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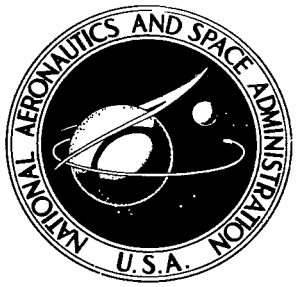

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THERMODYNAMIC PROPERTIES OF GASEOUS FLUOROCARBONS AND ISENTROPIC EQUILIBRIUM EXPANSIONS OF TWO BINARY MIXTURES OF FLUOROCARBONS AND ARGON

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ERRATA

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The chemical formula for one of the fluorocarbons is given incorrectly. Please change CCl_2F-CCl_2F to CCl_2F-$CClF_2$ in the following places:

ABSTRACT in line 6

SUMMARY (page 1) in line 6

INTRODUCTION (page 1) in line 11

Page 4 in 8th column heading of the table

Page 49 in 7th column heading of table B1 and in 7th column heading of table B2

Page 50 in 7th column heading of table B3

Two of the thermodynamic constants for fluorocarbon CCl_2F_2 are in error. Please make the following changes on page 49:

Table B1: In column 3, change the value for A_2 from -1.9×10^2 to -9.16×10^1

Table B2: In column 2, change the value for c_4 from -2.84×10^{-4} to -3.27×10^{-4}

An error has been found in the computer code which caused erroneous values to be added to the output in table IV for fluorocarbon C_4F_8 on page 104. Please replace pages 18, 22, 34, and 104 with the attached corrected pages.

ISSUED NOVEMBER 1978

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ERRATA

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An error has been found in the computer code which caused the tabulated fluorocarbon values of h/RT, c_p/R, and s/R to be in error by a constant multiplier. The molecular weight of CF_4 was erroneously used in conjunction with the universal gas constant, R, and the ice point of water, $T(273.15^\circ\ K)$, in converting the fluorocarbon values from U.S. Customary Units to the tabulated S.I. Units. The values in tables I, II, III, V, and VI are still usable, but conversion back to dimensional values will be in error unless multiplied by the molecular weight of the fluorocarbon in question divided by the molecular weight of CF_4.

Example: In table II convert $s/R = 7.50$ to dimensional units:

$$R = \tilde{R}/\tilde{M}$$

where

$\tilde{R}$ universal gas constant

$\tilde{M}$ molecular weight of CCl_2F_2

However, the molecular weight of CF_4 was incorrectly used to obtain $s/R = 7.50$. Therefore this value must be multiplied by $\tilde{M}_{CCl_2F_2}/\tilde{M}_{CF_4}$ to obtain the correct value for s/R:

$$\frac{s}{R} = 7.5\left(\frac{120.92}{88}\right) = 10.3057$$

The dimensional value of s is obtained as follows:

$$s = 10.3057\left(\frac{8314}{120.92}\right) = 708.58 \quad J/(kg\text{-}K)$$

The following corrections to the computer code will correct the error:

Page 21: Change line 375 from

```
IF(UNIO.GT.1.) STAB(I) = STAB(I)/44.289180
```

to

```
IF(UNIO.GT.1.) STAB(I) = STAB(I)/(EM/1.987)
```

Page 22: Change line 390 from

```
IF(UNIO.LE.1.) STAB(I) = STAB(I)/44.289180
```

to

```
IF(UNIO.LE.1.) STAB(I) = STAB(I)/(EM/1.987)
```

Page 39: Change lines 173 and 174 from

```
OUTS = S * 44.289180
OUTH = H * .090075418
```

to

```
OUTS = S * (EM/1.987)
OUTH = H * (EM/976.9483)
```

Change line 176 from

```
OUTCP = CP * 44.289180
```

to

```
OUTCP = CP * (EM/1.987)
```

Change line 193 from

```
IF(UNIO.EQ.2.) XPLOT(NN) = OUTH * .090075418
```

to

```
IF(UNIO.EQ.2.) XPLOT(NN) = OUTH * (EM/976.9483)
```

Page 43: Change line 54 from

```
OUTS = STAB(I) * 44.289180
```

to

```
OUTS = STAB(I) * (EM/1.987)
```

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16. Abstract

Equations and computer code are given for the thermodynamic properties of gaseous fluorocarbons in chemical equilibrium. In addition, isentropic equilibrium expansions of two binary mixtures of fluorocarbons and argon are included. The computer code calculates the equilibrium thermodynamic properties and, in some cases, the transport properties for the following fluorocarbons: CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, $CHCl_2F$, CHF_3, CCl_2F-$CClF_2$, $CClF_2$-$CClF_2$, CF_3-CF_3, and C_4F_8. Equilibrium thermodynamic properties are tabulated for six of the fluorocarbons (CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, CF_3-CF_3, and C_4F_8) and pressure-enthalpy diagrams are presented for $CBrF_3$.

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THERMODYNAMIC PROPERTIES OF GASEOUS FLUOROCARBONS AND ISENTROPIC EQUILIBRIUM EXPANSIONS OF TWO BINARY MIXTURES OF FLUOROCARBONS AND ARGON

Noel A. Talcott, Jr.
Langley Research Center

SUMMARY

Equations and computer code are given for the thermodynamic properties of gaseous fluorocarbons in chemical equilibrium. In addition, the thermodynamic properties of several binary mixtures of fluorocarbons and argon are included. The computer code calculates the thermodynamic properties and, in some cases, the transport properties for the following fluorocarbons: CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, $CHCl_2F$, CHF_3, $CCl_2F\text{-}CClF_2$, $CClF_2\text{-}CClF_2$, $CF_3\text{-}CF_3$, and C_4F_8.

Equilibrium thermodynamic properties are tabulated for six of the fluorocarbons (CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, $CF_3\text{-}CF_3$, and C_4F_8) for constant values of a dimensionless entropy s/R in increments of 0.5 and up to 588 K. Pressure-enthalpy diagrams containing lines of constant entropy, temperature, volume, and compressibility factor can be generated by the computer program. An example of these plots has been included for $CBrF_3$.

The thermodynamic properties are also tabulated for two equilibrium isentropic expansions for binary mixtures of $CBrF_3$-argon and CCl_2F_2-argon.

INTRODUCTION

Several gaseous fluorocarbons are being or have recently been used in hypersonic wind tunnels to simulate real-gas effects on aerodynamic shapes. (See refs. 1 and 2.) Also fluorocarbon-argon mixtures are currently being examined for nozzle exhaust plume simulation at hypersonic speeds. (See refs. 3 and 4.) This research in turn has generated interest in the thermodynamic and transport properties of fluorocarbons and fluorocarbon-argon mixtures.

A previous computer code (ref. 5) was written to generate the properties for CF_4. This report describes a more general version of that program which will provide the thermodynamic properties and, in some cases, the transport properties for the following fluorocarbons: CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, $CHCl_2F$, CHF_3, $CCl_2F\text{-}CClF_2$, $CClF_2\text{-}CClF_2$, $CF_3\text{-}CF_3$, and C_4F_8.

The equations and computer code are presented for the thermodynamic properties of the fluorocarbons. These properties are tabulated for six of the fluorocarbons (CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, $CF_3\text{-}CF_3$, and C_4F_8) for constant values of a dimensionless entropy s/R in increments of 0.5 and up to 588 K. Pressure-enthalpy diagrams containing lines of constant entropy, temperature, volume, and

compressibility factor can be generated by the program. Because of the current interest in using $CBrF_3$-argon mixtures in simulating scramjet exhaust flows, plots for $CBrF_3$ are included to demonstrate this capability.

Appendix A presents the computer code for calculating thermodynamic properties of selected fluorocarbons. The constants for the thermodynamic equations for the 10 fluorocarbons are given in appendix B. Through the use of an available computer code (ref. 6), the thermodynamic properties for two equilibrium expansions of binary mixtures for $CBrF_3$-argon and CCl_2F_2-argon are given in appendix C.

SYMBOLS

A,B,C,D,E,F,G,L	constants in saturation pressure equation (eq. (12))
$A',B',C',D',E',F',G',H',I',J'$	constants in entropy equation (eq. (15))
A_1,B_1,C_1,D_1,E_1,F_1	constants in saturation pressure equation (eq. (22))
$A_2,A_3,A_4,A_5,A_6,B_2,B_3,B_4,B_5,B_6,b,C_2,C_3,C_5,K$	constants in equation of state (eq. (1))
$A_2',A_3',A_4',B_2',B_3',B_4',C_2',C_4',D_4'$	constants in equation of state (eq. (13))
A_s,B_s,C_s,D_s,E_s	constants in saturation pressure equation (eq. (17))
a	speed of sound
a',b',c',d',e'	constants in equation for specific heat (eq. (14))
a_1,b_1,c_1,d_1,f_1	constants in equation for specific heat (eq. (19))
a_4,b_4,c_4,d_4,f_4	constants in equation for specific heat (eq. (2))
c_p	specific heat at constant pressure
c_v	specific heat at constant volume
f	functional notation
h	enthalpy
J	unit conversion factor
K',L',M',N',P'	constants in enthalpy equation (eq. 16))

k	thermal conductivity
k^*	thermal conductivity at atmospheric pressure
M	molecular weight
m,n	exponents in equation (24)
N,P,Q	constants in viscosity equation (eq. (23))
N_{Pr}	Prandtl number, $\mu c_p/k$
p	pressure
R	gas constant
s	entropy
T	temperature
V	specific volume
X	constant in enthalpy equation (eq. (4))
X'	constant in enthalpy equation (eq. (21))
Y	constant in entropy equation (eq. (3))
Y'	constant in entropy equation (eq. (20))
Z	compressibility factor, pV/RT
α	constant in equation of state (eqs. (1) and (18))
β	proportionality constant (eq. (24))
β'	constant in equation of state (eq.(18))
γ	ratio of specific heats, c_p/c_v
γ_e	isentropic exponent (eq. (8))
μ	viscosity
μ^*	viscosity at atmospheric pressure
ξ	viscosity parameter, $T_c^{1/6}/M^{1/2}p_c^{2/3}$
ρ	density, $1/V$
ρ_R	reduced density, V_c/V

Subscripts:

c	critical
R	reference
s	saturation
0	stagnation

PHYSICAL CHARACTERISTICS

Fluorocarbons are organic compounds containing one or more carbon atoms and flourine. Chlorine, bromine, and hydrogen atoms also may be present. Their principal characteristics include nonflammability, low toxicity, excellent thermal and chemical stability, high density coupled with low boiling point, low viscosity, and low surface tension. (See ref. 7.) Physical properties of fluorocarbon compounds of interest herein are contained in the following table:

Characteristic	Value for fluorocarbon -									
	CCl_3F	CCl_2F_2	$CBrF_3$	CF_4	$CHCl_2F$	CHF_3	$CCl_2F\text{-}CClF_2$	$CClF_2\text{-}CClF_2$	$CF_3\text{-}CF_3$	C_4F_8
Molecular weight	137.37	120.92	148.92	88.0	102.93	70.01	187.38	170.93	138.01	200.04
Boiling point at 1 atm, K	296.67	243.12	215.18	148.38	281.79	190.93	320.40	276.64	194.73	267.09
Freezing point, K	161.88	115.26	105.27	89.17	138.01	117.81	237.91	179.08	172.37	231.76
Critical temperature, K	470.68	384.76	339.81	227.26	451.19	298.74	486.77	418.45	292.58	388.42
Critical pressure, atm	43.5	40.6	39.1	36.96	51.0	47.70	33.7	32.2	29.4	26.78
Critical volume, $cm^3\text{-}mol^{-1}$	247.0	217.0	200.0	141.0	197.0	133.0	325.0	293.0	225.0	322.63
Critical density, $kg\text{-}m^{-3}$	554.24	557.44	744.86	625.68	514.19	525.09	576.67	581.79	612.07	611.91
Density, liquid at 298 K, $kg\text{-}m^{-3}$	1475.94	1310.95	1537.94	1316.88	1366.06	669.89	1564.85	1456.24	1587.11	1500.0
Density, saturated vapors at boiling point, $kg\text{-}m^{-3}$	5.879	6.327	8.714	7.625	4.565	4.66	7.385	7.833	9.002	8.8102
Specific heat, liquid at 298 K, $J\text{-}kg^{-1}\text{-}K^{-1}$	870.27	970.69	870.27	1230.10	1071.10	1443.48	912.11	1016.71	970.69	906.55
Specific-heat ratio at 1 atm and 298 K	1.137	1.137	1.144	1.159	1.175	1.191	1.080	1.084	1.085	1.066
Heat of vaporization at boiling point, $MJ\text{-}kg^{-1}$	.18025	.16521	.11879	.13600	.24221	.23958	.14679	.13612	.11709	.10697 (at 294 K)

THERMODYNAMIC PROPERTIES OF GASEOUS FLUOROCARBONS

The following equations were provided by E. I. du Pont de Nemours & Co. (ref. 8) and can be applied to all the fluorocarbons of interest herein (see previous section) except $CBrF_3$ and $CF_3\text{-}CF_3$ which will be handled separately. All the coefficients can be found listed by fluorocarbon in appendix B. (The coefficients were supplied in U.S. Customary Units and have been converted to SI Units.)

The equation of state is

$$p = \frac{RT}{V - b} + \frac{A_2 + B_2T + C_2e^{-KT}}{(V - b)^2} + \frac{A_3 + B_3T + C_3e^{-KT}}{(V - b)^3} + \frac{A_4 + B_4T}{(V - b)^4}$$
$$+ \frac{A_5 + B_5T + C_5e^{-KT}}{(V - b)^5} + (A_6 + B_6T)e^{\alpha V} \qquad (1)$$

where p is given in Pa, V in m^3-kg^{-1}, and T in K.

The specific heat at constant volume is given by

$$c_v = a_4 + b_4T + c_4T^2 + d_4T^3 + \frac{f_4}{T^2} - TK^2e^{-KT}\left[\frac{C_2}{V - b} + \frac{C_3}{2(V - b)^2} + \frac{C_5}{4(V - b)^4}\right] \qquad (2)$$

where c_v is in J-kg^{-1}-K^{-1}.

The equation for entropy is

$$s = a_4 \log_e T + b_4T + \frac{c_4T^2}{2} + \frac{d_4T^3}{3} - \frac{f_4}{2T^2} + R \log_e (V - b) - \left[\frac{B_2}{V - b} + \frac{B_3}{2(V - b)^2}\right.$$
$$\left. + \frac{B_4}{3(V - b)^3} + \frac{B_5}{4(V - b)^4} - \frac{B_6}{\alpha} e^{\alpha V}\right] + Ke^{-KT}\left[\frac{C_2}{V - b} + \frac{C_3}{2(V - b)^2}\right.$$
$$\left. + \frac{C_5}{4(V - b)^4}\right] + Y \qquad (3)$$

where s is given in J-kg^{-1}-K^{-1}.

The enthalpy is given by a similar expression

$$h = a_4T + \frac{b_4T^2}{2} + \frac{c_4T^3}{3} + \frac{d_4T^4}{4} - 1.8\frac{f_4}{T} + pV + \left[\frac{A_2}{V - b} + \frac{A_3}{2(V - b)^2} + \frac{A_4}{3(V - b)^3}\right.$$
$$\left. + \frac{A_5}{4(V - b)^4} - \frac{A_6}{\alpha} e^{\alpha V}\right] + e^{-KT}(1 + KT)\left[\frac{C_2}{V - b} + \frac{C_3}{2(V - b)^2} + \frac{C_5}{4(V - b)^4}\right] + X \qquad (4)$$

where h is given in J-kg^{-1}.

A general computer code was developed by using an existing code for CF_4 and it will compute all the thermodynamic variables, the coefficients for a

specific fluorocarbon being given. In addition, the program also calculates the specific heat at constant pressure c_p, ratio of specific heats γ, isentropic exponent γ_e, speed of sound a, and compressibility factor Z at the same thermodynamic point. The equations for these additional thermodynamic properties are

Specific heat at constant pressure:

$$c_p = c_v - T \frac{\left[(\partial p/\partial T)_V\right]^2}{(\partial p/\partial V)_T} \tag{5}$$

Specific heat ratio:

$$\gamma = \frac{c_p}{c_v} = 1 - T \frac{\left[(\partial p/\partial T)_V\right]^2}{c_v(\partial p/\partial V)_T} \tag{6}$$

Speed of sound:

$$a = \left[\left(\frac{\partial p}{\partial \rho}\right)_s\right]^{1/2} = \left[\gamma\left(\frac{\partial p}{\partial \rho}\right)_T\right]^{1/2} = \left[-\gamma V^2\left(\frac{\partial p}{\partial V}\right)_T\right]^{1/2} = \left\{\frac{V^2 T}{c_v}\left[\left(\frac{\partial p}{\partial T}\right)_V\right]^2 - V^2\left(\frac{\partial p}{\partial V}\right)_T\right\}^{1/2} \tag{7}$$

Isentropic exponent:

$$\gamma_e = \left(\frac{d \log p}{d \log \rho}\right)_s = \frac{\rho}{p}\left(\frac{dp}{d\rho}\right)_s = \frac{a^2}{pV} \tag{8}$$

Compressibility factor:

$$Z = \frac{pV}{RT} \tag{9}$$

where the partial derivatives in c_p, γ, and a are

$$\left(\frac{\partial p}{\partial T}\right)_V = \frac{R}{V - b} + \frac{B_2 - KC_2e^{-KT}}{(V - b)^2} + \frac{B_3 - KC_3e^{-KT}}{(V - b)^3} + \frac{B_4}{(V - b)^4} + \frac{B_5 - KC_5e^{-KT}}{(V - b)^5} + B_6e^{\alpha V} \tag{10}$$

$$\left(\frac{\partial p}{\partial V}\right)_T = -\frac{RT}{(V - b)^2} - \frac{2\left(A_2 + B_2T + C_2e^{-KT}\right)}{(V - b)^3} - \frac{3\left(A_3 + B_3T + C_3e^{-KT}\right)}{(V - b)^4} - \frac{4(A_4 + B_4T)}{(V - b)^5} - \frac{5\left(A_5 + B_5T + C_5e^{-KT}\right)}{(V - b)^6} + \alpha(A_6 + B_6T)e^{\alpha V} \tag{11}$$

These expressions are limited to temperatures above the saturated vapor line. The saturation pressure in Pa as a function of saturation temperature in degrees kelvin is

$$\log_e p = A + \frac{B}{T} + C \log_e [T(1.8)] + DT + E\left(\frac{F - T}{T}\right) \log_e [F - T(1.8)] + GT^2 + LT^3 \tag{12}$$

Equations (1) to (12) are also limited to temperatures below those at which dissociation occurs.

THERMODYNAMIC PROPERTIES OF $CBrF_3$ AND CF_3-CF_3

$CBrF_3$

The following equations provide the thermodynamic properties for $CBrF_3$ (ref. 9):

Equation of state:

$$p = \frac{A_2' + B_2'T - C_2'/T^3}{V^2} + \frac{A_3' + B_3'T}{V^2} + \frac{A_4' + B_4'T - C_4'/T^3}{V^4} + \frac{D_4'T}{V} \tag{13}$$

where p is given in Pa, V in m^3/kg, and T in K and where

$A_2' = -6.70681 \times 10^1$

$B_2' = 1.06221 \times 10^{-1}$

$C_2' = 2.707789 \times 10^7$

$A_3' = 4.6056 \times 10^{-2}$

$B_3' = -7.484318 \times 10^{-5}$

$A_4' = -1.873886 \times 10^{-5}$

$B_4' = 4.052713 \times 10^{-8}$

$C_4' = -3.891135 \times 10^1$

$D_4' = 5.581949 \times 10^1$

Specific heat at constant volume:

$$c_v = a' + b'T + c' + \frac{d'}{VT^4} + \frac{e'}{V^3T^4} \tag{14}$$

where c_v is in J/kg-K and T in K and where

$a' = 7.322 \times 10^{1}$

$b' = 1.461053 \times 10^{2}$

$c' = -1.1313381 \times 10^{-3}$

$d' = 2.209712 \times 10^{9}$

$e' = -8.358194 \times 10^{7}$

Entropy:

$$s = A' \log_e T + B'T + C'T^2 + \frac{D'}{VT^4} + \frac{E'}{V^3T^4} + F' \log_e V + \frac{G'}{V} + \frac{H'}{V^2} + \frac{I'}{V^3} + J' \qquad (15)$$

where s is in J/kg-K and where

$A' = 7.32682 \times 10^{1}$

$B' = 1.462016$

$C' = -5.663429 \times 10^{-4}$

$D' = -8.123486 \times 10^{7}$

$E' = 4.699288 \times 10^{1}$

$F' = 5.582002 \times 10^{1}$

$G' = -1.062235 \times 10^{-1}$

$H' = 3.7422337 \times 10^{-5}$

$I' = -1.3540801 \times 10^{-8}$

$J' = -2.6025689 \times 10^{2}$

Enthalpy:

$$h = a'T + \frac{b'}{2} T^2 + \frac{c'}{3} T^3 + \frac{K'}{VT^3} + \frac{L'}{V^3T^3} - \frac{(M' + B_2')T}{V} + \frac{(N' - B_3')T}{V^2}$$

$$- \frac{(F'/3 + B_4')T}{V^3} + P' \qquad (16)$$

where h is in J/kg and where

$$K' = -1.353914 \times 10^{8}$$

$$L' = 1.096500 \times 10^{2}$$

$$M' = 1.341382 \times 10^{2}$$

$$N' = 6.908596 \times 10^{-2}$$

$$P' = 4.9827721$$

Saturation pressure:

$$\log_e p_s = \frac{A_s}{T^2} + \frac{B_s}{T} + C_s + D_s T + E_s T^2 \qquad (17)$$

where p_s is in Pa and where

$$A_s = -1.367130 \times 10^{4}$$

$$B_s = -9.975989 \times 10^{2}$$

$$C_s = 1.1161025 \times 10^{1}$$

$$D_s = -7.89102 \times 10^{-3}$$

$$E_s = 1.012772 \times 10^{-5}$$

CF_3-CF_3

The following expressions give the thermodynamic properties of CF_3-CF_3 (ref. 10):

Equation of state:

$$p = \frac{RT}{V - \beta'} - \frac{\alpha T^{-1/2}}{V(V + \beta')} \qquad (18)$$

where p is given in Pa, V in m^3/kg, and T in K, and where

$$R = 60.24225 \text{ J/kg-K}$$

$$\beta' = 0.0005133877 \text{ } m^3/kg$$

$$\alpha = 0.07657512 \text{ } Jm^3\text{-}K^{1/2}/kg^2$$

Specific heat at constant volume:

$$c_v = a_1 + b_1T + c_1T^2 + d_1T^3 + \frac{f_1}{T^2} + \frac{3\alpha T^{-3/2}}{4\beta'} \log_e\left(\frac{V + \beta'}{V}\right) \qquad (19)$$

where c_v is in J/kg-K

$a_1 = 9.952795 \times 10$

$b_1 = 2.608545$

$c_1 = -1.926454 \times 10^{-3}$

$d_1 = 1.857347 \times 10^{-7}$

$f_1 = -3.473992 \times 10^{5}$

Entropy:

$$s = a_1 \log_e T + b_1T + \frac{c_1T^2}{2} + \frac{d_1T^3}{3} + - \frac{f_1}{2T^2} + R \log_e (V - \beta')$$

$$- \frac{\alpha}{2\beta'} T^{-3/2} \log_e\left(\frac{V + \beta'}{V}\right) + Y' \qquad (20)$$

where s is in J/kg-K and $Y' = 6.510304$ kJ/kg-K

Enthalpy:

$$h = a_1T + \frac{b_1T^2}{2} + \frac{c_1T^3}{3} + \frac{d_1T^4}{4} - \frac{f_1}{T} + pV - \frac{3\alpha T^{-1/2}}{2\beta'} \log_e\left(\frac{V - \beta'}{V}\right) + X' \qquad (21)$$

where h is in J/kg and $X' = 0.3688302$ kJ/kg

Saturation pressure:

$$\log_e p_s = A_1 + \frac{B_1}{T} + C_1 \log_e T + D_1T + \frac{E_1(F_1 - T)}{T} [\log_e (F_1 - T) + 0.25527]$$

$$+ 0.52553 \qquad (22)$$

where

$A_1 = 0.3762282521 \times 10^{2}$

$B_1 = -1.031833 \times 10^{3}$

$$C_1 = -0.1297816132 \times 10^2$$

$$D_1 = 0.01321347$$

$$E_1 = -0.537560386$$

$$F_1 = 0.297317 \times 10^3$$

where p_s is in Pa.

Transport Properties of the Gaseous Fluorocarbons

Experimental data for the viscosity and thermal conductivity of the tabulated fluorocarbons at a pressure of 1 atmosphere were curve fitted and are contained in reference 11. (Ref. 11 is currently being revised to correct typographical errors in many of the transport equations.) The temperature range of the data varies from fluorocarbon to fluorocarbon and cannot be given in general. As mentioned previously, this report does not contain transport data for all the listed fluorocarbons but this information is available in reference 11 if needed.

Viscosity.- The empirical equation is usually of the form

$$\mu^* = \frac{\sqrt{T}}{N + (P/T) + (Q/T^2)} \times 10^{-6} \tag{23}$$

where μ^* is in newton-second per square meter and the constants N, P, and Q must be determined for each fluorocarbon. To obtain the viscosity at pressures other than 1 atmosphere, the residual viscosity is expressed as a function of the density, molecular weight, and critical constants of the substance (ref. 12) through a dimensional analysis treatment, and the correct dependencies are established by the use of experimental data. The dimensional analysis treatment (ref. 11) resulted in the following expression:

$$(\mu - \mu^*)\xi = \frac{\beta}{R^{1/6}} Z_c^m \rho_R^n \tag{24}$$

Experimental high-pressure viscosities for the gaseous and liquid phases available in the literature for 14 polar substances including 5 fluorocarbons (CCl_3F, CCl_2F_2, $CHCl_2F$, $CHClF_2$, and $C_2Cl_3F_3$) were used (ref. 13) in conjunction with pressure-volume-temperature data to establish the constant β and the exponents m and n of equation (24). Plots of $(\mu - \mu^*)\xi$ against ρ_R (ref. 13) were found to be essentially the same for all 14 substances; therefore, it was concluded that the exponent m of Z_c in equation (24) was zero. The analytical representations of the residual viscosity correlation for the 14 polar substances (ref. 13) which should also apply to the fluorocarbons selected here are

$$\left.\begin{aligned}
(\mu - \mu^*)\xi &= 16.56 \times 10^{-8}\ \rho_R{}^{1.111} && (\rho_R \leqq 0.10) \\
(\mu - \mu^*)\xi &= 0.607 \times 10^{-8}(9.045\rho_R + 0.63)^{1.739} && (0.10 < \rho_R < 0.90) \\
-\log_e [(\mu - \mu^*)\xi] &= 10^{0.6439-0.1005\rho_R-\Delta} + 3 && (0.90 < \rho_R < 2.6)
\end{aligned}\right\} \quad (25)$$

where $\Delta = 0$ for $0.9 < \rho_R < 2.2$ and $\Delta = 4.75 \times 10^{-4}\ (\rho_R{}^3 - 10.65)$ for $2.2 < \rho_R < 2.6$ and $\xi = \dfrac{T^{1/6}}{M^{1/2}p_c{}^{2/3}}$ with μ in newton-second per square meter.

The viscosity equations for the fluorocarbons included herein are

CCl_2F_2:

$$\mu^* = \frac{\sqrt{T}}{0.75309 + (188.969/T) - (803.786/T^2)} \times 10^{-6} \quad (26)$$

$CBrF_3$:

$$\mu^* = \frac{\sqrt{T}}{0.63388 + (144.691/T) - (1087.52/T^2)} \times 10^{-6} \quad (27)$$

CF_4:

$$\mu^* = \frac{\sqrt{T}}{0.64625 + (103.0/T) - (3.42714/T^2)} \times 10^{-6} \quad (28)$$

CF_3-CF_3:

$$\mu^* = (12.778\sqrt{T} - 78.8) \times 10^{-7} \quad (29)$$

Thermal conductivity.- The empirical equation cannot be given in general for the fluorocarbons at a pressure of 1 atmosphere. However, the thermal conductivity relationship can be extended to pressures other than 1 atmosphere in the same manner as the viscosity was. Residual thermal conductivities $k - k^*$ for CF_4 were obtained from experimental data and correlated with the corresponding reduced densities (ref. 14) to produce the following expression:

$$k - k^* = 7.19 \times 10^{-3}[\exp(\rho_R) - 1] \quad (30)$$

where $k - k^*$ is in $Wm^{-1}\text{-}K^{-1}$. This equation represents the thermal conductivity of CF_4 in the dense gas region and should also be fairly representative of the thermal conductivity of the other fluorocarbons listed.

The thermal conductivity equations for the fluorocarbons included are

CCl_2F_2:

$$k^* = \frac{2.3220\sqrt{T}}{727.58 + (6.891667 \times 10^5/T) + (1.007883 \times 10^6/T^3)} \tag{31}$$

$CBrF_3$:

$$\left.\begin{aligned} k^* &= 1.73073\left\{0.0041 + (1.6 \times 10^{-5})[T(1.8) - 459.67]\right\} && (T < 600\ K) \\ k^* &= \frac{\sqrt{T}}{558.966 + (2.14363 \times 10^5) + (1.65119 \times 10^7) + (8.31701 \times 10^9)} && (T > 600\ K) \end{aligned}\right\} \tag{32}$$

CF_4:

$$k^* = 1.73073\ [(7.291 \times 10^{-3}) + (2.377 \times 10^{-5})(9/5T - 459.67)] \tag{33}$$

CF_3-CF_3:

$$k^* = (9.591 \times 10^{-5})T - 0.01163 \tag{34}$$

CALCULATION PROCEDURE

In generating the thermodynamic and transport properties of the fluorocarbons by using the computer code given in appendix A, certain boundaries were put on the thermodynamic regime of interest in terms of temperature and volume. These boundaries encompass the range of current interest for these fluorocarbons but the equations are applicable over a much broader base and their limits may be found in reference 8. The boundaries used are

(a) The saturation pressure line (eq. (12)) $p_s = f(T_s)$. The saturation volume was determined from the equation of state (eq. (1)) $p_s = f(T_s, V_s)$.

(b) The critical volume line.

(c) The constant temperature line, in this case 588 K. This could be changed if so desired to give more information on a given fluorocarbon.

(d) The constant volume line (procured from the simultaneous solution of the saturation pressure equation (eq. (12)) and the equation of state (eq. (1)). The other thermodynamic and the transport properties along the boundary are now easily calculated since they are expressed as a function of T and V.

To present the thermodynamic and transport property data in a convenient form, it is advantageous to calculate the properties at specified values of a given variable. A good example is the entropy which remains constant during a frequently occurring class of expansions in gas dynamic analysis. First, s

is determined at the critical point which gives a lower limit for the thermodynamic regime. The upper limit on s is determined by inserting the highest temperature and volume occurring on the boundaries of the specified regime into equation (3). The entropy is then divided into equal intervals between the upper and lower limits and set at the partition nearest the lower limit. The volume is set slightly above the critical value in order to avoid the large gradients and consequent convergence difficulties that occur along the critical volume line and the corresponding temperature calculated. This procedure gives an upper limit on the temperature for the specified value of the entropy. With the entropy held constant, the temperature is reduced at even intervals and the volume calculated at each temperature point until the saturated volume on the upper limit is exceeded. The transport properties and remaining thermodynamic variables which are functions of T and V are then calculated for the specified value of the entropy. This procedure is repeated at each entropy interval until the limits have been spanned.

RESULTS AND DISCUSSION

Equilibrium thermodynamic data and transport property data (when included) are presented in tables I to VI in dimensionless entropy s/R increments of 0.5 for CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, CF_3-CF_3, and C_4F_8. The entropy range varies from fluorocarbon to fluorocarbon.

CF_4 (tetrafluoromethane) has been included in the tables because an error was discovered in the reference conditions (S_R and H_R) used in reference 5 which contained tabulated properties for CF_4. The correct reference conditions should have been $S_R = 3.542$ J-kg^{-1}-K^{-1} and $H_R = 465710$ J-kg^{-1}. In addition, the enthalpy equation, equation (8), in reference 5 contains several erroneous terms and adds to the errors. A comparison was made between the two tables and an estimate of the errors in reference 5 was made. For values of specific volume V above 0.030 m^3-kg^{-1}, it appears that the error is negligible. For values between 0.030 and 0.0055 m^3-kg^{-1}, the errors in h and s are on the order of 0.5 percent. In the range between 0.0055 and 0.0026, the error increases up to a maximum of 4.5 percent which occurs at $V = 0.0026$ m^3-kg^{-1}. All errors are positive (that is, values in ref. 5 are too large).

Pressure-enthalpy diagrams are presented in figures 1 and 2 for $CBrF_3$ to show this feature of the code. Each of the figures contain lines of constant entropy and volume. In addition to having these lines in common, figure 1 contains constant temperature lines, and figure 2 contains lines of constant compressibility factor.

Binary mixtures of fluorocarbons and argon are being used as substitute gases to simulate high-temperature air flows in the flight Mach number range between 4 and 10. The properties of these mixtures can be easily computed, if it can be shown that they are thermally perfect (compressibility effects are negligible) in the range of interest. The tabulated thermodynamic properties of both $CBrF_3$ and CCl_2F_2 show that over the range of the experimental tests, $T < 600$ K and $p < 0.5$ atm, the compressibility factor Z remains very close to 1.00 and therefore pressure effects are small and can be neglected.

Thermally perfect species can have their thermodynamic properties, namely, s, h, and c_p, considered as functions of temperature only. By using the computer code of reference 6, the thermodynamic properties for equilibrium expansions of $CBrF_3$-argon and CCl_2F_2-argon mixtures (recommended for scramjet nozzle plume simulation (ref. 3)) were tabulated and are included in appendix C.

CONCLUDING REMARKS

Equations for the thermodynamic properties of gaseous fluorocarbons in chemical equilibrium have been generated by using as accurate an equation of state and curve fits of specific heat as are available. The equations along with available equations for the transport properties of the fluorocarbons have been built into a computer code. Thermodynamic and transport property data generated by this code are tabulated for CCl_3F, CCl_2F_2, $CBrF_3$, CF_4, CF_3-CF_3, and C_4F_8 and presented in a form which lends itself to a convenient gas dynamic analysis over thermodynamic regimes not previously examined.

In addition, it is shown that binary mixtures of fluorocarbon-argon can be considered thermally perfect over their current range of application for scramjet nozzle exhaust plume simulation. This condition leads to a very quick method for calculating the thermodynamic properties of equilibrium expansions of these mixtures which, in turn, provide the chemical data for existing two- and three-dimensional flow-field computer codes.

Langley Research Center
National Aeronautics and Space Administration
Hampton, VA 23665
January 27, 1977

APPENDIX A

COMPUTER CODE FOR CALCULATING THERMODYNAMIC PROPERTIES OF SELECTED FLUOROCARBONS

A Fortran IV Control Data Series 6000 computer code was developed for evaluating the thermodynamic properties of gaseous fluorocarbons in chemical equilibrium. The computer code calculates the following thermodynamic variables: entropy, temperature, volume, pressure, enthalpy, specific heat at constant pressure, specific-heat ratio, speed of sound, isentropic expansion exponent, compressibility factor, viscosity, and thermal conductivity.

The computer code itself is well documented, straightforward, and the user inputs are minimal. Provision has been included to allow the addition of other fluorocarbons governed by the same set of general equations provided the user supplies the necessary coefficients for the equations. An output option exists that allows for output of the thermodynamic properties in either SI or U.S. Customary Units. A listing of the program follows.

APPENDIX A

PROGRAM LISTING

```
      PROGRAM FREONS(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT)
C ***************************************************************************
C        PROGRAM FREONS CONTROLS COMPUTATION OF GAS PROPERTIES FOR THE
C     FOLLOWING FREON COMPOUNDS WHICH CAN BE SELECTED BY INPUTING THE
C     APPROPRIATE NUMBER CODE. A MINUS  PRECEDING  THE CODE WILL GIVE THE
C     OUTPUT IN US UNITS, OTHERWISE SI UNITS ARE OUTPUT.
C
C        ****** NOTE: AT THIS TIME THE OPTIONS FOR FREON 13 AND ******
C        ****** FREON 22 ARE NOT WORKING PROPERLY DUE TO ERRORS ******
C        ****** IN THE THERMODYNAMIC CONSTANTS. ONCE CORRECTED  ******
C        ****** THESE OPTIONS WILL BE AVAILABLE.                ******
C
C         FREON COMPOUND                NUMBER CODE (NAME)
C
C         FREON 11 (CCL3F)                    1
C         FREON 12 (CCL2F2)                   2
C         FREON 13 (CCLF3)                    3
C         FREON 13B1 (CBRF3)                  4
C         FREON 14 (CF4)                      5
C         FREON 21 (CHCL2F)                   6
C         FREON 22 (CHCLF2)                   7
C         FREON 23 (CHF3)                     8
C         FREON 113 (CCL2FCCLF2)              9
C         FREON 114 (CCLF2CCLF2)             10
C         FREON 116 (CF3CF3)                 11
C         FREON C318 (C-C4F8)                12
C         OTHER                              13
C
C     A PROVISION HAS BEEN ADDED TO ALLOW ADDITIONAL COMPOUNDS PROVIDED
C     THE USER SUPPLIES THE THERMODYNAMIC CONSTANTS FOR THE EQUATIONS.
C     CHECK THE REPORT TO SEE IF THE COMPOUND IS COMPATIBLE WITH THESE
C     EQUATIONS. THIS OPTION IS SELECTED BY INPUTING NUMBER CODE 13.
C
C     PLOT OUTPUT IS ALSO AVAILABLE TO THE USER AND IS CONTROLLED
C     BY THE INPUT PARAMETER CALLED NOPLOT. NOPLOT IS INPUT ON THE
C     CARD CONTAINING THE NUMBER CODE. FOUR OPTIONS ARE AVAILABLE
C     TO THE USER.
C
C         PLOT OPTION                   NOPLOT VALUE
C
C         NO PLOT                            0
C       LINES OF S/R ONLY                   11
C       S/R LINES + OTHERS                 -11
C       LINES OTHER THAN S/R                 1
C
C     TO OBTAIN PLOTS OTHER THAN LINES OF CONSTANT S/R THE USER
C     MUST INPUT THE APPROPRIATE TABULAR DATA FOR EACH SET OF
C     LINES. THIS IS DONE VIA NAMELIST N2 AND MUST BE INPUT FOR
C     EACH SET OF LINES DESIRED. THE FOLLOWING TABULAR DATA
C     COMPRISES THE VARIOUS INPUTS: V TABLE (VTAB IN
C     M3/KGM), T TABLE (TTAB IN DEGK), Z TABLE (ZTAB NONDIMENSIONAL)
C     A TABLE (ATAB IN M/SEC), AND G TABLE (GTAB NONDIMENSIONAL). IF
C     UNIN EQUALS TWO IN NAMELIST N2 THEN US UNITS MAY BE INPUT ;
C     V-FT3/LB, T-DEGR, A-FT/SEC.
C
C     INDICATE WHICH LINES ON THE PLOT ARE DESIRED BY SETTING THE
C     PLOT FLAGS TO ONE. NAMELIST PLOTIN IS USED TO INPUT THE FLAG
C     CONDITIONS AND MUST BE READ BEFORE NAMELIST N2. ( CONSTANT
C     VOLUME LINES,PLOTV, CONSTANT TEMPERATURE LINES,PLOTT, CONSTANT
C     COMPRESSIBILTY LINES,PLOTZ, LINES OF CONSTANT A(SPEED OF SOUND),
C     PLOTA, AND CONSTANT GAMMA LINES,PLOTG ). A LISTING OF THE PLOT
C     COMPUTATIONS IS AVAILABLE IF PLOTOUT IS SET EQUAL TO ONE.
C ***************************************************************************
      DIMENSION VDLTAB(28),DELTAB(28)
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      DIMENSION FRENAME(26)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,J860A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM4C,SUM41,SUM42,
```

APPENDIX A

```
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,J860A,J2,J4,JK,JR
      REAL JVIZ
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)

      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      COMMON LNCT
      COMMON/BOUND/FLAGOUT,NOENT
      COMMON/FNAME/FNAM(26)
      DATA FRENAME/6HFREON ,2H11,6HFREON ,2H12,6HFREON ,2H13,6HFREON ,
     14H1381,6HFREON ,2H14,6HFREON ,2H21,6HFREON ,2H22,6HFREON ,2H23,
     26HFREON ,3H113,6HFREON ,3H114,6HFREON ,3H116,6HFREON ,4HC318,
     36HOTHER ,3HGAS/
      DATA VOLTAB/0.,.12,.12001,.15,.15001,.3,.30001,.5,.50001,1.,
     11.00001,2.,2.00001,4.,4.00001,6.,6.00001,9.,9.00001,15.,15.00001,
     225.,25.00001,50.,50.00001,100.,100.00001,3000./
      DATA DELTAB/.02,.02,.03,.03,.05,.05,.1,.1,.25,.25,.5,.5,1.,1.,2.,
     12.,3.,3.,6.,6.,10.,10.,25.,25.,50.,50.,100.,100./
      NAMELIST/N1/NOS,STAB,VOLTAB,DELTAB,ERR,VIG,
     1CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,CAPX,CAPY,
     2J,R,A2,B2,C2,A3,B3,C3,A4,B4,A5,B5,C5,A6,B6,SB,K,ALPHA,SAA,SBB,SC,
     3SD,SF,TC,PC,VC,EM,FT,CT,PSTOP,PLOTOUT
      NAMELIST/N2/NOV,VTAB,NOT,TTAB,NOZ,ZTAB,NOA,ATAB,NOG,GTAB,UNIN
      NAMELIST/PLOTIN/PLOTV,PLOTT,PLOTZ,PLOTA,PLOTG,PLOTOUT
 1000 FORMAT(2I5)
 1050 FORMAT(F3.0)
 1100 FORMAT (1H1,10X,*UNIO=*,F3.0)
 1150 FORMAT(1H1,43X,*OUTPUT UNITS*,//,20X,*VARIABLE*,21X,*SI*,18X,
     1*US*,//18X,*TEMPERATURE,T*,14X,*DEGREE KELVIN*,6X,
     1*DEGREE RANKINE*,//,18X,
     2*VOLUME,V*,20X,*M*,2H**,*3/KGM*,13X,*FT*,2H**,*3/LB*,//,18X,
     2*PRESSURE,P*,20X,
     3*ATM*,15X,*LBF/IN*,2H**,*2*,//,18X,*ENTHALPY,H*,15X,
     3*NONDIMENSIONAL*,
     410X,*BTU/LB*,//,18X,*SPEED OF SOUND,A*,14X,*M/SEC*,14X,*FT/SEC*,
     5//,18X,*SPECIFIC HEAT,CP*,9X,*NONDIMENSIONAL*,5X,*BTU/(LB-DEGREE R
     6)*,//,18X,*GAMMA*,20X,*NONDIMENSIONAL*,6X,*NONDIMENSIONAL*,//,18X,
     7*ISENTROPIC EXPONENT,G*,4X,*NONDIMENSIONAL*,6X,*NONDIMENSIONAL*,
     8//,18X,*COMPRESSIBILITY,Z*,8X,*NONDIMENSIONAL*,6X,
     9*NONDIMENSIONAL*,//,18X,*VISCOSITY,MU*,17X,*N/M*,2H**,*2*,12X,
     A*LB/(FT-SEC)*,//,18X,*CONDUCTIVITY,K*,11X,*W/(M-DEGREE K)*,3X,
     3*BTU/(SEC-FT-DEGREE R)*,//,18X,*PRANDTL NUMBER,PR*,8X,
     C*NONDIMENSIONAL*,6X,*NONDIMENSIONAL*,//,18X,*ENTROPY*,18X,
     D*NONDIMENSIONAL*,5X,*BTU/(LB-DEGREE R)*)

 1160 FORMAT(1H1,/////,20X,*DELTT TOO SMALL-ARRAY OVERFLOW*)
 1170 FORMAT(1H1,/////,20X,*ARRAY OVERFLOW CHECK DELTV*)
 1200 FORMAT(1H1,43X,*OUTPUT IN SI UNITS FOR *,A6,A4,/,53X,*S/R=*,
     1F7.4,//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,/)
 1250 FORMAT(1H1,43X,*OUTPUT IN US UNITS FOR *,A6,A4,/,53X,*S/R=*,
     1F7.4,//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,/)
 1300 FORMAT(1H1,52X,4HS/R=,F7.4,//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,/)
 1350 FORMAT( //,53X,4HS/R=,F7.4,//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,/)
 1400 FORMAT(1H1,//)
 1600 FORMAT(1H1,10X,*ERROR IN GAS SELECTION, TRY AGAIN*)
 3000 FORMAT(1H1,////,10X,*INTERPOLATION HAS FAILED CHECK MONOTONICITY*,
     1* OF THE SATURATION PRESSURE LINE*)
      DO 50 N=1,26
      FNAM(N)=FRENAME(N)
   50 CONTINUE
      READ(5,1000) NAME,NOPLOT
      IF(EOF(5)) 910,75
   75 CONTINUE
      IF(NAME.EQ.3.OR.NAME.EQ.-3.OR.NAME.EQ.7.OR.NAME.EQ.-7) GO TO 905
C ***********************************************************************
C     NAMELIST OUTPUT OPTION - SET INOUT EQUAL ONE. THIS IS AN INTERNAL
C     SETTING AND USUALLY SET TO ONE.
C ***********************************************************************
      NOENT=0
      INOUT=1
```

```
      PLOTOUT=1
      IF(NOPLOT) 100,110,120
150 C ***************************************************************************
C     NO PLOT DESIRED
C ***************************************************************************
  110 SFLAG=0.0
      GO TO 140
160 C ***************************************************************************
C     PLOT OF S/R + OTHER LINES DESIRED
C ***************************************************************************
  100 SFLAG=1.0
      NOPLOT=1
165   GO TO 140
  120 IF(NOPLOT.GT.10) GO TO 130
C ***************************************************************************
C     PLOT OF LINES OTHER THAN S/R DESIRED
C ***************************************************************************
170   SFLAG=0.0
      NOPLOT=1
      GO TO 140
C ***************************************************************************
C     PLOT OF S/R LINES ONLY
175 C ***************************************************************************
  130 SFLAG=1.0
      NOPLOT=0
  140 CONTINUE
      UNIO=1.
180   IF(NAME.GT.0) GO TO 150
C ***************************************************************************
C     OUTPUT IN US UNITS DESIRED
C ***************************************************************************
      NAME=-NAME
185   UNIO=2.
  150 IF(NAME.GT.13) GO TO 900
      IF(NAME.EQ.13) GO TO 160
      NAME2=2*NAME
      NAME1=NAME2-1
190   CALL CNSTS
      GO TO 170
  160 READ (5,1050) UNIO
C ***************************************************************************
C     CODE 13 HAS BEEN SELECTED AND THE USER WILL SUPPLY THE THERMODYNAMIC
195 C     CONSTANTS AND OUTPUT OPTION. THE CONSTANTS ARE INPUT THROUGH A
C     NAMELIST FORMAT AND ARE LISTED IN THE NAMELIST N1 AND THE REPORT.
C
C     UNIO CONTROLS THE UNITS ASSOCIATED WITH THE TABULAR OUTPUT
C
200 C     IF UNIO=1 THE OUTPUT IS IN SI UNITS
C     IF UNIO=2 THE OUTPUT IS IN US UNITS
C ***************************************************************************
      IF(INOUT.EQ.1) WRITE (6,1100) UNIO
      READ(5,N1)
205   170 IF(INOUT.EQ.1) WRITE(6,N1)
      WRITE(6,1150)
      IA=-1
      IB=-1
      IC=-1
210   ID=-1
      IE=-1
      IF(SFLAG.EQ.0.0.AND.NOPLOT.EQ.0) GO TO 175
      CALL PSEUDO
      CALL LEROY
215   175 CONTINUE
      JB60A=0
      IF(ALPHA.NE.0)JB60A=J*B6/ALPHA
      JA60A=0
      IF(ALPHA.NE.0)JA60A=J*A6/ALPHA
220   J2=J/2.
      J4=J/4.
      JK=J*K
      JR=J*R
      VG(1)=VIG
225   NN=0
      DELTT=(TC-(FT+30.))/50.
      IF(DELTT.LT.2.0) DELTT=2.0
      N=1
```

```
C ***********************************************************************
C     THIS PORTION OF THE PROGRAM COMPUTES THE BOUNDARY LIMITS FOR
C     THE GAS PROPERTIES, THESE INCLUDE THE SATURATION PRESSURE LINE,
C     CONSTANT MAX. VOLUME LINE, CONSTANT TEMP LINE, AND CONSTANT
C     MIN. VOLUME LINE
C ***********************************************************************
C
C ***********************************************************************
C     BOUNDARY OUTPUT OPTION, SET FLAGOUT EQUAL ONE. THIS IS AN
C     INTERNAL SETTING AND IS USUALLY SET TO ONE.
C ***********************************************************************
      FLAGOUT=1.
      TTAB(N)=TC
      IF(FLAGOUT.EQ.1.0) CALL BOUNDRY(1)
  180 CALL PLINE
      LNCT=LNCT+1
      IF(FLAGOUT.EQ.1.0.AND.LNCT.GT.39) CALL BOUNDRY(1)
C ***********************************************************************
C     SATURATION PRESSURE LINE CALCULATION
C ***********************************************************************
      TL(N)=TI
      VL(N)=VI
      SL(N)=S
      ZL(N)=Z
      AL(N)=A
      GL(N)=G
      PL(N)=P
      HL(N)=H
      IF(P-PSTOP)200,190,190
  190 N=N+1
      IF(N.GT.99) GO TO 192
      GO TO 194
  192 WRITE(6,1160)
      GO TO 910
  194 CONTINUE
      TTAB(N)=TTAB(N-1)-DELTT
      GO TO 180
  200 NOL=N-1
      NN=NN-1
      IF(SFLAG.NE.0.0.OR.NOPLOT.NE.0) CALL PLOT
      NN=0
      DELTT=(CT-TL(NOL))/50.
      N=1
      TTAB(N)=TL(NOL)
      VI=VL(NOL)
      CALL VVAR
      IF(FLAGOUT.EQ.1.0) CALL BOUNDRY(2)
  210 TI=TTAB(N)
      CALL TVAR
      CALL PHOTV
      LNCT=LNCT+1
      IF(FLAGOUT.EQ.1.0.AND.LNCT.GT.39) CALL BOUNDRY(2)
C ***********************************************************************
C     MAXIMUM VOLUME LINE CALCULATION
C ***********************************************************************
      TU(N)=TI
      VU(N)=VI
      SU(N)=S
      ZU(N)=Z
      AU(N)=A
      GU(N)=G
      PU(N)=P
      HU(N)=H
      IF(ABS(TI-CT).LE..1) GO TO 230
  220 N=N+1
      IF(N.GT.99) GO TO 192
      TTAB(N)=TTAB(N-1)+DELTT
      GO TO 210
  230 NOU=N
      IF(SFLAG.NE.0.0.OR.NOPLOT.NE.0) CALL PLOT
      NN=0
      N=1
      VTAB(N)=VU(NOU)
      TI=TU(NOU)
      CALL TVAR
      IF(FLAGOUT.EQ.1.0) CALL BOUNDRY(3)
```

```
      240 VI=VTAB(N)
          CALL VVAR
          CALL PHOTV
          LNCT=LNCT+1
          IF(FLAGOUT.EQ.1.0.AND.LNCT.GT.39) CALL BOUNDRY(3)
C *************************************************************************
C     CONSTANT TEMPERATURE LINE CALCULATION
C *************************************************************************
          TT(N)=TI
          VT(N)=VI
          ST(N)=S
          ZT(N)=Z
          AT(N)=A
          GT(N)=G
          PT(N)=P
          HT(N)=H
          IF(VI-VL(1))260,260,250
      250 N=N+1
          IF(N.GT.99) GO TO 252
          GO TO 254
      252 WRITE(6,1170)
          GO TO 910
      254 CONTINUE
          CALL IUNI(28,28,VOLTAB,1,DELTAB,1,VTAB(N-1),DELTV,IA,IERR)
          IA=-1
          VTAB(N)=VTAB(N-1)-DELTV
          IF(VTAB(N)-VL(1))270,240,240
      270 VTAB(N)=VL(1)
          GO TO 240
      260 NOLL=N
          IF(SFLAG.NE.0.0.OR.NOPLOT.NE.0) CALL PLOT
          NN=0
          DELTT=(TT(NOLL)-TC)/50.
          N=1
          TTAB(N)=TT(NOLL)
          VI=VT(NOLL)
          CALL VVAR
          IF(FLAGOUT.EQ.1.0) CALL BOUNDRY(4)

      280 TI=TTAB(N)
          CALL TVAR
          CALL PHOTV
          LNCT=LNCT+1
          IF(FLAGOUT.EQ.1.0.AND.LNCT.GT.39) CALL BOUNDRY(4)
C *************************************************************************
C     MINIMUM VOLUME LINE CALCULATION
C *************************************************************************
          TA(N)=TI
          VA(N)=VI
          SA(N)=S
          ZA(N)=Z
          AA(N)=A
          GA(N)=G
          PA(N)=P
          HA(N)=H
          IF(TI-TC) 300,300,290
      290 N=N+1
          IF(N.GT.99) GO TO 192
          TTAB(N)=TTAB(N-1)-DELTT
          GO TO 280
      300 NOUU=N
          IF(SFLAG.NE.0.0.OR.NOPLOT.NE.0) CALL PLOT
          DELT=90./5.
          IF(NOS.EQ.0) GO TO 470
          LNCT=0
          NOENT=1
C *************************************************************************
C     THE FOLLOWING LOOP OUTPUTS THE GAS PROPERTIES FOR THE
C     SPECIES UNDER CONSIDERATION FOR GIVEN VALUES OF S/R
C *************************************************************************
          DO 460 I=1,NOS
          IF(UNIO.GT.1.) STAB(I) = STAB(I)/(EM/1.987)
          IF(I-1)340,310,340
      310 IF(UNIO.GT.1.) GO TO 320
          WRITE(6,1200) FRENAME(NAME1),FRENAME(NAME2),STAB(I)
          GO TO 330
      320 WRITE(6,1250) FRENAME(NAME1),FRENAME(NAME2),STAB(I)
```

```
      330 LNCT=7
          GO TO 370
      340 IF(LNCT-25) 360,350,350
      350 WRITE(6,1300) STAB(I)
385       LNCT=5
          GO TO 370
      360 WRITE(6,1350)STAB(I)
          LNCT=LNCT+7
      370 CONTINUE
390       IF(UNIO.LE.1.) STAB(I)=STAB(I)/44.289180
          IF(STAB(I)-SL(NOL))380,380,390
      380 CALL IUNI(99,NOL,SL,1,TL,1,STAB(I),TST,IB,IERR)
          IB=-1
          CALL IUNI(99,NOL,SL,1,VL,1,STAB(I),VST,IC,IERR)
395       IC=-1
          GO TO 400
      390 CALL IUNI(99,NOU,SU,1,TU,1,STAB(I),TST,ID,IERR)
          ID=-1
          VST=VU(1)
400       400 IF(STAB(I)-SA(1))410,410,420
      410 CALL IUNI(99,NOUU,SA,1,TA,1,STAB(I),TND,IE,IERR)
          IE=-1
          GO TO 430
      420 TND=TT(1)
405       430 L=1
          TTAB(L)=TST
      440 L=L+1
          TTAB(L)=TTAB(L-1)+DELT
          IF(TTAB(L)-TND)440,450,450
410       450 TTAB(L)=TND
          NOT=L
          VG(1)=VST
          NN=0
          SI=STAB(I)
415     C ************************************************************************
        C     THE REMAINDER OF THE MAIN PROGRAM CONTROLS THE VARIOUS PLOTS
        C     AVAILABLE TO THE USER
        C ************************************************************************
        C
420     C ************************************************************************
        C     PLOTS LINES OF CONSTANT S/R
        C ************************************************************************
          CALL SLINE
          IF(SFLAG.NE.1.) GO TO 460
425       CALL PLOT
      460 CONTINUE
      470 CONTINUE
          IF(NOPLOT.EQ.0) GO TO 890
430   C ************************************************************************
      C     PLOT OUTPUT IS CONTROLLED BY THE NAMELIST PLOTIN WHICH MUST
      C     PRECEED THE N2 NAMELISTS - ONE N2 NAMELIST IS REQUIRED FOR EACH LINE
      C     OF THE PLOT. SETTING PLOTOUT EQUAL TO ONE IN PLOTIN WILL OUTPUT
      C     THE PLOT COMPUTATIONS (THIS IS USUALLY NOT DONE UNLESS DEBUGGING
      C     IS DESIRED.
435   C
      C     NAMELIST N2 CONTAINS THE TABULAR PLOT INPUT AND MUST BE PROVIDED
      C     BY THE USER. N2 INPUTS FOLLOW THE PLOT INPUTS WHICH FOLLOW THE N1
      C     INPUTS IF CODE 13 HAS BEEN SELECTED. THE USER INPUTS THE NUMBER
      C     OF LINES DESIRED AND THE INCREMENTS BETWEEN THEM.
440   C                                   NOTE : THE VALUES MUST BE WITHIN THE
      C     BOUNDARIES OF THE COMPUTATION. THEREFORE IT IS RECOMMENDED THAT
      C     THE USER FIRST OBTAIN THE BOUNDARY VALUES THROUGH THE BOUNDARY
      C     OUTPUT OPTION TO HELP IN THE SELECTION OF THESE VALUES. IF UNIN
      C     EQUAL TWO IN N2 THEN THE INPUTS ARE IN US UNITS."
445   C ************************************************************************
          READ(5,PLOTIN)
          WRITE(6,1400)
          IF(INOUT.EQ.1) WRITE(6,PLOTIN)
          IF(PLOTV.EQ.0) GO TO 510
450       DO 471 II=1,99
          VTAB(II)=0.0
          TTAB(II)=0.0
          ZTAB(II)=0.0
          ATAB(II)=0.0
455       GTAB(II)=0.0
      471 CONTINUE
```

```
  330 LNCT=7
      GO TO 370
  340 IF(LNCT-25) 360,350,350
  350 WRITE(6,1300) STAB(I)
      LNCT=5
      GO TO 370
  360 WRITE(6,1350)STAB(I)
      LNCT=LNCT+7
  370 CONTINUE
      IF(UNIO.LE.1.) STAB(I)=STAB(I)/44.289180
      IF(STAB(I)-SL(NOL))380,380,390
  380 CALL IUNI(99,NOL,SL,1,TL,1,STAB(I),TST,IB,IERR)
      IB=-1
      CALL IUNI(99,NOL,SL,1,VL,1,STAB(I),VST,IC,IERR)
      IC=-1
      GO TO 400
  390 CALL IUNI(99,NOU,SU,1,TU,1,STAB(I),TST,ID,IERR)
      ID=-1
      VST=VU(1)
      IF(STAB(I)-SU(1))400,400,410
  400 IF(STAB(I)-SA(1))410,410,420
  410 CALL IUNI(99,NOUU,SA,1,TA,1,STAB(I),TND,IE,IERR)
      IE=-1
      GO TO 430
  420 TND=TT(1)
      GO TO 430
  425 CALL IUNI(99,NOL,SL,1,TL,1,STAB(I),TND,IB,IERR)
      IB=-1
      IF(TND.EQ.0) WRITE(6,3000)
      IF(TND.EQ.0) GO TO 910
  430 L=1
      TTAB(L)=TST
  440 L=L+1
      TTAB(L)=TTAB(L-1)+DELT
      IF(TTAB(L)-TND)440,450,450
  450 TTAB(L)=TND
      NOT=L

      VG(1)=VST
      NN=0
      SI=STAB(I)
C *************************************************************************
C     THE REMAINDER OF THE MAIN PROGRAM CONTROLS THE VARIOUS PLOTS
C     AVAILABLE TO THE USER
C *************************************************************************
C
C *************************************************************************
C     PLOTS LINES OF CONSTANT S/R
C *************************************************************************
      CALL SLINE
      IF(SFLAG.NE.1.) GO TO 460
      CALL PLOT
  460 CONTINUE
  470 CONTINUE
      IF(NOPLOT.EQ.0) GO TO 890
C *************************************************************************
C     PLOT OUTPUT IS CONTROLLED BY THE NAMELIST PLOTIN WHICH MUST
C     PRECEED THE N2 NAMELISTS - ONE N2 NAMELIST IS REQUIRED FOR EACH LINE
C     OF THE PLOT. SETTING PLOTOUT EQUAL TO ONE IN PLOTIN WILL OUTPUT
C     THE PLOT COMPUTATIONS (THIS IS USUALLY NOT DONE UNLESS DEBUGGING
C     IS DESIRED.
C
C     NAMELIST N2 CONTAINS THE TABULAR PLOT INPUT AND MUST BE PROVIDED
C     BY THE USER. N2 INPUTS FOLLOW THE PLOT INPUTS WHICH FOLLOW THE N1
C     INPUTS IF CODE 13 HAS BEEN SELECTED. THE USER INPUTS THE NUMBER
C     OF LINES DESIRED AND THE INCREMENTS BETWEEN THEM.
C                                   NOTE : THE VALUES MUST BE WITHIN THE
C     BOUNDARIES OF THE COMPUTATION. THEREFORE IT IS RECOMMENDED THAT
C     THE USER FIRST OBTAIN THE BOUNDARY VALUES THROUGH THE BOUNDARY
C     OUTPUT OPTION TO HELP IN THE SELECTION OF THESE VALUES. IF UNIN
C     EQUAL TWO IN N2 THEN THE INPUTS ARE IN US UNITS."
C *************************************************************************
      READ(5,PLOTIN)
      WRITE(6,1400)
      IF(INOUT.EQ.1) WRITE(6,PLOTIN)
      IF(PLOTV.EQ.0) GO TO 510
      DO 471 II=1,99
      VTAB(II)=0.0
      TTAB(II)=0.0
      ZTAB(II)=0.0

      ATAB(II)=0.0
      GTAB(II)=0.0
  471 CONTINUE
```

IF(UNIO.LE.1.) STAB(I) = STAB(I)/(EM/1.987)

```
C ***********************************************************************
C     INPUT NOV AND VTAB FOR V LINE PLOT
C ***********************************************************************
      READ(5,N2)
      WRITE(6,1400)
      IF(INOUT.EQ.1) WRITE(6,N2)
      DO 500 I=1,NOV
      IF(UNIN.NE.2.0) VTAB(I)=VTAB(I)/.062427962
      CALL IUNI(99,NOL,VL,1,TL,1,VTAB(I),TST,IB,IERR)
      IB=-1
      TND=TT(1)
      L=1
      TTAB(L)=TST
  480 L=L+1
      TTAB(L)=TTAB(L-1)+DELT
      IF(TTAB(L)-TND)480,480,490
  490 TTAB(L)=TND
      NOT=L
      NN=0
C ***********************************************************************
C     PLOTS LINES OF CONSTANT V
C ***********************************************************************
      CALL VLINE
  500 CALL PLOT
  510 CONTINUE
      IF(PLOTT.EQ.0) GO TO 580
      DO 511 II=1,99
      VTAB(II)=0.0
      TTAB(II)=0.0
      ZTAB(II)=0.0
      ATAB(II)=0.0
      GTAB(II)=0.0
  511 CONTINUE
C ***********************************************************************
C     INPUT NOT AND TTAB FOR T LINE PLOT
C ***********************************************************************
      READ(5,N2)
      WRITE(6,1400)
      IF(INOUT.EQ.1) WRITE(6,N2)
      DO 570 N=1,NOT
      IF(UNIN.NE.2.0) TTAB(N)=TTAB(N)/.5555
      IF(TTAB(N)-TL(1))530,520,520
  520 VST=VL(1)
      GO TO 540
  530 CALL IUNI(99,NOL,TL,1,VL,1,TTAB(N),VST,IB,IERR)
      IB=-1
  540 L=1
      VTAB(L)=VST
  550 L=L+1
      CALL IUNI(28,28,VDLTAB,1,DELTAB,1,VTAB(L-1),DELTV,IC,IERR)
      IC=-1
      VTAB(L)=VTAB(L-1)+DELTV
      IF(VTAB(L)-VL(NOL))550,550,560
  560 VTAB(L)=VL(NOL)
      NOV=L
      NN=0
C ***********************************************************************
C     PLOTS LINES OF CONSTANT T
C ***********************************************************************
      CALL TLINE
  570 CALL PLOT
  580 CONTINUE
      IF(PLOTZ.EQ.0) GO TO 670
      DO 581 II=1,99
      VTAB(II)=0.0
      TTAB(II)=0.0
      ZTAB(II)=0.0
      ATAB(II)=0.0
      GTAB(II)=0.0
  581 CONTINUE
C ***********************************************************************
C     INPUT NOZ AND ZTAB FOR Z LINES
C ***********************************************************************
      READ(5,N2)
      WRITE(6,1400)
      IF(INOUT.EQ.1) WRITE(6,N2)
```

```
      DO 660 I=1,NOZ
      IF(ZTAB(I)-ZU(1))600,590,590
  590 IF(ZTAB(I)-ZU(NOU))610,620,620
  600 CALL IUNI(99,NOL,ZL,1,VL,1,ZTAB(I),VND,IB,IERR)
      IB=-1
      GO TO 630
  610 VND=VU(1)
      GO TO 630
  620 CALL IUNI(99,NOLL,ZT,1,VT,1,ZTAB(I),VND,IC,IERR)
      IC=-1
  630 CALL IUNI(99,NOUU,ZA,1,TA,1,ZTAB(I),TST,ID,IERR)
      ID=-1
      VST=VA(1)
      VG(1)=TST
      L=1
      VTAB(L)=VST
  640 L=L+1
      CALL IUNI(28,28,VOLTAB,1,DELTAB,1,VTAB(L-1),DELTV,IE,IERR)
      IE=-1
      VTAB(L)=VTAB(L-1)+DELTV
      IF(VTAB(L)-VND)640,650,650
  650 VTAB(L)=VND
      NOV=L
      NN=0
C *************************************************************************
C     PLOTS LINES OF CONSTANT Z
C *************************************************************************
      CALL ZLINE
  660 CALL PLOT
  670 CONTINUE
      IF(PLOTA.EQ.0) GO TO 740
      DO 671 II=1,99
      VTAB(II)=0.0
      TTAB(II)=0.0
      ZTAB(II)=0.0
      ATAB(II)=0.0
      GTAB(II)=0.0
  671 CONTINUE
C *************************************************************************
C     INPUT NOA AND ATAB FOR A LINES
C *************************************************************************
      READ(5,N2)
      WRITE(6,1400)
      IF(INOUT.EQ.1) WRITE(6,N2)
      DO 730 I=1,NOA
      IF(UNIN.NE.2.0) ATAB(I)=ATAB(I)/.3048
      IF(ATAB(I)-AU(NOU))680,680,690
  680 VND=VU(I)
      GO TO 700
  690 CALL IUNI(99,NOLL,AT,1,VT,1,ATAB(I),VND,IB,IERR)
      IB=-1
  700 CALL IUNI(99,NOUU,AA,1,TA,1,ATAB(I),TST,IC,IERR)
      IC=-1
      VST=VA(1)
      VG(1)=TST
      L=1
      VTAB(L)=VST
  710 L=L+1
      CALL IUNI(28,28,VOLTAB,1,DELTAB,1,VTAB(L-1),DELTV,ID,IERR)
      ID=-1
      VTAB(L)=VTAB(L-1)+DELTV
      IF(VTAB(L)-VND)710,720,720
  720 VTAB(L)=VND
      NOV=L
      NN=0
C *************************************************************************
C     PLOTS LINES OF CONSTANT A
C *************************************************************************
      CALL ALINE
  730 CALL PLOT
  740 CONTINUE
      IF(PLOTG.EQ.0) GO TO 840
      DO 741 II=1,99
      VTAB(II)=0.0
      TTAB(II)=0.0
      ZTAB(II)=0.0
```

```
            ATAB(II)=0.0
610         GTAB(II)=0.0
          741 CONTINUE
          C ************************************************************************
          C     INPUT NOG AND GTAB FOR G LINES
          C ************************************************************************
615         READ(5,N2)
            WRITE(6,1400)
            IF(INOUT.EQ.1) WRITE(6,N2)
            NK=NOL-4
            NKK=5
620         DO 770 I=1,NOG
            TST=TT(1)
            CALL IUNI(99,NOLL,GT,1,VT,1,GTAB(I),VST,IB,IERR)
            IB=-1
            CALL IUNI(99,NOUU,GA,1,TA,1,GTAB(I),TND,IC,IERR)
625         IC=-1
            VG(1)=VST
            L=1
            TTAB(L)=TST
          750 L=L+1
630         TTAB(L)=TTAB(L-1)-DELT
            IF(TTAB(L)-TND)760,760,750
          760 TTAB(L)=TND
            NOT=L
            NN=0
635       C ************************************************************************
          C     PLOTS LINES OF CONSTANT G
          C ************************************************************************
            CALL GLINET
          770 CALL PLOT
640         DO 800 I=1,NOG
            VND=VU(1)
            CALL IUNI(99,NK,GL(NKK),1,TL(NKK),1,GTAB(I),TST,IB,IERR)
            IB=-1
            CALL IUNI(99,NK,GL(NKK),1,VL(NKK),1,GTAB(I),VST,IC,IERR)
645         IC=-1
            VG(1)=TST
            L=1
            VTAB(L)=VST
          780 L=L+1
650         CALL IUNI(28,28,VDLTAB,1,DELTAB,1,VTAB(L-1),DELTV,ID,IERR)
            ID=-1
            VTAB(L)=VTAB(L-1)+DELTV
            IF(VTAB(L)-VND)780,790,790
          790 VTAB(L)=VND
655         NOV=L
            NN=0
            CALL GLINE
          800 CALL PLOT
            DO 830 I=1,NOG
660         TST=TT(1)
            CALL IUNI(99,NOLL,GT,1,VT,1,GTAB(I),VST,IB,IERR)
            IB=-1
            CALL IUNI(99,NOU,GU,1,TU,1,GTAB(I),TND,IC,IERR)
            IC=-1
665         VG(1)=VST
            L=1
            TTAB(L)=TST
          810 L=L+1
            TTAB(L)=TTAB(L-1)-DELT
670         IF(TTAB(L)-TND)820,820,810
          820 TTAB(L)=TND
            NOT=L
            NN=0
            CALL GLINET
675         VG(1)=TND
            VTAB(1)=VU(1)
            NOV=1
            CALL GLINE
          830 CALL PLOT
680       840 CONTINUE
            IF(SFLAG.EQ.0.0) CALL CALPLT(0,0,999)
          890 IF(SFLAG.NE.1.) GO TO  910
            CALL CALPLT(0,0,999)
            GO TO  910
```

