73521	2.3082	2.51894	2.57300	1.4091
450.0	8.0	0.010	-4.7301-5	8.07044	7.6009-2	1.24449	1.24828-1	1.2441-2
450.0	8.0	0.020	-1.8740-4	8.14055	1.5108-1	2.47819	2.48304-1	1.2422-1
450.0	8.0	0.050	-1.1376-3	8.34894	3.7090-1	6.11683	6.10859-1	3.0594-1
450.0	8.0	0.100	-4.3399-3	8.69023	7.2025-1	1.19854	1.19042	5.9717-1
450.0	8.0	0.200	-1.5928-2	9.35297	1.3624	2.30739	2.26758	1.1678
450.0	8.0	0.305	-3.3967-2	1.00265	1.9641	3.39105	1.29439	1.6667
450.0	8.0	0.500	-7.9008-2	1.12197	1.2197	5.22727	1.98243	2.5366
450.0	8.0	0.700	-1.3574-1	1.23896	1.7561	6.92179	1.47143	3.3185
450.0	8.0	1.000	-2.3254-1	1.40635	1.7528	9.19111	1.35833	4.3323
450.0	8.0	1.524	-4.1511-1	1.68147	1.9955	1.25847	1.09322	5.7660
450.0	8.0	2.000	-5.8378-1	1.91707	6.7516	1.52292	1.27258	8.191
450.0	8.0	3.048	-9.3347-1	2.0028	7.6314	2.00828	1.55095	8.5850
450.0	8.0	5.000	-1.4702	2.0507	1.7724	2.70413	1.83802	1.0737
450.0	8.0	7.000	-1.8891	3.93439	1.70711	3.20596	1.98761	1.2185
450.0	8.0	10.000	-2.3181	4.89442	5.4590	3.94305	2.09267	1.3607
450.0	8.0	20.000	-2.7605	7.37309	1.8474-1	5.56969	2.16640	1.6640
450.0	8.0	30.480	-2.4252	9.32475	1.0219	6.81705	2.17199	1.6950
450.0	8.0	50.000	-8.3501-1	1.21481	2.2076	8.61668	2.17244	1.7954
450.0	8.0	70.000	-1.8891	1.4807	1.44701	2.17882	1.0965	1.7245
450.0	8.0	90.000	4.2089	1.64582	1.02221	2.02582	1.03625	1.8877
450.0	8.0	110.000	7.2228	1.82221	2.72621	2.24876	1.7245	1.9839
450.0	8.0	225.000	2.7775	2.60339	4.6791	1.74661	2.17245	1.9896
450.0	8.0	350.000	5.3750	3.22846	6.2418	2.14497	1.7245	1.7505
450.0	8.0	475.000	8.2189	3.73582	7.5102	2.46831	1.7245	1.8002
450.0	8.0	700.000	1.4807	1.44701	2.17882	1.0965	1.8513	1.5202
450.0	8.0	900.000	4.2089	1.64582	1.02221	2.02582	1.03625	1.8877
450.0	8.0	1100.000	7.2228	1.82221	2.72621	2.24876	1.7245	1.9839
450.0	8.0	2250.000	2.7775	2.60339	4.6791	1.74661	2.17245	1.9896
450.0	8.0	3500.000	5.3750	3.22846	6.2418	2.14497	1.7245	1.8002
450.0	8.0	4750.000	8.2189	3.73582	7.5102	2.46831	1.7245	1.8002

