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**A REFERENCE ATMOSPHERE FOR PATRICK AFB,
FLORIDA, ANNUAL (1963 REVISION)**

by **O. E. SMITH AND DON K. WEIDNER**
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NASA

*George C. Marshall
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Huntsville, Alabama*

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TECHNICAL MEMORANDUM X-53139

A REFERENCE ATMOSPHERE FOR PATRICK AFB, FLORIDA, ANNUAL
(1963 REVISION)

[A REFERENCE ATMOSPHERE FOR CAPE KENNEDY, FLORIDA
DEFINED TO 90 Km ALTITUDE
EXTENDED TO 700 Km ALTITUDE]

By

O. E. Smith and Don K. Weidner¹

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Huntsville, Alabama

ABSTRACT

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The reference atmosphere established by this study is based on the most current annual statistical parameters of pressure-height, temperature, and relative humidity for the constant pressure levels from 0 to 28 km altitude and on a defined temperature versus altitude relationship from 28 to 90 km altitude. It is also extended to 700 km altitude by the technique given in the U. S. Standard Atmosphere, 1962 with latitude adjustments so that it is directly applicable to Cape Kennedy. This technique was refined by simplification of the expression for geopotential height. Computed values of pressure, kinetic temperature, virtual temperature, molecular temperature, density, coefficient of viscosity, kinematic viscosity, speed of sound, molecular weight, pressure ratio, density ratio, viscosity ratio, and pressure difference are tabulated from 0 to 700 km altitude.

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NASA - GEORGE C. MARSHALL SPACE FLIGHT CENTER

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LIST OF SYMBOLS AND ABBREVIATIONS

Symbol

C_S	Speed of sound ($m \text{ sec}^{-1}$)
g	Acceleration of gravity ($m \text{ sec}^{-2}$)
g_0	Acceleration of gravity at sea-level ($9.80665 \text{ m sec}^{-2}$)
L_k	Kinetic temperature gradient dT/dZ ($^{\circ}K \text{ m}^{-1}$)
L_m	Molecular temperature gradient dT_m/dZ ($^{\circ}K \text{ m}^{-1}$)
M	Molecular weight of air (unitless)
M_0	Molecular weight of air from 0 to 90 km altitude (28.9644)
P	Pressure (newtons cm^{-2})
P_0	Sea-level pressure at Cape Kennedy ($10.1701472 \text{ newtons cm}^{-2}$)
PR	Pressure ratio (percent)
PD	Pressure difference (newtons cm^{-2})
R^*	Universal gas constant [$8.31436 \times 10^3 \text{ m}^2 \text{ sec}^{-2} (\text{^{\circ}K})^{-1}$]
$r' = 6335596$	Function of latitude used to convert geopotential height to geometric altitude
$r^* = 6344860$	Function of latitude used to convert geopotential height to geometric altitude
S	Sutherland's constant ($110.4 \text{ }^{\circ}K$)
T	Kinetic temperature ($^{\circ}K$)
T^*	Virtual temperature ($^{\circ}K$)
T_m	Molecular temperature ($^{\circ}K$)
Z	Geometric altitude (m)
ϕ	Geopotential height ($\text{m}^2 \text{ sec}^{-2}$)

LIST OF SYMBOLS AND ABBREVIATIONS (cont)

Symbol

φ	Latitude (degrees)
ρ	Density (kg m^{-3})
ρ_R	Density ratio (percent)
ρ_0	Sea level density at Cape Kennedy ($1.18354674 \text{ kg m}^{-3}$)
β	Constant used in Sutherland's viscosity equation [$1.458 \times 10^{-8} \text{ kg sec}^{-1} \text{ m}^{-1} (\text{°K})^{-\frac{1}{2}}$]
μ	Coefficient of viscosity ($\text{newtons sec m}^{-2}$)
μ_0	Sea level coefficient of viscosity at Cape Kennedy ($1.8302431 \times 10^{-5} \text{ newtons sec m}^{-2}$)
η	Kinematic viscosity ($\text{m}^2 \text{ sec}^{-1}$)
γ	Ratio of specific heat (1.40 unitless)
USS-62	U. S. Standard Atmosphere, 1962
KRA-63	A Reference Atmosphere for Cape Kennedy, Florida (defined to 90 Km and extended to 700 Km altitude)
mb	Millibar ($\text{mb} = 10^{-2} \text{ newtons cm}^{-2}$)
°K	Degrees Kelvin ($\text{°K} = \text{degrees Celcius} + 273.15^{\circ}$)

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DEFINED TO 90 Km ALTITUDE
EXTENDED TO 700 Km ALTITUDE]

SUMMARY

The reference atmosphere established by this study is based on the most current annual statistical parameters of pressure-height, temperature, and relative humidity for the constant pressure levels from 0 to 28 km altitude and on a defined temperature versus altitude relationship from 28 to 90 km altitude. It is also extended to 700 km altitude by the technique given in the U. S. Standard Atmosphere, 1962 with latitude adjustments so that it is directly applicable to Cape Kennedy. This technique was refined by simplification of the expression for geopotential height. Computed values of pressure, kinetic temperature, virtual temperature, molecular temperature, density, coefficient of viscosity, kinematic viscosity, speed of sound, molecular weight, pressure ratio, density ratio, viscosity ratio, and pressure difference are tabulated from 0 to 700 km altitude.

SECTION I. INTRODUCTION

The need for realistic atmospheric models derived from the best available information has been recognized. It is also imperative that models be revised or up-dated as better information becomes available.

In 1961, a reference atmosphere (TN D-595) [1] was developed for Patrick Air Force Base, Florida. It is based on annual median values of geopotential height, temperature, and relative humidity for the standard pressure levels from 0 to 28 km altitude, and is extended to 47 km altitude by use of extrapolated temperature versus pressure values from the ARDC, 1959 Model Atmosphere.

Improvements in accuracy and frequency of atmospheric measurements have rapidly advanced knowledge of the structure of the atmosphere and have led to the publication of the U. S. Standard Atmosphere, 1962 [2] and the Atlantic Missile Range Atmosphere for Cape Kennedy, Florida (IRIG

104-63) [3]. The atmosphere defined by the IRIG Reference Atmosphere for Cape Kennedy is also based on median values of thermodynamic quantities for the standard pressure levels (see Table I). These median values differ slightly from those used in TN D-595 because they are based on a larger number of observations. However, a rigid comparison shows the respective computed quantities that define these two atmospheres to have maximum relative differences of 0.07 percent in temperatures, 0.5 percent in pressures, and 0.4 percent in densities, and an average relative difference of only 0.3 percent.

Therefore, as the atmosphere defined by TN D-595 was revised by the IRIG Reference Atmosphere for Cape Kennedy, the purpose of this report is not to revise, but to extend the definition of the Reference Atmosphere for Patrick Air Force Base (Cape Kennedy), Florida. In this report, the reference atmosphere is defined to 90 km and extended to 700 km.

SECTION II. DETERMINATION OF A REFERENCE ATMOSPHERE FOR CAPE KENNEDY, FLORIDA

A. DEFINITION

The reference atmosphere established by this report is defined by computed values of pressure, kinetic temperature, virtual temperature, molecular temperature, density, coefficient of viscosity, kinematic viscosity, speed of sound, molecular weight, pressure ratio, density ratio, viscosity ratio, and pressure difference. In general, these parameters are tabulated for each 250-meter interval from 0 to 90 km altitude, each 1,000-meter interval from 90 to 300 km altitude, and each 2,000-meter interval from 300 to 700 km altitude. However, kinematic viscosity and kinetic temperature are computed from 0 to 90 km altitude only, virtual temperature becomes the same as kinetic temperature above the moisture layer (10,832.1 meters altitude), and molecular temperature is computed from 90 to 700 km altitude only.

B. PROCEDURE

1. Basic Data. The median values of various thermodynamic parameters, which were used as basic data in the IRIG Reference Atmosphere for Cape Kennedy, are presented in Table I. These are also the basic data used in deriving the atmosphere defined by this report for the altitude region from 0 to 28 km. The median values of geopotential height, density, and temperature were computed from frequency distributions of each parameter for the standard pressure levels. Relative

humidity median values were determined from the cumulative frequency corresponding to the class interval in which the median temperature occurred.

Data for the altitude region from 28,000 to 83,004 meters are based on a defined temperature versus altitude relationship. Pressure data are obtained by first fitting a fifth degree empirical polynomial to the temperature versus geometric altitude curve and then performing the following step-wise integration procedure.

$$P_i = (P_{i-1}) \exp \frac{-g_0 M_0 \Delta \phi}{R^* T'} \quad (1)$$

where

$\Delta \phi = (\phi_i - \phi_{i-1}) =$ an increment of geopotential height

$$T = A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5 \quad (2)$$

$$T' = \frac{T_i + T_{i-1}}{2}$$

(The derived coefficients $A_0 \dots A_5$ are listed in Table II, legs 4 and 5.)

If g_φ is the actual acceleration of gravity at mean sea level at the given latitude φ , the geopotential height ϕ may be computed as follows [4]:

$$\phi = \frac{Z r'}{Z + r'} \quad (3)$$

where

$$r^* = \frac{2g_\varphi}{-\left(\frac{\partial g}{\partial Z}\right)_{Z=0}}$$

$$-\left(\frac{\partial g}{\partial z}\right)_{z=0} = 3.085462 \times 10^{-6} + 2.27 \times 10^{-9} \cos 2\varphi - 2 \times 10^{-12} \cos 4\varphi ,$$

and

$$r' = \frac{g_{\varphi} r^*}{9.8} .$$

A relationship of pressure versus geometric altitude is now defined for the altitude region from 28,000 to 83,004 meters.

For the altitude region from 83,004 to 90,000 meters, basic data for this report are taken from the U. S. Standard Atmosphere, 1962. The isothermal nature of this portion of the atmosphere facilitates a convenient place for the integration of data from the U. S. Standard Atmosphere, 1962. Computations are made more representative of Cape Kennedy by recalculating the geometric altitude from the geopotential height using the exact latitude.

The atmosphere defined by this report is extended from 90 to 700 km altitude by the technique given in the U. S. Standard Atmosphere, 1962 with latitude adjustments so that it is directly applicable to Cape Kennedy, Florida. This technique was refined by simplification of the expression for geopotential height.

2. Empirical Polynomials. The atmospheric parameters of pressure, virtual temperature, and kinetic temperature are computed by use of empirical polynomials from 0 to 83,004 meters altitude. The density is also computed in this manner from 0 to 28,000 meters. These empirical polynomials are formed by least square fits to the respective parameter versus altitude curves. In performing the curve fits, each curve is broken into five legs and coefficients are derived. Therefore, these derived coefficients, as listed in Table II, are neither the same from equation to equation nor from leg to leg. The empirical curve fits are in agreement with the median values presented in Table I and generally display analytical continuity in the first and second derivatives. The second derivative, however, has discontinuities in the neighborhood of the end point of each leg.

3. Derived Thermodynamic Quantities. The following section is given to explain the final computation of thermodynamic quantities listed in Table III. Analytical equations are also presented when applicable. Derived values of the coefficients ($A_0 A_5$) are given in Table II.

a. Pressure

(1) Altitude Region: 0 to 28,000 meters

$$P = P_1 \exp (A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5) \quad (4)$$

where

$$P_1 = 10.0 \text{ newtons cm}^{-2}.$$

(2) Altitude Region: 28,000 to 83,004 meters

$$P = g_0 \times 10^{-4} [\exp (A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5)]. \quad (5)$$

(3) Altitude Region: 83,004 to 90,000 meters

(a) Analytical Equation

$$P = P_b \exp \left[\frac{g_0 M_0 r' r^* (Z - Z_b)}{R^* T_b (r^* + Z) (r^* + Z_b)} \right]. \quad (6)$$

(b) Computational Equation

$$P = P_b \exp \left[\frac{-1.373301523 \times 10^{12} (Z - Z_b)}{T_b (6344860 + Z) (6344860 + Z_b)} \right] \quad (7)$$

where

P_b = Pressure at base

T_b = Kinetic temperature at base

Z_b = Geometric altitude at base.

(4) Altitude Region: 90,000 to 700,000 meters

(a) Analytical Equation for $L_m \neq 0$

$$\ln P = \ln P_b + \left[\frac{g_0 M_0 r' r^*}{L_m R^* (r^* + Z) (r^* + Z_b)} \right] \ln \left[\frac{T_{mb}}{T_{mb} + L_m (Z - Z_b)} \right]. \quad (8)$$

(b) Computational Equation for $L_m \neq 0$

$$\ln P = \ln P_b + \left[\frac{1.373301523 \times 10^{12}}{L_m (6344860 + Z) (6344860 + Z_b)} \right] \ln \left[\frac{T_{mb}}{T_{mb} + L_m (Z - Z_b)} \right], \quad (9)$$

where

T_{mb} = Molecular temperature at base.

If

$L_m = 0$,

the analytical equation is the same as Equation (6) and the computational equation is the same as Equation (7). In this altitude region, however, molecular temperature (T_{mb}) is used instead of kinetic temperature (T_b).

b. Density

(1) Altitude Region: 0 to 28,000 meters

$$\rho = \rho_1 \exp (A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5), \quad (10)$$

where

ρ_1 = Density at the 1000 mb level (1.16790729 kg m⁻³).

(2) Altitude Region: 28,000 to 700,000 meters

(a) Analytical Equation

$$\rho = \frac{10^4 M_0 P}{R^* T_n} \quad (11)$$

(b) Computational Equation

$$\rho = (0.3483676 \times 10^2) \frac{P}{T_n} \quad (12)$$

where

$T_n = T$ from 28,000 to 90,000 meters altitude

$T_n = T_m$ from 90,000 to 700,000 meters altitude.

c. Density Ratio

(1) Altitude Region: 0 to 700,000 meters

$$\rho R = \frac{\rho}{\rho_0} \quad (13)$$

d. Pressure Ratio

(1) Altitude Region: 0 to 700,000 meters

$$PR = \frac{P}{P_0} \quad (14)$$

e. Virtual Temperature

(1) Altitude Region: 0 to 10,832.1 meters

$$T^* = A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5 \quad (15)$$

Virtual temperature is the same as kinetic temperature above 10,832.1 meters altitude.

f. Kinetic Temperature

(1) Altitude Region: 0 to 83,004 meters

$$T = A_0 + A_1 Z + A_2 Z^2 + A_3 Z^3 + A_4 Z^4 + A_5 Z^5 . \quad (16)$$

(2) Altitude Region: 83,004 to 90,000 meters

$$T = T_b + L_k (Z - Z_b), \quad (17)$$

where

T_b = Kinetic temperature at base

(3) Altitude Region: 90,000 to 700,000 meters

$$T = \frac{M T_m}{M_0} . \quad (18)$$

g. Molecular Temperature

(1) Altitude Region: 0 to 90,000 meters

The molecular temperature is equal to the kinetic temperature in this altitude region, as the molecular weight is considered to be of the constant value M_0 .

(2) Altitude Region: 90,000 to 700,000

$$T_m = T_{mb} + L_m (Z - Z_b), \quad (19)$$

where

T_{mb} = Molecular temperature at base

Z_b = Geometric height at base .

h. Coefficient of Viscosity

(1) Altitude Region: 0 to 700,000 meters

(a) Analytical Equation

$$\mu = \frac{S (T_n)^{3/2}}{T_n + S} \quad (20)$$

(b) Computational Equation

$$\mu = \frac{1.458 \times 10^{-8} (T_n)^{3/2}}{T_n + 110.4} \quad (21)$$

where

$T_n = T$ from 0 to 90,000 meters altitude

$T_n = T_m$ from 90,000 to 700,000 meters altitude.

i. Kinematic Viscosity

(1) Altitude Region: 0 to 90,000 meters

$$\eta = \frac{\mu}{\rho} \quad (22)$$

(2) Altitude Region: 90,000 to 700,000 meters
Kinematic viscosity is not computed above 90,000 meters altitude.

j. Viscosity Ratio

(1) Altitude Region: 0 to 700,000 meters

$$\mu R = \frac{\mu}{\mu_0} \quad (23)$$

k. Speed of Sound

(1) Altitude Region: 0 to 700,000 meters

(a) Analytical Equation

$$C_S = \left[\frac{\gamma R^* T_n}{M_0} \right]^{1/2} \quad (24)$$

(b) Computational Equation

$$C_S = 20.046707 (T_n)^{1/2}, \quad (25)$$

where

$T_n = T^*$ from 0 to 10,832.1 meters altitude

$T_n = T$ from 10,832.1 to 90,000 meters altitude

$T_n = T_m$ from 90,000 to 700,000 meters altitude.

l. Pressure Difference

(1) Altitude Region: 0 to 700,000 meters

$$PD = P_0 - P \quad (26)$$

m. Molecular Weight

(1) Altitude Region: 0 to 90,000 meters

Molecular weight is taken to be of constant value (28.9644) below 90,000 meters altitude.

(2) Altitude Region: 90,000 to 700,000 meters

$$M = M_b + \Delta M (Z - Z_b), \quad (27)$$

where

M_b = Molecular weight at base

ΔM = Molecular weight gradient

Z_b = Geometric altitude at base.

4. Computer Subroutine (PRA-63). The computer subroutine that was used in the development of this report is available in the subroutine files of the MSFC Computation Laboratory and has been designated as PRA-63. This subroutine contains the most current thermodynamic quantities and may be considered to be the best representation of the annual median atmospheric conditions at Cape Kennedy, Florida, from surface to 700 km altitude.

SECTION III. U. S. STANDARD ATMOSPHERE, 1962 COMPARISON

A. COMPARISON OF TEMPERATURE PROFILES

The temperature profiles of the U. S. Standard Atmosphere, 1962 and the atmosphere defined in this report differ significantly (see Fig. 1). The Cape Kennedy temperature is warmer in the troposphere and colder in the stratosphere than is the U. S. Standard temperature. The maximum temperature at the mesopeak is about the same in both atmospheres, but the Cape Kennedy temperature is warmer in the lower half of the mesosphere and colder in the upper portion. These differences are due to the variance of the atmospheric temperature gradient with latitude.

B. ABSOLUTE DIFFERENCES

The absolute pressure, temperature, and density differences between the atmosphere defined by this report and the U. S. Standard Atmosphere, 1962 are illustrated in Figure 2. These differences are computed for each km altitude by the following equations:

$$\Delta T = T_R - T_S \quad (28)$$

$$\Delta P = P_R - P_S \quad (29)$$

$$\Delta \rho = \rho_R - \rho_S \quad (30)$$

where the subscript "R" denotes parameters from the atmosphere defined by this report and "S" denotes parameters from the U. S. Standard Atmosphere, 1962.

The maximum pressure differences occur in the mid-troposphere (5 to 11 km altitude) in association with maximum temperature differences in this altitude region. The absolute differences in density are greatest near the surface and in the 13 to 15 km altitude region, but are at a minimum in the 7 to 10 km altitude region. The latter altitude region is referred to as "the level of constant density" [5].

C. RELATIVE COMPARISON

Due to the large variance in the magnitude of density and pressure, it is more informative to make relative comparisons instead of absolute comparisons. The relative differences between temperature, pressure, and density values from the atmosphere defined by this report and the U. S. Standard Atmosphere, 1962 are computed as follows:

$$\Delta T_{rel} = \frac{T_R - T_S}{T_S} \times 100 \quad (31)$$

$$\Delta P_{rel} = \frac{P_R - P_S}{P_S} \times 100 \quad (32)$$

$$\Delta \rho_{rel} = \frac{\rho_R - \rho_S}{\rho_S} \times 100, \quad (33)$$

where the subscript "R" denotes parameters from the atmosphere defined by this report and "S" denotes parameters from the U. S. Standard Atmosphere, 1962.

These relative differences are illustrated in Figure 3 and are related by the following equations:

$$\Delta T_{rel} = \frac{\Delta P_{rel} - \Delta \rho_{rel}}{1 + \left(\frac{\Delta \rho_{rel}}{100}\right)} \quad (34)$$

$$\Delta P_{rel} = \Delta T_{rel} + \Delta \rho_{rel} + \Delta \rho_{rel} \left(\frac{\Delta T_{rel}}{100} \right) \quad (35)$$

$$\Delta \rho_{rel} = \frac{\Delta P_{rel} - \Delta T_{rel}}{\left(\frac{\Delta T_{rel}}{100} + 1 \right)} \quad (36)$$

As can be seen by Equation (34), if $\Delta \rho_{rel}$ is zero, ΔT_{rel} would be equal to ΔP_{rel} . Also, by Equation (35), if ΔT_{rel} is zero, then ΔP_{rel} would be equal to $\Delta \rho_{rel}$. It may be noted, in Figure 3, that maximum relative pressure differences occur with increasing altitude as the corresponding relative temperature differences approach zero from positive values. Conversely, minimum relative pressure differences occur as the corresponding temperature differences approach zero from negative values.

SECTION IV. CONCLUSION

The atmosphere defined by this report is an improved representation of the actual atmospheric conditions over Cape Kennedy, Florida. It is defined to 90 km altitude and is extended to 700 km altitude. However, as the understanding of the structure of the atmosphere is improved by more frequent and more accurate measurements, any atmospheric model established at this time for altitudes greater than 30 km is likely to be replaced.

It is recommended that this reference atmosphere be employed in missile and space vehicle design, performance, and trajectory studies regarding the Eastern Test Range, Patrick Air Force Base (Cape Kennedy), Florida launch area. Designation of the subroutines used in this report as "Computer Subroutine, No. PRA-63" by the MSFC Computation Laboratory for use in MSFC vehicle development should be given in subsequent revisions of MSFC Design Criteria Manuals and Ground Rule Documents.

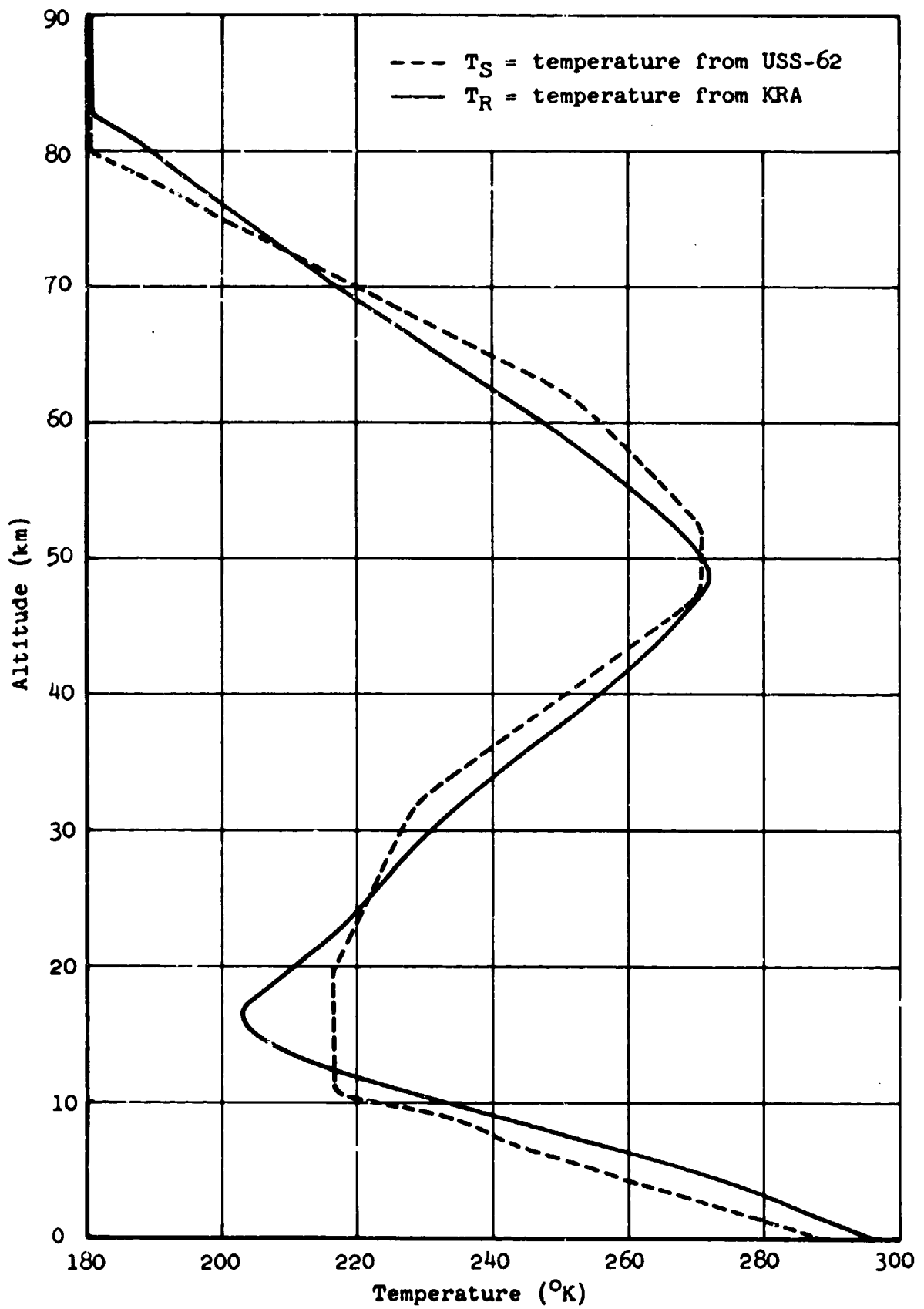


Fig. 1. Comparison of U.S. Standard Atmosphere, 1962 and Cape Kennedy Reference Atmosphere Temperature Profiles.

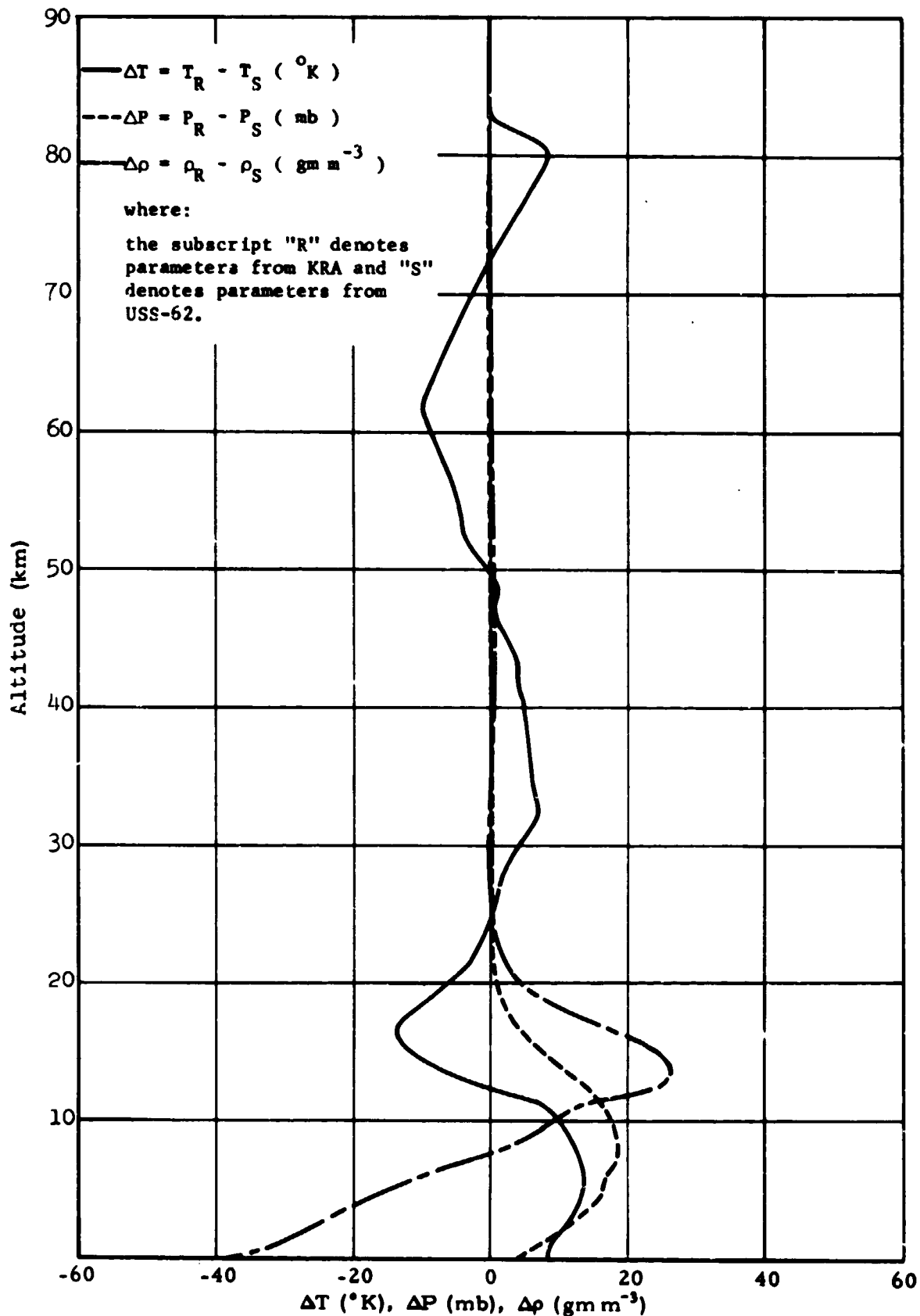


Fig. 2. Absolute Differences Between Thermodynamic Quantities of the Cape Kennedy Reference Atmosphere and the U. S. Standard Atmosphere, 1962, Versus Geometric Altitude.

