KRONIC - A COMPUTER PROGRAM
FOR CALCULATING ANNUAL AVERAGE
EXTERNAL DOSES FROM CHRONIC
ATMOSPHERIC RELEASES
OF RADIONUCLIDES
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by

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Occupational and Environmental Safety Department

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ABSTRACT

Mathematical models and a computer program are described for calculation of annual average beta and gamma doses resulting from chronic release of radionuclides to the atmosphere. The dose calculations are performed for each sector about the release point and use joint frequency of occurrence data for atmospheric stability and wind speed. A complete program listing is provided together with input instructions and sample problems.

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SUMMARY

This report describes a computer program for calculating annual external total body tissue dose from chronic release of radionuclides to the atmosphere. The external total body tissue dose is a function of the:

- radionuclides present
- release path phenomena from fuel to atmosphere
- climatology for the site
- time dependence of fission product concentrations
- photon and beta particles emitted from nuclides
- physical properties describing interaction of photons and beta particles with air and tissue.

The problems associated with release path phenomena are bypassed in this study by specifying the nuclide release rate to the atmosphere as a starting parameter.

Atmospheric dispersion effects are estimated using data on joint frequency of occurrence of wind speed, wind direction and stability for a particular site. Each sector is considered to be a plume for which the center line ground level dose is calculated for specified downwind distances. The result of the calculation is a table of annual dose rates as a function of direction and distance from the release point.

Both photons and beta particles can give significant contributions to the external total body dose. The beta dose contribution is easily calculated using a semi-infinite cloud model. This model may be used because the range of beta particles in air is short compared to the dimensions of plumes considered. The gamma dose calculation is more complicated

because of the relatively long range of photons in air. To properly determine the gamma contribution it is necessary to perform a space integration over the plume volume. The integration technique used in the reactor accident analysis computer program RACER⁽¹⁾ is employed in KRONIC except that here the plume width is determined by sector boundaries rather than by a Gaussian concentration gradient. The gamma dose is calculated as a tissue dose at the body surface, at 1 cm depth and at 5 cm depth. The beta dose and gamma doses are reported separately, however, the beta dose and gamma surface dose may be added and reported as skin dose if desired.

DESCRIPTION OF MATHEMATICAL MODELS

This section describes mathematical models used to calculate gamma and beta doses and normalized air concentrations. For convenience the expressions for gamma dose will be discussed first followed by the beta dose and normalized air concentration equations.

Total Body Tissue Dose from Gamma Radiation

The basic equation for the external total body tissue dose rate from a gamma emitting radionuclide present in an incremental volume of a cloud is:

$$d_Y = K_k \frac{\chi B(\mu_k r) \exp(-\mu_k r)}{4\pi r^2} dx dy dz \quad (1)$$

where:

d_Y • incremental dose rate to tissue, (rad/sec)/(MeV/dis),
from gamma radiation emitted from an incremental cloud
volume, dx, dy, dz at a distance r meters from the point
of interest.

χ • concentration in incremental cloud volume, Ci/m³.

$B(\mu_k r)$ • dose buildup factor for air.

- μ_k • total linear attenuation coefficient in air, m^{-1} , for photons with gamma energy in energy group k.
- K_k • dose conversion factor, $(rad \cdot m^2)/(Ci \cdot sec)$ per MeV/disintegration.

The constant K_k is:

$$K_k = \frac{3.70 \times 10^{10} \frac{\text{dis}}{\text{Ci} \cdot \text{sec}} 1.60 \times 10^{-6} \frac{\text{erg}}{\text{MeV}} 10^{-4} \frac{m^2}{cm^2} \left(\frac{\mu_a}{\rho}\right)_k}{100 \frac{\text{ergs}}{g \cdot rad}}$$

$$= 0.0592 \left(\frac{\mu_a}{\rho}\right)_k$$

where:

- $\left(\frac{\mu_a}{\rho}\right)_k$ • mass absorption coefficient, cm^2/g in tissue for average gamma energy of energy group k.

A quadratic expression is used to calculate the dose buildup factor.

$$B(\mu_k r) = 1 + A_k \mu_k r + \alpha_k (\mu_k r)^2 \quad (2)$$

where:

- A_k and α_k are empirical constants determined to fit buildup factor data of Berger. ⁽²⁾

Since dose rate is a function of γ -ray energy, the gamma spectrum has been divided into energy groups. The incremental dose is calculated separately as a function of photon energy and integrated over the cloud volume to obtain dose rate factors for each energy group. The dose rate factors are coupled with radionuclide release rate data and site climatology data to give annual dose rates. This procedure is indicated in the equations below.

Before integrating Equation (1), it is first necessary to describe mathematically the plume concentration, χ . To obtain a useful expression, several assumptions are necessary:

- Diffusion along the direction of cloud travel can be ignored.

- Vertical crosswind concentration is normally distributed and the standard deviation is a function of atmospheric stability and distance from the release point. In some dispersion models, the standard deviation is wind speed dependent.
- The dose receptor is at ground level.
- Cloud depletion by fallout, washout and rainout can be described by a factor dependent on the distance of travel and is independent of travel time and displacement from the centerline.
- The concentration of radionuclides in the cloud at distances beyond 3 standard deviations in the vertical direction is insignificant and therefore makes little contribution to the dose rate. Radionuclide concentrations at distances greater than ± 800 meters in the direction of cloud travel can also be ignored.
- A radionuclide decay factor is calculated for each radionuclide based on travel time to the exposure point. This decay factor is used for all downwind integration points (i.e. over ± 800 meters from the exposure point).

The crosswind plume concentration for a sector of width w at height z is given by; ⁽³⁾

$$\bar{X} = Q_0 F_d \left(\frac{2}{\pi} \right)^{1/2} \frac{\exp \left[-(z - h)^2 / 2\sigma_z^2 \right]}{2 \sigma_z \bar{u}_h w} \quad (3)$$

where $\bar{u}_h$ • average wind speed in direction of travel measured at height of release, m/sec.

σ_z • crosswind vertical standard deviation of cloud concentration, m.

h • height of release, m.

z • height of incremental element of cloud, m.

F_d • radioactive decay factor, for decay during transit.

Q_0 • rate of release from source, curies/sec.

w • sector width, $2\pi x/n$, m.

n • number of sectors (equal size) in 360 degrees.

x • distance from source to downwind point of interest, m.

Equation 3 does not include a factor of two for ground reflection.

The dose rate from all radionuclides within the plume is obtained by performing a space integration of Equation (1) with $\bar{x}$ defined by Equation (3). For a given nuclide, sector and distance from release point the dose rate is (rads/sec):

$$D'_Y = Q'_0 \sum_{i=1}^{\text{Wind Speeds}} (F_d)_i \sum_{j=1}^{\text{Stability Types}} 0.01 f_{ij} \sum_{k=1}^{\text{Energy Groups}} DRF_k \sum_{l=1}^{\text{Photons in Group K}} (A_k E_{Ykl})_l \quad (4)$$

where:

A_{kl} • abundance of l-th photon in energy group k, photons/disintegration

E_{Ykl} • energy of l-th photon in energy group k, MeV/photon.

f_{ij} • joint frequency of occurrence in the sector of interest for wind speed i and atmospheric stability class j, percent.

$$DRF_k = \left(\frac{2}{\pi}\right)^{1/2} \frac{n}{4\pi u_h} \int_{x_1}^{x_2} \int_{z_1}^{z_2} \exp \left[\frac{-(z-h)^2/2\sigma_z^2}{\sigma_z x} \right] \int_{y_1}^{y_2} \frac{B(\mu_k r) \exp(-\mu_k r) K_k}{4\pi r^2} dx dy dz \quad (5)$$

The Dose Rate Factors, DRF, have units of rad/sec per curies (at the distance of interest) per MeV/disintegration from photons in energy group k. The dose rate from all nuclides is obtained by adding the contributions from all nuclides present. Since the release rate, Q'_0 is assumed to be constant for chronic releases, the annual dose is proportional to the instantaneous rate given by Equation 4:

$$D_Y = 3.156 \times 10^{10} \sum_{i=1}^{\text{Nuclides}} (D_Y)_i \frac{\text{mrad}}{\text{year}} \quad (6)$$

where: $3.15576 \times 10^{10} = 3.156 \times 10^7 \text{ sec/y} \times 10^3 \text{ mrad/rad}$

The decay factor, F_{di} , at a distance x from the source is calculated from the release rate at Q_0 , and the travel time. An elaborate decay scheme is used to account for chain decay including transistions to and from isomeric states. The general equation for such a scheme is:

$$\frac{d M_i}{dt} = \sum_j \lambda_j K_j^i M_j - \lambda_i M_i \quad (7)$$

where: M_i • rate of release for nuclide i after decay for travel time T , atoms/sec.
 M_j • rate of release of parent nuclide j , atoms/sec.
 λ_i • decay rate constant for nuclide i (sec^{-1}).
 K_j^i • branching ratio for nuclide j decaying to nuclide i .

Then:

$$(F_d)_i = \frac{M_i}{(M_0)_i} \quad (8)$$

where: $(M_0)_i$ • initial rate of release for nuclide i , atoms/sec.

The summation is over all nuclides, j , decaying directly to nuclide i .

The vertical crosswind standard deviation, σ_z , may be calculated by the Hanford equations,⁽⁴⁾ the Sutton equation⁽⁵⁾ or taken from curves attributed to Pasquill.⁽³⁾ The values of σ_z depend on atmospheric stability in all three methods.

The Hanford equation for σ_z is

$$\sigma_z^2 = a \left[1 - \exp(-k^2 T^2) \right] + bT \quad (9)$$

where: a , b and k are parameters for describing the atmospheric condition and T is the time of travel to the exposure point, sec.

The Sutton equation defines the variance as:

$$\sigma_z = \frac{C_z x^{(2-n)/2}}{\sqrt{2}} \quad (10)$$

where: C_z and n are parameters describing the meteorological condition and x is downwind distance from the release point to the cloud position (i.e., to the incremental volume element $dx dy dz$).

Appendix C gives values of the parameters for the Hanford and Sutton equations and tabulated values of σ_z for the Pasquill stability categories.

Equation 6 gives the annual dose to the surface tissue. The dose to tissue below the surface is calculated by applying an attenuation factor to the dose rate factor of Equation 4.

$$D'_\gamma(d) = Q'_0 \sum_{i=1}^{\text{wind speed}} (F_d)_i \sum_{j=1}^{\text{stability type}} 0.01 f_{ij} \sum_{k=1}^{\text{energy group}} DRF_k e^{-\mu'_k d} \sum_{l=1}^{\text{photons in group k}} (A_k E_{\gamma k})_l \quad (11)$$

where the terms are as defined for Equation 4 and

$D'_\gamma(d)$ • gamma tissue dose at a depth d , rads/sec

d • depth in tissue of exposure point, cm

μ'_k • linear total attenuation coefficient of water for photons in energy group k , cm^{-1} .

Surface Tissue Dose from Beta Radiation

The beta dose calculation is considerably simpler than the gamma dose calculation. Because of the short range of beta particles in air, the radionuclide cloud may be assumed to be semi-infinite in dimension. With this assumption the annual beta dose in air is: ⁽³⁾

$$D_\beta = 1.44 \times 10^8 Q'_0 \bar{E}_\beta \sum_{i=1}^{\text{wind speed}} (F_d)_i \sum_{j=1}^{\text{stability type}} f_{ij} \left(\frac{\bar{x}}{Q'} \right)_{ij} \quad (12)$$

where: D_β • annual beta surface tissue dose, mrad/year.

$\bar{E}_\beta$ • average beta energy per disintegration, MeV/dis.

$\left(\frac{\bar{x}}{Q'}\right)_{ij}$ • normalized air concentration at exposure point for wind speed i and stability j , $(\text{Ci}/\text{m}^3)/(\text{Ci}/\text{sec})$.

$$1.44 \times 10^8 = \frac{(1.6 \times 10^{-6} \text{ erg/MeV})(3.7 \times 10^{10} \text{ dis/Ci} \cdot \text{s})(3.156 \times 10^7 \text{ s/y})(10^3 \text{ mrad/rad})}{100 \text{ percent } (1293 \text{ g/m}^3)(100 \text{ erg/g} \cdot \text{rad})}$$

Values for $\left(\frac{\bar{x}}{Q'}\right)_{ij}$ are calculated by Equation 3 with allowance made for release height dependence on wind speed and effects of terrain elevation on effective plume height. The modified form of Equation 3 is as follows:

$$\left(\frac{\bar{x}}{Q'}\right)_{ij} = \left(\frac{2}{\pi}\right)^{1/2} \frac{\exp\left[-\frac{H_x^2}{2\sigma_z^2}\right]}{\sigma_z \bar{u}_h w} \quad (13)$$

where: the terms are as defined for Equation 3 and

H_x • difference between release height and elevation of terrain at distance x in the sector being considered, meters.

If the terrain is higher than the release height, then H_x is set to zero. A value of $\bar{x}/Q'$ is calculated for each combination of wind speed, downwind distance, and atmospheric stability for each sector. These are used to calculate dose rate factors similar to the gamma dose rate factors of Equation 5.

$$\text{DRF}_\beta = 1.44 \times 10^8 \left(\frac{\bar{x}}{Q'}\right) \quad (14)$$

The total annual beta surface tissue dose from a particular radionuclide and for a given sector and downwind distance is:

$$D_\beta = 1/2 Q_0' \sum_{i=1}^{\text{wind speed}} (F_d)_i \sum_{j=1}^{\text{stability type}} \text{DRF}_\beta \bar{E}_\beta \quad (15)$$

A geometry factor of $1/2$ is introduced in Equation 15 to account for the presence of the human body which shields surface tissue from approximately half of the beta particles.

Calculation of Normalized Air Concentration

The normalized air concentration may be calculated separately from the dose rate calculations. For this calculation a modified form of Equation 13 is used which accounts for building wake effects:

$$\left(\frac{\bar{x}}{Q'}\right) = \frac{0.01}{w} \left(\frac{2}{\pi}\right)^{1/2} \sum_{i=1}^{\text{wind}} \sum_{j=1}^{\text{type}} \frac{f_{ij} \exp \left[-H_x^2 / 2 (\sigma_z^*)^2 \right]}{(\sigma_z^*)_{ij} (\bar{u}_h)_i} \quad (16)$$

where the terms are as defined for Equation 13 and:

$$\sigma_z^* = \left(\sigma_z^2 + cA/\pi \right)^{1/2} \quad (17)$$

where

c • building wake coefficient

A • cross sectional area of the building, m².

The values of $\bar{x}/Q'$ as calculated by Equation 16 are the total normalized air concentration summed over windspeed and atmospheric stability. This is in contrast to Equation 13 which is for a particular wind speed and stability.

COMPUTER PROGRAM

The models described in the previous section have been incorporated into a computer program for use on UNIVAC 1108 computers. The program is divided into two separately executable parts:

1. FDOSE - calculation of dose rate factors.
2. CHRONI - does and air concentration calculation.

A listing of the program is given in Appendix D. Input card preparation is described in Appendix A and sample problems are given in Appendix C.

FDOSE

This program calculates dose rate factors by performing the space integration indicated in Equation 5. A modified version of subroutine PLUME from the computer program RACER is used to perform the numerical integration.⁽¹⁾ The actual integration is performed in the following order: y direction (lateral), z direction (vertical) and x direction. The first two integrations are performed for each position in the x direction (as located to give sufficient accuracy). The resulting double integral represents the dose rate per unit length of downwind plume per curie of a nuclide. The integration is performed for each energy group at each x position. Integration in the x direction then gives the dose rate factors.

All integrations are performed by an 8 point polynomial integration subroutine.

$$\int_{x_1}^{x_8} f(x) dx = \frac{x_8 - x_1}{7C} \sum_{i=1}^8 f(x_i) W_i \quad (18)$$

where C is 17280 and W_i are the integration weights as follows:

$$W_1 = W_8 = 751$$

$$W_2 = W_7 = 3577$$

$$W_3 = W_6 = 1323$$

$$W_4 = W_5 = 2989$$

Each integration range is divided into sections and Equation 18 is applied to each section. This technique allows computing time to be minimized without loss of accuracy.

The dose rate factors are automatically punched onto cards for future use. They may be used directly for gamma dose calculation program CHRONI, or they may be incorporated into a dose rate factor library (see Appendix B) for direct access by the computer.

CHRONI

This program calculates gamma doses, beta doses and normalized air concentrations. The calculations are straight forward and are as indicated by the equations of the previous section. However, several features are worth mentioning.

- The program is divided into two parts: SOURCE for specification of nuclide release rates and JOINT for dose and air concentration calculations.
- Data is included for nearly 600 radionuclides which include fission products and activation products.
- Since dose rate factor libraries are calculated for a specific set of distances, the user is somewhat limited to the exposure points he can consider for the gamma dose calculation. Therefore a section was added to the program which interpolates the doses for the standard distances and prints a report for intermediate distances. A polynomial interpolation is used of order from one (linear) to nine as specified by the user. The interpolation is performed on the logarithms of the data. The interpolation may fail for elevated release in the beta dose calculation at distances within 1000 meters: for this case the output should be checked (by plotting) to ensure accuracy.

- Separate calculations are performed for gamma doses, beta doses and normalized air concentrations. If desired the beta dose may be added to a previous gamma dose (at surface of tissue) and reported as skin dose.
- When multiple release heights are to be considered, separate release inventories may be supplied for each height. Also the doses from each height may be added to give total dose.

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ERRATA

1. Page A.12

The description of $KINT \leq 1$ under card type 12 should read:

$KINT \leq 1$ no interpolation will be done; card 13 is not read.

2. Page C.2, Table C.3

The value for σ_z for Pasquill type F at 70,000 meters should be 86 (not 36) meters.

3. Page E.67

Line 571 was omitted. Values for this line are:

.7863-04, .4255-04, .2299-04, .2306-04
.2147-04, .2036-04, .1978-04, .1856-04

APPENDIX A
INPUT PREPARATION

APPENDIX A

INPUT PREPARATION

The preparation of input cards for KRONIC is described in this Appendix. The input to part one, FDOSE, will be discussed first followed by instructions for part two, CHRONI.

Part I - FDOSE

Program FDOSE calculates dose rate factors as a function of energy (see Equation 5 of text). The current version uses the energy groupings of photon probability library ISOLIB (see Appendix B).

Input to FDOSE is by card sets. Each set will command dose rate factor calculation for up to ten combinations of atmospheric stability, wind speed and downwind distance. The usual procedure is to vary distance within each card set keeping wind speed and atmospheric stability constant. Additional sets are then used for different wind speeds or atmospheric stabilities. The dose rate factors calculated are automatically punched onto cards for use by CHRONI or for preparation of a dose rate factor library.

The first data card of each set is a title card and contains 80 characters of alphanumeric data. This title is printed as a heading on the output report. The second card of each set indicates the number of cases for the set (Format I2). One case corresponds to one combination of distance, wind speed and stability. A maximum of ten cases are allowed per set.

Each case is described by a "TYPE" card of the following format:

<u>COLUMN</u>	<u>FORMAT</u>	<u>DESCRIPTION</u>
1-2	I2	Variable TYPE which indicates the type of meteorological model to be considered. TYPE has an integer value from 1 to 9 as follows:

<u>COLUMN</u>	<u>FORMAT</u>	<u>DESCRIPTION</u>																				
		<table><tr><th><u>TYPE</u></th><th><u>METEOROLOGICAL MODEL</u></th></tr><tr><td>1</td><td>Sutton equation</td></tr><tr><td>2</td><td>Hanford equations</td></tr><tr><td>3</td><td>σ_z input</td></tr><tr><td>4</td><td>Pasquill curve type A</td></tr><tr><td>5</td><td>Pasquill curve type B</td></tr><tr><td>6</td><td>Pasquill curve type C</td></tr><tr><td>7</td><td>Pasquill curve type D</td></tr><tr><td>8</td><td>Pasquill curve type E</td></tr><tr><td>9</td><td>Pasquill curve type F</td></tr></table>	<u>TYPE</u>	<u>METEOROLOGICAL MODEL</u>	1	Sutton equation	2	Hanford equations	3	σ_z input	4	Pasquill curve type A	5	Pasquill curve type B	6	Pasquill curve type C	7	Pasquill curve type D	8	Pasquill curve type E	9	Pasquill curve type F
<u>TYPE</u>	<u>METEOROLOGICAL MODEL</u>																					
1	Sutton equation																					
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4	Pasquill curve type A																					
5	Pasquill curve type B																					
6	Pasquill curve type C																					
7	Pasquill curve type D																					
8	Pasquill curve type E																					
9	Pasquill curve type F																					
10	L1	Logical variable DEPLET which indicates if cloud depletion factors are to be submitted. When DEPLET is false (F), no depletion data is read.																				
11-20	F10.0	Average wind speed, $\bar{u}$, in meters/second.																				
21-30	F10.0	Distance from release point to exposure point, meters.																				
31-40	F10.0	Height of release, meters.																				
41-50	F10.0	Lateral distance from sector centerline to exposure point, meters.																				
51-60	F10.0	Numbers of sectors. For 22.5° sectors this number should be 16. For other size sectors this number should be																				

$$\frac{360^\circ}{\text{degrees per sector}}$$

The number of sectors may be fractional, i.e., 17.5 for a 20.5° sector.

The remaining data cards for this case depend on the values of TYPE and DEPLET specified on the above card.

<u>TYPE</u>	<u>INPUT</u>
1	One card containing Sutton equation parameters C_z and n in Format 2F10.0.
2	One card containing Hanford equation parameters in the order a , b , and k^2 in Format 3F10.0.
3	This mode indicates values of σ_z are to be input directly.
4-9	Pasquill weather conditions -- no additional cards needed.

When TYPE = 3 values of σ_z are calculated from input data, the first card contains the number (I3) of positions for which values of σ_z are to be read (maximum of 20). The next cards contain the distances (meters) for which the σ_z values correspond (8F10.0) in increasing order. The next set of cards contain the values of σ_z (meters) corresponding to the distances. The program performs a linear interpolation of the data to get values at the necessary distances. When data is not supplied for large enough distances, the code uses the values for the largest distance given. When the variable DEPLET is true (T), depletion data are read next [if DEPLET is false (F), there is no more data]. The depletion factors represent the fraction of material remaining airborne at a given downwind position. The first data card for depletion factors contains the number of factors to be entered (Format I3). The next cards contain pairs of distances (meters) and corresponding depletion factors (Format 8F10.0) -- four pairs per card. The data pairs must be input in order of increasing distances. The depletion data is interpolated in the same manner as the σ_z data described above.

In summary, input cards to FDOSE are:

1. Title Card
2. Number of Cases, ND
3. TYPE Card for case 1
- 3a. Necessary data cards depending on values of TYPE and DEPLET.
-
-
-
4. TYPE Card for case 2.

4a. Necessary data cards.

—

—

—

5. TYPE Card for case 3.

5a. Necessary data cards.

—

—

—

N Last TYPE Card (for case ND)

Na Necessary data cards.

It is apparent that a large number of data cards may be necessary when σ_2 values are input or when depletion data is supplied. For this reason these modes of operation are not recommended when large sets of dose rate factors are to be calculated.

Part II - CHRONI

There are two main subroutines in CHRONI: SOURCE for radionuclide release rate specification and JOINT for beta dose, gamma dose and normalized air concentration calculation.

The input to each main subroutine consists of a "packet" of cards describing the calculations to be performed. In each packet there is a title card, a "control word" card and data cards. The title card contains 80 characters of alphanumeric data and is the first card of each packet. The title card must be present even though it has no effect on the calculations. The second card of each packet is the control word card. The first word of this card must be the name of one of the main subroutines: SOURCE or JOINT. The first word must start in column one. Other words (described below) can be anywhere on the card and in any order, but must be separated by at least one blank space. None of the control words can have interior blanks. The remaining cards in each packet are data cards.

SOURCE Input

The control word card for the SOURCE packet may contain the following words:

<u>WORD</u>	<u>PURPOSE</u>
SOURCE	Direct control to subroutine SOURCE. This must be the first word on the card.
LIBRARY	Cause a radionuclide data library and a photon probability library to be read. LIBRARY must be present in the first SOURCE packet. A library DAT card must be supplied for each library:

Δ DAT THERM, 1

Δ DAT ISOLIB, 2

(These are control cards for a UNIVAC 1108)

The first card after the control word card contains the number of radionuclides to be considered (Format I3). The following cards give the release rate in curies/second for each nuclide with data for four nuclides per card. Twenty columns are used for each nuclide as follows:

<u>COLUMN</u>	<u>Use</u>
1-3	Character name of the nuclide left adjusted. Isomers are indicated by an asterisk; i.e., KR*. Format is A3.
4-6	Atomic mass number of the nuclide right adjusted (I3).
7-20	Nuclide release rate in curies/sec (E14.0).
21-23	Character name of second nuclide.

etc.

The radionuclides supplied must be taken from the fission products and activation products available in the radionuclide data library. The program will stop if it encounters an unidentifiable nuclide.

JOINT Input

Subroutine JOINT uses the SOURCE release rate inventory to calculate the beta or gamma dose in mrad/year. JOINT incorporates joint

probability of occurrence meteorological data to determine the dose rates at several distances in each sector specified.

The title card for JOINT is divided into two parts. The first 42 characters are used in the main title of the output and follow the phrase: "THE FOLLOWING CALCULATIONS ARE FOR." The last 38 characters are generally used to describe the inventory and follow the phrase: "DOSE IN TISSUE AT X.X CM DEPTH. MRAD/YEAR" for gamma doses and "BETA DOSE CALCULATION, MRAD/YEAR" for beta doses.

Control words available for the JOINT control word card are:

<u>WORD</u>	<u>PURPOSE</u>
JOINT	Directs control to subroutine JOINT. This must be the first word on the card.
LIBRARY	Cause a dose rate factor library to be read. LIBRARY must be present in the first joint packet for which a DRF library is to be used. LIBRARY must also be present each time a new set of DRF library data is to be used.
A	Cause a dose calculation to be performed. If A is absent a normalized air concentration calculation will be made.
B	Cause special factors to be read, FACTM, as described under data input below (See Card Type 9).
HEIGHT	Cause effective release height values to be read (See Card Type 14).
GROUND	Cause terrain height data to be read (See Card Type 15).
POP	Cause population data to be read (See Card Type 8).

Data cards for JOINT depend on the above control words and on control integers submitted on the first two data cards. The input logic is complicated and care should be taken to ensure proper use of control words and control integers. A flow diagram of input logic is given in Figure A-1. This diagram should be used to determine which cards are necessary for each case.

Data cards are described below by card type. Control words are represented as "true" in the flow diagrams if they are present on the control word card. Input of a particular card type is indicated by a trapezoidal box. Diamond shaped boxes represent logical decision branch points based on the variable within the diamond.

FIGURE A.1. Input Flow Diagram for Subroutine JOINT

<u>CARD TYPE</u>	<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE DESCRIPTION</u>
1	1-5	I5	NUBAR, the number of wind speeds to be considered. Maximum is 8.
	6-10	I5	NMET, the number of weather stability types to be considered. Maximum is 6.
	11-15	I5	NTHETA, the number of sectors to be considered. Maximum is 16.
	16-20	I5	NR, the number of radial distances to be considered. Maximum is 10.
	21-25	I5	IBETA, a control integer to cause a beta dose calculation to be performed: IBETA > 0 calculate beta dose IBETA ≤ 0 calculate gamma dose
2	1-5	I5	JUMPM, input control integer: JUMPM > 0 skip input of card types 3 thru 10 and 12, 13. JUMPM ≤ 0 requires card types 3 thru 13, according to other control variables specified.
	6-10	I5	JDRF, input control integer for DRF factors: JDRF > 0 read DRF factors from cards JDRF ≤ 0 use library DRF factors if LIBRARY present or previous DRF factors if LIBRARY absent.
	11-15	I5	JPRIN > 0 for printing DRF values read in or calculated. JPRIN ≤ 0 for no printout of DRF.
	16-20	I5	NH, control integer to indicate addition of results from previous cases. NH > 0 to cause addition, NH ≤ 0 to initialize calculation with no addition of previous results.

<u>CARD TYPE</u>	<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE DESCRIPTION</u>
3	1-10	8F10.2	UBAR, average wind speeds, m/sec. The number of values read is NUBAR as given in card 2.
	11-20		
	--		
	--		
	71-80		
4	1-18	12A6	MET, titles describing weather conditions, three 6 character words per title. Note that only 72 columns of a card may be used. If more than four weather stability types are specified (NMET>4) then 2 cards are needed for MET. The maximum is 6 titles.
	19-36		
	37-54		
	35-72		
	1-18		
5	19-36	16A5	THETA, wind direction for each sector. These are descriptive titles used on output reports. This variable indicates the direction the wind is from.
	1-5		
	6-10		

6	---	16A5	SECT, sector centerline directions for each sector. These are also descriptive titles used on output reports. Note that the sector directions are to be 180° out of phase with the wind directions.
	76-80		
	1-5		
	6-10		

7	---	16F5.2	F, joint probability data (%) for wind speeds, weather stabilities and sectors specified above. The data for each wind speed - stability combination are supplied on one card (up to 16 values per card, one value for each sector). The order of the data is as follows:

	76-80		

<u>CARD TYPE</u>	<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE DESCRIPTION</u>
			Card 7a - Wind speed 1, Stability 1
			Card 7b - Wind speed 1, Stability 2
			--
			--
			--
			Card 7a' - Wind speed 2, Stability 1
			Card 7b' - Wind speed 2, Stability 2

8	1-8 8-16 --- --- --- 73-80	10F8.0	Population data as a function of sector and distance. One card is supplied for each sector with one value for each distance. The population data should correspond to the number of people within the radial segment about the exposure points as supplied on card type 13.
9	1-10 11-20 --- --- --- 51-60	8F10.2	FACTM, stability multiplication factor, one value for each stability specified. The joint probability data (F above) for each stability is multiplied by the corresponding factor. FACTM is useful when the probability data for each stability is based on 100%. If not specified FACTM values are all 1.0.
10	1-10 11-20 - - - 71-80 1-10 11-20	8F10.2	R, radial distances at which dose rates are to be determine, meters. The number specified is NR from card 2. The values must be in increasing order.

<u>CARD TYPE</u>	<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE DESCRIPTION</u>
11	1-10	8F10.2	HH, release height for this calculation, meters. If effective release heights are needed for each wind speed see card 14 below. (A value must be given to HH whether or not card 14 is used, since HH is the value printed on report headings.)
12	1-5	I5	KINT, control integer for dose rate interpolation calculation. When more than 10 distance points are desired additional values may be input on card 13. Dose rates at the additional points are determined by interpolation of the rates for the original distances. The order of the interpolation is KINT-1. Use of KINT is as follows: <div style="margin-left: 40px;">KINT $\leq$ 1 no interpolation will be done; card 12 not read. KINT = 2-10 interpolation order KINT-1 KINT > 10, KINT set to 5</div>
13	1-10 11-20 --- --- ---	8F10.2	X, radial distances for dose interpolations, meters. The values of X must be within the maximum and minimum values of R, card 10. The number of values submitted for X is NR, card 1 (the same as for R). If NR > 8, two cards will be needed for X. The population dose is calculated for radial distances X and not for distances R of card type 10.
14	1-10 11-20 --- --- ---	8F10.2	H, effective release heights for each wind speed. The first value of H corresponds to the first wind speed and so on. One value of H should be submitted for each wind speed, NUBAR total.

<u>CARD TYPE</u>	<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE DESCRIPTION</u>
15	1-8	10F8.0	HZ, terrain elevation data for each sector. The first card gives the elevation above the base of the stack, meters, for sector one and each value of R from card 10.
	9-16		
	17-24		

16	73-80	8F10.2	The second card is for the second sector and so on. Note the 8 character format. DRF factors for each atmospheric stability, wind speed, distance (R) and photon energy group. Each card contains DRF factors for 8 energy groups. With the current library of 12 energy groups, 2 cards are needed for each stability - wind speed - distance combination; each pair containing 12 DRF factors. The order of the cards is as follows: 1. The cards for the first stability are given first. 2. Within each stability set the cards for the first wind speed are first. 3. Within each wind speed set the cards for the first distance are first. 4. For each distance there are two cards containing DRF factors for the 12 photon energy groups.
	1-10		
	11-20		

17	71-80	I5	ITYPE, integer variable to indicate the type of atmospheric stability as follows: ITYPE = 1 for Sutton model (see card 18) ITYPE = 2 for Hanford model ITYPE = 3 for input of σ_z (see card 19) ITYPE = 4 for Pasquill curve A ITYPE = 5 for Pasquill curve B ITYPE = 6 for Pasquill curve C

<u>CARD TYPE</u>	<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE DESCRIPTION</u>
			ITYPE = 7 for Pasquill curve D
			ITYPE = 8 for Pasquill curve E
			ITYPE = 9 for Pasquill curve F
	6-10	I5	IPR, control integer to cause printing of σ_z values. IPR > 0 print σ_z values IPR $\leq$ 0 no σ_z values printed
	11-20	F10.2	For ITYPE = 1 this location is used for Sutton stability parameter n. For ITYPE = 2 this location is used for Hanford parameter a.
	21-30	F10.2	For ITYPE = 2 this location is used for Hanford stability parameter b (Ref. 1).
	31-40	F10.2	For ITYPE = 2 this location is used for Hanford stability parameter k^2 (Ref. 1).
18	1-10	8F10.2	C_z , Sutton stability parameter. One value must be submitted corresponding to each wind speed submitted on card 3.
	11-20		

	71-80		
19	1-8	10F8.1	SIGZ, standard deviation of plume concentration for vertical direction, meters. The first card contains NR (card 1) values of SIGZ, one for each distance, R, for the first wind speed. The second card contains values for the second wind speed and so on.
	9-16		
	17-24		

	73-80		
20	1-5	16F5.2	DEGRES, the number of degrees in each sector corresponding to the order of the sectors as indicated on cards 4 and 5.
	6-10		

	76-80		

<u>CARD TYPE</u>	<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE DESCRIPTION</u>
21	1-10	F10.2	Building wake parameter, C.
	11-21	F10.2	Building wake parameter, A. See Equation 17.

APPENDIX B
DATA LIBRARIES

APPENDIX B

DATA LIBRARIES

There is no single reference source which contains all the necessary data for nuclides of interest in radiological dose calculations. Most of the basic information on decay schemes is available from tables such as those prepared by Lederer, Hollander, and Perlman⁽⁷⁾ or Landolt and Bornstein.⁽⁸⁾ The use of these data in radiological dose calculations involves intermediate calculations for items such as obtaining the effective gamma or beta energy per disintegration. Useful but incomplete compilations of data in a form readily useable in radiation dose calculations have been prepared by Meek and Gilbert⁽⁹⁾ and Meek and Rider.⁽¹⁰⁾ These are the basic data sources for the three types of data libraries used by KRONIC. The three library types are:

1. Radionuclide Data Library
2. Photon Probability Library
3. Dose Rate Factor Library.

The photon probability library was taken in part from Reference 11.

The libraries have been constructed in a general manner so that data may be added or changed without difficulty. The structure of each library is indicated below.

Radionuclide Data Library

This library contains data on radionuclide decay schemes, half-lives and beta energy production. Data is also included on fission yields, absorption cross sections and gamma energy production but this data is not used by KRONIC. The extra data was originally included for use with computer programs RIBD⁽⁶⁾ and RACER.⁽¹⁾

The order of isotopes in this library determines the order for which data is supplied in the photon probability library. When the order of data is changed in the radionuclide data library, corresponding changes must be made in the photon probability library.

The first card image of the radionuclide data library contains the number of fission products in the library (Format I3). There is one card for each fission product. The cards are arranged in an ascending atomic number order within an ascending atomic mass sequence. The current radionuclide data library contains 450 fission products.

The card after the last fission product card contains the number of activation products in the library (Format I3). The term "activation product" includes all radionuclides that are not in the fission product portion of the library. There is one card per activation product. The current library contains 144 activation products.

The format for each radionuclide card is:

<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE</u>
1-3	I3	Atomic Mass Number
4-5	I2	Atomic Number
6-14	E9.3	Physical half life, days
15-23	E9.3	Fission yield from ^{235}U , %
24-32	E9.3	Fission yield from ^{239}Pu , %
33-41	E9.3	Absorption cross section, barns
42-46	F5.3	Fraction of (n, γ) captures that go to isomeric state
47-51	F5.3	If in isomeric state, fraction of decays by beta emission; if in ground state, fraction that decays to an isomer
52-56	F5.3	Average beta energy released per disintegration, MeV/disintegration
69-71	A3	Nuclide name (left adjusted)
72	I1	Nuclide type: 1 for isomeric state 2 for ground state

The radionuclide library available with KRONIC is called THERM.

Photon Probability Library

This library contains data for use by subroutine JOINT in calculating the cloud gamma dose. The first card image contains the number of energy

groups (Format I3) for which data is given in the library. The second card contains the upper energy bound for each group (Format 16F5.0) starting from the lowest energy group (number of entries is number of groups minus one). The next cards contain dose conversion factors in units of:

$$\frac{\text{rad}\cdot\text{cm}^2}{\text{Ci}\cdot\text{sec.}}$$

One value is supplied for each energy group starting from the lowest energy. The dose conversion factor of Equation 1 in the text is the library value divided by the average energy for the group. The average energy is calculated as the midpoint of maximum energies as supplied on the second library card. The average energy for the first group is 2/3 of its maximum energy and the average for the last energy group is 1.25 times the maximum for the next lower group.

The photon probability and gamma energy cards for each nuclide follow the dose conversion factor cards. There are from one to three cards for each nuclide (in the order of nuclides as in the radionuclide data library). The first card for each nuclide has the following format:

<u>COLUMN</u>	<u>FORMAT</u>	<u>VARIABLE</u>
1-3	I3	Atomic Mass Number
4-5	I2	Atomic Number
6-7	A2	Nuclide name
8	I1	Isotope state: 1 - isomeric 2 - ground
9-10	I2	Number of photon energies to be read
11-15	F5.0	Abundance of first photon (if any)
16-20	F5.0	Energy of first photon, MeV
21-25	F5.0	Abundance of second photon (if any)
26-30	F5.0	Energy of second photon, MeV
.		
.		
.		
61-65	F5.0	Abundance of sixth photon (if any)
66-70	F5.0	Energy of sixth photon, MeV

If the nuclide has more than 6 photons, additional cards are needed. The format for additional cards is 14F5.0, with the abundances and energies submitted in pairs (for up to 7 photons) as on the first card but starting in column 1. A maximum of 20 photons may be supplied for each nuclide (3 cards).

Buildup and attenuation data are stored after the photon data. Constants for the quadratic buildup equation (Equation 2 in text) are given next in Format 8F10.0. The first card gives values for A for each energy group (if there are more than 8 groups, more cards are needed). Next the values of α are given, followed by values of α_1 (a dummy variable) and values of μ last (total mass attenuation coefficient in air, cm^2/g).

The photon probability library is called ISOLIB.

Dose Rate Factor Library

This library contains dose rate factors, DRF, as described by Equation 5 of the text. The factors are calculated by FDOSE and stored in this type of library for use by JOINT in calculating gamma dose rates.

Dose rate factors are stored in sets corresponding to particular release heights. The first card of the library tells the number of sets stored in the library (15). The first card for each release height set has the following information.

<u>COLUMN</u>	<u>FORMAT</u>	<u>DESCRIPTION</u>
1-10	F10.2	HD, release height for data in this set, meters
11-15	I5	MD, number of weather stabilities in this set
16-20	I5	MUD, number of wind speeds in this set
21-25	I5	MRD, number of radial distances in this set
26-30	I5	IEN, number of photon energy groups for this set.

The next card for each set gives the radial distances (in meters) corresponding to the data in the set. The format is 8F10.2; two cards are needed if MRD is greater than 8, (maximum is 10 distances).

The DRF values follow the distance values. The cards are arranged according to weather stability class, wind speed and radial distance. The cards for each stability class are arranged by increasing wind speed. For each wind speed set the cards are arranged by increasing radial distance. Each card contains DRF values for up to 8 photon energy groups. The libraries described below have data based on 12 energy groups and therefore need 2 cards for each combination of weather stability, wind speed and radial distance. Three dose rate factor libraries are available with KRONIC; DOSRFL, DRATFL and DRFACL. The data in these libraries were calculated for the conditions indicated below. The libraries are for the 12 energy groups as specified by photon probability library ISOLIB. The radial distances used are 100, 200, 500, 10^3 , 2×10^3 , 5×10^3 , 10^4 , 2×10^4 , 5×10^4 and 10^5 meters. The sector width is 22.5° corresponding to 16 equal size sectors per 360° .

DOSRFL

This library contains DRF data for release at ground level. The atmospheric stability categories (in order) are:

1. Hanford Very Stable
2. Hanford Moderately Stable
3. Pasquill Type D
4. Pasquill Type B

The average wind speeds are as follows:

GROUP	WIND SPEED RANGE (mph)	AVERAGE	
		(mph)	(m/sec)
1	0-3	1.75	0.78
2	4-7	5.5	2.5
3	8-12	10	4.5
4	13-18	15.5	6.9
5	19-24	21.5	9.5
6	25-31	28	12.5
7	32+	35	15.6

DRFACL

This library contains data for 2 release heights, 10 and 100 meters.
The atmospheric stability categories (in order) are:

1. Pasquill Type F
2. Pasquill Type E
3. Pasquill Type D
4. Pasquill Type B

The wind speed groups are the same as for DOSRFL.

DRATFL

This library contains data for release heights of 0 and 100 meters.
The atmospheric stability categories (in order) are:

1. Pasquill Type A
2. Pasquill Type B
3. Pasquill Type C
4. Pasquill Type D
5. Pasquill Type E
6. Pasquill Type F

The wind speed groups are the same as for DOSRFL.

APPENDIX C
METEOROLOGICAL PARAMETER

APPENDIX C

METEOROLOGICAL PARAMETERS

This appendix presents the commonly used values of meteorological parameters for the Hanford equation (Equation 9 in text) and Sutton equation (Equation 10 in text). Also presented are tabulated values of σ_z used by KRONIC.

Table C.1 gives parameters for the Hanford equation for moderately stable and very stable atmospheric conditions. Table C.2 gives values of parameters for the Sutton equation for neutral and unstable atmospheric conditions.

TABLE C.1. Values of Meteorological Parameters for the Hanford Equation

<u>PARAMETER</u>	<u>MODERATELY STABLE CONDITIONS</u>	<u>VERY STABLE CONDITIONS</u>
a m ²	97	34
b m ² /sec	0.33	0.025
k ² sec ⁻²	2.5 x 10 ⁻⁴	8.8 x 10 ⁻⁴

TABLE C.2. Values of Meteorological Parameters for Sutton's Equation

<u>PARAMETER</u>	<u>RELEASE LEVEL</u>	<u>WIND SPEED m/sec</u>	<u>ATMOSPHERIC CONDITION</u>	
			<u>UNSTABLE</u>	<u>NEUTRAL</u>
C _z	Ground	1	0.35	0.17
		5	0.30	0.14
		10	0.28	0.13
C _z	Elevated	1	0.30	0.15
		5	0.26	0.12
		10	0.24	0.11
n	---	--	0.20	0.25

For Pasquill stability categories KRONIC uses a linear interpolation of tabulated values to determine σ_z as a function of downwind distance.

The values used for interpolation are given in Table C-3. These values were taken from "Meteorology and Atomic Energy," Appendix A, Reference 3. Values of lateral dispersion parameter, σ_y , are listed in Table C.4 as a matter of record. The σ_y values were also taken from Reference 3.

TABLE C.3. Values of σ_z for Pasquill Stability Categories

DISTANCE METERS	σ_z for Pasquill Type					
	A	B	C	D	E	F
100	15	10	7.8	4.7	3.0	1.4
150	22	15	11	6.8	4.3	2.2
250	43	26	18	10	7.1	4.0
350	70	37	24	14	9.4	5.3
500	140	57	34	19	13	7.6
700	270	86	46	25	17	10
1,000	670	140	64	33	22	14
1,500	2,000	240	90	43	29	18
2,500	2,000	580	140	62	41	25
3,500	2,000	1,200	190	76	50	30
5,000	2,000	2,000	260	95	61	35
7,000	2,000	2,000	340	120	72	41
10,000	2,000	2,000	440	140	84	47
15,000	2,000	2,000	600	170	99	55
25,000	2,000	2,000	880	220	120	64
35,000	2,000	2,000	1,100	260	130	72
50,000	2,000	2,000	1,400	320	140	79
70,000	2,000	2,000	1,800	370	160	86
100,000	2,000	2,000	2,000	450	170	94

The tabulated data are not extrapolated by the computer program. When the tabulated distance is exceeded, the value for the last distance is used.

TABLE C.4. Values of σ_y for Pasquill Stability Categories

DISTANCE METERS	σ_y for Pasquill Type					
	A	B	C	D	E	F
100	21	16	12	8.0	6.0	3.9
150	34	24	18	12	9.0	6.0
250	54	40	28	20	14	9.8
350	75	55	40	26	20	14
500	100	76	55	37	28	18
700	140	110	76	51	37	26
1,000	200	150	110	72	52	36
1,500	290	220	160	100	75	52
2,500	450	340	240	160	120	81
3,500	610	460	330	220	160	110
5,000	830	630	450	310	220	150
7,000	1,100	840	610	420	300	210
10,000	1,600	1,200	850	570	410	280
15,000	2,200	1,700	1,200	810	570	400
25,000	3,400	2,600	1,800	1,200	880	610
35,000	4,500	3,500	2,500	1,700	1,200	820
50,000	6,200	4,700	3,400	2,300	1,600	1,100
70,000	8,200	6,400	4,700	3,000	2,100	1,500
100,000	11,000	8,500	6,300	4,100	2,800	2,000

APPENDIX D
SAMPLE PROBLEMS

APPENDIX D

SAMPLE PROBLEMS

Two sample problems are presented here to illustrate use of the computer program KRONIC. The first problem will use FDOSE to calculate dose rate factors. The second problem will use these dose rate factors to calculate gamma doses for a hypothetical reactor site. The second problem will also calculate beta dose and normalized air concentration.

Sample Problem One-FDOSE

Consider a reactor site with meteorological data for 16 sectors with 22.5° per sector. To determine the dose for each sector, it is first necessary to calculate dose rate factors for a standard 22.5° sector for each windspeed, atmospheric stability and downwind distance of interest. A ground level release is assumed. Table D.1 gives values of windspeed, distance and stability types to be considered. The data of Table D.1 describe dose rate factor library DOSRFL. In practice FDOSE is used to calculate Pasquill dose rate factors for windspeed of 1 m/sec. Then dose rate factors for other windspeeds are determined by multiplying by the windspeed ratio.

$$DRF(\bar{u}_i) = \frac{DRF(1 \text{ m/s})}{\bar{u}_i}$$

This is possible because for Pasquill stabilities σ_z is independent of windspeed and hence DRF values are inversely proportional to windspeed. A small program to compute corrected dose rate factors from the 1 m/sec dose rate factors is shown in Figure D.1. Input for Pasquill Types B and D will be described for 1 m/sec. Input card images are listed in Figure D.2. The number of output cards to be expected (for each stability class) may be determined by:

$$\text{Cards Out} = (\text{Number of } \bar{u}) (\text{Number of Distances}) (2)$$

TABLE D.1. Parameters for Sample Problems

Windspeeds		Distance, Meters	Stability Types
mph	Average, m/sec		
0 to 3	0.78	100	Hanford very stable
4 to 7	2.5	200	Hanford moderately stable
8 to 12	4.5	500	Pasquill Type D-neutral
13 to 18	6.9	10^3	Pasquill Type B-unstable
19 to 24	9.5	2×10^3	
25 to 31	12.5	5×10^3	
32+	15.6	10^4	
		2×10^4	
		5×10^4	
		10^5	

```

1.      DIMENSION DRF(16),UBAR(8),DROUT(16)
2.      INTEGER GROUPS
3.      PRINT 400
4.      1 READ 100, GROUPS,NUBAR
5.      2 READ 200, (UBAR(I),I=1,NUBAR)
6.      3 READ 200, (DRF(I),I=1,GROUPS)
7.      DO 5 IU=1,NUBAR
8.      DO 4 IE=1,GROUPS
9.      DROUT(IE)=DRF(IE)/UBAR(IU)
10.     4 CONTINUE
11.     PRINT 300, UBAR(IU), (DROUT(I),I=1,GROUPS)
12.     PUNCH 200, (DROUT(I),I=1,GROUPS)
13.     5 CONTINUE
14.     PRINT 400
15.     GO TO 3
16.     100 FORMAT(2I5)
17.     200 FORMAT(8E10.4)
18.     300 FORMAT(1X,14HFOR WIND SPEED,F6.1,21H THE DOSE FACTORS ARE,1X,
19.     11P8E10.4/1X,8E10.4)
20.     400 FORMAT(1H1)
21.     END

```

FIGURE D.1. Program to Ratio DRF by Wind Speed

1.	HANFORD VS.	.75 M/S.	GROUND RELEASE		
2.	10				
3.	2	.75	100.	0.	16.
4.	34.	.025	.00088		
5.	2	.75	200.	0.	16.
6.	34.	.025	.00088		
7.	2	.75	500.	0.	16.
8.	34.	.025	.00088		
9.	2	.75	1000.	0.	16.
10.	34.	.025	.00088		
11.	2	.75	2000.	0.	16.
12.	34.	.025	.00088		
13.	2	.75	5000.	0.	16.
14.	34.	.025	.00088		
15.	2	.75	10000.	0.	16.
16.	34.	.025	.00088		
17.	2	.75	20000.	0.	16.
18.	34.	.025	.00088		
19.	2	.75	50000.	0.	16.
20.	34.	.025	.00088		
21.	2	.75	100000.	0.	16.
22.	34.	.025	.00088		
23.	HANFORD VS.	2.5 M/S.	GROUND RELEASE		
24.	10				
25.	2	2.5	100.	00.	16.
26.	34.	.025	.00088		
27.	2	2.5	200.	00.	16.
28.	34.	.025	.00088		
29.	2	2.5	500.	00.	16.
30.	34.	.025	.00088		
31.	2	2.5	1000.	00.	16.
32.	34.	.025	.00088		
33.	2	2.5	2000.	00.	16.
34.	34.	.025	.00088		
35.	2	2.5	5000.	00.	16.
36.	34.	.025	.00088		
37.	2	2.5	10000.	00.	16.
38.	34.	.025	.00088		
39.	2	2.5	20000.	00.	16.
40.	34.	.025	.00088		
41.	2	2.5	50000.	00.	16.
42.	34.	.025	.00088		
43.	2	2.5	100000.	00.	16.
44.	34.	.025	.00088		
45.	HANFORD VS.	4.5 M/S.	GROUND RELEASE		
46.	10				
47.	2	4.5	100.	00.	16.
48.	34.	.025	.00088		
49.	2	4.5	200.	00.	16.
50.	34.	.025	.00088		
51.	2	4.5	500.	00.	16.
52.	34.	.025	.00088		
53.	2	4.5	1000.	00.	16.
54.	34.	.025	.00088		
55.	2	4.5	2000.	00.	16.
56.	34.	.025	.00088		
57.	2	4.5	5000.	00.	16.
58.	34.	.025	.00088		
59.	2	4.5	10000.	00.	16.
60.	34.	.025	.00088		
61.	2	4.5	20000.	00.	16.
62.	34.	.025	.00088		
63.	2	4.5	50000.	00.	16.
64.	34.	.025	.00088		
65.	2	4.5	100000.	00.	16.
66.	34.	.025	.00088		
67.	HANFORD VS.	6.9 M/S.	GROUND RELEASE		
68.	10				
69.	2	6.9	100.	00.	16.
70.	34.	.025	.00088		
71.	2	6.9	200.	00.	16.
72.	34.	.025	.00088		
73.	2	6.9	500.	00.	16.
74.	34.	.025	.00088		
75.	2	6.9	1000.	00.	16.
76.	34.	.025	.00088		
77.	2	6.9	2000.	00.	16.
78.	34.	.025	.00088		
79.	2	6.9	5000.	00.	16.
80.	34.	.025	.00088		
81.	2	6.9	10000.	00.	16.
82.	34.	.025	.00088		
83.	2	6.9	20000.	00.	16.
84.	34.	.025	.00088		
85.	2	6.9	50000.	00.	16.
86.	34.	.025	.00088		
87.	2	6.9	100000.	00.	16.
88.	34.	.025	.00088		
89.	HANFORD VS.	9.5 M/S.	GROUND RELEASE		
90.	10				
91.	2	9.5	100.	0.	16.
92.	34.	.025	.00088		
93.	2	9.5	200.	0.	16.
94.	34.	.025	.00088		

FIGURE D.2. Sample Problem One Input

95.	2	9.5	500.	00.	16.
96.	2	34.	.025	.00088	
97.	2	9.5	1000.	00.	16.
98.	2	34.	.025	.00088	
99.	2	9.5	2000.	00.	16.
100.	2	34.	.025	.00088	
101.	2	9.5	5000.	00.	16.
102.	2	34.	.025	.00088	
103.	2	9.5	10000.	00.	16.
104.	2	34.	.025	.00088	
105.	2	9.5	20000.	00.	16.
106.	2	34.	.025	.00088	
107.	2	9.5	50000.	00.	16.
108.	2	34.	.025	.00088	
109.	2	9.5	100000.	00.	16.
110.	2	34.	.025	.00088	
111.	HANFORD VS, 12.5 M/S, GROUND RELEASE				
112.	10				
113.	2	12.5	100.	0.0	16.
114.	2	34.	.025	.00088	
115.	2	12.5	200.	0.0	16.
116.	2	34.	.025	.00088	
117.	2	12.5	500.	0.0	16.
118.	2	34.	.025	.00088	
119.	2	12.5	1000.	0.0	16.
120.	2	34.	.025	.00088	
121.	2	12.5	2000.	0.0	16.
122.	2	34.	.025	.00088	
123.	2	12.5	5000.	0.0	16.
124.	2	34.	.025	.00088	
125.	2	12.5	10000.	0.0	16.
126.	2	34.	.025	.00088	
127.	2	12.5	20000.	0.0	16.
128.	2	34.	.025	.00088	
129.	2	12.5	50000.	0.0	16.
130.	2	34.	.025	.00088	
131.	2	12.5	100000.	0.0	16.
132.	2	34.	.025	.00088	
133.	HANFORD VS, 15.6 M/S, GROUND RELEASE				
134.	10				
135.	2	15.6	100.	0.0	16.
136.	2	34.	.025	.00088	
137.	2	15.6	200.	0.0	16.
138.	2	34.	.025	.00088	
139.	2	15.6	500.	0.0	16.
140.	2	34.	.025	.00088	
141.	2	15.6	1000.	0.0	16.
142.	2	34.	.025	.00088	
143.	2	15.6	2000.	0.0	16.
144.	2	34.	.025	.00088	
145.	2	15.6	5000.	0.0	16.
146.	2	34.	.025	.00088	
147.	2	15.6	10000.	0.0	16.
148.	2	34.	.025	.00088	
149.	2	15.6	20000.	0.0	16.
150.	2	34.	.025	.00088	
151.	2	15.6	50000.	0.0	16.
152.	2	34.	.025	.00088	
153.	2	15.6	100000.	0.0	16.
154.	2	34.	.025	.00088	
155.	HANFORD MS, .78 M/S, GROUND RELEASE				
156.	10				
157.	2	.78	100.	0.	16.
158.	2	.33	.00025		
159.	2	.78	200.	0.	16.
160.	2	.33	.00025		
161.	2	.78	500.	0.	16.
162.	2	.33	.00025		
163.	2	.78	1000.	0.	16.
164.	2	.33	.00025		
165.	2	.78	2000.	0.	16.
166.	2	.33	.00025		
167.	2	.78	5000.	0.	16.
168.	2	.33	.00025		
169.	2	.78	10000.	0.	16.
170.	2	.33	.00025		
171.	2	.78	20000.	0.	16.
172.	2	.33	.00025		
173.	2	.78	50000.	0.	16.
174.	2	.33	.00025		
175.	2	.78	100000.	0.	16.
176.	2	.33	.00025		
177.	HANFORD MS, 2.5 M/S, GROUND RELEASE				
178.	10				
179.	2	2.5	100.	00.	16.
180.	2	.33	.00025		
181.	2	2.5	200.	00.	16.
182.	2	.33	.00025		
183.	2	2.5	500.	00.	16.
184.	2	.33	.00025		
185.	2	2.5	1000.	00.	16.
186.	2	.33	.00025		
187.	2	2.5	2000.	00.	16.
188.	2	.33	.00025		
189.	2	2.5	5000.	00.	16.
190.	2	.33	.00025		
191.	2	2.5	10000.	00.	16.
192.	2	.33	.00025		

FIGURE D.2. (contd)

193.	2	2.5	20000.	00.	16.
194.	97.	.33	.00025		
195.	2	2.5	50000.	00.	16.
196.	97.	.33	.00025		
197.	2	2.5	100000.	00.	16.
198.	97.	.33	.00025		
199.	HANFORD HS, 4.5 M/S, GROUND RELEASE				
200.	10				
201.	2	4.5	100.	00.	16.
202.	97.	.33	.00025		
203.	2	4.5	200.	00.	16.
204.	97.	.33	.00025		
205.	2	4.5	500.	00.	16.
206.	97.	.33	.00025		
207.	2	4.5	1000.	00.	16.
208.	97.	.33	.00025		
209.	2	4.5	2000.	00.	16.
210.	97.	.33	.00025		
211.	2	4.5	5000.	00.	16.
212.	97.	.33	.00025		
213.	2	4.5	10000.	00.	16.
214.	97.	.33	.00025		
215.	2	4.5	20000.	00.	16.
216.	97.	.33	.00025		
217.	2	4.5	50000.	00.	16.
218.	97.	.33	.00025		
219.	2	4.5	100000.	00.	16.
220.	97.	.33	.00025		
221.	HANFORD HS, 6.9 M/S, GROUND RELEASE				
222.	10				
223.	2	6.9	100	00.	16.
224.	97.	.33	.00025		
225.	2	6.9	200.	00.	16.
226.	97.	.33	.00025		
227.	2	6.9	500.	00.	16.
228.	97.	.33	.00025		
229.	2	6.9	1000.	00.	16.
230.	97.	.33	.00025		
231.	2	6.9	2000.	00.	16.
232.	97.	.33	.00025		
233.	2	6.9	5000.	00.	16.
234.	97.	.33	.00025		
235.	2	6.9	10000.	00.	16.
236.	97.	.33	.00025		
237.	2	6.9	20000.	00.	16.
238.	97.	.33	.00025		
239.	2	6.9	50000.	00.	16.
240.	97.	.33	.00025		
241.	2	6.9	100000.	00.	16.
242.	97.	.33	.00025		
243.	HANFORD HS, 9.5 M/S, GROUND RELEASE				
244.	10				
245.	2	9.5	100.	00.	16.
246.	97.	.33	.00025		
247.	2	9.5	200.	00.	16.
248.	97.	.33	.00025		
249.	2	9.5	500.	00.	16.
250.	97.	.33	.00025		
251.	2	9.5	1000.	00.	16.
252.	97.	.33	.00025		
253.	2	9.5	2000.	00.	16.
254.	97.	.33	.00025		
255.	2	9.5	5000.	00.	16.
256.	97.	.33	.00025		
257.	2	9.5	10000.	00.	16.
258.	97.	.33	.00025		
259.	2	9.5	20000.	00.	16.
260.	97.	.33	.00025		
261.	2	9.5	50000.	00.	16.
262.	97.	.33	.00025		
263.	2	9.5	100000.	00.	16.
264.	97.	.33	.00025		
265.	HANFORD HS, 12.5 M/S, GROUND RELEASE				
266.	10				
267.	2	12.5	100.	00.	16.
268.	97.	.33	.00025		
269.	2	12.5	200.	00.	16.
270.	97.	.33	.00025		
271.	2	12.5	500.	00.	16.
272.	97.	.33	.00025		
273.	2	12.5	1000.	00.	16.
274.	97.	.33	.00025		
275.	2	12.5	2000.	00.	16.
276.	97.	.33	.00025		
277.	2	12.5	5000.	00.	16.
278.	97.	.33	.00025		
279.	2	12.5	10000.	00.	16.
280.	97.	.33	.00025		
281.	2	12.5	20000.	00.	16.
282.	97.	.33	.00025		
283.	2	12.5	50000.	00.	16.
284.	97.	.33	.00025		
285.	2	12.5	100000.	00.	16.
286.	97.	.33	.00025		
287.	HANFORD HS, 15.0 M/S, GROUND RELEASE				
288.	10				
289.	2	15.0	100.	00.	16.
290.	97.	.33	.00025		

FIGURE D.2. (contd)

291.	2	15.6	200.	0.0	16.
292.	97.	.33	.00025		
293.	2	15.6	500.	0.0	16.
294.	97.	.33	.00025		
295.	2	15.6	1000.	0.0	16.
296.	97.	.33	.00025		
297.	2	15.6	2000.	0.0	16.
298.	97.	.33	.00025		
299.	2	15.6	5000.	0.0	16.
300.	97.	.33	.00025		
301.	2	15.6	10000.	0.0	16.
302.	97.	.33	.00025		
303.	2	15.6	20000.	0.0	16.
304.	97.	.33	.00025		
305.	2	15.6	50000.	0.0	16.
306.	97.	.33	.00025		
307.	2	15.6	100000.	0.0	16.
308.	97.	.33	.00025		
309.	PASQUILL TYPE D, 1 METER/SEC. GROUND RELEASE				
310.	10				
311.	7	1.0	100.	0.	16.
312.	7	1.0	200.		16.
313.	7	1.0	500.		16.
314.	7	1.0	1000.		16.
315.	7	1.0	2000.		16.
316.	7	1.0	5000.		16.
317.	7	1.0	10000.		16.
318.	7	1.0	20000.		16.
319.	7	1.0	50000.		16.
320.	7	1.0	100000.		16.
321.	PASQUILL TYPE B, 1 METER/SEC. GROUND RELEASE				
322.	10				
323.	5	1.0	100.	0.	16.
324.	5	1.0	200.	0.	16.
325.	5	1.0	500.	0.	16.
326.	5	1.0	1000.	0.	16.
327.	5	1.0	2000.	0.	16.
328.	5	1.0	5000.	0.	16.
329.	5	1.0	10000.	0.	16.
330.	5	1.0	20000.	0.	16.
331.	5	1.0	50000.	0.	16.
332.	5	1.0	100000.	0.	16.

