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CUBIC SPLINE FUNCTION INTERPOLATION IN ATMOSPHERE MODELS FOR THE SOFTWARE DEVELOPMENT LABORATORY:

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FORMULATION AND DATA

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CUBIC SPLINE FUNCTION INTERPOLATION IN ATMOSPHERE

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MODELS FOR THE SOFTWARE DEVELOPMENT LABORATORY:

FORMULATION AND DATA

James C. Kirkpatrick Lyndon B. Johnson Space Center Houston, Texas 77058

CUBIC SPLINE FUNCTION INTERPOLATION IN ATMOSPHERE

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MODELS FOR THE SOFTWARE DEVELOPMENT LABORATORY:

FORMULATION AND DATA

By James C. Kirkpatrick Lyndon B. Johnson Space Center

SUMMARY

Six standard reference atmosphere models for the years 1962, 1963 (Patrick Air Force Base), and 1966 (for July and January at latitudes 30° and 60° N) are presented in tabular form. The tabulation, which is presented in block data format, is adequate for the accurate representation of the atmospheric parameters of pressure, density, speed of sound, and coefficient of viscosity as functions of altitude. The range of tabulated altitudes extends from 0 to 205 kilometers. Interpolation for the desired parameters is performed by using cubic spline functions. The recursive relations necessary to compute the cubic spline function coefficients are derived and implemented in subroutine form. Detailed FLOWGM flow charts and FORTRAN listings of the atmosphere package are presented in the appendix.

INTRODUCTION

This report presents a tabulation in block data format of selected altitudecorrelated values of pressure, density, speed of sound, and coefficient of viscosity for each of six atmosphere models. These values were selected such that they adequately represent their respective functions for accurate interpolation by cubic spline functions throughout the range of tabulated altitudes. Three companion subprograms, which form the preprocessor (subroutines SDAT and SPLN1) and processor (subroutine ATMSFL), are presented. These subprograms, together with the data element, compose the spline fit atmosphere package. In the preprocessor, the data for the desired atmosphere model are selected and processed for proper order and unit consistency before SPLN1 is used to compute the spline function coefficients. In the processor, the data table is searched to establish the interval in which the desired altitude lies, and then the values of the previously mentioned parameters are computed by using the cubic spline function coefficients for the appropriate altitude interval.

The cubic spline technique provides an effective, easy-to-use method for the unerring reproduction of a function from tabulated data. The method also ensures continuity in the function and in its first and second derivatives. After the cubic spline function coefficients have been computed, they may be stored for repeated use as long as the tabulated data remain unchanged.

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SYMBOLS

a, b, c, d	edges of the beam
a _k	defined in equation (37)
^b k	defined in equation (38)
c ₁ , c ₂	arbitrary constants of integration
° _k	defined in equation (39)
c ₁ (k)	defined in equation (68)
e ₂ (k)	defined in equation (69)
c ₃ (k)	defined in equation (70)
dA	differential element of a cross-sectional area of a beam
ds	differential element of arc length
dx	differential element of the length of the beam
dθ	differential element of the angle through which a cross-sectional surface of a beam is rotated under load
d _k	defined in equation (49)
E	modulus of elasticity of the beam
EI	flexural rigidity (can be taken as unity for any plane curve without loss of generality)
ef	original unstressed length of the fiber
gh	typical fiber of the beam
hk	defined in equation (1)
I	area moment of inertia
Q	distance from the neutral surface to a deformed fiber of a loaded beam

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M (x)	bending moment as a function of the distance \mathbf{x} measured from the end of the beam
M _k	bending moment at the kth section of the beam or an approxima- tion to the second derivative at the kth section
Ρ	load that acts upon the beam
Q _k	defined in equation (44)
R ₁ , R ₂	support reactions of the beam
S	stress
s	arc length of a curve
U _k	defined in equation (46)
v _k	shear force at the kth section of the beam
y (k)	defined in equation (24)
y (x)	defined in equation (23)
у'	slope of the deformation curve
y'(x)	defined in equation (22)
З	strain (change in length per unit of length)
ρ	radius of curvature of the neutral surface
φ	angle that the tangent to a curve makes with the axis of abscissas

SPLINE FIT ATMOSPHERE MODEL PACKAGE

Model History

The spline fit atmosphere package discussed in this report, was originally developed for the space vehicle dynamic simulator (SVDS) program in November 1972. In February 1973, the package was incorporated with appreciable modification, into the Shuttle optimal abort program (SOAP). The package presented here is from an early version of the SOAP. For implementation into the SOAP, the SVDS version was modified, at the expense of storage, to improve its performance and execution requirements. The spline fit atmosphere package has performed accurately in both programs.

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Description of the Models

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The spline fit atmosphere package consists of six atmosphere models:

- 1. The 1962 standard reference atmosphere
- 2. The 1966 standard reference atmosphere for July at latitude 30° N
- 3. The 1966 standard reference atmosphere for January at latitude 30° N
- 4. The 1966 standard reference atmosphere for July at latitude 60° N
- 5. The 1966 standard reference atmosphere for January at latitude 60° N
- 6. The 1963 Patrick Air Force Base (AFB) reference atmosphere

Each model consists of a tabulation of altitude-correlated values of the atmospheric parameters of pressure, density, speed of sound, and coefficient of viscosity. All six models are correlated to the same table of altitudes and tabulated in the foregoing sequence. All tabulated atmospheric parameter values are expressed in the meter-kilogram-second (MKS) system of units. Altitude values are given in meters, pressure values are given in millibars, density values are given in kilograms per cubic meter, speed of sound values are given in meters per second, and coefficient of viscosity values are given in kilograms per meter per second. Each atmospheric parameter is represented as a function of altitude by 123 data points. These data have been selected on best-fit considerations, with particular emphasis on those regions in which the tabulation shows that the function is discontinuous in its first derivative. Each model is represented in the 0- to 205-kilometer altitude range. The tabulation was compiled from references 1 to 3.

Because the tabulation for the 1966 atmosphere extends only to 118 kilometers, the last data point is repeated to 205 kilometers for model consistency. If the model altitude boundaries are exceeded, the package returns the last tabulated parameter values at the violated boundary.

Assumptions and Approximations

The spline fit atmosphere model package was developed to accommodate the needs and restrictions of the SVDS program. As a result, temperature, an important atmospheric parameter, was not included in the list of parameters modeled when the package was built. This parameter can be added to any model desired at the cost of tabulating the parameter values required.

The tabulation was performed in the MKS system of units because this system was common to all the references used. A common system of units is advantageous because a single set of conversion factors can be used to place all models in any desired working units. The British engineering system of units was used to convert the atmospheric data in this package (i.e., pressure in pounds-force per square foot, density in slugs per cubic foot, speed of sound in feet per second, and coefficient of viscosity in pounds-mass seconds per square foot).

Atmospheric par	ameter functio	n values were se	elected at various	altitudes.
The increment of altitu	de was varied	as a function of	altitude as follows	۱

<u>Altitude range, km</u>	Altitude increment, m
0 to 3	250
3 to 5	500
5 to 20	1000
20 to 160	2000
160 to 204	4000
204 to 205	1000

Additional data points were added to mark the location in which the atmospheric parameter functions undergo first-derivative discontinuities. These discontinuities occur only in the speed of sound and coefficient of viscosity functions, which are affected because of temperature variations. As a result, when temperature is added to the atmosphere models, the choice of altitudes should accommodate discontinuities in the first derivative of the temperature functions. Because of the need to intersperse additional points, an ordering scheme is included in the preprocessor SDAT to place all altitude values and associated function values in ascending order of the independent variable. This order must be established before calling subroutine SPLN1 to compute the cubic spline coefficients.

The small altitude increment used at the extremes of the tabulation permitted the approximation of the first derivatives of the function at the initial and terminal boundaries by forming the difference quotient. This assumption of linearity at the extremes of the tabulated function is the only assumption made in the model. (The theoretical arguments on which the algorithm is based result in the additional assumption that the curvature of the function can be represented by its second derivative. The data sample selected is expected to comply with this assumption.)

DERIVATION OF THE RECURSIVE RELATIONS FOR COMPUTING THE COEFFICIENTS OF THE CUBIC SPLINE FUNCTIONS

The mathematical spline is a formal analog of the draftsman's spline, a flexible beam device used to fair out a smooth curve between specified data points. The mechanical spline is anchored on the drawing board at each plotted data point. The curvature of the spline results from the bending moments applied to the beam.

In deriving the recursive relations of the spline algorithm, the elementary theory of elasticity is useful. Consider a simply supported beam (i.e., ends

unrestrained) under the action of an applied load, however distributed. For an elementary analysis, the following assumptions are made:

1. Sections of the beam, which were originally plane, remain plane.

2. The material of the beam is homogeneous and obeys Hooke's law (the deformation is proportional to the applied load).

3. The moduli of elasticy for tension and for compression are equal.

4. The beam is initially straight and is of constant cross section.

Figure 1 shows a uniform homogeneous beam under the action of the load P. The beam is simply supported and is in static equilibrium under the action of the support reactions R_1 and R_2 . The differential element of length dx, bounded by the edges a, b, c, and d, is bent or deformed under load into the exaggerated shape shown in figure 2 where c and d are deflected to c' and d'. The sections ab and cd are shown rotated relative to each other through an angle d θ , but they remain undistorted in accordance with assumption 1. The fibers in the region of ac are contracted, or shortened, in compression, whereas those in the region bd are elongated, or lengthened, in tension. Because the beam is uniform and homogeneous in going from contraction to elongation, a region conceivably exists in which the fibers maintain their original unstressed length. This surface of unstressed fibers is referred to as the neutral surface. In the deformation of a typical fiber gh located at distance ℓ from the neutral surface, the elongation hk is the arc of a circle of radius ℓ , which subtends the angle d θ and is given by the relation

$$hk = \ell \, d\theta \tag{1}$$

The strain ε (the change in length per unit of length) is found by dividing the deformation hk by the original unstressed length of the fiber ef.

$$\varepsilon = \frac{hk}{ef} = \frac{\ell}{ef}$$
(2)

If the radius of curvature of the neutral surface is ρ , the curved length of ef is equal to $\rho d\theta$. The strain can then be expressed as

$$\varepsilon = \frac{\ell}{\rho} \frac{d\theta}{d\theta} = \frac{\ell}{\rho}$$
(3)

Because the material is assumed to be homogeneous and to obey Hooke's law, the stress (force per unit area) in the fiber gh is given by

$$S = E_{\varepsilon} = \frac{E}{\rho} \varrho \tag{4}$$

where E is the modulus of elasticity defined as the ratio of the stress S to the strain ε . Clearly, the sign of S varies with the sign of ℓ : negative or compressive stress for ℓ negative and positive or tensile stress for ℓ positive.

The beam in figure 1 is shown in static equilibrium. As a result, the algebraic sum of all forces and moments acting on the beam must be zero. The bending moment M(x) must be balanced by the resisting moment. The resisting moment is the sum of all stresses S acting on each differential area element of cross section dA multiplied by its moment arm ℓ measured from the neutral axis as shown in figure 3. Hence, the bending moment is

$$M(x) = \int \ell(S dA)$$
 (5)

Replacing S with $E\ell/\rho$ from equation (4) gives

$$M(\mathbf{x}) = EI/\rho \tag{6}$$

where I is the area moment of inertia.

$$\frac{1}{\rho} = \frac{M(x)}{EI}$$
(7)

The reciprocal of ρ , the radius of curvature of the beam, is called the curvature of the curve. For plane curves, the curvature is defined as the rate at which the tangent to the curve turns compared with the description of arc. Therefore, if ϕ is the angle that the tangent to a curve makes with the axis of abscissas and s is the element of arc length, then the curvature is defined as

$$\frac{1}{\rho} = \frac{d\varphi}{ds} \tag{8}$$

The slope of the tangent to the curve is

$$y' = \frac{dy}{dx} = \tan \varphi$$

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or

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$$\varphi = \arctan y' \tag{10}$$

and

$$d\phi = \frac{dy'}{\left(1 + {y'}^{2}\right)^{\frac{1}{2}}} dx = \frac{y''}{\left(1 + {y'}^{2}\right)^{\frac{1}{2}}} dx$$
(11)

The differential element of arc length ds is defined as

$$ds = (1 + y'^{2})^{\frac{1}{2}} dx$$
 (12)

Therefore,

$$\frac{1}{\rho} = \frac{d\phi}{ds} = \frac{y''}{(1 + y'^2)^2}$$
(13)

and

$$\frac{y''}{(1+y'^2)^2} = \frac{M(x)}{EI}$$
(14)

The assumption is usually made that the slope of the deformation curve y' is small so that ${y'}^2$ can be ignored compared to unity. When this assumption is made, the differential equation of the deformation curve can be written as

$$\mathbf{M}(\boldsymbol{x}) = \mathbf{E}\mathbf{I}\mathbf{y}^{\prime\prime}(\mathbf{x}) \tag{15}$$

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The assumption concerning the elastic behavior of a beam made at the beginning of this discussion can be realized by a mathematical function of one variable. The assumption that the slope of the curve is small and that its square can be neglected can be realized by an arbitrary mathematical function only over relatively short intervals. Under this condition, the curvature can be approximated by the second derivative of the function. This point must be remembered when selecting a set of data points to represent a function for spline fit. Sufficient data points must be chosen in the appropriate concentration such that in the regions where the curvature is large, each section of the curve can be considered as a simply supported beam (adequately supported so that the slope of the deformation curve is negligible).

The following definitions are required for the discussion that follows.

1. The shear at a section of a beam is the algebraic sum of all external forces acting on one side of the section.

2. The bending moment at a section of a beam is the algebraic sum of the moments of all the external forces on one side of the section.

Hence, if a mathematical function is represented in a region of definition by n data points, the region of definition will have been divided into n - 1 sections (fig. 4). If each section of the curve between given data points is considered to be a beam deflected under load, then the bending moment in the kth section between the kth and (k + 1)th data points will be given by the equatic

$$M(x) = \int_{x_k}^{x} V_k dx + M_k$$

where V_k and M_k are the shear and bending moments at the kth section. Therefore,

$$M(\mathbf{x}) = V_{\mathbf{k}} \left(\mathbf{x} - \mathbf{x}_{\mathbf{k}} \right) + M_{\mathbf{k}}$$
(17)

Clearly, where $x = x_k$, $M(x_k) = M_k$ and where $x = x_{k+1}$, $M(x_{k+1}) = M_{k+1}$ or

$$M_{k+1} = V_k (x_{k+1} - x_k) + M_k$$
(18)

Solving for V_k gives

$$V_{k} = \frac{M_{k+1} - M_{k}}{X_{k+1} - X_{k}} = \frac{\Delta M_{k}}{\Delta X_{k}}$$
(19)

Substituting equation (19) into equation (17) gives

$$M(\mathbf{x}) = \frac{\left(\frac{M_{k+1} - M_{k}}{(x_{k+1} - x_{k})} + M_{k}\right)}{\left(\frac{x_{k+1} - x_{k}}{(x_{k+1} - x_{k})} + M_{k}\right)}$$

$$= M_{k+1} \frac{\left(\frac{x_{k+1} - x_{k}}{(x_{k+1} - x_{k})} + M_{k}\right)}{\left(\frac{x_{k+1} - x_{k}}{(x_{k+1} - x_{k})}\right)}$$
(20)

Substituting the bending moment M(x) by its equivalent from equation (15) (the product EI is known as the flexural rigidity and can be taken as unity for any plane curve without loss of generality) in equation (20) gives

$$y''(x) = M_{k+1} \frac{(x - x_k)}{\Delta x_k} + M_k \frac{(x_{k+1} - x)}{\Delta x_k}$$
 (21)

where $\Delta x_k = x_{k+1} - x_k$. Integrating twice gives

y'(x) = M_{k+1}
$$\frac{(x - x_k)^2}{2\Delta x_k} - M_k \frac{(x_{k+1} - x)^2}{2\Delta x_k} + C_1$$
 (22)

$$y(x) = M_{k+1} \frac{\left(x - x_k\right)^3}{6\Delta x_k} + M_k \frac{\left(x_{k+1} - x\right)^3}{6\Delta x_k} + C_1 x + C_2$$
(23)

where C_1 and C_2 are constants of integration. At $x = x_k$, $y(x_k) = y_k$; at $x = x_{k+1}$, $y(x_{k+1}) = y_{k+1}$. Substituting y_k and y_{k+1} in equation (23) gives

$$y_k = M_k \frac{\Delta x_k^2}{6} + C_1 x_k + C_2$$
 (24)

and

$$y_{k+1} = M_{k+1} \frac{\Delta x_k^2}{6} + C_1 x_{k+1} + C_2$$
 (25)

Subtracting equation (24) from equation (25) gives

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$$y_{k+1} - y_k = (M_{k+1} - M_k) \frac{\Delta x_k^2}{6} + C_1 \Delta x_k$$
 (26)

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Solving for C_1 from equation (26) gives

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$$C_{1} = \frac{\mathbf{y}_{k+1} - \mathbf{y}_{k}}{\Delta \mathbf{x}_{k}} - \frac{(\mathbf{M}_{k+1} - \mathbf{M}_{k})\Delta \mathbf{x}_{k}}{6}$$
$$= \left(\frac{\mathbf{y}_{k+1}}{\Delta \mathbf{x}_{k}} - \frac{\mathbf{M}_{k+1}\Delta \mathbf{x}_{k}}{6}\right) - \left(\frac{\mathbf{y}_{k}}{\Delta \mathbf{x}_{k}} - \frac{\mathbf{M}_{k}\Delta \mathbf{x}_{k}}{6}\right)$$
(27)

Substituting for C_1 from equation (27) in equation (25) and solving for C_2 gives

$$C_{2} = x_{k+1} \left(\frac{y_{k}}{\Delta x_{k}} - \frac{M_{k} \Delta x_{k}}{6} \right) - x_{k} \left(\frac{y_{k+1}}{\Delta x_{k}} - \frac{M_{k+1} \Delta x_{k}}{6} \right)$$
(28)

Substituting the expressions for C_1 and C_2 from equations (27) and (28) in equations (22) and (23) gives the expression for the cubic spline function in the kth interval as

$$y(x) = M_{k+1} \frac{\left(x - x_{k}\right)^{3}}{6\Delta x_{k}} + M_{k} \frac{\left(x_{k+1} - x\right)^{3}}{6\Delta x_{k}} + \left(\frac{y_{k+1}}{\Delta x_{k}} - \frac{M_{k+1}\Delta x_{k}}{6}\right) (x - x_{k}) + \left(\frac{y_{k}}{\Delta x_{k}} - \frac{M_{k}\Delta x_{k}}{6}\right) (x_{k+1} - x)$$
(29)

and its first derivative is given by

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$$\mathbf{y}'(\mathbf{x}) = \mathbf{M}_{\mathbf{k}+1} \frac{\left(\mathbf{x} - \mathbf{x}_{\mathbf{k}}\right)^{2}}{2\Delta \mathbf{x}_{\mathbf{k}}} - \mathbf{M}_{\mathbf{k}} \frac{\left(\mathbf{x}_{\mathbf{k}+1} - \mathbf{x}\right)^{2}}{2\Delta \mathbf{x}_{\mathbf{k}}}$$
$$+ \left(\frac{\mathbf{y}_{\mathbf{k}+1}}{\Delta \mathbf{x}_{\mathbf{k}}} - \frac{\mathbf{M}_{\mathbf{k}+1}\Delta \mathbf{x}_{\mathbf{k}}}{6}\right) - \left(\frac{\mathbf{y}_{\mathbf{k}}}{\Delta \mathbf{x}_{\mathbf{k}}} - \frac{\mathbf{M}_{\mathbf{k}}\Delta \mathbf{x}_{\mathbf{k}}}{6}\right)$$
(30)

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Equations (21), (29), and (30) provide expressions for the values of the cubic spline function and its first and second derivatives in the kth interval. These expressions can be written for the cubic spline function and its first and second derivatives in the (k - 1)th interval by replacing k with k - 1. Therefore, in the (k - 1)th interval,

$$y(x) = M_{k} \frac{\left(x - x_{k-1}\right)^{3}}{6\Delta x_{k-1}} + M_{k-1} \frac{\left(x_{k} - x\right)^{3}}{6\Delta x_{k-1}} + \left(\frac{y_{k}}{\Delta x_{k-1}} - \frac{M_{k}\Delta x_{k-1}}{6}\right) (x - x_{k-1}) + \left(\frac{y_{k-1}}{\Delta x_{k-1}} - \frac{M_{k-1}\Delta x_{k-2}}{6}\right) (x_{k} - x)$$
(31)

$$y'(x) = M_{k} \frac{\left(\frac{x - x_{k-1}}{2\Delta x_{k-1}}\right)^{2}}{\frac{2}{\Delta x_{k-1}}} - M_{k-1} \frac{\left(\frac{x_{k} - x}{2\Delta x_{k-1}}\right)^{2}}{\frac{2}{\Delta x_{k-1}}} + \left(\frac{y_{k}}{\frac{\Delta x_{k-1}}{k-1}} - \frac{M_{k}\Delta x_{k-1}}{6}\right) - \left(\frac{y_{k-1}}{\Delta x_{k-1}} - \frac{M_{k-1}\Delta x_{k-1}}{6}\right)$$
(32)

y"(x) = M_k
$$\frac{(x - x_{k-1})}{\Delta x_{k-1}} + M_{k-1} \frac{(x_k - x)}{\Delta x_{k-1}}$$
 (33)

A cursory inspection of equations (29) and (31) and equations (21) and (33) will show that neither the cubic spline function nor its second derivative will experience discontinuity in going from the (k - 1)th to the kth interval. This may be shown simply be replacing x with x_k in these expressions. To ensure that the cubic spline functions will experience no discontinuity in the first derivative in going from the (k - 1)th to the kth interval, replace x with x_k in equations (30) and (32) and equate the results. Thus,

$$M_{k} \frac{\Delta x_{k-1}}{2} + \left(\frac{y_{k}}{\Delta x_{k-1}} - \frac{M_{k}\Delta x_{k-1}}{6}\right) - \left(\frac{y_{k-1}}{\Delta x_{k-1}} - \frac{M_{k-1}\Delta x_{k-1}}{6}\right)$$
$$= -M_{k} \frac{\Delta x_{k}}{2} + \left(\frac{y_{k+1}}{\Delta x_{k}} - \frac{M_{k+1}\Delta x_{k}}{6}\right) - \left(\frac{y_{k}}{\Delta x_{k}} - \frac{M_{k}\Delta x_{k}}{6}\right)$$
(34)

 \mathbf{or}

$$\frac{\Delta x_{k-1}}{6} M_{k-1} + \frac{\Delta x_{k-1}}{3} M_{k} + \frac{\Delta x_{k}}{6} M_{k+1} = \frac{\Delta y_{k}}{\Delta x_{k}} - \frac{\Delta y_{k-1}}{\Delta x_{k-1}}$$
(35)

where $\Delta y_k = y_{k+1} - y_k$ and $\Delta y_{k-1} = y_k - y_{k-1}$. Equation (35) permits the writing of k equations for the solution of k + 2 unknown values of M. Clearly, two second derivative values must be supplied at any two of the tabulated data points. However, if the second derivatives are not known, first derivative values may be used through equation (30). Further, if both the first and second derivative-tives of the function are known at any one of the tabulated points, the set of simultaneous equations given by equation (35) can still be solved.

Solving for M_{k+1} in equation (35) gives

$$M_{k+1} = -\frac{2\left(\Delta x_{k} + \Delta x_{k-1}\right)M_{k}}{\Delta x_{k}} - \frac{\Delta x_{k-1}}{\Delta x_{k}}M_{k-1} + \frac{6}{\Delta x_{k}}\left(\frac{\Delta y_{k}}{\Delta x_{k}} - \frac{\Delta y_{k-1}}{\Delta x_{k-1}}\right)$$
$$= a_{k}M_{k} + b_{k}M_{k-1} + c_{k}$$
(36)

where

$$a_{k} = -\frac{2\left(\Delta x_{k} + \Delta x_{k-1}\right)}{\Delta x_{k}}$$
(37)

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$$\mathbf{b}_{\mathbf{k}} = \frac{\Delta \mathbf{x}_{\mathbf{k}-1}}{\Delta \mathbf{x}_{\mathbf{k}}}$$
(38)

$$c_{k} = \frac{6}{\Delta x_{k}} \left(\frac{\Delta y_{k}}{\Delta x_{k}} - \frac{\Delta y_{k-1}}{\Delta x_{k-1}} \right)$$
(39)

Assume a solution of the form

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$$\mathbf{M}_{k+1} = \frac{1}{\mathbf{Q}_k} \left(\mathbf{M}_k - \mathbf{U}_k \right)$$
(40)

$$M_{k-1} = Q_{k-1}M_{k} + U_{k-1}$$
(41)

Substituting equation (41) in equation (36) gives

$$M_{k+1} = a_{k}M_{k} + b_{k}(Q_{k-1}M_{k} + U_{k-1}) + c_{k}$$

= $(a_{k} + b_{k}Q_{k-1})M_{k} + b_{k}U_{k-1} + c_{k}$ (42)

Comparing equations (40) and (42) gives

$$\frac{1}{Q_k} = a_k + b_k Q_{k-1}$$
 (43)

 \mathbf{or}

$$Q_{k} = \frac{1}{a_{k} + b_{k}Q_{k-1}}$$
 (44)

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and

$$-\frac{U_k}{Q_k} = b_k U_{k-1} + c_k$$
(45)

or

$$U_{\mathbf{k}} = -Q_{\mathbf{k}} \left(\mathbf{b}_{\mathbf{k}} U_{\mathbf{k}-1} + \mathbf{c}_{\mathbf{k}} \right)$$
(46)

Substituting equations (37), (38), and (39) in equations (44) and (46) gives

$$Q_{k} = -\frac{\Delta x_{k}}{2(\Delta x_{k} + \Delta x_{k-1}) + \Delta x_{k-1}Q_{k-1}} = -\frac{\Delta x_{k}}{2(x_{k+1} - x_{k-1}) + \Delta x_{k-1}Q_{k-1}}$$
(47)
$$U_{k} = -Q_{k} \left[-\frac{\Delta x_{k-1}}{\Delta x_{k}} U_{k-1} + \frac{6}{\Delta x_{k}} \left(\frac{\Delta y_{k}}{\Delta x_{k}} - \frac{\Delta y_{k-1}}{\Delta x_{k-1}} \right) \right]$$
$$= \frac{Q_{k}}{\Delta x_{k}} \left[\Delta x_{k-1}U_{k-1} + 6 \left(\frac{\Delta y_{k-1}}{\Delta x_{k-1}} - \frac{\Delta y_{k}}{\Delta x_{k}} \right) \right]$$
(48)

Equations (40), (41), (47), and (48) are the recursive relations that will be used for the solution of the set of simultaneous linear equations given by equation (35). Before this is done, equations (29) and (30) will be put in a more convenient form by using the following difference operators.

$$d_{k} = x - x_{k} \tag{49}$$

$$d_{k+1} = x - x_{k+1}$$
(50)

Adding and subtracting x_k to the right-hand side of equation (50) gives

$$d_{k+1} = x - x_{k+1} + x_k - x_k = d_k - \Delta x_k$$
(51)

Substituting equations (49) and (50) in equations (29) and (30) gives

$$y(x) = M_{k+1} \frac{d_{k}^{3}}{6\Delta x_{k}} - M_{k} \frac{d_{k+1}^{3}}{6\Delta x_{k}} + \left(\frac{y_{k+1}}{\Delta x_{k}} - \frac{M_{k+1}\Delta x_{k}}{6}\right) d_{k} - \left(\frac{y_{k}}{\Delta x_{k}} - \frac{M_{k}\Delta x_{k}}{6}\right) d_{k+1}$$
(52)
$$y'(x) = M_{k+1} \frac{d_{k}^{2}}{2\Delta x_{k}} - M_{k} \frac{d_{k+1}^{2}}{2\Delta x_{k}} + \left(\frac{y_{k+1}}{\Delta x_{k}} - \frac{M_{k+1}\Delta x_{k}}{6}\right) - \left(\frac{y_{k}}{\Delta x_{k}} - \frac{M_{k}\Delta x_{k}}{6}\right)$$

$$= M_{k+1} \frac{d_{k}^{2}}{2\Delta x_{k}} - M_{k} \frac{d_{k+1}^{2}}{2\Delta x_{k}} + \frac{\Delta y_{k}}{\Delta x_{k}} - \frac{\Delta M_{k}\Delta x_{k}}{6}$$
(53)

where $\Delta M_k = M_{k+1} - M_k$.

From equations (49), (50), and (51), when $x = x_k$, then $d_k = 0$ and $d_{k+1} = -\Delta x_k$; when $x = x_{k+1}$, then $d_k = \Delta x_k$ and $d_{k+1} = 0$. Substituting these results in equation (53) gives, for $x = x_k$,

$$y'(x_{k}) = -M_{k} \frac{\Delta x_{k}}{2} + \left(\frac{y_{k+1}}{\Delta x_{k}} - \frac{M_{k+1}\Delta x_{k}}{6}\right) - \left(\frac{y_{k}}{\Delta x_{k}} - \frac{M_{k}\Delta x_{k}}{6}\right)$$
$$= \frac{\Delta y_{k}}{\Delta x_{k}} - \frac{\Delta x_{k}}{6} \left(M_{k+1} + 2M_{k}\right)$$
(54)

and, for $x = x_{k+1}$,

$$y'(\mathbf{x}_{k+1}) = M_{k+1} \frac{\Delta \mathbf{x}_{k}}{2} + \left(\frac{\mathbf{y}_{k+1}}{\Delta \mathbf{x}_{k}} - \frac{\mathbf{M}_{k+1}\Delta \mathbf{x}_{k}}{6}\right) - \left(\frac{\mathbf{y}_{k}}{\Delta \mathbf{x}_{k}} - \frac{\mathbf{M}_{k}\Delta \mathbf{x}_{k}}{6}\right)$$
$$= \frac{\Delta \mathbf{y}_{k}}{\Delta \mathbf{x}_{k}} + \frac{\Delta \mathbf{x}_{k}}{6} \left(\mathbf{M}_{k} + 2\mathbf{M}_{k+1}\right)$$
(55)

The use of these recursive relations is described in the following six cases.

Case 1: Solution of the set of simultaneous equations given by equation (35) when the second derivatives of the function are known at the initial and terminal tabulated boundaries. In this case, $y''(x_1) = M_1$ and $y''(x_n) = M_n$. From equation (41) with k = 2, if $Q_1 = 0$, then $M_1 = U_1$. By using these values for Q_1 and U_1 , equations (47) and (48) can be used to generate values of Q_k and U_k , recursively, for all values of k ranging from 2 to n - 1. After these values are available, then all values of M_k can be computed by using equation (40) written in the form of equation (41)

$$\mathbf{M}_{\mathbf{k}} = \mathbf{Q}_{\mathbf{k}} \mathbf{M}_{\mathbf{k}+1} + \mathbf{U}_{\mathbf{k}}$$
(56)

and propagating the solution backwards with k ranging from n-1 to 2. As M_n and M_1 are known, all n second-derivative values will be available.

Case 2: Solution of the set of simultaneous equations given by equation (35) when the first derivatives of the function are known at the initial and terminal tabulated boundaries. In this case, $y'(x_1) = D_1$ and $y'(x_n) = D_n$. Substitute k = 1 in equation (54) for M_{k+1} from equation (40) and solve for U_1 to get

$$y'(x_{1}) = D_{1} = \frac{\Delta y_{1}}{\Delta x_{1}} - \frac{\Delta x_{1}}{6} \left(\frac{M_{1} - U_{1}}{Q_{1}} + 2M_{1} \right)$$

$$U_{1} = Q_{1} \left[M_{1} \left(2 + \frac{1}{Q_{1}} \right) + \frac{6}{\Delta x_{1}} \left(D_{1} - \frac{\Delta y_{1}}{\Delta x_{1}} \right) \right]$$
(57)

If $Q_1 = -1/2$, then from equation (57),

$$U_{1} = \frac{3}{\Delta x_{1}} \left(\frac{\Delta y_{1}}{\Delta x_{1}} - D_{1} \right)$$
(58)

By using $Q_1 = -1/2$ and the value obtained for U_1 from equation (58), compute all values of Q_k and U_k from equations (47) and (48) for values of k ranging from 2 to n - 1. With the value of Q_{n-1} and U_{n-1} thus computed, substitute equation (41) in equation (55) for M_{n-1} such that at $x = x_n$,

$$y'(x_n) = D_n = \frac{\Delta y_{n-1}}{\Delta x_{n-1}} + \frac{\Delta x_{n-1}}{6} \left(Q_{n-1} M_{n-1} + U_{n-1} + 2M_n \right)$$
 (59)

Solving for M_n from equation (59) gives

$$M_{n} = \frac{\frac{6}{\Delta x_{n-1}} \left(D_{n} - \frac{\Delta y_{n-1}}{\Delta x_{n-1}} \right)^{-} U_{n-1}}{2 + Q_{n-1}}$$
(60)

With the value of M_n known, the solution can be propagated backward by using equation (41) with k ranging from n - 1 to 1. Thus, M_1 will be computed as the last value.

Case 3: Solution of the set of simultaneous equations given by equation (35) when the first and second derivatives of the function are known, respectively, at the initial and terminal tabulated boundaries. In this case, $y'(x_1) = D_1$ and $y''(x_1) = M$. Proceed as in case 2 excluding the computation for M, which is not

 $y''(x_n) = M_n$. Proceed as in case 2 excluding the computation for M_n , which is not needed.

Case 4: Solution of the set of simultaneous equations given by equation (35) when the first and second derivatives of the function are known, respectively, at the terminal and initial tabulated boundaries. In this case, $y'(x_n) = D_n$ and $y''(x_1) = M_1$. Proceed as in case 1 and compute the value of M_n as in case 2.