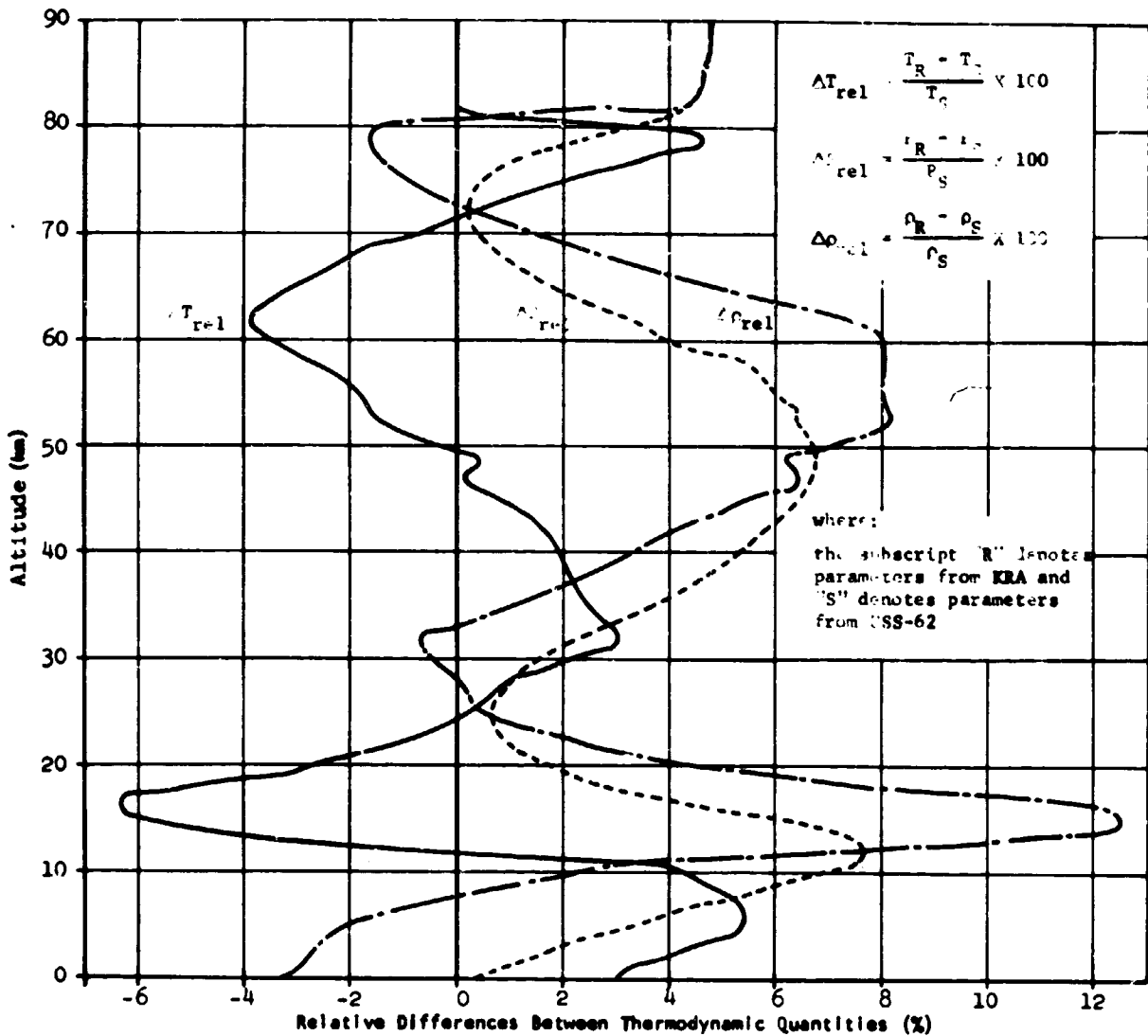


Fig. 3. Relative Differences Between Thermodynamic Quantities of the Cape Kennedy Reference Atmosphere and the U.S. Standard Atmosphere Versus Geometric Altitude.

TABLE I
CAPE KENNEDY ANNUAL MEDIAN THERMODYNAMIC QUANTITIES
versus
STANDARD PRESSURE LEVELS

STANDARD PRESSURE LEVEL (mb)	TEMPERATURE (°C)	RELATIVE HUMIDITY (%)	GEOPOTENTIAL HEIGHT (m)	DENSITY (gm⁻³)
1000	22.7	81	151.0	1163.1
950	19.9	80	603.4	1116.7
900	17.1	78	1060.3	1069.2
850	14.4	73	1546.1	1020.1
800	20.0	65	2055.7	969.2
750	9.4	48	2604.7	917.5
700	6.4	45	3161.8	865.5
650	3.2	35	3777.0	813.7
600	- 0.7	31	4410.4	761.2
550	- 4.8	26	5107.7	710.4
500	- 9.5	23	5843.0	655.5
450	-15.0		6662.7	602.0
400	-21.2		7529.7	548.4
350	-28.5		8500.1	496.1
300	-36.8		9585.1	439.8
250	-46.1		10819.5	381.6
200	-56.0		12265.2	318.9
175	-60.8		13103.4	285.4
150	-65.0		14051.5	249.0
125	-68.4		15154.2	212.6
100	-70.4		16484.8	171.7
80	-68.9		17807.1	136.4
60	-63.7		19539.5	99.8
50	-60.5		20663.6	81.9
40	-57.1		22063.8	64.6
30	-53.4		23898.3	47.6
20	-48.7		26534.4	31.2
10	-41.6		31200.9	15.2

TABLE II
DERIVED COEFFICIENTS FOR EMPIRICAL POLYNOMIALS

Log I		0 ≤ Z < 10832.1 meters					
Parameters	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Equation
Pressure	1.5871582x10 ⁻²	-1.1425176x10 ⁻⁴	-1.3612327x10 ⁻⁹	7.3624145x10 ⁻¹⁴	-1.0800315x10 ⁻¹⁷	3.7756432x10 ⁻²²	(4)
Density	1.3302117x10 ⁻²	-8.8502064x10 ⁻⁵	-4.2143056x10 ⁻⁹	5.9517557x10 ⁻¹³	-3.9744789x10 ⁻¹⁷	7.8771273x10 ⁻²²	(10)
Temperature	2.9667877x10 ²	-6.7731001x10 ⁻³	8.4619805x10 ⁻⁷	-1.7004049x10 ⁻¹⁰	1.1451454x10 ⁻¹⁴	-2.4898788x10 ⁻¹⁹	(16)
Virtual Temp.	2.9937265x10 ²	-7.7176284x10 ⁻³	9.4867202x10 ⁻⁷	-1.7136592x10 ⁻¹⁰	1.1074297x10 ⁻¹⁴	-2.3294094x10 ⁻¹⁹	(15)
Log II		10832.1 ≤ Z < 17853.3 meters					
Parameters	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Equation
Pressure	-7.9910777x10 ⁻²	-8.1046438x10 ⁻⁵	-5.5522383x10 ⁻⁹	3.1116969x10 ⁻¹³	-1.6687827x10 ⁻¹⁷	3.8319351x10 ⁻²²	(4)
Density	1.2667122x10 ⁻¹	-1.3373147x10 ⁻⁴	2.0667371x10 ⁻⁹	2.3396109x10 ⁻¹³	-3.2562503x10 ⁻¹⁷	7.9035209x10 ⁻²²	(10)
Temperature	2.6892151x10 ²	4.3075352x10 ⁻³	-8.9159672x10 ⁻⁷	-2.8929791x10 ⁻¹¹	5.0724856x10 ⁻¹⁵	-1.1490372x10 ⁻¹⁹	(16)
Virtual Temp.	2.6892151x10 ²	4.3075352x10 ⁻³	-8.9159672x10 ⁻⁷	-2.8929791x10 ⁻¹¹	5.0724856x10 ⁻¹⁵	-1.1490372x10 ⁻¹⁹	(15)
Log III		17853.3 ≤ Z < 28000 meters					
Parameters	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Equation
Pressure	9.8414277x10 ⁻¹	-2.6976917x10 ⁻⁴	8.5227541x10 ⁻⁹	-3.9620263x10 ⁻¹³	1.0146471x10 ⁻¹⁷	-1.0264318x10 ⁻²²	(4)
Density	9.2751266x10 ⁻¹	-1.4349679x10 ⁻⁴	-2.8271736x10 ⁻⁹	4.7480092x10 ⁻¹⁴	1.8863246x10 ⁻¹⁸	-4.2702411x10 ⁻²³	(10)
Temperature	3.7064557x10 ²	-3.2858965x10 ⁻²	2.0645636x10 ⁻⁶	-4.3283944x10 ⁻¹¹	-5.7507242x10 ⁻¹⁷	8.2924583x10 ⁻²¹	(16)
Virtual Temp.	3.7064557x10 ²	-3.2858965x10 ⁻²	2.0645636x10 ⁻⁶	-4.3283944x10 ⁻¹¹	-5.7507242x10 ⁻¹⁷	8.2924583x10 ⁻²¹	(15)
Log IV		28000 ≤ Z < 49000 meters					
Parameters	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Equation
Pressure	1.14118495x10 ¹	-4.11497477x10 ⁻⁴	1.33664855x10 ⁻⁸	-3.59518975x10 ⁻¹³	5.10097254x10 ⁻¹⁸	-2.89055894x10 ⁻²³	(5)
Temperature	2.044798x10 ¹	2.07698384x10 ⁻²	-8.63038789x10 ⁻⁷	1.66392417x10 ⁻¹¹	-9.30076185x10 ⁻¹⁷	-4.09005108x10 ⁻²²	(2) & (16)
Log V		49000 ≤ Z < 83004 meters					
Parameters	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Equation
Pressure	9.99324461x10 ⁰	-2.58298177x10 ⁻⁴	3.76139346x10 ⁻⁹	-4.20887236x10 ⁻¹⁴	1.60182148x10 ⁻¹⁹	-1.92508927x10 ⁻²³	(5)
Temperature	-4.98865953x10 ²	3.92137281x10 ⁻²	-4.95180601x10 ⁻⁷	-3.26219854x10 ⁻¹²	9.66650364x10 ⁻¹⁷	-4.78844279x10 ⁻²²	(2) & (16)

NOTE ON TABULAR VALUES IN TABLE III

The two digit numbers that are preceded by the symbol E indicate the power of 10 by which the respective principle value must be multiplied.

For example, a tabular value indicated as:

2.9937265E 02 is 299.37265

and

1.5464054E-05 is .000015464054

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
70.	1.0170147E 01	2.9667877E 02	2.9937265E 02	1.1835467E 00	1.5464054E-05	1.8302431E-05	3.4685752E 02
250.	9.8824373E 00	2.9503578E 02	2.9745989E 02	1.1573534E 00	1.5746406E-05	1.8224157E-05	3.4577091E 02
500.	9.6022651E 00	2.9348321E 02	2.9573026E 02	1.1312045E 00	1.6044844E-05	1.8149999E-05	3.4474100E 02
750.	9.3280864E 00	2.920674E 02	2.940420E 02	1.1051789E 00	1.6358708E-05	1.8079299E-05	3.4375977E 02
1000.	9.0603418E 00	2.9059301E 02	2.9244316E 02	1.0793462E 00	1.6687362E-05	1.8011441E-05	3.4281972E 02
1250.	8.7989596E 00	2.8922965E 02	2.9088953E 02	1.0537666E 00	1.7030194E-05	1.7945850E-05	3.4191375E 02
1500.	8.5438573E 00	2.8790525E 02	2.8940665E 02	1.0284922E 00	1.7386608E-05	1.7881991E-05	3.4103527E 02
1750.	8.2949430E 00	2.8660932E 02	2.8795373E 02	1.0035670E 00	1.7756031E-05	1.7819367E-05	3.4017814E 02
2000.	8.0521168E 00	2.8533228E 02	2.8653088E 02	9.7902801E-01	1.8137912E-05	1.7757524E-05	3.3933664E 02
2250.	7.8152728E 00	2.8406543E 02	2.8512905E 02	9.5490568E-01	1.8531717E-05	1.7696042E-05	3.3850555E 02
2500.	7.5843002E 00	2.8280007E 02	2.8374002E 02	9.3122447E-01	1.8936939E-05	1.7634541E-05	3.3768001E 02
2750.	7.3590840E 00	2.8153150E 02	2.8235634E 02	9.0800345E-01	1.9353094E-05	1.7572678E-05	3.3685564E 02
3000.	7.1395065E 00	2.8025121E 02	2.8097134E 02	8.8525681E-01	1.9779728E-05	1.7510139E-05	3.3602866E 02
3250.	6.9254477E 00	2.7895429E 02	2.7957909E 02	8.6299447E-01	2.0216415E-05	1.7446653E-05	3.3519489E 02
3500.	6.7167869E 00	2.7763601E 02	2.7817455E 02	8.4122243E-01	2.0662760E-05	1.7381977E-05	3.3435175E 02
3750.	6.5134029E 00	2.7629224E 02	2.7675260E 02	8.1994327E-01	2.1118413E-05	1.7315901E-05	3.3349622E 02
4000.	6.3151745E 00	2.7491954E 02	2.7530995E 02	7.9915662E-01	2.1583059E-05	1.7248245E-05	3.3262585E 02
4250.	6.1219816E 00	2.7351511E 02	2.7384314E 02	7.7885945E-01	2.2056429E-05	1.7178858E-05	3.3173858E 02
4500.	5.9337050E 00	2.7207674E 02	2.7234951E 02	7.5906674E-01	2.2538305E-05	1.7107621E-05	3.3083264E 02
4750.	5.7502279E 00	2.7060280E 02	2.7082700E 02	7.3971052E-01	2.3028518E-05	1.7034437E-05	3.2990626E 02
5000.	5.5714388E 00	2.6909222E 02	2.6927405E 02	7.2084275E-01	2.3526960E-05	1.6959239E-05	3.2895940E 02
5250.	5.3972132E 00	2.6754444E 02	2.6768988E 02	7.0243297E-01	2.4033585E-05	1.6881983E-05	3.2799020E 02
5500.	5.2274531E 00	2.6595939E 02	2.6607333E 02	6.8446986E-01	2.4548412E-05	1.6802648E-05	3.2699447E 02
5750.	5.0620471E 00	2.6433747E 02	2.6442497E 02	6.6694129E-01	2.5071532E-05	1.6721240E-05	3.2598400E 02
6000.	4.9008912E 00	2.6267950E 02	2.627496E 02	6.4983435E-01	2.5603110E-05	1.6637781E-05	3.2494679E 02
6250.	4.7438843E 00	2.609870E 02	2.6103412E 02	6.3315566E-01	2.6143393E-05	1.6552315E-05	3.2388713E 02
6500.	4.5909286E 00	2.5926069E 02	2.5929361E 02	6.1683158E-01	2.6692708E-05	1.6464906E-05	3.2280552E 02
6750.	4.4412996E 00	2.5750339E 02	2.5752496E 02	6.0090817E-01	2.7251477E-05	1.6375635E-05	3.2170270E 02
7000.	4.2967959E 00	2.5571708E 02	2.5573002E 02	5.8535153E-01	2.7820208E-05	1.6284601E-05	3.2057962E 02
7250.	4.1554397E 00	2.5390429E 02	2.5391096E 02	5.7014776E-01	2.8399511E-05	1.6191918E-05	3.1943741E 02
7500.	4.0177761E 00	2.5206783E 02	2.5207021E 02	5.5528319E-01	2.8990096E-05	1.6097713E-05	3.1827741E 02
7750.	3.8837237E 00	2.5021074E 02	2.5021046E 02	5.4074435E-01	2.9592781E-05	1.6002129E-05	3.1710112E 02
8000.	3.7532040E 00	2.4833622E 02	2.4833459E 02	5.2651817E-01	3.0208491E-05	1.5905319E-05	3.1591021E 02
8250.	3.6261415E 00	2.4644770E 02	2.4644571E 02	5.1259196E-01	3.0838268E-05	1.5807448E-05	3.1470648E 02
8500.	3.5024639E 00	2.4454868E 02	2.4454707E 02	4.9895351E-01	3.1483272E-05	1.5708495E-05	3.1349187E 02
8750.	3.3821013E 00	2.426284E 02	2.4262407E 02	4.8559116E-01	3.2144787E-05	1.5609225E-05	3.1226845E 02
9000.	3.2649869E 00	2.4073389E 02	2.4073420E 02	4.7249382E-01	3.2824226E-05	1.5509244E-05	3.1103836E 02
9250.	3.1510561E 00	2.3882562E 02	2.3882706E 02	4.5965099E-01	3.3523131E-05	1.5408941E-05	3.0980386E 02
9500.	3.0402449E 00	2.3692182E 02	2.3692429E 02	4.4705284E-01	3.4243187E-05	1.5308514E-05	3.0856726E 02
9750.	2.9324993E 00	2.3502631E 02	2.3502955E 02	4.3469070E-01	3.4986216E-05	1.5208165E-05	3.0733094E 02
10000.	2.8277555E 00	2.3314283E 02	2.3314652E 02	4.2255460E-01	3.5754185E-05	1.5108096E-05	3.0609732E 02
10250.	2.7259597E 00	2.3127509E 02	2.3127885E 02	4.1063824E-01	3.6549218E-05	1.5008502E-05	3.0486892E 02
10500.	2.6270579E 00	2.2942670E 02	2.2943012E 02	3.9893405E-01	3.7373593E-05	1.4909599E-05	3.0364789E 02
10750.	2.5309974E 00	2.2760114E 02	2.2760385E 02	3.8743564E-01	3.8229747E-05	1.4811567E-05	3.0243695E 02
11000.	2.4373144E 00	2.2576754E 02	2.2576754E 02	3.7638429E-01	3.9076662E-05	1.4717842E-05	3.0115374E 02
11250.	2.3466644E 00	2.2389290E 02	2.2389290E 02	3.6528888E-01	3.9994485E-05	1.4611367E-05	2.9981292E 02
11500.	2.2587459E 00	2.2215274E 02	2.2215274E 02	3.5436502E-01	4.0966090E-05	1.4516921E-05	2.9849332E 02
11750.	2.1735153E 00	2.2046105E 02	2.2046105E 02	3.4360979E-01	4.1980165E-05	1.4424796E-05	2.976534E 02
12000.	2.0909281E 00	2.1882266E 02	2.1882266E 02	3.3302120E-01	4.3046155E-05	1.4335282E-05	2.9654540E 02
12250.	2.0109393E 00	2.1724226E 02	2.1724226E 02	3.2259810E-01	4.4168460E-05	1.4248661E-05	2.9547260E 02
12500.	1.9335036E 00	2.1572436E 02	2.1572436E 02	3.1234019E-01	4.5351869E-05	1.4165211E-05	2.9443853E 02
12750.	1.8589748E 00	2.1427329E 02	2.1427329E 02	3.0224786E-01	4.6601486E-05	1.4085200E-05	2.9344629E 02
13000.	1.7861068E 00	2.1289318E 02	2.1289318E 02	2.9232219E-01	4.7922760E-05	1.4008886E-05	2.9250004E 02
13250.	1.7160527E 00	2.1158795E 02	2.1158795E 02	2.8256482E-01	4.931493E-05	1.3936519E-05	2.9160702E 02
13500.	1.6483655E 00	2.1036130E 02	2.1036130E 02	2.7297794E-01	5.0803867E-05	1.3868335E-05	2.9075551E 02
13750.	1.5829980E 00	2.0921670E 02	2.0921670E 02	2.6356414E-01	5.2376472E-05	1.3804560E-05	2.8994341E 02
14000.	1.5199024E 00	2.0815732E 02	2.0815732E 02	2.5432637E-01	5.4046313E-05	1.3745403E-05	2.892234E 02
14250.	1.4590316E 00	2.0717861E 02	2.0717861E 02	2.4526789E-01	5.5820832E-05	1.3691058E-05	2.8852747E 02
14500.	1.4003371E 00	2.0630573E 02	2.0630573E 02	2.3639213E-01	5.7707945E-05	1.3641704E-05	2.8784171E 02
14750.	1.3437771E 00	2.0551865E 02	2.0551865E 02	2.2770271E-01	5.9716027E-05	1.3597501E-05	2.8716935E 02
15000.	1.2892896E 00	2.0482679E 02	2.0482679E 02	2.1920324E-01	6.1853361E-05	1.3558590E-05	2.8650321E 02
15250.	1.2368327E 00	2.0423197E 02	2.0423197E 02	2.1089744E-01	6.4131138E-05	1.3525097E-05	2.860432E 02
15500.	1.1863629E 00	2.0373557E 02	2.0373557E 02	2.0278882E-01	6.657450E-05	1.3497107E-05	2.861394E 02
15750.	1.1378295E 00	2.0333869E 02	2.0333869E 02	1.9488807E-01	6.9143324E-05	1.3474711E-05	2.8646110E 02
16000.	1.0911841E 00	2.0304201E 02	2.0304201E 02	1.8717685E-01	7.1894693E-05	1.3457958E-05	2.8655286E 02
16250.	1.0463788E 00	2.0284589E 02	2.0284589E 02	1.7967978E-01	7.4818014E-05	1.3446881E-05	2.8655449E 02
16500.	1.0033454E 00	2.0275027E 02	2.0275027E 02	1.7239240E-01	7.7970223E-05	1.3441744E-05	2.8654719E 02
16750.	9.6209732E-01	2.0275470E 02	2.0275470E 02	1.6531714E-01	8.1398715E-05	1.3441724E-05	2.8654503E 02
17000.	9.2252642E-01	2.0289831E 02	2.0289831E 02	1.5848601E-01	8.4866322E-05	1.3447579E-05	2.865232E 02
17250.	8.8450606E-01	2.0305981E 02	2.0305981E 02	1.5181071E-01	8.84656214E-05	1.3458963E-05	2.8655000E 02
17500.	8.4828997E-01	2.0333748E 02	2.0333748E 02	1.45328244E-01	9.22691802E-05	1.3475772E-05	2.8687431E 02
17750.	8.1353127E-01	2.0374913E 02	2.0374913E 02	1.3911203E-01	9.6386994E-05	1.3497872E-05	2.8614966E 02

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III

	GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE	
	meters	unitless	unitless	unitless	unitless	newtons cm ⁻²	
	-0.	9.999996E-01	9.999995E-01	1.000000E 00	2.896440E 01	2.384185E-07	
	250.	9.717595E-01	9.778878E-01	9.937233E-01		2.872098E-01	
	500.	9.441618E-01	9.557750E-01	9.916715E-01		5.878820E-01	
	750.	9.172026E-01	9.337853E-01	9.878086E-01		6.420280E-01	
	1000.	8.908761E-01	9.119590E-01	9.841010E-01		1.109805E 00	
	1250.	8.651752E-01	8.903464E-01	9.805173E-01		1.371187E 00	
	1500.	8.400918E-01	8.689180E-01	9.770282E-01		1.626288E 00	
	1750.	8.156168E-01	8.479318E-01	9.736064E-01		1.873204E 00	
	2000.	7.917404E-01	8.271984E-01	9.702276E-01		2.118030E 00	
	2250.	7.684522E-01	8.068170E-01	9.668684E-01		2.354874E 00	
	2500.	7.457414E-01	7.868083E-01	9.635081E-01		2.583847E 00	
	2750.	7.235966E-01	7.671889E-01	9.601285E-01		2.811063E 00	
	3000.	7.020062E-01	7.479694E-01	9.567111E-01		3.030648E 00	
	3250.	6.809584E-01	7.291594E-01	9.532424E-01		3.244695E 00	
	3500.	6.604414E-01	7.107640E-01	9.497087E-01		3.453360E 00	
	3750.	6.404433E-01	6.927848E-01	9.460984E-01		3.656744E 00	
	4000.	6.209521E-01	6.752218E-01	9.424018E-01		3.854972E 00	
	4250.	6.019760E-01	6.580724E-01	9.386107E-01		4.048165E 00	
	4500.	5.834433E-01	6.413320E-01	9.347185E-01		4.236422E 00	
	4750.	5.654026E-01	6.249947E-01	9.307199E-01		4.419919E 00	
	5000.	5.478224E-01	6.090305E-01	9.266113E-01		4.598712E 00	
	5250.	5.306917E-01	5.934983E-01	9.223902E-01		4.775934E 00	
	5500.	5.139997E-01	5.783209E-01	9.180556E-01		4.942694E 00	
	5750.	4.977358E-01	5.635107E-01	9.136076E-01		5.108160E 00	
	6000.	4.818898E-01	5.490567E-01	9.090474E-01		5.269256E 00	
	6250.	4.664518E-01	5.349477E-01	9.043780E-01		5.426229E 00	
	6500.	4.514122E-01	5.211721E-01	8.996021E-01		5.579218E 00	
	6750.	4.367615E-01	5.077181E-01	8.947246E-01		5.728217E 00	
	7000.	4.224910E-01	4.945740E-01	8.897507E-01		5.873351E 00	
	7250.	4.085919E-01	4.817281E-01	8.846867E-01		6.014707E 00	
	7500.	3.950585E-01	4.691687E-01	8.795396E-01		6.152371E 00	
	7750.	3.818748E-01	4.568846E-01	8.743172E-01		6.286423E 00	
	8000.	3.690412E-01	4.448647E-01	8.690277E-01		6.416943E 00	
	8250.	3.565476E-01	4.330920E-01	8.636803E-01		6.544005E 00	
	8500.	3.443867E-01	4.215748E-01	8.582845E-01		6.667683E 00	
	8750.	3.325518E-01	4.102847E-01	8.528498E-01		6.788459E 00	
	9000.	3.210367E-01	3.992185E-01	8.473871E-01		6.905160E 00	
	9250.	3.098338E-01	3.883674E-01	8.419062E-01		7.019091E 00	
	9500.	2.989383E-01	3.777230E-01	8.364197E-01		7.129900E 00	
	9750.	2.883438E-01	3.672776E-01	8.309369E-01		7.237647E 00	
	10000.	2.780446E-01	3.570240E-01	8.254693E-01		7.342391E 00	
	10250.	2.680354E-01	3.469556E-01	8.200281E-01		7.444187E 00	
	10500.	2.583107E-01	3.370665E-01	8.146240E-01		7.543089E 00	
	10750.	2.488653E-01	3.275136E-01	8.092677E-01		7.639169E 00	
	11000.	2.396538E-01	3.180138E-01	8.036004E-01		7.732832E 00	
	11250.	2.307404E-01	3.086391E-01	7.978293E-01		7.823482E 00	
	11500.	2.220970E-01	2.994094E-01	7.919393E-01		7.911401E 00	
	11750.	2.137152E-01	2.903221E-01	7.861355E-01		7.996631E 00	
	12000.	2.055964E-01	2.813756E-01	7.802447E-01		8.079219E 00	
	12250.	1.977296E-01	2.725689E-01	7.745120E-01		8.159207E 00	
	12500.	1.901155E-01	2.639018E-01	7.689250E-01		8.236643E 00	
	12750.	1.827480E-01	2.553746E-01	7.635885E-01		8.311572E 00	
	13000.	1.756225E-01	2.469882E-01	7.584112E-01		8.384040E 00	
	13250.	1.687343E-01	2.387441E-01	7.534573E-01		8.454094E 00	
	13500.	1.620788E-01	2.306439E-01	7.487319E-01		8.521781E 00	
	13750.	1.556514E-01	2.226901E-01	7.442473E-01		8.587149E 00	
	14000.	1.494474E-01	2.148849E-01	7.400151E-01		8.650244E 00	
	14250.	1.434621E-01	2.072312E-01	7.360459E-01		8.711115E 00	
	14500.	1.376909E-01	1.997319E-01	7.323495E-01		8.769810E 00	
	14750.	1.321289E-01	1.923401E-01	7.289342E-01		8.826376E 00	
	15000.	1.267715E-01	1.852087E-01	7.257821E-01		8.880813E 00	
	15250.	1.216139E-01	1.781910E-01	7.228779E-01		8.933314E 00	
	15500.	1.166514E-01	1.713399E-01	7.201892E-01		8.983784E 00	
	15750.	1.118793E-01	1.646458E-01	7.176252E-01		9.032317E 00	
	16000.	1.072928E-01	1.581491E-01	7.153092E-01		9.078963E 00	
	16250.	1.028872E-01	1.518144E-01	7.132452E-01		9.123788E 00	
	16500.	9.865792E-02	1.456575E-01	7.114092E-01		9.166781E 00	
	16750.	9.460013E-02	1.396194E-01	7.097291E-01		9.208049E 00	
	17000.	9.070924E-02	1.338224E-01	7.082483E-01		9.247620E 00	
	17250.	8.698065E-02	1.282676E-01	7.069348E-01		9.285541E 00	
	17500.	8.340977E-02	1.229382E-01	7.057832E-01		9.321857E 00	
	17750.	7.999207E-02	1.177889E-01	7.047606E-01	2.896440E 01	9.356615E 00	