3. LIST FIG2

FIGURE D.2. (contd)

The factor of 2 is necessary since more than 8 energy groups (12) are used by FDOSE. For this sample problem the number of output cards will be 140 (Hanford) very stable) + 140 (Hanford moderately stable) + 20 (Pasquill D) + 20 (Pasquill B) for a total of 320 cards.

A printed output listing for part of the Sample Problem 1 is given in Figure D.3. This output is for one data set, i.e., 10 distances for the first windspeed and stability type.

HANFORD VS. .78 M/S. GROUND RELEASE

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 100. METERS
 RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS
 A,B,KSD .3400+02 .2500-01 .8800-03
 S2 = 110.00 164.52 383.74 415.34 495.12 545.79 574.39 588.97 594.43 597.80
 600.07 601.79 603.27 604.66 606.00 606.57 607.14 607.70 608.27 608.83
 609.40 609.96 610.52 611.08 611.65 612.21 612.77 613.33 613.89 615.19
 616.49 617.79 619.39 620.38 621.67 622.96 626.62 630.27 633.89 637.49
 641.07 644.63 648.17 660.42 672.44 684.26 695.87 707.29 718.53 729.59
 .00 .00 .00 .00 .00 .00 .00 .00

AT 100. METERS THE DOSE FACTORS ARE
 5.807-04 1.789-04 8.086-05 7.583-05 7.131-05 7.293-05 7.349-05 7.008-05 6.537-05 6.030-05 5.633-05 5.127-05

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 200. METERS
 RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS
 A,B,KSD .3400+02 .2500-01 .8800-03
 S2 = 110.00 164.52 383.74 415.34 495.12 545.79 574.39 588.97 599.79 604.27
 608.08 611.83 615.56 619.27 622.96 624.24 625.53 626.81 628.08 629.36
 630.63 631.90 632.44 632.98 633.53 634.07 634.61 635.15 635.69 636.23
 636.77 637.31 637.85 638.39 638.92 639.46 640.71 641.96 643.21 644.45
 645.78 646.94 648.17 651.70 655.20 658.68 662.15 665.60 669.03 672.44
 684.26 695.87 707.29 718.53 729.59 740.50 751.24

AT 200. METERS THE DOSE FACTORS ARE
 2.954-04 1.085-04 5.195-05 4.968-05 4.627-05 4.593-05 4.573-05 4.337-05 4.044-05 3.734-05 3.491-05 3.178-05

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 500. METERS
 RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS
 A,B,KSD .3400+02 .2500-01 .8800-03
 S2 = 110.00 589.09 609.98 622.97 635.70 648.18 660.42 672.44 675.54 679.22
 682.55 685.93 689.26 692.57 695.87 697.02 698.17 699.31 700.46 701.60
 702.74 703.88 704.37 704.86 705.34 705.83 706.32 706.80 707.29 707.77
 708.26 708.74 709.23 709.71 710.20 710.68 711.81 712.93 714.05 715.17
 716.29 717.41 718.53 721.71 724.87 728.02 731.15 734.29 737.40 740.50
 751.24 761.63 772.28 782.58 792.76 802.80 812.72

AT 500. METERS THE DOSE FACTORS ARE
 1.113-04 4.755-05 2.473-05 2.462-05 2.316-05 2.240-05 2.193-05 2.065-05 1.926-05 1.786-05 1.675-05 1.527-05

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 1000. METERS
 RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS
 A,B,KSD .3400+02 .2500-01 .8800-03

FIGURE D.3. Sample Problem One Output

SZ =	707.31	718.55	729.61	740.51	751.25	761.84	772.28	782.58	785.50	788.41
	731.31	794.20	797.08	799.94	802.80	803.80	804.79	805.79	806.76	807.77
	808.77	809.76	810.18	810.60	811.03	811.45	811.87	812.30	812.72	813.14
	813.56	813.99	814.41	814.83	815.25	815.67	816.65	817.63	818.61	819.59
	820.57	821.54	822.52	825.30	828.07	830.83	833.58	836.32	839.05	841.78
	851.24	860.61	869.87	879.03	888.16	897.08	905.96			

AT 1000. METERS THE DOSE FACTORS ARE

5.109-05 2.320-05 1.254-05 1.282-05 1.229-05 1.190-05 1.156-05 1.086-05 1.015-05 9.454-06 8.902-06 8.139-06

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 2000. METERS
 RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS
 A,B,KSQD .3400+02 .2500-01 .8800-03

SZ =	905.98	914.78	923.50	932.13	940.63	949.16	957.56	965.89	968.26	970.62
	972.98	975.33	977.67	980.01	982.34	983.16	983.97	984.79	985.60	986.41
	987.23	988.04	988.38	988.73	989.08	989.43	989.77	990.12	990.47	990.81
	991.16	991.51	991.85	992.20	992.55	992.89	993.70	994.50	995.31	996.11
	996.92	997.72	998.52	1000.81	1003.10	1005.38	1007.65	1009.92	1012.19	1014.45
	1022.32	1030.12	1037.87	1045.56	1053.20	1060.78	1068.31			

AT 2000. METERS THE DOSE FACTORS ARE

2.248-05 1.089-05 6.001-06 6.200-06 8.999-06 5.838-06 5.681-06 5.344-06 5.009-06 4.694-06 4.443-06 4.081-06

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 5000. METERS
 RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS
 A,B,KSQD .3400+02 .2500-01 .8800-03

SZ =	1335.04	1341.03	1346.99	1352.92	1358.83	1364.71	1370.57	1376.40	1378.07	1379.73
	1381.58	1383.04	1384.70	1386.35	1388.00	1388.58	1389.15	1389.73	1390.31	1390.88
	1391.46	1392.03	1392.28	1392.53	1392.77	1393.02	1393.27	1393.51	1393.76	1394.01
	1394.25	1394.50	1394.74	1394.99	1395.24	1395.48	1396.06	1396.63	1397.20	1397.78
	1398.35	1398.92	1399.50	1401.13	1402.76	1404.40	1406.02	1407.65	1409.28	1410.90
	1416.57	1422.21	1427.84	1433.44	1439.02	1444.57	1450.11			

AT 5000. METERS THE DOSE FACTORS ARE

7.101-06 3.858-06 2.187-06 2.284-06 2.214-06 2.142-06 2.080-06 1.957-06 1.839-06 1.731-06 1.646-06 1.519-06

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 10000. METERS
 RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS
 A,B,KSQD .3400+02 .2500-01 .8800-03

SZ =	1839.81	1844.16	1848.50	1852.83	1857.15	1861.45	1865.75	1870.04	1871.26	1872.49
	1873.71	1874.93	1876.15	1877.37	1878.59	1879.02	1879.44	1879.87	1880.30	1880.72
	1881.15	1881.57	1881.76	1881.94	1882.12	1882.30	1882.49	1882.67	1882.85	1883.03
	1883.22	1883.40	1883.58	1883.76	1883.95	1884.13	1884.55	1884.98	1885.40	1885.83
	1886.25	1886.68	1887.10	1888.31	1889.53	1890.74	1891.95	1893.16	1894.37	1895.58

FIGURE D.3. (contd)

1388.80 1604.01 1908.21 1912.41 1916.59 1920.77 1924.94

AT 10000. METERS THE DOSE FACTORS ARE

2.803-06 1.698-06 9.921-07 1.349-06 1.012-06 9.808-07 9.462-07 8.987-07 8.376-07 7.905-07 7.523-07 6.958-07

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 20000. METERS

RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS

A,B,K500 .3400+02 .2500-01 .8800-03

Sz =	2557.11	2570.22	2573.34	2576.45	2579.56	2582.66	2585.76	2588.86	2589.74	2590.62
	2591.51	2592.39	2593.27	2594.16	2595.04	2595.35	2595.66	2595.97	2596.27	2596.58
	2596.89	2597.20	2597.33	2597.46	2597.60	2597.73	2597.86	2597.99	2598.13	2598.26
	2598.39	2598.52	2598.65	2598.79	2598.92	2599.05	2599.36	2599.67	2599.98	2600.28
	2600.59	2600.90	2601.21	2602.09	2602.97	2603.85	2604.73	2605.60	2606.48	2607.36
	2610.43	2613.59	2616.56	2619.63	2622.68	2625.74	2628.79			

AT 20000. METERS THE DOSE FACTORS ARE

1.067-06 7.247-07 4.389-07 4.710-07 4.608-07 4.414-07 4.249-07 3.985-07 3.751-07 3.550-07 3.386-07 3.137-07

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 50000. METERS

RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS

A,B,K500 .3400+02 .2500-01 .8800-03

Sz =	4025.60	4027.58	4029.57	4031.56	4033.55	4035.53	4037.52	4039.50	4040.07	4040.63
	4041.20	4041.77	4042.33	4042.90	4043.47	4043.66	4043.86	4044.06	4044.26	4044.46
	4044.65	4044.85	4044.94	4045.02	4045.11	4045.19	4045.28	4045.36	4045.45	4045.53
	4045.62	4045.70	4045.79	4045.87	4045.96	4046.04	4046.24	4046.44	4046.64	4046.83
	4047.03	4047.23	4047.43	4047.99	4048.56	4049.12	4049.69	4050.25	4050.82	4051.38
	4053.36	4055.34	4057.31	4059.29	4061.26	4063.23	4065.21			

AT 50000. METERS THE DOSE FACTORS ARE

2.863-07 2.236-07 1.459-07 1.574-07 1.562-07 1.494-07 1.430-07 1.339-07 1.263-07 1.201-07 1.151-07 1.069-07

METEOROLOGY TYPE 2, WIND SPEED = .78 METERS/SECOND, DISTANCE FROM RELEASE POINT = 100000. METERS

RELEASE HEIGHT = 0. METERS, NUMBER OF SECTORS = 16.0, LATERAL DISTANCE FROM CENTERLINE = -.0 METERS

A,B,K500 .3400+02 .2500-01 .8800-03

Sz =	5677.24	5678.65	5680.76	5681.47	5682.88	5684.29	5685.70	5687.11	5687.51	5687.91
	5688.32	5688.72	5689.12	5689.52	5689.93	5690.07	5690.21	5690.35	5690.49	5690.63
	5690.77	5690.91	5690.97	5691.03	5691.09	5691.15	5691.21	5691.27	5691.33	5691.39
	5691.45	5691.51	5691.56	5691.64	5691.70	5691.76	5691.90	5692.04	5692.18	5692.32
	5692.46	5692.60	5692.74	5693.14	5693.55	5693.95	5694.35	5694.75	5695.15	5695.56
	5696.96	5698.37	5699.78	5701.13	5702.59	5703.99	5705.40			

AT 100000. METERS THE DOSE FACTORS ARE

1.957-07 6.826-08 5.890-08 6.632-08 6.685-08 6.418-08 6.126-08 5.735-08 5.423-08 5.181-08 4.984-08 4.646-08

FIGURE D.3. (contd)

Sample Problem Two

This sample problem will illustrate calculation of normalized air concentration, beta dose, and gamma dose. The gamma dose calculation will use dose rate factors calculated by sample problem one as incorporated into the library DOSRFL.

Input for the normalized air concentration is given in Figure D.4. Since building wake effects are not to be considered, the wake parameters are set to zero (last card). Output for the normalized air concentration calculation is given in Figure D.5.

Input for the beta and gamma dose calculations are given in Figure D.6. The gamma dose is calculated first. Then the beta dose is calculated and added to the gamma dose to give the total skin dose. A total of 10 dose reports will be written as follows:

<u>REPORT</u>	<u>DATA PRESENTED</u>
1	Gamma Dose - Surface, Standard Distances
2	Gamma Dose - Surface, Interpolated Distances
3	Gamma Dose - 1 cm depth, Standard Distances
4	Gamma Dose - 1 cm depth, Interpolated Distances
5	Gamma Dose - 5 cm depth, Standard Distances
6	Gamma Dose - 5 cm depth, Interpolated Distances
7	Beta Dose - Standard Distances
8	Beta Dose - Interpolated Distances
9	Skin Dose - sum of reports 1 and 7
10	Skin Dose - sum of reports 2 and 8

These output reports are shown in Figure D-7.

```

1.  SAMPLE PROBLEM 2 - AIR CONCENTRATION
2.  JOINT
3.      5      4      16      10      0
4.      0      0      0      0
5.      .78      2.5      4.5      6.9      9.5      12.5      15.6
6.  HANFORD V. STABLE HANFORD M. STABLE PASQUILL D NEUTRAL PASQUILL S UNSTAB.
7.  N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW
8.  S SSW SW WSW W WNW NW NNW N NNE NE ENE E ESE SE SSE
9.  .514 .535 .562 .934 1.41 1.21 .643 .383 .411 .786 .808 .661 .501 .49 .472 .435
10. .71 .619 .657 1.03 .993 .743 .588 .509 .515 .912 1.13 .961 .81 .847 .749 .59
11. .28 .279 .267 .435 .399 .313 .204 .120 .140 .246 .458 .596 .529 .523 .421 .281
12. .271 .232 .281 .387 .289 .208 .138 .14 .149 .254 .474 .631 .838 .930 .608 .381
13. .157 .0936 .191 .399 .663 .808 .305 .128 .230 1.15 .578 .201 .108 .059 .0672 .0956
14. .541 .49 .503 .547 .635 .604 .543 .409 .6822 .67 2.64 1.61 .696 .547 .295 .208
15. .34 .234 .175 .163 .254 .191 .128 .0733 .142 .397 .645 .564 .366 .326 .220 .142
16. 1.43 .779 .558 .765 .877 .718 .433 .350 .4681 .21 1.21 .832 .7 .836 .912 .897
17. .002 .002 .0041 .0020 .0224 .0346 .0102 .0081 .0020 .0651 .112 .0712 .0183 .0061 .0041 .0
18. .173 .0427 .0163 .0268 .0916 .138 .195 .258 .356 .912 1.73 2.28 .967 .328 .0753 .0163
19. .144 .0488 .0265 .0163 .0672 .0773 .0672 .0549 .124 .252 .405 .545 .411 .204 .0427 .0224
20. .564 .25 .171 .108 .281 .273 .161 .263 .301 1.0 .706 .615 .478 .293 .0977 .0916
21. .0 .0 .0 .0020 .0041 .0020 .0020 .0020 .0041 .0163 .0102 .0061 .0 .0 .0 .0
22. .147 .0997 .0041 .0 .0081 .0224 .0346 .102 .256 .429 .415 1.3 .956 .222 .0488 .0
23. .254 .116 .0041 .0061 .0122 .0305 .0224 .0570 .0977 .212 .303 .840 .804 .226 .0549 .0142
24. .344 .0712 .0041 .0020 .0204 .0468 .0102 .0305 .0997 .411 .244 .71 .682 .199 .0611 .0081
25. .0 .0020 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0
26. .0468 .0224 .0020 .0020 .0041 .0 .0 .0 .0020 .0936 .0692 .171 .195 .059 .0183 .0
27. .0956 .0488 .0102 .0041 .0061 .0020 .0122 .0041 .0142 .0590 .0468 .293 .315 .0672 .0224 .0
28. .13 .0427 .0 .0 .0 .0 .0041 .0020 .0041 .0326 .0305 .260 .244 .0611 .0204 .0020
29. 100. 200. 300. 1000. 2000. 5000. 10000. 20000.
30. 50000. 100000.
31. 0.0
32. 0
33. 2 1 34. .025 .00088
34. 2 1 97. .33 .00025
35. 7 1
36. 5 1
37. 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5
38. 0.0 0.0

```

FIGURE D.4. Normalized Air Concentration Input

SAMPLE PROBLEM 2 - AIR CONCENTRATION

JOINT

NR = 10

RELEASE HEIGHT IS .0 METERS
.3400+02 .2500-01 .8800-03

SIGMA Z VALUES FOR METEOROLOGICAL CONDITIONS 1

AVERAGE WIND SPEED, M/SEC	DISTANCE FROM RELEASE POINT METERS									
	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
.8	6.1	6.4	7.1	8.1	9.9	13.9	18.8	26.0	40.5	56.9
2.5	5.2	6.0	6.2	6.6	7.3	9.2	11.6	15.3	23.1	32.2
4.5	3.5	5.4	6.1	6.3	6.7	7.9	9.5	12.0	17.7	24.3
6.9	2.5	4.3	6.0	6.1	6.4	7.2	8.4	10.3	14.7	19.9
9.5	1.8	3.4	5.7	6.1	6.3	6.9	7.8	9.3	12.9	17.2
.9700+02	.3300-00	.2500-03								

SIGMA Z VALUES FOR METEOROLOGICAL CONDITIONS 2

AVERAGE WIND SPEED, M/SEC	DISTANCE FROM RELEASE POINT METERS									
	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
.8	11.7	13.5	17.6	22.8	30.7	47.0	65.8	92.5	145.8	205.9
2.5	6.7	10.2	12.8	15.1	19.0	27.5	37.6	52.3	81.8	115.3
4.5	4.3	7.2	11.4	13.1	15.6	21.5	28.8	39.5	61.3	86.2
6.9	3.1	5.3	9.7	12.0	13.9	18.3	24.0	32.5	49.9	69.9
9.5	2.5	4.1	8.1	11.2	12.9	16.5	21.1	28.1	42.8	59.8

SIGMA Z VALUES FOR METEOROLOGICAL CONDITIONS 3

AVERAGE WIND SPEED, M/SEC	DISTANCE FROM RELEASE POINT METERS									
	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
.8	4.7	8.6	19.0	33.0	52.5	95.0	140.0	195.0	320.0	450.0
2.5	4.7	8.6	19.0	33.0	52.5	95.0	140.0	195.0	320.0	450.0
4.5	4.7	8.6	19.0	33.0	52.5	95.0	140.0	195.0	320.0	450.0
6.9	4.7	8.6	19.0	33.0	52.5	95.0	140.0	195.0	320.0	450.0
9.5	4.7	8.6	19.0	33.0	52.5	95.0	140.0	195.0	320.0	450.0

LIMITS OF STORED SIGZ DATA EXCEEDED FOR METEOROLOGY TYPE 4

SIGMA Z VALUES FOR METEOROLOGICAL CONDITIONS 4

AVERAGE WIND

DISTANCE FROM RELEASE POINT METERS

FIGURE D.5. Normalized Air Concentration Output

SPEED, M/SEC	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
.8	10.0	20.2	57.0	135.0	410.0	2000.0	2000.0	2000.0	2000.0	2000.0
2.5	10.0	20.2	57.0	135.0	410.0	2000.0	2000.0	2000.0	2000.0	2000.0
4.5	10.0	20.2	57.0	135.0	410.0	2000.0	2000.0	2000.0	2000.0	2000.0
6.9	10.0	20.2	57.0	135.0	410.0	2000.0	2000.0	2000.0	2000.0	2000.0
9.5	10.0	20.2	57.0	135.0	410.0	2000.0	2000.0	2000.0	2000.0	2000.0

DEGRESS PER SECTOR ARE 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5
WAKE PARAMETERS C AND AREA ARE .00 .00

FIGURE D.5. (contd)

SAMPLE PROBLEM 2 - AIR CONCENTRATION

DATE 06 JUL 73

		CHI/Q' VALUES FOR RELEASE AT 0. METERS									
WIND	DIRECTION SECTOR	DISTANCE FROM SOURCE, METERS									
		100.0	200.0	500.0	1000.0	2000.0	5000.0	10000.0	20000.0	50000.0	100000.0
N	S	9.681-05	3.378-05	9.229-06	3.561-06	1.362-06	3.706-07	1.364-07	4.955-08	1.277-08	4.574-09
NNE	SSW	8.055-05	2.918-05	8.295-06	3.254-06	1.256-06	3.430-07	1.260-07	4.565-08	1.174-08	4.190-09
NE	SW	7.894-05	2.938-05	8.612-06	3.427-06	1.335-06	3.679-07	1.356-07	4.923-08	1.267-08	4.523-09
ENE	WSW	1.202-04	4.572-05	1.366-05	5.490-06	2.155-06	5.979-07	2.209-07	8.029-08	2.068-08	7.379-09
E	W	1.454-04	5.744-05	1.794-05	7.385-06	2.950-06	8.299-07	3.082-07	1.122-07	2.895-08	1.032-08
ESE	WNW	1.248-04	4.962-05	1.572-05	6.538-06	2.635-06	7.487-07	2.793-07	1.020-07	2.636-08	9.407-09
SE	NW	7.683-05	2.977-05	9.169-06	3.755-06	1.493-06	4.183-07	1.550-07	5.639-08	1.453-08	5.182-09
SSE	NNW	5.514-05	2.076-05	6.190-06	2.496-06	9.805-07	2.718-07	1.063-07	3.641-08	9.374-09	3.344-09
S	N	6.869-05	2.518-05	7.412-06	2.992-06	1.181-06	3.293-07	1.219-07	4.436-08	1.144-08	4.083-09
SSW	NNE	1.668-04	6.028-05	1.807-05	7.430-06	2.983-06	8.484-07	3.176-07	1.163-07	3.013-08	1.077-08
SW	NE	1.940-04	6.734-05	1.908-05	7.624-06	2.996-06	8.339-07	3.091-07	1.126-07	2.906-08	1.038-08
WSW	ENE	1.945-04	6.417-05	1.684-05	6.528-06	2.525-06	6.935-07	2.558-07	9.303-08	2.396-08	8.564-09
W	E	1.492-04	4.844-05	1.217-05	4.560-06	1.723-06	4.653-07	1.711-07	6.220-08	1.603-08	5.746-09
WNW	ESE	1.251-04	4.130-05	1.049-05	3.888-06	1.447-06	3.851-07	1.409-07	5.110-08	1.316-08	4.724-09
NW	SE	9.502-05	3.257-05	8.600-06	3.238-06	1.215-06	3.253-07	1.191-07	4.316-08	1.111-08	3.982-09
NNW	SSE	7.204-05	2.555-05	7.025-06	2.701-06	1.028-06	2.785-07	1.023-07	3.711-08	9.560-09	3.423-09

EXECUTION TIME FOR JOINT WAS .581 SECONDS

FIGURE D.5. (contd)

```

1.  SAMPLE PROBLEM 2 INVENTORY
2.  SOURCE LIBRARY
3.  15
4.  KR* 85      5.4E-8KR* 85      5.9E-8KR 85      4.4E-8KR 87      2.6E-5
5.  KR 88      2.6E-8KR 89      7.6E-8XE*131     4.1E-8XE*133     5.7E-7
6.  XE 133     1.6E-8XE*135     4.4E-8XE 135     4.4E-8XE 137     1.4E-4
7.  XE 138     1.4E-8I 131     2.4E-8I 133     1.1E-9
8.  SAMPLE PROBLEM 2 - GAMMA DOSE
9.  JOINT LIBRARY A
10.  5 4 16 10 0
11.  0 0 0 0 0
12.  .78 2.5 4.5 6.9 9.5 12.5 15.6
13.  HANFORD V. STABLE HANFORD M. STABLE PASQUILL D NEUTRALPASQUILL S UNSTAB.
14.  N ENE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW
15.  S SSW SW WSW W WNW NW NNW N NNE NE ENE E ESE SE SSE
16.  .514 .535 .562 .934 1.41 1.21 .643 .363 .411 .786 .808 .661 .501 .49 .472 .435
17.  .71 .819 .657 1.03 .993 .743 .585 .509 .515 .912 1.13 .961 .81 .847 .749 .59
18.  .25 .279 .267 .435 .399 .313 .204 .126 .140 .246 .458 .596 .529 .523 .421 .281
19.  .271 .232 .281 .387 .269 .208 .135 .14 .149 .254 .474 .631 .838 .930 .608 .381
20.  .157 .0936 .191 .399 .663 .808 .305 .128 .239 1.15 .578 .201 .106 .059 .0672 .0956
21.  .541 .49 .503 .547 .635 .604 .543 .409 .6822 .67 2.64 1.61 .636 .547 .295 .208
22.  .34 .234 .175 .163 .254 .191 .128 .6733 .142 .397 .645 .564 .366 .326 .220 .142
23.  1.43 .779 .558 .765 .877 .718 .433 .350 .4681 .21 1.21 .832 .7 .836 .912 .897
24.  .062 .092 .0041 .0020 .0224 .0346 .0102 .0081 .0020 .0651 .112 .0712 .0183 .0061 .0041 .0
25.  .173 .0427 .0163 .0265 .0916 .138 .195 .258 .356 .912 1.73 2.28 .967 .328 .0753 .0163
26.  .144 .0488 .0265 .0163 .0672 .0773 .0672 .0549 .124 .252 .405 .545 .411 .204 .0427 .0224
27.  .564 .25 .171 .108 .281 .273 .161 .263 .301 1.0 .706 .615 .478 .293 .0977 .0916
28.  .0 .0 .0 .0020 .0041 .0020 .0020 .0020 .0041 .0163 .0102 .0061 .0 .0 .0 .0
29.  .147 .0997 .0041 .0 .0081 .0224 .0346 .102 .256 .429 .415 1.3 .956 .222 .0488 .0
30.  .254 .116 .0041 .0061 .0122 .0305 .0224 .0570 .0977 .212 .303 .840 .804 .226 .0549 .0142
31.  .344 .0712 .0041 .0020 .0204 .0468 .0102 .0305 .0997 .411 .244 .71 .682 .199 .0611 .0081
32.  .0 .0020 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0
33.  .9468 .0224 .0020 .0020 .0041 .0 .0 .0 .0020 .0936 .0692 .171 .195 .059 .0183 .0
34.  .0956 .0488 .0102 .0041 .0061 .0020 .0122 .0041 .0142 .0590 .0468 .293 .315 .0672 .0224 .0
35.  .13 .0427 .0 .0 .0 .0 .0041 .0020 .0041 .0326 .0305 .260 .244 .0611 .0204 .0020
36.  100. 200. 500. 1000. 2000. 5000. 10000. 20000.
37.  50000. 100000.
38.  0.0
39.  3
40.  1300. 2414. 4022. 5632. 7240. 12070. 24140. 40220.
41.  56320. 72400.
42.  SAMPLE PROBLEM 2 - BETA AND SKIN DOSE
43.  JOINT A
44.  5 4 16 10 1
45.  1 0 0 0 1
46.  0.0
47.  2 0 34. .025 .00088
48.  2 0 97. .33 .00025
49.  7 0
50.  5 0
51.  22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5

```

FIGURE D.6. Gamma and Beta Dose Input

SAMPLE PROBLEM 2 INVENTORY

SOURCE LIBRARY

NUCLIDE RELEASE RATES IN CURIES/SECOND

KR* 83 5.4000-06	KR* 85 8.9000-06	KR 85 4.4000-08	KR 87 2.6000-05	KR 88 2.8000-05	KR 89 7.6000-05
XE*131 4.1000-08	XE*133 5.7000-07	XE 133 1.6000-05	XE*135 4.4000-05	XE 135 4.4000-05	XE 137 1.4000-04
XE 138 1.4000-04	I 131 2.4000-10	I 133 1.1000-09			

EXECUTION TIME FOR SOURCE WAS 10.278 SECONDS

SAMPLE PROBLEM 2 - GAMMA DOSE

JOINT LIBRARY A

NR = 10

RELEASE HEIGHT IS .0 METERS

LISTING OF INPUT DATA

DATA WERE SUPPLIED FOR 5 WIND SPEEDS, 4 STABILITIES, 10 DISTANCES AND 16 SECTORS

WIND SPEEDS (AVERAGE FOR GROUP, M/SEC) ARE .8 2.5 4.5 6.9 9.5

STABILITIES CONSIDERED ARE
 HANFORD V. STABLE
 HANFORD M. STABLE
 PASQUILL D. NEUTRAL
 PASQUILL B. UNSTAB.

WIND DIRECTIONS ARE N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW

SECTOR DIRECTIONS ARE S SSW SW WSW W WNW NW NNW N NNE NE ENE E ESE SE SSE

FIGURE D.7. Gamma and Beta Dose Output

JOINT PROBABILITY DATA FOR ATMOSPHERIC CONDITIONS

WIND SPEED	STABILITY	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
.8	HANFORD V. STABLE	.51	.53	.56	.93	1.41	1.21	.64	.38	.41	.79	.81	.66	.50	.49	.47	.44
.8	HANFORD M. STABLE	.71	.62	.66	1.03	.99	.74	.59	.51	.51	.91	1.13	.96	.81	.85	.75	.59
.8	PASQUILL D NEUTRAL	.26	.28	.27	.44	.40	.31	.20	.12	.14	.25	.46	.60	.53	.52	.42	.28
.8	PASQUILL B UNSTAB.	.27	.23	.28	.39	.29	.21	.14	.14	.15	.25	.47	.63	.84	.93	.61	.38
2.5	HANFORD V. STABLE	.16	.09	.19	.40	.66	.81	.30	.13	.23	1.15	.58	.20	.11	.06	.07	.10
2.5	HANFORD M. STABLE	.54	.49	.50	.55	.63	.60	.54	.41	.68	2.67	2.64	1.61	.70	.55	.30	.21
2.5	PASQUILL D NEUTRAL	.34	.23	.17	.16	.25	.19	.13	.07	.14	.40	.64	.56	.37	.33	.22	.14
2.5	PASQUILL B UNSTAB.	1.43	.78	.56	.76	.88	.72	.43	.35	.47	1.21	1.21	.83	.70	.84	.91	.90
4.5	HANFORD V. STABLE	.00	.00	.00	.00	.02	.03	.01	.01	.00	.07	.11	.07	.02	.01	.00	.00
4.5	HANFORD M. STABLE	.17	.04	.02	.03	.09	.14	.20	.26	.36	.91	1.73	2.28	.97	.33	.08	.02
4.5	PASQUILL D NEUTRAL	.14	.05	.03	.02	.07	.08	.07	.05	.12	.25	.41	.54	.41	.20	.04	.02
4.5	PASQUILL B UNSTAB.	.56	.25	.17	.11	.28	.27	.16	.26	.30	1.00	.71	.61	.48	.29	.10	.09
6.9	HANFORD V. STABLE	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.01	.01	.00	.00	.00	.00
6.9	HANFORD M. STABLE	.15	.10	.00	.00	.01	.02	.03	.10	.26	.43	.41	1.30	.96	.22	.05	.00
6.9	PASQUILL D NEUTRAL	.25	.12	.00	.01	.01	.03	.02	.06	.10	.21	.30	.84	.80	.23	.05	.01
6.9	PASQUILL B UNSTAB.	.34	.07	.00	.00	.02	.05	.01	.03	.10	.41	.24	.71	.68	.20	.06	.01
9.5	HANFORD V. STABLE	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9.5	HANFORD M. STABLE	.05	.02	.00	.00	.00	.00	.00	.00	.00	.09	.07	.17	.20	.06	.02	.00
9.5	PASQUILL D NEUTRAL	.10	.05	.01	.00	.01	.00	.01	.00	.01	.06	.05	.29	.31	.07	.02	.00
9.5	PASQUILL B UNSTAB.	.13	.04	.00	.00	.00	.00	.00	.00	.00	.03	.03	.26	.24	.06	.02	.00

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - GAMMA DOSE

DATE 06 JUL 73

DOSE IN TISSUE AT .0 CM DEPTH, MRAD/YR.

DIRECTION		DISTANCE FROM SOURCE, METERS								RELEASE HEIGHT = 0. METERS	
WIND	SECTOR	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
N	S	2.342+01	1.264+01	4.259+00	1.684+00	5.596-01	1.028-01	2.614-02	5.863-03	6.300-04	1.006-04
NNE	SSW	1.905+01	9.864+00	3.522+00	1.408+00	4.747-01	8.637-02	2.120-02	4.587-03	4.613-04	6.944-05
NE	SW	1.890+01	9.776+00	3.516+00	1.413+00	4.799-01	8.766-02	2.126-02	4.498-03	4.376-04	6.272-05
ENE	WSW	2.852+01	1.464+01	5.361+00	2.164+00	7.383-01	1.344-01	3.238-02	6.824-03	6.563-04	9.370-05
E	W	3.380+01	1.782+01	6.560+00	2.691+00	9.370-01	1.762-01	4.336-02	9.323-03	9.325-04	1.376-04
ESE	WNW	2.873+01	1.522+01	5.659+00	2.343+00	8.275-01	1.608-01	4.061-02	8.920-03	9.358-04	1.428-04
SE	NW	1.796+01	9.486+00	3.514+00	1.451+00	5.107-01	9.865-02	2.485-02	5.456-03	5.687-04	8.695-05
SSE	NNW	1.314+01	6.954+00	2.555+00	1.048+00	3.652-01	7.041-02	1.803-02	4.046-03	4.345-04	6.937-05
S	N	1.590+01	8.483+00	3.139+00	1.300+00	4.611-01	9.333-02	2.482-02	5.752-03	6.564-04	1.086-04
SSW	NNE	3.877+01	2.058+01	7.789+00	3.285+00	1.199+00	2.601-01	7.195-02	1.701-02	2.046-03	3.422-04
SW	NE	4.461+01	2.328+01	8.635+00	3.602+00	1.299+00	2.755-01	7.574-02	1.792-02	2.124-03	3.585-04
WSW	ENE	4.187+01	2.216+01	8.045+00	3.330+00	1.194+00	2.545-01	7.230-02	1.798-02	2.234-03	4.023-04
W	E	3.292+01	1.712+01	5.988+00	2.390+00	8.168-01	1.624-01	4.485-02	1.104-02	1.345-03	2.415-04
WNW	ESE	2.961+01	1.485+01	5.074+00	1.962+00	6.375-01	1.140-01	2.864-02	6.394-03	6.749-04	1.082-04
NW	SE	2.290+01	1.150+01	3.941+00	1.520+00	4.888-01	8.316-02	1.975-02	4.150-03	3.912-04	5.661-05
NNW	SSE	1.758+01	8.897+00	3.682+00	1.196+00	3.863-01	6.554-02	1.540-02	3.182-03	2.902-04	4.012-05

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - GAMMA DOSE

DATE 06 JUL 73

DOSE IN TISSUE AT .0 CM DEPTH, MRAD/YR.

DIRECTION		DISTANCE FROM SOURCE, METERS						RELEASE HEIGHT = 0. METERS			
WIND	SECTOR	1300.	2414.	4022.	5632.	7240.	12070.	24140.	40220.	56320.	72400.
N	S	1.133+00	4.040-01	1.556-01	8.168-02	5.025-02	1.764-02	3.797-03	1.092-03	4.639-04	2.402-04
NNE	SSW	9.518-01	3.430-01	1.315-01	6.834-02	4.144-02	1.417-02	2.936-03	8.132-04	3.365-04	1.706-04
NE	SW	9.579-01	3.472-01	1.336-01	6.928-02	4.184-02	1.414-02	2.861-03	7.800-04	3.169-04	1.581-04
ENE	WSW	1.469+00	5.342-01	2.052-01	1.061-01	6.390-02	2.150-02	4.332-03	1.172-03	4.749-04	2.365-04
E	W	1.840+00	6.821-01	2.670-01	1.396-01	8.474-02	2.895-02	5.959-03	1.649-03	6.784-04	3.418-04
ESE	WNW	1.610+00	6.058-01	2.418-01	1.280-01	7.847-02	2.729-02	5.747-03	1.637-03	6.849-04	3.493-04
SE	NW	9.960-01	3.734-01	1.485-01	7.850-02	4.806-02	1.669-02	3.512-03	9.955-04	4.161-04	2.124-04
SSE	NHW	7.168-01	2.666-01	1.058-01	5.612-02	3.457-02	1.217-02	2.620-03	7.532-04	3.200-04	1.657-04
S	N	8.943-01	3.393-01	1.386-01	7.487-02	4.680-02	1.692-02	3.766-03	1.123-03	4.866-04	2.554-04
SSW	NNE	2.282+00	8.924-01	3.806-01	2.102-01	1.335-01	4.940-02	1.123-02	3.470-03	1.522-03	8.031-04
SW	NE	2.490+00	9.624-01	4.047-01	2.223-01	1.408-01	5.198-02	1.181-02	3.605-03	1.581-03	8.359-04
WSW	ENE	2.297+00	8.847-01	3.719-01	2.062-01	1.321-01	5.021-02	1.199-02	3.736-03	1.679-03	9.075-04
W	E	1.621+00	5.970-01	2.405-01	1.307-01	8.286-02	3.101-02	7.337-03	2.255-03	1.009-03	5.447-04
WNW	ESE	1.309+00	4.575-01	1.734-01	9.033-02	5.531-02	1.929-02	4.131-03	1.172-03	4.968-04	2.575-04
NNW	SE	1.011+00	3.484-01	1.284-01	6.535-02	3.918-02	1.309-02	2.627-03	6.993-04	2.832-04	1.415-04
NNW	SSE	7.966-01	2.754-01	1.013-01	5.145-02	3.073-02	1.017-02	2.003-03	5.244-04	2.087-04	1.027-04

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - GAMMA DOSE

DATE 06 JUL 73

DOSE IN TISSUE AT 1.0 CM DEPTH, MRAD/YR.

DIRECTION		DISTANCE FROM SOURCE, METERS								RELEASE HEIGHT = 0. METERS	
WIND	SECTOR	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
N	S	2.201+01	1.132+01	4.005+00	1.585+00	5.272-01	9.681-02	2.457-02	5.490-03	5.846-04	9.245-05
NNE	SSW	1.790+01	9.270+00	3.312+00	1.325+00	4.474-01	8.135-02	1.992-02	4.289-03	4.265-04	6.351-05
NE	SW	1.776+01	9.187+00	3.306+00	1.330+00	4.523-01	8.256-02	1.997-02	4.202-03	4.035-04	5.707-05
ENE	WSW	2.680+01	1.394+01	5.041+00	2.037+00	6.958-01	1.266-01	3.041-02	6.371-03	6.045-04	8.512-05
E	W	3.176+01	1.675+01	6.169+00	2.533+00	8.829-01	1.659-01	4.073-02	8.710-03	8.600-04	1.252-04
ESE	WNW	2.700+01	1.430+01	5.321+00	2.205+00	7.797-01	1.515-01	3.816-02	8.341-03	8.649-04	1.303-04
SE	NW	1.688+01	8.915+00	3.305+00	1.366+00	4.812-01	9.291-02	2.336-02	5.103-03	5.260-04	7.950-05
SSE	NNW	1.235+01	6.536+00	2.402+00	9.864-01	3.441-01	6.631-02	1.694-02	3.787-03	4.029-04	6.370-05
S	N	1.494+01	7.972+00	2.952+00	1.223+00	4.344-01	8.791-02	2.335-02	5.392-03	6.103-04	1.000-04
SSW	NNE	3.643+01	1.934+01	7.322+00	3.091+00	1.129+00	2.450-01	6.773-02	1.597-02	1.906-03	3.155-04
SW	NE	4.192+01	2.188+01	8.118+00	3.389+00	1.223+00	2.596-01	7.129-02	1.682-02	1.979-03	3.310-04
WSW	ENE	3.935+01	2.082+01	7.563+00	3.133+00	1.124+00	2.397-01	6.806-02	1.689-02	2.088-03	3.732-04
W	E	3.093+01	1.608+01	5.630+00	2.249+00	7.693-01	1.530-01	4.220-02	1.037-02	1.256-03	2.241-04
WNW	ESE	2.782+01	1.396+01	4.771+00	1.847+00	6.007-01	1.073-01	2.692-02	5.986-03	6.262-04	9.959-05
NW	SE	2.152+01	1.081+01	3.706+00	1.431+00	4.607-01	7.832-02	1.854-02	3.875-03	3.606-04	5.160-05
NNW	SSE	1.552+01	8.362+00	2.898+00	1.126+00	3.640-01	6.173-02	1.446-02	2.969-03	2.658-04	3.637-05

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - GAMMA DOSE

DATE 06 JUL 73

DOSE IN TISSUE AT 1.0 CM DEPTH, MRAD/YR.

DIRECTION		DISTANCE FROM SOURCE, METERS										RELEASE HEIGHT = 0. METERS	
WIND	SECTOR	1300.	2414.	4022.	5632.	7240.	12070.	24140.	40220.	56320.	72400.		
N	S	1.066+00	3.807-01	1.466-01	7.692-02	4.729-02	1.657-02	3.550-03	1.016-03	4.298-04	2.219-04		
NNE	SSW	8.962-01	3.232-01	1.239-01	6.435-02	3.899-02	1.330-02	2.740-03	7.540-04	3.105-04	1.569-04		
NE	SW	9.021-01	3.272-01	1.259-01	6.523-02	3.937-02	1.326-02	2.667-03	7.218-04	2.916-04	1.448-04		
ENE	WSW	1.384+00	5.034-01	1.933-01	9.992-02	6.011-02	2.017-02	4.035-03	1.084-03	4.365-04	2.163-04		
E	W	1.733+00	6.428-01	2.516-01	1.315-01	7.972-02	2.716-02	5.555-03	1.527-03	6.244-04	3.132-04		
ESE	WNW	1.516+00	5.708-01	2.278-01	1.206-01	7.384-02	2.561-02	5.364-03	1.518-03	6.318-04	3.208-04		
SE	NW	9.379-01	3.519-01	1.399-01	7.391-02	4.522-02	1.567-02	3.279-03	9.237-04	3.843-04	1.953-04		
SSE	NNW	6.749-01	2.512-01	9.966-02	5.285-02	3.253-02	1.143-02	2.449-03	7.001-04	2.962-04	1.529-04		
S	N	8.418-01	3.196-01	1.306-01	7.051-02	4.406-02	1.590-02	3.526-03	1.047-03	4.518-04	2.364-04		
SSW	NNE	2.148+00	8.405-01	3.585-01	1.980-01	1.258-01	4.648-02	1.053-02	3.240-03	1.416-03	7.443-04		
SW	NE	2.344+00	9.065-01	3.813-01	2.094-01	1.327-01	4.890-02	1.108-02	3.367-03	1.471-03	7.754-04		
WSW	ENE	2.162+00	8.332-01	3.503-01	1.942-01	1.244-01	4.725-02	1.125-02	3.497-03	1.567-03	8.450-04		
W	E	1.526+00	5.624-01	2.265-01	1.231-01	7.801-02	2.916-02	6.883-03	2.109-03	9.414-04	5.071-04		
WNW	ESE	1.232+00	4.312-01	1.634-01	8.506-02	5.205-02	1.811-02	3.861-03	1.090-03	4.604-04	2.379-04		
NW	SE	9.520-01	3.284-01	1.209-01	6.153-02	3.685-02	1.227-02	2.448-03	6.467-04	2.606-04	1.297-04		
NNW	SSE	7.503-01	2.596-01	9.550-02	4.843-02	2.890-02	9.531-03	1.864-03	4.840-04	1.915-04	9.373-05		

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - GAMMA DOSE

DATE 06 JUL 73

DOSE IN TISSUE AT 5.0 CM DEPTH, MRAD/YR.

DIRECTION		DISTANCE FROM SOURCE, METERS								RELEASE HEIGHT = 0. METERS	
WIND	SECTOR	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
N	S	1.725+01	8.873+00	3.146+00	1.250+00	4.175-01	7.664-02	1.932-02	4.255-03	4.378-04	6.690-05
NNE	SSW	1.403+01	7.270+00	2.604+00	1.046+00	3.545-01	6.439-02	1.563-02	3.305-03	3.149-04	4.506-05
NE	SW	1.392+01	7.206+00	2.600+00	1.050+00	3.585-01	6.535-02	1.566-02	3.230-03	2.949-04	3.960-05
ENE	WSW	2.101+01	1.094+01	3.964+00	1.608+00	5.516-01	1.002-01	2.383-02	4.886-03	4.397-04	5.871-05
E	W	2.490+01	1.313+01	4.851+00	1.999+00	6.997-01	1.313-01	3.194-02	6.694-03	6.291-04	8.713-05
ESE	WNW	2.116+01	1.122+01	4.184+00	1.740+00	6.177-01	1.199-01	2.997-02	6.434-03	6.382-04	9.161-05
SE	NW	1.323+01	6.992+00	2.598+00	1.078+00	3.812-01	7.354-02	1.834-02	3.940-03	3.893-04	5.628-05
SSE	NNW	9.681+00	5.125+00	1.888+00	7.781-01	2.725-01	5.248-02	1.332-02	2.932-03	3.009-04	4.588-05
S	N	1.171+01	6.251+00	2.319+00	9.643-01	3.438-01	6.959-02	1.839-02	4.198-03	4.609-04	7.296-05
SSW	NNE	2.855+01	1.516+01	5.749+00	2.434+00	8.929-01	1.941-01	5.350-02	1.249-02	1.448-03	2.306-04
SW	NE	3.285+01	1.715+01	6.375+00	2.670+00	9.669-01	2.055-01	5.630-02	1.316-02	1.507-03	2.432-04
WSW	ENE	3.084+01	1.633+01	5.939+00	2.467+00	8.885-01	1.897-01	5.375-02	1.326-02	1.606-03	2.796-04
W	E	2.425+01	1.261+01	4.422+00	1.772+00	6.085-01	1.210-01	3.328-02	8.117-03	9.637-04	1.680-04
WNW	ESE	2.131+01	1.095+01	3.750+00	1.457+00	4.759-01	8.495-02	2.115-02	4.637-03	4.690-04	7.234-05
NW	SE	1.687+01	8.477+00	2.914+00	1.130+00	3.653-01	6.198-02	1.453-02	2.973-03	2.632-04	3.610-05
NNW	SSE	1.295+01	6.558+00	2.279+00	8.888-01	2.887-01	4.886-02	1.132-02	2.271-03	1.926-04	2.488-05

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - GAMMA DOSE

DATE 06 JUL 73

DOSE IN TISSUE AT 5.0 CM DEPTH, MRAD/YR.

DIRECTION		DISTANCE FROM SOURCE, METERS										RELEASE HEIGHT = 0. METERS	
WIND	SECTOR	1300.	2414.	4022.	5632.	7240.	12070.	24140.	40220.	56320.	72400.		
N	S	8.422-01	3.916-01	1.161-01	6.085-02	3.734-02	1.299-02	2.736-03	7.679-04	3.202-04	1.633-04		
NNE	SSW	7.083-01	2.562-01	9.822-02	5.088-02	3.075-02	1.039-02	2.097-03	5.531-04	2.278-04	1.135-04		
NE	SW	7.131-01	2.594-01	9.982-02	5.158-02	3.105-02	1.036-02	2.033-03	5.349-04	2.114-04	1.031-04		
ENE	WSW	1.094+00	3.992-01	1.532-01	7.898-02	4.739-02	1.573-02	3.068-03	7.998-04	3.149-04	1.531-04		
E	W	1.370+00	5.096-01	1.994-01	1.039-01	6.286-02	2.121-02	4.235-03	1.132-03	4.532-04	2.233-04		
ESE	WNW	1.198+00	4.524-01	1.806-01	9.535-02	5.827-02	2.004-02	4.108-03	1.134-03	4.627-04	2.311-04		
SE	NW	7.411-01	2.788-01	1.109-01	5.845-02	3.569-02	1.226-02	2.515-03	6.917-04	2.625-04	1.413-04		
SSE	NNW	5.332-01	1.991-01	7.895-02	4.179-02	2.568-02	8.955-03	1.885-03	5.280-04	2.200-04	1.121-04		
S	N	6.646-01	2.531-01	1.034-01	5.579-02	3.482-02	1.250-02	2.731-03	7.974-04	3.394-04	1.754-04		
SSW	NNE	1.694+00	6.650-01	2.840-01	1.568-01	9.956-02	3.665-02	8.202-03	2.486-03	1.070-03	5.551-04		
SW	NE	1.849+00	7.172-01	3.020-01	1.658-01	1.050-01	3.855-02	8.630-03	2.585-03	1.114-03	5.802-04		
WSW	ENE	1.704+00	6.589-01	2.773-01	1.536-01	9.842-02	3.727-02	8.806-03	2.707-03	1.200-03	6.416-04		
W	E	1.204+00	4.450-01	1.793-01	9.736-02	6.164-02	2.296-02	5.371-03	1.628-03	7.199-04	3.847-04		
WNW	ESE	9.738-01	3.417-01	1.294-01	6.727-02	4.108-02	1.419-02	2.974-03	8.233-04	3.430-04	1.754-04		
NW	SE	7.528-01	2.605-01	9.588-02	4.864-02	2.904-02	9.571-03	1.863-03	4.781-04	1.889-04	9.261-05		
NNW	SSE	5.934-01	2.059-01	7.572-02	3.828-02	2.277-02	7.422-03	1.413-03	3.547-04	1.370-04	6.583-05		

EXECUTION TIME FOR JOINT WAS 13.692 SECONDS

SAMPLE BROBLEM 2 - BETA AND SKIN DOSE

JOINT A

.3400+02 .2500-01 .8600-03
.9700+02 .3300-00 .2500-03

LIMITS OF STORED SIGZ DATA EXCEEDED FOR METEOROLOGY TYPE 4

DEGRESS PER SECTOR ARE 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5

LISTING OF INPUT DATA

DATA WERE SUPPLIED FOR 5 WIND SPEEDS, 4 STABILITIES, 10 DISTANCES AND 16 SECTORS

WIND SPEEDS (AVERAGE FOR GROUP, M/SEC) ARE .8 2.5 4.5 6.9 9.5

STABILITIES CONSIDERED ARE
HANFORD V. STABLE
HANFORD M. STABLE
PASQUILL D. NEUTRAL
PASQUILL B. UNSTAB.

WIND DIRECTIONS ARE N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW

SECTOR DIRECTIONS ARE S SSW SW WSW W WNW NW NNW N NNE NE ENE E ESE SE SSE

JOINT PROBABILITY DATA FOR ATMOSPHERIC CONDITIONS

WIND SPEED	STABILITY	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
.8	HANFORD V. STABLE	.51	.53	.56	.93	1.41	1.21	.64	.38	.41	.79	.81	.66	.50	.49	.47	.44
.8	HANFORD M. STABLE	.71	.62	.66	1.03	.99	.74	.59	.51	.51	.91	1.13	.96	.81	.85	.75	.59
.8	PASQUILL D NEUTRAL	.26	.28	.27	.44	.40	.31	.20	.12	.14	.25	.46	.60	.53	.52	.42	.28
.8	PASQUILL B UNSTAB.	.27	.23	.28	.39	.29	.21	.14	.14	.15	.25	.47	.63	.84	.93	.61	.38
2.5	HANFORD V. STABLE	.16	.09	.19	.40	.66	.81	.30	.13	.23	1.15	.58	.20	.11	.06	.07	.10
2.5	HANFORD M. STABLE	.54	.49	.50	.55	.63	.60	.54	.41	.68	2.67	2.64	1.61	.70	.55	.30	.21
2.5	PASQUILL D NEUTRAL	.34	.23	.17	.16	.25	.19	.13	.07	.14	.40	.64	.56	.37	.33	.22	.14
2.5	PASQUILL B UNSTAB.	1.43	.78	.56	.76	.88	.72	.43	.35	.47	1.21	1.21	.83	.70	.84	.91	.90
4.5	HANFORD V. STABLE	.00	.00	.00	.00	.02	.03	.01	.01	.00	.07	.11	.07	.02	.01	.00	.00
4.5	HANFORD M. STABLE	.17	.04	.02	.03	.09	.14	.20	.26	.36	.91	1.73	2.28	.97	.33	.08	.02
4.5	PASQUILL D NEUTRAL	.14	.05	.03	.02	.07	.08	.07	.05	.12	.25	.41	.54	.41	.20	.04	.02
4.5	PASQUILL B UNSTAB.	.56	.25	.17	.11	.28	.27	.16	.26	.30	1.00	.71	.61	.48	.29	.10	.09
6.9	HANFORD V. STABLE	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.01	.01	.00	.00	.00	.00
6.9	HANFORD M. STABLE	.15	.10	.00	.00	.01	.02	.03	.10	.26	.43	.41	1.30	.96	.22	.05	.00
6.9	PASQUILL D NEUTRAL	.25	.12	.00	.01	.01	.03	.02	.06	.10	.21	.30	.84	.80	.23	.05	.01
6.9	PASQUILL B UNSTAB.	.34	.07	.00	.00	.02	.05	.01	.03	.10	.41	.24	.71	.68	.20	.06	.01
9.5	HANFORD V. STABLE	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9.5	HANFORD M. STABLE	.05	.02	.00	.00	.00	.00	.00	.00	.00	.09	.07	.17	.20	.06	.02	.00
9.5	PASQUILL D NEUTRAL	.10	.05	.01	.00	.01	.00	.01	.00	.01	.06	.05	.29	.31	.07	.02	.00
9.5	PASQUILL B UNSTAB.	.13	.04	.00	.00	.00	.00	.00	.00	.00	.03	.03	.26	.24	.06	.02	.00

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - BETA AND SKIN DOSE

DATE 06 JUL 73

BETA DOSE CALCULATION, MRAD/YEAR

DIRECTION		DISTANCE FROM SOURCE, METERS								RELEASE HEIGHT = 0. METERS	
WIND	SECTOR	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
N	S	3.037+02	9.065+01	1.784+01	5.293+00	1.578+00	2.796-01	6.65E-02	1.365-02	1.321-03	2.028-04
NNE	SSW	2.477+02	7.591+01	1.532+01	4.622+00	1.401+00	2.464-01	5.693-02	1.118-02	1.001-03	1.479-04
NE	SW	2.404+02	7.547+01	1.575+01	4.832+00	1.480+00	2.648-01	6.176-02	1.209-02	1.059-03	1.488-04
ENE	WSW	3.639+02	1.164+02	2.472+01	7.574+00	2.376+00	4.284-01	1.001-01	1.959-02	1.711-03	2.394-04
E	W	4.429+02	1.476+02	3.287+01	1.046+01	3.289+00	6.046-01	1.434-01	2.856-02	2.566-03	3.636-04
ESE	WNW	3.830+02	1.291+02	2.953+01	9.527+00	3.014+00	5.672-01	1.383-01	2.839-02	2.674-03	3.828-04
SE	NW	2.362+02	7.756+01	1.720+01	5.464+00	1.706+00	3.141-01	7.553-02	1.537-02	1.437-03	2.084-04
SSE	NNW	1.708+02	5.465+01	1.175+01	3.686+00	1.138+00	2.065-01	4.965-02	1.024-02	9.926-04	1.506-04
S	N	2.163+02	6.824+01	1.479+01	4.666+00	1.440+00	2.678-01	6.676-02	1.439-02	1.488-03	2.300-04
SSW	NNE	5.375+02	1.704+02	3.898+01	1.257+01	3.895+00	7.643-01	2.017-01	4.559-02	4.976-03	7.596-04
SW	NE	6.200+02	1.880+02	4.036+01	1.272+01	3.884+00	7.353-01	1.905-01	4.288-02	4.693-03	7.369-04
WSW	ENE	6.245+02	1.609+02	3.623+01	1.124+01	3.421+00	6.329-01	1.646-01	3.842-02	4.506-03	7.660-04
W	E	4.711+02	1.329+02	2.496+01	7.440+00	2.228+00	3.993-01	1.004-01	2.284-02	2.623-03	4.524-04
WNW	ESE	3.839+02	1.078+02	1.969+01	5.679+00	1.668+00	2.876-01	6.757-02	1.382-02	1.340-03	2.110-04
NW	SE	2.882+02	8.311+01	1.545+01	4.474+00	1.324+00	2.261-01	5.115-02	9.797-03	8.364-04	1.222-04
NNW	SSE	2.185+02	6.509+01	1.255+01	3.698+00	1.108+00	1.914-01	4.323-02	8.170-03	6.725-04	9.423-05

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - BETA AND SKIN DOSE

DATE 06 JUL 73

BETA DOSE CALCULATION, MRAD/YEAR

DIRECTION		DISTANCE FROM SOURCE, METERS										RELEASE HEIGHT = 0. METERS	
WIND	SECTOR	1300.	2414.	4022.	5632.	7240.	12070.	24140.	40220.	56320.	72400.		
N	S	3.346+00	1.120+00	4.290-01	2.202-01	1.323-01	4.394-02	8.644-03	2.334-03	9.635-04	4.911-04		
NNE	SSW	2.940+00	9.950-01	3.800-01	1.933-01	1.150-01	3.719-02	6.980-03	1.797-03	7.246-04	3.639-04		
NE	SW	3.088+00	1.054+00	4.070-01	2.082-01	1.244-01	4.036-02	7.528-03	1.919-03	7.615-04	3.761-04		
ENE	WSW	4.925+00	1.697+00	6.576-01	3.370-01	2.014-01	6.542-02	1.219-02	3.104-03	1.229-03	6.064-04		
E	W	6.761+00	2.359+00	9.237-01	4.768-01	2.865-01	9.416-02	1.787-02	4.629-03	1.849-03	9.164-04		
ESE	WNW	6.177+00	2.169+00	8.606-01	4.491-01	2.727-01	9.153-02	1.792-02	4.788-03	1.934-03	9.629-04		
SE	NW	3.524+00	1.223+00	4.790-01	2.481-01	1.498-01	4.984-02	9.683-03	2.572-03	1.040-03	5.201-04		
SSE	NNW	2.367+00	8.130-01	3.154-01	1.630-01	9.831-02	3.285-02	6.492-03	1.757-03	7.233-04	3.672-04		
S	N	2.998+00	1.031+00	4.057-01	2.125-01	1.299-01	4.465-02	9.232-03	2.603-03	1.090-03	5.579-04		
SSW	NNE	8.104+00	2.809+00	1.141+00	6.118-01	3.825-01	1.368-01	2.961-02	8.659-03	3.648-03	1.864-03		
SW	NE	8.147+00	2.785+00	1.106+00	5.864-01	3.637-01	1.289-01	2.784-02	8.133-03	3.453-03	1.780-03		
WSW	ENE	7.181+00	2.445+00	9.540-01	5.044-01	3.124-01	1.121-01	2.526-02	7.652-03	3.354-03	1.777-03		
W	E	4.711+00	1.584+00	6.072-01	3.165-01	1.934-01	6.784-02	1.493-02	4.459-03	1.954-03	1.039-03		
WNW	ESE	3.564+00	1.177+00	4.437-01	2.259-01	1.350-01	4.453-02	8.752-03	2.360-03	9.808-04	5.039-04		
NW	SE	2.815+00	9.350-01	3.512-01	1.768-01	1.044-01	3.320-02	6.065-03	1.513-03	6.034-04	3.015-04		
NNW	SSE	2.339+00	7.844-01	2.968-01	1.497-01	8.841-02	2.800-02	5.029-03	1.230-03	4.821-04	2.374-04		

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE BROBLEM 2 - BETA AND SKIN DOSE

