NATIONAL BUREAU OF STANDARDS REPORT

9818

ALGORITHMS FOR PSYCHROMETRIC CALCULATIONS

NBS

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NATIONAL BUREAU OF STANDARDS REPORT

NBS PROJECT | **NBS REPORT**

42103-40-4212239 | March 1, 1969 | 9818

ALGORITHMS FOR PSYCHROMETRIC CALCULATIONS

by

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This report has been approved by the
Director for publication in the NBS
Building Science Series

U.S. DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

Algorithms for Psychrometric Calculations

Abstract

Computer algorithms to obtain properties of saturated and unsaturated moist air are presented in this paper. The saturated moist air properties are calculated by the methodology developed by J. A. Goff and S. Gratch for their ASHRAE tables (1967 Book of Fundamentals, The American Society of Heating, Refrigerating and Air Conditioning Engineers). Sample calculations were performed using a computer program based upon the algorithms presented herein and the results are attached.

Key Words: Computer algorithm, psychrometrics, saturated and unsaturated moist air, thermodynamic properties

Algorithms for Psychrometric Calculations

by

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National Bureau of Standards

Very accurate values of moist-air properties is required for many engineering problems. Most notable examples are those required in psychrometric calorimetry for measuring the capacity of various air conditioning apparatus, moisture transfer analyses in the cold storage warehouses and analyses of simultaneous transfer of heat and moisture affecting the physiological responses of biological bodies. Although numerous psychrometric formulas and charts currently exist, thermodynamic properties of moist air calculated by Goff and Gratch (1945)[1/] are still considered most accurate and extensive. Their calculations are based upon the theory of statistical mechanics whereby interactions of major molecular components in the moist air are taken into consideration. Thus the calculation methodology employed by Goff and Gratch to produce the now well-known ASHRAE tables of moist-air properties should be valid beyond the ranges within which their calculations had been made. For example, the barometric pressure up to 3 atms and the temperature to 400 K can be covered. In addition it is believed that the methodology is valid for a mole fraction composition of dry air different from that used in the original calculations.

Although the basic principle of calculation procedures for obtaining the moist air properties are described in the 1949 paper of J. A. Goff[2], it is not readily adaptable for the machine calculation. The purpose of this paper is then to list step by step procedures for computer oriented engineers to be able to calculate the accurate values of moist air properties based upon the Goff paper mentioned above. Since the paper is not intended for elaborating the thermodynamic principles inherent to the calculation procedures, those who wish to familarize themselves with that account should refer to references 1 and 2. The complete program of NBS called PSYCHR has been written to follow the calculation procedures described in this paper. This program has successfully reproduced the ASHRAE table of saturated moist air for 29.92 in. of barometric pressure.

Additional programs called CF, DBWBW, DBDPW, DBRHWB coupled with PSYCHR can be used to calculate thermodynamic properties of unsaturated moist air by inputting values of the barometric pressure, dry-bulb temperature and any one of several humidity indices such as, wet-bulb temperature, dew-point temperature, relative humidity and humidity ratio.

[1] J. A. Goff and S. Gratch, "Thermodynamic Properties of Moist Air", ASHVE Transaction, 1945, pp. 125 - 164.

[2] J. A. Goff, "Standardization of Thermodynamic Properties of Moist Air", ASHVE Journal Section, HPAC, Nov., 1949.

The program has been further employed to calculate the thermodynamic properties of moist air at various degrees of saturation and at various barometric pressure levels. Sample results of such calculations are attached to this algorithm. It is believed that the step-by-step account of the calculation methodology and the sample calculations presented herein should be very useful in future reference work relating to the accurate psychrometric calculations.

a) PSYCHR

Input: P_t: barometric pressure, (in. Hg)

t: dry-bulb temperature, (F)

Output: h_a: enthalpy of dry air (BTU/lb of dry air)

h_s: enthalpy of saturated moist air (BTU/lb of dry air)

V_a: volume of dry air (Cu. ft/lb of dry air)

V_s: volume of saturated moist air (Cu. ft/lb of dry air)

W_s: humidity ratio of saturated moist air (lb of H_2O/lb of dry air)

f_s: air-water interaction factor

h_w: enthalpy of saturated water (BTU/lb of H_2O)

P_{vs}: vapor pressure of liquid water in moisture saturated air, (in. Hg)

s_a: entropy of dry air (Btu/lb, F)

s_s: entropy of saturated moist air (Btu/ F/lb of dry air)

1. Composition of dry air

Components	Oxygen	Nitrogen	Argon	Carbon Dioxide
Chemical Symbols	O_2	N_2	Ar	CO_2
Mole fraction (X)	0.2095	0.7809	0.0093	0.0003
Molecular weight(M) (Natural Oxygen Scale)	32.000	28.016	39.944	44.01

Molecular weight of air $M_a = 28.966$

Molecular weight of water $M_w = 18.016$

2. Kelvin temperature used for the calculations[1/]

$$T = \frac{t - 32}{1.8} + 273.16$$

$$\tau = \frac{1}{T}$$

3. Zero Pressure Constants

Components	Oxygen	Nitrogen	Argon	Carbon Dioxide	Water
C	7/2	7/2	5/2	7/2	4
N_1	1	1	0	2	1
N_2	0	0	0	1	1
N_3	0	0	0	1	1
θ_1(K)	2235.4	3352.69	∞	960	2291.16
θ_2(K)	∞	∞	∞	1944	5176.37
θ_3(K)	∞	∞	∞	3379	5445.59
A (K)	1.073	0.9580	0	0	5.011
B	0	0.09	0	0	0
D(K^{-1})	3.30×10^{-6}	2.023×10^{-6}	0	0	2.32×10^{-5}
F	0.011	0.009009	0	0	0
a_1	0	0	0	0	-0.03958
a_2	0	0	0	0	0.05353
a_3	0	0	0	0	0.04000
Const	1.2164	-0.414686	1.867	1.8945	-4.1083

[1/]If the new Kelvin Temperature Scale is to be used, 273.16 in this algorithm should be replaced by 273.15. Detailed discussions on this subject are presented at the end of this paper.

6. Pressure in atmosphere

$$P_t = P_t/29.92$$

7. Virial coefficients:

$$A_{aa} = -40.70 + 13116\tau + 12\tau^3 \cdot 10^7 \quad cm^3/g.mol$$

$$B_{aa} = -40.70 + 26232\tau + 48\tau^3 \cdot 10^7 \quad cm^3/g.mol$$

$$C_{aa} = \tau(A_{aa} - B_{aa}) \quad cm^3/g.mol,\ K$$

$$A_{ww} = -33.97 + 55306\tau \cdot 10^{72000\tau^2} \quad cm^3/g.mol$$

$$B_{ww} = -33.97 + 110612\tau \cdot 10^{72000\tau^2} + 55306\tau^2(144000\tau \cdot 10^{72000\tau^2} \cdot \log 10) \quad cm^3/g.mol$$

$$C_{ww} = \tau(A_{ww} - B_{ww}) \quad cm^3/g.mol,\ K$$

$$A_{aw} = -29.53 + \frac{0.00669}{\tau}(1 - e^{-\theta\tau}) + A\tau + B\tau^2 + D\tau^3 \quad cm^3/g.mol$$

$$B_{aw} = -29.53 + 0.00669\theta e^{-\theta\tau} + 2A\tau + 3B\tau^2 + 4D\tau^3 \quad cm^3/g.mol$$

$$C_{aw} = \tau(A_{aw} - B_{aw}) \quad cm^3/g.mol,\ K$$

where $A = 17546$ $cm^3\ K/g.mol$
$B = 95300$ $cm^3\ K^2/g.mol$
$D = 8.515 \cdot 10^7$ $cm^3\ K^3/g.mol$
$\theta = 4416.5$ K

$$A_{www} = 0.0348\tau^2 A_{ww}^3 \quad cm^3/g.mol.atm$$

$$B_{www} = 0.1044\tau^2 A_{ww}^2 B_{ww} \quad cm^3/g.mol.atm$$

$$C_{www} = \tau(A_{www} - B_{www}) \quad cm^3/g.mol.atm,\ K$$

8. Dry air properties

$$h_a = 1.8\left[h^\circ_{air} - \frac{0.0242179 \cdot B_{aa}(P_t)}{M_a} - 60.99\right] \quad Btu/lb$$

$$s_a = s^\circ_{air} + \frac{0.0242179 \cdot C_{aa}(P_t)}{M_a} - \frac{R}{M_a}\ell n\,(P_t) - 1.60096, \quad Btu/lb,F$$

$$V_a = \left(\frac{453.5924}{28316.85}\right)\frac{\left(\frac{82.0567}{P_t} - A_{aa}\right)}{M_a}, \quad ft^3/lb$$

9. Calculate the water vapor pressure if $T \leq 273.16$

$$u = 273.16\tau$$

$$z = -9.09718(u - 1) - 3.56654 \log_{10}u + 0.876793(1 - \frac{1}{u})$$

$$P_s = 0.0060273 \cdot 10^z \quad \text{.... (atm).... vapor pressure of ice.}$$

if $T > 273.16$

$$u = 373.16\tau$$

$$z = -7.90298(u - 1) + 5.02808 \log_{10}u$$
$$- 1.3816 \cdot 10^{-7}\{10^{11.344(1 - \frac{1}{u})} - 1\}$$
$$+ 8.1328 \cdot 10^{-3}(10^{-3.49149(u - 1)} - 1)$$

$$P_s = 10^z \quad \text{.... atm.... vapor pressure of liquid water.}$$
$$P_{vs} = 29.921 \cdot P_s$$

10. Calculate humidity ratio and mole fraction of moisture saturated air.

$$\alpha = (A_{aa} - 2A_{aw} + A_{ww}) \frac{P_s \tau}{82.0567}$$

$$z' = \alpha(1 - \frac{P_s}{P_t}) + \beta(\frac{P_t}{P_s} - 1)$$ (β is tabulated in the following page)

$$f_s = e^{z'}$$

$$W_s = 0.62197 \frac{f_s \frac{P_s}{P_t}}{1 - f_s \frac{P_s}{P_t}}$$

$$Y_s = \frac{18.016}{28.966 \cdot W_s + 18.016}$$

11. Table of β, h ', L for the Lagrangean Interpolation

$(\frac{t-32}{1.8})$	β 1/	h_w' (cal/gm)
-80	$0.44*10^{-8}$	-114.25
-70	$1.90*10^{-8}$	-110.54
-60	$0.71*10^{-7}$	-106.64
-50	$2.35*10^{-7}$	-102.58
-40	$0.70*10^{-6}$	-98.34
-30	$1.91*10^{-6}$	-93.92
-20	$0.48*10^{-5}$	-89.34
-10	$1.11*10^{-5}$	-84.57
0	$2.43*10^{-5}$	-79.64
0	$2.37*10^{-5}$	0.02
10	$4.44*10^{-5}$	10.06
20	$0.79*10^{-4}$	20.06
30	$1.34*10^{-4}$	30.04
40	$2.19*10^{-4}$	40.03
50	$3.46*10^{-4}$	50.01
60	$5.26*10^{-4}$	60.00
70	$0.78*10^{-3}$	69.99
80	$1.12*10^{-3}$	80.01
90	$1.58*10^{-3}$	90.05

12. Calculate the properties of water vapor.

$$h_g' = h^{\circ}_{H_2O} - \frac{0.0242179}{M_w}\left\{B_{ww}P_s + \tfrac{1}{2}B_{www}P_s^2\right\} + 477.277 \quad \text{cal/g}$$

$$h_g = 1.8h_g' \ldots\ \text{Btu/lb}$$

$$s_g = s^{\circ}_{H_2O} + \frac{0.0242179}{M_w}\left\{C_{ww}P_s + \tfrac{1}{2}C_{www}P_s^2\right\}$$

$$- \frac{R}{M_w}\ell nP_s - 0.83960, \text{ Btu/lb, F or cal/gm, C}$$

$$V_g = \frac{1}{M_w}\left(\frac{453.5924}{28316.85}\right)\left(\frac{82.0567}{P_s T} - A_{ww} - A_{www}P_s\right), \text{ ft}^3/\text{lb}$$

13. Enthalpy of liquid water

$$h_w = 1.8\ h_w' \ldots\ \text{Btu/lb}$$

1/ * means the multiplication in this table.

14. Calculate the properties of moist air saturated with water vapor.

$$h_s = \frac{1.8}{M_a Y_s} \{[M_a Y_s h^\circ_{air} + M_w(1 - Y_s)h^\circ_{H_2O}]$$

$$-0.0242179\ [(Y_s^2 \cdot B_{aa} + 2Y_s(1 - Y_s)B_{aw} + (1 - Y_s)^2\ B_{ww})P_t$$

$$- 1/2(1 - Y_s)^3 B_{www}\ P_t^2]\} - 109.782 + 859.099W_s, \text{Btu/lb of dry air}$$

$$s_s = \frac{1}{M_a Y_s} \{[M_a Y_s s^\circ_{air} + M_w(1 - Y_s)s^\circ_{H_2O}]$$

$$+ 0.0242179[\ (Y_s^2 C_{aa} + 2Y_s(1 - Y_s)C_{aw} + (1 - Y_s)^2 C_{ww})P_t$$

$$+ \tfrac{1}{2}(1 - Y_s)^3 C_{www} P_t^2] - R[Y_s \ell n Y_s + (1 - Y_s)\ell n(1 - Y_s) + \ell n P_t]$$

$$- 1.60096 - 0.83960W_s, \text{ Btu/lb of dry air, } °R$$

$$V_s = \frac{1}{M_a Y_s} \left(\frac{453.5924}{28316.85}\right) \left\{\frac{82.0567}{P_t \tau}\right.$$

$$- [(Y_s^2 A_{aa} + 2Y_s(1 - Y_s)A_{aw} + (1 - Y_s)^2 A_{ww})$$

$$\left. - (1 - Y_s)^3 A_{www} P_t]\right\} \text{ cu. ft/ lb of dry air}$$

b) CF

Comments: when $t \geq 112$ °F, this program CF is used to find correction terms for h and v calculated by

$$h = h_a + (W/W_s)\ (h_s - h_a),\ v = v_a + (W/W_s)\ (v_s - v_a)$$

Input : t dry bulb temperatures, (F)

W humidity ratio (lb H_2O/lb of dry air)

W_s humidity ratio of saturated moist air (lb H_2O/lb of dry air)

Output : $\bar{v}$ correction terms to the volume v, (cu ft/lb of dry air)

$\bar{h}$ correction term to the enthalpy h, (BTU/lb of dry air)

Calculation procedures

1. Use the Lagrangean interpolation technique to pick up A and B from the following table:

t	A	B
112	0.0018	0.0268
128	0.0042	0.0650
144	0.0215	0.3149
160	0.0487	0.6969
176	0.1169	1.636
192	0.3363	4.608

2. $$\bar{v} = \frac{(\frac{W}{W_s}) \cdot (1 - \frac{W}{W_s}) A}{1 + 1.6078W}$$

3. $$\bar{h} = (\frac{W}{W_s}) (1 - \frac{W}{W_s}) B / (1 + 1.6078 W)$$

c. DBWBW

Input: t = dry-bulb temperature (F)

t* = thermodynamic wet-bulb temperature (F)

P_t = barometric pressure (in. Hg)

Output: W = humidity ratio of moist air (lb of H_2O/lb. of dry air)

h = enthalpy of moist air (BTU/lb. of dry air)

V = volume of moist air (cu. ft./lb. of dry air)

μ = degree of saturation

P_V = water vapor pressure, in. Hg

DP = dew-point temperature, F

RH = relative humidity, %

Calculation procedures

1. CALL PSYCHR (P_t, P_{vs}, t, h_a, h_s, V_a, V_s, W_s, f_s, h_w)

2. CALL PSYCHR (P_t, P_{vs}, t*, h_a^*, h_s^*, V_a^*, V_s^*, W_s^*, f_s^*, h_w^*)[1/]

3. Iterate on W to satisfy

$$h = h_a + \frac{W}{W_s}(h_s - h_a) + \bar{h}$$

$$h + (W_s^* - W)\, h_w^* = h_s^*$$

when $\bar{h}$ is obtained by

CALL CF(t, W, W_s, $\bar{V}$, $\bar{h}$)

If $t \leq 112$ °F, however, W may be calculated by

$$W = \left[\frac{h_s^* - h_a - h_w^* W_s^*}{h_s - h_a - h_w^* W_s}\right] . W_s$$

4. If $t \leq 112$ °F

$$h = h_a + \frac{W}{W_s}(h_s - h_a)$$

$$V = V_a + \frac{W}{W_s}(V_s - V_a)$$

5. If $t > 112$ °F

Call CF (t, W, W_s, $\bar{V}$, $\bar{h}$)

$$h = h + \bar{h}$$

$$V = V + \bar{V}$$

6. $\mu = \frac{W}{W_s}$

7. $$RH = \frac{\mu \times 100}{1 - (1 - \mu) f_s \frac{P_{vs}}{P_t}}$$

[1/] Properties with superscript (*) depict those evaluated at the thermodynamic wet-bulb temperature t*.

8. Iterate PSYCHR on various DP until

$$W = W_s(DP)$$

9. $PV = P_{vs}(DP)$

d) DBDPW

Input : t = dry-bulb temperature, (F)

DP = dew-point temperature, (F)

P_t = barometric pressure (in. Hg)

Output: W = humidity ratio (lb. of H_2O/lb. of dry air)

h = enthalpy (Btu/lb. of dry air)

V = volume (cu. ft/lb. of dry air)

RH = relative humidity, %

t* = thermodynamic wet-bulb temperature, F

1. CALL PSYCHR (P_t, P_{vs}, DP, h_a', h_s', V_a', V_s', W_s', f_s', h_w')

$$W = W_s'$$

2. CALL PSYCHR (P_t, P_{vs}, t, h_a, h_s, V_a, V_s, W_s, f_s, h_w)

3. If $t \leq 112$ °F

$$h = h_a + \frac{W}{W_s}(V_s - V_a)$$

4. If $t > 112$ °F

Call CF (t, W, W_s, $\bar{V}$, $\bar{h}$)

$$h = h_a + \frac{W}{W_s}(h_s - h_a) + \bar{h}$$

$$V = V_a + \frac{W}{W_s}(V_s - V_a) + \bar{V}$$

5. $\mu = \frac{W}{W_s}$

$$RH = \frac{\mu \times 100}{1 - (1 - \mu) f_s \frac{P_{vs}}{P_t}}$$

6. Iterate t* on the following equation by making use of PSYCHR.

$$h + (W_s(t^*) - W)\, h_w(t^*) = h_s(t^*)$$

e) DBRHWB

Input : P_t = barometric pressure (in. Hg)

t = dry-bulb temperature (F)

ϕ = relative humidity, fraction

Output: t^* = thermodynamic wet-bulb temperature (F)

Calculation procedures

1. CALL PSYCHR (P_t, P_{vs}, t, h_a, h_s, V_a, V_s, W_s, f_s, h_w)

2. $P_s = \phi\, P_{vs}$

3. $$\mu = \frac{\phi\,(1 - f_s \frac{P_s}{P_t})}{1 - \phi\, f_s \frac{P_s}{P_t}}$$

if $t \leq 112$ °F

$$h = h_a + \mu(h_s - h_a)$$

If $t > 112$ °F

Call CF (t, W, W_s, $\bar{V}$, $\bar{h}$)

$h = h + \bar{h}$

4. $W = \mu W_s$

5. Iterate the following formula to find t^* by making use of PSYCHR.

$$h + (W_s(t^*) - W) \cdot h_w(t^*) = h_s(t^*)$$

Comments on the New Kelvin Temperature Scale

The values for saturation pressure of water calculated by the algorithms presented herein are identical with those tabulated in Table 2 of Chapter 21 of 1967 ASHRAE Book of Fundamentals. These values were, however, obtained by the Goff's calculation based upon the old Kelvin scale [t = T - 273.16 (Centigrade vs Kelvin)]. In October, 1954, the Tenth General Conference on Weights and Measures adopted a new Kelvin scale T of absolute temperature on which the triple-point of water is assigned the value 273.16. According to this new convention, the new temperature scale becomes t = T - 273.15. Prof. J. A. Goff published new formulas corrected for this new temperature scale for saturation pressure in his most recent paper (Saturation Pressure of Water on the New Kelvin Temperature Scale, 1963 International Symposium on Humidity and Moisture, Washington, D.C.). According to that paper the saturation pressure for the new temperature scale will be calculated by the following algorithms.

$$u = 273.16/[(t - 32)/1.8 + 273.15]$$

$$p_s = 29.92\ 10^z \qquad (1013250\ \text{dyn/cm}^2)$$

when 1) saturation over ice

$$z = -9.096936\ (u - 1) - 3.56654\ \log_{10} u + 0.876817\ (1 - \tfrac{1}{u}) - 2.2195983$$

2) saturation over liquid water

$$z = -10.79586\ (u - 1) - 5.02808\ \log_{10} u + 1.50474 \cdot 10^{-4}(1 - 10^{-8.29692\ (1/u - 1)}) + 0.42873 \cdot 10^{-3}(10^{4.76955(1 - u)} - 1) - 2.2195983$$

According to this new formula, the corrections $\Delta P/P$ to the current ASHRAE Table values of the saturation water vapor pressure are found to be extremely small, as shown in the following table.

	t (°F)	$\Delta P/P$
over ice	-292	-0.00513
	-220	-0.00216
	-148	-0.001050
	-76	-0.000541
	-4	-0.000269
	+32	-0.000181
over liquid water	32	-0.000193
	68	-0.0001320
	104	-0.0000854
	140	-0.0000493
	176	-0.0000212
	212	0.00000

For the engineering calculation, the algorithms based upon the Goff's 1949 paper for PSYCHR should, therefore, be sufficiently accurate.

Unit Conversion Table

	To Convert From	To	Operation Required
V	$[ft^3/lb]$	V' $[m^3/kg]$	V' = 0.06243 V
p	[in. Hg* (32 °F)]	p' $[Newtons/m^2]$	p' = 3386.389 p
		p" $[kg/m^2]$	p" = 345.3 p
		p"' [mm.Hg]	p"' = 25.4 p
h	[Btu/lb]	h' [J/kg]	h' = (h - 7.686) 2326
		h" [Kcal/Kg]	h" = $\left(\frac{h - 7.686}{1.8}\right)$
s	[Btu/lb °R]	s' [Kcal/Kg °K]	s' = s - 0.01617
		s" [J/Kg °K]	s" = (s - 0.01617) 4184
W	[lb/lb]	W' [gm/Kg]	W' = 1000 W

* Density, 13.595 gm/cm^3

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@RN ASG A=1434
@IT FOR GOFF,GOFF
      DIMENSION PT(9)/31.02,29.92,28.86,27.86,26.87,25.88,24.89,22.65,20
     1.58/,ALT(9)/-1000.,0,1000.,2000.,3000.,4000.,5000., 7500.,10000./
C       SAR..... ENTROPY OF DRY AIR
C       SS......ENTROPY OF SATURATED MOIST AIR
C       SAS.....SS-SA
      COMMON NTAPE,INPUT,SAR,SS,SAS
 9000 FORMAT(10I7)
 9001 FORMAT(10F7.0)
 9002 READ(5,9000) K1,K2,K3,I1,I2,I3
      READ(5,9001) DBI,DBX
      WRITE(6,1)
    2 FORMAT(10H0           )
    1 FORMAT(10H1             )
      DO 1000 K=1,9
 1000 WRITE(6,2)
      WRITE(6,3)
    3 FORMAT(70H                THERMODYNAMIC  PROPERTIES  OF  MOIST  AIR
     1                                                                  )
      WRITE(6,2)
      WRITE(6,4)
    4 FORMAT(50H                                                BY      )
    5 FORMAT(50H0                                          T. KUSUDA    )
    6 FORMAT(51H0                                NATIONAL BUREAU OF STANDARDS)
    7 FORMAT(50H0                                      WASHINGTON,  D.C.)
    8 FORMAT(50H0                                        MARCH 1968    )
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      WRITE(6,2)
      WRITE(6,5)
      WRITE(6,6)
      WRITE(6,7)
      WRITE(6,2)
      WRITE(6,2)
      WRITE(6,8)
  101 FORMAT (50H1                    NOMENCLATURES                        )
  102 FORMAT(50H0      ALT.....ALTITUDE,FT                                 )
  100 FORMAT(50H0      DB......DRY-BULB TEMPERATURE, F                     )
  200 FORMAT(50H0      WB......THERMODYNAMIC WET-BULB TEMPERATURE,F        )
  300 FORMAT(50H0      DP......DEWPOINT TEMPERATURE, F                     )
  400 FORMAT(50H0      RH......RELATIVE HUMIDITY, PERCENT                  )
  500 FORMAT(50H0      PV......VAPOR PRESSURE, IN. HG                      )
  600 FORMAT(50H0       W......HUMIDITY RATIO                              )
  700 FORMAT(50H0       H......ENTHALPY, BTU PER LB OF DRY AIR             )
  701 FORMAT(55H0       S......ENTROPY,BTU PER F PER LB OF DRY AIR         )
  800 FORMAT(50H0       V......VOLUME, CU FT PER LB OF DRY AIR             )
  900 FORMAT(50H0      PB......BAROMETRIC PRESSURE,IN.HG                   )
  901 FORMAT(50H0      THERMODYNAMIC PROPERTIES TABULATED IN THIS          )
  902 FORMAT(50H0      PUBLICATION ARE CALCULATED BY THE GOFF AND          )
  903 FORMAT(50H0      GRATCH FORMULAS ORIGINALLY PUBLISHED IN             )
  904 FORMAT(52H0      STANDARDIZATION OF THERMODYNAMIC PROPERTIES         )
  906 FORMAT(52H0      OF MOIST AIR (ASHVE JOURNAL SECTION 1949)           )
      WRITE(6,101)
      WRITE(6,102)
      WRITE(6,100)
      WRITE(6,200)
      WRITE(6,300)
      WRITE(6,400)
      WRITE(6,500)
      WRITE(6,600)
      WRITE(6,700)
      WRITE(6,701)
      WRITE(6,800)
      WRITE(6,900)
      DO 905 J=1,9
  905 WRITE(6,2)
      WRITE(6,901)
      WRITE(6,902)
      WRITE(6,903)
      WRITE(6,904)
      WRITE(6,906)
   10 FORMAT(67H1
     1      PAGE     1I3                          )
    9 FORMAT(10H0       PB=1F7.2,11H ,ALTITUDE=1F6.0)
   11 FORMAT(70H0  DB       WB       DP       RH       PV          W       H
     1    S       V       )
   19 FORMAT(1F6.1,3F8.1,1F9.4,1F9.5,1F8.2,1F7.4,1F7.2)
      NPAGE=0
      DO 12 K=K1,K2,K3
      PB=PT(K)
      AT=ALT(K)
      DO 12 I=I1,I2,I3
      NPAGE=NPAGE+1
      DB=DBI+(I-1)*DBX
      WB=DB
      DX=DB
      NTT=0
      NT=0
   15 WRITE(6,10) NPAGE
      WRITE(6,9) PB,AT
```

```
      WRITE(6,11)
   14 CALL DBWB(DB,WB,PB,W,H,S,V,PV,DP,RH)
      IF(NTT.EQ.0) WRITE(6,2)
      WRITE(6,19) DB,WB,DP,RH,PV,W,H,S,V
      NT=NT+1
      NTT=NTT+1
      IF(NTT.EQ.5) NTT=0
      IF(NT.LT.35) GO TO 16
      NPAGE=NPAGE+1
      NT=0
      NTT=0
      GO TO 15
   16 IF (DB.LT.10.) WDX=0.0002
      IF(DB.GE.10.) WDX=0.0005
      IF(DB.GE.100.) WDX=0.001
      IF(W.LT.WDX) GO TO 12
      IF(DB.LT.10) DT=0.1
      IF(DB.GE.10) DT=1.0
      DX=DX-DT
      WB=DX
      GO TO 14
   12 CONTINUE
      GO TO 9002
      END
@N FOR TK3,TK3
      SUBROUTINE CF(T,W,WS,V,H,S)
C     IF(T.GT.114) CF IS USED TO FIND CORRECTION FOR H ,V,S  CALCULATED
C      BY H=HA+W*HAS/WS+H,V=VA+W*VAS/WS+V,S=SAR+W*SAS/WS+S
C      T=DRY-BULB TEMPERATURE F
C      W=HUMIDITY RATIO  LB/LB OF WA
C      W=LB/LB OF DRY AIR
C      WS=SATURATED AIR HUMIDITY RATIO
C      V=CORRECTED VOUUME OF MOIST AIR
C      H=CORRECTED ENTHALPY OF MOIST AIR(BTU/LB OF DRY AIR)
      DIMENSION A(7)/0.0018,0.0042,0.0096,0.0215,0.0487,0.1169,0.3363/,B
     1(7)/0.0260,0.0650,0.1439,0.3149,0.6969,1.639,4.608/,C(7)/0.00004,0
     2.00009,0.0002,0.00042,0.00091,0.00207,0.00567 /,TX(7)/96,112,128,1
     344,160,176,192/,AX(4),BX(4),CX(4),TY(4)
      COMMON  NTAPE,INPUT, SAR,SS,SAS
      XC=W*(1.-W/WS)/(1.+1.6078*W)/WS
      IF (T-150.) 1,1,2
    1 DO 3 J=1,4
      TY(J)=TX(J)
      AX(J)=A(J)
      BX(J)=B(J)
    3 CX(J)=C(J)
      GO TO 6
    2 DO 4 J=1,4
      JJ=J+3
      AX(J)=A(JJ)
      BX(J)=B(JJ)
      CX(J)=C(JJ)
    4 TY(J)=TX(JJ)
    6 CALL INT(AX,TY,T,AY)
      CALL INT(BX,TY,T,BY)
      CALL INT(CX,TY,T,CY)
      V=XC*AY
      H=XC*BY
      S=XC*CY
      RETURN
      END
@N FOR TK4,TK4
```

