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THERMODYNAMIC AND TRANSPORT PROPERTIES  
OF GASEOUS TETRAFLUOROMETHANE  
IN CHEMICAL EQUILIBRIUM

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## ERRATA

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The reference enthalpy ( $4.6489 \times 10^5 \text{ Jkg}^{-1}$ ) and the reference entropy ( $3.548 \times 10^3 \text{ Jkg}^{-1}\text{K}^{-1}$ ) used in the subject report are in error. The correct reference enthalpy is  $4.6571 \times 10^5 \text{ Jkg}^{-1}$  and the correct reference entropy is  $3.542 \text{ Jkg}^{-1}\text{K}^{-1}$ .

The enthalpy equation for  $\text{CF}_4$  (eq. (8), p. 9) contains erroneous terms. For values of specific volume  $V$  above  $0.030 \text{ m}^3\text{kg}^{-1}$ , the error in enthalpy is negligible. Between  $V = 0.030$  and  $0.0055 \text{ m}^3\text{kg}^{-1}$ , the error in enthalpy is of the order of 0.5 percent. For the range of  $V$  from  $0.0055$  to  $0.0026 \text{ m}^3\text{kg}^{-1}$ , the error increases up to a maximum of 4.5 percent at  $V = 0.0026 \text{ m}^3\text{kg}^{-1}$ . All errors are positive (that is, too large).

In equation (8) beginning with line 6, replace the following terms within braces

$$+ \left\{ \frac{V^2}{2} \left[ \frac{-4B_4T}{(V-b)^5} + A_6\alpha e^{\alpha V} + B_6T\alpha e^{\alpha V} \right] + V \left[ \frac{B_4T}{(V-b)^4} + A_6e^{\alpha V} + B_6Te^{\alpha V} \right] \right. \\ \left. - \frac{V_r^2}{2} \left[ \frac{-4B_4T}{(V_r-b)^5} + A_6\alpha e^{\alpha V_r} + B_6T\alpha e^{\alpha V_r} \right] - V_r \left[ \frac{B_4T}{(V_r-b)^4} + A_6e^{\alpha V_r} + B_6Te^{\alpha V_r} \right] \right\}$$

with

$$-4B_4T \left[ \frac{1}{3(V_r-b)^3} + \frac{b}{4(V_r-b)^4} - \frac{1}{3(V-b)^3} - \frac{b}{4(V-b)^4} \right] \\ + (A_6 + B_6T) \left[ \frac{e^{\alpha V}(\alpha V - 1) - e^{\alpha V_r}(\alpha V_r - 1)}{\alpha} \right]$$

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# THERMODYNAMIC AND TRANSPORT PROPERTIES OF GASEOUS TETRAFLUOROMETHANE IN CHEMICAL EQUILIBRIUM

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## SUMMARY

Equations and computer code are presented for the thermodynamic and transport properties of gaseous, undissociated tetrafluoromethane ( $\text{CF}_4$ ) in chemical equilibrium. The computer code calculates the thermodynamic and transport properties of  $\text{CF}_4$  when given any two of five thermodynamic variables (entropy, temperature, volume, pressure, and enthalpy).

Equilibrium thermodynamic and transport property data are tabulated for gaseous  $\text{CF}_4$  from a dimensionless entropy  $S/R$  of 24.0 to 46.0 and from a temperature of 89.45 K to 845 K. These data are listed at constant entropy in increments of 0.25 with temperature increments of 10 K. Pressure-enthalpy diagrams generated with data from the computer code which contain lines of constant entropy, temperature, volume, speed of sound, isentropic expansion exponent, and compressibility factor are presented. Transport property and specific heat data are also tabulated over a specific volume range from  $0.002 \text{ m}^3\text{kg}^{-1}$  to  $80 \text{ m}^3\text{kg}^{-1}$  for five values of temperature from 100 K to 800 K.

## INTRODUCTION

Tetrafluoromethane is currently being used in hypersonic tunnels at enthalpy levels below that at which dissociation occurs to simulate the inviscid flow field on blunt or lifting bodies in hypersonic flight where dissociation of the gas in the shock layer does occur. (See ref. 1.) This use of gaseous  $\text{CF}_4$  has generated interest in the thermodynamic and transport properties of  $\text{CF}_4$  in a higher enthalpy range and different form than that presently available (ref. 2) which covers the range of conditions where tetrafluoromethane is normally expected to be used as a refrigerant. Also, more recent and extensive pressure-volume-temperature measurements (information received from E. I. du Pont de Nemours & Co. as generated by Dr. J. J. Martin of the University of Michigan) resulted in an equation of state somewhat different from that used in reference 2.

Equations and computer code are presented for the thermodynamic and transport properties of gaseous, undissociated tetrafluoromethane ( $\text{CF}_4$ ) in chemical equilibrium.



The computer code calculates the thermodynamic and transport properties of  $\text{CF}_4$  when given any two of five thermodynamic variables (entropy, temperature, volume, pressure, and enthalpy).

Equilibrium thermodynamic and transport property data are tabulated for gaseous  $\text{CF}_4$  from a dimensionless entropy ( $S/R$ ) of 24.0 to 46.0 and from a temperature of 89.45 K to 845 K. These data are listed at constant entropy in increments of 0.25 with temperature increments of 10 K. Pressure-enthalpy diagrams generated with data from the computer codes are presented which contain lines of constant entropy, temperature, volume, speed of sound, isentropic expansion exponent, and compressibility factor. Transport property and specific heat data are also tabulated over a specific volume range from  $0.002 \text{ m}^3\text{kg}^{-1}$  to  $80 \text{ m}^3\text{kg}^{-1}$  for five values of temperature from 100 K to 800 K.

### SYMBOLS

A	constant in saturation pressure equation (eq. (16))
$A_2, A_3, A_4, A_5, A_6$	constants in equation of state (eq. (1))
a	speed of sound
$a_4$	constant in equation for specific heat at zero pressure (eq. (3))
B	constant in saturation pressure equation (eq. (16))
$B_2, B_3, B_4, B_5, B_6$	constants in equation of state (eq. (1))
b	constant in equation of state (eq. (1))
$b_4$	constant in equation for specific heat at zero pressure (eq. (3))
C	constant in saturation pressure equation (eq. (16))
$C_2, C_3, C_5$	constants in equation of state (eq. (1))
$c_4$	constant in equation for specific heat at zero pressure (eq. (3))
$c_p$	specific heat at constant pressure

$c_p'$	ideal-gas specific heat at constant pressure
$c_v$	specific heat at constant volume
$c_v'$	ideal-gas specific heat at constant volume
D	constant in saturation pressure (eq. (16))
$d_4$	constant in equation for specific heat at zero pressure (eq. (3))
E	constant in saturation pressure equation (eq. (16))
F	constant in saturation pressure equation (eq. (16))
f	functional notation
G	constant in equation (16)
H	enthalpy
J	unit conversion factor
K	constant in equation of state (eq. (1))
k	thermal conductivity
$k^*$	thermal conductivity at atmospheric pressure
M	molecular weight
m,n	exponents in equation (18)
$N_{Pr}$	Prandtl number, $\mu c_p/k$
p	pressure
R	gas constant
S	entropy

T	temperature
V	specific volume
Z	compressibility factor, $pV/RT$
$\alpha$	constant in equation of state (eq. (1))
$\beta$	proportionality constant (eq. (18))
$\gamma$	ratio of specific heats, $c_p/c_v$
$\gamma_e$	isentropic exponent (eq. (12))
$\mu$	viscosity
$\mu^*$	viscosity at atmospheric pressure
$\xi$	viscosity parameter, $T_c^{1/6}/M^{1/2} p_c^{2/3}$
$\rho$	density, $1/V$
$\rho_R$	reduced density, $V_c/V$

Subscripts:

c	critical
o	ice point of water, 273.15 K
r	reference conditions (eq. (5))
s	saturation

### CHARACTERISTICS

Tetrafluoromethane ( $CF_4$ ) is a nonlinear polyatomic molecule (ref. 3). Its nine vibrational energy modes (ref. 3) display anharmonic oscillator characteristics having four fundamental frequencies; two are threefold degenerate, one is twofold degenerate,

and one is onefold degenerate. The acute temperature dependence of the vibrational energy of this molecule reveals itself in the specific heats at constant pressure and volume and their ratio  $\gamma$  along with the isentropic expansion exponent.

In the gaseous state, tetrafluoromethane is colorless, odorless, and nontoxic. It has a low ratio of specific heats, low boiling point, and short vibrational relaxation time. (See ref. 4.) Some of the physical properties of  $\text{CF}_4$  (obtained from E. I. du Pont de Nemours & Co.) are given in the following table. (Note that 1 atmosphere =  $101 \text{ kN m}^{-2}$ .)

Molecular weight . . . . .	88.01
Boiling point at 1 atm, K . . . . .	145
Freezing point, K . . . . .	89.4
Critical temperature, K . . . . .	227.48
Critical pressure, atm . . . . .	36.96
Critical volume, $\text{cm}^3 \text{mole}^{-1}$ . . . . .	141
Critical density, $\text{kg m}^{-3}$ . . . . .	$0.626 \times 10^3$
Density, liquid at 193 K, $\text{kg m}^{-3}$ . . . . .	$1.317 \times 10^3$
Density, saturated vapors at boiling point, $\text{kg m}^{-3}$ . . . . .	7.62
Specific heat, liquid at 193 K, $\text{J kg}^{-1} \text{K}^{-1}$ . . . . .	$1.23 \times 10^3$
Specific heat, vapor at 1 atm and 298 K, $\text{J kg}^{-1} \text{K}^{-1}$ . . . . .	$0.707 \times 10^3$
Specific-heat ratio at 1 atm and 298 K . . . . .	1.159
Heat of vaporization at boiling point, $\text{J kg}^{-1}$ . . . . .	$136.0 \times 10^3$
Vibrational relaxation time at 298 K and 1 atm, sec . . . . .	$8.2 \times 10^{-7}$

The method of reference 5 was used to compute the equilibrium composition of  $\text{CF}_4$  as a function of temperature for several pressures covering the range that would normally be used in a wind tunnel, and it was found that no dissociation occurred for temperatures lower than 1600 K.

## GENERAL EQUATIONS

### Thermodynamic Properties of Gaseous $\text{CF}_4$

The equation of state of tetrafluoromethane was obtained from E. I. du Pont de Nemours & Co. and is

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

where  $p$  is given in  $\text{Nm}^{-2}$ ,  $V$  in  $\text{m}^3\text{kg}^{-1}$ , and  $T$  in  $\text{K}$ , and where the virial coefficients are

$$A_2 = -5.811999 \times 10^1$$

$$B_2 = 1.032692 \times 10^{-1}$$

$$C_2 = -5.089595 \times 10^2$$

$$A_3 = 7.387702 \times 10^{-3}$$

$$B_3 = 3.873415 \times 10^{-5}$$

$$C_3 = 9.054616 \times 10^{-1}$$

$$A_4 = 2.01177417 \times 10^{-5}$$

$$B_4 = -7.385870 \times 10^{-8}$$

$$A_5 = -2.929506 \times 10^{-8}$$

$$B_5 = 1.066416 \times 10^{-10}$$

$$C_5 = -3.162000 \times 10^{-7}$$

$$A_6 = 4.0257244 \times 10^{11}$$

$$B_6 = -1.149705 \times 10^9$$

and

$$R = 9.447002 \times 10^1 \text{ J kg}^{-1}\text{K}^{-1}$$

$$b = 9.364194 \times 10^{-5}$$

$$K = 1.758236 \times 10^{-2}$$

$$\alpha = -1.059139 \times 10^4$$

This equation was developed through an empirical approach (ref. 6) in which the 13 virial coefficients and  $\alpha$  and  $b$  were evaluated along the experimentally determined critical isotherm by Dr. J. J. Martin of the University of Michigan. This equation probably gives an accurate representation of the pressure-volume-temperature behavior of  $\text{CF}_4$  at densities as high as 1.5 times the critical value. Dr. Martin (ref. 7) has since developed

an equation of state which gives an accurate representation of the pressure-volume-temperature behavior of  $\text{CF}_4$  at densities as high as 2.5 times the critical value. The specific heat at constant volume is

$$c_V = c_V' + J \int_{\infty}^V T \left( \frac{\partial^2 p}{\partial T^2} \right)_V dV \quad (2)$$

Two third-degree expressions in temperature were obtained from P. E. Liley of Thermophysical Properties Research Center, Purdue University, for the ideal-gas specific heat  $c_p'$ . These expressions were curve fits of spectroscopic and molecular structural data derived from statistical mechanics which were compiled from six sources. These two expressions for the ideal-gas specific heat at constant pressure were converted to specific heat at constant volume by the ideal-gas relationship  $c_V' = c_p' - R$ . The equation for specific heat at constant volume at zero pressure is

$$c_V' = a_4 + b_4 T + c_4 T^2 + d_4 T^3 \quad (3)$$

where  $c_V'$  is in  $\text{J kg}^{-1} \text{K}^{-1}$ . When equation (3) is fitted over the temperature interval 100 K to 615 K:

$$a_4 = 1.43308 \times 10^2$$

$$b_4 = 1.51168 \times 10^0$$

$$c_4 = 5.15767 \times 10^{-4}$$

$$d_4 = -1.59381 \times 10^{-6}$$

When equation (3) is fitted over the temperature interval 615 K to 1500 K:

$$a_4 = 2.95790 \times 10^2$$

$$b_4 = 1.53754 \times 10^0$$

$$c_4 = -1.0727 \times 10^{-3}$$

$$d_4 = 2.64172 \times 10^{-7}$$

These curve fits are stated to fit the enumerated values with mean deviations of 0.66 and 0.09 percent and maximum deviations of 3.6 and 0.27 percent, respectively.

Evaluating the integral term of equation (2) with the equation of state (1) gives

$$c_v = c_v' - TK^2 e^{-KT} \left[ \frac{C_2}{V-b} + \frac{C_3}{2(V-b)^2} + \frac{C_5}{4(V-b)^4} \right] \quad (4)$$

The entropy  $S$  expressed as a function of  $T$  and  $V$  is

$$S - S_r = \int_{T_r}^T \frac{c_v}{T} dT + \int_{V_r}^V \left( \frac{\partial p}{\partial T} \right)_V dV \quad (5)$$

where the subscript  $r$  represents reference conditions taken herein as

$$S_r = 3.548 \times 10^3 \text{ J kg}^{-1} \text{ K}^{-1}$$

$$T_r = 4.556 \times 10^2 \text{ K}$$

$$p_r = 6.8948 \times 10^3 \text{ N m}^{-2}$$

$$V_r = 6.2428 \text{ m}^3 \text{ kg}^{-1}$$

From the integration of equation (5), the expression for entropy becomes

$$\begin{aligned} S - S_r = & a_4 \log_e \frac{T}{T_r} + b_4 (T - T_r) + \frac{c_4}{2} (T^2 - T_r^2) + \frac{d_4}{3} (T^3 - T_r^3) \\ & + K (e^{-KT} - e^{-KT_r}) \left[ \frac{C_2}{V_r - b} + \frac{C_3}{2(V_r - b)^2} + \frac{C_5}{4(V_r - b)^4} \right] + R \log_e \left( \frac{V - b}{V_r - b} \right) \\ & - (B_2 - KC_2 e^{-KT}) \left( \frac{1}{V - b} - \frac{1}{V_r - b} \right) - \frac{B_3 - KC_3 e^{-KT}}{2} \left[ \frac{1}{(V - b)^2} - \frac{1}{(V_r - b)^2} \right] \\ & - \frac{B_5 - KC_5 e^{-KT}}{4} \left[ \frac{1}{(V - b)^4} - \frac{1}{(V_r - b)^4} \right] - B_4 \left[ \frac{1}{3(V - b)^3} - \frac{1}{3(V_r - b)^3} \right] \\ & + B_6 \left( \frac{e^{\alpha V}}{\alpha} - \frac{e^{\alpha V_r}}{\alpha} \right) \end{aligned} \quad (6)$$

The enthalpy  $H$  expressed as a function of  $T$  and  $V$  is

$$H - H_r = \int_{T_r}^T \left[ c_v + V \left( \frac{\partial p}{\partial T} \right)_V \right] dT + \int_{V_r}^V \left[ V \left( \frac{\partial p}{\partial V} \right)_T + T \left( \frac{\partial p}{\partial T} \right)_V \right] dV \quad (7)$$

and becomes in integrated form

$$\begin{aligned} H - H_r = & a_4(T - T_r) + b_4 \frac{T^2 - T_r^2}{2} + c_4 \frac{T^3 - T_r^3}{3} + d_4 \frac{T^4 - T_r^4}{4} + \left[ e^{-KT} (KT + 1) - e^{-KT_r} (KT_r + 1) \right] \left[ \frac{C_2}{V_r - b} + \frac{C_3}{2(V_r - b)^2} + \frac{C_5}{4(V_r - b)^4} \right] \\ & + V_r \left[ \frac{R}{V_r - b} (T - T_r) + \frac{B_2(T - T_r) + C_2(e^{-KT} - e^{-KT_r})}{(V_r - b)^2} + \frac{B_3(T - T_r) + C_3(e^{-KT} - e^{-KT_r})}{(V_r - b)^3} + \frac{B_4(T - T_r)}{(V_r - b)^4} \right. \\ & + \left. \frac{B_5(T - T_r) + C_5(e^{-KT} - e^{-KT_r})}{(V_r - b)^5} + B_6 e^{\alpha V_r} (T - T_r) \right] - \left\{ RT \left[ \log_e \left( \frac{V - b}{V_r - b} \right) + \frac{b}{V_r - b} - \frac{b}{V - b} \right] \right. \\ & + 2(A_2 + B_2T + C_2 e^{-KT}) \left[ \frac{1}{V_r - b} + \frac{b}{2(V_r - b)^2} - \frac{1}{V - b} - \frac{b}{2(V - b)^2} \right] + 3(A_3 + B_3T + C_3 e^{-KT}) \left[ \frac{1}{2(V_r - b)^2} + \frac{b}{3(V_r - b)^3} - \frac{1}{2(V - b)^2} - \frac{b}{3(V - b)^3} \right] \\ & + 4A_4 \left[ \frac{1}{3(V_r - b)^3} + \frac{b}{4(V_r - b)^4} - \frac{1}{3(V - b)^3} - \frac{b}{4(V - b)^4} \right] + 5(A_5 + B_5T + C_5 e^{-KT}) \left[ \frac{1}{4(V_r - b)^4} + \frac{b}{5(V_r - b)^5} - \frac{1}{4(V - b)^4} - \frac{b}{5(V - b)^5} \right] \\ & + \left\{ \frac{V^2}{2} \left[ \frac{-4B_4T}{(V - b)^5} + A_6 \alpha e^{\alpha V} + B_6 T \alpha e^{\alpha V} \right] + V \left[ \frac{B_4T}{(V - b)^4} + A_6 e^{\alpha V} + B_6 T e^{\alpha V} \right] - \frac{V_r^2}{2} \left[ \frac{-4B_4T}{(V_r - b)^5} + A_6 \alpha e^{\alpha V_r} + B_6 T \alpha e^{\alpha V_r} \right] \right. \\ & - \left. V_r \left[ \frac{B_4T}{(V_r - b)^4} + A_6 e^{\alpha V_r} + B_6 T e^{\alpha V_r} \right] \right\} + T \left\{ R \log_e \left( \frac{V - b}{V_r - b} \right) - (B_2 - KC_2 e^{-KT}) \left( \frac{1}{V - b} - \frac{1}{V_r - b} \right) \right. \\ & - \left. \frac{B_3 - KC_3 e^{-KT}}{2} \left[ \frac{1}{(V - b)^2} - \frac{1}{(V_r - b)^2} \right] - B_4 \left[ \frac{1}{3(V - b)^3} - \frac{1}{3(V_r - b)^3} \right] - \frac{B_5 - KC_5 e^{-KT}}{4} \left[ \frac{1}{(V - b)^4} - \frac{1}{(V_r - b)^4} \right] + \frac{B_6}{\alpha} (e^{\alpha V} - e^{\alpha V_r}) \right\} \quad (8) \end{aligned}$$

where  $H_r = 4.6489 \times 10^5 \text{ J kg}^{-1}$  at reference conditions. (See ref. 2.)

The pressure, entropy, and enthalpy are now expressed as a function of temperature and volume. A computer code (see appendix) was developed which computes all these thermodynamic variables when any two are known. The computer code also calculates specific heat at constant pressure  $c_p$ , ratio of specific heats  $\gamma$ , isentropic exponent  $\gamma_e$ , speed of sound  $a$ , and compressibility factor  $Z$  at the same thermodynamic point as the first five variables. The equations for these thermodynamic properties are

Specific heat at constant pressure:

$$c_p = c_v - T \frac{\left[ \left( \frac{\partial p}{\partial T} \right)_V \right]^2}{\left( \frac{\partial p}{\partial V} \right)_T} \quad (9)$$



Specific heat ratio:

$$\gamma = \frac{c_p}{c_v} = 1 - \frac{T \left[ \left( \frac{\partial p}{\partial T} \right)_V \right]^2}{c_v \left( \frac{\partial p}{\partial V} \right)_T} \quad (10)$$

Speed of sound:

$$a = \left[ \left( \frac{\partial p}{\partial \rho} \right)_S \right]^{1/2} = \left[ \gamma \left( \frac{\partial p}{\partial \rho} \right)_T \right]^{1/2} = \left[ -\gamma V^2 \left( \frac{\partial p}{\partial V} \right)_T \right]^{1/2} = \left\{ \frac{V^2 T}{c_v} \left[ \left( \frac{\partial p}{\partial T} \right)_V \right]^2 - V^2 \left( \frac{\partial p}{\partial V} \right)_T \right\}^{1/2} \quad (11)$$

Isentropic exponent:

$$\gamma_e = \left( \frac{d \log p}{d \log \rho} \right)_S = \frac{\rho}{p} \left( \frac{dp}{d\rho} \right)_S = \frac{a^2}{pV} \quad (12)$$

Compressibility factor:

$$Z = \frac{pV}{RT} \quad (13)$$

where the partial derivatives in  $c_p$ ,  $\gamma$ , and  $a$  are

$$\begin{aligned} \left( \frac{\partial p}{\partial T} \right)_V &= \frac{R}{V-b} + \frac{(B_2 - KC_2 e^{-KT})}{(V-b)^2} + \frac{(B_3 - KC_3 e^{-KT})}{(V-b)^3} + \frac{B_4}{(V-b)^4} \\ &+ \frac{(B_5 - KC_5 e^{-KT})}{(V-b)^5} + B_6 e^{\alpha V} \end{aligned} \quad (14)$$

$$\begin{aligned} \left( \frac{\partial p}{\partial V} \right)_T &= -\frac{RT}{(V-b)^2} - 2 \frac{(A_2 + B_2 T + C_2 e^{-KT})}{(V-b)^3} - \frac{3(A_3 + B_3 T + C_3 e^{-KT})}{(V-b)^4} \\ &- \frac{4(A_4 + B_4 T)}{(V-b)^5} - \frac{5(A_5 + B_5 T + C_5 e^{-KT})}{(V-b)^6} + \alpha(A_6 + B_6 T)e^{\alpha V} \end{aligned} \quad (15)$$

These equations are limited to temperatures above the saturated vapor line. The saturation pressure in  $\text{N m}^{-2}$  as a function of saturation temperature in kelvins is (ref. 2):

$$\log p = A + \frac{B}{T} + C \log T + DT + E \left( \frac{F - T}{T} \right) \log (F - T) + G \quad (16)$$

where

$$A = 20.71545389$$

$$B = -2467.505285$$

$$C = -4.69017025$$

$$D = 6.4798076 \times 10^{-4}$$

$$E = 0.770707795$$

$$F = 424$$

$$G = 3.83852$$

The critical temperature  $T_c$  is 227.48 K. Equations (1) to (15) are also limited to temperatures below those at which dissociation occurs ( $T < 1600$  K).

#### Transport Properties of Gaseous $\text{CF}_4$

Viscosity. - Five sources of experimental data for the viscosity of  $\text{CF}_4$  at a pressure of 1 atmosphere were fitted to a quadratic equation in  $1/T$  by P. E. Liley of Purdue University. The data covered a temperature range from 230 K to 460 K. The agreement of the data of the various sets was stated to be generally good and the accuracy was thought to be  $\pm 2$  percent over the aforementioned temperature range. The empirical equation is

$$\mu^* = \frac{\sqrt{T}}{0.64625 + \frac{103.00}{T} - \frac{3.42714}{T^2}} \times 10^{-6} \quad (17)$$

where  $\mu^*$  is in  $\text{N s m}^{-2}$ . The viscosity of  $\text{CF}_4$  at a pressure of 1 atmosphere determined from this equation is plotted over a temperature range of 150 K to 800 K in figure 1. Even though the curve fit was only made for a temperature interval of 230 K to 460 K, equation (1) behaves well over the extended range. To obtain the viscosity of  $\text{CF}_4$  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. 8) through a dimensional

analysis treatment, and the correct dependencies are established by the use of experimental data. The dimensional analysis treatment (ref. 8) resulted in the following expression:

$$(\mu - \mu^*)\xi = \frac{\beta}{R^{1/6}} Z_c^m \rho_R^n \quad (18)$$

Experimental high-pressure viscosities for the gaseous and liquid phases available in the literature for 14 polar substances including 5 Freons ( $\text{CCl}_3\text{F}$ ,  $\text{CCl}_2\text{F}_2$ ,  $\text{CHCl}_2\text{F}$ ,  $\text{CHClF}_2$ , and  $\text{C}_2\text{Cl}_3\text{F}_3$ ) were used (ref. 9) in conjunction with pressure-volume-temperature data to establish the constant  $\beta$  and the exponents  $m$  and  $n$  of equation (18). Plots of  $(\mu - \mu^*)\xi$  against  $\rho_R$  (ref. 9) were found to be essentially the same for all 14 substances; therefore, it was concluded that the exponent  $m$  of  $Z_c$  in equation (18) was zero. The analytical representation of the residual viscosity correlation for the 14 polar substances (ref. 9) which should apply to  $\text{CF}_4$  as well are

$$\left. \begin{aligned} (\mu - \mu^*)\xi &= 16.56 \times 10^{-8} \rho_R^{1.111} && (\rho_R \leq 0.10) \\ (\mu - \mu^*)\xi &= 0.607 \times 10^{-8} (9.045\rho_R + 0.63)^{1.739} && (0.10 < \rho_R \leq 0.90) \\ -\log[(\mu - \mu^*)\xi] &= 10^{0.6439 - 0.1005\rho_R - \Delta} + 3 && (0.9 < \rho_R < 2.6) \end{aligned} \right\} \quad (19)$$

where  $\Delta = 0$  for  $0.9 < \rho_R < 2.2$  and  $\Delta = 4.75 \times 10^{-4} (\rho_R^3 - 10.65)^2$  for  $2.2 < \rho_R < 2.6$  and  $\xi = T^{1/6} / M^{1/2} p_c^{2/3} = 0.023735$  for  $\text{CF}_4$  with  $\mu$  in  $\text{Ns m}^{-2}$ .

Thermal conductivity.- The thermal conductivity of  $\text{CF}_4$  gas at a pressure of 1 atmosphere was obtained from P. E. Liley of Purdue University as

$$k^* = 1.73073 \left[ 7.2910 \times 10^{-3} + (2.377 \times 10^{-5}) \left( \frac{9}{5} T - 459.67 \right) \right] \quad (20)$$

where  $k^*$  is in  $\text{W m}^{-1}\text{K}^{-1}$ . This is a curve fit of experimental data over a temperature range from 230 K to 460 K. An uncertainty of 5 percent in value obtained from this equation appears to be a reasonable estimate. The thermal conductivity at 1 atmosphere of pressure is plotted over a temperature range of 100 K to 800 K in figure 2. Again, equation (20) is well behaved over the extended temperature range. The thermal conductivity relationship is extended to pressures other than 1 atmosphere in the same manner as was the viscosity. Residual thermal conductivities  $k - k^*$  for  $\text{CF}_4$  were obtained from experimental data and correlated with the corresponding reduced densities

(ref. 10) to produce the following expression:

$$k - k^* = 7.18 \times 10^{-3} [\exp(\rho_R) - 1] \quad (21)$$

where  $k - k^*$  is in  $W m^{-1}K^{-1}$ . Equation (21) represents the thermal conductivity of  $CF_4$  in the dense gaseous region. Deviations have been observed (ref. 10) at lower densities; these deviations may be attributed to difficulties encountered in obtaining precise thermal conductivity values in the less dense region.

### CALCULATION PROCEDURE

In generating the thermodynamic and transport properties of  $CF_4$  by using the computer code given in the appendix, the boundaries of the thermodynamic regime of interest were first designated in terms of temperature and volume. These boundaries were taken as

- (a) The saturation pressure line (eq. (16))  $p_S = f(T_S)$ . The saturation volume was determined from the equation of state (eq. (1))  $p_S = f(T_S, V_S)$ .
- (b) The critical volume line  $V_c = 0.0016 m^3kg^{-1}$ ,  $T = T_c$  to 844.7 K.
- (c) The constant temperature line  $T = 844.7 K$ ,  $V_c = 0.0016$  to  $V = 81.16 m^3kg^{-1}$ .
- (d) The constant volume line  $V = 81.16 m^3kg^{-1}$ ,  $T = 844.7 K$  to saturation temperature (procured from the simultaneous solution of the saturation pressure equation (eq. (16)) and the equation of state (eq. (1)), that is,  $p_S = f(T_S)$  and  $p_S = f(T_S, V)$  where  $V = 81.16 m^3kg^{-1}$ ).

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. (Equations and computer codes for isentropic expansions and flow across normal and oblique shocks in  $CF_4$  are given in the appendixes of ref. 1.) First,  $S$  is determined at the critical point which gives a lower limit for the thermodynamic regime specified herein. The upper limit on  $S$  is determined by inserting the highest temperature and volume occurring on the boundaries of the specified regime ( $T = 844.7 K$  and  $V = 81.16 m^3kg^{-1}$ ) into equation (6) ( $S = f(T, V)$ ). The entropy is then divided into equal intervals between the upper and lower limits and set at the partition nearest the lower limit,  $S = \text{Constant} = f(T, V)$ . The volume is set slightly above the critical value at  $V = 0.0026 m^3kg^{-1}$  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 or the upper limit ( $V = 81.16 \text{ m}^3\text{kg}^{-1}$ ) is exceeded. The transport properties and remaining thermodynamic variables which are given herein as a function 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. A similar procedure is used in calculating the thermodynamic and transport properties at constant values of any of the other thermodynamic variables.

## RESULTS

Pressure-enthalpy diagrams are presented in figures 3 to 6. Each of these diagrams contain lines of constant entropy and volume. In addition to these lines in common, figure 3 contains lines of constant temperature, figure 4 contains lines of constant speed of sound, figure 5 contains lines of constant isentropic expansion exponent, and figure 6 contains lines of constant compressibility factor. These diagrams were generated from the computer code of the appendix with subroutines added to calculate the constant speed of sound, isentropic expansion exponent, and compressibility factor.

Equilibrium thermodynamic data and transport property data (calculated from the computer code presented in the appendix) are presented in table I for  $\text{CF}_4$  from a dimensionless entropy  $S/R$  of approximately 24.0 to 46.0 and from a temperature of 89.45 K to 845 K. These data are listed at constant entropy in increments of 0.25 with temperature increments of 10 K.

Transport property data along with the specific heats are tabulated in table II for  $\text{CF}_4$  over a specific volume range from 0.002 to  $80 \text{ m}^3\text{kg}^{-1}$  for five values of temperature from 100 K to 800 K. These properties show little effect of the specific volume except near the critical value  $0.0016 \text{ m}^3\text{kg}^{-1}$ .

## CONCLUDING REMARKS

Equations for the thermodynamic properties of gaseous, undissociated tetrafluoromethane ( $\text{CF}_4$ ) in chemical equilibrium have been generated by using as accurate an equation of state and the curve fits of specific heat available. These equations along with those for the transport properties of  $\text{CF}_4$  have been incorporated into a computer code. Thermodynamic and transport property data generated by the computer code are presented in a form which lends itself to a convenient gas dynamic analysis over a thermodynamic regime heretofore not penetrated.

Langley Research Center,  
National Aeronautics and Space Administration,  
Hampton, Va., April 18, 1973.

## APPENDIX

### DIGITAL COMPUTER CODE FOR CALCULATING THERMODYNAMIC PROPERTIES OF CF<sub>4</sub>

A FORTRAN IV Control Data Series 6000 computer code was developed for evaluating the thermodynamic properties of gaseous, dissociated tetrafluoromethane (CF<sub>4</sub>) in chemical equilibrium. The computer code calculates the thermodynamic properties of CF<sub>4</sub> when given any two of five thermodynamic variables (entropy, temperature, volume, pressure, and enthalpy). Besides the five aforementioned variables, the computer code also calculates specific heat at constant pressure, specific heat ratio, speed of sound, isentropic expansion exponent, compressibility factor, viscosity, and thermal conductivity.

#### Subroutine CF4

Language: FORTRAN IV

Purpose: Evaluates the thermodynamic and transport properties of gaseous, undissociated tetrafluoromethane (CF<sub>4</sub>) in chemical equilibrium when given any two of five thermodynamic variables (entropy, temperature, volume, pressure, and enthalpy). Besides the five aforementioned variables, the subroutine calculates specific heat at constant pressure, specific heat ratio gamma, speed of sound, isentropic expansion exponent, compressibility factor, viscosity, and thermal conductivity.

Use: CALL CF4 (N, UNIN, UNIØ, ERR, TG, VG, SD, HD, PD, TI, VI, P, H, A, CP, GAM, G, Z, S, EMU, EK1)

Code inputs: N      Option indicating thermodynamic variables required on input

N = 1	Input SD, VI, and TG (estimate), Set HD, PD, TI, and VG at zero
N = 2	Input HD, VI, and TG (estimate), Set SD, PD, TI, and VG at zero
N = 3	Input PD, VI, and TG (estimate), Set SD, HD, TI, and VG at zero
N = 4	Input SD, TI, and VG (estimate), Set HD, PD, VI, and TG at zero
N = 5	Input HD, TI, and VG (estimate), Set SD, PD, VI, and TG at zero
N = 6	Input PD, TI, and VG (estimate), Set SD, HD, VI, and TG at zero
N = 7	Input VI and TI, Set HD, PD, SD, VG, and TG at zero
N = 8	Input SD, HD, TG (estimate), and VG (estimate), Set PD, VI, and TI at zero

APPENDIX - Continued

N = 9 Input PD, HD, TG (estimate), and VG (estimate), Set SD, VI, and TI at zero

N = 10 Input PD, SD, TG (estimate), and VG (estimate), Set HD, VI, and TI at zero

UNIN = 1. if input is in SI units  
 = 2. if input is in U.S. units

UNIØ = 1. if output is in SI units  
 = 2. if output is in U.S. units

ERR Allowable error in  $\frac{S - SD}{SD}$ ,  $\frac{H - HD}{HD}$ ,  $\frac{P - PD}{PD}$

		<u>SI units</u>	<u>U.S. units</u>
TG	temperature (estimate)	K	°R
VG	volume (estimate)	m <sup>3</sup> kg <sup>-1</sup>	ft <sup>3</sup> lb <sup>-1</sup>
SD	entropy desired	nondimensional S/R	Btu lb <sup>-1</sup> °R <sup>-1</sup>
HD	enthalpy desired	nondimensional H/RT <sub>0</sub>	Btu lb <sup>-1</sup>
PD	pressure desired	nondimensional atm	lb in <sup>-2</sup>
TI	temperature	K	°R
VI	volume	m <sup>3</sup> kg <sup>-1</sup>	ft <sup>3</sup> lb <sup>-1</sup>

Code outputs:

		<u>SI units</u>	<u>U.S. Units</u>
TI	temperature	K	°R
VI	volume	m <sup>3</sup> kg <sup>-1</sup>	ft <sup>3</sup> lb <sup>-1</sup>
P	pressure	nondimensional atm	lb in <sup>-2</sup>
H	enthalpy	nondimensional H/RT <sub>0</sub>	Btu lb <sup>-1</sup>
A	a, speed of sound	m s <sup>-1</sup>	ft s <sup>-1</sup>
CP	c <sub>p</sub> , specific heat at constant pressure	nondimensional c <sub>p</sub> /R	Btu lb <sup>-1</sup> °R <sup>-1</sup>
GAM	γ, specific heat ratio, c <sub>p</sub> /c <sub>v</sub>	nondimensional	nondimensional
G	γ <sub>e</sub> , isentropic expansion exponent	nondimensional	nondimensional
Z	compressibility factor	nondimensional	nondimensional



APPENDIX – Continued

		<u>SI units</u>		<u>U.S. units</u>
S	entropy	nondimensional	S/R	Btu lb <sup>-1</sup> °R <sup>-1</sup>
EMU	μ, viscosity	N s m <sup>-2</sup>		lb ft <sup>-1</sup> s <sup>-1</sup>
EK1	k, thermal conductivity	W m <sup>-1</sup> K <sup>-1</sup>		Btu s <sup>-1</sup> ft <sup>-1</sup> °R <sup>-1</sup>

Accuracy: A function of ERR input.

Error condition: STOP 1000 indicates nonconvergence in subroutine ITT

Storage: 1361<sub>8</sub> locations

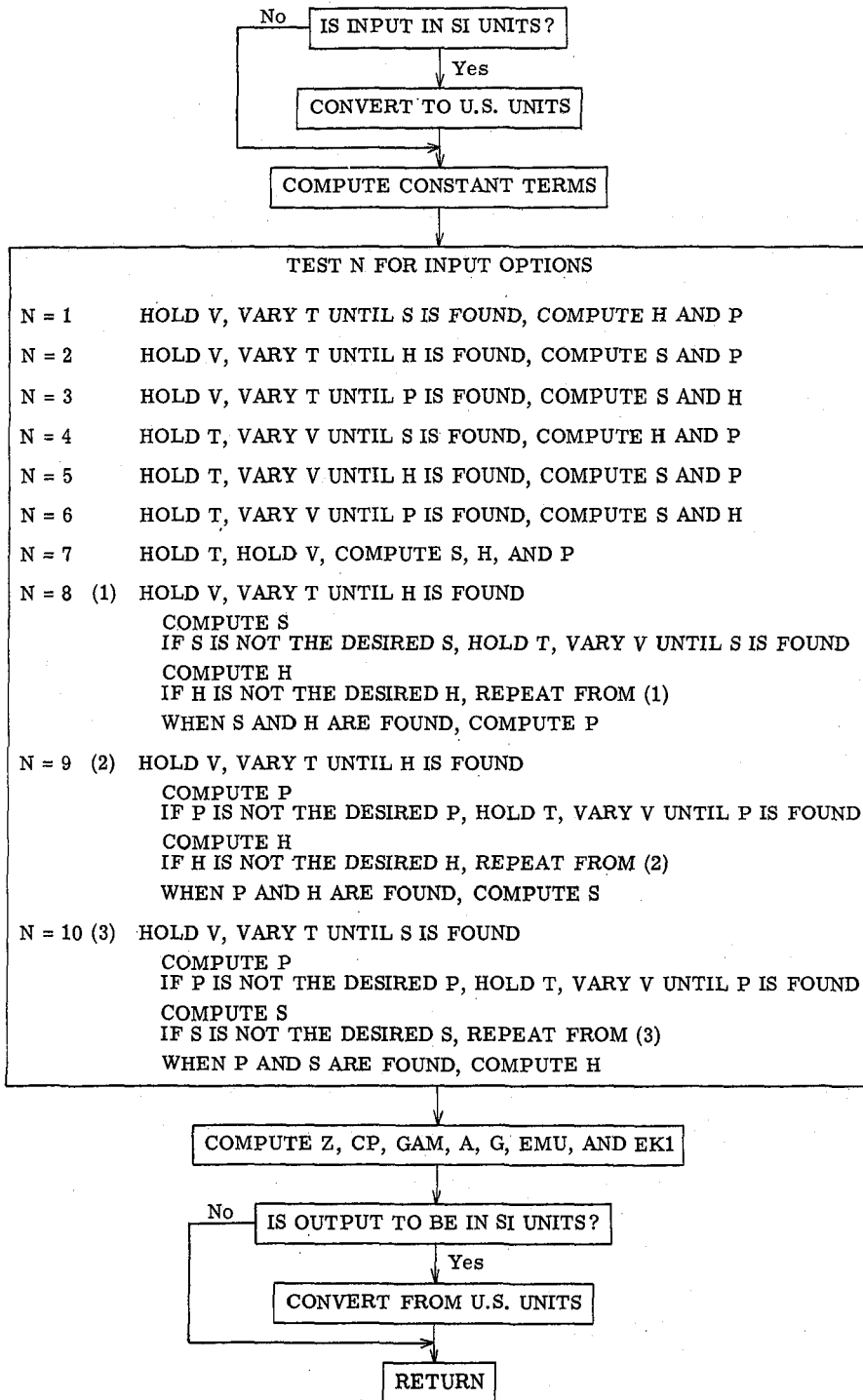
Subprograms used:

ITT	177 <sub>8</sub> locations
PØTV	27 <sub>8</sub> locations
SØTV	26 <sub>8</sub> locations
HØTV	63 <sub>8</sub> locations
TVAR	377 <sub>8</sub> locations
VVAR	157 <sub>8</sub> locations
SQRT	43 <sub>8</sub> locations
EXP	57 <sub>8</sub> locations
ALNLØG	67 <sub>8</sub> locations

# APPENDIX - Continued

## Flow Chart for Subroutine CF4

Computes thermodynamic properties of  $CF_4$  when given any two of five thermodynamic variables



APPENDIX - Continued

Other Subroutines

SUBROUTINE ITT (XVAR, XI, YVAR, YGG, YI, ZVAR, ZI, ZD, ERR, K)

(Iterative procedure to calculate  $ZI = f(XI, YI)$ )

Given XI, YGG, and ZD

Compute XI terms

Estimate  $YI = YGG$

(1) Compute YI terms, compute  $ZI = f(XI, YI)$

If ZI is not the desired ZD, second estimate of  $YI = 0.95 * \text{first estimate}$ .

Other estimates after first two are by linear interpolation or extrapolation.

Repeat from (1).

If ZI is not ZD after 1000 iterations, stop.

SUBROUTINE POTV (P, VI, TI)

$p = f(T, V)$

SUBROUTINE SOTV (S, VI, TI)

$S = f(T, V)$

SUBROUTINE HOTV (H, VI, TI)

$H = f(T, V)$

SUBROUTINE TVAR (TI)

Computes T terms

SUBROUTINE VVAR (VI)

Computes V terms

Program Listing

```

SUBROUTINE CF4 (N, UNIN, UNIO, ERR, TG, VG, SD, HD, PD, TI, VI, P, H, A, CP, GAM, A  1
1G, Z, S, EMU, EK1) A  2
C THIS SUBROUTINE CALCULATES THERMODYNAMIC PROPERTIES OF CF4 A  3
C WHEN GIVEN ANY TWO OF FIVE THERMODYNAMIC VARIABLES A  4
C (ENTROPY, TEMPERATURE, VOLUME, PRESSURE AND ENTHALPY) A  5
C N OPTION INDICATING THERMODYNAMIC PROPERTIES REQUIRED ON INPUT A  6
C =1 SD, VI, TG ESTIMATE A  7
C =2 HD, VI, TG ESTIMATE A  8
C =3 PD, VI, TG ESTIMATE A  9
C =4 SD, TI, VG ESTIMATE A 10
C =5 HD, TI, VG ESTIMATE A 11
C =6 PD, TI, VG ESTIMATE A 12
C =7 VI, TI A 13
C =8 SD, HD, TG ESTIMATE, VG ESTIMATE A 14
C =9 PD, HD, TG ESTIMATE, VG ESTIMATE A 15
C =10 PD, SD, TG ESTIMATE, VG ESTIMATE A 16
    
```



APPENDIX - Continued

	OVRB2=DEC1/VRMB2	A 86
	OVRB3=DEC1/VRMB3	A 87
	OVRB4=DEC1/VRMB4	A 88
	OVRB5=DEC1/VRMB5	A 89
	AVR=ALPHA*VR	A 90
	EAVR=EXP(AVR)	A 91
	SUM1=C2/VRMB+C3/VRMB22+C5/VRMB44	A 92
	JB403=J*B4/DEC3	A 93
	JB60A=J*B6/ALPHA	A 94
	SUM18=EMKTR*(KTR+DEC1)	A 95
	J2=J/DEC2	A 96
	J4=J/DEC4	A 97
	JK=J*K	A 98
	JR=J*R	A 99
	JVR=J*VR	A 100
	SUM21=SB*OVRB	A 101
	SUM22=OVRB+SB/VRMB22	A 102
	SUM23=DEC1/VRMB22+SB/VRMB33	A 103
	SUM24=DEC4*A4*(DEC1/VRMB33+SB/VRMB44)	A 104
	SUM25=DEC1/VRMB44+SB/VRMB55	A 105
	JVR22=JVR*VR/DEC2	A 106
	AER=ALPHA*EAVR	A 107
	GO TO ( 1, 2, 3, 4, 5, 6, 7, 8, 9,10), N	A 108
1	CALL ITT (VVAR,VI,TVAR,TG,TI,SOTV,S,SD,ERR,1)	A 109
	CALL HOTV (H,VI,TI)	A 110
	CALL POTV (P,VI,TI)	A 111
	GO TO 35	A 112
2	CALL ITT (VVAR,VI,TVAR,TG,TI,HOTV,H,HD,ERR,1)	A 113
	CALL SOTV (S,VI,TI)	A 114
	CALL POTV (P,VI,TI)	A 115
	GO TO 35	A 116
3	CALL ITT (VVAR,VI,TVAR,TG,TI,POTV,P,PD,ERR,1)	A 117
	CALL SOTV (S,VI,TI)	A 118
	CALL HOTV (H,VI,TI)	A 119
	GO TO 35	A 120
4	CALL ITT (TVAR,TI,VVAR,VG,VI,SOTV,S,SD,ERR,2)	A 121
	CALL HOTV (H,VI,TI)	A 122
	CALL POTV (P,VI,TI)	A 123
	GO TO 35	A 124
5	CALL ITT (TVAR,TI,VVAR,VG,VI,HOTV,H,HD,ERR,2)	A 125
	CALL SOTV (S,VI,TI)	A 126
	CALL POTV (P,VI,TI)	A 127
	GO TO 35	A 128
6	CALL ITT (TVAR,TI,VVAR,VG,VI,POTV,P,PD,ERR,2)	A 129
	CALL SOTV (S,VI,TI)	A 130
	CALL HOTV (H,VI,TI)	A 131
	GO TO 35	A 132
7	CALL TVAR (TI)	A 133
	CALL VVAR (VI)	A 134
	CALL SOTV (S,VI,TI)	A 135
	CALL HOTV (H,VI,TI)	A 136
	CALL POTV (P,VI,TI)	A 137
	GO TO 35	A 138
8	VI=VG	A 139
21	CALL ITT (VVAR,VI,TVAR,TG,TI,HOTV,H,HD,ERR,1)	A 140
	CALL SOTV (S,VI,TI)	A 141
	IF (ABS(S-SD)-ERR*SD) 24,22,22	A 142
22	VG=VI	A 143
	CALL ITT (TVAR,TI,VVAR,VG,VI,SOTV,S,SD,ERR,2)	A 144
	CALL HOTV (H,VI,TI)	A 145
	IF (ABS(H-HD)-ERR*HD) 24,23,23	A 146
23	TG=TI	A 147
	GO TO 21	A 148
24	CALL POTV (P,VI,TI)	A 149
	GO TO 35	A 150
9	VI=VG	A 151
26	CALL ITT (VVAR,VI,TVAR,TG,TI,HOTV,H,HD,ERR,1)	A 152
	CALL POTV (P,VI,TI)	A 153
	IF (ABS(P-PD)-ERR*PD) 29,27,27	A 154

APPENDIX - Continued

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27  VG=VI
    CALL ITT (TVAR, TI, VVAR, VG, VI, POTV, P, PD, ERR, 2)
    CALL HOTV (H, VI, TI)
    IF (ABS(H-HD)-ERR*HD) 29, 29, 29
28  TG=TI
    GO TO 26
29  CALL SOTV (S, VI, TI)
    GO TO 35
10  VI=VG
31  CALL ITT (VVAR, VI, TVAR, TG, TI, SOTV, S, SD, ERR, 1)
    CALL POTV (P, VI, TI)
    IF (ABS(P-PD)-ERR*PD) 34, 32, 32
32  VG=VI
    CALL ITT (TVAR, TI, VVAR, VG, VI, POTV, P, PD, ERR, 2)
    CALL SOTV (S, VI, TI)
    IF (ABS(S-SD)-ERR*SD) 34, 33, 33
33  TG=TI
    GO TO 31
34  CALL HOTV (H, VI, TI)
35  Z=(VI*P)/(RTI)
    CV=(SUM37-SUM38*SUM36)
    PPT=(R*OVIB+SUM39*OVIB2+SUM40*OVIB3+SUM43+SUM41*OVIB5)
    PPV=(RTI*OVIB2+SUM33*OVIB3+SUM34*OVIB4+SUM42*OVIB5+SUM35*OVIB6-AEI
1  *SUM6)
    CP=CV-TI*J*PPT**2/(-PPV)
    GAM=CP/CV
    A=JV12*TI*PPT**2/CV+VI2*PPV
    ASQ=A*4633.056
    G=A/(P*VI)
    TK=TI*CONT
    EMU=(SQRT(TK)/(1.64625+103./TK-3.42714/(TK*TK)))*1.E-6
    EK1=1.73073*(7.291E-3+2.377E-5*((9./5.)*TK-459.67))
    IF (ASQ) 37, 36, 36
36  A=SQRT(ASQ)
37  VK=VI*CONV
    XI=TC**.16666667/(SQRT(EM)*PC**.66666667)
    RHOR=VC/VK
    EK1=EK1+7.18E-3*(EXP(RHOR)-1.)
    IF (RHOR-.10) 41, 41, 38
38  IF (RHOR-.90) 42, 42, 39
39  IF (RHOR-2.2) 43, 43, 40
40  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 44
41  EMU=(16.56E-8*RHOR**1.111+XI*EMU)/XI
    GO TO 44
42  EMU=(.607E-8*(9.045*RHOR+.63)**1.739+XI*EMU)/XI
    GO TO 44
43  X=.6439-.1005*RHOR
    ALG1=10.**X+3.
    ALG2=10.**(-ALG1)
    EMU=(ALG2+XI*EMU)/XI
44  IF (UNID-1.) 45, 45, 46
45  TI=TK
    VI=VK
    S=S*CONS
    H=H*CONH
    P=P*CONP
    CP=CP*CONS
    A=A*CONA
    VG=VG*CONV
    TG=TG*CONT
    SD=SD*CONS
    HD=HD*CONH
    PD=PD*CONP
    GO TO 47
46  EMU=EMU/1.4881639
    EK1=EK1/6226.47794
47  RETURN
    END

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A 155  
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APPENDIX - Continued

	SUBROUTINE ITT (XVAR,XI,YVAR,YGG,YI,ZVAR,ZI,ZD,ERR,K)	B	1
C	THIS SUBROUTINE ITERATES TO FIND Z=F(X,Y)	P	2
	DIMENSION YG(2), ZG(2)	B	3
	KOUNT=0	B	4
1	CALL XVAR (XI)	B	5
	YG(1)=YGG	B	6
	JJ=1	B	7
2	YI=YG(JJ)	B	8
	IF (K-2) 5,3,3	B	9
3	IF (YI-.0015) 4,4,5	B	10
4	XI=XI*1.05	B	11
	GO TO 1	B	12
5	CALL YVAR (YI)	B	13
	GO TO (6,7), K	B	14
6	CALL ZVAR (ZI,XI,YI)	B	15
	GO TO 8	B	16
7	CALL ZVAR (ZI,YI,XI)	B	17
8	ZG(JJ)=ZI	B	18
	IF (ABS(ZG(JJ)-ZD)-ERR*ZD) 13,9,9	B	19
9	IF (JJ-1) 10,10,11	B	20
10	JJ=2	B	21
	YG(2)=YG(1)*.95	B	22
	GO TO 2	B	23
11	YGN=((YG(2)-YG(1))/(ZG(2)-ZG(1)))*(ZD-ZG(1))+YG(1)	B	24
	ZG(1)=ZG(2)	B	25
	YG(1)=YG(2)	B	26
	YG(2)=YGN	B	27
	KOUNT=KOUNT+1	B	28
	IF (KOUNT-1000) 2,2,12	B	29
12	STOP 1000	B	30
13	RETURN	B	31
	END	B	32-

	SUBROUTINE POTV (P,VI,TI)	C	1
C	THIS SUBROUTINE CALCULATES P=F(T,V)	C	2
	REAL K,KTI,KTR, J, JVI, JVI22,JB403,JB60A,J2, J4, JK, JR, JVR, JVR22, JVI2	C	3
	COMMON /BLOCK7 J,R,A2,B2,C2,A3,B3,C3,A4,B4,A5,B5,C5,A6,B6,SB,K,ALP	C	4
	1HA,SA4,SB4,SC4,SD4,SR,TR,VR,HR,TR2,TR3,TR4,KTR,EMKTR,VKMB,VRMB2,VR	C	5
	2MB3,VRMB4,VRMB5,VRMB22,VRMB33,VRMB44,VRMB55,OVRB,OVRB2,OVRB3,OVRB4	C	6
	3,OVRB5,AVR,EAVR,SUM1,JB403,JB60A,SUM18,SB42,SC43,SD44,SC42,SD43,J2	C	7
	4,J4,JK,JR,JVR,SUM21,SUM22,SUM23,SUM24,SUM25,JVR22,AER,RTI,OVI8,SUM	C	8
	52,OVI82,SUM3,OVI83,SUM4,OVI84,SUM5,OVI85,SUM6,EAVI,SUM14,SUM9,SUM1	C	9
	60,SUM11,SUM12,SUM8,SUM32,SUM26,SUM33,SUM28,SUM34,SUM29,SUM30,SUM35	C	10
	7,SUM31,JVI22,B4T4,AEI,JVI,B4T,SUM36,SUM37,SUM38,SUM39,SUM40,SUM43,	C	11
	8SUM41,SUM42,OVI86,JVI2,VI2,DEC1,DEC2,DEC3,DEC4,DEC5,KTI	C	12
	P=RTI*OVI8+SUM2*OVI82+SUM3*OVI83+SUM4*OVI84+SUM5*OVI85+SUM6*EAVI	C	13
	RETURN	C	14
	END	C	15-

	SUBROUTINE SOTV (S,VI,TI)	D	1
C	THIS SUBROUTINE CALCULATES S=F(T,V)	D	2
	REAL K,KTI,KTR, J, JVI, JVI22,JB403,JB60A,J2, J4, JK, JR, JVR, JVR22, JVI2	D	3
	COMMON /BLOCK/ J,R,A2,B2,C2,A3,B3,C3,A4,B4,A5,B5,C5,A6,B6,SB,K,ALP	D	4
	1HA,SA4,SB4,SC4,SD4,SR,TR,VR,HR,TR2,TR3,TR4,KTR,EMKTR,VRMB,VRMB2,VR	D	5
	2MB3,VRMB4,VRMB5,VRMB22,VRMB33,VRMB44,VRMB55,OVRB,OVRB2,OVRB3,OVRB4	D	6
	3,OVRB5,AVR,EAVR,SUM1,JB403,JB60A,SUM18,SB42,SC43,SD44,SC42,SD43,J2	D	7
	4,J4,JK,JR,JVR,SUM21,SUM22,SUM23,SUM24,SUM25,JVR22,AER,RTI,OVI8,SUM	D	8
	52,OVI82,SUM3,OVI83,SUM4,OVI84,SUM5,OVI85,SUM6,EAVI,SUM14,SUM9,SUM1	D	9
	60,SUM11,SUM12,SUM8,SUM32,SUM26,SUM33,SUM28,SUM34,SUM29,SUM30,SUM35	D	10
	7,SUM31,JVI22,B4T4,AEI,JVI,B4T,SUM36,SUM37,SUM38,SUM39,SUM40,SUM43,	D	11
	8SUM41,SUM42,OVI86,JVI2,VI2,DEC1,DEC2,DEC3,DEC4,DEC5,KTI	D	12
	SUM15=SUM14-SUM9*OVI8-SUM10*OVI82-SUM11*OVI84+SUM12	D	13
	S=SUM15+SUM8	D	14
	RETURN	D	15
	END	D	16-

## APPENDIX - Continued

	SUBROUTINE HOTV (H,VI,TI)	E	1
C	THIS SUBROUTINE CALCULATES H=F(T,V)	E	2
	REAL K,KTI,KTR,J,JVI,JVI22,JB403,JB60A,J2,J4,JK,JKR,JVR,JVR22,JVI2	E	3
	COMMON /BLOCK/ J,R,A2,B2,C2,A3,B3,C3,A4,B4,A5,B5,C5,A6,B6,SB,K,ALP	E	4
	1HA,SA4,SB4,SC4,SD4,SR,TR,VR,HR,TR2,TR3,TR4,KTK,EMKTK,VRMB,VRMB2,VR	E	5
	2MB3,VRMB4,VRMB5,VRMB22,VRMB33,VRMB44,VRMB55,OVVB,OVVB2,OVVB3,OVVB4	E	6
	3,OVVB5,AVR,EAVR,SUM1,JB403,JB60A,SUM18,SB42,SC43,SD44,SC42,SD43,J2	E	7
	4,J4,JK,JKR,JVR,SUM21,SUM22,SUM23,SUM24,SUM25,JVR22,AER,RTI,OVIB,SUM	E	8
	52,OVIB2,SUM3,OVIB3,SUM4,OVIB4,SUM5,OVIB5,SUM6,EAVI,SUM14,SUM9,SUM1	E	9
	60,SUM11,SUM12,SUM8,SUM32,SUM26,SUM33,SUM28,SUM34,SUM29,SUM30,SUM35	E	10
	7,SUM31,JVI22,B4T4,AEI,JVI,B4T,SUM36,SUM37,SUM38,SUM39,SUM40,SUM43,	E	11
	8SUM41,SUM42,OVIB6,JVI2,VI2,DEC1,DEC2,DEC3,DEC4,DEC5,KTI	F	12
	SUM15=SUM14-SUM9*OVIB-SUM10*OVIB2-SUM11*OVIB4+SUM12	E	13
	H=SUM32+HR-J*(RTI*SUM26-SUM33*SUM28-SUM34*SUM29-SUM35*SUM31)	E	14
	1+JVI22*(-B4T4*OVIB5+AEI*SUM6)+JVI*(B4T*OVIB4+SUM6*EAVI)+TI*SUM15	E	15
	RETURN	E	16
	END	E	17-
	SUBROUTINE TVAR (TI)	F	1
C	THIS SUBROUTINE CALCULATES T TERMS	F	2
	REAL K,KTI,KTR,J,JVI,JVI22,JB403,JB60A,J2,J4,JK,JKR,JVR,JVR22,JVI2	F	3
	COMMON /BLOCK/ J,R,A2,B2,C2,A3,B3,C3,A4,B4,A5,B5,C5,A6,B6,SB,K,ALP	F	4
	1HA,SA4,SB4,SC4,SD4,SR,TR,VR,HR,TR2,TR3,TR4,KTR,EMKTR,VRMB,VRMB2,VR	F	5
	2MB3,VRMB4,VRMB5,VRMB22,VRMB33,VRMB44,VRMB55,OVVB,OVVB2,OVVB3,OVVB4	F	6
	3,OVVB5,AVR,EAVR,SUM1,JB403,JB60A,SUM18,SB42,SC43,SD44,SC42,SD43,J2	F	7
	4,J4,JK,JKR,JVR,SUM21,SUM22,SUM23,SUM24,SUM25,JVR22,AER,RTI,OVIB,SUM	F	8
	52,OVIB2,SUM3,OVIB3,SUM4,OVIB4,SUM5,OVIB5,SUM6,EAVI,SUM14,SUM9,SUM1	F	9
	60,SUM11,SUM12,SUM8,SUM32,SUM26,SUM33,SUM28,SUM34,SUM29,SUM30,SUM35	F	10
	7,SUM31,JVI22,B4T4,AEI,JVI,B4T,SUM36,SUM37,SUM38,SUM39,SUM40,SUM43,	F	11
	8SUM41,SUM42,OVIB6,JVI2,VI2,DEC1,DEC2,DEC3,DEC4,DEC5,KTI	F	12
	IF(TI-1107.)2,1,1	F	13
1	SA4=.07069551	F	14
	SB4=2.0415605E-4	F	15
	SC4=-7.9130080E-8	F	16
	SD4=1.0826239E-11	F	17
	GO TO 3	F	18
2	SA4=.03425143	F	19
	SB4=2.0072233E-4	F	20
	SC4=3.8046689E-8	F	21
	SD4=-6.5317171E-11	F	22
3	SB42=SB4/DEC2	F	23
	SC43=SC4/DEC3	F	24
	SD44=SD4/DEC4	F	25
	SC42=SC4/DEC2	F	26
	SD43=SD4/DEC3	F	27
	TI2=TI*TI	F	28
	TI3=TI2*TI	F	29
	TI4=TI2*TI2	F	30
	KTI=K*TI	F	31
	EMKTI=EXP(-KTI)	F	32
	SUM38=JK*KTI*EMKTI	F	33
	SUM37=SA4+SB4*TI+SC4*TI2+SD4*TI3	F	34
	C2E=C2*EMKTI	F	35
	C3E=C3*EMKTI	F	36
	C5E=C5*EMKTI	F	37
	RTI=R*TI	F	38
	B2T=B2*TI	F	39
	B3T=B3*TI	F	40
	B4T=B4*TI	F	41
	B5T=B5*TI	F	42
	B6T=B6*TI	F	43
	SUM2=A2+B2T+C2E	F	44
	SUM3=A3+B3T+C3E	F	45
	SUM4=A4+B4T	F	46
	SUM42=DEC4*SUM4	F	47
	SUM5=A5+B5T+C5E	F	48
	SUM6=A6+B6T	F	49
	SUM33=DEC2*SUM2	F	50
	SUM34=DEC3*SUM3	F	51
	SUM35=DEC5*SUM5	F	52
	B4T4=DEC4*B4T	F	53
	TIR=TI-TR	F	54