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
18000.	7.8097365E-01	2.0530313E 02	2.0530313E 02	1.3239218E-01	1.0261471E-04	1.3585386E-05	2.8723862E 02
18250.	7.4940996E-01	2.0591008E 02	2.0591008E 02	1.2669197E-01	1.0753477E-04	1.3619491E-05	2.8766290E 02
18500.	7.1920093E-01	2.0652754E 02	2.0652754E 02	1.2117497E-01	1.1268123E-04	1.3654144E-05	2.8809388E 02
18750.	6.9028297E-01	2.0715785E 02	2.0715785E 02	1.1594899E-01	1.1806259E-04	1.3689238E-05	2.8853025E 02
19000.	6.6260092E-01	2.0778667E 02	2.0778667E 02	1.1096236E-01	1.2368766E-04	1.3724675E-05	2.8897076E 02
19250.	6.3609886E-01	2.0842488E 02	2.0842488E 02	1.0620395E-01	1.2956538E-04	1.3760356E-05	2.8941420E 02
19500.	6.1072356E-01	2.0906699E 02	2.0906699E 02	1.0166309E-01	1.3570500E-04	1.3796191E-05	2.8985945E 02
19750.	5.8642544E-01	2.0971051E 02	2.0971051E 02	9.7329618E-02	1.4211596E-04	1.3832092E-05	2.9030542E 02
20000.	5.6315652E-01	2.1035486E 02	2.1035486E 02	9.3193799E-02	1.4886793E-04	1.3867977E-05	2.9075100E 02
20250.	5.4087104E-01	2.1099934E 02	2.1099934E 02	8.9246359E-02	1.5579085E-04	1.3903766E-05	2.9119544E 02
20500.	5.1952558E-01	2.1163959E 02	2.1163959E 02	8.5478435E-02	1.6307487E-04	1.3939385E-05	2.9163759E 02
20750.	4.9907848E-01	2.1227735E 02	2.1227735E 02	8.1881557E-02	1.7067049E-04	1.3974765E-05	2.9207668E 02
21000.	4.7949016E-01	2.1291042E 02	2.1291042E 02	7.8447674E-02	1.7858834E-04	1.4009840E-05	2.9251188E 02
21250.	4.6072266E-01	2.1353768E 02	2.1353768E 02	7.5169075E-02	1.8683947E-04	1.4044550E-05	2.9294246E 02
21500.	4.4379892E-01	2.1415899E 02	2.1415899E 02	7.2038914E-02	1.9543515E-04	1.4078838E-05	2.9336769E 02
21750.	4.2850730E-01	2.1477067E 02	2.1477067E 02	6.9048699E-02	2.0438693E-04	1.4112651E-05	2.9378698E 02
22000.	4.0899191E-01	2.1537455E 02	2.1537455E 02	6.6193250E-02	2.1370675E-04	1.4145946E-05	2.9419972E 02
22250.	3.9316222E-01	2.1596891E 02	2.1596891E 02	6.3465926E-02	2.2340689E-04	1.4178673E-05	2.9460538E 02
22500.	3.7798811E-01	2.1655302E 02	2.1655302E 02	6.0859976E-02	2.3349933E-04	1.4210800E-05	2.9500350E 02
22750.	3.6344091E-01	2.1712624E 02	2.1712624E 02	5.8370312E-02	2.4399890E-04	1.4242292E-05	2.9539368E 02
23000.	3.4949306E-01	2.1768800E 02	2.1768800E 02	5.5991186E-02	2.5491726E-04	1.4273120E-05	2.9577557E 02
23250.	3.3611832E-01	2.1823781E 02	2.1823781E 02	5.3717368E-02	2.6626877E-04	1.4303258E-05	2.9614885E 02
23500.	3.2329168E-01	2.1877527E 02	2.1877527E 02	5.1543851E-02	2.7806785E-04	1.4332608E-05	2.9651329E 02
23750.	3.1098904E-01	2.1930008E 02	2.1930008E 02	4.9465870E-02	2.9032938E-04	1.4361396E-05	2.9686872E 02
24000.	2.9918759E-01	2.1981200E 02	2.1981200E 02	4.7478898E-02	3.0306874E-04	1.4389370E-05	2.9721502E 02
24250.	2.8786539E-01	2.2031091E 02	2.2031091E 02	4.5578615E-02	3.1630195E-04	1.4416605E-05	2.9755122E 02
24500.	2.7700151E-01	2.2079671E 02	2.2079671E 02	4.3760915E-02	3.3004564E-04	1.4443099E-05	2.9788000E 02
24750.	2.6657591E-01	2.2126948E 02	2.2126948E 02	4.2021881E-02	3.4431725E-04	1.4468859E-05	2.9819874E 02
25000.	2.5656950E-01	2.2172934E 02	2.2172934E 02	4.0357794E-02	3.5913489E-04	1.4493892E-05	2.9850844E 02
25250.	2.4696393E-01	2.2217646E 02	2.2217646E 02	3.8765104E-02	3.7451754E-04	1.4518211E-05	2.9880929E 02
25500.	2.3774181E-01	2.2261124E 02	2.2261124E 02	3.7240437E-02	3.9048512E-04	1.4541836E-05	2.9910150E 02
25750.	2.2888635E-01	2.2303400E 02	2.2303400E 02	3.5780583E-02	4.0705849E-04	1.4564790E-05	2.9938538E 02
26000.	2.2038159E-01	2.2344526E 02	2.2344526E 02	3.4382489E-02	4.2425962E-04	1.4587102E-05	2.9966127E 02
26250.	2.1221229E-01	2.2384560E 02	2.2384560E 02	3.3043241E-02	4.4211172E-04	1.4608804E-05	2.9992941E 02
26500.	2.0436382E-01	2.2423573E 02	2.2423573E 02	3.1760075E-02	4.6039214E-04	1.4629936E-05	3.0019086E 02
26750.	1.9682221E-01	2.2461640E 02	2.2461640E 02	3.0530360E-02	4.7986792E-04	1.4650541E-05	3.0044596E 02
27000.	1.8957414E-01	2.2498853E 02	2.2498853E 02	2.9351587E-02	4.9982535E-04	1.4670667E-05	3.0069433E 02
27250.	1.8262086E-01	2.2535303E 02	2.2535303E 02	2.8221373E-02	5.2054052E-04	1.4690368E-05	3.0093780E 02
27500.	1.7590816E-01	2.2571105E 02	2.2571105E 02	2.7137454E-02	5.4204438E-04	1.4709705E-05	3.0117677E 02
27750.	1.6946643E-01	2.2606372E 02	2.2606372E 02	2.6097671E-02	5.6436988E-04	1.4728740E-05	3.0141197E 02
28000.	1.6327363E-01	2.2641885E 02	2.2641885E 02	2.5119029E-02	5.8716331E-04	1.4747489E-05	3.0164194E 02
28250.	1.5729223E-01	2.2677720E 02	2.2677720E 02	2.4141415E-02	6.1214233E-04	1.4777982E-05	3.0202032E 02
28500.	1.5154519E-01	2.2715673E 02	2.2715673E 02	2.3204199E-02	6.3811838E-04	1.4807026E-05	3.0237907E 02
28750.	1.4602273E-01	2.2805774E 02	2.2805774E 02	2.2300596E-02	6.6513066E-04	1.4836119E-05	3.0273836E 02
29000.	1.4071528E-01	2.2860044E 02	2.2860044E 02	2.1443810E-02	6.9371970E-04	1.4865272E-05	3.0309836E 02
29250.	1.3561394E-01	2.2914508E 02	2.2914508E 02	2.0617288E-02	7.2242759E-04	1.4894498E-05	3.0345920E 02
29500.	1.3071014E-01	2.2969187E 02	2.2969187E 02	1.9824461E-02	7.5279778E-04	1.4923810E-05	3.0382105E 02
29750.	1.2599566E-01	2.3024104E 02	2.3024104E 02	1.9063850E-02	7.8437554E-04	1.4953217E-05	3.0418403E 02
30000.	1.2146271E-01	2.3079274E 02	2.3079274E 02	1.8336060E-02	8.1720744E-04	1.4982730E-05	3.0454826E 02
30250.	1.1710385E-01	2.3134718E 02	2.3134718E 02	1.7633751E-02	8.5134225E-04	1.5012357E-05	3.0491385E 02
30500.	1.1291193E-01	2.3190450E 02	2.3190450E 02	1.6961662E-02	8.8682977E-04	1.5042107E-05	3.0528090E 02
30750.	1.0888012E-01	2.3246485E 02	2.3246485E 02	1.6316577E-02	9.2372233E-04	1.5071986E-05	3.0564950E 02
31000.	1.0500195E-01	2.3302838E 02	2.3302838E 02	1.5697349E-02	9.6207348E-04	1.5102004E-05	3.0601975E 02
31250.	1.0127118E-01	2.3359519E 02	2.3359519E 02	1.5102878E-02	1.0019389E-03	1.5132162E-05	3.0639170E 02
31500.	9.7681867E-02	2.3416537E 02	2.3416537E 02	1.4532122E-02	1.0433760E-03	1.5162468E-05	3.0676541E 02
31750.	9.4228337E-02	2.3473934E 02	2.3473934E 02	1.3984082E-02	1.0864443E-03	1.5192926E-05	3.0714094E 02
32000.	9.0905080E-02	2.3531626E 02	2.3531626E 02	1.3457974E-02	1.1312058E-03	1.5223539E-05	3.0751834E 02
32250.	8.7706975E-02	2.3589704E 02	2.3589704E 02	1.2952372E-02	1.1772321E-03	1.5254309E-05	3.0789762E 02
32500.	8.4628981E-02	2.3648155E 02	2.3648155E 02	1.2466932E-02	1.2260625E-03	1.5285238E-05	3.0827881E 02
32750.	8.1666349E-02	2.3706971E 02	2.3706971E 02	1.2000652E-02	1.2762913E-03	1.5316328E-05	3.0866194E 02
33000.	7.8814489E-02	2.3766155E 02	2.3766155E 02	1.1552737E-02	1.3284798E-03	1.5347578E-05	3.0904698E 02
33250.	7.6068993E-02	2.3825710E 02	2.3825710E 02	1.1122427E-02	1.3827008E-03	1.5378989E-05	3.0943396E 02
33500.	7.3425727E-02	2.3885632E 02	2.3885632E 02	1.0709009E-02	1.4390274E-03	1.5410507E-05	3.0982283E 02
33750.	7.0883683E-02	2.3945918E 02	2.3945918E 02	1.0311789E-02	1.4975367E-03	1.5442282E-05	3.1021357E 02
34000.	6.8429914E-02	2.4006563E 02	2.4006563E 02	9.9301028E-03	1.5583081E-03	1.5474160E-05	3.1060615E 02
34250.	6.6069812E-02	2.4067563E 02	2.4067563E 02	9.5633194E-03	1.6214230E-03	1.5506187E-05	3.1100052E 02
34500.	6.3796784E-02	2.4128910E 02	2.4128910E 02	9.2108314E-03	1.6869660E-03	1.5539359E-05	3.1139663E 02
34750.	6.1607495E-02	2.4190591E 02	2.4190591E 02	8.8720665E-03	1.7550219E-03	1.5570671E-05	3.1179440E 02
35000.	5.9498632E-02	2.4252600E 02	2.4252600E 02	8.5466450E-03	1.8256808E-03	1.5603116E-05	3.1219375E 02
35250.	5.7467108E-02	2.4314924E 02	2.4314924E 02	8.2334940E-03	1.8990343E-03	1.5635687E-05	3.1259463E 02
35500.	5.5509918E-02	2.4377545E 02	2.4377545E 02	7.9326513E-03	1.9751751E-03	1.5668377E-05	3.1299690E 02
35750.	5.3624192E-02	2.4440454E 02	2.4440454E 02	7.6434488E-03	2.0542013E-03	1.5701179E-05	3.1340058E 02

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters					
18000.	7.6790792E-02	1.1186054E-01	7.4227225E-03	2.8964400E 01	9.3891735E 00
18250.	7.3687228E-02	1.0701054E-01	7.4413570E-03		9.4207371E 00
18500.	7.0716777E-02	1.0238292E-01	7.4602904E-03		9.4509470E 00
18750.	6.7873449E-02	9.7967392E-02	7.4794650E-03		9.4798651E 00
19000.	6.5151556E-02	9.3754101E-02	7.4988266E-03		9.5075462E 00
19250.	6.2545671E-02	8.9733634E-02	7.5183217E-03		9.5340404E 00
19500.	6.0050611E-02	8.5896982E-02	7.5379012E-03		9.5594236E 00
19750.	5.7661451E-02	8.2235550E-02	7.5575169E-03		9.5837216E 00
20000.	5.5373487E-02	7.8741122E-02	7.5771233E-03		9.6069906E 00
20250.	5.3182223E-02	7.5605859E-02	7.5966776E-03		9.6292760E 00
20500.	5.1083388E-02	7.2222272E-02	7.6161389E-03		9.6506215E 00
20750.	4.9072807E-02	6.9183205E-02	7.6354699E-03		9.6710687E 00
21000.	4.7146826E-02	6.6281855E-02	7.6546340E-03		9.6906570E 00
21250.	4.5301473E-02	6.3511708E-02	7.6735986E-03		9.7094245E 00
21500.	4.3533282E-02	6.0866556E-02	7.6923244E-03		9.7274072E 00
21750.	4.1838853E-02	5.8340492E-02	7.7108074E-03		9.7446394E 00
22000.	4.0214945E-02	5.5927871E-02	7.7289979E-03		9.7611552E 00
22250.	3.8658459E-02	5.3623308E-02	7.7468801E-03		9.7769840E 00
22500.	3.7166434E-02	5.1421692E-02	7.7644337E-03		9.7921590E 00
22750.	3.5736052E-02	4.9318132E-02	7.7816400E-03		9.8067822E 00
23000.	3.4364600E-02	4.7307963E-02	7.7984835E-03		9.8206540E 00
23250.	3.3049504E-02	4.5386774E-02	7.8149503E-03		9.8340280E 00
23500.	3.1788299E-02	4.3550330E-02	7.8310302E-03		9.8468554E 00
23750.	3.0578617E-02	4.1794606E-02	7.8467152E-03		9.8591580E 00
24000.	2.9418216E-02	4.0115778E-02	7.8619996E-03		9.8709595E 00
24250.	2.8304938E-02	3.8510194E-02	7.8768802E-03		9.8822818E 00
24500.	2.7236725E-02	3.6974387E-02	7.8913562E-03		9.8931456E 00
24750.	2.6211607E-02	3.550504 E-02	7.9054306E-03		9.9035712E 00
25000.	2.5227707E-02	3.4099128E-02	7.9191080E-03		9.9135777E 00
25250.	2.4283220E-02	3.2753335E-02	7.9323955E-03		9.9231832E 00
25500.	2.3376438E-02	3.1465117E-02	7.9453037E-03		9.9324054E 00
25750.	2.2505707E-02	3.0231640E-02	7.9578452E-03		9.9412608E 00
26000.	2.1669459E-02	2.9050386E-02	7.9700357E-03		9.9497456E 00
26250.	2.0866196E-02	2.7918830E-02	7.9818932E-03		9.9578549E 00
26500.	2.0094489E-02	2.6834661E-02	7.9934393E-03		9.9655734E 00
26750.	1.9352936E-02	2.5795642E-02	8.0046970E-03		9.9733249E 00
27000.	1.8640255E-02	2.4799686E-02	8.0156938E-03		9.9805729E 00
27250.	1.7955183E-02	2.3844747E-02	8.0264578E-03		9.9874022E 00
27500.	1.7296520E-02	2.2928925E-02	8.0370228E-03		9.9937300E 00
27750.	1.6663121E-02	2.2050393E-02	8.0474230E-03		1.0000681E 01
28000.	1.6054205E-02	2.1223521E-02	8.0584776E-03		1.0068073E 01
28250.	1.5466069E-02	2.0439751E-02	8.0743278E-03		1.0128555E 01
28500.	1.4900983E-02	1.9695466E-02	8.0901966E-03		1.0186022E 01
28750.	1.4357973E-02	1.8986378E-02	8.1060922E-03		1.0241129E 01
29000.	1.3836110E-02	1.8318262E-02	8.1220207E-03		1.0294322E 01
29250.	1.3334511E-02	1.7689199E-02	8.1379894E-03		1.0345533E 01
29500.	1.2852335E-02	1.6750045E-02	8.1540048E-03		1.0394372E 01
29750.	1.2388774E-02	1.6107391E-02	8.1700722E-03		1.0441512E 01
30000.	1.1943065E-02	1.5490778E-02	8.1861973E-03		1.0486844E 01
30250.	1.1514467E-02	1.4899074E-02	8.2023848E-03		1.0530432E 01
30500.	1.1102290E-02	1.4331214E-02	8.2186393E-03		1.0572352E 01
30750.	1.0705855E-02	1.3786170E-02	8.2349647E-03		1.0612674E 01
31000.	1.0324527E-02	1.3262973E-02	8.2513652E-03		1.0651452E 01
31250.	9.9576907E-03	1.2760694E-02	8.2678432E-03		1.0688762E 01
31500.	9.6047645E-03	1.2278452E-02	8.2844017E-03		1.0724465E 01
31750.	9.2651891E-03	1.1815403E-02	8.3010430E-03		1.0759192E 01
32000.	8.9384232E-03	1.1370735E-02	8.3177692E-03		1.0792422E 01
32250.	8.6239631E-03	1.0943693E-02	8.3345811E-03		1.0824400E 01
32500.	8.3213134E-03	1.0533536E-02	8.3514802E-03		1.0855182E 01
32750.	8.0300065E-03	1.0133467E-02	8.3684671E-03		1.0884812E 01
33000.	7.7495918E-03	9.7611161E-03	8.3855411E-03		1.0913322E 01
33250.	7.4796354E-03	9.3975394E-03	8.4027032E-03		1.0940782E 01
33500.	7.2197310E-03	9.0482346E-03	8.4199516E-03		1.0967212E 01
33750.	6.9694821E-03	8.7126163E-03	8.4372852E-03		1.0992664E 01
34000.	6.7285077E-03	8.3901230E-03	8.4547024E-03		1.0101717E 01
34250.	6.4964459E-03	8.0802215E-03	8.4722012E-03		1.0104077E 01
34500.	6.2729460E-03	7.7823777E-03	8.4897795E-03		1.0106330E 01
34750.	6.0576797E-03	7.4961690E-03	8.5074338E-03		1.0108539E 01
35000.	5.8503222E-03	7.2210616E-03	8.5251606E-03		1.0110648E 01
35250.	5.6505679E-03	6.9566277E-03	8.5429571E-03		1.0112680E 01
35500.	5.4581233E-03	6.7024403E-03	8.5608178E-03		1.0114637E 01
35750.	5.2727056E-03	6.4580862E-03	8.5787399E-03	2.8964400E 01	1.0116529E 01

MOLECULAR WEIGHT CONSTANT TO 50,000 METERS

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
36000.	5.1807184E-02	2.4503625E 02	2.4503628E 02	7.3654170E-03	2.1362103E-03	1.5734080E-05	3.1380529E 02
36250.	5.0056223E-02	2.456705E 02	2.4567052E 02	7.0981041E-03	2.2213063E-03	1.5747073E-05	3.1421114E 02
36500.	4.8368751E-02	2.4630706E 02	2.4630706E 02	6.8410974E-03	2.3095922E-03	1.5800146E-05	3.1461794E 02
36750.	4.6742370E-02	2.4694566E 02	2.4694566E 02	6.5937717E-03	2.4011762E-03	1.5833288E-05	3.1502593E 02
37000.	4.5176757E-02	2.475861E 02	2.4758610E 02	6.3563430E-03	2.4961657E-03	1.5866486E-05	3.1543376E 02
37250.	4.3663511E-02	2.4822817E 02	2.4822817E 02	6.1278247E-03	2.5946774E-03	1.5899729E-05	3.1584251E 02
37500.	4.2206814E-02	2.4887154E 02	2.4887154E 02	5.9080626E-03	2.6968231E-03	1.5933000E-05	3.1625156E 02
37750.	4.0802266E-02	2.4951598E 02	2.4951598E 02	5.6967042E-03	2.8027235E-03	1.5966287E-05	3.1666075E 02
38000.	3.9447995E-02	2.5016116E 02	2.5016116E 02	5.4934199E-03	2.9124978E-03	1.5999574E-05	3.1706989E 02
38250.	3.8142081E-02	2.5080680E 02	2.5080680E 02	5.2978887E-03	3.0262704E-03	1.6032846E-05	3.1747878E 02
38500.	3.6882693E-02	2.5145250E 02	2.5145250E 02	5.1098048E-03	3.1446173E-03	1.6066081E-05	3.1788723E 02
38750.	3.5668057E-02	2.5209809E 02	2.5209809E 02	4.9288731E-03	3.2663182E-03	1.6099269E-05	3.1829501E 02
39000.	3.4496486E-02	2.5274305E 02	2.5274305E 02	4.7548124E-03	3.3928543E-03	1.6132386E-05	3.1870190E 02
39250.	3.3366343E-02	2.5338705E 02	2.5338705E 02	4.5873508E-03	3.5239111E-03	1.6165417E-05	3.1910768E 02
39500.	3.2276080E-02	2.5402967E 02	2.5402967E 02	4.4262311E-03	3.6596231E-03	1.6198338E-05	3.1951207E 02
39750.	3.1224165E-02	2.5467356E 02	2.5467356E 02	4.2711993E-03	3.8001346E-03	1.6231132E-05	3.1991487E 02
40000.	3.0209180E-02	2.5530928E 02	2.5530928E 02	4.1220200E-03	3.9455843E-03	1.6263778E-05	3.2031579E 02
40250.	2.9229723E-02	2.5594537E 02	2.5594537E 02	3.9784617E-03	4.0961187E-03	1.6296252E-05	3.2071457E 02
40500.	2.8284457E-02	2.5657837E 02	2.5657837E 02	3.8403036E-03	4.2518854E-03	1.6328551E-05	3.2111092E 02
40750.	2.7372115E-02	2.5720782E 02	2.5720782E 02	3.7073359E-03	4.4130322E-03	1.6360593E-05	3.2150456E 02
41000.	2.6491424E-02	2.5783324E 02	2.5783324E 02	3.5793500E-03	4.5797177E-03	1.6392412E-05	3.2189520E 02
41250.	2.5641234E-02	2.5845410E 02	2.5845410E 02	3.4561553E-03	4.7520915E-03	1.6423966E-05	3.2228253E 02
41500.	2.4820392E-02	2.5906989E 02	2.5906989E 02	3.3375629E-03	4.9303122E-03	1.6455227E-05	3.2266623E 02
41750.	2.4027806E-02	2.5968005E 02	2.5968005E 02	3.2239391E-03	5.1145384E-03	1.6486168E-05	3.2304598E 02
42000.	2.3262411E-02	2.6028407E 02	2.6028407E 02	3.1134715E-03	5.3049350E-03	1.6516764E-05	3.2342147E 02
42250.	2.2523202E-02	2.6088134E 02	2.6088134E 02	3.0076332E-03	5.5016637E-03	1.6546987E-05	3.2379233E 02
42500.	2.1809203E-02	2.6147127E 02	2.6147127E 02	2.9057187E-03	5.7048901E-03	1.6576806E-05	3.2415822E 02
42750.	2.1119469E-02	2.6205329E 02	2.6205329E 02	2.8075733E-03	5.9147859E-03	1.6606195E-05	3.2451880E 02
43000.	2.0453115E-02	2.6262673E 02	2.6262673E 02	2.7130530E-03	6.1315131E-03	1.6635121E-05	3.2487367E 02
43250.	1.9809245E-02	2.6319098E 02	2.6319098E 02	2.6220120E-03	6.3552547E-03	1.6663554E-05	3.2522247E 02
43500.	1.9187063E-02	2.6374536E 02	2.6374536E 02	2.5343198E-03	6.5861708E-03	1.6691463E-05	3.2556482E 02
43750.	1.8585732E-02	2.6428923E 02	2.6428923E 02	2.4498413E-03	6.8244486E-03	1.6718816E-05	3.2590032E 02
44000.	1.8004513E-02	2.6482185E 02	2.6482185E 02	2.3684559E-03	7.0702506E-03	1.6745577E-05	3.2622854E 02
44250.	1.7442635E-02	2.6534256E 02	2.6534256E 02	2.2900392E-03	7.3237678E-03	1.6771716E-05	3.2654911E 02
44500.	1.6899401E-02	2.6585060E 02	2.6585060E 02	2.2144782E-03	7.5851708E-03	1.6797196E-05	3.2686158E 02
44750.	1.6374120E-02	2.6634524E 02	2.6634524E 02	2.1416613E-03	7.8546414E-03	1.6821981E-05	3.2716551E 02
45000.	1.5866134E-02	2.6682574E 02	2.6682574E 02	2.0714819E-03	8.1323606E-03	1.6846038E-05	3.2746049E 02
45250.	1.5374807E-02	2.6729129E 02	2.6729129E 02	2.0038380E-03	8.4185084E-03	1.6869327E-05	3.2774604E 02
45500.	1.4899529E-02	2.6774109E 02	2.6774109E 02	1.9386315E-03	8.7132488E-03	1.6891810E-05	3.2802169E 02
45750.	1.4439711E-02	2.6817436E 02	2.6817436E 02	1.8757674E-03	9.0168161E-03	1.6913450E-05	3.2828699E 02
46000.	1.3994781E-02	2.6859025E 02	2.6859025E 02	1.8151546E-03	9.3293467E-03	1.6934206E-05	3.2854145E 02
46250.	1.3564215E-02	2.6898792E 02	2.6898792E 02	1.7567042E-03	9.6510271E-03	1.6954039E-05	3.2878458E 02
46500.	1.3147466E-02	2.6936653E 02	2.6936653E 02	1.7003416E-03	9.9820579E-03	1.6972909E-05	3.2901589E 02
46750.	1.2744086E-02	2.6972512E 02	2.6972512E 02	1.6459792E-03	1.0322590E-02	1.6990770E-05	3.2923481E 02
47000.	1.2353487E-02	2.7006288E 02	2.7006288E 02	1.5935380E-03	1.0672843E-02	1.7007582E-05	3.2944089E 02
47250.	1.1975290E-02	2.7037884E 02	2.7037884E 02	1.5429432E-03	1.1032976E-02	1.7023301E-05	3.2963355E 02
47500.	1.1609022E-02	2.7067210E 02	2.7067210E 02	1.4943135E-03	1.1403173E-02	1.7037882E-05	3.2981226E 02
47750.	1.1254254E-02	2.7094166E 02	2.7094166E 02	1.4470338E-03	1.1783607E-02	1.7051279E-05	3.2997645E 02
48000.	1.0910568E-02	2.7118660E 02	2.7118660E 02	1.4015768E-03	1.2174463E-02	1.7063446E-05	3.3012557E 02
48250.	1.0575700E-02	2.7140590E 02	2.7140590E 02	1.3577018E-03	1.2575910E-02	1.7074335E-05	3.3025902E 02
48500.	1.0254871E-02	2.7159857E 02	2.7159857E 02	1.3153475E-03	1.2988126E-02	1.7083899E-05	3.3037623E 02
48750.	9.9421220E-03	2.7176355E 02	2.7176355E 02	1.2744583E-03	1.3411255E-02	1.7092086E-05	3.3047655E 02
49000.	9.6365027E-03	2.7187674E 02	2.7187674E 02	1.2346767E-03	1.3846901E-02	1.7097701E-05	3.3054537E 02
49250.	9.3444532E-03	2.7195862E 02	2.7195862E 02	1.1962240E-03	1.4252440E-02	1.7103316E-05	3.3060908E 02
49500.	9.0608503E-03	2.7202060E 02	2.7202060E 02	1.1596434E-03	1.4668753E-02	1.7108039E-05	3.3066858E 02
49750.	8.7854333E-03	2.7205394E 02	2.7205394E 02	1.1249526E-03	1.5096144E-02	1.7111889E-05	3.3071939E 02
50000.	8.5180215E-03	2.72061178E 02	2.72061178E 02	1.0926534E-03	1.5534932E-02	1.7114883E-05	3.3077550E 02
50250.	8.2583286E-03	2.7205298E 02	2.7205298E 02	1.0625333E-03	1.5985440E-02	1.7117040E-05	3.3082881E 02
50500.	8.0061513E-03	2.6987793E 02	2.6987793E 02	1.0336612E-03	1.6448006E-02	1.6998377E-05	3.2932405E 02
50750.	7.7612761E-03	2.6948699E 02	2.6948699E 02	1.0033052E-03	1.6922975E-02	1.6978910E-05	3.2908944E 02
51000.	7.5234920E-03	2.6908057E 02	2.6908057E 02	9.7403572E-04	1.7410715E-02	1.6958658E-05	3.2884119E 02
51250.	7.2925984E-03	2.6866950E 02	2.6866950E 02	9.4562420E-04	1.7911596E-02	1.6937638E-05	3.2858353E 02
51500.	7.0680373E-03	2.6822277E 02	2.6822277E 02	9.1804309E-04	1.8426005E-02	1.6915866E-05	3.2831662E 02
51750.	6.8506990E-03	2.6777211E 02	2.6777211E 02	8.9126533E-04	1.8954342E-02	1.6893359E-05	3.2804069E 02
52000.	6.639197E-03	2.6730745E 02	2.6730745E 02	8.6526723E-04	1.9497023E-02	1.6870136E-05	3.2775595E 02
52250.	6.4340792E-03	2.6682914E 02	2.6682914E 02	8.4002234E-04	2.0054474E-02	1.6846209E-05	3.2746258E 02
52500.	6.2348041E-03	2.6633759E 02	2.6633759E 02	8.1550777E-04	2.0627146E-02	1.6821598E-05	3.2716081E 02
52750.	6.0413253E-03	2.6583313E 02	2.6583313E 02	7.9110090E-04	2.1215500E-02	1.6796320E-05	3.2685084E 02
53000.	5.8534791E-03	2.6531610E 02	2.6531610E 02	7.6657846E-04	2.1820008E-02	1.6770388E-05	3.2653283E 02
53250.	5.6711084E-03	2.6478688E 02	2.6478688E 02	7.4212072E-04	2.2441168E-02	1.6743821E-05	3.2620700E 02
53500.	5.4945539E-03	2.6424584E 02	2.6424584E 02	7.2430671E-04	2.3079496E-02	1.6716634E-05	3.2587356E 02
53750.	5.3221716E-03	2.6369328E 02	2.6369328E 02	7.0311693E-04	2.3735514E-02	1.6688842E-05	3.2553267E 02

