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No. 115

The ARDC model atmosphere, 1959

R. A. Minzner

K. S. W. Champion

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August 1959

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Air Force Surveys in Geophysics
No. 115

THE ARDC MODEL ATMOSPHERE, 1959

R. A. Minzner
K. S. W. Champion
H. L. Pond

August 1959

Photochemistry Laboratory
GEOPHYSICS RESEARCH DIRECTORATE
AIR FORCE CAMBRIDGE RESEARCH CENTER
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
Bedford, Mass.

FOREWORD

The 1959 ARDC Model Atmosphere is a revision of the 1956 ARDC Model Atmosphere based on new rocket and satellite data. To an altitude of 53 kilometers the two models are the same. Following the methods developed for the 1956 model, the defining function of the atmosphere is the molecular-scale temperature. Figure 1 shows this function for both the 1956 and 1959 models. The quantities tabulated, defining equations, definitions, and conversion factors are those used in the U. S. Extension to the ICAO Standard Atmosphere.²⁵ However, in the present model the tabulation is given only in integral values of the geometric altitude with corresponding values of geopotential altitude given in an adjacent column.

Only average values of the various atmospheric properties are plotted. It is realized that density, pressure, temperature, composition, and related properties are functions of both position on the earth's surface and time. However, the amount of reliable data on these variations at altitudes above 30 km is so scant that it is not included in the present model. The 1959 model molecular weight curve probably represents the molecular weight at high latitudes, such as Fort Churchill, where the experimental data were obtained. At lower latitudes the molecular weight may be nearer the curve given in the 1956 model.

Since the present model is strongly dependent on the 1956 ARDC Model Atmosphere and the U. S. Extension to the ICAO Standard Atmosphere, it is appropriate to acknowledge the contribution of the many scientists who helped in the development of these models.

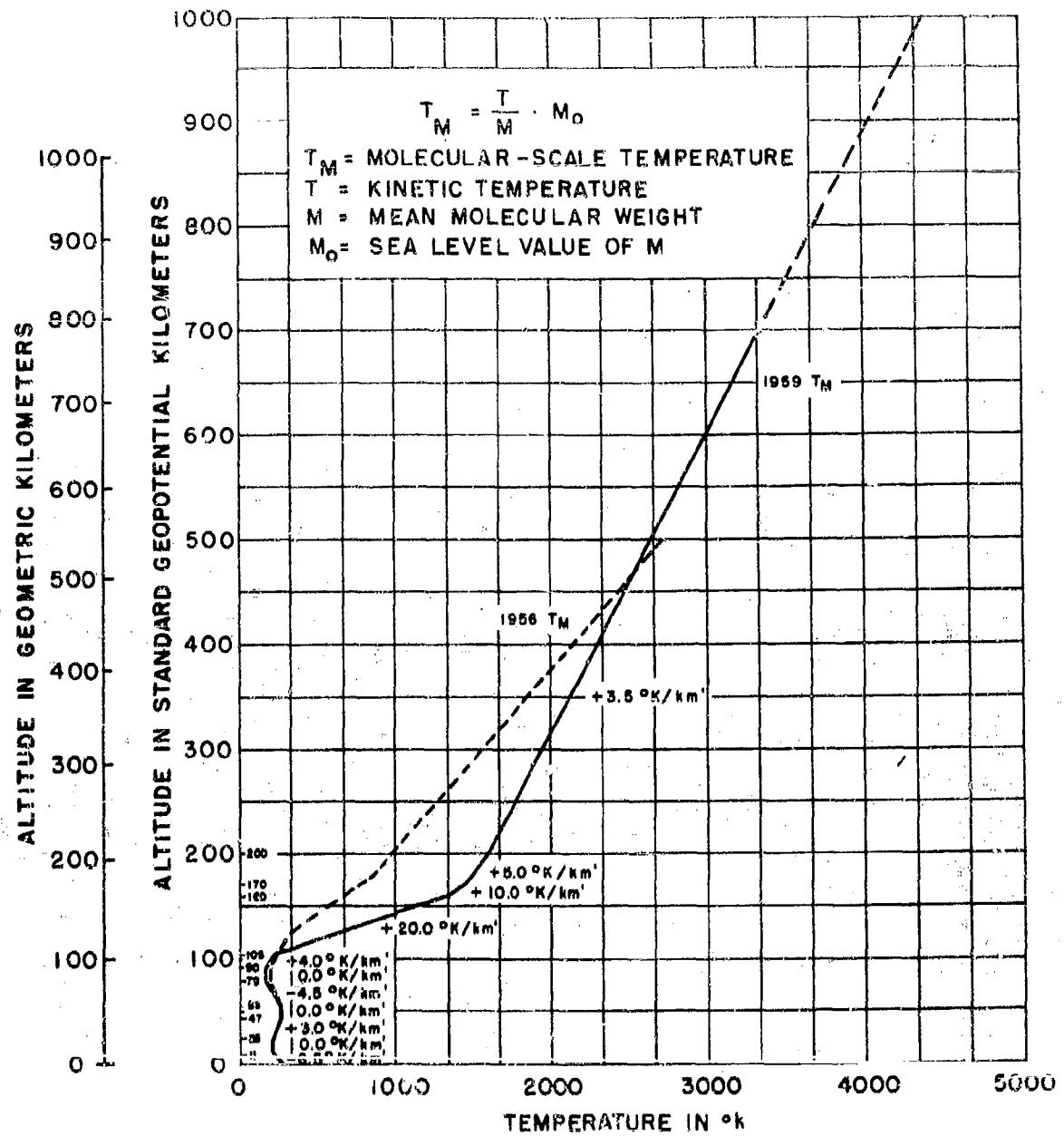


FIG. 1. Molecular-scale temperature vs. altitude. (The defining property of the model)

A B S T R A C T

A model of the earth's atmosphere to 700 kilometers is given. Below 53 kilometers the present model is the same as The ARDC Model Atmosphere 1956. Above this height, changes have been made based on data deduced from rocket flights and from the rate of change of the orbital period of satellites. At approximately 600 kilometers the new model gives densities that are 20 times lighter than the 1956 model. Below 600 kilometers the two models gradually come closer together and finally cross at about 150 kilometers. Between 90 and 150 kilometers the density for the 1959 model is lower, being about one half that of the 1956 model at 120 kilometers. At the present time, the maximum altitude at which density data from satellites has been obtained is just below 700 kilometers. For this reason, the tables end at 700 kilometers. Dashed lines in the plots present a tentative extrapolation of the data to 1000 kilometers.

The value of the molecular weight, like other atmospheric properties, probably depends on both location and time. The 1959 model curve probably represents the molecular weight at high latitudes, such as Fort Churchill, where the experimental data were obtained. At lower latitudes the molecular weight may be nearer the curve given in the 1956 model.

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* Tabulation is on integral values of geometric altitude, but the corresponding (nonintegral) values of geopotential altitude are included.

LIST OF SYMBOLS AND ABBREVIATIONS

<i>a</i>	acceleration	H'_s	geopotential scale height
<i>a</i>	radius of the earth at the equator	H^*	modified geopotential altitude
<i>b</i>	subscript indicating base or reference level	<i>i</i>	subscript indicating ice point value
BTU	British Thermal Unit	in.	inch
$^{\circ}\text{C}$	degrees, in thermodynamic Celsius scale	i n mi	international nautical mile
C_s	speed of sound	$^{\circ}\text{K}$	degrees, in thermodynamic Kelvin scale
cal	calorie	<i>k</i>	thermal conductivity
cm	centimeter	kg-cal	kilogram-calorie
E	energy	kg	kilogram (mass)
$^{\circ}\text{F}$	degrees, in thermodynamic Fahrenheit scale	kgf	kilogram (force)
<i>f</i>	ellipsoid flattening	kg-mol	kilogram-mole
F	force	km	kilometer
fps	foot-pound-second system of units	km'	standard geopotential kilometer
ft	foot	kwhr	kilowatt hour
ft'	standard geopotential foot	L	mean free path
G	dimensional constant in geometric-geopotential relationship	L_M	molecular-scale-temperature gradient
<i>g</i>	acceleration of gravity, effective value	<i>l</i>	length
\tilde{g}_e	acceleration of gravity at the equator	lb	pound (mass)
gm	gram	lbf	pound (force)
gm-mol	gram mole	M	mean molecular weight of air
H	altitude in geopotential measure	m	meter
H_g	mercury	m'	standard geopotential meter
H_s	scale height	<i>m</i>	mass
		mb	millibar
		mks	meter-kilogram-second system of units

N	Avogadro's number	<i>t</i>	temperature in nonabsolute thermodynamic scales
n	number density (positive integer in Eq. (B-1))	thsd ft	thousands of feet
<i>n_i</i>	Loschmid's number	<i>t_i</i>	ice point temperature in nonabsolute thermodynamic scales
nt	newton	\bar{V}	particle speed (arithmetic average)
o	subscript indicating sea-level value	v	mole volume of air under existing conditions of T and P
P	pressure	Z	altitude in geometric measure
pdl	poundal	β	constant used in Sutherland's viscosity equation
°R	degrees, in thermodynamic Rankine scale	γ	ratio of specific heats
R*	universal gas constant	η	kinematic viscosity
r	effective radius of earth	μ	coefficient of viscosity
S	Sutherland's constant	v	collision frequency
sec	second	ρ	mass density
T	temperature in absolute thermodynamic scales	σ	effective collision diameter of a mean air molecule
<i>T_i</i>	ice point temperature in absolute thermodynamic scales	ϕ	latitude of the earth
T _M	molecular-scale temperature in absolute thermodynamic scales	ω	specific weight
t	time		

THE ARDC MODEL ATMOSPHERE, 1959

1. INTRODUCTION.

New data from rockets and satellites have indicated the need of revising The ARDC Model Atmosphere, 1956.^{2, 3, 26} The new data consist of density measurements on rockets in the region of 110 to 220 geopotential kilometers (km') and densities inferred from the change in period of orbit of satellites having perigee altitudes of 170 to 650 km' . The actual data on which the 1959 Model Atmosphere is based are shown in Fig. 2. In the lower right-hand corner of this figure are listed eight rocket flights from which density data for altitudes above 100 km' was obtained. The data from flights of 7 March 1947, 22 January 1948, and one point at 219 km' from the flight of 7 August 1951, were used in derivation of the 1956 ARDC Model. The remaining five flights and additional data from the 7 August 1951 flight were not available for the 1956 Model. Between 120 and 130 km' the spread of data is within about a factor of two. If the data of the test of 18 October 1955 are neglected because of its unusual variation with altitude, the mean of the data between 120 and 130 km' is considerably below the 1956 Model. In the region of 200 km' the spread of data is covered by a factor of 20 and the mean of the data is about four or five times higher than that of the 1956 Model. The horizontal arrows in Fig. 2 indicate the possible errors in data based on estimates given in the references listed in Appendix A. Rocket data for lower altitudes is shown by shaded areas in Fig. 2 which represent the results of a large number of individual rocket flights.

Densities computed from satellite observations are also shown in Fig. 2. The new calculations by Champion² were made using the method developed by Sterne²⁸ and orbital data supplied by the Air Force Cambridge Research Center Project "Space Track," Project "Vanguard," and the Smithsonian Astrophysical Observatory. Sterne's equation relates the density to the rate of change of period. The particular satellite is specified by its effective cross-sectional area, mass, and drag coefficient.

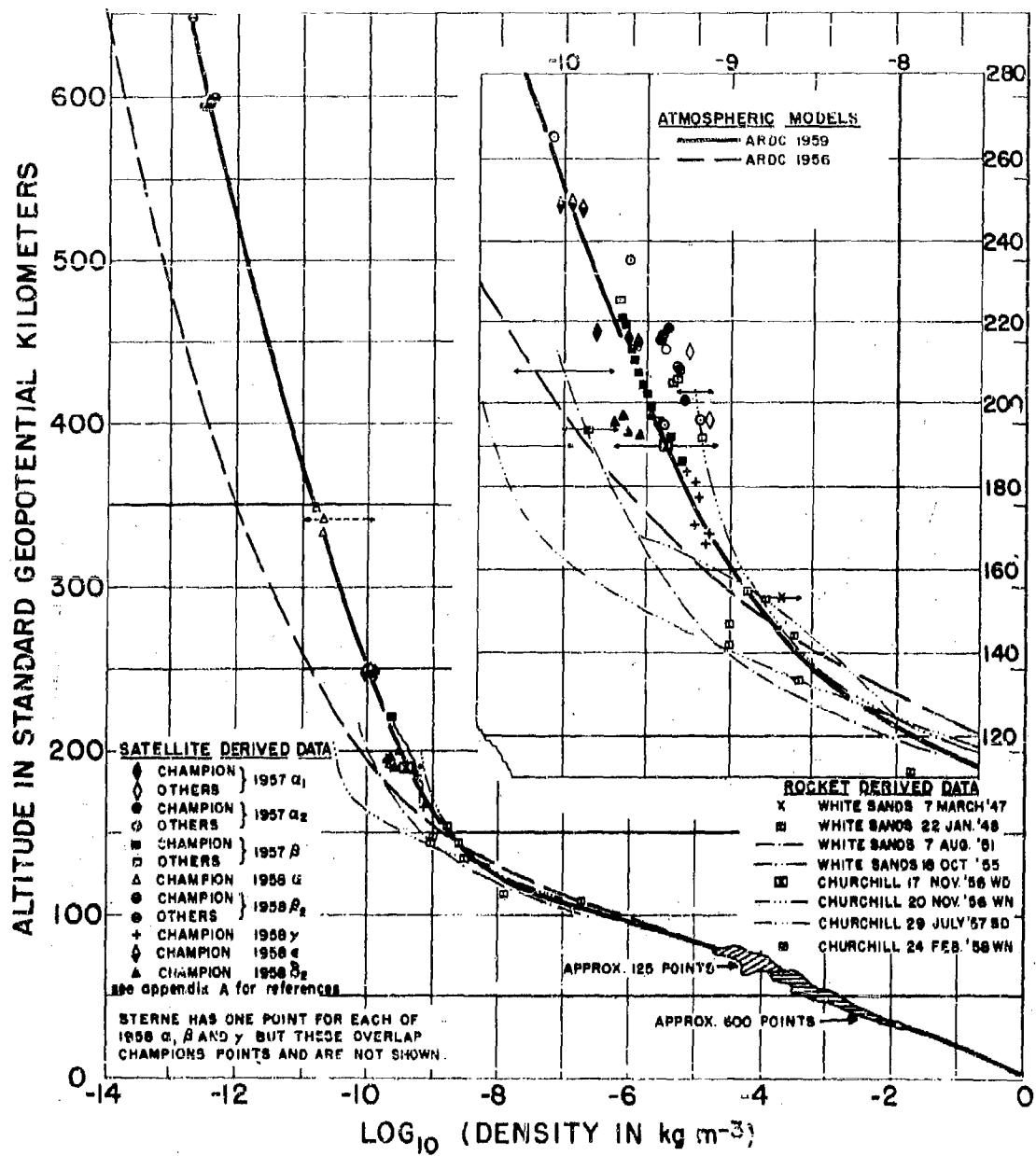


FIG. 2. Variation of atmospheric density with altitude.

For a sphere and for other bodies with their orientation varying randomly, the effective cross-sectional area can be taken as one-quarter of the total surface area of the body. A nonstabilized satellite can be considered randomly oriented if its motion is averaged over a sufficiently long time. For a cylinder, such as the Explorer satellites, the effective cross-sectional area could change by as much as a factor of 10 depending on its orientation. The appropriate range of densities obtained by Champion from Explorer I (1958a) data for the limiting cases of the satellite side-on (lower density) and end-on (higher density) at perigee is indicated by the horizontal dashed arrow in Fig. 2. The range for other Explorer satellites (1958 δ and 1958 ε) is the same, and for Sputnik II and III (1957 β 1 and 1958 δ 2) the range is somewhat smaller.

In addition, Champion³ has also investigated the possible variation in the drag coefficient for different-shaped bodies moving in free molecule flow. The shapes considered were cones, cylinders, and truncated cones. The variation in the drag coefficient from the value of 2 for a sphere was about 25 to 50 percent.

There is some doubt about the densities derived from Sputnik I carrier rocket (1957 α 1) and Sputnik II (1957 β 1), since the values of the ratio of mass to effective cross-sectional area have not been published for these satellites. The densities plotted for these satellites were calculated by using values of the ratio of mass to effective cross-sectional area based on the estimated size and mass of the satellites.

Although there is some spread of the computed densities, all values derived from satellites (extending from 170 to 650 km') are higher than the corresponding densities of the 1956 ARDC Model. The difference is small at 170 km' but increases with altitude. As shown in Fig. 2, the estimated mean values of densities derived from satellite data tend to lie on a smooth curve. At 600 km' the new curve is about twenty times higher than the 1956 model, but the two curves gradually come closer together and finally cross at 153 km'. Between 170 and 200 km' the densities derived from rocket and satellite data are in reasonable agreement. Between 90 and 153 km', the density of the 1959 model is

somewhat lower, being about one-half that of the 1956 model at 123 km'. The present model is limited to 700 km', since the greatest altitude for which density data were available was 656 km' for Vanguard I (1958 β 2). (Dashed lines in Figs. 4, 5, and 6, pages 27, 28 and 29 present a tentative extrapolation of the data to 1000 km.)

2. BASIC ASSUMPTIONS AND FORMULAS

2.1 Perfect Gas Law and Hydrostatic Equation

The atmosphere is assumed to obey the perfect gas law,¹⁴

$$\rho = \frac{P M}{R^* T} \quad (1)$$

where, in mks units,

ρ = density in kg m^{-3} ,

P = atmospheric pressure in newtons m^{-2} ($\text{kg m}^{-1} \text{sec}^{-2}$),

T = temperature in °K,

R^* = universal gas constant, 8.31439×10^3 joules $\text{kg}^{-1} (\text{°K})^{-1}$,

M = molecular weight of air (dimensionless).

The air is assumed to be in hydrostatic equilibrium¹⁵ and to satisfy the differential equation,

$$dP = -g \rho dZ \quad (2)$$

where

g = acceleration of gravity in m sec^{-2} ,

Z = geometric altitude in m.

Equations (1) and (2) may be combined to obtain the usual differential form of the barometric equation,

$$d \ln P = \frac{-g M}{R^* T} dZ \quad (3)$$

which contains five variables. For calculating pressures below 30 kilometers (100,000 ft), it has been customary to assume g and M to be constant. Thus the replacement of T by a linear function of Z permitted Eq. (3) to be simply integrated.

For the high altitudes to which these tables are computed, the

simplifying assumptions of constant g and M are no longer valid. The replacement of g and M by even very simple functions of Z produces considerable complexity upon integration.³¹ The mathematical simplicity of the low-altitude calculations may be retained, however, without the invalid assumptions of constant g and M , through two transformations of variables. These are the combining of g and Z into a single new altitude parameter, "geopotential H ," and the combining of T and M into a single new temperature parameter, molecular-scale temperature T_M . Defining T_M as a series of linear functions of H then permits a simple integration with the resulting equations in exactly the same form used in earlier standards. Values of Z may then be extracted from H by using the known relationship between g and Z , and values of T may be extracted from T_M by assuming a function M of H .

2.2 Relationship Between Geopotential and Geometric Altitude

Following the concept originally introduced by Bjerknes,¹ vertical displacement can be expressed in units of geopotential.⁷ Geopotential at an altitude Z is the potential energy of a unit mass at that altitude relative to the potential energy of that same unit mass at sea level. Geopotential H of a point at altitude Z may be rigorously defined as the increase in potential energy of a unit mass lifted from mean sea level to Z against the local force of gravity.

Mathematically this definition becomes,

$$GH = \frac{\Delta E}{m} = \int_0^Z g(Z) dZ \quad (4)$$

where

- ΔE = increase in potential energy in joules,
- m = mass of the body in kilograms,
- $g(Z)$ = acceleration of gravity in $m sec^{-2}$ expressed as a function of Z ,
- H = geopotential of a point at altitude Z ,
- G = proportionality factor depending on the units of H .

Solving Eq. (4) for H in terms of Z yields:

$$H = \frac{1}{G} \int_0^Z g(Z) dZ . \quad (5a)$$

The differential form of this relationship to be used later is

$$GdH = g(Z) dZ . \quad (6)$$

Geopotential is energy per unit mass. The basic unit of geopotential used in this model is one standard geopotential meter, m' , which is defined to be $9.80665 m^2 sec^{-2}$. If one kilogram is moved through an interval of one standard geopotential meter, its potential energy is increased by 9.80665 joules. Geopotential is essentially proportional to the product of the value of the acceleration due to gravity and the distance moved in the vertical direction. The constant of proportionality has been chosen so that if $g = 9.80665 m sec^{-2}$, an interval of one standard geopotential meter corresponds to a distance of one meter.⁷ If g is less than this value, the distance in meters corresponding to one standard geopotential meter is increased.

The above definitions of geopotential and the geopotential meter are in accord with international convention.^{7, 13} However, it is important to note that several recent reports have used a different definition of geopotential altitude.^{28, 32} The defining equation in this case is

$$H^* = \frac{1}{g(0)} \int_0^Z g(Z) dZ . \quad (5b)$$

Here H^* has the dimension of length, but the numerical magnitude is the same as that of H defined by Eq. (5a), provided the same sea-level value of g is used. Thus the tables of geopotential altitude are the same for either definition. For those who prefer the second definition,

⁷ At sea level at latitude $45^\circ 32' 33''$, g has the value $9.80665 m sec^{-2}$ within two parts in a million.

It is only necessary to replace H by H^* throughout and define H^* by Eq. (5b).⁷

To evaluate geopotential as a function of geometric altitude from Eq. (5a), a relationship between g and Z must be established. In an unpublished document,²⁰ Lambert prepared a refined version of his previous equation²¹ relating g to both altitude and latitude. The following is an evaluation of the refined equation for $45^\circ 32' 33''$ latitude:

$$g(Z) = 9.8066500 - 3.0854195 \times 10^{-6} Z + 7.2539455 \times 10^{-13} Z^2 \\ - 1.5167771 \times 10^{-19} Z^3 + 2.9724620 \times 10^{-26} Z^4 \\ - 5.5905936 \times 10^{-33} Z^5 + 1.0219762 \times 10^{-39} Z^6. \quad (7)$$

Substituting Eq. (7) into Eq. (5) and integrating gives

$$H(Z) = Z - 1.5731262 \times 10^{-7} Z^2 + 2.4656553 \times 10^{-14} Z^3 \\ - 3.8667054 \times 10^{-21} Z^4 + 6.0621354 \times 10^{-28} Z^5 \\ - 9.5013649 \times 10^{-35} Z^6. \quad (8)$$

The following relationship, derived from Eq. (8) by use of MacLaurin's series, is used for computing Z for integral values of H :

$$Z(H) = H + 1.5731262 \times 10^{-7} H^2 + 2.4837966 \times 10^{-14} H^3 \\ + 3.9380519 \times 10^{-21} H^4 + 6.2746418 \times 10^{-28} H^5 \\ + 1.0054032 \times 10^{-34} H^6. \quad (9)$$

A much simpler relation between H and Z , based on the inverse-square law variation of g , yields results which differ from those of Eq. (7) by only 4 meters at 300 km altitude (see Appendix B) when a suitable value of effective earth's radius^{7, 24} for latitude $45^\circ 32' 33''$

⁷ Professor A. Miele of Purdue University has suggested the name "modified geopotential altitude" for H^* . He has recommended the use of H^* in model atmosphere work, since it measures altitude in units of length and eliminates the use of geopotential meters which have the dimensions of energy per unit mass.

is used. This relationship is

$$H = \left(\frac{g_0}{G} \right) \frac{rZ}{r + Z} \quad (10)$$

where $r = 6,356,766$ m, the effective earth's radius at latitude $45^{\circ} 32' 33''$.

2.3 Relationship Between Temperature and Molecular-Scale Temperature

The molecular-scale temperature introduced by Minzner and Ripley²² is the defining atmospheric property of this model. This property is a composite of temperature and molecular weight, and is defined by the equation:

$$T_M = \left(\frac{T}{M} \right) M_0 \quad (11)$$

where

T = temperature in the absolute thermodynamic scales,

T_M = molecular-scale temperature in the absolute thermodynamic scales,

M = molecular weight (nondimensional),

M_0 = sea-level value of molecular weight .

No direct measurements of temperature have been made at altitudes above those which are reached by balloons; instead, the temperature is derived from values of the velocity of sound, or by substitution of measured pressures or densities into the barometric equation. The molecular-scale temperature can be derived in this way without specifying the molecular weight, whereas the temperature can be derived only if the molecular weight is known. Since the molecular weight is not well known at altitudes above 90 km, the molecular-scale temperature is more precisely known than temperature. Thus the introduction of molecular-scale temperature increases the validity of some of the tabulated properties while simultaneously decreasing the complexity of the mathematics relating the basic atmospheric properties. The use of molecular-scale temperature also avoids the necessity for changing the

defined atmosphere each time new values for the inadequately known molecular-weight distribution may be adopted.

The use of T_M retains consistency with the ICAO Standard Atmosphere, since over the altitude region of that Standard (as well as to considerably greater altitudes), the ratio of M_0/M is unity, and hence $T_M \approx T$ over the same altitude region.

2.4 Altitude Function of Molecular-Scale Temperature Determined From Pressure and Density Data

The combining of Eqs. (3), (6), and (11) leads to

$$\frac{d \ln P}{dH} = -\frac{GM_0}{R^* T_M} = -\frac{Q}{T_M} \quad (12)$$

where Q is a constant equal to $0.0341648^\circ K/m'$.

From this equation it is evident that the negative reciprocal of T_M is directly proportional to the slope of the curve, $\ln P$ vs. H . Differentiating Eq. (12) yields

$$\frac{d^2 \ln P}{dH^2} = \frac{Q}{T_M^2} \frac{dT_M}{dH} \quad (13)$$

from which one sees that the altitude gradient of molecular-scale temperature (dT_M/dH) is proportional to the rate of change of slope of the curve, $\ln P$ vs. H , as well as to T_M^2 . Equations (12) and (13) form the basis for the determination of T_M vs. H from pressure-altitude data.

Equation (13) may not be explicitly solved for either T_M or dT_M/dH , but this equation does assist in determining the approximate shape of the related T_M vs. H curve. Equation (12), on the other hand, may be solved for T_M ; but, since T_M varies greatly for even small variations in the logarithms of pressure, the values of T_M determined from the pressure data usually have a large scatter, and smoothing of either the initial pressure data or of the resulting T_M data must be used to obtain a reasonable T_M vs. H profile.

For technical reasons, pressure data have not been measured above 120 km on rocket flights, but density data are now available from both rocket instrumentation and satellite observation to much greater altitudes. Consequently, one is forced to use more complicated relations depending on density in deducing the variation of T_M with respect to H .

If one eliminates T and M from Eq. (1) through the introduction of Eq. (11) and then expresses the results in terms of natural logarithms, the derivative of this expression with respect to H yields

$$\frac{d \ln \rho}{dH} = \frac{d \ln P}{dH} - \frac{d \ln T_M}{dH} . \quad (14)$$

The elimination of $d \ln P/dH$ between Eqs. (12) and (14) provides the basic relationships between T_M , ρ , and H , and thus provides the means for deducing T_M from density-altitude data. These relationships are

$$\frac{d \ln \rho}{dH} = -\frac{Q}{T_M} - \frac{d \ln T_M}{dH} = -\frac{1}{T_M} \left(Q + \frac{dT_M}{dH} \right) \quad (15)$$

and

$$\frac{d^2 \ln \rho}{dH^2} = \frac{Q}{T_M^2} \frac{dT_M}{dH} - \frac{d^2 \ln T_M}{dH^2} = \frac{1}{T_M^2} \frac{dT_M}{dH} \left(Q + \frac{dT_M}{dH} \right) - \frac{1}{T_M} \frac{d^2 T_M}{dH^2} . \quad (16)$$

Neither of these equations may be solved for T_M or dT_M/dH explicitly, and numerical methods must be used to deduce the T_M vs. H profile from density data.

The general procedure begins by drawing an average density-altitude curve through the observed data points and estimating from this curve approximate values of T_M and dT_M/dH for the various altitude regions by means of Eqs. (15) and (16). Then, starting at the lowest altitude region under investigation, a range of values of dT_M/dH ,

including the previously estimated values, are selected. Each of these T_M gradients are then used to operate on the known or accepted base values of ρ and T_M to determine a segment of the ρ vs. H curve. The value of dT_M/dH yielding a density-altitude curve most closely fitting the data is adopted. The process is then repeated for successively higher altitude regions until a T_M vs. H function and a related density-altitude curve is constructed to the highest altitude for which data are available. Equation (21) given in Section 2.7 is used for these computations. The density-altitude curve developed in this manner for the 1959 ARDC Model, along with its supporting satellite and rocket density data, is shown in Fig. 2. The related T_M vs. H function is defined in the following section.

2.5 Temperature-Height Profile of the 1959 Model

In accordance with precedent^{5, 12, 29, 31} and by agreement of the Working Group on Extension to the Standard Atmosphere,⁶ the defining temperature parameter is a continuous function of altitude consisting of a consecutive series of different subfunctions, each linear with respect to altitude and with first derivatives which are discontinuous at the intersections of the linear segments. The use of such a function implied that the atmosphere is made up of a finite number of concentric layers, each layer characterized by a specific constant value of the slope of the temperature parameter with respect to geopotential. This slope will hereinafter be referred to as the gradient, L_M ; it is equal but of opposite sign to "lapse rate."

The following is the general form of the molecular-scale temperature function:

$$T_M = (T_M)_b + L_M(H - H_b) \quad (17)$$

where

H = geopotential (altitude) in m' ,

T_M = the molecular-scale temperature in °K at altitude H ,

$L_M = dT_M/dH$ = the gradient of the molecular-scale temperature in $^{\circ}\text{K m}^{-1}$ (constant for a particular layer),

H_b = geopotential in m' at the base of a particular layer characterized by a specific value of L_M ,

$(T_M)_b$ = the value of T_M at altitude H_b .

The molecular-scale temperature functions of both the 1959 and the 1956 models are shown in Fig. 1, page iii. In the following table, the molecular-scale temperature at the extremities of each atmospheric layer and the gradient within each layer are given.

Temperature-Height Profile of the 1959 ARDC Model Atmosphere

H_b (m')	$(T_M)_b$ ($^{\circ}\text{K}$)	L_M ($^{\circ}\text{K/m}'$)
-5,000	320.66	-0.0065
0	288.16	-0.0065
11,000	216.66	0.0000
25,000	216.66	0.0030
47,000	282.66	0.0000
53,000	282.66	-0.0045
79,000	165.66	0.0000
90,000	135.66	0.0040
105,000	225.66	0.0200
160,000	1325.66	0.0100
170,000	1425.66	0.0050
200,000	1575.66	0.0035
700,000	3325.66	

2.6 Pressure

2.6.1 Standard Pressure at Sea Level

The standard pressure at sea level, P_0 , is defined as 101,325 newtons m^{-2} or 1013.25 millibars.^{10,11,12} This pressure corresponds to the pressure exerted by a column of mercury 760 mm high having a density of 13,595.1 kg m^{-3} (13.5951 gm cm^{-3}) and subject to a gravitational acceleration of 9.80665 m sec^{-2} .

2.6.2 Pressure-Altitude Formulas

The basic pressure-altitude relationship was given by Eq. (3) in terms of five variables. The introduction of geopotential through Eq. (6) and the introduction of molecular-scale temperature through Eq. (11) yields:

$$d \ln P = \frac{-GM_0}{R^* T_M} \frac{dH}{T_M} \quad (18)$$

in terms of only three variables: P , T_M , and H .

Replacing T_M in Eq. (18) by a function of H (in terms of a constant gradient L_M) from Eq. (17) leads to expressions in terms of only two variables which, in turn, permit integrations resulting in the following equations for pressure explicitly in terms of geopotential:

$$P = P_b \left[\frac{(T_M)_b}{(T_M)_b + L_M (H - H_b)} \right] GM_0 / R^* L_M \quad \text{for } L_M \neq 0 \quad (19a)$$

and

$$P = P_b \exp \left[\frac{-GM_0 (H - H_b)}{R^* (T_M)_b} \right] \quad \text{for } L_M = 0 \quad (19b)$$

where P = pressure in the same units used for P_b , and where the subscript b refers to the value of the quantity at the base of the constant-gradient layer.

2.7 Density

The formula for atmospheric density at any specific altitude is obtained by introducing Eq. (11) into Eq. (1) which yields:

$$\rho = \frac{M_0 P}{R^* T_M} = 3.4838395 \times 10^{-3} \frac{P}{T_M} \quad (20)$$

where

ρ = density in kg m^{-3} ,

P = pressure in newtons m^{-2} .

Rewriting Eq. (20) for ρ_b and combining the expression for both ρ and ρ_b with Eq. (19a) yields:

$$\rho = \rho_b \left[\frac{(T_M)_b}{(T_M)_b + L_M (H - H_b)} \right]^{1 + (GM_0 / R^* L_M)} \quad \text{for } L_M \neq 0. \quad (21a)$$

When expressions for ρ and ρ_b from Eq. (20) are combined with Eq. (19b),

$$\rho = \rho_b \exp \left[\frac{-GM_0 (H - H_b)}{R^* (T_M)_b} \right] \quad \text{for } L_M = 0 \quad (21b)$$

in which the exponent is identical to that of Eq. (19b).

2.8 Speed of Sound

The speed of sound propagation is defined in this model by the classical equation,

$$C_s = \left[\frac{\gamma P}{\rho} \right]^{1/2} = \left[\frac{\gamma R^*}{M_0} T_M \right]^{1/2} = 20.046333 (T_M)^{1/2} \quad (22)$$

where

C_s = speed of sound in m sec^{-1} ,

γ = the ratio of specific heats of air defined to be 1.4 (exact) (for altitudes up to 90 km'),

P = pressure in newtons m^{-2} ,

ρ = density in kg m^{-3} .

For reasons which are discussed in a later section, the concept of the velocity of sound in the atmosphere becomes essentially meaningless at very great altitudes except perhaps for very special cases. To point out this limitation, the values of C_s are not tabulated above 90 km'.

2.9 Mean Air Particle Speed (Arithmetic Average)

The mean particle speed \bar{V} in this model is defined as the arithmetic average of the Maxwellian distribution of speeds of all air particles within a given elemental volume, assuming that all air molecules have the average mass associated with the mean molecular weight.¹⁸ The value of \bar{V} thus determined for a given temperature is not exactly equal to the weighted mean of the separate values of mean particle speed for each pure constituent of the atmosphere. However, this value does not depart greatly from such a weighted mean. The quantity \bar{V} retains its significance provided (a) that the volume considered contains enough particles for their velocities to follow a Maxwellian distribution, and (b) that variations of p and T/M in any direction are negligible within the volume element.

The formula used for the computations is

$$\bar{V} = \left[\frac{8R^*}{\pi} \frac{T}{M} \right]^{1/2} = \left[\frac{8R^*}{\pi M_0} T_M \right]^{1/2} = 27.035910 (T_M)^{1/2} \quad (23)$$

where \bar{V} = air particle speed (arithmetic average) in $m sec^{-1}$.

2.10 Geopotential Scale Height and Scale Height

Rearranging Eq. (18), an expression having the dimensions of "standard geopotential" meters is obtained,²⁵

$$H'_s = \frac{-1}{\frac{d \ln P}{dH}} = \frac{R^* T_M}{GM_0} = 29.269897 T_M \quad (24)$$

where H'_s = geopotential scale height in m.

This property is seen to be equal to the negative reciprocal of the slope of the curve, $\ln P$ vs. H , and to vary only with T_M . It is apparent that dH'_s/dH is directly proportional to T_M and that H'_s is, therefore, a linear function of H . Values of this property are not tabulated.

Similarly, rearranging Eq. (3) and introducing Eq. (11) yields an expression having the dimensions of geometric meters; this expression

is given the name of "scale height."²⁷

$$H_s = \frac{-1}{\frac{d \ln P}{dZ}} = \frac{R^* T}{gM} = \frac{R^* T_M}{gM_0} = 287.03963 \frac{T_M}{g} \quad (25)$$

where H_s = scale height in m.

Scale height is seen to be equal to the negative reciprocal of the slope of the curve, $\ln P$ vs. Z , and to vary with T_M as well as with g .

2.11 Specific Weight

The specific weight of a body of uniform density at any point in space is the weight per unit volume of the body at that point. The computational equation is thus the mass per unit volume times g , or the density times g , thus

$$\omega = \rho g = \frac{gM_0 P}{R^* T_M} = 3.4838395 \times 10^{-3} \frac{gP}{T_M} \quad (26)$$

where ω = specific weight in $\text{kg m}^{-2} \text{ sec}^{-2}$.

2.12 Molecular Weight, The Sea-Level Composition of the Atmosphere, and the Altitude Variation of Molecular Weight

In this model, molecular weight is considered dimensionless. Values of molecular weight are given in terms of the chemical mass scale in which the naturally occurring mixture of oxygen isotopes has, by definition, a value of 16.

In accordance with the ICAO Standard,^{11,12} the atmosphere defined by this model is assumed to be dry. The sea-level molecular weight M_0 , as determined by the sea-level atmospheric composition indicated in the following table, is 28.966 (dimensionless). In this model, the composition is assumed constant between 0 and 90 standard geopotential kilometers altitude; consequently, the sea-level value of molecular weight applies in this altitude interval.

To proceed from the molecular-scale temperature curve to a curve of kinetic temperature, it is necessary to know the mean molecular weight as a function of altitude. A mean molecular weight curve may be based on a theoretical description of the atmosphere or on the

Sea-Level Atmospheric Composition for a Dry Atmosphere[†]

Constituent Gas	Mol. Fraction Percent	Molecular Weight (0 = 16,000)
Nitrogen (N ₂)	78.09	28.016
Oxygen (O ₂)	20.95	32.0000
Argon (A)	0.93	39.944
Carbon dioxide (CO ₂)	0.03	44.010
Neon (Ne)	1.8 × 10 ⁻³	20.183
Helium (He)	5.24 × 10 ⁻⁴	4.003
Krypton (Kr)	1.0 × 10 ⁻⁴	83.7
Hydrogen (H ₂)	5.0 × 10 ⁻⁵	2.0160
Xenon (Xe)	8.0 × 10 ⁻⁶	131.3
Ozone (O ₃)	1.0 × 10 ⁻⁶	48.0000
Radon (Rn)	6.0 × 10 ⁻¹⁸	222.0

[†]These values are taken as standard and do not necessarily indicate the exact condition of the atmosphere. Ozone and Radon particularly are known to vary at sea level and above, but these variations would not appreciably affect the value of M₀.

results of experimental probes. Unfortunately, at the present time neither basis is adequate to an altitude of 700 km', although it is hoped that satellite mass spectrometric data will soon remedy this deficiency.

The variation of mean molecular weight with altitude above 90 km' used in the 1956 Model Atmosphere was based on theoretical calculations which indicated that oxygen dissociation commences sharply at 90 km and is nearly complete by 175 km', where diffusive equilibrium applies. Recent rocket data reported by Townsend³⁰ suggest that the molecular weights of the 1956 ARDC Model are in error, particularly between 90 and 200 km'. The average molecular weights deduced from rocket flights

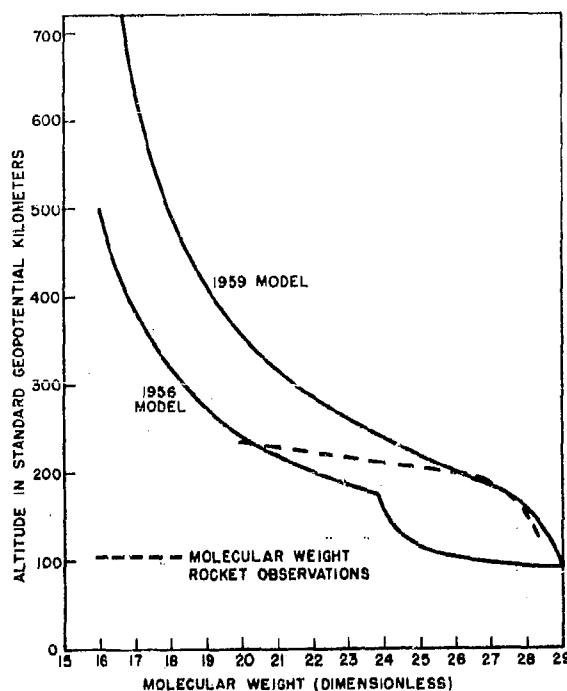


FIG. 3. Variation of mean molecular weight with altitude.

a single rocket flight while at lower altitudes there were three flights. Accepting the molecular weight data below 200 km' and keeping the restriction of $dT/dH \geq 0$ then leads to the molecular weight curve for the 1959 model shown in the figure. The equation of this curve is:

$$M = \begin{cases} 28.966 & , -5 \text{ km}' \leq H \leq 90 \text{ km}' \\ 22 - 5.044,835,74 \arctan \left[\frac{H - 220}{25} \right] & , 90 \text{ km}' \leq H \leq 180 \text{ km}' \\ 27.106 - 7.935,697,10 \arctan \left[\frac{H - 180}{140} \right] & , 180 \text{ km}' \leq H \end{cases} \quad (27)$$

In this equation the constant 28.966 is the defined sea-level value of M . The constants multiplying the arctangent functions were determined

of a Bennett mass spectrometer are compared with the 1956 model values in Fig. 3. However, molecular weights determined from this curve, when combined with the values of molecular-scale temperature at corresponding altitudes, yielded a kinetic temperature curve with negative gradients ($dT/dH < 0$) in the region just above 200 km'. Townsend's values of M are based on measurements which are probably much less reliable than the various density data. Furthermore, the molecular weight data above 180 km' represent the results of only

after the other constants had been selected and were used to adjust the different segments at junction and end points.

The mean molecular weight curve for the 1959 model results from an attempt to make use of the apparently best available experimental data. It leads to such questions as: Does oxygen dissociation commence at a higher altitude than 90 km, or does it start at 90 km but increase with altitude at a much slower rate than was previously believed? The apparent alternative is to reject the mass spectrometer measurements between 100 and 200 km. However, mean molecular weight, like most properties of the upper atmosphere, is a function of both time and location. Townsend's rocket measurements were made at Fort Churchill, which is near the magnetic north pole. Measurements of temperature made at the same time showed rather high gradients in the upper atmosphere, evidently due to the influence of higher energy particles following the lines of the earth's magnetic field. This could result in more efficient mixing of the air components and, in particular, a smaller ratio of atomic to molecular oxygen at altitudes of 100 to 200 km than at other parts of the earth. Thus, at lower latitudes, a curve such as that given in the 1956 model (see Fig. 3) may more accurately represent the mean molecular weight as a function of altitude.

Since sufficient data are not available at present to adequately discuss variations in atmospheric properties with latitude, it is possible it would be best to consider that the mean molecular weight lies between the values given for the 1956 and 1959 models.

The mean molecular weight for the 1959 model is about 10 to 20 percent greater than that of the 1956 model. Using the smaller molecular weights would decrease the kinetic temperature and mean free path by the same percentage. Similarly, the number density and collision frequency would be increased by 10 to 20 percent. However, it should be noted that the molecular-scale temperature is not uniquely determined by the density data. The result is that at altitudes above 200 km the effect of the uncertainty in molecular-scale temperature can exceed the effect of 10 to 20 percent change in molecular weight.

2.13 Mole Volume

Mole volume of a gas is defined as the specific volume of the gas which is the reciprocal of the density, when that density is expressed in terms of the mole mass unit:

$$v = \frac{1}{\rho'} = \frac{M}{\rho} = \left(\frac{R^*}{M_0} \right) \frac{MT_M}{P} = 287.03963 \frac{MT_M}{P} \quad (28)$$

where

v = mole volume in $\text{m}^3 (\text{kg-mol})^{-1}$,

ρ' = density in kg-mol m^{-3} .

This property is not tabulated but is plotted in Fig. 5c, page 28 (Fig. 9c, page 32, in English units).

2.14 Number Density

The number density of a gas is defined as the number of molecules per unit volume and is equal to Avogadro's number, the number of molecules per mole mass, divided by the mole volume. The value for air at any particular altitude depends among other things upon the degree of dissociation, which is inferred through the value of mean molecular

* The mole is defined as a mass of substance equal to M times the common mass unit of a particular system of units, where M is the dimensionless molecular weight of the substance. To distinguish between the various kinds of mole masses, when several systems of units are involved, prefixes indicating the related common mass unit are used. Thus, for this document, one requires the following units and conversions:

$$1 \text{ kg-mol} = M \text{ kg}$$

$$1 \text{ lb-mol} = M \text{ lb}$$

$$1 \text{ slug-mol} = M \text{ slugs.}$$

Applying the first of these mass conversions to density yields:

$$\left[\rho \text{ kg m}^{-3} = \frac{\rho}{M} \text{ kg-mol m}^{-3} = \rho' \text{ kg-mol m}^{-3} \right].$$

Similar relations hold for the other systems of units.

weight. Thus,

$$n = \frac{N}{V} = \frac{N M_0 P}{R^* M T_M} = 2.0985952 \times 10^{24} \frac{P}{M T_M} \quad (29)$$

where

n = number density in m^{-3} ,

N = Avogadro's number, $6.02380 \times 10^{26} (\text{kg-mol})^{-1}$.

2.15 Mean Free Path

Mean free path is the mean value of the distances traveled by each of the molecules of a given volume between successive collisions with other molecules of that volume, provided that the dimensions of the volume are large compared with the mean free path and provided that the density does not vary appreciably within that volume. For altitudes above 120 km, the tabulated values of L must be used with caution since the conditions implied by Eq. (30) become increasingly invalid at these altitudes. It is believed that the tabulated values, however, approximate the actual value for molecules moving horizontally even for much greater altitudes.

The expression for mean free path adopted for this model follows from kinetic theory assuming a homogeneous Maxwellian gas and elastic collisions between spherical molecules of uniform mass.¹⁹ As in the case of mean particle speed, the values of mean free path calculated for this model are those applicable to an atmosphere consisting of hypothetical average air molecules, rather than to an atmosphere consisting of a mixture of gases. The expression used and its equivalent in terms of Eq. (29) are

$$L = \frac{1}{\sqrt{2}\pi\sigma^2 n} = \frac{R^* M T_M}{\sqrt{2}\pi\sigma^2 N M_0 P} = 8.0504605 \times 10^{-7} \frac{M T_M}{P} \quad (30)$$

where

L = mean free path in meters,

σ = average effective collision diameter of air molecules assumed to be $3.65 \times 10^{-10} \text{ m.}$

[✓] The value of σ adopted for this model was rather arbitrarily chosen to fall within the range of values listed by Hirschfelder.⁹

2.16 Collision Frequency

The mean collision frequency of the molecules of a given volume of air is the average velocity of the molecules in that volume divided by the mean free path of the molecules within the volume, or

$$\nu = \frac{\bar{V}}{L} = 4 \sigma^2 N \left[\frac{\pi M_0}{R^*} \right]^{1/2} \frac{P}{M(T_M)^{1/2}} = 3.3583060 \times 10^7 \frac{P}{M(T_M)^{1/2}} \quad (31)$$

where

ν = the collision frequency in sec⁻¹,

\bar{V} = the average particle velocity in m sec⁻¹.

The limitations and approximations applying to \bar{V} and L obviously apply also to collision frequency.

2.17 Viscosity [✓]

Viscosity of a fluid or gas is a kind of internal friction which resists relative motion between adjacent regions of the fluid. This internal friction is usually determined by a viscometer from the drag force experienced by one of two parallel plates separated by the fluid, when that plate is moved with known velocity and constant spacing relative to the fixed plate so as to create, at any instant, a constant normal velocity gradient in the fluid between the plates. The measured drag force per unit of effective area of the plate is proportional to the normal velocity gradient within the fluid. This proportionality factor is defined as the coefficient of viscosity, μ .

The value of μ has been found to vary with the temperature of the gas but to be independent of the gas pressure within a limited range. Kinetic theory has been used in attempts to develop theoretical expressions for μ , ¹⁶ and Chapman⁴ has derived cumbersome formulas for accurately representing the dependence of μ on the temperature at least over the range of 100° to 1500° K. Because of the complexity of these equations, however, the values of μ in this model are computed from the well-known empirical Sutherland's equation with coefficients as used by the National Bureau of Standards. ⁸ This equation is

[✓] See Section 4 for limitation of the equation used.

$$\mu = \frac{\beta T^{3/2}}{T + S} \quad (32)$$

where

μ = coefficient of viscosity in $\text{kg sec}^{-1} \text{m}^{-1}$ ($1 \text{ kg sec}^{-1} \text{m}^{-1} = 10 \text{ poise}$),

$\beta = 1.458 \times 10^{-6} \text{ kg sec}^{-1} \text{m}^{-1} (\text{°K})^{-1/2}$,

$S = 110.4 \text{ °K}$,

$T = \text{temperature in } \text{°K}$.

Values of μ tabulated in this model from -5,000 m' to 90,000 m' are applicable over this range of altitudes when the body dimensions are sufficiently large, but each application should be examined with caution, especially for altitudes above 40 km.

2.18 Kinematic Viscosity

Kinematic viscosity of air is defined as the ratio of the coefficient of viscosity of air to the density of air.

$$\eta = \frac{\mu}{\rho} \quad (33)$$

where

η = kinematic viscosity in $\text{m}^2 \text{ sec}^{-1}$,

μ = coefficient of viscosity in $\text{kg sec}^{-1} \text{m}^{-1}$,

ρ = atmospheric density in kg m^{-3} .

2.19 Thermal Conductivity

Kinetic theory determinations of thermal conductivity of some monatomic gases agree well with observations.¹⁷ For these gases, thermal conductivity is directly proportional to the coefficient of viscosity. Modification of the simple theory has accounted in part for

* The same precautions advised in the use of the tabulated values of μ above 40 km are, of course, also applicable to the tabulated values of η .

** See Section 4 for limitations of the equation.

differences introduced by polyatomic molecules, but no valid theoretical equations exist for mixtures of gases. The following empirical equation has been adopted in this model for computing the coefficient of thermal conductivity for dry air.⁸

$$k = \frac{6.325 \times 10^{-7} T^{3/2}}{T + 245.4 \times 10^{-12}/T} \quad (34)$$

where

T = temperature in °K,

k = coefficient of thermal conductivity in $\text{kg}\cdot\text{cal m}^{-1}\text{sec}^{-1}(\text{°K})^{-1}$.

2.20 Relationship Between Various Properties

An analysis of the equations of the various atmospheric properties presented reveals several very simple relationships. It is seen that

$$\begin{aligned} \frac{T_M}{T_{M_0}} &= \frac{H'_s}{H'_{s_0}} = \left[\frac{C_s}{C_{s_0}} \right]^2 = \left[\frac{\bar{V}}{\bar{V}_0} \right]^2 = \frac{P}{P_0} \cdot \frac{\rho_0}{\rho} = \frac{H_s}{H_{s_0}} \cdot \frac{g}{g_0} \\ &= \frac{\omega_0}{\omega} \cdot \frac{P}{P_0} \cdot \frac{g}{g_0} = \frac{\mu}{\mu_0} \cdot \frac{\eta_0}{\eta} \cdot \frac{P}{P_0} \end{aligned} \quad (35)$$

Also

$$\frac{v}{v_0} = \frac{n_0}{n} = \frac{L}{L_0} = \frac{v_0}{v} \cdot \frac{\bar{V}}{\bar{V}_0} = \frac{T}{T_0} \cdot \frac{P_0}{P} \quad (36)$$

Each of the segments of Eq. (36), when multiplied by $P M_0 / P_0 M$ becomes equal to each of the segments of Eq. (35). Only the coefficient of thermal conductivity derived from an empirical relationship could not be included in these simple relationships. The coefficient of viscosity, also derived from an empirical equation, is essentially in the same situation; but by virtue of the definition of kinematic viscosity, the quotient μ/η is equal to density and hence in the ratio both find a place in the above equation.

3. TERMINATION OF CERTAIN PROPERTIES AT 90 STANDARD GEOPOTENTIAL KILOMETERS

3.1 Viscosity, Kinematic Viscosity, and Thermal Conductivity

Tabulations of the coefficient of viscosity, kinematic viscosity, and thermal conductivity are terminated at 90 km' where the composition of the atmosphere is assumed to change. One of the reasons for this termination is that these properties are computed from empirical equations which assume sea-level composition of air and which do not account for changes in molecular-weight of the air. Another reason for this termination is that the independence of these properties from variations in pressure or density implied by the empirical equations does not continue to be applicable at very low pressures except, perhaps, under special conditions involving extremely large bodies or volumes.

Measurements with laboratory-size viscometers show that μ is independent of pressure or density only in the pressure range from approximately 2.0 down to 0.1 atmospheres. It is for this pressure region that Sutherland's empirical formula is known to apply. This pressure independence appears to cease at low pressures when the mean free path of molecules becomes greater than some small fraction of the plate separation of a well-designed viscometer. This relationship suggests that for viscometers q times larger than existing models, the pressure or density independence of μ might be extended to approximately q times smaller values of pressure. Assuming that viscometer-measured values of μ apply to bodies comparable in size to the viscometer, such an extension would be applicable to present-day practical-size bodies only to altitudes below 90 km' (if such extension were warranted at all).

Thermal conductivity ceases to be pressure independent at low pressures for which the mean free path becomes comparable to the dimensions of the volume under consideration or comparable to the distance in which the temperature gradient varies appreciably. However, these latter limitations do not usually apply until pressures lower than those at 90 km' are reached.

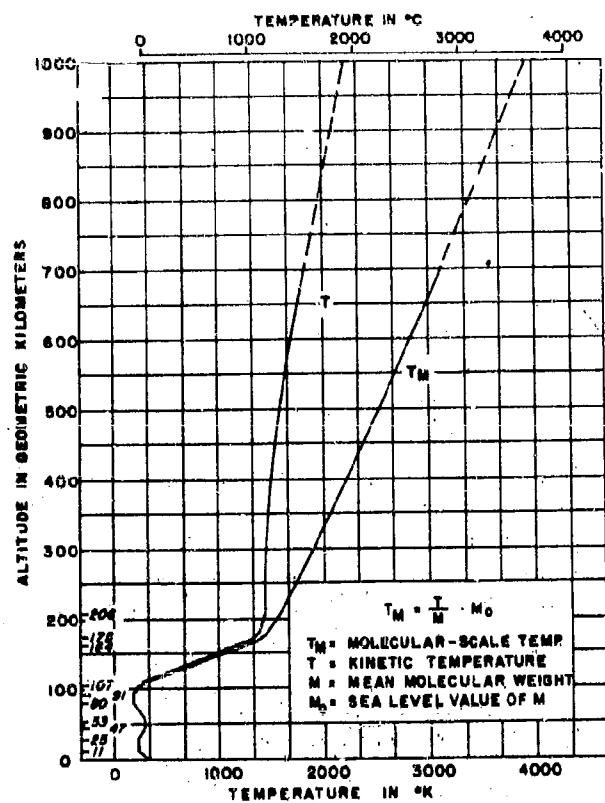
3.2 Speed of Sound

The concept of the speed of sound is related to the attenuation of sound transmission in that as the intensity approaches zero the concept of speed transmission becomes meaningless. The rate of absorption or attenuation of sound energy per unit length in air is related to frequency of the sound and the air pressure so that the attenuation increases with increasing frequency and also increases with decreasing pressure. Thus, while the sound-transmission efficiency over a given distance approaches zero for very high frequencies at sea-level pressures, it also approaches zero even for very low frequencies at the low pressures of the upper atmosphere, thereby suggesting an upper limit for tabulating sound velocity. Furthermore, while the direct dependence of sound velocity on the variation of molecular weight above 90 km' would be taken care of by the use of molecular-scale temperatures, the variation of γ above 90 km' is not accounted for by the use of T_M . The value of γ increases slowly above 90 km' as the percentage dissociation of O_2 and N_2 increases, and without separately defining this variation of γ the tabulation of the speed of sound must be terminated at 90 km'.

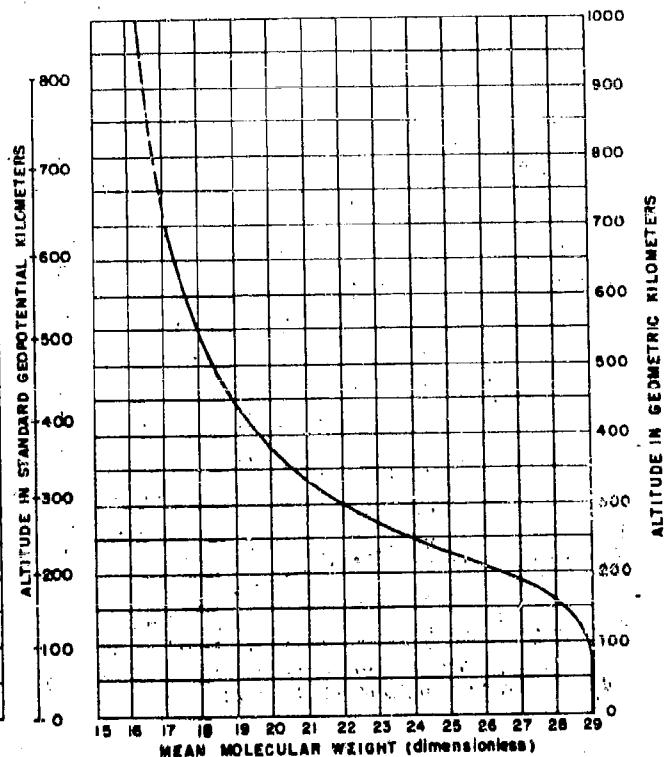
4. COMPUTATIONS

The tables of this model have been machine computed, using the formulas given in the preceding text. The properties have been calculated to eight significant figures, although they appear printed out to fewer figures dependent on altitude. The defined, independent physical constants are assumed exact. A one- or two-digit number (preceded by a plus or minus sign) following the initial entry of each block indicates the power of 10 by which that entry and each succeeding entry of that block should be multiplied. A change of power occurring within a block is indicated by a similar notation.

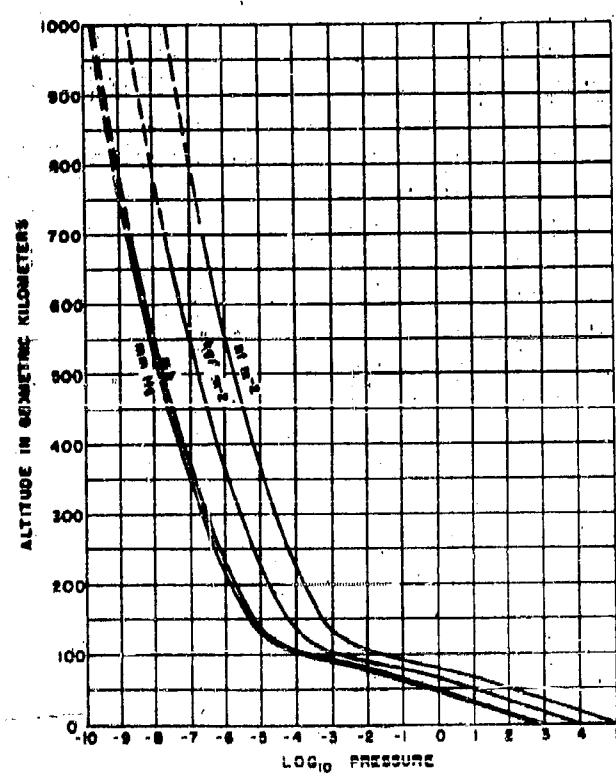
The results of the computations are given in Table 1 for metric units and in Table 2 for English units. In addition Figs. 4 through 7 provide plots of the various atmospheric properties in metric units and Figs. 8 through 11 the corresponding results in English units.



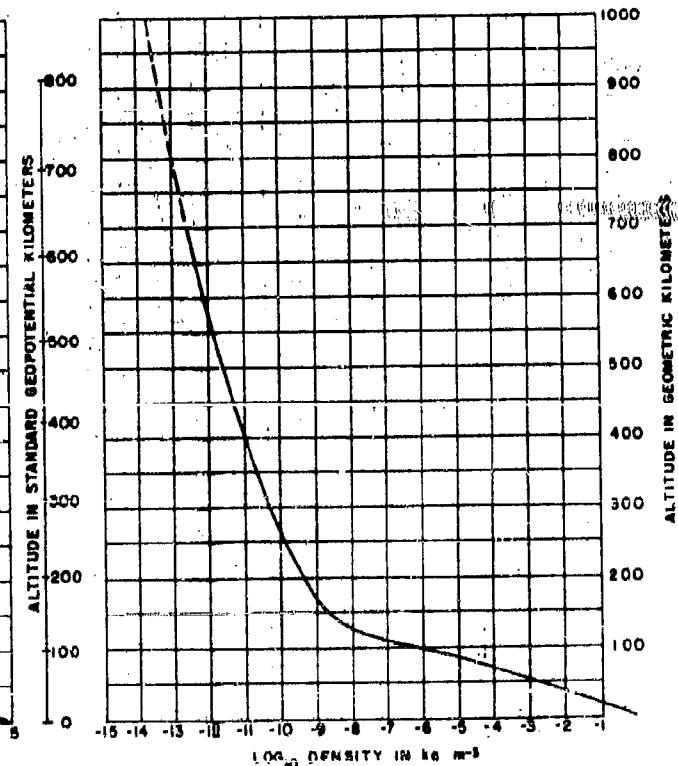
A. KINETIC TEMPERATURE AND MOLECULAR-SCALE TEMPERATURE VS. ALTITUDE



B. MEAN MOLECULAR WEIGHT VS. ALTITUDE

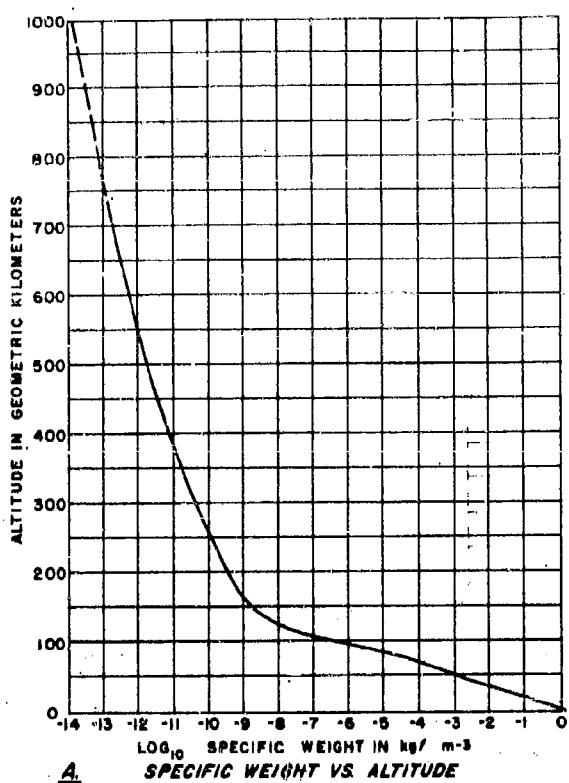


C. PRESSURE VS. ALTITUDE

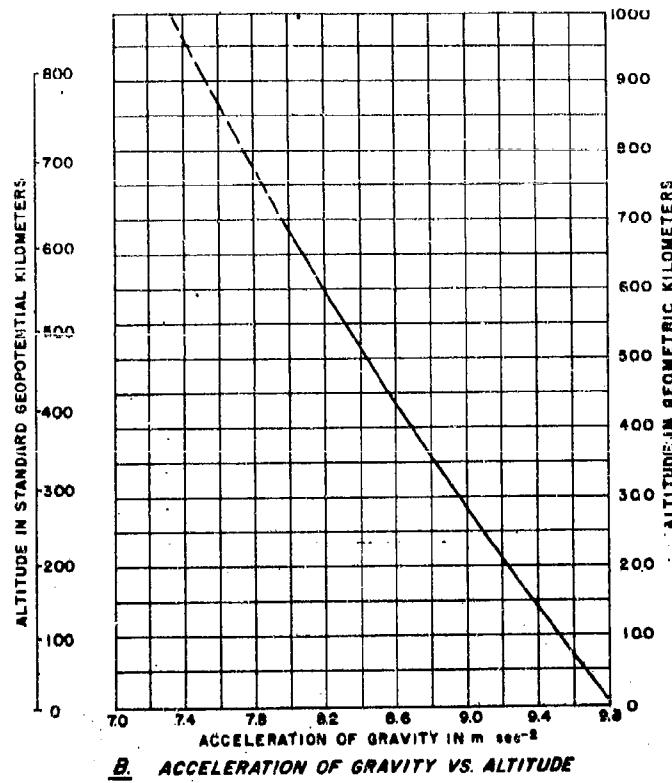


MASS DENSITY VS. ALTITUDE

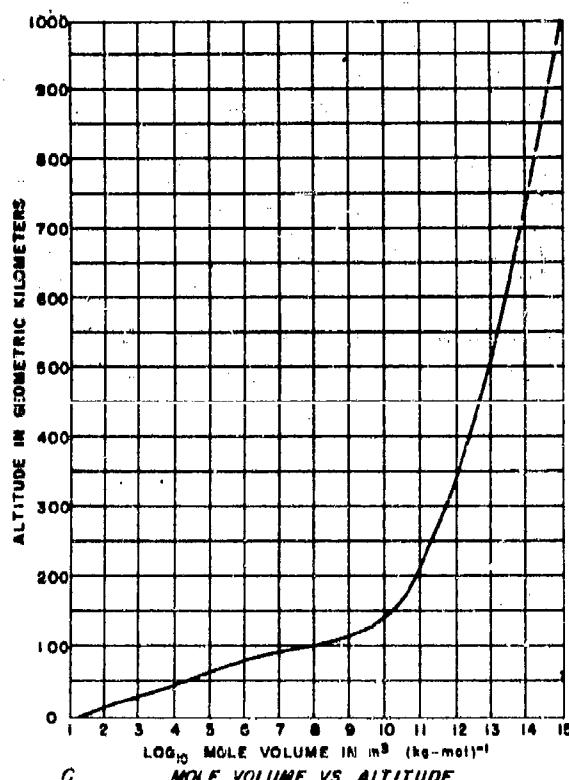
FIGURE 4



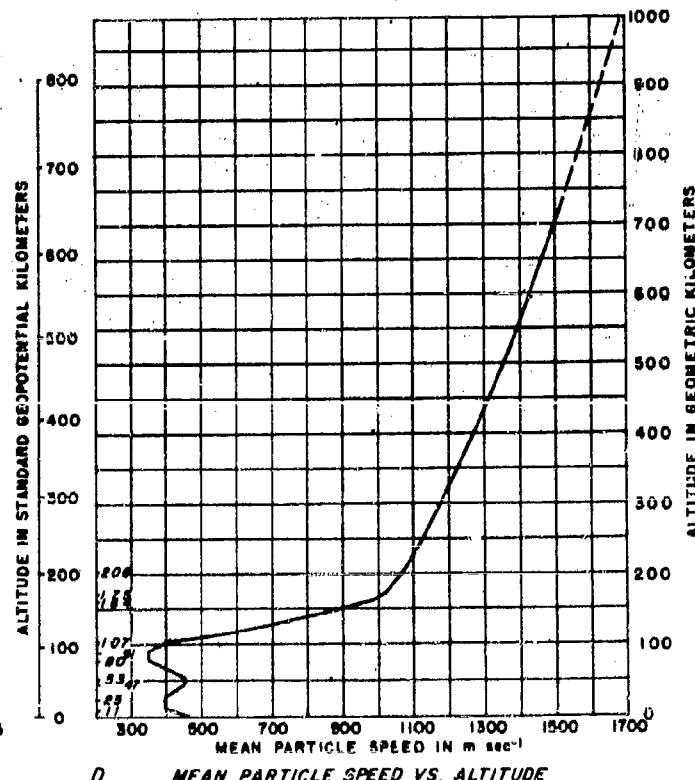
A. SPECIFIC WEIGHT VS. ALTITUDE



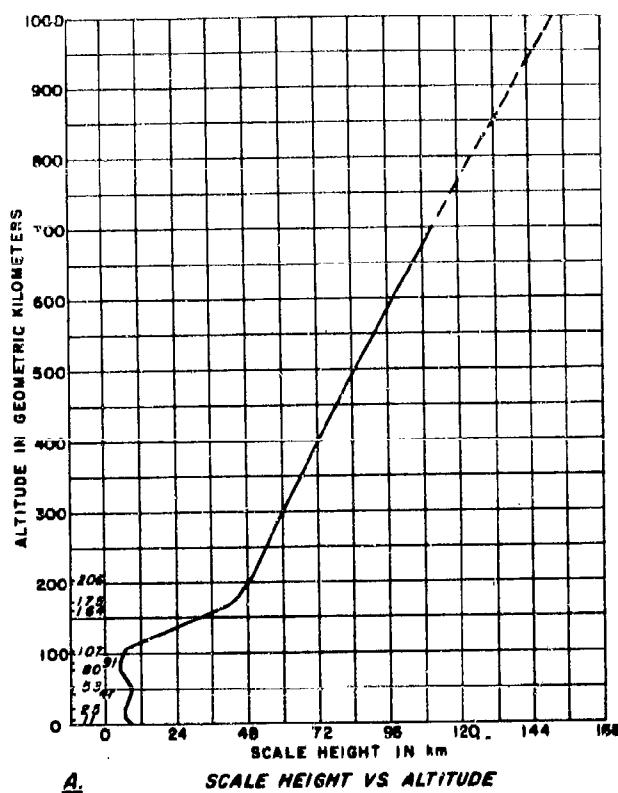
B. ACCELERATION OF GRAVITY VS. ALTITUDE



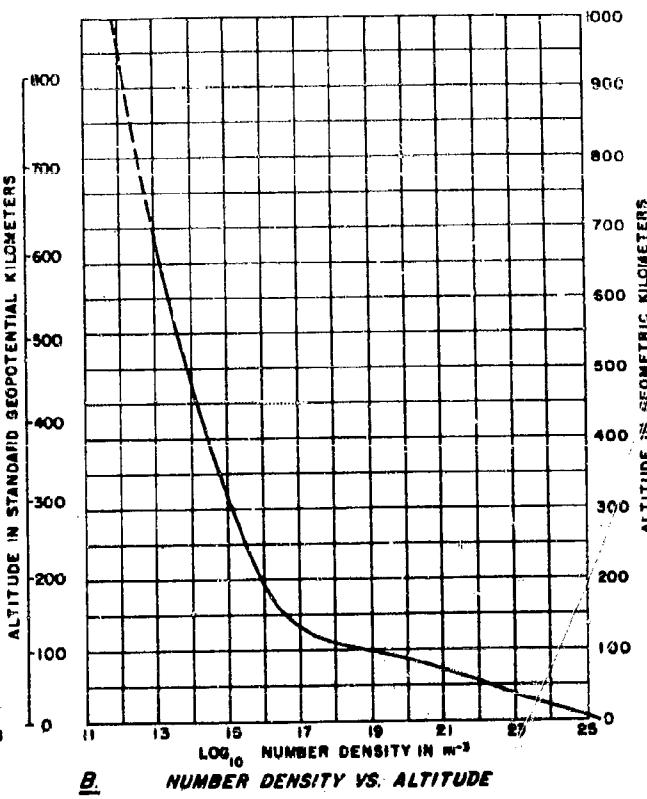
C. MOLE VOLUME VS. ALTITUDE



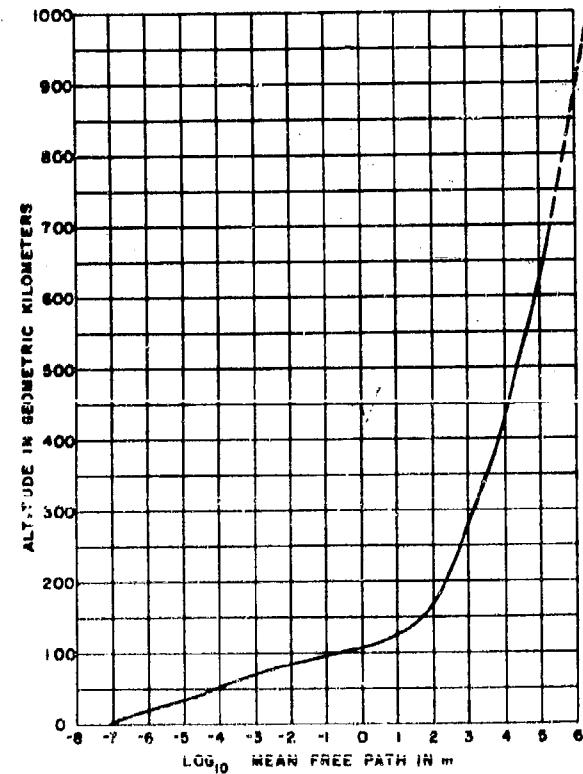
D. MEAN PARTICLE SPEED VS. ALTITUDE



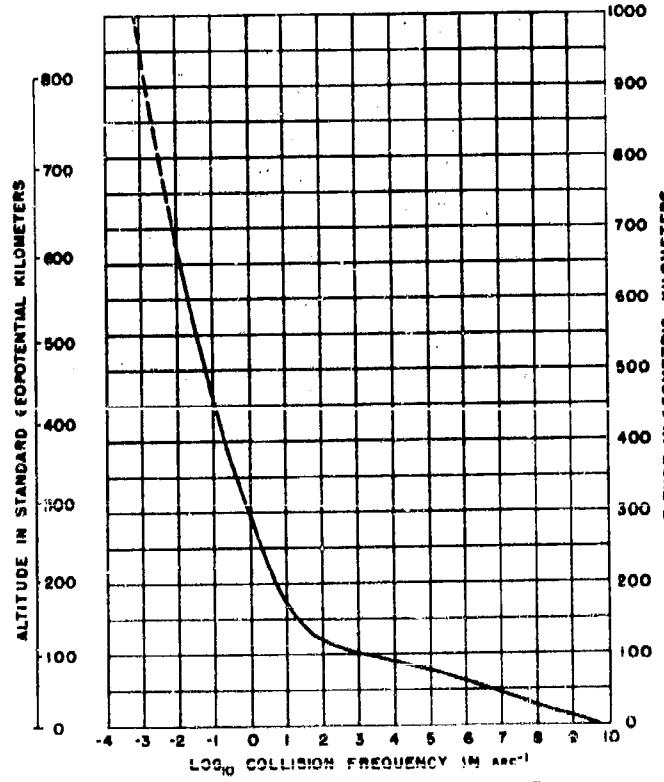
A. SCALE HEIGHT VS ALTITUDE



B. NUMBER DENSITY VS. ALTITUDE



C. MEAN FREE PATH VS. ALTITUDE



D. COLLISION FREQUENCY VS. ALTITUDE

FIGURE 6

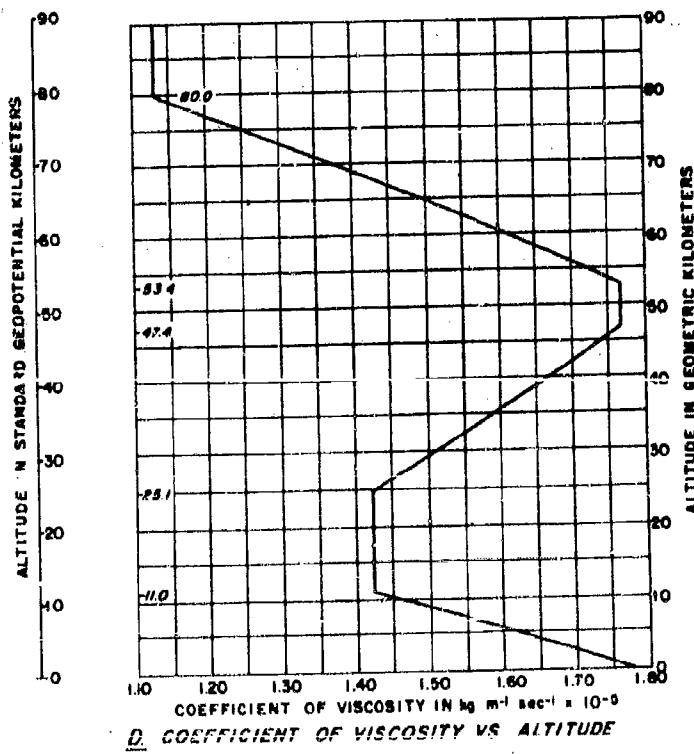
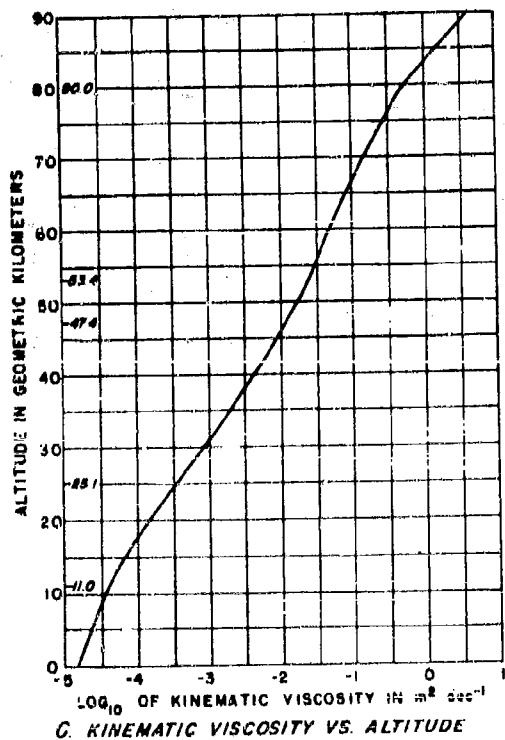
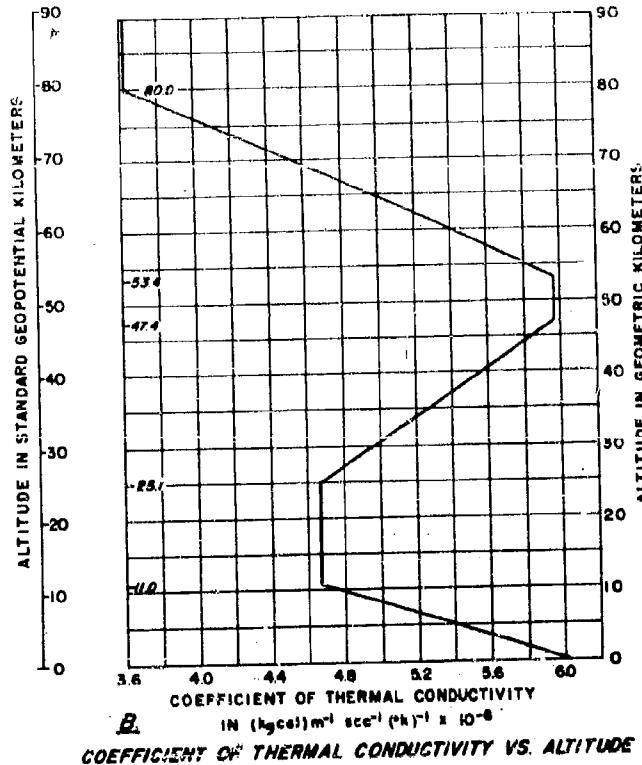
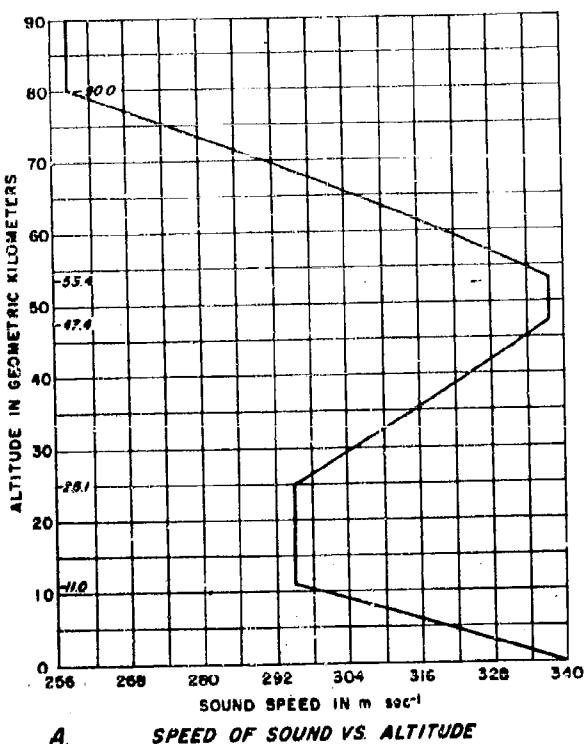