```
      SUBROUTINE DBWB(DB,WB,PT,W,H,S,V,PV,DP,RH)
      REAL MU
      DIMENSION BX(7)/0.0268,0.0650,0.1439,0.3149,0.6969,1.636,4.607/,TX
     1(7)/ 96,112,128,144,160,176,192/,TY(4),BY(4)
C       DB=DRY-BULB TEMPERATURE F
C      WB=THERMODYNAMIC WET-BULB TEMPERATURE(ASHRAE DEFINITION)
C       PT=BAROMETRIC PRESSURE( IN OF HG
C      W=HUMIDITY RATIO
C      H=MOIST AIR ENTHALPY
C      V=MOIST AIR VOLUME
C       SAR..... ENTROPY OF DRY AIR
C       SS......ENTROPY OF SATURATED MOIST AIR
C       SAS.....SS-SA
      COMMON NTAPE,INPUT,SAR,SS,SAS
      CALL PSYCH(PT,DB,PS,HA,HS,VA,VS,WS,FS,HW,0)
      S1=SAR
      S2=SAS
      IF(DB.NE.WB) GO TO 16
      DP=DB
      PV=PS
      H=HS
      V=VS
      W=WS
      RH=100.
      S=SS
      GO TO 17
   16 CALL PSYCH(PT,WB,PSTAR,HASTR,HSTAR,VASTR,VSTR,WSTR,FSTR,HWSTR,0)
      W=(HSTAR-HA-HWSTR*WSTR)/(HS-HA-HWSTR*WS)*WS
      IF(W.LT.0) W=0.
      H=HA+W/WS*(HS-HA)
      V=VA+W/WS*(VS-VA)
      S=S1+S2*W/WS
      IF(DB.LT.96) GO TO 1
      IF(DB.GT.150) GO TO 18
      DO 19 J=1,4
      TY(J)=TX(J)
   19 BY(J)=BX(J)
      GO TO 20
   18 DO 21 J=1,4
      JJ=J+3
      TY(J)=TX(JJ)
   21 BY(J)=BX(JJ)
   20 CALL INT(BY,TY,DB,B)
      AA=B/WSTR**2+1.6078*HWSTR
      BB=B/WSTR+HWSTR*(1.-1.6078*W)
      CC=W*HWSTR
      W=(-BB+SQRT(BB*BB+4*AA* CC))/2/AA
      CALL CF(DB,W,WS,VV,HH,SSS)
      H=H+HH
      V=V+VV
      S=S+SSS
    1 MU=W/WS
      RH=MU/(1.-(1.-MU)*FS*(PS/PT)) *100.
      DT=10.
      DP1=DB
      CALL PSYCH(PT,DP1,PS1,HA1,HS1,VA1,VS1,WS1,FS1,HW1,0)
      Y1=WS1-W
   13 DP2=DP1-DT
      CALL PSYCH(PT,DP2,PS2,HA2,HS2,VA2,VS2,WS2,FS2,HW2,0)
      Y2=WS2-W
      IF(Y1*Y2) 10,11,12
   11 IF(Y1.EQ.0.) DP=DP1
```

```
      IF(Y2.EQ.0.) DP=DP2
      GO TO 14
   12 Y1=Y2
      DP1=DP2
      GO TO 13
   10 IF(DT.LT.0.001) GO TO 15
      DT=DT/2.
      GO TO 13
   15 Z=ABS(Y1/Y2)
      DP=(DP1+DP2*Z)/(1.+Z)
   14 CALL PSYCH(PT,DP,PV,HA,HS,VA,VS,WS,FS,HW,0)
   17 RETURN
      END
ON FOR TK5,TK5
      SUBROUTINE DBDP(DB,WB,PT,W,H,S,V,PV,DP,RH)
C      SAR..... ENTROPY OF DRY AIR
C      SS......ENTROPY OF SATURATED MOIST AIR
C      SAS.....SS-SA
      COMMON NTAPE,INPUT,SAR,SS,SAS
C     DB=DRY-BULB TEMPERATURE
C      DP=DEW-POINT TEMPERATURE
C      PT=BAROMETRIC PRESSURE
C      H=ENTHALPY
C      V=VOULME
C     W=HUMIDITY RATIO
      REAL  MU
      CALL PSYCH(PT,DP,PSP,HAP,HSP,VAP,VSP,WSP,FSP,HWP,0)
      PV=PSP
      IF(DB.NE.DP) GO TO 16
      H=HSP
      S=SS
      V=VSP
      W=WSP
      WB=DP
      RH=100.
      GO TO 14
   16 W=WSP
      CALL PSYCH(PT,DB,PS,HA,HS,VA,VS,WS,FS,HW,0)
      H=HA+W/WS*(HS-HA)
      V=VA+W*(VS-VA)/WS
      S=SAR+SAS*W/WS
      IF(DB.LT.96.) GO TO 1
      CALL CF(DB,W,WS,VV,HH,SSS)
      H=H+HH
      V=V+VV
      S=S+SSS
    1 MU=W/WS
      RH=MU/(1.-(1.-MU)*FS*PS/PT) *100.
      WB1=DB
      DT=10.
      CALL PSYCH(PT,WB1,PS1,HA1,HS1,VA1,VS1,WS1,FS1,HW1,0)
      Y1=HS1-H-(WS1-W)*HW1
   13 WB2=WB1-DT
      CALL PSYCH(PT,WB2,PS2,HA2,HS2,VA2,VS2,WS2,FS2,Hw2,0)
      Y2=HS2-H-(WS2-W)*HW2
      IF(Y1*Y2) 10,11,12
   11 IF(Y1.EQ.0) WB=WB1
      IF(Y2.EQ.0.) WB=WB2
      GO TO 14
   12 Y1=Y2
      WB1=WB2
      GO TO 13
```

```
   10 IF(DT.LT.0.005) GO TO 15
      DT=DT/2.
      GO TO 13
   15 Z=ABS(Y1/Y2)
      WB=(WB1+WB2*Z)/(1.+Z)
   14 RETURN
      END
WN FOR TK6,TK6
      SUBROUTINE DBRH(DB,WB,PT,W,H,V,PV,DP,RH)
C      SAR..... ENTROPY OF DRY AIR
C      SS......ENTROPY OF SATURATED MOIST AIR
C      SAS.....SS-SA
      COMMON NTAPE,INPUT,SAR,SS,SAS
C     THIS SUBROUTINE IS USED TO CALCULATE THERMODYNAMIC WET-BULB
C     TEMPERATURE BY THE KNOLEDGE OF DRY-BULB TEMPERATURE AND RELATIVE
C     HUMIDITY(PERCENT)
C     PT=BAROMETRIC PRESSURE IN OF HG
C     DB=DRY-BULB TEMPERATURE
C     RH=RELATIVE HUMIDITY IN PERCENT
C     WB=THERMODYNAMIC WET-BULB TEMPERATURE
      REAL MU
      CALL PSYCH(PT,DB,PS,HA,HS,VA,VS,WS,FS,HW,0)
      S1=SAR
      S2=SAS
      IF(RH.NE.100) GO TO 26
      PV=PS
      H=HS
      V=VS
      W=WS
      WB=DB
      DP=WB
      S=SS
      GO TO 24
   26 RX=RH/100.
      MU=RX*(1.-FS*PS/PT)/(1.-RX*FS*PS/PT)
      H=HA+MU*(HS-HA)
      S=S1+S2*MU
      W=MU*WS
      IF(DB.LT.96) GO TO 1
      CALL CF(DB,W,WS,VV,HH,SSS)
      H=H+HH
      V=V+VV
      S=S+SSS
    1 DT=10.
      DP1=DB
      CALL PSYCH(PT,DP1,PS1,HA1,HS1,VA1,VS1,WS1,FS1,HW1,0)
      Y1=WS1-W
   13 DP2=DP1-DT
      CALL PSYCH(PT,DP2,PS2,HA2,HS2,VA2,VS2,WS2,FS2,HW2,0)
      Y2=WS2-W
      IF(Y1*Y2) 10,11,12
   11 IF(Y1.EQ.0.) DP=DP1
      IF(Y2.EQ.0.) DP=DP2
      GO TO 27
   12 Y1=Y2
      DP1=DP2
      GO TO 13
   10 IF(DT.LT.0.001) GO TO 15
      DT=DT/2.
      GO TO 13
   15 Z=ABS(Y1/Y2)
      DP=(DP1+DP2*Z)/(1.+Z)
```

```
   27 CALL PSYCH(PT,DP,PS,HA,HS,VA,VS,WS,FS,HW,0)
      PV=PS
   14 DT=10.
      WB1=DB
      CALL PSYCH(PT,WB1,PS1,HA1,HS1,VA1,VS1,WS1,FS1,HW1,0)
      Y1=HS1-H-(WS1-W)*HW1
   23 WB2=WB1-DT
      CALL PSYCH(PT,WB2,PS2,HA2,HS2,VA2,VS2,WS2,FS2,HW2,0)
      Y2=HS2-H-(WS2-W)*HW2
      IF(Y1*Y2) 20,21,22
   21 IF(Y1.EQ.0.) WB=WB1
      IF(Y2.EQ.0.) WB=WB2
      GO TO 24
   22 Y1=Y2
      WB1=WB2
      GO TO 23
   20 IF(DT.LT.0.05) GO TO 25
      DT=DT/2.
      GO TO 23
   25 Z=ABS(Y1/Y2)
      WB=(WB1+WB2*Z)/(1.+Z)
   24 RETURN
      END
$IBN FOR TK7,TK7
      SUBROUTINE PSYCH(PT,TEMP,PS,HA,HS,VA,VS,WS,FS,HWTR,TEST)
C     PT=PB=BAROMETRIC PRESSURE (IN OF HG)
C     TEMP=DRY-BULB TEMPERATURE F
C     HA=ENTHALPY OF DRY AIR
C     H= ENTHALPY OF SATURATED AIR(BTU/LB OF DRY AIR)
C     VA=VOLUME OF DRY AIR(CU FT/LB)
C     VS=VOLUME OF SATURATED AIR(CU FTPLB OF DRY AIR)
C     WS=HUMIDITY RATIO OF SATURATED AIR(LB OF WATER/LB OF DRY AIR)
C     FS(AIR-WATER INTERACTION FACTOR)
C     HWTR=ENTHALPY OF LIQUID WATER(BTU/LB OF WATER)
C     THIS PROGRAM IS WRTTEN BASED UPON' STNDARDIZATION OF THERMODYNAMIC
C     PROPERTIES OF MOIST AIR' BY JOHN A  GOFF ASHVEJOURNAL SECTION
C     HEATING PIPING AND AIR CONDITIONING NOV 1947
C     TEST= THIS IS AN INDEX FOR TABULAR CALCULATION
C     IF T=1    PROGRAM GENERATE ENTIRE TABLE FOR WS,VA,VAS,VS,HA,HAS,HS
C     PS,HH2O,HWP,HFG,AND HWDP
C     WHERE
C     PS=VAPOR PRESSURE
C     HH2O=ENTHALPY OF WATER VAPOR(BTU/LB OF WATER)
C     HWP=ENTHALPY OF WATER,BASICALLY SAME AS HW)
C     HFG=HEAT OF VAPORIZATION(BTU/LB OF WATER)
C     HWDP=BASICALLY SAME AS HW)
      INTEGER TEST
C      SAR..... ENTROPY OF DRY AIR
C      SS......ENTROPY OF SATURATED MOIST AIR
C      SAS.....SS-SA
      COMMON NTAPE,INPUT,SAR,SS,SAS
      DIMENSION TM(330),PSS(300),FSS(300),X20(300),HWP(300),HFG(300),
     1HGP(300),HWDP(300)
      DIMENSION HW(4,6)/-114.25,-110.54,-106.64,-102.58,-102.58,-98.34,
     1-93.92,-89.34,-93.92,-89.34,-84.57,-79.64,.02,10.06,20.06,30.04,
     230.04,40.03, 50.01,60.,60.,69.99,80.01,90.05/, A(4,6)/ -80.,-70.,
     3-60.,-50.,-50.,-40.,-30.,-20.,-30.,-20.,-10.,0.,0.,10.,20.,30.,
     430.,40.,50.,60.,60.,70.,80.,90. /, V(4,6)/ 676.3,677.,677.5,677.9,
     5677.9,678.,678.,677.9,678.,677.9,677.5,677.,597.31,591.7,586.,
     6580.4,580.4,574.7,569.,563.2,563.2,557.3,551.3,545.2/
     7,SUM1(5),SUM2(5),HO(5),RINT(4),TINT(4)
      DIMENSION C(5)/3.5,3.5,2.5,3.5,4./, XN(3,5)/1.,0.,0.,1.,0.,0.,0.,
```

```
     10.,0.,2.,1.,1.,1.,1.,1./, TH(3,5)/2235.4,0.,0.,3352.69,0.,0.,0.,
     20.,0.,960.,1944.,3379.,2291.16,5176.37,5445.59/,AA(5)/1.073,
     3.9580,0.,0.,5.011/, B(5)/ 0.,.09,0.,0.,0./, D(5)/ 3.3E-6,2.023E-6,
     40.,0.,2.32E-5/,F(5)/.011,.009009,0.,0.,0./, G(5)/ 1.2164,-.414686,
     51.867,1.8945,-4.1083/, AL(3,5)/0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,
     60.,-.03958,.05353,.04/, AF(4)/ -7.90298,5.02808,-1.3816E-7,
     78.1328E-3/, R(4,6)/.44E-8,1.9E-8,.71E-7,2.35E-7,2.35E-7,.7E-6,
     81.91E-6,.48E-5,1.91E-6,.48E-5,1.11E-5,2.43E-5,2.37E-5,4.44E-5,
     9.79E-4,1.34E-4,1.34E-4,2.19E-4,3.46E-4,5.26E-4,5.26E-4,.78E-3,
     91.12E-3,1.58E-3/
      PB=PT
      MQ = 0
      JJ = 0
      IF(TEST.NE.1) GO TO 1000
      KT = -100
  772 KL = KT + 50
      WRITE (6,909)
  913 FORMAT (1X,I5,2X,E9.4,2(1X,F8.3),2X,F8.3,3X,F8.3,2X,F8.3,4X,F8.3,
     1 3X,F8.4,2(4X,F8.4))
  911 FORMAT (114H0TEMP(F)     WS          VA         VAS         VS          HA
     1         HAS           HS           SA           SS           SAS )
  909 FORMAT (72H1                                    THERMODYNAMIC  PROPERTIE
     1S  OF  MOIST  AIR)
      WRITE (6,910) PB
  910 FORMAT (58H                                    AT  BAROMETRIC  PRESSURE
     1 = F5.2, 8H  IN. HG)
      WRITE (6,911)
      WRITE (6,912)
  912 FORMAT (1H )
      GO TO 2000
 1000 KT=1
      KL=1
 2000 DO 3000 IT=KT,KL
   69 TT = IT
      IF(TEST.NE.1) TT=TEMP
      T = (TT-32.)/1.8 + 273.16
      U = 1./T
      DO 102 I = 1,5
      SUM1(I) = 0.
      SUM2(I) = 0.
      DO 101 J = 1,3
      EX = EXP(-TH(J,I)*U)
      IF(XN(J,I))46,47,46
   47 PAULA = 0.
      GO TO 49
   46 PAULA= XN(J,I)*TH(J,I)* EX/ (1.-EX)
   49 SUM1(I) = SUM1(I) + PAULA
  101 SUM2(I) = SUM2(I) + AL(J,I)*TH(J,I)*EX
      IF (F(I))87,88,87
   88 Q=0.
      GO TO 102
   87 Q=F(I)*TH(1,I)* EXP(-TH(1,I)*U)  / (EXP(-TH(1,I)*U)-1.) **2.
  102 HO(I) = 1.98583 * (C(I)/U + SUM1(I) -AA(I) -2.*B(I)*U +D(I)/U**2.
     1-Q + SUM2(I) )
      HO(5) = HO(5) / 18.016
      HOAIR =(.2095*HO(1) + .7809*HO(2) + .0093*HO(3) + .0003*HO(4))/
     128.966
      AAA = -40.7 + 13116.*U + 12.E7*U**3.
      BAA = -40.7 + 26232.*U + 48.E7*U**3.
   13 AWW = -33.97 + 55306.*U*10.**(72000.*U**2.)
      BWW = -33.97 + 110612.*10.**(72000.*U**2.)*U+55306.*U**3.*144000.
     1*ALOG(10.) *10.**(72000.*U**2.)
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```
   14 EP = EXP(-4416.5*U)
      AAW = -29.53 + .00669* (1.-EP)/U + 17546.*U + 95300.*U**2. +
     18.515E7*U**3.
      BAW = -29.53 + .00669 *4416.5*EP + 2.*17546.*U + 3.*95300.*U**2.
     1+ 4.*8.515E7*U**3.
      AWWW=0.0348*U*U*AWW**3
      BWWW=0.1044*U*U*AWW*AWW*BWW
      P = PB / 29.92
      HAIR= HOAIR -(BAA*P*.0242179 )/28.966 - 60.99
      HAIR = HAIR * 1.8
      B1 = 11.344*(1.-T/373.16)
      B2 = -3.49149 *(373.16/T-1.)
      IF(T-273.16) 19,19,20
   20 Z = AF(1)*(373.16/T-1.) + AF(2)*ALOG10(373.16/T) + AF(3)*(10.**B1
     1-1.) + AF(4)*(10.**B2-1.)
      PPP = 1.
      GO TO 22
   19 Z = 9.09718*(1.-273.16/T) - 3.56654*ALOG10(273.16/T) + .876793*
     1(1.-T/273.16)
      PPP = .0060273
   22 PS = 10. ** Z  *PPP
      HH20 =HO(5)-(BWW*PS*.0242179)/18.016 + 477.277
      HH20=HH20-0.5*(BWWW*P*P*0.0242179)/18.016
      HH20 = HH20 * 1.8
      TX = T - 273.16
      MG = 0
      I = 0
      IF (TX+50.) 421,466,466
  466 IF(TX+25.) 423,467,467
  467 IF(TX) 425,428,468
  468 IF(TX-30.) 428,469,469
  469 IF(TX-60.) 430,431,431
   31 DO 5000 KL=1,4
      TINT(KL)=A(KL,I)
 5000 RINT(KL)=R(KL,I)
      CALL INT(RINT,TINT,TX,BETA)
      ALPHA = (AAA - 2.*AAW +AWW) * PS/(82.0567*T)
      ZEP = ALPHA * (1.-PS/P) + BETA * (P/PS-1.)
      FS = EXP(ZEP)
      WS = (.62197*FS*PS/P)/(1.-FS*PS/P)
      YS = 18.016 / (28.966*WS + 18.016 )
      HS = YS*HOAIR*28.966 + (1.-YS)*HO(5)*18.016 - (YS**2.*BAA+2.*YS*(
     11.-YS)*BAW + (1.-YS)**2. * BWW) * P * .0242179
      HS=HS-0.5*(1.-YS)**3*BWWW*P*P*0.0242179
      VS = 82.0567 * T/P - (YS**2.*AAA+2.*YS*(1.-YS)*AAW+(1.-YS)**2.
     1*AWW)
      VS=VS-(1.-YS)**3*AWWW*P
      OM1 = (1./252.) / (28.966 * (1./453.5924))
      HSP = OM1 * HS/YS + 859.099*WS - 109.782
      OM2 = (1./28316.85 )/(28.966*(1./453.5924))
      VSP = OM2 * VS / YS
      VA = (82.0567 * T / P - AAA) * OM2
      HASP = HSP - HAIR
      VASP = VSP - VA
            CALL ENTPY (TH,U,XN,AL,F,C,B,D,G,AAA,BAA,P,AWWW,BWWW,
     1AWW,BWW,AAW,BAW,YS,WS)
  527 JJ = JJ + 1
      I = 0
      MG = 1
      IF(TX+50.) 421,422,422
  422 IF(TX+25.) 423,424,424
  424 IF(TX) 425,426,427
```

```
 426 IF(MQ) 428,267,428
 267 MQ = 1
     GO TO 425
 427 IF(TX-30.) 428,429,429
 429 IF(TX-60.) 430,431,431
 431 I = I + 1
 430 I = I + 1
 428 I = I + 1
     MQ = 0
 425 I = I + 1
 423 I = I + 1
 421 I = I + 1
     IF(MQ.EQ.0) GO TO 31
     DO 6000 KL=1,4
     TINT(KL)=A(KL,I)
6000 RINT(KL)=HW(KL,I)
     CALL INT(RINT,TINT,TX,HWW)
     HWP(JJ) = HWW * 1.8
     HGP(JJ) = HH2O
     HFG(JJ) = HGP(JJ) - HWP(JJ)
     DO 7000 KL=1,4
     RINT(KL)=V(KL,I)
7000 TINT(KL)=A(KL,I)
     CALL INT(RINT,TINT,TX,TOM)
     HWDP(JJ) = HGP(JJ) - TOM * 1.8
     ITT = TT
     TM(JJ) = TT
     PSS(JJ) = PS * 29.921
     FSS(JJ) = FS
     X2O(JJ) = HH2O
     IF(MQ.EQ.1) GO TO 327
     IF(TEST.NE.1) GO TO 4000
 103 WRITE (6,913) ITT,WS,VA,VASP,VSP,HAIR,HASP,HSP,SAR,SS,SAS
3000 CONTINUE
     KT = KT + 50
     IF(KT.LT.140) GO TO 772
     IF(PB) 4000,154,4000
 154 KP = 1
     DO 348 JM = 1,5
     WRITE (6,639)
 639 FORMAT (83H1                                        THERMODYNAMIC  PROPERTIE
    1S  OF  WATER  AT  SATURATION)
     WRITE (6,638)
 638 FORMAT (74H                                             BAROMETRIC  PRESS
    1URE = 29.92  IN. HG)
     WRITE (6,912)
     WRITE (6,688)
 688 FORMAT  (123H  T(F)                    PS                    FS
    1     HH2O                  HWP                   HFG                   H
    2WDP )
     WRITE (6,912)
 992 KPP = KP + 50
     DO 349 JJ = KP , KPP
 349 WRITE (6,338) TM(JJ),PSS(JJ),FSS(JJ),X2O(JJ),HWP(JJ),HFG(JJ),
    1HWDP(JJ)
 338 FORMAT (F5.0,1X, 2(9X,E9.4), 4(10X,F10.2))
 348 KP = KP + 51
4000 HA=HAIR
     HS=HSP
     VS=VSP
     PS=PSS(1)
     HWTR=HWP(1)
```

```
      RETURN
      END
@N FOR TK10,TK10
      SUBROUTINE ENTPY (TH,U,XN,AL,F,C,B,D,G,AAA,BAA,P,AWWW,BWWW,
     1AWW,BWW,AAW,BAW,YS,WS)
C     THIS SUBROUTINE  FINDS ENTROPIES.
      COMMON NTAPE,INPUT,SAR,SS,SAS
      DIMENSION TH(3,5),B(5),D(5),F(5),G(5),C(5),XN(3,5),AL(3,5),SO(5)
      DO 1 I=1,5
      SUM1 = 0
      SUM2 = 0
      DO 2 J = 1,3
      EX = EXP(-TH(J,I)*U)
      IF (XN(J,I)) 3,8,3
    8 PAULA = 0.
      GO TO 4
    3 PAULA = XN(J,I) * (TH(J,I)*U*EX-(1.-EX)*ALOG(1.-EX))/(1.-EX)
    4 SUM1 = SUM1 + PAULA
    2 SUM2 = SUM2 + AL(J,I)*EX*(1.+TH(J,I)*U)
      EX = EXP(-TH(1,I)*U)
      IF(F(I)) 5,6,5
    6 Q = 0
      GO TO 1
    5 Q = F(I) * (EX*(1.-EX)-1.)/(EX-1.)**2.
    1 SO(I) =1.98583*((C(I)*(1.-ALOG(U))) + SUM1+SUM2 - (B(I)*U**2.)
     1 +(2.*D(I)/U) +Q +(G(I)))
      SO(5) = SO(5)/18.016
      CAA = U*(AAA-BAA)
      SOAIR = (.2095*SO(1) + .7809*SO(2) + .0093*SO(3) + .0003*SO(4))
     1/28.966  + .03947
      SAR = SOAIR + .0242179*CAA*P/28.966-1.98583/28.966*ALOG(P)
     1 - 1.60096
      CWWW = U*(AWWW-BWWW)
      CWW = U*(AWW-BWW)
      CAW =(AAW-BAW)*U
      IF(YS.GE.1.)  GO TO 1000
      IF(YS) 9,9,10
    9 SS=0.
      GO TO 11
   10 SS = ((28.966*YS*SOAIR + 18.016*(1.-YS)*SO(5)) + .0242179*((YS
     1**2.*CAA + 2.*YS*(1.-YS)*CAW + (1.-YS)**2.*CWW)*P + .5*(1.-YS)**3.
     2*CWWW*P**2.) - 1.98583*(YS*ALOG(YS) + (1.-YS)*ALOG(1.-YS)+
     3 ALOG(P))) / 28.966/ YS - 1.60096 - .8396*WS
   11 SAS = SS-SAR
 1000 RETURN
      END
@N FOR INT,INT
      SUBROUTINE INT(R,C,X,Y)
C     FOUR POINT LAGRANGEAN INTERPOLATION
      DIMENSION R(4),C(4)
      X1=X-C(1)
      X2=X-C(2)
      X3=X-C(3)
      X4=X-C(4)
      Q12=C(1)-C(2)
      Q13=C(1)-C(3)
      Q14=C(1)-C(4)
      Q21=C(2)-C(1)
      Q23=C(2)-C(3)
      Q24=C(2)-C(4)
      Q31=C(3)-C(1)
      Q32=C(3)-C(2)
```