APPENDIX A

```
685           900 WRITE(6,1600)
                  GO TO 910
              905 WRITE(6,2000)
             2000 FORMAT(1H1,////,18X,*THE PROGRAM DOES NOT HANDLE THIS COMPOUND*,
                 11X,*CORRECTLY AT THIS TIME BECAUSE OF ERRORS IN THE*,/,15X,
690              2*THERMODYNAMIC CONSTANTS. PLEASE REFER TO THE FREON PRODUCTS*,
                 31X,*BULLETINS FOR THE GAS PROPERTIES *,/,15X,
                 4*THAT ARE AVAILABLE. SORRY FOR THE INCONVIENIENCE.*)
              910 STOP
                  END

  1           SUBROUTINE ALINE
            C ***************************************************************
            C     SUBROUTINE ALINE COMPUTES LINES OF CONSTANT A, SPEED OF SOUND
            C ***************************************************************
  5               DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
                  COMMON JA60A,SUM160,PC,VC,EM,UNIQ,FT,CT,PSTOP,PLOTOUT
                  COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
                  COMMON CV,PPT,PPV,NAME,NAME1,NAME2
                  COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
 10               COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
                  COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
                  COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
                  COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
                 1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
 15              2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
                 3P,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
                 4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
                  COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
                 1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
 20               REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
                  AI=ATAB(I)
                  DO 2 N=1,NOV
                  VI=VTAB(N)
                  CALL VVAR
 25               JJ=1
                44 TI=VG(JJ)
                  CALL TVAR
                  CALL AOTV
                  AG(JJ)=A
 30               IF(ABS(AG(JJ)-AI)-ERR*AI)70,71,71
                71 IF(JJ-1)72,72,43
                72 JJ=2
                  VG(2)=VG(1)*1.05
                  GO TO 44
 35             43 VGN=((VG(2)-VG(1))/(AG(2)-AG(1)))
                 1*(AI-AG(1))+VG(1)
                  IF(VGN)46,46,45
                46 VGN=.5*VG(2)

                45 AG(1)=AG(2)
 40               VG(1)=VG(2)
                  VG(2)=VGN
                  GO TO 44
                70 CALL PHOTV
                 2 CONTINUE
 45               RETURN
                  END
```

APPENDIX A

```
      SUBROUTINE ADTV
C *********************************************************************
C     SUBROUTINE ADTV COMPUTES A=F(T,V), SPEED OF SOUND AS A FUNCTION
C     OF T AND V
C *********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIQ,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON V0(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,STAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3K,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIM3,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
C *********************************************************************
C     C2F6 CHECK
C *********************************************************************
C
      IF(CAPA.EQ.1.0) GO TO 1000
C
C *********************************************************************
C     CBRF3 CHECK
C *********************************************************************
C
      IF(CAPB.NE.1.0) GO TO 2000
C
C *********************************************************************
C     A=F(T,V) FOR CBRF3 ONLY
C *********************************************************************
      VI3=VI2*VI
      VI4=VI2*VI2
      VI5=VI2*VI3
      CV=0.0175+1.94E-4*TI-8.34999E-8*TI2+1.6313E7/(VI*TI4)-3.389986E3/
     1(VI3*TI4)+4.0640785E-4/VI-4.5869087E-6/VI2-3.9876922E-8/VI3
      PPT=0.072047/VI+0.00219617/VI2-0.000024787/VI3+0.0000002155/VI4
     1+(3./TI4)*(5.877E6/VI2-2.617E3/VI4)
      PPV=-((2.*2.49597)/VI3-(3.*.0274558)/VI4+(4.*.00017894)/VI5
     1+TI*(-0.072047/VI2-(2.*.00219617)/VI3+(3.*.000024787)/VI4
     2-(4.*.0000002155)/VI5)-((-2.*5.877E6)/VI3+(4.*2.617E3)/VI5)/TI3)
      A=JVI2*TI*PPT**2/CV-VI2*PPV
      GO TO 2001
 1000 CONTINUE
C *********************************************************************
C     A=F(T,V) FOR C2F6 ONLY
C *********************************************************************
      BETA=.008223681553
      ALP=38.20276942
      R=.07775539769
      RTI=R*TI
      CV=.02378775437+.0J03463651333*TI-.14211084E-06*TI2
     1+.7611753554E-11*TI3-.26902175E+03/TI2+((3.*J*ALP)/
     2(4.*BETA*TI**1.5))*ALOG((VI+BETA)/VI)
      PPT=R/(VI-BETA)+ALP/(2.*VI*(VI+BETA)*TI**1.5)
      PPV=-RTI/((VI-BETA)*(VI-BETA))+(ALP*(2.*VI+BETA))/(VI2*(VI+BETA)
     1*(VI+BETA)*TI**.5)
      PPV=-PPV
      A=JVI2*TI*PPT**2/CV-VI2*PPV
      GO TO 2001
C *********************************************************************
C     A=F(T,V) FOR ALL OTHER FREONS
C *********************************************************************
 2000 CV=SUM160-SUM38*SUM36
      PPT=       (R  *OVIB+SUM39*OVIB2+SUM40*OVIB3+SUM43+SUM41*OVIB5)
      PPV=                              (RTI*OVIB2+SUM33*OVIB3+SUM34*OVIB4
     2+SUM42*OVIB5+SUM35*OVIB6-AEI*SUM6)
      A=JVI2*TI*PPT**2/CV-VI2*PPV
 2001 CONTINUE
      A=SQRT(A*4633.056)
      RETURN
      END
```

APPENDIX A

```
      SUBROUTINE BOUNDRY(SIDE)
C ***************************************************************************
C     SUBROUTINE BOUNDRY WRITES THE HEADINGS FOR THE BOUNDARY OUTPUT
C ***************************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      INTEGER SIDE
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      COMMON LNCT
      COMMON/FNAME/FNAM(20)
 1000 FORMAT(1H1,/,40X,*BOUNDARY INFO SATURATION PRESSURE LINE*)
 1050 FORMAT(1H1,/,43X,*BOUNDARY INFO MAXIMUM VOLUME LINE*)
 1100 FORMAT(1H1,/,40X,*BOUNDARY INFO CONSTANT TEMPERATURE LINE*)
 1150 FORMAT(1H1,/,43X,*BOUNDARY INFO MINIMUM VOLUME LINE*)
 1200 FORMAT(44X,*OUTPUT IN US UNITS FOR *,A6,A4,/,
     1//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,5X,
     2*S/R*,/)

 1250 FORMAT(44X,*OUTPUT IN SI UNITS FOR *,A6,A4,/,
     1//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,5X,
     2*S/R*,/)
      GO TO (100,200,300,400),SIDE
C ***************************************************************************
C     SATURATION PRESSURE LINE
C ***************************************************************************
  100 WRITE(6,1000)
      GO TO 500
C ***************************************************************************
C     MAXIMUM VOLUME LINE
C ***************************************************************************
  200 WRITE(6,1050)
      GO TO 500
C ***************************************************************************
C     CONSTANT TEMPERATURE LINE
C ***************************************************************************
  300 WRITE(6,1100)
      GO TO 500
C ***************************************************************************
C     MINIMUM VOLUME LINE
C ***************************************************************************
  400 WRITE(6,1150)
  500 IF(UNIO.GT.1.) GO TO 510
      WRITE(6,1250) FNAM(NAME1),FNAM(NAME2)
      GO TO 520
  510 WRITE(6,1200) FNAM(NAME1),FNAM(NAME2)
  520 LNCT=4
      RETURN
      END
```

APPENDIX A

```
      SUBROUTINE C3RF3
C *********************************************************************
C     SUBROUTINE C3RF3 COMPUTES THE FOLLOWING PROPERTIES FOR C3RF3
C      ONLY: P,H,S,Z,AND CV
C *********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      VI3=VI2*VI
      VI4=VI2*VI2
      VI5=VI2*VI3
      P=-2.49597/VI2+0.0274558/VI3-0.00017894/VI4
     1+TI*(0.072047/VI+0.00219617/VI2-0.00002487/VI3
     2+0.000002155/VI4)-(5.877E6/VI2-2.617E3/VI4)/TI3
      S=0.640295239*ALOG10(TI)+0.000194*TI-4.175E-8*TI2-3.2626694E6
     1/(VI*TI4)+0.4842837E3/(VI3*TI4)+0.030699247*ALOG10(VI)
     2-0.00040640785/VI+2.2934544E-6/VI2-1.3292974E-8/VI3-0.06216190
      H=0.6175*TI+0.000097*TI2-2.78333E-8*TI3-5.4377824E6/(VI*TI3)
     1+1.1299953E3/(VI3*TI3)-(0.92377348-0.00040640785*TI)/VI
     2+(0.00176211673-4.5869087E-6*TI)/VI2-(4.4151179E-5+3.9878922E-8*TI)
     3/VI3+21.422274
      Z=(VI*PV)/(RTI)
      CV=0.6175+1.94E-4*TI-8.34999E-8*TI2+1.6313E7/(VI*TI4)-3.339986E3/
     1(VI3*TI4)+4.0640785E-4/VI-4.5869087E-6/VI2-3.9878922E-8/VI3
      PPT=0.072047/VI+0.00219617/VI2-0.000024787/VI3+0.000002155/VI4
     1+(3./TI4)*(5.877E6/VI2-2.617E3/VI4)
      PPV=-((2.*2.49597)/VI3-(3.*.0274558)/VI4+(4.*.00017894)/VI5
     1+TI*(-0.072047/VI2-(2.*.00219617)/VI3+(3.*.000024787)/VI4
     2-(4.*.000002155)/VI5)-((-2.*5.877E6)/VI3+(4.*2.617E3)/VI5)/TI3)
      RETURN
      END

      SUBROUTINE C2F6
C *********************************************************************
C     SUBROUTINE C2F6 COMPUTES THE FOLLOWING PROPERTIES FOR C2F6
C     ONLY: P,H,S,Z,AND CV
C *********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
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APPENDIX A

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      COMMON TU(99),VU(99),SU(99),ZU(99),AU(9 ),GU(99),NUU,TUIM
      COMMON LNCT
      BETA=.00822368l553
      ALP=38.20276942
      P=.07775539769
      RTI=R*TI
      J=C.186053
      JR=J*P
      P=RTI/(VI-BETA)-ALP/(VI*(VI+BETA)*SQRT(TI))
      S=0.02378775437*ALOG(TI)+.000346365133*TI-.14211084E-06*TI2/2.
     1+.76111753554E-11*TI3/3.+JR*ALOG(VI-BETA)-(J*ALP/(2.*BETA*TI**1.5))
     2 *ALOG((VI+BETA)/VI)-.15857+.26902175E+03/(2.*TI2)
      H=.02378775437*TI+.000346365l333*TI2/2.-.14211084E-06*TI3/3.+
     1.76111753554E-11*TI4/4.+.26902175E+03/TI+J*P*VI-((3.*J*ALP)
     1/(2.*BETA*TI**.5))*ALOG((VI+BETA)/VI)+1.55599999
      Z=(VI*P)/(RTI)
      CV=.02378775437+.000346365l333*TI-.14211084E-06*TI2
     1+.76111753554E-11*TI3-.26902175E+03/TI2+((3.*J*ALP)/
     2(4.*BETA*TI**1.5))*ALOG((VI+BETA)/VI)
      PPT=R/(VI-BETA)+ALP/(2.*VI*(VI+BETA)*TI**1.5)
      PPV=-RTI/((VI-BETA)*(VI-BETA))+(ALP*(2.*VI+BETA))/(VI2*(VI+BETA)
     1*(VI+BETA)*TI**.5)
      PPV=-PPV
      RETURN
      END


      SUBROUTINE CNSTS
C *********************************************************************
C     SUBROUTINE CNSTS ASSIGNS THE CONSTANTS REQUIRED IN THE THERMODYNAMIC
C     EQUATIONS FOR WHICH EVER FREON COMPOUND HAS BEEN SELECTED
C
C     FREON PRODUCT BULLETINS ARE AVAILABLE FROM THE FREON PRODUCTS
C     DIVISION OF E. I. DU PONT DE NEMOURS & CO., INC. WILMINGTON,
C     DELAWARE 19898
C *********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,J860A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,J860A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
C *********************************************************************
C     INITIALIZATION OF THE THERMODYNAMIC CONSTANTS
C *********************************************************************
      DO 10 I=1,99
      STAB(I)=0.0
   10 CONTINUE
      NOS=0
      CAPA=CAPB=CAPC=CAPD=CAPE=CAPF=0.0
      CAPG=CAPH=CAPL=CAPX=CAPY=TC=0.0
      PC=VC=EM=FT=CT=0.0
      R=A2=B2=C2=A3=B3=0.0
```

```
      C3=A4=B4=A5=B5=C5=0.0
      A6=B6=SB=K=ALPHA=SAA=0.0
      SBB=SC=SD=SF=0.0
      ERR=0.1E-04
      J=.1850505
      PSTOP=.074
      GO TO (100,200,300,400,500,600,700,800,900,1000,1100,1200),NAME
C *************************************************************************
C     FREON 11 (CCL3F) INPUT CONSTANTS
C     REFERENCE - DR. J. J. MARTIN, UNIV. OF MICHIGAN AND FREON
C     PRODUCTS BULLETIN T-11
C *************************************************************************
  100 VIG=.60 $ CAPA=42.14702865 $ CAPB=-4344.343807 $ CAPC=-12.84596753
      CAPD=0.004008372567 $ CAPE=0.0313603356 $ CAPF=862.07
      CAPX=50.2418 $ CAPY=-0.0918395 $ R=0.078117 $ A2=-3.126759
      B2=1.316523E-03 $ C2=-35.769990 $ A3=-0.025341 $ B3=4.875021E-05
      C3=1.220367 $ A4=1.687277E-03 $ B4=-1.805062E-06
      A5=-2.358930E-05 $ B5=2.448303E-08 $ C5=-1.478379E-04
      A6=1.057504E+08 $ B6=-9.472103E+04 $ K=.005306 $ ALPHA=-580.0
      SB=0.00190 $ SAA=0.028815 $ SBB=2.798823E-04 $ SC=-2.123734E-07
      SD=5.99018E-11 $ SF=-336.807030 $ PC=96.326 $ TC=654.67
      VC=0.45838 $ EM=137.36 $ FT=291.67 $ CT=1060.0
      CRAB=8.5
      DO 150 I=1,99
      NOS=I
      CRAB=CRAB+.5
      STAB(I)=CRAB
      IF(STAB(I).EQ.16.5) GO TO 160
  150 CONTINUE
  160 RETURN
C *************************************************************************
C     FREON 12 (CCL2F2) INPUT CONSTANTS
C     REFERENCE - REFRIGERATING ENGINEERING VOL. 63, PG 31, SEPT. 65
C     AND FREON PRODUCTS BULLETIN RT-21
C *************************************************************************
  200 VIG=.05 $ CAPA=39.88381727 $ CAPB=-3436.632228 $ CAPC=-12.47152228
      CAPD=0.004730442442
      CAPX=39.55655122 $ CAPY=-0.0165379361 $ R=0.088734
      A2=-3.409727134 $ B2=0.00159434848 $ C2=-56.7627671
      A3=0.06023944654 $ B3=-1.879618431E-05 $ C3=1.311399084
      A4=-0.000548737007 $ B5=3.468834E-09 $ C5=-2.54390678E-05
      K=.007897 $ SB=0.0065093886 $ SAA=0.0080945 $ SBB=0.000332662
      SC=-2.413896E-07 $ SD=6.72363E-11 $ PC=596.9 $ TC=693.30
      VC=0.02870 $ EM=120.93 $ FT=207.67 $ CT=1060.0
      CRAB=6.5
      DO 250 I=1,99
      NOS=I
      CRAB=CRAB+.5
      STAB(I)=CRAB
      IF(STAB(I).EQ.16.5) GO TO 260
  250 CONTINUE
  260 RETURN
C *************************************************************************
C     FREON 13 (CCLF3) INPUT CONSTANTS
C     ********** NOTE : AT THIS TIME ERRORS EXIST IN THE CONSTANTS
C     AND THIS FREON CAN NOT BE SELECTED - PLEASE REFER TO THE BULLETIN
C     SHOWN FOR THE AVAILABLE THERMODYNAMIC DATA.   **********
C     REFERENCE - EQ. OF STATE, DR. J. J. MARTIN, UNIV. OF MICHIGAN
C     AND FREON PRODUCTS BULLETIN X-95. VAPOR PRESSURE AND HEAT
C     CAPACITY, INDUSTRIAL & ENGINEERING CHEMISTRY VOL.44, PG 188,
C     JAN. 1952
C *************************************************************************
  300 VIG=.0278 $ CAPA=25.96797498 $ CAPB=-2409.538217 $ CAPC=-7.1723439
      CAPD=0.00254515398 $ CAPE= 0.2803010913 $ CAPF=546.0 $ CAPX=20.911
      CAPY=-0.05676 $ R=0.102728 $ A2=-3.083417 $ B2=2.3416595E-3
      C2=-18.212643 $ A3=-0.058854 $ B3=5.671268E-05 $ C3=0.571958
      A4=1.026061E-03 $ B4=-1.338679E-06 $ A5=-5.290649E-06
      B5=7.395111E-09 $ C5=-3.874233E-05 $ A6=7.378601E+07
      B6=-7.435565E+04 $ K=.00735835 $ ALPHA=-625.0 $ SB=0.0048
      SAA=0.01602 $ SBB=2.823E-04 $  SC=-1.159E-07 $  PC=561.3
      TC=543.6 $ VC=0.0277239 $ EM=104.47 $ FT=165.67 $ CT=1060.
  360 RETURN
C *************************************************************************
C     FREON 1381 (CBRF3) INPUT CONSTANTS
C     REFERENCE - FREON PRODUCTS BULLETIN X-65
C *************************************************************************
```

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      400 VIG=.05 $ R=.0720565 $ PC=575.0 $ TC= 612.6 $ VC=0.02150
          EM=148.93 $ FT=190.0 $ CT=1060.0
          CAPB=1.0
          CRAB=4.00
          DO 450 I=1,99
          NOS=I
          CRAB=CRAB+.5
          STAB(I)=CRAB
          IF(STAB(I).EQ.12.50) GO TO 460
      450 CONTINUE
      460 RETURN
C ***********************************************************************
C     FREON 14 (CF4) INPUT CONSTANTS
C     REFERENCE - DR. J. J. MARTIN, UNIV. OF MICHIGAN
C ***********************************************************************
      500 VIG=.032998 $ CAPA=20.71545389 $ CAPB=-2467.505285
          CAPC=-4.69017025 $ CAPD=0.00064798076 $ CAPE=0.770707795
          CAPF=424.0 $ CAPX=86.102162 $ CAPY=0.36172528
          R=0.1219336 $ A2=-2.162959 $ B2=2.135114E-03
          C2=-16.941131 $ A3=4.404057E-03 $ B3=1.282818E-05
          C3=0.539776 $ A4=1.921072E-04 $ B4=-3.918263E-07
          A5=-4.481049E-06 $ B5=9.062318E-09 $ C5=-4.836678E-05
          A6=5.838823E+07 $ B6=-9.263923E+04 $ K=.009768
          ALPHA=-661.199997 $ SB=0.0015 $ SAA=3.00559282E-02
          SBB=2.37043352E-04 $ SC=-2.85660077E-08 $ SD=-2.95338806E-11
          PC=543.16 $ TC=409.50 $ VC=0.02560163 $ EM=88.01
          FT=160.67 $ CT=1060.0
          CRAB=23.5
          DO 550 I=1,99
          NOS=I
          CRAB=CRAB+.5
          STAB(I)=CRAB
          IF(STAB(I).EQ.40.5) GO TO 560
      550 CONTINUE
      560 RETURN
C ***********************************************************************
C     FREON 21 (CHCL2F) INPUT CONSTANTS
C     REFERENCE - FREON PRODUCTS BULLETIN T-21
C ***********************************************************************
      600 VIG=.06 $ CAPA=42.7908 $ CAPB=-4261.34 $ CAPC=-13.0295
          CAPD=0.0039851 $ R=0.10427 $ A2=-7.316 $ B2=0.00464210
          A3=-0.20382376 $ B3=0.0003693 $ SAA=0.0427 $ SBB=0.000140
          PC=750.0 $ TC=812.9 $ VC=0.030675 $ EM=102.93 $ FT=248.67
          CAPX=76.294 $ CAPY=-.1104
          CT=1060.0
          CRAB=9.5
          DO 650 I=1,99
          NOS=I
          CRAB=CRAB+.5
          STAB(I)=CRAB
          IF(STAB(I).EQ.20.0) GO TO 660
      650 CONTINUE
      660 RETURN
C ***********************************************************************
C     FREON 22 (CHCLF2) INPUT CONSTANTS
C     ********** NOTE : AT THIS TIME ERRORS EXIST IN THE CONSTANTS
C     AND THIS FREON CAN NOT BE SELECTED - PLEASE REFER TO THE BULLETIN
C     SHOWN FOR THE AVAILABLE THERMODYNAMIC DATA.   **********
C     REFERENCE - FREON PRODUCTS BULLETIN T-22
C ***********************************************************************
      700 VIG=.06 $ CAPA=29.35754453 $ CAPB=-3845.193152 $ CAPC=-7.86103122
          CAPD=0.002190939044 $ CAPE=0.445746703 $ CAPF=686.1
          CAPX=62.4069 $ CAPY=-0.0453335 $ R=0.124098 $ A2=-4.353547
          B2=0.002407252 $ C2=-44.066868 $ A3=-0.017464 $ B3=7.62789E-05
          C3=1.483763 $ A4=0.002310142 $ B4=-3.605723E-06
          A5=-3.724044E-05 $ B5=5.355465E-08 $ C5=-1.845051E-04
          A6=1.363387E+08 $ B6=-1.672612E+05 $ K=.00632054 $ ALPHA=-548.2
          SE=0.002 $ SAA=0.02812636 $ SBB=2.255408E-04 $ SC=-6.509607E-08
          SF=257.341 $ PC=721.906 $ TC=664.50 $ VC=0.030525 $ EM=86.48
          FT=203.67 $ CT=1060.0
          RETURN
C ***********************************************************************
C     FREON 23 (CHF3) INPUT CONSTANTS
C     REFERENCE - A. I. CH. E. JOURNAL VOL. 5, PG 125, MARCH 1959
C ***********************************************************************
      800 VIG=.06 $ CAPA=328.90853 $ CAPB=-7952.76913 $ CAPC=-144.5142304
```

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      CAPD=0.2421150182 $ CAPH=-2.128066524E-04 $ CAPL=9.43495542E-08
      CAPX=41.569 $ CAPY=-.25603
      R=0.153270 $ A2=-5.016053028 $ B2=3.10516248E-03
      C2=-1.308703305E+02 $ A3=9.781899057E-02 $ B3=-3.80613864E-05
      C3=3.53359637 $ A4=-1.094517281E-03 $ B5=1.112366387E-08
      C5=-1.82469146E-04
      K=.01021678
      SB=0.00125 $ SAA=0.07628087 $ SBB=-7.561805E-06
      SC=3.9065696E-07 $ SD=-2.454905E-10 $ PC=701.42 $ TC=538.33
      VC=0.030510 $ EM=70.02 $ FT=212.27 $ CT=1060.0
      CRAB=6.00
      DO 850 I=1,99
      NOS=I
      CRAB=CRAB+.5
      STAB(I)=CRAB
      IF(STAB(I).EQ.24.50) GO TO 860
  850 CONTINUE
  860 RETURN
C *********************************************************************
C     FREON 113 (CCL2FCCLF2) INPUT CONSTANTS
C     REFERENCE - I. & EC. VOL. 32, PG 497,698,976 , APRIL-JULY 1940
C     AND FREON PRODUCTS BULLETIN T-113A
C *********************************************************************
  900 VIG=.60 $ CAPA=33.0655 $ CAPB=-4330.98 $ CAPC=-9.2635
      CAPD=0.0020539 $ CAPX=25.198 $ CAPY=-0.40552 $ R=0.05728
      A2=-4.035 $ B2=0.002618 $ A3=-0.0214 $ B3=0.0000500
      SAA=0.07963 $ SBB=0.0001159 $ PC=71.07 $ TC=679.67 $ VC=0.4827
      EM=187.39 $ FT=483.67 $ CT=1060.0
      PSTOP=1.60
      CRAB=7.5
      DO 950 I=1,99
      NOS=I
      CRAB=CRAB+.5
      STAB(I)=CRAB
      IF(STAB(I).EQ.13.00) GO TO 960
  950 CONTINUE
  960 RETURN
C *********************************************************************

C     FREON 114 (CCLF2CCLF2) INPUT CONSTANTS
C     REFERENCE - JOURNAL OF CHEM. & ENG. DATA VOL. 5, PG 334, JULY
C     1960
C *********************************************************************
 1000 VIG=10.0 $ CAPA=27.071306 $ CAPB=-5113.7021 $ CAPC=-6.3086761
      CAPD=6.913003E-04 $ CAPE=0.78142111002 $ CAPF=768.35
      CAPX=25.33966211 $ CAPY=-0.1151371756 $ R=0.062780807
      A2=-2.3856704 $ B2=1.0801207E-03 $ C2=-6.5643648
      A3=0.034055687 $ B3=-5.3336494E-06 $ C3=0.16366057
      A4=-3.857481E-04 $ A5=1.6017659E-06 $ B5=6.2623341E-10
      C5=-1.0166314E-09 $ K=.00397904 $ SB=0.005914907 $ SAA=0.0175
      SBB=3.49E-04 $ SC=-1.67E-07
      PC=3.094 $ TC=435.67 $ VC=8.733 $ EM=170.94 $ FT=322.67
      CT=1060.0
      CRAB=6.5
      DO 1050 I=1,99
      NOS=I
      CRAB=CRAB+.5
      STAB(I)=CRAB
      IF(STAB(I).EQ.15.00) GO TO 1060
 1050 CONTINUE
 1060 RETURN
C *********************************************************************
C     FREON 116 (CF3CF3) INPUT CONSTANTS
C     REFERENCE - FREON PRODUCTS BULLETINS 116 AND X-8882
C *********************************************************************
 1100 VIG=1.100004 $ R=.0777554 $ PC=33.9433 $ TC=381.67 $ VC=.81309
      EM=138.02 $ FT=340.9 $ CT=1060.0
      CAPA=1.0
      CRAB=4.50
      DO 1150 I=1,99
      NOS=I
      CRAB=CRAB+.5
      STAB(I)=CRAB
      IF(STAB(I).EQ.16.50) GO TO 1160
 1150 CONTINUE
 1160 RETURN
C *********************************************************************
```

APPENDIX A

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C      FREON C318 (C-C4F8) INPUT CONSTANTS
C      REFERENCE - JOURNAL OF CHEM. & ENG. DATA VOL. 7, PG 68, JAN 1962
C ***********************************************************************
 1200 VIG=.08 $ CAPA=15.6342 $ CAPB=-4301.063 $ CAPC=-2.128401
      CAPD=-0.00119759 $ CAPE=0.6625898 $ CAPF=714.0
      CAPX=12.19214242 $ CAPY=-0.1682887079 $ R=0.05364569795
      A2=-1.8947374 $ B2=9.8484745E-04 $ C2=-28.542156
      A3=0.026479892 $ B3=-6.862101E-06 $ C3=0.66384636
      A4=-2.5465234E-04 $ A5=6.0887086E-07 $ B5=8.269634E-10
      C5=-3.849145E-05 $ K=.00715031 $ SB=0.0060114165
      SAA=0.02251781573 $ SBB=3.699078141E-04
      SC=-1.648425224E-07 $ SD=2.152780846E-11 $ PC=312.195
      TC=671.1 $ VC=.0630 $ EM=200.04 $ FT=417.17 $ CT=1060.0
      PSTOP=.80
      CRAB=5.5
      DO 1250 I=1,99
      NOS=I
      CRAB=CRAB+.5
      STAB(I)=CRAB
      IF(STAB(I).EQ.14.00) GO TO 1260
 1250 CONTINUE
 1260 RETURN
      END

      SUBROUTINE GLINE
C ***********************************************************************
C      SUBROUTINE GLINE COMPUTES LINES OF CONSTANT G, ISENTROPIC
C      EXPANSION EXPONENT
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
      GI=GTAB(I)
      DO 2 N=1,NOV
      VI=VTAB(N)
      CALL VVAR
      JJ=1
 44   TI=VG(JJ)
      CALL TVAR
      CALL GOTV
      GG(JJ)=G
      IF(ABS(GG(JJ)-GI)-ERR*GI)70,71,71
 71   IF(JJ-1)72,72,43
 72   JJ=2
      VG(2)=VG(1)*1.01
      GO TO 44
 43   VGN=((VG(2)-VG(1))/(GG(2)-GG(1)))
     1*(GI-GG(1))+VG(1)
      IF(VGN)46,46,45
 46   VGN=.5*VG(2)
 45   GG(1)=GG(2)
      VG(1)=VG(2)
      VG(2)=VGN
      GO TO 44
 70   CALL PHOTV
 2    CONTINUE
      RETURN
      END
```

APPENDIX A

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      SUBROUTINE GLINET
C ***************************************************************************
C     SUBROUTINE GLINET IS USED TO COMPUTE LINES OF CONSTANT G,
C     ISENTROPIC EXPANSION EXPONENT
C ***************************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIM933,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
      GI=GTAB(I)
      DO 2 N=1,NOT
      TI=TTAB(N)
      CALL TVAR
      JJ=1
 44   VI=VG(JJ)
      CALL VVAR
      CALL GOTV
      GG(JJ)=G
      IF(ABS(GG(JJ)-GI)-ERR*GI)70,71,71
 71   IF(JJ-1)72,72,43
 72   JJ=2
      VG(2)=VG(1)*1.01
      GO TO 44
 43   VGN=((VG(2)-VG(1))/(GG(2)-GG(1)))
     1*(GI-GG(1))+VG(1)
      IF(VGN)46,46,45

 46   VGN=.5*VG(2)
 45   GG(1)=GG(2)
      VG(1)=VG(2)
      VG(2)=VGN
      GO TO 44
 70   CALL PHOTV
 2    CONTINUE
      RETURN
      END


      SUBROUTINE GOTV
C ***************************************************************************
C     SUBROUTINE GOTV COMPUTES G=F(T,V), ISENTROPIC EXPONENT AS A
C     FUNCTION OF T AND V
C ***************************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
```

APPENDIX A

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      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
C ***************************************************************************
C     C2F6 CHECK
C ***************************************************************************
C
      IF (CAPA.EQ.1.0) GO TO 1000
C
C ***************************************************************************
C     CBRF3 CHECK
C ***************************************************************************
C
      IF(CAPB.NE.1.0) GO TO 2000
C
C ***************************************************************************
C     G=F(T,V) FOR CBRF3 ONLY
C ***************************************************************************
      VI3=VI2*VI
      VI4=VI2*VI2

      VI5=VI2*VI3
      P=-2.49597/VI2+0.0274558/VI3-0.00017894/VI4
     1+TI*(0.072047/VI+0.00219617/VI2-0.000024787/VI3
     2+0.0000002155/VI4)-(5.877E6/VI2-2.617E3/VI4)/TI3
      CV=0.0175+1.94E-4*TI-8.34999E-8*TI2+1.6313E7/(VI*TI4)-3.389986E3/
     1(VI3*TI4)+4.6040785E-4/VI-4.5869087E-6/VI2-3.9878922E-8/VI3
      PPT=0.072047/VI+0.00219617/VI2-0.000024787/VI3+0.0000002155/VI4
     1+(3./TI4)*(5.877E6/VI2-2.617E3/VI4)
      PPV=-((2.*2.49597)/VI3-(3.*.0274558)/VI4+(4.*.00017894)/VI5
     1+TI*(-0.072047/VI2-(2.*.00219617)/VI3+(3.*.000024787)/VI4
     2-(4.*.0000002155)/VI5)-((-2.*5.877E6)/VI3+(4.*2.617E3)/VI5)/TI3)
      A=JVI2*TI*PPT**2/CV-VI2*PPV
      GO TO 2001
 1000 CONTINUE
C ***************************************************************************
C     G=F(T,V) FOR C2F6 ONLY
C ***************************************************************************
      BETA=.008223681553
      ALP=38.20276942
      R=.07775539769
      RTI=R*TI
      P=RTI/(VI-BETA)-ALP/(VI*(VI+BETA)*SQRT(TI))
      CV=.02378775437+.00034c3651333*TI-.14211084E-06*TI2
     1+.7611753554E-11*TI3-.26902175E+03/TI2+((3.*J*ALP)/
     2(4.*BETA*TI**1.5))*ALOG((VI+BETA)/VI)
      PPT=R/(VI-BETA)+ALP/(2.*VI*(VI+BETA)*TI**1.5)
      PPV=-RTI/((VI-BETA)*(VI-BETA))+(ALP*(2.*VI+BETA))/(VI2*(VI+BETA)
     1*(VI+BETA)*TI**.5)
      PPV=-PPV
      A=JVI2*TI*PPT**2/CV-VI2*PPV
      GO TO 2001
C ***************************************************************************
C     G=F(T,V) FOR ALL OTHER FREONS
C ***************************************************************************
 2000 P=RTI*OVIB+SUM2*OVIB2+SUM3*OVIB3+SUM4*OVIB4+SUM5*OVIB5+SUM6*EAVI
      CV=SUM160-SUM38*SUM36
      PPT=       (R   *OVIB+SUM39*OVIB2+SUM40*OVIB3+SUM43+SUM41*OVIB5)
      PPV=                              (RTI*OVIB2+SUM33*OVIB3+SUM34*OVIB4
     2+SUM42*OVIB5+SUM35*OVIB6-AEI*SUM6)
      A=JVI2*TI*PPT**2/CV-VI2*PPV
 2001 CONTINUE
      ASQ=A*4633.056
      G=A  /(P*VI)
      RETURN
      END
```

APPENDIX A

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      SUBROUTINE PHOTV
C ***********************************************************************
C     SUBROUTINE PHOTV COMPUTES THE THERMODYNAMIC PROPERTIES OF THE
C     VARIOUS FREON COMPOUNDS
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMK,TI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      COMMON/BOUND/FLAGOUT,NOENT
C ***********************************************************************
C     CBRF3 CHECK
C ***********************************************************************
      IF(CAPA.NE.0.0) GO TO 1000
      CALL CBRF3
      GO TO 2001
C ***********************************************************************
C     C2F6 CHECK
C ***********************************************************************
 1000 IF(CAPB.NE.0.0) GO TO 2000
      CALL C2F6
      GO TO 2001
C ***********************************************************************
C     COMPUTATION OF GAS PROPERTIES P,S,H,Z,CV,CP,GAMMA,A,AND G
C ***********************************************************************
 2000 P=RTI*OVIB+SUM2*JVIB2+SUM3*OVIB3+SUM4*OVIB4+SUM5*OVIB5+SUM6*EAVI
      S=SUM164+SUM165+SUM166*SUM36+CAPY
      H=SUM161+P*JVI+SUM162+SUM163*SUM36+CAPX
      Z=(VI*P)/(RTI)
      CV=SUM160-SUM38*SUM36
      PPT=       (R   *OVIB+SUM39*OVIB2+SUM40*OVIB3+SUM43+SUM41*OVIB5)
      PPV=                              (RTI*OVIB2+SUM33*OVIB3+SUM34*OVIB4
     2+SUM42*OVIB5+SUM35*OVIB6-AEI*SUM6)
 2001 CONTINUE
      CP=CV-TI*J*PPT**2/(-PPV)
      GAM=CP/CV
      A=JVI2*TI*PPT**2/CV+VI2*PPV
      ASQ=A*4633.056
      G=A   /(P*VI)
      ASQ=ABS(ASQ)
    2 A=SQRT(ASQ)
      TK=TI*5./9.
      VK=VI*.062427962
C ***********************************************************************
C     COMPUTATION OF TRANSPORT PROPERTIES
C ***********************************************************************
C
C ***********************************************************************
C     THESE TWO EQUATIONS FOR VISCOSITY AND CONDUCTIVITY MUST BE CHANGED
C     FOR EACH FREON COMPOUND, HOWEVER INTERNALLY THE EQUATIONS HAVE
C     BEEN PROVIDED FOR FREON 12, FREON 13B1, FREON 14, AND FREON 116.
C     IF A DIFFERENT COMPOUND HAS BEEN SELECTED THE USER MUST OBTAIN
C     AND INPUT THE TWO EQUATIONS OTHERWISE NO TRANSPORT PROPERTIES
C     WILL BE OUTPUT. THE TWO EQUATIONS FOR THERMAL CONDUCTIVITY AND
C     VISCOSITY CAN BE OBTAINED FROM P.E. LILEY OF THE THERMOPHYSICAL
C     PROPERTIES RESEARCH CENTER, PURDUE UNIVERSITY OR FROM E.I.
C     DU PONT DE NEMOURS & CO.
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APPENDIX A

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C ***********************************************************************
C
      GO TO (69,50,69,60,55,69,69,69,69,65,69,69),NAME
C
C ***********************************************************************
C .   TRANSPORT PROPERTIES FOR CCL2F2 ONLY
C ***********************************************************************
   50 EMU=(SQRT(TK)/(.75309+188.969/TK-803.786/(TK*TK)))*1.E-6
      EK1=(2.3220*SQRT(TK))/(727.58+6.891667E5/TK+1.007883E6/(TK*TK))
      GO TO 63
C ***********************************************************************
C     TRANSPORT PROPERTIES FOR CF4 ONLY
C ***********************************************************************
   55 EMU=(SQRT(TK)/(.64625+103./TK-3.42714/(TK*TK)))*1.E-6
      EK1=1.73073*(7.291E-3+2.377E-5*((9./5.)*TK-459.67))
      GO TO 63
C ***********************************************************************
C     TRANSPORT PROPERTIES FOR CBRF3 ONLY
C ***********************************************************************
   60 CONTINUE
      EMU=(SQRT(TK)/(.63388+144.691/TK-1087.52/(TK*TK)))*1.E-6
      IF(TK-600.)62,61,61
   62 EK1=1.73073*(6.0041+1.6E-5*(TK*1.8-459.67))
      GO TO 63
   61 EK1=SQRT(TK)/(558.966+2.14363E5/TK+1.65119E7/(TK*TK)+
     18.31701E9/(TK*TK*TK))
      GO TO 63
C ***********************************************************************
C     TRANSPORT PROPERTIES FOR C2F6 ONLY
C ***********************************************************************
   65 EMU=(12.778*SQRT(TK)-78.8)*1.E-07
      EK1=9.591E-05*TK-.01163
      GO TO 63
C ***********************************************************************
C     TRANSPORT PROPERTIES FOR OTHER FREONS. EQUATIONS MUST BE
C     INSERTED BY THE USER AND APPROPRIATE CHANGES SHOULD BE MADE
C     IN THE COMPUTED GO TO STATEMENT ABOVE
C ***********************************************************************
   63 CONTINUE
      IF(CAPA.EQ.1.0) GO TO 70
      GO TO 75
C ***********************************************************************
C     THESE THREE EQUATIONS ARE USED ONLY WHEN RUNNING C2F6
C ***********************************************************************
   70 PP=432.*.06804596299
      CK=527.5*5./9.
      VV=.0262*.062427962
      GO TO 79
   75 PP=PC*.06804596299
      CK=TC*5./9.
      VV=VC*.062427962
   79 CONTINUE
      XI=CK**.16666667/(SQRT(EM)*PP**.66666667)
      RHOR=VV/VK
      EK1=EK1+7.18E-3*(EXP(RHOR)-1.)
      IF(RHOR-.10)46,46,43
   43 IF(RHOR-.90)47,47,44
   44 IF(RHOR-2.2)48,48,45
   45 X=.6439-.1005*RHOR-4.75E-4*(RHOR**3-10.65)**2
      ALG1=10.**X+3.
      ALG2=10.**(-ALG1)
      EMU =(ALG2+XI*EMU)/XI
      GO TO 40
   46 EMU =(16.56E-8*RHOR**1.111+XI*EMU)/XI
      GO TO 40
   47 EMU =(.607E-8*(9.045*RHOR+.63)**1.739+XI*EMU)/XI
      GO TO 40
   48 X=.6439-.1005*RHOR
      ALG1=10.**X+3.
      ALG2=10.**(-ALG1)
      EMU =(ALG2+XI*EMU)/XI
      GO TO 40
C ***********************************************************************
C     IF THE VISCOSITY AND THERMAL CONDUCTIVITY EQUATIONS ARE NOT INPUT
C     FOR THE OTHER FREON COMPOUNDS THEN MU AND K ARE SET TO ZERO ALONG
C .   WITH THE PRANDTL NUMBER FOR THE OUTPUT
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APPENDIX A

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C ***********************************************************************
   69 EMU=0.0
      EK1=0.0
 40   CONTINUE
      IF(EMU.NE.0.0.AND.EK1.NE.0.0) GO TO 30
      PR=0.0
      GO TO 31
   30 PR=(EMU*CP/EK1)*4183.99992
   31 CONTINUE
C ***********************************************************************
C     OUTPUT UNIT CHECK SI OR US
C ***********************************************************************
C
      IF(UNIO-1.) 5,5,6
C
C ***********************************************************************
C     SI UNITS OUTPUT CONVERSIONS
C ***********************************************************************
    5 OUTV=VI*.062427962
      OUTP=P*.06804596299
      ~~OUTS=S*44.28218~~ OUTS = S * (EM/1.987)
      ~~OUTH=H*.090075416~~
      OUTA=A*.3048
      ~~OUTCP=CP*44.289100~~ OUTH = H * (EM/976.9483)
      OUTT=TK
      GO TO 7 OUTCP = CP * (EM/1.987)
C ***********************************************************************
C     US UNITS OUTPUT CONVERSIONS
C ***********************************************************************
    6 EMU=EMU/1.4681639
      EK1=EK1/6226.47794
      OUTV=VI
      OUTP=P
      OUTS=S
      OUTH=H
      OUTA=A
      OUTCP=CP
      OUTT=TI

    7 NN=NN+1
      XPLOT(NN)=OUTH
      ~~IF(UNIO.EQ.2.) XPLOT(N~~ IF(UNIO.EQ.2.) XPLOT(NN) = OUTH * (EM/976.9483)
      YPLOT(NN)=ALOG10(OUTP)
      IF(UNIO.EQ.2.) YPLOT(NN)=ALOG10(OUTP*.06804596299)
C ***********************************************************************
C     TABULAR OUTPUT FORMAT
C ***********************************************************************
      IF(FLAGOUT.NE.1.0) RETURN
      IF(PLOTOUT.NE.1) RETURN
      IF(NOENT.NE.1) GO TO 1
      WRITE(6,100) OUTT,OUTV,OUTP,OUTH,OUTA,OUTCP,GAM,G,Z,EMU,EK1,PR
      RETURN
 1    WRITE(6,100)OUTT,OUTV,OUTP,OUTH,OUTA,OUTCP,GAM,G,Z
     1,EMU,EK1,PR,OUTS
  100 FORMAT(1X,F9.4,2(2X,F8.4,2X,F9.4),2X,F8.4,2(2X,F7.4),2X,F6.4,2X,
     12E11.4,2X,F6.4,2X,F7.4)
      RETURN
      END
```

see errata

see errata

APPENDIX A

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      SUBROUTINE PLINE
C *********************************************************************
C     SUBROUTINE PLINE COMPUTES THE SATURATION PRESSURE LINE
C *********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      TI=TTAB(N)
      CALL TVAR
C *********************************************************************
C     C2F6 CHECK
C *********************************************************************
C
      IF(CAPA.EQ.1.0) GO TO 1000
C
C *********************************************************************
C     CBRF3 CHECK
C *********************************************************************
      IF(CAPB.NE.1.0) GO TO 2000
C
C *********************************************************************
C     CBRF3 SATURATION PRESSURE LINE ONLY
C *********************************************************************
      PS=(-44295./TI2-1795.678/TI+7.322506-0.00438339*TI
     1+0.00000312584*TI2)
      GO TO 2001
 1000 CONTINUE
C *********************************************************************
C     C2F6 SATURATION PRESSURE LINE ONLY
C *********************************************************************
      PS=.3762282521E+02-.1857298724E+04/TI-.1297816132E+02*ALOG10(TI)
     1+.7340820388E-02*TI-.5937560386E+00*((.5351699999E+03-TI)/TI)
     2*ALOG10(.5351699999E+03-TI)
      GO TO 2001
C *********************************************************************
C     SATURATION PRESSURE LINE FOR ALL OTHER FREONS
C *********************************************************************
 2000 PS=CAPA+CAPB/TI+CAPC*ALOG10(TI)+CAPD*TI
      IF(CAPE.NE.0.0) PS=PS+CAPE*((CAPF-TI)/TI)*ALOG10(CAPF-TI)
      IF(NAME.EQ.8) PS=PS+CAPH*TI2+CAPL*TI3
 2001 CONTINUE
      PS=10.**PS
      JJ=1
   44 VI=VG(JJ)
      CALL VVAR
      CALL  PUTV
      PG(JJ)=P
      IF(ABS(PG(JJ)-PS)-ERR*PS)70,71,71
   71 IF(JJ-1)72,72,43
   72 JJ=2
      VG(2)=VG(1)*1.50
      GO TO 44
   43 VGN=((VG(2)-VG(1))/(PG(2)-PG(1)))
     1*(PS-PG(1))+VG(1)
      PG(1)=PG(2)
      VG(1)=VG(2)
      VG(2)=VGN
      GO TO 44
   70 CALL PHOTV
      RETURN
      END
```

APPENDIX A

```
      SUBROUTINE PLOT
C ***********************************************************************
C     SUBROUTINE PLOT RELAYS THE PLOTTING INSTRUCTIONS TO THE PLOTTER
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,J860A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      XPLOT(NN+1)=0.
      XPLOT(NN+2)=1.
      YPLOT(NN+1)=-3.
      YPLOT(NN+2)=.2
      CALL LINPLT(XPLOT,YPLOT,NN,1,0,0,1,0)
      RETURN
      END


      SUBROUTINE PUTV
C ***********************************************************************
C     SUBROUTINE PUTV COMPUTES P=F(T,V), PRESSURE AS A FUNCTION OF
C     T AND V
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,J860A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      VI3=VI2*VI
      VI4=VI2*VI2
C ***********************************************************************
C     C2F6 CHECK
C ***********************************************************************
C
      IF(CAPA.EQ.1.0) GO TO 1000
C
C ***********************************************************************
C     CBRF3 CHECK
```

APPENDIX A

```
C ***********************************************************************
C
      IF(CAPB.NE.1.C) GO TO 2000
C
C ***********************************************************************
C     P=F(T,V) FOR C8RF3 ONLY
C ***********************************************************************
      P=-2.49597/VI2+0.0274558/VI3-0.00017894/VI4
     1+TI*(0.072647/VI+0.00219617/VI2-0.000024787/VI3
     2+0.000002195/VI4)-(5.877E6/VI2-2.617E3/VI4)/TI3
      GO TO 2001
 1000 CONTINUE
C ***********************************************************************
C     P=F(T,V) FOR C2F6 ONLY
C ***********************************************************************
      P=(.077755397e9*TI)/(VI-.008223681553)-(38.20276942)/(VI*(VI+
     1.008223681553)*SQRT(TI))
      GO TO 2001
C ***********************************************************************
C     P=F(T,V) FOR ALL OTHER FREONS
C ***********************************************************************
 2000 P=PTI*OVIB+SUM2*OVIB2+SUM3*OVIB3+SUM4*OVIB4+SUM5*OVIB5+SUM6*EAVI
 2001 CONTINUE
      RETURN
      END


      SUBROUTINE SLINE
C ***********************************************************************
C     SUBROUTINE SLINE COMPUTES LINES OF CONSTANT S,ENTROPY
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,S4A,SB,S88,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      COMMON/BOUND/FLAGOUT,NOENT
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      COMMON LNCT
      DO 2 N=1,NOT
      TI=TTAB(N)
      CALL TVAR
      JJ=1
 44   VI=VG(JJ)
      IF(VI.LE.SB)VI=SB*1.05
      CALL VVAR
      CALL  SOTV
      SG(JJ)=S
```

```
      IF(ABS(SG(JJ)-SI)-ERR*SI)70,71,71
   71 IF(JJ-1)72,72,43
   72 JJ=2
      VG(2)=VG(1)*.8
      GO TO 44
   43 VGN=((VG(2)-VG(1))/(SG(2)-SG(1)))
     1*(SI-SG(1))+VG(1)
      SG(1)=SG(2)
      VG(1)=VG(2)
      VG(2)=VGN
      GO TO 44
   70 CALL PHOTV
      LNCT=LNCT+1
      IF(LNCT-46) 2,101,101
  101 IF(N.EQ.NOT) RETURN
      ~~OUTS=STAB(I)*44.2891HD~~      OUTS = STAB(I) * (EM/1.987)
      IF(UNIO.GT.1.) OUTS=STAB(I)
C ***********************************************************************
C     HEADER INSTRUCTIONS FOR CONTINUATION TABLES
C ***********************************************************************
      IF(NOENT.EQ.1) GO TO 1000
      WRITE(6,100)OUTS
  100 FORMAT(1H1,52X,4HS/R=,F7.4,//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,5X,
     2*S/R*,7)
      GO TO 2000
 1000 CONTINUE
      WRITE(6,110)OUTS
  110 FORMAT(1H1,52X,4HS/R=,F7.4,//,5X,*T*,10X,*V*,9X,*P*,10X,*H*,9X,*A*,
     18X,*CP/R*,5X,*GAMMA*,6X,*G*,7X,*Z*,11X,*MU*,9X,*K*,8X,*NPR*,/)
 2000 LNCT=5
    2 CONTINUE
      RETURN
      END


      SUBROUTINE SOTV
C ***********************************************************************
C     SUBROUTINE SOTV COMPUTES S=F(T,V), ENTROPY AS A FUNCTION
C     OF T AND V
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      VI3=VI2*VI
C ***********************************************************************
C     C2F6 CHECK
C ***********************************************************************
C
      IF(CAPA.EQ.1.0) GO TO 1000
C
C ***********************************************************************
C     CBRF3 CHECK
C ***********************************************************************
C
      IF(CAPB.NE.1.0) GO TO 2000
C
C ***********************************************************************
C     S=F(T,V) FOR CBRF3 ONLY
```

all errata

APPENDIX A

```
C ***********************************************************************
      S=0.040295239*ALOG10(TI)+0.000194*TI-4.175E-8*TI2-3.2626694E6
     1/(VI*TI4)+0.4842837E3/(VI3*TI4)+0.030699247*ALOG10(VI)
     2-0.00040640785/VI+2.2934544E-6/VI2-1.3292974E-8/VI3-0.06216190
      GO TO 2001
 1000 CONTINUE
C ***********************************************************************
C     S=F(T,V) FOR C2F6 ONLY
C ***********************************************************************
      BETA=.00223681553
      ALP=38.20276942
      S=0.02378775437*ALOG(TI)+.000346365133*TI-.14211084E-06*TI2/2.
     1+.76117535546-11*TI3/3.+JR*ALOG(VI-BETA)-(J*ALP/(2.*BETA*TI**1.5))
     2 *ALOG((VI+BETA)/VI)-.15857+.26902175E+03/(2.*TI2)
      GO TO 2001
C ***********************************************************************
C     S=F(T,V) FOR ALL OTHER FREONS
C ***********************************************************************
 2000 S=SUM164+SUM165+SUM166*SUM36+CAPY
 2001 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE TLINE
C ***********************************************************************
C     SUBROUTINE TLINE COMPUTES LINES OF CONSTANT T, TEMPERATURE
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NGG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
      TI=TTAB(N)
      CALL TVAR
      DO 2 I=1,NOV
      VI=VTAB(I)
      CALL VVAR
      CALL PHOTV
 2    CONTINUE
      RETURN
      END
```

APPENDIX A

```
      SUBROUTINE TVAR
C ***************************************************************************
C     SUBROUTINE TVAR COMPUTES THE TERMS IN THE THERMODYNAMIC EQUATIONS
C     INVOLVING T, EXCEPT FOR THE COMPOUNDS CBRF3 AND C2F6
C ***************************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      TI2=TI*TI
      TI3=TI2*TI
      TI4=TI2*TI2
      RTI=R*TI
C ***************************************************************************
C     T TERMS FOR CBRF3 AND C2F6 ARE HANDLED IN ROUTINES CBRF3 AND C2F6
C ***************************************************************************
      IF(CAPA.EQ.0.0.OR.CAPB.EQ.0.0) RETURN
      KTI=K*TI
      IF(-KTI+675.84) 789,788,788
  789 EMKTI=0
      GO TO 790
  788 EMKTI=EXP(-KTI)
  790 CONTINUE
      SUM38=JK*KTI*EMKTI
      C2E=C2*EMKTI
      C3E=C3*EMKTI
      C5E=C5*EMKTI
      B2T=B2*TI
      B3T=B3*TI
      B4T=B4*TI
      B5T=B5*TI
      B6T=B6*TI
      SUM2=A2+B2T+C2E
      SUM3=A3+B3T+C3E
      SUM4=A4+B4T
      SUM42=4.*SUM4
      SUM5=A5+B5T+C5E
      SUM6=A6+B6T
      SUM33=2.*SUM2
      SUM34=3.*SUM3
      SUM35=5.*SUM5
      SUM39=B2-K*C2E
      SUM9=J*SUM39
      SUM40=B3-K*C3E
      SUM10=J2*SUM40
      SUM41=B5-K*C5E
      SUM11=J4*SUM41
      SUM163=J*EMKTI*(1.+KTI)
      SUM166=JK*EMKTI
      SUM160=SAA+SBB*TI+SC*TI2+SD*TI3
      SUM161=SAA*TI+SBB*TI2/2.+SC*TI3/3.+SD*TI4/4.
      SUM164=SAA*ALOG(TI)+SBB*TI+SC*TI2/2.+SD*TI3/3.
      IF(SF.EQ.0.0) GO TO 100
      SUM160=SUM160+SF/TI2
      SUM161=SUM161-SF/TI
      SUM164=SUM164-SF/(2.*TI2)
  100 CONTINUE
      RETURN
      END
```

APPENDIX A

```
      SUBROUTINE VLINE
C ***************************************************************************
C     SUBROUTINE VLINE COMPUTES LINES OF CONSTANT V, VOLUME
C ***************************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNID,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR,JVI2,JA60A
      VI=VTAB(I)
      CALL VVAR
      DO 2 N=1,NOT
      TI=TTAB(N)
      CALL TVAR
      CALL PHOTV
2     CONTINUE
      RETURN
      END
```

```
      SUBROUTINE VVAR
C ***************************************************************************
C     SUBROUTINE VVAR COMPUTES TERMS IN THE THERMODYNAMIC EQUATIONS
C     INVOLVING V, EXCEPT FOR C8RF3 AND C2F6
C ***************************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNID,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB60A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB60A,J2,J4,JK,JR
      REAL JVI2
      REAL JA60A
      COMMON PL(99),HL(99),PU(99),HU(99)
      COMMON TT(99),VT(99),ST(99),ZT(99),AT(99),GT(99),PT(99),HT(99)
      COMMON TA(99),VA(99),SA(99),ZA(99),AA(99),GA(99),PA(99),HA(99)
      COMMON TL(99),VL(99),SL(99),ZL(99),AL(99),GL(99),NOL,TLIM
      COMMON TU(99),VU(99),SU(99),ZU(99),AU(99),GU(99),NOU,TUIM
      JVI=J*VI
      VI2=VI*VI
      JVI2=J*VI2
C ***************************************************************************
C     V TERMS FOR C8RF3 AND C2F6 ARE HANDLED IN ROUTINES C8RF3 AND C2F6
C ***************************************************************************
      IF(CAPA.EQ.0.0.OR.CAPB.EQ.0.0) RETURN
      VIMB=VI-SB
      VIMB2=VIMB*VIMB
      VIMB3=VIMB2*VIMB
```

```
      VIMB4=VIMB2*VIMB2
      VIMB5=VIMB2*VIMB3
      VIMB6=VIMB3*VIMB3
      VIMB22=VIMB2*2.
      VIMB33=VIMB3*3.
      VIMB44=VIMB4*4.
      VIMB55=VIMB5*5.
      OVIB=1./VIMB
      OVIB2=1./VIMB2
      OVIB3=1./VIMB3
      OVIB4=1./VIMB4
      OVIB5=1./VIMB5
      OVIB6=1./VIMB6
      SUM36=C2/VIM3+C3/VIMB22+C5/VIMB44
      AVI=ALPHA*VI
      IF(AVI+675.84) 891,892,892
  891 EAVI=0
      GO TO 893
  892 EAVI=EXP(AVI)
  893 CONTINUE
      SUM43=B6*EAVI+B4*OVIB4
      AEI=ALPHA*EAVI
      SUM162=J*(A2/VIMB+A3/VIMB22+A4/VIMB33+A5/VIMB44)-JA6OA*EAVI
      SUM163=-J*(B2/VIMB+B3/VIMB22+B4/VIMB33+B5/VIMB44)+JB6OA*EAVI
     1+JR*ALOG(VIMB)
      RETURN
      END


      SUBROUTINE ZLINE
C ***************************************************************************
C     SUBROUTINE ZLINE COMPUTES LINES OF CONSTANT Z, COMPRESSIBILITY
C ***************************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA6OA,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,JB6OA,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,JB6OA,J2,J4,JK,JR,JVI2,JA6OA
      ZI=ZTAB(I)
      DO 2 N=1,NOV
      VI=VTAB(N)
      CALL VVAR
      JJ=1
   44 TI=VG(JJ)
      CALL TVAR
      CALL ZOTV
      ZG(JJ)=Z
      IF(ABS(ZG(JJ)-ZI)-ERR*ZI)70,71,71
   71 IF(JJ-1)72,72,43
   72 JJ=2
      VG(2)=VG(1)*1.05
      GO TO 44
   43 VGN=((VG(2)-VG(1))/(ZG(2)-ZG(1)))
     1*(ZI-ZG(1))+VG(1)
      IF(VGN)46,46,45
   46 VGN=.5*VG(2)
   45 ZG(1)=ZG(2)
      VG(1)=VG(2)
      VG(2)=VGN
      GO TO 44
   70 CALL PHOTV
    2 CONTINUE
      RETURN
      END
```

APPENDIX A