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

	GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE	
	meters	unitless	unitless	unitless	unitless	newtons cm ⁻²	
	34000.	5.0440444E-03	4.2251737E-03	8.5947164E-01	2.8964300E 01	1.0118340E 01	
	36250.	4.8218735E-03	5.9923186E-03	8.6147428E-01		1.0120091E 01	
	36500.	4.7595399E-03	5.7801466E-03	8.6328131E-01		1.0121770E 01	
	36750.	4.5960367E-03	5.5713696E-03	8.6509210E-01		1.0123409E 01	
	37000.	4.4418980E-03	5.3705889E-03	8.6690596E-01		1.0124972E 01	
	37250.	4.2933116E-03	5.1775097E-03	8.6872227E-01		1.0126483E 01	
	37500.	4.1500491E-03	4.9918207E-03	8.7054015E-01		1.0127950E 01	
	37750.	4.0119641E-03	4.8132402E-03	8.7235887E-01		1.0129349E 01	
	38000.	3.8788028E-03	4.6444896E-03	8.7417755E-01		1.0130699E 01	
	38250.	3.7503962E-03	4.4762217E-03	8.7599536E-01		1.0132009E 01	
	38500.	3.6265643E-03	4.3179633E-03	8.7781137E-01		1.0133264E 01	
	38750.	3.5071328E-03	4.1644938E-03	8.7962642E-01		1.0134479E 01	
	39000.	3.3919357E-03	4.0174268E-03	8.8143409E-01		1.0135650E 01	
	39250.	3.2808122E-03	3.8759355E-03	8.8323800E-01		1.0136781E 01	
	39500.	3.1736099E-03	3.7398024E-03	8.8503755E-01		1.0137871E 01	
	39750.	3.0701783E-03	3.6088134E-03	8.8683298E-01		1.0138929E 01	
	40000.	2.9703779E-03	3.4827691E-03	8.8861902E-01		1.0139958E 01	
	40250.	2.8740708E-03	3.3614750E-03	8.9038732E-01		1.0140971E 01	
	40500.	2.7811256E-03	3.2447418E-03	8.9215099E-01		1.0141962E 01	
	40750.	2.6914178E-03	3.1323950E-03	8.9390275E-01		1.0142775E 01	
	41000.	2.6048221E-03	3.0242574E-03	8.9564131E-01		1.0143546E 01	
	41250.	2.5212255E-03	2.9201480E-03	8.9736534E-01		1.0144286E 01	
	41500.	2.4403152E-03	2.8199670E-03	8.9907334E-01		1.0144997E 01	
	41750.	2.36225819E-03	2.7235930E-03	9.0076388E-01		1.0145680E 01	
	42000.	2.2873230E-03	2.6306283E-03	9.0243558E-01		1.0146335E 01	
	42250.	2.2146388E-03	2.5412036E-03	9.0408866E-01		1.0146964E 01	
	42500.	2.1443333E-03	2.4550942E-03	9.0571612E-01		1.0147568E 01	
	42750.	2.0766138E-03	2.3721695E-03	9.0732185E-01		1.0148148E 01	
	43000.	2.0110933E-03	2.2923075E-03	9.0890229E-01		1.0148694E 01	
	43250.	1.9477835E-03	2.2153852E-03	9.1045582E-01		1.0149208E 01	
	43500.	1.8866062E-03	2.1412925E-03	9.1198669E-01		1.0149690E 01	
	43750.	1.8274791E-03	2.0699151E-03	9.1347519E-01		1.0150141E 01	
	44000.	1.7703296E-03	2.0011512E-03	9.1493738E-01		1.0150564E 01	
	44250.	1.7150819E-03	1.9348955E-03	9.1636553E-01		1.0150960E 01	
	44500.	1.6616672E-03	1.8710526E-03	9.1775768E-01		1.0151329E 01	
	44750.	1.6100180E-03	1.8095282E-03	9.1911191E-01		1.0151673E 01	
	45000.	1.5600692E-03	1.7502324E-03	9.2042631E-01		1.0152001E 01	
	45250.	1.5117585E-03	1.6930789E-03	9.2169874E-01		1.0152304E 01	
	45500.	1.4650259E-03	1.6379848E-03	9.2292717E-01		1.0152582E 01	
	45750.	1.4198133E-03	1.5848697E-03	9.2410953E-01		1.0152836E 01	
	46000.	1.3760647E-03	1.5336569E-03	9.2524362E-01		1.0153067E 01	
	46250.	1.3337285E-03	1.4842745E-03	9.2632723E-01		1.0153276E 01	
	46500.	1.2927508E-03	1.4366493E-03	9.2735821E-01		1.0153464E 01	
	46750.	1.2530856E-03	1.3907175E-03	9.2833408E-01		1.0153631E 01	
	47000.	1.2146813E-03	1.3464090E-03	9.2925265E-01		1.0153778E 01	
	47250.	1.1774943E-03	1.3036640E-03	9.3011150E-01		1.0153904E 01	
	47500.	1.1414802E-03	1.2624218E-03	9.3090819E-01		1.0154010E 01	
	47750.	1.1065970E-03	1.2226250E-03	9.3164015E-01		1.0154097E 01	
	48000.	1.0728034E-03	1.1842175E-03	9.3230493E-01		1.0154166E 01	
	48250.	1.0400607E-03	1.1471467E-03	9.3289990E-01		1.0154218E 01	
	48500.	1.0083307E-03	1.1113408E-03	9.3342245E-01		1.0154263E 01	
	48750.	9.7757896E-04	1.0768128E-03	9.3386776E-01		1.0154292E 01	
	49000.	9.4752835E-04	1.0432772E-03	9.3417698E-01		1.0154306E 01	
	49250.	9.1881199E-04	1.0127390E-03	9.3439058E-01		1.0154306E 01	
	49500.	8.9092617E-04	9.8311651E-04	9.3455870E-01		1.0154292E 01	
	49750.	8.6384722E-04	9.5637936E-04	9.3467968E-01		1.0154263E 01	
	50000.	8.3755145E-04	9.2649775E-04	9.3474435E-01		1.0154218E 01	
	50250.	8.1201663E-04	8.9944376E-04	9.2976943E-01		1.0154159E 01	
	50500.	7.8722080E-04	8.7319003E-04	9.2874972E-01		1.0154076E 01	
	50750.	7.6314294E-04	8.4771069E-04	9.2768611E-01		1.0153960E 01	
	51000.	7.3976235E-04	8.2298036E-04	9.2657958E-01		1.0153814E 01	
	51250.	7.1705927E-04	7.9897496E-04	9.2543113E-01		1.0153638E 01	
	51500.	6.9501426E-04	7.7567118E-04	9.2424153E-01		1.0153432E 01	
	51750.	6.7360863E-04	7.5304667E-04	9.2301184E-01		1.0153196E 01	
	52000.	6.5282434E-04	7.3107990E-04	9.2174293E-01		1.0152930E 01	
	52250.	6.3264366E-04	7.0975011E-04	9.2043562E-01		1.0152634E 01	
	52500.	6.1304954E-04	6.8903723E-04	9.1909096E-01		1.0152308E 01	
	52750.	5.9402935E-04	6.6892192E-04	9.1770933E-01		1.0151952E 01	
	53000.	5.7555500E-04	6.4938582E-04	9.1629300E-01		1.0151566E 01	
	53250.	5.5762286E-04	6.3041086E-04	9.1484141E-01		1.0151150E 01	
	53500.	5.4021380E-04	6.1197981E-04	9.1335599E-01		1.0150704E 01	
	53750.	5.2331136E-04	5.9407618E-04	9.1183751E-01	2.8964400E 01	1.0150228E 01	

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
54000.	5.1553137E-03	2.6312956E 02	2.6312956E 02	6.8253221E-04	2.4409778E-02	1.6660460E-05	3.2518452E 02
54250.	4.9933376E-03	2.6255596E 02	2.6255596E 02	6.6253418E-04	2.5102866E-02	1.6631507E-05	3.2482934E 02
54500.	4.8361787E-03	2.6197010E 02	2.6197010E 02	6.4310530E-04	2.5815361E-02	1.6601996E-05	3.2446728E 02
54750.	4.6834927E-03	2.6137502E 02	2.6137502E 02	6.2422839E-04	2.6547884E-02	1.6571943E-05	3.2409855E 02
55000.	4.5353597E-03	2.6077015E 02	2.6077015E 02	6.0588697E-04	2.7301070E-02	1.6541363E-05	3.2372332E 02
55250.	4.3915860E-03	2.6015581E 02	2.6015581E 02	5.8806537E-04	2.8075549E-02	1.6510270E-05	3.2334178E 02
55500.	4.2520468E-03	2.5953237E 02	2.5953237E 02	5.7074782E-04	2.8872090E-02	1.6478682E-05	3.2295411E 02
55750.	4.1166255E-03	2.5890011E 02	2.5890011E 02	5.5391979E-04	2.9691323E-02	1.6446611E-05	3.2256049E 02
56000.	3.9852059E-03	2.5825934E 02	2.5825934E 02	5.376684E-04	3.0534011E-02	1.6414072E-05	3.2216108E 02
56250.	3.8576765E-03	2.5761043E 02	2.5761043E 02	5.2167510E-04	3.1400924E-02	1.6381081E-05	3.2175609E 02
56500.	3.7339278E-03	2.5695369E 02	2.5695369E 02	5.0623109E-04	3.2292855E-02	1.6347652E-05	3.2134569E 02
56750.	3.6138545E-03	2.5628940E 02	2.5628940E 02	4.9112195E-04	3.3210649E-02	1.6313800E-05	3.2093004E 02
57000.	3.4973535E-03	2.5561786E 02	2.5561786E 02	4.763518E-04	3.4155129E-02	1.6279536E-05	3.2050931E 02
57250.	3.3843247E-03	2.5493941E 02	2.5493941E 02	4.6245854E-04	3.5127209E-02	1.6244878E-05	3.2008368E 02
57500.	3.2746712E-03	2.5425435E 02	2.5425435E 02	4.4936803E-04	3.6127810E-02	1.6209839E-05	3.1965335E 02
57750.	3.1682985E-03	2.5356290E 02	2.5356290E 02	4.3528944E-04	3.7157872E-02	1.6174430E-05	3.1921839E 02
58000.	3.0651143E-03	2.5286545E 02	2.5286545E 02	4.2227457E-04	3.8218422E-02	1.6138668E-05	3.1877907E 02
58250.	2.9650293E-03	2.5216226E 02	2.5216226E 02	4.0962520E-04	3.9310494E-02	1.6102565E-05	3.1833552E 02
58500.	2.8679566E-03	2.5145360E 02	2.5145360E 02	3.9731910E-04	4.0435140E-02	1.6066135E-05	3.1788789E 02
58750.	2.7738122E-03	2.5073975E 02	2.5073975E 02	3.8538216E-04	4.1593494E-02	1.6029391E-05	3.1743634E 02
59000.	2.6825136E-03	2.5002101E 02	2.5002101E 02	3.7376892E-04	4.2786719E-02	1.5992346E-05	3.1698105E 02
59250.	2.5939802E-03	2.4929760E 02	2.4929760E 02	3.6248189E-04	4.4016023E-02	1.5955011E-05	3.1652214E 02
59500.	2.5081352E-03	2.4856981E 02	2.4856981E 02	3.5151213E-04	4.5282651E-02	1.5917401E-05	3.1605978E 02
59750.	2.4249023E-03	2.4783793E 02	2.4783793E 02	3.4085073E-04	4.6567926E-02	1.5879529E-05	3.1559415E 02
60000.	2.3442082E-03	2.4710222E 02	2.4710222E 02	3.3048920E-04	4.7933204E-02	1.5841407E-05	3.1512538E 02
60250.	2.2659808E-03	2.4636295E 02	2.4636295E 02	3.2041923E-04	4.9319911E-02	1.5803048E-05	3.1465363E 02
60500.	2.1901511E-03	2.4562030E 02	2.4562030E 02	3.1063299E-04	5.0749477E-02	1.5764462E-05	3.1417902E 02
60750.	2.1166509E-03	2.4487455E 02	2.4487455E 02	3.0111226E-04	5.2223448E-02	1.5725661E-05	3.1370170E 02
61000.	2.0456141E-03	2.4412598E 02	2.4412598E 02	2.9188045E-04	5.3743437E-02	1.5686659E-05	3.1322185E 02
61250.	1.9763771E-03	2.4337476E 02	2.4337476E 02	2.8299202E-04	5.5311054E-02	1.5647464E-05	3.1273955E 02
61500.	1.9095769E-03	2.4261188E 02	2.4261188E 02	2.7451772E-04	5.6928059E-02	1.5608093E-05	3.1225500E 02
61750.	1.8446531E-03	2.4186543E 02	2.4186543E 02	2.6569211E-04	5.8596209E-02	1.5568551E-05	3.1176829E 02
62000.	1.7818466E-03	2.4110778E 02	2.4110778E 02	2.5745733E-04	6.0317397E-02	1.5528854E-05	3.1127960E 02
62250.	1.7209993E-03	2.4034843E 02	2.4034843E 02	2.4946634E-04	6.2093563E-02	1.5489012E-05	3.1078904E 02
62500.	1.6620553E-03	2.3958754E 02	2.3958754E 02	2.4166791E-04	6.3926700E-02	1.5449032E-05	3.102971E 02
62750.	1.6049612E-03	2.3882540E 02	2.3882540E 02	2.3411097E-04	6.5818912E-02	1.5408929E-05	3.0980278E 02
63000.	1.5496626E-03	2.3806212E 02	2.3806212E 02	2.2676694E-04	6.7772384E-02	1.5368709E-05	3.0930732E 02
63250.	1.4961084E-03	2.3729799E 02	2.3729799E 02	2.1963763E-04	6.9789435E-02	1.5328366E-05	3.0881192E 02
63500.	1.4442428E-03	2.3653317E 02	2.3653317E 02	2.1270982E-04	7.1872414E-02	1.5287968E-05	3.0831246E 02
63750.	1.3940340E-03	2.3576784E 02	2.3576784E 02	2.0598070E-04	7.4023755E-02	1.5247465E-05	3.0781327E 02
64000.	1.3454170E-03	2.3500217E 02	2.3500217E 02	1.9944483E-04	7.6246075E-02	1.5206885E-05	3.0731304E 02
64250.	1.2983516E-03	2.3423638E 02	2.3423638E 02	1.9309793E-04	7.8520444E-02	1.5166240E-05	3.0681192E 02
64500.	1.2527926E-03	2.3347064E 02	2.3347064E 02	1.8693434E-04	8.0914448E-02	1.5125538E-05	3.0631001E 02
64750.	1.2086961E-03	2.3270509E 02	2.3270509E 02	1.8094601E-04	8.3366234E-02	1.5084787E-05	3.0580740E 02
65000.	1.1640196E-03	2.3193981E 02	2.3193981E 02	1.7513312E-04	8.5900316E-02	1.5043991E-05	3.0530415E 02
65250.	1.1247208E-03	2.3117513E 02	2.3117513E 02	1.6948932E-04	8.8520038E-02	1.5003167E-05	3.0480046E 02
65500.	1.0847607E-03	2.3041111E 02	2.3041111E 02	1.6400922E-04	9.1228521E-02	1.4962319E-05	3.0429636E 02
65750.	1.0440989E-03	2.2964788E 02	2.2964788E 02	1.5868995E-04	9.4029269E-02	1.4921453E-05	3.0379196E 02
66000.	1.0086976E-03	2.2888563E 02	2.2888563E 02	1.5352539E-04	9.6925850E-02	1.4880579E-05	3.0328736E 02
66250.	9.7251892E-04	2.2812466E 02	2.2812466E 02	1.4851282E-04	9.9922040E-02	1.4839744E-05	3.0278264E 02
66500.	9.3752730E-04	2.2736447E 02	2.2736447E 02	1.4364781E-04	1.0302162E-01	1.4798835E-05	3.0227787E 02
66750.	9.0368733E-04	2.2660580E 02	2.2660580E 02	1.3892644E-04	1.0622887E-01	1.4757972E-05	3.0177313E 02
67000.	8.7096431E-04	2.2584865E 02	2.2584865E 02	1.3434472E-04	1.0954754E-01	1.4717133E-05	3.0126856E 02
67250.	8.3932542E-04	2.2509302E 02	2.2509302E 02	1.2989908E-04	1.1298245E-01	1.4676317E-05	3.0076415E 02
67500.	8.0873778E-04	2.2433925E 02	2.2433925E 02	1.2555922E-04	1.1653806E-01	1.4635530E-05	3.0026000E 02
67750.	7.7916993E-04	2.2358690E 02	2.2358690E 02	1.2134013E-04	1.2021926E-01	1.4594782E-05	2.9975623E 02
68000.	7.5091284E-04	2.2283655E 02	2.2283655E 02	1.1734236E-04	1.2403084E-01	1.4554073E-05	2.9925283E 02
68250.	7.2297136E-04	2.2208819E 02	2.2208819E 02	1.1340531E-04	1.2797823E-01	1.4513411E-05	2.9874991E 02
68500.	6.9629181E-04	2.2134183E 02	2.2134183E 02	1.0958796E-04	1.3206667E-01	1.4472799E-05	2.9824749E 02
68750.	6.7049399E-04	2.2059755E 02	2.2059755E 02	1.0588440E-04	1.3630186E-01	1.4432241E-05	2.9774528E 02
69000.	6.4598010E-04	2.1985545E 02	2.1985545E 02	1.0229411E-04	1.4068894E-01	1.4391743E-05	2.9724399E 02
69250.	6.2151384E-04	2.1911562E 02	2.1911562E 02	9.8813254E-05	1.4523667E-01	1.4351309E-05	2.9674305E 02
69500.	5.9826304E-04	2.1837805E 02	2.1837805E 02	9.5438879E-05	1.4994875E-01	1.4310941E-05	2.9624399E 02
69750.	5.7582031E-04	2.1764274E 02	2.1764274E 02	9.2188003E-05	1.5483280E-01	1.4270640E-05	2.9574485E 02
70000.	5.5414297E-04	2.1690992E 02	2.1690992E 02	8.9097483E-05	1.5989589E-01	1.4230412E-05	2.9524650E 02
70250.	5.3321321E-04	2.1617939E 02	2.1617939E 02	8.6225955E-05	1.6514514E-01	1.4190254E-05	2.9474890E 02
70500.	5.1303789E-04	2.1545138E 02	2.1545138E 02	8.3469228E-05	1.7058841E-01	1.4150177E-05	2.9425218E 02
70750.	4.9350380E-04	2.1472581E 02	2.1472581E 02	8.0852288E-05	1.7623349E-01	1.4110177E-05	2.9375629E 02
71000.	4.7467952E-04	2.1400271E 02	2.1400271E 02	7.7271433E-05	1.8208870E-01	1.4070255E-05	2.9326126E 02
71250.	4.5651352E-04	2.1328214E 02	2.1328214E 02	7.4565325E-05	1.8816272E-01	1.4030415E-05	2.9276712E 02
71500.	4.3898500E-04	2.1256401E 02	2.1256401E 02	7.1944517E-05	1.9444548E-01	1.3990693E-05	2.9227392E 02
71750.	4.2207370E-04	2.1184835E 02	2.1184835E 02	6.9406629E-05	2.0100344E-01	1.3950971E-05	2.9178138E 02

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

	GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
	meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
	54000.	5.0690643E-04	5.7668378E-04	9.1028678E-01	2.8964400E 01	1.0164992E 01
	54250.	4.9097988E-04	5.5978768E-04	9.0870489E-01		1.0165154E 01
	54500.	4.7552003E-04	5.4337127E-04	9.0709243E-01		1.0165311E 01
	54750.	4.6051775E-04	5.2742183E-04	9.0549504E-01		1.0165464E 01
	55000.	4.4594829E-04	5.1192483E-04	9.0377960E-01		1.0165612E 01
	55250.	4.3181145E-04	4.9686704E-04	9.0208077E-01		1.0165755E 01
	55500.	4.1802909E-04	4.822313E-04	9.0033490E-01		1.0165895E 01
	55750.	4.0477541E-04	4.6801682E-04	8.9860260E-01		1.0166030E 01
	56000.	3.9185332E-04	4.5419992E-04	8.9682474E-01		1.0166162E 01
	56250.	3.7931373E-04	4.4077271E-04	8.9502219E-01		1.0166289E 01
	56500.	3.6714590E-04	4.2772378E-04	8.9319574E-01		1.0166413E 01
	56750.	3.5533945E-04	4.1504229E-04	8.9134611E-01		1.0166533E 01
	57000.	3.4388426E-04	4.0271766E-04	8.8947403E-01		1.0166650E 01
	57250.	3.3277048E-04	3.9073956E-04	8.8758039E-01		1.0166763E 01
	57500.	3.2198857E-04	3.7909814E-04	8.8566595E-01		1.0166872E 01
	57750.	3.1152927E-04	3.6778390E-04	8.8373126E-01		1.0166979E 01
	58000.	3.0138347E-04	3.5678740E-04	8.8177731E-01		1.0167082E 01
	58250.	2.9154242E-04	3.4602972E-04	8.7980474E-01		1.0167182E 01
	58500.	2.8199755E-04	3.3571214E-04	8.7781430E-01		1.0167279E 01
	58750.	2.7274061E-04	3.2561634E-04	8.7580669E-01		1.0167373E 01
	59000.	2.6376350E-04	3.1580411E-04	8.7378269E-01		1.0167464E 01
	59250.	2.5505827E-04	3.0626749E-04	8.7174278E-01		1.0167553E 01
	59500.	2.4661739E-04	2.9699944E-04	8.6968784E-01		1.0167639E 01
	59750.	2.3843336E-04	2.8799093E-04	8.6761861E-01		1.0167722E 01
	60000.	2.3049894E-04	2.7923629E-04	8.6553571E-01		1.0167803E 01
	60250.	2.2280707E-04	2.7072799E-04	8.6343989E-01		1.0167881E 01
	60500.	2.1535097E-04	2.6245942E-04	8.6133162E-01		1.0167957E 01
	60750.	2.0812393E-04	2.5442392E-04	8.5921162E-01		1.0168030E 01
	61000.	2.0111943E-04	2.4661506E-04	8.5708665E-01		1.0168101E 01
	61250.	1.9433122E-04	2.3902681E-04	8.5493916E-01		1.0168171E 01
	61500.	1.8775312E-04	2.3165306E-04	8.5278798E-01		1.0168238E 01
	61750.	1.8137920E-04	2.2448806E-04	8.5062753E-01		1.0168302E 01
	62000.	1.7520362E-04	2.1752612E-04	8.4845861E-01		1.0168365E 01
	62250.	1.6922068E-04	2.1076172E-04	8.4628174E-01		1.0168426E 01
	62500.	1.6342490E-04	2.0418957E-04	8.4409732E-01		1.0168485E 01
	62750.	1.5781101E-04	1.9780458E-04	8.4190620E-01		1.0168542E 01
	63000.	1.5237367E-04	1.9160163E-04	8.3970866E-01		1.0168597E 01
	63250.	1.4710784E-04	1.8557580E-04	8.3750552E-01		1.0168651E 01
	63500.	1.4200859E-04	1.7972236E-04	8.3529718E-01		1.0168703E 01
	63750.	1.3707117E-04	1.7403681E-04	8.3308420E-01		1.0168753E 01
	64000.	1.3229081E-04	1.6851453E-04	8.3086702E-01		1.0168802E 01
	64250.	1.2766301E-04	1.6315121E-04	8.2864624E-01		1.0168849E 01
	64500.	1.2318333E-04	1.5794259E-04	8.2642241E-01		1.0168894E 01
	64750.	1.1884746E-04	1.5288455E-04	8.2419587E-01		1.0168938E 01
	65000.	1.1465120E-04	1.4797314E-04	8.2196686E-01		1.0168981E 01
	65250.	1.1059041E-04	1.4320426E-04	8.1973635E-01		1.0169022E 01
	65500.	1.0666126E-04	1.3857435E-04	8.1750449E-01		1.0169062E 01
	65750.	1.0285976E-04	1.3407958E-04	8.1527168E-01		1.0169101E 01
	66000.	9.9182203E-05	1.2971638E-04	8.1303844E-01		1.0169138E 01
	66250.	9.5625859E-05	1.2548116E-04	8.1080512E-01		1.0169174E 01
	66500.	9.2184241E-05	1.2137064E-04	8.0857201E-01		1.0169210E 01
	66750.	8.8856859E-05	1.1738146E-04	8.0633949E-01		1.0169243E 01
	67000.	8.5679302E-05	1.1351028E-04	8.0410815E-01		1.0169276E 01
	67250.	8.2528344E-05	1.0975408E-04	8.0187805E-01		1.0169308E 01
	67500.	7.9520754E-05	1.0610972E-04	7.9964927E-01		1.0169338E 01
	67750.	7.6613633E-05	1.0257420E-04	7.9742320E-01		1.0169368E 01
	68000.	7.3803384E-05	9.9144481E-05	7.9519892E-01		1.0169396E 01
	68250.	7.1087601E-05	9.5818192E-05	7.9297726E-01		1.0169424E 01
	68500.	6.8463247E-05	9.2592089E-05	7.9075834E-01		1.0169451E 01
	68750.	6.5927658E-05	8.9463636E-05	7.8854235E-01		1.0169477E 01
	69000.	6.3477950E-05	8.6430142E-05	7.8632962E-01		1.0169501E 01
	69250.	6.1111588E-05	8.3489105E-05	7.8412042E-01		1.0169525E 01
	69500.	5.8826000E-05	8.0638031E-05	7.8191479E-01		1.0169549E 01
	69750.	5.6618680E-05	7.7874468E-05	7.7971280E-01		1.0169571E 01
	70000.	5.4487212E-05	7.5196082E-05	7.7751489E-01		1.0169593E 01
	70250.	5.2429252E-05	7.2600390E-05	7.7532077E-01		1.0169614E 01
	70500.	5.0442504E-05	7.0085300E-05	7.7313105E-01		1.0169634E 01
	70750.	4.8524745E-05	6.7648565E-05	7.7094553E-01		1.0169654E 01
	71000.	4.6673810E-05	6.5288028E-05	7.6876431E-01		1.0169672E 01
	71250.	4.4887602E-05	6.3001988E-05	7.6658753E-01		1.0169691E 01
	71500.	4.3164976E-05	6.0787221E-05	7.6441507E-01		1.0169708E 01
	71750.	4.1501238E-05	5.8642914E-05	7.6224694E-01	2.8964400E 01	1.0169725E 01

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	VIRTUAL TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	COEFFICIENT OF FRICTION	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	m ² sec ⁻¹	newton-sec m ⁻²	m sec ⁻¹
72000.	4.0576303E-04	2.1113510E 02	2.1113510E 02	6.6949356E-05	2.0778947E-01	1.3911371E-05	2.9128999E 02
72250.	3.9002491E-04	2.1042441E 02	2.1042441E 02	6.4570475E-05	2.1483266E-01	1.3871847E-05	2.9079913E 02
72500.	3.7484991E-04	2.0971612E 02	2.0971612E 02	6.2267774E-05	2.2214388E-01	1.3832405E-05	2.9030931E 02
72750.	3.6021682E-04	2.0901017E 02	2.0901017E 02	6.0039119E-05	2.2973417E-01	1.3793037E-05	2.8982028E 02
73000.	3.4610846E-04	2.0830656E 02	2.0830656E 02	5.7882463E-05	2.3761504E-01	1.3753744E-05	2.8933204E 02
73250.	3.3250751E-04	2.0760531E 02	2.0760531E 02	5.5795702E-05	2.4579899E-01	1.3714527E-05	2.8884462E 02
73500.	3.1939768E-04	2.0690623E 02	2.0690623E 02	5.3776921E-05	2.5429823E-01	1.3675376E-05	2.8835789E 02
73750.	3.0676280E-04	2.0620942E 02	2.0620942E 02	5.1824119E-05	2.6312645E-01	1.3636297E-05	2.8787192E 02
74000.	2.9458748E-04	2.0551462E 02	2.0551462E 02	4.9935490E-05	2.7229680E-01	1.3597275E-05	2.8738653E 02
74250.	2.8285647E-04	2.0482191E 02	2.0482191E 02	4.8109125E-05	2.8182420E-01	1.3558316E-05	2.8690179E 02
74500.	2.7155515E-04	2.0413113E 02	2.0413113E 02	4.6343256E-05	2.9172336E-01	1.3519410E-05	2.8641750E 02
74750.	2.6066926E-04	2.0344220E 02	2.0344220E 02	4.4636129E-05	3.0200992E-01	1.3480554E-05	2.8593385E 02
75000.	2.5018505E-04	2.0275499E 02	2.0275499E 02	4.2986051E-05	3.1270005E-01	1.3441740E-05	2.8545051E 02
75250.	2.4008915E-04	2.0206947E 02	2.0206947E 02	4.1391349E-05	3.2381085E-01	1.3402988E-05	2.8496755E 02
75500.	2.3036834E-04	2.0138545E 02	2.0138545E 02	3.9850378E-05	3.3536007E-01	1.3364226E-05	2.8448462E 02
75750.	2.2101015E-04	2.0070282E 02	2.0070282E 02	3.8361580E-05	3.4736598E-01	1.3325508E-05	2.8400225E 02
76000.	2.1200230E-04	2.0002147E 02	2.0002147E 02	3.6923403E-05	3.5984789E-01	1.3286809E-05	2.8351977E 02
76250.	2.0332988E-04	1.9934132E 02	1.9934132E 02	3.5534339E-05	3.7282595E-01	1.3248124E-05	2.8303733E 02
76500.	1.9499040E-04	1.9866205E 02	1.9866205E 02	3.4192910E-05	3.8632084E-01	1.3209434E-05	2.8255468E 02
76750.	1.8696371E-04	1.9798364E 02	1.9798364E 02	3.2897717E-05	4.0035419E-01	1.3170739E-05	2.8207183E 02
77000.	1.7924187E-04	1.9730592E 02	1.9730592E 02	3.1647331E-05	4.1494902E-01	1.3132029E-05	2.8158863E 02
77250.	1.7181453E-04	1.9662865E 02	1.9662865E 02	3.0440435E-05	4.3012822E-01	1.3093290E-05	2.8110492E 02
77500.	1.64667127E-04	1.9595189E 02	1.9595189E 02	2.9275652E-05	4.4591716E-01	1.3054515E-05	2.8062040E 02
77750.	1.5780237E-04	1.9527487E 02	1.9527487E 02	2.8151717E-05	4.6234101E-01	1.3015694E-05	2.8013559E 02
78000.	1.5119831E-04	1.9459798E 02	1.9459798E 02	2.7067389E-05	4.7942609E-01	1.2976813E-05	2.7964961E 02
78250.	1.4484988E-04	1.9392081E 02	1.9392081E 02	2.6021414E-05	4.9720054E-01	1.2937861E-05	2.7916261E 02
78500.	1.3874759E-04	1.9324316E 02	1.9324316E 02	2.5012613E-05	5.1564929E-01	1.2898827E-05	2.7867443E 02
78750.	1.3288332E-04	1.9256477E 02	1.9256477E 02	2.4039828E-05	5.3492286E-01	1.2859495E-05	2.7818485E 02
79000.	1.2724843E-04	1.9188547E 02	1.9188547E 02	2.3101922E-05	5.5495180E-01	1.2820453E-05	2.7769374E 02
79250.	1.2183471E-04	1.9120492E 02	1.9120492E 02	2.2197789E-05	5.7578186E-01	1.2781088E-05	2.7720087E 02
79500.	1.1663428E-04	1.9052299E 02	1.9052299E 02	2.1326351E-05	5.9745705E-01	1.2741579E-05	2.7670611E 02
79750.	1.1163954E-04	1.8983932E 02	1.8983932E 02	2.0486587E-05	6.2001130E-01	1.2701915E-05	2.7620920E 02
80000.	1.0684305E-04	1.8915372E 02	1.8915372E 02	1.9677466E-05	6.4368133E-01	1.2662082E-05	2.7570998E 02
80250.	1.0223758E-04	1.8846591E 02	1.8846591E 02	1.8893785E-05	6.6790522E-01	1.2622063E-05	2.7520826E 02
80500.	9.7816271E-05	1.8777551E 02	1.8777551E 02	1.8147211E-05	6.9332055E-01	1.2581835E-05	2.7470371E 02
80750.	9.3572375E-05	1.8708234E 02	1.8708234E 02	1.7424191E-05	7.1976859E-01	1.2541389E-05	2.7419621E 02
81000.	8.9499401E-05	1.8638606E 02	1.8638606E 02	1.6728017E-05	7.4729094E-01	1.2500695E-05	2.7368549E 02
81250.	8.5591011E-05	1.8568842E 02	1.8568842E 02	1.6057790E-05	7.7593164E-01	1.2459747E-05	2.7317133E 02
81500.	8.1841182E-05	1.8498297E 02	1.8498297E 02	1.5412671E-05	8.0573518E-01	1.2418516E-05	2.7265341E 02
81750.	7.8244016E-05	1.8427542E 02	1.8427542E 02	1.4791815E-05	8.3674524E-01	1.2376981E-05	2.7213146E 02
82000.	7.4793850E-05	1.8356358E 02	1.8356358E 02	1.4194402E-05	8.6901376E-01	1.2335131E-05	2.7160535E 02
82250.	7.1485156E-05	1.8284694E 02	1.8284694E 02	1.3619650E-05	9.0258818E-01	1.2292935E-05	2.7107464E 02
82500.	6.8312650E-05	1.8212515E 02	1.8212515E 02	1.3066191E-05	9.3751932E-01	1.2250370E-05	2.7053908E 02
82750.	6.5271214E-05	1.8139796E 02	1.8139796E 02	1.2535078E-05	9.7386089E-01	1.2207420E-05	2.6999844E 02
83000.	6.2355813E-05	1.8066486E 02	1.8066486E 02	1.2023779E-05	1.0116662E 00	1.2164052E-05	2.6945229E 02
83250.	5.9552895E-05	1.8065000E 02	1.8065000E 02	1.1484251E-05	1.0591178E 00	1.2163172E-05	2.6944122E 02
83500.	5.6879595E-05	1.8065000E 02	1.8065000E 02	1.0980027E-05	1.1089663E 00	1.2163172E-05	2.6944122E 02
83750.	5.4319545E-05	1.8065000E 02	1.8065000E 02	1.0475044E-05	1.1611571E 00	1.2163172E-05	2.6944122E 02
84000.	5.1878215E-05	1.8065000E 02	1.8065000E 02	1.0004256E-05	1.2157997E 00	1.2163172E-05	2.6944122E 02
84250.	4.9546789E-05	1.8065000E 02	1.8065000E 02	9.5646614E-06	1.2730092E 00	1.2163172E-05	2.6944122E 02
84500.	4.7320307E-05	1.8065000E 02	1.8065000E 02	9.1253040E-06	1.3329060E 00	1.2163172E-05	2.6944122E 02
84750.	4.5194038E-05	1.8065000E 02	1.8065000E 02	8.7152717E-06	1.3956160E 00	1.2163172E-05	2.6944122E 02
85000.	4.3163465E-05	1.8065000E 02	1.8065000E 02	8.3236936E-06	1.4612710E 00	1.2163172E-05	2.6944122E 02
85250.	4.1224272E-05	1.8065000E 02	1.8065000E 02	7.9497374E-06	1.5300093E 00	1.2163172E-05	2.6944122E 02
85500.	3.9372342E-05	1.8065000E 02	1.8065000E 02	7.5926090E-06	1.6019753E 00	1.2163172E-05	2.6944122E 02
85750.	3.7603741E-05	1.8065000E 02	1.8065000E 02	7.2515500E-06	1.6773203E 00	1.2163172E-05	2.6944122E 02
86000.	3.5914714E-05	1.8065000E 02	1.8065000E 02	6.9258360E-06	1.7562028E 00	1.2163172E-05	2.6944122E 02
86250.	3.4301675E-05	1.8065000E 02	1.8065000E 02	6.6147756E-06	1.8387883E 00	1.2163172E-05	2.6944122E 02
86500.	3.2761198E-05	1.8065000E 02	1.8065000E 02	6.3177093E-06	1.9252507E 00	1.2163172E-05	2.6944122E 02
86750.	3.1290016E-05	1.8065000E 02	1.8065000E 02	6.0340037E-06	2.0157714E 00	1.2163172E-05	2.6944122E 02
87000.	2.9885006E-05	1.8065000E 02	1.8065000E 02	5.7630599E-06	2.1105407E 00	1.2163172E-05	2.6944122E 02
87250.	2.8543187E-05	1.8065000E 02	1.8065000E 02	5.5043019E-06	2.2097574E 00	1.2163172E-05	2.6944122E 02
87500.	2.7261712E-05	1.8065000E 02	1.8065000E 02	5.2571808E-06	2.3136302E 00	1.2163172E-05	2.6944122E 02
87750.	2.6037863E-05	1.8065000E 02	1.8065000E 02	5.0211724E-06	2.4223769E 00	1.2163172E-05	2.6944122E 02
88000.	2.4869345E-05	1.8065000E 02	1.8065000E 02	4.7957760E-06	2.5362261E 00	1.2163172E-05	2.6944122E 02
88250.	2.3752779E-05	1.8065000E 02	1.8065000E 02	4.5805140E-06	2.6554185E 00	1.2163172E-05	2.6944122E 02
88500.	2.2688698E-05	1.8065000E 02	1.8065000E 02	4.3749296E-06	2.7801984E 00	1.2163172E-05	2.6944122E 02
88750.	2.1688942E-05	1.8065000E 02	1.8065000E 02	4.1792371E-06	2.9109339E 00	1.2163172E-05	2.6944122E 02
89000.	2.0746155E-05	1.8065000E 02	1.8065000E 02	3.9910710E-06	3.0475960E 00	1.2163172E-05	2.6944122E 02
89250.	1.9767475E-05	1.8065000E 02	1.8065000E 02	3.8119832E-06	3.1907728E 00	1.2163172E-05	2.6944122E 02
89500.	1.8808533E-05	1.8065000E 02	1.8065000E 02	3.6409443E-06	3.3400642E 00	1.2163172E-05	2.6944122E 02
89750.	1.8233452E-05	1.8065000E 02	1.8065000E 02	3.4779922E-06	3.4975844E 00	1.2163172E-05	2.6944122E 02