SURFACE N	INIT THETA	HEIGHT H	DELTA THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E	
									ANGLE	ERROR
450.0	15.0	0.010	-1.3484-5	1.50376	1	4.0664-2	6.65776-1	6.67810-2	3.3390-2	6.6585175-1
450.0	15.0	0.020	-5.4040-5	1.50754	1	8.1079-2	1.32989	1.33248-1	6.6661-2	1.3300478
450.0	15.0	0.050	-3.3357-4	1.51889	1	2.0083-1	3.31226	3.30772-1	1.6566-1	3.3126565
450.0	15.0	0.100	-1.3092-3	1.53791	1	3.9555-1	6.58336	6.53810-1	2.2797-1	6.5841735
450.0	15.0	0.200	-5.0578-3	1.57631	1	7.6740-1	1.30056	1.27759	4.393-1	1.3007432
450.0	15.0	0.305	-1.1309-2	1.61718	1	1.1324	1.95810	1.90059	6.157-1	1.9583842
450.0	15.0	0.500	-2.8342-2	1.69375	1	1.7530	3.13603	2.98328	5.187	3.1365580
450.0	15.0	0.700	-5.1836-2	1.77341	1	2.3141	4.29965	3.99685	0.495	4.2904571
450.0	15.0	1.000	-9.5699-2	1.89414	1	3.0323	5.92582	5.35688	2.7769	5.9271130
450.0	15.0	1.524	-1.8777-1	2.10647	1	3.9911	8.54486	7.34315	3.8779	8.5471180
450.0	15.0	2.000	-2.8071-1	2.29891	1	4.6088	1.07049	8.80812	4.7211	1.0708331
450.0	15.0	3.048	-4.8953-1	2.71497	1	5.3659	1.48836	1.12045	6.2069	1.4890022
450.0	15.0	5.000	-8.3366-1	3.44702	1	5.4942	2.12132	2.38157	8.0886	2.1226496
450.0	15.0	7.000	-1.1084	4.13384	1	4.8329	2.64874	2.52234	9.3778	2.6509347
450.0	15.0	10.000	-1.3756	5.05610	1	3.2838	3.30078	2.62321	1.0640	3.3045216
450.0	15.0	15.0	-20.000	-1.4682	7	4.81204	-2.28392	4.89224	1.2608	4.9027886
450.0	15.0	30.480	-8.8273-1	9.41044	1	-7.0206	6.12521	2.70072	1.3491	6.1450420
450.0	15.0	50.000	1.0581	1.22138	2	-1.4025	7.91214	2.70118	1.4291	7.9537520
450.0	15.0	70.000	3.6592	1.45253	2	-1.9804	9.38521	2.70118	1.4723	9.4540430
450.0	15.0	90.000	6.6316	1.65066	2	-2.4757	1.06479	3.70118	1.4998	1.0748157
450.0	15.0	110.000	9.8631	1.82658	2	-2.9155	1.17690	3.70118	1.5194	1.1904260
450.0	15.0	225.000	3.1401	2.60641	2	-4.8651	1.67389	3.70118	1.5748	1.7131364
450.0	15.0	350.000	5.8204	2.23086	2	-6.4262	2.07185	3.70118	1.6004	2.1473472
450.0	15.0	475.000	8.7351	3.73787	2	-7.6938	1.39497	3.70118	1.6151	2.5133374
450.0	30.0	0.010	-3.4490-6	3.00188	1	2.0346-2	3.33130-1	3.34144-2	1.6707-2	3.3328056-1
450.0	30.0	0.020	-1.4037-5	3.00377	1	4.0606-2	6.66062-1	6.67346-2	3.3385-2	6.6636415-1
450.0	30.0	0.050	-8.4169-5	3.00949	1	1.0086-1	1.66353	1.66123-1	8.3202-2	1.6642931
450.0	30.0	0.100	-3.3399-4	3.01913	1	1.9957-1	3.32178	2.9883-1	1.6548-1	3.3233184
450.0	30.0	0.200	-1.3117-3	3.03886	1	3.9065-1	6.62223	6.50426-1	2.783-1	6.6253550
450.0	30.0	0.305	-2.9869-3	3.06026	1	5.8174-1	1.00641	9.76538-1	4.906-1	1.0069037
450.0	30.0	0.500	-7.7344-3	3.10139	1	9.1505-1	1.63915	1.55806	7.9316-1	1.6399829
450.0	30.0	0.700	-1.4598-2	3.14559	1	1.2262	2.27922	2.12038	1.0873	2.2804220
450.0	30.0	1.000	-2.8156-2	3.21519	1	1.6400	3.22217	2.90402	1.5054	3.2239747
450.0	30.0	1.524	-5.9051-2	3.34465	1	2.2245	4.81895	4.11491	2.1700	4.8219270
450.0	30.0	2.000	-9.2919-2	3.46905	1	2.6237	6.21520	5.06187	7.7134	6.2193765
450.0	30.0	3.048	-1.7674-1	3.75764	1	3.1485	9.1347	1.72361	3.7260	9.1206670
450.0	30.0	5.000	-3.3127-1	4.31623	1	3.2464	1.39431	2.71609	5.1100	1.3957282
450.0	30.0	7.000	-4.6181-1	4.88214	1	2.6999	1.82875	2.87380	6.1124	1.8310321
450.0	30.0	10.000	-5.7801-1	5.1308	1	4.47542	2.0786	1.22168	1.14653	1.0146
450.0	30.0	20.000	-4.0771-1	7.91881	1	1.3517	2.39563	2.07493	7.1143	2.3994578
450.0	30.0	30.480	3.1955-1	9.76150	1	-3.7409	3.86180	2.14081	8.6518	3.8724398
450.0	30.0	50.000	-3.3127-1	4.31623	1	-8.3080	5.03952	2.14608	9.3046	5.0594305
450.0	30.0	70.000	2.4198	1.24858	2	-1.5115	6.77602	2.14653	9.8613	6.8177055
450.0	30.0	100.000	-4.6181-1	4.88214	1	2.6999	1.82875	2.87380	6.1124	1.8310321
450.0	30.0	150.000	8.9713	3.74647	2	-7.7562	1.74691	2.0786	1.14653	1.0146
450.0	30.0	200.000	1.1492	1.67078	2	-2.5671	1.46686	2.14653	1.0322	1.0322
450.0	30.0	300.000	3.3329	2.84476	2	-3.0020	1.05754	3.14653	1.0444	1.0444
450.0	30.0	225.000	6.0568	3.24093	2	-6.4924	1.94732	3.14653	1.0924	1.0924
450.0	30.0	350.000	8.7351	3.73787	2	-7.7562	1.26951	3.14653	1.1007	1.1007