APPENDIX - Concluded

```

TIR2=TI2-TR2
TIR3=TI3-TR3
TIR4=TI4-TR4
TIOR=TI/TR
SUM7=SA4*ALOG(TIOR)+SB4*TIR+SC42*TIR2+SD43*TIK3+SR
EMKIR=EMKTI-EMKTR
SUM8=JK*EMKIR*SUM1+SUM7
SUM39=B2-K*C2E
SUM9=J*SUM39
SUM40=B3-K*C3E
SUM10=J2*SUM40
SUM41=B5-K*C5E
SUM11=J4*SUM41
SUM12=SUM9*OVRB+SUM10*OVRB2+SUM11*OVRB4
SUM16=SA4*TIR+SB42*TIR2+SC43*TIR3+SD44*TIR4
SUM17=J*(EMKTI*(KTI+1.))-SUM18)*SUM1
SUM19=JVR*(R*OVRB*TIR+OVRB2*(B2*TIR+C2*EMKIR)+OVRB3*(B3*TIR+C3*EMK
IR)+OVRB4*(B4*TIR)+OVRB5*(B5*TIR+C5*EMKIR)+B6*EAVR*TIR)
SUM20=-J*(RTI*SUM21+SUM33*SUM22+SUM34*SUM23+SUM24+SUM35*SUM25)-JVR
122*(-B4T4*OVRB5+AER*SUM6)-JVR*(B4T*OVRB4+SUM6*EAVR)
SUM32=SUM16+SUM17+SUM19+SUM20
RETURN
END

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F 55  
F 56  
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F 66  
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F 69  
F 70  
F 71  
F 72  
F 73  
F 74  
F 75  
F 76  
F 77-

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SUBROUTINE VVAR (VI)
THIS SUBROUTINE CALCULATES V TERMS
REAL K,KTI,KTR,J,JVI,JVI22,JB403,JB60A,J2,J4,JK,JK,JVR,JVR22,JVI2
COMMON /BLOCK/ J,R,A2,B2,C2,A3,B3,C3,A4,B4,A5,B5,C5,A6,B6,SB,K,ALP
1HA,SA4,SB4,SC4,SD4,SR,TR,VR,HR,TR2,TR3,TR4,KTR,EMKTR,VRMB,VRMB2,VR
2MB3,VRMB4,VRMB5,VRMB22,VRMB33,VRMB44,VRMB55,OVRB,OVRB2,OVRB3,OVRB4
3,OVRB5,AVR,EAVR,SUM1,JB403,JB60A,SUM18,SB42,SC43,SD44,SC42,SD43,J2
4,J4,JK,JK,JVR,SUM21,SUM22,SUM23,SUM24,SUM25,JVR22,AER,RTI,OVI8,SUM
52,OVI82,SUM3,OVI83,SUM4,OVI84,SUM5,OVI85,SUM6,EAVI,SUM14,SUM9,SUM1
60,SUM11,SUM12,SUM8,SUM32,SUM26,SUM33,SUM28,SUM34,SUM29,SUM30,SUM35
7,SUM31,JVI22,B4T4,AEI,JVI,B4T,SUM36,SUM37,SUM38,SUM39,SUM40,SUM43,
8SUM41,SUM42,OVI86,JVI2,VI2,DEC1,DEC2,DEC3,DEC4,DEC5,KTI
VIMB=VI-SB
VIMB2=VIMB*VIMB
VIMB3=VIMB2*VIMB
VIMB4=VIMB2*VIMB2
VIMB5=VIMB2*VIMB3
VIMB6=VIMB3*VIMB3
VIMB22=VIMB2*DEC2
VIMB33=VIMB3*DEC3
VIMB44=VIMB4*DEC4
VIMB55=VIMB5*DEC5
OVI8=DEC1/VIMB
OVI82=DEC1/VIMB2
OVI83=DEC1/VIMB3
OVI84=DEC1/VIMB4
OVI85=DEC1/VIMB5
OVI86=DEC1/VIMB6
SUM36=C2/VIMB+C3/VIMB22+C5/VIMB44
AVI=ALPHA*VI
EAVI=EXP(AVI)
SUM43=B6*EAVI+B4*OVI84
SUM27=ALOG(VIMB/VRMB)
SUM13=JR*SUM27
SUM14=SUM13-JB403*(OVI83-OVRB3)+JB60A*(EAVI-EAVR)
JVI=J*VI
VI2=VI*VI
JVI2=J*VI2
JVI22=JVI2/DEC2
AEI=ALPHA*EAVI
SUM26=SUM27-SB*OVI8
SUM28=OVI8+SB/VIMB22
SUM29=DEC1/VIMB22+SB/VIMB33
SUM30=DEC4*A4*(DEC1/VIMB33+SB/VIMB44)
SUM31=DEC1/VIMB44+SB/VIMB55
RETURN
END

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G 1  
G 2  
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G 40  
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G 42  
G 43  
G 44  
G 45  
G 46  
G 47-

## REFERENCES

1. Jones, Robert A.; and Hunt, James L. (With appendix A by James L. Hunt, Kathryn A. Smith, and Robert B. Reynolds, and appendix B by James L. Hunt and Lillian R. Boney): Use of Tetrafluoromethane To Simulate Real-Gas Effects on the Hypersonic Aerodynamics of Blunt Vehicles. NASA TR R-312, 1969.
2. Chari, Nallan Chakravartula Satyanarayana: Thermodynamic Properties of Carbon Tetrafluoride. Ph. D. Thesis, Univ. of Mich., 1960.
3. McBride, Bonnie J.; Heimel, Sheldon; Ehlers, Janet G.; and Gordon, Sanford: Thermodynamic Properties to 6000° K for 210 Substances Involving the First 18 Elements. NASA SP-3001, 1963.
4. Edmonds, P. D.; and Lamb, J.: Vibrational Relaxation Times of a Number of Polyatomic Gases Derived From Measurements of Acoustic Absorption. Proc. Phys. Soc. (London), vol. 72, pt. 6, no. 468, Dec. 1, 1958, pp. 940-948.
5. Zeleznik, Frank J.; and Gordon, Sanford: A General IBM 704 or 7090 Computer Program for Computation of Chemical Equilibrium Composition, Rocket Performance, and Chapman-Jouguet Detonations. NASA TN D-1454, 1962.
6. Martin, Joseph J.: Equation of State. Ind. & Eng. Chem., vol. 59, no. 12, Dec. 1967, pp. 35-52.
7. Martin, J. J.; and Bhada, R. K.: Pressure-Volume-Temperature Behavior of Carbon Tetrafluoride Using a Variable-Volume Cell of Bellows Design. AIChE J., vol. 17, no. 3, May 1971, pp. 683-688.
8. Jossi, John A.; Stiel, Leonard I.; and Thodos, George: The Viscosity of Pure Substances in the Dense Gaseous and the Liquid Phases. AIChE J., vol. 8, 1962, pp. 59-63.
9. Stiel, Leonard I.; and Thodos, George.: The Viscosity of Polar Substances in the Dense Gaseous and Liquid Regions. AIChE J., vol. 10, no. 2, 1964, pp. 275-277.
10. Oshen, Steven; Rosenbaum, B. M.; and Thodos, George: Thermal Conductivity of Carbon Tetrafluoride in the Dense Gaseous Region. J. Chem. Phys., vol. 46, no. 8, Apr. 15, 1967, pp. 2939-2944.

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY

[Temperatures are in kelvins]

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=24.25											
223.473	.0029	32.763	9.7241	104.660	42.3294	6.077	1.127	.460	.00001857	.01547	4.799
230.039	.0026	37.471	9.8087	108.597	37.4263	5.322	1.192	.455	.00001993	.01682	4.190
S/R=24.50											
220.190	.0036	29.622	9.8534	108.055	24.9064	3.686	1.081	.519	.00001702	.01402	2.855
230.190	.0030	36.165	9.9676	111.695	25.2464	3.661	1.133	.506	.00001874	.01579	2.829
238.321	.0026	42.623	10.0790	116.613	24.0046	3.440	1.207	.501	.00002037	.01742	2.651
S/R=24.75											
215.139	.0046	25.340	9.9643	112.618	16.9050	2.603	1.070	.583	.00001560	.01261	1.976
225.139	.0038	31.007	10.0717	114.283	18.2138	2.731	1.086	.565	.00001696	.01410	2.070
235.139	.0032	37.822	10.1903	117.523	18.9522	2.782	1.127	.552	.00001856	.01577	2.107
245.139	.0027	46.165	10.3297	123.093	18.7916	2.714	1.203	.544	.00002044	.01767	2.053
247.075	.0026	48.000	10.3603	124.511	18.6511	2.687	1.222	.543	.00002084	.01807	2.032
S/R=25.00											
208.260	.0062	20.314	10.0426	117.729	12.6452	2.047	1.083	.650	.00001433	.01123	1.524
218.260	.0051	25.095	10.1537	118.423	13.6799	2.144	1.079	.630	.00001542	.01251	1.594
228.260	.0042	30.775	10.2677	119.821	14.6772	2.238	1.088	.612	.00001667	.01390	1.663
238.260	.0035	37.556	10.3891	122.430	15.4773	2.305	1.115	.597	.00001811	.01546	1.713
248.260	.0030	45.742	10.5253	126.894	15.8746	2.320	1.170	.587	.00001980	.01721	1.726
256.166	.0026	53.458	10.6509	132.228	15.8086	2.284	1.237	.584	.00002133	.01875	1.699
S/R=25.25											
199.751	.0088	15.187	10.0767	122.506	10.1344	1.741	1.110	.716	.00001323	.00993	1.276
209.751	.0072	19.032	10.1980	123.059	10.8563	1.798	1.097	.697	.00001413	.01104	1.313
219.751	.0059	23.627	10.3184	123.755	11.6275	1.863	1.089	.677	.00001512	.01223	1.358
229.751	.0049	29.092	10.4397	124.887	12.4171	1.931	1.091	.659	.00001623	.01352	1.408
239.751	.0040	35.589	10.5648	126.856	13.1574	1.995	1.105	.643	.00001751	.01495	1.456
249.751	.0034	43.347	10.6990	130.181	13.7410	2.039	1.140	.630	.00001898	.01653	1.490
259.751	.0029	52.712	10.8503	135.486	14.0497	2.048	1.200	.623	.00002069	.01831	1.500
265.566	.0026	59.084	10.9509	139.763	14.0694	2.034	1.251	.622	.00002181	.01944	1.491
S/R=25.50											
190.295	.0129	10.680	10.0660	126.219	8.5369	1.565	1.141	.777	.00001229	.00875	1.134
200.295	.0104	13.611	10.1994	127.118	9.0601	1.596	1.125	.759	.00001306	.00973	1.149
210.295	.0085	17.164	10.3315	127.889	9.6224	1.633	1.111	.741	.00001389	.01077	1.172
220.295	.0069	21.440	10.4619	128.663	10.2256	1.677	1.101	.723	.00001478	.01189	1.201
230.295	.0057	26.546	10.5918	129.655	10.8592	1.726	1.097	.704	.00001578	.01309	1.237
240.295	.0047	32.615	10.7229	131.164	11.4979	1.778	1.102	.688	.00001690	.01439	1.275
250.295	.0039	39.825	10.8586	133.586	12.0931	1.826	1.121	.673	.00001818	.01583	1.312
260.295	.0033	48.426	11.0044	137.422	12.5727	1.860	1.158	.663	.00001965	.01741	1.340
270.295	.0028	58.787	11.1683	143.265	12.8613	1.870	1.221	.658	.00002136	.01919	1.352
275.290	.0026	64.774	11.2607	147.143	12.9157	1.864	1.264	.659	.00002231	.02016	1.351

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=25.75											
180.752	.0194	7.203	10.0208	128.574	7.4634	1.461	1.169	.828	.00001149	.00771	1.051
190.752	.0155	9.335	10.1655	130.016	7.8675	1.476	1.153	.813	.00001220	.00861	1.053
200.752	.0125	11.972	10.3092	131.211	8.2986	1.496	1.138	.798	.00001293	.00956	1.060
210.752	.0101	15.195	10.4516	132.231	8.7578	1.521	1.124	.781	.00001369	.01054	1.074
220.752	.0082	19.101	10.5925	133.165	9.2479	1.551	1.113	.764	.00001451	.01159	1.094
230.752	.0068	23.793	10.7320	134.165	9.7667	1.586	1.106	.747	.00001541	.01271	1.118
240.752	.0055	29.390	10.8713	135.448	10.3056	1.626	1.105	.730	.00001640	.01392	1.147
250.752	.0046	36.039	11.0122	137.309	10.8444	1.667	1.113	.715	.00001752	.01523	1.179
260.752	.0039	43.530	11.1583	140.136	11.3474	1.704	1.134	.703	.00001880	.01666	1.209
270.752	.0033	53.337	11.3150	144.402	11.7654	1.732	1.174	.694	.00002027	.01825	1.234
280.752	.0028	64.628	11.4908	150.672	12.0429	1.743	1.237	.692	.00002196	.02002	1.248
285.400	.0026	70.661	11.5821	154.441	12.1133	1.741	1.277	.693	.00002282	.02091	1.249
S/R=26.00											
171.715	.0293	4.750	9.9540	129.688	6.7124	1.397	1.193	.869	.00001079	.00683	1.003
181.715	.0232	6.253	10.1075	131.673	7.0441	1.404	1.178	.858	.00001147	.00768	.994
191.715	.0185	8.146	10.2612	133.391	7.3929	1.413	1.163	.845	.00001216	.00855	.993
201.715	.0149	10.502	10.4145	134.868	7.7605	1.426	1.149	.831	.00001286	.00946	.997
211.715	.0120	13.405	10.5669	136.142	8.1494	1.442	1.136	.816	.00001358	.01041	1.005
221.715	.0098	16.949	10.7181	137.282	8.5616	1.463	1.124	.800	.00001434	.01140	1.017
231.715	.0080	21.234	10.8678	138.393	8.9976	1.488	1.115	.785	.00001516	.01246	1.035
241.715	.0066	26.373	11.0164	139.632	9.4550	1.518	1.111	.769	.00001606	.01358	1.056
251.715	.0054	32.495	11.1650	141.218	9.9259	1.550	1.113	.754	.00001706	.01480	1.081
261.715	.0045	39.761	11.3159	143.448	10.3940	1.583	1.124	.741	.00001818	.01611	1.108
271.715	.0038	48.377	11.4725	146.695	10.8318	1.614	1.148	.730	.00001945	.01755	1.134
281.715	.0032	58.635	11.6406	151.413	11.2035	1.638	1.190	.724	.00002092	.01914	1.157
291.715	.0028	70.916	11.8287	158.136	11.4686	1.649	1.254	.723	.00002259	.02090	1.171
295.829	.0026	76.680	11.9144	161.619	11.5400	1.649	1.289	.725	.00002335	.02168	1.174
S/R=26.25											
163.453	.0442	3.105	9.8764	129.862	6.1703	1.357	1.212	.901	.00001019	.00608	.978
173.453	.0348	4.146	10.0362	132.321	6.4547	1.358	1.198	.892	.00001085	.00689	.960
183.453	.0275	5.477	10.1974	134.523	6.7508	1.361	1.184	.882	.00001151	.00772	.951
193.453	.0219	7.161	10.3594	136.477	7.0593	1.366	1.170	.871	.00001218	.00858	.947
203.453	.0176	9.271	10.5217	138.197	7.3823	1.375	1.157	.859	.00001286	.00946	.949
213.453	.0142	11.888	10.6835	139.711	7.7213	1.386	1.145	.846	.00001356	.01037	.953
223.453	.0115	15.104	10.8444	141.065	8.0783	1.400	1.133	.832	.00001428	.01133	.962
233.453	.0094	19.016	11.0041	142.336	8.4543	1.418	1.124	.817	.00001504	.01233	.974
243.453	.0077	23.735	11.1626	143.639	8.8492	1.440	1.118	.803	.00001586	.01340	.990
253.453	.0063	29.383	11.3202	145.138	9.2605	1.465	1.116	.788	.00001676	.01453	1.009
263.453	.0053	36.102	11.4783	147.060	9.6807	1.492	1.121	.775	.00001776	.01576	1.031
273.453	.0044	44.066	11.6393	149.697	10.0960	1.520	1.136	.764	.00001889	.01708	1.055
283.453	.0037	53.501	11.8071	153.418	10.4844	1.546	1.163	.755	.00002018	.01853	1.078
293.453	.0032	64.723	11.9874	158.659	10.8186	1.566	1.208	.752	.00002164	.02013	1.099
303.453	.0027	78.131	12.1892	165.924	11.0681	1.576	1.274	.754	.00002331	.02189	1.114
306.545	.0026	82.804	12.2576	168.666	11.1247	1.577	1.300	.756	.00002388	.02247	1.117

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>p</sub> r
S/R=26.50											
156.012	.0664	2.028	9.7950	129.384	5.7686	1.332	1.227	.926	.00000967	.00544	.970
166.012	.0519	2.742	9.9590	132.234	6.0208	1.329	1.213	.919	.00001032	.00623	.943
176.012	.0408	3.668	10.1254	134.647	6.2810	1.328	1.200	.911	.00001097	.00703	.926
186.012	.0322	4.855	10.2938	137.224	6.5500	1.329	1.188	.902	.00001161	.00785	.916
196.012	.0256	6.365	10.4635	139.370	6.8288	1.331	1.175	.892	.00001227	.00868	.911
206.012	.0205	8.264	10.6340	141.295	7.1187	1.336	1.163	.882	.00001293	.00955	.911
216.012	.0165	10.633	10.8046	143.018	7.4212	1.344	1.152	.870	.00001361	.01043	.914
226.012	.0133	13.559	10.9748	144.574	7.7377	1.354	1.141	.858	.00001430	.01136	.920
236.012	.0108	17.140	11.1441	146.019	8.0694	1.367	1.132	.845	.00001502	.01232	.929
246.012	.0089	21.483	11.3122	147.438	8.4171	1.383	1.124	.832	.00001578	.01334	.941
256.012	.0073	26.707	11.4793	148.556	8.7801	1.402	1.121	.818	.00001661	.01442	.956
266.012	.0061	32.944	11.6460	150.748	9.1556	1.424	1.122	.806	.00001752	.01557	.973
276.012	.0051	40.351	11.8138	153.047	9.5365	1.448	1.131	.794	.00001854	.01681	.994
286.012	.0043	49.121	11.9854	156.147	9.9106	1.471	1.149	.785	.00001968	.01815	1.015
296.012	.0036	59.508	12.1648	160.407	10.2606	1.493	1.181	.779	.00002098	.01962	1.036
306.012	.0031	71.830	12.3587	166.253	10.5626	1.510	1.229	.778	.00002245	.02123	1.056
316.012	.0027	86.541	12.5758	174.166	10.7553	1.518	1.297	.783	.00002414	.02300	1.070
317.540	.0026	89.036	12.6118	175.592	10.8236	1.519	1.310	.785	.00002441	.02329	1.072
S/R=26.75											
149.361	.0989	1.330	9.7144	128.492	5.4644	1.316	1.239	.944	.00000922	.00489	.974
159.361	.0767	1.819	9.8809	131.658	5.6939	1.310	1.226	.939	.00000986	.00566	.937
169.361	.0599	2.460	10.0506	134.604	5.9290	1.306	1.214	.933	.00001050	.00644	.913
179.361	.0471	3.291	10.2233	137.331	6.1704	1.304	1.202	.926	.00001114	.00724	.897
189.361	.0372	4.361	10.3983	139.842	6.4187	1.303	1.190	.919	.00001177	.00805	.887
199.361	.0296	5.724	10.5752	142.141	6.6748	1.304	1.178	.910	.00001242	.00887	.883
209.361	.0236	7.447	10.7534	144.233	6.9398	1.307	1.167	.901	.00001306	.00971	.882
219.361	.0190	9.603	10.9322	146.136	7.2145	1.311	1.157	.891	.00001372	.01058	.884
229.361	.0153	12.279	11.1111	147.871	7.5004	1.318	1.147	.880	.00001439	.01148	.888
239.361	.0125	15.570	11.2895	149.483	7.7986	1.328	1.138	.869	.00001508	.01242	.895
249.361	.0102	19.580	11.4671	151.036	8.1101	1.340	1.130	.857	.00001580	.01339	.904
259.361	.0084	24.426	11.6436	152.628	8.4351	1.354	1.126	.845	.00001657	.01443	.915
269.361	.0069	30.236	11.8193	154.395	8.7727	1.372	1.125	.833	.00001741	.01552	.930
279.361	.0058	37.157	11.9952	156.523	9.1195	1.391	1.130	.822	.00001834	.01669	.947
289.361	.0048	45.360	12.1730	159.249	9.4689	1.412	1.142	.812	.00001937	.01795	.965
299.361	.0041	55.059	12.3558	162.872	9.8097	1.433	1.164	.806	.00002053	.01931	.985
309.361	.0035	66.538	12.5480	167.746	10.1273	1.451	1.200	.802	.00002185	.02080	1.005
319.361	.0030	80.140	12.7568	174.283	10.4223	1.465	1.252	.804	.00002335	.02243	1.023
328.805	.0026	95.379	12.9775	182.404	10.6800	1.471	1.319	.812	.00002495	.02412	1.037
S/R=27.00											
143.410	.1459	.878	9.6369	127.348	5.2292	1.306	1.249	.958	.00000882	.00441	.989
153.410	.1125	1.213	9.8046	130.768	5.4422	1.298	1.237	.954	.00000946	.00517	.941
163.410	.0873	1.656	9.9762	133.581	5.6593	1.293	1.225	.950	.00001010	.00594	.909
173.410	.0683	2.237	10.1516	136.992	5.8809	1.288	1.213	.944	.00001073	.00672	.887
183.410	.0537	2.991	10.3301	139.802	6.1075	1.285	1.202	.939	.00001135	.00751	.873
193.410	.0424	3.963	10.5115	142.415	6.3397	1.283	1.191	.932	.00001198	.00831	.864
203.410	.0337	5.205	10.6952	144.833	6.5791	1.282	1.180	.925	.00001261	.00912	.859
213.410	.0269	6.778	10.8805	147.061	6.8235	1.283	1.170	.917	.00001324	.00995	.858
223.410	.0216	8.752	11.0671	149.112	7.0767	1.286	1.160	.908	.00001389	.01080	.859
233.410	.0174	11.211	11.2542	151.002	7.3390	1.291	1.151	.899	.00001454	.01168	.863
243.410	.0142	14.246	11.4412	152.766	7.6112	1.298	1.142	.889	.00001520	.01259	.868
253.410	.0115	17.961	11.6277	154.454	7.8945	1.306	1.135	.878	.00001589	.01354	.875
263.410	.0095	22.469	11.8134	156.142	8.1894	1.318	1.130	.867	.00001662	.01453	.885
273.410	.0078	27.896	11.9983	157.940	8.4958	1.331	1.128	.856	.00001740	.01558	.896
283.410	.0065	34.382	12.1829	159.997	8.8124	1.347	1.130	.846	.00001826	.01669	.910
293.410	.0054	42.087	12.3682	162.508	9.1356	1.365	1.139	.837	.00001920	.01789	.926
303.410	.0046	51.203	12.5565	165.718	9.4588	1.383	1.155	.830	.00002026	.01917	.944
313.410	.0039	61.976	12.7511	169.926	9.7723	1.401	1.182	.825	.00002145	.02056	.963
323.410	.0033	74.695	12.9575	175.493	10.0621	1.416	1.221	.825	.00002279	.02208	.982
333.410	.0029	89.764	13.1828	182.792	10.3134	1.428	1.278	.830	.00002432	.02373	.998
340.326	.0026	101.831	13.3548	189.108	10.4578	1.432	1.328	.837	.00002549	.02497	1.008

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=27.25											
138.054	.2135	.584	9.5633	126.058	5.0432	1.300	1.258	.969	.00000847	.00399	1.013
148.054	.1637	.814	9.7313	129.684	5.2442	1.291	1.245	.966	.00000911	.00474	.952
158.054	.1265	1.121	9.9039	133.112	5.4482	1.284	1.233	.962	.00000974	.00550	.911
168.054	.0984	1.526	10.0807	136.350	5.6555	1.277	1.222	.958	.00001037	.00627	.883
178.054	.0769	2.058	10.2614	139.402	5.8664	1.272	1.211	.954	.00001099	.00704	.865
188.054	.0605	2.748	10.4456	142.271	6.0812	1.269	1.201	.949	.00001161	.00783	.852
198.054	.0479	3.638	10.6330	144.959	6.3004	1.266	1.191	.943	.00001223	.00862	.844
208.054	.0381	4.776	10.8231	147.469	6.5247	1.264	1.181	.937	.00001284	.00942	.840
218.054	.0304	6.220	11.0153	149.805	6.7546	1.264	1.171	.930	.00001347	.01024	.839
228.054	.0244	8.037	11.2091	151.977	6.9908	1.266	1.162	.922	.00001409	.01108	.840
238.054	.0197	10.306	11.4040	153.999	7.2343	1.269	1.154	.914	.00001473	.01194	.843
248.054	.0160	13.115	11.5992	155.897	7.4860	1.274	1.146	.905	.00001538	.01283	.847
258.054	.0130	16.566	11.7943	157.711	7.7468	1.280	1.139	.896	.00001604	.01376	.853
268.054	.0107	20.768	11.9889	159.502	8.0175	1.289	1.134	.886	.00001673	.01472	.861
278.054	.0088	25.845	12.1828	161.360	8.2985	1.300	1.131	.876	.00001747	.01573	.871
288.054	.0073	31.934	12.3761	163.404	8.5893	1.312	1.132	.867	.00001827	.01680	.882
298.054	.0061	39.187	12.5696	165.796	8.8881	1.327	1.137	.858	.00001914	.01793	.896
308.054	.0051	47.783	12.7649	168.741	9.1911	1.343	1.149	.851	.00002011	.01915	.912
318.054	.0043	57.533	12.9643	172.490	9.4918	1.359	1.170	.847	.00002119	.02046	.929
328.054	.0037	69.916	13.1719	177.342	9.7814	1.374	1.201	.845	.00002241	.02188	.946
338.054	.0032	84.047	13.3936	183.646	10.0475	1.388	1.245	.848	.00002379	.02343	.964
348.054	.0028	100.777	13.6372	191.797	10.2781	1.397	1.306	.856	.00002535	.02512	.980
352.090	.0026	108.392	13.7440	195.710	10.3586	1.399	1.336	.862	.00002604	.02584	.986

S/R=27.50

133.222	.3097	.392	9.4944	124.699	4.8936	1.297	1.265	.976	.00000815	.00361	1.044
143.222	.2364	.550	9.6622	128.494	5.0857	1.287	1.253	.974	.00000879	.00436	.968
153.222	.1818	.763	9.8348	132.098	5.2800	1.278	1.241	.971	.00000943	.00512	.919
163.222	.1408	1.047	10.0122	135.518	5.4768	1.271	1.230	.969	.00001005	.00588	.885
173.222	.1097	1.421	10.1940	138.763	5.6761	1.264	1.219	.965	.00001067	.00664	.862
183.222	.0859	1.911	10.3799	141.838	5.8782	1.259	1.209	.961	.00001129	.00741	.846
193.222	.0677	2.547	10.5697	144.745	6.0835	1.255	1.199	.957	.00001190	.00819	.835
203.222	.0536	3.367	10.7629	147.488	6.2923	1.252	1.190	.952	.00001250	.00897	.828
213.222	.0426	4.417	10.9592	150.068	6.5051	1.250	1.181	.947	.00001311	.00977	.825
223.222	.0341	5.750	11.1579	152.489	6.7225	1.249	1.172	.941	.00001372	.01058	.823
233.222	.0273	7.430	11.3586	154.760	6.9449	1.249	1.163	.934	.00001434	.01141	.824
243.222	.0221	9.531	11.5608	156.891	7.1733	1.251	1.155	.927	.00001496	.01226	.827
253.222	.0179	12.140	11.7638	158.904	7.4084	1.254	1.148	.919	.00001559	.01313	.831
263.222	.0146	15.353	11.9671	160.831	7.6511	1.259	1.142	.911	.00001623	.01403	.836
273.222	.0119	19.278	12.1702	162.723	7.9022	1.266	1.137	.903	.00001689	.01497	.843
283.222	.0098	24.035	12.3728	164.652	8.1622	1.274	1.134	.894	.00001759	.01595	.851
293.222	.0081	29.759	12.5749	166.717	8.4312	1.284	1.133	.885	.00001834	.01698	.861
303.222	.0068	36.596	12.7769	169.052	8.7084	1.296	1.137	.877	.00001916	.01807	.872
313.222	.0057	44.717	12.9797	171.829	8.9917	1.310	1.146	.871	.00002005	.01923	.886
323.222	.0048	54.316	13.1854	175.261	9.2769	1.324	1.162	.866	.00002105	.02048	.901
333.222	.0041	65.644	13.3967	179.604	9.5583	1.339	1.186	.864	.00002217	.02182	.917
343.222	.0035	78.977	13.6185	185.158	9.8264	1.352	1.222	.865	.00002342	.02327	.934
353.222	.0030	94.698	13.8570	192.267	10.0715	1.363	1.272	.871	.00002484	.02485	.951
363.222	.0026	113.297	14.1210	201.325	10.2834	1.370	1.337	.883	.00002644	.02657	.966
364.087	.0026	115.060	14.1454	202.214	10.2999	1.371	1.344	.885	.00002658	.02673	.968

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=27.75											
128.849	.4458	.265	9.4304	123.322	4.7709	1.295	1.272	.982	.00000787	.00328	1.082
138.849	.3388	.375	9.5975	127.259	4.9564	1.285	1.259	.981	.00000851	.00402	.990
148.849	.2594	.523	9.7698	131.006	5.1437	1.275	1.247	.979	.00000914	.00477	.930
158.849	.2001	.723	9.9470	134.574	5.3326	1.267	1.236	.976	.00000977	.00553	.890
168.849	.1553	.987	10.1292	137.575	5.5234	1.259	1.226	.974	.00001039	.00629	.862
178.849	.1213	1.335	10.3159	141.215	5.7162	1.253	1.216	.971	.00001100	.00705	.843
188.849	.0952	1.790	10.5070	144.298	5.9112	1.248	1.206	.968	.00001161	.00781	.830
198.849	.0751	2.380	10.7022	147.229	6.1087	1.243	1.197	.964	.00001221	.00859	.821
208.849	.0595	3.140	10.9011	150.009	6.3089	1.240	1.188	.960	.00001281	.00937	.815
218.849	.0474	4.113	11.1032	152.641	6.5124	1.237	1.180	.955	.00001341	.01016	.812
228.849	.0379	5.349	11.3082	155.127	6.7194	1.235	1.172	.950	.00001401	.01096	.811
238.849	.0304	6.908	11.5156	157.477	6.9306	1.235	1.164	.944	.00001461	.01178	.812
248.849	.0246	8.862	11.7247	159.698	7.1466	1.236	1.156	.938	.00001522	.01262	.814
258.849	.0199	11.291	11.9351	161.808	7.3681	1.238	1.150	.931	.00001583	.01348	.818
268.849	.0162	14.289	12.1462	163.835	7.5960	1.242	1.144	.924	.00001646	.01436	.823
278.849	.0133	17.961	12.3575	165.820	7.8308	1.247	1.139	.917	.00001710	.01528	.828
288.849	.0109	22.424	12.5685	167.823	8.0734	1.253	1.136	.909	.00001777	.01623	.835
298.849	.0090	27.809	12.7792	169.926	8.3240	1.262	1.135	.901	.00001848	.01723	.843
308.849	.0075	34.260	12.9897	172.242	8.5824	1.271	1.137	.894	.00001924	.01828	.854
318.849	.0063	41.939	13.2006	174.915	8.8475	1.283	1.144	.888	.00002008	.01939	.865
328.849	.0053	51.032	13.4133	178.128	9.1167	1.295	1.157	.883	.00002100	.02058	.879
338.849	.0045	61.756	13.6301	182.099	9.3860	1.308	1.176	.881	.00002202	.02186	.893
348.849	.0039	74.393	13.8544	187.089	9.6494	1.321	1.205	.881	.00002318	.02323	.909
358.849	.0033	89.246	14.0916	193.398	9.8984	1.333	1.246	.886	.00002447	.02472	.926
368.849	.0029	106.746	14.3488	201.368	10.1246	1.342	1.300	.895	.00002593	.02634	.942
376.4306	.0026	121.834	14.5589	208.625	10.2732	1.346	1.351	.906	.00002713	.02764	.953

S/R=28.00

124.865	.6371	.180	9.3711	121.955	4.6685	1.296	1.278	.987	.00000761	.00297	1.128
134.865	.4821	.257	9.5372	126.013	4.8491	1.284	1.265	.985	.00000825	.00372	1.016
144.865	.3678	.361	9.7087	129.879	5.0310	1.274	1.253	.984	.00000889	.00447	.945
154.865	.2827	.502	9.8854	133.570	5.2142	1.265	1.242	.982	.00000951	.00522	.898
164.865	.2188	.689	10.0674	137.098	5.3987	1.256	1.231	.980	.00001013	.00597	.866
174.865	.1703	.936	10.2543	140.470	5.5846	1.249	1.221	.978	.00001074	.00672	.843
184.865	.1333	1.262	10.4460	143.695	5.7720	1.243	1.212	.976	.00001135	.00748	.827
194.865	.1048	1.686	10.6422	146.776	5.9610	1.237	1.203	.973	.00001195	.00825	.816
204.865	.0823	2.237	10.8427	149.717	6.1520	1.233	1.194	.970	.00001254	.00902	.808
214.865	.0657	2.945	11.0470	152.521	6.3452	1.229	1.186	.966	.00001314	.00980	.804
224.865	.0524	3.850	11.2550	155.190	6.5408	1.226	1.178	.962	.00001372	.01058	.801
234.865	.0419	5.000	11.4660	157.728	6.7392	1.224	1.171	.958	.00001431	.01138	.801
244.865	.0337	6.453	11.6797	160.139	6.9411	1.223	1.164	.953	.00001490	.01219	.802
254.865	.0272	8.274	11.8956	162.433	7.1468	1.223	1.157	.947	.00001550	.01302	.804
264.865	.0221	10.541	12.1131	164.625	7.3571	1.225	1.151	.941	.00001610	.01386	.807
274.865	.0180	13.343	12.3316	166.738	7.5725	1.227	1.145	.935	.00001671	.01473	.812
284.865	.0147	16.782	12.5507	168.806	7.7939	1.231	1.140	.928	.00001734	.01563	.817
294.865	.0121	20.573	12.7699	170.880	8.0218	1.236	1.137	.922	.00001798	.01656	.823
304.865	.0100	26.041	12.9889	173.029	8.2568	1.243	1.136	.915	.00001865	.01753	.830
314.865	.0083	32.129	13.2078	175.347	8.4988	1.251	1.138	.909	.00001938	.01855	.839
324.865	.0069	39.392	13.4268	177.559	8.7476	1.260	1.143	.903	.00002016	.01962	.849
334.865	.0058	48.009	13.6470	181.019	9.0014	1.271	1.153	.898	.00002102	.02076	.861
344.865	.0050	58.184	13.8701	184.716	9.2577	1.283	1.169	.896	.00002197	.02198	.874
354.865	.0042	70.173	14.0988	189.277	9.5123	1.294	1.193	.896	.00002303	.02329	.889
364.865	.0036	84.249	14.3373	194.962	9.7588	1.306	1.226	.899	.00002422	.02469	.904
374.865	.0031	100.790	14.5915	202.673	9.9903	1.315	1.271	.907	.00002556	.02622	.920
384.865	.0027	120.262	14.8691	210.953	10.1990	1.323	1.330	.920	.00002706	.02788	.935
388.737	.0026	128.710	14.9850	214.949	10.2722	1.325	1.357	.927	.00002769	.02856	.941

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=28.25											
121.203	.9048	.124	9.3159	120.609	4.5812	1.297	1.283	.990	.00000737	.00270	1.182
131.203	.6819	.177	9.4808	124.772	4.7582	1.285	1.270	.989	.00000801	.00344	1.047
141.203	.5186	.251	9.6513	128.741	4.9362	1.274	1.258	.988	.00000865	.00419	.963
151.203	.3973	.350	9.8272	132.535	5.1150	1.264	1.247	.986	.00000928	.00493	.909
161.203	.3065	.483	10.0086	136.167	5.2948	1.255	1.236	.985	.00000990	.00568	.871
171.203	.2379	.660	10.1952	139.648	5.4755	1.247	1.226	.983	.00001051	.00643	.845
181.203	.1857	.893	10.3869	142.987	5.6572	1.240	1.217	.982	.00001112	.00719	.827
191.203	.1457	1.199	10.5835	146.190	5.8401	1.234	1.208	.979	.00001172	.00795	.814
201.203	.1148	1.597	10.7848	149.261	6.0242	1.228	1.200	.977	.00001231	.00871	.804
211.203	.0909	2.111	10.9904	152.204	6.2097	1.224	1.192	.974	.00001290	.00948	.798
221.203	.0722	2.773	11.2002	155.021	6.3969	1.220	1.184	.971	.00001348	.01025	.795
231.203	.0576	3.620	11.4137	157.714	6.5860	1.217	1.177	.968	.00001406	.01103	.793
241.203	.0462	4.693	11.6307	160.290	6.7772	1.214	1.170	.964	.00001464	.01182	.793
251.203	.0372	6.049	11.8505	162.750	6.9712	1.213	1.163	.960	.00001522	.01263	.794
261.203	.0300	7.749	12.0728	165.104	7.1683	1.213	1.157	.955	.00001580	.01344	.796
271.203	.0243	9.867	12.2971	167.363	7.3690	1.213	1.151	.950	.00001639	.01428	.799
281.203	.0198	12.489	12.5227	169.549	7.5740	1.215	1.146	.944	.00001699	.01513	.803
291.203	.0162	15.713	12.7493	171.690	7.7839	1.218	1.142	.939	.00001760	.01602	.808
301.203	.0133	19.648	12.9763	173.829	7.9994	1.222	1.138	.933	.00001822	.01693	.813
311.203	.0110	24.418	13.2035	176.025	8.2209	1.227	1.137	.927	.00001886	.01787	.820
321.203	.0091	30.160	13.4305	178.359	8.4488	1.234	1.138	.921	.00001955	.01886	.827
331.203	.0076	37.026	13.6577	180.935	8.6829	1.242	1.142	.916	.00002029	.01990	.836
341.203	.0064	45.189	13.8857	183.887	8.9225	1.251	1.150	.912	.00002109	.02100	.847
351.203	.0054	54.841	14.1157	187.379	9.1657	1.261	1.163	.910	.00002198	.02217	.858
361.203	.0046	66.209	14.3499	191.607	9.4096	1.271	1.183	.909	.00002296	.02342	.871
371.203	.0040	79.581	14.5815	196.801	9.6500	1.282	1.211	.912	.00002405	.02476	.886
381.203	.0034	95.254	14.8455	203.222	9.8809	1.292	1.249	.918	.00002528	.02620	.901
391.203	.0030	113.651	15.1182	211.174	10.0959	1.300	1.299	.924	.00002667	.02776	.916
401.203	.0026	135.288	15.4182	221.006	10.2885	1.306	1.362	.946	.00002821	.02946	.931
401.373	.0026	135.679	15.4236	221.189	10.2915	1.306	1.363	.946	.00002824	.02949	.931

S/R=28.50

117.848	1.2769	.085	9.2649	119.309	4.5061	1.298	1.288	.992	.00000715	.00244	1.245
127.848	.9587	.123	9.4285	123.564	4.6804	1.286	1.275	.992	.00000779	.00319	1.081
137.848	.7268	.175	9.5979	127.622	4.8554	1.274	1.262	.991	.00000843	.00393	.984
147.848	.5552	.246	9.7729	131.503	5.0311	1.264	1.251	.990	.00000907	.00468	.921
157.848	.4272	.341	9.9535	135.222	5.2073	1.255	1.240	.989	.00000969	.00542	.879
167.848	.3307	.467	10.1395	138.793	5.3842	1.246	1.230	.987	.00001030	.00617	.849
177.848	.2575	.635	10.3308	142.226	5.5617	1.238	1.221	.986	.00001091	.00692	.828
187.848	.2015	.855	10.5273	145.526	5.7400	1.232	1.212	.984	.00001151	.00768	.813
197.848	.1585	1.144	10.7288	148.702	5.9189	1.226	1.204	.983	.00001210	.00843	.802
207.848	.1252	1.518	10.9350	151.756	6.0988	1.220	1.196	.981	.00001268	.00919	.795
217.848	.0993	2.002	11.1459	154.693	6.2797	1.216	1.189	.978	.00001326	.00996	.790
227.848	.0790	2.622	11.3610	157.515	6.4618	1.212	1.182	.976	.00001384	.01073	.787
237.848	.0632	3.415	11.5800	160.225	6.6452	1.208	1.175	.973	.00001441	.01150	.786
247.848	.0507	4.420	11.8026	162.826	6.8304	1.206	1.168	.969	.00001498	.01229	.786
257.848	.0408	5.689	12.0284	165.323	7.0176	1.204	1.162	.966	.00001555	.01309	.787
267.848	.0330	7.280	12.2570	167.724	7.2073	1.203	1.156	.962	.00001612	.01390	.790
277.848	.0268	9.263	12.4878	170.039	7.3999	1.203	1.151	.957	.00001670	.01472	.793
287.848	.0218	11.720	12.7203	172.286	7.5960	1.204	1.146	.952	.00001728	.01557	.796
297.848	.0178	14.744	12.9541	174.490	7.7961	1.206	1.142	.947	.00001787	.01644	.801
307.848	.0147	18.441	13.1886	176.687	8.0009	1.209	1.139	.942	.00001848	.01733	.806
317.848	.0121	22.931	13.4235	178.928	8.2108	1.214	1.138	.937	.00001910	.01826	.812
327.848	.0101	28.346	13.6586	181.283	8.4263	1.219	1.138	.932	.00001976	.01922	.818
337.848	.0084	34.836	13.8938	183.842	8.6475	1.226	1.141	.928	.00002046	.02023	.826
347.848	.0070	42.565	14.1296	186.719	8.8740	1.234	1.148	.924	.00002121	.02130	.835
357.848	.0059	51.721	14.3669	190.056	9.1046	1.242	1.159	.922	.00002204	.02242	.846
367.848	.0051	62.515	14.6073	194.026	9.3374	1.252	1.176	.921	.00002295	.02362	.857
377.848	.0043	75.214	14.8534	198.830	9.5695	1.262	1.199	.924	.00002397	.02490	.870
387.848	.0037	90.089	15.1092	204.697	9.7960	1.271	1.231	.929	.00002510	.02627	.884
397.848	.0032	107.516	15.3800	211.894	10.0119	1.280	1.273	.938	.00002638	.02775	.899
407.848	.0028	127.950	15.6729	220.727	10.2114	1.287	1.327	.953	.00002780	.02935	.914
414.209	.0026	142.765	15.8750	227.357	10.3270	1.290	1.369	.965	.00002879	.03044	.923



TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=28.75											
114.727	1.7934	.059	9.2173	118.044	4.4400	1.301	1.293	.994	.00000694	.00221	1.317
124.727	1.3417	.086	9.3796	122.383	4.6123	1.288	1.279	.994	.00000759	.00295	1.120
134.727	1.0140	.123	9.5478	126.519	4.7851	1.276	1.267	.993	.00000823	.00370	1.007
144.727	.7725	.173	9.7216	130.476	4.9583	1.265	1.255	.992	.00000887	.00444	.935
154.727	.5929	.241	9.9012	134.271	5.1319	1.255	1.244	.991	.00000949	.00519	.888
164.727	.4580	.332	10.0864	137.917	5.3060	1.246	1.234	.991	.00001011	.00593	.854
174.727	.3558	.453	10.2770	141.427	5.4803	1.238	1.225	.989	.00001071	.00668	.831
184.727	.2779	.612	10.4731	144.808	5.6551	1.231	1.216	.988	.00001131	.00743	.814
194.727	.2181	.822	10.6744	148.069	5.8303	1.224	1.208	.987	.00001190	.00818	.802
204.727	.1719	1.054	10.8807	151.213	6.0060	1.218	1.200	.985	.00001249	.00894	.793
214.727	.1361	1.447	11.0920	154.247	6.1822	1.213	1.193	.984	.00001307	.00969	.787
224.727	.1081	1.902	11.3079	157.172	6.3590	1.208	1.186	.981	.00001364	.01046	.783
234.727	.0862	2.485	11.5283	159.992	6.5367	1.204	1.179	.979	.00001420	.01122	.781
244.727	.0690	3.228	11.7527	162.711	6.7153	1.201	1.173	.977	.00001477	.01200	.781
254.727	.0554	4.171	11.9809	165.330	6.8952	1.198	1.166	.974	.00001533	.01278	.781
264.727	.0447	5.360	12.2125	167.854	7.0766	1.196	1.161	.971	.00001589	.01357	.783
274.727	.0362	6.850	12.4471	170.292	7.2599	1.195	1.155	.967	.00001645	.01438	.785
284.727	.0294	8.709	12.6842	172.651	7.4455	1.195	1.150	.963	.00001702	.01519	.788
294.727	.0239	11.012	12.9233	174.949	7.6339	1.195	1.146	.959	.00001759	.01603	.791
304.727	.0196	13.848	13.1640	177.206	7.8255	1.197	1.142	.955	.00001817	.01688	.795
314.727	.0161	17.321	13.4058	179.454	8.0210	1.199	1.140	.950	.00001876	.01776	.800
324.727	.0133	21.544	13.6482	181.737	8.2208	1.202	1.138	.946	.00001936	.01867	.805
334.727	.0110	26.647	13.8910	184.115	8.4254	1.207	1.138	.942	.00001999	.01961	.811
344.727	.0092	32.773	14.1341	186.665	8.6351	1.212	1.141	.938	.00002066	.02060	.818
354.727	.0077	40.083	14.3777	189.487	8.8496	1.219	1.146	.935	.00002137	.02163	.826
364.727	.0065	48.757	14.6224	192.706	9.0684	1.226	1.156	.933	.00002215	.02272	.835
374.727	.0055	58.996	14.8695	196.470	9.2902	1.235	1.170	.932	.00002300	.02387	.846
384.727	.0047	71.049	15.1209	200.658	9.5128	1.244	1.190	.934	.00002394	.02509	.857
394.727	.0041	85.167	15.3800	206.371	9.7328	1.252	1.217	.939	.00002499	.02640	.870
404.727	.0035	101.691	15.6510	212.944	9.9459	1.261	1.253	.947	.00002617	.02781	.884
414.727	.0031	121.022	15.9400	220.946	10.1474	1.268	1.299	.959	.00002748	.02933	.898
424.727	.0027	143.659	16.2550	230.687	10.3320	1.274	1.358	.977	.00002895	.03097	.912
427.242	.0026	149.942	16.3394	233.452	10.3751	1.275	1.374	.982	.00002934	.03141	.916

S/R=29.00

111.848	2.5045	.041	9.1733	116.835	4.3817	1.303	1.298	.996	.00000675	.00200	1.401
121.848	1.8676	.061	9.3343	121.249	4.5525	1.290	1.283	.995	.00000740	.00274	1.163
131.848	1.4070	.087	9.5012	125.456	4.7236	1.277	1.270	.995	.00000805	.00348	1.032
141.848	1.0695	.123	9.6739	129.479	4.8950	1.266	1.258	.994	.00000868	.00422	.951
151.848	.8189	.172	9.8524	133.339	5.0667	1.256	1.247	.994	.00000931	.00497	.897
161.848	.6313	.237	10.0366	137.049	5.2385	1.246	1.237	.993	.00000993	.00571	.860
171.848	.4895	.325	10.2265	140.624	5.4106	1.238	1.228	.992	.00001054	.00646	.834
181.848	.3816	.440	10.4219	144.072	5.5828	1.230	1.219	.991	.00001114	.00720	.815
191.848	.2990	.592	10.6227	147.402	5.7552	1.223	1.211	.990	.00001173	.00795	.802
201.848	.2352	.791	10.8288	150.620	5.9277	1.217	1.203	.989	.00001231	.00870	.792
211.848	.1859	1.049	11.0401	153.732	6.1004	1.211	1.196	.988	.00001289	.00946	.785
221.848	.1474	1.383	11.2563	156.740	6.2734	1.206	1.189	.986	.00001346	.01021	.781
231.848	.1174	1.813	11.4773	159.650	6.4468	1.202	1.182	.984	.00001402	.01098	.778
241.848	.0938	2.362	11.7028	162.463	6.6206	1.198	1.176	.982	.00001458	.01174	.777
251.848	.0752	3.061	11.9326	165.183	6.7950	1.194	1.170	.980	.00001514	.01251	.777
261.848	.0605	3.947	12.1662	167.812	6.9703	1.192	1.165	.978	.00001569	.01329	.777
271.848	.0488	5.062	12.4035	170.357	7.1466	1.189	1.159	.975	.00001624	.01408	.779
281.848	.0395	6.461	12.6439	172.821	7.3243	1.188	1.154	.972	.00001679	.01488	.781
291.848	.0321	8.204	12.8872	175.216	7.5037	1.187	1.150	.969	.00001735	.01569	.784
301.848	.0262	10.364	13.1327	177.554	7.6853	1.187	1.146	.965	.00001791	.01651	.787
311.848	.0215	13.027	13.3800	179.855	7.8695	1.188	1.142	.961	.00001847	.01736	.791
321.848	.0176	16.290	13.6288	182.147	8.0568	1.190	1.140	.958	.00001905	.01822	.796
331.848	.0146	20.262	13.8785	184.467	8.2478	1.192	1.138	.954	.00001964	.01911	.800
341.848	.0121	25.069	14.1288	186.867	8.4427	1.196	1.138	.950	.00002024	.02004	.806
351.848	.0101	30.849	14.3795	189.416	8.6420	1.201	1.140	.947	.00002088	.02100	.812
361.848	.0084	37.757	14.6308	192.199	8.8458	1.206	1.145	.944	.00002156	.02200	.819
371.848	.0071	45.967	14.8829	195.325	9.0536	1.213	1.153	.942	.00002229	.02305	.827
381.848	.0060	55.673	15.1369	198.926	9.2646	1.220	1.165	.942	.00002309	.02417	.836
391.848	.0051	67.095	15.3944	203.155	9.4774	1.228	1.182	.943	.00002397	.02534	.847
401.848	.0044	80.508	15.6577	208.197	9.6896	1.236	1.205	.947	.00002495	.02660	.858
411.848	.0038	96.184	15.9307	214.255	9.8976	1.244	1.236	.955	.00002603	.02794	.871
421.848	.0033	114.497	16.2182	221.564	10.0976	1.252	1.276	.966	.00002725	.02939	.884
431.848	.0029	135.891	16.5270	230.400	10.2850	1.258	1.326	.981	.00002860	.03095	.898
440.468	.0026	157.219	16.8169	239.482	10.4329	1.262	1.379	.999	.00002934	.03239	.910

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=29.25											
109.164	3.4826	.029	9.1323	115.671	4.3294	1.306	1.302	.997	.00000657	.00180	1.498
119.164	2.5886	.043	9.2920	120.155	4.4990	1.292	1.287	.996	.00000723	.00254	1.211
129.164	1.9448	.062	9.4577	124.426	4.6688	1.279	1.274	.996	.00000788	.00328	1.059
139.164	1.4748	.088	9.6292	128.510	4.8389	1.267	1.262	.996	.00000851	.00402	.968
149.164	1.1267	.123	9.8066	132.426	5.0091	1.257	1.251	.995	.00000914	.00476	.908
159.164	.8669	.170	9.9897	136.193	5.1794	1.247	1.240	.995	.00000976	.00551	.867
169.164	.6710	.234	10.1786	139.823	5.3497	1.238	1.231	.994	.00001037	.00625	.838
179.164	.5222	.318	10.3732	143.328	5.5200	1.230	1.222	.993	.00001097	.00700	.818
189.164	.4085	.429	10.5733	146.716	5.6902	1.223	1.214	.992	.00001157	.00774	.803
199.164	.3209	.574	10.7789	149.994	5.8605	1.216	1.206	.992	.00001215	.00849	.792
209.164	.2532	.763	10.9899	153.169	6.0306	1.210	1.199	.991	.00001273	.00924	.785
219.164	.2005	1.008	11.2061	156.245	6.2007	1.205	1.192	.989	.00001330	.00999	.779
229.164	.1594	1.324	11.4272	159.227	6.3709	1.200	1.185	.988	.00001386	.01075	.776
239.164	.1271	1.731	11.6533	162.117	6.5411	1.195	1.179	.987	.00001442	.01151	.774
249.164	.1017	2.249	11.8839	164.919	6.7115	1.192	1.173	.985	.00001497	.01227	.773
259.164	.0817	2.906	12.1189	167.636	6.8821	1.188	1.168	.983	.00001551	.01304	.773
269.164	.0658	3.740	12.3580	170.270	7.0533	1.185	1.162	.981	.00001606	.01382	.774
279.164	.0532	4.788	12.6008	172.827	7.2251	1.183	1.158	.978	.00001660	.01460	.776
289.164	.0431	6.101	12.8469	175.312	7.3978	1.182	1.153	.976	.00001714	.01539	.778
299.164	.0351	7.737	13.0961	177.734	7.5718	1.181	1.149	.973	.00001769	.01620	.781
309.164	.0286	9.765	13.3478	180.104	7.7474	1.180	1.145	.970	.00001824	.01701	.784
319.164	.0235	12.264	13.6016	182.441	7.9250	1.181	1.142	.967	.00001879	.01785	.788
329.164	.0193	15.329	13.8570	184.769	8.1051	1.182	1.139	.964	.00001935	.01870	.792
339.164	.0159	19.063	14.1137	187.121	8.2881	1.184	1.138	.960	.00001993	.01958	.797
349.164	.0132	23.587	14.3712	189.541	8.4744	1.187	1.138	.957	.00002051	.02049	.802
359.164	.0110	29.034	14.6294	192.091	8.6644	1.191	1.139	.954	.00002112	.02143	.807
369.164	.0092	35.556	14.8881	194.844	8.8583	1.195	1.143	.952	.00002177	.02240	.813
379.164	.0078	43.317	15.1477	197.896	9.0560	1.201	1.150	.951	.00002247	.02343	.820
389.164	.0066	52.505	15.4088	201.363	9.2568	1.207	1.160	.950	.00002322	.02450	.829
399.164	.0056	63.329	15.6726	205.381	9.4598	1.214	1.175	.952	.00002404	.02564	.838
409.164	.0048	76.048	15.9409	210.112	9.6635	1.222	1.195	.955	.00002495	.02685	.848
419.164	.0041	90.912	16.2171	215.736	9.8649	1.229	1.222	.962	.00002596	.02813	.860
429.164	.0036	108.264	16.5050	222.463	10.0609	1.236	1.256	.972	.00002708	.02951	.872
439.164	.0031	128.501	16.8103	230.532	10.2478	1.243	1.300	.985	.00002834	.03099	.885
449.164	.0028	152.105	17.1405	240.221	10.4214	1.248	1.354	1.004	.00002974	.03258	.898
453.888	.0026	164.594	17.3076	245.453	10.4977	1.251	1.384	1.015	.00003045	.03338	.905

S/R=29.50

106.650	4.8235	.021	9.0940	114.552	4.2818	1.309	1.306	.997	.00000641	.00161	1.612
116.650	3.5740	.030	9.2525	119.102	4.4506	1.294	1.291	.997	.00000707	.00235	1.264
126.650	2.6780	.044	9.4168	123.432	4.6195	1.281	1.277	.997	.00000771	.00309	1.089
136.650	2.0262	.063	9.5872	127.570	4.7885	1.269	1.265	.997	.00000835	.00383	.986
146.650	1.5449	.088	9.7634	131.538	4.9576	1.258	1.254	.996	.00000898	.00458	.920
156.650	1.1864	.123	9.9455	135.355	5.1267	1.248	1.243	.996	.00000961	.00532	.875
166.650	.9168	.169	10.1334	139.033	5.2957	1.239	1.234	.995	.00001022	.00606	.843
176.650	.7124	.230	10.3270	142.586	5.4646	1.231	1.225	.995	.00001082	.00681	.821
186.650	.5564	.311	10.5263	146.023	5.6333	1.223	1.216	.994	.00001141	.00755	.805
196.650	.4366	.417	10.7313	149.351	5.8018	1.216	1.208	.994	.00001200	.00830	.793
206.650	.3440	.556	10.9417	152.579	5.9701	1.210	1.201	.993	.00001258	.00904	.784
216.650	.2721	.736	11.1575	155.711	6.1381	1.204	1.194	.992	.00001315	.00979	.778
226.650	.2160	.970	11.3785	158.751	6.3058	1.199	1.188	.991	.00001371	.01055	.774
236.650	.1720	1.269	11.6047	161.704	6.4734	1.194	1.182	.990	.00001426	.01130	.772
246.650	.1375	1.653	11.8357	164.573	6.6408	1.190	1.176	.988	.00001481	.01206	.771
256.650	.1103	2.142	12.0714	167.360	6.8080	1.186	1.170	.987	.00001536	.01282	.771
266.650	.0887	2.763	12.3116	170.069	6.9753	1.183	1.165	.985	.00001590	.01358	.771
276.650	.0715	3.547	12.5559	172.703	7.1427	1.180	1.160	.984	.00001643	.01436	.772
286.650	.0579	4.533	12.8041	175.267	7.3105	1.178	1.156	.982	.00001697	.01514	.774

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>p</sub> R
S/R=29.50											
296.650	.0470	5.766	13.0559	177.766	7.4788	1.176	1.151	.979	.00001750	.01592	.776
306.650	.0382	7.302	13.3108	180.268	7.6479	1.175	1.148	.977	.00001804	.01672	.779
316.650	.0312	9.205	13.5685	182.604	7.8181	1.174	1.144	.974	.00001857	.01753	.782
326.650	.0256	11.552	13.8285	184.969	7.9898	1.174	1.141	.972	.00001912	.01836	.786
336.650	.0211	14.429	14.0904	187.326	8.1634	1.175	1.139	.969	.00001967	.01920	.790
346.650	.0174	17.937	14.3538	189.704	8.3392	1.176	1.137	.966	.00002023	.02007	.794