DATE 06 JUL 73

SKIN DOSE CALCULATION, MRAD/YEAR

DIRECTION		DISTANCE FROM SOURCE, METERS						MULTIPLE RELEASE HEIGHTS, PREVIOUS 2 CASES			
WIND	SECTOR	100.	200.	500.	1000.	2000.	5000.	10000.	20000.	50000.	100000.
N	S	3.271+02	1.027+02	2.210+01	6.976+00	2.136+00	3.823-01	9.269-02	1.952-02	1.951-03	3.034-04
NNE	SSW	2.668+02	8.577+01	1.885+01	6.830+00	1.876+00	3.327-01	7.813-02	1.577-02	1.462-03	2.174-04
NE	SW	2.593+02	8.524+01	1.926+01	6.245+00	1.960+00	3.525-01	8.302-02	1.659-02	1.496-03	2.115-04
ENE	WSW	3.924+02	1.313+02	3.008+01	9.838+00	3.114+00	5.628-01	1.325-01	2.842-02	2.367-03	3.331-04
E	W	4.767+02	1.654+02	3.943+01	1.315+01	4.226+00	7.807-01	1.668-01	3.788-02	3.498-03	5.012-04
ESE	WNW	4.117+02	1.443+02	3.519+01	1.187+01	3.842+00	7.280-01	1.789-01	3.731-02	3.610-03	5.255-04
SE	NW	2.541+02	8.705+01	2.072+01	6.915+00	2.217+00	4.128-01	1.804-01	2.382-02	2.006-03	2.954-04
SSE	NNW	1.839+02	6.160+01	1.431+01	4.734+00	1.503+00	2.769-01	6.766-02	1.429-02	1.427-03	2.200-04
S	N	2.322+02	7.672+01	1.793+01	5.966+00	1.901+00	3.611-01	9.156-02	2.014-02	2.144-03	3.386-04
SSW	NNE	5.763+02	1.910+02	4.677+01	1.585+01	5.094+00	1.024+00	2.736-01	6.260-02	7.022-03	1.102-03
SW	NE	6.645+02	2.113+02	4.899+01	1.532+01	5.182+00	1.011+00	2.662-01	6.080-02	6.817-03	1.095-03
WSW	ENE	6.663+02	2.030+02	4.428+01	1.457+01	4.615+00	8.874-01	2.359-01	5.640-02	6.740-03	1.168-03
W	E	5.041+02	1.500+02	3.095+01	9.830+00	3.045+00	5.617-01	1.453-01	3.389-02	3.968-03	6.940-04
WNW	ESE	4.135+02	1.226+02	2.476+01	7.641+00	2.305+00	4.015-01	9.521-02	2.022-02	2.015-03	3.193-04
NW	SE	3.111+02	9.461+01	1.939+01	5.994+00	1.813+00	3.093-01	7.090-02	1.395-02	1.228-03	1.789-04
NNW	SSE	2.361+02	7.398+01	1.563+01	4.894+00	1.494+00	2.569-01	5.363-02	1.135-02	9.628-04	1.344-04

THE FOLLOWING CALCULATIONS ARE FOR SAMPLE PROBLEM 2 - BETA AND SKIN DOSE

DATE 06 JUL 73

SKIN DOSE CALCULATION, MRAD/YEAR

DIRECTION		DISTANCE FROM SOURCE, METERS						MULTIPLE RELEASE HEIGHTS, PREVIOUS 2 CASES			
WIND	SECTOR	1300.	2414.	4022.	5632.	7240.	12070.	24140.	40220.	56320.	72400.
N	S	4.479+00	1.524+00	5.846-01	3.019-01	1.826-01	6.157-02	1.244-02	3.426-03	1.427-03	7.313-04
NNE	SSW	3.892+00	1.338+00	5.115-01	2.617-01	1.564-01	5.136-02	9.916-03	2.610-03	1.061-03	5.345-04
NE	SW	4.046+00	1.402+00	5.406-01	2.775-01	1.662-01	5.450-02	1.039-02	2.699-03	1.078-03	5.341-04
ENE	WSW	6.394+00	2.231+00	8.627-01	4.431-01	2.653-01	8.692-02	1.652-02	4.276-03	1.704-03	8.429-04
E	W	8.601+00	3.041+00	1.191+00	6.165-01	3.713-01	1.231-01	2.383-02	6.279-03	2.527-03	1.258-03
ESE	WNW	7.787+00	2.775+00	1.102+00	5.772-01	3.512-01	1.188-01	2.367-02	6.425-03	2.618-03	1.312-03
SE	NW	4.829+00	1.596+00	6.274-01	3.266-01	1.979-01	6.654-02	1.320-02	3.567-03	1.457-03	7.325-04
SSE	NNW	5.084+00	1.980+00	4.212-01	2.191-01	1.329-01	4.502-02	9.112-03	2.510-03	1.043-03	5.329-04
S	N	3.892+00	1.371+00	5.443-01	2.873-01	1.767-01	6.157-02	1.300-02	3.726-03	1.576-03	8.132-04
SSW	NNE	1.039+01	3.701+00	1.521+00	8.220-01	5.160-01	1.862-01	4.084-02	1.213-02	5.171-03	2.667-03
SW	NE	1.064+01	3.747+00	1.510+00	8.087-01	5.046-01	1.808-01	3.965-02	1.174-02	5.033-03	2.616-03
WSW	ENE	9.477+00	3.330+00	1.326+00	7.105-01	4.445-01	1.623-01	3.724-02	1.139-02	5.033-03	2.685-03
W	E	6.333+00	2.181+00	8.477-01	4.473-01	2.763-01	9.885-02	2.227-02	6.714-03	2.963-03	1.584-03
WNW	ESE	4.873+00	1.635+00	6.171-01	3.162-01	1.903-01	6.382-02	1.288-02	3.532-03	1.478-03	7.614-04
NW	SE	3.826+00	1.283+00	4.796-01	2.422-01	1.436-01	4.629-02	8.692-03	2.213-03	8.866-04	4.430-04
NNW	SSE	3.135+00	1.060+00	3.981-01	2.011-01	1.191-01	3.816-02	7.032-03	1.754-03	6.909-04	3.401-04

EXECUTION TIME FOR JOINT WAS 2.064 SECONDS

APPENDIX E
PROGRAM LISTING

APPENDIX E

PROGRAM LISTING

The calling sequence for the subroutines used by program KRONIC is indicated in Figure E.1. A complete listing of the program follows in Figure E.2. The order of program elements is:

Part I - FDOSE
PLUME
PASSIG
LINEAR
FINT

Part II - CHRONI
SOURCE
JOINT
DECODE
LIBK
PASQIL
AITINT
CHAIINT

Data Libraries
THERM
ISOLIB
DOSRFL
DRFACL
DRATFL

FIGURE E.1. Subroutine Calling Sequence

COMPUTER PROGRAM KRONIC

W ELT FDOSE,1,730510, 57259

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1.  C MAIN PROGRAM FDOSE FOR CALCULATING GAMMA DOSE RATE FACTORS
2.  COMMON CAPA(16),ALFA(16),MU(16),MEV(16),DRDX(57,16),NXINT
3.  COMMON T(57),X(57),GROUPS,TRELES,UBAR,DELD(8),DELT(8),SZ(57),NDT
4.  COMMON MANDIS
5.  DIMENSION TITLE(14),DRF(16),DIST(10)
6.  REAL MANDIS,MEV,MU
7.  INTEGER GROUPS
8.  LOGICAL DEPLET
9.  DATA (CAPA(I),I=1,12)/.4,2,2,2,75,2,35,1,56,1,3,1,5,9,.85,.8,.75,
10. 1.65/
11. DATA (ALFA(I),I=1,12)/.9906,.193,.754,1.267,1.267,.831,.402,.211,
12. 1.3837,.5373,.0204,.0103/
13. DATA (MU(I),I=1,12)/.691,.229,.179,.159,.134,.166,.084,.0693,.957,
14. 1.948,.342,.0358/
15. DATA GROUPS/12/
16. DATA (MEV(I),I=1,12)/304,.40,25,15,83,15,29,16,4,18,93,19,45,
17. 1,10,82,17,6,16,23,15,16,13,83/
18. 131 FORMAT(12)
19. 56 FORMAT(3HDATA,F10.0,28H METERS THE DOSE FACTORS ARE /(1X,1P12E10.3/
20. 2))
21. CALL SETEOF(530)
22. DO 2 I=1,12
23. 2 MU(I)=MU(I)*1.293E-3
24. DEPLET=.FALSE.
25. C READ TITLE CARD
26. 1 READ 100, TITLE
27. 100 FORMAT(13A6,A2)
28. PRINT 200, TITLE
29. 200 FORMAT(1H1,13A6,A2)
30. C READ NUMBER OF DISTANCES POINT TO CONSIDER
31. READ(5,131) ND
32. IF(ND.LT.1.OR.ND.GT.10) GO TO 68
33. DO 60 ID=1,ND
34. IER=0
35. CALL PLUME(1ER)
36. DIST(ID)=MANDIS*.01
37. IF(1ER) 731,731,13
38. 13 PRINT 12,1ER
39. 12 FORMAT(24H TROUBLE IN PLUME, 1ER =,13)
40. C STOP ON PLUME ERROR
41. 11 GO TO 30
42. 731 DO 331 I=1,GROUPS
43. DRF(I)=0.0
44. 331 CONTINUE
45. DO 531 IE=1,NXINT
46. 531 J=7*(I-1)+1
47. K=J+7
48. DIFFX=(X(K)-X(J))/7.
49. DO 431 IE=1,GROUPS
50. DRF(IE)=DRF(IE)+DIFFX*FINT(DRDX(J,IE),8)
51. 431 CONTINUE
52. 531 CONTINUE
53. WRITE(6,56) DIST(ID),(DRF(I),I=1,GROUPS)
54. PUNCH 300, (DRF(I),I=1,GROUPS)
55. 300 FORMAT(8E10.4)
56. 60 CONTINUE
57. GO TO 1
58. 68 PRINT 168, ND
59. 168 FORMAT(10VALUE OF ND IS BAD - STOP*17)
60. 30 STOP
61. END

```

FIGURE E.2. Program Listing

@ ELT PLUME,1,730510, 57270

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1.  C SUBROUTINE PLUME READS METEOROLOGICAL PARAMETERS AND CALCULATES
2.  C DOSE RATE PER CURIE PER CM OF DOWNWIND CLOUD FOR EACH ENERGY GROUP.
3.  C
4.  SUBROUTINE PLUME(IER)
5.  COMMON CAPA(16),ALFA(16),MU(16),MEV(16),DRDX(57,16),NXINT
6.  COMMON T(57),X(57),GROUPS,TRELES,UBAR,DELD(8),DELT(8),SZ(57),NDT
7.  COMMON MANDIS
8.  DIMENSION ZLIM(22),YLM(22)
9.  DIMENSION ZSUM(16),ZLIST(8,16),YLIST(8,16),YSUM(16)
10. DIMENSION DEP(57),XDIST(20),ZSIG(20)
11. INTEGER TYPE,ENERGY,GROUPS,VERT,POSIT
12. INTEGER TYPE3
13. REAL MU,MEV,KSQD,MANDIS
14. DIMENSION Y(22),Z(22),YPM(10),ZPM(10)
15. LOGICAL ZDUB,YDUB,DEPLET,METIN,METOUT,PASS
16. LOGICAL LP
17. PASS=.FALSE.
18. IER=0
19. DEPLET=.FALSE.
20. C
21. C READ FIRST METEOROLOGICAL DATA CARD
22. C THE VARIABLES NDT, LP, DK, METIN AND METOUT ARE NOT DESCRIBED IN THE REPORT
23. C BECAUSE THEY ARE EITHER INOPERATIVE OR NOT PRACTICAL TO USE. THEY WERE
24. C ORIGINALLY DESIGNED FOR RACER (BNWL-B-69) AND WERE NOT REMOVED FOR THIS
25. C VERSION.
26. C TRELES IS THE NUMBER OF SECTORS.
27. READ 2, TYPE,NDT,LP,DK,METIN,METOUT,DEPLET,UBAR,MANDIS,H,YP,TRELES
28. 2 FORMAT(I2,I3,5L1,0P10,0)
29. PRINT 3, TYPE,UBAR,MANDIS,H,TRELES,YP
30. 3 FORMAT('0METEOROLOGY TYPE 'I2',' WIND SPEED = 'F5.2,' METERS/SECOND
31. 10, DISTANCE FROM RELEASE POINT = 'F9.0,' METERS',' RELEASE HEIGHT
32. 2= 'F4.0,' METERS, NUMBER OF SECTORS = 'F4.1,' LATERAL DISTANCE FRO
33. 3M CENTERLINE = 'F8.1,' METERS')
34. IF(METIN) METOUT=.FALSE.
35. IF(METOUT) PUNCH 1005, TYPE,NDT,DK,DEPLET,UBAR,MANDIS,H,YP,TRELES
36. 1005 FORMAT(I2,I3,1X,L1,2HTF,L1,5F10,2)
37. C
38. C CONVERT VARIABLES TO UNITS OF CM.
39. C
40. UBAR= 100.*UBAR
41. MANDIS=100.*MANDIS
42. H=100.*H
43. YP=100.*YP
44. IF(METIN) GO TO 25
45. C
46. C SET INTEGRATION LIMITS IN X DIRECTION.
47. C
48. C UPMAX IS MAXIMUM UPWIND INTEGRATION DISTANCE NECESSARY,
49. HYP=SQRT(H*H+YP*YP)
50. UPMAX=50000.+2.*HYP
51. UPTH=15000.+2.*HYP
52. UPTWO=5000.+7.*HYP
53. UPONE=1500.
54. C UPDIS IS UPWIND INTEGRATION DISTANCE.
55. UPDIS=AMIN1(80000.,MANDIS,UPMAX)
56. DWNDIS=AMIN1(80000.,UPMAX)
57. C TEST - UPWIND PLUS DOWNWIND DISTANCES ZERO IMPLIES NO EXPOSURE
58. IF(UPDIS+DWNDIS) 13,13,15
59. 13 PRINT 14, UPDIS,DWNDIS
60. 14 FORMAT(' NO X-INTEGRATION INTERVAL. UPDIS = 'F10.2,' METERS, DOWN
61. 1DIS = 'F10.2,' METERS')
62. GO TO 43
63. C TEST - IF DWNDIS LESS THAN 100CM, SKIP DOWNWIND INTEGRATION.
64. 15 IF(DWNDIS.LE.100.) GO TO 13
65. C TEST - IF MANDIS LESS THAN 100 CM, SKIP UPWIND INTEGRATION.
66. IF(MANDIS.LT.100.) GO TO 21
67. C SET UPWIND INTEGRATION
68. X(1)=MANDIS-UPDIS+10.
69. IF(UPTHR.GT.UPDIS-3000.) GO TO 16
70. X(8)=MANDIS-UPTHR
71. X(15)=MANDIS-UPTWO
72. X(22)=MANDIS-UPONE
73. X(29)=MANDIS
74. NXINT=4
75. GO TO 18
76. 16 IF(UPTWO.GT.UPDIS-1000.) GO TO 17
77. X(8)=MANDIS-UPTWO
78. X(15)=MANDIS-UPONE
79. X(22)=MANDIS
80. NXINT=3
81. GO TO 1A
82. 17 IF(UPONE.GT.UPDIS-300.) GO TO 1017
83. X(8)=MANDIS-UPONE
84. X(15)=MANDIS
85. NXINT=2
86. GO TO 18
87. 1017 X(8)=MANDIS
88. NXINT=1
89. 18 INEXT=7*(NXINT+1)+1
90. C SET DOWNWIND INTEGRATION LIMITS
91. X(INEXT)=MANDIS+UPONE
92. X(INEXT+7)=MANDIS+UPTWO
93. X(INEXT+14)=MANDIS+UPTHR
94. X(INEXT+21)=MANDIS+DWNDIS

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95.      IXINT=IXINT+4
96.      GO TO 25
97.      21 X(1)=MAHUIS
98.      IXINT=0
99.      GO TO 18
100. C READ NECESSARY METEOROLOGICAL DATA
101. 25 IF (TYPE.LT.4) GO TO 28
102.   IF (TYPE.LE.9) GO TO 27
103.   PRINT 26, TYPE
104. 26 FORMAT(' METEOROLOGY SPECIFIED INCORRECTLY. TYPE = '16)
105. 126 IER=2
106.   RETURN
107. 27 TYPE3=TYPE-3
108.   GO TO 31
109. 28 GO TO (29,30,31), TYPE
110. C SUTTONS WIND PARAMETERS
111. 29 READ(5,229) CZ,EN
112. 229 FORMAT(8F10.1)
113.   IF (METOUT) PUNCH 229, CZ,EN
114.   PRINT 129, CZ,EN
115. 129 FORMAT(6H CZ,EN,2F10.4)
116.   IF (METIN) GO TO 117
117.   CZ=CZ*100.
118.   GO TO 31
119. C HANFORD WIND CONDITIONS
120. 30 READ(5,229) A,B,KSQU
121.   PRINT 130,A,B,KSQU
122. 130 FORMAT(9H A,B,KSQU,3E10.4)
123.   IF (METOUT) PUNCH 230, A,B,KSQU
124. 230 FORMAT(8E10.4)
125.   IF (METIN) GO TO 117
126.   A=A*1.E4
127.   B=B*1.E4
128. C CALCULATE X-GRID POSITIONS
129. 31 IF (METIN) GO TO 117
130.   DO 33 I=1,IXINT
131.     J=7*(I-1)+1
132.     K=J+7
133.     DIFFX=(X(K)-X(J))/7.
134.     DELD(I)=DIFFX
135.     DELT(I)=DIFFX/UBAR
136.     DO 32 L=2,7
137.       POSIT=7*(I-1)+L
138.       X(POSIT)=X(POSIT-1)+DIFFX
139.     32 CONTINUE
140.   33 CONTINUE
141. C CALCULATE TRAVEL TIME TO EACH POSITION
142. C TRAVEL TIME IS USED TO CALCULATE SIGMA Z FROM HANFORD EQUATION.
143. C
144.   INEXT=7*IXINT+1
145.   DO 34 I=1,INEXT
146.     T(I)=X(I)/UBAR
147.     DEP(I)=1.0
148.   34 CONTINUE
149.   IF (METOUT) PUNCH 2, INEXT
150.   IF (METOUT) PUNCH 134, (X(I),I=1,INEXT)
151. 134 FORMAT(8E10.4)
152. C CALCULATE SIGMA Z FOR EACH POSITION
153. 39 IF (TYPE.LE.3) GO TO 45
154.   CALL PASSIG(TYPE3,INEXT,IRR)
155.   IF (IRR.GT.0) GO TO 43
156.   PRINT 1007, SZ
157. 1007 FORMAT(' SZ = '10F10.2/(' '10F10.2))
158.   GO TO 52
159. C ERROR RETURN FROM PASQUILL SIGMA Z CALCULATION. PRINT MESSAGE AND
160. C CONTINUE
161. 40 PRINT 41, TYPE3
162. 41 FORMAT(' LIBRARY DISTANCE DATA TOO SHORT FOR PASQUILL TYPE '12)
163.   7 IFR=1
164.   RETURN
165. 42 READ(5,4) (SZ(I),I=1,INEXT)
166.   4 FORMAT(8F10.0)
167.   READ 4, (SZ(I),I=1,INEXT)
168.   GO TO 7
169. 43 IF (TYPE.EQ.1) GO TO 44
170.   IF (TYPE.EQ.3) GO TO 42
171.   IF (TYPE.GT.3) GO TO 7
172.   READ 4, A
173.   GO TO 7
174. 44 READ(5,4) CZ
175.   GO TO 7
176. 45 IF (TYPE.EQ.3) GO TO 50
177.   IF (TYPE.EQ.2) GO TO 47
178. C SUTTON EQUATION
179.   DO 46 I=1,INEXT
180.     XPOWR=X(I)**(1.-EN*.5)/1.417
181.     SZ(I)=CZ*XPOWR
182.   46 CONTINUE
183.   PRINT 1007, SZ
184.   GO TO 52
185. C HANFORD
186. 47 CONTINUE
187.   DO 48 I=1,INEXT
188.     EXPO=KSQU*T(I)**2
189.     IF (EXPO.LT.1001) GO TO 347
190.     SIGZ2=A*(1.-EXP(-KSQU*T(I)**2))+D*T(I)
191.     GO TO 447
192. 347 SIGZ2=12100.

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193.      447 CONTINUE
194.      SZ(1)=SQRT(SIGZ2)
195.      48 CONTINUE
196.      PRINT 1007, SZ
197.      GO TO 52
198. C INPUT SIGMA Z
199.      50 READ 1110, N
200.      K=1
201.      IF(N.LT.1.OR.N.GT.20) GO TO 250
202.      READ 4, (XDIST(I),I=1,N)
203.      READ 4, (ZSIG(I),I=1,N)
204. C CONVERT XDIST(I) TO CM
205.      DO 550 I=1,N
206.      XDIST(I)=XDIST(I)*100.
207.      550 CONTINUE
208. C INTERPOLATE INPUT DATA FOR SY AND SZ AT EACH X POSITION.
209.      DO 150 I=1,INEXT
210.      CALL LINEAR(SZ(I),ZSIG,X(I),XDIST,K,N,ILR)
211.      IF(ILR.GT.0) GO TO 250
212.      150 CONTINUE
213.      IF(.NOT.METOUT) GO TO 450
214. C CONVERT XDIST(I) BACK TO METERS FOR PUNCHING
215.      DO 650 I=1,N
216.      XDIST(I)=XDIST(I)*.01
217.      650 CONTINUE
218.      PUNCH 1110, N
219.      PUNCH 134, (XDIST(I),I=1,N)
220.      PUNCH 134, (ZSIG(I),I=1,N)
221.      GO TO 450
222. C ERROR RETURN FROM LINEAR - TROUBLE WITH INPUT VALUES OF SY AND SZ.
223.      250 PRINT 350, N
224.      350 FORMAT(25H TROUBLE IN SZ INPUT, N =,I5)
225.      GO TO 7
226. C PRINT VALUES OF SZ
227.      450 PRINT 1007, SZ
228.      IF(METIN) GO TO 1117
229.      DO 51 I=1,INEXT
230.      SZ(I)=SZ(I)*100.
231.      51 CONTINUE
232. C
233. C
234.      52 CONTINUE
235.      DO 110 IX=1,INEXT
236.      SIGY=X(IX)*TAN(3.141593/TRELES)/3.
237.      SIGZ=SZ(IX)
238.      D=MAHOIS-X(IX)
239.      D=ABS(D)
240. C SET LIMITS FOR Z-INTEGRATION STARTING AT +3 SIGMA Z AND WORKING DOWN.
241.      ZLIM(1)=3.*SIGZ
242.      NZINT=0
243.      S04=SIGZ/4.
244.      S3=3.*SIGZ
245.      IF(D.LT.101.) GO TO 57
246.      IF(D.LT.501.) GO TO 56
247.      IF(D.GT.5101.) GO TO 58
248.      54 ZLIM(2)=S04
249.      ZLIM(3)=0.
250.      NZINT=2
251.      GO TO 62
252.      55 ZLIM(2)=0.
253.      NZINT=1
254.      GO TO 62
255.      56 IF(SIGZ.LT.10001.) GO TO 54
256.      GO TO 58
257.      57 IF(SIGZ.LT.1001.) GO TO 61
258.      IF(SIGZ.LT.4001.) GO TO 60
259.      58 IF(SIGZ.LT.20001.) GO TO 59
260.      ZLIM(2)=S04
261.      ZLIM(3)=5000.
262.      ZLIM(4)=1000.
263.      ZLIM(5)=200.
264.      ZLIM(6)=0.
265.      NZINT=5
266.      GO TO 62
267.      59 ZLIM(2)=S04
268.      ZLIM(3)=1000.
269.      ZLIM(4)=200.
270.      ZLIM(5)=0.
271.      NZINT=4
272.      GO TO 62
273.      60 ZLIM(2)=SIGZ
274.      ZLIM(3)=S04
275.      ZLIM(4)=200.
276.      ZLIM(5)=0.
277.      NZINT=4
278.      GO TO 62
279.      61 ZLIM(2)=SIGZ
280.      ZLIM(3)=0.
281.      NZINT=2
282.      62 CONTINUE
283. C SET Z INTEGRATION LIMITS BELOW CLOUD CENTERLINE.
284. C FOR GROUND LEVEL RELEASE DOUBLE UPPER INTEGRAL (DUB=.TRUE.)
285.      ZDUB=.FALSE.
286.      YDUB=.FALSE.
287.      IF(H.LT.100.) ZDUB=.TRUE.
288.      IF(YP.LT.100.) YDUB=.TRUE.
289.      IF(ZDUB) GO TO 87
290.      HOSZ=H/SIGZ

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291.      IF(HOSZ.LT.1.) GO TO 153
292.      SZ3=3.*SIGZ
293.      ZMIN=-SZ3
294.      ZMAX=H+SZ3
295.      ZPMIN=H-5.*SIGZ
296.      IF(ZPMIN.GT.ZMIN) ZMIN=ZPMIN
297.      Z(1)=ZMAX
298.      Z(2)=H
299.      IF(ZMIN.LE.0.) GO TO 162
300.      Z(3)=H-SZ3
301.      Z(4)=ZMIN
302.      NZINT=3
303.      1162 H=NZINT+1
304.      DO 1262 I=1,H
305.      1262 ZLIM(I)=Z(I)-H
306.      GO TO 87
307.      162 ZP02=H/2.
308.      ZMID=SZ3
309.      IF(Z(2).LE.ZMID) ZMID=Z(2)
310.      IF(ZP02.GT.ZMID) ZMID=ZP02
311.      DO 262 J=1,NZINT
312.      262 ZPM(J)=ZLIM(NZINT-J+1)
313.      DO 362 J=1,NZINT
314.      IF(ZPM(J).GT.ZMID*.9) GO TO 462
315.      362 CONTINUE
316.      HZ=NZINT
317.      GO TO 562
318.      462 HZ=J-1
319.      562 IF(HZ.EQ.0) GO TO 762
320.      DO 662 J=1,HZ
321.      662 Z(J+2)=ZPM(HZ-J+1)
322.      762 Z(NZ+3)=0.0
323.      DO 862 J=1,NZINT
324.      I=HZ+J+3
325.      Z(I)=-ZLIM(HZINT+1-J)
326.      IF(Z(I).LT.ZMIN) GO TO 962
327.      862 CONTINUE
328.      GO TO 1062
329.      962 Z(1)=ZMIN
330.      1062 HZINT=I-1
331.      GO TO 1162
332.      163 DO 63 JZ=1,NZINT
333.      Z2=2.*ZLIM(HZINT-JZ+1)
334.      IF(Z2.GT.H) GO TO 64
335.      63 CONTINUE
336.      JZ=JZ+1
337.      64 KZ=JZ-1
338.      LZ=2+JZ+1
339.      INDEX=LZ+NZINT
340.      IF(JZ.GT.NZINT) INDEX=INDEX-1
341.      IF(KZ.LT.1) GO TO 66
342.      DO 65 I=1,KZ
343.      ZLIM(NZINT+I+1)=-ZLIM(NZINT-I+1)
344.      ZLIM(INDEX-I)=-H+ZLIM(NZINT-I+1)
345.      65 CONTINUE
346.      66 ZLIM(INDEX)=-H
347.      IF(JZ.LE.NZINT) ZLIM(NZINT+JZ+1)=-H/2.
348.      DO 67 I=1,NZINT
349.      ZLIM(INDEX+I)=-H-ZLIM(NZINT-I+1)
350.      67 CONTINUE
351.      HZINT=INDEX+NZINT-1
352.      87 CONTINUE
353.      C SET Y INTEGRATION LIMITS STARTING AT 0. AND WORKING UP,
354.      DENOM=SIGZ+SIGY*UBAR*6.*1.5708**5
355.      DENOM=DENOM*2.
356.      SIGZ2=SIGZ+SIGZ
357.      SY3=3.*SIGY
358.      DO 89 EENERGY=1,GROUPS
359.      ZSUM(ENERGY)=0.0
360.      89 CONTINUE
361.      DO 108 IZ=1,NZINT
362.      DELZ=(ZLIM(IZ)-ZLIM(IZ+1))/7.
363.      ZZ=ZLIM(IZ)+H
364.      DO 106 VERT=1,8
365.      ZMH2=(ZZ-H)**2
366.      VERTEX=.5*ZMH2/SIGZ2
367.      PERP2=D*D+ZZ*ZZ
368.      PERP=SQRT(PERP2)
369.      YLIM(1)=0.0
370.      IF(PERP.LT.101.) GO TO 93.
371.      IF(SIGY.LT.PERP) GO TO 91
372.      PERP4=4.*PERP
373.      IF(SIGY.LT.PERP4) GO TO 92
374.      PERP15=15.*PERP
375.      IF(SIGY.LT.PERP15) GO TO 90
376.      PERP50=50.*PERP
377.      IF(SIGY.GT.PERP50) GO TO 189
378.      NYINT=4
379.      YLIM(2)=PERP4
380.      YLIM(3)=PERP15
381.      YLIM(4)=SIGY
382.      YLIM(5)=SY3
383.      GO TO 95
384.      189 NYINT=5
385.      YLIM(2)=PERP4
386.      YLIM(3)=PERP15
387.      YLIM(4)=PERP50
388.      YLIM(5)=SIGY

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389.      YLIM(6)=SY3
390.      GO TO 96
391. 90.  NYINT=3
392.      YLIM(2)=PERP4
393.      YLIM(3)=SIGY
394.      YLIM(4)=SY3
395.      GO TO 96
396. 91.  YLIM(2)=SY3
397.      NYINT=1
398.      GO TO 96
399. 92.  NYINT=2
400.      YLIM(2)=SIGY
401.      YLIM(3)=SY3
402.      GO TO 96
403. 93.  SY04=SIGY/4.
404.      IF(SIGY.LT.800.) GO TO 94
405.      IF(SIGY.LT.4000.) GO TO 95
406.      IF(SIGY.GT.20000.) GO TO 193
407.      NYINT=5
408.      YLIM(2)=200.
409.      YLIM(3)=1000.
410.      YLIM(4)=SY04
411.      YLIM(5)=SIGY
412.      YLIM(6)=SY3
413.      GO TO 96
414. 193. NYINT=6
415.      YLIM(2)=200.
416.      YLIM(3)=1000.
417.      YLIM(4)=5000.
418.      YLIM(5)=SY04
419.      YLIM(6)=SIGY
420.      YLIM(7)=SY3
421.      GO TO 96
422. 94.  NYINT=3
423.      YLIM(2)=SY04
424.      YLIM(3)=SIGY
425.      YLIM(4)=SY3
426.      GO TO 96
427. 95.  NYINT=4
428.      YLIM(2)=200.
429.      YLIM(3)=SY04
430.      YLIM(4)=SIGY
431.      YLIM(5)=SY3
432. 96.  DO 97 ENERGY=1, GROUPS
433.      YSUM(ENERGY)=0.0
434. 97.  CONTINUE
435.      IF(YDUB) GO TO 2097
436. C SET Y LIMITS FOR OFF CENTERLINE DOSE
437.      YPOS=YP/SIGY
438.      IF(YPOS.LT.1.) GO TO 1297
439.      YMIN=-SY3
440.      YMAX=5.*SIGY
441.      YOMAX=YP+SY3
442.      IF(YPMAX.LT.YMAX) YMAX=YPMAX
443.      Y(1)=-SY3
444.      Y(2)=0.
445.      IF(YMAX.GT.YP) GO TO 297
446.      Y(3)=SY3
447.      Y(4)=YMAX
448.      NYINT=3
449. 1897. M=NYINT+1
450.      DO 1997 I=1, M
451. 1997. YLIM(I)=Y(I)
452.      DO 2197 I=1, M
453.      IF(YLIM(I).GE.SY3) GO TO 2297
454. 2197. CONTINUE
455. 2297. YLIM(I)=SY3
456.      NYINT=I-1
457.      GO TO 2097
458. 297. CONTINUE
459.      YP02=YP/2.
460.      YMID=SY3
461.      IF(YP02.LT.SY3) YMID=YP02
462.      DO 397 J=1, NYINT
463. 397. YPM(J)=YP-YLIM(J+1)
464.      DO 497 J=1, NYINT
465.      IF(YPM(J).LT.YMID) GO TO 597
466. 497. CONTINUE
467.      NY=NYINT
468.      GO TO 697
469. 597. NY=J-1
470. 697. IF(NY.EQ.0) GO TO 897
471.      DO 797 J=1, NY
472.      Y(J+2)=YPM(NY+1-J)
473. 897. Y(NY+3)=YP
474.      DO 997 J=1, NYINT
475.      I=NY+3+J
476.      Y(I)=YP+YLIM(J+1)
477.      IF(Y(I).GT.YMAX) GO TO 1097
478. 997. CONTINUE
479.      GO TO 1197
480. 1097. Y(I)=YMAX
481. 1197. NYINT=I-1
482.      GO TO 1897
483. 1297. DO 1397 NY=1, NYINT
484.      Y2=2.*YLIM(NY+1)
485.      IF(Y2.GE.YP*.9) GO TO 1497
486. 1397. CONTINUE

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487.      1497 K=NY-1
488.      LY=2*NY+1
489.      INDEX=LY+NYINT
490.      IF(NY.GT.NYINT) INDEX=INDEX-1
491.      IF(KY.LT.1) GO TO 1697
492.      DO 1597 I=1,KY
493.      Y(NYINT+I+1)=YLIM(I+1)
494.      1597 Y(INDEX-1)=YP-YLIM(I+1)
495.      1697 Y(INDEX)=YP
496.      IF(NY.LE.NYINT) Y(NYINT+1+NY)=YP/2.
497.      DO 1797 I=1,NYINT
498.      Y(INDEX+I)=YP+YLIM(I+1)
499.      1797 Y(NYINT+1+I)=-YLIM(I+1)
500.      Y(NYINT+1)=0.
501.      NYINT=NYINT+INDEX-1
502.      GO TO 1897
503.      2097 VEXPO=EXP(-VERTEX)
504.      C DO LOOP ON NUMBER OF MAJOR Y INTEGRATION INTERVALS.
505.      DO 104 IY=1,NYINT
506.      DELY=(YLIM(IY+1)-YLIM(IY))/7.
507.      YY=YLIM(IY)
508.      C DO LOOP ON Y POSITIONS WITHIN MAJOR INTERVAL
509.      DO 102 LAT=1,8
510.      Y2=YY*YY
511.      YHYP2=(YY-YP)**2
512.      RSQ=PERP2+YHYP2
513.      R=SQRT(RSQ)
514.      C CALCULATE INVERSE SQUARE FACTOR FOR CURRENT X,Y,Z POSITION.
515.      EQQ=1./DENOM
516.      IF(R.LT.1) GO TO 99
517.      GNUM=1.
518.      IF(R.GT.140.) GO TO 98
519.      GNUM=1.-EXP(-6.283196*RSQ*.0001)
520.      98 GRATIO=GNUM/(12.56639*RSQ)
521.      GO TO 100
522.      99 GRATIO=.00005
523.      C CALCULATE DOSE RATE KERNEL FOR EACH ENERGY GROUP AT X,Y,Z.
524.      100 DO 101 ENERGY=1,GROUPS
525.      RMU=NU(ENERGY)*R
526.      ATEN=EXP(-RMU)
527.      BILDUP=1.+(CAPA(ENERGY)+ALFA(ENERGY)*RMU)*RMU
528.      YLIST(LAT,ENERGY)=VEXPO*GRATIO*EQQ*ATEN*BILDUP*MEV(ENERGY)
529.      101 CONTINUE
530.      YY=YY+DELY
531.      102 CONTINUE
532.      C INTEGRATE AND SUM OVER Y LINE FOR X,Z
533.      DO 103 ENERGY=1,GROUPS
534.      IF(YDUB) GO TO 1103
535.      YSUM(ENERGY)=YSUM(ENERGY)+DELY*FINT(YLIST(1,ENERGY),8)
536.      GO TO 105
537.      1103 YSUM(ENERGY)=YSUM(ENERGY)+DELY*FINT(YLIST(1,ENERGY),8)*2.0
538.      103 CONTINUE
539.      104 CONTINUE
540.      DO 105 ENERGY=1,GROUPS
541.      ZLIST(VERT,ENERGY)=YSUM(ENERGY)
542.      105 CONTINUE
543.      ZZ=ZZ+DELY
544.      106 CONTINUE
545.      C INTEGRATE AND SUM OVER Z FOR CURRENT X POSITION
546.      DO 108 ENERGY=1,GROUPS
547.      IF(ZDUB) GO TO 107
548.      ZSUM(ENERGY)=ZSUM(ENERGY)+DELY*FINT(ZLIST(1,ENERGY),8)
549.      GO TO 108
550.      107 ZSUM(ENERGY)=ZSUM(ENERGY)+DELY*FINT(ZLIST(1,ENERGY),8)*2.
551.      108 CONTINUE
552.      DO 109 ENERGY=1,GROUPS
553.      DROX(IX,ENERGY)=ZSUM(ENERGY)
554.      ZSUM(ENERGY)=0.0
555.      109 CONTINUE
556.      110 CONTINUE
557.      IF(.NOT.DEPLET) GO TO 7110
558.      C
559.      C READ CLOUD DEPLETION DATA
560.      READ 1110, N
561.      IF(N.GT.43.OR.N.LT.2) GO TO 5110
562.      READ 2110, (T(I),SZ(I),I=1,N)
563.      1110 FORMAT(I3)
564.      2110 FORMAT(8F10.8)
565.      K=1
566.      C INTERPOLATE CLOUD DEPLETION DATA AND CORRECT INTEGRALS ACCORDINGLY.
567.      DO 4110 I=1,INEXT
568.      CALL LINEAR(YY,SZ,X(I),T,K,N,ILR)
569.      IF(ILR.GT.0) GO TO 5110
570.      DEP(I)=YY
571.      DO 3110 J=1,GROUPS
572.      DRDX(I,J)=DRDX(I,J)*DEP(I)
573.      3110 CONTINUE
574.      4110 CONTINUE
575.      IF(METOUT) PUNCH 134, (DEP(I),I=1,INEXT)
576.      GO TO 7110
577.      5110 PRINT 6110, N
578.      6110 FORMAT(' TROUBLE IN CLOUD DEPLETION DATA'I4)
579.      GO TO 7
580.      7110 DO 113 I=1,INEXT
581.      IF(.NOT.LP) GO TO 1112
582.      DIFFX=X(I)/100.
583.      PRINT 111, DIFFX,DEP(I)
584.      111 FORMAT(' AT 'F10.2,' METERS, CLOUD DEPLETION FACTOR ='E12.5/' THE

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585.      100SE PER CURIE FACTORS ARE*)
586.      PRINT 112, (DRDX(I,J),J=1,GROUPS)
587.      112 FORMAT(10X,1PBE13.4)
588.      1112 CONTINUE
589.      IF(METOUT) PUNCH 134, (DRDX(I,J),J=1,GROUPS)
590.      113 CONTINUE
591.      114 RETURN
592.
593. C READ DOSE RATE/CM FACTORS
594.      117 READ(5,1119) INEXT
595.      READ 134, (X(I),I=1,INEXT)
596.      IF(TYPE.EQ.3) GO TO 50
597.      1117 CONTINUE
598.      IF(.NOT.DEPLET) GO TO 118
599.      READ 134, (DEP(I),I=1,INEXT)
600.      GO TO 120
601.      118 DO 119 I=1,INEXT
602.      119 DEP(I)=1.
603.      120 DO 121 I=1,INEXT
604.      READ 134, (DRDX(I,J),J=1,GROUPS)
605.      DIFFX=X(I)/100.
606.      IF(.NOT.LP) GO TO 220
607.      PRINT 111, DIFFX,DEP(I)
608.      PRINT 112,(DRDX(I,J),J=1,GROUPS)
609.      220 CONTINUE
610.      T(I)=X(I)/UBAR
611.      121 CONTINUE
612.      NIXINT=INEXT/7
613. C FOR INPUT OF DOSE RATE FACTORS - CALCULATE MAJOR TIME AND DISTANCE
614. C INCREMENTS.
615.      DO 122 I=1,NIXINT
616.      J=7*(I-1)+1
617.      K=J+7
618.      DIFFX=(X(K)-X(J))/7
619.      DELO(I)=DIFFX
620.      DELT(I)=DIFFX/UBAR
621.      122 CONTINUE
622. C RETURN TO FDOSE
623.      RETURN
624.      END

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@ ELT PASSIG,1.730510, 57257

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1. C PASSIG INTERPOLATES STORED PASQUILL CURVES FOR SY AND SZ FOR TYPE TYPE
2. C AND NUM X POSITIONS
3. SUBROUTINE PASSIG(TYPE,NUM,ERR)
4. COMMON CAPA(16),ALFA(16),NU(16),MEV(16),DRDX(57,16),NXINT
5. COMMON T(57),X(57),GROUPS,TRELES,UBAR,DELC(8),DELT(8),SZ(57),NDT
6. COMMON MANDIS
7. INTEGER TYPE
8. DIMENSION SIGZ(6,20),DIST(20)
9. C DISTANCES TO WHICH SIGZ DATA CORRESPOND
10. DATA DIST/2.5,1.E4,1.5E4,2.5E4,3.5E4,5.E4,7.E4,1.E5,1.5E5,2.5E5,
11. 13.5E5,5.E5,7.E5,1.E6,1.5E6,2.5E6,3.5E6,5.E6,7.E6,1.E7/
12. C SIGMA Z DATA - 1 FOR TYPE A, 2 FOR TYPE B, ETC.
13. DATA (SIGZ(1,I),I=1,20)/100.,1500.,2250.,4500.,7.E3,1.35E4,2.7E4,
14. 16.7E4,2.E5,1.1E5,1./
15. DATA (SIGZ(2,I),I=1,20)/100.,1.E3,1500.,2550.,3700.,5700.,8600.,
16. 11.35E4,2.4E4,5.0E4,1.2E5,2.E5,8E4,1./
17. DATA (SIGZ(3,I),I=1,20)/100.,700.,1100.,1750.,2400.,3400.,4600.,
18. 16400.,9000.,1.4E4,1.9E4,2.6E4,3.4E4,4.4E4,6.E4,8.8E4,1.12E5,1.44E5
19. 2.176E5,2.E5/
20. DATA (SIGZ(4,I),I=1,20)/100.,470.,680.,1050.,1400.,1900.,2500.,
21. 13300.,4300.,6200.,7600.,9500.,1.15E4,1.4E4,1.7E4,2.2E4,2.65E4,
22. 23.2E4,3.7E4,4.5E4/
23. DATA (SIGZ(5,I),I=1,20)/100.,300.,430.,710.,940.,1300.,1700.,2200.,
24. 1.2900.,4100.,5000.,6100.,7200.,8400.,9900.,1.17E4,1.3E4,1.4E4,
25. 21.55E4,1.7E4/
26. DATA (SIGZ(6,I),I=1,20)/100.,140.,220.,400.,530.,760.,1000.,1350.,
27. 11770.,2500.,3000.,3500.,4100.,4700.,5500.,6400.,7200.,7900.,8600.,
28. 29400./
29. ICR=0
30. IDATA=1
31. C
32. C CALCULATE SY AND SZ FOR EACH X POSITION DESIRED
33. DO 5 I=1,NUM
34. 1 IF(IDATA.GT.20) GO TO 7
35. 101 IF(SIGZ(TYPE,IDATA)) 7,7,201
36. 201 IF(X(I)-DIST(IDATA)) 4,3,2
37. 2 IDATA=IDATA+1
38. GO TO 1
39. 3 SZ(I)=SIGZ(TYPE,IDATA)
40. GO TO 5
41. 7 ICR=1
42. SZ(I)=SIGZ(TYPE,IDATA-1)
43. GO TO 5
44. 4 IF(IDATA.EQ.1) GO TO 3
45. SZ1=SIGZ(TYPE,IDATA-1)
46. SZ2=SIGZ(TYPE,IDATA)
47. D1=DIST(IDATA-1)
48. D2=DIST(IDATA)
49. SZ(I)=(SZ1+(X(I)-D1)*(SZ2-SZ1)/(D2-D1)
50. 5 CONTINUE
51. 6 RETURN
52. END

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Q ELT LINEAR,1,711904, 33009

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1.      SUBROUTINE LINEAR(Y,YA,X,XA,N,M,IERROR)
2.      C SUBROUTINE LINEAR INTERPOLATES YA=F(XA) FOR Y AT X
3.      C IERROR IS ERROR RETURN WHEN X IS NOT WITHIN XA
4.      DIMENSION XA(3),YA(3)
5.      C N IS PREVIOUS POSITION IN TABLE
6.      C DATA MUST BE IN ORDER OF INCREASING X
7.      IF(X.LT.XA(M)) GO TO 5
8.      Y=YA(M)
9.      RETURN
10.     5 IF(X.LT.XA(1)) GO TO 6
11.     DO 1 J=N,M
12.     IF(XA(J)-X) 1,2,4
13.     1 CONTINUE
14.     2 Y=YA(J)
15.     3 N=J
16.     RETURN
17.     4 Y=YA(J-1)+(X-XA(J-1))*(YA(J)-YA(J-1))/(XA(J)-XA(J-1))
18.     GO TO 3
19.     6 IERROR=1
20.     RETURN
21.     END

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Q ELT FIHT,1,710325, 30864

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1.      FUNCTION FIHT(I,IST,NUMBER)
2.      C
3.      C THIS FUNCTION RETURNS THE INTEGRAL FROM THE FIRST EQUALLY SPACED INTEGRAND
4.      C IN THE LIST TO THE LAST (NUMBER)
5.      C MAXIMUM NUMBER IS 8
6.      C
7.      REAL LIST
8.      DIMENSION A(35),B(7),C(7),LIST(0)
9.      DATA B/2*1.,3.,2.,5.,1.,7./,C/2.,3.,8.,45.,288.,140.,17280./
10.     DATA A/3*1.,4.,2*1.,2*3.,1.,7.,32.,12.,32.,7.,19.,75.,2*50.,75.,
11.     A 19.,41.,216.,27.,272.,27.,216.,41.,751.,3577.,1323.,2*2989.,
12.     B 1323.,3577.,751./
13.     C
14.     INDEX=(NUMBER*NUMBER)/2-1-NUMBER/2
15.     FIHT=0.0
16.     DO 1 I=1,NUMBER
17.     INDEX=INDEX+1
18.     1 FIHT=FIHT+LIST(I)*A(INDEX)
19.     FIHT=FIHT*B(NUMBER-1)/C(NUMBER-1)
20.     RETURN
21.     END

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1.  C MAIN PROGRAM      MAIN PEAJS FIRST TWO CARDS OF EACH PACKET AND CALLS THE
2.  C DESIRED SUBROUTINE - SOURCE,JOINT,FDUSE,INSIDE -
3.  C
4.  C SUBROUTINES ETIME AND ETIMEF ARE SYSTEM TIMING ROUTINES
5.  C
6.  C   DIMENSION ITAB(42),LOGIC(8),WORD(14),LISTM(4),LIST1(5),LIST2(8),
7.  C   ILIST3(6),LIST4(4)
8.  C   COMMON/LOGIC/LOGIC
9.  C   COMMON/TITLE/TITLE(14)
10.  C   INTEGER WORD,WORDS
11.  C   LOGICAL SKIP,LOGIC
12.  C   DATA LISTM/5HFDOSE,5HJOINT,6HSOURCE,6HINSIDE/
13.  C   DATA LIST1/6HLIBRAR,4HTAPE,5HEQIN,6HREWIND,5HXONLY/
14.  C   DATA LIST2/6HLIBRAR,3HPOP,3HSET,6HHEIGHT,6HGROUND,6HSECTOR,1HA
15.  C   1,1HU/
16.  C   DATA LIST3/6HLIBRAR,6HBYPASS,4HTAPE,6HREWIND,6HBACKSP,6HACTIVA/
17.  C   DATA LIST4/'INPUT','DOSE','ENERGY','TEST'/
18.  C EQUATE UNIT 29 WITH RADIOISOTOPE DATA LIBRARY
19.  C REQUIRES FOLLOWING CARD BEFORE XOT CARD
20.  C W DAT THERM,1      OR      D DAT FAST,1
21.  C CALL SETDAR(29,1,ITAB)
22.  C
23.  C EQUATE UNIT 28 WITH PHOTON PROBABILITY LIBRARY
24.  C REQUIRES FOLLOWING CARD BEFORE XOT CARD
25.  C W DAT ISOLIB,2
26.  C CALL SETUAR(28,2,ITAB(8))
27.  C
28.  C EQUATE UNIT 25 WITH DOSE RATE FACTOR LIBRARY
29.  C REQUIRES FOLLOWING CARD BEFORE XOT CARD
30.  C W DAT DRFLIB,3
31.  C CALL SETUAR(25,3,ITAB(29))
32.  C
33.  C READ 80 COLUMNS OF TEXT AND CATCH END-OF-FILE
34.  C CALL SETEOF(83)
35.  C
36.  C 100 READ 101, TITLE
37.  C 101 FORMAT(13A6,A2)
38.  C
39.  C READ COMMAND AND LOGIC
40.  C CALL ETIME
41.  C CALL DECODE(WORD,WORDS)
42.  C
43.  C FIND WHICH FUNCTION -FIRST WORD-
44.  C DO 1 I=1,4
45.  C IF(WORD(I).EQ.LISTM(I)) GO TO 4
46.  C 1 CONTINUE
47.  C PRINT 2
48.  C 2 FORMAT('FIRST WORD IS NOT A MAJOR PROGRAM FUNCTION - STOP')
49.  C 3 STOP
50.  C
51.  C BRANCH TO APPROPRIATE PLACE
52.  C 4 GO TO (5,12,18,24),I
53.  C
54.  C FDUSE DESIRED - SORT LOGIC
55.  C 5 PRINT 111
56.  C 111 FORMAT(' FDUSE NOT AVAILABLE IN CHRONI - STOP')
57.  C 8 FORMAT('BAD WORD -'A6,' - STOP')
58.  C GO TO 3
59.  C
60.  C JOINT DISTRIBUTION CALCULATION DESIRED - SORT LOGIC
61.  C 12 DO 13 I=1,8
62.  C 13 LOGIC(I)=.FALSE.
63.  C IF(WORDS.LE.1) GO TO 217
64.  C SKIP=.FALSE.
65.  C DO 17 I=2,WORDS
66.  C IF(SKIP) GO TO 16
67.  C DO 14 J=1,8
68.  C IF(WORD(I).EQ.LIST2(J)) GO TO 15
69.  C 14 CONTINUE
70.  C PRINT 8, WORD(I)
71.  C GO TO 3
72.  C 15 LOGIC(J)=.TRUE.
73.  C IF(J.EQ.1) SKIP=.TRUE.
74.  C GO TO 17
75.  C 16 SKIP=.FALSE.
76.  C 17 CONTINUE
77.  C 217 CONTINUE
78.  C CALL JOINT
79.  C CALL ETIMEF(SEC)
80.  C PRINT 117, SEC
81.  C 117 FORMAT('EXECUTION TIME FOR JOINT WAS 'F7.3,' SECONDS')
82.  C GO TO 180
83.  C
84.  C SOURCE DESIRED - SORT THRU LOGIC
85.  C 18 DO 19 I=1,6
86.  C 19 LOGIC(I)=.FALSE.
87.  C IF(WORDS.LE.1) GO TO 223
88.  C SKIP=.FALSE.
89.  C DO 23 I=2,WORDS
90.  C IF(SKIP) GO TO 22
91.  C DO 20 J=1,6
92.  C IF(WORD(I).EQ.LIST3(J)) GO TO 21
93.  C 20 CONTINUE
94.  C PRINT 8, WORD(I)

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95.      GO TO 3
96.      21 LOGIC1(J)=.TRUE.
97.      C
98.      C WORDS 1,5 AND 6 HAVE MORE THAN SIX CHARACTERS - SKIP THE SECOND HALF
99.      IF(J.EQ.1.OR.J.EQ.5.OR.J.EQ.6) SKIP=.TRUE.
100.      GO TO 23
101.      22 SKIP=.FALSE.
102.      23 CONTINUE
103.      223 CONTINUE
104.      CALL SOURCE
105.      CALL ETIMEF(SEC)
106.      PRINT 123, SEC
107.      123 FORMAT(///'DEEXECUTION TIME FOR SOURCE WAS'F7.3,' SECONDS')
108.      GO TO 100.
109.      C
110.      C INHALE DESIRED - SORT LOGIC
111.      24 PRINT 129
112.      129 FORMAT(' INSIDE NOT AVAILABLE IN CHRONI - STOP')
113.      GO TO 3
114.      C
115.      END

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1.  C SUBROUTINE SOURCE CONTROLS LIBRARY READING AND RELEASE RATE SPECIFICATION
2.  C
3.  SUBROUTINE SOURCE
4.  COMMON/TITLE/TITLE(14)
5.  COMMON/LOGIC/LIBRARY,BYPASS,TAPE,REWIND,BACKUP,ACTIVA
6.  COMMON HFP,HTOT,NOFHUC(96),SKIP(96),MASS(600,2),LAMBDA(600),
7.  ICHAINS,OKFRC(450,3),REC(600),BURST(600,16),RPOWER(600),GROUPS,
8.  ZML(600)
9.  COMMON CAPA(16),CAPB(16),AMUA(16),AMU(16)
10. COMMON ICL(600),KEV(16)
11. REAL KEV
12. DIMENSION QUANTY(600)
13. REAL LAMBDA,MASS
14. INTEGER REC
15. DIMENSION NAME(600),M(600)
16. INTEGER CHAINS,SKIP
17. LOGICAL LIBRARY,BYPASS,TAPE,REWIND,BACKUP,ACTIVA
18. IF(.NOT.LIBRARY) GO TO 4
19. C
20. C READ NUCLIDE DATA LIBRARY
21. 1 FORMAT(I3)
22. CALL LIBK
23. 4 DO 104 I=1,HTOT
24. C
25. C INITIALIZE NUCLIDE MASS ARRAY
26. 104 MASS(I,1)=0.0
27. C
28. C READ NUCLIDE INVENTORY FROM CARDS
29. 10 READ I,NUMBER
30. READ 11, (NAME(I),M(I),QUANTY(I),I=1,NUMBER)
31. 11 FORMAT(4(A3,I3,E14.0))
32. PRINT 6
33. 6 FORMAT('NUCLIDE RELEASE RATES IN CURIES/SECOND')
34. PRINT 7, (NAME(I),M(I),QUANTY(I),I=1,NUMBER)
35. 7 FORMAT(6(4XA3,I3,1PE10.4)/)
36. C
37. C TRY TO IDENTIFY NUCLIDES READ FROM CARDS
38. DO 16 I=1,NUMBER
39. DO 13 J=1,HTOT
40. IF(NAME(I).EQ.REC(J).AND.M(I).EQ.ML(J)) GO TO 15
41. 13 CONTINUE
42. C
43. C IF CAN NOT IDENTIFY NUCLIDE -STOP
44. PRINT 14, NAME(I),M(I)
45. 14 FORMAT('UNKNOWN ISO TOPE - 'A3,I3)
46. STOP
47. C CONVERT CURIES TO CURIE-SEC
48. 15 MASS(J,1)=QUANTY(I)/LAMBDA(J)
49. 16 CONTINUE
50. RETURN
51. END

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0 ELT JOINT,1,73051C, 57242

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1. C JOINT DOES DOSE AND CHI/0' CALCULATION FOR A SINGLE REACTOR PLUS POPULATION
2. C DOSE.
3. SUBROUTINE JOINT
4. COMMON/LOGIC/LIBARY,POP,SET,HEIGHT,GROUND,SECTOR,A,B
5. COMMON MFP,IAC,HTOT,HOFNUC(96),SKIP(96),MASS(600,2),LAMBDA(600),
6. ICHAINS,UKFRCT(450,3),REC(600),BURST(600,16),BPOWER(600),GROUPS,
7. 2ML(600)
8. COMMON CAPA(16),CAPB(16),AMUA(16),AMU(16)
9. COMMON ICL(600),KEV(16)
10. COMMON/TITLE/TITLJ(14)
11. DIMENSION OUB(8),DUMBY(7),SIGZ(10,8,6),CZS(8),DEGRES(16)
12. DIMENSION TOTMU(16),DEPTH(16),TDEP(3)
13. DIMENSION PDOSE(16,10),PP(10),DOSEX(10,16),X(10)
14. DIMENSION UOSL(10),XL(10),RL(10)
15. REAL KSG
16. DIMENSION DOSE(10,16),BRM(8,6),UBAR(8),MET(18),THETA(16),F(8,6,16)
17. DIMENSION FACTM(6),R(10),H(8),HZ(10,16),DRF(16,10,6,8)
18. DIMENSION SECT(16),RD(10),BB(2),P(16,10)
19. DIMENSION DSTOR(3,10,16),DSTORX(3,10,16)
20. DIMENSION XQQ(10,16)
21. REAL KEY
22. LOGICAL LIBARY,POP,SET,HEIGHT,GROUND,SECTOR,A,B
23. LOGICAL ACTPRD,FISPRD
24. LOGICAL BETA
25. INTEGER SKIP,CHAINS,GROUPS
26. REAL MASS,LAMBOA
27. DATA TDEP/0.,1.,5./
28. DATA (TOTMU(1),I=1,12)/.35,.23,.19,.16,.13,.10,.081,.068,.056,.04
29. 18,.042,.038/
30. 100 FORMAT(10I5)
31. 200 FORMAT(8F13.2)
32. 300 FORMAT(12A6)
33. 400 FORMAT(16A5)
34. 500 FORMAT(16F5.2)
35. 600 FORMAT(10F8.0)
36. 700 FORMAT(1H1,1GX,15HPOPULATION DATA,30X,9HDISTANCES/1H0,15X,6HSECTOR
37. 14X,10F10.0/)
38. 800 FORMAT(1H0,2GX,21HLISTING OF INPUT DATA/1H0,10X,22HDATA WERE SUPPL
39. 11ED FOR,13,13H WIND SPEEDS,,14,13H STABILITIES,,14,14H DISTANCES A
40. 2ND,14, 8H SECTORS)
41. 900 FORMAT(1H0,1GX,42HWIND SPEEDS (AVERAGE FOR GROUP, M/SEC) ARE,8F8.1
42. 1)
43. 1000 FORMAT(1H0,1GX,26HSTABILITIES CONSIDERED ARE,/(20X,3A6))
44. 1100 FORMAT(1H0,1GX,24HWIND DIRECTIONS ARE ,16A5)
45. 1200 FORMAT(1H1,2GX,49HJOINT PROBABILITY DATA FOR ATMOSPHERIC CONDITION
46. 15/1H0,31HWIND SPEED STABILITY ,16A6)
47. 1300 FORMAT(1X,F7.1,6X,3A6,16F6.2)
48. 1400 FORMAT(1H0)
49. 1500 FORMAT(1H ,6HUBAR =,F7.1,14H METERS/SECOND)
50. 1600 FORMAT(19H STABILITY CLASS = ,3A6)
51. 1700 FORMAT(1X,1P16E8.2)
52. 1800 FORMAT(1H1,21HDOSE RATE FACTOR DATA/)
53. 1900 FORMAT(1H0,2GX17HDOSE IN TISSUE AT,F4.1,20H CM DEPTH, MRAD/YR. ,6A
54. 16/15H0 DIRECTION ,30X,28HDISTANCE FROM SOURCE, METERS,20X,16HRE
55. 2LEASE HEIGHT =,F6.0, 7H METERS/17H0 WIND SECTOR ,10F11.0)
56. 2000 FORMAT(1H0,A5,6X,A5,1P10E11.3)
57. 2100 FORMAT(1H0,1GX,24HSECTOR DIRECTIONS ARE ,16A5)
58. 2200 FORMAT(1H0,20X33HDOSE DOSE CALCULATION, MRAD/YEAR ,6A6,
59. 1 /15H0 DIRECTION ,30X,28HDISTANCE FROM SOURCE, METERS,20X,16HRE
60. 2LEASE HEIGHT =,F6.0, 7H METERS/17H0 WIND SECTOR ,10F11.0)
61. 2300 FORMAT('1THE FOLLOWING CALCULATIONS ARE FOR '7A6)
62. 2400 FORMAT(215,7F13.2)
63. 2500 FORMAT(1X,3E10.4)
64. 2600 FORMAT(57H0LIMITS OF STORED SIGZ DATA EXCEEDED FOR METEOROLOGY TYP
65. 1E,13)
66. 2700 FORMAT(//1H,5CX,44HSIGMA Z VALUES FOR METEOROLOGICAL CONDITIONS,13
67. 1)
68. 2800 FORMAT(13H0AVERAGE WIND,30X,34HDISTANCE FROM RELEASE POINT METERS/
69. 113H SPEED, M/SEC,10F10.0/)
70. 2900 FORMAT(1H ,F10.1,2X,10F10.1)
71. 3000 FORMAT(23H0DEGRESS PER SECTOR ARE,16F5.1)
72. 3100 FORMAT(1X,6HSECTOR,/1X,16(1X,A5,2X))
73. 3200 FORMAT(28H NO BETA POWER FOR INVENTORY)
74. 3300 FORMAT(F10.2,5I5)
75. 3400 FORMAT(' DOSE RATE FACTOR LIBRARY CONTAINS NO DATA FOR RELEASE HEI
76. 1GHT,F7.1, ' METERS - STOP')
77. 3500 FORMAT('0 RELEASE HEIGHT IS,F7.1, ' METERS')
78. 3600 FORMAT(17X,A5,3X,10F10.0)
79. 3700 FORMAT('+'93X,'DATE '2A6)
80. 3800 FORMAT(' HR = '110)
81. 3900 FORMAT(1H0,15X,'POPULATION DOSE FROM PENETRATING RADIATION (5 CM T
82. 1ISSUE DEPTH), MAN-RAD/YR.,6A6,/15H0 DIRECTION ,30X,28HDISTANCE
83. 2FROM SOURCE, METERS,10X,'MULTIPLE RELEASE HEIGHTS, PREVIOUS,13, ' C
84. 3ACES,/17H0 WIND SECTOR ,10F11.0)
85. 4100 FORMAT('0'20X,33HSHIN DOSE CALCULATION, MRAD/YEAR ,6A6,
86. 1 /15H0 DIRECTION ,30X,28HDISTANCE FROM SOURCE, METERS,10X,35HMU
87. 2LTIPLE RELEASE HEIGHTS, PREVIOUS ,13,6H CASES/17H0 WIND SECTOR
88. 3,10F11.0)
89. 4200 FORMAT(1H0,2GX17HDOSE IN TISSUE AT,F4.1,20H CM DEPTH, MRAD/YR. ,6A
90. 16/15H0 DIRECTION ,30X,28HDISTANCE FROM SOURCE, METERS,10X,35HMU
91. 2LTIPLE RELEASE HEIGHTS, PREVIOUS ,13,6H CASES/17H0 WIND SECTOR
92. 3,10F11.0)
93. 4300 FORMAT(1H0,15X,'POPULATION DOSE FROM PENETRATING RADIATION (5 CM
94. 1TISSUE DEPTH), MAN-RAD/YR.,6A6/15H0 DIRECTION ,30X,28HDISTANCE

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95.      2FROM SOURCE, METERS,200,'RELEASE HEIGHT = 'F0.0,' METERS'/1709 WIND
96.      5 SECTOR ,1CF11.3)
97.      4400 FORMAT(15H WAKE PARAMETERS C AND AREA ARE,2F10.2)
98.      4500 FORMAT(15H,45X,20HCHT/0' VALUES FOR RELEASE AT,F7.0,7H METERS)
99.      4600 FORMAT(15H,45X,20HCHT/0' VALUES FOR RELEASE AT,F7.0,7H METERS)
100.     4700 FORMAT(15H,45X,20HCHT/0' VALUES FOR RELEASE AT,F7.0,7H METERS)
101.     4800 FORMAT(15H,45X,20HCHT/0' VALUES FOR RELEASE AT,F7.0,7H METERS)
102.     4900 FORMAT(15H,45X,20HCHT/0' VALUES FOR RELEASE AT,F7.0,7H METERS)
103.     4900 FORMAT(15H,45X,20HCHT/0' VALUES FOR RELEASE AT,F7.0,7H METERS)
104.     CALL GOY(80)
105.     N1=NFP+1
106.     N2=NTOT
107.     C READ JOINT PROBABILITY DATA
108.     READ(5,100) NUBAR,NMET,NTHETA,NR,IBETA
109.     READ(5,100) JUMPM,JDRF,JPRIN,NH
110.     IF(JUMPM.GT.0) GO TO 11
111.     READ(5,200) (UBAR(I),I=1,NUBAR)
112.     MR=NMET*3
113.     READ(5,300) (MET(I),I=1,MR)
114.     READ(5,400) (THETA(I),I=1,NTHETA)
115.     READ(5,400) (SECT(I),I=1,NTHETA)
116.     DO 2 IU=1,NUBAR
117.     DO 1 IM=1,NMET
118.     READ(5,500) (E(IU,IM,IT),IT=1,NTHETA)
119.     1 CONTINUE
120.     2 CONTINUE
121.     C READ POPULATION DATA WHEN POP IS TRUE AND JUMPM.EQ.0
122.     IF(.NOT.POP) GO TO 202
123.     DO 102 I=1,NTHETA
124.     READ(5,600) (P(I,J),J=1,NR)
125.     102 CONTINUE
126.     202 CONTINUE
127.     C SET METEOROLOGICAL FACTOR VALUES
128.     DO 3 IM=1,6
129.     FACTM(IM)=1.0
130.     3 CONTINUE
131.     IF(B) READ(5,200) FACTM
132.     DO 103 IM=1,6
133.     FACTM(IM)=FACTM(IM)*.01
134.     103 CONTINUE
135.     C READ DISTANCES R
136.     PRINT 3000, NR
137.     IF(NR.GT.10,OR,NR.LT.9) NR=10
138.     READ(5,200) (R(I),I=1,NR)
139.     C READ STACK HEIGHT ABOVE GROUND LEVEL (OR MSL FOR RELEASE NEAR SEA)
140.     READ(5,200) HH
141.     PRINT 3500, HH
142.     READ(5,100) KINT
143.     IF(KINT.LE.0) GO TO 403
144.     IF(KINT.GT.0) KINT=5
145.     READ(5,200) (X(I),I=1,NR)
146.     DO 303 IR=1,NR
147.     XL(IR)=ALOG(X(IR))
148.     RL(IR)=ALOG(R(IR))
149.     303 CONTINUE
150.     403 CONTINUE
151.     IF(HEIGHT) GO TO 5
152.     C PLUME RISE NOT CONSIDERED
153.     DO 4 IH=1,NUBAR
154.     H(IH)=HH
155.     4 CONTINUE
156.     GO TO 6
157.     C READ PLUME RISE VALUES
158.     5 READ(5,200) (H(I),I=1,NUBAR)
159.     6 IF(GROUND) GO TO 9
160.     C FLAT TERRAIN
161.     DO 8 IR=1,NR
162.     DO 7 IT=1,NTHETA
163.     HZ(IR,IT)=0.0
164.     7 CONTINUE
165.     8 CONTINUE
166.     GO TO 11
167.     C READ TERRAIN DATA RELATIVE TO BASE OF STACK (OR MSL FOR RELEASE NEAR
168.     THE SEA).
169.     9 READ(5,600) ((HZ(IR,IT),IR=1,10),IT=1,NTHETA)
170.     11 IF(A) GO TO 50
171.     C CALCULATE E/Q VALUES FOR JOINT PROBABILITY DATA.
172.     60 READ STABILITY CATEGORY DATA
173.     GO TO 365
174.     C AFTER READING STABILITY DATA, READ BUILDING WAKE PARAMETERS
175.     12 READ 200, C,AREA
176.     PRINT 4400, C,AREA
177.     CAOP=C*AREA/3.14159
178.     IF(CAOP)19,19,13
179.     13 DO 16 IR=1,NR
180.     DO 15 IU=1,NUBAR
181.     DO 14 IM=1,NMET
182.     S2=SIGZ(IR,IU,IM)**2+CAOP
183.     SIGZ(IR,IU,IM)=SQRT(S2)
184.     14 CONTINUE
185.     15 CONTINUE
186.     16 CONTINUE
187.     IF(IPR) 17,17,19
188.     DO 18 IM=1,NMET
189.     WRITE(6,2700) IM
190.     WRITE(6,2800) R
191.     WRITE(6,2900) (UBAR(I),SIGZ(I,IM),I=1,NUBAR)
192.     18 CONTINUE
193.     C CALCULATE CHI/O VALUES

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193.      19 DO 26 IT=1,NTHETA
194.         DO 25 IR=1,NR
195.            XHQ=0.
196.            DO 24 IU=1,NUBAR
197.               XQ=0.
198.               DO 23 IM=1,NMET
199.                  S2=SIGZ(IR,IU,IM)**2
200.                  IF(H(IU)-H2(IR,IT)) 20,20,21
201.             20 EXP0=0.
202.             GO TO 22
203.             21 EXP0=(H(IU)-H2(IR,IT))**2/(2.*S2)
204.             22 XQ=XQ+F(IU,IM,IT)*EXP(-EXP0)*FACTM(IM)/SIGZ(IR,IU,IM)
205.             23 CONTINUE
206.             XHQ=XHQ+XQ*OUB(IU)
207.             24 CONTINUE
208.             XQ0(IR,IT)=XHQ/R(IR)* 2.037*22.5/DEGRES(IT)
209.             25 CONTINUE
210.             26 CONTINUE
211.      C PRINT CHI/Q VALUES
212.         PRINT 4800, TITLJ,BB
213.         PRINT 4500, HH
214.         WRITE(6,4600) R
215.         DO 27 IT=1,NTHETA
216.            WRITE(6,4700) THETA(IT),SECT(IT) ,(XQ0(IR,IT),IR=1,NR)
217.            27 CONTINUE
218.            28 RETURN
219.      C DOSE CALCULATION FOR FINITE CLOUD
220.         50 IGROUP=GROUPS
221.         IF(NH.GT.5) GO TO 650.
222.         IREL=1
223.         GO TO 750
224.         650 IREL=IREL+1
225.         750 CONTINUE
226.         IF(JUMPM.LE.0) GO TO 250
227.         IF(NH.LE.0) GO TO 250.
228.         READ(5,200) HH
229.         DO 350 IH=1,NUBAR
230.            350 H(IH)=HH
231.            IF(HEIGHT) READ(5,200) (H(I),I=1,NUBAR)
232.            250 CONTINUE
233.            IF(IBETA.GT.0) IGROUP=NTHETA
234.      C INITIALIZE NUCLIDE MASS ARRAY
235.         DO 41 I=1,NTOT
236.            MASS(I,2)=0.
237.            41 CONTINUE
238.      C INITIALIZE SKIP
239.         DO 42 I=1,CHAINS
240.            SKIP(I)=0
241.            42 CONTINUE
242.      C ELIMINATE UNUSED CHAINS
243.      C FISPRD = FALSE IF NO FISSION PRODUCTS PRESENT
244.      C ACTPRD = FALSE IF NO ACTIVATION PRODUCTS PRESENT
245.         55 ACTPRD=.FALSE.
246.         FISPRD=.FALSE.
247.         BETA=.FALSE.
248.         ISOTOP=0
249.         DO 59 K=1,CHAINS
250.            LIM=HOFHUC(K)
251.            IF(SKIP(K),NE.0) GO TO 58
252.            DO 56 I=1,LIM
253.               L=ISOTOP+I
254.               IF(MASS(L,1).GT.1.E-30.AND.LAMBDA(L).GT.1.E-30) GO TO 57.
255.            56 CONTINUE
256.            SKIP(K)=LIM
257.            GO TO 58
258.            57 CONTINUE
259.            FISPRD=.TRUE.
260.            IF(BETA) GO TO 58
261.            DO 157 J=I,LIM
262.               L=ISOTOP+J
263.               IF(BPOWER(L).LT.1.E-30) GO TO 157
264.               BETA=.TRUE.
265.            157 CONTINUE
266.            58 ISOTOP=ISOTOP+LIM
267.            59 CONTINUE
268.            DO 60 L=N1,N2
269.               IF(MASS(L,1).LT.1.E-30.OR.LAMBDA(L).LT.1.E-30) GO TO 60
270.               ACTPRD=.TRUE.
271.               IF(BPOWER(L).GT.1.E-30) BETA=.TRUE.
272.            60 CONTINUE
273.      C READ DOSE RATE FACTORS DRF(IE,IR,IM,IU)
274.         IF(IBETA.GT.0) GO TO 165.
275.         IF(JDRF.LE.0) GO TO 465
276.         DO 65 IM=1,NMET
277.            DO 64 IU=1,NUBAR
278.               DO 63 IR=1,NR
279.                  READ(5,200) (DRF(IE,IR,IM,IU),IE=1,GROUPS)
280.            63 CONTINUE
281.            64 CONTINUE
282.            65 CONTINUE
283.            GO TO 265
284.         465 IF(.NOT.LIBARY) GO TO 265
285.         READ(25,100) NSETS
286.         DO 865 IS=1,NSETS
287.            READ(25,3300) HD,MD,MUD,MRD,IEN
288.            READ(25,200) (RD(I),I=1,MRD)
289.            DO 765 IM=1,MD
290.               DO 665 IU=1,MUD

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291.      DO 555 IR=1,NR
292.      READ(25,252) (DRF(IE,IR,IM,IU),IE=1,IEN)
293.      565 CONTINUE
294.      665 CONTINUE
295.      765 CONTINUE
296.      IF (HD,EO,HH) GO TO 965
297.      865 CONTINUE
298.      PRINT 3435
299.      STOP
300.      965 MR=MRD
301.      DO 1065 I=1,NR
302.      R(I)=RD(1)
303.      RL(I)=ALOG(R(I))
304.      1065 CONTINUE
305.      REWIND 25
306.      GO TO 265
307.      165 IF (BETA) GO TO 365
308.      PRINT 3200
309.      GO TO 1265
310.      365 CONTINUE
311.      C CALCULATE DRF FACTORS FOR BETA DOSE (DRF(1,IR,IM,IU))
312.      C READ METEOROLOGICAL PARAMETERS
313.      DO 1040 I=1,NUBAR
314.      OUB(I)=1.0/UBAR(I)
315.      1040 CONTINUE
316.      DO 1095 IM=1,NMET
317.      READ(9,2400) ITYPE,IPR,DUMBY
318.      IGO=ITYPE
319.      IF (IGO,GT,4) IGO=4
320.      GO TO (1019,1010,1020,1220), IGO
321.      C HANFORD MODEL
322.      1010 AH=DUMBY(1)
323.      BH=DUMBY(2)
324.      KSQ=DUMBY(3)
325.      PRINT 2530, AH,BH,KSQ
326.      DO 1218 IU=1,NUBAR
327.      DO 1118 IR=1,NR
328.      TT=R(IR)*OUB(IU)
329.      TT2=TT*TT
330.      EXPO=KSQ*TT2*(-1.0)
331.      EXX=EXP(EXPO)
332.      OME=1.-EXX
333.      S22=BH*TT+OME*AH
334.      SIGZ(IR,IU,IM)=SQRT(S22)
335.      1118 CONTINUE
336.      1218 CONTINUE
337.      GO TO 1090
338.      C SUTTON MODEL
339.      1019 READ(5,200) (CZS(I),I=1,NUBAR)
340.      EN=DUMBY(1)
341.      SQ2=1./SQRT(2.)
342.      DO 1319 IR=1,NR
343.      DO 1219 IU=1,NUBAR
344.      CZ=CZS(IU)
345.      SIGZ(IR,IU,IM)=CZ*SQ2*(R(IR)**(1.-5*EN))
346.      1219 CONTINUE
347.      1319 CONTINUE
348.      GO TO 1090
349.      C INPUT SIGMA 2 FOR EACH WIND SPEED
350.      DO 1120 IU=1,NUBAR
351.      READ(5,600) (SIGZ(IR,IU,IM),IR=1,NR)
352.      1120 CONTINUE
353.      GO TO 1090
354.      C PASQUILL CURVES FOR SIGMA 2
355.      1220 ITM3=ITYPE-3
356.      CALL PASQUIL(SIGZ(1,1,IM),R,ITM3,NR,IER)
357.      IF (IER) 1520,1520,1320
358.      1320 WRITE(6,2600) IM
359.      1520 IF (NUBAR-1) 1690,1090,1620
360.      DO 1820 IR=1,NR
361.      DO 1720 IU=2,NUBAR
362.      SIGZ(IR,IU,IM)=SIGZ(IR,1,IM)
363.      1720 CONTINUE
364.      1820 CONTINUE
365.      C PRINT SIGMA 2 VALUES FOR CURRENT METEOROLOGICAL CONDITIONS
366.      1090 IF (IPR) 1695,1095,1091
367.      1091 WRITE(6,2700) IM
368.      WRITE(6,2800) R
369.      WRITE(6,2900) (UBAR(I),(SIGZ(J,I,IM),J=1,10),I=1,NUBAR)
370.      1095 CONTINUE
371.      READ(5,500) (DEGRES(I),I=1,NTHETA)
372.      PRINT 3000, (DEGRES(I),I=1,NTHETA)
373.      IF (.NOT.A) GO TO 12
374.      DO 1045 IT=1,NTHETA
375.      DO 1044 IR=1,NR
376.      DO 1043 IU=1,NUBAR
377.      DO 1042 IM=1,NMET
378.      S2=SIGZ(IR,IU,IM)**2
379.      EXPO=(H(IU)-HZ(IR,IT))**2/(2.*S2)
380.      DRF(IT,IR,IM,IU)= 2.537*22.5*EXP(-EXPO)/R(IR)*OUB(IU)/(DEGRES(IT)*
381.      1SIGZ(IR,IU,IM))
382.      1042 CONTINUE
383.      1043 CONTINUE
384.      1044 CONTINUE
385.      1045 CONTINUE
386.      265 CONTINUE
387.      C PRINT INPUT DATA
388.      PRINT 800, NUBAR,NME,IR,NTHETA

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389. PRINT 900, (UBAR(I),I=1,NUBAR)
390. PRINT 1000, (MET(I),I=1,NR)
391. PRINT 1100, (THETA(I),I=1,NTHETA)
392. PRINT 2100, (SECT(I),I=1,NTHETA)
393. PRINT 1200, (THETA(I),I=1,NTHETA)
394. DO 67 IU=1,NUBAR
395. PRINT 1400
396. DO 66 IM=1,NMET
397. MR1=3*(IM-1)+1
398. MR2=MR1+2
399. PRINT 1300, UBAR(IU), (MET(I),I=MR1,MR2), (F(IU,IM,IT),IT=1,NTHETA)
400. 66 CONTINUE
401. 67 CONTINUE
402. C PRINT POPULATION DATA
403. IF(.NOT.POP) GO TO 267
404. PRINT 700, (X(I),I=1,NR)
405. DO 167 IT=1,NTHETA
406. PRINT 3600, SECT(IT), (P(IT,I),I=1,NR)
407. 167 CONTINUE
408. 267 CONTINUE
409. IF(JPRIN.LE.0) GO TO 370
410. PRINT 1800
411. DO 70 IM=1,NMET
412. MR1=3*(IM-1)+1
413. MR2=MR1+2
414. PRINT 1600, (MET(I),I=MR1,MR2)
415. DO 69 IU=1,NUBAR
416. PRINT 1500, UBAR(IU)
417. IF(IBETA.GT.0) PRINT 3100, (SECT(I),I=1,NTHETA)
418. DO 68 IR=1,NR
419. PRINT 1700, (DRF(IE,IR,IM,IU),IE=1,IGROUP)
420. 68 CONTINUE
421. 69 CONTINUE
422. 70 CONTINUE
423. 370 CONTINUE
424. C DO LOOP ON DEPTH DOSE CALCULATIONS
425. DO 186 IDEPTH=1,3
426. DO 170 IE=1,GROUPS
427. DEPTH(IE)=EXP(-TDEP(IDEPTH)*TOTMU(IE))
428. 170 CONTINUE
429. C
430. C CALCULATE DOSE RATES FOR EACH SECTOR AND DISTANCE
431. C
432. C DO LOOP ON NUMBER OF DISTANCES
433. DO 85 IR=1,NR
434. C CALCULATE BURST-MASS-DRF FACTORS = DOSE FOR EACH UBAR AND MET*100
435. DO 81 IU=1,NUBAR
436. TIME=R(IR)/UBAR(IU)
437. IF(FISPRD) CALL CHAINT(2,TIME,1)
438. IF(.NOT.ACTPRD) GO TO 72
439. DO 71 ISO=N1,N2
440. IF(MASS(ISO,1).LT.1.E-30) GO TO 71
441. MASS(ISO,2)=MASS(ISO,1)*EXP(-LAMBDA(ISO)*TIME)
442. 71 CONTINUE
443. 72 DO 80 IM=1,NMET
444. BRM(IU,IM)=0.0
445. ISOTOP=0
446. IF(.NOT.FISPRD) GO TO 77
447. DO 75 K=1,CHAINS
448. LIM=NOFHUC(K)
449. IF(SKIP(K).NE.0) GO TO 75
450. UU 74 I=1,LIM
451. ISO=ISOTOP+I
452. IF(IBETA.GT.0) GO TO 173
453. SUM1=0.0
454. DO 73 IE=1,GROUPS
455. SUM1=SUM1+BURST(ISO,IE)*DRF(IE,IR,IM,IU)*DEPTH(IE)
456. 73 CONTINUE
457. BRM(IU,IM)=BRM(IU,IM)+SUM1*MASS(ISO,2)*FACTM(IM)
458. GO TO 74
459. 173 BRM(IU,IM)=BRM(IU,IM)+BPOWER(ISO)*MASS(ISO,2)*FACTM(IM)*.229
460. 74 CONTINUE
461. 75 ISOTOP=ISOTOP+LIM
462. 76 CONTINUE
463. 77 IF(.NOT.ACTPRD) GO TO 80
464. DO 79 ISO=N1,N2
465. IF(MASS(ISO,2).LT.1.E-30) GO TO 79
466. IF(IBETA.GT.0) GO TO 178
467. SUM1=0.0
468. DO 78 IE=1,GROUPS
469. SUM1=SUM1+BURST(ISO,IE)*DRF(IE,IR,IM,IU)*DEPTH(IE)
470. 78 CONTINUE
471. BRM(IU,IM)=BRM(IU,IM)+SUM1*MASS(ISO,2)*FACTM(IM)
472. GO TO 79
473. 178 BRM(IU,IM)=BRM(IU,IM)+BPOWER(ISO)*MASS(ISO,2)*FACTM(IM)*.229
474. 79 CONTINUE
475. 80 CONTINUE
476. 81 CONTINUE
477. IF(IBETA.GT.0) GO TO 1084
478. C CALCULATE DOSE FOR EACH SECTOR AT CURRENT DISTANCE USING BRM AND F
479. DO 84 IT=1,NTHETA
480. SUM1=0.0
481. DO 83 IU=1,NUBAR
482. DO 82 IM=1,NMET
483. SUM1=SUM1+BRM(IU,IM)*F(IU,IM,IT)
484. 82 CONTINUE
485. 83 CONTINUE
486. DOSE(IR,IT)=SUM1*3.1536E10

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487.      84 CONTINUE
488.      GO TO 85
489. C CALCULATE BETA DOSE
490. 1084 DO 1085 IT=1,NTHETA
491.      SUM1=0.0
492.      DO 1083 IU=1,NUBAR
493.      DO 1082 IM=1,NHET
494.      SUM1=SUM1+HRH(IU,IM)*F(IU,IM,IT)*DRF(IT,IR,IM,IU)
495. 1083 CONTINUE
496. 1085 CONTINUE
497.      DOSE(IR,IT)=SUM1*3.1536E10
498. 1085 CONTINUE
499.      85 CONTINUE
500.      IF(HH.GT.0) GO TO 385
501.      DO 285 IT=1,NTHETA
502.      DO 185 IR=1,NR
503.      DOSTOR(IDEPTH,IR,IT)=DOSE(IR,IT)
504. 185 CONTINUE
505. 285 CONTINUE
506.      GO TO 1086
507. 385 DO 585 IT=1,NTHETA
508.      DO 485 IR=1,NR
509.      DOSTOR(IDEPTH,IR,IT)=DOSTOR(IDEPTH,IR,IT)+DOSE(IR,IT)
510. 485 CONTINUE
511. 585 CONTINUE
512. C PRINT RESULTS
513. 1066 CONTINUE
514.      PRINT 2300, (TITLJ(I),I=1,7)
515.      PRINT 3700, BB
516.      IF(IDEPTH.GT.0) GO TO 386
517.      PRINT 1900, TDEP(IDEPTH), (TITLJ(I),I=8,13),HH,(R(I),I=1,NR)
518.      GO TO 286
519. 386 PRINT 2200, (TITLJ(I),I=8,13),HH,(R(I),I=1,NR)
520. 286 CONTINUE
521.      DO 86 IT=1,NTHETA
522.      PRINT 2000, THETA(IT),SECT(IT), (DOSE(I,IT),I=1,NR)
523.      IF(KINT.LE.0) GO TO 86
524.      DO 985 IR=1,NR
525.      IF(DOSE(IR,IT).LE.0.0) DOSE(IR,IT)=1.E-20
526.      DOSL(IR)=ALOG(DOSE(IR,IT))
527. 986 CONTINUE
528.      DO 586 IR=1,NR
529.      DOSEX(IR,IT)=AINT(RL,DOSL,NR,XL(IR),KINT,PP)
530.      DOSEX(IR,IT)=EXP(DOSEX(IR,IT))
531. 586 CONTINUE
532.      86 CONTINUE
533.      IF(KINT.LE.0) GO TO 1186
534.      IF(HH.GT.0) GO TO 985
535.      DO 785 IT=1,NTHETA
536.      DO 685 IR=1,NR
537.      DOSTORX(IDEPTH,IR,IT)=DOSEX(IR,IT)
538. 685 CONTINUE
539. 785 CONTINUE
540.      GO TO 1285
541. 985 DO 1185 IT=1,NTHETA
542.      DO 1385 IR=1,NR
543.      DOSTORX(IDEPTH,IR,IT)=DOSTORX(IDEPTH,IR,IT)+DOSEX(IR,IT)
544. 1385 CONTINUE
545. 1185 CONTINUE
546. 1285 CONTINUE
547.      PRINT 2300, (TITLJ(I),I=1,7)
548.      PRINT 3700, BB
549.      IF(IDEPTH.GT.0) GO TO 686
550.      PRINT 1900, TDEP(IDEPTH), (TITLJ(I),I=8,13),HH,(X(I),I=1,NR)
551.      GO TO 786
552. 686 PRINT 2200, (TITLJ(I),I=8,13),HH,(X(I),I=1,NR)
553. 786 CONTINUE
554.      DO 886 IT=1,NTHETA
555.      PRINT 2000, THETA(IT),SECT(IT), (DOSEX(I,IT),I=1,NR)
556. 886 CONTINUE
557.      IF(.NOT.POP) GO TO 1186
558.      IF(KINT.LE.0) GO TO 1186
559.      IF(IDEPTH.NE.3) GO TO 1186
560. C CALCULATE AND PRINT POPULATION DOSES
561.      DO 1486 IT=1,NTHETA
562.      PDOSE(IT,1)=P(IT,1)*DOSEX(1,IT)*.001
563.      DO 1386 IR=2,NR
564.      PDOSE(IT,IR)=PDOSE(IT,IR-1)+P(IT,IR)*DOSEX(IR,IT)*.001
565. 1386 CONTINUE
566. 1486 CONTINUE
567. 1586 PRINT 2300, (TITLJ(I),I=1,7)
568.      PRINT 3700, BB
569.      PRINT 4300, (TITLJ(I),I=8,13),HH,(X(I),I=1,NR)
570.      DO 1686 IT=1,NTHETA
571.      PRINT 2000, THETA(IT),SECT(IT), (PDOSE(IT,I),I=1,NR)
572. 1686 CONTINUE
573. 1186 IF(IDEPTH.GT.0) GO TO 486
574. 186 CONTINUE
575. 486 CONTINUE
576. C PRINT RESULTS FOR ADDED DOSE RATE SETS
577.      IF(HH.LE.0) GO TO 199
578.      DO 99 IDEPTH=1,3
579.      PRINT 2300, (TITLJ(I),I=1,7)
580.      PRINT 3700, BB
581.      IF(IDEPTH.GT.0) GO TO 98
582.      PRINT 4200, TDEP(IDEPTH), (TITLJ(I),I=8,13),IRL,(R(I),I=1,NR)
583.      GO TO 91
584. 90 PRINT 4100, (TITLJ(I),I=8,13),IRL,(R(I),I=1,NR)

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585.      91 DO 93 IT=1,NTHETA
586.          PRINT 2000, THETA(IT),SECT(IT),(DSTOR(IDEPTH,I,IT),I=1,NR)
587.      93 CONTINUE
588.          IF(KINT.LE.0) GO TO 98
589.          PRINT 2300, (TITLJ(I),I=1,7)
590.          PRINT 3700, BB
591.          IF(1BETA.GT.0.OR.1DEPTH.EQ.1) GO TO 94
592.          PRINT 4200, TOEP(IDEPTH),(TITLJ(I),I=8,13),IREL,(X(I),I=1,NR)
593.          GO TO 95
594.      94 PRINT 4100, (TITLJ(I),I=8,13),IREL,(X(I),I=1,NR)
595.      95 DO 97 IT=1,NTHETA
596.          PRINT 2000, THETA(IT),SECT(IT),(DSTORX(IDEPTH,I,IT),I=1,NR)
597.      97 CONTINUE
598.          IF(.NOT.POP) GO TO 98
599.          IF(KINT.LE.0) GO TO 98
600.          IF(IDEPTH.NE.3) GO TO 98
601.          DO 298 IT=1,NTHETA
602.              PD0SE(IT,1)=P(IT,1)*DSTORX(IDEPTH,1,IT)*.001
603.              DO 198 IR=2,NR
604.                  PD0SE(IT,IR)=PD0SE(IT,IR-1)+P(IT,IR)*D0SEX(IR,IT)*.001
605.      198 CONTINUE
606.      298 CONTINUE
607.          PRINT 2300,(TITLJ(I),I=1,7)
608.          PRINT 3700, BB
609.          PRINT 3900, (TITLJ(I),I=8,13),IREL,(X(I),I=1,NR)
610.          DO 398 IT=1,NTHETA
611.              PRINT 2000, THETA(IT),SECT(IT),(PD0SE(IT,I),I=1,NR)
612.      398 CONTINUE
613.          98 IF(1BETA.GT.0) GO TO 199
614.          98 CONTINUE
615.      199 CONTINUE
616.      1286 CONTINUE
617.          RETURN
618.          END

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1.  C SUBROUTINE DECODE READS A CONTROL WORD CARD
2.  SUBROUTINE DECODE(WORD,WORDS)
3.  DIMENSION WORD(14)
4.  COMMON/TITLE/TITLE(14),A(80)
5.  IMPLICIT INTEGER (A,B,C,W)
6.  DATA BLANK/1H /
7.  C INITIALIZE WORDS TO BLANKS
8.  DO 1 I=1,14
9.  1 WORD(I)=BLANK
10. PRINT 9, TITLE
11. 9 FORMAT('1'13A6,A2)
12. C READ 80 CHARACTERS
13. READ 2, A
14. 2 FORMAT(80A1)
15. PRINT 10, A
16. 10 FORMAT('6'80A1)
17. C INITIALIZE PARAMETERS
18. COLUMN=6
19. WORDS=0
20. BIT=0
21. C START ANALYSIS OF CURRENT CHARACTER
22. 3 COLUMN=COLUMN+1
23. IF(COLUMN.GT.80) GO TO 7
24. C SET CHARAC EQUAL TO CURRENT CHARACTER
25. CHARAC=FLO(0.6,A(COLUMN))
26. C CHARAC=5 FOR BLANKS
27. IF(CHARAC.EQ.5) GO TO 3
28. C START FORMATION OF NEXT WORD
29. WORDS=WORDS+1
30. 4 IF(BIT.NE.36) GO TO 5
31. C WHEN WORD HAS MORE THAN 6 CHARACTERS, PLACE SECOND HALF IN NEXT WORD
32. WORDS=WORDS+1
33. BIT=0
34. C PLACE CHARAC IN CURRENT WORD STARTING AT BIT (6 BITS PER CHARACTER)
35. 5 FLO(BIT,6,WORD(WORDS))=CHARAC
36. BIT=BIT+6
37. 6 COLUMN=COLUMN+1
38. IF(COLUMN.GT.80) GO TO 7
39. C START ANALYSIS OF NEXT CHARACTER
40. CHARAC=FLO(0.6,A(COLUMN))
41. IF(CHARAC.NE.5) GO TO 4
42. BIT=0
43. C RETURN TO MAIN
44. GO TO 3
45. 7 RETURN
46. END