```
      SUBROUTINE ZOTV
C ***********************************************************************
C     SUBROUTINE ZOTV COMPUTES Z=F(T,V), COMPRESSIBILITY AS A FUNCTION
C     OF T AND V
C ***********************************************************************
      DIMENSION TTAB(99),VTAB(99),STAB(99),ZTAB(99),ATAB(99)
      COMMON JA60A,SUM160,PC,VC,EM,UNIO,FT,CT,PSTOP,PLOTOUT
      COMMON SUM161,SUM162,SUM163,SUM164,SUM165,SUM166,CAPY,CAPX,TC
      COMMON CV,PPT,PPV,NAME,NAME1,NAME2
      COMMON NOT,TTAB,NOV,VTAB,NOS,STAB,NOZ,ZTAB,NOA,ATAB,VIG
      COMMON VG(2),AG(2),SG(2),ZG(2),PG(2),VGN,I,N,JJ,GG(2),ASQ,AI,SI,ZI
      COMMON PS,NN,XPLOT(99),YPLOT(99),GI,GTAB(99),NOG,G
      COMMON CAPA,CAPB,CAPC,CAPD,CAPE,CAPF,CAPG,CAPH,CAPL,ERR
      COMMON AEI,ALPHA,AVI,A2,A3,A4,A5,A6,B2,B2T,B3,B3T,B4,B4T,
     1B4T4,B5,B5T,B6,B6T,C2,C2E,C3,C3E,C5,C5E,EAVI,EMKTI,
     2H,J,J860A,JK,JR,JVI,J2,J4,K,KTI,OVIB,OVIB2,OVIB3,OVIB4,OVIB5,P,
     3R,RTI,S,SAA,SB,SBB,SC,SD,SF,SUM10,SUM11,SUM2,SUM3,SUM33,SUM34,
     4SUM35,SUM4,SUM5,SUM6,SUM9,TI,TI2,TI3,TI4,VI,VIMB,VIMB2,VIMB22
      COMMON VIMB6,OVIB6,SUM36,SUM37,SUM38,SUM39,SUM40,SUM41,SUM42,
     1SUM43,VI2,JVI2,A,Z,VIMB3,VIMB33,VIMB4,VIMB44,VIMB5,VIMB55
      REAL K,KTI,J,JVI,J860A,J2,J4,JK,JR,JVI2,JA60A
C ***********************************************************************
C     C2F6 CHECK
C ***********************************************************************
C
      IF(CAPA.EQ.1.0) GO TO 1000
C
C ***********************************************************************
C     CBRF3 CHECK
C ***********************************************************************
C
       IF(CAPB.NE.1.0) GO TO 2000
C
C ***********************************************************************
C     Z=F(T,V) FOR CBRF3 ONLY
C ***********************************************************************
      VI3=VI2*VI
      VI4=VI2*VI2
      VI5=VI2*VI3
      P=-2.49597/VI2+0.0274558/VI3-0.00017894/VI4
     1+TI*(0.072047/VI+0.00219617/VI2-0.000024787/VI3
     2+0.0000002155/VI4)-(5.877E6/VI2-2.617E3/VI4)/TI3
      GO TO 2001
 1000 CONTINUE
C ***********************************************************************
C     Z=F(T,V) FOR C2F6 ONLY
C ***********************************************************************
      P=(.077755397e9*TI)/(VI-.008223681553)-(38.20276942)/(VI*(VI+
     1.008223681553)*SQRT(TI))
      GO TO 2001
C ***********************************************************************
C     Z=F(T,V) FOR ALL OTHER FREONS
C ***********************************************************************
 2000 P=RTI*OVIB+SUM2*OVIB2+SUM3*OVIB3+SUM4*OVIB4+SUM5*OVIB5+SUM6*EAVI
 2001 CONTINUE
      Z=(VI*P)/(RTI)
      RETURN
      END
```

APPENDIX B

CONSTANTS FOR THERMODYNAMIC EQUATIONS

FOR TEN FLUOROCARBONS

The computer program listed in appendix A contains a general set of thermodynamic equations applicable to all the fluorocarbons selected except $CBrF_3$ and CF_3-CF_3 whose respective equations are given in the report along with their constants. Built into the computer code are all the thermodynamic constants and thereby the user input is minimized.

Tables B1 to B3 list the constants (converted from U.S. Customary Units to SI Units) for each equation and for each fluorocarbon (refs. 8, 9, and 10).

TABLE B1.- THERMODYNAMIC CONSTANTS FOR EQUATION OF STATE

Constant	Value of constant for fluorocarbon -							
	CCl_3F	CCl_2F_2	CF_4	$CHCl_2F$	CHF_3	CCl_2F-$CClF_2$	$CClF_2$-$CClF_2$	C_4F_8
R	6.05×10^{1}	6.88×10^{1}	9.45×10^{1}	8.08×10^{1}	1.19×10^{2}	4.44×10^{1}	4.86×10^{1}	4.16×10^{1}
b	1.18×10^{-4}	4.06×10^{-4}	9.36×10^{-5}	0	8.17×10^{-6}	0	3.87×10^{-5}	3.93×10^{-5}
A_2	-8.40×10^{1}	-4.16×10^{1}	-5.81×10^{1}	-1.96×10^{2}	-1.25×10^{2}	-1.08×10^{2}	-6.41×10^{1}	5.09×10^{1}
B_2	6.38×10^{-2}	7.71×10^{-2}	1.03×10^{-1}	2.2×10^{-1}	1.68×10^{-1}	1.27×10^{-1}	5.22×10^{-2}	4.76×10^{-2}
C_2	-9.6×10^{2}	-1.53×10^{3}	-5.08×10^{2}	0	-4.29×10^{3}	0	-1.76×10^{2}	-7.67×10^{2}
A_3	-4.25×10^{-2}	1.01×10^{-1}	7.39×10^{-3}	-3.42×10^{-1}	2.09×10^{-2}	3.59×10^{-2}	5.71×10^{-2}	4.44×10^{-2}
B_3	1.47×10^{-4}	-5.67×10^{-5}	3.87×10^{-5}	1.08×10^{-3}	2.33×10^{-4}	1.51×10^{-4}	-1.61×10^{-5}	-2.07×10^{-5}
C_3	2.05×10^{0}	2.20×10^{0}	9.05×10^{-1}	0	9.97×10^{0}	0	2.75×10^{-1}	1.11×10^{0}
A_4	1.77×10^{-3}	-5.74×10^{-5}	2.01×10^{-5}	0	2.17×10^{-4}	0	-4.04×10^{-5}	-2.57×10^{-5}
B_4	-3.40×10^{-7}	0	7.39×10^{-8}	0	-6.9×10^{-7}	0	0	0
A_5	-1.54×10^{-7}	0	-2.93×10^{-8}	0	-2.53×10^{-7}	0	1.04×10^{-8}	3.98×10^{-8}
B_5	2.88×10^{-10}	4.08×10^{-11}	1.07×10^{-10}	0	7.60×10^{-10}	0	7.37×10^{-12}	9.73×10^{-12}
C_5	-9.67×10^{-7}	-1.66×10^{-7}	-3.16×10^{-7}	0	-4.83×10^{-6}	0	-6.64×10^{-8}	-2.52×10^{-7}
A_6	7.29×10^{11}	0	4.02×10^{11}	0	5.17×10^{11}	0	0	0
B_6	-1.17×10^{9}	0	-1.50×10^{9}	0	-1.38×10^{9}	0	0	0
K	9.55×10^{-3}	1.42×10^{-2}	1.76×10^{-2}	0	1.84×10^{-2}	0	7.16×10^{-3}	1.29×10^{-2}
$-\alpha$	-9.29×10^{3}	0	-1.06×10^{4}	0	-9.29×10^{3}	0	0	0

TABLE B2.- THERMODYNAMIC CONSTANTS FOR HEAT CAPACITY OF VAPOR, ENTROPY, AND ENTHALPY

Constant	Value of constant for fluorocarbon -							
	CCl_3F	CCl_2F_2	CF_4	$CHCl_2F$	CHF_3	CCl_2F-$CClF_2$	$CClF_2$-$CClF_2$	C_4F_8
a_4	9.96×10^{1}	3.39×10^{1}	1.26×10^{2}	1.79×10^{2}	3.19×10^{2}	3.33×10^{2}	7.32×10^{1}	9.42×10^{1}
b_4	2.11×10^{0}	2.51×10^{0}	1.79×10^{0}	1.05×10^{0}	-5.69×10^{-2}	8.73×10^{-1}	2.63×10^{0}	2.78×10^{0}
c_4	-3.29×10^{-4}	-3.22×10^{-4}	-3.82×10^{-5}	0	5.22×10^{-4}	0	-2.23×10^{-6}	-2.20×10^{-6}
d_4	1.46×10^{-7}	1.64×10^{-7}	-7.21×10^{-8}	0	-5.99×10^{-7}	0	0	5.25×10^{-8}
f_4	-4.35×10^{5}	0	0	0	0	0	0	0
Y	-3.84×10^{2}	-6.92×10^{1}	1.51×10^{3}	-4.61×10^{2}	-1.07×10^{3}	-1.69×10^{3}	-4.82×10^{2}	-7.04×10^{2}
X	1.18×10^{5}	9.20×10^{4}	2.00×10^{5}	1.77×10^{5}	9.67×10^{4}	5.86×10^{4}	5.89×10^{4}	2.84×10^{4}

APPENDIX B

TABLE B3.- THERMODYNAMIC CONSTANTS FOR VAPOR PRESSURE EQUATION

Constant	Value of constant for fluorocarbon -							
	CCl_3F	CCl_2F_2	CF_4	$CHCl_2F$	CHF_3	CCl_2F-$CClF_2$	$CClF_2$-$CClF_2$	C_4F_8
A	4.21×10^{1}	3.99×10^{1}	2.07×10^{1}	4.28×10^{2}	3.29×10^{2}	3.31×10^{1}	2.71×10^{1}	1.56×10^{1}
B	-2.41×10^{3}	-1.91×10^{3}	-1.37×10^{3}	-2.37×10^{3}	-4.42×10^{3}	-2.41×10^{3}	-2.84×10^{3}	-2.39×10^{3}
C	-1.28×10^{1}	-1.25×10^{1}	-4.69×10^{0}	-1.30×10^{1}	-1.45×10^{2}	-9.26×10^{0}	-6.31×10^{0}	-2.13×10^{0}
D	7.21×10^{-3}	8.51×10^{-3}	1.17×10^{-3}	7.18×10^{-3}	4.36×10^{-1}	3.69×10^{-3}	1.24×10^{-3}	-2.16×10^{-3}
E	3.14×10^{-2}	0	7.71×10^{-1}	0	0	0	7.81×10^{-1}	6.63×10^{-1}
F	4.79×10^{2}	0	2.36×10^{2}	0	0	0	4.27×10^{2}	3.97×10^{2}
G	0	0	0	0	-6.89×10^{-4}	0	0	0
L	0	0	0	0	5.50×10^{-7}	0	0	0

APPENDIX C

THERMODYNAMIC PROPERTIES FOR ISENTROPIC EQUILIBRIUM EXPANSIONS OF BINARY MIXTURES OF $CBrF_3$-ARGON AND CCl_2F_2-ARGON

Binary mixtures of fluorocarbons and argon are being used as substitute gases to simulate high-temperature air flows in the flight Mach number range between 4 and 10 (refs. 3 and 4). The properties of these mixtures are easily computed if it is shown that compressibility effects on the fluorocarbons in the range of interest are small.

The tabulated thermodynamic properties of both $CBrF_3$ and CCl_2F_2 show that in the range covered by the experimental tests ($T < 600$ K and $p < 0.5$ atm), pressure effects can be neglected. Therefore, these two fluorocarbons can be considered thermally perfect over this range and their thermodynamic properties; namely s, h, and c_p may be considered as functions of temperature only. An existing computer code is available that will handle mixtures of thermally perfect species and compute equilibrium rocket expansions.

Results using the computer code of reference 6 are tabulated for two representative cases; one for the $CBrF_3$-argon mixture and one for the CCl_2F_2-argon mixture.

TABLE C1.- $CBrF_3$-ARGON ISENTROPIC EQUILIBRIUM EXPANSION

[All values are in SI Units]

	Chamber	Throat	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit
Chamber pressure/p	1.0000	1.7575	5.0528	8.1117	11.410	14.930	18.650	22.550	39.678	58.817	79.599	107.54	137.39
p	5.0626	2.8805	1.0019	0.6241	0.4437	0.3391	0.2715	0.2245	0.1276	0.0861	0.0636	0.0471	0.0368
T	622	572	487	452	427	409	394	382	346	323	306	289	276
ρ	9.3665×10^{-3}	5.7949×10^{-3}	2.3694×10^{-3}	1.5907×10^{-3}	1.1948×10^{-3}	9.5422×10^{-4}	7.9265×10^{-4}	6.7679×10^{-4}	4.2382×10^{-4}	3.0652×10^{-4}	3.2923×10^{-4}	1.8719×10^{-4}	1.5344×10^{-4}
h	-778.8	-785.8	-797.6	-802.3	-805.4	-807.8	-809.7	-811.2	-815.5	-818.3	-820.3	-822.2	-823.7
s	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481	0.6481
M	94.429	94.429	94.429	94.429	94.429	94.429	94.429	94.429	94.429	94.429	94.429	94.429	94.429
c_p	0.1430	0.1403	0.1345	0.1316	0.1294	0.1275	0.1260	0.1247	0.1205	0.1175	0.1151	0.1128	0.1108
γ	1.1726	1.1765	1.1855	1.1904	1.1943	1.1976	1.2005	1.2031	1.2116	1.2181	1.2236	1.2295	1.2345
a	253.4	243.4	225.4	217.5	212.0	207.7	204.1	201.1	192.2	186.2	181.6	177.0	173.3
Mach number	0.000	1.000	1.761	2.038	2.228	2.373	2.491	2.591	2.886	3.090	3.248	3.406	3.536
Mole fractions:													
Argon	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002	0.50002
$CBrF_3$	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997	0.49997

TABLE C2.- CCl_2F_2-ARGON ISENTROPIC EQUILIBRIUM EXPANSION

[All values are in SI Units]

	Chamber	Throat	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit	Exit
Chamber pressure/p	1.0000	1.7723	5.1773	8.3735	11.843	15.564	19.514	23.671	42.066	62.812	85.505	116.22	149.25
p	4.6268	2.6105	0.8937	0.5525	0.3907	0.2973	0.2371	0.1955	0.1100	0.0737	0.0541	0.0398	0.0310
T	649	590	492	452	425	404	388	374	336	310	292	274	260
ρ	6.2843×10^{-3}	3.8983×10^{-3}	1.6015×10^{-3}	1.0773×10^{-3}	8.1038×10^{-4}	6.4793×10^{-4}	5.3870×10^{-4}	4.6031×10^{-4}	2.8889×10^{-4}	2.0924×10^{-4}	1.6349×10^{-4}	1.2806×10^{-4}	1.0506×10^{-4}
h	-595.3	-605.0	-620.9	-627.1	-631.3	-634.4	-636.9	-638.9	-644.5	-648.1	-650.6	-653.0	-654.8
s	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001	0.8001
M	72.332	72.332	72.332	72.332	72.332	72.332	72.332	72.332	72.332	72.332	72.332	72.332	72.332
c_p	0.1672	0.1644	0.1583	0.1551	0.1526	0.1505	0.1487	0.1472	0.1423	0.1388	0.1359	0.1330	0.1307
γ	1.1967	1.2006	1.2100	1.2153	1.2196	1.2233	1.2266	1.2295	1.2392	1.2469	1.2533	1.2602	1.2663
a	298.8	285.4	261.6	251.3	244.1	238.5	233.9	230.0	218.6	210.9	205.0	199.2	194.6
Mach number	0.000	1.000	1.771	2.055	2.250	2.400	2.523	2.627	2.936	3.152	3.320	3.489	3.629
Mole fractions:													
Argon	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003	0.60003
CCl_2F_2	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997	0.39997

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TABLE I.- THERMODYNAMIC AND TRANSPORT PROPERTIES

OF CCl_3F AT CONSTANT ENTROPY

s/R = 9.0000

T K	V m^3/kg	p atm	h/RT	a m/sec	c_p/R	γ	γ_e	Z	μ $N-s/m^2$	k W/m-K	N_{Pr}
246.7003	1.3189	.1108	8.1153	129.2221	5.5436	1.1366	1.1274	.9920			0.0000
256.7003	.9749	.1557	8.3141	131.4714	5.6593	1.1348	1.1236	.9902			0.0000
266.7003	.7251	.2171	8.5156	133.6315	5.7730	1.1335	1.1197	.9880			0.0000
276.7003	.5425	.3002	8.7193	135.6950	5.8854	1.1325	1.1158	.9854			0.0000
286.7003	.4084	.4119	8.9248	137.6527	5.9972	1.1321	1.1117	.9823			0.0000
296.7003	.3092	.5608	9.1316	139.4933	6.1091	1.1321	1.1074	.9785			0.0000
306.7003	.2356	.7576	9.3393	141.2032	6.2221	1.1327	1.1027	.9741			0.0000
316.7003	.1805	1.0154	9.5471	142.7664	6.3370	1.1339	1.0976	.9688	NOT		0.0000
326.7003	.1391	1.3500	9.7547	144.1647	6.4548	1.1357	1.0919	.9627	AVAILABLE		0.0000
336.7003	.1079	1.7808	9.9611	145.3756	6.5769	1.1383	1.0855	.9554			0.0000
346.7003	.0842	2.3297	10.1657	146.3761	6.7044	1.1418	1.0783	.9469			0.0000
356.7003	.0661	3.0222	10.3678	147.1396	6.8388	1.1464	1.0702	.9371			0.0000
366.7003	.0522	3.8869	10.5665	147.6380	6.9820	1.1521	1.0609	.9258			0.0000
376.7003	.0415	4.9546	10.7609	147.8415	7.1359	1.1593	1.0503	.9128			0.0000
386.7003	.0331	6.2582	10.9501	147.7211	7.3030	1.1682	1.0382	.8981			0.0000
393.4349	.0286	7.2860	11.0742	147.4425	7.4244	1.1755	1.0292	.8871			0.0000

s/R= 9.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
218.1187	7.0460	.0185	7.5689	122.5572	5.1855	1.1424	1.1401	.9980			0.0000
228.1187	5.1111	.0266	7.7595	125.0927	5.3067	1.1391	1.1363	.9975			0.0000
238.1187	3.7309	.0380	7.9541	127.5649	5.4236	1.1362	1.1327	.9969			0.0000
248.1187	2.7399	.0539	8.1523	129.9740	5.5365	1.1336	1.1293	.9962			0.0000
258.1187	2.0240	.0758	8.3540	132.3193	5.6459	1.1313	1.1260	.9953			0.0000
268.1187	1.5039	.1059	8.5589	134.5994	5.7520	1.1293	1.1229	.9943			0.0000
278.1187	1.1238	.1468	8.7668	136.8116	5.8554	1.1277	1.1198	.9930			0.0000
288.1187	.8444	.2021	8.9772	138.9523	5.9564	1.1263	1.1167	.9915			0.0000
298.1187	.6380	.2762	9.1899	141.0168	6.0555	1.1253	1.1136	.9897			0.0000
308.1187	.4846	.3750	9.4046	142.9987	6.1531	1.1246	1.1104	.9875	NOT		0.0000
318.1187	.3701	.5057	9.6210	144.8903	6.2498	1.1242	1.1070	.9849	AVAILABLE		0.0000
328.1187	.2842	.6771	9.8385	146.6824	6.3461	1.1242	1.1035	.9819			0.0000
338.1187	.2193	.9007	10.0567	148.3631	6.4427	1.1246	1.0996	.9782			0.0000
348.1187	.1702	1.1898	10.2753	149.9197	6.5402	1.1254	1.0954	.9739			0.0000
358.1187	.1328	1.5610	10.4936	151.3367	6.6394	1.1267	1.0907	.9689			0.0000
368.1187	.1041	2.0338	10.7110	152.5970	6.7411	1.1286	1.0854	.9629			0.0000
378.1187	.0821	2.6308	10.9270	153.6810	6.8462	1.1311	1.0795	.9560			0.0000
388.1187	.0651	3.3786	11.1409	154.5677	6.9559	1.1344	1.0728	.9481			0.0000
398.1187	.0518	4.3066	11.3518	155.2344	7.0711	1.1385	1.0652	.9389			0.0000
408.1187	.0415	5.4477	11.5592	155.6581	7.1935	1.1437	1.0567	.9283			0.0000
418.1187	.0335	6.8372	11.7621	155.8161	7.3244	1.1501	1.0470	.9164			0.0000
425.5498	.0286	8.0524	11.9095	155.7492	7.4284	1.1558	1.0391	.9065			0.0000

TABLE I.- Continued

s/R=10.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
211.6230	18.9928	.0067	7.4490	120.9594	5.0997	1.1442	1.1433	.9992			0.0000
221.6230	13.7151	.0096	7.6374	123.5592	5.2227	1.1405	1.1393	.9990			0.0000
231.6230	9.9671	.0139	7.8300	126.1009	5.3408	1.1371	1.1357	.9988			0.0000
241.6230	7.2873	.0198	8.0267	128.5864	5.4543	1.1341	1.1324	.9985			0.0000
251.6230	5.3594	.0280	8.2272	131.0172	5.5635	1.1314	1.1293	.9981			0.0000
261.6230	3.9641	.0393	8.4313	133.3943	5.6687	1.1290	1.1264	.9977			0.0000
271.6230	2.9485	.0549	8.6388	135.7181	5.7703	1.1268	1.1236	.9972			0.0000
281.6230	2.2051	.0760	8.8495	137.9883	5.8684	1.1249	1.1210	.9966			0.0000
291.6230	1.6579	.1046	9.0632	140.2041	5.9633	1.1231	1.1184	.9958			0.0000
301.6230	1.2530	.1430	9.2797	142.3639	6.0555	1.1217	1.1159	.9949			0.0000
311.6230	.9519	.1943	9.4986	144.4654	6.1451	1.1204	1.1135	.9938			0.0000
321.6230	.7267	.2624	9.7199	146.5053	6.2324	1.1194	1.1110	.9925	NOT		0.0000
331.6230	.5577	.3520	9.9431	148.4794	6.3179	1.1186	1.1084	.9910	AVAILABLE		0.0000
341.6230	.4299	.4695	10.1679	150.3821	6.4019	1.1180	1.1058	.9892			0.0000
351.6230	.3331	.6223	10.3942	152.2071	6.4847	1.1177	1.1030	.9870			0.0000
361.6230	.2593	.8201	10.6215	153.9466	6.5669	1.1177	1.1000	.9844			0.0000
371.6230	.2028	1.0742	10.8495	155.5913	6.6488	1.1180	1.0968	.9814			0.0000
381.6230	.1594	1.3986	11.0777	157.1304	6.7309	1.1186	1.0933	.9778			0.0000
391.6230	.1258	1.8100	11.3056	158.5517	6.8139	1.1196	1.0894	.9736			0.0000
401.6230	.0998	2.3282	11.5329	159.8413	6.8983	1.1210	1.0850	.9687			0.0000
411.6230	.0796	2.9763	11.7590	160.9840	6.9848	1.1229	1.0801	.9631			0.0000
421.6230	.0637	3.7808	11.9833	161.9633	7.0741	1.1253	1.0747	.9566			0.0000
431.6230	.0513	4.7719	12.2051	162.7622	7.1671	1.1284	1.0685	.9491			0.0000
441.6230	.0415	5.9831	12.4238	163.3633	7.2647	1.1323	1.0617	.9405			0.0000
451.6230	.0337	7.4509	12.6387	163.7507	7.3680	1.1370	1.0540	.9308			0.0000
459.6879	.0286	8.8481	12.8087	163.8977	7.4563	1.1416	1.0471	.9221			0.0000

s/R=10.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
235.9186	18.9928	.0074	7.9154	127.2437	5.3863	1.1354	1.1347	.9994			0.0000
245.9186	13.9164	.0105	8.1141	129.7235	5.4970	1.1324	1.1315	.9992			0.0000
255.9186	10.2568	.0149	8.3167	132.1534	5.6032	1.1297	1.1286	.9991			0.0000
265.9186	7.6020	.0209	8.5230	134.5352	5.7054	1.1272	1.1259	.9988			0.0000
275.9186	5.6651	.0291	8.7327	136.8700	5.8036	1.1250	1.1234	.9986			0.0000
285.9186	4.2441	.0402	8.9457	139.1590	5.8981	1.1230	1.1210	.9983			0.0000
295.9186	3.1960	.0552	9.1619	141.4024	5.9892	1.1211	1.1188	.9979			0.0000
305.9186	2.4189	.0753	9.3810	143.6005	6.0770	1.1195	1.1166	.9975			0.0000
315.9186	1.8398	.1022	9.6028	145.7528	6.1618	1.1180	1.1145	.9969			0.0000
325.9186	1.4063	.1379	9.8272	147.8584	6.2438	1.1167	1.1125	.9963			0.0000
335.9186	1.0798	.1850	10.0539	149.9157	6.3232	1.1155	1.1105	.9955			0.0000
345.9186	.8330	.2467	10.2828	151.9226	6.4003	1.1145	1.1085	.9946			0.0000
355.9186	.6455	.3272	10.5137	153.8765	6.4752	1.1137	1.1064	.9935	NOT		0.0000
365.9186	.5025	.4316	10.7462	155.7736	6.5483	1.1131	1.1043	.9922	AVAILABLE		0.0000
375.9186	.3929	.5662	10.9802	157.6096	6.6199	1.1127	1.1022	.9906			0.0000
385.9186	.3085	.7388	11.2153	159.3792	6.6902	1.1124	1.0999	.9888			0.0000
395.9186	.2433	.9590	11.4514	161.0761	6.7597	1.1124	1.0974	.9867			0.0000
405.9186	.1927	1.2383	11.6880	162.6930	6.8285	1.1126	1.0947	.9842			0.0000
415.9186	.1533	1.5904	11.9249	164.2215	6.8971	1.1130	1.0918	.9813			0.0000
425.9186	.1224	2.0321	12.1616	165.6516	6.9660	1.1138	1.0886	.9778			0.0000
435.9186	.0982	2.5819	12.3977	166.9739	7.0355	1.1148	1.0851	.9739			0.0000
445.9186	.0791	3.2632	12.6328	168.1759	7.1062	1.1162	1.0812	.9693			0.0000
455.9186	.0640	4.1016	12.8665	169.2458	7.1786	1.1181	1.0768	.9641			0.0000
465.9186	.0520	5.1266	13.0981	170.1711	7.2533	1.1204	1.0719	.9581			0.0000
475.9186	.0424	6.3712	13.3271	170.9400	7.3310	1.1233	1.0665	.9512			0.0000
485.9186	.0348	7.8716	13.5529	171.5415	7.4124	1.1268	1.0605	.9435			0.0000
495.9186	.0286	9.6669	13.7750	171.9677	7.4984	1.1311	1.0540	.9348			0.0000
495.9744	.0286	9.6778	13.7762	171.9697	7.4989	1.1311	1.0540	.9348			0.0000

TABLE I.- Continued

s/R=11.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
261.3838	18.9863	.0082	8.4302	133.5174	5.6565	1.1280	1.1274	.9995			0.0000
271.3838	14.1106	.0115	8.6387	135.8876	5.7557	1.1256	1.1249	.9994			0.0000
281.3838	10.5437	.0159	8.8507	138.2149	5.8510	1.1234	1.1226	.9993			0.0000
291.3838	7.9192	.0220	9.0660	140.5006	5.9425	1.1213	1.1204	.9991			0.0000
301.3838	5.9781	.0301	9.2844	142.7459	6.0304	1.1195	1.1183	.9989			0.0000
311.3838	4.5349	.0410	9.5058	144.9515	6.1149	1.1178	1.1163	.9987			0.0000
321.3838	3.4567	.0554	9.7300	147.1181	6.1962	1.1163	1.1145	.9984			0.0000
331.3838	2.6476	.0746	9.9569	149.2459	6.2745	1.1148	1.1127	.9981			0.0000
341.3838	2.0367	.0999	10.1863	151.3346	6.3498	1.1136	1.1110	.9977			0.0000
351.3838	1.5738	.1330	10.4181	153.3840	6.4225	1.1124	1.1093	.9972			0.0000
361.3838	1.2215	.1761	10.6520	155.3929	6.4926	1.1114	1.1077	.9967			0.0000
371.3838	.9521	.2321	10.8879	157.3602	6.5604	1.1105	1.1061	.9960			0.0000
381.3838	.7453	.3042	11.1257	159.2840	6.6260	1.1098	1.1044	.9952			0.0000
391.3838	.5858	.3968	11.3651	161.1620	6.6897	1.1091	1.1028	.9943	NOT		0.0000
401.3838	.4623	.5151	11.6059	162.9913	6.7517	1.1086	1.1011	.9932	AVAILABLE		0.0000
411.3838	.3663	.6654	11.8480	164.7684	6.8122	1.1083	1.0993	.9919			0.0000
421.3838	.2914	.8555	12.0911	166.4891	6.8714	1.1081	1.0974	.9904			0.0000
431.3838	.2327	1.0949	12.3349	168.1483	6.9296	1.1080	1.0954	.9887			0.0000
441.3838	.1866	1.3942	12.5792	169.7413	6.9870	1.1082	1.0932	.9866			0.0000
451.3838	.1501	1.7676	12.8238	171.2603	7.0441	1.1085	1.0908	.9842			0.0000
461.3838	.1213	2.2303	13.0682	172.6992	7.1009	1.1091	1.0882	.9815			0.0000
471.3838	.0983	2.8008	13.3122	174.0500	7.1580	1.1099	1.0854	.9783			0.0000
481.3838	.0801	3.5007	13.5554	175.3045	7.2157	1.1109	1.0823	.9747			0.0000
491.3838	.0654	4.3544	13.7974	176.4541	7.2743	1.1123	1.0788	.9705			0.0000
501.3838	.0537	5.3899	14.0377	177.4904	7.3344	1.1141	1.0750	.9657			0.0000
511.3838	.0442	6.6387	14.2759	178.4056	7.3964	1.1162	1.0708	.9604			0.0000
521.3838	.0365	8.1354	14.5115	179.1931	7.4609	1.1189	1.0663	.9543			0.0000
531.3838	.0303	9.9181	14.7439	179.8487	7.5285	1.1220	1.0614	.9476			0.0000
534.5411	.0286	10.5474	14.8166	180.0276	7.5506	1.1232	1.0598	.9453			0.0000

s/R=11.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
288.0699	18.9397	.0091	8.9954	139.7946	5.9101	1.1217	1.1213	.9996			0.0000
298.0699	14.3088	.0124	9.2130	142.0646	5.9986	1.1198	1.1193	.9995			0.0000
308.0699	10.8353	.0170	9.4338	144.2973	6.0835	1.1180	1.1174	.9994			0.0000
318.0699	8.2443	.0230	9.6575	146.4939	6.1650	1.1163	1.1156	.9993			0.0000
328.0699	6.3033	.0311	9.8841	148.6555	6.2433	1.1148	1.1139	.9992			0.0000
338.0699	4.8402	.0417	10.1133	150.7826	6.3184	1.1134	1.1123	.9990			0.0000
348.0699	3.7335	.0556	10.3450	152.8759	6.3905	1.1121	1.1107	.9988			0.0000
358.0699	2.8923	.0738	10.5792	154.9357	6.4598	1.1109	1.1093	.9986			0.0000
368.0699	2.2502	.0975	10.8156	156.9620	6.5264	1.1098	1.1079	.9983			0.0000
378.0699	1.7580	.1282	11.0541	158.9547	6.5904	1.1088	1.1065	.9979			0.0000
388.0699	1.3790	.1677	11.2946	160.9132	6.6521	1.1079	1.1052	.9975			0.0000
398.0699	1.0860	.2183	11.5370	162.8367	6.7115	1.1071	1.1039	.9970			0.0000
408.0699	.8586	.2829	11.7810	164.7241	6.7688	1.1064	1.1025	.9965			0.0000
418.0699	.6814	.3649	12.0266	166.5741	6.8243	1.1058	1.1012	.9958			0.0000
428.0699	.5429	.4687	12.2736	168.3846	6.8779	1.1053	1.0998	.9950	NOT		0.0000
438.0699	.4341	.5992	12.5218	170.1536	6.9300	1.1050	1.0984	.9941	AVAILABLE		0.0000
448.0699	.3483	.7630	12.7710	171.8780	6.9808	1.1047	1.0970	.9931			0.0000
458.0699	.2805	.9674	13.0211	173.5550	7.0303	1.1045	1.0954	.9918			0.0000
468.0699	.2267	1.2213	13.2718	175.1807	7.0788	1.1045	1.0938	.9904			0.0000
478.0699	.1839	1.5354	13.5229	176.7511	7.1266	1.1046	1.0920	.9887			0.0000
488.0699	.1497	1.9223	13.7742	178.2616	7.1738	1.1048	1.0901	.9868			0.0000
498.0699	.1222	2.3966	14.0255	179.7069	7.2208	1.1052	1.0881	.9846			0.0000
508.0699	.1002	2.9757	14.2764	181.0818	7.2677	1.1058	1.0858	.9821			0.0000
518.0699	.0824	3.6792	14.5267	182.3806	7.3149	1.1067	1.0834	.9792			0.0000
528.0699	.0680	4.5300	14.7760	183.5976	7.3627	1.1077	1.0807	.9760			0.0000
538.0699	.0563	5.5539	15.0240	184.7275	7.4114	1.1090	1.0778	.9723			0.0000
548.0699	.0467	6.7799	15.2704	185.7654	7.4614	1.1106	1.0746	.9681			0.0000
558.0699	.0390	8.2403	15.5146	186.7080	7.5131	1.1126	1.0713	.9634			0.0000
568.0699	.0326	9.9707	15.7563	187.5538	7.5669	1.1150	1.0677	.9583			0.0000
575.5318	.0286	11.4619	15.9348	188.1221	7.6088	1.1171	1.0649	.9541			0.0000

TABLE I.- Continued

s/R=12.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
316.0893	18.9869	.0099	9.6139	146.1010	6.1471	1.1165	1.1161	.9997			0.0000
326.0893	14.4990	.0134	9.8401	148.2787	6.2256	1.1149	1.1145	.9996			0.0000
336.0893	11.1244	.0180	10.0691	150.4238	6.3007	1.1134	1.1129	.9996			0.0000
346.0893	8.5716	.0241	10.3007	152.5375	6.3728	1.1120	1.1114	.9995			0.0000
356.0893	6.6336	.0320	10.5348	154.6205	6.4419	1.1107	1.1100	.9994			0.0000
366.0893	5.1556	.0424	10.7713	156.6735	6.5082	1.1096	1.1087	.9992			0.0000
376.0893	4.0234	.0558	11.0100	158.6969	6.5717	1.1085	1.1075	.9991			0.0000
386.0893	3.1526	.0731	11.2509	160.6912	6.6326	1.1075	1.1063	.9989			0.0000
396.0893	2.4800	.0953	11.4938	162.6565	6.6911	1.1066	1.1051	.9987			0.0000
406.0893	1.9585	.1237	11.7385	164.5928	6.7472	1.1057	1.1040	.9984			0.0000
416.0893	1.5525	.1598	11.9851	166.4998	6.8012	1.1049	1.1029	.9981			0.0000
426.0893	1.2352	.2056	12.2333	168.3772	6.8530	1.1043	1.1018	.9978			0.0000
436.0893	.9861	.2635	12.4831	170.2242	6.9029	1.1036	1.1007	.9974			0.0000
446.0893	.7904	.3361	12.7343	172.0401	6.9510	1.1031	1.0997	.9969	NOT		0.0000
456.0893	.6356	.4271	12.9867	173.8235	6.9974	1.1026	1.0986	.9964	AVAILABLE		0.0000
466.0893	.5128	.5405	13.2403	175.5732	7.0424	1.1022	1.0975	.9957			0.0000
476.0893	.4152	.6815	13.4950	177.2874	7.0859	1.1019	1.0963	.9950			0.0000
486.0893	.3372	.8559	13.7505	178.9641	7.1283	1.1017	1.0952	.9941			0.0000
496.0893	.2748	1.0708	14.0067	180.6010	7.1696	1.1016	1.0939	.9931			0.0000
506.0893	.2247	1.3346	14.2634	182.1954	7.2101	1.1015	1.0926	.9919			0.0000
516.0893	.1843	1.6573	14.5205	183.7445	7.2499	1.1016	1.0912	.9906			0.0000
526.0893	.1516	2.0504	14.7778	185.2449	7.2892	1.1018	1.0897	.9891			0.0000
536.0893	.1251	2.5274	15.0351	186.6932	7.3282	1.1021	1.0880	.9873			0.0000
546.0893	.1035	3.1040	15.2922	188.0859	7.3671	1.1026	1.0863	.9853			0.0000
556.0893	.0860	3.7981	15.5487	189.4192	7.4062	1.1032	1.0844	.9831			0.0000
566.0893	.0716	4.6303	15.8046	190.6896	7.4457	1.1040	1.0824	.9806			0.0000
576.0893	.0598	5.6240	16.0594	191.8940	7.4859	1.1050	1.0802	.9777			0.0000
586.0893	.0501	6.8055	16.3129	193.0299	7.5271	1.1062	1.0778	.9746			0.0000
588.8889	.0477	7.1745	16.3836	193.3350	7.5388	1.1066	1.0772	.9736			0.0000

s/R=12.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
345.5154	18.9880	.0109	10.2881	152.4503	6.3671	1.1119	1.1117	.9998			0.0000
355.5154	14.6898	.0145	10.5223	154.5426	6.4361	1.1106	1.1103	.9997			0.0000
365.5154	11.4138	.0191	10.7589	156.6064	6.5021	1.1094	1.1090	.9997			0.0000
375.5154	8.9041	.0252	10.9977	158.6425	6.5653	1.1083	1.1078	.9996			0.0000
385.5154	6.9744	.0330	11.2388	160.6517	6.6259	1.1072	1.1067	.9995			0.0000
395.5154	5.4844	.0431	11.4820	162.6345	6.6838	1.1063	1.1056	.9994			0.0000
405.5154	4.3293	.0559	11.7272	164.5914	6.7394	1.1054	1.1046	.9993			0.0000
415.5154	3.4304	.0723	11.9742	166.5227	6.7925	1.1045	1.1036	.9992			0.0000
425.5154	2.7280	.0931	12.2230	168.4287	6.8435	1.1038	1.1026	.9990			0.0000
435.5154	2.1773	.1193	12.4735	170.3095	6.8924	1.1030	1.1017	.9988			0.0000
445.5154	1.7441	.1524	12.7256	172.1650	6.9393	1.1024	1.1008	.9986			0.0000
455.5154	1.4015	.1938	12.9792	173.9949	6.9843	1.1018	1.1000	.9983			0.0000
465.5154	1.1301	.2456	13.2341	175.7991	7.0276	1.1012	1.0991	.9980	NOT		0.0000
475.5154	.9143	.3099	13.4903	177.5769	7.0693	1.1008	1.0982	.9977	AVAILABLE		0.0000
485.5154	.7420	.3898	13.7477	179.3278	7.1094	1.1003	1.0974	.9973			0.0000
495.5154	.6042	.4883	14.0062	181.0507	7.1482	1.1000	1.0965	.9968			0.0000
505.5154	.4934	.6097	14.2656	182.7448	7.1858	1.0997	1.0956	.9963			0.0000
515.5154	.4042	.7585	14.5259	184.4088	7.2223	1.0994	1.0947	.9957			0.0000
525.5154	.3321	.9403	14.7869	186.0412	7.2578	1.0992	1.0937	.9950			0.0000
535.5154	.2737	1.1618	15.0485	187.6404	7.2925	1.0991	1.0927	.9942			0.0000
545.5154	.2262	1.4307	15.3106	189.2047	7.3265	1.0991	1.0916	.9933			0.0000
555.5154	.1875	1.7560	15.5730	190.7319	7.3600	1.0991	1.0905	.9922			0.0000
565.5154	.1558	2.1482	15.8356	192.2201	7.3932	1.0993	1.0893	.9910			0.0000
575.5154	.1299	2.6195	16.0982	193.6668	7.4262	1.0995	1.0881	.9896			0.0000
585.5154	.1085	3.1838	16.3607	195.0700	7.4592	1.0998	1.0867	.9881			0.0000
588.8889	.1022	3.3982	16.4492	195.5330	7.4704	1.1000	1.0862	.9876			0.0000

TABLE I.- Continued

s/R=13.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
376.4638	18.9882	.0118	11.0212	158.8626	6.5699	1.1081	1.1079	.9998			0.0000
386.4638	14.8803	.0155	11.2626	160.8755	6.6299	1.1070	1.1068	.9998			0.0000
396.4638	11.7029	.0202	11.5062	162.8632	6.6873	1.1060	1.1057	.9997			0.0000
406.4638	9.2406	.0263	11.7518	164.8265	6.7423	1.1051	1.1047	.9997			0.0000
416.4638	7.3236	.0340	11.9993	166.7660	6.7949	1.1042	1.1038	.9996			0.0000
426.4638	5.8255	.0437	12.2486	168.6822	6.8452	1.1034	1.1029	.9995			0.0000
436.4638	4.6495	.0560	12.4996	170.5755	6.8933	1.1027	1.1021	.9994			0.0000
446.4638	3.7251	.0715	12.7523	172.4463	6.9394	1.1020	1.1013	.9993			0.0000
456.4638	2.9943	.0910	13.0066	174.2947	6.9836	1.1013	1.1005	.9992			0.0000
466.4638	2.4147	.1153	13.2623	176.1211	7.0259	1.1007	1.0997	.9991			0.0000
476.4638	1.9537	.1455	13.5194	177.9253	7.0665	1.1002	1.0990	.9989	NOT		0.0000
486.4638	1.5857	.1830	13.7778	179.7074	7.1055	1.0997	1.0983	.9987	AVAILABLE		0.0000
496.4638	1.2911	.2293	14.0375	181.4672	7.1430	1.0992	1.0976	.9985			0.0000
506.4638	1.0544	.2864	14.2982	183.2045	7.1791	1.0988	1.0969	.9983			0.0000
516.4638	.8636	.3565	14.5601	184.9189	7.2139	1.0984	1.0962	.9980			0.0000
526.4638	.7094	.4422	14.8229	186.6099	7.2476	1.0981	1.0955	.9977			0.0000
536.4638	.5844	.5468	15.0866	188.2770	7.2802	1.0978	1.0948	.9973			0.0000
546.4638	.4828	.6739	15.3511	189.9193	7.3119	1.0975	1.0940	.9968			0.0000
556.4638	.4000	.8280	15.6164	191.5361	7.3428	1.0973	1.0933	.9963			0.0000
566.4638	.3322	1.0142	15.8822	193.1264	7.3730	1.0972	1.0925	.9958			0.0000
576.4638	.2767	1.2385	16.1486	194.6891	7.4027	1.0971	1.0917	.9951			0.0000
586.4638	.2310	1.5079	16.4155	196.2230	7.4320	1.0970	1.0909	.9944			0.0000
588.8889	.2212	1.5811	16.4802	196.5905	7.4391	1.0970	1.0907	.9942			0.0000

s/R=13.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
409.0513	18.9883	.0129	11.8162	165.3551	6.7551	1.1048	1.1046	.9998			0.0000
419.0513	15.0638	.0166	12.0643	167.2936	6.8069	1.1039	1.1037	.9998			0.0000
429.0513	11.9919	.0214	12.3143	169.2099	6.8564	1.1031	1.1029	.9998			0.0000
439.0513	9.5802	.0274	12.5659	171.1045	6.9038	1.1024	1.1021	.9997			0.0000
449.0513	7.6825	.0349	12.8193	172.9780	6.9491	1.1016	1.1013	.9997			0.0000
459.0513	6.1788	.0444	13.0742	174.8307	6.9924	1.1010	1.1006	.9996			0.0000
469.0513	4.9866	.0562	13.3306	176.6631	7.0339	1.1004	1.0999	.9996			0.0000
479.0513	4.0374	.0708	13.5884	178.4755	7.0736	1.0998	1.0992	.9995			0.0000
489.0513	3.2792	.0890	13.8476	180.2681	7.1117	1.0992	1.0986	.9994	NOT		0.0000
499.0513	2.6715	.1115	14.1080	182.0411	7.1483	1.0987	1.0980	.9993	AVAILABLE		0.0000
509.0513	2.1830	.1392	14.3697	183.7946	7.1834	1.0983	1.0974	.9992			0.0000
519.0513	1.7891	.1731	14.6325	185.5287	7.2171	1.0978	1.0968	.9990			0.0000
529.0513	1.4704	.2147	14.8964	187.2433	7.2497	1.0974	1.0962	.9989			0.0000
539.0513	1.2119	.2653	15.1614	188.9383	7.2811	1.0970	1.0956	.9987			0.0000
549.0513	1.0016	.3270	15.4272	190.6137	7.3115	1.0967	1.0950	.9985			0.0000
559.0513	.8299	.4016	15.6940	192.2690	7.3410	1.0964	1.0945	.9983			0.0000
569.0513	.6895	.4919	15.9616	193.9041	7.3697	1.0961	1.0939	.9980			0.0000
579.0513	.5744	.6008	16.2300	195.5184	7.3977	1.0959	1.0933	.9977			0.0000
588.8889	.4810	.7293	16.4947	197.0860	7.4247	1.0957	1.0927	.9973			0.0000

s/R=14.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
443.4006	18.9928	.0139	12.6765	171.9431	6.9229	1.1020	1.1018	.9999			0.0000
453.4006	15.2476	.0178	12.9306	173.8117	6.9672	1.1013	1.1011	.9998			0.0000
463.4006	12.2824	.0225	13.1863	175.6605	7.0095	1.1006	1.1004	.9998			0.0000
473.4006	9.9261	.0285	13.4435	177.4900	7.0501	1.1000	1.0998	.9998			0.0000
483.4006	8.0473	.0359	13.7021	179.3006	7.0889	1.0994	1.0991	.9997			0.0000
493.4006	6.5444	.0450	13.9620	181.0926	7.1260	1.0989	1.0985	.9997			0.0000
503.4006	5.3383	.0563	14.2233	182.8664	7.1616	1.0983	1.0980	.9997	NOT		0.0000
513.4006	4.3673	.0702	14.4858	184.6224	7.1958	1.0979	1.0974	.9996	AVAILABLE		0.0000
523.4006	3.5833	.0872	14.7494	186.3606	7.2287	1.0974	1.0969	.9995			0.0000
533.4006	2.9483	.1080	15.0142	188.0813	7.2603	1.0970	1.0964	.9995			0.0000
543.4006	2.4325	.1333	15.2800	189.7847	7.2908	1.0966	1.0959	.9994			0.0000
553.4006	2.0124	.1641	15.5469	191.4708	7.3203	1.0962	1.0954	.9993			0.0000
563.4006	1.6692	.2014	15.8147	193.1396	7.3489	1.0958	1.0949	.9991			0.0000
573.4006	1.3880	.2465	16.0834	194.7913	7.3766	1.0955	1.0944	.9990			0.0000
583.4006	1.1571	.3008	16.3530	196.4256	7.4036	1.0952	1.0940	.9989			0.0000
588.8889	1.0482	.3352	16.5013	197.3152	7.4181	1.0951	1.0937	.9988			0.0000

TABLE I.- Concluded

s/R=14.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
479.6769	18.9928	.0151	13.6061	178.6470	7.0739	1.0996	1.0994	.9999			0.0000
489.6769	15.4253	.0190	13.8657	180.4494	7.1116	1.0990	1.0989	.9999			0.0000
499.6769	12.5679	.0237	14.1266	182.2340	7.1477	1.0985	1.0983	.9999			0.0000
509.6769	10.2704	.0296	14.3887	184.0013	7.1822	1.0980	1.0978	.9998			0.0000
519.6769	8.4173	.0369	14.6521	185.7515	7.2154	1.0975	1.0972	.9998	NOT		0.0000
529.6769	6.9181	.0457	14.9166	187.4851	7.2473	1.0970	1.0968	.9998	AVAILABLE		0.0000
539.6769	5.7017	.0565	15.1823	189.2023	7.2781	1.0966	1.0963	.9997			0.0000
549.6769	4.7119	.0697	15.4490	190.9033	7.3077	1.0962	1.0958	.9997			0.0000
559.6769	3.9042	.0856	15.7168	192.5883	7.3363	1.0958	1.0954	.9996			0.0000
569.6769	3.2433	.1049	15.9855	194.2576	7.3640	1.0954	1.0950	.9996			0.0000
579.6769	2.7010	.1281	16.2551	195.9112	7.3909	1.0951	1.0945	.9995			0.0000
588.8889	2.2871	.1537	16.5044	197.4207	7.4151	1.0948	1.0942	.9994			0.0000

s/R=15.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
518.0177	18.9928	.0163	14.6087	185.4784	7.2095	1.0975	1.0974	.9999			0.0000
528.0177	15.6006	.0202	14.8732	187.2176	7.2415	1.0970	1.0969	.9999			0.0000
538.0177	12.8514	.0250	15.1387	188.9407	7.2723	1.0966	1.0965	.9999			0.0000
548.0177	10.6153	.0308	15.4054	190.6482	7.3020	1.0962	1.0960	.9999	NOT		0.0000
558.0177	8.7915	.0379	15.6731	192.3402	7.3307	1.0958	1.0956	.9998	AVAILABLE		0.0000
568.0177	7.2999	.0465	15.9418	194.0171	7.3584	1.0954	1.0952	.9998			0.0000
578.0177	6.0765	.0568	16.2115	195.6791	7.3853	1.0950	1.0948	.9998			0.0000
588.0177	5.0706	.0693	16.4821	197.3263	7.4115	1.0947	1.0944	.9997			0.0000
588.8889	4.9923	.0704	16.5058	197.4692	7.4137	1.0946	1.0944	.9997			0.0000

s/R=15.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
558.5828	18.9928	.0176	15.6887	192.4495	7.3319	1.0957	1.0956	.9999			0.0000
568.5828	15.7725	.0215	15.9575	194.1278	7.3595	1.0953	1.0952	.9999	NOT		0.0000
578.5828	13.1307	.0263	16.2273	195.7916	7.3863	1.0950	1.0948	.9999	AVAILABLE		0.0000
588.5828	10.9562	.0321	16.4981	197.4411	7.4123	1.0946	1.0945	.9999			0.0000
588.8889	10.8983	.0323	16.5064	197.4914	7.4131	1.0946	1.0945	.9999			0.0000

TABLE II.- THERMODYNAMIC AND TRANSPORT PROPERTIES

OF CCl_2F_2 AT CONSTANT ENTROPY

s/R = 7.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
K	m^3/kg	atm		m/sec					N-s/m^2	W/m-K	
360.3164	.0057	26.0954	8.2479	112.0243	13.9329	1.8884	.8366	.6056	.1750E-04	.1931E-01	1.1925
370.3164	.0048	30.2318	8.3321	109.5125	15.9587	2.1247	.8241	.5716	.1862E-04	.2050E-01	1.3692
380.3164	.0040	34.7858	8.4100	108.1905	18.3336	2.4039	.8287	.5403	.1994E-04	.2183E-01	1.5823
390.3164	.0034	39.8921	8.4840	108.6493	20.5504	2.6612	.8577	.5129	.2151E-04	.2332E-01	1.7904
400.3164	.0029	45.7829	8.5567	111.3530	21.7374	2.7891	.9172	.4912	.2336E-04	.2502E-01	1.9176
410.3164	.0025	52.8004	8.6310	116.4876	21.4366	2.7351	1.0097	.4764	.2555E-04	.2696E-01	1.9193
420.3164	.0022	61.3888	8.7097	123.9970	20.1322	2.5645	1.1331	.4696	.2813E-04	.2921E-01	1.8316
430.3164	.0019	72.0816	8.7951	134.1014	18.5440	2.3691	1.2893	.4715	.3120E-04	.3180E-01	1.7187
432.6513	.0019	74.9502	8.8163	136.9741	18.1675	2.3241	1.3327	.4733	.3203E-04	.3246E-01	1.6936

s/R= 7.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
252.7848	.1104	1.4670	6.9150	135.2015	6.3093	1.1828	1.1137	.9445	.1077E-04	.1076E-01	.5965
262.7848	.0849	1.9634	7.1029	136.5668	6.5127	1.1862	1.1042	.9350	.1121E-04	.1134E-01	.6081
272.7848	.0657	2.6035	7.2899	137.6590	6.7253	1.1910	1.0937	.9239	.1166E-04	.1194E-01	.6204
282.7848	.0511	3.4198	7.4750	138.4453	6.9493	1.1976	1.0821	.9111	.1211E-04	.1255E-01	.6336
292.7848	.0400	4.4490	7.6572	138.8893	7.1880	1.2064	1.0691	.8964	.1257E-04	.1317E-01	.6480
302.7848	.0315	5.7301	7.8354	138.9580	7.4449	1.2178	1.0545	.8797	.1305E-04	.1382E-01	.6638
312.7848	.0250	7.3036	8.0084	138.6199	7.7248	1.2325	1.0381	.8608	.1354E-04	.1450E-01	.6815
322.7848	.0200	9.2098	8.1752	137.8523	8.0340	1.2513	1.0199	.8397	.1405E-04	.1520E-01	.7015
332.7848	.0160	11.4855	8.3348	136.6473	8.3810	1.2753	.9999	.8162	.1458E-04	.1594E-01	.7243
342.7848	.0130	14.1620	8.4862	135.0216	8.7769	1.3062	.9785	.7906	.1514E-04	.1671E-01	.7512
352.7848	.0106	17.2633	8.6287	133.0288	9.2359	1.3457	.9562	.7631	.1577E-04	.1754E-01	.7841
362.7848	.0087	20.8057	8.7618	130.7754	9.7760	1.3964	.9341	.7341	.1646E-04	.1843E-01	.8247
372.7848	.0072	24.8015	8.8855	128.4378	10.4166	1.4606	.9141	.7041	.1724E-04	.1939E-01	.8751
382.7848	.0060	29.2679	9.0002	126.2744	11.1735	1.5404	.8989	.6741	.1814E-04	.2043E-01	.9374
392.7848	.0050	34.2337	9.1069	124.6460	12.0416	1.6351	.8922	.6449	.1919E-04	.2157E-01	1.0118
402.7848	.0042	39.7664	9.2070	123.9798	12.9741	1.7386	.8985	.6178	.2040E-04	.2283E-01	1.0954
412.7848	.0036	45.9891	9.3026	124.7305	13.8565	1.8364	.9228	.5941	.2183E-04	.2423E-01	1.1793
422.7848	.0031	53.1016	9.3960	127.2925	14.5247	1.9082	.9693	.5751	.2350E-04	.2580E-01	1.2497
432.7848	.0027	61.3947	9.4899	131.9195	14.8479	1.9385	1.0407	.5620	.2545E-04	.2758E-01	1.2947
442.7848	.0023	71.2509	9.5868	138.7382	14.8180	1.9277	1.1375	.5559	.2772E-04	.2958E-01	1.3115
452.7848	.0021	83.1445	9.6891	147.9995	14.5277	1.8886	1.2620	.5576	.3032E-04	.3187E-01	1.3056
461.5149	.0019	95.6676	9.7850	158.8573	14.1221	1.8391	1.4044	.5664	.3303E-04	.3411E-01	1.2918

TABLE II.- Continued

s /R= 8.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
212.8477	.6491	.2191	6.2015	128.8367	5.4425	1.1696	1.1517	.9849	.9000E-05	.8515E-02	.5434
222.8477	.4856	.3059	6.3917	131.2965	5.6040	1.1667	1.1456	.9822	.9435E-05	.9052E-02	.5518
232.8477	.3652	.4236	6.5854	133.6362	5.7649	1.1645	1.1395	.9790	.9868E-05	.9596E-02	.5600
242.8477	.2761	.5820	6.7820	135.8460	5.9256	1.1629	1.1334	.9752	.1030E-04	.1015E-01	.5681
252.8477	.2098	.7936	6.9811	137.9135	6.0871	1.1621	1.1272	.9707	.1073E-04	.1071E-01	.5762
262.8477	.1603	1.0738	7.1821	139.8231	6.2500	1.1620	1.1206	.9655	.1116E-04	.1127E-01	.5844
272.8477	.1232	1.4417	7.3843	141.5566	6.4154	1.1628	1.1136	.9593	.1158E-04	.1185E-01	.5927
282.8477	.0951	1.9206	7.5870	143.0928	6.5844	1.1644	1.1061	.9520	.1201E-04	.1243E-01	.6013
292.8477	.0739	2.5379	7.7895	144.4079	6.7581	1.1671	1.0978	.9435	.1245E-04	.1302E-01	.6102
302.8477	.0577	3.3265	7.9909	145.4745	6.9382	1.1709	1.0886	.9337	.1289E-04	.1363E-01	.6196
312.8477	.0453	4.3232	8.1902	146.2656	7.1264	1.1762	1.0785	.9223	.1333E-04	.1426E-01	.6297
322.8477	.0358	5.5696	8.3865	146.7533	7.3248	1.1832	1.0671	.9093	.1379E-04	.1490E-01	.6405
332.8477	.0284	7.1102	8.5788	146.9126	7.5361	1.1922	1.0546	.8944	.1426E-04	.1556E-01	.6525
342.8477	.0227	8.9920	8.7659	146.7243	7.7636	1.2037	1.0407	.8777	.1475E-04	.1625E-01	.6658
352.8477	.0183	11.2607	8.9469	146.1819	8.0114	1.2182	1.0255	.8590	.1525E-04	.1696E-01	.6807
362.8477	.0148	13.9612	9.1207	145.2950	8.2846	1.2365	1.0094	.8384	.1578E-04	.1771E-01	.6972
372.8477	.0121	17.1330	9.2866	144.1020	8.5893	1.2594	.9926	.8161	.1635E-04	.1851E-01	.7169
382.8477	.0099	20.8105	9.4439	142.6790	8.9322	1.2879	.9761	.7924	.1698E-04	.1935E-01	.7404
392.8477	.0082	25.0236	9.5925	141.1525	9.3204	1.3228	.9611	.7676	.1768E-04	.2025E-01	.7687
402.8477	.0068	29.8038	9.7322	139.7069	9.7589	1.3650	.9493	.7424	.1848E-04	.2123E-01	.8025
412.8477	.0057	35.1853	9.8637	138.6013	10.2459	1.4142	.9433	.7175	.1939E-04	.2228E-01	.8422
422.8477	.0048	41.2267	9.9881	138.1498	10.7681	1.4686	.9461	.6940	.2044E-04	.2343E-01	.8873
432.8477	.0041	48.0221	10.1068	138.7066	11.2936	1.5243	.9610	.6728	.2166E-04	.2470E-01	.9357
442.8477	.0035	55.7190	10.2218	140.6210	11.7721	1.5750	.9915	.6551	.2307E-04	.2609E-01	.9834
452.8477	.0031	64.5340	10.3353	144.1855	12.1475	1.6136	1.0403	.6419	.2471E-04	.2764E-01	1.0258
462.8477	.0027	74.7612	10.4496	149.6115	12.3807	1.6358	1.1090	.6343	.2660E-04	.2938E-01	1.0591
472.8477	.0023	86.7764	10.5671	157.0923	12.4662	1.6412	1.1989	.6332	.2876E-04	.3132E-01	1.0817
482.8477	.0021	101.0499	10.6903	167.0407	12.4206	1.6324	1.3145	.6395	.3121E-04	.3349E-01	1.0936
492.7361	.0019	118.0017	10.8204	180.4013	12.2527	1.6104	1.4683	.6543	.3407E-04	.3589E-01	1.0990

s /R= 8.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
191.2987	2.4369	.0530	5.8151	123.5881	5.0512	1.1740	1.1677	.9946	.8049E-05	.7375E-02	.5208
201.2987	1.7985	.0755	5.9989	126.3789	5.2085	1.1689	1.1615	.9937	.8489E-05	.7896E-02	.5290
211.2987	1.3344	.1066	6.1875	129.0831	5.3625	1.1645	1.1557	.9925	.8926E-05	.8423E-02	.5368
221.2987	.9952	.1495	6.3806	131.7004	5.5133	1.1606	1.1503	.9912	.9360E-05	.8956E-02	.5443
231.2987	.7460	.2082	6.5780	134.2288	5.6615	1.1573	1.1451	.9895	.9790E-05	.9495E-02	.5514
241.2987	.5619	.2877	6.7792	136.6646	5.8074	1.1545	1.1400	.9876	.1022E-04	.1004E-01	.5583
251.2987	.4254	.3949	6.9840	139.0026	5.9514	1.1522	1.1351	.9853	.1064E-04	.1059E-01	.5649
261.2987	.3236	.5383	7.1920	141.2356	6.0939	1.1504	1.1301	.9826	.1106E-04	.1115E-01	.5714
271.2987	.2474	.7287	7.4026	143.3547	6.2356	1.1492	1.1250	.9794	.1148E-04	.1171E-01	.5777
281.2987	.1900	.9798	7.6156	145.3484	6.3769	1.1485	1.1198	.9756	.1190E-04	.1228E-01	.5840
291.2987	.1467	1.3084	7.8302	147.2036	6.5185	1.1483	1.1143	.9711	.1232E-04	.1285E-01	.5903
301.2987	.1138	1.7355	8.0459	148.9037	6.6612	1.1488	1.1083	.9658	.1274E-04	.1343E-01	.5966
311.2987	.0887	2.2857	8.2621	150.4312	6.8058	1.1500	1.1019	.9596	.1316E-04	.1403E-01	.6031
321.2987	.0695	2.9890	8.4781	151.7661	6.9532	1.1521	1.0949	.9524	.1358E-04	.1463E-01	.6098
331.2987	.0547	3.8801	8.6930	152.8872	7.1046	1.1550	1.0872	.9440	.1401E-04	.1524E-01	.6168
341.2987	.0433	4.9988	8.9060	153.7728	7.2613	1.1591	1.0787	.9343	.1444E-04	.1587E-01	.6243
351.2987	.0344	6.3894	9.1161	154.4028	7.4248	1.1644	1.0693	.9232	.1489E-04	.1652E-01	.6323
361.2987	.0276	8.0998	9.3225	154.7617	7.5969	1.1713	1.0590	.9106	.1535E-04	.1718E-01	.6411
371.2987	.0222	10.1832	9.5241	154.8365	7.7801	1.1800	1.0478	.8964	.1583E-04	.1787E-01	.6508
381.2987	.0180	12.6897	9.7200	154.6328	7.9768	1.1909	1.0358	.8806	.1632E-04	.1859E-01	.6617
391.2987	.0146	15.6713	9.9093	154.1695	8.1900	1.2045	1.0234	.8634	.1684E-04	.1934E-01	.6735
401.2987	.0120	19.1769	10.0913	153.4915	8.4232	1.2211	1.0109	.8447	.1739E-04	.2013E-01	.6875
411.2987	.0099	23.2521	10.2653	152.6770	8.6796	1.2414	.9993	.8250	.1800E-04	.2097E-01	.7040
421.2987	.0082	27.9403	10.4312	151.8461	8.9622	1.2656	.9895	.8045	.1869E-04	.2186E-01	.7236
431.2987	.0069	33.2891	10.5890	151.1633	9.2721	1.2940	.9831	.7839	.1945E-04	.2282E-01	.7466
441.2987	.0058	39.3465	10.7392	150.8511	9.6061	1.3261	.9820	.7638	.2032E-04	.2385E-01	.7733
451.2987	.0049	46.1851	10.8828	151.1671	9.9558	1.3610	.9886	.7450	.2132E-04	.2497E-01	.8032
461.2987	.0042	53.9070	11.0211	152.3953	10.3049	1.3964	1.0054	.7284	.2247E-04	.2619E-01	.8353
471.2987	.0036	62.6587	11.1559	154.8148	10.6303	1.4296	1.0347	.7149	.2379E-04	.2752E-01	.8681
481.2987	.0032	72.6439	11.2890	158.6708	10.9070	1.4574	1.0785	.7055	.2531E-04	.2899E-01	.8995
491.2987	.0028	84.1314	11.4225	164.1653	11.1156	1.4775	1.1383	.7010	.2705E-04	.3062E-01	.9276
501.2987	.0025	97.4623	11.5588	171.5058	11.2473	1.4889	1.2154	.7022	.2902E-04	.3242E-01	.9511
511.2987	.0022	113.0637	11.7000	181.0586	11.3019	1.4917	1.3135	.7100	.3123E-04	.3441E-01	.9691
521.2987	.0020	131.4973	11.8489	193.6494	11.2771	1.4857	1.4420	.7256	.3374E-04	.3662E-01	.9816
526.2549	.0019	141.9209	11.9267	201.4984	11.2314	1.4789	1.5231	.7368	.3517E-04	.3780E-01	.9872

TABLE II.- Continued

s/R= 9.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
176.3574	7.6815	.0155	5.5537	119.4162	4.7951	1.1812	1.1787	.9979	.7384E-05	.6608E-02	.5062
186.3574	5.6192	.0224	5.7307	122.3743	4.9549	1.1748	1.1718	.9975	.7829E-05	.7118E-02	.5148
196.3574	4.1328	.0321	5.9131	125.2521	5.1103	1.1690	1.1656	.9971	.8270E-05	.7635E-02	.5230
206.3574	3.0556	.0457	6.1007	128.0529	5.2615	1.1640	1.1599	.9965	.8708E-05	.8158E-02	.5306
216.3574	2.2707	.0644	6.2933	130.7791	5.4088	1.1594	1.1546	.9959	.9143E-05	.8687E-02	.5378
226.3574	1.6957	.0901	6.4906	133.4320	5.5523	1.1554	1.1497	.9951	.9573E-05	.9221E-02	.5446
236.3574	1.2725	.1253	6.6924	136.0119	5.6922	1.1518	1.1451	.9942	.1000E-04	.9760E-02	.5510
246.3574	.9595	.1730	6.8984	138.5181	5.8289	1.1487	1.1407	.9931	.1042E-04	.1030E-01	.5570
256.3574	.7268	.2374	7.1084	140.9486	5.9626	1.1459	1.1365	.9918	.1084E-04	.1085E-01	.5628
266.3574	.5531	.3236	7.3221	143.3004	6.0936	1.1436	1.1324	.9903	.1126E-04	.1141E-01	.5683
276.3574	.4228	.4383	7.5391	145.5690	6.2223	1.1416	1.1283	.9885	.1167E-04	.1196E-01	.5735
286.3574	.3247	.5902	7.7591	147.7486	6.3489	1.1400	1.1242	.9863	.1208E-04	.1253E-01	.5786
296.3574	.2505	.7897	7.9817	149.8320	6.4740	1.1388	1.1201	.9838	.1249E-04	.1310E-01	.5835
306.3574	.1941	1.0505	8.2065	151.8099	6.5978	1.1381	1.1157	.9807	.1290E-04	.1367E-01	.5883
316.3574	.1510	1.3888	8.4330	153.6718	6.7210	1.1377	1.1112	.9771	.1331E-04	.1425E-01	.5930
326.3574	.1181	1.8248	8.6608	155.4053	6.8441	1.1379	1.1064	.9729	.1371E-04	.1483E-01	.5977
336.3574	.0927	2.3829	8.8892	156.9965	6.9676	1.1386	1.1012	.9680	.1412E-04	.1543E-01	.6025
346.3574	.0731	3.0919	9.1177	158.4303	7.0923	1.1399	1.0955	.9622	.1453E-04	.1603E-01	.6074
356.3574	.0580	3.9857	9.3454	159.6906	7.2191	1.1419	1.0893	.9555	.1495E-04	.1665E-01	.6125
366.3574	.0462	5.1035	9.5718	160.7616	7.3487	1.1447	1.0826	.9478	.1537E-04	.1727E-01	.6179
376.3574	.0369	6.4895	9.7959	161.6285	7.4825	1.1485	1.0752	.9390	.1580E-04	.1791E-01	.6236
386.3574	.0297	8.1926	10.0169	162.2802	7.6215	1.1533	1.0672	.9290	.1624E-04	.1857E-01	.6298
396.3574	.0240	10.2656	10.2339	162.7110	7.7674	1.1595	1.0587	.9178	.1670E-04	.1925E-01	.6366
406.3574	.0196	12.7641	10.4461	162.9248	7.9217	1.1672	1.0496	.9053	.1718E-04	.1995E-01	.6442
416.3574	.0160	15.7448	10.6526	162.9392	8.0863	1.1766	1.0404	.8915	.1766E-04	.2069E-01	.6523
426.3574	.0132	19.2645	10.8528	162.7911	8.2632	1.1882	1.0312	.8767	.1819E-04	.2145E-01	.6617
436.3574	.0109	23.3786	11.0459	162.5421	8.4545	1.2020	1.0229	.8610	.1875E-04	.2226E-01	.6728
446.3574	.0091	28.1415	11.2318	162.2849	8.6616	1.2184	1.0161	.8447	.1937E-04	.2311E-01	.6859
456.3574	.0076	33.6118	11.4102	162.1451	8.8853	1.2375	1.0119	.8281	.2007E-04	.2402E-01	.7012
466.3574	.0064	39.8445	11.5815	162.2922	9.1244	1.2590	1.0118	.8120	.2085E-04	.2499E-01	.7191
476.3574	.0055	46.9137	11.7463	162.9234	9.3752	1.2826	1.0174	.7967	.2173E-04	.2603E-01	.7393
486.3574	.0047	54.9121	11.9056	164.2614	9.6305	1.3073	1.0305	.7831	.2274E-04	.2716E-01	.7617
496.3574	.0041	63.9642	12.0608	166.5356	9.8797	1.3318	1.0529	.7719	.2389E-04	.2838E-01	.7857
506.3574	.0035	74.2362	12.2134	169.9633	10.1099	1.3544	1.0863	.7639	.2520E-04	.2971E-01	.8102
516.3574	.0031	85.9456	12.3652	174.7375	10.3088	1.3735	1.1319	.7599	.2669E-04	.3116E-01	.8342
526.3574	.0027	99.3681	12.5183	181.0402	10.4672	1.3881	1.1910	.7605	.2838E-04	.3276E-01	.8568
536.3574	.0024	114.8470	12.6745	189.1057	10.5801	1.3975	1.2652	.7666	.3028E-04	.3451E-01	.8771
546.3574	.0022	132.8145	12.8363	199.3618	10.6444	1.4014	1.3586	.7788	.3240E-04	.3643E-01	.8942
556.3574	.0020	153.8471	13.0063	212.6690	10.6539	1.3990	1.4807	.7986	.3477E-04	.3854E-01	.9078
562.0107	.0019	167.3963	13.1076	222.1073	10.6306	1.3943	1.5689	.8138	.3630E-04	.3982E-01	.9155

TABLE II.- Continued

s/R= 9.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
172.8194	17.0591	.0069	5.4941	118.4254	4.7308	1.1828	1.1816	.9990	.7225E-05	.6428E-02	.5023
182.8194	12.4499	.0100	5.6695	121.4300	4.8907	1.1760	1.1746	.9988	.7671E-05	.6936E-02	.5110
192.8194	9.1360	.0143	5.8505	124.3567	5.0459	1.1699	1.1683	.9986	.8114E-05	.7450E-02	.5192
202.8194	6.7393	.0204	6.0370	127.2099	5.1966	1.1644	1.1625	.9983	.8553E-05	.7970E-02	.5268
212.8194	4.9966	.0288	6.2286	129.9936	5.3428	1.1595	1.1572	.9980	.8988E-05	.8496E-02	.5339
222.8194	3.7228	.0405	6.4253	132.7106	5.4847	1.1551	1.1524	.9977	.9420E-05	.9028E-02	.5406
232.8194	2.7871	.0565	6.6267	135.3632	5.6225	1.1511	1.1479	.9972	.9847E-05	.9564E-02	.5469
242.8194	2.0963	.0783	6.8327	137.9528	5.7564	1.1475	1.1438	.9967	.1027E-04	.1011E-01	.5527
252.8194	1.5840	.1079	7.0430	140.4802	5.8866	1.1443	1.1399	.9961	.1069E-04	.1065E-01	.5582
262.8194	1.2022	.1476	7.2575	142.9452	6.0132	1.1414	1.1361	.9954	.1111E-04	.1120E-01	.5633
272.8194	.9165	.2009	7.4759	145.3472	6.1365	1.1389	1.1326	.9945	.1152E-04	.1175E-01	.5682
282.8194	.7017	.2717	7.6979	147.6843	6.2567	1.1366	1.1291	.9935	.1193E-04	.1231E-01	.5727
292.8194	.5396	.3653	7.9233	149.9540	6.3741	1.1347	1.1258	.9922	.1233E-04	.1287E-01	.5770
302.8194	.4166	.4886	8.1518	152.1525	6.4888	1.1330	1.1224	.9907	.1274E-04	.1344E-01	.5811
312.8194	.3230	.6498	8.3831	154.2752	6.6013	1.1316	1.1190	.9890	.1314E-04	.1400E-01	.5850
322.8194	.2515	.8595	8.6169	156.3163	6.7117	1.1306	1.1156	.9869	.1353E-04	.1458E-01	.5887
332.8194	.1966	1.1307	8.8527	158.2687	6.8205	1.1298	1.1120	.9845	.1393E-04	.1515E-01	.5923
342.8194	.1544	1.4792	9.0903	160.1243	6.9281	1.1294	1.1083	.9816	.1433E-04	.1574E-01	.5958
352.8194	.1217	1.9245	9.3290	161.8737	7.0348	1.1294	1.1044	.9782	.1472E-04	.1633E-01	.5993
362.8194	.0963	2.4898	9.5686	163.5065	7.1412	1.1298	1.1002	.9742	.1512E-04	.1692E-01	.6028
372.8194	.0766	3.2029	9.8083	165.0114	7.2478	1.1307	1.0956	.9696	.1552E-04	.1753E-01	.6063
382.8194	.0611	4.0963	10.0476	166.3769	7.3552	1.1321	1.0907	.9643	.1592E-04	.1814E-01	.6099
392.8194	.0490	5.2076	10.2858	167.5918	7.4641	1.1341	1.0854	.9582	.1633E-04	.1876E-01	.6138
402.8194	.0395	6.5797	10.5223	168.6463	7.5754	1.1369	1.0797	.9513	.1674E-04	.1940E-01	.6178
412.8194	.0320	8.2604	10.7563	169.5334	7.6899	1.1404	1.0735	.9434	.1717E-04	.2005E-01	.6222
422.8194	.0260	10.3022	10.9870	170.2509	7.8087	1.1449	1.0670	.9345	.1761E-04	.2072E-01	.6270
432.8194	.0213	12.7614	11.2137	170.8039	7.9329	1.1505	1.0603	.9247	.1806E-04	.2141E-01	.6323
442.8194	.0175	15.6971	11.4356	171.2083	8.0639	1.1574	1.0535	.9140	.1853E-04	.2212E-01	.6381
452.8194	.0145	19.1700	11.6520	171.4942	8.2029	1.1657	1.0470	.9024	.1902E-04	.2286E-01	.6445
462.8194	.0120	23.2416	11.8624	171.7106	8.3511	1.1756	1.0411	.8901	.1954E-04	.2364E-01	.6521
472.8194	.0101	27.9738	12.0664	171.9291	8.5098	1.1872	1.0366	.8773	.2011E-04	.2446E-01	.6610
482.8194	.0085	33.4335	12.2638	172.2454	8.6795	1.2007	1.0341	.8643	.2074E-04	.2532E-01	.6716
492.8194	.0072	39.6814	12.4547	172.7887	8.8597	1.2159	1.0348	.8516	.2144E-04	.2624E-01	.6840
502.8194	.0061	46.7943	12.6394	173.7096	9.0489	1.2327	1.0398	.8395	.2222E-04	.2721E-01	.6982
512.8194	.0053	54.8606	12.8187	175.1811	9.2437	1.2506	1.0503	.8288	.2311E-04	.2825E-01	.7142
522.8194	.0045	63.9903	12.9936	177.3874	9.4389	1.2689	1.0678	.8198	.2411E-04	.2938E-01	.7319
532.8194	.0040	74.3234	13.1653	180.5118	9.6278	1.2867	1.0936	.8134	.2525E-04	.3059E-01	.7507
542.8194	.0035	86.0381	13.3354	184.7266	9.8030	1.3031	1.1287	.8101	.2653E-04	.3190E-01	.7702
552.8194	.0031	99.3583	13.5054	190.1928	9.9575	1.3173	1.1742	.8106	.2798E-04	.3332E-01	.7899
562.8194	.0027	114.5606	13.6772	197.0838	10.0863	1.3285	1.2311	.8154	.2961E-04	.3487E-01	.8089
572.8194	.0024	131.9855	13.8527	205.6485	10.1857	1.3364	1.3013	.8253	.3142E-04	.3657E-01	.8269
582.8194	.0022	152.0628	14.0341	216.3312	10.2519	1.3404	1.3889	.8410	.3343E-04	.3841E-01	.8428
588.8889	.0021	165.7765	14.1482	224.1746	10.2734	1.3406	1.4538	.8538	.3474E-04	.3961E-01	.8512

TABLE II.- Continued

s /R=10.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
194.8354	17.0611	.0077	5.8891	124.9974	5.0715	1.1682	1.1673	.9993	.8202E-05	.7554E-02	.5203
204.8354	12.5950	.0110	6.0769	127.8498	5.2202	1.1627	1.1617	.9991	.8641E-05	.8075E-02	.5277
214.8354	9.3450	.0156	6.2700	130.6364	5.3642	1.1578	1.1567	.9990	.9075E-05	.8602E-02	.5346
224.8354	6.9673	.0219	6.4681	133.3605	5.5038	1.1534	1.1520	.9988	.9505E-05	.9134E-02	.5411
234.8354	5.2191	.0305	6.6711	136.0250	5.6391	1.1494	1.1477	.9986	.9931E-05	.9670E-02	.5471
244.8354	3.9276	.0422	6.8788	138.6324	5.7702	1.1457	1.1438	.9983	.1035E-04	.1021E-01	.5527
254.8354	2.9690	.0581	7.0909	141.1843	5.8972	1.1424	1.1401	.9980	.1077E-04	.1076E-01	.5579
264.8354	2.2542	.0795	7.3073	143.6820	6.0204	1.1394	1.1366	.9976	.1119E-04	.1131E-01	.5628
274.8354	1.7188	.1082	7.5278	146.1261	6.1399	1.1367	1.1334	.9971	.1160E-04	.1186E-01	.5673
284.8354	1.3161	.1463	7.7521	148.5169	6.2558	1.1342	1.1303	.9966	.1200E-04	.1241E-01	.5715
294.8354	1.0121	.1969	7.9802	150.8538	6.3683	1.1320	1.1273	.9959	.1241E-04	.1297E-01	.5754
304.8354	.7813	.2634	8.2117	153.1356	6.4776	1.1300	1.1245	.9951	.1281E-04	.1353E-01	.5791
314.8354	.6056	.3507	8.4464	155.3608	6.5840	1.1282	1.1217	.9942	.1320E-04	.1410E-01	.5825
324.8354	.4713	.4644	8.6841	157.5268	6.6876	1.1267	1.1189	.9931	.1360E-04	.1467E-01	.5857
334.8354	.3682	.6120	8.9245	159.6303	6.7886	1.1254	1.1161	.9918	.1399E-04	.1524E-01	.5887
344.8354	.2888	.8024	9.1673	161.6674	6.8873	1.1243	1.1133	.9903	.1438E-04	.1581E-01	.5915
354.8354	.2273	1.0467	9.4123	163.6332	6.9840	1.1235	1.1104	.9885	.1476E-04	.1639E-01	.5942
364.8354	.1797	1.3588	9.6591	165.5221	7.0789	1.1230	1.1075	.9863	.1515E-04	.1697E-01	.5968
374.8354	.1426	1.7550	9.9073	167.3276	7.1725	1.1227	1.1044	.9838	.1553E-04	.1756E-01	.5993
384.8354	.1136	2.2554	10.1565	169.0424	7.2650	1.1228	1.1011	.9809	.1592E-04	.1815E-01	.6018
394.8354	.0908	2.8839	10.4063	170.6589	7.3569	1.1232	1.0976	.9776	.1630E-04	.1875E-01	.6042
404.8354	.0729	3.6683	10.6562	172.1693	7.4486	1.1240	1.0939	.9737	.1669E-04	.1936E-01	.6067
414.8354	.0588	4.6416	10.9056	173.5655	7.5406	1.1252	1.0899	.9692	.1708E-04	.1997E-01	.6093
424.8354	.0476	5.8414	11.1540	174.8408	7.6336	1.1269	1.0856	.9641	.1748E-04	.2060E-01	.6120
434.8354	.0387	7.3105	11.4008	175.9899	7.7281	1.1292	1.0811	.9584	.1788E-04	.2123E-01	.6150
444.8354	.0316	9.0968	11.6453	177.0108	7.8250	1.1322	1.0764	.9519	.1830E-04	.2188E-01	.6182
454.8354	.0259	11.2528	11.8869	177.9060	7.9249	1.1359	1.0715	.9447	.1872E-04	.2255E-01	.6217
464.8354	.0214	13.8353	12.1248	178.6847	8.0288	1.1404	1.0665	.9368	.1916E-04	.2323E-01	.6256
474.8354	.0177	16.9046	12.3586	179.3654	8.1376	1.1460	1.0618	.9282	.1961E-04	.2394E-01	.6299
484.8354	.0147	20.5235	12.5875	179.9785	8.2522	1.1526	1.0575	.9190	.2008E-04	.2467E-01	.6346
494.8354	.0123	24.7570	12.8111	180.5698	8.3736	1.1604	1.0539	.9094	.2059E-04	.2544E-01	.6402
504.8354	.0104	29.6751	13.0290	181.2010	8.5024	1.1695	1.0518	.8995	.2113E-04	.2624E-01	.6469
514.8354	.0088	35.3415	13.2412	181.9583	8.6388	1.1798	1.0515	.8896	.2172E-04	.2708E-01	.6548
524.8354	.0075	41.8316	13.4476	182.9448	8.7827	1.1915	1.0541	.8800	.2238E-04	.2796E-01	.6641
534.8354	.0064	49.2254	13.6486	184.2844	8.9331	1.2042	1.0602	.8711	.2311E-04	.2890E-01	.6749
544.8354	.0055	57.6147	13.8447	186.1164	9.0880	1.2178	1.0711	.8634	.2393E-04	.2990E-01	.6871
554.8354	.0048	67.1087	14.0368	188.5895	9.2443	1.2318	1.0875	.8574	.2485E-04	.3096E-01	.7008
564.8354	.0042	77.8404	14.2259	191.8534	9.3980	1.2457	1.1106	.8535	.2588E-04	.3211E-01	.7157
574.8354	.0037	89.9733	14.4132	196.0523	9.5447	1.2589	1.1413	.8522	.2704E-04	.3333E-01	.7315
584.8354	.0033	103.7078	14.6003	201.3248	9.6799	1.2708	1.1801	.8542	.2835E-04	.3466E-01	.7480
588.8889	.0031	109.7852	14.6764	203.8002	9.7305	1.2752	1.1984	.8561	.2892E-04	.3523E-01	.7547

TABLE II.- Continued

S /R=10.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
217.6941	17.0662	.0087	6.3273	131.4693	5.4006	1.1561	1.1555	.9995	.9198E-05	.8753E-02	.5362
227.6941	12.7384	.0121	6.5271	134.1869	5.5382	1.1518	1.1510	.9994	.9627E-05	.9286E-02	.5424
237.6941	9.5530	.0169	6.7317	136.8482	5.6713	1.1478	1.1469	.9992	.1005E-04	.9823E-02	.5482
247.6941	7.1967	.0233	6.9411	139.4558	5.8002	1.1441	1.1431	.9991	.1047E-04	.1037E-01	.5536
257.6941	5.4457	.0321	7.1550	142.0120	5.9248	1.1408	1.1396	.9989	.1089E-04	.1091E-01	.5586
267.6941	4.1385	.0438	7.3731	144.5186	6.0455	1.1378	1.1363	.9987	.1130E-04	.1146E-01	.5633
277.6941	3.1583	.0596	7.5955	146.9772	6.1622	1.1350	1.1333	.9985	.1171E-04	.1201E-01	.5676
287.6941	2.4207	.0805	7.8218	149.3886	6.2752	1.1325	1.1304	.9982	.1212E-04	.1257E-01	.5715
297.6941	1.8624	.1082	8.0519	151.7537	6.3845	1.1301	1.1277	.9978	.1252E-04	.1313E-01	.5752
307.6941	1.4387	.1447	8.2857	154.0726	6.4904	1.1280	1.1251	.9974	.1291E-04	.1369E-01	.5786
317.6941	1.1158	.1926	8.5228	156.3453	6.5930	1.1261	1.1226	.9969	.1331E-04	.1425E-01	.5817
327.6941	.8686	.2550	8.7632	158.5709	6.6923	1.1244	1.1202	.9963	.1370E-04	.1482E-01	.5846
337.6941	.6788	.3361	9.0066	160.7485	6.7887	1.1228	1.1179	.9956	.1409E-04	.1538E-01	.5872
347.6941	.5324	.4408	9.2529	162.8764	6.8823	1.1214	1.1156	.9948	.1447E-04	.1595E-01	.5897
357.6941	.4192	.5754	9.5017	164.9525	6.9733	1.1203	1.1133	.9938	.1485E-04	.1653E-01	.5920
367.6941	.3312	.7477	9.7529	166.9742	7.0618	1.1193	1.1110	.9927	.1523E-04	.1710E-01	.5941
377.6941	.2627	.9672	10.0062	168.9381	7.1481	1.1184	1.1087	.9914	.1561E-04	.1768E-01	.5960
387.6941	.2091	1.2453	10.2614	170.8406	7.2325	1.1178	1.1063	.9898	.1598E-04	.1826E-01	.5979
397.6941	.1670	1.5965	10.5180	172.6770	7.3152	1.1174	1.1039	.9880	.1636E-04	.1885E-01	.5997
407.6941	.1339	2.0365	10.7759	174.4435	7.3965	1.1173	1.1013	.9858	.1673E-04	.1944E-01	.6014
417.6941	.1077	2.5870	11.0346	176.1336	7.4767	1.1174	1.0986	.9834	.1710E-04	.2003E-01	.6030
427.6941	.0870	3.2706	11.2937	177.7431	7.5561	1.1178	1.0958	.9805	.1748E-04	.2063E-01	.6047
437.6941	.0705	4.1156	11.5528	179.2664	7.6353	1.1185	1.0928	.9773	.1786E-04	.2124E-01	.6064
447.6941	.0574	5.1540	11.8115	180.6991	7.7144	1.1196	1.0896	.9736	.1824E-04	.2185E-01	.6082
457.6941	.0469	6.4231	12.0693	182.0377	7.7942	1.1210	1.0863	.9695	.1862E-04	.2248E-01	.6101
467.6941	.0384	7.9645	12.3255	183.2807	7.8750	1.1230	1.0829	.9648	.1901E-04	.2311E-01	.6121
477.6941	.0317	9.8252	12.5798	184.4295	7.9576	1.1255	1.0794	.9596	.1941E-04	.2375E-01	.6144
487.6941	.0262	12.0567	12.8314	185.4897	8.0424	1.1285	1.0758	.9539	.1983E-04	.2442E-01	.6169
497.6941	.0217	14.7150	13.0799	186.4729	8.1302	1.1323	1.0724	.9476	.2025E-04	.2509E-01	.6198
507.6941	.0181	17.8602	13.3248	187.3983	8.2217	1.1367	1.0693	.9410	.2069E-04	.2579E-01	.6230
517.6941	.0152	21.5556	13.5654	188.2946	8.3175	1.1421	1.0667	.9339	.2114E-04	.2651E-01	.6264
527.6941	.0128	25.8707	13.8015	189.2015	8.4184	1.1483	1.0650	.9266	.2161E-04	.2726E-01	.6306
537.6941	.0109	30.8698	14.0327	190.1756	8.5248	1.1554	1.0645	.9191	.2213E-04	.2804E-01	.6356
547.6941	.0093	36.6275	14.2589	191.2855	8.6368	1.1635	1.0658	.9118	.2269E-04	.2885E-01	.6416
557.6941	.0079	43.2203	14.4801	192.6165	8.7546	1.1725	1.0694	.9049	.2330E-04	.2971E-01	.6486
567.6941	.0068	50.7317	14.6965	194.2686	8.8774	1.1824	1.0761	.8986	.2397E-04	.3061E-01	.6569
577.6941	.0059	59.2542	14.9086	196.3537	9.0040	1.1929	1.0866	.8934	.2472E-04	.3156E-01	.6664
587.6941	.0051	68.8948	15.1170	198.9915	9.1328	1.2039	1.1017	.8896	.2556E-04	.3257E-01	.6771
588.8889	.0051	70.1271	15.1417	199.3494	9.1482	1.2052	1.1039	.8893	.2566E-04	.3269E-01	.6784

S/R=11.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
241.4493	17.0620	.0096	6.8108	137.8728	5.7172	1.1461	1.1456	.9996	.1021E-04	.1003E-01	.5500
251.4493	12.8732	.0132	7.0221	140.4697	5.8438	1.1426	1.1420	.9995	.1063E-04	.1057E-01	.5552
261.4493	9.7556	.0182	7.2378	143.0179	5.9663	1.1393	1.1386	.9994	.1104E-04	.1112E-01	.5601
271.4493	7.4245	.0248	7.4579	145.5195	6.0847	1.1363	1.1355	.9993	.1146E-04	.1166E-01	.5645
281.4493	5.6740	.0336	7.6822	147.9764	6.1991	1.1335	1.1326	.9992	.1186E-04	.1222E-01	.5686
291.4493	4.3544	.0454	7.9104	150.3901	6.3097	1.1310	1.1299	.9990	.1227E-04	.1277E-01	.5724
301.4493	3.3545	.0609	8.1425	152.7617	6.4165	1.1287	1.1274	.9988	.1266E-04	.1333E-01	.5758
311.4493	2.5944	.0813	8.3783	155.0922	6.5197	1.1265	1.1250	.9986	.1306E-04	.1389E-01	.5790
321.4493	2.0143	.1081	8.6175	157.3822	6.6195	1.1245	1.1227	.9983	.1345E-04	.1446E-01	.5819
331.4493	1.5697	.1430	8.8601	159.6321	6.7159	1.1227	1.1205	.9980	.1384E-04	.1502E-01	.5846
341.4493	1.2279	.1882	9.1059	161.8419	6.8091	1.1211	1.1184	.9977	.1422E-04	.1559E-01	.5870
351.4493	.9639	.2467	9.3546	164.0113	6.8993	1.1196	1.1164	.9972	.1460E-04	.1616E-01	.5892
361.4493	.7595	.3218	9.6062	166.1396	6.9866	1.1182	1.1145	.9967	.1498E-04	.1673E-01	.5912
371.4493	.6005	.4181	9.8605	168.2260	7.0711	1.1170	1.1126	.9961	.1536E-04	.1730E-01	.5930
381.4493	.4764	.5407	10.1172	170.2690	7.1530	1.1159	1.1107	.9953	.1573E-04	.1787E-01	.5947
391.4493	.3793	.6963	10.3761	172.2669	7.2325	1.1150	1.1088	.9945	.1610E-04	.1845E-01	.5962
401.4493	.3030	.8931	10.6370	174.2177	7.3098	1.1142	1.1069	.9935	.1647E-04	.1903E-01	.5976
411.4493	.2430	1.1402	10.8998	176.1192	7.3851	1.1136	1.1050	.9923	.1683E-04	.1961E-01	.5988
421.4493	.1954	1.4503	11.1641	177.9681	7.4586	1.1132	1.1031	.9910	.1719E-04	.2019E-01	.6000
431.4493	.1577	1.8368	11.4297	179.7618	7.5306	1.1129	1.1011	.9894	.1756E-04	.2078E-01	.6011
441.4493	.1277	2.3166	11.6963	181.4969	7.6012	1.1128	1.0990	.9877	.1792E-04	.2137E-01	.6022
451.4493	.1038	2.9096	11.9636	183.1702	7.6708	1.1129	1.0968	.9856	.1828E-04	.2196E-01	.6032
461.4493	.0846	3.6390	12.2312	184.7785	7.7397	1.1133	1.0946	.9833	.1865E-04	.2256E-01	.6043
471.4493	.0692	4.5319	12.4988	186.3190	7.8082	1.1140	1.0922	.9806	.1901E-04	.2317E-01	.6053
481.4493	.0568	5.6194	12.7659	187.7896	7.8766	1.1149	1.0898	.9777	.1938E-04	.2378E-01	.6065
491.4493	.0468	6.9373	13.0322	189.1896	7.9455	1.1162	1.0873	.9743	.1976E-04	.2440E-01	.6077
501.4493	.0387	8.5258	13.2973	190.5201	8.0151	1.1178	1.0848	.9706	.2014E-04	.2503E-01	.6091
511.4493	.0322	10.4299	13.5605	191.7849	8.0861	1.1199	1.0823	.9665	.2052E-04	.2567E-01	.6107
521.4493	.0268	12.6993	13.8216	192.9915	8.1588	1.1224	1.0799	.9621	.2092E-04	.2632E-01	.6125
531.4493	.0224	15.3883	14.0800	194.1522	8.2339	1.1255	1.0777	.9573	.2133E-04	.2699E-01	.6146
541.4493	.0189	18.5553	14.3352	195.2857	8.3118	1.1291	1.0759	.9523	.2175E-04	.2768E-01	.6170
551.4493	.0159	22.2629	14.5869	196.4181	8.3932	1.1334	1.0746	.9470	.2218E-04	.2839E-01	.6195
561.4493	.0135	26.5810	14.8347	197.5840	8.4784	1.1384	1.0742	.9416	.2263E-04	.2912E-01	.6226
571.4493	.0115	31.5731	15.0783	198.8311	8.5679	1.1440	1.0749	.9362	.2312E-04	.2987E-01	.6264
581.4493	.0098	37.3154	15.3178	200.2159	8.6618	1.1504	1.0771	.9310	.2364E-04	.3066E-01	.6309
588.8889	.0089	42.1204	15.4931	201.3760	8.7347	1.1556	1.0801	.9274	.2406E-04	.3127E-01	.6348

TABLE II.- Continued

s/R=11.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
266.1205	17.0615	.0106	7.3409	144.2247	6.0198	1.1377	1.1373	.9997	.1124E-04	.1137E-01	.5620
276.1205	13.0085	.0144	7.5631	146.7126	6.1359	1.1348	1.1343	.9996	.1165E-04	.1192E-01	.5662
286.1205	9.9610	.0195	7.7895	149.1580	6.2480	1.1321	1.1316	.9996	.1205E-04	.1248E-01	.5701
296.1205	7.6564	.0262	8.0198	151.5627	6.3563	1.1296	1.1290	.9995	.1245E-04	.1303E-01	.5737
306.1205	5.9085	.0351	8.2540	153.9282	6.4607	1.1273	1.1266	.9994	.1285E-04	.1359E-01	.5770
316.1205	4.5772	.0468	8.4918	156.2558	6.5616	1.1252	1.1243	.9992	.1324E-04	.1415E-01	.5800
326.1205	3.5593	.0621	8.7331	158.5463	6.6589	1.1232	1.1222	.9991	.1363E-04	.1472E-01	.5827
336.1205	2.7781	.0820	8.9778	160.8008	6.7528	1.1214	1.1202	.9989	.1402E-04	.1528E-01	.5852
346.1205	2.1762	.1078	9.2256	163.0197	6.8435	1.1197	1.1183	.9987	.1440E-04	.1585E-01	.5874
356.1205	1.7108	.1410	9.4766	165.2035	6.9310	1.1182	1.1165	.9985	.1478E-04	.1641E-01	.5895
366.1205	1.3496	.1837	9.7305	167.3524	7.0155	1.1167	1.1147	.9982	.1515E-04	.1698E-01	.5913
376.1205	1.0684	.2383	9.9871	169.4662	7.0970	1.1154	1.1130	.9979	.1552E-04	.1755E-01	.5929
386.1205	.8487	.3079	10.2463	171.5448	7.1759	1.1143	1.1114	.9975	.1589E-04	.1813E-01	.5943
396.1205	.6764	.3962	10.5080	173.5875	7.2521	1.1132	1.1098	.9970	.1626E-04	.1870E-01	.5956
406.1205	.5409	.5076	10.7720	175.5937	7.3259	1.1122	1.1083	.9964	.1662E-04	.1928E-01	.5968
416.1205	.4339	.6480	11.0381	177.5622	7.3973	1.1114	1.1067	.9958	.1698E-04	.1985E-01	.5978
426.1205	.3492	.8239	11.3061	179.4919	7.4666	1.1107	1.1052	.9951	.1734E-04	.2043E-01	.5986
436.1205	.2819	1.0435	11.5758	181.3813	7.5340	1.1101	1.1037	.9942	.1769E-04	.2101E-01	.5994
446.1205	.2284	1.3165	11.8471	183.2288	7.5996	1.1096	1.1021	.9932	.1805E-04	.2159E-01	.6001
456.1205	.1855	1.6547	12.1197	185.0325	7.6636	1.1093	1.1005	.9921	.1840E-04	.2218E-01	.6008
466.1205	.1512	2.0720	12.3934	186.7906	7.7262	1.1091	1.0989	.9908	.1875E-04	.2276E-01	.6014
476.1205	.1237	2.5845	12.6679	188.5011	7.7877	1.1091	1.0972	.9894	.1911E-04	.2335E-01	.6019
486.1205	.1014	3.2117	12.9430	190.1623	7.8483	1.1092	1.0955	.9877	.1946E-04	.2395E-01	.6025
496.1205	.0835	3.9757	13.2184	191.7726	7.9082	1.1096	1.0938	.9858	.1981E-04	.2454E-01	.6030
506.1205	.0689	4.9026	13.4937	193.3311	7.9679	1.1102	1.0920	.9837	.2017E-04	.2515E-01	.6037
516.1205	.0571	6.0219	13.7686	194.8377	8.0275	1.1110	1.0902	.9814	.2052E-04	.2575E-01	.6043
526.1205	.0474	7.3675	14.0429	196.2934	8.0874	1.1120	1.0884	.9788	.2089E-04	.2637E-01	.6051
536.1205	.0395	8.9776	14.3160	197.7012	8.1481	1.1134	1.0867	.9759	.2125E-04	.2699E-01	.6060
546.1205	.0331	10.8946	14.5877	199.0663	8.2098	1.1151	1.0850	.9728	.2163E-04	.2763E-01	.6071
556.1205	.0278	13.1659	14.8575	200.3970	8.2730	1.1172	1.0835	.9695	.2201E-04	.2827E-01	.6084
566.1205	.0234	15.8430	15.1251	201.7057	8.3380	1.1197	1.0822	.9659	.2240E-04	.2893E-01	.6099
576.1205	.0198	18.9820	15.3901	203.0096	8.4055	1.1227	1.0814	.9622	.2280E-04	.2960E-01	.6117
586.1205	.0168	22.6468	15.6522	204.3311	8.4757	1.1261	1.0811	.9584	.2322E-04	.3030E-01	.6136
588.8889	.0161	23.7616	15.7242	204.7043	8.4957	1.1272	1.0812	.9573	.2333E-04	.3049E-01	.6142

s/R=12.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
291.7601	17.0622	.0116	7.9196	150.5466	6.3077	1.1305	1.1302	.9998	.1228E-04	.1279E-01	.5721
301.7601	13.1436	.0156	8.1522	152.9351	6.4136	1.1281	1.1278	.9997	.1268E-04	.1335E-01	.5754
311.7601	10.1654	.0208	8.3886	155.2865	6.5156	1.1259	1.1255	.9996	.1307E-04	.1391E-01	.5785
321.7601	7.8910	.0277	8.6287	157.6020	6.6141	1.1238	1.1233	.9996	.1346E-04	.1447E-01	.5813
331.7601	6.1484	.0366	8.8722	159.8830	6.7090	1.1219	1.1213	.9995	.1385E-04	.1503E-01	.5839
341.7601	4.8082	.0482	9.1190	162.1304	6.8005	1.1201	1.1195	.9994	.1423E-04	.1560E-01	.5862
351.7601	3.7735	.0632	9.3690	164.3451	6.8888	1.1185	1.1177	.9993	.1461E-04	.1616E-01	.5883
361.7601	2.9720	.0825	9.6221	166.5280	6.9738	1.1169	1.1160	.9992	.1499E-04	.1673E-01	.5901
371.7601	2.3487	.1073	9.8781	168.6794	7.0559	1.1155	1.1144	.9990	.1536E-04	.1730E-01	.5918
381.7601	1.8625	.1389	10.1370	170.8000	7.1350	1.1142	1.1129	.9988	.1573E-04	.1787E-01	.5932
391.7601	1.4818	.1791	10.3984	172.8899	7.2112	1.1130	1.1114	.9986	.1609E-04	.1844E-01	.5945
401.7601	1.1828	.2301	10.6624	174.9493	7.2848	1.1119	1.1100	.9983	.1646E-04	.1901E-01	.5956
411.7601	.9473	.2943	10.9288	176.9781	7.3559	1.1108	1.1086	.9980	.1682E-04	.1959E-01	.5966
421.7601	.7609	.3752	11.1975	178.9760	7.4245	1.1099	1.1073	.9977	.1717E-04	.2016E-01	.5974
431.7601	.6131	.4765	11.4682	180.9428	7.4908	1.1090	1.1060	.9973	.1753E-04	.2074E-01	.5981
441.7601	.4956	.6028	11.7409	182.8779	7.5550	1.1083	1.1047	.9968	.1788E-04	.2131E-01	.5987
451.7601	.4018	.7600	12.0155	184.7806	7.6172	1.1076	1.1035	.9963	.1823E-04	.2189E-01	.5992
461.7601	.3268	.9546	12.2916	186.6502	7.6779	1.1071	1.1022	.9956	.1857E-04	.2247E-01	.5996
471.7601	.2665	1.1949	12.5693	188.4858	7.7362	1.1066	1.1010	.9949	.1892E-04	.2306E-01	.5999
481.7601	.2180	1.4904	12.8483	190.2864	7.7934	1.1062	1.0997	.9941	.1926E-04	.2364E-01	.6002
491.7601	.1789	1.8525	13.1284	192.0510	7.8492	1.1060	1.0985	.9932	.1960E-04	.2421E-01	.6004
501.7601	.1472	2.2947	13.4094	193.7785	7.9039	1.1059	1.0972	.9921	.1994E-04	.2480E-01	.6006
511.7601	.1215	2.8326	13.6911	195.4683	7.9577	1.1059	1.0959	.9910	.2029E-04	.2538E-01	.6008
521.7601	.1005	3.4846	13.9733	197.1197	8.0108	1.1061	1.0946	.9896	.2063E-04	.2598E-01	.6010
531.7601	.0835	4.2717	14.2558	198.7324	8.0635	1.1064	1.0933	.9882	.2097E-04	.2657E-01	.6012
541.7601	.0695	5.2185	14.5383	200.3069	8.1159	1.1069	1.0920	.9865	.2131E-04	.2717E-01	.6013
551.7601	.0580	6.3527	14.8205	201.8443	8.1684	1.1076	1.0907	.9847	.2166E-04	.2777E-01	.6018
561.7601	.0486	7.7060	15.1021	203.3471	8.2213	1.1085	1.0895	.9828	.2201E-04	.2838E-01	.6023
571.7601	.0408	9.3140	15.3828	204.8192	8.2748	1.1096	1.0883	.9806	.2236E-04	.2900E-01	.6028
581.7601	.0344	11.2165	15.6624	206.2665	8.3293	1.1110	1.0873	.9783	.2272E-04	.2963E-01	.6036
588.8889	.0305	12.7784	15.8608	207.2873	8.3690	1.1122	1.0867	.9766	.2299E-04	.3008E-01	.6042

TABLE II.- Continued

s/R=12.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
318.4236	17.0662	.0127	8.5488	156.8570	6.5803	1.1244	1.1242	.9998	.1333E-04	.1428E-01	.5803
328.4236	13.2799	.0168	8.7912	159.1544	6.6761	1.1224	1.1221	.9998	.1372E-04	.1484E-01	.5830
338.4236	10.3718	.0221	9.0371	161.4191	6.7685	1.1206	1.1202	.9997	.1410E-04	.1541E-01	.5853
348.4236	8.1298	.0291	9.2863	163.6521	6.8576	1.1188	1.1185	.9997	.1448E-04	.1597E-01	.5874
358.4236	6.3949	.0380	9.5386	165.8544	6.9433	1.1172	1.1168	.9996	.1486E-04	.1654E-01	.5893
368.4236	5.0476	.0495	9.7939	168.0269	7.0260	1.1157	1.1152	.9995	.1523E-04	.1711E-01	.5910
378.4236	3.9977	.0642	10.0522	170.1704	7.1056	1.1144	1.1137	.9994	.1560E-04	.1768E-01	.5925
388.4236	3.1767	.0829	10.3132	172.2856	7.1823	1.1131	1.1123	.9993	.1597E-04	.1825E-01	.5938
398.4236	2.5325	.1067	10.5768	174.3729	7.2562	1.1118	1.1110	.9992	.1633E-04	.1882E-01	.5950
408.4236	2.0253	.1367	10.8430	176.4329	7.3274	1.1107	1.1097	.9991	.1669E-04	.1939E-01	.5959
418.4236	1.6250	.1745	11.1116	178.4659	7.3960	1.1097	1.1084	.9989	.1705E-04	.1996E-01	.5967
428.4236	1.3078	.2220	11.3825	180.4720	7.4622	1.1087	1.1073	.9987	.1740E-04	.2053E-01	.5974
438.4236	1.0557	.2813	11.6556	182.4513	7.5260	1.1078	1.1061	.9985	.1775E-04	.2111E-01	.5980
448.4236	.8548	.3553	11.9307	184.4040	7.5877	1.1070	1.1050	.9982	.1810E-04	.2168E-01	.5984
458.4236	.6941	.4472	12.2078	186.3298	7.6473	1.1063	1.1039	.9979	.1844E-04	.2226E-01	.5987
468.4236	.5653	.5609	12.4866	188.2287	7.7049	1.1056	1.1029	.9976	.1879E-04	.2283E-01	.5990
478.4236	.4617	.7011	12.7672	190.1002	7.7607	1.1050	1.1019	.9972	.1913E-04	.2341E-01	.5991
488.4236	.3781	.8735	13.0493	191.9441	7.8149	1.1045	1.1008	.9967	.1946E-04	.2398E-01	.5992
498.4236	.3106	1.0848	13.3328	193.7601	7.8676	1.1040	1.0998	.9962	.1980E-04	.2456E-01	.5992
508.4236	**.2558**	1.3428	13.6176	195.5476	**7.9189**	**1.1037**	1.0988	.9956	**.2013E-04**	**.2514E-01**	.5992
518.4236	**.2112**	1.6569	13.9036	197.3063	**7.9690**	**1.1034**	1.0978	.9950	**.2047E-04**	**.2572E-01**	.5992
528.4236	**.1749**	2.0380	14.1905	199.0358	**8.0181**	**1.1032**	1.0968	.9942	**.2080E-04**	**.2630E-01**	.5991
538.4236	**.1452**	2.4988	14.4782	200.7360	**8.0663**	**1.1031**	1.0958	.9934	**.2113E-04**	**.2688E-01**	.5990
548.4236	.1209	3.0543	14.7666	202.4067	8.1139	1.1032	1.0949	.9925	.2146E-04	.2747E-01	.5989
558.4236	.1009	3.7216	15.0554	204.0483	8.1610	1.1033	1.0939	.9914	.2179E-04	.2805E-01	.5989
568.4236	.0845	4.5206	15.3445	205.6615	8.2078	1.1036	1.0929	.9903	.2212E-04	.2864E-01	.5989
578.4236	.0709	5.4739	15.6336	207.2476	8.2547	1.1040	1.0920	.9891	.2246E-04	.2924E-01	.5989
588.4236	.0597	6.6073	15.9225	208.8087	8.3017	1.1046	1.0912	.9878	.2279E-04	.2984E-01	.5991
588.8889	.0592	6.6648	15.9360	208.8808	8.3039	1.1046	1.0911	.9877	.2281E-04	.2987E-01	.5991

s/R=13.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
346.1907	17.0631	.0138	9.2309	163.1766	6.8369	1.1191	1.1190	.9998	.1440E-04	.1585E-01	.5869
356.1907	13.4129	.0180	9.4826	165.3899	6.9233	1.1175	1.1173	.9998	.1478E-04	.1641E-01	.5889
366.1907	10.5770	.0235	9.7374	167.5742	7.0064	1.1160	1.1157	.9998	.1515E-04	.1698E-01	.5906
376.1907	8.3701	.0305	9.9952	169.7303	7.0865	1.1145	1.1142	.9997	.1552E-04	.1755E-01	.5921
386.1907	6.6458	.0394	10.2557	171.8590	7.1636	1.1132	1.1128	.9997	.1589E-04	.1812E-01	.5934
396.1907	5.2940	.0508	10.5191	173.9612	7.2378	1.1119	1.1115	.9996	.1625E-04	.1869E-01	.5946
406.1907	4.2304	.0651	10.7850	176.0375	7.3092	1.1107	1.1102	.9995	.1661E-04	.1926E-01	.5956
416.1907	3.3921	.0832	11.0534	178.0885	7.3780	1.1096	1.1091	.9995	.1697E-04	.1983E-01	.5964
426.1907	2.7273	.1060	11.3242	180.1146	7.4443	1.1086	1.1079	.9994	.1732E-04	.2040E-01	.5971
436.1907	2.1997	.1344	11.5972	182.1165	7.5082	1.1077	1.1068	.9993	.1767E-04	.2097E-01	.5976
446.1907	1.7795	.1700	11.8725	184.0943	7.5697	1.1068	1.1058	.9991	.1802E-04	.2155E-01	.5980
456.1907	1.4438	.2142	12.1498	186.0483	7.6291	1.1059	1.1048	.9990	.1836E-04	.2212E-01	.5983
466.1907	1.1747	.2689	12.4291	187.9788	7.6864	1.1052	1.1038	.9988	.1870E-04	.2269E-01	.5985
476.1907	.9585	.3366	12.7103	189.8860	7.7417	1.1044	1.1029	.9986	.1904E-04	.2326E-01	.5986
486.1907	.7843	.4199	12.9933	191.7698	7.7953	1.1038	1.1020	.9984	.1938E-04	.2384E-01	.5987
496.1907	.6435	.5222	13.2779	193.6303	7.8471	1.1032	1.1011	.9981	.1971E-04	.2441E-01	.5986
506.1907	.5293	.6474	13.5640	195.4676	7.8973	1.1027	1.1003	.9979	.2004E-04	.2498E-01	.5985
516.1907	.4366	.8002	13.8516	197.2815	7.9461	1.1022	1.0995	.9975	.2037E-04	.2556E-01	.5984
526.1907	.3611	.9860	14.1406	199.0720	7.9936	1.1018	1.0986	.9972	.2070E-04	.2613E-01	.5982
536.1907	.2994	1.2113	14.4308	200.8390	8.0399	1.1014	1.0978	.9967	.2103E-04	.2671E-01	.5979
546.1907	.2488	1.4838	14.7221	202.5826	8.0852	1.1011	1.0970	.9963	.2135E-04	.2728E-01	.5977
556.1907	.2073	1.8123	15.0145	204.3027	8.1297	1.1009	1.0962	.9958	.2167E-04	.2786E-01	.5974
566.1907	.1732	2.2072	15.3077	205.9995	8.1734	1.1008	1.0955	.9952	.2199E-04	.2844E-01	.5971
576.1907	.1451	2.6805	15.6016	207.6734	8.2166	1.1007	1.0947	.9946	.2231E-04	.2902E-01	.5969
586.1907	.1218	3.2462	15.8961	209.3249	8.2594	**1.1007**	1.0940	.9939	.2264E-04	.2960E-01	**.5967**
588.8889	.1162	3.4169	15.9757	209.7667	**8.2709**	**1.1007**	1.0938	.9937	.2272E-04	**.2976E-01**	**.5966**

TABLE II.- Continued

S/R=13.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
375.1236	17.0621	.0149	9.9680	169.5193	7.0773	1.1146	1.1145	.9999	.1548E-04	.1749E-01	.5919
385.1236	13.5428	.0193	10.2283	171.6545	7.1545	1.1132	1.1131	.9998	.1585E-04	.1806E-01	.5932
395.1236	10.7831	.0249	10.4915	173.7638	7.2289	1.1120	1.1118	.9998	.1621E-04	.1863E-01	.5944
405.1236	8.6131	.0319	10.7573	175.8478	7.3005	1.1108	1.1105	.9998	.1657E-04	.1920E-01	.5954
415.1236	6.9035	.0408	11.0256	177.9075	7.3694	1.1096	1.1093	.9997	.1693E-04	.1977E-01	.5962
425.1236	5.5486	.0520	11.2963	179.9433	7.4357	1.1086	1.1082	.9997	.1728E-04	.2034E-01	.5969
435.1236	4.4735	.0660	11.5694	181.9558	7.4996	1.1076	1.1072	.9996	.1763E-04	.2091E-01	.5974
445.1236	3.6175	.0835	11.8447	183.9457	7.5611	1.1067	1.1062	.9996	.1798E-04	.2148E-01	.5978
455.1236	2.9337	.1052	12.1222	185.9134	7.6204	1.1058	1.1052	.9995	.1832E-04	.2205E-01	.5981
465.1236	2.3860	.1322	12.4017	187.8592	7.6775	1.1050	1.1043	.9994	.1866E-04	.2262E-01	.5983
475.1236	1.9460	.1655	12.6831	189.7835	7.7326	1.1042	1.1034	.9993	.1900E-04	.2320E-01	.5984
485.1236	1.5915	.2067	12.9665	191.6868	7.7858	1.1035	1.1026	.9992	.1934E-04	.2377E-01	.5984
495.1236	1.3051	.2572	13.2516	193.5691	7.8372	1.1028	1.1018	.9991	.1967E-04	.2434E-01	.5984
505.1236	1.0730	.3191	13.5384	195.4307	7.8870	1.1022	1.1010	.9989	.2000E-04	.2491E-01	.5982
515.1236	.8845	.3946	13.8269	197.2719	7.9351	1.1016	1.1003	.9988	.2033E-04	.2548E-01	.5980
525.1236	.7310	.4867	14.1168	199.0928	7.9818	1.1011	1.0995	.9986	.2065E-04	.2605E-01	.5977
535.1236	.6056	.5985	14.4082	200.8934	8.0273	1.1006	1.0988	.9984	.2098E-04	.2663E-01	.5974
545.1236	.5030	.7339	14.7010	202.6741	8.0715	1.1002	1.0981	.9981	.2130E-04	.2720E-01	.5971
555.1236	.4188	.8975	14.9950	204.4348	8.1146	1.0998	1.0974	.9979	.2162E-04	.2777E-01	.5967
565.1236	.3495	1.0944	15.2903	206.1757	8.1569	1.0994	1.0968	.9976	.2193E-04	.2834E-01	.5964
575.1236	.2924	1.3310	15.5866	207.8972	8.1983	1.0991	1.0961	.9973	.2225E-04	.2891E-01	.5960
585.1236	.2451	1.6145	15.8839	209.5994	8.2391	1.0989	1.0955	.9969	.2256E-04	.2949E-01	.5956
588.8889	.2295	1.7352	15.9961	210.2353	8.2543	1.0988	1.0953	.9968	.2268E-04	.2970E-01	.5955

S/R=14.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
405.2963	17.0662	.0161	10.7623	175.8991	7.3011	1.1107	1.1106	.9999	.1658E-04	.1921E-01	.5954
415.2963	13.6763	.0206	11.0307	177.9613	7.3699	1.1096	1.1094	.9999	.1693E-04	.1978E-01	.5962
425.2963	10.9915	.0262	11.3016	180.0002	7.4360	1.1085	1.1083	.9998	.1729E-04	.2035E-01	.5968
435.2963	8.8620	.0333	11.5748	182.0166	7.4997	1.1075	1.1073	.9998	.1764E-04	.2092E-01	.5974
445.2963	7.1662	.0422	11.8503	184.0109	7.5611	1.1065	1.1063	.9998	.1798E-04	.2149E-01	.5978
455.2963	5.8117	.0531	12.1280	185.9837	7.6201	1.1056	1.1054	.9997	.1833E-04	.2206E-01	.5981
465.2963	4.7266	.0668	12.4078	187.9357	7.6770	1.1048	1.1045	.9997	.1867E-04	.2263E-01	.5983
475.2963	3.8548	.0836	12.6895	189.8671	7.7319	1.1040	1.1036	.9997	.1901E-04	.2320E-01	.5983
485.2963	3.1524	.1044	12.9732	191.7785	7.7848	1.1033	1.1028	.9996	.1934E-04	.2377E-01	.5983
495.2963	2.5849	.1299	13.2587	193.6703	7.8359	1.1026	1.1021	.9995	.1967E-04	.2435E-01	.5982
505.2963	2.1251	.1612	13.5459	195.5427	7.8852	1.1019	1.1013	.9995	.2000E-04	.2492E-01	.5981
515.2963	1.7516	.1995	13.8349	197.3962	7.9330	1.1013	1.1006	.9994	.2033E-04	.2549E-01	.5978
525.2963	1.4474	.2461	14.1254	199.2309	7.9792	1.1007	1.0999	.9993	.2065E-04	.2606E-01	.5975
535.2963	1.1990	.3027	14.4175	201.0472	8.0241	1.1002	1.0993	.9992	.2098E-04	.2663E-01	.5972
545.2963	.9956	.3713	14.7111	202.8453	8.0677	1.0996	1.0986	.9991	.2130E-04	.2719E-01	.5968
555.2963	.8287	.4542	15.0061	204.6255	8.1102	1.0992	1.0980	.9989	.2161E-04	.2776E-01	.5964
565.2963	.6913	.5541	15.3025	206.3879	8.1516	1.0987	1.0974	.9988	.2193E-04	.2833E-01	.5960
575.2963	.5781	.6743	15.6001	208.1328	8.1921	1.0983	1.0968	.9986	.2224E-04	.2890E-01	.5955
585.2963	.4845	.8184	15.8989	209.8605	8.2318	1.0979	1.0962	.9984	.2255E-04	.2947E-01	.5951
588.8889	.4549	.8769	16.0066	210.4770	8.2459	1.0978	1.0960	.9984	.2266E-04	.2967E-01	.5949

TABLE II.- Concluded

s/R=14.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
436.7997	17.0662	.0174	11.6165	182.3313	7.5086	1.1073	1.1072	.9999	.1769E-04	.2100E-01	.5974
446.7997	13.8057	.0220	11.8924	184.3248	7.5695	1.1063	1.1062	.9999	.1804E-04	.2157E-01	.5978
456.7997	11.2007	.0277	12.1705	186.2974	7.6282	1.1055	1.1053	.9999	.1838E-04	.2215E-01	.5981
466.7997	9.1130	.0347	12.4506	188.2495	7.6847	1.1046	1.1044	.9998	.1872E-04	.2272E-01	.5982
476.7997	7.4350	.0435	12.7328	190.1818	7.7391	1.1038	1.1036	.9998	.1906E-04	.2329E-01	.5983
486.7997	6.0824	.0543	13.0169	192.0946	7.7916	1.1031	1.1028	.9998	.1939E-04	.2386E-01	.5983
496.7997	4.9891	.0675	13.3028	193.9885	7.8423	1.1023	1.1021	.9998	.1972E-04	.2443E-01	.5981
506.7997	4.1030	.0838	13.5906	195.8638	7.8912	1.1017	1.1014	.9997	.2005E-04	.2500E-01	.5980
516.7997	3.3829	.1036	13.8800	197.7210	7.9385	1.1010	1.1007	.9997	.2038E-04	.2557E-01	.5977
526.7997	2.7961	.1278	14.1711	199.5603	7.9843	1.1004	1.1000	.9996	.2070E-04	.2614E-01	.5974
536.7997	2.3168	.1571	14.4638	201.3821	8.0287	1.0999	1.0994	.9996	.2102E-04	.2671E-01	.5970
546.7997	1.9242	.1927	14.7580	203.1867	8.0718	1.0993	1.0988	.9995	.2134E-04	.2727E-01	.5966
556.7997	1.6019	.2357	15.0537	204.9744	8.1138	1.0988	1.0982	.9995	.2165E-04	.2784E-01	.5962
566.7997	1.3366	.2875	15.3508	206.7455	8.1546	1.0983	1.0976	.9994	.2197E-04	.2841E-01	.5957
576.7997	1.1178	.3499	15.6493	208.5002	8.1945	1.0979	1.0971	.9993	.2228E-04	.2897E-01	.5952
586.7997	.9369	.4246	15.9490	210.2388	8.2336	1.0974	1.0965	.9992	.2259E-04	.2954E-01	.5948
588.8889	.9031	.4421	16.0118	210.6000	8.2416	1.0973	1.0964	.9992	.2265E-04	.2966E-01	.5946

s/R=15.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
469.7400	17.0662	.0187	12.5337	188.8314	7.7005	1.1043	1.1042	.9999	.1882E-04	.2288E-01	.5982
479.7400	13.9332	.0234	12.8165	190.7599	7.7543	1.1035	1.1034	.9999	.1915E-04	.2345E-01	.5983
489.7400	11.4071	.0291	13.1013	192.6695	7.8062	1.1028	1.1027	.9999	.1949E-04	.2402E-01	.5982
499.7400	9.3637	.0362	13.3878	194.5605	7.8562	1.1021	1.1019	.9999	.1982E-04	.2459E-01	.5981
509.7400	7.7061	.0449	13.6762	196.4334	7.9046	1.1014	1.1012	.9999	.2015E-04	.2516E-01	.5978
519.7400	6.3580	.0555	13.9663	198.2887	7.9514	1.1008	1.1006	.9998	.2047E-04	.2573E-01	.5976
529.7400	5.2587	.0683	14.2580	200.1266	7.9966	1.1002	1.0999	.9998	.2079E-04	.2630E-01	.5972
539.7400	4.3601	.0840	14.5513	201.9477	8.0405	1.0996	1.0993	.9998	.2111E-04	.2687E-01	.5969
549.7400	3.6235	.1029	14.8462	203.7521	8.0831	1.0990	1.0987	.9997	.2143E-04	.2744E-01	.5964
559.7400	3.0184	.1258	15.1426	205.5402	8.1245	1.0985	1.0982	.9997	.2174E-04	.2800E-01	.5960
569.7400	2.5200	.1533	15.4404	207.3124	8.1648	1.0980	1.0976	.9997	.2206E-04	.2857E-01	.5955
579.7400	2.1086	.1865	15.7396	209.0689	8.2042	1.0975	1.0971	.9996	.2237E-04	.2914E-01	.5950
588.8889	1.7948	.2225	16.0145	210.6623	8.2395	1.0971	1.0966	.9996	.2265E-04	.2965E-01	.5945

s/R=15.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
504.1982	17.0662	.0200	13.5165	195.4077	7.8777	1.1017	1.1017	.9999	.1996E-04	.2485E-01	.5980
514.1982	14.0608	.0248	13.8057	197.2743	7.9253	1.1011	1.1010	.9999	.2029E-04	.2542E-01	.5977
524.1982	11.6135	.0306	14.0966	199.1237	7.9713	1.1004	1.1003	.9999	.2061E-04	.2599E-01	.5974
534.1982	9.6158	.0377	14.3891	200.9561	8.0158	1.0998	1.0997	.9999	.2094E-04	.2655E-01	.5970
544.1982	7.9807	.0463	14.6832	202.7719	8.0591	1.0993	1.0991	.9999	.2125E-04	.2712E-01	.5966
554.1982	6.6392	.0566	14.9789	204.5716	8.1010	1.0987	1.0986	.9999	.2157E-04	.2769E-01	.5962
564.1982	5.5358	.0691	15.2760	206.3554	8.1419	1.0982	1.0980	.9998	.2188E-04	.2825E-01	.5957
574.1982	4.6260	.0842	15.5746	208.1237	8.1816	1.0977	1.0975	.9998	.2219E-04	.2882E-01	.5952
584.1982	3.8743	.1023	15.8746	209.8767	8.2205	1.0972	1.0970	.9998	.2250E-04	.2938E-01	.5947
588.8889	3.5673	.1120	16.0158	210.6937	8.2385	1.0970	1.0967	.9998	.2265E-04	.2965E-01	.5945

s/R=16.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
540.2907	17.0662	.0215	14.5684	202.0728	8.0421	1.0995	1.0994	.9999	.2113E-04	.2690E-01	.5968
550.2907	14.1831	.0263	14.8635	203.8800	8.0845	1.0989	1.0988	.9999	.2145E-04	.2747E-01	.5964
560.2907	11.8150	.0322	15.1602	205.6714	8.1257	1.0983	1.0983	.9999	.2176E-04	.2803E-01	.5959
570.2907	9.8646	.0392	15.4583	207.4472	8.1658	1.0978	1.0977	.9999	.2207E-04	.2860E-01	.5954
580.2907	8.2543	.0477	15.7578	209.2077	8.2050	1.0973	1.0972	.9999	.2238E-04	.2916E-01	.5949
588.8889	7.0944	.0563	16.0165	210.7096	8.2379	1.0969	1.0968	.9999	.2265E-04	.2965E-01	.5944

TABLE III.- THERMODYNAMIC AND TRANSPORT PROPERTIES

OF $CBrF_3$ AT CONSTANT ENTROPY

s/R = 4.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
K	m^3/kg	atm		m/sec					$N\text{-}s/m^2$	W/m-K	
329.3316	.0030	31.6607	4.2381	91.3790	13.1268	2.6534	.8564	.5303	.2170E-04	.1477E-01	1.8222
339.3316	.0026	36.3328	4.2451	92.7725	14.9682	2.9683	.8949	.5077	.2336E-04	.1610E-01	2.0512
349.3316	.0023	41.7326	4.2490	93.9157	15.3723	3.1344	.9612	.4906	.2526E-04	.1759E-01	2.1803
359.3316	.0020	48.1440	4.2198	101.0113	15.9865	3.0750	1.0584	.4805	.2744E-04	.1926E-01	2.1514
367.3852	.0018	54.3006	4.1894	106.6104	15.1859	2.8457	1.1601	.4777	.2941E-04	.2076E-01	2.0324

s/R= 5.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
252.6410	.0282	4.4203	4.0613	116.8788	4.8554	1.2158	1.0797	.8971	.1366E-04	.7309E-02	.8573
262.6410	.0222	5.7296	4.1680	117.0209	5.0338	1.2277	1.0631	.8785	.1425E-04	.7906E-02	.8574
272.6410	.0176	7.3354	4.2704	116.8241	5.2321	1.2438	1.0454	.8577	.1487E-04	.8527E-02	.8617
282.6410	.0140	9.2741	4.3678	116.3043	5.4557	1.2653	1.0268	.8349	.1550E-04	.9177E-02	.8705
292.6410	.0113	11.5751	4.4592	115.5000	5.7116	1.2924	1.0078	.8103	.1615E-04	.9860E-02	.8836
302.6410	.0092	14.2638	4.5442	114.4783	6.0061	1.3274	.9891	.7842	.1685E-04	.1056E-01	.9036
312.6410	.0075	17.3603	4.6222	113.3394	6.3542	1.3716	.9718	.7573	.1761E-04	.1135E-01	.9306
322.6410	.0062	20.8839	4.6930	112.2165	6.7590	1.4264	.9574	.7302	.1844E-04	.1218E-01	.9668
332.6410	.0052	24.8552	4.7565	111.2818	7.2288	1.4925	.9476	.7037	.1937E-04	.1307E-01	1.0121
342.6410	.0044	29.3083	4.8126	110.7333	7.7629	1.5694	.9447	.6785	.2041E-04	.1403E-01	1.0669
352.6410	.0037	34.2976	4.8610	110.7906	8.3403	1.6540	.9511	.6555	.2156E-04	.1507E-01	1.1290
362.6410	.0032	39.9097	4.9012	111.6811	8.9428	1.7394	.9694	.6355	.2291E-04	.1621E-01	1.1941
372.6410	.0027	46.2738	4.9323	113.6249	9.4925	1.8150	1.0021	.6193	.2443E-04	.1746E-01	1.2544
382.6410	.0024	53.5741	4.9524	116.8208	9.9227	1.8685	1.0513	.6077	.2615E-04	.1885E-01	1.3008
392.6410	.0021	62.0617	4.9591	121.4368	10.1722	1.8908	1.1189	.6012	.2811E-04	.2038E-01	1.3254
402.6410	.0018	72.0666	4.9486	127.6084	10.2174	1.8798	1.2058	.6008	.3033E-04	.2204E-01	1.3252
405.7690	.0018	75.5718	4.9410	129.8761	10.1919	1.8703	1.2370	.6019	.3109E-04	.2267E-01	1.3203

s/R= 5.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
196.7958	.2856	.3736	3.4552	112.2608	3.9906	1.1847	1.1657	.9841	.1048E-04	.4210E-02	.9388
206.7958	.2151	.5194	3.5748	114.4860	4.1067	1.1811	1.1579	.9805	.1102E-04	.4426E-02	.9062
216.7958	.1629	.7157	3.6968	116.5699	4.2229	1.1784	1.1500	.9763	.1156E-04	.5233E-02	.8819
226.7958	.1241	.9778	3.8208	118.5013	4.3396	1.1766	1.1420	.9712	.1210E-04	.5750E-02	.8627
236.7958	.0951	1.3242	3.9464	120.2674	4.4577	1.1757	1.1337	.9651	.1263E-04	.6272E-02	.8483
246.7958	.0733	1.7780	4.0729	121.8535	4.5780	1.1759	1.1250	.9580	.1317E-04	.6801E-02	.8375
256.7958	.0568	2.3663	4.1997	123.2443	4.7016	1.1774	1.1157	.9496	.1371E-04	.7339E-02	.8297
266.7958	.0443	3.1213	4.3261	124.4237	4.8299	1.1802	1.1059	.9398	.1425E-04	.7886E-02	.8245
276.7958	.0347	4.0790	4.4514	125.3789	4.9644	1.1846	1.0955	.9286	.1480E-04	.8447E-02	.8218
286.7958	.0274	5.2797	4.5747	126.1008	5.1070	1.1910	1.0844	.9159	.1536E-04	.9023E-02	.8213
296.7958	.0218	6.7661	4.6953	126.5870	5.2601	1.1996	1.0727	.9016	.1593E-04	.9617E-02	.8233
306.7958	.0174	8.5824	4.8122	126.8457	5.4262	1.2108	1.0606	.8857	.1652E-04	.1023E-01	.8276
316.7958	.0141	10.7727	4.9248	126.8991	5.6083	1.2251	1.0484	.8685	.1713E-04	.1088E-01	.8345
326.7958	.0114	13.3792	5.0324	126.7864	5.8096	1.2429	1.0366	.8500	.1776E-04	.1155E-01	.8438
336.7958	.0094	16.4421	5.1345	126.5673	6.0333	1.2648	1.0256	.8307	.1842E-04	.1226E-01	.8565
346.7958	.0077	19.9994	5.2306	126.3231	6.2823	1.2910	1.0164	.8109	.1914E-04	.1301E-01	.8731
356.7958	.0065	24.0914	5.3205	126.1550	6.5585	1.3219	1.0100	.7911	.1993E-04	.1381E-01	.8939
366.7958	.0054	28.7581	5.4041	126.1889	6.8614	1.3571	1.0075	.7719	.2079E-04	.1467E-01	.9189
376.7958	.0046	34.0525	5.4810	126.5624	7.1875	1.3960	1.0102	.7538	.2175E-04	.1558E-01	.9478
386.7958	.0039	40.0429	5.5512	127.4241	7.5283	1.4371	1.0195	.7375	.2283E-04	.1657E-01	.9797
396.7958	.0034	46.8219	5.6141	128.9264	7.8699	1.4779	1.0369	.7236	.2404E-04	.1765E-01	1.0130
406.7958	.0029	54.5144	5.6689	131.2192	8.1928	1.5154	1.0638	.7127	.2541E-04	.1882E-01	1.0454
416.7958	.0026	63.2868	5.7140	134.4447	8.4745	1.5462	1.1013	.7054	.2696E-04	.2009E-01	1.0742
426.7958	.0023	73.3561	5.7476	138.7356	8.6937	1.5673	1.1506	.7021	.2870E-04	.2150E-01	1.0967
436.7958	.0020	84.9994	5.7664	144.2154	8.8344	1.5771	1.2124	.7035	.3067E-04	.2304E-01	1.1107
446.4401	.0018	98.0447	5.7670	150.7366	8.8895	1.5756	1.2844	.7098	.3279E-04	.2470E-01	1.1151

TABLE III.- Continued

s/R= 5.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
172.0661	1.3738	.0687	3.1775	106.6458	3.6843	1.1939	1.1890	.9958	.9126E-05	.2951E-02	1.0765
182.0661	1.0182	.0980	3.2911	109.3086	3.7969	1.1877	1.1817	.9948	.9673E-05	.3452E-02	1.0057
192.0661	.7593	.1385	3.4045	111.8761	3.9117	1.1821	1.1747	.9937	.1021E-04	.3953E-02	.9549
202.0661	.5695	.1940	3.5294	114.3492	4.0229	1.1772	1.1682	.9923	.1075E-04	.4456E-02	.9171
212.0661	.4295	.2695	3.6537	116.7275	4.1326	1.1728	1.1618	.9906	.1129E-04	.4960E-02	.8883
222.0661	.3257	.3714	3.7810	119.0087	4.2410	1.1691	1.1557	.9885	.1181E-04	.5466E-02	.8661
232.0661	.2482	.5079	3.9112	121.1892	4.3484	1.1660	1.1497	.9860	.1234E-04	.5973E-02	.8486
242.0661	.1901	.6897	4.0439	123.2638	4.4551	1.1635	1.1437	.9831	.1286E-04	.6484E-02	.8349
252.0661	.1463	.9296	4.1788	125.2259	4.5616	1.1616	1.1376	.9796	.1338E-04	.6997E-02	.8241
262.0661	.1132	1.2441	4.3155	127.0677	4.6682	1.1604	1.1314	.9754	.1390E-04	.7515E-02	.8156
272.0661	.0880	1.6531	4.4535	128.7801	4.7757	1.1599	1.1251	.9705	.1441E-04	.8038E-02	.8090
282.0661	.0688	2.1806	4.5924	130.3542	4.8846	1.1602	1.1184	.9648	.1493E-04	.8568E-02	.8042
292.0661	.0540	2.8552	4.7316	131.7808	4.9958	1.1614	1.1115	.9582	.1545E-04	.9106E-02	.8009
302.0661	.0426	3.7101	4.8706	133.0521	5.1103	1.1637	1.1043	.9506	.1598E-04	.9653E-02	.7989
312.0661	.0339	4.7830	5.0085	134.1629	5.2292	1.1671	1.0968	.9420	.1651E-04	.1021E-01	.7984
322.0661	.0270	6.1163	5.1448	135.1120	5.3538	1.1719	1.0890	.9323	.1704E-04	.1079E-01	.7993
332.0661	.0217	7.7556	5.2788	135.9945	5.4856	1.1783	1.0812	.9215	.1759E-04	.1138E-01	.8015
342.0661	.0176	9.7495	5.4098	136.5538	5.6263	1.1864	1.0733	.9098	.1816E-04	.1199E-01	.8053
352.0661	.0143	12.1481	5.5371	137.0838	5.7773	1.1964	1.0658	.8971	.1875E-04	.1262E-01	.8106
362.0661	.0118	15.0021	5.6602	137.5307	5.9405	1.2087	1.0589	.8837	.1934E-04	.1328E-01	.8172
372.0661	.0097	18.3624	5.7786	137.9444	6.1173	1.2234	1.0532	.8699	.1997E-04	.1398E-01	.8259
382.0661	.0081	22.2816	5.8920	138.3678	6.3086	1.2405	1.0492	.8558	.2065E-04	.1471E-01	.8368
392.0661	.0068	26.8103	6.0002	138.9401	6.5146	1.2600	1.0476	.8419	.2139E-04	.1548E-01	.8502
402.0661	.0057	32.0060	6.1028	139.6894	6.7343	1.2818	1.0491	.8286	.2219E-04	.1630E-01	.8659
412.0661	.0049	37.9334	6.1997	140.7332	6.9553	1.3053	1.0546	.8164	.2307E-04	.1718E-01	.8839
422.0661	.0042	44.6691	6.2907	142.1743	7.2030	1.3299	1.0649	.8056	.2406E-04	.1811E-01	.9037
432.0661	.0036	52.3077	6.3753	144.1174	7.4408	1.3546	1.0808	.7967	.2515E-04	.1912E-01	.9247
442.0661	.0032	60.9676	6.4528	146.6668	7.6701	1.3780	1.1032	.7901	.2638E-04	.2021E-01	.9460
452.0661	.0028	70.7973	6.5221	149.9245	7.8811	1.3989	1.1326	.7864	.2775E-04	.2138E-01	.9663
462.0661	.0024	81.9819	6.5815	153.9903	8.0635	1.4161	1.1698	.7858	.2929E-04	.2266E-01	.9846
472.0661	.0022	94.7512	6.6287	158.9660	8.2062	1.4284	1.2155	.7889	.3102E-04	.2406E-01	.9996
482.0661	.0019	109.3869	6.6626	164.9528	8.3081	1.4353	1.2701	.7960	.3294E-04	.2559E-01	1.0102
489.5909	.0018	121.8352	6.6722	170.1902	8.3512	1.4370	1.3176	.8043	.3453E-04	.2685E-01	1.0148

s/R= 6.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
156.0053	5.2508	.0163	3.0046	102.2917	3.4907	1.2046	1.2041	.9986	.8236E-05	.2145E-02	1.2663
166.0053	3.8488	.0237	3.1124	105.1501	3.6075	1.1969	1.1951	.9983	.8790E-05	.2644E-02	1.1330
176.0053	2.8405	.0341	3.2243	107.9171	3.7221	1.1900	1.1877	.9980	.9339E-05	.3143E-02	1.0447
186.0053	2.1097	.0485	3.3402	110.5965	3.8345	1.1837	1.1809	.9975	.9883E-05	.3643E-02	.9827
196.0053	1.5762	.0683	3.4600	113.1990	3.9448	1.1780	1.1746	.9970	.1042E-04	.4143E-02	.9375
206.0053	1.1841	.0955	3.5835	115.7219	4.0530	1.1729	1.1687	.9963	.1096E-04	.4643E-02	.9034
216.0053	.8943	.1325	3.7106	118.1695	4.1592	1.1683	1.1632	.9955	.1148E-04	.5145E-02	.8772
226.0053	.6788	.1825	3.8411	120.5429	4.2636	1.1641	1.1579	.9946	.1201E-04	.5646E-02	.8566
236.0053	.5177	.2495	3.9749	122.8422	4.3662	1.1604	1.1529	.9934	.1253E-04	.6149E-02	.8403
246.0053	.3967	.3390	4.1117	125.0666	4.4672	1.1572	1.1481	.9920	.1304E-04	.6653E-02	.8272
256.0053	.3053	.4575	4.2514	127.2144	4.5668	1.1544	1.1433	.9904	.1355E-04	.7159E-02	.8167
266.0053	.2361	.6136	4.3938	129.2829	4.6651	1.1520	1.1387	.9884	.1406E-04	.7667E-02	.8081
276.0053	.1833	.8180	4.5384	131.2684	4.7625	1.1501	1.1341	.9861	.1456E-04	.8177E-02	.8012
286.0053	.1430	1.0838	4.6851	133.1669	4.8593	1.1486	1.1294	.9834	.1506E-04	.8691E-02	.7956
296.0053	.1120	1.4273	4.8335	134.9736	4.9558	1.1477	1.1247	.9802	.1556E-04	.9208E-02	.7912
306.0053	.0881	1.8681	4.9832	136.6835	5.0525	1.1473	1.1200	.9765	.1606E-04	.9730E-02	.7877
316.0053	.0697	2.4298	5.1338	138.2917	5.1499	1.1475	1.1151	.9722	.1656E-04	.1026E-01	.7852
326.0053	.0553	3.1403	5.2848	139.7941	5.2485	1.1484	1.1101	.9673	.1706E-04	.1079E-01	.7835
336.0053	.0442	4.0323	5.4358	141.1878	5.3493	1.1500	1.1050	.9617	.1756E-04	.1134E-01	.7827
346.0053	.0354	5.1429	5.5861	142.4727	5.4528	1.1525	1.0999	.9554	.1807E-04	.1189E-01	.7827
356.0053	.0286	6.5141	5.7352	143.6516	5.5600	1.1559	1.0947	.9485	.1858E-04	.1246E-01	.7835
366.0053	.0232	8.1919	5.8825	144.7326	5.6720	1.1604	1.0897	.9408	.1911E-04	.1304E-01	.7853
376.0053	.0189	10.2264	6.0274	145.7294	5.7896	1.1661	1.0849	.9325	.1965E-04	.1364E-01	.7879
386.0053	.0155	12.6704	6.1695	146.6632	5.9139	1.1731	1.0806	.9237	.2020E-04	.1426E-01	.7916
396.0053	.0128	15.5794	6.3082	147.5637	6.0459	1.1816	1.0770	.9145	.2077E-04	.1490E-01	.7961
406.0053	.0106	19.0102	6.4431	148.4692	6.1863	1.1915	1.0745	.9050	.2136E-04	.1557E-01	.8017
416.0053	.0089	23.0239	6.5739	149.4262	6.3357	1.2030	1.0735	.8956	.2198E-04	.1627E-01	.8087
426.0053	.0075	27.6781	6.7003	150.4920	6.4939	1.2159	1.0744	.8863	.2265E-04	.1700E-01	.8172
436.0053	.0064	33.0386	6.8220	151.7286	6.6605	1.2303	1.0777	.8776	.2338E-04	.1778E-01	.8272
446.0053	.0055	39.1752	6.9389	153.2036	6.8339	1.2458	1.0838	.8697	.2417E-04	.1860E-01	.8388
456.0053	.0047	46.1661	7.0508	154.9879	7.0120	1.2622	1.0934	.8630	.2504E-04	.1947E-01	.8517
466.0053	.0041	54.1012	7.1572	157.1537	7.1914	1.2789	1.1068	.8578	.2600E-04	.2040E-01	.8658
476.0053	.0036	63.0860	7.2578	159.7732	7.3680	1.2953	1.1244	.8543	.2706E-04	.2139E-01	.8805
486.0053	.0031	73.2460	7.3517	162.9184	7.5367	1.3110	1.1469	.8530	.2824E-04	.2245E-01	.8955
496.0053	.0028	84.7311	7.4378	166.6614	7.6921	1.3252	1.1745	.8540	.2955E-04	.2360E-01	.9100
506.0053	.0024	97.7212	7.5144	171.0766	7.8287	1.3374	1.2078	.8578	.3101E-04	.2483E-01	.9236
516.0053	.0022	112.4309	7.5795	176.2429	7.9412	1.3470	1.2470	.8647	.3263E-04	.2617E-01	.9354
526.0053	.0020	129.1163	7.6301	182.2460	8.0252	1.3538	1.2929	.8748	.3443E-04	.2763E-01	.9448
535.5394	.0018	147.1423	7.6618	188.8361	8.0756	1.3576	1.3431	.8880	.3632E-04	.2914E-01	.9509

TABLE III.- Continued

s/R= 7.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
158.9334	11.1673	.0078	3.0364	103.1984	3.5227	1.2018	1.2011	.9993	.8398E-05	.2290E-02	1.2205
168.9334	8.2012	.0113	3.1457	106.0459	3.5334	1.1943	1.1934	.9992	.8950E-05	.2789E-02	1.1032
178.9334	6.0634	.0162	3.2590	108.8080	3.7518	1.1874	1.1864	.9990	.9498E-05	.3287E-02	1.0240
188.9334	4.5106	.0231	3.3764	111.4912	3.8529	1.1812	1.1799	.9988	.1004E-04	.3786E-02	.9676
198.9334	3.3749	.0324	3.4978	114.1010	3.9717	1.1755	1.1740	.9986	.1058E-04	.4286E-02	.9260
208.9334	2.5386	.0453	3.6229	116.6416	4.0783	1.1704	1.1685	.9983	.1111E-04	.4785E-02	.8944
218.9334	1.9194	.0627	3.7518	119.1166	4.1827	1.1656	1.1633	.9979	.1163E-04	.5285E-02	.8699
228.9334	1.4583	.0863	3.8842	121.5288	4.2849	1.1614	1.1585	.9975	.1216E-04	.5785E-02	.8506
238.9334	1.1131	.1179	4.0201	123.8800	4.3850	1.1574	1.1540	.9969	.1267E-04	.6285E-02	.8351
248.9334	.8534	.1601	4.1593	126.1717	4.4830	1.1539	1.1498	.9963	.1318E-04	.6786E-02	.8226
258.9334	.6572	.2161	4.3018	128.4046	4.5791	1.1507	1.1457	.9955	.1369E-04	.7288E-02	.8124
268.9334	.5081	.2900	4.4472	130.5787	4.6734	1.1478	1.1418	.9946	.1419E-04	.7791E-02	.8040
278.9334	.3945	.3871	4.5954	132.6936	4.7659	1.1453	1.1380	.9936	.1468E-04	.8295E-02	.7970
288.9334	.3075	.5137	4.7463	134.7484	4.8568	1.1430	1.1344	.9923	.1518E-04	.8800E-02	.7912
298.9334	.2406	.6781	4.8997	136.7415	4.9462	1.1411	1.1308	.9908	.1566E-04	.9307E-02	.7864
308.9334	.1891	.8904	5.0552	138.6711	5.0344	1.1396	1.1272	.9891	.1615E-04	.9817E-02	.7824
318.9334	.1491	1.1631	5.2127	140.5350	5.1217	1.1384	1.1237	.9871	.1663E-04	.1033E-01	.7790
328.9334	.1181	1.5111	5.3719	142.3310	5.2082	1.1375	1.1202	.9848	.1711E-04	.1084E-01	.7763
338.9334	.0939	1.9529	5.5323	144.0569	5.2943	1.1371	1.1167	.9821	.1759E-04	.1136E-01	.7741
348.9334	.0750	2.5102	5.6937	145.7109	5.3804	1.1372	1.1132	.9791	.1807E-04	.1189E-01	.7725
358.9334	.0601	3.2088	5.8556	147.2922	5.4670	1.1377	1.1097	.9756	.1855E-04	.1242E-01	.7713
368.9334	.0484	4.0789	6.0180	148.8011	5.5546	1.1388	1.1063	.9718	.1903E-04	.1296E-01	.7706
378.9334	.0392	5.1551	6.1799	150.2400	5.6436	1.1405	1.1029	.9675	.1952E-04	.1351E-01	.7705
388.9334	.0319	6.4765	6.3410	151.6137	5.7348	1.1428	1.0996	.9627	.2001E-04	.1406E-01	.7708
398.9334	.0260	8.0870	6.5010	152.9306	5.8287	1.1459	1.0966	.9576	.2051E-04	.1463E-01	.7718
408.9334	.0214	10.0346	6.6593	154.2033	5.9262	1.1499	1.0940	.9521	.2102E-04	.1522E-01	.7733
418.9334	.0177	12.3713	6.8154	155.4492	6.0277	1.1547	1.0918	.9463	.2154E-04	.1582E-01	.7755
428.9334	.0147	15.1527	6.9689	156.6913	6.1340	1.1605	1.0903	.9404	.2207E-04	.1644E-01	.7783
438.9334	.0123	18.4376	7.1195	157.9582	6.2456	1.1673	1.0898	.9343	.2262E-04	.1708E-01	.7816
448.9334	.0103	22.2878	7.2668	159.2833	6.3628	1.1751	1.0905	.9283	.2319E-04	.1774E-01	.7856
458.9334	.0087	26.7650	7.4105	160.7075	6.4856	1.1839	1.0926	.9226	.2379E-04	.1844E-01	.7907
468.9334	.0074	31.9369	7.5505	162.2734	6.6139	1.1938	1.0965	.9174	.2444E-04	.1916E-01	.7968
478.9334	.0064	37.8746	7.6865	164.0294	6.7471	1.2044	1.1024	.9128	.2513E-04	.1993E-01	.8039
488.9334	.0055	44.6524	7.8183	166.0225	6.8838	1.2159	1.1108	.9091	.2589E-04	.2073E-01	.8121
498.9334	.0048	52.3549	7.9457	168.3029	7.0227	1.2278	1.1218	.9065	.2671E-04	.2158E-01	.8213
508.9334	.0042	61.0739	8.0683	170.9196	7.1614	1.2399	1.1357	.9053	.2761E-04	.2247E-01	.8312
518.9334	.0037	70.9136	8.1857	173.9217	7.2974	1.2519	1.1528	.9057	.2860E-04	.2342E-01	.8417
528.9334	.0032	81.9938	8.2972	177.3585	7.4277	1.2636	1.1734	.9079	.2969E-04	.2444E-01	.8526
538.9334	.0029	94.4512	8.4017	181.2803	7.5491	1.2745	1.1976	.9120	.3089E-04	.2552E-01	.8634
548.9334	.0026	108.4445	8.4979	185.7409	7.6581	1.2843	1.2258	.9184	.3222E-04	.2667E-01	.8739
558.9334	.0023	124.1576	8.5840	190.7993	7.7515	1.2928	1.2583	.9272	.3368E-04	.2792E-01	.8835
568.9334	.0021	141.8039	8.6577	196.5220	7.8201	1.2997	1.2954	.9387	.3529E-04	.2926E-01	.8918
578.9334	.0019	161.6312	8.7163	202.9851	7.8791	1.3050	1.3376	.9531	.3705E-04	.3070E-01	.8984
584.7127	.0018	174.1949	8.7419	207.0914	7.8990	1.3073	1.3645	.9629	.3815E-04	.3159E-01	.9011

TABLE III.- Continued

s/R= 7.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
186.8875	11.1665	.0092	3.3527	110.9967	3.8387	1.1821	1.1816	.9994	.9929E-05	.3683E-02	.9775
196.8875	8.3439	.0130	3.4734	113.6364	3.9476	1.1763	1.1756	.9993	.1047E-04	.4182E-02	.9333
206.8875	6.2692	.0182	3.5981	116.2673	4.0542	1.1709	1.1701	.9992	.1100E-04	.4681E-02	.9000
216.8875	4.7345	.0252	3.7265	118.7958	4.1585	1.1660	1.1651	.9991	.1153E-04	.5180E-02	.8741
226.8875	3.5929	.0348	3.8586	121.1656	4.2605	1.1615	1.1604	.9989	.1205E-04	.5679E-02	.8538
236.8875	2.7392	.0476	3.9943	123.5598	4.3602	1.1574	1.1560	.9987	.1256E-04	.6178E-02	.8376
246.8875	2.0976	.0647	4.1335	125.9008	4.4576	1.1536	1.1519	.9984	.1307E-04	.6678E-02	.8245
256.8875	1.6133	.0876	4.2760	128.1908	4.5529	1.1501	1.1481	.9981	.1358E-04	.7177E-02	.8137
266.8875	1.2457	.1178	4.4218	130.4314	4.6459	1.1469	1.1444	.9977	.1408E-04	.7678E-02	.8048
276.8875	.9657	.1575	4.5708	132.6238	4.7369	1.1440	1.1410	.9973	.1457E-04	.8178E-02	.7974
286.8875	.7516	.2096	4.7227	134.7688	4.8257	1.1413	1.1377	.9967	.1506E-04	.8680E-02	.7912
296.8875	.5871	.2775	4.8775	136.8669	4.9126	1.1389	1.1346	.9961	.1555E-04	.9182E-02	.7859
306.8875	.4604	.3656	5.0350	138.9183	4.9975	1.1367	1.1316	.9954	.1603E-04	.9685E-02	.7814
316.8875	.3623	.4793	5.1950	140.9228	5.0806	1.1348	1.1287	.9945	.1651E-04	.1019E-01	.7775
326.8875	.2861	.6253	5.3574	142.8800	5.1621	1.1331	1.1259	.9935	.1698E-04	.1069E-01	.7742
336.8875	.2268	.8121	5.5220	144.7895	5.2419	1.1317	1.1232	.9924	.1745E-04	.1120E-01	.7713
346.8875	.1804	1.0497	5.6885	146.6506	5.3204	1.1306	1.1206	.9911	.1791E-04	.1171E-01	.7688
356.8875	.1441	1.3505	5.8567	148.4627	5.3977	1.1297	1.1180	.9895	.1838E-04	.1222E-01	.7666
366.8875	.1155	1.7295	6.0264	150.2254	5.4740	1.1291	1.1154	.9878	.1884E-04	.1274E-01	.7647
376.8875	.0929	2.2043	6.1972	151.9388	5.5496	1.1288	1.1129	.9859	.1930E-04	.1326E-01	.7632
386.8875	.0750	2.7961	6.3690	153.6034	5.6248	1.1289	1.1105	.9837	.1976E-04	.1378E-01	.7619
396.8875	.0608	3.5297	6.5413	155.2209	5.6999	1.1294	1.1082	.9813	.2022E-04	.1431E-01	.7608
406.8875	.0495	4.4336	6.7138	156.7943	5.7753	1.1303	1.1060	.9786	.2068E-04	.1485E-01	.7601
416.8875	.0404	5.5407	6.8861	158.3281	5.8515	1.1316	1.1040	.9757	.2115E-04	.1539E-01	.7597
426.8875	.0332	6.8883	7.0579	159.8292	5.9288	1.1335	1.1022	.9725	.2162E-04	.1594E-01	.7596
436.8875	.0274	8.5179	7.2288	161.3073	6.0077	1.1359	1.1008	.9692	.2210E-04	.1650E-01	.7598
446.8875	.0227	10.4755	7.3983	162.7748	6.0887	1.1389	1.0997	.9657	.2258E-04	.1708E-01	.7605
456.8875	.0189	12.8110	7.5661	164.2478	6.1723	1.1425	1.0993	.9621	.2308E-04	.1767E-01	.7615
466.8875	.0158	15.5782	7.7319	165.7460	6.2589	1.1469	1.0995	.9586	.2358E-04	.1827E-01	.7631
476.8875	.0133	18.8364	7.8953	167.2922	6.3488	1.1519	1.1006	.9551	.2410E-04	.1890E-01	.7650
486.8875	.0113	22.6426	8.0561	168.9140	6.4423	1.1577	1.1028	.9518	.2464E-04	.1954E-01	.7672
496.8875	.0096	27.0617	8.2139	170.6407	6.5393	1.1642	1.1062	.9489	.2519E-04	.2021E-01	.7700
506.8875	.0082	32.1599	8.3687	172.5042	6.6398	1.1715	1.1110	.9465	.2578E-04	.2091E-01	.7736
516.8875	.0071	38.0069	8.5201	174.5379	6.7434	1.1793	1.1175	.9447	.2641E-04	.2163E-01	.7779
526.8875	.0061	44.6764	8.6681	176.7757	6.8494	1.1876	1.1257	.9437	.2709E-04	.2239E-01	.7830
536.8875	.0053	52.2468	8.8125	179.2514	6.9570	1.1966	1.1360	.9437	.2782E-04	.2318E-01	.7888
546.8875	.0047	60.8026	8.9529	181.9979	7.0648	1.2058	1.1483	.9446	.2861E-04	.2401E-01	.7952
556.8875	.0041	70.4358	9.0891	185.0478	7.1715	1.2151	1.1629	.9471	.2947E-04	.2489E-01	.8022
566.8875	.0037	81.2475	9.2205	188.4331	7.2751	1.2244	1.1799	.9509	.3041E-04	.2581E-01	.8097
576.8875	.0033	93.3498	9.3465	192.1866	7.3739	1.2334	1.1994	.9562	.3143E-04	.2679E-01	.8174
586.8875	.0029	106.8675	9.4661	196.3426	7.4657	1.2420	1.2216	.9632	.3255E-04	.2782E-01	.8252
588.8889	.0029	109.7546	9.4892	197.2260	7.4831	1.2437	1.2263	.9648	.3279E-04	.2803E-01	.8268

TABLE III.- Continued

S /R= 8.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
216.4679	11.1679	.0107	3.7216	118.6544	4.1529	1.1660	1.1656	.9995	.1150E-04	.5158E-02	.8750
226.4679	8.4724	.0147	3.8537	121.1173	4.2547	1.1614	1.1609	.9994	.1202E-04	.5656E-02	.8544
236.4679	6.4574	.0202	3.9895	123.5267	4.3541	1.1572	1.1566	.9994	.1254E-04	.6155E-02	.8380
246.4679	4.9434	.0274	4.1288	125.8859	4.4512	1.1533	1.1526	.9992	.1305E-04	.6654E-02	.8247
256.4679	3.8007	.0371	4.2715	128.1973	4.5460	1.1497	1.1489	.9991	.1356E-04	.7153E-02	.8139
266.4679	2.9336	.0500	4.4176	130.4632	4.6385	1.1464	1.1454	.9989	.1406E-04	.7652E-02	.8048
276.4679	2.2733	.0669	4.5670	132.6856	4.7287	1.1434	1.1421	.9988	.1455E-04	.8152E-02	.7973
286.4679	1.7683	.0891	4.7194	134.8661	4.8167	1.1405	1.1390	.9985	.1504E-04	.8651E-02	.7910
296.4679	1.3806	.1181	4.8750	137.0061	4.9024	1.1379	1.1361	.9983	.1552E-04	.9151E-02	.7855
306.4679	1.0816	.1558	5.0334	139.1067	4.9860	1.1355	1.1333	.9980	.1600E-04	.9652E-02	.7809
316.4679	.8507	.2045	5.1945	141.1697	5.0673	1.1333	1.1307	.9976	.1648E-04	.1015E-01	.7768
326.4679	.6712	.2672	5.3584	143.1929	5.1466	1.1313	1.1282	.9972	.1694E-04	.1065E-01	.7733
336.4679	.5315	.3477	5.5248	145.1797	5.2239	1.1295	1.1258	.9967	.1741E-04	.1116E-01	.7701
346.4679	.4222	.4504	5.6936	147.1296	5.2991	1.1278	1.1236	.9961	.1787E-04	.1166E-01	.7673
356.4679	.3365	.5809	5.8645	149.0427	5.3725	1.1264	1.1214	.9954	.1833E-04	.1216E-01	.7647
366.4679	.2691	.7462	6.0376	150.9196	5.4441	1.1251	1.1193	.9947	.1878E-04	.1267E-01	.7624
376.4679	.2160	.9544	6.2125	152.7604	5.5141	1.1241	1.1172	.9938	.1923E-04	.1318E-01	.7603
386.4679	.1739	1.2157	6.3891	154.5658	5.5825	1.1232	1.1153	.9928	.1968E-04	.1369E-01	.7583
396.4679	.1405	1.5421	6.5672	156.3361	5.6493	1.1226	1.1134	.9917	.2012E-04	.1420E-01	.7565
406.4679	.1139	1.9480	6.7466	158.0724	5.7146	1.1222	1.1117	.9905	.2057E-04	.1471E-01	.7548
416.4679	.0926	2.4503	6.9270	159.7764	5.7803	1.1221	1.1100	.9892	.2101E-04	.1523E-01	.7533
426.4679	.0756	3.0689	7.1081	161.4504	5.8444	1.1222	1.1085	.9877	.2145E-04	.1575E-01	.7519
436.4679	.0620	3.8270	7.2897	163.0977	5.9080	1.1226	1.1071	.9861	.2189E-04	.1628E-01	.7506
446.4679	.0510	4.7514	7.4716	164.7229	5.9714	1.1234	1.1059	.9844	.2234E-04	.1681E-01	.7495
456.4679	.0421	5.8724	7.6533	166.3320	6.0348	1.1245	1.1050	.9825	.2279E-04	.1735E-01	.7486
466.4679	.0349	7.2245	7.8346	167.9328	6.0987	1.1260	1.1043	.9806	.2324E-04	.1790E-01	.7479
476.4679	.0290	8.8460	8.0151	169.5321	6.1633	1.1279	1.1041	.9787	.2369E-04	.1846E-01	.7474
486.4679	.0243	10.7793	8.1947	171.1311	6.2290	1.1303	1.1042	.9768	.2415E-04	.1902E-01	.7472
496.4679	.0204	13.0707	8.3728	172.7352	6.2961	1.1331	1.1050	.9749	.2462E-04	.1960E-01	.7472
506.4679	.0172	15.7722	8.5493	174.4838	6.3650	1.1364	1.1064	.9732	.2510E-04	.2019E-01	.7475
516.4679	.0146	18.9342	8.7240	176.2366	6.4357	1.1403	1.1087	.9716	.2560E-04	.2080E-01	.7481
526.4679	.0124	22.6146	8.8965	178.0743	6.5085	1.1447	1.1118	.9704	.2610E-04	.2143E-01	.7488
536.4679	.0107	26.8734	9.0666	180.0195	6.5835	1.1497	1.1160	.9696	.2661E-04	.2207E-01	.7499
546.4679	.0092	31.7730	9.2342	182.0959	6.6606	1.1551	1.1214	.9692	.2715E-04	.2274E-01	.7515
556.4679	.0080	37.3791	9.3991	184.3273	6.7395	1.1611	1.1281	.9695	.2772E-04	.2342E-01	.7535
566.4679	.0069	43.7599	9.5611	186.7370	6.8200	1.1675	1.1362	.9705	.2833E-04	.2414E-01	.7561
576.4679	.0061	50.9873	9.7202	189.3495	6.9014	1.1743	1.1457	.9724	.2898E-04	.2488E-01	.7592
586.4679	.0053	59.1368	9.8760	192.1853	6.9831	1.1814	1.1569	.9751	.2967E-04	.2566E-01	.7629
588.3889	.0052	61.2573	9.9132	192.9078	7.0029	1.1832	1.1598	.9760	.2984E-04	.2585E-01	.7638

S /R= 8.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
247.6560	11.1686	.0122	4.1461	126.1941	4.4616	1.1527	1.1524	.9996	.1311E-04	.6712E-02	.8233
257.6560	8.5893	.0165	4.2894	128.5135	4.5559	1.1491	1.1487	.9995	.1361E-04	.7211E-02	.8126
267.6560	6.6332	.0222	4.4361	130.7844	4.6478	1.1458	1.1453	.9995	.1411E-04	.7710E-02	.8038
277.6560	5.1417	.0297	4.5860	133.0141	4.7374	1.1427	1.1421	.9994	.1461E-04	.8209E-02	.7963
287.6560	4.0008	.0396	4.7392	135.2045	4.8247	1.1398	1.1391	.9993	.1509E-04	.8708E-02	.7901
297.6560	3.1244	.0524	4.8954	137.3574	4.9096	1.1371	1.1363	.9992	.1558E-04	.9207E-02	.7847
307.6560	2.4486	.0692	5.0546	139.4741	4.9922	1.1347	1.1337	.9990	.1606E-04	.9706E-02	.7801
317.6560	1.9257	.0906	5.2167	141.5562	5.0725	1.1324	1.1312	.9989	.1653E-04	.1021E-01	.7760
327.6560	1.5196	.1186	5.3815	143.6045	5.1506	1.1302	1.1289	.9987	.1699E-04	.1071E-01	.7724
337.6560	1.2031	.1544	5.5491	145.6206	5.2264	1.1283	1.1267	.9985	.1746E-04	.1121E-01	.7692
347.6560	.9556	.2001	5.7191	147.6050	5.3000	1.1264	1.1246	.9982	.1792E-04	.1171E-01	.7663
357.6560	.7615	.2582	5.8917	149.5585	5.3715	1.1248	1.1226	.9979	.1837E-04	.1221E-01	.7636
367.6560	.6087	.3320	6.0665	151.4819	5.4408	1.1233	1.1207	.9976	.1882E-04	.1271E-01	.7611
377.6560	.4882	.4250	6.2435	153.3760	5.5081	1.1219	1.1189	.9972	.1927E-04	.1321E-01	.7588
387.6560	.3927	.5421	6.4226	155.2413	5.5733	1.1207	1.1172	.9968	.1971E-04	.1371E-01	.7566
397.6560	.3169	.6888	6.6035	157.0786	5.6366	1.1196	1.1156	.9963	.2015E-04	.1422E-01	.7545
407.6560	.2565	.8719	6.7862	158.8888	5.6980	1.1187	1.1140	.9957	.2058E-04	.1472E-01	.7524
417.6560	.2083	1.0994	6.9705	160.6728	5.7577	1.1179	1.1126	.9951	.2101E-04	.1523E-01	.7504
427.6560	.1697	1.3810	7.1563	162.4319	5.8157	1.1173	1.1113	.9945	.2144E-04	.1574E-01	.7484
437.6560	.1386	1.7283	7.3432	164.1676	5.8722	1.1169	1.1100	.9937	.2187E-04	.1625E-01	.7465
447.6560	.1137	2.1547	7.5312	165.8822	5.9273	1.1167	1.1089	.9929	.2230E-04	.1677E-01	.7447
457.6560	.0935	2.6759	7.7200	167.5781	5.9811	1.1166	1.1079	.9921	.2272E-04	.1728E-01	.7428
467.6560	.0771	3.3105	7.9095	169.2589	6.0339	1.1168	1.1071	.9912	.2315E-04	.1780E-01	.7411
477.6560	.0639	4.0794	8.0993	170.9288	6.0859	1.1172	1.1065	.9902	.2357E-04	.1833E-01	.7394
487.6560	.0531	5.0069	8.2893	172.5932	6.1372	1.1179	1.1061	.9893	.2400E-04	.1886E-01	.7377
497.6560	.0443	6.1205	8.4792	174.2588	6.1880	1.1188	1.1059	.9883	.2442E-04	.1939E-01	.7362
507.6560	.0371	7.4509	8.6687	175.9335	6.2387	1.1201	1.1061	.9874	.2485E-04	.1994E-01	.7348
517.6560	.0311	9.0325	8.8576	177.6270	6.2894	1.1216	1.1067	.9865	.2529E-04	.2049E-01	.7335
527.6560	.0263	10.9030	9.0457	179.3502	6.3404	1.1235	1.1078	.9857	.2573E-04	.2104E-01	.7323
537.6560	.0223	13.1055	9.2326	181.1159	6.3919	1.1258	1.1094	.9851	.2617E-04	.2161E-01	.7313
547.6560	.0189	15.6818	9.4183	182.9384	6.4441	1.1284	1.1116	.9847	.2663E-04	.2219E-01	.7305
557.6560	.0162	18.6810	9.6024	184.8332	6.4972	1.1314	1.1145	.9846	.2709E-04	.2278E-01	.7299
567.6560	.0139	22.1540	9.7847	186.8170	6.5514	1.1349	1.1183	.9848	.2757E-04	.2339E-01	.7294
577.6560	.0120	26.1543	9.9652	188.9071	6.6066	1.1387	1.1229	.9854	.2804E-04	.2401E-01	.7290
587.6560	.0104	30.7382	10.1435	191.1212	6.6628	1.1429	1.1285	.9866	.2854E-04	.2465E-01	.7288
588.9889	.0102	31.3465	10.1654	191.4036	6.6698	1.1435	1.1293	.9868	.2860E-04	.2473E-01	.7288

TABLE III.- Continued

S/R= 9.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
280.4503	11.1717	.0138	4.0290	133.6606	4.7612	1.1417	1.1415	.9996	.1474E-04	.8347E-02	.7944
290.4503	8.7014	.0194	4.7832	135.8470	4.8478	1.1389	1.1386	.9996	.1523E-04	.8846E-02	.7884
300.4503	6.8014	.0243	4.9434	137.9975	4.9316	1.1362	1.1359	.9996	.1571E-04	.9344E-02	.7833
310.4503	5.3350	.0320	5.1006	140.1139	5.0133	1.1337	1.1333	.9995	.1619E-04	.9843E-02	.7788
320.4503	4.1991	.0420	5.2638	142.1973	5.0926	1.1314	1.1309	.9994	.1666E-04	.1034E-01	.7748
330.4503	3.3161	.0549	5.4297	144.2491	5.1696	1.1293	1.1287	.9993	.1712E-04	.1084E-01	.7713
340.4503	2.6273	.0713	5.5983	146.2719	5.2443	1.1273	1.1266	.9992	.1758E-04	.1134E-01	.7682
350.4503	2.0882	.0924	5.7696	148.2651	5.3166	1.1254	1.1246	.9991	.1804E-04	.1184E-01	.7653
360.4503	1.6650	.1192	5.9433	150.2303	5.3867	1.1237	1.1227	.9990	.1849E-04	.1234E-01	.7626
370.4503	1.3316	.1531	6.1195	152.1685	5.4545	1.1221	1.1209	.9988	.1894E-04	.1284E-01	.7601
380.4503	1.0684	.1954	6.2980	154.0805	5.5200	1.1206	1.1193	.9987	.1938E-04	.1334E-01	.7577
390.4503	.8597	.2499	6.4786	155.9673	5.5834	1.1192	1.1177	.9985	.1982E-04	.1384E-01	.7553
400.4503	.6938	.3174	6.6613	157.8295	5.6445	1.1180	1.1162	.9983	.2025E-04	.1434E-01	.7531
410.4503	.5616	.4018	6.8460	159.6682	5.7035	1.1169	1.1148	.9980	.2069E-04	.1484E-01	.7509
420.4503	.4560	.5069	7.0325	161.4841	5.7603	1.1159	1.1135	.9977	.2111E-04	.1535E-01	.7487
430.4503	.3713	.6371	7.2207	163.2783	5.8151	1.1150	1.1123	.9974	.2154E-04	.1585E-01	.7469
440.4503	.3032	.7986	7.4105	165.0519	5.8679	1.1142	1.1111	.9971	.2196E-04	.1635E-01	.7446
450.4503	.2484	.9961	7.6017	166.8059	5.9188	1.1135	1.1101	.9968	.2237E-04	.1686E-01	.7421
460.4503	.2040	1.2389	7.7942	168.5421	5.9678	1.1130	1.1091	.9964	.2279E-04	.1737E-01	.7398
470.4503	.1681	1.5357	7.9878	170.2622	6.0151	1.1126	1.1083	.9960	.2320E-04	.1787E-01	.7376
480.4503	.1384	1.8969	8.1824	171.9684	6.0606	1.1124	1.1075	.9955	.2361E-04	.1838E-01	.7353
490.4503	.1152	2.3350	8.3779	173.6635	6.1046	1.1123	1.1069	.9951	.2402E-04	.1890E-01	.7330
500.4503	.0958	2.8641	8.5734	175.3506	6.1472	1.1123	1.1065	.9946	.2443E-04	.1941E-01	.7307
510.4503	.0799	3.5008	8.7704	177.0338	6.1884	1.1126	1.1062	.9942	.2484E-04	.1993E-01	.7284
520.4503	.0668	4.2634	8.9671	178.7179	6.2285	1.1130	1.1062	.9938	.2524E-04	.2045E-01	.7262
530.4503	.0561	5.1736	9.1639	180.4081	6.2675	1.1136	1.1064	.9934	.2565E-04	.2098E-01	.7239
540.4503	.0473	6.2551	9.3609	182.1115	6.3057	1.1144	1.1069	.9931	.2606E-04	.2151E-01	.7216
550.4503	.0400	7.5347	9.5584	183.8356	6.3432	1.1155	1.1077	.9928	.2647E-04	.2205E-01	.7194
560.4503	.0339	9.0417	9.7566	185.5891	6.3802	1.1168	1.1089	.9927	.2689E-04	.2259E-01	.7173
570.4503	.0289	10.8104	9.9476	187.3819	6.4168	1.1183	1.1105	.9926	.2730E-04	.2314E-01	.7152
580.4503	.0247	12.8734	10.1417	189.2250	6.4532	1.1202	1.1127	.9931	.2773E-04	.2370E-01	.7132
588.8889	.0217	14.8721	10.3046	190.8281	6.4849	1.1219	1.1149	.9935	.2809E-04	.2416E-01	.7116

S/R= 9.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
314.9239	11.1717	.0155	5.1737	141.0754	5.0483	1.1326	1.1324	.9997	.1640E-04	.1007E-01	.7769
324.9239	8.8048	.0203	5.3383	143.1500	5.1264	1.1303	1.1301	.9997	.1686E-04	.1056E-01	.7731
334.9239	6.9629	.0265	5.5056	145.1946	5.2022	1.1282	1.1279	.9996	.1733E-04	.1106E-01	.7698
344.9239	5.5240	.0344	5.6756	147.2106	5.2756	1.1262	1.1259	.9996	.1779E-04	.1156E-01	.7667
354.9239	4.3964	.0445	5.8482	149.1992	5.3466	1.1244	1.1240	.9995	.1824E-04	.1206E-01	.7639
364.9239	3.5097	.0573	6.0234	151.1614	5.4153	1.1227	1.1222	.9995	.1869E-04	.1256E-01	.7613
374.9239	2.8168	.0734	6.2008	153.0984	5.4816	1.1210	1.1205	.9994	.1913E-04	.1306E-01	.7588
384.9239	2.2572	.0939	6.3807	155.0109	5.5456	1.1195	1.1189	.9993	.1957E-04	.1356E-01	.7564
394.9239	1.8183	.1196	6.5628	156.9000	5.6073	1.1182	1.1174	.9992	.2001E-04	.1406E-01	.7540
404.9239	1.4690	.1517	6.7470	158.7666	5.6667	1.1169	1.1160	.9991	.2044E-04	.1456E-01	.7517
414.9239	1.1902	.1919	6.9332	160.6114	5.7238	1.1157	1.1147	.9990	.2087E-04	.1506E-01	.7495
424.9239	.9671	.2418	7.1213	162.4353	5.7787	1.1146	1.1135	.9989	.2129E-04	.1556E-01	.7472
434.9239	.7880	.3037	7.3112	164.2392	5.8313	1.1136	1.1123	.9988	.2171E-04	.1606E-01	.7449
444.9239	.6439	.3802	7.5029	166.0240	5.8817	1.1127	1.1113	.9986	.2213E-04	.1656E-01	.7425
454.9239	.5277	.4743	7.6961	167.7906	5.9299	1.1118	1.1103	.9984	.2254E-04	.1706E-01	.7402
464.9239	.4336	.5896	7.8908	169.5401	5.9760	1.1111	1.1094	.9983	.2295E-04	.1756E-01	.7377
474.9239	.3573	.7310	8.0869	171.2737	6.0199	1.1105	1.1085	.9981	.2336E-04	.1807E-01	.7353
484.9239	.2953	.9030	8.2841	172.9927	6.0618	1.1100	1.1078	.9979	.2376E-04	.1857E-01	.7327
494.9239	.2447	1.1120	8.4825	174.6987	6.1017	1.1095	1.1071	.9977	.2416E-04	.1908E-01	.7301
504.9239	.2033	1.3649	8.6819	176.3935	6.1397	1.1092	1.1066	.9975	.2456E-04	.1958E-01	.7274
514.9239	.1694	1.6699	8.8821	178.0793	6.1758	1.1090	1.1062	.9973	.2496E-04	.2009E-01	.7247
524.9239	.1416	2.0366	9.0829	179.7566	6.2100	1.1089	1.1059	.9971	.2535E-04	.2060E-01	.7219
534.9239	.1187	2.4757	9.2843	181.4343	6.2426	1.1089	1.1057	.9969	.2574E-04	.2111E-01	.7191
544.9239	.0998	2.9998	9.4862	183.1100	6.2735	1.1091	1.1057	.9968	.2613E-04	.2163E-01	.7162
554.9239	.0841	3.6229	9.6882	184.7896	6.3028	1.1094	1.1059	.9967	.2652E-04	.2214E-01	.7133
564.9239	.0711	4.3611	9.8904	186.4780	6.3308	1.1098	1.1063	.9967	.2692E-04	.2266E-01	.7103
574.9239	.0603	5.2323	10.0924	188.1805	6.3574	1.1104	1.1069	.9967	.2731E-04	.2319E-01	.7073
584.9239	.0513	6.2565	10.2942	189.9032	6.3827	1.1112	1.1079	.9969	.2770E-04	.2371E-01	.7043
588.8889	.0482	6.7108	10.3741	190.5934	6.3925	1.1115	1.1083	.9970	.2785E-04	.2392E-01	.7031

TABLE III.- Continued

S/R=10.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
351.1382	11.1717	.0173	5.7630	148.4703	5.3193	1.1250	1.1248	.9997	.1807E-04	.1187E-01	.7649
361.1382	8.9076	.0223	5.9573	150.4462	5.3887	1.1232	1.1230	.9997	.1852E-04	.1237E-01	.7622
371.1382	7.1232	.0287	6.1340	152.3959	5.4558	1.1215	1.1213	.9997	.1897E-04	.1287E-01	.7596
381.1382	5.7148	.0367	6.3132	154.3235	5.5205	1.1199	1.1197	.9996	.1941E-04	.1337E-01	.7572
391.1382	4.5979	.0469	6.4946	156.2269	5.5828	1.1185	1.1182	.9996	.1984E-04	.1387E-01	.7548
401.1382	3.7100	.0595	6.6783	158.1081	5.6427	1.1171	1.1168	.9996	.2028E-04	.1436E-01	.7525
411.1382	3.0022	.0754	6.8640	159.9679	5.7003	1.1158	1.1154	.9995	.2071E-04	.1486E-01	.7502
421.1382	2.4363	.0952	7.0518	161.8071	5.7556	1.1146	1.1142	.9995	.2113E-04	.1536E-01	.7479
431.1382	1.9826	.1197	7.2415	163.6266	5.8085	1.1135	1.1130	.9994	.2155E-04	.1586E-01	.7459
441.1382	1.6179	.1501	7.4330	165.4272	5.8591	1.1125	1.1119	.9994	.2197E-04	.1636E-01	.7431
451.1382	1.3239	.1876	7.6262	167.2096	5.9074	1.1116	1.1109	.9993	.2238E-04	.1686E-01	.7407
461.1382	1.0863	.2337	7.8210	168.9747	5.9535	1.1107	1.1100	.9992	.2279E-04	.1736E-01	.7382
471.1382	.8937	.2902	8.0174	170.7233	5.9972	1.1099	1.1091	.9991	.2319E-04	.1786E-01	.7357
481.1382	.7373	.3592	8.2152	172.4563	6.0387	1.1092	1.1083	.9991	.2360E-04	.1836E-01	.7331
491.1382	.6099	.4432	8.4143	174.1747	6.0779	1.1086	1.1076	.9990	.2399E-04	.1886E-01	.7304
501.1382	.5058	.5452	8.6146	175.8796	6.1149	1.1080	1.1069	.9989	.2439E-04	.1937E-01	.7276
511.1382	.4207	.6686	8.8160	177.5720	6.1498	1.1075	1.1064	.9988	.2478E-04	.1987E-01	.7247
521.1382	.3508	.8175	9.0184	179.2533	6.1825	1.1072	1.1059	.9987	.2517E-04	.2037E-01	.7217
531.1382	.2933	.9964	9.2216	180.9250	6.2130	1.1068	1.1055	.9986	.2556E-04	.2087E-01	.7187
541.1382	.2459	1.2109	9.4256	182.5888	6.2415	1.1066	1.1052	.9986	.2594E-04	.2138E-01	.7156
551.1382	.2067	1.4671	9.6303	184.2457	6.2680	1.1065	1.1050	.9985	.2633E-04	.2189E-01	.7123
561.1382	.1742	1.7721	9.8354	185.9008	6.2925	1.1064	1.1049	.9985	.2671E-04	.2239E-01	.7090
571.1382	.1472	2.1341	10.0410	187.5539	6.3151	1.1064	1.1049	.9985	.2709E-04	.2290E-01	.7056
581.1382	.1248	2.5623	10.2468	189.2088	6.3358	1.1066	1.1051	.9985	.2746E-04	.2341E-01	.7021
588.8889	.1100	2.9467	10.4064	190.4945	6.3506	1.1068	1.1054	.9986	.2775E-04	.2381E-01	.6994

S/R=10.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
389.2419	11.1692	.0192	6.4505	155.8841	5.5705	1.1186	1.1185	.9998	.1976E-04	.1377E-01	.7552
399.2419	9.0058	.0244	6.6438	157.7720	5.6308	1.1172	1.1171	.9997	.2019E-04	.1427E-01	.7529
409.2419	7.2839	.0309	6.8293	159.6387	5.6887	1.1159	1.1158	.9997	.2062E-04	.1477E-01	.7505
419.2419	5.9072	.0391	7.0168	161.4850	5.7442	1.1147	1.1145	.9997	.2105E-04	.1527E-01	.7482
429.2419	4.8042	.0492	7.2063	163.3116	5.7974	1.1136	1.1133	.9997	.2147E-04	.1576E-01	.7459
439.2419	3.9179	.0617	7.3977	165.1194	5.8482	1.1125	1.1122	.9997	.2189E-04	.1626E-01	.7435
449.2419	3.2038	.0772	7.5908	166.9091	5.8966	1.1115	1.1112	.9996	.2230E-04	.1676E-01	.7410
459.2419	2.6270	.0963	7.7857	168.6815	5.9427	1.1106	1.1103	.9996	.2271E-04	.1726E-01	.7386
469.2419	2.1598	.1197	7.9821	170.4372	5.9864	1.1097	1.1094	.9996	.2311E-04	.1776E-01	.7360
479.2419	1.7804	.1482	8.1800	172.1769	6.0278	1.1089	1.1086	.9995	.2352E-04	.1826E-01	.7333
489.2419	1.4716	.1831	8.3793	173.9015	6.0669	1.1082	1.1078	.9995	.2391E-04	.1876E-01	.7306
499.2419	1.2195	.2254	8.5800	175.6117	6.1036	1.1076	1.1071	.9994	.2431E-04	.1926E-01	.7276
509.2419	1.0132	.2768	8.7818	177.3083	6.1381	1.1070	1.1065	.9994	.2470E-04	.1976E-01	.7248
519.2419	.8440	.3388	8.9846	178.9921	6.1702	1.1065	1.1059	.9994	.2509E-04	.2026E-01	.7218
529.2419	.7049	.4134	9.1887	180.6641	6.2001	1.1060	1.1054	.9993	.2547E-04	.2076E-01	.7187
539.2419	.5902	.5030	9.3936	182.3251	6.2277	1.1056	1.1050	.9993	.2586E-04	.2126E-01	.7155
549.2419	.4955	.6103	9.5993	183.9764	6.2531	1.1053	1.1047	.9993	.2624E-04	.2176E-01	.7121
559.2419	.4170	.7383	9.8057	185.6192	6.2762	1.1050	1.1044	.9993	.2661E-04	.2227E-01	.7087
569.2419	.3519	.8907	10.0127	187.2547	6.2972	1.1049	1.1042	.9993	.2699E-04	.2277E-01	.7051
579.2419	.2977	1.0713	10.2202	188.8845	6.3160	1.1047	1.1041	.9993	.2736E-04	.2327E-01	.7014
588.8889	.2540	1.2767	10.4208	190.4529	6.3321	1.1047	1.1041	.9993	.2771E-04	.2376E-01	.6978

TABLE III.- Concluded

S/R=11.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
429.3742	11.1717	.0212	7.2093	163.3479	5.7975	1.1135	1.1134	.9998	.2147E-04	.1577E-01	.7458
439.3742	9.1098	.0266	7.4007	165.1571	5.8482	1.1124	1.1123	.9998	.2189E-04	.1627E-01	.7434
449.3742	7.4492	.0332	7.5940	166.9482	5.8965	1.1114	1.1113	.9998	.2230E-04	.1677E-01	.7410
459.3742	6.1078	.0414	7.7890	168.7221	5.9423	1.1104	1.1103	.9997	.2271E-04	.1727E-01	.7385
469.3742	5.0213	.0515	7.9856	170.4793	5.9859	1.1096	1.1094	.9997	.2312E-04	.1776E-01	.7359
479.3742	4.1390	.0638	8.1837	172.2206	6.0270	1.1088	1.1086	.9997	.2352E-04	.1826E-01	.7332
489.3742	3.4206	.0788	8.3832	173.9465	6.0656	1.1080	1.1078	.9997	.2392E-04	.1876E-01	.7304
499.3742	2.8343	.0970	8.5841	175.6573	6.1022	1.1073	1.1071	.9997	.2431E-04	.1926E-01	.7276
509.3742	2.3545	.1192	8.7862	177.3550	6.1362	1.1067	1.1065	.9997	.2470E-04	.1976E-01	.7246
519.3742	1.9610	.1459	8.9895	179.0389	6.1679	1.1061	1.1059	.9997	.2509E-04	.2026E-01	.7216
529.3742	1.6374	.1781	9.1939	180.7101	6.1973	1.1056	1.1054	.9996	.2547E-04	.2076E-01	.7184
539.3742	1.3707	.2167	9.3992	182.3693	6.2243	1.1052	1.1049	.9996	.2585E-04	.2126E-01	.7151
549.3742	1.1503	.2630	9.6055	184.0173	6.2490	1.1048	1.1045	.9996	.2623E-04	.2176E-01	.7117
559.3742	.9678	.3183	9.8124	185.6548	6.2714	1.1045	1.1042	.9996	.2661E-04	.2226E-01	.7082
569.3742	.8162	.3842	10.0201	187.2826	6.2915	1.1042	1.1039	.9996	.2698E-04	.2276E-01	.7046
579.3742	.6902	.4623	10.2284	188.9017	6.3092	1.1039	1.1037	.9996	.2735E-04	.2326E-01	.7008
588.8889	.5897	.5506	10.4270	190.4350	6.3240	1.1038	1.1035	.9996	.2770E-04	.2374E-01	.6971

S/R=11.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
471.7946	11.1696	.0233	8.0338	170.9105	5.9955	1.1093	1.1092	.9998	.2321E-04	.1788E-01	.7352
481.7946	9.2121	.0286	8.2323	172.6487	6.0360	1.1085	1.1084	.9998	.2361E-04	.1838E-01	.7325
491.7946	7.6180	.0356	8.4323	174.3717	6.0741	1.1078	1.1077	.9998	.2401E-04	.1888E-01	.7297
501.7946	6.3156	.0436	8.6336	176.0800	6.1098	1.1071	1.1070	.9998	.2440E-04	.1938E-01	.7268
511.7946	5.2494	.0537	8.8361	177.7743	6.1431	1.1064	1.1064	.9998	.2479E-04	.1988E-01	.7238
521.7946	4.3743	.0657	9.0399	179.4551	6.1741	1.1059	1.1058	.9998	.2518E-04	.2038E-01	.7207
531.7946	3.6543	.0802	9.2446	181.1230	6.2026	1.1054	1.1052	.9998	.2556E-04	.2088E-01	.7175
541.7946	3.0605	.0975	9.4504	182.7785	6.2289	1.1049	1.1048	.9998	.2594E-04	.2138E-01	.7142
551.7946	2.5696	.1183	9.6570	184.4223	6.2527	1.1045	1.1044	.9998	.2632E-04	.2187E-01	.7107
561.7946	2.1627	.1431	9.8644	186.0550	6.2742	1.1041	1.1040	.9998	.2669E-04	.2237E-01	.7072
571.7946	1.8248	.1726	10.0726	187.6771	6.2933	1.1038	1.1037	.9998	.2707E-04	.2287E-01	.7035
581.7946	1.5435	.2076	10.2813	189.2893	6.3101	1.1035	1.1034	.9998	.2743E-04	.2337E-01	.6997
588.8889	1.3725	.2363	10.4297	190.4274	6.3205	1.1034	1.1033	.9998	.2769E-04	.2373E-01	.6969

S/R=12.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
516.7863	11.1717	.0255	8.9381	176.6195	6.1584	1.1061	1.1061	.9998	.2499E-04	.2013E-01	.7223
526.7863	9.3200	.0311	9.1424	180.2937	6.1681	1.1055	1.1055	.9998	.2537E-04	.2063E-01	.7191
536.7863	7.7952	.0379	9.3477	181.9551	6.2154	1.1050	1.1050	.9998	.2575E-04	.2112E-01	.7158
546.7863	6.5362	.0461	9.5540	183.6042	6.2403	1.1046	1.1045	.9998	.2613E-04	.2162E-01	.7124
556.7863	5.4941	.0558	9.7612	185.2415	6.2628	1.1042	1.1041	.9998	.2651E-04	.2212E-01	.7089
566.7863	4.6296	.0674	9.9691	186.8676	6.2830	1.1038	1.1038	.9998	.2688E-04	.2262E-01	.7053
576.7863	3.9107	.0812	10.1777	188.4829	6.3007	1.1035	1.1035	.9998	.2725E-04	.2312E-01	.7015
586.7863	3.3114	.0976	10.3869	190.0879	6.3161	1.1033	1.1032	.9998	.2761E-04	.2362E-01	.6976
588.8889	3.1982	.1014	10.4309	190.4241	6.3191	1.1032	1.1032	.9998	.2769E-04	.2372E-01	.6968

S/R=12.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
564.7714	11.1717	.0278	9.9275	186.5417	6.2786	1.1039	1.1038	.9998	.2680E-04	.2252E-01	.7060
574.7714	9.4312	.0336	10.1360	188.1583	6.2968	1.1035	1.1035	.9998	.2717E-04	.2302E-01	.7022
584.7714	7.9816	.0404	10.3451	189.7644	6.3126	1.1033	1.1032	.9998	.2754E-04	.2352E-01	.6984
588.8889	7.4560	.0435	10.4314	190.4227	6.3184	1.1032	1.1031	.9998	.2769E-04	.2372E-01	.6967

TABLE IV.- THERMODYNAMIC AND TRANSPORT PROPERTIES OF CF_4 AT CONSTANT ENTROPY

s /R = 24.0000

T K	V m^3/kg	p atm	h/RT	a m/sec	c_p/R	γ	γ_e	Z	μ $N\text{-}s/m^2$	k W/m-K	N_{Pr}
224.9147	.0026	34.1923	9.5341	102.9286	63.3612	8.8578	1.1652	.4279	.1958E-04	.1638E-01	7.1544
234.9147	.0022	42.3870	9.6112	111.7056	39.5330	5.4776	1.3175	.4268	.2202E-04	.1875E-01	4.3876
244.9147	.0019	53.4287	9.6989	125.1756	26.7621	3.7009	1.5444	.4385	.2490E-04	.2151E-01	2.9271
253.1879	.0017	65.6982	9.7834	140.7035	21.0377	2.9172	1.7969	.4606	.2776E-04	.2414E-01	2.2860

s/R=24.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
218.2492	.0040	27.9155	9.8594	109.3885	20.9160	3.1035	1.0629	.5460	.1639E-04	.1342E-01	2.4143
228.2492	.0033	34.1068	9.9475	111.9879	22.1204	3.2076	1.0979	.5297	.1797E-04	.1507E-01	2.4913
238.2492	.0028	41.6825	10.0372	116.8573	21.9377	3.1267	1.1683	.5193	.1984E-04	.1696E-01	2.4236
248.2492	.0023	51.1977	10.1317	124.8923	20.3818	2.8714	1.2857	.5173	.2204E-04	.1913E-01	2.2181
258.2492	.0020	63.4866	10.2356	137.0299	18.1927	2.5467	1.4609	.5269	.2461E-04	.2163E-01	1.9556
268.2492	.0017	79.7543	10.3538	154.2523	16.1191	2.2516	1.7033	.5512	.2761E-04	.2449E-01	1.7164
271.4230	.0017	85.9998	10.3952	160.9584	15.5446	2.1713	1.7958	.5627	.2870E-04	.2548E-01	1.6544

s/R=25.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
204.6224	.0072	17.9884	10.0373	119.5555	11.4587	1.8761	1.0872	.6801	.1382E-04	.1064E-01	1.4060
214.6224	.0059	22.3872	10.1496	120.0092	12.3747	1.9575	1.0775	.6592	.1482E-04	.1184E-01	1.4636
224.6224	.0048	27.6230	10.2592	120.8828	13.3254	2.0449	1.0771	.6394	.1595E-04	.1315E-01	1.5277
234.6224	.0040	33.8521	10.3669	122.6071	14.2182	2.1258	1.0909	.6217	.1725E-04	.1459E-01	1.5883
244.6224	.0034	41.3045	10.4741	125.7434	14.8984	2.1798	1.1257	.6078	.1876E-04	.1620E-01	1.6360
254.6224	.0028	50.3348	10.5829	130.9721	15.1952	2.1853	1.1895	.5995	.2053E-04	.1802E-01	1.6356
264.6224	.0024	61.4671	10.6965	139.0706	15.0202	2.1324	1.2909	.5993	.2259E-04	.2008E-01	1.5965
274.6224	.0021	75.4830	10.8188	150.8607	14.4584	2.0340	1.4387	.6097	.2497E-04	.2241E-01	1.5214
284.6224	.0018	93.4779	10.9545	167.2003	13.7077	1.9167	1.6406	.6337	.2766E-04	.2506E-01	1.4295
291.0609	.0017	107.8384	11.0517	180.5435	13.2134	1.8425	1.8020	.6579	.2970E-04	.2694E-01	1.3765

s/R=25.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
185.6875	.0156	8.8776	10.0194	127.1908	8.0535	1.5009	1.1492	.8025	.1190E-04	.8231E-02	1.0998
195.6875	.0125	11.4345	10.1594	128.2624	8.5277	1.5245	1.1327	.7856	.1263E-04	.9175E-02	1.1089
205.6875	.0101	14.5693	10.2975	129.1263	9.0373	1.5539	1.1176	.7678	.1340E-04	.1017E-01	1.1252
215.6875	.0082	18.3706	10.4332	129.8870	9.5839	1.5898	1.1048	.7494	.1423E-04	.1122E-01	1.1482
225.6875	.0067	22.9437	10.5660	130.6918	10.1679	1.6320	1.0962	.7308	.1515E-04	.1235E-01	1.1776
235.6875	.0055	28.4035	10.6960	131.7747	10.7779	1.6794	1.0941	.7128	.1616E-04	.1357E-01	1.2121
245.6875	.0046	34.8948	10.8237	133.4564	11.3875	1.7283	1.1019	.6964	.1731E-04	.1491E-01	1.2492
255.6875	.0038	42.6117	10.9501	136.1587	11.9487	1.7724	1.1242	.6827	.1863E-04	.1637E-01	1.2841
265.6875	.0032	51.8348	11.0765	140.4036	12.3947	1.8032	1.1665	.6733	.2015E-04	.1800E-01	1.3105
275.6875	.0027	62.9558	11.2057	146.8102	12.6538	1.8115	1.2350	.6701	.2191E-04	.1982E-01	1.3211
285.6875	.0023	76.5558	11.3406	156.0600	12.6897	1.7931	1.3368	.6751	.2393E-04	.2186E-01	1.3122
295.6875	.0020	93.4503	11.4852	168.8854	12.5231	1.7512	1.4783	.6907	.2624E-04	.2416E-01	1.2851
305.6875	.0018	114.7520	11.6443	186.0488	12.2240	1.6949	1.6657	.7196	.2883E-04	.2672E-01	1.2458
311.9804	.0017	131.0571	11.7542	199.4150	12.0059	1.6569	1.8089	.7459	.3073E-04	.2846E-01	1.2238

TABLE IV.- Continued

s/R=26.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
167.3852	.0362	3.8231	9.8817	129.5979	6.4883	1.3688	1.1978	.8868	.1047E-04	.6427E-02	.9989
177.3852	.0285	5.0881	10.0405	131.7817	6.8038	1.3725	1.1832	.8759	.1114E-04	.7258E-02	.9866
187.3852	.0225	6.6966	10.1999	133.6981	7.1332	1.3790	1.1688	.8640	.1182E-04	.8112E-02	.9816
197.3852	.0180	8.7215	10.3593	135.3569	7.4788	1.3885	1.1547	.8509	.1250E-04	.8993E-02	.9823
207.3852	.0144	11.2434	10.5180	136.7834	7.8427	1.4014	1.1412	.8368	.1320E-04	.9909E-02	.9872
217.3852	.0116	14.3517	10.6753	138.0231	8.2272	1.4191	1.1287	.8218	.1393E-04	.1087E-01	.9962
227.3852	.0094	18.1440	10.8305	139.1516	8.6339	1.4389	1.1181	.8062	.1470E-04	.1187E-01	1.0097
237.3852	.0077	22.7275	10.9834	140.2863	9.0632	1.4640	1.1105	.7902	.1553E-04	.1294E-01	1.0273
247.3852	.0063	28.2217	11.1336	141.5989	9.5119	1.4930	1.1077	.7745	.1644E-04	.1409E-01	1.0488
257.3852	.0052	34.7662	11.2813	143.3283	9.9715	1.5248	1.1118	.7599	.1746E-04	.1533E-01	1.0735
267.3852	.0044	42.5335	11.4272	145.7904	10.4244	1.5572	1.1261	.7472	.1862E-04	.1667E-01	1.0998
277.3852	.0037	51.7502	11.5723	149.3822	10.8429	1.5865	1.1544	.7377	.1993E-04	.1815E-01	1.1253
287.3852	.0031	62.7372	11.7182	154.5787	11.1918	1.6081	1.2011	.7328	.2145E-04	.1977E-01	1.1466
297.3852	.0027	75.9152	11.8677	161.9295	11.4338	1.6173	1.2713	.7342	.2318E-04	.2158E-01	1.1600
307.3852	.0023	91.8977	12.0237	172.0391	11.5483	1.6115	1.3704	.7438	.2515E-04	.2359E-01	1.1631
317.3852	.0020	111.5172	12.1902	185.5628	11.5396	1.5916	1.5037	.7637	.2738E-04	.2583E-01	1.1556
327.3852	.0018	135.8863	12.3718	203.1870	11.4373	1.5611	1.6761	.7964	.2986E-04	.2831E-01	1.1394
334.0793	.0017	155.5405	12.5044	217.5984	11.3379	1.5375	1.8147	.8268	.3179E-04	.3012E-01	1.1305

s/R=26.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
152.3411	.0824	1.6150	9.7141	128.7022	5.6610	1.3174	1.2290	.9365	.9422E-05	.5130E-02	.9823
162.3411	.0638	2.2060	9.8816	131.6946	5.9087	1.3133	1.2158	.9301	.1007E-04	.5912E-02	.9504
172.3411	.0498	2.9789	10.0520	134.4565	6.1626	1.3109	1.2031	.9229	.1071E-04	.6704E-02	.9298
182.3411	.0391	3.9806	10.2248	136.9869	6.4238	1.3103	1.1907	.9149	.1135E-04	.7510E-02	.9171
192.3411	.0309	5.2660	10.3994	139.2883	6.6931	1.3115	1.1785	.9060	.1200E-04	.8333E-02	.9103
202.3411	.0245	6.8997	10.5751	141.3652	6.9717	1.3147	1.1666	.8962	.1265E-04	.9176E-02	.9080
212.3411	.0196	8.9567	10.7513	143.2279	7.2611	1.3202	1.1550	.8854	.1331E-04	.1004E-01	.9093
222.3411	.0157	11.5191	10.9274	144.9026	7.5624	1.3281	1.1441	.8737	.1399E-04	.1094E-01	.9134
232.3411	.0127	14.6832	11.1025	146.4255	7.8773	1.3387	1.1342	.8613	.1468E-04	.1188E-01	.9199
242.3411	.0103	18.5521	11.2760	147.8619	8.2071	1.3523	1.1259	.8482	.1541E-04	.1286E-01	.9293
252.3411	.0085	23.2396	11.4476	149.3090	8.5521	1.3689	1.1201	.8349	.1619E-04	.1389E-01	.9417
262.3411	.0070	28.8718	11.6168	150.9074	8.9114	1.3884	1.1181	.8218	.1704E-04	.1499E-01	.9569
272.3411	.0058	35.5915	11.7837	152.8497	9.2814	1.4105	1.1218	.8095	.1797E-04	.1616E-01	.9749
282.3411	.0048	43.5676	11.9487	155.3887	9.6540	1.4340	1.1333	.7988	.1902E-04	.1743E-01	.9950
292.3411	.0041	53.0103	12.1126	158.8413	10.0161	1.4572	1.1554	.7907	.2021E-04	.1881E-01	1.0162
302.3411	.0035	64.2039	12.2766	163.5882	10.3494	1.4778	1.1916	.7863	.2156E-04	.2032E-01	1.0370
312.3411	.0030	77.4999	12.4430	170.0749	10.6306	1.4927	1.2455	.7871	.2309E-04	.2198E-01	1.0550
322.3411	.0026	93.4041	12.6142	178.8008	10.8404	1.4994	1.3214	.7945	.2484E-04	.2381E-01	1.0683
332.3411	.0022	112.5926	12.7936	190.3224	10.9674	1.4965	1.4235	.8105	.2682E-04	.2584E-01	1.0753
342.3411	.0020	135.9678	12.9851	205.2464	11.0144	1.4844	1.5564	.8369	.2902E-04	.2808E-01	1.0757
352.3411	.0017	164.7085	13.1936	224.2031	10.9980	1.4652	1.7238	.8761	.3149E-04	.3054E-01	1.0712
357.2352	.0017	181.1676	13.3034	235.1281	10.9747	1.4542	1.8189	.9006	.3287E-04	.3183E-01	1.0704

TABLE IV.- Continued

S/R=27.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
140.3462	.1807	.6985	9.5552	126.4256	5.1779	1.2975	1.2499	.9645	.8621E-05	.4165E-02	1.0126
150.3462	.1383	.9738	9.7251	129.9367	5.3923	1.2895	1.2372	.9608	.9260E-05	.4925E-02	.9578
160.3462	.1067	1.3410	9.8995	133.2475	5.6093	1.2828	1.2252	.9567	.9893E-05	.5690E-02	.9213
170.3462	.0828	1.8267	10.0779	136.3613	5.8297	1.2775	1.2137	.9520	.1052E-04	.6462E-02	.8967
180.3462	.0646	2.4633	10.2599	139.2813	6.0537	1.2735	1.2027	.9468	.1115E-04	.7243E-02	.8802
190.3462	.0507	3.2903	10.4452	142.0084	6.2820	1.2708	1.1920	.9409	.1177E-04	.8033E-02	.8695
200.3462	.0401	4.3556	10.6331	144.5439	6.5151	1.2695	1.1816	.9342	.1239E-04	.8836E-02	.8633
210.3462	.0318	5.7161	10.8231	146.8903	6.7540	1.2697	1.1715	.9269	.1302E-04	.9655E-02	.8605
220.3462	.0254	7.4403	11.0145	149.0520	6.9996	1.2714	1.1617	.9187	.1365E-04	.1049E-01	.8605
230.3462	.0204	9.5997	11.2069	151.0489	7.2522	1.2749	1.1524	.9098	.1429E-04	.1135E-01	.8627
240.3462	.0164	12.2902	11.3993	152.8951	7.5139	1.2803	1.1438	.9002	.1495E-04	.1224E-01	.8669
250.3462	.0133	15.6064	11.5912	154.6343	7.7853	1.2877	1.1361	.8899	.1561E-04	.1316E-01	.8725
260.3462	.0109	19.6591	11.7819	156.3253	8.0673	1.2974	1.1301	.8792	.1631E-04	.1413E-01	.8801
270.3462	.0089	24.5693	11.9711	158.0563	8.3606	1.3093	1.1264	.8684	.1706E-04	.1514E-01	.8899
280.3462	.0074	30.4709	12.1582	159.9510	8.6647	1.3236	1.1261	.8578	.1786E-04	.1621E-01	.9019
290.3462	.0061	37.5142	12.3434	162.1762	8.9777	1.3398	1.1307	.8481	.1874E-04	.1735E-01	.9162
300.3462	.0051	45.8728	12.5268	164.9467	9.2952	1.3575	1.1419	.8398	.1972E-04	.1858E-01	.9324
310.3462	.0043	55.7557	12.7092	168.5287	9.6098	1.3757	1.1619	.8338	.2082E-04	.1990E-01	.9501
320.3462	.0037	67.4375	12.8915	173.2411	9.9110	1.3929	1.1933	.8311	.2207E-04	.2133E-01	.9686
330.3462	.0032	81.2389	13.0758	179.4554	10.1841	1.4073	1.2390	.8329	.2348E-04	.2290E-01	.9864
340.3462	.0027	97.6155	13.2642	187.5934	10.4153	1.4170	1.3023	.8405	.2508E-04	.2462E-01	1.0023
350.3462	.0024	117.1615	13.4596	198.1318	10.5931	1.4207	1.3867	.8554	.2688E-04	.2651E-01	1.0149
360.3462	.0021	140.6613	13.6655	211.6047	10.7123	1.4176	1.4959	.8793	.2889E-04	.2858E-01	1.0231
370.3462	.0019	169.1376	13.8862	228.5922	10.7768	1.4084	1.6338	.9142	.3112E-04	.3086E-01	1.0268
380.3462	.0017	203.8933	14.1267	249.6684	10.7991	1.3945	1.8029	.9622	.3367E-04	.3335E-01	1.0298
381.3788	.0017	207.8988	14.1529	252.0961	10.7997	1.3929	1.8222	.9680	.3395E-04	.3362E-01	1.0304

S/R=27.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
130.6630	.3821	.3125	9.4153	123.7217	4.8703	1.2917	1.2654	.9800	.7985E-05	.3414E-02	1.0762
140.6630	.2898	.4426	9.5845	127.5745	5.0673	1.2813	1.2524	.9779	.8626E-05	.4164E-02	.9917
150.6630	.2214	.6191	9.7590	131.2386	5.2652	1.2721	1.2404	.9756	.9260E-05	.4917E-02	.9367
160.6630	.1703	.8557	9.9386	134.7252	5.4644	1.2642	1.2292	.9729	.9886E-05	.5673E-02	.8996
170.6630	.1319	1.1705	10.1230	138.0416	5.6649	1.2574	1.2186	.9699	.1051E-04	.6434E-02	.8739
180.6630	.1027	1.5856	10.3118	141.1926	5.8672	1.2516	1.2085	.9665	.1112E-04	.7199E-02	.8561
190.6630	.0804	2.1289	10.5048	144.1810	6.0715	1.2469	1.1989	.9626	.1173E-04	.7971E-02	.8439
200.6630	.0633	2.8343	10.7016	147.0087	6.2782	1.2433	1.1897	.9583	.1233E-04	.8751E-02	.8360
210.6630	.0500	3.7435	10.9016	149.6770	6.4877	1.2408	1.1808	.9533	.1294E-04	.9541E-02	.8312
220.6630	.0397	4.9064	11.1045	152.1882	6.7007	1.2394	1.1722	.9478	.1354E-04	.1034E-01	.8289
230.6630	.0317	6.3835	11.3096	154.5457	6.9179	1.2392	1.1639	.9417	.1415E-04	.1116E-01	.8287
240.6630	.0255	8.2400	11.5164	156.7623	7.1396	1.2402	1.1561	.9350	.1476E-04	.1199E-01	.8302
250.6630	.0205	10.5645	11.7242	158.8465	7.3672	1.2427	1.1487	.9276	.1539E-04	.1285E-01	.8332
260.6630	.0166	13.4439	11.9325	160.8284	7.6012	1.2467	1.1421	.9197	.1602E-04	.1374E-01	.8376
270.6630	.0135	16.9838	12.1404	162.7465	7.8426	1.2523	1.1365	.9114	.1667E-04	.1465E-01	.8428
280.6630	.0111	21.3004	12.3476	164.6595	8.0923	1.2597	1.1326	.9029	.1734E-04	.1560E-01	.8495
290.6630	.0091	26.5220	12.5535	166.6514	8.3505	1.2688	1.1310	.8943	.1806E-04	.1660E-01	.8578
300.6630	.0076	32.7909	12.7578	168.8362	8.6173	1.2798	1.1325	.8861	.1883E-04	.1766E-01	.8680
310.6630	.0063	40.2662	12.9605	171.3643	8.8913	1.2924	1.1385	.8788	.1967E-04	.1878E-01	.8799
320.6630	.0053	49.1297	13.1617	174.4255	9.1699	1.3062	1.1504	.8730	.2060E-04	.1997E-01	.8936
330.6630	.0045	59.5959	13.3622	178.2514	9.4482	1.3206	1.1699	.8694	.2165E-04	.2126E-01	.9089
340.6630	.0038	71.9421	13.5628	183.1175	9.7196	1.3348	1.1992	.8688	.2282E-04	.2265E-01	.9252
350.6630	.0033	86.4754	13.7652	189.3418	9.9742	1.3473	1.2405	.8724	.2414E-04	.2415E-01	.9419
360.6630	.0029	103.6294	13.9716	197.2882	10.2024	1.3571	1.2964	.8812	.2563E-04	.2579E-01	.9579
370.6630	.0025	123.9545	14.1844	207.3722	10.3947	1.3629	1.3699	.8965	.2731E-04	.2759E-01	.9722
380.6630	.0022	148.1666	14.4069	220.0674	10.5449	1.3639	1.4642	.9198	.2918E-04	.2955E-01	.9839
390.6630	.0020	177.1916	14.6430	235.9036	10.6518	1.3601	1.5826	.9528	.3126E-04	.3169E-01	.9924
400.6630	.0018	212.2081	14.8973	255.4347	10.7203	1.3521	1.7280	.9976	.3355E-04	.3404E-01	.9982
406.4064	.0017	235.5815	15.0536	268.5171	10.7464	1.3462	1.8244	1.0294	.3505E-04	.3547E-01	1.0030

TABLE IV.- Continued

S/R=28.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
122.6793	.7831	.1444	9.2949	120.9973	4.6583	1.2926	1.2778	.9886	.7463E-05	.2807E-02	1.1698
132.6793	.5889	.2074	9.4620	125.0891	4.8461	1.2804	1.2642	.9875	.8108E-05	.3553E-02	1.0448
142.6793	.4468	.2936	9.6349	128.9939	5.0340	1.2696	1.2518	.9862	.8745E-05	.4299E-02	.9673
152.6793	.3413	.4107	9.8133	132.7269	5.2219	1.2600	1.2404	.9847	.9374E-05	.5048E-02	.9161
162.6793	.2625	.5679	9.9973	136.3004	5.4100	1.2515	1.2298	.9829	.9994E-05	.5799E-02	.8809
172.6793	.2031	.7776	10.1865	139.7232	5.5984	1.2440	1.2199	.9810	.1061E-04	.6552E-02	.8562
182.6793	.1580	1.0550	10.3808	143.0018	5.7873	1.2374	1.2106	.9788	.1121E-04	.7309E-02	.8388
192.6793	.1236	1.4192	10.5798	146.1409	5.9768	1.2317	1.2019	.9762	.1181E-04	.8070E-02	.8265
202.6793	.0971	1.8943	10.7834	149.1436	6.1673	1.2268	1.1935	.9734	.1241E-04	.8836E-02	.8180
212.6793	.0766	2.5098	10.9911	152.0120	6.3589	1.2229	1.1855	.9701	.1300E-04	.9609E-02	.8124
222.6793	.0608	3.3017	11.2025	154.7480	6.5521	1.2198	1.1779	.9665	.1358E-04	.1039E-01	.8092
232.6793	.0484	4.3140	11.4173	157.3540	6.7472	1.2175	1.1705	.9624	.1417E-04	.1118E-01	.8077
242.6793	.0387	5.6000	11.6350	159.8329	6.9449	1.2163	1.1635	.9578	.1475E-04	.1198E-01	.8078
252.6793	.0311	7.2197	11.8550	162.1937	7.1453	1.2159	1.1568	.9527	.1534E-04	.1280E-01	.8092
262.6793	.0251	9.2487	12.0768	164.4453	7.3495	1.2167	1.1505	.9472	.1594E-04	.1363E-01	.8117
272.6793	.0203	11.7710	12.2998	166.6064	7.5580	1.2186	1.1449	.9412	.1654E-04	.1449E-01	.8152
282.6793	.0166	14.8835	12.5233	168.7053	7.7715	1.2218	1.1401	.9348	.1716E-04	.1537E-01	.8196
292.6793	.0135	18.6956	12.7469	170.7833	7.9909	1.2263	1.1364	.9282	.1778E-04	.1628E-01	.8245
302.6793	.0111	23.3294	12.9699	172.8996	8.2167	1.2322	1.1344	.9216	.1844E-04	.1723E-01	.8306
312.6793	.0092	28.9207	13.1920	175.1357	8.4494	1.2395	1.1347	.9151	.1913E-04	.1822E-01	.8380
322.6793	.0077	35.6201	13.4129	177.5994	8.6889	1.2483	1.1381	.9092	.1988E-04	.1926E-01	.8469
332.6793	.0064	43.5957	13.6325	180.4291	8.9343	1.2584	1.1456	.9042	.2069E-04	.2037E-01	.8573
342.6793	.0054	53.0389	13.8511	183.7959	9.1837	1.2695	1.1585	.9007	.2159E-04	.2154E-01	.8693
352.6793	.0046	64.1724	14.0693	187.9058	9.4338	1.2812	1.1782	.8995	.2258E-04	.2280E-01	.8827
362.6793	.0039	77.2811	14.2878	193.0017	9.6800	1.2928	1.2064	.9012	.2370E-04	.2415E-01	.8973
372.6793	.0034	92.6664	14.5085	199.3606	9.9152	1.3035	1.2451	.9067	.2495E-04	.2561E-01	.9125
382.6793	.0030	110.7529	14.7330	207.3019	10.1325	1.3125	1.2963	.9170	.2636E-04	.2720E-01	.9279
392.6793	.0026	132.0662	14.9638	217.1927	10.3246	1.3187	1.3624	.9333	.2795E-04	.2892E-01	.9424
402.6793	.0023	157.2789	15.2039	229.4573	10.4857	1.3215	1.4463	.9570	.2971E-04	.3080E-01	.9555
412.6793	.0020	187.2514	15.4569	244.5800	10.6128	1.3206	1.5509	.9894	.3166E-04	.3285E-01	.9663
422.6793	.0018	223.0737	15.7270	263.0854	10.7072	1.3163	1.6790	1.0323	.3379E-04	.3508E-01	.9746
432.2732	.0017	264.1892	16.0069	284.4775	10.7728	1.3095	1.8260	1.0853	.3615E-04	.3739E-01	.9839

S/R=28.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
115.9638	1.5635	.0687	9.1919	118.4104	4.5016	1.2967	1.2882	.9935	.7022E-05	.2303E-02	1.2969
125.9638	1.1676	.0999	9.3563	122.6838	4.6848	1.2832	1.2740	.9928	.7672E-05	.3046E-02	1.1148
135.9638	.8799	.1429	9.5267	126.7639	4.8673	1.2711	1.2610	.9921	.8314E-05	.3789E-02	1.0088
145.9638	.6686	.2018	9.7031	130.6707	5.0493	1.2603	1.2492	.9912	.8946E-05	.4534E-02	.9412
155.9638	.5114	.2816	9.8854	134.4198	5.2308	1.2507	1.2384	.9903	.9570E-05	.5280E-02	.8957
165.9638	.3937	.3888	10.0733	138.0238	5.4118	1.2420	1.2284	.9892	.1019E-04	.6027E-02	.8640
175.9638	.3048	.5317	10.2669	141.4922	5.5924	1.2342	1.2191	.9879	.1079E-04	.6776E-02	.8414
185.9638	.2373	.7209	10.4658	144.8324	5.7728	1.2272	1.2104	.9865	.1139E-04	.7528E-02	.8252
195.9638	.1856	.9697	10.6699	148.0502	5.9529	1.2210	1.2023	.9848	.1198E-04	.8282E-02	.8137
205.9638	.1458	1.2948	10.8790	151.1498	6.1330	1.2156	1.1946	.9829	.1257E-04	.9039E-02	.8055
215.9638	.1150	1.7169	11.0928	154.1344	6.3133	1.2109	1.1873	.9808	.1315E-04	.9801E-02	.7999
225.9638	.0911	2.2618	11.3111	157.0065	6.4939	1.2068	1.1803	.9784	.1372E-04	.1057E-01	.7964
235.9638	.0725	2.9610	11.5334	159.7683	6.6751	1.2035	1.1737	.9756	.1429E-04	.1134E-01	.7944
245.9638	.0579	3.8534	11.7595	162.4220	6.8572	1.2009	1.1674	.9726	.1486E-04	.1212E-01	.7938
255.9638	.0464	4.9832	11.9889	164.9730	7.0405	1.1990	1.1614	.9691	.1542E-04	.1291E-01	.7943
265.9638	.0374	6.4091	12.2212	167.4244	7.2256	1.1979	1.1557	.9654	.1599E-04	.1372E-01	.7957
275.9638	.0302	8.1944	12.4558	169.7868	7.4129	1.1977	1.1504	.9612	.1656E-04	.1453E-01	.7980
285.9638	.0245	10.4163	12.6923	172.0736	7.6029	1.1983	1.1456	.9567	.1714E-04	.1537E-01	.8010
295.9638	.0200	13.1633	12.9301	174.3060	7.7963	1.1999	1.1415	.9520	.1773E-04	.1622E-01	.8047
305.9638	.0163	16.5369	13.1686	176.5146	7.9938	1.2025	1.1383	.9470	.1832E-04	.1710E-01	.8091
315.9638	.0134	20.6513	13.4073	178.7428	8.1958	1.2063	1.1363	.9419	.1893E-04	.1801E-01	.8137
325.9638	.0111	25.6348	13.6458	181.0505	8.4030	1.2111	1.1361	.9370	.1957E-04	.1896E-01	.8194
335.9638	.0092	31.6299	13.8836	183.5172	8.6158	1.2172	1.1381	.9324	.2024E-04	.1994E-01	.8261
345.9638	.0077	38.7950	14.1206	186.2456	8.8339	1.2244	1.1431	.9285	.2097E-04	.2098E-01	.8340
355.9638	.0065	47.3072	14.3568	189.3643	9.0568	1.2327	1.1520	.9257	.2175E-04	.2207E-01	.8432
365.9638	.0055	57.3671	14.5923	193.0297	9.2831	1.2418	1.1659	.9244	.2262E-04	.2323E-01	.8538
375.9638	.0047	69.2062	14.8278	197.4267	9.5102	1.2515	1.1859	.9254	.2358E-04	.2447E-01	.8658
385.9638	.0040	83.1191	15.0641	202.7727	9.7349	1.2612	1.2136	.9292	.2465E-04	.2579E-01	.8789
395.9638	.0035	99.4034	15.3027	209.3109	9.9519	1.2703	1.2504	.9366	.2585E-04	.2722E-01	.8928
405.9638	.0030	118.4810	15.5454	217.3254	10.1560	1.2782	1.2982	.9486	.2719E-04	.2876E-01	.9072
415.9638	.0027	140.8609	15.7943	227.1438	10.3416	1.2843	1.3589	.9662	.2869E-04	.3042E-01	.9214
425.9638	.0024	167.1845	16.0523	239.1485	10.5035	1.2878	1.4350	.9904	.3036E-04	.3223E-01	.9347
435.9638	.0021	198.2628	16.3226	253.7827	10.6385	1.2886	1.5291	1.0227	.3221E-04	.3420E-01	.9466
445.9638	.0019	235.1155	16.6094	271.5391	10.7461	1.2865	1.6439	1.0646	.3423E-04	.3633E-01	.9565
455.9638	.0017	279.0041	16.9173	292.9053	10.8294	1.2820	1.7816	1.1179	.3650E-04	.3864E-01	.9663
458.9420	.0017	293.6490	17.0138	300.0246	10.8505	1.2803	1.8271	1.1363	.3725E-04	.3936E-01	.9699

TABLE IV.- Continued

S/R=29.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
110.2124	3.0551	.0335	9.1034	116.0100	4.3792	1.3024	1.2975	.9963	.6644E-05	.1873E-02	1.4672
120.2124	2.2668	.0492	9.2649	120.4311	4.5599	1.2877	1.2824	.9959	.7298E-05	.2615E-02	1.2021
130.2124	1.6989	.0711	9.4327	124.6490	4.7397	1.2747	1.2689	.9955	.7944E-05	.3357E-02	1.0594
140.2124	1.2845	.1013	9.6066	128.6874	4.9186	1.2629	1.2566	.9950	.8580E-05	.4100E-02	.9724
150.2124	.9781	.1424	9.7866	132.5651	5.0967	1.2524	1.2453	.9944	.9208E-05	.4843E-02	.9154
160.2124	.7498	.1980	9.9726	136.2975	5.2738	1.2428	1.2351	.9938	.9827E-05	.5587E-02	.8763
170.2124	.5783	.2725	10.1645	139.8965	5.4501	1.2342	1.2256	.9931	.1044E-04	.6332E-02	.8486
180.2124	.4484	.3718	10.3621	143.3720	5.6255	1.2264	1.2168	.9922	.1104E-04	.7079E-02	.8287
190.2124	.3494	.5031	10.5653	146.7318	5.8002	1.2194	1.2087	.9913	.1163E-04	.7827E-02	.8142
200.2124	.2735	.6757	10.7740	149.9820	5.9741	1.2130	1.2011	.9902	.1221E-04	.8576E-02	.8038
210.2124	.2151	.9013	10.9879	153.1277	6.1474	1.2073	1.1939	.9890	.1279E-04	.9328E-02	.7963
220.2124	.1698	1.1944	11.2070	156.1728	6.3201	1.2022	1.1871	.9876	.1336E-04	.1008E-01	.7912
230.2124	.1345	1.5731	11.4309	159.1205	6.4924	1.1977	1.1808	.9860	.1392E-04	.1084E-01	.7878
240.2124	.1070	2.0600	11.6595	161.9733	6.6644	1.1938	1.1747	.9842	.1448E-04	.1160E-01	.7858
250.2124	.0854	2.6830	11.8923	164.7336	6.8364	1.1905	1.1689	.9821	.1504E-04	.1237E-01	.7849
260.2124	.0684	3.4735	12.1292	167.4057	7.0084	1.1877	1.1635	.9799	.1559E-04	.1315E-01	.7850
270.2124	.0550	4.4750	12.3698	169.9914	7.1810	1.1855	1.1583	.9773	.1614E-04	.1393E-01	.7859
280.2124	.0444	5.7361	12.6136	172.4960	7.3543	1.1840	1.1534	.9745	.1669E-04	.1472E-01	.7875
290.2124	.0359	7.3144	12.8602	174.9277	7.5288	1.1831	1.1490	.9714	.1724E-04	.1553E-01	.7896
300.2124	.0292	9.2776	13.1092	177.2981	7.7049	1.1829	1.1449	.9681	.1779E-04	.1634E-01	.7923
310.2124	.0238	11.7064	13.3601	179.6234	7.8831	1.1835	1.1414	.9646	.1835E-04	.1718E-01	.7956
320.2124	.0195	14.6930	13.6124	181.9272	8.0638	1.1849	1.1387	.9609	.1892E-04	.1803E-01	.7993
330.2124	.0161	18.3427	13.8655	184.2426	8.2478	1.1872	1.1369	.9571	.1950E-04	.1891E-01	.8035
340.2124	.0133	22.7747	14.1191	186.6147	8.4354	1.1903	1.1364	.9535	.2009E-04	.1982E-01	.8079
350.2124	.0110	28.1224	14.3726	189.1036	8.6271	1.1945	1.1377	.9501	.2071E-04	.2076E-01	.8131
360.2124	.0092	34.5346	14.6258	191.7870	8.8232	1.1996	1.1412	.9472	.2137E-04	.2174E-01	.8191
370.2124	.0077	42.1769	14.8785	194.7627	9.0237	1.2057	1.1476	.9451	.2207E-04	.2277E-01	.8263
380.2124	.0065	51.2343	15.1308	198.1508	9.2279	1.2126	1.1577	.9442	.2283E-04	.2385E-01	.8345
390.2124	.0056	61.9155	15.3829	202.0945	9.4347	1.2202	1.1724	.9450	.2367E-04	.2500E-01	.8440
400.2124	.0047	74.4769	15.6353	206.7629	9.6426	1.2283	1.1929	.9479	.2460E-04	.2622E-01	.8547
410.2124	.0041	89.1719	15.8890	212.3463	9.8482	1.2365	1.2201	.9537	.2563E-04	.2752E-01	.8665
420.2124	.0035	106.3449	16.1453	219.0651	10.0483	1.2443	1.2554	.9629	.2678E-04	.2891E-01	.8792
430.2124	.0031	126.3993	16.4058	227.1717	10.2386	1.2513	1.3004	.9764	.2806E-04	.3041E-01	.8925
440.2124	.0027	149.8306	16.6725	236.9599	10.4147	1.2569	1.3568	.9951	.2949E-04	.3203E-01	.9059
450.2124	.0024	177.2539	16.9482	248.7750	10.5723	1.2607	1.4266	1.0200	.3108E-04	.3378E-01	.9190
460.2124	.0022	209.4370	17.2359	263.0224	10.7083	1.2623	1.5121	1.0523	.3284E-04	.3568E-01	.9311
470.2124	.0019	247.3376	17.5394	280.1612	10.8211	1.2617	1.6160	1.0934	.3476E-04	.3773E-01	.9418
480.2124	.0018	292.1360	17.8631	300.6642	10.9122	1.2590	1.7403	1.1450	.3686E-04	.3994E-01	.9515
486.4234	.0017	324.0450	18.0764	315.2709	10.9598	1.2565	1.8283	1.1830	.3835E-04	.4140E-01	.9590

TABLE IV.- Continued

s/R=29.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
105.2014	5.8658	.0167	9.0266	113.7961	4.2788	1.3087	1.3058	.9978	.6313E-05	.1500E-02	1.7006
115.2014	4.3268	.0248	9.1854	118.3446	4.4584	1.2931	1.2900	.9976	.6970E-05	.2242E-02	1.3097
125.2014	3.2263	.0361	9.3505	122.6776	4.6369	1.2791	1.2758	.9974	.7620E-05	.2983E-02	1.1190
135.2014	2.4279	.0518	9.5218	126.8227	4.8144	1.2666	1.2629	.9971	.8261E-05	.3725E-02	1.0087
145.2014	1.8421	.0733	9.6994	130.8014	4.9907	1.2554	1.2513	.9968	.8893E-05	.4467E-02	.9386
155.2014	1.4069	.1025	9.8832	134.6313	5.1659	1.2452	1.2407	.9964	.9515E-05	.5209E-02	.8914
165.2014	1.0815	.1419	10.0730	138.3265	5.3399	1.2359	1.2310	.9960	.1013E-04	.5952E-02	.8584
175.2014	.8360	.1945	10.2687	141.8986	5.5129	1.2275	1.2220	.9955	.1073E-04	.6696E-02	.8348
185.2014	.6495	.2645	10.4703	145.3571	5.6847	1.2198	1.2137	.9950	.1133E-04	.7440E-02	.8176
195.2014	.5070	.3569	10.6777	148.7098	5.8553	1.2129	1.2060	.9944	.1191E-04	.8186E-02	.8051
205.2014	.3975	.4782	10.8907	151.9630	6.0249	1.2065	1.1988	.9937	.1249E-04	.8932E-02	.7960
215.2014	.3129	.6366	11.1091	155.1221	6.1935	1.2008	1.1921	.9929	.1306E-04	.9681E-02	.7894
225.2014	.2473	.8422	11.3329	158.1914	6.3610	1.1955	1.1858	.9919	.1362E-04	.1043E-01	.7849
235.2014	.1961	1.1080	11.5618	161.1746	6.5276	1.1908	1.1799	.9909	.1418E-04	.1118E-01	.7819
245.2014	.1561	1.4496	11.7957	164.0746	6.6934	1.1866	1.1743	.9897	.1473E-04	.1194E-01	.7801
255.2014	.1246	1.8871	12.0343	166.8941	6.8585	1.1829	1.1690	.9883	.1527E-04	.1270E-01	.7792
265.2014	.0998	2.4440	12.2774	169.6362	7.0229	1.1796	1.1640	.9868	.1581E-04	.1346E-01	.7792
275.2014	.0803	3.1487	12.5247	172.3043	7.1869	1.1768	1.1592	.9851	.1635E-04	.1423E-01	.7798
285.2014	.0647	4.0397	12.7759	174.9006	7.3508	1.1746	1.1547	.9832	.1688E-04	.1501E-01	.7810
295.2014	.0524	5.1580	13.0307	177.4310	7.5148	1.1728	1.1506	.9812	.1741E-04	.1579E-01	.7827
305.2014	.0425	6.5550	13.2886	179.9023	7.6791	1.1715	1.1467	.9789	.1794E-04	.1658E-01	.7848
315.2014	.0346	8.2916	13.5494	182.3238	7.8441	1.1709	1.1433	.9765	.1848E-04	.1739E-01	.7874
325.2014	.0283	10.4391	13.8125	184.7092	8.0102	1.1708	1.1403	.9739	.1901E-04	.1821E-01	.7903
335.2014	.0232	13.0805	14.0775	187.0771	8.1778	1.1713	1.1379	.9712	.1956E-04	.1904E-01	.7935
345.2014	.0191	16.3113	14.3439	189.4536	8.3474	1.1726	1.1364	.9685	.2011E-04	.1990E-01	.7971
355.2014	.0158	20.2404	14.6114	191.8736	8.5194	1.1746	1.1359	.9659	.2068E-04	.2078E-01	.8010
365.2014	.0131	24.9909	14.8794	194.3832	8.6943	1.1773	1.1367	.9635	.2125E-04	.2168E-01	.8051
375.2014	.0110	30.7007	15.1476	197.0422	8.8725	1.1809	1.1392	.9615	.2185E-04	.2262E-01	.8098
385.2014	.0092	37.5240	15.4159	199.9262	9.0540	1.1852	1.1440	.9601	.2249E-04	.2360E-01	.8153
395.2014	.0077	45.6322	15.6839	203.1280	9.2389	1.1904	1.1516	.9597	.2318E-04	.2462E-01	.8217
405.2014	.0066	55.2167	15.9519	206.7594	9.4267	1.1963	1.1627	.9605	.2392E-04	.2569E-01	.8290
415.2014	.0056	66.4932	16.2202	210.9519	9.6165	1.2027	1.1781	.9630	.2473E-04	.2682E-01	.8375
425.2014	.0048	79.7267	16.4891	215.8596	9.8069	1.2096	1.1987	.9677	.2562E-04	.2802E-01	.8470
435.2014	.0042	95.1697	16.7597	221.6517	9.9956	1.2165	1.2254	.9751	.2661E-04	.2930E-01	.8576
445.2014	.0036	113.1696	17.0331	228.5260	10.1798	1.2233	1.2594	.9859	.2771E-04	.3067E-01	.8691
455.2014	.0032	134.1242	17.3109	236.7080	10.3564	1.2295	1.3020	1.0007	.2894E-04	.3213E-01	.8813
465.2014	.0028	158.5152	17.5951	246.4610	10.5216	1.2347	1.3545	1.0204	.3031E-04	.3370E-01	.8938
475.2014	.0025	186.9313	17.8880	258.0965	10.6721	1.2385	1.4189	1.0458	.3182E-04	.3540E-01	.9063
485.2014	.0022	220.0988	18.1925	271.9830	10.8048	1.2407	1.4970	1.0780	.3349E-04	.3723E-01	.9182
495.2014	.0020	258.9148	18.5122	288.5451	10.9180	1.2411	1.5914	1.1184	.3531E-04	.3920E-01	.9291
505.2014	.0018	304.4794	18.8511	308.2337	11.0118	1.2396	1.7041	1.1682	.3729E-04	.4133E-01	.9387
514.7215	.0017	355.3328	19.1958	330.2516	11.0858	1.2370	1.8296	1.2259	.3945E-04	.4350E-01	.9498

TABLE IV.- Continued

s /R=30.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
100.7696	11.1023	.0085	8.9593	111.7523	4.1935	1.3152	1.3135	.9987	.6018E-05	.1171E-02	2.0356
110.7696	8.1448	.0127	9.1154	116.4151	4.3727	1.2987	1.2969	.9986	.6679E-05	.1912E-02	1.4429
120.7696	6.0448	.0186	9.2780	120.8494	4.5507	1.2840	1.2820	.9985	.7333E-05	.2653E-02	1.1881
130.7696	4.5303	.0269	9.4469	125.0858	4.7275	1.2708	1.2687	.9983	.7977E-05	.3394E-02	1.0496
140.7696	3.4249	.0382	9.6221	129.1488	4.9030	1.2589	1.2566	.9981	.8613E-05	.4136E-02	.9646
150.7696	2.6075	.0538	9.8036	133.0577	5.0773	1.2482	1.2456	.9979	.9239E-05	.4877E-02	.9086
160.7696	1.9984	.0748	9.9912	136.8287	5.2503	1.2384	1.2356	.9977	.9856E-05	.5619E-02	.8700
170.7696	1.5406	.1031	10.1849	140.4746	5.4221	1.2295	1.2264	.9974	.1046E-04	.6361E-02	.8426
180.7696	1.1940	.1408	10.3846	144.0063	5.5925	1.2214	1.2179	.9971	.1106E-04	.7104E-02	.8227
190.7696	.9298	.1907	10.5902	147.4328	5.7616	1.2140	1.2100	.9967	.1165E-04	.7847E-02	.8081
200.7696	.7273	.2564	10.8016	150.7616	5.9293	1.2072	1.2028	.9963	.1223E-04	.8591E-02	.7975
210.7696	.5713	.3426	11.0188	153.9991	6.0957	1.2010	1.1960	.9959	.1280E-04	.9336E-02	.7897
220.7696	.4505	.4548	11.2415	157.1507	6.2608	1.1953	1.1897	.9953	.1337E-04	.1008E-01	.7841
230.7696	.3565	.6004	11.4697	160.2207	6.4246	1.1901	1.1838	.9947	.1392E-04	.1083E-01	.7803
240.7696	.2831	.7883	11.7032	163.2131	6.5871	1.1853	1.1782	.9940	.1447E-04	.1158E-01	.7777
250.7696	.2255	1.0297	11.9419	166.1312	6.7484	1.1810	1.1729	.9932	.1501E-04	.1233E-01	.7762
260.7696	.1802	1.3387	12.1856	168.9779	6.9086	1.1770	1.1680	.9923	.1555E-04	.1308E-01	.7756
270.7696	.1445	1.7317	12.4341	171.7564	7.0677	1.1735	1.1633	.9913	.1608E-04	.1384E-01	.7756
280.7696	.1162	2.2310	12.6872	174.4686	7.2258	1.1704	1.1589	.9902	.1660E-04	.1460E-01	.7762
290.7696	.0937	2.8613	12.9446	177.1184	7.3830	1.1677	1.1548	.9890	.1712E-04	.1536E-01	.7772
300.7696	.0758	3.6539	13.2060	179.7091	7.5396	1.1654	1.1509	.9876	.1764E-04	.1613E-01	.7787
310.7696	.0615	4.6464	13.4713	182.2455	7.6957	1.1635	1.1473	.9861	.1815E-04	.1691E-01	.7804
320.7696	.0500	5.8836	13.7400	184.7336	7.8515	1.1621	1.1440	.9844	.1867E-04	.1769E-01	.7825
330.7696	.0408	7.4191	14.0118	187.1818	8.0074	1.1611	1.1410	.9827	.1918E-04	.1849E-01	.7849
340.7696	.0335	9.3157	14.2863	189.6014	8.1635	1.1605	1.1385	.9808	.1970E-04	.1929E-01	.7875
350.7696	.0275	11.6472	14.5632	192.0079	8.3204	1.1605	1.1365	.9789	.2022E-04	.2011E-01	.7903
360.7696	.0227	14.4989	14.8420	194.4219	8.4782	1.1611	1.1351	.9771	.2075E-04	.2095E-01	.7934
370.7696	.0188	17.9690	15.1223	196.8712	8.6374	1.1622	1.1346	.9753	.2129E-04	.2180E-01	.7968
380.7696	.0156	22.1692	15.4037	199.3920	8.7985	1.1640	1.1352	.9736	.2184E-04	.2268E-01	.8004
390.7696	.0130	27.2257	15.6858	202.0308	8.9616	1.1664	1.1371	.9723	.2240E-04	.2358E-01	.8041
400.7696	.0109	33.2800	15.9684	204.8464	9.1273	1.1695	1.1408	.9716	.2298E-04	.2452E-01	.8083
410.7696	.0092	40.4899	16.2512	207.9116	9.2955	1.1733	1.1466	.9715	.2361E-04	.2549E-01	.8132
420.7696	.0078	49.0314	16.5342	211.3142	9.4661	1.1777	1.1551	.9725	.2427E-04	.2650E-01	.8189
430.7696	.0066	59.1005	16.8175	215.1579	9.6389	1.1827	1.1669	.9748	.2499E-04	.2757E-01	.8254
440.7696	.0057	70.9171	17.1014	219.5631	9.8131	1.1882	1.1828	.9789	.2577E-04	.2868E-01	.8329
450.7696	.0049	84.7532	17.3863	224.6703	9.9876	1.1941	1.2033	.9850	.2663E-04	.2987E-01	.8413
460.7696	.0042	100.8572	17.6732	230.6295	10.1604	1.2001	1.2295	.9939	.2758E-04	.3112E-01	.8508
470.7696	.0037	119.5767	17.9632	237.6181	10.3296	1.2060	1.2621	1.0059	.2864E-04	.3246E-01	.8611
480.7696	.0032	141.3016	18.2577	245.8374	10.4925	1.2116	1.3023	1.0218	.2981E-04	.3389E-01	.8721
490.7696	.0029	166.4968	18.5584	255.5222	10.6462	1.2164	1.3513	1.0421	.3112E-04	.3542E-01	.8836
500.7696	.0025	195.7231	18.8678	266.9518	10.7879	1.2201	1.4107	1.0678	.3255E-04	.3706E-01	.8953
510.7696	.0023	229.6631	19.1883	280.4584	10.9148	1.2227	1.4822	1.0998	.3414E-04	.3882E-01	.9067
520.7696	.0021	269.1514	19.5232	296.4299	11.0251	1.2237	1.5680	1.1391	.3587E-04	.4072E-01	.9174
530.7696	.0019	315.2057	19.8763	315.2902	11.1182	1.2233	1.6701	1.1871	.3774E-04	.4276E-01	.9271
540.7696	.0017	369.0461	20.2520	337.4415	11.1958	1.2215	1.7901	1.2451	.3984E-04	.4495E-01	.9374
543.8728	.0017	387.5493	20.3738	345.0316	11.2172	1.2208	1.8310	1.2654	.4055E-04	.4565E-01	.9412

TABLE IV.- Continued

s /R=30.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
106.2207	15.4326	.0064	9.0443	114.3573	4.2878	1.3053	1.3043	.9992	.6379E-05	.1575E-02	1.6410
116.2207	11.3941	.0095	9.2041	118.8966	4.4657	1.2898	1.2887	.9991	.7036E-05	.2315E-02	1.2820
126.2207	8.5021	.0138	9.3703	123.2260	4.6424	1.2759	1.2747	.9990	.7685E-05	.3056E-02	1.1027
136.2207	6.4015	.0198	9.5428	127.3725	4.8178	1.2634	1.2621	.9989	.8324E-05	.3797E-02	.9978
146.2207	4.8589	.0280	9.7217	131.3579	4.9919	1.2521	1.2506	.9988	.8955E-05	.4538E-02	.9305
156.2207	3.7123	.0392	9.9068	135.1999	5.1646	1.2419	1.2402	.9987	.9576E-05	.5280E-02	.8849
166.2207	2.8540	.0542	10.0980	138.9128	5.3359	1.2325	1.2307	.9985	.1019E-04	.6021E-02	.8529
176.2207	2.2063	.0743	10.2954	142.5089	5.5058	1.2240	1.2220	.9983	.1079E-04	.6763E-02	.8298
186.2207	1.7142	.1011	10.4988	145.9981	5.6743	1.2162	1.2139	.9981	.1138E-04	.7505E-02	.8130
196.2207	1.3379	.1364	10.7081	149.3890	5.8413	1.2090	1.2065	.9979	.1197E-04	.8247E-02	.8006
206.2207	1.0487	.1829	10.9233	152.6888	6.0068	1.2024	1.1996	.9976	.1254E-04	.8990E-02	.7916
216.2207	.8252	.2436	11.1443	155.9036	6.1709	1.1963	1.1931	.9973	.1311E-04	.9733E-02	.7850
226.2207	.6518	.3226	11.3709	159.0387	6.3334	1.1908	1.1871	.9970	.1366E-04	.1048E-01	.7802
236.2207	.5166	.4249	11.6031	162.0987	6.4944	1.1856	1.1815	.9966	.1421E-04	.1122E-01	.7770
246.2207	.4107	.5567	11.8407	165.0874	6.6539	1.1809	1.1763	.9961	.1476E-04	.1197E-01	.7749
256.2207	.3275	.7262	12.0836	168.0081	6.8119	1.1765	1.1713	.9956	.1529E-04	.1272E-01	.7737
266.2207	.2620	.9426	12.3316	170.8643	6.9685	1.1725	1.1667	.9950	.1582E-04	.1347E-01	.7733
276.2207	.2103	1.2176	12.5847	173.6589	7.1237	1.1689	1.1623	.9943	.1634E-04	.1422E-01	.7734
286.2207	.1692	1.5670	12.8426	176.3941	7.2775	1.1656	1.1581	.9936	.1686E-04	.1497E-01	.7740
296.2207	.1365	2.0083	13.1051	179.0730	7.4300	1.1626	1.1542	.9928	.1737E-04	.1573E-01	.7750
306.2207	.1105	2.5636	13.3721	181.6986	7.5813	1.1600	1.1506	.9919	.1787E-04	.1649E-01	.7763
316.2207	.0896	3.2597	13.6432	184.2745	7.7315	1.1577	1.1472	.9909	.1838E-04	.1725E-01	.7779
326.2207	.0729	4.1290	13.9183	186.8050	7.8808	1.1558	1.1440	.9898	.1888E-04	.1802E-01	.7797
336.2207	.0595	5.2100	14.1971	189.2956	8.0294	1.1542	1.1411	.9886	.1937E-04	.1880E-01	.7817
346.2207	.0487	6.5490	14.4792	191.7536	8.1773	1.1530	1.1386	.9874	.1987E-04	.1959E-01	.7839
356.2207	.0399	8.2006	14.7643	194.1886	8.3250	1.1522	1.1363	.9861	.2037E-04	.2038E-01	.7862
366.2207	.0329	10.2290	15.0521	196.6132	8.4726	1.1518	1.1346	.9848	.2088E-04	.2118E-01	.7887
376.2207	.0271	12.7089	15.3423	199.0440	8.6204	1.1518	1.1334	.9835	.2138E-04	.2200E-01	.7914
386.2207	.0225	15.7268	15.6343	201.5032	8.7687	1.1523	1.1329	.9823	.2190E-04	.2284E-01	.7943
396.2207	.0187	19.3818	15.9280	204.0189	8.9179	1.1533	1.1332	.9813	.2242E-04	.2369E-01	.7973
406.2207	.0156	23.7868	16.2229	206.6275	9.0684	1.1549	1.1346	.9806	.2295E-04	.2456E-01	.8005
416.2207	.0131	29.0691	16.5187	209.3747	9.2203	1.1570	1.1374	.9802	.2349E-04	.2546E-01	.8037
426.2207	.0110	35.3712	16.8151	212.3171	9.3739	1.1596	1.1418	.9805	.2406E-04	.2639E-01	.8074
436.2207	.0093	42.8526	17.1121	215.5233	9.5293	1.1629	1.1483	.9816	.2466E-04	.2735E-01	.8117
446.2207	.0079	51.6903	17.4095	219.0749	9.6864	1.1667	1.1574	.9837	.2530E-04	.2836E-01	.8166
456.2207	.0068	62.0817	17.7075	223.0671	9.8450	1.1710	1.1695	.9872	.2600E-04	.2941E-01	.8222
466.2207	.0058	74.2470	18.0064	227.6086	10.0044	1.1757	1.1853	.9924	.2675E-04	.3051E-01	.8287
476.2207	.0050	88.4596	18.3065	232.8266	10.1639	1.1808	1.2054	.9996	.2757E-04	.3167E-01	.8361
486.2207	.0044	104.9596	18.6089	238.8524	10.3219	1.1861	1.2304	1.0094	.2848E-04	.3289E-01	.8443
496.2207	.0038	124.0883	18.9145	245.8437	10.4767	1.1913	1.2612	1.0223	.2948E-04	.3419E-01	.8534
506.2207	.0034	146.2208	19.2245	253.9774	10.6265	1.1963	1.2987	1.0386	.3060E-04	.3558E-01	.8632
516.2207	.0030	171.7977	19.5406	263.4598	10.7687	1.2007	1.3439	1.0591	.3182E-04	.3706E-01	.8736
526.2207	.0026	201.3429	19.8648	274.5358	10.9011	1.2045	1.3980	1.0845	.3318E-04	.3864E-01	.8843
536.2207	.0024	235.4855	20.1994	287.4987	11.0213	1.2073	1.4627	1.1155	.3467E-04	.4034E-01	.8950
546.2207	.0021	274.9860	20.5476	302.6945	11.1274	1.2089	1.5398	1.1532	.3630E-04	.4215E-01	.9053
556.2207	.0019	320.7649	20.9125	320.5128	11.2183	1.2093	1.6311	1.1986	.3807E-04	.4410E-01	.9148
566.2207	.0018	373.9253	21.2982	341.3479	11.2945	1.2086	1.7385	1.2530	.3998E-04	.4618E-01	.9238
573.9314	.0017	420.7613	21.6125	359.6787	11.3447	1.2073	1.8327	1.3020	.4165E-04	.4788E-01	.9324

TABLE IV.- Continued

s /R=31.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
122.8990	15.4320	.0074	9.3149	121.8351	4.5811	1.2800	1.2792	.9994	.7470E-05	.2810E-02	1.1506
132.8990	11.5840	.0107	9.4855	126.0439	4.7565	1.2670	1.2662	.9994	.8113E-05	.3550E-02	1.0267
142.8990	8.7703	.0152	9.6624	130.0857	4.9305	1.2553	1.2544	.9993	.8746E-05	.4291E-02	.9493
152.8990	6.6853	.0213	9.8456	133.9793	5.1032	1.2447	1.2437	.9992	.9370E-05	.5032E-02	.8977
162.8990	5.1291	.0296	10.0350	137.7404	5.2744	1.2350	1.2339	.9991	.9984E-05	.5773E-02	.8617
172.8990	3.9576	.0407	10.2306	141.3820	5.4442	1.2262	1.2250	.9990	.1059E-04	.6514E-02	.8360
182.8990	3.0695	.0555	10.4322	144.9149	5.6124	1.2181	1.2167	.9989	.1118E-04	.7256E-02	.8173
192.8990	2.3919	.0751	10.6399	148.3483	5.7791	1.2106	1.2091	.9988	.1177E-04	.7997E-02	.8036
202.8990	1.8720	.1009	10.8535	151.6900	5.9442	1.2038	1.2021	.9986	.1235E-04	.8739E-02	.7935
212.8990	1.4710	.1347	11.0730	154.9469	6.1078	1.1975	1.1956	.9984	.1292E-04	.9481E-02	.7860
222.8990	1.1602	.1788	11.2983	158.1246	6.2697	1.1916	1.1895	.9982	.1348E-04	.1022E-01	.7807
232.8990	.9182	.2360	11.5292	161.2282	6.4300	1.1862	1.1838	.9980	.1403E-04	.1097E-01	.7769
242.8990	.7291	.3099	11.7657	164.2621	6.5886	1.1812	1.1785	.9977	.1457E-04	.1171E-01	.7744
252.8990	.5808	.4049	12.0077	167.2301	6.7456	1.1766	1.1736	.9974	.1511E-04	.1246E-01	.7728
262.8990	.4639	.5268	12.2551	170.1356	6.9009	1.1723	1.1689	.9971	.1563E-04	.1320E-01	.7721
272.8990	.3718	.6821	12.5077	172.9819	7.0546	1.1684	1.1645	.9967	.1615E-04	.1395E-01	.7719
282.8990	.2987	.8798	12.7655	175.7715	7.2066	1.1647	1.1604	.9963	.1667E-04	.1470E-01	.7722
292.8990	.2406	1.1301	13.0282	178.5073	7.3569	1.1614	1.1565	.9958	.1718E-04	.1545E-01	.7729
302.8990	.1943	1.4462	13.2957	181.1919	7.5057	1.1584	1.1528	.9952	.1768E-04	.1620E-01	.7740
312.8990	.1574	1.8437	13.5678	183.8280	7.6530	1.1556	1.1494	.9946	.1818E-04	.1695E-01	.7753
322.8990	.1278	2.3419	13.8444	186.4187	7.7987	1.1531	1.1462	.9940	.1867E-04	.1771E-01	.7767
332.8990	.1040	2.9642	14.1253	188.9672	7.9431	1.1509	1.1432	.9932	.1916E-04	.1847E-01	.7784
342.8990	.0849	3.7386	14.4102	191.4779	8.0862	1.1490	1.1404	.9925	.1965E-04	.1924E-01	.7802
352.8990	.0694	4.6989	14.6988	193.9557	8.2281	1.1474	1.1379	.9917	.2013E-04	.2001E-01	.7821
362.8990	.0570	5.8851	14.9910	196.4073	8.3691	1.1461	1.1357	.9908	.2061E-04	.2079E-01	.7841
372.8990	.0469	7.3450	15.2863	198.8408	8.5091	1.1451	1.1338	.9899	.2110E-04	.2157E-01	.7862
382.8990	.0387	9.1347	15.5846	201.2673	8.6486	1.1445	1.1322	.9891	.2158E-04	.2237E-01	.7884
392.8990	.0320	11.3196	15.8855	203.7006	8.7877	1.1442	1.1312	.9883	.2207E-04	.2317E-01	.7908
402.8990	.0265	13.9761	16.1887	206.1587	8.9266	1.1443	1.1307	.9875	.2256E-04	.2399E-01	.7932
412.8990	.0221	17.1919	16.4938	208.6647	9.0656	1.1448	1.1310	.9870	.2306E-04	.2482E-01	.7957
422.8990	.0185	21.0673	16.8005	211.2477	9.2051	1.1457	1.1321	.9867	.2357E-04	.2567E-01	.7984
432.8990	.0155	25.7162	17.1085	213.9443	9.3452	1.1471	1.1343	.9867	.2409E-04	.2655E-01	.8011
442.8990	.0130	31.2670	17.4175	216.7996	9.4861	1.1490	1.1378	.9873	.2462E-04	.2744E-01	.8039
452.8990	.0110	37.8635	17.7274	219.8681	9.6281	1.1514	1.1430	.9885	.2517E-04	.2837E-01	.8071
462.8990	.0094	45.6657	18.0380	223.2153	9.7713	1.1542	1.1502	.9906	.2575E-04	.2932E-01	.8107
472.8990	.0080	54.8519	18.3493	226.9173	9.9155	1.1576	1.1599	.9937	.2637E-04	.3032E-01	.8149
482.8990	.0068	65.6197	18.6614	231.0619	10.0605	1.1613	1.1723	.9983	.2704E-04	.3135E-01	.8197
492.8990	.0059	78.2099	18.9746	235.7516	10.2059	1.1655	1.1882	1.0045	.2777E-04	.3244E-01	.8253
502.8990	.0051	92.8354	19.2895	241.0920	10.3508	1.1699	1.2080	1.0128	.2856E-04	.3358E-01	.8316
512.8990	.0045	109.7886	19.6068	247.2085	10.4942	1.1745	1.2323	1.0235	.2943E-04	.3478E-01	.8388
522.8990	.0039	129.3849	19.9273	254.2385	10.6348	1.1792	1.2617	1.0371	.3039E-04	.3606E-01	.8467
532.8990	.0034	151.9860	20.2522	262.3384	10.7708	1.1837	1.2971	1.0540	.3145E-04	.3741E-01	.8554
542.8990	.0031	178.0113	20.5832	271.6898	10.9005	1.1878	1.3392	1.0747	.3261E-04	.3884E-01	.8646
552.8990	.0027	207.9527	20.9219	282.3083	11.0219	1.1914	1.3892	1.0999	.3390E-04	.4037E-01	.8742
562.8990	.0024	242.3929	21.2705	295.0521	11.1329	1.1943	1.4484	1.1303	.3531E-04	.4201E-01	.8840
572.8990	.0022	282.0281	21.6317	309.6287	11.2318	1.1963	1.5184	1.1666	.3684E-04	.4375E-01	.8935
582.8990	.0020	327.6934	22.0085	326.5905	11.3174	1.1973	1.6009	1.2099	.3851E-04	.4562E-01	.9026
588.8889	.0019	358.3392	22.2431	338.0472	11.3622	1.1974	1.6570	1.2396	.3957E-04	.4679E-01	.9077

TABLE IV.- Continued

S/R=31.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
140.5155	15.4380	.0085	9.6201	129.1568	4.8870	1.2577	1.2572	.9996	.8596E-05	.4114E-02	.9646
150.5155	11.7488	.0119	9.8019	133.0876	5.0597	1.2468	1.2462	.9995	.9222E-05	.4855E-02	.9079
160.5155	9.0018	.0166	9.9900	136.8829	5.2309	1.2369	1.2363	.9995	.9839E-05	.5596E-02	.8688
170.5155	6.9360	.0229	10.1842	140.5566	5.4007	1.2279	1.2271	.9994	.1045E-04	.6337E-02	.8410
180.5155	5.3729	.0313	10.3846	144.1199	5.5688	1.2196	1.2188	.9994	.1104E-04	.7078E-02	.8208
190.5155	4.1820	.0424	10.5910	147.5825	5.7354	1.2119	1.2110	.9993	.1163E-04	.7819E-02	.8060
200.5155	3.2694	.0571	10.8034	150.9528	5.9004	1.2049	1.2039	.9992	.1221E-04	.8560E-02	.7951
210.5155	2.5663	.0764	11.0218	154.2378	6.0638	1.1984	1.1973	.9991	.1278E-04	.9302E-02	.7871
220.5155	2.0221	.1016	11.2459	157.4437	6.2255	1.1924	1.1912	.9990	.1334E-04	.1004E-01	.7813
230.5155	1.5989	.1343	11.4759	160.5759	6.3854	1.1868	1.1854	.9988	.1389E-04	.1079E-01	.7771
240.5155	1.2684	.1766	11.7115	163.6390	6.5436	1.1817	1.1801	.9987	.1444E-04	.1153E-01	.7743
250.5155	1.0094	.2310	11.9527	166.6373	6.7001	1.1769	1.1751	.9985	.1497E-04	.1227E-01	.7724
260.5155	.8055	.3010	12.1994	169.5742	6.8548	1.1724	1.1704	.9983	.1550E-04	.1301E-01	.7714
270.5155	.6448	.3904	12.4515	172.4533	7.0076	1.1683	1.1660	.9980	.1602E-04	.1376E-01	.7711
280.5155	.5178	.5040	12.7089	175.2775	7.1587	1.1645	1.1619	.9978	.1654E-04	.1450E-01	.7712
290.5155	.4166	.6486	12.9714	178.0494	7.3079	1.1609	1.1580	.9975	.1705E-04	.1525E-01	.7718
300.5155	.3361	.8312	13.2390	180.7717	7.4554	1.1576	1.1543	.9972	.1755E-04	.1600E-01	.7726
310.5155	.2719	1.0615	13.5115	183.4469	7.6010	1.1546	1.1509	.9968	.1804E-04	.1674E-01	.7737
320.5155	.2204	1.3508	13.7887	186.0775	7.7448	1.1518	1.1476	.9964	.1853E-04	.1749E-01	.7750
330.5155	.1792	1.7130	14.0705	188.6662	7.8869	1.1492	1.1446	.9960	.1902E-04	.1825E-01	.7765
340.5155	.1460	2.1651	14.3568	191.2159	8.0273	1.1469	1.1418	.9955	.1950E-04	.1900E-01	.7781
350.5155	.1192	2.7276	14.6473	193.7299	8.1661	1.1448	1.1391	.9950	.1997E-04	.1976E-01	.7797
360.5155	.0976	3.4249	14.9419	196.2121	8.3032	1.1430	1.1367	.9945	.2045E-04	.2052E-01	.7815
370.5155	.0801	4.2867	15.2402	198.6673	8.4389	1.1414	1.1345	.9939	.2092E-04	.2129E-01	.7833
380.5155	.0659	5.3480	15.5422	201.1013	8.5732	1.1401	1.1326	.9933	.2139E-04	.2206E-01	.7851
390.5155	.0544	6.6506	15.8475	203.5218	8.7063	1.1390	1.1309	.9928	.2186E-04	.2284E-01	.7870
400.5155	.0449	8.2434	16.1558	205.9380	8.8383	1.1382	1.1297	.9922	.2232E-04	.2363E-01	.7889
410.5155	.0373	10.1842	16.4670	208.3620	8.9694	1.1378	1.1288	.9918	.2280E-04	.2442E-01	.7909
420.5155	.0310	12.5398	16.7806	210.8090	9.0998	1.1376	1.1284	.9914	.2327E-04	.2523E-01	.7929
430.5155	.0259	15.3877	17.0964	213.2980	9.2297	1.1378	1.1286	.9912	.2375E-04	.2605E-01	.7950
440.5155	.0216	18.8166	17.4141	215.8532	9.3593	1.1383	1.1295	.9912	.2424E-04	.2688E-01	.7972
450.5155	.0182	22.9280	17.7335	218.5041	9.4888	1.1392	1.1314	.9916	.2473E-04	.2773E-01	.7994
460.5155	.0153	27.8363	18.0541	221.2875	9.6185	1.1405	1.1343	.9923	.2523E-04	.2860E-01	.8017
470.5155	.0129	33.6706	18.3759	224.2475	9.7486	1.1422	1.1385	.9937	.2575E-04	.2949E-01	.8040
480.5155	.0110	40.5747	18.6987	227.4369	9.8791	1.1443	1.1444	.9957	.2628E-04	.3041E-01	.8066
490.5155	.0094	48.7091	19.0224	230.9176	10.0102	1.1469	1.1522	.9987	.2685E-04	.3137E-01	.8096
500.5155	.0080	58.2513	19.3469	234.7609	10.1416	1.1498	1.1623	1.0028	.2745E-04	.3235E-01	.8131
510.5155	.0069	69.3983	19.6726	239.0478	10.2733	1.1532	1.1751	1.0083	.2810E-04	.3338E-01	.8171
520.5155	.0060	82.3919	19.9995	243.8726	10.4049	1.1568	1.1911	1.0155	.2880E-04	.3445E-01	.8218
530.5155	.0052	97.4367	20.3283	249.3285	10.5356	1.1608	1.2106	1.0246	.2957E-04	.3558E-01	.8271
540.5155	.0045	114.8215	20.6597	255.5284	10.6645	1.1649	1.2342	1.0361	.3040E-04	.3676E-01	.8332
550.5155	.0040	134.8524	20.9943	262.5942	10.7908	1.1690	1.2624	1.0503	.3132E-04	.3800E-01	.8400
560.5155	.0035	157.8768	21.3335	270.6637	10.9129	1.1731	1.2959	1.0676	.3233E-04	.3932E-01	.8475
570.5155	.0031	184.2923	21.6784	279.8964	11.0295	1.1769	1.3354	1.0885	.3343E-04	.4072E-01	.8556
580.5155	.0028	214.5592	22.0308	290.4809	11.1388	1.1804	1.3818	1.1135	.3465E-04	.4220E-01	.8641
588.8889	.0026	243.2543	22.3330	300.5470	11.2235	1.1829	1.4268	1.1380	.3576E-04	.4351E-01	.8713

TABLE IV.- Continued

s/R=32.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
159.0088	15.4425	.0096	9.9617	136.3356	5.2036	1.2381	1.2378	.9997	.9746E-05	.5484E-02	.8737
169.0088	11.8921	.0132	10.1550	140.0296	5.3733	1.2290	1.2285	.9997	.1035E-04	.6224E-02	.8444
179.0088	9.2029	.0181	10.3546	143.6120	5.5414	1.2205	1.2201	.9996	.1095E-04	.6965E-02	.8233
189.0088	7.1575	.0246	10.5602	147.0930	5.7080	1.2128	1.2123	.9996	.1154E-04	.7706E-02	.8077
199.0088	5.5918	.0332	10.7718	150.4811	5.8729	1.2056	1.2051	.9995	.1212E-04	.8447E-02	.7963
209.0088	4.3864	.0444	10.9894	153.7836	6.0362	1.1991	1.1984	.9995	.1269E-04	.9188E-02	.7878
219.0088	3.4540	.0591	11.2129	157.0069	6.1977	1.1929	1.1922	.9994	.1326E-04	.9929E-02	.7817
229.0088	2.7295	.0782	11.4422	160.1566	6.3575	1.1873	1.1865	.9993	.1381E-04	.1067E-01	.7773
239.0088	2.1641	.1029	11.6772	163.2376	6.5155	1.1820	1.1811	.9992	.1436E-04	.1141E-01	.7742
249.0088	1.7212	.1348	11.9179	166.2542	6.6717	1.1771	1.1761	.9991	.1489E-04	.1215E-01	.7723
259.0088	1.3727	.1757	12.1641	169.2103	6.8260	1.1726	1.1714	.9990	.1542E-04	.1290E-01	.7711
269.0088	1.0981	.2281	12.4158	172.1093	6.9785	1.1683	1.1670	.9988	.1594E-04	.1364E-01	.7706
279.0088	.8812	.2948	12.6729	174.9544	7.1290	1.1643	1.1628	.9987	.1646E-04	.1438E-01	.7706
289.0088	.7087	.3797	12.9353	177.7483	7.2776	1.1607	1.1589	.9985	.1696E-04	.1513E-01	.7711
299.0088	.5714	.4871	13.2028	180.4936	7.4243	1.1572	1.1553	.9983	.1746E-04	.1587E-01	.7718
309.0088	.4618	.6226	13.4754	183.1929	7.5690	1.1540	1.1518	.9981	.1796E-04	.1662E-01	.7729
319.0088	.3742	.7932	13.7529	185.8486	7.7118	1.1510	1.1486	.9979	.1845E-04	.1736E-01	.7741
329.0088	.3039	1.0071	14.0353	188.4628	7.8526	1.1483	1.1455	.9976	.1893E-04	.1811E-01	.7754
339.0088	.2473	1.2745	14.3223	191.0381	7.9914	1.1457	1.1426	.9973	.1941E-04	.1886E-01	.7769
349.0088	.2018	1.6078	14.6138	193.5770	8.1283	1.1434	1.1399	.9970	.1988E-04	.1961E-01	.7784
359.0088	.1650	2.0220	14.9097	196.0823	8.2633	1.1412	1.1374	.9967	.2035E-04	.2036E-01	.7800
369.0088	.1352	2.5351	15.2099	198.5572	8.3965	1.1393	1.1351	.9963	.2081E-04	.2112E-01	.7816
379.0088	.1111	3.1688	15.5140	201.0053	8.5278	1.1376	1.1330	.9960	.2127E-04	.2188E-01	.7832
389.0088	.0914	3.9490	15.8219	203.4312	8.6574	1.1361	1.1311	.9956	.2173E-04	.2264E-01	.7849
399.0088	.0755	4.9067	16.1335	205.8402	8.7852	1.1348	1.1294	.9952	.2218E-04	.2341E-01	.7865
409.0088	.0624	6.0783	16.4484	208.2392	8.9116	1.1337	1.1280	.9949	.2264E-04	.2418E-01	.7881
419.0088	.0518	7.5070	16.7664	210.6364	9.0364	1.1328	1.1269	.9946	.2309E-04	.2496E-01	.7898
429.0088	.0430	9.2431	17.0874	213.0424	9.1600	1.1322	1.1262	.9944	.2355E-04	.2575E-01	.7914
439.0088	.0359	11.3457	17.4110	215.4701	9.2823	1.1319	1.1259	.9943	.2401E-04	.2654E-01	.7931
449.0088	.0300	13.8827	17.7369	217.9357	9.4037	1.1319	1.1261	.9943	.2447E-04	.2735E-01	.7947
459.0088	.0251	16.9325	18.0650	220.4594	9.5242	1.1321	1.1269	.9946	.2493E-04	.2817E-01	.7964
469.0088	.0211	20.5848	18.3948	223.0659	9.6441	1.1326	1.1285	.9952	.2541E-04	.2900E-01	.7982
479.0088	.0178	24.9413	18.7263	225.7851	9.7635	1.1335	1.1310	.9961	.2589E-04	.2985E-01	.7999
489.0088	.0151	30.1167	19.0591	228.6534	9.8827	1.1347	1.1346	.9975	.2638E-04	.3072E-01	.8016
499.0088	.0128	36.2395	19.3931	231.7140	10.0016	1.1363	1.1395	.9996	.2688E-04	.3161E-01	.8034
509.0088	.0109	43.4533	19.7282	235.0176	10.1205	1.1383	1.1459	1.0024	.2740E-04	.3253E-01	.8054
519.0088	.0094	51.9171	20.0642	238.6225	10.2394	1.1406	1.1543	1.0061	.2796E-04	.3348E-01	.8078
529.0088	.0081	61.8069	20.4014	242.5953	10.3580	1.1432	1.1648	1.0110	.2854E-04	.3445E-01	.8106
539.0088	.0070	73.3172	20.7398	247.0102	10.4764	1.1462	1.1778	1.0174	.2917E-04	.3547E-01	.8138
549.0088	.0061	86.6893	21.0797	251.9542	10.5942	1.1495	1.1938	1.0253	.2985E-04	.3653E-01	.8176
559.0088	.0053	102.1164	21.4216	257.5089	10.7106	1.1530	1.2130	1.0352	.3058E-04	.3764E-01	.8221
569.0088	.0046	119.8823	21.7661	263.7756	10.8252	1.1567	1.2359	1.0473	.3138E-04	.3880E-01	.8271
579.0088	.0041	140.2816	22.1141	270.8620	10.9370	1.1604	1.2630	1.0620	.3226E-04	.4002E-01	.8328
588.8889	.0036	163.3459	22.4621	278.7868	11.0437	1.1641	1.2944	1.0793	.3321E-04	.4129E-01	.8390

TABLE IV.- Continued

S/R=32.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
178.3128	15.4476	.0108	10.3408	143.3795	5.5285	1.2210	1.2207	.9998	.1091E-04	.6913E-02	.8244
188.3128	12.0084	.0146	10.5461	146.8695	5.6950	1.2132	1.2128	.9997	.1150E-04	.7654E-02	.8085
198.3128	9.3782	.0197	10.7574	150.2664	5.8599	1.2060	1.2056	.9997	.1208E-04	.8395E-02	.7968
208.3128	7.3544	.0264	10.9747	153.5777	6.0230	1.1993	1.1989	.9997	.1265E-04	.9136E-02	.7882
218.3128	5.7894	.0351	11.1979	156.8098	6.1845	1.1932	1.1927	.9996	.1322E-04	.9876E-02	.7819
228.3128	4.5737	.0465	11.4269	159.9686	6.3441	1.1874	1.1869	.9996	.1377E-04	.1062E-01	.7773
238.3128	3.6253	.0613	11.6616	163.0589	6.5020	1.1821	1.1816	.9995	.1432E-04	.1136E-01	.7742
248.3128	2.8826	.0803	11.9021	166.0852	6.6579	1.1772	1.1765	.9995	.1485E-04	.1210E-01	.7721
258.3128	2.2981	.1047	12.1482	169.0515	6.8120	1.1726	1.1718	.9994	.1538E-04	.1284E-01	.7709
268.3128	1.8385	.1360	12.3997	171.9613	6.9642	1.1682	1.1674	.9993	.1590E-04	.1358E-01	.7703
278.3128	1.4743	.1759	12.6567	174.8178	7.1144	1.1642	1.1633	.9992	.1642E-04	.1433E-01	.7703
288.3128	1.1854	.2266	12.9191	177.6238	7.2626	1.1604	1.1594	.9991	.1693E-04	.1507E-01	.7707
298.3128	.9554	.2908	13.1867	180.3821	7.4088	1.1569	1.1557	.9990	.1743E-04	.1581E-01	.7714
308.3128	.7720	.3719	13.4595	183.0950	7.5529	1.1536	1.1523	.9989	.1792E-04	.1655E-01	.7724
318.3128	.6252	.4741	13.7373	185.7650	7.6950	1.1505	1.1491	.9987	.1841E-04	.1730E-01	.7735
328.3128	.5075	.6023	14.0200	188.3941	7.8350	1.1477	1.1460	.9985	.1889E-04	.1804E-01	.7748
338.3128	.4129	.7628	14.3075	190.9847	7.9729	1.1450	1.1431	.9984	.1936E-04	.1879E-01	.7762
348.3128	.3366	.9630	14.5998	193.5388	8.1087	1.1425	1.1404	.9982	.1983E-04	.1954E-01	.7777
358.3128	.2751	1.2121	14.8966	196.0588	8.2424	1.1402	1.1379	.9980	.2030E-04	.2028E-01	.7792
368.3128	.2252	1.5212	15.1978	198.5470	8.3740	1.1380	1.1355	.9978	.2076E-04	.2103E-01	.7807
378.3128	.1848	1.9035	15.5033	201.0062	8.5035	1.1361	1.1333	.9975	.2121E-04	.2178E-01	.7822
388.3128	.1520	2.3752	15.8130	203.4393	8.6309	1.1343	1.1313	.9973	.2166E-04	.2254E-01	.7837
398.3128	.1253	2.9553	16.1265	205.8499	8.7563	1.1327	1.1294	.9971	.2211E-04	.2330E-01	.7852
408.3128	.1035	3.6668	16.4438	208.2421	8.8797	1.1313	1.1278	.9969	.2256E-04	.2406E-01	.7866
418.3128	.0857	4.5369	16.7648	210.6210	9.0012	1.1300	1.1263	.9967	.2300E-04	.2482E-01	.7880
428.3128	.0711	5.5977	17.0890	212.9926	9.1208	1.1290	1.1251	.9965	.2344E-04	.2559E-01	.7894
438.3128	.0591	6.8870	17.4165	215.3646	9.2387	1.1281	1.1242	.9964	.2388E-04	.2636E-01	.7907
448.3128	.0493	8.4493	17.7468	217.7460	9.3549	1.1274	1.1236	.9964	.2433E-04	.2714E-01	.7920
458.3128	.0412	10.3360	18.0799	220.1483	9.4695	1.1270	1.1234	.9965	.2477E-04	.2793E-01	.7933
468.3128	.0345	12.6071	18.4154	222.5852	9.5827	1.1268	1.1236	.9967	.2521E-04	.2873E-01	.7945
478.3128	.0290	15.3314	18.7531	225.0740	9.6946	1.1268	1.1243	.9971	.2566E-04	.2953E-01	.7958
488.3128	.0244	18.5879	19.0928	227.6352	9.8053	1.1271	1.1257	.9978	.2612E-04	.3035E-01	.7970
498.3128	.0207	22.4662	19.4343	230.2941	9.9150	1.1277	1.1279	.9989	.2658E-04	.3119E-01	.7983
508.3128	.0175	27.0680	19.7773	233.0806	10.0239	1.1286	1.1309	1.0003	.2705E-04	.3204E-01	.7995
518.3128	.0149	32.5070	20.1216	236.0305	10.1321	1.1297	1.1351	1.0023	.2752E-04	.3290E-01	.8007
528.3128	.0127	38.9109	20.4671	239.1854	10.2396	1.1312	1.1405	1.0050	.2801E-04	.3379E-01	.8019
538.3128	.0109	46.4210	20.8138	242.5937	10.3465	1.1330	1.1475	1.0085	.2852E-04	.3470E-01	.8033
548.3128	.0094	55.1940	21.1616	246.3101	10.4529	1.1351	1.1563	1.0129	.2906E-04	.3564E-01	.8050
558.3128	.0081	65.4026	21.5106	250.3963	10.5586	1.1375	1.1671	1.0185	.2963E-04	.3662E-01	.8071
568.3128	.0070	77.2592	21.8608	254.9241	10.6636	1.1402	1.1803	1.0255	.3023E-04	.3762E-01	.8095
578.3128	.0061	90.9350	22.2128	259.9610	10.7673	1.1432	1.1961	1.0341	.3089E-04	.3867E-01	.8125
588.3128	.0054	106.6769	22.5668	265.5899	10.8694	1.1464	1.2150	1.0446	.3159E-04	.3976E-01	.8159
588.8889	.0053	107.6383	22.5873	265.9311	10.8752	1.1466	1.2162	1.0452	.3164E-04	.3983E-01	.8161

TABLE IV.- Continued

S/R=33.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
198.3677	15.4476	.0120	10.7589	150.2959	5.8598	1.2058	1.2056	.9998	.1209E-04	.8398E-02	.7966
208.3677	12.1112	.0160	10.9762	153.6086	6.0228	1.1992	1.1989	.9998	.1266E-04	.9139E-02	.7880
218.3677	9.5338	.0214	11.1995	156.8424	6.1841	1.1930	1.1927	.9998	.1322E-04	.9880E-02	.7817
228.3677	7.5316	.0283	11.4286	160.0032	6.3436	1.1873	1.1870	.9997	.1377E-04	.1062E-01	.7772
238.3677	5.9698	.0372	11.6635	163.0960	6.5012	1.1819	1.1816	.9997	.1432E-04	.1136E-01	.7740
248.3677	4.7466	.0488	11.9041	166.1253	6.6570	1.1770	1.1766	.9997	.1486E-04	.1210E-01	.7720
258.3677	3.7841	.0636	12.1503	169.0949	6.8108	1.1723	1.1719	.9996	.1539E-04	.1284E-01	.7707
268.3677	3.0272	.0826	12.4021	172.0086	6.9627	1.1680	1.1675	.9996	.1591E-04	.1358E-01	.7702
278.3677	2.4282	.1068	12.6593	174.8696	7.1126	1.1639	1.1634	.9995	.1642E-04	.1433E-01	.7701
288.3677	1.9515	.1377	12.9219	177.6806	7.2605	1.1601	1.1595	.9995	.1693E-04	.1507E-01	.7705
298.3677	1.5728	.1768	13.1898	180.4445	7.4063	1.1566	1.1559	.9994	.1743E-04	.1581E-01	.7712
308.3677	1.2706	.2261	13.4629	183.1637	7.5500	1.1532	1.1524	.9993	.1792E-04	.1655E-01	.7721
318.3677	1.0289	.2883	13.7411	185.8404	7.6916	1.1501	1.1492	.9992	.1840E-04	.1729E-01	.7733
328.3677	.8350	.3663	14.0243	188.4768	7.8310	1.1472	1.1462	.9991	.1888E-04	.1804E-01	.7745