FIGURE 7

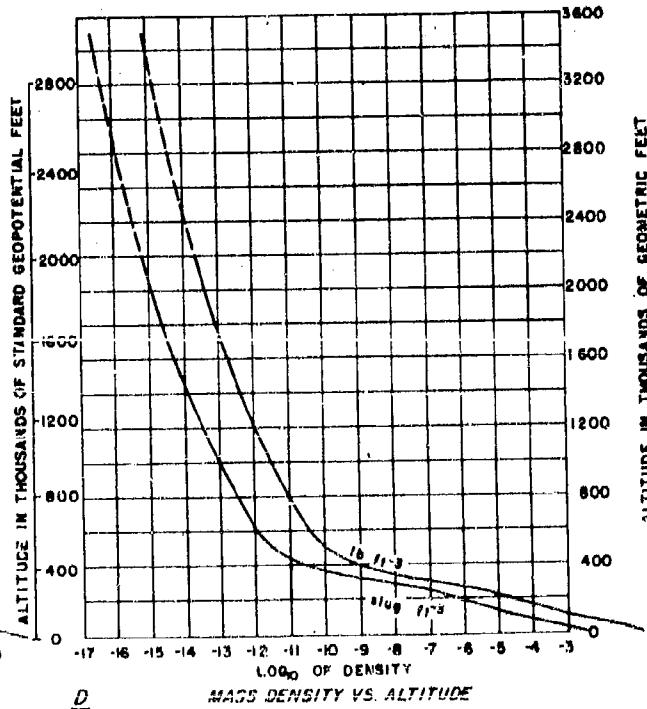
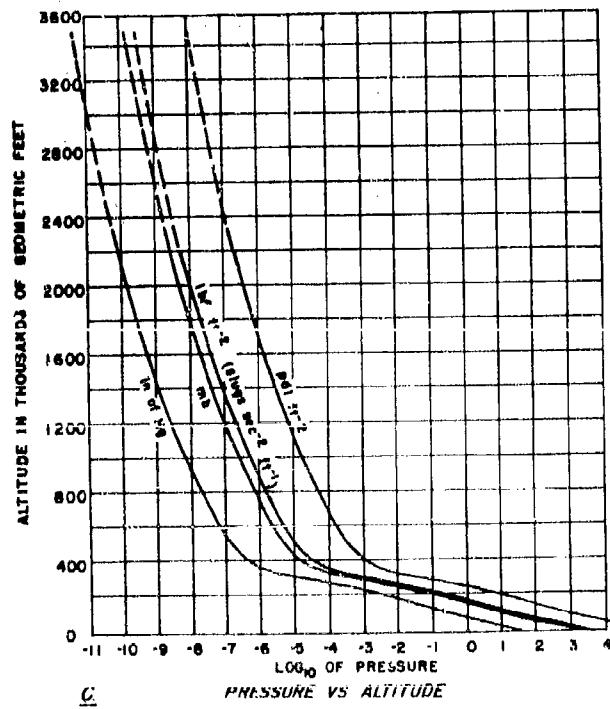
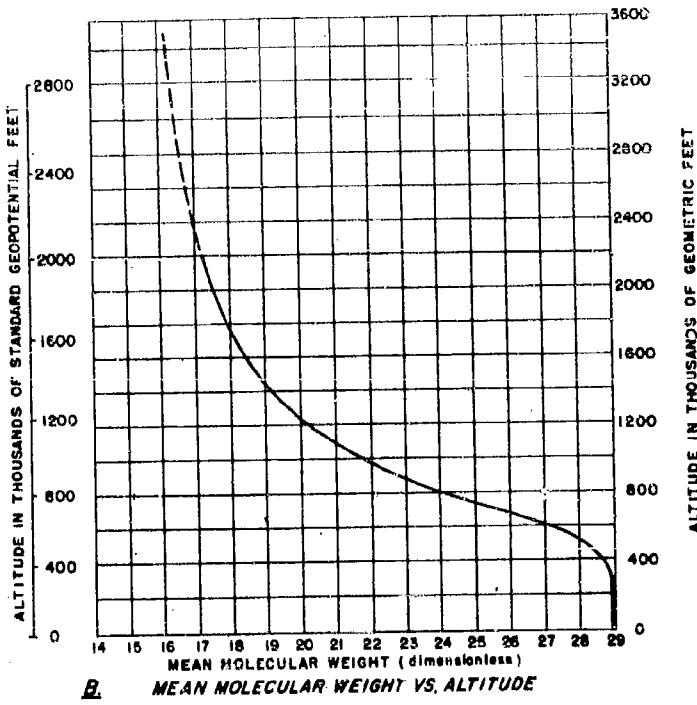
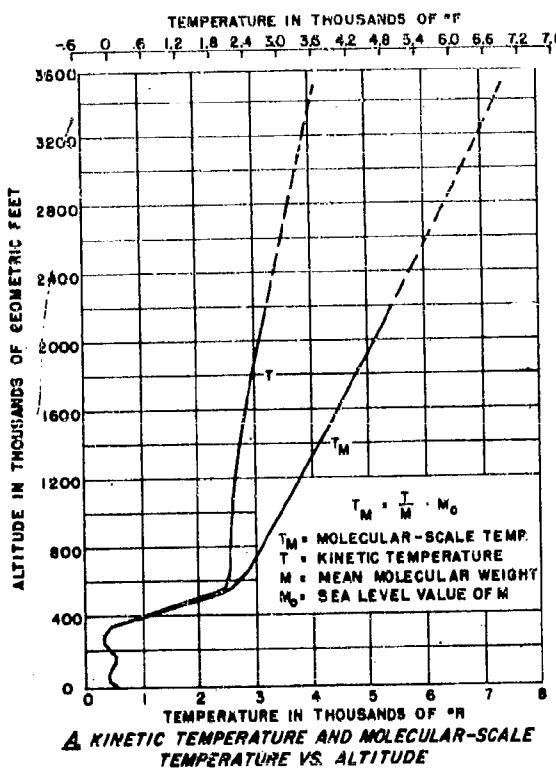
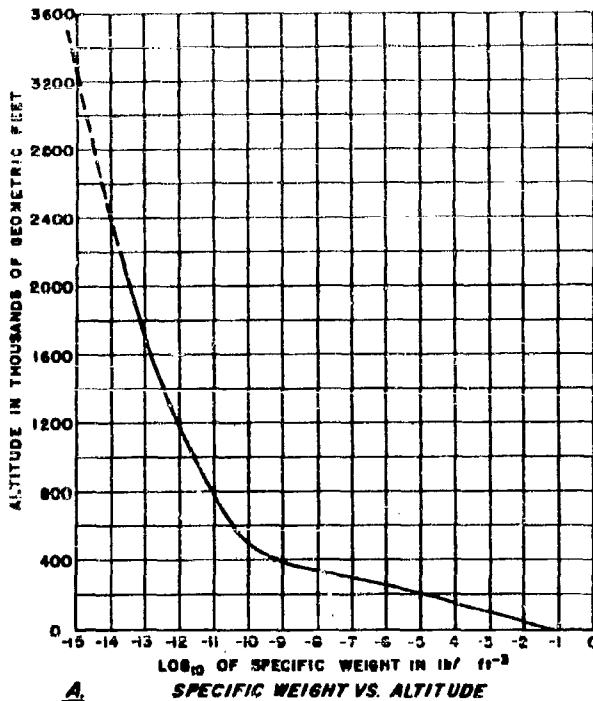
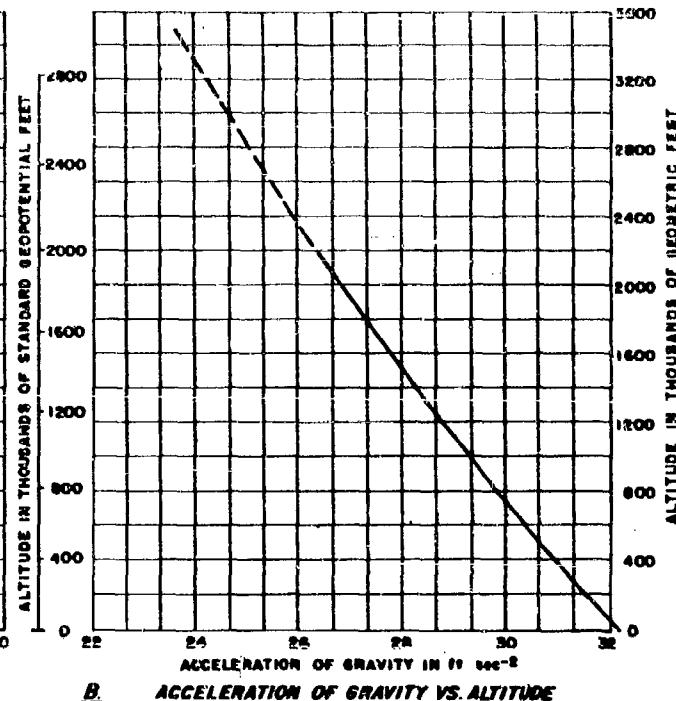


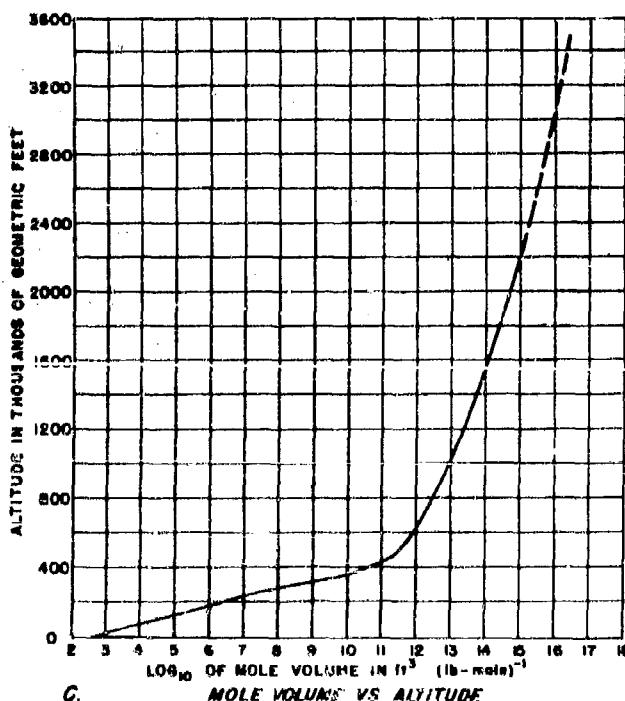
FIGURE 8



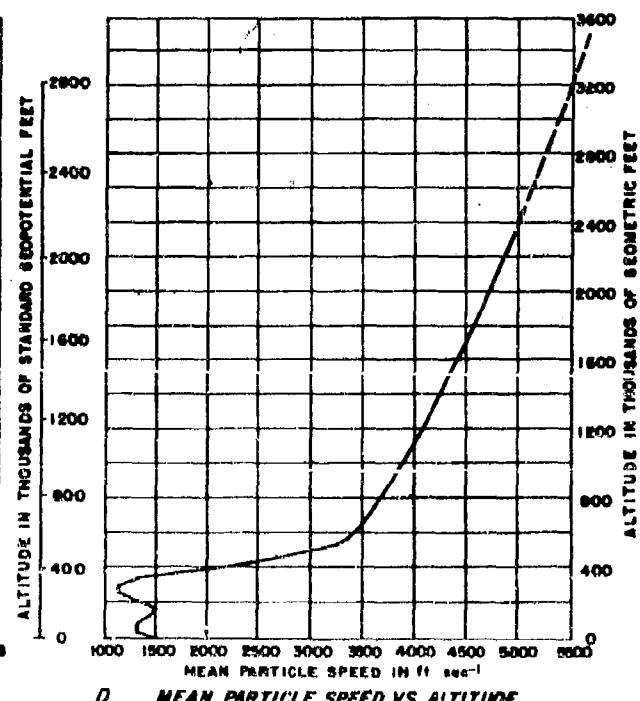
A. SPECIFIC WEIGHT VS. ALTITUDE



B. ACCELERATION OF GRAVITY VS. ALTITUDE

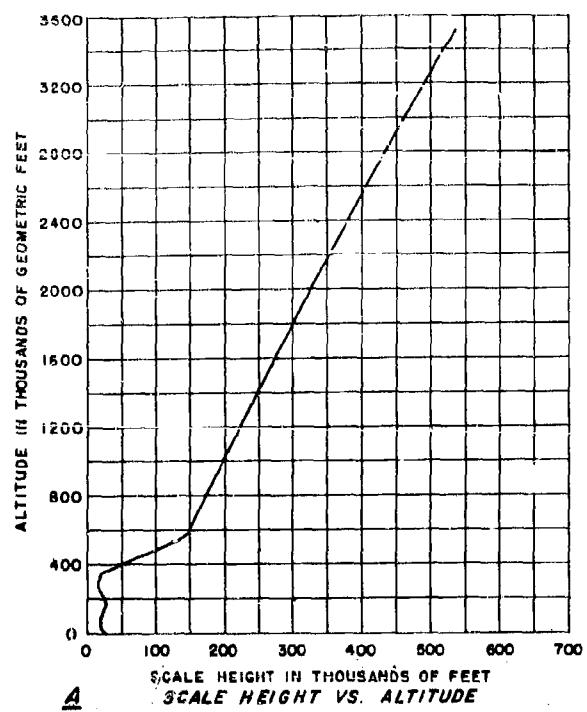


C. MOLE VOLUME VS. ALTITUDE



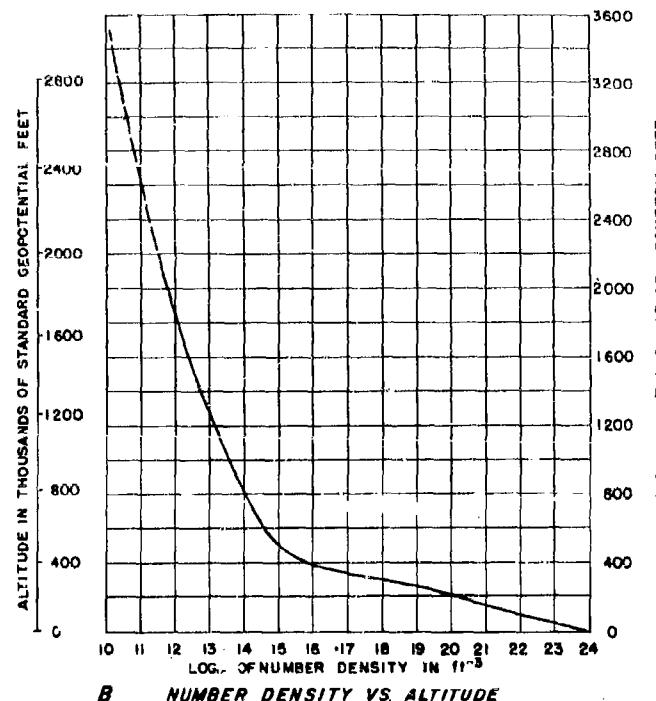
D. MEAN PARTICLE SPEED VS. ALTITUDE

FIGURE 9



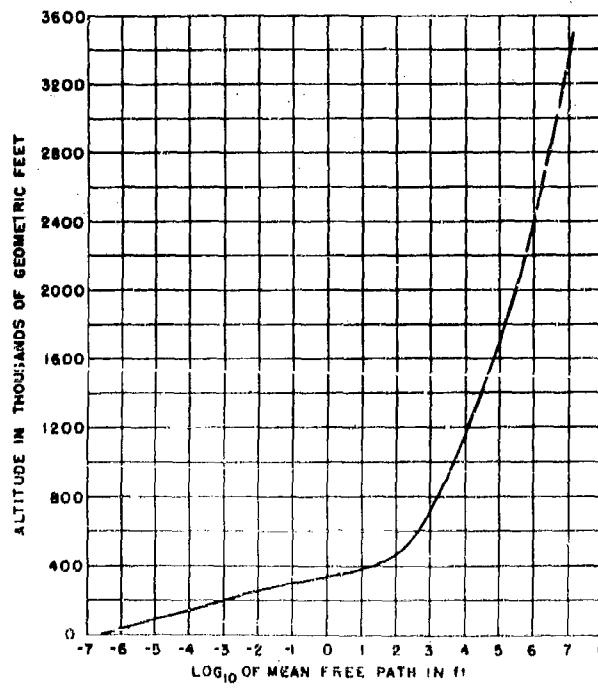
A

SCALE HEIGHT VS. ALTITUDE



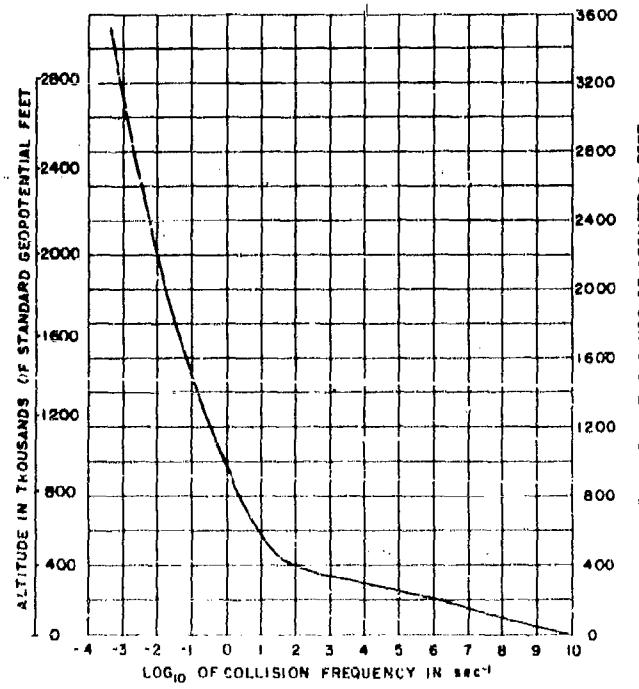
B

NUMBER DENSITY VS. ALTITUDE



C

MEAN FREE PATH VS. ALTITUDE



D

COLLISION FREQUENCY VS. ALTITUDE

FIGURE 10

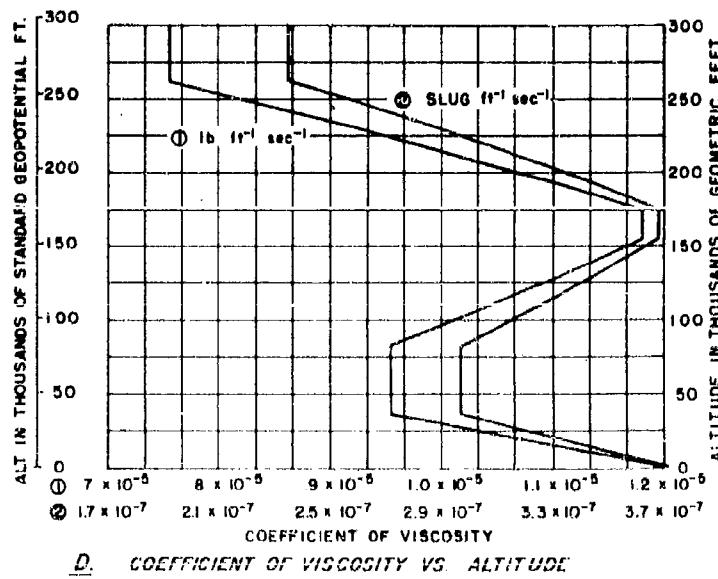
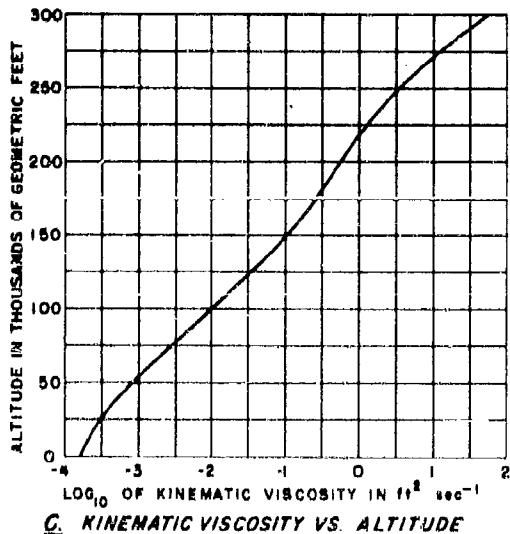
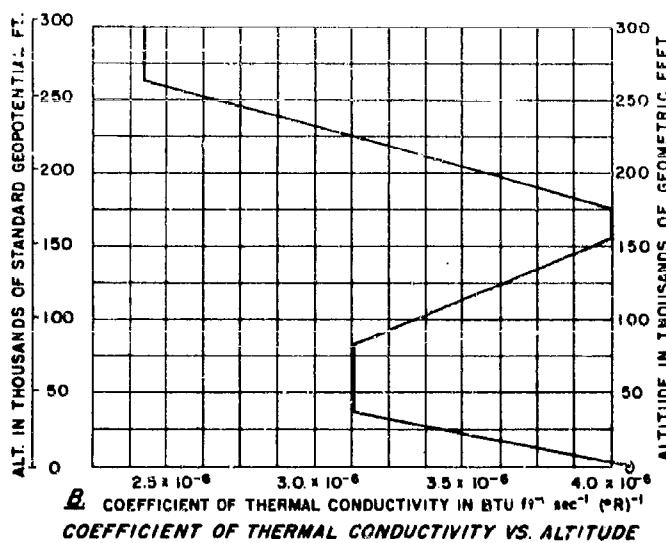
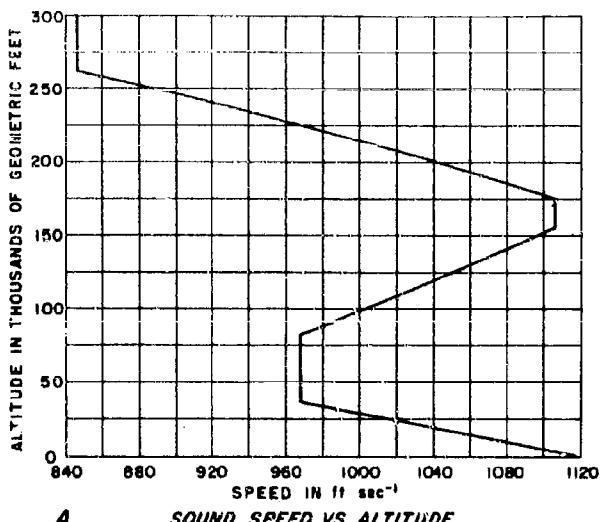


FIGURE 11

TABLE IA
ATMOSPHERIC PROPERTIES AS A FUNCTION OF ALTITUDE,
METRIC UNITS
Temperature, Pressure, Density, and Molecular Weight

NOTE: A one- or two-digit number (preceded by a plus or minus sign) following the initial entry of each block indicates the power of 10 by which that entry and each succeeding entry of that block should be multiplied. A change of power occurring within a block is indicated by a similar notation.

ALTITUDE Z, m	H, m'	TEMPERATURE		PRESSURE		DENSITY $\rho, \text{kg m}^{-3}$	MOLECULAR WEIGHT M
		T, °K	T _M , °K	P, mb	P, kg/m ²		
- 5000	- 5004	320.69	320.69	1.7761 + 3	1.8112 + 4	1.3322 + 3	1.9296 + 0 28.966
- 4900	- 4904	320.03	320.03	1.7587	1.7934	1.3192	1.9145 28.966
- 4800	- 4804	319.38	319.38	1.7400	1.7743	1.3051	1.8980 28.966
- 4700	- 4703	318.73	318.73	1.7215	1.7554	1.2912	1.8816 28.966
- 4600	- 4603	318.08	318.08	1.7031	1.7366	1.2774	1.8653 28.966
- 4500	- 4503	317.43	317.43	1.6848	1.7180	1.2637	1.8491 28.966
- 4400	- 4403	316.78	316.78	1.6667	1.6996	1.2502	1.8330 28.966
- 4300	- 4303	316.13	316.13	1.6488	1.6813	1.2367	1.8171 28.966
- 4200	- 4203	315.48	315.48	1.6311	1.6632	1.2234	1.8012 28.966
- 4100	- 4103	314.83	314.83	1.6134	1.6453	1.2102	1.7854 28.966
- 4000	- 4003	314.18	314.18	1.5960 + 3	1.6275 + 4	1.1971 + 3	1.7698 + 0 28.966
- 3900	- 3902	313.53	313.53	1.5787	1.6098	1.1841	1.7542 28.966
- 3800	- 3802	312.87	312.87	1.5615	1.5923	1.1713	1.7388 28.966
- 3700	- 3702	312.22	312.22	1.5445	1.5750	1.1585	1.7234 28.966
- 3600	- 3602	311.57	311.57	1.5277	1.5578	1.1459	1.7092 28.966
- 3500	- 3502	310.92	310.92	1.5110	1.5408	1.1333	1.6931 28.966
- 3400	- 3402	310.27	310.27	1.4945	1.5239	1.1209	1.6780 28.966
- 3300	- 3302	309.62	309.62	1.4781	1.5072	1.1086	1.6631 28.966
- 3200	- 3202	308.97	308.97	1.4618	1.4906	1.0964	1.6483 28.966
- 3100	- 3102	308.32	308.32	1.4457	1.4742	1.0844	1.6336 28.966
- 3000	- 3001	307.67	307.67	1.4297 + 3	1.4579 + 4	1.0724 + 3	1.6189 + 0 28.966
- 2900	- 2901	307.02	307.02	1.4139	1.4418	1.0605	1.6044 28.966
- 2800	- 2801	306.37	306.37	1.3982	1.4258	1.0488	1.5900 28.966
- 2700	- 2701	305.72	305.72	1.3827	1.4100	1.0371	1.5757 28.966
- 2600	- 2601	305.07	305.07	1.3673	1.3943	1.0256	1.5615 28.966
- 2500	- 2501	304.42	304.42	1.3521	1.3787	1.0141	1.5473 28.966
- 2400	- 2401	303.77	303.77	1.3369	1.3633	1.0028	1.5333 28.966
- 2300	- 2301	303.12	303.12	1.3220	1.3480	9.9155 + 2	1.5194 28.966
- 2200	- 2201	302.46	302.46	1.3071	1.3329	9.8042	1.5056 28.966
- 2100	- 2101	301.81	301.81	1.2924	1.3179	9.6938	1.4918 28.966
- 2000	- 2001	301.16	301.16	1.2778 + 3	1.3030 + 4	9.5845 + 2	1.4782 + 0 28.966
- 1900	- 1901	300.51	300.51	1.2634	1.2883	9.4762	1.4646 28.966
- 1800	- 1801	299.86	299.86	1.2491	1.2737	9.3689	1.4512 28.966
- 1700	- 1700	299.21	299.21	1.2349	1.2593	9.2626	1.4379 28.966
- 1600	- 1600	298.56	298.56	1.2209	1.2449	9.1573	1.4246 28.966
- 1500	- 1500	297.91	297.91	1.2070	1.2303	9.0530	1.4114 28.966
- 1400	- 1400	297.26	297.26	1.1932	1.2167	8.9496	1.3984 28.966
- 1300	- 1300	296.61	296.61	1.1795	1.2028	8.8471	1.3854 28.966
- 1200	- 1200	295.96	295.96	1.1660	1.1890	8.7457	1.3725 28.966
- 1100	- 1100	295.31	295.31	1.1526	1.1753	8.6451	1.3597 28.966
- 1000	- 1000	294.66	294.66	1.1393 + 3	1.1618 + 4	8.5456 + 2	1.3470 + 0 28.966
- 900	- 900	294.01	294.01	1.1268	1.1484	8.4459	1.3344 28.966
- 800	- 800	293.36	293.36	1.1131	1.1351	8.3492	1.3219 28.966
- 700	- 700	292.71	292.71	1.1002	1.1219	8.2524	1.3095 28.966
- 600	- 600	292.06	292.06	1.0874	1.1089	8.1565	1.2972 28.966
- 500	- 500	291.41	291.41	1.0748	1.0960	8.0615	1.2849 28.966
- 400	- 400	290.76	290.76	1.0622	1.0832	7.9575	1.2720 28.966
- 300	- 300	290.11	290.11	1.0498	1.0705	7.8743	1.2607 28.966
- 200	- 200	289.46	289.46	1.0375	1.0580	7.7820	1.2487 28.966
- 100	- 100	288.81	288.81	1.0253	1.0455	7.6906	1.2368 28.966
0	0	288.16	288.16	1.01325 + 3	1.0332 + 4	7.6000 + 2	1.2250 + 0 28.966
100	100	287.51	287.51	1.0013	1.0210	7.5103	1.2133 28.966
200	200	286.86	286.86	9.8945 + 2	1.0090	7.4215	1.2017 28.966
300	300	286.21	286.21	9.7773	9.9700 + 3	7.3336	1.1901 28.966
400	400	285.56	285.56	9.6611	9.8516	7.2464	1.1787 28.966
500	500	284.91	284.91	9.5461	9.7343	7.1602	1.1673 28.966
600	600	284.26	284.26	9.4322	9.6182	7.0748	1.1560 28.966
700	700	283.61	283.61	9.3154	9.5032	6.9901	1.1448 28.966
800	800	282.96	282.96	9.2077	9.3893	6.9064	1.1337 28.966
900	900	282.31	282.31	9.0971	9.2765	6.8234	1.1226 28.966

ALTITUDE Z, m	H, m ^t	TEMPERATURE		PRESSURE		DENSITY ρ , kg m ⁻³	MOLECULAR WEIGHT M
		T, °K	T _M , °K	P, mb	P, kgf m ⁻²		
1000	1000	281.66	281.66	8.9876 + 2	9.1648 + 3	6.7413 + 2	1.1117 + 0 28.966
1100	1100	281.01	281.01	8.8792	9.0542	6.6599	1.1008 28.966
1200	1200	280.36	280.36	8.7718	8.9447	6.5794	1.0900 28.966
1300	1300	279.71	279.71	8.6655	8.8363	6.4966	1.0795 28.966
1400	1400	279.06	279.06	8.5602	8.7290	6.4207	1.0687 28.966
1500	1500	278.41	278.41	8.4560	8.6227	6.3425	1.0581 28.966
1600	1600	277.76	277.76	8.3527	8.5174	6.2651	1.0476 28.966
1700	1700	277.11	277.11	8.2506	8.4132	6.1884	1.0373 28.966
1800	1799	276.46	276.46	8.1494	8.3101	6.1126	1.0269 28.966
1900	1899	275.81	275.81	8.0493	8.2080	6.0374	1.0167 28.966
2000	1999	275.16	275.16	7.9501 + 2	8.1069 + 3	5.9631 + 2	1.0066 + 0 28.966
2100	2099	274.51	274.51	7.8520	8.0068	5.8895	9.9649 - 1 28.966
2200	2199	273.86	273.86	7.7548	7.9077	5.8166	9.8649 28.966
2300	2299	273.22	273.22	7.6586	7.8096	5.7444	9.7657 28.966
2400	2399	272.57	272.57	7.5634	7.7125	5.6730	9.6673 28.966
2500	2499	271.92	271.92	7.4692	7.6164	5.6023	9.5696 28.966
2600	2599	271.27	271.27	7.3759	7.5213	5.5323	9.4727 28.966
2700	2699	270.62	270.62	7.2835	7.4271	5.4631	9.3765 28.966
2800	2799	269.97	269.97	7.1921	7.3339	5.3945	9.2811 28.966
2900	2899	269.32	269.32	7.1016	7.2416	5.3267	9.1865 28.966
3000	2999	268.67	268.67	7.0121 + 2	7.1503 + 3	5.2595 + 2	9.0926 - 1 28.966
3100	3098	268.02	268.02	6.9235	7.0600	5.1930	8.9994 28.966
3200	3198	267.37	267.37	6.8557	6.9705	5.1272	8.9070 28.966
3300	3298	266.72	266.72	6.7489	6.8820	5.0621	8.8153 28.966
3400	3398	266.07	266.07	6.6630	6.7944	4.9977	8.7243 28.966
3500	3498	265.42	265.42	6.5780	6.7077	4.9339	8.6341 28.966
3600	3598	264.77	264.77	6.4939	6.6219	4.8708	8.5445 28.966
3700	3698	264.12	264.12	6.4106	6.5370	4.8084	8.4557 28.966
3800	3798	263.47	263.47	6.3282	6.4530	4.7466	8.3676 28.966
3900	3898	262.83	262.83	6.2467	6.3698	4.6854	8.2802 28.966
4000	3997	262.18	262.18	6.1660 + 2	6.2876 + 3	4.6249 + 2	8.1935 - 1 28.966
4100	4097	261.53	261.53	6.0862	6.2062	4.5650	8.1075 28.966
4200	4197	260.88	260.88	6.0072	6.1256	4.5058	8.0222 28.966
4300	4297	260.23	260.23	5.9290	6.0459	4.4472	7.9376 28.966
4400	4397	259.58	259.58	5.8517	5.9671	4.3892	7.8536 28.966
4500	4497	258.93	258.93	5.7752	5.8891	4.3318	7.7704 28.966
4600	4597	258.28	258.28	5.6995	5.8119	4.2750	7.6878 28.966
4700	4697	257.63	257.63	5.6247	5.7356	4.2188	7.6059 28.966
4800	4796	256.98	256.98	5.5506	5.6600	4.1633	7.5247 28.966
4900	4896	256.33	256.33	5.4773	5.5853	4.1083	7.4442 28.966
5000	4996	255.69	255.69	5.4048 + 2	5.5114 + 3	4.0539 + 2	7.3643 - 1 28.966
5100	5096	255.04	255.04	5.3331	5.4382	4.0001	7.2851 28.966
5200	5196	254.39	254.39	5.2621	5.3659	3.9469	7.2065 28.966
5300	5296	253.74	253.74	5.1920	5.2943	3.8943	7.1286 28.966
5400	5395	253.09	253.09	5.1226	5.2236	3.8422	7.0513 28.966
5500	5495	252.44	252.44	5.0539	5.1535	3.7907	6.9747 28.966
5600	5595	251.79	251.79	4.9860	5.0843	3.7398	6.8987 28.966
5700	5695	251.14	251.14	4.9188	5.0158	3.6894	6.8234 28.966
5800	5795	250.49	250.49	4.8524	4.9481	3.6396	6.7486 28.966
5900	5895	249.85	249.85	4.7867	4.8811	3.5903	6.6746 28.966
6000	5994	249.20	249.20	4.7217 + 2	4.8148 + 3	3.5416 + 2	6.6011 - 1 28.966
6100	6094	248.55	248.55	4.6575	4.7132	3.4934	6.5283 28.966
6200	6194	247.90	247.90	4.5939	4.6845	3.4457	6.4561 28.966
6300	6294	247.25	247.25	4.5311	4.6204	3.3986	6.3845 28.966
6400	6394	246.60	246.60	4.4690	4.5571	3.3520	6.3135 28.966
6500	6493	245.95	245.95	4.4075	4.4944	3.3059	6.2431 28.966
6600	6593	245.30	245.30	4.3468	4.4325	3.2603	6.1733 28.966
6700	6693	244.66	244.66	4.2867	4.3712	3.2153	6.1041 28.966
6800	6793	244.01	244.01	4.2273	4.3106	3.1707	6.0356 28.966
6900	6893	243.36	243.36	4.1686	4.2507	3.1267	5.9676 28.966

ALTITUDE Z, m	H, m'	TEMPERATURE		P, mb	PRESSURE P, kg/m ²	P, mm Hg	MOLECULAR WEIGHT	
		T, °K	T _M , °K				ρ, kg m ⁻³	M
7000	6992	242.71	242.71	4.1105 + 2	4.1915 + 3	3.0831 + 2	5.9002 - 1	28.966
7100	7092	242.06	242.06	4.0531	4.1330	3.0401	5.8334	28.966
7200	7192	241.41	241.41	3.9963	4.0751	2.9975	5.7671	28.966
7300	7292	240.76	240.76	3.9402	4.0179	2.9554	5.7015	28.966
7400	7391	240.12	240.12	3.8848	3.9614	2.9138	5.6364	28.966
7500	7491	239.47	239.47	3.8299	3.9054	2.8727	5.5719	28.966
7600	7591	238.82	238.82	3.7757	3.8502	2.8320	5.5080	28.966
7700	7691	238.17	238.17	3.7222	3.7956	2.7919	5.4446	28.966
7800	7790	237.52	237.52	3.6692	3.7416	2.7521	5.3818	28.966
7900	7890	236.87	236.87	3.6169	3.6882	2.7129	5.3195	28.966
8000	7990	236.23	236.23	3.5651 + 2	3.6354 + 3	2.6741 + 2	5.2578 - 1	28.966
8100	8090	235.58	235.58	3.5140	3.5833	2.6357	5.1967	28.966
8200	8189	234.93	234.93	3.4635	3.5518	2.5978	5.1361	28.966
8300	8289	234.28	234.28	3.4135	3.4808	2.5604	5.0760	28.966
8400	8389	233.63	233.63	3.3642	3.4305	2.5233	5.0165	28.966
8500	8489	232.98	232.98	3.3154	3.3808	2.4867	4.9575	28.966
8600	8588	232.34	232.34	3.2672	3.3316	2.4506	4.8991	28.966
8700	8688	231.69	231.69	3.2196	3.2830	2.4149	4.8412	28.966
8800	8788	231.04	231.04	3.1725	3.2350	2.3796	4.7838	28.966
8900	8888	230.39	230.39	3.1260	3.1876	2.3447	4.7269	28.966
9000	8987	229.74	229.74	3.0800 + 2	3.1408 + 3	2.3102 + 2	4.6706 - 1	28.966
9100	9087	229.09	229.09	3.0346	3.0945	2.2762	4.6148	28.966
9200	9187	228.45	228.45	2.9898	3.0487	2.2425	4.5595	28.966
9300	9286	227.80	227.80	2.9455	3.0035	2.2093	4.5047	28.966
9400	9386	227.15	227.15	2.9017	2.9589	2.1754	4.4504	28.966
9500	9486	226.50	226.50	2.8584	2.9148	2.1440	4.3966	28.966
9600	9586	225.85	225.85	2.8157	2.8712	2.1120	4.3433	28.966
9700	9685	225.21	225.21	2.7735	2.8282	2.0803	4.2905	28.966
9800	9785	224.56	224.56	2.7318	2.7857	2.0490	4.2382	28.966
9900	9885	223.91	223.91	2.6906	2.7437	2.0181	4.1864	28.966
10000	9984	223.26	223.26	2.6500 + 2	2.7022 + 3	1.9876 + 2	4.1351 - 1	28.966
10100	10084	222.61	222.61	2.6098	2.6612	1.9575	4.0842	28.966
10200	10184	221.97	221.97	2.5701	2.6208	1.9277	4.0339	28.966
10300	10283	221.32	221.32	2.5309	2.5808	1.8983	3.9840	28.966
10400	10383	220.67	220.67	2.4922	2.5414	1.8693	3.9346	28.966
10500	10483	220.02	220.02	2.4540	2.5024	1.8407	3.8857	28.966
10600	10582	219.37	219.37	2.4163	2.4639	1.8123	3.8372	28.966
10700	10682	218.73	218.73	2.3790	2.4259	1.7844	3.7892	28.966
10800	10782	218.08	218.08	2.3422	2.3884	1.7568	3.7417	28.966
10900	10881	217.43	217.43	2.3059	2.3513	1.7295	3.6946	28.966
11000	10981	216.78	216.78	2.2700 + 2	2.3147 + 3	1.7026 + 2	3.6480 - 1	28.966
11100	11081	216.66	216.66	2.2346	2.2786	1.6761	3.5932	28.966
11200	11180	216.66	216.66	2.1997	2.2431	1.6499	3.5571	28.966
11300	11280	216.66	216.66	2.1654	2.2081	1.6242	3.4820	28.966
11400	11380	216.66	216.66	2.1317	2.1737	1.5989	3.4277	28.966
11500	11479	216.66	216.66	2.0985	2.1398	1.5740	3.3743	28.966
11600	11579	216.66	216.66	2.0657	2.1065	1.5494	3.3217	28.966
11700	11679	216.66	216.66	2.0335	2.0736	1.5253	3.2699	28.966
11800	11778	216.66	216.66	2.0018	2.0413	1.5015	3.2189	28.966
11900	11878	216.66	216.66	1.9706	2.0095	1.4781	3.1687	28.966
12000	11977	216.66	216.66	1.9399 + 2	1.9782 + 3	1.4551 + 2	3.1194 - 1	28.966
12100	12077	216.66	216.66	1.9097	1.9473	1.4324	3.0707	28.966
12200	12177	216.66	216.66	1.8799	1.9170	1.4101	3.0229	28.966
12300	12276	216.66	216.66	1.8506	1.8871	1.3881	2.9758	28.966
12400	12376	216.66	216.66	1.8218	1.8577	1.3664	2.9294	28.966
12500	12475	216.66	216.66	1.7934	1.8287	1.3452	2.8837	28.966
12600	12575	216.66	216.66	1.7654	1.8003	1.3242	2.8388	28.966
12700	12675	216.66	216.66	1.7379	1.7722	1.3036	2.7945	28.966
12800	12774	216.66	216.66	1.7108	1.7446	1.2832	2.7510	28.966
12900	12874	216.66	216.66	1.6842	1.7174	1.2632	2.7081	28.966

ALTITUDE Z, m	H, m ¹	TEMPERATURE		PRESSURE		P, mm Hg	DENSITY ρ , kg m ⁻³	MOLECULAR WEIGHT M
		T, °K	T _M , °K	P, mb	P, kg/m ²			
13000	12973	216.66	216.66	1.6579 + 2	1.6906 + 3	1.2436 + 2	2.6659 - 1	28.966
13100	13073	216.66	216.66	1.6321	1.6643	1.2242	2.6244	28.966
13200	13173	216.66	216.66	1.6067	1.6384	1.2051	2.5835	28.966
13300	13272	216.66	216.66	1.5816	1.6128	1.1863	2.5433	28.966
13400	13372	216.66	216.66	1.5570	1.5877	1.1679	2.5036	28.966
13500	13471	216.66	216.66	1.5327	1.5630	1.1497	2.4646	28.966
13600	13571	216.66	216.66	1.5089	1.5386	1.1317	2.4262	28.966
13700	13671	216.66	216.66	1.4854	1.5146	1.1141	2.3894	28.966
13800	13770	216.66	216.66	1.4622	1.4911	1.0968	2.3512	28.966
13900	13870	216.66	216.66	1.4394	1.4678	1.0797	2.3146	28.966
14000	13969	216.66	216.66	1.4170 + 2	1.4450 + 3	1.0629 + 2	2.2785 - 1	28.966
14100	14069	216.66	216.66	1.3950	1.4225	1.0463	2.2430	28.966
14200	14168	216.66	216.66	1.3732	1.4003	1.0300	2.2081	28.966
14300	14268	216.66	216.66	1.3518	1.3785	1.0140	2.1737	28.966
14400	14367	216.66	216.66	1.3308	1.3570	9.9817 + 1	2.1399	28.966
14500	14467	216.66	216.66	1.3101	1.3359	9.8862	2.1065	28.966
14600	14567	216.66	216.66	1.2896	1.3151	9.6732	2.0737	28.966
14700	14666	216.66	216.66	1.2696	1.2946	9.5225	2.0414	28.966
14800	14766	216.66	216.66	1.2498	1.2744	9.3742	2.0096	28.966
14900	14865	216.66	216.66	1.2303	1.2546	9.2282	1.9783	28.966
15000	14965	216.66	216.66	1.2112 + 2	1.2350 + 3	9.0845 + 1	1.9475 - 1	28.966
15100	15064	216.66	216.66	1.1923	1.2158	8.9431	1.9172	28.966
15200	15164	216.66	216.66	1.1737	1.1969	8.8038	1.8874	28.966
15300	15263	216.66	216.66	1.1555	1.1782	8.6667	1.8580	28.966
15400	15363	216.66	216.66	1.1375	1.1599	8.5318	1.8290	28.966
15500	15462	216.66	216.66	1.1198	1.1418	8.3989	1.8006	28.966
15600	15562	216.66	216.66	1.1023	1.1241	8.2682	1.7725	28.966
15700	15661	216.66	216.66	1.0852	1.1066	8.1394	1.7449	28.966
15800	15761	216.66	216.66	1.0683	1.0893	8.0127	1.7178	28.966
15900	15860	216.66	216.66	1.0516	1.0724	7.8880	1.6910	28.966
16000	15960	216.66	216.66	1.0353 + 2	1.0557 + 3	7.7652 + 1	1.6647 - 1	28.966
16100	16059	216.66	216.66	1.0192	1.0392	7.6443	1.6388	28.966
16200	16159	216.66	216.66	1.0033	1.0231	7.5253	1.6133	28.966
16300	16258	216.66	216.66	9.8767 + 1	1.0071	7.4082	1.5882	28.966
16400	16358	216.66	216.66	9.7230	9.9147 + 2	7.2929	1.5634	28.966
16500	16457	216.66	216.66	9.5717	9.7604	7.1793	1.5391	28.966
16600	16557	216.66	216.66	9.4227	9.6085	7.0676	1.5151	28.966
16700	16656	216.66	216.66	9.2760	9.4589	6.9576	1.4916	28.966
16800	16756	216.66	216.66	9.1317	9.3117	6.8493	1.4683	28.966
16900	16855	216.66	216.66	8.9895	9.1668	6.7427	1.4455	28.966
17000	16955	216.66	216.66	8.8496 + 1	9.0241 + 2	6.6378 + 1	1.4230 - 1	28.966
17100	17054	216.66	216.66	8.7119	8.8837	6.5345	1.4009	28.966
17200	17154	216.66	216.66	8.5763	8.7454	6.4328	1.3791	28.966
17300	17253	216.66	216.66	8.4429	8.6093	6.3227	1.3576	28.966
17400	17353	216.66	216.66	8.3115	8.4754	6.2341	1.3365	28.966
17500	17452	216.66	216.66	8.1822	8.3435	6.1371	1.3157	28.966
17600	17551	216.66	216.66	8.0549	8.2137	6.0416	1.2952	28.966
17700	17651	216.66	216.66	7.9295	8.0859	5.9476	1.2751	28.966
17800	17750	216.66	216.66	7.8062	7.9601	5.8551	1.2552	28.966
17900	17850	216.66	216.66	7.6847	7.8362	5.7640	1.2357	28.966
18000	17949	216.66	216.66	7.5652 + 1	7.7143 + 2	5.6745 + 1	1.2165 - 1	28.966
18100	18049	216.66	216.66	7.4475	7.5943	5.5861	1.1975	28.966
18200	18148	216.66	216.66	7.3316	7.4762	5.4992	1.1789	28.966
18300	18247	216.66	216.66	7.2175	7.3599	5.4136	1.1606	28.966
18400	18347	216.66	216.66	7.1053	7.2454	5.3294	1.1425	28.966
18500	18446	216.66	216.66	6.9947	7.1327	5.2465	1.1247	28.966
18600	18546	216.66	216.66	6.8859	7.0217	5.1649	1.1072	28.966
18700	18645	216.66	216.66	6.7788	6.9125	5.0845	1.0900	28.966
18800	18745	216.66	216.66	6.6734	6.8050	5.0055	1.0731	28.966
18900	18844	216.66	216.66	6.5696	6.6991	4.9276	1.0564	28.966

ALTITUDE Z, m	H, m'	TEMPERATURE		P, mb	PRESSURE P, kg/m ⁻²	P, mm Hg	DENSITY ρ, kg m ⁻³	MOLECULAR WEIGHT M	
		T, °K	T _{M'} , °K					1.0399 - 1	28.966
18900	18943	216.66	216.66	6.4674 + 1	6.5949 + 2	4.8510 + 1	1.0399 - 1	28.966	
19100	19043	216.66	216.66	6.3668	6.4924	4.7755	1.0238	28.966	
19200	19142	216.66	216.66	6.2678	6.3914	4.7013	1.0079	28.966	
19300	19242	216.66	216.66	6.1703	6.2920	4.6281	9.9218 - 2	28.966	
19400	19341	216.66	216.66	6.0744	6.1942	4.5562	9.7675	28.966	
19500	19440	216.66	216.66	5.9799	6.0978	4.4853	9.6156	28.966	
19600	19540	216.66	216.66	5.8869	6.0030	4.4156	9.4661	28.966	
19700	19639	216.66	216.66	5.7954	5.9097	4.3469	9.3189	28.966	
19800	19739	216.66	216.66	5.7053	5.8178	4.2793	9.1740	28.966	
19900	19838	216.66	216.66	5.6166	5.7273	4.2128	9.0313	28.966	
20000	19937	216.66	216.66	5.5293 + 1	5.6383 + 2	4.1473 + 1	8.8909 - 2	28.966	
20200	20136	216.66	216.66	5.3587	5.4643	4.0193	8.6166	28.966	
20400	20335	216.66	216.66	5.1933	5.2957	3.8953	8.3508	28.966	
20600	20533	216.66	216.66	5.0331	5.1324	3.7752	8.0931	28.966	
20800	20732	216.66	216.66	4.8779	4.9740	3.6587	7.8435	28.966	
21000	20931	216.66	216.66	4.7274	4.8206	3.5458	7.6015	28.966	
21200	21130	216.66	216.66	4.5816	4.6719	3.4365	7.3671	28.966	
21400	21328	216.66	216.66	4.4403	4.5278	3.3305	7.1399	28.966	
21600	21527	216.66	216.66	4.3034	4.3882	3.2278	6.9197	28.966	
21800	21725	216.66	216.66	4.1706	4.2529	3.1282	6.7063	28.966	
22000	21924	216.66	216.66	4.0420 + 1	4.1217 + 2	3.0518 + 1	6.4995 - 2	28.966	
22200	22123	216.66	216.66	3.9174	3.9945	2.9383	6.2991	28.966	
22400	22321	216.66	216.66	3.7966	3.8715	2.8477	6.1049	28.966	
22600	22520	216.66	216.66	3.6796	3.7521	2.7599	5.9167	28.966	
22800	22719	216.66	216.66	3.5661	3.6364	2.6748	5.7343	28.966	
23000	22917	216.66	216.66	3.4562	3.5243	2.5924	5.5575	28.966	
23200	23116	216.66	216.66	3.3497	3.4157	2.5125	5.3862	28.966	
23400	23314	216.66	216.66	3.2464	3.5104	2.4350	5.2202	28.966	
23600	23513	216.66	216.66	3.1464	3.2084	2.3600	5.0593	28.966	
23800	23711	216.66	216.66	3.0494	3.1095	2.2872	4.9034	28.966	
24000	23910	216.66	216.66	2.9554 + 1	3.0137 + 2	2.2167 + 1	4.7522 - 2	28.966	
24200	24108	216.66	216.66	2.8644	2.9208	2.1484	4.6058	28.966	
24400	24307	216.66	216.66	2.7761	2.8308	2.0822	4.4639	28.966	
24600	24505	216.66	216.66	2.6906	2.7436	2.0181	4.3263	28.966	
24800	24704	216.66	216.66	2.6077	2.6591	1.9559	4.1931	28.966	
25000	24902	216.66	216.66	2.5273	2.5772	1.8957	4.0639	28.966	
25200	25100	216.96	216.96	2.4495	2.4978	1.8373	3.9333	28.966	
25400	25299	217.56	217.56	2.3742	2.4211	1.7808	3.8020	28.966	
25600	25497	218.15	218.15	2.3015	2.3469	1.7263	3.6755	28.966	
25800	25696	218.75	218.75	2.2252	2.2792	1.6735	3.5575	28.966	
26000	25894	219.34	219.34	2.1632 + 1	2.2059 + 2	1.6225 + 1	3.4359 - 2	28.966	
26200	26092	219.94	219.94	2.0975	2.1388	1.5732	3.3225	28.966	
26400	26291	220.53	220.53	2.0339	2.0740	1.5256	3.2131	28.966	
26600	26489	221.13	221.13	1.9725	2.0114	1.4795	3.1076	28.966	
26800	26687	221.72	221.72	1.9130	1.9507	1.4349	3.0059	28.966	
27000	26886	222.32	222.32	1.8555	1.8921	1.3918	2.9077	28.966	
27200	27084	222.91	222.91	1.7999	1.8354	1.3500	2.8130	28.966	
27400	27282	223.51	223.51	1.7461	1.7805	1.3097	2.7217	28.966	
27600	27481	224.10	224.10	1.6940	1.7274	1.2706	2.6335	28.966	
27800	27679	224.70	224.70	1.6437	1.6761	1.2328	2.5484	28.966	
28000	27877	225.29	225.29	1.5949 + 1	1.6264 + 2	1.1963 + 1	2.4663 - 2	28.966	
28200	28075	225.89	225.89	1.5477	1.5783	1.1609	2.3871	28.966	
28400	28274	226.48	226.48	1.5021	1.5317	1.1267	2.3106	28.966	
28600	28472	227.08	227.08	1.4579	1.4866	1.0935	2.2367	28.966	
28800	28670	227.67	227.67	1.4151	1.4430	1.0614	2.1654	28.966	
29000	28868	228.26	228.26	1.3737	1.4008	1.0304	2.0966	28.966	
29200	29066	228.86	228.86	1.3336	1.3599	1.0003	2.0301	28.966	
29400	29265	229.45	229.45	1.2948	1.3203	9.7116 + 0	1.9659	28.966	
29600	29463	230.05	230.05	1.2572	1.2820	9.4296	1.9039	28.966	
29800	29661	230.64	230.64	1.2208	1.2448	9.1565	1.8440	28.966	

ALTITUDE Z, m	H, m'	TEMPERATURE		P, mb	PRESSURE P, kg/m ⁻²	P, mm Hg	DENSITY p, kg m ⁻³	MOLECULAR WEIGHT M	
		T, °K	T _M , °K						
30000	29859	231.24	231.24	1.1855 + 1	1.2089 + 2	8.8921 + 0	1.7861 - 2	28.966	
30200	30057	231.83	231.83	1.1514	1.1741	8.6359	1.7302	28.966	
30400	30255	232.43	232.43	1.1185	1.1403	8.3077	1.6762	28.966	
30600	30453	233.02	233.02	1.0862	1.1076	8.0473	1.6240	28.966	
30800	30651	233.61	233.61	1.0532	1.0760	7.9144	1.5735	28.966	
31000	30850	234.21	234.21	1.0251	1.0453	7.6887	1.5248	28.966	
31200	31048	234.80	234.80	9.9592 + 0	1.0156	7.4700	1.4777	28.966	
31400	31246	235.40	235.40	9.6766	9.8674 + 1	7.2581	1.4321	28.966	
31600	31444	235.99	235.99	9.4028	9.5882	7.0927	1.3881	28.966	
31800	31642	236.59	236.59	9.1374	9.3176	6.8556	1.3455	28.966	
32000	31840	237.18	237.18	8.8802 + 0	9.0552 + 1	6.6607 + 0	1.3044 - 2	28.966	
32200	32038	237.77	237.77	8.6308	8.8009	6.4736	1.2646	28.966	
32400	32236	238.37	238.37	8.3890	8.5544	6.2923	1.2261	28.966	
32600	32434	238.96	238.96	8.1546	8.3154	6.1165	1.1889	28.966	
32800	32632	239.55	239.55	7.9273	8.0836	5.9460	1.1529	28.966	
33000	32830	240.15	240.15	7.7069	7.8589	5.7807	1.1180	28.966	
33200	33028	240.74	240.74	7.4932	7.6409	5.6204	1.0844	28.966	
33400	33225	241.34	241.34	7.2859	7.4296	5.4649	1.0518	28.966	
33600	33423	241.93	241.93	7.0849	7.2245	5.3141	1.0202	28.966	
33800	33621	242.52	242.52	6.8898	7.0257	5.1678	9.8972 - 3	28.966	
34000	33819	243.12	243.12	6.7007 + 0	6.8328 + 1	5.0259 + 0	9.6020 - 3	28.966	
34200	34017	243.71	243.71	6.5171	6.6456	4.8882	9.3162	28.966	
34400	34215	244.30	244.30	6.3591	6.4640	4.7547	9.0396	28.966	
34600	34413	244.90	244.90	6.1663	6.2879	4.6251	8.7720	28.966	
34800	34611	245.49	245.49	5.9986	6.4169	4.4993	8.5128	28.966	
35000	34808	246.09	246.09	5.8359	5.9510	4.3773	8.2620	28.966	
35200	35006	246.68	246.68	5.6780	5.7900	4.2589	8.0191	28.966	
35400	35204	247.27	247.27	5.5248	5.6337	4.1439	7.7839	28.966	
35600	35402	247.87	247.87	5.3760	5.4890	4.0283	7.5562	28.966	
35800	35600	248.46	248.46	5.2316	5.3348	3.9240	7.3357	28.966	
36000	35797	249.05	249.05	5.0914 + 0	5.1918 + 1	3.8189 + 0	7.1821 - 3	28.966	
36200	35995	249.65	249.65	4.9553	5.0530	3.7168	6.9192	28.966	
36400	36193	250.24	250.24	4.8032	4.9183	3.6177	6.7149	28.966	
36600	36390	250.83	250.83	4.6949	4.7874	3.5014	6.5208	28.966	
36800	36588	251.42	251.42	4.5703	4.6604	3.4080	6.3398	28.966	
37000	36786	252.02	252.02	4.4493	4.5370	3.3372	6.1505	28.966	
37200	36984	252.61	252.61	4.3318	4.4172	3.2491	5.9741	28.966	
37400	37181	253.20	253.20	4.2176	4.3008	3.1635	5.8030	28.966	
37600	37379	253.80	253.80	4.1087	4.1877	3.0805	5.6373	28.966	
37800	37577	254.39	254.39	3.9990	4.0779	2.9995	5.4767	28.966	
38000	37774	254.98	254.98	3.8944 + 0	3.9712 + 1	2.9211 + 0	5.3210 - 3	28.966	
38200	37972	255.58	255.58	3.7928	3.8675	2.8448	5.1701	28.966	
38400	38169	256.17	256.17	3.6940	3.7668	2.7707	5.0238	28.966	
38600	38367	256.76	256.76	3.5980	3.6690	2.6987	4.8820	28.966	
38800	38565	257.35	257.35	3.5048	3.5739	2.6288	4.7445	28.966	
39000	38762	257.95	257.95	3.4141	3.4815	2.5608	4.6112	28.966	
39200	38960	258.54	258.54	3.3261	3.3916	2.4948	4.4819	28.966	
39400	39157	259.13	259.13	3.2403	3.3043	2.4305	4.3566	28.966	
39600	39355	259.72	259.72	3.1572	3.2195	2.3681	4.2350	28.966	
39800	39552	260.32	260.32	3.0764	3.1370	2.3075	4.1171	28.966	
40000	39750	260.91	260.91	2.9977 + 0	3.0568 + 1	2.2485 + 0	4.0028 - 3	28.966	
40200	39947	261.50	261.50	2.9213	2.9789	2.1911	3.8919	28.966	
40400	40145	262.09	262.09	2.8470	2.9051	2.1354	3.7843	28.966	
40600	40342	262.69	262.69	2.7747	2.8294	2.0812	3.6799	28.966	
40800	40540	263.28	263.28	2.7044	2.7577	2.0285	3.5786	28.966	
41000	40737	263.87	263.87	2.6361	2.6880	1.9772	3.4804	28.966	
41200	40935	264.46	264.46	2.5696	2.6203	1.9274	3.3850	28.966	
41400	41132	265.05	265.05	2.5050	2.5544	1.8789	3.2925	28.966	
41600	41330	265.65	265.65	2.4421	2.4903	1.8317	3.2027	28.966	
41800	41527	266.24	266.24	2.3810	2.4279	1.7859	3.1156	28.966	