```

0 ELT LIBK,1,720721, 36654

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1. C SUBROUTINE LIB READS A RIBD LIBRARY AND A PHOTON DATA LIBRARY.
2. C CALCULATE DKFRCT (FRACTIONAL YIELD FROM PARENTS) AND BURST (FRACTIONAL
3. C YIELD FROM EACH ENERGY GROUP * LAMBDA)
4. C
5. C SUBROUTINE LIBK
6. C COMMON HFP,HAC,NTOT,HOFNUC(96),SKIP(96),MASS(600,2),LAMBDA(600),
7. C 1CHAINS,DKFRCT(450,3),REC(600),BURST(600,16),BPOWER(600),GROUPS,
8. C 2ML(600)
9. C COMMON CAPA(16),CAPB(16),AMUA(16),AMU(16)
10. C COMMON ICL(600),KEV(16)
11. C DIMENSION MEV(16)
12. C DIMENSION FRACT(450),ISO(450), ENERGY(16)
13. C DIMENSION ENG(16)
14. C LOGICAL ERROR
15. C INTEGER CHAINS,REREAD,GROUPS
16. C REAL LAMBDA,MEV,KEV
17. C
18. C READ RIBD DATA LIBRARY
19. C READ (29,1) NCD
20. C 1 FORMAT(13)
21. C READ(29,2) (ML(J),LAMBDA(J),FRACT(J),BPOWER(J),REC(J),ISO(J),J=1,
22. C 1NCD)
23. C 2 FORMAT(13,2X,E9.3,32X,2F5.3,12X,A3,11)
24. C READ(29,1) N2
25. C N1=NCD+1
26. C HAC=N2
27. C N2=N2+NCD
28. C HFP=NCD
29. C NTOT=N2
30. C READ(29,2) (ML(J),LAMBDA(J),BPOWER(J),REC(J),J=N1,N2)
31. C 102 FORMAT(13,2X,F9.3,37X,F5.3,12X,A3)
32. C DO 202 L=N1,N2
33. C 202 LAMBDA(L)=.69314/86400./LAMBDA(L)
34. C REWIND 29
35. C ERROR=.FALSE.
36. C MP=0
37. C CHAINS=0
38. C DO 3 I=1,96
39. C 3 NOFNUC(I)=0
40. C CALCULATE LAMBDA IN SEC-1
41. C DO 10 J=1,NCD
42. C LAMBDA(J)=.69314/LAMBDA(J)/86400.
43. C IF(MP-ML(J)) 4,5,6
44. C 4 MP=ML(J)
45. C NEW MASS CHAIN
46. C CHAINS=CHAINS+1
47. C COUNT NUMBER OF NUCLIDES IN THIS CHAIN
48. C 5 NOFNUC(CHAINS)=NOFNUC(CHAINS)+1
49. C GO TO 8
50. C 6 ERROR=.TRUE.
51. C PRINT 7,J
52. C 7 FORMAT('OLIBRARY ENTRY',I4,' IS OUT OF PLACE')
53. C DO 9 L=1,3
54. C 9 DKFRCT(J,L)=0.0
55. C 10 CONTINUE
56. C DO 110 L=1,N2
57. C BPOWER(L)=LAMBDA(L)*BPOWER(L)
58. C 110 CONTINUE
59. C IF(ERROR) STOP
60. C ISO=1 MEANS ISOMERIC STATE, =2 MEANS GROUND STATE
61. C ISOTOP=0
62. C DO 15 K=1,CHAINS
63. C LIM=NOFNUC(K)
64. C J=0
65. C DETERMINE FRACTIONAL DECAY YIELDS
66. C DO 14 I=1,LIM
67. C J=J+1
68. C ISOTOP=ISOTOP+1
69. C IF(J.EQ.1) GO TO 13
70. C IF(ISO(ISOTOP),EQ.2) GO TO 11
71. C DKFRCT(ISOTOP,1)=FRACT(ISOTOP-1)
72. C GO TO 13
73. C 11 DKFRCT(ISOTOP,1)=1.-FRACT(ISOTOP-1)
74. C IF(J.EQ.2) GO TO 13
75. C IF(ISO(ISOTOP-1),EQ.1) GO TO 12
76. C IF(ISO(ISOTOP-2),EQ.2) GO TO 13
77. C DKFRCT(ISOTOP,2)=FRACT(ISOTOP-2)
78. C GO TO 13
79. C 12 DKFRCT(ISOTOP,2)=1.-FRACT(ISOTOP-2)
80. C IF(J.EQ.3,OR,ISO(ISOTOP-3),EQ.2) GO TO 13
81. C DKFRCT(ISOTOP,3)=FRACT(ISOTOP-3)
82. C 13 IF(LAMBDA(ISOTOP).LT.1.E-30) J=0
83. C 14 CONTINUE
84. C 15 CONTINUE
85. C
86. C READ PHOTON DATA LIBRARY
87. C REREAD=-4
88. C READ(28,1) GROUPS
89. C KEV(GROUPS)=5.0
90. C LIM=GROUPS-1
91. C KEV IS UPPER MEV LIMIT OF GROUP FOR LOWER 15 GROUPS
92. C READ (28,16) (KEV(I),I=1,LIM)
93. C 16 FORMAT(16F5,0)
94. C READ(28,216) (MEV(I),I=1,GROUPS)

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95.      216 FORMAT(6E12.5)
96.      IF(GROUPS.GT.1) GO TO 316
97.      ENG(1)= .7
98.      GO TO 616
99.      316 IF(GROUPS.GT.2) GO TO 416
100.      ENG(1)=.6687*KEV(1)
101.      ENG(2)=1.2*KEV(1)
102.      GO TO 616
103.      416 ENG(1)=.6687*KEV(1)
104.      ENG(GROUPS)=1.2*KEV(GROUPS-1)
105.      L=GROUPS-1
106.      DO 516 I=2,L
107.      516 ENG(I)=(KEV(I)*KEV(I-1))/2.0
108.      616 CONTINUE
109.      DO 716 I=1,GROUPS
110.      716 MEV(I)=MEV(I)/ENG(I)
111.      DO 23 ISOTOP=1,N2
112.      DO 116 L=1,16
113.      116 BURST(ISOTOP,L)=0.0
114.      READ(28,17) H,H0,(FRACT(J),ENERGY(J),J=1,6)
115.      17 FORMAT(3X,I2,3X,I2,12F5.5)
116.      ICL(ISOTOP)=4
117.      IF(H.EQ.18.OR.H.EQ.36.OR.H.EQ.54) ICL(ISOTOP)=1
118.      IF(H.EQ.34.OR.H.EQ.52.OR.H.EQ.55) ICL(ISOTOP)=3
119.      IF(H.EQ.17.OR.H.EQ.35.OR.H.EQ.53.OR.H.EQ.9) ICL(ISOTOP)=2
120.      IF(HO.EQ.9) GO TO 23
121.      IF(HO.LT.7) GO TO 20
122.      READ(28,19) (FRACT(J),ENERGY(J),J=7,13)
123.      IF(HO.LT.14) GO TO 28
124.      READ(28,19) (FRACT(J),ENERGY(J),J=14,N0)
125.      19 FORMAT(14F5.5)
126.      C CALCULATE BURST FOR CURRENT ISOTOPE
127.      DO 22 K=1,N0
128.      DO 21 I=1,LIM
129.      IF(ENERGY(K).LE.KEV(I)) GO TO 22
130.      21 CONTINUE
131.      I=GROUPS
132.      22 BURST(ISOTOP,I)=BURST(ISOTOP,I)+FRACT(K)*LAMBDA(ISOTOP)*ENERGY(K)
133.      23 CONTINUE
134.      READ(28,216) (CAPA(I),I=1,GROUPS)
135.      READ(28,216) (CAPR(I),I=1,GROUPS)
136.      READ(28,216) (AMJA(I),I=1,GROUPS)
137.      READ(28,216) (AMU(I),I=1,GROUPS)
138.      REWIND 28
139.      C RETURN TO JOINT
140.      RETURN
141.      END

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B ELT PASOIL,1,730510, 57244

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1.      SUBROUTINE PASOIL(SZ,X,ITYPE,NUM,IER)
2.      DIMENSION DIST(20),SIGZ(6,20)
3.      DIMENSION SZ(3),X(3)
4.      C DISTANCE DATA (CM)
5.      DATA DIST/0.0,1.E4,1.5E4,2.5E4,3.5E4,5.E4,7.E4,1.E5,1.5E5,2.5E5,
6.      13.5E5,5.E5,7.E5,1.E6,1.5E6,2.5E6,3.5E6,5.E6,7.E6,1.E7/
7.      C SZ DATA (CM)
8.      DATA (SIGZ(1,I),I=1,20)/100.,1500.,2250.,4300.,7.E3,1.35E4,2.7E4,
9.      16.7E4,2.E5,1.1E5,1.E6/
10.     DATA (SIGZ(2,I),I=1,20)/100.,1.E3,1500.,2550.,3700.,5700.,8600.,
11.     11.35E4,2.4E4,5.8E4,1.2E5,2.E5,8E4,1.E6/
12.     DATA (SIGZ(3,I),I=1,20)/100.,780.,1100.,1750.,2400.,3400.,4600.,
13.     16400.,9000.,1.4E4,1.9E4,2.6E4,3.4E4,4.4E4,6.E4,8.8E4,1.12E5,1.44E5,
14.     2.178E5,2.E5/
15.     DATA (SIGZ(4,I),I=1,20)/100.,470.,680.,1050.,1400.,1900.,2500.,
16.     13300.,4300.,6200.,7600.,9500.,1.15E4,1.4E4,1.7E4,2.2E4,2.65E4,
17.     23.2E4,3.7E4,4.5E4/
18.     DATA (SIGZ(5,I),I=1,20)/100.,300.,430.,710.,940.,1300.,1700.,2200.,
19.     1.2900.,4100.,5000.,6100.,7200.,8400.,9900.,1.17E4,1.3E4,1.4E4,
20.     21.55E4,1.7E4/
21.     DATA (SIGZ(6,I),I=1,20)/100.,140.,220.,400.,530.,760.,1000.,1350.,
22.     11770.,2509.,3000.,3500.,4100.,4700.,5500.,6400.,7200.,7900.,8600.,
23.     29400./
24.     IER=0
25.     IDATA=1
26.     C CALCULATE SZ FOR EACH DISTANCE
27.     DO 6 I=1,NUM
28.     X(I)=X(I)*100.
29.     1 IF(IDATA.GT.20) GO TO 5
30.     IF(SIGZ(ITYPE,IDATA)) 5,5,101
31.     101 IF(X(I)-DIST(IDATA)) 4,3,2
32.     2 IDATA=IDATA+1
33.     GO TO 1
34.     3 SZ(I)=SIGZ(ITYPE,IDATA)
35.     GO TO 16
36.     4 IF(IDATA.EQ.1) GO TO 3
37.     SZ1=SIGZ(ITYPE,IDATA-1)
38.     SZ2=SIGZ(ITYPE,IDATA)
39.     D1=DIST(IDATA-1)
40.     D2=DIST(IDATA)
41.     SZ(I)=SZ1+(X(I)-D1)*(SZ2-SZ1)/(D2-D1)
42.     GO TO 16
43.     5 IER=1
44.     SZ(I)=SIGZ(ITYPE,IDATA-1)
45.     16 SZ(I)=SZ(I)*.01
46.     X(I)=X(I)*.01
47.     6 CONTINUE
48.     RETURN
49.     END

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9 ELT AITINT,1,711108, 50740

1.	FUNCTION AITINT(X,Y,XB,K,P)	AITINT
2.	DIMENSION X(N),Y(N),P(K)	AITINT
3.	DOOJ=1,N	AITINT
4.	C TRY TO USE AN EQUAL NUMBER OF GIVEN POINTS TO	
5.	C THE LEFT AND RIGHT OF THE INTERPOLATION POINT, AP	
6.	IF(X(J)-XB)2,1,3	AITINT
7.	C IF THE INTERPOLATION POINT IS A GIVEN POINT, USE	
8.	C THE GIVEN FUNCTION VALUE AND EXIT	
9.	1 AITINT=Y(J)	AITINT
10.	RETURN	AITINT
11.	2 CONTINUE	AITINT
12.	J=N	AITINT
13.	3 J=MINO(MAXO(1,J-(K+1)/2),N-K+1)	AITINT
14.	IF(J+K.LE.N.AND.X(J+K)-XB.LT.XB-X(J))J=J+MOD(K,2)	AITINT
15.	P(1)=Y(J)	AITINT
16.	C AITKIN'S PROCEDURE, USING THE CLOSEST OF THE GIVEN POINTS.	
17.	DOOI=2,K	AITINT
18.	P(I)=Y(J+I-1)	AITINT
19.	DOOL=2,I	AITINT
20.	4 P(I)=(P(L-2)*(X(J+I-1)-XB)-P(I)*(X(J+L-2)-XB))/((X(J+I-1)-XB)-(X(J	AITINT
21.	1+L-2)-XB))	AITINT
22.	AITINT=P(K)	AITINT
23.	RETURN	AITINT
24.	END	AITINT

W ELT CHAINT,1,730510, 57252

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1. C SUBROUTINE CHAINT DECAYS FISSION PRODUCTS IN MASS ARRAY POSIT FOR A TIME
2. C THETA AND STORES RESULTS IN MASS ARRAY LOC.
3. C
4. SUBROUTINE CHAINT(LOC,THETA,POSIT)
5. DIMENSION EXPO(6)
6. COMMON HFP,HAC,NTOT,HOFNUC(96),SKIP(96),MASS(600,2),LAMBDA(600),
7. 1CHAINS,DKFRCT(450,3),REC(600),BURST(600,16),BPOWER(600),GROUPS,
8. 2HL(600)
9. COMMON CAPA(16),CAPB(16),AMUA(16),AMU(16)
10. REAL LAMBDA,MASS
11. INTEGER CHAINS,SKIP,POSIT
12. ISOTOP=0
13. C DO LOOP ON NUMBER OF CHAINS
14. DO 11 K=1,CHAINS
15. LIM=HOFNUC(K)
16. IF (SKIP(K).NE.0) GO TO 13
17. J=0
18. C DO LOOP ON ISOTOPES IN THE CHAIN
19. DO 9 I=1,LIM
20. ISOTOP=ISOTOP+1
21. J=J+1
22. IF (LAMBDA(ISOTOP).LT.1.E-30) GO TO 8
23. EXPO(J)=EXP(-LAMBDA(ISOTOP)*THETA)
24. C TRANSFER ON CHAIN MEMBER J
25. GO TO (1,2,3,4,5,6,7),J
26. C FIRST CHAIN MEMBER
27. 1 A1=MASS(ISOTOP,POSIT)
28. MASS(ISOTOP,LOC)=A1*EXPO(1)
29. GO TO 9
30. C SECOND CHAIN MEMBER
31. 2 A2=DKFRCT(ISOTOP,1)*LAMBDA(ISOTOP-1)*A1/(LAMBDA(ISOTOP)-LAMBDA(ISO
32. 1TOP-1))
33. A3=MASS(ISOTOP,POSIT)-A2
34. MASS(ISOTOP,LOC)=A3*EXPO(2)+A2*EXPO(1)
35. GO TO 9
36. C THIRD CHAIN MEMBER
37. 3 ABLE=DKFRCT(ISOTOP,1)*LAMBDA(ISOTOP-1)
38. A4=(ABLE*A2+DKFRCT(ISOTOP,2)*LAMBDA(ISOTOP-2)*A1)/(LAMBDA(ISOTOP)-
39. 1LAMBDA(ISOTOP-2))
40. A5=ABLE*A3/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-1))
41. A6=MASS(ISOTOP,POSIT)-A4-A5
42. MASS(ISOTOP,LOC)=A6*EXPO(3)+A5*EXPO(2)+A4*EXPO(1)
43. GO TO 9
44. C FOURTH CHAIN MEMBER
45. 4 ABLE=DKFRCT(ISOTOP,1)*LAMBDA(ISOTOP-1)
46. BAKER=DKFRCT(ISOTOP,2)*LAMBDA(ISOTOP-2)
47. A7=(ABLE*A4+BAKER*A2+DKFRCT(ISOTOP,3)*LAMBDA(ISOTOP-3)*A1)/(LAMBDA
48. 1(ISOTOP)-LAMBDA(ISOTOP-3))
49. A8=(ABLE*A5+BAKER*A3)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-2))
50. A9=ABLE*A6/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-1))
51. A10=MASS(ISOTOP,POSIT)-A9-A8-A7
52. MASS(ISOTOP,LOC)=A10*EXPO(4)+A9*EXPO(3)+A8*EXPO(2)+A7*EXPO(1)
53. GO TO 9
54. C FIFTH CHAIN MEMBER
55. 5 ABLE=DKFRCT(ISOTOP,1)*LAMBDA(ISOTOP-1)
56. BAKER=DKFRCT(ISOTOP,2)*LAMBDA(ISOTOP-2)
57. CHARLY=DKFRCT(ISOTOP,3)*LAMBDA(ISOTOP-3)
58. A11=(ABLE*A7+BAKER*A4+CHARLY*A2)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-4)
59. 1)
60. A12=(ABLE*A8+BAKER*A5+CHARLY*A3)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-3)
61. 1)
62. A13=(ABLE*A9+BAKER*A6)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-2))
63. A14=ABLE*A10/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-1))
64. A15=MASS(ISOTOP,POSIT)-A14-A13-A12-A11
65. MASS(ISOTOP,LOC)=A15*EXPO(5)+A14*EXPO(4)+A13*EXPO(3)+A12*EXPO(2)+
66. 1A11*EXPO(1)
67. GO TO 9
68. C SIXTH CHAIN MEMBER
69. 6 ABLE=DKFRCT(ISOTOP,1)*LAMBDA(ISOTOP-1)
70. BAKER=DKFRCT(ISOTOP,2)*LAMBDA(ISOTOP-2)
71. CHARLY=DKFRCT(ISOTOP,3)*LAMBDA(ISOTOP-3)
72. A16=(ABLE*A11+BAKER*A7+CHARLY*A4)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-5)
73. 1)
74. A17=(ABLE*A12+BAKER*A8+CHARLY*A5)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-4)
75. 1)
76. A18=(ABLE*A13+BAKER*A9+CHARLY*A6)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-3)
77. 1)
78. A19=(ABLE*A14+BAKER*A10)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-2))
79. A20=ABLE*A15/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-1))
80. A21=MASS(ISOTOP,POSIT)-A20-A19-A18-A17-A16
81. MASS(ISOTOP,LOC)=A21*EXPO(6)+A20*EXPO(5)+A19*EXPO(4)+A18*EXPO(3)+
82. 1A17*EXPO(2)+A16*EXPO(1)
83. GO TO 9
84. C SEVENTH CHAIN MEMBER
85. 7 ABLE=DKFRCT(ISOTOP,1)*LAMBDA(ISOTOP-1)
86. BAKER=DKFRCT(ISOTOP,2)*LAMBDA(ISOTOP-2)
87. CHARLY=DKFRCT(ISOTOP,3)*LAMBDA(ISOTOP-3)
88. A22=(ABLE*A16+BAKER*A11+CHARLY*A7)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-6)
89. 1)
90. A23=(ABLE*A17+BAKER*A12+CHARLY*A8)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-5)
91. 1)
92. A24=(ABLE*A18+BAKER*A13+CHARLY*A9)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-4)
93. 1)
94. A25=(ABLE*A19+BAKER*A14+CHARLY*A10)/(LAMBDA(ISOTOP)-LAMBDA(ISOTOP-

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95.      1.5)
96.      A26=(A21*A26+BAKER*A15)/(LAMBDA(ISO TOP)-LAMBDA(ISO TOP-2))
97.      A27=A21/(LAMBDA(ISO TOP)-LAMBDA(ISO TOP-1))
98.      A28=MASS(ISO TOP, POSIT)-A27-A26-A25-A24-A23-A22
99.      MASS(ISO TOP, LOC)=A26*EXP0(7)+A27*EXP0(6)+A28*EXP0(5)+A25*EXP0(4)+
100.     1A27*EXP0(3)+A25*EXP0(2)+A22*EXP0(1)
101.     GO TO 9
102.     8 J=9
103.     9 CONTINUE
104.     GO TO 11
105.     10 ISO TOP=ISO TOP+LIM
106.     11 CONTINUE
107. C RETURN TO INDOSE
108.     RETURN
109.     END

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95.	92375.707E-052.900E 001.540E 00	2.97	RB 2	083
96.	92301.125E-016.900E-017.000E-02	2.26 1.274	SR 2	084
97.	92391.471E-010. 0.	1.44 0.266	Y 2	085
98.	9240 0. 0.		ZR 2	086
99.	93362.315E-051.300E 007.700E-01	3.82	KR 2	087
100.	93376.944E-053.100E 001.820E 00	2.83	RB 2	088
101.	93385.764E-032.000E 001.320E 00	1.40 1.0	SR 2	089
102.	93394.208E-011.900E-016.000E-02	1.18 0.102	Y 2	090
103.	93403.468E 080. 0.	.25 .015	ZR 2	091
104.	93411.351E 030. 0.	0.029	NB*1	092
105.	9341 0. 0.	1.1 .909	NB 2	093
106.	94361.620E-056.000E-016.000E-01	2.70	KR 2	094
107.	94373.472E-052.300E 001.500E 00	4.57	RB 2	095
108.	94388.333E-042.900E 001.640E 00	1.46	SR 2	096
109.	94391.309E-027.000E-017.400E-01	2.23 1.	Y 2	097
110.	9440 0. 0.		ZR 2	098
111.	94414.583E-030. 0.	.001 .00050.042	NB*1	099
112.	94417.300E 060. 0.	.16 1.570	NB 2	100
113.	9442 0. 0.		MO 2	101
114.	95361.157E-053.200E 002.900E 00	4.57	KR 2	1011
115.	95372.314E-053.200E 002.900E 00	3.58	RB 2	1012
116.	95385.556E-04 0.	2.72	SR 2	1013
117.	95397.292E-03 0.	2.09	Y 2	102
118.	95406.500E 010. 0.	.02 .12 0.728	ZR 2	103
119.	95413.750E 000. 0.		NB*1	104
120.	95413.500E 010. 0.	.043 0.760	NB 2	105
121.	9542 0. 0.		MO 2	106
122.	96391.597E-033.200E 002.585E 00	1.55 1.7	Y 2	1061
123.	9640 3.200E 002.585E 00.05		ZR 2	107
124.	96419.583E-015.700E-043.600E-03	.22 2.456	NB 2	108
125.	9642 0. 0.		MO 2	109
126.	97361.157E-052.400E 002.210E 00	4.20	KR 2	1091
127.	97372.315E-052.400E 002.210E 00	4.39	RB 2	1092
128.	97383.472E-05 0.	3.57	SR 2	1093
129.	97394.630E-05 0.	2.31	Y 2	110
130.	97407.983E-011.400E 001.230E 00	.9 .70 0.221	ZR 2	111
131.	97416.944E-040. 0.		NB*1	112
132.	97415.000E-020. 0.	.47 .673	NB 2	113
133.	9742 0. 0.		MO 2	114
134.	98406.944E-04 .2 1.000E-01	1.99	ZR 2	1141
135.	98413.576E-02 .064 1.600E-01	1. 1.31 2.	NB*1	1142
136.	98411.000E-02 3. 2.645E 00	1.26 1.2	NB 2	115
137.	9842 2.516 2.845E 00.15		MO 2	116
138.	99401.652E-053.050E 003.050E 00	1.55	ZR 2	1161
139.	99411.736E-033.050E 003.050E 00	1.36 .26	NB 2	1162
140.	99422.750E 00 0.	.92 .41 0.124	MO 2	117
141.	99432.500E-010. 0.		TC*1	118
142.	99437.665E 070. 0.	.084 .1423	TC 2	119
143.	9944 0. 0.		RU 2	120
144.	100412.983E-036.300E 007.160E 00	3.59 1.05	NB 2	121
145.	10042 0. 0.		MO 2	122
146.	100431.968E-040. 0.		TC 2	123
147.	10044 0. 0.	1.44 .114	RU 2	124
148.	101416.944E-042.500E 002.950E 00	1.03	NB 2	1241
149.	101421.014E-022.500E 002.950E 00	.42 1.649	MO 2	125
150.	101439.722E-030. 0.	.47 0.362	TC 2	126
151.	10144 0. 0.		RU 2	127
152.	102427.981E-034.200E 005.990E 00	.44 1.3	MO 2	128
153.	102435.787E-050. 0.	1.79	TC 2	129
154.	10244 0. 0.		RU 2	130
155.	103435.787E-041.550E 002.835E 00	1.03	TC 2	1301
156.	103444.000E+011.450E 002.835E 00	.995 .063 0.488	RU 2	131
157.	103453.958E-020. 0.		RH*1	132
158.	10345 0. 0.		RH 2	133
159.	104421.111E-031.890E 005.930E 00	.071 1.08 1.	MO 2	134
160.	104431.250E-020. 0.	.98 3.1	TC 2	135
161.	10444 0. 0.		RU 2	136
162.	104453.956E-030. 0.	800. .0013.0002.131	RH*1	137
163.	104454.861E-040. 0.	40. .98 0.013	RH 2	138
164.	10446 0. 0.		PD 2	139
165.	105424.650E-040.000E-012.000E 00	2.54	MO 2	140
166.	105435.556E-033.000E-011.300E 00	2.09	TC 2	141
167.	105441.846E-010. 0.	.2 2690.42 .7680	RU 2	142
168.	105453.472E-040. 0.		RH*1	143
169.	105451.500E 000. 0.	2.100E+04.715 0. .17 0.032	RH 2	144
170.	10546 0. 0.		PD 2	145
171.	106443.650E 023.800E-014.570E 00.1		RU 2	146
172.	106459.167E-02 0.	1. .35 2.627	RH*1	1461
173.	106453.472E-040. 0.		RH 2	147
174.	10646 0. 0.		PD 2	148
175.	107431.942E-031.600E-013.600E 00	2.71	TC 2	149
176.	107442.917E-034.000E-029. 0.	1.67 .144	RU 2	150
177.	107451.507E-020. 0.	.42 0.328	RH 2	152
178.	107462.555E 090. 0.	.014	PD 2	153
179.	10747 0. 0.	35. 0.0100.	AG 2	154
180.	108443.125E-038.000E-022.140E 00	.54 0.099	RU 2	155
181.	108451.968E-040. 0.		RH 2	156
182.	10846 0. 0.	12. ? .016	PD 2	157
183.	108471.825E 030. 0.	.9 1.605	AG*1	158
184.	108471.667E-030. 0.	.62 .017	AG 2	159
185.	10848 0. 0.	10. .	CD 2	160
186.	109453.472E-042.890E-021.400E 00	1. 1.16 .31	RH 2	161
187.	109463.333E-030. 0.		PD*1	162
188.	109465.625E-010. 0.	1. .36 .0092	PD 2	163
189.	109474.630E-040. 0.		AG*1	164
190.	10947 0. 0.	92. .0326	AG 2	165
191.	11046 2.000E-020. 0.	.24 .167	PD 2	166
192.	110472.600E 020. 0.	50. 0.96 .069 2.722	AG*1	167