```
Q34=C(3)-C(4)
Q41=C(4)-C(1)
Q42=C(4)-C(2)
Q43=C(4)-C(3)
Y=R(1)*X2*X3*X4/Q12/Q13/Q14+R(2)*X1*X3*X4/Q21/Q23/Q24
Y=Y+R(3)*X1*X2*X4/Q31/Q32/Q34+R(4)*X1*X2*X3/Q41/Q42/Q43
RETURN
END
```

THERMODYNAMIC PROPERTIES OF MOIST AIR

BY

T. KUSUDA

NATIONAL BUREAU OF STANDARDS

WASHINGTON, D.C.

MARCH 1968

NOMENCLATURES

ALT.....ALTITUDE, FT

DB.....DRY-BULB TEMPERATURE, F

WB.....THERMODYNAMIC WET-BULB TEMPERATURE, F

DP.....DEWPOINT TEMPERATURE, F

RH.....RELATIVE HUMIDITY, PERCENT

PV.....VAPOR PRESSURE, IN. HG

W.....HUMIDITY RATIO

H.....ENTHALPY, BTU PER LB OF DRY AIR

S.....ENTROPY, BTU PER F PER LB OF DRY AIR

V.....VOLUME, CU FT PER LB OF DRY AIR

PB.....BAROMETRIC PRESSURE, IN.HG

THERMODYNAMIC PROPERTIES TABULATED IN THIS PUBLICATION ARE CALCULATED BY THE GOFF AND GRATCH FORMULAS ORIGINALLY PUBLISHED IN STANDARDIZATION OF THERMODYNAMIC PROPERTIES OF MOIST AIR (ASHVE JOURNAL SECTION 1949)

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00008	-9.54	-.0242	10.19

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00076	.80	-.0006	11.18
.0	-.1	-.6	96.9	.0365	.00074	.77	-.0007	11.18
.0	-.2	-1.2	93.8	.0353	.00071	.75	-.0007	11.18
.0	-.3	-1.9	90.6	.0341	.00069	.72	-.0008	11.18
.0	-.4	-2.5	87.5	.0329	.00066	.70	-.0009	11.18
.0	-.5	-3.2	84.4	.0318	.00064	.67	-.0009	11.18
.0	-.6	-3.9	81.3	.0306	.00062	.65	-.0010	11.18
.0	-.7	-4.7	78.2	.0294	.00059	.62	-.0010	11.18
.0	-.8	-5.4	75.1	.0283	.00057	.60	-.0011	11.18
.0	-.9	-6.2	72.0	.0271	.00055	.57	-.0011	11.18
.0	-1.0	-7.0	68.9	.0259	.00052	.55	-.0012	11.18
.0	-1.1	-7.9	65.8	.0248	.00050	.52	-.0013	11.18
.0	-1.2	-8.7	62.7	.0236	.00048	.50	-.0013	11.18
.0	-1.3	-9.7	59.6	.0224	.00045	.47	-.0014	11.18
.0	-1.4	-10.7	56.5	.0213	.00043	.45	-.0014	11.18
.0	-1.5	-11.7	53.4	.0201	.00041	.42	-.0015	11.18
.0	-1.6	-12.7	50.3	.0189	.00038	.40	-.0015	11.17
.0	-1.7	-13.9	47.2	.0178	.00036	.37	-.0016	11.17
.0	-1.8	-15.1	44.2	.0166	.00034	.35	-.0017	11.17
.0	-1.9	-16.4	41.1	.0155	.00031	.32	-.0017	11.17
.0	-2.0	-17.8	38.0	.0143	.00029	.30	-.0018	11.17
.0	-2.1	-19.2	34.9	.0131	.00026	.28	-.0018	11.17
.0	-2.2	-20.9	31.9	.0120	.00024	.25	-.0019	11.17
.0	-2.3	-22.6	28.8	.0108	.00022	.23	-.0019	11.17
.0	-2.4	-24.5	25.7	.0097	.00020	.20	-.0020	11.17

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00503	15.02	.0290	12.24
40.0	39.0	37.8	91.7	.2271	.00461	14.57	.0280	12.23
40.0	38.0	35.4	83.5	.2069	.00420	14.13	.0271	12.23
40.0	37.0	32.9	75.5	.1870	.00379	13.69	.0262	12.22
40.0	36.0	30.4	67.6	.1674	.00339	13.26	.0253	12.21
40.0	35.0	27.7	59.8	.1481	.00300	12.84	.0244	12.20
40.0	34.0	24.8	52.1	.1291	.00261	12.42	.0235	12.19
40.0	33.0	21.5	44.6	.1104	.00223	12.01	.0226	12.19
40.0	32.0	19.9	41.3	.1024	.00207	11.83	.0223	12.18
40.0	31.0	16.0	34.1	.0845	.00171	11.45	.0214	12.18
40.0	30.0	11.3	27.1	.0670	.00135	11.06	.0206	12.17
40.0	29.0	5.4	20.1	.0498	.00101	10.69	.0198	12.16
40.0	28.0	-2.5	13.3	.0330	.00066	10.32	.0191	12.16
40.0	27.0	-15.4	6.6	.0164	.00033	9.96	.0183	12.15

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02151	42.79	.0822	13.57
80.0	79.0	78.7	95.7	.9879	.02056	41.74	.0801	13.55
80.0	78.0	77.3	91.5	.9445	.01963	40.72	.0781	13.53
80.0	77.0	75.9	87.4	.9020	.01872	39.73	.0762	13.51
80.0	76.0	74.5	83.3	.8604	.01783	38.75	.0743	13.49
80.0	75.0	73.1	79.4	.8197	.01696	37.80	.0724	13.48
80.0	74.0	71.6	75.5	.7798	.01611	36.87	.0706	13.46
80.0	73.0	70.1	71.7	.7407	.01529	35.97	.0688	13.44
80.0	72.0	68.5	68.0	.7025	.01448	35.08	.0671	13.42
80.0	71.0	66.9	64.4	.6650	.01369	34.22	.0654	13.41
80.0	70.0	65.3	60.9	.6283	.01292	33.37	.0638	13.39
80.0	69.0	63.6	57.4	.5923	.01216	32.54	.0621	13.37
80.0	68.0	61.9	54.0	.5571	.01143	31.74	.0606	13.36
80.0	67.0	60.1	50.6	.5226	.01071	30.95	.0590	13.34
80.0	66.0	58.2	47.3	.4888	.01000	30.18	.0575	13.33
80.0	65.0	56.2	44.1	.4557	.00932	29.42	.0560	13.31
80.0	64.0	54.2	41.0	.4232	.00864	28.69	.0546	13.30
80.0	63.0	52.1	37.9	.3914	.00798	27.97	.0532	13.29
80.0	62.0	49.8	34.9	.3602	.00734	27.26	.0518	13.27
80.0	61.0	47.5	31.9	.3297	.00671	26.57	.0505	13.26
80.0	60.0	45.0	29.0	.2997	.00610	25.90	.0491	13.25
80.0	59.0	42.3	26.2	.2703	.00549	25.23	.0478	13.23
80.0	58.0	39.4	23.4	.2415	.00490	24.59	.0466	13.22
80.0	57.0	36.2	20.7	.2133	.00432	23.96	.0453	13.21
80.0	56.0	32.7	18.0	.1855	.00376	23.34	.0441	13.20
80.0	55.0	29.2	15.3	.1583	.00321	22.73	.0429	13.19
80.0	54.0	25.2	12.8	.1317	.00266	22.14	.0418	13.17
80.0	53.0	20.6	10.2	.1055	.00213	21.55	.0406	13.16
80.0	52.0	14.8	7.7	.0799	.00161	20.98	.0395	13.15
80.0	51.0	7.2	5.3	.0547	.00110	20.43	.0384	13.14
80.0	50.0	-4.3	2.9	.0299	.00060	19.88	.0374	13.13
80.0	49.0	-33.5	.5	.0057	.00011	19.34	.0363	13.12

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.07826	115.93	.2126	15.86
120.0	119.0	118.9	96.9	3.3425	.07558	112.95	.2072	15.80
120.0	118.0	117.8	94.0	3.2396	.07298	110.05	.2019	15.74
120.0	117.0	116.6	91.0	3.1388	.07045	107.24	.1967	15.68
120.0	116.0	115.5	88.2	3.0401	.06799	104.50	.1917	15.63
120.0	115.0	114.4	85.4	2.9434	.06559	101.84	.1868	15.57
120.0	114.0	113.2	82.6	2.8488	.06327	99.25	.1821	15.52
120.0	113.0	112.1	79.9	2.7562	.06101	96.74	.1775	15.47
120.0	112.0	110.9	77.3	2.6655	.05881	94.29	.1730	15.42
120.0	111.0	109.7	74.7	2.5768	.05667	91.91	.1687	15.37
120.0	110.0	108.6	72.2	2.4899	.05459	89.59	.1644	15.32
120.0	109.0	107.4	69.7	2.4049	.05257	87.34	.1603	15.28
120.0	108.0	106.2	67.3	2.3216	.05060	85.15	.1563	15.23
120.0	107.0	104.9	65.0	2.2401	.04868	83.02	.1524	15.19
120.0	106.0	103.7	62.6	2.1604	.04682	80.94	.1486	15.15
120.0	105.0	102.5	60.4	2.0823	.04500	78.92	.1449	15.11
120.0	104.0	101.2	58.2	2.0059	.04323	76.95	.1413	15.07
120.0	103.0	100.0	56.0	1.9312	.04151	75.04	.1378	15.03
120.0	102.0	98.7	53.9	1.8580	.03984	73.17	.1344	14.99
120.0	101.0	97.4	51.8	1.7864	.03821	71.36	.1311	14.95
120.0	100.0	96.1	49.8	1.7163	.03662	69.59	.1278	14.92
120.0	99.0	94.7	47.8	1.6477	.03507	67.87	.1247	14.88
120.0	98.0	93.4	45.8	1.5806	.03357	66.19	.1216	14.85
120.0	97.0	92.0	43.9	1.5149	.03210	64.56	.1186	14.82
120.0	96.0	90.6	42.0	1.4506	.03067	62.97	.1157	14.78
120.0	95.0	89.2	40.2	1.3877	.02928	61.42	.1129	14.75
120.0	94.0	87.8	38.4	1.3262	.02792	59.91	.1101	14.72
120.0	93.0	86.3	36.7	1.2659	.02660	58.44	.1074	14.69
120.0	92.0	84.8	35.0	1.2070	.02531	57.00	.1048	14.66
120.0	91.0	83.3	33.3	1.1493	.02405	55.60	.1022	14.64
120.0	90.0	81.8	31.7	1.0929	.02282	54.24	.0997	14.61
120.0	89.0	80.2	30.1	1.0377	.02163	52.91	.0973	14.58
120.0	88.0	78.5	28.5	.9836	.02047	51.61	.0949	14.55
120.0	87.0	76.9	27.0	.9307	.01933	50.35	.0926	14.53
120.0	86.0	75.1	25.5	.8790	.01822	49.12	.0904	14.50

DB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	75.1	25.5	.8790	.01822	49.12	.0904	14.50
120.0	85.0	73.4	24.0	.8283	.01714	47.92	.0882	14.48
120.0	84.0	71.5	22.6	.7787	.01609	46.75	.0860	14.46
120.0	83.0	69.6	21.2	.7302	.01507	45.60	.0839	14.43
120.0	82.0	67.7	19.8	.6828	.01406	44.49	.0819	14.41
120.0	81.0	65.6	18.4	.6363	.01309	43.40	.0799	14.39
120.0	80.0	63.5	17.1	.5908	.01213	42.34	.0780	14.37
120.0	79.0	61.3	15.8	.5463	.01120	41.30	.0761	14.35
120.0	78.0	59.0	14.6	.5027	.01029	40.29	.0742	14.33
120.0	77.0	56.5	13.3	.4601	.00941	39.31	.0724	14.31
120.0	76.0	53.9	12.1	.4183	.00854	38.34	.0707	14.29
120.0	75.0	51.1	10.9	.3775	.00770	37.40	.0689	14.27
120.0	74.0	48.1	9.8	.3374	.00687	36.48	.0673	14.25
120.0	73.0	44.8	8.6	.2983	.00607	35.59	.0656	14.23
120.0	72.0	41.2	7.5	.2599	.00528	34.71	.0640	14.21
120.0	71.0	37.2	6.4	.2224	.00451	33.86	.0625	14.20
120.0	70.0	32.7	5.4	.1856	.00376	33.02	.0609	14.18
120.0	69.0	27.9	4.3	.1495	.00303	32.21	.0594	14.16
120.0	68.0	22.2	3.3	.1143	.00231	31.41	.0580	14.15
120.0	67.0	14.8	2.3	.0797	.00161	30.63	.0565	14.13
120.0	66.0	3.8	1.3	.0459	.00093	29.87	.0552	14.11

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.28364	358.88	.6190	21.88
160.0	159.0	159.0	97.6	9.4191	.27364	347.59	.5997	21.64
160.0	158.0	157.9	95.1	9.1871	.26404	336.75	.5811	21.41
160.0	157.0	156.9	92.8	8.9595	.25482	326.33	.5632	21.19
160.0	156.0	155.8	90.5	8.7361	.24595	316.31	.5460	20.98
160.0	155.0	154.8	88.2	8.5169	.23743	306.68	.5295	20.77
160.0	154.0	153.7	86.0	8.3019	.22922	297.41	.5136	20.57
160.0	153.0	152.7	83.8	8.0909	.22132	288.49	.4983	20.38
160.0	152.0	151.6	81.7	7.8840	.21371	279.89	.4835	20.20
160.0	151.0	150.6	79.5	7.6810	.20638	271.61	.4693	20.02
160.0	150.0	149.5	77.5	7.4819	.19931	263.63	.4556	19.86
160.0	149.0	148.4	75.5	7.2866	.19250	255.93	.4424	19.69
160.0	148.0	147.4	73.5	7.0951	.18592	248.50	.4297	19.53
160.0	147.0	146.3	71.5	6.9073	.17958	241.33	.4174	19.38
160.0	146.0	145.2	69.6	6.7231	.17345	234.41	.4055	19.23
160.0	145.0	144.2	67.8	6.5425	.16753	227.72	.3940	19.09
160.0	144.0	143.1	65.9	6.3654	.16181	221.26	.3829	18.95
160.0	143.0	142.0	64.1	6.1918	.15629	215.02	.3722	18.82
160.0	142.0	140.9	62.4	6.0216	.15094	208.98	.3619	18.69
160.0	141.0	139.8	60.6	5.8547	.14578	203.14	.3519	18.57
160.0	140.0	138.7	58.9	5.6911	.14078	197.50	.3422	18.45
160.0	139.0	137.6	57.3	5.5308	.13594	192.03	.3328	18.33
160.0	138.0	136.5	55.6	5.3736	.13126	186.75	.3237	18.22
160.0	137.0	135.4	54.0	5.2196	.12673	181.63	.3149	18.11
160.0	136.0	134.3	52.5	5.0687	.12234	176.67	.3064	18.01
160.0	135.0	133.1	50.9	4.9208	.11809	171.86	.2982	17.90
160.0	134.0	132.0	49.4	4.7758	.11397	167.21	.2902	17.81
160.0	133.0	130.9	48.0	4.6338	.10997	162.70	.2825	17.71
160.0	132.0	129.7	46.5	4.4946	.10611	158.33	.2750	17.62
160.0	131.0	128.6	45.1	4.3583	.10235	154.09	.2677	17.53
160.0	130.0	127.4	43.7	4.2247	.09872	149.98	.2606	17.44
160.0	129.0	126.3	42.4	4.0938	.09519	146.00	.2538	17.35
160.0	128.0	125.1	41.0	3.9657	.09176	142.13	.2472	17.27
160.0	127.0	123.9	39.7	3.8401	.08844	138.38	.2407	17.19
160.0	126.0	122.7	38.5	3.7171	.08522	134.74	.2345	17.11

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	122.7	38.5	3.7171	.08522	134.74	.2345	17.11
160.0	125.0	121.5	37.2	3.5967	.08209	131.20	.2284	17.04
160.0	124.0	120.3	36.0	3.4787	.07905	127.77	.2225	16.97
160.0	123.0	119.1	34.8	3.3632	.07610	124.44	.2168	16.90
160.0	122.0	117.9	33.6	3.2500	.07324	121.20	.2113	16.83
160.0	121.0	116.6	32.5	3.1392	.07046	118.06	.2059	16.76
160.0	120.0	115.4	31.4	3.0307	.06775	115.01	.2006	16.70
160.0	119.0	114.1	30.3	2.9245	.06513	112.04	.1956	16.63
160.0	118.0	112.9	29.2	2.8205	.06258	109.16	.1906	16.57
160.0	117.0	111.6	28.1	2.7187	.06010	106.36	.1858	16.51
160.0	116.0	110.3	27.1	2.6190	.05769	103.63	.1811	16.45
160.0	115.0	109.0	26.1	2.5214	.05534	100.99	.1766	16.40
160.0	114.0	107.7	25.1	2.4259	.05307	98.41	.1722	16.34
160.0	113.0	106.3	24.1	2.3323	.05085	95.91	.1679	16.29
160.0	112.0	105.0	23.2	2.2408	.04870	93.48	.1637	16.24
160.0	111.0	103.6	22.3	2.1512	.04660	91.11	.1597	16.19
160.0	110.0	102.2	21.3	2.0635	.04457	88.81	.1557	16.14
160.0	109.0	100.8	20.5	1.9777	.04258	86.57	.1519	16.09
160.0	108.0	99.3	19.6	1.8936	.04065	84.39	.1481	16.04
160.0	107.0	97.8	18.7	1.8114	.03878	82.27	.1445	16.00
160.0	106.0	96.4	17.9	1.7310	.03695	80.21	.1409	15.96
160.0	105.0	94.8	17.1	1.6522	.03517	78.20	.1375	15.91
160.0	104.0	93.3	16.3	1.5751	.03344	76.25	.1342	15.87
160.0	103.0	91.7	15.5	1.4997	.03176	74.35	.1309	15.83
160.0	102.0	90.1	14.7	1.4259	.03012	72.49	.1277	15.79
160.0	101.0	88.4	14.0	1.3537	.02853	70.69	.1246	15.75
160.0	100.0	86.7	13.3	1.2831	.02697	68.94	.1216	15.72
160.0	99.0	85.0	12.6	1.2139	.02546	67.23	.1187	15.68
160.0	98.0	83.2	11.9	1.1463	.02398	65.56	.1158	15.64
160.0	97.0	81.4	11.2	1.0801	.02255	63.94	.1130	15.61
160.0	96.0	79.5	10.5	1.0153	.02115	62.36	.1103	15.58
160.0	95.0	77.5	9.8	.9520	.01979	60.82	.1077	15.54
160.0	94.0	75.5	9.2	.8900	.01846	59.32	.1051	15.51
160.0	93.0	73.4	8.6	.8293	.01717	57.86	.1026	15.48
160.0	92.0	71.2	8.0	.7700	.01591	56.44	.1002	15.45

PB= 31.02 ,ALTITUDE=-1000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	71.2	8.0	.7700	.01591	56.44	.1002	15.45
160.0	91.0	68.9	7.4	.7119	.01468	55.05	.0978	15.42
160.0	90.0	66.5	6.8	.6551	.01348	53.70	.0955	15.39
160.0	89.0	63.9	6.2	.5995	.01231	52.38	.0932	15.36
160.0	88.0	61.2	5.6	.5451	.01118	51.09	.0910	15.34
160.0	87.0	58.4	5.1	.4919	.01007	49.84	.0888	15.31
160.0	86.0	55.3	4.5	.4399	.00899	48.62	.0868	15.28
160.0	85.0	51.9	4.0	.3889	.00793	47.43	.0847	15.26
160.0	84.0	48.2	3.5	.3391	.00691	46.27	.0827	15.23
160.0	83.0	44.1	3.0	.2903	.00590	45.14	.0808	15.21
160.0	82.0	39.5	2.5	.2426	.00492	44.03	.0789	15.19
160.0	81.0	34.1	2.0	.1959	.00397	42.95	.0770	15.16
160.0	80.0	28.0	1.6	.1502	.00304	41.90	.0752	15.14
160.0	79.0	20.6	1.1	.1055	.00213	40.88	.0735	15.12
160.0	78.0	9.6	.6	.0617	.00125	39.88	.0717	15.10
160.0	77.0	-12.8	.2	.0189	.00038	38.90	.0701	15.08

P_{BS}= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00008	-9.53	-.0217	10.57

PB= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00079	.83	.0019	11.59
.0	-.1	-.6	97.0	.0365	.00076	.81	.0019	11.59
.0	-.2	-1.2	93.9	.0354	.00074	.78	.0018	11.59
.0	-.3	-1.8	90.9	.0342	.00072	.76	.0018	11.59
.0	-.4	-2.5	87.9	.0331	.00069	.73	.0017	11.59
.0	-.5	-3.1	84.9	.0319	.00067	.71	.0016	11.59
.0	-.6	-3.8	81.9	.0308	.00064	.68	.0016	11.59
.0	-.7	-4.5	78.8	.0297	.00062	.66	.0015	11.59
.0	-.8	-5.2	75.8	.0285	.00060	.63	.0015	11.59
.0	-.9	-6.0	72.8	.0274	.00057	.61	.0014	11.59
.0	-1.0	-6.8	69.8	.0263	.00055	.58	.0013	11.59
.0	-1.1	-7.6	66.8	.0251	.00053	.56	.0013	11.59
.0	-1.2	-8.4	63.8	.0240	.00050	.53	.0012	11.59
.0	-1.3	-9.3	60.8	.0229	.00048	.51	.0012	11.59
.0	-1.4	-10.2	57.8	.0217	.00045	.48	.0011	11.59
.0	-1.5	-11.2	54.8	.0206	.00043	.46	.0011	11.59
.0	-1.6	-12.2	51.8	.0195	.00041	.43	.0010	11.59
.0	-1.7	-13.3	48.8	.0184	.00038	.41	.0009	11.59
.0	-1.8	-14.4	45.8	.0172	.00036	.38	.0009	11.59
.0	-1.9	-15.6	42.8	.0161	.00034	.36	.0008	11.59
.0	-2.0	-16.9	39.8	.0150	.00031	.33	.0008	11.58
.0	-2.1	-18.3	36.9	.0139	.00029	.31	.0007	11.58
.0	-2.2	-19.8	33.9	.0127	.00027	.28	.0007	11.58
.0	-2.3	-21.4	30.9	.0116	.00024	.26	.0006	11.58
.0	-2.4	-23.1	27.9	.0105	.00022	.23	.0005	11.58
.0	-2.5	-25.1	25.0	.0094	.00020	.21	.0005	11.58

PB= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00521	15.23	.0319	12.70
40.0	39.0	37.8	91.9	.2275	.00479	14.77	.0309	12.69
40.0	38.0	35.5	83.9	.2077	.00437	14.32	.0300	12.68
40.0	37.0	33.1	76.0	.1882	.00395	13.87	.0290	12.67
40.0	36.0	30.6	68.2	.1690	.00355	13.43	.0281	12.66
40.0	35.0	28.0	60.6	.1501	.00315	13.00	.0272	12.65
40.0	34.0	25.2	53.1	.1315	.00276	12.58	.0263	12.65
40.0	33.0	22.0	45.7	.1132	.00237	12.17	.0254	12.64
40.0	32.0	20.5	42.5	.1051	.00220	11.98	.0250	12.63
40.0	31.0	16.7	35.4	.0877	.00184	11.59	.0242	12.63
40.0	30.0	12.3	28.5	.0705	.00148	11.20	.0234	12.62
40.0	29.0	6.9	21.7	.0537	.00112	10.82	.0226	12.61
40.0	28.0	-.3	15.0	.0371	.00078	10.45	.0218	12.61
40.0	27.0	-11.0	8.4	.0209	.00044	10.08	.0210	12.60

PB= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02233	43.69	.0864	14.09
80.0	79.0	78.7	95.7	.9883	.02135	42.61	.0843	14.07
80.0	78.0	77.3	91.6	.9453	.02039	41.56	.0822	14.05
80.0	77.0	76.0	87.5	.9032	.01945	40.53	.0802	14.03
80.0	76.0	74.6	83.5	.8620	.01854	39.53	.0783	14.01
80.0	75.0	73.1	79.6	.8217	.01764	38.55	.0764	13.99
80.0	74.0	71.7	75.8	.7822	.01677	37.60	.0745	13.97
80.0	73.0	70.2	72.0	.7435	.01592	36.67	.0727	13.95
80.0	72.0	68.6	68.4	.7057	.01509	35.76	.0709	13.93
80.0	71.0	67.1	64.8	.6686	.01428	34.87	.0692	13.91
80.0	70.0	65.5	61.2	.6323	.01349	34.00	.0675	13.90
80.0	69.0	63.8	57.8	.5967	.01271	33.15	.0658	13.88
80.0	68.0	62.1	54.4	.5619	.01196	32.32	.0642	13.86
80.0	67.0	60.3	51.1	.5278	.01122	31.51	.0626	13.85
80.0	66.0	58.5	47.9	.4944	.01050	30.72	.0610	13.83
80.0	65.0	56.6	44.7	.4617	.00979	29.95	.0595	13.81
80.0	64.0	54.6	41.6	.4296	.00910	29.19	.0581	13.80
80.0	63.0	52.5	38.6	.3982	.00843	28.45	.0566	13.78
80.0	62.0	50.4	35.6	.3674	.00777	27.73	.0552	13.77
80.0	61.0	48.1	32.7	.3372	.00712	27.02	.0538	13.76
80.0	60.0	45.6	29.8	.3077	.00649	26.33	.0525	13.74
80.0	59.0	43.1	27.0	.2787	.00587	25.66	.0511	13.73
80.0	58.0	40.3	24.2	.2503	.00527	24.99	.0498	13.72
80.0	57.0	37.3	21.5	.2224	.00468	24.35	.0486	13.70
80.0	56.0	34.0	18.9	.1951	.00410	23.71	.0473	13.69
80.0	55.0	30.5	16.3	.1683	.00353	23.09	.0461	13.68
80.0	54.0	26.8	13.8	.1420	.00298	22.49	.0449	13.67
80.0	53.0	22.6	11.3	.1162	.00244	21.89	.0438	13.65
80.0	52.0	17.5	8.8	.0910	.00191	21.31	.0426	13.64
80.0	51.0	11.0	6.4	.0662	.00138	20.74	.0415	13.63
80.0	50.0	2.0	4.1	.0418	.00087	20.18	.0404	13.62
80.0	49.0	-13.7	1.7	.0179	.00037	19.63	.0394	13.61

PB= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.08150	119.54	.2217	16.52
120.0	119.0	118.9	97.0	3.3429	.07871	116.44	.2160	16.45
120.0	118.0	117.8	94.0	3.2404	.07600	113.42	.2105	16.39
120.0	117.0	116.7	91.1	3.1400	.07336	110.49	.2051	16.33
120.0	116.0	115.5	88.2	3.0417	.07080	107.64	.1999	16.27
120.0	115.0	114.4	85.4	2.9455	.06832	104.87	.1948	16.21
120.0	114.0	113.3	82.7	2.8513	.06590	102.18	.1899	16.15
120.0	113.0	112.1	80.0	2.7591	.06355	99.56	.1851	16.10
120.0	112.0	110.9	77.4	2.6688	.06126	97.02	.1805	16.04
120.0	111.0	109.8	74.8	2.5805	.05904	94.55	.1759	15.99
120.0	110.0	108.6	72.3	2.4940	.05688	92.14	.1715	15.94
120.0	109.0	107.4	69.9	2.4094	.05478	89.80	.1673	15.89
120.0	108.0	106.2	67.5	2.3265	.05273	87.53	.1631	15.84
120.0	107.0	105.0	65.1	2.2454	.05074	85.31	.1591	15.80
120.0	106.0	103.8	62.8	2.1661	.04881	83.16	.1551	15.75
120.0	105.0	102.6	60.6	2.0884	.04692	81.06	.1513	15.71
120.0	104.0	101.3	58.3	2.0125	.04509	79.02	.1476	15.67
120.0	103.0	100.1	56.2	1.9381	.04331	77.04	.1439	15.62
120.0	102.0	98.8	54.1	1.8653	.04157	75.11	.1404	15.58
120.0	101.0	97.5	52.0	1.7941	.03988	73.23	.1369	15.54
120.0	100.0	96.2	50.0	1.7244	.03824	71.39	.1336	15.51
120.0	99.0	94.9	48.0	1.6562	.03663	69.61	.1303	15.47
120.0	98.0	93.6	46.1	1.5895	.03507	67.88	.1272	15.43
120.0	97.0	92.2	44.2	1.5243	.03356	66.18	.1241	15.40
120.0	96.0	90.9	42.3	1.4604	.03208	64.54	.1211	15.36
120.0	95.0	89.5	40.5	1.3979	.03063	62.93	.1181	15.33
120.0	94.0	88.0	38.7	1.3367	.02923	61.37	.1153	15.29
120.0	93.0	86.6	37.0	1.2769	.02786	59.85	.1125	15.26
120.0	92.0	85.1	35.3	1.2184	.02653	58.37	.1098	15.23
120.0	91.0	83.6	33.7	1.1611	.02523	56.92	.1071	15.20
120.0	90.0	82.1	32.0	1.1050	.02397	55.51	.1045	15.17
120.0	89.0	80.5	30.4	1.0502	.02273	54.14	.1020	15.14
120.0	88.0	78.9	28.9	.9966	.02153	52.80	.0996	15.12
120.0	87.0	77.3	27.4	.9441	.02036	51.50	.0972	15.09
120.0	86.0	75.6	25.9	.8927	.01922	50.23	.0949	15.06

PB= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	75.6	25.9	.8927	.01922	50.23	.0949	15.06
120.0	85.0	73.9	24.4	.8425	.01810	48.99	.0926	15.03
120.0	84.0	72.1	23.0	.7933	.01702	47.78	.0904	15.01
120.0	83.0	70.2	21.6	.7452	.01596	46.60	.0882	14.98
120.0	82.0	68.3	20.2	.6981	.01493	45.45	.0861	14.96
120.0	81.0	66.4	18.9	.6520	.01392	44.33	.0841	14.94
120.0	80.0	64.3	17.6	.6069	.01294	43.24	.0821	14.91
120.0	79.0	62.1	16.3	.5628	.01198	42.17	.0801	14.89
120.0	78.0	59.9	15.1	.5196	.01104	41.13	.0782	14.87
120.0	77.0	57.5	13.8	.4774	.01013	40.11	.0764	14.85
120.0	76.0	55.0	12.6	.4360	.00924	39.12	.0746	14.83
120.0	75.0	52.4	11.5	.3955	.00837	38.15	.0728	14.81
120.0	74.0	49.5	10.3	.3559	.00752	37.21	.0711	14.79
120.0	73.0	46.4	9.2	.3171	.00669	36.29	.0694	14.77
120.0	72.0	43.1	8.1	.2792	.00588	35.39	.0677	14.75