ALTITUDE Z, m	H, m'	TEMPERATURE		P, mb	PRESSURE P, kg/m ²	DENSITY ρ, kg m ⁻³	MOLECULAR WEIGHT M	
		T, °K	T _{M'} , °K				P, mm Hg	M
42000	41724	266.83	266.83	2.3215 + 0	2.3672 + 1	1.7412 + 0	3.0310 - 3	28.966
42200	41922	267.43	267.43	2.2636	2.3082	1.6978	2.9489	28.966
42400	42119	268.02	268.02	2.2073	2.2508	1.6556	2.8692	28.966
42600	42316	268.61	268.61	2.1525	2.1950	1.6145	2.7918	28.966
42800	42514	269.20	269.20	2.0992	2.1406	1.5746	2.7167	28.966
43000	42711	269.79	269.79	2.0474	2.0877	1.5357	2.6438	28.966
43200	42908	270.39	270.39	1.9969	2.0363	1.4978	2.5730	28.966
43400	43106	270.98	270.98	1.9478	1.9862	1.4610	2.5042	28.966
43600	43303	271.57	271.57	1.9000	1.9374	1.4251	2.4374	28.966
43800	43500	272.16	272.16	1.8535	1.8900	1.3902	2.3726	28.966
44000	43698	272.75	272.75	1.8082 + 0	1.8438 + 1	1.3562 + 0	2.3096 - 3	28.966
44200	43895	273.34	273.34	1.7641	1.7989	1.3232	2.2484	28.966
44400	44092	273.94	273.94	1.7212	1.7551	1.2910	2.1889	28.966
44600	44289	274.53	274.53	1.6794	1.7125	1.2597	2.1312	28.966
44800	44486	275.12	275.12	1.6387	1.6710	1.2291	2.0751	28.966
45000	44684	275.71	275.71	1.5991	1.6307	1.1994	2.0205	28.966
45200	44881	276.30	276.30	1.5606	1.5913	1.1705	1.9677	28.966
45400	45078	276.89	276.89	1.5230	1.5530	1.1424	1.9162	28.966
45600	45275	277.49	277.49	1.4865	1.5158	1.1149	1.8662	28.966
45800	45472	278.08	278.08	1.4508	1.4794	1.0882	1.8177	28.966
46000	45670	278.67	278.67	1.4162 + 0	1.4441 + 1	1.0622 + 0	1.7704 - 3	28.966
46200	45867	279.26	279.26	1.3824	1.4096	1.0369	1.7246	28.966
46400	46064	279.85	279.85	1.3495	1.3761	1.0122	1.6799	28.966
46600	46261	280.44	280.44	1.3174	1.3434	9.8815 - 1	1.6366	28.966
46800	46458	281.03	281.03	1.2862	1.3116	9.6473	1.5944	28.966
47000	46655	281.63	281.63	1.2558	1.2805	9.4192	1.5535	28.966
47200	46852	282.22	282.22	1.2261	1.2505	9.1969	1.5136	28.966
47400	47049	282.66	282.66	1.1973	1.2209	8.9803	1.4757	28.966
47600	47246	282.66	282.66	1.1691	1.1921	8.7699	1.4409	28.966
47800	47443	282.66	282.66	1.1416	1.1641	8.5626	1.4070	28.966
48000	47640	282.66	282.66	1.1147 + 0	1.1367 + 1	8.3611 - 1	1.3739 - 3	28.966
48200	47837	282.66	282.66	1.0885	1.1099	8.1643	1.3416	28.966
48400	48034	282.66	282.66	1.0629	1.0838	7.9722	1.3100	28.966
48600	48231	282.66	282.66	1.0379	1.0583	7.7847	1.2792	28.966
48800	48428	282.66	282.66	1.0135	1.0334	7.6015	1.2491	28.966
49000	48625	282.66	282.66	9.8961 - 1	1.0091	7.4227	1.2197	28.966
49200	48822	282.66	282.66	9.6633	9.8538 + 0	7.2481	1.1910	28.966
49400	49019	282.66	282.66	9.4360	9.6220	7.0776	1.1630	28.966
49600	49216	282.66	282.66	9.2141	9.3957	6.9111	1.1357	28.966
49800	49413	282.66	282.66	8.9974	9.1748	6.7486	1.1089	28.966
50000	49610	282.66	282.66	8.7858 - 1	8.9590 + 0	6.5899 - 1	1.0829 - 3	28.966
50300	50102	282.66	282.66	8.2783	8.4416	6.2093	1.0203	28.966
51000	50594	282.66	282.66	7.8003	7.9541	5.8507	9.6140 - 4	28.966
51500	51086	282.66	282.66	7.3499	7.4948	5.5129	9.0589	28.966
52000	51578	282.66	282.66	6.9256	7.0622	5.1946	8.5360	28.966
52500	52070	282.66	282.66	6.5259	6.6545	4.8949	8.0433	28.966
53000	52562	282.66	282.66	6.1493	6.2705	4.6123	7.5791	28.966
53500	53053	282.42	282.42	5.7944	5.9087	4.3462	7.1478	28.966
54000	53545	280.21	280.21	5.4586	5.5662	4.0943	6.7857	28.966
54500	54037	277.99	277.99	5.1398	5.2411	3.8551	6.4412	28.966
55000	54528	275.78	275.78	4.8373 - 1	4.9327 + 0	3.6283 - 1	6.1108 - 4	28.966
55500	55020	273.57	273.57	4.5505	4.6408	3.4132	5.7949	28.966
56000	55511	271.36	271.36	4.2786	4.3630	3.2092	5.4931	28.966
56500	56002	269.15	269.15	4.0210	4.1003	3.0160	5.2047	28.966
57000	56493	266.94	266.94	3.7770	3.8514	2.8329	4.9293	28.966
57500	56983	264.73	264.73	3.5459	3.6158	2.6597	4.6664	28.966
58000	57476	262.52	262.52	3.3273	3.3929	2.4957	4.4156	28.966
58500	57967	260.31	260.31	3.1203	3.1820	2.3406	4.1763	28.966
59000	58457	258.10	258.10	2.9250	2.9827	2.1932	3.9482	28.966
59500	58948	255.89	255.89	2.7403	2.7943	2.0554	3.7307	28.966

MOLECULAR
WEIGHT

ALTITUDE Z, m	TEMPERATURE H, m'	T, °K	T _M , °K	P, mb	PRESSURE P, kg/m ²	DENSITY P, mm Hg	WEIGHT p, kg m ⁻³	M
60000	59439	253.68	253.68	2.5657 - 1	2.6163 + 0	1.9245 - 1	3.5235 - 4	28.966
60500	59930	251.48	251.48	2.4010	2.4483	1.8009	3.3262	28.966
61000	60420	249.27	249.27	2.2455	2.2898	1.6843	3.1384	28.966
61500	60911	247.06	247.06	2.0980	2.1403	1.5743	2.9597	28.966
62000	61401	244.86	244.86	1.9607	1.9993	1.4706	2.7897	28.966
62500	61891	242.65	242.65	1.8304	1.8665	1.3729	2.6281	28.966
63000	62382	240.44	240.44	1.7078	1.7415	1.2810	2.4745	28.966
63500	62872	238.24	238.24	1.5924	1.6238	1.1944	2.3286	28.966
64000	63362	236.03	236.03	1.4838	1.5131	1.1130	2.1901	28.966
64500	63852	233.83	233.83	1.3818	1.4090	1.0354	2.0587	28.966
65000	64342	231.62	231.62	1.2859 - 1	1.3112 + 0	9.6447 - 2	1.9341 - 4	28.966
65500	64832	229.42	229.42	1.1958	1.2194	8.9693	1.8159	28.966
66000	65322	227.21	227.21	1.1113	1.1332	8.3354	1.7059	28.966
66500	65812	225.01	225.01	1.0280	1.0524	7.7408	1.5979	28.966
67000	66301	222.80	222.80	9.5773 - 2	9.7661 - 1	7.1836	1.4975	28.966
67500	66791	220.60	220.60	8.8813	9.0564	6.6615	1.4086	28.966
68000	67280	218.40	218.40	8.2298	8.3920	6.1728	1.3128	28.966
68500	67770	216.20	216.20	7.6202	7.7705	5.7156	1.2279	28.966
69000	68259	213.99	213.99	7.0503	7.1894	5.2882	1.1478	28.966
69500	68748	211.79	211.79	6.5179	6.6464	4.8888	1.0722	28.966
70000	69238	209.59	209.59	6.0809 - 2	6.1396 - 1	4.5160 - 2	1.0008 - 4	28.966
70500	69727	207.39	207.39	5.5571	5.6667	4.1682	9.3351 - 5	28.966
71000	70216	205.19	205.19	5.1847	5.2258	3.8439	8.7011	28.966
71500	70705	202.99	202.99	4.7220	4.8151	3.5418	8.1042	28.966
72000	71194	200.79	200.79	4.3470	4.4327	3.2605	7.5424	28.966
72500	71682	198.59	198.59	3.9982	4.0771	2.9989	7.0141	28.966
73000	72171	196.39	196.39	3.6741	3.7465	2.7598	6.5176	28.966
73500	72660	194.19	194.19	3.3750	3.4395	2.5300	6.0513	28.966
74000	73148	191.99	191.99	3.0957	3.1547	2.3004	5.6137	28.966
74500	73637	189.79	189.79	2.8347	2.8906	2.1862	5.2053	28.966
75000	74125	187.60	187.60	2.5947 - 2	2.6459 - 1	1.9462 - 2	4.8187 - 5	28.966
75500	74614	185.4	185.4	2.373	2.419	1.780	4.459	28.97
76000	75102	183.2	183.2	2.167	2.210	1.686	4.122	28.97
76500	75590	181.0	181.0	1.978	2.017	1.583	3.806	28.97
77000	76078	178.8	178.8	1.803	1.838	1.392	3.512	28.97
77500	76566	176.6	176.6	1.641	1.673	1.231	3.237	28.97
78000	77054	174.4	174.4	1.492	1.522	1.119	2.981	28.97
78500	77542	172.2	172.2	1.356	1.382	1.017	2.742	28.97
79000	78030	170.0	170.0	1.230	1.254	9.224 - 3	2.520	28.97
79500	78518	167.8	167.8	1.114	1.136	8.357	2.313	28.97
80000	79006	165.7	165.7	1.008 - 2	1.028 - 1	7.563 - 3	2.120 - 5	28.97
80500	79493	165.7	165.7	9.118 - 3	9.298 + 2	6.839	1.918	28.97
81000	79981	165.7	165.7	8.246	8.408	6.185	1.734	28.97
81500	80468	165.7	165.7	7.457	7.604	5.593	1.568	28.97
82000	80956	165.7	165.7	6.744	6.877	5.098	1.418	28.97
82500	81443	165.7	165.7	6.099	6.219	4.575	1.283	28.97
83000	81930	165.7	165.7	5.516	5.625	4.177	1.150	28.97
83500	82417	165.7	165.7	4.989	5.087	3.742	1.049	28.97
84000	82904	165.7	165.7	4.512	4.601	3.384	9.489 - 6	28.97
84500	83391	165.7	165.7	4.081	4.161	3.051	8.582	28.97
85000	83878	165.7	165.7	3.691 - 3	3.764 - 2	2.768 - 3	7.762 - 6	28.97
85500	84365	165.7	165.7	3.338	3.404	2.504	7.081	28.97
86000	84852	165.7	165.7	3.080	3.079	2.265	6.350	28.97
86500	85339	165.7	165.7	2.731	2.785	2.049	5.744	28.97
87000	85825	165.7	165.7	2.470	2.519	1.853	5.195	28.97
87500	86312	165.7	165.7	2.254	2.279	1.676	4.699	28.97
88000	86798	165.7	165.7	2.021	2.061	1.516	4.251	28.97
88500	87285	165.7	165.7	1.828	1.864	1.371	3.845	28.97
89000	87771	165.7	165.7	1.554	1.686	1.240	3.478	28.97
89500	88257	165.7	165.7	1.496	1.525	1.122	3.146	28.97

ALTITUDE Z, m	H, m'	TEMPERATURE		P, mb	PRESSURE P, kg/m ²	DENSITY ρ, kg m ⁻³	MOLECULAR WEIGHT	
		T, °K	T _{M'} , °K				P, mm Hg	M
90000	88743	165.7	165.7	1.353	- 3	1.015	- 3	2.846 - 6
90500	89230	165.7	165.7	1.224	1.248	9.162	- 4	2.574 28.97
91000	89716	165.7	165.7	1.107	1.129	8.306		2.329 28.97
91500	90202	166.5	166.5	1.002	1.022	7.515		2.097 26.96
92000	90687	168.4	168.4	9.074	- 4	9.253	- 3	1.877 28.96
92500	91173	170.3	170.4	8.227	8.389	6.171		1.682 28.96
93000	91659	172.2	172.3	7.467	7.614	5.601		1.510 28.95
93500	92145	174.1	174.2	6.785	6.919	5.089		1.357 28.95
94000	92630	176.1	176.2	6.172	6.294	4.630		1.221 28.95
94500	93116	178.0	178.1	5.621	5.731	4.216		1.099 28.94
95000	93601	179.9	180.1	5.124	- 4	5.825	- 3	3.843 - 7
95500	94086	181.8	182.0	4.675	4.767	3.507		8.949 28.94
96000	94572	183.7	183.9	4.270	4.354	3.203		8.087 28.93
96500	95057	185.6	185.9	3.904	3.981	2.928		7.317 26.95
97000	95542	187.6	187.8	3.573	3.643	2.680		6.626 28.92
97500	96027	189.5	189.8	3.272	3.337	2.455		6.008 28.92
98000	96512	191.4	191.7	3.000	3.059	2.250		5.452 28.92
98500	96997	193.3	193.6	2.753	2.807	2.065		4.953 28.91
99000	97482	195.2	195.6	2.528	2.578	1.896		4.504 28.91
99500	97966	197.1	197.5	2.324	2.370	1.743		4.099 28.91
100000	98431	199.0	199.5	2.138	- 4	2.180	- 3	1.604 - 4
101000	99420	202.8	203.3	1.814	1.850	1.361		3.108 28.89
102000	100389	205.6	207.2	1.514	1.574	1.198		2.596 28.88
103000	101358	210.4	211.1	1.318	1.344	9.885	- 5	2.175 28.88
104000	102326	214.2	215.0	1.126	1.151	8.463		1.889 28.87
105000	103294	218.0	218.8	9.688	- 5	9.879	- 4	7.266 28.86
106000	104261	221.8	222.7	8.341	8.505	6.256		1.503 28.85
107000	105229	229.3	230.2	7.201	7.543	5.402		1.090 28.84
108000	106196	248.4	249.6	6.274	6.398	4.706		8.759 - 8
109000	107162	267.6	268.9	5.524	5.633	4.143		7.156 28.82
110000	108129	286.7	288.2	4.906	- 5	5.003	- 4	3.680 - 5
111000	109095	305.9	307.6	4.391	4.478	3.294		4.974 28.81
112000	110061	325.0	326.9	3.957	4.055	2.968		4.218 28.80
113000	111026	344.0	346.2	3.588	3.658	2.691		3.611 28.79
114000	111991	363.1	365.3	3.270	3.335	2.453		3.117 28.78
115000	112956	382.1	384.8	2.995	3.054	2.246		2.712 28.77
116000	113921	401.2	404.1	2.755	2.809	2.056		2.375 28.76
117000	114885	420.2	423.4	2.544	2.594	1.908		2.093 28.75
118000	115849	439.1	442.6	2.398	2.404	1.768		1.846 28.74
119000	116813	458.1	461.9	2.192	2.235	1.644		1.653 28.73
120000	117777	477.0	481.2	2.044	- 5	2.085	- 4	1.533 - 5
121000	118740	495.9	500.5	1.912	1.949	1.424		1.351 28.70
122000	119702	514.8	519.7	1.792	1.828	1.344		1.201 28.69
123000	120665	533.7	539.0	1.684	1.717	1.263		1.089 28.68
124000	121627	552.5	558.2	1.586	1.618	1.190		9.900 - 9
125000	122599	571.3	577.5	1.497	1.527	1.123		9.052 28.66
126000	123551	590.1	596.7	1.416	1.444	1.062		8.265 28.64
127000	124512	608.8	615.9	1.341	1.367	1.006		7.585 28.63
128000	125473	627.5	635.1	1.272	1.297	9.544	- 6	6.979 28.62
129000	126434	646.2	654.3	1.209	1.233	9.070		6.438 28.61
130000	127395	664.9	673.6	1.151	- 5	1.174	- 4	8.632 - 6
131000	128355	683.5	692.8	1.097	1.119	8.228		5.516 28.58
132000	129315	702.2	712.0	1.047	1.068	7.852		5.123 28.57
133000	130274	720.7	731.1	1.000	1.020	7.503		4.767 28.55
134000	131233	739.3	750.3	9.571	- 6	9.760	- 5	7.179 28.54
135000	132192	757.8	769.5	9.167	9.348	6.876		4.150 28.53
136000	133151	776.3	788.7	8.790	8.963	6.593		3.883 28.51
137000	134109	794.7	807.8	8.436	8.603	6.328		3.638 28.50
138000	135068	813.1	827.0	8.105	8.265	6.079		3.414 28.48
139000	136025	831.5	846.2	7.794	7.948	5.846		3.209 28.46

MOLECULAR
DENSITY WEIGHT

ALTITUDE Z, m	H, m ¹	TEMPERATURE T, °K	T _M , °K	P, mb	P, kg f m ⁻²	P, mm Hg	n, kg m ⁻³	
140000	136983	849.9	865.3	7.502	7.650 - 5	5.627 - 6	3.020 - 9	28.45
141000	137940	868.2	884.5	7.227	7.369	5.420	2.847	28.43
142000	138897	886.4	903.6	6.957	7.104	5.226	2.686	28.42
143000	139854	904.7	922.7	6.722	6.855	5.042	2.538	28.40
144000	140810	922.9	941.9	6.491	6.619	4.868	2.401	28.38
145000	141766	941.0	961.0	6.272	6.395	4.704	2.274	28.36
146000	142722	959.1	980.1	6.064	6.184	4.548	2.156	28.35
147000	143677	977.2	999.2	5.867	5.983	4.401	2.046	28.33
148000	144632	995.2	1018.	5.681	5.793	4.261	1.943	28.31
149000	145587	1013.	1037.	5.503	5.612	4.128	1.848	28.29
150000	146542	1031.	1056.	5.334	5.439 - 5	4.001 - 6	1.759 - 9	28.27
151000	147496	1049.	1076.	5.174	5.276	3.881	1.676	28.25
152000	148450	1067.	1095.	5.021	5.120	3.766	1.598	28.23
153000	149404	1085.	1114.	4.875	4.971	3.655	1.525	28.21
154000	150357	1102.	1133.	4.735	4.829	3.552	1.456	28.19
155000	151310	1120.	1152.	4.602	4.693	3.452	1.392	28.16
156000	152263	1138.	1171.	4.475	4.563	3.356	1.331	28.14
157000	153216	1155.	1190.	4.353	4.439	3.265	1.274	28.12
158000	154168	1173.	1209.	4.237	4.320	3.178	1.221	28.09
159000	155120	1190.	1228.	4.125	4.207	3.094	1.170	28.07
160000	156071	1207.	1247.	4.018	4.097 - 5	3.014 - 6	1.123 - 9	28.04
161000	157023	1225.	1266.	3.916	3.993	2.937	1.077	28.02
162000	157974	1242.	1285.	3.817	3.892	2.863	1.035	27.99
163000	158924	1259.	1304.	3.723	3.796	2.792	9.944 - 10	27.96
164000	159875	1276.	1323.	3.632	3.703	2.724	9.562	27.94
165000	160825	1293.	1334.	3.544	3.614	2.658	9.256	27.91
166000	161775	1293.	1343.	3.459	3.587	2.595	8.971	27.88
167000	162725	1301.	1353.	3.377	3.643	2.533	8.696	27.85
168000	163674	1308.	1368.	3.297	3.362	2.473	8.431	27.82
169000	164623	1316.	1372.	3.220	3.283	2.415	8.177	27.79
170000	165572	1323.	1381.	3.145	3.207 - 5	2.359 - 6	7.932 - 10	27.75
171000	166520	1331.	1391.	3.072	3.133	2.304	7.696	27.72
172000	167468	1338.	1400.	3.002	3.061	2.292	7.468	27.68
173000	168416	1346.	1410.	2.933	2.991	2.200	7.249	27.65
174000	169364	1353.	1419.	2.867	2.964	2.150	7.038	27.61
175000	170311	1359.	1427.	2.805	2.858	2.102	6.841	27.57
176000	171258	1361.	1432.	2.740	2.794	2.055	6.666	27.53
177000	172205	1364.	1437.	2.679	2.732	2.009	6.496	27.49
178000	173151	1366.	1441.	2.619	2.671	1.965	6.331	27.45
179000	174097	1368.	1446.	2.561	2.612	1.921	6.170	27.41
180000	175043	1371.	1451.	2.505	2.554 - 5	1.879 - 6	6.015 - 10	27.36
181000	175988	1373.	1456.	2.450	2.498	1.837	5.863	27.32
182000	176934	1375.	1460.	2.396	2.443	1.797	5.716	27.27
183000	177879	1377.	1465.	2.344	2.390	1.758	5.573	27.22
184000	178823	1379.	1470.	2.293	2.338	1.720	5.435	27.17
185000	179768	1381.	1474.	2.243	2.287	1.682	5.300	27.12
186000	180712	1382.	1479.	2.195	2.238	1.646	5.169	27.07
187000	181656	1384.	1484.	2.147	2.190	1.611	5.041	27.01
188000	182599	1385.	1489.	2.101	2.143	1.576	4.918	26.96
189000	183542	1387.	1493.	2.056	2.097	1.542	4.797	26.91
190000	184485	1389.	1498.	2.013	2.052 - 5	1.510 - 6	4.680 - 10	26.85
191000	185428	1390.	1505.	1.970	2.009	1.477	4.566	26.80
192000	186370	1392.	1508.	1.928	1.966	1.446	4.456	26.75
193000	187312	1393.	1512.	1.887	1.925	1.416	4.348	26.69
194000	188254	1395.	1517.	1.848	1.884	1.386	4.244	26.64
195000	189196	1397.	1522.	1.809	1.845	1.357	4.142	26.59
196000	190137	1398.	1526.	1.771	1.805	1.329	4.043	26.53
197000	191078	1400.	1531.	1.734	1.769	1.301	3.947	26.48
198000	192018	1401.	1536.	1.698	1.732	1.278	3.853	26.43
199000	192959	1403.	1540.	1.663	1.696	1.248	3.762	26.37

ALTITUDE Z, m	E, m'	TEMPERATURE		PRESSURE		DENSITY		MOLECULAR WEIGHT				
		T, °K	T _M , °K	P, mb	P, kgf m ⁻²	P, mm Hg	p, kg m ⁻³	M				
200000	193899	1404.	1545.	1.629	- 6	1.661	- 5	1.222	- 6	3.673	-10	26.32
201000	194839	1405.	1550.	1.596		1.627		1.197		3.587		26.27
202000	195778	1407.	1555.	1.563		1.594		1.172		3.503		26.22
203000	196717	1408.	1559.	1.531		1.561		1.148		3.421		26.16
204000	197656	1410.	1564.	1.500		1.530		1.125		3.341		26.11
205000	198595	1411.	1569.	1.470		1.499		1.102		3.264		26.06
206000	199533	1413.	1573.	1.440		1.468		1.080		3.188		26.01
207000	200471	1413.	1577.	1.411		1.439		1.058		3.116		25.95
208000	201409	1413.	1581.	1.383		1.410		1.037		3.047		25.90
209000	202346	1413.	1584.	1.355		1.382		1.016		2.980		25.85
210000	203284	1414.	1587.	1.328	- 6	1.354	- 5	9.959	- 7	2.914	-10	25.80
211000	204220	1414.	1590.	1.301		1.327		9.760		2.850		25.75
212000	205157	1414.	1594.	1.275		1.301		9.566		2.788		25.70
213000	206095	1414.	1597.	1.250		1.275		9.376		2.727		25.64
214000	207030	1414.	1600.	1.225		1.249		9.191		2.668		25.59
215000	207965	1414.	1604.	1.201		1.225		9.009		2.610		25.54
216000	208901	1414.	1607.	1.177		1.201		8.831		2.553		25.49
217000	209836	1414.	1610.	1.154		1.177		8.658		2.498		25.44
218000	210771	1414.	1613.	1.132		1.154		8.488		2.444		25.39
219000	211706	1414.	1617.	1.109		1.131		8.322		2.391		25.34
220000	212640	1414.	1620.	1.088	- 6	1.109	- 5	8.159	- 7	2.339	-10	25.29
221000	213574	1414.	1623.	1.067		1.088		8.000		2.289		25.24
222000	214503	1414.	1626.	1.045		1.066		7.845		2.240		25.19
223000	215441	1414.	1630.	1.026		1.046		7.692		2.192		25.14
224000	216374	1414.	1633.	1.006		1.026		7.543		2.146		25.09
225000	217307	1414.	1636.	9.863	- 7	1.006		7.398		2.100		25.04
226000	218240	1414.	1639.	9.673		9.864	- 6	7.255		2.055		24.99
227000	219172	1414.	1643.	9.487		9.674		7.116		2.012		24.94
228000	220104	1415.	1646.	9.305		9.488		6.979		1.969		24.89
229000	221036	1415.	1649.	9.127		9.307		6.846		1.928		24.84
230000	221968	1415.	1653.	8.953	- 7	9.129	- 6	6.715	- 7	1.887	-10	24.79
231000	222899	1415.	1656.	8.782		8.955		6.587		1.848		24.75
232000	223830	1415.	1659.	8.615		8.785		6.462		1.809		24.70
233000	224761	1415.	1662.	8.438		8.619		6.339		1.771		24.65
234000	225691	1415.	1666.	8.292		8.455		6.219		1.734		24.60
235000	226621	1415.	1669.	8.135		8.296		6.102		1.698		24.56
236000	227551	1415.	1672.	7.982		8.140		5.987		1.663		24.51
237000	228480	1415.	1675.	7.832		7.987		5.875		1.629		24.46
238000	229410	1415.	1679.	7.685		7.837		5.764		1.593		24.41
239000	230339	1415.	1682.	7.541		7.690		5.657		1.562		24.37
240000	231267	1415.	1685.	7.401	- 7	7.547	- 6	5.551	- 7	1.530	-10	24.32
241000	232196	1415.	1688.	7.263		7.406		5.448		1.499		24.27
242000	233124	1415.	1692.	7.128		7.268		5.346		1.468		24.23
243000	234052	1415.	1695.	6.996		7.133		5.247		1.438		24.18
244000	234979	1415.	1698.	6.866		7.001		5.150		1.409		24.14
245000	235906	1415.	1701.	6.739		6.878		5.055		1.380		24.09
246000	236833	1415.	1705.	6.615		6.746		4.962		1.356		24.05
247000	237760	1415.	1708.	6.494		6.622		4.871		1.325		24.00
248000	238687	1415.	1711.	6.374		6.500		4.781		1.296		23.96
249000	239613	1415.	1714.	6.258		6.381		4.694		1.272		23.91
250000	240539	1415.	1718.	6.143	- 7	6.265	- 6	4.608	- 7	1.246	-10	23.87
251000	241464	1415.	1721.	6.051		6.150		4.524		1.221		23.82
252000	242390	1415.	1724.	5.922		6.058		4.442		1.197		23.78
253000	243315	1415.	1727.	5.814		5.929		4.361		1.173		23.74
254000	244239	1415.	1730.	5.709		5.822		4.282		1.149		23.69
255000	245164	1415.	1734.	5.606		5.716		4.205		1.126		23.65
256000	246088	1416.	1737.	5.505		5.613		4.129		1.104		23.61
257000	247012	1416.	1740.	5.406		5.512		4.052		1.082		23.56
258000	247936	1416.	1743.	5.309		5.413		3.982		1.061		23.52
259000	248859	1416.	1747.	5.214		5.316		3.910		1.040		23.48

MOLECULAR
DENSITY

ALTITUDE Z, m	H, m ¹	TEMPERATURE T, °K	T _{M'} , °K	P, mb	P, kg m ⁻²	P, mm Hg	DENSITY ρ, kg m ⁻³	MOLECULAR WEIGHT M
260000	249782	1416.	1750.	5.120	- 7	5.221	- 6	1.019 -10
261000	250705	1416.	1753.	5.029		5.128	3.772	9.994 -11
262000	251627	1416.	1756.	4.939		5.037	3.705	9.798
263000	252550	1416.	1760.	4.852		4.947	3.639	9.606
264000	253472	1416.	1763.	4.766		4.860	3.575	9.419
265000	254393	1416.	1766.	4.681		4.774	3.511	9.235
266000	255315	1416.	1769.	4.599		4.689	3.449	9.055
267000	256236	1417.	1772.	4.518		4.607	3.389	8.880
268000	257157	1417.	1776.	4.438		4.526	3.329	8.708
269000	258077	1417.	1779.	4.361		4.447	3.271	8.540
270000	258998	1417.	1782.	4.284	- 7	4.369	- 6	8.375 -11
271000	259918	1417.	1785.	4.209		4.292	3.157	8.214
272000	260837	1417.	1789.	4.136		4.218	3.102	8.056
273000	261757	1417.	1792.	4.064		4.144	3.048	7.902
274000	262676	1417.	1795.	3.994		4.072	2.995	7.751
275000	263595	1418.	1798.	3.924		4.002	2.944	7.603
276000	264513	1418.	1801.	3.857		3.933	2.893	7.458
277000	265432	1418.	1805.	3.790		3.865	2.843	7.316
278000	266350	1418.	1808.	3.725		3.798	2.794	7.178
279000	267268	1418.	1811.	3.661		3.733	2.746	7.042
280000	268185	1418.	1814.	3.598	- 7	3.669	- 6	6.909 -11
281000	269102	1419.	1818.	3.536		3.606	2.653	6.779
282000	270019	1419.	1821.	3.476		3.545	2.607	6.651
283000	270936	1419.	1824.	3.417		3.484	2.563	6.526
284000	271853	1419.	1827.	3.359		3.425	2.519	6.404
285000	272769	1419.	1830.	3.302		3.367	2.477	6.284
286000	273685	1420.	1834.	3.246		3.310	2.435	6.167
287000	274600	1420.	1837.	3.191		3.254	2.393	6.052
288000	275515	1420.	1840.	3.137		3.199	2.353	5.940
289000	276430	1420.	1843.	3.084		3.145	2.313	5.830
290000	277345	1420.	1846.	3.033	- 7	3.092	- 6	5.722 -11
291000	278260	1421.	1850.	2.982		3.040	2.236	5.616
292000	279174	1421.	1853.	2.932		2.990	2.199	5.513
293000	280088	1421.	1856.	2.883		2.940	2.162	5.411
294000	281001	1421.	1859.	2.835		2.891	2.126	5.312
295000	281915	1422.	1862.	2.788		2.843	2.091	5.215
296000	282829	1422.	1866.	2.741		2.795	2.056	5.119
297000	283741	1422.	1869.	2.696		2.749	2.022	5.026
298000	284653	1423.	1872.	2.651		2.704	1.989	4.934
299000	285566	1423.	1875.	2.608		2.659	1.956	4.845
300000	286478	1423.	1878.	2.565	- 7	2.615	- 6	4.757 -11
302000	288301	1424.	1885.	2.481		2.530	1.861	4.586
304000	290123	1424.	1891.	2.401		2.448	1.801	4.423
306000	291944	1425.	1897.	2.323		2.369	1.743	4.265
308000	292764	1426.	1904.	2.248		2.293	1.686	4.114
310000	293583	1426.	1910.	2.176		2.219	1.632	3.969
312000	297400	1427.	1917.	2.107		2.148	1.580	3.830
314000	299217	1428.	1923.	2.040		2.080	1.530	3.696
316000	301033	1429.	1929.	1.975		2.014	1.481	3.567
318000	302847	1429.	1936.	1.913		1.951	1.435	3.443
320000	304661	1430.	1942.	1.853	- 7	1.889	- 6	1.390 - 7
322000	306473	1431.	1948.	1.795		1.830	1.346	3.209
324000	308284	1432.	1955.	1.739		1.773	1.304	3.099
326000	310094	1433.	1961.	1.685		1.718	1.263	2.993
328000	311903	1434.	1967.	1.632		1.665	1.224	2.891
330000	313711	1435.	1974.	1.582		1.613	1.187	2.792
332000	315518	1436.	1980.	1.533		1.564	1.150	2.698
334000	317324	1437.	1984.	1.486		1.516	1.115	2.607
336000	319129	1438.	1995.	1.441		1.469	1.081	2.519
338000	320932	1439.	1999.	1.397		1.425	1.048	2.435

MOLECULAR WEIGHT

ALTITUDE	TEMPERATURE		PRESSURE	DENSITY				
Z, m	H, m'	T, °K	T _{M'} , °K	P, mb	P, kg/m ⁻²	P, mm Hg	p, kg m ⁻³	M
340000	322735	1440.	2005.	1.355	- 7	1.382	- 6	2.354 -11 20.80
342000	324536	1441.	2012.	1.314	1.340	9.856	- 8	2.276 20.75
344000	326337	1442.	2018.	1.274	1.300	9.559	2.200	20.70
346000	328136	1443.	2024.	1.236	1.261	9.273	2.128	20.65
348000	329934	1444.	2030.	1.199	1.223	8.996	2.058	20.60
350000	331731	1445.	2037.	1.164	1.187	8.729	1.991	20.55
352000	333527	1446.	2043.	1.129	1.151	8.470	1.926	20.51
354000	335322	1448.	2049.	1.096	1.117	8.220	1.863	20.46
356000	337116	1449.	2056.	1.064	1.085	7.978	1.803	20.42
358000	338909	1450.	2062.	1.032	1.053	7.744	1.745	20.37
360000	340701	1451.	2068.	1.002	- 7	1.022	- 6	7.518 - 8 1.688 -11 20.33
362000	342492	1453.	2074.	9.731	- 8	9.923	- 7	7.299 1.634 20.28
364000	344282	1454.	2081.	9.449	9.635	7.087	1.582	20.24
366000	346070	1455.	2087.	9.176	9.357	6.883	1.532	20.20
368000	347858	1457.	2093.	8.912	9.087	6.684	1.483	20.16
370000	349644	1458.	2099.	8.656	8.827	6.492	1.436	20.12
372000	351430	1459.	2106.	8.408	8.574	6.307	1.391	20.08
374000	353214	1461.	2112.	8.169	8.330	6.127	1.348	20.03
376000	354997	1462.	2118.	7.937	8.093	5.953	1.305	20.00
378000	356780	1464.	2124.	7.712	7.864	5.785	1.265	19.96
380000	358561	1465.	2131.	7.495	- 8	7.643	- 7	5.622 - 8 1.225 -11 19.92
382000	360341	1467.	2137.	7.284	7.428	5.464	1.188	19.88
384000	362120	1468.	2143.	7.080	7.220	5.311	1.151	19.84
386000	363898	1469.	2149.	6.883	7.018	5.162	1.116	19.80
388000	365675	1471.	2156.	6.691	6.823	5.019	1.081	19.77
390000	367451	1473.	2162.	6.506	6.634	4.880	1.048	19.73
392000	369226	1474.	2168.	6.326	6.451	4.745	1.017	19.70
394000	371000	1476.	2174.	6.152	6.273	4.614	9.858 -12	19.66
396000	372772	1477.	2180.	5.983	6.101	4.488	9.560	19.63
398000	374544	1479.	2187.	5.920	5.954	4.365	9.272	19.59
400000	376315	1480.	2193.	5.661	- 8	5.773	- 7	4.246 - 8 8.994 -12 19.56
402000	378084	1482.	2199.	5.507	5.616	4.131	8.725	19.52
404000	379853	1484.	2205.	5.358	5.464	4.019	8.465	19.49
406000	381621	1485.	2211.	5.214	5.316	3.911	8.214	19.46
408000	383387	1487.	2218.	5.073	5.173	3.805	7.971	19.42
410000	385152	1489.	2224.	4.938	5.035	3.703	7.736	19.39
412000	386917	1490.	2230.	4.806	4.900	3.605	7.508	19.36
414000	388680	1492.	2236.	4.678	4.770	3.509	7.288	19.33
416000	390442	1494.	2242.	4.554	4.643	3.415	7.075	19.30
418000	392204	1496.	2248.	4.433	4.521	3.325	6.869	19.27
420000	393964	1497.	2255.	4.316	- 8	4.401	- 7	3.238 - 8 6.670 -12 19.24
422000	395723	1499.	2261.	4.203	4.286	3.152	6.477	19.21
424000	397481	1501.	2267.	4.093	4.174	3.070	6.290	19.19
426000	399238	1503.	2273.	3.986	4.065	2.990	6.110	19.15
428000	400994	1505.	2279.	3.882	3.959	2.912	5.935	19.12
430000	402749	1506.	2285.	3.782	3.856	2.857	5.765	19.09
432000	404503	1508.	2291.	3.684	3.757	2.763	5.601	19.07
434000	406256	1510.	2298.	3.589	3.660	2.692	5.442	19.04
436000	408008	1512.	2304.	3.497	3.566	2.623	5.288	19.01
438000	409759	1514.	2310.	3.407	3.475	2.556	5.139	18.98
440000	411509	1516.	2316.	3.320	- 8	3.386	- 7	2.491 - 8 4.995 -12 18.96
442000	413258	1518.	2322.	3.236	3.300	2.427	4.855	18.93
444000	415006	1519.	2328.	3.154	3.216	2.366	4.719	18.90
446000	416752	1521.	2334.	3.074	3.135	2.306	4.588	18.88
448000	418498	1523.	2340.	2.997	3.056	2.248	4.461	18.85
450000	420243	1525.	2347.	2.921	2.979	2.191	4.338	18.83
452000	421987	1527.	2353.	2.848	2.905	2.136	4.218	18.80
454000	423729	1529.	2359.	2.777	2.832	2.083	4.102	18.78
456000	425471	1531.	2365.	2.708	2.762	2.031	3.990	18.75
458000	427211	1533.	2371.	2.641	2.693	1.981	3.881	18.73

MOLECULAR
DENSITY WEIGHT

ALTITUDE Z, m	TEMPERATURE H, m° T, °K	TEMPERATURE T _M , °K	P, mb	P, kg m ⁻²	P, mm Hg	p, kg m ⁻³	M	
460000	428951 1535.	2377.	2.576	- 8	2.626 - 7	1.932 - 8	3.775 -12 18.71	
462000	430690 1537.	2383.	2.512	2.562	1.884	3.673	18.68	
464000	432427 1539.	2389.	2.450	2.499	1.833	3.573	18.66	
466000	434164 1541.	2395.	2.390	2.458	1.793	3.477	18.64	
468000	435899 1543.	2401.	2.332	2.378	1.749	3.383	18.61	
470000	437634 1545.	2407.	2.275	2.320	1.707	3.293	18.59	
472000	439367 1547.	2413.	2.220	2.264	1.665	3.205	18.57	
474000	441100 1549.	2420.	2.166	2.209	1.625	3.119	18.55	
476000	442831 1551.	2426.	2.114	2.156	1.586	3.036	18.52	
478000	444562 1553.	2432.	2.063	2.104	1.548	2.956	18.50	
480000	446291 1555.	2438.	2.014	- 8	2.053 - 7	1.510 - 8	2.878 -12 18.48	
482000	448019 1557.	2444.	1.966	2.004	1.474	2.802	18.46	
484000	449747 1560.	2450.	1.919	1.957	1.439	2.729	18.44	
486000	451473 1562.	2456.	1.875	1.910	1.405	2.657	18.42	
488000	453199 1564.	2462.	1.829	1.865	1.372	2.588	18.40	
490000	454923 1566.	2468.	1.786	1.821	1.339	2.521	18.38	
492000	456646 1568.	2474.	1.744	1.778	1.308	2.455	18.36	
494000	458369 1570.	2480.	1.703	1.736	1.277	2.392	18.34	
496000	460090 1572.	2486.	1.663	1.696	1.247	2.330	18.32	
498000	461810 1574.	2492.	1.624	1.656	1.218	2.270	18.30	
500000	463530 1576.	2498.	1.586	- 8	1.617 - 7	1.190 - 8	2.212 -12 18.28	
502000	465248 1579.	2504.	1.549	1.580	1.162	2.156	18.26	
504000	466965 1581.	2510.	1.514	1.543	1.135	2.101	18.24	
506000	468682 1583.	2516.	1.479	1.508	1.109	2.047	18.22	
508000	470397 1585.	2522.	1.445	1.473	1.084	1.996	18.21	
510000	472111 1587.	2528.	1.412	1.439	1.059	1.945	18.19	
512000	473825 1590.	2534.	1.379	1.406	1.035	1.896	18.17	
514000	475537 1592.	2540.	1.348	1.374	1.011	1.849	18.15	
516000	477248 1594.	2546.	1.317	1.343	9.880 - 9	1.802	18.13	
518000	478959 1596.	2552.	1.287	1.313	9.656	1.757	18.12	
520000	480668 1598.	2558.	1.258	- 8	1.283 - 7	9.458 - 9	1.714 -12 18.10	
522000	482376 1601.	2564.	1.230	1.254	9.225	1.671	18.08	
524000	484084 1603.	2570.	1.202	1.226	9.018	1.630	18.06	
526000	485790 1605.	2576.	1.175	1.199	8.816	1.590	18.05	
528000	487495 1607.	2582.	1.149	1.172	8.619	1.550	18.03	
530000	489200 1609.	2588.	1.123	1.146	8.427	1.512	18.01	
532000	490903 1612.	2594.	1.099	1.120	8.240	1.475	18.00	
534000	492606 1614.	2600.	1.074	1.095	8.057	1.439	17.98	
536000	494307 1616.	2606.	1.050	1.071	7.879	1.404	17.97	
538000	496007 1618.	2612.	1.027	1.048	7.706	1.370	17.95	
540000	497707 1621.	2618.	1.005	- 8	1.025 - 7	7.536 - 9	1.337 -12 17.93	
542000	499405 1623.	2624.	9.828	- 9	1.002	7.371	1.305	17.92
544000	501103 1625.	2630.	9.613	9.803	- 8	7.210	1.274	17.90
546000	502799 1628.	2635.	9.404	9.589	7.053	1.243	17.89	
548000	504495 1630.	2641.	9.200	9.381	6.900	1.213	17.87	
550000	506189 1632.	2647.	9.000	9.178	6.751	1.184	17.86	
552000	507883 1634.	2653.	8.806	8.980	6.605	1.156	17.84	
554000	509575 1637.	2659.	8.616	8.786	6.463	1.129	17.83	
556000	511257 1639.	2665.	8.431	8.598	6.324	1.102	17.81	
558000	512957 1641.	2671.	8.251	8.413	6.189	1.076	17.80	
560000	514647 1644.	2677.	8.075	- 9	8.234 - 8	6.056 - 9	1.051 -12 17.78	
562000	516336 1646.	2683.	7.903	8.058	5.927	1.026	17.77	
564000	518023 1648.	2689.	7.735	7.887	5.802	1.002	17.76	
566000	519710 1651.	2695.	7.571	7.720	5.679	9.788 -13	17.74	
568000	521396 1653.	2701.	7.411	7.557	5.559	9.561	17.73	
570000	523080 1655.	2706.	7.255	7.398	5.442	9.339	17.72	
572000	524764 1658.	2712.	7.103	7.243	5.327	9.123	17.70	
574000	526447 1660.	2718.	6.954	7.091	5.216	8.912	17.69	
576000	528129 1662.	2724.	6.808	6.943	5.107	8.707	17.67	
578000	529810 1665.	2730.	6.667	6.798	5.000	8.507	17.66	

ALTITUDE Z, m	TEMPERATURE T, °K	TEMPERATURE T _M , °K	PRESSURE P, mb	PRESSURE P, kgf m ⁻²	PRESSURE P, mm Hg	DENSITY ρ, kg m ⁻³	MOLECULAR WEIGHT	
							M	-13
580000	531489	1667.	2736.	6.528	- 9	6.657	- 8	8.313
582000	532168	1669.	2742.	6.393		6.519	4.795	8.123
584000	534846	1672.	2748.	6.261		6.384	4.696	7.938
586000	536523	1674.	2753.	6.132		6.252	4.599	7.758
588000	538199	1676.	2759.	6.005		6.124	4.504	7.582
590000	539874	1679.	2765.	5.882		5.998	4.412	7.411
592000	541548	1681.	2771.	5.762		5.876	4.322	7.244
594000	543221	1683.	2777.	5.645		5.756	4.234	7.081
596000	544893	1685.	2783.	5.530		5.639	4.148	6.923
598000	546565	1688.	2789.	5.418		5.524	4.063	6.768
600000	548235	1691.	2794.	5.308	- 9	5.413	- 8	6.617
602000	549904	1693.	2800.	5.201		5.303	3.901	6.470
604000	551572	1695.	2806.	5.096		5.197	3.822	6.327
606000	553240	1698.	2812.	4.994		5.092	3.746	6.187
608000	554906	1700.	2818.	4.894		4.990	3.671	6.051
610000	556571	1703.	2824.	4.796		4.891	3.597	5.917
612000	558236	1705.	2829.	4.701		4.793	3.526	5.788
614000	559899	1707.	2835.	4.607		4.698	3.456	5.661
616000	561562	1710.	2841.	4.516		4.605	3.387	5.537
618000	563224	1712.	2847.	4.427		4.514	3.320	5.417
620000	564884	1715.	2853.	4.339	- 9	4.425	- 8	5.299
622000	566544	1717.	2859.	4.254		4.338	3.191	5.185
624000	568203	1719.	2864.	4.171		4.253	3.128	5.073
626000	569860	1722.	2870.	4.089		4.170	3.067	4.963
628000	571517	1724.	2876.	4.009		4.088	3.007	4.857
630000	573173	1727.	2882.	3.931		4.009	2.949	4.753
632000	574828	1729.	2888.	3.855		3.931	2.891	4.651
634000	576482	1731.	2893.	3.780		3.855	2.836	4.552
636000	578135	1734.	2899.	3.707		3.780	2.781	4.455
638000	579787	1736.	2905.	3.636		3.708	2.727	4.361
640000	581438	1739.	2911.	3.566	- 9	3.636	- 8	4.268
642000	583088	1741.	2916.	3.498		3.567	2.624	4.178
644000	584738	1744.	2922.	3.431		3.499	2.573	4.090
646000	586386	1746.	2928.	3.365		3.432	2.524	4.004
648000	588033	1749.	2934.	3.301		3.367	2.476	3.920
650000	589680	1751.	2940.	3.239		3.303	2.429	3.839
652000	591325	1753.	2945.	3.178		3.240	2.385	3.759
654000	592970	1756.	2951.	3.118		3.179	2.338	3.680
656000	594613	1758.	2957.	3.059		3.119	2.294	3.604
658000	596256	1761.	2963.	3.001		3.061	2.251	3.530
660000	597898	1763.	2968.	2.945	- 9	3.003	- 8	3.457
662000	599538	1766.	2974.	2.890		2.947	2.168	3.386
664000	601178	1768.	2980.	2.836		2.892	2.127	3.316
666000	602817	1771.	2986.	2.783		2.838	2.088	3.248
668000	604455	1773.	2991.	2.732		2.786	2.049	3.182
670000	606092	1775.	2997.	2.681		2.734	2.011	3.117
672000	607728	1778.	3003.	2.632		2.684	1.974	3.053
674000	609363	1780.	3008.	2.583		2.634	1.938	2.992
676000	610998	1783.	3014.	2.536		2.586	1.902	2.931
678000	612631	1785.	3020.	2.489		2.538	1.867	2.872
680000	614263	1788.	3026.	2.444	- 9	2.492	- 8	2.814
682000	615895	1790.	3031.	2.399		2.447	1.800	2.758
684000	617525	1793.	3037.	2.356		2.402	1.767	2.702
686000	619155	1795.	3043.	2.313		2.359	1.735	2.648
688000	620784	1798.	3048.	2.271		2.316	1.703	2.595
690000	622411	1800.	3054.	2.230		2.274	1.673	2.544
692000	624038	1803.	3060.	2.190		2.233	1.643	2.493
694000	625664	1805.	3065.	2.150		2.193	1.613	2.444
696000	627289	1808.	3071.	2.112		2.154	1.584	2.396
698000	628913	1810.	3077.	2.074		2.115	1.556	2.349
700000	630536	1812.	3083.	2.037	- 9	2.077	- 8	2.302
						1.528	- 9	1.703

TABLE IB

ATMOSPHERIC PROPERTIES AS A FUNCTION OF ALTITUDE,
METRIC UNITS

Acceleration of Gravity, Specific Weight, Scale Height, Number Density,
Particle Speed, Collision Frequency, and Mean Free Path

NOTE: A one- or two-digit number (preceded by a plus or minus sign) following the initial entry of each block indicates the power of 10 by which that entry and each succeeding entry of that block should be multiplied. A change of power occurring within a block is indicated by a similar notation.

ALTITUDE Z, m	H, m ¹	ACCEL. OF GRAV. g, m sec ⁻²	SPECIFIC WEIGHT $\omega, \text{kg/m}^3$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m	
								-	-
- 5000	- 5004	9.8221	1.9326 + 0	9.3717	4.0127 +25	484.15	1.1499 +10	4.2103	- 8
- 4900	- 4904	9.8218	1.9175	9.3529	3.9815	483.66	1.1398	4.2433	
- 4800	- 4804	9.8215	1.9009	9.3342	3.9471	483.17	1.1288	4.2802	
- 4700	- 4705	9.8212	1.8844	9.3155	3.9130	482.67	1.1179	4.3176	
- 4600	- 4603	9.8209	1.8680	9.2967	3.8791	482.18	1.1071	4.3553	
- 4500	- 4503	9.8205	1.8517	9.2780	3.8454	481.69	1.0964	4.3954	
- 4400	- 4403	9.8202	1.8356	9.2593	3.8120	481.19	1.0857	4.4320	
- 4300	- 4303	9.8199	1.8195	9.2405	3.7788	480.70	1.0752	4.4709	
- 4200	- 4203	9.8196	1.8036	9.2218	3.7458	480.20	1.0647	4.5103	
- 4100	- 4103	9.8193	1.7877	9.2031	3.7130	479.71	1.0543	4.5522	
- 4000	- 4003	9.8190	1.7710 + 0	9.1843	3.6804 +25	479.21	1.0439 +10	4.5904	- 8
- 3900	- 3902	9.8187	1.7564	9.1656	3.6481	478.72	1.0337	4.6311	
- 3800	- 3802	9.8184	1.7409	9.1469	3.6160	478.22	1.0235	4.6722	
- 3700	- 3702	9.8181	1.7254	9.1281	3.5841	477.72	1.0134	4.7138	
- 3600	- 3602	9.8178	1.7101	9.1094	3.5524	477.22	1.0034	4.7559	
- 3500	- 3502	9.8175	1.6949	9.0907	3.5209	476.72	9.9351 + 9	4.7984	
- 3400	- 3402	9.8171	1.6798	9.0719	3.4897	476.22	9.8366	4.8414	
- 3300	- 3302	9.8168	1.6648	9.0532	3.4586	475.73	9.7389	4.8848	
- 3200	- 3202	9.8165	1.6499	9.0344	3.4278	475.23	9.6419	4.9287	
- 3100	- 3102	9.8162	1.6352	9.0157	3.3972	474.72	9.5457	4.9732	
- 3000	- 3001	9.8159	1.6205 + 0	8.9969	3.3668 +25	474.22	9.4503 + 9	5.0181	- 8
- 2900	- 2901	9.8156	1.6059	8.9782	3.3366	473.72	9.3556	5.0635	
- 2800	- 2801	9.8153	1.5914	8.9595	3.3066	473.22	9.2617	5.1094	
- 2700	- 2701	9.8150	1.5770	8.9407	3.2768	472.72	9.1685	5.1559	
- 2600	- 2601	9.8147	1.5627	8.9220	3.2472	472.21	9.0761	5.2028	
- 2500	- 2501	9.8144	1.5486	8.9032	3.2178	471.71	8.9844	5.2503	
- 2400	- 2401	9.8141	1.5345	8.8845	3.1887	471.21	8.8935	5.2983	
- 2300	- 2301	9.8138	1.5205	8.8657	3.1597	470.70	8.8033	5.3469	
- 2200	- 2201	9.8134	1.5066	8.8470	3.1310	470.20	8.7138	5.3960	
- 2100	- 2101	9.8131	1.4928	8.8282	3.1024	469.69	8.6250	5.4457	
- 2000	- 2001	9.8128	1.4791 + 0	8.8095	3.0741 +25	469.18	8.5370 + 9	5.4959	- 8
- 1900	- 1901	9.8125	1.4655	8.7907	3.0459	468.68	8.4497	5.5467	
- 1800	- 1801	9.8122	1.4520	8.7720	3.0179	468.17	8.3630	5.5981	
- 1700	- 1700	9.8119	1.4386	8.7532	2.9902	467.66	8.2771	5.6500	
- 1600	- 1600	9.8116	1.4253	8.7345	2.9626	467.15	8.1919	5.7026	
- 1500	- 1500	9.8113	1.4121	8.7157	2.9352	466.64	8.1074	5.7558	
- 1400	- 1400	9.8110	1.3990	8.6970	2.9081	466.13	8.0236	5.8096	
- 1300	- 1300	9.8107	1.3860	8.6782	2.8811	465.62	7.9404	5.8640	
- 1200	- 1200	9.8104	1.3730	8.6595	2.8543	465.11	7.8580	5.9190	
- 1100	- 1100	9.8100	1.3602	8.6407	2.8277	464.60	7.7762	5.9747	
- 1000	- 1000	9.8097	1.3475 + 0	8.6220	2.8013 +25	464.09	7.6951 + 9	6.0310	- 8
- 900	- 900	9.8094	1.3348	8.6032	2.7751	463.58	7.6147	6.0880	
- 800	- 800	9.8091	1.3222	8.5845	2.7491	463.06	7.5249	6.1456	
- 700	- 700	9.8088	1.3098	8.5657	2.7232	462.55	7.4558	6.2039	
- 600	- 600	9.8085	1.2974	8.5470	2.6976	462.04	7.3774	6.2629	
- 500	- 500	9.8082	1.2851	8.5282	2.6721	461.52	7.2995	6.3225	
- 400	- 400	9.8079	1.2729	8.5094	2.6468	461.01	7.2225	6.3830	
- 300	- 300	9.8076	1.2608	8.4907	2.6217	460.49	7.1460	6.4440	
- 200	- 200	9.8073	1.2488	8.4719	2.5968	459.98	7.0702	6.5059	
- 100	- 100	9.8070	1.2369	8.4532	2.5721	459.46	6.9950	6.5684	
0	0	9.8067	1.2250 + 0	8.4344	2.5476 +25	458.94	6.9204 + 9	6.6317	- 8
100	100	9.8063	1.2133	8.4157	2.5232	458.42	6.8465	6.6958	
200	200	9.8060	1.2016	8.3969	2.4990	457.91	6.7732	6.7606	
300	300	9.8057	1.1900	8.3781	2.4750	457.39	6.7005	6.8262	
400	400	9.8054	1.1785	8.3594	2.4512	456.87	6.6284	6.8925	
500	500	9.8051	1.1671	8.3406	2.4275	456.35	6.5572	6.9597	
600	600	9.8048	1.1558	8.3218	2.4040	455.83	6.4862	7.0277	
700	700	9.8045	1.1445	8.3031	2.3807	455.30	6.4159	7.0965	
800	800	9.8042	1.1334	8.2843	2.3576	454.78	6.3463	7.1661	
900	900	9.8039	1.1223	8.2655	2.3346	454.26	6.2773	7.2366	

ALTITUDE Z, m	ACCEL. H, m ¹ g, m sec ⁻²	SPECIFIC WEIGHT $\omega, \text{kgf m}^{-3}$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	MEAN FREE PATH L, m		
						PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m
1000	1000	9.8036	1.1113 + 0	8.2468	2.3118 +25	453.74	6.2089 + 9	7.3079 - 8
1100	1100	9.8033	1.1004	8.2280	2.2892	453.21	6.1410	7.3801
1200	1200	9.8029	1.0896	8.2092	2.2658	452.69	6.0758	7.4551
1300	1300	9.8026	1.0789	8.1905	2.2445	452.16	6.0071	7.5271
1400	1400	9.8023	1.0682	8.1717	2.2224	451.64	5.9411	7.6020
1500	1500	9.8020	1.0576	8.1529	2.2005	451.11	5.8756	7.6778
1600	1600	9.8017	1.0471	8.1342	2.1787	450.59	5.8106	7.7545
1700	1700	9.8014	1.0367	8.1154	2.1571	450.06	5.7463	7.8322
1800	1799	9.8011	1.0264	8.0966	2.1356	449.53	5.6825	7.9108
1900	1899	9.8008	1.0161	8.0779	2.1144	449.00	5.6193	7.9904
2000	1999	9.8005	1.0059 + 0	8.0591	2.0933 +25	448.47	5.5566 + 9	8.0710 - 8
2100	2099	9.8002	9.9583 - 1	8.0403	2.0723	447.94	5.4945	8.1526
2200	2199	9.7999	9.8581	8.0215	2.0515	447.41	5.4329	8.2352
2300	2299	9.7996	9.7586	8.0028	2.0309	446.88	5.3719	8.3189
2400	2399	9.7993	9.6600	7.9840	2.0104	446.35	5.3115	8.4036
2500	2499	9.7989	9.5621	7.9652	1.9901	445.82	5.2515	8.4893
2600	2599	9.7986	9.4650	7.9465	1.9700	445.29	5.1921	8.5762
2700	2699	9.7983	9.3686	7.9277	1.9500	444.75	5.1333	8.6641
2800	2799	9.7980	9.2730	7.9089	1.9301	444.22	5.0749	8.7532
2900	2899	9.7977	9.1781	7.8901	1.9104	443.68	5.0171	8.8434
3000	2999	9.7974	9.0840 - 1	7.8713	1.8909 +25	443.15	4.9599 + 9	8.9347 - 8
3100	3098	9.7971	8.9907	7.8526	1.8715	442.61	4.9031	9.0272
3200	3198	9.7968	8.8980	7.8338	1.8523	442.08	4.8469	9.1209
3300	3298	9.7965	8.8061	7.8150	1.8332	441.54	4.7911	9.2158
3400	3398	9.7962	8.7150	7.7962	1.8143	441.00	4.7359	9.3119
3500	3498	9.7959	8.6246	7.7774	1.7955	440.46	4.6812	9.4092
3600	3598	9.7956	8.5349	7.7587	1.7769	439.92	4.6270	9.5078
3700	3698	9.7952	8.4459	7.7399	1.7585	439.38	4.5733	9.6077
3800	3798	9.7949	8.3576	7.7211	1.7401	438.84	4.5201	9.7088
3900	3898	9.7946	8.2700	7.7023	1.7220	438.30	4.4673	9.8113
4000	3997	9.7943	8.1832 - 1	7.6835	1.7039 +25	437.76	4.4151 + 9	9.9151 - 8
4100	4097	9.7940	8.0970	7.6648	1.6860	437.22	4.3633	1.0020 - 7
4200	4197	9.7937	8.0116	7.6460	1.6683	436.68	4.3121	1.0127
4300	4297	9.7934	7.9268	7.6272	1.6507	436.13	4.2613	1.0235
4400	4397	9.7931	7.8428	7.6084	1.6333	435.59	4.2110	1.0344
4500	4497	9.7928	7.7594	7.5896	1.6159	435.04	4.1611	1.0455
4600	4597	9.7925	7.6767	7.5708	1.5988	434.50	4.1117	1.0567
4700	4697	9.7922	7.5947	7.5520	1.5817	433.95	4.0628	1.0681
4800	4796	9.7919	7.5134	7.5332	1.5649	433.40	4.0144	1.0796
4900	4896	9.7915	7.4327	7.5145	1.5481	432.86	3.9664	1.0913
5000	4996	9.7912	7.3527 - 1	7.4957	1.5315 +25	432.31	3.9188 + 9	1.1032 - 7
5100	5096	9.7909	7.2734	7.4769	1.5150	431.76	3.8718	1.1152
5200	5196	9.7906	7.1947	7.4581	1.4967	431.21	3.8251	1.1273
5300	5296	9.7903	7.1167	7.4393	1.4825	430.66	3.7789	1.1396
5400	5395	9.7900	7.0393	7.4205	1.4664	430.11	3.7332	1.1521
5500	5495	9.7897	6.9626	7.4017	1.4505	429.56	3.6879	1.1648
5600	5595	9.7894	6.8866	7.3829	1.4347	429.00	3.6430	1.1776
5700	5695	9.7891	6.8111	7.3641	1.4190	428.45	3.5986	1.1906
5800	5795	9.7888	6.7363	7.3453	1.4035	427.90	3.5546	1.2038
5900	5895	9.7885	6.6622	7.3265	1.3880	427.34	3.5110	1.2172
6000	5994	9.7882	6.5887 - 1	7.3077	1.3728 +25	426.79	3.4679 + 9	1.2307 - 7
6100	6094	9.7879	6.5158	7.2889	1.3576	426.23	3.4251	1.2444
6200	6194	9.7875	6.4435	7.2701	1.3426	425.68	3.3828	1.2583
6300	6294	9.7872	6.3718	7.2513	1.3277	425.12	3.3409	1.2725
6400	6394	9.7869	6.3008	7.2326	1.3130	424.56	3.2994	1.2868
6500	6493	9.7866	6.2303	7.2138	1.2983	424.00	3.2584	1.3013
6600	6593	9.7863	6.1605	7.1950	1.2838	423.44	3.2177	1.3160
6700	6693	9.7860	6.0913	7.1762	1.2694	422.88	3.1774	1.3309
6800	6793	9.7857	6.0227	7.1574	1.2552	422.32	3.1376	1.3460
6900	6893	9.7854	5.9546	7.1386	1.2410	421.76	3.0981	1.3614

ALTITUDE Z, m	H, m ¹	ACCEL. OF GRAV.		SPECIFIC WEIGHT $\omega, \text{kg/m}^3$	SCALE HEIGHT H _s , km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m
		g, m sec^{-2}	$\omega, \text{kg/m}^3$						
7000	6992	9.7851	5.8872 - 1	7.1198	1.2270 +25	421.20	3.0590 + 9	1.3769 - 7	
7100	7092	9.7848	5.8203	7.1009	1.2131	420.63	3.0203	1.3927	
7200	7192	9.7845	5.7541	7.0821	1.1993	420.07	2.9820	1.4087	
7300	7292	9.7842	5.6884	7.0633	1.1857	419.50	2.9441	1.4249	
7400	7391	9.7839	5.6233	7.0445	1.1722	418.94	2.9066	1.4413	
7500	7491	9.7836	5.5588	7.0257	1.1587	418.37	2.8695	1.4580	
7600	7591	9.7832	5.4948	7.0069	1.1454	417.81	2.8327	1.4749	
7700	7691	9.7829	5.4314	6.9881	1.1323	417.24	2.7963	1.4921	
7800	7790	9.7826	5.3686	6.9693	1.1192	416.67	2.7603	1.5095	
7900	7890	9.7823	5.3063	6.9505	1.1063	416.10	2.7246	1.5272	
8000	7990	9.7820	5.2446 - 1	6.9317	1.0934 +25	415.53	2.6893 + 9	1.5451 - 7	
8100	8090	9.7817	5.1835	6.9129	1.0807	414.96	2.6544	1.5633	
8200	8189	9.7814	5.1229	6.8941	1.0681	414.39	2.6198	1.5817	
8300	8289	9.7811	5.0628	6.8753	1.0550	413.82	2.5856	1.6005	
8400	8389	9.7808	5.0033	6.8565	1.0432	413.24	2.5518	1.6194	
8500	8489	9.7805	4.9443	6.8377	1.0310	412.67	2.5183	1.6387	
8600	8588	9.7802	4.8859	6.8188	1.0188	412.10	2.4851	1.6583	
8700	8688	9.7799	4.8280	6.8000	1.0068	411.52	2.4523	1.6781	
8800	8788	9.7796	4.7706	6.7812	9.9485 +24	410.94	2.4199	1.6982	
8900	8888	9.7792	4.7137	6.7624	9.8302	410.37	2.3877	1.7186	
9000	8987	9.7789	4.6574 - 1	6.7436	9.7130 +24	409.79	2.3560 + 9	1.7394 - 7	
9100	9087	9.7786	4.6016	6.7248	9.5969	409.21	2.3245	1.7604	
9200	9187	9.7783	4.5463	6.7060	9.4819	408.63	2.2934	1.7818	
9300	9286	9.7780	4.4915	6.6872	9.3679	408.05	2.2626	1.8035	
9400	9386	9.7777	4.4372	6.6683	9.2550	407.47	2.2322	1.8255	
9500	9486	9.7774	4.3835	6.6495	9.1432	406.89	2.2020	1.8478	
9600	9586	9.7771	4.3302	6.6307	9.0324	406.31	2.1722	1.8705	
9700	9685	9.7768	4.2774	6.6119	8.9226	405.72	2.1427	1.8935	
9800	9785	9.7765	4.2252	6.5931	8.8138	405.14	2.1136	1.9168	
9900	9885	9.7762	4.1734	6.5743	8.7061	404.56	2.0847	1.9406	
10000	9984	9.7759	4.1221 - 1	6.5554	8.5993 +24	403.97	2.0562 + 9	1.9646 - 7	
10100	10084	9.7756	4.0713	6.5366	8.4936	403.38	2.0280	1.9991	
10200	10184	9.7753	4.0210	6.5178	8.3889	402.80	2.0000	2.0139	
10300	10283	9.7749	3.9711	6.4990	8.2852	402.21	1.9724	2.0391	
10400	10383	9.7746	3.9218	6.4802	8.1824	401.62	1.9451	2.0647	
10500	10483	9.7743	3.8729	6.4613	8.0807	401.03	1.9181	2.0907	
10600	10582	9.7740	3.8244	6.4425	7.9799	400.44	1.8914	2.1172	
10700	10682	9.7737	3.7765	6.4237	7.8801	399.85	1.8650	2.1440	
10800	10782	9.7734	3.7290	6.4049	7.7812	399.25	1.8389	2.1712	
10900	10881	9.7731	3.6820	6.3860	7.6833	398.66	1.8130	2.1989	
11000	10981	9.7728	3.6354 - 1	6.3672	7.5864 +24	398.07	1.7875 + 9	2.2270 - 7	
11100	11081	9.7725	3.5806	6.3538	7.4724	397.95	1.7601	2.2610	
11200	11180	9.7722	3.5247	6.3640	7.3559	397.95	1.7327	2.2968	
11300	11280	9.7719	3.4696	6.3642	7.2412	397.95	1.7057	2.3331	
11400	11380	9.7716	3.4154	6.3644	7.1283	397.95	1.6791	2.3701	
11500	11479	9.7713	3.3621	6.3646	7.0172	397.95	1.6529	2.4076	
11600	11579	9.7710	3.3096	6.3648	6.9078	397.95	1.6271	2.4457	
11700	11679	9.7707	3.2579	6.3650	6.8001	397.95	1.6018	2.4845	
11800	11778	9.7703	3.2070	6.3652	6.6941	397.95	1.5768	2.5238	
11900	11878	9.7700	3.1569	6.3654	6.5898	397.95	1.5522	2.5638	
12000	11977	9.7697	3.1076 - 1	6.3656	6.4870 +24	397.95	1.5280 + 9	2.6044 - 7	
12100	12077	9.7694	3.0591	6.3658	6.3859	397.95	1.5042	2.6456	
12200	12177	9.7691	3.0113	6.3660	6.2864	397.95	1.4808	2.6875	
12300	12276	9.7688	2.9643	6.3662	6.1884	397.95	1.4577	2.7300	
12400	12376	9.7685	2.9180	6.3664	6.0920	397.95	1.4350	2.7733	
12500	12475	9.7682	2.8724	6.3666	5.9970	397.95	1.4126	2.8172	
12600	12575	9.7679	2.8276	6.3668	5.9036	397.95	1.3906	2.8618	
12700	12675	9.7676	2.7824	6.3670	5.8116	397.95	1.3689	2.9071	
12800	12774	9.7673	2.7400	6.3672	5.7210	397.95	1.3476	2.9531	
12900	12874	9.7670	2.6972	6.3674	5.6319	397.95	1.3266	2.9998	

ALTITUDE Z, m	ACCEL. OF GRAV. H, m ¹	SPECIFIC WEIGHT g, m sec ⁻²	SCALE HEIGHT $\omega, \text{kg/m}^3$	NUMBER DENSITY n, m ⁻³	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec ⁻¹	MEAN FREE PATH L, m	
13000	12973	9.7667	2.6551 - 1	6.3676	5.5441 +24	397.95	1.3059 + 9	3.0473 - 7
13100	13073	9.7664	2.6136	6.3678	5.4577	397.95	1.2856	3.0956
13200	13173	9.7660	2.5728	6.3680	5.3727	397.95	1.2655	3.1445
13300	13272	9.7657	2.5326	6.3682	5.2890	397.95	1.2458	3.1943
13400	13372	9.7654	2.4931	6.3684	5.2066	397.95	1.2264	3.2449
13500	13471	9.7651	2.4542	6.3686	5.1255	397.95	1.2073	3.2962
13600	13571	9.7648	2.4159	6.3688	5.0456	397.95	1.1885	3.3484
13700	13671	9.7645	2.3782	6.3690	4.9670	397.95	1.1700	3.4014
13800	13770	9.7642	2.3410	6.3692	4.8896	397.95	1.1517	3.4552
13900	13870	9.7639	2.3045	6.3694	4.8135	397.95	1.1338	3.5099
14000	13969	9.7636	2.2685 - 1	6.3696	4.7385 +24	397.95	1.1161 + 9	3.5554 - 7
14100	14069	9.7633	2.2331	6.3698	4.6647	397.95	1.0988	3.6218
14200	14168	9.7630	2.1983	6.3700	4.5920	397.95	1.0816	3.6791
14300	14268	9.7627	2.1640	6.3702	4.5205	397.95	1.0646	3.7374
14400	14367	9.7624	2.1302	6.3704	4.4501	397.95	1.0482	3.7965
14500	14467	9.7621	2.0970	6.3706	4.3808	397.95	1.0319	3.8566
14600	14567	9.7618	2.0642	6.3708	4.3125	397.95	1.0158	3.9176
14700	14666	9.7615	2.0320	6.3710	4.2454	397.95	9.9999 + 8	3.9795
14800	14766	9.7611	2.0003	6.3712	4.1793	397.95	9.8442	4.0425
14900	14865	9.7608	1.9691	6.3714	4.1142	397.95	9.6909	4.1055
15000	14965	9.7605	1.9384 - 1	6.3716	4.0501 +24	397.95	9.5400 + 8	4.1714 - 7
15100	15064	9.7602	1.9081	6.3718	3.9870	397.95	9.3914	4.2374
15200	15164	9.7599	1.8784	6.3720	3.9250	397.95	9.2452	4.3044
15300	15263	9.7596	1.8491	6.3722	3.8638	397.95	9.1012	4.3725
15400	15363	9.7593	1.8202	6.3724	3.8037	397.95	8.9595	4.4417
15500	15462	9.7590	1.7918	6.3726	3.7445	397.95	8.8200	4.5119
15600	15562	9.7587	1.7639	6.3728	3.6862	397.95	8.6827	4.5833
15700	15661	9.7584	1.7363	6.3730	3.6288	397.95	8.5475	4.6558
15800	15761	9.7581	1.7093	6.3732	3.5723	397.95	8.4144	4.7294
15900	15860	9.7578	1.6826	6.3734	3.5167	397.95	8.2834	4.8046
16000	15960	9.7575	1.6563 - 1	6.3736	3.4619 +24	397.95	8.1545 + 8	4.8802 - 7
16100	16059	9.7572	1.6305	6.3738	3.4080	397.95	8.0276	4.9573
16200	16159	9.7569	1.6051	6.3740	3.3550	397.95	7.9026	5.0557
16300	16258	9.7566	1.5800	6.3742	3.3027	397.95	7.7796	5.1153
16400	16358	9.7562	1.5554	6.3744	3.2513	397.95	7.6585	5.1962
16500	16457	9.7559	1.5311	6.3746	3.2007	397.95	7.5393	5.2764
16600	16557	9.7556	1.5073	6.3748	3.1509	397.95	7.4219	5.3618
16700	16656	9.7553	1.4838	6.3750	3.1019	397.95	7.3064	5.4466
16800	16756	9.7550	1.4606	6.3752	3.0536	397.95	7.1927	5.5327
16900	16855	9.7547	1.4378	6.3754	3.0061	397.95	7.0808	5.6202
17000	16955	9.7544	1.4154 - 1	6.3756	2.9593 +24	397.95	6.9706 + 8	5.7090 - 7
17100	17054	9.7541	1.3933	6.3758	2.9132	397.95	6.8621	5.7993
17200	17154	9.7538	1.3716	6.3760	2.8679	397.95	6.7553	5.8910
17300	17253	9.7535	1.3502	6.3762	2.8233	397.95	6.6502	5.9841
17400	17353	9.7532	1.3292	6.3764	2.7793	397.95	6.5467	6.0787
17500	17452	9.7529	1.3085	6.3766	2.7351	397.95	6.4449	6.1747
17600	17551	9.7526	1.2881	6.3768	2.6935	397.95	6.3445	6.2723
17700	17651	9.7523	1.2680	6.3770	2.6516	397.95	6.2458	6.3715
17800	17750	9.7520	1.2482	6.3772	2.6104	397.95	6.1487	6.4722
17900	17850	9.7517	1.2288	6.3774	2.5697	397.95	6.0530	6.5745
18000	17949	9.7513	1.2096 - 1	6.3776	2.5298 +24	397.95	5.9588 + 8	6.6784 - 7
18100	18049	9.7510	1.1907	6.3778	2.4904	397.95	5.8661	6.7839
18200	18148	9.7507	1.1722	6.3780	2.4517	397.95	5.7749	6.8911
18300	18247	9.7504	1.1539	6.3782	2.4135	397.95	5.6850	7.0000
18400	18347	9.7501	1.1359	6.3784	2.3760	397.95	5.5966	7.1106
18500	18446	9.7498	1.1182	6.3786	2.3390	397.95	5.5095	7.2230
18600	18546	9.7495	1.1008	6.3788	2.3026	397.95	5.4238	7.3371
18700	18645	9.7492	1.0836	6.3790	2.2668	397.95	5.3395	7.4530
18800	18745	9.7489	1.0667	6.3792	2.2316	397.95	5.2564	7.5708
18900	18844	9.7486	1.0501	6.3794	2.1969	397.95	5.1757	7.6904