Case 5: Solution of the set of simultaneous equations given by equation (35) when the first and second derivatives of the function are known at the initial tabulated boundary. In this case, $y'(x_1) = D_1$ and $y''(x_1) = M_1$. From equation (56), if $Q_1 = 1$, then

$$U_{1} = 3M_{1} + \frac{6}{\Delta x_{1}} \left(D_{1} - \frac{\Delta y_{1}}{\Delta x_{1}} \right)$$
(61)

With the value of $Q_1 = 1$ and the value of U_1 given by equation (61), compute all values of Q_k and U_k from equations (47) and (48) for k = 2 to n - 1. With these values of Q_k and U_k known, compute values for the second derivative from equation (40) by propagating the solution forward for k ranging from 1 to n - 1. The last value thus computed is M_n .

Case 6: Solution of the set of simultaneous equations given by equation (35) when the first and second derivatives of the function are known at the terminal tabulated boundary. In this case, $y'(x_n) = D_n$ and $y''(x_n) = M_n$. In equation (55), substitute M_k in equation (41) with k = n - 1 and solve for U_{n-1} to get

$$y'(x_{n}) = D_{n} = \frac{\Delta y_{n-1}}{\Delta x_{n-1}} + \frac{\Delta x_{n-1}}{6} (Q_{n-1}M_{n} + U_{n-1} + 2M_{n})$$

$$U_{n-1} = \frac{6}{\Delta x_{n-1}} \left(D_{n} - \frac{\Delta y_{n-1}}{\Delta x_{n-1}} \right) - M_{n} (2 - Q_{n-1})$$
(62)

If $Q_{n-1} = 1$, then from equation (62),

$$U_{n-1} = \frac{6}{\Delta x_{n-1}} \left(D_n - \frac{\Delta y_{n-1}}{\Delta x_{n-1}} \right) - 3M_n$$
 (63)

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Solving for Q_{k-1} and U_{k-1} from equations (47) and (48) gives

$$Q_{k-1} = -\frac{1}{\Delta x_{k-1}} \left[\frac{\Delta x_k}{Q_k} + 2(\Delta x_k + \Delta x_{k-1}) \right] = -\frac{1}{\Delta x_{k-1}} \left[\frac{\Delta x_k}{Q_k} + 2(x_{k+1} - x_{k-1}) \right]$$
(64)

$$U_{k-1} = \frac{1}{\Delta x_{k-1}} \left[U_k \frac{\Delta x_k}{Q_k} - 6 \left(\frac{\Delta y_{k-1}}{\Delta x_{k-1}} - \frac{\Delta y_k}{\Delta x_k} \right) \right]$$
(65)

With $Q_{n-1} = 1$ and U_{n-1} given by equation (63), compute all values of Q_{k-1} and U_{k-1} from equations (64) and (65) for values of k ranging from n-1to 2. With the values of Q_k and U_k known, compute values for the second derivatives from equation (40) by propagating the solution backwards for k ranging from n-1 to 1. The last value thus computed will be M_1 . Clearly, the solutions for case 5 and case 6 could have been obtained from equations (54) and (55). In the solution for case 5, M_{k+1} can be obtained from equation (54) and $y'(x_{k+1})$ from equation (55). The solution can be propagated forward recursively with k ranging from 1 to n - 1. In the solution for case 6, M_k can be obtained from equation (55) and $y'(x_k)$ from equation (54). The solution can be propagated backward recursively with k ranging from n - 1 to 1.

If equation (52) is written with d_{k+1} replaced by its equivalent $d_{k+1} = d_k - \Delta x_k$ given by equation (51), the result is

$$\mathbf{y}(\mathbf{x}) = \mathbf{M}_{\mathbf{k}+1} \frac{\mathbf{d}_{\mathbf{k}}^{3}}{6\Delta \mathbf{x}_{\mathbf{k}}} - \mathbf{M}_{\mathbf{k}} \frac{\left(\mathbf{d}_{\mathbf{k}}^{-} - \Delta \mathbf{x}_{\mathbf{k}}^{-}\right)^{3}}{6\Delta \mathbf{x}_{\mathbf{k}}} + \left(\frac{\mathbf{y}_{\mathbf{k}+1}}{\Delta \mathbf{x}_{\mathbf{k}}} - \frac{\mathbf{M}_{\mathbf{k}+1}\Delta \mathbf{x}_{\mathbf{k}}}{6}\right) \mathbf{d}_{\mathbf{k}}$$
$$- \left(\frac{\mathbf{y}_{\mathbf{k}}}{\Delta \mathbf{x}_{\mathbf{k}}} - \frac{\mathbf{M}_{\mathbf{k}}\Delta \mathbf{x}_{\mathbf{k}}}{6}\right) \left(\mathbf{d}_{\mathbf{k}}^{-} - \Delta \mathbf{x}_{\mathbf{k}}^{-}\right) = \mathbf{y}_{\mathbf{k}} + \left[\frac{\Delta \mathbf{y}_{\mathbf{k}}}{\Delta \mathbf{x}_{\mathbf{k}}} - \frac{\Delta \mathbf{x}_{\mathbf{k}}}{6} \left(\mathbf{M}_{\mathbf{k}+1}^{+} + 2\mathbf{M}_{\mathbf{k}}\right)\right] \mathbf{d}_{\mathbf{k}}$$
$$+ \frac{\mathbf{M}_{\mathbf{k}}}{2} \mathbf{d}_{\mathbf{k}}^{2} + \frac{\Delta \mathbf{M}_{\mathbf{k}}}{6\Delta \mathbf{x}_{\mathbf{k}}} \mathbf{d}_{\mathbf{k}}^{3}$$
(66)

Equation (66) is the equation for the cubic spline function coefficients in the kth interval. If there are n data points in the tabulation, there will be n - 1 intervals and n - 1 cubic spline functions to cover the range of tabulated data.

For computation purposes, equation (67) is usually written as

$$y(x) = y_{k} + \left\{ \left[c_{3}(k)d_{k} + c_{2}(k) \right] d_{k} + c_{1}(k) \right\} d_{k}$$
 (67)

where

$$c_{1}(k) = \frac{\Delta y_{k}}{\Delta x_{k}} - \frac{\Delta x_{k}}{6} \left(M_{k+1} + 2M_{k} \right)$$
(68)

$$c_2(k) = \frac{M_k}{2} \tag{69}$$

$$c_{3}(k) = \frac{\Delta M_{k}}{6\Delta x_{k}}$$
(70)

Equations (67) through (70) show that the coefficients are functions of the interval; however, the coefficients need to be computed only once. After the computation is made, the set pertaining to the interval in which the value of the independent variable lies can be brought in to compute the value of the dependent variable needed. Because there are three coefficients for each interval, if there are n data points, there will be n - 1 intervals and 3(n - 1) coefficients.

CONCLUDING REMARKS AND RECOMMENDATIONS

The atmosphere package for the 1962 and 1966 standard atmosphere models is recommended without reservation. When these models were built, it was possible to conduct comparison checks with the layered versions of these models in 250-meter increments. In both packages, these tests revealed errors that were properly corrected. The package for the 1963 Patrick Air Force Base reference standard model was not subjected to such strenuous tests because the layered version of this model was not available. However, with the other models so thoroughly tested, the choice of altitudes was established as adequate, and the only requirement for the Patrick Air Force Base reference standard model was to ensure that the data were tabulated correctly. The laborious task of comparing (digit for digit) each tabulated number in the model printouts with the numbers in the reference source was performed as carefully as possible, and all errors found were corrected. As a result, the accuracy of this model is reasonably ensured.

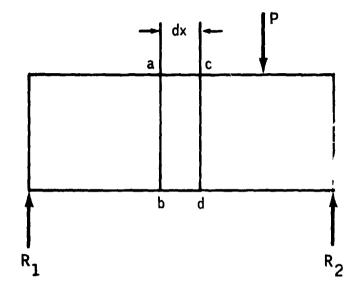
To test the accuracy of these models after they have been recoded for use in the Software Development Laboratory, the only requirement is to have the package reproduce the tabulated data. Because the interpolation is to be performed in a different set of units, the output must be converted to the units of the tabulated data for ease of comparison. The results should agree within an error of no greater than 10^{-8} . Additional verification can be obtained by evaluating the parameters of the models at various altitudes and comparing the results with those obtained from established operational sources, such as the space vehicle dynamic simulator and the Shuttle optimal abort programs. These tests should be performed for all models.

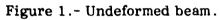
It is recommended that where the first and second derivatives are known at the same data point the cubic spline functions be used to interpolate data only in a small neighborhood of this point and not be extended for interpolation over the entire range of tabulated data.

Lyndon B. Johnson Space Center National Aeronautics and Space Administration Houston, Texas, June 4, 1976 986-16-00-00-72

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- 2. United States Committee on Extension to the Standard Atmosphere: U.S. Standard Atmosphere Supplements, 1966. U.S. Government Printing Office, 1966.
- 3. Smith, O. E.; and Weidner, Don K.: A Reference Atmosphere for Patrick Air Force Base, Florida, Annual (1963 Revision). NASA TM X-53139, 1964.





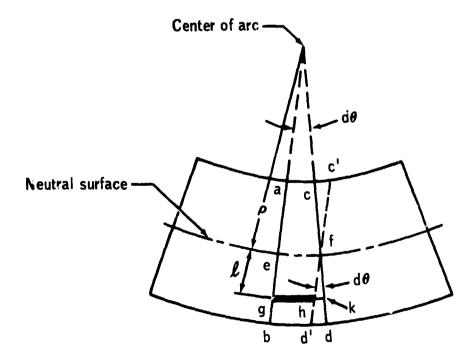
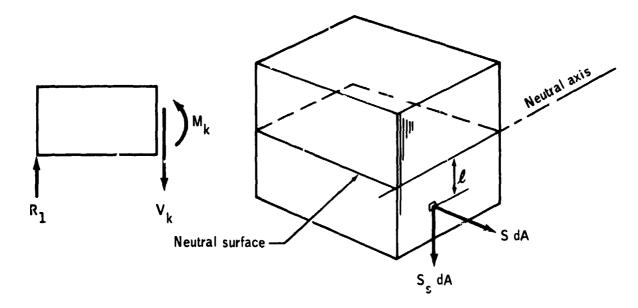
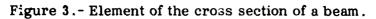
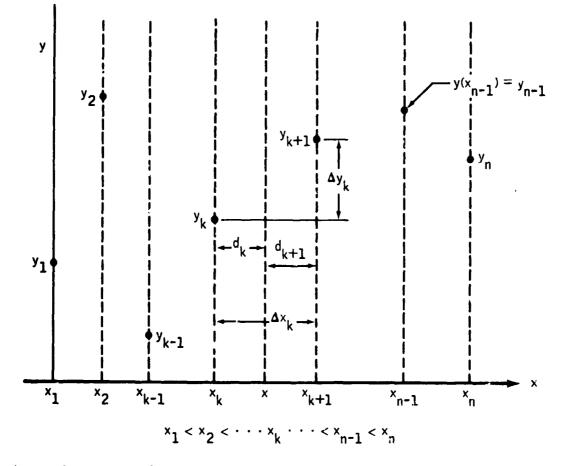


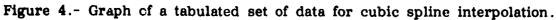
Figure 2.- Deformed section of a beam.

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APPENDIX

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PROGRAM FLOW CHAPTS AND LISTINGS

Definitions of the symbols used in the program flow charts and listings are as follows.

SYMBOLS USED IN SUBROUTINE SDAT (IOP)

IOP	an integer parameter used to designate the desired atmosphere based on the following set of values:
	IOP = 0 1962 standard atmosphere
	IOP = 1 1966 standard atmosphere for July at latitude 30° N
	IOP = 2 1966 standard atmosphere for January at latitude 30° N
	IOP = 3 1966 standard atmosphere for July at latitude 60° N
	IOP = 4 1966 standard atmosphere for January at latitude 60° N
	IOP = 5 1963 Patrick Air Force Base reference standard atmosphere
NF	an integer variable used to specify the number of data points used to describe each atmospheric parameter in each model (equal to 123)
NP64	an integer variable used to specify the total number of data points used to describe all atmospheric parameters in each atmosphere model (equal to $6*NP$ or $6 \times 123 \approx 738$)
NP34	an integer variable used to specify the total number of cubic spline coefficients for each atmospheric parameter (equal to $3*(NP - 1)$ or $3*(123 - 1) = 366$)
PRSLST	a column vector array dimensioned by NP64 or 738 containing all pressure data values (in millibars) for all atmosphere models tabulated
RHOLST	a column vector array dimensioned by NP64 or 738 containing all density data values (in kilograms per cubic meter) for all atmos- phere models tabulated
SONLST	a column vector array dimensioned by NP64 or 738 containing all speed of sound data vector (in meters per second) for all atmosphere models tabulated

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VISLST	a column vector a cient of viscosi for all atmosphe	ty data valı	ues (in kilog			
ALTLST	a column vector a data values (in					altitude
WORK	a column vector a array for subro			IP or 123 us	ed as a work	ting
D	a column vector a first (or second tabulated termi for the atmosph	1) derivativ nal bounda	ve of the fun ries (only fi	ction at eith	ner or both o	f the
ALTTAB	a column vector a values in the w					tude
PRSTAB	a column vector a data values for of the program	the selecte	d atmospher	re model in		
RHOTAB	a column vector a data values for of the program	the selecte	d atmospher			
SONTAB	a column vector a of sound data v working units o	alues for th	ne selected a	atmosphere		ed
VISTAB	a column vector a coefficient of vi model in the wo seconds per sq	scosity dat orking units	a values for	the selecte	d atmospher	9
СР	a column vector a cubic spline fui in pounds-forc	nction coeff	ficients for t			
CR	a column vector a cubic spline fui in slugs per cu	nction coeff				
CS	a column vector a cubic spline fu of sound in fee	nction coeff	ficients for t			

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CV	a column vector array dimensioned by NP34 or 366 containing the cubic spline function coefficients for the interpolation for the coefficient of viscosity in pounds-mass seconds per square foot
J1	an integer variable used to designate the order of the derivative of the function supplied at the initial tabulated boundary (except when $J1 = 4$). It can have the following values:
	J1 = 1 The first derivative of the function at the first tabulated point is supplied in $D(1)$.
	J1 = 2 The second derivative of the function at the first tabulated point is supplied in D(1).
	J1 = 3 The first and second derivatives of the function at the first tabulated point are supplied in D(1) and D(2), respectively.
	J1 = 4 The first and second derivatives of the function at the last tabulated point are supplied in D(1) and D(2), respectively.
JN	an integer variable used to designate the order of the derivatives of the function supplied at the last tabulated boundary. It can have the following values:
	JN = 1 The first derivative of the function at the last tabulated pcint is supplied in $D(2)$.
	JN = 2 The second derivative of the function at the last tabulated point is supplied in $D(2)$.
xs, ys1, ys2, ys3, ys4	Variables used for temporary storage in the ordering process for altitude, pressure, density, speed of sound, and coefficient of viscosity, respectively
SY	MBOLS USED IN SUBROUTINE SPLN1(N,X,Y,J1,JN,D,C,W)
N	an integer variable used to specify the number of data points used to represent the function in the region of definition
x	a column vector array dimensioned by at least N in the calling element containing the values of the independent variable in ascending order
Y	a column vector array dimensioned by at least N in the calling element containing the values of the dependent variable in sequence with the values in the X array
J1	same as J1 defined in SDAT

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JN	same as JN defined in SDAT
D	same as D defined in SDAT
С	a column vector array dimensioned by at least 3*(N-1) in the calling element containing the cubic spline function coefficients for the first-, second-, and third-degree terms for each interval. A portion of the array is also used to compute and store the values of one of the recursive functions used in the computation of the second derivatives and in the computation of the second-derivative values.
W	a column vector array dimensioned by at least N in the calling element used as a working array to compute and store the values of one of the recursive functions used in the computation of the second deriva- tives and in the computation of the cubic spline function coefficients
	SYMBOLS USED IN SUBROUTINE ATMSPL(V, FANS)
v	a real variable used to specify the altitude from the calling element containing the equations of motion at which values of the atmospheric parameters are desired
IS	an integer variable used to save the interval number in which the specified altitude lies
FANS	a column vector array dimensioned by 8 containing the following:
	FANS(1) the interpolated value for pressure at V altitude in pounds-force per square foot
	FANS (2) the interpolated value for density at V altitude in slugs per cubic foot
	FANS (3) the interpolated value for speed of sound at V altitude in feet per second
	FANS (4) the interpolated value for coefficient of viscosity at V altitude in pounds-mass seconds per square foot
	FANS (5) the ratio c [^] the pressure at V altitude and the pressure at 0 altitude
	FANS (6) the ratio of the density at V altitude and the density at 0 altitude
	FANS (7) the ratio of the speed of sound at V altitude and the speed of sound at 0 altitude

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FANS (8) the ratio of the coefficient of viscosity at V altitude and the coefficient of viscosity at 0 altitude

All other variables are defined in subroutine SDAT.

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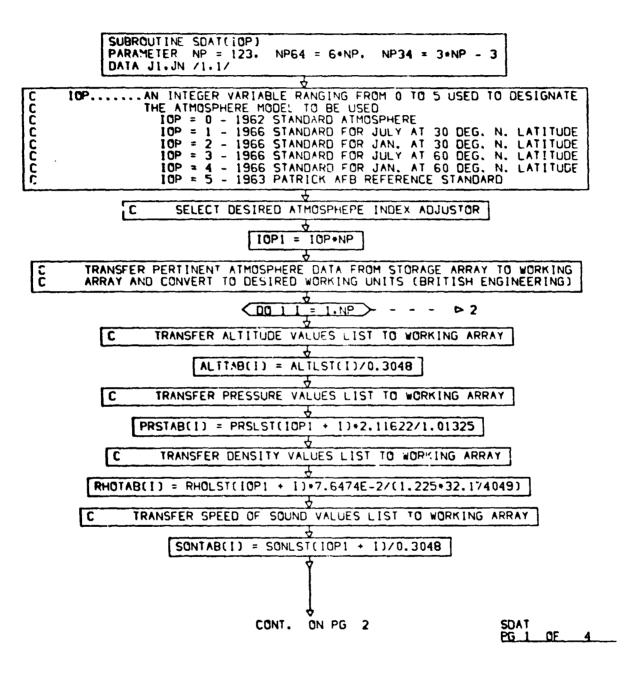
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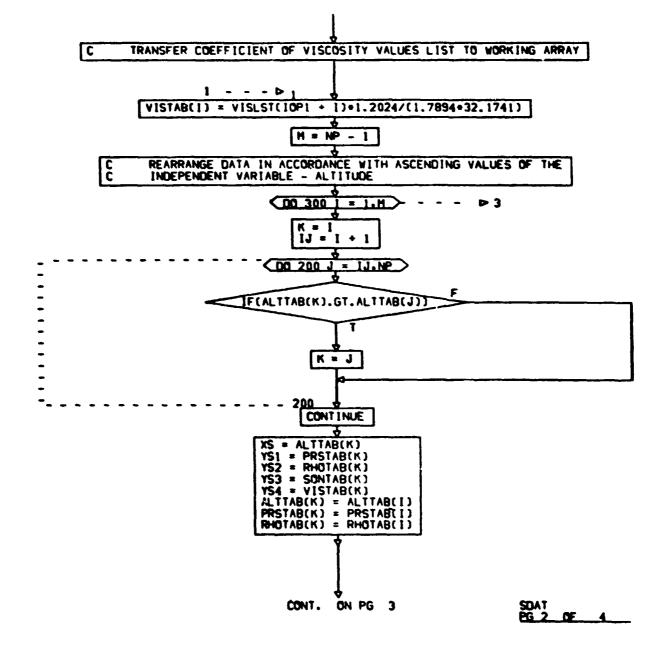
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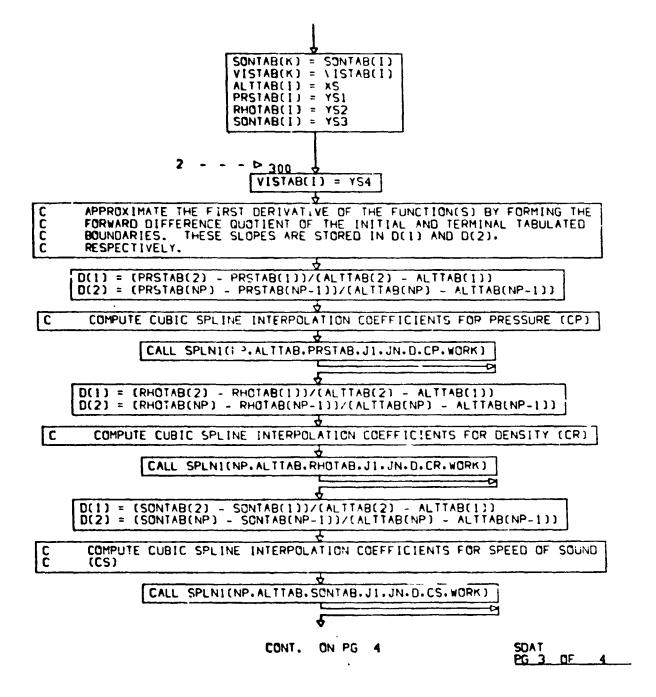


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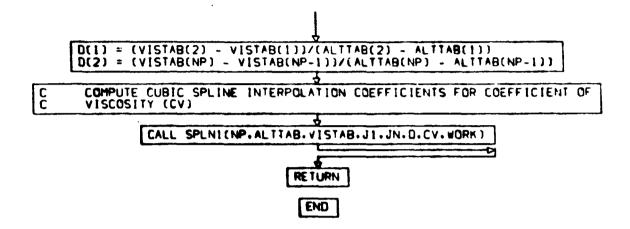
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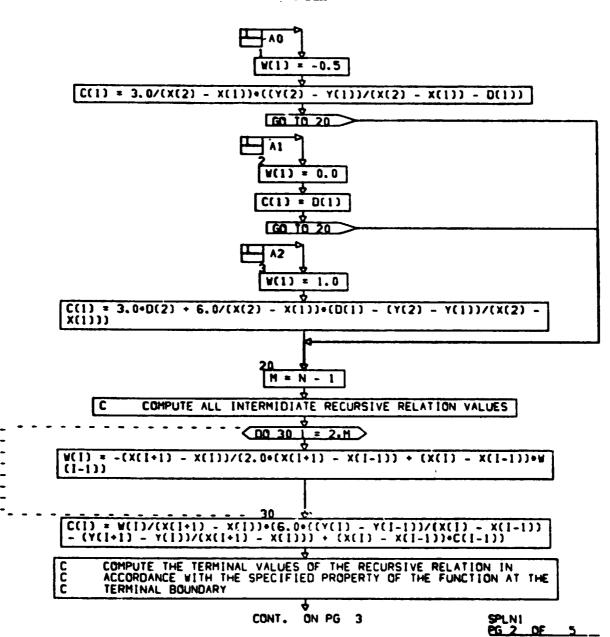
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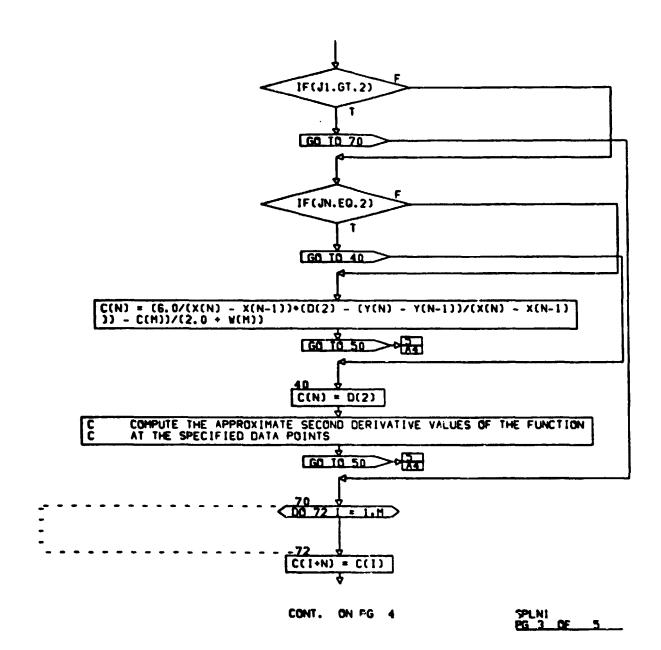


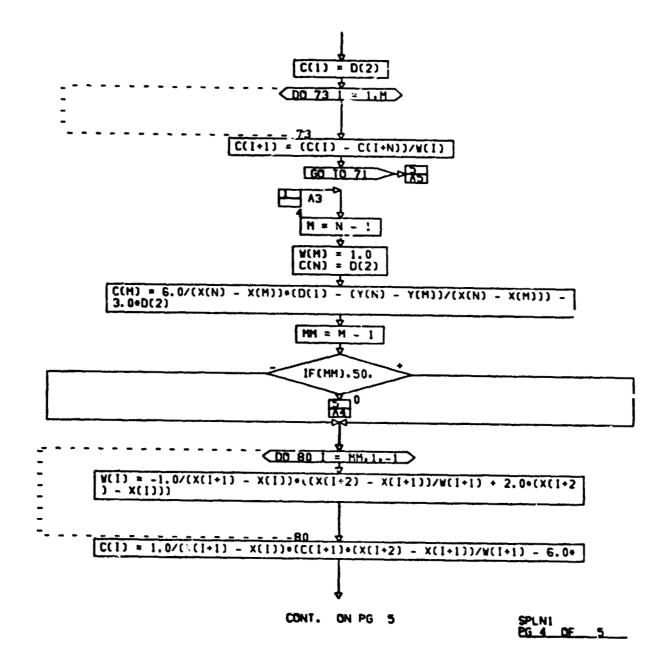
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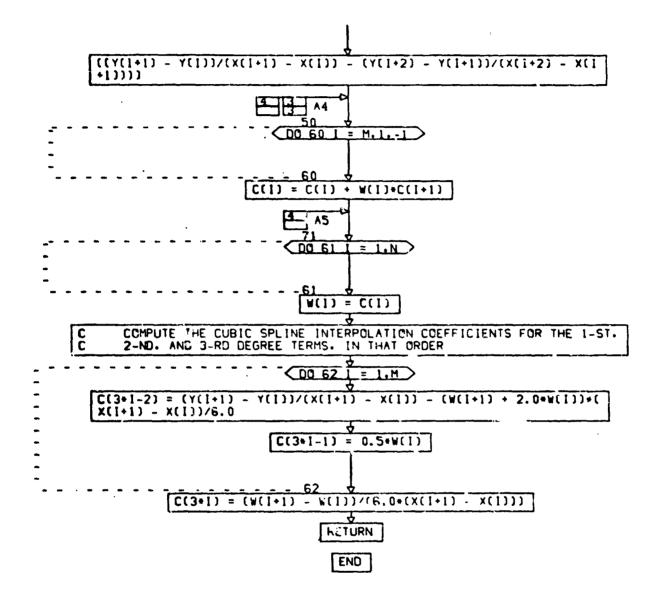


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APPENDIX



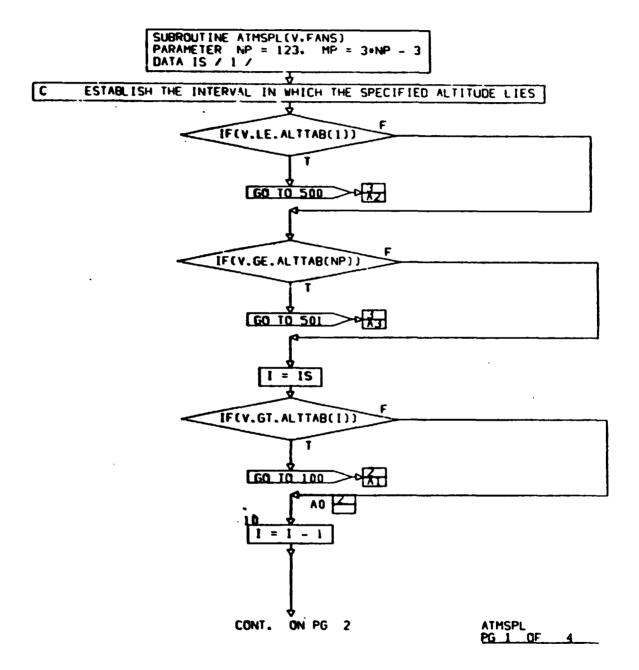


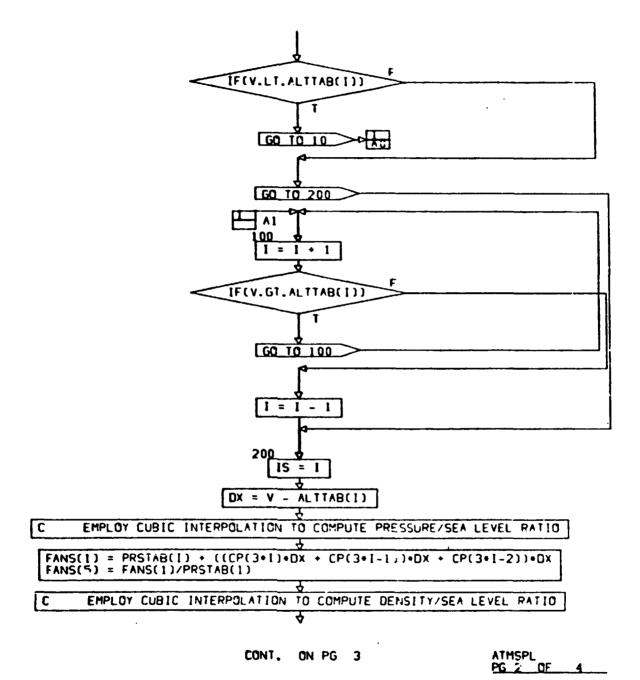


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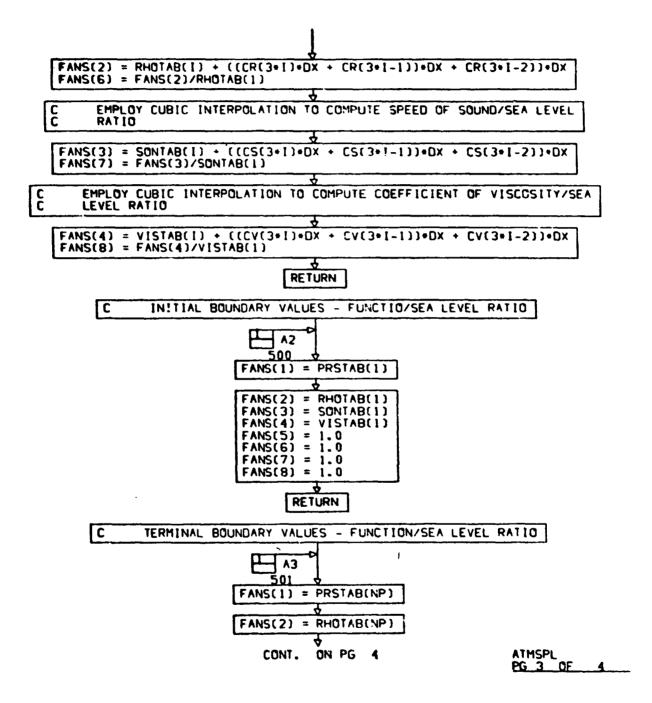
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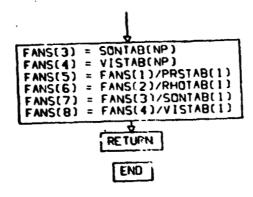