193.	110472.778E-046.	0.			1.17	0.033	AG 2	168
194.	11048	2.300E-079.	3.1	.0322			CD 2	169
195.	111462.292E-011.000E-031.000E-02			0.32	.048	.676	PD*1	170
196.	111461.528E-021.800E-022.200E-01			1.	.85	.3	PD 2	171
197.	111478.565E-04					.065	AG*1	1711
198.	111477.530E 00				.36	0.025	AG 2	172
199.	111483.463E-020.	0.				0.397	CD*1	173
200.	11148	0.					CD 2	174
201.	112468.750E-011.100E-021.200E-01				.08	0.018	PD 2	175
202.	112471.333E-010.	0.			1.44	0.695	AG 2	176
203.	11248	0.	.03	1.			CD 2	177
204.	113461.042E-031.100E-021.000E-02			1.	1.40		PD 2	178
205.	113478.333E-040.	0.		.1	.08	0.200	AG*1	179
206.	113472.208E-010.	0.			.79	0.030	AG 2	180
207.	113485.110E 030.	0.			0.999.18	.0003	CD*1	181
208.	11348	0.	2.000E 64				CD 2	182
209.	11349	0.	12.	.67			IN 2	1821
210.	114461.667E-031.000E-021.000E-02				.52		PD 2	183
211.	114475.787E-050.	0.			2.02	0.5	AG 2	184
212.	11448	0.	1.24	0.1130.			CD 2	185
213.	114495.000E 01					.192	IN*1	1851
214.	114498.333E-04				.779	.002	IN 2	1852
215.	115465.208E-04 .01	.0038		.28	1.91		PD 2	1853
216.	115472.315E-04			1.	1.49		AG*1	186
217.	115471.458E-02 .0005	3.000E-04		.09	1.21	.2	AG 2	187
218.	115484.300E 010.	0.		1.	.61	0.036	CD*1	188
219.	115482.300E 000.	0.		1.	.32	0.192	CD 2	189
220.	115491.033E-010.	0.		.055	.015	0.317	IN*1	190
221.	11549	0.	203.	.78			IN 2	191
222.	11550	0.			.15		SN 2	192
223.	116463.472E-041.000E-020.				.93		PD 2	193
224.	116471.736E-030.	0.			2.21	1.217	AG 2	194
225.	11648	0.	1.4				CD 2	195
226.	116493.750E-020.	0.		1.	.29	2.495	IN*1	196
227.	116491.620E-040.	0.			1.39		IN 2	197
228.	11650	3.000E-030.	.006	1.			SN 2	198
229.	117477.639E-041.100E-021.100E-02			.5	1.63		AG 2	199
230.	117481.208E-010.	0.		1.	.35	1.6	CD*1	200
231.	117483.472E-020.	0.		1.	.70	0.49	CD 2	201
232.	117497.917E-020.	0.		0.8	.52	.132	IN*1	202
233.	117493.125E-020.	0.			.24	.73	IN 2	203
234.	117501.400E 010.	0.				0.32	SN*1	204
235.	11750	0.					SN 2	205
236.	118483.472E-021.000E-021.000E-03				.27	.2	CD 2	206
237.	118495.903E-050.	0.			1.85	0.244	IN 2	207
238.	11850	0.	.01	1.			SN 2	208
239.	119481.875E-03 .01	4.000E-03		.99	1.56		CD*1	209
240.	119486.597E-03			1.	1.44	.1	CD 2	210
241.	119491.250E-02			.96	1.04	0.066	IN*1	2101
242.	119491.389E-03			.1	.61	.84	IN 2	211
243.	119502.500E+02					.089	SN*1	212
244.	11950	0.					SN 2	213
245.	120495.787E-040.500E-020.500E-03				.88	3.2	IN 2	2131
246.	12050	0.500E-020.500E-03.141		.007			SN 2	214
247.	121408.431E 030.600E-040.600E-03			1.	1.73	0.85	CD 2	2141
248.	121492.153E-032.500E-042.500E-03			1.	1.58		IN*1	2142
249.	121493.472E-04 .0005	.0053		1.	1.20	.94	IN 2	2143
250.	121509.125E+030.500E-030.500E-02			1.	.15	.01	SN*1	215
251.	121501.125E 001.400E-023.000E-02				.11		SN 2	216
252.	12151	0.	6.06	.01			SB 2	217
253.	122498.681E-050.650E-020.500E-03				2.68	2.14	IN 2	2171
254.	12250	0.650E-020.500E-03.201		.005			SN 2	218
255.	122512.047E-030.	0.				0.136	SB*1	219
256.	122512.750E 000.	0.			.58	.405	SB 2	220
257.	12252	0.	3.	.333			TE 2	221
258.	123491.157E-040.600E-030.500E-03				1.39	1.1	IN 2	2211
259.	123501.250E+020.600E-030.500E-03			1.	.52	0.022	SN*1	222
260.	123502.778E-021.400E-020.				.46	0.160	SN 2	223
261.	12351	0.	3.345	.0135			SB 2	224
262.	123521.040E+02					.248	TE*1	2241
263.	12352	0.	400.				TE 2	225
264.	12450	2.000E-020.	.104	.962			SN 2	226
265.	124511.458E-020.	0.		.982	.97	0.427	SB*1	227
266.	124516.020E+010.	0.	2000.		.38	1.899	SB 2	228
267.	12452	0.	7.	.714			TE 2	229
268.	125506.736E-031.100E-021.000E-03			1.	.79	0.361	SN*1	230
269.	125509.400E 001.200E-027.100E-02				.92	0.094	SN 2	231
270.	125519.855E 020.	0.	20.	.26	.096	.415	SB 2	232
271.	125525.800E 010.	0.				0.145	TE*1	233
272.	12552	0.	1.5				TE 2	234
273.	126503.650E+071.000E-012.000E-01			1.	.12	.09	SN 2	235
274.	126511.319E-020.	0.		.01	.00780	.117	SB*1	236
275.	126511.250E 010.	0.			.74	1.780	SB 2	237
276.	12652	0.	1.	.1			TE 2	238
277.	127508.750E-022.400E-013.900E-01			.2	1.34	1.	SN 2	239
278.	127513.900E 001.000E-021.000E-02			.015	.38	0.505	SB 2	240
279.	127521.050E 020.	0.			.00410	.088	TE*1	241
280.	127523.875E-010.	0.			.23	0.004	TE 2	242
281.	12753	0.	6.4				I 2	243
282.	128504.306E-023.700E-014.000E-01			.03	3.85	3.27	SN 2	244
283.	128514.000E-015.000E-020.			1.	.35	3.6	SB*1	245
284.	128516.944E-038.000E-021.000E-01				1.20	1.7	SB 2	246
285.	12852	0.	.157	.108			TE 2	247
286.	128531.736E-023.000E-052.000E-04				.77	0.093	I 2	248
287.	12854	0.	5.				XE 2	249
288.	129511.792E-011.000E 001.000E 00			.36	.542	.916	SB 2	250
289.	129523.300E 010.	0.				0.106	TE*1	251
290.	129524.653E-020.	0.			.45	.238	TE 2	252

291.	129535.640E-09C.	0.	28.		.050	.040	I	2	253	
292.	12954	0.	25.				XE	2	254	
293.	130501.806E-032.000E-002.000E-00				4.23		SN	2	255	
294.	130512.292E-020.	0.			1.72	1.0	SB	2	256	
295.	13052	0.	.23	.13			TE	2	257	
296.	130535.208E-01.0005	.0052	18.		.27	2.123	I	2	258	
297.	13054	0.	5.				XE	2	259	
298.	131511.597E-022.700E-003.100E-00				.15	1.33	SB	2	260	
299.	131521.209E-004.000E-021.300E-01				.783	.16	1.468	TE*1	261	
300.	131521.736E-021.600E-015.400E-01					.74	0.376	TE	2	262
301.	131530.050E-00.2	0.	.7		.007	.18	0.399	I	2	263
302.	131541.200E-010.	1.000E-02					0.164	XE*1	264	
303.	13154	0.	85.					XE	2	265
304.	132511.458E-033.400E-005.100E-00				2.68			SB	2	266
305.	132523.250E-001.300E-00.18				.055	0.280		TE	2	267
306.	132539.583E-020.	0.			.49	2.249		I	2	268
307.	13254		5.2	.962				XE	2	269
308.	133512.847E-033.800E-003.000E-00				.72	1.72		SB	2	270
309.	133523.472E-021.100E-001.000E-00				.87	.49	1.613	TE*1	271	
310.	133521.389E-031.100E-001.000E-00					.97	0.6	TE	2	272
311.	133538.750E-015.000E-012.000E-01				.02	.46	.53	I	2	273
312.	133542.300E-000.	0.					0.233	XE*1	274	
313.	133545.270E-000.	1.700E-00190.				.10	.082	XE	2	275
314.	13355	0.	30.6	.085				CS	2	276
315.	134515.556E-043.000E-003.500E-00					3.45	0.200	SB	2	277
316.	134522.917E-023.700E-004.000E-00					.52	.1	TE	2	278
317.	134533.681E-029.000E-010.					.78	2.5	I	2	279
318.	13454	0.	5.2	.962				XE	2	280
319.	134551.208E-010.	0.		.01		.00170	153	CS*1	281	
320.	134557.665E-020.	0.	136.			.16	1.588	CS	2	282
321.	13456		4.16	.038				BA	2	283
322.	135512.778E-04	4.3	1.1			3.16		SB	2	2831
323.	135526.944E-04					2.68		TE	2	284
324.	135532.792E-01	1.9	5.700E-00	.27		.32	1.642	I	2	285
325.	135541.111E-020.	0.					0.530	XE*1	286	
326.	135543.833E-013.000E-01.47	2.900E+06				.31	0.261	XE	2	287
327.	135557.300E+080.	8.7				.055		CS	2	288
328.	135561.208E-000.	0.					0.268	BA*1	289	
329.	13556	0.	5.					BA	2	290
330.	136539.606E-043.100E-002.100E-00					1.68	3.237	I	2	291
331.	13654	3.36	4.520E-00.15					XE	2	292
332.	136551.300E-016.800E-031.100E-01					.11	2.466	CS	2	293
333.	13656	0.	1.01	.01				BA	2	294
334.	137532.778E-044.900E-005.100E-00					2.19	.71	I	2	295
335.	137542.708E-031.300E-001.530E-00					1.48	1.	XE	2	296
336.	137551.095E+040.	0.	.11		.92	.20		CS	2	297
337.	137561.006E-030.	0.					0.662	BA*1	298	
338.	13756	0.	4.					BA	2	299
339.	138537.292E-053.400E-003.700E-00					3.10	1.5	I	2	300
340.	138549.722E-032.100E-002.210E-00					.96	0.420	XE	2	301
341.	138552.236E-023.000E-014.000E-01					1.10	2.153	CS	2	302
342.	13856	0.	.4					BA	2	303
343.	139532.314E-051.800E-001.700E-00					2.40		I	2	304
344.	139544.745E-042.900E-002.800E-00					2.60	.4	XE	2	305
345.	139556.597E-031.200E-001.230E-00					1.74	0.232	CS	2	306
346.	139565.764E-021.000E-011.400E-014.					.91	.053	BA	2	307
347.	13957	0.	8.9					LA	2	308
348.	140541.852E-043.700E-003.300E-00					1.09		XE	2	309
349.	140557.639E-042.300E-002.100E-00					2.66	.59	CS	2	310
350.	140561.280E-013.000E-010.	20.				.30	.222	BA	2	311
351.	140571.675E-000.	2.000E-01				.48	2.468	LA	2	312
352.	14058	0.	.6					CE	2	313
353.	141541.968E-051.800E-001.100E-00					2.36		XE	2	314
354.	141552.778E-042.900E-003.700E-00					1.72		CS	2	315
355.	141561.250E-021.200E-009.000E-01					1.14	.46	BA	2	316
356.	141571.625E-011.000E-010.					.96	.0272	LA	2	317
357.	141583.250E-010.	0.	30.			.15	0.101	CE	2	318
358.	14159	0.	12.					PR	2	319
359.	142541.736E-053.500E-013.100E-01					1.70		XE	2	320
360.	142552.662E-053.050E-002.870E-00					2.98		CC	2	321
361.	142567.637E-051.100E-001.830E-00					.78	.112	BA	2	322
362.	142575.833E-023.000E-010.					1.42	1.164	LA	2	323
363.	14258	0.	1.					CE	2	324
364.	142598.000E-010.	0.	20.			.83	.063	PR	2	325
365.	14260	0.	17.					ND	2	326
366.	143541.157E-053.100E-002.650E-00					2.91		XE	2	3261
367.	143552.314E-053.100E-002.650E-00					2.32		CS	2	3262
368.	143561.389E-004					1.47		BA	2	3263
369.	143579.722E-003					1.33	1.	LA	2	327
370.	143581.375E-000.	0.	6.			.37	.377	CE	2	328
371.	143591.370E-010.	0.	89.			.32		PR	2	329
372.	14360	0.	330.					ND	2	330
373.	144541.157E-052.900E-001.600E-00					2.19		XE	2	3301
374.	144552.315E-052.900E-001.600E-00					3.50		CS	2	3302
375.	144563.472E-005					1.00		BA	2	3303
376.	144574.630E-005					2.23		LA	2	331
377.	144582.050E-023.000E-015.900E-011.					.080	0.030	CE	2	332
378.	144591.201E-020.	1.400E-01				1.22	.031	PR	2	333
379.	14460	0.	5.					ND	2	334
380.	145582.083E-034.200E-003.130E-00					.77		CE	2	335
381.	145592.458E-010.	0.				.68	.056	PR	2	336
382.	14560	0.	50.					ND	2	337
383.	146589.722E-033.200E-002.670E-00					.22	0.320	CE	2	338
384.	146591.667E-021.000E-010.					1.27	1.107	PR	2	339
385.	14660	0.	2.					ND	2	340
386.	147588.333E-040.650E-000.550E-00					1.55		CE	2	3401
387.	147590.333E-030.650E-000.550E-00					1.12	1.	PR	2	3402
388.	147601.110E+011.300E-001.100E-00					.23	0.196	ND	2	341

389.	147619.655E 020.	0.	230.	.522	.059	PM 2	342
390.	14762	0.	90.			SM 2	343
391.	148584.861E-041.71GE 001.730E 00	0.			.95	CE 2	344
392.	148591.354E-030.	0.			2.17 0.300	PR 2	345
393.	14860	0.	4.			ND 2	346
394.	148615.400E 000.	0.	2000.	1.	.39 1.343	PM*1	347
395.	148614.100E 010.	0.	3.000E+04		.41 1.227	PM 2	348
396.	14862	0.				SM 2	349
397.	149607.500E-021.300E 001.320E 00	0.			.55 .5	ND 2	350
398.	149612.208E 000.	0.			.36 .035	PM 2	351
399.	14962	0.	4.150E 04			SM 2	352
400.	15060	7.400E-011.010E 001.5				ND 2	353
401.	15062	0.	100.			SM 2	354
402.	151608.333E-034.800E-018.000E-01	0.			.63 0.717	ND 2	355
403.	151611.183E 002.000E-020.	0.			.38 .715	PM 2	356
404.	151623.285E 040.	0.	1.500E 04		.019 .0004	SM 2	357
405.	15163	0.	8.700E 03.322			EU 2	358
406.	152614.167E-031.500E-013.100E-01	0.			.86 2.8	PM 2	3581
407.	15262	1.500E-013.100E-01210.				SM 2	359
408.	152633.875E-010.	0.		1.	.60 .238	EU*1	360
409.	152634.745E 030.	0.	5000.		.19 1.209	EU 2	361
410.	15264	0.	180.			GD 2	362
411.	153613.819E-03 .075	.185			.62 .3	PM 2	3621
412.	153621.950E 00 .075	.185			.22 .108	SM 2	363
413.	15363	0.	320.			EU 2	364
414.	154611.736E-03 .045	.145		1.		PM 2	3641
415.	15462	.045	5.			SM 2	365
416.	154635.840E 030.	0.	1400.		.20 1.351	EU 2	366
417.	15464	0.				GD 2	367
418.	155621.528E-023.100E-022.300E-01	0.			.60 0.116	SM 2	368
419.	155636.570E 020.	0.	1.300E 04		.046 0.072	EU 2	369
420.	15564	0.	5.800E 04			GD 2	370
421.	156623.917E-011.300E-021.100E-01	0.			.30	SM 2	371
422.	156631.500E 010.	0.			.70 1.2	EU 2	372
423.	15664	0.				GD 2	373
424.	157636.417E-017.400E-037.400E-02	0.			.42 0.525	EU 2	374
425.	15764	0.	2.400E 05			GD 2	375
426.	158633.194E-022.000E-034.000E-02	0.			1.04 0.600	EU 2	376
427.	15864	0.	3.4			GD 2	377
428.	159631.319E-02.00055	.0105			.86 .2	EU 2	3771
429.	159647.500E-01.00055	.0105			.29 0.075	GD 2	378
430.	15965	0.	46.			TB 2	379
431.	160631.736E-02.00135	.00081			1.5	EU 2	3791
432.	16064	.00135	.00081	.8		GD 2	380
433.	160657.300E 010.	0.	525.		.20 1.193	TB 2	381
434.	16066	0.				DY 2	382
435.	161642.569E-03 .008	3.900E-03			.59 0.428	GD 2	383
436.	161656.900E 000.	0.			.15 0.037	TD 2	384
437.	16166	0.	580.			DY 2	385
438.	162643.650E+02	1.800E-03			.34 1.	GD 2	3851
439.	162658.333E-02				1.68	TB 2	3852
440.	16266		140.			DY 2	386
441.	163652.017E-01	4.000E-04			1.22 .2	TB 2	3861
442.	16366	4.000E-04120.				U1 2	387
443.	16466	0.	3.000E-042800.	.714		DY 2	388
444.	165668.727E-040.	1.200E-04		.03	.00840.120	DY*1	389
445.	165669.583E-020.	0.	4700.		.44 .0269	DY 2	390
446.	16567	0.	65.			HO 2	391
447.	166663.333E 000.	6.800E-05			.12 0.088	DY 2	392
448.	166671.133E 000.	0.			.67 .0558	HO 2	393
449.	16668	0.	12.	.01		ER 2	394
450.	167602.892E-050.	0.			0.208	ER*1	395
451.	16768		700.			ER 2	
452.	145						
453.	3 1 4500.					H 2	
454.	7 4 53.6					BE 2	
455.	14 6 2.0 E6					C 2	
456.	18 9 0.078					F 2	
457.	2211 950.					NA 2	
458.	2411 0.63					NA 2	
459.	3114 0.11					SI 2	
460.	3215 14.3					P 2	
461.	3516 07.1					S 2	
462.	3617 1.2 E8					CL 2	
463.	3817 0.026					CL 2	
464.	4118 0.0763					AR 2	
465.	4219 .52					K 2	
466.	4520 164.					CA 2	
467.	4720 4.9					CA 2	
468.	4621 85.					SC 2	
469.	4721 3.43					SC 2	
470.	4821 1.83					SC 2	
471.	4823 16.1					V 2	
472.	5124 27.8					CH 2	
473.	5225 5.55					MM 2	
474.	5425 300.					MM 2	
475.	5625 .11					MM 2	
476.	5526 1100.					FE 2	
477.	5926 45.1					FE 2	
478.	5727 270.					CO 2	
479.	5627 0.38					CO*1	
480.	5827 72.					CO 2	
481.	6027 1.9 E3					CO 2	
482.	5928 2.9 E7					NI 2	
483.	6328 2.9 E4					NI 2	
484.	6528 .11					NI 2	
485.	6429 .53					CU 2	
486.	6530 245.					ZH 2	

ZN	1
GE	2
AS	2
SE	2
SR	*1
SR	2
TC	2
TC	*1
TC	2
RU	2
PD	2
AG	2
IN	*1
SN	2
I	2
CS	2
BA	2
GO	2
ER	2
ER	2
TM	2
YB	2
LU	2
TA	2
W	2
W	2
RE	2
RE	2
RE	2
OS	*1
OS	2
OS	2
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BI	2
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NP	2
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A	4

585. 24295 5.6 E4
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588. 24296 162.5
589. 24396 1.3 E4
590. 24496 6.7 E3
591. 24596 7.3 E6
592. 24696 2.4 E6
593. 24997 290.
594. 24998 1.31 E5
595. 25098 3.7 E3
596. 25298 803.
597.

AM*1
AM 2
AM 2
CM 2
CM 2
CM 2
CM 2
CM 2
CM 2
BK 2
CF 2
CF 2
CF 2

[illegible]

95.	.16	.236	.65	.120	.15	.115	.07	3.2	.04	2.7	.05	2.03	.09	1.7	080
96.	.39	1.38	.06	.94	.87	.75									080
97.	9837R3212	.35	4.5	.25	3.4	.05	3.1	.03	1.7	.05	1.4	.07	1.11		081K
98.	.85	1.33	.61	.83	.64	.53	.03	1.82	.02	2.2	.05	2.5			081
99.	9838SR2 0														082K
100.	9839Y 1 2	.91	.482	.97	.202										083K
101.	9839Y 2 0														084K
102.	9840ZR2 0														085S
103.	9136KR2 0														086K
104.	9137RB1 0														087N
105.	9137RB2 0														088N
106.	9138SR2 5	.30	1.03	.03	.93	.27	.75	.15	.645	.05	1.40				089K
107.	9139Y 1 1	.95	.55												090K
108.	9139Y 2 1	.003	1.21												091K
109.	9140ZR2 0														092S
110.	9236KR2 0														093N
111.	9237RB2 0														094N
112.	9238SR2 3	.90	1.37	.64	.44	.03	.23								095K
113.	9239 Y2 5	.004	1.83	.047	1.40	.14	.934	.026	.56	.023	.448				096K
114.	9240ZR2 0														097S
115.	9336KR2 0														098N
116.	9337RB2 0														099N
117.	9338SR2 3	.65	1.1	.25	1.4	.10	1.8								100U
118.	9339Y 211	.033	2.18	.018	1.9	.007	1.42	.023	.94	.007	.67	.06	.267		101K
119.	.0907 2.14	.0007	1.62	.0935	1.2	.003	.49	.0005	2.48						101
120.	9340ZR2 0														102K
121.	9341HB1 1	1.0	.029												103U
122.	9341HB2 0														104S
123.	9436KR2 0														105N
124.	9437RB2 0														106N
125.	9450SR2 1	1.0	1.42												107K
126.	9439Y 210	.011	3.53	.013	3.66	.015	2.57	.024	2.13	.016	1.90	.024	1.65		108K
127.	.05	1.13	.43	.92	.06	.56	.007	2.84							108
128.	9440ZR2 0														109S
129.	9441HB1 1	.002	.87												110K
130.	9441HB2 2	1.0	.871	1.0	.702										111K
131.	9442M02 0														112S
132.	9536KR2 0														113N
133.	9537RB2 0														114N
134.	9538SR2 0														115N
135.	9539Y 2 2	.10	1.3	.10	1.8										116U
136.	9540ZR2 2	.49	.756	.49	.724										117K
137.	9541HB1 1	1.0	.235												118U
138.	9541HB2 1	1.0	.765												119K
139.	9542M02 0														120S
140.	9639Y 2 3	.33	1.5	.40	1.0	1.0	.7								121U
141.	9640ZR2 0														122S
142.	9641HB2 9	.21	1.2	.49	1.09	.22	.85	.14	.81	.97	.78	.59	.57		123K
143.	.28	.46	.10	.24	.07	.216									123
144.	9642M02 0														124S
145.	9736KR2 0														125N
146.	9737RB2 0														126N
147.	9738SR2 0														127N
148.	9739Y 2 0														128N
149.	9740ZR2 6	.03	1.35	.013	.69	.017	.60	.017	1.84	.015	1.75	.03	1.15		129U
150.	9741HB1 1	.98	.747												130K
151.	9741HB2 2	.98	.665	.92	1.0										131K
152.	9742M02 0														132S
153.	9840ZR2 0														133N
154.	9841HB1 0														134N
155.	9841HB212	.08	1.93	.04	1.88	.10	1.68	.04	1.52	.10	1.44	.30	1.16		135U
156.	1.0	.747	.75	.72	.99	.33	.05	2.7	.05	2.44	.05	2.24			135
157.	9842M02 0														136S
158.	9940ZR2 0														137N
159.	9941HB2 2	.10	.10	.10	.26										138U
160.	9942M02 6	.04	.78	.12	.74	.01	.372	.07	.181	.02	.041	.0014	.95		139K
161.	9943TC1 1	.90	.14												140K
162.	9943TC2 0														141K
163.	9944RU2 0														142S
164.	10041HB2 4	1.0	.53	.40	.45	.55	.36	.10	.14						143U
165.	10042M02 0														144S
166.	10043TC2 2	.50	.54	.50	.60										145U
167.	10044RU2 0														146S
168.	10141HB2 0														147N
169.	10142M0210	.16	2.08	.11	1.56	.09	1.38	.11	1.18	.25	1.02	.15	.89		148K
170.	.11	.70	.21	.59	.15	.51	.25	.19							148
171.	10143TC2 6	.08	.55	.91	.31	.03	.13	.004	.85	.02	.72	.18	.38		149K
172.	10144RU2 0														150S
173.	10242M02 0														151N
174.	10243TC2 1	.5	.47												152U
175.	10244RU2 0														153S
176.	10343TC2 2	.17	.14	.10	.21										154U
177.	10344RU2 2	.06	.61	.88	.50										155K
178.	10345RH1 1	.04	.04												156K
179.	10345RH2 0														157S
180.	10442M02 0														158N
181.	10443TC2 5	.25	.53	.50	1.37	.20	2.2	.30	3.4	.20	4.4				159U
182.	10444RU2 0														160S
183.	10445RH1 5	.002	.77	.002	.56	.026	.10	.025	.08	.47	.051				161K
184.	10445RH2 2	.001	1.24	.02	.56										162K
185.	10446PU2 0														163S
186.	10542M02 0														164N
187.	10543TC2 1	1.0	.11												165U
188.	10544RU210	.48	.73	.16	.67	.20	.48	.06	.40	.11	.32	.06	.26		166K
189.	.001	1.72	.006	1.35	.015	.96	.023	.87							166
190.	10545RH1 1	1.0	.129												167U
191.	10545RH2 2	.19	.319	.05	.306										168K
192.	10546PD2 0														169S

389.	139563A2	3	.904	1.43	.23	.166	.301	1.27												
390.	13957LA2	0																		
391.	14054XE2	1	.50	.13																
392.	14055CS2	3	.40	.88	.30	1.85	.20	2.72												
393.	14056BA2	5	.34	.537	.05	.436	.06	.305	.06	.163	.11	.03								
394.	14057LA2	7	.03	2.53	.96	1.56	.10	.923	.19	.815	.40	.487	.20	.33						
395.	14011	3	1																	
396.	14058CE2	0																		
397.	14154XE2	0																		
398.	14155CS2	0																		
399.	14156BA2	3	.05	1.42	.19	.5	.60	.3												
400.	14157LA2	1	.02	1.37																
401.	14158CE2	1	.48	.145																
402.	14159PR2	0																		
403.	14254XE2	0																		
404.	14255CS2	0																		
405.	14256BA2	3	.25	2.2	.29	.97	.50	.26												
406.	14257LA2	13	.023	3.65	.019	3.51	.05	2.99	.11	2.55	.15	2.41	.06	2.06						
407.	14258CE2	0	.09	1.91	.05	1.74	.05	1.55	.04	1.06	.05	1.01	.09	.90	.48	.65				
408.	14259PR2	1	.037	1.57																
409.	14260ND2	0																		
410.	14354XE2	0																		
411.	14355CS2	0																		
412.	14356BA2	0																		
413.	14357LA2	2	.20	.625	.18	1.17														
414.	14358CE2	6	.01	1.10	.014	.88	.15	.70	.03	.493	.53	.293	.11	.057						
415.	14359PR2	0																		
416.	14360ND2	0																		
417.	14454XE2	0																		
418.	14455CS2	0																		
419.	14456BA2	0																		
420.	14457LA2	0																		
421.	14458CE2	2	.11	.134	.02	.08														
422.	14459PR2	3	.015	.697	.003	1.49	.007	2.19												
423.	14460ND2	0																		
424.	14558CE2	6	.13	1.14	.04	.86	.042	.44	.69	.73	.10	.29	.92	.06						
425.	14559PR2	2	.11	.134	.02	.08														
426.	14560ND2	0																		
427.	14650CE2	5	.60	.32	.07	.27	.30	.22	.25	.142	.12	.110								
428.	14659PR2	10	.017	2.73	.07	2.3	.04	1.72	.42	1.51	.17	1.37	.06	.92						
429.	14660ND2	0	.15	.78	.16	.74	.77	.45	.006	3.3										
430.	14759PR2	6	.11	1.26	.24	.65	.10	.61	.39	.56	.47	.32	.26	.127						
431.	14760ND2	6	.13	.53	.04	.43	.03	.32	.28	.09	.02	.69	.015	.69						
432.	14761PM2	0																		
433.	14762SM2	0																		
434.	14858CE2	0																		
435.	14859PR2	0	1.0	.3																
436.	14860ND2	0																		
437.	14861PM1	7	.20	1.02	.21	.916	.36	.727	.87	.63	.95	.551	.17	.413						
438.	14862SM2	0	.13	.289																
439.	14863PM2	3	.23	1.47	.15	.914	.27	.551												
440.	14960ND2	6	.09	.654	.10	.541	.09	.424	.05	.33	.53	.27	.22	.114						
441.	14961PM2	5	.092	.65	.001	.58	.02	.286	.08	.60	.072	.50								
442.	14962SM2	0																		
443.	15060ND2	0																		
444.	15062SM2	0																		
445.	15160ND2	7	.11	1.18	.08	.80	.05	.425	.11	.256	.10	.174	.46	.12						
446.	15161PM2	8	.06	.72	.03	.66	.05	.45	.21	.34	.11	.275	.18	.17						
447.	15162SM2	1	.04	.022																
448.	15163EU2	0																		
449.	15261PM2	2	.50	.245	.50	.122														
450.	15262SM2	0																		
451.	15263EU1	6	.011	1.39	.012	1.32	.12	.963	.13	.642	.025	.344	.08	.122						
452.	15263EU2	7	.22	2.41	.26	1.11	.15	.965	.14	.78	.27	.344	.08	.245						
453.	15264GD2	0	.37	.122																
454.	15361PM2	2	.50	.12	.53	.18														
455.	15362SM2	3	.006	.64	.28	.103	.054	.07												
456.	15461PM2	0																		
457.	15462SM2	0																		
458.	15463EU2	8	.37	1.28	.31	1.0	.12	.876	.26	.73	.06	.593	.07	.248						
459.	15464GD2	0	.38	.123	.03	1.6														
460.	15562SM2	2	.04	.246	.73	.104														
461.	15563EU2	2	.20	.105	.32	.067														
462.	15564GD2	0																		
463.	15662SM2	5	.03	.291	.05	.25	.20	.284	.10	.166	.38	.088								
464.	15663EU2	10	.05	2.19	.03	2.1	.07	1.97	.16	1.24	.14	1.15	.11	1.07						
465.	15664GD2	0	.09	.812	.06	.723	.07	.646	.08	.089										
466.	15763EU2	7	.06	.623	.05	.477	.27	.413	.14	.37	.05	.32	.27	.064						
467.	15764GD2	0	.05	.955																
468.	15863EU1	7	.06	1.19	.045	1.11	.032	.605	.02	.20	.10	.52	.40	.08						
469.	15864GD2	0	.38	.95																
470.	15963EU2	9	.35	1.5	.11	1.1	.11	.8	.10	.73	.21	.67	.05	.22						
471.	15964GD2	2	.39	.363	.23	.486														
472.	16363EU2	0																		

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E.42

E.43

0 ELT DOSRFL,1,730510, 57272

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6.	.6537-04	.6030-04	.5633-04	.5127-04						
7.	.2954-03	.1085-03	.5195-04	.4968-04	.4627-04	.4593-04	.4573-04	.4337-04		
8.	.4044-04	.3734-04	.3491-04	.3178-04						
9.	.1113-03	.4758-04	.2473-04	.2462-04	.2316-04	.2240-04	.2193-04	.2065-04		
10.	.1926-04	.1786-04	.1675-04	.1527-04						
11.	.5109-04	.2320-04	.1254-04	.1282-04	.1229-04	.1190-04	.1156-04	.1086-04		
12.	.1015-04	.9454-05	.8902-05	.8139-05						
13.	.2248-04	.1089-04	.6001-05	.6200-05	.5999-05	.5838-05	.5681-05	.5344-05		
14.	.5009-05	.4691-05	.4443-05	.4081-05						
15.	.7101-05	.3856-05	.2187-05	.2284-05	.2214-05	.2142-05	.2080-05	.1957-05		
16.	.1839-05	.1731-05	.1646-05	.1519-05						
17.	.2803-05	.1698-05	.9921-06	.1049-05	.1019-05	.9808-06	.9483-06	.8907-06		
18.	.8376-06	.7905-06	.7528-06	.6958-06						
19.	.1067-05	.7247-06	.4389-06	.4710-06	.4608-06	.4414-06	.4249-06	.3985-06		
20.	.3751-06	.3550-06	.3388-06	.3137-06						
21.	.2063-06	.2236-06	.1430-06	.1574-06	.1562-06	.1494-06	.1430-06	.1339-06		
22.	.1263-06	.1201-06	.1151-06	.1069-06						
23.	.1037-06	.8826-07	.5890-07	.6632-07	.6685-07	.6418-07	.6126-07	.5735-07		
24.	.5423-07	.5181-07	.4984-07	.4646-07						
25.	.1999-03	.5932-04	.2664-04	.2497-04	.2357-04	.2422-04	.2443-04	.2332-04		
26.	.2175-04	.2006-04	.1874-04	.1706-04						
27.	.9042-04	.3490-04	.1647-04	.1574-04	.1468-04	.1459-04	.1454-04	.1379-04		
28.	.1286-04	.1106-04	.1110-04	.1011-04						
29.	.3741-04	.1539-04	.7937-05	.7886-05	.7428-05	.7213-05	.7071-05	.6664-05		
30.	.6215-05	.5762-05	.5403-05	.4926-05						
31.	.1804-04	.7683-05	.4095-05	.4168-05	.4001-05	.3894-05	.3794-05	.3568-05		
32.	.3333-05	.3104-05	.2921-05	.2670-05						
33.	.8477-05	.3730-05	.2010-05	.2061-05	.1995-05	.1955-05	.1909-05	.1799-05		
34.	.1685-05	.1578-05	.1492-05	.1369-05						
35.	.2950-05	.1394-05	.7633-06	.7870-06	.7617-06	.7437-06	.7257-06	.6842-06		
36.	.6424-06	.6036-06	.5727-06	.5277-06						
37.	.1269-05	.6452-06	.3598-06	.3734-06	.3617-06	.3514-06	.3419-06	.3220-06		
38.	.3025-06	.2845-06	.2703-06	.2493-06						
39.	.5158-06	.2897-06	.1657-06	.1736-06	.1684-06	.1627-06	.1578-06	.1484-06		
40.	.1394-06	.1314-06	.1250-06	.1154-06						
41.	.1473-06	.9609-07	.5742-07	.6126-07	.5977-07	.5733-07	.5527-07	.5187-07		
42.	.4881-07	.4614-07	.4400-07	.4071-07						
43.	.5507-07	.4018-07	.2498-07	.2713-07	.2670-07	.2553-07	.2451-07	.2296-07		
44.	.2164-07	.2052-07	.1962-07	.1819-07						
45.	.1357-03	.3722-04	.1651-04	.1547-04	.1472-04	.1528-04	.1545-04	.1476-04		
46.	.1377-04	.1270-04	.1186-04	.1080-04						
47.	.5626-04	.1979-04	.9402-05	.8979-05	.8388-05	.8367-05	.8344-05	.7920-05		
48.	.7385-05	.6819-05	.6375-05	.5803-05						
49.	.2114-04	.8620-05	.4438-05	.4408-05	.4153-05	.4037-05	.3958-05	.3731-05		
50.	.3480-05	.3226-05	.3025-05	.2750-05						
51.	.1034-04	.4333-05	.2301-05	.2340-05	.2247-05	.2190-05	.2135-05	.2009-05		
52.	.1676-05	.1747-05	.1644-05	.1503-05						
53.	.4972-05	.2127-05	.1139-05	.1166-05	.1129-05	.1109-05	.1084-05	.1021-05		
54.	.9570-06	.8956-06	.8465-06	.7769-06						
55.	.1807-05	.8123-06	.4398-06	.4517-06	.4373-06	.4285-06	.4188-06	.3951-06		
56.	.3710-06	.3483-06	.3302-06	.3042-06						
57.	.8026-06	.3831-06	.2103-06	.2170-06	.2101-06	.2050-06	.1999-06	.1885-06		
58.	.1770-06	.1663-06	.1578-06	.1455-06						
59.	.3427-06	.1766-06	.9883-07	.1027-06	.9946-07	.9856-07	.9393-07	.8844-07		
60.	.8308-07	.7817-07	.7427-07	.6851-07						
61.	.1023-06	.6059-07	.3516-07	.3706-07	.3600-07	.3468-07	.3356-07	.3153-07		
62.	.2965-07	.2797-07	.2562-07	.2460-07						
63.	.3922-07	.2604-07	.1565-07	.1675-07	.1636-07	.1568-07	.1511-07	.1417-07		
64.	.1334-07	.1261-07	.1203-07	.1114-07						
65.	.1040-03	.2679-04	.1177-04	.1103-04	.1057-04	.1106-04	.1120-04	.1072-04		
66.	.1000-04	.9223-05	.8615-05	.7845-05						
67.	.4147-04	.1378-04	.6481-05	.6182-05	.5800-05	.5024-05	.5818-05	.5528-05		
68.	.5155-05	.4760-05	.4449-05	.4050-05						
69.	.1393-04	.5650-05	.2906-05	.2886-05	.2719-05	.2644-05	.2594-05	.2445-05		
70.	.2280-05	.2114-05	.1982-05	.1807-05						
71.	.6845-05	.2845-05	.1509-05	.1534-05	.1473-05	.1436-05	.1401-05	.1318-05		
72.	.1231-05	.1146-05	.1079-05	.9860-06						
73.	.3330-05	.1405-05	.7501-06	.7671-06	.7430-06	.7304-06	.7143-06	.6734-06		
74.	.6309-06	.5903-06	.5579-06	.5120-06						
75.	.1242-05	.5433-06	.2924-06	.2997-06	.2903-06	.2850-06	.2788-06	.2631-06		
76.	.2470-06	.2318-06	.2197-06	.2024-06						
77.	.5660-06	.2597-06	.1412-06	.1453-06	.1407-06	.1376-06	.1344-06	.1268-06		
78.	.1190-06	.1118-06	.1061-06	.9772-07						
79.	.2493-06	.1217-06	.6721-07	.6951-07	.6730-07	.6556-07	.6390-07	.6021-07		
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81.	.7721-07	.4273-07	.2435-07	.2547-07	.2470-07	.2388-07	.2316-07	.2179-07		
82.	.2048-07	.1929-07	.1834-07	.1693-07						
83.	.3026-07	.1872-07	.1101-07	.1166-07	.1135-07	.1091-07	.1054-07	.9898-08		
84.	.9309-08	.8790-08	.8374-08	.7742-08						
85.	.8440-04	.2082-04	.9089-05	.8526-05	.8215-05	.8643-05	.8761-05	.8387-05		
86.	.7828-05	.7219-05	.6743-05	.6140-05						
87.	.3385-04	.1064-04	.4963-05	.4730-05	.4457-05	.4504-05	.4508-05	.4287-05		
88.	.3998-05	.3691-05	.3450-05	.3141-05						
89.	.1039-04	.4156-05	.2132-05	.2116-05	.1995-05	.1942-05	.1906-05	.1798-05		
90.	.1676-05	.1554-05	.1457-05	.1328-05						
91.	.5010-05	.2074-05	.1099-05	.1117-05	.1073-05	.1046-05	.1021-05	.9604-06		
92.	.8972-06	.8353-06	.7860-06	.7185-06						
93.	.2454-05	.1027-05	.5477-06	.5598-06	.5423-06	.5334-06	.5218-06	.4920-06		
94.	.4609-06	.4312-06	.4075-06	.3740-06						

95.	.9294-06	.4094-06	.2147-06	.2199-06	.2130-06	.2093-06	.2049-06	.1934-06
96.	.1816-06	.1704-06	.1515-06	.1487-06				
97.	.4311-06	.1930-06	.1644-06	.1072-06	.1038-06	.1018-06	.9948-07	.9385-07
98.	.8011-07	.8272-07	.7844-07	.7227-07				
99.	.1921-06	.9123-07	.5301-07	.5158-07	.4993-07	.4874-07	.4755-07	.4483-07
100.	.4209-07	.3955-07	.3753-07	.3460-07				
101.	.6187-07	.3267-07	.1839-07	.1915-07	.1855-07	.1798-07	.1748-07	.1645-07
102.	.1546-07	.1455-07	.1383-07	.1276-07				
103.	.2471-07	.1451-07	.8403-08	.8849-08	.8595-08	.8283-08	.8017-08	.7534-08
104.	.7083-08	.6681-08	.6359-08	.5875-08				
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106.	.6308-05	.5817-05	.5433-05	.4948-05				
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108.	.3221-05	.2974-05	.2779-05	.2530-05				
109.	.8351-05	.3242-05	.1654-05	.1639-05	.1547-05	.1511-05	.1484-05	.1400-05
110.	.1306-05	.1210-05	.1135-05	.1035-05				
111.	.3831-05	.1581-05	.8371-06	.8504-06	.8169-06	.7971-06	.7776-06	.7318-06
112.	.6836-06	.6364-06	.5989-06	.5474-06				
113.	.1883-05	.7844-06	.4177-06	.4268-06	.4135-06	.4068-06	.3980-06	.3753-06
114.	.3516-06	.3290-06	.3109-06	.2853-06				
115.	.7211-06	.3073-06	.1644-06	.1683-06	.1630-06	.1603-06	.1570-06	.1482-06
116.	.1391-06	.1305-06	.1237-06	.1139-06				
117.	.3390-06	.1491-06	.8036-07	.8243-07	.7983-07	.7833-07	.7662-07	.7231-07
118.	.6788-07	.6371-07	.6040-07	.5564-07				
119.	.1536-06	.7109-07	.3874-07	.3988-07	.3860-07	.3775-07	.3686-07	.3476-07
120.	.3264-07	.3066-07	.2900-07	.2680-07				
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122.	.1210-07	.1139-07	.1082-07	.9976-08				
123.	.2063-07	.1160-07	.6639-08	.6959-08	.6750-08	.6520-08	.6321-08	.5944-08
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125.	.5963-04	.1390-04	.6019-05	.5653-05	.5486-05	.5814-05	.5901-05	.5654-05
126.	.5278-05	.4867-05	.4546-05	.4141-05				
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128.	.2701-05	.2493-05	.2330-05	.2122-05				
129.	.7118-05	.2670-05	.1356-05	.1344-05	.1271-05	.1245-05	.1224-05	.1156-05
130.	.1078-05	.9990-06	.9366-06	.8538-06				
131.	.3099-05	.1273-05	.6731-06	.6836-06	.6568-06	.6412-06	.6256-06	.5887-06
132.	.5500-06	.5120-06	.4818-06	.4404-06				
133.	.1518-05	.6304-06	.3354-06	.3427-06	.3320-06	.3268-06	.3197-06	.3015-06
134.	.2825-06	.2642-06	.2497-06	.2291-06				
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138.	.5489-07	.5152-07	.4883-07	.4498-07				
139.	.1276-06	.5798-07	.3146-07	.3234-07	.3131-07	.3066-07	.2996-07	.2826-07
140.	.2653-07	.2491-07	.2363-07	.2177-07				
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142.	.9916-08	.9324-08	.8853-08	.8163-08				
143.	.1775-07	.9658-08	.5474-08	.5719-08	.5544-08	.5364-08	.5207-08	.4899-08
144.	.4604-08	.4336-08	.4122-08	.3805-08				
145.	.3805-03	.1366-03	.6359-04	.5992-04	.5562-04	.5575-04	.5587-04	.5312-04
146.	.4953-04	.4570-04	.4269-04	.3885-04				
147.	.1812-03	.8227-04	.4108-04	.3970-04	.3657-04	.3543-04	.3499-04	.3304-04
148.	.3079-04	.2845-04	.2661-04	.2422-04				
149.	.5942-04	.3439-04	.1909-04	.1944-04	.1821-04	.1715-04	.1657-04	.1551-04
150.	.1446-04	.1343-04	.1262-04	.1151-04				
151.	.2392-04	.1551-04	.9201-05	.9741-05	.9386-05	.8865-05	.8482-05	.7912-05
152.	.7395-05	.6918-05	.6535-05	.5985-05				
153.	.9207-05	.6617-05	.4080-05	.4427-05	.4348-05	.4151-05	.3975-05	.3716-05
154.	.3490-05	.3295-05	.3137-05	.2893-05				
155.	.2486-05	.2024-05	.1319-05	.1466-05	.1464-05	.1401-05	.1340-05	.1254-05
156.	.1184-05	.1120-05	.1082-05	.1006-05				
157.	.9009-06	.7905-06	.5369-06	.6104-06	.6200-06	.5971-06	.5696-06	.5333-06
158.	.5048-06	.4835-06	.4566-06	.4351-06				
159.	.3213-06	.2492-06	.2107-06	.2447-06	.2534-06	.2468-06	.2357-06	.2210-06
160.	.2100-06	.2024-06	.1961-06	.1840-06				
161.	.8229-07	.8020-07	.5834-07	.6932-07	.7355-07	.7306-07	.7020-07	.6619-07
162.	.6324-07	.5159-07	.6016-07	.5699-07				
163.	.2888-07	.2913-07	.2148-07	.2579-07	.2775-07	.2798-07	.2709-07	.2568-07
164.	.2469-07	.2422-07	.2383-07	.2270-07				
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166.	.1965-04	.1812-04	.1593-04	.1541-04				
167.	.6915-04	.2885-04	.1415-04	.1360-04	.1258-04	.1230-04	.1219-04	.1154-04
168.	.1075-04	.9931-05	.9288-05	.8452-05				
169.	.2369-04	.1222-04	.6514-05	.6669-05	.6246-05	.5940-05	.5769-05	.5413-05
170.	.5047-05	.4585-05	.4398-05	.4010-05				
171.	.1042-04	.5823-05	.3312-05	.3446-05	.3306-05	.3151-05	.3036-05	.2840-05
172.	.2654-05	.2478-05	.2337-05	.2138-05				
173.	.4342-05	.2642-05	.1544-05	.1632-05	.1586-05	.1523-05	.1469-05	.1377-05
174.	.1292-05	.1215-05	.1153-05	.1061-05				
175.	.1266-05	.8776-06	.5352-06	.5761-06	.5643-06	.5402-06	.5195-06	.4871-06
176.	.4586-06	.4342-06	.4146-06	.3839-06				
177.	.4770-06	.3651-06	.2314-06	.2537-06	.2511-06	.2400-06	.2299-06	.2153-06
178.	.2038-06	.1929-06	.1847-06	.1715-06				
179.	.1753-06	.1463-06	.9663-07	.1082-06	.1086-06	.1041-06	.9944-07	.9309-07
180.	.8796-07	.8393-07	.8066-07	.7511-07				
181.	.4533-07	.4140-07	.2879-07	.3319-07	.3412-07	.3308-07	.3157-07	.2959-07
182.	.2897-07	.2699-07	.2611-07	.2444-07				
183.	.1627-07	.1545-07	.1106-07	.1302-07	.1365-07	.1342-07	.1284-07	.1207-07
184.	.1150-07	.1113-07	.1083-07	.1020-07				
185.	.1226-03	.3550-04	.1562-04	.1464-04	.1387-04	.1432-04	.1447-04	.1381-04
186.	.1289-04	.1189-04	.1110-04	.1011-04				
187.	.4736-04	.1834-04	.8889-05	.8319-05	.7730-05	.7642-05	.7600-05	.7403-05
188.	.6715-05	.6201-05	.5798-05	.5277-05				
189.	.1431-04	.7880-05	.3603-05	.3622-05	.3582-05	.3418-05	.3326-05	.3123-05
190.	.2912-05	.2702-05	.2530-05	.2313-05				
191.	.6471-05	.3450-05	.1924-05	.1992-05	.1910-05	.1827-05	.1764-05	.1652-05
192.	.1544-05	.1646-05	.1351-05	.1242-05				

193.	.2822-05	.1597-05	.9156-06	.9600-06	.9309-06	.8972-06	.8679-06	.8144-06
194.	.7637-06	.7174-06	.6802-06	.6255-06				
195.	.8699-06	.5529-06	.3278-06	.3485-06	.3395-06	.3259-06	.3146-06	.2953-06
196.	.2778-06	.2624-06	.2561-06	.2312-06				
197.	.3376-06	.2375-06	.1457-06	.1572-06	.1542-06	.1476-06	.1418-06	.1330-06
198.	.1252-06	.1186-06	.1133-06	.1050-06				
199.	.1266-06	.9828-07	.6267-07	.6891-07	.6832-07	.6533-07	.6256-07	.5858-07
200.	.5525-07	.5253-07	.5932-07	.4674-07				
201.	.3342-07	.2892-07	.1947-07	.2203-07	.2229-07	.2143-07	.2045-07	.1915-07
202.	.1812-07	.1733-07	.1669-07	.1557-07				
203.	.1196-07	.1132-07	.7704-08	.8910-08	.9187-08	.8923-08	.8517-08	.7985-08
204.	.7589-08	.7295-08	.7060-08	.6616-08				
205.	.2585-06	.1798-06	.1025-06	.1096-06	.1070-06	.1026-06	.9884-07	.9273-07
206.	.8727-07	.8252-07	.7872-07	.7285-07				
207.	.3712-04	.1299-04	.6163-05	.5885-05	.5500-05	.5490-05	.5476-05	.5198-05
208.	.4847-05	.4475-05	.4184-05	.3808-05				
209.	.1029-04	.4867-05	.2583-05	.2588-05	.2427-05	.2326-05	.2268-05	.2131-05
210.	.1987-05	.1844-05	.1730-05	.1577-05				
211.	.4404-05	.2307-05	.1285-05	.1327-05	.1272-05	.1219-05	.1179-05	.1105-05
212.	.1032-05	.9628-06	.9075-06	.8301-06				
213.	.2014-05	.1092-05	.6191-06	.6463-06	.6262-06	.6050-06	.5862-06	.5504-06
214.	.5161-06	.4845-06	.4591-06	.4220-06				
215.	.6475-06	.3887-06	.2265-06	.2399-06	.2323-06	.2236-06	.2163-06	.2032-06
216.	.1910-06	.1802-06	.1716-06	.1585-06				
217.	.2505-06	.1790-06	.1625-06	.1090-06	.1070-06	.1026-06	.9884-07	.9273-07
218.	.8727-07	.8252-07	.7872-07	.7285-07				
219.	.9893-07	.7235-07	.4561-07	.4891-07	.4815-07	.4605-07	.4419-07	.4141-07
220.	.3902-07	.3791-07	.3539-07	.3281-07				
221.	.2658-07	.2194-07	.1440-07	.1608-07	.1610-07	.1542-07	.1474-07	.1379-07
222.	.1303-07	.1243-07	.1193-07	.1111-07				
223.	.9803-08	.8527-08	.5836-08	.6654-08	.6780-08	.6541-08	.6240-08	.5044-08
224.	.5536-08	.5307-08	.5120-08	.4784-08				
225.	.7548-04	.1944-04	.8541-05	.8008-05	.7675-05	.8031-05	.8132-05	.7779-05
226.	.7260-05	.6695-05	.6254-05	.5694-05				
227.	.3072-04	.1011-04	.4749-05	.4529-05	.4252-05	.4274-05	.4272-05	.4059-05
228.	.3786-05	.3495-05	.3267-05	.2974-05				
229.	.8402-05	.3749-05	.1965-05	.1961-05	.1842-05	.1775-05	.1735-05	.1632-05
230.	.1522-05	.1412-05	.1324-05	.1207-05				
231.	.3421-05	.1718-05	.9513-06	.9804-06	.9396-06	.9025-06	.8735-06	.8189-06
232.	.7650-06	.7134-06	.6723-06	.6149-06				
233.	.1544-05	.8161-06	.4594-06	.4784-06	.4633-06	.4483-06	.4348-06	.4085-06
234.	.3829-06	.3594-06	.3404-06	.3129-06				
235.	.5129-06	.2960-06	.1705-06	.1792-06	.1739-06	.1677-06	.1625-06	.1527-06
236.	.1436-06	.1354-06	.1288-06	.1189-06				
237.	.2095-06	.1322-06	.7822-07	.8309-07	.8093-07	.7772-07	.7502-07	.7043-07
238.	.6625-07	.6258-07	.5964-07	.5516-07				
239.	.8166-07	.5699-07	.3485-07	.3756-07	.3682-07	.3524-07	.3389-07	.3177-07
240.	.2992-07	.2833-07	.2706-07	.2507-07				
241.	.2229-07	.1769-07	.1139-07	.1259-07	.1252-07	.1198-07	.1146-07	.1073-07
242.	.1012-07	.9634-08	.9238-08	.8586-08				
243.	.8120-08	.6988-08	.4691-08	.5299-08	.5355-08	.5146-08	.4911-08	.4598-08
244.	.4349-08	.4158-08	.4003-08	.3733-08				
245.	.6183-04	.1547-04	.6768-05	.6347-05	.6105-05	.6412-05	.6496-05	.6217-05
246.	.5803-05	.5352-05	.4999-05	.4552-05				
247.	.2584-04	.8108-05	.3779-05	.3601-05	.3395-05	.3431-05	.3434-05	.3266-05
248.	.3046-05	.2012-05	.2620-05	.2393-05				
249.	.7163-05	.3014-05	.1561-05	.1553-05	.1462-05	.1416-05	.1387-05	.1307-05
250.	.1219-05	.1130-05	.1060-05	.9661-06				
251.	.2778-05	.1350-05	.7416-06	.7622-06	.7306-06	.7034-06	.6817-06	.6395-06
252.	.5974-06	.5570-06	.5248-06	.4799-06				
253.	.1221-05	.6328-06	.3545-06	.3685-06	.3568-06	.3457-06	.3355-06	.3153-06
254.	.2956-06	.2773-06	.2626-06	.2413-06				
255.	.4161-06	.2329-06	.1331-06	.1394-06	.1352-06	.1306-06	.1267-06	.1191-06
256.	.1119-06	.1055-06	.1003-06	.9259-07				
257.	.1736-06	.1055-06	.6171-07	.6525-07	.6345-07	.6103-07	.5900-07	.5542-07
258.	.5211-07	.4919-07	.4684-07	.4330-07				
259.	.6083-07	.4614-07	.2782-07	.2980-07	.2912-07	.2791-07	.2688-07	.2521-07
260.	.2373-07	.2245-07	.2142-07	.1983-07				
261.	.1908-07	.1469-07	.9255-08	.1015-07	.1004-07	.9599-08	.9196-08	.8613-08
262.	.8121-08	.7716-08	.7388-08	.6859-08				
263.	.7012-08	.5855-08	.3868-08	.4331-08	.4347-08	.4167-08	.3980-08	.3726-08
264.	.3520-08	.3359-08	.3228-08	.3006-08				
265.	.5228-04	.1282-04	.5588-05	.5243-05	.5056-05	.5324-05	.5397-05	.5167-05
266.	.4823-05	.4448-05	.4154-05	.3783-05				
267.	.2228-04	.6755-05	.3132-05	.2983-05	.2820-05	.2862-05	.2867-05	.2729-05
268.	.2545-05	.2350-05	.2196-05	.2000-05				
269.	.6315-05	.2529-05	.1297-05	.1288-05	.1214-05	.1182-05	.1160-05	.1094-05
270.	.1020-05	.9455-06	.8866-06	.8082-06				
271.	.2371-05	.1118-05	.6096-06	.6248-06	.5989-06	.5781-06	.5610-06	.5266-06
272.	.4919-06	.4585-06	.4319-06	.3949-06				
273.	.1008-05	.5148-06	.2874-06	.2983-06	.2888-06	.2801-06	.2720-06	.2556-06
274.	.2396-06	.2248-06	.2128-06	.1956-06				
275.	.3493-06	.1913-06	.1087-06	.1136-06	.1101-06	.1065-06	.1033-06	.9721-07
276.	.9135-07	.8604-07	.8179-07	.7548-07				
277.	.1482-06	.8757-07	.5080-07	.5353-07	.5200-07	.5009-07	.4847-07	.4555-07
278.	.4202-07	.4039-07	.3845-07	.3553-07				
279.	.5969-07	.3874-07	.2311-07	.2464-07	.2404-07	.2306-07	.2224-07	.2087-07
280.	.1964-07	.1856-07	.1770-07	.1638-07				
281.	.1679-07	.1246-07	.7796-08	.8494-08	.8375-08	.8007-08	.7680-08	.7195-08
282.	.6781-08	.6435-08	.6156-08	.5710-08				
283.	.6215-08	.5056-08	.3296-08	.3665-08	.3660-08	.3504-08	.3349-08	.3136-08
284.	.2961-08	.2821-08	.2708-08	.2519-08				
285.	.6749-03	.1962-03	.8778-04	.8227-04	.7781-04	.8018-04	.8092-04	.7726-04
286.	.7208-04	.6647-04	.6209-04	.5653-04				
287.	.2446-03	.9788-04	.4759-04	.4565-04	.4229-04	.4158-04	.4128-04	.3909-04
288.	.3644-04	.3365-04	.3147-04	.2864-04				
289.	.5578-04	.3312-04	.1858-04	.1896-04	.1776-04	.1669-04	.1610-04	.1506-04
290.	.1405-04	.1305-04	.1226-04	.1119-04				

291.	.1729-04	.1270-04	.7869-05	.8491-05	.8249-05	.7749-05	.7367-05	.6854-05
292.	.6409-05	.6813-05	.5887-05	.5214-05				
293.	.5608-05	.4585-05	.3096-05	.3465-05	.3477-05	.3324-05	.3164-05	.2953-05
294.	.2779-05	.2640-05	.2524-05	.2336-05				
295.	.1251-05	.1172-05	.8277-06	.9626-06	.9978-06	.9724-06	.9288-06	.8714-06
296.	.8281-06	.7982-06	.7735-06	.7255-06				
297.	.4287-06	.4163-06	.3824-06	.3588-06	.3800-06	.3767-06	.3615-06	.3406-06
298.	.3255-06	.3164-06	.3088-06	.2918-06				
299.	.1527-06	.1532-06	.1128-06	.1353-06	.1454-06	.1463-06	.1414-06	.1340-06
300.	.1287-06	.1261-06	.1239-06	.1178-06				
301.	.3658-07	.3821-07	.2859-07	.3456-07	.3747-07	.3826-07	.3738-07	.3571-07
302.	.3459-07	.3426-07	.3399-07	.3268-07				
303.	.1282-07	.1358-07	.1034-07	.1259-07	.1369-07	.1400-07	.1373-07	.1317-07
304.	.1281-07	.1277-07	.1273-07	.1233-07				
305.	.2196-03	.6120-04	.2739-04	.2567-04	.2428-04	.2502-04	.2525-04	.2410-04
306.	.2249-04	.2574-04	.1937-04	.1764-04				
307.	.7632-04	.3054-04	.1485-04	.1424-04	.1320-04	.1297-04	.1288-04	.1220-04
308.	.1137-04	.1050-04	.9820-05	.8936-05				
309.	.1740-04	.1033-04	.5796-05	.5916-05	.5540-05	.5208-05	.5024-05	.4700-05
310.	.4384-05	.4072-05	.3826-05	.3490-05				
311.	.5396-05	.3962-05	.2455-05	.2649-05	.2574-05	.2418-05	.2298-05	.2138-05
312.	.2000-05	.1875-05	.1774-05	.1627-05				
313.	.1750-05	.1462-05	.9660-06	.1081-05	.1085-05	.1037-05	.9872-06	.9212-06
314.	.8672-06	.6235-06	.7876-06	.7288-06				
315.	.3904-06	.3658-06	.2582-06	.3003-06	.3113-06	.3034-06	.2898-06	.2719-06
316.	.2584-06	.2490-06	.2413-06	.2264-06				
317.	.1338-06	.1299-06	.9436-07	.1120-06	.1186-06	.1175-06	.1128-06	.1063-06
318.	.1016-06	.9872-07	.9536-07	.9104-07				
319.	.4764-07	.4780-07	.3520-07	.4220-07	.4536-07	.4564-07	.4412-07	.4180-07
320.	.4016-07	.3933-07	.3864-07	.3676-07				
321.	.1141-07	.1192-07	.8920-08	.1078-07	.1169-07	.1194-07	.1166-07	.1114-07
322.	.1079-07	.1069-07	.1060-07	.1020-07				
323.	.4009-08	.4236-08	.3226-08	.3927-08	.4272-08	.4368-08	.4284-08	.4108-08
324.	.3998-08	.3983-08	.3973-08	.3846-08				
325.	.1170-03	.3400-04	.1522-04	.1426-04	.1349-04	.1390-04	.1403-04	.1339-04
326.	.1249-04	.1152-04	.1076-04	.9798-05				
327.	.4246-04	.1697-04	.8249-05	.7913-05	.7331-05	.7207-05	.7156-05	.6776-05
328.	.6316-05	.5833-05	.5456-05	.4964-05				
329.	.9669-05	.5740-05	.3220-05	.3287-05	.3078-05	.2893-05	.2791-05	.2611-05
330.	.2436-05	.2262-05	.2126-05	.1939-05				
331.	.2998-05	.2201-05	.1364-05	.1472-05	.1430-05	.1343-05	.1277-05	.1188-05
332.	.1111-05	.1342-05	.9858-06	.9038-06				
333.	.9720-06	.8122-06	.5367-06	.6007-06	.6027-06	.5762-06	.5484-06	.5118-06
334.	.4818-06	.4576-06	.4376-06	.4049-06				
335.	.2169-06	.2032-06	.1435-06	.1668-06	.1730-06	.1686-06	.1610-06	.1510-06
336.	.1435-06	.1384-06	.1341-06	.1258-06				
337.	.7431-07	.7216-07	.5242-07	.6220-07	.6587-07	.6529-07	.6267-07	.5904-07
338.	.5642-07	.5484-07	.5353-07	.5058-07				
339.	.2647-07	.2656-07	.1955-07	.2344-07	.2520-07	.2536-07	.2451-07	.2322-07
340.	.2231-07	.2185-07	.2147-07	.2042-07				
341.	.6340-08	.6622-08	.4956-08	.5991-08	.6496-08	.6631-08	.6480-08	.6189-08
342.	.5996-08	.5938-08	.5891-08	.5664-08				
343.	.2222-08	.2353-08	.1792-08	.2182-08	.2373-08	.2427-08	.2380-08	.2282-08
344.	.2221-08	.2213-08	.2207-08	.2136-08				
345.	.7629-04	.2217-04	.9923-05	.9300-05	.8796-05	.9064-05	.9148-05	.8733-05
346.	.8148-05	.7514-05	.7019-05	.6390-05				
347.	.2765-04	.1107-04	.5380-05	.5161-05	.4781-05	.4700-05	.4667-05	.4419-05
348.	.4119-05	.3804-05	.3558-05	.3238-05				
349.	.6306-05	.3743-05	.2100-05	.2143-05	.2007-05	.1887-05	.1820-05	.1703-05
350.	.1588-05	.1475-05	.1386-05	.1265-05				
351.	.1955-05	.1436-05	.8896-06	.9599-06	.9325-06	.8759-06	.8328-06	.7748-06
352.	.7245-06	.6794-06	.6429-06	.5894-06				
353.	.6339-06	.5297-06	.3500-06	.3917-06	.3930-06	.3758-06	.3577-06	.3338-06
354.	.3142-06	.2984-06	.2854-06	.2641-06				
355.	.1414-06	.1325-06	.9357-07	.1088-06	.1128-06	.1099-06	.1050-06	.9851-07
356.	.9361-07	.9023-07	.8743-07	.8201-07				
357.	.4046-07	.4706-07	.3419-07	.4057-07	.4296-07	.4258-07	.4087-07	.3851-07
358.	.3680-07	.3577-07	.3491-07	.3299-07				
359.	.1726-07	.1732-07	.1275-07	.1529-07	.1643-07	.1654-07	.1599-07	.1514-07
360.	.1455-07	.1425-07	.1400-07	.1332-07				
361.	.4135-08	.4319-08	.3232-08	.3907-08	.4236-08	.4325-08	.4226-08	.4036-08
362.	.3910-08	.3872-08	.3842-08	.3694-08				
363.	.1449-08	.1535-08	.1169-08	.1423-08	.1548-08	.1583-08	.1552-08	.1488-08
364.	.1448-08	.1443-08	.1440-08	.1393-08				
365.	.5541-04	.1611-04	.7207-05	.6755-05	.6388-05	.6583-05	.6644-05	.6343-05
366.	.5918-05	.5458-05	.5098-05	.4641-05				
367.	.2008-04	.8037-05	.3987-05	.3748-05	.3473-05	.3414-05	.3389-05	.3209-05
368.	.2992-05	.2763-05	.2584-05	.2352-05				
369.	.4580-05	.2719-05	.1525-05	.1557-05	.1458-05	.1371-05	.1322-05	.1237-05
370.	.1154-05	.1072-05	.1007-05	.9185-06				
371.	.1420-05	.1043-05	.6461-06	.6972-06	.6773-06	.6362-06	.6048-06	.5627-06
372.	.5262-06	.4935-06	.4669-06	.4281-06				
373.	.4604-06	.3847-06	.2542-06	.2845-06	.2855-06	.2729-06	.2598-06	.2424-06
374.	.2282-06	.2167-06	.2073-06	.1918-06				
375.	.1027-06	.9626-07	.6796-07	.7903-07	.8193-07	.7964-07	.7626-07	.7155-07
376.	.6799-07	.6554-07	.6351-07	.5957-07				
377.	.3520-07	.3418-07	.2483-07	.2946-07	.3120-07	.3093-07	.2968-07	.2797-07
378.	.2673-07	.2598-07	.2536-07	.2396-07				
379.	.1254-07	.1258-07	.9262-08	.1111-07	.1194-07	.1201-07	.1161-07	.1100-07
380.	.1057-07	.1035-07	.1017-07	.9675-08				
381.	.3003-08	.3137-08	.2347-08	.2838-08	.3077-08	.3141-08	.3069-08	.2932-08
382.	.2840-08	.2813-08	.2791-08	.2683-08				
383.	.1053-08	.1115-08	.8488-09	.1033-08	.1124-08	.1149-08	.1127-08	.1081-08
384.	.1052-08	.1048-08	.1046-08	.1012-08				
385.	.4211-04	.1224-04	.5478-05	.5134-05	.4855-05	.5003-05	.5050-05	.4821-05
386.	.4498-05	.4144-05	.3074-05	.3527-05				
387.	.1526-04	.6108-05	.2972-05	.2849-05	.2639-05	.2594-05	.2976-05	.2439-05
388.	.2274-05	.2199-05	.1964-05	.1787-05				