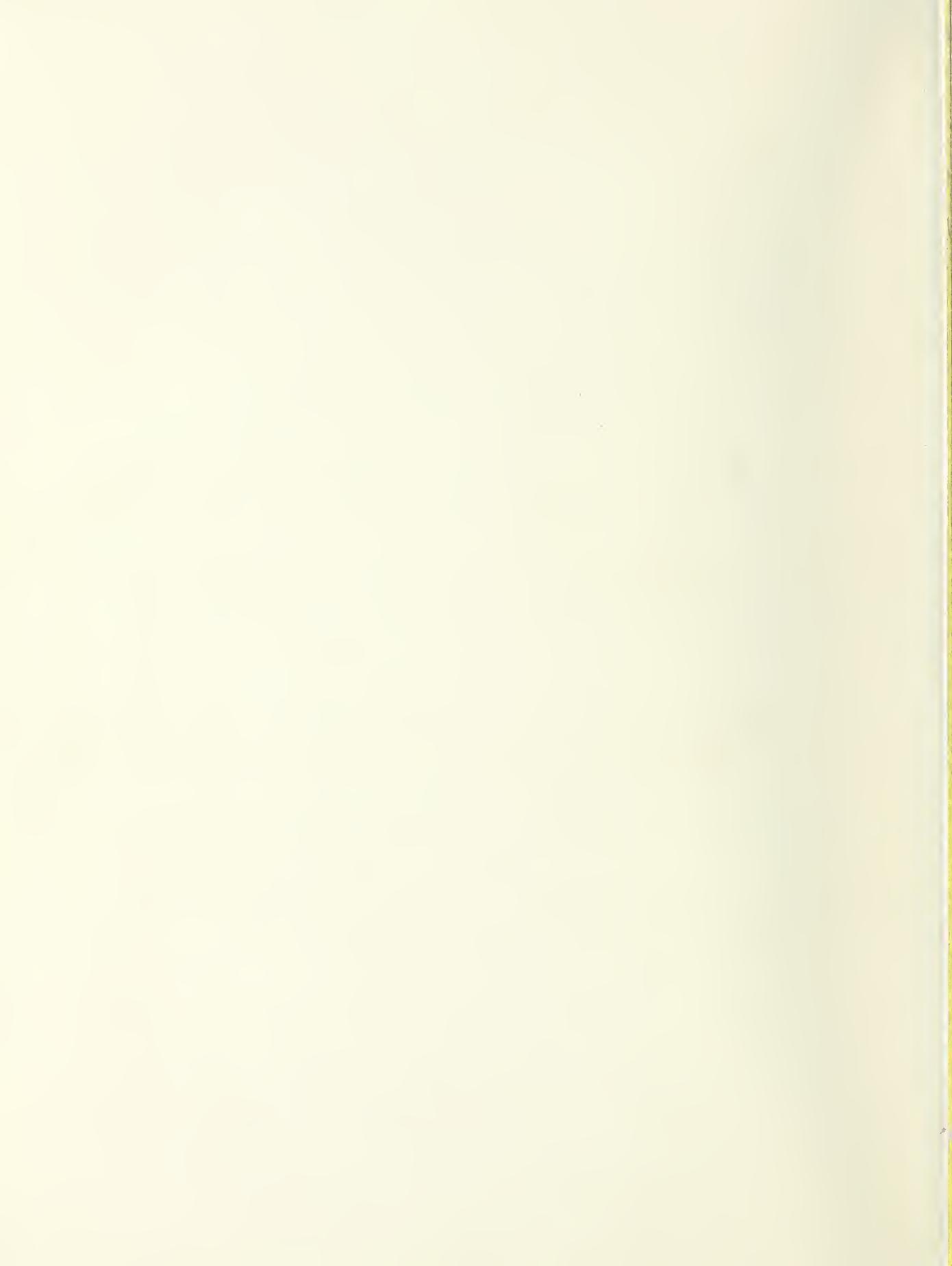
SURFACE N	INIT THETA	HEIGHT	DELTA H	THETA	DELTA THETA	DISTANCE	DELTA R-E	DELTA R	SLANT RANGE	TAU	ERROR ANGLE	
450.0	65.0	0.010	-8.8600-7	6.50086	1	9.3825-3	1.53621-1	1.54087-2	7.7078-3	1.5394679-1	0.000	
450.0	65.0	0.020	-3.7430-6	6.50174	1	1.8729-2	3.07230-1	3.07816-2	1.5398-2	3.0788109-1	1.000-8	
450.0	65.0	0.050	-1.8732-5	6.50438	1	4.6559-2	7.67897-1	7.66823-2	3.8407-2	7.6952645-1	1.000-8	
450.0	65.0	0.100	-7.0420-5	6.50884	1	9.2239-2	1.553522	1.52462-1	7.6483-2	1.5384929	0.000	
450.0	65.0	0.200	-2.8042-4	6.51800	1	1.8099-1	3.06831	3.01356-1	1.5189-1	3.0748729	0.000-7	
450.0	65.0	0.305	-6.4641-4	6.52800	1	2.7022-1	4.67569	4.53644-1	2.2951-1	4.6857451	0.000	
450.0	65.0	0.500	-1.6871-3	6.54736	1	4.2711-1	7.65397	7.27360-1	3.7027-1	7.6705915	2.000-7	
450.0	65.0	0.700	-3.2175-3	6.56839	1	5.7517-1	1.06991	1.94879-1	5.1016-1	1.0722580	1	
450.0	65.0	1.000	-6.2988-3	6.60196	1	7.7472-1	1.52477	1.37286	7.1172-1	1.5281666	1	
450.0	65.0	1.524	-1.3562-2	6.66590	1	1.0633	2.31334	1	1.97084	1.3186364	1	
450.0	65.0	2.000	-2.1832-2	6.72911	1	1.2662	3.02279	1	2.0393	3.029877	1	
450.0	65.0	3.048	-4.3476-2	6.88216	1	1.5444	4.55976	1	3.33310	1.8472	4.5710149	
450.0	65.0	5.000	-8.6913-2	7.20202	1	1.6004	7.32533	1	4.47404	2.6239	7.3452025	
450.0	65.0	7.000	-1.2589-1	7.55439	1	1.2588	1.00292	2	5.19313	3.2253	1.0059052	
450.0	65.0	10.000	-1.5667-1	8.09525	1	3.4820-1	1.38512	2	5.78177	3.85559	1.3897909	
450.0	65.0	15.000	-2.1164-2	9.79275	1	-3.5264	2.49831	2	6.27385	4.8517	2.5100487	
450.0	65.0	20.000	-5.0438-1	1.13331	2	-7.3444	3.48284	2	6.31797	5.2614	3.5040119	
450.0	65.0	30.000	-2.2334	1.37471	2	-1.3376	5.02148	2	6.32188	5.5875	5.0645845	
450.0	65.0	50.000	-4.4705	1.58336	2	-1.8592	1	6.35127	2	6.32192	5.7427	
450.0	65.0	70.000	-9.0000	1.76666	2	-2.3175	1	7.51940	2	6.32192	5.83339	
450.0	65.0	90.000	7.0688	1.93183	2	-2.7304	1	8.57203	2	6.32192	5.8948	
450.0	65.0	110.000	9.9329	2.68036	2	-4.6017	1	1.33424	3	6.0511	8.7089240	
450.0	65.0	225.000	2.9580	1	3.29006	2	-6.1260	1	1.72280	3	6.32192	1.3736658