356.650	.0144	22.191	14.6183	192.142	8.5178	1.179	1.137	.963	.00002080	.02096	.798
366.650	.0120	27.320	14.8837	194.693	8.6994	1.182	1.139	.961	.00002139	.02188	.803
376.650	.0101	33.467	15.1497	197.422	8.8843	1.186	1.142	.959	.00002201	.02283	.809
386.650	.0085	40.793	15.4166	200.414	9.0725	1.190	1.148	.958	.00002266	.02383	.815
396.650	.0072	49.477	15.6847	203.769	9.2637	1.196	1.157	.958	.00002338	.02488	.822
406.650	.0061	59.720	15.9551	207.610	9.4573	1.202	1.169	.959	.00002415	.02597	.831
416.650	.0052	71.749	16.2291	212.077	9.6519	1.209	1.187	.963	.00002500	.02714	.840
426.650	.0045	85.847	16.5092	217.336	9.8459	1.216	1.210	.968	.00002594	.02837	.850
436.650	.0039	102.280	16.7989	223.567	10.0365	1.223	1.240	.977	.00002698	.02969	.862
446.650	.0034	121.424	17.1029	230.982	10.2205	1.229	1.278	.989	.00002814	.03110	.874
456.650	.0030	143.711	17.4273	239.825	10.3944	1.235	1.325	1.006	.00002943	.03261	.886
466.650	.0026	169.665	17.7801	250.381	10.5545	1.240	1.383	1.028	.00003087	.03424	.899
467.503	.0026	172.069	17.8119	251.371	10.5674	1.240	1.389	1.030	.00003100	.03439	.900
S/R=29.75											
104.290	6.6560	.015	9.0582	113.477	4.2384	1.312	1.310	.998	.00000625	.00143	1.747
114.290	4.9170	.022	9.2154	118.089	4.4064	1.297	1.294	.998	.00000691	.00217	1.323
124.290	3.6749	.031	9.3785	122.475	4.5746	1.284	1.281	.998	.00000756	.00292	1.121
134.290	2.7743	.045	9.5477	126.663	4.7429	1.271	1.268	.997	.00000820	.00366	1.005
144.290	2.1111	.064	9.7227	130.678	4.9112	1.260	1.256	.997	.00000884	.00440	.932
154.290	1.6185	.089	9.9037	134.539	5.0794	1.250	1.246	.997	.00000946	.00514	.883
164.290	1.2487	.122	10.0906	138.260	5.2474	1.240	1.236	.996	.00001007	.00588	.849
174.290	.9690	.167	10.2832	141.855	5.4153	1.232	1.227	.996	.00001068	.00663	.824
184.290	.7558	.226	10.4817	145.333	5.5828	1.224	1.219	.996	.00001127	.00737	.807
194.290	.5922	.304	10.6858	148.705	5.7501	1.217	1.211	.995	.00001186	.00811	.794
204.290	.4660	.406	10.8956	151.976	5.9169	1.210	1.203	.995	.00001244	.00886	.785
214.290	.3682	.539	11.1108	155.154	6.0833	1.204	1.196	.994	.00001301	.00961	.778
224.290	.2919	.711	11.3315	158.243	6.2494	1.198	1.190	.993	.00001357	.01036	.774
234.290	.2323	.933	11.5574	161.247	6.4149	1.193	1.184	.992	.00001412	.01111	.771
244.290	.1854	1.218	11.7884	164.169	6.5801	1.189	1.178	.991	.00001467	.01186	.769
254.290	.1485	1.581	12.0244	167.015	6.7449	1.185	1.173	.990	.00001521	.01262	.768
264.290	.1192	2.043	12.2652	169.785	6.9093	1.181	1.168	.989	.00001575	.01338	.769
274.290	.0961	2.629	12.5105	172.484	7.0735	1.178	1.163	.987	.00001628	.01414	.770
284.290	.0776	3.367	12.7600	175.114	7.2375	1.175	1.158	.986	.00001681	.01491	.771
294.290	.0629	4.295	13.0136	177.680	7.4016	1.173	1.154	.984	.00001734	.01569	.773
304.290	.0511	5.454	13.2708	180.187	7.5658	1.171	1.150	.982	.00001786	.01647	.775
314.290	.0417	6.896	13.5313	182.643	7.7304	1.169	1.146	.980	.00001839	.01726	.778
324.290	.0341	8.682	13.7948	185.057	7.8958	1.169	1.143	.978	.00001892	.01807	.781
334.290	.0279	10.884	14.0608	187.445	8.0621	1.168	1.140	.976	.00001945	.01889	.784
344.290	.0230	13.584	14.3290	189.825	8.2298	1.169	1.138	.973	.00001999	.01972	.788
354.290	.0190	16.878	14.5989	192.224	8.3992	1.170	1.137	.971	.00002053	.02057	.792
364.290	.0158	20.875	14.8701	194.676	8.5707	1.172	1.137	.969	.00002109	.02145	.796
374.290	.0131	25.698	15.1424	197.227	8.7446	1.174	1.138	.967	.00002166	.02235	.800
384.290	.0110	31.484	15.4156	199.937	8.9212	1.177	1.141	.965	.00002226	.02329	.805
394.290	.0092	38.389	15.6896	202.877	9.1007	1.181	1.146	.965	.00002288	.02426	.811
404.290	.0078	46.585	15.9647	206.138	9.2829	1.186	1.153	.965	.00002356	.02528	.817
414.290	.0066	56.262	16.2417	209.828	9.4673	1.191	1.165	.966	.00002429	.02634	.825
424.290	.0057	67.637	16.5216	214.072	9.6531	1.197	1.180	.969	.00002508	.02747	.833
434.290	.0049	80.975	16.8064	219.017	9.8392	1.204	1.200	.974	.00002596	.02865	.842
444.290	.0042	96.523	17.0990	224.822	10.0230	1.210	1.226	.982	.00002693	.02992	.852
454.290	.0037	114.626	17.4032	231.677	10.2024	1.217	1.259	.993	.00002800	.03126	.863
464.290	.0032	135.671	17.7243	239.793	10.3743	1.223	1.300	1.008	.00002920	.03271	.875
474.290	.0028	160.125	18.0689	249.420	10.5353	1.228	1.351	1.028	.00003053	.03426	.887
481.316	.0026	179.645	18.3298	257.242	10.6402	1.231	1.393	1.045	.00003155	.03541	.896

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=30.00											
102.070	9.1537	.010	9.0246	112.444	4.1983	1.315	1.313	.999	.00000610	.00127	1.910
112.070	6.7423	.015	9.1806	117.115	4.3659	1.300	1.298	.998	.00000676	.00201	1.389
122.070	5.0267	.023	9.3426	121.553	4.5335	1.286	1.284	.998	.00000742	.00275	1.155
132.070	3.7857	.032	9.5105	125.789	4.7012	1.273	1.271	.998	.00000808	.00349	1.025
142.070	2.8765	.046	9.6845	129.847	4.8689	1.262	1.259	.998	.00000870	.00423	.945
152.070	2.2013	.064	9.8643	133.748	5.0364	1.251	1.248	.998	.00000932	.00497	.891
162.070	1.6960	.089	10.0501	137.508	5.2038	1.242	1.238	.997	.00000994	.00572	.854
172.070	1.3143	.122	10.2418	141.140	5.3708	1.233	1.229	.997	.00001054	.00646	.828
182.070	1.0238	.165	10.4393	144.655	5.5375	1.225	1.221	.997	.00001114	.00720	.809
192.070	.8013	.223	10.6426	148.063	5.7038	1.217	1.213	.996	.00001173	.00795	.795
202.070	.6299	.298	10.8515	151.372	5.8696	1.210	1.205	.996	.00001231	.00869	.785
212.070	.4971	.396	11.0661	154.588	6.0349	1.204	1.198	.995	.00001288	.00944	.778
222.070	.3938	.523	11.2862	157.717	6.1997	1.198	1.192	.995	.00001344	.01018	.773
232.070	.3130	.687	11.5117	160.763	6.3638	1.193	1.186	.994	.00001400	.01093	.770
242.070	.2496	.898	11.7425	163.730	6.5274	1.188	1.180	.993	.00001454	.01168	.768
252.070	.1996	1.169	11.9785	166.622	6.6903	1.184	1.175	.992	.00001508	.01243	.767
262.070	.1602	1.513	12.2194	169.443	6.8526	1.180	1.170	.992	.00001562	.01319	.767
272.070	.1288	1.950	12.4652	172.194	7.0144	1.176	1.165	.990	.00001615	.01394	.767
282.070	.1040	2.503	12.7155	174.879	7.1757	1.173	1.160	.989	.00001667	.01471	.769
292.070	.0841	3.198	12.9702	177.502	7.3366	1.170	1.156	.988	.00001719	.01547	.770
302.070	.0682	4.071	13.2290	180.066	7.4972	1.168	1.152	.986	.00001771	.01625	.772
312.070	.0555	5.160	13.4915	182.577	7.6577	1.166	1.148	.985	.00001823	.01703	.775
322.070	.0453	6.515	13.7576	185.042	7.8182	1.165	1.145	.983	.00001875	.01782	.777
332.070	.0371	8.192	14.0267	187.470	7.9791	1.164	1.142	.981	.00001927	.01861	.780
342.070	.0304	10.257	14.2986	189.874	8.1405	1.163	1.139	.979	.00001979	.01943	.783
352.070	.0251	12.790	14.5728	192.271	8.3027	1.163	1.137	.977	.00002031	.02025	.787
362.070	.0207	15.881	14.8489	194.686	8.4662	1.164	1.136	.975	.00002085	.02109	.790
372.070	.0172	19.632	15.1267	197.148	8.6312	1.165	1.136	.974	.00002139	.02196	.794
382.070	.0143	24.162	15.4056	199.699	8.7981	1.167	1.137	.972	.00002195	.02285	.798
392.070	.0120	29.602	15.6856	202.390	8.9671	1.170	1.139	.971	.00002252	.02376	.803
402.070	.0101	36.100	15.9666	205.286	9.1384	1.173	1.144	.970	.00002312	.02472	.808
412.070	.0085	43.821	16.2486	208.466	9.3121	1.177	1.150	.970	.00002376	.02571	.813
422.070	.0072	52.948	16.5322	212.026	9.4878	1.182	1.160	.972	.00002445	.02674	.820
432.070	.0062	63.687	16.8183	216.077	9.6650	1.187	1.174	.975	.00002520	.02783	.827
442.070	.0053	76.236	17.1082	220.751	9.8428	1.193	1.191	.979	.00002602	.02897	.835
452.070	.0046	90.979	17.4045	226.190	10.0194	1.199	1.214	.987	.00002692	.03019	.844
462.070	.0040	108.080	17.7103	232.559	10.1930	1.205	1.243	.997	.00002792	.03148	.854
472.070	.0035	127.944	18.0298	240.048	10.3611	1.211	1.279	1.010	.00002903	.03286	.865
482.070	.0031	150.988	18.3689	248.872	10.5207	1.216	1.323	1.028	.00003026	.03433	.876
492.070	.0027	177.713	18.7349	259.284	10.6689	1.221	1.377	1.050	.00003163	.03591	.888
495.330	.0026	187.319	18.8615	263.071	10.7142	1.222	1.397	1.059	.00003210	.03645	.891

S/R=30.25

99.974	12.5502	.007	8.9931	111.451	4.1611	1.318	1.317	.999	.00000597	.00111	2.108
109.974	9.2175	.011	9.1479	116.179	4.3283	1.302	1.301	.999	.00000663	.00185	1.462
119.974	6.8555	.016	9.3087	120.667	4.4955	1.288	1.286	.999	.00000728	.00259	1.192
129.974	5.1524	.023	9.4755	124.947	4.6628	1.275	1.273	.998	.00000793	.00334	1.047
139.974	3.9080	.033	9.6483	129.046	4.8300	1.264	1.261	.998	.00000856	.00408	.958
149.974	2.9861	.047	9.8271	132.984	4.9971	1.253	1.251	.998	.00000919	.00482	.900
159.974	2.2973	.065	10.0119	136.778	5.1639	1.243	1.240	.998	.00000981	.00556	.861
169.974	1.7780	.089	10.2025	140.444	5.3304	1.234	1.231	.998	.00001042	.00630	.832
179.974	1.3834	.121	10.3991	143.991	5.4964	1.226	1.223	.997	.00001101	.00704	.812
189.974	1.0816	.163	10.6014	147.432	5.6621	1.218	1.215	.997	.00001160	.00779	.797
199.974	.8494	.219	10.8095	150.773	5.8271	1.211	1.207	.997	.00001218	.00853	.786
209.974	.6697	.291	11.0234	154.021	5.9916	1.204	1.200	.996	.00001276	.00927	.779
219.974	.5299	.385	11.2428	157.184	6.1554	1.198	1.194	.996	.00001332	.01002	.773
229.974	.4208	.507	11.4677	160.265	6.3185	1.193	1.188	.995	.00001388	.01077	.769

TABLE I. - THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> T
S/R=30.25											
239.974	.3353	.664	11.6981	163.269	6.4809	1.188	1.182	.995	.00001442	.01151	.767
249.974	.2679	.865	11.9338	166.200	6.6424	1.183	1.176	.994	.00001496	.01226	.766
259.974	.2147	1.121	12.1747	169.061	6.8032	1.179	1.171	.994	.00001550	.01301	.765
269.974	.1726	1.448	12.4205	171.855	6.9633	1.175	1.167	.993	.00001603	.01377	.766
279.974	.1391	1.861	12.6712	174.586	7.1226	1.172	1.162	.992	.00001655	.01452	.767
289.974	.1124	2.383	12.9266	177.256	7.2811	1.169	1.158	.991	.00001707	.01528	.768
299.974	.0911	3.039	13.1863	179.869	7.4391	1.166	1.154	.990	.00001758	.01605	.770
309.974	.0740	3.860	13.4502	182.428	7.5965	1.164	1.150	.988	.00001809	.01682	.772
319.974	.0603	4.884	13.7180	184.939	7.7534	1.162	1.146	.987	.00001860	.01760	.774
329.974	.0492	6.156	13.9894	187.408	7.9101	1.160	1.143	.985	.00001911	.01838	.777
339.974	.0404	7.729	14.2641	189.844	8.0668	1.159	1.140	.984	.00001962	.01917	.780
349.974	.0332	9.667	14.5416	192.259	8.2236	1.158	1.138	.982	.00002013	.01998	.783
359.974	.0273	12.041	14.8216	194.669	8.3809	1.158	1.136	.981	.00002065	.02080	.786
369.974	.0226	14.939	15.1038	197.095	8.5389	1.159	1.135	.979	.00002117	.02163	.789
379.974	.0188	18.457	15.3878	199.564	8.6979	1.160	1.135	.978	.00002170	.02248	.793
389.974	.0156	22.706	15.6732	202.112	8.8582	1.161	1.136	.976	.00002224	.02336	.797
399.974	.0131	27.813	15.9598	204.786	9.0202	1.163	1.138	.975	.00002280	.02426	.801
409.974	.0110	33.919	16.2475	207.642	9.1839	1.166	1.142	.975	.00002337	.02519	.805
419.974	.0093	41.181	16.5363	210.751	9.3496	1.170	1.148	.975	.00002399	.02616	.810
429.974	.0079	49.773	16.8264	214.197	9.5170	1.174	1.156	.977	.00002464	.02716	.815
439.974	.0067	59.893	17.1187	218.080	9.6858	1.178	1.168	.980	.00002534	.02822	.822
449.974	.0059	71.756	17.4142	222.515	9.8552	1.184	1.184	.984	.00002611	.02933	.829
459.974	.0050	85.634	17.7147	227.636	10.0244	1.189	1.204	.991	.00002695	.03050	.837
469.974	.0043	101.769	18.0229	233.584	10.1913	1.195	1.229	1.000	.00002788	.03174	.846
479.974	.0038	120.500	18.3425	240.527	10.3543	1.200	1.261	1.012	.00002891	.03305	.856
489.974	.0033	142.206	18.6781	248.653	10.5107	1.206	1.300	1.023	.00003006	.03446	.866
499.974	.0029	167.332	19.0261	258.182	10.6581	1.211	1.347	1.043	.00003132	.03596	.877
509.551	.0026	195.054	19.4072	269.863	10.7881	1.214	1.401	1.072	.00003265	.03750	.887

S/R=30.50

97.989	17.1592	.005	8.9634	110.495	4.1264	1.321	1.320	.999	.00000583	.00097	2.356
107.989	12.5675	.008	9.1170	115.278	4.2932	1.305	1.304	.999	.00000650	.00171	1.545
117.989	9.3252	.012	9.2767	119.813	4.4602	1.291	1.289	.999	.00000715	.00245	1.232
127.989	6.9945	.017	9.4424	124.136	4.6271	1.277	1.276	.999	.00000780	.00319	1.069
137.989	5.2962	.024	9.6142	128.272	4.7940	1.265	1.264	.999	.00000844	.00393	.973
147.989	4.0406	.034	9.7919	132.245	4.9607	1.254	1.253	.999	.00000907	.00467	.910
157.989	3.1244	.047	9.9756	136.071	5.1271	1.244	1.242	.998	.00000968	.00541	.867
167.989	2.3998	.065	10.1653	139.767	5.2932	1.235	1.233	.998	.00001029	.00615	.837
177.989	1.8652	.089	10.3608	143.344	5.4588	1.227	1.224	.998	.00001090	.00689	.815
187.989	1.4568	.120	10.5622	146.813	5.6239	1.219	1.216	.998	.00001149	.00764	.799
197.989	1.1429	.161	10.7695	150.182	5.7885	1.212	1.209	.998	.00001207	.00838	.788
207.989	.9003	.215	10.9825	153.459	5.9523	1.205	1.202	.997	.00001264	.00912	.779
217.989	.7113	.285	11.2012	156.650	6.1155	1.199	1.195	.997	.00001321	.00987	.773
227.989	.5648	.375	11.4255	159.761	6.2778	1.193	1.189	.997	.00001376	.01061	.769
237.989	.4496	.492	11.6553	162.795	6.4393	1.188	1.183	.996	.00001431	.01136	.767
247.989	.3589	.641	11.8905	165.759	6.6000	1.183	1.178	.996	.00001485	.01210	.765
257.989	.2874	.833	12.1311	168.654	6.7597	1.179	1.173	.995	.00001539	.01285	.764
267.989	.2308	1.076	12.3768	171.484	6.9184	1.175	1.168	.994	.00001591	.01360	.765
277.989	.1859	1.386	12.6276	174.252	7.0762	1.171	1.164	.994	.00001643	.01436	.765
287.989	.1501	1.777	12.8832	176.961	7.2331	1.168	1.159	.993	.00001695	.01511	.766
297.989	.1215	2.269	13.1435	179.614	7.3891	1.165	1.155	.992	.00001746	.01587	.768
307.989	.0986	2.887	13.4082	182.214	7.5442	1.162	1.151	.991	.00001797	.01663	.770
317.989	.0802	3.660	13.6772	184.765	7.6985	1.160	1.148	.990	.00001847	.01740	.772
327.989	.0654	4.623	13.9501	187.273	7.8522	1.158	1.145	.989	.00001897	.01817	.774
337.989	.0535	5.817	14.2268	189.743	8.0053	1.156	1.142	.988	.00001947	.01895	.777
347.989	.0439	7.293	14.5067	192.183	8.1580	1.155	1.139	.986	.00001997	.01974	.780
357.989	.0361	9.108	14.7898	194.605	8.3105	1.154	1.137	.985	.00002048	.02054	.783

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=30.50											
367.989	.0298	11.333	15.0755	197.023	8.4631	1.154	1.135	.984	.00002098	.02135	.786
377.989	.0246	14.048	15.3635	199.455	8.6159	1.154	1.134	.982	.00002150	.02218	.789
387.989	.0205	17.343	15.6535	201.928	8.7693	1.155	1.134	.981	.00002202	.02302	.792
397.989	.0171	21.325	15.9451	204.471	8.9236	1.156	1.135	.980	.00002255	.02388	.796
407.989	.0143	26.112	16.2381	207.127	9.0790	1.158	1.136	.979	.00002308	.02477	.799
417.989	.0120	31.840	16.5323	209.946	9.2356	1.160	1.140	.979	.00002364	.02568	.803
427.989	.0101	38.657	16.8276	212.951	9.3938	1.163	1.145	.980	.00002422	.02663	.807
437.989	.0086	46.732	17.1242	216.337	9.5533	1.166	1.153	.981	.00002485	.02761	.812
447.989	.0073	56.249	17.4227	220.072	9.7139	1.171	1.163	.984	.00002551	.02864	.818
457.989	.0063	67.415	17.7238	224.300	9.8753	1.175	1.177	.988	.00002623	.02971	.824
467.989	.0054	80.483	18.0290	229.139	10.0366	1.180	1.195	.994	.00002702	.03084	.831
477.989	.0047	95.681	18.3405	234.716	10.1965	1.185	1.217	1.002	.00002789	.03203	.839
487.989	.0041	113.320	18.6612	241.180	10.3533	1.191	1.245	1.013	.00002884	.03330	.847
497.989	.0036	133.745	18.9952	248.696	10.5053	1.196	1.279	1.028	.00002990	.03464	.857
507.989	.0031	157.357	19.3476	257.455	10.6500	1.201	1.320	1.046	.00003107	.03607	.867
517.989	.0028	184.628	19.7252	267.680	10.7850	1.205	1.370	1.069	.00003237	.03760	.877
524.005	.0026	203.030	19.9679	274.648	10.8605	1.207	1.405	1.085	.00003321	.03857	.883

S/R=30.75

96.100	23.4022	.004	8.9352	109.572	4.0937	1.324	1.323	.999	.00000571	.00082	2.675
106.100	17.0942	.006	9.0878	114.408	4.2603	1.308	1.307	.999	.00000637	.00157	1.638
116.100	12.6549	.009	9.2464	118.989	4.4270	1.293	1.292	.999	.00000703	.00231	1.274
126.100	9.4736	.012	9.4111	123.352	4.5937	1.280	1.278	.999	.00000768	.00305	1.093
136.100	7.1614	.018	9.5817	127.524	4.7603	1.267	1.266	.999	.00000832	.00379	.987
146.100	5.4555	.025	9.7584	131.530	4.9267	1.256	1.255	.999	.00000895	.00453	.919
156.100	4.1862	.035	9.9411	135.386	5.0929	1.246	1.244	.999	.00000957	.00527	.873
166.100	3.2322	.048	10.1298	139.110	5.2587	1.237	1.235	.999	.00001018	.00601	.841
176.100	2.5096	.065	10.3244	142.714	5.4240	1.228	1.226	.999	.00001078	.00675	.818
186.100	1.9582	.088	10.5249	146.208	5.5888	1.220	1.218	.998	.00001137	.00749	.801
196.100	1.5349	.119	10.7312	149.603	5.7529	1.213	1.210	.998	.00001196	.00824	.789
206.100	1.2081	.159	10.9434	152.904	5.9164	1.206	1.203	.998	.00001253	.00898	.780
216.100	.9544	.211	11.1613	156.120	6.0790	1.199	1.197	.998	.00001310	.00972	.774
226.100	.7567	.278	11.3848	159.256	6.2408	1.194	1.191	.997	.00001366	.01047	.769
236.100	.6019	.365	11.6140	162.317	6.4018	1.188	1.185	.997	.00001420	.01121	.766
246.100	.4801	.476	11.8487	165.307	6.5617	1.183	1.179	.997	.00001475	.01196	.765
256.100	.3842	.619	12.0888	168.230	6.7206	1.179	1.174	.996	.00001528	.01270	.764
266.100	.3084	.801	12.3342	171.090	6.8785	1.174	1.169	.996	.00001581	.01345	.764
276.100	.2481	1.033	12.5848	173.889	7.0352	1.170	1.165	.995	.00001633	.01420	.764
286.100	.2001	1.326	12.8404	176.630	7.1909	1.167	1.161	.995	.00001684	.01495	.765
296.100	.1618	1.696	13.1009	179.316	7.3454	1.164	1.157	.994	.00001735	.01571	.767
306.100	.1312	2.161	13.3660	181.951	7.4989	1.161	1.153	.993	.00001786	.01646	.768
316.100	.1066	2.743	13.6357	184.537	7.6513	1.158	1.149	.992	.00001836	.01722	.770
326.100	.0869	3.470	13.9097	187.079	7.8027	1.156	1.146	.991	.00001885	.01799	.772
336.100	.0709	4.374	14.1877	189.580	7.9532	1.154	1.143	.990	.00001935	.01876	.775
346.100	.0581	5.495	14.4694	192.047	8.1028	1.152	1.140	.989	.00001984	.01954	.777
356.100	.0477	6.878	14.7546	194.488	8.2518	1.151	1.138	.988	.00002033	.02032	.780
366.100	.0393	8.580	15.0430	196.913	8.4002	1.150	1.136	.987	.00002083	.02112	.783
376.100	.0324	10.663	15.3342	199.335	8.5484	1.150	1.134	.986	.00002132	.02192	.786
386.100	.0269	13.203	15.6278	201.770	8.6964	1.150	1.133	.985	.00002183	.02274	.789
396.100	.0223	16.286	15.9236	204.242	8.8445	1.150	1.133	.984	.00002233	.02357	.792
406.100	.0186	20.012	16.2212	206.779	8.9931	1.151	1.133	.983	.00002285	.02442	.795
416.100	.0156	24.494	16.5204	209.417	9.1422	1.152	1.135	.983	.00002338	.02530	.798
426.100	.0131	29.858	16.8208	212.202	9.2922	1.154	1.138	.983	.00002391	.02619	.801
436.100	.0110	36.246	17.1224	215.188	9.4432	1.157	1.143	.984	.00002447	.02712	.805
446.100	.0094	43.819	17.4254	218.443	9.5952	1.160	1.149	.985	.00002507	.02808	.809
456.100	.0080	52.751	17.7299	222.046	9.7481	1.163	1.159	.988	.00002570	.02908	.814
466.100	.0068	63.238	18.0367	226.089	9.9015	1.168	1.171	.991	.00002638	.03012	.819
476.100	.0059	75.500	18.3470	230.676	10.0549	1.172	1.187	.997	.00002712	.03121	.825
486.100	.0051	89.806	18.6622	235.928	10.2074	1.177	1.206	1.005	.00002793	.03236	.832
496.100	.0044	106.389	18.9850	241.969	10.3577	1.182	1.231	1.015	.00002882	.03358	.840
506.100	.0039	125.583	19.3187	248.949	10.5041	1.187	1.261	1.028	.00002980	.03486	.848
516.100	.0034	147.750	19.6675	257.032	10.6448	1.192	1.298	1.044	.00003088	.03623	.857
526.100	.0030	173.311	20.0372	266.411	10.7776	1.196	1.341	1.065	.00003208	.03769	.867
536.100	.0027	202.764	20.4348	277.314	10.9002	1.200	1.393	1.090	.00003340	.03924	.876
538.692	.0026	211.103	20.5435	280.421	10.9301	1.201	1.409	1.097	.00003376	.03966	.879

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=31.00											
94.323	31.8269	.003	8.9089	108.691	4.0632	1.327	1.326	.999	.00000559	.00069	3.094
104.323	23.1841	.004	9.0604	113.578	4.2296	1.310	1.310	.999	.00000625	.00143	1.743
114.323	17.1251	.006	9.2180	118.203	4.3962	1.295	1.294	.999	.00000691	.00217	1.320
124.323	12.7960	.009	9.3817	122.604	4.5627	1.282	1.281	.999	.00000756	.00292	1.118
134.323	9.6575	.013	9.5513	126.811	4.7291	1.269	1.268	.999	.00000820	.00366	1.002
144.323	7.3467	.018	9.7270	130.847	4.8953	1.258	1.257	.999	.00000884	.00440	.929
154.323	5.6303	.026	9.9087	134.732	5.0613	1.247	1.246	.999	.00000946	.00514	.880
164.323	4.3425	.035	10.0964	138.482	5.2268	1.238	1.237	.999	.00001007	.00588	.846
174.323	3.3682	.048	10.2901	142.110	5.3919	1.229	1.228	.999	.00001067	.00662	.821
184.323	2.6259	.065	10.4896	145.627	5.5564	1.221	1.219	.999	.00001127	.00736	.804
194.323	2.0565	.088	10.6951	149.044	5.7203	1.213	1.212	.999	.00001185	.00810	.791
204.323	1.6173	.118	10.9064	152.368	5.8835	1.207	1.205	.998	.00001243	.00885	.781
214.323	1.2768	.156	11.1235	155.605	6.0458	1.200	1.198	.998	.00001300	.00959	.774
224.323	1.0116	.206	11.3463	158.763	6.2073	1.194	1.192	.998	.00001356	.01033	.769
234.323	.8041	.271	11.5748	161.846	6.3678	1.189	1.186	.998	.00001411	.01107	.766
244.323	.6411	.354	11.8088	164.859	6.5272	1.184	1.181	.997	.00001465	.01182	.764
254.323	.5127	.461	12.0484	167.806	6.6856	1.179	1.175	.997	.00001518	.01256	.763
264.323	.4112	.597	12.2934	170.690	6.8428	1.174	1.171	.997	.00001571	.01331	.763
274.323	.3304	.771	12.5436	173.514	6.9989	1.170	1.166	.996	.00001623	.01406	.763
284.323	.2664	.991	12.7990	176.282	7.1536	1.167	1.162	.996	.00001674	.01481	.764
294.323	.2153	1.269	13.0595	178.990	7.3072	1.163	1.158	.995	.00001725	.01556	.766
304.323	.1744	1.619	13.3248	181.660	7.4595	1.160	1.154	.995	.00001775	.01631	.767
314.323	.1416	2.057	13.5948	184.275	7.6104	1.157	1.150	.994	.00001825	.01707	.769
324.323	.1152	2.606	13.8694	186.845	7.7602	1.155	1.147	.993	.00001875	.01782	.771
334.323	.0940	3.291	14.1482	189.375	7.9087	1.152	1.144	.993	.00001924	.01859	.773
344.323	.0769	4.140	14.4312	191.868	8.0561	1.150	1.141	.992	.00001972	.01936	.775
354.323	.0631	5.192	14.7179	194.330	8.2025	1.149	1.138	.991	.00002021	.02013	.778
364.323	.0518	6.489	15.0082	196.768	8.3478	1.148	1.136	.990	.00002069	.02091	.780
374.323	.0427	8.082	15.3018	199.192	8.4924	1.147	1.134	.989	.00002118	.02170	.783
384.323	.0353	10.031	15.5983	201.614	8.6363	1.146	1.133	.988	.00002167	.02250	.786
394.323	.0293	12.407	15.8974	204.049	8.7797	1.146	1.132	.987	.00002216	.02331	.788
404.323	.0243	15.290	16.1988	206.518	8.9228	1.146	1.132	.987	.00002266	.02414	.791
414.323	.0203	18.774	16.5022	209.046	9.0660	1.147	1.132	.986	.00002316	.02498	.794
424.323	.0170	22.965	16.8072	211.666	9.2092	1.148	1.134	.986	.00002368	.02584	.797
434.323	.0143	27.982	17.1137	214.417	9.3529	1.149	1.136	.986	.00002420	.02672	.800
444.323	.0120	33.960	17.4214	217.349	9.4971	1.151	1.140	.987	.00002474	.02763	.803
454.323	.0102	41.050	17.7305	220.523	9.6419	1.154	1.146	.988	.00002531	.02857	.807
464.323	.0087	49.419	18.0410	224.008	9.7873	1.157	1.155	.991	.00002591	.02954	.811
474.323	.0074	59.251	18.3535	227.886	9.9330	1.161	1.165	.994	.00002655	.03056	.815
484.323	.0064	70.754	18.6689	232.252	10.0787	1.165	1.179	1.000	.00002725	.03162	.821
494.323	.0055	84.179	18.9883	237.213	10.2237	1.169	1.197	1.007	.00002800	.03273	.826
504.323	.0048	99.745	19.3140	242.881	10.3669	1.174	1.219	1.016	.00002883	.03390	.833
514.323	.0042	117.757	19.6484	249.387	10.5070	1.179	1.245	1.028	.00002974	.03513	.840
524.323	.0037	138.546	19.9953	256.676	10.6426	1.183	1.278	1.043	.00003075	.03644	.848
534.323	.0033	162.490	20.3594	265.515	10.7718	1.188	1.316	1.061	.00003186	.03783	.857
544.323	.0029	190.030	20.7468	275.498	10.8926	1.192	1.362	1.084	.00003308	.03931	.866
554.614	.0026	219.290	21.1339	286.178	10.9954	1.195	1.412	1.109	.00003432	.04077	.874

S/R=31.25

92.632	43.1889	.002	8.8840	107.841	4.0344	1.330	1.329	1.000	.00000548	.00057	3.675
102.632	31.3751	.003	9.0345	112.778	4.2007	1.313	1.312	1.000	.00000614	.00131	1.863
112.632	23.1249	.005	9.1911	117.446	4.3670	1.298	1.297	1.000	.00000680	.00205	1.369
122.632	17.2474	.007	9.3538	121.884	4.5334	1.284	1.283	.999	.00000745	.00279	1.144
132.632	12.9969	.010	9.5225	126.124	4.6997	1.271	1.270	.999	.00000810	.00353	1.018
142.632	9.8736	.013	9.6972	130.189	4.8658	1.259	1.259	.999	.00000873	.00427	.939
152.632	7.5578	.019	9.8780	134.100	5.0316	1.249	1.248	.999	.00000935	.00501	.887
162.632	5.8229	.026	10.0647	137.875	5.1970	1.239	1.238	.999	.00000997	.00575	.851
172.632	4.5123	.036	10.2574	141.525	5.3619	1.230	1.229	.999	.00001057	.00649	.825
182.632	3.5147	.048	10.4561	145.064	5.5263	1.222	1.221	.999	.00001117	.00724	.806
192.632	2.7504	.065	10.6607	148.501	5.6900	1.214	1.213	.999	.00001176	.00798	.792
202.632	2.1615	.087	10.8711	151.845	5.8530	1.207	1.206	.999	.00001233	.00872	.782
212.632	1.7052	.116	11.0874	155.102	6.0151	1.201	1.199	.999	.00001290	.00946	.775
222.632	1.3501	.154	11.3095	158.279	6.1763	1.195	1.193	.998	.00001346	.01020	.770
232.632	1.0725	.202	11.5372	161.382	6.3365	1.189	1.187	.998	.00001401	.01095	.766
242.632	.8546	.264	11.7706	164.414	6.4957	1.184	1.182	.998	.00001455	.01169	.764
252.632	.6829	.344	12.0095	167.381	6.6537	1.179	1.176	.998	.00001509	.01243	.763
262.632	.5474	.446	12.2539	170.285	6.8105	1.175	1.172	.998	.00001562	.01318	.763
272.632	.4398	.576	12.5037	173.131	6.9660	1.170	1.167	.997	.00001614	.01392	.763
282.632	.3543	.741	12.7588	175.922	7.1202	1.166	1.163	.997	.00001665	.01467	.764
292.632	.2861	.950	13.0190	178.659	7.2730	1.163	1.159	.996	.00001716	.01542	.765

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>p</sub>
S/R=31.25											
302.632	.2316	1.214	13.2843	181.346	7.4244	1.160	1.155	.996	.00001766	.01617	.766
312.632	.1879	1.544	13.5544	183.986	7.5744	1.157	1.151	.995	.00001816	.01692	.768
322.632	.1528	1.959	13.8292	186.581	7.7230	1.154	1.148	.995	.00001865	.01767	.770
332.632	.1246	2.476	14.1086	189.134	7.8701	1.151	1.145	.994	.00001914	.01843	.772
342.632	.1018	3.119	14.3923	191.650	8.0159	1.149	1.142	.994	.00001962	.01919	.774
352.632	.0833	3.918	14.6801	194.132	8.1602	1.147	1.139	.993	.00002010	.01996	.776
362.632	.0684	4.904	14.9718	196.587	8.3033	1.146	1.137	.992	.00002058	.02073	.779
372.632	.0563	6.119	15.2671	199.020	8.4452	1.144	1.135	.992	.00002106	.02151	.781
382.632	.0464	7.610	15.5657	201.441	8.5860	1.143	1.133	.991	.00002153	.02229	.783
392.632	.0384	9.433	15.8673	203.860	8.7258	1.143	1.132	.990	.00002201	.02309	.786
402.632	.0319	11.653	16.1717	206.292	8.8648	1.142	1.131	.989	.00002250	.02389	.788
412.632	.0265	14.346	16.4785	208.755	9.0032	1.142	1.130	.989	.00002298	.02471	.791
422.632	.0221	17.599	16.7874	211.271	9.1412	1.143	1.131	.989	.00002348	.02554	.794
432.632	.0185	21.512	17.0981	213.871	9.2789	1.144	1.132	.989	.00002398	.02639	.796
442.632	.0156	26.197	17.4103	216.590	9.4165	1.145	1.135	.989	.00002449	.02726	.799
452.632	.0131	31.782	17.7240	219.472	9.5543	1.147	1.138	.990	.00002501	.02815	.802
462.632	.0111	38.408	18.0389	222.571	9.6922	1.149	1.144	.991	.00002556	.02907	.805
472.632	.0095	46.233	18.3553	225.548	9.8304	1.152	1.151	.994	.00002613	.03003	.808
482.632	.0081	55.432	18.6735	229.679	9.9687	1.155	1.160	.997	.00002674	.03101	.812
492.632	.0070	66.199	18.9940	233.845	10.1067	1.158	1.173	1.002	.00002740	.03204	.816
502.632	.0060	78.771	19.3179	238.546	10.2441	1.162	1.189	1.008	.00002811	.03312	.821
512.632	.0052	93.351	19.6468	243.880	10.3800	1.166	1.208	1.017	.00002888	.03425	.827
522.632	.0045	110.223	19.9830	249.964	10.5135	1.171	1.232	1.028	.00002973	.03544	.833
532.632	.0040	129.688	20.3293	256.927	10.6432	1.175	1.260	1.041	.00003066	.03669	.840
542.632	.0035	152.088	20.6897	264.913	10.7676	1.180	1.294	1.058	.00003169	.03802	.848
552.632	.0031	177.817	21.0693	274.087	10.8851	1.184	1.335	1.078	.00003281	.03942	.856
562.632	.0028	207.332	21.4742	284.645	10.9937	1.188	1.382	1.103	.00003405	.04092	.864
568.781	.0026	227.588	21.7392	291.923	11.0553	1.190	1.416	1.120	.00003487	.04189	.870

S/R=31.50

91.008	58.5027	.001	8.8602	107.015	4.0069	1.333	1.332	1.000	.00000537	.00045	4.539
101.008	42.3891	.002	9.0098	112.002	4.1731	1.315	1.315	1.000	.00000603	.00119	2.002
111.008	31.1755	.003	9.1654	116.711	4.3393	1.300	1.299	1.000	.00000669	.00193	1.423
121.008	23.2099	.005	9.3271	121.186	4.5056	1.286	1.285	1.000	.00000735	.00267	1.172
131.008	17.4579	.007	9.4949	125.456	4.6718	1.273	1.272	1.000	.00000799	.00341	1.034
141.008	13.2501	.010	9.6687	129.550	4.8377	1.261	1.261	1.000	.00000863	.00415	.950
151.008	10.1296	.014	9.8485	133.487	5.0034	1.250	1.250	.999	.00000925	.00489	.894
161.008	7.7964	.019	10.0343	137.284	5.1688	1.241	1.240	.999	.00000987	.00563	.856
171.008	6.0360	.026	10.2261	140.556	5.3336	1.231	1.231	.999	.00001048	.00637	.828
181.008	4.6976	.036	10.4239	144.515	5.4979	1.223	1.222	.999	.00001107	.00711	.808
191.008	3.6734	.048	10.6276	147.971	5.6615	1.215	1.214	.999	.00001166	.00786	.794
201.008	2.8848	.065	10.8372	151.333	5.8243	1.208	1.207	.999	.00001224	.00860	.783
211.008	2.2744	.086	11.0527	154.608	5.9863	1.202	1.200	.999	.00001281	.00934	.776
221.008	1.7996	.114	11.2739	157.802	6.1474	1.195	1.194	.999	.00001337	.01008	.770
231.008	1.4287	.151	11.5009	160.922	6.3074	1.190	1.188	.999	.00001392	.01082	.766
241.008	1.1378	.197	11.7336	163.572	6.4663	1.184	1.183	.999	.00001447	.01157	.764
251.008	.9087	.257	11.9719	166.956	6.6241	1.179	1.177	.998	.00001500	.01231	.763
261.008	.7279	.334	12.2157	169.878	6.7806	1.175	1.173	.998	.00001553	.01305	.762
271.008	.5847	.431	12.4650	172.742	6.9358	1.171	1.168	.998	.00001605	.01380	.762
281.008	.4706	.555	12.7196	175.551	7.0896	1.167	1.164	.998	.00001656	.01454	.763
291.008	.3798	.712	12.9795	178.308	7.2419	1.163	1.160	.997	.00001707	.01529	.764
301.008	.3073	.911	13.2445	181.015	7.3927	1.159	1.156	.997	.00001757	.01604	.765
311.008	.2491	1.160	13.5145	183.675	7.5421	1.156	1.152	.997	.00001807	.01678	.767
321.008	.2025	1.472	13.7893	186.291	7.6898	1.153	1.149	.996	.00001856	.01754	.769
331.008	.1649	1.863	14.0689	188.865	7.8359	1.151	1.146	.996	.00001904	.01829	.771
341.008	.1346	2.350	14.3530	191.401	7.9805	1.148	1.143	.995	.00001952	.01905	.773
351.008	.1101	2.955	14.6414	193.902	8.1235	1.146	1.140	.995	.00002000	.01981	.775
361.008	.0903	3.704	14.9340	196.373	8.2649	1.144	1.137	.994	.00002048	.02057	.777
371.008	.0742	4.629	15.2305	198.817	8.4048	1.143	1.135	.993	.00002095	.02134	.779
381.008	.0612	5.766	15.5306	201.243	8.5433	1.141	1.133	.993	.00002142	.02211	.782
391.008	.0505	7.160	15.8342	203.658	8.6804	1.140	1.132	.992	.00002189	.02289	.784
401.008	.0418	8.863	16.1408	206.071	8.8163	1.139	1.130	.992	.00002236	.02368	.786
411.008	.0347	10.935	16.4503	208.497	8.9510	1.139	1.129	.991	.00002283	.02448	.789
421.008	.0289	13.447	16.7623	210.952	9.0848	1.139	1.129	.991	.00002331	.02529	.791
431.008	.0242	16.481	17.0765	213.456	9.2178	1.139	1.130	.991	.00002379	.02612	.793
441.008	.0202	20.128	17.3926	216.035	9.3502	1.140	1.131	.991	.00002428	.02695	.796
451.008	.0170	24.496	17.7104	218.722	9.4821	1.141	1.133	.991	.00002479	.02781	.798



TABLE I. - THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=31.50											
461.008	.0144	29.702	18.0297	221.556	9.6137	1.142	1.136	.992	.00002529	.02869	.801
471.008	.0122	35.882	18.3503	224.584	9.7450	1.144	1.141	.994	.00002582	.02959	.803
481.008	.0103	43.182	18.6724	227.663	9.8763	1.146	1.147	.996	.00002637	.03053	.806
491.008	.0088	51.769	18.9960	231.458	10.0073	1.149	1.156	.999	.00002695	.03149	.809
501.008	.0076	61.824	19.3217	235.445	10.1379	1.152	1.167	1.004	.00002757	.03249	.813
511.008	.0065	73.549	19.6503	239.907	10.2677	1.156	1.181	1.010	.00002823	.03354	.817
521.008	.0057	87.193	19.9828	244.943	10.3963	1.160	1.198	1.017	.00002896	.03463	.821
531.008	.0049	102.961	20.3213	250.649	10.5227	1.164	1.219	1.027	.00002975	.03577	.827
541.008	.0043	121.148	20.6680	257.141	10.6460	1.168	1.245	1.040	.00003061	.03698	.833
551.008	.0038	142.067	21.0263	264.546	10.7648	1.173	1.275	1.055	.00003156	.03825	.839
561.008	.0034	166.071	21.4002	273.004	10.8779	1.177	1.311	1.073	.00003261	.03959	.846
571.008	.0030	193.562	21.7951	282.683	10.9835	1.181	1.353	1.095	.00003375	.04101	.854
581.008	.0027	225.010	22.2174	293.777	11.0799	1.184	1.402	1.122	.00003501	.04253	.862
584.207	.0026	235.993	22.3596	297.662	11.1085	1.185	1.419	1.131	.00003543	.04303	.864
S/R=31.75											
89.450	79.1021	.001	8.8375	106.214	3.9806	1.336	1.335	1.000	.00000526	.00033	5.958
99.450	57.1738	.002	8.9862	111.248	4.1467	1.318	1.318	1.000	.00000593	.00107	2.166
109.450	41.9598	.002	9.1409	115.999	4.3129	1.302	1.302	1.000	.00000659	.00181	1.481
119.450	31.1832	.004	9.3016	120.508	4.4791	1.288	1.287	1.000	.00000725	.00255	1.201
129.450	23.4200	.005	9.4685	124.810	4.6452	1.275	1.274	1.000	.00000789	.00329	1.051
139.450	17.7523	.007	9.6414	128.931	4.8111	1.263	1.262	1.000	.00000853	.00404	.961
149.450	13.5560	.010	9.8203	132.892	4.9767	1.252	1.251	1.000	.00000916	.00478	.901
159.450	10.4231	.014	10.0052	136.712	5.1420	1.242	1.241	1.000	.00000977	.00552	.861
169.450	8.0624	.020	10.1962	140.404	5.3067	1.233	1.232	.999	.00001038	.00626	.832
179.450	6.2697	.027	10.3931	143.982	5.4709	1.224	1.224	.999	.00001098	.00700	.811
189.450	4.8990	.036	10.5959	147.456	5.6345	1.216	1.216	.999	.00001157	.00774	.796
199.450	3.8447	.048	10.8047	150.834	5.7973	1.209	1.208	.999	.00001215	.00848	.785
209.450	3.0293	.064	11.0193	154.125	5.9592	1.202	1.201	.999	.00001272	.00922	.776
219.450	2.3955	.085	11.2398	157.336	6.1202	1.196	1.195	.999	.00001328	.00996	.771
229.450	1.9008	.112	11.4660	160.471	6.2801	1.190	1.189	.999	.00001384	.01071	.767
239.450	1.5129	.147	11.6980	163.536	6.4389	1.185	1.184	.999	.00001438	.01145	.764
249.450	1.2076	.192	11.9356	166.535	6.5965	1.180	1.178	.999	.00001492	.01219	.763
259.450	.9668	.250	12.1787	169.473	6.7529	1.175	1.174	.999	.00001545	.01293	.762
269.450	.7763	.323	12.4274	172.353	6.9078	1.171	1.169	.998	.00001597	.01368	.762
279.450	.6245	.416	12.6815	175.178	7.0614	1.167	1.165	.998	.00001648	.01442	.762
289.450	.5038	.535	12.9409	177.951	7.2134	1.163	1.160	.998	.00001699	.01517	.763
299.450	.4073	.684	13.2056	180.675	7.3639	1.159	1.157	.998	.00001749	.01591	.765
309.450	.3301	.872	13.4753	183.353	7.5127	1.156	1.153	.997	.00001799	.01666	.766
319.450	.2681	1.108	13.7500	185.986	7.6599	1.153	1.150	.997	.00001848	.01741	.768
329.450	.2182	1.403	14.0296	188.578	7.8053	1.150	1.146	.997	.00001896	.01816	.770
339.450	.1780	1.771	14.3139	191.131	7.9491	1.148	1.143	.996	.00001944	.01891	.772
349.450	.1455	2.229	14.6026	193.649	8.0911	1.145	1.141	.996	.00001991	.01966	.774
359.450	.1192	2.798	14.8957	196.134	8.2313	1.143	1.138	.995	.00002038	.02042	.776
369.450	.0979	3.500	15.1930	198.591	8.3698	1.141	1.136	.995	.00002085	.02118	.778
379.450	.0806	4.366	15.4942	201.024	8.5066	1.140	1.134	.994	.00002132	.02195	.780
389.450	.0665	5.429	15.7990	203.440	8.6417	1.138	1.132	.994	.00002178	.02272	.783
399.450	.0550	6.732	16.1073	205.847	8.7752	1.137	1.130	.994	.00002224	.02350	.785
409.450	.0456	8.321	16.4188	208.253	8.9072	1.137	1.129	.993	.00002271	.02428	.787
419.450	.0379	10.253	16.7332	210.670	9.0378	1.136	1.128	.993	.00002317	.02508	.789
429.450	.0316	12.553	17.0502	213.114	9.1672	1.136	1.128	.993	.00002364	.02588	.791
439.450	.0264	15.418	17.3695	215.603	9.2954	1.136	1.128	.992	.00002411	.02670	.793
449.450	.0221	18.813	17.6909	218.161	9.4226	1.136	1.129	.993	.00002459	.02753	.795
459.450	.0186	22.878	18.0140	220.816	9.5489	1.137	1.131	.993	.00002508	.02837	.797
469.450	.0157	27.723	18.3387	223.604	9.6746	1.138	1.134	.994	.00002558	.02924	.799
479.450	.0133	33.474	18.6648	226.567	9.7997	1.140	1.138	.996	.00002608	.03013	.801
489.450	.0113	40.271	18.9923	229.755	9.9242	1.142	1.144	.998	.00002661	.03104	.804
499.450	.0097	48.267	19.3212	233.226	10.0482	1.144	1.152	1.001	.00002717	.03198	.806
509.450	.0083	57.635	19.6520	237.048	10.1715	1.147	1.162	1.005	.00002775	.03296	.809
519.450	.0071	68.563	19.9852	241.298	10.2939	1.150	1.174	1.011	.00002838	.03397	.812
529.450	.0062	81.282	20.3217	246.062	10.4151	1.154	1.189	1.018	.00002906	.03503	.816
539.450	.0054	95.984	20.6630	251.427	10.5343	1.158	1.208	1.027	.00002980	.03614	.821
549.450	.0047	112.941	21.0109	257.496	10.6507	1.162	1.231	1.038	.00003060	.03730	.826
559.450	.0041	132.437	21.3682	264.380	10.7634	1.166	1.257	1.052	.00003148	.03851	.831
569.450	.0037	154.792	21.7383	272.203	10.8711	1.170	1.289	1.068	.00003245	.03980	.837
579.450	.0033	180.365	22.1255	281.105	10.9725	1.174	1.326	1.088	.00003351	.04116	.844
589.450	.0029	209.569	22.5354	291.250	11.0661	1.177	1.370	1.112	.00003466	.04259	.851
599.450	.0026	242.877	22.9745	302.833	11.1502	1.181	1.420	1.140	.00003593	.04412	.858
599.950	.0026	244.627	22.9973	303.444	11.1541	1.181	1.423	1.142	.00003599	.04420	.858

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=32.00											
96.342	81.0701	.001	8.9394	109.720	4.0947	1.323	1.323	1.000	.00000572	.00084	2.628
106.342	59.2330	.002	9.0922	114.554	4.2608	1.307	1.307	1.000	.00000639	.00158	1.624
116.342	43.8589	.002	9.2511	119.135	4.4270	1.292	1.292	1.000	.00000704	.00232	1.268
126.342	32.8379	.004	9.4161	123.499	4.5930	1.279	1.278	1.000	.00000769	.00306	1.089
136.342	24.8256	.005	9.5871	127.674	4.7589	1.266	1.266	1.000	.00000833	.00380	.984
146.342	18.9133	.007	9.7642	131.684	4.9246	1.255	1.255	1.000	.00000896	.00455	.917
156.342	14.5129	.010	9.9473	135.547	5.0899	1.245	1.244	1.000	.00000958	.00529	.872
166.342	11.2056	.014	10.1364	139.279	5.2547	1.235	1.235	1.000	.00001019	.00603	.840
176.342	8.6999	.019	10.3315	142.893	5.4190	1.227	1.226	1.000	.00001079	.00677	.817
186.342	6.7881	.026	10.5326	146.399	5.5826	1.219	1.218	1.000	.00001139	.00751	.800
196.342	5.3201	.034	10.7396	149.809	5.7455	1.211	1.211	.999	.00001197	.00825	.788
206.342	4.1867	.046	10.9525	153.128	5.9075	1.204	1.204	.999	.00001254	.00899	.779
216.342	3.3070	.061	11.1712	156.366	6.0686	1.198	1.197	.999	.00001311	.00973	.772
226.342	2.6212	.080	11.3957	159.527	6.2287	1.192	1.191	.999	.00001366	.01047	.768
236.342	2.0843	.106	11.6260	162.616	6.3876	1.186	1.185	.999	.00001421	.01122	.765
246.342	1.6619	.138	11.8620	165.640	6.5454	1.181	1.180	.999	.00001475	.01196	.763
256.342	1.3296	.180	12.1036	168.601	6.7019	1.176	1.175	.999	.00001528	.01270	.762
266.342	1.0663	.233	12.3508	171.504	6.8569	1.172	1.170	.999	.00001580	.01344	.762
276.342	.8573	.300	12.6034	174.351	7.0106	1.168	1.166	.999	.00001632	.01419	.762
286.342	.6909	.386	12.8615	177.147	7.1627	1.164	1.162	.998	.00001683	.01493	.763
296.342	.5582	.494	13.1248	179.893	7.3132	1.160	1.158	.998	.00001733	.01567	.764
306.342	.4519	.631	13.3934	182.592	7.4620	1.157	1.154	.998	.00001783	.01642	.765
316.342	.3668	.802	13.6670	185.247	7.6091	1.153	1.151	.998	.00001832	.01716	.767
326.342	.2983	1.018	13.9456	187.861	7.7544	1.151	1.148	.997	.00001880	.01791	.769
336.342	.2431	1.286	14.2290	190.435	7.8979	1.148	1.145	.997	.00001928	.01866	.771
346.342	.1985	1.621	14.5172	192.973	8.0395	1.145	1.142	.997	.00001976	.01941	.773
356.342	.1625	2.037	14.8098	195.476	8.1792	1.143	1.139	.997	.00002022	.02017	.775
366.342	.1333	2.553	15.1068	197.950	8.3170	1.141	1.137	.996	.00002069	.02092	.777
376.342	.1096	3.189	15.4080	200.396	8.4528	1.139	1.134	.996	.00002115	.02168	.779
386.342	.0902	3.973	15.7132	202.820	8.5868	1.137	1.132	.995	.00002161	.02245	.781
396.342	.0745	4.935	16.0221	205.227	8.7189	1.136	1.131	.995	.00002207	.02321	.783
406.342	.0617	6.112	16.3345	207.624	8.8492	1.135	1.129	.995	.00002253	.02399	.785
416.342	.0511	7.547	16.6502	210.020	8.9777	1.134	1.128	.994	.00002298	.02477	.787
426.342	.0425	9.291	16.9688	212.424	9.1045	1.133	1.127	.994	.00002344	.02555	.789
436.342	.0355	11.403	17.2902	214.851	9.2298	1.133	1.127	.994	.00002390	.02635	.791
446.342	.0296	13.953	17.6141	217.315	9.3535	1.133	1.127	.994	.00002436	.02716	.793
456.342	.0249	17.017	17.9401	219.839	9.4759	1.133	1.128	.994	.00002483	.02798	.794
466.342	.0209	20.687	18.2680	222.447	9.5971	1.134	1.129	.995	.00002531	.02881	.796
476.342	.0176	25.063	18.5976	225.168	9.7173	1.135	1.132	.996	.00002579	.02966	.798
486.342	.0149	30.261	18.9287	228.041	9.8364	1.136	1.135	.997	.00002628	.03053	.800
496.342	.0127	36.409	19.2612	231.108	9.9546	1.138	1.140	.999	.00002678	.03143	.802
506.342	.0108	43.649	19.5951	234.421	10.0719	1.140	1.147	1.002	.00002731	.03234	.803
516.342	.0093	52.139	19.9306	238.038	10.1883	1.142	1.155	1.006	.00002787	.03329	.806
526.342	.0080	62.052	20.2680	242.026	10.3037	1.145	1.166	1.010	.00002845	.03427	.808
536.342	.0069	73.580	20.6081	246.461	10.4176	1.148	1.179	1.017	.00002908	.03529	.811
546.342	.0060	86.959	20.9517	251.427	10.5299	1.151	1.195	1.025	.00002977	.03635	.814
556.342	.0052	102.377	21.3005	257.007	10.6397	1.155	1.215	1.035	.00003050	.03746	.818
566.342	.0046	120.108	21.6565	263.300	10.7463	1.159	1.238	1.047	.00003131	.03863	.823
576.342	.0041	140.439	22.0223	270.412	10.8488	1.163	1.265	1.061	.00003219	.03985	.828
586.342	.0036	163.685	22.4014	278.462	10.9460	1.167	1.298	1.079	.00003315	.04113	.833
596.342	.0032	190.205	22.7982	287.583	11.0367	1.170	1.335	1.100	.00003420	.04249	.839
606.342	.0029	220.404	23.2181	297.933	11.1195	1.174	1.378	1.124	.00003535	.04392	.845
616.058	.0026	253.329	23.6480	309.236	11.1900	1.177	1.427	1.152	.00003656	.04538	.851

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=32.25											
104.134	81.4244	.001	9.0580	113.513	4.2238	1.310	1.310	1.000	.00000624	.00142	1.754
114.134	60.1251	.002	9.2156	113.146	4.3899	1.295	1.295	1.000	.00000690	.00216	1.325
124.134	44.9132	.003	9.3792	122.556	4.5559	1.281	1.281	1.000	.00000755	.00290	1.120
134.134	33.8885	.004	9.5489	126.771	4.7218	1.269	1.269	1.000	.00000819	.00364	1.003