120.0	71.0	39.4	7.0	.2420	.00509	34.51	.0661	14.73
120.0	70.0	35.3	6.0	.2056	.00432	33.65	.0645	14.71
120.0	69.0	30.7	4.9	.1700	.00357	32.81	.0630	14.70
120.0	68.0	25.8	3.9	.1351	.00283	31.99	.0615	14.68
120.0	67.0	19.6	2.9	.1009	.00211	31.19	.0601	14.66
120.0	66.0	11.4	2.0	.0675	.00141	30.41	.0586	14.64
120.0	65.0	-1.5	1.0	.0347	.00073	29.65	.0572	14.63

PRS= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.29901	376.25	.6511	23.07
160.0	159.0	159.0	97.6	9.4195	.28832	364.17	.6304	22.80
160.0	158.0	157.9	95.2	9.1880	.27806	352.59	.6105	22.55
160.0	157.0	156.9	92.8	8.9607	.26822	341.47	.5914	22.30
160.0	156.0	155.8	90.5	8.7378	.25877	330.80	.5731	22.07
160.0	155.0	154.8	88.2	8.5190	.24969	320.54	.5555	21.84
160.0	154.0	153.8	86.0	8.3044	.24096	310.68	.5386	21.62
160.0	153.0	152.7	83.8	8.0939	.23257	301.20	.5224	21.41
160.0	152.0	151.6	81.7	7.8874	.22449	292.07	.5067	21.21
160.0	151.0	150.6	79.6	7.6848	.21671	283.28	.4916	21.02
160.0	150.0	149.5	77.5	7.4861	.20922	274.82	.4771	20.83
160.0	149.0	148.5	75.5	7.2912	.20200	266.67	.4632	20.65
160.0	148.0	147.4	73.5	7.1001	.19505	258.81	.4497	20.48
160.0	147.0	146.3	71.6	6.9127	.18834	251.23	.4367	20.31
160.0	146.0	145.3	69.7	6.7289	.18186	243.91	.4241	20.15
160.0	145.0	144.2	67.8	6.5487	.17561	236.85	.4120	20.00
160.0	144.0	143.1	66.0	6.3721	.16958	230.04	.4003	19.84
160.0	143.0	142.0	64.2	6.1989	.16375	223.46	.3890	19.70
160.0	142.0	140.9	62.4	6.0291	.15812	217.10	.3781	19.56
160.0	141.0	139.9	60.7	5.8626	.15268	210.95	.3676	19.42
160.0	140.0	138.8	59.0	5.6994	.14742	205.01	.3574	19.29
160.0	139.0	137.7	57.4	5.5395	.14233	199.26	.3476	19.17
160.0	138.0	136.6	55.7	5.3828	.13741	193.70	.3380	19.04
160.0	137.0	135.5	54.1	5.2292	.13265	188.32	.3288	18.93
160.0	136.0	134.3	52.6	5.0787	.12804	183.12	.3199	18.81
160.0	135.0	133.2	51.1	4.9311	.12358	178.08	.3112	18.70
160.0	134.0	132.1	49.6	4.7866	.11926	173.20	.3029	18.59
160.0	133.0	131.0	48.1	4.6450	.11508	168.47	.2947	18.49
160.0	132.0	129.8	46.7	4.5062	.11102	163.89	.2869	18.39
160.0	131.0	128.7	45.2	4.3703	.10709	159.45	.2793	18.29
160.0	130.0	127.5	43.9	4.2371	.10328	155.15	.2719	18.19
160.0	129.0	126.4	42.5	4.1067	.09959	150.98	.2647	18.10
160.0	128.0	125.2	41.2	3.9789	.09601	146.93	.2578	18.01
160.0	127.0	124.0	39.9	3.8538	.09254	143.01	.2511	17.93
160.0	126.0	122.9	38.6	3.7312	.08917	139.20	.2446	17.84

PB= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	122.9	38.6	3.7312	.08917	139.20	.2446	17.84
160.0	125.0	121.7	37.4	3.6111	.08590	135.51	.2382	17.76
160.0	124.0	120.5	36.2	3.4936	.08273	131.93	.2321	17.68
160.0	123.0	119.3	35.0	3.3784	.07965	128.45	.2261	17.61
160.0	122.0	118.1	33.8	3.2657	.07666	125.08	.2203	17.53
160.0	121.0	116.8	32.7	3.1553	.07376	121.80	.2147	17.46
160.0	120.0	115.6	31.5	3.0472	.07095	118.62	.2093	17.39
160.0	119.0	114.3	30.4	2.9414	.06821	115.52	.2040	17.32
160.0	118.0	113.1	29.4	2.8378	.06555	112.52	.1988	17.25
160.0	117.0	111.8	28.3	2.7364	.06297	109.60	.1938	17.19
160.0	116.0	110.5	27.3	2.6371	.06046	106.77	.1889	17.13
160.0	115.0	109.2	26.3	2.5399	.05802	104.02	.1842	17.07
160.0	114.0	107.9	25.3	2.4447	.05565	101.34	.1796	17.01
160.0	113.0	106.6	24.3	2.3516	.05335	98.74	.1752	16.95
160.0	112.0	105.2	23.4	2.2605	.05111	96.21	.1708	16.89
160.0	111.0	103.9	22.5	2.1713	.04893	93.75	.1666	16.84
160.0	110.0	102.5	21.6	2.0840	.04681	91.36	.1625	16.79
160.0	109.0	101.1	20.7	1.9985	.04476	89.03	.1585	16.74
160.0	108.0	99.7	19.8	1.9149	.04275	86.77	.1546	16.69
160.0	107.0	98.2	19.0	1.8331	.04081	84.57	.1509	16.64
160.0	106.0	96.8	18.1	1.7530	.03891	82.43	.1472	16.59
160.0	105.0	95.3	17.3	1.6747	.03707	80.34	.1436	16.55
160.0	104.0	93.8	16.5	1.5980	.03527	78.32	.1401	16.50
160.0	103.0	92.2	15.8	1.5230	.03353	76.34	.1368	16.46
160.0	102.0	90.6	15.0	1.4496	.03183	74.42	.1335	16.41
160.0	101.0	89.0	14.3	1.3778	.03017	72.55	.1303	16.37
160.0	100.0	87.3	13.5	1.3075	.02856	70.74	.1271	16.33
160.0	99.0	85.6	12.8	1.2388	.02699	68.96	.1241	16.29
160.0	98.0	83.9	12.1	1.1715	.02547	67.24	.1212	16.26
160.0	97.0	82.1	11.4	1.1057	.02398	65.56	.1183	16.22
160.0	96.0	80.3	10.8	1.0414	.02253	63.93	.1155	16.18
160.0	95.0	78.4	10.1	.9784	.02113	62.33	.1127	16.15
160.0	94.0	76.4	9.5	.9168	.01975	60.78	.1101	16.11
160.0	93.0	74.4	8.9	.8565	.01841	59.27	.1075	16.08
160.0	92.0	72.2	8.2	.7976	.01711	57.80	.1050	16.05

PB= 29.92 ,ALTITUDE= 0.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	72.2	8.2	.7976	.01711	57.80	.1050	16.05
160.0	91.0	70.0	7.7	.7399	.01584	56.37	.1025	16.02
160.0	90.0	67.7	7.1	.6835	.01461	54.97	.1001	15.99
160.0	89.0	65.3	6.5	.6283	.01340	53.61	.0978	15.96
160.0	88.0	62.7	5.9	.5743	.01223	52.28	.0955	15.93
160.0	87.0	60.0	5.4	.5215	.01108	50.99	.0933	15.90
160.0	86.0	57.1	4.9	.4698	.00997	49.73	.0911	15.87
160.0	85.0	53.9	4.3	.4192	.00888	48.50	.0890	15.84
160.0	84.0	50.5	3.8	.3698	.00782	47.30	.0870	15.82
160.0	83.0	46.8	3.3	.3214	.00678	46.13	.0850	15.79
160.0	82.0	42.6	2.8	.2740	.00577	44.99	.0830	15.77
160.0	81.0	37.9	2.4	.2277	.00479	43.88	.0811	15.74
160.0	80.0	32.3	1.9	.1824	.00383	42.80	.0792	15.72
160.0	79.0	26.2	1.4	.1381	.00290	41.74	.0774	15.69
160.0	78.0	18.3	1.0	.0947	.00198	40.71	.0757	15.67
160.0	77.0	6.4	.5	.0523	.00109	39.71	.0739	15.65
160.0	76.0	-22.7	.1	.0108	.00023	38.72	.0722	15.63

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00008	-9.52	-.0192	10.96

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00082	.87	.0045	12.02
.0	-.1	-.6	97.1	.0365	.00079	.84	.0044	12.02
.0	-.2	-1.2	94.1	.0354	.00077	.82	.0044	12.02
.0	-.3	-1.8	91.2	.0343	.00074	.79	.0043	12.02
.0	-.4	-2.4	88.2	.0332	.00072	.77	.0042	12.02
.0	-.5	-3.0	85.3	.0321	.00070	.74	.0042	12.02
.0	-.6	-3.7	82.4	.0310	.00067	.72	.0041	12.02
.0	-.7	-4.3	79.5	.0299	.00065	.69	.0041	12.02
.0	-.8	-5.1	76.5	.0288	.00062	.67	.0040	12.02
.0	-.9	-5.8	73.6	.0277	.00060	.64	.0040	12.02
.0	-1.0	-6.5	70.7	.0266	.00058	.62	.0039	12.02
.0	-1.1	-7.3	67.8	.0255	.00055	.59	.0038	12.02
.0	-1.2	-8.1	64.9	.0244	.00053	.56	.0038	12.01
.0	-1.3	-9.0	61.9	.0233	.00051	.54	.0037	12.01
.0	-1.4	-9.8	59.0	.0222	.00048	.51	.0037	12.01
.0	-1.5	-10.8	56.1	.0211	.00046	.49	.0036	12.01
.0	-1.6	-11.7	53.2	.0200	.00043	.46	.0035	12.01
.0	-1.7	-12.7	50.3	.0189	.00041	.44	.0035	12.01
.0	-1.8	-13.8	47.4	.0178	.00039	.41	.0034	12.01
.0	-1.9	-14.9	44.5	.0168	.00036	.39	.0034	12.01
.0	-2.0	-16.1	41.6	.0157	.00034	.36	.0033	12.01
.0	-2.1	-17.4	38.7	.0146	.00032	.34	.0033	12.01
.0	-2.2	-18.8	35.8	.0135	.00029	.31	.0032	12.01
.0	-2.3	-20.3	33.0	.0124	.00027	.29	.0031	12.01
.0	-2.4	-21.9	30.1	.0113	.00025	.26	.0031	12.01
.0	-2.5	-23.6	27.2	.0102	.00022	.24	.0030	12.01
.0	-2.6	-25.5	24.3	.0091	.00020	.21	.0030	12.01

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00541	15.44	.0348	13.17
40.0	39.0	37.9	92.0	.2279	.00497	14.97	.0338	13.16
40.0	38.0	35.6	84.2	.2084	.00454	14.51	.0328	13.15
40.0	37.0	33.2	76.4	.1893	.00412	14.06	.0319	13.14
40.0	36.0	30.8	68.8	.1705	.00371	13.61	.0309	13.13
40.0	35.0	28.3	61.4	.1520	.00331	13.18	.0300	13.12
40.0	34.0	25.6	54.0	.1338	.00291	12.75	.0291	13.11
40.0	33.0	22.5	46.8	.1158	.00252	12.33	.0282	13.11
40.0	32.0	21.0	43.5	.1078	.00234	12.14	.0278	13.10
40.0	31.0	17.4	36.6	.0907	.00197	11.74	.0270	13.09
40.0	30.0	13.2	29.8	.0738	.00160	11.34	.0262	13.09
40.0	29.0	8.2	23.2	.0573	.00124	10.95	.0253	13.08
40.0	28.0	1.7	16.6	.0411	.00089	10.57	.0245	13.07
40.0	27.0	-7.5	10.2	.0252	.00055	10.20	.0238	13.06
40.0	26.0	-24.7	3.9	.0096	.00021	9.84	.0230	13.06

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02318	44.62	.0907	14.62
80.0	79.0	78.7	95.6	.9887	.02217	43.51	.0885	14.60
80.0	78.0	77.3	91.7	.9461	.02118	42.43	.0864	14.58
80.0	77.0	76.0	87.6	.9044	.02021	41.37	.0843	14.56
80.0	76.0	74.6	83.7	.8636	.01927	40.34	.0823	14.54
80.0	75.0	73.2	79.8	.8236	.01835	39.33	.0804	14.52
80.0	74.0	71.8	76.0	.7845	.01746	38.35	.0784	14.50
80.0	73.0	70.3	72.3	.7462	.01658	37.39	.0766	14.48
80.0	72.0	68.8	68.7	.7088	.01573	36.46	.0747	14.46
80.0	71.0	67.2	65.1	.6721	.01490	35.54	.0729	14.44
80.0	70.0	65.6	61.6	.6362	.01408	34.65	.0712	14.42
80.0	69.0	64.0	58.2	.6010	.01329	33.78	.0695	14.40
80.0	68.0	62.3	54.9	.5666	.01251	32.93	.0678	14.38
80.0	67.0	60.6	51.6	.5328	.01175	32.10	.0662	14.37
80.0	66.0	58.8	48.4	.4998	.01101	31.29	.0646	14.35
80.0	65.0	56.9	45.3	.4675	.01028	30.49	.0631	14.33
80.0	64.0	55.0	42.2	.4358	.00958	29.72	.0616	14.32
80.0	63.0	53.0	39.2	.4047	.00888	28.96	.0601	14.30
80.0	62.0	50.9	36.3	.3743	.00821	28.22	.0586	14.29
80.0	61.0	48.6	33.4	.3445	.00755	27.49	.0572	14.27
80.0	60.0	46.3	30.5	.3154	.00690	26.79	.0558	14.26
80.0	59.0	43.8	27.8	.2868	.00627	26.09	.0545	14.24
80.0	58.0	41.1	25.1	.2587	.00565	25.41	.0531	14.23
80.0	57.0	38.2	22.4	.2312	.00505	24.75	.0518	14.22
80.0	56.0	35.1	19.8	.2043	.00445	24.10	.0506	14.20
80.0	55.0	31.7	17.2	.1779	.00387	23.47	.0493	14.19
80.0	54.0	28.3	14.7	.1520	.00331	22.85	.0481	14.18
80.0	53.0	24.4	12.3	.1266	.00275	22.24	.0469	14.16
80.0	52.0	19.8	9.8	.1017	.00221	21.64	.0458	14.15
80.0	51.0	14.1	7.5	.0773	.00168	21.06	.0446	14.14
80.0	50.0	6.7	5.2	.0533	.00116	20.49	.0435	14.13
80.0	49.0	-4.4	2.9	.0298	.00065	19.93	.0424	14.12
80.0	48.0	-30.8	.6	.0067	.00015	19.38	.0413	14.10

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.08489	123.32	.2310	17.21
120.0	119.0	118.9	97.0	3.3433	.08198	120.08	.2251	17.13
120.0	118.0	117.8	94.0	3.2412	.07916	116.94	.2194	17.07
120.0	117.0	116.7	91.1	3.1412	.07641	113.88	.2138	17.00
120.0	116.0	115.5	88.3	3.0433	.07375	110.92	.2084	16.94
120.0	115.0	114.4	85.5	2.9475	.07116	108.04	.2031	16.87
120.0	114.0	113.3	82.8	2.8537	.06864	105.23	.1980	16.81
120.0	113.0	112.1	80.1	2.7619	.06619	102.51	.1930	16.75
120.0	112.0	111.0	77.5	2.6720	.06382	99.87	.1881	16.69
120.0	111.0	109.8	74.9	2.5840	.06151	97.30	.1834	16.64
120.0	110.0	108.7	72.4	2.4980	.05926	94.80	.1789	16.58
120.0	109.0	107.5	70.0	2.4137	.05708	92.37	.1744	16.53
120.0	108.0	106.3	67.6	2.3313	.05495	90.00	.1701	16.48
120.0	107.0	105.1	65.3	2.2506	.05289	87.70	.1659	16.43
120.0	106.0	103.9	63.0	2.1716	.05088	85.47	.1618	16.38
120.0	105.0	102.7	60.7	2.0944	.04892	83.29	.1578	16.33
120.0	104.0	101.4	58.5	2.0188	.04702	81.18	.1540	16.29
120.0	103.0	100.2	56.4	1.9448	.04517	79.12	.1502	16.24
120.0	102.0	98.9	54.3	1.8724	.04337	77.12	.1465	16.20
120.0	101.0	97.7	52.2	1.8016	.04162	75.17	.1430	16.16
120.0	100.0	96.4	50.2	1.7323	.03992	73.27	.1395	16.12
120.0	99.0	95.1	48.3	1.6645	.03826	71.42	.1361	16.08
120.0	98.0	93.8	46.3	1.5982	.03664	69.62	.1328	16.04
120.0	97.0	92.4	44.4	1.5333	.03507	67.87	.1296	16.00
120.0	96.0	91.1	42.6	1.4698	.03354	66.17	.1265	15.96
120.0	95.0	89.7	40.8	1.4077	.03205	64.51	.1235	15.93
120.0	94.0	88.3	39.0	1.3469	.03060	62.89	.1205	15.89
120.0	93.0	86.9	37.3	1.2875	.02918	61.32	.1176	15.86
120.0	92.0	85.4	35.6	1.2293	.02780	59.79	.1148	15.82
120.0	91.0	83.9	34.0	1.1724	.02646	58.29	.1121	15.79
120.0	90.0	82.4	32.4	1.1168	.02515	56.84	.1094	15.76
120.0	89.0	80.9	30.8	1.0623	.02388	55.42	.1068	15.73
120.0	88.0	79.3	29.2	1.0090	.02264	54.04	.1043	15.70
120.0	87.0	77.7	27.7	.9569	.02143	52.69	.1018	15.67
120.0	86.0	76.0	26.3	.9060	.02025	51.38	.0994	15.64

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	76.0	26.3	.9060	.02025	51.38	.0994	15.64
120.0	85.0	74.3	24.8	.8561	.01910	50.10	.0971	15.61
120.0	84.0	72.6	23.4	.8073	.01798	48.85	.0948	15.58
120.0	83.0	70.8	22.0	.7596	.01689	47.64	.0926	15.56
120.0	82.0	68.9	20.7	.7129	.01582	46.45	.0904	15.53
120.0	81.0	67.0	19.3	.6672	.01478	45.30	.0883	15.51
120.0	80.0	65.0	18.0	.6225	.01377	44.17	.0863	15.48
120.0	79.0	62.9	16.8	.5787	.01278	43.07	.0842	15.46
120.0	78.0	60.8	15.5	.5359	.01182	42.00	.0823	15.44
120.0	77.0	58.5	14.3	.4940	.01088	40.95	.0804	15.41
120.0	76.0	56.1	13.1	.4531	.00996	39.93	.0785	15.39
120.0	75.0	53.5	12.0	.4130	.00907	38.93	.0767	15.37
120.0	74.0	50.8	10.8	.3737	.00819	37.96	.0749	15.35
120.0	73.0	47.9	9.7	.3353	.00734	37.01	.0732	15.33
120.0	72.0	44.8	8.6	.2977	.00651	36.09	.0715	15.31
120.0	71.0	41.3	7.6	.2609	.00570	35.19	.0698	15.29
120.0	70.0	37.5	6.5	.2249	.00491	34.30	.0682	15.27
120.0	69.0	33.2	5.5	.1897	.00413	33.44	.0666	15.25
120.0	68.0	28.7	4.5	.1551	.00338	32.60	.0651	15.23
120.0	67.0	23.5	3.5	.1214	.00264	31.78	.0636	15.21
120.0	66.0	16.9	2.6	.0883	.00192	30.98	.0621	15.20
120.0	65.0	7.7	1.6	.0559	.00121	30.19	.0607	15.18
120.0	64.0	-8.3	.7	.0242	.00052	29.43	.0593	15.16

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.31548	394.87	.6852	24.34
160.0	159.0	159.0	97.6	9.4200	.30403	381.93	.6630	24.05
160.0	158.0	157.9	95.2	9.1888	.29306	369.53	.6418	23.76
160.0	157.0	156.9	92.8	8.9620	.28254	357.65	.6214	23.49
160.0	156.0	155.9	90.5	8.7394	.27245	346.26	.6019	23.23
160.0	155.0	154.8	88.3	8.5211	.26277	335.32	.5831	22.98
160.0	154.0	153.8	86.0	8.3069	.25347	324.81	.5651	22.74
160.0	153.0	152.7	83.9	8.0967	.24454	314.72	.5478	22.51
160.0	152.0	151.7	81.7	7.8906	.23595	305.02	.5312	22.29
160.0	151.0	150.6	79.6	7.6884	.22769	295.69	.5152	22.07
160.0	150.0	149.6	77.6	7.4901	.21974	286.71	.4998	21.87
160.0	149.0	148.5	75.6	7.2957	.21209	278.06	.4850	21.67
160.0	148.0	147.4	73.6	7.1050	.20471	269.73	.4707	21.48
160.0	147.0	146.4	71.6	6.9179	.19761	261.71	.4570	21.30
160.0	146.0	145.3	69.7	6.7346	.19076	253.97	.4437	21.12
160.0	145.0	144.2	67.9	6.5548	.18416	246.51	.4309	20.95
160.0	144.0	143.2	66.1	6.3785	.17779	239.32	.4186	20.79
160.0	143.0	142.1	64.3	6.2057	.17164	232.37	.4067	20.63
160.0	142.0	141.0	62.5	6.0363	.16570	225.66	.3952	20.47
160.0	141.0	139.9	60.8	5.8703	.15997	219.18	.3841	20.33
160.0	140.0	138.8	59.1	5.7075	.15442	212.92	.3733	20.18
160.0	139.0	137.7	57.4	5.5480	.14907	206.87	.3630	20.04
160.0	138.0	136.6	55.8	5.3916	.14389	201.03	.3529	19.91
160.0	137.0	135.5	54.2	5.2384	.13889	195.37	.3432	19.78
160.0	136.0	134.4	52.7	5.0883	.13405	189.90	.3339	19.66
160.0	135.0	133.3	51.2	4.9412	.12936	184.61	.3248	19.54
160.0	134.0	132.2	49.7	4.7970	.12483	179.49	.3160	19.42
160.0	133.0	131.0	48.2	4.6558	.12044	174.53	.3075	19.31
160.0	132.0	129.9	46.8	4.5174	.11618	169.72	.2993	19.20
160.0	131.0	128.8	45.4	4.3819	.11207	165.07	.2913	19.09
160.0	130.0	127.6	44.0	4.2491	.10808	160.57	.2836	18.99
160.0	129.0	126.5	42.6	4.1191	.10421	156.20	.2761	18.89
160.0	128.0	125.3	41.3	3.9917	.10047	151.97	.2688	18.79
160.0	127.0	124.2	40.0	3.8669	.09683	147.86	.2618	18.70
160.0	126.0	123.0	38.8	3.7447	.09331	143.89	.2550	18.61

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	123.0	38.8	3.7447	.09331	143.89	.2550	18.61
160.0	125.0	121.8	37.5	3.6251	.08990	140.03	.2484	18.52
160.0	124.0	120.6	36.3	3.5079	.08658	136.28	.2420	18.43
160.0	123.0	119.4	35.1	3.3931	.08337	132.65	.2357	18.35
160.0	122.0	118.2	34.0	3.2808	.08025	129.13	.2297	18.27
160.0	121.0	117.0	32.8	3.1708	.07722	125.71	.2238	18.19
160.0	120.0	115.8	31.7	3.0631	.07428	122.39	.2181	18.11
160.0	119.0	114.5	30.6	2.9577	.07143	119.17	.2126	18.04
160.0	118.0	113.3	29.5	2.8545	.06866	116.04	.2072	17.97
160.0	117.0	112.0	28.5	2.7534	.06597	113.00	.2020	17.90
160.0	116.0	110.8	27.5	2.6545	.06336	110.04	.1970	17.83
160.0	115.0	109.5	26.5	2.5577	.06082	107.18	.1921	17.77
160.0	114.0	108.2	25.5	2.4630	.05835	104.39	.1873	17.70
160.0	113.0	106.9	24.5	2.3702	.05595	101.68	.1826	17.64
160.0	112.0	105.5	23.6	2.2795	.05363	99.05	.1781	17.58
160.0	111.0	104.2	22.7	2.1906	.05136	96.49	.1737	17.52
160.0	110.0	102.8	21.8	2.1037	.04916	94.01	.1695	17.47
160.0	109.0	101.4	20.9	2.0187	.04702	91.59	.1653	17.41
160.0	108.0	100.0	20.0	1.9354	.04494	89.24	.1613	17.36
160.0	107.0	98.6	19.2	1.8540	.04292	86.96	.1574	17.30
160.0	106.0	97.2	18.4	1.7743	.04095	84.73	.1536	17.25
160.0	105.0	95.7	17.5	1.6963	.03904	82.57	.1499	17.20
160.0	104.0	94.2	16.8	1.6200	.03717	80.47	.1463	17.16
160.0	103.0	92.7	16.0	1.5454	.03536	78.42	.1428	17.11
160.0	102.0	91.1	15.2	1.4724	.03360	76.43	.1394	17.06
160.0	101.0	89.5	14.5	1.4010	.03189	74.49	.1360	17.02
160.0	100.0	87.9	13.8	1.3311	.03022	72.61	.1328	16.98
160.0	99.0	86.2	13.1	1.2627	.02859	70.77	.1297	16.93
160.0	98.0	84.5	12.4	1.1958	.02701	68.99	.1266	16.89
160.0	97.0	82.8	11.7	1.1304	.02547	67.25	.1236	16.85
160.0	96.0	81.0	11.0	1.0664	.02398	65.56	.1207	16.81
160.0	95.0	79.1	10.4	1.0038	.02252	63.91	.1179	16.78
160.0	94.0	77.2	9.7	.9426	.02110	62.30	.1151	16.74
160.0	93.0	75.3	9.1	.8827	.01971	60.74	.1125	16.70
160.0	92.0	73.2	8.5	.8241	.01837	59.22	.1099	16.67

PB= 28.86 ,ALTITUDE= 1000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	73.2	8.5	.8241	.01837	59.22	.1099	16.67
160.0	91.0	71.1	7.9	.7668	.01705	57.74	.1073	16.64
160.0	90.0	68.9	7.4	.7108	.01577	56.29	.1048	16.60
160.0	89.0	66.5	6.8	.6560	.01453	54.89	.1024	16.57
160.0	88.0	64.1	6.2	.6023	.01332	53.52	.1001	16.54
160.0	87.0	61.5	5.7	.5499	.01213	52.18	.0978	16.51
160.0	86.0	58.7	5.2	.4986	.01098	50.88	.0956	16.48
160.0	85.0	55.8	4.6	.4484	.00986	49.61	.0934	16.45
160.0	84.0	52.6	4.1	.3993	.00876	48.37	.0913	16.42
160.0	83.0	49.2	3.6	.3513	.00770	47.17	.0892	16.39
160.0	82.0	45.4	3.1	.3044	.00666	45.99	.0872	16.37
160.0	81.0	41.1	2.7	.2584	.00564	44.85	.0852	16.34
160.0	80.0	36.2	2.2	.2135	.00465	43.73	.0833	16.32
160.0	79.0	30.6	1.8	.1695	.00369	42.64	.0814	16.29
160.0	78.0	24.4	1.3	.1265	.00275	41.58	.0796	16.27
160.0	77.0	16.0	.9	.0844	.00183	40.54	.0778	16.24
160.0	76.0	2.7	.4	.0433	.00094	39.53	.0761	16.22

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00009	-9.51	-.0167	11.35

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00085	.90	.0070	12.45
.0	-.1	-.6	97.1	.0366	.00082	.88	.0069	12.45
.0	-.2	-1.1	94.3	.0355	.00080	.85	.0069	12.45
.0	-.3	-1.7	91.4	.0344	.00077	.83	.0068	12.45
.0	-.4	-2.3	88.6	.0333	.00075	.80	.0067	12.45
.0	-.5	-2.9	85.7	.0323	.00072	.78	.0067	12.45
.0	-.6	-3.6	82.9	.0312	.00070	.75	.0066	12.45
.0	-.7	-4.2	80.0	.0301	.00068	.73	.0066	12.45
.0	-.8	-4.9	77.2	.0291	.00065	.70	.0065	12.45
.0	-.9	-5.6	74.4	.0280	.00063	.67	.0064	12.45
.0	-1.0	-6.3	71.5	.0269	.00060	.65	.0064	12.45
.0	-1.1	-7.1	68.7	.0259	.00058	.62	.0063	12.45
.0	-1.2	-7.8	65.9	.0248	.00056	.60	.0063	12.45
.0	-1.3	-8.6	63.0	.0237	.00053	.57	.0062	12.45
.0	-1.4	-9.5	60.2	.0227	.00051	.55	.0062	12.45
.0	-1.5	-10.4	57.4	.0216	.00048	.52	.0061	12.45
.0	-1.6	-11.3	54.6	.0205	.00046	.50	.0060	12.44
.0	-1.7	-12.2	51.7	.0195	.00044	.47	.0060	12.44
.0	-1.8	-13.3	48.9	.0184	.00041	.45	.0059	12.44
.0	-1.9	-14.3	46.1	.0174	.00039	.42	.0059	12.44
.0	-2.0	-15.4	43.3	.0163	.00037	.40	.0058	12.44
.0	-2.1	-16.6	40.5	.0152	.00034	.37	.0057	12.44
.0	-2.2	-17.9	37.7	.0142	.00032	.35	.0057	12.44
.0	-2.3	-19.3	34.9	.0131	.00029	.32	.0056	12.44
.0	-2.4	-20.7	32.1	.0121	.00027	.30	.0056	12.44
.0	-2.5	-22.3	29.3	.0110	.00025	.27	.0055	12.44
.0	-2.6	-24.0	26.5	.0100	.00022	.25	.0055	12.44
.0	-2.7	-25.9	23.7	.0089	.00020	.22	.0054	12.44

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00560	15.66	.0377	13.64
40.0	39.0	37.9	92.2	.2283	.00516	15.18	.0367	13.63
40.0	38.0	35.7	84.5	.2092	.00472	14.71	.0357	13.62
40.0	37.0	33.3	76.9	.1904	.00430	14.25	.0347	13.62
40.0	36.0	31.0	69.4	.1719	.00388	13.80	.0337	13.61
40.0	35.0	28.5	62.1	.1538	.00347	13.35	.0328	13.60
40.0	34.0	25.9	54.9	.1359	.00306	12.92	.0319	13.59
40.0	33.0	23.0	47.8	.1183	.00266	12.49	.0310	13.58