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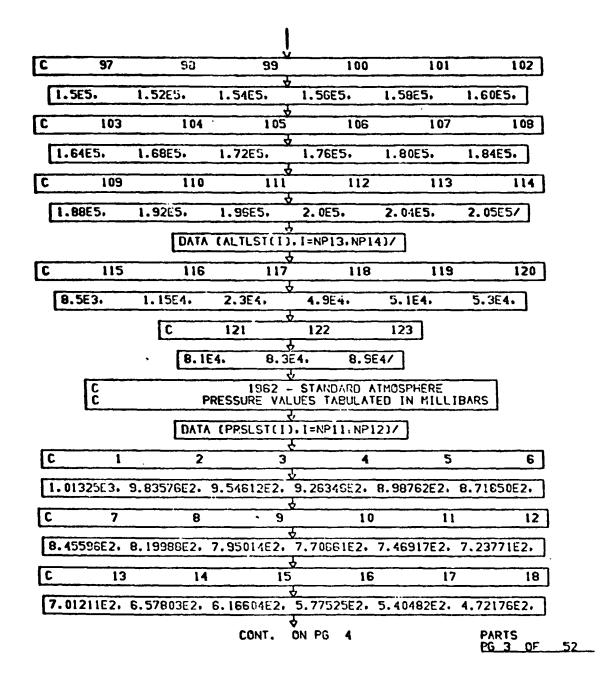
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	5.4E4.	5.6E4.	5.8E4.	6.0E4.	6.2E4.	6.4E4.
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1.65	796E2.	1.41704E2.	1.21118E2.	1.03528E2.	8.84971E1.	7.56522E1.
C	31	32	33	34	35	36
6.46	748E1.	5.52930E1.	4.04749E1.	2.97174E1.	2.18837E1.	1.61619E1.
C	37	38	39	40	41	42
1.19	703E1.	8.89063E0.	6.63412E0.	4.9P522E0.	3.77138E0.	2.87143E0.
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C	85	86		88	89	90
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8.0	0950E-6.	7.4194E-6.	6.8148E-6.	6.2931E-C,	5.8331E-6.	5.4252E-6.
C	97	98	99	è 10	0 10	1 102
5.0	0617E-6.	4.7345E-6.	4.4375E-6.	4.1671E-6.	3.9202E-6.	3.6943E-6.
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С	25	26	, 77	28 J	29	9 30
2.66	60E-1.	2.2786E-1.	1.9475E-1.	1.6647E-1.	1.4230E-1.	1.2165E-1.
С	31	32	2 33	34	3	5 36
1.04	00E-1.	8.8910E-2,			3.4257E-2.	2.5076E-2.
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	0E-5.	1.999E-5,	1.382E-5,	9,563E-6,	6.617E-6.	4.579E-6.
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C	67	68	69	5		
3.17	0E-6,	2.137E-6,	1.459E-6.	1.008E-6.	7.044E-7.	4.974E-7.
C	73	74	75	76	77	78
3.49	3E-7.	2.492E-7,	1.804E-7.	1.323E-7.	9.829E-8,	7.153E-8.
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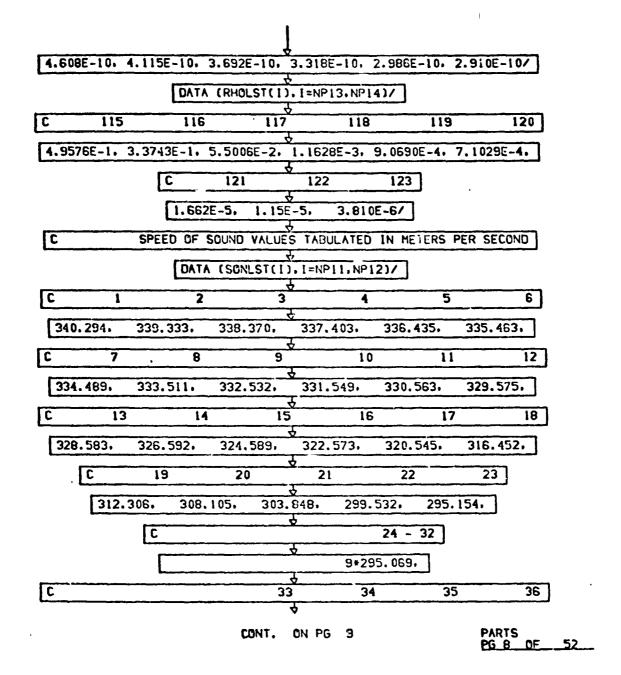
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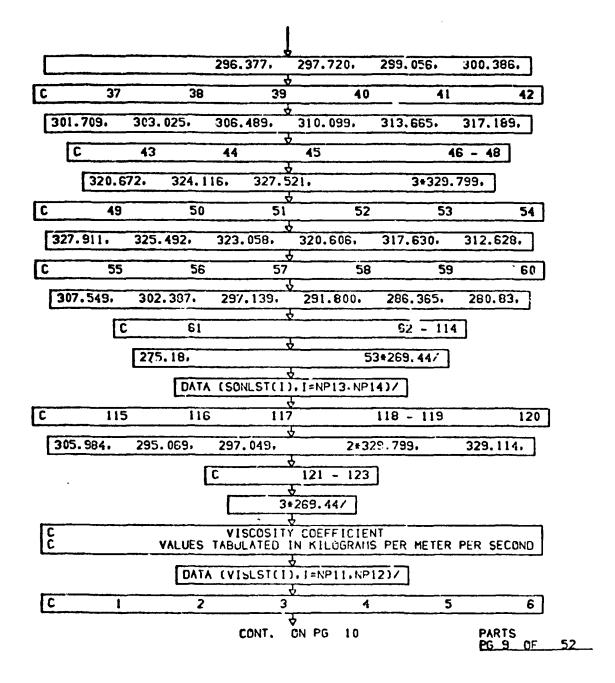
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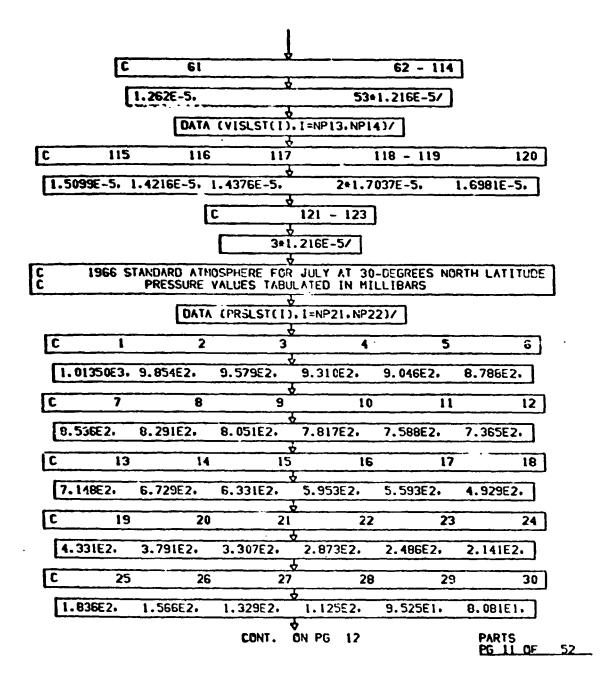
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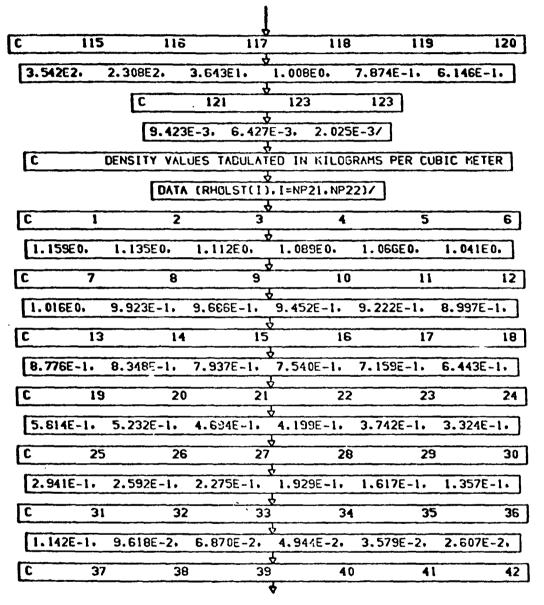
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A-28



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]			
C	31	32	33	34	35	36
6	.867E1.	5.846E1.	4.258E1.	3.121E1.	2.300E1.	1.705E1.
	37	38	39	40	41	42
<u> </u>	.270E1.	9.513E0.	7.163E0,	5.425E0.	4.131E0.	3.16220.
<u> </u>	. 27 06 11	5.51520	7.18520			
C	43	44	45	. 46	47	48
2	.433E0.	1.881E0.	1.461E0.	1.140E0.	8.908E-1.	6.959E-1.
	49	50	51	52	53	54
ـــــ ٦	.424E-1,	4.212E-1.	3.259E-1.	2.512E-1.	1.924E-1.	1.462E-1.
2				,		
C	55	56	57	58	59	60
Γ	.102E-1.	8.2265-2.	6.083E-2.	4.450-2.	3.224E-2.	2.306E-2.
C	61	62	63		65	66
Г	.6295-2.	1.135E-2.		5.301E-3.	3.607E-3.	2.455E-3.
				5		72
C	67	68	69	70	/	
[.671E-3.	1.142E-3.			3.859E-4.	2.737E-4.
C	73	74	the second s	÷ 76	77	78
	1.958E-4.	1.427E-4.	1.005E-4.	8.104E-5.	6.2762-5.	4.935E-5.
		C 79	80	\$	81 - 11	
	Ľ	L 75		4		<u>.</u>
		3.955E-5.	3.240E-5.	34	+2.702E-5/	J
		DAT	A (PRSLST()), 1=NP23, NP	24)/	
			CONT.	♦ CN PG 13		PARTS PG_12_DF



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CONT. ON PG 14

PARTS PG 13 OF 52

			.]			
1.90	9E-2.	1.406E-2.			5.7592-3.	4.326E-3.
C	43	44		46	47	48
3.26	8E-3.	2.482E-3.	1.894E-3.		1.140E-3.	8.942E-4.
	49	50	51	52	53	54
7.07	1E-4.	5.573E-4.	4.3785-4.		2.710E-4.	2.123E-4.
	55					
L				5		
1.65	51E-4.	1.273E-4.		7.380E-5.	5.5392-5.	4.113E-5,
С	61	62			65	66
3.02	20E-5.	2.190E-5.	1.568E-5,	1.070E-5.	7.2825-6.	4.956E-6.
	67	68		<u>ک</u>	71	72
L				ł		
3.3	74E-6.	2.256E-6.		1.030E-6.	7.065E-7,	4.892E-/.
C	73	74			5 77	78
3.3	92E-7.	2.288E-7.			8.2135-8.	6.087E-8.
	ſ	C 79	80	b	81 - 11	4
	. L			ę.	1.2 4005 04	
-		4.388E-8.	3.259E-8.	↓3·	4+2.4865-8/	J
		DAT	A (RHOLST(1), 1=NP23, NP	24)/	
C	11	5 11	6 11	7 !!	8 11	9 120
4.9	58E-1.	3.529E-1.		1.290E-3.	1.00SE-3.	7.955E-4.
L		C		₹ 122	123	
		<u> </u>	121	▼ ▼		
			CONT.	ON PG 15		PARTS PG_14_0F

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		1.85GE	-5. 1.298E	-5, 4.089	E-6/	
Γċ		SPEED OF SU			IN METERS P	FR SECOND
. <u>L</u>	· · · · · · · · · · · · · · · · · · ·		4			
		DATA	(SUNLST(1).	I=NP21.NP2	2)/	
C	1	2	3	4	5	6
1	349.9.	348.6.	347.3,	346.0,	344.7.	343.8.
			÷.			
C				10	11	12
	342.9.	342.0.	341.1.	340.3.	339.4.	338.5.
C	13	14	15	16	17	18
ل تـــ			Ą			
	337.7.	335.9.	3 34,2, ↓	332.5.	330.7.	327.3.
С	. 19	20	21	22	23	24
	322.9.	318.5.	314.0.	309.5.	304.9.	303.3.
	<u>_</u>		4	· · · · · · · · · · · · · · · · · · ·		
С	25	26	27	28	29	30
	295.6.	290.9.	286.0.	285.7.	287.2.	288.7.
C	31	32	33	34	35	36
			÷			
	290.2.	291.7.	294.6,	297.3.	299.9.	302.6.
C	37	38	39	40	41	42
	305.2.	307.8.	310.8.	313.9.	316.9,	319.9.
			4			J
C	43	44	<u>45</u> ↓		6 - 47	48
	322.8,	325.8.	328.7.	2+330	.7.	330.1.
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CONT. ON PG 16

PARTS PG_15_0F_52___

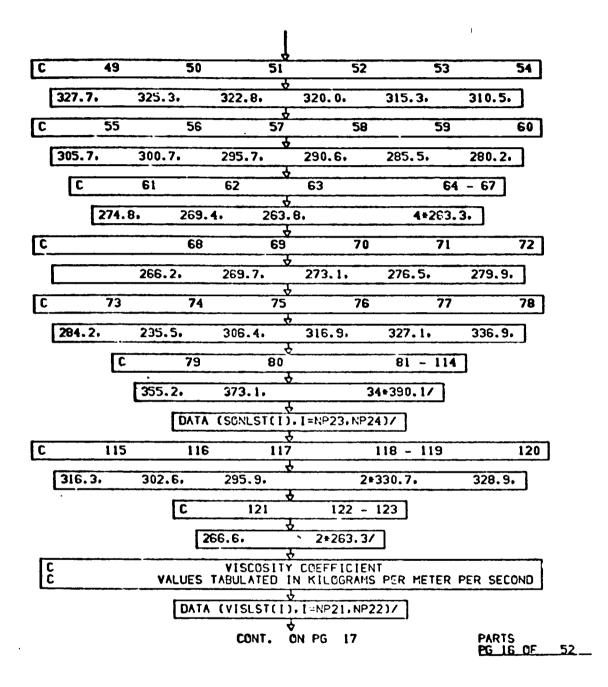
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C	1	2	3	4	5	6
Γ	.8682-5.	1.857E-5,	±	1.836E-5,	1.825E-5.	1.818E-5,
	7	8	· 9	10	11	12
1	.811E-5.	1.803E-5.	1.796E-5.	1.789E-5.	1.782E-5.	1.7758-5.
	13		₹	······································		
C	13	14		, 16	17	18
	.768E-5.	1.754E-5.			1.711E-5.	1.6835-5,
C	19	20	21	22	23	24
Γ	.648E-5.	1.612E-5.	1.575E-5.	1.539E-5.	1.501E-5.	1.464E-5.
	25	26	27	28	29	30
				,		
Ľ	1.426E-5.	1.308E-5.		1.346E-5.	1.358E-5.	1.370E-5.
C	31	. 32	33	34	35	36
Γ	1.3-2E-5.	1.395E-5.	1.418E-5.	1.439E-5.	1.461E-5,	1.482E-5.
	37	38	39	5	41	42
يتيا . سر				5		
Ľ	1.504E-5.	1.525E-5.		1.574E-5.	1.599E-5.	1.623E-5.
C	43	44	45		46 - 4	7 48
	1.647E-5.	1.671E-5,		2	*1.711E-5,	1.706E-5,
	49	50		52	53	54
	1 CO7C E	1.677E-5.	1 0475 5	1 5245 5		1 5475 5
L			······································	1.6242-3.	1.3332-3,	1.34/2-31
C	55	56			59	60
			•	\$		

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CONT. ON PG 18

PARTS PG_17_0F_52__

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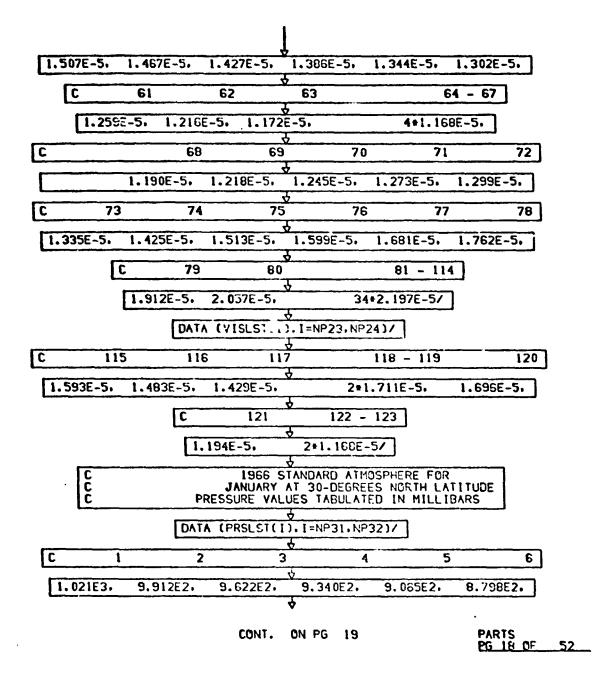
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			1			
C	7	8	9	10	11	12
8.5	53852.	8.285E2.	₩.038E2.	7.798E2.	7.564E2.	7.335E2.
	13	14	15	16	17	18
			·		E E1250	
<u>[/.</u>	112E2.	6.682E2,	6.2/4E2.	······································	5.517E2.	4.83/22.
C	19	20	21	22	23	24
4.	226E2.	3.679E2.	3.191E2.	2.75782.	2.372E2.	2.032E2.
[<u>c</u>	25	26	27	28	29	30
<u> </u>	734E2.	1.478E2,	1.25762,	1.067E2.	9.040E1.	7.65051
				· · · · · · · · · · · · · · · · · · ·		
C	31	32	33	34	35	36
6.	47921.	5.499E1.			2.134E1.	1.575E1.
C	37	38	39	40	41	42
	169E1.	8.723EG.	6.544E0,	4.939£0,	3.748E0.	2.860E0.
	43			46		
				Ş		
2.	194E0,	1.691E0,		1.019E0,	7.941E-1.	6.187E-1.
C	49	50	51	52	53	54
4.	808E-1.	3.723E-1.	2.872E-1.	5 2.207E-1,	1.687E-1.	1.281E-1.
	55			5		
				5		
9.	659E-2+	7.231E-2.		3.959E-2.	2.893E-2,	2.095E-2.
С	61	62	63	64	65	66
				\$		

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CONT. ON PG 20

PARTS PG 19 OF 52

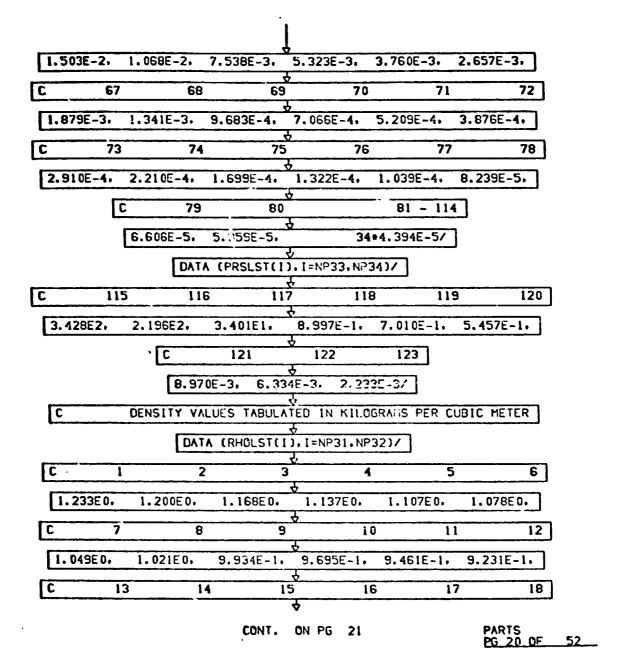
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[9.005E-	1.	8.565E-1.	8.142E-1.	and the second rest of the second	7.340E-1.	6.599E-1.
C		19	20	21	22	23	24
[5.916E-	1.	5.288E-1.	4.713E-1.	4.187E-1.	3.707E-1.	3.270E-1.
		25	26	27	28	29	30
L		1.	2.439E-1.	2.101E-1.	1.805E-1.	1.549E-1.	1.312E-!.
		31	32			35	
-			9.213E-2.		,	3.385E-2.	2.440E-2.
					5		
		37	38		5		
L	1.780E-	-2.	1.306E-2.	9.603E-3.	705E-3,		
	;	43	44	45	5		
[2.981E	-3,	2.257E-3.		1.319E-3.	1.028E-3.	8.038E-4.
		49	51			53	3 54
[6.340E	-4,	4.983E-4.			2.38SE-4.	1.860E-4.
Γ	C	55	5	the second s	÷ 7 58	5	60
1	1.439E	-4,	1.106E-4.	8.441E-5.	6.396E-5.	4.809E-5.	3.596E-5.
Б	с	61	6	ويتحديد والمتحدين والمتحد والمتحد والمتحد والمحد والمحد	↓ 3 64	6	5 66
ر		-5.	1,942E-5,	1.374E-5.	9.702E-6.	6.853E-6.	4.842E-6.
Г	C	67		8 6	4		
L					4		5.942E-7.
	3.386	-6,	2.330E-6.	1.630E-6.	▼	0.2312-71	51 5726-77
				CONT.	ON PG 22		PARTS PG 21 CF

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			1			e e
C	73	74	75	76	77	78
4	.322E-7.	3.13 3E-7,	2.305E-7, 1	.7102-7.	1.296E-7.	9.887E-8,
L	57				81 - 114	 1
		······································				1
	•	7.508E-8,	5.780E-8.	34+	4.509E-8/	
		DAT	A (RHOLST(1).	I=NP33.NP34	407	
С	115	5 11	6 117	118	119	120
[4	.994E-1.	3.483E-1.	5.512E-2,	1.165E-3.	9.073E-4.	7.142E-4.
L		[C	121	122	123	
			4			
		1.63	5E-5, 1.154E	-5. 4.070	E-6/	
C	·····	SPEED OF	SOUND VALUES	TABULATED	IN METERS F	ER SECOND
		DAT	A (SONLST(I).	1=NP31.NP3	2)/	
C	1		2 3	4	5	6
ينيا ا	240 5		4	220 1	220 0	
	340.5.	340.0.	339.5, 	339.1.	338.6.	338.1.
C	7	8	ک ک	10	11	12
1	337.6.	337.1,	336.6.	335.6,	334.6.	333.5.
C	1:	3 1	<u>↓</u> 4 15	16	17	18
•	332.5.	330.5,	328.5.	326.4,	324.4.	320.3,
 	352.31	330. 3,				
C	19	3 2	0 21	22	23	24
		212.1	307.9.	303.6.	299.3.	294.9.
	316.2.	312.1.	307.31			the second se
	316.2.	312.1,	<u> </u>			

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C	25	26	27	28	29	30
	293.0,	291.3.	289.5,	287.7.	285.9.	285.7.
٦	31	32	33	34	35	36
 ا	287.3.	289.1.	292.5,	295.2,	297.9,	300.6.
	·		4			
C	37	38	39	40	41	43
	303.2,	305.8,	308.9.	311.9,	315.0.	318.0.
C	43	44	45		46 - 47	48
	321.0.	323.9,	326.8,	2+3	28.9.	328.3.
C	49	50	£ 51	52	53	54
Ľ			÷.			
	325.8,	323.4.	321.0,	318.3.	314.4.	310.5.
C	55	. 56	57	58	59	6.
	306.5.	302.5.	298.5,	294.4.	29).2.	286.0.
		61	62		63 - 66	 ה
	ــــا ۲		<u>→</u> 277.4,		4+277.2.	
	L	201.7.	2//.4,			_
C	67	68	69 69	70	71	72
	278.7.	283.6.	288.4.	293.0.	297.7,	302.2.
C	73	74	75	76	77	71
	307.0.	314.3.	321.3.	328.2.	335.0,	341.6.
			¥		81 - 114	I
	L	. /9			81 - 114	J
			CONT. O	N PG 24		PARTS PG_23_0

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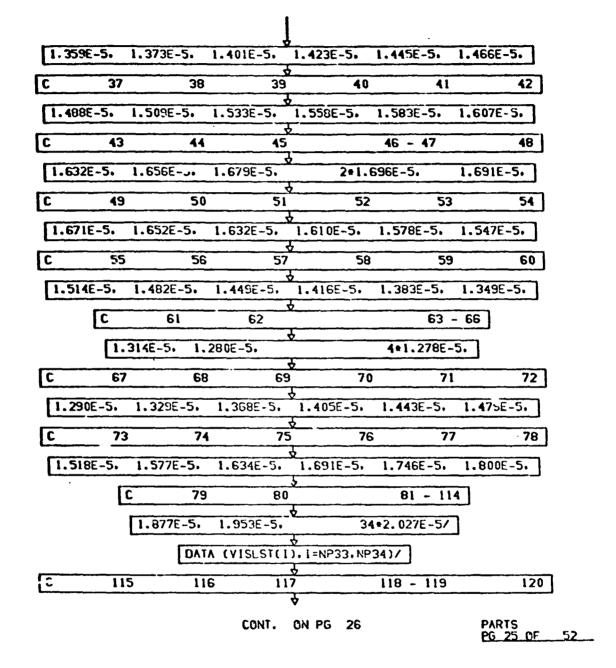
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		1				
	351.0.	360.3.	34	+369.3/		
	DATA	SUNLST(1),	I=NP33.NP34	37		
C 115	116	117		18 - 119	120]
308.9.	297.1.	2 93.9,	2+3	328.9.	327.1.	-
·····	ז	÷	121 - 123			
	L	¥	277.27			
	·····					
C C	VALUES T	ABULATED IN	COEFFICIEN	PER METEP	PER ECOND	
	DATA	(VISLST(:).	I=NP31.NP3	2)/		
C 1	2	3	4		6	
1.7915-5,	1.787E-5.	Ą	1.779E-5.	1.775E-5.	1.771E-5,	
C 7	8	9	10	11	12	
1.767E-5.	1.763E-5,	1.759E-5.	1.751E-5,	1.742E-5.	1.734E-5.	
C 13	14	15	16	17	18	}
1.726E-5.	1.709E-5,	↓ 1.693E-5,	1.6762-5.	1.660E-5.	1.626E-5.	
C 19	20	\	22	23	24	1
1.593E-5	1.5598-5.	<u>↓</u> 1.525E-5,	1.491E-5.	1.4562-5.	1.420E-5.	J
		\				ı
C 25	26	27	28	29	30	J
1.405E-5.	1.391E-5.	1.376E-5.	1.362E-5.	1.347E-5,	1.346E-5.	
C 31	32	33	34	35	36]
		CONT. (N PG 25		PARIS PG_24_OF	52

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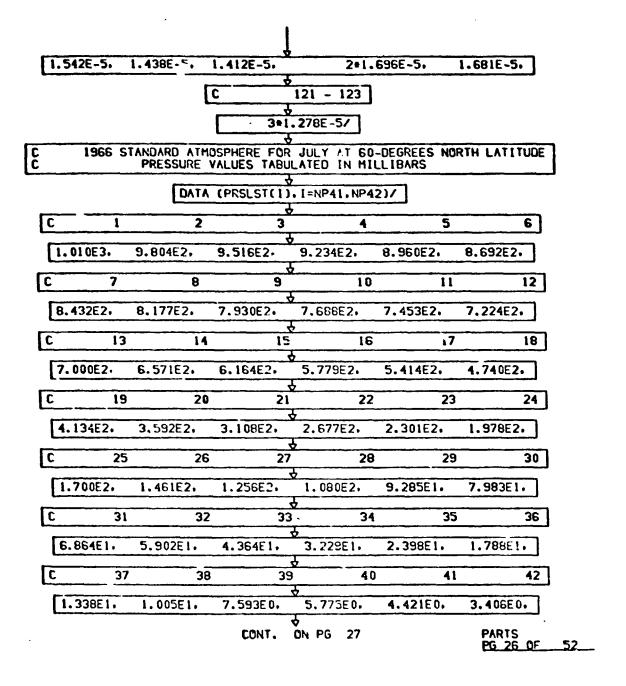
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		1			
C 43	44	45	46	47	48
2.640E0.	2.057EC.	1.607E0.	1.259E0.	9.872E-1.	7.742E-1.
C 49	50		52	53	54
6.072E-1.	4.751E-1.	3.704E-1,	2.877E-1.	2.218E-1.	1.694E-1.
C 55		4	,		/
		57	58	59	60
1.281E-1.	9.576E-2.	7.075E-2.	5.160E-2.	3.710E-2.	2.627E-2.
C 61	62	<u>63</u>	64	65	66
1.8295-2.	1.249E-2.	8 350F-2	5.536E-3.	3.667E-3.	2.430E-3.
		0.3002-31	J. J36E-31	3.00/2-31	2.4302-3.
C 67	68	63	70	71	72
1.61CE-3.	1.075E-3,	7.297E-4,	5.027E-4.	3.512E-4.	2.485E-4.
C 73	3 · 74	75	,76	77	78
		3	>		
1.782E-4.	1.310E-4,	9.889E-5,	7.633E-5.	6.004E-5.	4.801E-5.
[C 79	80	· · · · · · · · · · · · · · · · · · ·	81 - 114	Π
_	3.903E-5.	3.724E-5,		*2.700E-5/	1
			?		3
•	DATA	(PRSLST(1)		44)/	
C 11	5 116	5 117		B 119	9 120
3.343E2.	2.133E2.	3.753E1.	1.115E0.	8.742E-1.	6.857E-1.
·					0.03/2-11
	C	121	122	123	
	1.02	5E-2, 6.803	E-3, 1.97	BE-3/	
		4	5	·	
		CONT.	ON PG 28		PARTS PG 27 DF

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C	·	DENSITY VAL	LES TABULAT	ED IN KILO	SRAMS PER CL	BIC METER
		DATA	(RHOLST(1)	.1=NP41.NP4	2)/	
[C	1	2		and the second se	 	
				2		6
[]	220E0.	1.190E0.	1.161E0.	ومواقعه ببرين المشمسيات المحمد بمالك	1.104E0.	1.077E0.
C	7	8	9	10	11	12
1.0	5060.	1.023E0,	9.971E-1.	9.716E-1.	9.467E-1.	9.223E-1.
	13			2		
	13	14	15	16	17	18
8.9	984E-1.	8.521E-1.			7.244E-1.	6.519E-1.
C	19	20	21	22	23	24
5.6	149F-1	5.231E-1,	4 6635 1	A 1425 1	2 5005 1	
				4.1920-1.	3.560E-1.	3.0602-1.
C	25	. 26	27	28	29	30
2.6	531E-1.	2.261E-1.			1.437E-1.	1.235E-1.
C	31	3,2	33	34	35	36
				5		
<u>[].</u>	UG2E-1.	9.132E-2.		4.965E-2.	3.639E-2.	2.678E-2.
C	37	38	39	40	41	42
1.9	979E-2.	1.469E-2.	1.083E-2,	the second se	6.013E-3.	4.5285-3.
	43			5		
				5		48
3.4	131E-3.	2.630E-3.	2.039E-3.	1.584E-3.	1.241E-5	J. 732E-4.
C	49	50	51	52	53	54
				•		······································

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CONT. ON PG 29

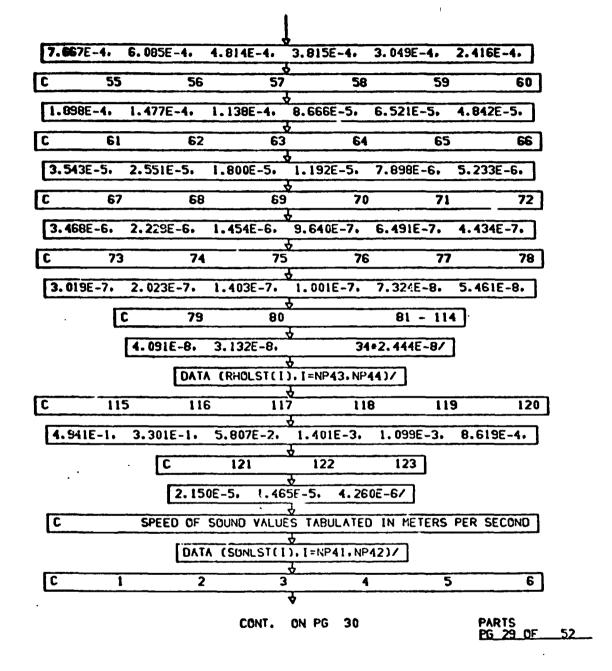
PARTS PG_28_0F__52__

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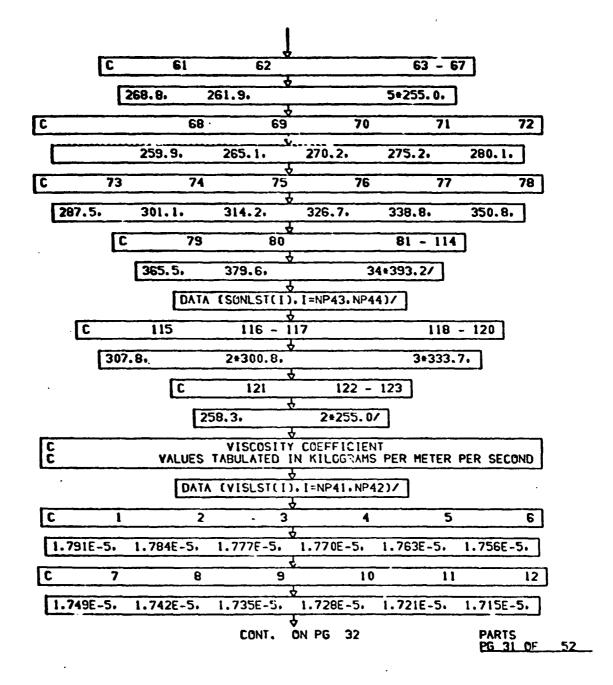
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		1			
340.5.	339.6.	338.8.	337.9.	337.0.	336.2.
C 7	8	9	10	11	12
335.4.	334.5.	333.7.	332.8.	332.0.	331.1.]
C 13	14		· · · · · · · · · · · · · · · · · · ·		
		15		17	18
330.3.	328.6.	326.9,	325.2.	323.5.	319.0.
	C	19	20	21	
	314.	6. 310.		5.	
	[C		,,,,,,,,,,,,_	22 - 33	
	<u> </u>				
	L	,		300.8.	
C			34	35	36
			301.7.	303.7.	305.7.
C 37	38	39	40	41	42
307.6.	309.6.	313.3.	· · · · · · · · · · · · · · · · · · ·		
•		313.3.	317.1.	320.8.	324.5.
C 4	3 4	4 4		\$	47 - 48
328.2.	330.9.	332.2,	333.5.	21	333.7.
C 49	50	51	52	53	54
333.0.	330.6.	328.2.	324.9.	319.2.	313.3.
		4	,		
	56	57	58	59	60
C 55		J	•		
307.3.	301.3.	295.0.	288.7.	282.2.	275.6.
	301.3.	295.0.	288.7.	282.2.	275.6.