144.134	25.7736	.005	9.7247	130.817	4.8875	1.257	1.257	1.000	.00000882	.00438	.930
154.134	19.7476	.007	9.9065	134.711	5.0528	1.247	1.247	1.000	.00000945	.00512	.880
164.134	15.2272	.010	10.0943	138.472	5.2176	1.237	1.237	1.000	.00001006	.00586	.846
174.134	11.8083	.014	10.2881	142.112	5.3819	1.228	1.228	1.000	.00001066	.00660	.821
184.134	9.2036	.019	10.4879	145.643	5.5456	1.220	1.220	1.000	.00001126	.00734	.803
194.134	7.2063	.025	10.6936	149.074	5.7086	1.213	1.212	1.000	.00001184	.00809	.790
204.134	5.6659	.034	10.9053	152.415	5.8707	1.206	1.205	1.000	.00001242	.00883	.780
214.134	4.4718	.045	11.1228	155.672	6.0319	1.199	1.199	.999	.00001298	.00957	.773
224.134	3.5417	.059	11.3461	158.852	6.1920	1.193	1.192	.999	.00001354	.01031	.768
234.134	2.8142	.078	11.5752	161.559	6.3511	1.187	1.187	.999	.00001409	.01105	.765
244.134	2.2430	.101	11.8100	165.000	6.5089	1.182	1.181	.999	.00001463	.01179	.763
254.134	1.7927	.132	12.0505	167.978	6.6655	1.177	1.176	.999	.00001516	.01253	.762
264.134	1.4370	.171	12.2566	170.897	6.8206	1.173	1.172	.999	.00001569	.01328	.761
274.134	1.1545	.221	12.5482	173.761	6.9743	1.168	1.167	.999	.00001621	.01402	.762
284.134	.9299	.285	12.8053	176.573	7.1264	1.164	1.163	.999	.00001672	.01476	.762
294.134	.7508	.365	13.0677	179.335	7.2770	1.161	1.159	.999	.00001722	.01550	.764
304.134	.6075	.466	13.3354	182.051	7.4257	1.157	1.155	.998	.00001772	.01625	.765
314.134	.4927	.593	13.6083	184.722	7.5728	1.154	1.152	.998	.00001821	.01699	.766
324.134	.4004	.753	13.8862	187.352	7.7179	1.151	1.148	.998	.00001869	.01774	.768
334.134	.3261	.953	14.1691	189.941	7.8612	1.148	1.145	.998	.00001917	.01849	.770
344.134	.2662	1.203	14.4567	192.494	8.0025	1.145	1.142	.998	.00001964	.01923	.772
354.134	.2177	1.513	14.7491	195.013	8.1418	1.143	1.140	.997	.00002011	.01999	.774
364.134	.1784	1.897	15.0459	197.499	8.2791	1.141	1.137	.997	.00002058	.02074	.776
374.134	.1465	2.373	15.3471	199.957	8.4143	1.139	1.135	.997	.00002104	.02149	.778
384.134	.1206	2.960	15.6525	202.389	8.5475	1.137	1.133	.996	.00002149	.02225	.780
394.134	.0994	3.631	15.9618	204.800	8.6785	1.135	1.131	.996	.00002195	.02301	.782
404.134	.0822	4.565	16.2749	207.196	8.8075	1.134	1.129	.996	.00002240	.02378	.784
414.134	.0681	5.646	16.5916	209.582	8.9345	1.133	1.128	.996	.00002285	.02455	.786
424.134	.0565	6.963	16.9116	211.965	9.0594	1.132	1.127	.995	.00002330	.02532	.787
434.134	.0471	8.562	17.2346	214.357	9.1825	1.131	1.126	.995	.00002375	.02610	.789
444.134	.0393	10.497	17.5604	216.768	9.3036	1.130	1.125	.995	.00002420	.02689	.791
454.134	.0328	12.830	17.8887	219.212	9.4230	1.130	1.125	.995	.00002465	.02770	.792
464.134	.0276	15.635	18.2194	221.709	9.5408	1.130	1.126	.996	.00002511	.02851	.794
474.134	.0232	18.993	18.5520	224.280	9.6570	1.131	1.127	.996	.00002557	.02933	.795
484.134	.0196	22.997	18.8863	226.852	9.7717	1.131	1.130	.997	.00002605	.03017	.797
494.134	.0166	27.754	19.2223	229.456	9.8851	1.132	1.133	.998	.00002653	.03103	.798
504.134	.0141	33.380	19.5597	232.133	9.9972	1.134	1.137	1.000	.00002701	.03190	.800
514.134	.0120	40.009	19.8984	235.926	10.1081	1.135	1.143	1.003	.00002752	.03280	.801
524.134	.0103	47.786	20.2386	239.388	10.2177	1.138	1.150	1.006	.00002804	.03373	.803
534.134	.0089	56.872	20.5805	243.178	10.3261	1.140	1.160	1.011	.00002860	.03468	.804
544.134	.0076	67.443	20.9245	247.363	10.4329	1.143	1.171	1.016	.00002919	.03567	.807
554.134	.0066	79.717	21.2714	252.019	10.5379	1.146	1.185	1.024	.00002983	.03670	.809
564.134	.0058	93.866	21.6224	257.219	10.6406	1.149	1.202	1.032	.00003051	.03777	.812
574.134	.0051	110.142	21.9789	263.051	10.7405	1.153	1.223	1.043	.00003126	.03888	.816
584.134	.0045	128.803	22.3432	269.608	10.8367	1.156	1.247	1.056	.00003207	.04005	.820
594.134	.0040	150.131	22.7179	276.992	10.9284	1.160	1.275	1.072	.00003295	.04128	.824
604.134	.0035	174.445	23.1067	285.316	11.0144	1.164	1.308	1.091	.00003391	.04257	.829
614.134	.0032	202.097	23.5138	294.709	11.0936	1.168	1.346	1.112	.00003497	.04393	.834
624.134	.0028	233.154	23.9390	305.194	11.1809	1.171	1.389	1.137	.00003610	.04535	.841
632.441	.0026	262.433	24.3203	315.024	11.2533	1.173	1.430	1.162	.00003713	.04660	.847

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	NPr
S/p=32.50											
112.460	81.1639	.001	9.1888	117.390	4.3618	1.297	1.297	1.000	.00000679	.00204	1.374
122.460	60.5181	.002	9.3515	121.835	4.5278	1.283	1.283	1.000	.00000744	.00278	1.146
132.460	45.5937	.003	9.5202	126.082	4.6937	1.271	1.271	1.000	.00000808	.00352	1.019
142.460	34.6296	.004	9.6949	130.154	4.8594	1.259	1.259	1.000	.00000872	.00426	.940
152.460	26.5022	.005	9.8757	134.074	5.0247	1.249	1.248	1.000	.00000934	.00500	.887
162.460	20.4147	.007	10.0626	137.856	5.1895	1.239	1.239	1.000	.00000996	.00574	.851
172.460	15.8166	.010	10.2554	141.517	5.3539	1.230	1.230	1.000	.00001056	.00648	.824
182.460	12.3176	.014	10.4542	145.066	5.5176	1.222	1.221	1.000	.00001116	.00722	.805
192.460	9.6373	.019	10.6590	148.515	5.6806	1.214	1.213	1.000	.00001174	.00796	.792
202.460	7.5721	.025	10.8697	151.871	5.8428	1.207	1.206	1.000	.00001232	.00870	.782
212.460	5.9724	.033	11.0863	155.143	6.0040	1.200	1.200	1.000	.00001289	.00944	.774
222.460	4.7275	.044	11.3087	158.337	6.1642	1.194	1.193	1.000	.00001345	.01018	.769
232.460	3.7543	.058	11.5369	161.459	6.3233	1.188	1.188	1.000	.00001400	.01093	.765
242.460	2.9907	.076	11.7708	164.513	6.4812	1.183	1.182	.999	.00001454	.01167	.763
252.460	2.3889	.098	12.0105	167.503	6.6379	1.178	1.177	.999	.00001507	.01241	.762
262.460	1.9140	.128	12.2557	170.435	6.7931	1.173	1.172	.999	.00001560	.01315	.761
272.460	1.5371	.165	12.5066	173.312	6.9468	1.169	1.168	.999	.00001612	.01389	.761
282.460	1.2375	.213	12.7629	176.136	7.0990	1.165	1.164	.999	.00001663	.01463	.762
292.460	.9987	.273	13.0246	178.910	7.2495	1.161	1.160	.999	.00001713	.01533	.763
302.460	.8078	.349	13.2916	181.638	7.3983	1.157	1.156	.999	.00001763	.01612	.764
312.460	.6548	.444	13.5639	184.322	7.5452	1.154	1.152	.999	.00001812	.01686	.766
322.460	.5319	.564	13.8413	186.964	7.6903	1.151	1.149	.999	.00001861	.01761	.768
332.460	.4330	.715	14.1237	189.566	7.8335	1.148	1.146	.998	.00001909	.01835	.770
342.460	.3532	.902	14.4110	192.130	7.9746	1.145	1.143	.998	.00001956	.01910	.771
352.460	.2887	1.136	14.7030	194.660	8.1136	1.143	1.140	.998	.00002003	.01985	.773
362.460	.2365	1.426	14.9997	197.157	8.2505	1.140	1.138	.998	.00002049	.02060	.775
372.460	.1941	1.785	15.3009	199.625	8.3852	1.138	1.135	.998	.00002095	.02135	.777
382.460	.1596	2.228	15.6064	202.065	8.5178	1.136	1.133	.997	.00002140	.02210	.779
392.460	.1315	2.774	15.9161	204.481	8.6481	1.134	1.131	.997	.00002185	.02286	.781
402.460	.1086	3.444	16.2297	206.878	8.7761	1.133	1.129	.997	.00002230	.02362	.783
412.460	.0899	4.264	16.5471	209.260	8.9019	1.132	1.128	.997	.00002275	.02438	.785
422.460	.0745	5.265	16.8680	211.633	9.0255	1.130	1.126	.996	.00002319	.02515	.786
432.460	.0620	6.484	17.1923	214.004	9.1469	1.129	1.125	.996	.00002363	.02592	.788
442.460	.0510	7.961	17.5197	216.382	9.2661	1.129	1.124	.996	.00002408	.02670	.789
452.460	.0431	9.748	17.8499	218.777	9.3832	1.128	1.124	.996	.00002452	.02748	.791
462.460	.0361	11.901	18.1826	221.203	9.4983	1.128	1.124	.996	.00002497	.02823	.792
472.460	.0303	14.487	18.5177	223.675	9.6114	1.128	1.125	.997	.00002542	.02908	.793
482.460	.0255	17.580	18.8549	226.215	9.7226	1.128	1.126	.997	.00002587	.02990	.795
492.460	.0215	21.269	19.1939	228.844	9.8321	1.128	1.128	.998	.00002633	.03073	.796
502.460	.0183	25.648	19.5345	231.593	9.9398	1.129	1.131	.999	.00002680	.03157	.797
512.460	.0155	30.829	19.8766	234.495	10.0460	1.130	1.134	1.001	.00002727	.03243	.798
522.460	.0132	36.933	20.2200	237.590	10.1506	1.132	1.139	1.004	.00002776	.03332	.799
532.460	.0113	44.094	20.5648	240.925	10.2537	1.134	1.146	1.007	.00002826	.03422	.800
542.460	.0097	52.462	20.9111	244.552	10.3551	1.136	1.154	1.011	.00002879	.03516	.801
552.460	.0084	62.201	21.2592	248.531	10.4548	1.138	1.165	1.016	.00002936	.03612	.803
562.460	.0073	73.489	21.6097	252.927	10.5526	1.141	1.177	1.023	.00002995	.03712	.804
572.460	.0064	86.550	21.9634	257.816	10.6481	1.144	1.192	1.031	.00003059	.03815	.807
582.460	.0056	101.552	22.3215	263.266	10.7408	1.147	1.211	1.041	.00003128	.03923	.809
592.460	.0049	118.749	22.6858	269.363	10.8302	1.151	1.232	1.052	.00003203	.04035	.812
602.460	.0043	138.398	23.0583	276.195	10.9154	1.155	1.257	1.066	.00003285	.04153	.816
612.460	.0038	160.784	23.4420	283.860	10.9957	1.158	1.286	1.083	.00003373	.04276	.819
622.460	.0034	185.940	23.8349	292.367	11.0823	1.162	1.319	1.102	.00003469	.04400	.825
632.460	.0031	214.801	24.2532	301.988	11.1737	1.165	1.357	1.125	.00003574	.04541	.831
642.460	.0028	247.548	24.6970	312.833	11.2611	1.168	1.400	1.152	.00003689	.04684	.838
649.066	.0026	271.550	25.0075	320.759	11.3161	1.169	1.433	1.171	.00003770	.04783	.843

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=32.75											
120.889	81.3353	.001	9.3256	121.153	4.5015	1.286	1.285	1.000	.00000734	.00266	1.173
130.889	61.1608	.002	9.4933	125.429	4.6674	1.273	1.272	1.000	.00000798	.00340	1.035
140.889	46.4125	.003	9.6672	129.528	4.8331	1.261	1.261	1.000	.00000862	.00414	.950
150.889	35.4768	.004	9.8470	133.471	4.9984	1.250	1.250	1.000	.00000924	.00488	.894
160.889	27.3015	.005	10.0329	137.275	5.1633	1.240	1.240	1.000	.00000986	.00562	.855
170.889	21.1338	.008	10.2248	140.954	5.3277	1.231	1.231	1.000	.00001047	.00636	.828
180.889	16.4456	.010	10.4227	144.521	5.4914	1.223	1.222	1.000	.00001106	.00710	.808
190.889	12.8579	.014	10.6266	147.986	5.6545	1.215	1.215	1.000	.00001165	.00784	.793
200.889	10.0960	.019	10.8364	151.357	5.8167	1.208	1.207	1.000	.00001223	.00859	.783
210.889	7.9584	.025	11.0521	154.643	5.9780	1.201	1.201	1.000	.00001280	.00933	.775
220.889	6.2959	.033	11.2736	157.850	6.1383	1.195	1.194	1.000	.00001336	.01007	.770
230.889	4.9973	.043	11.5010	160.984	6.2975	1.189	1.189	1.000	.00001391	.01081	.766
240.889	3.9789	.056	11.7341	164.050	6.4555	1.184	1.183	1.000	.00001446	.01155	.763
250.889	3.1767	.074	11.9729	167.053	6.6122	1.179	1.178	1.000	.00001499	.01229	.762
260.889	2.5439	.096	12.2174	169.996	6.7675	1.174	1.173	.999	.00001552	.01303	.761
270.889	2.0423	.124	12.4674	172.883	6.9213	1.169	1.169	.999	.00001604	.01377	.761
280.889	1.6435	.159	12.7230	175.718	7.0736	1.165	1.164	.999	.00001655	.01452	.762
290.889	1.3258	.204	12.9840	178.504	7.2241	1.161	1.160	.999	.00001705	.01526	.763
300.889	1.0719	.261	13.2504	181.242	7.3730	1.158	1.157	.999	.00001755	.01600	.764
310.889	.8685	.333	13.5220	183.937	7.5200	1.154	1.153	.999	.00001804	.01674	.766
320.889	.7052	.424	13.7988	186.589	7.6650	1.151	1.150	.999	.00001853	.01749	.767
330.889	.5738	.537	14.0807	189.202	7.8081	1.148	1.147	.999	.00001901	.01823	.769
340.889	.4679	.678	14.3676	191.777	7.9492	1.145	1.144	.999	.00001948	.01898	.771
350.889	.3823	.855	14.6593	194.317	8.0881	1.143	1.141	.998	.00001995	.01972	.773
360.889	.3129	1.073	14.9557	196.823	8.2247	1.140	1.138	.998	.00002041	.02047	.775
370.889	.2567	1.345	15.2568	199.299	8.3592	1.138	1.136	.998	.00002087	.02122	.777
380.889	.2110	1.680	15.5622	201.747	8.4913	1.136	1.134	.998	.00002132	.02197	.779
390.889	.1737	2.093	15.8720	204.169	8.6211	1.134	1.131	.998	.00002177	.02272	.780
400.889	.1433	2.601	16.1859	206.569	8.7486	1.132	1.130	.998	.00002222	.02347	.782
410.889	.1185	3.223	16.5037	208.951	8.8736	1.131	1.128	.997	.00002266	.02423	.784
420.889	.0982	3.984	16.8253	211.318	8.9962	1.129	1.126	.997	.00002310	.02499	.785
430.889	.0815	4.912	17.1504	213.677	9.1164	1.128	1.125	.997	.00002354	.02576	.787
440.889	.0679	6.039	17.4789	216.034	9.2342	1.127	1.124	.997	.00002397	.02653	.788
450.889	.0566	7.405	17.8104	218.397	9.3496	1.126	1.123	.997	.00002441	.02730	.790
460.889	.0473	9.054	18.1448	220.776	9.4627	1.126	1.123	.997	.00002485	.02808	.791
470.889	.0397	11.040	18.4818	223.182	9.5735	1.126	1.123	.997	.00002528	.02887	.792
480.889	.0333	13.422	18.8212	225.631	9.6820	1.125	1.123	.998	.00002573	.02967	.793
490.889	.0281	16.271	19.1627	228.139	9.7884	1.125	1.124	.998	.00002617	.03048	.794
500.889	.0237	19.665	19.5061	230.728	9.8927	1.126	1.126	.999	.00002662	.03130	.795
510.889	.0201	23.694	19.8512	233.425	9.9951	1.127	1.128	1.000	.00002708	.03213	.796
520.889	.0171	28.458	20.1977	236.258	10.0954	1.127	1.132	1.002	.00002754	.03298	.796
530.889	.0146	34.071	20.5456	239.264	10.1939	1.129	1.136	1.004	.00002801	.03385	.797
540.889	.0125	40.655	20.8948	242.483	10.2906	1.130	1.142	1.007	.00002850	.03474	.797
550.889	.0107	48.350	21.2454	245.563	10.3853	1.132	1.150	1.011	.00002900	.03565	.798
560.889	.0093	57.306	21.5975	249.757	10.4780	1.134	1.159	1.016	.00002954	.03659	.799
570.889	.0080	67.698	21.9516	253.923	10.5686	1.137	1.170	1.022	.00003010	.03756	.800
580.889	.0070	79.702	22.3082	258.529	10.6569	1.140	1.183	1.029	.00003070	.03857	.801
590.889	.0061	93.502	22.6683	263.636	10.7423	1.143	1.200	1.038	.00003134	.03961	.803
600.889	.0054	109.320	23.0333	269.321	10.8246	1.146	1.219	1.049	.00003204	.04069	.805
610.889	.0047	127.390	23.4048	275.661	10.9030	1.149	1.241	1.061	.00003279	.04182	.808
620.889	.0042	147.736	23.7798	282.669	10.9858	1.153	1.266	1.076	.00003360	.04299	.811
630.889	.0038	171.112	24.1724	290.533	11.0779	1.156	1.295	1.094	.00003449	.04423	.816
640.889	.0034	197.653	24.5812	299.338	11.1680	1.159	1.328	1.114	.00003546	.04552	.822
650.889	.0030	227.739	25.0109	309.213	11.2550	1.162	1.367	1.138	.00003651	.04689	.828
660.889	.0027	261.803	25.4672	320.312	11.3382	1.164	1.411	1.165	.00003765	.04832	.835
665.981	.0026	280.833	25.7119	326.493	11.3787	1.166	1.435	1.180	.00003827	.04909	.838

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=33.00											
129.678	81.2769	.001	9.4727	124.923	4.6471	1.274	1.274	1.000	.00000791	.00331	1.048
139.678	61.5894	.002	9.6458	129.043	4.8128	1.262	1.262	1.000	.00000854	.00405	.959
149.678	47.0505	.003	9.8250	133.004	4.9781	1.251	1.251	1.000	.00000917	.00479	.900
159.678	36.1778	.004	10.0102	136.824	5.1430	1.241	1.241	1.000	.00000979	.00553	.859
169.678	27.9860	.006	10.2014	140.518	5.3074	1.232	1.232	1.000	.00001039	.00627	.831
179.678	21.7643	.008	10.3986	144.099	5.4712	1.224	1.223	1.000	.00001099	.00701	.810
189.678	17.0069	.010	10.6017	147.576	5.6343	1.216	1.216	1.000	.00001158	.00775	.795
199.678	13.3470	.014	10.8108	150.559	5.7966	1.209	1.208	1.000	.00001216	.00850	.784
209.678	10.5162	.019	11.0258	154.256	5.9580	1.202	1.202	1.000	.00001273	.00924	.776
219.678	8.3158	.025	11.2467	157.473	6.1183	1.196	1.195	1.000	.00001329	.00998	.770
229.678	6.5980	.032	11.4734	160.617	6.2776	1.190	1.189	1.000	.00001385	.01072	.766
239.678	5.2513	.043	11.7058	163.692	6.4357	1.184	1.184	1.000	.00001439	.01146	.763
249.678	4.1909	.056	11.9440	166.704	6.5924	1.179	1.179	1.000	.00001493	.01220	.762
259.678	3.3547	.072	12.1879	169.656	6.7478	1.174	1.174	1.000	.00001545	.01294	.761
269.678	2.6932	.093	12.4373	172.552	6.9017	1.170	1.169	1.000	.00001597	.01368	.761
279.678	2.1662	.120	12.6923	175.395	7.0540	1.166	1.165	.999	.00001649	.01442	.762
289.678	1.7468	.155	12.9528	178.189	7.2046	1.162	1.161	.999	.00001699	.01517	.763
299.678	1.4118	.198	13.2186	180.936	7.3535	1.158	1.157	.999	.00001749	.01591	.764
309.678	1.1436	.252	13.4898	183.639	7.5005	1.154	1.154	.999	.00001798	.01665	.765
319.678	.9283	.321	13.7661	186.299	7.6456	1.151	1.150	.999	.00001847	.01739	.767
329.678	.7551	.407	14.0476	188.920	7.7886	1.148	1.147	.999	.00001895	.01814	.769
339.678	.6154	.514	14.3341	191.503	7.9296	1.145	1.144	.999	.00001942	.01888	.771
349.678	.5026	.648	14.6256	194.051	8.0684	1.143	1.141	.999	.00001989	.01963	.772
359.678	.4113	.814	14.9218	196.565	8.2049	1.140	1.139	.999	.00002035	.02037	.774
369.678	.3372	1.021	15.2227	199.048	8.3392	1.138	1.136	.999	.00002081	.02112	.776
379.678	.2770	1.276	15.5281	201.502	8.4710	1.136	1.134	.998	.00002126	.02187	.778
389.678	.2280	1.551	15.8380	203.929	8.6005	1.134	1.132	.998	.00002171	.02261	.780
399.678	.1880	1.978	16.1520	206.332	8.7274	1.132	1.130	.998	.00002215	.02337	.782
409.678	.1554	2.453	16.4702	208.715	8.8518	1.130	1.128	.998	.00002259	.02412	.783
419.678	.1287	3.034	16.7922	211.080	8.9737	1.129	1.126	.998	.00002303	.02488	.785
429.678	.1068	3.744	17.1180	213.432	9.0930	1.127	1.125	.998	.00002346	.02563	.786
439.678	.0888	4.608	17.4473	215.776	9.2098	1.126	1.124	.998	.00002389	.02640	.788
449.678	.0740	5.656	17.7798	218.118	9.3239	1.125	1.123	.998	.00002433	.02716	.789
459.678	.0618	6.924	18.1155	220.465	9.4355	1.124	1.122	.998	.00002476	.02794	.790
469.678	.0517	8.453	18.4541	222.827	9.5445	1.124	1.122	.998	.00002519	.02871	.791
479.678	.0434	10.292	18.7952	225.214	9.6510	1.123	1.122	.998	.00002562	.02950	.792
489.678	.0365	12.497	19.1388	227.640	9.7550	1.123	1.122	.998	.00002605	.03029	.793
499.678	.0308	15.130	19.4845	230.120	9.8566	1.123	1.123	.999	.00002649	.03109	.793
509.678	.0260	18.265	19.8321	232.673	9.9558	1.124	1.124	1.000	.00002693	.03191	.794
519.678	.0221	21.985	20.1814	235.323	10.0527	1.124	1.127	1.001	.00002737	.03273	.794
529.678	.0188	26.380	20.5322	238.056	10.1474	1.125	1.130	1.003	.00002783	.03357	.795
539.678	.0160	31.555	20.8843	241.024	10.2399	1.126	1.134	1.005	.00002829	.03442	.795
549.678	.0137	37.626	21.2377	244.144	10.3301	1.127	1.139	1.008	.00002876	.03530	.795
559.678	.0118	44.718	21.5924	247.497	10.4182	1.129	1.146	1.011	.00002924	.03619	.795
569.678	.0102	52.972	21.9484	251.131	10.5041	1.131	1.154	1.016	.00002975	.03711	.795
579.678	.0088	62.539	22.3061	255.098	10.5875	1.133	1.164	1.021	.00003028	.03806	.796
589.678	.0077	73.608	22.6658	259.460	10.6685	1.135	1.176	1.028	.00003085	.03904	.797
599.678	.0067	86.322	23.0283	264.271	10.7466	1.138	1.190	1.036	.00003145	.04005	.797
609.678	.0059	100.894	23.3947	269.600	10.8215	1.141	1.207	1.045	.00003210	.04109	.799
619.678	.0052	117.346	23.7609	275.462	10.8991	1.144	1.227	1.057	.00003280	.04218	.801
629.678	.0046	136.292	24.1399	281.995	10.9891	1.147	1.249	1.070	.00003355	.04331	.804
639.678	.0041	157.845	24.5290	289.269	11.0784	1.150	1.275	1.086	.00003437	.04449	.808
649.678	.0037	182.309	24.9314	297.380	11.1663	1.153	1.304	1.105	.00003526	.04573	.813
659.678	.0033	210.024	25.3509	306.435	11.2521	1.156	1.338	1.126	.00003623	.04703	.819
669.678	.0030	241.371	25.7923	316.563	11.3350	1.159	1.377	1.150	.00003728	.04840	.825
679.678	.0027	276.787	26.2613	327.916	11.4140	1.161	1.421	1.179	.00003842	.04984	.831
683.167	.0026	290.191	26.4326	332.198	11.4405	1.162	1.438	1.189	.00003884	.05036	.834

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=33.25											
138.684	81.2882	.002	9.6284	128.642	4.7961	1.263	1.263	1.000	.00000848	.00398	.966
148.684	62.0318	.002	9.8070	132.619	4.9615	1.252	1.252	1.000	.00000911	.00472	.905
158.684	47.6769	.003	9.9916	136.452	5.1264	1.242	1.242	1.000	.00000973	.00546	.863
168.684	36.8587	.004	10.1822	140.159	5.2908	1.233	1.233	1.000	.00001033	.00620	.833
178.684	28.6501	.006	10.3788	143.751	5.4547	1.224	1.224	1.000	.00001093	.00694	.812
188.684	22.3772	.008	10.5814	147.238	5.6178	1.217	1.216	1.000	.00001152	.00768	.796
198.684	17.5543	.011	10.7899	150.631	5.7801	1.209	1.209	1.000	.00001210	.00842	.785
208.684	13.8257	.014	11.0043	153.937	5.9415	1.202	1.202	1.000	.00001268	.00916	.776
218.684	10.9290	.019	11.2246	157.163	6.1020	1.196	1.196	1.000	.00001324	.00990	.771
228.684	8.6684	.025	11.4508	160.314	6.2613	1.190	1.190	1.000	.00001379	.01064	.766
238.684	6.8971	.032	11.6827	163.357	6.4194	1.185	1.184	1.000	.00001434	.01138	.764
248.684	5.5025	.042	11.9203	166.416	6.5762	1.179	1.179	1.000	.00001487	.01213	.762
258.684	4.4032	.055	12.1637	169.375	6.7317	1.175	1.174	1.000	.00001540	.01287	.761
268.684	3.5339	.071	12.4126	172.278	6.8856	1.170	1.170	1.000	.00001592	.01361	.761
278.684	2.8418	.091	12.6671	175.128	7.0379	1.166	1.165	1.000	.00001644	.01435	.762
288.684	2.2910	.117	12.9271	177.929	7.1886	1.162	1.161	1.000	.00001694	.01509	.762
298.684	1.8512	.150	13.1925	180.682	7.3375	1.158	1.158	.999	.00001744	.01583	.764
308.684	1.4991	.192	13.4633	183.392	7.4846	1.155	1.154	.999	.00001793	.01657	.765
318.684	1.2166	.244	13.7393	186.059	7.6297	1.151	1.151	.999	.00001842	.01732	.767
328.684	.9893	.310	14.0204	188.686	7.7727	1.148	1.147	.999	.00001890	.01806	.768
338.684	.8061	.391	14.3067	191.276	7.9137	1.145	1.144	.999	.00001937	.01880	.770
348.684	.6582	.493	14.5978	193.830	8.0524	1.143	1.142	.999	.00001984	.01955	.772
358.684	.5384	.620	14.8939	196.351	8.1889	1.140	1.139	.999	.00002030	.02029	.774
368.684	.4413	.778	15.1946	198.839	8.3230	1.138	1.136	.999	.00002076	.02104	.776
378.684	.3624	.973	15.5000	201.298	8.4546	1.136	1.134	.999	.00002121	.02178	.778
388.684	.2982	1.214	15.8098	203.730	8.5838	1.133	1.132	.999	.00002166	.02253	.780
398.684	.2458	1.510	16.1240	206.136	8.7104	1.132	1.130	.999	.00002210	.02328	.781
408.684	.2030	1.874	16.4423	208.520	8.8344	1.130	1.128	.998	.00002254	.02403	.783
418.684	.1680	2.320	16.7647	210.884	8.9558	1.128	1.126	.998	.00002297	.02478	.784
428.684	.1393	2.864	17.0909	213.232	9.0744	1.127	1.125	.998	.00002340	.02554	.786
438.684	.1157	3.527	17.4208	215.568	9.1904	1.125	1.123	.998	.00002383	.02629	.787
448.684	.0964	4.333	17.7542	217.896	9.3036	1.124	1.122	.998	.00002426	.02705	.788
458.684	.0804	5.310	18.0908	220.223	9.4140	1.123	1.121	.998	.00002468	.02782	.789
468.684	.0672	6.489	18.4306	222.554	9.5216	1.123	1.121	.998	.00002511	.02859	.790
478.684	.0563	7.910	18.7731	224.899	9.6265	1.122	1.120	.998	.00002553	.02936	.791
488.684	.0473	9.617	19.1183	227.267	9.7287	1.121	1.120	.999	.00002596	.03014	.791
498.684	.0398	11.660	19.4659	229.670	9.8282	1.121	1.121	.999	.00002638	.03093	.792
508.684	.0336	14.098	19.8156	232.122	9.9249	1.121	1.121	1.000	.00002681	.03173	.792
518.684	.0285	16.997	20.1672	234.642	10.0191	1.121	1.123	1.001	.00002724	.03253	.793
528.684	.0242	20.434	20.5205	237.248	10.1106	1.122	1.125	1.002	.00002768	.03335	.793
538.684	.0206	24.492	20.8754	239.966	10.1997	1.122	1.128	1.003	.00002812	.03418	.793
548.684	.0176	29.268	21.2315	242.823	10.2862	1.123	1.131	1.005	.00002857	.03502	.793
558.684	.0151	34.866	21.5889	245.853	10.3702	1.124	1.136	1.008	.00002903	.03588	.793
568.684	.0130	41.405	21.9475	249.093	10.4518	1.126	1.142	1.011	.00002950	.03676	.792
578.684	.0112	49.011	22.3073	252.585	10.5308	1.128	1.149	1.015	.00002998	.03766	.792
588.684	.0097	57.826	22.6684	256.375	10.6072	1.130	1.158	1.020	.00003049	.03859	.792
598.684	.0084	68.003	23.0313	260.516	10.6809	1.132	1.169	1.026	.00003103	.03954	.792
608.684	.0074	79.731	23.3963	265.067	10.7516	1.134	1.182	1.034	.00003160	.04052	.792
618.684	.0065	92.993	23.7591	270.040	10.8235	1.137	1.197	1.042	.00003220	.04153	.793
628.684	.0057	108.309	24.1317	275.538	10.9098	1.140	1.214	1.053	.00003285	.04259	.795
638.684	.0050	125.781	24.5105	281.627	10.9963	1.142	1.234	1.065	.00003355	.04368	.798
648.684	.0045	145.656	24.8977	288.383	11.0824	1.145	1.257	1.079	.00003431	.04482	.801
658.684	.0040	168.212	25.2858	295.886	11.1677	1.148	1.284	1.096	.00003513	.04601	.806
668.684	.0036	193.755	25.6709	304.229	11.2516	1.151	1.314	1.115	.00003602	.04725	.810
678.684	.0032	222.627	26.0580	313.518	11.3334	1.154	1.348	1.137	.00003699	.04855	.816
688.684	.0029	255.214	26.4509	323.880	11.4122	1.156	1.387	1.163	.00003804	.04992	.822
698.684	.0027	291.951	27.0724	335.466	11.4873	1.159	1.431	1.192	.00003918	.05136	.828
700.682	.0026	299.832	27.1726	337.943	11.5018	1.159	1.440	1.198	.00003942	.05166	.829

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=33.50											
147.877	81.3987	.002	9.7924	132.305	4.9480	1.253	1.253	1.000	.00000906	.00466	.909
157.877	62.5386	.002	9.9765	136.150	5.1129	1.243	1.243	1.000	.00000968	.00540	.866
167.877	48.3192	.003	10.1666	139.866	5.2774	1.234	1.234	1.000	.00001029	.00614	.835
177.877	37.5406	.004	10.3624	143.467	5.4412	1.225	1.225	1.000	.00001089	.00688	.813
187.877	29.3103	.006	10.5649	146.963	5.6044	1.217	1.217	1.000	.00001148	.00762	.797
197.877	22.9852	.008	10.7729	150.364	5.7668	1.210	1.210	1.000	.00001206	.00836	.786
207.877	18.0974	.011	10.9869	153.677	5.9282	1.203	1.203	1.000	.00001263	.00910	.777
217.877	14.3016	.014	11.2067	156.910	6.0887	1.197	1.196	1.000	.00001319	.00984	.771
227.877	11.3403	.019	11.4324	160.068	6.2481	1.191	1.190	1.000	.00001375	.01058	.767
237.877	9.0206	.025	11.6639	163.157	6.4062	1.185	1.185	1.000	.00001429	.01132	.764
247.877	7.1947	.032	11.9011	166.182	6.5631	1.180	1.180	1.000	.00001483	.01207	.762
257.877	5.7559	.042	12.1441	169.146	6.7186	1.175	1.175	1.000	.00001536	.01281	.761
267.877	4.6183	.054	12.3926	172.055	6.8726	1.170	1.170	1.000	.00001588	.01355	.761
277.877	3.7134	.070	12.6467	174.911	7.0250	1.166	1.166	1.000	.00001639	.01429	.761
287.877	2.9931	.090	12.9063	177.717	7.1757	1.162	1.162	1.000	.00001690	.01503	.762
297.877	2.4180	.115	13.1714	180.475	7.3246	1.158	1.158	1.000	.00001740	.01577	.763
307.877	1.9577	.147	13.4418	183.190	7.4717	1.155	1.154	1.000	.00001789	.01651	.765
317.877	1.5883	.186	13.7175	185.863	7.6168	1.152	1.151	.999	.00001838	.01725	.766
327.877	1.2914	.237	13.9983	188.495	7.7599	1.148	1.148	.999	.00001886	.01800	.768
337.877	1.0520	.299	14.2843	191.090	7.9008	1.145	1.145	.999	.00001933	.01874	.770
347.877	.8587	.377	14.5753	193.649	8.0395	1.143	1.142	.999	.00001980	.01948	.772
357.877	.7023	.475	14.8711	196.175	8.1759	1.140	1.139	.999	.00002026	.02023	.774
367.877	.5755	.595	15.1717	198.668	8.3099	1.138	1.137	.999	.00002072	.02097	.776
377.877	.4724	.745	15.4770	201.131	8.4415	1.135	1.134	.999	.00002117	.02171	.777
387.877	.3886	.930	15.7868	203.567	8.5705	1.133	1.132	.999	.00002162	.02246	.779
397.877	.3202	1.157	16.1011	205.876	8.6968	1.131	1.130	.999	.00002206	.02321	.781
407.877	.2644	1.437	16.4195	208.361	8.8205	1.130	1.128	.999	.00002249	.02396	.782
417.877	.2187	1.779	16.7422	210.725	8.9415	1.128	1.126	.999	.00002293	.02471	.784
427.877	.1813	2.198	17.0687	213.071	9.0597	1.126	1.125	.999	.00002336	.02546	.785
437.877	.1505	2.708	17.3991	215.402	9.1750	1.125	1.123	.999	.00002378	.02621	.787
447.877	.1252	3.329	17.7330	217.721	9.2875	1.124	1.122	.999	.00002421	.02697	.788
457.877	.1044	4.083	18.0704	220.033	9.3970	1.123	1.121	.999	.00002463	.02773	.789
467.877	.0872	4.994	18.4110	222.343	9.5037	1.122	1.120	.999	.00002505	.02849	.789
477.877	.0730	6.093	18.7547	224.658	9.6073	1.121	1.119	.999	.00002547	.02925	.790
487.877	.0613	7.415	19.1011	226.985	9.7081	1.120	1.119	.999	.00002588	.03003	.791
497.877	.0515	9.000	19.4502	229.334	9.8059	1.120	1.119	.999	.00002630	.03080	.791
507.877	.0434	10.895	19.8016	231.714	9.9007	1.119	1.119	1.000	.00002672	.03159	.791
517.877	.0367	13.154	20.1551	234.140	9.9927	1.119	1.120	1.000	.00002714	.03238	.791
527.877	.0311	15.837	20.5106	236.626	10.0818	1.119	1.121	1.001	.00002757	.03318	.791
537.877	.0264	19.014	20.8677	239.192	10.1680	1.120	1.123	1.002	.00002799	.03399	.791
547.877	.0225	22.763	21.2264	241.859	10.2514	1.120	1.126	1.004	.00002843	.03481	.791
557.877	.0193	27.170	21.5863	244.651	10.3321	1.121	1.129	1.006	.00002887	.03564	.791
567.877	.0165	32.333	21.9475	247.599	10.4099	1.122	1.133	1.008	.00002931	.03649	.790
577.877	.0142	38.360	22.3097	250.736	10.4850	1.123	1.139	1.011	.00002977	.03736	.789
587.877	.0123	45.367	22.6730	254.099	10.5573	1.125	1.145	1.015	.00003023	.03824	.789
597.877	.0106	53.485	23.0375	257.730	10.6267	1.127	1.153	1.020	.00003072	.03915	.788
607.877	.0092	62.851	23.4034	261.676	10.6931	1.129	1.163	1.025	.00003123	.04008	.787
617.877	.0081	73.518	23.7657	265.861	10.7593	1.131	1.174	1.032	.00003176	.04103	.787
627.877	.0071	85.855	24.1361	270.651	10.8414	1.133	1.188	1.040	.00003233	.04202	.788
637.877	.0062	99.971	24.5104	275.812	10.9240	1.136	1.203	1.049	.00003294	.04304	.790
647.877	.0055	116.074	24.8900	281.506	11.0069	1.138	1.221	1.060	.00003359	.04409	.792
657.877	.0049	134.396	25.2764	287.800	11.0897	1.141	1.242	1.073	.00003430	.04519	.795
667.877	.0044	155.187	25.6718	294.766	11.1721	1.143	1.265	1.088	.00003506	.04634	.799
677.877	.0039	178.727	26.0787	302.482	11.2536	1.146	1.292	1.106	.00003588	.04753	.803
687.877	.0035	205.324	26.5004	311.040	11.3336	1.149	1.322	1.126	.00003678	.04877	.807
697.877	.0032	235.322	26.9409	320.543	11.4114	1.151	1.357	1.149	.00003774	.05008	.812
707.877	.0029	269.107	27.4051	331.117	11.4865	1.154	1.396	1.175	.00003879	.05145	.818
717.877	.0026	307.116	27.8985	342.910	11.5579	1.156	1.440	1.204	.00003992	.05288	.824
718.482	.0026	309.508	27.9293	343.652	11.5620	1.156	1.442	1.206	.00003999	.05297	.825



TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=33.75											
157.401	81.3051	.002	9.9676	135.571	5.1049	1.243	1.243	1.000	.00000965	.00536	.867
167.401	62.8212	.002	10.1575	139.694	5.2694	1.234	1.234	1.000	.00001026	.00610	.836
177.401	48.7887	.003	10.3533	143.300	5.4333	1.225	1.225	1.000	.00001086	.00685	.814
187.401	38.0823	.005	10.5552	146.801	5.5964	1.217	1.217	1.000	.00001145	.00759	.798
197.401	29.8582	.006	10.7629	150.206	5.7588	1.210	1.210	1.000	.00001203	.00833	.786
207.401	23.5045	.008	10.9766	153.524	5.9203	1.203	1.203	1.000	.00001260	.00907	.777
217.401	18.5713	.011	11.1962	156.761	6.0808	1.197	1.197	1.000	.00001317	.00981	.771
227.401	14.7236	.014	11.4217	159.923	6.2402	1.191	1.191	1.000	.00001372	.01055	.767
237.401	11.7100	.019	11.6529	163.016	6.3984	1.185	1.185	1.000	.00001427	.01129	.764
247.401	9.3383	.025	11.8899	166.044	6.5552	1.180	1.180	1.000	.00001480	.01203	.762
257.401	7.4696	.032	12.1325	169.013	6.7108	1.175	1.175	1.000	.00001533	.01277	.761
267.401	5.9919	.042	12.3809	171.925	6.8648	1.171	1.170	1.000	.00001586	.01351	.761
277.401	4.8189	.054	12.6348	174.784	7.0172	1.166	1.166	1.000	.00001637	.01425	.761
287.401	3.8819	.069	12.8942	177.593	7.1679	1.162	1.162	1.000	.00001688	.01499	.762
297.401	3.1369	.088	13.1590	180.356	7.3169	1.158	1.158	1.000	.00001738	.01573	.763
307.401	2.5389	.113	13.4292	183.074	7.4639	1.155	1.155	1.000	.00001787	.01648	.765
317.401	2.0597	.144	13.7047	185.750	7.6091	1.152	1.151	1.000	.00001836	.01722	.766
327.401	1.6743	.182	13.9855	188.386	7.7521	1.148	1.148	1.000	.00001884	.01796	.768
337.401	1.3638	.231	14.2713	190.984	7.8930	1.145	1.145	1.000	.00001931	.01870	.770
347.401	1.1131	.291	14.5621	193.547	8.0316	1.143	1.142	.999	.00001978	.01944	.772
357.401	.9102	.366	14.8579	196.076	8.1679	1.140	1.139	.999	.00002024	.02019	.774
367.401	.7457	.459	15.1585	198.572	8.3018	1.138	1.137	.999	.00002069	.02093	.775
377.401	.6121	.574	15.4638	201.038	8.4332	1.135	1.134	.999	.00002115	.02167	.777
387.401	.5033	.717	15.7737	203.476	8.5620	1.133	1.132	.999	.00002159	.02242	.779
397.401	.4147	.893	16.0880	205.888	8.6882	1.131	1.130	.999	.00002203	.02316	.781
407.401	.3423	1.109	16.4067	208.274	8.8116	1.129	1.128	.999	.00002247	.02391	.782
417.401	.2830	1.373	16.7295	210.638	8.9323	1.128	1.126	.999	.00002290	.02466	.784
427.401	.2345	1.697	17.0564	212.982	9.0500	1.126	1.125	.999	.00002333	.02541	.785
437.401	.1947	2.093	17.3871	215.309	9.1649	1.124	1.123	.999	.00002375	.02616	.786
447.401	.1619	2.574	17.7216	217.622	9.2767	1.123	1.122	.999	.00002417	.02691	.787
457.401	.1349	3.158	18.0596	219.924	9.3856	1.122	1.121	.999	.00002459	.02766	.788
467.401	.1126	3.864	18.4010	222.219	9.4914	1.121	1.120	.999	.00002501	.02842	.789
477.401	.0942	4.718	18.7455	224.513	9.5941	1.120	1.119	.999	.00002542	.02918	.790
487.401	.0790	5.746	19.0930	226.811	9.6936	1.119	1.118	.999	.00002584	.02995	.790
497.401	.0664	6.980	19.4433	229.120	9.7901	1.119	1.118	.999	.00002625	.03072	.790
507.401	.0559	8.458	19.7961	231.449	9.8834	1.118	1.118	1.000	.00002666	.03149	.790
517.401	.0472	10.222	20.1512	233.808	9.9736	1.118	1.118	1.000	.00002707	.03227	.790
527.401	.0399	12.322	20.5085	236.208	10.0607	1.118	1.119	1.001	.00002748	.03306	.790
537.401	.0339	14.813	20.8676	238.665	10.1446	1.118	1.120	1.002	.00002790	.03385	.790
547.401	.0288	17.758	21.2284	241.193	10.2255	1.118	1.122	1.003	.00002832	.03465	.789
557.401	.0246	21.230	21.5906	243.813	10.3032	1.118	1.124	1.004	.00002874	.03547	.789
567.401	.0210	25.308	21.9541	246.547	10.3779	1.119	1.127	1.006	.00002917	.03629	.788
577.401	.0180	30.080	22.3188	249.422	10.4496	1.120	1.131	1.008	.00002961	.03713	.787
587.401	.0155	35.646	22.6845	252.468	10.5182	1.121	1.136	1.011	.00003005	.03798	.786
597.401	.0134	42.113	23.0511	255.718	10.5837	1.122	1.142	1.015	.00003050	.03885	.785
607.401	.0116	49.599	23.4188	259.209	10.6461	1.124	1.149	1.019	.00003097	.03974	.784
617.401	.0101	58.130	23.7822	262.561	10.7072	1.126	1.158	1.024	.00003145	.04065	.783
627.401	.0089	68.068	24.1527	267.031	10.7852	1.128	1.168	1.030	.00003197	.04159	.783
637.401	.0078	79.453	24.5259	271.470	10.8636	1.130	1.180	1.037	.00003250	.04255	.784
647.401	.0068	92.481	24.9025	276.335	10.9425	1.132	1.194	1.046	.00003308	.04354	.785
657.401	.0060	107.345	25.2834	281.682	11.0219	1.134	1.210	1.056	.00003369	.04457	.787
667.401	.0053	124.257	25.6700	287.571	11.1013	1.136	1.228	1.068	.00003434	.04563	.789
677.401	.0048	143.449	26.0640	294.067	11.1806	1.139	1.249	1.082	.00003505	.04673	.792
687.401	.0043	165.177	26.4676	301.238	11.2593	1.142	1.273	1.098	.00003581	.04788	.796
697.401	.0038	189.719	26.8835	309.163	11.3370	1.144	1.300	1.116	.00003664	.04907	.800
707.401	.0034	217.386	27.3149	317.930	11.4133	1.147	1.331	1.136	.00003753	.05032	.804
717.401	.0031	248.523	27.7659	327.641	11.4874	1.149	1.365	1.160	.00003850	.05163	.809
727.401	.0028	283.517	28.2413	338.419	11.5587	1.151	1.404	1.187	.00003954	.05300	.815
736.601	.0026	319.492	28.7051	349.405	11.6212	1.153	1.445	1.214	.00004057	.05432	.820

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

S/R=34.00

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
167.071	E1.3446	.002	10.1511	139.574	5.2639	1.234	1.234	1.000	.00001024	.00608	.837
177.071	63.1857	.003	10.3468	143.184	5.4277	1.226	1.226	1.000	.00001084	.00682	.815
187.071	49.3048	.004	10.5484	146.689	5.5909	1.218	1.218	1.000	.00001143	.00756	.798
197.071	38.6505	.005	10.7560	150.097	5.7533	1.210	1.210	1.000	.00001201	.00830	.786
207.071	30.4220	.006	10.9696	153.418	5.9148	1.203	1.203	1.000	.00001258	.00904	.778
217.071	24.0339	.008	11.1890	156.658	6.0753	1.197	1.197	1.000	.00001315	.00978	.771
227.071	19.0523	.011	11.4142	159.823	6.2347	1.191	1.191	1.000	.00001370	.01052	.767
237.071	15.1511	.015	11.6453	162.918	6.3929	1.185	1.185	1.000	.00001425	.01126	.764
247.071	12.0810	.019	11.8821	165.949	6.5498	1.180	1.180	1.000	.00001479	.01200	.762
257.071	9.6624	.025	12.1246	168.920	6.7053	1.175	1.175	1.000	.00001532	.01275	.761
267.071	7.7526	.032	12.3727	171.835	6.8593	1.171	1.171	1.000	.00001584	.01349	.761
277.071	6.2326	.041	12.6265	174.696	7.0117	1.166	1.166	1.000	.00001635	.01423	.761
287.071	5.0208	.053	12.8857	177.508	7.1625	1.162	1.162	1.000	.00001686	.01497	.762
297.071	4.0565	.068	13.1505	180.273	7.3114	1.159	1.158	1.000	.00001736	.01571	.763
307.071	3.2829	.087	13.4206	182.994	7.4585	1.155	1.155	1.000	.00001785	.01645	.765
317.071	2.6629	.111	13.6960	185.672	7.6036	1.152	1.151	1.000	.00001834	.01719	.766
327.071	2.1645	.141	13.9766	188.311	7.7466	1.148	1.148	1.000	.00001882	.01793	.768
337.071	1.7629	.178	14.2623	190.912	7.8874	1.145	1.145	1.000	.00001929	.01868	.770
347.071	1.4386	.225	14.5531	193.477	8.0260	1.143	1.142	1.000	.00001976	.01942	.772
357.071	1.1763	.283	14.8489	196.009	8.1623	1.140	1.139	1.000	.00002022	.02016	.773
367.071	.9635	.355	15.1494	198.508	8.2961	1.138	1.137	.999	.00002068	.02090	.775
377.071	.7908	.444	15.4547	200.976	8.4274	1.135	1.135	.999	.00002113	.02165	.777
387.071	.6502	.555	15.7647	203.416	8.5560	1.133	1.132	.999	.00002157	.02239	.779
397.071	.5356	.691	16.0791	205.829	8.6820	1.131	1.130	.999	.00002201	.02313	.781
407.071	.4420	.858	16.3979	208.216	8.8052	1.129	1.128	.999	.00002245	.02388	.782
417.071	.3654	1.063	16.7209	210.580	8.9256	1.127	1.126	.999	.00002288	.02462	.784
427.071	.3027	1.314	17.0481	212.923	9.0430	1.126	1.125	.999	.00002331	.02537	.785
437.071	.2512	1.621	17.3792	215.248	9.1574	1.124	1.123	.999	.00002373	.02612	.786
447.071	.2088	1.994	17.7140	217.555	9.2688	1.123	1.122	.999	.00002415	.02687	.787
457.071	.1739	2.448	18.0526	219.850	9.3771	1.121	1.120	.999	.00002457	.02762	.788
467.071	.1452	2.997	18.3945	222.134	9.4823	1.120	1.119	.999	.00002498	.02837	.789
477.071	.1214	3.661	18.7398	224.412	9.5842	1.119	1.118	.999	.00002539	.02913	.789
487.071	.1017	4.461	19.0881	226.689	9.6829	1.118	1.118	.999	.00002580	.02989	.790
497.071	.0854	5.423	19.4394	228.970	9.7782	1.118	1.117	.999	.00002621	.03065	.790
507.071	.0719	6.576	19.7933	231.261	9.8703	1.117	1.117	1.000	.00002661	.03142	.790
517.071	.0606	7.954	20.1497	233.571	9.9591	1.117	1.117	1.000	.00002702	.03219	.790
527.071	.0512	9.596	20.5084	235.908	10.0445	1.116	1.116	1.001	.00002743	.03297	.789
537.071	.0434	11.548	20.8691	238.284	10.1266	1.116	1.116	1.001	.00002783	.03375	.789
547.071	.0369	13.860	21.2317	240.710	10.2054	1.116	1.119	1.002	.00002824	.03454	.788
557.071	.0314	16.591	21.5959	243.202	10.2809	1.116	1.120	1.003	.00002865	.03533	.788
567.071	.0268	19.805	21.9615	245.778	10.3530	1.117	1.123	1.005	.00002907	.03614	.787
577.071	.0230	23.575	22.3284	248.458	10.4218	1.117	1.125	1.006	.00002949	.03696	.786
587.071	.0197	27.984	22.6963	251.265	10.4873	1.118	1.129	1.008	.00002992	.03779	.784
597.071	.0170	33.119	23.0652	254.226	10.5494	1.119	1.133	1.011	.00003035	.03863	.783
607.071	.0147	39.081	23.4349	257.371	10.6082	1.120	1.139	1.014	.00003079	.03949	.781
617.071	.0128	45.895	23.8001	260.718	10.6650	1.122	1.145	1.018	.00003123	.04036	.780
627.071	.0111	53.838	24.1720	264.301	10.7388	1.123	1.153	1.023	.00003170	.04125	.780
637.071	.0097	62.981	24.5457	268.175	10.8132	1.125	1.162	1.029	.00003219	.04217	.780
647.071	.0085	73.497	24.9217	272.389	10.8882	1.126	1.172	1.035	.00003270	.04311	.780
657.071	.0075	85.509	25.3007	276.985	10.9636	1.128	1.185	1.043	.00003324	.04408	.781
667.071	.0066	99.215	25.6834	282.017	11.0394	1.130	1.199	1.052	.00003381	.04507	.782
677.071	.0058	114.812	26.0708	287.539	11.1154	1.133	1.216	1.063	.00003442	.04610	.784
687.071	.0052	132.511	26.4645	293.611	11.1915	1.135	1.235	1.076	.00003508	.04717	.786
697.071	.0046	152.548	26.8660	300.293	11.2673	1.137	1.256	1.090	.00003579	.04827	.789
707.071	.0042	175.178	27.2778	307.653	11.3425	1.140	1.281	1.106	.00003655	.04942	.792
717.071	.0037	200.681	27.7024	315.766	11.4166	1.142	1.308	1.125	.00003738	.05062	.796
727.071	.0034	229.370	28.1432	324.718	11.4892	1.145	1.339	1.147	.00003827	.05187	.801
737.071	.0031	261.587	28.6043	334.612	11.5598	1.147	1.373	1.171	.00003923	.05318	.806
747.071	.0028	297.720	29.0904	345.567	11.6276	1.149	1.412	1.198	.00004027	.05455	.811
755.034	.0026	329.583	29.4992	355.146	11.6792	1.151	1.447	1.222	.00004116	.05568	.816

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

S/R=34.25

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
176.940	81.3928	.002	10.3442	143.139	5.4255	1.226	1.226	1.000	.00001083	.00681	.815
186.940	63.5319	.003	10.5458	146.645	5.5887	1.218	1.218	1.000	.00001142	.00755	.799
196.940	49.7930	.004	10.7533	150.055	5.7510	1.210	1.210	1.000	.00001200	.00829	.786
206.940	39.1894	.005	10.9668	153.377	5.9125	1.203	1.203	1.000	.00001258	.00903	.778
216.940	30.9589	.007	11.1861	156.618	6.0730	1.197	1.197	1.000	.00001314	.00977	.771
226.940	24.5407	.009	11.4113	159.784	6.2324	1.191	1.191	1.000	.00001369	.01051	.767
236.940	19.5149	.011	11.6423	162.881	6.3906	1.185	1.185	1.000	.00001424	.01125	.764
246.940	15.5598	.015	11.8790	165.913	6.5475	1.180	1.180	1.000	.00001478	.01200	.762
256.940	12.4442	.019	12.1215	168.885	6.7030	1.175	1.175	1.000	.00001531	.01274	.761
266.940	9.9854	.025	12.3696	171.801	6.8570	1.171	1.171	1.000	.00001583	.01348	.761
276.940	8.0264	.032	12.6233	174.664	7.0094	1.166	1.166	1.000	.00001635	.01422	.761
286.940	6.4659	.041	12.8825	177.477	7.1601	1.162	1.162	1.000	.00001685	.01496	.762
296.940	5.2235	.053	13.1472	180.244	7.3090	1.159	1.158	1.000	.00001735	.01570	.763
306.940	4.2271	.068	13.4172	182.966	7.4561	1.155	1.155	1.000	.00001785	.01644	.765
316.940	3.4287	.086	13.6926	185.646	7.6011	1.152	1.151	1.000	.00001833	.01718	.766
326.940	2.7868	.109	13.9732	188.286	7.7441	1.148	1.148	1.000	.00001881	.01792	.768
336.940	2.2696	.138	14.2590	190.888	7.8849	1.145	1.145	1.000	.00001929	.01866	.770
346.940	1.8520	.175	14.5498	193.455	8.0234	1.143	1.142	1.000	.00001975	.01941	.772
356.940	1.5142	.220	14.8456	195.988	8.1596	1.140	1.140	1.000	.00002021	.02015	.773
366.940	1.2403	.276	15.1462	198.489	8.2933	1.137	1.137	1.000	.00002067	.02089	.775
376.940	1.0178	.345	15.4516	200.958	8.4244	1.135	1.135	1.000	.00002112	.02163	.777
386.940	.8368	.431	15.7616	203.399	8.5530	1.133	1.132	1.000	.00002157	.02238	.779
396.940	.6892	.537	16.0762	205.813	8.6788	1.131	1.130	.999	.00002201	.02312	.780
406.940	.5687	.667	16.3951	208.201	8.8018	1.129	1.128	.999	.00002244	.02386	.782
416.940	.4701	.826	16.7184	210.565	8.9219	1.127	1.126	.999	.00002287	.02461	.783