389.	.3481-05	.2066-05	.1159-05	.1183-35	.1108-05	.1042-05	.1005-05	.9400-06
390.	.8768-06	.8144-06	.7653-36	.6981-06				
391.	.1079-05	.7925-06	.4910-06	.5298-06	.5147-06	.4835-06	.4597-06	.4277-06
392.	.3999-06	.3750-06	.3549-06	.3254-06				
393.	.3499-06	.2924-06	.1932-06	.2162-06	.2170-06	.2074-06	.1974-06	.1842-06
394.	.1734-06	.1647-06	.1575-06	.1458-06				
395.	.7808-07	.7316-07	.5165-07	.6006-07	.6226-07	.6068-07	.5796-07	.5438-07
396.	.5167-07	.4981-07	.4826-07	.4527-07				
397.	.2675-07	.2598-07	.1887-07	.2239-07	.2371-07	.2350-07	.2256-07	.2126-07
398.	.2031-07	.1974-07	.1927-07	.1821-07				
399.	.9528-08	.9560-08	.7039-08	.8440-08	.9072-08	.9128-08	.8824-08	.8360-08
400.	.8032-08	.7866-08	.7729-08	.7353-08				
401.	.2282-08	.2384-08	.1784-08	.2157-08	.2338-08	.2387-08	.2333-08	.2228-08
402.	.2158-08	.2138-08	.2121-08	.2039-08				
403.	.8000-09	.8472-09	.6451-09	.7854-09	.8544-09	.8736-09	.8568-09	.8216-09
404.	.7995-09	.7966-09	.7946-09	.7691-09				
405.	.3374-04	.9808-05	.4389-05	.4113-05	.3890-05	.4009-05	.4046-05	.3863-05
406.	.3604-05	.3324-05	.3104-05	.2826-05				
407.	.1223-04	.4894-05	.2379-05	.2283-05	.2115-05	.2079-05	.2064-05	.1954-05
408.	.1822-05	.1683-05	.1574-05	.1432-05				
409.	.2789-05	.1656-05	.9288-06	.9481-06	.8878-06	.8346-06	.8051-06	.7532-06
410.	.7026-06	.6526-06	.6132-06	.5594-06				
411.	.8647-06	.6350-06	.3935-06	.4246-06	.4124-06	.3874-06	.3683-06	.3427-06
412.	.3204-06	.3005-06	.2844-06	.2607-06				
413.	.2804-06	.2343-06	.1548-06	.1733-06	.1738-06	.1662-06	.1582-06	.1476-06
414.	.1390-06	.1320-06	.1262-06	.1168-06				
415.	.6256-07	.5862-07	.4138-07	.4813-07	.4989-07	.4862-07	.4644-07	.4357-07
416.	.4140-07	.3991-07	.3867-07	.3628-07				
417.	.2144-07	.2081-07	.1512-07	.1794-07	.1900-07	.1083-07	.1808-07	.1703-07
418.	.1628-07	.1582-07	.1544-07	.1459-07				
419.	.7635-08	.7660-08	.5640-08	.6763-08	.7269-08	.7314-08	.7071-08	.6699-08
420.	.6436-08	.6303-08	.6193-08	.5892-08				
421.	.1829-08	.1910-08	.1429-08	.1728-08	.1874-08	.1913-08	.1869-08	.1785-08
422.	.1729-08	.1713-08	.1699-08	.1634-08				
423.	.6410-09	.6788-09	.5169-09	.6294-09	.6846-09	.7000-09	.6865-09	.6583-09
424.	.6406-09	.6383-09	.6367-09	.6163-09				
425.	.4231-03	.1463-03	.6756-04	.6355-04	.5915-04	.5960-04	.5982-04	.5692-04
426.	.5308-04	.4897-04	.4576-04	.4163-04				
427.	.1315-03	.6759-04	.3476-04	.3391-04	.3113-04	.2974-04	.2921-04	.2750-04
428.	.2562-04	.2369-04	.2217-04	.2017-04				
429.	.2077-04	.1710-04	.1077-04	.1159-04	.1109-04	.1023-04	.9681-05	.8985-05
430.	.8383-05	.7836-05	.7395-05	.6763-05				
431.	.4456-05	.4304-05	.3087-05	.3613-05	.3738-05	.3590-05	.3378-05	.3136-05
432.	.2953-05	.2813-05	.2695-05	.2496-05				
433.	.7076-06	.7496-06	.5692-06	.6923-06	.7531-06	.7676-06	.7468-06	.7099-06
434.	.6842-06	.6733-06	.6635-06	.6318-06				
435.	.7906-07	.6151-07	.4629-07	.5695-07	.6328-07	.6633-07	.6592-07	.6390-07
436.	.6278-07	.6331-07	.6383-07	.6254-07				
437.	.3953-07	.3056-07	.2297-07	.2824-07	.3135-07	.3278-07	.3253-07	.3150-07
438.	.3094-07	.3118-07	.3144-07	.3082-07				
439.	.1977-07	.1527-07	.1146-07	.1408-07	.1563-07	.1636-07	.1626-07	.1574-07
440.	.1546-07	.1559-07	.1572-07	.1541-07				
441.	.7905-08	.6109-08	.4585-08	.5632-08	.6247-08	.6535-08	.6488-08	.6286-08
442.	.6174-08	.6224-08	.6278-08	.6156-08				
443.	.3953-08	.3055-08	.2294-08	.2817-08	.3124-08	.3269-08	.3245-08	.3144-08
444.	.3000-08	.3113-08	.3140-08	.3078-08				
445.	.1320-03	.4564-04	.2108-04	.1983-04	.1846-04	.1860-04	.1866-04	.1776-04
446.	.1656-04	.1528-04	.1428-04	.1299-04				
447.	.4104-04	.2109-04	.1084-04	.1058-04	.9712-05	.9280-05	.9112-05	.8580-05
448.	.7992-05	.7392-05	.6916-05	.6292-05				
449.	.6480-05	.5336-05	.3361-05	.3616-05	.3462-05	.3193-05	.3020-05	.2803-05
450.	.2616-05	.2445-05	.2307-05	.2110-05				
451.	.1390-05	.1343-05	.9632-06	.1127-05	.1166-05	.1120-05	.1054-05	.9784-06
452.	.9212-06	.8776-06	.8408-06	.7788-06				
453.	.2208-06	.2339-06	.1776-06	.2160-06	.2350-06	.2395-06	.2330-06	.2215-06
454.	.2135-06	.2101-06	.2070-06	.1971-06				
455.	.2467-07	.1919-07	.1444-07	.1777-07	.1974-07	.2070-07	.2057-07	.1994-07
456.	.1959-07	.1975-07	.1992-07	.1951-07				
457.	.1233-07	.9536-08	.7168-08	.8812-08	.9780-08	.1023-07	.1015-07	.9828-08
458.	.9652-08	.9728-08	.9808-08	.9616-08				
459.	.6168-08	.4764-08	.3576-08	.4392-08	.4876-08	.5104-08	.5072-08	.4912-08
460.	.4824-08	.4864-08	.4904-08	.4808-08				
461.	.2466-08	.1906-08	.1430-08	.1757-08	.1949-08	.2039-08	.2024-08	.1961-08
462.	.1926-08	.1942-08	.1959-08	.1921-08				
463.	.1233-08	.9532-09	.7156-09	.8788-09	.9748-09	.1020-08	.1012-08	.9808-09
464.	.9636-09	.9712-09	.9796-09	.9604-09				
465.	.7333-04	.2536-04	.1171-04	.1102-04	.1025-04	.1033-04	.1037-04	.9867-05
466.	.9200-05	.8489-05	.7931-05	.7216-05				
467.	.2280-04	.1172-04	.6024-05	.5878-05	.5396-05	.5156-05	.5062-05	.4767-05
468.	.4440-05	.4107-05	.3842-05	.3496-05				
469.	.3600-05	.2964-05	.1867-05	.2009-05	.1923-05	.1774-05	.1678-05	.1557-05
470.	.1453-05	.1358-05	.1282-05	.1172-05				
471.	.7724-06	.7460-06	.5351-06	.6262-06	.6480-06	.6222-06	.5856-06	.5436-06
472.	.5118-06	.4878-06	.4671-06	.4327-06				
473.	.1226-06	.1299-06	.9867-07	.1200-06	.1305-06	.1330-06	.1294-06	.1230-06
474.	.1186-06	.1167-06	.1150-06	.1095-06				
475.	.1370-07	.1066-07	.8024-08	.9871-08	.1097-07	.1150-07	.1143-07	.1108-07
476.	.1088-07	.1097-07	.1106-07	.1084-07				
477.	.6851-08	.5298-08	.3982-08	.4896-08	.5433-08	.5682-08	.5638-08	.5460-08
478.	.5362-08	.5404-08	.5449-08	.5342-08				
479.	.3427-08	.2647-08	.1987-08	.2440-08	.2709-08	.2836-08	.2818-08	.2729-08
480.	.2680-08	.2702-08	.2724-08	.2671-08				
481.	.1370-08	.1059-08	.7947-09	.9762-09	.1083-08	.1133-08	.1125-08	.1090-08
482.	.1070-08	.1079-08	.1088-08	.1067-08				
483.	.6851-09	.5296-09	.3976-09	.4882-09	.5416-09	.5667-09	.5624-09	.5449-09
484.	.5353-09	.5396-09	.5442-09	.5336-09				
485.	.4783-04	.1654-04	.7638-05	.7184-05	.6687-05	.6738-05	.6762-05	.6435-05
486.	.6000-05	.5536-05	.5172-05	.4706-05				

487.	.1487-04	.7641-05	.3929-05	.3833-05	.3519-05	.3362-05	.3301-05	.3109-05
488.	.2896-05	.2676-05	.2506-05	.2280-05				
489.	.2348-05	.1933-05	.1218-05	.1310-05	.1254-05	.1157-05	.1094-05	.1016-05
490.	.9477-06	.8858-06	.8359-06	.7645-06				
491.	.5038-06	.4865-06	.3490-06	.4084-06	.4226-06	.4058-06	.3819-06	.3545-06
492.	.3338-06	.3180-06	.3046-06	.2822-06				
493.	.7999-07	.8474-07	.6435-07	.7826-07	.8513-07	.8677-07	.8442-07	.8025-07
494.	.7735-07	.7612-07	.7500-07	.7142-07				
495.	.8938-08	.6954-08	.5233-08	.6438-08	.7154-08	.7499-08	.7452-08	.7223-08
496.	.7097-08	.7157-08	.7216-08	.7070-08				
497.	.4468-08	.3455-08	.2597-08	.3193-08	.3543-08	.3706-08	.3677-08	.3561-08
498.	.3497-08	.3525-08	.3554-08	.3484-08				
499.	.2235-08	.1726-08	.1296-08	.1591-08	.1767-08	.1849-08	.1838-08	.1780-08
500.	.1748-08	.1762-08	.1777-08	.1742-08				
501.	.8936-09	.6906-09	.5183-09	.6367-09	.7062-09	.7387-09	.7335-09	.7106-09
502.	.6980-09	.7036-09	.7097-09	.6959-09				
503.	.4468-09	.3454-09	.2593-09	.3184-09	.3532-09	.3696-09	.3668-09	.3554-09
504.	.3491-09	.3519-09	.3549-09	.3480-09				
505.	.3474-04	.1201-04	.5547-05	.5218-05	.4857-05	.4894-05	.4912-05	.4674-05
506.	.4358-05	.4021-05	.3757-05	.3418-05				
507.	.1080-04	.5549-05	.2854-05	.2784-05	.2556-05	.2442-05	.2398-05	.2258-05
508.	.2103-05	.1945-05	.1820-05	.1656-05				
509.	.1705-05	.1404-05	.8844-06	.9516-06	.9109-06	.8402-06	.7948-06	.7377-06
510.	.6883-06	.6434-06	.6072-06	.5553-06				
511.	.3659-06	.3534-06	.2535-06	.2966-06	.3069-06	.2947-06	.2774-06	.2575-06
512.	.2424-06	.2309-06	.2213-06	.2049-06				
513.	.5809-07	.6155-07	.4674-07	.5684-07	.6183-07	.6302-07	.6132-07	.5828-07
514.	.5618-07	.5528-07	.5447-07	.5187-07				
515.	.6492-08	.5051-08	.3801-08	.4676-08	.5196-08	.5446-08	.5413-08	.5246-08
516.	.3155-08	.5198-08	.5241-08	.5135-08				
517.	.3245-08	.2509-08	.1886-08	.2319-08	.2574-08	.2692-08	.2671-08	.2586-08
518.	.2540-08	.2560-08	.2581-08	.2531-08				
519.	.1623-08	.1254-08	.9411-09	.1156-08	.1283-08	.1343-08	.1335-08	.1293-08
520.	.1269-08	.1280-08	.1291-08	.1265-08				
521.	.6491-09	.5016-09	.3764-09	.4624-09	.5129-09	.5365-09	.5327-09	.5161-09
522.	.5069-09	.5111-09	.5155-09	.5055-09				
523.	.3245-09	.2508-09	.1883-09	.2313-09	.2565-09	.2684-09	.2664-09	.2581-09
524.	.2536-09	.2556-09	.2578-09	.2527-09				
525.	.2640-04	.9128-05	.4216-05	.3966-05	.3691-05	.3719-05	.3733-05	.3552-05
526.	.3312-05	.3056-05	.2855-05	.2598-05				
527.	.8208-05	.4218-05	.2169-05	.2116-05	.1942-05	.1856-05	.1822-05	.1716-05
528.	.1598-05	.1478-05	.1383-05	.1258-05				
529.	.1296-05	.1067-05	.6722-06	.7232-06	.6923-06	.6386-06	.6041-06	.5606-06
530.	.5231-06	.4890-06	.4614-06	.4220-06				
531.	.2781-06	.2686-06	.1926-06	.2254-06	.2333-06	.2240-06	.2108-06	.1957-06
532.	.1842-06	.1755-06	.1682-06	.1558-06				
533.	.4415-07	.4678-07	.3552-07	.4320-07	.4699-07	.4790-07	.4660-07	.4430-07
534.	.4270-07	.4202-07	.4140-07	.3942-07				
535.	.4934-08	.3838-08	.2889-08	.3554-08	.3949-08	.4139-08	.4114-08	.3987-08
536.	.3918-08	.3950-08	.3983-08	.3902-08				
537.	.2466-08	.1907-08	.1434-08	.1762-08	.1956-08	.2046-08	.2030-08	.1966-08
538.	.1930-08	.1946-08	.1962-08	.1923-08				
539.	.1234-08	.9528-09	.7152-09	.8784-09	.9752-09	.1021-08	.1014-08	.9824-09
540.	.9648-09	.9728-09	.9808-09	.9616-09				
541.	.4933-09	.3812-09	.2861-09	.3514-09	.3898-09	.4078-09	.4049-09	.3922-09
542.	.3853-09	.3884-09	.3918-09	.3842-09				
543.	.2466-09	.1906-09	.1431-09	.1758-09	.1950-09	.2040-09	.2025-09	.1962-09
544.	.1927-09	.1942-09	.1959-09	.1921-09				
545.	.2115-04	.7314-05	.3378-05	.3178-05	.2958-05	.2980-05	.2991-05	.2846-05
546.	.2654-05	.2449-05	.2288-05	.2081-05				
547.	.6577-05	.3379-05	.1738-05	.1696-05	.1556-05	.1487-05	.1460-05	.1375-05
548.	.1281-05	.1185-05	.1108-05	.1008-05				
549.	.1038-05	.8591-06	.5386-06	.5795-06	.5547-06	.5117-06	.4840-06	.4492-06
550.	.4192-06	.3918-06	.3697-06	.3381-06				
551.	.2228-06	.2152-06	.1544-06	.1806-06	.1869-06	.1795-06	.1689-06	.1568-06
552.	.1476-06	.1406-06	.1347-06	.1248-06				
553.	.3538-07	.3748-07	.2846-07	.3462-07	.3765-07	.3838-07	.3734-07	.3549-07
554.	.3421-07	.3367-07	.3317-07	.3159-07				
555.	.3953-08	.3076-08	.2315-08	.2847-08	.3164-08	.3317-08	.3296-08	.3195-08
556.	.3139-08	.3165-08	.3192-08	.3127-08				
557.	.1976-08	.1528-08	.1149-08	.1412-08	.1567-08	.1639-08	.1626-08	.1575-08
558.	.1547-08	.1559-08	.1572-08	.1541-08				
559.	.9885-09	.7635-09	.5731-09	.7038-09	.7814-09	.8179-09	.8128-09	.7872-09
560.	.7731-09	.7795-09	.7859-09	.7705-09				
561.	.3953-09	.3054-09	.2292-09	.2816-09	.3124-09	.3267-09	.3244-09	.3143-09
562.	.3087-09	.3112-09	.3139-09	.3078-09				
563.	.1976-09	.1528-09	.1147-09	.1408-09	.1562-09	.1635-09	.1622-09	.1572-09
564.	.1544-09	.1556-09	.1570-09	.1539-09				

R ELT DRFACL,1,730505, 43254

1.	2	4	7	10	12	1000.	2000.	5000.	10000.	20000.
2.	10.									
3.	100.									
4.	50000.	100000.								
5.	.1922-03	.1054-03	.5124-04	.4836-04	.4371-04	.4229-04	.4203-04	.3974-04		
6.	.3703-04	.3417-04	.3194-04	.2904-04						
7.	.1180-03	.7409-04	.3801-04	.3677-04	.3336-04	.3164-04	.3108-04	.2924-04		
8.	.2723-04	.2517-04	.2355-04	.2142-04						
9.	.6813-04	.3786-04	.2073-04	.2095-04	.1958-04	.1850-04	.1792-04	.1679-04		
10.	.1565-04	.1454-04	.1364-04	.1244-04						
11.	.3185-04	.1808-04	.1039-04	.1086-04	.1042-04	.9908-05	.9524-05	.8901-05		
12.	.8313-05	.7759-05	.7317-05	.6691-05						
13.	.1231-04	.7783-05	.4649-05	.4963-05	.4844-05	.4637-05	.4455-05	.4168-05		
14.	.3909-05	.3677-05	.3490-05	.3210-05						
15.	.3355-05	.2442-05	.1536-05	.1679-05	.1660-05	.1587-05	.1519-05	.1422-05		
16.	.1338-05	.1269-05	.1213-05	.1123-05						
17.	.1296-05	.1017-05	.6627-06	.7374-06	.7372-06	.7056-06	.6736-06	.6299-06		
18.	.5941-06	.5651-06	.5415-06	.5028-06						
19.	.5218-06	.4310-06	.2887-06	.3260-06	.3296-06	.3167-06	.3019-06	.2823-06		
20.	.2667-06	.2545-06	.2445-06	.2276-06						
21.	.1596-06	.1386-06	.9577-07	.1101-06	.1130-06	.1094-06	.1042-06	.9753-07		
22.	.9236-07	.8854-07	.8540-07	.7974-07						
23.	.6663-07	.6021-07	.4236-07	.4922-07	.5095-07	.4956-07	.4723-07	.4421-07		
24.	.4191-07	.4027-07	.3891-07	.3641-07						
25.	.5996-04	.3289-04	.1599-04	.1509-04	.1364-04	.1320-04	.1311-04	.1240-04		
26.	.1155-04	.1066-04	.9964-05	.9060-05						
27.	.3682-04	.2312-04	.1186-04	.1147-04	.1041-04	.9872-05	.9696-05	.9124-05		
28.	.8496-05	.7852-05	.7348-05	.6684-05						
29.	.2126-04	.1181-04	.6468-05	.6536-05	.6108-05	.5772-05	.5592-05	.5240-05		
30.	.4884-05	.4536-05	.4256-05	.3880-05						
31.	.9936-05	.5640-05	.3241-05	.3387-05	.3252-05	.3091-05	.2972-05	.2777-05		
32.	.2594-05	.2421-05	.2283-05	.2088-05						
33.	.3840-05	.2428-05	.1450-05	.1548-05	.1511-05	.1447-05	.1390-05	.1300-05		
34.	.1220-05	.1147-05	.1089-05	.1002-05						
35.	.1047-05	.7620-06	.4792-06	.5240-06	.5180-06	.4952-06	.4740-06	.4436-06		
36.	.4176-06	.3960-06	.3784-06	.3505-06						
37.	.4044-06	.3173-06	.2068-06	.2301-06	.2300-06	.2202-06	.2102-06	.1965-06		
38.	.1054-06	.1763-06	.1690-06	.1569-06						
39.	.1628-06	.1345-06	.9008-07	.1017-06	.1028-06	.9880-07	.9420-07	.8808-07		
40.	.8320-07	.7940-07	.7628-07	.7100-07						
41.	.4980-07	.4324-07	.2988-07	.3436-07	.3526-07	.3412-07	.3252-07	.3043-07		
42.	.2862-07	.2762-07	.2664-07	.2488-07						
43.	.2079-07	.1878-07	.1322-07	.1536-07	.1590-07	.1546-07	.1474-07	.1379-07		
44.	.1308-07	.1256-07	.1214-07	.1136-07						
45.	.3331-04	.1827-04	.8882-05	.8382-05	.7576-05	.7331-05	.7284-05	.6889-05		
46.	.6418-05	.5922-05	.5536-05	.5033-05						
47.	.2085-04	.1284-04	.6589-05	.6373-05	.5782-05	.5484-05	.5387-05	.5069-05		
48.	.4720-05	.4362-05	.4082-05	.3713-05						
49.	.1181-04	.6562-05	.3593-05	.3631-05	.3393-05	.3207-05	.3107-05	.2911-05		
50.	.2713-05	.2520-05	.2364-05	.2156-05						
51.	.5520-05	.3133-05	.1800-05	.1882-05	.1807-05	.1717-05	.1651-05	.1543-05		
52.	.1441-05	.1345-05	.1268-05	.1160-05						
53.	.2133-05	.1349-05	.8058-06	.8602-06	.8396-06	.8038-06	.7722-06	.7224-06		
54.	.6776-06	.6373-06	.6049-06	.5564-06						
55.	.5816-06	.4233-06	.2662-06	.2911-06	.2878-06	.2751-06	.2633-06	.2464-06		
56.	.2320-06	.2200-06	.2102-06	.1947-06						
57.	.2247-06	.1763-06	.1149-06	.1278-06	.1278-06	.1223-06	.1168-06	.1092-06		
58.	.1030-06	.9796-07	.9387-07	.8716-07						
59.	.9044-07	.7471-07	.5004-07	.5651-07	.5713-07	.5489-07	.5233-07	.4893-07		
60.	.4622-07	.4411-07	.4238-07	.3944-07						
61.	.2767-07	.2402-07	.1660-07	.1909-07	.1959-07	.1896-07	.1806-07	.1690-07		
62.	.1601-07	.1535-07	.1480-07	.1382-07						
63.	.1155-07	.1044-07	.7342-08	.8531-08	.8831-08	.8591-08	.8187-08	.7662-08		
64.	.7264-08	.6980-08	.6744-08	.6311-08						
65.	.2172-04	.1192-04	.5793-05	.5467-05	.4941-05	.4781-05	.4751-05	.4493-05		
66.	.4186-05	.3862-05	.3610-05	.3283-05						
67.	.1334-04	.8375-05	.4287-05	.4157-05	.3771-05	.3577-05	.3513-05	.3306-05		
68.	.3078-05	.2845-05	.2662-05	.2422-05						
69.	.7701-05	.4280-05	.2343-05	.2368-05	.2213-05	.2091-05	.2026-05	.1899-05		
70.	.1770-05	.1643-05	.1542-05	.1406-05						
71.	.3600-05	.2043-05	.1174-05	.1227-05	.1178-05	.1120-05	.1077-05	.1006-05		
72.	.9397-06	.8771-06	.8271-06	.7564-06						
73.	.1391-05	.8799-06	.5255-06	.5610-06	.5475-06	.5242-06	.5036-06	.4712-06		
74.	.4419-06	.4157-06	.3945-06	.3629-06						
75.	.3793-06	.2761-06	.1736-06	.1899-06	.1877-06	.1794-06	.1717-06	.1607-06		
76.	.1513-06	.1435-06	.1371-06	.1270-06						
77.	.1465-06	.1150-06	.7491-07	.8336-07	.8333-07	.7977-07	.7614-07	.7120-07		
78.	.6716-07	.6388-07	.6122-07	.5684-07						
79.	.5899-07	.4872-07	.3264-07	.3686-07	.3726-07	.3580-07	.3413-07	.3191-07		
80.	.3014-07	.2877-07	.2764-07	.2572-07						
81.	.1804-07	.1567-07	.1083-07	.1245-07	.1277-07	.1236-07	.1178-07	.1102-07		
82.	.1044-07	.1001-07	.9654-08	.9014-08						
83.	.7532-08	.6806-08	.4788-08	.5564-08	.5759-08	.5603-08	.5339-08	.4997-08		
84.	.4738-08	.4552-08	.4399-08	.4116-08						
85.	.1578-04	.8656-05	.4207-05	.3971-05	.3588-05	.3473-05	.3451-05	.3263-05		
86.	.3040-05	.2805-05	.2622-05	.2384-05						
87.	.9688-05	.6083-05	.3121-05	.3019-05	.2739-05	.2598-05	.2552-05	.2401-05		
88.	.2236-05	.2066-05	.1934-05	.1759-05						
89.	.5594-05	.3108-05	.1702-05	.1720-05	.1607-05	.1519-05	.1472-05	.1379-05		
90.	.1285-05	.1194-05	.1120-05	.1021-05						
91.	.2615-05	.1484-05	.8528-06	.8914-06	.8558-06	.8135-06	.7820-06	.7308-06		
92.	.6825-06	.6371-06	.6007-06	.5494-06						
93.	.1011-05	.6391-06	.3817-06	.4075-06	.3977-06	.3807-06	.3658-06	.3422-06		
94.	.3209-06	.3019-06	.2865-06	.2636-06						

95.	.2755-06	.2055-06	.1261-06	.1379-06	.1363-06	.1303-06	.1247-06	.1167-06
96.	.1099-06	.1642-06	.9959-07	.9223-07				
97.	.1064-06	.6349-07	.5441-07	.6055-07	.6053-07	.5794-07	.5531-07	.5172-07
98.	.4678-07	.4640-07	.4446-07	.4128-07				
99.	.4284-07	.3539-07	.2371-07	.2677-07	.2706-07	.2600-07	.2479-07	.2318-07
100.	.2189-07	.2089-07	.2007-07	.1868-07				
101.	.1311-07	.1138-07	.7863-08	.9041-08	.9278-08	.8980-08	.8557-08	.8007-08
102.	.7583-08	.7269-08	.7012-08	.6547-08				
103.	.5471-08	.4943-08	.3478-08	.4041-08	.4183-08	.4069-08	.3878-08	.3629-08
104.	.3441-08	.3356-08	.3195-08	.2989-08				
105.	.1199-04	.6578-05	.3198-05	.3018-05	.2727-05	.2639-05	.2622-05	.2480-05
106.	.2310-05	.2132-05	.1993-05	.1812-05				
107.	.7363-05	.4623-05	.2372-05	.2294-05	.2082-05	.1974-05	.1939-05	.1825-05
108.	.1699-05	.1570-05	.1470-05	.1337-05				
109.	.4251-05	.2362-05	.1294-05	.1307-05	.1222-05	.1154-05	.1118-05	.1048-05
110.	.9768-06	.9072-06	.8512-06	.7760-06				
111.	.1987-05	.1128-05	.6482-06	.6774-06	.6504-06	.6182-06	.5943-06	.5554-06
112.	.5187-06	.4842-06	.4566-06	.4175-06				
113.	.7680-06	.4857-06	.2901-06	.3097-06	.3022-06	.2894-06	.2780-06	.2601-06
114.	.2439-06	.2294-06	.2178-06	.2003-06				
115.	.2094-06	.1524-06	.9584-07	.1048-06	.1036-06	.9904-07	.9480-07	.8872-07
116.	.8352-07	.7921-07	.7569-07	.7010-07				
117.	.8088-07	.6346-07	.4135-07	.4602-07	.4600-07	.4403-07	.4203-07	.3930-07
118.	.3707-07	.3526-07	.3379-07	.3138-07				
119.	.3256-07	.2690-07	.1802-07	.2034-07	.2057-07	.1976-07	.1884-07	.1762-07
120.	.1664-07	.1588-07	.1526-07	.1420-07				
121.	.9960-08	.8648-08	.5976-08	.6871-08	.7051-08	.6025-08	.6503-08	.6086-08
122.	.5763-08	.5525-08	.5329-08	.4976-08				
123.	.4158-08	.3757-08	.2643-08	.3071-08	.3179-08	.3093-08	.2947-08	.2758-08
124.	.2615-08	.2513-08	.2428-08	.2272-08				
125.	.9609-05	.5271-05	.2562-05	.2418-05	.2185-05	.2115-05	.2101-05	.1987-05
126.	.1851-05	.1708-05	.1597-05	.1452-05				
127.	.5900-05	.3704-05	.1901-05	.1838-05	.1668-05	.1582-05	.1554-05	.1462-05
128.	.1362-05	.1258-05	.1178-05	.1071-05				
129.	.3406-05	.1893-05	.1037-05	.1047-05	.9788-06	.9250-06	.8962-05	.8397-06
130.	.7827-06	.7269-06	.6821-06	.6218-06				
131.	.1592-05	.9038-06	.5194-06	.5428-06	.5212-06	.4954-06	.4762-06	.4451-06
132.	.4156-06	.3879-06	.3658-06	.3346-06				
133.	.6154-06	.3892-06	.2324-06	.2481-06	.2422-06	.2319-06	.2228-06	.2084-06
134.	.1954-06	.1838-06	.1745-06	.1605-06				
135.	.1678-06	.1221-06	.7679-07	.8397-07	.8301-07	.7936-07	.7596-07	.7109-07
136.	.6692-07	.6347-07	.6065-07	.5617-07				
137.	.6481-07	.5085-07	.3313-07	.3687-07	.3686-07	.3528-07	.3368-07	.3149-07
138.	.2971-07	.2826-07	.2708-07	.2514-07				
139.	.2609-07	.2155-07	.1444-07	.1630-07	.1648-07	.1583-07	.1510-07	.1412-07
140.	.1333-07	.1272-07	.1222-07	.1138-07				
141.	.7981-08	.6929-08	.4788-08	.5506-08	.5650-08	.5469-08	.5211-08	.4876-08
142.	.4618-08	.4427-08	.4270-08	.3987-08				
143.	.3331-08	.3010-08	.2118-08	.2461-08	.2547-08	.2478-08	.2362-08	.2210-08
144.	.2096-08	.2013-08	.1946-08	.1821-08				
145.	.2121-03	.1087-03	.5253-04	.4955-04	.4494-04	.4369-04	.4346-04	.4114-04
146.	.3832-04	.3537-04	.3305-04	.3005-04				
147.	.1558-03	.7935-04	.4004-04	.3871-04	.3542-04	.3404-04	.3354-04	.3163-04
148.	.2946-04	.2723-04	.2547-04	.2317-04				
149.	.6468-04	.3571-04	.1974-04	.2005-04	.1878-04	.1773-04	.1714-04	.1605-04
150.	.1496-04	.1392-04	.1305-04	.1189-04				
151.	.2414-04	.1537-04	.9155-05	.9713-05	.9369-05	.8844-05	.8451-05	.7878-05
152.	.7359-05	.6881-05	.6497-05	.5946-05				
153.	.8395-05	.6190-05	.3842-05	.4200-05	.4149-05	.3958-05	.3778-05	.3527-05
154.	.3312-05	.3127-05	.2976-05	.2744-05				
155.	.2040-05	.1695-05	.1139-05	.1288-05	.1304-05	.1253-05	.1194-05	.1116-05
156.	.1055-05	.1007-05	.9674-06	.9003-06				
157.	.7521-06	.6592-06	.4587-06	.5295-06	.5453-06	.5287-06	.5037-06	.4715-06
158.	.4468-06	.4287-06	.4140-06	.3868-06				
159.	.2941-06	.2663-06	.1895-06	.2218-06	.2317-06	.2268-06	.2165-06	.2031-06
160.	.1929-06	.1862-06	.1804-06	.1692-06				
161.	.9074-07	.8456-07	.6124-07	.7260-07	.7683-07	.7608-07	.7291-07	.6856-07
162.	.6538-07	.6340-07	.6173-07	.5815-07				
163.	.3724-07	.3540-07	.2588-07	.3090-07	.3299-07	.3295-07	.3169-07	.2988-07
164.	.2858-07	.2782-07	.2719-07	.2571-07				
165.	.6616-04	.3390-04	.1439-04	.1540-04	.1402-04	.1363-04	.1356-04	.1284-04
166.	.1196-04	.1104-04	.1031-04	.9376-05				
167.	.4860-04	.2476-04	.1249-04	.1208-04	.1105-04	.1062-04	.1046-04	.9868-05
168.	.9192-05	.8496-05	.7948-05	.7228-05				
169.	.2018-04	.1114-04	.6160-05	.6256-05	.5860-05	.5532-05	.5348-05	.5008-05
170.	.4668-05	.4336-05	.4072-05	.3711-05				
171.	.7532-05	.4796-05	.2856-05	.3030-05	.2923-05	.2759-05	.2637-05	.2458-05
172.	.2296-05	.2147-05	.2027-05	.1855-05				
173.	.2619-05	.1906-05	.1199-05	.1310-05	.1294-05	.1235-05	.1179-05	.1100-05
174.	.1033-05	.9756-06	.9284-06	.8560-06				
175.	.6364-06	.5288-06	.3554-06	.4020-06	.4068-06	.3908-06	.3725-06	.3483-06
176.	.3290-06	.3141-06	.3018-06	.2809-06				
177.	.2346-06	.2057-06	.1431-06	.1652-06	.1701-06	.1650-06	.1572-06	.1471-06
178.	.1394-06	.1338-06	.1292-06	.1207-06				
179.	.9176-07	.8398-07	.5912-07	.6920-07	.7228-07	.7076-07	.6756-07	.6336-07
180.	.6020-07	.5608-07	.5628-07	.5280-07				
181.	.2831-07	.2638-07	.1911-07	.2265-07	.2397-07	.2374-07	.2275-07	.2139-07
182.	.2040-07	.1978-07	.1926-07	.1814-07				
183.	.1162-07	.1104-07	.8076-08	.9640-08	.1029-07	.1028-07	.9888-08	.9324-08
184.	.8916-08	.8680-08	.8484-08	.8020-08				
185.	.3676-04	.1884-04	.9104-05	.8589-05	.7789-05	.7573-05	.7533-05	.7131-05
186.	.6642-05	.6131-05	.5729-05	.5209-05				
187.	.2700-04	.1375-04	.6949-05	.6709-05	.6140-05	.5900-05	.5813-05	.5482-05
188.	.5107-05	.4720-05	.4416-05	.4016-05				
189.	.1121-04	.6189-05	.3422-05	.3476-05	.3256-05	.3073-05	.2971-05	.2782-05
190.	.2593-05	.2409-05	.2262-05	.2062-05				
191.	.4184-05	.2664-05	.1087-05	.1684-05	.1624-05	.1533-05	.1465-05	.1366-05
192.	.1276-05	.1193-05	.1126-05	.1031-05				

193.	.1455-05	.1059-05	.6660-06	.7280-06	.7191-06	.6860-06	.6549-06	.6113-06
194.	.5740-06	.5422-06	.5158-06	.4756-06				
195.	.3536-06	.2938-06	.1974-06	.2233-06	.2260-06	.2171-06	.2070-06	.1935-06
196.	.1828-06	.1745-06	.1677-06	.1560-06				
197.	.1304-06	.1143-06	.7951-07	.9178-07	.9451-07	.9164-07	.8731-07	.8173-07
198.	.7744-07	.7431-07	.7176-07	.6704-07				
199.	.5098-07	.4616-07	.3284-07	.3844-07	.4016-07	.3931-07	.3753-07	.3520-07
200.	.3344-07	.3227-07	.3127-07	.2933-07				
201.	.1573-07	.1466-07	.1062-07	.1258-07	.1332-07	.1319-07	.1264-07	.1188-07
202.	.1133-07	.1099-07	.1070-07	.1008-07				
203.	.6456-08	.6136-08	.4487-08	.5356-08	.5718-08	.5711-08	.5493-08	.5180-08
204.	.4953-08	.4822-08	.4713-08	.4456-08				
205.	.2397-04	.1228-04	.5938-05	.5601-05	.5080-05	.4939-05	.4913-05	.4651-05
206.	.4332-05	.3999-05	.3736-05	.3397-05				
207.	.1761-04	.8970-05	.4526-05	.4375-05	.4004-05	.3848-05	.3791-05	.3575-05
208.	.3330-05	.3078-05	.2880-05	.2619-05				
209.	.7312-05	.4036-05	.2232-05	.2267-05	.2123-05	.2004-05	.1938-05	.1814-05
210.	.1691-05	.1571-05	.1475-05	.1345-05				
211.	.2729-05	.1738-05	.1635-05	.1098-05	.1059-05	.9997-06	.9554-06	.8906-06
212.	.8319-06	.7778-06	.7345-06	.6722-06				
213.	.9490-06	.6904-06	.4343-06	.4748-06	.4690-06	.4474-06	.4271-06	.3987-06
214.	.3743-06	.3535-06	.3364-06	.3101-06				
215.	.2306-06	.1916-06	.1288-06	.1457-06	.1474-06	.1416-06	.1350-06	.1262-06
216.	.1192-06	.1138-06	.1094-06	.1018-06				
217.	.8501-07	.7452-07	.5186-07	.5986-07	.6164-07	.5977-07	.5694-07	.5330-07
218.	.5051-07	.4846-07	.4600-07	.4372-07				
219.	.3325-07	.3010-07	.2142-07	.2507-07	.2619-07	.2564-07	.2448-07	.2296-07
220.	.2181-07	.2104-07	.2039-07	.1913-07				
221.	.1026-07	.9559-08	.6923-00	.8207-08	.8686-08	.8600-08	.8242-08	.7751-08
222.	.7391-08	.7167-08	.6978-08	.6574-08				
223.	.4210-08	.4001-08	.2926-08	.3493-08	.3709-08	.3725-08	.3583-08	.3378-08
224.	.3230-08	.3145-08	.3074-08	.2906-08				
225.	.1741-04	.8922-05	.4313-05	.4068-05	.3689-05	.3587-05	.3568-05	.3378-05
226.	.3146-05	.2904-05	.2714-05	.2467-05				
227.	.1279-04	.6515-05	.3287-05	.3178-05	.2908-05	.2795-05	.2754-05	.2597-05
228.	.2419-05	.2236-05	.2092-05	.1902-05				
229.	.5311-05	.2932-05	.1621-05	.1646-05	.1542-05	.1456-05	.1407-05	.1318-05
230.	.1228-05	.1141-05	.1072-05	.9766-06				
231.	.1982-05	.1262-05	.7517-06	.7975-06	.7693-06	.7261-06	.6939-06	.6468-06
232.	.6042-06	.5649-06	.5335-06	.4882-06				
233.	.6093-06	.5015-06	.3155-06	.3440-06	.3406-06	.3249-06	.3102-06	.2896-06
234.	.2719-06	.2567-06	.2443-06	.2253-06				
235.	.1675-06	.1392-06	.9352-07	.1058-06	.1071-06	.1029-06	.9803-07	.9166-07
236.	.8659-07	.8266-07	.7943-07	.7392-07				
237.	.6175-07	.5413-07	.3766-07	.4347-07	.4477-07	.4341-07	.4136-07	.3872-07
238.	.3668-07	.3520-07	.3399-07	.3176-07				
239.	.2415-07	.2186-07	.1556-07	.1821-07	.1902-07	.1862-07	.1778-07	.1667-07
240.	.1584-07	.1528-07	.1481-07	.1389-07				
241.	.7451-08	.6943-08	.5028-08	.5961-08	.6308-08	.6246-08	.5986-08	.5629-08
242.	.5368-08	.5205-08	.5068-08	.4775-08				
243.	.3058-08	.2906-08	.2125-08	.2537-08	.2708-08	.2705-08	.2602-08	.2454-08
244.	.2346-08	.2284-08	.2233-08	.2111-08				
245.	.1323-04	.6781-05	.3278-05	.3092-05	.2804-05	.2726-05	.2712-05	.2567-05
246.	.2321-05	.2207-05	.2062-05	.1875-05				
247.	.9720-05	.4951-05	.2498-05	.2415-05	.2210-05	.2124-05	.2093-05	.1974-05
248.	.1838-05	.1699-05	.1590-05	.1446-05				
249.	.4036-05	.2228-05	.1232-05	.1251-05	.1172-05	.1106-05	.1070-05	.1002-05
250.	.9336-06	.8672-06	.8144-06	.7422-06				
251.	.1506-06	.9592-06	.5713-06	.6061-06	.5846-06	.5518-06	.5274-06	.4916-06
252.	.4592-06	.4294-06	.4054-06	.3710-06				
253.	.5238-06	.3811-06	.2398-06	.2621-06	.2589-06	.2470-06	.2358-06	.2201-06
254.	.2066-06	.1951-06	.1857-06	.1712-06				
255.	.1273-06	.1058-06	.7107-07	.8040-07	.8136-07	.7817-07	.7450-07	.6966-07
256.	.6581-07	.6282-07	.6037-07	.5618-07				
257.	.4693-07	.4114-07	.2862-07	.3304-07	.3402-07	.3299-07	.3143-07	.2942-07
258.	.2788-07	.2675-07	.2583-07	.2414-07				
259.	.1835-07	.1662-07	.1182-07	.1384-07	.1446-07	.1415-07	.1351-07	.1267-07
260.	.1204-07	.1162-07	.1126-07	.1056-07				
261.	.5662-08	.5277-08	.3822-08	.4530-08	.4794-08	.4747-08	.4550-08	.4278-08
262.	.4080-08	.3956-08	.3852-08	.3629-08				
263.	.2324-08	.2209-08	.1915-08	.1928-08	.2058-08	.2056-08	.1978-08	.1865-08
264.	.1783-08	.1736-08	.1697-08	.1604-08				
265.	.1060-04	.5433-05	.2626-05	.2478-05	.2247-05	.2185-05	.2173-05	.2057-05
266.	.1916-05	.1769-05	.1653-05	.1503-05				
267.	.7788-05	.3967-05	.2002-05	.1935-05	.1771-05	.1702-05	.1677-05	.1581-05
268.	.1473-05	.1362-05	.1274-05	.1158-05				
269.	.3234-05	.1785-05	.9872-06	.1003-05	.9391-06	.8865-06	.8571-06	.8026-06
270.	.7481-06	.6949-06	.6526-06	.5947-06				
271.	.1207-05	.7686-06	.4578-06	.4856-06	.4685-06	.4422-06	.4226-06	.3939-06
272.	.3679-06	.3440-06	.3249-06	.2973-06				
273.	.4197-06	.3054-06	.1921-06	.2100-06	.2074-06	.1979-06	.1889-06	.1763-06
274.	.1656-06	.1563-06	.1488-06	.1372-06				
275.	.1020-06	.8474-07	.5695-07	.6442-07	.6519-07	.6263-07	.5970-07	.5582-07
276.	.5273-07	.5034-07	.4837-07	.4501-07				
277.	.3760-07	.3296-07	.2294-07	.2647-07	.2726-07	.2644-07	.2519-07	.2358-07
278.	.2234-07	.2144-07	.2070-07	.1934-07				
279.	.1471-07	.1331-07	.9474-08	.1109-07	.1158-07	.1134-07	.1083-07	.1015-07
280.	.9647-08	.9308-08	.9019-08	.8462-08				
281.	.4537-08	.4228-08	.3062-08	.3630-08	.3842-08	.3804-08	.3646-08	.3428-08
282.	.3269-08	.3172-08	.3087-08	.2908-08				
283.	.1862-08	.1770-08	.1294-08	.1545-08	.1649-08	.1647-08	.1585-08	.1494-08
284.	.1429-08	.1391-08	.1360-08	.1285-08				
285.	.2624-03	.1161-03	.5545-04	.5231-04	.4786-04	.4703-04	.4690-04	.4446-04
286.	.4144-04	.3823-04	.3572-04	.3249-04				
287.	.1706-03	.8022-04	.4028-04	.3897-04	.3583-04	.3460-04	.3413-04	.3221-04
288.	.3000-04	.2773-04	.2594-04	.2360-04				
289.	.5324-04	.3181-04	.1799-04	.1845-04	.1729-04	.1622-04	.1562-04	.1460-04
290.	.1360-04	.1264-04	.1188-04	.1083-04				

291.	.1767-04	.1263-04	.7641-05	.8474-05	.8244-05	.7742-05	.7353-05	.6836-05
292.	.6380-05	.5987-05	.5562-05	.5187-05				
293.	.5868-05	.4722-05	.3117-05	.3491-05	.3504-05	.3350-05	.3185-05	.2968-05
294.	.2792-05	.2647-05	.2526-05	.2337-05				
295.	.1335-05	.1192-05	.8386-06	.9747-06	.1010-05	.9840-06	.9383-06	.8790-06
296.	.8340-06	.8021-06	.7755-06	.7256-06				
297.	.4537-06	.4231-06	.3967-06	.3636-06	.3849-06	.3809-06	.3650-06	.3432-06
298.	.3272-06	.3173-06	.3088-06	.2910-06				
299.	.1618-06	.1558-06	.1144-06	.1372-06	.1472-06	.1479-06	.1427-06	.1347-06
300.	.1292-06	.1262-06	.1236-06	.1172-06				
301.	.3899-07	.3882-07	.2901-07	.3505-07	.3800-07	.3871-07	.3771-07	.3591-07
302.	.3469-07	.3423-07	.3385-07	.3241-07				
303.	.1387-07	.1383-07	.1049-07	.1277-07	.1390-07	.1418-07	.1386-07	.1324-07
304.	.1285-07	.1275-07	.1267-07	.1221-07				
305.	.6188-04	.3623-04	.1730-04	.1632-04	.1493-04	.1467-04	.1463-04	.1387-04
306.	.1293-04	.1193-04	.1114-04	.1014-04				
307.	.5324-04	.2503-04	.1257-04	.1216-04	.1118-04	.1080-04	.1065-04	.1005-04
308.	.9360-05	.8652-05	.8092-05	.7364-05				
309.	.1661-04	.9924-05	.5612-05	.5756-05	.5396-05	.5060-05	.4872-05	.4556-05
310.	.4244-05	.3945-05	.3706-05	.3380-05				
311.	.5512-05	.3940-05	.2446-05	.2644-05	.2572-05	.2416-05	.2294-05	.2133-05
312.	.1993-05	.1868-05	.1766-05	.1618-05				
313.	.1031-05	.1473-05	.9724-06	.1089-05	.1093-05	.1045-05	.9936-05	.9260-06
314.	.8712-06	.8260-06	.7888-06	.7292-06				
315.	.4184-06	.3718-06	.2616-06	.3041-06	.3152-06	.3070-06	.2928-06	.2742-06
316.	.2602-06	.2502-06	.2420-06	.2264-06				
317.	.1416-06	.1323-06	.9568-07	.1134-06	.1201-06	.1188-06	.1139-06	.1071-06
318.	.1021-06	.9900-07	.9636-07	.9080-07				
319.	.5048-07	.4868-07	.3570-07	.4280-07	.4592-07	.4616-07	.4452-07	.4204-07
320.	.4032-07	.3937-07	.3856-07	.3657-07				
321.	.1216-07	.1211-07	.9052-08	.1094-07	.1186-07	.1208-07	.1176-07	.1120-07
322.	.1082-07	.1068-07	.1396-07	.1011-07				
323.	.4328-08	.4316-08	.3274-08	.3984-08	.4336-08	.4424-08	.4324-08	.4132-08
324.	.4008-08	.3978-08	.3953-08	.3808-08				
325.	.4549-04	.2013-04	.9611-05	.9067-05	.8296-05	.8151-05	.8129-05	.7707-05
326.	.7182-05	.6627-05	.6191-05	.5631-05				
327.	.2958-04	.1393-04	.6982-05	.6756-05	.6211-05	.5998-05	.5916-05	.5582-05
328.	.5200-05	.4807-05	.4496-05	.4091-05				
329.	.9229-05	.5513-05	.3118-05	.3198-05	.2998-05	.2811-05	.2707-05	.2531-05
330.	.2358-05	.2192-05	.2359-05	.1878-05				
331.	.3062-05	.2189-05	.1359-05	.1469-05	.1429-05	.1342-05	.1274-05	.1185-05
332.	.1107-05	.1038-05	.9813-06	.8991-06				
333.	.1017-05	.8184-06	.5402-06	.6051-06	.6073-06	.5807-06	.5520-06	.5144-06
334.	.4040-06	.4589-06	.4382-06	.4051-06				
335.	.2313-06	.2066-06	.1454-06	.1690-06	.1751-06	.1706-06	.1626-06	.1524-06
336.	.1446-06	.1390-06	.1344-06	.1258-06				
337.	.7864-07	.7333-07	.5316-07	.6302-07	.6671-07	.6602-07	.6327-07	.5949-07
338.	.5671-07	.5506-07	.3353-07	.5044-07				
339.	.2804-07	.2700-07	.1983-07	.2378-07	.2551-07	.2564-07	.2473-07	.2336-07
340.	.2240-07	.2187-07	.2142-07	.2032-07				
341.	.6758-08	.6729-08	.5029-08	.6076-08	.6587-08	.6709-08	.6536-08	.6224-08
342.	.6013-08	.5933-08	.5867-08	.5618-08				
343.	.2404-08	.2398-08	.1819-08	.2214-08	.2409-08	.2458-08	.2402-08	.2296-08
344.	.2227-08	.2210-08	.2196-08	.2116-08				
345.	.2967-04	.1313-04	.6268-05	.5913-05	.5410-05	.5316-05	.5301-05	.5026-05
346.	.4684-05	.4322-05	.4038-05	.3672-05				
347.	.1929-04	.9060-05	.4554-05	.4406-05	.4051-05	.3912-05	.3858-05	.3641-05
348.	.3391-05	.3135-05	.2932-05	.2668-05				
349.	.6019-05	.3598-05	.2033-05	.2086-05	.1955-05	.1833-05	.1765-05	.1651-05
350.	.1538-05	.1429-05	.1343-05	.1224-05				
351.	.1997-05	.1428-05	.8864-06	.9580-06	.9319-06	.8752-06	.8312-06	.7728-06
352.	.7222-06	.6768-06	.6403-06	.5864-06				
353.	.6633-06	.5338-06	.3523-06	.3946-06	.3961-06	.3787-06	.3600-06	.3355-06
354.	.3157-06	.2993-06	.2858-06	.2642-06				
355.	.1529-06	.1347-06	.9480-07	.1102-06	.1142-06	.1112-06	.1061-06	.9936-07
356.	.9428-07	.9067-07	.8767-07	.8203-07				
357.	.5129-07	.4783-07	.3467-07	.4110-07	.4351-07	.4306-07	.4126-07	.3880-07
358.	.3699-07	.3587-07	.3491-07	.3290-07				
359.	.1829-07	.1761-07	.1293-07	.1551-07	.1664-07	.1672-07	.1613-07	.1523-07
360.	.1461-07	.1426-07	.1397-07	.1325-07				
361.	.4407-08	.4388-08	.3283-08	.3962-08	.4296-08	.4375-08	.4262-08	.4059-08
362.	.3922-08	.3870-08	.3826-08	.3664-08				
363.	.1568-08	.1564-08	.1186-08	.1444-08	.1571-08	.1603-08	.1567-08	.1497-08
364.	.1452-08	.1441-08	.1432-08	.1380-08				
365.	.2155-04	.9534-05	.4553-05	.4295-05	.3929-05	.3861-05	.3851-05	.3651-05
366.	.3402-05	.3139-05	.2933-05	.2667-05				
367.	.1401-04	.6586-05	.3307-05	.3200-05	.2942-05	.2841-05	.2802-05	.2644-05
368.	.2463-05	.2277-05	.2129-05	.1938-05				
369.	.4372-05	.2612-05	.1477-05	.1515-05	.1420-05	.1332-05	.1282-05	.1199-05
370.	.1117-05	.1036-05	.9753-06	.8894-06				
371.	.1451-05	.1037-05	.6438-06	.6958-06	.6768-06	.6357-06	.6037-06	.5613-06
372.	.5245-06	.4916-06	.4648-06	.4259-06				
373.	.4818-06	.3877-06	.2559-06	.2866-06	.2877-06	.2751-06	.2615-06	.2437-06
374.	.2293-06	.2174-06	.2076-06	.1919-06				
375.	.1096-06	.9785-07	.8885-07	.8003-07	.8295-07	.8079-07	.7704-07	.7217-07
376.	.6847-07	.6585-07	.6367-07	.5958-07				
377.	.3725-07	.3474-07	.2518-07	.2985-07	.3160-07	.3127-07	.2997-07	.2818-07
378.	.2686-07	.2605-07	.2536-07	.2389-07				
379.	.1328-07	.1279-07	.9395-08	.1126-07	.1208-07	.1215-07	.1172-07	.1106-07
380.	.1061-07	.1036-07	.1015-07	.9623-08				
381.	.3201-08	.3187-08	.2302-08	.2878-08	.3120-08	.3178-08	.3096-08	.2948-08
382.	.2844-08	.2811-08	.2779-08	.2661-08				
383.	.1139-08	.1136-08	.8617-09	.1049-08	.1141-08	.1164-08	.1138-08	.1087-08
384.	.1055-08	.1047-08	.1040-08	.1002-08				
385.	.1638-04	.7246-05	.3460-05	.3264-05	.2986-05	.2934-05	.2926-05	.2774-05
386.	.2586-05	.2306-05	.2220-05	.2027-05				
387.	.1065-04	.5005-05	.2514-05	.2532-05	.2230-05	.2159-05	.2139-05	.2010-05
388.	.1872-05	.1730-05	.1610-05	.1473-05				