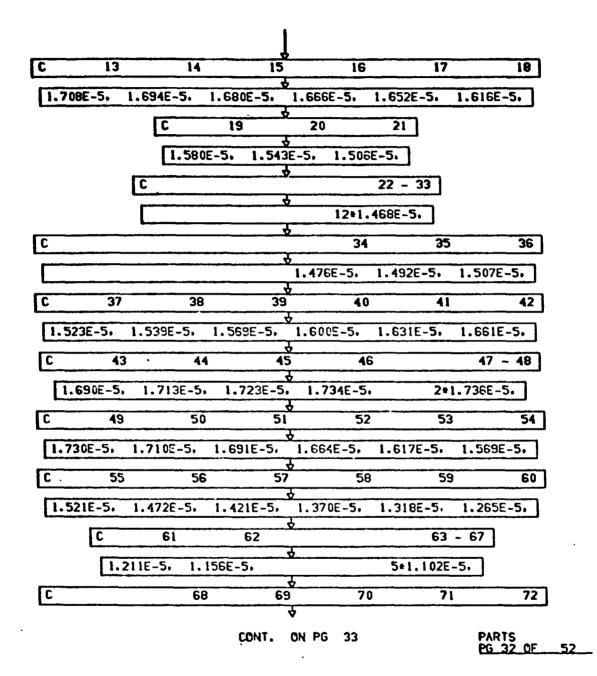
A-48

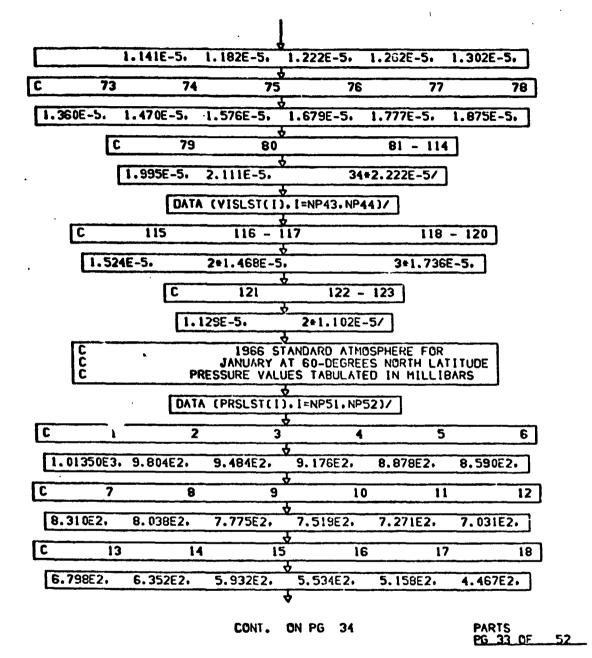
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C	19	20	21	22	23	24
I	3.85322.	3.308E2	₹.829E2.	2.418E2.	2.067E2.	1.766E2.
C	25	26	. 27	28	29	30
[1.510E2.	1.291E2.	1.103E2.	9.431E1.	8.058E1.	6.882E1.
C	31	32	33	34	35	36
E	5.875E1.	5.014E1.		the second s	1.922E1.	1.398E1.
C	37	38		40	41	42
[1.020E1.	7.464E0.	5.479E0.	the second s	3.001E0.	2.243E0.
C	43	44	45	46	47	48
Ľ	1.687E0.	1.277E0.		7.4345-1.	5.719E-1.	4.414E-1.
C	49	• 50	51	52	53	54
Ľ	3.408E-1.	2.629E-1.			1.184E-1.	9.050E-2,
C	55	56		58	59	60
C	6.909E-2.	5.271E-2,		3.051E-2.	2.306E-2.	1.735E-2.
C	61	62		64	65	66
Ľ	1.298E-2.	9.661E-3.	7.152E-3.		3.851E-3,	2.800E-3.
C	67	68	69	70	' 71	72
[2.022E-3.	1.460E-3.		7.762E-4.	5.715E-4.	4.234E-4.
	. 73	74			77	78
			4	7		

CONT. ON PG 35

PARTS PG_34_0F__52__

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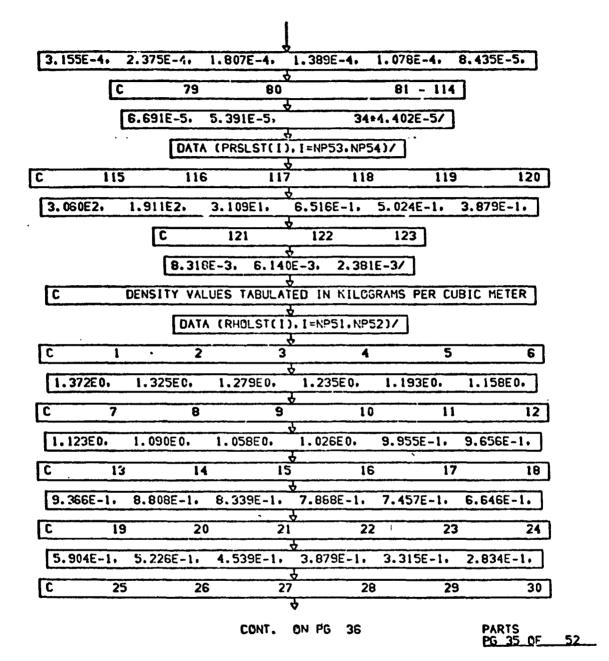
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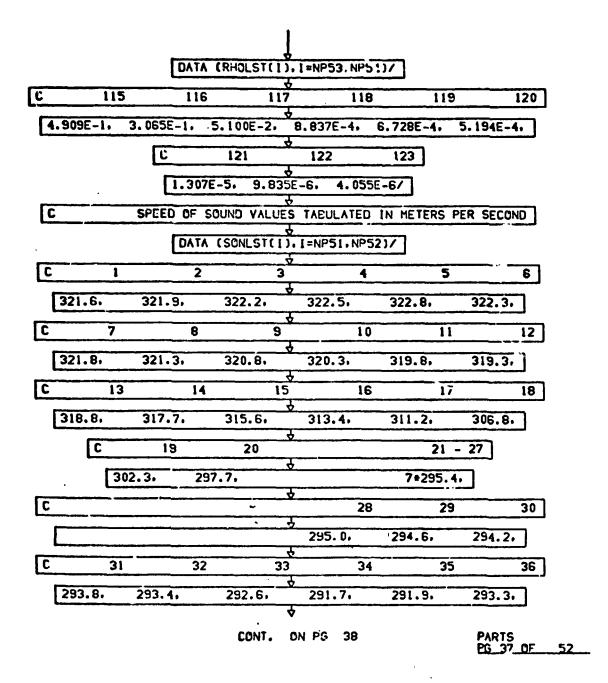
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			1		
2.422E-1.	2.071E-1,	1.770E-1.	1.517E-1.	1.300E-1.	1.113E-1.
C 3	32	33	34	35	36
9.530E-2.	8.156E-2.	5.966E-2,	4.357E-2.	3.157E-2.	2.275E-2.
C 37	7 38	39	40	41	42
1.645E-2.	1.1932-2.	8.676E-3.	6.264E-3.	4.551E-3.	3.3305-3.
C 4:	3 44	45	46	47	48
2.453E-3,	1.819E-3.	1.357E-3.	↓ 1.018E-3,	7.682E-4.	5.9116-4.
C 49		51	4		54
4.564E-4.	3.559E-4.		2.150E-4.		
C 55			4		1.266E-4,
9.708E-5.		57	÷		60
			4.408E-5. ↓	3.392E-5,	2.599E-5.
<u>C</u> 6		63	£		66
	1.503E-5.		8.516E-6,	6.357E-6,	4.717E-6.
C 6.	7 68	69	3 70 4	71	72
3.480E-6.	2.467E-6.	1.757E-6.	1.260E-6.	9.093E-7.	6.607E-7.
C 7	3 74	75		77	78
4.803E-7.	3.479E-7.	2.550E-7,		1.417E-7,	1.067E-7.
[C 79	80		81 - 114	
	7.890E-8.	5.950E-8,	and the second se	4.567E-8/	
		•	¢		
		CONT.	CN PG 37		PARTS PG_36_0F

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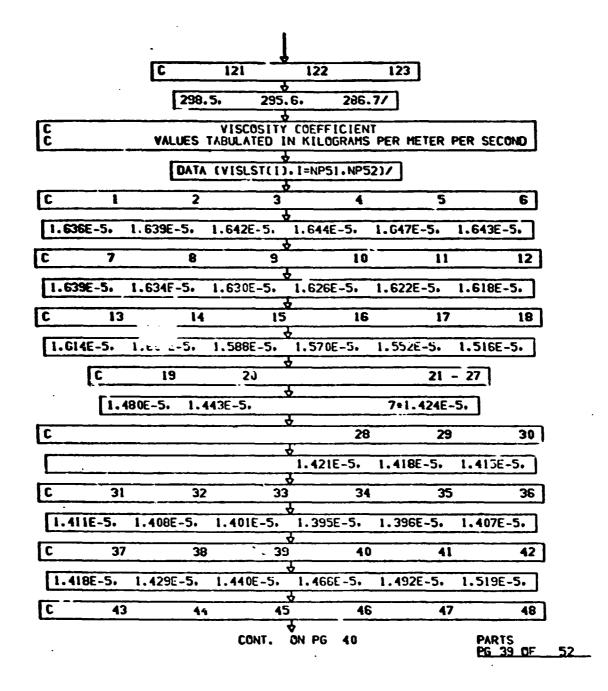


				-1					
C		37	38	39		40	41		42
	294.7.		296.0,	297.4.	300.5.		303.8.	307.1.]
C		13	44	45		46	4	7	48
(310.3.		313.5.	316.6.	319.7.		322.8.	323.3.	
		49	50	51		52	5	3	54
	323.3.		321.6.	319.3.	317.5.	~	316.9.	316.3	
C		55	56	57		58	5	9	60
	315.7.		315.0.	3 14.1.	311.3.		308.5.	305.7	
C		61	62	63		64	6	5	66
	302.8.		300.0.	297.1.	294.2.		291.2,	288.2	
C		67	68	<u> </u>		70	7	1	72
	285.2.		287.8,	290.8.	293.7.		296.6,	299.5	
C		73	74	75	· · · · · · · · · · · · · · · · · · ·	76	7	7	78
•	303.2.		309.2.	315.0.	320.7.		326.4,	332.6	- - -
		10	79	80			81 - 1	14]	
		-	344.6,	356.1.	2	34	\$367.3/	-	
			DATA	(SONLST(:)	, I=NP53,	NP54	77]		
6	C		115 - 116			118	, 	119 - 1	20
L	 		295.4.		,		· 		<u></u>
		2*	293.4.	292.1.	321.	<u></u>		2+323.3.	1
				CONT.	ON PG 3	e		PARTS PG_3	

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				J			
1.5	45E-5.	1.5716	-5.	1.5968-5.	1.622E-5.	1.647E-5.	1.651E-5.
	49		50	5:	52	53	3 54
<u> </u>					52	J.	J J1
1.6	512-5.	1.6376	-5,	1.6188-5.	1.604E-5.	1.5998-5.	1.594E-5.
C	55	; ;	56	57	the second s	5	9 60
1.5	89E-5.	1.583	-5.	1.5758-5.	1.553E-5.	1.530E-5.	1.507E-5.
	61		62	63	64	6	5 66
1.4	184E-5.	1.461	E-5.	1.438E-5.	↓ 1.414E-5,	1.3916-5.	1.367E-5.
	67		68		÷ } 70) 7	1 72
					¥		
1.3	343E-5,	1.363	E-5.	1.367E-5.	1.411E-5,	1.434E-5.	1.450E-5.
C	73	3	74			5 7	7 78
1.4	487E-5.	1.536	E-5.	1.583E-5.	1.630E-5.	1.676E-5.	1.727E-5.
]	C	79	80	÷	81 - 1	14
	•	1.824	5-5.	1.919E-5.	4 3	4+2.011E-5/	
					4		
			DAT	A (VISLST(1).1=NP53.13	54)/	
C		115 -	116		÷ 117	118	119 - 120
		1.424E	6	1.398E-5	↓ 5, 1,634E-5		+1.651E-5.
L	21		-J.	1.3582-3	6	2	*1.0312-31
		נ		121	~122	123	
			1 45	0E-5. 1.42	4 26E-5, 1.35	552-57	
			L	UC-JI 1.94	V 1.3	1.1.2.	
	C C		P		RICK AFB REP LUES TABULA		
				CONT.	ON PG 41		PARTS
							PG 40 0

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	٥	ATA (PRSLST(1)	1=NP61.NP62	7	
C	1	2	3	4	5
1.0170	147E+3.9.8829	373E+2.9.60226	51E+2.9.3280	664E+2.9.0603	418E+2.
C	6	7	8	9	10
8.7989	5966+2.8.5438	573E+2.8.29494	305+2.8.0521	166E+2.7.8152	728E+2.
C	11	12	13	14	15
	002E+2.7.3590	1840E+2.7.13950	65F+2.6.7167	869F+2.6.3151	
	16	17		19	20
C			2		
5.9337	7050E+2.5.5714	348E+2.4.90099	12E+2.4.2967	959E+2.3.7532	2040E+2.
C	21	22	23	24	25
3.264	8869E+2.2.8277	7555E+2,2.43731	44E+2.2.0905	281E+2.1.786	068E+2.
C	26	27	28	29	30
1.519	9026E+2+1.2892	2856E+2.1.09116	5 341E+2 .9.2 252	2642E+1.7.809	7365E+1+
C	31	32	33	34	35
6.626	0092E+1.5.631	5652E+1.4.0899	5 191E+1,2.9918	B759E+1.2.203	B159E+1.
	36	37	38 38	39	40
L			£		
•	7363E+1+1.214	6273E+1.9.0905	080E+6,6,8423	9914E+U, 5, 18U	/1846+0.
C	41	42	43	44	45
3.944	79952+0.3.020	91805+0,2.3262	411E+0,1.800	4513E+0.1.399	4781E+0.
·		CONT.	ON PG 42		PARTS PG_41_OF

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Ċ	46	47	48	49	50
1.0910	568E+0.8.5180	215E-1.6.6393	4 197E-1.5.1553	8130E-1.3.9852	0595-1.
C	51	52	53	54	55
3.0 651	143E-1,2.3442	082E-1.1.7816	↓ 466E-1.1.3454	1170E-1.1.0086	976E-1.
C	56	57	58	59	60
7.5059	0128E-2.5.5414	1297E-2.4.0576	↓ 003E-2.2.9450 ↓	87∴SE-2.2.1200)623E-2.
C	61	62	63	64	65
1.5119	9931E-2.1.068	1305E-2.7.4793	☆ 850E-3.5.187	82155-3.3.5914	1714E-3.
C	66	67	68	69	70
2.4865	9045E-3,1.722	44352-3.1.2003	⇒ 2541E~3•8•463 ↓	5721E-4.6.033	0423E-4.
C	71.	72	73	74	75
4.344	9711E-4.3.159	7170E-1.2.325	र 3935E-4,1.735 स	114SE-4.1.311	1039E-4.
C	76	77	78	79	80
1.002	2554E-4.7.743	8980E- 5.6.0 696		6073E-5.3.914	5232E-5.
C	81	82	83	84	85
3.208	2435E-5.2.659	771 GE-5.2.237	↓ 7934E-5,1.914	19!3E-5.1.659	9345E-5.
C	86	87	88	89	90
1.456	0872E-5.1.289	8417E-5,1.152	\$ 2650E-5.1.036	9626E-5 .9.3 92	5204E-6.
С	91	92	93	94	95
			♦		DADTĆ

CONT. ON PG 43

PARTS PG 42 OF 52

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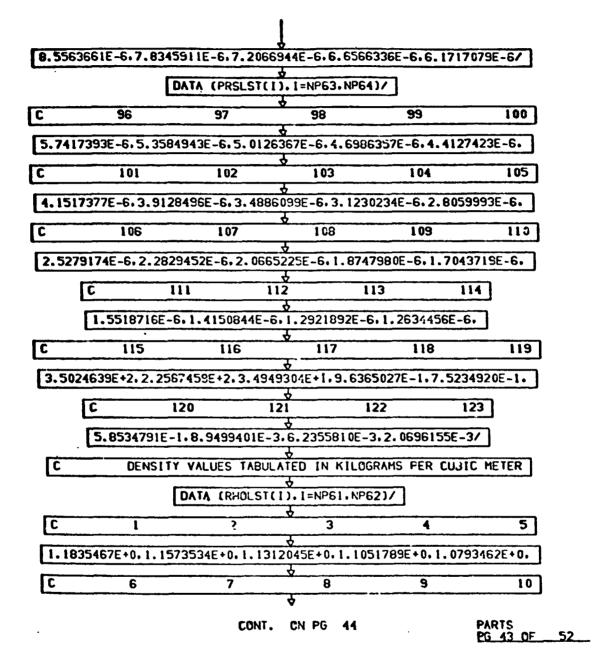
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L1 05276		L 22E+0.1.003567	05+0-9 7903	BOIE-1-9-5495	
C	11	12	13	14	15
9.31224	47E-1.9.08003	45E-1.8.852568	ILE-1.8.4122	243E-1.7.9915	662E-1.
C	16	17	18	19	20
7.59046	47E-1.7.20842	2752-1.6.49834	35E-1.5.853	5153E-1.5.2651	817E-1.
	21	22	23	24	25
C		I		21205-1-2 923	22185-1.
4.7249	382E-1.4.2255	460E-1.3.76384	296-1.3.330		
C	26	27	28	29	30
2.5432	637E-1.2.1920	326E-1.1.87176	65E-1.1.584	5601E-1.1.323	9218E-1.
[C	31	32	33	34	35
	236F-1.9.3193	37995-2.6.6193	250E-2.4.74	78898E-2.3.438	2489E-2.
		37	38	39	40
C	36		<u></u>	010205 2 7 365	54170E-3
2.511	9029E 2,1.833	4060E-2.1.3457	79/E-2.9.93 &	010282-3,7,30	
С	41	42	43	44	45
5.493	41992-3.4.122	02002-3.3.1134	715E-3.2.36	845592-3.1.81	51546E-3.
C	46	47	48	49	50
1.401	5768E-3.1.09E	5534E-3.8.6526	5723E-4.6.82	253221E-4.5.37	56684E-4.
		52	53	54	55
C	51		*	0414025 A 1 52	152539E-4.
4.222	27457E-4.3.304	16926E-4.2.574	▼ 	5414832-711.	
		CONT.	ON PG 45		PARTS PG 44_OF 52

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	56		ļ		
<u> </u>	<u> </u>	57	58	59	60
.1734	22:2-4.0.8997	*03E-5.6.6949	356E-5.4.9935	490E-5.3.692	3403E-5.
c	G1	62	63	64	65
2.7 Cū7	3895-5.1.9677	4068-5.1.4194	14028-5.1.0004	2005-5-6-920	.335 26-6.
C	66	67	63	63	70
4.79 57	760E-6.3.3215	805E-6.2.2404	5 1228E-6.1.5304	6162-6.1.057	9997E-6.
C	71	72	÷ 73	74	75
7.3962	724E-7.5.225	1595E-7.3.617	₽ 3880E-7.2.620E	711E-7.1.897	79684E-7.
C	76	77	78	79	80
1.3929	9915E-7.1.0349	9983E-7.7.534		657E-8,4.25	29020E-8.
C		82	83	84	85
3.280	9278E-8,2.569	1890E-8.1.945		B149E-8.1.20	30946E-8.
			4		
C	86	87	88		90
9.7428	5983E -9. R. 014	5089E-9.6.682	9568E-9.5 6387	136E-9.4.80	72428E-9,
C	91	92	<u>\$</u> 9.	94	95
4.1362	2113E-9.3.500	1380E-9.3.135		5267E-9.2.44	14047E-9/
	 [DATA (RHOLST(↓ 1).1=NP63.NP64	177]	
<u></u> _	ـــــــــــــــــــــــــــــــــــــ		<u>.</u>	J	
<u>C</u>	96	97	<u></u>	99	100
2.1726	6 34 5E-9,1.943	1903E-9.1.762	7216E-9,1.603	7353E-9.1.46	31480E-9.
			♦		
		CONT.	ON PG 46		PARTS PG_45_0F

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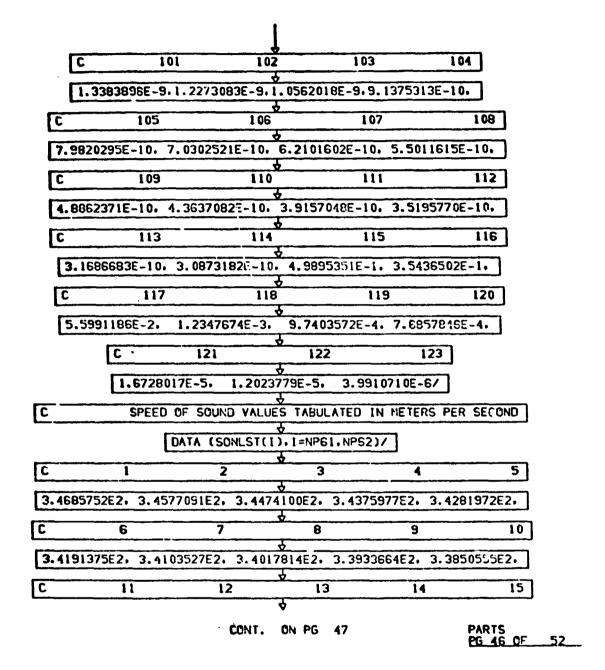
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411.1. 6. 78.110	1.1.1. F.		78 <u>2</u> . 7 9	TE E
andre and a second s	<i>ï</i> 4	<u> </u>	*	
F14 2 1 1 1	WE 22. 11	2 	- <u>-</u>	ANG-ET
and and a second s	7.	1 23	25	સ
SING 1. 1.4	States i th	<u>.</u> 1951 - 175		
میناند. با به میزاند. با میرو میرونی م میرو میرونی افغان مربو میرو میترو این ا	<u>~</u>	* 22	34	25
Birit, 7.3	1. 147. 2 M	<u>*</u> 1977 - 2017	1121. 1. H	
		: 32	39	41
40. 2097. 6. 2	CARREN B. S.	1 13452- 318		
4	42	43	44	45
14.17.7. 1. 3. 1	11. 116.2. 3.74	2.4722. 3.222	285452, 3.255	41422.
	47	2 46	49	5:
wr5.1.7. 2.7	111.55 2. 3.777	9 7.5522- 3.253	845282. 3.22	:6.C8E2.
\$1	52	÷ 53	54	55
4111112.3.1	1753627. 3.112	2 735552. 3.973	31304E2. 3.03	28736E2.
	57	\$ 58	59	60
	52465662. 2.912	3 838522, 2.873	38653E2. 2.83	51977E2.
ب بدور م ^ر ان بطور منه بر مر	ya manafalar kato a gant di Taglahahan gana a ya a ta	4		
	CONT.	ON PG 48		PARTS PG 47 DF

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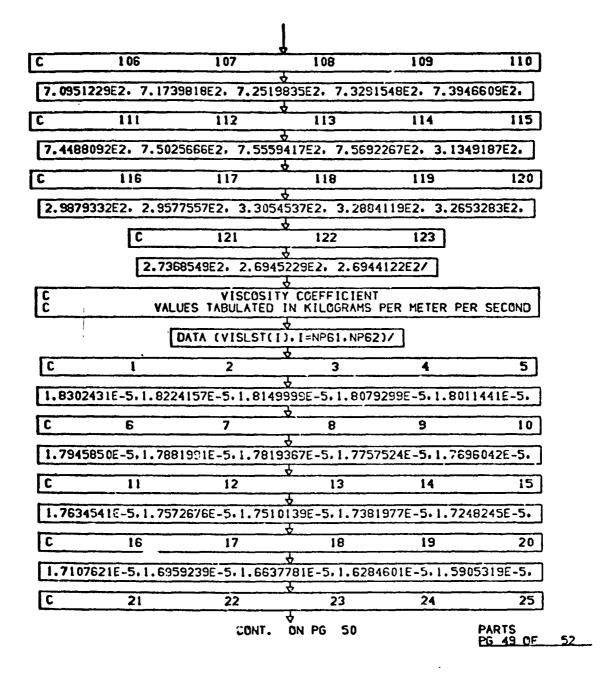
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נ	6	61 6	2	6	3	64 - 67	
Г	2.7964961E2	. 2.7570998E2	. 2.71	60535E2	4+2	.6944122E2.	
				<u>.</u>	·····		•
C				6 8		70]
F			2.7387	919E2.	2.7924640E2.	2.8254611E2.	
				£			•
C	71	72		73	74		J
2	.8678136E2.	2.9095497E2.	2.9778	8102E2.	3.0445407E2.	3.1098395E2.	
				£			, 7
C	76	77		78	79	80	J
3	.1737952E2.	3.2364874E2.	3.3583	9625E2.	3.4700671E2.	3.5897208E2,	
				÷			- -
C	81	82	<u> </u>	83	84	85	
3	.6999789E2.	3.8070451E2.	4.0126	5162F2	4.2081570E2.	4.3950065E2.	1
				V			1
C	86	87	, . <u></u>	88	89	90]
14	.5742298E2.	4.7466910E2.	4.913	<u>↓</u> 1021E2.	5.0740585F2.	5,2300637F2,	1
				у]
C	91	92	2	93	94	95	J
5	.3815483E2.	5.5288841E2	5.672	\$ 3942F2	5.8123620F2	5.9490377E2/	ו
Ľ			5.072	÷	0.012002022		1
	-	DATA (SC	NLST		3.NP64)/		
	96	97		4 ·	99	100	n
·				4			
e	.082643JE2.	6.2133762E2.	6.309		G.4047440E2.	6.4979159E2.]
C	10	1 10	2	10	3 10	4 105	5
				<u>+</u>			<u>.</u>
6	.5900326E2.	6.6809798E2.	6.800	1215E2.	6.9173079E2.	7.0153775E2.]
			,	4			
			CONT.	ON PG	49	PARTS PG 48 OF	52

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		J			
1.55092	244E-5.1.5108	096E-5.1.470784	2E-5.1.4335	282E-5.1.4108	886E- 5.
С	26	27	28	29	30
<u> </u>					
1.37454	103E-5.1.3558	590E-5.1.345795	8E-5.1.3447	7579E-5, 1.3585	386E-5.
<u>C</u>	31	32	33	34	35
1.37246	575E-5.1.3867	977E-5,1.414594	4E-5.1.4389		1025-5.
		4			
C	36	37	38	36	40
1 12 101		÷			
1.4748	3/2E-3.1.4982	730E-5.1.522353	92-5.1.547	41605,1.5734	080E-5.
C	41	42	43	44	45
		\			
1.59995	574E-5.1.62G3	7782-5.1.651676	4E-5.1.674	5577E-5.1.6934	206E-5,
				40	
C	46		48	49	50
1.7063	446E-5.1.7034	883E-5.1.687013	6E-5.1.666	0460E-5.1.6414	072E-5.
		÷			
C	51	52	53	54	55
1 0120	CCOC 6 1 5041		45 E 1 520	CODEC 5 1 4004	
1.0130	0002-3,1.3841	407E-5,1.552885	942-3.1.320	00032-3,1.4000	5792-51
C	56	57	58	59	60
		-			
1.4554	073E-5.1.4230	412E-5.1.391137	1E-5.1.359	7275E-5.1.3286	809E5.
C	61	\$		C	4 67
	01	62	63		4 - 67
1.297	76813E-5.1.260	62082E-5,1.2335	131E-5.	4+1.21631	72E-5.
······		\			
C			68	69	70
		1 25161	06F-5.1 28C	4314E-5.1.3208	7475-5
L		1.231012		- 3142-311.3200	
		. 🗸			
		CONT. C	N PG 51		PARTS
					<u> 26 50 OF</u>

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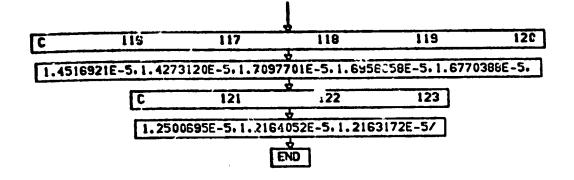
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			1		
C	71	72	73	74	75
1.3548	638E-5.1.3884	397E-5.1.4435	\$ 101E-5.1.4975	097E-5.1.550	4842E-5.
C	76	77	78	79	80
1.6024	767E-5.1.6535	285E-5, 1.7529	632E-5.1.8490	756E-5,1.942	1230E-5.
C	81	82	83	84	85
2.0323	355E- 5, 2. 1199	0197E-5.2.2879	₹ 253E-5.2.4474	1255-5.2.599	4216E-5.
C	86	87	88	89	90
2.7448	1117E-5.2.8842	2997 E-5,3,0 184	3 1890E-5,3.1478	926E-5, 3. 272	94992-5,
C	91	92	93	94	95
3.3940		1925E-5.3.6255 DATA (VISLST()	¥		73952-57
	· L				
<u>C</u>	96	97	98	99	100
С	96	97	\$ \$8 \$∕	99	100
		97 1768E-5.4.1288	3666E-5.4.2033		
			<u>.</u>		
3.9502 C	2050E-5.4.053 101	1768E-5.4.1288	3666E-5.4.2033 4 103	8057E-5,4.276 (04	105
3.9502 C 4.3486	2050E-5.4.053 101	1768E-5.4.1288 102	3666E-5.4.2033 4 103	8057E-5,4.276 (04	105
3.9502 C 4.3486 C	2050E-5.4.053 101 5565E-5.4.419 106	1768E-5.4.1288 102 6706E-5.4.512	36666E-5.4.2033 ↓ 103 ↓ 7375E-5.4.6040 ↓ 108 ↓ 0170E-5.4.9230	0057E-5,4.276 (04 0463E-5,4.680 109	105 105 03460E-5, 110
3.9502 C 4.3486 C	2050E-5.4.053 101 5565E-5.4.419 106	1768E-5.4.1288 102 6706E-5.4.512 107	3666E-5.4.2033 ↓ 103 ↓ 7375E-5.4.6040 ↓ 108 ↓	0057E-5,4.276 (04 0463E-5,4.680 109	105 105 03460E-5, 110
3.9502 C 4.3486 C 4.7423 C	2050E-5.4.053 101 5565E-5.4.419 106 314?E-5.4.803 111	1768E-5.4.1288 102 6706E-5.4.512 107 5293E-5.4.864	3666E-5.4.2033 ↓ 103 ↓ 7375E-5.4.6040 ↓ 108 ↓ 0170E-5.4.9236 ↓ 113 ↓	0057E-5,4.276 104 0463E-5,4.680 109 3014E-5,4.974 114	105 3460E-5. 110 5032E-5. 115

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PARTS PG 52 FINAL

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88101			Sugadullar Spa?(lor)
00101	2+	c	
60103	3.		PARANETER NP = 123, NP44 = 6+NP, NP34 = 34NP = 3
86193	4.	¢	
00161		-	C09=0x/4T2474/
08107	3.1		1985_57(4864), Reg_57(4864), Sch_57(484), VIS_57(4864),
96104	7.		
0010		٤	
90105		•	COMMON /SPLDAT/
	-		
08103	14+		lagteaeinp) ,PRSTablup) ,Rudtablup) ,Soutablup) ,VIStablup) ,
04105	11.	_	,Cb(#634) *C4(#634) *C2(#634) *C4(#634)
60105	11.	¢	
00104	13+		1121 × 122 × 12
06104	(40	C	
0018+	15.	¢	
90104	1	C	
00104	17+	¢	IUP++++++ INTEGER VARIABLE RANGING FROM D TO & USED TO BESIGNATE
0010+	18*	<u>،</u> د	THE ATHOSPHERE MODEL TO BE USED
00100	1**	ć	
68104	20.	č	100 + 0 - 1942 STANDARD ATPOSPHERE
00104	21+	ē	
08104	11.	-	100 - 1 - 1966 STANDARD FOR JULF AT 30 366- No LATITUDE
00100		2	to a first state of solution in the second
	•••	•	

8692 680816 1136	0001 000010 1254	0001 00005C 1726	0003 # 005410 ALTLET	0004 e 000no0 ALTTAR
633× # 881147 CH	900" R 901725 CR	00C4 x C02503 C5	0004 K 003241 CV	0003 R (74174 D
0000 [006083 [C1 40000 1 90000 1 9000	8000 000027 (HJP%	1401 100000 1 1000	0000 j ne0007 J
PL 199006 ; 9690	11 909000 1 00	0200 1 0000CS L	0007 j ~00004 4	0003 è socord pesist
0001 # 000173 PRSTAR	0003 8 001342 RHOLST	0004 g 000344 sH0148	0003 g 002:04 \$0%LST	0004 # 000541 504748
0003 8 084244 VISLST	0004 # 030754 /151AB	3003 # CC+003 #14g	0000 £ 700019 13	8000 e 30301) 731
0600 R 660812 152	0000 a cccul3 153	000g g ~0001 * 15*		

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4983 ATRATA 484286 9984 SPLBAT 664837

STORAGE ASSIGNMENT INLOCK. TYPE, RELATIVE LOCATION, NAME)

CONNER BLOCES;

ERT. - : REFERENCES (DLOCK, NAML)

П. + SPLN3 С. н. неякзя + 1 *

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\$*0#46E V\$CB1 (\$05(1; 6003++) DATA(8) 0000541 8LaWE (8+454(2) 000000

SUBMOUTINE SDAT ENTRY POLNT OP0275

W PAR SUATISOAT WRITAG IIOR PURTKAR T EREC II LETEL 254 -IEVECA LEVEL EIZOIROIDAI TRIS COMPILATIET RAS BC - Ju II PER 74 AT 20152109 11 768 74

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C 2

00144	290	6 10P . 2 - 1966 STANDARD FOR JAN. AT 30 DE6. N. LATITUDE
00104	22+	C
00104	26+	C 10P = 3 - 1964 STANDARD FOR JULY AT 60 DEGo No LA11TUDE
00104	27+	ι · · · · · · · · · · · · · · · · · · ·
20104	44+	C 10P = 4 = 1966 STANDARD FOR JAN. AT 60 UEG. N. LATITUDE
00:04	29-	C
00104	70+	C 10P = 5 = 1963 PATHICK AFB REFERENCE STANDAND
00100	31+	C
00100	32+	C
00104	33+	C
00104	34+	C SELECT DESIRED ATHOSPHERE INDEX ADJUSTOR
C010+	38 .	c
00111	364	10P1 - 10P*NP
20111	37+ 38+	
00111	394	C TRANSFER PERTINENT ATHOSPHERE DATA FROM STORAGE ARRAT TO BORLING C ARRAY AND CONVERT TO DESIRED BORKING UNITS INFITISH ENGINEERINGS
00111 00112	40+	
00112	12.	DO 1 1 = 1,*** C
00112	43+	C TRANSFER ALTITUDE VALUES LIST TO AURKING ARRAY
00112	44.8	
00115	45.	ALTTABILI + ALTLST(1)/0.3048
00115	46+	
00115	47+	C TRANSFER PRESSURE VELUES LIST TO BORKING ARRAY
00115	18.	
00114	49+	PRSTABILE = PRSUSTILOPE + 11+2+11422/1+91325
00114	50.	C
00114	51+	C TRANSFER DENSITY VALUES LIST TO NORKING ARRAY
00114	\$24	
00117	\$3.+	RHOTABII) = RHOLST(10P1 + 1)47+6474E-2/(1+225+32+174049)
00117	540	c
00117	\$ \$+	C TRANSFER SPEED OF TUND VALUES LIST TO BORKING ARRAY
60117	5.**	C C
00120	57 •	50NTAB[1] = 50NLST(10P1 + 11/0+3048
00120	58.	c c
00120	59+	C TRANSFER COEFFICIENT OF VISCOSITY VALUES LIST TO BORKING ARRAY
00120	♦Q ●	ζ
00121	4 j •	1 VISYAB(1) = VISLS3(17P1 + 1)+1+2024/(1+7844+32+1741)
03153	42*	M # NP * 1
03123	+3+	c .
00123	444	C REARRANGE DATA IN ACCORDANCE WITH ASCENDING VALUES OF THE
00123	45+	C INDEPENDENT VARIABLE - ALTITUDE
00123	44 4 67 4	
00127	48.4	00 300 I • I.M
00130	49+	
00131	70+	444L1 = 1 + 1 444L1 = 1 + 1
00134	712	IF(ALTTAB(K)+GT+ALTTAB(J))K = J
00134	724	ZOO CONTINUE
00110	73+	45 # ALTTAB(K)
00146	744	151 = PRSTAB()
00142	75+	TS2 • RHOTAB/K)
00143	7	
00144	77.	TSY - VISTABLES
00115	78.	ALTTABIKI - ALTTABLIS
001.0	794	PRSTABILI - PRSTABILI
00147	87-	HHUTABIKI . RHUTAR())
00150	81 •	SOUTRATKI # SOUTA, (1)

ORIGINAL FAGE IS OF POOR QUALITY

NO DIAGNOSTICS.