ALTITUDE Z, m	H, m ¹	g, m sec ⁻²	SPECIFIC GRAV. $\omega, \text{kgf m}^{-3}$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{v}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m	
								+24	+23
19000	18943	9.7483	1.0338 - 1	6.3796	2.1627	397.95	5.0942 + 8	7.8119	- 7
19100	19043	9.7480	1.0176	6.3798	2.1290	397.95	5.0149	7.9353	
19200	19142	9.7477	1.0018	6.3800	2.0959	397.95	4.9370	8.0607	
19300	19242	9.7474	9.8618 - 2	6.3802	2.0633	397.95	4.8602	8.1680	
19400	19341	9.7471	9.7081	6.3804	2.0313	397.95	4.7846	8.3174	
19500	19440	9.7468	9.5569	6.3806	1.9997	397.95	4.7102	8.4487	
19600	19540	9.7465	9.4080	6.3808	1.9686	397.95	4.6369	8.5822	
19700	19639	9.7461	9.2614	6.3810	1.9380	397.95	4.5648	8.7177	
19800	19739	9.7458	9.1171	6.3812	1.9078	397.95	4.4939	8.8554	
19900	19838	9.7455	8.9750	6.3814	1.8762	397.95	4.4240	8.9953	
20000	19937	9.7452	8.8352 - 2	6.3816	1.8490	397.95	4.3552 + 8	9.1374	- 7
20200	20136	9.7446	8.5621	6.3820	1.7919	397.95	4.2208	9.4283	
20400	20335	9.7440	8.2974	6.3824	1.7366	397.95	4.0906	9.7284	
20600	20533	9.7434	8.0409	6.3828	1.6831	397.95	3.9644	1.0053	- 6
20800	20732	9.7428	7.7924	6.3832	1.6311	397.95	3.8421	1.0358	
21000	20931	9.7422	7.5516	6.3836	1.5808	397.95	3.7236	1.0687	
21200	21130	9.7416	7.3182	6.3840	1.5321	397.95	3.6088	1.1027	
21400	21328	9.7410	7.0920	6.3844	1.4848	397.95	3.4975	1.1378	
21600	21527	9.7403	6.8729	6.3848	1.4390	397.95	3.3896	1.1740	
21800	21725	9.7397	6.6605	6.3852	1.3946	397.95	3.2851	1.2114	
22000	21924	9.7391	6.4547 - 2	6.3856	1.3516	397.95	3.1838 + 8	1.2499	- 6
22200	22123	9.7385	6.2553	6.3860	1.3100	397.95	3.0856	1.2897	
22400	22321	9.7379	6.0621	6.3864	1.2696	397.95	2.9905	1.3307	
22600	22520	9.7373	5.8748	6.3868	1.2304	397.95	2.8983	1.3731	
22800	22719	9.7367	5.6933	6.3872	1.1925	397.95	2.8069	1.4167	
23000	22917	9.7361	5.5175	6.3876	1.1557	397.95	2.7223	1.4618	
23200	23116	9.7355	5.3471	6.3880	1.1201	397.95	2.6384	1.5083	
23400	23314	9.7348	5.1819	6.3884	1.0856	397.95	2.5571	1.5563	
23600	23513	9.7342	5.0219	6.3888	1.0521	397.95	2.4783	1.6058	
23800	23711	9.7336	4.8668	6.3892	1.0197	397.95	2.4019	1.6568	
24000	23910	9.7330	4.7166 - 2	6.3896	9.8828	397.95	2.3279 + 8	1.7095	- 6
24200	24108	9.7324	4.5709	6.3900	9.5763	397.95	2.2562	1.7639	
24400	24307	9.7318	4.4298	6.3904	9.2831	397.95	2.1866	1.8199	
24600	24505	9.7312	4.2931	6.3908	8.9971	397.95	2.1193	1.8778	
24800	24704	9.7306	4.1605	6.3912	8.7199	397.95	2.0540	1.9375	
25000	24902	9.7300	4.0321	6.3916	8.4513	397.95	1.9907	1.9991	
25200	25100	9.7294	3.9023	6.4009	8.1796	398.23	1.9280	2.0655	
25400	25299	9.7287	3.7718	6.4189	7.9067	398.77	1.8663	2.1368	
25600	25497	9.7281	3.6460	6.4368	7.6435	399.32	1.8066	2.2103	
25800	25696	9.7275	3.5248	6.4548	7.3899	399.86	1.7490	2.2862	
26000	25894	9.7269	3.4079 - 2	6.4728	7.1453	400.41	1.6934 + 8	2.3645	- 6
26200	26092	9.7263	3.2952	6.4907	6.9094	400.95	1.6398	2.4452	
26400	26291	9.7257	3.1866	6.5087	6.6820	401.49	1.5879	2.5284	
26600	26489	9.7251	3.0818	6.5267	6.4626	402.03	1.5379	2.6142	
26800	26687	9.7245	2.9807	6.5446	6.2510	402.57	1.4895	2.7027	
27000	26886	9.7239	2.8852	6.5625	6.0459	403.11	1.4428	2.7939	
27200	27084	9.7233	2.7891	6.5806	5.8500	403.65	1.3977	2.8880	
27400	27282	9.7227	2.6963	6.5986	5.6600	404.19	1.3541	2.9849	
27600	27481	9.7220	2.6108	6.6165	5.4767	404.73	1.3120	3.0848	
27800	27679	9.7214	2.5263	6.6345	5.2997	405.27	1.2713	3.1878	
28000	27877	9.7208	2.4447 - 2	6.6525	5.1290	405.80	1.2320 + 8	3.2939	- 6
28200	28075	9.7202	2.3660	6.6705	4.9642	406.34	1.1939	3.4033	
28400	28274	9.7196	2.2901	6.6884	4.8051	406.87	1.1572	3.5160	
28600	28472	9.7190	2.2167	6.7064	4.6515	407.40	1.1217	3.6321	
28800	28670	9.7184	2.1459	6.7244	4.5032	407.94	1.0874	3.7517	
29000	28868	9.7178	2.0776	6.7424	4.3601	408.47	1.0542	3.8749	
29200	29066	9.7172	2.0116	6.7604	4.2218	409.00	1.0221	4.0018	
29400	29265	9.7166	1.9478	6.7784	4.0883	409.53	9.9101 + 7	4.1325	
29600	29463	9.7160	1.8863	6.7963	3.9593	410.06	9.6099	4.2671	
29800	29661	9.7153	1.8268	6.8143	3.8347	410.59	9.3196	4.4057	

ALTITUDE Z, m	H, m'	g, m sec ⁻²	ACCEL. OF GRAV.		SPECIFIC WEIGHT $\omega, \text{kg/m}^3$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m
			Z	H						
30000	29859	9.7147	1.7694	- 2	6.8323	3.7144 +23	411.12	9.0387 + 7	4.5484 - 6	
30200	30057	9.7141	1.7139		6.8503	3.5981	411.65	8.7671	4.6954	
30400	30255	9.7135	1.6603		6.8683	3.4858	412.18	8.5042	4.8467	
30600	30453	9.7129	1.6085		6.8863	3.3772	412.70	8.2499	5.0025	
30800	30651	9.7123	1.5584		6.9043	3.2723	413.23	8.0059	5.1629	
31000	30850	9.7117	1.5100		6.9223	3.1710	413.75	7.7658	5.3279	
31200	31048	9.7111	1.4633		6.9403	3.0730	414.28	7.5354	5.4978	
31400	31246	9.7105	1.4181		6.9583	2.9783	414.80	7.3123	5.6786	
31600	31444	9.7099	1.3744		6.9763	2.8867	415.33	7.0965	5.8526	
31800	31642	9.7093	1.3322		6.9943	2.7982	415.85	6.8875	6.0377	
32000	31840	9.7087	1.2913	- 2	7.0123	2.7126 +23	416.37	6.6852 + 7	6.2203 - 6	
32200	32038	9.7080	1.2519		7.0303	2.6298	416.89	6.4893	6.4242	
32400	32236	9.7074	1.2137		7.0483	2.5498	417.41	6.2997	6.6259	
32600	32434	9.7068	1.1768		7.0663	2.4724	417.93	6.1161	6.8333	
32800	32632	9.7062	1.1411		7.0843	2.3975	418.45	5.9382	7.0467	
33000	32830	9.7056	1.1065		7.1023	2.3251	418.97	5.7660	7.2662	
33200	33028	9.7050	1.0731		7.1203	2.2550	419.49	5.5992	7.4919	
33400	33225	9.7044	1.0408		7.1383	2.1873	420.00	5.4376	7.7241	
33600	33423	9.7038	1.0095		7.1563	2.1217	420.52	5.2810	7.9628	
33800	33621	9.7032	9.7928	- 3	7.1743	2.0582	421.05	5.1294	8.2083	
34000	33819	9.7026	9.5001	- 3	7.1923	1.9968 +23	421.55	4.9824 + 7	8.4607 - 6	
34200	34017	9.7020	9.2168		7.2104	1.9374	422.06	4.8401	8.7802	
34400	34215	9.7014	8.9426		7.2284	1.8799	422.58	4.7021	8.9870	
34600	34413	9.7008	8.6772		7.2464	1.8242	423.09	4.5684	9.2613	
34800	34611	9.7002	8.4204		7.2644	1.7703	423.60	4.4388	9.5432	
35000	34808	9.6995	8.1717		7.2824	1.7182	424.11	4.3138	9.8330	
35200	35006	9.6989	7.9310		7.3004	1.6677	424.63	4.1914	1.0131 - 5	
35400	35204	9.6983	7.6979		7.3185	1.6187	425.14	4.0734	1.0437	
35600	35402	9.6977	7.4723		7.3365	1.5714	425.65	3.9590	1.0751	
35800	35600	9.6971	7.2537		7.3545	1.5255	426.16	3.8480	1.1075	
36000	35797	9.6965	7.0421	- 3	7.3725	1.4811 +23	426.66	3.7405 + 7	1.1407 - 5	
36200	35995	9.6959	6.8372		7.3905	1.4381	427.17	3.6362	1.1748	
36400	36193	9.6953	6.6386		7.4086	1.3964	427.68	3.5350	1.2098	
36600	36390	9.6947	6.4463		7.4266	1.3561	428.19	3.4369	1.2459	
36800	36588	9.6941	6.2601		7.4446	1.3170	428.69	3.3417	1.2828	
37000	36786	9.6935	6.0796		7.4627	1.2791	429.20	3.2494	1.3208	
37200	36984	9.6929	5.9048		7.4807	1.2424	429.70	3.1599	1.3599	
37400	37181	9.6923	5.7353		7.4987	1.2068	430.21	3.0730	1.3999	
37600	37379	9.6917	5.5712		7.5167	1.1723	430.71	2.9887	1.4411	
37800	37577	9.6911	5.4121		7.5348	1.1389	431.21	2.9070	1.4854	
38000	37774	9.6904	5.2579	- 3	7.5528	1.1066 +23	431.71	2.8276 + 7	1.5268 - 5	
38200	37972	9.6898	5.1085		7.5708	1.0752	432.22	2.7506	1.5713	
38400	38169	9.6892	4.9636		7.5889	1.0447	432.72	2.6759	1.6171	
38600	38367	9.6886	4.8232		7.6069	1.0153	433.22	2.6053	1.6641	
38800	38565	9.6880	4.6871		7.6250	9.8666 +22	433.72	2.5329	1.7123	
39000	38762	9.6874	4.5551		7.6430	9.5894	434.22	2.4646	1.7618	
39200	38960	9.6868	4.4271		7.6610	9.3206	434.71	2.3983	1.8126	
39400	39157	9.6862	4.3031		7.6791	9.0600	435.21	2.3339	1.8648	
39600	39355	9.6856	4.1827		7.6971	8.8072	435.71	2.2714	1.9183	
39800	39552	9.6850	4.0660		7.7152	8.5620	436.21	2.2105	1.9752	
40000	39750	9.6844	3.9529	- 3	7.7332	8.3242 +22	436.70	2.1517 + 7	2.0296 - 5	
40200	39947	9.6838	3.8431		7.7513	8.0935	437.20	2.0944	2.0874	
40400	40145	9.6832	3.7366		7.7693	7.8698	437.69	2.0588	2.1468	
40600	40342	9.6826	3.6333		7.7874	7.6527	438.19	1.9848	2.2077	
40800	40540	9.6820	3.5331		7.8054	7.4421	438.68	1.9324	2.2701	
41000	40737	9.6814	3.4359		7.8235	7.2378	439.17	1.8815	2.3342	
41200	40935	9.6808	3.3416		7.8415	7.0395	439.67	1.8320	2.4000	
41400	41132	9.6801	3.2500		7.8596	6.8471	440.16	1.7839	2.4674	
41600	41330	9.6795	3.1612		7.8776	6.6604	440.65	1.7372	2.5366	
41800	41527	9.6789	3.0750		7.8957	6.4791	441.14	1.6918	2.6075	

ALTITUDE Z, m	ACCEL. OF GRAV. H, m ¹	SPECIFIC WEIGHT g, m sec ⁻²	SCALE HEIGHT $\omega, \text{kgf m}^{-3}$	NUMBER DENSITY n, m ⁻³	PART. SPEED V, m sec ⁻¹	COLL. FREQ. v, sec ⁻¹	MEAN FREE PATH L, m	
							v, sec^{-1}	L, m
42000	41724	9.6783	2.9913 - 3	7.9137	6.3032 +22	441.63	1.6477 + 7	2.6803 - 5
42200	41922	9.6777	2.9101	7.9318	6.1325	442.12	1.6048	2.7549
42400	42119	9.6771	2.8313	7.9498	5.9668	442.61	1.5632	2.8315
42600	42316	9.6765	2.7548	7.9679	5.8059	443.10	1.5227	2.9099
42800	42514	9.6759	2.6805	7.9860	5.6497	443.59	1.4834	2.9904
43000	42711	9.6753	2.6084	8.0040	5.4980	444.08	1.4451	3.0729
43200	42908	9.6747	2.5383	8.0221	5.3507	444.56	1.4080	3.1574
43400	43106	9.6741	2.4705	8.0401	5.2077	445.05	1.3718	3.2442
43600	43303	9.6735	2.4043	8.0582	5.0689	445.53	1.3367	3.3330
43800	43500	9.6729	2.3402	8.0763	4.9340	446.02	1.3026	3.4241
44000	43698	9.6723	2.2779 - 3	8.0943	4.8030 +22	446.50	1.2694 + 7	3.5175 - 5
44200	43895	9.6717	2.2174	8.1124	4.6758	446.99	1.2371	3.6133
44400	44092	9.6711	2.1587	8.1305	4.5522	447.47	1.2057	3.7114
44600	44289	9.6705	2.1016	8.1486	4.4321	447.95	1.1752	3.8119
44800	44486	9.6699	2.0462	8.1666	4.3155	448.44	1.1455	3.9149
45000	44684	9.6693	1.9923	8.1847	4.2021	448.92	1.1166	4.0205
45200	44881	9.6687	1.9400	8.2028	4.0920	449.40	1.0885	4.1287
45400	45078	9.6681	1.8872	8.2208	3.9850	449.88	1.0612	4.2395
45600	45275	9.6674	1.8398	8.2389	3.8811	450.36	1.0346	4.3531
45800	45472	9.6668	1.7917	8.2570	3.7800	450.84	1.0087	4.4695
46000	45670	9.6662	1.7451 - 3	8.2751	3.6818 +22	451.32	9.8356 + 6	4.5886 - 5
46200	45867	9.6656	1.6998	8.2932	3.5864	451.80	9.5908	4.7108
46400	46064	9.6650	1.6557	8.3112	3.4936	452.28	9.3586	4.8358
46600	46261	9.6644	1.6129	8.3293	3.4055	452.75	9.1209	4.9640
46800	46458	9.6638	1.5712	8.3474	3.3158	453.23	8.8953	5.0958
47000	46655	9.6632	1.5307	8.3655	3.2306	453.71	8.6758	5.2296
47200	46852	9.6626	1.4914	8.3836	3.1478	454.18	8.4682	5.3672
47400	47049	9.6620	1.4539	8.3973	3.0688	454.54	8.2564	5.5053
47600	47246	9.6614	1.4196	8.3978	2.9966	454.54	8.0621	5.6380
47800	47443	9.6608	1.3861	8.3983	2.9261	454.54	7.8724	5.7739
48000	47640	9.6602	1.3534 - 3	8.3989	2.8572 +22	454.54	7.6871 + 6	5.9130 - 5
48200	47837	9.6596	1.3215	8.3994	2.7900	454.54	7.5062	6.0555
48400	48034	9.6590	1.2905	8.3999	2.7243	454.54	7.3296	6.2014
48600	48231	9.6584	1.2599	8.4004	2.6602	454.54	7.1572	6.3508
48800	48428	9.6578	1.2301	8.4009	2.5976	454.54	6.9888	6.5059
49000	48625	9.6572	1.2011	8.4015	2.5365	454.54	6.8244	6.6605
49200	48822	9.6565	1.1728	8.4020	2.4769	454.54	6.6638	6.8210
49400	49019	9.6560	1.1451	8.4025	2.4186	454.54	6.5071	6.9853
49600	49216	9.6554	1.1181	8.4030	2.3617	454.54	6.3541	7.1536
49800	49413	9.6548	1.0918	8.4036	2.3062	454.54	6.2046	7.3299
50000	49610	9.6542	1.0660 - 3	8.4041	2.2519 +22	454.54	6.0587 + 6	7.5083 - 5
50500	50102	9.6537	1.0043	8.4054	2.1819	454.54	5.7088	7.9682
51000	50994	9.6532	9.4616 - 4	8.4067	1.9993	454.54	5.3791	8.4501
51500	51086	9.6497	8.9139	8.4080	1.8839	454.54	5.0685	8.9679
52000	51578	9.6481	8.3980	8.4093	1.7751	454.54	4.7759	9.5173
52500	52070	9.6466	7.9120	8.4107	1.6787	454.54	4.5003	1.0100 - 4
53000	52562	9.6451	7.5345	8.4120	1.5702	454.54	4.2405	1.0719
53500	53053	9.6436	7.0890	8.4061	1.4065	454.35	3.9975	1.1366
54000	53545	9.6421	6.7788	8.3416	1.4114	452.56	3.7807	1.1970
54500	54037	9.6405	6.3321	8.2770	1.3395	450.77	3.5740	1.2613
55000	54528	9.6391	6.0064 - 4	8.2124	1.2708 +22	448.98	3.3772 + 6	1.3994 - 4
55500	55020	9.6376	5.6950	8.1479	1.2051	447.17	3.1897	1.4019
56000	55511	9.6361	5.3975	8.0833	1.1463	445.36	3.0114	1.4789
56500	56002	9.6346	5.1134	8.0187	1.0824	443.55	2.8416	1.5609
57000	56493	9.6331	4.8421	7.9540	1.0251	441.72	2.6802	1.6481
57500	56985	9.6316	4.5821	7.8894	9.7044 +21	439.89	2.5267	1.7409
58000	57476	9.6301	4.3361	7.8248	9.1827	438.05	2.3809	1.8398
58500	57967	9.6286	4.1005	7.7542	8.6851	436.20	2.2484	1.9492
59000	58457	9.6271	3.6759	7.6955	8.2155	434.35	2.1109	2.0577
59500	58948	9.6256	3.6618	7.6308	7.7584	432.48	1.9861	2.1776

ALTITUDE Z, m	H, m ¹	OF GRAV. g, m sec ⁻²	SPECIFIC WEIGHT $\omega, \text{kgf m}^{-3}$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $V, \text{m sec}^{-1}$	ACCEL.	COLL.	MEAN FREQ. FREE PATH L, m
							+	-	v, sec ⁻¹
60000	59439	9.6241	3.4579 - 4	7.5662	7.3275 +21	430.61	1.8677 + 6	2.3056 - 4	
60500	59930	9.6226	3.2658	7.5015	6.9172	428.74	1.7554	2.4424	
61000	60420	9.6211	3.0790	7.4368	6.5266	426.85	1.6490	2.5886	
61500	60911	9.6196	2.9032	7.3721	6.1549	424.96	1.5462	2.7449	
62000	61401	9.6181	2.7360	7.3074	5.8014	423.05	1.4527	2.9122	
62500	61891	9.6166	2.5771	7.2426	5.4654	421.14	1.3624	3.0912	
63000	62382	9.6151	2.4262	7.1779	5.1460	419.22	1.2769	3.2831	
63500	62872	9.6136	2.2828	7.1132	4.8426	417.30	1.1961	3.4887	
64000	63362	9.6121	2.1467	7.0484	4.5546	415.36	1.1198	3.7093	
64500	63852	9.6106	2.0176	6.9837	4.2813	413.42	1.0477	3.9461	
65000	64342	9.6091	1.8951 - 4	6.9189	4.0221 +21	411.46	9.7957 + 5	4.2004 - 4	
65500	64832	9.6076	1.7791	6.8541	3.7764	409.50	9.1534	4.4758	
66000	65322	9.6061	1.6691	6.7893	3.5435	407.53	8.5476	4.7677	
66500	65812	9.6046	1.5650	6.7245	3.3230	405.55	7.9767	5.0841	
67000	66301	9.6031	1.4665	6.6597	3.1143	403.56	7.4390	5.4249	
67500	66791	9.6016	1.3733	6.5949	2.9168	401.56	6.9327	5.7982	
68000	67280	9.6001	1.2851	6.5300	2.7301	399.55	6.4564	6.1883	
68500	67770	9.5987	1.2019	6.4652	2.5536	397.53	6.0086	6.6159	
69000	68259	9.5972	1.1233	6.4003	2.3870	395.50	5.5878	7.0778	
69500	68748	9.5957	1.0491	6.3354	2.2297	393.46	5.1926	7.5772	
70000	69238	9.5942	9.7911 - 5	6.2706	2.0813 +21	391.41	4.8217 + 5	8.1175 - 4	
70500	69727	9.5927	9.1314	6.2057	1.9413	389.35	4.4739	8.7026	
71000	70216	9.5912	8.5100	6.1408	1.8095	387.27	4.1479	9.3367	
71500	70705	9.5897	7.9249	6.0759	1.6854	385.19	3.8425	1.0024 - 3	
72000	71194	9.5882	7.3744	6.0110	1.5685	383.10	3.5567	1.0771	
72500	71682	9.5867	6.8568	5.9460	1.4587	380.99	3.2894	1.1582	
73000	72171	9.5852	6.3704	5.8811	1.3554	378.88	3.0396	1.2465	
73500	72660	9.5837	5.9138	5.8162	1.2584	376.75	2.8063	1.3485	
74000	73148	9.5822	5.4853	5.7512	1.1674	374.61	2.5886	1.4472	
74500	73637	9.5808	5.0835	5.6862	1.0821	372.46	2.3856	1.5613	
75000	74125	9.5793	4.7070 - 5	5.6212	1.0021 +21	370.30	2.1964 + 5	1.6859 - 3	
75500	74614	9.5778	4.354	5.556	9.272 +20	368.1	2.020	1.822	
76000	75102	9.576	4.025	5.491	8.571	365.9	1.857	1.971	
76500	75590	9.575	3.716	5.426	7.916	363.7	1.704	2.134	
77000	76078	9.573	3.428	5.361	7.304	361.5	1.563	2.313	
77500	76566	9.572	3.160	5.296	6.752	359.3	1.432	2.510	
78000	77054	9.570	2.909	5.231	6.199	357.1	1.310	2.725	
78500	77542	9.569	2.676	5.166	5.705	354.8	1.198	2.963	
79000	78030	9.567	2.458	5.101	5.240	352.5	1.093	3.224	
79500	78518	9.566	2.256	5.036	4.810	350.2	9.972 + 4	3.512	
80000	79006	9.564	2.068 - 5	4.972	4.410 +20	348.0	9.082 + 4	3.831 - 3	
80500	79493	9.563	1.870	4.972	3.988	348.0	8.213	4.237	
81000	79981	9.561	1.691	4.973	3.606	348.0	7.428	4.685	
81500	80468	9.560	1.529	4.974	3.261	348.0	6.717	5.180	
82000	80956	9.558	1.382	4.975	2.949	348.0	6.075	5.728	
82500	81443	9.557	1.250	4.976	2.667	348.0	5.494	6.334	
83000	81930	9.555	1.130	4.976	2.412	348.0	4.969	7.003	
83500	82417	9.554	1.022	4.977	2.182	348.0	4.494	7.743	
84000	82904	9.553	9.243 - 6	4.978	1.973	348.0	4.064	8.562	
84500	83391	9.551	8.358	4.979	1.785	348.0	3.676	9.466	
85000	83878	9.550	7.559 - 6	4.979	1.614 +20	348.0	3.305 + 4	1.047 - 2	
85500	84365	9.548	6.835	4.980	1.460	348.0	3.007	1.157	
86000	84852	9.547	6.182	4.981	1.321	348.0	2.720	1.279	
86500	85339	9.545	5.590	4.982	1.194	348.0	2.460	1.414	
87000	85825	9.544	5.056	4.982	1.030	348.0	2.225	1.564	
87500	86312	9.542	4.572	4.983	9.772 +19	348.0	2.013	1.729	
88000	86798	9.541	4.135	4.984	8.840	348.0	1.821	1.911	
88500	87285	9.539	3.740	4.985	7.996	348.0	1.647	2.113	
89000	87771	9.538	3.383	4.986	7.233	348.0	1.450	2.336	
89500	88257	9.536	3.059	4.986	6.543	348.0	1.348	2.582	

ALTITUDE Z, m	ACCEL. OF GRAV. H, m ¹	SPECIFIC WEIGHT $\omega, \text{kgf m}^{-3}$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m	
							-2	-1
90000	88743	9.535	2.767	-6	4.987	5.918 +19	348.0	1.219 + 4
90500	89230	9.533	2.503		4.988	5.354	348.0	1.103
91000	89716	9.532	2.264		4.989	4.843	348.0	9.976 + 5
91500	90202	9.530	2.038		5.014	4.361	348.8	9.004
92000	90687	9.529	1.824		5.073	3.904	350.9	8.102
92500	91173	9.527	1.635		5.132	3.500	352.9	7.310
93000	91659	9.526	1.467		5.192	3.141	354.9	6.598
93500	92145	9.524	1.318		5.251	2.823	356.9	5.963
94000	92630	9.523	1.185		5.310	2.540	358.9	5.395
94500	93116	9.521	1.057		5.370	2.288	360.8	4.867
95000	93601	9.520	9.623	-7	5.429	2.063	+19	362.8
95500	94086	9.518	8.686		5.489	1.863		364.7
96000	94572	9.517	7.848		5.548	1.684		366.7
96500	95057	9.516	7.099		5.607	1.524		368.6
97000	95542	9.514	6.429		5.667	1.380		370.5
97500	96027	9.513	5.827		5.726	1.251		372.4
98000	96512	9.511	5.288		5.786	1.136		374.3
98500	96997	9.510	4.803		5.845	1.032		376.2
99000	97482	9.508	4.366		5.905	9.384	+18	378.1
99500	97966	9.507	3.974		5.964	8.542		380.0
100000	98451	9.505	3.619	-7	6.023	7.783	+18	381.8
101000	99420	9.502	3.011		6.142	6.479		385.5
102000	100389	9.499	2.514		6.261	5.413		389.2
103000	101358	9.496	2.106		6.380	4.557		392.8
104000	102326	9.493	1.770		6.500	3.816		396.4
105000	103294	9.491	1.493		6.619	3.219		399.9
106000	104261	9.488	1.262		6.738	2.784		403.5
107000	105229	9.485	1.054		6.968	2.276		410.2
108000	106196	9.482	8.468	-8	7.355	1.830		427.1
109000	107162	9.479	6.917		8.143	1.496		443.3
110000	108129	9.476	5.730	-8	8.731	1.240	+18	459.0
111000	109095	9.473	4.805		9.319	1.040		474.1
112000	110061	9.470	4.073		9.908	8.823	+17	488.8
113000	111026	9.467	3.485		10.50	7.555		503.0
114000	111991	9.464	3.008		11.09	6.565		516.9
115000	112956	9.461	2.616		11.67	5.678		530.3
116000	113921	9.458	2.291		12.26	4.975		543.5
117000	114885	9.455	2.018		12.85	4.387		556.3
118000	115849	9.452	1.769		13.44	3.890		568.8
119000	116813	9.450	1.593		14.03	3.467		581.1
120000	117777	9.447	1.426	-8	14.62	3.105	+17	593.1
121000	118740	9.444	1.292		15.21	2.793		604.8
122000	119702	9.441	1.157		15.80	2.522		616.3
123000	120665	9.438	1.048		16.39	2.287		627.7
124000	121627	9.435	9.325	-9	16.98	2.080		638.8
125000	122589	9.432	8.687		17.57	1.899		649.7
126000	123551	9.429	7.947		18.16	1.738		660.4
127000	124512	9.426	7.291		18.76	1.596		671.0
128000	125473	9.423	6.706		19.35	1.469		681.4
129000	126434	9.420	6.184		19.94	1.356		691.6
130000	127395	9.417	5.717	-9	20.53	1.254	+17	701.7
131000	128355	9.415	5.296		21.12	1.163		711.6
132000	129315	9.412	4.916		21.71	1.080		721.4
133000	130274	9.409	4.573		22.31	1.006		731.0
134000	131233	9.406	4.262		22.90	9.380	+16	740.6
135000	132192	9.403	3.979		23.49	8.764		750.0
136000	133151	9.400	3.722		24.08	8.205		759.3
137000	134109	9.397	3.486		24.68	7.691		768.4
138000	135068	9.394	3.271		25.27	7.222		777.5
139000	136025	9.391	3.073		25.86	6.791		786.4

ALTITUDE Z, m	H, m ¹	ACCEL. OF GRAV. g, m sec ⁻²	SPECIFIC WEIGHT $\omega, \text{kgf m}^{-3}$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ.		MEAN FREE PATH L, m		
							+16	v, sec ⁻¹	+1	L, m	
140000	136983	9.389	2.892	- 9	26.46	6.395	795.3	3.010	+ 1	2.642 + 1	
141000	137940	9.386	2.724		27.05	6.031	804.0	2.870		2.801	
142000	138897	9.383	2.570		27.64	5.694	812.7	2.739		2.967	
143000	139854	9.380	2.428		28.24	5.383	821.3	2.617		3.138	
144000	140810	9.377	2.295		28.83	5.096	829.7	2.503		3.316	
145000	141766	9.374	2.173		29.43	4.829	838.1	2.395		3.499	
146000	142722	9.371	2.060		30.02	4.581	846.4	2.295		3.688	
147000	143677	9.368	1.954		30.62	4.350	854.6	2.201		3.884	
148000	144632	9.365	1.856		31.21	4.135	862.7	2.112		4.085	
149000	145587	9.363	1.764		31.81	3.935	870.8	2.028		4.293	
150000	146542	9.360	1.679	- 9	32.40	3.748	+16	878.8	1.950	+ 1	4.507 + 1
151000	147496	9.357	1.599		33.00	3.573		886.7	1.875		4.728
152000	148450	9.354	1.524		33.59	3.410		894.5	1.805		4.955
153000	149404	9.351	1.454		34.19	3.256		902.3	1.739		5.188
154000	150357	9.348	1.388		34.78	3.112		910.0	1.676		5.428
155000	151310	9.345	1.326		35.38	2.977		917.6	1.617		5.675
156000	152263	9.342	1.268		35.98	2.850		925.1	1.561		5.928
157000	153216	9.340	1.214		36.57	2.730		932.6	1.507		6.188
158000	154168	9.337	1.162		37.17	2.618		940.1	1.457		6.454
159000	155120	9.334	1.114		37.77	2.511		947.4	1.408		6.727
160000	156071	9.331	1.068	- 9	38.36	2.411	+16	954.7	1.363	+ 1	7.007 + 1
161000	157023	9.328	1.025		38.96	2.316		962.0	1.319		7.293
162000	157974	9.325	9.840	-10	39.56	2.227		969.2	1.277		7.587
163000	158924	9.322	9.453		40.16	2.142		976.3	1.238		7.887
164000	159875	9.320	9.087		40.75	2.062		983.4	1.200		8.194
165000	160825	9.317	8.794		41.10	1.998		987.4	1.168		8.456
166000	161775	9.314	8.520		41.40	1.958		990.9	1.137		8.716
167000	162725	9.311	8.256		41.71	1.881		994.4	1.107		8.982
168000	163674	9.308	8.003		42.01	1.826		997.9	1.078		9.253
169000	164623	9.305	7.759		42.32	1.773		1001.	1.051		9.530
170000	165572	9.302	7.524	-10	42.62	1.722	+16	1005.	1.024	+ 1	9.813 + 1
171000	166520	9.300	7.298		42.93	1.672		1008.	9.981	+ 0	1.010 + 2
172000	167468	9.297	7.080		43.24	1.625		1012.	9.731		1.040
173000	168416	9.294	6.870		43.54	1.579		1015.	9.490		1.070
174000	169364	9.291	6.667		43.85	1.535		1019.	9.256		1.100
175000	170311	9.288	6.479		44.11	1.495		1021.	9.036		1.130
176000	171258	9.285	6.312		44.27	1.458		1023.	8.831		1.158
177000	172205	9.282	6.149		44.43	1.423		1025.	8.633		1.187
178000	173151	9.280	5.990		44.59	1.389		1026.	8.440		1.216
179000	174097	9.277	5.837		44.75	1.356		1028.	8.253		1.246
180000	175043	9.274	5.688	-10	44.91	1.324	+16	1030.	8.070	+ 0	1.276 + 2
181000	175988	9.271	5.543		45.07	1.293		1031.	7.893		1.307
182000	176934	9.268	5.402		45.23	1.263		1033.	7.721		1.338
183000	177879	9.265	5.266		45.39	1.233		1035.	7.554		1.370
184000	178823	9.263	5.133		45.55	1.205		1036.	7.392		1.402
185000	179768	9.260	5.004		45.71	1.177		1038.	7.234		1.435
186000	180712	9.257	4.879		45.87	1.150		1040.	7.080		1.469
187000	181656	9.254	4.757		46.03	1.124		1041.	6.930		1.503
188000	182599	9.251	4.639		46.19	1.099		1043.	6.784		1.538
189000	183542	9.248	4.524		46.35	1.074		1045.	6.642		1.573
190000	184485	9.246	4.412	-10	46.51	1.050	+16	1046.	6.503	+ 0	1.609 + 2
191000	185428	9.243	4.304		46.67	1.026		1048.	6.368		1.646
192000	186370	9.240	4.198		46.83	1.004		1050.	6.236		1.683
193000	187312	9.237	4.096		46.99	9.813	+15	1051.	6.107		1.722
194000	188254	9.234	3.996		47.15	9.596		1053.	5.981		1.761
195000	189196	9.231	3.899		47.31	9.385		1055.	5.858		1.800
196000	190137	9.229	3.805		47.47	9.179		1056.	5.739		1.841
197000	191078	9.226	3.713		47.63	9.078		1058.	5.622		1.882
198000	192018	9.223	3.624		47.80	8.783		1060.	5.508		1.924
199000	192959	9.220	3.537		47.96	8.592		1061.	5.397		1.966

ALTITUDE Z, m	H, m'	GRAV. g, m sec ⁻²	ACCEL. OF WEIGHT		SCALE HEIGHT H _S , km	NUMBER DENSITY n, m ⁻³	PART. SPEED V, m sec ⁻¹	COLL. FREQ. v, sec ⁻¹	MEAN FREE PATH L, m	
			w, kg/m ³	-10					L, m	+ 0
200000	193899	9.217	3.452	-10	48.12	8.406	+15	1063.	5.288	2.010 + 2
201000	194839	9.215	3.370		48.28	8.225		1064.	5.182	2.054
202000	195778	9.212	3.290		48.44	8.049		1066.	5.078	2.099
203000	196717	9.209	3.212		48.60	7.877		1068.	4.977	2.145
204000	197656	9.206	3.137		48.76	7.709		1069.	4.878	2.192
205000	198595	9.203	3.063		48.92	7.545		1071.	4.782	2.239
206000	199533	9.201	2.991		49.08	7.385		1072.	4.688	2.288
207000	200471	9.198	2.923		49.22	7.233		1074.	4.597	2.336
208000	201409	9.195	2.857		49.34	7.087		1075.	4.509	2.384
209000	202346	9.192	2.793		49.46	6.945		1076.	4.423	2.433
210000	203284	9.189	2.731	-10	49.58	6.805	+15	1077.	4.339	2.483 + 2
211000	204220	9.187	2.670		49.69	6.669		1078.	4.256	2.533
212000	205157	9.184	2.611		49.81	6.536		1079.	4.176	2.585
213000	206093	9.181	2.553		49.93	6.406		1080.	4.097	2.637
214000	207030	9.178	2.497		50.05	6.279		1082.	4.019	2.691
215000	207965	9.175	2.442		50.16	6.154		1083.	3.944	2.745
216000	208901	9.173	2.388		50.28	6.033		1084.	3.870	2.800
217000	209836	9.170	2.335		50.40	5.914		1085.	3.797	2.857
218000	210771	9.167	2.284		50.52	5.798		1086.	3.727	2.914
219000	211706	9.164	2.234		50.64	5.684		1087.	3.657	2.972
220000	212640	9.161	2.186	-10	50.75	5.573	+15	1088.	3.589	3.032 + 2
221000	213574	9.159	2.138		50.87	5.464		1089.	3.523	3.092
222000	214508	9.156	2.092		50.99	5.358		1090.	3.458	3.153
223000	215441	9.153	2.046		51.11	5.253		1091.	3.394	3.216
224000	216374	9.150	2.002		51.23	5.152		1093.	3.331	3.279
225000	217307	9.148	1.959		51.34	5.052		1094.	3.270	3.344
226000	218240	9.145	1.917		51.46	4.955		1095.	3.210	3.410
227000	219172	9.142	1.876		51.58	4.859		1096.	3.152	3.477
228000	220104	9.139	1.835		51.70	4.766		1097.	3.094	3.545
229000	221036	9.136	1.796		51.82	4.675		1098.	3.038	3.614
230000	221968	9.134	1.758	-10	51.93	4.585	+15	1099.	2.983	3.685 + 2
231000	222899	9.131	1.720		52.05	4.498		1100.	2.929	3.756
232000	223830	9.128	1.684		52.17	4.412		1101.	2.876	3.829
233000	224761	9.125	1.648		52.29	4.329		1102.	2.824	3.903
234000	225691	9.123	1.613		52.41	4.247		1103.	2.773	3.978
235000	226621	9.120	1.579		52.53	4.166		1104.	2.724	4.055
236000	227551	9.117	1.546		52.64	4.088		1106.	2.675	4.133
237000	228480	9.114	1.514		52.76	4.011		1107.	2.627	4.212
238000	229410	9.111	1.482		52.88	3.936		1108.	2.580	4.293
239000	230339	9.109	1.451		53.00	3.862		1109.	2.534	4.375
240000	231267	9.106	1.421	-10	53.12	3.790	+15	1110.	2.489	4.458 + 2
241000	232196	9.103	1.391		53.24	3.719		1111.	2.445	4.543
242000	233124	9.100	1.362		53.36	3.650		1112.	2.402	4.629
243000	234052	9.098	1.334		53.47	3.582		1113.	2.360	4.717
244000	234979	9.095	1.306		53.59	3.516		1114.	2.318	4.806
245000	235906	9.092	1.279		53.71	3.451		1115.	2.278	4.896
246000	236833	9.089	1.253		53.83	3.387		1116.	2.238	4.988
247000	237760	9.087	1.227		53.95	3.325		1117.	2.199	5.082
248000	238687	9.084	1.202		54.07	3.264		1118.	2.160	5.177
249000	239613	9.081	1.178		54.19	3.204		1119.	2.123	5.274
250000	240539	9.078	1.154	-10	54.31	3.145	+15	1120.	2.086	5.372 + 2
251000	241464	9.076	1.130		54.42	3.088		1122.	2.050	5.472
252000	242390	9.073	1.107		54.54	3.031		1123.	2.014	5.573
253000	243315	9.070	1.085		54.66	2.976		1124.	1.979	5.677
254000	244239	9.067	1.063		54.78	2.922		1125.	1.945	5.781
255000	245164	9.065	1.041		54.90	2.869		1126.	1.912	5.888
256000	246088	9.062	1.020		55.02	2.817		1127.	1.879	5.996
257000	247012	9.059	9.997	-11	55.14	2.767		1128.	1.847	6.107
258000	247936	9.056	9.797		55.26	2.717		1129.	1.815	6.219
259000	248859	9.054	9.600		55.38	2.668		1130.	1.784	6.332

ALTITUDE Z, m	ACCEL. OF GRAV. H, m ¹	SPECIFIC WEIGHT g, m sec ⁻²	SCALE HEIGHT $\omega, \text{kgf/m}^3$	NUMBER DENSITY n, m ⁻³	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec ⁻¹	MEAN FREE PATH L, m			
							-1	L, m		
260000	249782	9.051	9.408	-11	55.50	2.620	+15	1.754 + 0	6.448 + 2	
261000	250705	9.040	9.221		55.62	2.573	1132.	1.724	6.566	
262000	251627	9.045	9.037		55.73	2.527	1133.	1.695	6.685	
263000	252550	9.043	8.853		55.85	2.482	1134.	1.666	6.806	
264000	253472	9.040	8.682		55.97	2.438	1135.	1.638	6.930	
265000	254393	9.037	8.51		56.09	2.395	1136.	1.610	7.055	
266000	255315	9.035	8.343		56.21	2.352	1137.	1.583	7.182	
267000	256236	9.032	8.178		56.33	2.311	1138.	1.557	7.311	
268000	257157	9.029	8.017		56.45	2.270	1139.	1.531	7.443	
269000	258077	9.026	7.860		56.57	2.230	1140.	1.505	7.576	
270000	258998	9.024	7.706	-11	56.69	2.191	+15	1.480 + 0	7.712 + 2	
271000	259918	9.021	7.556		56.81	2.152	1142.	1.455	7.850	
272000	260837	9.018	7.408		56.93	2.114	1143.	1.431	7.990	
273000	261757	9.015	7.264		57.05	2.078	1144.	1.407	8.132	
274000	262676	9.013	7.123		57.17	2.041	1145.	1.384	8.277	
275000	263595	9.010	6.985		57.29	2.006	1146.	1.361	8.423	
276000	264513	9.007	6.850		57.41	1.971	1148.	1.339	8.573	
277000	265432	9.005	6.718		57.53	1.937	1149.	1.317	8.724	
278000	266350	9.002	6.589		57.65	1.903	1150.	1.295	8.878	
279000	267268	8.999	6.462		57.77	1.870	1151.	1.274	9.034	
280000	268185	8.996	6.338	-11	57.89	1.838	+15	1.253 + 0	9.193 + 2	
281000	269102	8.994	6.217		58.01	1.806	1153.	1.232	9.354	
282000	270019	8.991	6.098		58.13	1.775	1154.	1.212	9.518	
283000	270936	8.988	5.982		58.25	1.745	1155.	1.192	9.684	
284000	271853	8.986	5.866		58.37	1.715	1156.	1.173	9.853	
285000	272769	8.983	5.757		58.49	1.685	1157.	1.154	1.002 + 3	
286000	273685	8.980	5.647		58.61	1.657	1158.	1.135	1.020	
287000	274600	8.977	5.541		58.73	1.628	1159.	1.117	1.058	
288000	275515	8.975	5.436		58.85	1.601	1160.	1.099	1.056	
289000	276430	8.972	5.334		58.97	1.573	1161.	1.081	1.074	
290000	277345	8.969	5.233	-11	59.09	1.547	+15	1.064 + 0	1.032 + 3	
291000	278260	8.967	5.135		59.21	1.521	1163.	1.046	1.111	
292000	279174	8.964	5.039		59.33	1.495	1164.	1.030	1.130	
293000	280088	8.961	4.945		59.45	1.470	1165.	1.013	1.150	
294000	281001	8.959	4.853		59.57	1.445	1166.	9.970 - 1	1.169	
295000	281915	8.956	4.762		59.69	1.421	1167.	9.810	1.189	
296000	282828	8.953	4.674		59.81	1.397	1168.	9.654	1.210	
297000	283741	8.951	4.587		59.93	1.373	1169.	9.500	1.230	
298000	284653	8.948	4.502		60.05	1.350	1170.	9.350	1.251	
299000	285566	8.945	4.419		60.17	1.328	1171.	9.201	1.272	
300000	286478	8.942	4.338	-11	60.29	1.306	+15	1.172. - 1	1.294 + 3	
302000	288301	8.937	4.180		60.53	1.263	1174.	8.772	1.338	
304000	290123	8.932	4.028		60.77	1.221	1176.	8.498	1.384	
306000	291944	8.926	3.883		61.02	1.181	1178.	8.234	1.430	
308000	293764	8.921	3.743		61.26	1.143	1180.	7.978	1.479	
310000	295583	8.916	3.609		61.30	1.105	1182.	7.731	1.528	
312000	297400	8.910	3.489		61.74	1.070	1184.	7.495	1.580	
314000	299217	8.905	3.356		61.98	1.035	1186.	7.263	1.532	
316000	301033	8.900	3.237		62.25	1.002	1188.	7.041	1.687	
318000	302847	8.894	3.122		62.47	9.695	+14	1189.	6.826	
320000	304661	8.889	3.013	-11	62.71	9.385	+14	1191.	6.618 - 1	1.800 + 3
322000	306473	8.884	2.907		62.95	9.085		1193.	6.418	1.860
324000	308284	8.878	2.805		63.20	8.797		1195.	6.224	1.921
326000	310094	8.873	2.708		63.44	8.518		1197.	6.036	1.983
328000	311903	8.866	2.614		63.68	8.249		1199.	5.855	2.048
330000	313711	8.862	2.524		63.92	7.989		1201.	5.680	2.115
332000	315518	8.857	2.437		64.17	7.738		1203.	5.510	2.183
334000	317324	8.852	2.353		64.41	7.496		1205.	5.346	2.254
336000	319129	8.846	2.273		64.65	7.262		1207.	5.188	2.326
338000	320932	8.841	2.195		64.90	7.036		1209.	5.034	2.401

ALTITUDE Z, m	ACCEL. OF GRAV. H, m'	SPECIFIC WEIGHT $\omega, \text{kgf m}^{-3}$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{V}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m	
							-2	+3
340000	322735	8.836	2.121 -11	65.14	6.818 +14	1211.	4.886 - 1	2.478 + 3
342000	324535	8.831	2.049	65.39	6.607	1213.	4.742	2.557
344000	326337	8.825	1.960	65.63	6.404	1214.	4.603	2.628
346000	328136	8.820	1.914	65.87	6.207	1216.	4.469	2.722
348000	329934	8.815	1.850	66.12	6.017	1218.	4.339	2.803
350000	331731	8.810	1.788	66.36	5.834	1220.	4.213	2.896
352000	333527	8.804	1.729	66.61	5.656	1222.	4.091	2.987
354000	335322	8.799	1.672	66.85	5.485	1224.	3.973	3.080
356000	337116	8.794	1.616	67.10	5.319	1226.	3.859	3.176
358000	338909	8.789	1.563	67.34	5.158	1228.	3.748	3.275
360000	340701	8.783	1.512 -11	67.59	5.003 +14	1229.	3.641 - 1	3.277 + 3
362000	342492	8.778	1.463	67.83	4.853	1231.	3.537	3.481
364000	344282	8.773	1.415	68.08	4.708	1233.	3.437	3.588
366000	346070	8.768	1.370	68.32	4.568	1235.	3.340	3.698
368000	347858	8.762	1.325	68.57	4.433	1237.	3.245	3.811
370000	349644	8.757	1.283	68.81	4.301	1239.	3.154	3.928
372000	351430	8.752	1.242	69.06	4.174	1241.	3.065	4.047
374000	353214	8.747	1.202	69.31	4.052	1242.	2.980	4.170
376000	354997	8.742	1.164	69.55	3.933	1244.	2.896	4.296
378000	356780	8.736	1.127	69.80	3.818	1246.	2.816	4.425
380000	358561	8.731	1.091 -11	70.04	3.706 +14	1248.	2.738 - 1	4.558 + 3
382000	360341	8.726	1.057	70.29	3.599	1250.	2.662	4.695
384000	362120	8.721	1.024	70.54	3.494	1252.	2.589	4.835
386000	363898	8.716	9.915 -12	70.78	3.393	1253.	2.517	4.979
388000	365675	8.710	9.606	71.03	3.296	1255.	2.448	5.127
390000	367451	8.705	9.307	71.28	3.201	1257.	2.382	5.278
392000	369226	8.700	9.019	71.53	3.109	1259.	2.317	5.434
394000	371000	8.695	8.740	71.77	3.020	1261.	2.254	5.594
396000	372772	8.690	8.471	72.02	2.934	1262.	2.193	5.758
398000	374544	8.685	8.211	72.27	2.851	1264.	2.133	5.926
400000	376315	8.680	7.960 -12	72.52	2.770 +14	1266.	2.076 - 1	6.098 + 3
402000	378084	8.674	7.718	72.76	2.692	1268.	2.020	6.276
404000	379853	8.669	7.483	73.01	2.616	1270.	1.966	6.457
406000	381621	8.664	7.257	73.26	2.543	1271.	1.914	6.644
408000	383387	8.659	7.038	73.51	2.472	1273.	1.863	6.835
410000	385152	8.654	6.826	73.76	2.403	1275.	1.813	7.031
412000	386917	8.649	6.622	74.01	2.336	1277.	1.765	7.232
414000	388660	8.644	6.424	74.25	2.271	1278.	1.719	7.439
416000	390442	8.639	6.232	74.50	2.205	1280.	1.673	7.650
418000	392204	8.633	6.047	74.75	2.147	1282.	1.629	7.867
420000	393964	8.628	5.868 -12	75.00	2.088 +14	1284.	1.587 - 1	8.090 + 3
422000	395723	8.623	5.695	75.25	2.031	1285.	1.545	8.318
424000	397481	8.618	5.528	75.50	1.976	1287.	1.505	8.592
426000	399238	8.613	5.366	75.75	1.922	1289.	1.466	8.791
428000	400994	8.608	5.203	76.00	1.870	1291.	1.428	9.037
430000	402749	8.603	5.057	76.25	1.819	1292.	1.391	9.289
432000	404503	8.598	4.911	76.50	1.770	1294.	1.356	9.547
434000	406256	8.593	4.769	76.75	1.722	1296.	1.321	9.811
436000	408008	8.588	4.631	77.00	1.676	1298.	1.287	1.008 + 4
438000	409759	8.583	4.498	77.25	1.631	1299.	1.254	1.036
440000	411509	8.578	4.369 -12	77.50	1.587 +14	1301.	1.222 - 1	1.064 + 4
442000	413258	8.573	4.244	77.75	1.545	1303.	1.191	1.094
444000	415006	8.568	4.123	78.00	1.504	1305.	1.161	1.123
446000	416752	8.562	4.006	78.25	1.464	1306.	1.132	1.154
448000	418498	8.557	3.893	78.50	1.425	1308.	1.103	1.185
450000	420243	8.552	3.783	78.75	1.388	1310.	1.076	1.217
452000	421987	8.547	3.676	79.01	1.351	1311.	1.049	1.250
454000	423729	8.542	3.573	79.26	1.316	1313.	1.023	1.284
456000	425471	8.537	3.473	79.51	1.281	1315.	9.973 - 2	1.318
458000	427211	8.532	3.376	79.76	1.248	1316.	9.725	1.354

ALTITUDE Z, m	ACCEL. OF GRAV.	SPECIFIC WEIGHT $\omega, \text{kg/m}^3$	SCALE HEIGHT H_s, km	NUMBER DENSITY n, m^{-3}	PART. SPEED $\bar{v}, \text{m sec}^{-1}$	COLL. FREQ. v, sec^{-1}	MEAN FREE PATH L, m			
							-12	+14		
460000	428951	8.527	3.283	80.01	1.216	1318.	9.485	-2	1.390 + 4	
462000	430690	8.522	3.192	80.26	1.184	1320.	9.251		1.427	
464000	432427	8.517	3.103	80.52	1.154	1321.	9.023		1.465	
466000	434164	8.512	3.018	80.77	1.124	1323.	8.802		1.503	
468000	435899	8.507	2.935	81.02	1.095	1325.	8.587		1.543	
470000	437634	8.502	2.855	81.27	1.067	1327.	8.377		1.584	
472000	439367	8.497	2.777	81.53	1.040	1328.	8.173		1.625	
474000	441100	8.492	2.701	81.78	1.013	1330.	7.975		1.668	
476000	442831	8.487	2.628	82.03	9.874	+13	7.782		1.711	
478000	444562	8.482	2.557	82.28	9.624	1332.	7.594		1.756	
480000	446291	8.477	2.488	-12	82.54	9.380	+13	1335.	7.411 -2	1.801 + 4
482000	448019	8.472	2.421	82.79	9.144	1336.	7.234		1.848	
484000	449747	8.468	2.356	83.04	8.914	1338.	7.060		1.895	
486000	451473	8.463	2.293	83.30	8.691	1340.	6.892		1.944	
488000	453199	8.458	2.232	83.55	8.473	1341.	6.728		1.994	
490000	454923	8.453	2.173	83.81	8.262	1343.	6.568		2.045	
492000	456646	8.448	2.115	84.06	8.057	1345.	6.413		2.097	
494000	458369	8.443	2.059	84.31	7.857	1346.	6.261		2.150	
496000	460090	8.438	2.005	84.57	7.663	1348.	6.114		2.205	
498000	461810	8.433	1.952	84.82	7.474	1350.	5.970		2.261	
500000	463530	8.428	1.901	-12	85.08	7.290	+13	1351.	5.830 -2	2.318 + 4
502000	465248	8.423	1.852	85.33	7.111	1353.	5.694		2.376	
504000	466965	8.418	1.803	85.59	6.937	1355.	5.562		2.435	
506000	468682	8.413	1.757	85.84	6.768	1356.	5.432		2.496	
508000	470397	8.408	1.711	86.10	6.603	1358.	5.307		2.559	
510000	472111	8.403	1.667	86.35	6.443	1359.	5.184		2.622	
512000	473825	8.399	1.624	86.61	6.287	1361.	5.064		2.687	
514000	475537	8.394	1.582	86.86	6.135	1363.	4.948		2.754	
516000	477248	8.389	1.542	87.12	5.987	1364.	4.835		2.822	
518000	478959	8.384	1.502	87.37	5.844	1366.	4.724		2.891	
520000	480668	8.379	1.464	-12	87.63	5.704	+13	1367.	4.616 -2	2.962 + 4
522000	482376	8.374	1.427	87.89	5.567	1369.	4.511		3.035	
524000	484084	8.369	1.391	88.14	5.435	1371.	4.409		3.109	
526000	485790	8.364	1.356	88.40	5.306	1372.	4.309		3.184	
528000	487495	8.360	1.322	88.65	5.180	1374.	4.212		3.262	
530000	489200	8.355	1.289	88.91	5.057	1375.	4.117		3.341	
532000	490903	8.350	1.256	89.17	4.936	1377.	4.025		3.421	
534000	492606	8.345	1.225	89.42	4.802	1379.	3.935		3.504	
536000	494307	8.340	1.194	89.68	4.709	1380.	3.847		3.588	
538000	496007	8.335	1.165	89.94	4.599	1382.	3.761		3.674	
540000	497707	8.330	1.136	-12	90.19	4.492	+13	1383.	3.677 -2	3.761 + 4
542000	499405	8.326	1.108	90.45	4.387	1385.	3.596		3.851	
544000	501103	8.321	1.081	90.71	4.285	1386.	3.517		3.942	
546000	502799	8.316	1.054	90.97	4.186	1388.	3.439		4.056	
548000	504495	8.311	1.026	91.22	4.080	1389.	3.363		4.131	
550000	506189	8.306	1.003	91.48	3.985	1391.	3.290		4.229	
552000	507885	8.302	9.788	-13	91.74	3.904	1393.	3.218		4.308
554000	509575	8.297	9.550	92.00	3.814	1394.	3.147		4.429	
556000	511267	8.292	9.319	92.26	3.727	1396.	3.079		4.533	
558000	512957	8.287	9.094	92.52	3.642	1397.	3.018		4.639	
560000	514647	8.282	8.875	-13	92.77	3.559	+13	1399.	2.947 -2	4.747 + 4
562000	516336	8.278	8.662	93.03	3.479	1400.	2.853		4.857	
564000	518023	8.273	8.454	93.29	3.400	1402.	2.821		4.969	
566000	519710	8.268	8.258	93.55	3.323	1403.	2.761		5.084	
568000	521396	8.263	8.056	93.81	3.248	1405.	2.701		5.201	
570000	523080	8.258	7.864	94.07	3.176	1407.	2.644		5.320	
572000	524764	8.254	7.678	94.33	3.104	1408.	2.587		5.442	
574000	526447	8.249	7.497	94.59	3.035	1410.	2.522		5.566	
576000	528129	8.244	7.320	94.85	2.968	1411.	2.479		5.693	
578000	529810	8.239	7.148	95.11	2.902	1413.	2.426		5.823	

ACCEL. OF GRAV.	ALTITUDE	SPECIFIC WEIGHT	SCALE HEIGHT	NUMBER DENSITY	PART. SPEED	COLL. FREQ.	MEAN FREE PATH				
Z, m	H, m	g, m sec ⁻²	$\omega, \text{kgf m}^{-3}$	H_s, km	n, m ⁻³	v, m sec ⁻¹	v, sec ⁻¹	L, m			
580000	531489	8.235	6.980	-13	95.37	2.837	+13	1414.	2.375	- 2	5.955 + 4
582000	533168	8.230	6.817		95.63	2.775		1416.	2.325		6.089
584000	534846	8.225	6.658		95.89	2.713		1417.	2.276		6.226
586000	536523	8.220	6.503		96.15	2.654		1419.	2.228		6.366
588000	538199	8.216	6.352		96.41	2.595		1420.	2.182		6.509
590000	539874	8.211	6.205		96.67	2.539		1422.	2.136		6.655
592000	541548	8.206	6.062		96.93	2.483		1423.	2.092		6.803
594000	543221	8.201	5.922		97.19	2.429		1425.	2.049		6.955
596000	544893	8.197	5.786		97.45	2.370		1426.	2.006		7.109
598000	546565	8.192	5.654		97.71	2.325		1428.	1.965		7.267
600000	548235	8.187	5.525	-13	97.97	2.275	+13	1429.	1.924	- 2	7.427 + 4
602000	549904	8.183	5.399		98.23	2.226		1431.	1.885		7.591
604000	551572	8.178	5.276		98.50	2.178		1432.	1.846		7.738
606000	553240	8.173	5.156		98.76	2.131		1434.	1.808		7.928
608000	554906	8.168	5.040		99.02	2.085		1435.	1.772		8.101
610000	556571	8.164	4.926		99.28	2.041		1437.	1.736		8.278
612000	558236	8.159	4.815		99.54	1.997		1438.	1.700		8.458
614000	559899	8.154	4.707		99.81	1.955		1440.	1.666		8.642
616000	561562	8.150	4.602		100.1	1.914		1441.	1.632		8.829
618000	563224	8.145	4.499		100.3	1.875		1443.	1.599		9.019
620000	564884	8.140	4.399	-13	100.6	1.834	+13	1444.	1.567	- 2	9.214 + 4
622000	566544	8.136	4.301		100.9	1.795		1445.	1.536		9.412
624000	568203	8.131	4.206		101.1	1.757		1447.	1.505		9.613
626000	569860	8.126	4.113		101.4	1.721		1448.	1.475		9.819
628000	571517	8.122	4.022		101.6	1.685		1450.	1.446		1.003 + 5
630000	573173	8.117	3.934		101.9	1.650		1451.	1.417		1.024
632000	574828	8.112	3.847		102.2	1.615		1453.	1.389		1.046
634000	576482	8.108	3.763		102.4	1.582		1454.	1.362		1.068
636000	578135	8.103	3.681		102.7	1.549		1456.	1.335		1.091
638000	579787	8.098	3.601		103.0	1.517		1457.	1.309		1.114
640000	581438	8.094	3.523	-13	103.2	1.486	+13	1459.	1.283	- 2	1.137 + 5
642000	583088	8.089	3.446		103.5	1.455		1460.	1.250		1.161
644000	584738	8.085	3.372		103.8	1.426		1462.	1.233		1.185
646000	586386	8.080	3.299		104.0	1.396		1463.	1.209		1.210
648000	588033	8.075	3.228		104.3	1.368		1464.	1.186		1.235
650000	589680	8.071	3.159		104.5	1.340		1466.	1.163		1.261
652000	591325	8.066	3.091		104.8	1.313		1467.	1.140		1.287
654000	592970	8.061	3.025		105.1	1.286		1469.	1.118		1.313
656000	594613	8.057	2.961		105.3	1.260		1470.	1.097		1.340
658000	596256	8.052	2.898		105.6	1.235		1472.	1.076		1.368
660000	597898	8.048	2.837	-13	105.9	1.210	+13	1473.	1.055	- 2	1.396 + 5
662000	599538	8.043	2.777		106.1	1.186		1474.	1.035		1.425
664000	601178	8.038	2.718		106.4	1.162		1476.	1.015		1.454
666000	602817	8.034	2.661		106.7	1.139		1477.	9.959	- 3	1.483
668000	604455	8.029	2.605		106.9	1.116		1479.	9.770		1.513
670000	606092	8.025	2.551		107.2	1.094		1480.	9.585		1.544
672000	607728	8.020	2.497		107.5	1.072		1481.	9.404		1.575
674000	609363	8.016	2.445		107.7	1.051		1483.	9.227		1.607
676000	610998	8.011	2.394		108.0	1.031		1484.	9.054		1.639
678000	612631	8.006	2.345		108.3	1.010		1486.	8.884		1.672
680000	614263	8.002	2.296	-13	108.5	9.904	+12	1487.	8.718	- 3	1.706 + 5
682000	615895	7.997	2.249		108.8	9.710		1489.	8.555		1.740
684000	617525	7.993	2.202		109.1	9.529		1490.	8.396		1.775
686000	619155	7.988	2.157		109.3	9.335		1491.	8.240		1.810
688000	620784	7.984	2.113		109.6	9.153		1493.	8.087		1.846
690000	622411	7.979	2.070		109.9	8.975		1494.	7.938		1.882
692000	624038	7.975	2.028		110.1	8.802		1496.	7.791		1.920
694000	625664	7.970	1.986		110.4	8.632		1497.	7.648		1.957
696000	627289	7.966	1.946		110.7	8.465		1498.	7.507		1.996
698000	628913	7.961	1.907		110.9	8.302		1500.	7.370		2.035
700000	630536	7.957	1.868	-13	111.2	8.143	+12	1501.	7.235	- 3	2.075 + 5

TABLE IC

**ATMOSPHERIC PROPERTIES AS A FUNCTION OF ALTITUDE,
METRIC UNITS**

Sound Speed, Viscosity, Kinematic Viscosity, and Thermal Conductivity

NOTE: A one- or two-digit number (preceded by a plus or minus sign) following the initial entry of each block indicates the power of 10 by which that entry and each succeeding entry of that block should be multiplied. A change of power occurring within a block is indicated by a similar notation.