389.	.3322-05	.1965-05	.1122-05	.1151-05	.1079-05	.1012-05	.9744-06	.9112-06
390.	.8408-06	.7892-06	.7412-06	.6759-06				
391.	.1102-05	.7681-06	.4893-06	.5288-06	.5144-06	.4831-06	.4588-06	.4266-06
392.	.3986-06	.3736-06	.3533-06	.3237-06				
393.	.3662-06	.2946-06	.1945-06	.2178-06	.2186-06	.2090-06	.1987-06	.1852-06
394.	.1742-06	.1652-06	.1578-06	.1458-06				
395.	.8328-07	.7437-07	.5233-07	.6082-07	.6304-07	.6140-07	.5855-07	.5485-07
396.	.5204-07	.5005-07	.4839-07	.4528-07				
397.	.2831-07	.2640-07	.1914-07	.2269-07	.2402-07	.2377-07	.2278-07	.2142-07
398.	.2042-07	.1982-07	.1927-07	.1816-07				
399.	.1010-07	.9720-08	.7146-08	.8560-08	.9184-08	.9232-08	.8904-08	.8408-08
400.	.8064-08	.7874-08	.7713-08	.7314-08				
401.	.2433-08	.2422-08	.1810-08	.2187-08	.2371-08	.2415-08	.2353-08	.2241-08
402.	.2165-08	.2136-08	.2112-08	.2022-08				
403.	.8656-09	.8632-09	.6549-09	.7969-09	.8672-09	.8848-09	.8648-09	.8264-09
404.	.8016-09	.7957-09	.7906-09	.7617-09				
405.	.1312-04	.5856-05	.2772-05	.2615-05	.2393-05	.2351-05	.2345-05	.2223-05
406.	.2072-05	.1912-05	.1786-05	.1624-05				
407.	.8532-05	.4011-05	.2014-05	.1949-05	.1792-05	.1730-05	.1706-05	.1610-05
408.	.1500-05	.1387-05	.1297-05	.1180-05				
409.	.2662-05	.1590-05	.8994-06	.9224-06	.8647-06	.8109-06	.7808-06	.7301-06
410.	.6801-06	.6322-06	.5939-06	.5416-06				
411.	.8833-06	.6315-06	.3921-06	.4237-06	.4122-06	.3871-06	.3676-06	.3418-06
412.	.3194-06	.2994-06	.2831-06	.2594-06				
413.	.2934-06	.2361-06	.1558-06	.1746-06	.1752-06	.1675-06	.1592-06	.1484-06
414.	.1396-06	.1324-06	.1264-06	.1169-06				
415.	.6673-07	.5959-07	.4193-07	.4874-07	.5051-07	.4920-07	.4692-07	.4395-07
416.	.4170-07	.4010-07	.3878-07	.3628-07				
417.	.2269-07	.2115-07	.1533-07	.1818-07	.1924-07	.1904-07	.1825-07	.1716-07
418.	.1636-07	.1507-07	.1544-07	.1455-07				
419.	.8090-08	.7788-08	.5721-08	.6859-08	.7359-08	.7397-08	.7135-08	.6737-08
420.	.6462-08	.6309-08	.6180-08	.5860-08				
421.	.1949-08	.1941-08	.1451-08	.1753-08	.1900-08	.1935-08	.1885-08	.1796-08
422.	.1735-08	.1712-08	.1692-08	.1621-08				
423.	.6936-09	.6917-09	.5247-09	.6385-09	.6949-09	.7090-09	.6929-09	.6622-09
424.	.6423-09	.6376-09	.6335-09	.6103-09				
425.	.3181-03	.1207-03	.5699-04	.5390-04	.4985-04	.4955-04	.4953-04	.4701-04
426.	.4383-04	.4045-04	.3779-04	.3438-04				
427.	.1268-03	.6472-04	.3347-04	.3276-04	.3010-04	.2873-04	.2817-04	.2651-04
428.	.2469-04	.2283-04	.2137-04	.1945-04				
429.	.2179-04	.1723-04	.1082-04	.1164-04	.1115-04	.1029-04	.9732-05	.9029-05
430.	.8422-05	.7867-05	.7421-05	.6781-05				
431.	.4715-05	.4372-05	.3127-05	.3655-05	.3778-05	.3623-05	.3406-05	.3159-05
432.	.2971-05	.2824-05	.2703-05	.2490-05				
433.	.7614-06	.7629-06	.7576-06	.7022-06	.7635-06	.7762-06	.7527-06	.7133-06
434.	.6856-06	.6723-06	.6603-06	.6264-06				
435.	.9681-07	.6679-07	.4873-07	.5931-07	.6558-07	.6856-07	.6792-07	.6558-07
436.	.6412-07	.6421-07	.6435-07	.6263-07				
437.	.4840-07	.3321-07	.2419-07	.2942-07	.3249-07	.3391-07	.3355-07	.3237-07
438.	.3163-07	.3167-07	.3174-07	.3092-07				
439.	.2419-07	.1659-07	.1207-07	.1467-07	.1621-07	.1692-07	.1676-07	.1618-07
440.	.1581-07	.1583-07	.1587-07	.1546-07				
441.	.9679-08	.6637-08	.4827-08	.5868-08	.6478-08	.6763-08	.6695-08	.6460-08
442.	.6315-08	.6326-08	.6341-08	.6178-08				
443.	.4838-08	.3319-08	.2414-08	.2935-08	.3240-08	.3382-08	.3349-08	.3232-08
444.	.3159-08	.3163-08	.3171-08	.3090-08				
445.	.9924-04	.3766-04	.1778-04	.1682-04	.1555-04	.1546-04	.1545-04	.1467-04
446.	.1368-04	.1262-04	.1179-04	.1073-04				
447.	.3957-04	.2019-04	.1044-04	.1022-04	.9392-05	.8964-05	.8788-05	.8272-05
448.	.7704-05	.7124-05	.6668-05	.6068-05				
449.	.6800-05	.5376-05	.3377-05	.3632-05	.3478-05	.3210-05	.3036-05	.2817-05
450.	.2628-05	.2454-05	.2315-05	.2116-05				
451.	.1471-05	.1364-05	.9756-06	.1140-05	.1179-05	.1130-05	.1063-05	.9856-06
452.	.9268-06	.8812-06	.8432-06	.7796-06				
453.	.2376-06	.2380-06	.1802-06	.2191-06	.2382-06	.2422-06	.2348-06	.2226-06
454.	.2139-06	.2098-06	.2060-06	.1954-06				
455.	.3020-07	.2084-07	.1520-07	.1850-07	.2046-07	.2139-07	.2119-07	.2046-07
456.	.2000-07	.2003-07	.2008-07	.1954-07				
457.	.1510-07	.1036-07	.7548-08	.9180-08	.1014-07	.1058-07	.1047-07	.1010-07
458.	.9068-08	.9880-08	.9904-08	.9648-08				
459.	.7548-08	.5176-08	.3763-08	.4378-08	.5056-08	.5200-08	.5228-08	.5048-08
460.	.4932-08	.4940-08	.4952-08	.4824-08				
461.	.3029-08	.2071-08	.1506-08	.1831-08	.2021-08	.2110-08	.2089-08	.2016-08
462.	.1970-08	.1974-08	.1978-08	.1928-08				
463.	.1510-08	.1036-08	.7532-09	.9156-09	.1011-08	.1055-08	.1045-08	.1008-08
464.	.9856-09	.9868-09	.9892-09	.9640-09				
465.	.5513-04	.2092-04	.9878-05	.9342-05	.8640-05	.8589-05	.8584-05	.8149-05
466.	.7590-05	.7011-05	.6551-05	.5960-05				
467.	.2198-04	.1122-04	.5802-05	.5678-05	.5218-05	.4980-05	.4882-05	.4596-05
468.	.4280-05	.3958-05	.3704-05	.3371-05				
469.	.3778-05	.2987-05	.1876-05	.2018-05	.1932-05	.1783-05	.1687-05	.1565-05
470.	.1460-05	.1364-05	.1286-05	.1175-05				
471.	.8173-06	.7578-06	.5420-06	.6336-06	.6549-06	.6280-06	.5904-06	.5476-06
472.	.5149-06	.4896-06	.4684-06	.4331-06				
473.	.1320-06	.1322-06	.1001-06	.1217-06	.1323-06	.1345-06	.1305-06	.1236-06
474.	.1188-06	.1165-06	.1144-06	.1086-06				
475.	.1678-07	.1158-07	.8447-08	.1028-07	.1137-07	.1188-07	.1177-07	.1137-07
476.	.1111-07	.1113-07	.1115-07	.1086-07				
477.	.8389-08	.5756-08	.4193-08	.5100-08	.5631-08	.5878-08	.5816-08	.5611-08
478.	.5482-08	.5489-08	.5502-08	.5360-08				
479.	.4193-08	.2876-08	.2092-08	.2542-08	.2809-08	.2933-08	.2904-08	.2804-08
480.	.2740-08	.2744-08	.2751-08	.2680-08				
481.	.1678-08	.1150-08	.8367-09	.1017-08	.1123-08	.1172-08	.1160-08	.1120-08
482.	.1095-08	.1096-08	.1099-08	.1071-08				
483.	.8387-09	.5753-09	.4184-09	.5087-09	.5616-09	.5862-09	.5804-09	.5602-09
484.	.5476-09	.5482-09	.5496-09	.5356-09				
485.	.3596-04	.1365-04	.6442-05	.6093-05	.5635-05	.5601-05	.5599-05	.5314-05
486.	.4955-05	.4572-05	.4272-05	.3887-05				

487.	.1434-04	.7316-05	.3764-05	.3703-05	.3403-05	.3248-05	.3184-05	.2997-05
488.	.2791-05	.2501-05	.2416-05	.2199-05				
489.	.2464-05	.1948-05	.1224-05	.1316-05	.1260-05	.1163-05	.1100-05	.1021-05
490.	.9520-06	.8693-06	.8338-06	.7665-06				
491.	.5330-06	.4942-06	.3535-06	.4132-06	.4271-06	.4696-06	.3851-06	.3571-06
492.	.3358-06	.3193-06	.3055-06	.2825-06				
493.	.8607-07	.8625-07	.6529-07	.7938-07	.8630-07	.8774-07	.8509-07	.8064-07
494.	.7751-07	.7650-07	.7464-07	.7081-07				
495.	.1094-07	.7551-08	.5569-08	.6704-08	.7413-08	.7751-08	.7678-08	.7413-08
496.	.7248-08	.7258-08	.7274-08	.7080-08				
497.	.5471-08	.3754-08	.2735-08	.3326-08	.3672-08	.3833-08	.3793-08	.3659-08
498.	.3575-08	.3580-08	.3588-08	.3496-08				
499.	.2735-08	.1875-08	.1364-08	.1658-08	.1832-08	.1913-08	.1894-08	.1829-08
500.	.1787-08	.1790-08	.1794-08	.1748-08				
501.	.1094-08	.7503-09	.5457-09	.6633-09	.7323-09	.7645-09	.7568-09	.7303-09
502.	.7139-09	.7151-09	.7168-09	.6984-09				
503.	.5470-09	.3752-09	.2729-09	.3317-09	.3662-09	.3823-09	.3786-09	.3654-09
504.	.3571-09	.3575-09	.3584-09	.3493-09				
505.	.2612-04	.9912-05	.4679-05	.4425-05	.4093-05	.4068-05	.4066-05	.3860-05
506.	.3599-05	.3321-05	.3103-05	.2823-05				
507.	.1041-04	.5314-05	.2748-05	.2689-05	.2472-05	.2359-05	.2313-05	.2177-05
508.	.2027-05	.1875-05	.1755-05	.1597-05				
509.	.1789-05	.1415-05	.8887-06	.9558-06	.9152-06	.8446-06	.7991-06	.7414-06
510.	.6915-06	.6459-06	.6093-06	.5567-06				
511.	.3872-06	.3589-06	.2567-06	.3001-06	.3102-06	.2975-06	.2797-06	.2594-06
512.	.2439-06	.2319-06	.2219-06	.2052-06				
513.	.6252-07	.6264-07	.4742-07	.5765-07	.6260-07	.6373-07	.6180-07	.5857-07
514.	.5629-07	.5520-07	.5421-07	.5143-07				
515.	.7948-08	.5484-08	.4001-08	.4869-08	.5384-08	.5629-08	.5577-08	.5384-08
516.	.5264-08	.5272-08	.5283-08	.5142-08				
517.	.3974-08	.2726-08	.1986-08	.2416-08	.2667-08	.2784-08	.2755-08	.2658-08
518.	.2597-08	.2600-08	.2606-08	.2539-08				
519.	.1986-08	.1362-08	.9906-09	.1204-08	.1331-08	.1389-08	.1376-08	.1328-08
520.	.1298-08	.1306-08	.1303-08	.1269-08				
521.	.7947-09	.5449-09	.3963-09	.4818-09	.5319-09	.5553-09	.5497-09	.5304-09
522.	.5185-09	.5194-09	.5206-09	.5073-09				
523.	.3973-09	.2725-09	.1982-09	.2409-09	.2660-09	.2777-09	.2749-09	.2654-09
524.	.2594-09	.2597-09	.2603-09	.2537-09				
525.	.1905-04	.7533-05	.3556-05	.3363-05	.3110-05	.3092-05	.3090-05	.2934-05
526.	.2735-05	.2524-05	.2358-05	.2146-05				
527.	.7914-05	.4336-05	.2089-05	.2044-05	.1878-05	.1793-05	.1758-05	.1654-05
528.	.1541-05	.1425-05	.1334-05	.1214-05				
529.	.1366-05	.1075-05	.6754-06	.7264-06	.6955-06	.6419-06	.6073-06	.5634-06
530.	.5255-06	.4909-06	.4630-06	.4231-06				
531.	.2942-06	.2728-06	.1951-06	.2281-06	.2358-06	.2261-06	.2126-06	.1971-06
532.	.1854-06	.1762-06	.1686-06	.1559-06				
533.	.4751-07	.4761-07	.3604-07	.4382-07	.4764-07	.4843-07	.4697-07	.4451-07
534.	.4278-07	.4195-07	.4120-07	.3909-07				
535.	.6041-08	.4168-08	.3041-08	.3701-08	.4092-08	.4278-08	.4238-08	.4092-08
536.	.4001-08	.4006-08	.4015-08	.3908-08				
537.	.3020-08	.2072-08	.1510-08	.1836-08	.2027-08	.2116-08	.2094-08	.2020-08
538.	.1974-08	.1976-08	.1981-08	.1930-08				
539.	.1510-08	.1035-08	.7530-09	.9152-09	.1011-08	.1056-08	.1046-08	.1010-08
540.	.9864-09	.9880-09	.9904-09	.9648-09				
541.	.6040-09	.4142-09	.3012-09	.3662-09	.4042-09	.4220-09	.4178-09	.4031-09
542.	.3941-09	.3947-09	.3957-09	.3855-09				
543.	.3019-09	.2071-09	.1506-09	.1831-09	.2022-09	.2110-09	.2090-09	.2017-09
544.	.1971-09	.1974-09	.1978-09	.1928-09				
545.	.1590-04	.6636-05	.2849-05	.2695-05	.2492-05	.2478-05	.2476-05	.2351-05
546.	.2192-05	.2022-05	.1890-05	.1719-05				
547.	.6342-05	.3236-05	.1674-05	.1638-05	.1505-05	.1437-05	.1408-05	.1326-05
548.	.1235-05	.1142-05	.1069-05	.9724-06				
549.	.1090-05	.8615-06	.5412-06	.5821-06	.5573-06	.5144-06	.4866-06	.4515-06
550.	.4211-06	.3933-06	.3710-06	.3390-06				
551.	.2358-06	.2186-06	.1563-06	.1828-06	.1889-06	.1812-06	.1703-06	.1579-06
552.	.1485-06	.1412-06	.1351-06	.1249-06				
553.	.3807-07	.3815-07	.2888-07	.3511-07	.3817-07	.3881-07	.3763-07	.3567-07
554.	.3428-07	.3362-07	.3301-07	.3132-07				
555.	.4840-08	.3340-08	.2437-08	.2965-08	.3279-08	.3428-08	.3396-08	.3279-08
556.	.3206-08	.3219-08	.3217-08	.3131-08				
557.	.2420-08	.1660-08	.1210-08	.1471-08	.1624-08	.1696-08	.1678-08	.1619-08
558.	.1581-08	.1583-08	.1587-08	.1546-08				
559.	.1210-08	.8295-09	.6034-09	.7333-09	.8103-09	.8462-09	.8378-09	.8090-09
560.	.7904-09	.7917-09	.7936-09	.7731-09				
561.	.4840-09	.3319-09	.2413-09	.2934-09	.3239-09	.3381-09	.3347-09	.3230-09
562.	.3158-09	.3163-09	.3171-09	.3089-09				
563.	.2419-09	.1660-09	.1207-09	.1467-09	.1620-09	.1691-09	.1674-09	.1616-09
564.	.1579-09	.1581-09	.1585-09	.1545-09				
565.	100.	4	16	12				
566.	100.	200.	500.	1000.	2000.	5000.	10000.	20000.
567.	50000.	100000.						
568.	.1462-07	.2420-05	.2705-05	.3583-05	.3823-05	.3473-05	.3110-05	.2824-05
569.	.2642-05	.2513-05	.2404-05	.2215-05				
570.	.1295-07	.2427-05	.2817-05	.3804-05	.4149-05	.3824-05	.3427-05	.3112-05
571.	.2915-05	.2779-05	.2664-05	.2459-05				
572.	.8391-08	.1821-05	.2256-05	.3156-05	.3568-05	.3400-05	.3079-05	.2814-05
573.	.2654-05	.2550-05	.2468-05	.2295-05				
574.	.7159-08	.1107-05	.1438-05	.2079-05	.2449-05	.2431-05	.2235-05	.2059-05
575.	.1956-05	.1904-05	.1855-05	.1740-05				
576.	.1208-07	.6279-06	.7849-06	.1133-05	.1354-05	.1390-05	.1309-05	.1224-05
577.	.1176-05	.1161-05	.1145-05	.1087-05				
578.	.1057-06	.3592-06	.3735-06	.5094-06	.5891-06	.6003-06	.5713-06	.5386-06
579.	.5203-06	.5160-06	.5115-06	.4899-06				
580.	.1979-06	.2545-06	.2242-06	.2895-06	.3246-06	.3201-06	.3135-06	.2956-06
581.	.2846-06	.2805-06	.2766-06	.2642-06				
582.	.1750-06	.1621-06	.1285-06	.1595-06	.1749-06	.1760-06	.1600-06	.1594-06
583.	.1529-06	.1500-06	.1474-06	.1403-06				
584.	.9586-07	.7581-07	.5029-07	.0794-07	.7518-07	.7338-07	.7063-07	.6673-07

585.	.6397-07	.6250-07	.6127-07	.5817-07				
586.	.5059-07	.3883-07	.2832-07	.3391-07	.3636-07	.3644-07	.3513-07	.3321-07
587.	.3183-07	.3109-07	.3246-07	.2891-07				
588.	.4566-08	.7576-06	.8440-06	.1118-05	.1193-05	.1084-05	.9704-06	.8812-06
589.	.8244-06	.7840-06	.7500-06	.6912-06				
590.	.4040-08	.7572-06	.8788-06	.1188-05	.1294-05	.1193-05	.1069-05	.9708-06
591.	.9096-06	.8672-06	.8312-06	.7672-06				
592.	.2618-08	.5680-06	.7040-06	.9848-06	.1113-05	.1061-05	.9608-06	.8780-06
593.	.8280-06	.7972-06	.7700-06	.7160-06				
594.	.2234-08	.3453-06	.4488-06	.6488-06	.7640-06	.7584-06	.6972-06	.6424-06
595.	.6104-06	.5940-06	.5788-06	.5428-06				
596.	.3770-08	.1959-06	.2449-06	.3534-06	.4224-06	.4336-06	.4084-06	.3818-06
597.	.3670-06	.3623-06	.3572-06	.3392-06				
598.	.3299-07	.1121-06	.1165-06	.1589-06	.1838-06	.1873-06	.1782-06	.1680-06
599.	.1623-06	.1610-06	.1596-06	.1528-06				
600.	.6176-07	.7952-07	.6996-07	.9032-07	.1013-06	.1024-06	.9780-07	.9224-07
601.	.6880-07	.8752-07	.8636-07	.8244-07				
602.	.5460-07	.5056-07	.4308-07	.4976-07	.5456-07	.5492-07	.5268-07	.4972-07
603.	.4772-07	.4680-07	.4600-07	.4376-07				
604.	.2978-07	.2365-07	.1756-07	.2120-07	.2283-07	.2290-07	.2204-07	.2082-07
605.	.1996-07	.1950-07	.1912-07	.1815-07				
606.	.1578-07	.1212-07	.8836-08	.1058-07	.1134-07	.1137-07	.1096-07	.1036-07
607.	.9932-08	.9700-08	.9504-08	.9020-08				
608.	.2533-08	.4209-06	.4689-06	.6211-06	.6627-06	.6020-06	.5391-06	.4896-06
609.	.4580-06	.4356-06	.4167-06	.3840-06				
610.	.2244-08	.4207-06	.4882-06	.6602-06	.7191-06	.6629-06	.5940-06	.5393-06
611.	.5053-06	.4818-06	.4618-06	.4262-06				
612.	.1454-08	.3156-06	.3911-06	.5471-06	.6184-06	.5893-06	.5338-06	.4878-06
613.	.4600-06	.4429-06	.4278-06	.3978-06				
614.	.1241-08	.1910-06	.2493-06	.3604-06	.4244-06	.4213-06	.3873-06	.3569-06
615.	.3391-06	.3300-06	.3216-06	.3016-06				
616.	.2094-08	.1088-06	.1360-06	.1964-06	.2347-06	.2409-06	.2269-06	.2121-06
617.	.2039-06	.2013-06	.1985-06	.1884-06				
618.	.1833-07	.6227-07	.6473-07	.8829-07	.1021-06	.1040-06	.9902-07	.9336-07
619.	.9018-07	.8944-07	.8867-07	.8491-07				
620.	.3431-07	.4418-07	.3887-07	.5018-07	.5627-07	.5687-07	.5433-07	.5124-07
621.	.4933-07	.4862-07	.4790-07	.4580-07				
622.	.3033-07	.2809-07	.2227-07	.2764-07	.3031-07	.3051-07	.2927-07	.2762-07
623.	.2651-07	.2600-07	.2556-07	.2431-07				
624.	.1655-07	.1314-07	.9756-08	.1178-07	.1268-07	.1272-07	.1224-07	.1157-07
625.	.1109-07	.1083-07	.1062-07	.1008-07				
626.	.8769-08	.6731-08	.4909-08	.5878-08	.6302-08	.6316-08	.6089-08	.5756-08
627.	.5518-08	.5389-08	.5280-08	.5011-08				
628.	.1652-08	.2745-06	.3058-06	.4051-06	.4322-06	.3926-06	.3516-06	.3193-06
629.	.2987-06	.2841-06	.2717-06	.2504-06				
630.	.1464-08	.2743-06	.3184-06	.4306-06	.4690-06	.4323-06	.3874-06	.3517-06
631.	.3296-06	.3142-06	.3012-06	.2780-06				
632.	.9486-09	.2058-06	.2551-06	.3568-06	.4033-06	.3843-06	.3481-06	.3181-06
633.	.3000-06	.2888-06	.2790-06	.2594-06				
634.	.8093-09	.1251-06	.1626-06	.2351-06	.2768-06	.2748-06	.2526-06	.2328-06
635.	.2212-06	.2152-06	.2097-06	.1967-06				
636.	.1366-08	.7099-07	.8872-07	.1281-06	.1530-06	.1571-06	.1480-06	.1383-06
637.	.1330-06	.1313-06	.1294-06	.1229-06				
638.	.1195-07	.4661-07	.4222-07	.5758-07	.6659-07	.6786-07	.6458-07	.6088-07
639.	.5881-07	.5833-07	.5783-07	.5538-07				
640.	.2238-07	.2881-07	.2535-07	.3272-07	.3670-07	.3709-07	.3543-07	.3342-07
641.	.3217-07	.3171-07	.3129-07	.2987-07				
642.	.1978-07	.1832-07	.1452-07	.1803-07	.1977-07	.1990-07	.1909-07	.1801-07
643.	.1729-07	.1696-07	.1667-07	.1586-07				
644.	.1079-07	.8570-08	.6362-08	.7680-08	.8272-08	.8296-08	.7984-08	.7543-08
645.	.7232-08	.7065-08	.6926-08	.6575-08				
646.	.5719-08	.4390-08	.3201-08	.3833-08	.4110-08	.4119-08	.3971-08	.3754-08
647.	.3599-08	.3514-08	.3443-08	.3268-08				
648.	.1200-08	.1994-06	.2221-06	.2942-06	.3139-06	.2852-06	.2554-06	.2319-06
649.	.2169-06	.2063-06	.1974-06	.1819-06				
650.	.1063-08	.1993-06	.2313-06	.3127-06	.3406-06	.3140-06	.2814-06	.2555-06
651.	.2394-06	.2282-06	.2187-06	.2019-06				
652.	.6889-09	.1495-06	.1853-06	.2592-06	.2929-06	.2792-06	.2528-06	.2311-06
653.	.2179-06	.2098-06	.2026-06	.1884-06				
654.	.5878-09	.9086-07	.1181-06	.1707-06	.2011-06	.1996-06	.1835-06	.1691-06
655.	.1606-06	.1563-06	.1523-06	.1428-06				
656.	.9921-09	.5156-07	.6444-07	.9301-07	.1112-06	.1141-06	.1075-06	.1005-06
657.	.9657-07	.9534-07	.9461-07	.8925-07				
658.	.8681-08	.2949-07	.3066-07	.4182-07	.4837-07	.4928-07	.4691-07	.4422-07
659.	.4272-07	.4237-07	.4200-07	.4022-07				
660.	.1625-07	.2093-07	.1841-07	.2377-07	.2665-07	.2694-07	.2574-07	.2427-07
661.	.2337-07	.2303-07	.2273-07	.2169-07				
662.	.1437-07	.1331-07	.1055-07	.1309-07	.1436-07	.1445-07	.1386-07	.1308-07
663.	.1256-07	.1232-07	.1211-07	.1152-07				
664.	.7838-08	.6224-08	.4621-08	.5578-08	.6008-08	.6025-08	.5799-08	.5479-08
665.	.5253-08	.5132-08	.5031-08	.4776-08				
666.	.4150-08	.3188-08	.2325-08	.2784-08	.2985-08	.2992-08	.2884-08	.2726-08
667.	.2614-08	.2553-08	.2501-08	.2374-08				
668.	.9120-09	.1515-06	.1688-06	.2236-06	.2386-06	.2167-06	.1941-06	.1762-06
669.	.1649-06	.1568-06	.1500-06	.1382-06				
670.	.8080-09	.1514-06	.1758-06	.2377-06	.2589-06	.2386-06	.2138-06	.1942-06
671.	.1819-06	.1734-06	.1662-06	.1534-06				
672.	.5236-09	.1136-06	.1408-06	.1970-06	.2226-06	.2122-06	.1922-06	.1756-06
673.	.1656-06	.1594-06	.1540-06	.1432-06				
674.	.4467-09	.6906-07	.8976-07	.1298-06	.1528-06	.1517-06	.1394-06	.1285-06
675.	.1221-06	.1188-06	.1158-06	.1086-06				
676.	.7540-09	.3918-07	.4898-07	.7069-07	.8448-07	.8672-07	.8168-07	.7637-07
677.	.7339-07	.7246-07	.7145-07	.6783-07				
678.	.6598-08	.2242-07	.2330-07	.3178-07	.3676-07	.3746-07	.3565-07	.3361-07
679.	.3246-07	.3220-07	.3192-07	.3057-07				
680.	.1235-07	.1590-07	.1399-07	.1806-07	.2026-07	.2047-07	.1956-07	.1845-07
681.	.1776-07	.1750-07	.1727-07	.1649-07				
682.	.1092-07	.1012-07	.8016-08	.9952-08	.1091-07	.1098-07	.1054-07	.9944-08

683.	.9544-06	.9360-08	.9200-08	.8752-08			
684.	.5997-08	.4730-08	.3312-08	.4239-08	.4566-08	.4579-08	.4407-08
685.	.3992-08	.3900-08	.3823-08	.3630-08			.4164-08
686.	.3157-08	.2423-08	.1767-08	.2116-08	.2269-08	.2274-08	.2192-08
687.	.1986-08	.1941-08	.1901-08	.1804-08			.2072-08
688.	.7308-09	.1214-06	.1353-06	.1792-06	.1912-06	.1737-06	.1555-06
689.	.1321-06	.1256-06	.1202-06	.1108-06			.1412-06
690.	.6474-09	.1213-06	.1458-06	.1904-06	.2074-06	.1912-06	.1713-06
691.	.1450-06	.1390-06	.1332-06	.1229-06			.1556-06
692.	.4196-09	.9103-07	.1128-06	.1578-06	.1784-06	.1730-06	.1540-06
693.	.1327-06	.1278-06	.1234-06	.1147-06			.1407-06
694.	.3579-09	.5533-07	.7192-07	.1040-06	.1224-06	.1215-06	.1117-06
695.	.9782-07	.9519-07	.9278-07	.8699-07			.1029-06
696.	.6042-09	.3140-07	.3924-07	.5664-07	.6769-07	.6949-07	.6545-07
697.	.5881-07	.5606-07	.5725-07	.5435-07			.6119-07
698.	.5287-08	.1796-07	.1067-07	.2547-07	.2946-07	.3001-07	.2856-07
699.	.2601-07	.2589-07	.2558-07	.2449-07			.2693-07
700.	.9897-08	.1274-07	.1121-07	.1447-07	.1623-07	.1640-07	.1567-07
701.	.1423-07	.1403-07	.1364-07	.1321-07			.1478-07
702.	.8750-08	.8153-08	.6423-08	.7974-08	.8744-08	.8801-08	.8442-08
703.	.7647-08	.7500-08	.7372-08	.7013-08			.7968-08
704.	.4773-08	.3790-08	.2814-08	.3397-08	.3659-08	.3669-08	.3531-08
705.	.3199-08	.3125-08	.3063-08	.2908-08			.3337-08
706.	.2529-08	.1942-08	.1696-08	.1696-08	.1818-08	.1822-08	.1756-08
707.	.1592-08	.1554-08	.1523-08	.1446-08			.1660-08
708.	.1513-07	.2443-05	.2714-05	.3591-05	.3829-05	.3479-05	.3115-05
709.	.2646-05	.2517-05	.2406-05	.2218-05			.2828-05
710.	.1438-07	.2460-05	.2838-05	.3829-05	.4165-05	.3838-05	.3441-05
711.	.2927-05	.2791-05	.2674-05	.2468-05			.3124-05
712.	.1340-07	.1919-05	.2321-05	.3221-05	.3621-05	.3442-05	.3119-05
713.	.2687-05	.2587-05	.2497-05	.2322-05			.2851-05
714.	.2760-07	.1262-05	.1537-05	.2177-05	.2528-05	.2495-05	.2296-05
715.	.2009-05	.1953-05	.1901-05	.1781-05			.2115-05
716.	.2659-06	.8981-06	.9335-06	.1273-05	.1471-05	.1490-05	.1406-05
717.	.1262-05	.1239-05	.1218-05	.1153-05			.1317-05
718.	.7291-06	.6632-06	.5214-06	.6450-06	.7050-06	.7099-06	.6803-06
719.	.6163-06	.6038-06	.5931-06	.5636-06			.6421-06
720.	.4917-06	.3844-06	.2835-06	.3412-06	.3667-06	.3676-06	.3538-06
721.	.3205-06	.3129-06	.3067-06	.2910-06			.3344-06
722.	.2522-06	.1912-06	.1385-06	.1654-06	.1771-06	.1777-06	.1715-06
723.	.1556-06	.1521-06	.1498-06	.1415-06			.1623-06
724.	.9241-07	.6987-07	.5050-07	.6031-07	.6469-07	.6514-07	.6305-07
725.	.5741-07	.5621-07	.5521-07	.5255-07			.5977-07
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727.	.2628-07	.2579-07	.2543-07	.2424-07			.2731-07
728.	.4720-08	.7612-06	.8468-06	.1120-05	.1195-05	.1086-05	.9720-05
729.	.8256-06	.7852-06	.7508-06	.6920-06			.8824-06
730.	.4480-08	.7676-06	.8856-06	.1195-05	.1300-05	.1198-05	.1074-05
731.	.9132-06	.8708-08	.8344-06	.7700-06			.9748-06
732.	.4180-08	.5988-06	.7240-06	.1005-05	.1130-05	.1074-05	.9732-06
733.	.8384-06	.8072-06	.7792-06	.7244-06			.8896-06
734.	.8612-08	.3936-06	.4796-06	.6792-06	.7888-06	.7784-06	.7164-06
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736.	.8296-07	.2802-06	.2912-06	.3972-06	.4588-06	.4648-06	.4388-06
737.	.3936-06	.3867-06	.3799-06	.3596-06			.4108-06
738.	.2275-06	.2069-06	.1627-06	.2012-06	.2200-06	.2212-06	.2122-06
739.	.1923-06	.1884-06	.1850-06	.1758-06			.2003-06
740.	.1534-06	.1199-06	.8844-07	.1064-06	.1144-06	.1147-06	.1104-06
741.	.1000-06	.9764-07	.9568-07	.9080-07			.1043-06
742.	.7868-07	.5964-07	.4320-07	.5160-07	.5524-07	.5544-07	.5352-07
743.	.4056-07	.4744-07	.4648-07	.4416-07			.5064-07
744.	.2803-07	.2180-07	.1576-07	.1882-07	.2018-07	.2032-07	.1967-07
745.	.1791-07	.1754-07	.1722-07	.1640-07			.1865-07
746.	.1208-07	.9796-08	.7696-08	.8492-08	.9140-08	.9244-08	.8968-08
747.	.8200-08	.8048-08	.7924-08	.7564-08			.8520-08
748.	.2622-08	.4229-06	.4704-06	.6224-06	.6638-06	.6031-06	.5400-06
749.	.4587-06	.4362-06	.4171-06	.3844-06			.4902-06
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751.	.5073-06	.4838-06	.4636-06	.4278-06			.5416-06
752.	.2322-08	.3327-06	.4622-06	.5582-06	.6276-06	.5967-06	.5407-06
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754.	.4704-08	.2107-06	.2664-06	.3773-06	.4382-06	.4324-06	.3980-06
755.	.3482-06	.3384-06	.3296-06	.3087-06			.3667-06
756.	.4609-07	.1557-06	.1618-06	.2206-06	.2549-06	.2582-06	.2438-06
757.	.2107-06	.2146-06	.2110-06	.1998-06			.2282-06
758.	.1264-06	.1150-06	.9938-07	.1118-06	.1222-06	.1229-06	.1179-06
759.	.1068-06	.1047-06	.1028-06	.9769-07			.1113-06
760.	.8522-07	.6662-07	.4913-07	.5913-07	.6356-07	.6371-07	.6133-07
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763.	.2698-07	.2636-07	.2582-07	.2453-07			.2813-07
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765.	.9951-08	.9742-08	.9569-08	.9109-08			.1036-07
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767.	.4556-08	.4471-08	.4402-08	.4202-08			.4733-08
768.	.1710-08	.2758-06	.3068-06	.4059-06	.4329-06	.3933-06	.3522-06
769.	.2991-06	.2845-06	.2720-06	.2507-06			.3197-06
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772.	.1514-08	.2170-06	.2623-06	.3641-06	.4093-06	.3891-06	.3526-06
773.	.3038-06	.2925-06	.2623-06	.2625-06			.3223-06
774.	.3120-08	.1426-06	.1738-06	.2461-06	.2858-06	.2820-06	.2596-06
775.	.2271-06	.2207-06	.2149-06	.2013-06			.2391-06
776.	.3006-07	.1015-06	.1655-06	.1439-06	.1662-06	.1684-06	.1599-06
777.	.1426-06	.1401-06	.1376-06	.1303-06			.1488-06
778.	.8242-07	.7497-07	.5894-07	.7291-07	.7979-07	.8014-07	.7690-07
779.	.6967-07	.6823-07	.6704-07	.6371-07			.7258-07
780.	.5558-07	.4345-07	.3204-07	.3857-07	.4145-07	.4155-07	.4000-07
							.3780-07

781.	.3623-07	.3538-07	.3467-07	.3290-07				
782.	.2851-07	.2161-07	.1565-07	.1870-07	.2001-07	.2009-07	.1939-07	.1835-07
783.	.1759-07	.1719-07	.1684-07	.1600-07				
784.	.1045-07	.7899-08	.5709-08	.6817-08	.7313-08	.7364-08	.7128-08	.6757-08
785.	.6490-08	.6354-08	.6241-08	.5941-08				
786.	.4667-08	.3549-08	.2571-08	.3077-08	.3312-08	.3349-08	.3249-08	.3087-08
787.	.2971-08	.2916-08	.2871-08	.2741-08				
788.	.1242-08	.2003-06	.2228-06	.2948-06	.3144-06	.2857-06	.2558-06	.2322-06
789.	.2173-06	.2066-06	.1976-06	.1821-06				
790.	.1179-08	.2020-06	.2331-06	.3144-06	.3420-06	.3152-06	.2825-06	.2565-06
791.	.2403-06	.2292-06	.2196-06	.2026-06				
792.	.1100-08	.1576-06	.1905-06	.2644-06	.2973-06	.2826-06	.2561-06	.2341-06
793.	.2206-06	.2124-06	.2051-06	.1906-06				
794.	.2266-08	.1036-06	.1262-06	.1787-06	.2076-06	.2048-06	.1885-06	.1737-06
795.	.1649-06	.1603-06	.1561-06	.1462-06				
796.	.2183-07	.7374-07	.7664-07	.1045-06	.1207-06	.1223-06	.1155-06	.1081-06
797.	.1036-06	.1018-06	.9997-07	.9463-07				
798.	.5986-07	.5445-07	.4281-07	.5296-07	.5788-07	.5821-07	.5585-07	.5272-07
799.	.5060-07	.4958-07	.4869-07	.4627-07				
800.	.4037-07	.3156-07	.2327-07	.2801-07	.3011-07	.3018-07	.2905-07	.2745-07
801.	.2632-07	.2569-07	.2518-07	.2389-07				
802.	.2071-07	.1569-07	.1137-07	.1358-07	.1454-07	.1459-07	.1408-07	.1333-07
803.	.1278-07	.1248-07	.1223-07	.1162-07				
804.	.7587-08	.5737-08	.4146-08	.4952-08	.5312-08	.5348-08	.5177-08	.4907-08
805.	.4714-08	.4615-08	.4533-08	.4315-08				
806.	.3389-08	.2578-08	.1867-08	.2235-08	.2405-08	.2433-08	.2360-08	.2242-08
807.	.2158-08	.2118-08	.2085-08	.1991-08				
808.	.9440-09	.1522-06	.1694-06	.2241-06	.2390-06	.2171-06	.1944-06	.1765-06
809.	.1651-06	.1572-06	.1502-06	.1384-06				
810.	.8906-07	.1530-06	.1771-06	.2390-06	.2599-06	.2395-06	.2147-06	.1950-06
811.	.1026-06	.1742-06	.1669-06	.1540-06				
812.	.8360-09	.1198-06	.1448-06	.2010-06	.2259-06	.2148-06	.1946-06	.1779-06
813.	.1677-06	.1614-06	.1558-06	.1449-06				
814.	.1722-08	.7873-07	.9592-07	.1358-06	.1578-06	.1557-06	.1433-06	.1320-06
815.	.1254-06	.1218-06	.1186-06	.1111-06				
816.	.1659-07	.5604-07	.5825-07	.7943-07	.9176-07	.9296-07	.8776-07	.8216-07
817.	.7873-07	.7734-07	.7598-07	.7192-07				
818.	.4550-07	.4138-07	.3254-07	.4025-07	.4399-07	.4424-07	.4245-07	.4006-07
819.	.3046-07	.3768-07	.3701-07	.3517-07				
820.	.3068-07	.2398-07	.1769-07	.2129-07	.2288-07	.2294-07	.2208-07	.2086-07
821.	.2006-07	.1953-07	.1914-07	.1016-07				
822.	.1574-07	.1193-07	.8640-08	.1032-07	.1105-07	.1109-07	.1070-07	.1013-07
823.	.9712-08	.9488-08	.9296-08	.8832-08				
824.	.5766-08	.4360-08	.3151-08	.3763-08	.4037-08	.4065-08	.3934-08	.3730-08
825.	.3582-08	.3507-08	.3445-08	.3279-08				
826.	.2576-08	.1959-08	.1419-08	.1698-08	.1828-08	.1849-08	.1794-08	.1704-08
827.	.1640-08	.1610-08	.1585-08	.1513-08				
828.	.7564-09	.1220-06	.1337-06	.1796-06	.1915-06	.1740-06	.1558-06	.1414-06
829.	.1323-06	.1258-06	.1203-06	.1109-06				
830.	.7179-09	.1230-06	.1419-06	.1915-06	.2083-06	.1919-06	.1721-06	.1562-06
831.	.1463-06	.1396-06	.1337-06	.1234-06				
832.	.6699-09	.9596-07	.1160-06	.1610-06	.1810-06	.1721-06	.1560-06	.1426-06
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837.	.6308-07	.6197-07	.6088-07	.5763-07				
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839.	.3081-07	.3019-07	.2965-07	.2818-07				
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853.	.2751-05	.2645-05	.2551-05	.2371-05				
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9 ELT DRATFL,1,730706, 71752

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3.	100.	200.		500.						
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67.	.7103-05	.4378-05	.2417-05	.2435-05	.2249-05	.2103-05	.2035-05	.1904-05		
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69.	.7996-06	.7030-06	.4803-06	.5457-06	.5493-06	.5190-06	.4883-06	.4528-06		
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71.	.8126-07	.7955-07	.5987-07	.7261-07	.7862-07	.7939-07	.7670-07	.7255-07		
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73.	.1916-07	.1475-07	.1099-07	.1341-07	.1475-07	.1523-07	.1496-07	.1434-07		
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79.	.2533-08	.1957-08	.1468-08	.1803-08	.2000-08	.2091-08	.2077-08	.2010-08		
80.	.1974-08	.1990-08	.2006-08	.1967-08						
81.	.1192-08	.8961-09	.6693-09	.8207-09	.9099-09	.9516-09	.9448-09	.9151-09		
82.	.8986-09	.9054-09	.9126-09	.8946-09						
83.	.6694-09	.5046-09	.3772-09	.4626-09	.5129-09	.5365-09	.5326-09	.5159-09		
84.	.5067-09	.5106-09	.5148-09	.5046-09						
85.	.5511-04	.1307-04	.5854-05	.5579-05	.5399-05	.5638-05	.5686-05	.5435-05		
86.	.5072-05	.4680-05	.4373-05	.3982-05						
87.	.5159-05	.3180-05	.1756-05	.1768-05	.1634-05	.1527-05	.1478-05	.1383-05		
88.	.1287-05	.1194-05	.1119-05	.1019-05						
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91.	.5902-07	.5778-07	.4348-07	.5274-07	.5711-07	.5766-07	.5571-07	.5269-07		
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102.	.6526-09	.6576-09	.6628-09	.6498-09				
103.	.4862-09	.3665-09	.2740-09	.3368-09	.3725-09	.3897-09	.3868-09	.3747-09
104.	.3680-09	.3708-09	.3739-09	.3665-09				
105.	.4180-04	.9936-05	.4449-05	.4248-05	.4103-05	.4285-05	.4322-05	.4130-05
106.	.3854-05	.3557-05	.3323-05	.3026-05				
107.	.3921-05	.2417-05	.1334-05	.1344-05	.1242-05	.1161-05	.1123-05	.1051-05
108.	.9784-06	.9072-06	.6504-06	.7742-06				
109.	.4414-06	.3801-06	.2651-06	.3012-06	.3032-06	.2865-06	.2695-06	.2499-06
110.	.2344-06	.2216-06	.2111-06	.1345-06				
111.	.4486-07	.4391-07	.3305-07	.4086-07	.4340-07	.4382-07	.4234-07	.4005-07
112.	.3843-07	.3760-07	.3686-07	.3494-07				
113.	.1059-07	.8144-08	.6066-08	.7465-08	.8144-08	.8408-08	.8256-08	.7918-08
114.	.7694-08	.7648-08	.7608-08	.7435-08				
115.	.4906-08	.3687-08	.2753-08	.3574-08	.3737-08	.3898-08	.3858-08	.3726-08
116.	.3647-08	.3660-08	.3674-08	.3582-08				
117.	.2634-08	.1978-08	.1476-08	.1818-08	.2006-08	.2098-08	.2082-08	.2015-08
118.	.1977-08	.1990-08	.2003-08	.1961-08				
119.	.1399-08	.1080-08	.8104-09	.9952-09	.1104-08	.1154-08	.1146-08	.1110-08
120.	.1090-08	.1098-08	.1107-08	.1086-08				
121.	.6581-09	.4946-09	.3694-09	.4538-09	.5022-09	.5253-09	.5215-09	.5051-09
122.	.4967-09	.4998-09	.5038-09	.4938-09				
123.	.3695-09	.2786-09	.2082-09	.2554-09	.2831-09	.2962-09	.2940-09	.2848-09
124.	.2797-09	.2810-09	.2842-09	.2786-09				
125.	.3356-04	.7962-05	.3565-05	.3397-05	.3288-05	.3433-05	.3463-05	.3310-05
126.	.3086-05	.2850-05	.2663-05	.2425-05				
127.	.3142-05	.1937-05	.1069-05	.1077-05	.9949-06	.9361-06	.9000-06	.8423-06
128.	.7847-06	.7269-06	.6814-06	.6204-06				
129.	.3537-06	.3110-06	.2124-06	.2413-06	.2429-06	.2296-06	.2160-06	.2003-06
130.	.1878-06	.1776-06	.1692-06	.1558-06				
131.	.3594-07	.3519-07	.2648-07	.3212-07	.3478-07	.3512-07	.3392-07	.3209-07
132.	.3079-07	.3013-07	.2954-07	.2799-07				
133.	.8474-08	.6526-08	.4861-08	.5933-08	.6526-08	.6737-08	.6615-08	.6344-08
134.	.6165-08	.6128-08	.6096-08	.5878-08				
135.	.3931-08	.2934-08	.2206-08	.2704-08	.2994-08	.3124-08	.3092-08	.2985-08
136.	.2922-08	.2933-08	.2944-08	.2870-08				
137.	.2111-08	.1535-08	.1183-08	.1458-08	.1607-08	.1681-08	.1668-08	.1615-08
138.	.1584-08	.1594-08	.1605-08	.1571-08				
139.	.1121-08	.8654-09	.6494-09	.7974-09	.8846-09	.9250-09	.9186-09	.8891-09
140.	.8731-09	.8801-09	.8872-09	.8699-09				
141.	.5273-09	.3963-09	.2960-09	.3630-09	.4024-09	.4209-09	.4179-09	.4047-09
142.	.3974-09	.4004-09	.4037-09	.3957-09				
143.	.2961-09	.2232-09	.1669-09	.2046-09	.2269-09	.2373-09	.2356-09	.2282-09
144.	.2241-09	.2258-09	.2277-09	.2232-09				
145.	.9782-03	.2204-03	.9642-04	.9132-04	.8897-04	.9412-04	.9531-04	.9128-04
146.	.8521-04	.7860-04	.7342-04	.6688-04				
147.	.1258-04	.6273-04	.3235-04	.3168-04	.2918-04	.2792-04	.2738-04	.2578-04
148.	.2401-04	.2222-04	.2079-04	.1892-04				
149.	.2267-04	.1690-04	.1042-04	.1114-04	.1068-04	.9928-05	.9429-05	.8765-05
150.	.8182-05	.7647-05	.7219-05	.6604-05				
151.	.5035-05	.4515-05	.3142-05	.3621-05	.3706-05	.3551-05	.3354-05	.3118-05
152.	.2935-05	.2791-05	.2673-05	.2473-05				
153.	.8076-06	.8465-06	.6345-06	.7640-06	.8206-06	.8241-06	.7968-06	.7542-06
154.	.7241-06	.7087-06	.6951-06	.6594-06				
155.	.1037-06	.7818-07	.5845-07	.7168-07	.7935-07	.8273-07	.8182-07	.7895-07
156.	.7719-07	.7735-07	.7753-07	.7541-07				
157.	.5479-07	.4100-07	.3089-07	.3749-07	.4155-07	.4345-07	.4308-07	.4167-07
158.	.4085-07	.4108-07	.4132-07	.4038-07				
159.	.2931-07	.2264-07	.1699-07	.2086-07	.2314-07	.2419-07	.2401-07	.2326-07
160.	.2263-07	.2300-07	.2318-07	.2272-07				
161.	.1386-07	.1644-07	.7803-08	.9568-08	.1061-07	.1109-07	.1101-07	.1067-07
162.	.1047-07	.1055-07	.1064-07	.1043-07				
163.	.7653-08	.5773-08	.4315-08	.5294-08	.5869-08	.6138-08	.6095-08	.5904-08
164.	.5797-08	.5842-08	.5890-08	.5774-08				
165.	.3052-03	.6876-04	.3008-04	.2849-04	.2776-04	.2936-04	.2974-04	.2848-04
166.	.2658-04	.2452-04	.2291-04	.2087-04				
167.	.3924-04	.1957-04	.1009-04	.9884-05	.9104-05	.8712-05	.8544-05	.8044-05
168.	.7492-05	.6932-05	.6408-05	.5904-05				
169.	.7072-05	.5272-05	.3252-05	.3477-05	.3333-05	.3098-05	.2942-05	.2735-05
170.	.2553-05	.2386-05	.2252-05	.2066-05				
171.	.1571-05	.1409-05	.9804-06	.1130-05	.1156-05	.1168-05	.1046-05	.9728-06
172.	.9156-06	.8708-06	.8340-06	.7716-06				
173.	.2520-06	.2641-06	.1980-06	.2384-06	.2558-06	.2571-06	.2486-06	.2353-06
174.	.2259-06	.2211-06	.2169-06	.2057-06				
175.	.3236-07	.2439-07	.1824-07	.2236-07	.2476-07	.2581-07	.2553-07	.2463-07
176.	.2408-07	.2413-07	.2419-07	.2353-07				
177.	.1710-07	.1279-07	.9544-08	.1170-07	.1296-07	.1356-07	.1344-07	.1300-07
178.	.1274-07	.1202-07	.1289-07	.1260-07				
179.	.9144-08	.7064-08	.5300-08	.6508-08	.7220-06	.7548-08	.7492-08	.7256-08
180.	.7124-08	.7176-08	.7232-08	.7388-08				
181.	.4324-08	.3256-08	.2434-08	.2885-08	.3309-08	.3461-08	.3436-08	.3328-08
182.	.3268-08	.3245-08	.3319-08	.3254-08				
183.	.2380-08	.1801-08	.1346-08	.1052-08	.1831-08	.1915-08	.1902-08	.1842-08
184.	.1809-08	.1823-08	.1838-08	.1802-08				
185.	.1690-03	.3020-04	.1671-04	.1583-04	.1542-04	.1631-04	.1652-04	.1582-04
186.	.1477-04	.1362-04	.1273-04	.1159-04				
187.	.2180-04	.1037-04	.5667-05	.5401-05	.5956-05	.4840-05	.4747-05	.4469-05
188.	.4162-05	.3651-05	.3604-05	.3600-05				
189.	.3929-05	.2929-05	.1606-05	.1332-05	.1652-05	.1721-05	.1634-05	.1519-05
190.	.1418-05	.1326-05	.1251-05	.1158-05				
191.	.6727-06	.787-06	.5447-06	.6728-06	.5156-06	.5813-06	.5404-06	
192.	.5087-06	.4838-06	.4633-06	.4477-06				

193.	.1400-06	.1467-06	.1100-06	.1324-06	.1421-06	.1428-06	.1381-06	.1307-06
194.	.1253-06	.1228-06	.1205-06	.1143-06				
195.	.1799-07	.1353-07	.1013-07	.1242-07	.1375-07	.1434-07	.1418-07	.1368-07
196.	.1338-07	.1341-07	.1344-07	.1307-07				
197.	.9498-08	.7107-08	.5302-08	.6498-08	.7202-08	.7531-08	.7467-08	.7222-08
198.	.7080-08	.7120-08	.7162-08	.7008-08				
199.	.5083-08	.3924-08	.2944-08	.3616-08	.4011-08	.4193-08	.4162-08	.4031-08
200.	.3958-08	.3987-08	.4018-08	.3938-08				
201.	.2402-08	.1810-08	.1352-08	.1658-08	.1838-08	.1923-08	.1909-08	.1849-08
202.	.1816-08	.1829-08	.1844-08	.1808-08				
203.	.1326-08	.1001-08	.7480-09	.9176-09	.1017-08	.1064-08	.1056-08	.1023-08
204.	.1005-08	.1013-08	.1021-08	.1001-08				
205.	.1106-03	.2491-04	.1090-04	.1032-04	.1006-04	.1064-04	.1077-04	.1032-04
206.	.9632-05	.6886-05	.8300-05	.7561-05				
207.	.1422-04	.7091-05	.3657-05	.3581-05	.3299-05	.3157-05	.3096-05	.2914-05
208.	.2714-05	.2512-05	.2351-05	.2139-05				
209.	.2562-05	.1910-05	.1178-05	.1260-05	.1208-05	.1122-05	.1066-05	.9909-06
210.	.9249-06	.8645-06	.8161-06	.7465-06				
211.	.5691-06	.5104-06	.3552-06	.4093-06	.4190-06	.4014-06	.3791-06	.3525-06
212.	.3317-06	.3155-06	.3022-06	.2796-06				
213.	.9129-07	.9570-07	.7172-07	.8636-07	.9270-07	.9316-07	.9007-07	.8526-07
214.	.8186-07	.8012-07	.7858-07	.7454-07				
215.	.1172-07	.8838-08	.6607-08	.8103-08	.8970-08	.9352-08	.9249-08	.8925-08
216.	.8726-08	.8743-08	.8764-08	.8525-08				
217.	.6194-08	.4635-08	.3458-08	.4238-08	.4697-08	.4912-08	.4870-08	.4710-08
218.	.4617-08	.4643-08	.4671-08	.4565-08				
219.	.3313-08	.2559-08	.1920-08	.2358-08	.2616-08	.2735-08	.2714-08	.2629-08
220.	.2581-08	.2600-08	.2620-08	.2568-08				
221.	.1567-08	.1180-08	.8820-09	.1082-08	.1199-08	.1254-08	.1245-08	.1206-08
222.	.1184-08	.1193-08	.1203-08	.1179-08				
223.	.8651-09	.6526-09	.4878-09	.5984-09	.6635-09	.6939-09	.6890-09	.6674-09
224.	.6554-09	.6604-09	.6658-09	.6528-09				
225.	.8032-04	.1809-04	.7917-05	.7498-05	.7305-05	.7727-05	.7825-05	.7495-05
226.	.6996-05	.6454-05	.6028-05	.5492-05				
227.	.1033-04	.5151-05	.2656-05	.2601-05	.2396-05	.2293-05	.2248-05	.2117-05
228.	.1972-05	.1824-05	.1707-05	.1554-05				
229.	.1861-05	.1387-05	.8557-06	.9151-06	.8772-06	.8152-06	.7742-06	.7197-06
230.	.6718-06	.6279-06	.5927-06	.5422-06				
231.	.4134-06	.3707-06	.2580-06	.2973-06	.3043-06	.2916-06	.2754-06	.2560-06
232.	.2409-06	.2292-06	.2195-06	.2031-06				
233.	.6631-07	.6951-07	.5209-07	.6273-07	.6733-07	.6766-07	.6542-07	.6193-07
234.	.5945-07	.5819-07	.5707-07	.5414-07				
235.	.0515-08	.6419-08	.4799-08	.5885-08	.6515-08	.6793-08	.6718-08	.6482-08
236.	.6338-08	.6351-08	.6365-08	.6192-08				
237.	.4499-08	.3366-08	.2512-08	.3078-08	.3412-08	.3567-08	.3537-08	.3421-08
238.	.3354-08	.3373-08	.3393-08	.3316-08				
239.	.2406-08	.1859-08	.1395-08	.1713-08	.1900-08	.1986-08	.1972-08	.1909-08
240.	.1875-08	.1886-08	.1903-08	.1865-08				
241.	.1138-08	.8574-09	.6406-09	.7856-09	.8708-09	.9108-09	.9042-09	.8758-09
242.	.8602-09	.8665-09	.8735-09	.8562-09				
243.	.6283-09	.4740-09	.3543-09	.4346-09	.4819-09	.5040-09	.5004-09	.4847-09
244.	.4760-09	.4797-09	.4836-09	.4741-09				
245.	.6104-04	.1375-04	.6017-05	.5698-05	.5552-05	.5873-05	.5947-05	.5696-05
246.	.5317-05	.4905-05	.4582-05	.4174-05				
247.	.7848-05	.3914-05	.2013-05	.1977-05	.1821-05	.1742-05	.1709-05	.1609-05
248.	.1498-05	.1386-05	.1290-05	.1181-05				
249.	.1414-05	.1054-05	.6503-06	.6954-06	.6666-06	.6195-06	.5884-06	.5470-06
250.	.5105-06	.4772-06	.4505-06	.4121-06				
251.	.3142-06	.2818-06	.1961-06	.2259-06	.2313-06	.2216-06	.2093-06	.1946-06
252.	.1831-06	.1742-06	.1668-06	.1543-06				
253.	.5039-07	.5202-07	.3959-07	.4767-07	.5117-07	.5142-07	.4972-07	.4706-07
254.	.4518-07	.4422-07	.4338-07	.4114-07				
255.	.6471-08	.4878-08	.3647-08	.4473-08	.4951-08	.5162-08	.5106-08	.4926-08
256.	.4817-08	.4826-08	.4838-08	.4706-08				
257.	.3419-08	.2558-08	.1909-08	.2339-08	.2593-08	.2711-08	.2688-08	.2600-08
258.	.2549-08	.2563-08	.2578-08	.2520-08				
259.	.1829-08	.1413-08	.1060-08	.1302-08	.1444-08	.1510-08	.1498-08	.1451-08
260.	.1425-08	.1435-08	.1446-08	.1418-08				
261.	.8648-09	.6516-09	.4869-09	.5970-09	.6618-09	.6922-09	.6872-09	.6656-09
262.	.6536-09	.6586-09	.6638-09	.6507-09				
263.	.4773-09	.3602-09	.2693-09	.3303-09	.3662-09	.3830-09	.3803-09	.3684-09
264.	.3618-09	.3646-09	.3675-09	.3603-09				
265.	.4891-04	.1102-04	.4821-05	.4566-05	.4449-05	.4706-05	.4765-05	.4564-05
266.	.4262-05	.3930-05	.3671-05	.3344-05				
267.	.6288-05	.3137-05	.1617-05	.1584-05	.1459-05	.1396-05	.1369-05	.1289-05
268.	.1201-05	.1111-05	.1040-05	.9462-06				
269.	.1133-05	.8449-06	.5211-06	.5572-06	.5342-06	.4964-06	.4715-06	.4383-06
270.	.4091-06	.3824-06	.3610-06	.3302-06				
271.	.2517-06	.2258-06	.1571-06	.1810-06	.1853-06	.1776-06	.1677-06	.1559-06
272.	.1467-06	.1396-06	.1337-06	.1237-06				
273.	.4038-07	.4233-07	.3172-07	.3820-07	.4100-07	.4121-07	.3984-07	.3771-07
274.	.3621-07	.3544-07	.3476-07	.3297-07				
275.	.5185-08	.3909-08	.2922-08	.3584-08	.3967-08	.4137-08	.4091-08	.3947-08
276.	.3860-08	.3867-08	.3876-08	.3771-08				
277.	.2748-08	.2050-08	.1529-08	.1874-08	.2078-08	.2172-08	.2154-08	.2083-08
278.	.2042-08	.2054-08	.2066-08	.2019-08				
279.	.1465-08	.1132-08	.8494-09	.1043-08	.1157-08	.1210-08	.1201-08	.1163-08
280.	.1142-08	.1150-08	.1159-08	.1136-08				
281.	.6929-09	.5221-09	.3901-09	.4784-09	.5303-09	.5547-09	.5506-09	.5333-09
282.	.5237-09	.5277-09	.5319-09	.5214-09				
283.	.3826-09	.2887-09	.2158-09	.2647-09	.2935-09	.3069-09	.3047-09	.2952-09
284.	.2899-09	.2921-09	.2945-09	.2087-09				
285.	.1288-02	.2801-03	.1207-03	.1139-03	.1116-03	.1191-03	.1209-03	.1159-03
286.	.1082-03	.9982-04	.9324-04	.8494-04				
287.	.2247-03	.9310-04	.4555-04	.4376-04	.4047-04	.3964-04	.3931-04	.3719-04
288.	.3467-04	.3203-04	.2995-04	.2726-04				
289.	.5041-04	.3151-04	.1787-04	.1831-04	.1714-04	.1604-04	.1545-04	.1444-04
290.	.1346-04	.1252-04	.1176-04	.1073-04				