40.0	32.0	21.5	44.6	.1103	.00248	12.29	.0306	13.58
40.0	31.0	18.1	37.8	.0935	.00210	11.88	.0297	13.57
40.0	30.0	14.1	31.1	.0770	.00173	11.48	.0289	13.56
40.0	29.0	9.3	24.6	.0608	.00137	11.09	.0281	13.55
40.0	28.0	3.4	18.1	.0449	.00101	10.70	.0272	13.54
40.0	27.0	-4.7	11.8	.0293	.00066	10.33	.0264	13.54
40.0	26.0	-18.1	5.7	.0140	.00031	9.96	.0257	13.53

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02404	45.57	.0950	15.17
80.0	79.0	78.7	95.8	.9891	.02300	44.43	.0927	15.15
80.0	78.0	77.4	91.7	.9468	.02198	43.31	.0905	15.12
80.0	77.0	76.0	87.7	.9055	.02099	42.22	.0884	15.10
80.0	76.0	74.7	83.8	.8651	.02002	41.16	.0863	15.08
80.0	75.0	73.3	80.0	.8255	.01907	40.13	.0843	15.05
80.0	74.0	71.8	76.2	.7867	.01815	39.12	.0823	15.03
80.0	73.0	70.4	72.5	.7488	.01725	38.13	.0804	15.01
80.0	72.0	68.9	68.9	.7117	.01638	37.17	.0785	14.99
80.0	71.0	67.4	65.4	.6754	.01552	36.23	.0767	14.97
80.0	70.0	65.8	62.0	.6398	.01468	35.31	.0749	14.95
80.0	69.0	64.2	58.6	.6050	.01387	34.42	.0732	14.93
80.0	68.0	62.6	55.3	.5709	.01307	33.55	.0715	14.91
80.0	67.0	60.8	52.1	.5376	.01229	32.69	.0698	14.89
80.0	66.0	59.1	48.9	.5049	.01153	31.86	.0682	14.88
80.0	65.0	57.3	45.8	.4729	.01079	31.04	.0666	14.86
80.0	64.0	55.4	42.8	.4416	.01006	30.25	.0650	14.84
80.0	63.0	53.4	39.8	.4109	.00935	29.47	.0635	14.83
80.0	62.0	51.3	36.9	.3809	.00866	28.71	.0620	14.81
80.0	61.0	49.2	34.0	.3514	.00798	27.97	.0606	14.79
80.0	60.0	46.9	31.2	.3226	.00732	27.24	.0591	14.78
80.0	59.0	44.5	28.5	.2944	.00667	26.53	.0577	14.76
80.0	58.0	41.9	25.8	.2667	.00604	25.84	.0564	14.75
80.0	57.0	39.1	23.2	.2396	.00542	25.16	.0551	14.73
80.0	56.0	36.2	20.6	.2130	.00481	24.50	.0538	14.72
80.0	55.0	32.9	18.1	.1869	.00422	23.85	.0525	14.71
80.0	54.0	29.6	15.6	.1614	.00364	23.21	.0513	14.69
80.0	53.0	26.0	13.2	.1363	.00307	22.59	.0500	14.68
80.0	52.0	21.8	10.8	.1118	.00252	21.98	.0488	14.67
80.0	51.0	16.7	8.5	.0877	.00197	21.39	.0477	14.65
80.0	50.0	10.4	6.2	.0641	.00144	20.81	.0465	14.64
80.0	49.0	1.6	4.0	.0409	.00092	20.23	.0454	14.63
80.0	48.0	-13.5	1.8	.0182	.00041	19.68	.0443	14.62

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.08836	127.19	.2405	17.91
120.0	119.0	118.9	97.0	3.3437	.08533	123.81	.2343	17.83
120.0	118.0	117.8	94.0	3.2419	.08238	120.54	.2283	17.76
120.0	117.0	116.7	91.1	3.1423	.07953	117.36	.2225	17.69
120.0	116.0	115.6	88.3	3.0448	.07675	114.27	.2169	17.62
120.0	115.0	114.4	85.5	2.9493	.07406	111.27	.2114	17.55
120.0	114.0	113.3	82.8	2.8559	.07144	108.35	.2061	17.49
120.0	113.0	112.2	80.2	2.7645	.06890	105.52	.2009	17.42
120.0	112.0	111.0	77.6	2.6750	.06643	102.78	.1959	17.36
120.0	111.0	109.9	75.0	2.5874	.06403	100.10	.1910	17.30
120.0	110.0	108.7	72.5	2.5017	.06169	97.51	.1862	17.24
120.0	109.0	107.5	70.1	2.4178	.05942	94.98	.1816	17.18
120.0	108.0	106.4	67.7	2.3357	.05722	92.53	.1771	17.13
120.0	107.0	105.2	65.4	2.2554	.05508	90.14	.1728	17.07
120.0	106.0	104.0	63.1	2.1768	.05299	87.82	.1685	17.02
120.0	105.0	102.8	60.9	2.0999	.05096	85.57	.1644	16.97
120.0	104.0	101.5	58.7	2.0247	.04899	83.37	.1604	16.92
120.0	103.0	100.3	56.6	1.9511	.04708	81.24	.1565	16.87
120.0	102.0	99.1	54.5	1.8791	.04521	79.16	.1527	16.83
120.0	101.0	97.8	52.4	1.8086	.04340	77.14	.1490	16.78
120.0	100.0	96.5	50.4	1.7397	.04163	75.18	.1454	16.74
120.0	99.0	95.2	48.5	1.6723	.03991	73.27	.1419	16.69
120.0	98.0	93.9	46.6	1.6063	.03824	71.41	.1385	16.65
120.0	97.0	92.6	44.7	1.5418	.03661	69.59	.1352	16.61
120.0	96.0	91.3	42.9	1.4787	.03503	67.83	.1319	16.57
120.0	95.0	89.9	41.1	1.4169	.03349	66.11	.1288	16.53
120.0	94.0	88.5	39.3	1.3565	.03198	64.44	.1258	16.50
120.0	93.0	87.1	37.6	1.2974	.03052	62.82	.1228	16.46
120.0	92.0	85.7	35.9	1.2396	.02910	61.23	.1199	16.42
120.0	91.0	84.2	34.3	1.1831	.02771	59.69	.1171	16.39
120.0	90.0	82.7	32.7	1.1278	.02636	58.18	.1143	16.35
120.0	89.0	81.2	31.1	1.0737	.02505	56.72	.1116	16.32
120.0	88.0	79.7	29.6	1.0208	.02376	55.29	.1090	16.29
120.0	87.0	78.1	28.1	.9691	.02251	53.90	.1065	16.26
120.0	86.0	76.5	26.6	.9185	.02130	52.55	.1040	16.23

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	76.5	26.6	.9185	.02130	52.55	.1040	16.23
120.0	85.0	74.8	25.2	.8689	.02011	51.23	.1016	16.20
120.0	84.0	73.1	23.8	.8205	.01896	49.94	.0992	16.17
120.0	83.0	71.3	22.4	.7731	.01783	48.69	.0969	16.14
120.0	82.0	69.5	21.1	.7268	.01673	47.47	.0947	16.11
120.0	81.0	67.6	19.7	.6815	.01566	46.28	.0925	16.09
120.0	80.0	65.7	18.5	.6371	.01462	45.12	.0904	16.06
120.0	79.0	63.7	17.2	.5937	.01360	43.98	.0883	16.03
120.0	78.0	61.6	16.0	.5513	.01261	42.88	.0863	16.01
120.0	77.0	59.4	14.8	.5098	.01164	41.80	.0843	15.98
120.0	76.0	57.0	13.6	.4691	.01070	40.75	.0824	15.96
120.0	75.0	54.6	12.4	.4294	.00978	39.73	.0805	15.94
120.0	74.0	52.0	11.3	.3905	.00888	38.73	.0787	15.92
120.0	73.0	49.3	10.2	.3525	.00800	37.75	.0769	15.89
120.0	72.0	46.3	9.1	.3152	.00715	36.80	.0752	15.87
120.0	71.0	43.1	8.1	.2788	.00631	35.87	.0735	15.85
120.0	70.0	39.5	7.0	.2431	.00550	34.96	.0718	15.83
120.0	69.0	35.6	6.0	.2082	.00470	34.08	.0702	15.81
120.0	68.0	31.2	5.0	.1741	.00393	33.22	.0686	15.79
120.0	67.0	26.6	4.1	.1406	.00317	32.37	.0671	15.77
120.0	66.0	21.0	3.1	.1079	.00243	31.55	.0656	15.75
120.0	65.0	13.8	2.2	.0759	.00171	30.74	.0641	15.74
120.0	64.0	3.2	1.3	.0445	.00100	29.96	.0627	15.72
120.0	63.0	-18.3	.4	.0138	.00031	29.19	.0613	15.70

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.33279	414.42	.7209	25.68
160.0	159.0	159.0	97.6	9.4203	.32051	400.55	.6971	25.35
160.0	158.0	157.9	95.2	9.1896	.30877	387.28	.6744	25.04
160.0	157.0	156.9	92.8	8.9631	.29752	374.58	.6526	24.73
160.0	156.0	155.9	90.5	8.7410	.28675	362.41	.6317	24.45
160.0	155.0	154.8	88.3	8.5230	.27642	350.75	.6118	24.17
160.0	154.0	153.8	86.1	8.3092	.26652	339.56	.5926	23.91
160.0	153.0	152.7	83.9	8.0994	.25701	328.82	.5742	23.65
160.0	152.0	151.7	81.8	7.8937	.24788	318.50	.5565	23.41
160.0	151.0	150.6	79.7	7.6919	.23910	308.59	.5395	23.17
160.0	150.0	149.6	77.6	7.4940	.23067	299.06	.5232	22.95
160.0	149.0	148.5	75.6	7.2999	.22255	289.89	.5075	22.73
160.0	148.0	147.5	73.6	7.1095	.21474	281.07	.4924	22.52
160.0	147.0	146.4	71.7	6.9229	.20723	272.58	.4778	22.32
160.0	146.0	145.3	69.8	6.7399	.19998	264.40	.4638	22.13
160.0	145.0	144.3	67.9	6.5605	.19301	256.51	.4503	21.94
160.0	144.0	143.2	66.1	6.3846	.18628	248.91	.4373	21.76
160.0	143.0	142.1	64.3	6.2122	.17979	241.58	.4247	21.59
160.0	142.0	141.0	62.6	6.0432	.17353	234.51	.4126	21.42
160.0	141.0	140.0	60.9	5.8775	.16749	227.68	.4009	21.26
160.0	140.0	138.9	59.2	5.7151	.16165	221.09	.3896	21.10
160.0	139.0	137.8	57.5	5.5559	.15602	214.73	.3787	20.95
160.0	138.0	136.7	55.9	5.4000	.15057	208.58	.3682	20.80
160.0	137.0	135.6	54.3	5.2471	.14531	202.63	.3580	20.66
160.0	136.0	134.5	52.8	5.0974	.14023	196.89	.3481	20.53
160.0	135.0	133.4	51.3	4.9506	.13531	191.33	.3386	20.40
160.0	134.0	132.3	49.8	4.8068	.13055	185.96	.3294	20.27
160.0	133.0	131.1	48.3	4.6660	.12595	180.75	.3205	20.15
160.0	132.0	130.0	46.9	4.5280	.12149	175.72	.3119	20.03
160.0	131.0	128.9	45.5	4.3928	.11718	170.85	.3035	19.91
160.0	130.0	127.7	44.1	4.2604	.11300	166.13	.2954	19.80
160.0	129.0	126.6	42.8	4.1307	.10895	161.56	.2876	19.69
160.0	128.0	125.4	41.5	4.0037	.10503	157.13	.2800	19.59
160.0	127.0	124.3	40.2	3.8793	.10124	152.84	.2727	19.49
160.0	126.0	123.1	38.9	3.7575	.09756	148.68	.2655	19.39

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	123.1	38.9	3.7575	.09756	148.68	.2655	19.39
160.0	125.0	121.9	37.7	3.6382	.09399	144.65	.2586	19.29
160.0	124.0	120.8	36.5	3.5214	.09053	140.74	.2519	19.20
160.0	123.0	119.6	35.3	3.4070	.08717	136.95	.2454	19.11
160.0	122.0	118.4	34.1	3.2951	.08392	133.28	.2391	19.02
160.0	121.0	117.2	33.0	3.1854	.08076	129.71	.2330	18.94
160.0	120.0	116.0	31.9	3.0781	.07770	126.25	.2271	18.86
160.0	119.0	114.7	30.8	2.9730	.07472	122.89	.2213	18.78
160.0	118.0	113.5	29.7	2.8702	.07184	119.63	.2158	18.70
160.0	117.0	112.2	28.7	2.7695	.06904	116.46	.2103	18.62
160.0	116.0	111.0	27.6	2.6710	.06632	113.39	.2051	18.55
160.0	115.0	109.7	26.6	2.5745	.06367	110.41	.2000	18.48
160.0	114.0	108.4	25.7	2.4801	.06111	107.51	.1950	18.41
160.0	113.0	107.1	24.7	2.3878	.05862	104.69	.1902	18.35
160.0	112.0	105.8	23.8	2.2974	.05619	101.96	.1855	18.28
160.0	111.0	104.5	22.9	2.2089	.05384	99.30	.1809	18.22
160.0	110.0	103.1	22.0	2.1223	.05155	96.72	.1765	18.16
160.0	109.0	101.8	21.1	2.0376	.04933	94.20	.1722	18.10
160.0	108.0	100.4	20.2	1.9548	.04717	91.76	.1680	18.04
160.0	107.0	99.0	19.4	1.8737	.04507	89.39	.1640	17.98
160.0	106.0	97.5	18.6	1.7944	.04303	87.09	.1600	17.93
160.0	105.0	96.1	17.8	1.7167	.04104	84.84	.1562	17.88
160.0	104.0	94.6	17.0	1.6408	.03911	82.66	.1524	17.82
160.0	103.0	93.1	16.2	1.5666	.03724	80.54	.1488	17.77
160.0	102.0	91.6	15.5	1.4939	.03541	78.48	.1453	17.72
160.0	101.0	90.0	14.7	1.4228	.03363	76.47	.1418	17.68
160.0	100.0	88.4	14.0	1.3533	.03190	74.52	.1385	17.63
160.0	99.0	86.8	13.3	1.2853	.03022	72.62	.1352	17.59
160.0	98.0	85.1	12.6	1.2188	.02859	70.77	.1320	17.54
160.0	97.0	83.4	11.9	1.1537	.02699	68.97	.1290	17.50
160.0	96.0	81.7	11.3	1.0901	.02544	67.22	.1260	17.46
160.0	95.0	79.9	10.6	1.0278	.02393	65.51	.1230	17.42
160.0	94.0	78.0	10.0	.9670	.02246	63.85	.1202	17.38
160.0	93.0	76.1	9.4	.9074	.02103	62.24	.1174	17.34
160.0	92.0	74.1	8.8	.8492	.01964	60.66	.1147	17.30

PB= 27.86 ,ALTITUDE= 2000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	74.1	8.8	.8492	.01964	60.66	.1147	17.30
160.0	91.0	72.0	8.2	.7923	.01828	59.13	.1121	17.27
160.0	90.0	69.9	7.6	.7366	.01696	57.64	.1095	17.23
160.0	89.0	67.7	7.1	.6821	.01568	56.19	.1071	17.20
160.0	88.0	65.3	6.5	.6288	.01442	54.77	.1046	17.16
160.0	87.0	62.8	6.0	.5767	.01320	53.39	.1023	17.13
160.0	86.0	60.2	5.4	.5258	.01201	52.05	.1000	17.10
160.0	85.0	57.4	4.9	.4760	.01086	50.74	.0977	17.07
160.0	84.0	54.5	4.4	.4272	.00973	49.46	.0955	17.04
160.0	83.0	51.2	3.9	.3796	.00863	48.22	.0934	17.01
160.0	82.0	47.7	3.4	.3330	.00755	47.01	.0913	16.98
160.0	81.0	43.9	3.0	.2874	.00651	45.83	.0893	16.95
160.0	80.0	39.5	2.5	.2428	.00549	44.68	.0873	16.92
160.0	79.0	34.5	2.1	.1992	.00450	43.55	.0854	16.90
160.0	78.0	28.9	1.6	.1565	.00353	42.46	.0835	16.87
160.0	77.0	22.3	1.2	.1148	.00258	41.39	.0817	16.85
160.0	76.0	13.3	.8	.0740	.00166	40.35	.0799	16.82
160.0	75.0	-1.9	.4	.0341	.00076	39.34	.0782	16.80

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00009	-9.50	-.0142	11.77

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00088	.94	.0095	12.91
.0	-.1	-.5	97.2	.0366	.00085	.92	.0095	12.91
.0	-.2	-1.1	94.5	.0356	.00083	.89	.0094	12.91
.0	-.3	-1.7	91.7	.0345	.00080	.86	.0094	12.91
.0	-.4	-2.2	88.9	.0335	.00078	.84	.0093	12.91
.0	-.5	-2.8	86.2	.0324	.00075	.81	.0092	12.91
.0	-.6	-3.4	83.4	.0314	.00073	.79	.0092	12.91
.0	-.7	-4.1	80.6	.0303	.00071	.76	.0091	12.91
.0	-.8	-4.7	77.9	.0293	.00068	.74	.0091	12.91
.0	-.9	-5.4	75.1	.0283	.00066	.71	.0090	12.91
.0	-1.0	-6.1	72.4	.0272	.00063	.68	.0089	12.91
.0	-1.1	-6.8	69.6	.0262	.00061	.66	.0089	12.91
.0	-1.2	-7.6	66.9	.0252	.00059	.63	.0088	12.91
.0	-1.3	-8.3	64.1	.0241	.00056	.61	.0088	12.91
.0	-1.4	-9.1	61.4	.0231	.00054	.58	.0087	12.91
.0	-1.5	-10.0	58.6	.0221	.00051	.56	.0087	12.90
.0	-1.6	-10.8	55.9	.0210	.00049	.53	.0086	12.90
.0	-1.7	-11.8	53.2	.0200	.00047	.51	.0085	12.90
.0	-1.8	-12.7	50.4	.0190	.00044	.48	.0085	12.90
.0	-1.9	-13.7	47.7	.0179	.00042	.46	.0084	12.90
.0	-2.0	-14.8	45.0	.0169	.00039	.43	.0084	12.90
.0	-2.1	-15.9	42.2	.0159	.00037	.41	.0083	12.90
.0	-2.2	-17.1	39.5	.0149	.00035	.38	.0082	12.90
.0	-2.3	-18.3	36.8	.0138	.00032	.36	.0082	12.90
.0	-2.4	-19.7	34.1	.0128	.00030	.33	.0081	12.90
.0	-2.5	-21.1	31.4	.0118	.00027	.30	.0081	12.90
.0	-2.6	-22.7	28.6	.0108	.00025	.28	.0080	12.90
.0	-2.7	-24.4	25.9	.0098	.00023	.25	.0080	12.90
.0	-2.8	-26.3	23.2	.0087	.00020	.23	.0079	12.90
.0	-2.9	-28.4	20.5	.0077	.00018	.20	.0078	12.90

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00581	15.88	.0406	14.15
40.0	39.0	38.0	92.3	.2286	.00536	15.40	.0396	14.14
40.0	38.0	35.8	84.7	.2099	.00492	14.92	.0386	14.13
40.0	37.0	33.5	77.3	.1915	.00448	14.45	.0376	14.12
40.0	36.0	31.1	70.0	.1733	.00405	13.99	.0366	14.11
40.0	35.0	28.8	62.8	.1555	.00364	13.54	.0357	14.10
40.0	34.0	26.2	55.7	.1380	.00322	13.10	.0348	14.09
40.0	33.0	23.4	48.8	.1208	.00282	12.66	.0338	14.08
40.0	32.0	22.0	45.6	.1128	.00263	12.46	.0334	14.08
40.0	31.0	18.7	38.9	.0963	.00225	12.04	.0325	14.07
40.0	30.0	14.9	32.4	.0801	.00187	11.63	.0317	14.06
40.0	29.0	10.4	25.9	.0642	.00150	11.23	.0308	14.05
40.0	28.0	5.0	19.7	.0487	.00113	10.84	.0300	14.05
40.0	27.0	-2.3	13.5	.0334	.00078	10.46	.0292	14.04
40.0	26.0	-13.3	7.4	.0184	.00043	10.08	.0284	14.03

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02496	46.58	.0994	15.75
80.0	79.0	78.7	95.9	.9895	.02388	45.40	.0971	15.73
80.0	78.0	77.4	91.8	.9476	.02283	44.25	.0949	15.70
80.0	77.0	76.1	87.8	.9066	.02181	43.13	.0927	15.68
80.0	76.0	74.7	83.9	.8665	.02081	42.04	.0905	15.65
80.0	75.0	73.3	80.1	.8273	.01984	40.97	.0885	15.63
80.0	74.0	71.9	76.4	.7889	.01889	39.93	.0864	15.60
80.0	73.0	70.5	72.8	.7513	.01797	38.92	.0844	15.58
80.0	72.0	69.0	69.2	.7146	.01706	37.93	.0825	15.56
80.0	71.0	67.5	65.7	.6786	.01618	36.96	.0806	15.54
80.0	70.0	66.0	62.3	.6434	.01532	36.02	.0788	15.52
80.0	69.0	64.4	59.0	.6090	.01448	35.10	.0770	15.50
80.0	68.0	62.8	55.7	.5753	.01366	34.20	.0752	15.48
80.0	67.0	61.1	52.5	.5423	.01286	33.32	.0735	15.46
80.0	66.0	59.4	49.4	.5099	.01208	32.47	.0718	15.44
80.0	65.0	57.6	46.3	.4783	.01132	31.63	.0702	15.42
80.0	64.0	55.7	43.3	.4474	.01057	30.82	.0686	15.40
80.0	63.0	53.8	40.4	.4170	.00985	30.02	.0670	15.38
80.0	62.0	51.8	37.5	.3873	.00913	29.24	.0655	15.37
80.0	61.0	49.7	34.7	.3583	.00844	28.48	.0640	15.35
80.0	60.0	47.5	31.9	.3298	.00776	27.73	.0626	15.33
80.0	59.0	45.1	29.2	.3019	.00710	27.01	.0611	15.32
80.0	58.0	42.7	26.6	.2746	.00645	26.29	.0598	15.30
80.0	57.0	40.0	24.0	.2478	.00581	25.60	.0584	15.29
80.0	56.0	37.2	21.5	.2216	.00519	24.92	.0571	15.27
80.0	55.0	34.1	19.0	.1959	.00459	24.26	.0558	15.26
80.0	54.0	30.8	16.5	.1707	.00399	23.61	.0545	15.24
80.0	53.0	27.4	14.1	.1460	.00341	22.97	.0532	15.23
80.0	52.0	23.6	11.8	.1218	.00284	22.35	.0520	15.21
80.0	51.0	19.0	9.5	.0981	.00229	21.74	.0508	15.20
80.0	50.0	13.5	7.2	.0748	.00174	21.14	.0497	15.19
80.0	49.0	6.3	5.0	.0520	.00121	20.56	.0485	15.18
80.0	48.0	-4.5	2.9	.0296	.00069	19.99	.0474	15.16
80.0	47.0	-28.5	.7	.0077	.00018	19.43	.0463	15.15

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.09209	131.34	.2506	18.67
120.0	119.0	118.9	97.0	3.3441	.08892	127.82	.2441	18.58
120.0	118.0	117.8	94.0	3.2427	.08585	124.40	.2379	18.50
120.0	117.0	116.7	91.2	3.1434	.08287	121.08	.2318	18.43
120.0	116.0	115.6	88.3	3.0463	.07998	117.86	.2259	18.35
120.0	115.0	114.5	85.6	2.9512	.07717	114.74	.2202	18.28
120.0	114.0	113.3	82.9	2.8581	.07444	111.70	.2146	18.21
120.0	113.0	112.2	80.2	2.7671	.07179	108.75	.2093	18.14
120.0	112.0	111.1	77.7	2.6779	.06922	105.89	.2040	18.07
120.0	111.0	109.9	75.1	2.5907	.06672	103.11	.1989	18.01
120.0	110.0	108.8	72.6	2.5054	.06430	100.41	.1940	17.94
120.0	109.0	107.6	70.2	2.4219	.06194	97.78	.1892	17.88
120.0	108.0	106.4	67.9	2.3401	.05965	95.23	.1845	17.82
120.0	107.0	105.2	65.5	2.2602	.05742	92.75	.1800	17.76
120.0	106.0	104.1	63.3	2.1820	.05525	90.34	.1756	17.71
120.0	105.0	102.8	61.0	2.1054	.05315	88.00	.1713	17.65
120.0	104.0	101.6	58.9	2.0306	.05110	85.72	.1671	17.60
120.0	103.0	100.4	56.7	1.9573	.04911	83.51	.1631	17.55
120.0	102.0	99.2	54.7	1.8857	.04718	81.35	.1591	17.50
120.0	101.0	97.9	52.6	1.8156	.04529	79.26	.1553	17.45
120.0	100.0	96.7	50.6	1.7470	.04346	77.22	.1516	17.40
120.0	99.0	95.4	48.7	1.6800	.04168	75.24	.1480	17.36
120.0	98.0	94.1	46.8	1.6144	.03995	73.31	.1444	17.31
120.0	97.0	92.8	44.9	1.5502	.03826	71.43	.1410	17.27
120.0	96.0	91.4	43.1	1.4874	.03662	69.60	.1377	17.22
120.0	95.0	90.1	41.3	1.4261	.03502	67.83	.1344	17.18
120.0	94.0	88.7	39.6	1.3660	.03347	66.10	.1312	17.14
120.0	93.0	87.3	37.9	1.3073	.03195	64.41	.1282	17.10
120.0	92.0	85.9	36.2	1.2499	.03048	62.77	.1252	17.06
120.0	91.0	84.5	34.6	1.1937	.02905	61.18	.1222	17.03
120.0	90.0	83.0	33.0	1.1388	.02765	59.62	.1194	16.99
120.0	89.0	81.5	31.4	1.0850	.02629	58.11	.1166	16.95
120.0	88.0	80.0	29.9	1.0325	.02496	56.63	.1139	16.92
120.0	87.0	78.5	28.4	.9811	.02367	55.20	.1113	16.89
120.0	86.0	76.9	27.0	.9308	.02242	53.80	.1088	16.85

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	76.9	27.0	.9308	.02242	53.80	.1088	16.85
120.0	85.0	75.2	25.6	.8817	.02119	52.43	.1063	16.82
120.0	84.0	73.6	24.2	.8336	.02000	51.11	.1038	16.79
120.0	83.0	71.8	22.8	.7866	.01884	49.81	.1015	16.76
120.0	82.0	70.1	21.5	.7406	.01770	48.55	.0992	16.73
120.0	81.0	68.2	20.2	.6956	.01660	47.32	.0969	16.70
120.0	80.0	66.3	18.9	.6516	.01552	46.12	.0947	16.67
120.0	79.0	64.4	17.6	.6086	.01447	44.96	.0926	16.65
120.0	78.0	62.3	16.4	.5665	.01345	43.82	.0905	16.62
120.0	77.0	60.2	15.2	.5253	.01245	42.71	.0885	16.59
120.0	76.0	58.0	14.1	.4851	.01148	41.63	.0865	16.57
120.0	75.0	55.6	12.9	.4457	.01053	40.57	.0846	16.54
120.0	74.0	53.1	11.8	.4071	.00961	39.54	.0827	16.52
120.0	73.0	50.5	10.7	.3694	.00871	38.54	.0809	16.50
120.0	72.0	47.7	9.6	.3326	.00783	37.56	.0791	16.47
120.0	71.0	44.7	8.6	.2965	.00697	36.60	.0773	16.45
120.0	70.0	41.4	7.6	.2612	.00613	35.67	.0756	16.43
120.0	69.0	37.7	6.6	.2266	.00531	34.76	.0739	16.41
120.0	68.0	33.7	5.6	.1928	.00451	33.87	.0723	16.39
120.0	67.0	29.4	4.6	.1597	.00373	33.00	.0707	16.37
120.0	66.0	24.5	3.7	.1273	.00297	32.16	.0692	16.35
120.0	65.0	18.5	2.8	.0957	.00223	31.33	.0677	16.33
120.0	64.0	10.6	1.9	.0647	.00151	30.52	.0662	16.31
120.0	63.0	-1.8	1.0	.0343	.00080	29.74	.0648	16.29

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.35190	436.01	.7600	27.15
160.0	159.0	159.0	97.6	9.4207	.33869	421.09	.7345	26.79
160.0	158.0	157.9	95.2	9.1903	.32607	406.84	.7100	26.44
160.0	157.0	156.9	92.8	8.9643	.31400	393.21	.6867	26.10
160.0	156.0	155.9	90.5	8.7425	.30246	380.17	.6644	25.78
160.0	155.0	154.8	88.3	8.5249	.29141	367.68	.6430	25.48
160.0	154.0	153.8	86.1	8.3114	.28082	355.72	.6225	25.18
160.0	153.0	152.7	83.9	8.1021	.27067	344.25	.6029	24.90
160.0	152.0	151.7	81.8	7.8967	.26093	333.25	.5840	24.63
160.0	151.0	150.6	79.7	7.6953	.25158	322.69	.5659	24.37
160.0	150.0	149.6	77.7	7.4977	.24260	312.55	.5486	24.12
160.0	149.0	148.5	75.7	7.3040	.23398	302.80	.5319	23.88
160.0	148.0	147.5	73.7	7.1141	.22568	293.43	.5158	23.65
160.0	147.0	146.4	71.8	6.9278	.21770	284.41	.5004	23.43
160.0	146.0	145.4	69.9	6.7452	.21002	275.74	.4855	23.22
160.0	145.0	144.3	68.0	6.5662	.20263	267.39	.4712	23.01
160.0	144.0	143.2	66.2	6.3906	.19551	259.34	.4574	22.82
160.0	143.0	142.2	64.4	6.2186	.18864	251.59	.4442	22.63
160.0	142.0	141.1	62.7	6.0499	.18202	244.11	.4314	22.44
160.0	141.0	140.0	60.9	5.8846	.17564	236.90	.4190	22.27
160.0	140.0	138.9	59.3	5.7226	.16948	229.94	.4071	22.10
160.0	139.0	137.8	57.6	5.5638	.16354	223.23	.3956	21.93
160.0	138.0	136.7	56.0	5.4082	.15780	216.75	.3845	21.77
160.0	137.0	135.6	54.4	5.2557	.15226	210.49	.3738	21.62
160.0	136.0	134.5	52.9	5.1064	.14691	204.44	.3634	21.47
160.0	135.0	133.4	51.4	4.9600	.14173	198.59	.3534	21.33