END OF COMPILATIONS

00151	42+		VISTAB(K) - VISTABLI)
	-		
00152	63.		ALTTABIL) = RS
00153	84+		FRSTABLLE SI
00154	85+		NHUTABII) = YS2
00155	***		SONTAB([] = 753
00154	67*		¥157A9(1) = 754
00154		C	
00154	47+	¢	
00154	* 0*	C	
60154	+1+	¢	APPROXIMATE THE FIRST DERIVATIVE OF THE FUNCTIONISS BY FORMING THE
00154	*2*	ç	FORBARD DIFFERENCE BUDTIENT OF THE INITIAL AND TERMINAL TABULATED
00154	+3+	¢	BOUNDARIES. THESE SLOPES ARE STORED IN DILL AND DIZI.
00154	***	C	RESPECTIVELV.
00154	75+	C	
00154	74*	¢	
00154	*7*	C	
00140			D(1) = (PPSTAB(2) = pRSTAB(1))/(ALTTAB(2) = ALTTAB(1))
14100	***	_	D(2) = {PRSTAB{NP} - PRSTAB{NP-1}}//ALTTAB{NP} - ALTTAB{NP-1}}
90144	109+	C	
00141	101+	C	COMPUTE CUBIC SPLINE INTERPOLATION COEFFICIENTS FOR PRESSURE (CP)
14100	102+	¢	
20102	103+	-	CALL SPLN1 (NP+ALTTAB+PRSTAB,JI+JN,D+CP+HORK)
00142	104+	¢	
00162	105-	¢	• • • • • • • • • • • • • • • • • • • •
00143	104.		D(1) = (RHOTAB(2) = RHOTAB(1))/(ALTTAB(2) = ALTTAB(1))
001+4	107+	_	D(2) = {RHOTAB(NP) = RHOTAB(NP+[))/(ALTTAB(NP} = ALTTAB(NP+[))
06149	108+	C	• • • • • • • • • • • • • • • • • • • •
00147	107+	ç	COMPUTE CUBIC SPLINE INTERPOLATION COEFFICIENTS FOR DENSITY (CR)
00144	110+	¢	
00145	111+	-	CALL SPLNIINP, ALTTAB, PHOTAB, JI, JN, D, CR, BORK}
00145	112+	Ç	
00145	113+	C	•••
00144	1174		DII) = (SONTABIZ) = SONTAB([])/(ALTAB(Z) = ALTTAB(]))
00147	115+	-	D(2) = (SONTAB(NP) = SONTAB(NP+1))/(ALTTAB(NP) = ALTTAB(NP-1))
00147	114*	C	
00147	117+	ç	COMPUTE CUBIC SPLINE INTERPOLATION COEFFICIENTS FOR SPEED OF SOUND
03147	118+	ç	(CS)
00147 00173	119+	¢	CALL FOLMATING IN TYPE FOLTAL IT IN D. F. PODAL
-		~	CALL SPLNI (NP, ALTTAB, SONTAB, JI, JN, D, CS, WORK)
CO170 00170	121+ 122+	C C	
00171	1231	•	0(1) = (VISTAB(2) - VISTAB(1))/(ALTTAB(2) - ALTTAB(1))
00172	124+		$D(2) = (V_1STAB(NP) - V_1STAB(NP+1))/(ALTTAB(NP) - ALTTAB(NP-1))$
00172	125+	C	
00172	124+	č	COMPUTE CUBIC SPLINE INTERPOLATION COEFFICIENTS FOR COEFFICIENT OF
00172	1274	č	VISCOSITY (CV)
00172	128+	č	*********
00173	1294	•	CALL SPLN; INP.ALTTAB, VISTAB, JI.JN.D.CV. BORK)
00173	130+	c	ANDO - A DIE IN BURIENDELES AND EXEMPTENTE ANDER
00173	131.	č	
00174	132+	-	HETURN
00. '5	133+		END

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2+ 3+ 4+ 5+ 4+ 7+ 4+ 1+ 1+ 12+ 12+ 13+ 15+ ¢ - COMMON /SPLOA1/ IALTTABINPI -RSTABINPI -RNBTABINPI -SGNTABINPI -YISTABINPI -ZCPINPI -CRINPI -CSINPI -CVINPI ¢ DATA 15 / 1 / ESTABLISH THE INTERVAL IN MICH THE SPECIFIED AUTITUDE LIES 14+ 17+ 10+ 20+ 21+ 22+ 23+ 23+ 23+ 25+ 25+ 24+ [FTV-LE-ALTTABILI)66 TO 500 [FTV-6L-ALTTABINP)968 TO 501] =]5 [FTV-6T+ALTTABILI260 TO 100 19 (0-51-6) (710) (700 (700) 10 (0 1 - 1 19 (0-10 200) 100 (0 1 - 1 19 (0-51-6) (716) (1) (0 10) 1 - 1 200 (5 - 1) 27+

SUBROUTINE ATHSPLIT,PANST 1. ¢ PARAMETER UP = 123. HP = 3+4P = 3 c

STORAGE ASSIGNMENT ISLOCK, TTPE, RELATINE LOCATION, MARES 0001 000023 10L 0003 & 000000 ALTTAN 0000 # 000003 21 0003 # 000340 RH0TAN 0001 200131 500L 0003 8 20.503 CS 0000 1 7 0000 15 0001 800035 1004 0003 0 001147 CP 0000 1 000001 1 0003 0 000561 500748 0001 00050 700L 0003 8 001723 (8 0000 000004 10JPS 0003 8 000754 11578 0001 000151 801L 0003 0 003241 CV 0003 8 000173 PRST45

-----ESTERNAL REFERENCES (BLOCK, MANE)

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SUBROWTINE ATRSPL ENTRY POINT BOOSLS

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0 700 4785041478504 -01746 1966 7007544 7 4166 11 46764 264 -188668 44764 81201801841 Tuis confilation ads 9006 on 11 flo 74 47 20182111

STORAGE USEDI COLLEI BOOJET: BATALO, BOOREI: BLANK CONHONIE; BOODOO

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00130	29+		DE • V - ALTTAU(I)
00130	30+	C	
00130	31+	C	ENPLOY CUBIC INTERPOLATION TO COMPUTE PRESSURE/SCA LEVEL RATIO
00130	32+	C	
00131	37+		FANS(1) = PRSTAB(1) + ((CP(3+1)+DX + CP(3+1-1)+DX + CP(3+1-2))+DX
00135	34+		FANS(5) = FANS(1)/PRSTAB(1)
00135	35+	C	
00132	344	Ç	EMPLOY CUBIC INTERPOLATION TO COMPUTE DENSITY/SEA LEVEL RATIO
00135	37+	C	
00177	34+		FANS(2) = RHOTAB:[] + ((CR(3+1)+DI + CR(3+(-1))+DI + CR(3+(-2))+DK
00134	34+		FANS(4) = FANS(2)/RHOTAB(1)
00134	40+	C	
00134	41+	C	EMPLOY CUBIC INTERPOLATION TO COMPUTE SPEED OF SOUNDISEA LEVEL
0(34	42+	C	RATIO
00,34	474	¢	
00135	49+		FANS(3) = SONTAB(1) & ((CS(3+1)+DX + CS(3+1-1))+DX + CS(3+1-2))+DX
00134	75+		FANS(7) = FANS(3)/SUNTAB(1)
00134	44+	¢	
0013+	47+	C	EMPLOY CUBIC INTERPOLATION TO COMPUTE COEFFICIENT OF VISCOSITY/SEA
00134	48+	C	LEVEL RATIG
00134	47+	C	
00137	50+		FANS(4) = VISTAB(1) + ((CV(3+1)+DX + CV(3+1-1))+DX + CV(3+1-7))+DX
00140	51+		FANS(8) = FANS(4)/VISTAB(1)
00141	52+		RETURN ,
00141	\$3+	C	•
00143	54+	¢	
00141	55+	c	INITIAL BOUNDARY VALUES - FUNCTIO/SEA LEVEL RATIO
00141	54+	C	
00142	57+	500	FANS(1) = PRSTAB(1)
00143	58+		FANS(2) - RHOTAB(1)
00144	57+		FANS(3) = SONTAB(1)
00195	60+		FANS(4) = VISTAB(1)
00144	61+		FANS(5) • 1.0
00147	62+		FANS(4) - 8+0
00150	43+		FANS(7) + 1+0
00154	64.		FANS(8) = 1+0
00152	45+		NETURN
00152	6 * *	C	
06152	47+	¢	
00152	4 8 •	c	TEHMINAL BOUNDARY VALUES - FUNCTION/SEA LEVEL RATIO
00152	69e	C	
00153	70+	501	FANS(1) P PRSTAB(NP)
00154	71+		FANS(2) = RHOTAB(NP)
00155	72+		FANS(3) = SONTAB(NP)
00154	73+		FANS(4) # VISTAB(NP)
00157	74+		FANSISI # FANSIII/PRSTABIII
00100	75+		FANS(6) # FANS(2)/RHOTAB(1)
00141	760		FANS(7) # FANS(3)/SONTAB(1)
001+2	77•		FANS(B) + FANS(4)/VISTABIL)
00142	78+	Ç	
00162	79+	C	
00163	8 14		RETURN
00167	a i •		END
00163 00164	91= 8 / •		METURN END

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ENU OF COMPILATION:

NO DIAGNOSTICS.

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88101	1.4		\$UBROUTINE SPLNI(H.I.T.J., J.J., J., J., J., J., J., J., J., J
80181	2+	C	
88103	3.		01#E#510# 2113.7115.0123.4113.C151
6619)		¢	
08103	5.	ċ	
84103		ć	N - AN INTEGER DENATING THE NUMBER OF DATA POINTS USED TO
84103	7.	č	REPRESENT THE FUNCTION IN THE REGIDS OF DEFINITION
00103		ć	
00103	**	c	A - A ONE-DEMENSIONAL ARMAT BIMENSIONED BT W CONTAINING IME
00103	18-	c	TALVES OF THE INDEPENDENT VANIABLE IN ASCENDING OPDER
00103	11+	Ċ	
00103	12+	ć	T - A ONE-DIRERSIONAL ARRAY DIRENSIONED BY N CONTAINING THE
00103	t3+	ĉ	VALUES OF THE DEPENDENT VARIABLE CORRESPONDING IN
00:03	1 7 4	¢	SEQUENCE TO THE VALUES IN THE I ARRAY
66193	15+	C	
00103	14*	C	J1.JH - 1KTLGERS DEFINED AS FOLLOOS
00163	17+	C	
00103	14+	c	WI FIRST DERIVATIVE OF THE FUNCTION AT THE FIRST TABULATED
00:03	1.4.4	C	DATE POINT 15 SUPPLIED (+ DI)
00183	20+	C	
00103	21+	ć	JI & 2 - SECOND DERIVATIVE OF THE FUNCTION AT THE FIRST TABULATED
00103	22+	c	DATA POINT IS SUPPLIED IN DIIJ
00103	23+	¢	
60103	24+	c	JE & 3 + FIRST AND SECOND DERIVATIVES OF THE FUNCTION AT THE FIRST
00103	25.	č	DATA POINT ARE SUPPLIED IN Dals and DI23. RESPECTIVELY
80103	244	c	
60103	27.	č	JI = 4 - FIRST AND SECOND DERIVATIVES OF THE FUN, TION AT THE LAST
00103	24+	č	DATA POINT ARE SUPPLIED IN DILY AND DIZE, RESPECTIVELY
50103	27+	č	
00103	30+	ē	JN + 2 - FINST DENITATIVE OF THE SUNCTION AT THE LAST TABULATED
00103	31+	ċ	WATA POINT 15 SUPPLIED IN DIZI
••••			

99C :	80013v 3L	465000 1080	1176 0001	000341 1354	8001 A00341 1436	0001 COn473 1416
8001	688557 1476	BOGI 080574	1746 0001	000152 2L	001 noozof zn.	0001 000414 2016
0601	600141 JL	0001 000347	4L 0001	086334 40F.	880: 708540 \$AL	0001 200131 70L
60J I	000549 71L	\$666 GC6663	1 0000	000019 [NJPS	0008 1 ^00000 4	0000 I A00002 MM

60c :	60013u 1L	00a I	000234 1176	0001	000341 1354	8001	P00361 1436	4001	00n573 1
8001	686557 1676	880 L	000\$74 1746	8001	000152 2L	8001	100208 2nL	8001	P00414 20
0881	600141 3.	0001	000347 91	8001	080329 981 *	8801	700540 546	8001	207131 70

SUGROUTINE SPLAT ------

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, MANE)

0003 4EX825 0044 56835

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W FUN SPLNI-SPLNI VRITAC IING FONTHAR V LIGC II LETEL 254 -IEEECG LEVEL EIZDIGDIDA) This cumpilation aas boke un 11 feb 79 at 20152;12

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00103	32+	C	
00105	33+	ζ	JN # 2 - SECOND DENIVATIVE OF THE FUNCTION AT THE LAST TABULATED
COICJ	740	C	DATA POINT IS SUPPLIED IN D(2)
00103	35.	C	
00103	7*•	C	0 - A ONE-DIMENSIONAL ARRAY DIMENSIONED BY 2 CONTAINING THE
00103	37 •	•	VALUES OF THE DERIVATIVES OF THE FUNCTION SPECIFIED IN
00103	39+	C	ACCORDANCE RITH J2 AND JN
00103	39+	C	C - A GNE-DIMENSIONAL ARKAY DIMENSIONED BY 3+(N=1) CONTAINING
00103	40+	c	THE CUBIC SPLINE INTERPOLATING COEFFICIENTS FOR EACH
00103	41+	C	INTERVAL
00103	42+	C	
00103	13+	C	A ONE-DIMENSIONAL ARRAY DIMENSIONED BY N USED AS A BORKING
C0103	44+	C	ARRAY ONLY
00103	45+	ç	
00103	***	¢	
00103	47 +	c	COMPUTE THE INITIAL VALUES OF THE RECURSIVE RELATIONS IN
00103	48 -	C	ACCORDANCE #ITH THE SPCIFIED PROPERTY OF THE FUNCTION AT THE
00103	470	ç	INITIAL BOUNDARY
00103	50+	C	
00103	51+	¢	
00104	52+		60 TO (1,2,3,4),JI
00105	53.		1 = -0.5
00104	544		C(1) = 3+0/(1(2) = g(1))+((7(2) = Y(1))/(g(2) = g(1)) = D(1))
00107	55 •		60 TO 20
00110	54 *		2 4(1) = 0.0
00111	\$7.		C(1) = D(1)
00112	58+		60 TO 20
00113	59.		3 #(1) = 1+0
00114	60=		C(L) = 3+0+D(2) + 6+0/(X(2) - X(1))+(D(1) - (Y(2) - Y(1))/(X(2) -
00114	41 •		X X(1))
00115	+2+		20 M - N - I
00115	63+	¢	
00115	49	Ç	COMPUTE ALL INTERHIDIATE RECURSIVE RELATION VALUES
00115	45 =	C	
00114	66 •		DO 30 1 # 2.M
00121	67 =		a(1) = -(x(1+1) - x(1))/(2+0+(x(1+1) - x(1+1)) + (x(1) - x(1+1)), + a
00121	48*		χ(1-))
00122	67.		$30 \ C(1) = \pi(1)/(\chi(1+1) + \chi(1)) + (6+0+((Y(1) - Y(1-1))/(\chi(1) + \chi(1-1)))$
00122	70+	-	X = (A(1+1) = A(1)) / (X(1+1) = X(1)) + (X(1) = X(1-1)) + C(1-1))
00122	71+	C	
00122	72+	ç	COMPUTE THE TERMINAL VALUES OF THE RECURSIVE RELATION IN
00122	736	ç	ACCORDANCE WITH THE SPECIFIED PROPERTY OF THE FUNCTION AT THE
00122	74+	C	TERMINAL BOUNDARY
00122	750	C	
00124	760		1F(J)+GT+2)60 TO 70
00124	77+ 78+		IF(JN,EQ+2)GO TO = 40
00130	79+		C(N) = (4.0/(X(N) - X(N-1)) + (0(2) - (Y(N) - Y(N-1))/(X(N) - X(N-1)))
00130	80+	τ	$x_{1} \sim C(M)^{1/2} = 0 + u(M)^{1/2}$
00130	8j.+	· ·	
00132	82+		4C TO 50
00132	83+	c	40 C(H) = 0(2)
00132	44.	c	COMPUTE THE APPFOXIMATE SECOND DERIVATIVE VALUES OF THE FUNCTION
20132	45+	č	
00135	84.4	c c	AT THE SPECIFIED DATA POINTS
00/37	87+	L.	
00134	844		
_	89+		70 00 72 1 = 1.4 72 611-00 = 6115
00137	97-		72 C(1+N) = C(1)

ORIGINAL PAGE OF POOR QUALT

00111	70*	C(1) = D(2)
00142	*1*	90 73 1 = 1,M
00145	*2*	73 ([[+]] = ([[]] = [[]+H]]/#(]]
00147	+3+	60 TO 71
00150	***	4 M = N = 1
QQ151	95+	*(M) = L+C
00152	764	C(N) = D(2)
00153	*7*	C(H) = 6+0/(X(N) = X(H))+(U(L) = (Y(N) = Y(H))/(X(N) = X(H))) =
00153	784	x3.000[2]
00154		
00155	100+	1F (NH) . 50 .
00140	101+	D0 80 1 - HH.11
00143	1020	h(1) = -1, a/(x(1+1) - x(1)) + ((x(1+2) - x(1+1))/w(1+1) + 2, a+(1+2))
00143	103+	χ) → π(ξ));
00144	104+	90 Cff) = 1+0%(Xf ¹ +1) = X(1))+(C(1+1)+(Xf ¹ +2) = Xf ¹ +1)/M(1+1) = 0+0+
00144	1.15+	$x(\{y(1)\}) = y(1))/(x(1+1) = x(1)) = (y(1+2) = y(1+1))/(x(1+2) = x(1))$
00144	104+	X+11333
00144	107+	50 D0 40 1 = M.L1
00171	108+	40 ((1) u ((1) + n(1)+(1+1)
00173	109+	71 00 41 1 4 1.8
00176	110+	41 B(1) = C(1)
00174	111.	c
00174	112+	C COMPUTE THE CUBIC SPLINE INTERPOLATION COEFFICIENTS FOR THE 1-ST.
00174	113+	C 2-ND. AND 3-RD DEGREE TERNS. IN THAT ORDER
00176	114+	c c c c c c c c c c c c c c c c c c c
00200	115+	00 62 3 • t.M
00203	116*	C(3+1-2) = (Y(1+1) - Y(1))/(X(1+1) - X(1)) - (B(1+1) + 2+0+A(1))*(
00203	117+	$1 \times \{1 + 1\} = 1 \times \{1\}\} / 6 + 0$
00204	118+	C(3 + 1 + 1) = 0.5 + 0(1)
00205	114+	62 (13+1) - (#(1+1) - #(1))/(6+0+(x(1+1) - X(1)))
00205	120+	c · · · · · · · · · · · · · · · · · · ·
00207	121+ 1	NETURN
00210	122+	END

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NO DIAGNOSTICS.

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STORAGE SSIGNMENT IBLUCE, TYPE, BELLTIVE LOCATION, NAMES 1 30000 1 000300 1 0000 2003 - 004174 U 0003 - 004244 VISLST 0003 # 001342 ##0LST 0003 # 000000 PR5LST 0003 # 005410 ALTLST 0003 # 202704 SONLST 00101 00101 00102 00103 00103 00105 1* 2* 3* SLOCE DATA ¢ PANANCTER NP = 12) PANANCTER NP = 12) PANANCTER NP11 = 1, NP17 = 119, NP13 = 115, NP14 = NP PANANCTER NP31=NP1, NP22*NP12*NP, NP23*NP13*NP, NP3*NP3*NP PANANCTER NP31=NP31=NP, NP32*NP22*NP, NP3>NP33*NP, NP3*N*NP3*NP PANANCTER NP31=NP1=NP, NP32*NP22*NP, NP3>NP33*NP, NP3*N*NP3*NP PANANCTER NP31=NP31*NP, NP32*NP2*NP, NP3>NP33*NP, NP3*N*NP3*NP PANANCTER NP31=NP3:NP, NP32*NP2*NP, NP3>NP3*N*N, NP3*N*NP3*NP PANANCTER NP3=N*NP, NP32*NP3*N*S, NP33*NP3**Ne, NP3*N*NP3**NP 5 -4 -7 -8 -7 -00104 60107 00110 00110 00111 00111 ¢ 00111 00111 00111 00111 ¢ C C C ALTITUDE TABULATION IN PETLES 001112 00112 00112 00112 00112 00112 DATA (ALTLSTIL),L++PL1,LPL2)/ 1 2 3 RC-GEO, 2+52, 5,022, 7 7 ¢ 1 80-360, 7+5E2. 13 2+25E3, 4 1+25E3+ 12 2+75E3+ 1.0C). 11 2.5C). ī c 1.1503. 7 11.553, 2.063+ 2 00112 00112 00112 00112 00112 00112 1+ 3+5()+ 20 8+0(3+ 14 4-0L3-24 c 13 16 14 + SEJ, 22 1 - DE 4, 28 1 - AE 4, 34 2 - TE 4, 40 J - AE 4, 40 J - AE 4, 40 J - AE 4, 52 - DE 4, 52 - DE 4, 54 - DE 4, 54 - DE 4, - 12 15 4,003, 21 4,023, 27 1,504, 33 2,204, 34 3,404, 45 4,604, 51 17 5+0E3, 23 1+1E%, 24 1+7E%, 23-063-3 C 17+0E3, 25 21+3E4, 1.264. • ł 24 1.46.4. 30 1.814, 5]. *E...]2 _-f...]. 2 [... 1-7E4, 35 2-6E4, 41 3-8E4, 17 00112 00112 00112 00112 ¢ 31 21+724, 37 24+ 30+ 32+ 32+ 32+ 34+ 34+ 34+ 34+ 34+ 34+ 3.0 2.8. 92 9.069. 96 969, ٠ ¢ 13.0L4. , 00112 00112 00112 00112 00112 00112 ¢ 4+464, 53 5+464, 54 5.0E*, 53 +.2E*, 57 5.21+, 5* 6.-L+, 60 1.11. . C 5.4L++ 15. •

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STOWAGE USED: CODE(1) OCOGOC: DATAIC; CODOOL: BLANK CUMPONIZ: 000000

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00112	34.		X4.464.		7.014,	7.264,	7.424.	7.6E4,	10
51100	34+	L.	• 1	42		4 4	45		
51100	*o*		17.8E4.	8 · gL · i	8,264.		8	8.824.	11
00112	41.4	L	67			70	71	72	
51100	42.		14.0E4.	*.2L	9.4641	9.464,	T	1.065.	12
51100	43+	C	73	74	75	76	77	7.0	
51100			x1+02E5.	1.0465.	1,0465+	1.0465.	1.125.	1.1265.	12
51100	45.4	C	79	80	#1	42	#3		
00112	46.4		11+1965.	1+1425,	1.10651	1.2055.	1.2215	1.29251	1.4
00112	17.	c	#5	84	\$7	44	87	90	•
51100	18+	•	#1+24E51	1+2825,	1,3651	1.3265.	1.3485.	:.3425,	15
00112	49.4		*1	42	43	**	45	74	••
00112	50*	Ĺ	x1+3#E5+	1+4651	1.4265+	1+4465.	1.7485.	1.4865.	14
00112	50° 51°	ç	+7	98	1.~2E3+ 7 9		101	102	••
00112	52*	•	X1+5£5+	1+52£5,	1.54651	100 1•50£5.	1.5865.	1.4065.	17
00112	53.	C	101		105		107	104	
	-	•		104		10+	-	1.445.	18
00112	54*		X1+49E5+	1.445.	1.7265+	1+7465.	1.025.		••
00112	55*	C	107	110	111	112	113	114	19
51100	54"		X1+08E5.	1+4562	1.7465+	2.065.	Z+04E5,	2.0565/	17
00112	574	C							
0011*	58*			'LST[[],[=NI			_	_	
00114	59*	C	115	114	117	310	114	120	
00117	* o*		X8.5£3,	1+1564+	2,364+	4+964,	\$+1E%r	5.364.	
00114	۰, •	C	121	122	123				
0011*	429		28+1E4+	8+3E4+	8_9E4/				
00115	43*	5							
0011*	44 *	C		1962	- STANDARD	ATHUSPHERE			
00114	• • •	C							
00115	54*	C		PRESSURE V.	ALVES TABUL	ATED IN MILL	IBAR5		
00114	47*	C							
00114	48*		DATA IPRS	LST(]], [=N	eiseiz)/ -				
00114	<u> </u>	L	1	2	3	٩	5	•	
00114	70+		x1+01325c3	1 9-83576E	21 9 544 282	2. 9.2634662	. 8.98742E	21 8.71850621	
00114	71.4 -	C	7	• • · · ·	•	10	11	12	
00114	72+		28.4559622		2+ 7.9501462	2. 7.70.0112	1. 7.46717E.	2. 7.2377122.	
00114	734	C	j j	1.	15	1.	17	18	
00114	7		17+0121152	+ ++57803E	21 6.1440462	2. 5+7752512	- 5.40482E	21 4.72176221	
00114	75.	c	17	20	21	22	23	24	
00114	7	-						21 1173774621	
00114	77+	C	25	26	27	20	29	30	
00114	7.4.	•						1. 7.54527611	
0,14	7	ι	31	32	33	34	35	36	
65.1-	\$ n*	•						1. 1.4141961.	
DCIIA	81+	c	37	38	14.047472	40 11 2000(0042)	41	42	
001:4	Bz*	•						01 2187143601	
	-	,	43				47	48	
00114	8j+	C		44 	45	46		-1.4.222836-1.	
00116	8 y *		49			0+ 1+0229465		••••••••	
00114	8 5 * 8 5 *	Ĺ		* 0	51	52	53	54 *1+1+31504E+1+	
00114									
00114	8 7*	¢	55	54	57	50	59	•0	
00114	8.8*	-						-212-10458-21	
00114	39*	C	<u>51</u>	62	63	4 4	45	••	
00114	• •							3. 2.37462-3.	
00114	• •	ć	<u>ه</u> ۲	4.8	69	10	21	72	
00110	* 2 *							4. 3.00752-4.	
00114	93*	C	13	24	75	/ 6	,,	78	
0011*	• • •		x2+2123E-4	11 1+85 <u>7</u> JE=	41 1.2462L-	** **52256-5		5. 5.74238-5.	
00116	*5*	C	19	4 n	61	# 2	# 3		

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00114	***		X4+59196+5+ 3+71376-5+ 3.04266-5+ 2+52176-5+ 2+12106-5+ 1+A1398-5+
00110	* 7 *	L	85 Vé 87 88 8 ⁹ 90
00114	98*		x1.57261-5, 1.3791E-5, 1.2214E-5, 1.0909E-5, 9.0151E-6, 0.8082E-6,
00116	99	C	۹۱ ۹۶ ۹۷ ۹۶ ۹۵
00116	100*		x8+09501-6, 7+41341-6, 6,81481-6, 6+29318-6, 5+83318-6, 5+42528-6,
00110	101.	C	97 98 99 130 101 102
00114	102*	-	x5+0417E-6+ ++7345E-6+ +,4375E+6+ ++1671E+6+ 3+4202E+6+ 3+6943E-6+
00116	103*	C	103 Lo ⁴ 105 106 107 108
00116	104*		x3+2932E=6+ 2+9475E=6+ 2.6479E=6+ 2+3851E=6+ 2+1536E=6+ 1+9491E=6+
00114	105*	ç	107 110 111 112 113 114
00114	104*	•	x1+7 BDE-6+ 1+6070E-6+ 1.4630E-6+ 1+3339E-6+ 1+2179E-6+ 1+1907E-6/
00114	107.	C	
00:20	108*		DATA (PRSEST(1), LUNPI3, NP14)/
00120	10+*	C	115 116 117 118 119 120
00120	110*		X3+3154162+ Z+0984862+ 3,4468621+ 9+033676-1+7+045806-1+5+495406-1+
00120	£11*	C	121 122 123
00120	112*		X8+6204E+3, 5+9624E=3, 1,9756E=3/
00120	113*	C	
00120	114*	C	
00120	115+	C	DENSITY VALUES TABULATED IN RILOGRAMS PER CUBIC METER
00120	116*	C	
00122	117*		DATA (RHOLST(1), I=NP11, NP12)/
00122	118*	C	1 2 3 4 5 6
00122	119*		x1+2250E0+ 1+1959E0+ 1,1673E0+ 1+1392E3+ 1+1117E0+ 1+0846E0;
00122	120+	C	7 8, 9 10 11 12
00122	121+		x1+0581E0+ 1+0321E0+ 1,0044E0+ 9+8151E+1+ 9+5695E+1+ 9+3287E+1+
55100	122*	C	13 14 15 16 17 18
00122	123*		X9+09256-1, 8+6340E-1, 8,1935E-1, 7+7704E-1, 7+3643E+1, 6+6011E-1,
20155	124*	C	19 20 21 22 23 24
00122	125*		x5+9002E-1+ 5+2579E-1+ 4.6706E-1+ 4+1351E+1+ 3+6480E+1+ 3+1194E+1+
00122	126*	C	25 26 27 28 29 30
52100	127*		X2+6660E-1+ 2+278-2-1+ 1,9475E-1+ ++6647E' + 1+4230E-1+ 1+2145E-1+
06122	128*	C	31 32 33 3~ 35 3 4
60122	129*		x1+0400E-1+ 8+8910E-2+ 6,4510E-2+ 4+6934E-2+ 3+4257E-2+ 2+5076E-2+
00122	130*	C	37 3g 39 40 41 42
25100	131*		x1+8410E+2+ 1+3555E+2+ 9.8874E+3+ 7+2579E+3+ 5+3666E+3+ 3+9957E+3+
00122	135+	¢	4 3 4 q 45 40 47 48
OCIZZ	123.		X2+9948E-3, 2+2589E-3, 1.7141E-3, 1+3167E-3, 1+0269E-3, 8+0097E-4,
00122	1340	C	4 ⁹ 50 51 52 53 54
00122	135*		x6+3137E-4, 4+9762E-4, 3,9086E+4, 3+0592E-4, 2+3931E-4, 1+8837E-4,
00122	136.	Ç	55 56 57 58 59 60
00122	137*	_	K1+H713E-H+ 1+1399E-H+ 8.7535E-5+ 6+6593E-5+ 5+0151E-5+ 3+736E+5,
00122	134.	C	61 62 63 64 65 66
00122	134.		X2+750E-5+ 1+999E-5+ 1.382E-5+ 9+5+3E-6+ 6+617E-6+ 4+579E-6+
00122	140*	C	67 6A 69 70 71 72
00122	1414		X3+170E=6+ 2+137E=6+ 1.459E=6+ 1+008E=6+ 7+044E=7+ 4+974E=7+
00122	1424	C	73 74 75 76 77 78
00122	143*	_	X3+493E=7+ 2+492E=7+ 1.004E=7+ 1+323E=7+ 9+829E=8+ 7+153E=8+
00122	144*	C	79 ⁸ 0 81 82 83 84
00122	145*		x5+321E+8+ 4+035E+8+ 3,112E+8+ 2+436E+8+ 1+844E+8+ 1+434E+8+
00122	146*	C	85 8 <u>6</u> 87 88 89 90
00122	147*		x1+140E=8+ 9+22aE=9+ 7,589E=9+ 6+327E=9, 5+337E=9+ 4+549E=9+
00122	148*	C	91 9, 93 94 95 96
00122	149*	-	X]+413E=0+ 3+394E=9+ 2,965E=5+ 2+608E=9+ 2+307E=9+ 2+053E=9+
00122	150.	¢	97 98 99 10C 101 1C2
00122	151.*		#1·836E-9; l·665E-9; l.515E-9; l·382E-9; l·264E-9; l·159E-9;
00122	152*	C	103 104 105 106 107 108
00122	153*		XY+7' - 10+ 8+624E-10+ 7.532E-10+ 6+633E-10+ 5+850E0+ 5+189E+10+