291.	.1463-34	.1156-04	.7418-05	.8112-05	.7914-05	.7331-05	.6991-05	.6491-05
292.	.0669-05	.5697-05	.5396-05	.4949-05				
293.	.4123-05	.3919-05	.2742-05	.3171-05	.3255-05	.3127-05	.2958-05	.2753-05
294.	.2595-05	.2473-05	.2372-05	.2199-05				
295.	.0438-05	.8323-05	.6128-06	.7346-06	.7892-06	.7954-06	.7692-06	.7281-06
296.	.0967-06	.6333-06	.6750-06	.6354-06				
297.	.2599-06	.2626-06	.1986-06	.2412-06	.2619-06	.2672-06	.2613-06	.2499-06
298.	.2424-06	.2405-06	.2390-06	.2301-06				
299.	.8117-07	.6435-07	.6512-07	.8031-07	.8863-07	.9123-07	.8936-07	.8576-07
300.	.8364-07	.8365-07	.8376-07	.8145-07				
301.	.2262-07	.1969-07	.1491-07	.1833-07	.2033-07	.2128-07	.2109-07	.2037-07
302.	.1996-07	.2008-07	.2019-07	.1974-07				
303.	.1834-07	.7752-08	.5823-08	.7142-08	.7918-08	.8293-08	.8223-08	.7965-08
304.	.7822-08	.7882-08	.7946-08	.7792-08				
305.	.4020-08	.8740-04	.3767-04	.3554-04	.3481-04	.3715-04	.3772-04	.3617-04
306.	.3377-04	.3114-04	.2909-04	.2652-04				
307.	.7012-04	.2995-04	.1421-04	.1365-04	.1263-04	.1237-04	.1226-04	.1160-04
308.	.1082-04	.9992-05	.9344-05	.8504-05				
309.	.1573-04	.9532-05	.5576-05	.5712-05	.5348-05	.5004-05	.4820-05	.4504-05
310.	.4200-05	.3905-05	.3670-05	.3348-05				
311.	.4564-05	.3614-05	.2314-05	.2531-05	.2469-05	.2306-05	.2181-05	.2025-05
312.	.1894-05	.1778-05	.1684-05	.1544-05				
313.	.1399-05	.1220-05	.8556-06	.9892-06	.1016-05	.9756-06	.9228-06	.8588-06
314.	.8096-06	.7716-06	.7400-06	.6860-06				
315.	.2633-06	.2597-06	.1912-06	.2292-06	.2462-06	.2482-06	.2400-06	.2272-06
316.	.2185-06	.2132-06	.2090-06	.1982-06				
317.	.8109-07	.8192-07	.6196-07	.7524-07	.8172-07	.8336-07	.8152-07	.7796-07
318.	.7564-07	.7504-07	.7456-07	.7180-07				
319.	.2532-07	.2632-07	.2032-07	.2506-07	.2765-07	.2846-07	.2788-07	.2676-07
320.	.2617-07	.2610-07	.2613-07	.2541-07				
321.	.7120-08	.6116-08	.4652-08	.5720-08	.6344-08	.6640-08	.6580-08	.6356-08
322.	.6229-08	.6264-08	.6300-08	.6160-08				
323.	.3226-08	.2431-08	.1917-08	.2228-08	.2470-08	.2584-08	.2566-08	.2485-08
324.	.2442-08	.2459-08	.2479-08	.2430-08				
325.	.2233-03	.4836-04	.2093-04	.1975-04	.1934-04	.2064-04	.2096-04	.2009-04
326.	.1875-04	.1730-04	.1616-04	.1472-04				
327.	.3896-04	.1614-04	.7896-05	.7584-05	.7016-05	.6871-05	.6813-05	.6447-05
328.	.6009-05	.5551-05	.5191-05	.4724-05				
329.	.8734-05	.5462-05	.3098-05	.3173-05	.2971-05	.2780-05	.2678-05	.2502-05
330.	.2333-05	.2170-05	.2039-05	.1860-05				
331.	.2536-05	.2006-05	.1286-05	.1406-05	.1372-05	.1281-05	.1212-05	.1125-05
332.	.1052-05	.9876-06	.9353-06	.8578-06				
333.	.7273-06	.6778-06	.4753-06	.5496-06	.5642-06	.5420-06	.5127-06	.4771-06
334.	.4498-06	.4287-06	.4111-06	.3811-06				
335.	.1463-06	.1443-06	.1062-06	.1273-06	.1368-06	.1379-06	.1333-06	.1262-06
336.	.1211-06	.1184-06	.1161-06	.1101-06				
337.	.4504-07	.4551-07	.3442-07	.4180-07	.4540-07	.4631-07	.4529-07	.4331-07
338.	.4202-07	.4169-07	.4142-07	.3989-07				
339.	.1407-07	.1462-07	.1129-07	.1392-07	.1536-07	.1581-07	.1549-07	.1486-07
340.	.1458-07	.1450-07	.1452-07	.1412-07				
341.	.3956-08	.3398-08	.2584-08	.3178-08	.3524-08	.3689-08	.3656-08	.3531-08
342.	.3460-08	.3480-08	.3500-08	.3422-08				
343.	.1792-08	.1351-08	.1009-08	.1238-08	.1372-08	.1436-08	.1425-08	.1381-08
344.	.1356-08	.1366-08	.1377-08	.1350-08				
345.	.1457-03	.3167-04	.1365-04	.1288-04	.1261-04	.1346-04	.1367-04	.1310-04
346.	.1224-04	.1128-04	.1054-04	.9601-05				
347.	.2541-04	.1652-04	.5149-05	.4946-05	.4575-05	.4481-05	.4443-05	.4204-05
348.	.3919-05	.3620-05	.3386-05	.3081-05				
349.	.5693-05	.3562-05	.2020-05	.2670-05	.1938-05	.1813-05	.1746-05	.1632-05
350.	.1522-05	.1415-05	.1330-05	.1213-05				
351.	.1654-05	.1309-05	.8386-06	.9178-06	.8946-06	.8355-06	.7903-06	.7338-06
352.	.6861-06	.6441-06	.6100-06	.5594-06				
353.	.4743-06	.4420-06	.3100-06	.3564-06	.3680-06	.3535-06	.3343-06	.3112-06
354.	.2933-06	.2796-06	.2681-06	.2486-06				
355.	.9539-07	.9409-07	.6928-07	.8304-07	.8922-07	.8991-07	.8696-07	.8230-07
356.	.7899-07	.7725-07	.7574-07	.7183-07				
357.	.2936-07	.2968-07	.2245-07	.2726-07	.2961-07	.3020-07	.2954-07	.2825-07
358.	.2741-07	.2719-07	.2701-07	.2601-07				
359.	.9175-08	.9535-08	.7361-08	.9078-08	.1002-07	.1031-07	.1010-07	.9694-08
360.	.9455-08	.9457-08	.9468-08	.9207-08				
361.	.2580-08	.2216-08	.1686-08	.2072-08	.2299-08	.2406-08	.2384-08	.2303-08
362.	.3357-08	.2270-08	.2283-08	.2232-08				
363.	.1169-08	.8809-09	.6583-09	.8674-09	.8951-09	.9364-09	.9296-09	.9004-09
364.	.8842-09	.8910-09	.8983-09	.8686-09				
365.	.1058-03	.2300-04	.9914-05	.9354-05	.9161-05	.9776-05	.9926-05	.9518-05
366.	.8887-05	.8196-05	.7656-05	.6974-05				
367.	.1845-04	.7644-05	.3740-05	.3593-05	.3323-05	.3255-05	.3227-05	.3054-05
368.	.2046-05	.2629-05	.2459-05	.2238-05				
369.	.4139-05	.2587-05	.1467-05	.1503-05	.1407-05	.1317-05	.1268-05	.1185-05
370.	.1195-05	.1026-05	.9659-06	.8811-06				
371.	.1201-05	.9509-06	.6091-06	.6660-06	.6498-06	.6068-06	.5740-06	.5329-06
372.	.4983-06	.4678-06	.4431-06	.4063-06				
373.	.3445-06	.3211-06	.2252-06	.2603-06	.2673-06	.2567-06	.2428-06	.2260-06
374.	.2131-06	.2031-06	.1947-06	.1805-06				
375.	.6926-07	.6834-07	.5032-07	.6032-07	.6480-07	.6531-07	.6316-07	.5978-07
376.	.5737-07	.5611-07	.5501-07	.5217-07				
377.	.2134-07	.2156-07	.1631-07	.1980-07	.2151-07	.2194-07	.2145-07	.2052-07
378.	.1991-07	.1975-07	.1962-07	.1889-07				
379.	.6664-08	.6928-08	.5346-08	.6594-08	.7277-08	.7491-08	.7337-08	.7041-08
380.	.6867-08	.6868-08	.6877-08	.6887-08				
381.	.1874-08	.1609-08	.1224-08	.1505-08	.1669-08	.1747-08	.1732-08	.1673-08
382.	.1639-08	.1648-08	.1650-08	.1621-08				
383.	.8466-09	.6396-09	.4781-09	.5864-09	.6501-09	.6801-09	.6752-09	.6540-09
384.	.6422-09	.6472-09	.6524-09	.6596-09				
385.	.8040-04	.1743-04	.7534-05	.7189-05	.6962-05	.7430-05	.7544-05	.7234-05
386.	.6754-05	.6229-05	.5818-05	.5400-05				
387.	.1402-04	.5810-05	.2742-05	.2710-05	.2526-05	.2474-05	.2453-05	.2321-05
388.	.2163-05	.1990-05	.1889-05	.1701-05				

389.	.3146-05	.1960-05	.1115-05	.1142-05	.1070-05	.1061-05	.3640-06	.9008-06
390.	.8400-06	.7410-06	.7341-06	.6696-06				
391.	.9123-06	.7227-06	.4629-06	.5662-06	.4938-06	.4612-06	.3362-06	.4050-06
392.	.3767-06	.3550-06	.3367-06	.3088-06				
393.	.2613-06	.2440-06	.1711-06	.1678-06	.2031-06	.1951-06	.1846-06	.1718-06
394.	.1619-06	.1543-06	.1480-06	.1172-06				
395.	.5266-07	.5194-07	.3824-07	.4584-07	.4925-07	.4963-07	.4800-07	.4543-07
396.	.4360-07	.4264-07	.4181-07	.3965-07				
397.	.1622-07	.1636-07	.1239-07	.1505-07	.1634-07	.1667-07	.1630-07	.1559-07
398.	.1513-07	.1501-07	.1491-07	.1436-07				
399.	.5065-08	.5263-08	.4063-08	.5011-08	.5530-08	.5693-08	.5576-08	.5351-08
400.	.5219-08	.5220-08	.5226-08	.5082-08				
401.	.1424-08	.1223-08	.9304-09	.1144-08	.1269-08	.1328-08	.1316-08	.1271-08
402.	.1246-08	.1253-08	.1260-08	.1232-08				
403.	.6451-09	.4862-09	.3634-09	.4457-09	.4941-09	.5169-09	.5131-09	.4970-09
404.	.4881-09	.4916-09	.4958-09	.4661-09				
405.	.6442-04	.1401-04	.6037-05	.5696-05	.5579-05	.5953-05	.6045-05	.5796-05
406.	.5412-05	.4991-05	.4662-05	.4247-05				
407.	.1124-04	.4655-05	.2278-05	.2188-05	.2024-05	.1982-05	.1965-05	.1860-05
408.	.1733-05	.1601-05	.1497-05	.1363-05				
409.	.2521-05	.1576-05	.8936-06	.9154-06	.8571-06	.8019-06	.7724-06	.7218-06
410.	.6731-06	.6258-06	.5882-06	.5365-06				
411.	.7314-06	.5791-06	.3709-06	.4956-06	.3957-06	.3696-06	.3496-06	.3246-06
412.	.3035-06	.2849-06	.2698-06	.2474-06				
413.	.2098-06	.1955-06	.1371-06	.1385-06	.1628-06	.1563-06	.1479-06	.1376-06
414.	.1297-06	.1237-06	.1186-06	.1099-06				
415.	.4219-07	.4162-07	.3064-07	.3073-07	.3946-07	.3977-07	.3846-07	.3640-07
416.	.3494-07	.3417-07	.3350-07	.3177-07				
417.	.1299-07	.1313-07	.9929-08	.1206-07	.1310-07	.1336-07	.1306-07	.1249-07
418.	.1212-07	.1203-07	.1195-07	.1151-07				
419.	.4058-08	.4217-08	.3256-08	.4015-08	.4431-08	.4562-08	.4466-08	.4288-08
420.	.4182-08	.4163-08	.4188-08	.4072-08				
421.	.1141-08	.9801-09	.7455-09	.9167-09	.1017-08	.1064-08	.1054-08	.1019-08
422.	.9981-09	.1004-08	.1010-08	.9072-09				
423.	.5163-09	.3096-09	.2912-09	.3571-09	.3959-09	.4142-09	.4112-09	.3983-09
424.	.3911-09	.3941-09	.3973-09	.3895-09				
425.	.2217-02	.4347-03	.1827-03	.1721-03	.1712-03	.1860-03	.1897-03	.1823-03
426.	.1703-03	.1571-03	.1467-03	.1336-03				
427.	.4423-03	.1471-03	.6806-04	.6438-04	.6031-04	.6090-04	.6105-04	.5808-04
428.	.5417-04	.4999-04	.4672-04	.4253-04				
429.	.1229-03	.5950-04	.3086-04	.3937-04	.2814-04	.2701-04	.2647-04	.2494-04
430.	.2324-04	.2153-04	.2017-04	.1837-04				
431.	.4008-04	.2582-04	.1494-04	.1546-04	.1458-04	.1364-04	.1309-04	.1222-04
432.	.1139-04	.1061-04	.9983-05	.9114-05				
433.	.1344-04	.1081-04	.6897-05	.7529-05	.7345-05	.6873-05	.6510-05	.6049-05
434.	.5659-05	.5315-05	.5037-05	.4623-05				
435.	.3382-05	.3017-05	.2100-05	.2421-05	.2485-05	.2396-05	.2274-05	.2122-05
436.	.2004-05	.1914-05	.1840-05	.1710-05				
437.	.1375-05	.1172-05	.8451-06	.9290-06	.1054-05	.1040-05	.9955-06	.9354-06
438.	.8909-06	.8621-06	.8377-06	.7874-06				
439.	.4946-06	.4958-06	.3647-06	.4372-06	.4691-06	.4712-06	.4549-06	.4301-06
440.	.4127-06	.4035-06	.3956-06	.3755-06				
441.	.1329-06	.1335-06	.9941-07	.1200-06	.1300-06	.1327-06	.1296-06	.1237-06
442.	.1190-06	.1166-06	.1174-06	.1129-06				
443.	.5245-07	.5323-07	.4035-07	.4934-07	.5332-07	.5454-07	.5347-07	.6127-07
444.	.4987-07	.4907-07	.4951-07	.4791-07				
445.	.6896-03	.1386-03	.5700-04	.5368-04	.5340-04	.5804-04	.5920-04	.5688-04
446.	.5312-04	.4900-04	.4576-04	.4168-04				
447.	.1380-03	.4586-04	.2124-04	.2009-04	.1882-04	.1900-04	.1905-04	.1812-04
448.	.1690-04	.1360-04	.1458-04	.1327-04				
449.	.3835-04	.1859-04	.9628-05	.9476-05	.8780-05	.8428-05	.8260-05	.7780-05
450.	.7252-05	.6716-05	.6292-05	.5732-05				
451.	.1250-04	.8056-05	.4660-05	.4824-05	.4548-05	.4256-05	.4084-05	.3812-05
452.	.3555-05	.3310-05	.3115-05	.2844-05				
453.	.4192-05	.3373-05	.2152-05	.2349-05	.2292-05	.2144-05	.2031-05	.1887-05
454.	.1766-05	.1658-05	.1572-05	.1442-05				
455.	.1050-05	.9412-06	.6552-06	.7552-06	.7752-06	.7476-06	.7096-06	.6620-06
456.	.6252-06	.5972-06	.5740-06	.5336-06				
457.	.3921-06	.3656-06	.2637-06	.3117-06	.3288-06	.3245-06	.3106-06	.2918-06
458.	.2780-06	.2690-06	.2614-06	.2457-06				
459.	.1543-06	.1547-06	.1138-06	.1364-06	.1464-06	.1470-06	.1419-06	.1342-06
460.	.1288-06	.1259-06	.1234-06	.1172-06				
461.	.4148-07	.4164-07	.3102-07	.3743-07	.4056-07	.4140-07	.4044-07	.3860-07
462.	.3730-07	.3700-07	.3668-07	.3524-07				
463.	.1636-07	.1661-07	.1259-07	.1530-07	.1664-07	.1702-07	.1668-07	.1600-07
464.	.1553-07	.1550-07	.1545-07	.1495-07				
465.	.3831-03	.7536-04	.3167-04	.2982-04	.2967-04	.3224-04	.3289-04	.3160-04
466.	.2951-04	.2722-04	.2542-04	.2316-04				
467.	.7667-04	.2549-04	.1180-04	.1116-04	.1045-04	.1056-04	.1058-04	.1007-04
468.	.9389-05	.8664-05	.8098-05	.7371-05				
469.	.2131-04	.1033-04	.5349-05	.5264-05	.4878-05	.4682-05	.4589-05	.4322-05
470.	.4029-05	.3731-05	.3496-05	.3184-05				
471.	.6947-05	.4476-05	.2589-05	.2680-05	.2527-05	.2364-05	.2269-05	.2118-05
472.	.1975-05	.1839-05	.1730-05	.1580-05				
473.	.2329-05	.1874-05	.1196-05	.1305-05	.1273-05	.1191-05	.1128-05	.1048-05
474.	.9809-06	.9213-06	.8731-06	.8013-06				
475.	.5862-06	.5229-06	.3640-06	.4196-06	.4307-06	.4153-06	.3942-06	.3678-06
476.	.3473-06	.3318-06	.3189-06	.2964-06				
477.	.2178-06	.2031-06	.1465-06	.1732-06	.1826-06	.1803-06	.1726-06	.1621-06
478.	.1544-06	.1494-06	.1452-06	.1365-06				
479.	.8573-07	.8593-07	.6322-07	.7578-07	.8131-07	.8167-07	.7884-07	.7456-07
480.	.7153-07	.6993-07	.6858-07	.6509-07				
481.	.2304-07	.2313-07	.1723-07	.1979-07	.2253-07	.2300-07	.2247-07	.2145-07
482.	.2077-07	.2053-07	.2038-07	.1958-07				
483.	.9091-08	.9227-08	.6993-08	.8500-08	.9242-08	.9453-08	.9269-08	.8887-08
484.	.8644-08	.8609-08	.8532-08	.8304-08				
485.	.2499-03	.4914-04	.2065-04	.1945-04	.1935-04	.2103-04	.2145-04	.2061-04
486.	.1925-04	.1775-04	.1658-04	.1510-04				

487.	.5000-04	.1662-04	.7694-05	.7278-05	.6817-05	.6804-05	.6901-05	.6665-05
488.	.6123-05	.5651-05	.5281-05	.4907-05				
489.	.1390-04	.6735-05	.3430-05	.3433-05	.3161-05	.3854-05	.2993-05	.2819-05
490.	.2628-05	.2433-05	.2280-05	.2077-05				
491.	.4537-05	.2919-05	.1688-05	.1748-05	.1648-05	.1542-05	.1480-05	.1381-05
492.	.1286-05	.1194-05	.1129-05	.1030-05				
493.	.1519-05	.1222-05	.7797-06	.8112-06	.8303-06	.7770-06	.7359-06	.6838-06
494.	.6397-06	.6609-06	.5694-06	.5226-06				
495.	.3623-06	.3410-06	.2374-06	.2736-06	.2609-06	.2709-06	.2571-06	.2399-06
496.	.2265-06	.2164-06	.2080-06	.1933-06				
497.	.1421-06	.1325-06	.9554-07	.1129-06	.1191-06	.1176-06	.1125-06	.1057-06
498.	.1007-06	.9745-07	.9470-07	.8901-07				
499.	.5591-07	.5604-07	.4123-07	.4942-07	.5303-07	.5326-07	.5142-07	.4862-07
500.	.4665-07	.4561-07	.4472-07	.4245-07				
501.	.1503-07	.1509-07	.1124-07	.1356-07	.1470-07	.1500-07	.1465-07	.1399-07
502.	.1354-07	.1340-07	.1329-07	.1277-07				
503.	.5929-08	.6017-08	.4561-08	.5543-08	.6028-08	.6165-08	.6045-08	.5796-08
504.	.5656-08	.5614-08	.5597-08	.5416-08				
505.	.1813-03	.3569-04	.1500-04	.1413-04	.1405-04	.1527-04	.1558-04	.1497-04
506.	.1398-04	.1289-04	.1204-04	.1097-04				
507.	.3632-04	.1207-04	.5588-05	.5286-05	.4952-05	.5000-05	.5013-05	.4768-05
508.	.4447-05	.4104-05	.3836-05	.3492-05				
509.	.1009-04	.4892-05	.2534-05	.2494-05	.2311-05	.2218-05	.2174-05	.2047-05
510.	.1908-05	.1767-05	.1656-05	.1508-05				
511.	.3291-05	.2120-05	.1226-05	.1269-05	.1197-05	.1120-05	.1075-05	.1003-05
512.	.9355-06	.8711-06	.8197-06	.7483-06				
513.	.1103-05	.8677-06	.5663-06	.6182-06	.6031-06	.5643-06	.5345-06	.4966-06
514.	.4646-06	.4364-06	.4136-06	.3796-06				
515.	.2777-06	.2477-06	.1724-06	.1987-06	.2040-06	.1967-06	.1867-06	.1742-06
516.	.1645-06	.1572-06	.1511-06	.1404-06				
517.	.1032-06	.9622-07	.6939-07	.8202-07	.8652-07	.8540-07	.8174-07	.7680-07
518.	.7315-07	.7078-07	.6878-07	.6465-07				
519.	.4061-07	.4071-07	.2995-07	.3589-07	.3852-07	.3868-07	.3735-07	.3532-07
520.	.3386-07	.3313-07	.3248-07	.3083-07				
521.	.1092-07	.1096-07	.8162-08	.9849-08	.1067-07	.1089-07	.1064-07	.1016-07
522.	.9837-08	.9736-08	.9652-08	.9273-08				
523.	.4306-08	.4371-08	.3313-08	.4026-08	.4378-08	.4478-08	.4391-08	.4209-08
524.	.4095-08	.4078-08	.4065-08	.3934-08				
525.	.1379-03	.2713-04	.1140-04	.1074-04	.1068-04	.1161-04	.1184-04	.1138-04
526.	.1062-04	.9800-05	.9152-05	.8336-05				
527.	.2764-04	.9176-05	.4247-05	.4018-05	.3763-05	.3800-05	.3810-05	.3624-05
528.	.3382-05	.3119-05	.2915-05	.2654-05				
529.	.7670-05	.3716-05	.1926-05	.1895-05	.1756-05	.1686-05	.1652-05	.1556-05
530.	.1450-05	.3433-05	.1258-05	.1146-05				
531.	.2501-05	.1611-05	.9320-06	.9548-06	.9096-06	.8512-06	.8168-06	.7623-06
532.	.7112-06	.6620-06	.6230-06	.5687-06				
533.	.6564-06	.6740-06	.4304-06	.4698-06	.4583-06	.4289-06	.4062-06	.3774-06
534.	.3531-06	.3317-06	.3143-06	.2885-06				
535.	.2112-06	.1892-06	.1310-06	.1510-06	.1550-06	.1495-06	.1419-06	.1324-06
536.	.1250-06	.1194-06	.1148-06	.1067-06				
537.	.7842-07	.7313-07	.5274-07	.6234-07	.6575-07	.6490-07	.6212-07	.5837-07
538.	.5559-07	.5379-07	.5227-07	.4914-07				
539.	.3086-07	.3094-07	.2276-07	.2728-07	.2927-07	.2940-07	.2838-07	.2684-07
540.	.2575-07	.2518-07	.2469-07	.2343-07				
541.	.8296-08	.8328-08	.6203-08	.7486-08	.8112-08	.8280-08	.8088-08	.7721-08
542.	.7476-08	.7399-08	.7335-08	.7047-08				
543.	.3273-08	.3322-08	.2518-08	.3060-08	.3327-08	.3403-08	.3337-08	.3199-08
544.	.3112-08	.3099-08	.3090-08	.2990-08				
545.	.1105-03	.2174-04	.9135-05	.8603-05	.8558-05	.9301-05	.9487-05	.9115-05
546.	.8513-05	.7853-05	.7333-05	.6679-05				
547.	.2212-04	.7353-05	.3403-05	.3219-05	.3015-05	.3045-05	.3053-05	.2904-05
548.	.2708-05	.2499-05	.2336-05	.2126-05				
549.	.6146-05	.2979-05	.1543-05	.1519-05	.1407-05	.1351-05	.1324-05	.1247-05
550.	.1162-05	.1076-05	.1008-05	.9186-06				
551.	.2004-05	.1291-05	.7468-06	.7731-06	.7288-06	.6821-06	.6545-06	.6108-06
552.	.5697-06	.5304-06	.4992-06	.4557-06				
553.	.6718-06	.5406-06	.3449-06	.3765-06	.3672-06	.3437-06	.3255-06	.3024-06
554.	.2829-06	.2658-06	.2519-06	.2312-06				
555.	.1691-06	.1508-06	.1050-06	.1210-06	.1242-06	.1198-06	.1137-06	.1061-06
556.	.1002-06	.9571-07	.9199-07	.8551-07				
557.	.6284-07	.5860-07	.4226-07	.4995-07	.5269-07	.5201-07	.4978-07	.4677-07
558.	.4454-07	.4310-07	.4108-07	.3937-07				
559.	.2473-07	.2479-07	.1824-07	.2186-07	.2346-07	.2356-07	.2274-07	.2151-07
560.	.2063-07	.2017-07	.1978-07	.1878-07				
561.	.6647-08	.6673-08	.4971-08	.5998-08	.6500-08	.6635-08	.6481-08	.6187-08
562.	.5990-08	.5929-08	.5678-08	.5647-08				
563.	.2622-08	.2662-08	.2017-08	.2452-08	.2666-08	.2727-08	.2674-08	.2563-08
564.	.2494-08	.2483-08	.2476-08	.2396-08				
565.	.3383-02	.6165-03	.2549-03	.2405-03	.2423-03	.2668-03	.2726-03	.2624-03
566.	.2451-03	.2260-03	.2112-03	.1924-03				
567.	.3354-03	.2076-03	.9276-04	.8717-04	.8286-04	.8564-04	.8641-04	.8250-04
568.	.7699-04	.7101-04	.6635-04	.6041-04				
569.	.2159-03	.6767-04	.4312-04	.4162-04	.3865-04	.3791-04	.3750-04	.3554-04
570.	.3313-04	.3064-04	.2867-04	.2610-04				

572.	.1731-04	.1605-04	.1506-04	.1373-04	.1125-04	.1050-04	.1004-04	.9342-05
573.	.2647-04	.1872-04	.1120-04	.1181-04				
574.	.8721-05	.8142-05	.7679-05	.7323-05	.4423-05	.4191-05	.3973-05	.3696-05
575.	.7336-05	.6035-05	.3979-05	.4540-05				
576.	.3472-05	.3263-05	.3129-05	.2386-05				
577.	.2888-05	.2544-05	.1754-05	.2114-05	.2060-05	.1986-05	.1888-05	.1764-05
578.	.1667-05	.1594-05	.1532-05	.1426-05				
579.	.1218-05	.1146-05	.6163-06	.9553-06	.9958-06	.9732-06	.9290-06	.8710-06
580.	.8276-06	.7979-06	.7731-06	.7487-06				
581.	.4477-06	.4179-06	.3918-06	.3574-06	.3781-06	.3747-06	.3599-06	.3390-06
582.	.3237-06	.3144-06	.3055-06	.2954-06				
583.	.2092-06	.1997-06	.1458-06	.1758-06	.1850-06	.1856-06	.1790-06	.1691-06
584.	.1621-06	.1502-06	.1549-06	.1499-06				

585.	.1056-02	.1924-03	.7952-04	.7004-04	.7560-04	.8324-04	.8504-04	.8188-04
586.	.7648-04	.7052-04	.6568-04	.6004-04				
587.	.2294-03	.6470-04	.2894-04	.2720-04	.2580-04	.2672-04	.2696-04	.2574-04
588.	.2402-04	.2216-04	.2070-04	.1835-04				
589.	.6738-04	.2755-04	.1345-04	.1096-04	.1206-04	.1183-04	.1172-04	.1109-04
591.	.1034-04	.9960-05	.8944-05	.8144-05				
591.	.2453-04	.1326-04	.7172-05	.7196-05	.6700-05	.6352-05	.6172-05	.5792-05
592.	.5400-05	.5098-05	.4700-05	.4284-05				
593.	.8260-05	.5840-05	.3494-05	.3084-05	.3510-05	.3277-05	.3129-05	.2915-05
594.	.2721-05	.2540-05	.2396-05	.2191-05				
595.	.2289-05	.1893-05	.1242-05	.1385-05	.1380-05	.1368-05	.1240-05	.1153-05
596.	.1083-05	.1024-05	.9764-06	.9004-06				
597.	.9012-06	.7924-06	.5472-06	.6284-06	.6428-06	.6196-06	.5892-06	.5504-06
598.	.5200-06	.4972-06	.4780-06	.4448-06				
599.	.3002-06	.3576-06	.2547-06	.2980-06	.3107-06	.3036-06	.2898-06	.2718-06
600.	.2582-06	.2490-06	.2412-06	.2261-06				
601.	.1397-06	.1304-06	.9416-07	.1115-06	.1160-06	.1169-06	.1123-06	.1058-06
602.	.1010-06	.9808-07	.9564-07	.9028-07				
603.	.6528-07	.6232-07	.4548-07	.5424-07	.5792-07	.5792-07	.5584-07	.5276-07
604.	.5056-07	.4936-07	.4832-07	.4564-07				
605.	.5864-03	.1069-03	.4418-04	.4169-04	.4200-04	.4624-04	.4724-04	.4549-04
606.	.4249-04	.3918-04	.3660-04	.3336-04				
607.	.1275-03	.3598-04	.1608-04	.1511-04	.1436-04	.1454-04	.1498-04	.1430-04
608.	.1334-04	.1231-04	.1150-04	.1047-04				
609.	.3742-04	.1520-04	.7473-05	.7213-05	.6700-05	.6571-05	.6511-05	.6160-05
610.	.5742-05	.5311-05	.4969-05	.4524-05				
611.	.1363-04	.7376-05	.3984-05	.3998-05	.3722-05	.3529-05	.3429-05	.3218-05
612.	.3000-05	.2782-05	.2611-05	.2380-05				
613.	.4589-05	.3244-05	.1941-05	.2047-05	.1950-05	.1820-05	.1738-05	.1619-05
614.	.1512-05	.1411-05	.1331-05	.1217-05				
615.	.1272-05	.1046-05	.6898-06	.7096-06	.7667-06	.7264-06	.6887-06	.6407-06
616.	.6018-06	.5691-06	.5424-06	.5002-06				
617.	.5007-06	.4402-06	.3040-06	.3491-06	.3571-06	.3442-06	.3273-06	.3058-06
618.	.2889-06	.2762-06	.2656-06	.2471-06				
619.	.2112-06	.1987-06	.1415-06	.1656-06	.1726-06	.1687-06	.1610-06	.1510-06
620.	.1434-06	.1383-06	.1340-06	.1256-06				
621.	.7760-07	.7244-07	.5231-07	.6196-07	.6553-07	.6496-07	.6238-07	.5876-07
622.	.5611-07	.5449-07	.5313-07	.5016-07				
623.	.3627-07	.3462-07	.2527-07	.3013-07	.3218-07	.3218-07	.3102-07	.2931-07
624.	.2809-07	.2742-07	.2684-07	.2547-07				
625.	.3825-03	.6970-04	.2881-04	.2719-04	.2739-04	.3016-04	.3081-04	.2967-04
626.	.2771-04	.2555-04	.2387-04	.2175-04				
627.	.8313-04	.2346-04	.1049-04	.9854-05	.9367-05	.9681-05	.9768-05	.9326-05
628.	.8703-05	.8020-05	.7500-05	.6829-05				
629.	.2441-04	.9910-05	.4874-05	.4704-05	.4370-05	.4286-05	.4246-05	.4017-05
630.	.3745-05	.3464-05	.3241-05	.2951-05				
631.	.8888-05	.4810-05	.2599-05	.2607-05	.2428-05	.2301-05	.2236-05	.2099-05
632.	.1957-05	.1814-05	.1703-05	.1552-05				
633.	.2993-05	.2116-05	.1266-05	.1335-05	.1272-05	.1187-05	.1134-05	.1056-05
634.	.9858-06	.9204-06	.8681-06	.7939-06				
635.	.8293-06	.6822-06	.4499-06	.5019-06	.5000-06	.4738-06	.4491-06	.4178-06
636.	.3925-06	.3712-06	.3538-06	.3262-06				
637.	.1265-06	.2071-06	.1983-06	.2277-06	.2329-06	.2245-06	.2135-06	.1994-06
638.	.1884-06	.1301-06	.1732-06	.1612-06				
639.	.1377-06	.1266-06	.9228-07	.1080-06	.1126-06	.1100-06	.1050-06	.9846-07
640.	.9355-07	.9020-07	.8739-07	.8193-07				
641.	.5061-07	.4725-07	.3412-07	.4041-07	.4274-07	.4236-07	.4068-07	.3832-07
642.	.3659-07	.3504-07	.3465-07	.3271-07				
643.	.2365-07	.2258-07	.1648-07	.1965-07	.2099-07	.2099-07	.2023-07	.1912-07
644.	.1832-07	.1788-07	.1751-07	.1661-07				
645.	.2775-03	.5062-04	.2093-04	.1975-04	.1989-04	.2191-04	.2238-04	.2155-04
646.	.2013-04	.1866-04	.1734-04	.1588-04				
647.	.6038-04	.1704-04	.7616-05	.7157-05	.6803-05	.7032-05	.7095-05	.6774-05
648.	.6321-05	.5831-05	.5447-05	.4960-05				
649.	.1773-04	.7198-05	.5540-05	.3417-05	.3174-05	.3113-05	.3084-05	.2918-05
650.	.2720-05	.2516-05	.2354-05	.2143-05				
651.	.6456-05	.3494-05	.1887-05	.1894-05	.1763-05	.1672-05	.1624-05	.1524-05
652.	.1421-05	.1316-05	.1237-05	.1127-05				
653.	.2174-05	.1537-05	.9195-06	.9695-06	.9236-06	.8623-06	.8234-06	.7671-06
654.	.7168-06	.6685-06	.6305-06	.5766-06				
655.	.6023-06	.4955-06	.3267-06	.3645-06	.3632-06	.3441-06	.3262-06	.3035-06
656.	.2851-06	.2696-06	.2569-06	.2369-06				
657.	.2372-06	.2085-06	.1440-06	.1654-06	.1692-06	.1631-06	.1551-06	.1448-06
658.	.1368-06	.1308-06	.1258-06	.1171-06				
659.	.1000-06	.9411-07	.6702-07	.7843-07	.8176-07	.7991-07	.7627-07	.7152-07
660.	.6795-07	.6552-07	.6347-07	.5951-07				
661.	.3676-07	.3432-07	.2478-07	.2935-07	.3104-07	.3077-07	.2955-07	.2783-07
662.	.2658-07	.2581-07	.2517-07	.2376-07				
663.	.1718-07	.1600-07	.1197-07	.1427-07	.1524-07	.1524-07	.1469-07	.1388-07
664.	.1331-07	.1299-07	.1272-07	.1206-07				
665.	.2111-03	.3847-04	.1590-04	.1501-04	.1512-04	.1665-04	.1701-04	.1638-04
666.	.1530-04	.1410-04	.1318-04	.1201-04				
667.	.4580-04	.1295-04	.5788-05	.5439-05	.5170-05	.5344-05	.5392-05	.5148-05
668.	.4804-05	.4431-05	.4140-05	.3770-05				
669.	.1347-04	.5470-05	.2690-05	.2597-05	.2412-05	.2366-05	.2344-05	.2218-05
670.	.2067-05	.1912-05	.1789-05	.1629-05				
671.	.4906-05	.2655-05	.1434-05	.1439-05	.1340-05	.1270-05	.1234-05	.1158-05
672.	.1082-05	.1002-05	.9400-06	.8568-06				
673.	.1652-05	.1168-05	.6988-06	.7368-06	.7019-06	.6554-06	.6258-06	.5830-06
674.	.5442-06	.5061-06	.4792-06	.4382-06				
675.	.4578-06	.3766-06	.2483-06	.2770-06	.2760-06	.2615-06	.2479-06	.2306-06
676.	.2166-06	.2049-06	.1953-06	.1601-06				
677.	.1802-06	.1505-06	.1094-06	.1257-06	.1286-06	.1239-06	.1179-06	.1101-06
678.	.1040-06	.9944-07	.9560-07	.8896-07				
679.	.7603-07	.7152-07	.5094-07	.5961-07	.6214-07	.6073-07	.5797-07	.5435-07
680.	.5164-07	.4979-07	.4824-07	.4522-07				
681.	.2794-07	.2608-07	.1883-07	.2230-07	.2359-07	.2338-07	.2246-07	.2115-07
682.	.2020-07	.1902-07	.1913-07	.1806-07				

683.	.1355-37	.1246-07	.9096-38	.1855-07	.1158-07	.1158-07	.1117-07	.1055-07
684.	.1011-07	.9872-08	.9664-38	.9664-38				
685.	.1692-03	.3863-04	.1274-04	.1274-04	.1212-04	.1334-04	.1363-04	.1312-04
686.	.1226-04	.1130-04	.1056-04	.9222-03				
687.	.3677-04	.1338-04	.4638-05	.4638-05	.4143-05	.4242-05	.4321-05	.4125-05
688.	.3849-05	.3551-05	.3317-05	.3021-05				
689.	.1079-04	.4383-05	.2156-05	.2041-05	.1933-05	.1896-05	.1878-05	.1777-05
690.	.1655-05	.1532-05	.1433-05	.1305-05				
691.	.3931-05	.2120-05	.1149-05	.1153-05	.1074-05	.1018-05	.9891-06	.9282-06
692.	.8654-06	.8626-06	.7532-06	.6965-06				
693.	.1324-05	.9359-06	.5599-06	.5904-06	.5624-06	.5251-06	.5014-06	.4671-06
694.	.4363-06	.4071-06	.3840-06	.3512-06				
695.	.3663-06	.3017-06	.1990-06	.2220-06	.2212-06	.2096-06	.1987-06	.1848-06
696.	.1736-06	.1642-06	.1565-06	.1443-06				
697.	.1444-06	.1270-06	.8769-07	.1607-06	.1030-06	.9929-07	.9442-07	.8821-07
698.	.8333-07	.7968-07	.7660-07	.7128-07				
699.	.6092-07	.5751-07	.4081-07	.4776-07	.4979-07	.4866-07	.4645-07	.4355-07
700.	.4135-07	.3990-07	.3865-07	.3024-07				
701.	.2233-07	.2090-07	.1509-07	.1787-07	.1890-07	.1874-07	.1799-07	.1695-07
702.	.1619-07	.1572-07	.1533-07	.1447-07				
703.	.1040-07	.9937-08	.7288-08	.8392-08	.9282-08	.9282-08	.8949-08	.8455-08
704.	.8103-08	.7910-08	.7744-08	.7546-08				
705.	.6004-02	.1003-02	.4078-03	.3862-03	.3953-03	.4412-03	.4516-03	.4356-03
706.	.4071-03	.3754-03	.3505-03	.3196-03				
707.	.1419-02	.3295-03	.1417-03	.1328-03	.1292-03	.1374-03	.1395-03	.1337-03
708.	.1249-03	.1152-03	.1076-03	.9797-04				
709.	.4483-03	.1447-03	.6703-04	.6355-04	.5977-04	.6051-04	.6067-04	.5773-04
710.	.5386-04	.4973-04	.4649-04	.4233-04				
711.	.1663-03	.7190-04	.3615-04	.3523-04	.3272-04	.3179-04	.3136-04	.2960-04
712.	.2760-04	.2554-04	.2392-04	.2178-04				
713.	.5962-04	.3453-04	.1908-04	.1935-04	.1809-04	.1706-04	.1651-04	.1547-04
714.	.1442-04	.1340-04	.1259-04	.1148-04				
715.	.1794-04	.1257-04	.7659-05	.8191-05	.7914-05	.7444-05	.7101-05	.6617-05
716.	.6188-05	.5800-05	.5487-05	.5031-05				
717.	.7401-05	.5764-05	.3704-05	.4082-05	.4037-05	.3831-05	.3646-05	.3399-05
718.	.3192-05	.3017-05	.2874-05	.2651-05				
719.	.3121-05	.2674-05	.1790-05	.2015-05	.2028-05	.1941-05	.1847-05	.1726-05
720.	.1620-05	.1550-05	.1487-05	.1381-05				
721.	.1124-05	.9839-06	.6760-06	.7762-06	.7955-06	.7700-06	.7346-06	.6879-06
722.	.6519-06	.6254-06	.6036-06	.5641-06				
723.	.5261-06	.4747-06	.3332-06	.3868-06	.4005-06	.3903-06	.3728-06	.3497-06
724.	.3322-06	.3200-06	.3100-06	.2906-06				
725.	.1673-02	.3129-03	.1272-03	.1205-03	.1233-03	.1376-03	.1410-03	.1359-03
726.	.1273-03	.1171-03	.1094-03	.9972-04				
727.	.4428-03	.1000-03	.4420-04	.4144-04	.4032-04	.4288-04	.4352-04	.4172-04
728.	.3896-04	.3593-04	.3356-04	.3057-04				
729.	.1399-03	.4516-04	.2091-04	.1983-04	.1865-04	.1888-04	.1893-04	.1801-04
730.	.1680-04	.1552-04	.1450-04	.1321-04				
731.	.5188-04	.2243-04	.1128-04	.1099-04	.1021-04	.9920-05	.9784-05	.9236-05
732.	.8612-05	.7968-05	.7464-05	.6796-05				
733.	.1860-04	.1077-04	.5952-05	.6036-05	.5644-05	.5324-05	.5152-05	.4828-05
734.	.4500-05	.4180-05	.3928-05	.3582-05				
735.	.5596-05	.3922-05	.2390-05	.2556-05	.2469-05	.2322-05	.2216-05	.2064-05
736.	.1931-05	.1810-05	.1712-05	.1576-05				
737.	.2309-05	.1796-05	.1156-05	.1274-05	.1260-05	.1195-05	.1138-05	.1060-05
738.	.9960-06	.9412-06	.8968-06	.8272-06				
739.	.9736-06	.8344-06	.5584-06	.6288-06	.6328-06	.6056-06	.5764-06	.5384-06
740.	.5060-06	.4836-06	.4640-06	.4308-06				
741.	.3500-06	.3080-06	.2109-06	.2422-06	.2482-06	.2402-06	.2292-06	.2146-06
742.	.2034-06	.1951-06	.1883-06	.1760-06				
743.	.1640-06	.1481-06	.1040-06	.1207-06	.1250-06	.1218-06	.1163-06	.1091-06
744.	.1036-06	.9984-07	.9672-07	.9068-07				
745.	.1041-02	.1738-03	.7069-04	.6693-04	.6851-04	.7647-04	.7831-04	.7551-04
746.	.7056-04	.6507-04	.6076-04	.5540-04				
747.	.2460-03	.5711-04	.2456-04	.2302-04	.2240-04	.2382-04	.2418-04	.2318-04
748.	.2164-04	.1996-04	.1864-04	.1698-04				
749.	.7771-04	.2509-04	.1162-04	.1102-04	.1036-04	.1049-04	.1052-04	.1001-04
750.	.9336-05	.8620-05	.8058-05	.7338-05				
751.	.2882-04	.1246-04	.6267-05	.6107-05	.5671-05	.5511-05	.5436-05	.5131-05
752.	.4784-05	.4427-05	.4147-05	.3776-05				
753.	.1033-04	.5984-05	.3307-05	.3353-05	.3136-05	.2958-05	.2862-05	.2682-05
754.	.2500-05	.2322-05	.2182-05	.1990-05				
755.	.3109-05	.2179-05	.1328-05	.1420-05	.1372-05	.1290-05	.1231-05	.1147-05
756.	.1073-05	.1005-05	.9511-06	.8720-06				
757.	.1283-05	.9991-06	.6420-06	.7076-06	.6998-06	.6640-06	.6320-06	.5891-06
758.	.5533-06	.5229-06	.4982-06	.4596-06				
759.	.5409-06	.4636-06	.3102-06	.3493-06	.3516-06	.3364-06	.3202-06	.2991-06
760.	.2822-06	.2687-06	.2578-06	.2393-06				
761.	.1949-06	.1700-06	.1172-06	.1345-06	.1379-06	.1335-06	.1273-06	.1192-06
762.	.1130-06	.1084-06	.1046-06	.9778-07				
763.	.9153-07	.8229-07	.5776-07	.6704-07	.6942-07	.6764-07	.6462-07	.6062-07
764.	.5758-07	.5547-07	.5373-07	.5038-07				
765.	.6787-03	.1134-03	.4610-04	.4665-04	.4468-04	.4987-04	.5107-04	.4925-04
766.	.4601-04	.4243-04	.3962-04	.3613-04				
767.	.1604-03	.3725-04	.1601-04	.1501-04	.1461-04	.1554-04	.1577-04	.1512-04
768.	.1412-04	.1302-04	.1216-04	.1106-04				
769.	.5068-04	.1636-04	.7577-05	.7184-05	.6757-05	.6841-05	.6858-05	.6526-05
770.	.6088-05	.5622-05	.5255-05	.4786-05				
771.	.1880-04	.8128-05	.4087-05	.3953-05	.3699-05	.3594-05	.3545-05	.3346-05
772.	.3120-05	.2867-05	.2704-05	.2462-05				
773.	.6739-05	.3903-05	.2157-05	.2187-05	.2045-05	.1929-05	.1867-05	.1749-05
774.	.1630-05	.1514-05	.1423-05	.1298-05				
775.	.2028-05	.1421-05	.8658-06	.9259-06	.8946-06	.8414-06	.8028-06	.7480-06
776.	.6996-06	.6557-06	.6293-06	.5637-06				
777.	.8367-06	.6516-06	.4187-06	.4514-06	.4564-06	.4330-06	.4122-06	.3842-06
778.	.3609-06	.3410-06	.3249-06	.2997-06				
779.	.3528-06	.3023-06	.2023-06	.2774-06	.2293-06	.2194-06	.2088-06	.1951-06
780.	.1841-06	.1732-06	.1651-06	.1561-06				

781.	.1271-06	.1109-06	.7642-07	.9774-07	.8993-07	.8704-07	.8304-07	.7777-07
782.	.7379-07	.7070-07	.5823-07	.6177-07				
783.	.5970-07	.5567-07	.3767-07	.4372-07	.4520-07	.4412-07	.4214-07	.3954-07
784.	.3755-07	.3617-07	.3504-07	.3286-07				
785.	.4929-03	.6234-04	.3343-04	.3171-04	.3245-04	.3022-04	.3709-04	.3577-04
786.	.3342-04	.3682-04	.2873-04	.2624-04				
787.	.1165-03	.2705-04	.1163-04	.1091-04	.1061-04	.1128-04	.1145-04	.1093-04
788.	.1025-04	.9456-05	.0832-05	.8044-05				
789.	.3681-04	.1188-04	.5503-05	.5218-05	.4907-05	.4968-05	.4981-05	.4740-05
790.	.4422-05	.4083-05	.3817-05	.3476-05				
791.	.1365-04	.5903-05	.2968-05	.2093-05	.2686-05	.2611-05	.2575-05	.2431-05
792.	.2266-05	.2097-05	.1964-05	.1788-05				
793.	.4895-05	.2835-05	.1566-05	.1588-05	.1485-05	.1401-05	.1356-05	.1271-05
794.	.1184-05	.1100-05	.1034-05	.9427-06				
795.	.1473-05	.1032-05	.6288-06	.6725-06	.6498-06	.6112-06	.5831-06	.5433-06
796.	.5081-06	.4762-06	.4505-06	.4131-06				
797.	.6077-06	.4733-06	.3041-06	.3352-06	.3315-06	.3145-06	.2994-06	.2791-06
798.	.2621-06	.2477-06	.2360-06	.2177-06				
799.	.2562-06	.2196-06	.1469-06	.1655-06	.1665-06	.1594-06	.1517-06	.1417-06
800.	.1337-06	.1273-06	.1221-06	.1134-06				
801.	.9233-07	.8054-07	.5551-07	.6173-07	.6532-07	.6322-07	.6032-07	.5648-07
802.	.5353-07	.5135-07	.4956-07	.4632-07				
803.	.4536-07	.3898-07	.2736-07	.3176-07	.3288-07	.3204-07	.3061-07	.2872-07
804.	.2727-07	.2627-07	.2545-07	.2386-07				
805.	.3746-03	.6256-04	.2545-04	.2410-04	.2466-04	.2753-04	.2819-04	.2718-04
806.	.2500-04	.2342-04	.2187-04	.1994-04				
807.	.8856-04	.2056-04	.8840-05	.8288-05	.8064-05	.8576-05	.8704-05	.8344-05
808.	.7792-05	.7106-05	.6712-05	.6114-05				
809.	.2798-04	.9032-05	.4182-05	.3966-05	.3730-05	.3776-05	.3786-05	.3602-05
810.	.3361-05	.3103-05	.2901-05	.2642-05				
811.	.1038-04	.4446-05	.2256-05	.2198-05	.2042-05	.1984-05	.1957-05	.1847-05
812.	.1722-05	.1594-05	.1493-05	.1359-05				
813.	.3720-05	.2154-05	.1190-05	.1207-05	.1129-05	.1065-05	.1030-05	.9656-06
814.	.9000-06	.8360-06	.7855-06	.7165-06				
815.	.1119-05	.7845-06	.4779-06	.5111-06	.4938-06	.4645-06	.4431-06	.4129-06
816.	.3862-06	.3619-06	.3424-06	.3139-06				
817.	.4618-06	.3597-06	.2311-06	.2547-06	.2519-06	.2390-06	.2275-06	.2121-06
818.	.1992-06	.1882-06	.1794-06	.1654-06				
819.	.1947-06	.1669-06	.1117-06	.1258-06	.1266-06	.1211-06	.1153-06	.1077-06
820.	.1016-06	.9672-07	.9280-07	.8616-07				
821.	.7017-07	.6121-07	.4218-07	.4843-07	.4964-07	.4805-07	.4584-07	.4293-07
822.	.4868-07	.3902-07	.3766-07	.3520-07				
823.	.3295-07	.2962-07	.2079-07	.2414-07	.2499-07	.2435-07	.2326-07	.2182-07
824.	.2073-07	.1997-07	.1934-07	.1814-07				
825.	.3002-03	.5014-04	.2039-04	.1931-04	.1976-04	.2206-04	.2259-04	.2178-04
826.	.2035-04	.1877-04	.1753-04	.1598-04				
827.	.7090-04	.1647-04	.7083-05	.6641-05	.6462-05	.6872-05	.6974-05	.6686-05
828.	.6244-05	.5758-05	.5378-05	.4899-05				
829.	.2242-04	.7237-05	.3351-05	.3178-05	.2988-05	.3026-05	.3033-05	.2887-05
830.	.2693-05	.2487-05	.2324-05	.2117-05				
831.	.8314-05	.3595-05	.1808-05	.1762-05	.1636-05	.1590-05	.1568-05	.1480-05
832.	.1380-05	.1277-05	.1196-05	.1089-05				
833.	.2981-05	.1726-05	.9538-06	.9673-06	.9045-06	.8532-06	.8256-06	.7737-06
834.	.7212-06	.6699-06	.6294-06	.5741-06				
835.	.8968-06	.6286-06	.3829-06	.4096-06	.3957-06	.3722-06	.3551-06	.3308-06
836.	.3094-06	.2900-06	.2744-06	.2515-06				
837.	.3701-06	.2882-06	.1852-06	.2041-06	.2019-06	.1915-06	.1823-06	.1699-06
838.	.1596-06	.1508-06	.1437-06	.1326-06				
839.	.1560-06	.1337-06	.8949-07	.1008-06	.1014-06	.9705-07	.9237-07	.8628-07
840.	.8141-07	.7750-07	.7436-07	.6904-07				
841.	.5622-07	.4904-07	.3380-07	.3681-07	.3978-07	.3850-07	.3673-07	.3440-07
842.	.3260-07	.3127-07	.3018-07	.2821-07				
843.	.2640-07	.2374-07	.1666-07	.1934-07	.2003-07	.1951-07	.1864-07	.1749-07
844.	.1661-07	.1600-07	.1550-07	.1453-07				
845.	100.	6	7	10				
846.	50000.	100000.						
847.	100.	200.						
848.	.4213-07	.2695-05	.2833-05	.3678-05	.3871-05	.3500-05	.3141-05	.2853-05
849.	.2667-05	.2531-05	.2415-05	.2223-05				
850.	.1024-05	.3082-05	.3517-05	.4391-05	.4571-05	.4185-05	.3801-05	.3469-05
851.	.3245-05	.3076-05	.2935-05	.2700-05				
852.	.5351-05	.4760-05	.3291-05	.3774-05	.3841-05	.3664-05	.3456-05	.3210-05
853.	.3018-05	.2865-05	.2738-05	.2531-05				
854.	.7215-06	.6973-06	.5210-06	.6305-06	.6824-06	.6899-06	.6668-06	.6308-06
855.	.6054-06	.5923-06	.5806-06	.5504-06				
856.	.1481-06	.1297-06	.9731-07	.1186-06	.1300-06	.1338-06	.1313-06	.1258-06
857.	.1222-06	.1215-06	.1208-06	.1165-06				
858.	.6910-07	.5879-07	.4415-07	.5405-07	.5967-07	.6204-07	.6132-07	.5918-07
859.	.5792-07	.5813-07	.5837-07	.5692-07				
860.	.3710-07	.3154-07	.2368-07	.2099-07	.3203-07	.3338-07	.3309-07	.3201-07
861.	.3140-07	.3160-07	.3182-07	.3115-07				
862.	.1958-07	.1722-07	.1300-07	.1595-07	.1763-07	.1037-07	.1822-07	.1763-07
863.	.1731-07	.1745-07	.1759-07	.1724-07				
864.	.9271-08	.7887-08	.5926-08	.7258-08	.8019-08	.8360-08	.8290-08	.8023-08
865.	.7877-08	.7938-08	.8003-08	.7047-08				
866.	.5203-08	.4442-08	.3340-08	.4091-08	.4521-08	.4714-08	.4673-08	.4524-08
867.	.4442-08	.4477-08	.4514-08	.4427-08				
868.	.1314-07	.8438-06	.8840-06	.1148-05	.1208-05	.1092-05	.9800-06	.8900-06
869.	.8320-06	.7896-06	.7536-06	.6936-06				
870.	.3196-06	.1211-05	.1097-05	.1370-05	.1426-05	.1306-05	.1186-05	.1082-05
871.	.1012-05	.9596-06	.9156-06	.8424-06				
872.	.1678-05	.1485-05	.1027-05	.1178-05	.1198-05	.1143-05	.1073-05	.1002-05
873.	.9416-06	.8940-06	.8544-06	.7896-06				
874.	.2251-06	.2176-06	.1626-06	.1967-06	.2129-06	.2152-06	.2080-06	.1968-06
875.	.1889-06	.1848-06	.1812-06	.1717-06				
876.	.4620-07	.4048-07	.3036-07	.3701-07	.4056-07	.4176-07	.4096-07	.3924-07
877.	.3812-07	.3790-07	.3770-07	.3636-07				
878.	.2156-07	.1834-07	.1378-07	.1686-07	.1862-07	.1936-07	.1913-07	.1846-07

879.	.1657-07	.1814-07	.1821-07	.1776-07			
880.	.1158-07	.9880-06	.7388-08	.9844-06	.9992-06	.1042-07	.1032-07
881.	.9795-06	.9836-06	.9928-08	.9720-08			.9988-08
882.	.0158-08	.5372-06	.4056-08	.4976-06	.5500-06	.5742-08	.3684-08
883.	.5407-08	.5444-06	.5406-08	.5380-06			.5500-02
884.	.2692-08	.2461-08	.1849-08	.2264-08	.2502-06	.2608-08	.2566-08
885.	.2453-08	.2477-06	.2497-08	.2448-08			.2503-08
886.	.1623-08	.1366-08	.1042-08	.1276-08	.1410-08	.1471-08	.1453-08
887.	.1386-08	.1397-08	.1408-08	.1381-08			.1412-08
888.	.7332-08	.4671-06	.4911-06	.6376-06	.6709-06	.6067-06	.5444-06
889.	.4622-06	.4387-06	.4167-06	.3653-06			.4944-06
890.	.1775-06	.6729-06	.6096-06	.7011-06	.7922-06	.7253-06	.6589-06
891.	.5624-06	.5331-06	.5087-06	.4680-06			.6013-06
892.	.9276-06	.8251-06	.5704-06	.6542-06	.6658-06	.6351-06	.5991-06
893.	.5231-06	.4967-06	.4747-06	.4387-06			.5564-06
894.	.1251-06	.1209-06	.9031-07	.1093-06	.1183-06	.1196-06	.1156-06
895.	.1049-06	.1027-06	.1006-06	.9546-07			.1093-06
896.	.2567-07	.2249-07	.1687-07	.2056-07	.2253-07	.2320-07	.2270-07
897.	.2118-07	.2105-07	.2095-07	.2020-07			.2180-07
898.	.1198-07	.1019-07	.7653-08	.9369-08	.1034-07	.1075-07	.1063-07
899.	.1004-07	.1008-07	.1012-07	.9667-08			.1026-07
900.	.6431-08	.5467-08	.4104-08	.5024-08	.5551-08	.5787-08	.5736-08
901.	.5442-08	.5478-08	.5516-08	.5400-08			.5549-08
902.	.3393-08	.2934-08	.2253-08	.2764-08	.3056-08	.3184-08	.3158-08
903.	.3000-08	.3024-08	.3049-08	.2989-08			.3056-08
904.	.1607-08	.1367-08	.1027-08	.1258-08	.1390-08	.1449-08	.1437-08
905.	.1365-08	.1376-08	.1387-08	.1360-08			.1391-08
906.	.9018-09	.7790-09	.5789-09	.7091-09	.7836-09	.8171-09	.8100-09
907.	.7702-09	.7760-09	.7824-09	.7673-09			.7842-09
908.	.4762-08	.3046-06	.3203-06	.4158-06	.4375-06	.3957-06	.3551-06
909.	.3014-06	.2861-06	.2730-06	.2513-06			.3225-06
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917.	.1381-07	.1373-07	.1366-07	.1317-07			.1422-07
918.	.7812-08	.6646-08	.4991-08	.6110-08	.6745-08	.7013-08	.6932-08
919.	.6548-08	.6571-08	.6599-08	.6435-08			.6690-08
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925.	.8904-09	.8974-09	.9046-09	.8871-09			.9070-09
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927.	.5022-09	.5061-09	.5103-09	.5004-09			.5114-09
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949.	.1664-06	.1579-06	.1507-06	.1387-06			.1780-06
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1005.	.1074-07	.1046-07	.1054-07	.1034-07			.1057-07
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1302.	.1349-06	.1356-06	.1008-06	.1214-06	.1309-06	.1322-06	.1279-06
1303.	.1166-06	.1143-06	.1124-06	.1070-06			.1212-06
1304.	.3974-07	.3933-07	.2944-07	.3566-07	.3875-07	.3959-07	.3869-07
1305.	.3581-07	.3546-07	.3520-07	.3386-07			.3696-07
1306.	.1617-07	.1610-07	.1218-07	.1484-07	.1620-07	.1661-07	.1629-07
1307.	.1520-07	.1514-07	.1510-07	.1-62-07			.1562-07
1308.	.2891-08	.4324-06	.4778-06	.6307-06	.6711-06	.6089-06	.5451-06
1309.	.4624-06	.4393-06	.4200-06	.3867-06			.4947-06
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1311.	.5220-06	.4971-06	.4758-06	.4384-06			.5578-06
1312.	.9129-08	.4664-06	.5102-06	.6804-06	.7407-06	.6911-06	.6256-06
1313.	.5367-06	.5136-06	.4938-06	.4571-06			.5711-06
1314.	.1164-06	.5060-06	.4887-06	.6513-06	.6811-06	.6422-06	.5878-06
1315.	.5073-06	.4856-06	.4671-06	.4329-06			.5391-06
1316.	.4009-06	.5020-06	.4369-06	.5360-06	.5700-06	.5404-06	.5110-06
1317.	.4469-06	.4280-06	.4118-06	.3624-06			.4736-06
1318.	.3364-06	.3256-06	.2389-06	.2847-06	.3016-06	.2969-06	.2829-06
1319.	.2518-06	.2429-06	.2353-06	.2203-06			.2649-06
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1321.	.1300-06	.1265-06	.1235-06	.1166-06			.1360-06
1322.	.7496-07	.7544-07	.5600-07	.6747-07	.7273-07	.7342-07	.7104-07
1323.	.6476-07	.6351-07	.6244-07	.5942-07			.6733-07
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1325.	.1989-07	.1971-07	.1956-07	.1681-07			.2053-07
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1327.	.8444-08	.8413-08	.8391-08	.8122-08			.8678-08
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1329.	.3016-06	.2865-06	.2739-06	.2522-06			.3226-06
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1331.	.3404-06	.3242-06	.3103-06	.2659-06			.3638-06
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1337.	.2914-06	.2791-06	.2686-06	.2494-06			.3088-06
1338.	.2194-06	.2123-06	.1558-06	.1857-06	.1967-06	.1936-06	.1845-06
1339.	.1642-06	.1584-06	.1535-06	.1437-06			.1728-06
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1341.	.8480-07	.8251-07	.8055-07	.7607-07			.8868-07
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1343.	.4223-07	.4142-07	.4072-07	.3875-07			.4391-07
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1345.	.1297-07	.1285-07	.1276-07	.1227-07			.1339-07
1346.	.5858-08	.5835-08	.4414-08	.5377-08	.5868-08	.6019-08	.5901-08
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1368.	.1041-08	.1557-06	.1720-06	.2270-06	.2416-06	.2192-06	.1962-06

1369.	.1663-06	.1542-06	.1512-06	.1392-06			
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1382.	.2690-07	.2716-07	.2016-07	.2429-07	.2618-07	.2643-07	.2558-07
1383.	.2331-07	.2286-07	.2248-07	.2139-07			.2424-07
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1385.	.7162-08	.7095-08	.7041-08	.6771-08			.7391-08
1386.	.3234-08	.3221-08	.2437-08	.2968-08	.3239-08	.3322-08	.3258-08
1387.	.3040-08	.3329-08	.3021-08	.2924-08			.3124-08
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1423.	.6405-06	.6231-06	.6083-06	.5744-06			.6701-06
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1427.	.1431-06	.1403-06	.1378-06	.1312-06			.1488-06
1428.	.4936-08	.7756-06	.6592-06	.1135-05	.1209-05	.1097-05	.9820-06
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1431.	.9408-06	.8956-06	.8572-06	.7904-06			.1005-05
1432.	.7867-08	.8096-06	.9148-06	.1231-05	.1345-05	.1254-05	.1133-05
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1438.	.6192-06	.7004-06	.5476-06	.6688-06	.7164-06	.7012-06	.6616-06
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1442.	.2466-06	.2452-06	.1814-06	.2174-06	.2322-06	.2313-06	.2220-06
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1447.	.4464-07	.4376-07	.4300-07	.4092-07			.4644-07
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1449.	.4627-06	.4348-06	.4202-06	.3869-06			.4949-06
1450.	.2936-08	.4536-06	.5158-06	.6916-06	.7480-06	.6867-06	.6153-06
1451.	.5227-06	.4976-06	.4762-06	.4391-06			.5584-06
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1453.	.5393-06	.5164-06	.4964-06	.4598-06			.5740-06
1454.	.1294-07	.4373-06	.4767-06	.6371-06	.6969-06	.6542-06	.5938-06
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1463.	.1117-06	.1080-06	.1054-06	.9956-07			.1162-06
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							.2580-07

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1472.	.2840-08	.2933-06	.3314-06	.4061-06	.4874-06	.4545-06	.4106-06	.3743-06
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1474.	.8438-08	.2852-06	.3109-06	.4155-06	.4545-06	.4267-06	.3872-06	.3538-06
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1487.	.1617-07	.1586-07	.1558-07	.1483-07				
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1489.	.2192-06	.2083-06	.1991-06	.1833-06				
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