426.940	.3893	1.022	17.0458	212.907	9.0390	1.125	1.125	.999	.00002330	.02535	.785
436.940	.3230	1.260	17.3772	215.229	9.1531	1.124	1.123	.999	.00002372	.02610	.786
446.940	.2685	1.551	17.7124	217.533	9.2641	1.122	1.122	.999	.00002414	.02685	.787
456.940	.2236	1.904	18.0514	219.822	9.3719	1.121	1.120	.999	.00002455	.02760	.788
466.940	.1865	2.332	18.3938	222.098	9.4765	1.120	1.119	.999	.00002496	.02835	.788
476.940	.1559	2.850	18.7397	224.365	9.5778	1.119	1.118	.999	.00002537	.02910	.789
486.940	.1306	3.474	19.0887	226.626	9.6757	1.118	1.117	.999	.00002578	.02985	.789
496.940	.1096	4.225	19.4408	228.886	9.7702	1.117	1.116	1.000	.00002618	.03061	.789
506.940	.0922	5.126	19.7956	231.149	9.8613	1.116	1.116	1.000	.00002658	.03137	.789
516.940	.0777	6.205	20.1531	233.423	9.9489	1.116	1.116	1.000	.00002698	.03214	.789
526.940	.0656	7.491	20.5130	235.713	10.0330	1.115	1.116	1.000	.00002738	.03291	.789
536.940	.0555	9.022	20.8751	238.029	10.1136	1.115	1.116	1.001	.00002778	.03368	.788
546.940	.0471	10.638	21.2391	240.380	10.1907	1.115	1.117	1.002	.00002819	.03446	.787
556.940	.0401	12.386	21.6050	242.777	10.2642	1.115	1.118	1.002	.00002859	.03524	.787
566.940	.0342	15.158	21.9724	245.235	10.3342	1.115	1.119	1.003	.00002899	.03603	.785
576.940	.0292	18.495	22.3412	247.770	10.4006	1.115	1.121	1.005	.00002940	.03683	.784
586.940	.0251	21.983	22.7111	250.398	10.4634	1.116	1.124	1.006	.00002981	.03764	.783
596.940	.0215	26.055	23.0820	253.143	10.5227	1.116	1.127	1.008	.00003023	.03846	.781
606.940	.0186	30.794	23.4538	256.026	10.5784	1.117	1.131	1.011	.00003065	.03930	.779
616.940	.0161	36.223	23.8210	259.063	10.6316	1.118	1.136	1.014	.00003108	.04014	.778
626.940	.0140	42.569	24.1946	262.276	10.7019	1.119	1.141	1.017	.00003151	.04100	.777
636.940	.0122	49.893	24.5698	265.713	10.7726	1.120	1.148	1.022	.00003196	.04188	.777
646.940	.0106	58.323	24.9467	269.414	10.8436	1.122	1.156	1.027	.00003243	.04278	.776
656.940	.0093	68.017	25.3256	273.422	10.9152	1.123	1.166	1.033	.00003291	.04370	.777
666.940	.0082	79.091	25.7071	277.774	10.9872	1.125	1.177	1.040	.00003342	.04464	.777
676.940	.0072	91.726	26.0919	282.522	11.0596	1.127	1.190	1.049	.00003396	.04562	.778
686.940	.0064	106.104	26.4806	287.714	11.1323	1.129	1.205	1.059	.00003454	.04662	.779
696.940	.0057	122.422	26.8746	293.403	11.2051	1.131	1.222	1.070	.00003515	.04765	.781
706.940	.0051	140.894	27.2752	299.646	11.2779	1.133	1.241	1.083	.00003581	.04872	.783
716.940	.0045	161.756	27.6843	306.502	11.3503	1.136	1.263	1.098	.00003652	.04983	.786
726.940	.0041	185.264	28.1040	314.035	11.4220	1.138	1.288	1.115	.00003728	.05098	.789
736.940	.0037	211.699	28.5372	322.220	11.4927	1.140	1.315	1.135	.00003811	.05218	.793
746.940	.0033	241.370	28.9872	331.440	11.5619	1.143	1.346	1.156	.00003900	.05343	.797
756.940	.0030	274.622	29.4581	341.495	11.6290	1.145	1.381	1.181	.00003996	.05473	.802
766.940	.0028	311.839	29.9545	352.604	11.6934	1.147	1.420	1.209	.00004099	.05610	.807
773.794	.0026	339.858	30.3124	360.899	11.7358	1.148	1.449	1.230	.00004174	.05707	.811

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=34.50											
187.061	81.3384	.002	10.5483	146.688	5.5905	1.218	1.218	1.000	.00001143	.00756	.798
197.061	63.7682	.003	10.7559	150.097	5.7529	1.210	1.210	1.000	.00001201	.00830	.786
207.061	50.1834	.004	10.9694	153.418	5.9144	1.203	1.203	1.000	.00001258	.00904	.778
217.061	39.6451	.005	11.1889	156.658	6.0748	1.197	1.197	1.000	.00001315	.00978	.771
227.061	31.4273	.007	11.4141	159.824	6.2342	1.191	1.191	1.000	.00001370	.01052	.767
237.061	24.9920	.009	11.6452	162.920	6.3923	1.185	1.185	1.000	.00001425	.01126	.764
247.061	19.9276	.012	11.8820	165.952	6.5492	1.180	1.180	1.000	.00001479	.01200	.762
257.061	15.9378	.015	12.1245	168.924	6.7047	1.175	1.175	1.000	.00001532	.01274	.761
267.061	12.7880	.019	12.3727	171.840	6.8586	1.171	1.171	1.000	.00001584	.01349	.761
277.061	10.2802	.025	12.6265	174.702	7.0110	1.166	1.166	1.000	.00001635	.01423	.761
287.061	8.2814	.032	12.8858	177.516	7.1616	1.162	1.162	1.000	.00001686	.01497	.762
297.061	6.6905	.041	13.1506	180.282	7.3105	1.158	1.158	1.000	.00001736	.01571	.763
307.061	5.4143	.053	13.4208	183.004	7.4575	1.155	1.155	1.000	.00001785	.01645	.765
317.061	4.3918	.067	13.6962	185.684	7.6024	1.152	1.151	1.000	.00001834	.01719	.766
327.061	3.5696	.085	13.9769	188.325	7.7453	1.148	1.148	1.000	.00001882	.01793	.768
337.061	2.9072	.108	14.2628	190.928	7.8860	1.145	1.145	1.000	.00001929	.01867	.770
347.061	2.3722	.136	14.5538	193.495	8.0245	1.143	1.142	1.000	.00001976	.01941	.772
357.061	1.9394	.172	14.8497	196.028	8.1605	1.140	1.140	1.000	.00002022	.02015	.773
367.061	1.5886	.215	15.1504	198.529	8.2941	1.137	1.137	1.000	.00002067	.02090	.775
377.061	1.3036	.270	15.4560	201.000	8.4251	1.135	1.135	1.000	.00002112	.02164	.777
387.061	1.0717	.337	15.7662	203.441	8.5534	1.133	1.132	1.000	.00002157	.02238	.779
397.061	.8827	.419	16.0810	205.855	8.6790	1.131	1.130	1.000	.00002201	.02312	.780
407.061	.7283	.521	16.4002	208.242	8.8018	1.129	1.128	1.000	.00002244	.02387	.782
417.061	.6020	.646	16.7237	210.606	8.9216	1.127	1.126	1.000	.00002287	.02461	.783
427.061	.4985	.798	17.0513	212.947	9.0385	1.125	1.125	.999	.00002330	.02536	.785
437.061	.4135	.985	17.3830	215.267	9.1522	1.124	1.123	.999	.00002372	.02610	.786
447.061	.3437	1.212	17.7187	217.568	9.2629	1.122	1.121	.999	.00002414	.02685	.787
457.061	.2861	1.488	18.0580	219.852	9.3702	1.121	1.120	.999	.00002455	.02759	.788
467.061	.2387	1.823	18.4010	222.122	9.4743	1.119	1.119	.999	.00002496	.02834	.788
477.061	.1995	2.229	18.7474	224.380	9.5750	1.118	1.118	.999	.00002537	.02909	.789
487.061	.1670	2.718	19.0970	226.628	9.6722	1.117	1.117	1.000	.00002577	.02984	.789
497.061	.1401	3.306	19.4498	228.872	9.7660	1.116	1.116	1.000	.00002617	.03060	.789
507.061	.1178	4.013	19.8054	231.115	9.8562	1.115	1.115	1.000	.00002657	.03135	.789
517.061	.0992	4.859	20.1638	233.361	9.9428	1.115	1.115	1.000	.00002697	.03211	.789
527.061	.0838	5.869	20.5247	235.616	10.0258	1.114	1.115	1.000	.00002736	.03288	.788
537.061	.0708	7.072	20.8879	237.887	10.1052	1.114	1.115	1.001	.00002776	.03364	.788
547.061	.0601	8.502	21.2532	240.182	10.1808	1.113	1.115	1.001	.00002815	.03441	.787
557.061	.0510	10.194	21.6205	242.509	10.2527	1.113	1.116	1.002	.00002855	.03519	.786
567.061	.0435	12.192	21.9894	244.879	10.3208	1.113	1.116	1.003	.00002894	.03597	.785
577.061	.0371	14.545	22.3598	247.305	10.3852	1.113	1.118	1.004	.00002934	.03676	.783
587.061	.0318	17.305	22.7315	249.800	10.4458	1.114	1.120	1.005	.00002974	.03755	.782
597.061	.0273	20.534	23.1043	252.382	10.5027	1.114	1.122	1.006	.00003014	.03835	.780
607.061	.0235	24.299	23.4780	255.068	10.5557	1.115	1.125	1.008	.00003055	.03917	.778
617.061	.0203	28.622	23.8470	257.870	10.6063	1.115	1.129	1.011	.00003096	.03999	.776
627.061	.0176	33.686	24.2225	260.801	10.6735	1.116	1.133	1.013	.00003138	.04083	.775
637.061	.0153	39.546	24.5994	263.904	10.7408	1.117	1.138	1.017	.00003180	.04167	.774
647.061	.0133	46.306	24.9778	267.211	10.8085	1.118	1.144	1.021	.00003224	.04254	.774
657.061	.0116	54.083	25.3578	270.754	10.8765	1.119	1.152	1.026	.00003268	.04342	.773
667.061	.0102	63.006	25.7397	274.573	10.9448	1.121	1.160	1.031	.00003315	.04432	.773
677.061	.0089	73.239	26.1238	278.711	11.0136	1.122	1.170	1.038	.00003364	.04525	.773
687.061	.0079	84.892	26.5108	283.203	11.0827	1.124	1.182	1.046	.00003415	.04620	.774
697.061	.0070	98.152	26.9013	288.098	11.1521	1.126	1.195	1.055	.00003469	.04717	.775
707.061	.0062	113.201	27.2962	293.446	11.2217	1.128	1.211	1.065	.00003527	.04818	.776
717.061	.0055	130.238	27.6967	299.295	11.2914	1.130	1.228	1.077	.00003588	.04921	.778
727.061	.0049	149.477	28.1043	305.701	11.3609	1.132	1.248	1.091	.00003654	.05029	.780
737.061	.0044	171.153	28.5207	312.719	11.4300	1.134	1.270	1.106	.00003725	.05140	.783
747.061	.0040	195.524	28.9484	320.415	11.4984	1.136	1.295	1.124	.00003801	.05255	.786
757.061	.0036	222.870	29.3900	328.858	11.5658	1.139	1.322	1.144	.00003883	.05375	.789
767.061	.0033	253.498	29.8490	338.132	11.6316	1.141	1.353	1.166	.00003972	.05500	.794
777.061	.0030	287.752	30.3293	348.333	11.6954	1.143	1.388	1.191	.00004067	.05630	.798
787.061	.0027	326.013	30.8357	359.578	11.7566	1.145	1.426	1.219	.00004170	.05766	.803
792.883	.0026	350.299	31.1447	366.659	11.7909	1.146	1.451	1.237	.00004233	.05848	.806

TABLE I. - THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=34.75											
197.328	61.3590	.002	10.7616	150.188	5.7571	1.210	1.210	1.000	.00001203	.00832	.786
207.328	64.0484	.003	10.9752	153.507	5.9186	1.203	1.203	1.000	.00001260	.00906	.777
217.328	50.5966	.004	11.1948	156.745	6.0790	1.197	1.197	1.000	.00001316	.00980	.771
227.328	40.1118	.005	11.4202	159.909	6.2383	1.191	1.191	1.000	.00001372	.01054	.767
237.328	31.9008	.007	11.6515	163.004	6.3964	1.185	1.185	1.000	.00001426	.01128	.764
247.328	25.4384	.009	11.8885	166.034	6.5532	1.180	1.180	1.000	.00001480	.01202	.762
257.328	20.3469	.012	12.1312	169.005	6.7086	1.175	1.175	1.000	.00001533	.01276	.761
267.328	16.3231	.015	12.3795	171.919	6.8625	1.171	1.170	1.000	.00001585	.01350	.761
277.328	13.1254	.020	12.6334	174.781	7.0148	1.166	1.166	1.000	.00001637	.01425	.761
287.328	10.5732	.025	12.8929	177.593	7.1654	1.162	1.162	1.000	.00001687	.01499	.762
297.328	8.5431	.032	13.1579	180.359	7.3142	1.158	1.158	1.000	.00001737	.01573	.763
307.328	6.9140	.041	13.4282	183.080	7.4611	1.155	1.155	1.000	.00001786	.01647	.765
317.328	5.6084	.053	13.7038	185.760	7.6059	1.151	1.151	1.000	.00001835	.01721	.766
327.328	4.5587	.067	13.9847	188.400	7.7487	1.148	1.148	1.000	.00001883	.01795	.768
337.328	3.7128	.085	14.2708	191.003	7.8893	1.145	1.145	1.000	.00001930	.01869	.770
347.328	3.0297	.107	14.5619	193.570	8.0276	1.142	1.142	1.000	.00001977	.01943	.772
357.328	2.4770	.134	14.8580	196.103	8.1635	1.140	1.139	1.000	.00002023	.02017	.773
367.328	2.0290	.169	15.1590	198.604	8.2969	1.137	1.137	1.000	.00002069	.02091	.775
377.328	1.6650	.211	15.4647	201.074	8.4278	1.135	1.135	1.000	.00002114	.02166	.777
387.328	1.3688	.264	15.7752	203.515	8.5559	1.133	1.132	1.000	.00002158	.02240	.779
397.328	1.1274	.328	16.0902	205.928	8.6813	1.131	1.130	1.000	.00002202	.02314	.780
407.328	.9302	.408	16.4096	208.316	8.8039	1.129	1.128	1.000	.00002245	.02388	.782
417.328	.7688	.506	16.7334	210.678	8.9235	1.127	1.126	1.000	.00002288	.02463	.783
427.328	.6366	.626	17.0613	213.018	9.0400	1.125	1.124	1.000	.00002331	.02537	.785
437.328	.5281	.772	17.3934	215.336	9.1535	1.123	1.123	1.000	.00002373	.02611	.786
447.328	.4388	.950	17.7294	217.634	9.2637	1.122	1.121	1.000	.00002414	.02686	.787
457.328	.3653	1.167	18.0691	219.915	9.3707	1.120	1.120	1.000	.00002456	.02761	.787
467.328	.3047	1.429	18.4125	222.179	9.4743	1.119	1.119	1.000	.00002496	.02835	.788
477.328	.2546	1.747	18.7594	224.430	9.5745	1.118	1.117	1.000	.00002537	.02910	.789
487.328	.2131	2.131	19.1096	226.669	9.6712	1.117	1.116	1.000	.00002577	.02985	.789
497.328	.1788	2.593	19.4630	228.901	9.7643	1.116	1.116	1.000	.00002617	.03060	.789
507.328	.1502	3.148	19.8193	231.127	9.8537	1.115	1.115	1.000	.00002657	.03135	.789
517.328	.1265	3.813	20.1784	233.352	9.9395	1.114	1.114	1.000	.00002696	.03211	.788
527.328	.1067	4.607	20.5402	235.581	10.0216	1.113	1.114	1.000	.00002735	.03287	.788
537.328	.0902	5.554	20.9043	237.818	10.0998	1.113	1.114	1.001	.00002774	.03363	.787
547.328	.0765	6.680	21.2707	240.070	10.1742	1.113	1.114	1.001	.00002813	.03439	.786
557.328	.0649	8.014	21.6391	242.344	10.2448	1.112	1.114	1.001	.00002852	.03516	.785
567.328	.0553	9.591	22.0092	244.648	10.3114	1.112	1.114	1.002	.00002891	.03593	.784
577.328	.0471	11.449	22.3810	246.991	10.3741	1.112	1.115	1.003	.00002930	.03671	.782
587.328	.0403	13.633	22.7542	249.385	10.4328	1.112	1.117	1.004	.00002969	.03749	.781
597.328	.0346	16.191	23.1286	251.843	10.4876	1.112	1.118	1.005	.00003008	.03828	.779
607.328	.0297	19.179	23.5040	254.379	10.5383	1.113	1.121	1.006	.00003048	.03908	.776
617.328	.0257	22.615	23.8747	257.002	10.5870	1.113	1.123	1.008	.00003088	.03988	.774
627.328	.0222	26.649	24.2520	259.717	10.6515	1.114	1.126	1.010	.00003128	.04070	.773
637.328	.0192	31.326	24.6307	262.563	10.7161	1.114	1.130	1.013	.00003169	.04153	.773
647.328	.0167	36.733	25.0107	265.565	10.7808	1.115	1.135	1.016	.00003211	.04236	.772
657.328	.0145	42.969	25.3921	268.750	10.8456	1.116	1.140	1.020	.00003252	.04322	.771
667.328	.0127	50.140	25.7752	272.150	10.9106	1.117	1.147	1.024	.00003296	.04409	.770
677.328	.0111	58.365	26.1600	275.798	10.9759	1.118	1.155	1.029	.00003340	.04497	.770
687.328	.0098	67.795	26.5468	279.736	11.0416	1.120	1.164	1.035	.00003387	.04588	.770
697.328	.0086	78.532	26.9362	283.994	11.1075	1.121	1.174	1.043	.00003435	.04681	.770
707.328	.0076	90.750	27.3286	288.618	11.1738	1.123	1.186	1.051	.00003486	.04776	.771
717.328	.0068	104.615	27.7248	293.652	11.2402	1.125	1.200	1.060	.00003541	.04874	.771
727.328	.0060	120.311	28.1257	299.143	11.3068	1.126	1.216	1.071	.00003598	.04974	.773
737.328	.0054	138.035	28.5326	305.139	11.3734	1.128	1.234	1.084	.00003660	.05078	.774
747.328	.0048	158.005	28.9470	311.692	11.4398	1.130	1.254	1.098	.00003726	.05186	.776
757.328	.0044	180.454	29.3706	318.856	11.5057	1.133	1.276	1.114	.00003796	.05297	.779
767.328	.0039	205.638	29.8059	326.694	11.5709	1.135	1.301	1.132	.00003872	.05412	.782
777.328	.0036	233.836	30.2557	335.274	11.6350	1.137	1.329	1.152	.00003954	.05532	.786
787.328	.0033	265.354	30.7232	344.677	11.6976	1.139	1.360	1.175	.00004042	.05657	.790
797.328	.0030	300.531	31.2125	354.997	11.7583	1.141	1.394	1.200	.00004137	.05787	.794
807.328	.0027	339.745	31.7282	366.348	11.8165	1.143	1.432	1.229	.00004238	.05922	.799
812.321	.0026	360.964	31.9972	372.443	11.8444	1.143	1.453	1.244	.00004292	.05992	.801

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=35.00											
207.748	81.4244	.002	10.9844	153.645	5.9252	1.203	1.203	1.000	.00001262	.00909	.777
217.748	64.3415	.003	11.2042	156.880	6.0856	1.197	1.196	1.000	.00001318	.00983	.771
227.748	51.0156	.004	11.4299	160.041	6.2449	1.191	1.191	1.000	.00001374	.01057	.767
237.748	40.5776	.005	11.6614	163.134	6.4029	1.185	1.185	1.000	.00001428	.01131	.764
247.748	32.3617	.007	11.8986	166.162	6.5597	1.180	1.180	1.000	.00001482	.01205	.762
257.748	25.8877	.009	12.1415	169.130	6.7150	1.175	1.175	1.000	.00001535	.01280	.761
267.748	20.7632	.012	12.3901	172.043	6.8688	1.170	1.170	1.000	.00001587	.01354	.761
277.748	16.7026	.016	12.6443	174.903	7.0210	1.166	1.166	1.000	.00001639	.01428	.761
287.748	13.4543	.020	12.9040	177.713	7.1715	1.162	1.162	1.000	.00001689	.01502	.762
297.748	10.8734	.026	13.1692	180.477	7.3202	1.158	1.158	1.000	.00001739	.01576	.763
307.748	8.8006	.033	13.4398	183.197	7.4670	1.155	1.154	1.000	.00001788	.01650	.765
317.748	7.1393	.041	13.7157	185.876	7.6117	1.151	1.151	1.000	.00001837	.01724	.766
327.748	5.8035	.053	13.9968	188.515	7.7544	1.148	1.148	1.000	.00001885	.01798	.768
337.748	4.7269	.067	14.2831	191.116	7.8948	1.145	1.145	1.000	.00001932	.01872	.770
347.748	3.8576	.084	14.5745	193.682	8.0330	1.142	1.142	1.000	.00001979	.01946	.772
357.748	3.1540	.106	14.8708	196.215	8.1687	1.140	1.139	1.000	.00002025	.02020	.773
367.748	2.5836	.133	15.1721	198.715	8.3020	1.137	1.137	1.000	.00002070	.02094	.775
377.748	2.1203	.166	15.4781	201.184	8.4326	1.135	1.134	1.000	.00002115	.02169	.777
387.748	1.7432	.207	15.7888	203.624	8.5606	1.132	1.132	1.000	.00002160	.02243	.779
397.748	1.4357	.258	16.1041	206.037	8.6858	1.130	1.130	1.000	.00002204	.02317	.780
407.748	1.1846	.321	16.4238	208.423	8.8081	1.128	1.128	1.000	.00002247	.02391	.782
417.748	.9792	.398	16.7479	210.785	8.9274	1.126	1.126	1.000	.00002290	.02465	.783
427.748	.8108	.492	17.0762	213.123	9.0437	1.125	1.124	1.000	.00002332	.02540	.785
437.748	.6726	.607	17.4086	215.439	9.1568	1.123	1.123	1.000	.00002374	.02614	.786
447.748	.5589	.747	17.7449	217.735	9.2667	1.122	1.121	1.000	.00002416	.02688	.787
457.748	.4653	.917	18.0851	220.012	9.3733	1.120	1.120	1.000	.00002457	.02763	.787
467.748	.3880	1.124	18.4289	222.272	9.4765	1.119	1.118	1.000	.00002498	.02838	.788
477.748	.3242	1.374	18.7762	224.517	9.5762	1.118	1.117	1.000	.00002538	.02912	.788
487.748	.2714	1.675	19.1269	226.749	9.6723	1.116	1.116	1.000	.00002578	.02987	.789
497.748	.2276	2.039	19.4808	228.970	9.7648	1.115	1.115	1.000	.00002618	.03062	.789
507.748	.1912	2.476	19.8378	231.184	9.8536	1.114	1.114	1.000	.00002657	.03137	.789
517.748	.1610	2.999	20.1975	233.393	9.9387	1.114	1.114	1.000	.00002696	.03212	.788
527.748	.1358	3.625	20.5600	235.601	10.0199	1.113	1.113	1.000	.00002735	.03287	.788
537.748	.1148	4.371	20.9250	237.812	10.0972	1.112	1.113	1.000	.00002774	.03363	.787
547.748	.0972	5.258	21.2922	240.031	10.1706	1.112	1.113	1.001	.00002813	.03439	.786
557.748	.0825	6.311	21.6616	242.264	10.2399	1.111	1.113	1.001	.00002851	.03515	.785
567.748	.0702	7.556	22.0328	244.517	10.3053	1.111	1.113	1.002	.00002889	.03592	.783
577.748	.0598	9.025	22.4058	246.798	10.3665	1.111	1.114	1.002	.00002928	.03669	.782
587.748	.0511	10.753	22.7802	249.115	10.4236	1.111	1.114	1.003	.00002966	.03746	.780
597.748	.0438	12.780	23.1559	251.479	10.4766	1.111	1.116	1.004	.00003004	.03824	.778
607.748	.0376	15.150	23.5327	253.901	10.5254	1.111	1.117	1.005	.00003043	.03902	.775
617.748	.0324	17.879	23.9050	256.386	10.5728	1.112	1.119	1.006	.00003082	.03982	.773
627.748	.0280	21.088	24.2839	258.935	10.6352	1.112	1.122	1.008	.00003121	.04062	.772
637.748	.0242	24.815	24.6642	261.583	10.6974	1.112	1.124	1.010	.00003160	.04142	.771
647.748	.0210	29.133	25.0458	264.350	10.7595	1.113	1.128	1.013	.00003200	.04224	.770
657.748	.0182	34.122	25.4288	267.258	10.8216	1.113	1.132	1.015	.00003241	.04307	.769
667.748	.0159	39.871	25.8133	270.332	10.8837	1.114	1.137	1.019	.00003282	.04391	.768
677.748	.0139	46.480	26.1993	273.599	10.9459	1.115	1.143	1.023	.00003324	.04477	.768
687.748	.0122	54.057	26.5869	277.091	11.0084	1.116	1.150	1.028	.00003367	.04564	.767
697.748	.0107	62.741	26.9764	280.844	11.0711	1.117	1.158	1.033	.00003411	.04653	.767
707.748	.0094	72.627	27.3682	284.888	11.1340	1.119	1.168	1.040	.00003458	.04744	.767
717.748	.0084	83.875	27.7627	289.264	11.1972	1.120	1.178	1.047	.00003506	.04837	.767
727.748	.0074	96.638	28.1605	294.012	11.2606	1.122	1.191	1.056	.00003557	.04933	.767
737.748	.0066	111.086	28.5623	299.176	11.3242	1.123	1.205	1.066	.00003611	.05031	.768
747.748	.0059	127.401	28.9692	304.798	11.3878	1.125	1.221	1.077	.00003669	.05131	.769
757.748	.0053	145.782	29.3823	310.927	11.4513	1.127	1.239	1.090	.00003730	.05236	.771
767.748	.0048	166.444	29.8033	317.611	11.5147	1.129	1.259	1.105	.00003796	.05343	.773
777.748	.0043	189.819	30.2340	324.904	11.5775	1.131	1.282	1.121	.00003866	.05454	.775
787.748	.0039	215.563	30.6766	332.865	11.6396	1.133	1.307	1.140	.00003942	.05570	.778
797.748	.0035	244.551	31.1341	341.560	11.7006	1.135	1.334	1.160	.00004023	.05689	.782
807.748	.0032	276.887	31.6097	351.068	11.7601	1.137	1.365	1.183	.00004111	.05814	.786
817.748	.0029	312.907	32.1073	361.481	11.8178	1.139	1.399	1.209	.00004204	.05943	.790
827.748	.0027	352.981	32.6316	372.911	11.8731	1.141	1.437	1.237	.00004305	.06078	.794
832.087	.0026	371.732	32.8686	378.218	11.8962	1.141	1.455	1.251	.00004351	.06138	.797

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=35.25											
218.409	81.3684	.003	11.2190	157.092	6.0961	1.196	1.196	1.000	.00001322	.00988	.771
228.409	64.5312	.003	11.4450	160.249	6.2553	1.190	1.190	1.000	.00001378	.01062	.766
238.409	51.3335	.004	11.6769	163.337	6.4132	1.185	1.185	1.000	.00001432	.01136	.764
248.409	40.9494	.006	11.9145	166.361	6.5699	1.179	1.179	1.000	.00001486	.01210	.762
258.409	32.7638	.007	12.1578	169.326	6.7251	1.175	1.175	1.000	.00001539	.01284	.761
268.409	26.2911	.010	12.4068	172.235	6.8788	1.170	1.170	1.000	.00001591	.01358	.761
278.409	21.1398	.012	12.6614	175.092	7.0309	1.166	1.166	1.000	.00001642	.01433	.761
288.409	17.0400	.016	12.9215	177.899	7.1812	1.162	1.162	1.000	.00001693	.01507	.762
298.409	13.7663	.020	13.1870	180.661	7.3298	1.158	1.158	1.000	.00001743	.01581	.763
308.409	11.1457	.026	13.4580	183.378	7.4764	1.154	1.154	1.000	.00001792	.01655	.765
318.409	9.0429	.033	13.7342	186.054	7.6210	1.151	1.151	1.000	.00001840	.01729	.766
328.409	7.3518	.042	14.0157	188.691	7.7635	1.148	1.148	1.000	.00001888	.01803	.768
338.409	5.9887	.053	14.3024	191.291	7.9038	1.145	1.145	1.000	.00001935	.01877	.770
348.409	4.8878	.066	14.5941	193.855	8.0417	1.142	1.142	1.000	.00001982	.01951	.772
358.409	3.9969	.084	14.8908	196.385	8.1773	1.139	1.139	1.000	.00002028	.02025	.774
368.409	3.2744	.105	15.1924	198.884	8.3103	1.137	1.137	1.000	.00002073	.02099	.775
378.409	2.6874	.131	15.4988	201.352	8.4407	1.134	1.134	1.000	.00002118	.02173	.777
388.409	2.2096	.164	15.8099	203.790	8.5684	1.132	1.132	1.000	.00002163	.02248	.779
398.409	1.8201	.204	16.1255	206.201	8.6933	1.130	1.130	1.000	.00002206	.02322	.780
408.409	1.5019	.253	16.4456	208.586	8.8154	1.128	1.128	1.000	.00002250	.02396	.782
418.409	1.2415	.314	16.7701	210.946	8.9344	1.126	1.126	1.000	.00002293	.02470	.783
428.409	1.0280	.388	17.0988	213.282	9.0503	1.125	1.124	1.000	.00002335	.02544	.785
438.409	.8528	.479	17.4316	215.596	9.1631	1.123	1.123	1.000	.00002377	.02619	.786
448.409	.7087	.590	17.7683	217.889	9.2726	1.121	1.121	1.000	.00002418	.02693	.787
458.409	.5900	.724	18.1089	220.163	9.3788	1.120	1.120	1.000	.00002459	.02767	.787
468.409	.4921	.887	18.4532	222.419	9.4815	1.119	1.118	1.000	.00002500	.02842	.788
478.409	.4111	1.085	18.8010	224.659	9.5807	1.117	1.117	1.000	.00002540	.02916	.788
488.409	.3441	1.323	19.1522	226.884	9.6763	1.116	1.116	1.000	.00002580	.02991	.789
498.409	.2855	1.610	19.5066	229.098	9.7682	1.115	1.115	1.000	.00002620	.03066	.789
508.409	.2424	1.955	19.8641	231.301	9.8564	1.114	1.114	1.000	.00002659	.03140	.788
518.409	.2040	2.369	20.2245	233.497	9.9407	1.113	1.113	1.000	.00002698	.03215	.788
528.409	.1721	2.863	20.5877	235.689	10.0211	1.112	1.113	1.000	.00002737	.03290	.787
538.409	.1454	3.453	20.9534	237.880	10.0976	1.112	1.112	1.000	.00002775	.03366	.787
548.409	.1231	4.155	21.3214	240.074	10.1700	1.111	1.112	1.001	.00002813	.03441	.785
558.409	.1045	4.988	21.6916	242.275	10.2383	1.111	1.112	1.001	.00002851	.03517	.784
568.409	.0888	5.974	22.0637	244.490	10.3024	1.110	1.112	1.001	.00002889	.03593	.783
578.409	.0757	7.138	22.4377	246.722	10.3624	1.110	1.112	1.002	.00002927	.03669	.781
588.409	.0645	8.508	22.8132	248.981	10.4181	1.110	1.113	1.002	.00002965	.03746	.779
598.409	.0553	10.116	23.1901	251.273	10.4695	1.110	1.113	1.003	.00003003	.03823	.777
608.409	.0475	11.999	23.5681	253.608	10.5165	1.110	1.115	1.004	.00003041	.03901	.774
618.409	.0409	14.169	23.9417	255.987	10.5634	1.110	1.116	1.005	.00003079	.03979	.772
628.409	.0353	16.724	24.3220	258.410	10.6240	1.110	1.118	1.006	.00003117	.04058	.771
638.409	.0305	19.696	24.7038	260.906	10.6843	1.110	1.120	1.008	.00003155	.04137	.770
648.409	.0264	23.144	25.0869	263.493	10.7442	1.111	1.122	1.010	.00003194	.04217	.769
658.409	.0229	27.134	25.4715	266.187	10.8040	1.111	1.126	1.012	.00003233	.04298	.768
668.409	.0199	31.741	25.8574	269.008	10.8636	1.112	1.129	1.015	.00003273	.04380	.767
678.409	.0174	37.046	26.2448	271.980	10.9232	1.112	1.134	1.018	.00003313	.04464	.766
688.409	.0152	43.141	26.6336	275.127	10.9828	1.113	1.139	1.022	.00003353	.04548	.765
698.409	.0133	50.125	27.0240	278.476	11.0425	1.114	1.146	1.026	.00003395	.04634	.764
708.409	.0117	58.108	27.4162	282.059	11.1023	1.115	1.153	1.031	.00003438	.04722	.764
718.409	.0103	67.234	27.8105	285.913	11.1624	1.116	1.161	1.037	.00003482	.04811	.763
728.409	.0091	77.592	28.2072	290.064	11.2227	1.118	1.171	1.044	.00003528	.04902	.763
738.409	.0081	89.344	28.6067	294.553	11.2831	1.119	1.182	1.052	.00003577	.04995	.763
748.409	.0072	102.645	29.0098	299.420	11.3437	1.120	1.195	1.061	.00003628	.05091	.764
758.409	.0064	117.665	29.4172	304.705	11.4045	1.122	1.210	1.071	.00003682	.05189	.764
768.409	.0058	134.585	29.8299	310.451	11.4652	1.124	1.226	1.083	.00003739	.05290	.766
778.409	.0052	153.604	30.2492	316.703	11.5258	1.126	1.244	1.096	.00003800	.05394	.767
788.409	.0047	174.934	30.6766	323.507	11.5861	1.128	1.264	1.111	.00003866	.05502	.769
798.409	.0042	198.809	31.1141	330.916	11.6460	1.130	1.287	1.128	.00003936	.05613	.771
808.409	.0038	225.479	31.5639	338.986	11.7050	1.131	1.312	1.147	.00004011	.05728	.774
818.409	.0035	255.219	32.0288	347.782	11.7631	1.133	1.339	1.168	.00004092	.05848	.778
828.409	.0032	288.328	32.5121	357.379	11.8197	1.135	1.370	1.191	.00004179	.05972	.781
838.409	.0029	325.136	33.0177	367.868	11.8745	1.137	1.404	1.217	.00004271	.06101	.785
844.814	.0028	350.821	33.5553	375.103	11.9084	1.138	1.427	1.235	.00004334	.06186	.788

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

S/R=35.50

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
229.208	81.3630	.003	11.4634	160.498	6.2679	1.190	1.190	1.000	.00001382	.01068	.766
239.208	64.7427	.003	11.6957	163.581	6.4257	1.184	1.184	1.000	.00001436	.01142	.763
249.208	51.6661	.004	11.9338	166.601	6.5823	1.179	1.179	1.000	.00001490	.01216	.762
259.208	41.3499	.006	12.1775	169.561	6.7373	1.174	1.174	1.000	.00001543	.01290	.761
269.208	33.1739	.008	12.4270	172.466	6.8909	1.170	1.170	1.000	.00001595	.01364	.761
279.208	26.6823	.010	12.6820	175.319	7.0428	1.165	1.165	1.000	.00001646	.01438	.761
289.208	21.5114	.013	12.9425	178.123	7.1931	1.161	1.161	1.000	.00001697	.01512	.762
299.208	17.3817	.016	13.2085	180.881	7.3414	1.158	1.158	1.000	.00001746	.01587	.763
309.208	14.0752	.020	13.4799	183.596	7.4879	1.154	1.154	1.000	.00001796	.01661	.765
319.208	11.4216	.026	13.7566	186.269	7.6323	1.151	1.151	1.000	.00001844	.01735	.766
329.208	9.2870	.033	14.0385	188.903	7.7746	1.148	1.147	1.000	.00001892	.01809	.768
339.208	7.5663	.042	14.3256	191.500	7.9147	1.145	1.145	1.000	.00001939	.01883	.770
349.208	6.1763	.053	14.6178	194.062	8.0524	1.142	1.142	1.000	.00001986	.01957	.772
359.208	5.0511	.066	14.9149	196.590	8.1877	1.139	1.139	1.000	.00002032	.02031	.774
369.208	4.1386	.083	15.2169	199.086	8.3205	1.137	1.136	1.000	.00002077	.02105	.776
379.208	3.3971	.104	15.5237	201.552	8.4506	1.134	1.134	1.000	.00002122	.02179	.777
389.208	2.7935	.130	15.8352	203.988	8.5781	1.132	1.132	1.000	.00002166	.02253	.779
399.208	2.3013	.162	16.1513	206.397	8.7027	1.130	1.130	1.000	.00002210	.02327	.781
409.208	1.8992	.201	16.4718	208.780	8.8244	1.128	1.128	1.000	.00002253	.02402	.782
419.208	1.5701	.249	16.7967	211.138	8.9431	1.126	1.126	1.000	.00002296	.02476	.783
429.208	1.3003	.308	17.1258	213.472	9.0587	1.124	1.124	1.000	.00002338	.02550	.785
439.208	1.0787	.380	17.4590	215.783	9.1711	1.123	1.122	1.000	.00002380	.02624	.786
449.208	.8965	.467	17.7962	218.074	9.2802	1.121	1.121	1.000	.00002421	.02699	.787
459.208	.7464	.573	18.1372	220.344	9.3860	1.120	1.119	1.000	.00002462	.02773	.787
469.208	.6225	.703	18.4820	222.597	9.4882	1.118	1.118	1.000	.00002503	.02847	.788
479.208	.5201	.859	18.8303	224.832	9.5870	1.117	1.117	1.000	.00002543	.02922	.788
489.208	.4354	1.047	19.1820	227.052	9.6820	1.116	1.116	1.000	.00002583	.02996	.789
499.208	.3651	1.275	19.5369	229.259	9.7734	1.115	1.115	1.000	.00002622	.03071	.788
509.208	.3067	1.548	19.8950	231.454	9.8609	1.114	1.114	1.000	.00002661	.03145	.788
519.208	.2581	1.875	20.2559	233.640	9.9445	1.113	1.113	1.000	.00002700	.03220	.788
529.208	.2177	2.267	20.6197	235.819	10.0242	1.112	1.112	1.000	.00002739	.03295	.787
539.208	.1839	2.734	20.9860	237.993	10.0999	1.111	1.112	1.000	.00002777	.03370	.786
549.208	.1557	3.290	21.3547	240.167	10.1714	1.111	1.111	1.000	.00002815	.03445	.785
559.208	.1321	3.950	21.7256	242.344	10.2387	1.110	1.111	1.001	.00002853	.03521	.784
569.208	.1123	4.732	22.0986	244.528	10.3018	1.110	1.111	1.001	.00002890	.03596	.782
579.208	.0956	5.655	22.4734	246.724	10.3606	1.109	1.111	1.001	.00002928	.03672	.780
589.208	.0816	6.742	22.8498	248.937	10.4151	1.109	1.111	1.002	.00002965	.03748	.778
599.208	.0698	8.019	23.2277	251.173	10.4651	1.109	1.112	1.002	.00003003	.03825	.776
609.208	.0599	9.514	23.6068	253.441	10.5106	1.109	1.113	1.003	.00003040	.03901	.774
619.208	.0516	11.240	23.9814	255.737	10.5575	1.109	1.114	1.004	.00003077	.03979	.771
629.208	.0444	13.274	24.3630	258.062	10.6166	1.109	1.115	1.005	.00003114	.04056	.770
639.208	.0383	15.643	24.7461	260.442	10.6753	1.109	1.116	1.006	.00003152	.04135	.769
649.208	.0332	18.394	25.1306	262.889	10.7334	1.109	1.118	1.008	.00003190	.04214	.768
659.208	.0287	21.582	25.5165	265.416	10.7912	1.109	1.121	1.009	.00003228	.04293	.766
669.208	.0250	25.268	25.9039	268.042	10.8487	1.110	1.123	1.012	.00003266	.04374	.765
679.208	.0218	29.520	26.2926	270.782	10.9060	1.110	1.127	1.014	.00003305	.04455	.764
689.208	.0190	34.413	26.6827	273.659	10.9631	1.111	1.131	1.017	.00003344	.04537	.763
699.208	.0166	40.030	27.0743	276.693	11.0202	1.111	1.136	1.020	.00003384	.04621	.762
709.208	.0146	46.463	27.4674	279.912	11.0774	1.112	1.141	1.024	.00003424	.04706	.761
719.208	.0128	53.813	27.8622	283.341	11.1345	1.113	1.148	1.029	.00003465	.04792	.761
729.208	.0113	62.212	28.2589	287.016	11.1919	1.114	1.156	1.035	.00003508	.04880	.760
739.208	.0100	71.741	28.6578	290.960	11.2493	1.115	1.165	1.041	.00003552	.04969	.760
749.208	.0089	82.551	29.0593	295.211	11.3070	1.116	1.175	1.048	.00003598	.05060	.759
759.208	.0079	94.785	29.4639	299.805	11.3647	1.118	1.186	1.056	.00003646	.05154	.760
769.208	.0070	108.596	29.8721	304.780	11.4226	1.119	1.199	1.066	.00003697	.05250	.760
779.208	.0063	124.155	30.2850	310.175	11.4805	1.121	1.214	1.077	.00003751	.05348	.761
789.208	.0057	141.642	30.7033	316.030	11.5384	1.123	1.230	1.089	.00003808	.05449	.762
799.208	.0051	161.253	31.1286	322.389	11.5962	1.124	1.249	1.102	.00003869	.05554	.763
809.208	.0046	183.201	31.5622	329.297	11.6536	1.126	1.269	1.118	.00003934	.05661	.765
819.208	.0042	207.716	32.0062	336.802	11.7106	1.128	1.292	1.135	.00004004	.05772	.767
829.208	.0038	235.045	32.4627	344.560	11.7667	1.130	1.317	1.154	.00004079	.05887	.770
839.208	.0035	265.459	32.9346	353.833	11.8219	1.132	1.344	1.175	.00004159	.06006	.773
844.814	.0033	283.968	33.2071	359.147	11.8523	1.133	1.361	1.188	.00004206	.06075	.775



TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=35.75											
240.147	81.3904	.003	11.7178	163.868	6.4404	1.184	1.184	1.000	.00001441	.01149	.763
250.147	64.9868	.004	11.9564	166.882	6.5968	1.179	1.179	1.000	.00001495	.01223	.762
260.147	52.0163	.005	12.2008	169.837	6.7518	1.174	1.174	1.000	.00001548	.01297	.761
270.147	41.7309	.006	12.4507	172.737	6.9052	1.169	1.169	1.000	.00001600	.01371	.761
280.147	33.5736	.008	12.7063	175.586	7.0570	1.165	1.165	1.000	.00001651	.01445	.761
290.147	27.0752	.010	12.9673	178.385	7.2070	1.161	1.161	1.000	.00001701	.01519	.762
300.147	21.8818	.013	13.2338	181.139	7.3552	1.157	1.157	1.000	.00001751	.01593	.764
310.147	17.7227	.016	13.5057	183.850	7.5014	1.154	1.154	1.000	.00001800	.01668	.765
320.147	14.3841	.021	13.7829	186.520	7.6456	1.150	1.150	1.000	.00001849	.01742	.767
330.147	11.6980	.026	14.0654	189.150	7.7877	1.147	1.147	1.000	.00001896	.01816	.768
340.147	9.5322	.033	14.3530	191.744	7.9275	1.144	1.144	1.000	.00001943	.01890	.770
350.147	7.7824	.042	14.6456	194.303	8.0650	1.142	1.141	1.000	.00001990	.01964	.772
360.147	6.3657	.053	14.9432	196.828	8.2001	1.139	1.139	1.000	.00002036	.02038	.774
370.147	5.2165	.066	15.2457	199.322	8.3326	1.136	1.136	1.000	.00002081	.02112	.776
380.147	4.2826	.083	15.5530	201.785	8.4625	1.134	1.134	1.000	.00002126	.02186	.777
390.147	3.5222	.103	15.8650	204.219	8.5896	1.132	1.132	1.000	.00002170	.02260	.779
400.147	2.9020	.129	16.1815	206.626	8.7139	1.130	1.130	1.000	.00002214	.02334	.781
410.147	2.3952	.160	16.5025	209.006	8.8353	1.128	1.128	1.000	.00002257	.02408	.782
420.147	1.9804	.198	16.8278	211.361	8.9536	1.126	1.126	1.000	.00002300	.02483	.784
430.147	1.6403	.244	17.1574	213.693	9.0688	1.124	1.124	1.000	.00002342	.02557	.785
440.147	1.3610	.301	17.4911	216.002	9.1809	1.122	1.122	1.000	.00002384	.02631	.786
450.147	1.1313	.371	17.8287	218.290	9.2895	1.121	1.121	1.000	.00002425	.02705	.787
460.147	.9419	.455	18.1702	220.557	9.3948	1.119	1.119	1.000	.00002466	.02779	.787
470.147	.7857	.558	18.5154	222.806	9.4966	1.118	1.118	1.000	.00002506	.02854	.788
480.147	.6565	.682	18.8642	225.037	9.5948	1.117	1.117	1.000	.00002547	.02929	.788
490.147	.5496	.831	19.2164	227.252	9.6894	1.116	1.115	1.000	.00002586	.03002	.788
500.147	.4609	1.012	19.5719	229.453	9.7801	1.114	1.114	1.000	.00002626	.03077	.788
510.147	.3872	1.228	19.9304	231.641	9.8671	1.113	1.113	1.000	.00002665	.03151	.788
520.147	.3259	1.488	20.2919	233.818	9.9500	1.113	1.113	1.000	.00002703	.03226	.788
530.147	.2748	1.799	20.6562	235.987	10.0290	1.112	1.112	1.000	.00002742	.03301	.787
540.147	.2322	2.170	21.0231	238.149	10.1039	1.111	1.111	1.000	.00002780	.03376	.786
550.147	.1965	2.611	21.3925	240.307	10.1746	1.110	1.111	1.000	.00002818	.03451	.785
560.147	.1667	3.135	21.7641	242.464	10.2410	1.110	1.110	1.001	.00002855	.03526	.783
570.147	.1417	3.755	22.1377	244.624	10.3031	1.109	1.110	1.001	.00002892	.03601	.782
580.147	.1207	4.488	22.5132	246.790	10.3609	1.109	1.110	1.001	.00002930	.03676	.780
590.147	.1030	5.352	22.8905	248.968	10.4142	1.109	1.110	1.001	.00002967	.03752	.778
600.147	.0881	6.366	23.2692	251.161	10.4629	1.108	1.111	1.002	.00003003	.03828	.776
610.147	.0755	7.555	23.6491	253.376	10.5071	1.108	1.111	1.002	.00003040	.03904	.773
620.147	.0650	8.929	24.0248	255.607	10.5545	1.108	1.112	1.003	.00003077	.03981	.771
630.147	.0559	10.548	24.4074	257.857	10.6124	1.108	1.113	1.004	.00003114	.04058	.769
640.147	.0482	12.436	24.7916	260.145	10.6697	1.108	1.114	1.005	.00003150	.04135	.768
650.147	.0417	14.630	25.1773	262.484	10.7263	1.108	1.115	1.006	.00003187	.04213	.767
660.147	.0361	17.176	25.5645	264.883	10.7825	1.108	1.117	1.007	.00003224	.04292	.765
670.147	.0313	20.124	25.9531	267.355	10.8382	1.108	1.119	1.009	.00003262	.04371	.764
680.147	.0273	23.528	26.3431	269.915	10.8936	1.108	1.121	1.011	.00003299	.04451	.763
690.147	.0238	27.451	26.7345	272.580	10.9487	1.109	1.125	1.013	.00003337	.04531	.762
700.147	.0208	31.961	27.1273	275.368	11.0035	1.109	1.128	1.016	.00003376	.04613	.761
710.147	.0182	37.135	27.5216	278.298	11.0582	1.110	1.133	1.019	.00003415	.04695	.760
720.147	.0160	43.057	27.9173	281.395	11.1129	1.110	1.138	1.023	.00003454	.04779	.759
730.147	.0140	49.819	28.3147	284.683	11.1675	1.111	1.144	1.027	.00003494	.04864	.758
740.147	.0124	57.523	28.7138	288.188	11.2222	1.112	1.151	1.032	.00003535	.04951	.757
750.147	.0109	66.302	29.1149	291.945	11.2771	1.113	1.159	1.038	.00003577	.05039	.756
760.147	.0097	76.236	29.5184	295.977	11.3319	1.114	1.168	1.045	.00003621	.05128	.756
770.147	.0086	87.476	29.9245	300.321	11.3870	1.115	1.178	1.052	.00003667	.05220	.756
780.147	.0077	100.164	30.3339	305.011	11.4421	1.117	1.190	1.061	.00003715	.05313	.756
790.147	.0069	114.455	30.7473	310.083	11.4973	1.118	1.203	1.071	.00003766	.05409	.756
800.147	.0062	130.516	31.1654	315.575	11.5525	1.120	1.218	1.082	.00003820	.05508	.757
810.147	.0056	148.527	31.5892	321.525	11.6076	1.121	1.235	1.094	.00003876	.05609	.758
820.147	.0050	168.683	32.0202	327.976	11.6626	1.123	1.253	1.108	.00003937	.05713	.759
830.147	.0045	191.193	32.4598	334.968	11.7173	1.125	1.273	1.124	.00004002	.05820	.761
840.147	.0041	216.284	32.9099	342.551	11.7714	1.127	1.296	1.141	.00004071	.05931	.763
844.814	.0040	228.945	33.1242	346.307	11.7964	1.127	1.307	1.150	.00004105	.05984	.764

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=36.00											
251.246	81.4244	.003	11.9830	167.210	6.6139	1.178	1.178	1.000	.00001501	.01231	.762
261.246	65.1886	.004	12.2280	170.159	6.7687	1.173	1.173	1.000	.00001553	.01305	.761
271.246	52.3258	.005	12.4786	173.053	6.9219	1.169	1.169	1.000	.00001605	.01379	.761
281.246	42.1068	.006	12.7347	175.897	7.0735	1.165	1.165	1.000	.00001656	.01454	.762
291.246	33.9624	.008	12.9964	178.691	7.2233	1.161	1.161	1.000	.00001707	.01528	.762
301.246	27.4545	.010	13.2635	181.441	7.3713	1.157	1.157	1.000	.00001757	.01602	.764
311.246	22.2413	.013	13.5360	184.147	7.5173	1.153	1.153	1.000	.00001806	.01676	.765
321.246	18.0555	.017	13.8138	186.812	7.6613	1.150	1.150	1.000	.00001854	.01750	.767
331.246	14.6869	.021	14.0968	189.439	7.8031	1.147	1.147	1.000	.00001901	.01824	.769
341.246	11.9703	.027	14.3850	192.029	7.9426	1.144	1.144	1.000	.00001949	.01898	.770
351.246	9.7748	.034	14.6782	194.584	8.0798	1.141	1.141	1.000	.00001995	.01972	.772
361.246	7.9970	.042	14.9763	197.106	8.2146	1.139	1.139	1.000	.00002041	.02046	.774
371.246	6.5546	.053	15.2794	199.596	8.3468	1.136	1.136	1.000	.00002086	.02120	.776
381.246	5.3822	.066	15.5872	202.056	8.4763	1.134	1.134	1.000	.00002131	.02194	.778
391.246	4.4273	.082	15.8997	204.488	8.6031	1.132	1.131	1.000	.00002175	.02268	.779
401.246	3.6484	.103	16.2168	206.891	8.7271	1.129	1.129	1.000	.00002219	.02342	.781
411.246	3.0118	.127	16.5383	209.269	8.8481	1.127	1.127	1.000	.00002262	.02417	.782
421.246	2.4907	.158	16.8642	211.622	8.9660	1.126	1.125	1.000	.00002304	.02491	.784
431.246	2.0633	.195	17.1943	213.950	9.0809	1.124	1.124	1.000	.00002347	.02565	.785
441.246	1.7122	.240	17.5284	216.256	9.1924	1.122	1.122	1.000	.00002388	.02639	.786
451.246	1.4234	.296	17.8666	218.541	9.3007	1.121	1.121	1.000	.00002430	.02713	.787
461.246	1.1853	.363	18.2086	220.805	9.4055	1.119	1.119	1.000	.00002470	.02787	.787
471.246	.9889	.444	18.5543	223.051	9.5068	1.118	1.118	1.000	.00002511	.02862	.788
481.246	.8264	.543	18.9036	225.278	9.6045	1.117	1.116	1.000	.00002551	.02936	.788
491.246	.6918	.662	19.2563	227.489	9.6984	1.115	1.115	1.000	.00002590	.03010	.788
501.246	.5802	.805	19.6123	229.684	9.7886	1.114	1.114	1.000	.00002630	.03085	.788
511.246	.4875	.978	19.9714	231.866	9.8749	1.113	1.113	1.000	.00002669	.03159	.788
521.246	.4104	1.184	20.3334	234.036	9.9572	1.112	1.112	1.000	.00002707	.03233	.788
531.246	.3461	1.431	20.6982	236.196	10.0355	1.111	1.112	1.000	.00002745	.03308	.787
541.246	.2924	1.726	21.0657	238.347	10.1096	1.111	1.111	1.000	.00002783	.03383	.786
551.246	.2475	2.077	21.4356	240.492	10.1794	1.110	1.110	1.000	.00002821	.03457	.785
561.246	.2099	2.494	21.8078	242.634	10.2450	1.109	1.110	1.000	.00002858	.03532	.783
571.246	.1784	2.987	22.1821	244.775	10.3062	1.109	1.110	1.001	.00002895	.03607	.781
581.246	.1519	3.570	22.5593	246.918	10.3629	1.108	1.109	1.001	.00002932	.03683	.780
591.246	.1296	4.257	22.9362	249.067	10.4151	1.108	1.109	1.001	.00002969	.03758	.777
601.246	.1108	5.065	23.3156	251.227	10.4627	1.108	1.109	1.002	.00003006	.03834	.775
611.246	.0950	6.012	23.6963	253.401	10.5056	1.108	1.110	1.002	.00003042	.03909	.772
621.246	.0817	7.106	24.0728	255.580	10.5540	1.107	1.110	1.002	.00003078	.03985	.770
631.246	.0703	8.397	24.4563	257.770	10.6109	1.107	1.111	1.003	.00003114	.04062	.769
641.246	.0606	9.902	24.8415	259.988	10.6671	1.107	1.111	1.004	.00003151	.04138	.767
651.246	.0524	11.654	25.2283	262.241	10.7225	1.107	1.112	1.005	.00003187	.04216	.766
661.246	.0453	13.687	25.6166	264.540	10.7773	1.107	1.114	1.006	.00003223	.04293	.764
671.246	.0393	16.044	26.0064	266.893	10.8316	1.107	1.115	1.007	.00003260	.04371	.763
681.246	.0341	18.768	26.3976	269.313	10.8853	1.107	1.117	1.009	.00003296	.04450	.762
691.246	.0297	21.911	26.7902	271.813	10.9386	1.107	1.120	1.011	.00003333	.04529	.760
701.246	.0259	25.530	27.1842	274.406	10.9915	1.107	1.122	1.013	.00003370	.04609	.759
711.246	.0227	29.687	27.5795	277.111	11.0442	1.108	1.126	1.015	.00003408	.04690	.758
721.246	.0199	34.452	27.9763	279.946	11.0967	1.108	1.130	1.018	.00003446	.04772	.757
731.246	.0175	39.901	28.3746	282.930	11.1490	1.109	1.134	1.022	.00003485	.04855	.756
741.246	.0154	46.120	28.7744	286.086	11.2012	1.110	1.140	1.026	.00003523	.04938	.755
751.246	.0136	53.200	29.1759	289.440	11.2535	1.110	1.146	1.030	.00003563	.05024	.754
761.246	.0120	61.266	29.5792	293.022	11.3057	1.111	1.153	1.035	.00003604	.05110	.753
771.246	.0106	70.390	29.9847	296.853	11.3580	1.112	1.161	1.041	.00003646	.05198	.753
781.246	.0095	80.709	30.3925	300.966	11.4104	1.113	1.171	1.048	.00003690	.05288	.752
791.246	.0084	92.356	30.8033	305.394	11.4629	1.114	1.181	1.056	.00003735	.05380	.752
801.246	.0075	105.472	31.2175	310.170	11.5154	1.116	1.193	1.065	.00003783	.05473	.752
811.246	.0068	120.210	31.6357	315.328	11.5680	1.117	1.207	1.075	.00003834	.05569	.752
821.246	.0061	136.737	32.0589	320.905	11.6205	1.119	1.222	1.086	.00003887	.05668	.753
831.246	.0055	155.230	32.4880	326.937	11.6730	1.120	1.238	1.099	.00003944	.05769	.754
841.246	.0050	175.882	32.9245	333.463	11.7253	1.122	1.257	1.113	.00004004	.05873	.755
844.814	.0048	183.812	33.0822	335.919	11.7439	1.122	1.264	1.119	.00004026	.05911	.756

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

S/R=36.25

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