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25100	154*	C	109	1:0	111	114	113	114
00122	155*		E1-3804+PE	+ ++115E=10+				
GC122	156*	۲.						
00124	157+		DATA CRHOL	LST(1),1=NPI	3+6P142/			
00124	154.	C	115	114	117	110	117	120
00124	159+	•		· 3+3743E=1+				
00124	146*	c	121	122		1 1.104.05-3		
00124	161.4	•	X1+662E-51		123 3,8106-67			
00124		,	V14445-31	1+156+2+	3.4106-01			
	162*	Ç						
00124	143*	C						
00124	164+	¢	SPEI	ED OF SOUND	VALUES TAD	ULATED IN H	LTERS PER SI	COND
00124	165*	C						
00134	146*		DATA ISON	LST[]),[=NP]	11444121/			
00126	167*	C	1 .	2	3	4	5	•
00124	168.		x340+294+	338+323+	338+370+	371,4031	334.435.	335+*#3+
00126	169*	C	7	8	♥	10	11	12
00124	170*		XJJ4+489,	333+511+	332+532+	3. 544,	330.563.	329+575,
00124	171.	c	13	14	15	•	;7	18
0012*	172*		1320+503,	326+5921	3,4.507,	322 5731	320.545.	310.4521
00126	173.	c	19	20	21	22	23	J · J ·
00124	174*	•	x312+30++	308+105+	3,3.844.	279.5321	295+154+	
00124	175*	c		200.1021			2-2112-11	
00124	174*	•			24 - 3			
	17.	,	X		7+295+0	-		
00124		C	-		33	34	35	36
00120	178*	-	A		296.3/7.	297+720+	259.054;	300+384,
00124	179*	C	- 37	3.8	39	40	41	*2
00150	180*		x301+70++	303+025+	3,6.489,	310+099+	313+645+	317+189:
06126	181+	C	*3	44	45		46 - 48	
00126	182*		x320+672.	324+ : 16+	3,7.5211		3+329+799,	
00124	183*	C	49	50	51	52	53	54
00126	184*		x327+*11+	325+4921	3,3,05#,	220++04+	317.630,	312+628+
00126	185*	Ç	55	56	57	58	59	60
00125	154.	•	x307+549+	302+387+	2+7+139+	291.0001	286.345.	280+83+
00126	187*	C	61			62 - 114	100000000	200.031
00126	188*	-	x275+18,			3•269.44/		
00126	189*	C	X4/3-101		2	7.5011441		
00130	1904	•	DATA ISONI					
00130		~		STELL, LENPE				
00130	1910	C	115		117		- 119	120
	192*		x305+98×,	295+949+	297+049;	2*3	29.7991	329+114+
00130	193+	¢		- 123				
00130	194*	_	X 3+2(69.44/				
00130	195*	C						
00130	196 *	C						
00130	197*	C		. 115	CORITY COL	FFICIENT		
00130	138.	¢		VALUES TABUL	ATED IN KI	LOWNANS PER	NETER PER S	SECOND
00130	199*	C						
00132	200*		DATA (VISI	LSTIII, I=NP1	11NP121/			
26100	201*	Ç	1	2	3	4	5	•
00132	202*		x1+7894E-5	1+74156-51		1+76588-5	1.75798-51	1+74992-51
56100	203.	C	,		9	10	11	12
00132	204*	-	X1+7420E-5	+ 1+7340E=5+	1.72606-5			
00132	205*	Ĺ	13	14	15	16	17	18
50132	204	•		1+6775E-5+				
00132	207*	c		20	21	22	23	1.2.2.2.2.2.2.
		•	******					
56100	209* 209*	Ç	¥1+38125.2	• 1•52712-5+	24 -		• 1•4223E=5)
00135	2119 T	L				17		
		•	-					
00132	210* 211	c	x		9+1+42		35	4 (

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			15-1520"2	18+362++9	16-365+98		. 592	0.100
			153	153	121	2		01100
41-39h1+9	+1-3HLR+L	1036001	1135 #9*8	121308654	1232+9-64	-	.192	0+100
021	611	e11	211	9 1 1	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	2	.992	05100
			11+5911	ZAN=1 ' (1)15		-	. 592	0+100
						>	a h 9 Z	90139
		/9-3202+2.	* C	15-3Uh2+5	19-3556 . CX		•(9Z	96100
		511 - 1	0	08	61	2	.2+2.	90130
15-356416	\$ 5-3962+9	15-360l+A	**-3590*1		***385A+1X	•	.192	96100
87	11	~ /	51		1)	.092	96100
5+13.E-H'	18-36581E	*******	• • ~ 3/ 68 * 6	18.366111	16+312+11		. 652	96100
21	14	01	59	84	1.4	>	. 452	95100
1E+355+1Z	16-3104+6	16-3106+5	12-326112	12-3561+1	12-3629+1X		52	00130
99	59	F 9	۳ ع	29	19	2	.952	96100
12-3906-2	3.5346-5*	12-7650+0	4,08JE+2,	12-3922-8	+1-3201+1X		.552	00174
09	65	85	25	95	55	2	0 1 5 2	10134
*1-3296*1	1-3-26-1	+1-7215+2	1-3652*0	*1=3212++	*1-3626+58		.[52	00130
*5	(5	25	15	Ûç	6 4)	.252	95100
*1-3656**	+j-3809,8	+030+1+1	103144.1	407188+I	*2**JJE0*		152	90139
8.	2.11	94	54	h h	E h	>	•052	9E100
10329116	•03.C1•#	+03526+5	+03691*4	+03612+6	413G7S+1X		. 6 h Z	90130
2 m	1 10	0 🖌	36	95	25	2	*8+S	96100
113502+1	13006.5	112111	13852 4	+139#Brit	* i 37 68 • 6x		a i hZ	00130
96	şC	• 5		25	10	2	***2	90130
13190+8	11352516	123521+1	+*352C*1	1235951	XI+R]@E5*		* 5 H Z	95100
00	52	82	12	56	52)	• * * 2	00130
42314142	2.48422	12367815	123706.6	1+19161+6	X#+33162+		* C # 2	00130
h 2	53	22	12	07	16	2	-2+2	90130
+53929.4	,53692.2	12355615	4.33162.4	-5-621+9	4538#1+7X		• • • Z	●C 20
81	11	91	51	h 1	£ 1	3	• 0 H Z	4 + 3
123595+2	*Z3985*/ 11	123110+2 61	+23150°8	8+591E2+	×8+1 3462+	-	• 61 Z	95100
15	•	101	6	8	1	2	• ¥ C Z	96100
123837.8	+22960+6		*23625 *6 C	• • •	<c305c10+1x< td=""><td></td><td>\$21.</td><td>91100</td></c305c10+1x<>		\$21.	91100
•	5	•		, Z ZdN=1*(1)15	1 76845 WIND	C	•9(2 •5(2	10130
			/15.60	204-1 (1)15	12041 4140	•	**(7	00130 00134
	C × V 9	כם זא שוררו	1470941 530			2	• ((2	NC100
	3011		TA HIGAT - TH	14/ 14/ 2239	3)	•2(2	6000 60100
30011483	MTRON 23390						•102	PE100
SAUTITAL	MT804 23385	Junet It a	101 BUS 1-30	1920-11 USA0	NV15 V701	2	•0cz	NE100
))	+422	FC100
				15-3012	• t • t' ¥	,	\$380	LE100
				- 153		,	• 1 2 2	SC100
(5-31864+1	15-31201	· i . Z	15-39/54-1		15-36605+1X	,	,922	AC100
021	511 -		411	• l1	SIT	,	572	
•••	••••	0.1		1 an=1*(1)15			++22	
						2	.522	20100
		/5-3912+1.	f 6		+5-3242+18	,	.222	20100
		611 - Z			1.)	122	20100
+5-3/05+1	19-3919811			15-300 shal			022	21100
0.9	۵5	85	15	τ η η η Ϋς	55)	+ 41Z	25100
	15-75-09-1	-			+5-7C88++1X	-		2(100
h5	τs	25	19	Ûç	6h	>	.112	21100
-	5-32002+1+0				15-70624.1X	•	.912	20100
	84 - 94		5.6	**	EN	2	.512	25100
·5-36009·1		19-31649-1	14-30615"1		15-3(5/+11	-		20135
2.	lh	J.	34	¥6.	11	2		20100
15-34N9N+1	+5-38556+1		15-727C+1	•	<u>х</u>	•	.712	21100
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00140	270*	c						
801-0	271+	c						
00140	272+	C	DENSIT	* VALUES TA	BULATED IN	KILOGRAMS P	ER CUBIC ME	TER
00140	2710	c					•	-
00142	274+		DATA CRHOL	51(1), [=NP2	111082211			
001+2	275+	C	1	2	3	٦	e	6
20145	274+		X1-159E0.	1+135E0+	1.11260+	1+08960.	1.03440.	1+04150+
00192	277+	۲	7	à	•	10	11	12
00192	27#*		A1+014E0+	4+9236-i.	9.486E-11	9+4521-1+	9+222E-1+	8.4976-1,
00142	279+	C	13	14	15	14	17	18
001 4 2	\$8 0*		28+776E-1+	8+348E-1+	7, 4376-11	7.5406-1.	7+15*E*1+	4+443E=1+
001 7 2	2814	C	1*	29	21	22	23	24
00142	2#2+		X5.814E-1.	5+2326-1,	4_4446-14	4 . 19 98 - 1 .	J.742E-1.	3+324E-1,
00141	547.	C	25	24	2?	2 4	29	30
901-2	2849		#2+941E=L+	2+5726-1:	2,2758-11	1+9296-11	1++17E-1+	1+3576-1,
20145	285*	C	31	32	33	34	35	34
00145	544.	_	X1+142E-1+	9+4:8E=Z+	▲ .870E=2+	4+944L-2+	3+5798-8+	2+4076-2+
001 4 2	247+	C	37	38	39	40	41	42
30142	248*		X1+9C9E-2+	1.40966-21	1.0386*2+	7+709E-31	5+754E-3+	4+3248-3,
00142	284+	C	43	44	45	44	47	48
00142	2°0°	-	x3+248E=3+	2++82E-3+	1.8946-34	1+4406-3+	1+1406-3+	8+9428-41
00142	2714	C	49	50	51	52	53	54
00142	2*2* 2*1*	c	17+071E-4+	\$+5736-41	4.3786-41	3+435E-4+	2+7108-4+	2+1236-41
00142	2741	•	55	54	57	58	5+537E-51	40
00142	215+	c	A1+451E-4+	1+273E-41	9.734E-51	7+380E-5+	45	4+1L3E=\$1
00142	5444	Ľ	x3+020E+5+	#2 2+190E=5+	63 1.568E-51	64 1+070E-5+	** 7 • 282E-4,	46 4+956E-6,
00142	2974	c	47	48 68	1.3802-31	70	71	72
C0142	278*	•	X3+374E+41	2+2546-41	1.5148-4.	1+0306-6+	7+045E-7.	4+892E-7.
50147	29++	c	73	74 .	75	76	77	78
80142	300+	•	13+3+2E-7+	2+2846-7.	1.5848-71	1+1305-71	8+2132-8.	4+087E-8,
00142	301*	C	79	0	• •	11 - 114		
00142	302		X4.388E-8.	3+2598-81		-2+4842-8/		
0014Z	3030	C						
00144	164.		DATA CANOL	ST(11,1=NP2	23+NP2+1/			
00144	305*	C	115	114	117	11+	119	120
00144	304*		X4+758E-1+	3+5292-1+	5.8236-21	1+290L-3+	1+008E+3+	7.9558-9,
00147	307*	C	151	122	123			
00144	304*		X1+#54E-5+	1+2488+5+	4.Q89E-6/			
001=4	307*	C						
001+4	310*	C		-		_		
001+4	311+	C	SPEE	n ar sound	VALUES TABU	ILATED IN ME	TERS PER SE	COND
001+4	312*	ç						
00144	313.	-		ST(11,1=NP)				
00144	314*	¢		2	, ,,	*	5	•
00144	315*	-	*7=6.6"	398.41	347+3+	394+0+	344+7+	343-8,
00146 '	314*	C	7 x342+9,	8	9	10	11 337.4.	12 338.5,
00174	317* 318*	c	13	345.01	341+1+	340.3,	17	
00144	316.	•	x337+7+	14 335+41	15 334+2+	10 332.5,	330.7.	1# 327+3,
001**	3204	C	19	• • •	-	22	23	24
00144	321+	-	x322.7.	20 318+5+	21 314.01	304.51	304.7.	303.3,
00144	322*	c	25	24	27	28	29	30
001++	323*	-	1275.41	290.44	220.0+	285.7.	287.2,	288.7,
00144	324+	c	31	32	33	34	35	36
00144	325*		#293.2.	291+7+	244.4.	297.3.	299.9,	302.4,
00144	324*	C	37	38	32	*0	41	42
00146	327+		x335+2,	307+#+	3,0.0.	313.9.	314.9.	319.9,
					• =			

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09144	326*	¢	43	4.4	45	- 47	•7	
00144	324*		x322+8,	325.8.	3,4+/.	2+330	• 7 •	330+1+
00144	330-	C	47	50	51	52	53	54
00144	331+		x32/+7+	325 . 3.	3,2.0.	320+6+	315.3.	310.5.
001+4	332*	C	55	5.	57	54	59	0
00144	323*		x3c5+7.	300.7.	245.7.	299+6,	285.5.	280.21
00144	•• • • •	C	4 j	÷2	63		64 - 67	
001**	172.		x274.0,	269+41	243.8.			
00144	336*	c		44	69	70	71	72
-		•		-		•	274+51	279.9.
001**	337*	c	x 73	246.71	24 4 4 7 4	273+1+	2/ • • 3 • 77	78
00144	774. 779.	•	1284+21	295151	75	76 316.9.	327.1.	336. 4.
00144	340*	C	79	€g.		31 - 114		
001**	3414	-	x355+2,	373.1.		-390.1/		
	-	C	1333.51	313-1-		- 3 - 0 - 1 -		
001+4	345.	•						
00150	3434	-		ST(1), Lanp;				
00150	344*	C	115	t 1 +	117		- 119	120
00150	345*		x310+3.	302+4+	295.91	2+	330•2'	328+91
00150	344.	C	121	122 -	123			
00150	347*		2544+01	2*263	- 37			
00150	348+	C						
00150	3444	C						
00150	350*	C		¥15	SCORITY COEF	FICIENT		
00150	351*	C	۷				HETER PER S	ECOND
00150	352"	C			•			
52100	353*		DATA TYISL	STILL, LONP	21			
00152	354*	c	1	2	3	•	5	6
00152	355*		X1+868E-51	1.8576-51	1.8465-51	1+8346-51	1+9256-5+	1+8185-5.
00152	354*	c	7	4	•	10	11	12
00152	357*	-	X1+#11E-5+	1+8336-51	1.7966-51	1+7#76-51	1.7826-5,	1.7758-5,
00152	354*	c	13	1.	15	16	17	18
00152	359*	-	X1+76#E*51	1+7548-5+	1.7376-51	1+7256-51	1+7118-5.	,
00:52	340*	C	19	₹0	21	22	23	24
00152	341*	•	X1+648E-51	1.6126-51	1.5756-51		1+5016-5+	
00152	362*	c	25			1+5392-51	29	1.9446-5,
00152	363.	•	x!+#26E=51	26 1+388E-5+	27	28		30
00152	364+	C	31		1.3492-51	1+346E-5+	1+3586-51	1+370E-51
00152	365*	•		32 1+3°5E-5+	33	34	35	34
00152	-	c	x1+3#2E~5+ 37		1.4186-5+	1+4396-5.	1+4615-5+	1+4822-5,
	344*			38	39	10		42
00152	347*	c	X1+504E-5+	1+5252-5+	1.5496-51	1+5748-5+	1+599E=5+	1+4236=5+
00152)ég•	· ·	43	44	45		46 - 47	48
00152	349*	-	X1+647E-5+	1+6716-5+	1.0948-51		2+1+711E-5+	1=70#E+5;
00152	370*	C	49	50	51	52	\$3	54
00152	371*		X1+607E-5:	1+6778-51	1.4476-5+	1+6298-5+	1+5856-5,	1+5478-5,
00152	372*	C	55	50	57	58	59	0
00152	373*		X1+507E-5+	1+4476-51	1.4276-51	1+3845-5+	1+3446-2+	1+3026-5.
00152	374+	C	41	6 Z	63		44 - 67	
00152	375*		x1+259E=5+	1+2166-5+	1.1726-5+		4+1+1682-5.	
00152	374*	Ĺ		69	69	70	71	72
00152	1774		X	1+1908-5+	1.2182-5+	1+2456-51	1+273E-51	1+2998-51
00152	17A+	C	73	74	75	74	77	78
00152	1794		81+3356-5+	1+425E-5+	1.5136-51	1+5992-51	1+6812-5,	1+7628-5,
04152	380+	C	79			1 - 114		
00152	381.+		X1+912E-5+	2 0576-51		*2+1+7E-5/		
00152	382*	ι	· • -		-			
00154	383.	-	DATA EVISI	S (1), 1=4.P2	21 P243/			
0015	344.	ι	115		117		- 11*	120
0015*	195.	-	X1+593E-51	1+4036-54	1.4296-51		1+7116-5+	1.6966-5,
						• -		1.0.07.31

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00154	384*	C	121	122 - 1	21			
00154	387*	-	A1+194E-5.	2*1+14				
00154	388*	c		2.1.1.				
00154	389*	č						
0015*	140+	č			• • • • • • •			
001				-	•	USPHENE TOR		
-	341+	C C		JANUARY	AT 30-01640	LES NONTH LA	TITJOE	
00154	3*2*	ć	_					
00154	34)*	C	•	RESSURE VAL	UES TABULAS	ILO IN MILLI	BARS	
0015	394*	C						
00154	3*5*		DATA LPRSL	STELF,LENPJ	111NP321/			
00154	344 .	C	1	2	3	•	5	•
0015+	3424		#1+02163,	9+91222×	9.422621	T.J.C.2.	V. 04522.	8.798E2.
00154	3989	C	7	•	•	10	11	12
00154	374*		x8.53462;	8-245521	8.03812+	7+798E2+	7.564221	7.33522.
00154	* Cy*	C	13	19	15	10	17	18
00154	* 0)*		x7+112E2+	4+482E21	4.274E21	5.844621	5+517E21	4.83722.
00154	402*	C	1*	20	21	22	23	24
00154	103		14.224EZ.	3.479621	3.141624	2.75762.	2.37262.	2.03262.
00154	404*	c	25	26	27	20	29	30
80154	105*		X.+739E21	1-478221	1,25762.	1.047621	7.040E1.	7+450E1.
00154	404*	C	31	32	33	34	35	36
00154	407*	-	14.474E1.	5.399611	3,787611		-	
00154		τ	37	34	•	2+907E1+	2+134E1+	1-575811
00154	101	•	X1+147E1.		39	40	41	42
00154			43	8.723601	6.54450,	4.43960.	3.748EQ.	2.84000,
	10	C		**	. 15		47	78
00154	311.		X2+194EG1	1.47160+	1,31060+	1.01410.	7.9416-1.	6.1872-1.
00154	412*	C	••	50	51	52	53	54
00154	413*		R4.808E-1.	3+7236-1+	2,8726*11	2+207E-1+	1+687E-1+	1+281E-1,
00154	414*	C	55	54	57	58	57	60
00154	415*		X7+659E-2+	7+231E-2,	5.3726-21	3+9576-21	2.8936-2.	2.0956-2.
00156	414*	C	41	42 °	43	67	45	* *
00154	417*		X1+503E-2+	1.0486-2.	7,53#[+3+	5.3238-3,	3+740E-3+	2+457E-3,
00154	118*	C	≜ 7	44	49	70	71	72
00154	319*-		X1+879E-3+	1-3416-31	1.4836-41	7.0441-4.	5+2076-4,	3.8745-4.
00154	42a*	C	73	7.	75	76	17	7.
00154	42.*		K2+910E-4+	2+2105-4+	1.0998-41	1+3221-4+	1+0396-4.	8+2398-5,
00156	4224	C	19	•0	-	1 - 114		0.1916-91
C0156	423*		14.004E-5.	\$+350E-S,		**+3942-5/		
00154	424+	C		••••••	•••			
00140	425+	•	Data (PRS)	ST(1),1=NP3	1. P.s.1/			
00140	424*	C	115	114				
00100	427*	•	13.428E2.	2+1*4E21	117 3.40111	118	117	120
00160	42.6.*	C		+ -		8.9972-1,	7.0106-1.	5.4578+1.
00100	4294	•	121	122	123			
	-	C	18.9706-3,	4.3345-3,	2.2336-3/			
00100	439*	č						
00140	431+							
00140	432*	C	DENSIT	Y VALUES TA	BUCATED IN	RILOGRAMS P	ER CUBIC ME	TER
00140	4334	C						
00142	434*		DATA LMHOL	ST(1),1=~P3	L+4P321/			
00162	435*	ć	1	2	3	٩	5	٠
00142	434.		X1+233ED+	1.20013,	1.1.8820+	1+13760+	1+107E0+	1+078E0+
00142	437*	C	7	8	9	10	11	12
50100	438.		X1+04*E0+	1.05110.	9.9348-11	9+6951-1.	9.461E-1.	9+2316-1,
00162	439*	C	13	14	15	10	17	18
00162	440°		x9+305E-1+	8.5056-1,	8.142E-1.	7+7336-11	7.3402-1.	6.599E-1.
00162	4414	τ	19	20	21	22	23	24
54100	4424		45+9145-11	5+2#AE-1.	4.7136-14	4+1876-1+	3+7078-11	3.2705-1.
00162	443*	Ĺ	25	5 M	27	28	29	30

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00142 C0142	455*							
00162		C	61	• 2	6 3	64	۵5	**
00145	154*		#2+651E+5+	1+9426-5+	1.3748-5+	9+702E-4+	6·#53E-6:	4.8426-6
00142	4574	(⊾7	6 <u>6</u>	÷9	70	71	72
00145	458*		X3+789E-9+	2.3356-8.	1.0305-01	1+1526+ -1	8+2318-7+	5+942E-7
00162	459.	C	73	7 🦏	75	76	77	78
00142	460°		X4+322E-7+	3+1336-7+	2.3056-7.	1+7182-7,	1+296E-7,	9.887E-8
00162	4614	C	79	*o	8	1 - 114		
00195	462*		17+5098-8+	5+780L-8,	34	*4+509E-8/		
00142	443+	C	•					
00144	4644		DATA LRHOL	STILLENPS	13+NP341/			
00144	465*	C	115	110	117	118	119	120
00144	444.		X4.994E-1.	3++832-11	5.5126-21	1+165E-3+	9.0736-9.	7+1426-4
00169	467*	c	121	122 -	123			
00144	468		X1+035E-5+	1+15+E+5+	*.07DE+4/			
00144	449*	C	-		• • •			
00149	479*	c						
00149	471+	Ċ	SPEE	D OF COUND	VALUES TABU	LATED IN HE	TERS PER SE	COND
00144	472+	c		•				• • •
00144	4730		DATA ISONI	ST(1),1=NP3	1			
00144	474*	C	1	2	3	•	5	•
00144	475*	•	x340.5.	370.01	338.51	339-1-	334.4,	338.11
00144	4744	c	7		•	10	11	12
00144	4774	•	2337.6.	337+1+	310.0.	335.4.	339.4.	333.5,
00144	478+	C	13	14	15	14	17	14
00164	479*	-	\$332.5.	330+5+	3,8.5,	324.41	324.4.	320+3.
00144	480+	C	19	20	21	22	23	24
00144	481*	•	x316.2.	312+1+	307.91	303.6.	299.3,	294.9,
00144	482+	c	25	26	27	28	29	30
00166	483.	•	x293+01	291.31	289.51	287.7.	285	285.7,
00164	484.	C	31	32	33	34	15	36
00144	485*	•	x287.J.	299+1+	792.51	295.2,	297.9,	300+4,
00144	4864	c	37	38	39	40	•1	42
00144	487*	•	x333+2+	305 . 9 .	3,8.9.	311.9.	315.0.	318.0.
00166	488.	c	43	303 30 44	45		- 47	48
00144	489*	•	x321+0+	323.9.	376.8,		28.9.	328.3.
00164	476*	c	49	50	51	52	53	54
00166	4914	•	x325.8.	323.4,	321+0+	318+3+	314.4.	3:0+5,
00144	4924	c	55	22244	57	58	59	+0
00166	493*		x J 06 + 5 ,	302.5.	298.5.	294.4,	290+21	284+C+
00166	494.	c	▲I		240131		470441	200-01
00166	495.	L.	*1 X201+7,	42 277+41		63 - 66		
	-		•			4+277+2+		• -
00166	474.	C	67	68	69	70	71	12
00166	497*	-	x278+7	283.8.	248.4.	293+3+	291.7.	302+21
00166	493.	Ĺ	73	7.4	75	76	77	78
00144	499+		x30/+U+	314-31	321+3+	359+5+	335.0.	341+61
	50n*	C	79	ð.n		1 • 114		
CC146 00166	501*		X351+0,	340.31		* 169 . 1/		

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54100	****		X2.4286-1.	2++346-1+	2.1016-14	1+8056+1+	1+5496-1+	1+3126-11
00162	445+	C	31	` و (11	34	35	36
00142	444.4	-	x1+0**E=1+	9+2136-2+			3.3658-21	2.4406-2.
00142	447+	C	37	38	40	40	•1	42
00142		•	X1+780E-2+	1+3266-2.	-	7+1052-3,	5+2872-31	3.9605-3.
54100			43	**	45	46		48
00142	*5n*	•	X2+981E-3+	•		1+3192-3.	1+0286-31	8.0385-4,
00142	451.4	c	49		51	52	53	54
001+2	452*	•	10+340E-4+	،۲۳۹3٤ ۹۰۹ ۹۰۹۹	3.9036-41			1+8405-4+
	-					3.0216-41		
00142	453*	c	55	56	57	58	59	0
20195	454*		X1**3*E***	1-1366-44	8.4416"51	6=3962-5,	**8085*21	3+5#46=51
00142	455*	c	61		♦3	64	45	**
60162	454.		12++51E+5+	1+9421-5+	1.3745-51	9-7026-6.	6.853E-6.	4.8426-6,
00142	457*	C	≜ 7	68	69	70	71	72
20102	458*	•	X3+386E-6.	2.3356-6.	1.0301-01	1+1526+ -1	8+2312-7.	5. 9426-7.
00162	459.	c	73	,	75	76	77	78
00142	440*	-	14+3226-71	3+1336-7+	-	1+7182-71	1.2966-7,	9.887E-8.
54100	4614	c	79	-	· · ·	1 - 114	•	-
	•	•	-	, * 0		• •		
001+2	462*	-	_x7+509E+8+	5+780t-#,	34	1*4+509E-8/		
00142	4614	C						