160.0	134.0	132.3	49.9	4.8166	.13673	192.94	.3437	21.19
160.0	133.0	131.2	48.4	4.6761	.13189	187.48	.3344	21.05
160.0	132.0	130.1	47.0	4.5385	.12722	182.19	.3253	20.92
160.0	131.0	129.0	45.6	4.4037	.12269	177.08	.3166	20.80
160.0	130.0	127.8	44.2	4.2716	.11831	172.13	.3081	20.68
160.0	129.0	126.7	42.9	4.1423	.11406	167.34	.2999	20.56
160.0	128.0	125.5	41.6	4.0157	.10996	162.70	.2919	20.44
160.0	127.0	124.4	40.3	3.8916	.10598	158.20	.2842	20.33
160.0	126.0	123.2	39.0	3.7702	.10212	153.85	.2768	20.23

FB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	123.2	39.0	3.7702	.10212	153.85	.2768	20.23
160.0	125.0	122.1	37.8	3.6512	.09839	149.63	.2696	20.12
160.0	124.0	120.9	36.6	3.5348	.09477	145.54	.2625	20.02
160.0	123.0	119.7	35.4	3.4208	.09126	141.58	.2558	19.93
160.0	122.0	118.5	34.3	3.3092	.08786	137.73	.2492	19.83
160.0	121.0	117.3	33.1	3.1999	.08456	134.01	.2428	19.74
160.0	120.0	116.1	32.0	3.0929	.08136	130.39	.2366	19.65
160.0	119.0	114.9	30.9	2.9882	.07826	126.89	.2306	19.57
160.0	118.0	113.7	29.9	2.8857	.07525	123.49	.2248	19.48
160.0	117.0	112.4	28.8	2.7854	.07233	120.18	.2191	19.40
160.0	116.0	111.2	27.8	2.6872	.06949	116.98	.2136	19.32
160.0	115.0	109.9	26.8	2.5912	.06674	113.87	.2083	19.25
160.0	114.0	108.7	25.8	2.4971	.06406	110.85	.2031	19.17
160.0	113.0	107.4	24.9	2.4051	.06147	107.92	.1981	19.10
160.0	112.0	106.1	24.0	2.3151	.05895	105.07	.1932	19.03
160.0	111.0	104.7	23.0	2.2270	.05650	102.30	.1885	18.96
160.0	110.0	103.4	22.2	2.1408	.05412	99.61	.1839	18.90
160.0	109.0	102.1	21.3	2.0564	.05181	97.00	.1794	18.83
160.0	108.0	100.7	20.4	1.9739	.04956	94.47	.1751	18.77
160.0	107.0	99.3	19.6	1.8932	.04738	92.00	.1709	18.71
160.0	106.0	97.9	18.8	1.8142	.04526	89.60	.1668	18.65
160.0	105.0	96.5	18.0	1.7370	.04319	87.27	.1628	18.59
160.0	104.0	95.0	17.2	1.6614	.04119	85.01	.1589	18.54
160.0	103.0	93.5	16.4	1.5875	.03924	82.81	.1551	18.48
160.0	102.0	92.0	15.7	1.5152	.03734	80.66	.1514	18.43
160.0	101.0	90.5	14.9	1.4445	.03550	78.58	.1479	18.38
160.0	100.0	88.9	14.2	1.3753	.03371	76.56	.1444	18.33
160.0	99.0	87.3	13.5	1.3076	.03196	74.59	.1410	18.28
160.0	98.0	85.7	12.8	1.2415	.03027	72.67	.1378	18.23
160.0	97.0	84.0	12.2	1.1768	.02862	70.80	.1346	18.19
160.0	96.0	82.3	11.5	1.1135	.02701	68.99	.1314	18.14
160.0	95.0	80.6	10.9	1.0516	.02545	67.22	.1284	18.10
160.0	94.0	78.8	10.3	.9911	.02392	65.50	.1255	18.06
160.0	93.0	76.9	9.6	.9319	.02244	63.83	.1226	18.02
160.0	92.0	75.0	9.0	.8740	.02100	62.20	.1198	17.98

PB= 26.87 ,ALTITUDE= 3000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	75.0	9.0	.8740	.02100	62.20	.1198	17.98
160.0	91.0	73.0	8.5	.8174	.01960	60.62	.1171	17.94
160.0	90.0	70.9	7.9	.7621	.01823	59.07	.1145	17.90
160.0	89.0	68.7	7.3	.7080	.01690	57.57	.1119	17.86
160.0	88.0	66.5	6.8	.6551	.01561	56.11	.1094	17.83
160.0	87.0	64.1	6.2	.6033	.01435	54.68	.1069	17.79
160.0	86.0	61.6	5.7	.5527	.01312	53.29	.1046	17.76
160.0	85.0	59.0	5.2	.5032	.01192	51.94	.1023	17.73
160.0	84.0	56.2	4.7	.4549	.01075	50.63	.1000	17.69
160.0	83.0	53.2	4.2	.4075	.00962	49.34	.0978	17.66
160.0	82.0	49.9	3.7	.3613	.00851	48.09	.0957	17.63
160.0	81.0	46.4	3.3	.3160	.00743	46.87	.0936	17.60
160.0	80.0	42.4	2.8	.2718	.00638	45.69	.0915	17.57
160.0	79.0	37.9	2.4	.2285	.00536	44.53	.0896	17.54
160.0	78.0	32.8	1.9	.1862	.00436	43.40	.0876	17.52
160.0	77.0	27.3	1.5	.1448	.00338	42.30	.0857	17.49
160.0	76.0	20.3	1.1	.1044	.00243	41.23	.0839	17.46
160.0	75.0	10.6	.7	.0648	.00151	40.18	.0821	17.44
160.0	74.0	-6.9	.3	.0261	.00061	39.16	.0804	17.41

THERMODYNAMIC PROPERTIES OF MOIST AIR

BY

T. KUSUDA

NATIONAL BUREAU OF STANDARDS

WASHINGTON, D.C.

MARCH 1968

NOMENCLATURES

ALT.....ALTITUDE,FT

DB.....DRY-BULB TEMPERATURE, F

WB.....THERMODYNAMIC WET-BULB TEMPERATURE,F

DP.....DEWPOINT TEMPERATURE, F

RH.....RELATIVE HUMIDITY, PERCENT

PV.....VAPOR PRESSURE, IN. HG

W.....HUMIDITY RATIO

H.....ENTHALPY, BTU PER LB OF DRY AIR

S.....ENTROPY,BTU PER F PER LB OF DRY AIR

V.....VOLUME, CU FT PER LB OF DRY AIR

PB.....BAROMETRIC PRESSURE,IN.HG

THERMODYNAMIC PROPERTIES TABULATED IN THIS PUBLICATION ARE CALCULATED BY THE GOFF AND GRATCH FORMULAS ORIGINALLY PUBLISHED IN STANDARDIZATION OF THERMODYNAMIC PROPERTIES OF MOIST AIR (ASHVE JOURNAL SECTION 1949)

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00009	-9.49	-.0116	12.22

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00091	.98	.0122	13.41
.0	-.1	-.5	97.3	.0366	.00089	.96	.0121	13.41
.0	-.2	-1.1	94.6	.0356	.00086	.93	.0121	13.41
.0	-.3	-1.6	91.9	.0346	.00084	.90	.0120	13.41
.0	-.4	-2.2	89.2	.0336	.00081	.88	.0120	13.41
.0	-.5	-2.7	86.6	.0326	.00079	.85	.0119	13.40
.0	-.6	-3.3	83.9	.0316	.00076	.83	.0118	13.40
.0	-.7	-3.9	81.2	.0306	.00074	.80	.0118	13.40
.0	-.8	-4.6	78.5	.0296	.00071	.77	.0117	13.40
.0	-.9	-5.2	75.9	.0286	.00069	.75	.0117	13.40
.0	-1.0	-5.9	73.2	.0275	.00067	.72	.0116	13.40
.0	-1.1	-6.6	70.5	.0265	.00064	.70	.0115	13.40
.0	-1.2	-7.3	67.9	.0255	.00062	.67	.0115	13.40
.0	-1.3	-8.0	65.2	.0245	.00059	.65	.0114	13.40
.0	-1.4	-8.8	62.5	.0235	.00057	.62	.0114	13.40
.0	-1.5	-9.6	59.9	.0225	.00054	.59	.0113	13.40
.0	-1.6	-10.4	57.2	.0215	.00052	.57	.0113	13.40
.0	-1.7	-11.3	54.6	.0205	.00050	.54	.0112	13.40
.0	-1.8	-12.2	51.9	.0195	.00047	.52	.0111	13.40
.0	-1.9	-13.1	49.3	.0185	.00045	.49	.0111	13.40
.0	-2.0	-14.1	46.6	.0175	.00042	.47	.0110	13.40
.0	-2.1	-15.2	44.0	.0166	.00040	.44	.0110	13.40
.0	-2.2	-16.3	41.3	.0156	.00038	.42	.0109	13.40
.0	-2.3	-17.4	38.7	.0146	.00035	.39	.0108	13.40
.0	-2.4	-18.7	36.1	.0136	.00033	.37	.0108	13.39
.0	-2.5	-20.0	33.4	.0126	.00030	.34	.0107	13.39
.0	-2.6	-21.4	30.8	.0116	.00028	.31	.0107	13.39
.0	-2.7	-23.0	28.2	.0106	.00026	.29	.0106	13.39
.0	-2.8	-24.7	25.5	.0096	.00023	.26	.0105	13.39
.0	-2.9	-26.5	22.9	.0086	.00021	.24	.0105	13.39
.0	-3.0	-28.6	20.3	.0076	.00018	.21	.0104	13.39

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00603	16.13	.0437	14.70
40.0	39.0	38.0	92.4	.2290	.00557	15.63	.0427	14.69
40.0	38.0	35.9	85.0	.2106	.00512	15.15	.0416	14.68
40.0	37.0	33.6	77.7	.1925	.00468	14.67	.0406	14.67
40.0	36.0	31.3	70.6	.1748	.00425	14.20	.0396	14.66
40.0	35.0	29.0	63.5	.1573	.00382	13.74	.0387	14.65
40.0	34.0	26.6	56.6	.1402	.00340	13.29	.0377	14.64
40.0	33.0	23.8	49.8	.1233	.00299	12.85	.0368	14.63
40.0	32.0	22.4	46.6	.1153	.00280	12.64	.0364	14.62
40.0	31.0	19.3	40.0	.0991	.00240	12.21	.0355	14.61
40.0	30.0	15.7	33.6	.0832	.00201	11.80	.0346	14.60
40.0	29.0	11.5	27.3	.0677	.00164	11.39	.0337	14.60
40.0	28.0	6.4	21.2	.0524	.00127	10.99	.0329	14.59
40.0	27.0	-.1	15.1	.0374	.00090	10.60	.0321	14.58
40.0	26.0	-9.4	9.2	.0227	.00055	10.22	.0313	14.57
40.0	25.0	-27.1	3.4	.0083	.00020	9.84	.0305	14.56

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02595	47.67	.1041	16.38
80.0	79.0	78.7	95.9	.9898	.02484	46.45	.1017	16.35
80.0	78.0	77.4	91.9	.9483	.02376	45.27	.0994	16.32
80.0	77.0	76.1	87.9	.9077	.02270	44.11	.0972	16.30
80.0	76.0	74.8	84.1	.8680	.02167	42.98	.0950	16.27
80.0	75.0	73.4	80.3	.8291	.02067	41.88	.0928	16.25
80.0	74.0	72.0	76.6	.7911	.01969	40.81	.0907	16.22
80.0	73.0	70.6	73.0	.7539	.01874	39.77	.0887	16.20
80.0	72.0	69.1	69.5	.7175	.01781	38.75	.0867	16.17
80.0	71.0	67.6	66.0	.6819	.01690	37.75	.0847	16.15
80.0	70.0	66.1	62.7	.6470	.01601	36.78	.0828	16.13
80.0	69.0	64.6	59.4	.6129	.01515	35.83	.0810	16.11
80.0	68.0	63.0	56.1	.5796	.01431	34.91	.0792	16.09
80.0	67.0	61.3	53.0	.5469	.01348	34.01	.0774	16.06
80.0	66.0	59.6	49.9	.5150	.01268	33.13	.0757	16.04
80.0	65.0	57.9	46.8	.4837	.01189	32.27	.0740	16.02
80.0	64.0	56.1	43.9	.4531	.01113	31.43	.0724	16.01
80.0	63.0	54.2	41.0	.4232	.01038	30.61	.0708	15.99
80.0	62.0	52.2	38.1	.3938	.00965	29.81	.0692	15.97
80.0	61.0	50.2	35.4	.3651	.00893	29.02	.0677	15.95
80.0	60.0	48.1	32.6	.3370	.00824	28.26	.0662	15.93
80.0	59.0	45.8	30.0	.3094	.00756	27.51	.0647	15.92
80.0	58.0	43.4	27.4	.2825	.00689	26.78	.0633	15.90
80.0	57.0	40.9	24.8	.2561	.00624	26.07	.0619	15.88
80.0	56.0	38.1	22.3	.2302	.00560	25.37	.0605	15.87
80.0	55.0	35.2	19.8	.2048	.00498	24.69	.0592	15.85
80.0	54.0	32.0	17.4	.1800	.00437	24.03	.0579	15.84
80.0	53.0	28.8	15.1	.1557	.00378	23.37	.0566	15.82
80.0	52.0	25.2	12.8	.1318	.00320	22.74	.0554	15.81
80.0	51.0	21.1	10.5	.1084	.00263	22.11	.0541	15.79
80.0	50.0	16.2	8.3	.0855	.00207	21.50	.0530	15.78
80.0	49.0	10.1	6.1	.0631	.00153	20.91	.0518	15.76
80.0	48.0	1.7	4.0	.0410	.00099	20.32	.0506	15.75
80.0	47.0	-12.3	1.9	.0194	.00047	19.75	.0495	15.74

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.09614	135.85	.2614	19.49
120.0	119.0	118.9	97.0	3.3444	.09283	132.17	.2546	19.40
120.0	118.0	117.8	94.1	3.2434	.08962	128.60	.2481	19.31
120.0	117.0	116.7	91.2	3.1445	.08651	125.13	.2417	19.23
120.0	116.0	115.6	88.4	3.0478	.08348	121.77	.2356	19.15
120.0	115.0	114.5	85.6	2.9530	.08055	118.50	.2296	19.07
120.0	114.0	113.4	83.0	2.8604	.07770	115.33	.2238	18.99
120.0	113.0	112.2	80.3	2.7696	.07494	112.26	.2182	18.92
120.0	112.0	111.1	77.7	2.6809	.07226	109.27	.2128	18.85
120.0	111.0	110.0	75.2	2.5940	.06965	106.37	.2075	18.78
120.0	110.0	108.8	72.8	2.5091	.06712	103.56	.2023	18.71
120.0	109.0	107.7	70.3	2.4259	.06466	100.82	.1973	18.64
120.0	108.0	106.5	68.0	2.3446	.06228	98.17	.1924	18.58
120.0	107.0	105.3	65.7	2.2650	.05996	95.58	.1877	18.51
120.0	106.0	104.1	63.4	2.1871	.05770	93.07	.1831	18.45
120.0	105.0	102.9	61.2	2.1110	.05551	90.64	.1787	18.39
120.0	104.0	101.7	59.0	2.0365	.05338	88.27	.1743	18.34
120.0	103.0	100.5	56.9	1.9636	.05131	85.96	.1701	18.28
120.0	102.0	99.3	54.9	1.8923	.04930	83.72	.1660	18.23
120.0	101.0	98.0	52.8	1.8226	.04735	81.55	.1621	18.17
120.0	100.0	96.8	50.9	1.7544	.04544	79.43	.1582	18.12
120.0	99.0	95.5	48.9	1.6877	.04359	77.37	.1544	18.07
120.0	98.0	94.2	47.0	1.6224	.04179	75.37	.1508	18.02
120.0	97.0	92.9	45.2	1.5586	.04004	73.42	.1472	17.98
120.0	96.0	91.6	43.4	1.4962	.03834	71.52	.1437	17.93
120.0	95.0	90.3	41.6	1.4352	.03668	69.68	.1404	17.88
120.0	94.0	88.9	39.9	1.3755	.03507	67.89	.1371	17.84
120.0	93.0	87.6	38.2	1.3172	.03350	66.14	.1339	17.80
120.0	92.0	86.2	36.5	1.2601	.03198	64.44	.1308	17.76
120.0	91.0	84.8	34.9	1.2043	.03049	62.78	.1278	17.72
120.0	90.0	83.3	33.3	1.1497	.02904	61.17	.1248	17.68
120.0	89.0	81.8	31.8	1.0963	.02763	59.61	.1219	17.64
120.0	88.0	80.4	30.3	1.0441	.02626	58.08	.1192	17.60
120.0	87.0	78.8	28.8	.9931	.02493	56.59	.1164	17.57
120.0	86.0	77.3	27.3	.9432	.02363	55.15	.1138	17.53

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	77.3	27.3	.9432	.02363	55.15	.1138	17.53
120.0	85.0	75.7	25.9	.8944	.02236	53.74	.1112	17.50
120.0	84.0	74.0	24.5	.8467	.02112	52.36	.1087	17.46
120.0	83.0	72.3	23.2	.8000	.01992	51.02	.1063	17.43
120.0	82.0	70.6	21.9	.7544	.01875	49.72	.1039	17.40
120.0	81.0	68.8	20.6	.7098	.01761	48.45	.1015	17.37
120.0	80.0	67.0	19.3	.6661	.01650	47.21	.0993	17.34
120.0	79.0	65.1	18.1	.6235	.01542	46.01	.0971	17.31
120.0	78.0	63.1	16.9	.5817	.01436	44.83	.0949	17.28
120.0	77.0	61.0	15.7	.5409	.01333	43.69	.0928	17.25
120.0	76.0	58.9	14.5	.5010	.01233	42.57	.0908	17.23
120.0	75.0	56.6	13.4	.4620	.01135	41.48	.0888	17.20
120.0	74.0	54.2	12.3	.4238	.01039	40.42	.0869	17.17
120.0	73.0	51.7	11.2	.3864	.00946	39.38	.0850	17.15
120.0	72.0	49.1	10.1	.3499	.00856	38.38	.0831	17.12
120.0	71.0	46.2	9.1	.3142	.00767	37.39	.0813	17.10
120.0	70.0	43.1	8.1	.2792	.00681	36.43	.0796	17.08
120.0	69.0	39.7	7.1	.2450	.00597	35.49	.0779	17.05
120.0	68.0	36.0	6.1	.2116	.00515	34.58	.0762	17.03
120.0	67.0	31.8	5.2	.1788	.00434	33.69	.0745	17.01
120.0	66.0	27.5	4.3	.1468	.00356	32.82	.0730	16.99
120.0	65.0	22.4	3.3	.1154	.00280	31.96	.0714	16.97
120.0	64.0	16.0	2.5	.0848	.00205	31.14	.0699	16.95
120.0	63.0	7.3	1.6	.0548	.00132	30.33	.0684	16.93
120.0	62.0	-7.4	.7	.0254	.00061	29.53	.0670	16.91

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.37334	460.24	.8037	28.81
160.0	159.0	159.0	97.6	9.4211	.35905	444.10	.7761	28.40
160.0	158.0	157.9	95.2	9.1911	.34542	428.71	.7497	28.01
160.0	157.0	156.9	92.9	8.9654	.33242	414.02	.7246	27.63
160.0	156.0	155.9	90.6	8.7440	.31999	399.98	.7005	27.28
160.0	155.0	154.8	88.3	8.5268	.30811	386.55	.6776	26.93
160.0	154.0	153.8	86.1	8.3137	.29674	373.71	.6556	26.61
160.0	153.0	152.8	83.9	8.1047	.28585	361.41	.6345	26.29
160.0	152.0	151.7	81.8	7.8997	.27542	349.63	.6144	25.99
160.0	151.0	150.7	79.7	7.6987	.26542	338.33	.5950	25.70
160.0	150.0	149.6	77.7	7.5015	.25583	327.49	.5765	25.43
160.0	149.0	148.6	75.7	7.3082	.24662	317.09	.5587	25.16
160.0	148.0	147.5	73.7	7.1186	.23777	307.10	.5416	24.91
160.0	147.0	146.5	71.8	6.9327	.22927	297.49	.5251	24.66
160.0	146.0	145.4	69.9	6.7505	.22110	288.26	.5093	24.43
160.0	145.0	144.3	68.1	6.5718	.21324	279.38	.4941	24.20
160.0	144.0	143.3	66.3	6.3967	.20568	270.83	.4795	23.98
160.0	143.0	142.2	64.5	6.2250	.19839	262.61	.4654	23.77
160.0	142.0	141.1	62.7	6.0567	.19137	254.68	.4518	23.57
160.0	141.0	140.1	61.0	5.8918	.18461	247.04	.4388	23.38
160.0	140.0	139.0	59.3	5.7301	.17809	239.67	.4262	23.19
160.0	139.0	137.9	57.7	5.5717	.17181	232.57	.4140	23.01
160.0	138.0	136.8	56.1	5.4165	.16574	225.72	.4023	22.83
160.0	137.0	135.7	54.5	5.2644	.15989	219.11	.3909	22.67
160.0	136.0	134.6	53.0	5.1153	.15423	212.72	.3800	22.50
160.0	135.0	133.5	51.5	4.9693	.14878	206.55	.3695	22.35
160.0	134.0	132.4	50.0	4.8263	.14350	200.60	.3593	22.19
160.0	133.0	131.3	48.5	4.6862	.13840	194.84	.3494	22.05
160.0	132.0	130.2	47.1	4.5489	.13348	189.27	.3399	21.90
160.0	131.0	129.1	45.7	4.4145	.12871	183.89	.3307	21.77
160.0	130.0	127.9	44.3	4.2828	.12410	178.68	.3218	21.63
160.0	129.0	126.8	43.0	4.1539	.11965	173.64	.3131	21.51
160.0	128.0	125.7	41.7	4.0276	.11533	168.77	.3048	21.38
160.0	127.0	124.5	40.4	3.9039	.11115	164.05	.2967	21.26
160.0	126.0	123.4	39.2	3.7828	.10711	159.48	.2889	21.15

PR= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	123.4	39.2	3.7828	.10711	159.48	.2889	21.15
160.0	125.0	122.2	37.9	3.6643	.10319	155.06	.2813	21.03
160.0	124.0	121.0	36.7	3.5482	.09940	150.77	.2740	20.92
160.0	123.0	119.9	35.6	3.4345	.09572	146.61	.2669	20.82
160.0	122.0	118.7	34.4	3.3233	.09216	142.59	.2600	20.71
160.0	121.0	117.5	33.3	3.2144	.08870	138.69	.2533	20.62
160.0	120.0	116.3	32.2	3.1078	.08535	134.91	.2468	20.52
160.0	119.0	115.1	31.1	3.0034	.08211	131.24	.2405	20.43
160.0	118.0	113.9	30.0	2.9013	.07896	127.68	.2345	20.33
160.0	117.0	112.6	29.0	2.8013	.07590	124.23	.2285	20.25
160.0	116.0	111.4	28.0	2.7035	.07294	120.88	.2228	20.16
160.0	115.0	110.1	27.0	2.6078	.07006	117.63	.2173	20.08
160.0	114.0	108.9	26.0	2.5141	.06727	114.48	.2119	20.00
160.0	113.0	107.6	25.1	2.4225	.06456	111.42	.2066	19.92
160.0	112.0	106.3	24.1	2.3328	.06193	108.45	.2015	19.84
160.0	111.0	105.0	23.2	2.2451	.05938	105.56	.1966	19.77
160.0	110.0	103.7	22.3	2.1592	.05690	102.76	.1918	19.70
160.0	109.0	102.4	21.5	2.0752	.05449	100.04	.1871	19.63
160.0	108.0	101.0	20.6	1.9931	.05215	97.39	.1826	19.56
160.0	107.0	99.6	19.8	1.9127	.04988	94.83	.1782	19.50
160.0	106.0	98.3	19.0	1.8341	.04767	92.33	.1740	19.43
160.0	105.0	96.8	18.2	1.7572	.04552	89.91	.1698	19.37
160.0	104.0	95.4	17.4	1.6820	.04344	87.55	.1658	19.31
160.0	103.0	94.0	16.6	1.6084	.04141	85.26	.1618	19.25
160.0	102.0	92.5	15.9	1.5365	.03944	83.03	.1580	19.20
160.0	101.0	91.0	15.2	1.4661	.03752	80.87	.1543	19.14
160.0	100.0	89.4	14.5	1.3973	.03566	78.76	.1507	19.09
160.0	99.0	87.9	13.8	1.3300	.03385	76.72	.1472	19.04
160.0	98.0	86.3	13.1	1.2642	.03208	74.73	.1438	18.98
160.0	97.0	84.6	12.4	1.1998	.03037	72.79	.1405	18.94
160.0	96.0	83.0	11.8	1.1369	.02870	70.91	.1373	18.89
160.0	95.0	81.3	11.1	1.0754	.02708	69.07	.1341	18.84
160.0	94.0	79.5	10.5	1.0152	.02550	67.29	.1311	18.80
160.0	93.0	77.7	9.9	.9564	.02397	65.56	.1281	18.75
160.0	92.0	75.8	9.3	.8989	.02247	63.87	.1252	18.71

PB= 25.88 ,ALTITUDE= 4000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	75.8	9.3	.8989	.02247	63.87	.1252	18.71
160.0	91.0	73.9	8.7	.8426	.02102	62.23	.1224	18.67
160.0	90.0	71.9	8.1	.7876	.01960	60.63	.1197	18.63
160.0	89.0	69.8	7.6	.7339	.01823	59.07	.1170	18.59
160.0	88.0	67.6	7.0	.6813	.01688	57.55	.1144	18.55
160.0	87.0	65.4	6.5	.6299	.01558	56.08	.1119	18.51
160.0	86.0	63.0	6.0	.5796	.01431	54.64	.1094	18.47
160.0	85.0	60.5	5.5	.5305	.01307	53.24	.1070	18.44
160.0	84.0	57.8	5.0	.4825	.01186	51.88	.1047	18.40
160.0	83.0	55.0	4.5	.4355	.01069	50.55	.1024	18.37
160.0	82.0	52.0	4.0	.3896	.00954	49.26	.1002	18.34
160.0	81.0	48.7	3.6	.3447	.00843	48.00	.0981	18.30
160.0	80.0	45.0	3.1	.3008	.00734	46.77	.0960	18.27
160.0	79.0	41.0	2.7	.2579	.00628	45.58	.0939	18.24
160.0	78.0	36.5	2.2	.2159	.00525	44.41	.0919	18.21
160.0	77.0	31.3	1.8	.1749	.00425	43.28	.0900	18.18
160.0	76.0	25.7	1.4	.1347	.00327	42.17	.0881	18.16
160.0	75.0	18.5	1.0	.0955	.00231	41.09	.0862	18.13
160.0	74.0	8.1	.6	.0572	.00138	40.04	.0844	18.10
160.0	73.0	-12.1	.2	.0196	.00047	39.02	.0827	18.07

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00010	-9.48	-.0089	12.71

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00095	1.02	.0150	13.94
.0	-.1	-.5	97.4	.0367	.00092	1.00	.0149	13.94
.0	-.2	-1.0	94.8	.0357	.00090	.97	.0148	13.94
.0	-.3	-1.5	92.2	.0347	.00087	.95	.0148	13.94
.0	-.4	-2.1	89.6	.0337	.00085	.92	.0147	13.94
.0	-.5	-2.6	87.0	.0327	.00082	.89	.0147	13.94
.0	-.6	-3.2	84.4	.0318	.00080	.87	.0146	13.94
.0	-.7	-3.8	81.8	.0308	.00077	.84	.0145	13.94
.0	-.8	-4.4	79.2	.0298	.00075	.82	.0145	13.94
.0	-.9	-5.0	76.6	.0288	.00072	.79	.0144	13.94
.0	-1.0	-5.7	74.0	.0279	.00070	.76	.0144	13.94
.0	-1.1	-6.3	71.4	.0269	.00068	.74	.0143	13.94
.0	-1.2	-7.0	68.9	.0259	.00065	.71	.0143	13.94
.0	-1.3	-7.7	66.3	.0249	.00063	.69	.0142	13.93
.0	-1.4	-8.5	63.7	.0240	.00060	.66	.0141	13.93
.0	-1.5	-9.2	61.1	.0230	.00058	.63	.0141	13.93
.0	-1.6	-10.0	58.6	.0220	.00055	.61	.0140	13.93
.0	-1.7	-10.8	56.0	.0211	.00053	.58	.0140	13.93
.0	-1.8	-11.7	53.4	.0201	.00050	.56	.0139	13.93
.0	-1.9	-12.6	50.9	.0191	.00048	.53	.0138	13.93
.0	-2.0	-13.5	48.3	.0182	.00046	.51	.0138	13.93
.0	-2.1	-14.5	45.7	.0172	.00043	.48	.0137	13.93
.0	-2.2	-15.5	43.2	.0162	.00041	.45	.0137	13.93
.0	-2.3	-16.6	40.6	.0153	.00038	.43	.0136	13.93
.0	-2.4	-17.7	38.1	.0143	.00036	.40	.0135	13.93
.0	-2.5	-18.9	35.5	.0134	.00034	.38	.0135	13.93
.0	-2.6	-20.3	33.0	.0124	.00031	.35	.0134	13.93
.0	-2.7	-21.7	30.4	.0114	.00029	.33	.0134	13.93
.0	-2.8	-23.2	27.9	.0105	.00026	.30	.0133	13.93
.0	-2.9	-24.8	25.3	.0095	.00024	.28	.0132	13.93
.0	-3.0	-26.6	22.8	.0086	.00022	.25	.0132	13.93
.0	-3.1	-28.6	20.2	.0076	.00019	.23	.0131	13.93

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00627	16.39	.0469	15.29
40.0	39.0	38.0	92.6	.2293	.00581	15.89	.0459	15.28
40.0	38.0	36.0	85.3	.2113	.00535	15.39	.0448	15.27
40.0	37.0	33.8	78.2	.1936	.00489	14.90	.0438	15.25
40.0	36.0	31.5	71.1	.1762	.00445	14.43	.0428	15.24
40.0	35.0	29.3	64.2	.1591	.00402	13.96	.0418	15.23
40.0	34.0	26.9	57.5	.1423	.00359	13.50	.0408	15.22
40.0	33.0	24.2	50.8	.1258	.00317	13.05	.0399	15.21
40.0	32.0	22.9	47.6	.1178	.00297	12.83	.0394	15.21
40.0	31.0	19.8	41.2	.1019	.00257	12.40	.0385	15.20
40.0	30.0	16.4	34.9	.0864	.00217	11.97	.0376	15.19
40.0	29.0	12.5	28.7	.0711	.00179	11.56	.0368	15.18