262.527	81.3806	.003	12.2598	170.533	6.7883	1.173	1.173	1.000	.00001560	.01315	.761
272.527	65.3232	.004	12.5111	173.421	6.9414	1.168	1.168	1.000	.00001612	.01389	.761
282.527	52.5934	.005	12.7679	176.258	7.0927	1.164	1.164	1.000	.00001663	.01463	.762
292.527	42.4377	.006	13.0303	179.047	7.2423	1.160	1.160	1.000	.00001713	.01537	.763
302.527	34.3152	.008	13.2981	181.791	7.3900	1.156	1.156	1.000	.00001763	.01611	.764
312.527	27.8067	.010	13.5713	184.491	7.5358	1.153	1.153	1.000	.00001812	.01685	.765
322.527	22.5793	.013	13.8498	187.152	7.6795	1.150	1.150	1.000	.00001860	.01759	.767
332.527	18.3713	.017	14.1335	189.774	7.8210	1.147	1.146	1.000	.00001908	.01833	.769
342.527	14.9769	.021	14.4223	192.360	7.9602	1.144	1.144	1.000	.00001955	.01907	.771
352.527	12.2329	.027	14.7162	194.911	8.0971	1.141	1.141	1.000	.00002001	.01981	.772
362.527	10.0103	.034	15.0150	197.429	8.2315	1.138	1.138	1.000	.00002047	.02055	.774
372.527	8.2066	.042	15.3187	199.915	8.3634	1.136	1.136	1.000	.00002092	.02130	.776
382.527	6.7402	.053	15.6271	202.372	8.4926	1.133	1.133	1.000	.00002136	.02204	.778
392.527	5.5456	.066	15.9402	204.799	8.6190	1.131	1.131	1.000	.00002181	.02278	.779
402.527	4.5709	.082	16.2579	207.200	8.7425	1.129	1.129	1.000	.00002224	.02352	.781
412.527	3.7741	.102	16.5800	209.574	8.8631	1.127	1.127	1.000	.00002267	.02426	.783
422.527	3.1217	.126	16.9065	211.923	8.9806	1.125	1.125	1.000	.00002310	.02500	.784
432.527	2.5866	.156	17.2371	214.249	9.0950	1.124	1.123	1.000	.00002352	.02574	.785
442.527	2.1469	.192	17.5719	216.552	9.2061	1.122	1.122	1.000	.00002393	.02648	.786
452.527	1.7851	.236	17.9106	218.833	9.3138	1.120	1.120	1.000	.00002435	.02722	.787
462.527	1.4868	.290	18.2532	221.094	9.4181	1.119	1.119	1.000	.00002475	.02797	.788
472.527	1.2406	.355	18.5994	223.336	9.5188	1.118	1.117	1.000	.00002516	.02871	.788
482.527	1.0369	.434	18.9493	225.559	9.6160	1.116	1.116	1.000	.00002556	.02945	.788
492.527	.8683	.529	19.3025	227.766	9.7093	1.115	1.115	1.000	.00002595	.03019	.788
502.527	.7283	.643	19.6590	229.957	9.7989	1.114	1.114	1.000	.00002634	.03094	.788
512.527	.6120	.781	20.0186	232.133	9.8845	1.113	1.113	1.000	.00002673	.03168	.788
522.527	.5152	.946	20.3812	234.297	9.9661	1.112	1.112	1.000	.00002712	.03242	.787
532.527	.4346	1.143	20.7466	236.449	10.0436	1.111	1.111	1.000	.00002750	.03317	.787
542.527	.3672	1.378	21.1146	238.591	10.1169	1.110	1.111	1.000	.00002788	.03391	.786
552.527	.3109	1.658	21.4851	240.726	10.1860	1.110	1.110	1.000	.00002825	.03466	.784
562.527	.2637	1.990	21.8579	242.854	10.2507	1.109	1.109	1.000	.00002862	.03541	.783
572.527	.2241	2.383	22.2327	244.980	10.3110	1.108	1.109	1.001	.00002899	.03616	.781
582.527	.1908	2.848	22.6095	247.104	10.3667	1.108	1.109	1.001	.00002936	.03691	.779
592.527	.1628	3.396	22.9880	249.231	10.4178	1.108	1.109	1.001	.00002972	.03766	.777
602.527	.1392	4.040	23.3681	251.364	10.4643	1.107	1.109	1.001	.00003009	.03841	.774
612.527	.1193	4.796	23.7495	253.506	10.5060	1.107	1.109	1.002	.00003045	.03916	.772
622.527	.1026	5.668	24.1267	255.643	10.5559	1.107	1.109	1.002	.00003081	.03992	.770
632.527	.0883	6.699	24.5111	257.786	10.6120	1.107	1.109	1.002	.00003117	.04068	.768
642.527	.0761	7.901	24.8971	259.948	10.6672	1.106	1.110	1.003	.00003152	.04144	.767
652.527	.0657	9.301	25.2848	262.136	10.7216	1.106	1.110	1.004	.00003188	.04221	.765
662.527	.0568	10.927	25.6741	264.355	10.7752	1.106	1.111	1.005	.00003224	.04297	.764
672.527	.0492	12.813	26.0649	266.616	10.8282	1.106	1.112	1.006	.00003260	.04375	.762
682.527	.0427	14.994	26.4571	268.926	10.8806	1.106	1.114	1.007	.00003295	.04452	.761
692.527	.0372	17.514	26.8508	271.296	10.9324	1.106	1.116	1.008	.00003331	.04531	.759
702.527	.0324	20.417	27.2459	273.738	10.9837	1.106	1.118	1.010	.00003368	.04609	.758
712.527	.0283	23.756	27.6424	276.266	11.0347	1.106	1.120	1.012	.00003404	.04689	.757
722.527	.0248	27.587	28.0403	278.893	11.0853	1.107	1.123	1.014	.00003441	.04769	.756
732.527	.0217	31.975	28.4395	281.638	11.1356	1.107	1.127	1.017	.00003478	.04850	.754
742.527	.0191	36.989	28.8402	284.519	11.1857	1.107	1.131	1.020	.00003516	.04932	.753
752.527	.0168	42.708	29.2424	287.555	11.2356	1.108	1.136	1.024	.00003554	.05015	.752
762.527	.0149	49.215	29.6462	290.769	11.2855	1.109	1.142	1.028	.00003592	.05099	.751
772.527	.0131	56.623	30.0517	294.190	11.3353	1.109	1.148	1.033	.00003632	.05184	.750
782.527	.0117	64.999	30.4592	297.836	11.3852	1.110	1.156	1.038	.00003672	.05271	.749
792.527	.0104	74.470	30.8688	301.739	11.4350	1.111	1.164	1.045	.00003714	.05359	.749
802.527	.0092	85.156	31.2811	305.927	11.4849	1.112	1.174	1.052	.00003758	.05449	.748
812.527	.0083	97.187	31.6963	310.432	11.5349	1.114	1.184	1.060	.00003803	.05541	.748
822.527	.0074	110.704	32.1150	315.284	11.5849	1.115	1.197	1.069	.00003851	.05635	.748
832.527	.0067	125.859	32.5380	320.519	11.6349	1.116	1.210	1.079	.00003901	.05730	.748
842.527	.0060	142.815	32.9661	326.169	11.6849	1.118	1.225	1.091	.00003954	.05829	.749
844.814	.0059	146.964	33.0649	327.523	11.6963	1.118	1.229	1.094	.00003966	.05852	.749

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=36.50											
273.941	81.3766	.003	12.5471	173.826	6.9628	1.168	1.168	1.000	.00001619	.01399	.761
283.941	65.5169	.004	12.8047	176.656	7.1139	1.163	1.163	1.000	.00001670	.01473	.762
293.941	52.8802	.005	13.0679	179.438	7.2632	1.160	1.160	1.000	.00001720	.01548	.763
303.941	42.7721	.007	13.3365	182.176	7.4107	1.156	1.156	1.000	.00001770	.01622	.764
313.941	34.6698	.008	13.6104	184.871	7.5562	1.152	1.152	1.000	.00001819	.01696	.766
323.941	28.1602	.011	13.8896	187.526	7.6995	1.149	1.149	1.000	.00001867	.01770	.767
333.941	22.9185	.014	14.1740	190.143	7.8407	1.146	1.146	1.000	.00001914	.01844	.769
343.941	18.6888	.017	14.4636	192.724	7.9796	1.143	1.143	1.000	.00001961	.01918	.771
353.941	15.2688	.022	14.7582	195.270	8.1162	1.140	1.140	1.000	.00002007	.01992	.773
363.941	12.4978	.027	15.0577	197.783	8.2502	1.138	1.138	1.000	.00002053	.02066	.775
373.941	10.2485	.034	15.3621	200.266	8.3817	1.135	1.135	1.000	.00002098	.02140	.776
383.941	8.4193	.043	15.6712	202.718	8.5105	1.133	1.133	1.000	.00002143	.02214	.778
393.941	6.9289	.053	15.9850	205.142	8.6364	1.131	1.131	1.000	.00002187	.02288	.780
403.941	5.7124	.066	16.3033	207.539	8.7596	1.129	1.129	1.000	.00002230	.02362	.781
413.941	4.7177	.082	16.6261	209.909	8.8797	1.127	1.127	1.000	.00002273	.02436	.783
423.941	3.9031	.101	16.9532	212.255	8.9967	1.125	1.125	1.000	.00002316	.02510	.784
433.941	3.2348	.125	17.2845	214.577	9.1106	1.123	1.123	1.000	.00002358	.02585	.785
443.941	2.6855	.154	17.6198	216.877	9.2212	1.122	1.122	1.000	.00002399	.02659	.786
453.941	2.2334	.189	17.9591	219.155	9.3284	1.120	1.120	1.000	.00002440	.02733	.787
463.941	1.8607	.232	18.3023	221.412	9.4321	1.119	1.119	1.000	.00002481	.02807	.788
473.941	1.5528	.285	18.6491	223.650	9.5323	1.117	1.117	1.000	.00002521	.02881	.788
483.941	1.2982	.348	18.9995	225.870	9.6288	1.116	1.116	1.000	.00002561	.02955	.788
493.941	1.0872	.424	19.3533	228.072	9.7215	1.115	1.115	1.000	.00002601	.03030	.788
503.941	.9122	.515	19.7104	230.259	9.8104	1.114	1.114	1.000	.00002640	.03104	.788
513.941	.7667	.625	20.0706	232.430	9.8953	1.113	1.113	1.000	.00002678	.03178	.788
523.941	.6455	.757	20.4337	234.588	9.9762	1.112	1.112	1.000	.00002717	.03252	.787
533.941	.5445	.914	20.7996	236.733	10.0530	1.111	1.111	1.000	.00002755	.03327	.786
543.941	.4602	1.102	21.1682	238.868	10.1255	1.110	1.110	1.000	.00002792	.03401	.785
553.941	.3896	1.326	21.5392	240.993	10.1937	1.109	1.110	1.000	.00002830	.03476	.784
563.941	.3305	1.591	21.9125	243.112	10.2576	1.109	1.109	1.000	.00002867	.03550	.782
573.941	.2809	1.906	22.2879	245.224	10.3169	1.108	1.109	1.000	.00002904	.03625	.781
583.941	.2392	2.277	22.6652	247.334	10.3717	1.108	1.108	1.001	.00002940	.03700	.779
593.941	.2041	2.715	23.0443	249.443	10.4218	1.107	1.108	1.001	.00002976	.03775	.776
603.941	.1745	3.229	23.4249	251.554	10.4671	1.107	1.108	1.001	.00003013	.03850	.774
613.941	.1496	3.832	23.8069	253.670	10.5077	1.107	1.108	1.001	.00003048	.03925	.771
623.941	.1286	4.530	24.1848	255.773	10.5595	1.106	1.108	1.002	.00003084	.04000	.769
633.941	.1106	5.353	24.5699	257.879	10.6148	1.106	1.108	1.002	.00003120	.04076	.768
643.941	.0953	6.314	24.9568	259.997	10.6692	1.106	1.108	1.002	.00003155	.04151	.766
653.941	.0823	7.434	25.3453	262.132	10.7228	1.105	1.109	1.003	.00003190	.04227	.764
663.941	.0711	8.735	25.7354	264.289	10.7755	1.105	1.109	1.004	.00003226	.04304	.763
673.941	.0616	10.244	26.1271	266.476	10.8274	1.105	1.110	1.005	.00003261	.04380	.761
683.941	.0535	11.991	26.5203	268.699	10.8786	1.105	1.111	1.006	.00003296	.04457	.760
693.941	.0465	14.011	26.9150	270.968	10.9292	1.105	1.113	1.007	.00003331	.04535	.759
703.941	.0405	16.339	27.3111	273.291	10.9792	1.105	1.114	1.008	.00003367	.04612	.757
713.941	.0353	19.019	27.7086	275.679	11.0286	1.105	1.116	1.010	.00003402	.04691	.756
723.941	.0309	22.098	28.1075	278.144	11.0776	1.105	1.118	1.011	.00003438	.04770	.754
733.941	.0271	25.628	28.5077	280.699	11.1262	1.105	1.121	1.014	.00003474	.04849	.753
743.941	.0238	29.667	28.9093	283.361	11.1745	1.106	1.124	1.016	.00003511	.04930	.752
753.941	.0209	34.278	29.3123	286.144	11.2225	1.106	1.128	1.019	.00003547	.05011	.751
763.941	.0184	39.532	29.7168	289.069	11.2703	1.107	1.133	1.022	.00003585	.05093	.749
773.941	.0163	45.508	30.1228	292.154	11.3179	1.107	1.138	1.026	.00003623	.05176	.748
783.941	.0144	52.288	30.5305	295.423	11.3654	1.108	1.143	1.031	.00003661	.05260	.747
793.941	.0128	59.990	30.9399	298.902	11.4129	1.109	1.150	1.036	.00003700	.05346	.746
803.941	.0114	68.673	31.3514	302.610	11.4603	1.105	1.158	1.041	.00003740	.05432	.745
813.941	.0101	78.467	31.7651	306.577	11.5078	1.110	1.167	1.048	.00003781	.05521	.745
823.941	.0091	89.491	32.1816	310.831	11.5553	1.111	1.176	1.055	.00003825	.05611	.744
833.941	.0081	101.873	32.6011	315.402	11.6028	1.113	1.187	1.064	.00003870	.05702	.744
843.941	.0073	115.754	33.0243	320.321	11.6503	1.114	1.199	1.073	.00003917	.05796	.744
844.814	.0072	117.026	33.0615	320.764	11.6545	1.114	1.201	1.074	.00003921	.05804	.744

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT

CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=36.75											
285.488	81.3911	.003	12.8451	177.090	7.1371	1.163	1.163	1.000	.00001678	.01485	.762
295.488	65.7011	.004	13.1091	179.865	7.2862	1.159	1.159	1.000	.00001728	.01559	.763
305.488	53.1656	.005	13.3785	182.596	7.4333	1.155	1.155	1.000	.00001777	.01633	.764
315.488	43.1082	.007	13.6533	185.285	7.5784	1.152	1.152	1.000	.00001826	.01707	.766
325.488	35.0251	.009	13.9333	187.934	7.7215	1.149	1.149	1.000	.00001874	.01781	.768
335.488	28.5142	.011	14.2185	190.545	7.8623	1.146	1.146	1.000	.00001922	.01855	.769
345.488	23.2587	.014	14.5089	193.121	8.0009	1.143	1.143	1.000	.00001968	.01929	.771
355.488	19.0078	.017	14.8042	195.662	8.1370	1.140	1.140	1.000	.00002014	.02003	.773
365.488	15.5627	.022	15.1045	198.171	8.2706	1.137	1.137	1.000	.00002060	.02077	.775
375.488	12.7653	.027	15.4097	200.648	8.4017	1.135	1.135	1.000	.00002105	.02151	.777
385.488	10.4897	.034	15.7195	203.096	8.5300	1.133	1.133	1.000	.00002150	.02226	.778
395.488	8.6351	.043	16.0341	205.516	8.6556	1.131	1.131	1.000	.00002193	.02300	.780
405.488	7.1209	.053	16.3531	207.908	8.7782	1.129	1.128	1.000	.00002237	.02374	.781
415.488	5.8826	.066	16.6766	210.275	8.8978	1.127	1.127	1.000	.00002280	.02448	.783
425.488	4.8680	.081	17.0043	212.617	9.0143	1.125	1.125	1.000	.00002322	.02522	.784
435.488	4.0355	.101	17.3363	214.936	9.1277	1.123	1.123	1.000	.00002364	.02596	.785
445.488	3.3511	.124	17.6723	217.231	9.2377	1.121	1.121	1.000	.00002406	.02670	.786
455.488	2.7877	.152	18.0123	219.506	9.3443	1.120	1.120	1.000	.00002447	.02744	.787
465.488	2.3230	.187	18.3560	221.760	9.4475	1.118	1.118	1.000	.00002487	.02818	.788
475.488	1.9391	.229	18.7035	223.994	9.5470	1.117	1.117	1.000	.00002527	.02892	.788
485.488	1.6215	.279	19.0545	226.210	9.6429	1.116	1.116	1.000	.00002567	.02967	.788
495.488	1.3583	.340	19.4089	228.408	9.7350	1.115	1.115	1.000	.00002607	.03041	.788
505.488	1.1399	.413	19.7665	230.590	9.8232	1.114	1.113	1.000	.00002646	.03115	.788
515.488	.9583	.502	20.1272	232.757	9.9074	1.112	1.112	1.000	.00002684	.03189	.788
525.488	.8071	.607	20.4909	234.909	9.9875	1.112	1.112	1.000	.00002722	.03264	.787
535.488	.6809	.733	20.8574	237.049	10.0635	1.111	1.111	1.000	.00002760	.03338	.786
545.488	.5756	.884	21.2265	239.177	10.1352	1.110	1.110	1.000	.00002798	.03412	.785
555.488	.4874	1.063	21.5980	241.295	10.2026	1.109	1.109	1.000	.00002835	.03487	.784
565.488	.4136	1.275	21.9718	243.404	10.2655	1.108	1.109	1.000	.00002872	.03561	.782
575.488	.3515	1.527	22.3478	245.506	10.3239	1.108	1.108	1.000	.00002909	.03636	.780
585.488	.2994	1.824	22.7256	247.603	10.3777	1.107	1.108	1.000	.00002945	.03710	.778
595.488	.2555	2.174	23.1052	249.698	10.4268	1.107	1.108	1.001	.00002981	.03785	.776
605.488	.2185	2.586	23.4864	251.791	10.4711	1.107	1.107	1.001	.00003017	.03860	.773
615.488	.1876	3.062	23.8634	253.888	10.5090	1.106	1.107	1.001	.00003053	.03935	.770
625.488	.1610	3.626	24.2474	255.961	10.5647	1.106	1.107	1.001	.00003088	.04010	.769
635.488	.1385	4.285	24.6332	258.036	10.6193	1.105	1.107	1.002	.00003124	.04085	.767
645.488	.1193	5.055	25.0207	260.119	10.6731	1.105	1.107	1.002	.00003159	.04160	.766
655.488	.1030	5.951	25.4100	262.212	10.7258	1.105	1.108	1.002	.00003194	.04236	.764
665.488	.0890	6.992	25.8009	264.320	10.7777	1.105	1.108	1.003	.00003229	.04312	.762
675.488	.0771	8.201	26.1934	266.449	10.8288	1.104	1.108	1.004	.00003263	.04388	.761
685.488	.0669	9.602	26.5874	268.604	10.8790	1.104	1.109	1.004	.00003298	.04464	.759
695.488	.0581	11.221	26.9830	270.792	10.9286	1.104	1.110	1.005	.00003333	.04541	.758
705.488	.0506	13.089	27.3800	273.020	10.9774	1.104	1.111	1.006	.00003368	.04618	.756
715.488	.0441	15.240	27.7784	275.298	11.0256	1.104	1.113	1.008	.00003403	.04696	.755
725.488	.0385	17.714	28.1782	277.635	11.0732	1.104	1.114	1.009	.00003438	.04774	.753
735.488	.0337	20.552	28.5794	280.041	11.1204	1.104	1.117	1.011	.00003473	.04852	.752
745.488	.0296	23.802	28.9819	282.529	11.1671	1.104	1.119	1.013	.00003508	.04931	.751
755.488	.0260	27.517	29.3858	285.112	11.2134	1.105	1.122	1.015	.00003544	.05011	.749
765.488	.0229	31.754	29.7911	287.805	11.2593	1.105	1.125	1.018	.00003580	.05091	.748
775.488	.0202	36.580	30.1577	290.626	11.3050	1.105	1.129	1.021	.00003616	.05173	.747
785.488	.0178	42.063	30.6059	293.592	11.3505	1.106	1.134	1.024	.00003653	.05255	.745
795.488	.0158	48.281	31.0156	296.723	11.3959	1.106	1.139	1.028	.00003690	.05338	.744
805.488	.0140	55.339	31.4270	300.045	11.4411	1.107	1.145	1.033	.00003728	.05422	.743
815.488	.0125	63.293	31.8403	303.573	11.4863	1.108	1.152	1.038	.00003767	.05508	.742
825.488	.0111	72.261	32.2556	307.336	11.5314	1.109	1.160	1.044	.00003807	.05595	.741
835.488	.0099	82.351	32.6734	311.359	11.5765	1.110	1.169	1.051	.00003848	.05683	.740
844.814	.0090	92.877	33.0654	315.370	11.6186	1.110	1.178	1.058	.00003888	.05767	.740

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

S/R=37.00

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
297.170	81.4244	.003	13.1540	180.328	7.3110	1.158	1.158	1.000	.00001736	.01571	.763
307.170	65.9013	.004	13.4244	183.051	7.4578	1.155	1.155	1.000	.00001786	.01645	.765
317.170	53.4533	.006	13.7000	185.734	7.6026	1.151	1.151	1.000	.00001834	.01720	.766
327.170	43.4450	.007	13.9809	188.376	7.7453	1.148	1.148	1.000	.00001882	.01794	.768
337.170	35.3805	.009	14.2670	190.982	7.8857	1.145	1.145	1.000	.00001929	.01868	.770
347.170	28.8686	.011	14.5582	193.551	8.0239	1.142	1.142	1.000	.00001976	.01942	.771
357.170	23.5998	.014	14.8544	196.087	8.1596	1.140	1.140	1.000	.00002022	.02016	.773
367.170	19.3283	.018	15.1556	198.590	8.2928	1.137	1.137	1.000	.00002068	.02090	.775
377.170	15.8589	.022	15.4615	201.063	8.4234	1.135	1.135	1.000	.00002113	.02164	.777
387.170	13.0356	.028	15.7722	203.506	8.5512	1.132	1.132	1.000	.00002157	.02238	.779
397.170	10.7340	.034	16.0875	205.921	8.6763	1.130	1.130	1.000	.00002201	.02312	.780
407.170	8.8544	.043	16.4073	208.309	8.7984	1.128	1.128	1.000	.00002244	.02386	.782
417.170	7.3166	.053	16.7315	210.672	8.9175	1.126	1.126	1.000	.00002287	.02460	.783
427.170	6.0565	.066	17.0600	213.010	9.0335	1.124	1.124	1.000	.00002329	.02534	.784
437.170	5.0221	.081	17.3927	215.324	9.1462	1.123	1.123	1.000	.00002371	.02608	.785
447.170	4.1716	.100	17.7294	217.616	9.2557	1.121	1.121	1.000	.00002413	.02682	.786
457.170	3.4711	.123	18.0700	219.887	9.3617	1.120	1.120	1.000	.00002453	.02757	.787
467.170	2.8933	.151	18.4145	222.136	9.4642	1.118	1.118	1.000	.00002494	.02831	.788
477.170	2.4159	.184	18.7626	224.367	9.5631	1.117	1.117	1.000	.00002534	.02905	.788
487.170	2.0207	.225	19.1142	226.579	9.6583	1.116	1.116	1.000	.00002574	.02979	.788
497.170	1.6932	.274	19.4692	228.773	9.7496	1.114	1.114	1.000	.00002613	.03053	.788
507.170	1.4213	.333	19.8274	230.951	9.8371	1.113	1.113	1.000	.00002652	.03127	.788
517.170	1.1951	.403	20.1887	233.113	9.9205	1.112	1.112	1.000	.00002690	.03201	.788
527.170	1.0068	.488	20.5530	235.261	9.9999	1.111	1.111	1.000	.00002729	.03276	.787
537.170	.8497	.589	20.9200	237.395	10.0751	1.110	1.110	1.000	.00002766	.03350	.786
547.170	.7184	.710	21.2896	239.517	10.1459	1.110	1.110	1.000	.00002804	.03424	.785
557.170	.6085	.854	21.6617	241.628	10.2124	1.109	1.109	1.000	.00002841	.03499	.783
567.170	.5164	1.024	22.0360	243.730	10.2744	1.108	1.108	1.000	.00002878	.03573	.782
577.170	.4391	1.226	22.4125	245.823	10.3319	1.108	1.108	1.000	.00002914	.03647	.780
587.170	.3740	1.464	22.7908	247.910	10.3847	1.107	1.108	1.000	.00002951	.03722	.778
597.170	.3192	1.745	23.1709	249.992	10.4327	1.107	1.107	1.000	.00002987	.03797	.775
607.170	.2730	2.075	23.5525	252.071	10.4759	1.106	1.107	1.001	.00003022	.03871	.773
617.170	.2344	2.457	23.9300	254.147	10.5160	1.106	1.107	1.001	.00003058	.03946	.770
627.170	.2013	2.908	24.3146	256.199	10.5712	1.106	1.107	1.001	.00003093	.04021	.768
637.170	.1731	3.437	24.7010	258.251	10.6253	1.105	1.107	1.001	.00003128	.04096	.767
647.170	.1491	4.053	25.0892	260.304	10.6784	1.105	1.107	1.002	.00003163	.04171	.765
657.170	.1287	4.771	25.4791	262.364	10.7305	1.104	1.107	1.002	.00003198	.04246	.763
667.170	.1112	5.607	25.8708	264.433	10.7817	1.104	1.107	1.002	.00003232	.04322	.762
677.170	.0963	6.576	26.2640	266.515	10.8320	1.104	1.107	1.003	.00003267	.04397	.760
687.170	.0835	7.699	26.6588	268.616	10.8814	1.104	1.108	1.004	.00003301	.04473	.759
697.170	.0726	8.998	27.0551	270.740	10.9300	1.103	1.108	1.004	.00003336	.04549	.757
707.170	.0631	10.497	27.4529	272.893	10.9779	1.103	1.109	1.005	.00003370	.04626	.755
717.170	.0550	12.225	27.8522	275.084	11.0251	1.103	1.110	1.006	.00003404	.04703	.754
727.170	.0481	14.212	28.2528	277.318	11.0716	1.103	1.111	1.007	.00003438	.04780	.752
737.170	.0420	16.494	28.6549	279.606	11.1175	1.103	1.113	1.009	.00003473	.04857	.751
747.170	.0368	19.109	29.0583	281.956	11.1628	1.103	1.115	1.010	.00003507	.04936	.749
757.170	.0323	22.100	29.4630	284.381	11.2077	1.103	1.117	1.012	.00003542	.05014	.748
767.170	.0284	25.515	29.8691	286.891	11.2521	1.103	1.120	1.014	.00003577	.05093	.747
777.170	.0251	29.408	30.2765	289.500	11.2961	1.104	1.123	1.017	.00003612	.05173	.745
787.170	.0221	33.836	30.6853	292.224	11.3399	1.104	1.126	1.019	.00003648	.05254	.744
797.170	.0196	38.864	31.0955	295.079	11.3833	1.105	1.131	1.023	.00003684	.05335	.743
807.170	.0173	44.562	31.5072	298.083	11.4266	1.105	1.135	1.026	.00003721	.05417	.741
817.170	.0154	51.007	31.9205	301.256	11.4697	1.106	1.141	1.031	.00003757	.05501	.740
827.170	.0137	58.305	32.3355	304.622	11.5127	1.106	1.147	1.035	.00003795	.05585	.739
837.170	.0122	66.509	32.7525	308.197	11.5556	1.107	1.154	1.041	.00003833	.05670	.738
844.814	.0112	73.464	33.0727	311.088	11.5883	1.108	1.160	1.045	.00003863	.05737	.737

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=37.25											
309.023	81.4244	.004	13.4751	183.552	7.4848	1.154	1.154	1.000	.00001795	.01659	.765
319.023	66.0487	.005	13.7517	186.227	7.6292	1.151	1.151	1.000	.00001843	.01733	.766
329.023	53.7018	.006	14.0336	188.862	7.7715	1.148	1.148	1.000	.00001891	.01807	.768
339.023	43.7491	.007	14.3207	191.461	7.9115	1.145	1.145	1.000	.00001938	.01881	.770
349.023	35.7095	.009	14.6128	194.024	8.0492	1.142	1.142	1.000	.00001985	.01955	.772
359.023	29.2022	.011	14.9099	196.554	8.1844	1.139	1.139	1.000	.00002031	.02029	.774
369.023	23.9248	.014	15.2120	199.052	8.3171	1.137	1.137	1.000	.00002076	.02104	.775
379.023	19.6368	.018	15.5188	201.519	8.4472	1.134	1.134	1.000	.00002121	.02178	.777
389.023	16.1462	.022	15.8303	203.957	8.5746	1.132	1.132	1.000	.00002165	.02252	.779
399.023	13.2997	.028	16.1465	206.367	8.6991	1.130	1.130	1.000	.00002209	.02326	.781
409.023	10.9743	.035	16.4671	208.750	8.8206	1.128	1.128	1.000	.00002252	.02400	.782
419.023	9.0713	.043	16.7921	211.108	8.9391	1.126	1.126	1.000	.00002295	.02474	.783
429.023	7.5113	.053	17.1214	213.441	9.0545	1.124	1.124	1.000	.00002337	.02548	.785
439.023	6.2304	.066	17.4549	215.751	9.1666	1.122	1.122	1.000	.00002379	.02622	.786
449.023	5.1769	.081	17.7924	218.039	9.2754	1.121	1.121	1.000	.00002420	.02696	.787
459.023	4.3089	.099	18.1338	220.305	9.3808	1.119	1.119	1.000	.00002461	.02770	.787
469.023	3.5927	.122	18.4789	222.551	9.4826	1.118	1.118	1.000	.00002501	.02844	.788
479.023	3.0008	.149	18.8277	224.778	9.5808	1.117	1.117	1.000	.00002541	.02918	.788
489.023	2.5108	.182	19.1800	226.985	9.6752	1.115	1.115	1.000	.00002581	.02993	.788
499.023	2.1044	.221	19.5357	229.176	9.7658	1.114	1.114	1.000	.00002620	.03067	.788
509.023	1.7670	.269	19.8945	231.349	9.8525	1.113	1.113	1.000	.00002659	.03141	.788
519.023	1.4863	.326	20.2565	233.507	9.9351	1.112	1.112	1.000	.00002697	.03215	.787
529.023	1.2524	.394	20.6213	235.650	10.0136	1.111	1.111	1.000	.00002736	.03289	.787
539.023	1.0572	.475	20.9889	237.779	10.0879	1.110	1.110	1.000	.00002773	.03363	.786
549.023	.8941	.573	21.3591	239.896	10.1579	1.109	1.110	1.000	.00002811	.03438	.785
559.023	.7576	.688	21.7317	242.001	10.2234	1.109	1.109	1.000	.00002848	.03512	.783
569.023	.6431	.825	22.1066	244.095	10.2845	1.108	1.108	1.000	.00002884	.03586	.781
579.023	.5469	.987	22.4835	246.181	10.3409	1.107	1.108	1.000	.00002921	.03661	.779
589.023	.4660	1.179	22.8623	248.259	10.3926	1.107	1.107	1.000	.00002957	.03735	.777
599.023	.3979	1.404	23.2429	250.331	10.4396	1.106	1.107	1.000	.00002993	.03810	.775
609.023	.3404	1.669	23.6250	252.398	10.4817	1.106	1.107	1.001	.00003028	.03884	.772
619.023	.2923	1.976	24.0029	254.455	10.5243	1.106	1.106	1.001	.00003064	.03959	.769
629.023	.2510	2.339	24.3881	256.490	10.5790	1.105	1.106	1.001	.00003099	.04033	.768
639.023	.2159	2.763	24.7751	258.522	10.6327	1.105	1.106	1.001	.00003134	.04108	.766
649.023	.1860	3.258	25.1639	260.552	10.6852	1.104	1.106	1.001	.00003168	.04183	.765
659.023	.1605	3.835	25.5545	262.585	10.7368	1.104	1.106	1.002	.00003203	.04258	.763
669.023	.1387	4.506	25.9467	264.622	10.7873	1.104	1.106	1.002	.00003237	.04333	.761
679.023	.1201	5.284	26.3406	266.667	10.8370	1.103	1.106	1.002	.00003271	.04409	.760
689.023	.1041	6.186	26.7361	268.724	10.8857	1.103	1.106	1.003	.00003305	.04484	.758
699.023	.0905	7.230	27.1332	270.797	10.9335	1.103	1.107	1.003	.00003339	.04560	.756
709.023	.0787	8.435	27.5317	272.891	10.9806	1.103	1.107	1.004	.00003373	.04636	.755
719.023	.0686	9.824	27.9317	275.012	11.0268	1.102	1.108	1.005	.00003407	.04712	.753
729.023	.0599	11.422	28.3332	277.166	11.0723	1.102	1.109	1.006	.00003441	.04789	.752
739.023	.0523	13.258	28.7360	279.360	11.1172	1.102	1.110	1.007	.00003475	.04866	.750
749.023	.0458	15.363	29.1402	281.601	11.1614	1.102	1.112	1.008	.00003509	.04943	.748
759.023	.0402	17.772	29.5457	283.899	11.2050	1.102	1.113	1.010	.00003543	.05021	.747
769.023	.0353	20.525	29.9526	286.263	11.2481	1.102	1.115	1.011	.00003577	.05099	.745
779.023	.0311	23.665	30.3607	288.705	11.2908	1.103	1.118	1.013	.00003611	.05177	.744
789.023	.0274	27.240	30.7702	291.237	11.3330	1.103	1.120	1.016	.00003646	.05257	.743
799.023	.0242	31.303	31.1811	293.872	11.3748	1.103	1.124	1.018	.00003681	.05337	.741
809.023	.0214	35.513	31.5933	296.624	11.4163	1.103	1.127	1.021	.00003716	.05417	.740
819.023	.0190	41.133	32.0069	299.511	11.4576	1.104	1.132	1.024	.00003752	.05499	.738
829.023	.0169	47.033	32.4220	302.550	11.4987	1.104	1.137	1.028	.00003788	.05581	.737
839.023	.0150	53.711	32.8388	305.764	11.5396	1.105	1.142	1.033	.00003824	.05664	.736
844.814	.0141	57.946	33.0810	307.710	11.5632	1.105	1.146	1.035	.00003845	.05713	.735

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=37.50											
321.015	81.3872	.004	13.8075	186.755	7.6577	1.150	1.150	1.000	.00001853	.01748	.767
331.015	66.1827	.005	14.0904	189.383	7.7995	1.147	1.147	1.000	.00001900	.01822	.768
341.015	53.9492	.006	14.3785	191.975	7.9391	1.144	1.144	1.000	.00001947	.01896	.770
351.015	44.0515	.007	14.6716	194.531	8.0763	1.141	1.141	1.000	.00001994	.01970	.772
361.015	36.0373	.009	14.9657	197.054	8.2110	1.139	1.139	1.000	.00002040	.02044	.774
371.015	29.5353	.012	15.2727	199.546	8.3432	1.136	1.136	1.000	.00002085	.02118	.776
381.015	24.2504	.015	15.5805	202.007	8.4728	1.134	1.134	1.000	.00002130	.02192	.778
391.015	19.9467	.018	15.8930	204.439	8.5995	1.132	1.131	1.000	.00002174	.02266	.779
401.015	16.4359	.023	16.2100	206.844	8.7234	1.129	1.129	1.000	.00002217	.02340	.781
411.015	13.5668	.028	16.5316	209.222	8.8444	1.127	1.127	1.000	.00002261	.02415	.782
421.015	11.2181	.035	16.8575	211.575	8.9623	1.126	1.126	1.000	.00002303	.02489	.784
431.015	9.2921	.043	17.1876	213.904	9.0770	1.124	1.124	1.000	.00002345	.02563	.785
441.015	7.7101	.053	17.5219	216.209	9.1884	1.122	1.122	1.000	.00002387	.02637	.786
451.015	6.4085	.066	17.8602	218.492	9.2965	1.121	1.120	1.000	.00002428	.02711	.787
461.015	5.3359	.081	18.2023	220.754	9.4012	1.119	1.119	1.000	.00002469	.02785	.787
471.015	4.4505	.099	18.5483	222.996	9.5022	1.118	1.118	1.000	.00002509	.02859	.788
481.015	3.7184	.121	18.8978	225.218	9.5996	1.116	1.116	1.000	.00002549	.02933	.788
491.015	3.1122	.147	19.2508	227.422	9.6933	1.115	1.115	1.000	.00002589	.03007	.788
501.015	2.6094	.179	19.6071	229.608	9.7831	1.114	1.114	1.000	.00002628	.03081	.788
511.015	2.1917	.217	19.9667	231.777	9.8689	1.113	1.113	1.000	.00002667	.03155	.788
521.015	1.8441	.263	20.3293	233.930	9.9507	1.112	1.112	1.000	.00002705	.03230	.787
531.015	1.5545	.319	20.6947	236.069	10.0283	1.111	1.111	1.000	.00002743	.03304	.787
541.015	1.3127	.384	21.0629	238.193	10.1017	1.110	1.110	1.000	.00002781	.03378	.786
551.015	1.1105	.463	21.4337	240.305	10.1707	1.109	1.109	1.000	.00002818	.03452	.784
561.015	.9412	.556	21.8068	242.404	10.2353	1.108	1.109	1.000	.00002855	.03526	.783
571.015	.7992	.666	22.1822	244.493	10.2953	1.108	1.108	1.000	.00002891	.03601	.781
581.015	.6799	.797	22.5596	246.571	10.3507	1.107	1.107	1.000	.00002928	.03675	.779
591.015	.5795	.951	22.9389	248.642	10.4013	1.107	1.107	1.000	.00002964	.03749	.777
601.015	.4949	1.133	23.3199	250.705	10.4472	1.106	1.107	1.000	.00003000	.03824	.774
611.015	.4235	1.346	23.7025	252.762	10.4881	1.106	1.106	1.000	.00003035	.03898	.771
621.015	.3638	1.593	24.0809	254.802	10.5338	1.105	1.106	1.001	.00003070	.03973	.769
631.015	.3124	1.885	24.4666	256.823	10.5880	1.105	1.106	1.001	.00003105	.04047	.767
641.015	.2687	2.226	24.8542	258.838	10.6412	1.104	1.105	1.001	.00003140	.04122	.766
651.015	.2315	2.624	25.2436	260.850	10.6932	1.104	1.105	1.001	.00003174	.04197	.764
661.015	.1998	3.088	25.6347	262.860	10.7443	1.104	1.105	1.001	.00003209	.04271	.762
671.015	.1727	3.627	26.0276	264.871	10.7943	1.103	1.105	1.002	.00003243	.04346	.761
681.015	.1496	4.254	26.4221	266.885	10.8433	1.103	1.105	1.002	.00003277	.04422	.759
691.015	.1297	4.979	26.8183	268.907	10.8914	1.103	1.105	1.002	.00003311	.04497	.758
701.015	.1126	5.819	27.2160	270.939	10.9386	1.102	1.105	1.003	.00003344	.04572	.756
711.015	.0980	6.788	27.6152	272.986	10.9849	1.102	1.106	1.003	.00003378	.04648	.754
721.015	.0854	7.906	28.0159	275.051	11.0304	1.102	1.106	1.004	.00003411	.04724	.753
731.015	.0745	9.192	28.4181	277.140	11.0750	1.102	1.107	1.005	.00003445	.04800	.751
741.015	.0651	10.670	28.8216	279.259	11.1190	1.102	1.108	1.006	.00003478	.04876	.749
751.015	.0570	12.365	29.2266	281.414	11.1622	1.101	1.109	1.007	.00003511	.04953	.748
761.015	.0500	14.306	29.6328	283.611	11.2048	1.101	1.110	1.008	.00003545	.05030	.746
771.015	.0439	16.526	30.0404	285.860	11.2468	1.101	1.112	1.009	.00003578	.05107	.744
781.015	.0386	19.058	30.4493	288.168	11.2882	1.101	1.114	1.011	.00003612	.05185	.743
791.015	.0340	21.944	30.8595	290.546	11.3291	1.102	1.116	1.013	.00003646	.05263	.741
801.015	.0300	25.226	31.2710	293.005	11.3695	1.102	1.118	1.015	.00003679	.05342	.740
811.015	.0266	28.952	31.6838	295.556	11.4096	1.102	1.121	1.017	.00003714	.05421	.738
821.015	.0235	33.176	32.0979	298.214	11.4493	1.102	1.125	1.020	.00003748	.05501	.737
831.015	.0209	37.955	32.5134	300.993	11.4887	1.103	1.128	1.023	.00003783	.05582	.736
841.015	.0186	43.353	32.9303	303.908	11.5278	1.103	1.133	1.026	.00003818	.05663	.734
844.814	.0178	45.596	33.0891	305.059	11.5427	1.103	1.135	1.028	.00003832	.05694	.734



TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=37.75											
333.140	81.3857	.004	14.1512	189.937	7.8293	1.146	1.146	1.000	.00001910	.01838	.769
343.140	66.3360	.005	14.4403	192.521	7.9684	1.143	1.143	1.000	.00001957	.01912	.771
353.140	54.2014	.006	14.7345	195.070	8.1051	1.141	1.141	1.000	.00002004	.01986	.773
363.140	44.3576	.008	15.0337	197.587	8.2393	1.138	1.138	1.000	.00002049	.02060	.774
373.140	36.3686	.010	15.3377	200.072	8.3709	1.136	1.136	1.000	.00002095	.02134	.776
383.140	29.8722	.012	15.6465	202.527	8.4999	1.133	1.133	1.000	.00002139	.02208	.778
393.140	24.5801	.015	15.9600	204.953	8.6261	1.131	1.131	1.000	.00002183	.02282	.780
403.140	20.2613	.019	16.2780	207.352	8.7493	1.129	1.129	1.000	.00002227	.02356	.781
413.140	16.7305	.023	16.6005	209.725	8.8696	1.127	1.127	1.000	.00002270	.02430	.783
423.140	13.8391	.029	16.9273	212.072	8.9868	1.125	1.125	1.000	.00002312	.02504	.784
433.140	11.4673	.035	17.2584	214.396	9.1009	1.123	1.123	1.000	.00002354	.02578	.785
443.140	9.5184	.043	17.5935	216.696	9.2116	1.122	1.122	1.000	.00002396	.02652	.786
453.140	7.9144	.053	17.9326	218.975	9.3190	1.120	1.120	1.000	.00002437	.02727	.787
463.140	6.5921	.066	18.2756	221.232	9.4228	1.119	1.119	1.000	.00002478	.02801	.788
473.140	5.5002	.080	18.6223	223.469	9.5231	1.117	1.117	1.000	.00002518	.02875	.788
483.140	4.5971	.098	18.9727	225.687	9.6197	1.116	1.116	1.000	.00002558	.02949	.788
493.140	3.8491	.119	19.3264	227.886	9.7125	1.115	1.115	1.000	.00002597	.03023	.788
503.140	3.2284	.145	19.6835	230.068	9.8014	1.114	1.114	1.000	.00002636	.03097	.788
513.140	2.7125	.176	20.0437	232.233	9.8864	1.113	1.113	1.000	.00002675	.03171	.788
523.140	2.2832	.214	20.4070	234.382	9.9672	1.112	1.112	1.000	.00002713	.03245	.787
533.140	1.9252	.258	20.7731	236.516	10.0439	1.111	1.111	1.000	.00002751	.03319	.786
543.140	1.6263	.311	21.1418	238.636	10.1163	1.110	1.110	1.000	.00002788	.03394	.785
553.140	1.3763	.375	21.5132	240.743	10.1843	1.109	1.109	1.000	.00002826	.03468	.784
563.140	1.1669	.450	21.8869	242.837	10.2478	1.108	1.108	1.000	.00002863	.03542	.782
573.140	.9912	.539	22.2628	244.920	10.3068	1.108	1.108	1.000	.00002899	.03616	.781
583.140	.8435	.645	22.6407	246.992	10.3611	1.107	1.107	1.000	.00002935	.03690	.779
593.140	.7192	.769	23.0205	249.056	10.4107	1.107	1.107	1.000	.00002971	.03765	.776
603.140	.6144	.915	23.4020	251.111	10.4553	1.106	1.106	1.000	.00003007	.03839	.774
613.140	.5259	1.087	23.7849	253.160	10.4951	1.106	1.106	1.000	.00003042	.03913	.771
623.140	.4519	1.286	24.1638	255.185	10.5441	1.105	1.106	1.000	.00003077	.03988	.769
633.140	.3882	1.522	24.5501	257.193	10.5980	1.105	1.105	1.001	.00003112	.04062	.767
643.140	.3340	1.797	24.9382	259.194	10.6507	1.104	1.105	1.001	.00003147	.04137	.765
653.140	.2878	2.118	25.3282	261.190	10.7023	1.104	1.105	1.001	.00003181	.04211	.764
663.140	.2484	2.491	25.7199	263.181	10.7529	1.103	1.104	1.001	.00003215	.04286	.762
673.140	.2148	2.926	26.1133	265.171	10.8024	1.103	1.104	1.001	.00003249	.04361	.760
683.140	.1860	3.430	26.5085	267.161	10.8509	1.103	1.104	1.002	.00003283	.04436	.759
693.140	.1613	4.014	26.9052	269.154	10.8984	1.102	1.104	1.002	.00003316	.04511	.757
703.140	.1401	4.690	27.3035	271.153	10.9450	1.102	1.104	1.002	.00003350	.04586	.755
713.140	.1219	5.471	27.7034	273.161	10.9906	1.102	1.105	1.003	.00003383	.04661	.754
723.140	.1062	6.371	28.1048	275.182	11.0354	1.101	1.105	1.003	.00003416	.04737	.752
733.140	.0926	7.407	28.5076	277.219	11.0794	1.101	1.105	1.004	.00003449	.04812	.750
743.140	.0809	8.598	28.9118	279.278	11.1225	1.101	1.106	1.005	.00003482	.04888	.749
753.140	.0708	9.964	29.3174	281.363	11.1649	1.101	1.107	1.005	.00003515	.04964	.747
763.140	.0621	11.529	29.7244	283.480	11.2066	1.101	1.108	1.006	.00003548	.05041	.745
773.140	.0545	13.319	30.1326	285.636	11.2476	1.101	1.109	1.007	.00003581	.05117	.744
783.140	.0479	15.362	30.5422	287.837	11.2880	1.101	1.110	1.009	.00003614	.05194	.742
793.140	.0422	17.691	30.9531	290.093	11.3278	1.101	1.112	1.010	.00003647	.05272	.740
803.140	.0372	20.342	31.3652	292.410	11.3670	1.101	1.114	1.012	.00003680	.05350	.739
813.140	.0329	23.353	31.7786	294.801	11.4058	1.101	1.116	1.014	.00003714	.05428	.737
823.140	.0291	26.768	32.1932	297.275	11.4441	1.101	1.119	1.016	.00003747	.05507	.736
833.140	.0258	30.636	32.6092	299.845	11.4821	1.101	1.122	1.018	.00003781	.05586	.734
843.140	.0229	35.009	33.0264	302.523	11.5197	1.102	1.125	1.021	.00003815	.05666	.733
844.814	.0225	35.797	33.0964	302.984	11.5259	1.102	1.126	1.022	.00003821	.05680	.732

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	NPr
S/R=38.00											
345.399	81.3935	.004	14.5064	193.100	7.9995	1.143	1.143	1.000	.00001968	.01929	.771
355.399	66.4952	.005	14.8017	195.642	8.1356	1.140	1.140	1.000	.00002014	.02003	.773
365.399	54.4578	.006	15.1020	198.151	8.2693	1.137	1.137	1.000	.00002060	.02077	.775
375.399	44.6673	.008	15.4071	200.629	8.4003	1.135	1.135	1.000	.00002105	.02151	.777
385.399	36.7035	.010	15.7170	203.078	8.5286	1.133	1.133	1.000	.00002149	.02225	.778
395.399	30.2132	.012	16.0315	205.498	8.6541	1.131	1.131	1.000	.00002193	.02299	.780
405.399	24.9144	.015	16.3505	207.891	8.7767	1.129	1.128	1.000	.00002236	.02373	.781
415.399	20.5809	.019	16.6740	210.258	8.8963	1.127	1.127	1.000	.00002279	.02447	.783
425.399	17.0307	.023	17.0018	212.600	9.0128	1.125	1.125	1.000	.00002322	.02521	.784
435.399	14.1173	.029	17.3338	214.918	9.1261	1.123	1.123	1.000	.00002364	.02595	.785
445.399	11.7226	.035	17.6699	217.213	9.2361	1.121	1.121	1.000	.00002405	.02669	.786
455.399	9.7509	.044	18.0099	219.487	9.3426	1.120	1.120	1.000	.00002446	.02743	.787
465.399	8.1248	.053	18.3537	221.739	9.4457	1.118	1.118	1.000	.00002487	.02817	.788
475.399	6.7817	.065	18.7013	223.972	9.5451	1.117	1.117	1.000	.00002527	.02891	.788
485.399	5.6704	.080	19.0524	226.185	9.6409	1.116	1.116	1.000	.00002567	.02965	.788
495.399	4.7495	.097	19.4070	228.380	9.7328	1.114	1.114	1.000	.00002606	.03040	.788
505.399	3.9851	.118	19.7648	230.557	9.8208	1.113	1.113	1.000	.00002645	.03114	.788
515.399	3.3497	.143	20.1257	232.718	9.9048	1.112	1.112	1.000	.00002683	.03188	.788
525.399	2.8205	.174	20.4897	234.863	9.9847	1.111	1.111	1.000	.00002722	.03262	.787
535.399	2.3793	.210	20.8564	236.992	10.0603	1.110	1.110	1.000	.00002759	.03336	.786
545.399	2.0106	.253	21.2258	239.107	10.1317	1.110	1.110	1.000	.00002797	.03410	.785
555.399	1.7022	.304	21.5978	241.209	10.1987	1.109	1.109	1.000	.00002834	.03484	.784
565.399	1.4438	.365	21.9720	243.299	10.2611	1.108	1.108	1.000	.00002871	.03558	.782
575.399	1.2268	.437	22.3485	245.376	10.3190	1.107	1.108	1.000	.00002907	.03633	.780
585.399	1.0445	.523	22.7269	247.443	10.3722	1.107	1.107	1.000	.00002943	.03707	.778
595.399	.8909	.623	23.1072	249.501	10.4205	1.106	1.107	1.000	.00002979	.03781	.776
605.399	.7614	.742	23.4891	251.549	10.4640	1.106	1.106	1.000	.00003015	.03855	.773
615.399	.6532	.879	23.8669	253.592	10.5008	1.106	1.106	1.000	.00003050	.03930	.770
625.399	.5603	1.041	24.2518	255.600	10.5554	1.105	1.105	1.000	.00003085	.04004	.768
635.399	.4814	1.231	24.6386	257.598	10.6088	1.104	1.105	1.000	.00003120	.04078	.767
645.399	.4143	1.453	25.0273	259.588	10.6611	1.104	1.105	1.001	.00003154	.04153	.765
655.399	.3572	1.712	25.4178	261.569	10.7123	1.103	1.104	1.001	.00003188	.04227	.763
665.399	.3084	2.014	25.8101	263.545	10.7624	1.103	1.104	1.001	.00003222	.04302	.762
675.399	.2666	2.364	26.2041	265.517	10.8115	1.103	1.104	1.001	.00003256	.04377	.760
685.399	.2309	2.771	26.5998	267.487	10.8595	1.102	1.104	1.001	.00003290	.04451	.758
695.399	.2003	3.242	26.9971	269.456	10.9065	1.102	1.104	1.002	.00003323	.04526	.756
705.399	.1740	3.788	27.3961	271.428	10.9525	1.102	1.104	1.002	.00003356	.04601	.755
715.399	.1513	4.417	27.7965	273.405	10.9976	1.101	1.104	1.002	.00003389	.04676	.753
725.399	.1318	5.143	28.1985	275.389	11.0418	1.101	1.104	1.003	.00003422	.04751	.751
735.399	.1150	5.979	28.6019	277.385	11.0851	1.101	1.104	1.003	.00003455	.04827	.750
745.399	.1005	6.939	29.0068	279.395	11.1276	1.100	1.105	1.004	.00003488	.04902	.748
755.399	.0880	8.041	29.4130	281.424	11.1693	1.100	1.105	1.004	.00003520	.04978	.746
765.399	.0771	9.303	29.8206	283.477	11.2102	1.100	1.106	1.005	.00003553	.05054	.744
775.399	.0677	10.747	30.2295	285.558	11.2503	1.100	1.107	1.006	.00003585	.05130	.743
785.399	.0595	12.396	30.6397	287.674	11.2898	1.100	1.108	1.007	.00003618	.05206	.741
795.399	.0524	14.277	31.0512	289.831	11.3286	1.100	1.109	1.008	.00003650	.05283	.739
805.399	.0462	16.417	31.4639	292.037	11.3669	1.100	1.110	1.009	.00003683	.05360	.738
815.399	.0408	18.851	31.8779	294.298	11.4045	1.100	1.112	1.011	.00003715	.05438	.736
825.399	.0361	21.612	32.2931	296.625	11.4417	1.100	1.114	1.013	.00003748	.05516	.735
835.399	.0319	24.741	32.7096	299.027	11.4784	1.100	1.117	1.015	.00003781	.05594	.733
844.814	.0285	28.061	33.1028	301.366	11.5125	1.100	1.119	1.017	.00003812	.05668	.731

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=38.25											
357.796	81.4244	.004	14.8733	196.247	8.1679	1.139	1.139	1.000	.00002025	.02020	.773
367.796	66.6811	.005	15.1747	198.748	8.3009	1.137	1.137	1.000	.00002070	.02094	.775
377.796	54.7172	.006	15.4810	201.219	8.4313	1.134	1.134	1.000	.00002115	.02168	.777
387.796	44.9807	.008	15.7919	203.661	8.5589	1.132	1.132	1.000	.00002160	.02243	.779
397.796	37.0423	.010	16.1076	206.074	8.6837	1.130	1.130	1.000	.00002203	.02317	.780
407.796	30.5586	.012	16.4277	208.461	8.8056	1.128	1.128	1.000	.00002247	.02391	.782
417.796	25.2538	.015	16.7522	210.821	8.9245	1.126	1.126	1.000	.00002290	.02465	.783
427.796	20.9062	.019	17.0810	213.158	9.0402	1.124	1.124	1.000	.00002332	.02539	.784
437.796	17.3370	.024	17.4140	215.470	9.1527	1.123	1.123	1.000	.00002374	.02613	.786
447.796	14.4020	.029	17.7510	217.760	9.2619	1.121	1.121	1.000	.00002415	.02687	.786
457.796	11.9845	.036	18.0920	220.029	9.3676	1.119	1.119	1.000	.00002456	.02761	.787
467.796	9.9901	.044	18.4268	222.276	9.4698	1.118	1.118	1.000	.00002496	.02835	.788
477.796	8.3420	.053	18.7852	224.504	9.5683	1.117	1.117	1.000	.00002536	.02909	.788
487.796	6.9779	.065	19.1372	226.712	9.6631	1.115	1.115	1.000	.00002576	.02983	.788
497.796	5.8470	.079	19.4925	228.902	9.7541	1.114	1.114	1.000	.00002615	.03057	.788
507.796	4.9080	.096	19.8511	231.075	9.8411	1.113	1.113	1.000	.00002654	.03131	.788
517.796	4.1271	.117	20.2128	233.231	9.9241	1.112	1.112	1.000	.00002693	.03205	.788
527.796	3.4766	.142	20.5775	235.372	10.0030	1.111	1.111	1.000	.00002731	.03280	.787
537.796	2.9339	.171	20.9449	237.497	10.0776	1.110	1.110	1.000	.00002768	.03354	.786
547.796	2.4804	.206	21.3150	239.607	10.1479	1.109	1.109	1.000	.00002806	.03428	.785
557.796	2.1008	.248	21.6875	241.705	10.2137	1.109	1.109	1.000	.00002843	.03502	.783
567.796	1.7826	.297	22.0624	243.789	10.2751	1.108	1.108	1.000	.00002879	.03576	.782
577.796	1.5153	.356	22.4394	245.862	10.3318	1.107	1.107	1.000	.00002916	.03650	.780
587.796	1.2906	.425	22.8183	247.924	10.3837	1.107	1.107	1.000	.00002952	.03724	.777
597.796	1.1013	.506	23.1990	249.976	10.4308	1.106	1.106	1.000	.00002987	.03799	.775
607.796	.9416	.602	23.5814	252.018	10.4730	1.106	1.106	1.000	.00003023	.03873	.772
617.796	.8081	.713	23.9596	254.049	10.5133	1.105	1.106	1.000	.00003058	.03947	.769
627.796	.6934	.844	24.3451	256.048	10.5675	1.105	1.105	1.000	.00003093	.04021	.768
637.796	.5960	.998	24.7324	258.037	10.6205	1.104	1.105	1.000	.00003128	.04096	.766
647.796	.5131	1.178	25.1217	260.016	10.6725	1.104	1.104	1.000	.00003162	.04170	.764
657.796	.4424	1.387	25.5127	261.986	10.7232	1.103	1.104	1.001	.00003196	.04244	.763