450.0	65.0	350.000	5.4658	1	8.2294	1	3.78853	2	-7.3721	1	2.1151	1.7984833
450.0	65.0	475.000	4.75	1	3.	6.32192	2	2.04047	3	6.1496	2.1590315	
450.0	100.0	0.010	-1.3500-6	1.00005	2	1.2151-2	1.99347	-1	9.99710-2	9.9906-3	5.0022-3	
450.0	100.0	0.020	-3.8930-6	1.000011	2	3.0212-2	4.98242	-1	4.97570-2	2.4916-2	4.99680-1	
450.0	100.0	0.050	-5.8800-6	1.000028	2	5.9860-2	9.96420	-1	9.89482-2	4.9641-2	1.0014341	
450.0	100.0	0.100	-3.5160-5	1.000057	2	1.00116	2	1.1750-1	1.99220	1.95656-1	9.8615-2	
450.0	100.0	0.200	-1.2541-4	1.00181	2	1.00181	2	1.03699	2	2.94654-1	1.4907-1	
450.0	100.0	0.305	-2.6974-4	1.00307	2	2.7763-1	4.97566	4.72817	-1	2.4069-1	5.0009210	
450.0	100.0	0.500	-7.1824-4	1.00445	2	3.7417-1	6.96130	6.47256-1	3.3190-1	6.9967794	4.0000-7	
450.0	100.0	0.700	-1.3698-3	1.00664	2	5.0460-1	9.93425	8.94305	-1	4.6362-1	9.9852345	
450.0	100.0	1.000	-2.6754-3	1.01084	2	6.9405-1	1.51102	1	1.28680	6.7856-1	1.5188682	
450.0	100.0	1.524	-5.7891-3	1.01501	2	8.2792-1	1.97921	1	1.60432	8.6003-1	1.9896038	
450.0	100.0	2.000	-9.3634-3	1.02520	2	1.0131	3.00259	1	2.19099	1.2142	3.0187374	
450.0	100.0	3.048	-1.8793-2	1.04669	2	1.0511	4.87873	1	2.96499	1.7389	4.9061804	
450.0	100.0	5.000	-3.8075-2	1.056987	2	-1.1025	1	3.90550	2	3.8407	3.9519407	
450.0	100.0	7.000	-5.5617-2	1.07140	2	8.1636-1	6.75844	3.46455	2.1534	6.7882620	1.573-2	
450.0	100.0	10.000	-6.8553-2	1.11012	2	1.6093-1	9.49461	1	3.88547	2.5966	9.5544535	
450.0	100.0	20.000	4.6224-2	1.23913	2	-2.7864	1.79520	2	4.25573	3.3135	1.8090479	
450.0	100.0	30.480	4.0920-1	1.36390	2	-5.8791	2.59269	2	4.29147	3.6098	2.6165213	
450.0	100.0	50.000	1.5801	1.56987	2	-1.1025	1	3.90550	2	4.29480	3.8407	
450.0	100.0	70.000	3.2597	1.75514	2	-1.5657	1	5.08625	2	4.29484	3.9470	
450.0	100.0	90.000	5.2926	1.92181	2	-1.9824	1	6.14846	2	4.29484	4.0079	
450.0	100.0	110.000	7.5994	2.07438	2	-2.3638	1	7.12078	2	4.29484	4.0477	
450.0	100.0	225.000	4.9322	1	2.78365	2	-5.6121	1	1.64049	3	4.29484	4.1457
450.0	100.0	350.000	4.6671	1	3.37369	2	-6.8290	1	1.54012	3	4.29484	4.1838
450.0	100.0	475.000	7.1883	1	3.86048	2	-6.8290	1	1.85036	3	4.29484	4.2037