ALTITUDE Z, m	E, m ¹	SOUND SPEED C_s , m sec ⁻¹	COEF. OF VISCOSITY μ , kg m ⁻¹ sec ⁻¹	KIN. VISCOSITY η , m ² sec ⁻¹	THERMAL CONDUCT. k, kg cal m ⁻¹ sec ⁻¹ (°K) ⁻¹		
					5000	4900	
- 5000	- 5004	358.98	1.9423	5	1.0066	- 5	
- 4900	- 4904	358.62	1.9393		1.0129	6.6428	
- 4800	- 4804	358.25	1.9363		1.0202	6.6309	
- 4700	- 4703	357.89	1.9333		1.0275	6.6191	
- 4600	- 4603	357.52	1.9303		1.0349	6.6072	
- 4500	- 4503	357.16	1.9273		1.0423	6.5953	
- 4400	- 4403	356.79	1.9243		1.0498	6.5834	
- 4300	- 4303	356.42	1.9213		1.0574	6.5715	
- 4200	- 4203	356.06	1.9183		1.0650	6.5596	
- 4100	- 4103	355.69	1.9153		1.0728	6.5477	
- 4000	- 4003	355.32	1.9123	- 5	1.0806	- 5	
- 3900	- 3902	354.95	1.9093		1.0884	6.5239	
- 3800	- 3802	354.58	1.9063		1.0963	6.5120	
- 3700	- 3702	354.22	1.9033		1.1044	6.5000	
- 3600	- 3602	353.85	1.9003		1.1124	6.4881	
- 3500	- 3502	353.48	1.8972		1.1206	6.4761	
- 3400	- 3402	353.11	1.8942		1.1288	6.4642	
- 3300	- 3302	352.74	1.8912		1.1371	6.4522	
- 3200	- 3202	352.37	1.8881		1.1455	6.4402	
- 3100	- 3102	351.99	1.8851		1.1540	6.4283	
- 3000	- 3001	351.62	1.8821	- 5	1.1625	- 5	
- 2900	- 2901	351.25	1.8790		1.1712	6.4043	
- 2800	- 2801	350.88	1.8760		1.1799	6.3923	
- 2700	- 2701	350.51	1.8729		1.1887	6.3803	
- 2600	- 2601	350.13	1.8699		1.1975	6.3682	
- 2500	- 2501	349.76	1.8668		1.2065	6.3562	
- 2400	- 2401	349.39	1.8638		1.2155	6.3442	
- 2300	- 2301	349.01	1.8607		1.2246	6.3321	
- 2200	- 2201	348.64	1.8576		1.2339	6.3201	
- 2100	- 2101	348.26	1.8546		1.2432	6.3080	
- 2000	- 2001	347.89	1.8515	- 5	1.2526	- 5	
- 1900	- 1901	347.51	1.8484		1.2620	6.2839	
- 1800	- 1801	347.13	1.8454		1.2716	6.2718	
- 1700	- 1700	346.76	1.8423		1.2813	6.2598	
- 1600	- 1600	346.38	1.8392		1.2910	6.2477	
- 1500	- 1500	346.00	1.8361		1.3009	6.2356	
- 1400	- 1400	345.62	1.8330		1.3108	6.2235	
- 1300	- 1300	345.25	1.8299		1.3209	6.2114	
- 1200	- 1200	344.87	1.8268		1.3310	6.1992	
- 1100	- 1100	344.49	1.8237		1.3412	6.1871	
- 1000	- 1000	344.11	1.8206	- 5	1.3516	- 5	
- 900	- 900	343.73	1.8175		1.3620	6.1628	
- 800	- 800	343.35	1.8144		1.3726	6.1507	
- 700	- 700	342.97	1.8113		1.3832	6.1385	
- 600	- 600	342.59	1.8082		1.3940	6.1264	
- 500	- 500	342.21	1.8051		1.4048	6.1142	
- 400	- 400	341.82	1.8019		1.4156	6.1020	
- 300	- 300	341.44	1.7988		1.4269	6.0898	
- 200	- 200	341.06	1.7957		1.4380	6.0776	
- 100	- 100	340.68	1.7926		1.4493	6.0654	
0	0	340.29	1.7894	- 5	1.4607	- 5	
100	100	339.91	1.7863		1.4723	6.0410	
200	200	339.52	1.7831		1.4839	6.0288	
300	300	339.14	1.7800		1.4957	6.0165	
400	400	338.75	1.7769		1.5075	6.0043	
500	500	338.37	1.7737		1.5195	5.9921	
600	600	337.98	1.7706		1.5316	5.9798	
700	700	337.60	1.7674		1.5439	5.9676	
800	800	337.21	1.7642		1.5562	5.9553	
900	900	336.82	1.7611		1.5687	5.9430	

ALTITUDE Z, m	H, m'	SOUND C _s , m sec ⁻¹	COEF. OF VISCOSITY μ , kg m ⁻¹ sec ⁻¹	KIN. VISCOSITY η , m ² sec ⁻¹	THERMAL CONDUCT. k, kgcal m ⁻¹ sec ⁻¹ (°K) ⁻¹	
					-5	-6
1000	1000	336.43	1.7579	1.5813	5.9307	5.9307
1100	1100	336.04	1.7547	1.5941	5.9184	5.9184
1200	1200	335.66	1.7516	1.6069	5.9061	5.9061
1300	1300	335.27	1.7484	1.6199	5.8938	5.8938
1400	1400	334.88	1.7452	1.6331	5.8815	5.8815
1500	1500	334.49	1.7420	1.6463	5.8692	5.8692
1600	1600	334.10	1.7388	1.6597	5.8569	5.8569
1700	1700	333.71	1.7356	1.6733	5.8445	5.8445
1800	1799	333.31	1.7324	1.6870	5.8322	5.8322
1900	1899	332.92	1.7292	1.7008	5.8198	5.8198
2000	1999	332.53	1.7260	1.7148	5.8075	5.8075
2100	2099	332.14	1.7228	1.7289	5.7951	5.7951
2200	2199	331.74	1.7196	1.7432	5.7827	5.7827
2300	2299	331.35	1.7164	1.7576	5.7704	5.7704
2400	2399	330.96	1.7132	1.7722	5.7580	5.7580
2500	2499	330.56	1.7100	1.7869	5.7456	5.7456
2600	2599	330.17	1.7067	1.8018	5.7332	5.7332
2700	2699	329.77	1.7035	1.8168	5.7208	5.7208
2800	2799	329.38	1.7003	1.8320	5.7084	5.7084
2900	2899	328.98	1.6971	1.8473	5.6959	5.6959
3000	2999	328.58	1.6938	1.8629	5.6835	5.6835
3100	3098	328.18	1.6906	1.8785	5.6711	5.6711
3200	3198	327.79	1.6873	1.8944	5.6586	5.6586
3300	3298	327.39	1.6841	1.9104	5.6461	5.6461
3400	3398	326.99	1.6808	1.9266	5.6337	5.6337
3500	3498	326.59	1.6776	1.9430	5.6212	5.6212
3600	3598	326.19	1.6743	1.9595	5.6087	5.6087
3700	3698	325.79	1.6711	1.9762	5.5963	5.5963
3800	3798	325.39	1.6678	1.9931	5.5838	5.5838
3900	3898	324.99	1.6645	2.0102	5.5713	5.5713
4000	3997	324.59	1.6612	2.0275	5.5587	5.5587
4100	4097	324.19	1.6580	2.0450	5.5462	5.5462
4200	4197	323.78	1.6547	2.0626	5.5337	5.5337
4300	4297	323.38	1.6514	2.0805	5.5212	5.5212
4400	4397	322.98	1.6481	2.0985	5.5086	5.5086
4500	4497	322.57	1.6448	2.1168	5.4961	5.4961
4600	4597	322.17	1.6415	2.1352	5.4835	5.4835
4700	4697	321.76	1.6382	2.1539	5.4710	5.4710
4800	4796	321.36	1.6349	2.1727	5.4584	5.4584
4900	4896	320.95	1.6316	2.1918	5.4458	5.4458
5000	4996	320.54	1.6283	2.2111	5.4332	5.4332
5100	5095	320.14	1.6250	2.2306	5.4207	5.4207
5200	5196	319.73	1.6217	2.2503	5.4081	5.4081
5300	5296	319.32	1.6183	2.2702	5.3955	5.3955
5400	5395	318.91	1.6150	2.2904	5.3828	5.3828
5500	5495	318.50	1.6117	2.3108	5.3702	5.3702
5600	5595	318.09	1.6084	2.3314	5.3576	5.3576
5700	5695	317.68	1.6050	2.3522	5.3449	5.3449
5800	5795	317.27	1.6017	2.3733	5.3323	5.3323
5900	5895	316.86	1.5983	2.3947	5.3197	5.3197
6000	5994	316.45	1.5950	2.4162	5.3070	5.3070
6100	6094	316.04	1.5916	2.4381	5.2943	5.2943
6200	6194	315.63	1.5883	2.4601	5.2817	5.2817
6300	6294	315.21	1.5849	2.4824	5.2690	5.2690
6400	6394	314.80	1.5815	2.5050	5.2563	5.2563
6500	6493	314.38	1.5782	2.5279	5.2436	5.2436
6600	6593	313.97	1.5748	2.5510	5.2309	5.2309
6700	6693	313.55	1.5714	2.5744	5.2182	5.2182
6800	6793	313.14	1.5680	2.5980	5.2054	5.2054
6900	6893	312.72	1.5647	2.6219	5.1927	5.1927

ALTITUDE Z, m	H, m	SOUND SPEED $C_s, \text{m sec}^{-1}$	COEF. OF VISCOSITY $\mu, \text{kg m}^{-1} \text{sec}^{-1}$	KIN. VISCOSEITY $\eta, \text{m}^2 \text{sec}^{-1}$	THERMAL CONDUCT. $k, \text{kg cal m}^{-1} \text{sec}^{-1} (\text{°K})^{-1}$	
					-	-
7000	6992	312.30	1.5613 - 5	2.6462 - 5	5.1800	- 6
7100	7092	311.89	1.5579	2.6706	5.1672	
7200	7192	311.47	1.5545	2.6954	5.1545	
7300	7292	311.05	1.5511	2.7205	5.1417	
7400	7391	310.63	1.5477	2.7459	5.1290	
7500	7491	310.21	1.5443	2.7715	5.1162	
7600	7591	309.79	1.5409	2.7975	5.1034	
7700	7691	309.37	1.5374	2.8238	5.0906	
7800	7790	308.95	1.5340	2.8504	5.0778	
7900	7890	308.53	1.5306	2.8773	5.0650	
8000	7990	308.10	1.5272 - 5	2.9046 - 5	5.0522	- 6
8100	8090	307.68	1.5237	2.9321	5.0394	
8200	8189	307.26	1.5203	2.9600	5.0266	
8300	8289	306.83	1.5169	2.9883	5.0137	
8400	8389	306.41	1.5134	3.0169	5.0009	
8500	8489	305.98	1.5100	3.0458	4.9880	
8600	8588	305.56	1.5065	3.0751	4.9752	
8700	8688	305.13	1.5031	3.1047	4.9623	
8800	8788	304.70	1.4996	3.1347	4.9495	
8900	8888	304.28	1.4961	3.1651	4.9366	
9000	8987	303.85	1.4927 - 5	3.1958 - 5	4.9237	- 6
9100	9087	303.42	1.4892	3.2270	4.9108	
9200	9187	302.99	1.4857	3.2585	4.8979	
9300	9286	302.56	1.4822	3.2904	4.8850	
9400	9386	302.13	1.4787	3.3227	4.8721	
9500	9486	301.70	1.4752	3.3554	4.8591	
9600	9586	301.27	1.4717	3.3885	4.8462	
9700	9685	300.83	1.4682	3.4221	4.8333	
9800	9785	300.40	1.4647	3.4560	4.8203	
9900	9885	299.97	1.4612	3.4904	4.8074	
10000	9984	299.53	1.4577 - 5	3.5253 - 5	4.7944	- 6
10100	10084	299.10	1.4542	3.5605	4.7815	
10200	10184	298.66	1.4507	3.5962	4.7685	
10300	10283	298.22	1.4472	3.6324	4.7555	
10400	10383	297.79	1.4436	3.6690	4.7425	
10500	10483	297.35	1.4401	3.7061	4.7295	
10600	10582	296.91	1.4365	3.7437	4.7165	
10700	10682	296.47	1.4330	3.7818	4.7035	
10800	10782	296.03	1.4295	3.8204	4.6905	
10900	10881	295.59	1.4259	3.8594	4.6774	
11000	10981	295.15	1.4223 - 5	3.8990 - 5	4.6644	- 6
11100	11081	295.07	1.4217	3.9566	4.6619	
11200	11180	295.07	1.4217	4.0193	4.6619	
11300	11280	295.07	1.4217	4.0829	4.6619	
11400	11380	295.07	1.4217	4.1476	4.6619	
11500	11479	295.07	1.4217	4.2133	4.6619	
11600	11579	295.07	1.4217	4.2800	4.6619	
11700	11679	295.07	1.4217	4.3478	4.6619	
11800	11778	295.07	1.4217	4.4166	4.6619	
11900	11878	295.07	1.4217	4.4865	4.6619	
12000	11977	295.07	1.4217 - 5	4.5576 - 5	4.6619	- 6
12100	12077	295.07	1.4217	4.6297	4.6619	
12200	12177	295.07	1.4217	4.7030	4.6619	
12300	12276	295.07	1.4217	4.7775	4.6619	
12400	12376	295.07	1.4217	4.8531	4.6619	
12500	12475	295.07	1.4217	4.9300	4.6619	
12600	12575	295.07	1.4217	5.0080	4.6619	
12700	12675	295.07	1.4217	5.0873	4.6619	
12800	12774	295.07	1.4217	5.1678	4.6619	
12900	12874	295.07	1.4217	5.2496	4.6619	

ALTITUDE Z, m	SOUND H, m ¹	COEF. OF $C_s, \text{m sec}^{-1}$	KIN. VISCOSITY $\mu, \text{kg m}^{-1} \text{sec}^{-1}$	THERMAL CONDUCT. $k, \text{kgcal m}^{-1} \text{sec}^{-1} (\text{°K})^{-1}$
			$\eta, \text{m}^2 \text{sec}^{-1}$	
13000	12973	295.07	1.4217 - 5	4.6619 - 6
13100	13073	295.07	1.4217	4.6619
13200	13173	295.07	1.4217	4.6619
13300	13272	295.07	1.4217	4.6619
13400	13372	295.07	1.4217	4.6619
13500	13471	295.07	1.4217	4.6619
13600	13571	295.07	1.4217	4.6619
13700	13671	295.07	1.4217	4.6619
13800	13770	295.07	1.4217	4.6619
13900	13870	295.07	1.4217	4.6619
14000	13969	295.07	1.4217 - 5	4.6619 - 6
14100	14069	295.07	1.4217	4.6619
14200	14168	295.07	1.4217	4.6619
14300	14268	295.07	1.4217	4.6619
14400	14367	295.07	1.4217	4.6619
14500	14467	295.07	1.4217	4.6619
14600	14567	295.07	1.4217	4.6619
14700	14666	295.07	1.4217	4.6619
14800	14766	295.07	1.4217	4.6619
14900	14865	295.07	1.4217	4.6619
15000	14965	295.07	1.4217 - 5	4.6619 - 6
15100	15064	295.07	1.4217	4.6619
15200	15164	295.07	1.4217	4.6619
15300	15263	295.07	1.4217	4.6619
15400	15363	295.07	1.4217	4.6619
15500	15462	295.07	1.4217	4.6619
15600	15562	295.07	1.4217	4.6619
15700	15661	295.07	1.4217	4.6619
15800	15761	295.07	1.4217	4.6619
15900	15860	295.07	1.4217	4.6619
16000	15960	295.07	1.4217 - 5	4.6619 - 6
16100	16059	295.07	1.4217	4.6619
16200	16159	295.07	1.4217	4.6619
16300	16258	295.07	1.4217	4.6619
16400	16358	295.07	1.4217	4.6619
16500	16457	295.07	1.4217	4.6619
16600	16557	295.07	1.4217	4.6619
16700	16656	295.07	1.4217	4.6619
16800	16756	295.07	1.4217	4.6619
16900	16855	295.07	1.4217	4.6619
17000	16955	295.07	1.4217 - 5	4.6619 - 6
17100	17054	295.07	1.4217	4.6619
17200	17154	295.07	1.4217	4.6619
17300	17253	295.07	1.4217	4.6619
17400	17353	295.07	1.4217	4.6619
17500	17452	295.07	1.4217	4.6619
17600	17551	295.07	1.4217	4.6619
17700	17651	295.07	1.4217	4.6619
17800	17750	295.07	1.4217	4.6619
17900	17850	295.07	1.4217	4.6619
18000	17949	295.07	1.4217 - 5	4.6619 - 6
18100	18049	295.07	1.4217	4.6619
18200	18148	295.07	1.4217	4.6619
18300	18247	295.07	1.4217	4.6619
18400	18347	295.07	1.4217	4.6619
18500	18446	295.07	1.4217	4.6619
18600	18546	295.07	1.4217	4.6619
18700	18645	295.07	1.4217	4.6619
18800	18745	295.07	1.4217	4.6619
18900	18844	295.07	1.4217	4.6619

ALTITUDE Z, m	H, m'	SOUND SPEED $C_s, \text{m sec}^{-1}$	COEF. OF VISCOSITY $\mu, \text{kg m}^{-1} \text{sec}^{-1}$	KIN. VISCOSITY $\eta, \text{m}^2 \text{sec}^{-1}$	THERMAL CONDUCT. $k, \text{kgcal m}^{-1} \text{sec}^{-1} (\text{°K})^{-1}$	
					-	-
19000	18943	295.07	1.4217 - 5	1.3671 - 4	4.6619	- 6
19100	19043	295.07	1.4217	1.3687	4.6619	
19200	19142	295.07	1.4217	1.4106	4.6619	
19300	19242	295.07	1.4217	1.4329	4.6619	
19400	19341	295.07	1.4217	1.4555	4.6619	
19500	19440	295.07	1.4217	1.4785	4.6619	
19600	19540	295.07	1.4217	1.5019	4.6619	
19700	19639	295.07	1.4217	1.5256	4.6619	
19800	19739	295.07	1.4217	1.5497	4.6619	
19900	19838	295.07	1.4217	1.5742	4.6619	
20000	19937	295.07	1.4217 - 5	1.5990 - 4	4.6619	- 6
20200	20136	295.07	1.4217	1.6499	4.6619	
20400	20335	295.07	1.4217	1.7024	4.6619	
20600	20533	295.07	1.4217	1.7566	4.6619	
20800	20732	295.07	1.4217	1.8125	4.6619	
21000	20931	295.07	1.4217	1.8702	4.6619	
21200	21130	295.07	1.4217	1.9298	4.6619	
21400	21328	295.07	1.4217	1.9912	4.6619	
21600	21527	295.07	1.4217	2.0545	4.6619	
21800	21725	295.07	1.4217	2.1199	4.6619	
22000	21924	295.07	1.4217 - 5	2.1874 - 4	4.6619	- 6
22200	22123	295.07	1.4217	2.2569	4.6619	
22400	22321	295.07	1.4217	2.3287	4.6619	
22600	22520	295.07	1.4217	2.4028	4.6619	
22800	22719	295.07	1.4217	2.4793	4.6619	
23000	22917	295.07	1.4217	2.5581	4.6619	
23200	23116	295.07	1.4217	2.6395	4.6619	
23400	23314	295.07	1.4217	2.7234	4.6619	
23600	23513	295.07	1.4217	2.8100	4.6619	
23800	23711	295.07	1.4217	2.8994	4.6619	
24000	23910	295.07	1.4217 - 5	2.9916 - 4	4.6619	- 6
24200	24108	295.07	1.4217	3.0867	4.6619	
24400	24307	295.07	1.4217	3.1848	4.6619	
24600	24505	295.07	1.4217	3.2861	4.6619	
24800	24704	295.07	1.4217	3.3905	4.6619	
25000	24902	295.07	1.4217	3.4983	4.6619	
25200	25100	295.27	1.4233	3.6187	4.6680	
25400	25299	295.68	1.4266	3.7522	4.6800	
25600	25497	296.08	1.4299	3.8903	4.6919	
25800	25696	296.49	1.4331	4.0330	4.7039	
26000	25894	296.89	1.4364 - 5	4.1805 - 4	4.7158	- 6
26200	26092	297.29	1.4396	4.3330	4.7278	
26400	26291	297.69	1.4429	4.4906	4.7397	
26600	26489	298.10	1.4461	4.6535	4.7517	
26800	26687	298.50	1.4494	4.8216	4.7636	
27000	26886	298.90	1.4526	4.9956	4.7755	
27200	27084	299.30	1.4558	5.1753	4.7874	
27400	27282	299.70	1.4590	5.3609	4.7993	
27600	27481	300.09	1.4623	5.5526	4.8112	
27800	27679	300.49	1.4655	5.7506	4.8231	
28000	27877	300.89	1.4687 - 5	5.9550 - 4	4.8350	- 6
28200	28075	301.29	1.4719	6.1662	4.8469	
28400	28274	301.68	1.4751	6.3842	4.8587	
28600	28472	302.08	1.4783	6.6093	4.8706	
28800	28670	302.47	1.4815	6.8417	4.8824	
29000	28868	302.87	1.4847	7.0817	4.8943	
29200	29066	303.26	1.4879	7.3293	4.9061	
29400	29265	303.66	1.4911	7.5849	4.9179	
29600	29463	304.05	1.4943	7.8487	4.9298	
29800	29661	304.44	1.4975	8.1209	4.9416	

ALTITUDE Z, m	H, m	SOUND C _s , m sec ⁻¹	COEF. OF VISCOSITY $\mu, \text{kg m}^{-1} \text{sec}^{-1}$	KIN. VISCOSITY $\eta, \text{m}^2 \text{sec}^{-1}$	THERMAL CONDUCT. k, kg cal m ⁻¹ sec ⁻¹ (°K) ⁻¹	
					-5	-4
30000	29859	304.85	1.5006	8.4016	4.9554	-6
30200	30057	305.23	1.5038	8.6916	4.9652	
30400	30255	305.62	1.5070	8.9907	4.9770	
30600	30453	306.01	1.5102	9.2991	4.9888	
30800	30651	306.40	1.5133	9.6173	5.0005	
31000	30850	306.79	1.5165	9.9455	5.0123	
31200	31048	307.18	1.5196	1.0284	-3	5.0241
31400	31246	307.56	1.5228	1.0633		5.0358
31600	31444	307.95	1.5259	1.0993		5.0476
31800	31642	308.34	1.5291	1.1364		5.0593
32000	31840	308.73	1.5322	-5	1.1747	-3
32200	32038	309.11	1.5353		1.2141	5.0828
32400	32236	309.50	1.5385		1.2548	5.0945
32600	32434	309.88	1.5416		1.2967	5.1062
32800	32632	310.27	1.5447		1.3399	5.1179
33000	32830	310.65	1.5479		1.3844	5.1296
33200	33028	311.04	1.5510		1.4303	5.1413
33400	33225	311.42	1.5541		1.4776	5.1530
33600	33423	311.80	1.5572		1.5263	5.1647
33800	33621	312.18	1.5603		1.5765	5.1763
34000	33819	312.57	1.5634	-5	1.6282	-3
34200	34017	312.95	1.5665		1.6815	5.1996
34400	34215	313.33	1.5696		1.7363	5.2113
34600	34413	313.71	1.5727		1.7929	5.2229
34800	34611	314.09	1.5758		1.8511	5.2345
35000	34808	314.47	1.5789		1.9110	5.2462
35200	35006	314.85	1.5819		1.9727	5.2578
35400	35204	315.23	1.5850		2.0363	5.2694
35600	35402	315.60	1.5881		2.1017	5.2810
35800	35600	315.98	1.5912		2.1691	5.2926
36000	35797	316.36	1.5942	-5	2.2384	-3
36200	35995	316.74	1.5973		2.3098	5.3157
36400	36193	317.11	1.6004		2.3873	5.3273
36600	36390	317.49	1.6034		2.4659	5.3389
36800	36588	317.86	1.6065		2.5468	5.3504
37000	36786	318.24	1.6095		2.6168	5.3620
37200	36984	318.61	1.6126		2.6993	5.3735
37400	37181	318.98	1.6156		2.7841	5.3851
37600	37379	319.36	1.6186		2.8713	5.3966
37800	37577	319.73	1.6217		2.9611	5.4081
38000	37774	320.10	1.6247	-5	3.0524	-3
38200	37972	320.48	1.6277		3.1484	5.4311
38400	38169	320.85	1.6308		3.2461	5.4426
38600	38367	321.22	1.6338		3.3446	5.4541
38800	38565	321.59	1.6368		3.4429	5.4656
39000	38762	321.96	1.6398		3.5412	5.4771
39200	38960	322.33	1.6428		3.6655	5.4885
39400	39157	322.70	1.6458		3.7778	5.5000
39600	39355	323.07	1.6488		3.8934	5.5114
39800	39552	323.43	1.6518		4.0121	5.5229
40000	39750	323.80	1.6548	-5	4.1348	-3
40200	39947	324.17	1.6578		4.2598	5.5343
40400	40145	324.54	1.6608		4.3868	5.5457
40600	40342	324.90	1.6638		4.5214	5.5572
40800	40540	325.27	1.6668		4.6577	5.5686
41000	40737	325.64	1.6698		4.7977	5.5791
41200	40935	326.00	1.6728		4.9417	5.6028
41400	41132	326.37	1.6757		5.0896	5.6142
41600	41330	326.73	1.6787		5.2415	5.6256
41800	41527	327.09	1.6817		5.3977	5.6369

ALTITUDE Z, m	H, m'	SOUND C _s , m sec ⁻¹	COEF. OF VISCOSITY $\mu, \text{kg m}^{-1} \text{sec}^{-1}$	KIN. VISCOSITY $\eta_h \text{m}^2 \text{sec}^{-1}$	THERMAL CONDUCT. k, kg cal m ⁻¹ sec ⁻¹ (°K) ⁻¹
					- -
42000	41724	327.46	1.6846 - 5	5.5381 - 3	5.6483 - 6
42200	41922	327.82	1.6876	5.7229	5.6597
42400	42119	328.18	1.6906	5.8921	5.6710
42600	42316	328.55	1.6935	6.0660	5.6823
42800	42514	328.91	1.6965	6.2446	5.6937
43000	42711	329.27	1.6994	6.4280	5.7050
43200	42908	329.63	1.7024	6.6164	5.7163
43400	43106	329.99	1.7053	6.8098	5.7276
43600	43303	330.35	1.7082	7.0034	5.7389
43800	43500	330.71	1.7112	7.2124	5.7502
44000	43698	331.07	1.7141 - 5	7.4218 - 3	5.7615 - 6
44200	43895	331.43	1.7170	7.6368	5.7726
44400	44092	331.79	1.7200	7.8575	5.7841
44600	44289	332.15	1.7229	8.0841	5.7954
44800	44486	332.50	1.7258	8.3167	5.8066
45000	44684	332.86	1.7287	8.5554	5.8179
45200	44881	333.22	1.7316	8.8004	5.8291
45400	45078	333.57	1.7346	9.0519	5.8404
45600	45275	333.93	1.7375	9.3099	5.8516
45800	45472	334.29	1.7404	9.5747	5.8628
46000	45670	334.64	1.7433 - 5	9.8465 - 3	5.8741 - 6
46200	45867	335.00	1.7462	1.0125 - 2	5.8853
46400	46064	335.35	1.7491	1.0411	5.8965
46600	46261	335.70	1.7519	1.0702	5.9077
46800	46458	336.06	1.7548	1.1006	5.9189
47000	46655	336.41	1.7577	1.1315	5.9300
47200	46852	336.76	1.7606	1.1632	5.9412
47400	47049	337.05	1.7635	1.1946	5.9496
47600	47246	337.05	1.7668	1.2234	5.9496
47800	47443	337.05	1.7698	1.2528	5.9496
48000	47640	337.05	1.7698 - 5	1.2830 - 2	5.9496 - 6
48200	47837	337.05	1.7698	1.3139	5.9496
48400	48034	337.05	1.7698	1.3436	5.9496
48600	48231	337.05	1.7698	1.3700	5.9496
48800	48428	337.05	1.7698	1.4112	5.9496
49000	48625	337.05	1.7698	1.4438	5.9496
49200	48822	337.05	1.7698	1.4800	5.9496
49400	49019	337.05	1.7698	1.5157	5.9496
49600	49216	337.05	1.7698	1.5524	5.9496
49800	49413	337.05	1.7698	1.5896	5.9496
50000	49610	337.05	1.7698 - 5	1.6279 - 2	5.9496 - 6
50500	50106	337.05	1.7698	1.7877	5.9496
51000	50304	337.05	1.7698	1.8535	5.9496
51500	51026	337.05	1.7698	1.9499	5.9496
52000	51578	337.05	1.7698	2.0651	5.9496
52500	52070	337.05	1.7698	2.1916	5.9496
53000	52562	337.05	1.7698	2.3259	5.9496
53500	53053	336.89	1.7616	2.4645	5.9451
54000	53545	335.96	1.7508	2.5798	5.9052
54500	54037	334.24	1.7400	2.7013	5.8613
55000	54528	332.90	1.7291 - 5	2.8296 - 2	5.8193 - 6
55500	55020	331.57	1.7182	2.9650	5.7772
56000	55511	330.82	1.7072	3.1079	5.7350
56500	56002	329.88	1.6968	3.2590	5.6927
57000	56493	327.38	1.6898	3.4187	5.6505
57500	56985	326.16	1.6741	3.5875	5.6079
58000	57476	324.80	1.6630	3.7661	5.5654
58500	57967	323.43	1.6518	3.9552	5.5228
59000	58457	322.06	1.6406	4.1554	5.4801
59500	58948	320.67	1.6294	4.3674	5.4373

ALTITUDE Z, m	H, m ²	SOUND C _s , m sec ⁻¹	COEF. OF VISCOSITY μ , kg m ⁻¹ sec ⁻¹	KIN. VISCOSITY η , m ² sec ⁻¹	THERMAL CONDUCT. k, kg cal m ⁻¹ sec ⁻¹ (°K) ⁻¹
60000	59439	319.29	1.6101 - 5	4.5922 - 2	5.3944 - 6
60500	59930	317.90	1.6067	4.8305	5.3514
61000	60420	316.50	1.5954	5.0834	5.3084
61500	60911	315.09	1.5839	5.3517	5.2653
62000	61401	313.68	1.5725	5.6367	5.2221
62500	61891	312.27	1.5610	5.9395	5.1788
63000	62382	310.84	1.5494	6.2615	5.1354
63500	62872	309.41	1.5378	6.6036	5.0919
64000	63362	307.98	1.5261	6.9682	5.0484
64500	63852	306.54	1.5144	7.3562	5.0047
65000	64342	305.09	1.5027 - 5	7.7696 - 2	4.9610 - 6
65500	64832	303.63	1.4909	8.2102	4.9172
66000	65322	302.17	1.4791	8.6802	4.8753
66500	65812	300.70	1.4672	9.1819	4.8293
67000	66301	299.22	1.4552	9.7175	4.7853
67500	66791	297.74	1.4432	1.0290 - 1	4.7411
68000	67280	296.25	1.4312	1.0902	4.6969
68500	67770	294.75	1.4191	1.1557	4.6526
69000	68259	293.25	1.4070	1.2258	4.6092
69500	68748	291.74	1.3948	1.3009	4.5637
70000	69238	290.22	1.3825 - 5	1.3815 - 1	4.5192 - 6
70500	69727	288.69	1.3702	1.4678	4.4743
71000	70216	287.15	1.3579	1.5605	4.4298
71500	70705	285.61	1.3455	1.6605	4.3850
72000	71194	284.06	1.3330	1.7674	4.3401
72500	71682	282.50	1.3205	1.8627	4.2951
73000	72171	280.93	1.3080	2.0068	4.2501
73500	72660	279.35	1.2953	2.1406	4.2050
74000	73148	277.76	1.2827	2.2849	4.1598
74500	73637	276.17	1.2699	2.4406	4.1145
75000	74125	274.57	1.2571 - 5	2.6089 - 1	4.0691 - 6
75500	74614	273.0	1.244	2.791	4.024
76000	75102	271.3	1.231	2.988	3.978
76500	75590	269.7	1.218	3.201	3.933
77000	76078	268.1	1.205	3.432	3.887
77500	76566	266.4	1.192	3.683	3.841
78000	77054	264.7	1.179	3.956	3.795
78500	77542	263.1	1.166	4.232	3.750
79000	78030	261.4	1.153	4.575	3.704
79500	78518	259.7	1.139	4.926	3.658
80000	79006	258.0	1.126 - 5	5.311 - 1	3.612 - 6
80500	79493	258.0	1.126	5.873	3.612
81000	79981	258.0	1.126	6.494	3.612
81500	80468	258.0	1.126	7.181	3.612
82000	80956	258.0	1.126	7.940	3.612
82500	81443	258.0	1.126	8.779	3.612
83000	81930	258.0	1.126	9.708	3.612
83500	82417	258.0	1.126	1.073 + 0	3.612
84000	82904	258.0	1.126	1.187	3.612
84500	83391	258.0	1.126	1.312	3.612
85000	83878	258.0	1.126 - 5	1.451 + 0	3.612 - 6
85500	84365	258.0	1.126	1.604	3.612
86000	84852	258.0	1.126	1.773	3.612
86500	85339	258.0	1.126	1.961	3.612
87000	85825	258.0	1.126	2.168	3.612
87500	86312	258.0	1.126	2.396	3.612
88000	86798	258.0	1.126	2.649	3.612
88500	87285	258.0	1.126	2.929	3.612
89000	87771	258.0	1.126	3.238	3.612
89500	88257	258.0	1.126	3.579	3.612
90000	88743	258.0	1.126	3.957	3.612

TABLE II A
ATMOSPHERIC PROPERTIES AS A FUNCTION OF ALTITUDE,
ENGLISH UNITS

Temperature, Pressure, Density, and Molecular Weight

NOTE: A one- or two-digit number (preceded by a plus or minus sign) following the initial entry of each block indicates the power of 10 by which that entry and each succeeding entry of that block should be multiplied. A change of power occurring within a block is indicated by a similar notation.

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE P, lbf ft ⁻²	DENSITY			MOL. WEIGHT M
				P, in. Hg	$\rho, \text{lb}^{\circ} \text{sec}^2 \text{ft}^{-4}$	$\rho, \text{lb ft}^{-3}$	
-16500	-15513	577.58	1.7518 + 3	3.6588 + 3	5.1732 + 1	3.6905 - 3	1.1874 - 1 28.966
-16000	-16042	575.79	1.7544	3.6641	5.1807	3.7074	1.1928 28.966
-15500	-15512	574.00	1.7260	3.6048	5.0968	3.6587	1.1771 28.966
-15000	-15011	572.22	1.6979	3.5462	5.0140	3.6105	1.1616 28.966
-14500	-14510	570.43	1.6703	3.4884	4.9323	3.5628	1.1463 28.966
-14000	-14009	568.65	1.6430	3.4314	4.8517	3.5155	1.1311 28.966
-13500	-13509	566.86	1.6160	3.3752	4.7722	3.4688	1.1161 28.966
-13000	-13008	565.08	1.5895	3.3197	4.6937	3.4225	1.1012 28.966
-12500	-12507	563.29	1.5633	3.2649	4.6163	3.3768	1.0864 28.966
-12000	-12007	561.51	1.5374	3.2109	4.5399	3.3314	1.0719 28.966
-11500	-11506	559.72	1.5119 + 3	3.1576 + 3	4.4646 + 1	3.2866 - 3	1.0574 - 1 28.966
-11000	-11006	557.94	1.4867	3.1050	4.3908	3.2422	1.0432 28.966
-10500	-10505	556.15	1.4619	3.0532	4.3169	3.1983	1.0290 28.966
-10000	-10005	554.37	1.4374	3.0020	4.2446	3.1548	1.0150 28.966
- 9500	- 9504	552.58	1.4132	2.9516	4.1732	3.1118	1.0012 28.966
- 9000	- 9004	550.80	1.3894	2.9018	4.1029	3.0693	9.8752 - 2 28.966
- 8500	- 8503	549.01	1.3659	2.8527	4.0335	3.0272	9.7397 28.966
- 8000	- 8003	547.23	1.3427	2.8043	3.9651	2.9855	9.6057 28.966
- 7500	- 7503	545.44	1.3199	2.7566	3.8976	2.9443	9.4731 28.966
- 7000	- 7002	543.66	1.2973	2.7095	3.8310	2.9055	9.3419 28.966
- 6500	- 6502	541.88	1.2751 + 3	2.6631 + 3	3.7654 + 1	2.8632 - 3	9.2121 - 2 28.966
- 6000	- 6002	540.09	1.2532	2.6174	3.7007	2.8233	9.0837 28.966
- 5500	- 5501	538.31	1.2316	2.5722	3.6369	2.7838	8.9567 28.966
- 5000	- 5001	536.52	1.2103	2.5277	3.5740	2.7448	8.8310 28.966
- 4500	- 4501	534.74	1.1893	2.4839	3.5120	2.7061	8.7067 28.966
- 4000	- 4001	532.96	1.1686	2.4406	3.4508	2.6679	8.5838 28.966
- 3500	- 3501	531.17	1.1482	2.3980	3.3905	2.6301	8.4622 28.966
- 3000	- 3000	529.39	1.1280	2.3560	3.3311	2.5927	8.3419 28.966
- 2500	- 2500	527.60	1.1082	2.3146	3.2726	2.5558	8.2229 28.966
- 2000	- 2000	525.82	1.0887	2.2737	3.2148	2.5192	8.1053 28.966
- 1500	- 1500	524.04	1.0694 + 3	2.2335 + 3	3.1579 + 1	2.4830 - 3	7.9889 - 2 28.966
- 1000	- 1000	522.25	1.0504	2.1938	3.1019	2.4473	7.8738 28.966
- 500	- 500	520.47	1.0517	2.1547	3.0466	2.4119	7.7601 28.966
0	0	518.69	1.01325	2.1162	2.9921	2.3769	7.6475 28.966
500	500	516.90	9.9508 + 2	2.0783	2.9385	2.3423	7.5362 28.966
1000	1000	515.12	9.7717	2.0409	2.8856	2.3081	7.4852 28.966
1500	1500	513.34	9.5952	2.0040	2.8335	2.2743	7.3175 28.966
2000	2000	511.56	9.4213	1.9677	2.7821	2.2409	7.2099 28.966
2500	2500	509.77	9.2501	1.9319	2.7315	2.2079	7.1056 28.966
3000	3000	507.99	9.0813	1.8967	2.6817	2.1752	6.9984 28.966
3500	3499	506.21	8.9151 + 2	1.8619 + 3	2.6326 + 1	2.1489 - 3	6.8945 - 2 28.966
4000	3999	504.43	8.7513	1.8277	2.5843	2.1110	6.7918 28.966
4500	4499	502.64	8.5900	1.7941	2.5366	2.0746	6.6200 28.966
5000	4999	500.86	8.4311	1.7609	2.4897	2.0402	6.5899 28.966
5500	5499	499.08	8.2746	1.7282	2.4435	2.0174	6.4906 28.966
6000	5998	497.30	8.1205	1.6960	2.3590	1.9369	6.3926 28.966
6500	6498	495.52	7.9687	1.6643	2.3332	1.9567	6.2956 28.966
7000	6998	493.75	7.8192	1.6331	2.3090	1.9270	6.1998 28.966
7500	7497	491.95	7.6720	1.6023	2.2655	1.8975	6.1058 28.966
8000	7997	490.17	7.5271	1.5721	2.2228	1.8685	6.0116 28.966
8500	8497	488.39	7.3844 + 2	1.5423 + 3	2.1806 + 1	1.8397 - 3	5.9198 - 2 28.966
9000	8996	486.61	7.2439	1.5129	2.1391	1.8113	5.8278 28.966
9500	9496	484.82	7.1036	1.4840	2.0983	1.7833	5.7375 28.966
10000	9995	483.04	6.9694	1.4556	2.0581	1.7556	5.6483 28.966
10500	10495	481.26	6.8354	1.4276	2.0185	1.7282	5.5602 28.966
11000	10994	479.48	6.7035	1.4000	1.9795	1.7011	5.4732 28.966
11500	11494	477.70	6.5756	1.3729	1.9412	1.6744	5.3871 28.966
12000	11993	475.92	6.4458	1.3462	1.9034	1.6480	5.3022 28.966
12500	12493	474.14	6.3200	1.3200	1.8663	1.6219	5.2182 28.966
13000	12992	472.36	6.1962	1.2941	1.8298	1.5961	5.1353 28.966

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE P, lb ¹ ft ⁻²	DENSITY			MOL. WEIGHT M
				P, in. Hg	$\rho, \text{lb}/\text{sec}^2 \text{ft}^{-4}$	$\rho, \text{lb ft}^{-3}$	
13500	13491	470.58	6.0744 + 2	1.2687 + 3	1.7938 + 1	1.5707 - 3	5.0534 - 2
14000	13991	468.80	5.9546	1.2436	1.7584	1.5455	4.9725
14500	14490	467.01	5.8367	1.2190	1.7236	1.5207	4.8927
15000	14989	465.23	5.7206	1.1948	1.6893	1.4962	4.8137
15500	15488	463.45	5.6065	1.1709	1.6556	1.4719	4.7358
16000	15988	461.67	5.4942	1.1475	1.6224	1.4480	4.6589
16500	16487	459.89	5.3838	1.1244	1.5898	1.4244	4.5829
17000	16986	458.11	5.2751	1.1017	1.5577	1.4011	4.5079
17500	17485	456.33	5.1683	1.0794	1.5262	1.3781	4.4338
18000	17984	454.55	5.0632	1.0575	1.4952	1.3553	4.3606
18500	18484	452.77	4.9598 + 2	1.0359 + 3	1.4646 + 1	1.3329 - 3	4.2884 - 2
19000	18983	450.99	4.8582	1.0147	1.4346	1.3107	4.2171
19500	19482	449.21	4.7583	9.9379 + 2	1.4051	1.2889	4.1468
20000	19981	447.43	4.6600	9.7327	1.3761	1.2673	4.0773
20500	20480	445.65	4.5634	9.5309	1.3476	1.2459	4.0087
21000	20979	443.87	4.4685	9.3326	1.3195	1.2249	3.9410
21500	21478	442.09	4.3751	9.1376	1.2920	1.2041	3.8742
22000	21977	440.32	4.2833	8.9459	1.2649	1.1836	3.8083
22500	22476	438.54	4.1951	8.7576	1.2382	1.1634	3.7432
23000	22975	436.76	4.1045	8.5724	1.2121	1.1435	3.6790
23500	23474	434.98	4.0174 + 2	8.3905 + 2	1.1863 + 1	1.1258 - 3	3.6156 - 2
24000	23972	433.20	3.9318	8.2116	1.1610	1.1043	3.5531
24500	24471	431.42	3.8476	8.0359	1.1362	1.0892	3.4914
25000	24970	429.64	3.7650	7.8633	1.1118	1.0663	3.4306
25500	25469	427.86	3.6838	7.6937	1.0878	1.0476	3.3705
26000	25968	426.08	3.6040	7.5271	1.0643	1.0292	3.3113
26500	26466	424.30	3.5256	7.3634	1.0411	1.0110	3.2529
27000	26965	422.53	3.4486	7.2026	1.0184	9.9311 - 4	3.1952
27500	27464	420.75	3.3730	7.0447	9.9605 + 0	9.7544	3.1384
28000	27962	418.97	3.2987	6.8896	9.7412	9.5801	3.0823
28500	28461	417.19	3.2258 + 2	6.7373 + 2	9.5258 + 0	9.4082 - 4	3.0270 - 2
29000	28960	415.41	3.1542	6.5877	9.3143	9.2387	2.9725
29500	29458	413.63	3.0839	6.4408	9.1067	9.0716	2.9187
30000	29957	411.86	3.0148	6.2966	8.9028	8.9068	2.8657
30500	30455	410.08	2.9471	6.1551	8.7027	8.7443	2.8134
31000	30954	408.30	2.8805	6.0161	8.5062	8.5841	2.7618
31500	31452	406.52	2.8152	5.8797	8.3133	8.4261	2.7110
32000	31951	404.75	2.7511	5.7458	8.1240	8.2704	2.6609
32500	32449	402.97	2.6882	5.6144	7.9382	8.1169	2.6115
33000	32948	401.19	2.6264	5.4854	7.7559	7.9655	2.5629
33500	33446	399.41	2.5659 + 2	5.3589 + 2	7.5770 + 0	7.8165 - 4	2.5149 - 2
34000	33945	397.64	2.5064	5.2347	7.4014	7.6696	2.4676
34500	34443	395.86	2.4481	5.1129	7.2292	7.5247	2.4210
35000	34941	394.08	2.3909	5.0034	7.0602	7.3820	2.3751
35500	35440	392.30	2.3347	4.8762	6.8945	7.2413	2.3298
36000	35938	390.53	2.2797	4.7612	6.7319	7.1028	2.2892
36500	36436	389.99	2.2258	4.6486	6.5726	6.9443	2.2343
37000	36934	389.99	2.1731	4.5386	6.4171	6.7800	2.1814
37500	37433	389.99	2.1217	4.4312	6.2653	6.6196	2.1298
38000	37931	389.99	2.0715	4.3263	6.1170	6.4629	2.0794
38500	38429	389.99	2.0225 + 2	4.2240 + 2	5.9723 + 0	6.3100 - 4	2.0502 - 2
39000	38927	389.99	1.9746	4.1241	5.8310	6.1608	1.9822
39500	39425	389.99	1.9279	4.0265	5.6931	6.0150	1.9353
40000	39923	389.99	1.8823	3.9312	5.5584	5.8727	1.8895
40500	40422	389.99	1.8378	3.8382	5.4259	5.7338	1.8448
41000	40920	389.99	1.7943	3.7475	5.2985	5.5982	1.8012
41500	41418	389.99	1.7519	3.6588	5.1732	5.4650	1.7586
42000	41916	389.99	1.7104	3.5723	5.0509	5.3365	1.7170
42500	42414	389.99	1.6700	3.4878	4.9314	5.2105	1.6764
43000	42912	389.99	1.6305	3.4053	4.8148	5.0871	1.6367

ALTITUDE Z, ft	TEMP. T, °R	F, bm	PRESSURE P, lbf ft ⁻²	DENSITY			MOL. WEIGHT M	
				P, in. Hg	$\rho, \text{lbf sec ft}^{-2}$	$\rho, \text{lb ft}^{-3}$		
43500	43409	389.99	1.5919 + 2	3.3248 + 2	4.7009 + 0	4.9668 - 4	1.5980 - 2	28.966
44000	43907	389.99	1.5543	3.2462	4.5898	4.8493	1.5602	28.966
44500	44405	389.99	1.5175	3.1694	4.4812	4.7346	1.5233	28.966
45000	44903	389.99	1.4816	3.0945	4.3753	4.6227	1.4873	28.966
45500	45401	389.99	1.4466	3.0213	4.2718	4.5134	1.4521	28.966
46000	45899	389.99	1.4124	2.9499	4.1708	4.4067	1.4178	28.966
46500	46397	389.99	1.3790	2.8801	4.0722	4.3025	1.3843	28.966
47000	46894	389.99	1.3464	2.8120	3.9760	4.2008	1.3516	28.966
47500	47392	389.99	1.3146	2.7456	3.8820	4.1015	1.3196	28.966
48000	47890	389.99	1.2835	2.6807	3.7902	4.0045	1.2884	28.966
48500	48387	389.99	1.2532 + 2	2.6173 + 2	3.7006 + 0	3.9099 - 4	1.2580 - 2	28.966
49000	48885	389.99	1.2236	2.5554	3.6131	3.8175	1.2282	28.966
49500	49383	389.99	1.1946	2.4950	3.5277	3.7272	1.1952	28.966
50000	49880	389.99	1.1664	2.4361	3.4444	3.6391	1.1709	28.966
50500	50378	389.99	1.1388	2.3785	3.3630	3.5531	1.1432	28.966
51000	50876	389.99	1.1119	2.3223	3.2835	3.4692	1.1162	28.966
51500	51373	389.99	1.0856	2.2674	3.2059	3.3872	1.0898	28.966
52000	51871	389.99	1.0600	2.2138	3.1302	3.3072	1.0640	28.966
52500	52368	389.99	1.0349	2.1615	3.0562	3.2290	1.0389	28.966
53000	52866	389.99	1.0105	2.1105	2.9840	3.1527	1.0144	28.966
53500	53363	389.99	9.8662 + 1	2.0606 + 2	2.9135 + 0	3.0782 - 4	9.9040 - 3	28.966
54000	53861	389.99	9.6351	2.0119	2.8447	3.0055	9.6700	28.966
54500	54358	389.99	9.4056	1.9644	2.7775	2.9345	9.4415	28.966
55000	54855	389.99	9.1834	1.9180	2.7118	2.8652	9.2185	28.966
55500	55353	389.99	8.9664	1.8727	2.6478	2.7975	9.0008	28.966
56000	55850	389.99	8.7547	1.8284	2.5852	2.7314	8.7882	28.966
56500	56347	389.99	8.5479	1.7853	2.5242	2.6669	8.5806	28.966
57000	56845	389.99	8.3460	1.7431	2.4646	2.6039	8.3779	28.966
57500	57342	389.99	8.1489	1.7019	2.4064	2.5424	8.1801	28.966
58000	57839	389.99	7.9564	1.6617	2.3495	2.4824	7.9869	28.966
58500	58336	389.99	7.7686 + 1	1.6225 + 2	2.2941 + 0	2.4238 - 4	7.7983 - 3	28.966
59000	58834	389.99	7.5851	1.5842	2.2399	2.3665	7.6141	28.966
59500	59331	389.99	7.4060	1.5468	2.1870	2.3107	7.4343	28.966
60000	59828	389.99	7.2311	1.5103	2.1354	2.2561	7.2588	28.966
60500	60325	389.99	7.0604	1.4746	2.0849	2.2028	7.0874	28.966
61000	60822	389.99	6.8937	1.4398	2.0357	2.1508	6.9201	28.966
61500	61319	389.99	6.7310	1.4058	1.9877	2.1001	6.7567	28.966
62000	61816	389.99	6.5781	1.3796	1.9407	2.0503	6.5972	28.966
62500	62313	389.99	6.4169	1.3402	1.8949	2.0021	6.4415	28.966
63000	62810	389.99	6.2655	1.3086	1.8502	1.9548	6.2894	28.966
63500	63307	389.99	6.1176 + 1	1.2777 + 2	1.8065 + 0	1.9087 - 4	6.1410 - 3	28.966
64000	63804	389.99	5.9732	1.2475	1.7639	1.8636	5.9960	28.966
64500	64301	389.99	5.8322	1.2181	1.7223	1.8196	5.8545	28.966
65000	64798	389.99	5.6946	1.1893	1.6816	1.7767	5.7164	28.966
65500	65295	389.99	5.5602	1.1613	1.6419	1.7348	5.5815	28.966
66000	65792	389.99	5.4290	1.1339	1.6032	1.6938	5.4497	28.966
66500	66289	389.99	5.3009	1.1071	1.5657	1.6539	5.3212	28.966
67000	66785	389.99	5.1758	1.0810	1.5284	1.6148	5.1956	28.966
67500	67282	389.99	5.0537	1.0555	1.4923	1.5767	5.0730	28.966
68000	67779	389.99	4.9344	1.0305	1.4571	1.5395	4.9533	28.966
68500	68276	389.99	4.8180 + 1	1.0063 + 2	1.4238 + 0	1.5052 - 4	4.8365 - 3	28.966
69000	68772	389.99	4.7044	9.8253 + 1	1.3892	1.4678	4.7224	28.966
69500	69269	389.99	4.5934	9.5935	1.3564	1.4331	4.6110	28.966
70000	69766	389.99	4.4830	9.3672	1.3244	1.3993	4.5022	28.966
70500	70262	389.99	4.3792	9.1462	1.2932	1.3663	4.3960	28.966
71000	70759	389.99	4.2759	8.9305	1.2627	1.3341	4.2923	28.966
71500	71256	389.99	4.1751	8.7199	1.2329	1.3026	4.1911	28.966
72000	71752	389.99	4.0766	8.5142	1.2038	1.2719	4.0922	28.966
72500	72249	389.99	3.9805	8.3134	1.1754	1.2419	3.9957	28.966
73000	72745	389.99	3.8866	8.1174	1.1477	1.2126	3.9015	28.966

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE P, lb ^f ft ⁻²	P, in. Hg	DENSITY		MOL. WEIGHT M
					P, lb sec ⁻² ft ⁻⁴	P, lb ft ⁻³	
73500	73242	389.99	3.7950 + 1	7.9259 + 1	1.1207 + 0	1.1840 - 4	3.8095 - 3
74000	73738	389.99	3.7055	7.7390	1.0942	1.1561	3.7197
74500	74235	389.99	3.6181	7.5565	1.0684	1.1288	3.6319
75000	74731	389.99	3.5328	7.3784	1.0432	1.1022	3.5463
75500	75228	389.99	3.4495	7.2044	1.0186	1.0762	3.4627
76000	75724	389.99	3.3682	7.0346	9.9462 - 1	1.0509	3.3811
76500	76220	389.99	3.2888	6.8687	9.7117	1.0261	3.3014
77000	76717	389.99	3.2112	6.7068	9.4828	1.0019	3.2235
77500	77213	389.99	3.1355	6.5487	9.2593	9.7829 - 5	3.1475
78000	77709	389.99	3.0616	6.3944	9.0410	9.5523	3.0754
78500	78206	389.99	2.9895 + 1	6.2437 + 1	8.8279 - 1	9.3271 - 5	3.0009 - 3
79000	78702	389.99	2.9190	6.0965	8.5199	9.1073	2.9302
79500	79198	389.99	2.8502	5.9528	8.4167	8.8927	2.8611
80000	79694	389.99	2.7831	5.8125	8.2183	8.6831	2.7937
80500	80190	389.99	2.7175	5.6755	8.0247	8.4785	2.7279
81000	80687	389.99	2.6534	5.5418	7.8356	8.2787	2.6636
81500	81183	389.99	2.5909	5.4112	7.6509	8.0836	2.6008
82000	81679	389.99	2.5299	5.2837	7.4707	7.8931	2.5395
82500	82175	390.24	2.4703	5.1592	7.2947	7.7022	2.4781
83000	82671	391.06	2.4122	5.0379	7.1231	7.5053	2.4148
83500	83167	391.87	2.3555 + 1	4.9196 + 1	6.9559 - 1	7.3139 - 5	2.3532 - 3
84000	83663	392.69	2.3004	4.8044	6.7930	7.1277	2.2933
84500	84159	393.51	2.2466	4.6921	6.6342	6.9467	2.2350
85000	84655	394.32	2.1942	4.5827	6.4795	6.7706	2.1784
85500	85151	395.14	2.1431	4.4760	6.3287	6.5994	2.1233
86000	85647	395.96	2.0934	4.3721	6.1817	6.4328	2.0697
86500	86143	396.77	2.0448	4.2707	6.0384	6.2708	2.0176
87000	86639	397.59	1.9975	4.1719	5.8987	6.1132	1.9669
87500	87134	398.40	1.9514	4.0757	5.7626	5.9598	1.9175
88000	87630	399.22	1.9065	3.9818	5.6298	5.8106	1.8695
88500	88126	400.04	1.8627 + 1	3.8902 + 1	5.5004 - 1	5.6655 - 5	1.8228 - 3
89000	88622	400.85	1.8199	3.8010	5.3743	5.5243	1.7774
89500	89118	401.67	1.7783	3.7140	5.2512	5.3868	1.7332
90000	89613	402.48	1.7376	3.6292	5.1313	5.2531	1.6901
90500	90109	403.30	1.6980	3.5464	5.0143	5.1230	1.6483
91000	90605	404.12	1.6594	3.4657	4.9002	4.9963	1.6075
91500	91100	404.93	1.6217	3.3870	4.7889	4.8730	1.5678
92000	91596	405.75	1.5850	3.3105	4.6804	4.7530	1.5292
92500	92092	406.56	1.5491	3.2354	4.5746	4.6362	1.4917
93000	92587	407.38	1.5142	3.1624	4.4714	4.5225	1.4551
93500	93083	408.19	1.4801 + 1	3.0912 + 1	4.3707 - 1	4.4118 - 5	1.4195 - 3
94000	93578	409.01	1.4468	3.0217	4.2724	4.3041	1.3848
94500	94074	409.83	1.4144	2.9539	4.1766	4.1992	1.3510
95000	94569	410.64	1.3827	2.8878	4.0831	4.0970	1.3182
95500	95065	411.46	1.3518	2.8233	3.9919	3.9976	1.2862
96000	95560	412.27	1.3217	2.7604	3.9029	3.9007	1.2550
96500	96056	413.09	1.2923	2.6989	3.8160	3.8064	1.2247
97000	96551	413.90	1.2636	2.6390	3.7313	3.7145	1.1951
97500	97046	414.72	1.2356	2.5805	3.6486	3.6251	1.1663
98000	97542	415.53	1.2082	2.5234	3.5679	3.5379	1.1383
98500	98037	416.35	1.1816 + 1	2.4677 + 1	3.4891 - 1	3.4530 - 5	1.1110 - 3
99000	98532	417.16	1.1555	2.4134	3.4123	3.3704	1.0844
99500	99028	417.98	1.1301	2.3603	3.3373	3.2898	1.0585
100000	99523	418.79	1.1053	2.3085	3.2640	3.2114	1.0332
100500	100018	419.61	1.0811	2.2580	3.1925	3.1350	1.0086
101000	100513	420.42	1.0575	2.2086	3.1228	3.0605	9.8468 - 4
101500	101008	421.24	1.0344	2.1604	3.0546	2.9879	9.6134
102000	101504	422.05	1.0119	2.1134	2.9881	2.9172	9.3859
102500	101999	422.87	9.8991 + 0	2.0675	2.9232	2.8484	9.1643
103000	102494	423.68	9.6844	2.0226	2.8598	2.7812	8.9483

ALTITUDE Z, ft	TEMP. H, ft'	T, °R	P, mb	PRESSURE		P, in. Hg	DENSITY		MOL. WEIGHT M
				P, lbf ft ⁻²	P, lbf sec ² ft ⁻⁴		ρ, lbf ft ⁻³	ρ, lb ft ⁻³	
103500	102989	424.50	9.4748 + 0	1.9789 + 1	2.7979 - 1	2.7158 - 5	8.7378 - 4	28.966	
104000	103484	425.31	9.2701	1.9361	2.7375	2.6520	8.5327	28.966	
104500	103979	426.13	9.0703	1.8944	2.6785	2.5899	8.3328	28.966	
105000	104474	426.94	8.8751	1.8536	2.6208	2.5293	8.1379	28.966	
106000	105464	428.57	8.4983	1.7749	2.5096	2.4128	7.7628	28.966	
107000	106454	430.20	8.1389	1.6999	2.4034	2.3020	7.4064	28.966	
108000	107444	431.83	7.7960	1.6282	2.3022	2.1967	7.0516	28.966	
109000	108433	433.46	7.4688	1.5599	2.2055	2.0966	6.7455	28.966	
110000	109423	435.09	7.1565	1.4947	2.1133	2.0014	6.4392	28.966	
111000	110412	436.72	6.8584	1.4324	2.0253	1.9109	6.1480	28.966	
112000	111402	438.35	6.5738 + 0	1.3730 + 1	1.9412 - 1	1.8247 - 5	5.8710 - 4	28.966	
113000	112591	439.97	6.3020	1.3162	1.8610	1.7428	5.6074	28.966	
114000	113580	441.60	6.0424	1.2620	1.7843	1.6649	5.3566	28.966	
115000	114369	443.23	5.7944	1.2102	1.7111	1.5907	5.1179	28.966	
116000	115358	444.86	5.5575	1.1607	1.6411	1.5201	4.8906	28.966	
117000	116347	446.49	5.3311	1.1134	1.5743	1.4528	4.6743	28.966	
118000	117336	448.11	5.1147	1.0682	1.5104	1.3888	4.4683	28.966	
119000	118325	449.74	4.9078	1.0250	1.4493	1.3278	4.2721	28.966	
120000	119313	451.37	4.7101	9.8372 + 0	1.3909	1.2697	4.0851	28.966	
121000	120302	453.00	4.5210	9.4422	1.3350	1.2143	3.9070	28.966	
122000	121290	454.62	4.3401 + 0	9.0645 + 0	1.2816 - 1	1.1616 - 5	3.7373 - 4	28.966	
123000	122279	456.25	4.1671	8.7032	1.2305	1.1113	3.5755	28.966	
124000	123267	457.88	4.0016	8.3575	1.1817	1.0634	3.4213	28.966	
125000	124255	459.50	3.8432	8.0267	1.1349	1.0177	3.2743	28.966	
126000	125243	461.13	3.6917	7.7102	1.0901	9.7410 - 6	3.1341	28.966	
127000	126231	462.75	3.5466	7.4072	1.0473	9.3253	3.0003	28.966	
128000	127219	464.38	3.4077	7.1172	1.0063	8.9288	2.8728	28.966	
129000	128207	466.01	3.2748	6.8395	9.6703 - 2	8.5505	2.7510	28.966	
130000	129195	467.63	3.1474	6.5735	9.2943	8.1894	2.6349	28.966	
131000	130182	469.26	3.0255	6.3188	8.9342	7.8449	2.5240	28.966	
132000	131170	470.88	2.9086 + 0	6.0748 + 0	8.5892 - 2	7.5159 - 6	2.4182 - 4	28.966	
133000	132157	472.51	2.7967	5.8411	8.2587	7.2019	2.3171	28.966	
134000	133145	474.13	2.6895	5.6171	7.9421	6.9020	2.2206	28.966	
135000	134132	475.76	2.5867	5.4025	7.6386	6.6156	2.1285	28.966	
136000	135119	477.38	2.4882	5.1967	7.3477	6.3420	2.0405	28.966	
137000	136106	479.01	2.3938	4.9995	7.0688	6.0806	1.9564	28.966	
138000	137093	480.63	2.3092	4.8104	6.8015	5.8309	1.8760	28.966	
139000	138080	482.26	2.2164	4.6291	6.5451	5.5922	1.7992	28.966	
140000	139066	483.88	2.1332	4.4552	6.2993	5.3640	1.7858	28.966	
141000	140053	485.50	2.0533	4.2884	6.0634	5.1460	1.6557	28.966	
142000	141040	487.13	1.9767 + 0	4.1284 + 0	5.8372 - 2	4.9374 - 6	1.5886 - 4	28.966	
143000	142026	488.75	1.9022	3.9749	5.6201	4.7380	1.5844	28.966	
144000	143013	490.38	1.8327	3.8276	5.4118	4.5473	1.4631	28.966	
145000	143999	492.00	1.7650	3.6862	5.2119	4.3649	1.4084	28.966	
146000	144985	493.62	1.7000	5.5507	5.0291	4.1904	1.3480	28.966	
147000	145971	495.24	1.6376	3.4202	4.8359	4.0234	1.2945	28.966	
148000	146957	496.87	1.5777	3.2951	4.6590	3.8636	1.2431	28.966	
149000	147943	498.49	1.5202	3.1750	4.4862	3.7106	1.1939	28.966	
150000	148929	500.11	1.4650	3.0597	4.3261	3.5642	1.1468	28.966	
151000	149915	501.74	1.4119	2.9489	4.1694	3.4241	1.1017	28.966	
152000	150900	503.36	1.3610 + 0	2.8424 + 0	4.0189 - 2	3.2898 - 6	1.0585 - 4	28.966	
153000	151886	504.98	1.3120	2.7402	3.8743	3.1613	1.0171	28.966	
154000	152871	506.60	1.2649	2.6419	3.7354	3.0582	9.7750 - 5	28.966	
155000	153856	508.22	1.2197	2.5475	3.6019	2.9202	9.3955	28.966	
156000	154842	508.79	1.1752	2.4566	3.4734	2.8130	9.0303	28.966	
157000	155827	508.79	1.1343	2.3691	3.3496	2.7127	8.7279	28.966	
158000	156812	508.79	1.0939	2.2846	3.2303	2.6160	8.4168	28.966	
159000	157797	508.79	1.0549	2.2052	3.1151	2.5228	8.1169	28.966	
160000	158782	508.79	1.0173	2.1247	3.0041	2.4329	7.8276	28.966	
161000	159767	508.79	9.8107 - 1	2.0490	2.8971	2.3462	7.5487	28.966	

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE P, lb'ft ⁻²	P, in. Hg	DENSITY $\rho, \text{lb sec}^2 \text{ft}^{-4}$	$\rho, \text{lb ft}^{-3}$	MOL. WEIGHT M
162000	160751	508.79	9.4612 - 1	1.9760 + 0	2.7939 - 2	2.2626 - 6	7.2798 - 5
163000	161736	508.79	9.1242	1.9056	2.6944	2.1820	7.0205
164000	162720	508.79	8.7992	1.8377	2.5984	2.1043	6.7704
165000	163705	508.79	8.4858	1.7723	2.5058	2.0294	6.5293
166000	164689	508.79	8.1835	1.7092	2.4166	1.9571	6.2967
167000	165673	508.79	7.8921	1.6483	2.3305	1.8874	6.0725
168000	166657	508.79	7.6111	1.5896	2.2476	1.8202	5.8563
169000	167641	508.79	7.3401	1.5330	2.1675	1.7554	5.6478
170000	168625	508.79	7.0788	1.4784	2.0904	1.6929	5.4467
171000	169609	508.79	6.8268	1.4258	2.0160	1.6326	5.2528
172000	170593	508.79	6.5839 - 1	1.3751 + 0	1.94442 - 2	1.5745 - 6	5.0659 - 5
173000	171577	508.79	6.3495	1.3261	1.8750	1.5185	4.8856
174000	172560	508.79	6.1236	1.2789	1.8083	1.4644	4.7117
175000	173544	508.79	5.9057	1.2334	1.7439	1.4123	4.5440
176000	174527	507.20	5.6953	1.1895	1.6818	1.3663	4.3959
177000	175510	504.77	5.4916	1.1469	1.6217	1.3238	4.211
178000	176494	502.35	5.2943	1.1057	1.5634	1.2824	4.1258
179000	177477	499.92	5.1031	1.0658	1.5070	1.2421	3.9962
180000	178460	497.49	4.9180	1.0272	1.4523	1.2028	3.8700
181000	179443	495.07	4.7388	9.8972 - 1	1.3994	1.1647	3.7473
182000	180425	492.64	4.5653 - 1	9.5248 - 1	1.3481 - 2	1.1276 - 6	3.6278 - 5
183000	181408	490.21	4.3973	9.1840	1.2985	1.0915	3.5117
184000	182391	487.79	4.2348	8.8445	1.2505	1.0563	3.3987
185000	183373	485.36	4.0775	8.5160	1.2041	1.0222	3.2888
186000	184356	482.94	3.9253	8.1982	1.1591	9.8898 - 7	3.1820
187000	185338	480.51	3.7781	7.8907	1.1157	9.5670	3.0781
188000	186320	478.09	3.6357	7.5924	1.0756	9.2531	2.9771
189000	187303	475.66	3.4980	7.3058	1.0330	8.9481	2.8790
190000	188285	473.24	3.3649	7.0278	9.9366 - 3	8.6517	2.7836
191000	189267	470.81	3.2362	6.7590	9.5566	8.3636	2.6909
192000	190248	468.39	3.1118 - 1	6.4992 - 1	9.1893 - 3	8.0838 - 7	2.6009 - 5
193000	191230	465.96	2.9916	6.2482	8.8343	7.8120	2.5134
194000	192212	463.54	2.8755	6.0056	8.4914	7.5480	2.4285
195000	193194	461.12	2.7633	5.7713	8.1601	7.2916	2.3460
196000	194175	458.69	2.6550	5.5450	7.8401	7.0427	2.2659
197000	195157	456.27	2.5503	5.3264	7.5311	6.8011	2.1882
198000	196138	453.85	2.4493	5.1154	7.2327	6.5665	2.1127
199000	197119	451.42	2.3518	4.9117	6.9447	6.3389	2.0395
200000	198100	449.00	2.2576	4.7151	6.6668	6.1180	1.9684
201000	199081	446.58	2.1668	4.5254	6.3985	5.9057	1.8994
202000	200062	444.16	2.0792 - 1	4.3424 - 1	6.1397 - 3	5.6958 - 7	1.8326 - 5
203000	201043	441.74	1.9946	4.1659	5.8901	5.4942	1.7677
204000	202024	439.32	1.9131	3.9956	5.6494	5.2986	1.7048
205000	203004	436.89	1.8345	3.8314	5.4172	5.1091	1.6438
206000	203985	434.47	1.7587	3.6731	5.1935	4.9253	1.5847
207000	204966	432.05	1.6857	3.5205	4.9778	4.7472	1.5274
208000	205946	429.63	1.6153	3.3736	4.7699	4.5746	1.4718
209000	206926	427.21	1.5475	3.2319	4.5697	4.4074	1.4180
210000	207906	424.79	1.4821	3.0955	4.3768	4.2454	1.3659
211000	208887	422.37	1.4192	2.9641	4.1910	4.0885	1.3154
212000	209867	419.95	1.3587 - 1	2.8376 - 1	4.0121 - 3	3.9365 - 7	1.2665 - 5
213000	210847	417.53	1.3004	2.7158	3.8399	3.7894	1.2192
214000	211826	415.11	1.2442	2.5986	3.6742	3.6470	1.1734
215000	212806	412.70	1.1902	2.4859	3.5148	3.5092	1.1290
216000	213786	410.28	1.1383	2.3774	3.3614	3.3758	1.0861
217000	214765	407.86	1.0883	2.2730	3.2138	3.2468	1.0446
218000	215745	405.44	1.0403	2.1727	3.0720	3.1220	1.0045
219000	216724	403.02	9.9410 - 2	2.0762	2.9356	3.0013	9.6565 - 6
220000	217703	400.60	9.4971	1.9835	2.8045	2.8845	9.2807
221000	218683	398.19	9.0705	1.8944	2.6785	2.7717	8.9177

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE P, lb/ ft ⁻²	DENSITY			MOL. WEIGHT M
				P, in. Hg	ρ, lb/ sec ² ft ⁻⁴	ρ, lb ft ⁻³	
222000	219662	395.77	8.6607 - 2	1.8088 - 1	2.5575 - 3	2.6627 - 7	8.5668 - 6
223000	220641	393.35	8.2671	1.7266	2.4413	2.5573	8.2278
224000	221620	390.94	7.8892	1.6477	2.3297	2.4555	7.9002
225000	222598	388.52	7.5264	1.5719	2.2226	2.3571	7.5838
226000	223577	386.10	7.1782	1.4992	2.1197	2.2621	7.2782
227000	224556	383.69	6.8442	1.4294	2.0211	2.1704	6.9832
228000	225534	381.27	6.5237	1.3625	1.9264	2.0819	6.6984
229000	226513	378.86	6.2164	1.2983	1.8357	1.9965	6.4235
230000	227491	376.44	5.9217	1.2368	1.7487	1.9141	6.1583
231000	228469	374.02	5.6393	1.1778	1.6653	1.8345	5.9025
232000	229447	371.61	5.3687 - 2	1.1213 - 1	1.5954 - 3	1.7579 - 7	5.6557 - 6
233000	230426	369.19	5.1094	1.0671	1.5088	1.6839	5.4178
234000	231404	366.78	4.8611	1.0153	1.4355	1.6126	5.1885
235000	232381	364.37	4.6234	9.6562 - 2	1.3653	1.5439	4.9674
236000	233359	361.95	4.3958	9.1809	1.2981	1.4777	4.7545
237000	234337	359.54	4.1781	8.7262	1.2338	1.4140	4.5493
238000	235315	357.12	3.9698	8.2911	1.1723	1.3526	4.3517
239000	236292	354.71	3.7706	7.8751	1.1135	1.2934	4.1615
240000	237269	352.30	3.5802	7.4774	1.0572	1.2365	3.9784
241000	238247	349.89	3.3982	7.0972	1.0035	1.1817	3.8021
242000	239224	347.47	3.2243 - 2	6.7340 - 2	9.5212 - 4	1.1290 - 7	3.6326 - 6
243000	240201	345.06	3.0581	6.3871	9.0307	1.0784	3.4695
244000	241178	342.65	2.8995	6.0558	8.5623	1.0296	3.3127
245000	242155	340.24	2.7481	5.7395	8.1152	9.8278 - 8	3.1620
246000	243132	337.8	2.604	5.4358	7.688	9.378	3.017
247000	244109	335.4	2.466	5.150	7.281	8.945	2.878
248000	245085	333.0	2.334	4.875	6.893	8.530	2.744
249000	246062	330.6	2.209	4.614	6.523	8.131	2.616
250000	247039	328.2	2.090	4.364	6.171	7.748	2.493
251000	248015	325.8	1.976	4.127	5.835	7.380	2.374
252000	248991	323.4	1.868 - 2	3.901 - 2	5.515 - 4	7.027 - 8	2.261 - 6
253000	249967	320.9	1.764	3.685	5.210	6.689	2.152
254000	250944	318.5	1.666	3.480	4.921	6.365	2.048
255000	251920	316.1	1.573	3.285	4.645	6.054	1.948
256000	252896	313.7	1.484	3.100	4.383	5.756	1.852
257000	253871	311.3	1.400	2.924	4.134	5.471	1.760
258000	254847	308.9	1.320	2.756	3.897	5.198	1.672
259000	255823	306.5	1.243	2.597	3.672	4.937	1.588
260000	256798	304.1	1.171	2.446	3.459	4.686	1.508
261000	257774	301.7	1.103	2.303	3.256	4.447	1.431
262000	258749	299.3	1.038 - 2	2.167 - 2	3.064 - 4	4.218 - 8	1.357 - 6
263000	259725	298.2	9.759 - 3	2.038	2.882	3.982	1.281
264000	260700	298.2	9.178	1.917	2.710	3.745	1.205
265000	261675	298.2	8.633	1.803	2.549	3.523	1.133
266000	262650	298.2	8.119	1.696	2.399	3.313	1.066
267000	263625	298.2	7.637	1.595	2.255	3.116	1.003
268000	264600	298.2	7.183	1.500	2.121	2.931	9.430 - 7
269000	265574	298.2	6.756	1.411	1.995	2.757	8.070
270000	266549	298.2	6.354	1.327	1.876	2.593	8.343
271000	267524	298.2	5.977	1.246	1.765	2.439	7.847
272000	268498	298.2	5.622 - 3	1.174 - 2	1.660 - 4	2.294 - 8	7.381 - 7
273000	269472	298.2	5.288	1.104	1.561	2.158	6.942
274000	270447	298.2	4.974	1.039	1.469	2.029	6.530
275000	271421	298.2	4.678	9.771 - 3	1.381	1.909	6.142
276000	272395	298.2	4.400	9.190	1.299	1.796	5.777
277000	273369	298.2	4.139	8.644	1.222	1.689	5.434
278000	274343	298.2	3.893	8.131	1.150	1.589	5.111
279000	275317	298.2	3.662	7.648	1.081	1.494	4.808
280000	276290	298.2	3.445	7.194	1.017	1.406	4.522
281000	277264	298.2	3.240	6.767	9.568 - 5	1.322	4.254

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE P, lb/ft ⁻²	DENSITY			MOL. WEIGHT M
				P, in. Hg	$\rho, \text{lb sec}^2 \text{ft}^{-4}$	$\rho, \text{lb ft}^{-3}$	
282000	278238	298.2	3.048 - 3	6.365 - 3	9.000 - 5	1.244 - 8	4.001 - 7 28.97
283000	279211	298.2	2.867	5.988	8.466	1.170	3.764 28.97
284000	280184	298.2	2.697	5.632	7.963	1.100	3.540 28.97
285000	281158	298.2	2.537	5.298	7.491	1.035	3.330 28.97
286000	282131	298.2	2.386	4.984	7.046	9.737 - 9	3.133 28.97
287000	283104	298.2	2.245	4.688	6.628	9.159	2.947 28.97
288000	284077	298.2	2.111	4.410	6.235	8.616	2.772 28.97
289000	285050	298.2	1.986	4.148	5.865	8.104	2.608 28.97
290000	286023	298.2	1.868	3.902	5.517	7.624	2.453 28.97
291000	286995	298.2	1.758	3.671	5.190	7.172	2.307 28.97
292000	287968	298.2	1.653 - 3	3.453 - 3	4.882 - 5	6.746 - 9	2.171 - 7 28.97
293000	288940	298.2	1.555	3.248	4.593	6.346	2.042 28.97
294000	289913	298.2	1.463	3.056	4.320	5.970	1.921 28.97
295000	290885	298.2	1.376	2.874	4.064	5.616	1.807 28.97
296000	291857	298.2	1.295	2.704	3.823	5.283	1.700 28.97
297000	292830	298.2	1.218	2.544	3.597	4.970	1.599 28.97
298000	293802	298.2	1.146	2.393	3.383	4.675	1.504 28.97
299000	294774	298.2	1.078	2.251	3.182	4.398	1.415 28.97
300000	295746	299.2	1.014	2.118	2.994	4.123	1.327 28.96
302000	297689	303.4	8.985 - 4	1.877	2.653	3.603	1.159 28.96
304000	299632	307.6	7.976 - 4	1.666 - 3	2.355 - 5	3.153 - 9	1.015 - 7 28.96
306000	301575	311.9	7.092	1.481	2.094	2.766	8.898 - 8 28.95
308000	303517	316.1	6.316	1.319	1.865	2.430	7.817 28.95
310000	305459	320.3	5.633	1.177	1.663	2.138	6.880 28.94
312000	307401	324.5	5.032	1.051	1.486	1.885	6.066 28.94
314000	309342	328.7	4.502	9.403 - 4	1.330	1.665	5.356 28.93
316000	311283	332.9	4.034	8.425	1.191	1.473	4.738 28.93
318000	313224	337.1	3.619	7.559	1.069	1.305	4.197 28.92
320000	315164	341.3	3.292	6.792	9.603 - 6	1.158	3.724 28.92
322000	317104	345.5	2.926	6.110	8.640	1.029	3.309 28.92
324000	319043	349.7	2.636 - 4	5.505 - 4	7.783 - 6	9.154 - 10	2.945 - 8 28.91
326000	320982	353.9	2.377	4.965	7.020	8.158	2.625 28.90
328000	322921	358.1	2.147	4.484	6.341	7.280	2.342 28.90
330000	324859	362.2	1.942	4.055	5.733	6.506	2.093 28.89
332000	326797	366.4	1.758	3.671	5.191	5.822	1.873 28.89
334000	328735	370.6	1.593	3.327	4.705	5.216	1.678 28.89
336000	330672	374.8	1.446	3.019	4.269	4.680	1.506 28.88
338000	332609	378.9	1.313	2.743	3.870	4.204	1.353 28.88
340000	334546	383.1	1.194	2.494	3.527	3.781	1.216 28.87
342000	336482	387.3	1.087	2.271	3.211	3.404	1.095 28.87
344000	338418	391.4	9.908 - 5	2.069 - 4	2.926 - 6	3.069 - 10	9.873 - 9 28.86
346000	340353	395.6	9.039	1.888	2.669	2.770	8.911 28.86
348000	342288	399.8	8.254	1.724	2.437	2.502	8.051 28.85
350000	344223	403.9	7.544	1.576	2.228	2.263	7.282 28.85
352000	346157	407.7	6.912	1.444	2.041	1.981	6.374 28.84
354000	348091	413.7	6.359	1.328	1.878	1.736	5.585 28.83
356000	350025	416.7	5.875	1.227	1.734	1.531	4.924 28.83
358000	351958	419.7	5.444	1.137	1.608	1.357	4.366 28.82
360000	353891	506.8	5.063	1.057	1.495	1.209	3.891 28.82
362000	355823	527.7	4.722	9.862 - 5	1.394	1.083	3.484 28.81
364000	357756	548.7	4.416 - 5	9.224 - 5	1.304 - 6	9.739 - 11	3.133 - 9 28.81
366000	359687	569.7	4.141	8.648	1.223	8.794	2.829 28.80
368000	361619	590.6	3.892	8.128	1.149	7.970	2.564 28.79
370000	363550	611.6	3.666	7.656	1.082	7.248	2.332 28.79
372000	365481	632.5	3.460	7.226	1.022	6.613	2.128 28.78
374000	367411	653.4	3.272	6.833	9.661 - 7	6.052	1.947 28.77
376000	369341	674.3	3.099	6.473	9.152	5.555	1.787 28.76
378000	371270	695.2	2.941	6.142	8.684	5.111	1.644 28.76
380000	373200	716.1	2.795	5.837	8.253	4.715	1.517 28.76
382000	375129	736.9	2.660	5.556	7.855	4.360	1.403 28.75

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE		DENSITY		WEIGHT	
			P, lb/ft ⁻²	P, in. Hg	ρ, lb/ft ²	ρ, lb ft ⁻³	M	
384000	377057	757.8	2.535	- 5	5.295	- 7	4.040	-11
386000	378985	778.6	2.420		5.054	7.146	3.752	1.207
388000	380913	799.4	2.312		4.829	6.828	3.491	1.123
390000	382840	820.2	2.212		4.620	6.533	3.255	1.047
392000	384767	841.0	2.119		4.425	6.257	3.040	9.780
394000	386694	861.7	2.032		4.243	5.999	2.844	9.149
396000	388620	882.5	1.950		4.072	5.758	2.664	8.572
398000	390546	903.2	1.873		3.912	5.532	2.500	8.045
400000	392472	923.9	1.801		3.762	5.319	2.350	7.561
402000	394397	944.6	1.734		3.621	5.120	2.212	7.116
404000	396322	965.3	1.670	- 5	3.488	- 7	2.084	-11
406000	398247	986.0	1.610		3.363	4.754	1.967	6.328
408000	400171	1007	1.553		3.244	4.587	1.858	5.978
410000	402095	1027	1.500		3.132	4.429	1.758	5.655
412000	404018	1048	1.449		3.027	4.279	1.664	5.355
414000	405941	1068	1.401		2.926	4.138	1.578	5.076
416000	407864	1089	1.356		2.831	4.003	1.497	4.817
418000	409786	1110	1.312		2.741	3.875	1.422	4.576
420000	411708	1130	1.271		2.655	3.754	1.352	4.351
422000	413630	1151	1.232		2.574	3.639	1.287	4.141
424000	415551	1171	1.195	- 5	2.496	- 7	1.226	-11
426000	417472	1192	1.160		2.422	3.424	1.169	3.761
428000	419393	1212	1.126		2.351	3.325	1.115	3.589
430000	421313	1233	1.094		2.284	3.229	1.065	3.427
432000	423233	1253	1.063		2.220	3.138	1.018	3.276
434000	425152	1273	1.033		2.158	3.052	9.737	-12
436000	427071	1294	1.005		2.099	2.968	9.320	3.133
438000	428990	1314	9.782	- 6	2.043	2.889	8.927	2.999
440000	430908	1334	9.524		1.989	2.812	8.556	2.872
442000	432826	1355	9.277		1.937	2.739	8.206	2.753
444000	434744	1375	9.039	- 6	1.888	- 7	2.669	-12
446000	436661	1395	8.811		1.840	2.602	7.563	2.433
448000	438578	1415	8.592		1.795	2.537	7.267	2.338
450000	440495	1436	8.382		1.751	2.475	6.987	2.248
452000	442411	1456	8.180		1.708	2.415	6.722	2.163
454000	444327	1476	7.985		1.668	2.358	6.470	2.082
456000	446242	1496	7.798		1.629	2.303	6.231	2.005
458000	448157	1517	7.617		1.591	2.249	6.004	1.932
460000	450078	1537	7.443		1.555	2.198	5.788	1.862
462000	451987	1557	7.276		1.520	2.148	5.583	1.796
464000	453901	1577	7.114	- 6	1.486	- 5	2.101	- 7
466000	455814	1597	6.958		1.453	2.055	5.201	1.673
468000	457728	1617	6.807		1.422	2.010	5.024	1.616
470000	459641	1637	6.662		1.391	1.967	4.854	1.562
472000	461553	1657	6.521		1.362	1.926	4.695	1.510
474000	463466	1677	6.385		1.334	1.885	4.539	1.460
476000	465377	1697	6.254		1.306	1.847	4.391	1.413
478000	467289	1716	6.126		1.280	1.809	4.251	1.368
480000	469200	1736	6.003		1.254	1.773	4.116	1.324
482000	471111	1756	5.884		1.229	1.738	3.987	1.283
484000	473022	1776	5.768	- 6	1.205	- 5	1.703	- 7
486000	474932	1795	5.656		1.181	1.670	3.746	1.205
488000	476841	1815	5.548		1.159	1.638	3.632	1.169
490000	478751	1835	5.443		1.137	1.607	3.524	1.134
492000	480660	1855	5.341		1.115	1.577	3.419	1.100
494000	482569	1874	5.242		1.095	1.548	3.319	1.068
496000	484477	1894	5.145		1.075	1.519	3.223	1.037
498000	486385	1914	5.052		1.055	1.492	3.131	1.007
500000	488292	1933	4.961		1.036	1.465	3.043	9.789
502000	490200	1953	4.873		1.018	1.439	2.957	9.515

ALTITUDE Z, ft	TEMP. H, ft°R	T, °R	P, mb	PRESSURE P, lb/ft ⁻²	DENSITY			MOL. WEIGHT M					
					P, in. Hg	$\rho, \text{lb sec}^2 \text{ft}^{-4}$	$\rho, \text{lb ft}^{-3}$						
504000	492107	1972	4.788	- 6	9.999	- 6	1.414	- 7	2.875	- 12	9.251	- 11	28.19
506000	494013	1991	4.704		9.825		1.389		2.796		8.997		28.18
508000	495919	2011	4.623		9.656		1.365		2.720		8.753		28.17
510000	497825	2030	4.544		9.491		1.342		2.647		8.517		28.15
512000	499731	2049	4.468		9.331		1.319		2.577		8.291		28.14
514000	501636	2069	4.393		9.175		1.297		2.509		8.072		28.13
516000	503540	2088	4.321		9.024		1.276		2.443		7.862		28.11
518000	505445	2107	4.250		8.876		1.255		2.380		7.659		28.10
520000	507349	2126	4.181		8.732		1.235		2.319		7.463		28.08
522000	509253	2145	4.114		8.592		1.215		2.261		7.273		28.07
524000	511156	2164	4.048	- 6	8.455	- 6	1.195	- 7	2.204	- 12	7.091	- 11	28.05
526000	513059	2183	3.984		8.322		1.177		2.149		6.914		28.04
528000	514961	2202	3.922		8.192		1.158		2.096		6.744		28.02
530000	516864	2221	3.862		8.065		1.140		2.045		6.579		28.00
532000	518766	2240	3.802		7.941		1.123		1.995		6.420		27.99
534000	520667	2259	3.745		7.821		1.106		1.948		6.266		27.97
536000	522568	2278	3.688		7.703		1.089		1.901		6.118		27.95
538000	524469	2296	3.633		7.588		1.073		1.857		5.973		27.94
540000	526370	2308	3.579		7.476		1.057		1.819		5.853		27.92
542000	528270	2316	3.527		7.366		1.041		1.765		5.742		27.90
544000	530170	2325	3.475	- 6	7.258	- 6	1.026	- 7	1.751	- 12	5.633	- 11	27.88
546000	532069	2333	3.424		7.152		1.011		1.718		5.527		27.87
548000	533968	2342	3.374		7.048		9.965	- 8	1.686		5.423		27.85
550000	535867	2350	3.326		6.946		9.820		1.654		5.322		27.83
552000	537765	2358	3.278		6.846		9.679		1.623		5.223		27.81
554000	539663	2367	3.231		6.747		9.540		1.593		5.127		27.79
556000	541561	2375	3.184		6.651		9.404		1.564		5.032		27.77
558000	543458	2383	3.139		6.556		9.270		1.535		4.940		27.75
560000	545355	2392	3.095		6.464		9.139		1.507		4.850		27.73
562000	547252	2400	3.051		6.372		9.010		1.480		4.761		27.71
564000	549148	2408	3.008	- 6	6.283	- 6	8.883	- 8	1.453	- 12	4.675	- 11	27.69
566000	551044	2416	2.966		6.195		8.759		1.427		4.591		27.67
568000	552939	2424	2.925		6.109		8.637		1.401		4.508		27.64
570000	554834	2432	2.884		6.024		8.518		1.376		4.428		27.62
572000	556729	2440	2.845		5.941		8.400		1.352		4.349		27.60
574000	558624	2445	2.805		5.859		8.285		1.329		4.276		27.57
576000	560518	2448	2.767		5.779		8.171		1.308		4.209		27.55
578000	562411	2451	2.729		5.700		8.059		1.288		4.143		27.53
580000	564305	2454	2.692		5.622		7.949		1.267		4.078		27.50
582000	566198	2456	2.655		5.546		7.841		1.248		4.014		27.48
584000	568091	2459	2.619	- 6	5.470	- 6	7.734	- 8	1.228	- 12	3.952	- 11	27.45
586000	569983	2461	2.584		5.396		7.629		1.209		3.890		27.43
588000	571875	2464	2.549		5.323		7.526		1.190		3.850		27.40
590000	573767	2466	2.514		5.251		7.424		1.172		3.771		27.37
592000	575659	2469	2.480		5.180		7.324		1.155		3.713		27.34
594000	577549	2471	2.447		5.111		7.226		1.136		3.656		27.32
596000	579439	2474	2.414		5.042		7.129		1.119		3.599		27.29
598000	581330	2476	2.382		4.974		7.033		1.102		3.544		27.26
600000	583219	2478	2.350		4.908		6.939		1.085		3.490		27.23
602000	585109	2480	2.319		4.843		6.847		1.068		3.437		27.20
604000	586998	2482	2.288	- 6	4.778	- 6	6.756	- 8	1.052	- 12	3.384	- 11	27.17
606000	588887	2484	2.257		4.715		6.666		1.036		3.333		27.13
608000	590775	2486	2.228		4.652		6.578		1.020		3.282		27.10
610000	592663	2488	2.196		4.591		6.491		1.005		3.233		27.07
612000	594551	2490	2.169		4.530		6.405		9.895	- 13	3.184		27.04
614000	596439	2491	2.141		4.471		6.321		9.746		3.136		27.00
616000	598326	2493	2.112		4.412		6.238		9.599		3.080		26.97
618000	600212	2495	2.085		4.354		6.156		9.455		3.042		26.94
620000	602099	2497	2.057		4.297		6.076		9.314		2.997		26.91
622000	603985	2499	2.031		4.241		5.996		9.174		2.952		26.87

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE		DENSITY			MOL. WEIGHT M					
			P, lb/ft ⁻²	P, in. Hg	ρ, lb/sec ² ft ⁻⁴	ρ, lb ft ⁻³							
624000	605870	2500	2.004	- 6	4.186	- 6	5.918	- 8	9.038	-13	2.908	-11	26.84
626000	607756	2502	1.978		4.131		5.841		8.903		2.864		26.81
628000	609641	2504	1.952		4.078		5.765		8.771		2.822		26.78
630000	611525	2506	1.927		4.025		5.691		8.641		2.780		26.74
632000	613409	2507	1.902		3.973		5.617		8.513		2.739		26.71
634000	615293	2509	1.878		3.922		5.545		8.387		2.699		26.68
636000	617177	2511	1.854		3.871		5.474		8.264		2.659		26.65
638000	619060	2512	1.830		3.822		5.403		8.142		2.620		26.61
640000	620943	2514	1.806		3.773		5.334		8.023		2.581		26.58
642000	622825	2516	1.783		3.724		5.266		7.905		2.543		26.55
644000	624707	2517	1.760	- 6	3.677	- 6	5.199	- 8	7.790	-13	2.506	-11	26.52
646000	626589	2519	1.738		3.630		5.133		7.676		2.470		26.48
648000	628471	2521	1.716		3.584		5.067		7.564		2.434		26.45
650000	630352	2522	1.694		3.538		5.003		7.455		2.398		26.42
652000	632232	2524	1.673		3.494		4.940		7.346		2.364		26.39
654000	634113	2526	1.652		3.450		4.877		7.240		2.329		26.36
656000	635993	2527	1.631		3.406		4.816		7.136		2.296		26.32
658000	637873	2529	1.610		3.363		4.755		7.033		2.263		26.29
660000	639752	2530	1.590		3.321		4.696		6.932		2.230		26.26
662000	641631	2532	1.570		3.279		4.637		6.832		2.198		26.23
664000	643510	2533	1.551	- 6	3.238	- 6	4.579	- 8	6.735	-13	2.167	-11	26.20
666000	645388	2535	1.531		3.198		4.522		6.638		2.136		26.16
668000	647266	2537	1.512		3.158		4.465		6.544		2.105		26.13
670000	649143	2538	1.493		3.119		4.410		6.450		2.075		26.10
672000	651021	2540	1.475		3.080		4.355		6.359		2.046		26.07
674000	652897	2541	1.457		3.042		4.301		6.269		2.017		26.04
676000	654774	2543	1.439		3.005		4.248		6.180		1.988		26.00
678000	656650	2544	1.421		2.967		4.196		6.094		1.961		25.97
680000	658526	2544	1.403		2.931		4.144		6.011		1.934		25.94
682000	660402	2544	1.386		2.895		4.093		5.930		1.908		25.91
684000	662277	2544	1.369	- 6	2.859	- 6	4.043	- 8	5.849	-13	1.882	-11	25.88
686000	664151	2544	1.352		2.824		3.993		5.770		1.857		25.85
688000	666026	2544	1.336		2.790		3.945		5.693		1.832		25.81
690000	667900	2544	1.319		2.756		3.896		5.616		1.807		25.78
692000	669774	2545	1.303		2.722		3.849		5.540		1.783		25.75
694000	671647	2545	1.287		2.689		3.802		5.466		1.759		25.72
696000	673520	2545	1.272		2.656		3.756		5.393		1.735		25.69
698000	675393	2545	1.256		2.624		3.710		5.321		1.712		25.66
700000	677265	2545	1.241		2.592		3.665		5.249		1.689		25.63
702000	679137	2545	1.226		2.561		3.621		5.179		1.666		25.59
704000	681009	2545	1.211	- 6	2.530	- 6	3.577	- 8	5.110	-13	1.644	-11	25.56
706000	682880	2545	1.197		2.499		3.534		5.042		1.622		25.53
708000	684751	2545	1.182		2.469		3.491		4.975		1.601		25.50
710000	686622	2545	1.168		2.439		3.449		4.909		1.580		25.47
712000	688492	2545	1.154		2.410		3.407		4.844		1.559		25.44
714000	690362	2545	1.140		2.381		3.366		4.780		1.538		25.41
716000	692232	2545	1.126		2.352		3.326		4.717		1.518		25.38
718000	694101	2546	1.113		2.324		3.286		4.655		1.498		25.35
720000	695970	2546	1.100		2.296		3.247		4.593		1.478		25.32
722000	697838	2546	1.086		2.269		3.208		4.533		1.458		25.29
724000	699707	2546	1.073	- 6	2.242	- 6	3.170	- 8	4.473	-13	1.439	-11	25.25
726000	701574	2546	1.061		2.215		3.132		4.415		1.420		25.22
728000	703442	2546	1.048		2.189		3.095		4.357		1.402		25.19
730000	705309	2546	1.036		2.163		3.058		4.300		1.383		25.16
732000	707176	2546	1.023		2.137		3.022		4.243		1.365		25.13
734000	709042	2546	1.011		2.112		2.986		4.188		1.347		25.10
736000	710909	2546	9.992	- 7	2.087		2.951		4.134		1.330		25.07
738000	712774	2546	9.874		2.062		2.916		4.080		1.313		25.04
740000	714640	2546	9.758		2.038		2.881		4.027		1.296		25.01
742000	716505	2546	9.643		2.014		2.847		3.974		1.279		24.98

ALTITUDE Z, ft	TEMP. H, ft' T, °R	PRESSURE		DENSITY		MOL. WEIGHT M			
		P, mb	P, lb/ft ⁻²	P, in. Hg	$\rho, \text{lb sec}^2 \text{ft}^{-4}$				
504000	492107	1972	4.788	- 6	9.999	1.414 - 7	2.875 -12	9.251 -11	28.19
505000	494015	1991	4.704		9.825	1.389	2.796	8.997	28.18
508000	495919	2011	4.623		9.656	1.365	2.720	8.753	28.17
510000	497825	2030	4.544		9.491	1.342	2.647	8.517	28.15
512000	499731	2049	4.468		9.331	1.319	2.577	8.291	28.14
514000	501636	2069	4.393		9.175	1.297	2.509	8.072	28.13
516000	503540	2088	4.321		9.024	1.276	2.443	7.862	28.11
518000	505445	2107	4.250		8.876	1.255	2.380	7.659	28.10
520000	507349	2126	4.181		8.732	1.235	2.319	7.463	28.08
522000	509253	2145	4.114		8.592	1.215	2.261	7.273	28.07
524000	511156	2164	4.048	- 6	8.455	1.195 - 7	2.204 -12	7.091 -11	28.05
526000	513059	2183	3.964		8.322	1.177	2.149	6.914	28.04
528000	514961	2202	3.922		8.192	1.158	2.096	6.744	28.02
530000	516864	2221	3.862		8.065	1.140	2.045	6.579	28.00
532000	518766	2240	3.802		7.941	1.123	1.995	6.420	27.99
534000	520667	2259	3.745		7.821	1.106	1.948	6.266	27.97
536000	522568	2278	3.688		7.703	1.089	1.901	6.118	27.95
538000	524469	2296	3.633		7.588	1.073	1.857	5.973	27.94
540000	526370	2308	3.579		7.476	1.057	1.819	5.853	27.92
542000	528270	2316	3.527		7.366	1.041	1.785	5.742	27.90
544000	530170	2325	3.475	- 6	7.258	1.026 - 7	1.751 -12	5.633 -11	27.88
546000	532069	2333	3.424		7.152	1.011	1.718	5.527	27.87
548000	533968	2342	3.374		7.048	9.965 - 8	1.686	5.423	27.85
550000	535867	2350	3.326		6.946	9.880	1.654	5.322	27.83
552000	537765	2358	3.278		6.846	9.679	1.623	5.223	27.81
554000	539663	2367	3.231		6.747	9.540	1.593	5.127	27.79
556000	541561	2375	3.184		6.651	9.404	1.564	5.032	27.77
558000	543458	2383	3.139		6.556	9.270	1.533	4.940	27.75
560000	545355	2392	3.095		6.464	9.139	1.507	4.850	27.73
562000	547252	2400	3.051		6.372	9.010	1.480	4.761	27.71
564000	549148	2408	3.008	- 6	6.283	8.883 - 8	1.453 -12	4.675 -11	27.69
566000	551046	2416	2.966		6.195	8.759	1.427	4.591	27.67
568000	552939	2424	2.925		6.109	8.637	1.401	4.508	27.64
570000	554834	2432	2.884		6.084	8.518	1.376	4.428	27.62
572000	556729	2440	2.845		5.941	8.400	1.358	4.349	27.60
574000	558624	2448	2.805		5.859	8.285	1.339	4.276	27.57
576000	560518	2456	2.767		5.779	8.171	1.308	4.209	27.55
578000	562411	2451	2.729		5.700	8.059	1.288	4.143	27.53
580000	564305	2454	2.692		5.622	7.949	1.267	4.078	27.50
582000	566198	2456	2.655		5.546	7.841	1.248	4.014	27.48
584000	568091	2459	2.619	- 6	5.470	7.734 - 8	1.228 -12	3.992 -11	27.45
586000	569983	2461	2.584		5.396	7.629	1.209	3.890	27.43
588000	571873	2464	2.549		5.323	7.526	1.190	3.830	27.40
590000	573767	2465	2.514		5.251	7.404	1.172	3.771	27.37
592000	575658	2469	2.480		5.180	7.304	1.154	3.713	27.34
594000	577549	2471	2.447		5.111	7.226	1.136	3.656	27.32
596000	579439	2474	2.414		5.042	7.129	1.119	3.599	27.29
598000	581330	2476	2.382		4.974	7.035	1.102	3.544	27.26
600000	583219	2478	2.350		4.908	6.939	1.085	3.490	27.23
602000	585109	2480	2.319		4.843	6.847	1.068	3.437	27.20
604000	586998	2482	2.288	- 6	4.778	6.756 - 8	1.052 -12	3.384 -11	27.17
606000	588887	2484	2.257		4.715	6.666	1.036	3.333	27.13
608000	590775	2486	2.228		4.652	6.578	1.020	3.282	27.10
610000	592663	2488	2.198		4.591	6.491	1.005	3.233	27.07
612000	594551	2490	2.169		4.530	6.405	9.895 -13	3.184	27.04
614000	596439	2491	2.141		4.471	6.321	9.746	3.136	27.00
616000	598326	2493	2.112		4.412	6.238	9.599	3.089	26.97
618000	600212	2495	2.085		4.354	6.156	9.455	3.042	26.94
620000	602099	2497	2.057		4.297	6.076	9.314	2.997	26.91
622000	603985	2499	2.031		4.241	5.996	9.174	2.952	26.87

ALTITUDE Z, ft	TEMP. H, ft ¹	T, °R	P, mb	PRESSURE		DENSITY			MOL. WEIGHT		
				P, lb/ft ⁻²	P, in. Hg	P, lb/sec ² ft ⁻⁴	P, lb ft ⁻³	M			
624000	605870	2500	2.004	- 6	4.186	- 6	5.918	- 8	9.038	-11	26.04
626000	607756	2502	1.978		4.131		5.841		8.903		26.01
628000	609641	2504	1.952		4.078		5.765		8.771		26.78
630000	611525	2506	1.927		4.025		5.691		8.641		26.74
632000	613409	2507	1.902		3.973		5.617		8.513		26.71
634000	615293	2509	1.878		3.922		5.545		8.387		26.68
636000	617177	2511	1.854		3.871		5.474		8.264		26.65
638000	619060	2512	1.830		3.822		5.403		8.142		26.61
640000	620943	2514	1.806		3.773		5.334		8.023		26.58
642000	622825	2516	1.783		3.724		5.266		7.905		26.55
644000	624707	2517	1.760	- 6	3.677	- 6	5.199	- 8	7.790	-13	26.52
646000	626589	2519	1.738		3.630		5.133		7.676		26.48
648000	628471	2521	1.716		3.584		5.067		7.564		26.45
650000	630352	2522	1.694		3.538		5.003		7.455		26.42
652000	632232	2524	1.673		3.494		4.940		7.346		26.39
654000	634113	2526	1.652		3.450		4.877		7.240		26.36
656000	635993	2527	1.631		3.406		4.816		7.136		26.32
658000	637873	2529	1.610		3.363		4.755		7.033		26.29
660000	639752	2530	1.590		3.321		4.696		6.932		26.26
662000	641631	2532	1.570		3.279		4.637		6.832		26.23
664000	643510	2533	1.551	- 6	3.236	- 6	4.579	- 8	6.735	-13	26.20
666000	645388	2535	1.531		3.198		4.522		6.638		26.16
668000	647266	2537	1.512		3.158		4.465		6.544		26.13
670000	649143	2538	1.493		3.119		4.410		6.450		26.10
672000	651021	2540	1.475		3.080		4.355		6.359		26.07
674000	652897	2541	1.457		3.042		4.301		6.269		26.04
676000	654774	2543	1.439		3.005		4.248		6.180		26.00
678000	656650	2544	1.421		2.967		4.196		6.094		25.94
680000	658526	2544	1.403		2.931		4.144		6.011		25.94
682000	660402	2544	1.386		2.895		4.093		5.930		25.91
684000	662277	2544	1.369	- 6	2.859	- 6	4.043	- 8	5.849	-13	25.88
686000	664151	2544	1.352		2.824		3.993		5.770		25.85
688000	666026	2544	1.336		2.790		3.945		5.693		25.81
690000	667900	2544	1.319		2.756		3.896		5.516		25.78
692000	669774	2545	1.303		2.722		3.849		5.420		25.75
694000	671647	2545	1.287		2.689		3.802		5.346		25.72
696000	673520	2545	1.272		2.656		3.756		5.253		25.69
698000	675393	2545	1.256		2.624		3.710		5.161		25.66
700000	677265	2545	1.241		2.592		3.665		5.049		25.63
702000	679137	2545	1.226		2.561		3.621		5.179		25.59
704000	681009	2545	1.211	- 6	2.530	- 6	3.577	- 8	5.110	-13	25.56
706000	682880	2545	1.197		2.499		3.534		5.042		25.53
708000	684751	2545	1.182		2.469		3.491		4.975		25.50
710000	686622	2545	1.168		2.439		3.449		4.909		25.47
712000	688492	2545	1.154		2.410		3.407		4.844		25.44
714000	690362	2545	1.140		2.381		3.366		4.780		25.41
716000	692232	2545	1.125		2.352		3.326		4.717		25.38
718000	694101	2546	1.113		2.324		3.286		4.655		25.35
720000	695970	2546	1.100		2.296		3.247		4.593		25.32
722000	697836	2546	1.086		2.269		3.208		4.533		25.29
724000	699707	2546	1.073	- 6	2.242	- 6	3.170	- 8	4.473	-13	25.25
726000	701574	2546	1.061		2.215		3.132		4.415		25.22
728000	703442	2546	1.048		2.189		3.095		4.357		25.19
730000	705309	2546	1.036		2.163		3.058		4.300		25.16
732000	707176	2546	1.023		2.137		3.022		4.243		25.13
734000	709042	2546	1.011		2.112		2.986		4.188		25.10
736000	710909	2546	9.992	- 7	2.087		2.951		4.154		25.07
738000	712774	2546	9.874		2.062		2.916		4.080		25.04
740000	714640	2546	9.758		2.038		2.881		4.027		25.01
742000	716505	2546	9.643		2.014		2.847		3.974		24.98

ALTITUDE Z, ft	TEMP. H, ft°R	P, mb	PRESSURE		DENSITY		MOL. WEIGHT M
			P, lb/ft ⁻²	P, in. Hg	ρ, lb/sec ² ft ⁻⁴	ρ, lb ft ⁻³	
744000	718370	2546	9.529	- 7	1.990	- 8	3.923 -13
746000	720234	2546	9.417		1.967	2.781	3.872 1.246
748000	722098	2546	9.307		1.944	2.748	3.822 1.230
750000	723962	2546	9.198		1.921	2.716	3.773 1.214
752000	725825	2546	9.090		1.899	2.684	3.724 1.198
754000	727688	2546	8.984		1.876	2.653	3.676 1.183
756000	729551	2546	8.879		1.854	2.622	3.629 1.168
758000	731413	2546	8.776		1.833	2.591	3.582 1.153
760000	733275	2546	8.674		1.812	2.561	3.536 1.138
762000	735137	2546	8.573		1.790	2.532	3.491 1.123
764000	736998	2546	8.473	- 7	1.770	- 6	3.447 -13
766000	738859	2546	8.375		1.749	2.473	3.403 1.095
768000	740719	2546	8.278		1.729	2.445	3.359 1.081
770000	742580	2546	8.183		1.709	2.416	3.316 1.067
772000	744440	2546	8.088		1.689	2.388	3.274 1.053
774000	746299	2547	7.995		1.670	2.361	3.233 1.040
776000	748158	2547	7.903		1.651	2.334	3.192 1.027
778000	750017	2547	7.812		1.632	2.307	3.151 1.014
780000	751876	2547	7.723		1.613	2.280	3.111 1.001
782000	753734	2547	7.634		1.594	2.254	3.072 9.884 -12
784000	755592	2547	7.547	- 7	1.576	- 6	3.033 -13
786000	757449	2547	7.460		1.558	2.203	2.995 9.637
788000	759307	2547	7.375		1.540	2.178	2.958 9.516
790000	761163	2547	7.291		1.523	2.153	2.920 9.396
792000	763020	2547	7.208		1.505	2.129	2.884 9.278
794000	764876	2547	7.126		1.488	2.104	2.848 9.162
796000	766732	2547	7.045		1.471	2.080	2.812 9.047
798000	768587	2547	6.966		1.455	2.057	2.777 8.934
800000	770442	2547	6.887		1.438	2.034	2.742 8.823
805000	775079	2547	6.694		1.398	1.977	2.658 8.551
810000	779713	2547	6.507	- 7	1.359	- 6	1.992 -13
815000	784345	2547	6.326		1.321	1.868	2.497 8.035
820000	788975	2547	6.151		1.285	1.816	2.421 7.789
825000	793602	2548	5.981		1.249	1.766	2.347 7.592
830000	798228	2548	5.816		1.215	1.717	2.276 7.383
835000	802851	2548	5.656		1.181	1.670	2.207 7.102
840000	807473	2548	5.502		1.149	1.625	2.141 6.888
845000	812092	2548	5.352		1.118	1.580	2.077 6.681
850000	816709	2548	5.206		1.087	1.537	2.014 6.481
855000	821324	2549	5.065		1.058	1.496	1.954 6.288
860000	825936	2549	4.928	- 7	1.029	- 6	1.455 -13
865000	830547	2549	4.795		1.002	1.416	1.840 5.980
870000	835156	2549	4.667		9.747	- 7	1.378 1.786
875000	839762	2550	4.542		9.486		1.341 1.733
880000	844366	2550	4.421		9.233		1.305 1.682
885000	848969	2550	4.303		9.988		1.271 1.633
890000	853569	2551	4.189		8.750		1.237 1.585
895000	858167	2551	4.079		8.518		1.204 1.539
900000	862762	2551	3.971		8.294		1.173 1.495
905000	867356	2552	3.867		8.076		1.142 1.451
910000	871948	2552	3.766	- 7	7.865	- 7	1.112 -13
915000	876537	2553	3.668		7.660		1.083 1.369
920000	881125	2553	3.572		7.461		1.055 1.330
925000	885710	2554	3.480		7.267		1.028 1.292
930000	890293	2554	3.390		7.080		1.001 1.255
935000	894874	2555	3.302		6.897		9.752 - 9 1.220 3.924
940000	899453	2555	3.218		6.720		9.502 1.185 3.813
945000	904030	2556	3.135		6.548		9.258 1.152 3.706
950000	908605	2557	3.055		6.381		9.022 1.119 3.602
955000	913177	2557	2.977		6.219		8.792 1.088 3.501

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE		DENSITY		MOL. WEIGHT		
			P, lb/ft ⁻²	P, in.Hg	ρ_1 , lb/ft ⁻⁴	ρ_1 , lb ft ⁻³	M		
960000	917748	2558	2.902	- 7	6.061	- 9	8.569	-12	22.19
965000	922316	2559	2.829		5.908		8.353	1.028	22.14
970000	926883	2559	2.757		5.759		8.142	9.997	22.09
975000	931447	2560	2.688		5.614		7.937	9.720	22.04
980000	936009	2561	2.621		5.473		7.738	9.452	21.99
985000	940569	2562	2.555		5.336		7.545	9.192	21.94
990000	945127	2563	2.491		5.203		7.357	8.939	21.89
995000	949683	2563	2.430		5.074		7.174	8.695	21.84
1000000	954237	2564	2.369		4.949		6.997	8.458	21.79
1005000	958789	2565	2.311		4.826		6.824	8.228	21.74
1010000	963339	2566	2.254	- 7	4.708	- 7	6.656	- 9	21.70
1015000	967886	2567	2.199		4.592		6.493	7.789	21.65
1020000	972432	2568	2.145		4.480		6.334	7.579	21.60
1025000	976973	2569	2.093		4.370		6.179	7.375	21.56
1030000	981517	2570	2.042		4.264		6.029	7.178	21.51
1035000	986056	2571	1.992		4.161		5.883	6.986	21.46
1040000	990593	2572	1.944		4.060		5.740	6.800	21.42
1045000	995128	2573	1.897		3.962		5.602	6.619	21.38
1050000	999661	2574	1.851		3.867		5.467	6.444	21.33
1055000	1004192	2576	1.807		3.774		5.336	6.274	21.29
1060000	1008721	2577	1.764	- 7	3.684	- 7	5.209	- 9	21.25
1065000	1013248	2578	1.722		3.596		5.085	5.949	21.20
1070000	1017773	2579	1.681		3.511		4.964	5.793	21.16
1075000	1022296	2580	1.641		3.427		4.846	5.642	21.12
1080000	1026816	2582	1.602		3.346		4.732	5.495	21.08
1085000	1031355	2583	1.565		3.268		4.620	5.353	21.04
1090000	1035851	2584	1.528		3.191		4.512	5.214	21.00
1095000	1040566	2586	1.492		3.116		4.406	5.080	20.96
1100000	1044878	2587	1.457		3.043		4.303	4.949	20.92
1105000	1049389	2588	1.423		2.972		4.203	4.822	20.88
1110000	1053897	2590	1.390	- 7	2.903	- 7	4.105	- 9	20.84
1115000	1058403	2591	1.358		2.836		4.010	4.779	20.80
1120000	1062908	2593	1.327		2.771		3.917	4.462	20.76
1125000	1067410	2594	1.296		2.707		3.827	4.349	20.72
1130000	1071910	2596	1.266		2.645		3.739	4.239	20.69
1135000	1076408	2597	1.237		2.584		3.654	4.132	20.65
1140000	1080904	2599	1.209		2.525		3.570	4.028	20.61
1145000	1085398	2600	1.181		2.468		3.489	3.927	20.58
1150000	1089890	2602	1.155		2.411		3.410	3.829	20.54
1155000	1094380	2604	1.128		2.357		3.332	3.724	20.51
1160000	1098868	2605	1.103	- 7	2.304	- 7	3.257	- 9	20.47
1165000	1103353	2607	1.078		2.252		3.184	3.550	20.44
1170000	1107837	2609	1.054		2.201		3.112	3.463	20.40
1175000	1112319	2610	1.030		2.152		3.043	3.377	20.37
1180000	1116799	2612	1.007		2.104		2.973	3.294	20.34
1185000	1121276	2614	9.848	- 8	2.057		2.908	3.213	20.30
1190000	1125752	2616	9.630		2.011		2.844	3.135	20.27
1195000	1130226	2617	9.416		1.967		2.781	3.058	20.24
1200000	1134697	2619	9.208		1.923		2.719	2.984	20.20
1205000	1139167	2621	9.005		1.881		2.659	2.911	20.17
1210000	1143634	2623	8.807	- 8	1.839	- 7	2.601	- 9	20.14
1215000	1148100	2625	8.614		1.799		2.544	2.772	20.11
1220000	1152563	2627	8.426		1.760		2.488	2.705	20.08
1225000	1157025	2629	8.242		1.721		2.434	2.641	20.05
1230000	1161484	2630	8.063		1.684		2.381	2.577	20.02
1235000	1165941	2632	7.888		1.647		2.329	2.516	19.99
1240000	1170397	2634	7.718		1.612		2.279	2.456	19.96
1245000	1174850	2636	7.551		1.577		2.230	2.398	19.93
1250000	1179302	2638	7.389		1.543		2.182	2.341	19.90
1255000	1183751	2640	7.230		1.510		2.135	2.285	19.87

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE		DENSITY			MOL. WEIGHT M					
			P, lb/ft ²	P, in.Hg	$\rho, \text{lb sec}^{-2} \text{ft}^{-4}$	$\rho, \text{lb ft}^{-3}$							
1260000	1188198	2642	7.075	- 8	1.478	- 7	2.089	- 9	2.232	-14	7.180	-13	19.84
1265000	1192644	2645	6.984		1.446		2.045		2.179		7.011		19.81
1270000	1197087	2647	6.777		1.415		2.001		2.128		6.847		19.78
1275000	1201528	2649	6.633		1.385		1.959		2.078		6.687		19.76
1280000	1205967	2651	6.493		1.356		1.917		2.030		6.531		19.73
1285000	1210405	2653	6.355		1.327		1.877		1.983		6.379		19.70
1290000	1214840	2655	6.222		1.299		1.837		1.937		6.231		19.67
1295000	1219273	2657	6.091		1.272		1.799		1.872		6.087		19.65
1300000	1223704	2659	5.963		1.245		1.761		1.848		5.946		19.62
1305000	1228134	2662	5.839		1.219		1.724		1.806		5.809		19.59
1310000	1232561	2664	5.717	- 8	1.194	- 7	1.688	- 9	1.764	-14	5.676	-13	19.57
1315000	1236986	2666	5.598		1.169		1.653		1.724		5.546		19.54
1320000	1241410	2668	5.482		1.145		1.619		1.684		5.419		19.52
1325000	1245831	2671	5.368		1.121		1.585		1.646		5.296		19.49
1330000	1250250	2673	5.258		1.098		1.553		1.609		5.175		19.47
1335000	1254667	2675	5.149		1.075		1.521		1.572		5.058		19.44
1340000	1259083	2677	5.044		1.053		1.489		1.537		4.944		19.42
1345000	1263496	2680	4.940		1.032		1.459		1.502		4.832		19.39
1350000	1267907	2682	4.840		1.011		1.429		1.468		4.724		19.37
1355000	1272317	2684	4.741		9.902	- 8	1.400		1.435		4.618		19.35
1360000	1276724	2687	4.645	- 8	9.700	- 8	1.372	- 9	1.403	-14	4.514	-13	19.32
1365000	1281129	2689	4.550		9.504		1.344		1.372		4.414		19.30
1370000	1285533	2692	4.458		9.312		1.317		1.341		4.315		19.28
1375000	1289934	2694	4.369		9.124		1.290		1.311		4.219		19.25
1380000	1294334	2696	4.281		8.940		1.264		1.282		4.126		19.23
1385000	1298731	2699	4.195		8.761		1.239		1.254		4.035		19.21
1390000	1303126	2701	4.111		8.585		1.214		1.226		3.946		19.18
1395000	1307520	2704	4.029		8.414		1.190		1.199		3.859		19.16
1400000	1311911	2706	3.948		8.246		1.166		1.173		3.774		19.14
1405000	1316301	2709	3.870		8.083		1.143		1.147		3.692		19.12
1410000	1320688	2711	3.793	- 8	7.902	- 8	1.120	- 9	1.122	-14	3.611	-13	19.10
1415000	1325074	2714	3.718		7.766		1.098		1.098		3.533		19.08
1420000	1329458	2716	3.645		7.613		1.076		1.074		3.456		19.05
1425000	1333839	2719	3.573		7.463		1.055		1.051		3.381		19.03
1430000	1338219	2721	3.503		7.316		1.034		1.028		3.308		19.01
1435000	1342597	2724	3.434		7.173		1.014		1.006		3.236		18.99
1440000	1346972	2726	3.367		7.033		9.944	-10	9.843	-15	3.167		18.97
1445000	1351346	2729	3.302		6.896		9.750		9.632		3.099		18.95
1450000	1355718	2732	3.238		6.762		9.561		9.426		3.033		18.93
1455000	1360088	2734	3.175		6.631		9.375		9.224		2.968		18.91
1460000	1364456	2737	3.113	- 8	6.505	- 8	9.194	-10	9.028	-15	2.905	-13	18.89
1465000	1368822	2739	3.053		6.377		9.017		8.856		2.843		18.87
1470000	1373186	2742	2.995		6.254		8.843		8.649		2.783		18.85
1475000	1377548	2745	2.937		6.134		8.673		8.466		2.724		18.83
1480000	1381908	2747	2.881		6.017		8.507		8.287		2.666		18.81
1485000	1386266	2750	2.826		5.902		8.345		8.113		2.610		18.80
1490000	1390682	2753	2.772		5.789		8.186		7.942		2.555		18.78
1495000	1394976	2755	2.719		5.679		8.050		7.776		2.508		18.76
1500000	1399369	2758	2.668		5.571		7.878		7.614		2.450		18.74
1505000	1403679	2761	2.617		5.466		7.728		7.455		2.399		18.72
1510000	1408027	2764	2.568	- 8	5.363	- 8	7.583	-10	7.300	-15	2.349	-13	18.70
1515000	1412374	2766	2.519		5.262		7.440		7.148		2.300		18.69
1520000	1416718	2769	2.472		5.163		7.300		7.000		2.252		18.67
1525000	1421061	2772	2.426		5.066		7.163		6.856		2.206		18.65
1530000	1425401	2774	2.380		4.971		7.029		6.715		2.160		18.63
1535000	1429740	2777	2.336		4.879		6.898		6.577		2.116		18.61
1540000	1434077	2780	2.292		4.788		6.769		6.442		2.073		18.60
1545000	1438411	2783	2.250		4.699		6.644		6.310		2.030		18.58
1550000	1442744	2786	2.208		4.612		6.521		6.181		1.989		18.56
1555000	1447075	2788	2.167		4.527		6.400		6.055		1.948		18.55

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE P, lb/ft ²	DENSITY				MOL. WEIGHT M
				P, in. Hg	ρ, lb sec ² ft ⁻⁴	ρ, lb ft ⁻³		
1560000	1451404	2791	2.127 - 8	4.443 - 8	6.282 - 10	5.932 - 15	1.909 - 13	18.53
1565000	1455731	2794	2.088	4.361	6.166	5.812	1.870	18.51
1570000	1460056	2797	2.050	4.281	6.053	5.695	1.832	18.50
1575000	1464380	2800	2.012	4.203	5.942	5.580	1.795	18.48
1580000	1468701	2803	1.976	4.126	5.834	5.468	1.759	18.46
1585000	1473020	2805	1.940	4.051	5.727	5.358	1.724	18.45
1590000	1477358	2808	1.904	3.977	5.623	5.250	1.689	18.43
1595000	1481653	2811	1.870	3.905	5.521	5.146	1.656	18.42
1600000	1485967	2814	1.836	3.834	5.421	5.043	1.623	18.40
1605000	1490278	2817	1.803	3.765	5.323	4.943	1.590	18.39
1610000	1494588	2820	1.770 - 8	3.697 - 8	5.227 - 10	4.844 - 15	1.559 - 13	18.37
1615000	1498896	2823	1.738	3.631	5.133	4.749	1.528	18.36
1620000	1503202	2826	1.707	3.566	5.041	4.655	1.498	18.34
1625000	1507505	2829	1.677	3.502	4.951	4.563	1.468	18.33
1630000	1511808	2832	1.647	3.439	4.863	4.473	1.439	18.31
1635000	1516108	2834	1.617	3.378	4.776	4.385	1.411	18.30
1640000	1520406	2837	1.589	3.318	4.691	4.300	1.383	18.28
1645000	1524702	2840	1.560	3.259	4.608	4.216	1.356	18.27
1650000	1528997	2843	1.533	3.201	4.526	4.133	1.330	18.25
1655000	1533289	2846	1.506	3.145	4.446	4.053	1.304	18.24
1660000	1537580	2849	1.479 - 8	3.089 - 8	4.368 - 10	3.974 - 15	1.279 - 13	18.22
1665000	1541868	2852	1.453	3.035	4.291	3.897	1.254	18.21
1670000	1546155	2855	1.428	2.982	4.216	3.822	1.230	18.20
1675000	1550440	2858	1.403	2.930	4.142	3.748	1.206	18.18
1680000	1554723	2861	1.378	2.879	4.070	3.676	1.183	18.17
1685000	1559004	2864	1.354	2.828	3.999	3.606	1.160	18.16
1690000	1563283	2867	1.331	2.779	3.930	3.537	1.138	18.14
1695000	1567560	2870	1.308	2.731	3.861	3.469	1.116	18.13
1700000	1571836	2873	1.285	2.684	3.795	3.403	1.095	18.11
1705000	1576109	2876	1.263	2.637	3.729	3.338	1.074	18.10
1710000	1580381	2879	1.241 - 8	2.592 - 8	3.665 - 10	3.275 - 15	1.054 - 13	18.09
1715000	1584650	2882	1.220	2.547	3.602	3.213	1.034	18.08
1720000	1588918	2885	1.199	2.504	3.540	3.152	1.014	18.06
1725000	1593184	2889	1.178	2.461	3.479	3.093	9.951 - 14	18.05
1730000	1597448	2892	1.158	2.419	3.420	3.035	9.764	18.04
1735000	1601710	2895	1.138	2.378	3.362	2.978	9.580	18.02
1740000	1605970	2898	1.119	2.337	3.305	2.922	9.401	18.01
1745000	1610228	2901	1.100	2.298	3.248	2.867	9.225	18.00
1750000	1614485	2904	1.081	2.259	3.193	2.814	9.053	17.99
1755000	1618739	2907	1.063	2.220	3.140	2.761	8.885	17.97
1760000	1622992	2910	1.045 - 8	2.183 - 8	3.087 - 10	2.710 - 15	8.720 - 14	17.96
1765000	1627243	2913	1.028	2.146	3.035	2.660	8.558	17.95
1770000	1631492	2916	1.010	2.110	2.984	2.611	8.400	17.94
1775000	1635739	2919	9.935 - 9	2.075	2.934	2.563	8.245	17.93
1780000	1639984	2922	9.769	2.040	2.885	2.515	8.093	17.91
1785000	1644227	2926	9.606	2.006	2.837	2.469	7.945	17.90
1790000	1648469	2929	9.446	1.973	2.789	2.424	7.799	17.89
1795000	1652708	2932	9.289	1.940	2.743	2.380	7.656	17.88
1800000	1656946	2935	9.135	1.908	2.698	2.336	7.517	17.87
1805000	1661182	2938	8.984	1.876	2.653	2.294	7.380	17.86
1810000	1665415	2941	8.836 - 9	1.845 - 8	2.609 - 10	2.252 - 15	7.245 - 14	17.85
1815000	1669647	2944	8.691	1.815	2.566	2.211	7.114	17.83
1820000	1673878	2948	8.548	1.785	2.524	2.171	6.985	17.82
1825000	1678106	2951	8.408	1.756	2.483	2.132	6.859	17.81
1830000	1682332	2954	8.270	1.727	2.442	2.093	6.736	17.80
1835000	1686557	2957	8.135	1.699	2.402	2.056	6.614	17.79
1840000	1690780	2960	8.003	1.671	2.363	2.019	6.496	17.78
1845000	1695000	2963	7.872	1.644	2.325	1.983	6.379	17.77
1850000	1699219	2967	7.745	1.618	2.287	1.947	6.265	17.76
1855000	1703437	2970	7.619	1.591	2.250	1.913	6.154	17.75

ALTITUDE Z, ft	TEMP. T, °R	P, mb	PRESSURE		DENSITY		MOL. WEIGHT						
			P, lbf ft ⁻²	P, in. Hg	ρ, lb sec ² ft ⁻⁴	ρ, lb ft ⁻³	M						
1860000	1707652	2973	7.496	- 9	1.566	- 10	1.879	-15	6.044	-14	17.74		
1865000	1711865	2976	7.375		1.540	2.178	1.845		5.937		17.73		
1870000	1716077	2979	7.257		1.516	2.143	1.813		5.832		17.72		
1875000	1720286	2983	7.140		1.491	2.109	1.780		5.729		17.71		
1880000	1724494	2986	7.026		1.467	2.075	1.749		5.627		17.69		
1885000	1728700	2989	6.914		1.444	2.042	1.718		5.528		17.68		
1890000	1732904	2992	6.803		1.421	2.009	1.688		5.431		17.67		
1895000	1737107	2995	6.695		1.398	1.977	1.658		5.336		17.66		
1900000	1741307	2999	6.589		1.376	1.946	1.629		5.243		17.65		
1905000	1745506	3002	6.484		1.354	1.915	1.601		5.151		17.64		
1910000	1749702	3005	6.381	- 9	1.333	- 8	1.884	-10	1.573	-15	5.061	-14	17.63
1915000	1753897	3008	6.281		1.312		1.855		1.546		4.973		17.62
1920000	1758090	3012	6.182		1.291		1.825		1.519		4.887		17.62
1925000	1762282	3015	6.085		1.271		1.797		1.493		4.802		17.61
1930000	1766471	3018	5.989		1.251		1.769		1.467		4.719		17.60
1935000	1770658	3021	5.895		1.231		1.741		1.441		4.638		17.59
1940000	1774844	3025	5.803		1.212		1.714		1.417		4.558		17.58
1945000	1779028	3028	5.713		1.193		1.687		1.392		4.480		17.57
1950000	1783210	3031	5.624		1.175		1.661		1.368		4.403		17.56
1955000	1787390	3034	5.536		1.156		1.635		1.345		4.327		17.55
1960000	1791569	3038	5.450	- 9	1.138	- 8	1.610	-10	1.322	-15	4.254	-14	17.54
1965000	1795745	3041	5.366		1.121		1.585		1.299		4.181		17.53
1970000	1799920	3044	5.283		1.103		1.560		1.277		4.110		17.52
1975000	1804093	3047	5.202		1.086		1.536		1.256		4.040		17.51
1980000	1808264	3051	5.122		1.070		1.512		1.234		3.972		17.50
1985000	1812433	3054	5.043		1.053		1.489		1.214		3.905		17.49
1990000	1816600	3057	4.966		1.037		1.466		1.193		3.839		17.48
1995000	1820766	3060	4.890		1.021		1.444		1.173		3.774		17.47
2000000	1824929	3064	4.815		1.006		1.422		1.153		3.711		17.47
2005000	1829091	3067	4.742		9.904	- 9	1.400		1.134		3.648		17.46
2010000	1833251	3070	4.670	- 9	9.754	- 9	1.379	-10	1.115	-15	3.587	-14	17.45
2015000	1837410	3074	4.599		9.606		1.358		1.096		3.527		17.44
2020000	1841566	3077	4.520		9.460		1.338		1.078		3.469		17.43
2025000	1845721	3080	4.461		9.317		1.317		1.060		3.411		17.42
2030000	1849873	3083	4.394		9.177		1.298		1.043		3.354		17.42
2035000	1854024	3087	4.328		9.039		1.278		1.025		3.299		17.41
2040000	1858173	3090	4.263		8.903		1.259		1.008		3.244		17.40
2045000	1862321	3093	4.199		8.770		1.240		9.916	-16	3.190		17.39
2050000	1866466	3097	4.136		8.639		1.221		9.753		3.138		17.38
2055000	1870610	3100	4.074		8.510		1.203		9.593		3.086		17.37
2060000	1874752	3103	4.014	- 9	8.383	- 9	1.185	-10	9.435	-16	3.036	-14	17.37
2065000	1878892	3107	3.954		8.258		1.168		9.281		2.986		17.36
2070000	1883050	3110	3.895		8.136		1.150		9.129		2.937		17.35
2075000	1887167	3113	3.838		8.015		1.133		8.980		2.889		17.34
2080000	1891301	3117	3.781		7.897		1.117		8.834		2.842		17.33
2085000	1895454	3120	3.725		7.780		1.100		8.690		2.796		17.33
2090000	1899565	3123	3.670		7.666		1.084		8.549		2.751		17.32
2095000	1903695	3127	3.616		7.553		1.068		8.411		2.706		17.31
2100000	1907822	3130	3.563		7.442		1.052		8.275		2.662		17.30
2120000	1924314	3143	3.360		7.017		9.921	-11	7.755		2.495		17.27
2140000	1940777	3157	3.169	- 9	6.619	- 9	9.359	-11	7.272	-16	2.340	-14	17.24
2160000	1957212	3170	2.991		6.247		8.832		6.822		2.195		17.21
2180000	1973617	3184	2.824		5.898		8.339		6.403		2.060		17.19
2200000	1989995	3197	2.667		5.571		7.877		6.013		1.935		17.16
2220000	2006344	3211	2.591		5.264		7.443		5.649		1.818		17.13
2240000	2022664	3224	2.383		4.977		7.036		5.310		1.708		17.10
2260000	2038957	3238	2.254		4.707		6.655		4.993		1.607		17.08
2280000	2055221	3251	2.132		4.453		6.296		4.698		1.511		17.05
2300000	2071457	3265	2.018		4.215		5.960		4.421		1.423		17.03
2320000	2087665	3278	1.911		3.991		5.643		4.163		1.340		17.00

TABLE II B
ATMOSPHERIC PROPERTIES AS A FUNCTION OF ALTITUDE
ENGLISH UNITS

**Acceleration of Gravity, Specific Weight, Scale Height, Number Density
Particle Speed, Collision Frequency, and Mean Free Path**

NOTE: A one- or two-digit number (preceded by a plus or minus sign) following the initial entry of each block indicates the power of 10 by which that entry and each succeeding entry of that block should be multiplied. A change of power occurring within a block is indicated by a similar notation.

ALTITUDE Z, ft	ACC. OF GRAV. H, ft' ft sec^{-2}	SPECIFIC WEIGHT $\omega, \text{lb/ft}^3$	SCALE WEIGHT $W_s, \text{thsd ft}$	NUMBER DENSITY n, ft^{-3}	PART. SPEED $\bar{V}, \text{ft sec}^{-1}$	COLLISION FREQ. v, sec^{-1}	MEAN FREE PATH L, ft	
-16500	-16513	32.225	1.1893 - 1	30.765	1.1201 +24	1588.9	1.1339 +10	1.4013 - 7
-16000	-16012	32.223	1.1946	30.671	1.1252	1586.4	1.1373	1.3950
-15500	-15512	32.222	1.1789	30.578	1.1104	1584.0	1.1205	1.4135
-15000	-15011	32.220	1.1633	30.484	1.0958	1581.5	1.1041	1.4324
-14500	-14510	32.219	1.1479	30.390	1.0813	1579.0	1.0878	1.4516
-14000	-14009	32.217	1.1326	30.297	1.0670	1576.6	1.0717	1.4711
-13500	-13509	32.216	1.1175	30.203	1.0528	1574.1	1.0558	1.4909
-13000	-13008	32.214	1.1025	30.109	1.0387	1571.6	1.0401	1.5110
-12500	-12507	32.213	1.0877	30.016	1.0248	1569.1	1.0245	1.5315
-12000	-12007	32.211	1.0731	29.922	1.0111	1566.6	1.0092	1.5524
-11500	-11506	32.210	1.0586 - 1	29.828	9.9747 +23	1564.1	9.9402 + 9	1.5735 - 7
-11000	-11006	32.208	1.0443	29.734	9.8400	1561.6	9.7904	1.5951
-10500	-10505	32.206	1.0301	29.641	9.7057	1559.1	9.6423	1.6170
-10000	-10005	32.205	1.0160	29.547	9.5748	1556.6	9.4960	1.6393
- 9500	- 9504	32.203	1.0021	29.453	9.4443	1554.1	9.3515	1.6619
- 9000	- 9004	32.202	9.8837 - 2	29.360	9.3152	1551.6	9.2087	1.6850
- 8500	- 8503	32.200	9.7477	29.266	9.1874	1549.1	9.0677	1.7084
- 8000	- 8003	32.199	9.6131	29.172	9.0510	1546.6	8.9283	1.7322
- 7500	- 7503	32.197	9.4799	29.078	8.9359	1544.1	8.7907	1.7565
- 7000	- 7002	32.196	9.3482	28.985	8.8121	1541.5	8.6548	1.7811
- 6500	- 6502	32.194	9.2178 - 2	28.891	8.6897 +23	1539.0	8.5205 + 9	1.8062 - 7
- 6000	- 6002	32.193	9.0889	28.797	8.5686	1536.5	8.3879	1.8318
- 5500	- 5501	32.191	8.9614	28.703	8.4488	1533.9	8.2569	1.8577
- 5000	- 5001	32.189	8.8352	28.610	8.3302	1531.4	8.1276	1.8842
- 4500	- 4501	32.188	8.7105	28.516	8.2130	1528.8	7.9999	1.9111
- 4000	- 4001	32.186	8.5871	28.422	8.0970	1526.3	7.8737	1.9384
- 3500	- 3501	32.185	8.4650	28.328	7.9823	1523.7	7.7492	1.9663
- 3000	- 3000	32.183	8.3443	28.235	7.8689	1521.2	7.6262	1.9947
- 2500	- 2500	32.182	8.2249	28.141	7.7566	1518.6	7.5048	2.0235
- 2000	- 2000	32.180	8.1068	28.047	7.6457	1516.0	7.3849	2.0529
- 1500	- 1500	32.179	7.9901 - 2	27.953	7.5359 +23	1513.5	7.2665 + 9	2.0828 - 7
- 1000	- 1000	32.177	7.8746	27.860	7.4274	1510.9	7.1497	2.1132
- 500	- 500	32.176	7.7604	27.766	7.3200	1508.3	7.0343	2.1442
0	0	32.174	7.6475	27.672	7.2139	1505.7	6.9204	2.1758
500	500	32.173	7.5359	27.578	7.1089	1503.1	6.8080	2.2079
1000	1000	32.171	7.4255	27.484	7.0051	1500.5	6.6970	2.2406
1500	1500	32.169	7.3164	27.391	6.9025	1497.9	6.5875	2.2739
2000	2000	32.168	7.2085	27.297	6.8011	1495.3	6.4794	2.3078
2500	2500	32.166	7.1019	27.203	6.7008	1492.7	6.3727	2.3424
3000	3000	32.165	6.9964	27.109	6.6016	1490.1	6.2674	2.3776
3500	3499	32.163	6.8922 - 2	27.015	6.5036 +23	1487.5	6.1635 + 9	2.4134 - 7
4000	3999	32.162	6.7892	26.921	6.4067	1484.9	6.0610	2.4499
4500	4499	32.160	6.6874	26.828	6.3109	1482.2	5.9598	2.4871
5000	4999	32.159	6.5867	26.734	6.2162	1479.6	5.8599	2.5250
5500	5499	32.157	6.4872	26.640	6.1226	1477.0	5.7614	2.5636
6000	5998	32.156	6.3889	26.546	6.0301	1474.3	5.6642	2.6029
6500	6498	32.154	6.2917	26.452	5.9386	1471.7	5.5683	2.6430
7000	6998	32.152	6.1957	26.358	5.8483	1469.0	5.4737	2.6838
7500	7497	32.151	6.1008	26.264	5.7590	1466.4	5.3804	2.7254
8000	7997	32.149	6.0070	26.171	5.6707	1463.7	5.2884	2.7678
8500	8497	32.148	5.9143 - 2	26.077	5.5835 +23	1461.1	5.1976 + 9	2.8111 - 7
9000	8996	32.146	5.8229	25.983	5.4973	1458.4	5.1080	2.8551
9500	9496	32.145	5.7323	25.889	5.4122	1455.7	5.0197	2.9001
10000	9995	32.143	5.6429	25.795	5.3281	1453.1	4.9326	2.9458
10500	10495	32.142	5.5546	25.701	5.2449	1450.4	4.8466	2.9925
11000	10994	32.140	5.4674	25.607	5.1628	1447.7	4.7619	3.0401
11500	11494	32.139	5.3812	25.513	5.0817	1445.0	4.6784	3.0887
12000	11993	32.137	5.2961	25.419	5.0015	1442.3	4.5960	3.1382
12500	12493	32.136	5.2120	25.326	4.9223	1439.6	4.5148	3.1887
13000	12992	32.134	5.1289	25.232	4.8441	1436.9	4.4347	3.2401

ALTITUDE Z, ft	ACC. OF GRAV. H, ft ² g, ft sec ⁻²	SPECIFIC WEIGHT $\omega, \text{lb/ft}^3$	SCALE HEIGHT $H_s, \text{thsd ft}$	NUMBER DENSITY n, ft ⁻³	PART. SPEED $\bar{V}, \text{ft sec}^{-1}$	COLLISION FREQ. v, sec^{-1}	MEAN FREE PATH L, ft	
							L, ft	
13500	13491	32.132	5.0469 - 2	25.138	4.7669 + 23	1434.2	4.3557 + 9	3.2926 - 7
14000	13991	32.131	4.9659	25.044	4.6906	1431.5	4.2779	3.3462
14500	14490	32.129	4.8859	24.950	4.6152	1428.7	4.2011	3.4008
15000	14989	32.128	4.8068	24.856	4.5408	1426.0	4.1255	3.4566
15500	15488	32.126	4.7288	24.762	4.4673	1423.3	4.0510	3.5135
16000	15988	32.125	4.6517	24.668	4.3947	1420.6	3.9775	3.5715
16500	16487	32.123	4.5757	24.574	4.3230	1417.8	3.9050	3.6307
17000	16986	32.122	4.5005	24.480	4.2522	1415.1	3.8337	3.6911
17500	17485	32.120	4.4264	24.386	4.1824	1412.3	3.7633	3.7528
18000	17984	32.119	4.3531	24.292	4.1134	1409.6	3.6940	3.8158
18500	18484	32.117	4.2808 - 2	24.198	4.0452 + 23	1406.8	3.6257 + 9	3.8800 - 7
19000	18983	32.116	4.2095	24.104	3.9780	1404.0	3.5584	3.9456
19500	19482	32.114	4.1390	24.010	3.9116	1401.3	3.4921	4.0126
20000	19981	32.112	4.0695	23.916	3.8461	1398.5	3.4268	4.0809
20500	20480	32.111	4.0008	23.822	3.7814	1395.7	3.3625	4.1508
21000	20979	32.109	3.9331	23.728	3.7175	1392.9	3.2991	4.2220
21500	21478	32.108	3.8662	23.634	3.6545	1390.1	3.2367	4.2949
22000	21977	32.106	3.8003	23.540	3.5923	1387.3	3.1752	4.3692
22500	22476	32.105	3.7351	23.446	3.5310	1384.5	3.1146	4.4452
23000	22975	32.103	3.6709	23.352	3.4704	1381.7	3.0550	4.5227
23500	23474	32.102	3.6075 - 2	23.258	3.4106 + 23	1378.9	2.9962 + 9	4.6020 - 7
24000	23972	32.100	3.5450	23.164	3.3516	1376.0	2.9384	4.6830
24500	24471	32.099	3.4832	23.070	3.2935	1373.2	2.8815	4.7657
25000	24970	32.097	3.4224	22.976	3.2360	1370.4	2.8254	4.8503
25500	25469	32.096	3.3623	22.882	3.1794	1367.5	2.7702	4.9367
26000	25968	32.094	3.3031	22.788	3.1235	1364.7	2.7158	5.0250
26500	26466	32.092	3.2446	22.694	3.0684	1361.8	2.6623	5.1152
27000	26965	32.091	3.1870	22.600	3.0140	1359.0	2.6097	5.2075
27500	27464	32.089	3.1301	22.506	2.9604	1356.1	2.5578	5.3018
28000	27962	32.088	3.0740	22.412	2.9075	1353.3	2.5068	5.3983
28500	28461	32.086	3.0188 - 2	22.318	2.8554 + 23	1350.4	2.4566 + 9	5.4969 - 7
29000	28960	32.085	2.9642	22.224	2.8059	1347.5	2.4072	5.5977
29500	29458	32.083	2.9105	22.130	2.7532	1344.6	2.3586	5.7009
30000	29957	32.082	2.8575	22.036	2.7052	1341.7	2.3108	5.8064
30500	30455	32.080	2.8052	21.942	2.6539	1338.8	2.2637	5.9143
31000	30954	32.079	2.7537	21.848	2.6052	1335.9	2.2174	6.0246
31500	31452	32.077	2.7029	21.754	2.5573	1333.0	2.1719	6.1376
32000	31951	32.076	2.6528	21.659	2.5100	1330.1	2.1271	6.2531
32500	32449	32.074	2.6034	21.565	2.4635	1327.2	2.0830	6.3714
33000	32948	32.072	2.5548	21.471	2.4175	1324.2	2.0397	6.4924
33500	33446	32.071	2.5068 - 2	21.377	2.3723 + 23	1321.3	1.9970 + 9	6.6163 - 7
34000	33945	32.069	2.4596	21.283	2.3277	1318.4	1.9551	6.7430
34500	34443	32.068	2.4130	21.189	2.2837	1315.4	1.9139	6.8728
35000	34941	32.066	2.3671	21.095	2.2404	1312.5	1.8734	7.0057
35500	35440	32.065	2.3219	21.001	2.1977	1309.5	1.8336	7.1418
36000	35938	32.063	2.2774	20.907	2.1557	1306.5	1.7944	7.2811
36500	36436	32.062	2.2265	20.819	2.1076	1303.6	1.7532	7.4473
37000	36934	32.060	2.1757	20.830	2.0577	1305.6	1.7117	7.6277
37500	37433	32.059	2.1221	20.881	2.0090	1303.6	1.6712	7.8126
38000	37931	32.057	2.0718	20.882	1.9615	1303.6	1.6316	8.0019
38500	38429	32.056	2.0227 - 2	20.883	1.9151 + 23	1305.6	1.5930 + 9	8.1958 - 7
39000	38927	32.054	1.9748	20.884	1.8698	1305.6	1.5553	8.3944
39500	39425	32.053	1.9280	20.885	1.8255	1305.6	1.5185	8.5978
40000	39923	32.051	1.8823	20.886	1.7823	1305.6	1.4826	8.8062
40500	40422	32.049	1.8377	20.887	1.7402	1305.6	1.4475	9.0195
41000	40920	32.048	1.7941	20.888	1.6990	1305.6	1.4133	9.2380
41500	41418	32.046	1.7516	20.889	1.6588	1305.6	1.3799	9.4618
42000	41916	32.045	1.7101	20.890	1.6196	1305.6	1.3472	9.6910
42500	42414	32.043	1.6695	20.891	1.5813	1305.6	1.3154	9.9258
43000	42912	32.042	1.6300	20.892	1.5439	1305.6	1.2843	1.0166 - 6

ALTITUDE Z, ft	ACC. OF GRAV. H, ft' g, ft sec ⁻²	SPECIFIC WEIGHT ω, lb/ft ⁻³	SCALE HEIGHT H _s , thsd ft	NUMBER DENSITY n, ft ⁻³	PART. SPEED V, ft sec ⁻¹	COLLISION FREQ. v, sec ⁻¹	MEAN FREE PATH L, ft	
							+23	+22
43500	43409	32.040	1.5914 - 2	20.893	1.5074	1.2539 + 9	1.0412	- 6
44000	43907	32.039	1.5537	20.894	1.4717	1.2242	1.0665	
44500	44405	32.037	1.5168	20.895	1.4369	1.1953	1.0923	
45000	44903	32.036	1.4809	20.896	1.4030	1.1670	1.1187	
45500	45401	32.034	1.4458	20.897	1.3698	1.1394	1.1458	
46000	45899	32.033	1.4116	20.898	1.3374	1.1125	1.1736	
46500	46397	32.031	1.3781	20.899	1.3053	1.0862	1.2020	
47000	46894	32.030	1.3455	20.900	1.2749	1.0605	1.2311	
47500	47392	32.028	1.3136	20.901	1.2448	1.0355	1.2609	
48000	47890	32.026	1.2825	20.902	1.2154	1.0110	1.2914	
48500	48387	32.025	1.2521 - 2	20.903	1.1866	9.8708 + 8	1.3227	- 6
49000	48885	32.023	1.2225	20.904	1.1586	9.6375	1.3547	
49500	49383	32.022	1.1935	20.905	1.1312	9.4097	1.3875	
50000	49880	32.020	1.1653	20.906	1.1045	9.1873	1.4211	
50500	50378	32.019	1.1377	20.907	1.0734	8.9702	1.4555	
51000	50876	32.017	1.1107	20.908	1.0529	8.7582	1.4907	
51500	51373	32.016	1.0841	20.909	1.0230	8.5513	1.5268	
52000	51871	32.014	1.0583	20.910	1.0037	8.3492	1.5638	
52500	52368	32.013	1.0337	20.911	9.8000 + 22	8.1519	1.6016	
53000	52866	32.011	1.0092	20.912	9.5634	7.9593	1.5404	
53500	53364	32.010	9.8533 - 3	20.913	9.3424	7.7713 + 8	1.6801	- 6
54000	53861	32.008	9.6201	20.914	9.1215	7.5377	1.7207	
54500	54358	32.007	9.3924	20.915	8.9062	7.4084	1.7623	
55000	54855	32.005	9.1701	20.916	8.6958	7.2354	1.8050	
55500	55353	32.003	8.9530	20.917	8.4904	7.0626	1.8436	
56000	55850	32.002	8.7411	20.918	8.2898	6.8957	1.8934	
56500	56347	32.001	8.5343	20.919	8.0940	6.7329	1.9392	
57000	56845	31.999	8.3323	20.920	7.9029	6.5739	1.9861	
57500	57342	31.997	8.1351	20.921	7.7162	6.4136	2.0341	
58000	57839	31.996	7.9426	20.922	7.5340	6.2670	2.0833	
58500	58336	31.994	7.7547 - 3	20.923	7.3561	6.1190 + 8	2.1337	- 6
59000	58834	31.993	7.5712	20.924	7.1824	5.9745	2.1853	
59500	59331	31.991	7.3921	20.925	7.0123	5.8335	2.2381	
60000	59828	31.990	7.2172	20.926	6.8472	5.6957	2.2923	
60500	60325	31.988	7.0465	20.927	6.6855	5.5612	2.3477	
61000	60822	31.987	6.8798	20.928	6.5277	5.4300	2.4045	
61500	61319	31.985	6.7171	20.929	6.3736	5.3013	2.4625	
62000	61816	31.984	6.5582	20.930	6.2231	5.1756	2.5221	
62500	62313	31.982	6.4051	20.931	6.0762	5.0544	2.5831	
63000	62810	31.981	6.2516	20.932	5.9328	4.9351	2.6456	
63500	63307	31.979	6.1038 - 3	20.933	5.7928	4.8186 + 8	2.7095	- 6
64000	63804	31.977	5.9594	20.934	5.6560	4.7049	2.7750	
64500	64301	31.976	5.8185	20.935	5.5225	4.5938	2.8421	
65000	64798	31.974	5.6809	20.936	5.3922	4.4354	2.9108	
65500	65295	31.973	5.5466	20.937	5.2650	4.3796	2.9812	
66000	65792	31.971	5.4154	20.938	5.1407	4.2762	3.0532	
66500	66289	31.970	5.2874	20.939	5.0194	4.1753	3.1270	
67000	66785	31.968	5.1624	20.940	4.9010	4.0768	3.2026	
67500	67282	31.967	5.0403	20.941	4.7853	3.9806	3.2799	
68000	67779	31.965	4.9212	20.942	4.6724	3.8867	3.3592	
68500	68276	31.964	4.8048 - 3	20.943	4.5622	3.7950 + 8	3.4404	- 6
69000	68772	31.962	4.6913	20.944	4.4546	3.7055	3.5235	
69500	69269	31.961	4.5804	20.945	4.3495	3.6181	3.6086	
70000	69766	31.959	4.4721	20.946	4.2469	3.5327	3.6958	
70500	70262	31.958	4.3664	20.947	4.1467	3.4494	3.7851	
71000	70759	31.956	4.2632	20.948	4.0489	3.3680	3.8765	
71500	71256	31.955	4.1625	20.949	3.9534	3.2886	3.9702	
72000	71752	31.953	4.0641	20.950	3.8602	3.2110	4.0661	
72500	72249	31.952	3.9681	20.951	3.7691	3.1353	4.1643	
73000	72745	31.950	3.8743	20.952	3.6802	3.0614	4.2648	

ALTITUDE Z, ft	ACC. OF GRAV. H, ft' g, ft sec ⁻²	SPECIFIC WEIGHT w, lb/ft ⁻³	SCALE WEIGHT H _s , thsd ft	NUMBER DENSITY n, ft ⁻³	PART. SPEED V, ft sec ⁻¹	COLLISION MEAN FREQ. FREE PATH	
						L, ft	
73500	73242	31.948	3.7828 - 3	20.953	3.5935 +22	1305.6	2.9892 + 8 4.3678 - 6
74000	73738	31.947	3.6934	20.954	3.5087	1305.6	2.9187 4.4733
74500	74235	31.945	3.6061	20.955	3.4260	1305.6	2.8499 4.5813
75000	74731	31.944	3.5209	20.956	3.3452	1305.6	2.7827 4.6920
75500	75228	31.942	3.4378	20.957	3.2663	1305.6	2.7171 4.8053
76000	75724	31.941	3.3566	20.958	3.1893	1305.6	2.6530 4.9213
76500	76220	31.939	3.2773	20.959	3.1142	1305.6	2.5905 5.0401
77000	76717	31.938	3.1999	20.960	3.0407	1305.6	2.5294 5.1618
77500	77213	31.936	3.1243	20.961	2.9691	1305.6	2.4698 5.2864
78000	77709	31.935	3.0505	20.962	2.8991	1305.6	2.4116 5.4140
78500	78206	31.933	2.9785 - 3	20.963	2.8307 +22	1305.6	2.3547 + 8 5.5447 - 6
79000	78702	31.932	2.9081	20.964	2.7640	1305.6	2.2992 5.6785
79500	79198	31.930	2.8394	20.965	2.6989	1305.6	2.2450 5.8156
80000	79694	31.929	2.7724	20.966	2.6353	1305.6	2.1921 5.9560
80500	80190	31.927	2.7069	20.967	2.5732	1305.6	2.1405 6.0997
81000	80687	31.926	2.6430	20.968	2.5125	1305.6	2.0900 6.2469
81500	81183	31.924	2.5806	20.969	2.4533	1305.6	2.0408 6.3977
82000	81679	31.923	2.5197	20.970	2.3955	1305.6	1.9927 6.5520
82500	82175	31.921	2.4586	20.984	2.3376	1306.0	1.9451 6.7145
83000	82671	31.919	2.3957	21.029	2.2778	1307.4	1.8974 6.8906
83500	83167	31.918	2.3344 - 3	21.074	2.2197 +22	1308.8	1.8509 + 8 7.0710 - 6
84000	83663	31.916	2.2749	21.119	2.1632	1310.1	1.8057 7.2556
84500	84159	31.915	2.2170	21.164	2.1083	1311.5	1.7616 7.4447
85000	84655	31.913	2.1607	21.209	2.0549	1312.9	1.7188 7.6383
85500	85151	31.912	2.1060	21.254	2.0029	1314.2	1.6770 7.8365
86000	85647	31.910	2.0527	21.299	1.9523	1315.6	1.6364 8.0394
86500	86143	31.909	2.0009	21.344	1.9032	1316.9	1.5968 8.2472
87000	86639	31.907	1.9505	21.389	1.8553	1318.3	1.5583 8.4598
87500	87134	31.906	1.9015	21.434	1.8088	1319.6	1.5208 8.6774
88000	87630	31.904	1.8558	21.478	1.7635	1321.0	1.4842 8.9002
88500	88126	31.903	1.8074 - 3	21.523	1.7195 +22	1322.3	1.4486 + 8 9.1283 - 6
89000	88622	31.901	1.7623	21.568	1.6766	1323.7	1.4139 9.3616
89500	89118	31.900	1.7184	21.613	1.6349	1325.0	1.3802 9.6004
90000	89613	31.898	1.6756	21.658	1.5943	1326.4	1.3473 9.8449
90500	90109	31.897	1.6341	21.703	1.5548	1327.7	1.3152 1.0095 - 5
91000	90605	31.895	1.5936	21.748	1.5164	1329.1	1.2840 1.0351
91500	91100	31.894	1.5542	21.793	1.4789	1330.4	1.2536 1.0613
92000	91596	31.892	1.5158	21.838	1.4425	1331.7	1.2239 1.0881
92500	92092	31.891	1.4785	21.883	1.4071	1333.1	1.1951 1.1155
93000	92587	31.889	1.4422	21.928	1.3726	1334.4	1.1669 1.1435
93500	93083	31.887	1.4068 - 3	21.973	1.3390 +22	1335.7	1.1395 + 8 1.1722 - 5
94000	93578	31.886	1.3724	22.018	1.3063	1337.1	1.1128 1.2016
94500	94074	31.884	1.3389	22.063	1.2744	1338.4	1.0867 1.2316
95000	94569	31.883	1.3063	22.108	1.2434	1339.7	1.0614 1.2623
95500	95065	31.881	1.2745	22.153	1.2132	1341.1	1.0366 1.2937
96000	95560	31.880	1.2435	22.198	1.1838	1342.4	1.0125 1.3258
96500	96056	31.878	1.2134	22.243	1.1552	1343.7	9.8900 + .7 1.3587
97000	96551	31.877	1.1841	22.288	1.1273	1345.1	9.6609 1.3923
97500	97046	31.875	1.1555	22.333	1.1002	1346.4	9.4375 1.4266
98000	97542	31.874	1.1277	22.378	1.0737	1347.7	9.2197 1.4618
98500	98037	31.872	1.1006 - 3	22.422	1.0480 +22	1349.0	9.0073 + 7 1.4977 - 5
99000	98532	31.871	1.0742	22.467	1.0229	1350.3	8.8003 1.5344
99500	99028	31.869	1.0484	22.512	9.9846 +21	1351.7	8.5984 1.5720
100000	99523	31.868	1.0234	22.557	9.7464	1353.0	8.4015 1.6104
100500	100018	31.866	9.9899 - 4	22.602	9.5145	1354.3	8.2095 1.6497
101000	100513	31.865	9.7522	22.647	9.2885	1355.6	8.0223 1.6898
101500	101008	31.863	9.5205	22.692	9.0683	1356.9	7.8397 1.7308
102000	101504	31.862	9.2948	22.737	8.8537	1358.2	7.6616 1.7728
102500	101999	31.860	9.0749	22.782	8.6446	1359.5	7.4879 1.8156
103000	102494	31.859	8.8606	22.827	8.4409	1360.9	7.3185 1.8595

ALTITUDE Z, ft	ACC. OF GRAV. M, ft sec ⁻²	SPECIFIC WEIGHT w, lb ft ⁻³	SCALE HEIGHT H _s , thou ft	NUMBER DENSITY n, ft ⁻³	PART. SPEED V, ft sec ⁻¹	COLLISION FREQ. v, sec ⁻¹	MEAN FREE PATH L, ft	
							+21	-7
103500	102989	31.857	8.6517 - 4	22.872	8.2424 +21	1362.2	7.1532 + 7	1.9043 - 5
104000	103484	31.856	8.4482	22.917	8.0489	1365.5	6.9920	1.9500
104500	103979	31.854	8.2499	22.962	7.8603	1364.8	6.8347	1.9968
105000	104474	31.853	8.0566	23.007	7.6764	1366.1	6.6812	2.0447
106000	105464	31.849	7.6845	23.097	7.3226	1368.7	6.3854	2.1434
107000	106454	31.846	7.3309	23.187	6.9864	1371.3	6.1038	2.2466
108000	107444	31.843	6.9949	23.277	6.6668	1373.9	5.8356	2.3543
109000	108433	31.840	6.6755	23.367	6.3630	1376.5	5.5801	2.4667
110000	109423	31.837	6.3718	23.457	6.0741	1379.0	5.3368	2.5840
111000	110412	31.834	6.0831	23.548	5.7994	1381.6	5.1050	2.7064
112000	111402	31.831	5.8084 - 4	23.638	5.5380 +21	1384.2	4.8840 + 7	2.8342 - 5
113000	112391	31.828	5.5471	23.728	5.2894	1386.8	4.6734	2.9674
114000	113380	31.825	5.2985	23.818	5.0528	1389.3	4.4726	3.1063
115000	114369	31.822	5.0619	23.908	4.8277	1391.9	4.2812	3.2512
116000	115358	31.819	4.8367	23.998	4.6133	1394.4	4.0986	3.4022
117000	116347	31.816	4.6223	24.088	4.4092	1397.0	3.9245	3.5597
118000	117336	31.813	4.4181	24.178	4.2149	1399.5	3.7583	3.7238
119000	118325	31.810	4.2237	24.268	4.0298	1402.1	3.5998	3.8949
120000	119313	31.807	4.0385	24.358	3.8535	1404.6	3.4485	4.0731
121000	120302	31.804	3.8621	24.449	3.6855	1407.1	3.3041	4.2588
122000	121290	31.801	3.6940 - 4	24.539	3.5254 +21	1409.7	3.1662 + 7	4.4522 - 5
123000	122279	31.798	3.5337	24.629	3.3728	1412.2	3.0346	4.6536
124000	123267	31.795	3.3810	24.719	3.2273	1414.7	2.9089	4.8634
125000	124255	31.792	3.2354	24.809	3.0886	1417.2	2.7888	5.0818
126000	125243	31.789	3.0966	24.899	2.9564	1419.7	2.6741	5.3091
127000	126231	31.786	2.9641	24.990	2.8302	1422.2	2.5645	5.5458
128000	127219	31.783	2.8378	25.080	2.7099	1424.7	2.4598	5.7920
129000	128207	31.780	2.7173	25.170	2.5950	1427.2	2.3597	6.0483
130000	129195	31.777	2.6023	25.260	2.4855	1429.7	2.2640	6.3150
131000	130182	31.774	2.4926	25.350	2.3809	1432.2	2.1725	6.5924
132000	131170	31.771	2.3879 - 4	25.441	2.2811 +21	1434.7	2.0950 + 7	6.8809 - 5
133000	132157	31.768	2.2879	25.531	2.1857	1437.1	2.0013	7.1809
134000	133145	31.765	2.1924	25.621	2.0947	1439.6	1.9213	7.4929
135000	134132	31.762	2.1012	25.711	2.0078	1442.1	1.8447	7.8173
136000	135119	31.758	2.0141	25.802	1.9248	1444.5	1.7714	8.1546
137000	136106	31.755	1.9309	25.892	1.8454	1447.0	1.7013	8.5051
138000	137093	31.752	1.8514	25.982	1.7696	1449.4	1.6342	8.8694
139000	138080	31.749	1.7755	26.072	1.6972	1451.9	1.5699	9.2479
140000	139066	31.746	1.7029	26.163	1.6280	1454.3	1.5084	9.6413
141000	140053	31.743	1.6335	26.253	1.5618	1456.8	1.4495	1.0050 - 4
142000	141040	31.740	1.5672 - 4	26.343	1.4985 +21	1459.2	1.3931 + 7	1.0474 - 4
143000	142026	31.737	1.5037	26.434	1.4380	1461.6	1.3391	1.0915
144000	143013	31.734	1.4431	26.524	1.3801	1464.0	1.2873	1.1373
145000	143999	31.731	1.3850	26.614	1.3247	1466.5	1.2377	1.1848
146000	144985	31.728	1.3295	26.705	1.2718	1468.9	1.1902	1.2342
147000	145971	31.725	1.2764	26.795	1.2211	1471.3	1.1446	1.2884
148000	146957	31.722	1.2256	26.885	1.1726	1473.7	1.1010	1.3385
149000	147943	31.719	1.1770	26.976	1.1262	1476.1	1.0591	1.3937
150000	148929	31.716	1.1304	27.066	1.0817	1478.5	1.0190	1.4510
151000	149915	31.713	1.0859	27.157	1.0392	1480.9	9.8049 + 6	1.5104
152000	150900	31.710	1.0432 - 4	27.247	9.9845 +20	1483.3	9.4357 + 6	1.5720 - 4
153000	151886	31.707	1.0023	27.337	9.5944	1485.7	9.0816	1.6359
154000	152871	31.704	9.6322 - 5	27.428	9.2207	1488.1	8.7419	1.7022
155000	153856	31.701	9.2574	27.518	8.8627	1490.4	8.4160	1.7710
156000	154842	31.698	8.9166	27.551	8.5372	1491.3	8.1114	1.8385
157000	155827	31.695	8.5979	27.554	8.2330	1491.3	7.8223	1.9064
158000	156812	31.692	8.2907	27.557	7.9395	1491.3	7.5435	1.9769
159000	157797	31.689	7.7945	27.559	7.6566	1491.3	7.2747	2.0500
160000	158782	31.686	7.7089	27.562	7.3938	1491.3	7.0155	2.1257
161000	159767	31.683	7.4735	27.565	7.1207	1491.3	6.7655	2.2042

ALTITUDE Z, ft	ACC. OF GRAV. g, ft sec ⁻²	SPECIFIC WEIGHT $\omega, \text{lb/ft}^3$	SCALE HEIGHT $z_s, \text{thsd ft}$	NUMBER DENSITY n, ft^{-3}	PART. SPEED $V, \text{ft sec}^{-1}$	COLLISION FREQ. v, sec^{-1}	MEAN FREE PATH L, ft	
							11, ft'	1491.3
162000	160751	31.680	7.1680 - 5	27.567	6.8670 +20	1491.3	6.5245 + 6	2.2857 - 4
163000	161736	31.677	6.9120	27.570	6.6224	1491.3	6.2920	2.3701
164000	162720	31.674	6.6652	27.572	6.3865	1491.3	6.0679	2.4576
165000	163705	31.671	6.4271	27.575	6.1590	1491.3	5.8518	2.5484
166000	164689	31.668	6.1977	27.578	5.9397	1491.3	5.6434	2.6425
167000	165673	31.665	5.9764	27.580	5.7282	1491.3	5.4424	2.7401
168000	166657	31.662	5.7631	27.583	5.5242	1491.3	5.2487	2.8413
169000	167641	31.659	5.5573	27.586	5.3275	1491.3	5.0618	2.9461
170000	168625	31.656	5.3590	27.588	5.1379	1491.3	4.8816	3.0549
171000	169609	31.653	5.1677	27.591	4.9550	1491.3	4.7078	3.1677
172000	170593	31.650	4.9833 - 5	27.593	4.7786 +20	1491.3	4.5403 + 6	3.2846 - 4
173000	171577	31.647	4.8055	27.596	4.6085	1491.3	4.3787	3.4058
174000	172560	31.644	4.6341	27.599	4.4445	1491.3	4.2228	3.5315
175000	173544	31.641	4.4687	27.601	4.2864	1491.3	4.0726	3.6618
176000	174527	31.638	4.3226	27.518	4.1466	1488.9	3.9337	3.7851
177000	175510	31.635	4.1877	27.389	4.0175	1485.4	3.8021	3.9068
178000	176494	31.632	4.0563	27.260	3.8919	1481.8	3.6743	4.0329
179000	177477	31.629	3.9285	27.130	3.7696	1478.2	3.5502	4.1638
180000	178460	31.626	3.8041	27.001	3.6506	1474.6	3.4298	4.2995
181000	179443	31.623	3.6831	26.872	3.5348	1471.0	3.3129	4.4403
182000	180425	31.620	3.5653 - 5	26.743	3.4221 +20	1467.4	3.1994 + 6	4.5865 - 4
183000	181408	31.617	3.4508	26.614	3.3125	1463.8	3.0893	4.7383
184000	182391	31.614	3.3395	26.485	3.2060	1460.2	2.9825	4.8958
185000	183373	31.611	3.2312	26.355	3.1023	1456.5	2.8789	5.0593
186000	184356	31.608	3.1259	26.226	3.0015	1452.9	2.7784	5.2292
187000	185338	31.605	3.0236	26.097	2.9035	1449.2	2.6810	5.4057
188000	186320	31.602	2.9241	25.968	2.8083	1445.6	2.5865	5.5890
189000	187303	31.599	2.8275	25.838	2.7157	1441.9	2.4948	5.7796
190000	188285	31.596	2.7336	25.709	2.6268	1438.2	2.4060	5.9776
191000	189267	31.593	2.6423	25.580	2.5383	1434.5	2.3200	6.1834
192000	190248	31.590	2.5537 - 5	25.451	2.4534 +20	1430.8	2.2366 + 6	6.3975 - 4
193000	191230	31.587	2.4676	25.321	2.3709	1427.1	2.1558	6.6201
194000	192212	31.584	2.3839	25.192	2.2908	1423.4	2.0775	6.8516
195000	193194	31.581	2.3027	25.063	2.2130	1419.7	2.0017	7.0925
196000	194175	31.578	2.2239	24.933	2.1374	1416.0	1.9283	7.3432
197000	195157	31.575	2.1474	24.804	2.0641	1412.2	1.8572	7.6041
198000	196138	31.572	2.0732	24.675	1.9929	1408.5	1.7883	7.8758
199000	197119	31.569	2.0011	24.545	1.9238	1404.7	1.7217	8.1586
200000	198100	31.566	1.9312	24.416	1.8568	1400.9	1.6573	8.4532
201000	199081	31.563	1.8634	24.286	1.7917	1397.1	1.5949	8.7600
202000	200062	31.560	1.7976 - 5	24.157	1.7286 +20	1393.3	1.5346 + 6	9.0797 - 4
203000	201043	31.557	1.7338	24.028	1.6675	1389.5	1.4762	9.4129
204000	202024	31.554	1.6719	23.898	1.6081	1385.7	1.4198	9.7603
205000	203004	31.551	1.6120	23.769	1.5506	1381.9	1.3652	1.0122 - 3
206000	203985	31.548	1.5538	23.639	1.4948	1378.1	1.3124	1.0500
207000	204966	31.545	1.4975	23.510	1.4408	1374.2	1.2615	1.0894
208000	205946	31.542	1.4429	23.380	1.3884	1370.4	1.2122	1.1305
209000	206926	31.539	1.3900	23.251	1.3376	1366.5	1.1646	1.1734
210000	207906	31.536	1.3388	23.121	1.2885	1362.6	1.1186	1.2182
211000	208887	31.533	1.2892	22.992	1.2408	1358.7	1.0742	1.2649
212000	209867	31.530	1.2412 - 5	22.862	1.1947 +20	1354.8	1.0313 + 6	1.3137 - 3
213000	210847	31.527	1.1947	22.733	1.1501	1350.9	9.8988 + 5	1.3647
214000	211826	31.524	1.1497	22.603	1.1069	1347.0	9.4992	1.4180
215000	212806	31.521	1.1061	22.474	1.0650	1342.1	9.1135	1.4737
216000	213786	31.518	1.0640	22.344	1.0245	1339.1	8.7414	1.5320
217000	214765	31.515	1.0232	22.214	9.8539 +19	1335.2	8.3825	1.5928
218000	215745	31.512	9.8379 - 6	22.085	9.4751	1331.2	8.0363	1.6565
219000	216724	31.509	9.4566	21.955	9.1087	1327.3	7.7025	1.7231
220000	217703	31.506	9.0680	21.826	8.7545	1323.3	7.3807	1.7929
221000	218683	31.503	8.7317	21.696	8.4120	1319.3	7.0706	1.8659

ALTITUDE Z, ft	ACC. OF GRAV. \ddot{H} , ft ft sec^{-2}	SPECIFIC WEIGHT ω , lb ft^{-3}	SCALE H_s , thsd ft	NUMBER DENSITY n , ft^{-3}	PART. \bar{V} , ft sec^{-1}	COLLISION FREQ. v , sec^{-1}	MEAN FREE PATH L, ft	
							HEIGHT H_s , thsd ft	SPEED \bar{V} , ft sec^{-1}
222000	219662	31.500	8.3873 - 6	21.566	8.0811 +19	1315.3	6.7717 + 5	1.9423 - 3
223000	220641	31.497	8.0546	21.437	7.7612	1311.2	6.4838	2.0223
224000	221620	31.494	7.7332	21.307	7.4522	1307.2	6.2065	2.1062
225000	222598	31.491	7.4228	21.177	7.1538	1303.2	5.9395	2.1940
226000	223577	31.488	7.1230	21.047	6.8655	1299.1	5.6824	2.2862
227000	224556	31.485	6.8336	20.918	6.5872	1295.0	5.4350	2.3827
228000	225534	31.482	6.5543	20.788	6.3185	1290.9	5.1969	2.4841
229000	226513	31.479	6.2847	20.658	6.0593	1286.8	4.9678	2.5904
230000	227491	31.476	6.0247	20.528	5.8091	1282.7	4.7475	2.7019
231000	228469	31.473	5.7739	20.399	5.5678	1278.6	4.5357	2.8190
232000	229447	31.470	5.5320 - 6	20.269	5.3350 +19	1274.5	4.3320 + 5	2.9420 - 3
233000	230426	31.467	5.2988	20.139	5.1106	1270.3	4.1363	3.0712
234000	231404	31.464	5.0740	20.009	4.8943	1266.2	3.9482	3.2069
235000	232381	31.461	4.8574	19.879	4.6858	1262.0	3.7676	3.3496
236000	233359	31.458	4.6487	19.750	4.4849	1257.8	3.5941	3.4997
237000	234337	31.455	4.4476	19.620	4.2913	1253.6	3.4275	3.6575
238000	235315	31.452	4.2541	19.490	4.1050	1249.4	3.2676	3.8236
239000	236292	31.449	4.0677	19.360	3.9255	1245.2	3.1142	3.9984
240000	237269	31.446	3.8884	19.230	3.7528	1240.9	2.9670	4.1824
241000	238247	31.443	3.7158	19.100	3.5865	1236.7	2.8259	4.3763
242000	239224	31.440	3.5497 - 6	18.970	3.4266 +19	1232.4	2.6905 + 5	4.5805 - 3
243000	240201	31.437	3.3901	18.840	3.2728	1228.1	2.5608	4.7958
244000	241178	31.434	3.2366	18.711	3.1249	1223.8	2.4365	5.0228
245000	242155	31.431	3.0890	18.581	2.9827	1219.5	2.3175	5.2622
246000	243132	31.43	2.947	18.45	2.846	1215.	2.203	5.515
247000	244109	31.43	2.811	18.32	2.715	1211.	2.094	5.782
248000	245085	31.42	2.680	18.19	2.589	1206.	1.990	6.063
249000	246062	31.42	2.555	18.06	2.468	1202.	1.890	6.361
250000	247039	31.42	2.434	17.93	2.351	1198.	1.794	6.675
251000	248015	31.41	2.318	17.80	2.240	1193.	1.703	7.008
252000	248991	31.41	2.207 - 6	17.67	2.133 +19	1189.	1.615 + 5	7.359 - 3
253000	249967	31.41	2.101	17.54	2.030	1184.	1.532	7.731
254000	250944	31.40	1.999	17.41	1.932	1180.	1.452	8.125
255000	251920	31.40	1.901	17.28	1.837	1175.	1.376	8.542
256000	252896	31.40	1.807	17.15	1.747	1171.	1.303	8.984
257000	253871	31.40	1.718	17.02	1.660	1167.	1.234	9.452
258000	254847	31.39	1.632	16.89	1.578	1162.	1.168	9.949
259000	255823	31.39	1.550	16.76	1.498	1157.	1.105	1.048 - 2
260000	256798	31.39	1.471	16.63	1.422	1153.	1.045	1.104
261000	257774	31.38	1.396	16.50	1.350	1148.	9.874 + 4	1.163
262000	258749	31.38	1.324 - 6	16.37	1.280 +19	1144.	9.329 + 4	1.226 - 2
263000	259725	31.38	1.249	16.31	1.209	1142.	8.790	1.299
264000	260700	31.37	1.175	16.31	1.137	1142.	8.268	1.381
265000	261675	31.37	1.105	16.32	1.069	1142.	7.776	1.468
266000	262650	31.37	1.039	16.32	1.006	1142.	7.314	1.561
267000	263625	31.37	9.774 - 7	16.32	9.457 +18	1142.	6.879	1.660
268000	264600	31.36	9.192	16.32	8.895	1142.	6.470	1.764
269000	265574	31.36	8.645	16.32	8.367	1142.	6.086	1.876
270000	266549	31.36	8.131	16.32	7.869	1142.	5.724	1.995
271000	267524	31.35	7.647	16.32	7.402	1142.	5.384	2.121
272000	268498	31.35	7.192 - 7	16.33	6.962 +18	1142.	5.064 + 4	2.254 - 2
273000	269472	31.35	6.764	16.33	6.548	1142.	4.763	2.397
274000	270447	31.34	6.361	16.33	6.159	1142.	4.480	2.548
275000	271421	31.34	5.983	16.33	5.794	1142.	4.214	2.709
276000	272395	31.34	5.627	16.33	5.449	1142.	3.964	2.880
277000	273369	31.34	5.292	16.33	5.126	1142.	3.728	3.062
278000	274343	31.33	4.978	16.34	4.821	1142.	3.507	3.255
279000	275317	31.33	4.682	16.34	4.535	1142.	3.299	3.461
280000	276290	31.33	4.403	16.34	4.265	1142.	3.103	3.679
281000	277264	31.32	4.141	16.34	4.013	1142.	2.919	3.912

ALTITUDE Z, ft	ACC. OF GRAV. H, ft'	SPECIFIC WEIGHT g, ft sec ⁻²	SCALE HEIGHT H _s , thsd ft	NUMBER DENSITY n, ft ⁻³	PART. SPEED. V, ft sec ⁻¹	COLLISION FREQ. v, sec ⁻¹	MEAN FREE PATH L, ft	MEAN FREE PATH L, ft
								-
282000	278238	31.32	3.895	- 7	16.34	3.774	+18	1142. 2.745 + 4 4.158 - 2
283000	279211	31.32	3.661		16.34	3.550		1142. 2.582 4.421
284000	280184	31.32	3.446		16.34	3.340		1142. 2.429 4.700
285000	281158	31.31	3.241		16.35	3.141		1142. 2.285 4.996
286000	282131	31.31	3.048		16.35	2.955		1142. 2.149 5.311
287000	283104	31.31	2.867		16.35	2.780		1142. 2.022 5.647
288000	284077	31.30	2.697		16.35	2.615		1142. 1.902 6.003
289000	285050	31.30	2.537		16.35	2.460		1142. 1.789 6.381
290000	286023	31.30	2.386		16.35	2.314		1142. 1.683 6.784
291000	286995	31.29	2.244		16.36	2.177		1142. 1.583 7.211
292000	287968	31.29	2.111	- 7	16.36	2.047	+18	1142. 1.489 + 4 7.666 - 2
293000	288940	31.29	1.986		16.36	1.926		1142. 1.401 8.149
294000	289913	31.29	1.868		16.36	1.812		1142. 1.318 8.663
295000	290885	31.28	1.757		16.36	1.704		1142. 1.240 9.209
296000	291857	31.28	1.652		16.36	1.603		1142. 1.166 9.789
297000	292830	31.28	1.554		16.36	1.508		1142. 1.097 1.041 - 1
298000	293802	31.27	1.462		16.37	1.419		1142. 1.032 1.106
299000	294774	31.27	1.375		16.37	1.335		1142. 9.709 + 3 1.176
300000	295746	31.27	1.289		16.43	1.251		1144. 9.119 1.254
302000	297689	31.26	1.126		16.66	1.094		1152. 8.024 1.435
304000	299632	31.26	9.856	- 8	16.90	9.574	+17	1160. 7.074 + 3 1.639 - 1
306000	301575	31.25	8.642		17.14	8.397		1168. 6.248 1.869
308000	303517	31.24	7.591		17.38	7.379		1176. 5.527 2.127
310000	305459	31.24	6.680		17.51	6.495		1184. 4.898 2.417
312000	307401	31.23	5.888		17.85	5.727		1192. 4.348 2.741
314000	309342	31.23	5.199		18.09	5.058		1199. 3.865 3.105
316000	311283	31.22	4.597		18.33	4.475		1207. 3.441 3.508
318000	313224	31.21	4.072		18.56	3.965		1215. 3.069 3.959
320000	315164	31.21	3.612		18.80	3.519		1222. 2.740 4.461
322000	317104	31.20	3.209		19.04	3.127		1230. 2.451 5.019
324000	319043	31.20	2.856	- 8	19.26	2.783	+17	1237. 2.194 + 3 5.639 - 1
326000	320982	31.19	2.544		19.51	2.481		1245. 1.968 6.326
328000	322921	31.19	2.270		19.75	2.214		1252. 1.767 7.088
330000	324859	31.18	2.029		19.99	1.979		1260. 1.589 7.930
332000	326797	31.17	1.815		20.23	1.771		1267. 1.430 8.860
334000	328735	31.17	1.626		20.47	1.588		1274. 1.289 9.887
336000	330672	31.16	1.458		20.70	1.424		1282. 1.163 1.102 + 0
338000	332609	31.16	1.310		20.94	1.280		1289. 1.051 1.226
340000	334546	31.15	1.178		21.18	1.151		1296. 9.507 + 2 1.363
342000	336482	31.14	1.060		21.42	1.037		1303. 8.609 1.514
344000	338418	31.14	9.556	- 9	21.66	9.347	+16	1310. 7.804 + 2 1.679 + 0
346000	340353	31.13	8.622		21.89	8.437		1317. 7.082 1.860
348000	342288	31.13	7.789		22.13	7.625		1325. 6.434 2.059
350000	344223	31.12	7.043		22.37	6.897		1332. 5.851 2.276
352000	346157	31.11	6.164		23.42	6.039		1362. 5.241 2.599
354000	348091	31.11	5.400		24.59	5.293		1396. 4.707 2.966
356000	350025	31.10	4.760		25.77	4.567		1429. 4.248 3.363
358000	351958	31.10	4.220		26.94	4.139		1461. 3.852 3.792
360000	353891	31.09	3.760		28.12	3.689		1492. 3.507 4.254
362000	355823	31.09	3.366		29.30	3.304		1523. 3.206 4.750
364000	357756	31.08	3.027	- 9	30.47	2.972	+16	1553. 2.941 + 2 5.281 + 0
366000	359687	31.07	2.732		31.65	2.684		1583. 2.706 5.848
368000	361619	31.07	2.476		32.83	2.433		1612. 2.498 6.451
370000	363550	31.06	2.251		34.00	2.213		1640. 2.313 7.091
372000	365481	31.06	2.054		35.18	2.020		1668. 2.147 7.771
374000	367411	31.05	1.879		36.36	1.849		1696. 1.997 8.489
376000	369341	31.04	1.724		37.54	1.697		1723. 1.863 9.248
378000	371270	31.04	1.586		38.71	1.562		1749. 1.741 1.005 + 1
380000	373200	31.03	1.463		39.89	1.441		1776. 1.630 1.089
382000	375129	31.03	1.355		41.07	1.333		1801. 1.530 1.177

ALTITUDE Z, ft	ACC. OF GRAV. $\ddot{z}, \text{ft sec}^{-2}$	SPECIFIC WEIGHT $\omega, \text{lbf ft}^{-3}$	SCALE HEIGHT $H_s, \text{thsd ft}$	NUMBER DENSITY n, ft^{-3}	PART. SPEED $V, \text{ft sec}^{-1}$	COLLISION FREQ. v, sec^{-1}	MEAN FREE PATH L, ft					
384000	377057	31.02	1.253	-9	42.25	1.236	+16	1827.	1.438	+ 2	1.270	+ 1
386000	378985	31.02	1.164		43.43	1.148		1852.	1.354		1.368	
388000	380913	31.01	1.083		44.61	1.068		1877.	1.277		1.469	
390000	382840	31.00	1.009		45.79	9.960	+15	1901.	1.207		1.576	
392000	384767	31.00	9.422	-10	46.97	9.304		1925.	1.141		1.687	
394000	386694	30.99	8.813		48.15	8.706		1949.	1.081		1.803	
396000	388620	30.99	8.256		49.33	8.159		1973.	1.026		1.924	
398000	390546	30.98	7.746		50.51	7.659		1996.	9.740	+ 1	2.049	
400000	392472	30.97	7.279		51.69	7.200		2019.	9.262		2.180	
402000	394397	30.97	6.849		52.87	6.778		2042.	8.817		2.316	
404000	396322	30.96	6.453	-10	54.05	6.389	+15	2064.	8.403	+ 1	2.457	+ 1
406000	398247	30.96	6.088		55.23	6.030		2087.	8.017		2.603	
408000	400171	30.95	5.751		56.41	5.699		2109.	7.656		2.754	
410000	402095	30.95	5.439		57.59	5.392		2130.	7.318		2.911	
412000	404018	30.94	5.150		58.77	5.107		2152.	7.002		3.073	
414000	405941	30.93	4.881		59.96	4.843		2173.	6.705		3.241	
416000	407864	30.93	4.631		61.14	4.597		2194.	6.427		3.414	
418000	409786	30.92	4.398		62.32	4.368		2215.	6.165		3.594	
420000	411708	30.92	4.181		63.50	4.154		2236.	5.918		3.778	
422000	413630	30.91	3.979		64.69	3.955		2256.	5.686		3.969	
424000	415551	30.90	3.789	-10	65.87	3.768	+15	2277.	5.466	+ 1	4.165	+ 1
426000	417472	30.90	3.612		67.05	3.594		2297.	5.259		4.368	
428000	419393	30.89	3.446		68.24	3.430		2317.	5.063		4.576	
430000	421313	30.89	3.290		69.42	3.277		2337.	4.878		4.790	
432000	423233	30.88	3.144		70.60	3.132		2356.	4.703		5.011	
434000	425152	30.88	3.006		71.79	2.997		2376.	4.536		5.237	
436000	427071	30.87	2.877		72.97	2.869		2395.	4.378		5.470	
438000	428990	30.86	2.755		74.16	2.749		2414.	4.228		5.710	
440000	430908	30.86	2.640		75.34	2.636		2433.	4.086		5.955	
442000	432826	30.85	2.532		76.53	2.529		2452.	3.950		6.207	
444000	434744	30.85	2.429	-10	77.71	2.428	+15	2471.	3.821	+ 1	6.466	+ 1
446000	436661	30.84	2.332		78.90	2.332		2489.	3.698		6.731	
448000	438578	30.83	2.241		80.08	2.241		2508.	3.581		7.002	
450000	440495	30.83	2.154		81.27	2.156		2526.	3.469		7.281	
452000	442411	30.82	2.072		82.46	2.075		2544.	3.362		7.566	
454000	444327	30.82	1.994		83.64	1.997		2562.	3.260		7.858	
456000	446242	30.81	1.920		84.83	1.924		2580.	3.163		8.156	
458000	448157	30.81	1.850		86.02	1.855		2598.	3.070		8.462	
460000	450072	30.80	1.783		87.20	1.789		2615.	2.980		8.775	
462000	451987	30.79	1.719		88.39	1.726		2633.	2.895		9.094	
464000	453901	30.79	1.659	-10	89.58	1.666	+15	2650.	2.813	+ 1	9.421	+ 1
466000	455814	30.78	1.601		90.76	1.609		2667.	2.735		9.754	
468000	457728	30.78	1.546		91.95	1.555		2685.	2.659		1.010	+ 2
470000	459641	30.77	1.494		93.14	1.503		2702.	2.587		1.044	
472000	461555	30.77	1.444		94.33	1.453		2718.	2.517		1.080	
474000	463466	30.76	1.396		95.52	1.406		2735.	2.451		1.116	
476000	465377	30.75	1.351		96.71	1.361		2752.	2.387		1.153	
478000	467289	30.75	1.307		97.90	1.318		2769.	2.325		1.191	
480000	469200	30.74	1.265		99.08	1.277		2785.	2.266		1.229	
482000	471111	30.74	1.226		100.3	1.237		2802.	2.208		1.269	
484000	473022	30.73	1.187	-10	101.5	1.199	+15	2818.	2.153	+ 1	1.309	+ 2
486000	474932	30.73	1.151		102.7	1.163		2834.	2.100		1.349	
488000	476841	30.72	1.116		103.8	1.129		2850.	2.049		1.391	
490000	478751	30.71	1.082		105.0	1.095		2866.	2.000		1.433	
492000	480660	30.71	1.050		106.2	1.063		2882.	1.953		1.476	
494000	482569	30.70	1.019		107.4	1.033		2898.	1.907		1.520	
496000	484477	30.70	9.895	-11	108.6	1.003		2914.	1.862		1.564	
498000	486385	30.69	9.610		109.8	9.750	+14	2929.	1.820		1.610	
500000	488292	30.68	9.336		111.0	9.478		2945.	1.778		1.656	
502000	490200	30.68	9.073		112.2	9.217		2960.	1.738		1.703	

ALTITUDE Z, ft	ACC. OF GRAV. H, ft ¹	SPECIFIC WEIGHT ω_1 , lbf ft ⁻³	SCALE HEIGHT H_s , thsd ft	NUMBER DENSITY n, ft ⁻³	PART. SPEED \bar{V} , ft sec ⁻¹	COLLISION FREQ. v, sec ⁻¹	MEAN FREE PATH L, ft	
							-1	+2
504000	492107	30.67	8.819	-11	113.4	8.965	+14	2976.
506000	494013	30.67	8.576		114.6	8.723	2991.	1.662
508000	495919	30.66	8.341		115.8	8.491	3006.	1.626
510000	497825	30.66	8.116		117.0	8.266	3022.	1.591
512000	499731	30.65	7.898		118.1	8.050	3037.	1.558
514000	501636	30.64	7.689		119.3	7.842	3052.	1.525
516000	503540	30.64	7.487		120.5	7.641	3067.	1.493
518000	505445	30.63	7.292		121.7	7.448	3081.	1.462
520000	507349	30.63	7.104		122.9	7.261	3096.	1.432
522000	509253	30.62	6.923		124.1	7.081	3111.	1.403
524000	511156	30.62	6.747	-11	125.3	6.907	+14	3126.
526000	513059	30.61	6.578		126.5	6.739	3140.	1.348
528000	514961	30.60	6.415		127.7	6.577	3155.	1.322
530000	516864	30.60	6.257		128.9	6.420	3169.	1.296
532000	518766	30.59	6.105		130.1	6.268	3183.	1.271
534000	520667	30.59	5.957		131.3	6.121	3198.	1.247
536000	522568	30.58	5.815		132.5	5.980	3212.	1.224
538000	524469	30.58	5.677		133.7	5.842	3226.	1.201
540000	526370	30.57	5.561		134.4	5.728	3235.	1.181
542000	528270	30.56	5.455		135.0	5.623	3242.	1.161
544000	530170	30.56	5.350	-11	135.6	5.520	+14	3249.
546000	532069	30.55	5.249		136.3	5.420	3256.	1.124
548000	533968	30.55	5.149		136.9	5.321	3263.	1.106
550000	535867	30.54	5.052		137.5	5.226	3270.	1.089
552000	537765	30.54	4.957		138.1	5.132	3277.	1.071
554000	539663	30.53	4.865		138.7	5.041	3284.	1.055
556000	541561	30.52	4.774		139.3	4.951	3291.	1.038
558000	543458	30.52	4.686		139.9	4.864	3298.	1.022
560000	545355	30.51	4.599		140.5	4.779	3304.	1.006
562000	547252	30.51	4.515		141.1	4.695	3311.	9.906 + 0
564000	549148	30.50	4.432	-11	141.8	4.614	+14	3318.
566000	551044	30.50	4.351		142.4	4.534	3325.	9.605
568000	552939	30.49	4.272		143.0	4.456	3332.	9.460
570000	554834	30.48	4.195		143.6	4.380	3339.	9.317
572000	556729	30.48	4.120		144.2	4.306	3346.	9.178
574000	558624	30.47	4.050		144.7	4.237	3351.	9.045
576000	560518	30.47	3.985		145.0	4.174	3354.	8.920
578000	562411	30.46	3.922		145.3	4.112	3357.	8.796
580000	564305	30.46	3.860		145.6	4.051	3361.	8.675
582000	566198	30.45	3.799		146.0	3.992	3364.	8.556
584000	568091	30.44	3.739	-11	146.3	3.933	+14	3368.
586000	569983	30.44	3.681		146.6	3.876	3371.	8.325
588000	571875	30.43	3.623		146.9	3.820	3374.	8.212
590000	573767	30.43	3.566		147.2	3.764	3378.	8.101
592000	575658	30.42	3.511		147.6	3.710	3381.	7.992
594000	577549	30.42	3.456		147.9	3.657	3384.	7.884
596000	579439	30.41	3.402		148.2	3.604	3388.	7.779
598000	581330	30.41	3.343		148.5	3.553	3391.	7.676
600000	583219	30.40	3.297		148.8	3.502	3394.	7.574
602000	585109	30.39	3.246		149.2	3.453	3398.	7.474
604000	586998	30.39	3.196	-11	149.5	3.404	+14	3401.
606000	588887	30.38	3.147		149.8	3.356	3404.	7.279
608000	590775	30.38	3.099		150.1	3.309	3408.	7.184
610000	592663	30.37	3.051		150.4	3.263	3411.	7.091
612000	594551	30.37	3.005		150.8	3.217	3414.	6.999
614000	596439	30.36	2.959		151.1	3.173	3418.	6.909
616000	598326	30.35	2.914		151.4	3.129	3421.	6.820
618000	600212	30.35	2.870		151.7	3.086	3424.	6.732
620000	602099	30.34	2.826		152.1	3.043	3428.	6.645
622000	603985	30.34	2.783		152.4	3.001	3431.	6.560

ALTITUDE Z, ft	ACC. OF GRAV. H, ft ¹	SPECIFIC WEIGHT g, ft sec ⁻²	SCALE HEIGHT $\omega_1 \text{lb ft}^{-3}$	NUMBER DENSITY n, ft ⁻³	PART. SPEED V, ft sec ⁻¹	MEAN FREE PATH L, ft		
						v, sec ⁻¹	L, ft	
624000	605870	30.33	2.741	-11	152.7	2.960	+14	3434. 6.476 + 0 5.303 + 2
626000	607756	30.33	2.700		153.0	2.919		3438. 6.394
628000	609641	30.32	2.659		153.3	2.880		3441. 6.313
630000	611525	30.31	2.619		153.7	2.840		3444. 6.233
632000	613409	30.31	2.580		154.0	2.802		3447. 6.154
634000	615293	30.30	2.542		154.3	2.764		3451. 6.076
636000	617177	30.30	2.504		154.6	2.726		3454. 5.999
638000	619060	30.29	2.466		154.9	2.689		3457. 5.924
640000	620943	30.29	2.430		155.3	2.653		3460. 5.850
642000	622825	30.28	2.394		155.6	2.618		3464. 5.776
644000	624707	30.28	2.358	-11	155.9	2.582	+14	3467. 5.704 + 0 6.078 + 2
646000	626589	30.27	2.324		156.2	2.548		3470. 5.633
648000	628471	30.26	2.289		156.6	2.514		3473. 5.563
650000	630352	30.26	2.256		156.9	2.480		3477. 5.494
652000	632232	30.25	2.223		157.2	2.447		3480. 5.426
654000	634113	30.25	2.190		157.5	2.415		3483. 5.359
656000	635993	30.24	2.158		157.8	2.383		3486. 5.293
658000	637873	30.24	2.126		158.2	2.352		3490. 5.228
660000	639752	30.23	2.095		158.5	2.321		3493. 5.164
662000	641631	30.22	2.065		158.8	2.290		3496. 5.101
664000	643510	30.22	2.035	-11	159.1	2.260	+14	3499. 5.039 + 0 6.945 + 2
666000	645388	30.21	2.006		159.5	2.231		3503. 4.977
668000	647266	30.21	1.977		159.8	2.201		3506. 4.917
670000	649143	30.20	1.948		160.1	2.173		3509. 4.857
672000	651021	30.20	1.920		160.4	2.144		3512. 4.799
674000	652897	30.19	1.893		160.7	2.117		3515. 4.741
676000	654774	30.19	1.865		161.1	2.089		3519. 4.684
678000	656650	30.18	1.839		161.4	2.063		3522. 4.628
680000	658526	30.17	1.814		161.6	2.037		3524. 4.573
682000	660402	30.17	1.789		161.8	2.012		3526. 4.520
684000	662277	30.16	1.764	-11	162.1	1.987	+14	3528. 4.467 + 0 7.898 + 2
686000	664151	30.16	1.740		162.3	1.963		3530. 4.415
688000	666026	30.15	1.716		162.5	1.939		3533. 4.363
690000	667900	30.15	1.693		162.8	1.915		3535. 4.313
692000	669774	30.14	1.670		163.0	1.891		3537. 4.263
694000	671647	30.13	1.647		163.2	1.868		3539. 4.213
696000	673520	30.13	1.625		163.5	1.846		3542. 4.164
698000	675393	30.12	1.603		163.7	1.823		3544. 4.116
700000	677265	30.12	1.581		163.9	1.801		3546. 4.069
702000	679137	30.11	1.560		164.2	1.779		3548. 4.022
704000	681009	30.11	1.539	-11	164.4	1.757	+14	3550. 3.975 + 0 8.931 + 2
706000	682880	30.10	1.518		164.7	1.736		3553. 3.930
708000	68471	30.10	1.497		164.9	1.715		3555. 3.885
710000	686522	30.09	1.477		165.1	1.694		3557. 3.840
712000	688492	30.08	1.457		165.4	1.674		3559. 3.796
714000	690362	30.08	1.438		165.6	1.654		3561. 3.753
716000	692232	30.07	1.419		165.8	1.634		3564. 3.710
718000	694101	30.07	1.400		166.1	1.614		3566. 3.668
720000	695970	30.06	1.381		166.3	1.595		3568. 3.626
722000	697838	30.06	1.362		166.5	1.576		3570. 3.585
724000	699707	30.05	1.344	-11	166.8	1.557	+14	3572. 3.544 + 0 1.008 + 3
726000	701574	30.05	1.326		167.0	1.539		3575. 3.504
728000	703442	30.04	1.309		167.2	1.520		3577. 3.464
730000	705309	30.03	1.291		167.5	1.502		3579. 3.425
732000	707176	30.03	1.274		167.7	1.484		3581. 3.387
734000	709042	30.02	1.257		168.0	1.467		3583. 3.349
736000	710909	30.02	1.241		168.2	1.449		3586. 3.311
738000	712774	30.01	1.224		168.4	1.432		3588. 3.274
740000	714640	30.01	1.208		168.7	1.415		3590. 3.237
742000	716505	30.00	1.192		168.9	1.399		3592. 3.201

ALTITUDE Z, ft	ACC. OF GRAV. H, ft g, ft sec ⁻²	SPECIFIC WEIGHT ω , lb/ft ³	SCALE HEIGHT H_s , thsd ft	NUMBER DENSITY n, ft ⁻³	PART. SPEED \bar{V} , ft sec ⁻¹	COLLISION FREQ. v, sec ⁻¹				
						v, sec ⁻¹	L, ft	L, ft		
744000	718370	30.00	1.177	-11	169.1	1.382	+14	3594.	3.165 + 0	1.136 + 3
746000	720234	29.99	1.161		169.4	1.366		3596.	3.130	1.149
748000	722098	29.98	1.146		169.6	1.350		3599.	3.095	1.163
750000	723962	29.98	1.131		169.8	1.334		3601.	3.060	1.177
752000	725825	29.97	1.116		170.1	1.318		3603.	3.026	1.191
754000	727688	29.97	1.102		170.3	1.303		3605.	2.993	1.205
756000	729551	29.96	1.087		170.6	1.288		3607.	2.960	1.219
758000	731413	29.96	1.073		170.8	1.273		3610.	2.927	1.233
760000	733275	29.95	1.059		171.0	1.258		3612.	2.895	1.248
762000	735137	29.95	1.045		171.3	1.243		3614.	2.863	1.262
764000	736998	29.94	1.032	-11	171.5	1.229	+14	3616.	2.831 + 0	1.277 + 3
766000	738859	29.93	1.019		171.7	1.215		3618.	2.800	1.292
768000	740719	29.93	1.005		172.0	1.201		3620.	2.769	1.307
770000	742580	29.92	9.924	-12	172.2	1.187		3622.	2.739	1.323
772000	744440	29.92	9.796		172.4	1.173		3625.	2.709	1.338
774000	746299	29.91	9.670		172.7	1.159		3627.	2.679	1.354
776000	748158	29.91	9.545		172.9	1.146		3629.	2.650	1.370
778000	750017	29.90	9.423		173.2	1.133		3631.	2.621	1.385
780000	751876	29.90	9.302		173.4	1.120		3633.	2.592	1.402
782000	753734	29.89	9.183		173.6	1.107		3635.	2.564	1.418
784000	755592	29.88	9.065	-12	173.9	1.094	+14	3638.	2.536 + 0	1.434 + 3
786000	757449	29.88	8.949		174.1	1.082		3640.	2.509	1.451
788000	759307	29.87	8.835		174.3	1.069		3642.	2.481	1.468
790000	761163	29.87	8.723		174.6	1.057		3644.	2.454	1.485
792000	763020	29.86	8.612		174.8	1.045		3646.	2.428	1.502
794000	764876	29.86	8.502		175.1	1.033		3648.	2.402	1.519
796000	766732	29.85	8.394		175.3	1.022		3650.	2.376	1.536
798000	768587	29.85	8.288		175.5	1.010		3652.	2.350	1.554
800000	770442	29.84	8.183		175.8	9.985	+13	3655.	2.325	1.572
805000	775079	29.83	7.927		176.4	9.705		3660.	2.263	1.617
810000	779713	29.81	7.680	-12	177.0	9.434	+13	3665.	2.203 + 0	1.664 + 3
815000	784345	29.80	7.441		177.5	9.171		3671.	2.145	1.711
820000	788975	29.79	7.211		178.1	8.916		3676.	2.088	1.760
825000	793674	29.77	6.988		178.7	8.669		3681.	2.033	1.810
830000	798228	29.76	6.773		179.3	8.430		3686.	1.980	1.862
835000	802851	29.74	6.566		179.9	8.198		3692.	1.928	1.915
840000	807473	29.73	6.365		180.5	7.973		3697.	1.878	1.969
845000	812092	29.72	6.171		181.1	7.755		3702.	1.829	2.024
850000	816709	29.70	5.984		181.7	7.544		3707.	1.782	2.081
855000	821324	29.69	5.802		182.3	7.339		3713.	1.736	2.139
860000	825936	29.68	5.627	-12	182.9	7.140	+13	3718.	1.691 + 0	2.198 + 3
865000	830547	29.66	5.458		183.5	6.947		3723.	1.648	2.259
870000	835156	29.65	5.294		184.1	6.760		3728.	1.606	2.322
875000	839762	29.63	5.136		184.7	6.578		3733.	1.565	2.386
880000	844366	29.62	4.983		185.3	6.402		3739.	1.525	2.452
885000	848969	29.61	4.835		185.9	6.231		3744.	1.486	2.519
890000	853569	29.59	4.692		186.5	6.065		3749.	1.449	2.588
895000	858167	29.58	4.553		187.1	5.904		3754.	1.412	2.658
900000	862762	29.57	4.419		187.7	5.748		3759.	1.377	2.731
905000	867356	29.55	4.289		188.3	5.596		3764.	1.342	2.805
910000	871948	29.54	4.164	-12	188.9	5.449	+13	3769.	1.308 + 0	2.881 + 3
915000	876537	29.53	4.043		189.5	5.306		3774.	1.276	2.958
920000	881125	29.51	3.925		190.1	5.167		3780.	1.244	3.038
925000	885710	29.50	3.811		190.7	5.032		3785.	1.213	3.119
930000	890293	29.49	3.701		191.3	4.901		3790.	1.183	3.203
935000	894874	29.47	3.595		191.9	4.773		3795.	1.154	3.288
940000	899453	29.46	3.491		192.5	4.650		3800.	1.126	3.376
945000	904030	29.44	3.391		193.1	4.530		3805.	1.098	3.465
950000	908605	29.43	3.294		193.7	4.413		3810.	1.071	3.557
955000	913177	29.42	3.201		194.3	4.300		3815.	1.045	3.651

ALTITUDE Z, ft	ACC. OF GRAV. H, ft' g, ft sec ⁻²	SPECIFIC WEIGHT ω, lb/ft ³	SCALE HEIGHT H _s , thsd ft	NUMBER DENSITY n, ft ⁻³	PART. SPEED V, ft sec ⁻¹	COLLISION FREQ.		MEAN FREE PATH L, ft
						+13	-1	
960000	917748	29.40	3.110 -19	194.9	4.189	+13	3820.	1.020 + 0 3.747 + 3
965000	922316	29.59	3.022	195.5	4.082		3825.	9.948 - 1 3.845
970000	926883	29.38	2.937	196.1	3.978		3830.	9.708 3.945
975000	931447	29.36	2.854	196.7	3.877		3835.	9.473 4.048
980000	936009	29.35	2.774	197.3	3.779		3840.	9.245 4.154
985000	940569	29.34	2.697	197.9	3.683		3845.	9.023 4.261
990000	945127	29.32	2.621	198.5	3.590		3850.	8.807 4.372
995000	949683	29.31	2.548	199.1	3.500		3855.	8.596 4.485
1000000	954237	29.30	2.478	199.7	3.412		3860.	8.391 4.600
1005000	958789	29.28	2.409	200.3	3.327		3865.	8.192 4.718
1010000	963339	29.27	2.343 -12	200.9	3.244	+13	3870.	7.997 - 1 4.839 + 3
1015000	967886	29.26	2.279	201.5	3.163		3875.	7.808 4.962
1020000	972432	29.24	2.216	202.1	3.084		3880.	7.624 5.089
1025000	976975	29.23	2.156	202.7	3.008		3885.	7.444 5.218
1030000	981517	29.22	2.097	203.3	2.934		3890.	7.269 5.350
1035000	986056	29.20	2.040	203.9	2.861		3894.	7.099 5.486
1040000	990593	29.19	1.985	204.5	2.791		3899.	6.933 5.624
1045000	" 995128	29.18	1.931	205.2	2.722		3904.	6.772 5.765
1050000	999661	29.16	1.879	205.8	2.656		3909.	6.614 5.910
1055000	1004192	29.15	1.829	206.4	2.591		3914.	6.461 6.058
1060000	1008721	29.14	1.780 -12	207.0	2.528	+13	3919.	6.311 - 1 6.209 + 3
1065000	1013248	29.12	1.732	207.6	2.466		3924.	6.166 6.364
1070000	1017773	29.11	1.686	208.2	2.407		3928.	6.024 6.522
1075000	1022296	29.10	1.642	208.8	2.349		3933.	5.885 6.683
1080000	1026816	29.08	1.598	209.4	2.292		3938.	5.750 6.848
1085000	1031335	29.07	1.556	210.0	2.237		3943.	5.619 7.017
1090000	1035851	29.06	1.515	210.6	2.183		3948.	5.491 7.190
1095000	1040366	29.04	1.475	211.2	2.131		3952.	5.366 7.366
1100000	1044878	29.03	1.437	211.8	2.080		3957.	5.244 7.546
1105000	1049389	29.02	1.399	212.4	2.030		3962.	5.125 7.730
1110000	1053897	29.00	1.363 -12	213.0	1.982	+13	3967.	5.010 - 1 7.918 + 3
1115000	1058403	28.99	1.327	213.7	1.935		3972.	4.897 8.111
1120000	1062908	28.98	1.293	214.3	1.889		3976.	4.787 8.307
1125000	1067410	28.96	1.260	214.9	1.845		3981.	4.679 8.508
1130000	1071910	28.95	1.227	215.5	1.801		3986.	4.575 8.713
1135000	1076408	28.94	1.196	216.1	1.759		3991.	4.472 8.922
1140000	1080904	28.92	1.165	216.7	1.718		3995.	4.373 9.136
1145000	1085398	28.91	1.135	217.3	1.678		4000.	4.276 9.355
1150000	1089890	28.90	1.107	217.9	1.639		4005.	4.181 9.578
1155000	1094380	28.89	1.078	218.5	1.601		4009.	4.088 9.806
1160000	1098868	28.87	1.051 -12	219.2	1.563	+13	4014.	3.998 - 1 1.004 + 4
1165000	1103353	28.86	1.025	219.8	1.527		4019.	3.910 1.028
1170000	1107837	28.85	9.988 -13	220.4	1.492		4023.	3.824 1.052
1175000	1112319	28.83	9.737	221.0	1.458		4028.	3.741 1.077
1180000	1116799	28.82	9.493	221.6	1.424		4033.	3.659 1.102
1185000	1121276	28.81	9.256	222.2	1.391		4037.	3.579 1.128
1190000	1125759	28.79	9.026	222.8	1.360		4042.	3.501 1.154
1195000	1130226	28.78	8.801	223.4	1.329		4047.	3.425 1.181
1200000	1134697	28.77	8.583	224.1	1.298		4051.	3.351 1.209
1205000	1139167	28.75	8.371	224.7	1.269		4056.	3.279 1.237
1210000	1143634	28.74	8.165 -13	225.3	1.240	+13	4061.	3.208 - 1 1.266 + 4
1215000	1148100	28.73	7.964	225.9	1.212		4065.	3.139 1.295
1220000	1152567	28.72	7.769	226.5	1.185		4070.	3.072 1.325
1225000	1157025	28.70	7.579	227.1	1.158		4074.	3.006 1.355
1230000	1161484	28.69	7.394	227.7	1.132		4079.	2.942 1.387
1235000	1165941	28.68	7.214	228.4	1.107		4084.	2.879 1.418
1240000	1170397	28.66	7.039	229.0	1.082		4088.	2.818 1.451
1245000	1174850	28.65	6.869	229.6	1.058		4093.	2.758 1.484
1250000	1179402	28.64	6.701	230.2	1.034		4097.	2.700 1.510
1255000	1183751	28.62	6.542	230.8	1.011		4102.	2.643 1.552

Z, ft	H, ft'	ACC. OF GRAV. ft sec^{-2}	SPECIFIC WEIGHT $\omega, \text{lb ft}^{-3}$	SCALE HEIGHT $H_s, \text{thsd ft}$	NUMBER DENSITY n, ft^{-3}	PART. SPEED $\bar{V}, \text{ft sec}^{-1}$	COLLISION FREQ. v, sec^{-1}	MEAN FREE PATH L, ft		
								-13	+12	
1260000	1188198	28.61	6.385	-13	231.4	9.888	4106.	2.587	-1	1.587 + 4
1265000	1192644	28.60	6.232		232.1	9.669	4111.	2.533		1.623
1270000	1197087	28.59	6.083		232.7	9.456	4115.	2.479		1.660
1275000	1201528	28.57	5.938		233.3	9.248	4120.	2.428		1.697
1280000	1205967	28.56	5.797		233.9	9.045	4125.	2.377		1.735
1285000	1210405	28.55	5.660		234.5	8.847	4129.	2.327		1.774
1290000	1214840	28.53	5.526		235.1	8.653	4134.	2.279		1.814
1295000	1219273	28.52	5.396		235.8	8.465	4138.	2.232		1.854
1300000	1223704	28.51	5.269		236.4	8.280	4143.	2.185		1.896
1305000	1228134	28.50	5.145		237.0	8.101	4147.	2.140		1.938
1310000	1232561	28.48	5.025	-13	237.6	7.925	4151.	2.096	-1	1.980 + 4
1315000	1236986	28.47	4.907		238.2	7.754	4156.	2.053		2.024
1320000	1241410	28.46	4.793		238.9	7.587	4160.	2.011		2.069
1325000	1245831	28.44	4.682		239.5	7.424	4165.	1.970		2.114
1330000	1250250	28.43	4.573		240.1	7.264	4169.	1.930		2.161
1335000	1254667	28.42	4.468		240.7	7.109	4174.	1.890		2.208
1340000	1259083	28.41	4.365		241.3	6.957	4178.	1.852		2.256
1345000	1263496	28.39	4.264		242.0	6.808	4183.	1.814		2.305
1350000	1267907	28.38	4.167		242.6	6.663	4187.	1.778		2.355
1355000	1272317	28.37	4.071		243.2	6.522	4191.	1.742		2.407
1360000	1276724	28.35	3.978	-13	243.8	6.384	4196.	1.707	-1	2.459 + 4
1365000	1281129	28.34	3.888		244.5	6.249	4200.	1.672		2.512
1370000	1285533	28.33	3.799		245.1	6.117	4205.	1.639		2.566
1375000	12889934	28.32	3.713		245.7	5.988	4209.	1.606		2.621
1380000	1294334	28.30	3.629		246.3	5.863	4213.	1.574		2.677
1385000	1298731	28.29	3.548		246.9	5.740	4218.	1.542		2.735
1390000	1303126	28.28	3.468		247.6	5.620	4222.	1.512		2.793
1395000	1307520	28.26	3.390		248.2	5.503	4227.	1.482		2.852
1400000	1311911	28.25	3.314		248.8	5.388	4231.	1.452		2.913
1405000	1316301	28.24	3.240		249.4	5.276	4235.	1.424		2.975
1410000	1320688	28.23	3.168	-13	250.1	5.167	4240.	1.396	-1	3.038 + 4
1415000	1325074	28.21	3.098		250.7	5.060	4244.	1.368		3.102
1420000	1329458	28.20	3.029		251.3	4.956	4248.	1.341		3.167
1425000	1333839	28.19	2.962		251.9	4.854	4253.	1.315		3.234
1430000	1338219	28.18	2.897		252.6	4.754	4257.	1.289		3.302
1435000	1342597	28.16	2.833		253.2	4.656	4261.	1.264		3.371
1440000	1346972	28.15	2.771		253.8	4.561	4266.	1.240		3.441
1445000	1351346	28.14	2.710		254.4	4.468	4270.	1.215		3.513
1450000	1355718	28.13	2.651		255.1	4.377	4274.	1.192		3.586
1455000	1360088	28.11	2.593		255.7	4.288	4278.	1.169		3.660
1460000	1364456	28.10	2.537	-13	256.3	4.201	4283.	1.146	-1	3.736 + 4
1465000	1368822	28.09	2.482		257.0	4.116	4287.	1.124		3.813
1470000	1373186	28.08	2.428		257.6	4.033	4291.	1.103		3.892
1475000	1377548	28.06	2.376		258.2	3.952	4296.	1.082		3.972
1480000	1381908	28.05	2.325		258.8	3.872	4300.	1.061		4.053
1485000	1386266	28.04	2.275		259.5	3.795	4304.	1.041		4.136
1490000	1390622	28.02	2.226		260.1	3.719	4308.	1.021		4.221
1495000	1394976	28.01	2.178		260.7	3.644	4313.	1.001		4.307
1500000	1399329	28.00	2.132		261.4	3.572	4317.	9.823	-2	4.394
1505000	1403679	27.99	2.086		262.0	3.501	4321.	9.637		4.484
1510000	1408027	27.97	2.042	-13	262.6	3.431	4325.	9.455	-2	4.574 + 4
1515000	1412374	27.96	1.999		263.2	3.363	4329.	9.277		4.667
1520000	1416718	27.95	1.957		263.9	3.291	4334.	9.103		4.761
1525000	1421061	27.94	1.915		264.5	3.232	4338.	8.932		4.857
1530000	1425401	27.92	1.875		265.1	3.168	4342.	8.764		4.954
1535000	1429740	27.91	1.836		265.8	3.106	4346.	8.601		5.052
1540000	1434077	27.90	1.797		266.4	3.045	4350.	8.440		5.154
1545000	1438411	27.89	1.760		267.0	2.986	4355.	8.283		5.257
1550000	1442744	27.87	1.723		267.7	2.927	4359.	8.129		5.362
1555000	1447075	27.86	1.687		268.3	2.870	4363.	7.978		5.463

ALTITUDE Z, ft	CC. OF GRAV. H, ft' g, ft sec ⁻²	SPECIFIC WEIGHT $\sigma, \text{lb ft}^{-3}$	SCALE HEIGHT $H_s, \text{thsd ft}$	NUMBER DENSITY n, ft^{-3}	PART. $\bar{V}, \text{ft sec}^{-1}$	COLLISION MEAN FREQ. FREE PATH	
						v, sec^{-1}	L, ft
1560000	1451404	27.85	1.652 -13	268.9	2.814 +12	4367.	7.831 - 2 5.577 + 4
1565000	1455731	27.84	1.618	269.6	2.760	4371.	7.686 5.687
1570000	1460056	27.83	1.585	270.2	2.706	4375.	7.545 5.799
1575000	1464380	27.81	1.552	270.8	2.654	4380.	7.406 5.913
1580000	1468701	27.80	1.520	271.5	2.603	4384.	7.270 5.030
1585000	1473020	27.79	1.489	272.1	2.553	4388.	7.137 6.148
1590000	1477338	27.78	1.458	272.7	2.504	4392.	7.007 6.268
1595000	1481653	27.76	1.429	273.4	2.456	4396.	6.879 6.391
1600000	1485967	27.75	1.399	274.0	2.409	4400.	6.754 6.515
1605000	1490278	27.74	1.371	274.6	2.363	4404.	6.631 6.642
1610000	1494588	27.73	1.343 -13	275.3	2.318 +12	4408.	6.511 - 2 6.771 + 4
1615000	1498896	27.71	1.316	275.9	2.274	4413.	6.393 6.902
1620000	1503202	27.70	1.289	276.5	2.231	4417.	6.278 7.035
1625000	1507505	27.69	1.263	277.2	2.189	4421.	6.165 7.171
1630000	1511808	27.68	1.238	277.8	2.148	4425.	6.054 7.309
1635000	1516108	27.66	1.213	278.4	2.107	4429.	5.946 7.449
1640000	1520406	27.65	1.189	279.1	2.068	4433.	5.839 7.592
1645000	1524702	27.64	1.165	279.7	2.029	4437.	5.735 7.737
1650000	1528997	27.63	1.142	280.3	1.991	4441.	5.633 7.884
1655000	1533289	27.62	1.119	281.0	1.954	4445.	5.533 8.034
1660000	1537580	27.60	1.097 -13	281.6	1.917 +12	4449.	5.434 - 2 8.187 + 4
1665000	1541868	27.59	1.075	282.3	1.881	4453.	5.338 8.342
1670000	1546155	27.58	1.054	282.9	1.847	4457.	5.244 8.500
1675000	1550440	27.57	1.033	283.5	1.812	4461.	5.151 8.660
1680000	1554723	27.55	1.013	284.2	1.779	4465.	5.061 8.824
1685000	1559004	27.54	9.931 -14	284.8	1.746	4469.	4.972 8.989
1690000	1563283	27.53	9.736	285.4	1.714	4473.	4.885 9.158
1695000	1567560	27.52	9.546	286.1	1.682	4477.	4.799 9.330
1700000	1571836	27.50	9.360	286.7	1.651	4481.	4.715 9.504
1705000	1576109	27.49	9.178	287.4	1.621	4485.	4.633 9.681
1710000	1580381	27.48	9.000 -14	288.0	1.592 +12	4489.	4.553 - 2 9.861 + 4
1715000	1584650	27.47	8.825	288.6	1.563 -	4493.	4.473 1.004 + 5
1720000	1588918	27.46	8.655	289.3	1.534	4497.	4.396 1.023
1725000	1593184	27.44	8.488	289.9	1.506	4501.	4.320 1.042
1730000	1597448	27.43	8.325	290.6	1.479	4505.	4.245 1.061
1735000	1601710	27.42	8.165	291.2	1.452	4509.	4.172 1.081
1740000	1605970	27.41	8.008	291.8	1.426	4513.	4.101 1.101
1745000	1610228	27.40	7.855	292.5	1.400	4517.	4.030 1.121
1750000	1614485	27.38	7.705	293.1	1.375	4521.	3.961 1.141
1755000	1618739	27.37	7.558	293.8	1.351	4525.	3.894 1.162
1760000	1622992	27.36	7.415 -14	294.4	1.326 +12	4529.	3.827 - 2 1.183 + 5
1765000	1627243	27.35	7.274	295.1	1.303	4533.	3.762 1.205
1770000	1631492	27.33	7.137	295.7	1.279	4537.	3.698 1.227
1775000	1635739	27.32	7.002	296.3	1.257	4541.	3.636 1.249
1780000	1639984	27.31	6.870	297.0	1.234	4545.	3.574 1.272
1785000	1644227	27.30	6.741	297.6	1.212	4549.	3.514 1.294
1790000	1648469	27.29	6.614	298.3	1.191	4553.	3.455 1.318
1795000	1652708	27.27	6.490	298.9	1.170	4556.	3.397 1.341
1800000	1656946	27.26	6.369	299.6	1.149	4560.	3.340 1.366
1805000	1661182	27.25	6.250	300.2	1.129	4564.	3.284 1.390
1810000	1665415	27.24	6.134 -14	300.9	1.109 +12	4568.	3.229 - 2 1.415 + 5
1815000	1669647	27.23	6.020	301.5	1.090	4572.	3.175 1.440
1820000	1673878	27.21	5.909	302.1	1.071	4576.	3.122 1.466
1825000	1678106	27.20	5.799	302.8	1.052	4580.	3.070 1.492
1830000	1682332	27.19	5.692	303.4	1.034	4584.	3.019 1.518
1835000	1686557	27.18	5.587	304.1	1.016	4588.	2.969 1.545
1840000	1690780	27.17	5.485	304.7	9.983 +11	4591.	2.920 1.572
1845000	1695000	27.15	5.384	305.4	9.810	4595.	2.872 1.603
1850000	1699219	27.14	5.286	306.0	9.641	4599.	2.825 1.629
1855000	1703437	27.13	5.189	306.7	9.474	4603.	2.778 1.657

ALTITUDE Z, ft	ACC. OF GRAV. H, ft'	SPECIFIC WEIGHT $\omega, \text{lb}/\text{ft}^3$	SCALE HEIGHT $H_s, \text{thsd ft}$	NUMBER n, ft^{-3}	PART. SPEED $V, \text{ft sec}^{-1}$	COLLISION FREQ. v, sec^{-1}	MEAN FREE PATH L, ft	
							DENSITY n, ft^{-3}	MEAN FREE PATH L, ft
1860000	1707652	27.12	5.094	-14	307.3	9.311	+11	4607. 2.733 - 2 1,686 + 5
1865000	1711865	27.11	5.002		308.0	9.151		4611. 2.688
1870000	1716077	27.09	4.911		308.6	8.995		4614. 2.644
1875000	1720286	27.08	4.822		309.3	8.841		4618. 2.601
1880000	1724494	27.07	4.735		309.9	8.690		4622. 2.559
1885000	1728700	27.06	4.649		310.6	8.542		4626. 2.517
1890000	1732904	27.05	4.566		311.2	8.396		4630. 2.477
1895000	1737107	27.04	4.484		311.9	8.254		4634. 2.437
1900000	1741307	27.02	4.403		312.5	8.114		4637. 2.397
1905000	1745506	27.01	4.324		313.2	7.977		4641. 2.359
1910000	1749702	27.00	4.247	-14	313.8	7.842	+11	4645. 2.321 - 2 2.001 + 5
1915000	1753897	26.99	4.171		314.5	7.710		4649. 2.283
1920000	1758090	26.98	4.097		315.1	7.580		4652. 2.247
1925000	1762282	26.96	4.025		315.8	7.453		4656. 2.211
1930000	1766471	26.95	3.953		316.4	7.328		4660. 2.176
1935000	1770658	26.94	3.883		317.1	7.206		4664. 2.141
1940000	1774844	26.93	3.815		317.7	7.085		4668. 2.107
1945000	1779028	26.92	3.748		318.4	6.967		4671. 2.074
1950000	1783210	26.90	3.682		319.0	6.852		4675. 2.041
1955000	1787390	26.89	3.617		319.7	6.738		4679. 2.009
1960000	1791569	26.88	3.554	-14	320.3	6.626	+11	4683. 1.977 - 2 2.369 + 5
1965000	1795745	26.87	3.492		321.0	6.517		4686. 1.946
1970000	1799920	26.86	3.431		321.6	6.409		4690. 1.915
1975000	1804093	26.85	3.371		322.3	6.304		4694. 1.885
1980000	1808264	26.83	3.312		322.9	6.200		4698. 1.856
1985000	1812433	26.82	3.255		323.6	6.098		4701. 1.827
1990000	1816600	26.81	3.199		324.2	5.999		4705. 1.798
1995000	1820766	26.80	3.143		324.9	5.901		4709. 1.770
2000000	1824929	26.79	3.089		325.6	5.804		4712. 1.743
2005000	1829091	26.78	3.036		326.2	5.710		4716. 1.716
2010000	1833251	26.76	2.984	-14	326.9	5.617	+11	4720. 1.689 - 2 2.794 + 5
2015000	1837410	26.75	2.933		327.5	5.526		4724. 1.663
2020000	1841566	26.74	2.883		328.2	5.436		4727. 1.637
2025000	1845721	26.73	2.834		328.8	5.349		4731. 1.612
2030000	1849873	26.72	2.785		329.5	5.262		4735. 1.587
2035000	1854024	26.71	2.738		330.1	5.178		4738. 1.563
2040000	1858173	26.69	2.691		330.8	5.094		4742. 1.539
2045000	1862321	26.68	2.646		331.5	5.013		4746. 1.516
2050000	1866466	26.67	2.601		332.1	4.932		4749. 1.492
2055000	1870610	26.66	2.557		332.8	4.854		4753. 1.470
2060000	1874752	26.65	2.514	-14	333.4	4.776	+11	4757. 1.447 - 2 3.286 + 5
2065000	1878892	26.64	2.472		334.1	4.700		4760. 1.425
2070000	1883050	26.62	2.430		334.7	4.625		4764. 1.404
2075000	1887167	26.61	2.390		335.4	4.552		4768. 1.383
2080000	1891301	26.60	2.350		336.1	4.480		4771. 1.362
2085000	1895434	26.59	2.311		336.7	4.409		4775. 1.341
2090000	1899565	26.58	2.272		337.4	4.340		4778. 1.321
2095000	1903695	26.57	2.234		338.0	4.271		4782. 1.301
2100000	1907822	26.55	2.197		338.7	4.204		4786. 1.282
2120000	1924314	26.51	2.056		341.3	3.947		4800. 1.207
2140000	1940777	26.46	1.924	-14	344.0	3.708	+11	4814. 1.137 - 2 4.233 + 5
2160000	1957212	26.42	1.802		346.6	3.484		4829. 1.072
2180000	1973617	26.37	1.689		349.3	3.276		4843. 1.011
2200000	1989995	26.32	1.583		351.9	3.081		4857. 9.534 - 3 5.094
2220000	2006344	26.28	1.484		354.6	2.899		4871. 8.998
2240000	2022664	26.23	1.393		357.3	2.729		4885. 8.495
2260000	2038957	26.19	1.308		359.9	2.570		4899. 8.023
2280000	2055221	26.14	1.228		362.6	2.422		4913. 7.531
2300000	2071457	26.10	1.154		365.3	2.283		4927. 7.166
2320000	2087665	26.05	1.085		368.0	2.153		4941. 6.775

TABLE II
ATMOSPHERIC PROPERTIES AS A FUNCTION OF ALTITUDE
ENGLISH UNITS

Sound Speed, Viscosity, Kinematic Viscosity, and Thermal Conductivity

NOTE: A one- or two-digit number (preceded by a plus or minus sign) following the initial entry of each block indicates the power of 10 by which that entry and each succeeding entry of that block should be multiplied. A change of power occurring within a block is indicated by a similar notation.

LATITUDE	SOUND SPEED Z, ft	C_s , ft sec ⁻¹	COEFFICIENT OF VISCOSITY		IN. VISCOSITY η , ft ² sec ⁻¹	THERMAL CONDUCT. k, BTU ft ⁻¹ sec ⁻¹ (°R) ⁻¹				
			μ , 10 ⁻² sec ft ⁻²	μ , lb ft ⁻¹ sec ⁻¹						
-16500	-16512	1178.1	4.0594	-7	1.3057	-5	1.0997	-4	4.4740	-6
-16000	-16012	1176.3	4.0489		1.3027		1.0921		4.4619	
-15500	-15512	1174.5	4.0394		1.2996		1.1041		4.4498	
-15000	-15011	1172.5	4.0293		1.2966		1.1162		4.4376	
-14500	-14510	1170.8	4.0203		1.2935		1.1284		4.4254	
-14000	-14009	1169.0	4.0108		1.2904		1.1409		4.4132	
-13500	-13507	1167.1	4.0012		1.2873		1.1535		4.4011	
-13000	-13008	1165.3	3.9916		1.2843		1.1663		4.3889	
-12500	-12507	1163.5	3.9820		1.2812		1.1792		4.3766	
-12000	-12007	1161.6	3.9724		1.2781		1.1924		4.3644	
-11500	-11506	1159.8	3.9628	-7	1.2750	-5	1.2057	-4	4.3522	-6
-11000	-11006	1157.9	3.9531		1.2719		1.2193		4.3399	
-10500	-10505	1156.1	3.9435		1.2688		1.2330		4.3277	
-10000	-10005	1154.2	3.9338		1.2657		1.2469		4.3154	
-9500	-9504	1152.3	3.9241		1.2626		1.2610		4.3031	
-9000	-9004	1150.5	3.9144		1.2594		1.2754		4.2908	
-8500	-8503	1148.6	3.9047		1.2563		1.2899		4.2785	
-8000	-8003	1146.7	3.8950		1.2532		1.3046		4.2662	
-7500	-7503	1144.9	3.8853		1.2500		1.3196		4.2539	
-7000	-7002	1143.0	3.8755		1.2469		1.3348		4.2415	
-6500	-6502	1141.1	3.8657	-7	1.2438	-5	1.3501	-4	4.2292	-6
-6000	-6002	1139.2	3.8560		1.2406		1.3658		4.2168	
-5500	-5501	1137.4	3.8462		1.2375		1.3816		4.2044	
-5000	-5001	1135.5	3.8363		1.2343		1.3977		4.1921	
-4500	-4501	1133.6	3.8265		1.2311		1.4140		4.1797	
-4000	-4001	1131.7	3.8167		1.2280		1.4306		4.1673	
-3500	-3501	1129.8	3.8068		1.2248		1.4474		4.1548	
-3000	-3000	1127.9	3.7969		1.2216		1.4644		4.1424	
-2500	-2500	1126.0	3.7870		1.2184		1.4818		4.1300	
-2000	-2000	1124.1	3.7771		1.2152		1.4993		4.1175	
-1500	-1500	1122.2	3.7672	-7	1.2121	-5	1.5172	-4	4.1050	-6
-1000	-1000	1120.3	3.7572		1.2089		1.5353		4.0926	
-500	-500	1118.4	3.7473		1.2056		1.5537		4.0801	
0	0	1116.4	3.7373		1.2024		1.5723		4.0676	
500	500	1114.5	3.7273		1.1992		1.5913		4.0551	
1000	1000	1112.6	3.7173		1.1960		1.6105		4.0425	
1500	1500	1110.7	3.7073		1.1928		1.6301		4.0300	
2000	2000	1108.7	3.6972		1.1896		1.6499		4.0175	
2500	2500	1106.8	3.6872		1.1863		1.6700		4.0049	
3000	3000	1104.9	3.6771		1.1831		1.6905		3.9923	
3500	3499	1102.9	3.6670	-7	1.1798	-5	1.7113	-4	3.9797	-6
4000	3999	1101.0	3.6569		1.1766		1.7324		3.9672	
4500	4499	1099.0	3.6468		1.1733		1.7538		3.9545	
5000	4999	1097.1	3.6367		1.1701		1.7755		3.9419	
5500	5499	1095.1	3.6265		1.1668		1.7977		3.9293	
6000	5998	1093.2	3.6163		1.1635		1.8201		3.9167	
6500	6498	1091.2	3.6061		1.1602		1.8429		3.9040	
7000	6998	1089.3	3.5959		1.1570		1.8661		3.8913	
7500	7497	1087.3	3.5857		1.1537		1.8897		3.8787	
8000	7997	1085.3	3.5755		1.1504		1.9136		3.8660	
8500	8497	1083.3	3.5652	-7	1.1471	-5	1.9379	-4	3.8533	-6
9000	8936	1081.4	3.5550		1.1438		1.9626		3.8406	
9500	9496	1079.4	3.5447		1.1405		1.9877		3.8279	
10000	9995	1077.4	3.5344		1.1371		2.0132		3.8151	
10500	10495	1075.4	3.5240		1.1338		2.0392		3.8024	
11000	10994	1073.4	3.5137		1.1305		2.0655		3.7896	
11500	11494	1071.4	3.5033		1.1272		2.0923		3.7768	
12000	11993	1069.4	3.4930		1.1238		2.1196		3.7641	
12500	12493	1067.4	3.4826		1.1205		2.1472		3.7513	
13000	12992	1065.4	3.4721		1.1171		2.1751		3.7385	

ALTITUDE Z, ft	SOUND SPEED $C_s, \text{ft sec}^{-1}$	COEFFICIENT OF VISCOSITY $\mu, \text{lb sec ft}^{-2}$	KIN. VISCOSITY $\mu, \text{lb ft}^{-1} \text{sec}^{-1}$	THERM. L. CONDUCTI. k, BTU ft $^{-1}$ sec $^{-1}$ (°R) $^{-1}$		
13500	13491	1063.4	3.4617 - 7	1.1138 - 5	2.2040 - 4	3.7257 - 6
14000	13991	1061.4	3.4513	1.1104	2.2331	3.7128
14500	14490	1059.4	3.4408	1.1070	2.2627	3.7000
15000	14989	1057.4	3.4303	1.1037	2.2927	3.6871
15500	15488	1055.3	3.4198	1.1003	2.3233	3.6743
16000	15988	1053.3	3.4093	1.0969	2.3544	3.6614
16500	16487	1051.3	3.3988	1.0935	2.3861	3.6485
17000	16986	1049.2	3.3882	1.0901	2.4183	3.6356
17500	17485	1047.2	3.3776	1.0867	2.4510	3.6227
18000	17984	1045.1	3.3670	1.0833	2.4843	3.6098
18500	18484	1043.1	3.3564 - 7	1.0799 - 5	2.5182 - 4	3.5968 - 6
19000	18983	1041.0	3.3458	1.0765	2.5526	3.5839
19500	19482	1039.0	3.3351	1.0730	2.5877	3.5709
20000	19981	1036.9	3.3245	1.0696	2.6234	3.5580
20500	20480	1034.9	3.3138	1.0662	2.6597	3.5450
21000	20979	1032.8	3.3031	1.0627	2.6966	3.5320
21500	21478	1030.7	3.2923	1.0593	2.7342	3.5190
22000	21977	1028.6	3.2816	1.0558	2.7724	3.5060
22500	22476	1026.6	3.2708	1.0524	2.8114	3.4929
23000	22975	1024.5	3.2601	1.0489	2.8510	3.4799
23500	23474	1022.4	3.2492 - 7	1.0454 - 5	2.8914 - 4	3.4668 - 6
24000	23972	1020.3	3.2384	1.0419	2.9324	3.4538
24500	24471	1018.2	3.2276	1.0384	2.9743	3.4407
25000	24970	1016.1	3.2167	1.0350	3.0168	3.4276
25500	25469	1014.0	3.2058	1.0314	3.0602	3.4145
26000	25968	1011.9	3.1949	1.0279	3.1044	3.4014
26500	26466	1009.8	3.1840	1.0244	3.1493	3.3883
27000	26965	1007.7	3.1731	1.0209	3.1951	3.3751
27500	27464	1005.5	3.1621	1.0174	3.2417	3.3620
28000	27962	1003.4	3.1511	1.0139	3.2893	3.3488
28500	28461	1001.3	3.1401 - 7	1.0103 - 5	3.3377 - 4	3.3357 - 6
29000	28960	999.13	3.1291	1.0068	3.3870	3.3225
29500	29458	996.99	3.1181	1.0032	3.4572	3.3093
30000	29957	994.85	3.1070	9.9965 - 6	3.4884	3.2961
30500	30455	992.70	3.0959	9.9609	3.5405	3.2829
31000	30954	990.54	3.0848	9.9252	3.5937	3.2696
31500	31452	988.39	3.0737	9.8894	3.6478	3.2564
32000	31951	986.22	3.0626	9.8535	3.7030	3.2432
32500	32449	984.05	3.0514	9.8176	3.7593	3.2299
33000	32948	981.88	3.0402	9.7816	3.8167	3.2166
33500	33446	979.70	3.0290 - 7	9.7455 - 6	3.8751 - 4	3.2033 - 6
34000	33945	977.52	3.0178	9.7094	3.9348	3.1900
34500	34443	975.33	3.0065	9.6732	3.9955	3.1767
35000	34941	973.14	2.9953	9.6370	4.0575	3.1634
35500	35440	970.95	2.9840	9.6006	4.1207	3.1501
36000	35938	968.75	2.9727	9.5642	4.1852	3.1367
36500	36436	966.08	2.9592	9.5532	4.2757	3.1327
37000	36934	966.08	2.9692	9.5532	4.3794	3.1327
37500	37433	966.08	2.9692	9.5532	4.4855	3.1327
38000	37931	966.08	2.9692	9.5532	4.5942	3.1327
38500	38429	966.08	2.9692 - 7	9.5532 - 6	4.7055 - 4	3.1327 - 6
39000	38927	966.08	2.9692	9.5532	4.8196	3.1327
39500	39425	966.08	2.9692	9.5532	4.9363	3.1327
40000	39923	966.08	2.9692	9.5532	5.0560	3.1327
40500	40422	966.08	2.9692	9.5532	5.1784	3.1327
41000	40920	966.08	2.9692	9.5532	5.3039	3.1327
41500	41418	966.08	2.9692	9.5532	5.4324	3.1327
42000	41916	966.08	2.9692	9.5532	5.5640	3.1327
42500	42414	966.08	2.9692	9.5532	5.6988	3.1327
43000	42912	966.08	2.9692	9.5532	5.8368	3.1327

ALTITUDE Z, ft	SOUND SPEED $C_s, \text{ft sec}^{-1}$	COEFFICIENT OF VISCOSITY		KIN. VISCOOSITY	THERMAL CONDUCT. $k, \text{BTU ft}^{-1}\text{sec}^{-1}(\text{°R})^{-1}$	
		$\mu, \text{lb sec ft}^{-2}$	$\eta, \text{lb ft}^{-1}\text{sec}^{-1}$	$\eta, \text{ft}^2\text{sec}^{-1}$		
43500	43409	968.08	2.9692 - 7	9.5532 - 6	5.9782 - 4	3.1327 - 6
44000	43907	968.08	2.9692	9.5532	6.1230	3.1327
44500	44405	968.08	2.9692	9.5532	6.2713	3.1327
45000	44903	968.08	2.9692	9.5532	6.4231	3.1327
45500	45401	968.08	2.9692	9.5532	6.5787	3.1327
46000	45899	968.08	2.9692	9.5532	6.7380	3.1327
46500	46397	968.08	2.9692	9.5532	6.9011	3.1327
47000	46894	968.08	2.9692	9.5532	7.0682	3.1327
47500	47392	968.08	2.9692	9.5532	7.2394	3.1327
48000	47890	968.08	2.9692	9.5532	7.4146	3.1327
48500	48387	968.08	2.9692 - 7	9.5532 - 6	7.5941 - 4	3.1327 - 6
49000	48885	968.08	2.9692	9.5532	7.7780	3.1327
49500	49383	968.08	2.9692	9.5532	7.9663	3.1327
50000	49880	968.08	2.9692	9.5532	8.1591	3.1327
50500	50378	968.08	2.9692	9.5532	8.3566	3.1327
51000	50876	968.08	2.9692	9.5532	8.5588	3.1327
51500	51373	968.08	2.9692	9.5532	8.7660	3.1327
52000	51871	968.08	2.9692	9.5532	8.9781	3.1327
52500	52368	968.08	2.9692	9.5532	9.1954	3.1327
53000	52866	968.08	2.9692	9.5532	9.4179	3.1327
53500	53363	968.08	2.9692 - 7	9.5532 - 6	9.6458 - 4	3.1327 - 6
54000	53861	968.08	2.9692	9.5532	9.8792	3.1327
54500	54358	968.08	2.9692	9.5532	1.0118 - 3	3.1327
55000	54855	968.08	2.9692	9.5532	1.0363	3.1327
55500	55353	968.08	2.9692	9.5532	1.0614	3.1327
56000	55850	968.08	2.9692	9.5532	1.0871	3.1327
56500	56347	968.08	2.9692	9.5532	1.1133	3.1327
57000	56845	968.08	2.9692	9.5532	1.1403	3.1327
57500	57342	968.08	2.9692	9.5532	1.1679	3.1327
58000	57839	968.08	2.9692	9.5532	1.1961	3.1327
58500	58336	968.08	2.9692 - 7	9.5532 - 6	1.2250 - 3	3.1327 - 6
59000	58834	968.08	2.9692	9.5532	1.2547	3.1327
59500	59331	968.08	2.9692	9.5532	1.2850	3.1327
60000	59828	968.08	2.9692	9.5532	1.3161	3.1327
60500	60325	968.08	2.9692	9.5532	1.3479	3.1327
61000	60822	968.08	2.9692	9.5532	1.3805	3.1327
61500	61319	968.08	2.9692	9.5532	1.4139	3.1327
62000	61816	968.08	2.9692	9.5532	1.4481	3.1327
62500	62313	968.08	2.9692	9.5532	1.4831	3.1327
63000	62810	968.08	2.9692	9.5532	1.5189	3.1327
63500	63307	968.08	2.9692 - 7	9.5532 - 6	1.5556 - 3	3.1327 - 6
64000	63804	968.08	2.9692	9.5532	1.5932	3.1327
64500	64301	968.08	2.9692	9.5532	1.6318	3.1327
65000	64798	968.08	2.9692	9.5532	1.6712	3.1327
65500	65295	968.08	2.9692	9.5532	1.7116	3.1327
66000	65792	968.08	2.9692	9.5532	1.7530	3.1327
66500	66289	968.08	2.9692	9.5532	1.7953	3.1327
67000	66785	968.08	2.9692	9.5532	1.8387	3.1327
67500	67282	968.08	2.9692	9.5532	1.8831	3.1327
68000	67779	968.08	2.9692	9.5532	1.9286	3.1327
68500	68276	968.08	2.9692 - 7	9.5532 - 6	1.9752 - 3	3.1327 - 6
69000	68772	968.08	2.9692	9.5532	2.0230	3.1327
69500	69269	968.08	2.9692	9.5532	2.0718	3.1327
70000	69766	968.08	2.9692	9.5532	2.1219	3.1327
70500	70262	968.08	2.9692	9.5532	2.1732	3.1327
71000	70759	968.08	2.9692	9.5532	2.2257	3.1327
71500	71256	968.08	2.9692	9.5532	2.2794	3.1327
72000	71752	968.08	2.9692	9.5532	2.3345	3.1327
72500	72249	968.08	2.9692	9.5532	2.3909	3.1327
73000	72745	968.08	2.9692	9.5532	2.4486	3.1327

ALTITUDE Z, ft	SOUND SPEED H, ft ¹	COEFFICIENT OF VISCOSITY $C_s, \text{ft sec}^{-1}$	$\mu, \text{lb/sec ft}^2$	$\mu, \text{lb ft}^{-1} \text{sec}^{-1}$	KIN. VISCOSITY $\eta, \text{ft}^2 \text{sec}^{-1}$	THERMAL CONDUCT. $k, \text{BTU ft}^{-1} \text{sec}^{-1} (\text{R})^{-1}$	
						-	-
73500	73242	968.08	2.9692	- 7	9.5532 - 6	2.5077 - 3	3.1327 - 6
74000	73738	968.08	2.9692		9.5532	2.5683	3.1327
74500	74235	968.08	2.9692		9.5532	2.6303	3.1327
75000	74731	968.08	2.9692		9.5532	2.6938	3.1327
75500	75228	968.08	2.9692		9.5532	2.7589	3.1327
76000	75724	968.08	2.9692		9.5532	2.8255	3.1327
76500	76220	968.08	2.9692		9.5532	2.8937	3.1327
77000	76717	968.08	2.9692		9.5532	2.9636	3.1327
77500	77213	968.08	2.9692		9.5532	3.0351	3.1327
78000	77709	968.08	2.9692		9.5532	3.1084	3.1327
78500	78206	968.08	2.9692	- 7	9.5532 - 6	3.1834 - 3	3.1327 - 6
79000	78702	968.08	2.9692		9.5532	3.2603	3.1327
79500	79198	968.08	2.9692		9.5532	3.3390	3.1327
80000	79694	968.08	2.9692		9.5532	3.4195	3.1327
80500	80190	968.08	2.9692		9.5532	3.5021	3.1327
81000	80687	968.08	2.9692		9.5532	3.5866	3.1327
81500	81183	968.08	2.9692		9.5532	3.6731	3.1327
82000	81679	968.08	2.9692		9.5532	3.7618	3.1327
82500	82175	968.39	2.9708		9.5584	3.8571	3.1346
83000	82671	969.40	2.9760		9.5751	3.9652	3.1407
83500	83167	970.41	2.9812	- 7	9.5918 - 6	4.0761 - 3	3.1468 - 6
84000	83663	971.42	2.9864		9.6085	4.1899	3.1530
84500	84159	972.43	2.9916		9.6252	4.3065	3.1591
85000	84655	973.44	2.9968		9.6419	4.4262	3.1652
85500	85151	974.45	3.0020		9.6586	4.5489	3.1713
86000	85647	975.45	3.0071		9.6752	4.6747	3.1774
86500	86143	976.46	3.0123		9.6918	4.8037	3.1836
87000	86639	977.46	3.0175		9.7085	4.9360	3.1897
87500	87134	978.47	3.0226		9.7250	5.0717	3.1958
88000	87630	979.47	3.0278		9.7416	5.2108	3.2019
88500	88126	980.47	3.0329	- 7	9.7582 - 6	5.3533 - 3	3.2080 - 6
89000	88622	981.47	3.0381		9.7747	5.4995	3.2141
89500	89118	982.47	3.0432		9.7913	5.6494	3.2202
90000	89613	983.46	3.0484		9.8078	5.8030	3.2263
90500	90109	984.46	3.0535		9.8243	5.9604	3.2324
91000	90605	985.45	3.0586		9.8408	6.1218	3.2385
91500	91100	986.45	3.0637		9.8573	6.2871	3.2445
92000	91596	987.44	3.0688		9.8737	6.4566	3.2506
92500	92092	988.43	3.0740		9.8902	6.6303	3.2567
93000	92587	989.43	3.0791		9.9066	6.8083	3.2628
93500	93083	990.42	3.0842	- 7	9.9230 - 6	6.9907 - 3	3.2689 - 6
94000	93578	991.40	3.0893		9.9394	7.1775	3.2749
94500	94074	992.39	3.0944		9.9558	7.3690	3.2810
95000	94569	993.38	3.0994		9.9722	7.5651	3.2871
95500	95065	994.37	3.1045		9.9885	7.7661	3.2931
96000	95560	995.35	3.1096		1.0005 - 5	7.9719	3.2992
96500	96056	996.33	3.1147		1.0021	8.1828	3.3052
97000	96551	997.32	3.1197		1.0037	8.3988	3.3113
97500	97046	998.30	3.1248		1.0054	8.6200	3.3173
98000	97542	999.28	3.1299		1.0070	8.8466	3.3234
98500	98037	1000.3	3.1349	- 7	1.0086 - 5	9.0787 - 3	3.3294 - 6
99000	98532	1001.2	3.1400		1.0103	9.3164	3.3353
99500	99028	1002.2	3.1450		1.0119	9.5598	3.3415
100000	99523	1003.2	3.1501		1.0135	9.8090	3.3475
100500	100018	1004.2	3.1551		1.0151	1.0064 - 2	3.3536
101000	100513	1005.1	3.1601		1.0167	1.0326	3.3596
101500	101008	1006.1	3.1652		1.0184	1.0593	3.3656
102000	101504	1007.1	3.1702		1.0200	1.0867	3.3717
102500	101999	1008.1	3.1752		1.0216	1.1147	3.3777
103000	102491	1009.0	3.1802		1.0232	1.1435	3.3837

ALTITUDE Z, ft	H, ft ¹	SOUND SPEED $C_s, \text{ft sec}^{-1}$	COEFFICIENT OF VISCOSITY		KIN. VISCOSITY $\eta, \text{ft}^2 \text{sec}^{-1}$	THERMAL CONDUCT. $k, \text{BTU ft}^{-1} \text{sec}^{-1} (\text{°R})^{-1}$	
			$\mu, \text{lb/sec ft}^{-2}$	$\mu, \text{lb ft}^{-1} \text{sec}^{-1}$			
103500	102989	1010.0	3.1852	- 7	1.0248 - 5	1.1728 - 2	3.3897 - 6
104000	103484	1011.0	3.1902		1.0264	1.2029	3.3957
104500	103979	1011.9	3.1952		1.0280	1.2337	3.4017
105000	104474	1012.9	3.2002		1.0296	1.2652	3.4077
106000	105464	1014.8	3.2102		1.0329	1.3305	3.4198
107000	106454	1016.8	3.2202		1.0361	1.3989	3.4318
108000	107444	1018.7	3.2301		1.0393	1.4705	3.4437
109000	108433	1020.6	3.2400		1.0424	1.5454	3.4557
110000	109423	1021.5	3.2499		1.0456	1.6238	3.4677
111000	110412	1024.4	3.2598		1.0488	1.7059	3.4796
112000	111402	1026.3	3.2697	- 7	1.0520 - 5	1.7919 - 2	3.4915 - 6
113000	112391	1028.2	3.2795		1.0552	1.8817	3.5035
114000	113380	1030.1	3.2894		1.0583	1.9757	3.5154
115000	114369	1032.0	3.2992		1.0615	2.0741	3.5273
116000	115358	1033.9	3.3090		1.0646	2.1769	3.5392
117000	116347	1035.8	3.3188		1.0678	2.2844	3.5511
118000	117336	1037.7	3.3285		1.0709	2.3967	3.5629
119000	118325	1039.6	3.3383		1.0741	2.5142	3.5748
120000	119313	1041.5	3.3480		1.0772	2.6369	3.5866
121000	120302	1043.4	3.3577		1.0803	2.7651	3.5985
122000	121290	1045.2	3.3674	- 7	1.0834 - 5	2.8990 - 2	3.6103 - 6
123000	122279	1047.1	3.3771		1.0866	3.0589	3.6221
124000	123267	1049.0	3.3868		1.0897	3.1849	3.6339
125000	124255	1050.8	3.3964		1.0928	3.3374	3.6457
126000	125243	1052.7	3.4061		1.0959	3.4966	3.6575
127000	126231	1054.5	3.4157		1.0990	3.6628	3.6692
128000	127219	1056.4	3.4253		1.1021	3.8362	3.6810
129000	128207	1058.2	3.4349		1.1051	4.0172	3.6927
130000	129195	1060.1	3.4444		1.1082	4.2059	3.7044
131000	130182	1061.9	3.4540		1.1113	4.4029	3.7162
132000	131170	1063.8	3.4635	- 7	1.1144 - 5	4.6082 - 2	3.7279 - 6
133000	132157	1065.6	3.4730		1.1174	4.8224	3.7396
134000	133145	1067.4	3.4825		1.1205	5.0457	3.7512
135000	134132	1069.2	3.4920		1.1235	5.2785	3.7629
136000	135119	1071.1	3.5015		1.1266	5.5211	3.7746
137000	136106	1072.9	3.5109		1.1296	5.7740	3.7862
138000	137093	1074.7	3.5204		1.1326	6.0375	3.7979
139000	138080	1076.5	3.5298		1.1357	6.3120	3.8095
140000	139066	1078.3	3.5392		1.1387	6.5980	3.8211
141000	140053	1080.1	3.5486		1.1417	6.8959	3.8327
142000	141040	1081.9	3.5580	- 7	1.1447 - 5	7.2061 - 2	3.8443 - 6
143000	142026	1083.7	3.5673		1.1478	7.5291	3.8559
144000	143013	1085.5	3.5767		1.1508	7.8654	3.8674
145000	143999	1087.3	3.5860		1.1538	8.2155	3.8790
146000	144985	1089.1	3.5953		1.1568	8.5799	3.8906
147000	145971	1090.9	3.6046		1.1597	8.9591	3.9021
148000	146957	1092.7	3.6139		1.1627	9.3537	3.9136
149000	147943	1094.5	3.6231		1.1657	9.7642	3.9251
150000	148929	1096.3	3.6324		1.1687	1.0191 - 1	3.9366
151000	149915	1098.0	3.6416		1.1717	1.0635	3.9481
152000	150900	1099.8	3.6509	- 7	1.1746 - 5	1.1097 - 1	3.9596 - 6
153000	151886	1101.6	3.6601		1.1776	1.1578	3.9711
154000	152871	1103.4	3.6693		1.1805	1.2077	3.9825
155000	153856	1105.1	3.6784		1.1835	1.2596	3.9940
156000	154842	1105.7	3.6816		1.1845	1.3088	3.9980
157000	155827	1105.7	3.6816		1.1845	1.3572	3.9980
158000	156812	1105.7	3.6816		1.1845	1.4073	3.9980
159000	157797	1105.7	3.6816		1.1845	1.4593	3.9980
160000	158782	1105.7	3.6816		1.1845	1.5133	3.9980
161000	159767	1105.7	3.6816		1.1845	1.5692	3.9980

ALTITUDE Z, ft	SOUND SPEED H, ft'	$C_s, \text{ft sec}^{-1}$	$\mu, \text{lb sec ft}^{-2}$	$\eta, \text{lb ft}^{-1} \text{sec}^{-1}$	KIN. VISCOSITY $\eta, \text{ft}^2 \text{sec}^{-1}$	THERMAL CONDUCT. $k, \text{BTU ft}^{-1}$ $\text{sec}^{-1} (\text{°R})^{-1}$
					OF VISCOSITY	
162000	160751	1105.7	3.6816 - 7	1.1845 - 5	1.6271 - 1	3.9980 - 6
163000	161736	1105.7	3.6816	1.1845	1.6872	3.9980
164000	162720	1105.7	3.6816	1.1845	1.7496	3.9980
165000	163705	1105.7	3.6816	1.1845	1.8142	3.9980
166000	164689	1105.7	3.6816	1.1845	1.8812	3.9980
167000	165673	1105.7	3.6816	1.1845	1.9506	3.9980
168000	166657	1105.7	3.6816	1.1845	2.0227	3.9980
169000	167641	1105.7	3.6816	1.1845	2.0973	3.9980
170000	168625	1105.7	3.6816	1.1845	2.1748	3.9980
171000	169609	1105.7	3.6816	1.1845	2.2550	3.9980
172000	170593	1105.7	3.6816 - 7	1.1845 - 5	2.3383 - 1	3.9980 - 6
173000	171577	1105.7	3.6816	1.1845	2.4245	3.9980
174000	172560	1105.7	3.6816	1.1845	2.5140	3.9980
175000	173544	1105.7	3.6816	1.1845	2.6068	3.9980
176000	174527	1104.0	3.6726	1.1816	2.6880	3.9868
177000	175510	1101.4	3.6589	1.1772	2.7640	3.9696
178000	176494	1098.7	3.6451	1.1728	2.8425	3.9524
179000	177477	1096.1	3.6313	1.1683	2.9236	3.9353
180000	178460	1093.4	3.6175	1.1639	3.0074	3.9180
181000	179443	1090.7	3.6036	1.1594	3.0940	3.9008
182000	180425	1088.0	3.5897 - 7	1.1549 - 5	3.1836 - 1	3.8836 - 6
183000	181408	1085.4	3.5757	1.1505	3.2761	3.8663
184000	182391	1082.7	3.5618	1.1460	3.3718	3.8490
185000	183373	1080.0	3.5478	1.1415	3.4708	3.8317
186000	184356	1077.3	3.5337	1.1369	3.5731	3.8143
187000	185338	1074.6	3.5197	1.1324	3.6790	3.7970
188000	186320	1071.9	3.5056	1.1279	3.7885	3.7796
189000	187303	1069.1	3.4914	1.1233	3.9019	3.7622
190000	188285	1066.4	3.4773	1.1188	4.0192	3.7448
191000	189267	1063.7	3.4631	1.1142	4.1407	3.7273
192000	190248	1060.9	3.4489 - 7	1.1096 - 5	4.2664 - 1	3.7099 - 6
193000	191230	1058.2	3.4346	1.1051	4.3966	3.6924
194000	192212	1055.4	3.4203	1.1005	4.5314	3.6749
195000	193194	1052.7	3.4060	1.0958	4.6711	3.6574
196000	194175	1049.9	3.3916	1.0912	4.8158	3.6398
197000	195157	1047.1	3.3772	1.0866	4.9658	3.6222
198000	196138	1044.3	3.3628	1.0820	5.1212	3.6046
199000	197119	1041.5	3.3484	1.0773	5.2823	3.5870
200000	198100	1038.7	3.3339	1.0726	5.4453	3.5694
201000	199081	1035.9	3.3193	1.0680	5.6025	3.5517
202000	200062	1033.1	3.3048 - 7	1.0633 - 5	5.8022 - 1	3.5341 - 6
203000	201043	1030.3	3.2902	1.0586	5.9885	3.5164
204000	202024	1027.5	3.2756	1.0539	6.1819	3.4986
205000	203004	1024.6	3.2609	1.0492	6.3825	3.4809
206000	203985	1021.8	3.2462	1.0444	6.5908	3.4631
207000	204966	1018.9	3.2314	1.0397	6.8070	3.4454
208000	205946	1016.1	3.2167	1.0349	7.0316	3.4276
209000	206926	1013.2	3.2019	1.0302	7.2648	3.4097
210000	207906	1010.3	3.1870	1.0254	7.5070	3.3919
211000	208887	1007.5	3.1721	1.0205	7.7507	3.3740
212000	209867	1004.6	3.1572 - 7	1.0158 - 5	8.0003 - 1	3.5561 - 6
213000	210847	1001.7	3.1423	1.0110	8.2321	3.3382
214000	211826	998.77	3.1273	1.0062	8.5749	3.3203
215000	212805	995.86	3.1122	1.0013	8.8603	3.3023
216000	213786	992.94	3.0972	9.9649 - 6	9.1746	3.2843
217000	214765	990.01	3.0821	9.9163	9.4927	3.2663
218000	215745	987.07	3.0669	9.8675	9.8237	3.2483
219000	216724	984.12	3.0517	9.8187	1.0168 + 0	3.2303
220000	217703	981.16	3.0365	9.7697	1.0527	3.2122
221000	218683	978.20	3.0213	9.7206	1.0900	3.1942

ALTITUDE Z, ft	H, ft'	SOUND SPEED $C_s, \text{ft sec}^{-1}$	COEFFICIENT OF VISCOSITY $\mu, \text{lb sec ft}^{-2}$	KIN. VISCOSITY $\eta, \text{ft}^2 \text{sec}^{-1}$	THERMAL CONDUCT. $k, \text{BTU ft}^{-1} \text{sec}^{-1} (\text{°R})^{-1}$	
					-7	-6
222000	219662	975.23	3.0060	9.6714	1.1289 + 0	3.1761 - 6
223000	220641	972.24	2.9906	9.6221	1.1695	3.1579
224000	221620	969.25	2.9753	9.5726	1.2117	3.1398
225000	222598	966.25	2.9598	9.5230	1.2557	3.1216
226000	223577	963.24	2.9444	9.4733	1.3016	3.1034
227000	224556	960.22	2.9289	9.4234	1.3494	3.0852
228000	225534	957.20	2.9134	9.3735	1.3994	3.0670
229000	226513	954.16	2.8978	9.3233	1.4514	3.0488
230000	227491	951.11	2.8822	9.2731	1.5058	3.0305
231000	228469	948.06	2.8665	9.2227	1.5625	3.0122
232000	229447	944.99	2.8508	9.1722	1.6218 + 0	2.9939 - 6
233000	230426	941.91	2.8351	9.1216	1.6836	2.9756
234000	231404	938.83	2.8193	9.0708	1.7483	2.9572
235000	232381	935.73	2.8035	9.0199	1.8158	2.9389
236000	233359	932.63	2.7876	8.9689	1.8864	2.9205
237000	234337	929.51	2.7717	8.9177	1.9602	2.9021
238000	235315	926.39	2.7558	8.8664	2.0374	2.8836
239000	236292	923.25	2.7398	8.8149	2.1182	2.8652
240000	237269	920.11	2.7237	8.7634	2.2028	2.8467
241000	238247	916.95	2.7077	8.7116	2.2912	2.8282
242000	239224	913.78	2.6915	8.6598	2.3839 + 0	2.8097 - 6
243000	240201	910.61	2.6754	8.6077	2.4809	2.7912
244000	241178	907.42	2.6592	8.5556	2.5826	2.7726
245000	242155	904.22	2.6429	8.5033	2.6892	2.7541
246000	243132	901.0	2.627	8.451	2.801	2.735
247000	244109	897.8	2.610	8.398	2.918	2.717
248000	245085	894.6	2.594	8.346	3.041	2.698
249000	246062	891.3	2.577	8.293	3.170	2.680
250000	247039	888.1	2.561	8.240	3.306	2.661
251000	248015	884.8	2.544	8.187	3.448	2.642
252000	248991	881.5	2.528	8.133	3.597 + 0	2.624 - 6
253000	249967	878.2	2.511	8.080	3.754	2.605
254000	250944	874.9	2.495	8.026	3.919	2.586
255000	251920	871.6	2.478	7.972	4.093	2.567
256000	252896	868.3	2.461	7.918	4.275	2.549
257000	253871	864.9	2.444	7.864	4.468	2.530
258000	254847	861.6	2.427	7.810	4.670	2.511
259000	255823	858.2	2.411	7.756	4.883	2.492
260000	256798	854.8	2.394	7.701	5.108	2.473
261000	257774	851.4	2.377	7.647	5.344	2.455
262000	258749	848.0	2.360	7.592	5.594 + 0	2.436 - 6
263000	259725	846.5	2.352	7.567	5.906	2.427
264000	260700	845.5	2.352	7.567	6.280	2.427
265000	261675	846.5	2.352	7.567	6.677	2.427
266000	262650	846.5	2.352	7.567	7.090	2.427
267000	263625	846.5	2.352	7.567	7.547	2.427
268000	264600	846.5	2.352	7.567	8.024	2.427
269000	265574	846.5	2.352	7.567	8.531	2.427
270000	266549	846.5	2.352	7.567	9.071	2.427
271000	267524	846.5	2.352	7.567	9.644	2.427
272000	268498	846.5	2.352	7.567	1.025 + 1	2.427 - 6
273000	269472	846.5	2.352	7.567	1.090	2.427
274000	270447	846.5	2.352	7.567	1.159	2.427
275000	271421	846.5	2.352	7.567	1.232	2.427
276000	272395	846.5	2.352	7.567	1.310	2.427
277000	273369	846.5	2.352	7.567	1.393	2.427
278000	274343	846.5	2.352	7.567	1.480	2.427
279000	275317	846.5	2.352	7.567	1.574	2.427
280000	276290	846.5	2.352	7.567	1.673	2.427
281000	277264	846.5	2.352	7.567	1.779	2.427

ALTITUDE	SOUND SPEED	COEFFICIENT OF VISCOSITY	KIN. VISCOSITY	THERMAL CONDUCT.			
Z, ft	H, ft'	$C_s \text{ ft sec}^{-1}$	$\mu, \text{lb/sec ft}^{-2}$	$\mu, \text{lb ft}^{-1} \text{sec}^{-1}$	$\eta, \text{ft}^2 \text{sec}^{-1}$	k, BTU ft $^{-1}$ sec $^{-1}$ (°R) $^{-1}$	
282000	278238	846.5	2.352	- 7	7.567 - 6	1.891 + 1	2.427 - 6
283000	279211	846.5	2.352		7.567	2.010	2.427
284000	280184	846.5	2.352		7.567	2.137	2.427
285000	281158	846.5	2.352		7.567	2.272	2.427
286000	282131	846.5	2.352		7.567	2.416	2.427
287000	283104	846.5	2.352		7.567	2.568	2.427
288000	284077	846.5	2.352		7.567	2.730	2.427
289000	285050	846.5	2.352		7.567	2.902	2.427
290000	286023	846.5	2.352		7.567	3.085	2.427
291000	286995	846.5	2.352		7.567	3.280	2.427
292000	287968	846.5	2.352	- 7	7.567 - 6	3.486 + 1	2.427 - 6
293000	288940	846.5	2.352		7.567	3.706	2.427
294000	289913	846.5	2.352		7.567	3.940	2.427
295000	290885	846.5	2.352		7.567	4.188	2.427

5. SEA-LEVEL VALUES OF ATMOSPHERIC PROPERTIES

5.1 Metric Units

The sea-level values of the properties tabulated in this model in metric units are given in the following table:

Collision frequency	(v_0)	$6.9204049 \times 10^9 \text{ sec}^{-1}$
Conductivity, thermal	(k_0)	$2.5339053 \times 10^{-2} \text{ joule m}^{-1} \text{ sec}^{-1} (\text{°K})^{-1}$
Conductivity, thermal	(k_0)	$6.0532182 \times 10^{-6} \text{ kg-cal m}^{-1} \text{ sec}^{-1} (\text{°K})^{-1}$
Conductivity, thermal	(k_0)	$2.5838643 \times 10^{-3} \text{ kgf sec}^{-1} (\text{°K})^{-1}$
Density, mass	(ρ_0)	$1.2250140 \text{ kg m}^{-3}$
Density, mass	(ρ_0)	$0.12491666 \text{ kgf sec}^2 \text{ m}^{-4}$
Gravitational acceleration	(g_0)	$9.80665 \text{ m sec}^{-2}$
Kinematic viscosity	(η_0)	$1.4607413 \times 10^{-5} \text{ m}^2 \text{ sec}^{-1}$
Mean free path	(L_0)	$6.6317223 \times 10^{-8} \text{ m}$
Molar volume	(v_0)	$23.645444 \text{ m}^3 (\text{kg-mol})^{-1}$
Molar volume	(v_0)	$231.88259 \text{ m}^3 [(\text{kgf sec}^2 \text{ m}^{-1})-\text{mol}]$
Molecular weight	(M_0)	28.966 (dimensionless)
Number density	(n_0)	$2.5475521 \times 10^{25} \text{ m}^{-3}$
Particle speed	(\bar{V}_0)	$458.94204 \text{ m sec}^{-1}$
Pressure	(P_0)	0.760 m Hg
Pressure	(P_0)	1013.2500 mb
Pressure	(P_0)	$101,325.00 \text{ nt m}^{-2}$
Pressure	(P_0)	$10,332.275 \text{ kgf m}^{-2}$
Scale height	(H_{S0})	8434.4134 m
Sound speed	(C_{S0})	$340.29205 \text{ m sec}^{-1}$
Specific weight	(ω_0)	$12.013284 \text{ kg m}^{-2} \text{ sec}^{-2}$
Specific weight	(ω_0)	$1.2250140 \text{ kgf m}^{-3}$
Temperature	(t_0)	15.0°C
Temperature, absolute	(T_0)	288.16 °K
Temperature, molecular scale	(T_{M0})	288.16 °K
Viscosity, coefficient of	(μ_0)	$1.7894285 \times 10^{-5} \text{ kg m}^{-1} \text{ sec}^{-1}$
Viscosity, coefficient of	(μ_0)	$1.8247093 \times 10^{-6} \text{ kgf sec m}^{-2}$

5.2 English Units

The sea-level values of the properties tabulated in this model in English units are given in the following table:

Collision frequency	(v_0)	$6.9204049 \times 10^9 \text{ sec}^{-1}$
Conductivity, thermal	(k_0)	$3.1646925 \times 10^{-3} \text{ lbf sec}^{-1} (\text{°R})^{-1}$
Conductivity, thermal	(k_0)	$1.0182097 \times 10^{-1} \text{ lb ft sec}^{-3} (\text{°R})^{-1}$
Conductivity, thermal	(k_0)	$4.0675755 \times 10^{-6} \text{ BTU ft}^{-1} \text{ sec}^{-1} (\text{°R})^{-1}$
Conductivity, thermal	(k_0)	$1.7571926 \times 10^{-1} \text{ BTU in ft}^{-2} \text{ hr}^{-1} (\text{°R})^{-1}$
Density, mass	(ρ_0)	$0.0023769200 \text{ slugs ft}^{-3} (\text{lbf sec}^2 \text{ ft}^{-4})$
Density, mass	(ρ_0)	$0.076475137 \text{ lb ft}^{-3}$
Gravitational acceleration	(g_0)	$32.174049 \text{ ft sec}^{-2}$
Kinematic viscosity	(η_0)	$1.5723288 \times 10^{-4} \text{ ft}^2 \text{ sec}^{-1}$
Mean free path	(L_0)	$2.1757619 \times 10^{-7} \text{ ft}$
Molar volume	(v_0)	$378.76362 \text{ ft}^3 (\text{lb-mol})^{-1}$
Molar volume	(v_0)	$12186.359 \text{ ft}^3 (\text{slug-mol})^{-1}$
Molecular weight	(M_0)	28.966 (dimensionless)
Number density	(n_0)	$7.2138641 \times 10^{23} \text{ ft}^{-3}$
Particle speed	(\bar{V}_0)	1505.7153 ft sec $^{-1}$
Pressure	(P_0)	29.921260 in Hg
Pressure	(P_0)	1013.25 mb
Pressure	(P_0)	2116.2170 lbf ft $^{-2}$
Pressure	(P_0)	68087.267 pdl ft $^{-2}$
Scale height	(H_{S_0})	27671.960 ft
Sound speed	(C_{S_0})	1116.4437 ft sec $^{-1}$
Specific weight	(ω_0)	$0.076475137 \text{ lbf ft}^{-3}$
Specific weight	(ω_0)	$2.4605148 \text{ lb ft}^{-2} \text{ sec}^{-2}$
Temperature	(t_0)	59.0°F
Temperature, absolute	(T_0)	518.688 °R
Temperature, molecular scale	(T_{M_0})	518.688 °R
Viscosity, coefficient of	(μ_0)	$3.7372998 \times 10^{-7} \text{ lbf sec ft}^{-2}$
Viscosity, coefficient of	(μ_0)	$1.2024406 \times 10^{-5} \text{ lb ft}^{-1} \text{ sec}^{-1}$

6. ICE-POINT VALUES OF SOME ATMOSPHERIC PROPERTIES
BASED ON $P_i = P_0$

n_i	$2.6874455 \times 10^{25} \text{ m}^{-3}$	$2.6874455 \times 10^{19} \text{ cm}^{-3}$
v_i	$22.414594 \text{ m}^3 (\text{kg-mol})^{-1}$	$22414.594 \text{ cm}^3 (\text{gm-mol})^{-1}$
ρ_i	$1.2922830 \text{ kg m}^{-3}$	$1.2922830 \times 10^{-3} \text{ gm cm}^{-3}$

7. PHYSICAL CONSTANTS

Defined, independent physical constants adopted as being exact for the computation of the tables are:

	<u>mks absolute units</u>	<u>cgs units</u>
G	$9.80665 \text{ m}^2 \text{ sec}^{-2} \text{ m}^{-1}$	$980.665 \text{ cm}^2 \text{ sec}^{-2} \text{ cm}^{-1}$
g_0	$9.80665 \text{ m sec}^{-2}$	$980.665 \text{ cm sec}^{-2}$
M_0	28.966 (dimensionless)	28.966 (dimensionless)
N	$6.02380 \times 10^{26} (\text{kg-mol})^{-1}$	$6.02380 \times 10^{23} (\text{gm-mol})^{-1}$
P_0	$1.013250 \times 10^5 \text{ newton m}^{-2}$ or 0.76 m Hg	$1.013250 \times 10^6 \text{ dynes cm}^{-2}$ or 76.0 cm Hg
R^*	$8.31439 \times 10^3 \text{ joules } (\text{°K})^{-1} \text{ kg}^{-1}$	$8.31439 \times 10^7 \text{ ergs } (\text{°K})^{-1} \text{ gm}^{-1}$
S	110.4 °K	110.4 °K
T_i	273.16 °K	273.16 °K
t_0	15 °C	15 °C
β	$1.458 \times 10^{-6} \text{ kg sec}^{-1} \text{ m}^{-1} (\text{°K})^{-1/2}$	$1.458 \times 10^{-5} \text{ gm sec}^{-1} \text{ cm}^{-1} (\text{°K})^{-1/2}$ or poise $(\text{°K})^{-1/2}$
γ	≈ 1.4 (dimensionless)	1.4 (dimensionless)
σ	$3.65 \times 10^{-10} \text{ m}$	$3.65 \times 10^{-8} \text{ cm}$

8. CONVERSION FACTORS

The defined and derived conversion factors for transformation to units and scales used for this model are:

8.1 Metric to English Conversions of Units of Length, Mass, and Geopotential

a. Defined relations (the constants are adopted as being exact).

1 foot	= 0.3048 meter
1 (in mi)	= 1852 meters
1 pound	= 0.4535923 kilogram
1 standard geopotential foot	= 0.3048 standard geopotential meter

b. Derived relations

1 meter	= 3.280839895 + feet
1 meter	= $5.399568035 + \times 10^{-4}$ (in mi)
1 kilogram	= 2.204622962 + pounds
1 (in mi)	= 6,076.115486 - feet
1 foot	= $1.645788336 \times 10^{-4} + (\text{in mi})$
1 standard geopotential meter	= 3.280839895 + standard geopotential feet

8.2 Metric to English and Absolute to Nonabsolute Conversions of Temperature Units

a. Defined

$$\begin{aligned} t(\text{°C}) &= T(\text{°K}) - T_i(\text{°K}), \text{ where } T_i(\text{°K}) = 273.16\text{°K} \\ T(\text{°R}) &= 1.8 T(\text{°K}) \\ t(\text{°F}) - t_i(\text{°F}) &= T(\text{°R}) - T_i(\text{°R}), \text{ where } t_i(\text{°F}) = 32(\text{°F}) \end{aligned}$$

b. Derived relations

$$\begin{aligned} t_i(\text{°C}) &= 0\text{ °C} \\ T_i(\text{°R}) &= 491.688\text{ °R} \\ t(\text{°C}) &= [T(\text{°R}) - T_i(\text{°R})]/1.8 = [t(\text{°F}) - t_i(\text{°F})]/1.8 \\ T(\text{°R}) &= 1.8[t(\text{°C}) + 273.16(\text{°C})] = [t(\text{°F}) - t_i(\text{°F})] + 491.688\text{ °R} \\ t(\text{°F}) - 32\text{°F} &= 1.8t(\text{°C}) = 1.8[T(\text{°K}) - 273.16(\text{°K})] \end{aligned}$$

8.3 Absolute Systems of Units to Absolute-Force, Gravitational System of Units, Metric - English

a. Defined

$$1 \text{ force unit} = 1 \text{ mass unit} \times g_0$$

b. Derived relations

$$1 \text{ kgf} = 9.80665 \text{ kg m sec}^{-2}$$

$$1 \text{ kg} = \frac{1}{9.80665} \text{ kgf sec}^2 \text{ m}^{-1} = 0.1019716212 \text{ kgf sec}^2 \text{ m}^{-1}$$

$$1 \text{ lbf} = 0.4535923 \text{ kgf}$$

$$1 \text{ lbf} = 32.17404855 \text{ lb ft sec}^{-2}$$

$$1 \text{ lb} = 0.03108095017 \text{ lbf sec}^2 \text{ ft}^{-1}$$

$$= 0.03108095017 \text{ slugs}$$

$$1 \text{ slug} = 32.17404855 \text{ lb}$$

8.4 Thermal to Mechanical Units, Metric - English

a. Defined relations

$$1 \text{ kg-cal} = 1/860 \text{ kilowatt-hours (exact)}$$

$$1 \text{ kg-cal} \approx 1 \text{ kg } ^\circ\text{C}$$

$$1 \text{ kg-cal} = \frac{1.8}{0.4535923} \text{ BTU} = 3.968321331 \text{ BTU}$$

$$1 \text{ BTU} \approx 1 \text{ lb } ^\circ\text{F}$$

$$1 \text{ joule} = 1 \text{ watt sec}$$

b. Derived relations

$$1 \text{ kwhr} = 3.6 \times 10^6 \text{ watt sec} = 3.6 \times 10^6 \text{ joules}$$

$$1 \text{ kg-cal} = \frac{3.6 \times 10^6}{860} \text{ joules} = 4,186.046511 \text{ joules}$$

$$= 4,186.046511 \text{ kg m}^2 \text{ sec}^{-2}$$

The precise value of the mechanical equivalent of heat depends on the particular temperature interval used in the definition of the calorie or BTU. To avoid confusion, an International Commission has agreed to define 1 kg-cal as exactly 1/860 kilowatt-hour. Consequently, the relationships $1 \text{ kg-cal} = 1 \text{ kg } ^\circ\text{C}$ and $1 \text{ BTU} = 1 \text{ lb } ^\circ\text{F}$ are no longer exact except at a particular temperature T. The kg-cal and the BTU may be arbitrarily related, however, at all temperatures, through their exact relation at temperature T.

$$\begin{aligned}
 1 \text{ kg-cal} &= \frac{3.6 \times 10^6}{860 \times 9.80665} \text{ m kgf} = 426.8579495 \text{ m kgf} \\
 1 \text{ kg-cal} &= \frac{3.6 \times 10^6}{860 \times 9.80665 \times 0.4535923 \times 0.3048} \text{ ft lbf} \\
 &= 3087.469937 \text{ ft lbf} \\
 1 \text{ BTU} &= \frac{0.4535923}{1.8} \text{ kg-cal} = 0.2519957222 \text{ kg-cal} \\
 1 \text{ BTU} &= \frac{3.6 \times 10^6}{860 \times 0.3048 \times 9.80665 \times 1.8} \text{ ft lbf} \\
 &= 778.0292165 \text{ ft lbf} \\
 1 \text{ BTU} &= \frac{3.6 \times 10^6}{860 \times (0.3048)^2 \times 1.8} \text{ lb ft}^2 \text{ sec}^{-2} \\
 &= 25032.34980 \text{ lb ft}^2 \text{ sec}^{-2}
 \end{aligned}$$

APPENDIX A

REFERENCES FOR ROCKET AND SATELLITE DATA

1. References for Rocket Data

- 1.1 Havens, R. J., R. T. Koll, and H. E. LaGow, "The Pressure, Density, and Temperature of the Earth's Atmosphere to 160 Kilometers," Journal of Geophysical Research 57, 59-72, (1952).
- 1.2 Horowitz, R. and H. E. LaGow, "Upper Air Pressure and Density Measurements from 90 to 220 Kilometers with the Viking 7 Rocket," Journal of Geophysical Research 62, 57-78 (1957).
- 1.3 LaGow, H. E., R. Horowitz, and J. Ainsworth, "Arctic Atmospheric Structure to 250 Kilometers," IGY Rocket Report Series No. 1, 38-46, IGY World Data Center A, National Academy of Sciences, (30 July 1958).
- 1.4 Townsend, J. W., Jr., and E. B. Meadows, "Density of the Winter Night-Time Arctic Upper Atmosphere, 110 to 170 Km," Annales de Geophysique 14, 117-130, (1958).

2. References for Satellite Data

- 2.1 Groves, G. V., "Effect of the Earth's Equatorial Bulge on the Life-Time of Artificial Satellites and its Use in Determining Atmospheric Scale-Heights," Nature 181, 1055, (12 April 1958).
- 2.2 Harris, I., and R. Jastrow, "Upper Atmosphere Densities from Minitrack Observations on Sputnik I," Science 127, 471, (28 Feb 1958).
- 2.3 _____ "Density Determinations Based on the Explorer and Vanguard Satellites," Science 128, (22 Aug 1958).
- 2.4 Mullard Radio Astronomy Observatory, The Staff of the Cambridge, "Radio Observations of the First Russian Earth Satellite," Nature 180, 879, (2 Nov 1957).
- 2.5 Priester, W. H., G. Bennewitz, and P. Lengruesser, "Radiobebachtungen des ersten kuenstlichen Erdsatelliten," Westdeutscher Verlag, Koeln, und Opladen, (1958).
- 2.6 Royal Aircraft Establishment, The Staff of the, Farnborough, "Observations of the Orbit of the First Russian Earth Sattelite," Nature 180, 937, (9 Nov 1957).

- 2.7 Schilling, G. F., and C. A. Whitney, "Atmospheric Densities from Explorer IV," Special Report No. 18, Smithsonian Astrophysical Observatory, Cambridge, pp. 13-22, (4 Oct 1958).
- 2.8 Sterne, T. E., "The Densities of the Upper Atmosphere," Special Report No. 11, Smithsonian Astrophysical Observatory, Cambridge, pp. 18-22, (31 Mar 1958).
- 2.9 Sterne, T. E., B. M. Folkart, and G. F. Schilling, "An Interim Model Atmosphere Fitted to Preliminary Densities Inferred from USSR Satellites," Smithsonian Contributions to Astrophysics, Vol. 2, No. 10, 275-279, Smithsonian Institution, Washington, D. C., (1958).
- 2.10 Sterne, T. E., and G. F. Schilling, "Some Preliminary Values of Upper Atmosphere Density from Observations of USSR Satellites," Smithsonian Contributions to Astrophysics, Vol. 2, No. 10, 207-210, Smithsonian Institution, Washington, D. C., (1958).

APPENDIX B

FORMULAS FOR THE ACCELERATION DUE TO GRAVITY

1. Lambert's Gravity Formula

In Reference 20, Lambert developed a formula which relates the acceleration of gravity to latitude and altitude. The general form of his equation is

$$\begin{aligned}
 g(Z, \phi) = g_e & \left\{ \left[1 + \left(\frac{5m}{2} - f - \frac{17mf}{14} \right) \sin^2 \phi - \left(\frac{5}{8}mf - \frac{f^2}{8} \right) \sin^2 2\phi \right] \right. \\
 & - \frac{2g_e Z}{a} \left[\left(1 + \frac{9m}{4} - \frac{f}{2} + f^2 - \frac{173}{112}mf \right) + \left(\frac{3f}{2} - \frac{5m}{4} + \frac{f^2}{4} + \frac{13mf}{7} \right) \cos 2\phi \right] \Big\} \\
 & + g_e \sum_{n=5}^{\infty} (-1)^{n-1} \left[1 + \left\{ \frac{f}{12} [(n-1)(6-n) - 12] + \frac{m}{24} [36 + n(n-1)] \right\} \right. \\
 & \left. + \left\{ \frac{n-1}{4} \left[(n-2)f - \frac{mn}{2} \right] \cos 2\phi \right\} \right] \frac{(n-2)Z^{n-3}}{a^{n-3}} \quad (B-1)
 \end{aligned}$$

where

$g(Z, \phi)$ = acceleration of gravity at altitude Z and latitude ϕ ,

g_e = acceleration of gravity at sea level at the equator,

m = ratio of centrifugal force to gravity at the equator,

f = ellipsoid flattening,

a = radius of the earth at the equator.

A body rising directly against the force of gravity would move in a curved path. This "curvature of the vertical" is familiar to geodesists. The vertical at the surface of reference is tangent to this curved path but the extended normal does not give the direction of gravity at altitude above the surface. Equation (B-1) neglects the curvature of the vertical; the first two terms are measured along the normal to the ellipsoid while the remaining terms are calculated for motion along the radius vector.

In a private communication, Doctor Lambert indicates that the difference between the radius vector and the normal, to the surface, is at most 11 minutes of arc at 45° latitude and states that "the difficulty

of pushing ray approximations — (too far) — lies perhaps in the conception of altitude." It should be emphasized, then, that the number of significant figures given in Eqs. (7) - (9), page 7, was used to maintain smoothness in the tabulation of gravity and other related quantities.

In the computation of the coefficients for Eqs. (7) - (9), the values of a , m , and f are based on the International Ellipsoid. The "meteorologist's" value of g_e was used instead of the "geodesist's" value to maintain consistency with the abbreviated version of Lambert's formula given in Reference 21. The values used are as follows:

$$\begin{aligned} a &= 6.37838800 \times 10^6 \text{ m}, \\ g_e &= 9.78035600 \text{ m sec}^{-2}, \\ f &= 3.36700337 \times 10^{-3} \text{ (dimensionless)}, \\ m &= 3.46787398 \times 10^{-3} \text{ (dimensionless), and} \\ \cos 2\phi &= -0.018938074 \end{aligned}$$

2. The Inverse-Square Gravity Formula

The well-known inverse-square law for computing the acceleration of gravity at any altitude for a given latitude is

$$g = g_\varphi \left[\frac{r_\varphi}{r_\varphi + Z} \right]^2 \quad (\text{B-2})$$

where

- g = the acceleration of gravity at a point in m sec^{-2} ,
- Z = the geometric altitude of the point in m,
- g_φ = the sea-level value of g at latitude φ of the point in m sec^{-2}
- r_φ = the effective radius of the earth at latitude $45^\circ 32' 33''$.^{5, 23}

This formula was used in the computation of the ARDC tables²⁴ but is replaced by the Lambert formula in this model at the suggestion of some members of the Working Group.* For the altitudes considered in this model, both formulas yield identical values of g to the number of

* Working Group on the Extension to the Standard Atmosphere. See Ref. 25, p. iii.

significant figures tabulated. At an altitude of 300,000 m, the geopotential equation based on Lambert's formula for g yields a value approximately four standard geopotential meters less than that given by the inverse-square law; the "error" increases with altitude and amounts to approximately 70 m' at an altitude of 1000 km. For most engineering applications, the inverse-square law for g with the appropriate effective radius is most adequate.

APPENDIX C
Systems of Mechanical Units

Property	METRIC						ENGLISH			
	Absolute cps		Absolute rate		Gravitational units		Absolute fps		Gravitational fps	
	1 $F = m \cdot a$	2 $F = m \cdot a$	3 $F = m \cdot a$	Type I $F = m \cdot a$	Type II $G F = m \cdot a$	4 $G F = m \cdot a$	5 $F = m \cdot a$	Type I $F = m \cdot a$	Type II $G F = m \cdot a$	7 $G F = m \cdot a$
length (altitude) (scale height) (vacuum free path)	centimeter (cm)	meter (m)	meter (m)	meter (m)	meter (m)	meter (m)	foot (ft)	foot (ft)	foot (ft)	foot (ft)
mass	gram (gm)	kilogram (kg)	$\frac{1}{10}$ gram (10^{-1} gm)	kilogram (kg)	kilogram (kg)	kilogram (kg)	pound (lb)	pound (lb)	pound (lb)	pound (lb)
time	second (sec)	second (sec)	second (sec)	second (sec)	second (sec)	second (sec)	second (sec)	second (sec)	second (sec)	second (sec)
force	$m l^2 t^{-2}$	$m l^2$	$m l^2 t^{-2}$	$m l^2$	$m l^2$	$m l^2$	$\frac{1}{10}$ pound (lb)	$\frac{1}{10}$ pound (lb)	$\frac{1}{10}$ pound (lb)	$\frac{1}{10}$ pound (lb)
area	l^2	l^2	l^2	l^2	l^2	l^2	l^2	l^2	l^2	l^2
volume	l^3	l^3	l^3	l^3	l^3	l^3	l^3	l^3	l^3	l^3
speed (sound)	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$	$l t^{-1}$
acceleration	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$	$l t^{-2}$
energy	$m l^2 t^{-2}$	$m l^2$	$m l^2 t^{-2}$	$m l^2$	$m l^2$	$m l^2$	$\frac{1}{10}$ erg (10^{-1} erg)			
potential	$l^2 t^{-2}$	l^2	$l^2 t^{-2}$	l^2	l^2	l^2	l^2	l^2	l^2	l^2
pressure	$m t^{-2} l^{-2}$	$m t^{-2}$	$m t^{-2} l^{-2}$	$m t^{-2}$	$m t^{-2}$	$m t^{-2}$	$\frac{1}{10}$ dyne (10^{-1} dyne)			
density	$m t^{-3}$	$m t^{-3}$	$m t^{-3}$	$m t^{-3}$	$m t^{-3}$	$m t^{-3}$	$l g m^{-3}$	$l g m^{-3}$	$l g m^{-3}$	$l g m^{-3}$
specific weight	$m t^{-2} l^{-2}$	$m t^{-2}$	$m t^{-2}$	$m t^{-2}$	$m t^{-2}$	$m t^{-2}$	$l g m^{-2}$	$l g m^{-2}$	$l g m^{-2}$	$l g m^{-2}$
number density	t^{-3}	t^{-3}	t^{-3}	t^{-3}	t^{-3}	t^{-3}	l^{-3}	l^{-3}	l^{-3}	l^{-3}
collision frequency	t^{-1}	t^{-1}	t^{-1}	t^{-1}	t^{-1}	t^{-1}	$l^{-1} t^{-1}$	$l^{-1} t^{-1}$	$l^{-1} t^{-1}$	$l^{-1} t^{-1}$
viscosity	$m^2 t^{-1}$	$m^2 t^{-1}$	$m^2 t^{-1}$	$m^2 t^{-1}$	$m^2 t^{-1}$	$m^2 t^{-1}$	$l^2 t^{-1}$	$l^2 t^{-1}$	$l^2 t^{-1}$	$l^2 t^{-1}$
kinematic viscosity	$m^2 t^{-1}$	used by physicists	used by electrical engineers and physicists	used by aerodynamicists	used by aerodynamicists	used by aerodynamicists	used by aerodynamicists	used by aerodynamicists	used by aerodynamicists	used by some mechanical engineers

† At sea level and at a latitude of $45^{\circ} 32' 35''$ the numbers associated with these units will be only 1/9,806.65 (exact) as large as numbers associated with corresponding units of systems 2, 3, 5.

†† At sea level and at a latitude of $45^{\circ} 32' 35''$ the numbers associated with these units will be only 1/32,170/4855 as large as numbers associated with corresponding units of systems 2, 3, 5.

‡ For the absolute-decibel version of gravitational units as used in this manual, the same ratio applies at all altitudes.

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