667.796	.3821	1.631	25.9056	263.949	10.7729	1.103	1.104	1.001	.00003230	.04319	.761
677.796	.3304	1.914	26.3001	265.906	10.8215	1.102	1.103	1.001	.00003263	.04393	.759
687.796	.2862	2.243	26.6964	267.858	10.8691	1.102	1.103	1.001	.00003297	.04468	.758
697.796	.2483	2.624	27.0943	269.808	10.9156	1.102	1.103	1.001	.00003330	.04543	.756
707.796	.2157	3.064	27.4937	271.757	10.9612	1.101	1.103	1.001	.00003363	.04617	.754
717.796	.1877	3.572	27.8948	273.708	11.0057	1.101	1.103	1.002	.00003396	.04692	.752
727.796	.1635	4.158	28.2973	275.663	11.0494	1.101	1.103	1.002	.00003429	.04767	.751
737.796	.1427	4.833	28.7013	277.624	11.0921	1.100	1.103	1.003	.00003461	.04842	.749
747.796	.1247	5.609	29.1067	279.595	11.1340	1.100	1.103	1.003	.00003494	.04918	.747
757.796	.1091	6.498	29.5136	281.579	11.1750	1.100	1.104	1.003	.00003526	.04993	.746
767.796	.0956	7.518	29.9218	283.580	11.2152	1.100	1.104	1.004	.00003558	.05069	.744
777.796	.0839	8.684	30.3313	285.602	11.2546	1.099	1.105	1.005	.00003590	.05144	.742
787.796	.0737	10.016	30.7421	287.649	11.2933	1.099	1.106	1.006	.00003622	.05220	.740
797.796	.0649	11.535	31.1542	289.727	11.3313	1.099	1.107	1.007	.00003654	.05296	.739
807.796	.0572	13.265	31.5675	291.842	11.3686	1.099	1.108	1.008	.00003686	.05373	.737
817.796	.0505	15.231	31.9820	294.000	11.4054	1.099	1.109	1.009	.00003718	.05450	.735
827.796	.0446	17.465	32.3978	296.209	11.4415	1.099	1.111	1.010	.00003751	.05527	.733
837.796	.0395	19.996	32.8148	298.476	11.4771	1.099	1.112	1.012	.00003783	.05604	.732
844.814	.0363	21.576	33.1081	300.108	11.5018	1.099	1.114	1.013	.00003805	.05659	.731

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=38.50											
370.338	81.4244	.004	15.2521	199.379	8.3343	1.136	1.136	1.000	.00002082	.02113	.776
380.338	66.8444	.005	15.5596	201.843	8.4640	1.134	1.134	1.000	.00002127	.02187	.777
390.338	54.9744	.007	15.8718	204.277	8.5909	1.132	1.132	1.000	.00002171	.02261	.779
400.338	45.2926	.008	16.1885	206.683	8.7150	1.130	1.130	1.000	.00002215	.02335	.781
410.338	37.3814	.010	16.5098	209.063	8.8361	1.128	1.128	1.000	.00002258	.02409	.782
420.338	30.9058	.013	16.8354	211.418	8.9542	1.126	1.126	1.000	.00002300	.02483	.784
430.338	25.5963	.016	17.1653	213.748	9.0691	1.124	1.124	1.000	.00002343	.02558	.785
440.338	21.2357	.019	17.4993	216.055	9.1807	1.122	1.122	1.000	.00002384	.02632	.786
450.338	17.6483	.024	17.8374	218.339	9.2890	1.121	1.121	1.000	.00002425	.02706	.787
460.338	14.6923	.029	18.1793	220.602	9.3938	1.119	1.119	1.000	.00002466	.02780	.787
470.338	12.2526	.036	18.5251	222.844	9.4951	1.118	1.118	1.000	.00002507	.02854	.788
480.338	10.2357	.044	18.8744	225.067	9.5927	1.116	1.116	1.000	.00002547	.02928	.788
490.338	8.5656	.053	19.2273	227.270	9.6865	1.115	1.115	1.000	.00002586	.03002	.788
500.338	7.1806	.065	19.5835	229.456	9.7765	1.114	1.114	1.000	.00002625	.03076	.788
510.338	6.0301	.079	19.9429	231.624	9.8625	1.113	1.113	1.000	.00002664	.03150	.788
520.338	5.0729	.096	20.3054	233.775	9.9444	1.112	1.112	1.000	.00002702	.03224	.787
530.338	4.2752	.116	20.6708	235.911	10.0222	1.111	1.111	1.000	.00002740	.03298	.787
540.338	3.6094	.140	21.0389	238.032	10.0957	1.110	1.110	1.000	.00002778	.03372	.786
550.338	3.0528	.168	21.4097	240.138	10.1648	1.109	1.109	1.000	.00002815	.03446	.784
560.338	2.5868	.202	21.7828	242.231	10.2295	1.108	1.108	1.000	.00002852	.03521	.783
570.338	2.1959	.242	22.1583	244.311	10.2896	1.108	1.108	1.000	.00002889	.03595	.781
580.338	1.8676	.290	22.5358	246.379	10.3451	1.107	1.107	1.000	.00002925	.03669	.779
590.338	1.5913	.346	22.9153	248.435	10.3958	1.107	1.107	1.000	.00002961	.03743	.777
600.338	1.3585	.412	23.2965	250.482	10.4416	1.106	1.106	1.000	.00002996	.03817	.774
610.338	1.1620	.490	23.6792	252.519	10.4825	1.106	1.106	1.000	.00003032	.03891	.772
620.338	.9977	.580	24.0579	254.537	10.5266	1.105	1.105	1.000	.00003067	.03966	.769
630.338	.8565	.686	24.4439	256.529	10.5804	1.105	1.105	1.000	.00003102	.04040	.767
640.338	.7364	.811	24.8319	258.509	10.6331	1.104	1.104	1.000	.00003136	.04114	.766
650.338	.6341	.957	25.2217	260.479	10.6846	1.104	1.104	1.000	.00003170	.04188	.764
660.338	.5469	1.126	25.6133	262.439	10.7350	1.103	1.104	1.000	.00003204	.04263	.762
670.338	.4725	1.324	26.0067	264.390	10.7843	1.103	1.103	1.001	.00003238	.04337	.761
680.338	.4087	1.553	26.4018	266.334	10.8325	1.102	1.103	1.001	.00003272	.04412	.759
690.338	.3541	1.819	26.7986	268.272	10.8796	1.102	1.103	1.001	.00003305	.04486	.757
700.338	.3073	2.127	27.1970	270.206	10.9257	1.101	1.102	1.001	.00003338	.04561	.755
710.338	.2670	2.483	27.5970	272.136	10.9707	1.101	1.102	1.001	.00003371	.04635	.754
720.338	.2324	2.895	27.9986	274.066	11.0148	1.101	1.102	1.001	.00003403	.04710	.752
730.338	.2025	3.369	28.4017	275.996	11.0580	1.100	1.102	1.002	.00003436	.04785	.750
740.338	.1767	3.914	28.8063	277.929	11.1002	1.100	1.102	1.002	.00003468	.04860	.748
750.338	.1544	4.541	29.2123	279.868	11.1415	1.100	1.102	1.002	.00003500	.04935	.747
760.338	.1351	5.261	29.6197	281.815	11.1819	1.099	1.103	1.003	.00003532	.05010	.745
770.338	.1184	6.085	30.0284	283.774	11.2215	1.099	1.103	1.003	.00003564	.05085	.743
780.338	.1039	7.027	30.4385	285.747	11.2603	1.099	1.103	1.004	.00003596	.05160	.741
790.338	.0913	8.104	30.8499	287.739	11.2983	1.099	1.104	1.005	.00003628	.05236	.740
800.338	.0804	9.333	31.2625	289.754	11.3356	1.099	1.105	1.005	.00003660	.05312	.738
810.338	.0708	10.731	31.6764	291.796	11.3721	1.099	1.105	1.006	.00003691	.05388	.736
820.338	.0625	12.322	32.0915	293.871	11.4080	1.099	1.106	1.007	.00003723	.05464	.734
830.338	.0552	14.129	32.5078	295.985	11.4433	1.098	1.108	1.008	.00003754	.05541	.733
840.338	.0489	16.178	32.9253	298.143	11.4779	1.098	1.109	1.010	.00003786	.05617	.731
844.814	.0463	17.186	33.1125	299.127	11.4933	1.098	1.110	1.010	.00003800	.05652	.730

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=38.75											
383.045	81.4244	.004	15.6436	202.505	8.4986	1.133	1.133	1.000	.00002139	.02207	.778
393.045	66.9816	.005	15.9571	204.931	8.6248	1.131	1.131	1.000	.00002183	.02281	.780
403.045	55.2110	.007	16.2751	207.330	8.7481	1.129	1.129	1.000	.00002226	.02355	.781
413.045	45.5889	.008	16.5975	209.703	8.8684	1.127	1.127	1.000	.00002269	.02429	.783
423.045	37.7092	.010	16.9243	212.051	8.9856	1.125	1.125	1.000	.00002312	.02504	.784
433.045	31.2455	.013	17.2553	214.375	9.0996	1.123	1.123	1.000	.00002354	.02578	.785
443.045	25.9345	.016	17.5905	216.675	9.2104	1.122	1.122	1.000	.00002395	.02652	.786
453.045	21.5634	.020	17.9296	218.954	9.3177	1.120	1.120	1.000	.00002437	.02726	.787
463.045	17.9600	.024	18.2726	221.211	9.4216	1.119	1.119	1.000	.00002477	.02800	.788
473.045	14.9846	.029	18.6193	223.448	9.5218	1.117	1.117	1.000	.00002517	.02874	.788
483.045	12.5238	.036	18.9696	225.665	9.6184	1.116	1.116	1.000	.00002557	.02948	.788
493.045	10.4853	.044	19.3234	227.863	9.7112	1.115	1.115	1.000	.00002597	.03022	.788
503.045	8.7940	.053	19.6805	230.044	9.8001	1.114	1.114	1.000	.00002636	.03096	.788
513.045	7.3884	.065	20.0408	232.207	9.8850	1.113	1.113	1.000	.00002674	.03170	.788
523.045	6.2185	.078	20.4041	234.354	9.9658	1.112	1.112	1.000	.00002713	.03244	.787
533.045	5.2432	.095	20.7703	236.485	10.0424	1.111	1.111	1.000	.00002750	.03318	.786
543.045	4.4288	.114	21.1392	238.601	10.1147	1.110	1.110	1.000	.00002788	.03392	.785
553.045	3.7476	.138	21.5106	240.702	10.1826	1.109	1.109	1.000	.00002825	.03466	.784
563.045	3.1770	.165	21.8844	242.790	10.2460	1.108	1.108	1.000	.00002862	.03541	.782
573.045	2.6983	.198	22.2605	244.866	10.3049	1.107	1.108	1.000	.00002898	.03615	.781
583.045	2.2959	.237	22.6386	246.929	10.3590	1.107	1.107	1.000	.00002935	.03689	.779
593.045	1.9573	.283	23.0186	248.981	10.4084	1.106	1.106	1.000	.00002970	.03763	.776
603.045	1.6718	.336	23.4003	251.023	10.4528	1.106	1.106	1.000	.00003006	.03837	.774
613.045	1.4306	.400	23.7835	253.055	10.4923	1.105	1.106	1.000	.00003041	.03911	.771
623.045	1.2289	.473	24.1626	255.060	10.5408	1.105	1.105	1.000	.00003076	.03985	.769
633.045	1.0553	.559	24.5492	257.045	10.5943	1.104	1.105	1.000	.00003111	.04060	.767
643.045	.9077	.661	24.9377	259.017	10.6465	1.104	1.104	1.000	.00003145	.04134	.765
653.045	.7820	.779	25.3281	260.978	10.6977	1.103	1.104	1.000	.00003179	.04208	.764
663.045	.6747	.917	25.7203	262.929	10.7477	1.103	1.103	1.000	.00003213	.04282	.762
673.045	.5830	1.077	26.1142	264.870	10.7965	1.102	1.103	1.000	.00003247	.04357	.760
683.045	.5045	1.263	26.5099	266.803	10.8443	1.102	1.103	1.001	.00003280	.04431	.758
693.045	.4373	1.479	26.9072	268.729	10.8910	1.101	1.102	1.001	.00003313	.04506	.757
703.045	.3795	1.729	27.3062	270.648	10.9367	1.101	1.102	1.001	.00003346	.04580	.755
713.045	.3299	2.017	27.7068	272.563	10.9813	1.101	1.102	1.001	.00003379	.04654	.753
723.045	.2871	2.351	28.1089	274.475	11.0249	1.100	1.102	1.001	.00003412	.04729	.751
733.045	.2503	2.735	28.5125	276.385	11.0676	1.100	1.102	1.001	.00003444	.04804	.750
743.045	.2184	3.177	28.9177	278.295	11.1093	1.100	1.101	1.002	.00003476	.04878	.748
753.045	.1907	3.685	29.3242	280.207	11.1501	1.099	1.102	1.002	.00003508	.04953	.746
763.045	.1671	4.257	29.7321	282.125	11.1900	1.099	1.102	1.002	.00003540	.05028	.744
773.045	.1465	4.935	30.1414	284.049	11.2290	1.099	1.102	1.003	.00003572	.05103	.742
783.045	.1285	5.698	30.5521	285.983	11.2672	1.099	1.102	1.003	.00003603	.05178	.741
793.045	.1130	6.570	30.9640	287.929	11.3046	1.098	1.103	1.004	.00003635	.05254	.739
803.045	.0994	7.564	31.3772	289.893	11.3412	1.098	1.103	1.004	.00003666	.05329	.737
813.045	.0876	8.697	31.7916	291.876	11.3771	1.098	1.104	1.005	.00003697	.05405	.735
823.045	.0773	9.985	32.2072	293.884	11.4123	1.098	1.104	1.006	.00003728	.05481	.733
833.045	.0683	11.448	32.6240	295.921	11.4468	1.098	1.105	1.007	.00003760	.05557	.732
843.045	.0604	13.108	33.0420	297.993	11.4806	1.098	1.106	1.008	.00003791	.05633	.730
844.814	.0591	13.424	33.1161	298.364	11.4865	1.098	1.107	1.008	.00003796	.05646	.730
S/R=39.00											
355.896	81.3946	.005	16.0473	205.618	8.6602	1.130	1.130	1.000	.00002195	.02302	.780
405.896	67.1219	.006	16.3666	208.010	8.7826	1.128	1.128	1.000	.00002239	.02377	.782
415.896	55.4541	.007	16.6903	210.375	8.9021	1.126	1.126	1.000	.00002281	.02451	.783
425.896	45.8915	.009	17.0183	212.716	9.0184	1.125	1.125	1.000	.00002324	.02525	.784
435.896	38.0440	.011	17.3505	215.033	9.1315	1.123	1.123	1.000	.00002366	.02599	.785
445.896	31.5929	.013	17.6868	217.327	9.2413	1.121	1.121	1.000	.00002407	.02673	.786
455.896	26.2809	.016	18.0270	219.599	9.3476	1.120	1.120	1.000	.00002448	.02747	.787
465.896	21.8999	.020	18.3711	221.851	9.4505	1.118	1.118	1.000	.00002489	.02821	.788
475.896	18.2807	.024	18.7189	224.082	9.5497	1.117	1.117	1.000	.00002529	.02895	.788
485.896	15.2862	.030	19.0702	226.293	9.6452	1.116	1.116	1.000	.00002569	.02969	.788
495.896	12.8044	.036	19.4250	228.486	9.7369	1.114	1.114	1.000	.00002608	.03043	.788
505.896	10.7443	.044	19.7830	230.661	9.8246	1.113	1.113	1.000	.00002647	.03117	.788
515.896	9.0315	.053	20.1442	232.820	9.9084	1.112	1.112	1.000	.00002685	.03191	.788
525.896	7.6052	.064	20.5083	234.961	9.9880	1.111	1.111	1.000	.00002723	.03265	.787
535.896	6.4156	.078	20.8753	237.088	10.0633	1.110	1.110	1.000	.00002761	.03339	.786
545.896	5.4218	.094	21.2449	239.199	10.1344	1.109	1.109	1.000	.00002798	.03413	.785
555.896	4.5903	.113	21.6171	241.296	10.2010	1.109	1.109	1.000	.00002836	.03488	.784
565.896	3.8934	.136	21.9916	243.380	10.2631	1.108	1.108	1.000	.00002872	.03562	.782
575.896	3.3084	.162	22.3683	245.451	10.3206	1.107	1.107	1.000	.00002909	.03636	.780
585.896	2.8165	.194	22.7470	247.510	10.3734	1.107	1.107	1.000	.00002945	.03710	.778

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	Npr
S/R=39.00											
595.896	2.4023	.231	23.1275	249.557	10.4213	1.106	1.106	1.000	.00002980	.03784	.775
605.896	2.0529	.275	23.5096	251.594	10.4643	1.106	1.106	1.000	.00003016	.03858	.773
615.896	1.7611	.326	23.8877	253.622	10.5016	1.105	1.105	1.000	.00003051	.03932	.770
625.896	1.5106	.386	24.2730	255.613	10.5558	1.105	1.105	1.000	.00003086	.04006	.768
635.896	1.2978	.457	24.6602	257.591	10.6089	1.104	1.104	1.000	.00003120	.04081	.766
645.896	1.1167	.539	25.0493	259.556	10.6608	1.104	1.104	1.000	.00003155	.04155	.765
655.896	.9624	.636	25.4402	261.509	10.7115	1.103	1.103	1.000	.00003189	.04229	.763
665.896	.8307	.748	25.8330	263.452	10.7611	1.103	1.103	1.000	.00003223	.04303	.761
675.896	.7180	.878	26.2275	265.384	10.8095	1.102	1.103	1.000	.00003256	.04377	.760
685.896	.6216	1.029	26.6237	267.307	10.8569	1.102	1.102	1.000	.00003289	.04452	.758
695.896	.5389	1.205	27.0216	269.222	10.9032	1.101	1.102	1.001	.00003322	.04526	.756
705.896	.4679	1.408	27.4211	271.129	10.9484	1.101	1.102	1.001	.00003355	.04601	.754
715.896	.4068	1.642	27.8222	273.031	10.9926	1.100	1.101	1.001	.00003388	.04675	.753
725.896	.3542	1.913	28.2249	274.927	11.0358	1.100	1.101	1.001	.00003420	.04749	.751
735.896	.3088	2.225	28.6291	276.820	11.0780	1.100	1.101	1.001	.00003452	.04824	.749
745.896	.2696	2.583	29.0347	278.711	11.1193	1.099	1.101	1.001	.00003484	.04899	.747
755.896	.2357	2.995	29.4418	280.601	11.1596	1.099	1.101	1.002	.00003516	.04973	.745
765.896	.2063	3.468	29.8503	282.493	11.1990	1.099	1.101	1.002	.00003548	.05048	.744
775.896	.1809	4.009	30.2601	284.389	11.2375	1.099	1.101	1.002	.00003579	.05123	.742
785.896	.1587	4.628	30.6713	286.291	11.2752	1.098	1.101	1.003	.00003611	.05198	.740
795.896	.1395	5.335	31.0837	288.201	11.3120	1.098	1.101	1.003	.00003642	.05273	.738
805.896	.1228	6.141	31.4974	290.122	11.3481	1.098	1.102	1.003	.00003673	.05348	.736
815.896	.1082	7.059	31.9124	292.058	11.3833	1.098	1.102	1.004	.00003704	.05423	.734
825.896	.0955	8.103	32.3285	294.011	11.4178	1.098	1.103	1.005	.00003735	.05499	.733
835.896	.0844	9.289	32.7458	295.987	11.4516	1.097	1.103	1.005	.00003766	.05574	.731
844.814	.0756	10.480	33.1190	297.770	11.4812	1.097	1.104	1.006	.00003793	.05642	.729

S/R=39.25

408.895	81.3903	.005	16.4632	208.722	8.8188	1.128	1.128	1.000	.00002251	.02399	.782
418.895	67.2703	.006	16.7882	211.080	8.9373	1.126	1.126	1.000	.00002294	.02473	.783
428.895	55.7026	.007	17.1175	213.414	9.0526	1.124	1.124	1.000	.00002336	.02547	.785
438.895	46.2007	.009	17.4509	215.724	9.1648	1.122	1.122	1.000	.00002378	.02621	.786
448.895	38.3863	.011	17.7884	218.011	9.2735	1.121	1.121	1.000	.00002420	.02695	.787
458.895	31.9486	.013	18.1298	220.277	9.3788	1.119	1.119	1.000	.00002460	.02769	.787
468.895	26.6365	.016	18.4750	222.522	9.4806	1.118	1.118	1.000	.00002501	.02843	.788
478.895	22.2460	.020	18.8239	224.747	9.5787	1.116	1.116	1.000	.00002541	.02917	.788
488.895	18.6115	.024	19.1763	226.953	9.6731	1.115	1.115	1.000	.00002580	.02991	.788
498.895	15.5980	.030	19.5320	229.140	9.7636	1.114	1.114	1.000	.00002619	.03065	.788
508.895	13.0952	.036	19.8910	231.310	9.8501	1.113	1.113	1.000	.00002658	.03139	.788
518.895	11.0135	.044	20.2531	233.463	9.9326	1.112	1.112	1.000	.00002697	.03213	.787
528.895	9.2719	.053	20.6181	235.600	10.0109	1.111	1.111	1.000	.00002735	.03287	.787
538.895	7.8318	.064	20.9859	237.721	10.0850	1.110	1.110	1.000	.00002772	.03362	.786
548.895	6.6222	.077	21.3564	239.828	10.1548	1.109	1.109	1.000	.00002810	.03436	.785
558.895	5.6095	.093	21.7293	241.920	10.2200	1.108	1.108	1.000	.00002847	.03510	.783
568.895	4.7605	.111	22.1045	243.999	10.2807	1.108	1.108	1.000	.00002883	.03584	.781
578.895	4.0474	.133	22.4818	246.065	10.3368	1.107	1.107	1.000	.00002919	.03658	.779
588.895	3.4476	.159	22.8611	248.120	10.3881	1.107	1.107	1.000	.00002955	.03732	.777
598.895	2.9422	.190	23.2421	250.163	10.4345	1.106	1.106	1.000	.00002991	.03806	.775
608.895	2.5157	.226	23.6247	252.195	10.4760	1.106	1.106	1.000	.00003026	.03880	.772
618.895	2.1592	.267	24.0033	254.211	10.5177	1.105	1.105	1.000	.00003061	.03954	.769
628.895	1.8529	.316	24.3892	256.196	10.5716	1.105	1.105	1.000	.00003096	.04028	.768
638.895	1.5926	.374	24.7770	258.167	10.6242	1.104	1.104	1.000	.00003131	.04103	.766
648.895	1.3710	.441	25.1667	260.125	10.6757	1.103	1.104	1.000	.00003165	.04177	.764
658.895	1.1820	.520	25.5582	262.072	10.7260	1.103	1.103	1.000	.00003199	.04251	.762
668.895	1.0206	.611	25.9515	264.006	10.7752	1.102	1.103	1.000	.00003232	.04325	.761
678.895	.8826	.717	26.3466	265.931	10.8233	1.102	1.102	1.000	.00003266	.04399	.759
688.895	.7644	.841	26.7434	267.845	10.8702	1.102	1.102	1.000	.00003299	.04474	.757
698.895	.6629	.983	27.1419	269.750	10.9161	1.101	1.102	1.000	.00003332	.04548	.756
708.895	.5757	1.149	27.5419	271.646	10.9609	1.101	1.101	1.001	.00003365	.04622	.754
718.895	.5007	1.339	27.9436	273.536	11.0047	1.100	1.101	1.001	.00003397	.04697	.752
728.895	.4361	1.560	28.3468	275.419	11.0475	1.100	1.101	1.001	.00003429	.04771	.750
738.895	.3803	1.813	28.7515	277.298	11.0893	1.100	1.101	1.001	.00003462	.04845	.748
748.895	.3321	2.105	29.1577	279.172	11.1301	1.099	1.100	1.001	.00003493	.04920	.747
758.895	.2904	2.439	29.5653	281.044	11.1699	1.099	1.100	1.001	.00003525	.04994	.745
768.895	.2543	2.823	29.9743	282.915	11.2089	1.099	1.100	1.002	.00003557	.05069	.743
778.895	.2230	3.263	30.3847	284.788	11.2469	1.098	1.100	1.002	.00003588	.05144	.741
788.895	.1958	3.765	30.7963	286.663	11.2841	1.098	1.100	1.002	.00003619	.05219	.739
798.895	.1721	4.339	31.2093	288.542	11.3204	1.098	1.100	1.002	.00003650	.05293	.737
808.895	.1515	4.993	31.6235	290.429	11.3559	1.098	1.101	1.003	.00003681	.05368	.736
818.895	.1335	5.739	32.0390	292.326	11.3906	1.097	1.101	1.003	.00003712	.05443	.734
828.895	.1178	6.586	32.4556	294.236	11.4245	1.097	1.101	1.004	.00003742	.05519	.732
838.895	.1041	7.548	32.8734	296.161	11.4577	1.097	1.102	1.004	.00003773	.05594	.730
844.814	.0967	8.180	33.1212	297.309	11.4770	1.097	1.102	1.005	.00003791	.05639	.729

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=39.50											
422.046	81.3899	.005	16.8915	211.818	8.9740	1.125	1.125	1.000	.00002308	.02496	.784
432.046	67.4235	.006	17.2222	214.144	9.0883	1.124	1.124	1.000	.00002350	.02570	.785
442.046	55.9567	.007	17.5569	216.447	9.1994	1.122	1.122	1.000	.00002391	.02644	.786
452.046	46.5167	.009	17.8956	218.727	9.3071	1.120	1.120	1.000	.00002432	.02718	.787
462.046	38.7366	.011	18.2383	220.987	9.4113	1.119	1.119	1.000	.00002473	.02792	.787
472.046	32.3133	.014	18.5846	223.225	9.5119	1.117	1.117	1.000	.00002513	.02866	.788
482.046	27.0019	.017	18.9346	225.444	9.6088	1.116	1.116	1.000	.00002553	.02940	.788
492.046	22.6027	.020	19.2881	227.644	9.7020	1.115	1.115	1.000	.00002593	.03015	.788
502.046	18.9533	.025	19.6449	229.826	9.7912	1.114	1.114	1.000	.00002632	.03089	.788
512.046	15.9209	.030	20.0049	231.990	9.8765	1.113	1.113	1.000	.00002670	.03163	.788
522.046	13.3974	.036	20.3679	234.137	9.9577	1.112	1.112	1.000	.00002709	.03237	.787
532.046	11.2939	.044	20.7338	236.269	10.0347	1.111	1.111	1.000	.00002747	.03311	.786
542.046	9.5377	.053	21.1025	238.385	10.1074	1.110	1.110	1.000	.00002784	.03385	.785
552.046	8.0691	.064	21.4737	240.487	10.1757	1.109	1.109	1.000	.00002821	.03459	.784
562.046	6.8391	.077	21.8474	242.575	10.2396	1.108	1.108	1.000	.00002858	.03533	.783
572.046	5.8072	.092	22.2233	244.649	10.2988	1.108	1.108	1.000	.00002895	.03607	.781
582.046	4.9402	.110	22.6012	246.711	10.3533	1.107	1.107	1.000	.00002931	.03681	.779
592.046	4.2105	.131	22.9811	248.761	10.4031	1.106	1.106	1.000	.00002967	.03755	.776
602.046	3.5954	.156	23.3627	250.799	10.4480	1.106	1.106	1.000	.00003002	.03829	.774
612.046	3.0760	.186	23.7458	252.827	10.4878	1.105	1.105	1.000	.00003037	.03903	.771
622.046	2.6416	.220	24.1249	254.830	10.5346	1.105	1.105	1.000	.00003072	.03978	.769
632.046	2.2680	.260	24.5114	256.808	10.5880	1.104	1.104	1.000	.00003107	.04052	.767
642.046	1.9503	.307	24.8999	258.773	10.6403	1.104	1.104	1.000	.00003141	.04126	.765
652.046	1.6797	.362	25.2902	260.725	10.6914	1.103	1.103	1.000	.00003176	.04200	.764
662.046	1.4488	.426	25.6823	262.665	10.7413	1.103	1.103	1.000	.00003209	.04274	.762
672.046	1.2515	.501	26.0762	264.593	10.7901	1.102	1.102	1.000	.00003243	.04348	.760
682.046	1.0827	.587	26.4719	266.509	10.8377	1.102	1.102	1.000	.00003276	.04423	.758
692.046	.9381	.688	26.8693	268.415	10.8843	1.101	1.102	1.000	.00003309	.04497	.757
702.046	.8139	.805	27.2683	270.311	10.9297	1.101	1.101	1.000	.00003342	.04571	.755
712.046	.7071	.939	27.6689	272.199	10.9742	1.100	1.101	1.000	.00003375	.04645	.753
722.046	.6152	1.095	28.0712	274.078	11.0175	1.100	1.101	1.001	.00003407	.04720	.751
732.046	.5360	1.274	28.4749	275.950	11.0599	1.100	1.100	1.001	.00003439	.04794	.750
742.046	.4676	1.481	28.8802	277.815	11.1012	1.099	1.100	1.001	.00003471	.04868	.748
752.046	.4085	1.718	29.2869	279.676	11.1416	1.099	1.100	1.001	.00003503	.04943	.746
762.046	.3573	1.991	29.6950	281.532	11.1810	1.099	1.100	1.001	.00003534	.05017	.744
772.046	.3130	2.303	30.1045	283.386	11.2195	1.098	1.100	1.001	.00003566	.05092	.742
782.046	.2745	2.660	30.5154	285.239	11.2571	1.098	1.100	1.001	.00003597	.05166	.740
792.046	.2410	3.069	30.9276	287.091	11.2938	1.098	1.100	1.002	.00003628	.05241	.739
802.046	.2119	3.536	31.3411	288.946	11.3296	1.098	1.100	1.002	.00003659	.05315	.737
812.046	.1866	4.068	31.7558	290.805	11.3646	1.097	1.100	1.002	.00003690	.05390	.735
822.046	.1644	4.673	32.1717	292.669	11.3988	1.097	1.100	1.003	.00003720	.05465	.733
832.046	.1451	5.362	32.5888	294.542	11.4322	1.097	1.100	1.003	.00003751	.05540	.731
842.046	.1282	6.144	33.0071	296.426	11.4648	1.097	1.101	1.004	.00003781	.05615	.729
844.814	.1240	6.378	33.1231	296.950	11.4738	1.097	1.101	1.004	.00003789	.05636	.729

S/R=39.75

435.356	81.3926	.005	17.3325	214.909	9.1254	1.123	1.123	1.000	.00002363	.02595	.785
445.356	67.5809	.006	17.6686	217.204	9.2354	1.121	1.121	1.000	.00002405	.02669	.786
455.356	56.2166	.008	18.0086	219.478	9.3419	1.120	1.120	1.000	.00002446	.02743	.787
465.356	46.8400	.009	18.3525	221.730	9.4450	1.118	1.118	1.000	.00002487	.02817	.788
475.356	39.0955	.011	18.7001	223.962	9.5444	1.117	1.117	1.000	.00002527	.02891	.788
485.356	32.6879	.014	19.0513	226.174	9.6401	1.116	1.116	1.000	.00002566	.02965	.788
495.356	27.3781	.017	19.4058	228.368	9.7319	1.114	1.114	1.000	.00002606	.03039	.788
505.356	22.9708	.021	19.7637	230.544	9.8199	1.113	1.113	1.000	.00002645	.03113	.788
515.356	19.3070	.025	20.1247	232.702	9.9038	1.112	1.112	1.000	.00002683	.03187	.788
525.356	16.2562	.030	20.4888	234.844	9.9836	1.111	1.111	1.000	.00002721	.03261	.787
535.356	13.7118	.036	20.8556	236.971	10.0592	1.110	1.110	1.000	.00002759	.03335	.786
545.356	11.5865	.044	21.2251	239.082	10.1305	1.109	1.109	1.000	.00002796	.03409	.785
555.356	9.8083	.053	21.5972	241.178	10.1973	1.109	1.109	1.000	.00002833	.03483	.784
565.356	8.3182	.063	21.9716	243.261	10.2596	1.108	1.108	1.000	.00002870	.03557	.782
575.356	7.0674	.076	22.3482	245.331	10.3173	1.107	1.107	1.000	.00002907	.03632	.780
585.356	6.0159	.091	22.7269	247.388	10.3702	1.107	1.107	1.000	.00002943	.03706	.778
595.356	5.1305	.108	23.1073	249.433	10.4184	1.106	1.106	1.000	.00002978	.03780	.776
605.356	4.3837	.129	23.4895	251.467	10.4616	1.106	1.106	1.000	.00003014	.03854	.773

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT

CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=39.75											
615.356	3.7599	.153	23.8676	253.493	10.4980	1.105	1.105	1.000	.00003049	.03928	.770
625.356	3.2246	.181	24.2528	255.480	10.5522	1.105	1.105	1.000	.00003084	.04002	.768
635.356	2.7699	.214	24.6400	257.452	10.6053	1.104	1.104	1.000	.00003118	.04076	.766
645.356	2.3830	.253	25.0290	259.411	10.6571	1.104	1.104	1.000	.00003153	.04150	.765
655.356	2.0534	.298	25.4200	261.357	10.7077	1.103	1.103	1.000	.00003187	.04224	.763
665.356	1.7720	.350	25.8127	263.290	10.7573	1.103	1.103	1.000	.00003220	.04298	.761
675.356	1.5314	.411	26.2073	265.210	10.8056	1.102	1.102	1.000	.00003254	.04373	.760
685.356	1.3255	.482	26.6036	267.120	10.8529	1.102	1.102	1.000	.00003287	.04447	.758
695.356	1.1489	.564	27.0015	269.018	10.8990	1.101	1.101	1.000	.00003320	.04521	.756
705.356	.9972	.660	27.4011	270.906	10.9441	1.101	1.101	1.000	.00003353	.04595	.754
715.356	.8667	.770	27.8024	272.785	10.9881	1.100	1.101	1.000	.00003385	.04669	.753
725.356	.7544	.897	28.2051	274.655	11.0310	1.100	1.100	1.000	.00003418	.04744	.751
735.356	.6575	1.043	28.6095	276.517	11.0730	1.099	1.100	1.001	.00003450	.04818	.749
745.356	.5738	1.212	29.0153	278.371	11.1139	1.099	1.100	1.001	.00003481	.04892	.747
755.356	.5015	1.405	29.4225	280.220	11.1538	1.099	1.100	1.001	.00003513	.04967	.745
765.356	.4388	1.628	29.8312	282.063	11.1928	1.098	1.099	1.001	.00003544	.05041	.743
775.356	.3844	1.882	30.2412	283.901	11.2309	1.098	1.099	1.001	.00003576	.05115	.742
785.356	.3373	2.174	30.6526	285.737	11.2680	1.098	1.099	1.001	.00003607	.05190	.740
795.356	.2962	2.507	31.0653	287.571	11.3043	1.098	1.099	1.001	.00003638	.05264	.738
805.356	.2605	2.887	31.4793	289.405	11.3397	1.097	1.099	1.002	.00003668	.05339	.736
815.356	.2294	3.320	31.8945	291.240	11.3742	1.097	1.099	1.002	.00003699	.05414	.734
825.356	.2023	3.813	32.3109	293.078	11.4079	1.097	1.099	1.002	.00003729	.05488	.732
835.356	.1785	4.373	32.7285	294.921	11.4408	1.097	1.099	1.003	.00003759	.05563	.730
844.814	.1588	4.973	33.1245	296.670	11.4712	1.096	1.100	1.003	.00003788	.05634	.729

S/R=40.00

448.831	81.4244	.005	17.7863	217.597	9.2728	1.121	1.121	1.000	.00002419	.02694	.787
458.831	67.7473	.006	18.1277	220.262	9.3781	1.119	1.119	1.000	.00002460	.02769	.787
468.831	56.4815	.008	18.4729	222.507	9.4799	1.118	1.118	1.000	.00002500	.02843	.788
478.831	47.1711	.009	18.8217	224.732	9.5780	1.116	1.116	1.000	.00002540	.02917	.788
488.831	39.4637	.012	19.1741	226.938	9.6724	1.115	1.115	1.000	.00002580	.02991	.788
498.831	33.0732	.014	19.5298	229.126	9.7629	1.114	1.114	1.000	.00002619	.03065	.788
508.831	27.7660	.017	19.8888	231.295	9.8495	1.113	1.113	1.000	.00002658	.03139	.788
518.831	23.3515	.021	20.2509	233.448	9.9320	1.112	1.112	1.000	.00002696	.03213	.787
528.831	19.6737	.025	20.6159	235.584	10.0103	1.111	1.111	1.000	.00002734	.03287	.787
538.831	16.6047	.030	20.9837	237.705	10.0844	1.110	1.110	1.000	.00002772	.03361	.786
548.831	14.0397	.036	21.3542	239.811	10.1541	1.109	1.109	1.000	.00002809	.03435	.785
558.831	11.8925	.044	21.7271	241.902	10.2194	1.108	1.108	1.000	.00002846	.03509	.783
568.831	10.0921	.053	22.1023	243.980	10.2801	1.108	1.108	1.000	.00002883	.03583	.781
578.831	8.5801	.063	22.4796	246.045	10.3362	1.107	1.107	1.000	.00002919	.03657	.779
588.831	7.3082	.075	22.8589	248.097	10.3874	1.106	1.106	1.000	.00002955	.03731	.777
598.831	6.2366	.090	23.2400	250.138	10.4339	1.106	1.106	1.000	.00002991	.03805	.775
608.831	5.3323	.106	23.6227	252.168	10.4753	1.106	1.106	1.000	.00003026	.03879	.772
618.831	4.5766	.126	24.0013	254.180	10.5169	1.105	1.105	1.000	.00003061	.03954	.769
628.831	3.9271	.149	24.3872	256.161	10.5707	1.104	1.105	1.000	.00003096	.04028	.768
638.831	3.3751	.176	24.7751	258.127	10.6232	1.104	1.104	1.000	.00003130	.04102	.766
648.831	2.9053	.208	25.1648	260.080	10.6746	1.103	1.103	1.000	.00003164	.04176	.764
658.831	2.5046	.245	25.5564	262.019	10.7249	1.103	1.103	1.000	.00003198	.04250	.762
668.831	2.1625	.288	25.9498	263.946	10.7739	1.102	1.102	1.000	.00003232	.04324	.761
678.831	1.8698	.339	26.3450	265.860	10.8219	1.102	1.102	1.000	.00003265	.04398	.759
688.831	1.6191	.397	26.7419	267.763	10.8687	1.101	1.102	1.000	.00003298	.04472	.757
698.831	1.4040	.464	27.1405	269.654	10.9144	1.101	1.101	1.000	.00003331	.04547	.755
708.831	1.2192	.542	27.5407	271.535	10.9591	1.100	1.101	1.000	.00003364	.04621	.754
718.831	1.0602	.632	27.9425	273.406	11.0026	1.100	1.100	1.000	.00003396	.04695	.752
728.831	.9232	.736	28.3458	275.267	11.0452	1.100	1.100	1.000	.00003428	.04769	.750
738.831	.8049	.856	28.7507	277.120	11.0867	1.099	1.100	1.000	.00003460	.04843	.748
748.831	.7028	.994	29.1571	278.964	11.1272	1.099	1.099	1.001	.00003492	.04918	.746
758.831	.6144	1.152	29.5649	280.802	11.1668	1.099	1.099	1.001	.00003524	.04992	.745
768.831	.5378	1.334	29.9741	282.633	11.2053	1.098	1.099	1.001	.00003555	.05066	.743
778.831	.4714	1.542	30.3847	284.459	11.2430	1.098	1.099	1.001	.00003586	.05141	.741
788.831	.4136	1.780	30.7966	286.280	11.2797	1.098	1.099	1.001	.00003617	.05215	.739
798.831	.3634	2.052	31.2098	288.099	11.3155	1.097	1.099	1.001	.00003648	.05289	.737
808.831	.3197	2.362	31.6242	289.915	11.3504	1.097	1.099	1.001	.00003678	.05364	.735
818.831	.2816	2.715	32.0400	291.730	11.3845	1.097	1.098	1.002	.00003709	.05438	.733
828.831	.2484	3.117	32.4569	293.546	11.4177	1.097	1.099	1.002	.00003739	.05513	.732
838.831	.2193	3.574	32.8749	295.364	11.4501	1.096	1.099	1.002	.00003769	.05588	.730
844.814	.2037	3.876	33.1256	296.453	11.4692	1.096	1.099	1.002	.00003787	.05632	.728



TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	NPr
S/R=40.25											
462.476	81.4244	.C05	18.2531	221.083	9.4156	1.119	1.119	1.000	.00002475	.02796	.787
472.476	67.9129	.006	18.5996	223.321	9.5161	1.117	1.117	1.000	.00002515	.02870	.788
482.476	56.7532	.008	18.9498	225.539	9.6129	1.116	1.116	1.000	.00002555	.02944	.788
492.476	47.5102	.010	19.3034	227.737	9.7058	1.115	1.115	1.000	.00002594	.03018	.788
502.476	39.8420	.012	19.6603	229.918	9.7949	1.114	1.114	1.000	.00002633	.03092	.788
512.476	33.4700	.014	20.0205	232.082	9.8800	1.113	1.113	1.000	.00002672	.03166	.788
522.476	28.1668	.017	20.3836	234.228	9.9610	1.112	1.112	1.000	.00002710	.03240	.787
532.476	23.7459	.021	20.7497	236.359	10.0378	1.111	1.111	1.000	.00002748	.03314	.786
542.476	20.0548	.025	21.1185	238.474	10.1103	1.110	1.110	1.000	.00002786	.03388	.785
552.476	16.9679	.030	21.4899	240.574	10.1784	1.109	1.109	1.000	.00002823	.03462	.784
562.476	14.3824	.036	21.8636	242.660	10.2420	1.108	1.108	1.000	.00002860	.03536	.782
572.476	12.2132	.044	22.2396	244.733	10.3010	1.107	1.107	1.000	.00002896	.03610	.781
582.476	10.3904	.052	22.6177	246.793	10.3553	1.107	1.107	1.000	.00002932	.03684	.779
592.476	8.8562	.062	22.9977	248.841	10.4049	1.106	1.106	1.000	.00002968	.03758	.776
602.476	7.5628	.074	23.3794	250.877	10.4495	1.106	1.106	1.000	.00003004	.03832	.774
612.476	6.4706	.088	23.7626	252.902	10.4891	1.105	1.105	1.000	.00003039	.03906	.771
622.476	5.5571	.104	24.1418	254.900	10.5365	1.105	1.105	1.000	.00003074	.03981	.769
632.476	4.7712	.124	24.5285	256.875	10.5898	1.104	1.104	1.000	.00003108	.04055	.767
642.476	4.1029	.146	24.9170	258.835	10.6420	1.104	1.104	1.000	.00003143	.04129	.765
652.476	3.5337	.172	25.3075	260.781	10.6929	1.103	1.103	1.000	.00003177	.04203	.764
662.476	3.0480	.203	25.6998	262.715	10.7427	1.103	1.103	1.000	.00003211	.04277	.762
672.476	2.6330	.238	26.0938	264.635	10.7913	1.102	1.102	1.000	.00003244	.04351	.760
682.476	2.2778	.279	26.4897	266.543	10.8388	1.102	1.102	1.000	.00003277	.04425	.758
692.476	1.9734	.327	26.8872	268.439	10.8852	1.101	1.101	1.000	.00003310	.04499	.757
702.476	1.7121	.383	27.2864	270.323	10.9305	1.101	1.101	1.000	.00003343	.04573	.755
712.476	1.4874	.447	27.6872	272.197	10.9747	1.100	1.100	1.000	.00003376	.04648	.753
722.476	1.2940	.521	28.0896	274.060	11.0179	1.100	1.100	1.000	.00003408	.04722	.751
732.476	1.1273	.606	28.4936	275.914	11.0600	1.099	1.100	1.000	.00003440	.04796	.749
742.476	.9834	.704	28.8990	277.758	11.1011	1.099	1.100	1.000	.00003472	.04870	.748
752.476	.8589	.817	29.3060	279.594	11.1412	1.099	1.099	1.000	.00003503	.04944	.746
762.476	.7512	.947	29.7143	281.422	11.1803	1.098	1.099	1.001	.00003535	.05019	.744
772.476	.6578	1.096	30.1241	283.243	11.2185	1.098	1.099	1.001	.00003566	.05093	.742
782.476	.5768	1.266	30.5352	285.057	11.2557	1.098	1.098	1.001	.00003597	.05167	.740
792.476	.5063	1.460	30.9476	286.866	11.2919	1.097	1.098	1.001	.00003628	.05241	.738
802.476	.4451	1.683	31.3614	288.670	11.3273	1.097	1.098	1.001	.00003658	.05316	.736
812.476	.3917	1.936	31.7763	290.471	11.3618	1.097	1.098	1.001	.00003689	.05390	.735
822.476	.3451	2.225	32.1925	292.269	11.3955	1.097	1.098	1.001	.00003719	.05465	.733
832.476	.3044	2.553	32.6099	294.067	11.4283	1.096	1.098	1.001	.00003749	.05539	.731
842.476	.2689	2.926	33.0285	295.864	11.4602	1.096	1.098	1.002	.00003779	.05614	.729
844.814	.2612	3.021	33.1265	296.284	11.4676	1.096	1.098	1.002	.00003786	.05631	.728
S/R=40.50											
476.299	81.4244	.C05	18.7331	224.171	9.5535	1.117	1.117	1.000	.00002530	.02898	.788
486.299	68.0819	.007	19.0846	226.381	9.6488	1.116	1.116	1.000	.00002570	.02972	.788
496.299	57.0311	.008	19.4395	228.573	9.7403	1.114	1.114	1.000	.00002609	.03046	.788
506.299	47.8582	.010	19.7977	230.747	9.8279	1.113	1.113	1.000	.00002648	.03120	.788
516.299	40.2312	.012	20.1590	232.904	9.9114	1.112	1.112	1.000	.00002687	.03194	.788
526.299	33.8795	.014	20.5233	235.044	9.9908	1.111	1.111	1.000	.00002725	.03268	.787
536.299	28.5814	.017	20.8904	237.169	10.0660	1.110	1.110	1.000	.00002763	.03342	.786
546.299	24.1552	.021	21.2602	239.278	10.1368	1.109	1.109	1.000	.00002800	.03416	.785
556.299	20.4514	.025	21.6325	241.373	10.2032	1.109	1.109	1.000	.00002837	.03490	.783
566.299	17.3471	.030	22.0072	243.454	10.2651	1.108	1.108	1.000	.00002874	.03564	.782
576.299	14.7411	.036	22.3840	245.521	10.3223	1.107	1.107	1.000	.00002910	.03638	.780
586.299	12.5499	.044	22.7628	247.576	10.3748	1.107	1.107	1.000	.00002946	.03713	.778
596.299	10.7045	.052	23.1435	249.619	10.4224	1.106	1.106	1.000	.00002982	.03787	.775
606.299	9.1478	.062	23.5258	251.650	10.4651	1.106	1.106	1.000	.00003017	.03861	.773
616.299	7.8474	.073	23.9040	253.671	10.5029	1.105	1.105	1.000	.00003052	.03935	.770
626.299	6.7309	.087	24.2895	255.654	10.5570	1.105	1.105	1.000	.00003087	.04009	.768
636.299	5.7824	.103	24.6769	257.622	10.6098	1.104	1.104	1.000	.00003122	.04083	.766

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=40.50											
646.299	4.9754	.121	25.0662	259.576	10.6615	1.103	1.104	1.000	.00003156	.04157	.765
656.299	4.2875	.143	25.4574	261.516	10.7120	1.103	1.103	1.000	.00003190	.04231	.763
666.299	3.7003	.168	25.8504	263.443	10.7613	1.102	1.103	1.000	.00003223	.04305	.761
676.299	3.1983	.197	26.2451	265.357	10.8095	1.102	1.102	1.000	.00003257	.04379	.759
686.299	2.7683	.231	26.6416	267.259	10.8565	1.101	1.102	1.000	.00003290	.04453	.758
696.299	2.3996	.271	27.0398	269.148	10.9025	1.101	1.101	1.000	.00003323	.04527	.756
706.299	2.0829	.316	27.4397	271.026	10.9473	1.101	1.101	1.000	.00003356	.04602	.754
716.299	1.8105	.369	27.8411	272.893	10.9911	1.100	1.100	1.000	.00003388	.04676	.752
726.299	1.5759	.430	28.2441	274.749	11.0338	1.100	1.100	1.000	.00003420	.04750	.751
736.299	1.3735	.500	28.6487	276.596	11.0755	1.099	1.100	1.000	.00003452	.04824	.749
746.299	1.1987	.581	29.0548	278.432	11.1162	1.099	1.099	1.000	.00003484	.04898	.747
756.299	1.0475	.673	29.4623	280.260	11.1558	1.099	1.099	1.000	.00003515	.04972	.745
766.299	.9165	.780	29.8712	282.079	11.1945	1.098	1.099	1.000	.00003547	.05047	.743
776.299	.8029	.902	30.2815	283.890	11.2322	1.098	1.098	1.000	.00003578	.05121	.741
786.299	.7043	1.042	30.6932	285.695	11.2690	1.098	1.098	1.001	.00003609	.05195	.739
796.299	.6185	1.201	31.1061	287.492	11.3049	1.097	1.098	1.001	.00003639	.05269	.738
806.299	.5439	1.383	31.5204	289.285	11.3398	1.097	1.098	1.001	.00003670	.05344	.736
816.299	.4788	1.591	31.9359	291.072	11.3739	1.097	1.098	1.001	.00003700	.05418	.734
826.299	.4220	1.827	32.3526	292.856	11.4071	1.096	1.098	1.001	.00003730	.05492	.732
836.299	.3724	2.096	32.7705	294.637	11.4395	1.096	1.097	1.001	.00003760	.05567	.730
844.814	.3351	2.353	33.1272	296.152	11.4664	1.096	1.097	1.001	.00003786	.05630	.728

S/R=40.75

490.309	81.4244	.006	19.2265	227.263	9.6860	1.115	1.115	1.000	.00002586	.03002	.788
500.309	68.2543	.007	19.5828	229.447	9.7759	1.114	1.114	1.000	.00002625	.03076	.788
510.309	57.3156	.008	19.9422	231.614	9.8619	1.113	1.113	1.000	.00002664	.03150	.788
520.309	48.2155	.010	20.3047	233.764	9.9438	1.112	1.112	1.000	.00002702	.03224	.787
530.309	40.6321	.012	20.6702	235.898	10.0215	1.111	1.111	1.000	.00002740	.03298	.787
540.309	34.3026	.015	21.0384	238.016	10.0949	1.110	1.110	1.000	.00002778	.03372	.786
550.309	29.0113	.018	21.4092	240.119	10.1640	1.109	1.109	1.000	.00002815	.03446	.784
560.309	24.5807	.021	21.7825	242.208	10.2286	1.108	1.108	1.000	.00002852	.03520	.783
570.309	20.8650	.025	22.1581	244.284	10.2886	1.108	1.108	1.000	.00002888	.03594	.781
580.309	17.7435	.030	22.5357	246.346	10.3439	1.107	1.107	1.000	.00002924	.03668	.779
590.309	15.1174	.036	22.9153	248.395	10.3944	1.106	1.106	1.000	.00002960	.03742	.777
600.309	12.9042	.043	23.2967	250.433	10.4401	1.106	1.106	1.000	.00002996	.03816	.774
610.309	11.0360	.052	23.6796	252.460	10.4808	1.105	1.105	1.000	.00003031	.03890	.771
620.309	9.4742	.061	24.0584	254.465	10.5247	1.105	1.105	1.000	.00003066	.03964	.769
630.309	8.1314	.072	24.4447	256.442	10.5782	1.104	1.104	1.000	.00003101	.04038	.767
640.309	6.9900	.085	24.8329	258.404	10.6306	1.104	1.104	1.000	.00003135	.04113	.766
650.309	6.0181	.101	25.2229	260.352	10.6818	1.103	1.103	1.000	.00003169	.04187	.764
660.309	5.1891	.119	25.6148	262.286	10.7318	1.103	1.103	1.000	.00003203	.04261	.762
670.309	4.4811	.139	26.0086	264.206	10.7806	1.102	1.102	1.000	.00003237	.04335	.760
680.309	3.8753	.164	26.4040	266.114	10.8283	1.102	1.102	1.000	.00003270	.04409	.759
690.309	3.3562	.192	26.8012	268.009	10.8749	1.101	1.101	1.000	.00003303	.04483	.757
700.309	2.9108	.224	27.2001	269.893	10.9204	1.101	1.101	1.000	.00003336	.04557	.755
710.309	2.5280	.262	27.6006	271.764	10.9648	1.100	1.100	1.000	.00003368	.04631	.753
720.309	2.1986	.306	28.0027	273.624	11.0081	1.100	1.100	1.000	.00003401	.04705	.752
730.309	1.9146	.356	28.4064	275.474	11.0504	1.100	1.100	1.000	.00003433	.04779	.750
740.309	1.6696	.414	28.8116	277.313	11.0916	1.099	1.099	1.000	.00003465	.04854	.748
750.309	1.4578	.480	29.2182	279.142	11.1319	1.099	1.099	1.000	.00003496	.04928	.746
760.309	1.2745	.556	29.6264	280.962	11.1711	1.098	1.099	1.000	.00003528	.05002	.744
770.309	1.1157	.644	30.0359	282.773	11.2094	1.098	1.098	1.000	.00003559	.05076	.742
780.309	.9779	.744	30.4468	284.576	11.2466	1.098	1.098	1.000	.00003590	.05150	.741
790.309	.8581	.859	30.8590	286.371	11.2830	1.097	1.098	1.000	.00003621	.05224	.739
800.309	.7540	.990	31.2725	288.159	11.3184	1.097	1.098	1.001	.00003651	.05299	.737
810.309	.6633	1.140	31.6873	289.941	11.3529	1.097	1.097	1.001	.00003682	.05373	.735
820.309	.5841	1.310	32.1033	291.717	11.3866	1.096	1.097	1.001	.00003712	.05447	.733
830.309	.5151	1.504	32.5205	293.488	11.4194	1.096	1.097	1.001	.00003742	.05522	.731
840.309	.4547	1.725	32.9389	295.255	11.4513	1.096	1.097	1.001	.00003772	.05596	.729
844.814	.4301	1.833	33.1277	296.050	11.4654	1.096	1.097	1.001	.00003785	.05629	.728

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>P</sub> r
S/R=41.00											
504.516	81.4244	.006	19.7336	230.361	9.8126	1.113	1.113	1.000	.00002641	.03107	.788
514.516	68.4298	.007	20.0944	232.520	9.8968	1.112	1.112	1.000	.00002680	.03181	.788
524.516	57.6069	.008	20.4581	234.663	9.9770	1.111	1.111	1.000	.00002718	.03255	.787
534.516	48.5828	.010	20.8248	236.791	10.0529	1.110	1.110	1.000	.00002756	.03329	.786
544.516	41.0458	.012	21.1941	238.902	10.1245	1.110	1.110	1.000	.00002793	.03403	.785
554.516	34.7407	.015	21.5660	240.999	10.1917	1.109	1.109	1.000	.00002830	.03477	.784
564.516	29.4577	.018	21.9402	243.082	10.2544	1.108	1.108	1.000	.00002867	.03551	.782
574.516	25.0240	.021	22.3167	245.152	10.3124	1.107	1.107	1.000	.00002904	.03625	.780
584.516	21.2971	.026	22.6952	247.209	10.3657	1.107	1.107	1.000	.00002940	.03699	.778
594.516	18.1592	.031	23.0755	249.253	10.4142	1.106	1.106	1.000	.00002975	.03773	.776
604.516	15.5130	.036	23.4576	251.286	10.4578	1.106	1.106	1.000	.00003011	.03847	.773
614.516	13.2778	.043	23.8411	253.308	10.4964	1.105	1.105	1.000	.00003046	.03921	.770
624.516	11.4070	.051	24.2207	255.297	10.5473	1.105	1.105	1.000	.00003081	.03996	.768
634.516	9.7967	.060	24.6078	257.267	10.6004	1.104	1.104	1.000	.00003115	.04070	.767
644.516	8.4270	.071	24.9968	259.222	10.6522	1.104	1.104	1.000	.00003150	.04144	.765
654.516	7.2599	.084	25.3876	261.163	10.7029	1.103	1.103	1.000	.00003184	.04218	.763
664.516	6.2638	.099	25.7803	263.091	10.7524	1.102	1.103	1.000	.00003217	.04292	.761
674.516	5.4124	.116	26.1748	265.005	10.8007	1.102	1.102	1.000	.00003251	.04366	.760
684.516	4.6835	.136	26.5710	266.907	10.8480	1.102	1.102	1.000	.00003284	.04440	.758
694.516	4.0586	.160	26.9689	268.796	10.8941	1.101	1.101	1.000	.00003317	.04514	.756
704.516	3.5220	.187	27.3685	270.673	10.9391	1.101	1.101	1.000	.00003350	.04588	.754
714.516	3.0605	.218	27.7697	272.538	10.9830	1.100	1.100	1.000	.00003382	.04662	.753
724.516	2.6632	.254	28.1725	274.391	11.0259	1.100	1.100	1.000	.00003414	.04736	.751
734.516	2.3205	.295	28.5768	276.234	11.0677	1.099	1.099	1.000	.00003446	.04810	.749
744.516	2.0245	.343	28.9826	278.067	11.1085	1.099	1.099	1.000	.00003478	.04885	.747
754.516	1.7686	.398	29.3899	279.889	11.1482	1.099	1.099	1.000	.00003509	.04959	.745