338.3677	.6792	.4640	14.3124	191.0750	7.9682	1.1444	1.1433	.9990	.1936E-04	.1878E-01	.7759
348.3677	.5536	.5860	14.6053	193.6370	8.1032	1.1418	1.1406	.9989	.1983E-04	.1953E-01	.7773
358.3677	.4523	.7379	14.9029	196.1648	8.2360	1.1394	1.1380	.9988	.2029E-04	.2027E-01	.7788
368.3677	.3702	.9264	15.2050	198.6603	8.3666	1.1372	1.1356	.9986	.2075E-04	.2102E-01	.7802
378.3677	.3037	1.1599	15.5115	201.1258	8.4949	1.1351	1.1334	.9985	.2120E-04	.2176E-01	.7817
388.3677	.2496	1.4482	15.8224	203.5635	8.6209	1.1332	1.1313	.9984	.2165E-04	.2251E-01	.7831
398.3677	.2056	1.8032	16.1374	205.9759	8.7447	1.1314	1.1294	.9982	.2209E-04	.2326E-01	.7845
408.3677	.1697	2.2393	16.4564	208.3660	8.8663	1.1297	1.1276	.9981	.2253E-04	.2402E-01	.7858
418.3677	.1404	2.7734	16.7792	210.7371	8.9856	1.1282	1.1260	.9979	.2297E-04	.2477E-01	.7871
428.3677	.1163	3.4258	17.1057	213.0929	9.1027	1.1269	1.1245	.9978	.2340E-04	.2553E-01	.7883
438.3677	.0966	4.2205	17.4358	215.4383	9.2177	1.1257	1.1233	.9978	.2383E-04	.2629E-01	.7894
448.3677	.0804	5.1858	17.7691	217.7788	9.3306	1.1247	1.1223	.9977	.2426E-04	.2705E-01	.7905
458.3677	.0671	6.3550	18.1056	220.1210	9.4414	1.1239	1.1215	.9977	.2469E-04	.2782E-01	.7915
468.3677	.0561	7.7669	18.4449	222.4732	9.5503	1.1232	1.1210	.9979	.2512E-04	.2860E-01	.7925
478.3677	.0470	9.4669	18.7870	224.8454	9.6572	1.1227	1.1208	.9981	.2555E-04	.2938E-01	.7934
488.3677	.0395	11.5074	19.1316	227.2495	**9.7624**	**1.1224**	1.1211	.9985	.2598E-04	.3017E-01	.7942
498.3677	.0333	13.9488	19.4784	229.7002	9.8659	1.1223	1.1218	.9990	**.2641E-04**	**.3097E-01**	.7950
508.3677	.0281	16.8601	19.8273	232.2151	9.9678	1.1225	1.1230	.9998	**.2685E-04**	**.3177E-01**	.7958
518.3677	.0238	20.3202	20.1780	234.8153	**10.0682**	**1.1228**	1.1249	1.0009	**.2729E-04**	**.3259E-01**	.7965
528.3677	.0202	24.4183	20.5304	237.5258	10.1673	1.1234	1.1276	1.0024	**.2774E-04**	**.3342E-01**	.7972
538.3677	.0172	29.2546	20.8842	240.3765	10.2651	1.1243	1.1312	1.0043	**.2820E-04**	.3427E-01	.7979
548.3677	.0147	34.9414	21.2393	243.4018	10.3618	1.1254	1.1358	1.0069	.2866E-04	.3514E-01	.7985
558.3677	.0126	41.6037	21.5956	246.6418	10.4574	1.1268	1.1417	1.0101	.2914E-04	.3602E-01	.7991
568.3677	.0109	49.3797	21.9530	250.1419	10.5520	1.1285	1.1491	1.0141	.2963E-04	.3693E-01	.7999
578.3677	.0094	58.4218	22.3116	253.9532	10.6455	1.1304	1.1582	1.0191	.3016E-04	.3787E-01	.8009
588.3677	.0082	68.8975	22.6715	258.1319	10.7379	1.1326	1.1692	1.0253	.3071E-04	.3883E-01	.8022
588.8889	.0081	69.4933	22.6902	258.3622	10.7427	1.1328	1.1698	1.0257	.3074E-04	.3888E-01	.8023

S/R=33.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
219.1227	15.4428	.0132	11.2169	157.0928	6.1954	1.1925	1.1923	.9999	.1326E-04	**.9935E-02**	**.7812**
229.1227	12.2038	.0175	11.4465	160.2499	6.3547	1.1868	1.1866	.9998	.1381E-04	.1068E-01	**.7768**
239.1227	9.6741	.0230	11.6818	163.3394	6.5121	1.1815	1.1813	.9998	.1436E-04	.1142E-01	.7738
249.1227	7.6935	.0302	11.9229	166.3660	6.6676	1.1765	1.1763	.9998	.1490E-04	.1216E-01	.7718
259.1227	6.1347	.0394	12.1697	169.3336	6.8211	1.1719	1.1716	.9998	.1542E-04	.1290E-01	.7706
269.1227	4.9068	.0511	12.4219	172.2458	6.9727	1.1676	1.1673	.9997	.1594E-04	.1364E-01	.7701
279.1227	3.9368	.0661	12.6797	175.1058	7.1223	1.1635	1.1632	.9997	.1646E-04	.1438E-01	.7700
289.1227	3.1658	.0851	12.9428	177.9165	7.2698	1.1597	1.1593	.9997	.1696E-04	.1512E-01	.7704
299.1227	2.5514	.1093	13.2113	180.6805	7.4152	1.1561	1.1557	.9996	.1746E-04	.1586E-01	.7711
309.1227	2.0613	.1398	13.4849	183.4003	7.5585	1.1528	1.1523	.9996	.1795E-04	.1660E-01	.7721
319.1227	1.6693	.1782	13.7637	186.0782	7.6996	1.1496	1.1491	.9995	.1844E-04	.1735E-01	.7732
329.1227	1.3548	.2264	14.0476	188.7163	7.8385	1.1467	1.1460	.9995	.1892E-04	.1809E-01	.7745
339.1227	1.1020	.2867	14.3364	191.3166	7.9752	1.1439	1.1432	.9994	.1939E-04	.1883E-01	.7758
349.1227	.8983	.3621	14.6300	193.8809	8.1095	1.1413	1.1405	.9993	.1986E-04	.1957E-01	.7772
359.1227	.7338	.4560	14.9284	196.4111	8.2416	1.1388	1.1379	.9992	.2032E-04	.2032E-01	.7786
369.1227	.6006	.5725	15.2314	198.9090	8.3714	1.1365	1.1356	.9992	.2077E-04	.2106E-01	.7801
379.1227	.4926	.7169	15.5389	201.3765	8.4988	1.1343	1.1333	.9991	.2122E-04	.2181E-01	.7815
389.1227	.4048	.8953	15.8508	203.8154	8.6238	1.1323	1.1312	.9990	.2167E-04	.2255E-01	.7828
399.1227	.3334	1.1150	16.1670	206.2278	8.7464	1.1304	1.1292	.9989	.2211E-04	.2330E-01	.7842
409.1227	.2751	1.3851	16.4873	208.6158	8.8667	1.1287	1.1274	.9988	.2255E-04	.2405E-01	.7854
419.1227	.2274	1.7162	16.8116	210.9818	8.9845	1.1271	1.1257	.9987	.2298E-04	.2480E-01	.7866
429.1227	.1884	2.1211	17.1398	213.3285	9.0999	1.1256	1.1241	.9987	.2341E-04	.2555E-01	.7877
439.1227	**.1564**	2.6148	17.4718	215.6591	**9.2130**	**1.1242**	1.1227	.9986	**.2383E-04**	**.2630E-01**	.7888
449.1227	**.1300**	3.2154	17.8072	217.9771	**9.3236**	**1.1230**	1.1214	.9986	**.2426E-04**	**.2705E-01**	.7897
459.1227	**.1084**	3.9440	18.1461	220.2869	**9.4319**	**1.1219**	1.1204	.9986	**.2468E-04**	**.2781E-01**	.7906
469.1227	**.0905**	4.8256	18.4882	222.5935	**9.5379**	**1.1209**	1.1195	.9987	**.2510E-04**	**.2858E-01**	.7913
479.1227	.0758	5.8894	18.8333	224.9031	**9.6416**	**1.1201**	1.1189	.9988	**.2551E-04**	**.2934E-01**	.7920
489.1227	.0635	7.1696	19.1813	227.2228	9.7430	1.1195	1.1185	.9990	.2593E-04	.3011E-01	.7926
499.1227	.0534	8.7056	19.5319	229.5615	9.8423	1.1190	1.1184	.9993	.2634E-04	.3089E-01	.7931
509.1227	.0450	10.5435	19.8850	231.9297	9.9394	1.1186	1.1187	.9998	.2676E-04	.3167E-01	.7935
519.1227	.0380	12.7358	20.2403	234.3399	10.0345	1.1185	1.1193	1.0004	.2718E-04	.3246E-01	.7938
529.1227	.0322	15.3429	20.5977	236.8072	10.1277	1.1185	1.1205	1.0012	.2760E-04	.3326E-01	.7941
539.1227	.0273	18.4336	20.9570	239.3494	10.2190	1.1187	1.1222	1.0024	.2803E-04	.3406E-01	.7944
549.1227	.0233	22.0857	21.3179	241.9877	10.3085	1.1191	1.1245	1.0038	.2846E-04	.3488E-01	.7946
559.1227	.0199	26.3868	21.6804	244.7469	10.3963	1.1197	1.1276	1.0057	.2890E-04	.3571E-01	.7947
569.1227	.0170	31.4350	22.0442	247.6558	10.4826	1.1206	1.1316	1.0081	.2934E-04	.3656E-01	.7948
579.1227	.0146	37.3396	22.4092	250.7474	10.5673	1.1217	1.1367	1.0110	.2979E-04	.3742E-01	.7948
588.8889	.0126	44.0479	22.7668	253.9793	10.6486	1.1230	1.1428	1.0146	.3024E-04	.3828E-01	.7947

TABLE IV.- Continued

s /R=34.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
240.5372	15.4425	.0145	11.7158	163.7790	6.5336	1.1807	1.1806	.9999	.1444E-04	.1152E-01	.7734
250.5372	12.2863	.0190	11.9578	166.7983	6.6887	1.1758	1.1756	.9999	.1497E-04	.1226E-01	.7715
260.5372	9.8030	.0248	12.2053	169.7592	6.8419	1.1712	1.1710	.9999	.1550E-04	.1300E-01	.7704
270.5372	7.8444	.0321	12.4584	172.6654	6.9931	1.1669	1.1667	.9998	.1602E-04	.1374E-01	.7700
280.5372	6.2929	.0416	12.7170	175.5200	7.1423	1.1629	1.1626	.9998	.1653E-04	.1448E-01	.7700
290.5372	5.0615	.0535	12.9810	178.3260	7.2894	1.1591	1.1588	.9998	.1703E-04	.1523E-01	.7704
300.5372	4.0810	.0686	13.2503	181.0858	7.4344	1.1555	1.1553	.9998	.1753E-04	.1597E-01	.7712
310.5372	3.2982	.0878	13.5248	183.8020	7.5772	1.1522	1.1519	.9997	.1802E-04	.1671E-01	.7721
320.5372	2.6717	.1118	13.8045	186.4768	7.7178	1.1490	1.1487	.9997	.1851E-04	.1745E-01	.7733
330.5372	2.1689	.1420	14.0892	189.1123	7.8562	1.1461	1.1457	.9997	.1898E-04	.1819E-01	.7745
340.5372	1.7646	.1799	14.3789	191.7103	7.9923	1.1433	1.1429	.9996	.1945E-04	.1893E-01	.7759
350.5372	1.4387	.2271	14.6734	194.2728	8.1260	1.1407	1.1402	.9996	.1992E-04	.1967E-01	.7773
360.5372	1.1754	.2859	14.9727	196.8013	8.2574	1.1382	1.1377	.9995	.2038E-04	.2042E-01	.7787
370.5372	.9622	.3589	15.2767	199.2978	8.3865	1.1359	1.1353	.9995	.2083E-04	.2116E-01	.7801
380.5372	.7893	.4493	15.5853	201.7637	8.5131	1.1337	1.1330	.9994	.2128E-04	.2190E-01	.7815
390.5372	.6487	.5610	15.8982	204.2008	8.6372	1.1316	1.1309	.9994	.2173E-04	.2265E-01	.7828
400.5372	.5342	.6986	16.2156	206.6107	8.7589	1.1297	1.1289	.9993	.2216E-04	.2339E-01	.7841
410.5372	.4407	.8678	16.5371	208.9953	8.8781	1.1279	1.1270	.9993	.2260E-04	.2413E-01	.7853
420.5372	.3643	1.0753	16.8628	211.3563	8.9948	1.1262	1.1253	.9992	.2303E-04	.2488E-01	.7865
430.5372	.3018	1.3291	17.1924	213.6959	9.1089	1.1246	1.1237	.9992	.2345E-04	.2563E-01	.7875
440.5372	.2504	1.6388	17.5258	216.0162	9.2205	1.1231	1.1222	.9992	.2388E-04	.2638E-01	.7885
450.5372	.2082	2.0157	17.8630	218.3198	9.3295	1.1218	1.1208	.9991	.2429E-04	.2713E-01	.7893
460.5372	.1734	2.4734	18.2037	220.6097	9.4360	1.1206	1.1196	.9991	.2471E-04	.2788E-01	.7901
470.5372	.1448	3.0278	18.5478	222.8892	9.5399	1.1194	1.1185	.9992	.2512E-04	.2863E-01	.7907
480.5372	.1211	3.6975	18.8952	225.1623	9.6413	1.1184	1.1176	.9992	.2553E-04	.2939E-01	.7912
490.5372	.1015	4.5045	19.2457	227.4335	9.7401	1.1176	1.1169	.9994	.2594E-04	.3015E-01	.7917
500.5372	.0852	5.4745	19.5990	229.7083	9.8365	1.1168	1.1164	.9996	.2634E-04	.3091E-01	.7920
510.5372	.0717	6.6374	19.9552	231.9933	9.9303	1.1162	1.1161	.9998	.2675E-04	.3168E-01	.7922
520.5372	.0605	8.0276	20.3138	234.2962	10.0217	1.1157	1.1161	1.0002	.2715E-04	.3245E-01	.7923
530.5372	.0511	9.6852	20.6749	236.6262	10.1108	1.1153	1.1164	1.0007	.2756E-04	.3322E-01	.7923
540.5372	.0433	11.6559	21.0382	238.9941	10.1974	1.1151	1.1170	1.0014	.2796E-04	.3401E-01	.7922
550.5372	.0368	13.9922	21.4035	241.4129	10.2819	1.1151	1.1180	1.0023	.2837E-04	.3480E-01	.7920
560.5372	.0313	16.7536	21.7706	243.8977	10.3641	1.1152	1.1196	1.0034	.2878E-04	.3559E-01	.7917
570.5372	.0267	20.0077	22.1393	246.4663	10.4441	1.1154	1.1216	1.0048	.2920E-04	.3640E-01	.7914
580.5372	.0229	23.8304	22.5096	249.1395	10.5221	1.1159	1.1244	1.0066	.2962E-04	.3722E-01	.7910
588.8889	.0201	27.5169	22.8199	251.4691	10.5857	1.1164	1.1272	1.0084	.2997E-04	.3791E-01	.7906

s /R=34.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
262.5792	15.4476	.0158	12.2567	170.3635	6.8725	1.1702	1.1701	.9999	.1560E-04	.1315E-01	.7702
272.5792	12.3644	.0206	12.5110	173.2599	7.0232	1.1660	1.1659	.9999	.1612E-04	.1389E-01	.7699
282.5792	9.9241	.0265	12.7708	176.1055	7.1719	1.1620	1.1619	.9999	.1663E-04	.1463E-01	.7700
292.5792	7.9860	.0342	13.0359	178.9030	7.3185	1.1583	1.1581	.9999	.1714E-04	.1538E-01	.7705
302.5792	6.4420	.0438	13.3063	181.6552	7.4630	1.1548	1.1546	.9999	.1763E-04	.1612E-01	.7713
312.5792	5.2086	.0559	13.5820	184.3643	7.6052	1.1514	1.1513	.9998	.1812E-04	.1686E-01	.7723
322.5792	4.2209	.0712	13.8628	187.0325	7.7453	1.1483	1.1481	.9998	.1860E-04	.1760E-01	.7735
332.5792	3.4280	.0904	14.1486	189.6619	7.8830	1.1454	1.1451	.9998	.1908E-04	.1834E-01	.7747
342.5792	2.7900	.1145	14.4394	192.2544	8.0185	1.1426	1.1423	.9998	.1955E-04	.1908E-01	.7761
352.5792	2.2755	.1444	14.7351	194.8116	8.1516	1.1400	1.1397	.9997	.2001E-04	.1982E-01	.7775
362.5792	1.8597	.1817	15.0355	197.3354	8.2823	1.1375	1.1372	.9997	.2047E-04	.2056E-01	.7789
372.5792	1.5229	.2280	15.3407	199.8272	8.4106	1.1352	1.1348	.9997	.2092E-04	.2131E-01	.7803
382.5792	1.2496	.2854	15.6504	202.2887	8.5364	1.1330	1.1326	.9996	.2137E-04	.2205E-01	.7817
392.5792	1.0273	.3562	15.9646	204.7213	8.6597	1.1309	1.1305	.9996	.2181E-04	.2279E-01	.7830
402.5792	.8461	.4434	16.2831	207.1266	8.7805	1.1290	1.1285	.9996	.2225E-04	.2353E-01	.7842
412.5792	.6983	.5506	16.6059	209.5060	8.8988	1.1271	1.1266	.9996	.2268E-04	.2428E-01	.7854
422.5792	.5773	.6821	16.9329	211.8611	9.0144	1.1254	1.1249	.9995	.2311E-04	.2502E-01	.7865
432.5792	.4782	.8429	17.2638	214.1936	9.1274	1.1238	1.1232	.9995	.2353E-04	.2577E-01	.7875
442.5792	.3969	1.0392	17.5987	216.5052	9.2378	1.1223	1.1217	.9995	.2395E-04	.2651E-01	.7884
452.5792	.3308	1.2781	17.9374	218.7979	9.3455	1.1209	1.1203	.9995	.2436E-04	.2726E-01	.7892
462.5792	.2749	1.5682	18.2797	221.0736	9.4505	1.1196	1.1190	.9995	.2478E-04	.2800E-01	.7899
472.5792	.2294	1.9198	18.6255	223.3349	9.5528	1.1184	1.1178	.9995	.2518E-04	.2875E-01	.7904
482.5792	.1918	2.3447	18.9747	225.5844	9.6524	1.1172	1.1167	.9995	.2559E-04	.2950E-01	.7908
492.5792	.1607	2.8571	19.3271	227.8252	9.7492	1.1162	1.1158	.9996	.2599E-04	.3026E-01	.7911
502.5792	.1349	3.4735	19.6826	230.0610	9.8434	1.1153	1.1151	.9997	.2639E-04	.3101E-01	.7913
512.5792	.1134	4.2132	20.0410	232.2959	9.9348	1.1145	1.1145	.9999	.2679E-04	.3177E-01	.7914
522.5792	.0956	5.0986	20.4022	234.5349	10.0236	1.1138	1.1141	1.0001	.2718E-04	.3253E-01	.7913
532.5792	.0807	6.1557	20.7660	236.7838	10.1096	1.1132	1.1138	1.0005	.2757E-04	.3329E-01	.7911
542.5792	.0683	7.4147	21.1322	239.0494	10.1930	1.1128	1.1139	1.0009	.2797E-04	.3406E-01	.7908
552.5792	.0579	8.9101	21.5007	241.3398	10.2737	1.1124	1.1142	1.0014	.2836E-04	.3483E-01	.7903
562.5792	.0492	10.6817	21.8713	243.6643	10.3518	1.1122	1.1148	1.0021	.2875E-04	.3560E-01	.7898
572.5792	.0419	12.7747	22.2438	246.0339	10.4274	1.1121	1.1157	1.0030	.2915E-04	.3639E-01	.7891
582.5792	.0358	15.2403	22.6180	248.4618	10.5004	1.1121	1.1171	1.0041	.2955E-04	.3718E-01	.7884
588.8889	.0324	17.0166	22.8550	250.0306	10.5453	1.1122	1.1182	1.0049	.2980E-04	.3768E-01	.7879

TABLE IV.- Continued

S/R=35.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
285.2286	15.4476	.0172	12.8406	176.8566	7.2106	1.1610	1.1609	.9999	.1677E-04	.1483E-01	.7701
295.2286	12.4383	.0221	13.1072	179.6427	7.3566	1.1573	1.1572	.9999	.1727E-04	.1557E-01	.7707
305.2286	10.0395	.0283	13.3791	182.3840	7.5004	1.1538	1.1537	.9999	.1776E-04	.1631E-01	.7715
315.2286	8.1221	.0362	13.6562	185.0830	7.6420	1.1505	1.1504	.9999	.1825E-04	.1705E-01	.7726
325.2286	6.5857	.0460	13.9384	187.7418	7.7814	1.1475	1.1473	.9999	.1873E-04	.1779E-01	.7738
335.2286	5.3515	.0584	14.2256	190.3623	7.9184	1.1446	1.1444	.9999	.1920E-04	.1853E-01	.7751
345.2286	4.3578	.0739	14.5178	192.9464	8.0532	1.1418	1.1417	.9999	.1967E-04	.1928E-01	.7764
355.2286	3.5560	.0931	14.8148	195.4958	8.1855	1.1392	1.1391	.9998	.2013E-04	.2002E-01	.7778
365.2286	2.9076	.1171	15.1166	198.0121	8.3155	1.1368	1.1366	.9998	.2059E-04	.2076E-01	.7792
375.2286	2.3821	.1468	15.4231	200.4968	8.4430	1.1345	1.1343	.9998	.2104E-04	.2150E-01	.7806
385.2286	1.9554	.1836	15.7342	202.9514	8.5680	1.1323	1.1321	.9998	.2149E-04	.2224E-01	.7820
395.2286	1.6082	.2291	16.0497	205.3773	8.6904	1.1302	1.1300	.9998	.2193E-04	.2298E-01	.7832
405.2286	1.3252	.2850	16.3696	207.7759	8.8103	1.1283	1.1280	.9997	.2236E-04	.2372E-01	.7845
415.2286	1.0940	.3538	16.6938	210.1485	8.9275	1.1265	1.1261	.9997	.2279E-04	.2447E-01	.7856
425.2286	.9048	.4380	17.0221	212.4966	9.0422	1.1247	1.1244	.9997	.2322E-04	.2521E-01	.7867
435.2286	.7498	.5410	17.3545	214.8214	9.1541	1.1231	1.1227	.9997	.2364E-04	.2595E-01	.7876
445.2286	.6224	.6667	17.6908	217.1244	9.2633	1.1215	1.1212	.9997	.2405E-04	.2670E-01	.7885
455.2286	.5176	.8197	18.0309	219.4072	9.3698	1.1201	1.1197	.9997	.2447E-04	.2744E-01	.7892
465.2286	.4313	1.0055	18.3748	221.6714	9.4735	1.1188	1.1184	.9997	.2487E-04	.2819E-01	.7898
475.2286	.3600	1.2305	18.7221	223.9188	9.5743	1.1175	1.1172	.9997	.2528E-04	.2893E-01	.7903
485.2286	.3010	1.5026	19.0729	226.1513	9.6724	1.1163	1.1160	.9997	.2568E-04	.2968E-01	.7906
495.2286	.2522	1.8307	19.4271	228.3712	9.7676	1.1152	1.1150	.9998	.2608E-04	.3043E-01	.7908
505.2286	.2116	2.2254	19.7843	230.5810	9.8600	1.1142	1.1141	.9999	.2647E-04	.3118E-01	.7909
515.2286	.1780	2.6993	20.1447	232.7835	9.9495	1.1133	1.1133	1.0000	.2686E-04	.3193E-01	.7909
525.2286	.1499	3.2668	20.5079	234.9820	10.0361	1.1125	1.1127	1.0001	.2725E-04	.3268E-01	.7907
535.2286	.1265	3.9448	20.8738	237.1803	10.1198	1.1118	1.1122	1.0003	.2764E-04	.3343E-01	.7903
545.2286	.1070	4.7530	21.2423	239.3829	10.2006	1.1112	1.1119	1.0006	.2802E-04	.3419E-01	.7899
555.2286	.0907	5.7139	21.6132	241.5949	10.2786	1.1106	1.1117	1.0009	.2841E-04	.3495E-01	.7892
565.2286	.0770	6.8536	21.9864	243.8224	10.3536	1.1102	1.1118	1.0014	.2879E-04	.3571E-01	.7885
575.2286	.0655	8.2020	22.3617	246.0723	10.4258	1.1099	1.1121	1.0019	.2917E-04	.3648E-01	.7876
585.2286	.0559	9.7932	22.7389	248.3527	10.4952	1.1097	1.1127	1.0026	.2956E-04	.3725E-01	.7866
588.8889	.0527	10.4454	22.8775	249.1971	10.5199	1.1096	1.1130	1.0029	.2970E-04	.3754E-01	.7862

S/R=35.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
308.5009	15.4476	.0186	13.4693	183.2762	7.5467	1.1527	1.1526	.9999	.1792E-04	.1655E-01	.7718
318.5009	12.5032	.0237	13.7481	185.9624	7.6875	1.1495	1.1494	.9999	.1841E-04	.1729E-01	.7729
328.5009	10.1451	.0302	14.0320	188.6091	7.8261	1.1465	1.1464	.9999	.1888E-04	.1804E-01	.7742
338.5009	8.2495	.0383	14.3209	191.2182	7.9623	1.1436	1.1435	.9999	.1936E-04	.1878E-01	.7755
348.5009	6.7222	.0483	14.6148	193.7914	8.0962	1.1409	1.1408	.9999	.1982E-04	.1952E-01	.7769
358.5009	5.4888	.0609	14.9135	196.3305	8.2277	1.1384	1.1382	.9999	.2028E-04	.2026E-01	.7783
368.5009	4.4907	.0765	15.2169	198.8370	8.3568	1.1360	1.1358	.9999	.2074E-04	.2100E-01	.7796
378.5009	3.6814	.0958	15.5250	201.3123	8.4834	1.1337	1.1335	.9999	.2119E-04	.2174E-01	.7810
388.5009	3.0237	.1198	15.8376	203.7579	8.6074	1.1315	1.1314	.9999	.2163E-04	.2248E-01	.7823
398.5009	2.4883	.1493	16.1547	206.1751	8.7289	1.1295	1.1293	.9999	.2207E-04	.2322E-01	.7836
408.5009	2.0515	.1856	16.4762	208.5652	8.8478	1.1276	1.1274	.9998	.2250E-04	.2396E-01	.7848
418.5009	1.6945	.2302	16.8019	210.9293	8.9640	1.1257	1.1255	.9998	.2293E-04	.2471E-01	.7859
428.5009	1.4022	.2849	17.1317	213.2689	9.0775	1.1240	1.1238	.9998	.2335E-04	.2545E-01	.7869
438.5009	1.1624	.3516	17.4656	215.5850	9.1883	1.1224	1.1222	.9998	.2377E-04	.2619E-01	.7878
448.5009	.9654	.4330	17.8035	217.8790	9.2964	1.1208	1.1206	.9998	.2418E-04	.2693E-01	.7886
458.5009	.8032	.5321	18.1451	220.1521	9.4016	1.1194	1.1192	.9998	.2459E-04	.2767E-01	.7893
468.5009	.6695	.6523	18.4905	222.4056	9.5040	1.1180	1.1178	.9998	.2500E-04	.2842E-01	.7898
478.5009	.5590	.7979	18.8394	224.6410	9.6035	1.1168	1.1166	.9998	.2540E-04	.2916E-01	.7903
488.5009	.4676	.9738	19.1918	226.8598	9.7001	1.1156	1.1154	.9998	.2580E-04	.2991E-01	.7905
498.5009	.3919	1.1860	19.5475	229.0637	9.7938	1.1144	1.1143	.9999	.2619E-04	.3065E-01	.7907
508.5009	.3290	1.4411	19.9065	231.2544	9.8846	1.1134	1.1133	.9999	.2659E-04	.3140E-01	.7907
518.5009	.2767	1.7474	20.2685	233.4341	9.9723	1.1124	1.1125	1.0000	.2697E-04	.3215E-01	.7905
528.5009	.2331	2.1142	20.6334	235.6050	10.0571	1.1116	1.1117	1.0001	.2736E-04	.3289E-01	.7902
538.5009	.1967	2.5525	21.0012	237.7697	10.1388	1.1108	1.1110	1.0002	.2774E-04	.3364E-01	.7898
548.5009	.1664	3.0749	21.3716	239.9313	10.2175	1.1100	1.1105	1.0004	.2812E-04	.3439E-01	.7892
558.5009	.1410	3.6963	21.7445	242.0932	10.2931	1.1094	1.1101	1.0006	.2850E-04	.3515E-01	.7884
568.5009	.1197	4.4337	22.1198	244.2594	10.3657	1.1088	1.1099	1.0009	.2887E-04	.3590E-01	.7875
578.5009	.1018	5.3067	22.4973	246.4343	10.4352	1.1084	1.1098	1.0013	.2925E-04	.3666E-01	.7865
588.5009	.0867	6.3376	22.8768	248.6234	10.5016	1.1080	1.1100	1.0017	.2962E-04	.3742E-01	.7853
588.8889	.0862	6.3814	22.8916	248.7087	10.5041	1.1080	1.1100	1.0017	.2964E-04	.3745E-01	.7853

TABLE IV.- Continued

s /R=36.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
332.3537	15.4476	.0201	14.1429	189.6223	7.8786	1.1453	1.1453	1.0000	.1907E-04	.1832E-01	.7747
342.3537	12.5697	.0254	14.4337	192.2177	8.0139	1.1425	1.1425	.9999	.1954E-04	.1906E-01	.7760
352.3537	10.2504	.0320	14.7295	194.7781	8.1469	1.1399	1.1398	.9999	.2000E-04	.1980E-01	.7774
362.3537	8.3761	.0403	15.0301	197.3048	8.2774	1.1374	1.1373	.9999	.2046E-04	.2054E-01	.7788
372.3537	6.8581	.0506	15.3353	199.7995	8.4054	1.1350	1.1349	.9999	.2091E-04	.2128E-01	.7802
382.3537	5.6261	.0634	15.6452	202.2636	8.5310	1.1328	1.1327	.9999	.2136E-04	.2202E-01	.7815
392.3537	4.6243	.0791	15.9597	204.6984	8.6540	1.1307	1.1306	.9999	.2180E-04	.2276E-01	.7828
402.3537	3.8080	.0985	16.2785	207.1052	8.7744	1.1287	1.1286	.9999	.2223E-04	.2351E-01	.7841
412.3537	3.1417	.1224	16.6017	209.4851	8.8921	1.1268	1.1266	.9999	.2266E-04	.2425E-01	.7852
422.3537	2.5967	.1516	16.9292	211.8394	9.0072	1.1250	1.1248	.9999	.2309E-04	.2499E-01	.7863
432.3537	2.1502	.1875	17.2607	214.1692	9.1195	1.1233	1.1231	.9999	.2351E-04	.2573E-01	.7873
442.3537	1.7836	.2312	17.5963	216.4757	9.2291	1.1216	1.1215	.9999	.2393E-04	.2647E-01	.7881
452.3537	1.4822	.2845	17.9358	218.7598	9.3359	1.1201	1.1200	.9999	.2434E-04	.2721E-01	.7889
462.3537	1.2339	.3493	18.2791	221.0229	9.4398	1.1187	1.1186	.9999	.2475E-04	.2796E-01	.7895
472.3537	1.0291	.4279	18.6261	223.2659	9.5409	1.1173	1.1172	.9999	.2515E-04	.2870E-01	.7900
482.3537	.8597	.5230	18.9766	225.4901	9.6390	1.1161	1.1159	.9999	.2555E-04	.2944E-01	.7903
492.3537	.7195	.6379	19.3306	227.6967	9.7342	1.1149	1.1148	.9999	.2595E-04	.3018E-01	.7905
502.3537	.6032	.7764	19.6880	229.8870	9.8264	1.1137	1.1137	.9999	.2634E-04	.3093E-01	.7906
512.3537	.5066	.9428	20.0485	232.0625	9.9155	1.1127	1.1127	1.0000	.2673E-04	.3167E-01	.7905
522.3537	.4263	1.1426	20.4121	234.2246	10.0016	1.1117	1.1117	1.0000	.2711E-04	.3242E-01	.7903
532.3537	.3593	1.3816	20.7787	236.3751	10.0846	1.1108	1.1109	1.0001	.2749E-04	.3316E-01	.7899
542.3537	.3034	1.6672	21.1481	238.5159	10.1645	1.1099	1.1102	1.0002	.2787E-04	.3391E-01	.7893
552.3537	.2566	2.0076	21.5202	240.6491	10.2412	1.1092	1.1095	1.0003	.2825E-04	.3466E-01	.7886
562.3537	.2174	2.4123	21.8949	242.7770	10.3148	1.1085	1.1090	1.0004	.2862E-04	.3540E-01	.7878
572.3537	.1846	2.8926	22.2720	244.9023	10.3852	1.1079	1.1086	1.0006	.2899E-04	.3615E-01	.7867
582.3537	.1570	3.4612	22.6513	247.0283	10.4523	1.1073	1.1083	1.0009	.2936E-04	.3691E-01	.7856
588.8889	.1414	3.8866	22.9003	248.4195	10.4945	1.1070	1.1081	1.0010	.2960E-04	.3740E-01	.7847

s /R=36.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
356.8148	15.4476	.0215	14.8631	195.9121	8.2052	1.1387	1.1387	1.0000	.2021E-04	.2013E-01	.7780
366.8148	12.6316	.0271	15.1658	198.4247	8.3346	1.1363	1.1362	1.0000	.2066E-04	.2087E-01	.7794
376.8148	10.3512	.0339	15.4732	200.9058	8.4615	1.1340	1.1339	1.0000	.2111E-04	.2161E-01	.7808
386.8148	8.4989	.0424	15.7852	203.3569	8.5858	1.1318	1.1317	1.0000	.2155E-04	.2235E-01	.7821
396.8148	6.9913	.0529	16.1017	205.7792	8.7076	1.1297	1.1297	.9999	.2199E-04	.2309E-01	.7834
406.8148	5.7619	.0658	16.4225	208.1739	8.8268	1.1278	1.1277	.9999	.2243E-04	.2384E-01	.7846
416.8148	4.7574	.0817	16.7477	210.5422	8.9433	1.1259	1.1258	.9999	.2285E-04	.2458E-01	.7857
426.8148	3.9352	.1011	17.0770	212.8852	9.0571	1.1241	1.1241	.9999	.2328E-04	.2532E-01	.7867
436.8148	3.2610	.1249	17.4105	215.2040	9.1681	1.1225	1.1224	.9999	.2370E-04	.2606E-01	.7876
446.8148	2.7071	.1539	17.7479	217.4996	9.2763	1.1209	1.1208	.9999	.2411E-04	.2680E-01	.7884
456.8148	2.2513	.1892	18.0892	219.7730	9.3817	1.1194	1.1193	.9999	.2452E-04	.2754E-01	.7891
466.8148	1.8756	.2320	18.4343	222.0253	9.4843	1.1180	1.1179	.9999	.2493E-04	.2828E-01	.7897
476.8148	1.5653	.2840	18.7830	224.2575	9.5838	1.1166	1.1166	.9999	.2533E-04	.2902E-01	.7901
486.8148	1.3086	.3468	19.1353	226.4705	9.6805	1.1154	1.1153	.9999	.2573E-04	.2977E-01	.7904
496.8148	1.0959	.4226	19.4910	228.6654	9.7741	1.1142	1.1141	1.0000	.2612E-04	.3051E-01	.7905
506.8148	.9194	.5139	19.8501	230.8434	9.8647	1.1131	1.1130	1.0000	.2651E-04	.3125E-01	.7905
516.8148	.7727	.6236	20.2123	233.0055	9.9522	1.1120	1.1120	1.0000	.2689E-04	.3199E-01	.7903
526.8148	.6505	.7551	20.5776	235.1530	10.0366	1.1110	1.1111	1.0000	.2728E-04	.3274E-01	.7900
536.8148	.5486	.9124	20.9458	237.2871	10.1178	1.1101	1.1102	1.0001	.2766E-04	.3348E-01	.7895
546.8148	.4634	1.1002	21.3168	239.4094	10.1959	1.1093	1.1094	1.0001	.2803E-04	.3423E-01	.7889
556.8148	.3922	1.3240	21.6905	241.5213	10.2707	1.1085	1.1087	1.0002	.2840E-04	.3497E-01	.7881
566.8148	.3325	1.5898	22.0668	243.6246	10.3423	1.1077	1.1081	1.0003	.2877E-04	.3572E-01	.7871
576.8148	.2824	1.9052	22.4455	245.7213	10.4105	1.1071	1.1076	1.0004	.2914E-04	.3646E-01	.7860
586.8148	.2403	2.2784	22.8264	247.8134	10.4755	1.1065	1.1071	1.0006	.2950E-04	.3721E-01	.7847
588.8889	.2324	2.3635	22.9057	248.2469	10.4886	1.1064	1.1071	1.0006	.2958E-04	.3737E-01	.7844

TABLE IV.- Continued

s /R=37.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
381.8742	15.4476	.0230	15.6306	202.1516	8.5245	1.1328	1.1328	1.0000	.2134E-04	.2199E-01	.7814
391.8742	12.6946	.0288	15.9449	204.5881	8.6476	1.1307	1.1307	1.0000	.2178E-04	.2273E-01	.7827
401.8742	10.4525	.0358	16.2636	206.9963	8.7680	1.1287	1.1286	1.0000	.2221E-04	.2347E-01	.7840
411.8742	8.6223	.0445	16.5867	209.3776	8.8858	1.1268	1.1267	1.0000	.2264E-04	.2421E-01	.7851
421.8742	7.1257	.0552	16.9140	211.7329	9.0009	1.1250	1.1249	1.0000	.2307E-04	.2495E-01	.7862
431.8742	5.8994	.0683	17.2455	214.0633	9.1132	1.1232	1.1232	1.0000	.2349E-04	.2569E-01	.7872
441.8742	4.8930	.0842	17.5811	216.3699	9.2228	1.1216	1.1216	1.0000	.2391E-04	.2643E-01	.7880
451.8742	4.0655	.1036	17.9205	218.6536	9.3295	1.1201	1.1200	1.0000	.2432E-04	.2717E-01	.7888
461.8742	3.3838	.1273	18.2638	220.9153	9.4334	1.1186	1.1185	1.0000	.2473E-04	.2791E-01	.7894
471.8742	2.8214	.1559	18.6109	223.1561	9.5344	1.1172	1.1172	1.0000	.2513E-04	.2866E-01	.7899
481.8742	2.3566	.1906	18.9615	225.3768	9.6323	1.1159	1.1159	1.0000	.2553E-04	.2940E-01	.7902
491.8742	1.9718	.2326	19.3157	227.5783	9.7273	1.1147	1.1146	1.0000	.2592E-04	.3014E-01	.7904
501.8742	1.6526	.2831	19.6732	229.7616	9.8193	1.1135	1.1135	1.0000	.2631E-04	.3088E-01	.7905
511.8742	1.3876	.3439	20.0340	231.9275	9.9082	1.1124	1.1124	1.0000	.2670E-04	.3162E-01	.7904
521.8742	1.1670	.4169	20.3980	234.0772	9.9939	1.1114	1.1114	1.0000	.2708E-04	.3236E-01	.7901
531.8742	.9832	.5044	20.7649	236.2114	10.0765	1.1104	1.1104	1.0000	.2746E-04	.3311E-01	.7897
541.8742	.8298	.6089	21.1348	238.3314	10.1559	1.1095	1.1095	1.0001	.2784E-04	.3385E-01	.7891
551.8742	.7015	.7335	21.5075	240.4383	10.2320	1.1086	1.1087	1.0001	.2821E-04	.3459E-01	.7884
561.8742	.5941	.8819	21.8828	242.5331	10.3049	1.1078	1.1080	1.0002	.2858E-04	.3533E-01	.7875
571.8742	.5040	1.0581	22.2607	244.6174	10.3744	1.1071	1.1073	1.0002	.2895E-04	.3608E-01	.7864
581.8742	.4283	1.2670	22.6409	246.6924	10.4406	1.1064	1.1068	1.0003	.2931E-04	.3682E-01	.7852
588.8889	.3826	1.4356	22.9090	248.1433	10.4850	1.1060	1.1064	1.0004	.2957E-04	.3735E-01	.7842

s /R=37.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
407.5693	15.4476	.0246	16.4472	208.3571	8.8353	1.1276	1.1275	1.0000	.2246E-04	.2389E-01	.7846
417.5693	12.7538	.0305	16.7728	210.7234	8.9515	1.1257	1.1257	1.0000	.2289E-04	.2463E-01	.7858
427.5693	10.5507	.0378	17.1025	213.0643	9.0650	1.1239	1.1239	1.0000	.2331E-04	.2537E-01	.7868
437.5693	8.7439	.0467	17.4363	215.3809	9.1757	1.1223	1.1222	1.0000	.2373E-04	.2611E-01	.7877
447.5693	7.2594	.0575	17.7741	217.6740	9.2837	1.1207	1.1207	1.0000	.2414E-04	.2685E-01	.7885
457.5693	6.0375	.0707	18.1159	219.9447	9.3887	1.1192	1.1191	1.0000	.2455E-04	.2759E-01	.7891
467.5693	5.0302	.0867	18.4614	222.1938	9.4909	1.1178	1.1177	1.0000	.2496E-04	.2833E-01	.7897
477.5693	4.1982	.1061	18.8105	224.4221	9.5901	1.1164	1.1164	1.0000	.2536E-04	.2908E-01	.7901
487.5693	3.5099	.1295	19.1632	226.6306	9.6863	1.1151	1.1151	1.0000	.2575E-04	.2982E-01	.7903
497.5693	2.9395	.1578	19.5194	228.8200	9.7795	1.1139	1.1139	1.0000	.2614E-04	.3056E-01	.7904
507.5693	2.4660	.1919	19.8789	230.9912	9.8696	1.1128	1.1128	1.0000	.2653E-04	.3130E-01	.7904
517.5693	2.0724	.2328	20.2416	233.1451	9.9566	1.1117	1.1117	1.0000	.2692E-04	.3204E-01	.7902
527.5693	1.7446	.2819	20.6074	235.2824	10.0404	1.1107	1.1107	1.0000	.2730E-04	.3278E-01	.7899
537.5693	1.4711	.3407	20.9762	237.4041	10.1210	1.1097	1.1098	1.0000	.2768E-04	.3352E-01	.7894
547.5693	1.2427	.4108	21.3479	239.5110	10.1984	1.1089	1.1089	1.0001	.2805E-04	.3427E-01	.7887
557.5693	1.0515	.4944	21.7222	241.6040	10.2725	1.1080	1.1081	1.0001	.2842E-04	.3501E-01	.7879
567.5693	.8913	.5938	22.0992	243.6842	10.3432	1.1072	1.1074	1.0001	.2879E-04	.3575E-01	.7869
577.5693	.7567	.7117	22.4787	245.7525	10.4106	1.1065	1.1067	1.0002	.2915E-04	.3649E-01	.7857
587.5693	.6436	.8513	22.8604	247.8101	10.4746	1.1058	1.1061	1.0002	.2951E-04	.3724E-01	.7843
588.8889	.6302	.8715	22.9110	248.0809	10.4828	1.1058	1.1060	1.0002	.2956E-04	.3733E-01	.7841

TABLE IV.- Continued

s /R=38.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
433.8989	15.4476	.0262	17.3134	214.5341	9.1353	1.1229	1.1228	1.0000	.2357E-04	.2584E-01	.7873
443.8989	12.8155	.0323	17.6498	216.8356	9.2442	1.1212	1.1212	1.0000	.2399E-04	.2658E-01	.7882
453.8989	10.6514	.0397	17.9901	219.1141	9.3503	1.1197	1.1197	1.0000	.2440E-04	.2732E-01	.7889
463.8989	8.8684	.0488	18.3343	221.3707	9.4535	1.1182	1.1182	1.0000	.2481E-04	.2806E-01	.7895
473.8989	7.3967	.0597	18.6822	223.6061	9.5538	1.1169	1.1169	1.0000	.2521E-04	.2880E-01	.7899
483.8989	6.1800	.0730	19.0336	225.8211	9.6511	1.1156	1.1155	1.0000	.2561E-04	.2954E-01	.7902
493.8989	5.1723	.0890	19.3886	228.0166	9.7453	1.1143	1.1143	1.0000	.2600E-04	.3028E-01	.7904
503.8989	4.3363	.1083	19.7469	230.1933	9.8365	1.1132	1.1131	1.0000	.2639E-04	.3103E-01	.7904
513.8989	3.6417	.1316	20.1085	232.3519	9.9246	1.1120	1.1120	1.0000	.2678E-04	.3177E-01	.7903
523.8989	3.0636	.1594	20.4733	234.4934	10.0095	1.1110	1.1110	1.0000	.2716E-04	.3251E-01	.7900
533.8989	2.5817	.1928	20.8411	236.6183	10.0912	1.1100	1.1100	1.0000	.2754E-04	.3325E-01	.7896
543.8989	2.1793	.2327	21.2118	238.7274	10.1697	1.1091	1.1091	1.0000	.2791E-04	.3399E-01	.7889
553.8989	1.8427	.2803	21.5853	240.8216	10.2449	1.1082	1.1083	1.0000	.2828E-04	.3473E-01	.7882
563.8989	1.5608	.3369	21.9614	242.9016	10.3167	1.1074	1.1075	1.0001	.2865E-04	.3547E-01	.7872
573.8989	1.3243	.4041	22.3401	244.9683	10.3852	1.1067	1.1068	1.0001	.2902E-04	.3621E-01	.7861
583.8989	1.1255	.4837	22.7212	247.0225	10.4503	1.1060	1.1061	1.0001	.2938E-04	.3696E-01	.7848
588.8889	1.0383	.5289	22.9122	248.0432	10.4815	1.1056	1.1058	1.0001	.2956E-04	.3733E-01	.7841

s /R=38.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
460.9034	15.4476	.0278	18.2309	220.6971	9.4228	1.1187	1.1186	1.0000	.2469E-04	.2784E-01	.7893
470.9034	12.8777	.0341	18.5777	222.9385	9.5239	1.1173	1.1172	1.0000	.2509E-04	.2858E-01	.7898
480.9034	10.7535	.0417	18.9281	225.1592	9.6221	1.1159	1.1159	1.0000	.2549E-04	.2932E-01	.7902
490.9034	8.9953	.0509	19.2821	227.3599	9.7172	1.1147	1.1147	1.0000	.2588E-04	.3006E-01	.7904
500.9034	7.5375	.0620	19.6394	229.5415	9.8093	1.1135	1.1135	1.0000	.2627E-04	.3080E-01	.7904
510.9034	6.3267	.0753	20.0001	231.7047	9.8983	1.1123	1.1123	1.0000	.2666E-04	.3154E-01	.7903
520.9034	5.3195	.0913	20.3640	233.8501	9.9841	1.1113	1.1113	1.0000	.2704E-04	.3228E-01	.7901
530.9034	4.4803	.1105	20.7309	235.9785	10.0667	1.1103	1.1103	1.0000	.2742E-04	.3302E-01	.7897
540.9034	3.7799	.1334	21.1008	238.0906	10.1461	1.1093	1.1093	1.0000	.2780E-04	.3377E-01	.7891
550.9034	3.1944	.1608	21.4735	240.1871	10.2222	1.1084	1.1085	1.0000	.2817E-04	.3451E-01	.7884
560.9034	2.7042	.1934	21.8490	242.2686	10.2950	1.1076	1.1076	1.0000	.2854E-04	.3525E-01	.7875
570.9034	2.2931	.2321	22.2270	244.3358	10.3644	1.1068	1.1069	1.0000	.2891E-04	.3599E-01	.7864
580.9034	1.9478	.2781	22.6074	246.3895	10.4304	1.1061	1.1062	1.0001	.2927E-04	.3673E-01	.7852
588.8889	1.7122	.3207	22.9129	248.0203	10.4807	1.1055	1.1056	1.0001	.2956E-04	.3732E-01	.7841

TABLE IV.- Concluded

s /R=39.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
488.6317	15.4476	.0295	19.2015	226.8612	9.6958	1.1149	1.1149	1.0000	.2579E-04	.2989E-01	.7903
498.6317	12.9382	.0359	19.5581	229.0467	9.7885	1.1137	1.1137	1.0000	.2618E-04	.3063E-01	.7904
508.6317	10.8555	.0437	19.9180	231.2135	9.8782	1.1126	1.1126	1.0000	.2657E-04	.3137E-01	.7904
518.6317	9.1237	.0530	20.2812	233.3623	9.9647	1.1115	1.1115	1.0000	.2696E-04	.3211E-01	.7902
528.6317	7.6812	.0642	20.6475	235.4937	10.0480	1.1105	1.1105	1.0000	.2734E-04	.3286E-01	.7898
538.6317	6.4778	.0775	21.0167	237.6085	10.1281	1.1095	1.1095	1.0000	.2771E-04	.3360E-01	.7893
548.6317	5.4722	.0935	21.3889	239.7072	10.2050	1.1086	1.1086	1.0000	.2809E-04	.3434E-01	.7886
558.6317	4.6305	.1125	21.7637	241.7905	10.2785	1.1078	1.1078	1.0000	.2846E-04	.3508E-01	.7877
568.6317	3.9250	.1351	22.1412	243.8590	10.3486	1.1070	1.1070	1.0000	.2882E-04	.3582E-01	.7867
578.6317	3.3326	.1619	22.5212	245.9133	10.4153	1.1062	1.1062	1.0000	.2919E-04	.3656E-01	.7855
588.6317	2.8344	.1936	22.9035	247.9542	10.4786	1.1055	1.1056	1.0000	.2955E-04	.3730E-01	.7841
588.8889	2.8226	.1945	22.9134	248.0065	10.4802	1.1055	1.1055	1.0001	.2955E-04	.3732E-01	.7840

s /R=39.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
517.1171	15.4476	.0312	20.2261	233.0368	9.9517	1.1116	1.1116	1.0000	.2690E-04	.3200E-01	.7902
527.1171	13.0009	.0378	20.5919	235.1704	10.0355	1.1106	1.1106	1.0000	.2728E-04	.3274E-01	.7899
537.1171	10.9609	.0457	20.9608	237.2871	10.1161	1.1096	1.1096	1.0000	.2766E-04	.3348E-01	.7894
547.1171	9.2569	.0551	21.3325	239.3874	10.1934	1.1087	1.1087	1.0000	.2803E-04	.3422E-01	.7887
557.1171	7.8310	.0663	21.7070	241.4721	10.2674	1.1079	1.1079	1.0000	.2840E-04	.3496E-01	.7878
567.1171	6.6360	.0797	22.0841	243.5417	10.3380	1.1070	1.1071	1.0000	.2877E-04	.3571E-01	.7868
577.1171	5.6328	.0955	22.4637	245.5967	10.4052	1.1063	1.1063	1.0000	.2913E-04	.3645E-01	.7857
587.1171	4.7895	.1143	22.8457	247.6379	10.4689	1.1056	1.1056	1.0000	.2949E-04	.3719E-01	.7843
588.8889	4.6552	.1179	22.9137	247.9981	10.4799	1.1055	1.1055	1.0000	.2955E-04	.3732E-01	.7840

s /R=40.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
546.4193	15.4476	.0330	21.3065	239.2396	10.1880	1.1088	1.1088	1.0000	.2800E-04	.3417E-01	.7887
556.4193	13.0657	.0397	21.6808	241.3249	10.2622	1.1079	1.1079	1.0000	.2837E-04	.3491E-01	.7879
566.4193	11.0703	.0477	22.0578	243.3948	10.3330	1.1071	1.1071	1.0000	.2874E-04	.3565E-01	.7869
576.4193	9.3956	.0572	22.4373	245.4500	10.4005	1.1063	1.1063	1.0000	.2910E-04	.3639E-01	.7857
586.4193	7.9878	.0684	22.8192	247.4911	10.4644	1.1056	1.1056	1.0000	.2946E-04	.3713E-01	.7844
588.8889	7.6774	.0715	22.9138	247.9931	10.4797	1.1054	1.1055	1.0000	.2955E-04	.3732E-01	.7840

s /R=40.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
576.6093	15.4476	.0348	22.4446	245.4866	10.4016	1.1063	1.1063	1.0000	.2911E-04	.3641E-01	.7857
586.6093	13.1332	.0416	22.8265	247.5269	10.4655	1.1056	1.1056	1.0000	.2947E-04	.3715E-01	.7844
588.8889	12.6611	.0434	22.9139	247.9900	10.4796	1.1054	1.1054	1.0000	.2955E-04	.3732E-01	.7840

TABLE V.- THERMODYNAMIC AND TRANSPORT PROPERTIES OF CF_3-CF_3 AT CONSTANT ENTROPY

s/R = 5.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
K	m^3/kg	atm		m/sec					$N\text{-}s/m^2$	W/m-K	
156.6260	1.2881	.0720	2.3365	103.0757	5.3851	1.1365	1.1313	.9954	.8116E-05	.3401E-02	1.2140
166.6260	.8054	.1222	2.5350	105.8407	5.6199	1.1311	1.1235	.9933	.8622E-05	.4366E-02	1.0485
176.6260	.5073	.2050	2.7405	108.4332	5.8505	1.1267	1.1158	.9904	.9114E-05	.5333E-02	.9445
186.6260	.3220	.3398	2.9521	110.8174	6.0787	1.1234	1.1076	.9861	.9596E-05	.6306E-02	.8739
196.6260	.2060	.5564	3.1688	112.9399	6.3067	1.1212	1.0986	.9802	.1007E-04	.7286E-02	.8236
206.6260	.1328	.8989	3.3891	114.7242	6.5373	1.1204	1.0880	.9718	.1054E-04	.8276E-02	.7866
216.6260	.0864	1.4313	3.6110	116.0643	6.7746	1.1213	1.0751	.9601	.1101E-04	.9284E-02	.7593
226.6260	.0567	2.2418	3.8319	116.8194	7.0243	1.1245	1.0588	.9441	.1150E-04	.1032E-01	.7395
229.3276	.0507	2.5227	3.8910	116.9008	7.0949	1.1259	1.0536	.9389	.1163E-04	.1060E-01	.7353

s/R= 5.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
139.6025	6.3813	.0130	2.0177	98.1376	4.9677	1.1478	1.1465	.9989	.7218E-05	.1761E-02	1.9235
149.6025	3.9384	.0225	2.2034	101.2025	5.2118	1.1402	1.1383	.9984	.7750E-05	.2721E-02	1.4022
159.6025	2.4483	.0387	2.3976	104.1543	5.4482	1.1336	1.1309	.9976	.8265E-05	.3682E-02	1.1552
169.6025	1.5329	.0656	2.5997	106.9893	5.6781	1.1280	1.1242	.9966	.8765E-05	.4644E-02	1.0123
179.6025	.9665	.1099	2.8094	109.6985	5.9028	1.1233	1.1177	.9951	.9251E-05	.5608E-02	.9199
189.6025	.6138	.1824	3.0260	112.2661	6.1234	1.1193	1.1113	.9929	.9725E-05	.6574E-02	.8557
199.6025	.3925	.2993	3.2490	114.6665	6.3411	1.1161	1.1047	.9898	.1019E-04	.7544E-02	.8091
209.6025	.2528	.4858	3.4774	116.8612	6.5574	1.1138	1.0974	.9855	.1065E-04	.8520E-02	.7741
219.6025	.1640	.7796	3.7100	118.7947	6.7744	1.1124	1.0891	.9794	.1110E-04	.9504E-02	.7474
229.6025	.1073	1.2356	3.9454	120.3895	6.9949	1.1123	1.0792	.9709	.1155E-04	.1050E-01	.7268
239.6025	.0707	1.9317	4.1814	121.5415	7.2225	1.1138	1.0669	.9593	.1201E-04	.1152E-01	.7114
247.7477	.0507	2.7479	4.3724	122.0606	7.4172	1.1165	1.0545	.9467	.1239E-04	.1237E-01	.7021

s/R= 6.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
137.8380	15.2345	.0054	1.9864	97.6300	4.9222	1.1490	1.1484	.9995	.7122E-05	.1591E-02	2.0819
147.8380	9.3885	.0094	2.1708	100.7375	5.1672	1.1410	1.1402	.9993	.7657E-05	.2550E-02	1.4656
157.8380	5.8274	.0161	2.3639	103.7435	5.4038	1.1342	1.1331	.9990	.8174E-05	.3510E-02	1.1888
167.8380	3.6427	.0274	2.5653	106.6502	5.6334	1.1282	1.1266	.9985	.8676E-05	.4471E-02	1.0328
177.8380	2.2928	.0460	2.7746	109.4574	5.8568	1.1231	1.1207	.9979	.9163E-05	.5432E-02	.9333
187.8380	1.4530	.0766	2.9916	112.1614	6.0749	1.1185	1.1151	.9970	.9637E-05	.6394E-02	.8650
197.8380	.9270	.1263	3.2156	114.7540	6.2886	1.1146	1.1098	.9956	.1010E-04	.7357E-02	.8155
207.8380	.5953	.2063	3.4464	117.2210	6.4985	1.1113	1.1044	.9937	.1055E-04	.8323E-02	.7783
217.8380	.3848	.3335	3.6832	119.5399	6.7059	1.1087	1.0987	.9911	.1100E-04	.9293E-02	.7496
227.8380	.2505	.5340	3.9252	121.6772	6.9117	1.1067	1.0925	.9873	.1143E-04	.1027E-01	.7271
237.8380	.1641	.8461	4.1715	123.5851	7.1178	1.1055	1.0854	.9821	.1187E-04	.1125E-01	.7092
247.8380	.1083	1.3259	4.4205	125.1976	7.3264	1.1052	1.0769	.9749	.1230E-04	.1225E-01	.6952
257.8380	.0721	2.0523	4.6704	126.4269	7.5405	1.1063	1.0665	.9649	.1275E-04	.1326E-01	.6845
266.6207	.0507	2.9778	4.8889	127.1025	7.7366	1.1086	1.0551	.9533	.1314E-04	.1418E-01	.6776

s/R= 6.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
154.1178	15.2341	.0060	2.2915	102.6768	5.3154	1.1364	1.1360	.9996	.7983E-05	.3152E-02	1.2718
164.1178	9.4963	.0103	2.4901	105.6403	5.5469	1.1301	1.1294	.9994	.8490E-05	.4112E-02	1.0820
174.1178	5.9604	.0174	2.6969	108.5144	5.7717	1.1245	1.1236	.9992	.8982E-05	.5072E-02	.9656
184.1178	3.7666	.0290	2.9116	111.3011	5.9905	1.1196	1.1182	.9988	.9460E-05	.6032E-02	.8875
194.1178	2.3960	.0481	3.1340	114.0005	6.2039	1.1152	1.1133	.9983	.9925E-05	.6993E-02	.8319
204.1178	1.5339	.0789	3.3636	116.6097	6.4126	1.1114	1.1086	.9975	.1038E-04	.7955E-02	.7905
214.1178	.9882	.1284	3.6002	119.1223	6.6171	1.1080	1.1041	.9964	.1082E-04	.8918E-02	.7587
224.1178	.6406	.2069	3.8433	121.5268	6.8181	1.1051	1.0995	.9949	.1126E-04	.9883E-02	.7337
234.1178	.4179	.3307	4.0923	123.8051	7.0163	1.1027	1.0947	.9928	.1169E-04	.1085E-01	.7138
244.1178	.2743	.5237	4.3465	125.9308	7.2126	1.1009	1.0895	.9898	.1211E-04	.1183E-01	.6977
254.1178	.1812	.8217	4.6051	127.8659	7.4083	1.0996	1.0836	.9856	.1253E-04	.1281E-01	.6846
264.1178	.1205	1.2767	4.8669	129.5581	7.6052	1.0992	1.0767	.9798	.1295E-04	.1380E-01	.6741
274.1178	.0807	1.9622	5.1303	130.9383	7.8056	1.0996	1.0682	.9720	.1337E-04	.1481E-01	.6658
284.1178	.0545	2.9796	5.3933	131.9170	8.0128	1.1014	1.0577	.9613	.1380E-04	.1584E-01	.6598
285.9526	.0507	3.2126	5.4413	132.0444	8.0519	1.1019	1.0554	.9590	.1389E-04	.1603E-01	.6589

TABLE V.- Continued

s/R= 7.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
170.7907	15.2368	.0067	2.6276	107.6037	5.6965	1.1261	1.1257	.9997	.8819E-05	.4751E-02	.9989
180.7907	9.6057	.0112	2.8400	110.4369	5.9168	1.1209	1.1204	.9995	.9302E-05	.5711E-02	.9104
190.7907	6.0958	.0186	3.0602	113.1913	6.1312	1.1163	1.1155	.9993	.9771E-05	.6671E-02	.8484
200.7907	3.8933	.0306	3.2880	115.8688	6.3404	1.1122	1.1110	.9990	.1023E-04	.7631E-02	.8028
210.7907	2.5020	.0500	3.5231	118.4694	6.5448	1.1085	1.1069	.9985	.1067E-04	.8592E-02	.7681
220.7907	1.6178	.0810	3.7652	120.9910	6.7447	1.1052	1.1029	.9979	.1111E-04	.9553E-02	.7410
230.7907	1.0522	.1300	4.0140	123.4284	6.9407	1.1023	1.0990	.9970	.1154E-04	.1052E-01	.7194
240.7907	.6884	.2071	4.2691	125.7722	7.1332	1.0997	1.0951	.9958	.1196E-04	.1148E-01	.7018
250.7907	.4530	.3272	4.5300	128.0082	7.3227	1.0976	1.0910	.9941	.1237E-04	.1245E-01	.6873
260.7907	.2999	.5127	4.7962	130.1153	7.5101	1.0958	1.0867	.9917	.1278E-04	.1342E-01	.6754
270.7907	.1997	.7967	5.0668	132.0634	7.6963	1.0946	1.0817	.9883	.1318E-04	.1440E-01	.6655
280.7907	.1338	1.2272	5.3409	133.8110	7.8826	1.0940	1.0760	.9838	.1359E-04	.1539E-01	.6574
290.7907	.0903	1.8723	5.6171	135.3033	8.0709	1.0941	1.0691	.9775	.1399E-04	.1639E-01	.6509
300.7907	.0613	2.8264	5.8938	136.4700	8.2636	1.0951	1.0606	.9691	.1441E-04	.1741E-01	.6460
305.7569	.0507	3.4528	6.0306	136.9025	8.3620	1.0961	1.0557	.9639	.1462E-04	.1793E-01	.6442

s/R= 7.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
187.8744	15.2403	.0073	2.9956	112.4282	6.0683	1.1175	1.1171	.9997	.9635E-05	.6390E-02	.8644
197.8744	9.7144	.0121	3.2214	115.1435	6.2786	1.1131	1.1127	.9996	.1009E-04	.7349E-02	.8147
207.8744	6.2308	.0198	3.4547	117.7892	6.4837	1.1092	1.1086	.9994	.1054E-04	.8309E-02	.7773
217.8744	4.0207	.0322	3.6953	120.3670	6.6840	1.1057	1.1048	.9991	.1098E-04	.9269E-02	.7481
227.8744	2.6098	.0519	3.9429	122.8769	6.8799	1.1026	1.1012	.9988	.1141E-04	.1023E-01	.7250
237.8744	1.7037	.0829	4.1972	125.3172	7.0715	1.0997	1.0978	.9983	.1183E-04	.1119E-01	.7062
247.8744	1.1185	.1314	4.4580	127.6836	7.2593	1.0972	1.0945	.9976	.1224E-04	.1215E-01	.6908
257.8744	.7383	.2069	4.7250	129.9689	7.4437	1.0949	1.0911	.9965	.1265E-04	.1312E-01	.6780
267.8744	.4902	.3233	4.9976	132.1616	7.6249	1.0930	1.0877	.9951	.1305E-04	.1409E-01	.6672
277.8744	.3272	.5015	5.2754	134.2447	7.8038	1.0914	1.0839	.9932	.1344E-04	.1506E-01	.6581
287.8744	.2196	.7720	5.5578	136.1945	7.9810	1.0902	1.0798	.9905	.1383E-04	.1603E-01	.6504
297.8744	.1483	1.1788	5.8437	137.9783	8.1575	1.0895	1.0751	.9869	.1422E-04	.1702E-01	.6440
307.8744	.1007	1.7847	6.1322	139.5529	8.3349	1.0893	1.0694	.9819	.1461E-04	.1802E-01	.6387
317.8744	.0689	2.6768	6.4217	140.8627	8.5149	1.0899	1.0625	.9752	.1501E-04	.1903E-01	.6347
326.6333	.0508	3.6976	6.6575	141.6885	8.6656	1.0911	1.0558	.9681	.1535E-04	.1988E-01	.6323

s/R= 8.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
205.3798	15.2438	.0080	3.3962	117.1647	6.4322	1.1101	1.1098	.9998	.1043E-04	.8069E-02	.7857
215.3798	9.8204	.0130	3.6352	119.7730	6.6333	1.1064	1.1060	.9996	.1087E-04	.9028E-02	.7547
225.3798	6.3641	.0210	3.8813	122.3197	6.8298	1.1031	1.1025	.9995	.1130E-04	.9988E-02	.7302
235.3798	4.1479	.0337	4.1344	124.8060	7.0217	1.1001	1.0993	.9993	.1173E-04	.1095E-01	.7104
245.3798	2.7185	.0536	4.3943	127.2322	7.2094	1.0974	1.0962	.9990	.1214E-04	.1191E-01	.6942
255.3798	1.7913	.0846	4.6607	129.5968	7.3930	1.0949	1.0933	.9985	.1254E-04	.1287E-01	.6807
265.3798	1.1868	.1327	4.9333	131.8964	7.5729	1.0926	1.0904	.9980	.1294E-04	.1383E-01	.6693
275.3798	.7904	.2065	5.2119	134.1252	7.7493	1.0906	1.0875	.9971	.1333E-04	.1480E-01	.6596
285.3798	.5291	.3194	5.4960	136.2740	7.9225	1.0889	1.0845	.9960	.1372E-04	.1576E-01	.6513
295.3798	.3561	.4904	5.7851	138.3295	8.0932	1.0875	1.0814	.9944	.1410E-04	.1673E-01	.6442
305.3798	.2409	.7478	6.0788	140.2727	8.2618	1.0863	1.0779	.9923	.1448E-04	.1771E-01	.6381
315.3798	.1639	1.1320	6.3763	142.0779	8.4292	1.0855	1.0739	.9893	.1486E-04	.1869E-01	.6329
325.3798	.1121	1.7004	6.6765	143.7111	8.5964	1.0852	1.0693	.9854	.1523E-04	.1968E-01	.6286
335.3798	.0772	2.5327	6.9783	145.1287	8.7651	1.0855	1.0637	.9801	.1562E-04	.2069E-01	.6251
345.3798	.0535	3.7378	7.2801	146.2774	8.9371	1.0865	1.0569	.9730	.1602E-04	.2172E-01	.6226
346.8076	.0508	3.9483	7.3231	146.4158	8.9621	1.0867	1.0558	.9719	.1607E-04	.2187E-01	.6224

s/R= 8.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
223.3157	15.2438	.0087	3.8303	121.8254	6.7889	1.1037	1.1034	.9998	.1122E-04	.9789E-02	.7348
233.3157	9.9226	.0140	4.0822	124.3362	6.9814	1.1006	1.1002	.9997	.1164E-04	.1075E-01	.7141
243.3157	6.4949	.0223	4.3410	126.7922	7.1695	1.0977	1.0972	.9996	.1205E-04	.1171E-01	.6972
253.3157	4.2743	.0352	4.6064	129.1944	7.3533	1.0951	1.0944	.9994	.1246E-04	.1267E-01	.6832
263.3157	2.8281	.0553	4.8783	131.5431	7.5330	1.0927	1.0918	.9991	.1286E-04	.1363E-01	.6713
273.3157	1.8807	.0863	5.1565	133.8370	7.7089	1.0906	1.0892	.9988	.1325E-04	.1459E-01	.6613
283.3157	1.2570	.1338	5.4407	136.0736	7.8810	1.0886	1.0867	.9983	.1363E-04	.1555E-01	.6526
293.3157	.8444	.2060	5.7306	138.2480	8.0496	1.0868	1.0842	.9976	.1401E-04	.1652E-01	.6451
303.3157	.5700	.3153	6.0259	140.3531	8.2150	1.0853	1.0817	.9967	.1438E-04	.1748E-01	.6386