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601 B	60	c						
(3) 0	502° 503°		DATA ENON	STELL LANPS	11P1#1/			
67 /0	504*	C	115	114	117	110	- 11*	120
0 70	505*	•	x308.9.	277414	203.91		28.9.	327+1+
00.70	504*	ι	121 -		••••		•	
01.10	507*			17.21				
0/) 70	504*	C						
63120	50#*	C						
Cotro	519*	C			COGITY COLF			
4 0170	511*	C	1	ALUES TABUL	ATED IN KIL	OGRAMS PEN	HETER PER S	ECOND
50170	512*	C						
CD (Z	513*		DATA EVIS	ST(1),LANP:	11+NP321/			
CD1 2	514*	c	1	2	3	4	5	6
0112	515*	-	x1+791E=5+	1+7876+5+	1.7836-5+	1+779E-5+	1+775E-5+	1+7718-51
5212	514*	C	7		•	10	11	12
00, 2	517*		x1+/47E=5+	1+7431-5+	1.7541-51	1+751E-5+	1.7428-5.	1+7348-51
001 2	514-	C	13	14	15	14	17	10
00112	51	c	x1+/24E=5+	1+7396+5+	1.4938-51	1+474E-5+	1+#40E=5+	1.4268-5,
53172 00172	52g*	•	19 21+5938-5+	20	21	22	Z] +454E-5,	24
00, 3	521* 522*	C	25	1-5596-51	1,5252-51	1+491E-5+	29	1+420E-5, 30
D0112	523*	•	x1+405E-5,	26 1+3916+59	27 1.376E-51	24]=362E-5+	1-3476-51	1+3468-51
00177	524*	C	31	32	33	34	35	34
00172	525*	-	x1+35*E+5+	1+3736+5+	1.4016-5.	1+4212-5,	1.4458-5,	1.4666-5,
00172	524*	C	7	34	39	40	41	42
00172	527*		x1++8#E+5,	1-5096-5.	1.5336-51	1+554E-5+	1.5838-5.	1.6076-5,
00.72	524*	¢	• • 3	44	45		. 47	18
30172	529*		x1++32E-5.	1-4568-5.	1.4748-5+	2*1+	6962-5,	1+671E-5.
35172	\$30 [*]	C	47	50	51	52	53	54
00172	\$3 <u>1</u> *		X1+671E-5+	1+4528-51	1.4328-5:	1+410L-5+	1+578E+5+	1+5478-5,
10:72	532*	C	55	54 ,	57	58	59	60
0: "Z	\$33*		x1+514E-5+	1+4#2E-5+	1.4498-51	+4 6E-5,	1.3836-5,	+349E-5,
0172	534*	C	41	62		÷3 *	44	
1 3175	\$35*		81+3146-51	1+280E-5.		4+1+27	8E-5.	
(0172	534*	C	67	4.8	69	70	71	72
00172	537*	•	x1+290E*5+	1+3246-5+	1.3985-2+	1+405E-5,	1.4436-51	1+479E-5,
00177	536*	C	73	74	75	74	77	78
0017.	5394		#1+518E-5+	1+5776-5+	1.0346-21	1+6918-5+	1+746E+5+	1.0008-5,
00171	540*	C	79	8 0		11 - 114		
00172	\$41*	,	x1+877E-5+	1.4238-51	٦.	*2+027E-5/		
00177	5420	C						-
00174	543*	C		LST(1),1+HP;				120
00174	544+ 545+	•	x1+542E*5+	114	17 .4 2E-5+		- 119 +496E-5+	[+68]E-5,
00174	5444	c		- 123	1.7125-31	***		[
00174	547+	•		- 123				
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00174	5494							
00174	550+		1466 STA	NDARU ATHOS	PHENE FOH JU	JLY AT 40-DE	GREES NURTH	LATITUDE
60174	551+	č	- • •					
60174	5524	č	1	PRESSURE VA	UES TABULA	TED IN HILLI	BARS	
60174	55	C						
00176	554+		DATA LPRS	LST(1), L=NP	11, NP421/			
00170	355°	Ľ	1	2	3	۹	5	6
001 10	556.		x1+J10E3+	9+83462+	9,516EZ+	9-234EZ+	8.960E2.	8.69222.
00175	557*	C	,	đ	9	10	11	12
001++	55A*		18+432E21	8+177E2+	7.930E2+	7 + 688E2 +	7+453E21	7+224621
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00174	540*		R7+000E2+	6.571221	6.16422.	5+77922+	5+414E2+	4.740EZ,
001 +	541*	C	19	25	21	22	23	24
00176	542*	•	X4+134E2+	3+59262+	3.1042+	2+477EZ+	2+30162+	1.478E2+
00176	543*	C	25	24	27	28	24	70
00174	544*	-	X1+700E2.	1.401221	1.25662,	1+08012+	9.285211	7.483E1+
00174	545*	c	31	32	33	34	35	36
00176	546*	•	X4+044E11	5+93261+	4.364E1+	3+229E1+	2+398E1+	1.788E1.
60176	547*	c	37	38	39	•0	• 1	42
00174	568*	-	x1+338,1+	1*005E1*	7.593E0+	5.775201	4.42160+	3+46450+
00176	547*	c	43	4,	45	4.6	₹7	46
00176	\$70*	•	12.040E3:	2.02160	1.40760+	1+25420+	9.872E=1+	7+7426-11
00174	571.	C	., 9	5 ე	51	52	53	54
00174	\$72*		X#+C72E=1+	4.7518-11	3.704E-1+	2+87/6-1+	2+2185-1+	1+6948-1,
00176	573*	C	55	56	\$7	59	59	60
00176	574*		X1+201E-1+	9.5766-2,	7,0756-2+	5+1+0E-2+	3.7106-2,	2+6278-2.
00174	\$75*	C	• <u>:</u>	• 2	63	64	₩5 3+1×7E=3+	å 4 2•430€−3,
00176	578*		x1+829E=21	1.5.66-2.	8,3402-3+	5.5302-3.	34, 4, 5-31	72
00176	577.	C	£7	56	69	70		/2 2+485E-4.
60176	578*		X1+010E=3+	E+C75E=3+	7.2975-4+	5+0276-4+	3+5,2E-4, 77	78
00176	579*	C	73		75	76	4+004E-5+	4.8016-5.
00174	58 ₀ •		#1+782E=++	1+3101-4+	9.0891-5.	7+633E-5+	•••UU*E=3•	
00176	581*	C	7.	9 ⁰		1 - 114 2+700E-5/		
00176	582*	-	X3+903E-2+	3.22-6-5.		2.1005-31		
00174	583*	c			3 . Bun 1/			
00200	584.			ST(1),1=NP4			:17	120
00200	585+	C	115 x3+343E2+	1:4 2+133E2+	i17 3,753El+	110 +115E0+	8.7.26-1.	6.857E-1,
00200	584.	c	121	122	123	1.112001	•••••••••••••••••••••••••••••••••••••••	•••••••••••
00200	587.			-	• -			
					1 9745-3/			
00200	588*		#1+025E-2+	6.8036-3.	1,9786-3/			
00260	589.	ç	#1+025E-2+	6•8 0][≁3,	1,978E-3/			
00200	589* 570*	Ċ				I KILOGHAMS	PER CUBIC M	ETER
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00200 00200 00200 00200	589* 590* 591* 572*	Ċ	DENSI	TY VALUES T	ABULATED IF	I KILOGNAMS	PER CUBIC H	ETER
00200 00200 00200 00200 00200	589* 590* 591* 592* 593*	Ċ	DENSI		ABULATED IF	I KILOGHAMS	PER CUBIC M	٠
00200 00200 00200 00200	589* 590* 591* 572*	(((DENSI DATA (MHOL	TY VALUES 1 ST{I},I=nP4 2	ABULATED IP			
00260 00200 00200 00200 00202 00202	589* 590* 591* 592* 593* 594*	(((DENSI DATA (MHOL 1	TY VALUES T	ABULATED 1	•	5 1+10¶E0+ 11	♦ 1+077E0+ 12
00200 00200 00200 00200 00202 00202 60202 60202	589* 590* 591* 572* 593* 594* 595*	נ נ נ	DENSI DATA (*HOL 1 X1+220EG+	TY VALUES T ST(1),140P4 2 1+190E0+	ABULATED IP 1	4 1+135FD+	5 1+104E0+ 11 9+467E-1+	♦ 1+077E0+ 12 9+223E=1+
00200 00200 00200 00200 00202 00202 00202 00202	589 590 591 592 593 593 594 595 594	נ נ נ	DENSI DATA (***0) 1 XI+220EG+ 7 XI+050EG+ 13	TV VALUES 1 ST(1),1=NP4 2 1+190E0+ 1+023E0+ 14	ABULATED IP 1	4 1+132EQ+ 10 9+71+E-1+ 16	5 1 • 1 0 ¶ E 0 + 1 1 9 • 467E=1 + 17	∳ 1+077E0+ 12 9+223E=1+ 18
00200 00200 00200 00202 00202 00202 00202 00202 00202	589 590 591 572 593 593 594 595 594 594	((((DENSI DATA (MHOL 1 XI+220E0+ 7 XI+050E0+ 13 X8+984E+1;	TV VALUES 1 .ST(1), I=NP4 2 1+190E0+ 0 1+023E0+ 14 E+52(E-1+	ABULATED I 1. NP421/ 3 1. 161E0. 9 9. 971E-1.	4 1+132ED+ 10 9+71+E-1+ 16 7+651E-1+	5 1+104E0+ 11 9+467E+1+ 17 7+244E+1+	
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00200 00200 00200 00202 00202 00202 00202 00202 00202 00202 00202 00202	580 5912 5912 5912 5923 595 595 595 595 598 598 598	נ נ נ נ נ	DENSI QATA (MMOL 1 XI+220E0+ 7 XI+050E0+ 13 X8+989E=1+ 19 X5+849E=1+	TY VALUES T ST(1), 1=NP4 2 1+190E0 0 1+023E0 14 0+521E-1 2 5+231E-1	ABULATED I 1	4 1 + 132 E D + 10 9 + 71 + E - 1 + 14 7 + 651 E - 1 + 22 9 + 142 E - 1 +	5 1 • 10 ° E0 • 1 ! 9 • ° 67 E - 1 • 17 7 • 2 ° ° E - 1 • 23 3 • 560 E - 1 •	<pre></pre>
00200 00200 00200 00202 00202 00202 00202 00202 00202 00202 00202 00202	589+ 590+ 591+ 572+ 593+ 594+ 595+ 594+ 595+ 598+ 599+ 400+ 601+ 602+	((((DENSI OATA (MHOL 1 X1+220EG+ 7 X1+050EG+ 13 X8+984E+1+ 19 X5+849E+1+ 25	TY VALUES T ST(1), 1=nP4 2 1+190E0+ 0 1+023E0+ 14 E+52(E-1+ 2C 5+23(E-1+ 26	ABULATED I 1. NP421/ 3 1. 161ED. 9 9. 971E-1. 15 8. 077E-1. 21 4. 663E-1. 27	4 1 + 132 E 0 + 10 7 + 7 1 + E - 1 + 14 7 + 65 1 E - 1 + 22 4 + 142 E - 1 + 28	5 1+10"E0+ 11 9+467E=1+ 17 7+244E=1+ 23 3+560E=1+ 27	6 1 • 077E0 • 12 • • 223E=1 • 18 • • 519E=1 • 24 3 • 060E=1 • 30
00200 00200 00200 00202 00202 00202 00202 00202 00202 00202 00202 00202	589* 590* 591* 592* 593* 594* 595* 598* 598* 599* 400* 401*	с с с с с с	DENSI OATA (MHOL 1 X1+220EG+ 7 X1+050EG+ 13 X8+984E-1+ 19 X5+649E-1+ 25 X2+631E-1+	TY VALUES T ST(1), 1=NP4 2 1+190E0 0 1+023E0 14 0+521E-1 2 5+231E-1	ABULATED IP 1	4 1+132E0+ 10 9+71+E-1+ 16 7+651E-1+ 22 4+142E-1+ 28 1+671E-1+	5 1 • 10 ⁴ E0 • 1 i 9 • 467E-1 • 17 7 • 244E-1 • 23 3 • 560E-1 • 27 1 • 437E-1 •	6 1 • 077E0 • 12 • • 223E=1 • 18 • • 519E=1 • 24 3 • 060E=1 • 30 1 • 235E=1 •
00200 00200 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202	589 591 572 593 594 595 594 595 594 595 594 597 598 601 602 604	נ נ נ נ נ	DENSI DATA (MHOL 1 XI+220E0+ 7 XI+050E0+ 13 X8+984E-1+ 19 X5+849E-1+ 25 X2+631L-1+ 31	TY VALUES 1 .57(1),1=NP4 2 1+190E0+ 0 1+023E3+ 14 E+52(E-1+ 26 2+26(E-1+ 32	ABULATED IP 1	4 1 + 1 3 2 E 0 + 10 9 + 7 1 + E = 1 + 16 7 + 65 1 E = 1 + 22 4 + 14 2 E = 1 + 28 1 + 67 1 E = 1 + 34	5 1+104E0+ 1i 9+467E+1+ 17 7+244E-1+ 23 3+560E-1+ 24 1+437E-1+ 35	<pre></pre>
00200 00200 00200 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202	589 591 572 593 594 595 594 595 596 597 598 500 601 602 603 603 603 603	נ נ נ נ נ	DENSI OATA (MHOL 1 XI+220EG+ 7 XI+050EG+ 13 X8+984E=1+ 19 X5+849E=1+ 25 X2+631L=1+ 31 X1+062E+1+	TY VALUES 1 ST(1), 1=0.04 2 1+190E0 0 1+023E0 1+ 2 2 5+231E-1 2 2 2+261E-1 32 9+132E-2	ABULATED IP 1	4 1 • 1 3 2 E D + 10 9 • 7 1 • E - 1 + 16 7 • 65 1 E - 1 + 22 9 • 1 4 2 E - 1 + 28 1 • 67 1 E - 1 + 34 4 • 965 E - 2 +	5 1 • 10 ⁴ E0+ 1 i 9 • 467E-1+ 17 7 • 244E-1+ 23 3 • 560E-1+ 29 1 • 437E-1+ 35 3 • 639E-2+	6 1 • 077E0 • 12 • • 223E=1 • 18 6 • 519E=1 • 29 3 • 0 • 0 E= 1 • 30 1 • 235E=1 • 3 • 2 • 678E=2 •
00200 00200 00200 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202 00202	589* 590* 591* 593* 593* 594* 595* 598* 599* 600* 602* 603* 604* 605* 506*	с с с с с с	DENSI 0ATA (MMOL 1 XI+220E0+ 7 XI+050E3+ 13 X8+989E=1+ 19 X5+899E=1+ 25 X2+631E=1+ 31 XI+062E=1+ 37	TY VALUES T ST(1), I=NP4 2 1+190E0+ 0 1+023E3+ 14 R+521E=1+ 26 2+261E=1+ 26 2+261E=1+ 32 9+132E=2+ 38	ABULATED IP 1	4 1 + 132 E 0 + 10 9 + 71 + E - 1 + 14 7 + 651 E - 1 + 22 9 + 192 E - 1 + 28 1 + 671 E - 1 + 34 9 + 965 E - 2 + 90	5 1 + 10 ⁴ E0 + 1 1 9 • 467E - 1 + 17 7 • 244E - 1 + 23 3 • 560E - 1 + 29 1 • 437E - 1 + 35 3 • 639E - 2 + 41	6 1 • 077E0 • 12 • • 223E = 1 • 18 6 • 519E = 1 • 24 3 • 0 • 0 E = 1 • 30 1 • 235E = 1 • 36 2 • 678E = 2 • 42
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0020ª	42.4	ç	115	114	117	114	119	120
00204	\$25*	•	14.941E-11	3+3014-1+	5.0072-2.	1+401E-3.	1+0998-3+	8+619E-4,
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0020ª	\$27 *		#2+150E-5+	1.4656-5,	4.26 gt-6/			
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00204	445*	C	37	38	39	40	91	42
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00204	447*	C	43	74	45	44	47 -	48
00204	478*		£328+21	336.41 4	332.21	333.5.	2•333	.7.
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00212	68.4	-	1			1 + 4762 - 5 +	1.4928-5.	1+507E-5,
	4854	c	7د		. 9	-	1	42
00212	484	•	x1+523E-51	1: 1.539E-5,	1,5695-5.	40 1.0032-5.	1+0318-51	1+661E-5.
00212	4B7+	C	43	44	45	46	47	
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51200	489*	C		50	51	52	53	54
21200	69 ₀ •	-	11+7302-51	1.7102-51	1.6916-5.	1.00.2-5.	1.4176-51	1+5698-5.
00212	♦7 1 •	C	55	54	57	58	59	•0
00212	6924	-	x1+521E-5+	1.4726-51	1.4218-5+	1-3701-5+	1.3186-51	1+2058-5,
00212	691*	C	• t	62		63 -		
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00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214	705* 706* 707* 708* 709* 710* 711* 712* 713* 713* 713* 715* 716* 717*		121 XI+129E-5+ DATA (PRSL 1 X1+01350E3+ 7	2+1+4 122 - 2+1+1 1466 5 JANUAMT RESSURE VAL ST(11,1=NP5 2 9-804E2+ 8	1485-5, 123 025-5/ 17ANDARD ATM AT 60-DEG4E UES TABULAT 11NP523/ 39,48462, 9	05PHERE FOR ES NORTH LA ED IN MILLI 9 174E21 10	TITUDE BARS 8.878E2. 11	8+590E2+ 12
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D0214 D0214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214 00214	705* 706* 707* 709* 719* 719* 713* 713* 714* 715* 716* 716* 716* 716* 716* 716* 716* 716	ι ι ι ι ι ι	121 XI+129E-5+ P DATA (PRSL 1 XI+01350E3+ 7 X8+310E2+ 13 X6+794E2+ 19 X3+d53E2+	2+1+4 122 - 2+1+1 1966 5 JANUAMT RESSURE VAL ST(1),1=NP5 2 9-804E2+ 8 8+038E2+ 14 6+352E2+ 20 3+304E2+	1485-5, 123 025-5/ 14.00ARD ATM AT 60-0664E UES TABULAT 1.00521/ 3.9.48422+ 9.48422+ 1.5.5.9.32521 21.2.82952+	05PHENE FON ES NONTH LA ED IN MILLI 9+176E2+ 10 7+519L2+ 16 5+534L2+ 22 2+41862+	TITUDE BARS 8+878E2+ 11 7+271E2+ 17 5+158E2+ 23 2+067E2+	8+590E2+ 12 7+031E2+ 18 4+447E2+ 24 1+744E2+
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D0214 0020000000000000000000000000000000000	705* 704* 704* 704* 709* 719* 719* 713* 713* 713* 713* 714* 715* 714* 715* 716* 715* 716* 717* 718* 715* 715* 715* 715* 715* 715* 715* 715	ι ι ι ι ι ι	121 XI+129E-5+ P DATA (PRSL 1 XI+01350E3+ 7 X0+310E2+ 13 X6+794E2+ 19 X3+653E2+ 25 x1+510E2+ 31	2+1+4 122 - 2=1+1 1466 5 JANUAMY RESSURE VAL STI11,1=NP5 2 9-804E2+ 8+038E2+ 14 6+352E2+ 20 3+352E2+ 20 3+352E2+ 20 1+20 1+20 1+20 1+20 1+20 1+10	1485-5, 123 025-5/ 14NDARD ATM AT 60-DEGHE UEC TABULAT 1+NP521/ 3 9,48452+ 9,48452+ 15 5,93252+ 21 2.82952+ 27 1.10352, 33	05PHERE FOR ES NORTH LA ED IN MILLI 9+176E2+ 10 7+519L2+ 16 5+534L2+ 22 2+41062+ 26 9+43161+ 34	5 8AR5 8+878E2+ 11 7+271E2+ 17 5+158E2+ 23 2+047E2+ 29 8+058E1+ 35	8 • 5 • 0 E 2 + 1 2 7 • 0 3 1 E 2 + 1 8 4 • 9 4 7 E 2 + 2 4 1 • 7 6 6 E 2 + 3 0 6 • 8 8 2 E 1 + 3 6
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D0214 0020000000000000000000000000000000000	705* 704* 704* 704* 719* 719* 713* 713* 713* 713* 713* 713* 714* 715* 714* 715* 714* 715* 714* 720* 721* 720* 721* 722* 723* 724* 725* 724* 725* 724*		121 XI+129E-5+ DATA [PRSL 1 XI+01350E3+ 7 X0+310E2+ 13 X6+794E2+ 19 X3+653E2+ 25 R1+510E2+ 31 X5+675E1+ 37 X1+02DE1+ 43 R1+667E0+	2 + 1 + 4 $1 \ge 2 - 2 = 1 + 1$ $2 \ge 1 + 1$ $2 \ge 1 + 1$ $1 \ge 6 \le 5$ J = N = 0 = 1 $R = S \le U = E = 1$ S = C = 1 + E = 1 $3 \ge 1 \ge 1 = 1 = 1$ $3 \ge 1 \ge 1 = 1$ $3 \ge 1 \ge 1 = 1$ $3 \ge 1 \ge 1$ $3 \ge 1$	1485-5, 123 025-5/ 14, DARD ATM AT 60-DEGHE UEC TABULAT 1, NP52)/ 9, 48452, 7, 77552, 15 5, 93252, 21 2, 82952, 21 2, 82952, 33 3, 64751, 39 5, 47950, 55 9, 7145-1,	05PHENE FON ES NONTH LA ED IN MILLI 9+176E2+ 10 7+519L2+ 16 5+534L2+ 22 2+41062+ 26 9+431L1+ 34 2+649E1+ 34 2+649E1+ 40 4+041E0+	TITUDE BARS 8+878E2+ 11 7+271E2+ 17 5+158E2+ 23 2+047E2+ 29 8+058E1+ 35 1+922E1+ 41 3+0GIE0+ 47 5+714E=1+	8.590E2; 12 7.031E2; 18 4.467E2; 24 1.766E2; 30 6.882E1; 36 1.398E1; 42 2.243E0; 46 47 47 47 47 47 47 47 47 47 47
D0214 D0214 000214 000000000000000000000000000000000000	705* 704* 707* 709* 719* 719* 713* 713* 713* 713* 714* 715* 714* 715* 716* 717* 718* 719* 720* 721* 720* 721* 720* 721* 725* 725* 725* 725* 725* 725* 725* 725	ι ι ι ι ι ι ι ι ι	121 XI+129E-5+ P DATA (PRSL 1 XI+01350E3+ 7 X6+J10E2+ 13 X6+79#E2+ 13 X6+79#E2+ 19 X3+653E2+ 25 X1+510E2, 31 X5+675E1+ 37 X1+02DE1+ 43 R1+667E0+ 47	2 + 1 + 4 $1 \ge 2 - 2 = 1 + 1$ $2 \ge 1 + 1$ $2 \ge 1 + 1$ $1 \ge 6 \ge 5$ J = N = 0 = 1 $3 = 1 \ge 1 + 1 = -1$ $2 \ge 1 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge 2 + 2 = -1$ $3 = 0 = 1 \ge -1 = -1$ $3 = 0 = 1 \ge -1 = -1$ 3 = 0 = -1 = -1 3 = 0 = -1 = -1 3 = 0 = -1 = -1 3 = 0 = -1	1485-5, 123 025-5/ 14, DARD ATM AT 60-DEGHE UES TABULAT 14, NP521/ 39, 48452, 9, 48452, 15 5, 93252, 21 2, 82952, 21 2, 82952, 33 3, 64751, 39 5, 47750, 45 9, 7145-1, 51	05PHENE FON ES NONTH LA ED IN MILLI 9 176E2+ 10 7 + 519L2+ 16 5 + 534L2+ 22 2 + 41862+ 26 9 + 431L1+ 34 2 + 649E1+ 40 4 + 041E0+ 46 9 + 434L-1+ 52	T I TUDE BARS 8+878E2+ 1 7+271E2+ 17 5+158E2+ 23 2+047E2+ 29 8+058E1+ 35 1+922E1+ 4 3-0GIE0+ 47 5+714E-1+ 53	8.590E2; 12 7.031E2; 18 4.967E2; 24 1.766E2; 30 6.882E1; 36 1.398E1; 42 2.243E0; 46 47 47 47 47 54
D0214 0020000000000000000000000000000000000	705* 704* 704* 704* 719* 719* 713* 713* 713* 713* 713* 713* 714* 715* 714* 715* 714* 715* 714* 720* 721* 720* 721* 722* 723* 724* 725* 724* 725* 724*		121 XI+129E-5+ DATA [PRSL 1 XI+01350E3+ 7 X0+310E2+ 13 X6+794E2+ 19 X3+653E2+ 25 R1+510E2+ 31 X5+675E1+ 37 X1+02DE1+ 43 R1+667E0+	2 + 1 + 4 $1 \ge 2 - 2 = 1 + 1$ $2 \ge 1 + 1$ $2 \ge 1 + 1$ $1 \ge 6 \le 5$ J = N = 0 = 1 $R = S \le U = E = 1$ S = C = 1 + E = 1 $3 \ge 1 \ge 1 = 1 = 1$ $3 \ge 1 \ge 1 = 1$ $3 \ge 1 \ge 1 = 1$ $3 \ge 1 \ge 1$ $3 \ge 1$	1485-5, 123 025-5/ 14, DARD ATM AT 60-DEGHE UEC TABULAT 1, NP52)/ 9, 48452, 47, 77552, 15 5, 93252, 21 2, 82952, 21 2, 82952, 33 3, 64751, 39 5, 47950, 55 9, 7145-1,	05PHERE FOR ES NONTH LA ED IN MILLI 9 9 176E2 10 7 519L2 16 5 534L2 22 2 4182 22 2 4182 2 2 4182 2 5 534L2 2 2 4182 2 2 4 041E0 4 0 4 041E0 8 4 7 434L-1,	TITUDE BARS 8+878E2+ 11 7+271E2+ 17 5+158E2+ 23 2+047E2+ 29 8+058E1+ 35 1+922E1+ 41 3+0GIE0+ 47 5+714E=1+	8.590E2; 12 7.031E2; 18 4.467E2; 24 1.766E2; 30 6.882E1; 36 1.398E1; 42 2.243E0; 46 47 47 47 47 47 47 47 47 47 47

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00214 734* 24+4045-21 5+2116-21 4.017E-2+ 3+0516-2. 2.3948-21 1+7356-21 00210 735* L .5 • 2 00214 734* 2781-2 9+641L=3+ 7.1528-11 5-2036-30 3.851E+3. 2.800E-J. **E** 1 737* ¢ 48 49 70 71 72 00210 00210 734* 12-0225-31 1.0616-34 7.7621-41 5.7156-41 4.2348-4, 1.4001-3. 00214 ,3++ 749* C 73 11 78 7 . 75 76 R3+155E-41 2+3756-41 1.8072-41 1+3896-41 1.0786-4. 8.4356-5. 741+ C 79 89 81 - 114 00214 34+4+402E-5/ 742* 00214 80.0918-5. 5+39 18-5 00214 7439 C 002200 DATA (PRSESTEL), 1+NP53+4P541/ 00220 745+ C 115 117 114 114 110 120 746* 3.8796-1. 00220 13.04012. 1+911E2+ 3.109E1+ 6+514E-1+ 5+02*8-11 747+ 748+ 002200 C 121 19+319E-3+ 123 2.381E-3/ 122 6+199E=31 002200 00220 749+ C C 00220 750* TULATED IN KILUSPANS PER CUBIC HETER 00220 751+ c DENSITY VALUES 00220 752* C 55500 753* DATA IRHOLSTIII, 1=NPSI, NPS21/ 00222 7540 c 1+19360+ 00222 755+ A1+372E0 1+32510+ 1.27980. 1+235E0. 1+158E0. 11 00222 754* C 7 . 10 12 9 00222 757* RI+123E0. 1.058E0. +++55E=1+ T-454E-1, 1.07010. 1.024FD. 00222 13 17 18 758* C 14 1.4 15 759* X9+366E-1. 7-4578-11 00222 8.339E-1. 7+888E-1 4+446E+1 8+80AL-1 19 23 ¢ 760* 00222 20 21 22 24 x5+904E*1+ 00272 761. 5+2248-11 4.5396-11 3-8796-1-3+315E-1+ 2.8346-1. 55500 762* C 25 26 27 28 29 30 743* 12.4226-1. 1.3006-1. 00222 2+0711-1+ 1.770L-1. 1+5176-1 1+113E-1. 764* 00222 ¢ 31 32 ננ 34 35 34 5.9661-21 745* x9+530E-2+ 8+154E=2+ 4+357L-21 3+1578-21 2.2756-2. 00222 766* 42 00222 C 37 39 1 38 40 7674 X1+445E-2+ 1+1938-21 00222 8.6742-31 6-2648-3. 4-5512-3. 3+330E-3. 55500 768. C 41 45 44 47 48 12.4535-31 1+019E-31 1.3571-3. 769. 5.9116-4 1+010E-3. 7.6828-4. 22200 77₀• 00222 C 49 50 51 52 53 54 77 i • 3.5598-4. 2.7746-4. 00222 2435645-41 2-1505-41 1.4518-4. 1+2668-4. 00222 772* ٢ 55 57 59 58 58 .0 00222 773+ 19.708E-SI 7+4356-5. 5.7018-51 4+4086-5 1.2028-5. 2.5998-5 774+ ¢ 6 I ٥z 65 66 00222 63 x1+981E-5+ 1756 3+357E-6. 4.7178-6. 00222 1.5018-5. 1.1346-51 8+514E-4+ 00222 776+ ¢ 67 6 R 49 70 71 72 1.7576-61 9.0932-7, 1770 A+607E-7. X3+480F~61 60222 2-4072-61 1+240E-4. 77 778* 74 73 78 00222 ¢ 75 76 1+8+16-7. X4+805E-7+ 3+4796-71 2.5508-71 1.417E-7, 770* 1.0476-7 00222 00222 780* ¢ 79 80 81 - 114 00222 781* X7+890E-8+ 5+9501-81 34+4+5672-8/ 00222 782+ ¢ 00224 783+ DATA ERHOLSTELT, LENPS3+NPS41/ 00224 784* 116 ¢ 115 117 114 119 120 785+ 14+4045-1+ 3+045E-1+ 8+837E=41 4+728E=41 5+1948+4 00224 5.1002-21 00224 786. 121 122 123 ζ 787. x1+307E=5+ 9.8361-4. 00224 4.0558-4/ C 00224 788* 00224 789* C SPEED OF SUUND VALUES TABULATED IN HETERS PER SECOND 90224 79.7* C 00224 791+ c

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00224	7*2*		DATA 150N	LSTILL, Lanps	11NP521/			
00226	7*3*	C	1	2	3	•	5	۵
00224	794+		x321+++	321-**	322.21	322+5+	322.8,	322+3+
00224	795.	C	7		- • -	10	11	12
00224	794.		x321+#+	321+31	3,0.8.	320+3+	319.8,	319.3.
00224	7970	C	13	14	- 1 5	1.	· 17	18
00224	79A+		x318.0,	317+7+	3,5.0,	313.4.	311+2+	300.0,
00224	7994	C	1.	20	•1	21 -		
		-	x302+3+	297+71			5.4.	
0922*	8 ₀₀ *	ç	X 3 0 2 - 3 1	2.1.271		24	29	30
00224	001* 602*	•	X			295.0.	294.4.	294.21
00224	803*	ι	^ 31	ړ	33	34	35	34
00224	804*		8273.8.	293.4.	292.61	291+7+	291.9,	293.3,
00224	805*	c	17	30	39	40	41	42
00224	806°	-	*294+7,	296.01	247.4,	300.5.	303.8.	307+1+
00224	807*	C	43	*4	45	46	¥7	48
00226	808*	-	x310+3+	313+51	310.01	319.7.	322.8.	323.3,
00224	804*	C	49	212-31	51	52	53	59
		•	x323,3,	-		-	-	
90224	\$10*	c	55	321.6.	319.3.	317.5.	314.9. 59	314.3. 60
00224	811*	•	•	56	57	50	308.5.	305+7+
00224	612*	C	x315+7. 61	315+0+	31"+1+	311+3+	· · ·	
00224	•13*	•	-	62	63	6 4	65	66
00226	814*		¥302+8,	300.01	297+1+	294+2+	291+2+	288+2+
00224	815*	C	67 2285+21	68 787.5.	69	70 2 73 •7•	7 294+41	72 299+5+
20224	8144	c	73	287+8+ /	290.8.		77	78
00226	817*	Ľ	x3a3+2+	74 *	75 3,5.0,	76 320•7•	325.41	332+6,
00226	818*	c	79	308.51		-	3231-1	272.01
00224	914.	•	-	⁶ 0		81 - 114		
					•			
00224	\$20*	,	X344+6+	356.1.	34	**367:3/		
00224	821*	c		•		**367:3/		
00224	821* 822*		DATA ISON	LST(1),1+NPS	53+NP541/			
00224 00230 00230	821* 822* 823*	c c	DATA ISON	LST[]},]=NPI ~]]6	53+NP541/ 17	1,8		- 120
00224 00230 00230 00230	821* 822* 823* 824*	¢	DATA (SON 115 g 2+2	- - 116 95.41	53+NP54)/ 17 2+2+1+			- 120
00224 00230 00230 00230 00230	821* 822* 823* 824* 825*		DATA (SON 115 8 202 121	LST(]),I=NP ^ 16 95.9, 122	53+N ^P 54)/ 117 242+1+ 123	1,8		
00224 00230 00230 00230 00230 00230	821* 822* 823* 824* 825* 825*	c c	DATA (SON 115 g 2+2	- - 116 95.41	53+NP54)/ 17 2+2+1+	1,8		
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00224 00230 00230 00230 00230 00230 00230 00230 00230 00230	821* 822* 823* 824* 825* 825* 825* 826* 826* 826* 826* 826* 826* 826* 826	ג ר ר ר	DATA (SON 115 K 2*2 121 R298+5;	LST(1),1=NP ~ 116 95.4. 122 295.6.	53+NP541/ 117 242+1+ 123 286+7/ 5005174 0051	1,8 321+3+	2*3.	23.3,
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230	821+ 822+ 823+ 824+ 825+ 825+ 825+ 825+ 825+ 825+ 826+ 826+ 826+ 826+ 830+ 830+ 831+	с с с с	DATA (SON 115 8 202 121 829005	LST(1),1=NP5 ~ 116 95.4 122 295+6 VI VALUES TABUE	53.NP541/ 117 292.11 123 286.7/ SCOSITY COLI LATED IN KI	1,8 321+3+	2*3.	23.3,
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232	821* 822* 823* 824* 825* 825* 826* 827* 826* 827* 826* 830* 830* 831* 832*		DATA (SON 115 8 202 121 829005	LST(1),1=NP1 - 116 95-4 122 295+6 VI: VALUES TABUL LST(1),1=NP1	53.NP541/ 117 292.11 123 286.7/ 5005174 COLI LATED IN R1 51.NP521/	1,8 321+3+	2+3. Mettr Per 1	23.3,
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232	821* 823* 823* 825* 825* 826* 826* 828* 828* 828* 830* 831* 832* 832* 833*	ג ר ר ר	DATA (SON 115 R 2+2 121 R290+5+ DATA (V15	LST(1),1=NPS ~ 116 95-41 122 295+61 VALUES TABUU LST(1),1=NPS 2	53.NP541/ 117 292.1. 123 286.7/ SCOSITY COLI LATED IN K1 51.NP521/ 3	1,8 321+3, FFICIENT .OGHAMS PER	2+3. Meter Per 5	83.3, SECOND
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232	821* 822* 823* 825* 825* 826* 827* 828* 827* 828* 829° 830* 831* 832* 833*	נ נ נ נ נ נ נ נ נ נ	DATA (SON 115 R 202 121 R290+5, DATA (V15 1 X1+636E=5,	LST(1),1=NPS - 116 95.4. 122 295.6. VI: VALUES TABUE LST(1),1=NPS 2 1.639E-5.	53.NP541/ 117 202.1.1 123 206.7/ SCOSITY COLI LATED IN K11 51.NP521/ 3 1.642E=5.	1,8 321+3, FFICIENT .0GHAMS PER 4 1+644E-5,	2+3. METLR PER 5 5.6472-5.	23.3, SECOND 1.643E-5,
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232	821+ 822+ 823+ 825+ 825+ 828+ 828+ 829+ 830+ 830+ 832+ 832+ 834+ 835+		DATA (SON 115 x 2+2 121 x290+5; DATA (V15 x1+636E=5; 7	LST(1),1=NPS ~ 116 95.4 122 295+6 VI: VALUES TABUE LST(1),1=NPS 2 1+639E+5, 8	53. NP541/ 117 242.1. 123 286.7/ SCOSITY COLI LATED IN KI 51. NP521/ 3 1. 642E-5. 9	1,8 321+3, FICIENT DGRAMS PER 1+644E-5, 10	2+3 METLR PER 5 5 5+647E-5+ 11	23+3; SECOND 1+643E-5; 12
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232	821* 822* 823* 824* 825* 825* 826* 827* 829* 830* 831* 832* 832* 834* 835* 835*	נ נ נ נ נ נ	DATA (SON 115 X 202 121 X290+5+ DATA (V15 X1+636E-5+ 7 X1+639E-5+	LST(1),1=NP - 116 95.4, 122 295+6, VI: VALUES TABUE LST(1),1=NP 2 1+634E=5, 0 1+634E=5,	53. NP541/ 117 292.11 123 286.7/ SCOSITY COLI LATED IN RIV 51. NP521/ 3 1. 642E-5. 9 1. 630E-5.	1,8 321+3+ FFICIENT OGHAMS PER 4 1+644E-5+ 10 1+625E-5+	2+3 METLR PER 5 1+647E-5+ 11 1+622E-5+	83.3, 5ECOND 1.643E-5. 12 1.618E-5.
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232	821+ 822+ 823+ 824+ 825+ 825+ 825+ 826+ 827+ 830+ 831+ 832+ 832+ 834+ 835+ 835+ 835+ 835+ 835+	נ נ נ נ נ נ נ נ נ נ	DATA (SON 115 X 2+2 121 X298+5; DATA (V15 X1+636E=5; 7 X1+639E=5; 13	LST(1),1=NP1 ~ 116 95.4, 122 295.6, VI: VALUES TABUU LST(1),1=NP1 2 1.63.4E-5, 0 1.63.4E-5, 1.4	53. NP541/ 117 292.1. 123 286.7/ SCOSITY COLI LATED IN RI 51. NP521/ 3 1.642E-5. 9 1.630E-5. 15	1,8 321+3+ FFICIENT OGHAMS PER 1+644E-5+ 10 1+626E-5+ 16	2+3 METER PER 5 5+647E-5+ 11 1+622E-5+ 17	23.3, 5ECOND 1.693E=5, 12 1.418E=5, 18
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232	821* 822* 823* 824* 825* 825* 825* 825* 826* 827* 830* 831* 832* 834* 834* 834* 834* 834* 834*	6 6 6 6 6 6 6 6 7 6 7 7 7 7 7 7 7 7 7 7	DATA (SON 115 R 202 121 R290+5; DATA (V15 1 X1+636E=5; 7 X1+639E=5; 13 X1+619E=5;	LST(1),1=NP ~ 116 95.4. 122 295.6. VI: VALUES TABUE LST(1),1=NP 2 1.6.34E=5. 1.4 1.4 1.4.05E=5.	53. NP541/ 117 292.11 123 286.7/ SCOSITY COLI LATED IN RIV 51. NP521/ 3 1. 642E-5. 9 1. 630E-5.	1,8 321+3, FFICIENT .0GHAMS PER 4 1+644E-5, 10 1+626E-5, 16 1+570E-5,	2+3 METLR PER 5 1.647E-5. 11 1.622E-5. 17 1.552E-5.	83.3, 5ECOND 1.693E-5. 12 1.618E-5.
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232	821+ 822+ 823+ 825+ 825+ 825+ 825+ 825+ 825+ 830+ 830+ 832+ 835+ 835+ 835+ 836+ 836+ 836+ 836+ 836+	נ נ נ נ נ נ	DATA (SON 115 R 202 121 R290+5; DATA (V15 L X1+636E=5; 7 X1+639E=5; 13 X1+619E=5; 19	LST(1), 1=NPS ~ 116 95.4. 122 295.6. VALUES TABUE LST(1), 1=NPS 2 1.639E=5. 8 1.635E=5. 20	53. NP541/ 117 292.1. 123 286.7/ SCOSITY COLI LATED IN RI 51. NP521/ 3 1.642E-5. 9 1.630E-5. 15	1,8 321+3, FFICIENT .0GHAMS PER 4 1+644E-5, 10 1+626E-5, 16 1+570E-5, 21 -	2 * 3 METLR PER 5 1 * 6 47E-5 + 1 1 1 * 622E-5 + 1 * 552E-5 + 2 7	23.3, 5ECOND 1.693E=5, 12 1.418E=5, 18
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232	821+ 822+ 823+ 825+ 825+ 826+ 826+ 827+ 830+ 830+ 831+ 831+ 835+ 834+ 835+ 835+ 835+ 835+ 836+ 836+ 836+ 836+ 836+ 836+ 836+ 836	נ נ נ נ נ נ נ נ	DATA (SON 115 R 202 121 R290+5; DATA (V15 1 X1+636E=5; 7 X1+639E=5; 13 X1+619E=5;	LST(1), 1=NPS - 116 95.4 122 295.6 VALUES TABUE LST(1), 1=NPS 2 1.639E=5 8 1.639E=5 14 1.635E=5 20	53. NP541/ 117 292.1. 123 286.7/ SCOSITY COLI LATED IN RI 51. NP521/ 3 1.642E-5. 9 1.630E-5. 15	1,8 321+3+ FFICIENT OGHAMS PER 4 1+644E-5+ 10 1+626E-5+ 16 1+570E-5+ 21 - 7+1+	2+3 METLR PER 5 1+647E-5+ 11 1+622E-5+ 1+552E-5+ 27 1+24E-5+	23.3, SECOND 1.643E-5. 12 1.418E-5. 18 1.516E-5.
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232 00232	821* 822* 823* 825* 825* 826* 827* 827* 830* 831* 832* 832* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 834* 835* 835* 835* 835* 835* 835* 835* 835	6 6 6 6 6 6 6 6 6 7 6 7 7 7 7 7 7 7 7 7	DATA (SON 115 X 202 121 X290+5; DATA (V15 X1+636E=5; 7 X1+637E=5; 13 X1+614E=5; 19 X1+480E=5;	LST(1), 1=NPS ~ 116 95.4. 122 295.6. VALUES TABUE LST(1), 1=NPS 2 1.639E=5. 8 1.635E=5. 20	53. NP541/ 117 292.1. 123 286.7/ SCOSITY COLI LATED IN RI 51. NP521/ 3 1.642E-5. 9 1.630E-5. 15	1,8 321+3+ FFICIENT OGHAMS PER 1+644E-5+ 10 1+625E-5+ 16 1+570E-5+ 21 - 7+1+ 26	2+3 METLR PER 5 5 5 6 472-5 11 1 6222-5 17 1+5522-5 27 245-5 27	885000 6 1 • 6935-5 • 12 1 • 6 185-5 • 18 1 • 5 165-5 • 30
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232	821* 822* 823* 825* 825* 825* 828* 828* 831* 831* 831* 831* 835* 835* 835* 835* 835* 835* 835* 835	נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ	DATA (SON 115 X 202 121 R290+5+ DATA (V15 1 X1+636E=5+ 7 X1+637E=5+ 13 X1+614E=5+ 19 X1+480E=5+ X	LST(1), 1=NP - 116 95.4 122 295.6 VI: VALUES TABUU LST(1), 1=NP 2 1.634E-5, 8 1.634E-5, 14 1.605E-5, 20 1.443E-5,	53. NP541/ 117 292.11 123 286.7/ 5005174 COLI LATED IN KI 51. NP521/ 3 1. 642E-5. 9 1. 630E-5. 15 1. 588E-5.	1,8 321+3+ FFICIENT OGHAMS PER 1+644E-5+ 10 1+626E-5+ 16 1+570E-5+ 21 + 24 1+421E-5+	2+3 METLR PER 5 1+647E-5+ 11 1+622E-5+ 17 1+552E-5+ 27 24E-5+ 29 1+418E-5+	880000 6 1+6438-5+ 12 1+6188-5+ 18 1+5168-5+ 30 1+4158-5+
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232	821+ 822+ 823+ 823+ 825+ 825+ 825+ 825+ 825+ 825+ 832+ 832+ 832+ 832+ 832+ 832+ 833+ 833	נ נ נ נ נ נ נ נ	DATA (SON 115 X 202 121 X298+5; DATA (V15 X1+636E-5; X1+639E-5; 13 X1+614E-5; 19 X1+480E-5; X 31	LST(1), 1=NP 116 95.4. 122 295.6. VI: VALUES TABUU LST(1), 1=NP 2 1.6.3.4E=5. 1.4 1.6.3.4E=5. 1.4 1.6.3.4E=5. 20 1.4.4.3E=5. 32	53. NP541/ 117 292.11 123 286.7/ 5CO51TY CO51 LATED IN R1 51. NP521/ 3 1.642E-5. 9 1.630E-5. 1.588E-5.	1,8 321+3, FFICIENT .0GHAMS PER 1+626E-5, 16 1+626E-5, 16 1+570E-5, 21 7+1,4 24 1+421E-5, 34	2+3 METLR PER 5 1 + 6 + 7 E - 5 + 1 1 1 + 6 2 2 E - 5 + 1 + 5 5 2 E - 5 + 2 + 2 + E - 5 + 2 + 1 + 1 8 E - 5 + 3 5	23.3, SECOND
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232	821* 822* 823* 825* 825* 825* 826* 827* 830* 831* 831* 835* 835* 835* 835* 835* 835* 835* 835	c c c c c c c c c c	DATA (SON 115 R 202 121 R298+5; DATA (V15 1 R1+636E=5; 7 R1+639E=5; 13 R1+9180E=5; R 31 R1+911E=5;	LST(1), 1=NPS ~ 116 95.4. 122 295.6. VI: VALUES TABUE LST(1), 1=NPS 2 1.6.3.4E=5. 1.4 1.6.3.4E=5. 1.4 1.6.3.5E=5. 20 1.44.3E=5.	53.NP541/ 117 292.1 123 286.7/ 5COSITY COLI LATED IN K1 51.NP521/ 3 1.642E=5. 9 1.588E=5. 33 1.401E=5.	1,8 321+3, FFICIENT .0GHAMS PER 1+644E-5, 10 1+626E-5, 16 1+570E-5, 21 7+1,4 24 1+421E-5, 34 1+395E-5,	2+3 METLR PER 5 5 5 6 47E-5 11 1+622E-5 17 1+552E-5 27 1+552E-5 27 1+10E-5 35 1+376E-5	23.3, SECOND
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 002310 00232	821+ 822+ 822+ 825+ 825+ 825+ 825+ 825+ 825	נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ	DATA (SON 115 X 2*2 121 X290+5; DATA (V15 X1+634E=5; 7 X1+634E=5; 13 X1+614E=5; X1+480E=5; X 14 X1+411E=5; 37	LST(1), 1=NPS - 116 95.4, 122 295.6, VALUES TABUE LST(1), 1=NPS 2 1.634E-5, 1.4 1.635E-5, 20 1.443E-5, 37 1.406E-5, 37 1.406E-5, 37	53. NP541/ 117 292.11 123 286.7/ SCOSITY COLI LATED IN RIV 51. NP521/ 3 1. 642E-5. 1. 588E-5. 33 1. 401E-5. 39	1,8 321+3+	2+3 METLR PER 5 1+647E-5+ 11 1+622E-5+ 1+552E-5+ 27 1+552E-5+ 29 1+18E-5+ 35 1+396E-5+ 41	23.3, SECOND
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232	821* 822* 825* 825* 825* 825* 825* 8278* 8278* 8278* 830* 831* 831* 831* 831* 831* 835* 835* 835* 835* 835* 835* 835* 835	c c c c c c c c c c	DATA (SON 115 X 202 121 X290+5+ DATA (V15 X1+636E-5+ 7 X1+637E-5+ 13 X1+614E-5+ 19 X1+480E-5+ X 31 X1+411E-5+ 37 X1+414E-5+	LST(1), 1=NP 116 95.4, 122 295.6, VALUES TABUE LST(1), 1=NP 2 1.634E=5, 8 1.634E=5, 1.4 1.605E=5, 20 1.443E=5, 32 1.446E=5, 34 1.424E=5, 34	53. NP541/ 117 292.11 123 286.7/ SCOSITY COLI LATED IN KI 51. NP521/ 3 1. 642E-5. 1. 588E-5. 33 1. 401E-5. 39 1. 440E-5.	1,8 321+3+ FFICIENT OGHAMS PER 4 1+644E-5+ 10 1+625E-5+ 16 1+570E-5+ 21 7+1+7 26 1+421E-5+ 34 1+395E-5+ 40 1+464E-5+	2+3 METLR PER 5 1+647E-5+ 11 1+622E-5+ 17 1+552E-5+ 27 1+512E-5+ 27 1+418E-5+ 35 1+376E-5+ 41 1+492E-5+	23.3, SECOND
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232	8214 8224 8224 8224 8224 8224 8224 8224	c c c c c c c c c c	DATA (SON 115 X 202 121 R2905 DATA (V15 1 X10036E-5 7 X10037E-5 13 X1004E-5 X100E-5 X 10 X1004E-5 X 10 X1004E-5 X 10 X1005 X 10 10 10 10 10 10 10 10 10 10	LST(1), 1=NP - 116 95.4, 122 295.6, VI: VALUES TABUL LST(1), 1=NP 2 1.634E-5, 8 1.634E-5, 14 1.605E-5, 20 1.443E-5, 37 1.428E-5, 34	53. NP541/ 117 292.1 123 286.7/ 5COSITY COLI LATED IN KI 51. NP521/ 3 1. 642E-5. 1. 588E-5. 1. 588E-5. 33 1. 401E-5. 39 1. 40E-5. 45	1,8 321+3+ PFJCJENT DGHAMS PER 1+644E-5+ 10 1+626E-5+ 16 1+570E-5+ 21 7+1+7 28 1+421E-5+ 34 1+395E-5+ 40 1+464E-5+ 46	2*3 METLR PER 5 5 5 6 472-5 11 1 6222-5 7 1 + 5522-5 27 246-5 27 1 * 102-5 35 1 * 3462-5 41 3 * 40225-5 41 3 * 40225-5 41 3 * 40225-5 41 41 41 40 40 40 40 40 40 40 40 40 40	83.3, 8ECOND 6 1.693E=5. 12 1.618E=5. 18 1.516E=5. 30 1.415E=5. 36 1.407E=5. 42 1.519E=5. 48
00224 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00230 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232 00232	821* 822* 825* 825* 825* 825* 825* 8278* 8278* 8278* 830* 831* 831* 831* 831* 831* 835* 835* 835* 835* 835* 835* 835* 835	c c c c c c c c c c	DATA (SON 115 X 202 121 X290+5+ DATA (V15 X1+636E-5+ 7 X1+637E-5+ 13 X1+614E-5+ 19 X1+480E-5+ X 31 X1+411E-5+ 37 X1+414E-5+	LST(1), 1=NP 116 95.4, 122 295.6, VALUES TABUE LST(1), 1=NP 2 1.634E=5, 8 1.634E=5, 1.4 1.605E=5, 20 1.443E=5, 32 1.446E=5, 34 1.424E=5, 34	53. NP541/ 117 292.11 123 286.7/ SCOSITY COLI LATED IN KI 51. NP521/ 3 1. 642E-5. 1. 588E-5. 33 1. 401E-5. 39 1. 440E-5.	1,8 321+3+ FFICIENT OGHAMS PER 4 1+644E-5+ 10 1+625E-5+ 16 1+570E-5+ 21 7+1+7 26 1+421E-5+ 34 1+395E-5+ 40 1+464E-5+	2+3 METLR PER 5 1+647E-5+ 11 1+622E-5+ 17 1+552E-5+ 27 1+512E-5+ 27 1+418E-5+ 35 1+376E-5+ 41 1+492E-5+	23.3, SECOND

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56232	850*		21·#51E=5+ 1·#376=5+ 1.#1#E=5+ 1·#046=5+ 1+594E=5+ 1+594E=5+
60232	85	C	55 5A 57 58 59 60
00232	852*		x1+5#9E+5+ 1+5#3E+5+ 1+575E+5+ 1+553E+5+ 1+530E+5+ 1+507E+5+
C0232	453*	C	61 62 63 64 65 66
00232	854*		R1+484E-5+ 1+4612-5+ 1+438E-5+ 1+4142-5+ 1+341E-5+ 1+347E-5+
51500	855*	c	67 68 69 7 <u>0</u> 71 72
00232	854*	-	x1+343E=5+ 1+343E+5+ 1.387E=5+ 1+411E=5+ 1+434E=5+ 1+458E=5+
60232	8574	c	
00232	854*	•	
	85	ι	
00232		•	
00232	840*		x1+824E-5+ 1+919E-5+ 3432+011E+5/
00232	841*	¢	
00234	862*		DATA (VISLSTI), I=NPS3, NPS4)/
00234	863*	C	115 = 116 <u>117</u> <u>118</u> 119 = 120
00234	864*	c	X 2+1+424E=5+ 1,398E=5+ 1+634E=5+ 2+1+651E=5+
00234	865.		121 172 123
30234	8	-	x1++50E-5+ 1+426E-5+ 1,355E-5/
00234	867*	Ç	
00234	863 *	C	
00234	849*	C	1963 PATHICK AFB REFERENCE ATMOSPHERE
0023*	₿7ŋ•	Ç	•
0023*	471 *	C	PRESSURE VALUES TABULATED IN MILLIBARS
00234	872+	C	
00234	873*		DATA (PRSLST(1), I=NP61, NP62)/
00234	874 *	C	1 2 3 4 5
00234	875+		#1+0170147E+3+9+#829373E+2,9+4022451E+2+9+3280844E+2+9+0403418E+2+
00234	876 -	C	6 7 B 9 10
00230	877*		x8+7989596E+2+8+5438573E+2+8+2949430E+2+8+0521168E+2+7+8152728E+2+
00230	878*	C	11 12 13 14 15
00236	877*		x7+5843002E+2+7+3540840E+2+7+13+5065E+2+6+7167869E+2+6+3151745E+2+
00236	880*	C	16 17 18 19 20
00234	88j*	•	x5++337050E+2+5+5714348E+2,4+9008912E+2,4+2967959E+2,3+7532U40E+2,
00235	882*	C	21 22 23 24 25
00230	883		x3+2649869E+2+2+8277555E+2+2+373144E+2+2+0909281E+2+1+7861068E+2+
00236	884*	C	26 27 28 29 30
00236	885.		x1+5199024E+2+1+2#52#56E+2+1+0911341E+2+9+2252642E+1+7+8047365E+1+
00236		C	31 32 33 34 35
00234	887+		x4+6260372E+1+5+6315652E+1,4+0879191E+1+2+9418759E+1+2+2038159E+1+
00234	88a *	ε	34 37 38 39 40
00234	889.		x1+6327363E+1+1+2146273E+1,9+0905380E+0+6+8429914E+0+5+1807184E+0+
00236	89 9€	C	41 42 43 44 45
00234	891 *		x3+9447995E+0+3+2C9180E+0+2+3262411E+0+1+8004513E+0+1+3494781E+0+
00234	892.	C	46 47 48 49 50
00234	891.		x1+C910568E+0+8+5180215E+1+6+6343197E+1+5+1553130E+1+3+852059E+1+
00236		ç	51 52 53 54 55
00230	895.	-	x3+6651143E+1+2+3442082E-1+1+7818466E-1+1+3454170E-1+1+0086476E-1+
60236	894.	C	5¢ 57 58 59 60
00234	897.	-	x7+5059128E-2+5+5414297E_2,4+0576003E-2+2+9458748E-2+2+1200623E-2+
00234	898*	C	61 62 63 64 45
00236	879.		x1+5119d312-2+1+0484305E-2,7+4793850E-3,5+1878215E-3,3+5414714E-3,
00236	900+	C	66 67 68 69 70
00236	900- 901-	•	x2+4869045E=3+1+7224435E=3,1+2003841E=3,8+4635721E=4,6+0330423E=4,
00239	902*	c	71 72 73 74 75
00234	903*	•	x4+3+49711E=++3+159717DE=++2+3253935E=++1+7351148E=++1+3111C39E=++
00236	904*	c	
00236	905°	•	76 77 78 79 80 X1+C077554E=4+7+7438980E=5+6+0696757E=5+4+8386073E=5+3+9 45232E=5+
	•		
00236	9 DA *	L	
00234	907*		x3+2082435E=5+2+6397710E=5+2+2377434E=5+1+9141913E=5+1+6599345E=5+

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00236	* 0 * *		#1+4560872E-5+1+2898417E-5+1+1522050E-5+1+0369626E-5+9+3925204E-6+
00234	910*	C	91 92 93 94 os
00236	•11•		x8+5563661E=6+7+R345911E=6+7+2066944E=6+6 6566336E=6+6+1717079E=6/
46500	415+	Ç	
00240	*13*		DATA (PRSLST[]], I=NP63+NP64)/
00240	914+ 915*	C	
			15+74173932-6+5+35849432-6+5+01263672-6+4+69863572-6+4+41274232-6+
00240	♥1≜♥ 917♥	c	
00240	918+	c	x*+1517377E-6+3+9128496E-6+3+4886399E-6+3+1230234E-6+2+8059993E-6+
00240	9 9 -	•	106 107 108 107 120 x2+5279174E=6+2+2029452E=6+2+0665225E=6+1+8747980E=6+1+7043719E=6+
00240	+20+	c	
00240	9210		111 112 112 113 114 x1+5518716E=6+1+4150844E=6+1+2921892E=6+1+2634456E=6+
00240	922+	C	
00240	923*		x3+5024+639£+2+2+2587459E+2,3+4949304E+1+9+6365027E=1+7+5234920E=1+
00240	924*	C	
00240	925*		£5,8534791E=1+8+9499401E=3,6+2355810E=3+2+0696155E=3/
00240	454.	C	
00240	9274	C	
00240	928+	C	DENSITY VALUES TABULATED IN KILOGRAMS PER CUBIC METER
00240	729*	C	
00242	*30*		DATA (RHOLSTII), IPHP61+NP621/
00242 00242	931*	c	1 2 3 4 5
00242	932*		X1+1835467E+0+1+15/3534E+0+1+1312045E+0+1+1051789E+0+1+0793462E+0+
00242	934+ 934+	C	
00242	935+	c	#1+0537666E*0+1+0284422E+0+1+6035670E+0+0+7902801E+1+9+5490568E=1+
00242	134		11 12 13 14 15 $17 \times 1229 $
00242	\$37+	c	10 17 18 18 18 18 18 18 18 18 18 18 18 18 18
00242	938*	•	10 17 18 19 20 17.5904447E-1+7+2084275E-1+6+4983435E+1+5+85351535E+1+5+2651817E+1+
00242	* 3 · ·	c	
00242	* * ` *		21 22 23 24 25 x4+7249382E-1+4+2255460E-1+3+7638429E-1+3+3302120E-1+2+9232218E-1+
00242	••]•	C	2° 27 28 29 10
00242	9420		x2+5432437E=1+2+1920326E=1+1+8717445E=1+1+5845601E=1+1+3239218E=1+
00242	9430	C	
00242	9 4 4 +		AI+1096236E+1+9+3193799E-2,6+6193250E-2,4+7438898E-2,3+4382489E-2,
00242	9450	¢	3• 37 38 10 no
00242	• • 6 •	-	R2+5119029E-2+1+R334060E-2+1+3457797E-2+9+9301028E-3+7+3454170E-3+
00242 00242	947 +	¢	4] 42 43 44 us
00242	948. 9494	c	x5.4934199E-3.4.1220200E-3,3.1134715E-3.2.3684559E-3,1.8151546E-3,
00242	950°	· ·	40 47 48 44 50
00242	¥51.●	c	x1+4015768E+3+1+0965534E-3+8+6526723E-4+6+8253221E-4+5+3756484E+4+
00242	9524	•	
00242	953+	c	x4+2227457E+4+3+3048920E_4,2+5745233E=4,1+9944483E+4,1+5352534E+4, 56 57 58 c 4
00242	954*	-	58 57 58 59 60 X1+1734Z36E-4+8+8997983E-5+6+6949356E+5+4+9935490E+5+3+6923403E+5+
00242	955*	C	
00242	956.		52 63 64 65 #2+7667J#9E=5+1+9677466E=5+1+4194402E=5+1+0004256E=5+6+9258360E=6+
00242	957	C	66 67 68 69 70
00242	958*		x4.795776jt-6.3.32158j5t-6.2.240422#E-6.1.5304616E-6.1.0579997E-6.
00242	959+	C	71 72 73 74 75
00242	₹éŋ*		x7+3962724E-7+5+2254595E-7+3+6173880E-7+2+6206711E-7+1+8979684E-/+
00242	**1*	C	76 77 78 79 80
60242	962*		#1+3929915E=7+1+0349963E=7,7+5342182E=8,5+606565/E=8,4+2529020E=8,
00242	9630	C	51 52 63 AN BC
00242	964*		x3+2809278E-8,2+5×91840E-8,1+9457748E-8,1+5133149E-8,1+2030946E-8,
Co2+2	9050	C	86 37 88 89 90

۲.		87	88	89	90
	#1+4540872E-5+	1+2898417E-5,	1+15220506-51	1+0369426E-5.	9+39252045-6
۲.	• 1	12	93	94	95
	X8+27930915-94	7+A345911F=6.	7 . 20669445-6.	4 6546336F-6.	A. 17170795-4/
C			• • •		
	DATA IPRSLSTI	11.1=NP+3PA	4)/		
c				* *	100
-	25+7417393E-6+	5+ 15849435-6.	5+01263675-6.		100
r				104	
•	X4+1517377E-6+	1.04	105	107	103
c		107		3-15305346-01	5.00211.30-01
	106 x2+52791746-61	/****27452F_6.	100	107	110
c		112	113	1.0.4005-01	1.10-21146-01
	x1+5518716E-6+			117	
c			1.1.1	1.50744395-91	
	13.50246396+3.]0 	117	118	117
c	X3+5024639E+2+		3	A+030215-11	7+52349208-1,
•	140		122	123	
<i>r</i>	#5-8534791E-1+		2.5122010E-3'	2+06961558-3/	
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002+2	946*		x#+7426#83E=#18+g14608#t=#16+6829564E=#15+638713 +6j72426E=+.
C0242	547+	ι	ŶĮ Ŷ2 Ŷ3 'n Ŷb
00242	968*		x++1362113E-9+3+5481346E_+,3+1354758E+9+2+7585267 = =14047E+9/
00242	749*	C	
00244	¥70*		DATA ENHOLSTILI, I-NP63, NP641/
00244	#71 +	C	96 97 98 99 100
00244	972*		#2+1726345L=9+1+0431403E=9+1+7627216E=9+1+6037353E=9+1+4631530F=45
00244	• د 7 9	C	101 102 103 104
00244	9740		x1+J383898E=9+1+227J083E=9,1+0542018E=9,9+1375313E=10,
00244	9754	C	105 106 '07 108
00244	776*		x7+9820295E=10, 7+0302521E=10, 4+2101402E=10, 5+5011415E=10,
00244	977+	c	109 110 111 112
00244	978 ⁸		14+#062371E-10+ 4+3637087E-10+ 3+9157048E-10+ 3+519577CE-10+
68244	9798	c	113 114 115 116
00244	98 ₀ +		x3+14864A3E=10+ 3+3873187E=10+ 4+9895351E=1+ 3+5436502E=1+
00244	*8; *	C	117 118 119 120
00244	482.		X5+59911R4E-2+ 1+23+7474E-3+ 9+7403572E-4+ 7+6857846E-4+
30244	983*	C	121 122 123
00244	984 *		x1+6728017E=5+ 1+202377eE=5+ 3+9910710E=6/
002++	985*	C	
00244	784*	C	
00244	987*	C	SPELD OF SOUND VALUES TABULATED IN METERS PER SECOND
00244	98A.	C	
00246	989 *		DATA (SONLST(]), [=NP61+NP62)/
00244	**0*	C	· 1 2 3 4 5
00246	*•1*		x3+4485/52E2+ 3+4577091E2+ 3+4474100E2+ 3+4375477E2+ 3+4281472E2+
00246	992*	C	6 7 8 9 10
00244	443+		x3+4191375E2+ 3+4103527E2+ 3+4017814E2+ 3+3933644E2+ 3+3850555E2+
00246	9940	C	11 12 13 14 15
00244	* *5*		x3+3748001E2+ 3+3485544E2+ 3+3462844E2+ 3+3435175E2+ 3+3242585E2+
002+4	**	C	17 50 19 2C
00246	**;*		x3+3083244E2+ 3+284 1940E2+ 3+2494479E2+ 3+2057942E2+ 3+1591021E2+
00244	99A*	C	21 22 23 24 25
00246	999.	_	x3+1103836E2+ 3+0+9732E2+ 3+0115374E2+ 2+9454540E2+ 2+9250004E2+
00246	1000*	C	26 27 28 29 30
002+6	1001		x2+8922838E2+ 2+8640521E7+ 2+8565244E2+ 2+8552323E2+ 2+8723862E2+
00246	1002*	C	
	1003*	c	12+689707662+ 2+9075108E2+ 2+9419972E2+ 2+9721502E2+ 2-9946127E2+
00246 00246	1004*		
	1005*	c	x3+014419462+ 3+5454824E2+ 3+0751834E2+ 3+1060415E2+ 3+1380529E2+ 41 42 43 44 45
00246	1004*		41 42 43 44 45 x3+1706789EZ1 3+2031579E2+ 3+2342147E2+ 3+2622854E2+ 3+2654145E2,
00246	1008*	c	
00246	1009*	•	46 47 50 x3+301255762+3+2977550E2+3+2775595E2+3+25184525 +3+2216108E2+
00246	1010*	C	51 52 53 54 55 51 52 53 54 55
00244	1011	•	RJ+187740762, 3+1253862, 3+11246062, 3+073130462, 3+032873662;
00246	1012*	C	56 57 58 59 60
00248	1013*	•	x2+9925283E2+ 2+4524650E2+ 2+9128985E2+ 2+873865352+ 2+8351977E2+
00246	1014*	C	61 62 63 64 - 67
00246	1015	-	x2+7964461E2+ 2+7570998E2+ 2+7180535E2+ 4+2+6944122E2+
00246	1016*	ç	68 69 70
00246	1017*	-	Z 2+7387919E2+ 2+7824640E2+ 2+8254611E2+
00746	1010*	ί	71 72 73 74 75
00246	1017*	-	x2+867913622, 2+90954975, 2+9/7810282, 3+044540722, 3+109839522,
00246	1020*	C	76 77 78 79 80
00246	1021*		x3+173795262, 3+236487467, 3+358362562, 3+475967;62, 3+589720862,
00246	1022*	C	Aj d2 83 84 85
C0246	1023*		x3+6999789E2+ 3+4070451E7+ 4+012616262+ 4+2081570E2+ 4+3950065E2+

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00246	102	C	36 87 8 4 89 90
00244	1025*		x4+574229862, 4+746691062+ 4+9131-2162, 5+074058567, 5+230063762.
00244	1024*	C	
00244	1027*		15+381548322, 5+5288841E2+ 5+67 "442E2, 5+6123 20E2, 5+44"0377E2/
30244	1024*	C	
00250	1029*		"ATA (SONLST(1), LANP63, NP641/
00250	10320	c	96 97 95 99 100
00250	1031.	•	x0+0826+1022, 6+2133762E2, 6+3096486E2, 6+404, 440E2, 6+4979159E2,
00250	10320	ι	101 '02 103 104 105
00250	1033*	•	x**5900328E2+ ***C0"/98E7+ ***001215E2+ ***173079E2+ 7+0153775E2+
00250	1034*	c	
00250	1035	•	x7+095122912+ 7+1739818E2+ 7+2519835E2+ 7+3291548E2. 7+394660922+
00250	1034*	c	
00250	1037*	•	x7 + 448809242+ 7 + 5025644E2 7+5559417E2+ 7+5692267E2+ 3+1349187E2+
00250	1039*	c	
00250	1039*	•	x2+957933262+ 2+95755762+ 3+305453762+ 3+288411962+ 3+265328362+
00250	1040*	c	121 122 123
00250	1041	•	x2+736854962+ 2+6445229E2+ 2.694412262/
00250	10420	ć	
00250	1043+	č	
00250	10444	č	VISCOSITY COLFFICIENT
00250	1045+	ĩ	VALUES TABULATED IN KILOGRAMS PER METER PER SECOND
00250	1046*	č	ACCES AND AN ALL ON ALL ON ALL OF ALL ALL ALL ALL ALL ALL ALL ALL ALL AL
03252	10470		DATA JUISE STITE LANDER DE VIZ
00252	10"8"	c	DATA (VISLST(1), 1=NP61, 4P621/
00252	1049*	•	1 2 3 4 5 x1+8302431E=5+1+8224157E=5+1+8149999E=5+1+8079299E=5+1+8611441E=5+
00752	1750	c	x10000x200E31100200200E31100000200E3110000000000
00252	1051	•	10 x1+7745850L=5+1+7881991E=5+1+7819367E=5+1+7757524E=5+1+7696042E=5+
00252	10520	c	
00252	1053*	•	11 12 23 14 15 x1+7634541t=5+1+7572676E=5+1+7510139E=5+1+7381977E=5+1+7248245E=5+
00252	10540	c	
00752	1055*	-	10 17 18 19 20 #1+7107621E=5+1+6459239E=5+1+6637731E 5+1+6284601E=5+1+5905319E=5+
00252	1056*	c	
00252	1057*	•	21 22 23 24 25 X1+5509244E-5+1+5108096E-5+1+4707842E-5+1+4335282E-5+1+4038886E-5+
00252	1054*	C	
00252	1059.	•	27 28 29 30 x1+37*5*03E=5+1+3553590E=5+1+3457958E=5+1+3447579E=5+1+3585386E=5+
00252	1040*	c	
00222	1041*	-	x1+372+675E+5+1+38+7977E+5+1+4145944E+5+1+4389370E+5+1+4587102E+5+
00252	1042*	c	26 37 38 39 40
00252	1043*	•	_=0
00252	1044*	C	41 42 43 44 45
00252	1045*		x1+5999574E+5+1+6263778E+5+1+6516764E+5+1+6745577E+5+1+6934206E+5+
00252	1064	C	46 47 48 49 50
00252	1047*		x1+7063446E-5+1+7C346835-5+1+6870136E-5+1+66604605-5+1+6414C72E-5+
00152	1044.	C	51 52 53 54 55
00252	1009*		x1+ 384686-5+1+5841407E-5+1+552885 E-5+1+5206885E-5+1+4860579E-5+
00252	1070*	C	
00252	1071	-	x1+4554073E=5,1+4230412E=5,1+3911371E=5,1+35972/5E=5+1+3286809E=5,
00252	1072*	c	
00252	1073*	-	
00752	10740	c	
00252	1075*	•	
00252	1076*	Ĺ	
00252	107/*	•	71 72 73 74 75 x1+3548639E=5+1+3884397E=5+1+4435101E=5+1+4975097E=5+1+55C4842E=5+
00252	1078*	c	
00252	1074	•	76 77 78 79 80 x1+60247676-5+1+65352856-5+1+75296326-5+1+54907556-5+1+942:2358-5+
00252	1,080.	c	
00252	108.	-	
	- '		x2+0323355E=5+2+1149197E=5+2+2879253E=5+2+4474125E=5+2+5994216E=5+

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00252	1082*	C	84	n 7		89	¥C
C0252	1603.		12+1 4#117E-5	+2+8#42997E-5	.3.01#4890E-5	3+14789242-5	3+27299998-50
00252	1084*	C	91	¥2	₹3		75
00252	10#\$*		I3.7440400F-2	· 2 · 5 1 4 • 25 E- 5	, 3+#251 +E-Si	.3+73660338-51	3+8447349E-5/
Cu252	1044.	C					
00254	10874		DATA EVISEST	[[],]=NP63,NP	641/		
00254	10##*	C	9.	97	78	97	100
6025 *	1089*		13.9502350L-5	+++9531748E-5		4+20330576-5	++2745514E-5
00254	1090*	C	101	102	163	107	105
00254	10*1*		14+34845656-5	. 4 + 4194700E-5	. 4.5127-75E-5		4 - 4803440E-5
00254	10*2*	C	10+	107	168	107	110
00254	1073*		#4+74231436+5	++++0352*36-5	. 4. 8640170E-S	+++2380148-5	4+ #7450328-5
0025*	1074*	ć	211	112	113	114	115
00254	1075*		12+01434316-2	·5·n>7*335E-5.	-5+0991417E-5	5+10941938-5	1-57084898-5
0025 *	10444	c	114	117	116	119	150
26254	10474		x1+4516921E-5	1+4273120E-5.	,1+704770iE-5	1+49586588-51	1=47703888-5
0025 4	107#*		121	122	123		
0025 *	1074*		x1+2500495E-5	+1+2144052E-5	1+21+3172E-5/	,	
80259	1100*	C					
00254	1101*		Enu				

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END OF COMPLETION:

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NO DIAGNOSTICS.

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