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

	GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE	
	meters	unitless	unitless	unitless	unitless	newtons cm ⁻²	
	72000.	3.9897164E-05	5.6566718E-05	7.6008329E-01	2.8964400E 01	1.0169741E 01	
	72250.	2.8349976E-05	5.4556739E-05	7.5792378E-01		1.0169737E 01	
	72500.	3.885 463E-05	5.2611166E-05	7.5576879E-01		1.0169772E 01	
	72750.	3.2514337E-05	5.0728135E-05	7.5361782E-01		1.0169787E 01	
	73000.	3.4231901E-05	4.8903938E-05	7.5147093E-01		1.0169801E 01	
	73250.	3.2694463E-05	4.7142795E-05	7.4932821E-01		1.0169815E 01	
	73500.	3.1505413E-05	4.5437091E-05	7.4718909E-01		1.0169828E 01	
	73750.	3.0163064E-05	4.3787133E-05	7.4505390E-01		1.0169840E 01	
	74000.	2.8965901E-05	4.2191396E-05	7.4292182E-01		1.0169852E 01	
	74250.	2.7812427E-05	4.0648267E-05	7.4079321E-01		1.0169864E 01	
	74500.	2.6701201E-05	3.9156233E-05	7.3866751E-01		1.0169875E 01	
	74750.	2.5630822E-05	3.7713871E-05	7.3654550E-01		1.0169886E 01	
	75000.	2.4599944E-05	3.6319690E-05	7.3442382E-01		1.0169897E 01	
	75250.	2.3607244E-05	3.4972298E-05	7.3230540E-01		1.0169907E 01	
	75500.	2.2651424E-05	3.3670304E-05	7.3018862E-01		1.0169917E 01	
	75750.	2.1731263E-05	3.2412392E-05	7.2807317E-01		1.0169926E 01	
	76000.	2.0845549E-05	3.1197249E-05	7.2595872E-01		1.0169935E 01	
	76250.	1.9993120E-05	3.0023604E-05	7.2384508E-01		1.0169944E 01	
	76500.	1.9172819E-05	2.8890207E-05	7.2173114E-01		1.0169952E 01	
	76750.	1.8383580E-05	2.7795974E-05	7.1961697E-01		1.0169960E 01	
	77000.	1.7624314E-05	2.6739401E-05	7.1750195E-01		1.0169968E 01	
	77250.	1.6894006E-05	2.5719673E-05	7.1538536E-01		1.0169975E 01	
	77500.	1.6191631E-05	2.4735526E-05	7.1326679E-01		1.0169982E 01	
	77750.	1.5516232E-05	2.3785894E-05	7.1114566E-01		1.0169989E 01	
	78000.	1.4866875E-05	2.2864726E-05	7.0902130E-01		1.0169996E 01	
	78250.	1.4242634E-05	2.1985962E-05	7.0689307E-01		1.0170002E 01	
	78500.	1.3642633E-05	2.1133608E-05	7.0476035E-01		1.0170008E 01	
	78750.	1.3064017E-05	2.0311695E-05	7.0262225E-01		1.0170014E 01	
	79000.	1.2511956E-05	1.9519231E-05	7.0047820E-01		1.0170020E 01	
	79250.	1.1979641E-05	1.8755312E-05	6.9832718E-01		1.0170025E 01	
	79500.	1.1468298E-05	1.8019919E-05	6.9616897E-01		1.0170030E 01	
	79750.	1.0977180E-05	1.7309487E-05	6.9400159E-01		1.0170035E 01	
	80000.	1.0505556E-05	1.6625846E-05	6.9182519E-01		1.0170040E 01	
	80250.	1.0052714E-05	1.5967249E-05	6.8963886E-01		1.0170045E 01	
	80500.	9.6179799E-06	1.5332906E-05	6.8744068E-01		1.0170049E 01	
	80750.	9.2006903E-06	1.47222013E-05	6.8523062E-01		1.0170054E 01	
	81000.	8.8002070E-06	1.4133803E-05	6.8300741E-01		1.0170058E 01	
	81250.	8.4159068E-06	1.3567517E-05	6.8077012E-01		1.0170061E 01	
	81500.	8.0571972E-06	1.3022443E-05	6.7851731E-01		1.0170065E 01	
	81750.	7.6934987E-06	1.2497872E-05	6.7624797E-01		1.0170069E 01	
	82000.	7.3542544E-06	1.1993107E-05	6.7396140E-01		1.0170072E 01	
	82250.	7.0289205E-06	1.1507488E-05	6.7165588E-01		1.0170076E 01	
	82500.	6.7169775E-06	1.1040368E-05	6.6933023E-01		1.0170079E 01	
	82750.	6.4179222E-06	1.0591113E-05	6.6698355E-01		1.0170082E 01	
	83000.	6.1312594E-06	1.0159108E-05	6.6461403E-01		1.0170085E 01	
	83250.	5.8556570E-06	9.7032506E-06	6.6223598E-01		1.0170088E 01	
	83500.	5.5924417E-06	9.2670836E-06	6.6456598E-01		1.0170090E 01	
	83750.	5.3410771E-06	8.8505540E-06	6.6456598E-01		1.0170093E 01	
	84000.	5.1010289E-06	8.4527768E-06	6.6456598E-01		1.0170095E 01	
	84250.	4.8717868E-06	8.0729058E-06	6.6456598E-01		1.0170098E 01	
	84500.	4.6528635E-06	7.7101340E-06	6.6456598E-01		1.0170100E 01	
	84750.	4.4437939E-06	7.3636903E-06	6.6456598E-01		1.0170102E 01	
	85000.	4.2441337E-06	7.0328389E-06	6.6456598E-01		1.0170104E 01	
	85250.	4.0534588E-06	6.7168766E-06	6.6456598E-01		1.0170106E 01	
	85500.	3.8713640E-06	6.4151324E-06	6.6456598E-01		1.0170108E 01	
	85750.	3.6974628E-06	6.1269654E-06	6.6456598E-01		1.0170109E 01	
	86000.	3.5313858E-06	5.8517637E-06	6.6456598E-01		1.0170111E 01	
	86250.	3.3727806E-06	5.5889432E-06	6.6456598E-01		1.0170113E 01	
	86500.	3.2213101E-06	5.3379458E-06	6.6456598E-01		1.0170114E 01	
	86750.	3.0766532E-06	5.0982386E-06	6.6456598E-01		1.0170116E 01	
	87000.	2.9389028E-06	4.8693133E-06	6.6456598E-01		1.0170117E 01	
	87250.	2.8065657E-06	4.6508840E-06	6.6456598E-01		1.0170119E 01	
	87500.	2.6805622E-06	4.4418897E-06	6.6456598E-01		1.0170120E 01	
	87750.	2.5602248E-06	4.2424792E-06	6.6456598E-01		1.0170121E 01	
	88000.	2.4452984E-06	4.0520377E-06	6.6456598E-01		1.0170122E 01	
	88250.	2.3355393E-06	3.8701589E-06	6.6456598E-01		1.0170123E 01	
	88500.	2.2307148E-06	3.6964570E-06	6.6456598E-01		1.0170124E 01	
	88750.	2.1308026E-06	3.5302638E-06	6.6456598E-01		1.0170125E 01	
	89000.	2.0349907E-06	3.3712179E-06	6.6456598E-01		1.0170126E 01	
	89250.	1.9436763E-06	3.2208134E-06	6.6456598E-01		1.0170127E 01	
	89500.	1.8564660E-06	3.0762995E-06	6.6456598E-01		1.0170128E 01	
	89750.	1.7731751E-06	2.9382804E-06	6.6456598E-01	2.8964400E 01	1.0170129E 01	

MOLECULAR WEIGHT CONSTANT TO 90,000 METERS

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
90000.	1.7224435E-05	1.8065000E 02	1.8065000E 02	3.3215805E-06	1.2163172E-05	2.6944122E 02
91000.	1.4357534E-05	1.8359648E 02	1.8365000E 02	2.7234957E-06	1.2340215E-05	2.7168927E 02
92000.	1.2003841E-05	1.8654122E 02	1.8665000E 02	2.2404220E-06	1.2516126E-05	2.7387919E 02
93000.	1.0065252E-05	1.8948421E 02	1.8965000E 02	1.8488836E-06	1.2690921E-05	2.7607143E 02
94000.	8.4635721E-06	1.9242545E 02	1.9265000E 02	1.5304616E-06	1.2864614E-05	2.7824440E 02
95000.	7.1362419E-06	1.9536494E 02	1.9565000E 02	1.2706545E-06	1.3037217E-05	2.8040450E 02
96000.	6.0330423E-06	1.9830268E 02	1.9865000E 02	1.0579997E-06	1.3208747E-05	2.8254611E 02
97000.	5.1135173E-06	2.0123868E 02	2.0165000E 02	8.8140379E-07	1.3379216E-05	2.8467161E 02
98000.	4.3449711E-06	2.0417293E 02	2.0465000E 02	7.3962724E-07	1.3548638E-05	2.8678136E 02
99000.	3.7008921E-06	2.0710543E 02	2.0765000E 02	6.2088653E-07	1.3717028E-05	2.8887571E 02
100000.	3.1597170E-06	2.1003618E 02	2.1065000E 02	5.2254595E-07	1.3884397E-05	2.9095497E 02
101000.	2.7057645E-06	2.1478336E 02	2.1565000E 02	4.3709746E-07	1.4161117E-05	2.938778E 02
102000.	2.3253935E-06	2.1951949E 02	2.2065000E 02	3.6713880E-07	1.4435101E-05	2.9778102E 02
103000.	2.0053844E-06	2.2424457E 02	2.2565000E 02	3.0959935E-07	1.4706408E-05	3.0113603E 02
104000.	1.7351148E-06	2.2895861E 02	2.3065000E 02	2.6206711E-07	1.4975097E-05	3.0445407E 02
105000.	1.5060079E-06	2.3366159E 02	2.3565000E 02	2.2263706E-07	1.5241233E-05	3.0773633E 02
106000.	1.3111039E-06	2.3835333E 02	2.4065000E 02	1.8979684E-07	1.5504842E-05	3.1098395E 02
107000.	1.1447335E-06	2.4303442E 02	2.4565000E 02	1.6233993E-07	1.5766006E-05	3.1419801E 02
108000.	1.0022554E-06	2.4770427E 02	2.5065000E 02	1.3929915E-07	1.6024767E-05	3.1737952E 02
109000.	8.7985634E-07	2.5237306E 02	2.5565000E 02	1.1989573E-07	1.6281177E-05	3.2052946E 02
110000.	7.7438980E-07	2.5701081E 02	2.6065000E 02	1.0349983E-07	1.6535285E-05	3.2364874E 02
111000.	6.8403258E-07	2.6641332E 02	2.7065000E 02	8.8045367E-08	1.7036783E-05	3.2979880E 02
112000.	6.0696757E-07	2.7578200E 02	2.8065000E 02	7.5342182E-08	1.7529632E-05	3.3583625E 02
113000.	5.4086384E-07	2.8511684E 02	2.9065000E 02	6.4826916E-08	1.8014180E-05	3.4176707E 02
114000.	4.8386073E-07	2.9441785E 02	3.0065000E 02	5.6065657E-08	1.8490756E-05	3.4759671E 02
115000.	4.3446125E-07	3.0368503E 02	3.1065000E 02	4.8721141E-08	1.8959675E-05	3.5333018E 02
116000.	3.9145232E-07	3.1291837E 02	3.2065000E 02	4.2529020E-08	1.9421230E-05	3.5897206E 02
117000.	3.5384426E-07	3.2211787E 02	3.3065000E 02	3.7280470E-08	1.9875728E-05	3.6452667E 02
118000.	3.2082435E-07	3.3128354E 02	3.4065000E 02	3.2809278E-08	2.0323355E-05	3.6999789E 02
119000.	2.9172114E-07	3.4041538E 02	3.5065000E 02	2.8982235E-08	2.0764441E-05	3.7538938E 02
120000.	2.6597710E-07	3.4951338E 02	3.6065000E 02	2.5691890E-08	2.1199197E-05	3.8070451E 02
121000.	2.4341101E-07	3.6839206E 02	3.8065000E 02	2.2276765E-08	2.2050607E-05	3.9118181E 02
122000.	2.2377934E-07	3.8721781E 02	4.0065000E 02	1.9457748E-08	2.2879253E-05	4.0126162E 02
123000.	2.0658102E-07	4.0599062E 02	4.2065000E 02	1.7108315E-08	2.3686639E-05	4.1115493E 02
124000.	1.9141913E-07	4.2471051E 02	4.4065000E 02	1.5133149E-08	2.4474125E-05	4.2081570E 02
125000.	1.7797572E-07	4.4337744E 02	4.6065000E 02	1.3459454E-08	2.5242944E-05	4.3025962E 02
126000.	1.6599345E-07	4.6199146E 02	4.8065000E 02	1.2030946E-08	2.5994216E-05	4.3950065E 02
127000.	1.5526215E-07	4.8055254E 02	5.0065000E 02	1.0803615E-08	2.6728963E-05	4.4855134E 02
128000.	1.4568072E-07	4.9906068E 02	5.2065000E 02	9.7426983E-09	2.7448117E-05	4.5742298E 02
129000.	1.3688945E-07	5.1751589E 02	5.4065000E 02	8.8204658E-09	2.8152533E-05	4.6612582E 02
130000.	1.2898417E-07	5.3591816E 02	5.6065000E 02	8.0146089E-09	2.8842997E-05	4.7466910E 02
131000.	1.2179175E-07	5.5426750E 02	5.8065000E 02	7.3070349E-09	2.9520227E-05	4.8306132E 02
132000.	1.1522650E-07	5.7256391E 02	6.0065000E 02	6.6829568E-09	3.0184890E-05	4.9131021E 02
133000.	1.0921551E-07	5.9080738E 02	6.2065000E 02	6.1302094E-09	3.0837601E-05	4.9942288E 02
134000.	1.0369625E-07	6.0899793E 02	6.4065000E 02	5.6387136E-09	3.1478926E-05	5.0740585E 02
135000.	9.8615005E-08	6.2713553E 02	6.6065000E 02	5.2000715E-09	3.2109396E-05	5.1526515E 02
136000.	9.3925204E-08	6.4522020E 02	6.8065000E 02	4.8072428E-09	3.2729499E-05	5.2300637E 02
137000.	8.9586503E-08	6.6325194E 02	7.0065000E 02	4.4542972E-09	3.3339691E-05	5.3063467E 02
138000.	8.5563661E-08	6.8123074E 02	7.2065000E 02	4.1362113E-09	3.3940406E-05	5.3815483E 02
139000.	8.1825829E-08	6.9915662E 02	7.4065000E 02	3.8487096E-09	3.4532020E-05	5.4557136E 02
140000.	7.8345911E-08	7.1702955E 02	7.6065000E 02	3.5881386E-09	3.5114925E-05	5.5288841E 02
141000.	7.5100094E-08	7.3484955E 02	7.8065000E 02	3.3513623E-09	3.5689461E-05	5.6010988E 02
142000.	7.2066944E-08	7.5261663E 02	8.0065000E 02	3.1356758E-09	3.6255956E-05	5.6723942E 02
143000.	6.9227957E-08	7.7033076E 02	8.2064999E 02	2.9387408E-09	3.6814717E-05	5.7428046E 02
144000.	6.6566336E-08	7.8799196E 02	8.4065000E 02	2.7585267E-09	3.7366033E-05	5.8123620E 02
145000.	6.4067172E-08	8.0560023E 02	8.6064999E 02	2.5932840E-09	3.7910175E-05	5.8810970E 02
146000.	6.1717079E-08	8.2315556E 02	8.8065000E 02	2.4414047E-09	3.8467399E-05	5.9490377E 02
147000.	5.9504086E-08	8.4065795E 02	9.0065000E 02	2.3015928E-09	3.8977947E-05	6.0162112E 02
148000.	5.7417393E-08	8.5810742E 02	9.2064999E 02	2.1726345E-09	3.9502050E-05	6.0826430E 02
149000.	5.5447274E-08	8.7550395E 02	9.4065000E 02	2.0534772E-09	4.0019922E-05	6.1483570E 02
150000.	5.3584943E-08	8.9284424E 02	9.6064999E 02	1.9431903E-09	4.0531768E-05	6.2133762E 02
151000.	5.1813260E-08	9.0990989E 02	9.7565000E 02	1.8500549E-09	4.0911817E-05	6.2616974E 02
152000.	5.0126367E-08	9.1894822E 02	9.9065000E 02	1.7627216E-09	4.1288666E-05	6.3096486E 02
153000.	4.8519017E-08	9.3195982E 02	1.0056500E 03	1.6807491E-09	4.1662388E-05	6.3572381E 02
154000.	4.6986357E-08	9.4494449E 02	1.0206500E 03	1.6037353E-09	4.2033057E-05	6.4044740E 02
155000.	4.5523880E-08	9.5792022E 02	1.0356500E 03	1.5313132E-09	4.2400743E-05	6.4513641E 02
156000.	4.4127423E-08	9.7083302E 02	1.0506500E 03	1.4631480E-09	4.2765514E-05	6.4979159E 02
157000.	4.2793123E-08	9.8373690E 02	1.0656500E 03	1.3989338E-09	4.3127434E-05	6.5441364E 02
158000.	4.1517377E-08	9.9661385E 02	1.0806500E 03	1.3383698E-09	4.3486465E-05	6.5900328E 02
159000.	4.0296878E-08	1.0094639E 03	1.0956500E 03	1.2812601E-09	4.3842970E-05	6.6356118E 02

CAPE KENNEDY REFERENCE ATMOSPHERE
VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
90000.	1.6936289E-06	2.864633E-06	6.6456598E-01	2.8964400E 01	1.0170130E 01
91000.	1.6117332E-06	2.3011304E-06	6.7423916E-01	2.8922960E 01	1.0170133E 01
92000.	1.1803016E-06	1.8929737E-06	6.8385054E-01	2.8947520E 01	1.0170135E 01
93000.	9.8968600E-07	1.5621551E-06	6.9340090E-01	2.8939080E 01	1.0170137E 01
94000.	8.3219761E-07	1.2931146E-06	7.0289101E-01	2.8930640E 01	1.0170139E 01
95000.	7.0168521E-07	1.0732989E-06	7.1232166E-01	2.8922200E 01	1.0170140E 01
96000.	5.9321091E-07	8.9392306E-07	7.2169362E-01	2.8913760E 01	1.0170141E 01
97000.	5.0279678E-07	7.4660381E-07	7.3100766E-01	2.8905320E 01	1.0170142E 01
98000.	4.2722794E-07	6.2492440E-07	7.4026446E-01	2.8896880E 01	1.0170143E 01
99000.	3.6389799E-07	5.2459823E-07	7.4946494E-01	2.8888440E 01	1.0170143E 01
100000.	3.1068547E-07	4.4150830E-07	7.5860950E-01	2.8880000E 01	1.0170144E 01
101000.	2.6804969E-07	3.6931154E-07	7.6772877E-01	2.8871600E 01	1.0170144E 01
102000.	2.2864895E-07	3.1020220E-07	7.7686980E-01	2.8863200E 01	1.0170145E 01
103000.	1.9718942E-07	2.6159808E-07	7.86032210E-01	2.8854800E 01	1.0170145E 01
104000.	1.7060862E-07	2.2142523E-07	7.9520267E-01	2.8846400E 01	1.0170145E 01
105000.	1.4808119E-07	1.8811007E-07	8.04374316E-01	2.8838000E 01	1.0170145E 01
106000.	1.2891690E-07	1.6036277E-07	8.1354662E-01	2.8829600E 01	1.0170146E 01
107000.	1.1258220E-07	1.3716394E-07	8.2271897E-01	2.8821200E 01	1.0170146E 01
108000.	9.834873E-08	1.1769636E-07	8.3189130E-01	2.8812800E 01	1.0170146E 01
109000.	8.6513629E-08	1.0130297E-07	8.4106368E-01	2.8804400E 01	1.0170146E 01
110000.	7.6153421E-08	8.7448876E-08	8.5023606E-01	2.8796000E 01	1.0170146E 01
111000.	6.7258868E-08	7.4391119E-08	8.5940844E-01	2.8787600E 01	1.0170146E 01
112000.	5.9881296E-08	6.3657969E-08	8.6858082E-01	2.8779200E 01	1.0170146E 01
113000.	5.3181515E-08	5.4773431E-08	8.7775320E-01	2.8770800E 01	1.0170147E 01
114000.	4.7376371E-08	4.7370884E-08	8.8692558E-01	2.8762400E 01	1.0170147E 01
115000.	4.2719269E-08	4.1165371E-08	8.9609796E-01	2.8754000E 01	1.0170147E 01
116000.	3.8490330E-08	3.5933537E-08	9.0527034E-01	2.8745600E 01	1.0170147E 01
117000.	3.4792442E-08	3.1498941E-08	9.1444272E-01	2.8737200E 01	1.0170147E 01
118000.	3.1545694E-08	2.7721151E-08	9.2361510E-01	2.8728800E 01	1.0170147E 01
119000.	2.8684067E-08	2.4487613E-08	9.3278748E-01	2.8720400E 01	1.0170147E 01
120000.	2.6152728E-08	2.1707542E-08	9.4195986E-01	2.8712000E 01	1.0170147E 01
121000.	2.3933973E-08	1.9822041E-08	9.5113224E-01	2.8703600E 01	1.0170147E 01
122000.	2.2003549E-08	1.8440203E-08	9.6030462E-01	2.8695200E 01	1.0170147E 01
123000.	2.0212489E-08	1.7455124E-08	9.6947700E-01	2.8686800E 01	1.0170147E 01
124000.	1.8821667E-08	1.6786271E-08	9.7864938E-01	2.8678400E 01	1.0170147E 01
125000.	1.7499817E-08	1.6372135E-08	9.8782176E-01	2.8670000E 01	1.0170147E 01
126000.	1.6321637E-08	1.6165163E-08	9.9699414E-01	2.8661600E 01	1.0170147E 01
127000.	1.5266460E-08	1.61281695E-08	1.0061652E-01	2.8653200E 01	1.0170147E 01
128000.	1.4317268E-08	1.62317816E-08	1.0153390E-01	2.8644800E 01	1.0170147E 01
129000.	1.3459928E-08	1.6425707E-08	1.0245128E-01	2.8636400E 01	1.0170147E 01
130000.	1.2682626E-08	1.6718876E-08	1.0336866E-01	2.8628000E 01	1.0170147E 01
131000.	1.1975416E-08	1.7138456E-08	1.0428604E-01	2.8619600E 01	1.0170147E 01
132000.	1.1329876E-08	1.7683508E-08	1.0520342E-01	2.8611200E 01	1.0170147E 01
133000.	1.0738833E-08	1.8352459E-08	1.0612080E-01	2.8602800E 01	1.0170147E 01
134000.	1.0196142E-08	1.9145209E-08	1.0703818E-01	2.8594400E 01	1.0170147E 01
135000.	9.6965170E-09	1.9962341E-08	1.0795556E-01	2.8586000E 01	1.0170147E 01
136000.	9.2353829E-09	1.0617262E-08	1.0887294E-01	2.8577600E 01	1.0170147E 01
137000.	8.8087711E-09	1.13635161E-08	1.0979032E-01	2.8569200E 01	1.0170147E 01
138000.	8.4132175E-09	1.21947596E-08	1.1070770E-01	2.8560800E 01	1.0170147E 01
139000.	8.0456877E-09	1.3118442E-08	1.1162508E-01	2.8552400E 01	1.0170147E 01
140000.	7.7035178E-09	1.4146831E-08	1.1254246E-01	2.8544000E 01	1.0170147E 01
141000.	7.3843582E-09	1.5281626E-08	1.1345984E-01	2.8535600E 01	1.0170147E 01
142000.	7.0861259E-09	1.6523891E-08	1.1437722E-01	2.8527200E 01	1.0170147E 01
143000.	6.8069769E-09	1.7875222E-08	1.1529460E-01	2.8518800E 01	1.0170147E 01
144000.	6.5452677E-09	1.9337789E-08	1.1621198E-01	2.8510400E 01	1.0170147E 01
145000.	6.2993225E-09	2.0910956E-08	1.1712936E-01	2.8502000E 01	1.0170147E 01
146000.	6.0684548E-09	2.2602786E-08	1.1804674E-01	2.8493600E 01	1.0170147E 01
147000.	5.8508579E-09	1.9446573E-08	1.1896412E-01	2.8485200E 01	1.0170147E 01
148000.	5.6456797E-09	1.8356981E-08	1.1988150E-01	2.8476800E 01	1.0170147E 01
149000.	5.4519637E-09	1.7350200E-08	1.2079888E-01	2.8468400E 01	1.0170147E 01
150000.	5.2688464E-09	1.6418366E-08	1.2171626E-01	2.8460000E 01	1.0170147E 01
151000.	5.0946420E-09	1.5631448E-08	1.2263364E-01	2.8451600E 01	1.0170147E 01
152000.	4.9287749E-09	1.4893553E-08	1.2355102E-01	2.8443200E 01	1.0170147E 01
153000.	4.7707291E-09	1.4209952E-08	1.2446840E-01	2.8434800E 01	1.0170147E 01
154000.	4.6200272E-09	1.3580249E-08	1.2538578E-01	2.8426400E 01	1.0170147E 01
155000.	4.4762262E-09	1.2993341E-08	1.2630316E-01	2.8418000E 01	1.0170147E 01
156000.	4.3389168E-09	1.24362401E-08	1.2722054E-01	2.8409600E 01	1.0170147E 01
157000.	4.2077191E-09	1.1912844E-08	1.2813792E-01	2.8401200E 01	1.0170147E 01
158000.	4.0822789E-09	1.1308297E-08	1.2905530E-01	2.8392800E 01	1.0170147E 01
159000.	3.9622708E-09	1.0825598E-08	1.2997268E-01	2.8384400E 01	1.0170147E 01