313.3157	.3867	.4795	6.3262	142.3783	8.3776	1.0839	1.0789	.9954	.1475E-04	.1845E-01	.6329
323.3157	.2637	.7244	6.6309	144.3086	8.5379	1.0829	1.0760	.9937	.1512E-04	.1942E-01	.6279
333.3157	.1807	1.0870	6.9394	146.1237	8.6965	1.0821	1.0727	.9913	.1549E-04	.2040E-01	.6236
343.3157	.1245	1.6196	7.2510	147.7971	8.8543	1.0817	1.0688	.9882	.1585E-04	.2139E-01	.6199
353.3157	.0863	2.3951	7.5645	149.2944	9.0125	1.0817	1.0643	.9840	.1623E-04	.2239E-01	.6169
363.3157	.0602	3.5128	7.8786	150.5741	9.1725	1.0823	1.0588	.9784	.1661E-04	.2341E-01	.6146
368.0953	.0508	4.2048	8.0285	151.0953	9.2503	1.0829	1.0558	.9751	.1679E-04	.2391E-01	.6138

TABLE V.- Continued

S/R= 9.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
241.6853	15.2438	.0094	4.2987	126.4194	7.1385	1.0981	1.0979	.9998	.1199E-04	.1155E-01	.6997
251.6853	10.0238	.0149	4.5632	128.8410	7.3227	1.0954	1.0951	.9997	.1239E-04	.1251E-01	.6852
261.6853	6.6252	.0235	4.8343	131.2137	7.5027	1.0930	1.0926	.9996	.1279E-04	.1347E-01	.6731
271.6853	4.4013	.0367	5.1119	133.5383	7.6786	1.0907	1.0901	.9995	.1318E-04	.1443E-01	.6627
281.6853	2.9386	.0569	5.3956	135.8149	7.8505	1.0886	1.0878	.9993	.1357E-04	.1539E-01	.6538
291.6853	1.9717	.0879	5.6854	138.0428	8.0186	1.0867	1.0856	.9990	.1395E-04	.1635E-01	.6461
301.6853	1.3293	.1347	5.9809	140.2197	8.1830	1.0850	1.0834	.9986	.1432E-04	.1731E-01	.6393
311.6853	.9006	.2054	6.2819	142.3420	8.3439	1.0834	1.0812	.9980	.1469E-04	.1828E-01	.6334
321.6853	.6130	.3111	6.5882	144.4040	8.5016	1.0820	1.0790	.9973	.1505E-04	.1924E-01	.6281
331.6853	.4192	.4686	6.8992	146.3971	8.6563	1.0808	1.0767	.9962	.1541E-04	.2021E-01	.6234
341.6853	.2881	.7015	7.2147	148.3098	8.8085	1.0798	1.0742	.9948	.1576E-04	.2118E-01	.6192
351.6853	.1990	1.0435	7.5339	150.1261	8.9586	1.0790	1.0714	.9929	.1612E-04	.2216E-01	.6156
361.6853	.1381	1.5423	7.8563	151.8252	9.1074	1.0785	1.0682	.9904	.1647E-04	.2314E-01	.6124
371.6853	.0964	2.2638	8.1809	153.3805	9.2558	1.0784	1.0644	.9871	.1683E-04	.2414E-01	.6097
381.6853	.0676	3.2983	8.5067	154.7595	9.4049	1.0788	1.0600	.9826	.1720E-04	.2515E-01	.6075
389.9096	.0507	4.4678	8.7745	155.7351	9.5292	1.0795	1.0557	.9780	.1751E-04	.2600E-01	.6062

S/R= 9.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
260.4983	15.2438	.0102	4.8022	130.9564	7.4810	1.0932	1.0930	.9998	.1274E-04	.1336E-01	.6744
270.4983	10.1201	.0159	5.0791	133.2961	7.6571	1.0909	1.0906	.9998	.1314E-04	.1431E-01	.6638
280.4983	6.7523	.0247	5.3624	135.5919	7.8292	1.0887	1.0884	.9997	.1352E-04	.1527E-01	.6547
290.4983	4.5272	.0381	5.6517	137.8444	7.9972	1.0867	1.0863	.9995	.1390E-04	.1623E-01	.6469
300.4983	3.0500	.0585	5.9471	140.0540	8.1614	1.0849	1.0842	.9994	.1427E-04	.1719E-01	.6400
310.4983	2.0644	.0893	6.2481	142.2199	8.3218	1.0832	1.0823	.9991	.1464E-04	.1816E-01	.6339
320.4983	1.4039	.1356	6.5547	144.3404	8.4785	1.0817	1.0804	.9988	.1500E-04	.1912E-01	.6285
330.4983	.9590	.2045	6.8666	146.4128	8.6318	1.0803	1.0785	.9983	.1536E-04	.2008E-01	.6236
340.4983	.6582	.3069	7.1835	148.4323	8.7818	1.0790	1.0766	.9977	.1571E-04	.2105E-01	.6192
350.4983	.4537	.4578	7.5050	150.3925	8.9287	1.0779	1.0745	.9969	.1606E-04	.2201E-01	.6153
360.4983	.3142	.6791	7.8309	152.2840	9.0729	1.0770	1.0724	.9957	.1640E-04	.2298E-01	.6117
370.4983	.2187	1.0016	8.1605	154.0947	9.2147	1.0763	1.0700	.9942	.1675E-04	.2396E-01	.6085
380.4983	.1529	1.4683	8.4933	155.8082	9.3548	1.0758	1.0674	.9922	.1709E-04	.2494E-01	.6056
390.4983	.1074	2.1389	8.8285	157.4041	9.4939	1.0756	1.0643	.9896	.1744E-04	.2593E-01	.6031
400.4983	.0759	3.0947	9.1652	158.8571	9.6328	1.0757	1.0607	.9861	.1779E-04	.2694E-01	.6011
410.4983	.0539	4.4451	9.5023	160.1384	9.7728	1.0763	1.0565	.9815	.1816E-04	.2796E-01	.5995
412.2741	.0507	4.7366	9.5620	160.3456	9.7979	1.0765	1.0557	.9806	.1822E-04	.2815E-01	.5993

S/R=10.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
279.7609	15.2400	.0109	5.3416	135.4439	7.8161	1.0888	1.0887	.9999	.1349E-04	.1520E-01	.6553
289.7609	10.2145	.0169	5.6307	137.7081	7.9843	1.0868	1.0866	.9998	.1387E-04	.1616E-01	.6474
299.7609	6.8784	.0259	5.9258	139.9326	8.1484	1.0849	1.0846	.9997	.1424E-04	.1712E-01	.6404
309.7609	4.6536	.0396	6.2267	142.1182	8.3087	1.0832	1.0828	.9996	.1461E-04	.1808E-01	.6342
319.7609	3.1629	.0601	6.5334	144.2650	8.4651	1.0816	1.0810	.9995	.1497E-04	.1904E-01	.6287
329.7609	2.1594	.0907	6.8455	146.3727	8.6178	1.0801	1.0793	.9993	.1533E-04	.2000E-01	.6238
339.7609	1.4809	.1363	7.1629	148.4398	8.7669	1.0787	1.0776	.9990	.1568E-04	.2096E-01	.6193
349.7609	1.0201	.2036	7.4853	150.4642	8.9125	1.0775	1.0760	.9986	.1602E-04	.2193E-01	.6153
359.7609	.7058	.3025	7.8125	152.4423	9.0548	1.0764	1.0743	.9981	.1636E-04	.2289E-01	.6115
369.7609	.4904	.4471	8.1443	154.3689	9.1939	1.0754	1.0726	.9974	.1670E-04	.2386E-01	.6081
379.7609	.3423	.6573	8.4802	156.2370	9.3302	1.0745	1.0707	.9965	.1704E-04	.2483E-01	.6050
389.7609	.2400	.9611	8.8198	158.0368	9.4639	1.0738	1.0687	.9953	.1737E-04	.2580E-01	.6021
399.7609	.1690	1.3973	9.1625	159.7560	9.5955	1.0733	1.0665	.9937	.1771E-04	.2678E-01	.5995
409.7609	.1196	2.0198	9.5079	161.3787	9.7256	1.0730	1.0640	.9916	.1805E-04	.2777E-01	.5971
419.7609	.0851	2.9015	9.8550	162.8857	9.8549	1.0731	1.0611	.9888	.1839E-04	.2877E-01	.5951
429.7609	.0608	4.1406	10.2028	164.2549	9.9844	1.0734	1.0577	.9853	.1874E-04	.2978E-01	.5934
435.2147	.0508	5.0114	10.3924	164.9353	10.0554	1.0738	1.0556	.9829	.1894E-04	.3035E-01	.5927

TABLE V.- Continued

s /R=10.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
299.4815	15.2380	.0117	5.9178	139.8891	8.1434	1.0849	1.0848	.9999	.1423E-04	.1709E-01	.6406
309.4815	10.3083	.0178	6.2187	142.0832	8.3036	1.0832	1.0830	.9998	.1460E-04	.1805E-01	.6344
319.4815	7.0044	.0271	6.5253	144.2415	8.4599	1.0815	1.0813	.9998	.1496E-04	.1901E-01	.6288
329.4815	4.7810	.0410	6.8376	146.3646	8.6123	1.0800	1.0797	.9997	.1532E-04	.1997E-01	.6239
339.4815	3.2778	.0615	7.1552	148.4527	8.7610	1.0786	1.0781	.9995	.1567E-04	.2093E-01	.6194
349.4815	2.2571	.0920	7.4781	150.5055	8.9060	1.0773	1.0766	.9994	.1601E-04	.2189E-01	.6152
359.4815	1.5609	.1368	7.8060	152.5220	9.0474	1.0761	1.0751	.9991	.1635E-04	.2286E-01	.6115
369.4815	1.0840	.2024	8.1387	154.5005	9.1854	1.0749	1.0737	.9988	.1669E-04	.2382E-01	.6079
379.4815	.7561	.2979	8.4760	156.4382	9.3199	1.0739	1.0722	.9984	.1702E-04	.2478E-01	.6047
389.4815	.5296	.4363	8.8176	158.3311	9.4513	1.0730	1.0707	.9979	.1735E-04	.2575E-01	.6016
399.4815	.3725	.6358	9.1631	160.1738	9.5797	1.0722	1.0692	.9971	.1768E-04	.2672E-01	.5988
409.4815	.2631	.9217	9.5123	161.9589	9.7053	1.0716	1.0675	.9961	.1800E-04	.2769E-01	.5961
419.4815	.1867	1.3291	9.8647	163.6768	9.8286	1.0711	1.0656	.9949	.1833E-04	.2867E-01	.5937
429.4815	.1330	1.9061	10.2196	165.3155	9.9500	1.0708	1.0635	.9932	.1866E-04	.2965E-01	.5914
439.4815	.0953	2.7181	10.5765	166.8606	10.0701	1.0707	1.0612	.9910	.1899E-04	.3065E-01	.5894
449.4815	.0686	3.8525	10.9344	168.2952	10.1895	1.0710	1.0584	.9882	.1932E-04	.3165E-01	.5877
458.7596	.0508	5.2938	11.2666	169.5119	10.3007	1.0715	1.0555	.9850	.1965E-04	.3260E-01	.5864

s /R=11.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
319.6695	15.2375	.0125	6.5315	144.2982	8.4624	1.0815	1.0814	.9999	.1497E-04	.1903E-01	.6287
329.6695	10.4024	.0188	6.8439	146.4273	8.6146	1.0799	1.0798	.9998	.1532E-04	.1999E-01	.6238
339.6695	7.1312	.0283	7.1619	148.5238	8.7630	1.0785	1.0783	.9998	.1567E-04	.2095E-01	.6192
349.6695	4.9103	.0423	7.4851	150.5884	8.9076	1.0772	1.0768	.9997	.1602E-04	.2191E-01	.6151
359.6695	3.3955	.0630	7.8134	152.6213	9.0485	1.0759	1.0755	.9996	.1635E-04	.2287E-01	.6113
369.6695	2.3579	.0932	8.1467	154.6223	9.1858	1.0747	1.0741	.9995	.1669E-04	.2383E-01	.6078
379.6695	1.6442	.1372	8.4848	156.5908	9.3194	1.0736	1.0729	.9993	.1702E-04	.2479E-01	.6045
389.6695	1.1512	.2010	8.8274	158.5252	9.4496	1.0726	1.0716	.9990	.1735E-04	.2575E-01	.6014
399.6695	.8094	.2932	9.1744	160.4237	9.5764	1.0717	1.0703	.9987	.1767E-04	.2672E-01	.5984
409.6695	.5714	.4255	9.5255	162.2831	9.7000	1.0709	1.0690	.9982	.1799E-04	.2768E-01	.5957
419.6695	.4050	.6146	9.8804	164.0993	9.8205	1.0702	1.0677	.9976	.1831E-04	.2865E-01	.5930
429.6695	.2883	.8833	10.2388	165.8666	9.9382	1.0696	1.0662	.9968	.1863E-04	.2962E-01	.5905
439.6695	.2061	1.2633	10.6002	167.5779	10.0532	1.0691	1.0647	.9958	.1895E-04	.3060E-01	.5881
449.6695	.1479	1.7974	10.9643	169.2241	10.1661	1.0688	1.0630	.9945	.1926E-04	.3158E-01	.5859
459.6695	.1067	2.5438	11.3304	170.7944	10.2772	1.0687	1.0610	.9928	.1959E-04	.3257E-01	.5839
469.6695	.0773	3.5802	11.6978	172.2763	10.3872	1.0688	1.0589	.9906	.1991E-04	.3357E-01	.5820
479.6695	.0562	5.0089	12.0657	173.6568	10.4967	1.0692	1.0564	.9879	.2025E-04	.3459E-01	.5805
482.9398	.0508	5.5827	12.1859	174.0840	10.5326	1.0694	1.0555	.9869	.2036E-04	.3492E-01	.5800

s /R=11.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
340.3362	15.2398	.0133	7.1835	148.6775	8.7724	1.0784	1.0783	.9999	.1569E-04	.2101E-01	.6189
350.3362	10.4959	.0198	7.5072	150.7458	8.9166	1.0770	1.0769	.9999	.1604E-04	.2197E-01	.6148
360.3362	7.2599	.0295	7.8360	152.7846	9.0570	1.0758	1.0756	.9998	.1638E-04	.2293E-01	.6110
370.3362	5.0423	.0437	8.1699	154.7943	9.1938	1.0746	1.0743	.9997	.1671E-04	.2389E-01	.6075
380.3362	3.5166	.0643	8.5086	156.7752	9.3268	1.0735	1.0731	.9997	.1704E-04	.2485E-01	.6042
390.3362	2.4625	.0942	8.8520	158.7273	9.4563	1.0724	1.0719	.9995	.1737E-04	.2581E-01	.6011
400.3362	1.7313	.1374	9.1999	160.6499	9.5822	1.0715	1.0708	.9994	.1769E-04	.2677E-01	.5981
410.3362	1.2221	.1995	9.5521	162.5423	9.7046	1.0706	1.0697	.9992	.1801E-04	.2773E-01	.5953
420.3362	.8661	.2882	9.9084	164.4027	9.8236	1.0698	1.0686	.9989	.1832E-04	.2870E-01	.5926
430.3362	.6163	.4145	10.2686	166.2289	9.9393	1.0690	1.0674	.9985	.1864E-04	.2966E-01	.5900
440.3362	.4402	.5935	10.6325	168.0177	10.0519	1.0684	1.0663	.9980	.1895E-04	.3063E-01	.5874
450.3362	.3157	.8458	10.9996	169.7651	10.1615	1.0678	1.0651	.9974	.1926E-04	.3160E-01	.5850
460.3362	.2274	1.1996	11.3698	171.4655	10.2684	1.0674	1.0638	.9966	.1957E-04	.3257E-01	.5827
470.3362	.1644	1.6932	11.7425	173.1124	10.3729	1.0671	1.0624	.9956	.1987E-04	.3355E-01	.5805
480.3362	.1194	2.3781	12.1172	174.6978	10.4753	1.0669	1.0608	.9943	.2019E-04	.3454E-01	.5784
490.3362	.0871	3.3227	12.4934	176.2126	10.5761	1.0669	1.0590	.9926	.2050E-04	.3553E-01	.5765
500.3362	.0638	4.6171	12.8704	177.6473	10.6758	1.0671	1.0571	.9905	.2082E-04	.3654E-01	.5747
507.8049	.0508	5.8809	13.1519	178.6614	10.7500	1.0675	1.0555	.9886	.2107E-04	.3731E-01	.5736

TABLE V.- Continued

S/R=12.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
361.5047	15.2438	.0141	7.8751	153.0346	9.0729	1.0756	1.0755	.9999	.1642E-04	.2304E-01	.6106
371.5047	10.5907	.0209	8.2096	155.0461	9.2090	1.0744	1.0743	.9999	.1675E-04	.2400E-01	.6071
381.5047	7.3892	.0307	8.5490	157.0306	9.3415	1.0733	1.0731	.9998	.1708E-04	.2496E-01	.6038
391.5047	5.1763	.0450	8.8932	158.9887	9.4703	1.0722	1.0720	.9998	.1740E-04	.2592E-01	.6007
401.5047	3.6406	.0656	9.2419	160.9205	9.5954	1.0712	1.0709	.9997	.1773E-04	.2688E-01	.5977
411.5047	2.5707	.0951	9.5950	162.8262	9.7170	1.0703	1.0699	.9996	.1804E-04	.2784E-01	.5949
421.5047	1.8223	.1374	9.9524	164.7052	9.8350	1.0695	1.0689	.9995	.1836E-04	.2880E-01	.5921
431.5047	1.2968	.1977	10.3138	166.5571	9.9495	1.0687	1.0679	.9993	.1867E-04	.2976E-01	.5895
441.5047	.9264	.2831	10.6791	168.3806	10.0607	1.0679	1.0670	.9991	.1898E-04	.3073E-01	.5869
451.5047	.6644	.4035	11.0480	170.1740	10.1685	1.0673	1.0660	.9988	.1928E-04	.3169E-01	.5844
461.5047	.4783	.5727	11.4204	171.9351	10.2731	1.0667	1.0650	.9984	.1958E-04	.3266E-01	.5820
471.5047	.3457	.8092	11.7959	173.6608	10.3748	1.0662	1.0640	.9979	.1989E-04	.3363E-01	.5796
481.5047	.2508	1.1383	12.1742	175.3471	10.4735	1.0658	1.0629	.9973	.2019E-04	.3460E-01	.5773
491.5047	.1827	1.5937	12.5550	176.9893	10.5696	1.0655	1.0617	.9965	.2049E-04	.3557E-01	.5750
501.5047	.1336	2.2210	12.9379	178.5816	10.6634	1.0653	1.0604	.9954	.2079E-04	.3656E-01	.5729
511.5047	.0982	3.0802	13.3223	180.1176	10.7552	1.0653	1.0591	.9941	.2110E-04	.3755E-01	.5708
521.5047	.0724	4.2500	13.7076	181.5906	10.8455	1.0654	1.0575	.9925	.2141E-04	.3855E-01	.5689
531.5047	.0537	5.8328	14.0932	182.9948	10.9348	1.0657	1.0559	.9905	.2173E-04	.3957E-01	.5672
533.3864	.0507	6.1871	14.1657	183.2510	10.9516	1.0658	1.0555	.9901	.2179E-04	.3976E-01	.5669

S/R=12.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
383.2026	15.2381	.0150	8.6074	157.3774	9.3633	1.0731	1.0730	.9999	.1713E-04	.2512E-01	.6032
393.2026	10.6810	.0219	8.9524	159.3355	9.4913	1.0720	1.0719	.9999	.1746E-04	.2608E-01	.6002
403.2026	7.5171	.0319	9.3020	161.2690	9.6157	1.0710	1.0709	.9999	.1778E-04	.2704E-01	.5972
413.2026	5.3110	.0462	9.6561	163.1783	9.7364	1.0701	1.0699	.9998	.1810E-04	.2800E-01	.5944
423.2026	3.7669	.0668	10.0144	165.0636	9.8536	1.0692	1.0690	.9997	.1841E-04	.2896E-01	.5916
433.2026	2.6821	.0960	10.3769	166.9251	9.9671	1.0684	1.0681	.9997	.1872E-04	.2992E-01	.5890
443.2026	1.9169	.1374	10.7433	168.7626	10.0772	1.0677	1.0672	.9996	.1902E-04	.3088E-01	.5864
453.2026	1.3752	.1958	11.1135	170.5756	10.1838	1.0670	1.0663	.9994	.1933E-04	.3185E-01	.5839
463.2026	.9904	.2779	11.4874	172.3633	10.2869	1.0663	1.0655	.9992	.1963E-04	.3281E-01	.5814
473.2026	.7159	.3926	11.8646	174.1246	10.3868	1.0657	1.0647	.9990	.1992E-04	.3377E-01	.5789
483.2026	.5194	.5524	12.2451	175.8576	10.4834	1.0652	1.0638	.9987	.2022E-04	.3474E-01	.5765
493.2026	.3783	.7738	12.6284	177.5604	10.5770	1.0647	1.0629	.9983	.2051E-04	.3570E-01	.5741
503.2026	.2766	1.0794	13.0145	179.2300	10.6675	1.0644	1.0620	.9978	.2081E-04	.3667E-01	.5718
513.2026	.2030	1.4991	13.4029	180.8632	10.7553	1.0641	1.0611	.9972	.2110E-04	.3765E-01	.5695
523.2026	.1495	2.0727	13.7933	182.4558	10.8406	1.0639	1.0600	.9964	.2140E-04	.3863E-01	.5672
533.2026	.1106	2.8526	14.1853	184.0036	10.9236	1.0638	1.0589	.9954	.2169E-04	.3962E-01	.5651
543.2026	.0822	3.9075	14.5783	185.5020	11.0047	1.0639	1.0577	.9942	.2199E-04	.4061E-01	.5630
553.2026	.0613	5.3260	14.9718	186.9473	11.0844	1.0641	1.0565	.9927	.2230E-04	.4162E-01	.5611
559.7307	.0508	6.5007	15.2286	187.8613	11.1358	1.0644	1.0556	.9915	.2251E-04	.4229E-01	.5600

S/R=13.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
405.4265	15.2438	.0158	9.3806	161.7069	9.6426	1.0708	1.0707	.9999	.1785E-04	.2726E-01	.5966
415.4265	10.7780	.0229	9.7358	163.6149	9.7624	1.0699	1.0698	.9999	.1816E-04	.2821E-01	.5937
425.4265	7.6507	.0331	10.0952	165.5002	9.8786	1.0690	1.0689	.9999	.1848E-04	.2917E-01	.5910
435.4265	5.4515	.0475	10.4587	167.3634	9.9912	1.0682	1.0680	.9998	.1878E-04	.3013E-01	.5884
445.4265	3.8992	.0679	10.8262	169.2047	10.1002	1.0674	1.0672	.9998	.1909E-04	.3109E-01	.5858
455.4265	2.7994	.0967	11.1976	171.0243	10.2057	1.0667	1.0664	.9997	.1939E-04	.3205E-01	.5832
465.4265	2.0172	.1371	11.5727	172.8220	10.3076	1.0660	1.0656	.9996	.1969E-04	.3301E-01	.5807
475.4265	1.4590	.1936	11.9512	174.5977	10.4062	1.0654	1.0649	.9995	.1999E-04	.3398E-01	.5783
485.4265	1.0591	.2723	12.3332	176.3508	10.5013	1.0648	1.0642	.9994	.2028E-04	.3494E-01	.5758
495.4265	.7717	.3814	12.7183	178.0805	10.5931	1.0643	1.0634	.9992	.2057E-04	.3590E-01	.5734
505.4265	.5643	.5319	13.1063	179.7856	10.6817	1.0638	1.0627	.9989	.2086E-04	.3687E-01	.5709
515.4265	.4142	.7389	13.4971	181.4647	10.7671	1.0634	1.0620	.9986	.2115E-04	.3783E-01	.5685
525.4265	.3051	1.0220	13.8904	183.1158	10.8494	1.0631	1.0612	.9982	.2143E-04	.3880E-01	.5661
535.4265	.2256	1.4078	14.2859	184.7366	10.9289	1.0628	1.0604	.9977	.2172E-04	.3977E-01	.5637
545.4265	.1675	1.9310	14.6833	186.3245	11.0057	1.0626	1.0596	.9971	.2200E-04	.4075E-01	.5614
555.4265	.1248	2.6371	15.0822	187.8767	11.0800	1.0625	1.0587	.9964	.2229E-04	.4174E-01	.5591
565.4265	.0933	3.5853	15.4822	189.3903	11.1521	1.0626	1.0578	.9955	.2258E-04	.4273E-01	.5569
575.4265	.0701	4.8521	15.8827	190.8631	11.2224	1.0627	1.0569	.9943	.2288E-04	.4373E-01	.5548
585.4265	.0529	6.5347	16.2833	192.2946	11.2913	1.0631	1.0559	.9930	.2319E-04	.4474E-01	.5528
586.9057	.0508	6.8260	16.3425	192.5030	11.3013	1.0631	1.0557	.9928	.2323E-04	.4490E-01	.5525

TABLE V.- Continued

S/R=13.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
428.2326	15.2386	.0167	10.1970	166.0354	9.9103	1.0687	1.0687	.9999	.1856E-04	.2944E-01	.5903
438.2326	10.6690	.0240	10.5618	167.8959	10.0218	1.0679	1.0678	.9999	.1887E-04	.3040E-01	.5876
448.2326	7.7820	.0342	10.9305	169.7357	10.1297	1.0672	1.0671	.9999	.1917E-04	.3136E-01	.5851
458.2326	5.5925	.0487	11.3031	171.5551	10.2340	1.0665	1.0663	.9999	.1947E-04	.3232E-01	.5825
468.2326	4.0338	.0690	11.6794	173.3546	10.3348	1.0658	1.0656	.9998	.1977E-04	.3328E-01	.5800
478.2326	2.9202	.0973	12.0592	175.1341	10.4320	1.0651	1.0649	.9998	.2007E-04	.3424E-01	.5775
488.2326	2.1217	.1368	12.4425	176.8939	10.5258	1.0646	1.0642	.9997	.2036E-04	.3520E-01	.5750
498.2326	1.5471	.1914	12.8290	178.6337	10.6162	1.0640	1.0636	.9996	.2065E-04	.3616E-01	.5726
508.2326	1.1322	.2667	13.2185	180.3532	10.7032	1.0635	1.0629	.9995	.2093E-04	.3712E-01	.5701
518.2326	.8315	.3703	13.6110	182.0520	10.7868	1.0630	1.0623	.9993	.2122E-04	.3809E-01	.5676
528.2326	.6129	.5120	14.0062	183.7293	10.8672	1.0626	1.0617	.9991	.2150E-04	.3905E-01	.5652
538.2326	.4534	.7051	14.4039	185.3840	10.9444	1.0623	1.0611	.9989	.2178E-04	.4002E-01	.5627
548.2326	.3366	.9671	14.8039	187.0151	11.0185	1.0620	1.0605	.9986	.2206E-04	.4099E-01	.5602
558.2326	.2508	1.3211	15.2059	188.6210	11.0896	1.0617	1.0598	.9982	.2234E-04	.4196E-01	.5577
568.2326	.1875	1.7975	15.6096	190.2000	11.1579	1.0615	1.0592	.9978	.2262E-04	.4293E-01	.5553
578.2326	.1408	2.4355	16.0148	191.7506	11.2236	1.0614	1.0585	.9972	.2290E-04	.4391E-01	.5529
588.2326	.1061	3.2860	16.4211	193.2710	11.2868	1.0614	1.0578	.9965	.2318E-04	.4490E-01	.5505
588.6889	.1041	3.3502	16.4478	193.3698	11.2909	1.0614	1.0577	.9965	.2320E-04	.4496E-01	.5503

S/R=14.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
451.6151	15.2438	.0176	11.0563	170.3625	10.1651	1.0669	1.0668	.9999	.1928E-04	.3169E-01	.5842
461.6151	10.9678	.0250	11.4303	172.1782	10.2681	1.0662	1.0661	.9999	.1957E-04	.3264E-01	.5816
471.6151	7.9204	.0354	11.8079	173.9748	10.3676	1.0655	1.0654	.9999	.1987E-04	.3360E-01	.5791
481.6151	5.7406	.0499	12.1891	175.7527	10.4635	1.0649	1.0648	.9999	.2016E-04	.3456E-01	.5766
491.6151	4.1756	.0700	12.5736	177.5123	10.5560	1.0643	1.0641	.9998	.2045E-04	.3552E-01	.5742
501.6151	3.0482	.0978	12.9615	179.2537	10.6449	1.0638	1.0635	.9998	.2074E-04	.3648E-01	.5717
511.6151	2.2331	.1362	13.3524	180.9771	10.7304	1.0632	1.0630	.9997	.2102E-04	.3744E-01	.5692
521.6151	1.6417	.1888	13.7463	182.6824	10.8125	1.0628	1.0624	.9997	.2131E-04	.3841E-01	.5667
531.6151	1.2112	.2608	14.1430	184.3695	10.8912	1.0623	1.0619	.9996	.2159E-04	.3937E-01	.5642
541.6151	.8968	.3589	14.5423	186.0381	10.9666	1.0619	1.0613	.9994	.2186E-04	.4033E-01	.5617
551.6151	.6663	.4919	14.9440	187.6878	11.0387	1.0616	1.0608	.9993	.2214E-04	.4129E-01	.5591
561.6151	.4967	.6716	15.3481	189.3181	11.1075	1.0612	1.0603	.9991	.2241E-04	.4226E-01	.5566
571.6151	.3716	.9134	15.7542	190.9281	11.1733	1.0610	1.0598	.9989	.2269E-04	.4323E-01	.5540
581.6151	.2790	1.2375	16.1621	192.5171	11.2360	1.0607	1.0593	.9986	.2296E-04	.4419E-01	.5515
588.8889	.2271	1.5395	16.4599	193.6592	11.2798	1.0606	1.0589	.9984	.2316E-04	.4490E-01	.5496

S/R=14.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
475.6443	15.2389	.0186	11.9613	174.7016	10.4065	1.0652	1.0652	1.0000	.1999E-04	.3399E-01	.5781
485.6443	11.0601	.0261	12.3439	176.4747	10.5009	1.0646	1.0646	.9999	.2028E-04	.3495E-01	.5756
495.6443	8.0564	.0366	12.7299	178.2302	10.5918	1.0640	1.0640	.9999	.2057E-04	.3591E-01	.5731
505.6443	5.8893	.0510	13.1192	179.9687	10.6792	1.0635	1.0634	.9999	.2085E-04	.3687E-01	.5707
515.6443	4.3203	.0710	13.5115	181.6902	10.7632	1.0630	1.0628	.9999	.2114E-04	.3783E-01	.5682
525.6443	3.1804	.0982	13.9068	183.3951	10.8437	1.0625	1.0623	.9998	.2142E-04	.3879E-01	.5656
535.6443	2.3494	.1355	14.3048	185.0836	10.9207	1.0621	1.0618	.9998	.2170E-04	.3975E-01	.5631
545.6443	1.7416	.1862	14.7056	186.7557	10.9944	1.0616	1.0613	.9997	.2197E-04	.4071E-01	.5606
555.6443	1.2955	.2549	15.1088	188.4113	11.0647	1.0613	1.0609	.9996	.2224E-04	.4167E-01	.5580
565.6443	.9669	.3476	15.5145	190.0505	11.1316	1.0609	1.0604	.9996	.2252E-04	.4263E-01	.5554
575.6443	.7242	.4723	15.9223	191.6730	11.1953	1.0606	1.0600	.9994	.2279E-04	.4360E-01	.5528
585.6443	.5443	.6393	16.3321	193.2785	11.2558	1.0603	1.0596	.9993	.2305E-04	.4456E-01	.5501
588.8889	.4964	.7047	16.4654	193.7958	11.2747	1.0602	1.0595	.9992	.2314E-04	.4487E-01	.5493

TABLE V.- Concluded

s/R=15.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
500.3253	15.2395	.0195	12.9119	179.0534	10.6330	1.0638	1.0637	1.0000	.2070E-04	.3636E-01	.5720
510.3253	11.1579	.0272	13.3027	180.7861	10.7187	1.0632	1.0632	.9999	.2099E-04	.3732E-01	.5695
520.3253	8.1984	.0377	13.6965	182.5026	10.8009	1.0627	1.0627	.9999	.2127E-04	.3828E-01	.5670
530.3253	6.0449	.0522	14.0933	184.2034	10.8797	1.0623	1.0622	.9999	.2155E-04	.3924E-01	.5644
540.3253	4.4724	.0718	14.4928	185.8886	10.9550	1.0618	1.0617	.9999	.2182E-04	.4020E-01	.5619
550.3253	3.3204	.0985	14.8949	187.5587	11.0268	1.0614	1.0612	.9999	.2210E-04	.4116E-01	.5593
560.3253	2.4735	.1347	15.2996	189.2136	11.0953	1.0610	1.0608	.9998	.2237E-04	.4212E-01	.5567
570.3253	1.8489	.1834	15.7066	190.8537	11.1604	1.0607	1.0604	.9998	.2264E-04	.4308E-01	.5541
580.3253	1.3867	.2487	16.1159	192.4790	11.2222	1.0603	1.0600	.9997	.2291E-04	.4404E-01	.5514
588.8889	1.0869	.3220	16.4680	193.8590	11.2724	1.0601	1.0597	.9997	.2313E-04	.4486E-01	.5491

s/R=15.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
525.7058	15.2438	.0205	13.9098	183.4261	10.8435	1.0625	1.0624	1.0000	.2142E-04	.3879E-01	.5656
535.7058	11.2590	.0283	14.3082	185.1203	10.9204	1.0620	1.0619	1.0000	.2170E-04	.3975E-01	.5631
545.7058	8.3453	.0389	14.7092	186.7997	10.9937	1.0616	1.0615	.9999	.2197E-04	.4071E-01	.5605
555.7058	6.2068	.0532	15.1129	188.4645	11.0637	1.0612	1.0611	.9999	.2224E-04	.4167E-01	.5579
565.7058	4.6319	.0726	15.5190	190.1150	11.1302	1.0608	1.0607	.9999	.2251E-04	.4263E-01	.5553
575.7058	3.4683	.0987	15.9274	191.7516	11.1933	1.0604	1.0603	.9999	.2278E-04	.4359E-01	.5526
585.7058	2.6057	.1336	16.3380	193.3744	11.2530	1.0601	1.0599	.9999	.2305E-04	.4455E-01	.5500
588.8889	2.3806	.1470	16.4692	193.8881	11.2713	1.0600	1.0598	.9998	.2313E-04	.4486E-01	.5491

s/R=16.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
551.8433	15.2438	.0215	14.9568	187.8288	11.0369	1.0613	1.0613	1.0000	.2214E-04	.4130E-01	.5589
561.8433	11.3600	.0294	15.3621	189.4863	11.1047	1.0609	1.0609	1.0000	.2241E-04	.4226E-01	.5563
571.8433	8.4949	.0400	15.7697	191.1301	11.1690	1.0605	1.0605	1.0000	.2268E-04	.4322E-01	.5537
581.8433	6.3736	.0543	16.1796	192.7606	11.2300	1.0602	1.0601	.9999	.2294E-04	.4418E-01	.5510
588.8889	5.2162	.0671	16.4697	193.9014	11.2709	1.0600	1.0599	.9999	.2313E-04	.4485E-01	.5491

s/R=16.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
578.7903	15.2438	.0226	16.0544	192.2690	11.2115	1.0603	1.0602	1.0000	.2286E-04	.4388E-01	.5518
588.7903	11.4620	.0305	16.4659	193.8916	11.2701	1.0599	1.0599	1.0000	.2313E-04	.4484E-01	.5491
588.8889	11.4304	.0306	16.4700	193.9075	11.2706	1.0599	1.0599	1.0000	.2313E-04	.4485E-01	.5491

TABLE VI.- THERMODYNAMIC AND TRANSPORT PROPERTIES OF C_4F_8 AT CONSTANT ENTROPY

s/R = 6.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
K	m^3/kg	atm		m/sec					$N\text{-}s/m^2$	W/m-K	
226.7625	1.3828	.0669	4.7354	99.7922	6.9990	1.0694	1.0630	.9940			0.0000
236.7625	.7266	.1323	4.9860	101.5159	7.2125	1.0689	1.0579	.9899			0.0000
246.7625	.3869	.2572	5.2431	102.9377	7.4354	1.0694	1.0510	.9831			0.0000
256.7625	.2094	.4889	5.4976	103.8950	7.6764	1.0715	1.0407	.9719			0.0000
266.7625	.1155	.9039	5.7471	104.1379	7.9494	1.0763	1.0250	.9543			0.0000
276.7625	.0653	1.6120	5.9854	103.3082	8.2772	1.0854	1.0008	.9271			0.0000
286.7625	.0380	2.7448	6.2046	100.9331	8.6976	1.1023	.9637	.8869	NOT		0.0000
296.7625	.0229	4.4132	6.3965	96.4491	9.2818	1.1338	.9080	.8306	AVAILABLE		0.0000
306.7625	.0144	6.6301	6.5538	89.2545	10.1917	1.1966	.8263	.7562			0.0000
316.7625	.0094	9.2272	6.6720	78.7688	11.9331	1.3437	.7095	.6642			0.0000
326.7625	.0063	11.8180	6.7507	64.4718	17.3182	1.8687	.5482	.5582			0.0000
336.7625	.0044	13.8663	6.7939	45.8552	-90.4504	-9.3630	.3376	.4450			0.0000
339.3769	.0041	14.2471	6.8003	40.1683	-19.1988	-1.9669	.2754	.4153			0.0000

s/R= 6.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
244.2946	1.3833	.0721	5.1948	103.5104	7.3325	1.0656	1.0604	.9951			0.0000
254.2946	.7370	.1404	5.4605	105.2217	7.5355	1.0650	1.0562	.9918			0.0000
264.2946	.3973	.2691	5.7292	106.6802	7.7450	1.0651	1.0504	.9863			0.0000
274.2946	.2172	.5064	5.9982	107.7515	7.9677	1.0665	1.0419	.9774			0.0000
284.2946	.1207	.9306	6.2638	108.2266	8.2144	1.0698	1.0291	.9632			0.0000
294.2946	.0685	1.6591	6.5203	107.7997	8.5017	1.0763	1.0095	.9411	NOT		0.0000
304.2946	.0399	2.8440	6.7606	106.0570	8.8572	1.0882	.9794	.9081	AVAILABLE		0.0000
314.2946	.0239	4.6392	6.9764	102.4943	9.3281	1.1097	.9343	.8608			0.0000
324.2946	.0149	7.1272	7.1597	96.5815	10.0089	1.1502	.8684	.7969			0.0000
334.2946	.0096	10.2239	7.3048	87.8814	11.1326	1.2333	.7761	.7163			0.0000
344.2946	.0064	13.6199	7.4099	76.2465	13.4841	1.4387	.6537	.6215			0.0000
354.2946	.0045	16.8373	7.4782	62.2050	21.8273	2.2447	.5065	.5188			0.0000
358.3345	.0039	17.9803	7.4970	56.2342	36.4997	3.7008	.4450	.4772			0.0000

s/R= 7.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
262.2624	1.3831	.0775	5.6876	107.1753	7.6627	1.0623	1.0580	.9960			0.0000
272.2624	.7469	.1485	5.9661	108.8678	7.8557	1.0616	1.0545	.9933			0.0000
282.2624	.4076	.2809	6.2479	110.3472	8.0531	1.0616	1.0496	.9889			0.0000
292.2624	.2251	.5227	6.5309	111.5021	8.2600	1.0624	1.0426	.9817			0.0000
302.2624	.1262	.9534	6.8116	112.1583	8.4846	1.0647	1.0321	.9702			0.0000
312.2624	.0720	1.6947	7.0852	112.0572	8.7395	1.0693	1.0161	.9522			0.0000
322.2624	.0420	2.9139	7.3452	110.8419	9.0449	1.0778	.9916	.9250	NOT		0.0000
332.2624	.0251	4.8009	7.5836	108.0680	9.4340	1.0930	.9549	.8856	AVAILABLE		0.0000
342.2624	.0156	7.5049	7.7922	103.2662	9.9666	1.1205	.9017	.8314			0.0000
352.2624	.0100	11.0345	7.9641	96.0803	10.7674	1.1726	.8280	.7615			0.0000
362.2624	.0066	15.1786	8.0964	86.5159	12.1500	1.2803	.7334	.6778			0.0000
372.2624	.0046	19.5409	8.1911	75.3653	15.0852	1.5389	.6264	.5860			0.0000
377.2920	.0038	21.6918	8.2265	69.7780	18.0791	1.8160	.5756	.5394			0.0000

s/R= 7.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
280.6560	1.3831	.0830	6.2142	110.7924	7.9884	1.0594	1.0558	.9967			0.0000
290.6560	.7568	.1567	6.5052	112.4619	8.1720	1.0587	1.0528	.9945			0.0000
300.6560	.4180	.2923	6.7998	113.9508	8.3583	1.0585	1.0487	.9908			0.0000
310.6560	.2334	.5377	7.0961	115.1665	8.5513	1.0590	1.0429	.9850			0.0000
320.6560	.1320	.9721	7.3911	115.9642	8.7571	1.0606	1.0342	.9756			0.0000
330.6560	.0758	1.7195	7.6807	116.1273	8.9855	1.0639	1.0211	.9610			0.0000
340.6560	.0444	2.9566	7.9591	115.3522	9.2514	1.0701	1.0011	.9387	NOT		0.0000
350.6560	.0266	4.9013	8.2187	113.2541	9.5788	1.0810	.9713	.9061	AVAILABLE		0.0000
360.6560	.0164	7.7615	8.4515	109.4209	10.0080	1.1004	.9283	.8604			0.0000
370.6560	.0105	11.6395	8.6499	103.5504	10.6130	1.1351	.8694	.8006			0.0000
380.6560	.0069	16.4379	8.8097	95.7059	11.5460	1.2002	.7955	.7278			0.0000
390.6560	.0047	21.8638	8.9316	86.7142	13.1356	1.3273	.7160	.6468			0.0000
396.6223	.0038	25.2694	8.9888	81.5763	14.6443	1.4561	.6752	.5979			0.0000

TABLE VI.- THERMODYNAMIC AND TRANSPORT PROPERTIES OF C_4F_8 AT CONSTANT ENTROPY

s/R = 6.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
K	m^3/kg	atm		m/sec					$N\text{-}s/m^2$	W/m-K	
224.9596	1.5550	.0590	4.6903	99.4580	6.9611	1.0696	1.0637	.9946			0.0000
234.9596	.8152	.1171	4.9422	101.2238	7.1735	1.0689	1.0590	.9906			0.0000
244.9596	.4330	.2285	5.1970	102.7100	7.3942	1.0692	1.0524	.9845	NOT		0.0000
254.9596	.2336	.4362	5.4519	103.7666	7.6311	1.0710	1.0428	.9744			0.0000
264.9596	.1284	.8110	5.7028	104.1614	7.8970	1.0752	1.0283	.9581	AVAILABLE		0.0000
271.3311	.0887	1.1832	5.8578	103.9185	8.0905	1.0798	1.0152	.9433			0.0000

s/R = 6.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
242.4510	1.5555	.0637	5.1463	103.1746	7.2955	1.0658	1.0611	.9956			0.0000
252.4510	.6270	.1243	5.4112	104.9221	7.4977	1.0651	1.0571	.9925			0.0000
262.4510	.4448	.2390	5.6795	106.4355	7.7056	1.0650	1.0516	.9875	NOT		0.0000
272.4510	.2425	.4514	5.9488	107.5915	7.9253	1.0662	1.0438	.9794			0.0000
282.4510	.1343	.8336	6.2153	108.1963	8.1664	1.0690	1.0319	.9663	AVAILABLE		0.0000
292.4510	.0759	1.4953	6.4740	107.9636	8.4446	1.0748	1.0138	.9459			0.0000
302.4510	.0439	2.5838	6.7179	106.4993	8.7848	1.0854	.9859	.9151			0.0000
312.4510	.0262	4.2569	6.9389	103.3125	9.2293	1.1047	.9440	.8707			0.0000
319.7262	.0184	5.9047	7.0805	99.6076	9.6621	1.1284	.9015	.8282			0.0000

s/R = 7.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
260.3758	1.5553	.0684	5.6355	106.8383	7.6265	1.0625	1.0586	.9964			0.0000
270.3758	.8383	.1315	5.9132	108.5622	7.8190	1.0617	1.0552	.9939			0.0000
280.3758	.4565	.2494	6.1946	110.0888	8.0153	1.0615	1.0507	.9899			0.0000
290.3758	.2516	.4656	6.4775	111.3161	8.2199	1.0622	1.0442	.9833			0.0000
300.3758	.1406	.8527	6.7590	112.0833	8.4404	1.0641	1.0344	.9728			0.0000
310.3758	.0799	1.5239	7.0344	112.1493	8.6883	1.0682	1.0196	.9562	NOT		0.0000
320.3758	.0464	2.6385	7.2975	111.1760	8.9822	1.0758	.9970	.9310			0.0000
330.3758	.0276	4.3856	7.5407	108.7328	9.3520	1.0894	.9630	.8941	AVAILABLE		0.0000
340.3758	.0170	6.9291	7.7555	104.3469	9.8508	1.1139	.9132	.8428			0.0000
350.3758	.0108	10.3119	7.9347	97.6258	10.5857	1.1598	.8436	.7758			0.0000
360.3758	.0071	14.3666	8.0745	88.4810	11.8164	1.2530	.7527	.6945			0.0000
370.3758	.0049	18.7210	8.1758	77.5130	14.3131	1.4690	.6466	.6036			0.0000
374.7033	.0042	20.5920	8.2092	72.6136	16.3325	1.6535	.6010	.5633			0.0000

s/R = 7.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
278.7285	1.5552	.0733	6.1586	110.4550	7.9531	1.0595	1.0563	.9970			0.0000
288.7285	.8494	.1387	6.4488	112.1520	8.1365	1.0588	1.0534	.9950			0.0000
298.7285	.4683	.2595	6.7428	113.6816	8.3220	1.0585	1.0496	.9917			0.0000
308.7285	.2609	.4787	7.0390	114.9594	8.5133	1.0588	1.0442	.9863			0.0000
318.7285	.1472	.8686	7.3345	115.8520	8.7161	1.0602	1.0362	.9778	NOT		0.0000
328.7285	.0842	1.5435	7.6256	116.1582	8.9391	1.0631	1.0240	.9644			0.0000
338.7285	.0491	2.6702	7.9066	115.5917	9.1963	1.0686	1.0056	.9438	AVAILABLE		0.0000
348.7285	.0293	4.4609	8.1705	113.7811	9.5094	1.0784	.9780	.9133			0.0000
358.7285	.0180	7.1318	8.4091	110.3120	9.9146	1.0957	.9378	.8703			0.0000
368.7285	.0114	10.8142	8.6146	104.8453	10.4773	1.1267	.8820	.8132			0.0000
378.7285	.0075	15.4534	8.7820	97.3472	11.3288	1.1841	.8106	.7427			0.0000
388.7285	.0051	20.7854	8.9109	88.4609	12.7531	1.2956	.7308	.6627			0.0000
394.0474	.0042	23.7871	8.9655	83.7255	13.9258	1.3941	.6916	.6189			0.0000

TABLE VI.- Continued

S/R= 8.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
299.4817	1.3832	.0886	6.7755	114.3689	8.3091	1.0568	1.0538	.9972			0.0000
309.4817	.7666	.1648	7.0788	116.0129	8.4837	1.0561	1.0512	.9954			0.0000
319.4817	.4286	.3034	7.3857	117.5027	8.6597	1.0558	1.0477	.9924			0.0000
329.4817	.2420	.5515	7.6948	118.7617	8.8402	1.0561	1.0429	.9876			0.0000
339.4817	.1382	.9875	8.0034	119.6697	9.0299	1.0572	1.0357	.9800			0.0000
349.4817	.0800	1.7354	8.3080	120.0466	9.2361	1.0596	1.0249	.9681	NOT		0.0000
359.4817	.0471	2.9766	8.6033	119.6375	9.4703	1.0642	1.0086	.9498	AVAILABLE		0.0000
369.4817	.0283	4.9484	8.8828	118.1149	9.7501	1.0722	.9844	.9229			0.0000
379.4817	.0174	7.9062	9.1383	115.1231	10.1036	1.0862	.9497	.8848			0.0000
389.4817	.0111	12.0397	9.3624	110.4022	10.5785	1.1104	.9026	.8342			0.0000
399.4817	.0073	17.3707	9.5496	104.0303	11.2588	1.1531	.8446	.7717			0.0000
409.4817	.0050	23.7273	9.6993	96.7832	12.2878	1.2278	.7848	.7013			0.0000
416.7198	.0038	28.8447	9.7870	91.9598	13.3525	1.3117	.7518	.6495			0.0000

S/R= 8.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
318.7444	1.3833	.0943	7.3723	117.9107	8.6240	1.0544	1.0519	.9976			0.0000
328.7444	.7765	.1730	7.6875	119.5274	8.7899	1.0538	1.0497	.9961			0.0000
338.7444	.4394	.3142	8.0064	121.0120	8.9563	1.0535	1.0468	.9937			0.0000
348.7444	.2509	.5643	8.3277	122.3009	9.1254	1.0536	1.0426	.9897			0.0000
358.7444	.1447	1.0000	8.6493	123.2948	9.3009	1.0543	1.0367	.9835			0.0000
368.7444	.0845	1.7437	8.9679	123.8448	9.4886	1.0561	1.0278	.9737	NOT		0.0000
378.7444	.0500	2.9778	9.2791	123.7393	9.6969	1.0595	1.0145	.9588	AVAILABLE		0.0000
388.7444	.0302	4.9504	9.5768	122.7044	9.9390	1.0655	.9949	.9367			0.0000
398.7444	.0186	7.9523	9.8537	120.4386	10.2355	1.0758	.9669	.9052			0.0000
408.7444	.0118	12.2475	10.1021	116.7203	10.6184	1.0933	.9294	.8628			0.0000
418.7444	.0077	17.9735	10.3160	111.6242	11.1391	1.1228	.8839	.8099			0.0000
428.7444	.0053	25.0895	10.4936	105.8419	11.8715	1.1714	.8387	.7496			0.0000
437.5565	.0038	32.4269	10.6229	101.3991	12.7462	1.2353	.8130	.6954			0.0000

S/R= 9.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
338.4582	1.3831	.1002	8.0057	121.4243	8.9326	1.0524	1.0502	.9980			0.0000
348.4582	.7862	.1812	8.3325	123.0129	9.0902	1.0518	1.0483	.9967			0.0000
358.4582	.4503	.3248	8.6630	124.4877	9.2474	1.0514	1.0458	.9947			0.0000
368.4582	.2600	.5763	8.9961	125.7962	9.4060	1.0514	1.0423	.9914			0.0000
378.4582	.1515	1.0104	9.3299	126.8565	9.5690	1.0519	1.0373	.9863			0.0000
388.4582	.0893	1.7464	9.6617	127.5462	9.7406	1.0532	1.0300	.9783	NOT		0.0000
398.4582	.0533	2.9645	9.9876	127.6918	9.9275	1.0558	1.0191	.9661	AVAILABLE		0.0000
408.4582	.0323	4.9171	10.3023	127.0673	10.1395	1.0603	1.0033	.9480			0.0000
418.4582	.0200	7.9176	10.5989	125.4225	10.3918	1.0681	.9809	.9221			0.0000
428.4582	.0127	12.2883	10.8702	122.5719	10.7072	1.0810	.9511	.8871			0.0000
438.4582	.0083	18.2701	11.1098	118.5816	11.1192	1.1023	.9155	.8428			0.0000
448.4582	.0056	25.9536	11.3147	114.0497	11.6713	1.1359	.8813	.7918			0.0000
458.4582	.0039	35.3469	11.4875	110.3311	12.3941	1.1850	.8636	.7397			0.0000
459.1202	.0038	36.0338	11.4979	110.1566	12.4479	1.1888	.8635	.7364			0.0000

S/R= 9.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
358.6211	1.3833	.1062	8.6760	124.9128	9.2342	1.0505	1.0486	.9983			0.0000
368.6211	.7961	.1894	9.0141	126.4730	9.3835	1.0499	1.0470	.9972			0.0000
378.6211	.4614	.3350	9.3558	127.9350	9.5319	1.0496	1.0448	.9955			0.0000
388.6211	.2695	.5872	9.7003	129.2554	9.6809	1.0495	1.0419	.9928			0.0000
398.6211	.1587	1.0182	10.0458	130.3671	9.8325	1.0498	1.0377	.9885			0.0000
408.6211	.0944	1.7433	10.3901	131.1701	9.9901	1.0508	1.0317	.9820			0.0000
418.6211	.0568	2.9381	10.7297	131.5236	10.1589	1.0528	1.0228	.9720	NOT		0.0000
428.6211	.0347	4.8534	11.0599	131.2440	10.3464	1.0563	1.0100	.9573	AVAILABLE		0.0000
438.6211	.0216	7.8139	11.3748	130.1276	10.5639	1.0622	.9922	.9362			0.0000
448.6211	.0137	12.1833	11.6673	128.0233	10.8280	1.0720	.9686	.9075			0.0000
458.6211	.0090	18.2878	11.9312	124.9881	11.1619	1.0877	.9410	.8709			0.0000
468.6211	.0060	26.3405	12.1627	121.5290	11.5938	1.1119	.9153	.8285			0.0000
478.6211	.0042	36.4662	12.3629	118.8108	12.1418	1.1466	.9041	.7848			0.0000
481.3998	.0038	39.6774	12.4135	118.4059	12.3181	1.1580	.9060	.7734			0.0000

TABLE VI.- Continued

S /R=10.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
379.2527	1.3836	.1123	9.3845	128.3822	9.5281	1.0488	1.0472	.9985			0.0000
389.2527	.8060	.1976	9.7334	129.9140	9.6695	1.0483	1.0457	.9976			0.0000
399.2527	.4728	.3451	10.0861	131.3610	9.8095	1.0479	1.0439	.9962			0.0000
409.2527	.2793	.5974	10.4414	132.6874	9.9492	1.0478	1.0414	.9939			0.0000
419.2527	.1663	1.0243	10.7981	133.8382	10.0904	1.0480	1.0379	.9904	NOT		0.0000
429.2527	.0999	1.7362	11.1541	134.7328	10.2357	1.0488	1.0329	.9850			0.0000
439.2527	.0606	2.9024	11.5065	135.2578	10.3890	1.0503	1.0257	.9769	AVAILABLE		0.0000
449.2527	.0373	4.7677	11.8512	135.2662	10.5561	1.0530	1.0155	.9650			0.0000
459.2527	.0233	7.6589	12.1828	134.5958	10.7457	1.0576	1.0013	.9479			0.0000
469.2527	.0149	11.9646	12.4950	133.1268	10.9700	1.0651	.9829	.9245			0.0000
479.2527	.0097	18.0754	12.7817	130.9101	11.2458	1.0770	.9616	.8947			0.0000
489.2527	.0066	26.3103	13.0385	128.3701	11.5928	1.0950	.9424	.8599			0.0000
499.2527	.0046	36.9086	13.2653	126.4967	12.0235	1.1205	.9360	.8239			0.0000
504.3926	.0038	43.3736	13.3715	126.2634	12.2746	1.1364	.9425	.8069			0.0000

S /R=10.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
400.3719	1.3833	.1186	10.1321	131.8377	9.8140	1.0472	1.0459	.9987			0.0000
410.3719	.8157	.2059	10.4917	133.3414	9.9475	1.0468	1.0446	.9979			0.0000
420.3719	.4841	.3550	10.8548	134.7718	10.0793	1.0464	1.0430	.9967			0.0000
430.3719	.2893	.6071	11.2206	136.0994	10.2103	1.0463	1.0409	.9948			0.0000
440.3719	.1741	1.0290	11.5879	137.2798	10.3418	1.0464	1.0380	.9920			0.0000
450.3719	.1057	1.7262	11.9550	138.2481	10.4760	1.0470	1.0339	.9876	NOT		0.0000
460.3719	.0648	2.8602	12.3194	138.9140	10.6158	1.0482	1.0281	.9810			0.0000
470.3719	.0402	4.6667	12.6774	139.1620	10.7657	1.0503	1.0199	.9713	AVAILABLE		0.0000
480.3719	.0253	7.4673	13.0244	138.8653	10.9325	1.0539	1.0087	.9575			0.0000
490.3719	.0162	11.6613	13.3547	137.9327	11.1253	1.0598	.9944	.9388			0.0000
500.3719	.0106	17.6827	13.6625	136.4115	11.3567	1.0689	.9782	.9147			0.0000
510.3719	.0072	25.9310	13.9432	134.6568	11.6408	1.0826	.9642	.8865			0.0000
520.3719	.0050	36.7608	14.1956	133.4966	11.9879	1.1019	.9611	.8574			0.0000
528.0972	.0038	47.1325	14.3731	133.8161	12.2953	1.1205	.9742	.8375			0.0000

S /R=11.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
421.9859	1.3832	.1250	10.9195	135.2820	10.0911	1.0458	1.0447	.9989			0.0000
431.9859	.8255	.2143	11.2893	136.7582	10.2169	1.0454	1.0435	.9982			0.0000
441.9859	.4958	.3647	11.6625	138.1711	10.3407	1.0451	1.0422	.9972			0.0000
451.9859	.2996	.6161	12.0384	139.4965	10.4632	1.0450	1.0404	.9956			0.0000
461.9859	.1824	1.0322	12.4159	140.6987	10.5857	1.0450	1.0380	.9933			0.0000
471.9859	.1118	1.7132	12.7935	141.7262	10.7096	1.0455	1.0346	.9897			0.0000
481.9859	.0692	2.8119	13.1691	142.5082	10.8375	1.0464	1.0299	.9843	NOT		0.0000
491.9859	.0433	4.5528	13.5395	142.9551	10.9727	1.0481	1.0234	.9765			0.0000
501.9859	.0274	7.2468	13.9006	142.9704	11.1204	1.0510	1.0147	.9655	AVAILABLE		0.0000
511.9859	.0177	11.2921	14.2475	142.4878	11.2878	1.0556	1.0037	.9506			0.0000
521.9859	.0116	17.1468	14.5747	141.5530	11.4842	1.0627	.9915	.9315			0.0000
531.9859	.0078	25.2720	14.8776	140.4614	11.7206	1.0733	.9816	.9090			0.0000
541.9859	.0055	36.1092	15.1544	139.9041	12.0051	1.0882	.9809	.8858			0.0000
551.9859	.0039	50.1143	15.4069	140.9982	12.3347	1.1072	1.0002	.8664			0.0000
552.5210	.0038	50.9660	15.4199	141.1279	12.3534	1.1083	1.0020	.8655			0.0000

S /R=11.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
444.1139	1.3832	.1316	11.7478	138.7194	10.3589	1.0446	1.0435	.9990			0.0000
454.1139	.8355	.2226	12.1274	140.1688	10.4770	1.0442	1.0426	.9985			0.0000
464.1139	.5076	.3741	12.5103	141.5635	10.5930	1.0439	1.0414	.9976			0.0000
474.1139	.3103	.6244	12.8958	142.8840	10.7074	1.0438	1.0399	.9963			0.0000
484.1139	.1910	1.0340	13.2830	144.1018	10.8212	1.0438	1.0379	.9943			0.0000
494.1139	.1184	1.6976	13.6706	145.1767	10.9357	1.0441	1.0351	.9914			0.0000
504.1139	.0740	2.7591	14.0566	146.0537	11.0527	1.0449	1.0314	.9871			0.0000
514.1139	.0467	4.4300	14.4385	146.6651	11.1750	1.0462	1.0263	.9809	NOT		0.0000
524.1139	.0298	7.0066	14.8126	146.9394	11.3065	1.0485	1.0195	.9722			0.0000
534.1139	.0193	10.8771	15.1747	146.8316	11.4529	1.0522	1.0112	.9604	AVAILABLE		0.0000
544.1139	.0128	16.5042	15.5197	146.3884	11.6214	1.0578	1.0023	.9454			0.0000
554.1139	.0086	24.3966	15.8432	145.8528	11.8204	1.0662	.9955	.9278			0.0000
564.1139	.0060	35.0546	16.1428	145.8014	12.0567	1.0779	.9966	.9098			0.0000
574.1139	.0043	49.0003	16.4195	147.1886	12.3300	1.0929	1.0145	.8950			0.0000
577.6753	.0038	54.8816	16.5132	148.2482	12.4343	1.0989	1.0268	.8915			0.0000

TABLE VI.- Concluded

s /R=12.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
466.7763	1.3832	.1383	12.6179	142.1540	10.6168	1.0434	1.0425	.9991			0.0000
476.7763	.8456	.2310	13.0070	143.5773	10.7273	1.0431	1.0417	.9987			0.0000
486.7763	.5197	.3834	13.3992	144.9534	10.8356	1.0428	1.0407	.9979			0.0000
496.7763	.3214	.6321	13.7939	146.2668	10.9422	1.0427	1.0394	.9969			0.0000
506.7763	.2000	1.0346	14.1903	147.4953	11.0477	1.0427	1.0377	.9953			0.0000
516.7763	.1253	1.6799	14.5872	148.6075	11.1532	1.0429	1.0355	.9929	NOT		0.0000
526.7763	.0791	2.7027	14.9831	149.5620	11.2602	1.0435	1.0326	.9895	AVAILABLE		0.0000
536.7763	.0504	4.3010	15.3756	150.3087	11.3710	1.0446	1.0286	.9845			0.0000
546.7763	.0325	6.7518	15.7617	150.7976	11.4885	1.0465	1.0234	.9777			0.0000
556.7763	.0212	10.4297	16.1376	150.9999	11.6173	1.0495	1.0173	.9686			0.0000
566.7763	.0141	15.7939	16.4989	150.9621	11.7629	1.0540	1.0109	.9570			0.0000
576.7763	.0096	23.3657	16.8413	150.8906	11.9319	1.0606	1.0067	.9435			0.0000
586.7763	.0066	33.6927	17.1622	151.2609	12.1301	1.0698	1.0090	.9298			0.0000
588.8889	.0062	36.2826	17.2272	151.4658	12.1760	1.0721	1.0110	.9271			0.0000

s /R=12.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
489.9946	1.3836	.1452	13.5308	145.5894	10.8642	1.0424	1.0416	.9992			0.0000
499.9946	.8556	.2394	13.9290	146.9873	10.9672	1.0421	1.0409	.9988			0.0000
509.9946	.5321	.3925	14.3300	148.3447	11.0680	1.0418	1.0400	.9983			0.0000
519.9946	.3328	.6392	14.7335	149.6494	11.1668	1.0417	1.0389	.9974			0.0000
529.9946	.2094	1.0341	15.1386	150.8843	11.2643	1.0417	1.0376	.9961	NOT		0.0000
539.9946	.1326	1.6604	15.5445	152.0256	11.3613	1.0419	1.0358	.9942	AVAILABLE		0.0000
549.9946	.0846	2.6430	15.9495	153.0432	11.4590	1.0424	1.0335	.9914			0.0000
559.9946	.0544	4.1678	16.3519	153.9003	11.5593	1.0433	1.0304	.9876			0.0000
569.9946	.0354	6.4914	16.7490	154.5643	11.6645	1.0448	1.0266	.9823			0.0000
579.9946	.0233	9.9673	17.1375	155.0209	11.7782	1.0472	1.0222	.9753			0.0000
588.8889	.0162	14.3858	17.4727	155.2881	11.8899	1.0503	1.0183	.9675			0.0000

s /R=13.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
513.7921	1.3836	.1522	14.4876	149.0293	11.1006	1.0414	1.0407	.9993			0.0000
523.7921	.8659	.2479	14.8944	150.4026	11.1962	1.0411	1.0401	.9990			0.0000
533.7921	.5448	.4013	15.3039	151.7412	11.2894	1.0409	1.0394	.9985			0.0000
543.7921	.3447	.6457	15.7157	153.0359	11.3806	1.0408	1.0385	.9978	NOT		0.0000
553.7921	.2194	1.0322	16.1291	154.2738	11.4703	1.0408	1.0374	.9967	AVAILABLE		0.0000
563.7921	.1404	1.6393	16.5432	155.4372	11.5592	1.0409	1.0360	.9952			0.0000
573.7921	.0905	2.5819	16.9569	156.5050	11.6482	1.0413	1.0342	.9931			0.0000
583.7921	.0588	4.0310	17.3685	157.4523	11.7388	1.0421	1.0319	.9901			0.0000
588.8889	.0474	5.0398	17.5767	157.8814	11.7862	1.0426	1.0306	.9882			0.0000

s /R=13.5000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
538.20_	1.3836	.1595	15.4898	152.4788	11.3254	1.0405	1.0400	.9994			0.0000
548.2056	.8763	.2564	15.9048	153.8282	11.4136	1.0403	1.0394	.9992			0.0000
558.2056	.5576	.4101	16.3223	155.1481	11.4994	1.0401	1.0388	.9988	NOT		0.0000
568.2056	.3569	.6518	16.7419	156.4317	11.5832	1.0400	1.0381	.9982	AVAILABLE		0.0000
578.2056	.2297	1.0300	17.1631	157.6695	11.6653	1.0400	1.0372	.9973			0.0000
588.2056	.1486	1.6170	17.5851	158.8493	11.7462	1.0401	1.0361	.9962			0.0000
588.8889	.1443	1.6671	17.6139	158.9274	11.7517	1.0401	1.0360	.9961			0.0000

s /R=14.0000

T	V	p	h/RT	a	c_p/R	γ	γ_e	Z	μ	k	N_{Pr}
563.2567	1.3832	.1669	16.5382	155.9406	11.5380	1.0398	1.0392	.9995			0.0000
573.2567	.8864	.2651	16.9609	157.2668	11.6188	1.0395	1.0388	.9993	NOT		0.0000
583.2567	.5709	.4187	17.3860	158.5682	11.6973	1.0394	1.0383	.9990			0.0000
588.8889	.4465	.5404	17.6263	159.2883	11.7406	1.0393	1.0380	.9987	AVAILABLE		0.0000

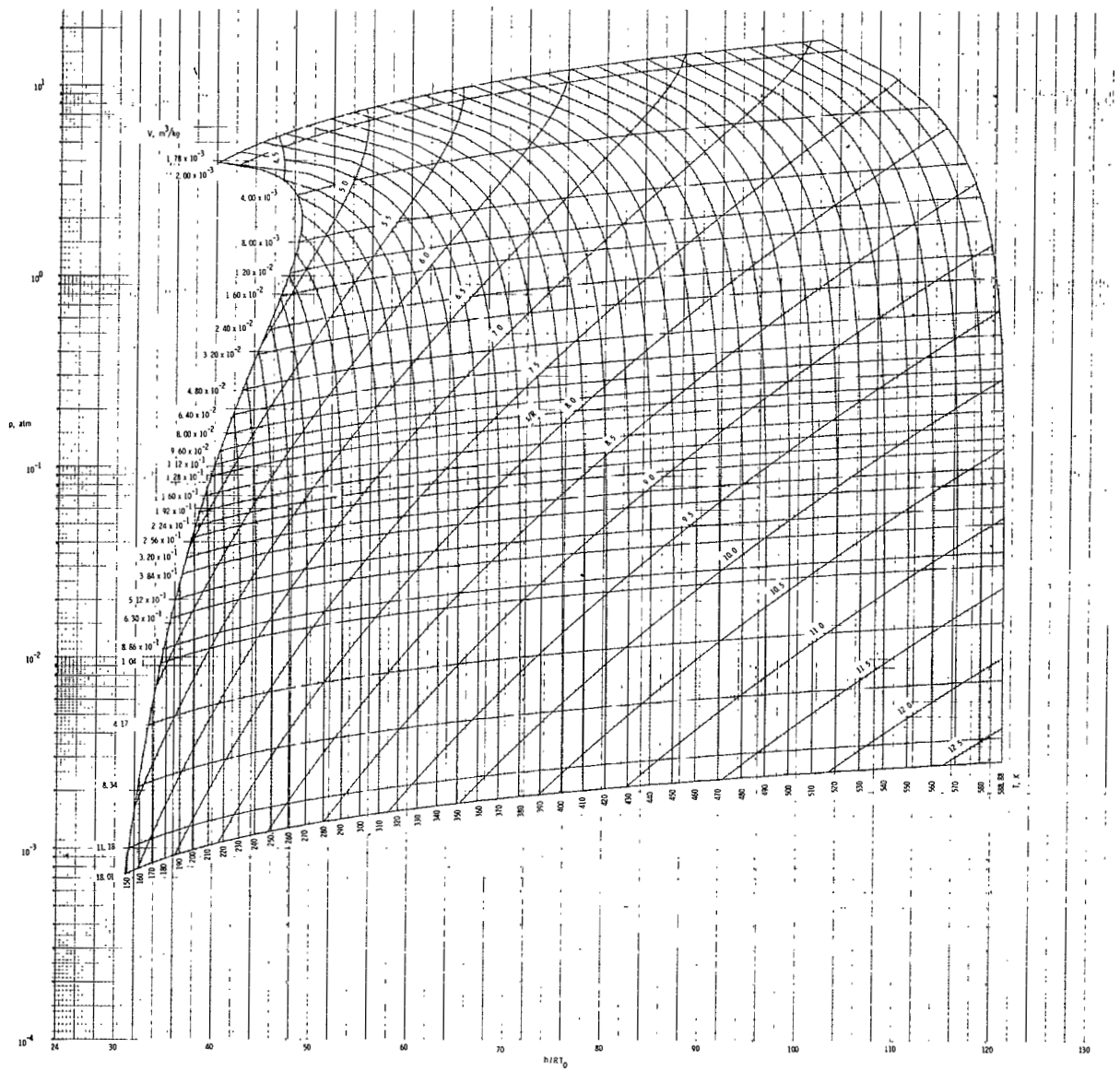

Figure 1.- Pressure enthalpy diagram for $CBrF_3$ with lines of constant entropy, volume, and temperature.

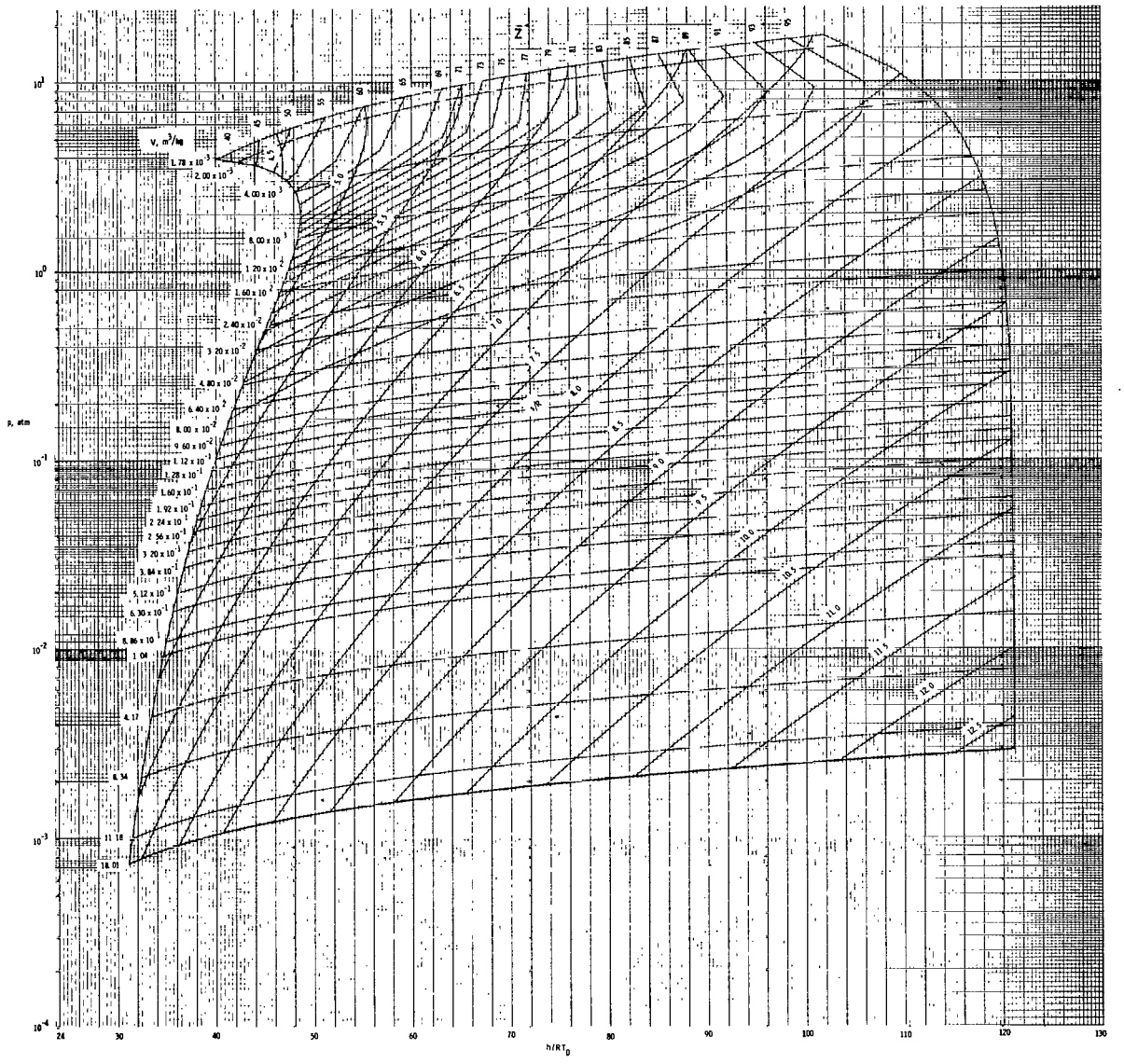

Figure 2.- Pressure enthalpy diagram for $CBrF_3$ with lines of constant entropy, volume, and compressibility factor.

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