40.0	28.0	7.8	22.7	.0562	.00141	11.15	.0359	15.17
40.0	27.0	1.9	16.8	.0415	.00104	10.75	.0351	15.16
40.0	26.0	-6.2	11.0	.0271	.00068	10.36	.0342	15.15
40.0	25.0	-19.4	5.3	.0130	.00033	9.98	.0334	15.14

PB= 24.89 'ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02702	48.85	.1091	17.06
80.0	79.0	78.7	95.9	.9902	.02588	47.59	.1066	17.03
80.0	78.0	77.4	91.9	.9490	.02476	46.36	.1042	17.00
80.0	77.0	76.1	88.0	.9088	.02367	45.17	.1019	16.97
80.0	76.0	74.8	84.2	.8694	.02260	44.01	.0996	16.94
80.0	75.0	73.5	80.5	.8309	.02157	42.87	.0974	16.92
80.0	74.0	72.1	76.8	.7932	.02056	41.76	.0952	16.89
80.0	73.0	70.7	73.3	.7564	.01957	40.68	.0931	16.86
80.0	72.0	69.2	69.8	.7204	.01861	39.63	.0911	16.84
80.0	71.0	67.8	66.4	.6851	.01767	38.60	.0891	16.81
80.0	70.0	66.3	63.0	.6506	.01676	37.60	.0871	16.79
80.0	69.0	64.8	59.8	.6169	.01587	36.63	.0852	16.77
80.0	68.0	63.2	56.6	.5839	.01500	35.67	.0833	16.74
80.0	67.0	61.6	53.4	.5516	.01415	34.74	.0815	16.72
80.0	66.0	59.9	50.4	.5200	.01332	33.84	.0797	16.70
80.0	65.0	58.2	47.4	.4891	.01252	32.95	.0780	16.68
80.0	64.0	56.4	44.4	.4589	.01173	32.09	.0763	16.66
80.0	63.0	54.6	41.6	.4293	.01096	31.24	.0747	16.64
80.0	62.0	52.7	38.8	.4003	.01020	30.42	.0731	16.62
80.0	61.0	50.7	36.0	.3719	.00947	29.61	.0715	16.60
80.0	60.0	48.6	33.3	.3442	.00875	28.83	.0700	16.58
80.0	59.0	46.4	30.7	.3170	.00805	28.06	.0685	16.56
80.0	58.0	44.1	28.1	.2904	.00737	27.31	.0670	16.54
80.0	57.0	41.7	25.6	.2643	.00670	26.58	.0656	16.53
80.0	56.0	39.1	23.1	.2388	.00605	25.86	.0642	16.51
80.0	55.0	36.3	20.7	.2138	.00541	25.16	.0628	16.49
80.0	54.0	33.2	18.3	.1893	.00478	24.48	.0614	16.48
80.0	53.0	30.1	16.0	.1653	.00417	23.81	.0601	16.46
80.0	52.0	26.8	13.7	.1418	.00358	23.16	.0589	16.44
80.0	51.0	23.0	11.5	.1188	.00299	22.52	.0576	16.43
80.0	50.0	18.6	9.3	.0962	.00242	21.89	.0564	16.41
80.0	49.0	13.3	7.2	.0741	.00184	21.28	.0552	16.40
80.0	48.0	6.4	5.1	.0524	.00132	20.68	.0540	16.39
80.0	47.0	-3.6	3.0	.0312	.00078	20.10	.0529	16.37
80.0	46.0	-23.4	1.0	.0104	.00026	19.52	.0518	16.36

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	46.0	-23.4	1.0	.0104	.00026	19.52	.0518	16.36

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.10057	140.79	.2730	20.39
120.0	119.0	118.9	97.0	3.3448	.09710	136.93	.2660	20.29
120.0	118.0	117.8	94.1	3.2441	.09373	133.18	.2591	20.20
120.0	117.0	116.7	91.2	3.1456	.09047	129.55	.2525	20.11
120.0	116.0	115.6	88.4	3.0492	.08731	126.03	.2460	20.02
120.0	115.0	114.5	85.7	2.9549	.08424	122.61	.2398	19.93
120.0	114.0	113.4	83.0	2.8626	.08126	119.30	.2337	19.85
120.0	113.0	112.3	80.4	2.7722	.07837	116.08	.2278	19.77
120.0	112.0	111.1	77.8	2.6838	.07556	112.96	.2221	19.69
120.0	111.0	110.0	75.3	2.5974	.07284	109.93	.2166	19.61
120.0	110.0	108.9	72.9	2.5128	.07020	106.99	.2112	19.54
120.0	109.0	107.7	70.5	2.4300	.06763	104.13	.2060	19.47
120.0	108.0	106.6	68.1	2.3490	.06514	101.36	.2009	19.40
120.0	107.0	105.4	65.8	2.2698	.06272	98.66	.1960	19.33
120.0	106.0	104.2	63.6	2.1923	.06037	96.05	.1912	19.26
120.0	105.0	103.0	61.4	2.1165	.05809	93.50	.1866	19.20
120.0	104.0	101.8	59.2	2.0424	.05587	91.03	.1821	19.13
120.0	103.0	100.6	57.1	1.9698	.05371	88.63	.1777	19.07
120.0	102.0	99.4	55.1	1.8989	.05161	86.30	.1734	19.02
120.0	101.0	98.2	53.0	1.8296	.04958	84.03	.1693	18.96
120.0	100.0	96.9	51.1	1.7617	.04760	81.83	.1652	18.90
120.0	99.0	95.7	49.1	1.6954	.04567	79.69	.1613	18.85
120.0	98.0	94.4	47.3	1.6305	.04380	77.60	.1575	18.80
120.0	97.0	93.1	45.4	1.5671	.04198	75.58	.1538	18.74
120.0	96.0	91.8	43.6	1.5050	.04021	73.61	.1502	18.70
120.0	95.0	90.5	41.9	1.4444	.03849	71.69	.1467	18.65
120.0	94.0	89.2	40.1	1.3850	.03681	69.83	.1433	18.60
120.0	93.0	87.8	38.5	1.3270	.03518	68.01	.1400	18.55
120.0	92.0	86.4	36.8	1.2703	.03360	66.25	.1367	18.51
120.0	91.0	85.0	35.2	1.2149	.03205	64.53	.1336	18.47
120.0	90.0	83.6	33.6	1.1607	.03055	62.86	.1306	18.42
120.0	89.0	82.2	32.1	1.1076	.02909	61.23	.1276	18.38
120.0	88.0	80.7	30.6	1.0558	.02767	59.65	.1247	18.34
120.0	87.0	79.2	29.1	1.0051	.02628	58.11	.1219	18.30
120.0	86.0	77.7	27.7	.9556	.02494	56.61	.1191	18.27

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	77.7	27.7	.9556	.02494	56.61	.1191	18.27
120.0	85.0	76.1	26.3	.9072	.02362	55.15	.1165	18.23
120.0	84.0	74.5	24.9	.8598	.02234	53.72	.1139	18.19
120.0	83.0	72.8	23.6	.8135	.02110	52.34	.1113	18.16
120.0	82.0	71.1	22.3	.7682	.01989	50.99	.1089	18.12
120.0	81.0	69.4	21.0	.7239	.01871	49.67	.1065	18.09
120.0	80.0	67.6	19.7	.6807	.01756	48.39	.1041	18.06
120.0	79.0	65.7	18.5	.6383	.01644	47.15	.1018	18.03
120.0	78.0	63.8	17.3	.5970	.01534	45.93	.0996	18.00
120.0	77.0	61.8	16.1	.5565	.01428	44.75	.0974	17.97
120.0	76.0	59.7	15.0	.5169	.01324	43.59	.0953	17.94
120.0	75.0	57.6	13.9	.4782	.01223	42.47	.0933	17.91
120.0	74.0	55.3	12.8	.4404	.01125	41.37	.0913	17.88
120.0	73.0	52.9	11.7	.4034	.01029	40.30	.0893	17.85
120.0	72.0	50.4	10.6	.3672	.00935	39.26	.0874	17.83
120.0	71.0	47.6	9.6	.3319	.00844	38.24	.0856	17.80
120.0	70.0	44.7	8.6	.2972	.00755	37.25	.0837	17.78
120.0	69.0	41.6	7.6	.2634	.00668	36.29	.0820	17.75
120.0	68.0	38.1	6.7	.2303	.00583	35.34	.0803	17.73
120.0	67.0	34.3	5.7	.1979	.00500	34.42	.0786	17.71
120.0	66.0	30.2	4.8	.1662	.00420	33.53	.0769	17.68
120.0	65.0	25.8	3.9	.1352	.00341	32.65	.0753	17.66
120.0	64.0	20.4	3.0	.1049	.00264	31.80	.0738	17.64
120.0	63.0	13.6	2.2	.0753	.00189	30.96	.0722	17.62
120.0	62.0	4.0	1.3	.0462	.00116	30.15	.0708	17.60
120.0	61.0	-13.8	.5	.0178	.00045	29.35	.0693	17.58

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.39756	487.62	.8528	30.68
160.0	159.0	159.0	97.6	9.4215	.38202	470.06	.8228	30.22
160.0	158.0	157.9	95.2	9.1918	.36722	453.34	.7942	29.78
160.0	157.0	156.9	92.9	8.9665	.35312	437.41	.7669	29.35
160.0	156.0	155.9	90.6	8.7455	.33967	422.22	.7409	28.95
160.0	155.0	154.8	88.3	8.5287	.32683	407.71	.7161	28.57
160.0	154.0	153.8	86.1	8.3160	.31456	393.85	.6924	28.20
160.0	153.0	152.8	84.0	8.1074	.30283	380.60	.6697	27.85
160.0	152.0	151.7	81.9	7.9028	.29161	367.92	.6480	27.51
160.0	151.0	150.7	79.8	7.7021	.28086	355.78	.6273	27.19
160.0	150.0	149.6	77.7	7.5053	.27057	344.15	.6074	26.88
160.0	149.0	148.6	75.7	7.3124	.26069	332.99	.5883	26.59
160.0	148.0	147.5	73.8	7.1231	.25122	322.29	.5700	26.30
160.0	147.0	146.5	71.9	6.9376	.24213	312.02	.5524	26.03
160.0	146.0	145.4	70.0	6.7558	.23340	302.16	.5355	25.77
160.0	145.0	144.4	68.1	6.5775	.22501	292.68	.5193	25.52
160.0	144.0	143.3	66.3	6.4027	.21694	283.57	.5037	25.28
160.0	143.0	142.2	64.5	6.2314	.20919	274.80	.4887	25.04
160.0	142.0	141.2	62.8	6.0635	.20172	266.36	.4743	24.82
160.0	141.0	140.1	61.1	5.8989	.19452	258.24	.4604	24.60
160.0	140.0	139.0	59.4	5.7376	.18760	250.42	.4470	24.40
160.0	139.0	137.9	57.8	5.5796	.18093	242.88	.4341	24.20
160.0	138.0	136.9	56.2	5.4247	.17449	235.61	.4217	24.00
160.0	137.0	135.8	54.6	5.2730	.16829	228.60	.4097	23.82
160.0	136.0	134.7	53.1	5.1243	.16230	221.84	.3981	23.64
160.0	135.0	133.6	51.6	4.9787	.15652	215.31	.3870	23.47
160.0	134.0	132.5	50.1	4.8360	.15095	209.01	.3762	23.30
160.0	133.0	131.4	48.6	4.6963	.14556	202.92	.3658	23.14
160.0	132.0	130.3	47.2	4.5594	.14036	197.05	.3557	22.98
160.0	131.0	129.1	45.8	4.4253	.13533	191.36	.3460	22.83
160.0	130.0	128.0	44.5	4.2940	.13047	185.87	.3366	22.69
160.0	129.0	126.9	43.1	4.1654	.12577	180.56	.3275	22.55
160.0	128.0	125.8	41.8	4.0395	.12122	175.43	.3187	22.41
160.0	127.0	124.6	40.6	3.9162	.11682	170.46	.3102	22.28
160.0	126.0	123.5	39.3	3.7955	.11256	165.65	.3020	22.15

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	123.5	39.3	3.7955	.11256	165.65	.3020	22.15
160.0	125.0	122.3	38.1	3.6773	.10844	160.99	.2940	22.03
160.0	124.0	121.2	36.9	3.5616	.10446	156.49	.2863	21.91
160.0	123.0	120.0	35.7	3.4483	.10059	152.12	.2789	21.79
160.0	122.0	118.8	34.6	3.3374	.09685	147.90	.2716	21.68
160.0	121.0	117.7	33.4	3.2289	.09323	143.80	.2646	21.57
160.0	120.0	116.5	32.3	3.1226	.08971	139.83	.2578	21.47
160.0	119.0	115.3	31.2	3.0186	.08631	135.99	.2513	21.36
160.0	118.0	114.1	30.2	2.9169	.08301	132.26	.2449	21.26
160.0	117.0	112.8	29.2	2.8173	.07981	128.64	.2387	21.17
160.0	116.0	111.6	28.2	2.7198	.07670	125.14	.2327	21.08
160.0	115.0	110.4	27.2	2.6244	.07369	121.73	.2269	20.99
160.0	114.0	109.1	26.2	2.5311	.07077	118.43	.2212	20.90
160.0	113.0	107.9	25.3	2.4398	.06794	115.23	.2157	20.81
160.0	112.0	106.6	24.3	2.3505	.06519	112.13	.2104	20.73
160.0	111.0	105.3	23.4	2.2631	.06252	109.11	.2053	20.65
160.0	110.0	104.0	22.5	2.1777	.05993	106.18	.2003	20.57
160.0	109.0	102.7	21.7	2.0940	.05741	103.34	.1954	20.50
160.0	108.0	101.3	20.8	2.0122	.05497	100.58	.1907	20.43
160.0	107.0	100.0	20.0	1.9322	.05260	97.90	.1861	20.35
160.0	106.0	98.6	19.2	1.8540	.05029	95.30	.1816	20.29
160.0	105.0	97.2	18.4	1.7774	.04806	92.77	.1773	20.22
160.0	104.0	95.8	17.6	1.7026	.04588	90.31	.1731	20.15
160.0	103.0	94.4	16.9	1.6294	.04377	87.93	.1690	20.09
160.0	102.0	92.9	16.1	1.5578	.04171	85.61	.1651	20.03
160.0	101.0	91.4	15.4	1.4878	.03972	83.35	.1612	19.97
160.0	100.0	89.9	14.7	1.4193	.03778	81.16	.1575	19.91
160.0	99.0	88.4	14.0	1.3524	.03589	79.03	.1538	19.85
160.0	98.0	86.8	13.3	1.2869	.03406	76.96	.1503	19.80
160.0	97.0	85.2	12.7	1.2229	.03228	74.95	.1468	19.75
160.0	96.0	83.6	12.0	1.1603	.03054	72.99	.1435	19.69
160.0	95.0	81.9	11.4	1.0992	.02886	71.08	.1402	19.64
160.0	94.0	80.2	10.8	1.0393	.02722	69.23	.1371	19.59
160.0	93.0	78.4	10.1	.9809	.02562	67.43	.1340	19.55
160.0	92.0	76.6	9.6	.9237	.02407	65.67	.1310	19.50

PB= 24.89 ,ALTITUDE= 5000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	76.6	9.6	.9237	.02407	65.67	.1310	19.50
160.0	91.0	74.8	9.0	.8678	.02256	63.97	.1281	19.45
160.0	90.0	72.8	8.4	.8132	.02109	62.31	.1252	19.41
160.0	89.0	70.8	7.9	.7597	.01966	60.69	.1224	19.37
160.0	88.0	68.7	7.3	.7075	.01827	59.12	.1198	19.33
160.0	87.0	66.5	6.8	.6565	.01692	57.59	.1171	19.29
160.0	86.0	64.3	6.3	.6066	.01560	56.10	.1146	19.25
160.0	85.0	61.9	5.8	.5578	.01431	54.65	.1121	19.21
160.0	84.0	59.4	5.3	.5101	.01306	53.24	.1097	19.17
160.0	83.0	56.7	4.8	.4635	.01185	51.87	.1073	19.13
160.0	82.0	53.9	4.3	.4179	.01066	50.53	.1051	19.10
160.0	81.0	50.8	3.9	.3734	.00951	49.22	.1028	19.06
160.0	80.0	47.5	3.4	.3298	.00838	47.95	.1007	19.03
160.0	79.0	43.8	3.0	.2872	.00729	46.72	.0985	19.00
160.0	78.0	39.8	2.5	.2456	.00622	45.51	.0965	18.97
160.0	77.0	35.2	2.1	.2049	.00518	44.34	.0945	18.93
160.0	76.0	30.1	1.7	.1651	.00417	43.19	.0925	18.90
160.0	75.0	24.3	1.3	.1262	.00318	42.08	.0906	18.87
160.0	74.0	16.9	.9	.0882	.00222	40.99	.0887	18.85
160.0	73.0	5.9	.5	.0511	.00128	39.93	.0869	18.82
160.0	72.0	-17.2	.2	.0147	.00037	38.90	.0852	18.79

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00010	-9.46	-.0024	13.96

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00104	1.13	.0217	15.32
.0	-.1	-.5	97.6	.0367	.00101	1.11	.0216	15.32
.0	-.2	-.9	95.2	.0358	.00099	1.08	.0216	15.32
.0	-.3	-1.4	92.7	.0349	.00096	1.05	.0215	15.32
.0	-.4	-1.9	90.3	.0340	.00094	1.03	.0214	15.32
.0	-.5	-2.4	87.9	.0331	.00091	1.00	.0214	15.32
.0	-.6	-3.0	85.5	.0322	.00089	.97	.0213	15.32
.0	-.7	-3.5	83.1	.0313	.00086	.95	.0213	15.32
.0	-.8	-4.1	80.7	.0304	.00084	.92	.0212	15.32
.0	-.9	-4.6	78.3	.0295	.00081	.89	.0211	15.32
.0	-1.0	-5.2	75.9	.0286	.00079	.87	.0211	15.32
.0	-1.1	-5.8	73.5	.0277	.00076	.84	.0210	15.32
.0	-1.2	-6.4	71.1	.0268	.00074	.82	.0209	15.32
.0	-1.3	-7.1	68.7	.0259	.00071	.79	.0209	15.32
.0	-1.4	-7.7	66.3	.0250	.00069	.76	.0208	15.32
.0	-1.5	-8.4	63.9	.0241	.00066	.74	.0208	15.31
.0	-1.6	-9.1	61.6	.0232	.00064	.71	.0207	15.31
.0	-1.7	-9.8	59.2	.0223	.00061	.68	.0206	15.31
.0	-1.8	-10.6	56.8	.0214	.00059	.66	.0206	15.31
.0	-1.9	-11.3	54.4	.0205	.00057	.63	.0205	15.31
.0	-2.0	-12.1	52.0	.0196	.00054	.61	.0205	15.31
.0	-2.1	-13.0	49.7	.0187	.00052	.58	.0204	15.31
.0	-2.2	-13.9	47.3	.0178	.00049	.55	.0203	15.31
.0	-2.3	-14.8	44.9	.0169	.00047	.53	.0203	15.31
.0	-2.4	-15.7	42.6	.0160	.00044	.50	.0202	15.31
.0	-2.5	-16.8	40.2	.0151	.00042	.48	.0202	15.31
.0	-2.6	-17.8	37.8	.0142	.00039	.45	.0201	15.31
.0	-2.7	-19.0	35.5	.0134	.00037	.42	.0200	15.31
.0	-2.8	-20.2	33.1	.0125	.00034	.40	.0200	15.31
.0	-2.9	-21.4	30.8	.0116	.00032	.37	.0199	15.31
.0	-3.0	-22.8	28.4	.0107	.00030	.35	.0199	15.31
.0	-3.1	-24.3	26.1	.0098	.00027	.32	.0198	15.31
.0	-3.2	-25.9	23.7	.0089	.00025	.29	.0197	15.30
.0	-3.3	-27.7	21.4	.0080	.00022	.27	.0197	15.30
.0	-3.4	-29.6	19.0	.0072	.00020	.24	.0196	15.30

PR= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
.0	-3.4	-29.6	19.0	.0072	.00020	.24	.0196	15.30

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00690	17.08	.0548	16.82
40.0	39.0	38.1	92.9	.2301	.00641	16.54	.0537	16.80
40.0	38.0	36.1	86.0	.2129	.00592	16.02	.0526	16.79
40.0	37.0	34.1	79.1	.1960	.00545	15.51	.0515	16.78
40.0	36.0	31.9	72.4	.1794	.00498	15.01	.0505	16.77
40.0	35.0	29.8	65.9	.1631	.00453	14.52	.0494	16.75
40.0	34.0	27.6	59.4	.1471	.00408	14.04	.0484	16.74
40.0	33.0	25.2	53.0	.1314	.00364	13.56	.0474	16.73
40.0	32.0	23.9	49.9	.1235	.00342	13.33	.0469	16.73
40.0	31.0	21.1	43.7	.1083	.00300	12.87	.0460	16.71
40.0	30.0	18.0	37.7	.0934	.00259	12.42	.0450	16.70
40.0	29.0	14.6	31.9	.0789	.00218	11.99	.0441	16.69
40.0	28.0	10.6	26.1	.0646	.00179	11.56	.0432	16.68
40.0	27.0	5.7	20.5	.0507	.00140	11.15	.0424	16.67
40.0	26.0	-.3	14.9	.0370	.00102	10.74	.0415	16.66
40.0	25.0	-8.7	9.5	.0236	.00065	10.34	.0407	16.65
40.0	24.0	-23.2	4.2	.0105	.00029	9.95	.0398	16.64

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.02982	51.92	.1216	18.83
80.0	79.0	78.8	96.0	.9910	.02857	50.55	.1189	18.79
80.0	78.0	77.5	92.1	.9507	.02736	49.22	.1163	18.76
80.0	77.0	76.2	88.3	.9112	.02617	47.92	.1137	18.72
80.0	76.0	74.9	84.5	.8727	.02502	46.66	.1113	18.69
80.0	75.0	73.6	80.9	.8350	.02390	45.43	.1089	18.66
80.0	74.0	72.3	77.3	.7982	.02280	44.23	.1065	18.63
80.0	73.0	70.9	73.8	.7621	.02174	43.07	.1042	18.59
80.0	72.0	69.5	70.4	.7269	.02070	41.93	.1020	18.56
80.0	71.0	68.1	67.1	.6925	.01969	40.82	.0999	18.54
80.0	70.0	66.7	63.8	.6588	.01870	39.74	.0977	18.51
80.0	69.0	65.2	60.6	.6259	.01774	38.68	.0957	18.48
80.0	68.0	63.7	57.5	.5937	.01680	37.66	.0937	18.45
80.0	67.0	62.1	54.5	.5622	.01589	36.66	.0917	18.43
80.0	66.0	60.5	51.5	.5315	.01500	35.68	.0898	18.40
80.0	65.0	58.9	48.6	.5014	.01413	34.73	.0879	18.38
80.0	64.0	57.2	45.7	.4719	.01328	33.80	.0861	18.35
80.0	63.0	55.5	42.9	.4431	.01245	32.89	.0844	18.33
80.0	62.0	53.7	40.2	.4149	.01165	32.01	.0826	18.30
80.0	61.0	51.8	37.5	.3874	.01086	31.15	.0809	18.28
80.0	60.0	49.9	34.9	.3604	.01009	30.30	.0793	18.26
80.0	59.0	47.8	32.3	.3340	.00934	29.48	.0777	18.24
80.0	58.0	45.7	29.8	.3082	.00861	28.68	.0761	18.22
80.0	57.0	43.4	27.4	.2830	.00790	27.90	.0746	18.20
80.0	56.0	41.1	25.0	.2582	.00720	27.13	.0731	18.18
80.0	55.0	38.6	22.7	.2340	.00652	26.39	.0716	18.16
80.0	54.0	35.8	20.4	.2104	.00585	25.66	.0702	18.14
80.0	53.0	32.9	18.1	.1872	.00520	24.94	.0688	18.12
80.0	52.0	30.0	15.9	.1645	.00457	24.25	.0675	18.10
80.0	51.0	26.9	13.8	.1422	.00394	23.57	.0661	18.08
80.0	50.0	23.3	11.7	.1205	.00334	22.90	.0648	18.06
80.0	49.0	19.3	9.6	.0991	.00274	22.25	.0636	18.05
80.0	48.0	14.4	7.6	.0783	.00216	21.62	.0623	18.03
80.0	47.0	8.3	5.6	.0578	.00160	20.99	.0611	18.01
80.0	46.0	.1	3.7	.0378	.00104	20.39	.0599	18.00

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
80.0	46.0	.1	3.7	.0378	.00104	20.39	.0599	18.00
80.0	45.0	-13.6	1.8	.0181	.00050	19.79	.0587	17.98

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.11228	153.83	.3032	22.77
120.0	119.0	118.9	97.0	3.3456	.10837	149.48	.2953	22.65
120.0	118.0	117.8	94.1	3.2458	.10459	145.28	.2876	22.53
120.0	117.0	116.8	91.3	3.1482	.10093	141.20	.2802	22.42
120.0	116.0	115.7	88.5	3.0526	.09739	137.25	.2729	22.31
120.0	115.0	114.6	85.8	2.9591	.09395	133.43	.2660	22.20
120.0	114.0	113.5	83.2	2.8676	.09062	129.72	.2592	22.10
120.0	113.0	112.3	80.6	2.7781	.08739	126.13	.2526	22.00
120.0	112.0	111.2	78.0	2.6905	.08426	122.65	.2462	21.90
120.0	111.0	110.1	75.5	2.6049	.08123	119.27	.2401	21.81
120.0	110.0	109.0	73.1	2.5211	.07828	115.99	.2341	21.72
120.0	109.0	107.8	70.7	2.4392	.07543	112.81	.2283	21.63
120.0	108.0	106.7	68.4	2.3590	.07266	109.73	.2226	21.55
120.0	107.0	105.5	66.1	2.2806	.06997	106.74	.2172	21.46
120.0	106.0	104.4	63.9	2.2040	.06736	103.83	.2119	21.38
120.0	105.0	103.2	61.7	2.1290	.06483	101.02	.2067	21.30
120.0	104.0	102.0	59.6	2.0557	.06237	98.28	.2017	21.23
120.0	103.0	100.9	57.5	1.9840	.05998	95.62	.1969	21.15
120.0	102.0	99.7	55.5	1.9139	.05767	93.04	.1922	21.08
120.0	101.0	98.5	53.5	1.8453	.05542	90.54	.1876	21.01
120.0	100.0	97.2	51.6	1.7783	.05323	88.11	.1831	20.95
120.0	99.0	96.0	49.7	1.7128	.05111	85.74	.1788	20.88
120.0	98.0	94.8	47.8	1.6487	.04904	83.44	.1746	20.82
120.0	97.0	93.5	46.0	1.5861	.04704	81.21	.1705	20.76
120.0	96.0	92.2	44.2	1.5249	.04509	79.04	.1666	20.70
120.0	95.0	91.0	42.5	1.4651	.04320	76.94	.1627	20.64
120.0	94.0	89.7	40.8	1.4066	.04135	74.89	.1590	20.58
120.0	93.0	88.3	39.1	1.3494	.03957	72.90	.1553	20.52
120.0	92.0	87.0	37.5	1.2935	.03783	70.96	.1518	20.47
120.0	91.0	85.6	35.9	1.2388	.03613	69.08	.1484	20.42
120.0	90.0	84.3	34.4	1.1854	.03449	67.25	.1450	20.37
120.0	89.0	82.9	32.8	1.1332	.03289	65.47	.1418	20.32
120.0	88.0	81.4	31.4	1.0822	.03133	63.73	.1386	20.27
120.0	87.0	80.0	29.9	1.0323	.02982	62.05	.1355	20.22
120.0	86.0	78.5	28.5	.9836	.02835	60.41	.1325	20.18

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	78.5	28.5	.9836	.02835	60.41	.1325	20.18
120.0	85.0	77.0	27.1	.9360	.02691	58.82	.1296	20.13
120.0	84.0	75.5	25.8	.8894	.02552	57.26	.1268	20.09
120.0	83.0	73.9	24.5	.8439	.02416	55.75	.1240	20.05
120.0	82.0	72.3	23.2	.7994	.02284	54.28	.1213	20.01
120.0	81.0	70.7	21.9	.7560	.02156	52.85	.1187	19.97
120.0	80.0	69.0	20.7	.7135	.02031	51.46	.1162	19.93
120.0	79.0	67.2	19.5	.6720	.01909	50.10	.1137	19.89
120.0	78.0	65.4	18.3	.6314	.01790	48.78	.1113	19.86
120.0	77.0	63.6	17.1	.5917	.01675	47.50	.1089	19.82
120.0	76.0	61.6	16.0	.5530	.01562	46.25	.1066	19.79
120.0	75.0	59.6	14.9	.5151	.01453	45.03	.1044	19.75
120.0	74.0	57.6	13.9	.4781	.01346	43.84	.1022	19.72
120.0	73.0	55.4	12.8	.4419	.01242	42.68	.1001	19.69
120.0	72.0	53.1	11.8	.4065	.01141	41.55	.0981	19.65
120.0	71.0	50.7	10.8	.3719	.01042	40.46	.0961	19.62
120.0	70.0	48.1	9.8	.3381	.00946	39.39	.0941	19.59
120.0	69.0	45.4	8.8	.3050	.00852	38.34	.0922	19.57
120.0	68.0	42.5	7.9	.2727	.00761	37.33	.0903	19.54
120.0	67.0	39.3	7.0	.2411	.00671	36.33	.0885	19.51
120.0	66.0	35.8	6.1	.2102	.00585	35.37	.0868	19.48
120.0	65.0	32.0	5.2	.1800	.00500	34.42	.0850	19.46
120.0	64.0	28.1	4.4	.1505	.00417	33.51	.0834	19.43
120.0	63.0	23.5	3.5	.1216	.00337	32.61	.0817	19.41
120.0	62.0	18.0	2.7	.0934	.00258	31.73	.0801	19.38
120.0	61.0	10.9	1.9	.0657	.00182	30.88	.0786	19.36
120.0	60.0	.5	1.1	.0387	.00107	30.05	.0770	19.34
120.0	59.0	-20.4	.4	.0123	.00034	29.24	.0756	19.31

PB= 22.45 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.46601	564.96	.9902	35.97
160.0	159.0	159.0	97.6	9.4223	.44670	543.14	.9529	35.34
160.0	158.0	158.0	95.2	9.1936	.42840	522.47	.9176	34.73
160.0	157.0	156.9	92.9	8.9691	.41105	502.87	.8841	34.16
160.0	156.0	155.9	90.6	8.7490	.39457	484.25	.8523	33.62