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
meters						
160000.	3.912849E-08	1.0222870E 03	1.1106500E 03	1.2273083E-09	4.4196706E-05	6.6801798E 02
161000.	3.8006765E-08	1.0304854E 03	1.1206500E 03	1.1814862E-09	4.4431075E-05	6.7108889E 02
162000.	3.6927060E-08	1.0386859E 03	1.1306500E 03	1.1377695E-09	4.4665298E-05	6.7407653E 02
163000.	3.5887447E-08	1.0468828E 03	1.1406500E 03	1.0960438E-09	4.4896393E-05	6.7705080E 02
164000.	3.4886099E-08	1.0549730E 03	1.1506500E 03	1.0562018E-09	4.5127375E-05	6.8001215E 02
165000.	3.3921305E-08	1.0630997E 03	1.1606500E 03	1.0181436E-09	4.5357258E-05	6.8296066E 02
166000.	3.299141E-08	1.0712083E 03	1.1706500E 03	9.8177412E-10	4.5586058E-05	6.8589650E 02
167000.	3.2094881E-08	1.0792991E 03	1.1806500E 03	9.4700518E-10	4.5813789E-05	6.8881981E 02
168000.	3.1230234E-08	1.0873719E 03	1.1906500E 03	9.1375313E-10	4.6040545E-05	6.9173079E 02
169000.	3.0396090E-08	1.0954276E 03	1.2006500E 03	8.8194002E-10	4.6266110E-05	6.9462955E 02
170000.	2.9591111E-08	1.1034635E 03	1.2106500E 03	8.5149170E-10	4.6490709E-05	6.9751629E 02
171000.	2.8813069E-08	1.1086877E 03	1.2174500E 03	8.2433703E-10	4.6647331E-05	6.9952990E 02
172000.	2.8059993E-08	1.1138985E 03	1.2244500E 03	7.9820295E-10	4.6803460E-05	7.0153775E 02
173000.	2.7330945E-08	1.1190981E 03	1.2316500E 03	7.7304559E-10	4.6959102E-05	7.0353982E 02
174000.	2.6625029E-08	1.1242804E 03	1.2388500E 03	7.4882312E-10	4.7114260E-05	7.0553628E 02
175000.	2.5941384E-08	1.1294514E 03	1.2456500E 03	7.2549574E-10	4.7268939E-05	7.0752708E 02
176000.	2.5279174E-08	1.1346091E 03	1.2526500E 03	7.0302521E-10	4.7423143E-05	7.0951229E 02
177000.	2.4637422E-08	1.1397535E 03	1.2596500E 03	6.8137571E-10	4.7576877E-05	7.1149195E 02
178000.	2.4015958E-08	1.1448846E 03	1.2666500E 03	6.6051251E-10	4.7730144E-05	7.1346613E 02
179000.	2.3413469E-08	1.1500024E 03	1.2736500E 03	6.4040310E-10	4.7882288E-05	7.1543486E 02
180000.	2.2829452E-08	1.1551070E 03	1.2806500E 03	6.2101602E-10	4.8035293E-05	7.1739818E 02
181000.	2.2263246E-08	1.1601982E 03	1.2874500E 03	6.0232157E-10	4.8181784E-05	7.1935616E 02
182000.	2.1714210E-08	1.1652761E 03	1.2946500E 03	5.8429129E-10	4.8338625E-05	7.2130880E 02
183000.	2.1181733E-08	1.1703408E 03	1.3016500E 03	5.6689814E-10	4.8489619E-05	7.2325619E 02
184000.	2.0665225E-08	1.1753922E 03	1.3088500E 03	5.5011615E-10	4.8640170E-05	7.2519835E 02
185000.	2.0164124E-08	1.1804302E 03	1.3156500E 03	5.3392071E-10	4.8790280E-05	7.2713531E 02
186000.	1.9677896E-08	1.1854550E 03	1.3226500E 03	5.1828839E-10	4.8939956E-05	7.2906713E 02
187000.	1.9206311E-08	1.1904665E 03	1.3296500E 03	5.0319647E-10	4.9089190E-05	7.3099388E 02
188000.	1.8749780E-08	1.1954647E 03	1.3366500E 03	4.8862371E-10	4.9238014E-05	7.3291548E 02
189000.	1.8303317E-08	1.2004496E 03	1.3436500E 03	4.7454937E-10	4.9386404E-05	7.3483211E 02
190000.	1.7871564E-08	1.2054212E 03	1.3506500E 03	4.6095390E-10	4.9534373E-05	7.3674375E 02
191000.	1.7451910E-08	1.2085380E 03	1.3556500E 03	4.48466974E-10	4.9639880E-05	7.3810617E 02
192000.	1.7043719E-08	1.2116448E 03	1.3606500E 03	4.3637082E-10	4.9745032E-05	7.3946609E 02
193000.	1.6646644E-08	1.2147417E 03	1.3656500E 03	4.2464403E-10	4.9850045E-05	7.4082351E 02
194000.	1.6260338E-08	1.2178287E 03	1.3706500E 03	4.1327655E-10	4.9954849E-05	7.4217845E 02
195000.	1.5884471E-08	1.2209057E 03	1.3756500E 03	4.0225603E-10	5.0059444E-05	7.4353091E 02
196000.	1.5518716E-08	1.2239729E 03	1.3806500E 03	3.9157048E-10	5.0163831E-05	7.4488092E 02
197000.	1.5162775E-08	1.2270301E 03	1.3856500E 03	3.8120879E-10	5.0268014E-05	7.4622849E 02
198000.	1.4816337E-08	1.2300773E 03	1.3906500E 03	3.7115965E-10	5.0371991E-05	7.4757363E 02
199000.	1.4479118E-08	1.2331147E 03	1.3956500E 03	3.6141266E-10	5.0475764E-05	7.4891635E 02
200000.	1.4150844E-08	1.2361421E 03	1.4006500E 03	3.5195770E-10	5.0579335E-05	7.5025666E 02
201000.	1.3831239E-08	1.2391586E 03	1.4056500E 03	3.4278486E-10	5.0682705E-05	7.5159460E 02
202000.	1.3520045E-08	1.2421672E 03	1.4106500E 03	3.3388477E-10	5.0785874E-05	7.5293015E 02
203000.	1.3217012E-08	1.2451588E 03	1.4156500E 03	3.2524838E-10	5.0888844E-05	7.5426334E 02
204000.	1.2921892E-08	1.2481326E 03	1.4206500E 03	3.1686483E-10	5.0991617E-05	7.5559417E 02
205000.	1.2634456E-08	1.2511304E 03	1.4256500E 03	3.0873182E-10	5.1094193E-05	7.5692267E 02
206000.	1.2354471E-08	1.2540982E 03	1.4306500E 03	3.0083510E-10	5.1196572E-05	7.5824883E 02
207000.	1.2081722E-08	1.2570581E 03	1.4356500E 03	2.9316897E-10	5.1298757E-05	7.5957248E 02
208000.	1.1815994E-08	1.2600042E 03	1.4406500E 03	2.8572584E-10	5.1400748E-05	7.6089423E 02
209000.	1.1557080E-08	1.2629423E 03	1.4456500E 03	2.7847841E-10	5.1502547E-05	7.6221349E 02
210000.	1.1304783E-08	1.2658705E 03	1.4506500E 03	2.7147970E-10	5.1604154E-05	7.6353047E 02
211000.	1.1058912E-08	1.2687887E 03	1.4556500E 03	2.6466296E-10	5.1705571E-05	7.6484517E 02
212000.	1.0819280E-08	1.2716970E 03	1.4606500E 03	2.5804174E-10	5.1806798E-05	7.6615745E 02
213000.	1.0585704E-08	1.2745954E 03	1.4656500E 03	2.5160961E-10	5.1907837E-05	7.6746784E 02
214000.	1.0358013E-08	1.2774839E 03	1.4706500E 03	2.4536062E-10	5.2008688E-05	7.6877581E 02
215000.	1.0136038E-08	1.2803624E 03	1.4756500E 03	2.3928894E-10	5.2109353E-05	7.7008157E 02
216000.	9.9196129E-09	1.2832310E 03	1.4806500E 03	2.3338883E-10	5.2209833E-05	7.7138512E 02
217000.	9.7085841E-09	1.2860897E 03	1.4856500E 03	2.2765497E-10	5.2310127E-05	7.7268646E 02
218000.	9.5027945E-09	1.2889384E 03	1.4906500E 03	2.2208202E-10	5.2410240E-05	7.7398526E 02
219000.	9.3020988E-09	1.2917773E 03	1.4956500E 03	2.1664498E-10	5.2510169E-05	7.7528240E 02
220000.	9.1063540E-09	1.2946062E 03	1.5006500E 03	2.1139897E-10	5.2609917E-05	7.7657742E 02
221000.	8.9154168E-09	1.2974252E 03	1.5056500E 03	2.0627917E-10	5.2709484E-05	7.7787007E 02
222000.	8.7291573E-09	1.3002342E 03	1.5106500E 03	2.0130113E-10	5.2808871E-05	7.7916059E 02
223000.	8.5474434E-09	1.3030331E 03	1.5156500E 03	1.9646022E-10	5.2908080E-05	7.8044897E 02
224000.	8.3701468E-09	1.3058225E 03	1.5206500E 03	1.9175273E-10	5.3007112E-05	7.8173523E 02
225000.	8.1971492E-09	1.3086018E 03	1.5256500E 03	1.8717407E-10	5.3105966E-05	7.8301938E 02
226000.	8.0283282E-09	1.3113712E 03	1.5306500E 03	1.8272038E-10	5.3204644E-05	7.8430142E 02
227000.	7.8635709E-09	1.3141306E 03	1.5356500E 03	1.7838787E-10	5.3303148E-05	7.8558137E 02
228000.	7.7027657E-09	1.3168801E 03	1.5406500E 03	1.7417285E-10	5.3401477E-05	7.8685923E 02
229000.	7.5459986E-09	1.3196197E 03	1.5456500E 03	1.7007170E-10	5.3499638E-05	7.8813503E 02

CAPE KENNEDY REFERENCE ATMOSPHERE
VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
160000.	3.8573873E-09	1.0349730E-09	2.4167999E 00	2.6640000E 01	1.0170147E 01
161000.	3.7370909E-09	9.9825902E-10	2.4276052E 00	2.6634000E 01	1.0170147E 01
162000.	3.6309267E-09	9.8132197E-10	2.4403480E 00	2.6628000E 01	1.0170147E 01
163000.	3.5287047E-09	9.2606717E-10	2.4530291E 00	2.6582000E 01	1.0170147E 01
164000.	3.4302453E-09	8.9240400E-10	2.4656436E 00	2.6536000E 01	1.0170147E 01
165000.	3.3353799E-09	8.6024789E-10	2.4782096E 00	2.6500000E 01	1.0170147E 01
166000.	3.2439443E-09	8.2951846E-10	2.4907107E 00	2.6500000E 01	1.0170147E 01
167000.	3.1557932E-09	8.0014176E-10	2.5031534E 00	2.6478000E 01	1.0170147E 01
168000.	3.0707750E-09	7.7204531E-10	2.5155385E 00	2.6452000E 01	1.0170147E 01
169000.	2.9887962E-09	7.4516704E-10	2.5278666E 00	2.6426000E 01	1.0170147E 01
170000.	2.9096050E-09	7.1944070E-10	2.5401386E 00	2.6400000E 01	1.0170147E 01
171000.	2.8331025E-09	6.9469723E-10	2.5484960E 00	2.6372500E 01	1.0170147E 01
172000.	2.7590547E-09	6.7441608E-10	2.5572266E 00	2.6345000E 01	1.0170147E 01
173000.	2.6873677E-09	6.5316017E-10	2.5657305E 00	2.6317500E 01	1.0170147E 01
174000.	2.6179591E-09	6.3269417E-10	2.5742079E 00	2.6290000E 01	1.0170147E 01
175000.	2.5507383E-09	6.1288444E-10	2.5826592E 00	2.6262500E 01	1.0170147E 01
176000.	2.4856252E-09	5.9399869E-10	2.5910844E 00	2.6235000E 01	1.0170147E 01
177000.	2.4225433E-09	5.7570883E-10	2.5994842E 00	2.6207500E 01	1.0170147E 01
178000.	2.3614169E-09	5.5807893E-10	2.6078573E 00	2.6180000E 01	1.0170147E 01
179000.	2.3021760E-09	5.4108813E-10	2.6162072E 00	2.6152500E 01	1.0170147E 01
180000.	2.2447514E-09	5.2470765E-10	2.6245309E 00	2.6125000E 01	1.0170147E 01
181000.	2.1890701E-09	5.0891236E-10	2.6328299E 00	2.6097500E 01	1.0170147E 01
182000.	2.1350930E-09	4.9367823E-10	2.6411043E 00	2.6070000E 01	1.0170147E 01
183000.	2.0827361E-09	4.7898246E-10	2.6493542E 00	2.6042500E 01	1.0170147E 01
184000.	2.0319495E-09	4.6480306E-10	2.6575799E 00	2.6015000E 01	1.0170147E 01
185000.	1.9826777E-09	4.5111924E-10	2.6657816E 00	2.5987500E 01	1.0170147E 01
186000.	1.9349603E-09	4.3791121E-10	2.6739595E 00	2.5960000E 01	1.0170147E 01
187000.	1.8886693E-09	4.2515978E-10	2.6821137E 00	2.5932500E 01	1.0170147E 01
188000.	1.8438325E-09	4.1284699E-10	2.6902446E 00	2.5905000E 01	1.0170147E 01
189000.	1.7997101E-09	4.0095532E-10	2.6983523E 00	2.5877500E 01	1.0170147E 01
190000.	1.7572572E-09	3.8946827E-10	2.7064370E 00	2.5850000E 01	1.0170147E 01
191000.	1.7159939E-09	3.78292017E-10	2.7121977E 00	2.582249E 01	1.0170147E 01
192000.	1.6758571E-09	3.6849758E-10	2.7179469E 00	2.579499E 01	1.0170147E 01
193000.	1.6368144E-09	3.5917890E-10	2.7236845E 00	2.576749E 01	1.0170147E 01
194000.	1.5988302E-09	3.4918481E-10	2.7294108E 00	2.5739900E 01	1.0170147E 01
195000.	1.5618723E-09	3.3972388E-10	2.7351256E 00	2.571239E 01	1.0170147E 01
196000.	1.5259087E-09	3.3084497E-10	2.7408290E 00	2.568479E 01	1.0170147E 01
197000.	1.4909101E-09	3.2209018E-10	2.7465213E 00	2.565719E 01	1.0170147E 01
198000.	1.4568458E-09	3.1359948E-10	2.7522024E 00	2.562959E 01	1.0170147E 01
199000.	1.4236882E-09	3.0536427E-10	2.7578723E 00	2.5599129E 01	1.0170147E 01
200000.	1.3914099E-09	2.9737541E-10	2.7635311E 00	2.5562499E 01	1.0170147E 01
201000.	1.3599841E-09	2.8962311E-10	2.7691790E 00	2.5533749E 01	1.0170147E 01
202000.	1.3293894E-09	2.8210527E-10	2.7748159E 00	2.5505000E 01	1.0170147E 01
203000.	1.2995890E-09	2.7480822E-10	2.7804420E 00	2.5476249E 01	1.0170147E 01
204000.	1.2705708E-09	2.6772650E-10	2.7860572E 00	2.5447499E 01	1.0170147E 01
205000.	1.2423081E-09	2.6085308E-10	2.7916617E 00	2.5418749E 01	1.0170147E 01
206000.	1.2147780E-09	2.5418100E-10	2.7972554E 00	2.5390000E 01	1.0170147E 01
207000.	1.1879593E-09	2.4770375E-10	2.8028386E 00	2.5361249E 01	1.0170147E 01
208000.	1.1618311E-09	2.4141492E-10	2.8084112E 00	2.5332499E 01	1.0170147E 01
209000.	1.1363729E-09	2.3530833E-10	2.8139732E 00	2.5303749E 01	1.0170147E 01
210000.	1.1115654E-09	2.2937809E-10	2.8195248E 00	2.5275000E 01	1.0170147E 01
211000.	1.0873895E-09	2.2361851E-10	2.8250659E 00	2.5246249E 01	1.0170147E 01
212000.	1.0638273E-09	2.1802512E-10	2.8305967E 00	2.5217499E 01	1.0170147E 01
213000.	1.0408604E-09	2.1258950E-10	2.8361172E 00	2.5188749E 01	1.0170147E 01
214000.	1.0184723E-09	2.0730962E-10	2.8416275E 00	2.5160000E 01	1.0170147E 01
215000.	9.9664617E-10	2.0217955E-10	2.8471276E 00	2.5131250E 01	1.0170147E 01
216000.	9.7536570E-10	1.9719443E-10	2.8526176E 00	2.5102499E 01	1.0170147E 01
217000.	9.5461588E-10	1.9234979E-10	2.8580974E 00	2.5073749E 01	1.0170147E 01
218000.	9.3438121E-10	1.8764111E-10	2.8635673E 00	2.5045000E 01	1.0170147E 01
219000.	9.1464741E-10	1.8306416E-10	2.8690272E 00	2.5016250E 01	1.0170147E 01
220000.	8.9540042E-10	1.7861481E-10	2.8744772E 00	2.4987499E 01	1.0170147E 01
221000.	8.7662612E-10	1.7428999E-10	2.8799173E 00	2.4958749E 01	1.0170147E 01
222000.	8.5831180E-10	1.7008296E-10	2.8853475E 00	2.4930000E 01	1.0170147E 01
223000.	8.4044441E-10	1.6599225E-10	2.8907681E 00	2.4901250E 01	1.0170147E 01
224000.	8.2301136E-10	1.6201534E-10	2.8961789E 00	2.4872499E 01	1.0170147E 01
225000.	8.0600103E-10	1.5814675E-10	2.9015801E 00	2.4843749E 01	1.0170147E 01
226000.	7.8940138E-10	1.5438374E-10	2.9069716E 00	2.4815000E 01	1.0170147E 01
227000.	7.7320129E-10	1.5072313E-10	2.9123536E 00	2.4786250E 01	1.0170147E 01
228000.	7.5738980E-10	1.4716170E-10	2.9177261E 00	2.4757499E 01	1.0170147E 01
229000.	7.4197613E-10	1.4369895E-10	2.9230998E 00	2.4728749E 01	1.0170147E 01

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees F	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
230000.	7.3925818E-09	1.3223493E 03	1.5506500E 03	1.6660106E-10	5.3597617E-05	7.8440877E 02
231000.	7.2428844E-09	1.3241963E 03	1.5546500E 03	1.6229931E-10	5.3675801E-05	7.9042627E 02
232000.	7.0966346E-09	1.3260353E 03	1.5586500E 03	1.5861403E-10	5.3754035E-05	7.9144247E 02
233000.	6.9537457E-09	1.3278662E 03	1.5626500E 03	1.5502254E-10	5.3832081E-05	7.9245737E 02
234000.	6.8141302E-09	1.3296980E 03	1.5666500E 03	1.5152218E-10	5.3910018E-05	7.9347096E 02
235000.	6.6777033E-09	1.3315039E 03	1.5706500E 03	1.4811037E-10	5.3987878E-05	7.9448327E 02
236000.	6.5443868E-09	1.3333106E 03	1.5746500E 03	1.4478470E-10	5.4065570E-05	7.9549429E 02
237000.	6.4140997E-09	1.3351093E 03	1.5786500E 03	1.4154273E-10	5.4143183E-05	7.9650403E 02
238000.	6.2867616E-09	1.3369000E 03	1.5826500E 03	1.3838208E-10	5.4220692E-05	7.9751249E 02
239000.	6.1623034E-09	1.3386826E 03	1.5866500E 03	1.3530079E-10	5.4298093E-05	7.9851967E 02
240000.	6.0406505E-09	1.3404572E 03	1.5906500E 03	1.3229604E-10	5.4375389E-05	7.9952559E 02
241000.	5.9217323E-09	1.3422237E 03	1.5946500E 03	1.2936630E-10	5.4452580E-05	8.0053023E 02
242000.	5.8054790E-09	1.3439822E 03	1.5986500E 03	1.2650929E-10	5.4529665E-05	8.0153363E 02
243000.	5.6918242E-09	1.3457326E 03	1.6026500E 03	1.2372303E-10	5.4606646E-05	8.0253576E 02
244000.	5.5807045E-09	1.3474750E 03	1.6066500E 03	1.2100561E-10	5.4683524E-05	8.0353667E 02
245000.	5.4720553E-09	1.3492094E 03	1.6106500E 03	1.1835512E-10	5.4760296E-05	8.0453628E 02
246000.	5.3658158E-09	1.3509356E 03	1.6146500E 03	1.1576975E-10	5.4836976E-05	8.0553468E 02
247000.	5.2619249E-09	1.3526538E 03	1.6186500E 03	1.1324771E-10	5.4913533E-05	8.0653186E 02
248000.	5.1603259E-09	1.3543640E 03	1.6226500E 03	1.1078731E-10	5.4989998E-05	8.0752779E 02
249000.	5.0609262E-09	1.3560662E 03	1.6266500E 03	1.0838689E-10	5.5066360E-05	8.0852250E 02
250000.	4.9637803E-09	1.3577603E 03	1.6306500E 03	1.0604484E-10	5.5142621E-05	8.0951596E 02
251000.	4.8687236E-09	1.3594463E 03	1.6346500E 03	1.0375955E-10	5.5218779E-05	8.1050824E 02
252000.	4.7757415E-09	1.3611243E 03	1.6386500E 03	1.0152953E-10	5.5294838E-05	8.1149930E 02
253000.	4.6847841E-09	1.3627942E 03	1.6426500E 03	9.9353300E-11	5.5370796E-05	8.1248914E 02
254000.	4.5958012E-09	1.3644561E 03	1.6466500E 03	9.7229418E-11	5.5446653E-05	8.1347779E 02
255000.	4.5087449E-09	1.3661100E 03	1.6506500E 03	9.5146492E-11	5.5522412E-05	8.1446522E 02
256000.	4.4235698E-09	1.3677588E 03	1.6546500E 03	9.3133194E-11	5.5598070E-05	8.1545147E 02
257000.	4.3402283E-09	1.3693935E 03	1.6586500E 03	9.1158165E-11	5.5673630E-05	8.1643632E 02
258000.	4.2586772E-09	1.3710232E 03	1.6626500E 03	8.9237154E-11	5.5749090E-05	8.1742039E 02
259000.	4.1788747E-09	1.3726449E 03	1.6666500E 03	8.7367945E-11	5.5824453E-05	8.1840308E 02
260000.	4.1007767E-09	1.3742585E 03	1.6706500E 03	8.5510293E-11	5.5899718E-05	8.1938457E 02
261000.	4.0243446E-09	1.3758640E 03	1.6746500E 03	8.3716075E-11	5.5974885E-05	8.2036492E 02
262000.	3.9495377E-09	1.3774615E 03	1.6786500E 03	8.1964134E-11	5.6049955E-05	8.2134407E 02
263000.	3.8763164E-09	1.3790510E 03	1.6826500E 03	8.0253351E-11	5.6124928E-05	8.2232206E 02
264000.	3.8046447E-09	1.3806324E 03	1.6866500E 03	7.8582690E-11	5.6199805E-05	8.2329890E 02
265000.	3.7344853E-09	1.3822056E 03	1.6906500E 03	7.6951092E-11	5.6274586E-05	8.2427458E 02
266000.	3.6658013E-09	1.3837711E 03	1.6946500E 03	7.5357311E-11	5.6349271E-05	8.2524910E 02
267000.	3.5985599E-09	1.3853283E 03	1.6986500E 03	7.3801059E-11	5.6423861E-05	8.2622247E 02
268000.	3.5327263E-09	1.3868776E 03	1.7026500E 03	7.2280703E-11	5.6498355E-05	8.2719469E 02
269000.	3.4682874E-09	1.3884187E 03	1.7066500E 03	7.0795534E-11	5.6572756E-05	8.2816577E 02
270000.	3.4051519E-09	1.3899518E 03	1.7106500E 03	6.9344688E-11	5.6647062E-05	8.2913573E 02
271000.	3.3433475E-09	1.3914769E 03	1.7146500E 03	6.7927213E-11	5.6721274E-05	8.3010454E 02
272000.	3.2828238E-09	1.3929939E 03	1.7186500E 03	6.6542312E-11	5.6795392E-05	8.3107224E 02
273000.	3.2235518E-09	1.3945029E 03	1.7226500E 03	6.5189155E-11	5.6869471E-05	8.3203880E 02
274000.	3.1655008E-09	1.3960038E 03	1.7266500E 03	6.3866904E-11	5.6943349E-05	8.3300422E 02
275000.	3.1086453E-09	1.3974967E 03	1.7306500E 03	6.2574823E-11	5.7017189E-05	8.3396854E 02
276000.	3.0529552E-09	1.3989815E 03	1.7346500E 03	6.1312119E-11	5.7090937E-05	8.3493176E 02
277000.	2.9984053E-09	1.4004583E 03	1.7386500E 03	6.0078065E-11	5.7164592E-05	8.3589386E 02
278000.	2.9449691E-09	1.4019270E 03	1.7426500E 03	5.8871938E-11	5.7238156E-05	8.3685485E 02
279000.	2.8926212E-09	1.4033877E 03	1.7466500E 03	5.7693040E-11	5.7311629E-05	8.3781472E 02
280000.	2.8413364E-09	1.4048403E 03	1.7506500E 03	5.6540688E-11	5.7385010E-05	8.3877352E 02
281000.	2.7910914E-09	1.4062849E 03	1.7546500E 03	5.5414231E-11	5.7458303E-05	8.3973122E 02
282000.	2.7418610E-09	1.4077214E 03	1.7586500E 03	5.4312999E-11	5.7531503E-05	8.4068781E 02
283000.	2.6936236E-09	1.4091499E 03	1.7626500E 03	5.3236388E-11	5.7604614E-05	8.4164335E 02
284000.	2.6463566E-09	1.4105704E 03	1.7666500E 03	5.2183788E-11	5.7677636E-05	8.4259777E 02
285000.	2.6000374E-09	1.4119828E 03	1.7706500E 03	5.1154591E-11	5.7750568E-05	8.4355112E 02
286000.	2.5546459E-09	1.4133871E 03	1.7746500E 03	5.0148246E-11	5.7823412E-05	8.4450340E 02
287000.	2.5101599E-09	1.4147834E 03	1.7786500E 03	4.9164162E-11	5.7896167E-05	8.4545461E 02
288000.	2.4665603E-09	1.4161716E 03	1.7826500E 03	4.8201817E-11	5.7968833E-05	8.4640474E 02
289000.	2.4238261E-09	1.4175518E 03	1.7866500E 03	4.7260654E-11	5.8041411E-05	8.4735382E 02
290000.	2.3819394E-09	1.4189240E 03	1.7906500E 03	4.6340187E-11	5.8113902E-05	8.4830183E 02
291000.	2.3408808E-09	1.4202881E 03	1.7946500E 03	4.5439891E-11	5.8186305E-05	8.4924878E 02
292000.	2.3006322E-09	1.4216441E 03	1.7986500E 03	4.4559293E-11	5.8258622E-05	8.5019467E 02
293000.	2.2611749E-09	1.4229921E 03	1.8026500E 03	4.3697893E-11	5.8330851E-05	8.5113952E 02
294000.	2.2224918E-09	1.4243321E 03	1.8066500E 03	4.2855237E-11	5.8402995E-05	8.5208313E 02
295000.	2.1845663E-09	1.4256640E 03	1.8106500E 03	4.2030879E-11	5.8475052E-05	8.5302607E 02
296000.	2.1473817E-09	1.4269878E 03	1.8146500E 03	4.1224380E-11	5.8547023E-05	8.5396777E 02
297000.	2.1109216E-09	1.4283036E 03	1.8186500E 03	4.0435306E-11	5.8618908E-05	8.5490845E 02
298000.	2.0751696E-09	1.4296114E 03	1.8226500E 03	3.9663230E-11	5.8690707E-05	8.5584810E 02
299000.	2.0401117E-09	1.4309111E 03	1.8266500E 03	3.8907771E-11	5.8762496E-05	8.5678670E 02

CAPE KENNEDY REFERENCE ATMOSPHERE
VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE	
	meters	unitless	unitless	unitless	unitless	
230000.	7.2689034E-10	1.4032488E-10	2.9284427E 00	2.4700000E 01	1.0170147E 01	
231000.	7.1217104E-10	1.3712962E-10	2.9327188E 00	2.4670860E 01	1.0170147E 01	
232000.	6.9779074E-10	1.3401385E-10	2.9369890E 00	2.4641719E 01	1.0170147E 01	
233000.	6.8374090E-10	1.3098134E-10	2.9412532E 00	2.4612580E 01	1.0170147E 01	
234000.	6.7001294E-10	1.2802382E-10	2.9455113E 00	2.4583440E 01	1.0170147E 01	
235000.	6.5659848E-10	1.2514112E-10	2.9497639E 00	2.4554300E 01	1.0170147E 01	
236000.	6.4349988E-10	1.2233121E-10	2.9540109E 00	2.4525160E 01	1.0170147E 01	
237000.	6.3067907E-10	1.1959200E-10	2.9582511E 00	2.4496019E 01	1.0170147E 01	
238000.	6.1813837E-10	1.1692132E-10	2.9624840E 00	2.4466880E 01	1.0170147E 01	
239000.	6.0592077E-10	1.1431791E-10	2.9667150E 00	2.4437740E 01	1.0170147E 01	
240000.	5.9395900E-10	1.1177931E-10	2.9709389E 00	2.4408600E 01	1.0170147E 01	
241000.	5.8226613E-10	1.0920392E-10	2.9751598E 00	2.4379460E 01	1.0170147E 01	
242000.	5.7083300E-10	1.0668998E-10	2.9793679E 00	2.4350320E 01	1.0170147E 01	
243000.	5.5963994E-10	1.0423382E-10	2.9835734E 00	2.4321180E 01	1.0170147E 01	
244000.	5.4873389E-10	1.0183082E-10	2.9877740E 00	2.4292040E 01	1.0170147E 01	
245000.	5.3803075E-10	1.0000038E-10	2.9919647E 00	2.4262900E 01	1.0170147E 01	
246000.	5.2764035E-10	9.7815955E-11	2.9961577E 00	2.4233760E 01	1.0170147E 01	
247000.	5.1738924E-10	9.5645017E-11	3.0003411E 00	2.4204620E 01	1.0170147E 01	
248000.	5.0739933E-10	9.3465200E-11	3.0045190E 00	2.4175480E 01	1.0170147E 01	
249000.	4.9762929E-10	9.1278042E-11	3.0086912E 00	2.4146340E 01	1.0170147E 01	
250000.	4.8807356E-10	8.9599197E-11	3.0128579E 00	2.4117200E 01	1.0170147E 01	
251000.	4.7872695E-10	8.7668320E-11	3.0170190E 00	2.4088060E 01	1.0170147E 01	
252000.	4.6958430E-10	8.5784129E-11	3.0211747E 00	2.4058920E 01	1.0170147E 01	
253000.	4.6064073E-10	8.3945396E-11	3.0253249E 00	2.4029780E 01	1.0170147E 01	
254000.	4.5189131E-10	8.2150890E-11	3.0294695E 00	2.4000640E 01	1.0170147E 01	
255000.	4.4333133E-10	8.0399437E-11	3.0336088E 00	2.3971500E 01	1.0170147E 01	
256000.	4.3495632E-10	7.8689916E-11	3.0377425E 00	2.3942360E 01	1.0170147E 01	
257000.	4.2676140E-10	7.7021178E-11	3.0418710E 00	2.3913220E 01	1.0170147E 01	
258000.	4.1874292E-10	7.5392167E-11	3.0459937E 00	2.3884080E 01	1.0170147E 01	
259000.	4.1089918E-10	7.3801855E-11	3.0501116E 00	2.3854940E 01	1.0170147E 01	
260000.	4.0321704E-10	7.2249190E-11	3.0542238E 00	2.3825800E 01	1.0170147E 01	
261000.	3.9570171E-10	7.0733223E-11	3.0583308E 00	2.3796660E 01	1.0170147E 01	
262000.	3.8833417E-10	6.9232976E-11	3.0624324E 00	2.3767520E 01	1.0170147E 01	
263000.	3.8114653E-10	6.7807505E-11	3.0665288E 00	2.3738380E 01	1.0170147E 01	
264000.	3.7409928E-10	6.6395392E-11	3.0706199E 00	2.3709240E 01	1.0170147E 01	
265000.	3.6720071E-10	6.5017367E-11	3.0747057E 00	2.3680100E 01	1.0170147E 01	
266000.	3.6044722E-10	6.3670937E-11	3.0787863E 00	2.3650960E 01	1.0170147E 01	
267000.	3.5383558E-10	6.2355846E-11	3.0828618E 00	2.3621820E 01	1.0170147E 01	
268000.	3.4733238E-10	6.1071270E-11	3.0869319E 00	2.3592680E 01	1.0170147E 01	
269000.	3.4102430E-10	5.9816424E-11	3.0909970E 00	2.3563540E 01	1.0170147E 01	
270000.	3.3481835E-10	5.8590562E-11	3.0950589E 00	2.3534400E 01	1.0170147E 01	
271000.	3.2874131E-10	5.7392920E-11	3.0991116E 00	2.3505260E 01	1.0170147E 01	
272000.	3.2279020E-10	5.6222801E-11	3.1031613E 00	2.3476120E 01	1.0170147E 01	
273000.	3.1696215E-10	5.5079493E-11	3.1072039E 00	2.3446980E 01	1.0170147E 01	
274000.	3.1125417E-10	5.3962300E-11	3.1112453E 00	2.3417840E 01	1.0170147E 01	
275000.	3.0566371E-10	5.2870597E-11	3.1152798E 00	2.3388700E 01	1.0170147E 01	
276000.	3.0018791E-10	5.1803716E-11	3.1193091E 00	2.3359560E 01	1.0170147E 01	
277000.	2.9482418E-10	5.0761041E-11	3.1233335E 00	2.3330420E 01	1.0170147E 01	
278000.	2.8956996E-10	4.9741963E-11	3.1273528E 00	2.3301280E 01	1.0170147E 01	
279000.	2.8442274E-10	4.8745891E-11	3.1313672E 00	2.3272140E 01	1.0170147E 01	
280000.	2.7938007E-10	4.7772247E-11	3.1353766E 00	2.3243000E 01	1.0170147E 01	
281000.	2.7443933E-10	4.6820484E-11	3.1393811E 00	2.3213860E 01	1.0170147E 01	
282000.	2.6959895E-10	4.5890033E-11	3.1433806E 00	2.3184720E 01	1.0170147E 01	
283000.	2.6485591E-10	4.4980385E-11	3.1473752E 00	2.3155580E 01	1.0170147E 01	
284000.	2.6020879E-10	4.4091025E-11	3.1513659E 00	2.3126440E 01	1.0170147E 01	
285000.	2.5565366E-10	4.3221637E-11	3.1553498E 00	2.3097300E 01	1.0170147E 01	
286000.	2.5119065E-10	4.2371586E-11	3.1593298E 00	2.3068160E 01	1.0170147E 01	
287000.	2.4681647E-10	4.1539608E-11	3.1633049E 00	2.3039020E 01	1.0170147E 01	
288000.	2.4252946E-10	4.0726585E-11	3.1672752E 00	2.3009880E 01	1.0170147E 01	
289000.	2.3832753E-10	3.9931379E-11	3.1712407E 00	2.2980739E 01	1.0170147E 01	
290000.	2.3420896E-10	3.9153661E-11	3.1752014E 00	2.2951600E 01	1.0170147E 01	
291000.	2.3017177E-10	3.8392984E-11	3.1791574E 00	2.2922460E 01	1.0170147E 01	
292000.	2.2621425E-10	3.7648951E-11	3.1831086E 00	2.2893320E 01	1.0170147E 01	
293000.	2.2233453E-10	3.6921130E-11	3.1870920E 00	2.2864180E 01	1.0170147E 01	
294000.	2.1853094E-10	3.6209163E-11	3.1909960E 00	2.2835039E 01	1.0170147E 01	
295000.	2.1480184E-10	3.5517648E-11	3.1949338E 00	2.2805900E 01	1.0170147E 01	
296000.	2.1114559E-10	3.4831227E-11	3.1988661E 00	2.2776760E 01	1.0170147E 01	
297000.	2.0756057E-10	3.4164526E-11	3.2027937E 00	2.2747620E 01	1.0170147E 01	
298000.	2.0404519E-10	3.3512174E-11	3.2067167E 00	2.2718480E 01	1.0170147E 01	
299000.	2.0059805E-10	3.2873878E-11	3.2106355E 00	2.2689340E 01	1.0170147E 01	

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE meters	PRESSURE newtons cm ⁻²	KINETIC TEMPERATURE degrees K	MOLECULAR TEMPERATURE degrees K	DENSITY kg m ⁻³	COEFFICIENT OF VISCOSITY newton-sec m ⁻²	SPEED OF SOUND m sec ⁻¹
300000.	2.0537311E-09	1.4321902E 03	1.8306500E 03	3.8168505E-11	5.8834054E-05	8.5772430E 02
302000.	1.9288802E-09	1.4339029E 03	1.8327500E 03	3.6763628E-11	5.8952060E-05	8.5826804E 02
304000.	1.8744851E-09	1.4355909E 03	1.8434300E 03	3.5415564E-11	5.9069838E-05	8.6081107E 02
306000.	1.8123020E-09	1.4372541E 03	1.8504500E 03	3.4122362E-11	5.9187388E-05	8.6235031E 02
308000.	1.7528153E-09	1.4388925E 03	1.8570500E 03	3.2881401E-11	5.9304712E-05	8.6388681E 02
310000.	1.6953204E-09	1.4405061E 03	1.8636500E 03	3.1690388E-11	5.9421913E-05	8.6542059E 02
312000.	1.6399304E-09	1.4420949E 03	1.8702500E 03	3.0547084E-11	5.9538689E-05	8.6695164E 02
314000.	1.5866056E-09	1.4436690E 03	1.8768500E 03	2.9454500E-11	5.9655345E-05	8.6848003E 02
316000.	1.5352017E-09	1.4452182E 03	1.8834500E 03	2.8395473E-11	5.9771778E-05	8.7000570E 02
318000.	1.4856637E-09	1.4467426E 03	1.8900500E 03	2.7383248E-11	5.9887992E-05	8.7152870E 02
320000.	1.4379174E-09	1.4482239E 03	1.8966500E 03	2.6410980E-11	6.0003988E-05	8.7304906E 02
322000.	1.3918915E-09	1.4496672E 03	1.9032500E 03	2.5476943E-11	6.0119767E-05	8.7456676E 02
324000.	1.3475168E-09	1.4511072E 03	1.9098500E 03	2.4579480E-11	6.0235330E-05	8.7608185E 02
326000.	1.3047288E-09	1.4525229E 03	1.9164500E 03	2.3717042E-11	6.0350677E-05	8.7759436E 02
328000.	1.2634642E-09	1.4539130E 03	1.9230500E 03	2.2888120E-11	6.0465811E-05	8.7910416E 02
330000.	1.2236637E-09	1.4552787E 03	1.9296500E 03	2.2091301E-11	6.0580732E-05	8.8061143E 02
332000.	1.1852696E-09	1.4566196E 03	1.9362500E 03	2.1325217E-11	6.0695443E-05	8.8211613E 02
334000.	1.1482273E-09	1.4579357E 03	1.9428500E 03	2.0588579E-11	6.0809942E-05	8.8361827E 02
336000.	1.1124851E-09	1.4592270E 03	1.9494500E 03	1.9880142E-11	6.0924233E-05	8.8511784E 02
338000.	1.0779898E-09	1.4604933E 03	1.9560500E 03	1.9198728E-11	6.1038315E-05	8.8661491E 02
340000.	1.0446960E-09	1.4617353E 03	1.9626500E 03	1.8543206E-11	6.1152192E-05	8.8810942E 02
342000.	1.0125567E-09	1.4629522E 03	1.9692500E 03	1.7912503E-11	6.1265862E-05	8.8960143E 02
344000.	9.8152788E-10	1.4641444E 03	1.9758500E 03	1.7305591E-11	6.1379327E-05	8.9109093E 02
346000.	9.5326966E-10	1.4653117E 03	1.9824500E 03	1.6721486E-11	6.1492588E-05	8.9257798E 02
348000.	9.2633181E-10	1.4664543E 03	1.9890500E 03	1.6159247E-11	6.1605647E-05	8.9406253E 02
350000.	9.0069797E-10	1.4675721E 03	1.9956500E 03	1.5617984E-11	6.1718503E-05	8.9554464E 02
352000.	8.7649385E-10	1.4686650E 03	2.0022500E 03	1.5096837E-11	6.1831163E-05	8.9702429E 02
354000.	8.5361312E-10	1.4697332E 03	2.0088500E 03	1.4594989E-11	6.1943621E-05	8.9850150E 02
356000.	8.3194749E-10	1.4707766E 03	2.0154500E 03	1.4111658E-11	6.2055860E-05	8.9997628E 02
358000.	7.9206777E-10	1.4717932E 03	2.0220500E 03	1.3646089E-11	6.2167941E-05	9.0144886E 02
360000.	7.6893477E-10	1.4727891E 03	2.0286500E 03	1.3197576E-11	6.2279808E-05	9.0291842E 02
362000.	7.4678808E-10	1.4737581E 03	2.0352500E 03	1.2765429E-11	6.2391479E-05	9.0438620E 02
364000.	7.2579869E-10	1.4747023E 03	2.0418500E 03	1.2348998E-11	6.2502966E-05	9.0585142E 02
366000.	7.0593869E-10	1.4756217E 03	2.0484500E 03	1.1947654E-11	6.2614258E-05	9.0731425E 02
368000.	6.8728121E-10	1.4765165E 03	2.0550500E 03	1.1560797E-11	6.2725388E-05	9.0877473E 02
370000.	6.6981057E-10	1.4773863E 03	2.0616500E 03	1.1187894E-11	6.2836227E-05	9.1023288E 02
372000.	6.5349725E-10	1.4782319E 03	2.0682500E 03	1.0828284E-11	6.2946893E-05	9.1168869E 02
374000.	6.3827894E-10	1.4790516E 03	2.0748500E 03	1.0481951E-11	6.3057455E-05	9.1314217E 02
376000.	6.2409792E-10	1.4798471E 03	2.0814500E 03	1.0147139E-11	6.3167878E-05	9.1459358E 02
378000.	6.1088695E-10	1.4806177E 03	2.0880500E 03	9.8246453E-12	6.3277930E-05	9.1604223E 02
380000.	5.9862204E-10	1.4813637E 03	2.0946500E 03	9.5546736E-12	6.3387887E-05	9.1748833E 02
382000.	5.8719261E-10	1.4820948E 03	2.1012500E 03	9.2933057E-12	6.3497657E-05	9.1893133E 02
384000.	5.7659908E-10	1.4828111E 03	2.1078500E 03	9.0402368E-12	6.3607243E-05	9.2037181E 02
386000.	5.6684391E-10	1.4835128E 03	2.1144500E 03	8.7944134E-12	6.3716648E-05	9.2180972E 02
388000.	5.5792790E-10	1.4841993E 03	2.1210500E 03	8.5549910E-12	6.3825865E-05	9.2324528E 02
390000.	5.4985238E-10	1.4848713E 03	2.1276500E 03	8.3212045E-12	6.3934992E-05	9.2467833E 02
392000.	5.4261433E-10	1.4855284E 03	2.1342500E 03	8.0925266E-12	6.4043938E-05	9.2610916E 02
394000.	5.3622457E-10	1.4861808E 03	2.1408500E 03	7.8679790E-12	6.4152434E-05	9.2753798E 02
396000.	5.3069990E-10	1.4868283E 03	2.1474500E 03	7.6473938E-12	6.4260691E-05	9.2896466E 02
398000.	5.2594122E-10	1.4874711E 03	2.1540500E 03	7.4309199E-12	6.4368730E-05	9.3038944E 02
400000.	5.2194664E-10	1.4881091E 03	2.1606500E 03	7.2189720E-12	6.4477388E-05	9.3181233E 02
402000.	5.1871271E-10	1.4887429E 03	2.1672500E 03	7.0112022E-12	6.4585667E-05	9.3323188E 02
404000.	5.1612891E-10	1.4893723E 03	2.1738500E 03	6.8072014E-12	6.4693565E-05	9.3464716E 02
406000.	5.1419244E-10	1.4899974E 03	2.1804500E 03	6.6064825E-12	6.4799972E-05	9.3605833E 02
408000.	5.1289429E-10	1.4906181E 03	2.1870500E 03	6.4093479E-12	6.4911745E-05	9.3746533E 02
410000.	5.1223792E-10	1.4912344E 03	2.1936500E 03	6.2152238E-12	6.5021888E-05	9.3886833E 02
412000.	5.1219249E-10	1.4918466E 03	2.2002500E 03	6.0245047E-12	6.5131402E-05	9.4026833E 02
414000.	5.1274273E-10	1.4924548E 03	2.2068500E 03	5.8365706E-12	6.5239387E-05	9.4166533E 02
416000.	5.1387181E-10	1.4930591E 03	2.2134500E 03	5.6518222E-12	6.5345842E-05	9.4305933E 02
418000.	5.1556959E-10	1.4936594E 03	2.2200500E 03	5.4697458E-12	6.5450867E-05	9.4445033E 02
420000.	5.1792692E-10	1.4942557E 03	2.2266500E 03	5.2908200E-12	6.5554472E-05	9.4583833E 02
422000.	5.2094392E-10	1.4948480E 03	2.2332500E 03	5.1145442E-12	6.5656667E-05	9.4722333E 02
424000.	5.2462131E-10	1.4954363E 03	2.2398500E 03	4.9414243E-12	6.5757452E-05	9.4860533E 02
426000.	5.2895910E-10	1.4960206E 03	2.2464500E 03	4.7719604E-12	6.5856837E-05	9.4998433E 02
428000.	5.3395729E-10	1.4966009E 03	2.2530500E 03	4.6066442E-12	6.5954822E-05	9.5136033E 02
430000.	5.3961588E-10	1.4971772E 03	2.2596500E 03	4.4455204E-12	6.6051407E-05	9.5273333E 02
432000.	5.4593497E-10	1.4977495E 03	2.2662500E 03	4.2879122E-12	6.6146592E-05	9.5410333E 02
434000.	5.5291456E-10	1.4983178E 03	2.2728500E 03	4.1342984E-12	6.6240377E-05	9.5547033E 02
436000.	5.6055465E-10	1.4988821E 03	2.2794500E 03	3.9842890E-12	6.6332762E-05	9.5683433E 02
438000.	5.6885524E-10	1.4994424E 03	2.2860500E 03	3.8374946E-12	6.6423747E-05	9.5819533E 02

CAPE KENNEDY REFERENCE ATMOSPHERE
VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
300000.	1.9721751E-10	3.2249259E-11	3.2145488E 00	2.2660000E 01	1.0170147E 01
302000.	1.9865230E-10	3.1062085E-11	3.2209966E 00	2.2603600E 01	1.0170147E 01
304000.	1.8431249E-10	2.9923249E-11	3.2274314E 00	2.2551200E 01	1.0170147E 01
306000.	1.7821795E-10	2.8830599E-11	3.2338541E 00	2.2496800E 01	1.0170147E 01
308000.	1.7234906E-10	2.7782089E-11	3.2402644E 00	2.2442400E 01	1.0170147E 01
310000.	1.6669656E-10	2.6775764E-11	3.2466625E 00	2.2388000E 01	1.0170147E 01
312000.	1.6125175E-10	2.5809783E-11	3.2530483E 00	2.2333600E 01	1.0170147E 01
314000.	1.5600616E-10	2.4882371E-11	3.2594221E 00	2.2279200E 01	1.0170147E 01
316000.	1.5095177E-10	2.3991847E-11	3.2657837E 00	2.2224800E 01	1.0170147E 01
318000.	1.4600094E-10	2.3136601E-11	3.2721334E 00	2.2170400E 01	1.0170147E 01
320000.	1.41138610E-10	2.2315113E-11	3.2784711E 00	2.2116000E 01	1.0170147E 01
322000.	1.3686051E-10	2.1525929E-11	3.2847970E 00	2.2061600E 01	1.0170147E 01
324000.	1.3269728E-10	2.0767656E-11	3.2911111E 00	2.2007200E 01	1.0170147E 01
326000.	1.2829006E-10	2.0038957E-11	3.2974133E 00	2.1952800E 01	1.0170147E 01
328000.	1.2423264E-10	1.9338586E-11	3.3037040E 00	2.1898400E 01	1.0170147E 01
330000.	1.2031917E-10	1.8665339E-11	3.3099830E 00	2.1844000E 01	1.0170147E 01
332000.	1.1655399E-10	1.8010081E-11	3.3162505E 00	2.1789600E 01	1.0170147E 01
334000.	1.1290174E-10	1.7355662E-11	3.3225065E 00	2.1735200E 01	1.0170147E 01
336000.	1.0938722E-10	1.6719701E-11	3.3287511E 00	2.1680800E 01	1.0170147E 01
338000.	1.0599549E-10	1.6227351E-11	3.3349842E 00	2.1626400E 01	1.0170147E 01
340000.	1.0272181E-10	1.5667489E-11	3.3412062E 00	2.1572000E 01	1.0170147E 01
342000.	9.9561659E-11	1.5134597E-11	3.3474168E 00	2.1517600E 01	1.0170147E 01
344000.	9.6510686E-11	1.4621806E-11	3.3536163E 00	2.1463200E 01	1.0170147E 01
346000.	9.3564718E-11	1.4128282E-11	3.3598056E 00	2.1408800E 01	1.0170147E 01
348000.	9.0719748E-11	1.3653240E-11	3.3659819E 00	2.1354400E 01	1.0170147E 01
350000.	8.7971979E-11	1.3195917E-11	3.3721481E 00	2.1300000E 01	1.0170147E 01
352000.	8.5317729E-11	1.2755590E-11	3.3783035E 00	2.1245600E 01	1.0170147E 01
354000.	8.2753484E-11	1.2331570E-11	3.3844479E 00	2.1191200E 01	1.0170147E 01
356000.	8.0275078E-11	1.1923194E-11	3.3905815E 00	2.1136800E 01	1.0170147E 01
358000.	7.7881643E-11	1.1529827E-11	3.3967043E 00	2.1082400E 01	1.0170147E 01
360000.	7.5567713E-11	1.1150870E-11	3.4028164E 00	2.1028000E 01	1.0170147E 01
362000.	7.3331100E-11	1.0785742E-11	3.4089178E 00	2.0973600E 01	1.0170147E 01
364000.	7.1168948E-11	1.0433891E-11	3.4150086E 00	2.0919200E 01	1.0170147E 01
366000.	6.9078517E-11	1.0094788E-11	3.4210888E 00	2.0864800E 01	1.0170147E 01
368000.	6.7057161E-11	9.7679259E-12	3.4271585E 00	2.0810400E 01	1.0170147E 01
370000.	6.5102358E-11	9.4528193E-12	3.4332178E 00	2.0756000E 01	1.0170147E 01
372000.	6.3211727E-11	9.1490122E-12	3.4392669E 00	2.0701600E 01	1.0170147E 01
374000.	6.1382881E-11	8.8560518E-12	3.4453051E 00	2.0647200E 01	1.0170147E 01
376000.	5.9613612E-11	8.5735176E-12	3.4513333E 00	2.0592800E 01	1.0170147E 01
378000.	5.7901772E-11	8.3010025E-12	3.4573513E 00	2.0538400E 01	1.0170147E 01
380000.	5.6245297E-11	8.0381171E-12	3.4633591E 00	2.0484000E 01	1.0170147E 01
382000.	5.4642204E-11	7.7844842E-12	3.4693566E 00	2.0429600E 01	1.0170147E 01
384000.	5.3090586E-11	7.5397579E-12	3.4753442E 00	2.0375200E 01	1.0170147E 01
386000.	5.1588625E-11	7.3035854E-12	3.4813217E 00	2.0320800E 01	1.0170147E 01
388000.	5.0134544E-11	7.0756403E-12	3.4872891E 00	2.0266400E 01	1.0170147E 01
390000.	4.8726665E-11	6.8556094E-12	3.4932467E 00	2.0212000E 01	1.0170147E 01
392000.	4.7363369E-11	6.6431931E-12	3.4991943E 00	2.0157600E 01	1.0170147E 01
394000.	4.6043067E-11	6.4380981E-12	3.5051321E 00	2.0103200E 01	1.0170147E 01
396000.	4.4764287E-11	6.2400517E-12	3.5110601E 00	2.0048800E 01	1.0170147E 01
398000.	4.3525258E-11	6.0497851E-12	3.5169784E 00	1.9994400E 01	1.0170147E 01
400000.	4.2325508E-11	5.8640456E-12	3.5228868E 00	1.9940000E 01	1.0170147E 01
402000.	4.1160929E-11	5.6890058E-12	3.5287952E 00	1.9885600E 01	1.0170147E 01
404000.	4.0031723E-11	5.5196618E-12	3.5347037E 00	1.9831200E 01	1.0170147E 01
406000.	3.8936727E-11	5.3558727E-12	3.5406122E 00	1.9776800E 01	1.0170147E 01
408000.	3.7874815E-11	5.1973845E-12	3.5465207E 00	1.9722400E 01	1.0170147E 01
410000.	3.6844887E-11	5.0440286E-12	3.5524292E 00	1.9668000E 01	1.0170147E 01
412000.	3.5845914E-11	4.8956280E-12	3.5583377E 00	1.9613600E 01	1.0170147E 01
414000.	3.4876853E-11	4.7520055E-12	3.5642462E 00	1.9559200E 01	1.0170147E 01
416000.	3.3936757E-11	4.6129988E-12	3.5699000E 00	1.9504800E 01	1.0170147E 01
418000.	3.3024653E-11	4.4784423E-12	3.5655092E 00	1.9450400E 01	1.0170147E 01
420000.	3.2139654E-11	4.3481855E-12	3.5691047E 00	1.9396000E 01	1.0170147E 01
422000.	3.1280870E-11	4.2220779E-12	3.5726992E 00	1.9341600E 01	1.0170147E 01
424000.	3.0447457E-11	4.0999767E-12	3.5762937E 00	1.9287200E 01	1.0170147E 01
426000.	2.9638602E-11	3.9817445E-12	3.5798882E 00	1.9232800E 01	1.0170147E 01
428000.	2.8853498E-11	3.8672462E-12	3.5834827E 00	1.9178400E 01	1.0170147E 01
430000.	2.8091408E-11	3.7563572E-12	3.5870772E 00	1.9124000E 01	1.0170147E 01
432000.	2.7351578E-11	3.6489520E-12	3.5906717E 00	1.9069600E 01	1.0170147E 01
434000.	2.6633309E-11	3.5449132E-12	3.6011122E 00	1.9015200E 01	1.0170147E 01
436000.	2.5935906E-11	3.4441252E-12	3.6056620E 00	1.8960800E 01	1.0170147E 01
438000.	2.5258710E-11	3.3464783E-12	3.6102062E 00	1.8906400E 01	1.0170147E 01

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
44000.	2.5517604E-10	1.4965061E 03	2.2646500E 03	3.8487362E-12	6.6158612E-05	9.5399390E 02
44200.	2.437127E-10	1.4968076E 03	2.2698500E 03	3.7402308E-12	6.6241579E-05	9.5508853E 02
44400.	2.3734258E-10	1.4970946E 03	2.2750500E 03	3.6350738E-12	6.6324444E-05	9.5618191E 02
44600.	2.3126473E-10	1.4973676E 03	2.2802500E 03	3.5331714E-12	6.6407207E-05	9.5727403E 02
44800.	2.2531199E-10	1.4976261E 03	2.2854500E 03	3.4343957E-12	6.6489869E-05	9.5836493E 02
45000.	2.1952890E-10	1.4978702E 03	2.2906500E 03	3.3386486E-12	6.6572431E-05	9.5945457E 02
45200.	2.1391231E-10	1.4980998E 03	2.2958500E 03	3.2458315E-12	6.6654892E-05	9.6054298E 02
45400.	2.0845093E-10	1.4983152E 03	2.3010500E 03	3.1558441E-12	6.6737255E-05	9.6163017E 02
45600.	2.0314599E-10	1.4985162E 03	2.3062500E 03	3.0685954E-12	6.6819517E-05	9.6271610E 02
45800.	1.9799263E-10	1.4987029E 03	2.3114500E 03	2.9839931E-12	6.6901681E-05	9.6380085E 02
46000.	1.929021E-10	1.4988752E 03	2.3166500E 03	2.9019512E-12	6.6983746E-05	9.6488435E 02
46200.	1.8787134E-10	1.4990331E 03	2.3218500E 03	2.8223851E-12	6.7065712E-05	9.6596664E 02
46400.	1.8337669E-10	1.4991767E 03	2.3270500E 03	2.7452138E-12	6.7147580E-05	9.6704772E 02
46600.	1.7877516E-10	1.4993058E 03	2.3322500E 03	2.6703602E-12	6.7229351E-05	9.6812760E 02
46800.	1.7430157E-10	1.4994207E 03	2.3374500E 03	2.5977463E-12	6.7311026E-05	9.6920626E 02
47000.	1.6995216E-10	1.4995212E 03	2.3426500E 03	2.5273014E-12	6.7392603E-05	9.7028373E 02
47200.	1.6572313E-10	1.4996073E 03	2.3478500E 03	2.4589548E-12	6.7474003E-05	9.7136002E 02
47400.	1.6161382E-10	1.4996790E 03	2.3530500E 03	2.3926382E-12	6.7555466E-05	9.7243510E 02
47600.	1.5761171E-10	1.4997363E 03	2.3582500E 03	2.3282864E-12	6.7636913E-05	9.7350900E 02
47800.	1.5372238E-10	1.4997794E 03	2.3634500E 03	2.2658358E-12	6.7717947E-05	9.7458172E 02
48000.	1.4993956E-10	1.4998080E 03	2.3686500E 03	2.2052260E-12	6.7799044E-05	9.7565325E 02
48200.	1.4626306E-10	1.4998233E 03	2.3738500E 03	2.1463978E-12	6.7880046E-05	9.7672361E 02
48400.	1.4268077E-10	1.4998233E 03	2.3790500E 03	2.0892944E-12	6.7960953E-05	9.7779280E 02
48600.	1.3919874E-10	1.4998078E 03	2.3842500E 03	2.0338610E-12	6.8041767E-05	9.7886081E 02
48800.	1.3581101E-10	1.4997790E 03	2.3894500E 03	1.9800438E-12	6.8122485E-05	9.7992767E 02
49000.	1.3251486E-10	1.4997359E 03	2.3946500E 03	1.9277925E-12	6.8203111E-05	9.8099338E 02
49200.	1.2930755E-10	1.4996784E 03	2.3998500E 03	1.8770573E-12	6.8283644E-05	9.8205791E 02
49400.	1.2618645E-10	1.4996065E 03	2.4050500E 03	1.8277902E-12	6.8364083E-05	9.8312130E 02
49600.	1.2314902E-10	1.4995202E 03	2.4102500E 03	1.7799451E-12	6.8444428E-05	9.8418353E 02
49800.	1.2019283E-10	1.4994196E 03	2.4154500E 03	1.7334778E-12	6.8524683E-05	9.8524462E 02
50000.	1.1731545E-10	1.4993047E 03	2.4206500E 03	1.6883441E-12	6.8604845E-05	9.8630458E 02
50200.	1.1451121E-10	1.4991694E 03	2.4245000E 03	1.6456754E-12	6.8685720E-05	9.8736970E 02
50400.	1.1177938E-10	1.4989829E 03	2.4274500E 03	1.6041654E-12	6.8769534E-05	9.8843895E 02
50600.	1.0911792E-10	1.5000833E 03	2.4308500E 03	1.5637801E-12	6.8856182E-05	9.8950116E 02
50800.	1.0652497E-10	1.5003325E 03	2.4342500E 03	1.5244890E-12	6.8946067E-05	9.9057138E 02
51000.	1.0399854E-10	1.5005765E 03	2.4376500E 03	1.4862561E-12	6.8885274E-05	9.9164188E 02
51200.	1.0153685E-10	1.5008154E 03	2.4410500E 03	1.4490546E-12	6.8918444E-05	9.9271190E 02
51400.	9.9139159E-11	1.5010591E 03	2.4444500E 03	1.4128544E-12	6.8970575E-05	9.9378143E 02
51600.	9.6800666E-11	1.5012776E 03	2.4478500E 03	1.3776259E-12	6.9022676E-05	9.9483048E 02
51800.	9.4522758E-11	1.5015010E 03	2.4512500E 03	1.3433418E-12	6.9074719E-05	9.9587904E 02
52000.	9.2302788E-11	1.5017193E 03	2.4546500E 03	1.3099750E-12	6.9126735E-05	9.9692714E 02
52200.	9.0139147E-11	1.5019323E 03	2.4580500E 03	1.2774988E-12	6.9178711E-05	9.9797477E 02
52400.	8.8023257E-11	1.5021402E 03	2.4614500E 03	1.2458886E-12	6.9230649E-05	9.9902191E 02
52600.	8.5974921E-11	1.5023429E 03	2.4648500E 03	1.2151197E-12	6.9282550E-05	9.9956858E 02
52800.	8.3971362E-11	1.5025405E 03	2.4682500E 03	1.1851677E-12	6.9334410E-05	9.9954799E 02
53000.	8.2018286E-11	1.5027328E 03	2.4716499E 03	1.1560097E-12	6.9386234E-05	9.9964050E 02
53200.	8.0114324E-11	1.5029201E 03	2.4750500E 03	1.1276231E-12	6.9438021E-05	9.9973257E 02
53400.	7.8258179E-11	1.5031021E 03	2.4784500E 03	1.0999864E-12	6.9489769E-05	9.9981055E 02
53600.	7.6448556E-11	1.5032790E 03	2.4818500E 03	1.0730785E-12	6.9541579E-05	9.9989486E 02
53800.	7.4688181E-11	1.5034507E 03	2.4852500E 03	1.0468785E-12	6.9593151E-05	9.9997871E 02
54000.	7.2963864E-11	1.5036173E 03	2.4886500E 03	1.0213668E-12	6.9644787E-05	1.0000621E 03
54200.	7.1286404E-11	1.5037787E 03	2.4920500E 03	9.9652387E-13	6.9696384E-05	1.0007450E 03
54400.	6.9650681E-11	1.5039350E 03	2.4954500E 03	9.7233125E-13	6.9747944E-05	1.0014274E 03
54600.	6.8055573E-11	1.5040860E 03	2.4988500E 03	9.4877069E-13	6.9799466E-05	1.0021094E 03
54800.	6.6500008E-11	1.5042319E 03	2.5022500E 03	9.2582468E-13	6.9850951E-05	1.0027909E 03
55000.	6.4982911E-11	1.5043727E 03	2.5056500E 03	9.0347577E-13	6.9902399E-05	1.0034720E 03
55200.	6.3503272E-11	1.5045083E 03	2.5090500E 03	8.8170750E-13	6.9953810E-05	1.0041526E 03
55400.	6.20630105E-11	1.5046387E 03	2.5124500E 03	8.6050388E-13	7.0005184E-05	1.0048327E 03
55600.	6.0652455E-11	1.5047539E 03	2.5158500E 03	8.3984936E-13	7.0056520E-05	1.0055124E 03
55800.	5.9279361E-11	1.5048840E 03	2.5192500E 03	8.1972843E-13	7.0107821E-05	1.0061916E 03
56000.	5.7939934E-11	1.5049989E 03	2.5226499E 03	8.0012667E-13	7.0159083E-05	1.0068703E 03
56200.	5.663257E-11	1.5051087E 03	2.5260500E 03	7.8102934E-13	7.0210310E-05	1.0075486E 03
56400.	5.5358504E-11	1.5052133E 03	2.5294500E 03	7.6242301E-13	7.0261499E-05	1.0082265E 03
56600.	5.4114844E-11	1.5053127E 03	2.5328500E 03	7.4429430E-13	7.0312652E-05	1.0089039E 03
56800.	5.2901431E-11	1.5054069E 03	2.5362500E 03	7.2662964E-13	7.0363768E-05	1.0095805E 03
57000.	5.1717495E-11	1.5054967E 03	2.5396500E 03	7.0941664E-13	7.0414848E-05	1.0102573E 03
57200.	5.0562249E-11	1.5055800E 03	2.5430500E 03	6.9264256E-13	7.0465892E-05	1.0109333E 03
57400.	4.9434978E-11	1.5056587E 03	2.5464500E 03	6.7629619E-13	7.0516899E-05	1.0116089E 03
57600.	4.8334925E-11	1.5057323E 03	2.5498500E 03	6.6030918E-13	7.0567870E-05	1.0122840E 03
57800.	4.7261423E-11	1.5058008E 03	2.5532500E 03	6.4483888E-13	7.0618805E-05	1.0129586E 03

CAPE KENNEDY REFERENCE ATMOSPHERE
VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III
(Continued)

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE
meters	unitless	unitless	unitless	unitless	newtons cm ⁻²
440000.	2.4601083E-11	3.2518666E-12	3.6147448E 00	1.9140000E 01	1.0170147E 01
442000.	2.3962413E-11	3.1601885E-12	3.6192779E 00	1.9100000E 01	1.0170147E 01
444000.	2.3342098E-11	3.0713555E-12	3.6238055E 00	1.9060000E 01	1.0170147E 01
446000.	2.2739566E-11	2.9852403E-12	3.6283273E 00	1.9020000E 01	1.0170147E 01
448000.	2.2154250E-11	2.9017829E-12	3.6328430E 00	1.8980000E 01	1.0170147E 01
450000.	2.1585616E-11	2.8208845E-12	3.6373540E 00	1.8940000E 01	1.0170147E 01
452000.	2.1033137E-11	2.7424616E-12	3.6418602E 00	1.8900000E 01	1.0170147E 01
454000.	2.0496353E-11	2.6664296E-12	3.6463604E 00	1.8860000E 01	1.0170147E 01
456000.	1.9974735E-11	2.5927117E-12	3.6508549E 00	1.8820000E 01	1.0170147E 01
458000.	1.9467820E-11	2.5212297E-12	3.6553442E 00	1.8780000E 01	1.0170147E 01
460000.	1.8975164E-11	2.4519109E-12	3.6598280E 00	1.8740000E 01	1.0170147E 01
462000.	1.8496324E-11	2.3846841E-12	3.6643064E 00	1.8700000E 01	1.0170147E 01
464000.	1.8030879E-11	2.3194807E-12	3.6687796E 00	1.8660000E 01	1.0170147E 01
466000.	1.7578424E-11	2.2562355E-12	3.6732473E 00	1.8620000E 01	1.0170147E 01
468000.	1.7138550E-11	2.1948827E-12	3.6777098E 00	1.8580000E 01	1.0170147E 01
470000.	1.6710885E-11	2.1353625E-12	3.6821670E 00	1.8540000E 01	1.0170147E 01
472000.	1.6295057E-11	2.0776133E-12	3.6866188E 00	1.8500000E 01	1.0170147E 01
474000.	1.5890700E-11	2.0215832E-12	3.6910654E 00	1.8460000E 01	1.0170147E 01
476000.	1.5497486E-11	1.9672112E-12	3.6955068E 00	1.8420000E 01	1.0170147E 01
478000.	1.5115059E-11	1.9144453E-12	3.6999429E 00	1.8380000E 01	1.0170147E 01
480000.	1.4743106E-11	1.8632352E-12	3.7043739E 00	1.8340000E 01	1.0170147E 01
482000.	1.4381312E-11	1.8135303E-12	3.7087997E 00	1.8300000E 01	1.0170147E 01
484000.	1.4029371E-11	1.7652825E-12	3.7132202E 00	1.8260000E 01	1.0170147E 01
486000.	1.3686994E-11	1.7184459E-12	3.7176357E 00	1.8220000E 01	1.0170147E 01
488000.	1.3353888E-11	1.6729747E-12	3.7220460E 00	1.8180000E 01	1.0170147E 01
490000.	1.3029787E-11	1.6288266E-12	3.7264512E 00	1.8140000E 01	1.0170147E 01
492000.	1.2714423E-11	1.5859596E-12	3.7308513E 00	1.8100000E 01	1.0170147E 01
494000.	1.2407534E-11	1.5443330E-12	3.7352462E 00	1.8060000E 01	1.0170147E 01
496000.	1.2108872E-11	1.5039077E-12	3.7396361E 00	1.8020000E 01	1.0170147E 01
498000.	1.1818200E-11	1.4646467E-12	3.7440211E 00	1.7980000E 01	1.0170147E 01
500000.	1.1535275E-11	1.4265124E-12	3.7484009E 00	1.7940000E 01	1.0170147E 01
502000.	1.1259543E-11	1.3905628E-12	3.7527619E 00	1.7918000E 01	1.0170147E 01
504000.	1.0990930E-11	1.3553883E-12	3.7571120E 00	1.7896000E 01	1.0170147E 01
506000.	1.0729237E-11	1.3212660E-12	3.7614621E 00	1.7874000E 01	1.0170147E 01
508000.	1.0474260E-11	1.2880674E-12	3.7658123E 00	1.7852000E 01	1.0170147E 01
510000.	1.0225864E-11	1.2557646E-12	3.7626848E 00	1.7830000E 01	1.0170147E 01
512000.	9.9838128E-12	1.2243324E-12	3.7655352E 00	1.7608000E 01	1.0170147E 01
514000.	9.7479562E-12	1.1937462E-12	3.7683835E 00	1.7786000E 01	1.0170147E 01
516000.	9.5161185E-12	1.1639810E-12	3.7712297E 00	1.7764000E 01	1.0170147E 01
518000.	9.2941386E-12	1.1350137E-12	3.7740737E 00	1.7742000E 01	1.0170147E 01
520000.	9.0758557E-12	1.1068215E-12	3.7769157E 00	1.7720000E 01	1.0170147E 01
522000.	8.8631114E-12	1.0793818E-12	3.7797555E 00	1.7698000E 01	1.0170147E 01
524000.	8.6537805E-12	1.0526737E-12	3.7825933E 00	1.7676000E 01	1.0170147E 01
526000.	8.4536555E-12	1.0266765E-12	3.7854290E 00	1.7654000E 01	1.0170147E 01
528000.	8.2566516E-12	1.0013696E-12	3.7882626E 00	1.7632000E 01	1.0170147E 01
530000.	8.0646114E-12	9.7673345E-13	3.7910941E 00	1.7610000E 01	1.0170147E 01
532000.	7.8774006E-12	9.5274907E-13	3.7939236E 00	1.7588000E 01	1.0170147E 01
534000.	7.6948915E-12	9.2939839E-13	3.7967510E 00	1.7566000E 01	1.0170147E 01
536000.	7.5169567E-12	9.0666342E-13	3.7995763E 00	1.7544000E 01	1.0170147E 01
538000.	7.3434709E-12	8.8452656E-13	3.8023995E 00	1.7522000E 01	1.0170147E 01
540000.	7.1743174E-12	8.6297128E-13	3.8052208E 00	1.7500000E 01	1.0170147E 01
542000.	7.0093778E-12	8.4198101E-13	3.8080399E 00	1.7478000E 01	1.0170147E 01
544000.	6.8485421E-12	8.2154022E-13	3.8108571E 00	1.7456000E 01	1.0170147E 01
546000.	6.6916999E-12	8.0163348E-13	3.8136721E 00	1.7434000E 01	1.0170147E 01
548000.	6.5387459E-12	7.8224598E-13	3.8164851E 00	1.7412000E 01	1.0170147E 01
550000.	6.3895743E-12	7.6336294E-13	3.8192961E 00	1.7390000E 01	1.0170147E 01
552000.	6.2440858E-12	7.4497059E-13	3.8221051E 00	1.7368000E 01	1.0170147E 01
554000.	6.1021836E-12	7.2705526E-13	3.8249120E 00	1.7346000E 01	1.0170147E 01
556000.	5.9637735E-12	7.0960388E-13	3.8277169E 00	1.7324000E 01	1.0170147E 01
558000.	5.8287613E-12	6.9260335E-13	3.8305198E 00	1.7302000E 01	1.0170147E 01
560000.	5.6970595E-12	6.7604147E-13	3.8333207E 00	1.7280000E 01	1.0170147E 01
562000.	5.5685779E-12	6.5990578E-13	3.8361196E 00	1.7258000E 01	1.0170147E 01
564000.	5.4432353E-12	6.4418496E-13	3.8389165E 00	1.7236000E 01	1.0170147E 01
566000.	5.3209499E-12	6.2886768E-13	3.8417113E 00	1.7214000E 01	1.0170147E 01
568000.	5.2016386E-12	6.1394249E-13	3.8445041E 00	1.7192000E 01	1.0170147E 01
570000.	5.0852258E-12	5.9939892E-13	3.8472950E 00	1.7170000E 01	1.0170147E 01
572000.	4.9716340E-12	5.8522629E-13	3.8500840E 00	1.7148000E 01	1.0170147E 01
574000.	4.8607928E-12	5.7141486E-13	3.8528709E 00	1.7126000E 01	1.0170147E 01
576000.	4.7526278E-12	5.5795445E-13	3.8556558E 00	1.7104000E 01	1.0170147E 01
578000.	4.6470737E-12	5.4483600E-13	3.8584388E 00	1.7082000E 01	1.0170147E 01

CAPE KENNEDY REFERENCE ATMOSPHERE VERSUS GEOMETRIC ALTITUDE (ANNUAL)

TABLE III (Continued)

GEOMETRIC ALTITUDE	PRESSURE	KINETIC TEMPERATURE	MOLECULAR TEMPERATURE	DENSITY	COEFFICIENT OF VISCOSITY	SPEED OF SOUND
meters	newtons cm ⁻²	degrees K	degrees K	kg m ⁻³	newton-sec m ⁻²	m sec ⁻¹
580000.	4.6213737E-11	1.5058640E 03	2.5566500E 03	6.2970561E-13	7.0669703E-05	1.136329E 03
582000.	4.5192255E-11	1.5059221E 03	2.5600500E 03	6.1495511E-13	7.0720567E-05	1.0143067E 03
584000.	4.4193244E-11	1.5059751E 03	2.5634500E 03	6.0057713E-13	7.0771394E-05	1.0149800E 03
586000.	4.3219147E-11	1.5060228E 03	2.5668500E 03	5.8656136E-13	7.0822185E-05	1.0156529E 03
588000.	4.2268324E-11	1.5060654E 03	2.5702500E 03	5.7289814E-13	7.0872940E-05	1.0163253E 03
590000.	4.1349184E-11	1.5061029E 03	2.5736500E 03	5.5957806E-13	7.0923660E-05	1.0169973E 03
592000.	4.0434149E-11	1.5061352E 03	2.5770500E 03	5.4659193E-13	7.0974344E-05	1.0176688E 03
594000.	3.9549641E-11	1.5061623E 03	2.5804500E 03	5.3393065E-13	7.1024992E-05	1.0183399E 03
596000.	3.8686114E-11	1.5061842E 03	2.5838500E 03	5.2158557E-13	7.1075606E-05	1.0190106E 03
598000.	3.7843038E-11	1.5062010E 03	2.5872500E 03	5.0954831E-13	7.1126181E-05	1.0196808E 03
600000.	3.7019889E-11	1.5062126E 03	2.5906500E 03	4.9781058E-13	7.1176726E-05	1.0203506E 03
602000.	3.6215577E-11	1.5062292E 03	2.5928500E 03	4.8658169E-13	7.1227240E-05	1.0207927E 03
604000.	3.5429846E-11	1.5062497E 03	2.5950500E 03	4.7562129E-13	7.1277721E-05	1.0212167E 03
606000.	3.4662245E-11	1.5062645E 03	2.5972500E 03	4.6492284E-13	7.1327368E-05	1.0216495E 03
608000.	3.3912334E-11	1.5062786E 03	2.5994500E 03	4.5447915E-13	7.1376177E-05	1.0220821E 03
610000.	3.3179683E-11	1.5062899E 03	2.6016500E 03	4.4428445E-13	7.1424033E-05	1.0225145E 03
612000.	3.2463859E-11	1.5062976E 03	2.6038500E 03	4.3433210E-13	7.1471951E-05	1.0229468E 03
614000.	3.1764455E-11	1.5062976E 03	2.6060500E 03	4.2461606E-13	7.1519921E-05	1.0233788E 03
616000.	3.1081098E-11	1.5062919E 03	2.6082500E 03	4.1513073E-13	7.1567955E-05	1.0238107E 03
618000.	3.0413369E-11	1.5062852E 03	2.6104500E 03	4.0586995E-13	7.1616031E-05	1.0242424E 03
620000.	2.9760908E-11	1.5062644E 03	2.6126499E 03	3.9682836E-13	7.1564155E-05	1.0246739E 03
622000.	2.9123341E-11	1.5062375E 03	2.6148500E 03	3.8800040E-13	7.1511330E-05	1.0251052E 03
624000.	2.8500294E-11	1.5070327E 03	2.6170500E 03	3.7938056E-13	7.1457978E-05	1.0255363E 03
626000.	2.7891442E-11	1.5070878E 03	2.6192500E 03	3.7096400E-13	7.1404487E-05	1.0259673E 03
628000.	2.7296429E-11	1.5071409E 03	2.6214500E 03	3.6274548E-13	7.1350982E-05	1.0263981E 03
630000.	2.6714925E-11	1.5071919E 03	2.6236500E 03	3.5472012E-13	7.165643E-05	1.0268287E 03
632000.	2.6146607E-11	1.5072410E 03	2.6258500E 03	3.4688313E-13	7.1697928E-05	1.0272591E 03
634000.	2.5591154E-11	1.5072879E 03	2.6280500E 03	3.3922980E-13	7.1730380E-05	1.0276894E 03
636000.	2.5048265E-11	1.5073328E 03	2.6302500E 03	3.3175568E-13	7.1762818E-05	1.0281194E 03
638000.	2.4517629E-11	1.5073758E 03	2.6324500E 03	3.2445621E-13	7.1795239E-05	1.0285493E 03
640000.	2.3998967E-11	1.5074166E 03	2.6346500E 03	3.1732726E-13	7.1827648E-05	1.0289790E 03
642000.	2.3491983E-11	1.5074555E 03	2.6368500E 03	3.1036448E-13	7.1860043E-05	1.0294085E 03
644000.	2.2996400E-11	1.5074923E 03	2.6390500E 03	3.0356381E-13	7.1892422E-05	1.0298379E 03
646000.	2.2511953E-11	1.5075270E 03	2.6412500E 03	2.9692135E-13	7.1924787E-05	1.0302670E 03
648000.	2.2038369E-11	1.5075597E 03	2.6434500E 03	2.9043309E-13	7.1957139E-05	1.0306960E 03
650000.	2.1575395E-11	1.5075904E 03	2.6456500E 03	2.8409535E-13	7.1989475E-05	1.0311248E 03
652000.	2.1122777E-11	1.5076191E 03	2.6478500E 03	2.7790439E-13	7.2021797E-05	1.0315534E 03
654000.	2.0680276E-11	1.5076457E 03	2.6500500E 03	2.7185668E-13	7.2054106E-05	1.0319819E 03
656000.	2.0247647E-11	1.5076703E 03	2.6522500E 03	2.6594870E-13	7.2086399E-05	1.0324102E 03
658000.	1.9824656E-11	1.5076928E 03	2.6544500E 03	2.6017698E-13	7.2118679E-05	1.0328383E 03
660000.	1.9411084E-11	1.5077133E 03	2.6566499E 03	2.5453834E-13	7.2150944E-05	1.0332662E 03
662000.	1.9006698E-11	1.5077318E 03	2.6588500E 03	2.4902938E-13	7.2183195E-05	1.0336939E 03
664000.	1.8611281E-11	1.5077482E 03	2.6610500E 03	2.4364696E-13	7.2215433E-05	1.0341215E 03
666000.	1.8224638E-11	1.5077626E 03	2.6632500E 03	2.3838819E-13	7.2247656E-05	1.0345489E 03
668000.	1.7846547E-11	1.5077750E 03	2.6654500E 03	2.3324987E-13	7.2279864E-05	1.0349761E 03
670000.	1.7476821E-11	1.5077853E 03	2.6676500E 03	2.2822927E-13	7.2312059E-05	1.0354031E 03
672000.	1.7115252E-11	1.5077936E 03	2.6698500E 03	2.2332338E-13	7.2344239E-05	1.0358300E 03
674000.	1.6761651E-11	1.5077999E 03	2.6720500E 03	2.1852944E-13	7.2376407E-05	1.0362567E 03
676000.	1.6415844E-11	1.5078041E 03	2.6742500E 03	2.1384493E-13	7.2408558E-05	1.0366832E 03
678000.	1.6077632E-11	1.5078063E 03	2.6764500E 03	2.0926697E-13	7.2440697E-05	1.0371093E 03
680000.	1.5746857E-11	1.5078064E 03	2.6786500E 03	2.0479326E-13	7.2472821E-05	1.0375357E 03
682000.	1.5423325E-11	1.5078045E 03	2.6808500E 03	2.0042101E-13	7.2504931E-05	1.0379616E 03
684000.	1.5106807E-11	1.5078006E 03	2.6830500E 03	1.9614794E-13	7.2537029E-05	1.0383874E 03
686000.	1.4797364E-11	1.5077946E 03	2.6852500E 03	1.9197178E-13	7.2569111E-05	1.0388131E 03
688000.	1.4494605E-11	1.5077867E 03	2.6874500E 03	1.8789003E-13	7.2601179E-05	1.0392385E 03
690000.	1.4198423E-11	1.5077766E 03	2.6896500E 03	1.8390954E-13	7.2633234E-05	1.0396638E 03
692000.	1.3908750E-11	1.5077646E 03	2.6918500E 03	1.8000104E-13	7.2665275E-05	1.0400889E 03
694000.	1.3625348E-11	1.5077505E 03	2.6940500E 03	1.7618937E-13	7.2697302E-05	1.0405139E 03
696000.	1.3348102E-11	1.5077343E 03	2.6962500E 03	1.7246356E-13	7.2729314E-05	1.0409386E 03
698000.	1.3076882E-11	1.5077162E 03	2.6984500E 03	1.6882143E-13	7.2761313E-05	1.0413632E 03
700000.	1.2811533E-11	1.5076960E 03	2.7006500E 03	1.6526106E-13	7.2793300E-05	1.0417877E 03

**CAPE KENNEDY REFERENCE ATMOSPHERE
VERSUS GEOMETRIC ALTITUDE (ANNUAL)**

**TABLE III
(Continued)**

GEOMETRIC ALTITUDE	PRESSURE RATIO	DENSITY RATIO	VISCOSITY RATIO	MOLECULAR WEIGHT	PRESSURE DIFFERENCE	
	meters unitless	unitless	unitless	unitless	newtons cm ⁻²	
580000.	4.5440578E-12	5.3204963E-13	3.3612137E 00	1.7060000E 01	1.0170147E 01	01
582000.	4.4435173E-12	5.1958667E-13	3.4639988E 00	1.7038000E 01	1.0170147E 01	01
584000.	4.3453888E-12	5.0743845E-13	3.8667759E 00	1.7016000E 01	1.0170147E 01	01
586000.	4.2496088E-12	4.9559628E-13	3.4695509E 00	1.6994000E 01	1.0170147E 01	01
588000.	4.1561172E-12	4.8405197E-13	3.8723241E 00	1.6972000E 01	1.0170147E 01	01
590000.	4.0648560E-12	4.7279759E-13	3.8750953E 00	1.6950000E 01	1.0170147E 01	01
592000.	3.9757683E-12	4.6182538E-13	3.8778645E 00	1.6928000E 01	1.0170147E 01	01
594000.	3.8887973E-12	4.5112764E-13	3.8806318E 00	1.6906000E 01	1.0170147E 01	01
596000.	3.8038893E-12	4.4069706E-13	3.8833972E 00	1.6884000E 01	1.0170147E 01	01
598000.	3.7209922E-12	4.3052656E-13	3.8861607E 00	1.6862000E 01	1.0170147E 01	01
600000.	3.6400543E-12	4.2060913E-13	3.8889222E 00	1.6840000E 01	1.0170147E 01	01
602000.	3.5609688E-12	4.1112165E-13	3.8907080E 00	1.6826000E 01	1.0170147E 01	01
604000.	3.4837103E-12	4.0186101E-13	3.8924930E 00	1.6813200E 01	1.0170147E 01	01
606000.	3.4082344E-12	3.9282153E-13	3.8942772E 00	1.6799800E 01	1.0170147E 01	01
608000.	3.3344978E-12	3.8399763E-13	3.8960607E 00	1.6786400E 01	1.0170147E 01	01
610000.	3.2624585E-12	3.7538395E-13	3.8978432E 00	1.6773000E 01	1.0170147E 01	01
612000.	3.1920736E-12	3.6697503E-13	3.8996251E 00	1.6759600E 01	1.0170147E 01	01
614000.	3.1233034E-12	3.5876577E-13	3.9014061E 00	1.6746200E 01	1.0170147E 01	01
616000.	3.0561109E-12	3.5075145E-13	3.9031864E 00	1.6732800E 01	1.0170147E 01	01
618000.	2.9904551E-12	3.4292684E-13	3.9049657E 00	1.6719400E 01	1.0170147E 01	01
620000.	2.9263006E-12	3.3528744E-13	3.9067446E 00	1.6706000E 01	1.0170147E 01	01
622000.	2.8636105E-12	3.2782854E-13	3.9085222E 00	1.6692600E 01	1.0170147E 01	01
624000.	2.8023482E-12	3.2054548E-13	3.9102992E 00	1.6679199E 01	1.0170147E 01	01
626000.	2.7424816E-12	3.1343417E-13	3.9120755E 00	1.6665800E 01	1.0170147E 01	01
628000.	2.6839758E-12	3.0649020E-13	3.9138509E 00	1.6652400E 01	1.0170147E 01	01
630000.	2.6267982E-12	2.9970942E-13	3.9156256E 00	1.6639000E 01	1.0170147E 01	01
632000.	2.5709172E-12	2.9308781E-13	3.9173994E 00	1.6625600E 01	1.0170147E 01	01
634000.	2.5153012E-12	2.8662136E-13	3.9191725E 00	1.6612200E 01	1.0170147E 01	01
636000.	2.4629205E-12	2.8030636E-13	3.9209448E 00	1.6598800E 01	1.0170147E 01	01
638000.	2.4107448E-12	2.7413891E-13	3.9227163E 00	1.6585400E 01	1.0170147E 01	01
640000.	2.3597463E-12	2.6811552E-13	3.9244870E 00	1.6572000E 01	1.0170147E 01	01
642000.	2.3098961E-12	2.6223255E-13	3.9262570E 00	1.6558600E 01	1.0170147E 01	01
644000.	2.2611669E-12	2.5648654E-13	3.9280261E 00	1.6545200E 01	1.0170147E 01	01
646000.	2.2135327E-12	2.5087421E-13	3.9297944E 00	1.6531800E 01	1.0170147E 01	01
648000.	2.1669666E-12	2.4539216E-13	3.9315620E 00	1.6518400E 01	1.0170147E 01	01
650000.	2.1214438E-12	2.4003729E-13	3.9333288E 00	1.6505000E 01	1.0170147E 01	01
652000.	2.0769392E-12	2.3480643E-13	3.9350948E 00	1.6491600E 01	1.0170147E 01	01
654000.	2.0334294E-12	2.2969662E-13	3.9368601E 00	1.6478200E 01	1.0170147E 01	01
656000.	1.9908903E-12	2.2470486E-13	3.9386245E 00	1.6464800E 01	1.0170147E 01	01
658000.	1.9492988E-12	2.1982822E-13	3.9403882E 00	1.6451400E 01	1.0170147E 01	01
660000.	1.9086335E-12	2.1506403E-13	3.9421511E 00	1.6438000E 01	1.0170147E 01	01
662000.	1.8688714E-12	2.1040941E-13	3.9439132E 00	1.6424600E 01	1.0170147E 01	01
664000.	1.8299913E-12	2.0586171E-13	3.9456746E 00	1.6411200E 01	1.0170147E 01	01
666000.	1.7919739E-12	2.0141848E-13	3.9474352E 00	1.6397800E 01	1.0170147E 01	01
668000.	1.7547973E-12	1.9707703E-13	3.9491949E 00	1.6384400E 01	1.0170147E 01	01
670000.	1.7184432E-12	1.9283503E-13	3.9509540E 00	1.6371000E 01	1.0170147E 01	01
672000.	1.6828913E-12	1.8868995E-13	3.9527123E 00	1.6357600E 01	1.0170147E 01	01
674000.	1.6481227E-12	1.8463947E-13	3.9544698E 00	1.6344200E 01	1.0170147E 01	01
676000.	1.6141206E-12	1.8068144E-13	3.9562265E 00	1.6330800E 01	1.0170147E 01	01
678000.	1.5808652E-12	1.7681344E-13	3.9579825E 00	1.6317400E 01	1.0170147E 01	01
680000.	1.5483411E-12	1.7303352E-13	3.9597377E 00	1.6304000E 01	1.0170147E 01	01
682000.	1.5165292E-12	1.6933933E-13	3.9614921E 00	1.6290600E 01	1.0170147E 01	01
684000.	1.4854142E-12	1.6572893E-13	3.9632458E 00	1.6277200E 01	1.0170147E 01	01
686000.	1.4549803E-12	1.6220042E-13	3.9649987E 00	1.6263800E 01	1.0170147E 01	01
688000.	1.4252109E-12	1.5875168E-13	3.9667508E 00	1.6250400E 01	1.0170147E 01	01
690000.	1.3960912E-12	1.5538089E-13	3.9685022E 00	1.6237000E 01	1.0170147E 01	01
692000.	1.3676056E-12	1.5208613E-13	3.9702529E 00	1.6223600E 01	1.0170147E 01	01
694000.	1.3397395E-12	1.4886558E-13	3.9720027E 00	1.6210200E 01	1.0170147E 01	01
696000.	1.3124794E-12	1.4571757E-13	3.9737510E 00	1.6196800E 01	1.0170147E 01	01
698000.	1.2858105E-12	1.4264028E-13	3.9755002E 00	1.6183400E 01	1.0170147E 01	01
700000.	1.2597195E-12	1.3963205E-13	3.9772478E 00	1.6170000E 01	1.0170147E 01	01

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