764.516	1.5471	.461	29.7987	281.701	11.1870	1.098	1.098	1.000	.00003541	.05033	.744
774.516	1.3549	.533	30.2088	283.505	11.2248	1.098	1.098	1.000	.00003572	.05107	.742
784.516	1.1882	.616	30.6203	285.300	11.2617	1.098	1.098	1.000	.00003603	.05181	.740
794.516	1.0432	.710	31.0330	287.086	11.2976	1.097	1.098	1.000	.00003633	.05255	.738
804.516	.9170	.818	31.4471	288.865	11.3326	1.097	1.097	1.000	.00003664	.05330	.736
814.516	.8070	.942	31.8625	290.637	11.3667	1.097	1.097	1.001	.00003694	.05404	.734
824.516	.7111	1.082	32.2790	292.403	11.3999	1.096	1.097	1.001	.00003724	.05478	.732
834.516	.6273	1.241	32.6968	294.163	11.4322	1.096	1.097	1.001	.00003754	.05552	.730
844.516	.5540	1.423	33.1157	295.918	11.4637	1.096	1.097	1.001	.00003784	.05627	.728
844.814	.5518	1.429	33.1282	295.970	11.4647	1.096	1.097	1.001	.00003785	.05629	.728
S/R=41.25											
518.929	81.4244	.006	20.2545	233.468	9.9327	1.112	1.112	1.000	.00002697	.03214	.787
528.929	68.6084	.007	20.6196	235.604	10.0110	1.111	1.111	1.000	.00002735	.03288	.787
538.929	57.9055	.009	20.9874	237.724	10.0850	1.110	1.110	1.000	.00002772	.03362	.786
548.929	48.9611	.010	21.3575	239.829	10.1547	1.109	1.109	1.000	.00002810	.03436	.785
558.929	41.4732	.013	21.7309	241.920	10.2199	1.108	1.108	1.000	.00002847	.03510	.783
568.929	35.1948	.015	22.1061	243.997	10.2805	1.108	1.108	1.000	.00002883	.03584	.781
578.929	29.9220	.018	22.4835	246.061	10.3365	1.107	1.107	1.000	.00002919	.03658	.779
588.929	25.4866	.022	22.8628	248.112	10.3877	1.106	1.106	1.000	.00002955	.03732	.777
598.929	21.7495	.026	23.2440	250.151	10.4340	1.106	1.106	1.000	.00002991	.03806	.775
608.929	18.5957	.031	23.6267	252.178	10.4754	1.105	1.105	1.000	.00003026	.03880	.772
618.929	15.9600	.036	24.0053	254.188	10.5171	1.105	1.105	1.000	.00003061	.03954	.769
628.929	13.6948	.043	24.3913	256.166	10.5708	1.104	1.104	1.000	.00003096	.04028	.768
638.929	11.7698	.051	24.7792	258.129	10.6233	1.104	1.104	1.000	.00003131	.04102	.766
648.929	10.1310	.060	25.1691	260.078	10.6747	1.103	1.103	1.000	.00003165	.04176	.764
658.929	8.7337	.070	25.5607	262.013	10.7248	1.103	1.103	1.000	.00003199	.04250	.762
668.929	7.5403	.083	25.9542	263.934	10.7738	1.102	1.102	1.000	.00003232	.04324	.761
678.929	6.5195	.097	26.3495	265.842	10.8216	1.102	1.102	1.000	.00003265	.04399	.759
688.929	5.6451	.114	26.7465	267.737	10.8684	1.101	1.101	1.000	.00003299	.04473	.757
698.929	4.8948	.133	27.1451	269.619	10.9140	1.101	1.101	1.000	.00003331	.04547	.755
708.929	4.2502	.156	27.5454	271.490	10.9585	1.100	1.100	1.000	.00003364	.04621	.754
718.929	3.6955	.181	27.9474	273.349	11.0019	1.100	1.100	1.000	.00003396	.04695	.752
728.929	3.2176	.211	28.3508	275.196	11.0443	1.100	1.100	1.000	.00003428	.04769	.750
738.929	2.8051	.246	28.7558	277.032	11.0856	1.099	1.099	1.000	.00003460	.04843	.748
748.929	2.4488	.285	29.1623	278.858	11.1259	1.099	1.099	1.000	.00003492	.04917	.746
758.929	2.1404	.331	29.5703	280.673	11.1653	1.098	1.099	1.000	.00003523	.04991	.745
768.929	1.8732	.383	29.9797	282.479	11.2036	1.098	1.098	1.000	.00003554	.05065	.743
778.929	1.6415	.443	30.3904	284.275	11.2409	1.098	1.098	1.000	.00003585	.05140	.741
788.929	1.4402	.511	30.8025	286.062	11.2773	1.097	1.098	1.000	.00003616	.05214	.739
798.929	1.2651	.589	31.2159	287.841	11.3128	1.097	1.097	1.000	.00003647	.05288	.737
808.929	1.1126	.678	31.6305	289.612	11.3473	1.097	1.097	1.000	.00003677	.05362	.735
818.929	.9796	.780	32.0464	291.375	11.3810	1.096	1.097	1.000	.00003707	.05436	.733
828.929	.8636	.895	32.4635	293.131	11.4138	1.096	1.097	1.001	.00003737	.05510	.731
838.929	.7621	1.027	32.8818	294.881	11.4457	1.096	1.097	1.001	.00003767	.05585	.729
844.814	.7085	1.112	33.1285	295.908	11.4641	1.096	1.096	1.001	.00003785	.05628	.728

TABLE I. - THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=41.50											
533.562	81.4244	.006	20.7897	236.588	10.0458	1.110	1.110	1.000	.00002752	.03322	.786
543.562	68.7874	.007	21.1588	238.701	10.1178	1.110	1.110	1.000	.00002790	.03396	.785
553.562	58.2096	.009	21.5304	240.800	10.1854	1.109	1.109	1.000	.00002827	.03470	.784
563.562	49.3491	.011	21.9045	242.884	10.2485	1.108	1.108	1.000	.00002864	.03544	.782
573.562	41.9140	.013	22.2807	244.954	10.3070	1.107	1.107	1.000	.00002900	.03618	.780
583.562	35.6652	.015	22.6591	247.012	10.3608	1.107	1.107	1.000	.00002936	.03692	.778
593.562	30.4048	.018	23.0392	249.057	10.4098	1.106	1.106	1.000	.00002972	.03766	.776
603.562	25.9693	.022	23.4211	251.091	10.4538	1.106	1.106	1.000	.00003007	.03840	.773
613.562	22.2233	.026	23.8046	253.113	10.4928	1.105	1.105	1.000	.00003043	.03914	.771
623.562	19.0890	.030	24.1840	255.106	10.5421	1.105	1.105	1.000	.00003077	.03988	.768
633.562	16.3917	.036	24.5709	257.076	10.5953	1.104	1.104	1.000	.00003112	.04062	.767
643.562	14.0977	.043	24.9597	259.032	10.6472	1.104	1.104	1.000	.00003146	.04137	.765
653.562	12.1433	.050	25.3504	260.974	10.6980	1.103	1.103	1.000	.00003180	.04211	.763
663.562	10.4757	.059	25.7429	262.902	10.7476	1.103	1.103	1.000	.00003214	.04285	.762
673.562	9.0504	.069	26.1372	264.817	10.7961	1.102	1.102	1.000	.00003248	.04359	.760
683.562	7.8304	.081	26.5333	266.718	10.8434	1.102	1.102	1.000	.00003281	.04433	.758
693.562	6.7846	.095	26.9310	268.606	10.8896	1.101	1.101	1.000	.00003314	.04507	.756
703.562	5.8866	.111	27.3305	270.483	10.9346	1.101	1.101	1.000	.00003346	.04581	.755
713.562	5.1146	.130	27.7316	272.346	10.9786	1.100	1.100	1.000	.00003379	.04655	.753
723.562	4.4499	.152	28.1342	274.199	11.0216	1.100	1.100	1.000	.00003411	.04729	.751
733.562	3.8767	.176	28.5384	276.039	11.0634	1.099	1.099	1.000	.00003443	.04803	.749
743.562	3.3818	.205	28.9441	277.869	11.1043	1.099	1.099	1.000	.00003475	.04877	.747
753.562	2.9539	.238	29.3513	279.688	11.1441	1.099	1.099	1.000	.00003506	.04951	.746
763.562	2.5834	.276	29.7599	281.497	11.1830	1.098	1.098	1.000	.00003538	.05026	.744
773.562	2.2622	.319	30.1699	283.296	11.2208	1.098	1.098	1.000	.00003569	.05100	.742
783.562	1.9834	.368	30.5813	285.085	11.2577	1.098	1.098	1.000	.00003600	.05174	.740
793.562	1.7411	.425	30.9940	286.865	11.2936	1.097	1.097	1.000	.00003630	.05248	.738
803.562	1.5302	.490	31.4080	288.636	11.3286	1.097	1.097	1.000	.00003661	.05322	.736
813.562	1.3465	.564	31.8233	290.399	11.3627	1.097	1.097	1.000	.00003691	.05396	.734
823.562	1.1862	.648	32.2398	292.154	11.3959	1.096	1.097	1.000	.00003721	.05470	.732
833.562	1.0461	.743	32.6574	293.902	11.4283	1.096	1.096	1.000	.00003751	.05545	.730
843.562	.9237	.852	33.0763	295.642	11.4598	1.096	1.096	1.000	.00003781	.05619	.728
844.814	.9094	.867	33.1288	295.860	11.4636	1.096	1.096	1.001	.00003784	.05628	.728
S/R=41.75											
548.424	81.4244	.006	21.3392	239.723	10.1513	1.109	1.109	1.000	.00002808	.03432	.785
558.424	68.9734	.008	21.7120	241.814	10.2167	1.108	1.108	1.000	.00002845	.03506	.783
568.424	58.5253	.009	22.0871	243.892	10.2775	1.108	1.108	1.000	.00002881	.03580	.781
578.424	49.7524	.011	22.4644	245.956	10.3338	1.107	1.107	1.000	.00002918	.03654	.779
588.424	42.3734	.013	22.8437	248.007	10.3852	1.106	1.106	1.000	.00002954	.03728	.777
598.424	36.1567	.015	23.2247	250.047	10.4318	1.106	1.106	1.000	.00002989	.03802	.775
608.424	30.9106	.018	23.6074	252.075	10.4734	1.105	1.105	1.000	.00003025	.03876	.772
618.424	26.5268	.022	23.9860	254.086	10.5143	1.105	1.105	1.000	.00003060	.03950	.769
628.424	22.7599	.026	24.3718	256.065	10.5681	1.104	1.104	1.000	.00003094	.04024	.768
638.424	19.5590	.030	24.7597	258.028	10.6207	1.104	1.104	1.000	.00003129	.04098	.766
648.424	16.8343	.036	25.1494	259.977	10.6720	1.103	1.103	1.000	.00003163	.04173	.764
658.424	14.5112	.042	25.5410	261.912	10.7222	1.103	1.103	1.000	.00003197	.04247	.763
668.424	12.5273	.050	25.9344	263.833	10.7713	1.102	1.102	1.000	.00003230	.04321	.761
678.424	10.8306	.058	26.3296	265.740	10.8191	1.102	1.102	1.000	.00003264	.04395	.759
688.424	9.3771	.068	26.7265	267.635	10.8659	1.101	1.101	1.000	.00003297	.04469	.757
698.424	8.1302	.080	27.1251	269.516	10.9115	1.101	1.101	1.000	.00003330	.04543	.756
708.424	7.0589	.094	27.5253	271.386	10.9561	1.100	1.100	1.000	.00003362	.04617	.754
718.424	6.1371	.109	27.9272	273.243	10.9996	1.100	1.100	1.000	.00003395	.04691	.752
728.424	5.3429	.127	28.3306	275.089	11.0420	1.100	1.100	1.000	.00003427	.04765	.750
738.424	4.6577	.148	28.7356	276.923	11.0833	1.099	1.099	1.000	.00003459	.04839	.748
748.424	4.0656	.172	29.1420	278.746	11.1237	1.099	1.099	1.000	.00003490	.04913	.746
758.424	3.5533	.199	29.5499	280.559	11.1630	1.098	1.098	1.000	.00003522	.04987	.745
768.424	3.1095	.230	29.9592	282.361	11.2013	1.098	1.098	1.000	.00003553	.05061	.743
778.424	2.7245	.266	30.3699	284.153	11.2387	1.098	1.098	1.000	.00003584	.05136	.741
788.424	2.3901	.308	30.7819	285.935	11.2751	1.097	1.098	1.000	.00003614	.05210	.739
798.424	2.0993	.355	31.1953	287.708	11.3106	1.097	1.097	1.000	.00003645	.05284	.737
808.424	1.8460	.408	31.6099	289.472	11.3451	1.097	1.097	1.000	.00003675	.05358	.735
818.424	1.6253	.470	32.0258	291.228	11.3787	1.096	1.097	1.000	.00003706	.05432	.733
828.424	1.4325	.539	32.4428	292.975	11.4115	1.096	1.096	1.000	.00003736	.05506	.731
838.424	1.2641	.619	32.8611	294.714	11.4434	1.096	1.096	1.000	.00003765	.05580	.729
844.814	1.1678	.675	33.1290	295.822	11.4633	1.096	1.096	1.000	.00003784	.05628	.728

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=42.00											
563.530	81.4244	.006	21.9033	242.877	10.2483	1.108	1.108	1.000	.00002863	.03544	.782
573.530	69.1644	.008	22.2795	244.947	10.3068	1.107	1.107	1.000	.00002900	.03618	.780
583.530	58.8513	.009	22.6578	247.005	10.3606	1.107	1.107	1.000	.00002936	.03692	.778
593.530	50.1708	.011	23.0380	249.050	10.4096	1.106	1.106	1.000	.00002972	.03766	.776
603.530	42.8514	.013	23.4199	251.083	10.4536	1.106	1.106	1.000	.00003007	.03840	.773
613.530	36.6698	.016	23.8033	253.106	10.4927	1.105	1.105	1.000	.00003042	.03914	.771
623.530	31.4978	.018	24.1828	255.098	10.5419	1.105	1.105	1.000	.00003077	.03988	.768
633.530	27.0468	.022	24.5696	257.068	10.5951	1.104	1.104	1.000	.00003112	.04062	.767
643.530	23.2614	.026	24.9585	259.024	10.6470	1.104	1.104	1.000	.00003146	.04136	.765
653.530	20.0365	.030	25.3491	260.965	10.6978	1.103	1.103	1.000	.00003180	.04210	.763
663.530	17.2847	.036	25.7417	262.893	10.7474	1.103	1.103	1.000	.00003214	.04284	.762
673.530	14.9328	.042	26.1360	264.806	10.7958	1.102	1.102	1.000	.00003247	.04358	.760
683.530	12.9197	.049	26.5321	266.707	10.8431	1.102	1.102	1.000	.00003281	.04433	.758
693.530	11.1940	.058	26.9298	268.594	10.8893	1.101	1.101	1.000	.00003314	.04507	.756
703.530	9.7123	.068	27.3293	270.469	10.9344	1.101	1.101	1.000	.00003346	.04581	.755
713.530	8.4384	.079	27.7304	272.332	10.9784	1.100	1.100	1.000	.00003379	.04655	.753
723.530	7.3416	.092	28.1330	274.183	11.0213	1.100	1.100	1.000	.00003411	.04729	.751
733.530	6.3958	.107	28.5372	276.022	11.0631	1.099	1.099	1.000	.00003443	.04803	.749
743.530	5.5791	.124	28.9430	277.849	11.1040	1.099	1.099	1.000	.00003475	.04877	.747
753.530	4.8731	.144	29.3502	279.666	11.1438	1.099	1.099	1.000	.00003506	.04951	.746
763.530	4.2618	.167	29.7588	281.472	11.1826	1.098	1.098	1.000	.00003537	.05025	.744
773.530	3.7318	.193	30.1688	283.267	11.2204	1.098	1.098	1.000	.00003569	.05099	.742
783.530	3.2718	.223	30.5802	285.052	11.2573	1.097	1.098	1.000	.00003599	.05173	.740
793.530	2.8719	.258	30.9929	286.828	11.2932	1.097	1.097	1.000	.00003630	.05247	.738
803.530	2.5240	.297	31.4069	288.594	11.3281	1.097	1.097	1.000	.00003661	.05321	.736
813.530	2.2208	.342	31.8222	290.351	11.3622	1.097	1.097	1.000	.00003691	.05396	.734
823.530	1.9563	.393	32.2387	292.099	11.3953	1.096	1.096	1.000	.00003721	.05470	.732
833.530	1.7253	.451	32.6564	293.839	11.4276	1.096	1.096	1.000	.00003751	.05544	.730
843.530	1.5233	.516	33.0753	295.571	11.4590	1.096	1.096	1.000	.00003780	.05618	.728
844.814	1.4991	.526	33.1291	295.793	11.4630	1.096	1.096	1.000	.00003784	.05628	.728

S/R=42.25

578.899	81.4244	.007	22.4824	246.053	10.3363	1.107	1.107	1.000	.00002919	.03658	.779
588.899	69.3578	.008	22.8618	248.104	10.3875	1.106	1.106	1.000	.00002955	.03732	.777
598.899	59.1861	.009	23.2429	250.143	10.4339	1.106	1.106	1.000	.00002991	.03806	.775
608.899	50.6033	.011	23.6256	252.170	10.4752	1.105	1.105	1.000	.00003026	.03880	.772
618.899	43.4303	.013	24.0043	254.180	10.5168	1.105	1.105	1.000	.00003061	.03954	.769
628.899	37.2658	.016	24.3903	256.157	10.5706	1.104	1.104	1.000	.00003096	.04028	.768
638.899	32.0270	.019	24.7782	258.119	10.6231	1.104	1.104	1.000	.00003130	.04102	.766
648.899	27.5673	.022	25.1680	260.067	10.6744	1.103	1.103	1.000	.00003165	.04176	.764
658.899	23.7647	.026	25.5597	262.001	10.7245	1.103	1.103	1.000	.00003198	.04250	.762
668.899	20.5171	.030	25.9532	263.921	10.7735	1.102	1.102	1.000	.00003232	.04324	.761
678.899	17.7393	.036	26.3485	265.827	10.8213	1.102	1.102	1.000	.00003265	.04398	.759
688.899	15.3596	.042	26.7455	267.720	10.8680	1.101	1.101	1.000	.00003298	.04472	.757
698.899	13.3180	.049	27.1441	269.600	10.9136	1.101	1.101	1.000	.00003331	.04546	.755
708.899	11.5637	.057	27.5445	271.468	10.9581	1.100	1.100	1.000	.00003364	.04620	.754
718.899	10.0543	.067	27.9464	273.324	11.0015	1.100	1.100	1.000	.00003396	.04694	.752
728.899	8.7536	.078	28.3499	275.168	11.0438	1.100	1.100	1.000	.00003428	.04769	.750
738.899	7.6313	.090	28.7549	277.000	11.0851	1.099	1.099	1.000	.00003460	.04843	.748
748.899	6.6615	.105	29.1615	278.821	11.1254	1.099	1.099	1.000	.00003492	.04917	.746
758.899	5.8224	.122	29.5694	280.630	11.1647	1.098	1.098	1.000	.00003523	.04991	.745
768.899	5.0954	.141	29.9788	282.430	11.2029	1.098	1.098	1.000	.00003554	.05065	.743
778.899	4.4647	.163	30.3896	284.218	11.2402	1.098	1.098	1.000	.00003585	.05139	.741
788.899	3.9168	.188	30.8017	285.997	11.2765	1.097	1.097	1.000	.00003616	.05213	.739
798.899	3.4403	.217	31.2151	287.766	11.3119	1.097	1.097	1.000	.00003646	.05287	.737
808.899	3.0254	.249	31.6298	289.525	11.3464	1.097	1.097	1.000	.00003677	.05361	.735
818.899	2.6636	.287	32.0458	291.275	11.3799	1.096	1.097	1.000	.00003707	.05435	.733
828.899	2.3478	.329	32.4629	293.016	11.4126	1.096	1.096	1.000	.00003737	.05509	.731
838.899	2.0718	.378	32.8813	294.749	11.4444	1.096	1.096	1.000	.00003767	.05584	.729
844.814	1.9253	.409	33.1292	295.770	11.4628	1.096	1.096	1.000	.00003784	.05627	.728

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=42.50											
594.548	81.4244	.007	23.0768	249.257	10.4143	1.106	1.106	1.000	.00002975	.03774	.776
604.548	69.5565	.008	23.4589	251.289	10.4578	1.106	1.106	1.000	.00003011	.03848	.773
614.548	59.5329	.010	23.8425	253.310	10.4964	1.105	1.105	1.000	.00003046	.03922	.770
624.548	51.1447	.011	24.2221	255.298	10.5473	1.105	1.105	1.000	.00003081	.03996	.768
634.548	43.9245	.013	24.6092	257.267	10.6004	1.104	1.104	1.000	.00003115	.04070	.767
644.548	37.7827	.016	24.9982	259.221	10.6522	1.104	1.104	1.000	.00003150	.04144	.765
654.548	32.5495	.019	25.3890	261.160	10.7028	1.103	1.103	1.000	.00003184	.04218	.763
664.548	28.0833	.022	25.7818	263.086	10.7523	1.102	1.102	1.000	.00003217	.04292	.761
674.548	24.2656	.026	26.1763	264.998	10.8006	1.102	1.102	1.000	.00003251	.04366	.760
684.548	20.9974	.030	26.5725	266.897	10.8478	1.101	1.101	1.000	.00003284	.04440	.758
694.548	18.1951	.036	26.9705	268.782	10.8939	1.101	1.101	1.000	.00003317	.04514	.756
704.548	15.7890	.042	27.3701	270.655	10.9388	1.101	1.101	1.000	.00003350	.04588	.754
714.548	13.7198	.049	27.7713	272.516	10.9827	1.100	1.100	1.000	.00003382	.04662	.753
724.548	11.9380	.057	28.1742	274.364	11.0255	1.100	1.100	1.000	.00003414	.04736	.751
734.548	10.4013	.066	28.5785	276.201	11.0672	1.099	1.099	1.000	.00003446	.04810	.749
744.548	9.0744	.077	28.9844	278.026	11.1079	1.099	1.099	1.000	.00003478	.04884	.747
754.548	7.9269	.089	29.3918	279.840	11.1476	1.098	1.098	1.000	.00003509	.04958	.745
764.548	6.9333	.103	29.8006	281.643	11.1863	1.098	1.098	1.000	.00003541	.05033	.743
774.548	6.0718	.119	30.2107	283.435	11.2240	1.098	1.098	1.000	.00003572	.05107	.742
784.548	5.3239	.137	30.6223	285.217	11.2608	1.097	1.097	1.000	.00003602	.05181	.740
794.548	4.6737	.159	31.0351	286.989	11.2965	1.097	1.097	1.000	.00003633	.05255	.738
804.548	4.1079	.183	31.4493	288.751	11.3314	1.097	1.097	1.000	.00003664	.05329	.736
814.548	3.6148	.210	31.8647	290.503	11.3653	1.096	1.096	1.000	.00003694	.05403	.734
824.548	3.1846	.241	32.2813	292.247	11.3984	1.096	1.096	1.000	.00003724	.05477	.732
834.548	2.8087	.277	32.6992	293.981	11.4305	1.096	1.096	1.000	.00003754	.05551	.730
844.548	2.4801	.318	33.1182	295.706	11.4618	1.096	1.096	1.000	.00003783	.05625	.728
844.814	2.4715	.319	33.1293	295.752	11.4626	1.096	1.096	1.000	.00003784	.05627	.728

S/R=42.75

610.517	81.3766	.007	23.6877	252.496	10.4814	1.105	1.105	1.000	.00003032	.03892	.771
620.517	69.8558	.008	24.0666	254.500	10.5256	1.105	1.105	1.000	.00003067	.03966	.769
630.517	59.9679	.010	24.4529	256.474	10.5791	1.104	1.104	1.000	.00003102	.04040	.767
640.517	51.5492	.012	24.8411	258.434	10.6314	1.104	1.104	1.000	.00003136	.04114	.766
650.517	44.3820	.014	25.2313	260.380	10.6826	1.103	1.103	1.000	.00003170	.04188	.764
660.517	38.2691	.016	25.6233	262.311	10.7325	1.103	1.103	1.000	.00003204	.04262	.762
670.517	33.0472	.019	26.0170	264.228	10.7813	1.102	1.102	1.000	.00003237	.04336	.760
680.517	28.5795	.022	26.4126	266.132	10.8289	1.102	1.102	1.000	.00003271	.04410	.759
690.517	24.7512	.026	26.8099	268.022	10.8754	1.101	1.101	1.000	.00003304	.04484	.757
700.517	21.4660	.030	27.2088	269.900	10.9208	1.101	1.101	1.000	.00003336	.04558	.755
710.517	18.6425	.036	27.6094	271.765	10.9651	1.100	1.100	1.000	.00003369	.04632	.753
720.517	16.2125	.041	28.0116	273.618	11.0083	1.100	1.100	1.000	.00003401	.04706	.752
730.517	14.1181	.048	28.4154	275.459	11.0505	1.099	1.099	1.000	.00003433	.04780	.750
740.517	12.3105	.056	28.8207	277.289	11.0916	1.099	1.099	1.000	.00003465	.04854	.748
750.517	10.7482	.065	29.2274	279.107	11.1317	1.099	1.099	1.000	.00003497	.04929	.746
760.517	9.3961	.075	29.6357	280.914	11.1708	1.098	1.098	1.000	.00003528	.05003	.744
770.517	8.2244	.087	30.0453	282.709	11.2089	1.098	1.098	1.000	.00003559	.05077	.742
780.517	7.2078	.101	30.4563	284.495	11.2460	1.098	1.098	1.000	.00003590	.05151	.740
790.517	6.3245	.117	30.8686	286.270	11.2822	1.097	1.097	1.000	.00003621	.05225	.739
800.517	5.5561	.134	31.2823	288.035	11.3174	1.097	1.097	1.000	.00003651	.05299	.737
810.517	4.8868	.155	31.6972	289.790	11.3517	1.097	1.097	1.000	.00003682	.05373	.735
820.517	4.3031	.178	32.1133	291.535	11.3851	1.096	1.096	1.000	.00003712	.05447	.733
830.517	3.7935	.204	32.5307	293.272	11.4175	1.096	1.096	1.000	.00003742	.05521	.731
840.517	3.3481	.234	32.9492	294.999	11.4492	1.096	1.096	1.000	.00003771	.05595	.729
844.814	3.1745	.248	33.1294	295.738	11.4625	1.096	1.096	1.000	.00003784	.05627	.728

S/R=43.00

626.870	81.4244	.007	24.3118	255.756	10.5597	1.105	1.105	1.000	.00003089	.04013	.768
636.870	69.9437	.008	24.6994	257.721	10.6125	1.104	1.104	1.000	.00003123	.04087	.766
646.870	60.1840	.010	25.0888	259.671	10.6640	1.103	1.103	1.000	.00003158	.04161	.765
656.870	51.8662	.012	25.4801	261.608	10.7144	1.103	1.103	1.000	.00003192	.04235	.763
666.870	44.7648	.014	25.8733	263.530	10.7636	1.102	1.102	1.000	.00003225	.04309	.761
676.870	38.6924	.016	26.2682	265.438	10.8117	1.102	1.102	1.000	.00003259	.04383	.759
686.870	33.4921	.019	26.6648	267.334	10.8586	1.101	1.101	1.000	.00003292	.04457	.758

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=43.00											
696.870	29.0318	.022	27.0632	269.216	10.9044	1.101	1.101	1.000	.00003325	.04531	.756
706.870	25.2005	.026	27.4632	271.086	10.9491	1.100	1.100	1.000	.00003357	.04605	.754
716.870	21.9048	.031	27.8648	272.943	10.9927	1.100	1.100	1.000	.00003390	.04679	.752
726.870	19.0658	.036	28.2680	274.788	11.0352	1.100	1.100	1.000	.00003422	.04753	.750
736.870	16.6166	.041	28.6727	276.621	11.0767	1.099	1.099	1.000	.00003454	.04827	.749
746.870	14.5010	.048	29.0790	278.443	11.1172	1.099	1.099	1.000	.00003485	.04902	.747
756.870	12.6710	.056	29.4867	280.253	11.1566	1.098	1.098	1.000	.00003517	.04976	.745
766.870	11.0958	.064	29.8958	282.052	11.1951	1.098	1.098	1.000	.00003548	.05050	.743
776.870	9.7111	.075	30.3063	283.841	11.2325	1.098	1.098	1.000	.00003579	.05124	.741
786.870	8.5172	.086	30.7181	285.619	11.2690	1.097	1.097	1.000	.00003610	.05198	.739
796.870	7.4791	.099	31.1313	287.387	11.3046	1.097	1.097	1.000	.00003640	.05272	.737
806.870	6.5753	.114	31.5458	289.145	11.3392	1.097	1.097	1.000	.00003671	.05346	.735
816.870	5.7875	.132	31.9615	290.893	11.3729	1.096	1.096	1.000	.00003701	.05420	.734
826.870	5.0999	.151	32.3784	292.631	11.4057	1.096	1.096	1.000	.00003731	.05494	.732
836.870	4.4992	.173	32.7965	294.360	11.4376	1.096	1.096	1.000	.00003760	.05568	.730
844.814	4.0764	.193	33.1295	295.728	11.4624	1.096	1.096	1.000	.00003784	.05627	.728
S/R=43.25											
643.406	81.4244	.007	24.9537	258.997	10.6463	1.104	1.104	1.000	.00003146	.04135	.765
653.406	70.1195	.009	25.3444	260.938	10.6971	1.103	1.103	1.000	.00003180	.04209	.763
663.406	60.4865	.010	25.7369	262.865	10.7467	1.103	1.103	1.000	.00003214	.04283	.762
673.406	52.2551	.012	26.1312	264.778	10.7951	1.102	1.102	1.000	.00003247	.04357	.760
683.406	45.2094	.014	26.5272	266.678	10.8424	1.102	1.102	1.000	.00003280	.04432	.758
693.406	39.1694	.017	26.9250	268.565	10.8886	1.101	1.101	1.000	.00003313	.04506	.756
703.406	33.9840	.019	27.3244	270.438	10.9337	1.101	1.101	1.000	.00003346	.04580	.755
713.406	29.5256	.023	27.7255	272.300	10.9777	1.100	1.100	1.000	.00003378	.04654	.753
723.406	25.6869	.026	28.1282	274.149	11.0206	1.100	1.100	1.000	.00003411	.04728	.751
733.406	22.3770	.031	28.5324	275.986	11.0624	1.099	1.099	1.000	.00003443	.04802	.749
743.406	19.5192	.036	28.9381	277.811	11.1033	1.099	1.099	1.000	.00003474	.04876	.747
753.406	17.0482	.041	29.3453	279.625	11.1431	1.099	1.099	1.000	.00003506	.04950	.746
763.406	14.9090	.048	29.7539	281.428	11.1818	1.098	1.098	1.000	.00003537	.05024	.744
773.406	13.0545	.055	30.1640	283.220	11.2196	1.098	1.098	1.000	.00003568	.05098	.742
783.406	11.4447	.064	30.5753	285.001	11.2565	1.097	1.097	1.000	.00003599	.05172	.740
793.406	10.0456	.074	30.9881	286.772	11.2923	1.097	1.097	1.000	.00003630	.05246	.738
803.406	8.8280	.085	31.4021	288.532	11.3273	1.097	1.097	1.000	.00003660	.05320	.736
813.406	7.7671	.098	31.8174	290.283	11.3613	1.096	1.097	1.000	.00003690	.05394	.734
823.406	6.8416	.112	32.2339	292.024	11.3944	1.096	1.096	1.000	.00003720	.05468	.732
833.406	6.0333	.129	32.6516	293.755	11.4266	1.096	1.096	1.000	.00003750	.05542	.730
843.406	5.3264	.148	33.0705	295.478	11.4580	1.096	1.096	1.000	.00003780	.05617	.728
844.814	5.2339	.151	33.1295	295.719	11.4623	1.096	1.096	1.000	.00003784	.05627	.728
S/R=43.50											
660.223	81.4244	.008	25.6117	262.253	10.7310	1.103	1.103	1.000	.00003203	.04260	.762
670.223	70.2967	.009	26.0055	264.170	10.7798	1.102	1.102	1.000	.00003236	.04334	.760
680.223	60.7891	.010	26.4010	266.074	10.8275	1.102	1.102	1.000	.00003270	.04408	.759
690.223	52.6440	.012	26.7982	267.965	10.8740	1.101	1.101	1.000	.00003303	.04482	.757
700.223	45.6545	.014	27.1971	269.843	10.9195	1.101	1.101	1.000	.00003335	.04556	.755
710.223	39.6477	.017	27.5977	271.768	10.9638	1.100	1.100	1.000	.00003368	.04630	.753
720.223	34.4782	.019	27.9998	273.561	11.0070	1.100	1.100	1.000	.00003400	.04704	.752
730.223	30.0228	.023	28.4036	275.401	11.0492	1.099	1.099	1.000	.00003432	.04778	.750
740.223	26.1776	.026	28.8088	277.230	11.0904	1.099	1.099	1.000	.00003464	.04852	.748
750.223	22.8544	.031	29.2155	279.047	11.1305	1.099	1.099	1.000	.00003496	.04926	.746
760.223	19.9785	.035	29.6237	280.854	11.1696	1.098	1.098	1.000	.00003527	.05000	.744
770.223	17.4865	.041	30.0333	282.649	11.2077	1.098	1.098	1.000	.00003558	.05074	.742
780.223	15.3242	.047	30.4443	284.433	11.2448	1.098	1.098	1.000	.00003589	.05149	.741
790.223	13.4456	.055	30.8566	286.206	11.2810	1.097	1.097	1.000	.00003620	.05223	.739
800.223	11.8114	.063	31.2702	287.970	11.3162	1.097	1.097	1.000	.00003650	.05297	.737
810.223	10.3881	.073	31.6851	289.723	11.3505	1.097	1.097	1.000	.00003681	.05371	.735
820.223	9.1469	.084	32.1012	291.466	11.3839	1.096	1.096	1.000	.00003711	.05445	.733
830.223	8.0633	.096	32.5185	293.200	11.4164	1.096	1.096	1.000	.00003741	.05519	.731
840.223	7.1160	.110	32.9370	294.924	11.4480	1.096	1.096	1.000	.00003770	.05593	.729
844.814	6.7224	.117	33.1296	295.713	11.4622	1.096	1.096	1.000	.00003784	.05627	.728

TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Continued

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=43.75											
677.325	81.4244	.008	26.2862	265.524	10.8138	1.102	1.102	1.000	.00003260	.04386	.759
687.325	70.4767	.009	26.6829	267.418	10.8607	1.101	1.101	1.000	.00003293	.04461	.757
697.325	61.0933	.011	27.0813	269.299	10.9064	1.101	1.101	1.000	.00003326	.04535	.756
707.325	53.0342	.012	27.4814	271.168	10.9510	1.100	1.100	1.000	.00003359	.04609	.754
717.325	46.1011	.015	27.8831	273.024	10.9946	1.100	1.100	1.000	.00003391	.04683	.752
727.325	40.1282	.017	28.2864	274.868	11.0371	1.100	1.100	1.000	.00003423	.04757	.750
737.325	34.9755	.020	28.6912	276.700	11.0785	1.099	1.099	1.000	.00003455	.04831	.749
747.325	30.5240	.023	29.0975	278.521	11.1189	1.099	1.099	1.000	.00003487	.04905	.747
757.325	26.6732	.026	29.5053	280.330	11.1583	1.098	1.098	1.000	.00003518	.04979	.745
767.325	23.3376	.031	29.9145	282.128	11.1967	1.098	1.098	1.000	.00003549	.05053	.743
777.325	20.4444	.035	30.3250	283.915	11.2341	1.098	1.098	1.000	.00003580	.05127	.741
787.325	17.9318	.041	30.7370	285.691	11.2706	1.097	1.097	1.000	.00003611	.05201	.739
797.325	15.7469	.047	31.1502	287.457	11.3061	1.097	1.097	1.000	.00003641	.05275	.737
807.325	13.8446	.054	31.5647	289.213	11.3406	1.097	1.097	1.000	.00003672	.05349	.735
817.325	12.1863	.063	31.9805	290.959	11.3743	1.096	1.096	1.000	.00003702	.05423	.733
827.325	10.7390	.072	32.3975	292.695	11.4070	1.096	1.096	1.000	.00003732	.05497	.732
837.325	9.4743	.082	32.8157	294.421	11.4389	1.096	1.096	1.000	.00003762	.05571	.730
844.814	8.6328	.091	33.1296	295.708	11.4622	1.096	1.096	1.000	.00003784	.05627	.728

S/R=44.00

694.716	81.4244	.008	26.9772	268.809	10.8946	1.101	1.101	1.000	.00003317	.04515	.756
704.716	70.6612	.009	27.3769	270.681	10.9395	1.101	1.101	1.000	.00003350	.04589	.754
714.716	61.4006	.011	27.7782	272.541	10.9833	1.100	1.100	1.000	.00003383	.04663	.753
724.716	53.4269	.013	28.1810	274.388	11.0261	1.100	1.100	1.000	.00003415	.04737	.751
734.716	46.5505	.015	28.5855	276.223	11.0678	1.099	1.099	1.000	.00003447	.04811	.749
744.716	40.6121	.017	28.9914	278.046	11.1085	1.099	1.099	1.000	.00003478	.04886	.747
754.716	35.4768	.020	29.3988	279.858	11.1481	1.098	1.098	1.000	.00003510	.04960	.745
764.716	31.0300	.023	29.8076	281.659	11.1868	1.098	1.098	1.000	.00003541	.05034	.743
774.716	27.1745	.027	30.2178	283.448	11.2244	1.098	1.098	1.000	.00003572	.05108	.742
784.716	23.8271	.031	30.6294	285.227	11.2611	1.097	1.097	1.000	.00003603	.05182	.740
794.716	20.9174	.035	31.0423	286.996	11.2969	1.097	1.097	1.000	.00003634	.05256	.738
804.716	18.3848	.041	31.4565	288.754	11.3317	1.097	1.097	1.000	.00003664	.05330	.736
814.716	16.1777	.047	31.8719	290.502	11.3656	1.096	1.096	1.000	.00003694	.05404	.734
824.716	14.2521	.054	32.2886	292.240	11.3985	1.096	1.096	1.000	.00003724	.05478	.732
834.716	12.5699	.062	32.7065	293.968	11.4306	1.096	1.096	1.000	.00003754	.05552	.730
844.716	11.0987	.071	33.1255	295.687	11.4619	1.096	1.096	1.000	.00003784	.05626	.728
844.814	11.0830	.071	33.1296	295.704	11.4622	1.096	1.096	1.000	.00003784	.05627	.728

S/R=44.25

712.413	81.4244	.008	27.6856	272.113	10.9733	1.100	1.100	1.000	.00003375	.04646	.753
722.413	70.8390	.010	28.0881	273.963	11.0163	1.100	1.100	1.000	.00003407	.04720	.751
732.413	61.7013	.011	28.4922	275.801	11.0583	1.099	1.099	1.000	.00003439	.04794	.749
742.413	53.8141	.013	28.8978	277.627	11.0992	1.099	1.099	1.000	.00003471	.04868	.748
752.413	46.9956	.015	29.3048	279.441	11.1391	1.099	1.099	1.000	.00003503	.04943	.746
762.413	41.0931	.017	29.7133	281.244	11.1780	1.098	1.098	1.000	.00003534	.05017	.744
772.413	35.9769	.020	30.1232	283.036	11.2159	1.098	1.098	1.000	.00003565	.05091	.742
782.413	31.5364	.023	30.5345	284.817	11.2528	1.097	1.097	1.000	.00003596	.05165	.740
792.413	27.6775	.027	30.9471	286.588	11.2887	1.097	1.097	1.000	.00003627	.05239	.738
802.413	24.3197	.031	31.3610	288.348	11.3237	1.097	1.097	1.000	.00003657	.05313	.736
812.413	21.3944	.035	31.7762	290.098	11.3578	1.096	1.097	1.000	.00003687	.05387	.734
822.413	18.8428	.041	32.1926	291.838	11.3910	1.096	1.096	1.000	.00003717	.05461	.733
832.413	16.6144	.047	32.6101	293.568	11.4233	1.096	1.096	1.000	.00003747	.05535	.731
842.413	14.6660	.054	33.0289	295.289	11.4547	1.096	1.096	1.000	.00003777	.05609	.729
844.814	14.2358	.055	33.1296	295.701	11.4621	1.096	1.096	1.000	.00003784	.05627	.728



TABLE I.- THERMODYNAMIC PROPERTIES OF CF<sub>4</sub> AT  
CONSTANT ENTROPY - Concluded

T	V	p	H/RT <sub>0</sub>	A	c <sub>p</sub> /R	γ	G	Z	μ	k	N <sub>Pr</sub>
S/R=44.50											
730.440	81.4244	.008	28.4124	275.439	11.0501	1.099	1.099	1.000	.00003433	.04780	.750
740.440	70.9944	.010	28.8176	277.267	11.0912	1.099	1.099	1.000	.00003465	.04854	.748
750.440	61.9820	.011	29.2244	279.083	11.1313	1.099	1.099	1.000	.00003496	.04928	.746
760.440	54.1838	.013	29.6326	280.889	11.1704	1.098	1.098	1.000	.00003528	.05002	.744
770.440	47.4261	.015	30.0422	282.683	11.2084	1.098	1.098	1.000	.00003559	.05076	.742
780.440	41.5624	.018	30.4532	284.466	11.2455	1.098	1.098	1.000	.00003590	.05150	.741
790.440	36.4680	.020	30.8656	286.238	11.2817	1.097	1.097	1.000	.00003620	.05224	.739
800.440	32.0362	.023	31.2792	288.000	11.3169	1.097	1.097	1.000	.00003651	.05298	.737
810.440	28.1763	.027	31.6942	289.752	11.3512	1.097	1.097	1.000	.00003681	.05372	.735
820.440	24.8101	.031	32.1103	291.494	11.3845	1.096	1.096	1.000	.00003711	.05446	.733
830.440	21.8711	.035	32.5277	293.226	11.4170	1.096	1.096	1.000	.00003741	.05520	.731
840.440	19.3020	.041	32.9462	294.948	11.4486	1.096	1.096	1.000	.00003771	.05594	.729
844.814	18.2834	.043	33.1296	295.698	11.4621	1.096	1.096	1.000	.00003784	.05627	.728
S/R=44.75											
748.772	81.4244	.009	29.1565	278.781	11.1247	1.099	1.099	1.000	.00003491	.04916	.746
758.772	71.1582	.010	29.5644	280.588	11.1639	1.098	1.098	1.000	.00003523	.04990	.745
768.772	62.2691	.012	29.9738	282.384	11.2022	1.098	1.098	1.000	.00003554	.05064	.743
778.772	54.5591	.013	30.3846	284.168	11.2394	1.098	1.098	1.000	.00003585	.05138	.741
788.772	47.8619	.015	30.7967	285.943	11.2757	1.097	1.097	1.000	.00003615	.05212	.739
798.772	42.0372	.018	31.2102	287.706	11.3111	1.097	1.097	1.000	.00003646	.05286	.737
808.772	36.9649	.020	31.6249	289.459	11.3455	1.097	1.097	1.000	.00003676	.05360	.735
818.772	32.5425	.023	32.0408	291.203	11.3790	1.096	1.096	1.000	.00003706	.05434	.733
828.772	28.6821	.027	32.4580	292.936	11.4116	1.096	1.096	1.000	.00003736	.05508	.731
838.772	25.3081	.031	32.8763	294.660	11.4433	1.096	1.096	1.000	.00003766	.05582	.729
844.814	23.4803	.034	33.1296	295.696	11.4621	1.096	1.096	1.000	.00003784	.05627	.728
S/R=45.00											
767.414	81.4244	.009	29.9181	282.140	11.1970	1.098	1.098	1.000	.00003549	.05054	.743
777.414	71.3324	.010	30.3287	283.926	11.2344	1.098	1.098	1.000	.00003580	.05128	.741
787.414	62.5646	.012	30.7407	285.702	11.2708	1.097	1.097	1.000	.00003611	.05202	.739
797.414	54.9417	.014	31.1539	287.467	11.3063	1.097	1.097	1.000	.00003642	.05276	.737
807.414	48.3046	.016	31.5685	289.221	11.3409	1.097	1.097	1.000	.00003672	.05350	.735
817.414	42.5189	.018	31.9843	290.966	11.3745	1.096	1.096	1.000	.00003702	.05424	.733
827.414	37.4691	.021	32.4013	292.700	11.4072	1.096	1.096	1.000	.00003732	.05498	.732
837.414	33.0564	.024	32.8194	294.425	11.4391	1.096	1.096	1.000	.00003762	.05572	.730
844.814	30.1534	.026	33.1296	295.695	11.4621	1.096	1.096	1.000	.00003784	.05627	.728
S/R=45.25											
786.380	81.4244	.009	30.6980	285.518	11.2671	1.097	1.097	1.000	.00003608	.05194	.739
796.380	71.5092	.010	31.1112	287.284	11.3027	1.097	1.097	1.000	.00003639	.05268	.737
806.380	62.8617	.012	31.5256	289.040	11.3373	1.097	1.097	1.000	.00003669	.05342	.736
816.380	55.3257	.014	31.9412	290.785	11.3710	1.096	1.096	1.000	.00003699	.05416	.734
826.380	48.7491	.016	32.3581	292.520	11.4039	1.096	1.096	1.000	.00003729	.05490	.732
836.380	43.0030	.018	32.7762	294.246	11.4358	1.096	1.096	1.000	.00003759	.05564	.730
844.814	38.7227	.020	33.1297	295.694	11.4621	1.096	1.096	1.000	.00003784	.05627	.728
S/R=45.50											
805.715	81.4244	.009	31.4980	288.923	11.3350	1.097	1.097	1.000	.00003667	.05337	.736
815.715	71.6563	.011	31.9135	290.669	11.3688	1.096	1.096	1.000	.00003697	.05411	.734
825.715	63.1324	.012	32.3303	292.404	11.4017	1.096	1.096	1.000	.00003727	.05485	.732
835.715	55.6867	.014	32.7483	294.131	11.4337	1.096	1.096	1.000	.00003757	.05559	.730
844.814	49.7277	.016	33.1297	295.693	11.4621	1.096	1.096	1.000	.00003784	.05627	.728
S/R=45.75											
825.376	81.4244	.009	32.3162	292.345	11.4006	1.096	1.096	1.000	.00003726	.05483	.732
835.376	71.8200	.011	32.7341	294.072	11.4326	1.096	1.096	1.000	.00003756	.05557	.730
844.814	63.8611	.012	33.1297	295.692	11.4621	1.096	1.096	1.000	.00003784	.05627	.728

TABLE II.- TRANSPORT PROPERTIES OF CF<sub>4</sub> AT CONSTANT TEMPERATURE

[Temperatures are in kelvins]

V	$\mu$	k	$c_p/R$	$c_v/R$	$N_{Pr}$	V	$\mu$	k	$c_p/R$	$c_v/R$	$N_{Pr}$
T= 100						T= 400					
.1000	.00000604	.00123	5.3491	3.4394	2.483	8.0000	.00002213	.02333	8.7112	7.7115	.781
.2000	.00000600	.00117	4.6727	3.2977	2.262	10.0000	.00002213	.02333	8.7111	7.7115	.781
.4000	.00000598	.00114	4.3980	3.2264	2.176	20.0000	.00002213	.02333	8.7110	7.7115	.781
.6000	.00000598	.00113	4.3136	3.2026	2.151	40.0000	.00002213	.02333	8.7109	7.7114	.781
.8000	.00000597	.00113	4.2726	3.1907	2.138	60.0000	.00002213	.02333	8.7108	7.7114	.781
1.0000	.00000597	.00112	4.2484	3.1835	2.131	80.0000	.00002213	.02333	8.7108	7.7114	.781
2.0000	.00000597	.00112	4.2008	3.1692	2.117	T= 600					
4.0000	.00000597	.00112	4.1774	3.1620	2.110	.0020	.00003916	.04692	11.2779	9.4469	.889
6.0000	.00000597	.00112	4.1696	3.1596	2.108	.0040	.00003310	.04166	10.9424	9.4445	.821
8.0000	.00000597	.00111	4.1657	3.1584	2.107	.0060	.00003171	.04033	10.7831	9.4430	.801
10.0000	.00000597	.00111	4.1634	3.1577	2.106	.0080	.00003115	.03973	10.6988	9.4422	.793
20.0000	.00000597	.00111	4.1588	3.1563	2.105	.0100	.00003086	.03938	10.6473	9.4417	.788
40.0000	.00000597	.00111	4.1565	3.1556	2.104	.0200	.00003037	.03874	10.5431	9.4405	.781
60.0000	.00000597	.00111	4.1557	3.1553	2.104	.0400	.00003014	.03843	10.4908	9.4399	.777
80.0000	.00000597	.00111	4.1553	3.1552	2.104	.0600	.00003007	.03833	10.4734	9.4397	.776
T= 200						.0800	.00003004	.03828	10.4647	9.4396	.776
.0100	.00001309	.00976	9.2873	5.7094	1.176	1.0000	.00003002	.03825	10.4595	9.4395	.775
.0200	.00001260	.00912	7.1771	5.2753	.937	2.0000	.00002998	.03820	10.4490	9.4394	.775
.0400	.00001237	.00881	6.4287	5.0430	.853	4.0000	.00002996	.03817	10.4438	9.4393	.775
.0600	.00001230	.00871	6.2078	4.9633	.828	6.0000	.00002996	.03816	10.4421	9.4393	.774
.0800	.00001227	.00866	6.1019	4.9231	.816	8.0000	.00002996	.03815	10.4412	9.4393	.774
.1000	.00001225	.00863	6.0397	4.8988	.810	1.0000	.00002995	.03815	10.4407	9.4393	.774
.2000	.00001221	.00858	5.9181	4.8500	.796	2.0000	.00002995	.03814	10.4397	9.4393	.774
.4000	.00001219	.00855	5.8586	4.8254	.790	4.0000	.00002995	.03814	10.4391	9.4393	.774
.6000	.00001219	.00854	5.8390	4.8172	.788	6.0000	.00002995	.03814	10.4390	9.4393	.774
.8000	.00001219	.00853	5.8292	4.8131	.786	8.0000	.00002995	.03814	10.4389	9.4393	.774
1.0000	.00001218	.00853	5.8234	4.8106	.786	10.0000	.00002995	.03814	10.4388	9.4393	.774
2.0000	.00001218	.00852	5.8117	4.8057	.785	20.0000	.00002995	.03814	10.4387	9.4393	.774
4.0000	.00001218	.00852	5.8059	4.8032	.784	40.0000	.00002995	.03814	10.4387	9.4393	.774
6.0000	.00001218	.00852	5.8039	4.8024	.784	60.0000	.00002995	.03814	10.4387	9.4393	.774
8.0000	.00001218	.00852	5.8030	4.8020	.784	80.0000	.00002995	.03814	10.4386	9.4393	.774
10.0000	.00001218	.00852	5.8024	4.8017	.784	T= 800					
20.0000	.00001218	.00852	5.8012	4.8012	.784	.0020	.00004571	.06173	11.8950	10.3163	.832
40.0000	.00001218	.00852	5.8006	4.8010	.783	.0040	.00003965	.05647	11.6672	10.3162	.774
60.0000	.00001218	.00852	5.8004	4.8009	.783	.0060	.00003826	.05514	11.5588	10.3161	.758
80.0000	.00001218	.00852	5.8003	4.8008	.783	.0080	.00003770	.05454	11.5007	10.3161	.751
T= 400						.0100	.00003741	.05419	11.4649	10.3161	.748
.0020	.00003134	.03211	10.5876	7.8827	.976	.0200	.00003692	.05355	11.3912	10.3160	.742
.0040	.00002529	.02685	9.7776	7.8280	.870	.0400	.00003669	.05324	11.3535	10.3160	.739
.0060	.00002390	.02552	9.4129	7.7960	.833	.0600	.00003662	.05314	11.3408	10.3160	.738
.0080	.00002333	.02492	9.2294	7.7774	.817	.0800	.00003659	.05309	11.3345	10.3160	.738
.0100	.00002304	.02457	9.1209	7.7654	.808	1.0000	.00003657	.05306	11.3307	10.3160	.738
.0200	.00002255	.02393	8.9101	7.7396	.793	2.0000	.00003653	.05301	11.3230	10.3160	.737
.0400	.00002233	.02362	8.8088	7.7258	.787	4.0000	.00003651	.05298	11.3192	10.3160	.737
.0600	.00002225	.02352	8.7757	7.7211	.784	6.0000	.00003651	.05297	11.3179	10.3160	.737
.0800	.00002222	.02347	8.7594	7.7187	.783	8.0000	.00003650	.05296	11.3172	10.3160	.737
.1000	.00002220	.02344	8.7496	7.7173	.783	1.0000	.00003650	.05296	11.3168	10.3160	.737
.2000	.00002216	.02339	8.7301	7.7144	.782	2.0000	.00003650	.05295	11.3161	10.3160	.737
.4000	.00002215	.02336	8.7204	7.7129	.781	4.0000	.00003650	.05295	11.3157	10.3160	.737
.6000	.00002214	.02335	8.7172	7.7124	.781	6.0000	.00003650	.05295	11.3156	10.3160	.737
.8000	.00002214	.02334	8.7156	7.7122	.781	8.0000	.00003650	.05295	11.3155	10.3160	.737
1.0000	.00002214	.02334	8.7146	7.7120	.781	10.0000	.00003650	.05295	11.3155	10.3160	.737
2.0000	.00002213	.02333	8.7127	7.7117	.781	20.0000	.00003650	.05295	11.3154	10.3160	.737
4.0000	.00002213	.02333	8.7117	7.7116	.781	40.0000	.00003650	.05295	11.3153	10.3160	.737
6.0000	.00002213	.02333	8.7114	7.7115	.781	60.0000	.00003650	.05295	11.3153	10.3160	.737
						80.0000	.00003650	.05295	11.3153	10.3160	.737

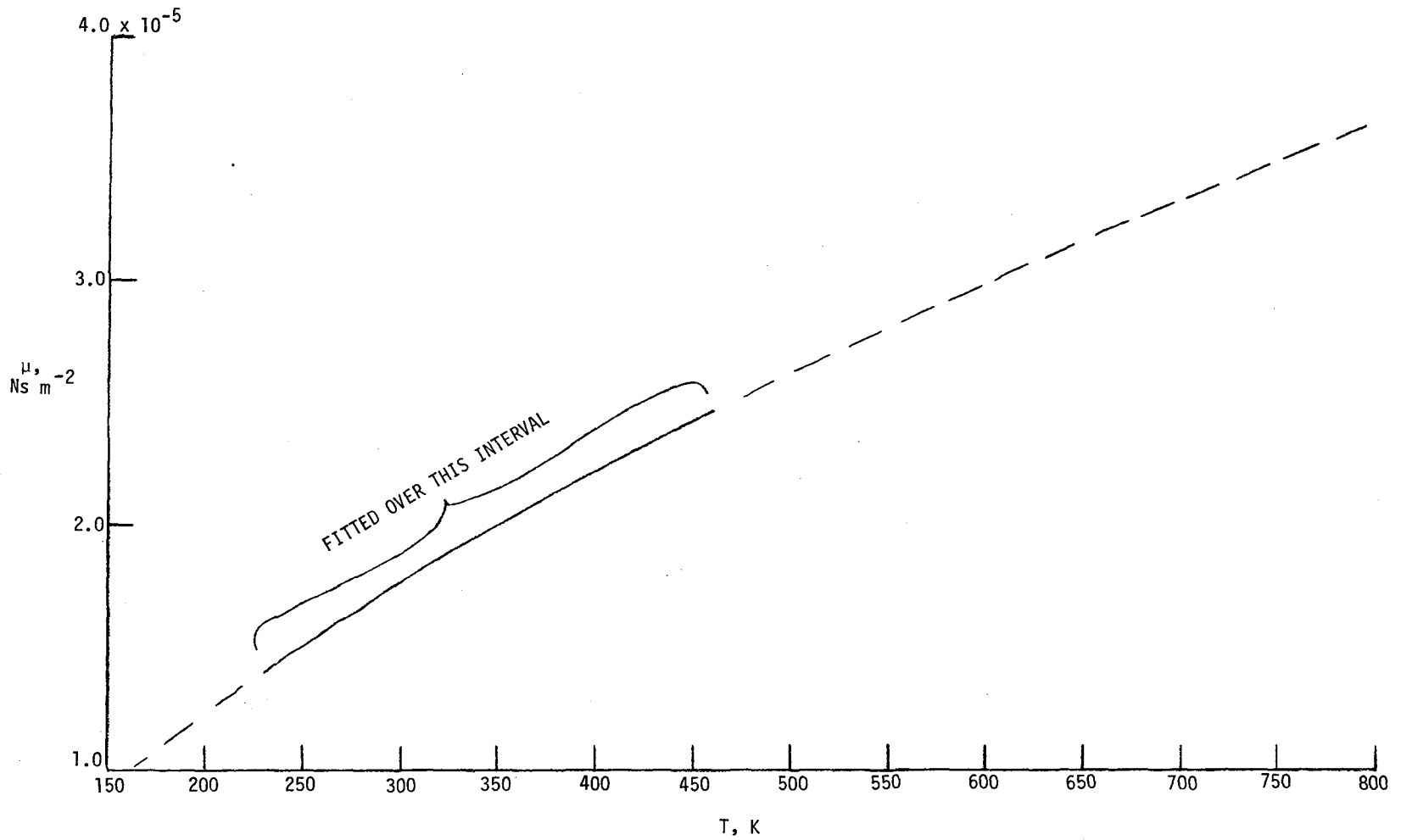


Figure 1.- Viscosity of  $\text{CF}_4$  at a pressure of 1 atmosphere.

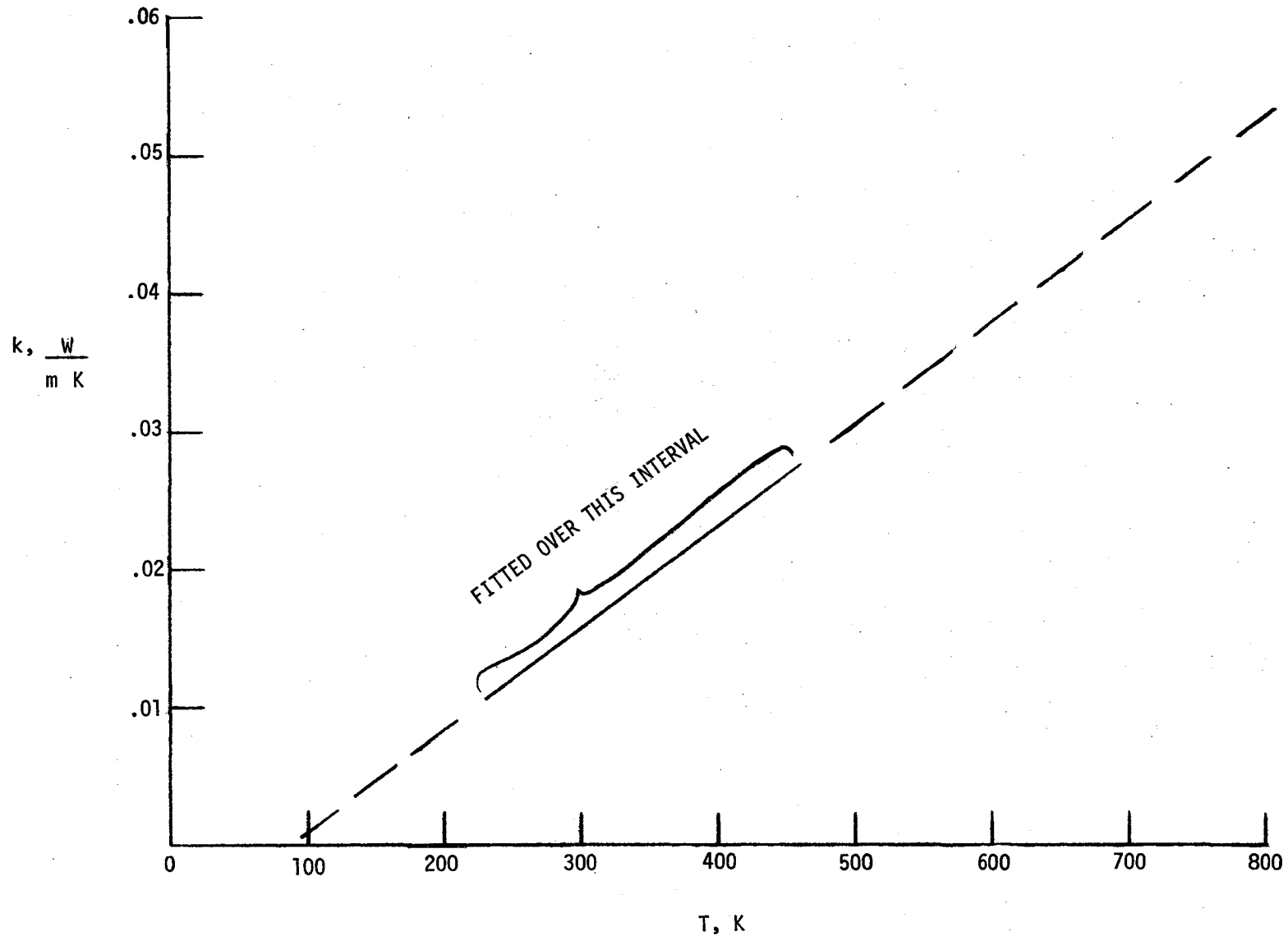
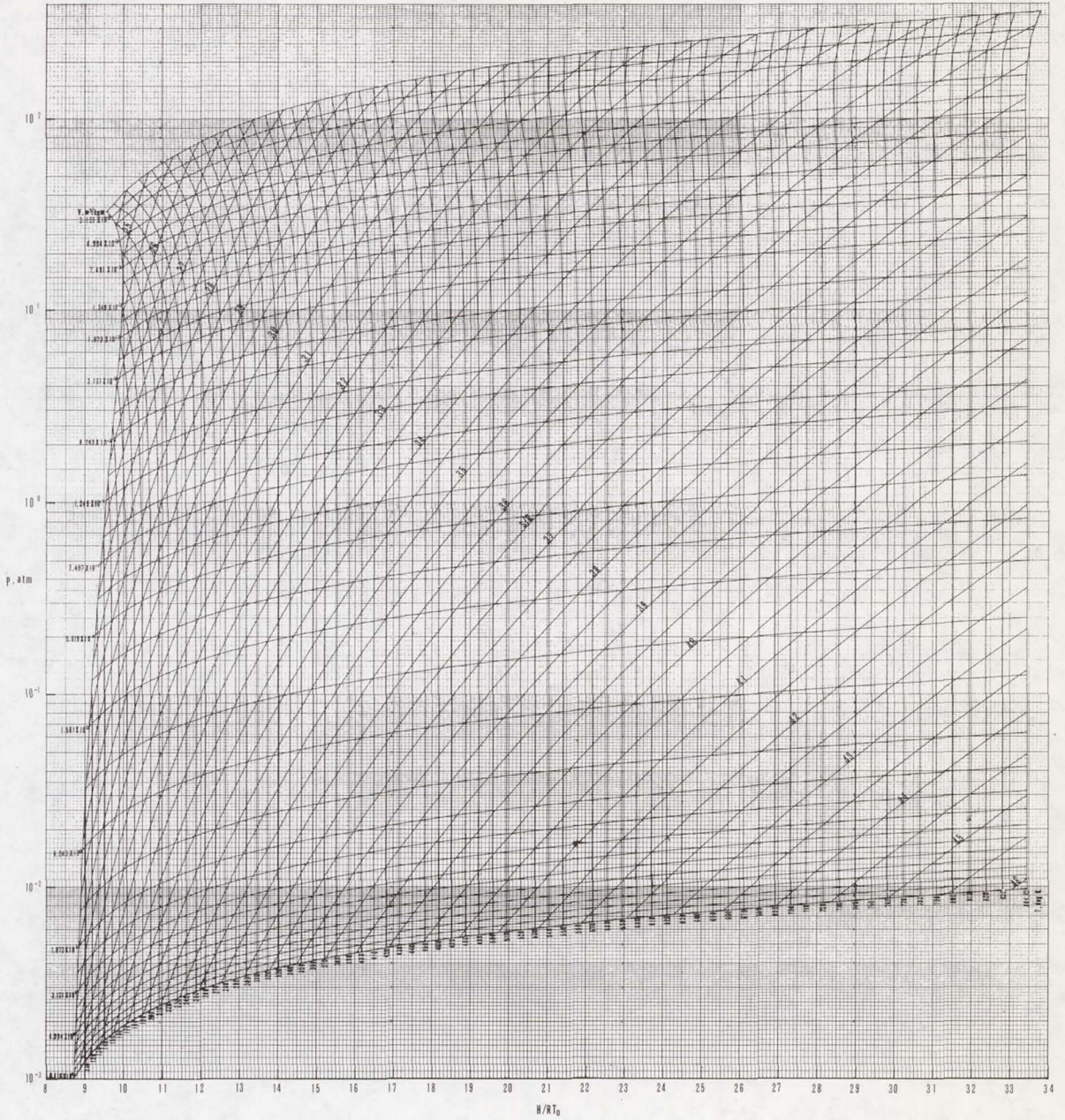


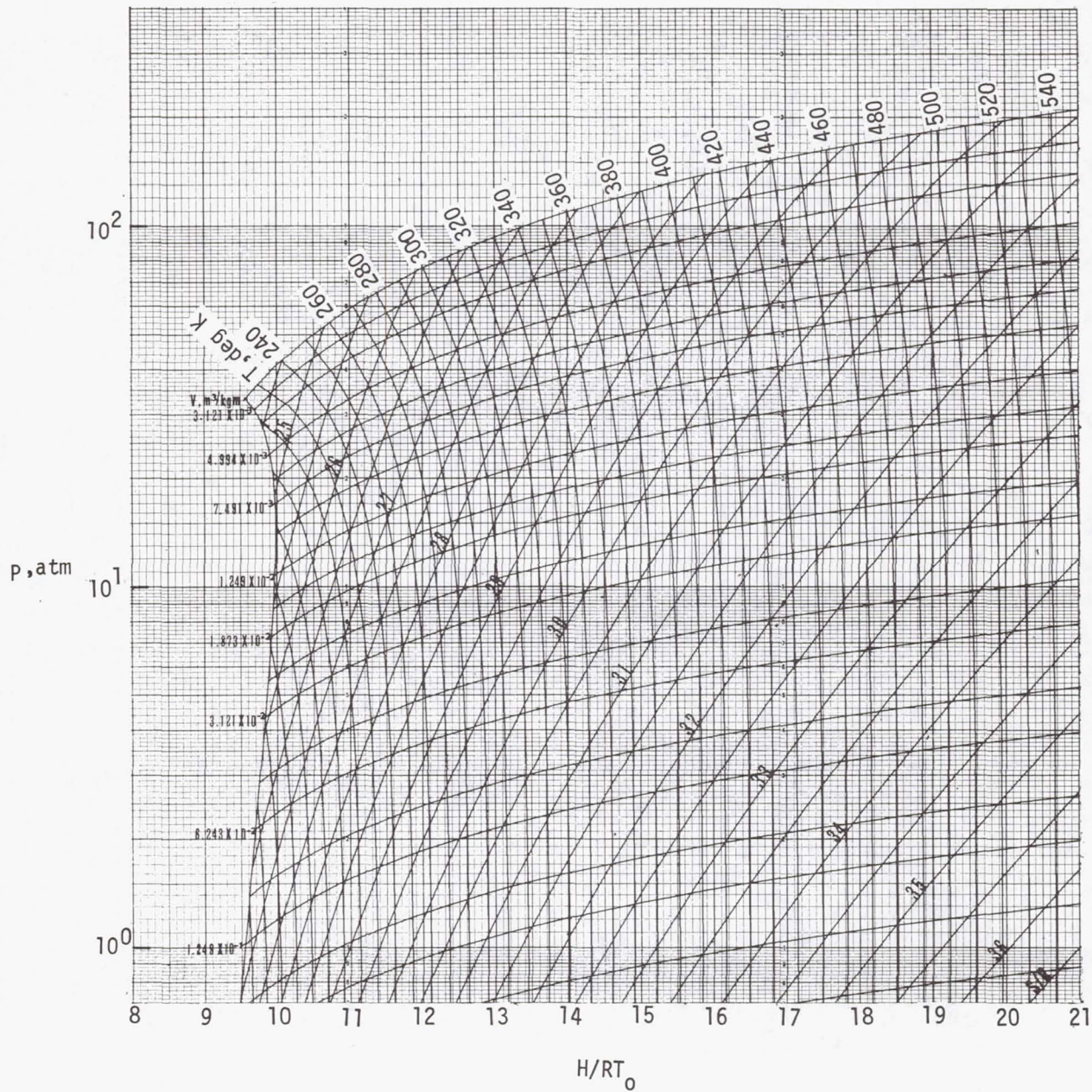
Figure 2.- Thermal conductivity of  $CF_4$  at a pressure of 1 atmosphere.



(a) Overall plot.

Figure 3.- Pressure enthalpy diagram for CF<sub>4</sub> with lines of constant entropy, volume, and temperature.

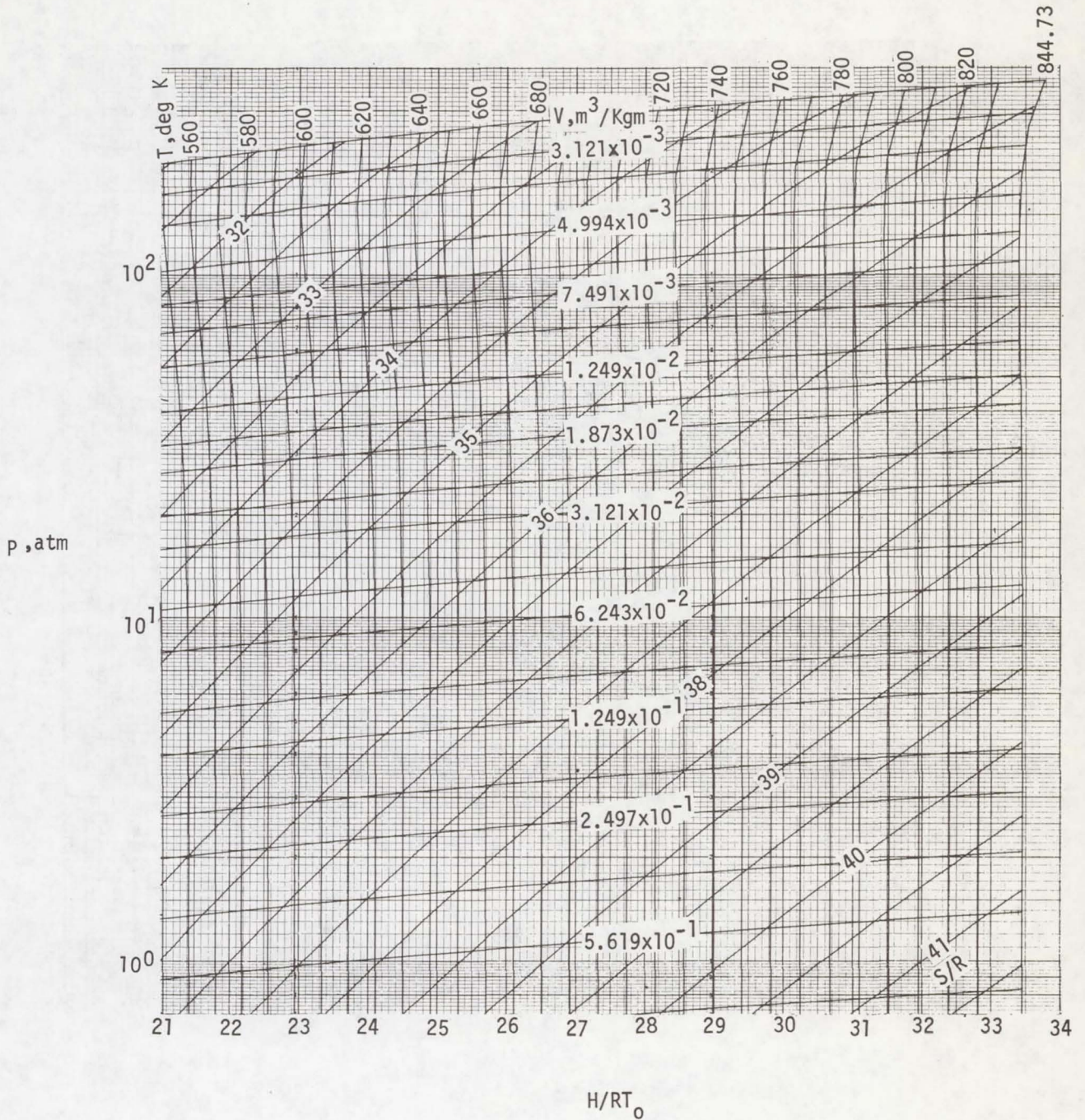




(b) Upper left quadrant.

Figure 3.- Continued.

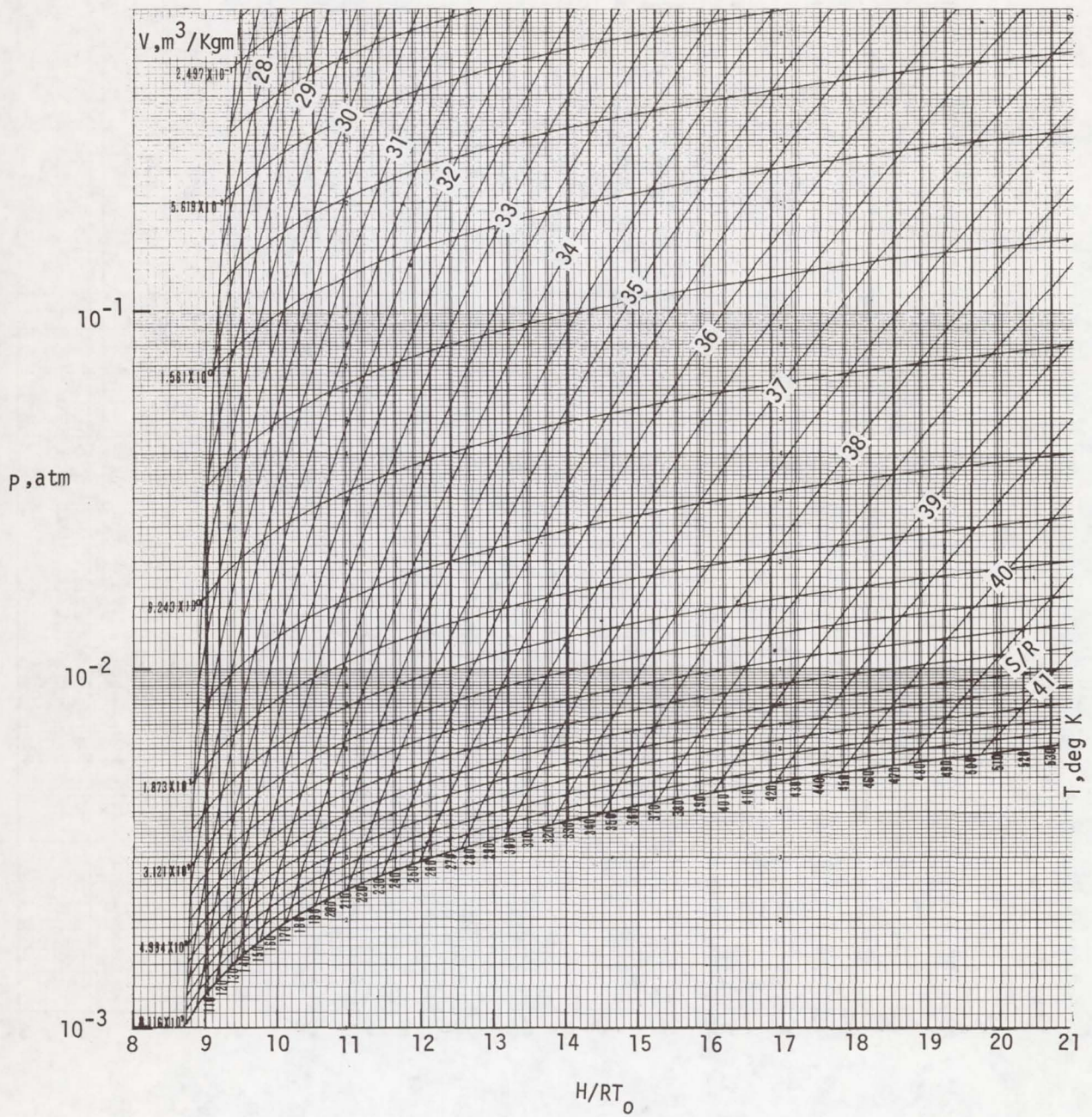




(c) Upper right quadrant.

Figure 3.- Continued.

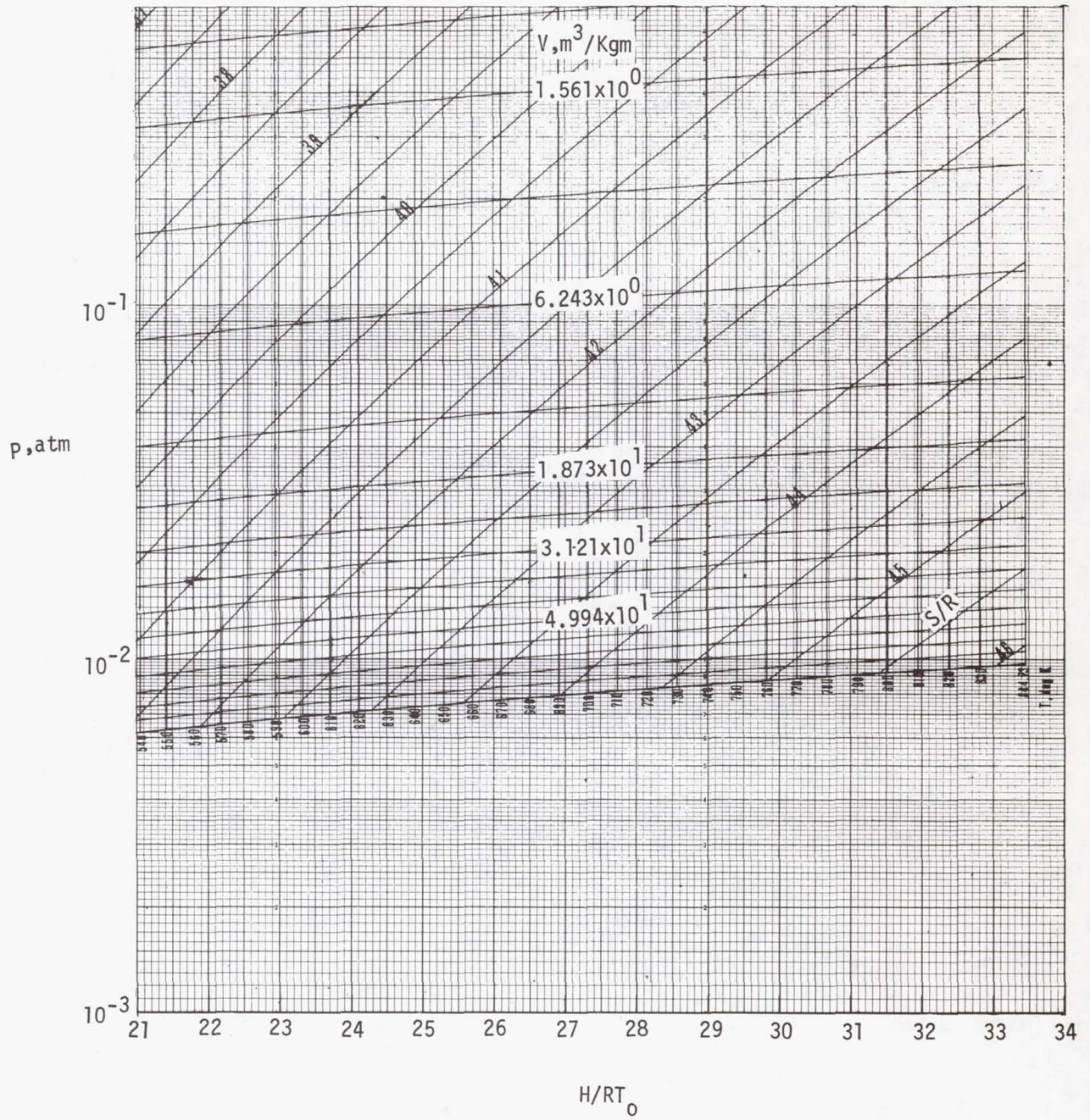




(d) Lower left quadrant.

Figure 3.- Continued.

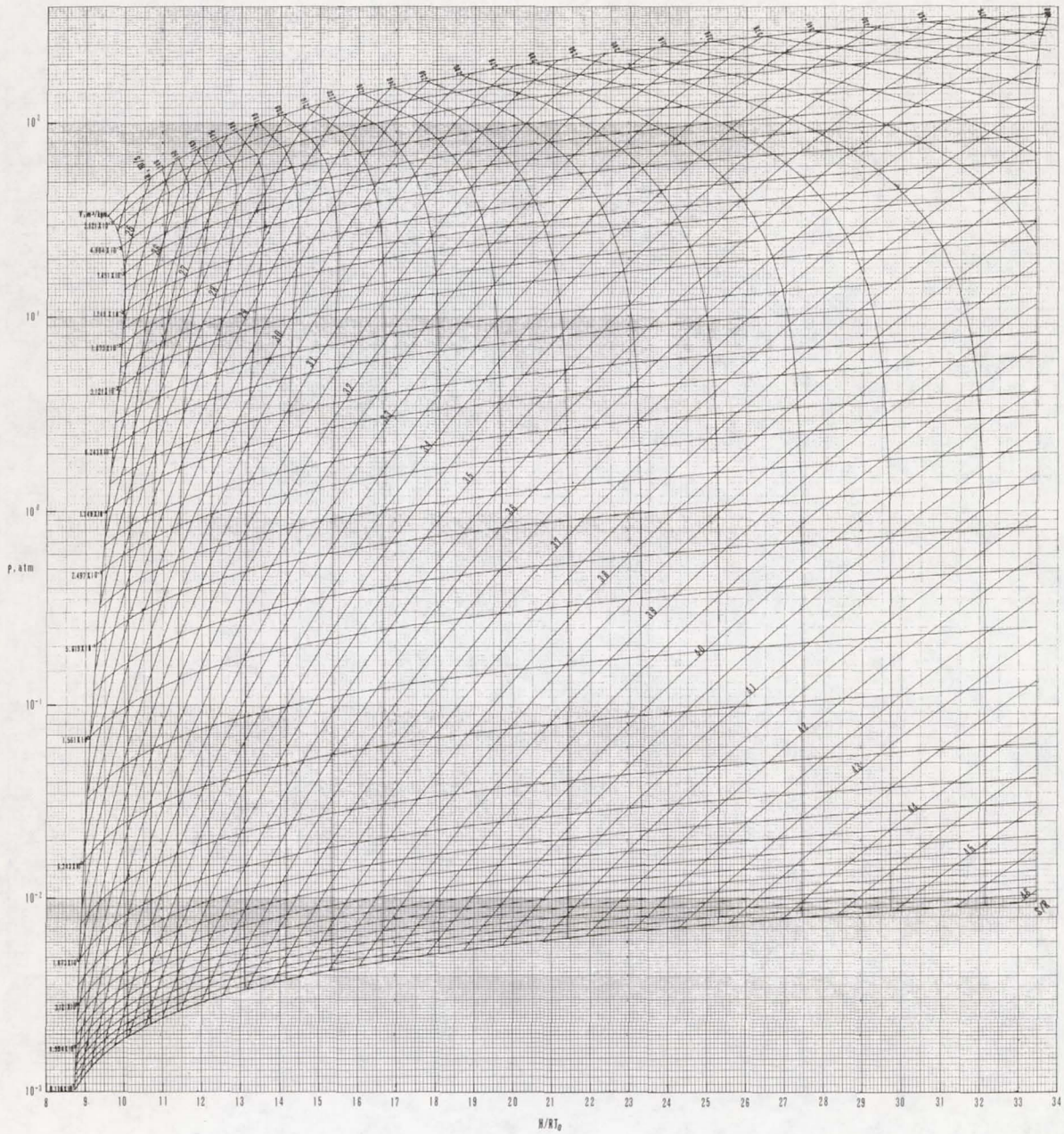




(e) Lower right quadrant.

Figure 3.- Concluded.

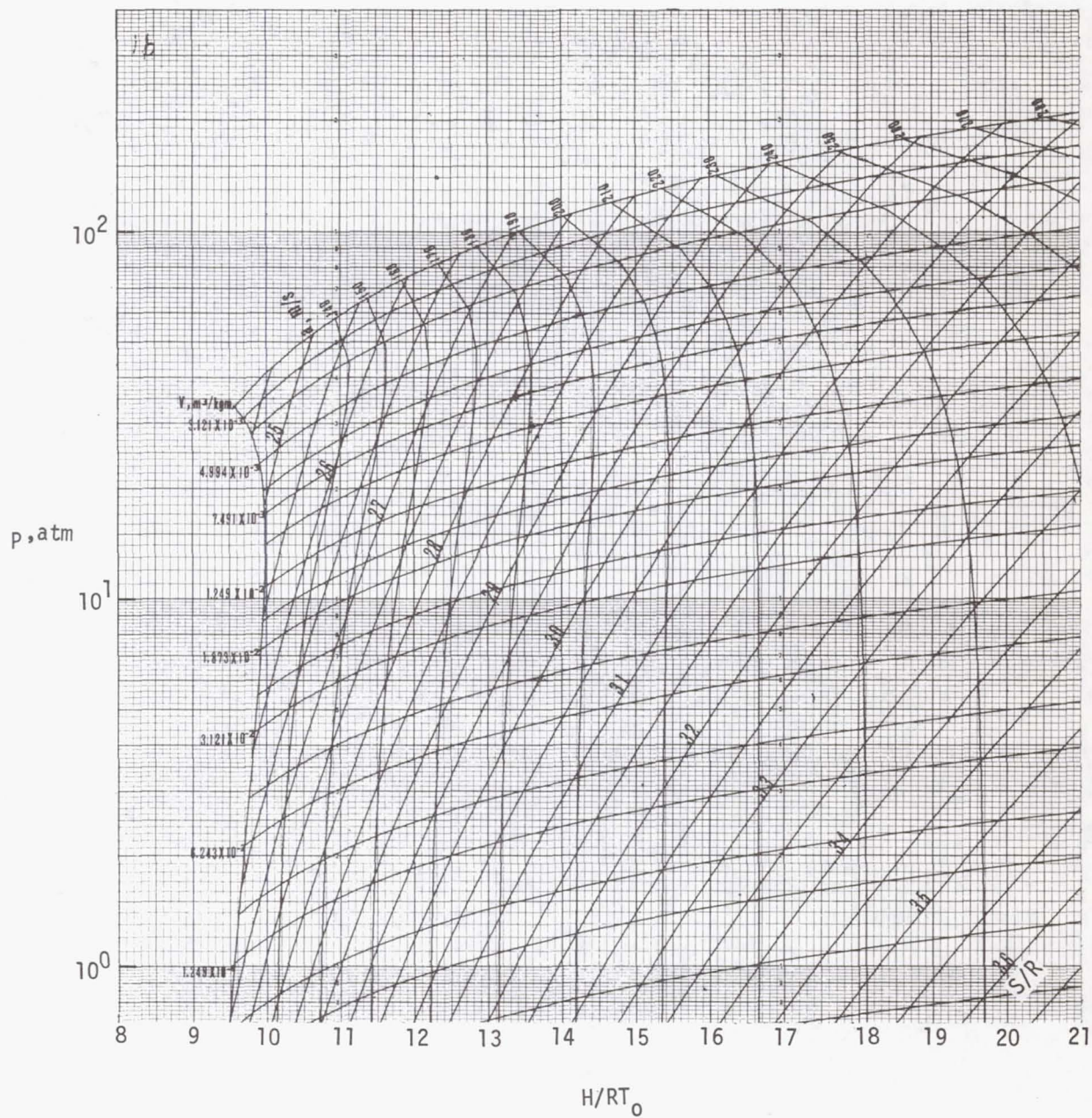




(a) Overall plot.

Figure 4.- Pressure enthalpy diagram for CF<sub>4</sub> with lines of constant entropy, volume, and speed of sound.

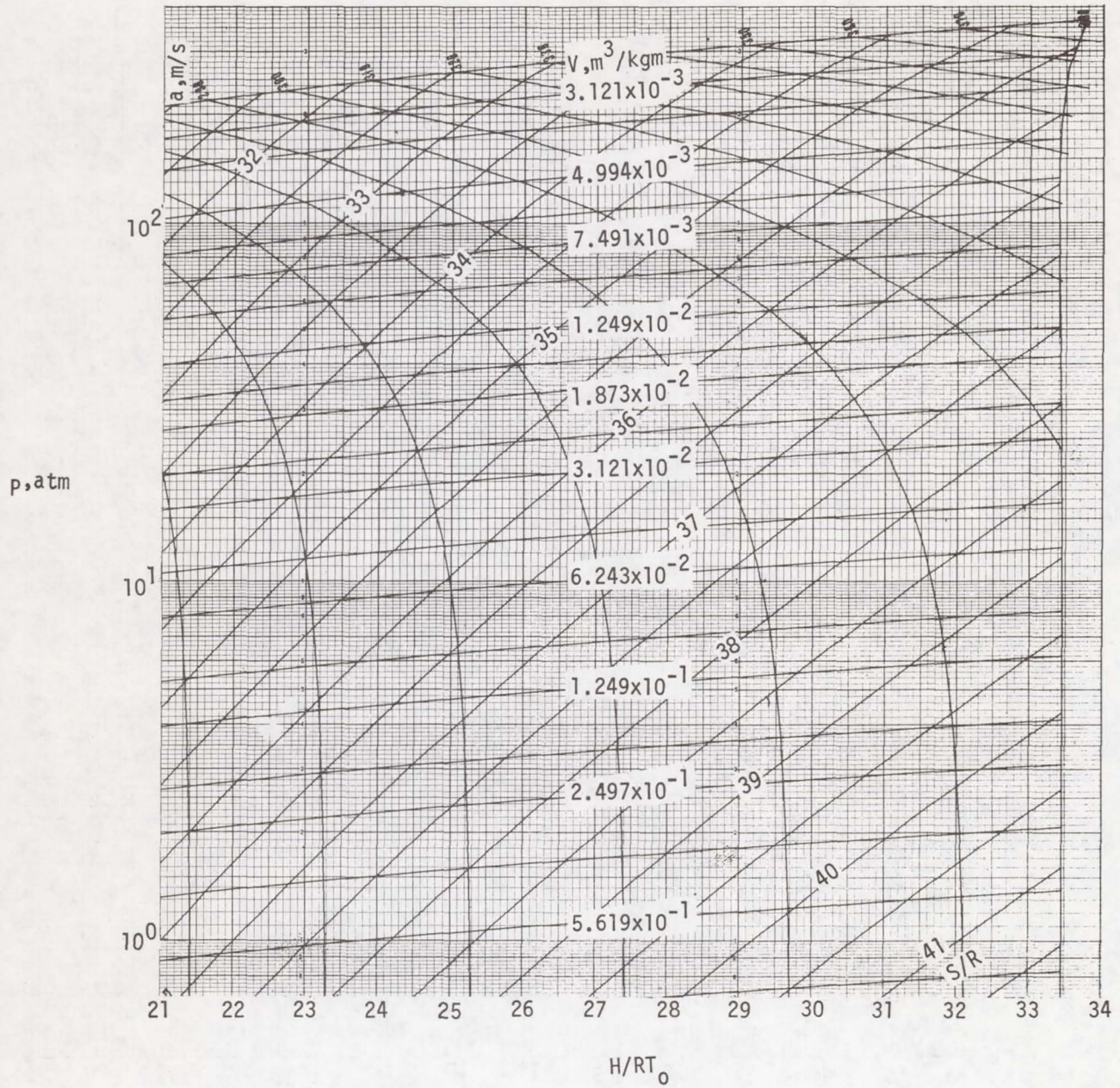




(b) Upper left quadrant.

Figure 4. - Continued.

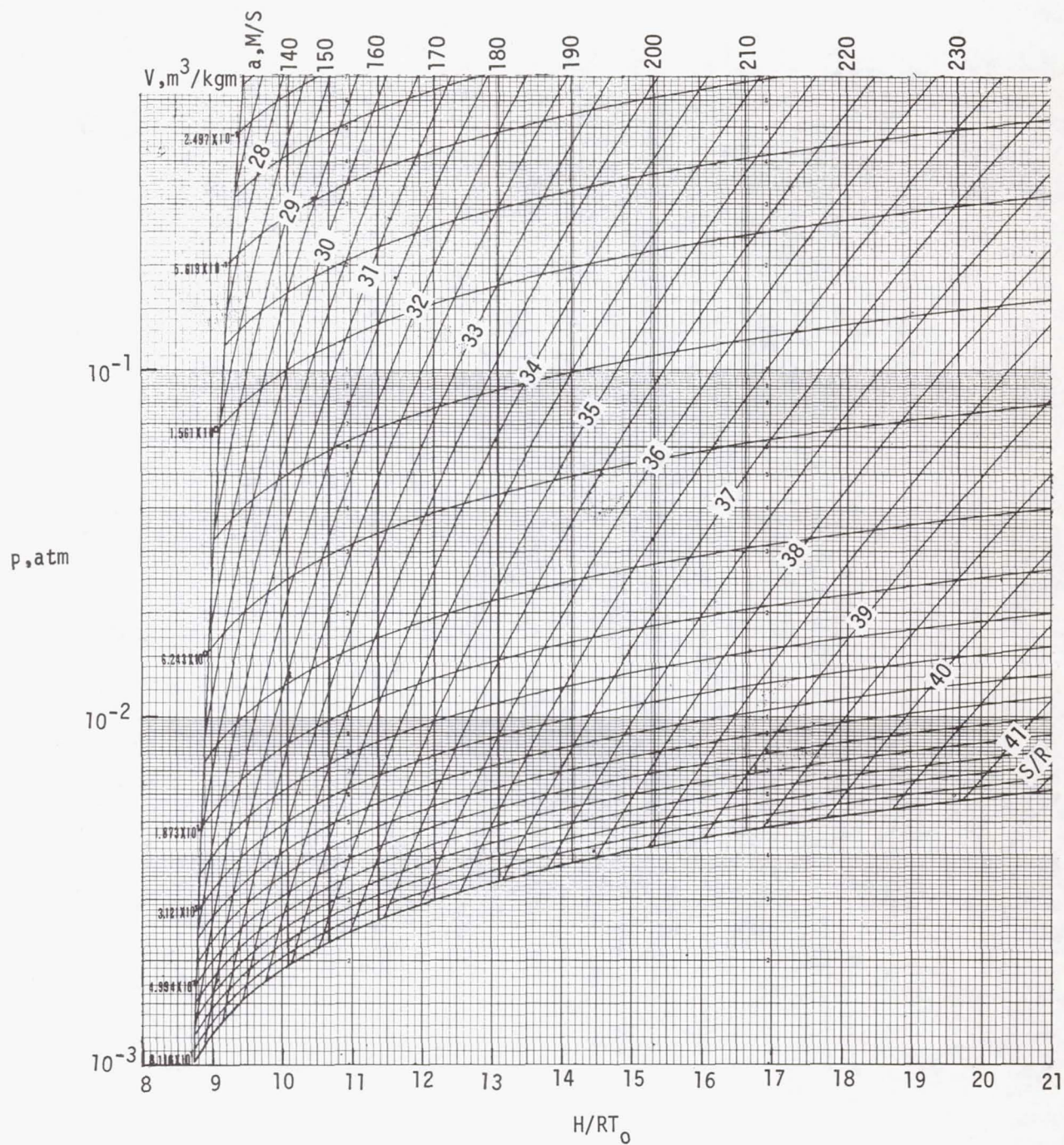




(c) Upper right quadrant.

Figure 4.- Continued.

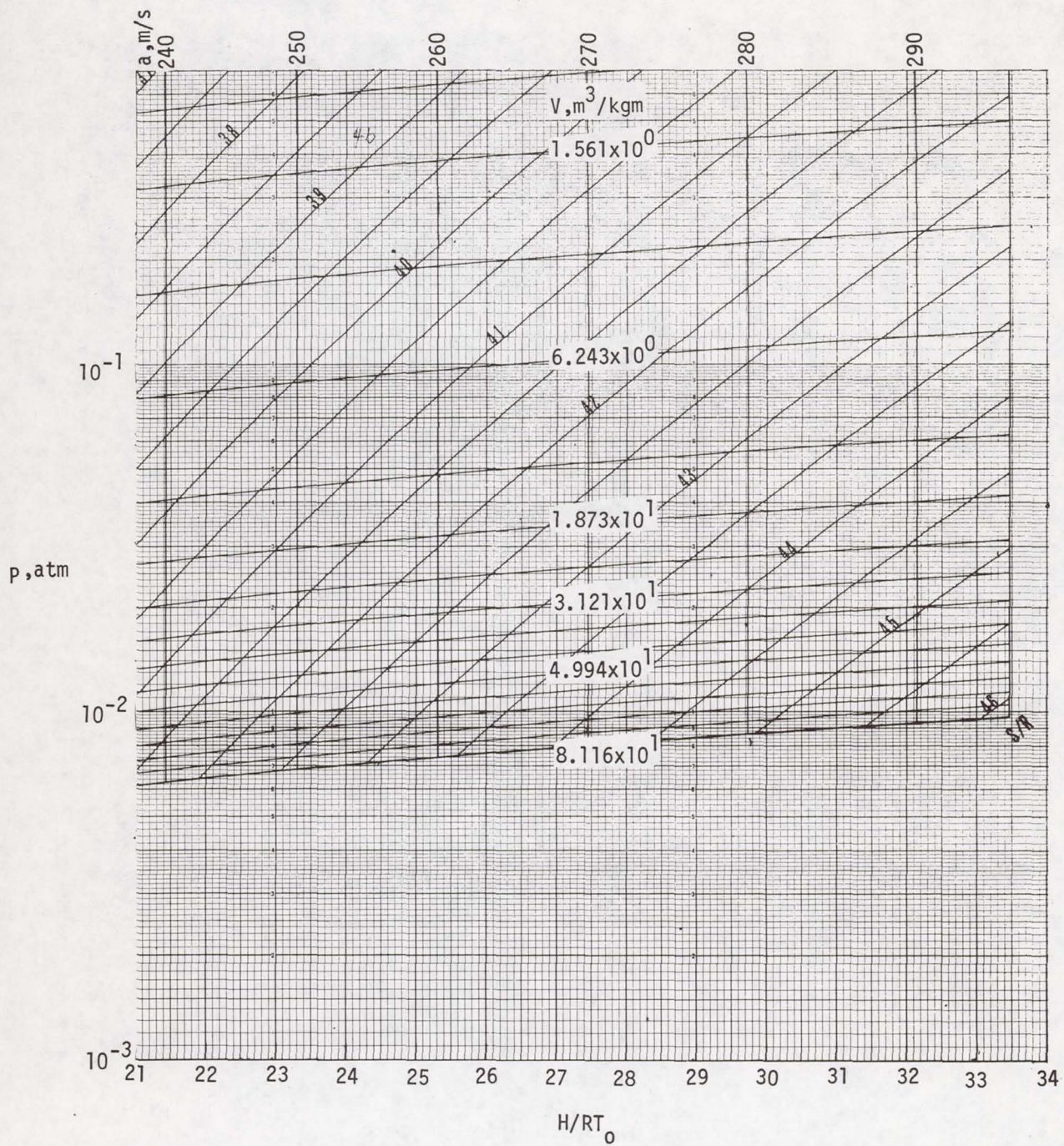




(d) Lower left quadrant.

Figure 4.- Continued.

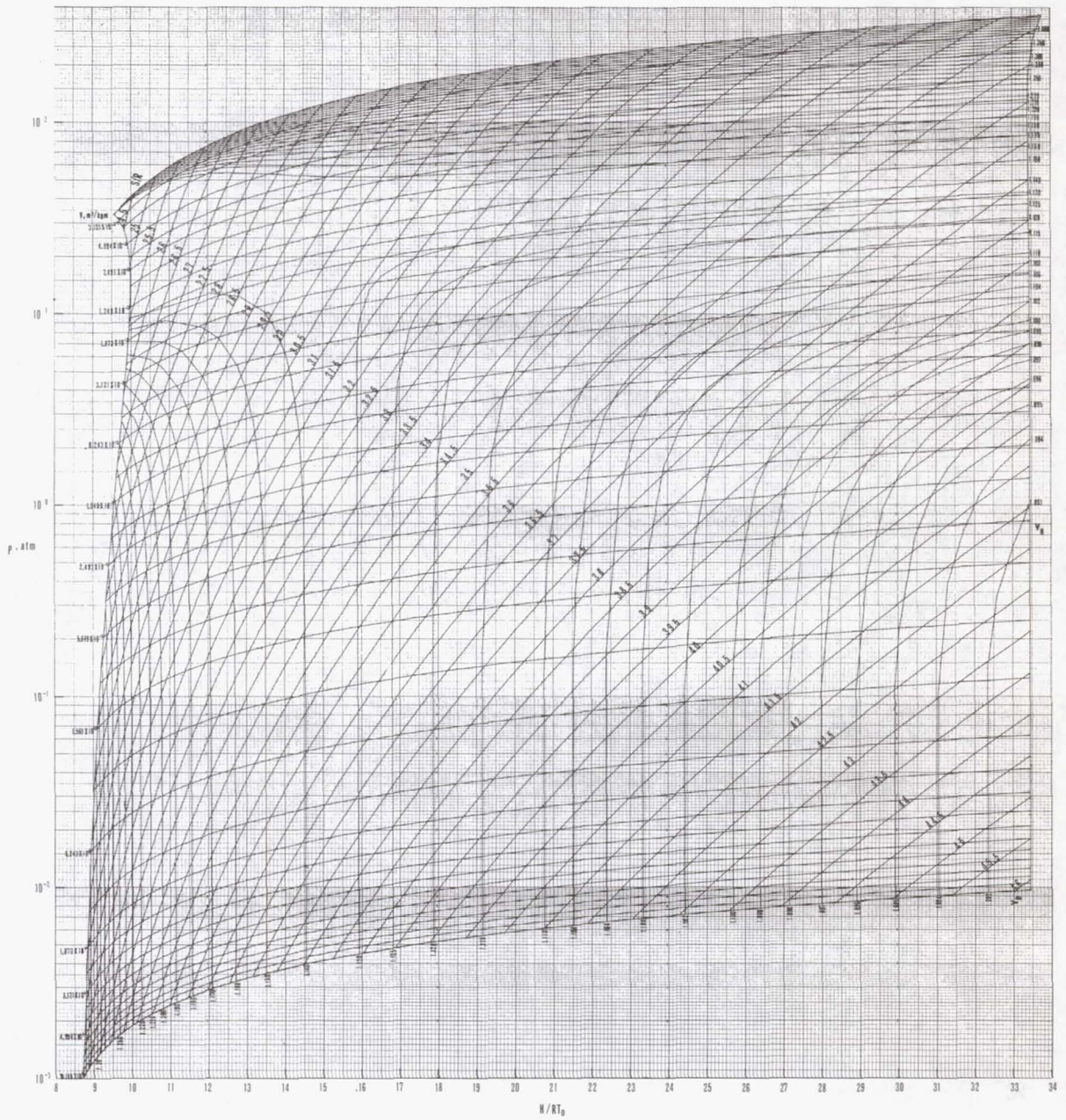




(e) Lower right quadrant.

Figure 4. - Concluded.

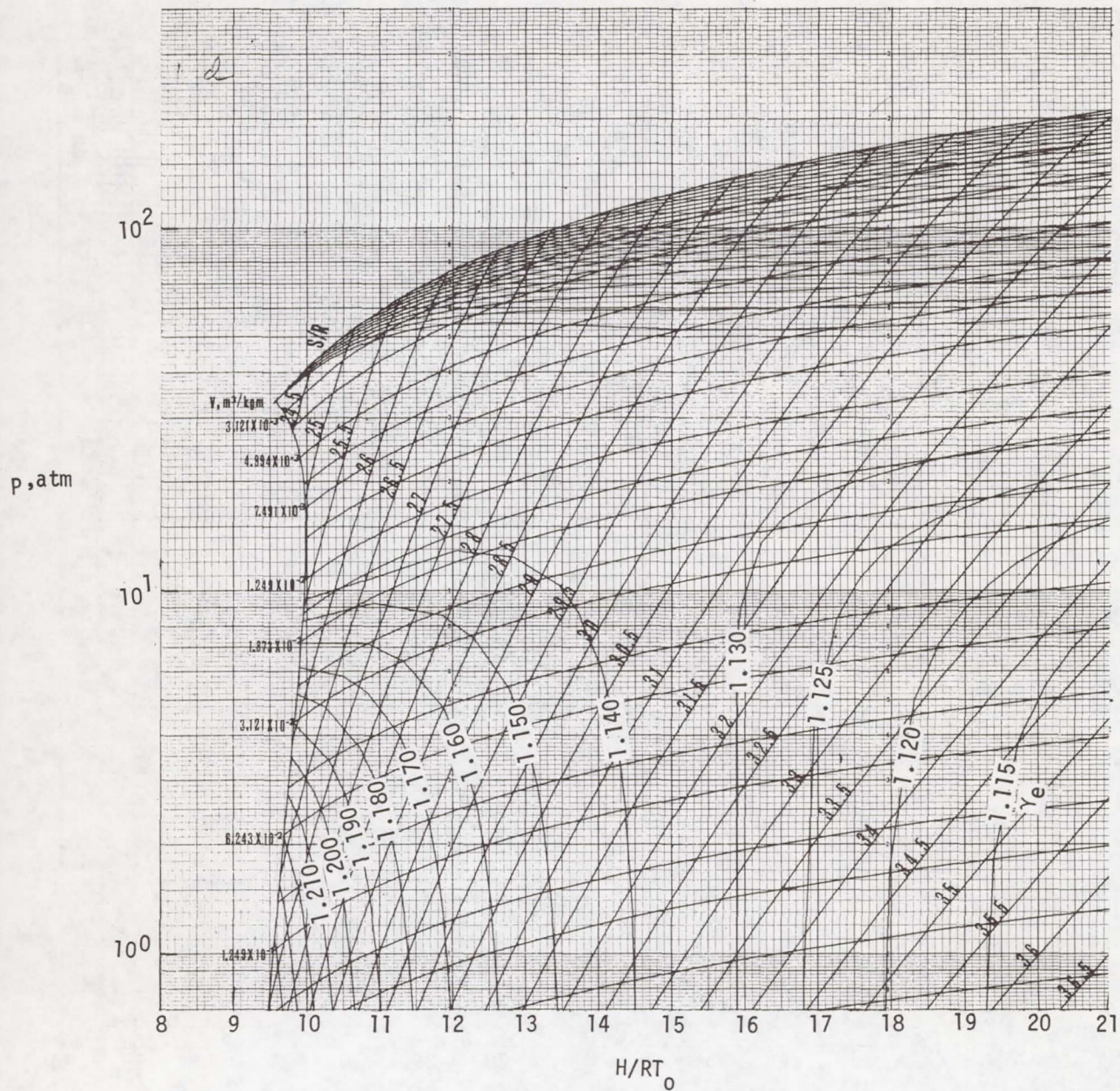




(a) Overall plot.

Figure 5.- Pressure-enthalpy diagram for CF<sub>4</sub> with lines of constant entropy, volume, and isentropic exponent.

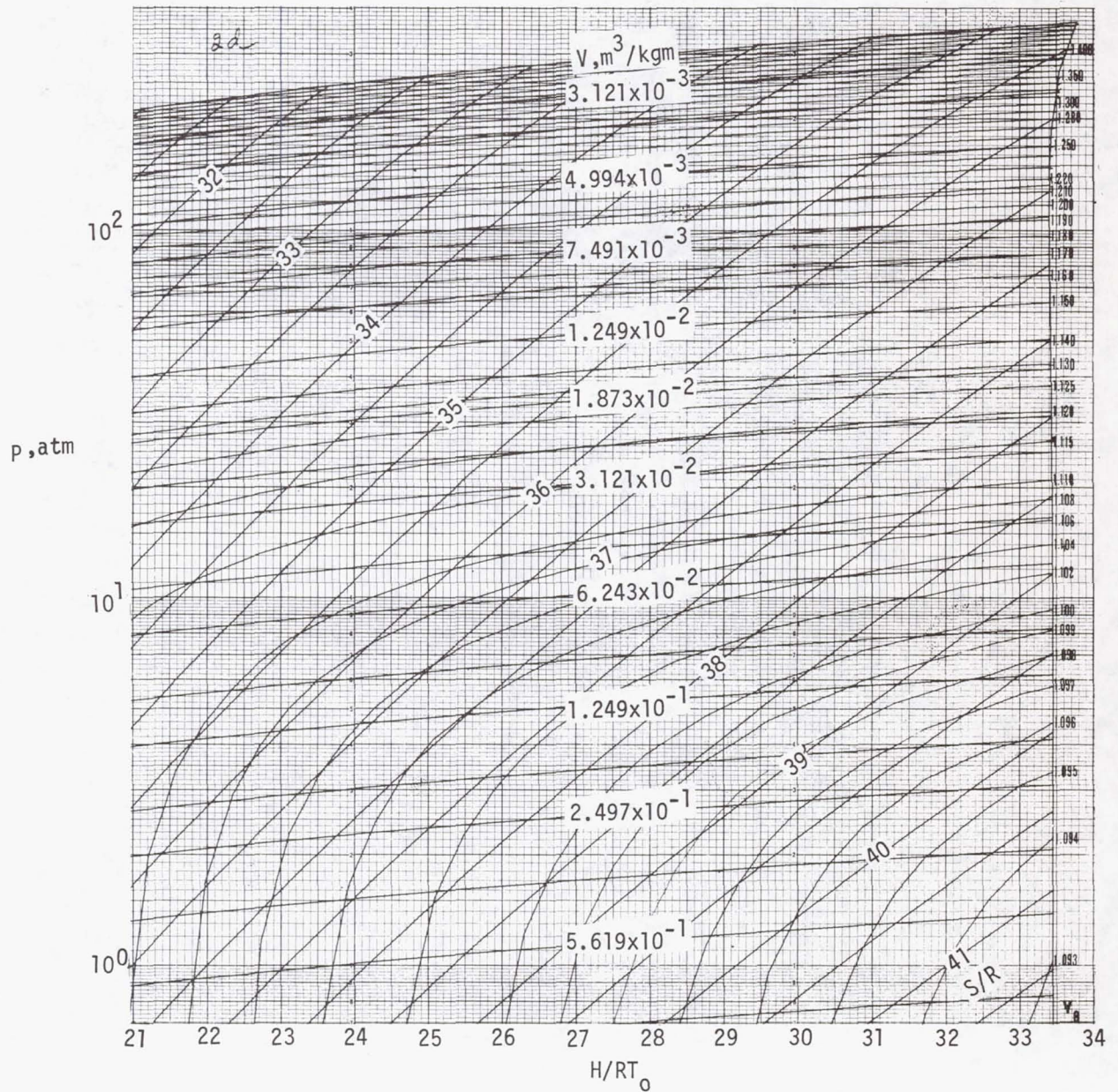




(b) Upper left quadrant.

Figure 5.- Continued.

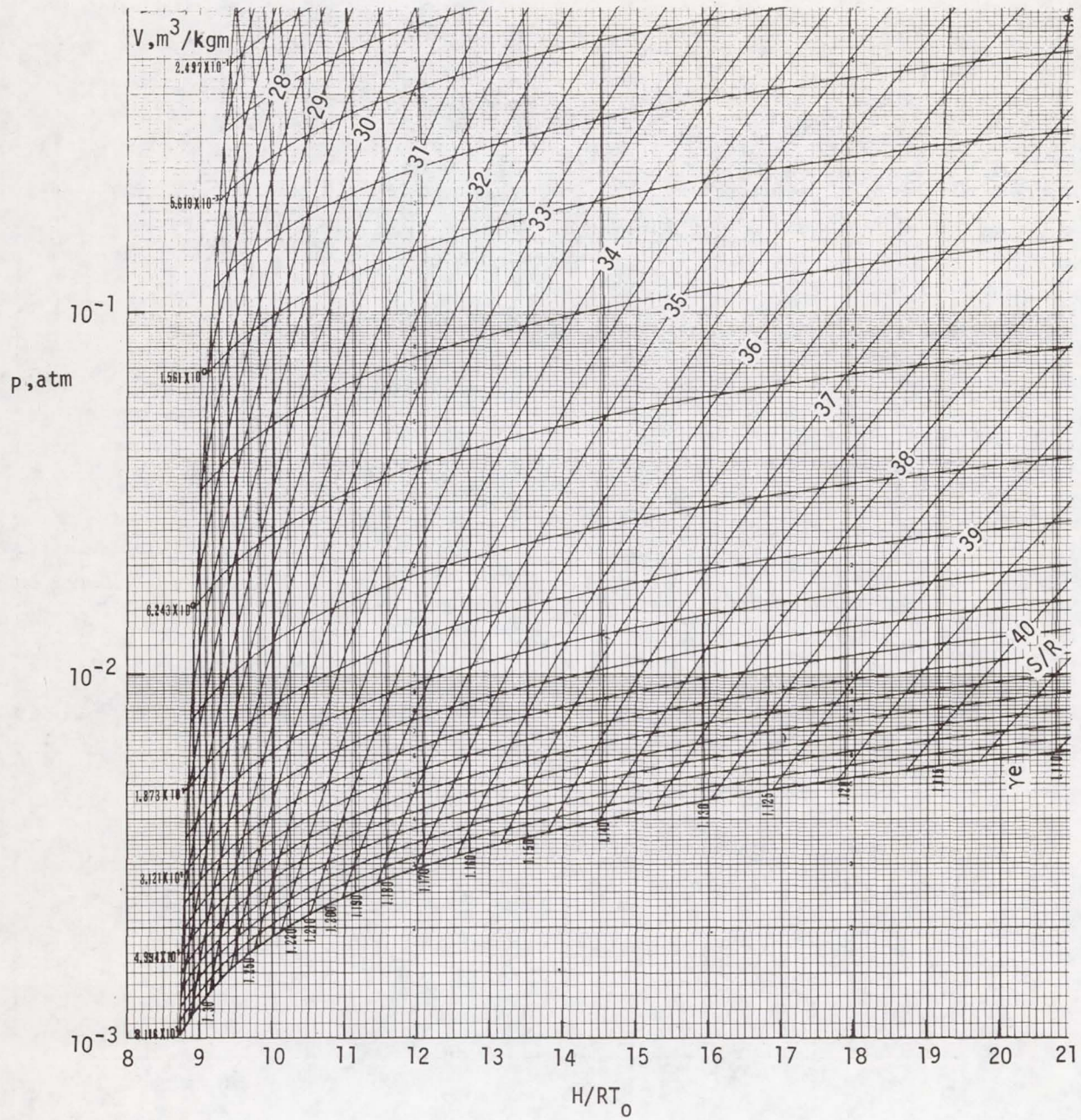




(c) Upper right quadrant.

Figure 5. - Continued.

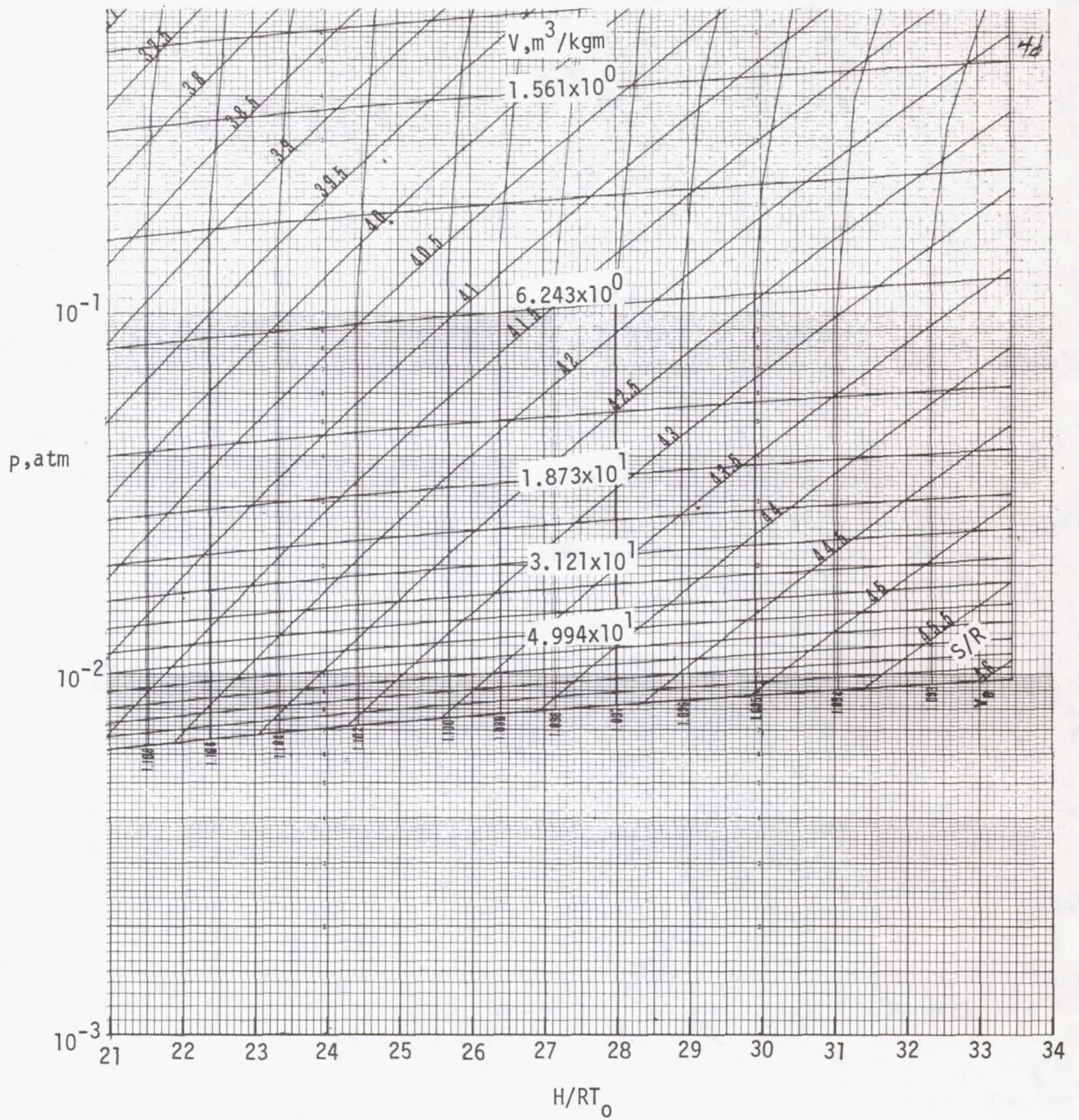




(d) Lower left quadrant.

Figure 5.- Continued.

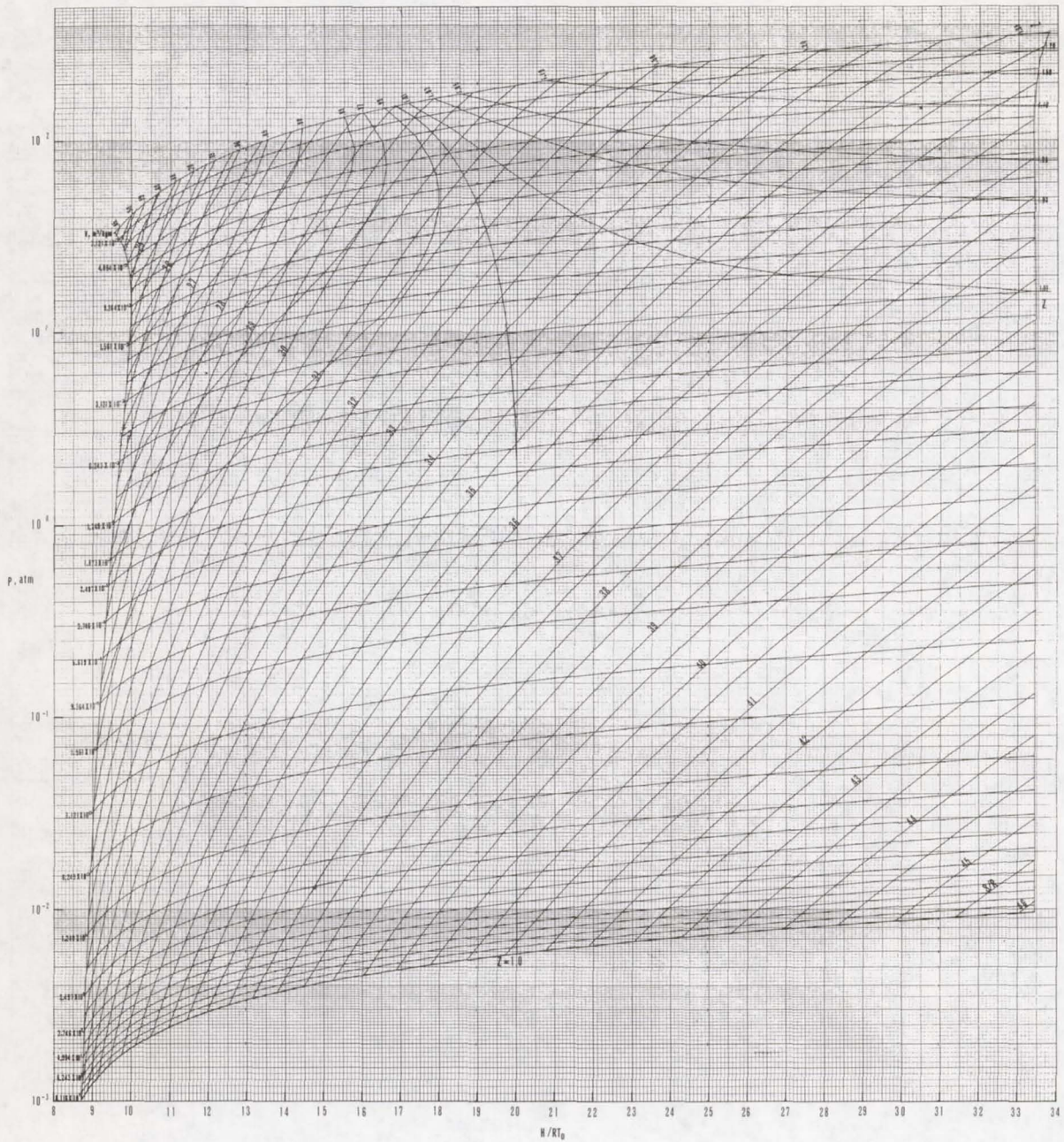




(e) Lower right quadrant.

Figure 5.- Concluded.

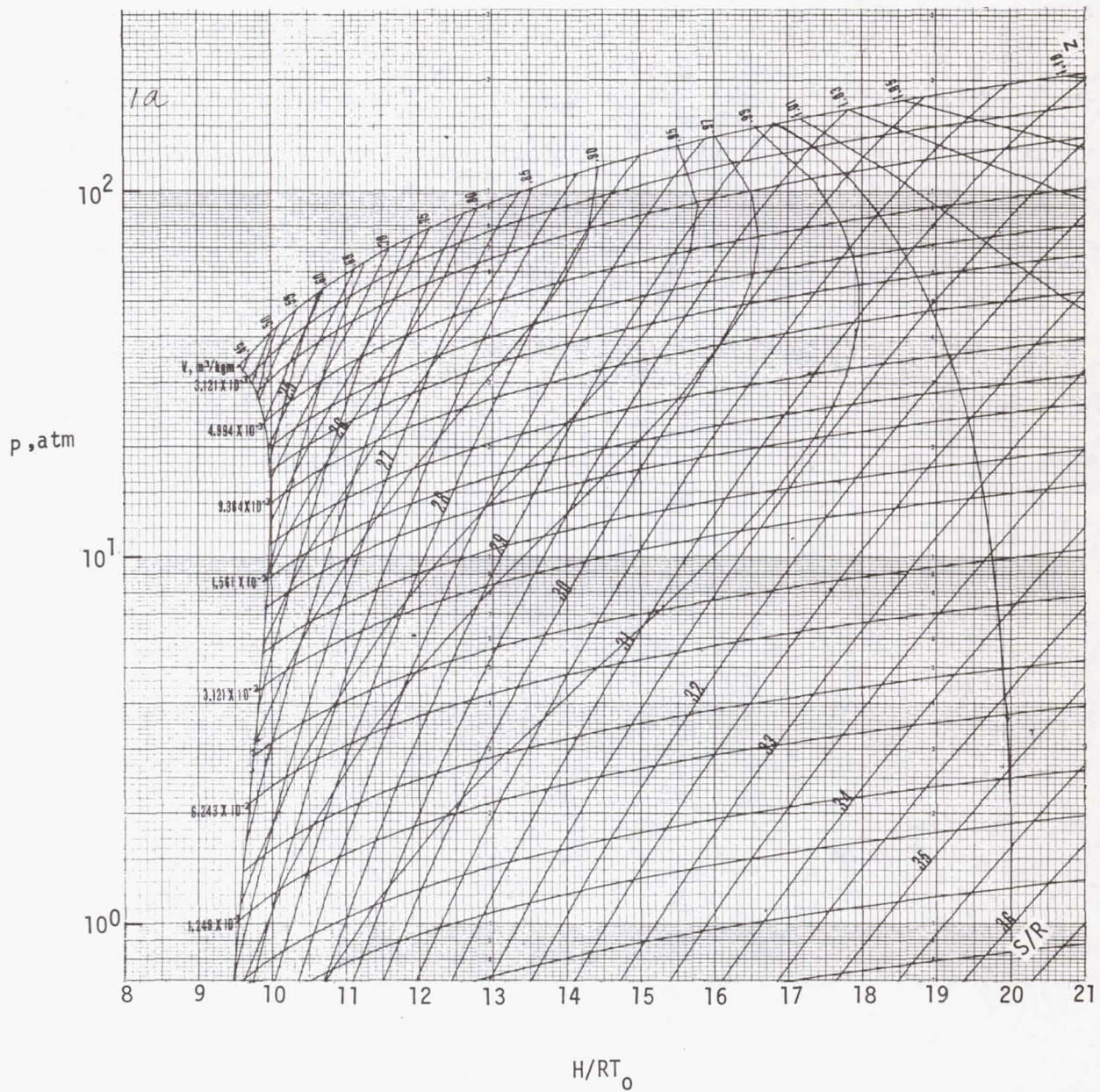




(a) Overall plot.

Figure 6.- Pressure enthalpy diagram for CF<sub>4</sub> with lines of constant entropy, volume, and compressibility factor.

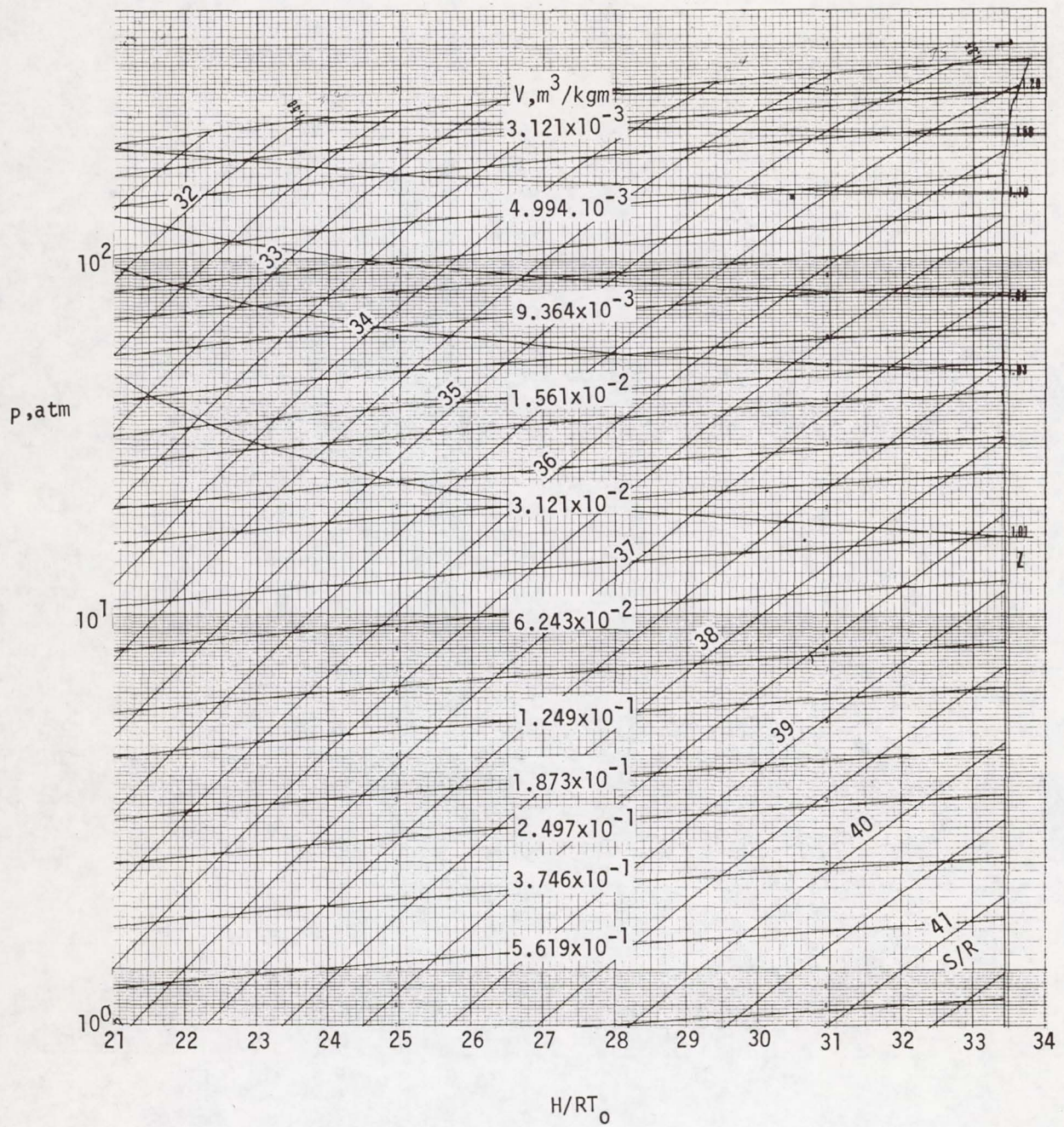




(b) Upper left quadrant.

Figure 6.- Continued.

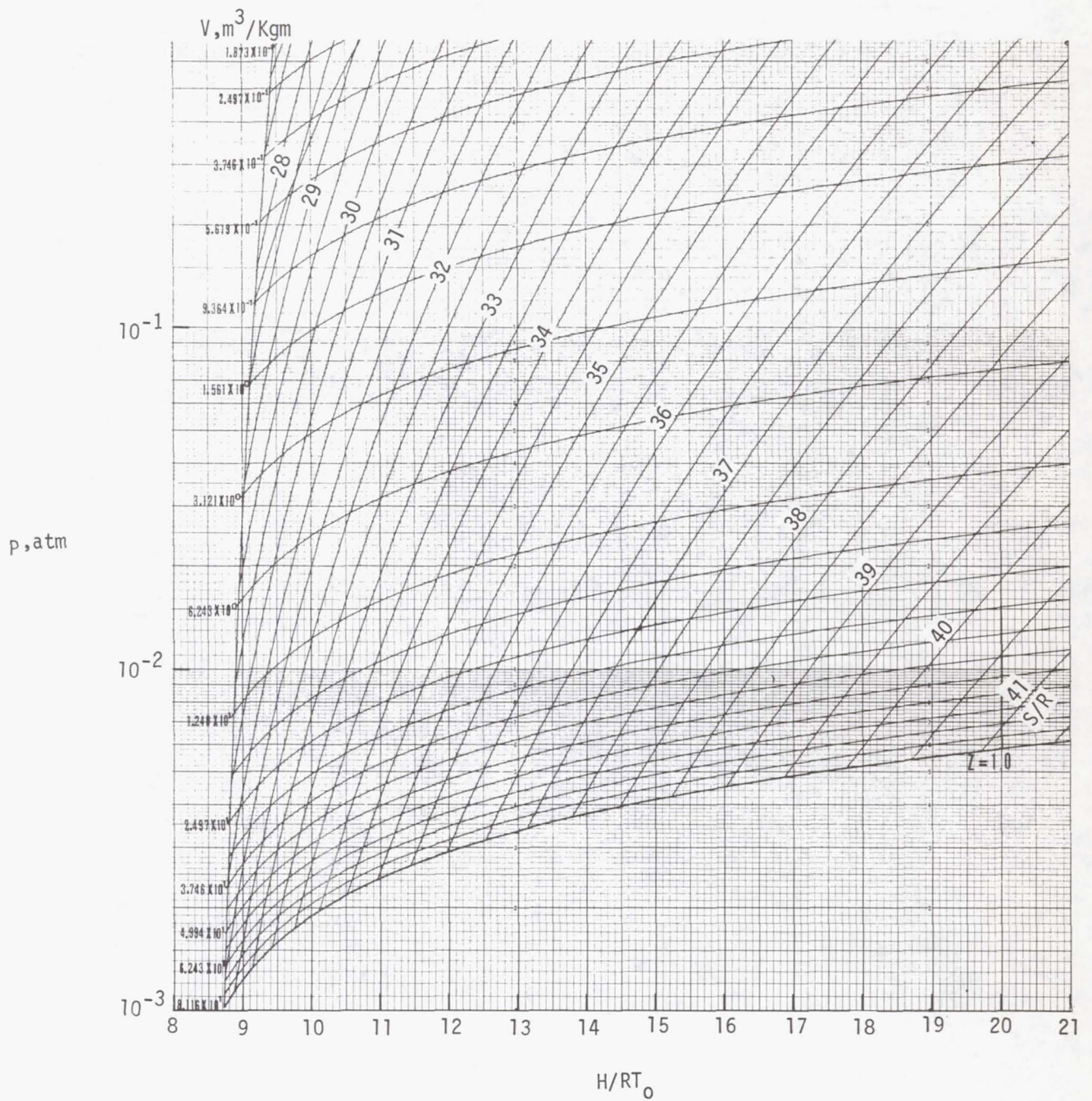




(c) Upper right quadrant.

Figure 6. - Continued.

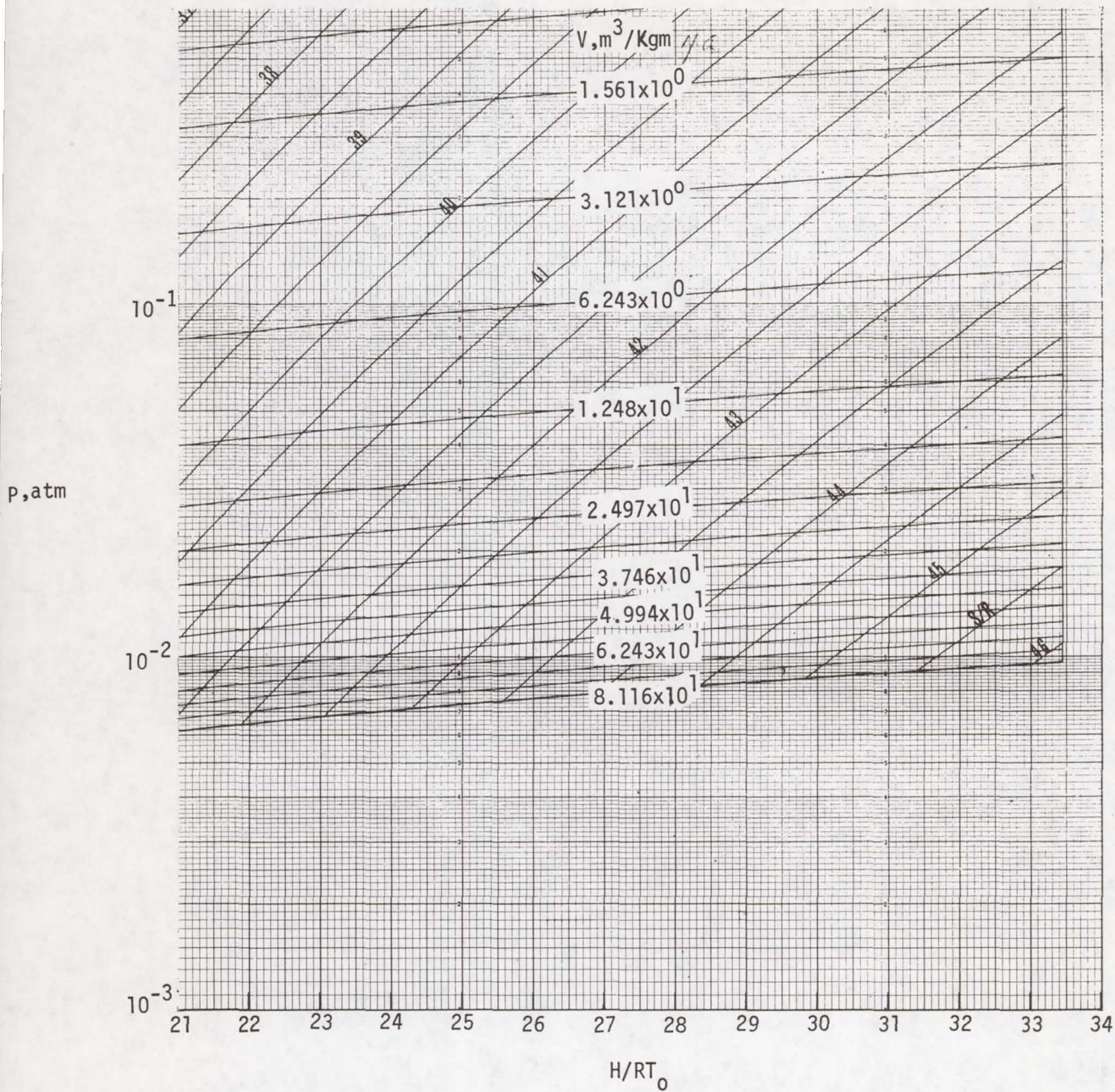




(d) Lower left quadrant.

Figure 6.- Continued.





(e) Lower right quadrant.

Figure 6.- Concluded.





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—NATIONAL AERONAUTICS AND SPACE ACT OF 1958

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