SURFACE N	INIT THETA	HEIGHT H	DELTA H	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E
450.0	200.0	0.010	-1.2180-5	2.00002	3.0106-3	4.93908-2	4.94816-3	5.0393070-2	0.000	2.265-5
450.0	200.0	0.020	-1.1752-5	2.00005	6.0129-3	9.87180-2	9.88540-3	4.09324-3	1.0072376-1	4.522-4
450.0	200.0	0.050	1.3518-5	2.00014	1.4958-2	2.46571-1	2.46306-2	1.02327-2	2.05159135-1	1.126-4
450.0	200.0	0.100	-1.9470-5	2.00028	2.9634-2	4.93335-1	4.89865-2	2.04583-2	5.0337195-1	2.240-4
450.0	200.0	0.200	-2.1160-5	2.00057	5.8187-2	9.86478-1	9.68851-2	4.08818-2	1.0065641	4.430-4
450.0	200.0	0.305	-5.2210-5	2.00090	8.6935-2	1.50415	1.45940-1	7.3831-2	1.0348054	6.678-4
450.0	200.0	0.500	-2.0032-4	2.00152	2.3756-1	2.46565	2.34287-1	1.01927-1	2.05159363	0.000
450.0	200.0	0.700	-3.2126-4	2.00220	1.8549-1	3.45105	3.20872-1	1.06454-1	3.0215145	-1.000-7
450.0	200.0	1.000	-6.5680-4	2.00329	2.5031-1	4.92876	4.43660-1	2.03000-1	5.0295635	1.000-7
450.0	200.0	1.524	-1.4437-3	2.00538	3.4469-1	7.50753	6.39204-1	3.03706-1	7.6615395	5.000-7
450.0	200.0	2.000	-2.3163-3	2.00747	4.1160-1	9.84726	7.97892-1	4.02772-1	1.0049827	1.000-7
450.0	200.0	3.048	-4.7122-3	2.01259	5.0464-1	1.49888	1.09262	6.0554-1	1.05299161	1.000-6
450.0	200.0	5.000	-7.4899-3	2.02362	5.2397-1	2.45234	1.48598	8.7150-1	2.0537424	1.000-6
450.0	200.0	7.000	-1.3772-2	2.03627	4.0103-1	3.42314	1.74386	1.0844	3.04958200	1.000-6
450.0	200.0	10.000	-1.6357-2	2.05670	5.6631-2	4.86668	1.96572	1.3155	4.09720871	1.000-6
450.0	200.0	20.000	2.5832-2	2.12839	1.5826	9.56508	1.69593	1.06979	9.07865350	1.000-5
450.0	200.0	30.480	1.6108-1	2.20263	3.4226	1.43098	2.01079	1.08583	1.04664045	2.000-5
450.0	200.0	50.000	6.4306-1	2.33446	6.7169	2.27132	2.19292	1.09823	2.03342720	2.000-5
450.0	200.0	70.000	1.4090	2.46161	9.8957	3.08164	2.19295	2.0381	3.01763160	2.000-5
450.0	200.0	90.000	2.4133	2.58190	1.2902	1.384822	2.19295	2.0693	3.09778664	2.000-5
450.0	200.0	110.000	3.6268	2.69624	1.5761	4.57694	2.19295	2.0893	4.07445639	2.000-5
450.0	200.0	225.000	1.3738	3.26810	3.0057	1.22139	2.19295	2.1361	8.06569675	2.000-5
450.0	200.0	350.000	2.9098	3.77843	4.2816	1.14737	3.19295	2.1529	1.2278110	3.000-2
450.0	200.0	475.000	4.725	4.21450	5.3717	1.42528	3.19295	2.1612	1.54899945	3.000-2
450.0	400.0	0.010	-5.0409-5	4.00001	4.00002	2.8796-3	1.4399-3	2.037713-2	2.037242-3	1.01815-3
450.0	400.0	0.020	-4.7020-5	4.00005	1.6510-5	7.1721-3	4.73965-3	4.03670-3	5.03670-3	2.03670-3
450.0	400.0	0.050	4.00006	4.00006	4.000013	1.8219-1	1.18096-2	5.09123-3	1.02835865	1.000-8
450.0	400.0	0.100	-5.0060-5	4.000013	1.4205-2	2.36630-1	2.34880-2	1.01798-2	2.05689426	1.000-8
450.0	400.0	0.200	-1.2400-6	4.000027	2.7902-2	4.73005-1	4.64570-2	2.03404-2	5.01355715-1	5.000-8
450.0	400.0	0.305	-5.5300-5	4.000043	4.1683-2	7.21425-1	6.99836-2	3.05707-2	7.03362550-1	8.000-8
450.0	400.0	0.500	-4.3180-5	4.000073	6.5976-2	1.18244	1.02361-1	5.07202-2	1.02838598	0.000
450.0	400.0	0.700	-1.3383-4	4.000105	8.8964-2	1.65545	1.53904-1	7.08924-2	1.07974511	0.000
450.0	400.0	1.000	-1.4800-4	4.000158	2.0008-2	2.36451	2.12836-1	1.01034-1	2.05674527	1.000-7
450.0	400.0	1.524	-3.5450-4	4.000258	1.65540-1	3.60298	3.06745-1	1.06174-1	3.0124385	0.000
450.0	400.0	2.000	-5.6900-4	4.000358	1.9756-1	4.72756	3.83014-1	2.00533-1	5.01338970	-1.000-7
450.0	400.0	3.048	-1.1094-3	4.000605	2.4234-1	7.20201	5.24862-1	2.09090-1	7.08220300	1.000-7
450.0	400.0	5.000	-2.0764-3	4.01137	2.5167-1	1.18046	1.08461	4.0119-1	2.0824179	1.000-6
450.0	400.0	7.000	-2.9822-3	4.01751	2.904-1	6.615120	8.39774-1	5.02231-1	1.07942789	1.000-6
450.0	400.0	10.000	-2.8760-2	4.02747	2.4004-2	2.35540	9.47979-1	6.03467-1	2.05605899	2.000-6
450.0	400.0	20.000	1.3261-2	4.06303	2.8935-1	4.68568	1.04874	8.02204-1	5.01014140	1.000-6
450.0	400.0	30.480	5.9764-2	4.10080	2.17253	7.09933	1.05955	9.0120-1	7.07415360	1.000-6
450.0	400.0	50.000	2.2782-1	4.17014	3.4581	1.15193	1.06067	9.06247-1	1.02598925	0.000
450.0	400.0	70.000	5.0654-1	4.23967	2.1962	1.59502	1.06069	9.8997-1	1.07498361	2.000
450.0	400.0	90.000	8.8903-1	4.30772	6.8975	2.02871	1.06069	1.0052	2.02323650	2.000
450.0	400.0	110.000	4.3709	4.03736	2.5637	2.45345	1.06069	1.0149	2.070774	2.000
450.0	400.0	225.000	5.9106	4.73336	2.7538	4.74137	1.06069	1.0374	5.03222215	3.000-5
450.0	400.0	350.000	1.3843	5.08443	2.6315	6.97869	1.06069	1.0451	7.9734265	2.000-5
450.0	400.0	475.000	2.4453	5.40291	3.4277	9.00836	1.06069	1.0488	1.0469791	3.000-3

SURFACE N	INIT THETA	HEIGHT H	DELTA THETA	THETA	DELTA THETA	DISTANCE	TAU	SLANT RANGE	DELTA R	DELTA R-E
450.0	900.0	0.010	3.6277-4	9.00000	2	4.9597-4	7.64761-3	1.2589128-2	0.000	5.659-6
450.0	900.0	0.020	-1.5789-4	9.00000	2	9.6269-4	1.59962-2	2.5610181-2	5.853-6	1.736-5
450.0	900.0	0.050	-1.1387-4	9.00002	2	2.4022-3	3.97676-2	3.0061-3	6.013-6	3.461-5
450.0	900.0	0.100	-2.2853-4	9.00004	2	4.7605-3	7.95352-2	7.88054-3	2.0061-3	6.287-5
450.0	900.0	0.200	4.2331-4	9.00009	2	9.3746-3	1.58369-1	1.55871-2	7.8591-3	2.5511108-1
450.0	900.0	0.305	-1.9267-4	9.00014	2	1.3981-2	2.42174-1	2.34810-2	1.1902-2	3.8945646-1
450.0	900.0	0.500	4.3274-4	9.00024	2	2.2150-2	3.96401-1	3.77008-2	1.9176-2	6.3808035-1
450.0	900.0	0.700	2.6293-4	9.00035	2	2.9861-2	5.55217-1	5.16414-2	2.6470-2	7.510-6
450.0	900.0	1.000	-1.7570-4	9.00053	2	4.0289-2	7.93567-1	7.14192-2	3.7041-2	8.9347630-1
450.0	900.0	1.524	3.1940-4	9.00086	2	5.5520-2	1.20883	1.02940-1	5.4250-2	1.9453030
450.0	900.0	2.000	-9.8500-5	9.00120	2	6.6303-2	1.58668	1.28545-1	6.8900-2	2.5531106
450.0	900.0	3.048	-7.9600-5	9.00203	2	8.1344-2	2.41766	1.76184-1	9.7645-2	3.8907857
450.0	900.0	5.000	-3.5660-4	9.00382	2	8.4473-2	3.96497	2.40010-1	1.4076-1	6.3822670
450.0	900.0	7.000	3.1170-4	9.00588	2	6.4422-2	5.04860	2.82082-1	1.7544-1	8.9342485
450.0	900.0	10.000	6.4800-4	9.00924	2	7.7612-3	7.92274	3.18553-1	2.1329-1	1.2761987
450.0	900.0	20.000	9.0290-3	9.02128	2	-2.6773-1	1.58149	1.52648-1	2.7653-1	2.5512695
450.0	900.0	30.480	2.8890-2	9.03417	2	-5.8714-1	2.40512	1.56339-1	3.0331-1	3.8862050
450.0	900.0	50.000	9.5280-2	9.05809	2	-1.1848	3.92987	3.56726-1	3.2406-1	6.3690685
450.0	900.0	70.000	2.0352-1	9.08241	2	-1.7928	5.47960	1.56731-1	3.3337-1	8.9081785
450.0	900.0	90.000	3.5147-1	9.10653	2	-2.3958	7.01688	1.56731-1	3.3854-1	1.1442531
450.0	900.0	110.000	5.4059-1	9.13046	2	-2.9940	8.54177	1.56731-1	3.4183-1	1.3972118
450.0	900.0	225.000	2.3965	9.26441	2	-6.3428	1.70787	3.56731-1	3.4941-1	2.8429085
450.0	900.0	350.000	5.8700	9.40339	2	-9.8172	2.59355	2.56731-1	3.5200-1	4.3982895
450.0	900.0	475.000	1.0816	1	9.53596	-2	-1.3131	1	3.43847	2
								3.56731-1	5.9383295	-2.000-5







THE NATIONAL BUREAU OF STANDARDS

The scope of activities of the National Bureau of Standards at its major laboratories, in Washington, D.C., and Boulder, Colo., is suggested in the following listing of the divisions and sections engaged in technical work. In general, each section carries out specialized research, development, and engineering in the field indicated by its title. A brief description of the activities, and of the resultant publications, appears on the inside front cover.

WASHINGTON, D.C.

Electricity and Electronics. Resistance and Reactance. Electron Devices. Electrical Instruments. Magnetic Measurements. Dielectrics. Engineering Electronics. Electronic Instrumentation. Electrochemistry.

Optics and Metrology. Photometry and Colorimetry. Optical Instruments. Photographic Technology. Length. Engineering Metrology.

Heat. Temperature Physics. Thermodynamics. Cryogenic Physics. Rheology. Molecular Kinetics. Free Radicals Research.

Atomic and Radiation Physics. Spectroscopy. Radiometry. Mass Spectrometry. Solid State Physics. Electron Physics. Atomic Physics. Neutron Physics. Radiation Theory. Radioactivity. X-ray. High Energy Radiation. Nucleonic Instrumentation. Radiological Equipment.

Chemistry. Organic Coatings. Surface Chemistry. Organic Chemistry. Analytical Chemistry. Inorganic Chemistry. Electrodeposition. Molecular Structure and Properties of Gases. Physical Chemistry. Thermochemistry. Spectrochemistry. Pure Substances.

Mechanics. Sound. Mechanical Instruments. Fluid Mechanics. Engineering Mechanics. Mass and Scale. Capacity, Density, and Fluid Meters. Combustion Controls.

Organic and Fibrous Materials. Rubber. Textiles. Paper. Leather. Testing and Specifications. Polymer Structure. Plastics. Dental Research.

Metallurgy. Thermal Metallurgy. Chemical Metallurgy. Mechanical Metallurgy. Corrosion. Metal Physics.

Mineral Products. Engineering Ceramics. Glass. Refractories. Enameled Metals. Constitution and Microstructure.

Building Technology. Structural Engineering. Fire Protection. Air Conditioning. Heating and Refrigeration. Floor, Roof, and Wall Coverings. Codes and Safety Standards. Heat Transfer. Concreting Materials.

Applied Mathematics. Numerical Analysis. Computation. Statistical Engineering. Mathematical Physics.

Data Processing Systems. SEAC Engineering Group. Components and Techniques. Digital Circuitry. Digital Systems. Analog Systems. Applications Engineering.

• Office of Basic Instrumentation. • Office of Weights and Measures.

BOULDER, COLORADO

Cryogenic Engineering. Cryogenic Equipment. Cryogenic Processes. Properties of Materials. Gas Liquefaction.

Radio Propagation Physics. Upper Atmosphere Research. Ionosphere Research. Regular Prediction Services. Sun-Earth Relationships. VHF Research. Radio Warning Services. Airglow and Aurora. Radio Astronomy and Arctic Propagation.

Radio Propagation Engineering. Data Reduction Instrumentation. Radio Noise. Tropospheric Measurements. Tropospheric Analysis. Propagation-Terrain Effects. Radio-Meteorology. Lower Atmosphere Physics.

Radio Standards. High-Frequency Electrical Standards. Radio Broadcast Service. Radio and Microwave Materials. Electronic Calibration Center. Microwave Physics. Microwave Circuit Standards.

Radio Communication and Systems. Low Frequency and Very Low Frequency Research. High Frequency and Very High Frequency Research. Modulation Systems. Antenna Research. Navigation Systems. Systems Analysis Field Operations.