160.0	155.0	154.9	88.4	8.5330	.37891	466.56	.8221	33.11
160.0	154.0	153.8	86.2	8.3212	.36401	449.72	.7934	32.62
160.0	153.0	152.8	84.0	8.1134	.34982	433.69	.7660	32.15
160.0	152.0	151.8	81.9	7.9096	.33629	418.41	.7399	31.70
160.0	151.0	150.7	79.9	7.7098	.32338	403.83	.7150	31.28
160.0	150.0	149.7	77.8	7.5139	.31106	389.90	.6912	30.87
160.0	149.0	148.6	75.8	7.3218	.29928	376.60	.6685	30.49
160.0	148.0	147.6	73.9	7.1334	.28802	363.87	.6467	30.11
160.0	147.0	146.5	72.0	6.9488	.27724	351.70	.6259	29.76
160.0	146.0	145.5	70.1	6.7677	.26692	340.03	.6060	29.42
160.0	145.0	144.4	68.3	6.5903	.25702	328.86	.5869	29.09
160.0	144.0	143.4	66.5	6.4164	.24754	318.14	.5686	28.78
160.0	143.0	142.3	64.7	6.2459	.23844	307.86	.5511	28.48
160.0	142.0	141.3	63.0	6.0788	.22970	297.99	.5342	28.20
160.0	141.0	140.2	61.3	5.9151	.22131	288.52	.5180	27.92
160.0	140.0	139.1	59.6	5.7546	.21325	279.41	.5024	27.65
160.0	139.0	138.1	58.0	5.5974	.20550	270.65	.4875	27.40
160.0	138.0	137.0	56.4	5.4434	.19804	262.22	.4731	27.15
160.0	137.0	135.9	54.8	5.2925	.19086	254.11	.4592	26.92
160.0	136.0	134.8	53.3	5.1447	.18395	246.31	.4459	26.69
160.0	135.0	133.7	51.8	4.9999	.17729	238.78	.4331	26.47
160.0	134.0	132.7	50.3	4.8581	.17088	231.54	.4207	26.26
160.0	133.0	131.6	48.9	4.7192	.16470	224.55	.4087	26.06
160.0	132.0	130.5	47.5	4.5831	.15873	217.81	.3972	25.86
160.0	131.0	129.4	46.1	4.4499	.15298	211.31	.3861	25.67
160.0	130.0	128.2	44.7	4.3194	.14743	205.04	.3754	25.49
160.0	129.0	127.1	43.4	4.1916	.14207	198.99	.3651	25.31
160.0	128.0	126.0	42.1	4.0665	.13689	193.14	.3551	25.14
160.0	127.0	124.9	40.8	3.9441	.13189	187.49	.3454	24.98
160.0	126.0	123.8	39.6	3.8242	.12706	182.03	.3361	24.82

PR= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	123.8	39.6	3.8242	.12706	182.03	.3361	24.82
160.0	125.0	122.6	38.4	3.7068	.12239	176.75	.3271	24.66
160.0	124.0	121.5	37.2	3.5919	.11787	171.65	.3184	24.52
160.0	123.0	120.3	36.0	3.4794	.11350	166.72	.3100	24.37
160.0	122.0	119.2	34.9	3.3694	.10928	161.94	.3018	24.23
160.0	121.0	118.0	33.8	3.2616	.10519	157.33	.2939	24.10
160.0	120.0	116.8	32.7	3.1562	.10123	152.86	.2863	23.97
160.0	119.0	115.7	31.6	3.0530	.09740	148.53	.2789	23.84
160.0	118.0	114.5	30.6	2.9521	.09369	144.34	.2717	23.72
160.0	117.0	113.3	29.5	2.8533	.09010	140.28	.2648	23.60
160.0	116.0	112.1	28.5	2.7567	.08662	136.35	.2581	23.49
160.0	115.0	110.9	27.6	2.6621	.08325	132.54	.2516	23.38
160.0	114.0	109.6	26.6	2.5696	.07999	128.85	.2453	23.27
160.0	113.0	108.4	25.7	2.4792	.07682	125.27	.2392	23.16
160.0	112.0	107.2	24.7	2.3906	.07375	121.80	.2332	23.06
160.0	111.0	105.9	23.9	2.3041	.07077	118.44	.2275	22.97
160.0	110.0	104.6	23.0	2.2194	.06788	115.18	.2219	22.87
160.0	109.0	103.3	22.1	2.1366	.06508	112.02	.2165	22.78
160.0	108.0	102.0	21.3	2.0556	.06237	108.95	.2113	22.69
160.0	107.0	100.7	20.5	1.9764	.05973	105.97	.2062	22.60
160.0	106.0	99.4	19.7	1.8989	.05717	103.08	.2013	22.52
160.0	105.0	98.1	18.9	1.8232	.05469	100.28	.1965	22.44
160.0	104.0	96.7	18.1	1.7492	.05228	97.55	.1918	22.36
160.0	103.0	95.3	17.4	1.6768	.04994	94.91	.1873	22.28
160.0	102.0	93.9	16.6	1.6060	.04767	92.34	.1829	22.21
160.0	101.0	92.5	15.9	1.5368	.04547	89.85	.1787	22.13
160.0	100.0	91.0	15.2	1.4691	.04332	87.43	.1745	22.06
160.0	99.0	89.6	14.5	1.4030	.04124	85.08	.1705	21.99
160.0	98.0	88.1	13.8	1.3383	.03922	82.80	.1666	21.93
160.0	97.0	86.6	13.2	1.2751	.03726	80.58	.1628	21.86
160.0	96.0	85.0	12.6	1.2133	.03535	78.42	.1591	21.80
160.0	95.0	83.4	11.9	1.1529	.03349	76.33	.1556	21.74
160.0	94.0	81.8	11.3	1.0939	.03169	74.29	.1521	21.68
160.0	93.0	80.1	10.7	1.0362	.02994	72.31	.1487	21.62
160.0	92.0	78.4	10.1	.9799	.02823	70.38	.1454	21.57

PB= 22.65 ,ALTITUDE= 7500.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	78.4	10.1	.9799	.02823	70.38	.1454	21.57
160.0	91.0	76.7	9.6	.9248	.02658	68.51	.1422	21.51
160.0	90.0	74.9	9.0	.8709	.02497	66.69	.1391	21.46
160.0	89.0	73.0	8.5	.8183	.02340	64.92	.1361	21.41
160.0	88.0	71.1	7.9	.7669	.02188	63.20	.1331	21.36
160.0	87.0	69.1	7.4	.7166	.02040	61.53	.1303	21.31
160.0	86.0	67.0	6.9	.6675	.01896	59.90	.1275	21.26
160.0	85.0	64.9	6.4	.6195	.01755	58.32	.1248	21.21
160.0	84.0	62.6	5.9	.5726	.01619	56.78	.1222	21.17
160.0	83.0	60.3	5.4	.5268	.01486	55.28	.1196	21.13
160.0	82.0	57.8	5.0	.4820	.01357	53.82	.1171	21.08
160.0	81.0	55.2	4.5	.4382	.01231	52.40	.1147	21.04
160.0	80.0	52.4	4.1	.3955	.01109	51.02	.1123	21.00
160.0	79.0	49.3	3.7	.3537	.00990	49.67	.1100	20.96
160.0	78.0	46.1	3.2	.3128	.00874	48.36	.1078	20.92
160.0	77.0	42.5	2.8	.2729	.00761	47.09	.1056	20.89
160.0	76.0	38.5	2.4	.2339	.00651	45.84	.1035	20.85
160.0	75.0	34.0	2.0	.1958	.00544	44.64	.1014	20.82
160.0	74.0	29.2	1.6	.1586	.00440	43.46	.0994	20.78
160.0	73.0	23.6	1.3	.1222	.00338	42.31	.0975	20.75
160.0	72.0	16.5	.9	.0866	.00240	41.19	.0955	20.72
160.0	71.0	6.2	.5	.0518	.00143	40.10	.0937	20.68
160.0	70.0	-13.8	.2	.0179	.00049	39.04	.0919	20.65

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
-40.0	-40.0	-40.0	100.0	.0038	.00011	-9.44	.0042	15.37

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
.0	.0	.0	100.0	.0376	.00114	1.25	.0285	16.87
.0	-.1	-.4	97.8	.0368	.00112	1.23	.0285	16.87
.0	-.2	-.9	95.5	.0359	.00109	1.20	.0284	16.87
.0	-.3	-1.3	93.3	.0351	.00107	1.17	.0283	16.87
.0	-.4	-1.8	91.0	.0343	.00104	1.14	.0283	16.87
.0	-.5	-2.3	88.8	.0334	.00102	1.12	.0282	16.87
.0	-.6	-2.7	86.6	.0326	.00099	1.09	.0281	16.87
.0	-.7	-3.2	84.3	.0317	.00096	1.06	.0281	16.86
.0	-.8	-3.7	82.1	.0309	.00094	1.04	.0280	16.86
.0	-.9	-4.3	79.9	.0301	.00091	1.01	.0280	16.86
.0	-1.0	-4.8	77.6	.0292	.00089	.98	.0279	16.86
.0	-1.1	-5.3	75.4	.0284	.00086	.96	.0278	16.86
.0	-1.2	-5.9	73.2	.0275	.00084	.93	.0278	16.86
.0	-1.3	-6.5	71.0	.0267	.00081	.90	.0277	16.86
.0	-1.4	-7.0	68.8	.0259	.00079	.88	.0277	16.86
.0	-1.5	-7.6	66.6	.0250	.00076	.85	.0276	16.86
.0	-1.6	-8.3	64.3	.0242	.00074	.82	.0275	16.86
.0	-1.7	-8.9	62.1	.0234	.00071	.79	.0275	16.86
.0	-1.8	-9.6	59.9	.0226	.00068	.77	.0274	16.86
.0	-1.9	-10.3	57.7	.0217	.00066	.74	.0273	16.86
.0	-2.0	-11.0	55.5	.0209	.00063	.71	.0273	16.86
.0	-2.1	-11.7	53.3	.0201	.00061	.69	.0272	16.85
.0	-2.2	-12.5	51.1	.0192	.00058	.66	.0272	16.85
.0	-2.3	-13.3	48.9	.0184	.00056	.63	.0271	16.85
.0	-2.4	-14.1	46.7	.0176	.00053	.61	.0270	16.85
.0	-2.5	-14.9	44.6	.0168	.00051	.58	.0270	16.85
.0	-2.6	-15.8	42.4	.0159	.00048	.56	.0269	16.85
.0	-2.7	-16.8	40.2	.0151	.00046	.53	.0269	16.85
.0	-2.8	-17.8	38.0	.0143	.00043	.50	.0268	16.85
.0	-2.9	-18.8	35.8	.0135	.00041	.48	.0267	16.85
.0	-3.0	-19.9	33.6	.0127	.00038	.45	.0267	16.85
.0	-3.1	-21.1	31.5	.0118	.00036	.42	.0266	16.85
.0	-3.2	-22.3	29.3	.0110	.00033	.40	.0265	16.85
.0	-3.3	-23.6	27.1	.0102	.00031	.37	.0265	16.85
.0	-3.4	-25.1	24.9	.0094	.00028	.34	.0264	16.85

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
.0	-3.4	-25.1	24.9	.0094	.00028	.34	.0264	16.85
.0	-3.5	-26.6	22.8	.0086	.00026	.32	.0264	16.85
.0	-3.6	-28.3	20.6	.0078	.00024	.29	.0263	16.84
.0	-3.7	-30.1	18.4	.0069	.00021	.27	.0262	16.84
.0	-3.8	-32.2	16.3	.0061	.00019	.24	.0262	16.84

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
40.0	40.0	40.0	100.0	.2477	.00760	17.84	.0630	18.53
40.0	39.0	38.2	93.2	.2309	.00708	17.28	.0618	18.52
40.0	38.0	36.3	86.6	.2144	.00657	16.73	.0607	18.50
40.0	37.0	34.4	80.0	.1982	.00607	16.19	.0595	18.49
40.0	36.0	32.3	73.6	.1824	.00558	15.66	.0584	18.47
40.0	35.0	30.3	67.4	.1668	.00510	15.14	.0573	18.46
40.0	34.0	28.2	61.2	.1515	.00463	14.64	.0563	18.44
40.0	33.0	26.0	55.1	.1366	.00417	14.14	.0552	18.43
40.0	32.0	24.7	52.0	.1287	.00393	13.88	.0547	18.42
40.0	31.0	22.2	46.1	.1142	.00348	13.40	.0537	18.41
40.0	30.0	19.4	40.4	.1000	.00305	12.93	.0527	18.40
40.0	29.0	16.3	34.8	.0861	.00262	12.47	.0517	18.38
40.0	28.0	12.9	29.3	.0725	.00220	12.02	.0508	18.37
40.0	27.0	8.8	23.9	.0592	.00180	11.58	.0498	18.36
40.0	26.0	3.9	18.6	.0461	.00140	11.16	.0489	18.35
40.0	25.0	-2.3	13.5	.0334	.00101	10.74	.0481	18.34
40.0	24.0	-11.0	8.4	.0209	.00063	10.33	.0472	18.33
40.0	23.0	-26.4	3.5	.0087	.00026	9.93	.0464	18.32

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	80.0	80.0	100.0	1.0323	.03297	55.38	.1349	20.82
80.0	79.0	78.8	96.1	.9918	.03161	53.89	.1320	20.78
80.0	78.0	77.5	92.2	.9522	.03028	52.44	.1291	20.74
80.0	77.0	76.3	88.5	.9135	.02900	51.03	.1264	20.70
80.0	76.0	75.0	84.8	.8757	.02774	49.65	.1237	20.66
80.0	75.0	73.7	81.2	.8388	.02652	48.31	.1211	20.62
80.0	74.0	72.4	77.8	.8027	.02533	47.01	.1185	20.58
80.0	73.0	71.1	74.3	.7674	.02418	45.74	.1160	20.54
80.0	72.0	69.8	71.0	.7330	.02305	44.51	.1136	20.51
80.0	71.0	68.4	67.7	.6993	.02195	43.31	.1113	20.47
80.0	70.0	67.0	64.5	.6664	.02089	42.14	.1090	20.44
80.0	69.0	65.6	61.4	.6342	.01984	41.00	.1068	20.41
80.0	68.0	64.1	58.4	.6028	.01883	39.89	.1046	20.37
80.0	67.0	62.6	55.4	.5720	.01784	38.80	.1025	20.34
80.0	66.0	61.1	52.5	.5420	.01688	37.75	.1004	20.31
80.0	65.0	59.5	49.6	.5127	.01594	36.72	.0984	20.28
80.0	64.0	57.9	46.9	.4840	.01503	35.72	.0964	20.25
80.0	63.0	56.3	44.2	.4559	.01414	34.74	.0945	20.22
80.0	62.0	54.5	41.5	.4285	.01327	33.79	.0927	20.20
80.0	61.0	52.8	38.9	.4017	.01242	32.86	.0909	20.17
80.0	60.0	51.0	36.4	.3754	.01160	31.96	.0891	20.14
80.0	59.0	49.1	33.9	.3498	.01079	31.07	.0874	20.12
80.0	58.0	47.1	31.4	.3247	.01000	30.21	.0857	20.09
80.0	57.0	45.0	29.1	.3002	.00924	29.37	.0840	20.07
80.0	56.0	42.8	26.7	.2762	.00849	28.55	.0824	20.05
80.0	55.0	40.5	24.5	.2528	.00776	27.75	.0809	20.02
80.0	54.0	38.1	22.3	.2298	.00705	26.97	.0794	20.00
80.0	53.0	35.5	20.1	.2074	.00635	26.21	.0779	19.98
80.0	52.0	32.7	18.0	.1854	.00567	25.47	.0764	19.96
80.0	51.0	29.9	15.9	.1639	.00501	24.74	.0750	19.93
80.0	50.0	27.0	13.8	.1429	.00436	24.03	.0736	19.91
80.0	49.0	23.7	11.8	.1223	.00373	23.34	.0722	19.89
80.0	48.0	19.9	9.9	.1021	.00311	22.66	.0709	19.87
80.0	47.0	15.5	8.0	.0824	.00251	22.00	.0696	19.86
80.0	46.0	10.1	6.1	.0631	.00192	21.35	.0684	19.84

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
80.0	46.0	10.1	6.1	.0631	.00192	21.35	.0684	19.84
80.0	45.0	3.1	4.3	.0442	.00134	20.72	.0671	19.82
80.0	44.0	-7.2	2.5	.0256	.00078	20.10	.0659	19.80
80.0	43.0	-28.9	.7	.0075	.00023	19.50	.0647	19.78

PB= 20.58 !ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	120.0	120.0	100.0	3.4476	.12582	168.91	.3372	25.52
120.0	119.0	118.9	97.1	3.3464	.12140	163.99	.3283	25.37
120.0	118.0	117.9	94.2	3.2474	.11713	159.24	.3196	25.23
120.0	117.0	116.8	91.4	3.1505	.11300	154.64	.3112	25.09
120.0	116.0	115.7	88.6	3.0557	.10900	150.18	.3030	24.95
120.0	115.0	114.6	85.9	2.9630	.10513	145.88	.2952	24.82
120.0	114.0	113.5	83.3	2.8722	.10138	141.71	.2876	24.69
120.0	113.0	112.4	80.7	2.7835	.09775	137.67	.2802	24.57
120.0	112.0	111.3	78.2	2.6967	.09424	133.76	.2730	24.45
120.0	111.0	110.2	75.7	2.6118	.09084	129.97	.2661	24.33
120.0	110.0	109.1	73.3	2.5288	.08754	126.31	.2594	24.22
120.0	109.0	108.0	71.0	2.4477	.08435	122.75	.2529	24.11
120.0	108.0	106.8	68.7	2.3683	.08125	119.31	.2466	24.01
120.0	107.0	105.7	66.4	2.2906	.07825	115.97	.2405	23.90
120.0	106.0	104.6	64.2	2.2147	.07534	112.73	.2346	23.81
120.0	105.0	103.4	62.1	2.1405	.07252	109.59	.2289	23.71
120.0	104.0	102.2	60.0	2.0680	.06979	106.54	.2233	23.62
120.0	103.0	101.1	57.9	1.9971	.06713	103.59	.2179	23.53
120.0	102.0	99.9	55.9	1.9277	.06456	100.72	.2127	23.44
120.0	101.0	98.7	53.9	1.8599	.06206	97.94	.2076	23.35
120.0	100.0	97.5	52.0	1.7937	.05964	95.24	.2027	23.27
120.0	99.0	96.3	50.1	1.7289	.05728	92.62	.1979	23.19
120.0	98.0	95.1	48.3	1.6656	.05500	90.08	.1933	23.11
120.0	97.0	93.9	46.5	1.6037	.05278	87.61	.1887	23.04
120.0	96.0	92.6	44.7	1.5433	.05063	85.22	.1844	22.97
120.0	95.0	91.4	43.0	1.4842	.04854	82.89	.1801	22.89
120.0	94.0	90.1	41.3	1.4264	.04651	80.63	.1760	22.83
120.0	93.0	88.8	39.7	1.3700	.04453	78.43	.1720	22.76
120.0	92.0	87.5	38.1	1.3149	.04262	76.30	.1681	22.69
120.0	91.0	86.2	36.5	1.2610	.04075	74.23	.1643	22.63
120.0	90.0	84.9	35.0	1.2083	.03895	72.21	.1606	22.57
120.0	89.0	83.5	33.5	1.1569	.03719	70.26	.1570	22.51
120.0	88.0	82.1	32.1	1.1066	.03548	68.35	.1536	22.45
120.0	87.0	80.7	30.6	1.0575	.03382	66.51	.1502	22.39
120.0	86.0	79.3	29.3	1.0095	.03220	64.71	.1469	22.34

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
120.0	86.0	79.3	29.3	1.0095	.03220	64.71	.1469	22.34
120.0	85.0	77.9	27.9	.9626	.03063	62.96	.1437	22.29
120.0	84.0	76.4	26.6	.9168	.02910	61.26	.1406	22.23
120.0	83.0	74.9	25.3	.8720	.02762	59.61	.1376	22.18
120.0	82.0	73.4	24.0	.8283	.02618	58.00	.1347	22.13
120.0	81.0	71.8	22.8	.7856	.02477	56.44	.1318	22.09
120.0	80.0	70.2	21.6	.7439	.02341	54.92	.1290	22.04
120.0	79.0	68.5	20.4	.7031	.02208	53.44	.1263	21.99
120.0	78.0	66.8	19.2	.6632	.02078	52.00	.1237	21.95
120.0	77.0	65.1	18.1	.6243	.01953	50.60	.1211	21.91
120.0	76.0	63.3	17.0	.5863	.01830	49.23	.1186	21.87
120.0	75.0	61.4	15.9	.5491	.01711	47.91	.1162	21.83
120.0	74.0	59.5	14.9	.5128	.01595	46.62	.1139	21.79
120.0	73.0	57.5	13.8	.4774	.01482	45.36	.1116	21.75
120.0	72.0	55.4	12.8	.4427	.01372	44.14	.1093	21.71
120.0	71.0	53.3	11.8	.4089	.01265	42.94	.1072	21.67
120.0	70.0	51.0	10.9	.3758	.01161	41.78	.1050	21.64
120.0	69.0	48.6	10.0	.3435	.01059	40.65	.1030	21.60
120.0	68.0	46.0	9.0	.3119	.00960	39.55	.1010	21.57
120.0	67.0	43.3	8.1	.2810	.00864	38.48	.0990	21.54
120.0	66.0	40.3	7.3	.2509	.00770	37.44	.0971	21.51
120.0	65.0	37.1	6.4	.2214	.00679	36.42	.0952	21.47
120.0	64.0	33.6	5.6	.1926	.00589	35.43	.0934	21.44
120.0	63.0	30.0	4.8	.1644	.00503	34.46	.0917	21.42
120.0	62.0	26.1	4.0	.1369	.00418	33.52	.0899	21.39
120.0	61.0	21.4	3.2	.1100	.00335	32.60	.0883	21.36
120.0	60.0	15.8	2.4	.0837	.00255	31.70	.0866	21.33
120.0	59.0	8.4	1.7	.0580	.00176	30.83	.0850	21.30
120.0	58.0	-2.6	1.0	.0329	.00100	29.98	.0835	21.28

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	160.0	160.0	100.0	9.6555	.55421	664.62	1.1651	42.79
160.0	159.0	159.0	97.6	9.4231	.52956	636.77	1.1176	41.89
160.0	158.0	158.0	95.2	9.1952	.50635	610.55	1.0729	41.05
160.0	157.0	156.9	92.9	8.9715	.48447	585.83	1.0308	40.26
160.0	156.0	155.9	90.7	8.7522	.46382	562.50	.9910	39.51
160.0	155.0	154.9	88.4	8.5370	.44429	540.44	.9534	38.81
160.0	154.0	153.9	86.2	8.3259	.42581	519.56	.9178	38.14
160.0	153.0	152.8	84.1	8.1190	.40829	499.77	.8840	37.50
160.0	152.0	151.8	82.0	7.9160	.39167	480.99	.8520	36.90
160.0	151.0	150.8	79.9	7.7170	.37588	463.15	.8216	36.33
160.0	150.0	149.7	77.9	7.5218	.36087	446.19	.7927	35.78
160.0	149.0	148.7	75.9	7.3305	.34658	430.05	.7651	35.27
160.0	148.0	147.7	74.0	7.1429	.33297	414.67	.7389	34.77
160.0	147.0	146.6	72.1	6.9591	.32000	400.01	.7139	34.30
160.0	146.0	145.6	70.2	6.7788	.30761	386.02	.6901	33.86
160.0	145.0	144.5	68.4	6.6021	.29578	372.66	.6673	33.43
160.0	144.0	143.5	66.6	6.4290	.28448	359.89	.6455	33.02
160.0	143.0	142.4	64.8	6.2593	.27367	347.67	.6247	32.63
160.0	142.0	141.4	63.1	6.0930	.26332	335.98	.6047	32.25
160.0	141.0	140.3	61.4	5.9301	.25340	324.78	.5857	31.89
160.0	140.0	139.2	59.8	5.7704	.24391	314.05	.5674	31.55
160.0	139.0	138.2	58.2	5.6140	.23480	303.76	.5498	31.22
160.0	138.0	137.1	56.6	5.4607	.22605	293.88	.5330	30.90
160.0	137.0	136.0	55.0	5.3106	.21764	284.40	.5168	30.60
160.0	136.0	135.0	53.5	5.1636	.20960	275.29	.5013	30.30
160.0	135.0	133.9	52.0	5.0195	.20186	266.54	.4863	30.02
160.0	134.0	132.8	50.5	4.8785	.19441	258.13	.4720	29.75
160.0	133.0	131.7	49.1	4.7403	.18724	250.03	.4582	29.49
160.0	132.0	130.6	47.7	4.6050	.18034	242.24	.4449	29.25
160.0	131.0	129.5	46.3	4.4725	.17370	234.74	.4321	29.00
160.0	130.0	128.4	45.0	4.3428	.16731	227.51	.4198	28.77
160.0	129.0	127.3	43.7	4.2158	.16114	220.55	.4079	28.55
160.0	128.0	126.2	42.4	4.0915	.15520	213.83	.3965	28.33
160.0	127.0	125.1	41.1	3.9698	.14947	207.36	.3854	28.13
160.0	126.0	124.0	39.9	3.8507	.14394	201.12	.3748	27.93

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	126.0	124.0	39.9	3.8507	.14394	201.12	.3748	27.93
160.0	125.0	122.9	38.7	3.7340	.13861	195.09	.3645	27.73
160.0	124.0	121.8	37.5	3.6199	.13346	189.27	.3546	27.55
160.0	123.0	120.6	36.3	3.5082	.12849	183.65	.3450	27.37
160.0	122.0	119.5	35.2	3.3989	.12369	178.23	.3358	27.19
160.0	121.0	118.3	34.1	3.2919	.11904	172.98	.3268	27.02
160.0	120.0	117.2	33.0	3.1873	.11456	167.92	.3182	26.86
160.0	119.0	116.0	31.9	3.0849	.11022	163.02	.3098	26.70
160.0	118.0	114.9	30.9	2.9847	.10603	158.28	.3018	26.55
160.0	117.0	113.7	29.9	2.8866	.10197	153.70	.2939	26.41
160.0	116.0	112.5	28.9	2.7908	.09805	149.26	.2864	26.26
160.0	115.0	111.3	27.9	2.6970	.09425	144.97	.2791	26.13
160.0	114.0	110.1	27.0	2.6052	.09058	140.82	.2720	25.99
160.0	113.0	108.9	26.0	2.5155	.08702	136.80	.2651	25.86
160.0	112.0	107.7	25.1	2.4277	.08357	132.91	.2585	25.74
160.0	111.0	106.5	24.2	2.3419	.08023	129.14	.2521	25.62
160.0	110.0	105.2	23.4	2.2580	.07700	125.48	.2458	25.50
160.0	109.0	104.0	22.5	2.1759	.07387	121.94	.2398	25.39
160.0	108.0	102.7	21.7	2.0957	.07083	118.51	.2339	25.28
160.0	107.0	101.4	20.9	2.0172	.06789	115.19	.2283	25.17
160.0	106.0	100.1	20.1	1.9405	.06503	111.96	.2228	25.07
160.0	105.0	98.8	19.3	1.8655	.06227	108.84	.2174	24.97
160.0	104.0	97.5	18.6	1.7922	.05958	105.81	.2123	24.87
160.0	103.0	96.2	17.8	1.7206	.05698	102.87	.2073	24.78
160.0	102.0	94.8	17.1	1.6505	.05446	100.02	.2024	24.68
160.0	101.0	93.4	16.4	1.5821	.05201	97.25	.1977	24.60
160.0	100.0	92.0	15.7	1.5151	.04963	94.56	.1931	24.51
160.0	99.0	90.6	15.0	1.4497	.04732	91.96	.1887	24.43
160.0	98.0	89.2	14.3	1.3858	.04508	89.43	.1844	24.35
160.0	97.0	87.7	13.7	1.3234	.04291	86.97	.1802	24.27
160.0	96.0	86.2	13.1	1.2623	.04080	84.59	.1761	24.19
160.0	95.0	84.7	12.4	1.2027	.03875	82.27	.1722	24.12
160.0	94.0	83.2	11.8	1.1444	.03676	80.02	.1683	24.04
160.0	93.0	81.6	11.3	1.0874	.03483	77.84	.1646	23.97
160.0	92.0	80.0	10.7	1.0318	.03295	75.72	.1610	23.91

PB= 20.58 ,ALTITUDE=10000.

DB	WB	DP	RH	PV	W	H	S	V
160.0	92.0	80.0	10.7	1.0318	.03295	75.72	.1610	23.91
160.0	91.0	78.3	10.1	.9774	.03113	73.66	.1575	23.84
160.0	90.0	76.6	9.6	.9243	.02936	71.66	.1541	23.78
160.0	89.0	74.9	9.0	.8724	.02763	69.71	.1507	23.71
160.0	88.0	73.1	8.5	.8217	.02596	67.82	.1475	23.65
160.0	87.0	71.3	8.0	.7722	.02433	65.98	.1444	23.59
160.0	86.0	69.4	7.5	.7238	.02275	64.20	.1413	23.54
160.0	85.0	67.4	7.0	.6766	.02122	62.46	.1384	23.48
160.0	84.0	65.4	6.5	.6304	.01972	60.77	.1355	23.43
160.0	83.0	63.3	6.1	.5853	.01827	59.13	.1327	23.37
160.0	82.0	61.0	5.6	.5412	.01686	57.53	.1300	23.32
160.0	81.0	58.7	5.2	.4982	.01548	55.98	.1273	23.27
160.0	80.0	56.3	4.7	.4561	.01414	54.47	.1247	23.22
160.0	79.0	53.7	4.3	.4151	.01284	53.00	.1222	23.18
160.0	78.0	50.9	3.9	.3750	.01158	51.57	.1198	23.13
160.0	77.0	48.0	3.5	.3358	.01035	50.18	.1174	23.09
160.0	76.0	44.8	3.1	.2975	.00915	48.83	.1151	23.04
160.0	75.0	41.3	2.7	.2601	.00799	47.52	.1129	23.00
160.0	74.0	37.4	2.3	.2236	.00685	46.23	.1107	22.96
160.0	73.0	33.0	1.9	.1879	.00575	44.99	.1086	22.92
160.0	72.0	28.4	1.6	.1530	.00467	43.77	.1065	22.88
160.0	71.0	23.1	1.2	.1190	.00363	42.59	.1045	22.84
160.0	70.0	16.3	.9	.0857	.00261	41.44	.1025	22.81
160.0	69.0	6.7	.6	.0533	.00162	40.32	.1006	22.77
160.0	68.0	-10.4	.2	.0215	.00065	39.23	.0988	22.74


DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS