NBSIR 80-1632

THERMOPHYSICAL PROPERTIES OF NITROGEN TRIFLUORIDE FROM 66 TO 500 K AT PRESSURES TO 500 BAR

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U.S. DEPARTMENT OF COMMERCE, Philip M. Klutznick, Secretary

Luther H. Hodges, Jr., Deputy Secretary
Jordan J. Baruch, Assistant Secretary for Productivity, Technology and Innovation

NATIONAL BUREAU OF STANDARDS, Ernest Ambler, Director

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THERMOPHYSICAL PROPERTIES OF NITROGEN TRIFLUORIDE FROM 66 TO 500 K AT PRESSURES TO 500 BAR

Robert D. Goodwin and Lloyd A. Weber

Density and specific heat data for nitrogen trifluoride have been measured in the approximate ranges $90 < T < 320$ K, $0.07 < \rho/\rho_c < 3$, at pressures up to 300 bar. These include vapor pressures, some orthobaric densities away from the critical region, and specific heats in the single and two phase regions. A nonanalytic equation of state is used to tabulate thermophysical properties along isobars. The tables include: compressibility factors, densities, enthalpies, entropies, heats of vaporization, isochores, isotherms, Joule-Thomson inversion, orthobaric densities, specific heats, speeds of sound, and vapor pressures. The data also are represented by an analytic equation of state and comparisons are made between some results from the two equations.

Key Words: Compressibility factors; densities; enthalpies; entropies; equation of state; heats of vaporization; isobars; isochores; isotherms; Joule-Thomson inversion; nitrogen trifluoride; orthobaric densities; specific heats; speeds of sound; vapor pressures.

1. INTRODUCTION

The purpose of this work has been to perform P-ρ-T and heat capacity measurements needed to develop equations of state, and then to report both the equations and tables of thermodynamic properties, including the computer programs.

The triple-point temperature was reported at 66.36 K by Pierce and Pace in 1954 [15]. In 1955 they reported vapor pressures and specific heats of the liquid up to the normal boiling point, and the heat of vaporization at the normal boiling point, (11587 $\pm$ 22 J/mol) at 144.093 K, corrected for the ice-point 273.15 K, and molecular weight on the C^{12} scale) [16]. In 1956 Jarry and Miller reported vapor pressures up to their observed critical-point at 233.9 $\pm$ 0.1 K, as well as densities of the saturated liquid from 78 to 170 K [11]. Some P-ρ-T compressibility data were reported privately by E. A. Burns (1975) [1], and by E. M. Van der Waal and R. E. Anderson (1977) [1]. The range is $273 < T < 344$ K, $21 < P < 200$ atm, $0.14 < \rho/\rho_c < 1.48$.

Thermodynamic functions for ideal gas states appeared in the JANAF Thermochemical Tables in 1969 [2]. Thermodynamic properties over the P-ρ-T surface were computed by Seshadri, et al. in 1970 by use of some of the above

data and a Martin-Hou equation of state in which all parameters were estimated from simple physical properties [18].

At the start of present work, apparently no experimental compressibility data existed below 273 K. There were no experimental densities for saturated liquid above 170 K in the all-important critical region, and no such densities whatsoever for the saturated vapor. No virial equation of state was found for low-density gas. No saturated liquid specific heat data existed above the normal boiling point and there were no data at all for the single-phase fluid.

The present report includes results of experimental and computational work. The PVT compressibility measurements are described in a manuscript by Goodwin [7] for the range 90 to 320 K at pressures to 300 bar. Table 5 presents a comparison of these data with the nonanalytic equation of state. Specific heat measurements, for the saturated and compressed liquid up to 300 K, are described in a manuscript by Weber [22].

In the following we at first give a full description of development of the nonanalytic equation of state and of the computation of thermodynamic properties tabulated in this report. The specific heat measurements are described where appropriate, and the analytic, BWR-type of equation of state [10] is described in Sections 3.5 and 5.5. Finally, some comparisons are made between experimental and calculated data from the two equations of state, and also between calculated thermodynamic properties from the two equations.

In present work, we have derived second virial coefficients from 200 through 320 K. Vapor pressures have been measured from 160 K (2.75 bar) up to the critical point at 234 K (44.607 bar), and data have been derived via thermal loops from the triple- to the normal boiling-point (144 K). Some orthobaric densities have been derived at temperatures well below the critical. Apparent gravitational effects in our P-ρ-T data near the critical point preclude accurate extrapolation of experimental isochores to the vapor pressure curve in the critical region.

We have formulated the vapor pressures and orthobaric densities from the triple- to the critical-point, and then have developed the highly constrained, nonanalytic equation of state via our P-ρ-T data. This equation has the valuable property for thermodynamic computations that it is structured to be consistent with the known behavior of specific heats about the critical point. We also have fit an analytic 32-term Benedict-Webb-Rubin (BWR) equation, useful for many applications, to the P-ρ-T and specific heat data.

We subsequently formulate the available, ideal gas specific heats. We derive heats of vaporization via thermal loops from the triple- to the boiling-point, and via the Clapeyron equation up to the critical temperature, and formulate these data, to obtain enthalpies, entropies, and specific heats of the saturated liquid, and finally a complete thermodynamic network over the P-ρ-T surface. We then compare results from the analytic and nonanalytic equations.

The commercially purified NF_3 for the PVT work is 99.925 percent pure, and 99.90 percent for the specific heat measurements. Apparatus and the data-reduction programs for PVT work are the same as modified by G. C. Straty in prior work on ethylene [19]. The sample cell is 12.5 cm high, with a volume of about 28.5 cm^3. It is connected to a pressure transducer via a very small stainless steel capillary tube, brought out through the walls of the cryostat at a height within about 5 cm above the top of the cell (to avoid corrections for hydrostatic pressures in the former, vertical capillary). The transducer was maintained at 330 K.

Symbols and units for this report are in Appendix A, and fixed-point values in Appendix B. Computer programs are in Appendices C and D. The density-temperature phase diagram is outlined in fig. 1, where the upper left corner shows the qualitative behavior of freezing liquid densities. Explanations for table headings are in Appendix E.

2. PHYSICAL PROPERTIES

2.1 Fixed-Point Values

These values are listed in Appendix B.

(a) The Triple Point. The temperature used is from Pierce and Pace by subtracting 0.01 K for the ice-point [15]. This choice was made before our subsequent redetermination yielded a value 0.1 K higher [22]. The pressure is from our vapor-pressure eq. (1). The liquid density is assigned as a fitting parameter in eq. (2). The vapor density from eq. (3) is based on data derived from the vapor-pressure and virial equations.

(b) The Boiling Point. The temperature of 144.0935 K is from the vapor-pressure eq. (1) at a pressure of 1 atm = 1.01325 bar, as compared with 144.10 K reported by Jarry and Miller [11]. The liquid and vapor densities are from eqs. (2) and (3).

(c) The Critical Point. The temperature, 234.0 K, is selected for fitting estimated orthobaric densities and P-ρ-T data, as compared with 233.9 $\pm$ 0.1 K

observed directly by Jarry and Miller [11]. The density, 7.92 mol/L, has been selected by the condition that, at the critical point, the slope of the critical isochore (from the equation of state) be equal to the slope of the vapor-pressure equation, $\partial P/\partial T = dP_\sigma/dT$. The critical pressure is from the vapor-pressure eq. (1).

2.2 Vapor Pressures and Melting Pressures

(a) Vapor Pressures. Vapor pressures from the triple- to the boiling-point have been estimated via thermal loops as described in refs. [3,4], and in Program Ziegler, Appendix C. This computation yields also densities of the saturated vapor, and heats of vaporization. Information used includes the ideal gas specific heats, eq. (7); the virial eq. (4); specific heats of the saturated liquid [16]; and the heat of vaporization at the normal boiling point [16]. Vapor pressure above the boiling point have been measured directly, as reported in table 1. The data are formulated by use of the argument $x \equiv T/T_c$,

$$\ell n(P) = a + b/x + c \cdot x + d \cdot x^2 + e \cdot x^3 + f \cdot x\,(1 - x)^\varepsilon \quad , \qquad (1)$$

where P is in bar, $\varepsilon = 1.75$, and

a = 20.3154 17602	d = 20.1621 94616
b = - 8.3620 69370	e = - 6.9186 62727
c = -21.3989 86401	f = 3.6777 99376

Under heading ID in table 1 is given the source of data for each line, as specified at the top of this table. Heading DPS/DT is for calculated slopes of the vapor-pressure curve in bar/K. The calculated critical-point pressure (at 234.0 K) is 44.60713 bar, and the critical-point slope is 1.24509 bar/K. Data from other sources are given for comparison at the bottom of table 1. From about 2 bar up to the critical point, the vapor pressures of Jarry and Miller exceed ours by several percent. They used a 1000 psi Bourdon gage accurate to 0.25 percent of full scale, whereas we used a piston-type, oil dead-weight gage.

The last column of table 1 gives the experimental residual,

$$\ell n(P/P_t)/\ell n(P_c/P_t) - (1 - T_t/T)/(1 - T_t/T_c) \quad ,$$

which has been used in the past to develop the extended, nonanalytic vapor-pressure equation.

At the normal boiling point (144.0935 K) the vapor-pressure slope from eq. (1) is $dP_\sigma/dT = 0.070882$ bar/K. The Clapeyron equation, with orthobaric

densities from eqs. (2) and (3) below, yields a derived heat of vaporization, Q_{vap} = 11.583 kJ/mol, as compared with the experimental value 11.587 + .022 kJ/mol of Pierce and Pace [16], (adjusted to the C^{12} molecular weight scale).

(b) Melting Pressures. No data have been found for pressure vs. temperature at the liquid-solid equilibrium of NF_3, i.e., the melting line. This boundary is used here in the tables of functions along isobars merely as a low-temperature limit for the tabulations, and for convenience we have substituted the reduced Simon equation for methane, $P = P_t + P_o \cdot [(T/T_t)^{\epsilon} - 1]$, with P_o = 1909.40 bar, ϵ = 1.85, and P_t, T_t for NF_3.

2.3 The Orthobaric Densities

We have used the present nonanalytic equation of state (which incorporates the vapor-pressure equation) to describe pressure vs. T along experimental pseudo-isochores. For a given density (isochore) it is necessary merely to find the coexistence temperature, $T_\sigma(\rho)$, by iteration for a best "fit" of these data [5], as follows from eq. (6) below for a fixed density (and assuming values of non-linear parameters from preliminary work) -

$$[P - P_\sigma(T_\sigma) - \rho R^* \cdot (T - T_\sigma)]/(\rho^2 R^* T_c) = B \cdot \Phi(\rho, T, T_\sigma) + C \cdot \Psi(\rho, T, T_\sigma) \quad ,$$

wherein B and C are least-squares coefficients for a given density. At densities in the range roughly $\rho_c \pm 30$ percent, the results are unacceptable, but their qualitative behavior suggests gravitational effects on the P-ρ-T data in the critical region, by comparison with published studies of this effect [14,20,23]. The critical density of NF_3, 0.562 g/cm^3, is large relative to that of many simple substances, e.g., 0.16 g/cm^3 for methane.

The behavior of orthobaric densities about the critical point is well known to be described by a term $|T - T_c|^{\epsilon}$ where traditionally the exponent was ϵ = 1/3, and more recently ϵ = 0.35 [17]. In the following representations of the orthobaric densities we use ϵ = 1/3, and a minimum of coefficients by use of data well-removed from the critical temperature.

(a) Saturated Liquid Densities. In table 2 our derived densities are identified by ID = 900^+, wherein the last two digits are the sequence number of the experimental pseudo-isochore run. The extensive data set of Jarry and Miller from 78 to 170 K at ID = 6 is included with a low weighting. Our calculated densities are roughly 0.4 percent greater than theirs. As the accuracy in each set is believed to be $\pm$ 0.1 percent, the reader of this report

must assume an uncertainty of 0.2 percent about the mean. Our densities are essential for our equation of state in the compressed liquid region. In table 2 the heading X is for $x(T) \equiv (T_c-T)/(T_c-T_t)$, and DDS/DT is for slope of the saturated liquid curve in (mol/L)/K. We represent these densities by use of the further reduced variable, $y(\rho) \equiv (\rho-\rho_c)/(\rho_t-\rho_c)$,

$$y = x + (x^{\varepsilon} - x)\, f(T), \qquad f(T) \equiv a + b \cdot \exp[2 \cdot (1 - T_c/T)] , \quad (2)$$

where $\varepsilon = 1/3$, and

$$a = 0.7543\ 77410, \qquad b = 0.0279\ 75083.$$

The experimental residual, $(y-x)/(x^{\varepsilon}-x)$, in the last column of table 2 was used to develop a functional form for f(T).

(b) Saturated Vapor Densities. In table 3 our densities derived via thermal loops are identified by ID = 43, and results via isochores, the vapor-pressure equation and the equation of state by ID = 900^{+}. Our recent formulation yields a compressibility factor for saturated vapor which approaches unity at low densities, by use of the vapor-pressure equation [4]. Let $A_o \equiv (Z_c-1)$ where Z_c is value of the compressibility factor at the critical point, and define the variables,

$$\pi(T) \equiv P_\sigma(T)/P_c, \qquad x(T) \equiv T/T_c, \qquad u(T) \equiv 1 - x \ .$$

The saturated vapor densities, $d_g \equiv P_\sigma(T)/[Z_\sigma(T)\ R\ T]$, then are described by

$$Z_\sigma(T) = 1 + A_o \cdot \pi \cdot x^{-2} \cdot f(x) , \quad f(x) \equiv 1 + a \cdot u^{\varepsilon} + b \cdot u + c \cdot u^2, \quad (3)$$

with

$$\varepsilon = 1/3 \qquad b = 0.3800\ 17523$$
$$a = -0.7109\ 56694 \qquad c = 1.6228\ 47586$$

The seventh and eighth columns of table 3 give experimental and calculated values of the compressibility factor for saturated vapor. The next-to-last column gives the experimental values, $F(Z) \equiv (Z-1) \cdot x^2/[A_o \cdot \pi]$, used to develop a functional form for f(x). Very small inaccuracies in low-density data yield large relative errors in the experimental values of (Z-1). The last column of table 3 gives the slope of the saturated vapor densities curve in (mol/L)/K.

2.4 Second Virial Coefficients

The truncated virial equation of state (for gas at densities roughly below $\rho_c/5$) may be arranged to

$$(Z - 1)/\rho = B(x) + C(x)\cdot\rho + \ldots \qquad (4)$$

in which we use reduced variables $x \equiv T/T_c$, $\rho \equiv d/d_c$. With P-ρ-T data along seven isotherms from 200 thru 320 K we have obtained values for the second and third virial coefficients, B(x) and C(x), by least squares. Results for C(x) are not highly regular, but for B(x) they are formulated as follows,

$$B(x) = B_1 + B_2/x + B_3/x^3 \ , \qquad (5)$$

B_1 = 0.4938 2731 $\qquad$ B_3 = -0.3898 3811

B_2 = -1.3097 2686

In table 4, column B(T) is the second virial coefficient in cm^3/mol, whereas B^* is the dimensionless value B(x) in eq. (4). This equation with C(x) = 0 was used for the thermal loop computations [3,6] to obtain the density at any given (P,T), and to obtain ΔH and ΔS by integration along isotherms from ideal gas states up to the derived, saturated vapor boundary at temperatures up to the normal boiling point.

2.5 The Nonanalytic Equation of State

This isochoric equation is modified from those described earlier [3,4,5,6]. It is constrained to a given liquid-vapor coexistence boundary, and yields a maximum in isochoric specific heats at the critical point. It is adjusted to our compressibility data in table 5. Data of Burns and of Van der Waal are not used for the adjustment.

At the critical point the derivatives $\partial\rho/\partial T$ and $\partial\rho/\partial P$ become infinite for any pure fluid. The slightest error in experimental pressures due to gravitational effects therefore will correspond to gross deviations of density in the critical region, as is well known. In present work, P-ρ-T data in the critical region are given a low weighting, where density deviations are several percent.

The form of this nonanalytic equation is

$$P - P_\sigma(\rho) = \rho R^*\cdot[T - T_\sigma(\rho)] + \rho^2 R^* T_c\cdot F(\rho,T) \ , \qquad (6)$$

$$F(\rho,T) \equiv B(\rho)\cdot\Phi(\rho,T) + C(\rho)\cdot\Psi(\rho,T) \ , \qquad (6a)$$

in which, for any given density (isochore), the liquid-vapor coexistence temperature, $T\sigma(\rho)$, is obtained by iteration from eqs. (2) and (3) for the

orthobaric densities, and the vapor pressure, $P_\sigma[T_\sigma(\rho)]$, thus is a function of density. The temperature-dependent functions in eq. (6a) are

$$\Phi(\rho,T) \equiv x^{1/2}\cdot \ell n[T/T_\sigma(\rho)] \quad , \tag{6b}$$

$$\Psi(\rho,T) \equiv \psi(\rho,T) - \psi_\sigma(\rho) \quad , \tag{6c}$$

where $\psi_\sigma(\rho)$ is obtained from $\psi(\rho,T)$ merely by replacing T with $T_\sigma(\rho)$,

$$\psi(\rho,T) \equiv \delta\cdot f_1(T) + (1 - \delta)\cdot f_2(\rho,T) \quad , \tag{6d}$$

$$f_1(T) \equiv \exp[\varepsilon\cdot(1 - x)] \quad , \tag{6e}$$

$$f_2(\rho,T) \equiv 1 - (\omega - \omega^\eta/\eta)/(1 - 1/\eta) \quad . \tag{6f}$$

The parameter, $0 \leq \delta \leq 1$, in eq. (6d) is for relative weighting of the analytic and nonanalytic parts, and --

$$\omega(\rho,T) \equiv [1 - \theta(\rho)/T] \quad , \tag{6g}$$

where $\theta(\rho)$ is a locus of temperatures inside the coexistence envelope

$$\theta(\rho) \equiv T_\sigma(\rho)\cdot\exp[-\alpha\cdot f(\rho)] \quad , \tag{6h}$$

$$f(\rho) \equiv |\rho - 1|^3/(\rho_t - 1)^3 \quad , \tag{6i}$$

and ρ_t is reduced density of liquid at the triple point. The density-dependent coefficients in eq. (6a) are

$$B(\rho) \equiv B_1 + B_2\cdot\rho + B_3\cdot\rho^2 \quad , \tag{6j}$$

$$C(\rho) \equiv (C_1 + C_2\,\rho)\cdot(\rho - 1)\cdot\exp(-\gamma\cdot\rho^m) \quad . \tag{6k}$$

Parameters and least-squares coefficients of (6) for NF_3 are

$$\alpha = 1,\ \gamma = 1,\ \delta = 1/2,\ \varepsilon = 1,\ \eta = 1.10,\ m = 1,$$

B_1 = 0.5519 9813 920 $\qquad$ C_1 = 0.7406 7409 894

B_2 = 0.1326 8809 584 $\qquad$ C_2 = 0.2937 5371 520

B_3 = 0.2060 8495 802

The overall "fit" of present P-ρ-T data is not sensitive to small relative changes in the non-linear parameters, excepting $\eta = 1.10$, which value was not explored. Table 6 gives behavior of coefficients $B(\rho)$, $C(\rho)$.

In present work the assigned critical density was varied to obtain a critical isochore (from the equation of state) having a slope at the critical point equal to that of the vapor-pressure equation, $\partial P/\partial T = dP_\sigma/dT$. Following this, these two slopes at the critical point were constrained to equality via the least-squares program [9,12]. This procedure leads to a critical isotherm free of negative slopes, $(\partial P/\partial \rho)_{T_c}$, as shown in table 7.

The sign of the curvatures of isochores, $\partial^2 P/\partial T^2$, at the coexistence boundary [$T = T_\sigma(\rho)$], is determined uniquely by the sign of $C(\rho)$ because $\partial^2 \Phi/\partial T^2 = 0$ on this boundary. The present compressed liquid isochores for NF_3 have positive curvatures $\partial^2 P/\partial T^2$ up to the highest densities (lowest temperatures) measured experimentally, in contrast to experience with other, simple cryogenic fluids. This behavior is obtained from the equation of state via the positive values of $C(\rho)$ at high densities as seen in table 6.

2.6 The Ideal Gas Functions

We have formulated specific heats $C_p^o(T)$ for NF_3 from the JANAF tables [2] as follows, using $x \equiv T/100$,

$$C_p^o(T)/R = 4 + \exp(-\varepsilon/x) \cdot \sum_{i=1}^{5} A_i \cdot x^{1-i} \quad , \qquad (7)$$

where,

$\varepsilon = 8.76$ $\qquad$ $A_3 = 228.231\ 405$

$A_1 = 6.118\ 9724$ $\qquad$ $A_4 = -249.067\ 052$

$A_2 = 48.162\ 6880$ $\qquad$ $A_5 = 564.293\ 045$

Table 8 shows the "fit" of data used. The calculated values of $(H^o - H_o^o)$ and of S^o are obtained by numerical integrations, starting at T = 300 K. Table 9 gives interpolated values at integral temperatures.

2.7 The Heats of Vaporization

Table 10 shows the "fit" of data used for NF_3. Those below the boiling-point at ID = 39 we derived via thermal loops as described above, and those at ID = 40 are via the Clapeyron equation. Unpublished, estimated data from the Aerojet Company [1] are given last for comparison, ID = 23. The formulation of these data uses argument $x(T) \equiv (T_c - T)/(T_c - T_t)$,

$$Q_{vap}/Q_t = x + (x^{\varepsilon} - x)\cdot[a + b\cdot x + c\cdot x^2] \quad , \qquad (8)$$

where $\varepsilon = 0.38$, and

Q_t = 14.548 kJ/mol b = 0.2695 36103

a = 0.9982 47122 c = -0.4050 10672

The experimental residual in the last column of table 10 is

$$[Q_{vap}/Q_t - x]/(x^{\varepsilon} - x) \quad .$$

2.8 Specific Heats of Saturated Liquid

Specific heats, $C_\sigma(T)$, along the saturated liquid path, are needed as a base to compute specific heats in compressed liquid states. The techniques described here were developed before the measured data of Weber [22] were available, and they were used to produce the values given in tables 14 and 15. Starting with the ideal gas functions $S^o(T)$, we have used the equation of state and the heats of vaporization to tabulate $S_\sigma(T)$ for the saturated liquid at 35 temperatures from the triple- to the critical point. These are represented in J/mol/K with an rms relative deviation of 0.002 percent by use of $x(T) \equiv T/T_c$, $u(T) \equiv (1-x)$,

$$S_\sigma(T) - S_c = A_1\cdot u^{\varepsilon} + A_2\cdot \ell n(x) + \sum_{i=3}^{7} A_i\cdot u^{i-2} \quad , \qquad (9)$$

where $\varepsilon = 0.33$, and

S_c = 197.03182 J/mol/K A_4 = - 16.4628 7979

A_1 = - 27.0414 1165 A_5 = 241.1959 696

A_2 = 168.4875 348 A_6 = -288.5828 349

A_3 = 117.5913 487 A_7 = 230.9162 107

The specific heats for saturated liquid follow from the relation $C_\sigma(T) = T\cdot dS_\sigma/dT$, in J/mol/K,

$$C_\sigma(T) = -\varepsilon\cdot A_1\cdot x\cdot u^{\varepsilon-1} + A_2 - x\cdot \sum_{i=3}^{7} (i-2)\cdot A_i\cdot u^{i-3} \quad . \qquad (10)$$

Calculated values for $C_\sigma(T)$ appear in the eighth column of page two of table 14.

2.9 Specific Heats at Constant Volume

The specific heat at constant volume, $C_v(\rho,T)$, may be calculated from the equation of state and the ideal gas properties by methods outlined in Secion 3. Recently, new experimental data for specific heats have been published by one of us [22]. Since this quantity is a measure of the temperature variation of the state properties (E,H,S) a comparison between calculated and experimental values is useful for estimating uncertainties. Such a comparison with the nonanalytic and with the analytic equation of state is given in fig. 3 and in table 17.

2.10 The Analytic Equation of State

For many purposes it is convenient to use an analytic equation of state to represent the properties of a substance. Here we have used the 32 term BWR equation reported by Jacobsen [10], which has the form,

$$
\begin{aligned}
P = {} & \rho RT + \rho^2(A_1T + A_2T^{1/2} + A_3 + A_4/T + A_5/T^2) \\
& + \rho^3(A_6T + A_7 + A_8/T, + A_9/T^2) \\
& + \rho^4(A_{10}T + A_{11} + A_{12}/T) \\
& + \rho^5(A_{13}) \\
& + \rho^6(A_{14}/T + A_{15}/T^2) \\
& + \rho^7(A_{16}/T) \\
& + \rho^8(A_{17}/T + A_{18}/T^2) \\
& + \rho^9(A_{19}/T^2) \qquad (11) \\
& + e^{-\gamma\rho^2}\,[\rho^3(A_{20}/T^2 + A_{21}/T^3) \\
& \qquad + \rho^5(A_{22}/T^2 + A_{23}/T^4) \\
& \qquad + \rho^7(A_{24}/T^2 + A_{25}/T^3) \\
& \qquad + \rho^9(A_{26}/T^2 + A_{27}/T^4) \\
& \qquad + \rho^{11}(A_{28}/T^2 + A_{29}/T^3) \\
& \qquad + \rho^{13}(A_{30}/T^2 + A_{31}/T^3 + A_{32}/T^4)]
\end{aligned}
$$

The parameters are given in table 16 and a listing of the program and subroutines used is given in Appendix D. From the listing it is seen that all of the thermodynamic properties may be calculated quickly and conveniently in closed form as functions of the density and temperature. Since the equation is explicit in pressure, the density must be found by iteration. The FUNCTION FINDD in the appendix is used for this purpose. This equation of state, with 32 adjustable parameters, is much more flexible than the nonanalytic equation; therefore, a large body of precise data is necessary to insure proper behavior. In addition it should not be extrapolated far beyond the bounds of the data, particularly in the direction of higher densities. On the other hand, since the derived properties can be expressed directly in terms of the parameters, other data such

as the specific heats may be included in the fitting process by making use of multiproperty fitting techniques such as described by Hust and McCarty [9].

In applying the equation to NF_3 we used the 225 P-ρ-T data of Goodwin [7], 25 points on the saturation boundary calculated from the relations in Section 2.3 above, a few high density points in the compressed liquid between the triple point and 90 K calculated from the nonanalytic equation, 47 single phase specific heats, C_v, and 101 saturated liquid specific heats, C_σ, from ref. [22]. We also included some calculated data which help to insure that the chemical potential is the same for the saturated liquid and vapor at a given temperature, in other words that $\Delta H = T\Delta S$ across the two phase boundary. These data make use of the vapor pressure and orthobaric density equations in Sections 2.2 and 2.3. In addition the equation is constrained to the critical point, and the derivatives $(\partial P/\partial\rho)_T$ and $(\partial^2 P/\partial\rho^2)_T$ are constrained to be zero at the critical point.

This equation, like all analytical equations, does not fit the data well in the critical region. The average absolute deviation in density is 0.50 pct when all of the data are considered. If the deviations of the points in the range 235 - 240 K and $\rho_c \pm 28$ percent are not counted, the average absolute deviation drops to 0.14 percent. The average absolute deviation from the C_v data is 0.97 pct and for the C_σ data it is 1.42 pct, which are quite reasonable for this type equation. Some typical deviations are shown in figs. 2 and 3.

3. COMPUTATIONAL METHODS
(Nonanalytic Equation of State)

The numerical values for E and H in this report are based on the assigned value, E = 0 at the liquid triple-point, obtained by use of the arbitrary value, E_o^o = 12340.685 J/mol, for ideal gas at T = 0. Specific heats of Pierce and Pace [16] could be integrated to give the solid at T = 0 as reference state.

3.1 The Homogeneous Domain

The homogeneous domain of fig. 1 includes all regions which can be attained along isotherms starting at zero density without crossing the vapor-liquid "dome," and without passing very close to the critical point at $T \geq T_c$.

We start our computations with ideal gas thermodynamic functions at zero density, and then integrate along isotherms by use of the equation of state in the following relations,

$$\Delta E = \int [P - T\cdot(\partial P/\partial T)]\cdot d\rho/\rho^2 \quad , \tag{12}$$

$$\Delta C_v = -T\cdot\int(\partial^2 P/\partial T^2)\cdot d\rho/\rho^2 \quad , \tag{13}$$

$$\Delta S = R\cdot\ell n[P^o/(\rho RT)] + \int[R - (\partial P/\partial T)/\rho]\cdot d\rho/\rho \quad , \tag{14}$$

Equation (14) is for use with initial entropies in hypothetical ideal gas states at P^o = 1 atm. For all other initial states we use

$$\Delta S = -\int(\partial P/\partial T)\cdot d\rho/\rho^2 \quad . \tag{14a}$$

In each (ρ,T) state, reached by above integrations, we compute

$$H = E + P\cdot v \quad , \tag{15}$$

$$C_p = C_v + T\cdot(\partial P/\partial T)^2/(\partial P/\partial\rho)/\rho^2 \quad , \tag{16}$$

$$W^2 = C_p\cdot(\partial P/\partial\rho)/C_v \quad . \tag{17}$$

3.2 The Saturated Liquid

At temperatures from the triple point up to the critical point, we first obtain thermofunctions for the saturated vapor via eqs. (12) through (15). We then use eq. (8) for the heat of vaporization, Q_{vap}, to compute

$$\Delta H = -Q, \quad \Delta S = \Delta H/T \quad , \tag{18}$$

such that the free energy of vaporization, $\Delta F = \Delta H - T\cdot\Delta S$, is zero. Having obtained H and S for the saturated liquid, we compute $E = H - P\cdot v$.

The single-phase specific heat, $C_v(\rho,T)$, at the saturated liquid boundary is obtained via eq. (10) for $C_\sigma(T)$ and the thermodynamic relation,

$$C_v(\rho,T) = C_\sigma(T) + T\cdot(\partial P/\partial T)\cdot(d\rho_\ell/dT)/\rho_\ell^2 \quad , \tag{19}$$

where ρ_ℓ is density of the saturated liquid. Values for $C_p(\rho,T)$ and $W(\rho,T)$ on this boundary follow from eqs. (16) and (17). For liquid at the boiling point we have obtained.

T_b = 144.0935 K, H_b = 5 538.1 J/mol,
E_b = 5 533.4 J/mol, S_b = 147.694 J/mol/K.

3.3 The Compressed Liquid

Starting with above values for E, S, and C_v on the saturated liquid boundary, we use eqs. (12), (13), and (14a) to integrate along isotherms, and then obtain H, C_p, and W via eqs. (15), (16), and (17).

3.4 Subroutine THERMO

In Appendix C, we have prepared a Subroutine, THERMO, for convenience to the reader in computing properties at any random, (P,T) point. ENTRIES at the bottom of this subroutine are given for the two-phase boundaries, in which the independent variable is pressure. The present computational method of integration along isotherms cannot be used on or very near the critical isotherm to obtain C_v, C_p, or W at supercritical densities or pressures, because the specific heats pass through infinity at the critical point.

3.5 Computations With the Analytic Equation

Calculation of the thermodynamic properties by means of the analytic equation is extremely simple. Relations (12-17) are used for this purpose. If, as indicated in Section 2.10, data are included to influence the equation to yield a constant chemical potential across the gas-liquid boundary, we can then perform the integrations indicated in eqs. (12-17) right through the two phase region in closed analytical form, without reference to heats of vaporization or vapor pressures. Examples illustrating these calculations are given in the program listing in the appendix.

4. COMMENTS

It is well known that extremely accurate physical properties data are needed for thermodynamic properties computations. In present work we see inherent deficiencies in P-ρ-T data near the critical point due, we believe, to gravity. For this the only remedy apparently is specialized apparatus, because no simple computational procedure is available to make corrections [14].

The orthobaric densities in the critical region are especially important for the Clapeyron equation, and for the present highly-constrained equation of state. They should be measured directly by methods such as those used by Weber [21] or Haynes [8].

Heats of vaporization also always are needed over the widest practical temperature range, and it is obvious also, that a Burnett-type determination of virial coefficients is needed, especially for lower temperatures and densities than available in present work.

The above deficiencies lead to a diminished accuracy, but not to irregularities or inconsistencies with the present, nonanalytic equation of state, as seen by inspecting derivatives of the P-ρ-T surface in tables 7, 11, 12, 14, and 15.

5. TABLES OF PHYSICAL AND THERMODYNAMIC PROPERTIES

5.1 Calculated P-ρ-T Isochores and Isotherms

Tables 11 and 12 give a selection of isochores and isotherms computed by equation of state (6). These are essential to examine behavior of the P(ρ,T) surface. They are a useful supplement to the isobars of table 15 for interpolating P-ρ-T values and their derivatives.

5.2 The Joule-Thomson Inversion Locus

Table 13 gives the P-ρ-T locus of the J.-T. inversion, $(\partial T/\partial P)_H = 0$, obtained from equation of state (6) under the condition $T\,(\partial P/\partial T) = \rho\,(\partial P/\partial \rho)$. This table has been computed to temperatures well above those of P-ρ-T data, to show a maximum in P-T coordinates. In this table under heading DI are given the initial densities used to start the iteration for density in heading MOL/L. We thus know that convergence is attained within present limits of DI $\pm$ 3.2 mol/L, Subroutine JTLOCUS.

5.3 Thermophysical Properties of the Saturated Liquid

Table 14 gives physical and thermodynamic properties of saturated liquid, computed by methods of Section 3, using eq. (6). Column headings are interpreted on the first page of this table.

5.4 Thermophysical Properties Along Selected Isobars

Table 15 gives physical and thermodynamic properties on isobars, computed by methods of Section 3, using eq. (6). Explanations for this table are given on the first page. This table is extrapolated below the minimum temperature (90 K), and above the maximum pressure ($\sim$ 300 bar) of P-ρ-T data used for adjusting the equation of state.

5.5 Results From the Analytic Equation

The derived properties may be calculated from the analytic equation by making use of the subroutines given in Appendix D. A sample program is also included there to illustrate the proper method of utilizing the subroutines. Detailed calculated results are not tabulated in this report because of the space requirements. However, table 17 gives a comparison of several of the derived

properties calculated via the analytic and nonanalytic equations. Since the zero for enthalpy is arbitrary, the equations were adjusted to give the same value for the liquid at the triple point.

Table 17 compares properties computed via the nonanalytic eq. (6) with properties via the BWR-type eq. (11). At given pressures and temperatures, table 17 presents differences [eq. (6) minus eq. (11)] of density in percent; of enthalpy (J/mol); of entropy (J/mol/K); and of the specific heats, C_v, C_p, in percent. These comparisons serve to indicate the uncertainties in the derived results.

Figure 2 presents a comparison of the deviations of experimental densities from calculated values obtained via the two equations of state: open circles for the nonanalytic equation and filled circles for the BWR-type equation. The greatest relative deviations of several percent, from each equation, occur in the critical region near ρ_c = 7.92 mol/L, and T_c = 234.0 K. This behavior has been encountered often in work on other fluids.

Figure 3 presents a comparison of the deviations of experimental single-phase specific heats [22] from calculated values via the two equations of state: open circles for the nonanalytic equation, and filled circles for the BWR-type equation.

6. ACKNOWLEDGMENTS

The authors are indebted to many staff members of this research group for valuable suggestions. Robert D. McCarty contributed the essential least-squares program, providing for constraints. Finally, we express grateful appreciation for support of this work by the U.S. Air Force Weapons Laboratory.

7. REFERENCES

[1] Aerojet Liquid Rocket Co., unpublished report (Oct 28, 1977).

[2] Nitrogen Trifluoride (Ideal Gas), JANAF Thermochemical Tables, Dow Chemical Co., Midland, Michigan (Jun 30, 1969).

[3] Goodwin, R. D., Provisional thermodynamic functions of propane, from 85 to 700 bar, Nat. Bur. Stand. (U.S.), NBSIR 77-860 (Jul 1977).

[4] Goodwin, R. D., Modification of the nonanalytic equation of state for the limit of low densities, J. Res. NBS Nat. Bur. Stand. (U.S.) 83 (4), 325-27 (1978).

[5] Goodwin, R. D., The nonanalytic equation of state for pure fluids applied to propane, 176th National Meeting of the American Chemical Society, Miami Beach, Florida, Sept. 10, 1978. To appear in a volume of the Advances in Chemistry series.

[6] Goodwin, R. D., Isobutane: provisional thermodynamic functions from 114 to 700 K at pressures to 700 bar, Nat. Bur. Stand. (U.S.), NBSIR 79-1612 (Jul 1979).

[7] Goodwin, R. D., PVT Data and an Equation of State for Nitrogen Trifluoride, to be submitted to the Nat. Bur. Stand. (U.S.) J. Res.

[8] Haynes, W. M., Hiza, M. J. and Frederick, N. V., Magnetic Suspension Densimeter for Measurements on Fluids of Cryogenic Interest, Rev. Sci. Instrum. 47, No. 10, 1237 (1976).

[9] Hust, J. G. and R. D. McCarty, Curve-Fitting Techniques and Applications to Thermodynamics, Cryogenics 7, 200 (1967).

[10] Jacobsen, R. T., The Thermodynamic Properties of Nitrogen From 65 to 2000 K With Pressures to 10,000 Atmospheres, Doctoral Thesis, Washington, State Univ., 1972.

[11] Jarry, R. L. and Miller, H. C., The liquid density, vapor pressure, and critical temperature and pressure of nitrogen trifluoride, J. Phys. Chem. 60, 1412-13 (1956).

[12] McCarty, R. D., Least-squares computer subroutine, unpublished report, this laboratory (Jan 3, 1972).

[13] Menzel, W. and Mohry, F., The vapor tension of CF_4 and NF_3 and the triple point of CF_4, Z. anorg. allgem, Chem. 210, 257-63 (1933).

[14] Moldover, M. R., Sengers, J. V., Gammon, R. W. and Hocken, R. J., Gravity effects in fluids near the gas-liquid critical point, Rev. Modern Phys. 51 (1), 79-99 (1979).

[15] Pierce, L. and Pace, E. L., The triple point temperature of nitrogen trifluoride (66.37 K) as a possible fixed point, J. Chem. Phys 22, 1271 (1954).

[16] Pierce, L. and Pace, E. L., Thermodynamic properties of nitrogen trifluoride from 12 K to its boiling point. The entropy from molecular and spectroscopic data, J. Chem. Phys 23, 551-5 (1955).

[17] Rowlinson, J. S., Liquids and Liquid Mixtures, Butterworths Scientific Publications, London (1959); also second edition (1969).

[18] Seshadri, D. N., Viswaneth, D. S. and Kuloor, Thermodynamic properties of nitrogen trifluoride, Indian J. Technol. 8 (5), 153-60 (1970).

[19] Straty, G. C., PVT of compressed fluid ethylene, submitted to J. Chem. Thermodynamics, March 1979.

[20] Ulybin, S. A. and Malyshenko, The influence of the gravitational effect on the density of substances near the critical point, Advances in Thermophysical Properties at Extreme Temperatures and Pressures, Third Symposium, The Am. Soc. Mechanical Engrs, New York, New York (Mar 22, 1965).

[21] Weber, L. A., Density and Compressibility of Oxygen in the Critical Region, Phys. Rev. A 2, No. 6, 2379 (1970).

[22] Weber, L. A., Measurements of the Specific Heat, C_V, of Dense Gaseous and Liquid Nitrogen and Nitrogen Trifluoride, to be published.

[23] Weinberger, M. A. and Schneider, W. G., On the liquid-vapor coexistence curve of xenon in the region of the critical temperature, Can. J. Chem. 30, 422-37, 847-59, (1952).

Appendix A. Symbols and Units

Subscripts c and t refer to critical and liquid triple points.

Subscripts g and ℓ refer to saturated vapor and liquid.

Subscript σ refers to liquid-vapor coexistence.

$\alpha, \gamma, \delta, \epsilon, \eta$	non-linear parameters in the equation of state
$B(\rho)$, $C(\rho)$	density-dependent coefficients in the equation of state
$B^*(x)$	reduced second virial coefficient
$C_v(\rho,T)$	isochoric specific heat, (J/mol)/K
$C_p(\rho,T)$	isobaric specific heat, (J/mol)/K
$C_\sigma(T)$	molal heat capacity for saturated liquid, (J/mol)/K
d	density, mol/L
$E(\rho,T)$	the internal energy, J/mol
E_o^o	12,340.685 J/mol (arbitrary)
H_o^o	enthalpy for ideal gas state at T = 0
$H(\rho,T)$	the enthalpy, J/mol
J	the joule, 1 N-m
L	the liter, $10^{-3}m^3$
mol	71.0019 grams of NF_3 (C^{12} scale)
P	pressure in bar, 1 bar ≡ 10^5 N/m^2, (1 atm = 1.01325 bar)
$P_\sigma(T)$	the vapor pressure, bar
$P_\sigma(\rho)$	$P_\sigma[T_\sigma(\rho)]$, vapor pressure as function of density
$\Phi(\rho,T)$	function in the equation of state
$\Psi(\rho,T)$	function in the equation of state
R	the gas constant, 8.3145 (J/mol)/K, 0.083145 (bar-L/mol)/K
R^*	$(0.083145)\cdot d_c$, bar/K, for the equation of state
ρ	d/d_c, reduced density
$S(\rho,T)$	the entropy, (J/mol)/K
T	temperature, K (IPTS 68)
$T_\sigma(\rho)$	liquid-vapor coexistence temperature, K
$\theta(\rho)$	defined locus of temperatures, K
$\omega(\rho,T)$	$[1-\theta(\rho)/T]$, for the equation of state
$x(T)$	T/T_c, for the equation of state
$x(T)$	variously defined for other equations
$x_\sigma(\rho)$	$T_\sigma(\rho)/T_c$, reduced coexistence temperature
$Z(P,\rho,T)$	$P/(d\cdot R\cdot T)$, the "compressibility factor"

Appendix B. Fixed-Point Values Used for NF_3

	Triple Point	Boiling Point	Critical Point
Temperature, K	66.35	144.0935	234.0
Pressure, bar	$1.85425 \cdot 10^{-6}$	1.01325	44.60713
Density, mol/L			
Vapor	$3.3612 \cdot 10^{-7}$	$8.782 \cdot 10^{-2}$	7.92
Liquid	26.320	21.662	7.92

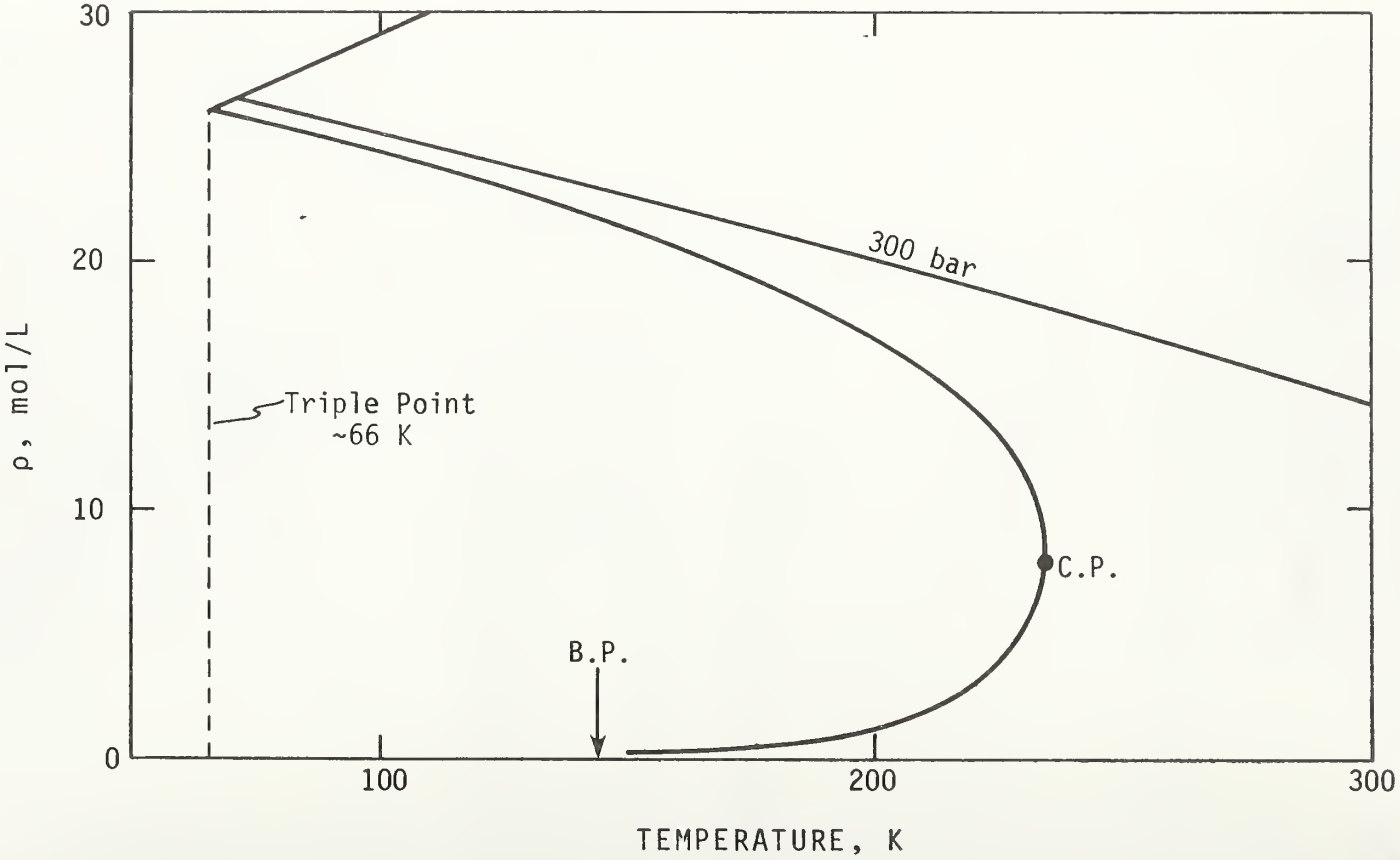

Figure 1. Density-Temperature Phase Diagram for Nitrogen Trifluoride.

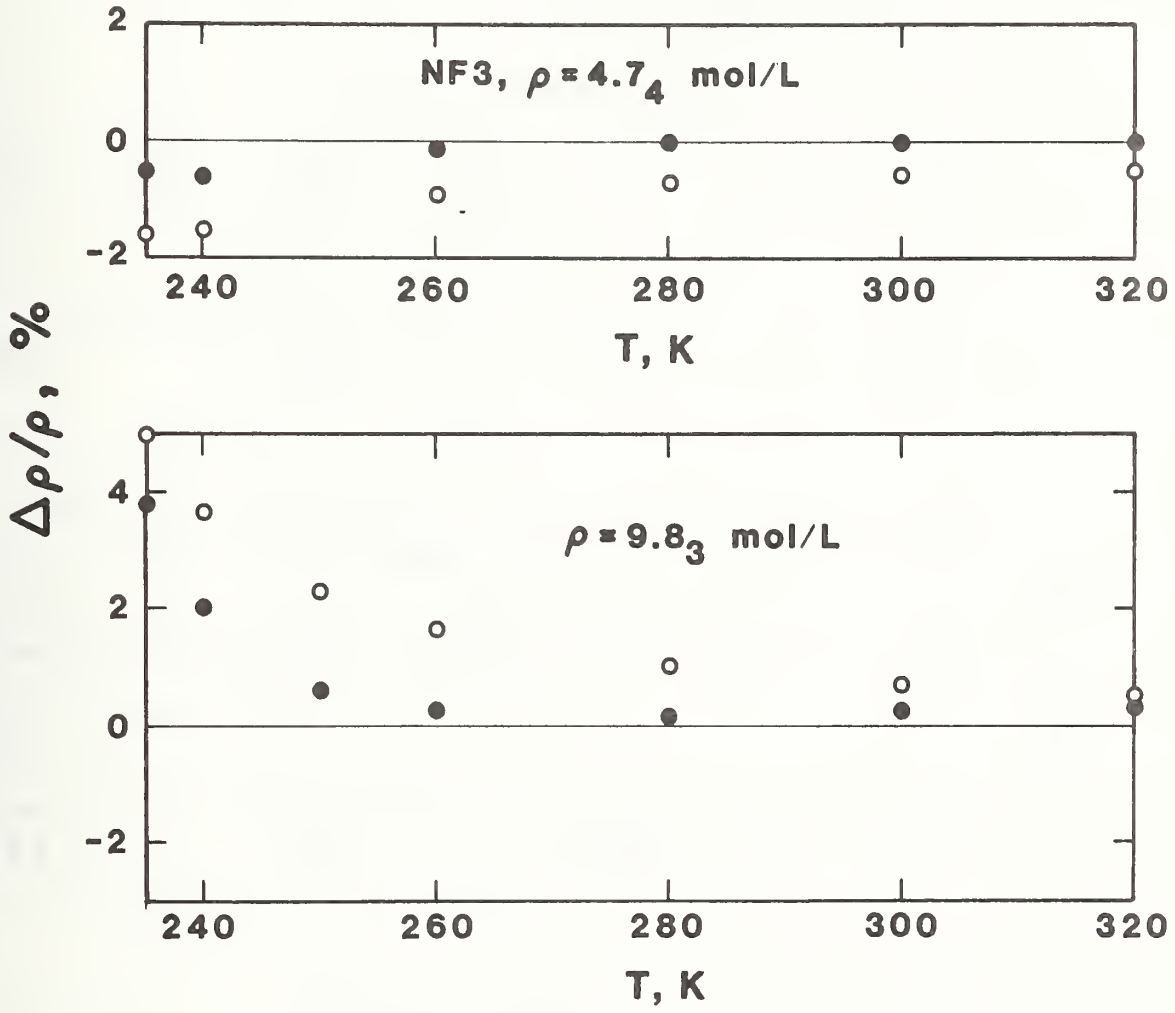

Figure 2. Comparisons of experimental with calculated densities: open circles for eq. (6); filled circles for eq. (11).

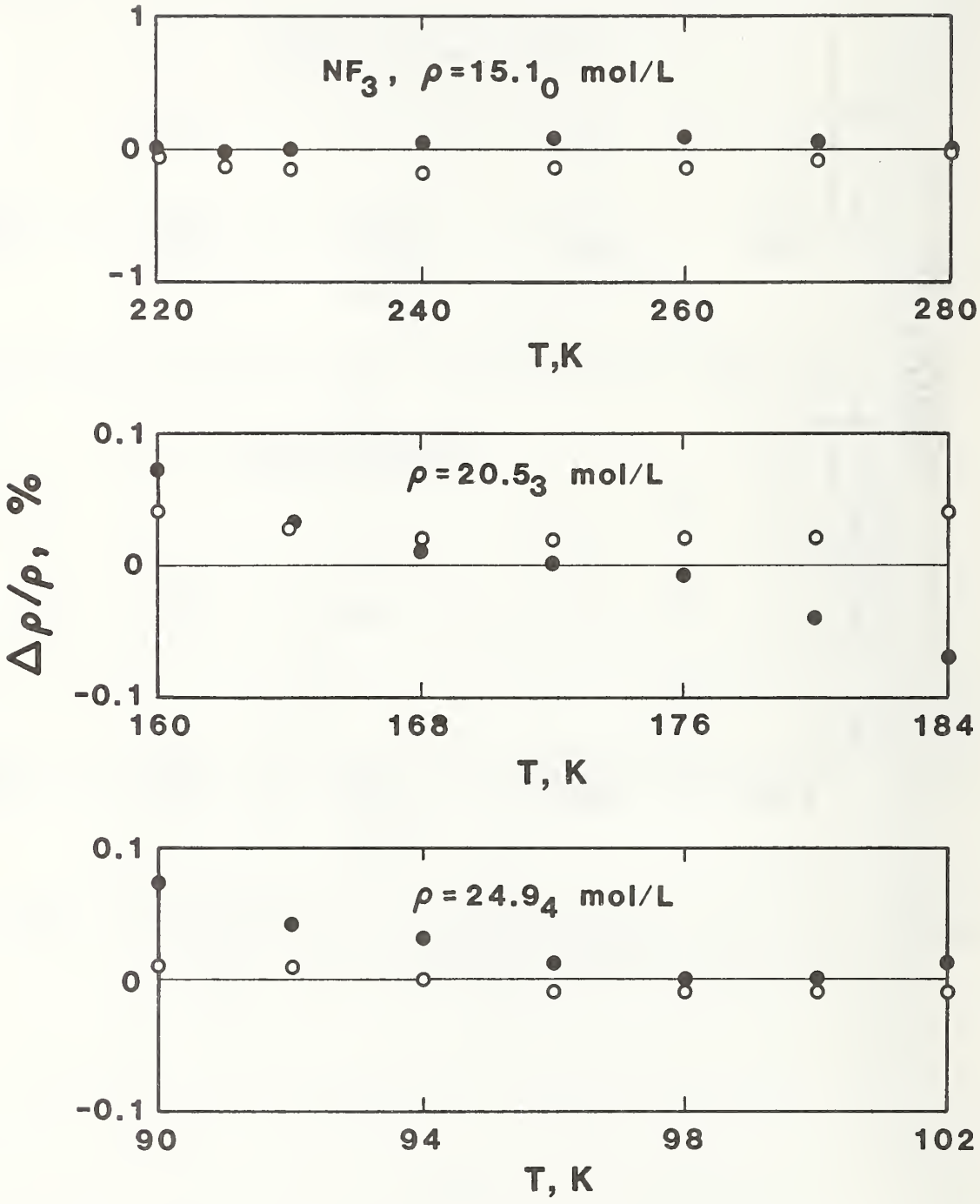

Figure 2, Continued. Comparisons of experimental with calculated densities: open circles for eq. (6); filled circles for eq. (11).

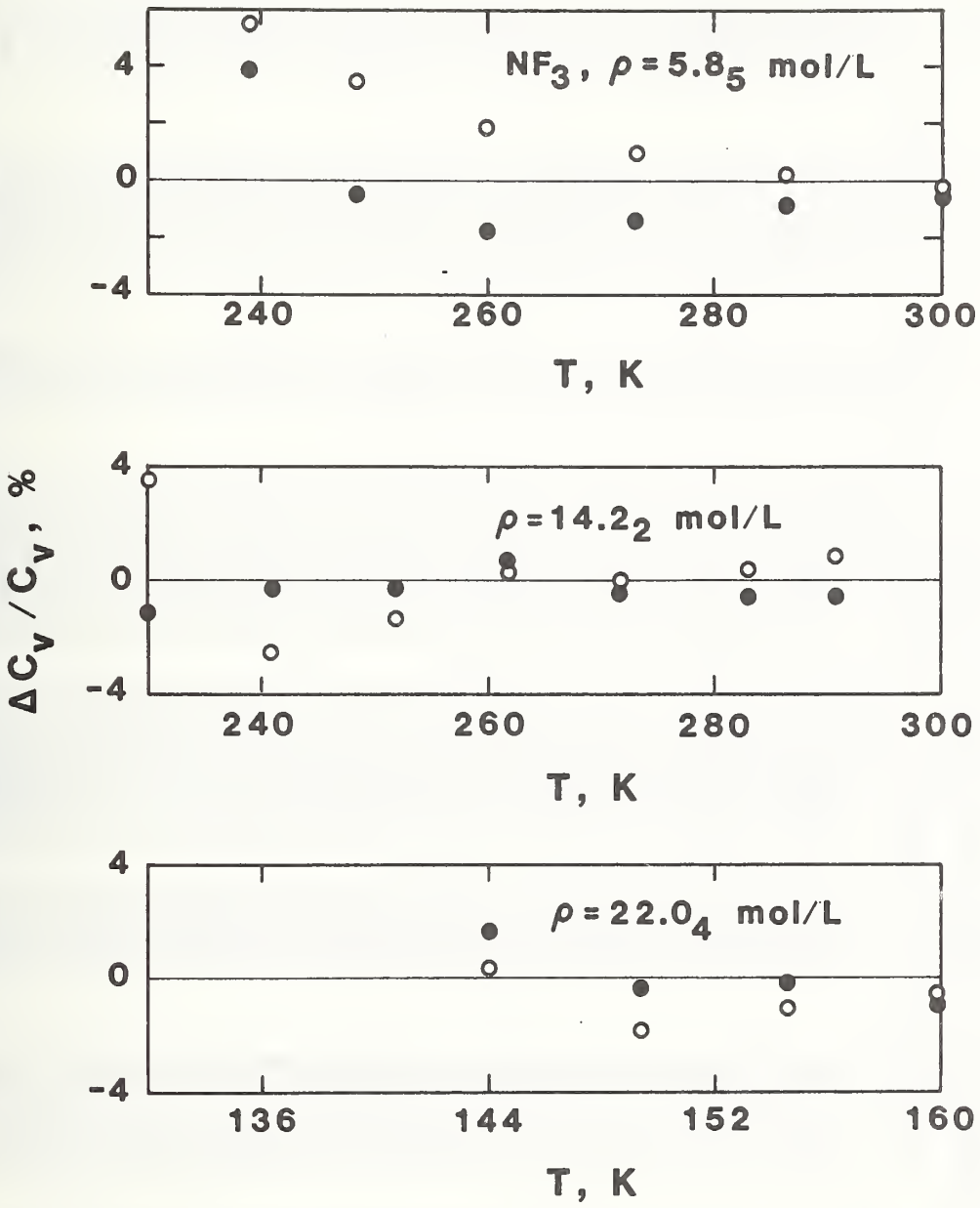

Figure 3. Comparisons of experimental with calculated specific heats: open circles for eq. (6); filled circles for eq. (11).

NF3 VAPOR PRESSURES, EPP = 1.750

(3)PIERCE(1954), (6)JARRY(1956), (10)MENZEL(1933).
(43)THERMALOOPS VIA NBS VIRIAL, (100+)NBS(1979).

TTRP = 66.350, TCRT = 234.000
PTRP = .18543E-05, PCRT = 44.607130, DPSDT = 1.24509

20.315417602 -8.362069370 -21.398986401 20.162194616 -6.918662727 3.677799375

ID	WT	T,K	X	P,BAR	CALCD	PCNT	DPS/DT	RESID
43	1.000	66.360	.28359	.18618E-05	.18616E-05	.01	.740E-06	.00003
43	1.000	70.000	.29915	.72869E-05	.72864E-05	.01	.258E-05	.00775
43	1.000	75.000	.32051	.37541E-04	.37543E-04	-.01	.114E-04	.01600
43	1.000	80.000	.34188	.15456E-03	.15459E-03	-.02	.407E-04	.02209
43	1.000	85.000	.36325	.52979E-03	.52988E-03	-.02	.122E-03	.02648
43	1.000	90.000	.38462	.15606E-02	.15607E-02	-.01	.316E-03	.02952
43	1.000	95.000	.40598	.40503E-02	.40503E-02	-.00	.727E-03	.03147
43	1.000	100.000	.42735	.94488E-02	.94476E-02	.01	.151E-02	.03257
43	1.000	105.000	.44872	.20134E-01	.20129E-01	.02	.288E-02	.03299
43	1.000	110.000	.47009	.39703E-01	.39693E-01	.03	.511E-02	.03285
43	1.000	115.000	.49145	.73243E-01	.73228E-01	.02	.853E-02	.03227
43	1.000	120.000	.51282	.12755E+00	.12753E+00	.01	.135E-01	.03136
43	1.000	125.000	.53419	.21125E+00	.21126E+00	-.00	.204E-01	.03017
43	1.000	130.000	.55556	.33490E+00	.33496E+00	-.02	.295E-01	.02879
43	1.000	135.000	.57692	.51089E+00	.51107E+00	-.04	.414E-01	.02725
43	1.000	140.000	.59829	.75349E+00	.75383E+00	-.05	.562E-01	.02562
801	0.000	160.000	.68376	.27530E+01	.27295E+01	.86	.152E+00	.01917
1501	0.000	165.000	.70513	.35954E+01	.35700E+01	.71	.185E+00	.01733
802	0.000	170.000	.72650	.45999E+01	.45906E+01	.20	.224E+00	.01532
1502	1.000	175.000	.74786	.58197E+01	.58133E+01	.11	.266E+00	.01360
803	0.000	180.000	.76923	.72350E+01	.72608E+01	-.36	.314E+00	.01171
1503	1.000	185.000	.79060	.89548E+01	.89564E+01	-.02	.366E+00	.01035
804	1.000	190.000	.81197	.10923E+02	.10924E+02	-.01	.422E+00	.00886
1504	1.000	195.000	.83333	.13182E+02	.13189E+02	-.05	.484E+00	.00743
805	1.000	200.000	.85470	.15775E+02	.15776E+02	-.01	.552E+00	.00612
1505	1.000	205.000	.87607	.18706E+02	.18714E+02	-.04	.625E+00	.00485
806	1.000	210.000	.89744	.22037E+02	.22033E+02	.02	.704E+00	.00374
1506	1.000	215.000	.91880	.25763E+02	.25767E+02	-.01	.791E+00	.00268
2601	1.000	215.000	.91880	.25781E+02	.25767E+02	.05	.791E+00	.00272
807	1.000	220.000	.94017	.29963E+02	.29954E+02	.03	.886E+00	.00177
1507	1.000	220.000	.94017	.29956E+02	.29954E+02	.01	.886E+00	.00176
808	1.000	225.000	.96154	.34641E+02	.34645E+02	-.01	.992E+00	.00095
1508	1.000	225.000	.96154	.34647E+02	.34645E+02	.01	.992E+00	.00096
2501	1.000	225.000	.96154	.34664E+02	.34645E+02	.05	.992E+00	.00099

Table 1. Vapor Pressures of NF_3.

NF3 VAPOR PRESSURES, EPP = 1.750

ID	WT	T,K	X	P,BAR	CALCD	PCNT	DPS/DT	RESID
809	1.000	230.000	.98291	.39917E+02	.39907E+02	.03	.112E+01	.00035
1001	1.000	230.000	.98291	.39887E+02	.39907E+02	-.05	.112E+01	.00030
1101	1.000	230.000	.98291	.39906E+02	.39907E+02	-.00	.112E+01	.00033
1201	1.000	230.000	.98291	.39901E+02	.39907E+02	-.01	.112E+01	.00032
1301	1.000	230.000	.98291	.39904E+02	.39907E+02	-.01	.112E+01	.00033
1401	1.000	230.000	.98291	.39904E+02	.39907E+02	-.01	.112E+01	.00033
1601	1.000	230.000	.98291	.39862E+02	.39907E+02	-.11	.112E+01	.00027
2301	1.000	230.000	.98291	.39921E+02	.39907E+02	.04	.112E+01	.00035
1002	1.000	231.000	.98718	.41015E+02	.41036E+02	-.05	.114E+01	.00020
1102	1.000	231.000	.98718	.41037E+02	.41036E+02	.00	.114E+01	.00023
1202	1.000	231.000	.98718	.41033E+02	.41036E+02	-.01	.114E+01	.00023
1302	1.000	231.000	.98718	.41029E+02	.41036E+02	-.02	.114E+01	.00022
1402	1.000	231.000	.98718	.41035E+02	.41036E+02	-.00	.114E+01	.00023
810	1.000	232.000	.99145	.42203E+02	.42195E+02	.02	.117E+01	.00015
1003	1.000	232.000	.99145	.42173E+02	.42195E+02	-.05	.117E+01	.00011
1103	1.000	232.000	.99145	.42190E+02	.42195E+02	-.01	.117E+01	.00013
1203	1.000	232.000	.99145	.42193E+02	.42195E+02	-.00	.117E+01	.00014
1303	1.000	232.000	.99145	.42211E+02	.42195E+02	.04	.117E+01	.00016
1403	1.000	232.000	.99145	.42204E+02	.42195E+02	.02	.117E+01	.00015
811	1.000	233.000	.99573	.43392E+02	.43384E+02	.02	.121E+01	.00007
1104	1.000	233.000	.99573	.43389E+02	.43384E+02	.01	.121E+01	.00007
1204	1.000	233.000	.99573	.43391E+02	.43384E+02	.02	.121E+01	.00007
1304	1.000	233.000	.99573	.43397E+02	.43384E+02	.03	.121E+01	.00008
1404	1.000	233.000	.99573	.43395E+02	.43384E+02	.03	.121E+01	.00008
3	0.000	85.814	.36673	.96660E-03	.63786E-03	51.54	.144E-03	.05152
3	0.000	92.064	.39344	.25598E-02	.23465E-02	9.09	.452E-03	.03556
3	0.000	98.078	.41914	.69728E-02	.69013E-02	1.04	.115E-02	.03284
3	0.000	103.892	.44398	.17865E-01	.17144E-01	4.21	.251E-02	.03536
3	0.000	109.494	.46792	.37544E-01	.37176E-01	.99	.484E-02	.03345
3	0.000	114.854	.49083	.72354E-01	.71992E-01	.50	.841E-02	.03258
3	0.000	119.924	.51250	.12658E+00	.12651E+00	.05	.134E-01	.03140
3	0.000	124.522	.53215	.20134E+00	.20171E+00	-.18	.196E-01	.03019
3	0.000	129.689	.55423	.32505E+00	.32587E+00	-.25	.289E-01	.02874
3	0.000	134.653	.57544	.49540E+00	.49687E+00	-.30	.405E-01	.02721
3	0.000	139.762	.59727	.73822E+00	.74054E+00	-.31	.555E-01	.02554
3	0.000	144.523	.61762	.10405E+01	.10440E+01	-.34	.726E-01	.02390
6	0.000	89.320	.38171	.13332E-02	.13582E-02	-1.84	.280E-03	.02808
6	0.000	94.130	.40226	.33331E-02	.34592E-02	-3.64	.634E-03	.02902
6	0.000	98.980	.42299	.78927E-02	.80110E-02	-1.48	.131E-02	.03153
6	0.000	103.860	.44385	.17119E-01	.17064E-01	.32	.250E-02	.03312
6	0.000	108.570	.46397	.33051E-01	.32924E-01	.38	.437E-02	.03315
6	0.000	113.690	.48585	.63181E-01	.62742E-01	.70	.750E-02	.03286
6	0.000	118.480	.50632	.10884E+00	.10835E+00	.45	.118E-01	.03192

Table 1. Continued.

NF3 VAPOR PRESSURES, EPP = 1.750

ID	WT	T,K	X	P,BAR	CALCD	PCNT	DPS/DT	RESID
6	0.000	123.150	.52628	.17709E+00	.17622E+00	.49	.176E-01	.03092
6	0.000	127.600	.54530	.27086E+00	.26985E+00	.37	.248E-01	.02970
6	0.000	131.940	.56385	.39725E+00	.39632E+00	.23	.338E-01	.02836
6	0.000	136.070	.58150	.55770E+00	.55690E+00	.14	.443E-01	.02702
6	0.000	140.160	.59897	.76404E+00	.76287E+00	.15	.568E-01	.02568
6	0.000	144.170	.61611	.10189E+01	.10187E+01	.02	.712E-01	.02424
6	0.000	148.960	.63658	.14064E+01	.14067E+01	-.02	.914E-01	.02255
6	0.000	153.790	.65722	.19090E+01	.19044E+01	.24	.115E+00	.02100
6	0.000	158.660	.67803	.25919E+01	.25321E+01	2.36	.143E+00	.02051
6	0.000	163.510	.69876	.34187E+01	.33017E+01	3.54	.175E+00	.01948
6	0.000	168.390	.71962	.43833E+01	.42410E+01	3.36	.211E+00	.01769
6	0.000	173.350	.74081	.56246E+01	.53861E+01	4.43	.252E+00	.01663
6	0.000	178.260	.76179	.70036E+01	.67301E+01	4.06	.297E+00	.01482
6	0.000	183.150	.78269	.86572E+01	.82986E+01	4.32	.346E+00	.01342
6	0.000	188.020	.80350	.10518E+02	.10111E+02	4.02	.399E+00	.01177
6	0.000	193.140	.82538	.12656E+02	.12310E+02	2.81	.461E+00	.00960
6	0.000	198.050	.84637	.15205E+02	.14727E+02	3.25	.525E+00	.00851
6	0.000	203.130	.86808	.18032E+02	.17573E+02	2.61	.597E+00	.00685
6	0.000	208.010	.88893	.21202E+02	.20665E+02	2.60	.672E+00	.00569
6	0.000	217.930	.93132	.28647E+02	.28163E+02	1.72	.845E+00	.00313
6	0.000	222.950	.95278	.33265E+02	.32657E+02	1.86	.947E+00	.00235
6	0.000	227.800	.97350	.38365E+02	.37515E+02	2.26	.106E+01	.00190
6	0.000	232.770	.99474	.44087E+02	.43107E+02	2.27	.120E+01	.00140
10	0.000	79.850	.34124	.19998E-03	.14858E-03	34.59	.393E-04	.03943
10	0.000	87.650	.37457	.11999E-02	.95561E-03	25.56	.205E-03	.04164
10	0.000	92.750	.39637	.30664E-02	.26750E-02	14.63	.507E-03	.03875
10	0.000	99.350	.42457	.90659E-02	.85087E-02	6.55	.138E-02	.03620
10	0.000	101.050	.43184	.11732E-01	.11152E-01	5.20	.174E-02	.03568
10	0.000	106.550	.45534	.25065E-01	.25038E-01	.11	.347E-02	.03304
10	0.000	108.650	.46432	.33597E-01	.33276E-01	.97	.441E-02	.03348
10	0.000	110.150	.47073	.40530E-01	.40466E-01	.16	.520E-02	.03291
10	0.000	135.850	.58056	.54569E+00	.54722E+00	-.28	.437E-01	.02684
10	0.000	142.450	.60876	.89379E+00	.90186E+00	-.89	.647E-01	.02429
10	0.000	143.390	.61278	.96285E+00	.96433E+00	-.15	.682E-01	.02440
10	0.000	144.080	.61573	.10086E+01	.10123E+01	-.37	.708E-01	.02404
10	0.000	144.370	.61697	.10307E+01	.10330E+01	-.22	.720E-01	.02403

NP = 54, RMSPCT = .033

Table 1. Continued.

Table 2. Densities of Saturated Liquid.

NF3 SATLIQUID DENSITIES, EL = .333
(6)JARRY, (11)SESHADRI, (900)NBS V.P.,ISOCHORES/EQNSTATE.
TTRP = 66.350, TCRT = 234.000, DTRP = 26.320, DCRT = 7.920
.754377410 .027975083 0.000000000

ID	WT	T,K	X	MOL/L	CALCD	PCNT	DDS/DT	RESID
935	1.000	89.012	.86483	25.013	25.055	-.17	-.05718	.72962
934	1.000	105.189	.76833	24.124	24.112	.05	-.05942	.76116
933	1.000	123.055	.66177	23.022	23.025	-.01	-.06247	.75832
932	1.000	142.576	.54533	21.762	21.764	-.01	-.06699	.76180
931	1.000	158.678	.44928	20.651	20.645	.03	-.07232	.76628
930	1.000	174.718	.35361	19.438	19.426	.06	-.08021	.77042
929	1.000	184.904	.29285	18.555	18.574	-.10	-.08756	.76811
928	1.000	197.490	.21778	17.422	17.392	.17	-.10140	.77798
927	1.000	207.954	.15536	16.234	16.237	-.02	-.12116	.77569
926	1.000	215.559	.11000	15.216	15.228	-.08	-.14673	.77619
924	1.000	221.420	.07504	14.267	14.273	-.04	-.18296	.77835
6	.020	78.040	.93027	25.619	25.675	-.22	-.05585	.68877
6	.020	79.090	.92401	25.549	25.616	-.26	-.05597	.68148
6	.020	79.430	.92198	25.520	25.597	-.30	-.05601	.67367
6	.020	81.670	.90862	25.380	25.471	-.36	-.05628	.67185
6	.020	87.220	.87551	25.070	25.157	-.35	-.05696	.69683
6	.020	87.650	.87295	24.999	25.133	-.53	-.05701	.66781
6	.020	92.210	.84575	24.788	24.871	-.33	-.05760	.71039
6	.020	94.260	.83352	24.619	24.753	-.54	-.05787	.68818
6	.020	97.000	.81718	24.506	24.594	-.36	-.05824	.71563
6	.020	99.440	.80262	24.323	24.451	-.52	-.05858	.70129
6	.020	101.780	.78867	24.225	24.314	-.37	-.05892	.72060
6	.020	104.060	.77507	24.056	24.179	-.51	-.05925	.70989
6	.020	109.900	.74023	23.704	23.831	-.53	-.06015	.71530
6	.020	114.780	.71112	23.422	23.535	-.48	-.06096	.72397
6	.020	119.460	.68321	23.140	23.248	-.46	-.06179	.72885
6	.020	119.520	.68285	23.140	23.244	-.45	-.06180	.72991
6	.020	124.490	.65321	22.830	22.935	-.45	-.06275	.73275
6	.020	129.410	.62386	22.535	22.624	-.39	-.06377	.73897
6	.020	131.050	.61408	22.436	22.519	-.37	-.06413	.74114
6	.020	134.220	.59517	22.253	22.314	-.27	-.06485	.74715
6	.020	135.340	.58849	22.168	22.241	-.33	-.06512	.74497
6	.020	139.150	.56576	21.943	21.992	-.22	-.06607	.75145
6	.020	139.930	.56111	21.859	21.940	-.37	-.06627	.74490
6	.020	143.990	.53689	21.633	21.669	-.16	-.06738	.75540
6	.020	144.650	.53296	21.549	21.624	-.35	-.06757	.74775
6	.020	149.330	.50504	21.239	21.305	-.31	-.06899	.75111
6	.020	153.920	.47766	20.901	20.984	-.40	-.07054	.74930
6	.020	158.520	.45022	20.577	20.656	-.38	-.07226	.75156
6	.020	164.150	.41664	20.197	20.243	-.23	-.07464	.75873
6	.020	169.530	.38455	19.802	19.834	-.16	-.07727	.76238
ID	WT	T,K	X	MOL/L	CALCD	PCNT	DDS/DT	RESID
925	0.000	226.509	.04468	13.227	13.197	.23	-.24950	.78591
923	0.000	230.872	.01866	11.986	11.809	1.49	-.42936	.82051
922	0.000	233.122	.00524	10.844	10.440	3.87	-.97199	.91258
915	0.000	233.662	.00202	10.188	9.746	4.53	-1.81660	.97532
11	0.000	170.000	.38175	19.646	19.798	-.77	-.07752	.74360
11	0.000	180.000	.32210	18.762	18.993	-1.22	-.08372	.73510
11	0.000	190.000	.26245	17.794	18.116	-1.78	-.09234	.72567
11	0.000	200.000	.20280	16.750	17.133	-2.23	-.10519	.72029
11	0.000	205.000	.17298	16.181	16.585	-2.43	-.11437	.71837
11	0.000	210.000	.14316	15.528	15.984	-2.85	-.12669	.71144
11	0.000	215.000	.11333	14.815	15.309	-3.23	-.14427	.70531
11	0.000	220.000	.08351	14.065	14.525	-3.17	-.17188	.70830
11	0.000	225.000	.05368	13.123	13.553	-3.17	-.22328	.70811
11	0.000	230.000	.02386	11.696	12.155	-3.78	-.36776	.68688

NP = 41, RMSPCT = .121

NF3 SATVAPOR DENSITIES, NF = 3, EG = .333, EGX = 2.00
(11)SESHADRI/VISWANETH/KULOOR(1970), (43)THERMALOOPS VIA NBS NF3 VIRIAL.
(900)NBS V.P.,ISOCHORES/EQNSTATE.
TTRP = 66.350, TCRT = 234.000, DGAT = .3361185E-06, DCRT = 7.920
-.7109566941E+00 .3800175233E+00 .1622847586E+01

ID	WT	T,K	MOL/L	CALCD	PCNT	Z,XPT	Z,CALC	F(Z)	DDS/DT
43	.000	66.360	.33744E-06	.33741E-06	.01	.99990	1.00000	274.56544	.129E-06
43	.000	70.000	.12520E-05	.12519E-05	.01	.99995	1.00000	41.47800	.425E-06
43	.000	75.000	.60203E-05	.60206E-05	-.01	1.00004	.99999	-7.21144	.175E-05
43	.000	80.000	.23238E-04	.23241E-04	-.01	1.00011	.99997	-5.11385	.583E-05
43	.000	85.000	.74972E-04	.74982E-04	-.01	1.00005	.99992	-.80112	.164E-04
43	.001	90.000	.20860E-03	.20861E-03	-.01	.99985	.99979	.87346	.400E-04
43	.005	95.000	.51307E-03	.51302E-03	.01	.99943	.99953	1.45589	.867E-04
43	.013	100.000	.11377E-02	.11374E-02	.03	.99875	.99904	1.51184	.171E-03
43	.029	105.000	.23108E-02	.23098E-02	.04	.99779	.99822	1.38592	.309E-03
43	.054	110.000	.43555E-02	.43534E-02	.05	.99643	.99690	1.24733	.523E-03
43	.089	115.000	.77009E-02	.76974E-02	.05	.99450	.99495	1.13927	.833E-03
43	.133	120.000	.12887E-01	.12883E-01	.03	.99187	.99219	1.05232	.126E-02
43	.184	125.000	.20567E-01	.20564E-01	.02	.98831	.98847	.99102	.183E-02
43	.241	130.000	.31502E-01	.31505E-01	-.01	.98372	.98363	.94189	.257E-02
43	.300	135.000	.46557E-01	.46577E-01	-.04	.97797	.97756	.90069	.349E-02
43	.360	140.000	.66707E-01	.66753E-01	-.07	.97082	.97015	.86997	.462E-02
900	.565	158.061	.20000E+00	.20000E+00	-.00	.93117	.93116	.80562	.107E-01
906	.752	179.292	.55000E+00	.55006E+00	-.01	.85881	.85871	.73907	.235E-01
901	.859	196.355	.10965E+01	.10946E+01	.17	.77406	.77542	.72078	.421E-01
905	.897	204.133	.14742E+01	.14728E+01	.09	.72653	.72720	.71876	.560E-01
902	.927	211.352	.19429E+01	.19414E+01	.08	.67366	.67417	.72669	.753E-01
903	.954	218.455	.25761E+01	.25789E+01	-.11	.61142	.61075	.74319	.107E+00
909	.967	222.493	.30616E+01	.30709E+01	-.30	.56900	.56727	.75911	.139E+00
907	0.000	226.484	.36818E+01	.37210E+01	-1.05	.52130	.51581	.77895	.193E+00
916	0.000	230.853	.47629E+01	.48321E+01	-1.43	.44704	.44063	.82676	.350E+00
917	0.000	233.116	.57980E+01	.59436E+01	-2.45	.38729	.37780	.87715	.768E+00
910	0.000	233.123	.58275E+01	.59490E+01	-2.04	.38539	.37752	.87975	.772E+00
11	0.000	110.000	.43764E-02	.43534E-02	.53	.99167	.99690	2.91054	.523E-03
11	0.000	120.000	.12963E-01	.12883E-01	.62	.98606	.99219	1.80516	.126E-02
11	0.000	130.000	.31666E-01	.31505E-01	.51	.97862	.98363	1.23662	.257E-02
11	0.000	140.000	.66979E-01	.66753E-01	.34	.96688	.97015	.98750	.462E-02
11	0.000	160.000	.22999E+00	.22163E+00	3.77	.89212	.92578	1.16005	.116E-01
11	0.000	170.000	.38023E+00	.36321E+00	4.69	.85415	.89418	1.05274	.170E-01
11	0.000	180.000	.59453E+00	.56693E+00	4.87	.81603	.85575	.94128	.241E-01
11	0.000	190.000	.88417E+00	.85416E+00	3.51	.78209	.80957	.82564	.339E-01
11	0.000	200.000	.12960E+01	.12586E+01	2.97	.73203	.75380	.77901	.480E-01
11	0.000	205.000	.15805E+01	.15222E+01	3.83	.69469	.72131	.78610	.579E-01
11	0.000	210.000	.18762E+01	.18426E+01	1.82	.67258	.68484	.75139	.710E-01
11	0.000	215.000	.22578E+01	.22406E+01	.77	.63841	.64331	.74377	.894E-01
11	0.000	220.000	.27450E+01	.27526E+01	-.28	.59656	.59491	.74742	.118E+00
11	0.000	225.000	.34388E+01	.34536E+01	-.43	.53853	.53622	.77316	.168E+00
11	0.000	230.000	.45065E+01	.45566E+01	-1.10	.46306	.45797	.81608	.299E+00

NP = 23, RMSPCT = .14

Table 3. Densities of Saturated Vapor.

Table 4. Second Virial Coefficients.

NF3 SECOND VIRIAL COEFFICIENTS, EV = 3.00

(40)NBS/RDG APRIL, 1979.

.49382731 -1.30972686 -.38983811

ID	WT	T,K	X	B(T)	B*	CALC	DIF	PCT
40	1.000	200.00	.855	-210.00	-1.663	-1.663	-.000	-.02
40	1.000	220.00	.940	-173.00	-1.370	-1.368	-.002	-.13
40	1.000	240.00	1.026	-144.00	-1.140	-1.144	.004	.35
40	1.000	260.00	1.111	-122.00	-.966	-.969	.003	.30
40	1.000	280.00	1.197	-105.00	-.832	-.828	-.003	-.40
40	1.000	300.00	1.282	-91.00	-.721	-.713	-.008	-1.12
40	1.000	320.00	1.368	-77.00	-.610	-.616	.007	1.06

NP = 7, RMSPCT = .63

Table 5. Comparisons With P-ρ-T Data for NF_3.

NF3 PVT DATA VS. EQNSTATE.
(1)NBS VIRIAL, (100+)NBS(1979), (26)BURNS(1975), (27)VANDERWALL(1977).

ID	PN	WT	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
1	1	.839	160.000	.2000	.2001	-.07	2.483	2.482	.06
1	2	.690	170.000	.2000	.2003	-.16	2.661	2.657	.15
1	3	.610	180.000	.2000	.2005	-.23	2.837	2.831	.21
1	4	.567	190.000	.2000	.2005	-.27	3.012	3.004	.26
1	5	.544	200.000	.2000	.2006	-.29	3.186	3.177	.28
1	6	.534	210.000	.2000	.2006	-.30	3.359	3.350	.29
1	7	.532	220.000	.2000	.2006	-.30	3.532	3.522	.29
1	8	.535	230.000	.2000	.2006	-.30	3.704	3.693	.29
1	9	.543	240.000	.2000	.2006	-.28	3.876	3.865	.28
1	10	.554	250.000	.2000	.2005	-.27	4.047	4.036	.26
1	11	.568	260.000	.2000	.2005	-.25	4.218	4.207	.25
1	12	.584	270.000	.2000	.2005	-.23	4.388	4.378	.23
1	13	.601	280.000	.2000	.2004	-.21	4.559	4.549	.21
1	14	.620	290.000	.2000	.2004	-.19	4.729	4.720	.19
1	15	.640	300.000	.2000	.2003	-.17	4.899	4.891	.17
1	16	.661	310.000	.2000	.2003	-.16	5.069	5.061	.15
1	17	.683	320.000	.2000	.2003	-.14	5.238	5.231	.13

NP = 17, DNRMSPCT = .228, PMEANDIF = .008, PMEANPCT = .210

Table 5. Continued.

NF3 PVT DATA VS. EQNSTATE.
(1)NBS VIRIAL, (100+)NBS(1979), (26)BURNS(1975), (27)VANDERWALL(1977).

ID	PN	WT	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
601	18	.745	200.000	.5500	.5508	-.14	8.119	8.109	.13
602	19	.717	220.000	.5491	.5499	-.16	9.117	9.104	.14
603	20	.755	240.000	.5480	.5487	-.13	10.094	10.082	.12
604	21	.793	260.000	.5470	.5475	-.09	11.059	11.049	.09
605	22	.846	280.000	.5460	.5463	-.05	12.012	12.006	.05
606	23	.920	300.000	.5449	.5450	-.01	12.955	12.954	.01
607	24	.959	320.000	.5438	.5437	.02	13.891	13.894	-.02
101	25	.689	200.000	1.0965	1.0948	.15	14.276	14.292	-.11
102	26	.681	220.000	1.0944	1.0931	.12	16.476	16.492	-.09
103	27	.655	240.000	1.0922	1.0907	.14	18.595	18.617	-.12
104	28	.610	260.000	1.0901	1.0880	.19	20.660	20.695	-.17
105	29	.569	280.000	1.0879	1.0852	.25	22.686	22.737	-.23
106	30	.540	300.000	1.0856	1.0824	.30	24.682	24.751	-.28
107	31	.532	320.000	1.0833	1.0797	.33	26.657	26.739	-.31
501	32	.791	220.000	1.4742	1.4737	.03	20.712	20.718	-.02
502	33	.727	240.000	1.4712	1.4703	.06	23.733	23.745	-.05
503	34	.662	260.000	1.4682	1.4663	.13	26.654	26.682	-.11
504	35	.625	280.000	1.4651	1.4625	.18	29.511	29.557	-.16
505	36	.593	300.000	1.4620	1.4585	.24	32.314	32.382	-.21
506	37	.578	320.000	1.4587	1.4547	.27	35.077	35.165	-.25
201	38	.786	220.000	1.9429	1.9422	.04	24.944	24.950	-.02
202	39	.663	240.000	1.9388	1.9371	.09	29.187	29.205	-.06
203	40	.588	260.000	1.9346	1.9314	.17	33.252	33.295	-.13
204	41	.548	280.000	1.9303	1.9257	.24	37.205	37.277	-.19
205	42	.522	300.000	1.9260	1.9202	.30	41.071	41.176	-.26
206	43	.513	320.000	1.9215	1.9150	.34	44.873	45.008	-.30
301	44	.779	220.000	2.5761	2.5798	-.14	29.113	29.093	.07
302	45	.928	240.000	2.5702	2.5746	-.17	35.239	35.202	.10
303	46	.810	260.000	2.5643	2.5653	-.04	41.007	40.995	.03
304	47	.701	280.000	2.5582	2.5566	.06	46.579	46.601	-.05
305	48	.656	300.000	2.5521	2.5486	.14	52.014	52.072	-.11
306	49	.646	320.000	2.5457	2.5411	.18	57.345	57.434	-.15
901	50	.538	225.000	3.0616	3.0744	-.42	33.244	33.189	.17
902	51	.610	230.000	3.0598	3.0717	-.39	35.186	35.125	.18
903	52	.752	240.000	3.0561	3.0654	-.30	38.937	38.874	.16
904	53	.989	260.000	3.0488	3.0538	-.17	46.127	46.077	.11
905	54	.814	280.000	3.0413	3.0423	-.03	53.039	53.026	.02
906	55	.747	300.000	3.0336	3.0321	.05	59.770	59.794	-.04
907	56	.732	320.000	3.0258	3.0226	.10	66.361	66.418	-.09
701	57	.315	230.000	3.6818	3.7207	-1.04	37.918	37.787	.35
702	58	.407	240.000	3.6772	3.7072	-.81	42.715	42.562	.36
703	59	.526	260.000	3.6680	3.6881	-.55	51.843	51.676	.32
704	60	.622	280.000	3.6585	3.6721	-.37	60.600	60.444	.26
705	61	.662	300.000	3.6487	3.6589	-.28	69.120	68.975	.21
706	62	.672	320.000	3.6388	3.6467	-.22	77.453	77.317	.18
1602	63	.241	235.000	4.7629	4.8418	-1.63	43.763	43.599	.37
1603	64	.259	240.000	4.7597	4.8329	-1.51	47.112	46.895	.46
1604	65	.355	260.000	4.7468	4.7929	-.96	59.867	59.570	.50

Table 5. Continued.

NF3 PVT DATA VS. EQNSTATE.
(1)NBS VIRIAL, (100+)NBS(1979), (26)BURNS(1975), (27)VANDERWALL(1977).

ID	PN	WT	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
1605	66	.411	280.000	4.7336	4.7673	-.71	72.099	71.768	.46
1606	67	.438	300.000	4.7200	4.7472	-.57	84.003	83.645	.43
1607	68	.438	320.000	4.7062	4.7303	-.51	95.665	95.267	.42
1701	69	.174	235.000	5.7980	5.9458	-2.49	45.213	45.093	.27
1702	70	.214	240.000	5.7940	5.9102	-1.97	49.522	49.320	.41
1703	71	.285	250.000	5.7858	5.8636	-1.33	57.839	57.561	.48
1704	72	.332	260.000	5.7774	5.8374	-1.03	65.955	65.631	.49
1705	73	.377	280.000	5.7603	5.8048	-.77	81.823	81.418	.50
1706	74	.385	300.000	5.7427	5.7812	-.67	97.339	96.845	.51
1707	75	.376	320.000	5.7249	5.7611	-.63	112.575	111.976	.53
1006	76	.183	235.000	5.8266	5.9673	-2.36	45.229	45.118	.25
1007	77	.189	236.000	5.8258	5.9627	-2.30	46.111	45.978	.29
1008	78	.198	237.000	5.8250	5.9545	-2.18	46.982	46.832	.32
1009	79	.206	238.000	5.8242	5.9480	-2.08	47.849	47.682	.35
1010	80	.223	240.000	5.8225	5.9343	-1.88	49.562	49.371	.39
1801	81	.095	235.000	6.7709	7.1222	-4.93	45.705	45.617	.19
1802	82	.224	240.000	6.7660	6.8920	-1.83	50.886	50.734	.30
1803	83	.362	250.000	6.7561	6.8189	-.92	60.986	60.787	.33
1804	84	.429	260.000	6.7459	6.7913	-.67	70.930	70.696	.33
1805	85	.448	280.000	6.7248	6.7615	-.54	90.535	90.196	.38
1806	86	.424	300.000	6.7032	6.7391	-.53	109.823	109.342	.44
1807	87	.396	320.000	6.6816	6.7185	-.55	128.827	128.179	.51
1106	88	.093	235.000	7.0723	7.4403	-4.95	45.767	45.694	.16
1107	89	.145	236.000	7.0713	7.2935	-3.05	46.867	46.781	.18
1108	90	.189	237.000	7.0702	7.2334	-2.26	47.957	47.863	.20
1109	91	.227	238.000	7.0692	7.1989	-1.80	49.042	48.942	.20
1110	92	.289	240.000	7.0672	7.1614	-1.32	51.200	51.092	.21
1901	93	.228	235.000	7.8341	7.9658	-1.65	45.860	45.837	.05
1902	94	.468	240.000	7.8284	7.7900	.49	51.924	51.969	-.09
1903	95	.450	250.000	7.8165	7.7787	.49	64.054	64.180	-.20
1904	96	.518	260.000	7.8041	7.7772	.35	76.170	76.320	-.20
1905	97	.792	280.000	7.7783	7.7718	.08	100.313	100.380	-.07
1906	98	.807	300.000	7.7521	7.7589	-.09	124.237	124.135	.08
1907	99	.618	320.000	7.7265	7.7424	-.21	147.908	147.591	.21
1206	100	.333	235.000	8.1094	8.0267	1.03	45.871	45.886	-.03
1207	101	.255	236.000	8.1082	7.9928	1.44	47.124	47.168	-.09
1208	102	.234	237.000	8.1070	7.9810	1.58	48.377	48.450	-.15
1209	103	.230	238.000	8.1058	7.9784	1.60	49.633	49.732	-.20
1210	104	.240	240.000	8.1034	7.9861	1.47	52.156	52.298	-.27
812	105	.405	235.000	8.1178	8.0553	.78	45.877	45.888	-.02
813	106	.247	240.000	8.1119	7.9984	1.42	52.171	52.308	-.26
814	107	.300	250.000	8.0995	8.0208	.98	64.869	65.139	-.41
815	108	.371	260.000	8.0865	8.0328	.67	77.616	77.926	-.40
2001	109	.116	235.000	8.8533	8.5174	3.94	45.964	46.036	-.16
2002	110	.135	240.000	8.8467	8.5847	3.05	52.900	53.250	-.66
2003	111	.185	250.000	8.8328	8.6693	1.89	67.181	67.802	-.92
2004	112	.235	260.000	8.8181	8.7049	1.30	81.664	82.387	-.88
2005	113	.348	280.000	8.7874	8.7271	.69	110.761	111.471	-.64

Table 5. Continued.

NF3 PVT DATA VS. EQNSTATE.
(1)NBS VIRIAL, (100+)NBS(1979), (26)BURNS(1975), (27)VANDERWALL(1977).

ID	PN	WT	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
2006	114	.492	300.000	8.7566	8.7250	.36	139.781	140.328	-.39
2007	115	.659	320.000	8.7274	8.7123	.17	168.575	168.922	-.21
1306	116	.075	235.000	9.1988	8.6529	6.31	45.991	46.131	-.30
1307	117	.085	236.000	9.1974	8.7270	5.39	47.415	47.642	-.48
1308	118	.094	237.000	9.1961	8.7763	4.78	48.861	49.162	-.61
1309	119	.101	238.000	9.1947	8.8138	4.32	50.322	50.687	-.72
1310	120	.115	240.000	9.1919	8.8683	3.65	53.280	53.748	-.87
2101	121	.093	235.000	9.8670	9.4001	4.97	46.201	46.433	-.50
2102	122	.113	240.000	9.8594	9.5120	3.65	54.265	54.911	-1.18
2103	123	.154	250.000	9.8431	9.6230	2.29	71.122	72.176	-1.46
2104	124	.185	260.000	9.8257	9.6618	1.70	88.303	89.590	-1.44
2105	125	.254	280.000	9.7896	9.6893	1.04	123.064	124.487	-1.14
2106	126	.320	300.000	9.7545	9.6867	.70	157.853	159.254	-.88
2107	127	.378	320.000	9.7225	9.6734	.51	192.477	193.815	-.69
1406	128	.102	235.000	10.1860	9.7594	4.37	46.369	46.677	-.66
1407	129	.107	236.000	10.1845	9.7836	4.10	48.040	48.445	-.84
1408	130	.109	237.000	10.1829	9.7948	3.96	49.721	50.225	-1.00
1409	131	.113	238.000	10.1813	9.8158	3.72	51.431	52.013	-1.12
1410	132	.122	240.000	10.1781	9.8517	3.31	54.895	55.611	-1.29
2201	133	.169	235.000	10.8444	10.6010	2.30	47.155	47.551	-.83
2202	134	.178	240.000	10.8355	10.6192	2.04	56.817	57.540	-1.26
2203	135	.221	250.000	10.8162	10.6657	1.41	76.900	77.940	-1.33
2204	136	.276	260.000	10.7956	10.6884	1.00	97.443	98.578	-1.15
2205	137	.392	280.000	10.7536	10.6942	.55	138.974	140.049	-.77
2206	138	.507	300.000	10.7147	10.6801	.32	180.597	181.489	-.49
2207	139	.600	320.000	10.6808	10.6598	.20	222.095	222.798	-.32
2302	140	.342	235.000	11.9859	11.8964	.75	50.886	51.342	-.89
2303	141	.360	240.000	11.9749	11.8913	.70	62.985	63.600	-.97
2304	142	.441	250.000	11.9512	11.8898	.52	87.811	88.542	-.83
2305	143	.538	260.000	11.9263	11.8829	.37	113.040	113.755	-.63
2306	144	.702	280.000	11.8777	11.8556	.19	163.880	164.450	-.35
2307	145	.772	300.000	11.8362	11.8235	.11	214.798	215.240	-.21
2308	146	.742	320.000	11.8013	11.7915	.08	265.560	265.998	-.16
2502	147	.861	230.000	13.2274	13.2148	.10	46.808	46.937	-.27
2503	148	.917	235.000	13.2141	13.2039	.08	62.040	62.176	-.22
2504	149	.758	240.000	13.2000	13.1949	.04	77.517	77.600	-.11
2505	150	.653	250.000	13.1701	13.1721	-.01	108.794	108.752	.04
2506	151	.625	260.000	13.1402	13.1466	-.05	140.289	140.109	.13
2507	152	.686	280.000	13.0874	13.0953	-.06	203.455	203.144	.15
2508	153	.886	300.000	13.0455	13.0487	-.02	266.595	266.433	.06
2401	154	.510	225.000	14.2667	14.2796	-.09	44.567	44.336	.52
2402	155	.424	230.000	14.2510	14.2709	-.14	63.201	62.767	.69
2403	156	.408	240.000	14.2166	14.2412	-.17	100.744	100.030	.71
2404	157	.417	250.000	14.1813	14.2081	-.19	138.506	137.541	.70
2405	158	.450	260.000	14.1490	14.1746	-.18	176.323	175.220	.63
2406	159	.503	270.000	14.1209	14.1434	-.16	214.187	213.061	.53
2407	160	.590	280.000	14.0968	14.1141	-.12	252.025	251.038	.39
2408	161	.720	290.000	14.0755	14.0868	-.08	289.818	289.095	.25

Table 5. Continued.

NF3 PVT DATA VS. EQNSTATE.
(1)NBS VIRIAL, (100+)NBS(1979), (26)BURNS(1975), (27)VANDERWALL(1977).

ID	PN	WT	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
2602	162	.488	220.000	15.2155	15.2259	-.07	45.983	45.683	.66
2603	163	.405	225.000	15.1969	15.2152	-.12	68.294	67.680	.91
2604	164	.402	230.000	15.1770	15.1981	-.14	90.556	89.757	.89
2605	165	.412	240.000	15.1362	15.1606	-.16	135.155	134.019	.85
2606	166	.454	250.000	15.0989	15.1223	-.15	179.742	178.462	.72
2607	167	.530	260.000	15.0677	15.0869	-.13	224.367	223.158	.54
2608	168	.664	270.000	15.0415	15.0541	-.08	268.965	268.074	.33
2609	169	.914	280.000	15.0187	15.0230	-.03	313.449	313.116	.11
2701	170	.856	210.000	16.2335	16.2337	-.00	31.606	31.599	.02
2702	171	.469	215.000	16.2127	16.2222	-.06	58.512	58.060	.78
2703	172	.500	215.000	16.2127	16.2209	-.05	58.448	58.062	.66
2704	173	.443	220.000	16.1898	16.2035	-.08	85.232	84.510	.85
2705	174	.438	225.000	16.1658	16.1825	-.10	111.886	110.924	.87
2706	175	.453	230.000	16.1421	16.1600	-.11	138.448	137.330	.81
2707	176	.514	240.000	16.1000	16.1168	-.10	191.559	190.338	.64
2708	177	.640	250.000	16.0663	16.0781	-.07	244.729	243.756	.40
2709	178	.916	260.000	16.0387	16.0422	-.02	297.816	297.496	.11
2801	179	.130	200.000	17.4218	17.3894	.19	31.480	33.640	-6.42
2802	180	.670	205.000	17.3954	17.3901	.03	66.075	66.459	-.58
2803	181	.953	210.000	17.3670	17.3662	.00	99.016	99.081	-.06
2804	182	.824	215.000	17.3383	17.3399	-.01	131.690	131.554	.10
2805	183	.831	220.000	17.3115	17.3136	-.01	164.255	164.056	.12
2806	184	.883	225.000	17.2878	17.2896	-.01	196.897	196.720	.09
2807	185	.973	230.000	17.2674	17.2671	.00	229.561	229.587	-.01
2808	186	.801	235.000	17.2496	17.2459	.02	262.222	262.634	-.16
2809	187	.664	240.000	17.2338	17.2255	.05	294.843	295.812	-.33
2901	188	.453	190.000	18.5460	18.5400	.03	49.777	50.391	-1.22
2902	189	.733	194.000	18.5200	18.5171	.02	82.053	82.376	-.39
2903	190	.962	200.000	18.4788	18.4790	-.00	129.824	129.807	.01
2904	191	.907	205.000	18.4471	18.4484	-.01	169.481	169.320	.10
2905	192	.992	210.000	18.4200	18.4207	-.00	209.251	209.169	.04
2906	193	.834	215.000	18.3975	18.3956	.01	249.137	249.407	-.11
2907	194	.681	220.000	18.3784	18.3724	.03	289.058	289.938	-.30
3001	195	.118	176.000	19.4280	19.4168	.06	17.750	19.171	-7.41
3002	196	.339	180.000	19.4013	19.3933	.04	55.751	56.830	-1.90
3003	197	.567	184.000	19.3709	19.3661	.02	93.066	93.743	-.72
3004	198	.720	188.000	19.3395	19.3364	.02	129.796	130.245	-.34
3005	199	.603	192.000	19.3107	19.3046	.03	165.910	166.845	-.56
3006	200	.627	196.000	19.2854	19.2794	.03	202.775	203.742	-.47
3007	201	.596	200.000	19.2642	19.2567	.04	239.813	241.067	-.52
3008	202	.603	205.000	19.2418	19.2341	.04	286.807	288.164	-.47
3101	203	.113	160.000	20.6409	20.6327	.04	17.679	19.162	-7.74
3102	204	.375	164.000	20.6080	20.6025	.03	64.347	65.395	-1.60
3103	205	.543	168.000	20.5707	20.5665	.02	109.477	110.323	-.77
3104	206	.646	172.000	20.5342	20.5307	.02	154.178	154.894	-.46
3105	207	.691	176.000	20.5028	20.4995	.02	199.376	200.065	-.34
3106	208	.637	180.000	20.4773	20.4725	.02	245.058	246.126	-.43
3107	209	.556	184.000	20.4564	20.4486	.04	291.075	292.877	-.62
3201	210	.222	144.000	21.7506	21.7477	.01	20.326	21.059	-3.48
3202	211	.524	148.000	21.7109	21.7083	.01	75.762	76.421	-.86

Table 5. Continued.

NF3 PVT DATA VS. EQNSTATE.
(1)NBS VIRIAL, (100+)NBS(1979), (26)BURNS(1975), (27)VANDERWALL(1977).

ID	PN	WT	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
3203	212	.772	152.000	21.6664	21.6652	.01	129.502	129.818	-.24
3204	213	.777	156.000	21.6295	21.6280	.01	184.095	184.495	-.22
3205	214	.796	160.000	21.5942	21.5928	.01	238.550	238.958	-.17
3206	215	.637	164.000	21.5692	21.5648	.02	294.473	295.777	-.44
3301	216	.282	124.000	23.0104	23.0115	-.00	15.792	15.402	2.53
3302	217	.646	128.000	22.9620	22.9633	-.01	83.605	83.156	.54
3303	218	.659	130.000	22.9351	22.9368	-.01	116.223	115.629	.51
3304	219	.654	132.000	22.9090	22.9112	-.01	148.828	148.048	.53
3305	220	.640	134.000	22.8853	22.8881	-.01	182.078	181.060	.56
3306	221	.688	136.000	22.8649	22.8675	-.01	215.960	214.971	.46
3307	222	.798	138.000	22.8474	22.8492	-.01	250.446	249.765	.27
3308	223	.997	140.000	22.8323	22.8326	-.00	285.347	285.241	.04
3401	224	.439	108.000	24.0635	24.0620	.01	52.250	52.943	-1.31
3402	225	.554	110.000	24.0333	24.0316	.01	91.280	92.041	-.83
3403	226	.782	112.000	24.0018	24.0010	.00	129.716	130.110	-.30
3404	227	.946	114.000	23.9724	23.9725	-.00	168.714	168.663	.03
3405	228	.822	116.000	23.9470	23.9478	-.00	209.069	208.673	.19
3406	229	.895	118.000	23.9259	23.9264	-.00	250.608	250.359	.10
3407	230	.882	120.000	23.9081	23.9073	.00	292.951	293.350	-.14
3501	231	.174	90.000	25.0381	25.0362	.01	21.866	22.976	-4.83
3502	232	.418	92.000	25.0055	25.0038	.01	68.766	69.788	-1.47
3503	233	.930	94.000	24.9696	24.9693	.00	113.787	113.964	-.16
3504	234	.566	96.000	24.9344	24.9361	-.01	158.957	157.891	.68
3505	235	.502	98.000	24.9040	24.9070	-.01	205.933	204.107	.89
3506	236	.515	100.000	24.8793	24.8827	-.01	255.263	253.125	.84
3507	237	.600	102.000	24.8589	24.8617	-.01	306.123	304.360	.58

NP = 220, DNRMSPCT = .721, PMEANDIF = .405, PMEANPCT = .372

Table 5. Continued.

NF3 PVT DATA VS. EQNSTATE.
(1)NBS VIRIAL, (100+)NBS(1979), (26)BURNS(1975), (27)VANDERWALL(1977).

ID	PN	WT	T,K	MOL/L	CALCD	D,PCT	P,BAR	CALCD	P,PCT
26	238	1.000	273.150	1.0663	1.0567	.90	21.464	21.637	-.80
26	239	1.000	282.150	1.0663	1.0470	1.84	22.180	22.548	-1.63
26	240	1.000	299.150	1.0663	1.0407	2.46	23.725	24.260	-2.21
26	241	1.000	319.350	1.0663	1.0414	2.39	25.710	26.282	-2.18
27	242	1.000	273.150	1.6887	1.6983	-.56	32.336	32.185	.47
27	243	1.000	294.250	1.6887	1.6735	.91	35.508	35.788	-.78
27	244	1.000	321.150	1.6887	1.6861	.16	40.265	40.322	-.14
27	245	1.000	344.150	1.6887	1.6730	.94	43.782	44.160	-.86
26	246	1.000	273.150	2.3661	2.4174	-2.12	42.810	42.117	1.64
26	247	1.000	282.650	2.3661	2.3609	.22	44.471	44.549	-.18
26	248	1.000	300.250	2.3661	2.3505	.67	48.739	49.007	-.55
26	249	1.000	319.350	2.3661	2.3381	1.20	53.241	53.789	-1.02
27	250	1.000	273.150	2.9651	2.9802	-.51	49.918	49.738	.36
27	251	1.000	295.150	2.9651	2.9540	.37	56.951	57.117	-.29
27	252	1.000	324.650	2.9651	2.9825	-.58	67.155	66.825	.49
27	253	1.000	344.250	2.9651	2.9412	.81	72.671	73.188	-.71
26	254	1.000	273.150	3.3225	3.4557	-3.86	55.296	53.841	2.70
26	255	1.000	284.150	3.3225	3.3846	-1.84	58.895	58.111	1.35
26	256	1.000	298.950	3.3225	3.3660	-1.29	64.432	63.790	1.01
26	257	1.000	319.150	3.3225	3.3291	-.20	71.561	71.444	.16
27	258	1.000	273.150	3.7558	3.7997	-1.16	58.881	58.436	.76
27	259	1.000	292.850	3.7558	3.7433	.33	67.155	67.319	-.24
27	260	1.000	324.250	3.7558	3.7414	.38	80.944	81.200	-.31
27	261	1.000	273.150	4.3876	4.5272	-3.08	65.776	64.516	1.95
27	262	1.000	292.150	4.3876	4.4829	-2.13	76.118	74.961	1.54
27	263	1.000	323.950	4.3876	4.4595	-1.61	93.355	92.116	1.35
27	264	1.000	344.150	4.3876	4.4287	-.93	103.697	102.858	.82
27	265	1.000	273.150	4.4712	4.5272	-1.24	65.776	65.273	.77
27	266	1.000	295.150	4.4712	4.4098	1.39	76.877	77.650	-1.00
27	267	1.000	323.550	4.4712	4.4361	.79	92.734	93.336	-.64
27	268	1.000	344.150	4.4712	4.4051	1.50	103.215	104.565	-1.29
27	269	1.000	273.150	6.3442	6.3954	-.80	80.944	80.548	.49
27	270	1.000	291.550	6.3442	6.2783	1.05	96.320	97.068	-.77
27	271	1.000	318.650	6.3442	6.2899	.86	120.245	121.155	-.75
27	272	1.000	344.250	6.3442	6.2833	.97	142.377	143.709	-.93
27	273	1.000	326.150	6.5508	6.3920	2.48	128.656	131.590	-2.23
27	274	1.000	344.250	6.5508	6.4277	1.91	145.548	148.283	-1.84
27	275	1.000	273.150	8.8026	8.8078	-.06	101.629	101.576	.05
27	276	1.000	292.450	8.8026	8.6875	1.33	128.242	129.993	-1.35
27	277	1.000	310.150	8.8026	8.7168	.98	154.374	156.112	-1.11
27	278	1.000	316.650	8.8026	8.6951	1.24	163.337	165.710	-1.43
27	279	1.000	344.250	8.8026	8.6630	1.61	202.292	206.473	-2.02
27	280	1.000	273.150	11.6398	11.5100	1.13	138.929	141.562	-1.86
27	281	1.000	283.450	11.6398	11.4328	1.81	162.027	167.130	-3.05
27	282	1.000	288.150	11.6398	11.4069	2.04	172.645	178.855	-3.47
27	283	1.000	293.150	11.6398	11.3728	2.35	183.676	191.364	-4.02

NP = 46, DNRMSPCT = 1.515, PMEANDIF = 1.254, PMEANPCT = 1.208

NP = 237, DNRMSPCT = .693, PMEANDIF = .372, PMEANPCT = .358

Table 6. Coefficients of the Equation of State.

EQUATION OF STATE, COEFFICIENTS

DGAT = .336118520E-06, TBLP = 144.0935
DGBP = .878210055E-01, DLBP = 21.6617
DTRP = 26.3200, TTRP = 66.350, PTRP = .185425421E-05
DCRT = 7.9200, TCRT = 234.000, PCRT = 44.607130324
DPS/DTB = .70882E-01, QVAPB,KJ/MOL = 11.583

IX = 1, ER = 0.000
AL = 1.0000000, BE = 0.0000000, GA = 1.0000000
DE = .5000000, EP = 1.0000000

B1 = .55199813920, B2 = .13268809584, B3 = .20608495802
C1 = .74067409894, C2 = .29375371520, C3 = 0.00000000000

MOL/L	TSAT	THETA	PSAT	B	C
1.0	194.018	183.967	12.719	.5720	-.59895
2.0	212.116	205.168	23.561	.5986	-.47316
3.0	221.972	217.769	31.741	.6318	-.36236
4.0	227.832	225.639	37.549	.6716	-.26555
5.0	231.310	230.387	41.392	.7179	-.18161
6.0	233.188	232.923	43.610	.7708	-.10947
7.0	233.913	233.884	44.499	.8303	-.04801
8.0	234.000	234.000	44.607	.8963	.00382
9.0	233.930	233.882	44.520	.9689	.04703
10.0	233.503	233.166	43.994	1.0481	.08259
11.0	232.416	231.328	42.685	1.1338	.11139
12.0	230.408	227.910	40.364	1.2261	.13425
13.0	227.273	222.540	36.961	1.3250	.15193
14.0	222.861	214.963	32.572	1.4305	.16513
15.0	217.076	205.054	27.447	1.5425	.17447
16.0	209.872	192.832	21.943	1.6611	.18052
17.0	201.249	178.461	16.476	1.7863	.18377
18.0	191.243	162.249	11.458	1.9181	.18467
19.0	179.919	144.626	7.236	2.0564	.18362
20.0	167.370	126.120	4.030	2.2013	.18098
21.0	153.700	107.316	1.894	2.3527	.17704
22.0	139.023	88.815	.700	2.5107	.17207
23.0	123.448	71.189	.182	2.6753	.16630
24.0	107.074	54.932	.027	2.8465	.15993
25.0	89.971	40.432	.002	3.0242	.15313
26.0	72.183	27.952	.000	3.2086	.14605

TABLE 7. Calculated P(ρ) Critical Isotherm

The following page gives a high-resolution examination of the critical isotherm as computed by equation of state (6). Column headings have the following interpretations--

D/DC ≡ d/d_c, density reduced at the critical point.
TS/TC ≡ $T_\sigma(\rho)/T_c$, reduced coexistence temperature.
PS/PC ≡ $P_\sigma(\rho)/P_c$, reduced coexistence pressure.
P/PC ≡ P/P_c, pressure reduced at the critical point.
DP/DR ≡ $\partial P/\partial\rho$ slope of the critical isotherm, bar.*

The last five columns give the density-dependence of functions used in the equation of state, where R ≡ ρ ≡ d/d_t is density reduced at the liquid triple point--

DTS/DR ≡ $dT_\sigma(\rho)/d\rho$, K.
DTH/DR ≡ $d\ (\rho)/d\rho$, K.
DPS/DR ≡ $dP_\sigma(\rho)/d\rho$, bar.
DXB/DR ≡ $\partial\ (\rho,T)/\partial\rho$.
DXC/DR ≡ $\partial\ (\rho,T)/\partial\rho$.

*Note: ρ ≡ d/d_t, density reduced at the liquid triple-point.

THE CRITICAL ISOTHERM

TC = 234.00, DC = 7.920, PC = 44.6071303. AT THE C.P., DPS/DT = 1.24509, DP/DT = 1.24509

D/DC	TS/TC	PS/PC	P/PC	DP/DR	DTS/DR	DTH/DR	DPS/DR	DXB/DR	DXC/DR
.900	.9997667132	.9984785814	.9998490785	.943707009	5.66917	7.52859	7.03928	-.02423	.08340
.905	.9998012754	.9987037439	.9998784552	.800830384	5.08677	6.76504	6.31829	-.02174	.07570
.910	.9998321940	.9989052348	.9999032732	.673257843	4.53586	6.04223	5.63577	-.01939	.06831
.915	.9998597536	.9990848900	.9999240792	.559926933	4.01530	5.35903	4.99041	-.01716	.06121
.920	.9998839821	.9992428740	.9999412479	.460543216	3.52884	4.71921	4.38696	-.01508	.05447
.925	.9999051883	.9993811851	.9999552830	.373928664	3.07490	4.12117	3.82353	-.01314	.04808
.930	.9999235818	.9995011778	.9999666003	.299193502	2.65363	3.56508	3.30038	-.01134	.04205
.935	.9999393728	.9996042129	.9999755850	.235431847	2.26506	3.05099	2.81765	-.00968	.03639
.940	.9999527712	.9996916527	.9999825918	.181727100	1.90914	2.57883	2.37529	-.00816	.03111
.945	.9999639864	.9997648555	.9999879443	.137157694	1.58566	2.14840	1.97312	-.00678	.02623
.950	.9999732259	.9998251711	.9999919349	.100803156	1.29432	1.75941	1.61079	-.00553	.02175
.955	.9999806950	.9998739350	.9999948252	.071750358	1.03470	1.41142	1.28783	-.00442	.01767
.960	.9999865957	.9999124632	.9999968463	.049099891	.80624	1.10390	1.00357	-.00345	.01402
.965	.9999911263	.9999420478	.9999981991	.031972463	.60828	.83618	.75722	-.00260	.01077
.970	.9999944804	.9999639513	.9999990553	.019515241	.44006	.60750	.54784	-.00188	.00795
.975	.9999969234	.9999799059	.9999995696	.010700560	.29568	.41196	.35812	-.00126	.00547
.980	.9999984427	.9999898291	.9999998296	.005274811	.18629	.26071	.23193	-.00080	.00353
.985	.9999993508	.9999957598	.9999999482	.002128765	.10308	.14494	.12834	-.00044	.00201
.990	.9999998504	.9999990229	.9999999924	.000497074	.03835	.05695	.04775	-.00016	.00078
.995	.9999999813	.9999998782	.9999999995	.000058050	.00949	.01414	.01181	-.00004	.00020
1.000	1.0000000000	1.0000000000	1.0000000000	.000000000	.00000	.00000	.00000	-.00000	0.00000
1.005	.9999999921	.9999999485	1.0000000002	.000026765	-.00455	-.00920	-.00566	.00002	-.00010
1.010	.9999999369	.9999995880	1.0000000032	.000226990	-.01820	-.03680	-.02266	.00008	-.00037
1.015	.9999996359	.9999976221	1.0000000288	.001195902	-.05855	-.10042	-.07290	.00025	-.00115
1.020	.9999991371	.9999943638	1.0000000937	.002923213	-.10409	-.17851	-.12960	.00044	-.00199
1.025	.9999981419	.9999878644	1.0000002588	.006313000	-.17356	-.28983	-.21608	.00074	-.00324
1.030	.9999967895	.9999790315	1.0000005478	.011154524	-.24989	-.41733	-.31111	.00107	-.00456
1.035	.9999949022	.9999667062	1.0000010339	.018068233	-.34008	-.56799	-.42338	.00145	-.00609
1.040	.9999923912	.9999503078	1.0000017936	.027462131	-.44412	-.74179	-.55288	.00190	-.00781
1.045	.9999891675	.9999292563	1.0000029176	.039758404	-.56199	-.93873	-.69957	.00240	-.00972
1.050	.9999851423	.9999029727	1.0000045110	.055393104	-.69368	-1.15878	-.86345	.00296	-.01181
1.055	.9999802269	.9998708786	1.0000066940	.074815968	-.83918	-1.40194	-1.04447	.00359	-.01408
1.060	.9999743327	.9998323967	1.0000096018	.098490316	-.99845	-1.66817	-1.24260	.00427	-.01651
1.065	.9999672674	.9997862727	1.0000134295	.127207062	-1.17398	-1.95995	-1.46090	.00502	-.01916
1.070	.9999591246	.9997331206	1.0000182730	.160911702	-1.36116	-2.27268	-1.69364	.00582	-.02192
1.075	.9999497342	.9996718311	1.0000243488	.200353242	-1.56208	-2.60845	-1.94342	.00668	-.02485
1.080	.9999390077	.9996018303	1.0000318588	.246050634	-1.77673	-2.96723	-2.21018	.00759	-.02793
1.085	.9999268570	.9995225463	1.0000410232	.298536625	-2.00508	-3.34900	-2.49387	.00857	-.03115
1.090	.9999131941	.9994334087	1.0000520801	.358357864	-2.24710	-3.75372	-2.79444	.00960	-.03452
1.095	.9998979312	.9993338493	1.0000652862	.426075027	-2.50276	-4.18136	-3.11184	.01070	-.03802
1.100	.9998809808	.9992233015	1.0000809175	.502262943	-2.77203	-4.63189	-3.44599	.01185	-.04166

Table 7. Calculated P(ρ) Critical Isotherm.

Table 8. Comparisons With Ideal Gas Functions.

NF3 IDEAL GAS FUNCTIONS, JOULES,MOLES,KELVINS

T,K	HZ-HZZ	CALCD	PCNT	SZ	CALCD	PCNT	CPZ	CALCD	PCNT
100.00	3334.6	3336.7	-.06	215.689	215.683	.00	34.04	34.04	-.00
200.00	7117.0	7119.9	-.04	241.559	241.556	.00	42.78	42.78	.00
298.00	11849.1	11842.6	.05	260.659	260.632	.01	53.37	53.36	.01
300.00	11949.5	11949.5	.00	260.990	260.990	0.00	53.55	53.56	-.02
400.00	17744.3	17744.6	-.00	277.604	277.604	.00	61.86	61.86	.00
500.00	24233.7	24234.3	-.00	292.060	292.061	-.00	67.57	67.56	.01
600.00	31195.9	31196.3	-.00	304.746	304.744	.00	71.43	71.43	.00
700.00	38480.2	38480.3	-.00	315.967	315.967	.00	74.09	74.09	-.00
800.00	45986.3	45988.7	-.01	325.992	325.990	.00	75.97	75.97	-.01
900.00	53655.6	53657.8	-.00	335.021	335.022	-.00	77.34	77.34	-.00
1000.00	61442.0	61445.1	-.00	343.226	343.225	.00	78.36	78.36	.00
1100.00	69320.5	69321.3	-.00	350.732	350.732	.00	79.14	79.13	.00
1200.00	77265.9	77266.2	-.00	357.644	357.644	.00	79.74	79.74	.00
1300.00	85265.7	85265.0	.00	364.046	364.046	-.00	80.22	80.22	.00
1400.00	93307.4	93307.3	.00	370.008	370.006	.00	80.61	80.61	-.00
1500.00	101382.5	101384.8	-.00	375.581	375.579	.00	80.93	80.93	-.00

Table 9. Interpolated Ideal Gas Functions.

NF3 IDEAL GAS FUNCTIONS, JOULES, MOLES, KELVINS

T,K	EZ-EZZ	HZ-HZZ	SZ	CVZ	CPZ
50.0	1247.6	1663.3	192.512	24.95	33.26
60.0	1497.1	1996.0	198.576	24.96	33.27
70.0	1746.9	2328.9	203.708	25.01	33.32
80.0	1997.5	2662.7	208.165	25.14	33.45
90.0	2249.9	2998.2	212.117	25.37	33.68
100.0	2505.3	3336.7	215.683	25.72	34.04
110.0	2764.8	3679.4	218.948	26.21	34.52
120.0	3029.8	4027.6	221.977	26.81	35.13
130.0	3301.4	4382.3	224.816	27.53	35.84
140.0	3580.7	4744.7	227.502	28.34	36.65
150.0	3868.5	5115.7	230.060	29.23	37.55
160.0	4165.6	5495.9	232.514	30.19	38.51
170.0	4472.5	5886.0	234.879	31.21	39.52
180.0	4789.9	6286.5	237.167	32.26	40.58
190.0	5117.9	6697.7	239.390	33.35	41.67
200.0	5457.0	7119.9	241.556	34.46	42.78
210.0	5807.2	7553.2	243.670	35.58	43.90
220.0	6168.6	7997.8	245.738	36.71	45.02
230.0	6541.4	8453.7	247.764	37.83	46.15
240.0	6925.3	8920.7	249.752	38.95	47.26
250.0	7320.3	9398.9	251.703	40.05	48.36
260.0	7726.2	9888.0	253.621	41.13	49.45
270.0	8142.9	10387.8	255.508	42.20	50.51
280.0	8570.1	10898.2	257.364	43.24	51.56
290.0	9007.6	11418.8	259.191	44.26	52.57
300.0	9455.2	11949.5	260.990	45.25	53.56
310.0	9912.4	12489.9	262.762	46.21	54.52
320.0	10379.2	13039.8	264.507	47.14	55.45
330.0	10855.1	13598.9	266.228	48.04	56.36
340.0	11339.9	14166.9	267.923	48.91	57.23
350.0	11833.3	14743.4	269.594	49.76	58.07
360.0	12335.0	15328.2	271.242	50.57	58.89
370.0	12844.6	15921.0	272.866	51.36	59.67
380.0	13362.0	16521.5	274.467	52.11	60.43
390.0	13886.8	17129.5	276.046	52.84	61.16
400.0	14418.8	17744.6	277.604	53.54	61.86
410.0	14957.6	18366.6	279.139	54.22	62.54
420.0	15503.1	18995.2	280.654	54.87	63.19
430.0	16055.0	19630.2	282.148	55.50	63.81
440.0	16613.0	20271.3	283.622	56.10	64.41
450.0	17176.8	20918.4	285.076	56.68	64.99
460.0	17746.4	21571.1	286.511	57.23	65.55
470.0	18321.4	22229.2	287.926	57.77	66.08
480.0	18901.6	22892.6	289.323	58.28	66.59
490.0	19486.9	23561.0	290.701	58.77	67.09
500.0	20077.1	24234.3	292.061	59.25	67.56
510.0	20671.9	24912.3	293.404	59.71	68.02
520.0	21271.1	25594.7	294.729	60.15	68.46
530.0	21874.7	26281.4	296.037	60.57	68.88
540.0	22482.4	26972.3	297.328	60.98	69.29
550.0	23094.2	27667.1	298.603	61.37	69.68
560.0	23709.7	28365.8	299.862	61.74	70.06
570.0	24329.0	29068.2	301.106	62.11	70.42
580.0	24951.8	29774.2	302.333	62.45	70.77
590.0	25578.0	30483.6	303.546	62.79	71.11
600.0	26207.6	31196.3	304.744	63.11	71.43

Table 10. The Heats of Vaporization.

NF3 QVAP, NF = 3, E = .380, QT = 14.548

(23)AEROJET, (39)THERMALOOPS, (40)CLAPEYRON.

.998247122E+00 .269536103E+00 -.405010672E+00
0. 0. 0.

ID	WT	T,K	KJ/MOL	CALC	PCNT	RESID.
39	1.000	66.360	14.548	14.548	.00	.1613E+01
39	.989	70.000	14.406	14.402	.03	.8935E+00
39	.974	75.000	14.213	14.207	.04	.9022E+00
39	.958	80.000	14.021	14.017	.03	.9100E+00
39	.943	85.000	13.832	13.830	.02	.9200E+00
39	.927	90.000	13.645	13.646	-.01	.9302E+00
39	.911	95.000	13.461	13.464	-.02	.9415E+00
39	.894	100.000	13.278	13.283	-.03	.9523E+00
39	.877	105.000	13.096	13.102	-.04	.9630E+00
39	.860	110.000	12.914	12.920	-.04	.9735E+00
39	.843	115.000	12.731	12.736	-.04	.9835E+00
39	.825	120.000	12.546	12.549	-.03	.9930E+00
39	.806	125.000	12.358	12.359	-.01	.1002E+01
39	.788	130.000	12.165	12.164	.01	.1010E+01
39	.768	135.000	11.967	11.963	.04	.1018E+01
39	.749	140.000	11.761	11.754	.06	.1024E+01
40	1.000	66.350	14.548	14.548	.00	0.
40	.989	70.000	14.407	14.402	.03	.9000E+00
40	.974	75.000	14.214	14.207	.05	.9051E+00
40	.958	80.000	14.022	14.017	.04	.9120E+00
40	.943	85.000	13.832	13.830	.02	.9205E+00
40	.927	90.000	13.645	13.646	-.01	.9303E+00
40	.911	95.000	13.460	13.464	-.03	.9409E+00
40	.894	100.000	13.278	13.283	-.04	.9522E+00
40	.877	105.000	13.097	13.102	-.03	.9636E+00
40	.860	110.000	12.917	12.920	-.02	.9748E+00
40	.843	115.000	12.736	12.736	-.00	.9854E+00
40	.825	120.000	12.552	12.549	.02	.9952E+00
40	.806	125.000	12.364	12.359	.04	.1004E+01
40	.788	130.000	12.171	12.164	.06	.1012E+01
40	.768	135.000	11.970	11.963	.06	.1018E+01
40	.749	140.000	11.761	11.754	.06	.1024E+01
40	.729	145.000	11.543	11.538	.04	.1029E+01
40	.708	150.000	11.314	11.311	.02	.1032E+01
40	.686	155.000	11.073	11.074	-.01	.1035E+01
40	.664	160.000	10.821	10.824	-.04	.1037E+01
40	.642	165.000	10.554	10.561	-.06	.1039E+01
40	.618	170.000	10.273	10.281	-.08	.1040E+01
40	.593	175.000	9.975	9.983	-.08	.1041E+01
40	.563	180.000	9.657	9.664	-.07	.1042E+01
40	.541	185.000	9.318	9.322	-.05	.1041E+01
40	.512	190.000	8.952	8.953	-.01	.1041E+01
40	.482	195.000	8.556	8.553	.04	.1040E+01
40	.450	200.000	8.122	8.115	.09	.1038E+01
40	.416	205.000	7.640	7.631	.13	.1035E+01
40	.378	210.000	7.099	7.089	.13	.1030E+01
40	.337	215.000	6.476	6.471	.08	.1025E+01
40	.289	220.000	5.739	5.743	-.07	.1017E+01
40	.232	225.000	4.818	4.834	-.33	.1008E+01
40	.154	230.000	3.521	3.532	-.32	.1001E+01
40	0.000	234.000	0.000	0.000	0.00	0.

Table 10. Continued.

NF3 QVAP, NF = 3, E = .380, QT = 14.548

ID	WT	T,K	KJ/MOL	CALC	PCNT	RESID.
23	0.000	70.000	14.469	14.402	.46	.1216E+01
23	0.000	80.000	14.137	14.017	.86	.1070E+01
23	0.000	90.000	13.790	13.646	1.06	.1048E+01
23	0.000	100.000	13.429	13.283	1.10	.1039E+01
23	0.000	110.000	13.049	12.920	1.00	.1035E+01
23	0.000	120.000	12.651	12.549	.81	.1032E+01
23	0.000	130.000	12.229	12.164	.54	.1031E+01
23	0.000	140.000	11.782	11.754	.23	.1030E+01
23	0.000	150.000	11.303	11.311	-.08	.1029E+01
23	0.000	160.000	10.787	10.824	-.35	.1029E+01
23	0.000	170.000	10.225	10.281	-.54	.1030E+01
23	0.000	180.000	9.605	9.664	-.61	.1031E+01
23	0.000	190.000	8.908	8.953	-.51	.1032E+01
23	0.000	200.000	8.102	8.115	-.16	.1034E+01
23	0.000	210.000	7.129	7.089	.56	.1037E+01
23	0.000	220.000	5.850	5.743	1.86	.1042E+01
23	0.000	230.000	3.699	3.532	4.73	.1057E+01

NP = 50, RMSPCT = .05

TABLE 11. Calculated P(T) Isochores

The following pages give P(T) along isochores, as computed by the equation of state. The third column DP/DD is the isotherm slope $(\partial P/\partial \rho)$ in units of the bar and mol/L. The last two columns give the isochore slopes and curvatures $\partial P/\partial T$, $\partial^2 P/\partial T^2$, in units of the bar and K.

These tables show that the isochore curvatures are qualitatively consistent with a maximum in the specific heat $C_v(\rho,T)$ at the critical point.

Table 11. Calculated P(T) Isochores.

NF3 ISOCHORE AT .500 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
177.084	6.388	.86770	10.916	.0473	-.000113
180.000	6.525	.87200	11.233	.0470	-.000092
188.000	6.898	.88264	12.077	.0464	-.000060
196.000	7.268	.89193	12.899	.0460	-.000044
204.000	7.634	.90015	13.706	.0456	-.000034
212.000	7.998	.90750	14.502	.0454	-.000028
220.000	8.360	.91412	15.289	.0452	-.000023
228.000	8.721	.92012	16.070	.0450	-.000019
236.000	9.081	.92558	16.845	.0449	-.000017
244.000	9.440	.93059	17.615	.0448	-.000014
252.000	9.797	.93518	18.381	.0447	-.000013
260.000	10.154	.93942	19.143	.0446	-.000011
268.000	10.510	.94334	19.902	.0445	-.000010
276.000	10.866	.94698	20.659	.0444	-.000009
284.000	11.220	.95036	21.412	.0443	-.000008
292.000	11.575	.95351	22.164	.0443	-.000008
300.000	11.929	.95645	22.913	.0442	-.000007
308.000	12.282	.95920	23.661	.0441	-.000007
316.000	12.635	.96179	24.407	.0441	-.000006
324.000	12.987	.96421	25.151	.0440	-.000006
332.000	13.340	.96650	25.894	.0440	-.000005
340.000	13.691	.96865	26.635	.0440	-.000005
348.000	14.043	.97068	27.375	.0439	-.000005
356.000	14.394	.97259	28.113	.0439	-.000004
364.000	14.745	.97441	28.851	.0438	-.000004
372.000	15.096	.97613	29.587	.0438	-.000004
380.000	15.446	.97776	30.323	.0438	-.000004
388.000	15.796	.97931	31.057	.0438	-.000004
396.000	16.146	.98078	31.791	.0437	-.000003
404.000	16.496	.98218	32.523	.0437	-.000003
412.000	16.845	.98351	33.255	.0437	-.000003
420.000	17.195	.98478	33.986	.0436	-.000003
428.000	17.544	.98599	34.716	.0436	-.000003
436.000	17.893	.98715	35.445	.0436	-.000003
444.000	18.241	.98825	36.174	.0436	-.000003
452.000	18.590	.98931	36.902	.0436	-.000003
460.000	18.938	.99032	37.629	.0435	-.000003
468.000	19.286	.99129	38.356	.0435	-.000002
476.000	19.634	.99222	39.082	.0435	-.000002
484.000	19.982	.99311	39.808	.0435	-.000002
492.000	20.330	.99396	40.533	.0435	-.000002
500.000	20.678	.99478	41.257	.0434	-.000002

Table 11. Calculated P(T) Isochores.

NF3 ISOCHORE AT .500 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
177.084	6.388	.86770	10.916	.0473	-.000113
180.000	6.525	.87200	11.233	.0470	-.000092
188.000	6.898	.88264	12.077	.0464	-.000060
196.000	7.268	.89193	12.899	.0460	-.000044
204.000	7.634	.90015	13.706	.0456	-.000034
212.000	7.998	.90750	14.502	.0454	-.000028
220.000	8.360	.91412	15.289	.0452	-.000023
228.000	8.721	.92012	16.070	.0450	-.000019
236.000	9.081	.92558	16.845	.0449	-.000017
244.000	9.440	.93059	17.615	.0448	-.000014
252.000	9.797	.93518	18.381	.0447	-.000013
260.000	10.154	.93942	19.143	.0446	-.000011
268.000	10.510	.94334	19.902	.0445	-.000010
276.000	10.866	.94698	20.659	.0444	-.000009
284.000	11.220	.95036	21.412	.0443	-.000008
292.000	11.575	.95351	22.164	.0443	-.000008
300.000	11.929	.95645	22.913	.0442	-.000007
308.000	12.282	.95920	23.661	.0441	-.000007
316.000	12.635	.96179	24.407	.0441	-.000006
324.000	12.987	.96421	25.151	.0440	-.000006
332.000	13.340	.96650	25.894	.0440	-.000005
340.000	13.691	.96865	26.635	.0440	-.000005
348.000	14.043	.97068	27.375	.0439	-.000005
356.000	14.394	.97259	28.113	.0439	-.000004
364.000	14.745	.97441	28.851	.0438	-.000004
372.000	15.096	.97613	29.587	.0438	-.000004
380.000	15.446	.97776	30.323	.0438	-.000004
388.000	15.796	.97931	31.057	.0438	-.000004
396.000	16.146	.98078	31.791	.0437	-.000003
404.000	16.496	.98218	32.523	.0437	-.000003
412.000	16.845	.98351	33.255	.0437	-.000003
420.000	17.195	.98478	33.986	.0436	-.000003
428.000	17.544	.98599	34.716	.0436	-.000003
436.000	17.893	.98715	35.445	.0436	-.000003
444.000	18.241	.98825	36.174	.0436	-.000003
452.000	18.590	.98931	36.902	.0436	-.000003
460.000	18.938	.99032	37.629	.0435	-.000003
468.000	19.286	.99129	38.356	.0435	-.000002
476.000	19.634	.99222	39.082	.0435	-.000002
484.000	19.982	.99311	39.808	.0435	-.000002
492.000	20.330	.99396	40.533	.0435	-.000002
500.000	20.678	.99478	41.257	.0434	-.000002

Table 11. Continued.

NF3 ISOCHORE AT 1.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
194.018	12.719	.78847	9.474	.1036	-.000398
196.000	12.924	.79305	9.731	.1029	-.000341
204.000	13.738	.80992	10.723	.1007	-.000216
212.000	14.537	.82472	11.673	.0993	-.000156
220.000	15.327	.83789	12.595	.0982	-.000121
228.000	16.108	.84972	13.498	.0973	-.000097
236.000	16.884	.86044	14.386	.0966	-.000081
244.000	17.654	.87019	15.262	.0960	-.000068
252.000	18.420	.87911	16.128	.0955	-.000059
260.000	19.182	.88731	16.986	.0950	-.000051
268.000	19.940	.89487	17.837	.0947	-.000045
276.000	20.696	.90187	18.681	.0943	-.000040
284.000	21.449	.90837	19.520	.0940	-.000036
292.000	22.200	.91441	20.354	.0937	-.000033
300.000	22.949	.92004	21.184	.0935	-.000030
308.000	23.696	.92531	22.009	.0932	-.000028
316.000	24.441	.93024	22.832	.0930	-.000025
324.000	25.185	.93487	23.650	.0928	-.000023
332.000	25.927	.93923	24.466	.0927	-.000022
340.000	26.667	.94332	25.279	.0925	-.000020
348.000	27.406	.94719	26.090	.0923	-.000019
356.000	28.144	.95084	26.898	.0922	-.000018
364.000	28.881	.95429	27.704	.0920	-.000017
372.000	29.617	.95755	28.508	.0919	-.000016
380.000	30.352	.96065	29.309	.0918	-.000015
388.000	31.086	.96359	30.109	.0917	-.000014
396.000	31.819	.96638	30.907	.0916	-.000014
404.000	32.551	.96904	31.703	.0914	-.000013
412.000	33.282	.97157	32.498	.0913	-.000012
420.000	34.012	.97398	33.291	.0913	-.000012
428.000	34.742	.97628	34.083	.0912	-.000011
436.000	35.471	.97847	34.874	.0911	-.000011
444.000	36.199	.98057	35.663	.0910	-.000010
452.000	36.926	.98257	36.450	.0909	-.000010
460.000	37.653	.98449	37.237	.0908	-.000010
468.000	38.380	.98632	38.022	.0907	-.000009
476.000	39.105	.98808	38.807	.0907	-.000009
484.000	39.831	.98977	39.590	.0906	-.000009
492.000	40.555	.99139	40.372	.0905	-.000008
500.000	41.279	.99294	41.153	.0905	-.000008

Table 11. Continued.

NF3 ISOCHORE AT 2.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
212.116	23.561	.66796	6.446	.2374	-.001518
220.000	25.395	.69416	7.668	.2289	-.000800
228.000	27.204	.71751	8.820	.2236	-.000544
236.000	28.977	.73837	9.923	.2199	-.000409
244.000	30.724	.75721	10.996	.2169	-.000324
252.000	32.449	.77435	12.045	.2146	-.000266
260.000	34.158	.79005	13.075	.2126	-.000224
268.000	35.852	.80448	14.091	.2110	-.000192
276.000	37.534	.81781	15.095	.2095	-.000168
284.000	39.206	.83016	16.088	.2083	-.000148
292.000	40.867	.84164	17.072	.2072	-.000132
300.000	42.521	.85234	18.049	.2062	-.000118
308.000	44.166	.86233	19.018	.2053	-.000107
316.000	45.805	.87169	19.981	.2045	-.000098
324.000	47.438	.88047	20.938	.2037	-.000089
332.000	49.065	.88872	21.890	.2030	-.000082
340.000	50.686	.89649	22.837	.2024	-.000076
348.000	52.303	.90382	23.780	.2018	-.000071
356.000	53.915	.91074	24.718	.2013	-.000066
364.000	55.523	.91729	25.654	.2007	-.000062
372.000	57.127	.92349	26.585	.2003	-.000058
380.000	58.728	.92938	27.513	.1998	-.000055
388.000	60.324	.93496	28.439	.1994	-.000052
396.000	61.918	.94027	29.361	.1990	-.000049
404.000	63.508	.94532	30.281	.1986	-.000047
412.000	65.095	.95013	31.198	.1982	-.000044
420.000	66.679	.95472	32.112	.1979	-.000042
428.000	68.261	.95910	33.025	.1975	-.000040
436.000	69.840	.96328	33.935	.1972	-.000039
444.000	71.417	.96728	34.842	.1969	-.000037
452.000	72.991	.97110	35.748	.1966	-.000035
460.000	74.563	.97477	36.652	.1964	-.000034
468.000	76.133	.97828	37.554	.1961	-.000033
476.000	77.701	.98164	38.455	.1958	-.000031
484.000	79.267	.98487	39.353	.1956	-.000030
492.000	80.830	.98797	40.250	.1954	-.000029
500.000	82.392	.99095	41.145	.1951	-.000028

Table 11. Continued.

NF3 ISOCHORE AT 3.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
221.972	31.741	.57328	3.991	.3925	-.003709
228.000	34.057	.59884	5.055	.3775	-.001772
236.000	37.030	.62904	6.345	.3666	-.001081
244.000	39.931	.65610	7.576	.3593	-.000779
252.000	42.783	.68063	8.771	.3538	-.000604
260.000	45.595	.70305	9.942	.3495	-.000490
268.000	48.376	.72367	11.095	.3459	-.000410
276.000	51.131	.74270	12.232	.3428	-.000350
284.000	53.863	.76035	13.358	.3402	-.000303
292.000	56.575	.77676	14.473	.3380	-.000267
300.000	59.271	.79207	15.579	.3360	-.000237
308.000	61.951	.80638	16.677	.3342	-.000213
316.000	64.618	.81980	17.768	.3325	-.000193
324.000	67.272	.83240	18.854	.3311	-.000176
332.000	69.915	.84426	19.933	.3297	-.000161
340.000	72.548	.85544	21.008	.3285	-.000149
348.000	75.171	.86599	22.078	.3273	-.000138
356.000	77.785	.87597	23.143	.3263	-.000128
364.000	80.391	.88542	24.205	.3253	-.000120
372.000	82.990	.89439	25.263	.3243	-.000113
380.000	85.581	.90289	26.317	.3235	-.000106
388.000	88.165	.91098	27.368	.3226	-.000100
396.000	90.743	.91868	28.416	.3219	-.000095
404.000	93.315	.92601	29.461	.3211	-.000090
412.000	95.882	.93300	30.503	.3204	-.000085
420.000	98.442	.93967	31.543	.3198	-.000081
428.000	100.998	.94605	32.580	.3191	-.000077
436.000	103.549	.95214	33.615	.3185	-.000074
444.000	106.095	.95797	34.647	.3179	-.000071
452.000	108.636	.96356	35.677	.3174	-.000068
460.000	111.173	.96891	36.705	.3169	-.000065
468.000	113.706	.97404	37.731	.3163	-.000063
476.000	116.234	.97897	38.755	.3159	-.000060
484.000	118.759	.98371	39.777	.3154	-.000058
492.000	121.281	.98825	40.797	.3149	-.000056
500.000	123.798	.99263	41.815	.3145	-.000054

Table 11. Continued.

NF3 ISOCHORE AT 4.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
227.832	37.549	.49555	2.234	.5625	-.007997
228.000	37.643	.49643	2.269	.5612	-.007513
236.000	41.990	.53499	3.730	.5314	-.002198
244.000	46.183	.56911	5.073	.5178	-.001352
252.000	50.287	.60001	6.376	.5086	-.000979
260.000	54.327	.62827	7.657	.5017	-.000764
268.000	58.318	.65429	8.922	.4962	-.000623
276.000	62.269	.67837	10.175	.4916	-.000523
284.000	66.186	.70073	11.419	.4878	-.000449
292.000	70.075	.72158	12.656	.4844	-.000392
300.000	73.938	.74105	13.885	.4815	-.000346
308.000	77.779	.75930	15.109	.4789	-.000310
316.000	81.600	.77644	16.328	.4765	-.000279
324.000	85.404	.79257	17.542	.4744	-.000254
332.000	89.191	.80777	18.752	.4724	-.000233
340.000	92.963	.82212	19.959	.4706	-.000214
348.000	96.721	.83569	21.161	.4690	-.000199
356.000	100.467	.84855	22.361	.4675	-.000185
364.000	104.201	.86074	23.557	.4660	-.000173
372.000	107.924	.87232	24.751	.4647	-.000162
380.000	111.636	.88333	25.941	.4634	-.000153
388.000	115.339	.89381	27.129	.4622	-.000145
396.000	119.032	.90380	28.315	.4611	-.000137
404.000	122.716	.91332	29.498	.4600	-.000130
412.000	126.393	.92242	30.679	.4590	-.000124
420.000	130.061	.93111	31.857	.4580	-.000118
428.000	133.721	.93942	33.034	.4571	-.000113
436.000	137.375	.94738	34.208	.4562	-.000109
444.000	141.021	.95500	35.380	.4554	-.000104
452.000	144.661	.96231	36.551	.4546	-.000100
460.000	148.294	.96933	37.719	.4538	-.000096
468.000	151.922	.97606	38.886	.4530	-.000093
476.000	155.543	.98253	40.051	.4523	-.000090
484.000	159.158	.98875	41.214	.4516	-.000087
492.000	162.768	.99474	42.375	.4509	-.000084
500.000	166.373	1.00050	43.534	.4503	-.000081

Table 11. Continued.

NF3 ISOCHORE AT 5.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
231.310	41.392	.43044	1.064	.7415	-.017485
236.000	44.772	.45634	1.961	.7080	-.003813
244.000	50.344	.49631	3.372	.6875	-.001829
252.000	55.794	.53257	4.757	.6756	-.001231
260.000	61.163	.56586	6.134	.6671	-.000929
268.000	66.472	.59662	7.506	.6604	-.000744
276.000	71.733	.62518	8.875	.6550	-.000618
284.000	76.955	.65179	10.242	.6505	-.000527
292.000	82.142	.67667	11.606	.6465	-.000458
300.000	87.300	.69998	12.970	.6431	-.000405
308.000	92.432	.72188	14.331	.6400	-.000362
316.000	97.541	.74250	15.692	.6373	-.000327
324.000	102.629	.76194	17.051	.6348	-.000298
332.000	107.698	.78031	18.408	.6325	-.000274
340.000	112.750	.79768	19.765	.6304	-.000253
348.000	117.785	.81415	21.120	.6284	-.000236
356.000	122.805	.82977	22.473	.6266	-.000220
364.000	127.811	.84462	23.826	.6249	-.000207
372.000	132.803	.85873	25.177	.6233	-.000195
380.000	137.783	.87218	26.526	.6218	-.000185
388.000	142.751	.88500	27.875	.6203	-.000176
396.000	147.708	.89723	29.221	.6189	-.000167
404.000	152.655	.90891	30.567	.6176	-.000160
412.000	157.591	.92008	31.911	.6164	-.000153
420.000	162.517	.93077	33.254	.6152	-.000147
428.000	167.434	.94101	34.595	.6140	-.000141
436.000	172.342	.95082	35.935	.6129	-.000136
444.000	177.241	.96023	37.274	.6119	-.000131
452.000	182.132	.96926	38.611	.6108	-.000126
460.000	187.015	.97794	39.946	.6099	-.000122
468.000	191.890	.98628	41.281	.6089	-.000118
476.000	196.757	.99430	42.614	.6080	-.000115
484.000	201.617	1.00202	43.945	.6071	-.000111
492.000	206.470	1.00945	45.275	.6062	-.000108
500.000	211.316	1.01662	46.604	.6053	-.000105

Table 11. Continued.

NF3 ISOCHORE AT 6.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
233.188	43.610	.37488	.356	.9237	-.044724
236.000	46.145	.39194	.890	.8896	-.005383
244.000	53.150	.43664	2.345	.8658	-.001870
252.000	60.026	.47748	3.817	.8541	-.001187
260.000	66.824	.51520	5.304	.8459	-.000878
268.000	73.566	.55024	6.802	.8397	-.000698
276.000	80.262	.58293	8.309	.8346	-.000580
284.000	86.921	.61351	9.824	.8303	-.000496
292.000	93.549	.64220	11.345	.8266	-.000434
300.000	100.148	.66917	12.871	.8233	-.000386
308.000	106.723	.69458	14.401	.8204	-.000348
316.000	113.275	.71856	15.934	.8177	-.000317
324.000	119.807	.74123	17.470	.8153	-.000292
332.000	126.321	.76269	19.008	.8131	-.000271
340.000	132.817	.78304	20.548	.8110	-.000253
348.000	139.296	.80237	22.089	.8090	-.000238
356.000	145.761	.82074	23.631	.8071	-.000225
364.000	152.211	.83822	25.174	.8054	-.000213
372.000	158.648	.85488	26.718	.8037	-.000203
380.000	165.071	.87076	28.262	.8021	-.000194
388.000	171.482	.88593	29.806	.8006	-.000186
396.000	177.881	.90042	31.351	.7992	-.000179
404.000	184.269	.91429	32.895	.7978	-.000173
412.000	190.645	.92756	34.439	.7964	-.000167
420.000	197.011	.94027	35.982	.7951	-.000161
428.000	203.367	.95246	37.525	.7938	-.000156
436.000	209.712	.96416	39.067	.7926	-.000152
444.000	216.048	.97539	40.609	.7914	-.000148
452.000	222.375	.98619	42.150	.7902	-.000144
460.000	228.692	.99656	43.690	.7891	-.000140
468.000	235.000	1.00655	45.229	.7880	-.000136
476.000	241.299	1.01616	46.768	.7869	-.000133
484.000	247.590	1.02542	48.305	.7858	-.000130
492.000	253.873	1.03434	49.841	.7848	-.000127
500.000	260.148	1.04295	51.377	.7838	-.000125

Table 11. Continued.

NF3 ISOCHORE AT 7.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
233.913	44.499	.32686	.041	1.1021	-.189899
236.000	46.752	.34037	.417	1.0716	-.004383
244.000	55.244	.38901	1.947	1.0550	-.001208
252.000	63.651	.43398	3.548	1.0474	-.000755
260.000	72.009	.47586	5.190	1.0422	-.000563
268.000	80.330	.51500	6.861	1.0382	-.000456
276.000	88.622	.55169	8.554	1.0348	-.000387
284.000	96.889	.58617	10.264	1.0320	-.000340
292.000	105.134	.61862	11.988	1.0294	-.000305
300.000	113.360	.64924	13.724	1.0270	-.000279
308.000	121.568	.67816	15.469	1.0249	-.000259
316.000	129.759	.70553	17.222	1.0229	-.000243
324.000	137.934	.73146	18.982	1.0210	-.000230
332.000	146.095	.75607	20.748	1.0192	-.000219
340.000	154.242	.77945	22.519	1.0175	-.000210
348.000	162.375	.80169	24.294	1.0159	-.000202
356.000	170.496	.82287	26.072	1.0143	-.000195
364.000	178.604	.84305	27.854	1.0127	-.000189
372.000	186.700	.86232	29.637	1.0112	-.000184
380.000	194.784	.88071	31.423	1.0098	-.000180
388.000	202.856	.89830	33.211	1.0084	-.000176
396.000	210.918	.91513	35.000	1.0070	-.000172
404.000	218.968	.93125	36.790	1.0056	-.000168
412.000	227.008	.94669	38.580	1.0043	-.000165
420.000	235.037	.96151	40.372	1.0030	-.000162
428.000	243.055	.97572	42.163	1.0017	-.000159
436.000	251.064	.98938	43.955	1.0004	-.000157
444.000	259.062	1.00250	45.747	.9992	-.000154
452.000	267.050	1.01513	47.539	.9979	-.000152
460.000	275.029	1.02728	49.330	.9967	-.000150
468.000	282.998	1.03897	51.121	.9956	-.000148
476.000	290.958	1.05024	52.912	.9944	-.000146
484.000	298.908	1.06111	54.702	.9932	-.000144
492.000	306.850	1.07158	56.491	.9921	-.000142
500.000	314.782	1.08170	58.279	.9909	-.000140

Table 11. Continued.

NF3 ISOCHORE AT 7.920 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
234.000	44.607	.28949	0.000	1.2451	0.000000
236.000	47.097	.30306	.371	1.2451	-.000005
244.000	57.058	.35511	2.044	1.2450	-.000025
252.000	67.016	.40385	3.826	1.2447	-.000042
260.000	76.972	.44957	5.668	1.2443	-.000056
268.000	86.925	.49255	7.552	1.2438	-.000069
276.000	96.873	.53301	9.469	1.2432	-.000081
284.000	106.816	.57116	11.410	1.2425	-.000091
292.000	116.753	.60719	13.373	1.2417	-.000100
300.000	126.684	.64127	15.353	1.2409	-.000107
308.000	136.607	.67354	17.346	1.2400	-.000114
316.000	146.524	.70414	19.352	1.2391	-.000120
324.000	156.433	.73320	21.368	1.2381	-.000125
332.000	166.334	.76082	23.393	1.2371	-.000130
340.000	176.226	.78710	25.426	1.2360	-.000134
348.000	186.110	.81214	27.464	1.2350	-.000137
356.000	195.986	.83601	29.509	1.2338	-.000140
364.000	205.852	.85880	31.558	1.2327	-.000143
372.000	215.709	.88057	33.611	1.2316	-.000145
380.000	225.557	.90139	35.667	1.2304	-.000147
388.000	235.395	.92131	37.726	1.2292	-.000148
396.000	245.224	.94039	39.788	1.2280	-.000150
404.000	255.044	.95868	41.851	1.2268	-.000151
412.000	264.854	.97622	43.917	1.2256	-.000152
420.000	274.654	.99306	45.983	1.2244	-.000152
428.000	284.444	1.00923	48.051	1.2232	-.000153
436.000	294.224	1.02478	50.119	1.2219	-.000153
444.000	303.995	1.03973	52.187	1.2207	-.000154
452.000	313.756	1.05413	54.256	1.2195	-.000154
460.000	323.507	1.06798	56.325	1.2183	-.000154
468.000	333.248	1.08134	58.394	1.2170	-.000154
476.000	342.979	1.09421	60.463	1.2158	-.000153
484.000	352.701	1.10662	62.531	1.2146	-.000153

Table 11. Continued.

NF3 ISOCHORE AT 9.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
233.930	44.520	.25432	.036	1.4263	.199779
236.000	47.540	.26920	.488	1.4713	.007078
240.000	53.465	.29770	1.433	1.4886	.002903
244.000	59.439	.32554	2.428	1.4979	.001892
248.000	65.444	.35265	3.455	1.5044	.001408
252.000	71.472	.37902	4.506	1.5094	.001115
256.000	77.518	.40466	5.577	1.5134	.000914
260.000	83.579	.42958	6.663	1.5168	.000766
264.000	89.652	.45381	7.764	1.5196	.000651
268.000	95.735	.47737	8.877	1.5220	.000558
272.000	101.827	.50028	10.000	1.5241	.000482
276.000	107.927	.52257	11.132	1.5259	.000417
280.000	114.034	.54425	12.273	1.5274	.000363
284.000	120.146	.56535	13.421	1.5288	.000315
288.000	126.264	.58588	14.576	1.5300	.000273
292.000	132.386	.60587	15.738	1.5310	.000236
296.000	138.512	.62534	16.905	1.5319	.000204
300.000	144.640	.64430	18.077	1.5326	.000174
304.000	150.772	.66278	19.254	1.5333	.000148
308.000	156.906	.68079	20.435	1.5338	.000124
312.000	163.042	.69834	21.621	1.5342	.000102
316.000	169.180	.71546	22.810	1.5346	.000083
320.000	175.319	.73215	24.002	1.5349	.000065
324.000	181.459	.74844	25.198	1.5351	.000048
328.000	187.600	.76433	26.396	1.5353	.000033
332.000	193.742	.77984	27.598	1.5354	.000019
336.000	199.883	.79498	28.801	1.5354	.000006
340.000	206.025	.80977	30.007	1.5354	-.000006
344.000	212.167	.82422	31.216	1.5354	-.000017
348.000	218.308	.83833	32.426	1.5353	-.000028
352.000	224.449	.85211	33.638	1.5352	-.000037
356.000	230.590	.86559	34.852	1.5350	-.000046
360.000	236.729	.87876	36.067	1.5348	-.000055
364.000	242.868	.89164	37.284	1.5346	-.000062
368.000	249.006	.90424	38.502	1.5343	-.000070
372.000	255.143	.91656	39.721	1.5340	-.000076
376.000	261.278	.92862	40.942	1.5337	-.000083
380.000	267.412	.94041	42.164	1.5334	-.000089
384.000	273.545	.95196	43.386	1.5330	-.000094
388.000	279.676	.96326	44.610	1.5326	-.000099
392.000	285.806	.97433	45.834	1.5322	-.000104
396.000	291.934	.98517	47.060	1.5318	-.000109
400.000	298.060	.99578	48.285	1.5313	-.000113
404.000	304.184	1.00618	49.512	1.5309	-.000117
408.000	310.307	1.01637	50.739	1.5304	-.000121
412.000	316.427	1.02636	51.967	1.5299	-.000125
416.000	322.546	1.03614	53.195	1.5294	-.000128
420.000	328.663	1.04574	54.423	1.5289	-.000131
424.000	334.777	1.05514	55.652	1.5283	-.000134
428.000	340.889	1.06437	56.881	1.5278	-.000137
432.000	346.999	1.07341	58.110	1.5272	-.000140
436.000	353.107	1.08228	59.340	1.5267	-.000142
440.000	359.213	1.09099	60.570	1.5261	-.000145

Table 11. Continued.

NF3 ISOCHORE AT 10.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
233.503	43.994	.22660	.310	1.6604	.075649
236.000	48.241	.24585	1.020	1.7230	.012050
240.000	55.205	.27665	2.171	1.7553	.005775
244.000	62.266	.30692	3.364	1.7742	.003911
248.000	69.391	.33653	4.590	1.7877	.002970
252.000	76.564	.36542	5.840	1.7984	.002387
256.000	83.776	.39359	7.111	1.8071	.001984
260.000	91.019	.42104	8.400	1.8144	.001684
264.000	98.290	.44778	9.704	1.8206	.001452
268.000	105.583	.47383	11.022	1.8261	.001265
272.000	112.897	.49920	12.352	1.8308	.001111
276.000	120.229	.52392	13.692	1.8350	.000981
280.000	127.576	.54799	15.042	1.8387	.000871
284.000	134.938	.57145	16.400	1.8420	.000775
288.000	142.312	.59431	17.766	1.8449	.000692
292.000	149.696	.61658	19.139	1.8475	.000618
296.000	157.091	.63830	20.519	1.8499	.000553
300.000	164.495	.65947	21.904	1.8519	.000495
304.000	171.907	.68012	23.295	1.8538	.000443
308.000	179.325	.70025	24.691	1.8555	.000395
312.000	186.750	.71990	26.092	1.8570	.000352
316.000	194.181	.73907	27.497	1.8583	.000314
320.000	201.617	.75777	28.906	1.8595	.000278
324.000	209.057	.77604	30.318	1.8605	.000245
328.000	216.501	.79387	31.734	1.8615	.000215
332.000	223.948	.81129	33.152	1.8623	.000188
336.000	231.399	.82830	34.574	1.8630	.000163
340.000	238.852	.84492	35.998	1.8636	.000139
344.000	246.307	.86116	37.425	1.8641	.000117
348.000	253.764	.87703	38.854	1.8645	.000097
352.000	261.223	.89255	40.285	1.8649	.000078
356.000	268.683	.90773	41.718	1.8651	.000061
360.000	276.144	.92257	43.153	1.8654	.000044
364.000	283.606	.93708	44.590	1.8655	.000029
368.000	291.068	.95129	46.028	1.8656	.000015
372.000	298.531	.96518	47.467	1.8656	.000001
376.000	305.993	.97879	48.908	1.8656	-.000011
380.000	313.455	.99210	50.350	1.8655	-.000023
384.000	320.917	1.00514	51.793	1.8654	-.000034
388.000	328.379	1.01790	53.237	1.8653	-.000044
392.000	335.839	1.03041	54.681	1.8651	-.000054
396.000	343.299	1.04266	56.127	1.8648	-.000063
400.000	350.758	1.05466	57.574	1.8646	-.000072
404.000	358.215	1.06642	59.021	1.8643	-.000080

Table 11. Continued.

NF3 ISOCHORE AT 11.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
232.416	42.685	.20081	1.174	1.9648	.044829
236.000	49.898	.23118	2.516	2.0442	.013076
240.000	58.161	.26497	3.979	2.0840	.007801
244.000	66.553	.29823	5.462	2.1104	.005643
248.000	75.036	.33082	6.969	2.1303	.004425
252.000	83.590	.36268	8.495	2.1463	.003627
256.000	92.203	.39380	10.040	2.1597	.003056
260.000	100.865	.42417	11.601	2.1710	.002623
264.000	109.569	.45379	13.176	2.1808	.002281
268.000	118.309	.48267	14.764	2.1893	.002004
272.000	127.082	.51084	16.364	2.1968	.001773
276.000	135.883	.53830	17.974	2.2035	.001578
280.000	144.709	.56508	19.593	2.2095	.001411
284.000	153.558	.59119	21.221	2.2149	.001266
288.000	162.427	.61665	22.856	2.2197	.001139
292.000	171.315	.64148	24.498	2.2240	.001027
296.000	180.218	.66570	26.147	2.2279	.000928
300.000	189.137	.68933	27.802	2.2314	.000839
304.000	198.069	.71239	29.463	2.2346	.000759
308.000	207.014	.73489	31.128	2.2375	.000686
312.000	215.969	.75685	32.798	2.2401	.000621
316.000	224.934	.77829	34.472	2.2425	.000561
320.000	233.909	.79922	36.150	2.2446	.000506
324.000	242.891	.81967	37.832	2.2465	.000456
328.000	251.881	.83964	39.517	2.2483	.000410
332.000	260.877	.85915	41.205	2.2498	.000368
336.000	269.879	.87822	42.896	2.2512	.000329
340.000	278.886	.89685	44.590	2.2525	.000293
344.000	287.898	.91507	46.286	2.2536	.000259
348.000	296.915	.93288	47.984	2.2545	.000228
352.000	305.935	.95029	49.684	2.2554	.000199
356.000	314.958	.96733	51.386	2.2561	.000172
360.000	323.983	.98399	53.090	2.2568	.000147
364.000	333.012	1.00030	54.796	2.2573	.000123
368.000	342.042	1.01625	56.502	2.2577	.000101
372.000	351.073	1.03187	58.210	2.2581	.000080

Table 11. Continued.

NF3 ISOCHORE AT 12.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
230.408	40.364	.17558	3.120	2.3546	.032221
232.000	44.148	.19072	3.917	2.3959	.021328
236.000	53.870	.22878	5.815	2.4590	.012081
240.000	63.791	.26640	7.683	2.4995	.008590
244.000	73.852	.30336	9.554	2.5297	.006682
248.000	84.021	.33956	11.435	2.5538	.005453
252.000	94.277	.37496	13.327	2.5738	.004582
256.000	104.607	.40955	15.232	2.5908	.003927
260.000	115.000	.44331	17.149	2.6054	.003414
264.000	125.448	.47626	19.075	2.6182	.002999
268.000	135.944	.50840	21.012	2.6295	.002655
272.000	146.483	.53976	22.958	2.6395	.002365
276.000	157.059	.57034	24.912	2.6485	.002118
280.000	167.669	.60017	26.874	2.6565	.001904
284.000	178.310	.62927	28.843	2.6637	.001717
288.000	188.978	.65766	30.819	2.6703	.001552
292.000	199.671	.68535	32.800	2.6762	.001405
296.000	210.387	.71238	34.787	2.6815	.001275
300.000	221.123	.73875	36.779	2.6864	.001157
304.000	231.878	.76448	38.775	2.6908	.001052
308.000	242.649	.78961	40.776	2.6948	.000956
312.000	253.436	.81413	42.780	2.6985	.000868
316.000	264.236	.83808	44.788	2.7018	.000789
320.000	275.050	.86148	46.800	2.7048	.000716
324.000	285.874	.88433	48.814	2.7075	.000649
328.000	296.709	.90665	50.831	2.7100	.000587
332.000	307.554	.92847	52.851	2.7122	.000531
336.000	318.407	.94979	54.873	2.7142	.000478
340.000	329.268	.97063	56.897	2.7161	.000429
344.000	340.135	.99100	58.923	2.7177	.000384
348.000	351.009	1.01093	60.950	2.7191	.000342

Table 11. Continued.

NF3 ISOCHORE AT 13.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
227.273	36.961	.15046	6.763	2.8478	.025811
228.000	39.038	.15840	7.229	2.8654	.022921
230.000	44.810	.18025	8.473	2.9055	.017674
232.000	50.654	.20200	9.686	2.9374	.014476
234.000	56.557	.22361	10.881	2.9641	.012295
236.000	62.508	.24504	12.067	2.9870	.010696
238.000	68.503	.26629	13.246	3.0071	.009465
240.000	74.535	.28732	14.423	3.0250	.008482
242.000	80.602	.30814	15.598	3.0412	.007676
244.000	86.699	.32873	16.773	3.0558	.007000
246.000	92.824	.34910	17.947	3.0692	.006424
248.000	98.975	.36923	19.122	3.0816	.005926
250.000	105.150	.38912	20.298	3.0930	.005490
252.000	111.346	.40879	21.475	3.1036	.005105
254.000	117.563	.42821	22.653	3.1134	.004762
256.000	123.800	.44740	23.832	3.1226	.004455
258.000	130.054	.46636	25.012	3.1313	.004177
260.000	136.324	.48509	26.194	3.1394	.003924
262.000	142.611	.50358	27.378	3.1470	.003694
264.000	148.912	.52185	28.562	3.1541	.003482
266.000	155.227	.53989	29.748	3.1609	.003288
268.000	161.555	.55771	30.936	3.1673	.003109
270.000	167.896	.57530	32.125	3.1734	.002942
272.000	174.249	.59268	33.315	3.1791	.002788
274.000	180.612	.60984	34.506	3.1845	.002644
276.000	186.986	.62679	35.698	3.1897	.002509
278.000	193.371	.64353	36.892	3.1946	.002384
280.000	199.765	.66006	38.087	3.1992	.002266
282.000	206.167	.67638	39.283	3.2036	.002155
284.000	212.579	.69250	40.479	3.2078	.002050
286.000	218.999	.70843	41.677	3.2118	.001952
288.000	225.426	.72416	42.876	3.2156	.001859
290.000	231.861	.73969	44.076	3.2193	.001771
292.000	238.303	.75504	45.277	3.2227	.001688
294.000	244.752	.77019	46.478	3.2260	.001609
296.000	251.207	.78516	47.681	3.2292	.001535
298.000	257.668	.79995	48.884	3.2322	.001463
300.000	264.136	.81457	50.088	3.2350	.001396
302.000	270.609	.82900	51.293	3.2378	.001331
304.000	277.087	.84326	52.498	3.2404	.001270
306.000	283.570	.85735	53.704	3.2428	.001211
308.000	290.058	.87127	54.911	3.2452	.001155
310.000	296.551	.88503	56.118	3.2475	.001102
312.000	303.048	.89862	57.326	3.2496	.001051
314.000	309.549	.91205	58.534	3.2517	.001002
316.000	316.054	.92533	59.743	3.2536	.000955
318.000	322.563	.93844	60.953	3.2555	.000910
320.000	329.076	.95141	62.162	3.2573	.000867
322.000	335.592	.96422	63.373	3.2590	.000826
324.000	342.112	.97689	64.583	3.2606	.000786
326.000	348.635	.98940	65.795	3.2621	.000748
328.000	355.160	1.00178	67.006	3.2636	.000712

Table 11. Continued.

NF3 ISOCHORE AT 14.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
222.861	32.572	.12556	12.816	3.4645	.022137
224.000	36.533	.14011	13.717	3.4883	.019766
226.000	43.547	.16553	15.267	3.5246	.016677
228.000	50.628	.19076	16.788	3.5556	.014441
230.000	57.767	.21577	18.290	3.5827	.012734
232.000	64.957	.24053	19.778	3.6068	.011380
234.000	72.193	.26504	21.257	3.6284	.010275
236.000	79.470	.28928	22.729	3.6480	.009352
238.000	86.784	.31325	24.196	3.6659	.008568
240.000	94.132	.33695	25.658	3.6824	.007892
242.000	101.512	.36036	27.118	3.6975	.007302
244.000	108.922	.38350	28.575	3.7116	.006782
246.000	116.358	.40635	30.031	3.7247	.006319
248.000	123.820	.42892	31.485	3.7369	.005904
250.000	131.305	.45121	32.939	3.7483	.005530
252.000	138.813	.47322	34.392	3.7591	.005191
254.000	146.341	.49496	35.844	3.7691	.004882
256.000	153.889	.51642	37.296	3.7786	.004599
258.000	161.455	.53761	38.748	3.7875	.004338
260.000	169.039	.55853	40.200	3.7960	.004098
262.000	176.639	.57919	41.652	3.8039	.003876
264.000	184.254	.59958	43.104	3.8115	.003670
266.000	191.884	.61972	44.556	3.8186	.003478
268.000	199.528	.63960	46.009	3.8254	.003299
270.000	207.186	.65922	47.461	3.8318	.003131
272.000	214.855	.67860	48.914	3.8379	.002974
274.000	222.537	.69773	50.367	3.8437	.002827
276.000	230.230	.71662	51.820	3.8492	.002688
278.000	237.934	.73527	53.273	3.8545	.002558
280.000	245.648	.75369	54.727	3.8595	.002435
282.000	253.372	.77187	56.181	3.8642	.002318
284.000	261.105	.78983	57.635	3.8688	.002208
286.000	268.847	.80756	59.089	3.8731	.002104
288.000	276.597	.82507	60.544	3.8772	.002005
290.000	284.355	.84236	61.999	3.8811	.001911
292.000	292.121	.85944	63.454	3.8848	.001821
294.000	299.894	.87631	64.909	3.8884	.001736
296.000	307.675	.89297	66.364	3.8918	.001655
298.000	315.461	.90942	67.820	3.8950	.001578
300.000	323.255	.92568	69.275	3.8981	.001504
302.000	331.054	.94173	70.731	3.9010	.001434
304.000	338.859	.95759	72.187	3.9038	.001367
306.000	346.669	.97326	73.643	3.9065	.001302
308.000	354.485	.98874	75.099	3.9090	.001241

Table 11. Continued.

NF3 ISOCHORE AT 15.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
217.076	27.447	.10138	22.066	4.2287	.019869
218.000	31.365	.11536	22.963	4.2465	.018627
220.000	39.894	.14540	24.879	4.2814	.016404
222.000	48.488	.17513	26.766	4.3124	.014642
224.000	57.141	.20454	28.632	4.3402	.013205
226.000	65.847	.23361	30.482	4.3654	.012006
228.000	74.601	.26235	32.319	4.3883	.010988
230.000	83.399	.29074	34.145	4.4094	.010110
232.000	92.238	.31878	35.962	4.4289	.009344
234.000	101.113	.34647	37.772	4.4469	.008669
236.000	110.024	.37381	39.576	4.4636	.008069
238.000	118.967	.40079	41.375	4.4792	.007532
240.000	127.940	.42743	43.170	4.4937	.007047
242.000	136.941	.45372	44.961	4.5074	.006608
244.000	145.969	.47967	46.749	4.5202	.006208
246.000	155.022	.50528	48.533	4.5322	.005841
248.000	164.098	.53055	50.316	4.5436	.005505
250.000	173.196	.55548	52.096	4.5543	.005195
252.000	182.314	.58009	53.874	4.5644	.004908
254.000	191.453	.60437	55.650	4.5739	.004641
256.000	200.610	.62833	57.425	4.5830	.004394
258.000	209.784	.65197	59.199	4.5915	.004163
260.000	218.975	.67530	60.971	4.5996	.003947
262.000	228.182	.69832	62.741	4.6073	.003745
264.000	237.404	.72104	64.511	4.6146	.003555
266.000	246.641	.74346	66.280	4.6215	.003377
268.000	255.890	.76558	68.047	4.6281	.003209
270.000	265.153	.78742	69.814	4.6344	.003050
272.000	274.428	.80897	71.580	4.6403	.002901
274.000	283.714	.83024	73.345	4.6460	.002759
276.000	293.011	.85123	75.110	4.6514	.002626
278.000	302.319	.87195	76.873	4.6565	.002499
280.000	311.637	.89241	78.636	4.6614	.002378
282.000	320.964	.91260	80.398	4.6660	.002264
284.000	330.301	.93253	82.160	4.6704	.002155
286.000	339.646	.95221	83.921	4.6746	.002051
288.000	348.999	.97164	85.681	4.6786	.001953
290.000	358.360	.99082	87.440	4.6824	.001859

Table 11. Continued.

NF3 ISOCHORE AT 16.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
209.872	21.943	.07859	35.358	5.1684	.018399
210.000	22.605	.08091	35.510	5.1707	.018273
212.000	32.981	.11694	37.859	5.2054	.016478
214.000	43.424	.15253	40.179	5.2368	.014977
216.000	53.927	.18767	42.476	5.2655	.013700
218.000	64.485	.22235	44.754	5.2918	.012597
220.000	75.093	.25658	47.015	5.3160	.011633
222.000	85.747	.29034	49.263	5.3384	.010783
224.000	96.445	.32365	51.499	5.3592	.010026
226.000	107.183	.35650	53.724	5.3785	.009348
228.000	117.958	.38890	55.941	5.3966	.008737
230.000	128.769	.42085	58.150	5.4135	.008182
232.000	139.612	.45235	60.351	5.4294	.007677
234.000	150.485	.48342	62.546	5.4442	.007215
236.000	161.388	.51405	64.736	5.4582	.006790
238.000	172.318	.54425	66.920	5.4714	.006398
240.000	183.273	.57403	69.099	5.4839	.006036
242.000	194.253	.60339	71.274	5.4956	.005700
244.000	205.255	.63234	73.446	5.5067	.005387
246.000	216.279	.66088	75.613	5.5172	.005096
248.000	227.323	.68903	77.777	5.5271	.004824
250.000	238.387	.71678	79.938	5.5365	.004569
252.000	249.469	.74415	82.096	5.5454	.004330
254.000	260.568	.77114	84.251	5.5538	.004106
256.000	271.684	.79775	86.403	5.5618	.003894
258.000	282.815	.82400	88.553	5.5694	.003695
260.000	293.961	.84989	90.700	5.5766	.003507
262.000	305.121	.87542	92.846	5.5834	.003330
264.000	316.295	.90060	94.989	5.5899	.003162
266.000	327.481	.92544	97.129	5.5961	.003002
268.000	338.679	.94994	99.268	5.6019	.002851
270.000	349.888	.97411	101.405	5.6075	.002708

Table 11. Continued.

NF3 ISOCHORE AT 17.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
201.249	16.476	.05792	53.597	6.3179	.017416
202.000	21.226	.07434	54.669	6.3307	.016850
204.000	33.920	.11764	57.503	6.3630	.015480
206.000	46.676	.16030	60.312	6.3928	.014282
208.000	59.489	.20234	63.098	6.4203	.013223
210.000	72.356	.24376	65.865	6.4457	.012279
212.000	85.271	.28457	68.615	6.4694	.011433
214.000	98.232	.32476	71.350	6.4915	.010669
216.000	111.236	.36434	74.072	6.5122	.009976
218.000	124.280	.40333	76.782	6.5315	.009344
220.000	137.361	.44173	79.480	6.5496	.008766
222.000	150.478	.47955	82.169	6.5666	.008234
224.000	163.627	.51680	84.849	6.5825	.007744
226.000	176.807	.55349	87.520	6.5976	.007291
228.000	190.017	.58962	90.183	6.6117	.006871
230.000	203.254	.62521	92.840	6.6251	.006481
232.000	216.516	.66026	95.490	6.6377	.006117
234.000	229.804	.69479	98.133	6.6496	.005777
236.000	243.114	.72881	100.771	6.6608	.005459
238.000	256.447	.76232	103.403	6.6714	.005161
240.000	269.799	.79533	106.030	6.6814	.004881
242.000	283.172	.82785	108.652	6.6909	.004618
244.000	296.563	.85989	111.270	6.6999	.004370
246.000	309.971	.89146	113.883	6.7084	.004137
248.000	323.396	.92257	116.492	6.7165	.003916
250.000	336.837	.95322	119.097	6.7241	.003707
252.000	350.292	.98343	121.697	6.7313	.003509

Table 11. Continued.

NF3 ISOCHORE AT 18.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
191.243	11.458	.04003	77.762	7.7196	.016749
192.000	17.310	.06024	79.065	7.7321	.016261
193.000	25.051	.08673	80.780	7.7481	.015648
194.000	32.806	.11299	82.487	7.7634	.015068
195.000	40.577	.13904	84.189	7.7782	.014519
196.000	48.363	.16487	85.884	7.7925	.013999
197.000	56.162	.19049	87.573	7.8062	.013504
198.000	63.975	.21589	89.257	7.8195	.013033
199.000	71.801	.24108	90.936	7.8323	.012585
200.000	79.639	.26607	92.610	7.8447	.012157
201.000	87.490	.29084	94.280	7.8566	.011749
202.000	95.352	.31541	95.945	7.8682	.011359
203.000	103.226	.33977	97.606	7.8793	.010986
204.000	111.111	.36393	99.263	7.8901	.010629
205.000	119.006	.38789	100.916	7.9006	.010287
206.000	126.912	.41165	102.565	7.9107	.009958
207.000	134.828	.43521	104.211	7.9205	.009643
208.000	142.753	.45858	105.853	7.9300	.009340
209.000	150.687	.48175	107.493	7.9392	.009049
210.000	158.631	.50473	109.129	7.9481	.008769
211.000	166.584	.52752	110.762	7.9567	.008500
212.000	174.545	.55013	112.392	7.9651	.008240
213.000	182.514	.57254	114.019	7.9732	.007990
214.000	190.491	.59477	115.644	7.9811	.007749
215.000	198.476	.61682	117.265	7.9887	.007516
216.000	206.468	.63869	118.885	7.9961	.007291
217.000	214.468	.66038	120.502	8.0033	.007074
218.000	222.475	.68189	122.116	8.0103	.006865
219.000	230.488	.70323	123.728	8.0170	.006662
220.000	238.509	.72439	125.338	8.0236	.006466
221.000	246.536	.74538	126.946	8.0300	.006276
222.000	254.569	.76620	128.552	8.0362	.006092
223.000	262.608	.78685	130.156	8.0422	.005914
224.000	270.653	.80734	131.757	8.0480	.005741
225.000	278.704	.82766	133.357	8.0536	.005574
226.000	286.760	.84782	134.954	8.0591	.005412
227.000	294.822	.86781	136.550	8.0645	.005255
228.000	302.889	.88765	138.144	8.0696	.005102
229.000	310.961	.90732	139.737	8.0747	.004954
230.000	319.038	.92684	141.327	8.0796	.004811
231.000	327.120	.94621	142.916	8.0843	.004671
232.000	335.207	.96542	144.503	8.0889	.004535
233.000	343.298	.98448	146.089	8.0934	.004403
234.000	351.394	1.00339	147.673	8.0977	.004275
235.000	359.493	1.02215	149.255	8.1019	.004150

Table 11. Continued.

NF3 ISOCHORE AT 19.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
179.919	7.236	.02546	108.950	9.4275	.016303
180.000	7.996	.02812	109.117	9.4289	.016255
181.000	17.433	.06097	111.190	9.4448	.015666
182.000	26.886	.09351	113.257	9.4602	.015106
183.000	36.353	.12575	115.316	9.4750	.014572
184.000	45.836	.15769	117.369	9.4894	.014062
185.000	55.332	.18933	119.415	9.5032	.013574
186.000	64.842	.22067	121.456	9.5165	.013108
187.000	74.365	.25173	123.491	9.5294	.012662
188.000	83.900	.28250	125.520	9.5418	.012234
189.000	93.448	.31298	127.544	9.5539	.011824
190.000	103.008	.34318	129.563	9.5655	.011430
191.000	112.579	.37311	131.578	9.5767	.011052
192.000	122.161	.40276	133.587	9.5876	.010689
193.000	131.754	.43213	135.592	9.5981	.010339
194.000	141.357	.46124	137.593	9.6083	.010003
195.000	150.971	.49008	139.590	9.6181	.009679
196.000	160.594	.51866	141.582	9.6276	.009367
197.000	170.226	.54698	143.571	9.6369	.009067
198.000	179.867	.57504	145.556	9.6458	.008777
199.000	189.517	.60285	147.537	9.6544	.008497
200.000	199.176	.63040	149.514	9.6628	.008227
201.000	208.843	.65771	151.488	9.6709	.007966
202.000	218.518	.68477	153.459	9.6787	.007713
203.000	228.200	.71159	155.426	9.6863	.007470
204.000	237.890	.73817	157.391	9.6937	.007234
205.000	247.587	.76451	159.352	9.7008	.007006
206.000	257.292	.79062	161.310	9.7077	.006785
207.000	267.003	.81650	163.265	9.7143	.006571
208.000	276.720	.84215	165.218	9.7208	.006364
209.000	286.444	.86757	167.167	9.7271	.006163
210.000	296.174	.89277	169.114	9.7331	.005968
211.000	305.910	.91775	171.058	9.7390	.005779
212.000	315.652	.94250	173.000	9.7447	.005596
213.000	325.400	.96705	174.939	9.7502	.005419
214.000	335.153	.99138	176.875	9.7555	.005246
215.000	344.911	1.01550	178.809	9.7607	.005079
216.000	354.674	1.03941	180.741	9.7657	.004916

Table 11. Continued.

NF3 ISOCHORE AT 20.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
167.370	4.030	.01448	148.469	11.5120	.016029
168.000	11.288	.04041	150.050	11.5220	.015659
169.000	22.818	.08119	152.553	11.5373	.015092
170.000	34.363	.12156	155.049	11.5522	.014549
171.000	45.922	.16150	157.537	11.5665	.014029
172.000	57.496	.20102	160.019	11.5802	.013530
173.000	69.083	.24014	162.494	11.5935	.013051
174.000	80.683	.27885	164.962	11.6063	.012591
175.000	92.295	.31716	167.424	11.6187	.012149
176.000	103.920	.35507	169.881	11.6306	.011723
177.000	115.556	.39260	172.331	11.6422	.011314
178.000	127.204	.42975	174.776	11.6533	.010921
179.000	138.863	.46652	177.215	11.6640	.010541
180.000	150.532	.50291	179.649	11.6744	.010176
181.000	162.211	.53893	182.078	11.6844	.009823
182.000	173.900	.57460	184.502	11.6940	.009483
183.000	185.599	.60990	186.921	11.7033	.009155
184.000	197.307	.64485	189.336	11.7123	.008838
185.000	209.024	.67945	191.746	11.7210	.008532
186.000	220.749	.71371	194.151	11.7294	.008236
187.000	232.482	.74762	196.553	11.7375	.007950
188.000	244.224	.78120	198.950	11.7453	.007673
189.000	255.973	.81445	201.343	11.7528	.007406
190.000	267.729	.84738	203.731	11.7601	.007147
191.000	279.493	.87998	206.116	11.7671	.006896
192.000	291.264	.91226	208.497	11.7739	.006653
193.000	303.041	.94423	210.875	11.7804	.006417
194.000	314.824	.97589	213.249	11.7867	.006189
195.000	326.614	1.00724	215.619	11.7928	.005968
196.000	338.410	1.03830	217.986	11.7987	.005754
197.000	350.211	1.06905	220.349	11.8043	.005546

Table 11. Continued.

NF3 ISOCHORE AT 21.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
153.700	1.894	.00706	198.018	14.0671	.015907
154.000	6.117	.02275	198.935	14.0719	.015720
155.000	20.196	.07463	201.983	14.0873	.015114
156.000	34.291	.12589	205.024	14.1021	.014532
157.000	48.400	.17656	208.056	14.1163	.013974
158.000	62.524	.22664	211.080	14.1300	.013437
159.000	76.660	.27613	214.096	14.1432	.012921
160.000	90.810	.32506	217.105	14.1559	.012425
161.000	104.972	.37342	220.106	14.1681	.011947
162.000	119.146	.42122	223.101	14.1798	.011488
163.000	133.331	.46848	226.089	14.1911	.011045
164.000	147.528	.51520	229.070	14.2019	.010618
165.000	161.735	.56139	232.044	14.2123	.010206
166.000	175.952	.60706	235.012	14.2223	.009809
167.000	190.180	.65222	237.975	14.2319	.009426
168.000	204.416	.69687	240.931	14.2412	.009056
169.000	218.662	.74102	243.881	14.2500	.008699
170.000	232.916	.78468	246.826	14.2586	.008354
171.000	247.179	.82787	249.765	14.2668	.008020
172.000	261.449	.87057	252.698	14.2746	.007698
173.000	275.728	.91281	255.627	14.2822	.007386
174.000	290.014	.95458	258.550	14.2894	.007084
175.000	304.307	.99590	261.468	14.2963	.006792
176.000	318.606	1.03678	264.381	14.3030	.006509
177.000	332.912	1.07721	267.290	14.3093	.006236
178.000	347.225	1.11721	270.193	14.3154	.005970

NF3 ISOCHORE AT 22.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
139.023	.700	.00275	260.017	17.2235	.015949
140.000	17.541	.06850	263.681	17.2387	.015272
141.000	34.787	.13488	267.421	17.2536	.014608
142.000	52.048	.20038	271.151	17.2679	.013970
143.000	69.323	.26502	274.871	17.2816	.013356
144.000	86.611	.32882	278.582	17.2947	.012767
145.000	103.912	.39178	282.284	17.3071	.012200
146.000	121.225	.45392	285.976	17.3191	.011654
147.000	138.550	.51526	289.661	17.3305	.011129
148.000	155.886	.57582	293.336	17.3413	.010623
149.000	173.232	.63560	297.004	17.3517	.010135
150.000	190.589	.69462	300.663	17.3616	.009666
151.000	207.955	.75290	304.315	17.3710	.009213
152.000	225.331	.81044	307.959	17.3800	.008776
153.000	242.715	.86726	311.596	17.3886	.008354
154.000	260.108	.92337	315.225	17.3967	.007947
155.000	277.509	.97878	318.848	17.4045	.007554
156.000	294.917	1.03351	322.463	17.4119	.007174
157.000	312.332	1.08757	326.071	17.4188	.006807
158.000	329.754	1.14097	329.673	17.4255	.006453
159.000	347.183	1.19372	333.268	17.4318	.006110

Table 11. Continued.

NF3 ISOCHORE AT 23.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
123.448	.182	.00077	338.197	21.1699	.016196
124.000	11.861	.05002	340.779	21.1787	.015729
125.000	33.048	.13825	345.451	21.1940	.014908
126.000	54.249	.22514	350.109	21.2085	.014121
127.000	75.465	.31072	354.755	21.2223	.013365
128.000	96.693	.39502	359.389	21.2353	.012640
129.000	117.935	.47807	364.012	21.2475	.011944
130.000	139.188	.55988	368.622	21.2592	.011276
131.000	160.453	.64049	373.222	21.2701	.010633
132.000	181.728	.71992	377.810	21.2804	.010015
133.000	203.014	.79820	382.388	21.2901	.009420
134.000	224.308	.87534	386.956	21.2993	.008848
135.000	245.612	.95138	391.513	21.3078	.008298
136.000	266.924	1.02632	396.060	21.3159	.007768
137.000	288.244	1.10021	400.597	21.3234	.007257
138.000	309.571	1.17305	405.124	21.3304	.006765
139.000	330.904	1.24487	409.642	21.3369	.006290
140.000	352.244	1.31568	414.151	21.3430	.005833

NF3 ISOCHORE AT 24.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
107.074	.027	.00013	438.669	26.1953	.016748
108.000	24.303	.11277	444.203	26.2103	.015713
109.000	50.521	.23227	450.159	26.2255	.014644
110.000	76.753	.34967	456.097	26.2396	.013621
111.000	103.000	.46501	462.019	26.2527	.012643
112.000	129.259	.57835	467.923	26.2649	.011707
113.000	155.529	.68974	473.812	26.2762	.010811
114.000	181.811	.79922	479.684	26.2866	.009953
115.000	208.102	.90684	485.542	26.2961	.009130
116.000	234.403	1.01264	491.383	26.3048	.008342
117.000	260.711	1.11667	497.211	26.3128	.007586
118.000	287.028	1.21897	503.023	26.3200	.006860
119.000	313.351	1.31958	508.821	26.3265	.006164
120.000	339.681	1.41854	514.606	26.3323	.005496

Table 11. Continued.

NF3 ISOCHORE AT 25.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
89.971	.002	.00001	571.934	32.7759	.017810
90.000	.959	.00513	572.165	32.7765	.017761
91.000	33.744	.17840	580.059	32.7934	.016110
92.000	66.546	.34798	587.925	32.8087	.014542
93.000	99.361	.51399	595.764	32.8225	.013051
94.000	132.190	.67654	603.578	32.8348	.011633
95.000	165.030	.83573	611.365	32.8458	.010283
96.000	197.881	.99165	619.128	32.8554	.008999
97.000	230.741	1.14440	626.867	32.8638	.007775
98.000	263.608	1.29407	634.582	32.8710	.006608
99.000	296.483	1.44075	642.273	32.8770	.005496
100.000	329.362	1.58452	649.942	32.8820	.004435

NF3 ISOCHORE AT 26.000 MOL/L

T,K	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
72.183	.000	.00000	757.199	41.7825	.019864
73.000	34.139	.21633	766.216	41.7978	.017536
74.000	75.945	.47474	777.209	41.8140	.014839
75.000	117.766	.72635	788.154	41.8275	.012301
76.000	159.599	.97142	799.053	41.8386	.009911
77.000	201.442	1.21018	809.906	41.8474	.007658
78.000	243.293	1.44287	820.716	41.8540	.005534
79.000	285.150	1.66969	831.482	41.8585	.003530
80.000	327.010	1.89087	842.206	41.8611	.001638

TABLE 12. Calculated P(ρ) Isotherms

The following pages give P(ρ) isotherms, as computed by the equation of state (6). The third column DP/DD is the isotherm slope $(\partial P/\partial \rho)$ in units of the bar and mol/L. The last two columns give the isochore slopes and curvatures, DP/DT ≡ $(\partial P/\partial T)$, D2P/DT2 ≡ $(\partial^2 P/\partial T^2)$ in units of the bar and kelvins.

These tables show that $\partial P/\partial \rho$ is non-negative, and that it increases monotonically with density.

Table 12. Calculated P(ρ) Isotherms.

NF3 ISOTHERM AT 80.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.000	.000	.99997	6.651	.0000	-.000000
25.565	.000	.00000	668.426	37.4843	.018796
25.580	9.943	.05844	673.736	37.6250	.018230
25.600	23.490	.13795	680.965	37.8157	.017465
25.620	37.182	.21818	688.267	38.0075	.016698
25.640	51.021	.29916	695.642	38.2003	.015929
25.660	65.008	.38088	703.091	38.3941	.015158
25.680	79.145	.46334	710.616	38.5891	.014385
25.700	93.431	.54655	718.216	38.7850	.013610
25.720	107.873	.63054	725.895	38.9821	.012833
25.740	122.468	.71530	733.653	39.1803	.012053
25.760	137.220	.80084	741.490	39.3795	.011270
25.780	152.129	.88716	749.408	39.5799	.010485
25.800	167.197	.97428	757.409	39.7814	.009697
25.820	182.426	1.06220	765.493	39.9841	.008906
25.840	197.818	1.15092	773.661	40.1879	.008112
25.860	213.373	1.24047	781.915	40.3928	.007315
25.880	229.095	1.33084	790.256	40.5990	.006515
25.900	244.984	1.42204	798.686	40.8063	.005711
25.920	261.043	1.51409	807.205	41.0148	.004904
25.940	277.273	1.60698	815.815	41.2245	.004093
25.960	293.676	1.70074	824.518	41.4355	.003279
25.980	310.254	1.79537	833.314	41.6477	.002460
26.000	327.010	1.89087	842.206	41.8611	.001638
26.020	343.943	1.98725	851.195	42.0758	.000811
26.040	361.058	2.08454	860.281	42.2918	-.000019
26.060	378.355	2.18273	869.467	42.5090	-.000854
26.080	395.837	2.28183	878.755	42.7276	-.001693

Table 12. Continued.

NF3 ISOTHERM AT 100.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.001	.009	.99904	8.299	.0001	-.000000
24.419	.009	.00005	489.627	28.7231	.017112
24.420	.702	.00346	489.972	28.7325	.017082
24.440	10.551	.05192	494.861	28.8666	.016649
24.460	20.497	.10079	499.791	29.0013	.016217
24.480	30.542	.15006	504.762	29.1366	.015785
24.500	40.688	.19974	509.774	29.2725	.015354
24.520	50.934	.24983	514.827	29.4090	.014922
24.540	61.281	.30034	519.923	29.5462	.014490
24.560	71.731	.35127	525.061	29.6839	.014059
24.580	82.284	.40262	530.243	29.8223	.013627
24.600	92.941	.45440	535.468	29.9613	.013195
24.620	103.703	.50660	540.737	30.1009	.012763
24.640	114.571	.55924	546.050	30.2412	.012330
24.660	125.545	.61231	551.409	30.3821	.011897
24.680	136.627	.66582	556.814	30.5237	.011464
24.700	147.818	.71977	562.264	30.6659	.011030
24.720	159.118	.77417	567.761	30.8088	.010596
24.740	170.529	.82901	573.306	30.9523	.010161
24.760	182.051	.88431	578.898	31.0966	.009726
24.780	193.685	.94007	584.539	31.2415	.009290
24.800	205.433	.99628	590.228	31.3871	.008853
24.820	217.294	1.05296	595.967	31.5333	.008416
24.840	229.272	1.11010	601.756	31.6803	.007978
24.860	241.365	1.16772	607.596	31.8280	.007538
24.880	253.576	1.22580	613.486	31.9764	.007098
24.900	265.905	1.28437	619.429	32.1255	.006657
24.920	278.353	1.34342	625.424	32.2754	.006215
24.940	290.922	1.40296	631.473	32.4259	.005772
24.960	303.613	1.46298	637.574	32.5772	.005328
24.980	316.425	1.52350	643.731	32.7292	.004882
25.000	329.362	1.58452	649.942	32.8820	.004435
25.020	342.424	1.64604	656.209	33.0355	.003987
25.040	355.611	1.70807	662.533	33.1898	.003538
25.060	368.925	1.77060	668.913	33.3449	.003087
25.080	382.368	1.83366	675.352	33.5007	.002635
25.100	395.940	1.89723	681.848	33.6573	.002181

Table 12. Continued.

NF3 ISOTHERM AT 120.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.013	.128	.99219	9.823	.0011	-.000000
23.215	.127	.00055	357.601	22.1445	.016284
23.240	9.291	.04007	362.014	22.2703	.015924
23.280	23.911	.10295	369.028	22.4691	.015361
23.320	38.815	.16682	376.143	22.6694	.014801
23.360	54.004	.23171	383.362	22.8712	.014244
23.400	69.485	.29762	390.685	23.0746	.013689
23.440	85.261	.36456	398.116	23.2797	.013137
23.480	101.336	.43256	405.655	23.4863	.012587
23.520	117.715	.50162	413.306	23.6947	.012038
23.560	134.402	.57176	421.070	23.9046	.011491
23.600	151.402	.64299	428.950	24.1163	.010945
23.640	168.719	.71532	436.947	24.3297	.010400
23.680	186.359	.78877	445.064	24.5449	.009856
23.720	204.326	.86336	453.303	24.7619	.009312
23.760	222.625	.93910	461.667	24.9806	.008768
23.800	241.261	1.01600	470.157	25.2012	.008224
23.840	260.239	1.09408	478.778	25.4236	.007680
23.880	279.565	1.17336	487.530	25.6479	.007136
23.920	299.243	1.25385	496.417	25.8741	.006590
23.960	319.280	1.33557	505.441	26.1022	.006044
24.000	339.681	1.41854	514.606	26.3323	.005496
24.040	360.451	1.50277	523.913	26.5644	.004947
24.080	381.596	1.58829	533.367	26.7986	.004396

Table 12. Continued.

NF3 ISOTHERM AT 140.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.040	.457	.98179	11.224	.0034	-.000001
.067	.754	.97015	10.957	.0057	-.000003
21.935	.754	.00295	255.568	16.9979	.015940
21.960	7.095	.02775	258.642	17.0894	.015684
22.000	17.541	.06850	263.681	17.2387	.015272
22.040	28.190	.10988	268.787	17.3890	.014865
22.080	39.045	.15191	273.959	17.5404	.014461
22.120	50.108	.19461	279.200	17.6928	.014062
22.160	61.382	.23796	284.510	17.8462	.013666
22.200	72.869	.28199	289.891	18.0008	.013273
22.240	84.574	.32669	295.343	18.1565	.012884
22.280	96.498	.37208	300.867	18.3132	.012497
22.320	108.644	.41817	306.466	18.4711	.012113
22.360	121.016	.46495	312.139	18.6302	.011732
22.400	133.616	.51245	317.888	18.7904	.011353
22.440	146.448	.56065	323.715	18.9517	.010976
22.480	159.514	.60959	329.620	19.1143	.010601
22.520	172.818	.65926	335.605	19.2781	.010228
22.560	186.364	.70967	341.671	19.4431	.009856
22.600	200.153	.76083	347.820	19.6093	.009486
22.640	214.190	.81275	354.052	19.7768	.009118
22.680	228.479	.86544	360.370	19.9455	.008750
22.720	243.021	.91891	366.774	20.1155	.008383
22.760	257.822	.97316	373.266	20.2868	.008018
22.800	272.884	1.02820	379.848	20.4595	.007653
22.840	288.211	1.08405	386.520	20.6335	.007288
22.880	303.807	1.14071	393.285	20.8088	.006924
22.920	319.675	1.19820	400.145	20.9855	.006560
22.960	335.820	1.25652	407.099	21.1635	.006197
23.000	352.244	1.31568	414.151	21.3430	.005833
23.040	368.953	1.37570	421.302	21.5239	.005469
23.080	385.950	1.43658	428.554	21.7062	.005105

Table 12. Continued.

NF3 ISOTHERM AT 160.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.040	.524	.98538	12.924	.0034	-.000000
.080	1.034	.97180	12.573	.0068	-.000002
.120	1.530	.95860	12.230	.0103	-.000005
.160	2.013	.94560	11.892	.0139	-.000010
.200	2.482	.93272	11.554	.0176	-.000019
.222	2.730	.92578	11.371	.0197	-.000026
20.549	2.730	.00999	174.284	12.8485	.015943
20.560	4.697	.01717	175.280	12.8800	.015848
20.600	11.779	.04298	178.849	12.9923	.015514
20.640	19.005	.06922	182.462	13.1053	.015186
20.680	26.377	.09588	186.121	13.2191	.014862
20.720	33.895	.12297	189.827	13.3335	.014543
20.760	41.563	.15050	193.578	13.4487	.014229
20.800	49.382	.17846	197.377	13.5647	.013919
20.840	57.354	.20688	201.224	13.6814	.013613
20.880	65.481	.23574	205.120	13.7988	.013311
20.920	73.764	.26505	209.065	13.9171	.013012
20.960	82.207	.29482	213.060	14.0361	.012717
21.000	90.810	.32506	217.105	14.1559	.012425
21.040	99.576	.35576	221.201	14.2765	.012136
21.080	108.507	.38693	225.350	14.3979	.011850
21.120	117.605	.41858	229.551	14.5202	.011567
21.160	126.872	.45070	233.805	14.6432	.011287
21.200	136.310	.48332	238.113	14.7672	.011009
21.240	145.921	.51643	242.476	14.8919	.010733
21.280	155.709	.55003	246.895	15.0175	.010459
21.320	165.674	.58413	251.370	15.1440	.010188
21.360	175.819	.61874	255.902	15.2714	.009918
21.400	186.147	.65386	260.492	15.3997	.009650
21.440	196.659	.68950	265.140	15.5289	.009384
21.480	207.359	.72566	269.848	15.6589	.009120
21.520	218.248	.76234	274.616	15.7899	.008857
21.560	229.329	.79956	279.445	15.9219	.008595
21.600	240.604	.83732	284.337	16.0548	.008335
21.640	252.076	.87563	289.291	16.1886	.008076
21.680	263.748	.91448	294.308	16.3234	.007817
21.720	275.622	.95389	299.391	16.4591	.007560
21.760	287.700	.99386	304.539	16.5959	.007304
21.800	299.986	1.03440	309.753	16.7336	.007048
21.840	312.482	1.07551	315.035	16.8724	.006793
21.880	325.190	1.11721	320.385	17.0122	.006539
21.920	338.113	1.15949	325.805	17.1530	.006285
21.960	351.255	1.20236	331.295	17.2948	.006032
22.000	364.618	1.24583	336.857	17.4377	.005779
22.040	378.205	1.28991	342.491	17.5817	.005526
22.080	392.018	1.33460	348.198	17.7267	.005273

Table 12. Continued.

NF3 ISOTHERM AT 180.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.080	1.170	.97695	14.299	.0068	-.000001
.160	2.289	.95599	13.694	.0138	-.000004
.240	3.361	.93577	13.107	.0210	-.000012
.320	4.387	.91594	12.529	.0286	-.000025
.400	5.366	.89634	11.954	.0365	-.000047
.480	6.299	.87686	11.377	.0448	-.000081
.560	7.186	.85743	10.797	.0535	-.000135
.567	7.261	.85575	10.747	.0543	-.000141
18.993	7.261	.02554	108.713	9.4148	.016306
19.040	12.409	.04355	111.531	9.5122	.015956
19.120	21.528	.07523	116.453	9.6803	.015378
19.200	31.045	.10804	121.501	9.8504	.014824
19.280	40.971	.14199	126.679	10.0226	.014291
19.360	51.317	.17711	131.990	10.1969	.013778
19.440	62.093	.21342	137.436	10.3734	.013282
19.520	73.311	.25095	143.022	10.5522	.012802
19.600	84.981	.28970	148.751	10.7332	.012336
19.680	97.115	.32972	154.625	10.9165	.011882
19.760	109.725	.37103	160.648	11.1023	.011441
19.840	122.823	.41364	166.825	11.2905	.011010
19.920	136.421	.45760	173.157	11.4811	.010589
20.000	150.532	.50291	179.649	11.6744	.010176
20.080	165.169	.54961	186.305	11.8702	.009771
20.160	180.345	.59773	193.129	12.0687	.009373
20.240	196.074	.64729	200.125	12.2699	.008981
20.320	212.370	.69833	207.296	12.4738	.008595
20.400	229.246	.75087	214.647	12.6806	.008214
20.480	246.718	.80494	222.183	12.8902	.007837
20.560	264.801	.86057	229.907	13.1028	.007465
20.640	283.509	.91780	237.826	13.3184	.007096
20.720	302.858	.97665	245.942	13.5370	.006729
20.800	322.865	1.03717	254.262	13.7587	.006366
20.880	343.546	1.09937	262.791	13.9835	.006004
20.960	364.917	1.16331	271.534	14.2116	.005644
21.040	386.997	1.22900	280.495	14.4430	.005285

Table 12. Continued.

NF3 ISOTHERM AT 200.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.160	2.564	.96361	15.467	.0137	-.000003
.320	4.955	.93120	14.432	.0283	-.000013
.480	7.184	.90001	13.428	.0438	-.000035
.640	9.253	.86943	12.438	.0603	-.000073
.800	11.164	.83921	11.454	.0779	-.000135
.960	12.919	.80924	10.477	.0968	-.000233
1.120	14.517	.77947	9.505	.1169	-.000389
1.259	15.776	.75380	8.666	.1357	-.000612
17.133	15.776	.05537	56.440	6.4883	.017312
17.280	24.487	.08522	61.848	6.7065	.016211
17.440	34.874	.12025	68.044	6.9487	.015149
17.600	46.280	.15813	74.592	7.1968	.014196
17.760	58.763	.19897	81.509	7.4510	.013330
17.920	72.383	.24290	88.810	7.7118	.012534
18.080	87.204	.29005	96.513	7.9793	.011794
18.240	103.290	.34054	104.636	8.2538	.011100
18.400	120.710	.39451	113.195	8.5357	.010444
18.560	139.536	.45211	122.210	8.8252	.009820
18.720	159.843	.51348	131.700	9.1226	.009223
18.880	181.707	.57877	141.686	9.4281	.008647
19.040	205.210	.64813	152.190	9.7421	.008088
19.200	230.436	.72174	163.233	10.0648	.007545
19.360	257.475	.79977	174.839	10.3965	.007013
19.520	286.416	.88237	187.034	10.7376	.006491
19.680	317.358	.96975	199.843	11.0883	.005975
19.840	350.401	1.06208	213.295	11.4491	.005465
20.000	385.648	1.15957	227.419	11.8201	.004958

Table 12. Continued.

NF3 ISOTHERM AT 220.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.160	2.837	.96949	17.226	.0137	-.000002
.320	5.518	.94275	16.295	.0281	-.000008
.480	8.054	.91725	15.400	.0432	-.000021
.640	10.447	.89240	14.523	.0592	-.000041
.800	12.702	.86798	13.659	.0760	-.000070
.960	14.819	.84387	12.806	.0936	-.000109
1.120	16.800	.82005	11.967	.1121	-.000161
1.280	18.649	.79649	11.142	.1314	-.000227
1.440	20.367	.77321	10.335	.1515	-.000309
1.600	21.957	.75022	9.546	.1725	-.000413
1.760	23.423	.72755	8.778	.1944	-.000542
1.920	24.767	.70520	8.033	.2171	-.000703
2.080	25.994	.68321	7.310	.2408	-.000909
2.240	27.108	.66158	6.612	.2655	-.001175
2.400	28.111	.64034	5.938	.2912	-.001532
2.560	29.009	.61949	5.287	.3181	-.002038
2.720	29.804	.59903	4.658	.3465	-.002815
2.753	29.954	.59491	4.532	.3525	-.003029
14.525	29.954	.11274	17.219	3.8455	.020820
14.560	30.570	.11478	17.733	3.8768	.020389
14.720	33.600	.12479	20.172	4.0210	.018682
14.880	37.034	.13606	22.791	4.1685	.017293
15.040	40.903	.14868	25.599	4.3195	.016132
15.200	45.237	.16270	28.609	4.4745	.015140
15.360	50.069	.17820	31.828	4.6336	.014276
15.520	55.434	.19526	35.268	4.7972	.013512
15.680	61.367	.21396	38.938	4.9653	.012827
15.840	67.907	.23437	42.851	5.1382	.012204
16.000	75.093	.25658	47.015	5.3160	.011633
16.160	82.966	.28067	51.443	5.4989	.011103
16.320	91.569	.30674	56.146	5.6871	.010607
16.480	100.948	.33487	61.135	5.8807	.010140
16.640	111.148	.36517	66.423	6.0800	.009696
16.800	122.220	.39772	72.023	6.2850	.009273
16.960	134.213	.43262	77.947	6.4959	.008865
17.120	147.181	.46999	84.209	6.7129	.008472
17.280	161.179	.50992	90.822	6.9362	.008089
17.440	176.263	.55253	97.802	7.1660	.007717
17.600	192.495	.59793	105.163	7.4024	.007352
17.760	209.937	.64623	112.921	7.6456	.006994
17.920	228.652	.69756	121.093	7.8958	.006641
18.080	248.709	.75203	129.694	8.1532	.006291
18.240	270.178	.80978	138.744	8.4181	.005945
18.400	293.132	.87094	148.260	8.6905	.005600
18.560	317.647	.93564	158.262	8.9709	.005257
18.720	343.803	1.00403	168.771	9.2593	.004913
18.880	371.682	1.07625	179.808	9.5560	.004569

Table 12. Continued.

NF3 ISOTHERM AT 230.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	5.799	.94756	17.216	.0280	-.000007
.640	11.038	.90184	15.540	.0589	-.000033
.960	15.750	.85791	13.920	.0927	-.000084
1.280	19.952	.81511	12.354	.1294	-.000167
1.600	23.664	.77339	10.855	.1691	-.000288
1.920	26.908	.73286	9.439	.2115	-.000453
2.240	29.715	.69368	8.117	.2567	-.000674
2.560	32.114	.65597	6.895	.3045	-.000965
2.880	34.139	.61985	5.778	.3548	-.001349
3.200	35.823	.58539	4.764	.4075	-.001867
3.520	37.198	.55261	3.852	.4625	-.002595
3.840	38.298	.52153	3.036	.5200	-.003696
4.160	39.151	.49213	2.309	.5803	-.005610
4.480	39.785	.46438	1.664	.6448	-.010056
4.557	39.907	.45797	1.519	.6614	-.012244
12.155	39.907	.17168	3.557	2.4239	.030952
12.160	39.924	.17169	3.578	2.4265	.030791
12.480	41.312	.17310	5.152	2.6017	.023437
12.800	43.258	.17672	7.073	2.7853	.019405
13.120	45.882	.18287	9.394	2.9799	.016816
13.440	49.319	.19189	12.169	3.1869	.014982
13.760	53.725	.20417	15.455	3.4076	.013590
14.080	59.271	.22013	19.310	3.6430	.012476
14.400	66.151	.24022	23.797	3.8939	.011545
14.720	74.576	.26493	28.981	4.1613	.010741
15.040	84.781	.29477	34.933	4.4460	.010024
15.360	97.022	.33031	41.725	4.7490	.009370
15.680	111.583	.37212	49.437	5.0712	.008761
16.000	128.769	.42085	58.150	5.4135	.008182
16.320	148.915	.47715	67.952	5.7771	.007625
16.640	172.384	.54173	78.939	6.1629	.007082
16.960	199.573	.61533	91.210	6.5722	.006547
17.280	230.908	.69876	104.874	7.0061	.006016
17.600	266.853	.79286	120.047	7.4660	.005483
17.920	307.912	.89851	136.854	7.9533	.004946
18.240	354.629	1.01668	155.433	8.4694	.004401

Table 12. Continued.

NF3 ISOTHERM AT 234.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	5.910	.94934	17.583	.0280	-.000006
.640	11.273	.90531	15.943	.0587	-.000030
.960	16.120	.86305	14.360	.0923	-.000077
1.280	20.469	.82191	12.829	.1288	-.000150
1.600	24.338	.78182	11.365	.1680	-.000255
1.920	27.751	.74289	9.982	.2098	-.000395
2.240	30.736	.70526	8.692	.2542	-.000575
2.560	33.324	.66907	7.501	.3010	-.000800
2.880	35.548	.63441	6.412	.3500	-.001078
3.200	37.439	.60134	5.425	.4010	-.001416
3.520	39.030	.56991	4.537	.4539	-.001829
3.840	40.353	.54012	3.745	.5084	-.002333
4.160	41.437	.51197	3.044	.5644	-.002954
4.480	42.310	.48542	2.428	.6217	-.003730
4.800	42.999	.46044	1.892	.6801	-.004722
5.120	43.529	.43698	1.432	.7394	-.006026
5.440	43.923	.41500	1.042	.7995	-.007806
5.760	44.204	.39444	.720	.8600	-.010361
6.080	44.391	.37527	.463	.9208	-.014269
6.400	44.506	.35743	.268	.9816	-.020779
6.720	44.569	.34089	.132	1.0419	-.032965
7.040	44.597	.32559	.050	1.1012	-.060115
7.360	44.606	.31150	.012	1.1583	-.142093
7.680	44.607	.29853	.001	1.2114	-.669850
8.000	44.607	.28659	.000	1.2549	8.490979
8.320	44.607	.27557	.002	1.3044	.430249
8.640	44.610	.26538	.014	1.3622	.166301
8.960	44.618	.25595	.046	1.4268	.093647
9.280	44.642	.24726	.111	1.4982	.062503
9.600	44.694	.23929	.223	1.5765	.046005
9.920	44.792	.23208	.401	1.6622	.036094
10.240	44.960	.22567	.665	1.7556	.029618
10.560	45.230	.22014	1.039	1.8573	.025125
10.880	45.640	.21561	1.550	1.9678	.021862
11.200	46.239	.21220	2.227	2.0876	.019402
11.520	47.087	.21008	3.104	2.2173	.017492
11.840	48.251	.20946	4.217	2.3576	.015967
12.160	49.815	.21056	5.605	2.5090	.014721
12.480	51.873	.21363	7.311	2.6722	.013679
12.800	54.533	.21898	9.381	2.8477	.012790
13.120	57.921	.22691	11.864	3.0364	.012016
13.440	62.175	.23778	14.811	3.2389	.011329
13.760	67.455	.25197	18.279	3.4558	.010707
14.080	73.936	.26990	22.327	3.6879	.010136
14.400	81.813	.29202	27.016	3.9360	.009602
14.720	91.302	.31880	32.414	4.2008	.009096
15.040	102.641	.35077	38.589	4.4831	.008609
15.360	116.090	.38846	45.616	4.7839	.008137
15.680	131.934	.43247	53.574	5.1039	.007673
16.000	150.485	.48342	62.546	5.4442	.007215
16.320	172.082	.54195	72.621	5.8058	.006757
16.640	197.091	.60878	83.893	6.1896	.006298
16.960	225.912	.68464	96.465	6.5969	.005835
17.280	258.978	.77031	110.445	7.0289	.005366
17.600	296.759	.86664	125.951	7.4868	.004888
17.920	339.763	.97451	143.109	7.9720	.004399
18.240	388.540	1.09486	162.058	8.4860	.003898

Table 12. Continued.

NF3 ISOTHERM AT 240.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	6.078	.95186	18.133	.0279	-.000006
.640	11.625	.91022	16.545	.0586	-.000027
.960	16.673	.87033	15.013	.0919	-.000068
1.280	21.239	.83151	13.534	.1279	-.000130
1.600	25.341	.79370	12.119	.1666	-.000217
1.920	29.003	.75700	10.783	.2077	-.000330
2.240	32.252	.72154	9.537	.2511	-.000469
2.560	35.117	.68743	8.386	.2967	-.000635
2.880	37.630	.65478	7.335	.3443	-.000827
3.200	39.822	.62363	6.382	.3937	-.001044
3.520	41.724	.59402	5.524	.4447	-.001283
3.840	43.367	.56596	4.758	.4971	-.001538
4.160	44.779	.53943	4.079	.5507	-.001802
4.480	45.987	.51441	3.482	.6054	-.002064
4.800	47.016	.49085	2.961	.6609	-.002309
5.120	47.889	.46873	2.512	.7171	-.002517
5.440	48.630	.44798	2.130	.7739	-.002665
5.760	49.259	.42857	1.813	.8313	-.002728
6.080	49.797	.41044	1.558	.8893	-.002680
6.400	50.263	.39357	1.366	.9480	-.002505
6.720	50.678	.37792	1.235	1.0077	-.002195
7.040	51.060	.36346	1.163	1.0685	-.001756
7.360	51.428	.35017	1.143	1.1309	-.001204
7.680	51.796	.33798	1.161	1.1953	-.000556
8.000	52.173	.32682	1.198	1.2619	.000175
8.320	52.563	.31660	1.245	1.3311	.000982
8.640	52.972	.30725	1.314	1.4033	.001858
8.960	53.408	.29871	1.417	1.4789	.002785
9.280	53.884	.29098	1.569	1.5584	.003735
9.600	54.419	.28407	1.784	1.6425	.004675
9.920	55.035	.27802	2.082	1.7320	.005565
10.240	55.762	.27289	2.481	1.8276	.006370
10.560	56.636	.26877	3.006	1.9301	.007062
10.880	57.702	.26577	3.681	2.0404	.007625
11.200	59.011	.26404	4.536	2.1594	.008053
11.520	60.627	.26374	5.604	2.2877	.008353
11.840	62.624	.26506	6.920	2.4262	.008537
12.160	65.087	.26823	8.523	2.5756	.008620
12.480	68.114	.27351	10.457	2.7367	.008621
12.800	71.819	.28118	12.767	2.9101	.008553
13.120	76.330	.29155	15.502	3.0965	.008430
13.440	81.791	.30497	18.715	3.2967	.008264
13.760	88.365	.32182	22.462	3.5114	.008062
14.080	96.230	.34250	26.802	3.7413	.007832
14.400	105.588	.36746	31.799	3.9871	.007578
14.720	116.659	.39716	37.518	4.2497	.007303
15.040	129.684	.43211	44.030	4.5297	.007010
15.360	144.930	.47285	51.411	4.8282	.006700
15.680	162.688	.51995	59.739	5.1459	.006375
16.000	183.273	.57403	69.099	5.4839	.006036
16.320	207.031	.63572	79.582	5.8430	.005682
16.640	234.336	.70573	91.283	6.2244	.005313
16.960	265.593	.78477	104.304	6.6291	.004930
17.280	301.243	.87363	118.758	7.0585	.004532
17.600	341.763	.97312	134.762	7.5137	.004118
17.920	387.670	1.08412	152.445	7.9962	.003687

Table 12. Continued.

NF3 ISOTHERM AT 245.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	6.218	.95385	18.590	.0279	-.000005
.640	11.917	.91408	17.043	.0584	-.000025
.960	17.131	.87603	15.554	.0916	-.000061
1.280	21.877	.83902	14.115	.1273	-.000117
1.600	26.171	.80298	12.739	.1655	-.000192
1.920	30.038	.76800	11.439	.2061	-.000289
2.240	33.502	.73421	10.227	.2489	-.000405
2.560	36.593	.70171	9.109	.2938	-.000540
2.880	39.342	.67059	8.086	.3405	-.000692
3.200	41.778	.64091	7.159	.3890	-.000856
3.520	43.933	.61270	6.324	.4390	-.001029
3.840	45.835	.58596	5.578	.4903	-.001204
4.160	47.512	.56067	4.917	.5429	-.001374
4.480	48.990	.53682	4.335	.5965	-.001529
4.800	50.294	.51437	3.827	.6511	-.001659
5.120	51.447	.49327	3.390	.7067	-.001753
5.440	52.471	.47350	3.020	.7631	-.001800
5.760	53.387	.45500	2.715	.8204	-.001790
6.080	54.215	.43774	2.474	.8787	-.001716
6.400	54.977	.42170	2.298	.9382	-.001572
6.720	55.693	.40685	2.188	.9991	-.001360
7.040	56.384	.39317	2.142	1.0617	-.001082
7.360	57.070	.38065	2.153	1.1263	-.000744
7.680	57.767	.36924	2.206	1.1931	-.000352
8.000	58.484	.35888	2.283	1.2626	.000088
8.320	59.229	.34947	2.376	1.3349	.000574
8.640	60.008	.34095	2.496	1.4104	.001104
8.960	60.831	.33329	2.658	1.4895	.001670
9.280	61.715	.32647	2.877	1.5728	.002263
9.600	62.680	.32052	3.170	1.6606	.002870
9.920	63.754	.31549	3.555	1.7537	.003475
10.240	64.968	.31145	4.054	1.8528	.004060
10.560	66.363	.30850	4.690	1.9584	.004610
10.880	67.986	.30675	5.489	2.0714	.005109
11.200	69.896	.30636	6.481	2.1926	.005546
11.520	72.158	.30749	7.698	2.3226	.005913
11.840	74.850	.31034	9.175	2.4624	.006209
12.160	78.062	.31514	10.951	2.6127	.006431
12.480	81.895	.32214	13.069	2.7742	.006585
12.800	86.468	.33162	15.575	2.9478	.006675
13.120	91.910	.34390	18.518	3.1341	.006707
13.440	98.371	.35931	21.950	3.3339	.006686
13.760	106.016	.37823	25.927	3.5479	.006620
14.080	115.029	.40105	30.509	3.7770	.006513
14.400	125.613	.42822	35.759	4.0218	.006371
14.720	137.993	.46020	41.745	4.2833	.006197
15.040	152.416	.49749	48.537	4.5622	.005994
15.360	169.151	.54061	56.211	4.8593	.005765
15.680	188.493	.59013	64.847	5.1756	.005513
16.000	210.765	.64666	74.530	5.5120	.005239
16.320	236.314	.71083	85.351	5.8695	.004944
16.640	265.521	.78333	97.407	6.2492	.004629
16.960	298.797	.86487	110.803	6.6522	.004295
17.280	336.590	.95621	125.649	7.0796	.003941
17.600	379.381	1.05818	142.067	7.5329	.003568

Table 12. Continued.

NF3 ISOTHERM AT 250.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	6.357	.95573	19.046	.0279	-.000005
.640	12.209	.91774	17.540	.0583	-.000023
.960	17.588	.88142	16.090	.0913	-.000056
1.280	22.512	.84611	14.690	.1268	-.000105
1.600	26.997	.81174	13.351	.1646	-.000172
1.920	31.065	.77838	12.087	.2048	-.000256
2.240	34.742	.74615	10.908	.2470	-.000355
2.560	38.056	.71516	9.820	.2913	-.000468
2.880	41.036	.68549	8.824	.3373	-.000592
3.200	43.713	.65718	7.922	.3851	-.000724
3.520	46.116	.63028	7.110	.4343	-.000858
3.840	48.273	.60478	6.384	.4849	-.000989
4.160	50.211	.58067	5.741	.5367	-.001112
4.480	51.955	.55793	5.176	.5897	-.001218
4.800	53.531	.53652	4.684	.6438	-.001302
5.120	54.960	.51642	4.262	.6990	-.001356
5.440	56.266	.49759	3.908	.7552	-.001374
5.760	57.468	.47999	3.620	.8126	-.001350
6.080	58.589	.46360	3.398	.8713	-.001282
6.400	59.651	.44839	3.245	.9315	-.001168
6.720	60.674	.43436	3.161	.9933	-.001007
7.040	61.681	.42150	3.145	1.0571	-.000802
7.360	62.693	.40979	3.191	1.1231	-.000556
7.680	63.728	.39920	3.284	1.1916	-.000273
8.000	64.798	.38967	3.406	1.2629	.000045
8.320	65.910	.38111	3.548	1.3372	.000397
8.640	67.072	.37347	3.723	1.4150	.000781
8.960	68.297	.36671	3.946	1.4965	.001193
9.280	69.604	.36084	4.233	1.5823	.001628
9.600	71.016	.35588	4.603	1.6728	.002078
9.920	72.561	.35190	5.075	1.7685	.002535
10.240	74.277	.34896	5.671	1.8701	.002988
10.560	76.207	.34718	6.415	1.9782	.003427
10.880	78.401	.34667	7.334	2.0935	.003842
11.200	80.922	.34759	8.457	2.2167	.004224
11.520	83.839	.35012	9.817	2.3486	.004563
11.840	87.234	.35445	11.449	2.4898	.004856
12.160	91.200	.36081	13.393	2.6413	.005099
12.480	95.843	.36946	15.690	2.8037	.005290
12.800	101.284	.38068	18.388	2.9779	.005429
13.120	107.659	.39477	21.533	3.1645	.005518
13.440	115.119	.41207	25.180	3.3643	.005560
13.760	123.834	.43296	29.384	3.5782	.005558
14.080	133.991	.45782	34.206	3.8070	.005516
14.400	145.798	.48709	39.707	4.0513	.005436
14.720	159.483	.52123	45.957	4.3120	.005321
15.040	175.298	.56073	53.027	4.5900	.005175
15.360	193.516	.60611	60.992	4.8861	.004999
15.680	214.437	.65793	69.934	5.2013	.004797
16.000	238.387	.71678	79.938	5.5365	.004569
16.320	265.721	.78330	91.096	5.8926	.004317
16.640	296.822	.85816	103.507	6.2708	.004043
16.960	332.110	.94206	117.275	6.6722	.003746
17.280	372.035	1.03577	132.513	7.0980	.003427

Table 12. Continued.

NF3 ISOTHERM AT 260.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	6.636	.95923	19.955	.0278	-.000004
.640	12.791	.92451	18.528	.0581	-.000019
.960	18.499	.89138	17.155	.0908	-.000047
1.280	23.775	.85920	15.828	.1258	-.000088
1.600	28.635	.82788	14.560	.1631	-.000141
1.920	33.101	.79749	13.362	.2025	-.000206
2.240	37.196	.76813	12.245	.2439	-.000282
2.560	40.947	.73990	11.215	.2871	-.000366
2.880	44.383	.71287	10.273	.3322	-.000456
3.200	47.531	.68709	9.419	.3788	-.000548
3.520	50.420	.66260	8.652	.4269	-.000639
3.840	53.077	.63939	7.969	.4764	-.000725
4.160	55.528	.61747	7.365	.5273	-.000801
4.480	57.799	.59680	6.837	.5795	-.000864
4.800	59.912	.57738	6.382	.6330	-.000910
5.120	61.891	.55917	5.998	.6878	-.000936
5.440	63.758	.54216	5.684	.7440	-.000937
5.760	65.536	.52632	5.440	.8016	-.000914
6.080	67.247	.51164	5.267	.8609	-.000862
6.400	68.915	.49811	5.169	.9220	-.000784
6.720	70.563	.48574	5.147	.9851	-.000678
7.040	72.217	.47452	5.201	1.0505	-.000545
7.360	73.900	.46447	5.326	1.1185	-.000388
7.680	75.632	.45555	5.507	1.1892	-.000207
8.000	77.428	.44771	5.724	1.2631	-.000003
8.320	79.299	.44089	5.972	1.3402	.000221
8.640	81.255	.43504	6.263	1.4210	.000467
8.960	83.313	.43013	6.614	1.5059	.000731
9.280	85.496	.42618	7.044	1.5951	.001012
9.600	87.832	.42322	7.571	1.6892	.001306
9.920	90.355	.42134	8.217	1.7886	.001608
10.240	93.106	.42060	9.006	1.8939	.001914
10.560	96.136	.42113	9.961	2.0057	.002218
10.880	99.502	.42305	11.113	2.1245	.002515
11.200	103.272	.42654	12.490	2.2510	.002798
11.520	107.524	.43176	14.127	2.3858	.003062
11.840	112.345	.43893	16.059	2.5298	.003303
12.160	117.837	.44827	18.327	2.6836	.003517
12.480	124.114	.46004	20.972	2.8479	.003699
12.800	131.304	.47452	24.040	3.0235	.003848
13.120	139.550	.49202	27.581	3.2112	.003963
13.440	149.012	.51288	31.647	3.4117	.004043
13.760	159.867	.53744	36.296	3.6259	.004087
14.080	172.310	.56611	41.587	3.8545	.004098
14.400	186.557	.59929	47.583	4.0984	.004075
14.720	202.846	.63745	54.354	4.3583	.004020
15.040	221.434	.68106	61.972	4.6352	.003934
15.360	242.606	.73064	70.513	4.9299	.003820
15.680	266.670	.78672	80.060	5.2434	.003677
16.000	293.961	.84989	90.700	5.5766	.003507
16.320	324.845	.92076	102.527	5.9305	.003312
16.640	359.716	.99999	115.641	6.3063	.003092
16.960	399.003	1.08828	130.148	6.7050	.002847

Table 12. Continued.

NF3 ISOTHERM AT 270.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	6.914	.96242	20.862	.0278	-.000004
.640	13.371	.93064	19.508	.0579	-.000017
.960	19.404	.90039	18.208	.0904	-.000040
1.280	25.029	.87102	16.951	.1250	-.000074
1.600	30.259	.84244	15.750	.1618	-.000118
1.920	35.116	.81470	14.615	.2006	-.000171
2.240	39.621	.78792	13.557	.2413	-.000232
2.560	43.801	.76216	12.582	.2838	-.000298
2.880	47.683	.73751	11.692	.3281	-.000367
3.200	51.293	.71402	10.887	.3739	-.000437
3.520	54.660	.69171	10.166	.4212	-.000504
3.840	57.808	.67059	9.527	.4701	-.000567
4.160	60.765	.65067	8.965	.5203	-.000621
4.480	63.554	.63193	8.480	.5719	-.000665
4.800	66.200	.61435	8.069	.6250	-.000696
5.120	68.726	.59793	7.730	.6796	-.000712
5.440	71.155	.58265	7.464	.7358	-.000711
5.760	73.511	.56850	7.272	.7937	-.000691
6.080	75.817	.55547	7.157	.8534	-.000653
6.400	78.099	.54359	7.122	.9152	-.000595
6.720	80.384	.53284	7.170	.9792	-.000518
7.040	82.698	.52326	7.304	1.0458	-.000423
7.360	85.067	.51485	7.516	1.1150	-.000310
7.680	87.514	.50760	7.791	1.1873	-.000180
8.000	90.058	.50146	8.112	1.2629	-.000034
8.320	92.710	.49637	8.471	1.3419	.000127
8.640	95.485	.49229	8.885	1.4248	.000303
8.960	98.404	.48922	9.370	1.5119	.000494
9.280	101.492	.48717	9.946	1.6035	.000696
9.600	104.782	.48620	10.634	1.7001	.000908
9.920	108.312	.48637	11.456	1.8021	.001128
10.240	112.130	.48778	12.437	1.9100	.001353
10.560	116.292	.49055	13.603	2.0244	.001578
10.880	120.859	.49482	14.983	2.1457	.001801
11.200	125.907	.50076	16.610	2.2747	.002017
11.520	131.519	.50855	18.517	2.4119	.002223
11.840	137.792	.51841	20.741	2.5581	.002415
12.160	144.832	.53055	23.322	2.7138	.002589
12.480	152.760	.54525	26.304	2.8798	.002743
12.800	161.714	.56278	29.733	3.0568	.002873
13.120	171.842	.58344	33.658	3.2456	.002979
13.440	183.314	.60757	38.133	3.4469	.003058
13.760	196.312	.63552	43.215	3.6616	.003110
14.080	211.042	.66768	48.964	3.8904	.003135
14.400	227.728	.70446	55.446	4.1341	.003131
14.720	246.613	.74629	62.728	4.3937	.003100
15.040	267.967	.79366	70.884	4.6698	.003042
15.360	292.081	.84705	79.993	4.9636	.002956
15.680	319.273	.90702	90.137	5.2758	.002845
16.000	349.888	.97411	101.405	5.6075	.002708
16.320	384.302	1.04894	113.893	5.9597	.002546

Table 12. Continued.

NF3 ISOTHERM AT 280.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	7.191	.96532	21.766	.0278	-.000003
.640	13.949	.93622	20.484	.0578	-.000015
.960	20.306	.90857	19.252	.0900	-.000035
1.280	26.275	.88174	18.062	.1243	-.000064
1.600	31.871	.85563	16.924	.1607	-.000101
1.920	37.114	.83030	15.850	.1990	-.000145
2.240	42.023	.80584	14.850	.2392	-.000195
2.560	46.626	.78233	13.928	.2811	-.000249
2.880	50.946	.75985	13.089	.3247	-.000304
3.200	55.012	.73843	12.334	.3699	-.000360
3.520	58.849	.71812	11.660	.4167	-.000413
3.840	62.483	.69893	11.066	.4649	-.000462
4.160	65.939	.68086	10.550	.5147	-.000504
4.480	69.243	.66390	10.111	.5660	-.000537
4.800	72.418	.64806	9.748	.6188	-.000560
5.120	75.489	.63332	9.459	.6733	-.000572
5.440	78.480	.61968	9.247	.7295	-.000571
5.760	81.416	.60714	9.113	.7875	-.000555
6.080	84.321	.59572	9.061	.8476	-.000526
6.400	87.224	.58541	9.096	.9099	-.000482
6.720	90.152	.57625	9.221	.9746	-.000424
7.040	93.135	.56826	9.439	1.0419	-.000351
7.360	96.202	.56145	9.743	1.1122	-.000266
7.680	99.379	.55583	10.119	1.1856	-.000168
8.000	102.684	.55134	10.548	1.2624	-.000057
8.320	106.134	.54795	11.024	1.3429	.000065
8.640	109.747	.54561	11.565	1.4273	.000199
8.960	113.545	.54433	12.188	1.5160	.000344
9.280	117.558	.54414	12.915	1.6094	.000498
9.600	121.823	.54509	13.766	1.7078	.000660
9.920	126.384	.54725	14.766	1.8118	.000828
10.240	131.292	.55074	15.939	1.9217	.001000
10.560	136.607	.55567	17.315	2.0380	.001174
10.880	142.398	.56219	18.923	2.1613	.001347
11.200	148.746	.57047	20.796	2.2922	.001516
11.520	155.740	.58070	22.969	2.4313	.001679
11.840	163.482	.59310	25.480	2.5791	.001832
12.160	172.087	.60788	28.369	2.7364	.001972
12.480	181.683	.62533	31.681	2.9038	.002098
12.800	192.413	.64570	35.462	3.0820	.002207
13.120	204.435	.66931	39.764	3.2718	.002297
13.440	217.923	.69648	44.639	3.4739	.002366
13.760	233.071	.72757	50.146	3.6890	.002414
14.080	250.091	.76296	56.345	3.9181	.002439
14.400	269.213	.80304	63.303	4.1618	.002440
14.720	290.693	.84827	71.087	4.4211	.002417
15.040	314.805	.89908	79.774	4.6968	.002371
15.360	341.852	.95599	89.441	4.9897	.002301
15.680	372.161	1.01951	100.174	5.3009	.002207

Table 12. Continued.

NF3 ISOTHERM AT 300.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	7.746	.97042	23.567	.0277	-.000003
.640	15.102	.94600	22.420	.0575	-.000012
.960	22.099	.92288	21.319	.0894	-.000028
1.280	28.750	.90046	20.255	.1232	-.000050
1.600	35.067	.87866	19.237	.1589	-.000077
1.920	41.068	.85751	18.278	.1965	-.000109
2.240	46.772	.83711	17.387	.2358	-.000145
2.560	52.204	.81753	16.572	.2769	-.000184
2.880	57.386	.79884	15.834	.3195	-.000223
3.200	62.346	.78109	15.177	.3638	-.000261
3.520	67.108	.76432	14.601	.4097	-.000298
3.840	71.699	.74856	14.104	.4571	-.000331
4.160	76.143	.73381	13.686	.5062	-.000360
4.480	80.467	.72008	13.348	.5569	-.000383
4.800	84.695	.70739	13.090	.6094	-.000399
5.120	88.853	.69574	12.913	.6637	-.000407
5.440	92.968	.68514	12.820	.7199	-.000407
5.760	97.067	.67560	12.814	.7781	-.000398
6.080	101.179	.66716	12.902	.8387	-.000381
6.400	105.335	.65983	13.089	.9017	-.000354
6.720	109.567	.65366	13.381	.9673	-.000318
7.040	113.910	.64868	13.779	1.0358	-.000273
7.360	118.397	.64492	14.279	1.1074	-.000220
7.680	123.058	.64238	14.867	1.1824	-.000158
8.000	127.919	.64104	15.522	1.2609	-.000089
8.320	132.999	.64087	16.242	1.3433	-.000012
8.640	138.323	.64183	17.047	1.4299	.000072
8.960	143.920	.64395	17.955	1.5209	.000163
9.280	149.827	.64727	18.990	1.6167	.000259
9.600	156.089	.65184	20.174	1.7178	.000362
9.920	162.757	.65777	21.534	1.8244	.000468
10.240	169.893	.66515	23.097	1.9370	.000577
10.560	177.564	.67412	24.893	2.0561	.000687
10.880	185.852	.68483	26.954	2.1822	.000798
11.200	194.847	.69746	29.315	2.3158	.000906
11.520	204.650	.71220	32.013	2.4575	.001011
11.840	215.375	.72927	35.087	2.6078	.001110
12.160	227.150	.74890	38.581	2.7674	.001202
12.480	240.116	.77135	42.539	2.9368	.001285
12.800	254.430	.79689	47.010	3.1168	.001357
13.120	270.263	.82584	52.046	3.3081	.001416
13.440	287.806	.85850	57.703	3.5114	.001462
13.760	307.265	.89524	64.040	3.7273	.001492
14.080	328.870	.93641	71.118	3.9568	.001506
14.400	352.867	.98241	79.006	4.2005	.001503
14.720	379.528	1.03366	87.775	4.4593	.001482

Table 12. Continued.

NF3 ISOTHERM AT 320.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	8.299	.97475	25.361	.0276	-.000002
.640	16.249	.95427	24.340	.0573	-.000010
.960	23.881	.93496	23.362	.0889	-.000022
1.280	31.204	.91626	22.415	.1223	-.000040
1.600	38.231	.89808	21.511	.1576	-.000062
1.920	44.977	.88046	20.662	.1946	-.000087
2.240	51.462	.86348	19.878	.2333	-.000114
2.560	57.707	.84723	19.166	.2736	-.000143
2.880	63.736	.83178	18.530	.3156	-.000173
3.200	69.575	.81717	17.973	.3592	-.000202
3.520	75.248	.80346	17.497	.4045	-.000230
3.840	80.781	.79067	17.102	.4513	-.000255
4.160	86.202	.77882	16.790	.4999	-.000277
4.480	91.536	.76794	16.561	.5502	-.000294
4.800	96.810	.75804	16.417	.6024	-.000307
5.120	102.052	.74914	16.361	.6565	-.000314
5.440	107.291	.74127	16.398	.7127	-.000316
5.760	112.557	.73445	16.533	.7711	-.000311
6.080	117.883	.72872	16.772	.8319	-.000301
6.400	123.303	.72411	17.122	.8953	-.000284
6.720	128.853	.72068	17.591	.9615	-.000261
7.040	134.574	.71846	18.182	1.0308	-.000232
7.360	140.502	.71750	18.888	1.1032	-.000197
7.680	146.673	.71780	19.697	1.1792	-.000157
8.000	153.117	.71936	20.589	1.2589	-.000111
8.320	159.859	.72215	21.563	1.3426	-.000060
8.640	166.929	.72616	22.640	1.4305	-.000004
8.960	174.362	.73141	23.842	1.5230	.000057
9.280	182.204	.73794	25.192	1.6204	.000121
9.600	190.504	.74584	26.715	1.7231	.000189
9.920	199.323	.75520	28.440	1.8315	.000260
10.240	208.730	.76612	30.395	1.9459	.000333
10.560	218.803	.77876	32.611	2.0668	.000406
10.880	229.633	.79327	35.124	2.1947	.000479
11.200	241.318	.80982	37.970	2.3301	.000551
11.520	253.973	.82861	41.187	2.4735	.000620
11.840	267.722	.84986	44.816	2.6254	.000685
12.160	282.704	.87380	48.903	2.7865	.000745
12.480	299.074	.90069	53.495	2.9573	.000798
12.800	317.000	.93081	58.641	3.1385	.000844
13.120	336.669	.96446	64.395	3.3307	.000880
13.440	358.284	1.00194	70.815	3.5346	.000905
13.760	382.068	1.04360	77.961	3.7510	.000919

Table 12. Continued.

NF3 ISOTHERM AT 350.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	9.127	.98013	28.041	.0276	-.000002
.640	17.964	.96452	27.198	.0570	-.000008
.960	26.537	.94991	26.391	.0883	-.000017
1.280	34.857	.93578	25.612	.1213	-.000030
1.600	42.933	.92207	24.870	.1560	-.000046
1.920	50.779	.90882	24.178	.1923	-.000065
2.240	58.413	.89611	23.549	.2303	-.000085
2.560	65.858	.88402	22.989	.2699	-.000106
2.880	73.135	.87262	22.505	.3112	-.000127
3.200	80.270	.86198	22.102	.3540	-.000148
3.520	87.289	.85214	21.781	.3986	-.000168
3.840	94.219	.84314	21.546	.4448	-.000187
4.160	101.087	.83503	21.399	.4928	-.000203
4.480	107.924	.82782	21.344	.5427	-.000216
4.800	114.758	.82155	21.383	.5945	-.000227
5.120	121.620	.81626	21.523	.6484	-.000234
5.440	128.543	.81198	21.768	.7045	-.000238
5.760	135.563	.80875	22.126	.7630	-.000237
6.080	142.717	.80662	22.606	.8240	-.000233
6.400	150.045	.80563	23.217	.8878	-.000225
6.720	157.591	.80586	23.966	.9545	-.000213
7.040	165.399	.80734	24.857	1.0244	-.000198
7.360	173.514	.81013	25.887	1.0976	-.000179
7.680	181.979	.81425	27.040	1.1745	-.000157
8.000	190.831	.81970	28.299	1.2552	-.000131
8.320	200.102	.82646	29.665	1.3401	-.000103
8.640	209.830	.83455	31.162	1.4293	-.000071
8.960	220.062	.84398	32.813	1.5232	-.000037
9.280	230.850	.85483	34.644	1.6221	-.000001
9.600	242.257	.86716	36.683	1.7263	.000038
9.920	254.353	.88109	38.960	1.8363	.000077
10.240	267.219	.89673	41.505	1.9523	.000118
10.560	280.948	.91424	44.354	2.0749	.000158
10.880	295.642	.93376	47.543	2.2045	.000198
11.200	311.416	.95547	51.110	2.3415	.000237
11.520	328.398	.97959	55.098	2.4864	.000274
11.840	346.728	1.00631	59.550	2.6398	.000307
12.160	366.564	1.03589	64.514	2.8021	.000337
12.480	388.077	1.06856	70.038	2.9741	.000361

Table 12. Continued.

NF3 ISOTHERM AT 400.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	10.504	.98696	32.484	.0275	-.000001
.640	20.806	.97749	31.913	.0567	-.000006
.960	30.931	.96879	31.372	.0875	-.000012
1.280	40.886	.96044	30.851	.1200	-.000021
1.600	50.679	.95239	30.363	.1540	-.000032
1.920	60.323	.94469	29.922	.1896	-.000045
2.240	69.836	.93742	29.542	.2268	-.000058
2.560	79.238	.93067	29.233	.2656	-.000072
2.880	88.554	.92452	29.003	.3059	-.000087
3.200	97.809	.91904	28.859	.3479	-.000101
3.520	107.033	.91428	28.805	.3917	-.000115
3.840	116.255	.91030	28.848	.4371	-.000128
4.160	125.507	.90715	28.991	.4845	-.000139
4.480	134.821	.90486	29.242	.5337	-.000150
4.800	144.234	.90350	29.606	.5851	-.000159
5.120	153.782	.90311	30.091	.6386	-.000166
5.440	163.506	.90373	30.705	.6945	-.000171
5.760	173.448	.90542	31.459	.7529	-.000174
6.080	183.656	.90825	32.364	.8140	-.000176
6.400	194.178	.91227	33.429	.8779	-.000176
6.720	205.069	.91756	34.667	.9450	-.000173
7.040	216.384	.92418	36.081	1.0153	-.000169
7.360	228.179	.93218	37.669	1.0891	-.000164
7.680	240.509	.94161	39.416	1.1667	-.000157
8.000	253.420	.95248	41.304	1.2482	-.000148
8.320	266.959	.96477	43.341	1.3339	-.000138
8.640	281.177	.97852	45.553	1.4241	-.000127
8.960	296.135	.99377	47.968	1.5191	-.000115
9.280	311.901	1.01059	50.613	1.6192	-.000102
9.600	328.555	1.02906	53.521	1.7246	-.000089
9.920	346.186	1.04931	56.723	1.8358	-.000075
10.240	364.893	1.07144	60.255	1.9531	-.000062
10.560	384.789	1.09563	64.156	2.0770	-.000049

Table 12. Continued.

NF3 ISOTHERM AT 450.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	11.877	.99198	36.904	.0274	-.000001
.640	23.634	.98699	36.586	.0564	-.000004
.960	35.294	.98260	36.290	.0870	-.000009
1.280	46.861	.97849	36.011	.1191	-.000016
1.600	58.344	.97460	35.763	.1526	-.000024
1.920	69.754	.97101	35.563	.1877	-.000033
2.240	81.111	.96779	35.426	.2243	-.000043
2.560	92.435	.96504	35.364	.2625	-.000054
2.880	103.753	.96285	35.387	.3022	-.000065
3.200	115.093	.96128	35.505	.3436	-.000075
3.520	126.486	.96040	35.723	.3867	-.000086
3.840	137.967	.96028	36.051	.4316	-.000096
4.160	149.572	.96096	36.496	.4784	-.000106
4.480	161.338	.96252	37.064	.5272	-.000115
4.800	173.307	.96500	37.766	.5781	-.000123
5.120	185.523	.96846	38.611	.6313	-.000130
5.440	198.034	.97296	39.610	.6869	-.000136
5.760	210.891	.97856	40.774	.7451	-.000141
6.080	224.149	.98534	42.118	.8060	-.000146
6.400	237.867	.99336	43.655	.8699	-.000149
6.720	252.110	1.00270	45.395	.9369	-.000151
7.040	266.943	1.01344	47.346	1.0072	-.000153
7.360	282.434	1.02563	49.505	1.0812	-.000154
7.680	298.647	1.03932	51.858	1.1589	-.000154
8.000	315.642	1.05452	54.388	1.2406	-.000154
8.320	333.475	1.07125	57.106	1.3266	-.000153
8.640	352.213	1.08954	60.043	1.4171	-.000152
8.960	371.929	1.10944	63.228	1.5124	-.000150
9.280	392.708	1.13103	66.693	1.6127	-.000149

Table 12. Continued.

NF3 ISOTHERM AT 500.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	13.247	.99579	41.308	.0274	-.000001
.640	26.451	.99418	41.225	.0563	-.000003
.960	39.633	.99307	41.160	.0866	-.000007
1.280	52.796	.99216	41.111	.1183	-.000013
1.600	65.948	.99145	41.094	.1516	-.000019
1.920	79.101	.99101	41.127	.1862	-.000026
2.240	92.276	.99091	41.228	.2224	-.000034
2.560	105.496	.99126	41.410	.2601	-.000042
2.880	118.788	.99215	41.685	.2993	-.000051
3.200	132.186	.99364	42.065	.3402	-.000060
3.520	145.722	.99581	42.559	.3829	-.000068
3.840	159.437	.99874	43.177	.4273	-.000077
4.160	173.370	1.00247	43.927	.4737	-.000085
4.480	187.565	1.00709	44.820	.5221	-.000093
4.800	202.071	1.01264	45.866	.5726	-.000101
5.120	216.937	1.01920	47.079	.6254	-.000108
5.440	232.220	1.02682	48.470	.6807	-.000114
5.760	247.978	1.03558	50.053	.7386	-.000120
6.080	264.276	1.04556	51.845	.7993	-.000126
6.400	281.183	1.05682	53.859	.8629	-.000131
6.720	298.772	1.06946	56.110	.9297	-.000136
7.040	317.119	1.08354	58.604	.9999	-.000141
7.360	336.304	1.09913	61.339	1.0737	-.000145
7.680	356.401	1.11628	64.303	1.1513	-.000149
8.000	377.480	1.13501	67.478	1.2329	-.000153
8.320	399.611	1.15534	70.881	1.3188	-.000158

NF3 ISOTHERM AT 600.00 K

MOL/L	P,BAR	Z	DP/DD	DP/DT	D2P/DT2
.320	15.982	1.00111	50.077	.0273	-.000001
.640	32.062	1.00421	50.431	.0560	-.000002
.960	48.259	1.00767	50.799	.0860	-.000005
1.280	64.575	1.01128	51.184	.1173	-.000008
1.600	81.021	1.01505	51.607	.1500	-.000013
1.920	97.610	1.01907	52.089	.1841	-.000018
2.240	114.366	1.02344	52.652	.2196	-.000023
2.560	131.318	1.02824	53.313	.2566	-.000029
2.880	148.499	1.03358	54.089	.2951	-.000035
3.200	165.948	1.03953	54.992	.3353	-.000041
3.520	183.709	1.04617	56.038	.3772	-.000047
3.840	201.829	1.05357	57.238	.4209	-.000054
4.160	220.359	1.06182	58.605	.4665	-.000061
4.480	239.355	1.07097	60.154	.5142	-.000067
4.800	258.879	1.08110	61.899	.5640	-.000074
5.120	278.993	1.09229	63.855	.6161	-.000081
5.440	299.770	1.10459	66.040	.6708	-.000087
5.760	321.285	1.11810	68.470	.7280	-.000094
6.080	343.619	1.13289	71.164	.7880	-.000101
6.400	366.860	1.14904	74.142	.8510	-.000108
6.720	391.102	1.16663	77.418	.9172	-.000115

Table 13. The Joule-Thomson Inversion Locus. (Column DI is the initial density for the iteration.)

THE JOULE-THOMSON INVERSION LOCUS FOR NITROGEN TRIFLUORIDE.

T,K	DI	MOL/L	P,BAR	T,K	DI	MOL/L	P,BAR
190	19.228	18.171	15.48	450	11.065	11.059	532.62
200	18.823	17.836	65.09	460	10.832	10.812	531.93
210	18.428	17.510	110.99	470	10.604	10.565	530.36
220	18.040	17.193	153.47	480	10.381	10.319	527.97
230	17.661	16.884	192.76	490	10.163	10.075	524.85
240	17.289	16.582	229.09	500	9.949	9.832	521.09
250	16.926	16.286	262.67	510	9.740	9.592	516.76
260	16.570	15.997	293.65	520	9.535	9.355	511.95
270	16.221	15.712	322.19	530	9.335	9.122	506.76
280	15.880	15.433	348.44	540	9.138	8.892	501.28
290	15.546	15.158	372.52	550	8.946	8.668	495.59
300	15.219	14.886	394.53	560	8.758	8.448	489.78
310	14.899	14.619	414.60	570	8.574	8.235	483.93
320	14.586	14.354	432.80	580	8.394	8.028	478.11
330	14.279	14.092	449.22	590	8.217	7.828	472.39
340	13.979	13.832	463.95	600	8.044	7.636	466.89
350	13.685	13.575	477.05	610	7.875	7.451	461.56
360	13.397	13.319	488.61	620	7.709	7.272	456.29
370	13.115	13.064	498.67	630	7.547	7.097	451.01
380	12.840	12.811	507.30	640	7.389	6.926	445.66
390	12.570	12.559	514.57	650	7.233	6.758	440.17
400	12.305	12.307	520.52	660	7.081	6.592	434.51
410	12.046	12.057	525.22	670	6.932	6.428	428.66
420	11.793	11.807	528.72	680	6.786	6.266	422.59
430	11.545	11.557	531.08	690	6.644	6.104	416.30
440	11.302	11.308	532.36	700	6.504	5.944	409.78

TABLE 14. Thermophysical Properties of Saturated Liquid

This table was computed along paths described in section 3.0. Column headings have the following interpretations--

DPS/DT	≡	dP_σ/dT, vapor pressure,
DDL/DT	≡	$d\rho_\ell/dT$, saturated liquid,
DP/DT	≡	$(\partial P/\partial T)$, single phase,
DP/DD	≡	$(\partial P/\partial \rho)$, single phase,
Q,VAP	≡	ΔH_{vap}, heat of vaporization,
CV	≡	$C_v(\rho,T)$,
CS	≡	$C_\sigma(T)$,
CP	≡	$C_p(\rho,T)$,
W	≡	speed of sound.

PROPERTIES OF SATURATED LIQUID NITROGEN TRIFLUORIDE.

T K	P BAR	DEN MOL/L	Z	V,LIQ L/MOL	V,GAS L/MOL	DPS/DT BAR/K	DDL/DT MOL/L/K	DP/DT BAR/K	DP/DD BAR-L/MOL
66.350	.1854E-05	26.320	.00000	.03799	.2975E+07	.7370E-06	-.05454	45.429	.8329E+03
70.000	.7286E-05	26.120	.00000	.03828	.7988E+06	.2577E-05	-.05494	43.099	.7845E+03
75.000	.3754E-04	25.844	.00000	.03869	.1661E+06	.1141E-04	-.05550	40.163	.7237E+03
80.000	.1546E-03	25.565	.00000	.03912	.4303E+05	.4074E-04	-.05608	37.484	.6684E+03
85.000	.5299E-03	25.283	.00000	.03955	.1334E+05	.1220E-03	-.05668	35.027	.6180E+03
90.000	.1561E-02	24.998	.00001	.04000	.4794E+04	.3163E-03	-.05731	32.763	.5717E+03
95.000	.4050E-02	24.710	.00002	.04047	.1949E+04	.7269E-03	-.05797	30.668	.5290E+03
100.000	.9448E-02	24.419	.00005	.04095	.8792E+03	.1510E-02	-.05866	28.723	.4896E+03
105.000	.2013E-01	24.123	.00010	.04145	.4329E+03	.2881E-02	-.05939	26.911	.4531E+03
110.000	.3969E-01	23.825	.00018	.04197	.2297E+03	.5113E-02	-.06017	25.218	.4191E+03
115.000	.7323E-01	23.522	.00033	.04251	.1299E+03	.8527E-02	-.06100	23.633	.3873E+03
120.000	.1275E+00	23.215	.00055	.04308	.7762E+02	.1348E-01	-.06189	22.145	.3576E+03
125.000	.2113E+00	22.903	.00089	.04366	.4863E+02	.2036E-01	-.06285	20.744	.3297E+03
130.000	.3350E+00	22.586	.00137	.04428	.3174E+02	.2954E-01	-.06390	19.424	.3035E+03
135.000	.5111E+00	22.264	.00205	.04492	.2147E+02	.4138E-01	-.06504	18.178	.2789E+03
140.000	.7538E+00	21.935	.00295	.04559	.1498E+02	.5625E-01	-.06629	16.998	.2556E+03
144.094	.1013E+01	21.662	.00390	.04616	.1139E+02	.7088E-01	-.06741	16.078	.2375E+03
150.000	.1504E+01	21.258	.00567	.04704	.7885E+01	.9623E-01	-.06921	14.819	.2127E+03
155.000	.2048E+01	20.908	.00760	.04783	.5910E+01	.1219E+00	-.07092	13.810	.1930E+03
160.000	.2730E+01	20.549	.00999	.04866	.4512E+01	.1515E+00	-.07285	12.849	.1743E+03
165.000	.3570E+01	20.179	.01298	.04956	.3500E+01	.1854E+00	-.07503	11.932	.1565E+03
170.000	.4591E+01	19.798	.01640	.05051	.2753E+01	.2236E+00	-.07752	11.056	.1397E+03
175.000	.5813E+01	19.403	.02059	.05154	.2192E+01	.2663E+00	-.08039	10.218	.1238E+03
180.000	.7261E+01	18.993	.02554	.05265	.1764E+01	.3135E+00	-.08372	9.415	.1087E+03
185.000	.8956E+01	18.565	.03136	.05386	.1432E+01	.3655E+00	-.08764	8.643	.9445E+02
190.000	.1092E+02	18.116	.03817	.05520	.1171E+01	.4224E+00	-.09234	7.900	.8098E+02
195.000	.1319E+02	17.640	.04611	.05669	.9626E+00	.4843E+00	-.09805	7.183	.6832E+02
200.000	.1578E+02	17.133	.05537	.05837	.7946E+00	.5516E+00	-.10519	6.488	.5644E+02
205.000	.1871E+02	16.585	.06620	.06030	.6570E+00	.6247E+00	-.11437	5.813	.4536E+02
210.000	.2203E+02	15.984	.07895	.06256	.5427E+00	.7040E+00	-.12669	5.152	.3511E+02
215.000	.2577E+02	15.309	.09415	.06532	.4463E+00	.7906E+00	-.14427	4.499	.2570E+02
220.000	.2995E+02	14.525	.11274	.06885	.3633E+00	.8859E+00	-.17188	3.845	.1722E+02
225.000	.3464E+02	13.553	.13665	.07379	.2896E+00	.9925E+00	-.22328	3.172	.9761E+01
230.000	.3991E+02	12.155	.17168	.08227	.2195E+00	.1116E+01	-.36776	2.424	.3557E+01
232.000	.4219E+02	11.255	.19435	.08885	.1890E+00	.1173E+01	-.57086	2.055	.1545E+01
233.000	.4338E+02	10.554	.21219	.09475	.1707E+00	.1205E+01	-.89310	1.819	.6875E+00
234.000	.4461E+02	7.920	.28949	.12626	.1263E+00	.1245E+01	0.00000	1.245	0.

Table 14. Thermophysical Properties of Saturated Liquid.

PROPERTIES OF SATURATED LIQUID NITROGEN TRIFLUORIDE.

T	P	Q,VAP	E	H	S	CV	CS	CP	W
K	BAR	J/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.350	.1854E-05	14548.0	.0	.0	92.507	50.06	73.79	73.79	1314
70.000	.7286E-05	14402.2	267.3	267.3	96.427	48.53	72.82	72.82	1287
75.000	.3754E-04	14207.2	629.1	629.1	101.413	46.75	71.78	71.78	1250
80.000	.1546E-03	14016.7	986.6	986.6	106.023	45.30	71.03	71.03	1214
85.000	.5299E-03	13829.9	1340.9	1340.9	110.315	44.11	70.51	70.51	1179
90.000	.1561E-02	13645.9	1692.8	1692.8	114.336	43.15	70.19	70.19	1144
95.000	.4050E-02	13463.8	2043.1	2043.2	118.126	42.37	70.03	70.03	1109
100.000	.9448E-02	13282.6	2392.9	2392.9	121.716	41.75	70.01	70.01	1075
105.000	.2013E-01	13101.6	2742.7	2742.8	125.132	41.25	70.09	70.09	1041
110.000	.3969E-01	12919.7	3093.2	3093.4	128.395	40.86	70.26	70.27	1007
115.000	.7323E-01	12735.9	3444.9	3445.2	131.523	40.55	70.52	70.53	973
120.000	.1275E+00	12549.4	3798.3	3798.8	134.531	40.33	70.84	70.86	940
125.000	.2113E+00	12359.0	4153.6	4154.5	137.431	40.16	71.23	71.26	907
130.000	.3350E+00	12163.8	4511.2	4512.7	140.234	40.06	71.69	71.74	874
135.000	.5111E+00	11962.6	4871.2	4873.5	142.950	40.01	72.21	72.29	842
140.000	.7538E+00	11754.3	5234.0	5237.4	145.588	40.02	72.80	72.91	809
144.094	.1013E+01	11577.6	5533.4	5538.1	147.694	40.06	73.34	73.49	783
150.000	.1504E+01	11311.4	5969.2	5976.2	150.659	40.18	74.22	74.44	745
155.000	.2048E+01	11074.2	6342.3	6352.1	153.105	40.32	75.05	75.36	712
160.000	.2730E+01	10824.4	6719.5	6732.7	155.502	40.52	75.99	76.41	680
165.000	.3570E+01	10560.6	7101.5	7119.2	157.855	40.75	77.03	77.60	647
170.000	.4591E+01	10280.8	7488.6	7511.8	160.170	41.02	78.19	78.96	615
175.000	.5813E+01	9982.8	7882.0	7911.9	162.454	41.32	79.50	80.52	582
180.000	.7261E+01	9664.3	8281.9	8320.1	164.713	41.64	80.96	82.32	550
185.000	.8956E+01	9322.4	8689.5	8737.7	166.953	41.96	82.62	84.42	517
190.000	.1092E+02	8953.4	9106.0	9166.3	169.181	42.29	84.52	86.91	484
195.000	.1319E+02	8552.8	9532.4	9607.2	171.406	42.59	86.73	89.92	450
200.000	.1578E+02	8114.7	9970.5	10062.6	173.636	42.87	89.38	93.70	416
205.000	.1871E+02	7630.8	10422.6	10535.5	175.884	43.12	92.66	98.63	382
210.000	.2203E+02	7089.3	10892.3	11030.2	178.168	43.34	96.99	105.48	346
215.000	.2577E+02	6471.1	11385.0	11553.3	180.517	43.59	103.13	115.83	310
220.000	.2995E+02	5742.9	11911.7	12117.9	182.984	44.01	112.93	133.56	271
225.000	.3464E+02	4834.1	12499.0	12754.6	185.695	45.04	131.80	171.30	228
230.000	.3991E+02	3532.2	13237.3	13565.6	189.080	48.48	187.24	305.62	177
232.000	.4219E+02	2707.0	13666.7	14041.6	191.056	52.27	267.16	552.94	151
233.000	.4338E+02	2077.1	13984.7	14395.8	192.532	55.23	395.13	1062.37	136
234.000	.4461E+02	0.0	14897.2	15460.4	197.032	0.00	0.00	0.00	0

Table 14. Continued.

TABLE 15. Thermophysical Properties Along Isobars*

The following pages give physical and thermodynamic properties along selected isobars, as computed by methods of section 3 of the text.

The first line of each table refers to freezing liquid on an artifical P(T) melting line adopted from methane.

Each table at $P < P_c$ contains a blank line for the transition from saturated liquid to vapor, as seen by the abrupt decrease of density.

Table headings for partial derivatives have the following interpretations--

DP/DT $\equiv \partial P/\partial T$,

DP/DD $\equiv \partial P/\partial \rho$.

The specific heat interpretations are--

CV $\equiv C_v(\rho,T)$.

CP $\equiv C_p(\rho,T)$.

*These tables are extrapolated beyond the range of some of the P-ρ-T data used for adjusting the equation of state. Small discontinuities may be detected at T = 234.0 K along isobars at $P > P_c$ = 44.61 bar, due to change in the paths of computation, section 3.

NITROGEN TRIFLUORIDE ISOBAR AT .10000 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.352	26.320	.03799	.00069	45.4295	832.940	.1	.5	92.506	50.06	73.79	1315
70.000	26.120	.03828	.00066	43.1001	784.543	267.3	267.7	96.429	48.53	72.82	1287
80.000	25.565	.03912	.00059	37.4857	668.480	986.6	987.0	106.023	45.30	71.03	1215
90.000	24.998	.04000	.00053	32.7646	571.725	1692.6	1693.0	114.333	43.15	70.19	1144
100.000	24.419	.04095	.00049	28.7243	489.672	2392.8	2393.2	121.714	41.75	70.01	1075
110.000	23.825	.04197	.00046	25.2191	419.081	3093.2	3093.6	128.396	40.86	70.27	1007
117.748	23.353	.04282	.00044	22.8033	370.738	3638.9	3639.4	133.190	40.42	70.70	955
117.748	.01028	97.270	.99354	.000858	9.665	15300.5	16273.2	240.485	26.74	35.23	133
120.000	.01008	99.161	.99385	.000842	9.856	15361.0	16352.6	241.154	26.87	35.35	135
130.000	.00930	107.547	.99499	.000775	10.702	15633.8	16709.3	244.008	27.56	36.01	140
140.000	.00863	115.919	.99584	.000719	11.545	15914.0	17073.2	246.704	28.36	36.78	145
150.000	.00805	124.282	.99650	.000670	12.386	16202.5	17445.3	249.271	29.25	37.65	149
160.000	.00754	132.636	.99703	.000628	13.226	16500.1	17826.5	251.731	30.21	38.60	154
170.000	.00709	140.986	.99745	.000591	14.064	16807.5	18217.4	254.100	31.22	39.60	158
180.000	.00670	149.330	.99779	.000557	14.901	17125.3	18618.6	256.393	32.27	40.64	162
190.000	.00634	157.671	.99807	.000528	15.738	17453.7	19030.4	258.619	33.36	41.72	166
200.000	.00602	166.009	.99831	.000501	16.574	17793.0	19453.1	260.787	34.47	42.83	170
210.000	.00574	174.345	.99851	.000477	17.410	18143.5	19887.0	262.904	35.59	43.94	174
220.000	.00547	182.678	.99868	.000456	18.245	18505.2	20332.0	264.974	36.71	45.06	177
230.000	.00524	191.009	.99883	.000436	19.080	18878.2	20788.3	267.002	37.84	46.18	181
240.000	.00502	199.339	.99895	.000417	19.914	19262.3	21255.7	268.991	38.95	47.30	184
250.000	.00482	207.668	.99906	.000401	20.748	19657.5	21734.1	270.944	40.05	48.39	187
260.000	.00463	215.995	.99916	.000385	21.582	20063.6	22223.5	272.863	41.14	49.48	191
270.000	.00446	224.321	.99924	.000371	22.416	20480.4	22723.6	274.750	42.20	50.54	194
280.000	.00430	232.646	.99931	.000358	23.250	20907.8	23234.2	276.607	43.24	51.58	197
290.000	.00415	240.971	.99938	.000345	24.083	21345.4	23755.1	278.435	44.26	52.59	200
300.000	.00401	249.295	.99944	.000334	24.916	21793.1	24286.0	280.235	45.25	53.58	203
310.000	.00388	257.618	.99949	.000323	25.749	22250.5	24826.6	282.007	46.21	54.54	206
320.000	.00376	265.940	.99953	.000313	26.582	22717.3	25376.7	283.754	47.14	55.47	209
330.000	.00365	274.262	.99958	.000303	27.415	23193.3	25936.0	285.475	48.04	56.37	212
340.000	.00354	282.583	.99961	.000294	28.248	23678.2	26504.1	287.170	48.92	57.24	215
350.000	.00344	290.904	.99965	.000286	29.081	24171.7	27080.8	288.842	49.76	58.09	218
360.000	.00334	299.225	.99968	.000278	29.913	24673.5	27665.7	290.490	50.57	58.90	221
370.000	.00325	307.545	.99970	.000270	30.746	25183.2	28258.7	292.114	51.36	59.68	224
380.000	.00317	315.865	.99973	.000263	31.578	25700.7	28859.3	293.716	52.12	60.44	227
390.000	.00308	324.184	.99975	.000257	32.411	26225.5	29467.4	295.296	52.84	61.17	229
400.000	.00301	332.504	.99977	.000250	33.243	26757.6	30082.6	296.853	53.55	61.87	232
410.000	.00293	340.823	.99979	.000244	34.076	27296.5	30704.7	298.389	54.22	62.55	235
420.000	.00286	349.141	.99981	.000238	34.908	27842.0	31333.4	299.904	54.87	63.19	237
430.000	.00280	357.460	.99982	.000233	35.740	28393.9	31968.5	301.399	55.50	63.82	240
440.000	.00273	365.778	.99984	.000227	36.572	28952.0	32609.8	302.873	56.10	64.42	243
450.000	.00267	374.096	.99985	.000222	37.404	29515.9	33256.9	304.327	56.68	65.00	245
460.000	.00261	382.414	.99986	.000217	38.237	30085.5	33909.6	305.762	57.23	65.55	248
470.000	.00256	390.732	.99987	.000213	39.069	30660.6	34567.9	307.177	57.77	66.09	250
480.000	.00251	399.050	.99988	.000208	39.901	31240.8	35231.3	308.574	58.28	66.60	253
490.000	.00245	407.367	.99989	.000204	40.733	31826.2	35899.8	309.953	58.78	67.10	255
500.000	.00241	415.684	.99990	.000200	41.565	32416.3	36573.2	311.313	59.25	67.57	258

NITROGEN TRIFLUORIDE ISOBAR AT .50000 BAR

Table 15. Thermophysical Properties Along Isobars.

NITROGEN TRIFLUORIDE ISOBAR AT .50000 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.359	26.320	.03799	.00344	45.4305	833.069	.4	2.3	92.511	50.06	73.79	1315
70.000	26.121	.03828	.00329	43.1060	784.769	267.1	269.0	96.426	48.53	72.82	1287
80.000	25.566	.03911	.00294	37.4914	668.693	986.3	988.3	106.019	45.30	71.03	1215
90.000	24.999	.04000	.00267	32.7701	571.930	1692.3	1694.3	114.329	43.15	70.19	1144
100.000	24.420	.04095	.00246	28.7298	489.871	2392.4	2394.5	121.710	41.75	70.00	1075
110.000	23.826	.04197	.00229	25.2246	419.276	3092.7	3094.8	128.391	40.86	70.26	1007
120.000	23.216	.04307	.00216	22.1497	357.780	3797.7	3799.9	134.529	40.33	70.86	940
130.000	22.586	.04427	.00205	19.4266	303.618	4510.8	4513.0	140.233	40.06	71.74	875
134.730	22.281	.04488	.00200	18.2430	280.154	4851.7	4854.0	142.806	40.02	72.26	844
134.730	.04564	21.910	.97792	.003855	10.715	15732.1	16827.6	231.677	28.18	37.15	141
140.000	.04383	22.818	.98011	.003693	11.186	15883.3	17024.2	233.106	28.54	37.43	143
150.000	.04077	24.531	.98345	.003426	12.068	16175.3	17401.9	235.712	29.36	38.14	148
160.000	.03812	26.235	.98604	.003197	12.941	16475.6	17787.4	238.200	30.28	38.98	153
170.000	.03580	27.932	.98808	.002999	13.807	16785.2	18181.8	240.590	31.28	39.92	157
180.000	.03376	29.625	.98974	.002825	14.668	17104.7	18586.0	242.900	32.32	40.92	161
190.000	.03193	31.314	.99110	.002671	15.525	17434.6	19000.3	245.140	33.40	41.96	165
200.000	.03030	32.999	.99222	.002533	16.379	17775.2	19425.2	247.319	34.50	43.03	169
210.000	.02883	34.682	.99317	.002409	17.230	18126.8	19861.0	249.445	35.61	44.12	173
220.000	.02750	36.363	.99397	.002297	18.079	18489.5	20307.7	251.523	36.74	45.22	177
230.000	.02629	38.042	.99465	.002195	18.926	18863.3	20765.4	253.558	37.86	46.33	180
240.000	.02518	39.720	.99524	.002101	19.771	19248.2	21234.2	255.553	38.97	47.42	184
250.000	.02416	41.396	.99574	.002016	20.616	19644.1	21713.9	257.511	40.07	48.51	187
260.000	.02322	43.070	.99619	.001937	21.459	20050.9	22204.4	259.434	41.15	49.58	190
270.000	.02235	44.744	.99657	.001864	22.301	20468.3	22705.5	261.325	42.22	50.64	194
280.000	.02154	46.417	.99691	.001797	23.142	20896.2	23217.1	263.186	43.26	51.67	197
290.000	.02079	48.090	.99721	.001734	23.983	21334.4	23738.9	265.017	44.27	52.68	200
300.000	.02010	49.761	.99748	.001675	24.823	21782.5	24270.6	266.819	45.26	53.66	203
310.000	.01944	51.432	.99771	.001621	25.662	22240.3	24811.9	268.594	46.22	54.61	206
320.000	.01883	53.102	.99792	.001569	26.501	22707.6	25362.7	270.343	47.15	55.54	209
330.000	.01826	54.772	.99811	.001521	27.339	23184.0	25922.6	272.065	48.05	56.43	212
340.000	.01772	56.441	.99828	.001476	28.176	23669.2	26491.3	273.763	48.92	57.30	215
350.000	.01721	58.110	.99843	.001434	29.014	24163.0	27068.6	275.436	49.77	58.14	218
360.000	.01673	59.779	.99857	.001394	29.851	24665.1	27654.0	277.086	50.58	58.95	221
370.000	.01627	61.447	.99869	.001356	30.687	25175.1	28247.5	278.712	51.37	59.73	224
380.000	.01584	63.115	.99881	.001320	31.523	25692.9	28848.6	280.315	52.12	60.49	226
390.000	.01544	64.782	.99891	.001286	32.359	26218.0	29457.1	281.895	52.85	61.21	229
400.000	.01505	66.450	.99900	.001253	33.195	26750.3	30072.8	283.454	53.55	61.91	232
410.000	.01468	68.117	.99909	.001223	34.031	27289.4	30695.3	284.991	54.23	62.58	235
420.000	.01433	69.783	.99916	.001193	34.866	27835.2	31324.4	286.507	54.88	63.23	237
430.000	.01400	71.450	.99924	.001165	35.701	28387.3	31959.8	288.002	55.50	63.85	240
440.000	.01368	73.116	.99930	.001139	36.536	28945.5	32601.4	289.477	56.10	64.45	243
450.000	.01337	74.783	.99936	.001113	37.370	29509.7	33248.8	290.932	56.68	65.03	245
460.000	.01308	76.449	.99942	.001089	38.205	30079.4	33901.9	292.367	57.24	65.58	248
470.000	.01280	78.115	.99947	.001066	39.039	30654.7	34560.4	293.783	57.77	66.12	250
480.000	.01253	79.780	.99951	.001043	39.873	31235.1	35224.1	295.181	58.29	66.63	253
490.000	.01228	81.446	.99956	.001022	40.708	31820.6	35892.9	296.560	58.78	67.12	255
500.000	.01203	83.112	.99960	.001002	41.542	32410.9	36566.5	297.921	59.25	67.59	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 1.01325 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.369	26.320	.03799	.00698	45.4319	833.234	.9	4.7	92.518	50.05	73.79	1315
70.000	26.121	.03828	.00666	43.1135	785.059	266.8	270.7	96.422	48.53	72.82	1288
80.000	25.567	.03911	.00596	37.4987	668.967	985.9	989.9	106.015	45.30	71.02	1215
90.000	25.000	.04000	.00542	32.7772	572.193	1691.9	1695.9	114.324	43.15	70.19	1144
100.000	24.421	.04095	.00499	28.7368	490.126	2391.9	2396.1	121.705	41.75	70.00	1075
110.000	23.827	.04197	.00465	25.2316	419.526	3092.1	3096.4	128.386	40.86	70.26	1008
120.000	23.217	.04307	.00437	22.1567	358.028	3797.0	3801.4	134.523	40.33	70.85	941
130.000	22.588	.04427	.00415	19.4338	303.865	4510.0	4514.5	140.227	40.06	71.73	875
140.000	21.936	.04559	.00397	17.0017	255.694	5233.5	5238.2	145.583	40.02	72.91	809
144.094	21.662	.04616	.00390	16.0782	237.455	5533.4	5538.1	147.694	40.06	73.49	783
144.094	.08782	11.387	.96302	.007514	11.110	15961.9	17115.7	228.042	29.18	38.68	144
150.000	.08402	11.902	.96698	.007156	11.666	16138.9	17344.9	229.599	29.58	38.91	147
160.000	.07833	12.766	.97236	.006640	12.587	16443.5	17737.1	232.130	30.42	39.56	151
170.000	.07341	13.623	.97655	.006203	13.491	16756.3	18136.6	234.552	31.37	40.37	156
180.000	.06909	14.473	.97990	.005826	14.384	17078.3	18544.9	236.885	32.39	41.29	160
190.000	.06527	15.320	.98262	.005495	15.267	17410.3	18962.6	239.144	33.45	42.27	164
200.000	.06187	16.163	.98487	.005201	16.144	17752.8	19390.5	241.338	34.54	43.30	168
210.000	.05881	17.004	.98674	.004939	17.015	18105.9	19828.8	243.476	35.65	44.36	172
220.000	.05605	17.842	.98832	.004703	17.881	18469.9	20277.7	245.564	36.77	45.43	176
230.000	.05354	18.678	.98967	.004489	18.744	18844.8	20737.4	247.608	37.88	46.51	180
240.000	.05125	19.513	.99082	.004294	19.603	19230.8	21207.9	249.610	38.99	47.59	183
250.000	.04915	20.346	.99181	.004116	20.460	19627.6	21689.2	251.574	40.09	48.66	187
260.000	.04722	21.179	.99267	.003952	21.315	20035.2	22181.1	253.504	41.17	49.72	190
270.000	.04543	22.010	.99343	.003802	22.167	20453.4	22683.5	255.400	42.23	50.76	193
280.000	.04378	22.840	.99409	.003662	23.018	20882.0	23196.3	257.264	43.27	51.78	196
290.000	.04225	23.670	.99467	.003532	23.867	21320.8	23719.1	259.099	44.29	52.78	200
300.000	.04082	24.499	.99518	.003412	24.715	21769.5	24251.8	260.905	45.27	53.75	203
310.000	.03948	25.327	.99564	.003299	25.561	22227.9	24794.1	262.683	46.23	54.70	206
320.000	.03823	26.155	.99605	.003194	26.407	22695.6	25345.8	264.434	47.16	55.62	209
330.000	.03706	26.982	.99641	.003095	27.251	23172.5	25906.4	266.159	48.06	56.51	212
340.000	.03596	27.809	.99674	.003003	28.095	23658.2	26475.9	267.859	48.94	57.37	215
350.000	.03492	28.635	.99703	.002916	28.938	24152.4	27053.8	269.534	49.78	58.21	218
360.000	.03394	29.461	.99730	.002833	29.780	24654.9	27640.0	271.186	50.59	59.01	221
370.000	.03302	30.287	.99754	.002756	30.621	25165.3	28234.0	272.813	51.38	59.79	224
380.000	.03214	31.112	.99776	.002682	31.462	25683.3	28835.7	274.418	52.13	60.54	226
390.000	.03131	31.937	.99795	.002612	32.302	26208.8	29444.8	276.000	52.86	61.26	229
400.000	.03052	32.762	.99813	.002546	33.142	26741.4	30060.9	277.560	53.56	61.96	232
410.000	.02977	33.586	.99830	.002484	33.981	27280.8	30683.9	279.098	54.24	62.63	235
420.000	.02906	34.411	.99845	.002424	34.820	27826.8	31313.5	280.615	54.89	63.28	237
430.000	.02838	35.235	.99858	.002367	35.658	28379.2	31949.4	282.111	55.51	63.90	240
440.000	.02773	36.059	.99871	.002312	36.496	28937.7	32591.3	283.587	56.11	64.49	243
450.000	.02711	36.883	.99882	.002261	37.334	29502.0	33239.2	285.043	56.69	65.07	245
460.000	.02652	37.706	.99893	.002211	38.171	30072.0	33892.6	286.479	57.24	65.62	248
470.000	.02595	38.530	.99903	.002164	39.008	30647.5	34551.5	287.896	57.78	66.15	250
480.000	.02541	39.353	.99912	.002118	39.845	31228.1	35215.6	289.294	58.29	66.66	253
490.000	.02489	40.176	.99920	.002075	40.682	31813.8	35884.6	290.674	58.79	67.15	255
500.000	.02439	40.999	.99928	.002033	41.518	32404.3	36558.5	292.035	59.26	67.62	258

NITROGEN TRIFLUORIDE ISOBAR AT 1.50000 BAR

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 1.50000 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.378	26.320	.03799	.01033	45.4332	833.390	1.3	7.0	92.524	50.05	73.78	1315
70.000	26.122	.03828	.00987	43.1207	785.334	266.5	272.3	96.418	48.53	72.82	1288
80.000	25.567	.03911	.00882	37.5056	669.227	985.6	991.5	106.011	45.30	71.02	1215
90.000	25.001	.04000	.00802	32.7839	572.442	1691.5	1697.5	114.320	43.15	70.18	1145
100.000	24.422	.04095	.00739	28.7434	490.368	2391.4	2397.6	121.700	41.75	70.00	1076
110.000	23.828	.04197	.00688	25.2382	419.763	3091.5	3097.8	128.381	40.86	70.26	1008
120.000	23.218	.04307	.00648	22.1634	358.263	3796.4	3802.8	134.517	40.32	70.85	941
130.000	22.590	.04427	.00614	19.4406	304.100	4509.2	4515.8	140.220	40.06	71.72	875
140.000	21.938	.04558	.00587	17.0087	255.930	5232.6	5239.4	145.577	40.02	72.90	810
149.956	21.261	.04703	.00566	14.8277	212.900	5965.9	5973.0	150.637	40.17	74.43	745
149.956	.12649	7.906	.95110	.010942	11.272	16100.5	17286.4	226.082	29.90	39.85	145
150.000	.12645	7.908	.95114	.010938	11.277	16102.2	17288.4	226.092	29.90	39.86	145
160.000	.11753	8.509	.95941	.010075	12.251	16411.9	17688.3	228.673	30.60	40.20	150
170.000	.10989	9.100	.96574	.009369	13.196	16728.3	18093.3	231.128	31.49	40.86	155
180.000	.10325	9.686	.97074	.008771	14.120	17053.1	18505.9	233.486	32.47	41.67	159
190.000	.09741	10.266	.97478	.008252	15.029	17387.2	18927.2	235.764	33.52	42.59	164
200.000	.09222	10.843	.97810	.007797	15.928	17731.4	19357.9	237.973	34.59	43.57	168
210.000	.08759	11.417	.98085	.007393	16.818	18086.1	19798.7	240.123	35.69	44.59	172
220.000	.08341	11.989	.98317	.007030	17.702	18451.4	20249.8	242.221	36.80	45.63	175
230.000	.07962	12.559	.98513	.006704	18.579	18827.5	20711.4	244.273	37.91	46.69	179
240.000	.07617	13.128	.98681	.006407	19.452	19214.4	21183.6	246.283	39.02	47.75	183
250.000	.07302	13.695	.98825	.006137	20.320	19612.2	21666.4	248.253	40.11	48.80	186
260.000	.07012	14.261	.98950	.005889	21.185	20020.6	22159.6	250.188	41.19	49.85	190
270.000	.06745	14.825	.99059	.005661	22.047	20439.5	22663.3	252.088	42.25	50.88	193
280.000	.06498	15.389	.99155	.005450	22.907	20868.8	23177.1	253.957	43.29	51.89	196
290.000	.06269	15.952	.99239	.005255	23.764	21308.1	23701.0	255.795	44.30	52.88	199
300.000	.06055	16.515	.99313	.005074	24.619	21757.4	24234.6	257.604	45.29	53.84	203
310.000	.05856	17.077	.99379	.004905	25.472	22216.3	24777.8	259.385	46.25	54.78	206
320.000	.05670	17.638	.99438	.004747	26.324	22684.5	25330.2	261.139	47.18	55.70	209
330.000	.05495	18.199	.99491	.004599	27.174	23161.9	25891.7	262.867	48.08	56.58	212
340.000	.05331	18.759	.99538	.004461	28.023	23648.0	26461.8	264.569	48.95	57.44	215
350.000	.05176	19.319	.99580	.004330	28.871	24142.6	27040.4	266.246	49.79	58.27	218
360.000	.05031	19.879	.99618	.004207	29.718	24645.4	27627.2	267.899	50.60	59.07	221
370.000	.04893	20.438	.99652	.004091	30.563	25156.1	28221.8	269.528	51.38	59.85	223
380.000	.04763	20.997	.99684	.003981	31.408	25674.5	28824.0	271.134	52.14	60.59	226
390.000	.04639	21.555	.99712	.003877	32.252	26200.3	29433.6	272.717	52.87	61.31	229
400.000	.04522	22.114	.99738	.003778	33.096	26733.1	30050.2	274.278	53.57	62.01	232
410.000	.04411	22.672	.99761	.003685	33.938	27272.8	30673.6	275.818	54.24	62.67	235
420.000	.04305	23.230	.99782	.003595	34.780	27819.1	31303.6	277.336	54.89	63.32	237
430.000	.04204	23.788	.99802	.003511	35.622	28371.7	31939.9	278.833	55.52	63.94	240
440.000	.04108	24.345	.99820	.003430	36.463	28930.4	32582.2	280.309	56.12	64.53	243
450.000	.04016	24.903	.99836	.003352	37.303	29495.0	33230.4	281.766	56.69	65.10	245
460.000	.03928	25.460	.99851	.003279	38.143	30065.2	33884.2	283.203	57.25	65.65	248
470.000	.03844	26.017	.99865	.003208	38.983	30640.8	34543.4	284.621	57.78	66.18	250
480.000	.03763	26.574	.99878	.003140	39.822	31221.7	35207.8	286.019	58.30	66.69	253
490.000	.03686	27.131	.99890	.003076	40.661	31807.5	35877.2	287.400	58.79	67.18	255
500.000	.03612	27.688	.99901	.003013	41.499	32398.2	36551.3	288.762	59.27	67.65	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 2 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.388	26.320	.03799	.01377	45.4345	833.550	1.7	9.3	92.531	50.04	73.78	1315
70.000	26.123	.03828	.01315	43.1281	785.617	266.2	273.9	96.414	48.53	72.81	1288
80.000	25.568	.03911	.01176	37.5127	669.494	985.3	993.1	106.007	45.30	71.02	1215
90.000	25.002	.04000	.01069	32.7909	572.698	1691.1	1699.1	114.315	43.15	70.18	1145
100.000	24.423	.04095	.00985	28.7502	490.616	2391.0	2399.1	121.695	41.75	69.99	1076
110.000	23.829	.04197	.00918	25.2450	420.006	3091.3	3099.4	128.376	40.86	70.25	1008
120.000	23.220	.04307	.00863	22.1703	358.504	3795.7	3804.3	134.511	40.32	70.84	941
130.000	22.591	.04426	.00819	19.4476	304.341	4508.4	4517.2	140.214	40.06	71.71	875
140.000	21.940	.04558	.00783	17.0159	256.173	5231.6	5240.8	145.570	40.02	72.89	810
150.000	21.261	.04704	.00754	14.8261	212.966	5968.2	5977.6	150.649	40.17	74.43	745
154.604	20.936	.04776	.00743	13.8876	194.512	6312.6	6322.2	152.913	40.31	75.28	715
154.604	.16549	6.043	.94017	.014468	11.347	16207.0	17415.6	224.667	30.51	40.93	146
160.000	.15893	6.292	.94595	.013799	11.901	16378.1	17636.6	226.070	30.83	40.96	149
170.000	.14822	6.747	.95462	.012762	12.891	16698.8	18048.1	228.565	31.63	41.41	154
180.000	.13900	7.194	.96140	.011903	13.850	17026.7	18465.5	230.950	32.57	42.10	158
190.000	.13095	7.637	.96683	.011170	14.788	17363.3	18890.6	233.249	33.59	42.94	163
200.000	.12383	8.075	.97125	.010531	15.711	17709.5	19324.6	235.474	34.65	43.86	167
210.000	.11749	8.511	.97492	.009969	16.621	18065.7	19768.0	237.637	35.74	44.84	171
220.000	.11180	8.945	.97799	.009468	17.522	18432.5	20221.4	239.746	36.84	45.85	175
230.000	.10665	9.376	.98059	.009018	18.414	18809.8	20685.0	241.807	37.95	46.88	178
240.000	.10198	9.806	.98280	.008611	19.300	19197.8	21158.9	243.824	39.05	47.91	182
250.000	.09771	10.234	.98470	.008242	20.181	19596.4	21643.3	245.801	40.14	48.95	186
260.000	.09380	10.661	.98635	.007903	21.057	20005.7	22137.9	247.741	41.21	49.98	189
270.000	.09019	11.087	.98778	.007593	21.929	20425.4	22642.9	249.646	42.27	51.00	193
280.000	.08686	11.513	.98904	.007307	22.797	20855.3	23157.9	251.519	43.31	52.00	196
290.000	.08377	11.937	.99014	.007042	23.662	21295.3	23682.8	253.361	44.32	52.98	199
300.000	.08090	12.361	.99111	.006797	24.525	21745.2	24217.4	255.173	45.30	53.94	202
310.000	.07822	12.784	.99197	.006568	25.385	22204.6	24761.4	256.957	46.26	54.87	205
320.000	.07572	13.207	.99274	.006355	26.243	22673.3	25314.7	258.714	47.19	55.78	209
330.000	.07337	13.629	.99343	.006155	27.099	23151.1	25876.9	260.444	48.09	56.66	212
340.000	.07117	14.050	.99404	.005968	27.953	23637.6	26447.7	262.148	48.96	57.51	215
350.000	.06910	14.472	.99459	.005792	28.806	24132.6	27027.0	263.827	49.80	58.33	218
360.000	.06715	14.893	.99509	.005626	29.658	24635.8	27614.3	265.481	50.61	59.13	220
370.000	.06530	15.313	.99554	.005470	30.508	25146.9	28209.5	267.112	51.39	59.90	223
380.000	.06356	15.733	.99594	.005322	31.357	25665.6	28812.3	268.719	52.15	60.65	226
390.000	.06191	16.153	.99631	.005182	32.205	26191.7	29422.4	270.304	52.88	61.36	229
400.000	.06034	16.573	.99664	.005050	33.052	26724.8	30039.5	271.866	53.58	62.05	232
410.000	.05885	16.993	.99695	.004924	33.898	27264.8	30663.3	273.407	54.25	62.72	234
420.000	.05743	17.412	.99723	.004804	34.743	27811.3	31293.7	274.926	54.90	63.36	237
430.000	.05608	17.831	.99748	.004690	35.588	28364.2	31930.4	276.424	55.52	63.97	240
440.000	.05479	18.250	.99771	.004581	36.431	28923.1	32573.1	277.902	56.12	64.57	242
450.000	.05357	18.669	.99793	.004478	37.274	29487.9	33221.7	279.359	56.70	65.14	245
460.000	.05239	19.087	.99812	.004379	38.117	30058.3	33875.8	280.797	57.26	65.69	248
470.000	.05127	19.506	.99830	.004284	38.959	30634.2	34535.3	282.215	57.79	66.21	250
480.000	.05019	19.924	.99847	.004194	39.800	31215.2	35200.0	283.615	58.30	66.72	253
490.000	.04916	20.342	.99862	.004107	40.641	31801.2	35869.7	284.995	58.80	67.21	255
500.000	.04817	20.761	.99876	.004023	41.482	32392.1	36544.2	286.358	59.27	67.68	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 3 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.406	26.321	.03799	.02064	45.4371	833.871	2.6	14.0	92.544	50.04	73.77	1315
70.000	26.124	.03828	.01973	43.1428	786.182	265.7	277.2	96.406	48.53	72.81	1288
80.000	25.570	.03911	.01764	37.5268	670.028	984.6	996.3	105.998	45.30	71.01	1216
90.000	25.004	.03999	.01603	32.8047	573.211	1690.3	1702.3	114.306	43.15	70.18	1145
100.000	24.425	.04094	.01477	28.7639	491.113	2390.0	2402.3	121.686	41.75	69.99	1076
110.000	23.832	.04196	.01376	25.2586	420.493	3089.8	3102.4	128.365	40.86	70.24	1009
120.000	23.223	.04306	.01295	22.1841	358.986	3794.3	3807.2	134.500	40.32	70.83	942
130.000	22.595	.04426	.01228	19.4616	304.822	4506.7	4520.0	140.202	40.06	71.70	876
140.000	21.944	.04557	.01174	17.0304	256.658	5229.7	5243.4	145.556	40.01	72.87	811
150.000	21.265	.04702	.01131	14.8412	213.460	5965.9	5980.0	150.633	40.17	74.40	746
160.000	20.550	.04866	.01097	12.8529	174.421	6718.8	6733.4	155.496	40.52	76.40	680
161.722	20.423	.04897	.01092	12.5280	168.070	6850.4	6865.1	156.317	40.59	76.80	669
161.722	.24230	4.127	.92080	.021604	11.363	16362.2	17600.3	222.698	31.53	42.85	147
170.000	.22772	4.391	.93203	.020037	12.268	16637.0	17954.4	224.830	31.99	42.72	151
180.000	.21265	4.702	.94263	.018526	13.307	16972.3	18383.0	227.280	32.81	43.07	156
190.000	.19969	5.008	.95098	.017279	14.307	17314.4	18816.7	229.625	33.76	43.70	161
200.000	.18837	5.309	.95772	.016219	15.280	17664.9	19257.5	231.886	34.78	44.48	165
210.000	.17837	5.606	.96325	.015299	16.233	18024.8	19706.7	234.077	35.84	45.36	170
220.000	.16945	5.901	.96785	.014490	17.169	18394.5	20164.9	236.208	36.92	46.29	174
230.000	.16144	6.194	.97172	.013770	18.093	18774.4	20632.6	238.288	38.02	47.26	177
240.000	.15419	6.485	.97501	.013124	19.007	19164.6	21110.2	240.320	39.11	48.25	181
250.000	.14760	6.775	.97783	.012540	19.912	19565.2	21597.7	242.310	40.19	49.25	185
260.000	.14157	7.064	.98025	.012010	20.809	19976.2	22095.3	244.261	41.26	50.25	188
270.000	.13603	7.351	.98236	.011524	21.701	20397.4	22602.8	246.176	42.31	51.24	192
280.000	.13093	7.638	.98420	.011079	22.587	20828.8	23120.1	248.058	43.34	52.22	195
290.000	.12621	7.923	.98582	.010668	23.468	21270.1	23647.1	249.907	44.35	53.18	199
300.000	.12183	8.208	.98724	.010288	24.345	21721.1	24183.6	251.726	45.33	54.12	202
310.000	.11775	8.493	.98850	.009935	25.219	22181.6	24729.4	253.515	46.29	55.04	205
320.000	.11394	8.777	.98962	.009606	26.089	22651.3	25284.3	255.277	47.21	55.93	208
330.000	.11037	9.060	.99061	.009299	26.957	23130.0	25848.0	257.011	48.11	56.80	211
340.000	.10703	9.343	.99151	.009012	27.822	23617.3	26420.3	258.720	48.98	57.64	214
350.000	.10389	9.626	.99231	.008742	28.685	24113.1	27000.8	260.403	49.82	58.46	217
360.000	.10093	9.908	.99303	.008489	29.545	24617.0	27589.4	262.061	50.63	59.25	220
370.000	.09814	10.190	.99367	.008250	30.404	25128.8	28185.7	263.694	51.41	60.01	223
380.000	.09550	10.471	.99426	.008024	31.261	25648.2	28789.6	265.305	52.17	60.75	226
390.000	.09300	10.753	.99479	.007811	32.117	26174.8	29400.6	266.892	52.89	61.46	229
400.000	.09063	11.034	.99528	.007609	32.971	26708.6	30018.7	268.457	53.59	62.14	232
410.000	.08838	11.314	.99572	.007417	33.823	27249.1	30643.4	269.999	54.27	62.80	234
420.000	.08624	11.595	.99612	.007235	34.675	27796.1	31274.7	271.520	54.91	63.44	237
430.000	.08421	11.876	.99648	.007062	35.525	28349.5	31912.1	273.020	55.54	64.05	240
440.000	.08227	12.156	.99682	.006897	36.374	28908.9	32555.6	274.500	56.14	64.64	242
450.000	.08041	12.436	.99713	.006740	37.223	29474.1	33204.9	275.959	56.71	65.21	245
460.000	.07864	12.716	.99741	.006590	38.070	30044.9	33859.7	277.398	57.27	65.75	248
470.000	.07695	12.996	.99767	.006446	38.917	30621.1	34519.8	278.818	57.80	66.28	250
480.000	.07533	13.275	.99791	.006309	39.763	31202.5	35185.1	280.218	58.31	66.78	253
490.000	.07377	13.555	.99813	.006177	40.608	31788.9	35855.4	281.600	58.81	67.27	255
500.000	.07228	13.834	.99833	.006051	41.453	32380.1	36530.4	282.964	59.28	67.73	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 4 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.425	26.321	.03799	.02752	45.4397	834.191	3.4	18.6	92.557	50.03	73.76	1316
70.000	26.125	.03828	.02631	43.1576	786.746	265.1	280.4	96.397	48.53	72.81	1289
80.000	25.571	.03911	.02352	37.5410	670.563	983.9	999.5	105.989	45.30	71.01	1216
90.000	25.005	.03999	.02138	32.8185	573.722	1689.4	1705.4	114.297	43.15	70.17	1146
100.000	24.427	.04094	.01970	28.7775	491.610	2389.0	2405.4	121.676	41.75	69.98	1077
110.000	23.834	.04196	.01835	25.2723	420.980	3088.6	3105.4	123.354	40.66	70.23	1009
120.000	23.225	.04306	.01726	22.1978	359.468	3792.9	3810.1	134.488	40.32	70.82	942
130.000	22.598	.04425	.01638	19.4757	305.303	4505.1	4522.8	140.189	40.06	71.68	877
140.000	21.948	.04556	.01566	17.0448	257.143	5227.8	5246.0	145.542	40.01	72.85	812
150.000	21.270	.04701	.01508	14.8563	213.953	5963.6	5982.4	150.618	40.17	74.37	746
160.000	20.556	.04865	.01463	12.8689	174.928	6716.0	6735.5	155.476	40.51	76.36	681
167.222	20.011	.04997	.01438	11.5379	148.967	7272.9	7292.8	158.888	40.87	78.18	633
167.222	.31838	3.141	.90361	.028913	11.283	16474.8	17731.2	221.310	32.40	44.62	147
170.000	.31146	3.211	.90859	.028100	11.615	16570.7	17855.0	222.042	32.48	44.39	149
180.000	.28941	3.455	.92349	.025691	12.750	16915.3	18297.4	224.571	33.10	44.22	154
190.000	.27080	3.693	.93502	.023792	13.820	17263.9	18741.0	226.970	33.96	44.57	159
200.000	.25476	3.925	.94421	.022219	14.849	17619.5	19189.6	229.271	34.93	45.17	164
210.000	.24072	4.154	.95168	.020879	15.847	17983.3	19645.0	231.492	35.95	45.92	168
220.000	.22830	4.380	.95786	.019715	16.822	18356.2	20108.3	233.648	37.01	46.77	173
230.000	.21720	4.604	.96303	.018690	17.778	18738.9	20580.5	235.746	38.09	47.67	177
240.000	.20721	4.826	.96740	.017778	18.720	19131.4	21061.9	237.795	39.17	48.61	180
250.000	.19815	5.047	.97114	.016960	19.650	19534.1	21552.7	239.799	40.25	49.56	184
260.000	.18991	5.266	.97434	.016219	20.570	19946.9	22053.2	241.761	41.31	50.53	188
270.000	.18235	5.484	.97712	.015546	21.481	20369.7	22563.3	243.686	42.36	51.49	191
280.000	.17540	5.701	.97954	.014929	22.385	20802.5	23083.0	245.576	43.38	52.44	195
290.000	.16899	5.917	.98166	.014363	23.282	21245.1	23612.1	247.433	44.39	53.38	198
300.000	.16305	6.133	.98353	.013840	24.174	21697.3	24150.6	249.258	45.36	54.31	201
310.000	.15752	6.348	.98518	.013356	25.061	22158.9	24698.2	251.054	46.32	55.21	205
320.000	.15238	6.563	.98664	.012906	25.944	22629.6	25254.7	252.821	47.24	56.09	208
330.000	.14756	6.777	.98794	.012487	26.823	23109.2	25819.9	254.560	48.14	56.95	211
340.000	.14306	6.990	.98910	.012095	27.698	23597.4	26393.5	256.272	49.00	57.78	214
350.000	.13882	7.203	.99015	.011728	28.570	24094.0	26975.4	257.959	49.84	58.59	217
360.000	.13484	7.416	.99108	.011383	29.440	24598.6	27565.2	259.620	50.65	59.37	220
370.000	.13108	7.629	.99193	.011058	30.307	25111.1	28162.6	261.257	51.43	60.12	223
380.000	.12753	7.841	.99269	.010752	31.172	25631.1	28767.5	262.870	52.19	60.85	226
390.000	.12418	8.053	.99338	.010463	32.035	26158.4	29379.6	264.460	52.91	61.55	229
400.000	.12100	8.265	.99401	.010190	32.896	26692.6	29998.5	266.027	53.61	62.23	231
410.000	.11798	8.476	.99458	.009931	33.755	27233.7	30624.2	267.572	54.28	62.89	234
420.000	.11511	8.687	.99510	.009685	34.613	27781.2	31256.2	269.095	54.93	63.52	237
430.000	.11238	8.899	.99557	.009451	35.469	28335.1	31894.5	270.597	55.55	64.13	240
440.000	.10978	9.109	.99601	.009228	36.323	28894.9	32538.7	272.078	56.15	64.71	242
450.000	.10729	9.320	.99640	.009016	37.177	29460.6	33188.6	273.538	56.73	65.27	245
460.000	.10492	9.531	.99677	.008814	38.029	30031.8	33844.1	274.979	57.28	65.82	248
470.000	.10266	9.741	.99710	.008621	38.881	30608.4	34504.9	276.400	57.81	66.34	250
480.000	.10049	9.952	.99741	.008436	39.731	31190.2	35170.8	277.802	58.33	66.84	253
490.000	.09841	10.162	.99769	.008259	40.580	31776.9	35841.6	279.185	58.82	67.32	255
500.000	.09641	10.372	.99795	.008089	41.429	32368.4	36517.2	280.550	59.29	67.79	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 5 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.444	26.321	.03799	.03439	45.4422	834.511	4.3	23.3	92.570	50.02	73.75	1316
70.000	26.127	.03828	.03288	43.1723	787.311	264.5	283.7	96.389	48.53	72.80	1289
80.000	25.573	.03910	.02939	37.5551	671.097	983.2	1002.8	105.981	45.30	71.01	1217
90.000	25.007	.03999	.02672	32.8323	574.234	1688.6	1708.6	114.288	43.15	70.16	1146
100.000	24.429	.04094	.02462	28.7911	492.106	2388.0	2408.5	121.666	41.75	69.97	1077
110.000	23.836	.04195	.02294	25.2859	421.467	3087.5	3108.5	128.344	40.85	70.22	1010
120.000	23.228	.04305	.02157	22.2115	359.949	3791.6	3813.1	134.477	40.32	70.80	943
130.000	22.601	.04425	.02047	19.4896	305.784	4503.5	4525.6	140.177	40.06	71.67	877
140.000	21.952	.04555	.01957	17.0593	257.628	5225.9	5248.6	145.528	40.01	72.83	812
150.000	21.275	.04700	.01884	14.8714	214.446	5961.3	5984.8	150.603	40.17	74.34	747
160.000	20.562	.04863	.01828	12.8848	175.434	6713.3	6737.6	155.461	40.51	76.32	682
170.000	19.801	.05050	.01786	11.0633	139.950	7487.2	7512.5	160.163	41.02	78.94	615
171.774	19.660	.05087	.01781	10.7548	133.984	7627.4	7652.8	160.984	41.12	79.49	603
171.774	.39430	2.536	.88788	.036431	11.152	16562.0	17830.1	220.232	33.17	46.32	148
180.000	.36967	2.705	.90376	.033497	12.172	16855.1	18207.7	222.377	33.46	45.60	152
190.000	.34449	2.903	.91877	.030759	13.323	17211.6	18663.0	224.839	34.19	45.56	158
200.000	.32311	3.095	.93058	.028561	14.413	17572.8	19120.2	227.184	35.09	45.93	163
210.000	.30461	3.283	.94010	.026726	15.460	17941.0	19582.5	229.439	36.08	46.54	167
220.000	.28836	3.468	.94791	.025155	16.475	18317.5	20051.4	231.620	37.11	47.28	171
230.000	.27395	3.650	.95442	.023787	17.466	18703.1	20528.3	233.740	38.17	48.10	176
240.000	.26103	3.831	.95990	.022580	18.437	19098.2	21013.6	235.806	39.24	48.98	180
250.000	.24938	4.010	.96456	.021503	19.392	19503.0	21507.9	237.823	40.30	49.89	183
260.000	.23880	4.188	.96855	.020535	20.335	19917.7	22011.4	239.798	41.36	50.81	187
270.000	.22914	4.364	.97201	.019658	21.266	20342.2	22524.2	241.733	42.40	51.74	191
280.000	.22028	4.540	.97500	.018859	22.188	20776.4	23046.3	243.632	43.42	52.67	194
290.000	.21211	4.715	.97763	.018126	23.101	21220.4	23577.6	245.496	44.42	53.59	198
300.000	.20456	4.889	.97993	.017453	24.008	21673.8	24118.1	247.328	45.40	54.49	201
310.000	.19755	5.062	.98196	.016831	24.908	22136.4	24667.4	249.129	46.35	55.38	204
320.000	.19103	5.235	.98376	.016254	25.803	22608.2	25225.6	250.901	47.27	56.25	207
330.000	.18494	5.407	.98537	.015717	26.693	23088.7	25792.3	252.645	48.16	57.09	211
340.000	.17924	5.579	.98680	.015216	27.579	23577.7	26367.3	254.362	49.03	57.91	214
350.000	.17389	5.751	.98808	.014748	28.461	24075.1	26950.5	256.052	49.86	58.71	217
360.000	.16886	5.922	.98923	.014308	29.340	24580.5	27541.5	257.717	50.67	59.48	220
370.000	.16413	6.093	.99026	.013895	30.215	25093.6	28140.0	259.357	51.45	60.23	223
380.000	.15966	6.263	.99120	.013507	31.088	25614.3	28746.0	260.973	52.20	60.95	226
390.000	.15543	6.434	.99204	.013140	31.958	26142.1	29359.0	262.565	52.93	61.65	228
400.000	.15143	6.604	.99281	.012793	32.826	26677.0	29978.9	264.134	53.63	62.32	231
410.000	.14763	6.774	.99351	.012464	33.691	27218.6	30605.4	265.681	54.30	62.97	234
420.000	.14402	6.943	.99414	.012153	34.555	27766.6	31238.2	267.206	54.94	63.60	237
430.000	.14059	7.113	.99472	.011857	35.417	28320.9	31877.3	268.710	55.57	64.20	240
440.000	.13732	7.282	.99525	.011575	36.277	28881.2	32522.2	270.193	56.16	64.78	242
450.000	.13421	7.451	.99573	.011307	37.135	29447.3	33172.8	271.655	56.74	65.34	245
460.000	.13123	7.620	.99618	.011051	37.992	30018.9	33829.0	273.097	57.29	65.88	248
470.000	.12839	7.789	.99658	.010807	38.848	30595.9	34490.4	274.519	57.83	66.40	250
480.000	.12567	7.958	.99696	.010574	39.703	31178.0	35156.9	275.922	58.34	66.90	253
490.000	.12306	8.126	.99730	.010351	40.556	31765.1	35828.2	277.307	58.83	67.38	255
500.000	.12056	8.295	.99762	.010137	41.409	32357.0	36504.3	278.673	59.30	67.84	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 6 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.463	26.321	.03799	.04125	45.4448	834.831	5.2	28.0	92.583	50.01	73.74	1316
70.000	26.128	.03827	.03946	43.1870	787.876	264.0	287.0	96.381	48.53	72.80	1290
80.000	25.574	.03910	.03527	37.5693	671.631	982.5	1006.0	105.972	45.30	71.00	1217
90.000	25.009	.03999	.03206	32.8461	574.746	1687.8	1711.8	114.279	43.15	70.16	1147
100.000	24.431	.04093	.02954	28.8048	492.603	2387.0	2411.6	121.656	41.75	69.97	1078
110.000	23.839	.04195	.02752	25.2995	421.954	3086.3	3111.5	128.333	40.85	70.22	1010
120.000	23.231	.04305	.02589	22.2252	360.431	3790.2	3816.0	134.466	40.32	70.79	944
130.000	22.604	.04424	.02456	19.5036	306.265	4501.9	4528.4	140.164	40.05	71.65	878
140.000	21.956	.04555	.02348	17.0737	258.113	5223.9	5251.3	145.515	40.01	72.81	813
150.000	21.279	.04699	.02261	14.8864	214.938	5959.0	5987.2	150.587	40.16	74.32	748
160.000	20.567	.04862	.02193	12.9008	175.939	6710.5	6739.7	155.444	40.51	76.28	683
170.000	19.808	.05048	.02143	11.0806	140.475	7483.8	7514.1	160.142	41.01	78.88	616
175.693	19.347	.05169	.02123	10.1049	121.659	7937.0	7968.0	162.769	41.36	80.75	578
175.693	.47039	2.126	.87318	.044183	10.987	16632.4	17907.9	219.345	33.87	47.98	148
180.000	.45392	2.203	.88320	.042080	11.565	16791.2	18113.0	220.496	33.91	47.29	150
190.000	.42102	2.375	.90211	.038245	12.811	17157.0	18582.2	223.032	34.46	46.70	156
200.000	.39358	2.541	.91675	.035281	13.968	17524.7	19049.2	225.428	35.28	46.78	161
210.000	.37012	2.702	.92843	.032862	15.068	17897.8	19518.9	227.720	36.22	47.20	166
220.000	.34971	2.859	.93795	.030824	16.127	18278.2	19993.9	229.929	37.22	47.82	170
230.000	.33172	3.015	.94583	.029069	17.153	18667.0	20475.7	232.071	38.26	48.56	175
240.000	.31569	3.168	.95245	.027533	18.155	19064.7	20965.3	234.154	39.31	49.37	179
250.000	.30129	3.319	.95805	.026174	19.137	19471.8	21463.2	236.187	40.36	50.22	183
260.000	.28826	3.469	.96284	.024958	20.102	19888.4	21969.8	238.174	41.41	51.11	186
270.000	.27640	3.618	.96697	.023863	21.054	20314.6	22485.4	240.119	42.45	52.00	190
280.000	.26555	3.766	.97055	.022868	21.994	20750.4	23009.9	242.027	43.46	52.90	194
290.000	.25557	3.913	.97367	.021960	22.924	21195.7	23543.5	243.899	44.46	53.80	197
300.000	.24635	4.059	.97642	.021127	23.845	21650.4	24085.9	245.738	45.43	54.68	201
310.000	.23782	4.205	.97883	.020359	24.759	22114.1	24637.1	247.545	46.38	55.55	204
320.000	.22988	4.350	.98097	.019649	25.666	22586.9	25196.9	249.322	47.30	56.40	207
330.000	.22249	4.495	.98287	.018990	26.568	23068.3	25765.1	251.071	48.19	57.24	210
340.000	.21557	4.639	.98456	.018375	27.464	23558.3	26341.5	252.791	49.05	58.05	213
350.000	.20909	4.783	.98608	.017802	28.356	24056.4	26926.0	254.486	49.89	58.83	217
360.000	.20300	4.926	.98744	.017265	29.243	24562.5	27518.1	256.154	50.69	59.60	220
370.000	.19727	5.069	.98866	.016761	30.127	25076.4	28117.8	257.797	51.47	60.34	223
380.000	.19187	5.212	.98976	.016286	31.007	25597.6	28724.8	259.415	52.22	61.05	225
390.000	.18676	5.354	.99076	.015839	31.884	26126.1	29338.8	261.010	52.95	61.74	228
400.000	.18192	5.497	.99167	.015417	32.759	26661.5	29959.6	262.582	53.64	62.41	231
410.000	.17734	5.639	.99249	.015017	33.631	27203.6	30587.0	264.131	54.31	63.06	234
420.000	.17299	5.781	.99323	.014638	34.500	27752.2	31220.6	265.658	54.96	63.68	237
430.000	.16885	5.922	.99392	.014279	35.368	28306.9	31860.4	267.163	55.58	64.28	240
440.000	.16491	6.064	.99454	.013937	36.233	28867.7	32506.1	268.648	56.18	64.85	242
450.000	.16115	6.205	.99511	.013612	37.096	29434.2	33157.4	270.111	56.75	65.41	245
460.000	.15756	6.347	.99563	.013302	37.958	30006.2	33814.2	271.555	57.31	65.94	248
470.000	.15414	6.488	.99611	.013006	38.819	30583.6	34476.2	272.979	57.84	66.46	250
480.000	.15086	6.629	.99655	.012723	39.677	31166.1	35143.3	274.383	58.35	66.95	253
490.000	.14772	6.769	.99695	.012453	40.535	31753.5	35815.2	275.768	58.84	67.43	255
500.000	.14471	6.910	.99732	.012194	41.391	32345.7	36491.8	277.135	59.31	67.89	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 7 BAR

NITROGEN TRIFLUORIDE ISOBAR AT 7 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.481	26.321	.03799	.04811	45.4474	835.151	6.0	32.6	92.595	50.00	73.73	1317
70.000	26.129	.03827	.04603	43.2017	788.441	263.4	290.2	96.373	48.53	72.80	1290
80.000	25.576	.03910	.04115	37.5834	672.165	981.9	1009.2	105.964	45.30	71.00	1218
90.000	25.011	.03998	.03740	32.8598	575.258	1687.0	1715.0	114.270	43.15	70.15	1147
100.000	24.433	.04093	.03446	28.8184	493.099	2386.1	2414.7	121.646	41.74	69.96	1078
110.000	23.841	.04194	.03210	25.3130	422.440	3085.2	3114.5	128.323	40.85	70.21	1011
120.000	23.234	.04304	.03020	22.2390	360.912	3788.8	3818.9	134.454	40.32	70.78	944
130.000	22.608	.04423	.02865	19.5176	306.746	4500.3	4531.2	140.152	40.05	71.64	879
140.000	21.960	.04554	.02738	17.0881	258.597	5222.0	5253.9	145.501	40.01	72.79	814
150.000	21.284	.04698	.02637	14.9014	215.430	5956.7	5989.6	150.572	40.16	74.29	749
160.000	20.573	.04861	.02558	12.9167	176.444	6707.7	6741.7	155.426	40.50	76.25	683
170.000	19.815	.05047	.02499	11.0978	140.999	7480.4	7515.7	160.122	41.01	78.83	617
179.157	19.064	.05246	.02465	9.5480	111.199	8213.9	8250.7	164.334	41.58	82.00	555
179.157	.54689	1.829	.85927	.052189	10.799	16690.3	17970.3	218.586	34.52	49.63	147
180.000	.54286	1.842	.86159	.051635	10.922	16722.7	18012.1	218.817	34.50	49.41	148
190.000	.50073	1.997	.88492	.046329	12.279	17099.9	18497.9	221.443	34.78	48.02	154
200.000	.46636	2.144	.90264	.042420	13.513	17475.1	18976.1	223.896	35.49	47.73	160
210.000	.43738	2.286	.91662	.039311	14.671	17853.7	19454.1	226.228	36.37	47.93	165
220.000	.41241	2.425	.92792	.036735	15.775	18238.3	19935.6	228.468	37.34	48.40	169
230.000	.39056	2.560	.93724	.034544	16.839	18630.4	20422.7	230.633	38.35	49.04	174
240.000	.37121	2.694	.94501	.032646	17.873	19030.9	20916.7	232.736	39.39	49.77	178
250.000	.35390	2.826	.95158	.030977	18.882	19440.4	21418.4	234.783	40.43	50.57	182
260.000	.33830	2.956	.95717	.029493	19.871	19859.1	21928.3	236.783	41.47	51.41	186
270.000	.32414	3.085	.96199	.028162	20.844	20287.1	22446.7	238.740	42.49	52.27	190
280.000	.31121	3.213	.96615	.026959	21.802	20724.5	22973.7	240.656	43.50	53.14	193
290.000	.29936	3.340	.96978	.025864	22.749	21171.1	23509.5	242.536	44.50	54.01	197
300.000	.28843	3.467	.97296	.024863	23.685	21627.0	24053.9	244.382	45.46	54.88	200
310.000	.27833	3.593	.97576	.023942	24.613	22092.0	24607.0	246.195	46.41	55.73	204
320.000	.26895	3.718	.97823	.023092	25.532	22565.7	25168.4	247.978	47.32	56.56	207
330.000	.26021	3.843	.98043	.022305	26.445	23048.1	25738.2	249.731	48.21	57.38	210
340.000	.25206	3.967	.98238	.021573	27.352	23538.9	26316.0	251.456	49.08	58.18	213
350.000	.24442	4.091	.98413	.020891	28.253	24037.9	26901.8	253.153	49.91	58.96	216
360.000	.23725	4.215	.98570	.020252	29.149	24544.7	27495.1	254.825	50.71	59.71	219
370.000	.23051	4.338	.98711	.019654	30.041	25059.3	28096.0	256.471	51.49	60.44	222
380.000	.22416	4.461	.98838	.019091	30.929	25581.2	28704.0	258.093	52.24	61.15	225
390.000	.21816	4.584	.98953	.018561	31.814	26110.3	29318.9	259.690	52.96	61.84	228
400.000	.21248	4.706	.99057	.018062	32.695	26646.2	29940.7	261.264	53.66	62.50	231
410.000	.20710	4.829	.99151	.017589	33.573	27188.9	30568.9	262.815	54.33	63.14	234
420.000	.20199	4.951	.99237	.017142	34.448	27737.9	31203.3	264.344	54.97	63.75	237
430.000	.19714	5.072	.99315	.016717	35.321	28293.1	31843.9	265.851	55.59	64.35	239
440.000	.19252	5.194	.99386	.016314	36.192	28854.3	32490.3	267.337	56.19	64.92	242
450.000	.18812	5.316	.99452	.015930	37.060	29421.2	33142.3	268.802	56.77	65.47	245
460.000	.18392	5.437	.99511	.015565	37.927	29993.7	33799.7	270.247	57.32	66.00	248
470.000	.17991	5.558	.99566	.015217	38.791	30571.4	34462.3	271.672	57.85	66.52	250
480.000	.17607	5.680	.99617	.014884	39.654	31154.3	35129.9	273.078	58.36	67.01	253
490.000	.17240	5.801	.99663	.014566	40.516	31742.0	35802.4	274.464	58.85	67.48	255
500.000	.16888	5.921	.99705	.014261	41.375	32334.5	36479.6	275.832	59.32	67.94	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 8 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.500	26.321	.03799	.05497	45.4500	835.472	6.9	37.3	92.608	49.99	73.72	1317
70.000	26.130	.03827	.05260	43.2165	789.006	262.9	293.5	96.365	48.53	72.79	1291
80.000	25.577	.03910	.04702	37.5975	672.698	981.2	1012.5	105.955	45.30	70.99	1218
90.000	25.012	.03998	.04274	32.8736	575.770	1686.1	1718.1	114.261	43.15	70.15	1148
100.000	24.435	.04093	.03938	28.8320	493.596	2385.1	2417.8	121.637	41.74	69.95	1079
110.000	23.844	.04194	.03669	25.3266	422.927	3084.0	3117.6	128.312	40.85	70.20	1011
120.000	23.236	.04304	.03451	22.2526	361.393	3787.5	3821.9	134.443	40.32	70.77	945
130.000	22.611	.04423	.03273	19.5315	307.226	4498.7	4534.0	140.139	40.05	71.63	879
140.000	21.963	.04553	.03129	17.1024	259.080	5220.1	5256.5	145.487	40.01	72.77	814
150.000	21.289	.04697	.03013	14.9164	215.922	5954.4	5992.0	150.557	40.16	74.27	749
160.000	20.579	.04859	.02922	12.9326	176.948	6705.0	6743.8	155.409	40.50	76.21	684
170.000	19.822	.05045	.02855	11.1149	141.522	7477.0	7517.4	160.102	41.00	78.77	618
180.000	19.000	.05263	.02813	9.4289	109.119	8278.6	8320.7	164.698	41.63	82.25	551
182.275	18.801	.05319	.02808	9.0600	102.122	8466.3	8508.8	165.734	41.78	83.23	535
182.275	.62398	1.603	.84597	.060464	10.593	16738.6	18020.7	217.918	35.13	51.29	147
190.000	.58405	1.712	.86706	.055112	11.725	17039.8	18409.5	220.305	35.15	49.58	152
200.000	.54166	1.846	.88817	.050028	13.045	17423.7	18900.6	222.524	35.72	48.80	158
210.000	.50649	1.974	.90461	.046100	14.266	17808.3	19387.8	224.901	36.53	48.73	163
220.000	.47652	2.099	.91780	.042906	15.419	18197.6	19876.4	227.174	37.46	49.03	168
230.000	.45051	2.220	.92859	.040224	16.523	18593.4	20369.1	229.364	38.45	49.55	173
240.000	.42760	2.339	.93757	.037923	17.590	18996.9	20867.8	231.486	39.47	50.20	177
250.000	.40722	2.456	.94512	.035915	18.627	19408.8	21373.4	233.550	40.49	50.93	181
260.000	.38891	2.571	.95154	.034141	19.641	19829.6	21886.6	235.563	41.52	51.72	185
270.000	.37236	2.686	.95704	.032558	20.634	20259.5	22408.0	237.531	42.54	52.55	189
280.000	.35728	2.799	.96180	.031132	21.612	20698.5	22937.6	239.457	43.55	53.38	193
290.000	.34348	2.911	.96594	.029839	22.575	21146.6	23475.7	241.345	44.53	54.23	196
300.000	.33080	3.023	.96956	.028661	23.527	21603.8	24022.2	243.197	45.50	55.07	200
310.000	.31908	3.134	.97274	.027580	24.468	22069.9	24577.1	245.017	46.44	55.90	203
320.000	.30822	3.244	.97555	.026584	25.400	22544.7	25140.2	246.805	47.35	56.73	207
330.000	.29812	3.354	.97804	.025664	26.324	23028.0	25711.5	248.563	48.24	57.53	210
340.000	.28869	3.464	.98025	.024809	27.241	23519.7	26290.8	250.292	49.10	58.32	213
350.000	.27988	3.573	.98223	.024013	28.152	24019.5	26877.8	251.993	49.93	59.08	216
360.000	.27162	3.682	.98400	.023270	29.057	24527.1	27472.4	253.668	50.74	59.83	219
370.000	.26385	3.790	.98560	.022574	29.958	25042.3	28074.3	255.317	51.51	60.55	222
380.000	.25653	3.898	.98703	.021921	30.853	25564.9	28683.4	256.942	52.26	61.25	225
390.000	.24962	4.006	.98833	.021307	31.745	26094.5	29299.3	258.541	52.98	61.93	228
400.000	.24310	4.114	.98950	.020728	32.633	26631.1	29922.0	260.118	53.68	62.59	231
410.000	.23691	4.221	.99057	.020180	33.517	27174.2	30551.0	261.671	54.35	63.22	234
420.000	.23104	4.328	.99154	.019662	34.398	27723.8	31186.3	263.202	54.99	63.83	237
430.000	.22547	4.435	.99242	.019172	35.277	28279.5	31827.6	264.711	55.61	64.42	239
440.000	.22017	4.542	.99322	.018706	36.152	28841.1	32474.7	266.198	56.21	64.99	242
450.000	.21512	4.649	.99396	.018263	37.026	29408.4	33127.4	267.665	56.78	65.54	245
460.000	.21030	4.755	.99463	.017841	37.897	29981.3	33785.4	269.111	57.33	66.07	248
470.000	.20570	4.862	.99524	.017439	38.766	30559.4	34448.6	270.538	57.86	66.58	250
480.000	.20130	4.968	.99581	.017055	39.633	31142.6	35116.8	271.945	58.37	67.07	253
490.000	.19709	5.074	.99633	.016688	40.498	31730.7	35789.9	273.332	58.86	67.54	255

NITROGEN TRIFLUORIDE ISOBAR AT 10 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 10 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.538	26.322	.03799	.06867	45.4552	836.112	8.6	46.6	92.634	49.97	73.71	1317
70.000	26.133	.03827	.06575	43.2459	790.136	261.7	300.0	96.349	48.53	72.79	1291
80.000	25.580	.03909	.05877	37.6258	673.766	979.8	1018.9	105.938	45.30	70.98	1219
90.000	25.016	.03997	.05342	32.9012	576.793	1684.5	1724.5	114.242	43.15	70.14	1149
100.000	24.439	.04092	.04921	28.8592	494.588	2383.1	2424.1	121.617	41.74	69.94	1080
110.000	23.848	.04193	.04585	25.3538	423.899	3081.7	3123.6	128.291	40.85	70.18	1012
120.000	23.242	.04303	.04312	22.2800	362.355	3784.7	3827.8	134.420	40.32	70.75	946
130.000	22.617	.04421	.04090	19.5594	308.186	4495.4	4539.6	140.114	40.05	71.60	880
140.000	21.971	.04551	.03910	17.1311	260.047	5216.3	5261.8	145.460	40.00	72.73	816
150.000	21.298	.04695	.03765	14.9463	216.904	5949.9	5996.8	150.526	40.15	74.21	751
160.000	20.590	.04857	.03651	12.9643	177.955	6699.5	6748.0	155.374	40.49	76.14	686
170.000	19.836	.05041	.03567	11.1491	142.565	7470.3	7520.7	160.062	40.99	78.66	620
180.000	19.018	.05258	.03513	9.4669	110.216	8270.0	8322.6	164.650	41.61	82.08	553
187.741	18.322	.05458	.03497	8.2324	86.966	8916.6	8971.2	168.176	42.14	85.73	499
187.741	.78053	1.281	.82075	.077881	10.144	16813.6	18094.8	216.773	36.28	54.71	146
190.000	.76379	1.309	.82877	.075369	10.528	16908.2	18217.5	217.419	36.15	53.72	148
200.000	.70099	1.427	.85787	.066896	12.062	17314.4	18741.0	220.105	36.28	51.38	155
210.000	.65094	1.536	.87984	.060829	13.428	17713.7	19250.0	222.588	36.91	50.57	160
220.000	.60938	1.641	.89712	.056102	14.690	18113.6	19754.6	224.936	37.74	50.43	166
230.000	.57396	1.742	.91108	.052245	15.880	18517.5	20259.8	227.181	38.66	50.66	171
240.000	.54319	1.841	.92257	.049004	17.018	18927.6	20768.6	229.347	39.64	51.11	175
250.000	.51609	1.938	.93217	.046221	18.114	19344.9	21282.6	231.445	40.64	51.71	180
260.000	.49196	2.033	.94029	.043793	19.179	19770.3	21803.0	233.486	41.64	52.38	184
270.000	.47027	2.126	.94721	.041648	20.217	20204.0	22330.4	235.476	42.65	53.12	188
280.000	.45064	2.219	.95317	.039733	21.233	20646.4	22865.5	237.422	43.64	53.89	192
290.000	.43276	2.311	.95834	.038009	22.231	21097.5	23408.3	239.327	44.61	54.68	195
300.000	.41638	2.402	.96284	.036446	23.214	21557.4	23959.0	241.194	45.57	55.47	199
310.000	.40130	2.492	.96679	.035021	24.183	22025.8	24517.7	243.026	46.50	56.27	203
320.000	.38736	2.582	.97027	.033714	25.140	22502.8	25084.3	244.825	47.41	57.05	206
330.000	.37444	2.671	.97335	.032509	26.087	22988.1	25658.8	246.592	48.29	57.83	209
340.000	.36241	2.759	.97609	.031396	27.025	23481.5	26240.9	248.330	49.15	58.59	213
350.000	.35117	2.848	.97853	.030362	27.955	23982.9	26830.5	250.039	49.98	59.34	216
360.000	.34066	2.935	.98071	.029399	28.878	24492.1	27427.6	251.721	50.78	60.06	219
370.000	.33079	3.023	.98267	.028499	29.795	25008.7	28031.7	253.376	51.55	60.77	222
380.000	.32151	3.110	.98443	.027657	30.706	25532.6	28642.9	255.006	52.30	61.46	225
390.000	.31276	3.197	.98602	.026866	31.612	26063.4	29260.8	256.611	53.02	62.12	228
400.000	.30450	3.284	.98746	.026121	32.513	26601.1	29885.2	258.192	53.71	62.76	231
410.000	.29668	3.371	.98876	.025419	33.410	27145.3	30516.0	259.749	54.38	63.39	234
420.000	.28927	3.457	.98995	.024756	34.303	27695.9	31152.9	261.284	55.02	63.99	237
430.000	.28224	3.543	.99102	.024128	35.192	28252.5	31795.7	262.796	55.64	64.57	239
440.000	.27555	3.629	.99201	.023533	36.078	28815.0	32444.2	264.287	56.23	65.13	242
450.000	.26918	3.715	.99290	.022968	36.961	29383.2	33098.2	265.757	56.80	65.67	245
460.000	.26311	3.801	.99372	.022430	37.841	29956.8	33757.5	267.206	57.36	66.19	248
470.000	.25732	3.886	.99447	.021918	38.719	30535.7	34421.9	268.635	57.88	66.69	250
480.000	.25178	3.972	.99516	.021430	39.594	31119.6	35091.2	270.044	58.39	67.18	253
490.000	.24649	4.057	.99579	.020964	40.467	31708.4	35765.3	271.434	58.88	67.64	255
500.000	.24142	4.142	.99637	.020518	41.338	32301.8	36444.0	272.805	59.35	68.09	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 12 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.575	26.322	.03799	.08236	45.4604	836.753	10.3	55.9	92.660	49.96	73.69	1318
70.000	26.135	.03826	.07889	43.2753	791.266	260.6	306.5	96.333	48.52	72.78	1292
80.000	25.583	.03909	.07052	37.6540	674.834	978.5	1025.4	105.921	45.29	70.98	1220
90.000	25.019	.03997	.06410	32.9287	577.816	1682.9	1730.8	114.224	43.15	70.13	1150
100.000	24.443	.04091	.05905	28.8863	495.580	2381.2	2430.3	121.598	41.74	69.92	1081
110.000	23.853	.04192	.05501	25.3808	424.871	3079.4	3129.7	128.270	40.85	70.16	1013
120.000	23.247	.04302	.05174	22.3073	363.317	3782.0	3833.6	134.397	40.31	70.73	947
130.000	22.624	.04420	.04907	19.5872	309.146	4492.2	4545.3	140.090	40.05	71.57	882
140.000	21.979	.04550	.04690	17.1598	261.013	5212.5	5267.1	145.433	40.00	72.69	817
150.000	21.307	.04693	.04516	14.9762	217.884	5945.3	6001.7	150.496	40.15	74.16	752
160.000	20.601	.04854	.04379	12.9958	178.960	6694.0	6752.3	155.340	40.49	76.06	688
170.000	19.850	.05038	.04277	11.1831	143.606	7463.6	7524.0	160.023	40.98	78.56	622
180.000	19.036	.05253	.04212	9.5045	111.308	8261.6	8324.6	164.603	41.60	81.91	555
190.000	18.129	.05516	.04190	7.9234	81.612	9100.0	9166.1	169.152	42.27	86.75	485
192.461	17.885	.05591	.04193	7.5441	74.650	9314.5	9381.6	170.276	42.44	88.31	467
192.461	.94109	1.063	.79684	.096556	9.657	16867.0	18142.1	215.794	37.36	58.34	145
200.000	.87445	1.144	.82524	.086542	10.999	17194.6	18566.9	217.957	37.01	54.82	151
210.000	.80497	1.242	.85378	.077365	12.543	17612.9	19103.6	220.576	37.36	52.82	158
220.000	.74914	1.335	.87570	.070585	13.932	18025.6	19627.4	223.013	38.05	52.07	163
230.000	.70258	1.423	.89314	.065235	15.219	18439.0	20147.0	225.323	38.90	51.93	169
240.000	.66277	1.509	.90734	.060842	16.434	18856.5	20667.1	227.536	39.82	52.13	174
250.000	.62811	1.592	.91911	.057134	17.595	19279.8	21190.3	229.672	40.79	52.54	178
260.000	.59753	1.674	.92900	.053943	18.713	19710.1	21718.4	231.743	41.77	53.09	183
270.000	.57024	1.754	.93740	.051153	19.798	20148.1	22252.4	233.759	42.75	53.73	187
280.000	.54569	1.833	.94459	.048684	20.854	20594.1	22793.1	235.725	43.73	54.42	191
290.000	.52342	1.910	.95081	.046478	21.888	21048.3	23340.9	237.647	44.70	55.14	195
300.000	.50312	1.988	.95621	.044490	22.902	21510.9	23896.1	239.529	45.64	55.89	198
310.000	.48449	2.064	.96094	.042686	23.900	21981.9	24458.7	241.374	46.57	56.64	202
320.000	.46733	2.140	.96510	.041040	24.883	22461.0	25028.8	243.184	47.47	57.39	205
330.000	.45145	2.215	.96877	.039529	25.853	22948.4	25606.5	244.961	48.35	58.14	209
340.000	.43670	2.290	.97203	.038137	26.813	23443.6	26191.5	246.708	49.20	58.87	212
350.000	.42296	2.364	.97493	.036848	27.762	23946.7	26783.8	248.425	50.02	59.59	215
360.000	.41013	2.438	.97752	.035651	28.703	24457.4	27383.3	250.113	50.82	60.30	219
370.000	.39810	2.512	.97984	.034535	29.637	24975.4	27989.8	251.775	51.59	60.99	222
380.000	.38680	2.585	.98193	.033493	30.563	25500.6	28603.0	253.410	52.34	61.66	225
390.000	.37616	2.658	.98381	.032516	31.483	26032.7	29222.9	255.020	53.05	62.31	228
400.000	.36612	2.731	.98551	.031598	32.398	26571.5	29849.1	256.606	53.74	62.94	231
410.000	.35663	2.804	.98705	.030734	33.307	27116.8	30481.6	258.168	54.41	63.55	234
420.000	.34765	2.876	.98844	.029919	34.211	27668.3	31120.1	259.706	55.05	64.14	236
430.000	.33913	2.949	.98971	.029148	35.112	28225.9	31764.4	261.222	55.67	64.71	239
440.000	.33104	3.021	.99087	.028418	36.008	28789.3	32414.3	262.716	56.26	65.27	242
450.000	.32334	3.093	.99192	.027726	36.901	29358.3	33069.6	264.189	56.83	65.80	245
460.000	.31600	3.165	.99288	.027068	37.790	29932.7	33730.2	265.641	57.38	66.31	248
470.000	.30900	3.236	.99377	.026443	38.676	30512.3	34395.8	267.072	57.91	66.81	250
480.000	.30232	3.308	.99458	.025847	39.560	31097.0	35066.3	268.484	58.42	67.29	253
490.000	.29593	3.379	.99532	.025278	40.440	31686.4	35741.4	269.876	58.91	67.75	255
500.000	.28981	3.451	.99600	.024735	41.319	32280.5	36421.1	271.249	59.38	68.19	251

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 14 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.613	26.322	.03799	.09603	45.4656	837.394	12.0	65.2	92.686	49.94	73.67	1319
70.000	26.138	.03826	.09203	43.3047	792.395	259.5	313.1	96.317	48.52	72.77	1293
80.000	25.536	.03908	.08226	37.6822	675.901	977.1	1031.8	105.904	45.29	70.97	1221
90.000	25.023	.03996	.07477	32.9561	578.839	1681.2	1737.2	114.206	43.14	70.12	1151
100.000	24.447	.04090	.06888	28.9134	496.572	2379.3	2436.5	121.578	41.74	69.91	1082
110.000	23.858	.04192	.06416	25.4079	425.842	3077.1	3135.8	128.249	40.85	70.14	1014
120.000	23.253	.04301	.06034	22.3346	364.277	3779.3	3839.5	134.374	40.31	70.70	948
130.000	22.630	.04419	.05723	19.6150	310.104	4489.0	4550.9	140.065	40.04	71.54	883
140.000	21.987	.04548	.05470	17.1883	261.977	5208.7	5272.4	145.405	40.00	72.66	818
150.000	21.316	.04691	.05266	15.0059	218.863	5940.8	6006.5	150.466	40.15	74.11	754
160.000	20.612	.04851	.05106	13.0272	179.962	6688.6	6756.5	155.306	40.48	75.99	689
170.000	19.864	.05034	.04986	11.2170	144.644	7456.9	7527.4	159.983	40.97	78.45	624
180.000	19.054	.05248	.04909	9.5419	112.396	8253.2	8326.7	164.556	41.59	81.75	557
190.000	18.153	.05509	.04882	7.9665	82.775	9088.9	9166.0	169.093	42.25	86.46	488
196.639	17.478	.05722	.04899	6.9529	64.335	9674.6	9754.7	172.136	42.69	91.06	439
196.639	1.10662	.904	.77379	.116620	9.142	16903.3	18168.4	214.923	38.38	62.27	144
200.000	1.06650	.938	.78940	.110036	9.830	17060.4	18373.1	215.952	37.99	59.65	147
210.000	.97063	1.030	.82607	.096141	11.604	17504.2	18946.5	218.751	37.90	55.66	154
220.000	.89690	1.115	.85334	.086578	13.141	17932.8	19493.7	221.297	38.41	54.01	161
230.000	.83702	1.195	.87464	.079321	14.537	18357.4	20030.0	223.681	39.16	53.37	167
240.000	.78673	1.271	.89178	.073514	15.837	18783.3	20562.8	225.948	40.02	53.26	172
250.000	.74352	1.345	.90586	.068705	17.066	19213.3	21096.2	228.126	40.95	53.46	177
260.000	.70577	1.417	.91761	.064624	18.242	19649.0	21632.6	230.230	41.90	53.85	181
270.000	.67236	1.487	.92753	.061095	19.375	20091.4	22173.7	232.272	42.87	54.37	186
280.000	.64247	1.556	.93601	.058002	20.474	20541.3	22720.4	234.260	43.83	54.98	190
290.000	.61552	1.625	.94330	.055257	21.544	20998.9	23273.4	236.200	44.78	55.63	194
300.000	.59104	1.692	.94962	.052800	22.591	21464.4	23833.1	238.098	45.72	56.32	197
310.000	.56867	1.758	.95514	.050582	23.618	21937.9	24399.8	239.956	46.64	57.02	201
320.000	.54812	1.824	.95999	.048567	24.627	22419.4	24973.5	241.777	47.53	57.73	205
330.000	.52916	1.890	.96425	.046725	25.621	22908.8	25554.5	243.565	48.41	58.45	208
340.000	.51159	1.955	.96803	.045034	26.602	23405.9	26142.5	245.320	49.25	59.16	212
350.000	.49525	2.019	.97140	.043473	27.572	23910.7	26737.5	247.045	50.07	59.85	215
360.000	.48001	2.083	.97439	.042027	28.531	24422.9	27339.5	248.741	50.87	60.54	218
370.000	.46576	2.147	.97708	.040682	29.481	24942.4	27948.3	250.408	51.63	61.21	221
380.000	.45239	2.211	.97949	.039429	30.423	25468.9	28563.6	252.050	52.37	61.86	224
390.000	.43981	2.274	.98166	.038256	31.357	26002.3	29185.4	253.664	53.09	62.50	228
400.000	.42796	2.337	.98362	.037157	32.285	26542.2	29813.5	255.255	53.78	63.12	231
410.000	.41677	2.399	.98539	.036123	33.207	27088.6	30447.7	256.821	54.44	63.72	233
420.000	.40619	2.462	.98700	.035149	34.123	27641.1	31087.8	258.363	55.08	64.30	236
430.000	.39616	2.524	.98846	.034230	35.034	28199.6	31733.6	259.883	55.70	64.86	239
440.000	.38663	2.586	.98978	.033361	35.941	28763.9	32384.9	261.380	56.29	65.40	242
450.000	.37758	2.648	.99099	.032537	36.843	29333.7	33041.6	262.856	56.86	65.93	245
460.000	.36896	2.710	.99210	.031755	37.742	29908.9	33703.4	264.310	57.40	66.43	248
470.000	.36074	2.772	.99311	.031012	38.636	30489.3	34370.2	265.744	57.93	66.92	250
480.000	.35290	2.834	.99404	.030305	39.528	31074.6	35041.8	267.158	58.44	67.39	253
490.000	.34540	2.895	.99489	.029631	40.416	31664.7	35718.0	268.552	58.93	67.85	256
500.000	.33823	2.957	.99567	.028988	41.302	32259.5	36398.7	269.928	59.40	68.29	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 16 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.650	26.323	.03799	.10969	45.4708	838.035	13.7	74.5	92.712	49.92	73.66	1319
70.000	26.140	.03825	.10517	43.3340	793.525	258.4	319.6	96.301	48.52	72.77	1294
80.000	25.589	.03908	.09400	37.7104	676.969	975.7	1038.3	105.887	45.29	70.96	1222
90.000	25.026	.03996	.08544	32.9836	579.862	1679.6	1743.6	114.188	43.14	70.10	1151
100.000	24.451	.04090	.07870	28.9405	497.563	2377.3	2442.8	121.559	41.74	69.90	1083
110.000	23.862	.04191	.07331	25.4349	426.813	3074.8	3141.9	128.228	40.85	70.13	1015
120.000	23.258	.04300	.06895	22.3618	365.237	3776.6	3845.4	134.352	40.31	70.68	949
130.000	22.637	.04418	.06539	19.6427	311.061	4485.8	4556.5	140.040	40.04	71.51	884
140.000	21.994	.04547	.06250	17.2168	262.940	5205.0	5277.7	145.378	39.99	72.62	820
150.000	21.325	.04689	.06016	15.0356	219.841	5936.3	6011.4	150.436	40.14	74.06	755
160.000	20.623	.04849	.05832	13.0585	180.963	6683.2	6760.8	155.272	40.47	75.92	691
170.000	19.878	.05031	.05695	11.2506	145.678	7450.3	7530.8	159.944	40.96	78.35	626
180.000	19.072	.05243	.05606	9.5790	113.480	8244.9	8328.8	164.509	41.57	81.59	560
190.000	18.177	.05501	.05572	8.0090	83.930	9078.0	9166.0	169.035	42.23	86.18	491
200.000	17.137	.05835	.05615	6.4941	56.581	9969.0	10062.4	173.627	42.87	93.63	417
200.404	17.090	.05851	.05619	6.4331	55.516	10006.5	10100.1	173.817	42.89	94.04	414
200.404	1.27808	.782	.75131	.138224	8.605	16925.6	18177.5	214.122	39.38	66.62	143
210.000	1.15084	.869	.79625	.117784	10.595	17385.6	18775.8	217.037	38.57	59.33	151
220.000	1.05407	.949	.82983	.104367	12.311	17834.2	19352.2	219.718	38.82	56.34	158
230.000	.97803	1.022	.85547	.094657	13.831	18272.2	19908.1	222.190	39.45	55.03	164
240.000	.91551	1.092	.87581	.087112	15.223	18707.7	20455.4	224.519	40.24	54.52	170
250.000	.86260	1.159	.89235	.080989	16.527	19145.1	20999.9	226.742	41.12	54.46	175
260.000	.81687	1.224	.90606	.075872	17.763	19586.7	21545.4	228.881	42.04	54.67	180
270.000	.77673	1.287	.91759	.071500	18.948	20034.0	22093.9	230.952	42.99	55.06	184
280.000	.74108	1.349	.92738	.067702	20.090	20488.0	22647.0	232.963	43.93	55.56	189
290.000	.70911	1.410	.93578	.064359	21.199	20949.1	23205.4	234.922	44.87	56.14	193
300.000	.68019	1.470	.94305	.061385	22.279	21417.6	23769.9	236.836	45.80	56.76	197
310.000	.65386	1.529	.94937	.058714	23.336	21893.8	24340.8	238.708	46.71	57.42	201
320.000	.62976	1.588	.95491	.056299	24.372	22377.7	24918.3	240.542	47.60	58.09	204
330.000	.60757	1.646	.95978	.054101	25.390	22869.2	25502.6	242.339	48.46	58.77	208
340.000	.58707	1.703	.96409	.052088	26.393	23368.3	26093.7	244.104	49.30	59.44	211
350.000	.56804	1.760	.96791	.050237	27.383	23874.8	26691.5	245.837	50.12	60.12	215
360.000	.55032	1.817	.97132	.048527	28.360	24388.6	27296.0	247.539	50.91	60.78	218
370.000	.53378	1.873	.97437	.046941	29.327	24909.6	27907.1	249.214	51.67	61.43	221
380.000	.51828	1.929	.97710	.045465	30.285	25437.4	28524.6	250.860	52.41	62.07	224
390.000	.50372	1.985	.97956	.044087	31.233	25972.0	29148.4	252.481	53.12	62.69	227
400.000	.49002	2.041	.98178	.042798	32.175	26513.1	29778.3	254.075	53.81	63.29	230
410.000	.47709	2.096	.98378	.041587	33.109	27060.6	30414.2	255.646	54.47	63.88	233
420.000	.46487	2.151	.98560	.040448	34.037	27614.1	31055.9	257.192	55.11	64.45	236
430.000	.45330	2.206	.98725	.039375	34.959	28173.6	31703.2	258.715	55.72	65.00	239
440.000	.44233	2.261	.98874	.038361	35.876	28738.8	32356.0	260.216	56.31	65.54	242
450.000	.43190	2.315	.99011	.037401	36.788	29309.4	33014.0	261.694	56.88	66.06	245
460.000	.42198	2.370	.99136	.036491	37.695	29885.4	33677.0	263.152	57.43	66.56	248
470.000	.41253	2.424	.99250	.035627	38.599	30466.5	34345.0	264.588	57.96	67.04	250
480.000	.40351	2.478	.99354	.034805	39.498	31052.5	35017.7	266.004	58.46	67.50	253
490.000	.39490	2.532	.99449	.034022	40.394	31643.3	35695.0	267.401	58.95	67.95	256
500.000	.38666	2.586	.99537	.033276	41.287	32238.7	36376.7	268.778	59.42	68.39	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 18 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.687	26.323	.03799	.12333	45.4760	838.676	15.4	83.8	92.737	49.91	73.64	1320
70.000	26.143	.03825	.11830	43.3634	794.655	257.3	326.1	96.285	48.52	72.76	1295
80.000	25.592	.03907	.10574	37.7385	678.036	974.4	1044.7	105.870	45.29	70.95	1223
90.000	25.030	.03995	.09610	33.0110	580.884	1678.0	1749.9	114.170	43.14	70.09	1152
100.000	24.455	.04089	.08853	28.9676	498.554	2375.4	2449.0	121.539	41.74	69.88	1084
110.000	23.867	.04190	.08246	25.4619	427.784	3072.5	3147.9	128.207	40.84	70.11	1016
120.000	23.264	.04299	.07755	22.3890	366.197	3773.9	3851.3	134.329	40.31	70.66	950
130.000	22.643	.04416	.07355	19.6703	312.018	4482.7	4562.2	140.016	40.04	71.48	885
140.000	22.002	.04545	.07028	17.2452	263.902	5201.2	5283.0	145.351	39.99	72.58	821
150.000	21.334	.04687	.06765	15.0651	220.816	5931.9	6016.2	150.406	40.14	74.01	757
160.000	20.634	.04846	.06557	13.0897	181.961	6677.8	6765.1	155.238	40.47	75.85	693
170.000	19.892	.05027	.06402	11.2841	146.710	7443.7	7534.2	159.905	40.96	78.24	628
180.000	19.089	.05238	.06300	9.6159	114.559	8236.6	8330.9	164.463	41.56	81.43	562
190.000	18.201	.05494	.06260	8.0511	85.079	9067.2	9166.1	168.978	42.21	85.90	493
200.000	17.172	.05824	.06304	6.5455	57.841	9953.7	10058.6	173.549	42.83	93.07	420
203.840	16.716	.05982	.06353	5.9679	47.861	10316.3	10424.0	175.360	43.07	97.35	390
203.840	1.45653	.687	.72917	.161546	8.051	16935.9	18171.7	213.369	40.36	71.50	141
210.000	1.34992	.741	.76367	.143260	9.501	17253.9	18587.3	215.375	39.41	64.31	147
220.000	1.22253	.818	.80492	.124332	11.437	17728.8	19201.1	218.231	39.30	59.20	155
230.000	1.12659	.888	.83550	.111431	13.097	18182.7	19780.5	220.806	39.77	56.95	162
240.000	1.04967	.953	.85935	.101740	14.593	18629.4	20344.2	223.206	40.48	55.93	168
250.000	.98567	1.015	.87855	.094051	15.976	19075.0	20901.2	225.480	41.31	55.55	173
260.000	.93102	1.074	.89434	.087728	17.277	19523.2	21456.5	227.658	42.19	55.55	178
270.000	.88351	1.132	.90753	.082393	18.515	19975.8	22013.1	229.758	43.11	55.79	183
280.000	.84160	1.188	.91869	.077803	19.703	20434.1	22572.8	231.794	44.04	56.18	188
290.000	.80423	1.243	.92824	.073795	20.851	20898.9	23137.0	233.774	44.96	56.67	192
300.000	.77059	1.298	.93646	.070252	21.966	21370.6	23706.5	235.704	45.88	57.23	196
310.000	.74009	1.351	.94360	.067089	23.053	21849.6	24281.7	237.590	46.78	57.83	200
320.000	.71225	1.404	.94985	.064241	24.116	22335.9	24863.1	239.436	47.66	58.45	204
330.000	.68670	1.456	.95533	.061659	25.159	22829.6	25450.9	241.245	48.52	59.09	207
340.000	.66315	1.508	.96017	.059304	26.185	23330.7	26045.0	243.018	49.36	59.74	211
350.000	.64133	1.559	.96446	.057144	27.194	23839.0	26645.7	244.759	50.17	60.39	214
360.000	.62106	1.610	.96828	.055154	28.190	24354.5	27252.7	246.469	50.95	61.03	218
370.000	.60215	1.661	.97169	.053312	29.174	24876.9	27866.2	248.150	51.72	61.66	221
380.000	.58447	1.711	.97475	.051603	30.147	25406.1	28485.9	249.803	52.45	62.28	224
390.000	.56788	1.761	.97750	.050010	31.111	25942.0	29111.7	251.428	53.16	62.88	227
400.000	.55228	1.811	.97997	.048521	32.065	26484.3	29743.5	253.027	53.85	63.47	230
410.000	.53759	1.860	.98221	.047126	33.012	27032.8	30381.1	254.602	54.51	64.05	233
420.000	.52371	1.909	.98423	.045816	33.952	27587.4	31024.4	256.152	55.14	64.61	236
430.000	.51058	1.959	.98607	.044582	34.885	28147.8	31673.2	257.679	55.75	65.15	239
440.000	.49813	2.008	.98774	.043418	35.812	28713.8	32327.3	259.183	56.34	65.68	242
450.000	.48631	2.056	.98926	.042317	36.734	29285.3	32986.7	260.664	56.91	66.18	245
460.000	.47507	2.105	.99064	.041275	37.650	29862.1	33651.0	262.124	57.45	66.68	248
470.000	.46437	2.153	.99191	.040286	38.562	30443.9	34320.1	263.563	57.98	67.15	250
480.000	.45417	2.202	.99307	.039346	39.470	31030.7	34994.0	264.982	58.48	67.61	253
490.000	.44442	2.250	.99413	.038452	40.374	31622.1	35672.3	266.381	58.97	68.06	256
500.000	.43511	2.298	.99510	.037600	41.274	32218.1	36355.0	267.760	59.44	68.48	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 20 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.725	26.324	.03799	.13695	45.4812	839.317	17.1	93.1	92.763	49.89	73.62	1320
70.000	26.146	.03825	.13143	43.3927	795.784	256.2	332.7	96.269	48.52	72.75	1296
80.000	25.595	.03907	.11748	37.7667	679.103	973.0	1051.2	105.853	45.29	70.94	1223
90.000	25.033	.03995	.10677	33.0384	581.907	1676.4	1756.3	114.151	43.14	70.08	1153
100.000	24.459	.04088	.09835	28.9946	499.545	2373.5	2455.2	121.520	41.74	69.87	1085
110.000	23.872	.04189	.09160	25.4889	428.754	3070.2	3154.0	128.186	40.84	70.09	1017
120.000	23.269	.04297	.08614	22.4161	367.155	3771.2	3857.2	134.307	40.31	70.64	951
130.000	22.650	.04415	.08169	19.6979	312.974	4479.5	4567.8	139.991	40.04	71.45	886
140.000	22.009	.04544	.07807	17.2736	264.863	5197.4	5288.3	145.324	39.99	72.54	822
150.000	21.343	.04685	.07513	15.0946	221.791	5927.4	6021.1	150.376	40.13	73.96	758
160.000	20.645	.04844	.07282	13.1208	182.958	6672.5	6769.3	155.204	40.46	75.78	694
170.000	19.905	.05024	.07109	11.3174	147.739	7437.2	7537.7	159.866	40.95	78.14	630
180.000	19.107	.05234	.06994	9.6525	115.634	8228.5	8333.1	164.417	41.55	81.27	564
190.000	18.224	.05487	.06947	8.0928	86.221	9056.5	9166.2	168.921	42.18	85.64	496
200.000	17.206	.05812	.06990	6.5960	59.089	9938.7	10055.0	173.473	42.79	92.53	424
207.009	16.351	.06116	.07107	5.5456	41.143	10609.1	10731.4	176.796	43.21	101.09	368
207.009	1.64313	.609	.70719	.186797	7.484	16935.3	18152.5	212.645	41.34	77.09	140
210.000	1.57477	.635	.72737	.174207	8.294	17104.2	18374.2	213.706	40.56	71.55	143
220.000	1.40482	.712	.77831	.146993	10.511	17614.7	19038.4	216.797	39.87	62.78	152
230.000	1.28388	.779	.81460	.129878	12.335	18088.3	19646.1	219.499	40.13	59.21	160
240.000	1.18985	.840	.84235	.117523	13.945	18547.9	20228.8	221.979	40.74	57.53	166
250.000	1.11310	.898	.86441	.107963	15.414	19002.9	20799.7	224.310	41.50	56.76	172
260.000	1.04847	.954	.88240	.100238	16.783	19458.2	21365.7	226.530	42.35	56.51	177
270.000	.99283	1.007	.89734	.093804	18.077	19916.5	21930.9	228.663	43.24	56.57	182
280.000	.94413	1.059	.90992	.088325	19.312	20379.5	22497.8	230.725	44.14	56.83	187
290.000	.90096	1.110	.92064	.083580	20.501	20848.2	23068.0	232.726	45.05	57.23	191
300.000	.86230	1.160	.92985	.079412	21.651	21323.3	23642.7	234.674	45.96	57.71	195
310.000	.82738	1.209	.93783	.075712	22.769	21805.2	24222.4	236.575	46.85	58.25	199
320.000	.79563	1.257	.94479	.072397	23.860	22294.1	24807.8	238.433	47.72	58.83	203
330.000	.76656	1.305	.95089	.069403	24.928	22790.0	25399.1	240.253	48.58	59.43	207
340.000	.73983	1.352	.95627	.066682	25.976	23293.1	25996.4	242.036	49.41	60.04	210
350.000	.71513	1.398	.96103	.064194	27.006	23803.3	26600.0	243.785	50.22	60.66	214
360.000	.69222	1.445	.96527	.061907	28.021	24320.4	27209.6	245.503	51.00	61.28	217
370.000	.67088	1.491	.96905	.059797	29.022	24844.3	27825.5	247.190	51.76	61.89	221
380.000	.65096	1.536	.97243	.057842	30.011	25374.9	28447.3	248.848	52.49	62.49	224
390.000	.63229	1.582	.97546	.056023	30.989	25912.1	29075.2	250.479	53.20	63.08	227
400.000	.61476	1.627	.97820	.054327	31.957	26455.5	29708.8	252.083	53.88	63.65	230
410.000	.59826	1.672	.98067	.052740	32.916	27005.2	30348.2	253.662	54.54	64.22	233
420.000	.58269	1.716	.98290	.051251	33.868	27560.8	30993.1	255.216	55.17	64.76	236
430.000	.56797	1.761	.98492	.049851	34.812	28122.1	31643.4	256.746	55.78	65.30	239
440.000	.55403	1.805	.98676	.048531	35.749	28689.1	32299.0	258.253	56.37	65.81	242
450.000	.54080	1.849	.98843	.047285	36.680	29261.4	32959.7	259.738	56.93	66.31	245
460.000	.52823	1.893	.98996	.046106	37.606	29839.0	33625.2	261.201	57.48	66.80	248
470.000	.51626	1.937	.99135	.044989	38.527	30421.6	34295.6	262.642	58.00	67.27	250
480.000	.50486	1.981	.99262	.043928	39.442	31009.0	34970.5	264.063	58.51	67.72	253
490.000	.49397	2.024	.99379	.042919	40.354	31601.1	35649.9	265.464	58.99	68.16	256
500.000	.48357	2.068	.99486	.041958	41.261	32197.7	36333.6	266.845	59.46	68.58	258

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 22 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.762	26.324	.03799	.15056	45.4864	839.958	18.8	102.4	92.788	49.87	73.60	1321
70.000	26.148	.03824	.14456	43.4220	796.914	255.1	339.2	96.253	48.52	72.75	1297
80.000	25.598	.03907	.12921	37.7948	680.170	971.7	1057.6	105.836	45.29	70.93	1224
90.000	25.036	.03994	.11743	33.0658	582.929	1674.8	1762.6	114.133	43.14	70.07	1154
100.000	24.463	.04088	.10816	29.0216	500.535	2371.5	2461.5	121.500	41.74	69.85	1086
110.000	23.876	.04188	.10075	25.5158	429.723	3068.0	3160.1	128.166	40.84	70.08	1019
120.000	23.275	.04296	.09474	22.4432	368.113	3768.5	3863.1	134.284	40.30	70.62	953
130.000	22.656	.04414	.08984	19.7255	313.929	4476.3	4573.4	139.967	40.03	71.42	888
140.000	22.017	.04542	.08584	17.3019	265.823	5193.7	5293.6	145.298	39.98	72.51	823
150.000	21.352	.04683	.08261	15.1240	222.764	5923.0	6026.0	150.346	40.13	73.91	760
160.000	20.656	.04841	.08006	13.1517	183.952	6667.2	6773.7	155.171	40.45	75.71	696
170.000	19.919	.05020	.07814	11.3506	148.765	7430.7	7541.2	159.828	40.94	78.05	632
180.000	19.124	.05229	.07687	9.6889	116.705	8220.4	8335.4	164.372	41.53	81.12	566
190.000	18.247	.05480	.07632	8.1341	87.357	9046.0	9166.5	168.865	42.16	85.38	499
200.000	17.239	.05801	.07674	6.6457	60.325	9924.0	10051.6	173.398	42.75	92.02	427
209.953	15.990	.06254	.07882	5.1578	35.199	10887.8	11025.4	178.147	43.34	105.40	347
209.953	1.83926	.544	.68521	.214235	6.905	16924.0	18120.1	211.939	42.33	83.58	138
210.000	1.83780	.544	.68560	.213940	6.920	16927.1	18124.2	211.955	42.31	83.43	138
220.000	1.60452	.623	.74958	.173099	9.524	17489.9	18861.1	215.385	40.54	67.43	149
230.000	1.45143	.689	.79262	.150297	11.542	17988.2	19503.9	218.244	40.54	61.91	157
240.000	1.33680	.748	.82473	.134610	13.278	18463.0	20108.7	220.818	41.02	59.35	164
250.000	1.24533	.803	.84989	.122809	14.839	18928.5	20695.1	223.212	41.71	58.10	170
260.000	1.16945	.855	.87022	.113451	16.281	19391.7	21272.9	225.478	42.51	57.54	176
270.000	1.10484	.905	.88700	.105765	17.633	19856.1	21847.4	227.646	43.37	57.40	181
280.000	1.04876	.954	.90106	.099289	18.918	20324.1	22421.8	229.736	44.26	57.52	186
290.000	.99937	1.001	.91299	.093727	20.148	20797.0	22998.4	231.759	45.15	57.81	190
300.000	.95536	1.047	.92321	.088875	21.335	21275.6	23578.4	233.725	46.04	58.21	194
310.000	.91578	1.092	.93204	.084592	22.485	21760.5	24162.9	235.642	46.92	58.69	199
320.000	.87990	1.136	.93973	.080773	23.604	22252.0	24752.3	237.513	47.79	59.21	202
330.000	.84717	1.180	.94646	.077337	24.697	22750.4	25347.2	239.344	48.64	59.77	206
340.000	.81714	1.224	.95238	.074225	25.767	23255.5	25947.8	241.136	49.46	60.35	210
350.000	.78945	1.267	.95762	.071389	26.818	23767.5	26554.3	242.894	50.27	60.94	213
360.000	.76381	1.309	.96227	.068790	27.851	24286.3	27166.6	244.619	51.05	61.53	217
370.000	.73998	1.351	.96642	.066396	28.870	24811.8	27784.9	246.313	51.80	62.12	220
380.000	.71775	1.393	.97013	.064183	29.875	25343.8	28409.0	247.977	52.53	62.70	224
390.000	.69696	1.435	.97345	.062129	30.867	25882.3	29038.8	249.613	53.23	63.27	227
400.000	.67745	1.476	.97645	.060215	31.849	26426.9	29674.4	251.222	53.91	63.84	230
410.000	.65911	1.517	.97914	.058428	32.821	26977.7	30315.5	252.805	54.57	64.39	233
420.000	.64181	1.558	.98159	.056754	33.784	27534.3	30962.1	254.363	55.20	64.92	236
430.000	.62548	1.599	.98380	.055182	34.739	28096.6	31613.9	255.897	55.81	65.44	239
440.000	.61002	1.639	.98580	.053702	35.687	28664.5	32270.9	257.407	56.40	65.95	242
450.000	.59536	1.680	.98763	.052305	36.628	29237.7	32932.9	258.895	56.96	66.44	245
460.000	.58144	1.720	.98929	.050986	37.563	29816.0	33599.7	260.361	57.50	66.92	248
470.000	.56820	1.760	.99081	.049736	38.492	30399.3	34271.2	261.805	58.03	67.38	250
480.000	.55558	1.800	.99220	.048550	39.416	30987.5	34947.3	263.228	58.53	67.83	253
490.000	.54355	1.840	.99347	.047424	40.335	31580.3	35627.8	264.631	59.01	68.26	256
500.000	.53205	1.880	.99463	.046352	41.249	32177.5	36312.5	266.014	59.48	68.68	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 24 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.800	26.324	.03799	.16415	45.4916	840.599	20.6	111.7	92.814	49.86	73.59	1321
70.000	26.151	.03824	.15769	43.4513	798.044	254.0	345.7	96.238	48.52	72.74	1298
80.000	25.601	.03906	.14094	37.8229	681.237	970.3	1064.1	105.819	45.29	70.92	1225
90.000	25.040	.03994	.12809	33.0932	583.950	1673.1	1769.0	114.115	43.14	70.06	1155
100.000	24.467	.04087	.11798	29.0486	501.525	2369.6	2467.7	121.481	41.74	69.84	1087
110.000	23.881	.04187	.10988	25.5427	430.692	3065.7	3166.2	128.145	40.84	70.06	1020
120.000	23.280	.04295	.10333	22.4703	369.071	3765.9	3868.9	134.262	40.30	70.59	954
130.000	22.662	.04413	.09798	19.7530	314.883	4473.2	4579.1	139.942	40.03	71.40	889
140.000	22.024	.04540	.09361	17.3301	266.782	5190.0	5299.0	145.271	39.98	72.47	825
150.000	21.361	.04681	.09009	15.1533	223.735	5918.6	6030.9	150.316	40.12	73.86	761
160.000	20.667	.04839	.08729	13.1826	184.945	6661.9	6778.0	155.137	40.45	75.65	697
170.000	19.932	.05017	.08519	11.3836	149.789	7424.3	7544.7	159.789	40.93	77.95	633
180.000	19.141	.05224	.08378	9.7250	117.772	8212.3	8337.7	164.326	41.52	80.97	568
190.000	18.270	.05473	.08315	8.1750	88.486	9035.6	9166.9	168.809	42.14	85.13	501
200.000	17.272	.05790	.08356	6.6947	61.551	9909.6	10048.5	173.325	42.72	91.53	430
210.000	16.039	.06235	.08570	5.2167	36.486	10869.3	11019.0	178.052	43.26	104.15	351
212.706	15.630	.06398	.08683	4.7979	29.908	11155.6	11309.1	179.429	43.47	110.48	327
212.706	2.04658	.489	.66308	.244173	6.316	16902.3	18075.0	211.238	43.34	91.27	136
220.000	1.82699	.547	.71815	.203787	8.463	17351.0	18664.7	213.961	41.38	73.72	145
230.000	1.63119	.613	.76938	.173078	10.713	17881.2	19352.5	217.020	40.99	65.16	154
240.000	1.49144	.670	.80641	.153178	12.591	18374.0	19983.2	219.705	41.32	61.43	162
250.000	1.38283	.723	.83496	.138682	14.253	18851.6	20587.2	222.171	41.93	59.58	168
260.000	1.29426	.773	.85779	.127424	15.770	19323.5	21177.8	224.487	42.69	58.67	174
270.000	1.21973	.820	.87649	.118311	17.184	19794.6	21762.3	226.693	43.51	58.29	180
280.000	1.15561	.865	.89209	.110718	18.519	20267.9	22344.8	228.811	44.37	58.25	185
290.000	1.09951	.909	.90527	.104252	19.793	20745.2	22928.0	230.858	45.25	58.42	189
300.000	1.04981	.953	.91653	.098651	21.016	21227.5	23513.6	232.843	46.13	58.73	194
310.000	1.00530	.995	.92623	.093736	22.198	21715.6	24102.9	234.776	47.00	59.14	198
320.000	.96510	1.036	.93466	.089373	23.346	22209.8	24696.6	236.661	47.86	59.61	202
330.000	.92853	1.077	.94203	.085465	24.465	22710.6	25295.3	238.503	48.70	60.12	206
340.000	.89507	1.117	.94850	.081937	25.558	23217.9	25899.2	240.305	49.52	60.67	210
350.000	.86429	1.157	.95422	.078732	26.630	23731.8	26508.6	242.072	50.32	61.22	213
360.000	.83584	1.196	.95929	.075802	27.682	24252.3	27123.7	243.804	51.09	61.79	217
370.000	.80944	1.235	.96381	.073111	28.718	24779.4	27744.4	245.505	51.84	62.35	220
380.000	.78485	1.274	.96784	.070627	29.739	25312.8	28370.7	247.175	52.57	62.92	223
390.000	.76188	1.313	.97146	.068326	30.746	25852.6	29002.7	248.817	53.27	63.47	227
400.000	.74035	1.351	.97471	.066187	31.742	26398.4	29640.1	250.430	53.95	64.02	230
410.000	.72013	1.389	.97764	.064192	32.726	26950.3	30283.0	252.018	54.60	64.56	233
420.000	.70109	1.426	.98029	.062326	33.701	27508.0	30931.2	253.580	55.23	65.08	236
430.000	.68311	1.464	.98269	.060575	34.667	28071.2	31584.6	255.117	55.84	65.59	239
440.000	.66611	1.501	.98486	.058929	35.626	28640.0	32243.0	256.631	56.42	66.09	242
450.000	.65000	1.538	.98684	.057378	36.576	29214.0	32906.3	258.122	56.99	66.57	245
460.000	.63471	1.576	.98864	.055913	37.520	29793.2	33574.4	259.590	57.53	67.04	248
470.000	.62018	1.612	.99029	.054527	38.458	30377.3	34247.1	261.037	58.05	67.50	250
480.000	.60634	1.649	.99179	.053213	39.390	30966.1	34924.3	262.462	58.55	67.94	253
490.000	.59314	1.686	.99316	.051966	40.316	31559.6	35605.8	263.868	59.03	68.36	256
500.000	.58054	1.723	.99442	.050780	41.238	32157.5	36291.5	265.253	59.50	68.77	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 26 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.837	26.325	.03799	.17773	45.4968	841.241	22.3	121.0	92.839	49.84	73.57	1322
70.000	26.153	.03824	.17081	43.4805	799.173	252.9	352.3	96.222	48.52	72.73	1298
80.000	25.604	.03906	.15267	37.8509	682.304	969.0	1070.5	105.802	45.29	70.91	1226
90.000	25.043	.03993	.13874	33.1205	584.972	1671.5	1775.3	114.097	43.14	70.05	1156
100.000	24.471	.04086	.12779	29.0755	502.515	2367.7	2473.9	121.462	41.73	69.83	1088
110.000	23.886	.04187	.11902	25.5695	431.661	3063.4	3172.3	128.124	40.84	70.04	1021
120.000	23.286	.04294	.11191	22.4973	370.027	3763.2	3874.8	134.239	40.30	70.57	955
130.000	22.669	.04411	.10611	19.7804	315.836	4470.0	4584.7	139.918	40.03	71.37	890
140.000	22.032	.04539	.10138	17.3583	267.740	5186.3	5304.3	145.244	39.98	72.43	826
150.000	21.370	.04679	.09755	15.1825	224.705	5914.2	6035.8	150.286	40.12	73.81	763
160.000	20.678	.04836	.09452	13.2133	185.935	6656.6	6782.3	155.104	40.44	75.58	699
170.000	19.945	.05014	.09222	11.4165	150.809	7417.9	7548.2	159.751	40.92	77.85	635
180.000	19.158	.05220	.09068	9.7609	118.836	8204.4	8340.1	164.281	41.51	80.83	570
190.000	18.292	.05467	.08997	8.2155	89.610	9025.3	9167.4	168.754	42.12	84.89	504
200.000	17.304	.05779	.09036	6.7429	62.766	9895.4	10045.6	173.252	42.68	91.06	434
210.000	16.093	.06214	.09253	5.2809	37.866	10846.9	11008.4	177.943	43.18	102.90	356
215.294	15.267	.06550	.09514	4.4608	25.179	11414.9	11585.2	180.658	43.61	116.61	307
215.294	2.26711	.441	.64067	.277005	5.721	16870.1	18017.0	210.532	44.38	100.56	135
220.000	2.08080	.481	.68310	.240944	7.307	17192.7	18442.2	212.483	42.47	82.84	141
230.000	1.82580	.548	.74466	.198738	9.847	17765.8	19189.8	215.808	41.52	69.19	152
240.000	1.65490	.604	.78733	.173445	11.884	18280.5	19851.6	218.626	41.65	63.84	160
250.000	1.52618	.655	.81958	.155693	13.654	18771.8	20475.4	221.173	42.17	61.23	167
260.000	1.42320	.703	.84508	.142217	15.253	19253.4	21080.2	223.545	42.87	59.89	173
270.000	1.33768	.748	.86581	.131479	16.730	19731.8	21675.5	225.792	43.65	59.25	178
280.000	1.26479	.791	.88300	.122635	18.118	20210.9	22266.5	227.941	44.49	59.02	183
290.000	1.20148	.832	.89747	.115171	19.435	20692.8	22856.8	230.012	45.35	59.06	188
300.000	1.14570	.873	.90980	.108752	20.696	21179.0	23448.3	232.018	46.21	59.27	193
310.000	1.09598	.912	.92039	.103150	21.911	21670.3	24042.6	233.966	47.07	59.61	197
320.000	1.05124	.951	.92958	.098203	23.088	22167.4	24640.7	235.865	47.92	60.02	201
330.000	1.01068	.989	.93759	.093790	24.233	22670.6	25243.2	237.719	48.76	60.48	205
340.000	.97365	1.027	.94462	.089820	25.349	23180.1	25850.5	239.532	49.57	60.99	209
350.000	.93966	1.064	.95082	.086224	26.442	23696.0	26463.0	241.307	50.37	61.51	213
360.000	.90831	1.101	.95632	.082946	27.513	24218.3	27080.8	243.047	51.14	62.05	216
370.000	.87927	1.137	.96120	.079942	28.566	24746.9	27704.0	244.755	51.88	62.59	220
380.000	.85226	1.173	.96557	.077175	29.603	25281.9	28332.6	246.431	52.61	63.13	223
390.000	.82706	1.209	.96948	.074617	30.625	25822.9	28966.6	248.078	53.31	63.67	226
400.000	.80347	1.245	.97299	.072243	31.635	26370.0	29606.0	249.697	53.98	64.20	230
410.000	.78133	1.280	.97615	.070032	32.632	26923.0	30250.7	251.289	54.63	64.73	233
420.000	.76050	1.315	.97901	.067966	33.619	27481.7	30900.5	252.855	55.26	65.24	236
430.000	.74086	1.350	.98159	.066031	34.596	28046.0	31555.4	254.396	55.87	65.74	239
440.000	.72230	1.384	.98394	.064213	35.564	28615.7	32215.3	255.913	56.45	66.23	242
450.000	.70472	1.419	.98607	.062502	36.525	29190.5	32879.9	257.406	57.01	66.70	245
460.000	.68805	1.453	.98801	.060888	37.478	29770.5	33549.3	258.877	57.55	67.16	248
470.000	.67221	1.488	.98978	.059362	38.424	30355.3	34223.2	260.327	58.07	67.61	251
480.000	.65713	1.522	.99139	.057917	39.364	30944.9	34901.5	261.755	58.57	68.05	253
490.000	.64276	1.556	.99287	.056546	40.298	31539.0	35584.0	263.162	59.05	68.47	256
500.000	.62905	1.590	.99422	.055243	41.227	32137.5	36270.7	264.549	59.52	68.87	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 28 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.874	26.325	.03799	.19129	45.5020	841.882	24.0	130.3	92.865	49.82	73.55	1323
70.000	26.156	.03823	.18393	43.5098	800.303	251.8	358.8	96.206	48.52	72.72	1299
80.000	25.607	.03905	.16439	37.8790	683.371	967.7	1077.0	105.785	45.29	70.91	1227
90.000	25.047	.03993	.14939	33.1478	585.993	1669.9	1781.7	114.079	43.14	70.04	1157
100.000	24.475	.04086	.13759	29.1024	503.504	2365.8	2480.2	121.442	41.73	69.81	1089
110.000	23.890	.04186	.12815	25.5963	432.629	3061.2	3178.4	128.103	40.84	70.02	1022
120.000	23.291	.04293	.12049	22.5242	370.984	3760.5	3880.7	134.217	40.30	70.55	956
130.000	22.675	.04410	.11424	19.8078	316.789	4466.9	4590.4	139.893	40.03	71.34	891
140.000	22.039	.04537	.10914	17.3864	268.696	5182.6	5309.6	145.217	39.97	72.40	827
150.000	21.379	.04677	.10501	15.2117	225.673	5909.8	6040.8	150.257	40.11	73.76	764
160.000	20.689	.04834	.10173	13.2439	186.924	6651.4	6786.7	155.071	40.44	75.51	701
170.000	19.959	.05010	.09925	11.4491	151.827	7411.5	7551.8	159.713	40.91	77.76	637
180.000	19.175	.05215	.09757	9.7966	119.895	8196.5	8342.5	164.237	41.49	80.68	573
190.000	18.315	.05460	.09678	8.2556	90.728	9015.1	9168.0	168.700	42.10	84.66	506
200.000	17.336	.05768	.09713	6.7904	63.971	9881.4	10042.9	173.181	42.65	90.61	437
210.000	16.144	.06194	.09933	5.3433	39.224	10825.1	10998.6	177.837	43.11	101.76	361
217.737	14.897	.06713	.10382	4.1423	20.940	11668.0	11856.0	181.847	43.78	124.18	289
217.737	2.50337	.399	.61782	.313226	5.121	16826.7	17945.2	209.814	45.48	112.04	133
220.000	2.38138	.420	.64279	.288160	6.015	17005.2	18180.9	210.886	44.02	97.57	137
230.000	2.03884	.490	.71814	.227993	8.936	17640.2	19013.5	214.591	42.12	74.30	149
240.000	1.82854	.547	.76737	.195676	11.156	18181.7	19713.0	217.569	42.02	66.65	157
250.000	1.67602	.597	.80372	.173968	13.044	18688.9	20359.6	220.209	42.42	63.07	165
260.000	1.55663	.642	.83208	.157900	14.728	19181.3	20980.0	222.643	43.06	61.22	171
270.000	1.45889	.685	.85494	.145311	16.272	19667.7	21586.9	224.933	43.80	60.27	177
280.000	1.37643	.727	.87380	.135067	17.713	20152.8	22187.1	227.116	44.61	59.83	182
290.000	1.30535	.766	.88960	.126500	19.076	20639.7	22784.7	229.213	45.45	59.73	187
300.000	1.24309	.804	.90302	.119188	20.375	21129.9	23382.4	231.239	46.30	59.84	192
310.000	1.18786	.842	.91452	.112844	21.624	21624.7	23981.9	233.205	47.15	60.09	197
320.000	1.13835	.878	.92447	.107269	22.830	22124.8	24584.5	235.118	47.99	60.44	201
330.000	1.09361	.914	.93314	.102317	24.000	22630.6	25190.9	236.984	48.82	60.85	205
340.000	1.05287	.950	.94073	.097877	25.140	23142.3	25801.7	238.807	49.63	61.31	209
350.000	1.01557	.985	.94742	.093868	26.254	23660.2	26417.3	240.592	50.42	61.80	212
360.000	.98123	1.019	.95335	.090223	27.344	24184.3	27037.9	242.340	51.18	62.31	216
370.000	.94946	1.053	.95861	.086890	28.415	24714.5	27663.6	244.054	51.93	62.83	220
380.000	.91997	1.087	.96330	.083828	29.468	25250.9	28294.5	245.737	52.65	63.35	223
390.000	.89249	1.120	.96751	.081001	30.505	25793.4	28930.6	247.389	53.34	63.87	226
400.000	.86680	1.154	.97128	.078382	31.528	26341.7	29572.0	249.013	54.02	64.39	230
410.000	.84271	1.187	.97467	.075947	32.538	26895.8	30218.4	250.609	54.67	64.90	233
420.000	.82007	1.219	.97774	.073674	33.537	27455.6	30869.9	252.179	55.29	65.40	236
430.000	.79873	1.252	.98051	.071548	34.525	28020.8	31526.4	253.723	55.90	65.89	239
440.000	.77858	1.284	.98303	.069554	35.503	28591.4	32187.7	255.244	56.48	66.37	242
450.000	.75952	1.317	.98531	.067678	36.474	29167.2	32853.7	256.740	57.04	66.83	245
460.000	.74144	1.349	.98738	.065910	37.436	29747.9	33524.3	258.214	57.58	67.29	248
470.000	.72428	1.381	.98928	.064241	38.391	30333.5	34199.4	259.666	58.10	67.73	251
480.000	.70795	1.413	.99101	.062661	39.339	30923.7	34878.8	261.097	58.60	68.15	253
490.000	.69240	1.444	.99258	.061163	40.281	31518.5	35562.4	262.506	59.08	68.57	256
500.000	.67757	1.476	.99403	.059741	41.217	32117.7	36250.1	263.895	59.54	68.97	259

Table 15. Continued.

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.911	26.325	.03799	.20484	45.5072	842.523	25.7	139.6	92.890	49.80	73.54	1323
70.000	26.158	.03823	.19705	43.5390	801.433	250.7	365.3	96.190	48.52	72.72	1300
80.000	25.610	.03905	.17611	37.9070	684.437	966.3	1083.5	105.768	45.29	70.90	1228
90.000	25.050	.03992	.16004	33.1751	587.014	1668.3	1788.1	114.061	43.14	70.03	1158
100.000	24.479	.04085	.14740	29.1293	504.493	2363.9	2486.4	121.423	41.73	69.80	1090
110.000	23.895	.04185	.13727	25.6231	433.597	3058.9	3184.5	128.083	40.84	70.01	1023
120.000	23.296	.04293	.12907	22.5512	371.939	3757.9	3886.6	134.194	40.30	70.53	957
130.000	22.681	.04409	.12237	19.8351	317.740	4463.8	4596.1	139.869	40.02	71.31	892
140.000	22.047	.04536	.11690	17.4144	269.652	5178.9	5315.0	145.191	39.97	72.36	829
150.000	21.388	.04675	.11247	15.2407	226.640	5905.4	6045.7	150.227	40.11	73.72	765
160.000	20.699	.04831	.10895	13.2744	187.910	6646.1	6791.1	155.038	40.43	75.45	702
170.000	19.972	.05007	.10627	11.4817	152.843	7405.2	7555.4	159.676	40.90	77.66	639
180.000	19.191	.05211	.10445	9.8320	120.951	8188.6	8344.9	164.193	41.48	80.54	575
190.000	18.336	.05454	.10357	8.2954	91.840	9005.0	9168.6	168.646	42.09	84.43	509
200.000	17.367	.05758	.10388	6.8372	65.167	9867.7	10040.5	173.111	42.61	90.18	440
210.000	16.195	.06175	.10610	5.4040	40.562	10804.0	10989.3	177.734	43.04	100.69	365
220.000	14.527	.06884	.11289	3.8479	17.258	11910.4	12116.9	182.981	44.00	133.43	271
220.052	14.516	.06889	.11296	3.8387	17.136	11917.4	12124.1	183.010	44.01	133.81	270
220.052	2.759	.36249	.59436	.3535	4.518	16771.2	17858.7	209.071	46.65	126.62	131
230.000	2.275	.43947	.68942	.2619	7.976	17501.6	18820.0	213.346	42.83	81.03	145
240.000	2.014	.49650	.74644	.2202	10.407	18076.8	19566.3	216.524	42.41	69.98	155
250.000	1.833	.54552	.78733	.1937	12.422	18602.6	20239.1	219.271	42.69	65.15	163
260.000	1.695	.58999	.81877	.1745	14.197	19107.0	20877.0	221.773	43.25	62.68	170
270.000	1.584	.63148	.84389	.1598	15.810	19602.0	21496.5	224.111	43.96	61.36	176
280.000	1.491	.67085	.86447	.1480	17.307	20093.8	22106.4	226.329	44.74	60.70	181
290.000	1.411	.70862	.88165	.1383	18.715	20585.9	22711.7	228.454	45.56	60.43	186
300.000	1.342	.74514	.89619	.1300	20.053	21080.4	23315.8	230.502	46.39	60.42	191
310.000	1.281	.78066	.90862	.1228	21.335	21578.8	23920.8	232.485	47.23	60.59	196
320.000	1.226	.81536	.91935	.1166	22.571	22081.9	24528.0	234.413	48.06	60.87	200
330.000	1.177	.84937	.92868	.1110	23.768	22590.3	25138.4	236.291	48.88	61.23	204
340.000	1.133	.88280	.93685	.1061	24.931	23104.4	25752.8	238.125	49.68	61.65	208
350.000	1.092	.91573	.94403	.1017	26.066	23624.3	26371.5	239.919	50.47	62.10	212
360.000	1.055	.94823	.95038	.0976	27.176	24150.2	26994.9	241.675	51.23	62.58	216
370.000	1.020	.98036	.95602	.0940	28.264	24682.1	27623.2	243.396	51.97	63.08	219
380.000	.988	1.01215	.96105	.0906	29.333	25220.0	28256.5	245.085	52.69	63.58	223
390.000	.958	1.04364	.96554	.0875	30.385	25763.8	28894.7	246.743	53.38	64.08	226
400.000	.930	1.07487	.96958	.0846	31.421	26313.4	29538.0	248.372	54.05	64.58	229
410.000	.904	1.10587	.97321	.0819	32.444	26868.7	30186.3	249.972	54.70	65.07	233
420.000	.880	1.13665	.97648	.0795	33.455	27429.5	30839.5	251.546	55.32	65.56	236
430.000	.857	1.16724	.97944	.0771	34.454	27995.8	31497.5	253.095	55.92	66.04	239
440.000	.835	1.19766	.98212	.0750	35.443	28567.3	32160.2	254.618	56.50	66.51	242
450.000	.814	1.22791	.98456	.0729	36.423	29143.9	32827.6	256.118	57.06	66.96	245
460.000	.795	1.25802	.98677	.0710	37.394	29725.4	33499.5	257.595	57.60	67.41	248
470.000	.776	1.28800	.98879	.0692	38.357	30311.8	34175.7	259.049	58.12	67.84	251
480.000	.759	1.31785	.99063	.0674	39.314	30902.7	34856.3	260.482	58.62	68.26	253
490.000	.742	1.34759	.99231	.0658	40.263	31498.2	35541.0	261.893	59.10	68.67	256
500.000	.726	1.37723	.99385	.0643	41.207	32098.0	36229.7	263.285	59.56	69.07	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 32 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
66.949	26.326	.03799	.21837	45.5123	843.164	27.3	148.9	92.916	49.79	73.52	1324
70.000	26.161	.03823	.21017	43.5682	802.562	249.6	371.9	96.174	48.52	72.71	1301
80.000	25.612	.03904	.18783	37.9350	685.504	965.0	1089.9	105.752	45.29	70.89	1229
90.000	25.054	.03991	.17069	33.2024	588.035	1666.7	1794.4	114.043	43.14	70.02	1159
100.000	24.483	.04084	.15720	29.1562	505.482	2362.0	2492.7	121.404	41.73	69.79	1091
110.000	23.899	.04184	.14640	25.6498	434.564	3056.7	3190.6	128.062	40.83	69.99	1024
120.000	23.302	.04292	.13764	22.5781	372.894	3755.2	3892.5	134.172	40.30	70.51	958
130.000	22.688	.04408	.13049	19.8624	318.691	4460.7	4601.7	139.845	40.02	71.29	894
140.000	22.054	.04534	.12465	17.4424	270.606	5175.2	5320.3	145.164	39.97	72.33	830
150.000	21.397	.04674	.11991	15.2697	227.606	5901.1	6050.6	150.198	40.11	73.67	767
160.000	20.710	.04829	.11615	13.3048	188.895	6641.0	6795.5	155.005	40.42	75.38	704
170.000	19.985	.05004	.11328	11.5141	153.856	7398.9	7559.0	159.638	40.90	77.57	641
180.000	19.208	.05206	.11132	9.8672	122.003	8180.8	8347.4	164.149	41.47	80.41	577
190.000	18.358	.05447	.11034	8.3348	92.947	8995.0	9169.4	168.592	42.07	84.20	511
200.000	17.397	.05748	.11061	6.8834	66.354	9854.2	10038.1	173.042	42.58	89.77	443
210.000	16.243	.06156	.11283	5.4631	41.881	10783.6	10980.6	177.633	42.98	99.70	369
220.000	14.638	.06831	.11951	3.9468	18.902	11867.4	12086.0	182.778	43.77	128.39	279
222.251	14.118	.07083	.12266	3.5465	13.725	12165.8	12392.5	184.161	44.35	146.53	252
222.251	3.038	.32921	.57008	.3987	3.913	16702.0	17755.5	208.292	47.92	145.76	129
230.000	2.544	.39315	.65787	.3020	6.955	17345.7	18603.7	212.043	43.70	90.31	142
240.000	2.214	.45173	.72440	.2475	9.636	17964.8	19410.3	215.478	42.85	73.98	153
250.000	1.998	.50042	.77038	.2149	11.790	18512.4	20113.7	218.350	42.98	67.50	161
260.000	1.839	.54391	.80513	.1923	13.660	19030.4	20770.9	220.926	43.46	64.27	168
270.000	1.712	.58412	.83263	.1751	15.345	19534.9	21404.0	223.318	44.12	62.54	175
280.000	1.608	.62205	.85502	.1616	16.898	20033.7	22024.3	225.574	44.87	61.61	180
290.000	1.519	.65828	.87362	.1505	18.353	20531.3	22637.8	227.727	45.66	61.17	186
300.000	1.443	.69320	.88931	.1411	19.731	21030.3	23248.6	229.798	46.48	61.03	191
310.000	1.375	.72709	.90269	.1331	21.047	21532.5	23859.1	231.800	47.31	61.10	195
320.000	1.316	.76012	.91421	.1261	22.313	22038.7	24471.1	233.743	48.13	61.31	200
330.000	1.262	.79245	.92421	.1200	23.536	22549.9	25085.7	235.634	48.94	61.62	204
340.000	1.213	.82419	.93295	.1145	24.722	23066.3	25703.7	237.479	49.74	61.99	208
350.000	1.169	.85541	.94063	.1096	25.878	23588.4	26325.7	239.282	50.52	62.41	212
360.000	1.128	.88620	.94742	.1052	27.008	24116.1	26952.0	241.046	51.27	62.86	215
370.000	1.091	.91660	.95344	.1011	28.113	24649.7	27582.9	242.774	52.01	63.32	219
380.000	1.056	.94667	.95880	.0975	29.198	25189.1	28218.5	244.469	52.72	63.80	223
390.000	1.024	.97643	.96359	.0941	30.265	25734.3	28858.9	246.133	53.42	64.28	226
400.000	.994	1.00593	.96788	.0909	31.315	26285.2	29504.2	247.766	54.08	64.77	229
410.000	.966	1.03520	.97175	.0880	32.351	26841.6	30154.2	249.372	54.73	65.25	233
420.000	.940	1.06425	.97523	.0853	33.373	27403.5	30809.1	250.950	55.35	65.72	236
430.000	.915	1.09310	.97838	.0828	34.383	27970.8	31468.7	252.502	55.95	66.19	239
440.000	.891	1.12178	.98123	.0804	35.383	28543.2	32132.9	254.029	56.53	66.65	242
450.000	.869	1.15030	.98381	.0782	36.372	29120.7	32801.6	255.531	57.09	67.10	245
460.000	.848	1.17867	.98616	.0761	37.352	29703.0	33474.8	257.011	57.62	67.53	248
470.000	.829	1.20691	.98831	.0741	38.324	30290.1	34152.2	258.468	58.14	67.96	251
480.000	.810	1.23503	.99026	.0723	39.289	30881.8	34833.9	259.903	58.64	68.37	254
490.000	.792	1.26303	.99204	.0705	40.246	31477.9	35519.6	261.317	59.12	68.77	256
500.000	.775	1.29092	.99368	.0688	41.197	32078.4	36209.3	262.710	59.58	69.16	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 34 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
66.986	26.326	.03799	.23189	45.5175	843.806	29.0	158.2	92.941	49.77	73.50	1324
70.000	26.163	.03822	.22328	43.5974	803.692	248.5	378.4	96.158	48.52	72.70	1302
80.000	25.615	.03904	.19955	37.9630	686.570	963.6	1096.4	105.735	45.29	70.88	1230
90.000	25.057	.03991	.18133	33.2296	589.056	1665.1	1800.8	114.025	43.14	70.01	1160
100.000	24.487	.04084	.16700	29.1830	506.471	2360.1	2498.9	121.384	41.73	69.77	1092
110.000	23.904	.04183	.15552	25.6765	435.531	3054.4	3196.7	128.041	40.83	69.97	1025
120.000	23.307	.04291	.14621	22.6049	373.849	3752.6	3898.5	134.150	40.29	70.49	959
130.000	22.694	.04406	.13861	19.8896	319.641	4457.6	4607.4	139.821	40.02	71.26	895
140.000	22.062	.04533	.13240	17.4703	271.559	5171.6	5325.7	145.138	39.96	72.29	831
150.000	21.406	.04672	.12736	15.2986	228.570	5896.8	6055.6	150.169	40.10	73.62	768
160.000	20.721	.04826	.12334	13.3351	189.878	6635.8	6799.9	154.972	40.42	75.32	705
170.000	19.998	.05001	.12029	11.5463	154.866	7392.7	7562.7	159.601	40.89	77.48	642
180.000	19.224	.05202	.11817	9.9022	123.051	8173.1	8350.0	164.105	41.46	80.27	579
190.000	18.379	.05441	.11710	8.3739	94.048	8985.2	9170.2	168.539	42.05	83.99	514
200.000	17.427	.05738	.11732	6.9290	67.532	9840.9	10036.0	172.974	42.55	89.37	446
210.000	16.290	.06139	.11954	5.5209	43.183	10763.7	10972.4	177.536	42.92	98.77	374
220.000	14.740	.06784	.12610	4.0390	20.484	11827.6	12058.3	182.590	43.57	124.22	286
224.346	13.696	.07302	.13309	3.2624	10.673	12416.8	12665.1	185.317	44.84	164.11	234
224.346	3.346	.29884	.54470	.4500	3.307	16617.0	17633.1	207.462	49.33	172.00	127
230.000	2.856	.35012	.62249	.3510	5.857	17165.7	18356.1	210.643	44.81	104.09	138
240.000	2.430	.41147	.70109	.2780	8.841	17844.3	19243.3	214.423	43.35	78.86	150
250.000	2.173	.46025	.75283	.2380	11.148	18417.8	19982.6	217.442	43.28	70.19	159
260.000	1.988	.50304	.79117	.2111	13.118	18951.1	20661.5	220.105	43.68	66.03	167
270.000	1.844	.54220	.82118	.1912	14.877	19466.0	21309.5	222.551	44.29	63.80	173
280.000	1.727	.57890	.84545	.1757	16.488	19972.5	21940.7	224.847	45.00	62.57	179
290.000	1.629	.61381	.86552	.1631	17.991	20476.0	22562.9	227.030	45.77	61.94	185
300.000	1.545	.64734	.88238	.1526	19.409	20979.7	23180.7	229.125	46.58	61.66	190
310.000	1.471	.67979	.89672	.1437	20.759	21485.7	23797.0	231.146	47.39	61.63	195
320.000	1.406	.71137	.90905	.1359	22.054	21995.3	24413.9	233.105	48.20	61.77	199
330.000	1.347	.74222	.91973	.1291	23.304	22509.2	25032.8	235.009	49.00	62.01	203
340.000	1.295	.77246	.92906	.1231	24.514	23028.1	25654.5	236.865	49.79	62.34	207
350.000	1.247	.80219	.93724	.1177	25.692	23552.3	26279.7	238.677	50.57	62.72	211
360.000	1.203	.83146	.94446	.1129	26.840	24082.0	26909.0	240.449	51.32	63.13	215
370.000	1.162	.86035	.95086	.1085	27.963	24617.3	27542.5	242.185	52.05	63.57	219
380.000	1.125	.88889	.95655	.1044	29.064	25158.3	28180.5	243.887	52.76	64.03	222
390.000	1.090	.91714	.96164	.1007	30.146	25704.8	28823.1	245.556	53.45	64.49	226
400.000	1.058	.94511	.96620	.0973	31.210	26257.0	29470.4	247.194	54.12	64.96	229
410.000	1.028	.97285	.97029	.0942	32.258	26814.6	30122.3	248.804	54.76	65.42	232
420.000	1.000	1.00037	.97399	.0912	33.292	27377.6	30778.8	250.386	55.38	65.89	236
430.000	.973	1.02769	.97732	.0885	34.313	27945.8	31440.0	251.942	55.98	66.34	239
440.000	.948	1.05484	.98034	.0859	35.323	28519.2	32105.6	253.472	56.56	66.79	242
450.000	.924	1.08183	.98308	.0835	36.322	29097.5	32775.7	254.978	57.11	67.23	245
460.000	.902	1.10867	.98557	.0813	37.311	29680.7	33450.2	256.460	57.65	67.66	248
470.000	.881	1.13537	.98783	.0791	38.292	30268.6	34128.8	257.920	58.16	68.07	251
480.000	.861	1.16195	.98990	.0771	39.264	30861.0	34811.6	259.357	58.66	68.48	254
490.000	.841	1.18842	.99178	.0752	40.229	31457.8	35498.4	260.773	59.14	68.88	256
500.000	.823	1.21478	.99351	.0734	41.187	32058.8	36189.1	262.169	59.60	69.26	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 36 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.023	26.326	.03798	.24539	45.5227	844.447	30.7	167.5	92.966	49.75	73.49	1325
70.000	26.166	.03822	.23640	43.6266	804.822	247.4	384.9	96.142	48.52	72.70	1303
80.000	25.618	.03903	.21126	37.9910	687.637	962.3	1102.8	105.718	45.29	70.87	1231
90.000	25.060	.03990	.19197	33.2568	590.077	1663.5	1807.2	114.007	43.14	70.00	1161
100.000	24.491	.04083	.17679	29.2098	507.459	2358.2	2505.2	121.365	41.73	69.76	1093
110.000	23.909	.04183	.16463	25.7032	436.498	3052.2	3202.8	128.021	40.83	69.96	1026
120.000	23.313	.04290	.15477	22.6317	374.802	3749.9	3904.4	134.128	40.29	70.47	960
130.000	22.700	.04405	.14672	19.9168	320.591	4454.5	4613.1	139.796	40.02	71.23	896
140.000	22.069	.04531	.14014	17.4981	272.512	5167.9	5331.1	145.111	39.96	72.26	833
150.000	21.414	.04670	.13479	15.3274	229.533	5892.5	6060.6	150.140	40.10	73.58	770
160.000	20.731	.04824	.13053	13.3653	190.859	6630.6	6804.3	154.940	40.41	75.26	707
170.000	20.011	.04997	.12728	11.5784	155.874	7386.5	7566.4	159.563	40.88	77.39	644
180.000	19.240	.05197	.12502	9.9370	124.096	8165.5	8352.6	164.061	41.45	80.14	581
190.000	18.401	.05435	.12385	8.4126	95.144	8975.4	9171.1	168.487	42.03	83.77	516
200.000	17.456	.05729	.12402	6.9740	68.701	9827.8	10034.1	172.907	42.52	88.99	449
210.000	16.336	.06122	.12621	5.5773	44.469	10744.3	10964.6	177.441	42.86	97.91	378
220.000	14.834	.06741	.13268	4.1256	22.016	11790.5	12033.1	182.414	43.40	120.69	293
226.345	13.238	.07554	.14451	2.9823	7.955	12675.0	12947.0	186.503	45.57	190.00	216
226.345	3.694	.27069	.51781	.5093	2.702	16512.1	17486.6	206.559	50.94	210.16	125
230.000	3.238	.30886	.58144	.4138	4.652	16948.7	18060.6	209.072	46.32	127.10	134
240.000	2.668	.37486	.67628	.3125	8.022	17713.5	19063.0	213.344	43.90	84.96	147
250.000	2.358	.42416	.73462	.2631	10.497	18318.4	19845.4	216.539	43.61	73.26	157
260.000	2.144	.46650	.77686	.2312	12.573	18869.1	20548.5	219.298	43.91	67.96	165
270.000	1.981	.50481	.80953	.2082	14.408	19395.4	21212.7	221.805	44.46	65.16	172
280.000	1.850	.54047	.83576	.1905	16.078	19910.1	21855.8	224.144	45.14	63.60	178
290.000	1.741	.57422	.85733	.1763	17.629	20419.8	22487.0	226.359	45.88	62.74	184
300.000	1.649	.60654	.87540	.1645	19.087	20928.5	23112.1	228.478	46.67	62.32	189
310.000	1.568	.63773	.89073	.1546	20.472	21438.6	23734.4	230.519	47.47	62.18	194
320.000	1.497	.66802	.90387	.1460	21.797	21951.5	24356.4	232.494	48.27	62.24	198
330.000	1.434	.69757	.91524	.1385	23.073	22468.4	24979.6	234.412	49.07	62.42	203
340.000	1.376	.72648	.92515	.1319	24.307	22989.8	25605.1	236.279	49.85	62.69	207
350.000	1.325	.75487	.93384	.1260	25.505	23516.2	26233.7	238.101	50.62	63.03	211
360.000	1.277	.78281	.94150	.1207	26.673	24047.8	26865.9	239.882	51.37	63.42	215
370.000	1.234	.81035	.94828	.1159	27.814	24584.8	27502.1	241.625	52.10	63.83	219
380.000	1.194	.83755	.95431	.1115	28.931	25127.4	28142.5	243.333	52.80	64.26	222
390.000	1.157	.86443	.95970	.1075	30.027	25675.4	28787.3	245.007	53.49	64.70	226
400.000	1.122	.89105	.96452	.1038	31.105	26228.8	29436.6	246.651	54.15	65.15	229
410.000	1.090	.91743	.96885	.1004	32.165	26787.6	30090.4	248.265	54.79	65.60	232
420.000	1.060	.94359	.97275	.0972	33.211	27351.7	30748.6	249.852	55.41	66.05	236
430.000	1.031	.96955	.97627	.0942	34.243	27920.9	31411.3	251.411	56.01	66.49	239
440.000	1.005	.99534	.97946	.0915	35.263	28495.2	32078.5	252.945	56.58	66.93	242
450.000	.979	1.02097	.98235	.0889	36.272	29074.5	32749.9	254.454	57.14	67.36	245
460.000	.956	1.04644	.98497	.0865	37.270	29658.4	33425.6	255.939	57.67	67.78	248
470.000	.933	1.07179	.98736	.0842	38.259	30247.1	34105.5	257.401	58.19	68.19	251
480.000	.912	1.09700	.98954	.0820	39.240	30840.2	34789.4	258.841	58.68	68.59	254
490.000	.891	1.12211	.99153	.0800	40.212	31437.7	35477.3	260.259	59.16	68.98	256
500.000	.872	1.14711	.99335	.0781	41.177	32039.4	36169.0	261.656	59.62	69.36	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 38 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.061	26.327	.03798	.25887	45.5279	845.089	32.4	176.8	92.992	49.74	73.47	1325
70.000	26.168	.03821	.24950	43.6557	805.951	246.3	391.5	96.126	48.52	72.69	1304
80.000	25.621	.03903	.22298	38.0189	688.703	961.0	1109.3	105.701	45.29	70.86	1231
90.000	25.064	.03990	.20261	33.2840	591.097	1661.9	1813.5	113.989	43.13	69.99	1162
100.000	24.495	.04083	.18658	29.2366	508.447	2356.3	2511.4	121.346	41.73	69.75	1094
110.000	23.913	.04182	.17375	25.7299	437.463	3049.9	3208.9	128.000	40.83	69.94	1027
120.000	23.318	.04289	.16333	22.6585	375.755	3747.3	3910.3	134.105	40.29	70.45	961
130.000	22.706	.04404	.15483	19.9440	321.539	4451.4	4618.7	139.772	40.02	71.21	897
140.000	22.076	.04530	.14788	17.5259	273.463	5164.3	5336.5	145.085	39.96	72.22	834
150.000	21.423	.04668	.14222	15.3561	230.494	5888.2	6065.5	150.111	40.09	73.53	771
160.000	20.742	.04821	.13772	13.3954	191.838	6625.5	6808.7	154.907	40.41	75.19	709
170.000	20.023	.04994	.13426	11.6104	156.879	7380.3	7570.1	159.526	40.87	77.31	646
180.000	19.256	.05193	.13186	9.9716	125.138	8157.9	8355.2	164.018	41.44	80.01	583
190.000	18.422	.05428	.13058	8.4511	96.235	8965.8	9172.1	168.435	42.01	83.57	519
200.000	17.485	.05719	.13069	7.0184	69.863	9815.0	10032.3	172.841	42.50	88.62	452
210.000	16.380	.06105	.13287	5.6325	45.740	10725.4	10957.4	177.348	42.80	97.09	382
220.000	14.922	.06702	.13922	4.2075	23.504	11755.5	12010.2	182.249	43.25	117.67	300
228.255	12.726	.07858	.15734	2.7010	5.555	12948.6	13247.2	187.757	46.72	231.85	197
228.255	4.097	.24410	.48876	.5795	2.097	16381.3	17308.9	205.551	52.88	270.67	122
230.000	3.745	.26699	.53054	.5027	3.267	16664.9	17679.5	207.164	48.75	175.60	128
240.000	2.931	.34118	.64971	.3521	7.176	17570.1	18866.5	212.227	44.52	92.78	145
250.000	2.554	.39149	.71570	.2905	9.838	18213.5	19701.2	215.636	43.96	76.82	155
260.000	2.306	.43360	.76219	.2527	12.025	18784.1	20431.8	218.503	44.14	70.10	163
270.000	2.122	.47124	.79767	.2261	13.938	19323.0	21113.7	221.077	44.63	66.62	171
280.000	1.976	.50601	.82594	.2060	15.669	19846.4	21769.3	223.461	45.28	64.68	177
290.000	1.856	.53876	.84907	.1900	17.268	20362.8	22410.1	225.710	46.00	63.59	183
300.000	1.754	.57001	.86837	.1768	18.766	20876.7	23042.7	227.855	46.76	63.01	188
310.000	1.666	.60008	.88470	.1658	20.186	21391.0	23671.3	229.916	47.55	62.75	193
320.000	1.589	.62923	.89868	.1563	21.541	21907.5	24298.5	231.908	48.34	62.72	198
330.000	1.521	.65760	.91075	.1481	22.843	22427.3	24926.2	233.839	49.13	62.83	202
340.000	1.459	.68534	.92125	.1409	24.101	22951.3	25555.6	235.718	49.91	63.06	207
350.000	1.403	.71254	.93044	.1344	25.320	23479.9	26187.6	237.550	50.67	63.35	211
360.000	1.353	.73928	.93854	.1287	26.507	24013.5	26822.8	239.339	51.41	63.70	215
370.000	1.306	.76562	.94571	.1234	27.665	24552.3	27461.7	241.090	52.14	64.08	218
380.000	1.263	.79161	.95208	.1187	28.798	25096.5	28104.6	242.804	52.84	64.49	222
390.000	1.224	.81729	.95776	.1143	29.909	25645.9	28751.6	244.484	53.53	64.91	226
400.000	1.187	.84269	.96284	.1104	31.000	26200.6	29402.9	246.133	54.19	65.35	229
410.000	1.152	.86785	.96741	.1067	32.074	26760.7	30058.5	247.752	54.82	65.78	232
420.000	1.120	.89280	.97152	.1033	33.131	27325.8	30718.5	249.343	55.44	66.21	236
430.000	1.090	.91754	.97523	.1001	34.174	27896.1	31382.8	250.906	56.04	66.65	239
440.000	1.061	.94211	.97858	.0971	35.204	28471.4	32051.4	252.443	56.61	67.07	242
450.000	1.035	.96652	.98162	.0943	36.223	29051.5	32724.2	253.955	57.16	67.49	245
460.000	1.009	.99078	.98439	.0917	37.230	29636.3	33401.2	255.443	57.70	67.90	248
470.000	.985	1.01490	.98690	.0893	38.227	30225.7	34082.3	256.908	58.21	68.31	251
480.000	.963	1.03890	.98919	.0870	39.216	30819.5	34767.3	258.350	58.70	68.70	254
490.000	.941	1.06278	.99128	.0848	40.196	31417.7	35456.2	259.770	59.18	69.08	257
500.000	.920	1.08656	.99319	.0827	41.168	32020.0	36148.9	261.170	59.64	69.45	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 40 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.098	26.327	.03798	.27234	45.5331	845.730	34.1	186.1	93.017	49.72	73.45	1326
70.000	26.170	.03821	.26261	43.6848	807.081	245.2	398.0	96.111	48.52	72.68	1304
80.000	25.624	.03903	.23469	38.0468	689.769	959.7	1115.8	105.684	45.29	70.86	1232
90.000	25.067	.03989	.21324	33.3111	592.117	1660.3	1819.9	113.971	43.13	69.98	1163
100.000	24.499	.04082	.19637	29.2633	509.434	2354.4	2517.7	121.327	41.73	69.73	1095
110.000	23.918	.04181	.18286	25.7565	438.429	3047.7	3215.0	127.979	40.83	69.92	1028
120.000	23.323	.04288	.17189	22.6852	376.708	3744.7	3916.2	134.083	40.29	70.42	963
130.000	22.713	.04403	.16293	19.9711	322.487	4448.3	4624.4	139.748	40.01	71.18	898
140.000	22.083	.04528	.15561	17.5536	274.413	5160.7	5341.8	145.059	39.95	72.19	835
150.000	21.432	.04666	.14965	15.3848	231.454	5883.9	6070.5	150.082	40.09	73.48	773
160.000	20.752	.04819	.14489	13.4254	192.815	6620.4	6813.2	154.875	40.40	75.13	710
170.000	20.036	.04991	.14124	11.6422	157.882	7374.1	7573.8	159.490	40.86	77.22	648
180.000	19.272	.05189	.13868	10.0060	126.176	8150.3	8357.9	163.975	41.42	79.88	585
190.000	18.442	.05422	.13730	8.4892	97.322	8956.2	9173.1	168.383	42.00	83.36	521
200.000	17.514	.05710	.13735	7.0623	71.016	9802.3	10030.7	172.775	42.47	88.26	455
210.000	16.423	.06089	.13949	5.6865	46.996	10707.0	10950.5	177.257	42.75	96.32	386
220.000	15.004	.06665	.14574	4.2855	24.955	11722.5	11989.1	182.092	43.11	115.03	306
230.000	12.181	.08210	.17172	2.4378	3.672	13227.8	13556.2	189.030	48.35	299.24	178
230.084	12.124	.08248	.17246	2.4098	3.466	13252.5	13582.5	189.150	48.59	310.83	176
230.084	4.582	.21825	.45635	.6659	1.490	16213.1	17086.1	204.378	55.38	381.44	120
240.000	3.228	.30978	.62097	.3981	6.303	17410.5	18649.6	211.053	45.24	103.17	142
250.000	2.765	.36169	.69601	.3206	9.172	18102.4	19549.1	214.728	44.34	80.98	153
260.000	2.477	.40379	.74715	.2757	11.475	18695.8	20311.0	217.717	44.39	72.47	162
270.000	2.268	.44091	.78562	.2450	13.469	19248.5	21012.2	220.364	44.82	68.20	169
280.000	2.106	.47493	.81601	.2221	15.260	19781.5	21681.2	222.798	45.42	65.83	176
290.000	1.973	.50680	.84074	.2041	16.908	20304.9	22332.1	225.082	46.11	64.47	182
300.000	1.862	.53710	.86130	.1895	18.447	20824.3	22972.7	227.253	46.86	63.72	187
310.000	1.766	.56618	.87865	.1773	19.901	21343.0	23607.7	229.336	47.63	63.34	193
320.000	1.683	.59430	.89347	.1669	21.286	21863.1	24240.3	231.344	48.41	63.21	197
330.000	1.609	.62163	.90624	.1579	22.615	22386.0	24872.5	233.289	49.19	63.26	202
340.000	1.542	.64831	.91734	.1500	23.896	22912.6	25505.8	235.180	49.96	63.43	206
350.000	1.483	.67445	.92705	.1430	25.136	23443.5	26141.3	237.022	50.72	63.68	210
360.000	1.428	.70011	.93559	.1368	26.342	23979.2	26779.6	238.820	51.46	63.99	214
370.000	1.379	.72536	.94314	.1311	27.518	24519.8	27421.3	240.578	52.18	64.34	218
380.000	1.333	.75026	.94985	.1260	28.667	25065.5	28066.6	242.299	52.88	64.73	222
390.000	1.291	.77485	.95583	.1213	29.792	25616.4	28715.9	243.985	53.56	65.13	225
400.000	1.251	.79917	.96118	.1170	30.897	26172.5	29369.2	245.640	54.22	65.54	229
410.000	1.215	.82324	.96598	.1130	31.982	26733.7	30026.7	247.263	54.86	65.96	232
420.000	1.181	.84709	.97029	.1094	33.052	27300.0	30688.4	248.858	55.47	66.38	236
430.000	1.148	.87074	.97419	.1060	34.106	27871.3	31354.3	250.425	56.06	66.80	239
440.000	1.118	.89421	.97771	.1028	35.146	28447.5	32024.4	251.965	56.64	67.22	242
450.000	1.090	.91752	.98091	.0998	36.174	29028.5	32698.6	253.480	57.19	67.63	245
460.000	1.063	.94068	.98380	.0970	37.190	29614.1	33376.9	254.971	57.72	68.03	248
470.000	1.038	.96371	.98644	.0944	38.196	30204.3	34059.1	256.438	58.23	68.42	251
480.000	1.014	.98661	.98884	.0920	39.192	30798.9	34745.3	257.883	58.73	68.81	254
490.000	.991	1.00940	.99104	.0896	40.180	31397.7	35435.3	259.305	59.20	69.19	257
500.000	.969	1.03208	.99304	.0874	41.159	32000.7	36129.0	260.707	59.66	69.55	259

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 42 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.135	26.327	.03798	.28580	45.5383	846.372	35.8	195.3	93.042	49.70	73.43	1327
70.000	26.173	.03821	.27572	43.7139	808.211	244.1	404.6	96.095	48.52	72.68	1305
80.000	25.627	.03902	.24639	38.0747	690.835	958.3	1122.2	105.667	45.29	70.85	1233
90.000	25.070	.03989	.22388	33.3383	593.137	1658.7	1826.3	113.953	43.13	69.96	1164
100.000	24.503	.04081	.20616	29.2900	510.421	2352.5	2523.9	121.308	41.73	69.72	1095
110.000	23.922	.04180	.19196	25.7830	439.394	3045.5	3221.1	127.959	40.83	69.91	1029
120.000	23.328	.04287	.18045	22.7119	377.660	3742.1	3922.1	134.061	40.29	70.40	964
130.000	22.719	.04402	.17103	19.9981	323.434	4445.2	4630.1	139.724	40.01	71.15	900
140.000	22.091	.04527	.16333	17.5813	275.363	5157.1	5347.2	145.032	39.95	72.15	836
150.000	21.440	.04664	.15707	15.4134	232.413	5879.6	6075.5	150.053	40.09	73.44	774
160.000	20.762	.04816	.15206	13.4553	193.791	6615.4	6817.7	154.842	40.40	75.07	712
170.000	20.049	.04988	.14821	11.6739	158.882	7368.0	7577.5	159.453	40.86	77.13	649
180.000	19.288	.05185	.14550	10.0402	127.211	8142.8	8360.6	163.933	41.41	79.75	587
190.000	18.463	.05416	.14400	8.5270	98.403	8946.8	9174.3	168.332	41.98	83.17	523
200.000	17.542	.05701	.14398	7.1057	72.163	9789.8	10029.2	172.711	42.44	87.92	458
210.000	16.465	.06073	.14609	5.7395	48.240	10689.0	10944.0	177.168	42.70	95.60	389
220.000	15.082	.06630	.15224	4.3600	26.374	11691.2	11969.7	181.943	42.99	112.70	312
230.000	12.605	.07933	.17424	2.6723	5.858	13077.0	13410.2	188.325	46.74	223.20	198
231.834	11.348	.08813	.19202	2.0897	1.699	13623.8	13993.9	190.858	51.84	514.63	154
231.834	5.216	.19170	.41770	.7808	.875	15979.8	16784.9	202.896	59.11	652.83	116
240.000	3.570	.28007	.58949	.4529	5.397	17229.6	18405.9	209.792	46.09	117.63	139
250.000	2.991	.33430	.67549	.3538	8.500	17984.2	19388.2	213.806	44.74	85.88	151
260.000	2.655	.37663	.73173	.3003	10.925	18604.0	20185.8	216.936	44.65	75.10	160
270.000	2.419	.41337	.77336	.2649	13.001	19172.0	20908.1	219.662	45.00	69.91	168
280.000	2.238	.44674	.80596	.2390	14.854	19715.2	21591.6	222.148	45.56	67.05	175
290.000	2.093	.47785	.83235	.2189	16.551	20246.1	22253.1	224.470	46.23	65.40	181
300.000	1.971	.50730	.85420	.2027	18.131	20771.2	22901.9	226.669	46.96	64.45	187
310.000	1.867	.53549	.87258	.1892	19.619	21294.5	23543.6	228.773	47.72	63.94	192
320.000	1.777	.56269	.88825	.1778	21.034	21818.4	24181.7	230.799	48.49	63.72	197
330.000	1.698	.58908	.90173	.1680	22.388	22344.4	24818.6	232.759	49.26	63.69	201
340.000	1.627	.61481	.91343	.1594	23.693	22873.8	25456.0	234.662	50.02	63.80	206
350.000	1.563	.63998	.92365	.1518	24.954	23407.1	26095.0	236.514	50.77	64.01	210
360.000	1.505	.66467	.93264	.1450	26.179	23944.8	26736.4	238.321	51.51	64.28	214
370.000	1.451	.68894	.94058	.1389	27.371	24487.2	27380.8	240.087	52.22	64.61	218
380.000	1.403	.71286	.94763	.1334	28.536	25034.6	28028.6	241.814	52.92	64.96	222
390.000	1.358	.73647	.95390	.1284	29.676	25587.0	28680.1	243.506	53.60	65.34	225
400.000	1.316	.75980	.95951	.1238	30.794	26144.4	29335.5	245.166	54.25	65.74	229
410.000	1.277	.78288	.96455	.1195	31.892	26706.8	29994.9	246.794	54.89	66.14	232
420.000	1.241	.80574	.96908	.1156	32.973	27274.3	30658.4	248.393	55.50	66.55	235
430.000	1.207	.82840	.97316	.1119	34.038	27846.6	31325.9	249.963	56.09	66.95	239
440.000	1.175	.85088	.97685	.1085	35.088	28423.8	31997.4	251.507	56.66	67.36	242
450.000	1.145	.87320	.98019	.1054	36.125	29005.6	32673.0	253.025	57.21	67.76	245
460.000	1.117	.89536	.98323	.1024	37.150	29592.1	33352.6	254.519	57.74	68.15	248
470.000	1.090	.91740	.98599	.0996	38.165	30183.0	34036.1	255.989	58.25	68.54	251
480.000	1.065	.93930	.98850	.0970	39.169	30778.3	34723.4	257.436	58.75	68.92	254
490.000	1.040	.96110	.99080	.0945	40.164	31377.8	35414.4	258.861	59.22	69.29	257
500.000	1.018	.98278	.99289	.0922	41.150	31981.4	36109.1	260.264	59.68	69.65	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 43 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.154	26.328	.03798	.29252	45.5409	846.693	36.7	200.0	93.055	49.70	73.43	1327
70.000	26.174	.03821	.28227	43.7285	808.775	243.5	407.8	96.087	48.52	72.67	1306
80.000	25.628	.03902	.25224	38.0887	691.368	957.7	1125.5	105.659	45.28	70.84	1234
90.000	25.072	.03988	.22919	33.3518	593.647	1657.9	1829.5	113.944	43.13	69.96	1164
100.000	24.505	.04081	.21105	29.3034	510.915	2351.5	2527.0	121.298	41.73	69.71	1096
110.000	23.925	.04180	.19651	25.7963	439.876	3044.4	3224.1	127.949	40.83	69.90	1029
120.000	23.331	.04286	.18472	22.7252	378.136	3740.8	3925.1	134.050	40.29	70.39	964
130.000	22.722	.04401	.17508	20.0116	323.907	4443.7	4633.0	139.712	40.01	71.14	900
140.000	22.094	.04526	.16719	17.5951	275.837	5155.3	5349.9	145.019	39.95	72.14	837
150.000	21.445	.04663	.16078	15.4276	232.892	5877.5	6078.0	150.038	40.08	73.42	775
160.000	20.767	.04815	.15564	13.4702	194.278	6612.9	6819.9	154.826	40.39	75.04	712
170.000	20.055	.04986	.15169	11.6897	159.382	7365.0	7579.4	159.435	40.85	77.09	650
180.000	19.296	.05182	.14890	10.0572	127.727	8139.1	8362.0	163.912	41.41	79.69	588
190.000	18.473	.05413	.14735	8.5458	98.942	8942.1	9174.9	168.307	41.97	83.07	525
200.000	17.555	.05696	.14730	7.1272	72.733	9783.6	10028.5	172.679	42.43	87.75	460
210.000	16.486	.06066	.14938	5.7656	48.857	10680.1	10940.9	177.125	42.68	95.25	391
220.000	15.120	.06614	.15548	4.3962	27.072	11676.1	11960.5	181.872	42.93	111.63	314
230.000	12.763	.07835	.17618	2.7635	6.830	13019.8	13356.7	188.058	46.27	204.15	206
232.680	10.814	.09247	.20554	1.9021	.948	13868.3	14265.9	191.990	54.28	813.56	141
232.680	5.649	.17701	.39343	.8598	.557	15813.8	16575.0	201.913	62.19	1029.32	113
240.000	3.764	.26566	.57246	.4846	4.932	17128.8	18271.2	209.116	46.57	127.23	137
250.000	3.111	.32141	.66489	.3717	8.163	17922.1	19304.1	213.338	44.95	88.66	150
260.000	2.748	.36392	.72388	.3134	10.651	18556.6	20121.5	216.546	44.79	76.53	160
270.000	2.497	.40052	.76716	.2753	12.768	19132.9	20855.1	219.315	45.10	70.81	168
280.000	2.306	.43361	.80090	.2477	14.652	19681.6	21546.1	221.829	45.64	67.69	174
290.000	2.153	.46437	.82813	.2265	16.373	20216.4	22213.2	224.170	46.29	65.88	181
300.000	2.027	.49343	.85063	.2094	17.973	20744.5	22866.2	226.384	47.01	64.83	186
310.000	1.919	.52122	.86954	.1953	19.479	21270.1	23511.3	228.499	47.76	64.25	192
320.000	1.825	.54799	.88563	.1834	20.908	21795.9	24152.2	230.534	48.52	63.98	197
330.000	1.742	.57394	.89947	.1731	22.276	22323.6	24791.5	232.501	49.29	63.91	201
340.000	1.669	.59923	.91148	.1642	23.592	22854.3	25431.0	234.410	50.05	63.99	206
350.000	1.603	.62395	.92196	.1563	24.864	23388.8	26071.7	236.267	50.80	64.18	210
360.000	1.543	.64818	.93117	.1492	26.098	23927.5	26714.7	238.079	51.53	64.43	214
370.000	1.488	.67201	.93930	.1429	27.299	24470.9	27360.5	239.848	52.24	64.74	218
380.000	1.438	.69547	.94652	.1371	28.471	25019.1	28009.6	241.579	52.94	65.08	222
390.000	1.392	.71862	.95294	.1319	29.618	25572.2	28662.3	243.274	53.62	65.45	225
400.000	1.349	.74149	.95869	.1272	30.743	26130.3	29318.7	244.936	54.27	65.84	229
410.000	1.309	.76411	.96384	.1228	31.847	26693.4	29979.1	246.567	54.90	66.23	232
420.000	1.271	.78651	.96847	.1187	32.934	27261.4	30643.4	248.167	55.52	66.63	235
430.000	1.237	.80871	.97265	.1149	34.004	27834.2	31311.7	249.740	56.11	67.03	239
440.000	1.204	.83073	.97642	.1114	35.059	28411.9	31984.0	251.286	56.68	67.43	242
450.000	1.173	.85258	.97984	.1082	36.101	28994.2	32660.3	252.805	57.23	67.83	245
460.000	1.144	.87429	.98294	.1051	37.131	29581.1	33340.5	254.300	57.76	68.22	248
470.000	1.116	.89586	.98576	.1022	38.149	30172.4	34024.6	255.771	58.27	68.60	251
480.000	1.090	.91730	.98833	.0995	39.157	30768.1	34712.5	257.220	58.76	68.97	254
490.000	1.065	.93863	.99068	.0970	40.156	31367.9	35404.0	258.646	59.23	69.34	257
500.000	1.042	.95986	.99282	.0946	41.146	31971.8	36099.2	260.050	59.69	69.70	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 44.60714 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.183	26.328	.03798	.30331	45.5450	847.209	38.0	207.4	93.075	49.68	73.41	1327
70.000	26.176	.03820	.29280	43.7519	809.683	242.7	413.1	96.074	48.52	72.67	1306
80.000	25.631	.03902	.26165	38.1111	692.224	956.6	1130.6	105.646	45.28	70.84	1234
90.000	25.075	.03988	.23773	33.3736	594.466	1656.7	1834.6	113.930	43.13	69.95	1165
100.000	24.508	.04080	.21891	29.3248	511.708	2350.0	2532.1	121.283	41.72	69.70	1097
110.000	23.928	.04179	.20383	25.8176	440.651	3042.6	3229.0	127.932	40.83	69.89	1030
120.000	23.335	.04285	.19159	22.7466	378.900	3738.7	3929.8	134.032	40.28	70.38	965
130.000	22.727	.04400	.18159	20.0333	324.667	4441.3	4637.5	139.693	40.01	71.12	901
140.000	22.100	.04525	.17340	17.6172	276.598	5152.4	5354.3	144.998	39.95	72.11	838
150.000	21.452	.04662	.16673	15.4505	233.661	5874.1	6082.0	150.015	40.08	73.38	776
160.000	20.776	.04813	.16140	13.4941	195.060	6608.8	6823.5	154.800	40.39	74.99	714
170.000	20.065	.04984	.15728	11.7150	160.183	7360.1	7582.5	159.405	40.85	77.02	652
180.000	19.308	.05179	.15436	10.0845	128.555	8133.2	8364.2	163.878	41.40	79.59	589
190.000	18.489	.05409	.15272	8.5758	99.806	8934.6	9175.9	168.256	41.96	82.92	527
200.000	17.577	.05689	.15261	7.1614	73.646	9773.7	10027.5	172.628	42.41	87.49	462
210.000	16.518	.06054	.15466	5.8070	49.842	10666.1	10936.2	177.055	42.64	94.71	394
220.000	15.178	.06589	.16067	4.4528	28.179	11652.5	11946.4	181.759	42.84	110.04	319
230.000	12.976	.07707	.17977	2.8907	8.295	12941.9	13285.6	187.695	45.72	183.33	216
240.000	4.118	.24282	.54280	.5437	4.163	16947.6	18030.7	207.944	47.46	147.94	135
250.000	3.315	.30165	.64735	.4026	7.620	17817.6	19163.2	212.574	45.31	93.70	148
260.000	2.902	.34460	.71106	.3353	10.211	18478.4	20015.6	215.920	45.01	79.00	158
270.000	2.625	.38102	.75710	.2926	12.396	19068.9	20768.5	218.762	45.26	72.33	167
280.000	2.417	.41372	.79271	.2622	14.330	19626.8	21472.2	221.322	45.76	68.75	174
290.000	2.252	.44396	.82132	.2390	16.090	20168.1	22148.4	223.695	46.39	66.67	180
300.000	2.117	.47244	.84488	.2205	17.722	20701.1	22808.5	225.933	47.09	65.45	186
310.000	2.002	.49961	.86464	.2053	19.255	21230.6	23459.2	228.066	47.82	64.76	191
320.000	1.902	.52574	.88143	.1924	20.708	21759.6	24104.7	230.116	48.58	64.40	196
330.000	1.815	.55103	.89584	.1815	22.097	22289.9	24747.9	232.095	49.34	64.27	201
340.000	1.737	.57565	.90834	.1719	23.431	22822.9	25390.7	234.014	50.09	64.30	205
350.000	1.668	.59969	.91923	.1635	24.719	23359.3	26034.4	235.880	50.84	64.45	210
360.000	1.605	.62324	.92880	.1560	25.968	23899.8	26679.9	237.698	51.57	64.67	214
370.000	1.547	.64638	.93725	.1493	27.183	24444.7	27328.0	239.474	52.28	64.95	218
380.000	1.494	.66915	.94474	.1432	28.368	24994.2	27979.1	241.210	52.97	65.28	221
390.000	1.446	.69161	.95140	.1377	29.526	25548.5	28633.6	242.910	53.65	65.63	225
400.000	1.401	.71378	.95736	.1327	30.662	26107.7	29291.7	244.576	54.30	66.00	229
410.000	1.359	.73571	.96270	.1280	31.776	26671.8	29953.6	246.211	54.93	66.38	232
420.000	1.320	.75741	.96750	.1238	32.872	27240.7	30619.3	247.815	55.54	66.77	235
430.000	1.284	.77891	.97182	.1198	33.950	27814.4	31288.9	249.390	56.13	67.16	239
440.000	1.250	.80023	.97573	.1161	35.014	28392.8	31962.4	250.939	56.70	67.55	242
450.000	1.217	.82139	.97927	.1127	36.063	28975.8	32639.8	252.461	57.25	67.93	245
460.000	1.187	.84240	.98249	.1095	37.100	29563.4	33321.1	253.958	57.77	68.32	248
470.000	1.158	.86327	.98541	.1064	38.125	30155.4	34006.1	255.431	58.28	68.69	251
480.000	1.131	.88401	.98807	.1036	39.139	30751.6	34694.9	256.882	58.77	69.06	254
490.000	1.105	.90464	.99049	.1009	40.144	31352.0	35387.4	258.309	59.25	69.42	257
500.000	1.081	.92517	.99270	.0984	41.139	31956.5	36083.4	259.715	59.70	69.78	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 46 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.209	26.328	.03798	.31266	45.5486	847.656	39.2	213.9	93.092	49.67	73.40	1328
70.000	26.178	.03820	.30192	43.7721	810.470	241.9	417.6	96.063	48.52	72.66	1307
80.000	25.633	.03901	.26980	38.1304	692.967	955.7	1135.1	105.634	45.28	70.83	1235
90.000	25.077	.03988	.24513	33.3925	595.176	1655.6	1839.0	113.918	43.13	69.94	1165
100.000	24.510	.04080	.22572	29.3434	512.395	2348.7	2536.4	121.270	41.72	69.70	1097
110.000	23.931	.04179	.21016	25.8361	441.323	3041.1	3233.3	127.918	40.83	69.88	1031
120.000	23.339	.04285	.19754	22.7651	379.562	3736.9	3934.0	134.017	40.28	70.36	966
130.000	22.731	.04399	.18722	20.0520	325.325	4439.1	4641.5	139.677	40.01	71.10	902
140.000	22.105	.04524	.17877	17.6364	277.258	5149.9	5358.0	144.980	39.95	72.09	839
150.000	21.458	.04660	.17189	15.4703	234.327	5871.2	6085.5	149.995	40.08	73.35	777
160.000	20.783	.04812	.16638	13.5147	195.737	6605.3	6826.7	154.778	40.39	74.95	715
170.000	20.074	.04982	.16212	11.7368	160.876	7355.9	7585.1	159.380	40.84	76.97	653
180.000	19.319	.05176	.15910	10.1080	129.271	8128.0	8366.1	163.849	41.39	79.51	591
190.000	18.503	.05405	.15737	8.6017	100.552	8928.2	9176.8	168.231	41.95	82.79	528
200.000	17.596	.05683	.15721	7.1909	74.434	9765.3	10026.7	172.585	42.39	87.26	464
210.000	16.546	.06044	.15922	5.8425	50.689	10654.2	10932.2	176.996	42.61	94.26	397
220.000	15.226	.06568	.16516	4.5005	29.126	11632.7	11934.9	181.665	42.78	108.77	322
230.000	13.133	.07615	.18317	2.9877	9.494	12883.8	13234.1	187.424	45.35	170.74	224
240.000	4.484	.22302	.51412	.6060	3.475	16764.6	17790.5	206.808	48.37	174.53	132
250.000	3.504	.28541	.63161	.4318	7.149	17721.9	19034.7	211.897	45.64	98.74	147
260.000	3.041	.32885	.69975	.3554	9.833	18408.4	19921.1	215.376	45.20	81.32	157
270.000	2.738	.36518	.74828	.3083	12.075	19012.2	20692.0	218.286	45.39	73.73	166
280.000	2.515	.39757	.78556	.2752	14.052	19578.5	21407.3	220.888	45.86	69.71	173
290.000	2.340	.42740	.81538	.2501	15.846	20125.7	22091.7	223.290	46.47	67.38	179
300.000	2.196	.45543	.83988	.2303	17.506	20663.1	22758.1	225.549	47.16	66.01	185
310.000	2.074	.48209	.86038	.2141	19.062	21196.1	23413.8	227.699	47.88	65.20	191
320.000	1.970	.50771	.87778	.2005	20.536	21727.9	24063.4	229.762	48.63	64.77	196
330.000	1.878	.53247	.89270	.1888	21.942	22260.6	24710.0	231.752	49.38	64.59	201
340.000	1.797	.55655	.90562	.1787	23.292	22795.6	25355.7	233.679	50.13	64.57	205
350.000	1.724	.58004	.91688	.1698	24.595	23333.7	26001.9	235.552	50.87	64.68	209
360.000	1.658	.60304	.92676	.1620	25.857	23875.7	26649.7	237.377	51.60	64.88	213
370.000	1.598	.62562	.93547	.1549	27.083	24421.9	27299.8	239.158	52.31	65.14	217
380.000	1.544	.64784	.94320	.1486	28.279	24972.6	27952.7	240.899	53.00	65.44	221
390.000	1.493	.66973	.95007	.1428	29.448	25528.0	28608.8	242.603	53.67	65.78	225
400.000	1.446	.69134	.95621	.1375	30.592	26088.2	29268.3	244.273	54.32	66.14	229
410.000	1.403	.71270	.96171	.1326	31.715	26653.1	29931.5	245.911	54.95	66.51	232
420.000	1.363	.73384	.96666	.1282	32.818	27222.8	30598.5	247.518	55.56	66.88	235
430.000	1.325	.75478	.97112	.1240	33.904	27797.2	31269.2	249.096	56.15	67.26	239
440.000	1.289	.77553	.97514	.1202	34.975	28376.3	31943.7	250.647	56.72	67.65	242
450.000	1.256	.79612	.97879	.1166	36.031	28960.0	32622.1	252.171	57.26	68.03	245
460.000	1.225	.81656	.98209	.1133	37.073	29548.1	33304.3	253.671	57.79	68.40	248
470.000	1.195	.83687	.98510	.1101	38.104	30140.6	33990.2	255.146	58.30	68.77	251
480.000	1.167	.85705	.98783	.1072	39.124	30737.4	34679.8	256.597	58.79	69.14	254
490.000	1.140	.87711	.99033	.1044	40.134	31338.2	35372.9	258.027	59.26	69.50	257
500.000	1.115	.89707	.99261	.1018	41.134	31943.1	36069.7	259.434	59.71	69.84	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 48 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
67.246	26.329	.03798	.32607	45.5538	848.297	40.9	223.2	93.117	49.65	73.38	1328
70.000	26.180	.03820	.31502	43.8012	811.599	240.8	424.2	96.047	48.52	72.66	1308
80.000	25.636	.03901	.28150	38.1583	694.032	954.4	1141.6	105.617	45.28	70.82	1236
90.000	25.081	.03987	.25576	33.4195	596.196	1654.0	1845.4	113.900	43.13	69.93	1166
100.000	24.514	.04079	.23550	29.3700	513.381	2346.9	2542.7	121.251	41.72	69.68	1098
110.000	23.936	.04178	.21926	25.8626	442.287	3038.8	3239.4	127.898	40.82	69.86	1032
120.000	23.344	.04284	.20608	22.7917	380.512	3734.3	3939.9	133.995	40.28	70.34	967
130.000	22.737	.04398	.19531	20.0789	326.270	4436.1	4647.2	139.653	40.00	71.08	903
140.000	22.112	.04522	.18648	17.6639	278.204	5146.3	5363.4	144.954	39.94	72.05	840
150.000	21.466	.04659	.17929	15.4987	235.282	5867.0	6090.6	149.966	40.07	73.31	778
160.000	20.793	.04809	.17353	13.5443	196.708	6600.3	6831.2	154.746	40.38	74.89	716
170.000	20.086	.04979	.16907	11.7681	161.870	7350.0	7588.9	159.344	40.83	76.88	655
180.000	19.335	.05172	.16588	10.1416	130.296	8120.7	8369.0	163.807	41.38	79.39	593
190.000	18.523	.05399	.16404	8.6386	101.620	8919.0	9178.1	168.181	41.93	82.60	530
200.000	17.623	.05674	.16379	7.2328	75.559	9753.3	10025.6	172.523	42.37	86.95	467
210.000	16.585	.06029	.16576	5.8926	51.897	10637.3	10926.8	176.913	42.57	93.65	401
220.000	15.294	.06539	.17158	4.5671	30.465	11605.3	11919.2	181.535	42.68	107.08	328
230.000	13.327	.07504	.18834	3.1121	11.132	12811.2	13171.4	187.086	44.94	157.62	234
240.000	5.165	.19363	.46576	.7250	2.454	16435.5	17364.9	204.860	50.00	242.68	129
250.000	3.798	.26333	.60808	.4781	6.476	17574.9	18838.8	210.894	46.15	107.34	145
260.000	3.250	.30768	.68317	.3862	9.293	18304.0	19780.9	214.592	45.50	85.00	156
270.000	2.907	.34397	.73547	.3319	11.620	18928.7	20579.8	217.608	45.60	75.88	165
280.000	2.660	.37599	.77522	.2945	13.658	19507.9	21312.6	220.274	46.01	71.15	172
290.000	2.467	.40530	.80683	.2667	15.500	20064.0	22009.4	222.719	46.59	68.44	179
300.000	2.311	.43271	.83269	.2448	17.200	20608.1	22685.1	225.010	47.26	66.83	185
310.000	2.180	.45872	.85427	.2270	18.789	21146.3	23348.1	227.184	47.97	65.86	190
320.000	2.068	.48365	.87254	.2122	20.292	21682.2	24003.7	229.266	48.70	65.31	195
330.000	1.970	.50771	.88819	.1996	21.723	22218.4	24655.4	231.271	49.45	65.05	200
340.000	1.883	.53106	.90172	.1887	23.096	22756.2	25305.3	233.211	50.19	64.97	205
350.000	1.806	.55382	.91350	.1791	24.419	23296.9	25955.2	235.095	50.92	65.03	209
360.000	1.736	.57609	.92383	.1707	25.699	23841.0	26606.2	236.929	51.65	65.19	213
370.000	1.672	.59792	.93293	.1631	26.942	24389.1	27259.2	238.718	52.35	65.41	217
380.000	1.614	.61939	.94100	.1563	28.153	24941.6	27914.7	240.466	53.04	65.69	221
390.000	1.561	.64054	.94817	.1501	29.336	25498.5	28573.1	242.176	53.71	66.00	225
400.000	1.512	.66140	.95457	.1445	30.493	26060.0	29234.7	243.851	54.35	66.34	228
410.000	1.466	.68201	.96031	.1393	31.628	26626.2	29899.9	245.493	54.98	66.69	232
420.000	1.424	.70239	.96546	.1346	32.743	27197.1	30568.6	247.105	55.59	67.05	235
430.000	1.384	.72257	.97010	.1302	33.839	27772.6	31240.9	248.687	56.18	67.42	239
440.000	1.347	.74257	.97430	.1261	34.919	28352.6	31917.0	250.241	56.74	67.79	242
450.000	1.312	.76241	.97809	.1223	35.984	28937.2	32596.8	251.769	57.29	68.16	245
460.000	1.279	.78209	.98153	.1188	37.036	29526.2	33280.2	253.271	57.81	68.53	248
470.000	1.247	.80164	.98466	.1154	38.075	30119.5	33967.3	254.748	58.32	68.89	251
480.000	1.218	.82106	.98751	.1123	39.102	30716.9	34658.0	256.203	58.81	69.25	254
490.000	1.190	.84037	.99010	.1094	40.119	31318.5	35352.3	257.634	59.28	69.60	257
500.000	1.163	.85957	.99247	.1066	41.127	31924.1	36050.0	259.044	59.73	69.94	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 50 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.284	26.329	.03798	.33946	45.5590	848.939	42.5	232.5	93.142	49.64	73.37	1329
70.000	26.183	.03819	.32811	43.8302	812.729	239.7	430.7	96.032	48.52	72.65	1309
80.000	25.639	.03900	.29319	38.1861	695.098	953.1	1148.1	105.600	45.28	70.81	1237
90.000	25.084	.03987	.26638	33.4466	597.215	1652.4	1851.7	113.882	43.13	69.92	1167
100.000	24.518	.04079	.24527	29.3966	514.367	2345.0	2548.9	121.232	41.72	69.67	1099
110.000	23.941	.04177	.22835	25.8890	443.250	3036.6	3245.5	127.877	40.82	69.84	1033
120.000	23.350	.04283	.21462	22.8182	381.462	3731.7	3945.8	133.973	40.28	70.32	968
130.000	22.743	.04397	.20339	20.1058	327.213	4433.1	4652.9	139.629	40.00	71.05	904
140.000	22.120	.04521	.19419	17.6913	279.149	5142.8	5368.8	144.928	39.94	72.02	842
150.000	21.475	.04657	.18669	15.5269	236.235	5862.8	6095.6	149.938	40.07	73.26	779
160.000	20.803	.04807	.18067	13.5738	197.676	6595.4	6835.7	154.714	40.37	74.83	718
170.000	20.098	.04976	.17600	11.7992	162.861	7344.0	7592.8	159.308	40.83	76.80	656
180.000	19.350	.05168	.17266	10.1750	131.318	8113.4	8371.8	163.765	41.37	79.27	595
190.000	18.542	.05393	.17069	8.6753	102.683	8909.9	9179.5	168.132	41.92	82.42	533
200.000	17.649	.05666	.17036	7.2743	76.678	9741.4	10024.7	172.461	42.34	86.65	470
210.000	16.623	.06016	.17227	5.9419	53.094	10620.8	10921.6	176.831	42.53	93.06	404
220.000	15.358	.06511	.17798	4.6315	31.783	11579.0	11904.6	181.409	42.60	105.55	333
230.000	13.495	.07410	.19375	3.2237	12.694	12747.7	13118.2	186.790	44.62	148.01	243
240.000	6.214	.16092	.40322	.9138	1.470	15957.6	16762.3	202.201	52.09	405.12	126
250.000	4.124	.24251	.58335	.5308	5.811	17414.8	18627.3	209.845	46.68	117.97	143
260.000	3.472	.28804	.66621	.4196	8.762	18194.7	19634.9	213.801	45.80	89.13	154
270.000	3.083	.32439	.72249	.3569	11.172	18842.7	20464.6	216.934	45.80	78.20	163
280.000	2.808	.35610	.76480	.3148	13.270	19435.8	21216.3	219.668	46.17	72.68	171
290.000	2.598	.38494	.79824	.2838	15.160	20001.3	21926.1	222.159	46.71	69.55	178
300.000	2.428	.41181	.82548	.2598	16.898	20552.4	22611.4	224.483	47.36	67.67	184
310.000	2.287	.43722	.84815	.2404	18.520	21095.9	23282.0	226.682	48.05	66.54	190
320.000	2.167	.46152	.86731	.2243	20.051	21636.2	23943.7	228.783	48.78	65.87	195
330.000	2.062	.48493	.88369	.2106	21.508	22175.8	24600.5	230.804	49.51	65.52	200
340.000	1.970	.50762	.89783	.1989	22.902	22716.7	25254.8	232.757	50.25	65.37	204
350.000	1.888	.52971	.91013	.1886	24.245	23259.9	25908.4	234.652	50.97	65.38	209
360.000	1.814	.55130	.92091	.1795	25.543	23806.3	26562.7	236.495	51.69	65.49	213
370.000	1.747	.57245	.93040	.1714	26.803	24356.3	27218.6	238.292	52.39	65.69	217
380.000	1.686	.59323	.93880	.1642	28.029	24910.5	27876.7	240.047	53.08	65.93	221
390.000	1.629	.61369	.94627	.1576	29.225	25469.0	28537.4	241.763	53.74	66.22	225
400.000	1.578	.63386	.95294	.1516	30.396	26031.9	29201.2	243.444	54.39	66.54	228
410.000	1.530	.65377	.95891	.1461	31.542	26599.4	29868.2	245.091	55.01	66.87	232
420.000	1.485	.67346	.96427	.1411	32.668	27171.4	30538.7	246.706	55.62	67.22	235
430.000	1.443	.69295	.96910	.1364	33.775	27748.0	31212.7	248.292	56.20	67.58	239
440.000	1.404	.71226	.97346	.1321	34.865	28329.0	31890.3	249.850	56.77	67.94	242
450.000	1.367	.73140	.97740	.1281	35.939	28914.5	32571.5	251.380	57.31	68.30	245
460.000	1.333	.75038	.98098	.1243	36.999	29504.3	33256.2	252.885	57.84	68.66	248
470.000	1.300	.76924	.98423	.1208	38.046	30098.4	33944.5	254.356	58.34	69.01	251
480.000	1.269	.78796	.98719	.1175	39.082	30696.6	34636.4	255.822	58.83	69.36	254
490.000	1.240	.80657	.98988	.1144	40.106	31298.8	35331.7	257.256	59.30	69.70	257
500.000	1.212	.82508	.99234	.1115	41.120	31905.0	36030.4	258.668	59.75	70.04	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 52 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
67.321	26.329	.03798	.35284	45.5642	849.581	44.2	241.7	93.167	49.62	73.35	1329
70.000	26.185	.03819	.34120	43.8592	813.859	238.7	437.2	96.016	48.52	72.65	1310
80.000	25.641	.03900	.30488	38.2139	696.163	951.7	1154.5	105.584	45.28	70.81	1238
90.000	25.087	.03986	.27700	33.4736	598.234	1650.8	1858.1	113.864	43.13	69.91	1168
100.000	24.522	.04078	.25504	29.4232	515.353	2343.1	2555.2	121.213	41.72	69.66	1100
110.000	23.945	.04176	.23744	25.9154	444.213	3034.4	3251.6	127.857	40.82	69.83	1034
120.000	23.355	.04282	.22316	22.8447	382.411	3729.1	3951.8	133.951	40.28	70.30	969
130.000	22.750	.04396	.21147	20.1326	328.157	4430.0	4658.6	139.605	40.00	71.02	905
140.000	22.127	.04519	.20189	17.7187	280.094	5139.2	5374.2	144.902	39.94	71.99	843
150.000	21.483	.04655	.19408	15.5551	237.187	5858.6	6100.6	149.909	40.07	73.22	781
160.000	20.813	.04805	.18781	13.6032	198.643	6590.4	6840.2	154.683	40.37	74.78	719
170.000	20.111	.04972	.18293	11.8303	163.850	7338.1	7596.6	159.272	40.82	76.72	658
180.000	19.365	.05164	.17942	10.2083	132.337	8106.2	8374.7	163.724	41.36	79.16	597
190.000	18.562	.05387	.17734	8.7117	103.743	8900.9	9181.0	168.083	41.90	82.25	535
200.000	17.675	.05658	.17692	7.3153	77.791	9729.7	10023.9	172.401	42.32	86.36	472
210.000	16.660	.06002	.17876	5.9903	54.280	10604.7	10916.8	176.751	42.49	92.50	407
220.000	15.420	.06485	.18436	4.6939	33.081	11553.6	11890.9	181.287	42.51	104.14	337
230.000	13.644	.07329	.19930	3.3257	14.198	12691.0	13072.1	186.525	44.35	140.60	251
240.000	7.854	.12732	.33177	1.2313	1.180	15276.5	15938.5	198.649	53.50	553.46	131
250.000	4.489	.22278	.55733	.5912	5.161	17239.2	18397.7	208.740	47.26	131.27	142
260.000	3.707	.26975	.64888	.4557	8.243	18080.1	19482.8	213.002	46.11	93.78	153
270.000	3.265	.30624	.70937	.3834	10.733	18754.0	20346.4	216.263	46.01	80.70	162
280.000	2.961	.33771	.75432	.3360	12.890	19362.1	21118.2	219.070	46.33	74.30	170
290.000	2.731	.36614	.78962	.3017	14.825	19937.7	21841.6	221.609	46.84	70.70	177
300.000	2.548	.39251	.81826	.2753	16.601	20496.0	22537.0	223.967	47.46	68.55	183
310.000	2.396	.41737	.84203	.2541	18.256	21045.1	23215.4	226.191	48.14	67.24	189
320.000	2.267	.44109	.86208	.2366	19.815	21589.8	23883.4	228.312	48.85	66.44	194
330.000	2.156	.46391	.87919	.2219	21.296	22133.1	24545.4	230.349	49.58	65.99	199
340.000	2.058	.48598	.89395	.2092	22.712	22677.0	25204.1	232.316	50.30	65.78	204
350.000	1.971	.50746	.90677	.1982	24.074	23222.8	25861.6	234.221	51.03	65.73	208
360.000	1.892	.52842	.91800	.1885	25.390	23771.4	26519.2	236.074	51.74	65.81	213
370.000	1.822	.54894	.92788	.1799	26.666	24323.5	27178.0	237.879	52.43	65.96	217
380.000	1.757	.56909	.93662	.1721	27.907	24879.4	27838.7	239.641	53.12	66.18	221
390.000	1.698	.58891	.94439	.1651	29.117	25439.4	28501.8	241.363	53.78	66.45	225
400.000	1.644	.60844	.95132	.1588	30.300	26003.8	29167.7	243.049	54.42	66.74	228
410.000	1.593	.62772	.95752	.1530	31.458	26572.5	29836.7	244.701	55.04	67.06	232
420.000	1.546	.64677	.96309	.1476	32.595	27145.7	30508.9	246.321	55.65	67.39	235
430.000	1.502	.66561	.96810	.1427	33.712	27723.4	31184.5	247.911	56.23	67.73	239
440.000	1.461	.68428	.97263	.1381	34.812	28305.4	31863.6	249.472	56.79	68.08	242
450.000	1.423	.70277	.97672	.1339	35.895	28891.8	32546.2	251.006	57.34	68.43	245
460.000	1.387	.72112	.98043	.1299	36.964	29482.4	33232.3	252.514	57.86	68.78	248
470.000	1.353	.73933	.98380	.1262	38.019	30077.3	33921.8	253.997	58.36	69.13	251
480.000	1.320	.75741	.98687	.1227	39.061	30676.3	34614.8	255.456	58.85	69.47	254
490.000	1.290	.77538	.98966	.1195	40.093	31279.2	35311.2	256.891	59.32	69.81	257
500.000	1.261	.79324	.99221	.1164	41.114	31886.1	36010.9	258.305	59.77	70.14	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 55 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.376	26.330	.03798	.37288	45.5719	850.544	46.7	255.6	93.205	49.60	73.33	1330
70.000	26.189	.03818	.36084	43.9027	815.553	237.0	447.0	95.992	48.51	72.64	1311
80.000	25.646	.03899	.32242	38.2555	697.761	949.8	1164.2	105.559	45.28	70.79	1239
90.000	25.092	.03985	.29292	33.5141	599.762	1648.5	1867.7	113.838	43.13	69.90	1170
100.000	24.528	.04077	.26969	29.4630	516.831	2340.3	2564.6	121.184	41.72	69.64	1102
110.000	23.952	.04175	.25107	25.9550	445.657	3031.2	3260.8	127.826	40.82	69.80	1036
120.000	23.363	.04280	.23595	22.8844	383.834	3725.2	3960.7	133.918	40.28	70.27	971
130.000	22.759	.04394	.22358	20.1727	329.570	4425.5	4667.2	139.570	40.00	70.99	907
140.000	22.137	.04517	.21344	17.7596	281.508	5133.9	5382.4	144.864	39.93	71.94	845
150.000	21.496	.04652	.20516	15.5973	238.614	5852.4	6108.2	149.867	40.06	73.16	783
160.000	20.828	.04801	.19850	13.6471	200.091	6583.0	6847.1	154.635	40.36	74.69	722
170.000	20.129	.04968	.19331	11.8765	165.330	7329.2	7602.5	159.219	40.81	76.61	661
180.000	19.388	.05158	.18955	10.2578	133.861	8095.5	8379.2	163.663	41.35	78.99	600
190.000	18.590	.05379	.18728	8.7658	105.324	8887.5	9183.4	168.010	41.88	81.99	538
200.000	17.713	.05645	.18672	7.3761	79.448	9712.5	10023.0	172.311	42.29	85.94	476
210.000	16.715	.05983	.18845	6.0616	56.042	10581.0	10910.1	176.633	42.43	91.71	413
220.000	15.508	.06448	.19389	4.7844	34.994	11517.2	11871.8	181.113	42.40	102.24	344
230.000	13.840	.07225	.20781	3.4652	16.365	12615.3	13012.7	186.172	44.02	132.12	263
240.000	9.903	.10098	.27832	1.7271	2.064	14502.1	15057.4	194.838	52.00	405.73	150
250.000	5.129	.19496	.51586	.7006	4.251	16940.6	18012.9	206.951	48.16	157.88	140
260.000	4.089	.24457	.62223	.5159	7.492	17897.4	19242.5	211.781	46.59	101.84	151
270.000	3.554	.28141	.68944	.4263	10.095	18615.7	20163.5	215.259	46.34	84.82	161
280.000	3.199	.31259	.73850	.3698	12.336	19248.5	20967.8	218.185	46.56	76.89	169
290.000	2.937	.34049	.77665	.3298	14.337	19840.3	21712.9	220.800	47.02	72.53	176
300.000	2.731	.36619	.80743	.2994	16.168	20410.1	22424.1	223.211	47.61	69.92	182
310.000	2.562	.39031	.83287	.2754	17.869	20967.9	23114.6	225.476	48.27	68.31	188
320.000	2.420	.41325	.85425	.2557	19.468	21519.5	23792.4	227.627	48.96	67.32	194
330.000	2.298	.43525	.87247	.2393	20.985	22068.5	24462.3	229.689	49.67	66.73	199
340.000	2.191	.45650	.88815	.2252	22.433	22617.1	25127.8	231.676	50.39	66.41	204
350.000	2.096	.47713	.90176	.2130	23.824	23166.9	25791.1	233.598	51.10	66.27	208
360.000	2.011	.49723	.91366	.2023	25.166	23719.0	26453.8	235.465	51.81	66.28	212
370.000	1.935	.51690	.92412	.1928	26.465	24274.1	27117.0	237.282	52.50	66.38	217
380.000	1.865	.53618	.93337	.1843	27.728	24832.7	27781.7	239.055	53.17	66.56	221
390.000	1.801	.55513	.94158	.1767	28.958	25395.1	28448.3	240.786	53.83	66.78	224
400.000	1.743	.57379	.94890	.1697	30.160	25961.6	29117.5	242.480	54.47	67.05	228
410.000	1.689	.59220	.95545	.1634	31.335	26532.3	29789.4	244.140	55.09	67.34	232
420.000	1.638	.61037	.96133	.1576	32.488	27107.2	30464.3	245.766	55.69	67.65	235
430.000	1.591	.62834	.96662	.1522	33.621	27686.5	31142.4	247.362	56.27	67.97	239
440.000	1.548	.64613	.97139	.1473	34.734	28270.0	31823.8	248.928	56.83	68.30	242
450.000	1.507	.66375	.97571	.1427	35.831	28857.8	32508.4	250.466	57.37	68.64	245
460.000	1.468	.68122	.97962	.1384	36.912	29449.7	33196.5	251.979	57.89	68.97	248
470.000	1.432	.69855	.98317	.1344	37.979	30045.8	33887.8	253.466	58.40	69.30	251
480.000	1.397	.71576	.98640	.1306	39.033	30645.9	34582.5	254.928	58.88	69.64	254
490.000	1.365	.73285	.98934	.1271	40.075	31249.9	35280.5	256.367	59.35	69.96	257
500.000	1.334	.74984	.99203	.1238	41.106	31857.7	35981.8	257.784	59.80	70.28	260

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 60 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.469	26.331	.03798	.40621	45.5849	852.149	50.9	278.8	93.267	49.56	73.29	1332
70.000	26.195	.03818	.39355	43.9751	818.377	234.3	463.4	95.953	48.51	72.62	1313
80.000	25.653	.03898	.35163	38.3248	700.424	946.5	1180.4	105.517	45.28	70.77	1241
90.000	25.101	.03984	.31944	33.5814	602.308	1644.6	1883.6	113.793	43.13	69.87	1172
100.000	24.538	.04075	.29409	29.5292	519.292	2335.7	2580.2	121.137	41.72	69.61	1104
110.000	23.963	.04173	.27377	26.0207	448.061	3025.7	3276.1	127.776	40.82	69.76	1038
120.000	23.376	.04278	.25726	22.9503	386.202	3718.8	3975.5	133.864	40.27	70.22	973
130.000	22.774	.04391	.24375	20.2393	331.922	4418.0	4681.5	139.511	39.99	70.92	910
140.000	22.155	.04514	.23266	17.8275	283.861	5125.2	5396.0	144.800	39.93	71.86	848
150.000	21.516	.04648	.22359	15.6672	240.984	5842.0	6120.9	149.796	40.05	73.05	786
160.000	20.853	.04795	.21628	13.7198	202.496	6570.8	6858.6	154.557	40.35	74.55	725
170.000	20.159	.04961	.21057	11.9531	167.785	7314.7	7612.3	159.131	40.79	76.41	665
180.000	19.425	.05148	.20639	10.3395	136.385	8077.8	8386.7	163.561	41.32	78.72	604
190.000	18.637	.05366	.20379	8.8547	107.939	8865.6	9187.6	167.891	41.85	81.58	544
200.000	17.775	.05626	.20299	7.4754	82.182	9684.5	10022.0	172.165	42.23	85.27	483
210.000	16.802	.05952	.20452	6.1769	58.932	10543.0	10900.1	176.444	42.34	90.50	421
220.000	15.645	.06392	.20967	4.9276	38.104	11460.2	11843.7	180.839	42.23	99.51	355
230.000	14.117	.07084	.22225	3.6714	19.799	12507.1	12932.1	185.666	43.60	122.17	279
240.000	11.404	.08769	.26367	2.2399	5.189	13953.8	14479.9	192.238	49.75	228.20	183
250.000	6.508	.15365	.44351	.9522	3.209	16336.8	17258.7	203.586	49.52	216.30	140
260.000	4.814	.20773	.57657	.6353	6.364	17561.3	18807.7	209.674	47.41	118.57	149
270.000	4.075	.24538	.65583	.5069	9.106	18370.9	19843.2	213.585	46.88	92.74	159
280.000	3.620	.27627	.71203	.4315	11.466	19051.2	20708.8	216.735	46.96	81.67	167
290.000	3.296	.30344	.75507	.3803	13.567	19672.8	21493.4	219.489	47.34	75.80	174
300.000	3.047	.32820	.78946	.3424	15.482	20263.5	22232.7	221.995	47.86	72.34	181
310.000	2.847	.35127	.81769	.3130	17.255	20837.0	22944.6	224.330	48.48	70.20	187
320.000	2.680	.37307	.84132	.2892	18.917	21400.8	23639.2	226.535	49.14	68.84	193
330.000	2.539	.39391	.86138	.2695	20.490	21959.6	24323.0	228.640	49.83	67.99	198
340.000	2.416	.41395	.87859	.2529	21.988	22516.4	25000.1	230.660	50.53	67.47	203
350.000	2.308	.43336	.89350	.2385	23.424	23073.1	25673.3	232.612	51.23	67.19	208
360.000	2.211	.45223	.90651	.2260	24.808	23631.1	26344.5	234.503	51.92	67.08	212
370.000	2.125	.47065	.91794	.2150	26.145	24191.4	27015.3	236.341	52.60	67.09	216
380.000	2.046	.48868	.92803	.2052	27.442	24754.6	27686.7	238.131	53.27	67.19	220
390.000	1.975	.50638	.93697	.1964	28.705	25321.1	28359.4	239.878	53.92	67.35	224
400.000	1.909	.52378	.94494	.1884	29.936	25891.2	29033.9	241.586	54.55	67.56	228
410.000	1.849	.54092	.95206	.1812	31.140	26465.2	29710.8	243.258	55.17	67.81	232
420.000	1.793	.55783	.95845	.1745	32.319	27043.2	30390.2	244.895	55.76	68.08	235
430.000	1.741	.57454	.96420	.1684	33.476	27625.2	31072.4	246.500	56.34	68.37	239
440.000	1.692	.59106	.96938	.1628	34.612	28211.2	31757.6	248.075	56.89	68.67	242
450.000	1.646	.60741	.97406	.1576	35.730	28801.3	32445.8	249.622	57.43	68.97	245
460.000	1.604	.62361	.97830	.1528	36.832	29395.4	33137.1	251.141	57.95	69.29	249
470.000	1.563	.63968	.98215	.1483	37.918	29993.4	33831.5	252.635	58.45	69.60	252
480.000	1.525	.65562	.98565	.1440	38.990	30595.4	34529.1	254.103	58.93	69.91	255
490.000	1.489	.67144	.98884	.1401	40.049	31201.1	35229.7	255.548	59.40	70.22	258
500.000	1.455	.68716	.99175	.1364	41.097	31810.6	35933.5	256.970	59.85	70.53	261

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 65 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.562	26.332	.03798	.43944	45.5978	853.755	55.1	302.0	93.329	49.51	73.24	1333
70.000	26.201	.03817	.42624	44.0474	821.201	231.7	479.7	95.914	48.51	72.60	1315
80.000	25.660	.03897	.38083	38.3940	703.087	943.2	1196.6	105.475	45.28	70.75	1243
90.000	25.109	.03983	.34595	33.6486	604.853	1640.7	1899.5	113.749	43.12	69.85	1174
100.000	24.547	.04074	.31848	29.5953	521.752	2331.1	2595.9	121.090	41.71	69.57	1107
110.000	23.974	.04171	.29644	26.0863	450.462	3020.3	3291.4	127.725	40.81	69.73	1041
120.000	23.388	.04276	.27854	23.0159	388.567	3712.5	3990.4	133.809	40.27	70.17	976
130.000	22.789	.04388	.26388	20.3057	334.269	4410.6	4695.8	139.452	39.99	70.86	913
140.000	22.173	.04510	.25184	17.8951	286.208	5116.5	5409.6	144.736	39.92	71.78	851
150.000	21.537	.04643	.24199	15.7367	243.347	5831.8	6133.6	149.726	40.04	72.95	790
160.000	20.878	.04790	.23403	13.7919	204.890	6558.8	6870.1	154.480	40.34	74.42	729
170.000	20.188	.04953	.22778	12.0288	170.227	7300.3	7622.3	159.044	40.78	76.23	669
180.000	19.461	.05138	.22317	10.4202	138.892	8060.5	8394.5	163.462	41.30	78.46	609
190.000	18.683	.05352	.22023	8.9422	110.530	8844.2	9192.1	167.774	41.81	81.19	549
200.000	17.835	.05607	.21917	7.5724	84.881	9657.2	10021.7	172.023	42.18	84.66	489
210.000	16.885	.05923	.22048	6.2883	61.772	10506.6	10891.5	176.262	42.27	89.42	429
220.000	15.771	.06341	.22532	5.0628	41.127	11407.1	11819.3	180.583	42.10	97.22	365
230.000	14.351	.06968	.23685	3.8543	23.065	12414.5	12867.4	185.232	43.29	115.22	294
240.000	12.150	.08231	.26810	2.5707	8.467	13677.5	14212.5	190.947	48.65	175.54	207
250.000	8.059	.12408	.38802	1.2764	3.430	15709.3	16515.9	200.340	49.98	232.80	150
260.000	5.662	.17661	.53104	.7838	5.507	17185.4	18333.4	207.481	48.16	138.63	149
270.000	4.653	.21492	.62229	.6004	8.249	18107.8	19504.7	211.906	47.41	101.92	158
280.000	4.072	.24561	.68574	.5008	10.685	18843.7	20440.1	215.310	47.36	87.00	166
290.000	3.674	.27217	.73370	.4357	12.864	19499.1	21268.2	218.217	47.65	79.35	173
300.000	3.377	.29614	.77170	.3890	14.849	20112.8	22037.7	220.826	48.12	74.92	180
310.000	3.142	.31831	.80273	.3532	16.685	20703.2	22772.2	223.234	48.69	72.18	186
320.000	2.948	.33916	.82858	.3248	18.404	21280.0	23484.6	225.496	49.32	70.42	192
330.000	2.786	.35900	.85046	.3015	20.027	21849.3	24182.8	227.645	49.99	69.29	197
340.000	2.645	.37802	.86920	.2819	21.572	22414.6	24871.8	229.701	50.67	68.57	202
350.000	2.523	.39639	.88539	.2652	23.050	22978.6	25555.1	231.682	51.35	68.14	207
360.000	2.414	.41422	.89950	.2508	24.472	23542.8	26235.2	233.598	52.03	67.90	212
370.000	2.317	.43158	.91188	.2381	25.845	24108.4	26913.7	235.457	52.70	67.81	216
380.000	2.229	.44855	.92279	.2268	27.175	24676.3	27591.8	237.266	53.36	67.83	220
390.000	2.150	.46518	.93246	.2167	28.468	25246.9	28270.6	239.029	54.01	67.93	224
400.000	2.077	.48151	.94107	.2077	29.728	25820.8	28950.6	240.750	54.63	68.08	228
410.000	2.010	.49758	.94876	.1994	30.958	26398.2	29632.4	242.434	55.24	68.28	232
420.000	1.948	.51342	.95565	.1919	32.162	26979.2	30316.4	244.082	55.83	68.51	235
430.000	1.890	.52905	.96184	.1851	33.342	27563.9	31002.7	245.697	56.40	68.77	239
440.000	1.837	.54449	.96742	.1787	34.501	28152.5	31691.7	247.281	56.96	69.03	242
450.000	1.786	.55977	.97247	.1729	35.639	28745.0	32383.5	248.835	57.49	69.32	246
460.000	1.739	.57490	.97703	.1675	36.760	29341.2	33078.1	250.362	58.01	69.60	249
470.000	1.695	.58989	.98118	.1624	37.865	29941.3	33775.5	251.862	58.50	69.89	252
480.000	1.654	.60475	.98494	.1577	38.955	30545.1	34476.0	253.337	58.98	70.19	255
490.000	1.614	.61950	.98837	.1533	40.031	31152.6	35179.3	254.787	59.45	70.48	258
500.000	1.577	.63414	.99150	.1491	41.094	31763.7	35885.6	256.214	59.89	70.77	261

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 70 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.654	26.333	.03798	.47258	45.6108	855.361	59.3	325.1	93.390	49.47	73.20	1335
70.000	26.207	.03816	.45893	44.1196	824.025	229.0	496.1	95.875	48.51	72.59	1317
80.000	25.667	.03896	.41001	38.4631	705.749	940.0	1212.7	105.434	45.28	70.73	1246
90.000	25.117	.03981	.37243	33.7157	607.396	1636.8	1915.5	113.705	43.12	69.82	1176
100.000	24.557	.04072	.34284	29.6611	524.211	2326.5	2611.5	121.043	41.71	69.54	1109
110.000	23.985	.04169	.31910	26.1516	452.861	3014.9	3306.7	127.675	40.81	69.69	1043
120.000	23.401	.04273	.29981	23.0814	390.928	3706.2	4005.3	133.755	40.26	70.13	979
130.000	22.804	.04385	.28400	20.3717	336.612	4403.2	4710.1	139.394	39.98	70.80	916
140.000	22.190	.04507	.27100	17.9624	288.550	5107.8	5423.3	144.672	39.91	71.70	854
150.000	21.558	.04639	.26036	15.8058	245.703	5821.7	6146.4	149.657	40.03	72.85	793
160.000	20.902	.04784	.25174	13.8635	207.275	6546.9	6881.8	154.403	40.33	74.28	733
170.000	20.218	.04946	.24495	12.1039	172.657	7286.1	7632.4	158.957	40.76	76.05	673
180.000	19.497	.05129	.23990	10.4999	141.382	8043.4	8402.4	163.363	41.28	78.20	614
190.000	18.728	.05340	.23661	9.0282	113.099	8823.3	9197.1	167.659	41.78	80.82	555
200.000	17.893	.05589	.23526	7.6673	87.549	9630.8	10022.0	171.885	42.13	84.08	496
210.000	16.964	.05895	.23633	6.3961	64.564	10471.6	10884.3	176.086	42.19	88.43	436
220.000	15.888	.06294	.24086	5.1912	44.077	11357.4	11798.0	180.343	41.97	95.25	375
230.000	14.554	.06871	.25151	4.0205	26.202	12333.0	12814.0	184.850	43.03	110.02	307
240.000	12.651	.07905	.27729	2.8277	11.640	13488.6	14041.9	190.068	47.98	150.99	227
250.000	9.372	.10670	.35931	1.6079	4.331	15205.4	15952.3	197.856	49.61	219.51	164
260.000	6.611	.15127	.48984	.9633	5.145	16784.6	17843.5	205.283	48.72	156.32	152
270.000	5.286	.18916	.58984	.7087	7.582	17828.2	19152.3	210.227	47.90	111.89	157
280.000	4.555	.21953	.66008	.5783	10.019	18626.9	20163.6	213.907	47.74	92.77	165
290.000	4.073	.24553	.71281	.4965	12.243	19319.6	21038.3	216.978	47.95	83.15	172
300.000	3.720	.26880	.75434	.4392	14.280	19958.4	21839.9	219.696	48.36	77.64	179
310.000	3.446	.29019	.78809	.3962	16.168	20566.8	22598.1	222.182	48.90	74.25	185
320.000	3.224	.31020	.81613	.3625	17.935	21157.5	23328.9	224.503	49.50	72.06	191
330.000	3.038	.32917	.83979	.3352	19.603	21737.7	24041.9	226.697	50.14	70.63	197
340.000	2.879	.34731	.86002	.3124	21.189	22312.0	24743.2	228.790	50.81	69.70	202
350.000	2.741	.36479	.87747	.2931	22.705	22883.4	25436.9	230.801	51.47	69.10	207
360.000	2.620	.38170	.89266	.2765	24.162	23454.0	26125.9	232.742	52.14	68.74	211
370.000	2.512	.39815	.90596	.2619	25.568	24025.1	26812.2	234.623	52.80	68.55	216
380.000	2.414	.41421	.91769	.2491	26.929	24597.8	27497.2	236.449	53.45	68.48	220
390.000	2.326	.42991	.92807	.2377	28.250	25172.7	28182.1	238.228	54.09	68.51	224
400.000	2.246	.44532	.93730	.2275	29.536	25750.4	28867.6	239.964	54.71	68.61	228
410.000	2.172	.46047	.94554	.2182	30.792	26331.1	29554.4	241.660	55.31	68.76	232
420.000	2.104	.47539	.95292	.2098	32.019	26915.2	30242.9	243.319	55.90	68.95	235
430.000	2.040	.49009	.95956	.2021	33.221	27502.8	30933.5	244.944	56.47	69.16	239
440.000	1.982	.50461	.96554	.1950	34.400	28094.0	31626.3	246.537	57.02	69.40	242
450.000	1.927	.51897	.97093	.1885	35.559	28688.8	32321.6	248.099	57.55	69.66	246
460.000	1.876	.53317	.97582	.1824	36.699	29287.2	33019.4	249.633	58.06	69.92	249
470.000	1.827	.54723	.98025	.1768	37.821	29889.3	33720.0	251.139	58.56	70.19	252
480.000	1.782	.56117	.98428	.1716	38.928	30495.0	34423.2	252.620	59.03	70.46	255
490.000	1.739	.57500	.98794	.1667	40.020	31104.3	35129.3	254.076	59.49	70.74	258
500.000	1.699	.58872	.99128	.1621	41.098	31717.0	35838.0	255.508	59.94	71.01	261

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 75 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.746	26.334	.03797	.50563	45.6237	856.967	63.4	348.3	93.452	49.43	73.16	1336
70.000	26.213	.03815	.49159	44.1916	826.849	226.3	512.4	95.836	48.51	72.57	1319
80.000	25.674	.03895	.43918	38.5320	708.410	936.8	1228.9	105.393	45.28	70.71	1248
90.000	25.125	.03980	.39891	33.7826	609.939	1632.9	1931.4	113.661	43.12	69.80	1179
100.000	24.566	.04071	.36719	29.7268	526.667	2321.9	2627.2	120.996	41.71	69.51	1111
110.000	23.996	.04167	.34174	26.2168	455.258	3009.5	3322.0	127.625	40.81	69.65	1046
120.000	23.414	.04271	.32105	23.1466	393.287	3699.9	4020.2	133.702	40.26	70.08	981
130.000	22.818	.04382	.30408	20.4375	338.951	4395.8	4724.5	139.336	39.98	70.74	919
140.000	22.207	.04503	.29014	18.0293	290.885	5099.3	5437.0	144.609	39.91	71.63	857
150.000	21.578	.04634	.27869	15.8744	248.051	5811.7	6159.3	149.588	40.02	72.75	796
160.000	20.926	.04779	.26941	13.9346	209.651	6535.1	6893.5	154.327	40.31	74.15	736
170.000	20.246	.04939	.26208	12.1782	175.075	7272.2	7642.6	158.872	40.74	75.88	677
180.000	19.532	.05120	.25657	10.5787	143.857	8026.6	8410.6	163.266	41.26	77.96	618
190.000	18.771	.05327	.25292	9.1129	115.646	8802.8	9202.3	167.547	41.75	80.47	560
200.000	17.949	.05571	.25127	7.7601	90.187	9605.0	10022.9	171.750	42.09	83.54	502
210.000	17.040	.05869	.25208	6.5007	67.314	10438.0	10878.2	175.917	42.12	87.53	443
220.000	15.998	.06251	.25629	5.3137	46.962	11310.6	11779.4	180.116	41.86	93.54	384
230.000	14.735	.06787	.26617	4.1739	29.235	12259.8	12768.8	184.505	42.82	105.95	319
240.000	13.032	.07673	.28841	3.0439	14.704	13342.6	13918.1	189.390	47.51	136.55	243
250.000	10.365	.09648	.34812	1.9114	5.942	14832.4	15556.0	196.068	48.98	192.08	181
260.000	7.565	.13220	.45864	1.1634	5.437	16398.3	17389.8	203.266	48.98	162.10	159
270.000	5.966	.16761	.55998	.8319	7.189	17537.9	18795.0	208.574	48.31	121.34	159
280.000	5.068	.19730	.63562	.6644	9.501	18402.4	19882.1	212.531	48.09	98.73	165
290.000	4.490	.22269	.69269	.5628	11.722	19135.1	20805.3	215.771	48.23	87.09	172
300.000	4.077	.24529	.73754	.4933	13.787	19800.5	21640.2	218.602	48.60	80.46	179
310.000	3.760	.26597	.77391	.4421	15.712	20428.1	22422.9	221.169	49.10	76.38	185
320.000	3.506	.28524	.80405	.4024	17.516	21033.3	23172.6	223.549	49.67	73.74	191
330.000	3.296	.30344	.82944	.3706	19.222	21624.9	23900.7	225.790	50.29	72.00	196
340.000	3.117	.32080	.85111	.3443	20.843	22208.5	24614.5	227.921	50.94	70.84	202
350.000	2.963	.33748	.86978	.3221	22.393	22787.6	25318.8	229.962	51.59	70.07	206
360.000	2.828	.35361	.88602	.3032	23.881	23364.8	26016.8	231.929	52.25	69.58	211
370.000	2.708	.36926	.90023	.2867	25.316	23941.5	26711.0	233.831	52.90	69.28	216
380.000	2.601	.38451	.91274	.2722	26.705	24519.1	27402.9	235.676	53.55	69.13	220
390.000	2.504	.39941	.92381	.2594	28.053	25098.4	28094.0	237.471	54.17	69.09	224
400.000	2.415	.41402	.93366	.2479	29.364	25679.9	28785.1	239.221	54.79	69.13	228
410.000	2.334	.42836	.94244	.2375	30.642	26264.1	29476.9	240.929	55.39	69.23	232
420.000	2.260	.44247	.95030	.2281	31.892	26851.4	30169.9	242.599	55.97	69.38	235
430.000	2.191	.45637	.95736	.2195	33.115	27441.8	30864.6	244.234	56.53	69.56	239
440.000	2.127	.47009	.96373	.2116	34.314	28035.6	31561.2	245.835	57.08	69.77	243
450.000	2.068	.48364	.96947	.2044	35.491	28632.8	32260.1	247.405	57.60	70.00	246
460.000	2.012	.49704	.97467	.1977	36.648	29233.4	32961.2	248.947	58.11	70.24	249
470.000	1.960	.51030	.97938	.1915	37.788	29837.5	33664.8	250.460	58.61	70.48	252
480.000	1.910	.52344	.98366	.1857	38.910	30445.1	34370.9	251.946	59.08	70.74	256
490.000	1.864	.53646	.98756	.1803	40.017	31056.2	35079.6	253.408	59.54	71.00	259
500.000	1.820	.54937	.99111	.1753	41.110	31670.5	35790.8	254.845	59.98	71.26	262

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 80 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
67.838	26.334	.03797	.53858	45.6366	858.574	67.6	371.4	93.513	49.39	73.12	1337
70.000	26.219	.03814	.52424	44.2636	829.673	223.7	528.8	95.797	48.51	72.56	1322
80.000	25.681	.03894	.46833	38.6008	711.071	933.6	1245.1	105.352	45.27	70.69	1250
90.000	25.133	.03979	.42536	33.8493	612.480	1629.1	1947.4	113.617	43.12	69.77	1181
100.000	24.576	.04069	.39151	29.7924	529.122	2317.4	2642.9	120.949	41.71	69.48	1114
110.000	24.007	.04165	.36435	26.2818	457.652	3004.1	3337.4	127.575	40.81	69.61	1048
120.000	23.427	.04269	.34226	23.2116	395.642	3693.6	4035.1	133.648	40.26	70.03	984
130.000	22.833	.04380	.32415	20.5030	341.285	4388.6	4738.9	139.278	39.97	70.68	921
140.000	22.224	.04500	.30924	18.0958	293.216	5090.7	5450.7	144.547	39.90	71.55	860
150.000	21.598	.04630	.29700	15.9426	250.393	5801.7	6172.1	149.520	40.02	72.66	800
160.000	20.950	.04773	.28705	14.0051	212.018	6523.4	6905.3	154.251	40.30	74.03	740
170.000	20.275	.04932	.27916	12.2519	177.481	7258.3	7652.9	158.788	40.73	75.71	681
180.000	19.566	.05111	.27320	10.6565	146.316	8010.1	8419.0	163.170	41.24	77.73	623
190.000	18.814	.05315	.26916	9.1963	118.173	8782.6	9207.9	167.436	41.72	80.14	565
200.000	18.004	.05554	.26721	7.8512	92.798	9579.9	10024.2	171.618	42.05	83.04	508
210.000	17.113	.05844	.26774	6.6024	70.026	10405.6	10873.1	175.754	42.06	86.70	450
220.000	16.101	.06211	.27162	5.4313	49.790	11266.3	11763.2	179.900	41.75	92.03	393
230.000	14.897	.06713	.28081	4.3170	32.183	12193.1	12730.1	184.190	42.64	102.65	330
240.000	13.342	.07495	.30050	3.2336	17.672	13222.3	13821.9	188.832	47.15	126.93	258
250.000	11.088	.09019	.34710	2.1727	8.039	14560.5	15282.0	194.786	48.41	167.81	198
260.000	8.436	.11853	.43865	1.3692	6.072	16056.2	17004.5	201.543	48.98	161.77	168
270.000	6.666	.15001	.53456	.9683	7.156	17247.8	18447.9	206.995	48.60	128.21	163
280.000	5.605	.17841	.61307	.7592	9.168	18173.2	19600.5	211.190	48.39	104.42	166
290.000	4.925	.20305	.67369	.6347	11.320	18946.9	20571.3	214.598	48.50	91.04	173
300.000	4.445	.22497	.72153	.5513	13.381	19640.1	21439.8	217.542	48.82	83.31	179
310.000	4.082	.24496	.76032	.4908	15.323	20287.6	22247.3	220.191	49.29	78.54	185
320.000	3.794	.26355	.79243	.4446	17.154	20907.8	23016.2	222.632	49.84	75.45	191
330.000	3.558	.28106	.81947	.4077	18.887	21511.2	23759.7	224.920	50.44	73.39	196
340.000	3.359	.29772	.84252	.3776	20.537	22104.4	24486.1	227.088	51.07	71.99	201
350.000	3.188	.31370	.86237	.3524	22.116	22691.4	25201.0	229.161	51.71	71.05	206
360.000	3.038	.32911	.87961	.3309	23.632	23275.2	25908.1	231.153	52.36	70.42	211
370.000	2.907	.34405	.89470	.3123	25.093	23857.8	26610.2	233.077	53.00	70.02	216
380.000	2.789	.35859	.90797	.2960	26.507	24440.4	27309.1	234.941	53.63	69.79	220
390.000	2.682	.37279	.91972	.2816	27.878	25024.0	28006.3	236.752	54.26	69.68	224
400.000	2.586	.38669	.93015	.2688	29.212	25609.5	28703.0	238.515	54.86	69.66	228
410.000	2.498	.40032	.93946	.2573	30.512	26197.2	29399.7	240.236	55.46	69.71	232
420.000	2.417	.41372	.94779	.2468	31.781	26787.6	30097.3	241.917	56.03	69.82	236
430.000	2.342	.42691	.95527	.2373	33.024	27380.9	30796.2	243.561	56.59	69.96	239
440.000	2.273	.43992	.96201	.2286	34.241	27977.3	31496.7	245.172	57.14	70.14	243
450.000	2.209	.45277	.96809	.2207	35.436	28576.9	32199.0	246.750	57.66	70.33	246
460.000	2.148	.46546	.97359	.2133	36.610	29179.7	32903.4	248.298	58.17	70.55	250
470.000	2.092	.47801	.97858	.2065	37.765	29785.9	33610.0	249.818	58.66	70.78	253
480.000	2.039	.49044	.98311	.2001	38.903	30395.4	34319.0	251.310	59.13	71.01	256
490.000	1.989	.50276	.98723	.1942	40.025	31008.2	35030.3	252.777	59.58	71.25	259
500.000	1.942	.51497	.99099	.1887	41.132	31624.3	35744.1	254.219	60.02	71.50	262

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 90 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
68.023	26.336	.03797	.60422	45.6625	861.788	75.9	417.6	93.634	49.31	73.04	1340
70.000	26.231	.03812	.58951	44.4071	835.322	218.4	561.5	95.720	48.51	72.52	1326
80.000	25.695	.03892	.52658	38.7381	716.391	927.2	1277.4	105.269	45.27	70.65	1254
90.000	25.150	.03976	.47822	33.9824	617.560	1621.5	1979.3	113.530	43.12	69.72	1185
100.000	24.595	.04066	.44012	29.9230	534.026	2308.3	2674.3	120.856	41.70	69.42	1118
110.000	24.029	.04162	.40953	26.4112	462.433	2993.5	3368.1	127.476	40.80	69.54	1053
120.000	23.452	.04264	.38463	23.3408	400.342	3681.2	4065.0	133.542	40.25	69.94	989
130.000	22.862	.04374	.36420	20.6332	345.941	4374.1	4767.8	139.163	39.96	70.57	927
140.000	22.258	.04493	.34737	18.2280	297.860	5073.9	5478.3	144.422	39.89	71.41	866
150.000	21.637	.04622	.33351	16.0779	255.055	5782.1	6198.1	149.384	40.00	72.47	806
160.000	20.996	.04763	.32221	14.1447	216.725	6500.4	6929.1	154.102	40.28	73.79	747
170.000	20.330	.04919	.31319	12.3973	182.259	7231.2	7673.9	158.621	40.70	75.38	689
180.000	19.633	.05093	.30629	10.8096	151.191	7977.8	8436.2	162.983	41.20	77.29	632
190.000	18.897	.05292	.30148	9.3596	123.169	8743.6	9219.8	167.219	41.67	79.51	575
200.000	18.109	.05522	.29887	8.0281	97.942	9531.6	10028.6	171.362	41.97	82.11	519
210.000	17.250	.05797	.29881	6.7980	75.342	10344.0	10865.7	175.441	41.95	85.23	464
220.000	16.292	.06138	.30200	5.6536	55.298	11184.0	11736.4	179.498	41.58	89.49	409
230.000	15.183	.06586	.30996	4.5795	37.869	12074.5	12667.3	183.628	42.35	97.60	350
240.000	13.831	.07230	.32608	3.5613	23.376	13028.6	13679.3	187.931	46.63	114.69	284
250.000	12.068	.08286	.35877	2.5969	12.802	14188.1	14933.9	193.049	47.57	137.99	228
260.000	9.877	.10125	.42153	1.7748	8.122	15504.2	16415.4	198.858	48.59	151.96	189
270.000	7.993	.12511	.50158	1.2611	8.104	16718.0	17844.0	204.252	48.82	131.76	175
280.000	6.703	.14918	.57670	.9712	9.213	17719.6	19062.2	208.685	48.81	112.60	173
290.000	5.827	.17161	.64055	.7949	10.957	18566.9	20111.4	212.369	48.93	98.18	175
300.000	5.209	.19198	.69268	.6791	12.878	19315.1	21042.9	215.527	49.22	88.81	180
310.000	4.748	.21062	.73544	.5970	14.782	20003.2	21898.7	218.334	49.64	82.80	186
320.000	4.387	.22792	.77099	.5355	16.618	20654.3	22705.6	220.896	50.15	78.83	191
330.000	4.095	.24418	.80095	.4874	18.377	21282.0	23479.7	223.278	50.71	76.15	197
340.000	3.852	.25961	.82651	.4485	20.062	21894.8	24231.3	225.522	51.32	74.29	202
350.000	3.645	.27436	.84853	.4164	21.679	22498.1	24967.4	227.656	51.93	73.01	207
360.000	3.465	.28856	.86765	.3893	23.236	23095.7	25692.7	229.699	52.56	72.11	211
370.000	3.308	.30229	.88436	.3660	24.738	23689.9	26410.6	231.666	53.18	71.50	216
380.000	3.168	.31562	.89907	.3458	26.192	24282.7	27123.4	233.567	53.80	71.09	220
390.000	3.043	.32862	.91207	.3281	27.603	24875.4	27832.9	235.410	54.41	70.84	224
400.000	2.930	.34131	.92362	.3124	28.975	25468.7	28540.5	237.201	55.01	70.70	229
410.000	2.827	.35374	.93392	.2983	30.312	26063.6	29247.3	238.946	55.60	70.66	232
420.000	2.733	.36595	.94314	.2856	31.617	26660.4	29953.9	240.649	56.16	70.68	236
430.000	2.646	.37795	.95142	.2742	32.894	27259.5	30661.0	242.313	56.71	70.75	240
440.000	2.566	.38977	.95887	.2637	34.144	27861.1	31369.0	243.941	57.25	70.86	243
450.000	2.491	.40142	.96559	.2541	35.370	28465.6	32078.4	245.535	57.77	71.01	247
460.000	2.422	.41293	.97167	.2453	36.574	29072.9	32789.3	247.097	58.27	71.17	250
470.000	2.357	.42430	.97719	.2372	37.759	29683.2	33501.9	248.630	58.75	71.36	254
480.000	2.296	.43554	.98219	.2296	38.924	30296.6	34216.5	250.134	59.22	71.55	257
490.000	2.239	.44668	.98675	.2226	40.072	30912.9	34933.0	251.612	59.67	71.76	260
500.000	2.185	.45771	.99090	.2160	41.205	31532.3	35651.7	253.064	60.11	71.97	263

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 100 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
68.206	26.338	.03797	.66950	45.6883	865.003	84.1	463.8	93.755	49.23	72.96	1343
70.000	26.243	.03810	.65471	44.5502	840.971	213.2	594.2	95.643	48.51	72.49	1330
80.000	25.709	.03890	.58477	38.8748	721.710	920.8	1309.8	105.188	45.27	70.62	1259
90.000	25.166	.03974	.53102	34.1150	622.635	1613.9	2011.3	113.443	43.11	69.68	1190
100.000	24.613	.04063	.48865	30.0529	538.925	2299.4	2705.7	120.764	41.70	69.36	1123
110.000	24.050	.04158	.45462	26.5398	467.205	2983.1	3398.9	127.377	40.79	69.47	1058
120.000	23.477	.04260	.42692	23.4693	405.030	3669.0	4095.0	133.436	40.24	69.85	995
130.000	22.891	.04369	.40416	20.7624	350.582	4359.9	4796.7	139.050	39.95	70.46	933
140.000	22.292	.04486	.38538	18.3589	302.484	5057.4	5506.0	144.300	39.87	71.27	872
150.000	21.676	.04613	.36990	16.2116	259.691	5762.9	6224.2	149.250	39.98	72.29	813
160.000	21.042	.04752	.35724	14.2823	221.399	6477.9	6953.1	153.955	40.26	73.56	754
170.000	20.385	.04906	.34707	12.5402	186.995	7204.8	7695.4	158.458	40.67	75.08	697
180.000	19.699	.05077	.33920	10.9594	156.010	7946.4	8454.1	162.799	41.16	76.87	640
190.000	18.977	.05270	.33357	9.5185	128.095	8705.8	9232.8	167.010	41.62	78.94	584
200.000	18.208	.05492	.33027	8.1989	102.993	9485.4	10034.6	171.117	41.90	81.28	530
210.000	17.378	.05754	.32956	6.9846	80.534	10286.1	10861.6	175.146	41.85	83.97	477
220.000	16.464	.06074	.33204	5.8616	60.637	11108.6	11716.0	179.128	41.43	87.42	424
230.000	15.430	.06481	.33890	4.8178	43.331	11970.8	12618.9	183.133	42.12	93.86	368
240.000	14.216	.07035	.35252	3.8434	28.835	12873.7	13577.1	187.208	46.26	107.10	306
250.000	12.729	.07856	.37795	2.9381	17.752	13932.1	14717.7	191.862	47.01	122.05	254
260.000	10.924	.09154	.42344	2.1416	11.290	15104.6	16020.0	196.968	48.07	136.57	212
270.000	9.128	.10956	.48802	1.5593	9.660	16277.4	17373.0	202.075	48.71	130.28	190
280.000	7.741	.12918	.55488	1.2000	10.198	17305.7	18597.5	206.531	48.98	114.96	183
290.000	6.731	.14857	.61617	.9729	11.302	18198.5	19684.2	210.345	49.21	102.82	182
300.000	5.988	.16699	.66946	.8211	12.867	18992.8	20662.7	213.663	49.52	93.35	184
310.000	5.430	.18416	.71451	.7143	14.608	19719.0	21560.6	216.608	49.93	86.65	188
320.000	4.995	.20021	.75251	.6351	16.372	20400.4	22402.5	219.281	50.42	82.02	193
330.000	4.644	.21532	.78477	.5739	18.105	21052.4	23205.7	221.753	50.96	78.80	198
340.000	4.354	.22966	.81240	.5251	19.788	21685.0	23981.6	224.069	51.54	76.53	203
350.000	4.109	.24336	.83625	.4851	21.417	22304.8	24738.3	226.263	52.14	74.91	208
360.000	3.898	.25652	.85700	.4516	22.993	22916.2	25481.4	228.356	52.75	73.76	212
370.000	3.714	.26923	.87516	.4231	24.519	23522.3	26214.7	230.366	53.36	72.94	217
380.000	3.552	.28156	.89114	.3986	25.999	24125.5	26941.0	232.303	53.96	72.37	221
390.000	3.407	.29355	.90528	.3771	27.438	24727.1	27662.7	234.177	54.56	71.98	225
400.000	3.276	.30526	.91784	.3582	28.838	25328.5	28381.1	235.996	55.15	71.73	229
410.000	3.157	.31671	.92905	.3413	30.203	25930.5	29097.6	237.765	55.73	71.59	233
420.000	3.049	.32794	.93908	.3262	31.536	26533.8	29813.1	239.490	56.29	71.53	237
430.000	2.950	.33896	.94809	.3126	32.840	27138.7	30528.3	241.173	56.83	71.53	241
440.000	2.859	.34981	.95619	.3002	34.117	27745.7	31243.8	242.817	57.36	71.58	244
450.000	2.774	.36050	.96351	.2888	35.369	28355.0	31960.0	244.427	57.87	71.67	248
460.000	2.695	.37104	.97013	.2785	36.599	28966.8	32677.3	246.003	58.37	71.79	251
470.000	2.622	.38145	.97613	.2689	37.808	29581.3	33395.8	247.549	58.85	71.93	255
480.000	2.553	.39175	.98158	.2601	38.997	30198.4	34115.9	249.065	59.31	72.09	258
490.000	2.488	.40193	.98654	.2519	40.169	30818.3	34837.6	250.553	59.76	72.26	261
500.000	2.427	.41201	.99106	.2442	41.323	31441.0	35561.1	252.014	60.19	72.44	264

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 120 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
68.572	26.342	.03796	.79900	45.7399	871.438	100.5	556.0	93.993	49.08	72.80	1349
70.000	26.267	.03807	.78494	44.8352	852.271	202.8	659.7	95.490	48.50	72.43	1338
80.000	25.737	.03886	.70098	39.1468	732.341	908.3	1374.6	105.026	45.27	70.54	1267
90.000	25.198	.03969	.63642	34.3784	632.775	1599.0	2075.2	113.271	43.11	69.58	1199
100.000	24.650	.04057	.58550	30.3110	548.703	2281.8	2768.6	120.581	41.69	69.25	1132
110.000	24.093	.04151	.54459	26.7949	476.723	2962.4	3460.5	127.182	40.78	69.32	1068
120.000	23.526	.04251	.51124	23.7235	414.371	3644.9	4155.0	133.227	40.23	69.68	1005
130.000	22.947	.04358	.48380	21.0177	359.816	4332.0	4854.9	138.826	39.94	70.24	944
140.000	22.357	.04473	.46111	18.6172	311.674	5025.0	5561.8	144.058	39.85	71.00	884
150.000	21.752	.04597	.44234	16.4746	268.889	5725.3	6277.0	148.988	39.96	71.96	825
160.000	21.130	.04733	.42689	14.5521	230.653	6434.2	7002.1	153.668	40.22	73.12	768
170.000	20.489	.04881	.41436	12.8191	196.347	7153.7	7739.4	158.142	40.62	74.52	712
180.000	19.823	.05045	.40449	11.2503	165.500	7886.2	8491.5	162.446	41.10	76.13	657
190.000	19.127	.05228	.39714	9.8246	137.755	8634.2	9261.6	166.609	41.53	77.92	603
200.000	18.394	.05437	.39232	8.5245	112.850	9399.0	10051.4	170.654	41.78	79.85	551
210.000	17.612	.05678	.39022	7.3352	90.604	10179.6	10860.9	174.599	41.68	81.89	500
220.000	16.769	.05963	.39122	6.2447	70.911	10973.9	11689.5	178.460	41.20	84.22	451
230.000	15.843	.06312	.39607	5.2432	53.750	11793.9	12551.4	182.284	41.77	88.64	400
240.000	14.807	.06754	.40613	4.3241	39.209	12629.5	13439.9	186.063	45.75	97.95	343
250.000	13.625	.07339	.42370	3.4864	27.543	13575.3	14456.0	190.209	46.30	105.73	297
260.000	12.275	.08147	.45221	2.7415	19.233	14581.4	15558.9	194.534	47.26	114.69	256
270.000	10.822	.09240	.49393	2.1233	14.716	15625.0	16733.9	198.968	48.18	118.81	226
280.000	9.466	.10564	.54455	1.6659	13.392	16634.6	17902.4	203.219	48.87	113.63	209
290.000	8.352	.11973	.59589	1.3516	13.681	17558.2	18995.0	207.053	49.37	104.89	202
300.000	7.472	.13384	.64389	1.1331	14.475	18399.2	20005.3	210.479	49.83	97.50	199
310.000	6.770	.14771	.68770	.9748	15.551	19177.5	20950.0	213.577	50.30	91.64	199
320.000	6.206	.16114	.72677	.8565	16.896	19908.1	21841.7	216.409	50.81	86.89	201
330.000	5.746	.17403	.76111	.7656	18.384	20603.0	22691.4	219.023	51.34	83.21	204
340.000	5.366	.18637	.79114	.6937	19.928	21272.4	23508.9	221.464	51.90	80.42	208
350.000	5.045	.19823	.81742	.6355	21.480	21923.4	24302.2	223.764	52.48	78.34	212
360.000	4.770	.20965	.84048	.5874	23.019	22561.7	25077.4	225.948	53.07	76.79	216
370.000	4.532	.22068	.86080	.5469	24.533	23191.1	25839.2	228.035	53.66	75.63	220
380.000	4.322	.23137	.87876	.5123	26.017	23814.5	26591.0	230.040	54.25	74.77	224
390.000	4.136	.24177	.89471	.4823	27.471	24434.1	27335.3	231.974	54.83	74.13	228
400.000	3.970	.25191	.90892	.4561	28.894	25051.3	28074.2	233.844	55.40	73.68	232
410.000	3.820	.26181	.92162	.4329	30.286	25667.5	28809.3	235.659	55.96	73.36	236
420.000	3.683	.27151	.93301	.4123	31.650	26283.5	29541.7	237.424	56.51	73.14	240
430.000	3.558	.28103	.94325	.3938	32.987	26900.1	30272.4	239.144	57.04	73.01	243
440.000	3.444	.29038	.95247	.3771	34.299	27517.6	31002.1	240.822	57.56	72.95	247
450.000	3.338	.29957	.96081	.3620	35.586	28136.6	31731.5	242.460	58.06	72.93	250
460.000	3.240	.30864	.96836	.3481	36.851	28757.3	32460.9	244.064	58.55	72.96	254
470.000	3.149	.31758	.97521	.3355	38.095	29379.9	33190.8	245.633	59.02	73.02	257
480.000	3.064	.32640	.98143	.3238	39.320	30004.7	33921.5	247.172	59.48	73.11	260
490.000	2.984	.33513	.98709	.3130	40.526	30631.6	34653.2	248.680	59.92	73.22	264
500.000	2.909	.34375	.99225	.3030	41.715	31260.9	35386.0	250.161	60.34	73.35	267

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 140 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
68.937	26.346	.03796	.92711	45.7915	877.879	116.7	648.1	94.228	48.93	72.65	1354
70.000	26.290	.03804	.91495	45.1184	863.573	192.6	725.2	95.338	48.50	72.37	1347
80.000	25.764	.03881	.81695	39.4170	742.967	896.0	1439.4	104.865	45.26	70.47	1276
90.000	25.229	.03964	.74156	34.6397	642.900	1584.3	2139.2	113.101	43.10	69.49	1208
100.000	24.686	.04051	.68209	30.5666	558.457	2264.5	2831.6	120.400	41.69	69.14	1142
110.000	24.134	.04143	.63426	27.0473	486.208	2942.2	3522.3	126.990	40.78	69.19	1077
120.000	23.573	.04242	.59524	23.9746	423.668	3621.4	4215.3	133.022	40.22	69.51	1015
130.000	23.002	.04347	.56309	21.2693	368.994	4304.7	4913.4	138.606	39.92	70.04	954
140.000	22.420	.04460	.53645	18.8709	320.790	4993.5	5618.0	143.821	39.83	70.75	895
150.000	21.825	.04582	.51433	16.7321	277.994	5688.9	6330.4	148.732	39.93	71.64	838
160.000	21.215	.04714	.49604	14.8152	239.792	6392.1	7052.0	153.389	40.19	72.73	781
170.000	20.588	.04857	.48108	13.0897	205.556	7104.8	7784.8	157.836	40.58	74.01	726
180.000	19.941	.05015	.46912	11.5306	174.811	7829.1	8531.2	162.107	41.04	75.47	672
190.000	19.268	.05190	.45995	10.1171	147.192	8567.0	9293.6	166.229	41.46	77.05	620
200.000	18.564	.05387	.45352	8.8321	122.429	9319.0	10073.1	170.222	41.68	78.66	570
210.000	17.822	.05611	.44990	7.6616	100.327	10083.1	10868.7	174.099	41.55	80.23	522
220.000	17.033	.05871	.44934	6.5941	80.759	10855.4	11677.3	177.867	41.01	81.84	476
230.000	16.184	.06179	.45234	5.6205	63.662	11645.0	12510.0	181.561	41.52	85.09	428
240.000	15.262	.06552	.45970	4.7346	49.049	12437.1	13354.4	185.152	45.41	92.50	375
250.000	14.249	.07018	.47269	3.9338	37.019	13319.6	14302.1	189.020	45.86	97.33	332
260.000	13.136	.07613	.49300	3.2211	27.774	14238.1	15303.9	192.949	46.74	103.02	293
270.000	11.944	.08372	.52211	2.6078	21.542	15186.4	16358.5	196.929	47.69	107.43	261
280.000	10.751	.09302	.55936	2.1107	18.245	16136.2	17438.4	200.856	48.54	107.70	238
290.000	9.663	.10349	.60090	1.7337	17.167	17048.8	18497.7	204.574	49.26	103.64	225
300.000	8.738	.11445	.64236	1.4572	17.312	17904.1	19506.3	207.993	49.87	98.07	218
310.000	7.971	.12546	.68143	1.2526	17.973	18704.7	20461.1	211.124	50.44	93.04	216
320.000	7.333	.13636	.71753	1.0971	18.825	19461.7	21370.7	214.013	51.01	89.05	215
330.000	6.798	.14710	.75058	.9757	19.866	20185.1	22244.5	216.702	51.58	85.79	215
340.000	6.345	.15760	.78048	.8790	21.083	20882.2	23088.5	219.221	52.15	83.10	217
350.000	5.959	.16781	.80729	.8007	22.410	21559.0	23908.3	221.598	52.73	80.93	220
360.000	5.627	.17772	.83124	.7361	23.797	22220.5	24708.6	223.853	53.32	79.21	223
370.000	5.338	.18735	.85260	.6819	25.208	22870.7	25493.6	226.004	53.90	77.86	226
380.000	5.083	.19672	.87167	.6359	26.624	23512.7	26266.8	228.066	54.48	76.82	229
390.000	4.858	.20584	.88872	.5963	28.033	24148.9	27030.8	230.050	55.05	76.01	233
400.000	4.657	.21475	.90400	.5618	29.428	24781.2	27787.7	231.966	55.62	75.40	237
410.000	4.475	.22346	.91771	.5315	30.806	25410.8	28539.3	233.822	56.17	74.94	240
420.000	4.311	.23199	.93005	.5047	32.165	26039.1	29286.9	235.624	56.70	74.60	244
430.000	4.161	.24035	.94118	.4807	33.504	26666.7	30031.7	237.377	57.23	74.36	247
440.000	4.023	.24857	.95123	.4592	34.822	27294.5	30774.4	239.084	57.74	74.20	251
450.000	3.896	.25665	.96034	.4397	36.121	27922.8	31515.9	240.750	58.23	74.10	254
460.000	3.779	.26461	.96859	.4220	37.400	28552.1	32256.6	242.378	58.71	74.05	257
470.000	3.670	.27246	.97609	.4058	38.660	29182.7	32997.1	243.971	59.18	74.04	261
480.000	3.569	.28020	.98292	.3910	39.903	29814.8	33737.6	245.530	59.63	74.07	264
490.000	3.474	.28785	.98914	.3773	41.128	30448.7	34478.5	247.057	60.06	74.12	267
500.000	3.385	.29540	.99481	.3647	42.337	31084.4	35220.1	248.556	60.48	74.19	270

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 160 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
69.300	26.350	.03795	1.05385	45.8429	884.322	132.7	739.9	94.459	48.78	72.50	1360
70.000	26.313	.03800	1.04475	45.4001	874.880	182.6	790.7	95.187	48.50	72.32	1355
80.000	25.790	.03877	.93268	39.6853	753.588	883.9	1504.3	104.706	45.26	70.39	1284
90.000	25.260	.03959	.84646	34.8990	653.013	1569.9	2203.3	112.933	43.10	69.41	1217
100.000	24.722	.04045	.77841	30.8199	568.190	2247.5	2894.7	120.222	41.68	69.03	1151
110.000	24.175	.04137	.72364	27.2969	495.662	2922.4	3584.2	126.800	40.77	69.06	1087
120.000	23.620	.04234	.67893	24.2226	432.924	3598.4	4275.8	132.820	40.21	69.36	1025
130.000	23.056	.04337	.64204	21.5172	378.118	4278.2	4972.1	138.390	39.91	69.85	965
140.000	22.481	.04448	.61141	19.1203	329.839	4962.9	5674.6	143.590	39.81	70.52	907
150.000	21.896	.04567	.58591	16.9845	287.015	5653.7	6384.4	148.482	39.90	71.35	850
160.000	21.297	.04695	.56473	15.0722	248.825	6351.5	7102.7	153.119	40.16	72.36	794
170.000	20.684	.04835	.54728	13.3528	214.636	7057.9	7831.4	157.540	40.54	73.55	740
180.000	20.052	.04987	.53315	11.8015	183.964	7774.7	8572.6	161.781	40.99	74.88	688
190.000	19.399	.05155	.52209	10.3978	156.436	8503.6	9328.4	165.867	41.39	76.28	637
200.000	18.721	.05342	.51395	9.1248	131.773	9244.4	10099.1	169.816	41.60	77.65	588
210.000	18.013	.05552	.50873	7.9686	109.767	9994.7	10882.9	173.635	41.43	78.88	542
220.000	17.267	.05791	.50658	6.9178	90.271	10749.0	11675.7	177.330	40.86	79.98	498
230.000	16.477	.06069	.50778	5.9637	73.193	11515.3	12486.4	180.926	41.33	82.50	453
240.000	15.635	.06396	.51285	5.0996	58.495	12276.3	13299.6	184.385	45.16	88.82	402
250.000	14.731	.06788	.52252	4.3215	46.191	13117.1	14203.2	188.073	45.55	92.12	362
260.000	13.764	.07266	.53774	3.6285	36.353	13981.7	15144.1	191.763	46.37	96.08	325
270.000	12.742	.07848	.55936	3.0237	29.073	14867.8	16123.5	195.459	47.31	99.61	293
280.000	11.700	.08547	.58740	2.5134	24.338	15762.7	17130.2	199.120	48.22	101.31	268
290.000	10.698	.09348	.62028	2.1012	21.841	16644.8	18140.4	202.665	49.05	100.27	250
300.000	9.790	.10214	.65520	1.7804	20.959	17494.2	19128.5	206.014	49.78	97.12	239
310.000	9.001	.11110	.68964	1.5344	21.032	18303.0	20080.5	209.136	50.45	93.28	234
320.000	8.327	.12010	.72222	1.3443	21.584	19073.6	20995.1	212.040	51.08	89.72	231
330.000	7.749	.12904	.75250	1.1947	22.347	19812.5	21877.1	214.755	51.69	86.79	229
340.000	7.252	.13790	.78047	1.0744	23.220	20526.6	22732.9	217.310	52.30	84.44	229
350.000	6.820	.14663	.80618	.9760	24.229	21221.2	23567.2	219.728	52.90	82.48	230
360.000	6.443	.15521	.82965	.8944	25.361	21900.3	24383.6	222.028	53.49	80.85	232
370.000	6.112	.16362	.85095	.8259	26.579	22567.3	25185.2	224.225	54.08	79.50	234
380.000	5.819	.17184	.87023	.7677	27.851	23225.0	25974.5	226.330	54.66	78.41	237
390.000	5.559	.17990	.88765	.7177	29.154	23875.7	26754.0	228.355	55.23	77.53	240
400.000	5.325	.18778	.90339	.6742	30.470	24521.2	27525.7	230.308	55.79	76.83	243
410.000	5.115	.19550	.91761	.6362	31.789	25163.1	28291.2	232.199	56.34	76.29	246
420.000	4.924	.20308	.93048	.6025	33.105	25802.6	29051.9	234.032	56.87	75.87	249
430.000	4.750	.21052	.94213	.5726	34.413	26440.5	29808.9	235.813	57.39	75.55	252
440.000	4.591	.21783	.95270	.5458	35.709	27077.8	30563.1	237.547	57.90	75.31	255
450.000	4.444	.22503	.96230	.5216	36.993	27714.9	31315.3	239.237	58.38	75.14	258
460.000	4.308	.23212	.97103	.4997	38.264	28352.3	32066.2	240.887	58.86	75.03	262
470.000	4.182	.23910	.97897	.4797	39.520	28990.5	32816.1	242.500	59.32	74.97	265
480.000	4.065	.24600	.98622	.4614	40.763	29629.7	33565.6	244.078	59.76	74.94	268
490.000	3.956	.25281	.99283	.4447	41.990	30270.1	34315.0	245.623	60.19	74.94	271
500.000	3.853	.25954	.99887	.4292	43.205	30911.9	35064.5	247.138	60.61	74.97	274

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 180 BAR

T K	DEN MOL/L	VOL L/MOL	Z	DP/DT BAR/K	DP/DD BAR-L/MOL	E J/MOL	H J/MOL	S J/MOL/K	CV J/MOL/K	CP J/MOL/K	W M/SEC
69.661	26.353	.03795	1.17926	45.8942	890.772	148.6	831.7	94.687	48.63	72.35	1366
70.000	26.336	.03797	1.17433	45.6801	886.190	172.7	856.2	95.038	48.50	72.26	1363
80.000	25.817	.03873	1.04820	39.9518	764.205	872.0	1569.2	104.548	45.26	70.33	1293
90.000	25.290	.03954	.95113	35.1563	663.113	1555.7	2267.4	112.766	43.09	69.32	1225
100.000	24.756	.04039	.87448	31.0709	577.903	2230.8	2957.9	120.045	41.67	68.93	1160
110.000	24.215	.04130	.81275	27.5441	505.087	2902.9	3646.3	126.613	40.76	68.94	1096
120.000	23.666	.04226	.76232	24.4676	442.141	3576.0	4336.5	132.621	40.20	69.21	1035
130.000	23.108	.04328	.72066	21.7618	387.192	4252.3	5031.2	138.178	39.89	69.67	975
140.000	22.541	.04436	.68601	19.3658	338.825	4933.2	5731.7	143.362	39.80	70.29	918
150.000	21.965	.04553	.65709	17.2323	295.958	5619.5	6439.0	148.238	39.88	71.08	861
160.000	21.376	.04678	.63297	15.3235	257.763	6312.3	7154.3	152.855	40.13	72.03	807
170.000	20.775	.04814	.61298	13.6091	223.600	7012.8	7879.2	157.254	40.50	73.13	754
180.000	20.158	.04961	.59664	12.0642	192.975	7722.8	8615.7	161.468	40.94	74.35	702
190.000	19.524	.05122	.58361	10.6684	165.510	8443.5	9365.4	165.522	41.33	75.61	653
200.000	18.868	.05300	.57370	9.4047	140.915	9174.6	10128.6	169.431	41.52	76.79	605
210.000	18.187	.05498	.56682	8.2595	118.969	9912.8	10902.5	173.202	41.34	77.74	561
220.000	17.478	.05722	.56302	7.2213	99.510	10652.3	11682.1	176.836	40.74	78.48	519
230.000	16.734	.05976	.56247	6.2812	82.421	11399.8	12475.4	180.355	41.18	80.49	476
240.000	15.952	.06269	.56547	5.4320	67.630	12137.0	13265.4	183.715	44.97	86.12	427
250.000	15.127	.06611	.57246	4.6687	55.100	12947.8	14137.7	187.275	45.31	88.53	389
260.000	14.258	.07014	.58399	3.9883	44.832	13775.3	15037.7	190.805	46.10	91.48	353
270.000	13.352	.07490	.60054	3.3900	36.839	14618.7	15966.9	194.311	47.02	94.27	322
280.000	12.426	.08047	.62221	2.8750	31.094	15471.6	16920.2	197.778	47.95	96.15	296
290.000	11.515	.08684	.64828	2.4439	27.432	16321.5	17884.6	201.162	48.83	96.45	276
300.000	10.657	.09384	.67716	2.0935	25.486	17154.4	18843.4	204.413	49.64	95.06	262
310.000	9.879	.10123	.70691	1.8143	24.763	17960.3	19782.3	207.491	50.38	92.60	253
320.000	9.192	.10879	.73601	1.5931	24.804	18736.3	20694.5	210.388	51.07	89.83	247
330.000	8.591	.11640	.76359	1.4166	25.274	19484.4	21579.5	213.111	51.74	87.23	244
340.000	8.067	.12396	.78932	1.2738	25.967	20209.2	22440.5	215.681	52.38	85.03	243
350.000	7.606	.13147	.81318	1.1565	26.765	20915.0	23281.4	218.119	53.00	83.23	243
360.000	7.200	.13890	.83527	1.0586	27.646	21606.0	24106.2	220.443	53.61	81.76	243
370.000	6.838	.14624	.85564	.9760	28.626	22285.3	24917.5	222.666	54.21	80.54	244
380.000	6.516	.15347	.87436	.9054	29.697	22955.1	25717.6	224.800	54.80	79.51	246
390.000	6.227	.16060	.89148	.8447	30.837	23617.5	26508.2	226.853	55.37	78.65	248
400.000	5.966	.16760	.90711	.7920	32.025	24274.1	27291.0	228.835	55.93	77.94	250
410.000	5.731	.17449	.92136	.7458	33.242	24926.6	28067.4	230.753	56.48	77.36	253
420.000	5.517	.18127	.93434	.7050	34.478	25575.9	28838.7	232.611	57.01	76.90	255
430.000	5.321	.18793	.94617	.6688	35.722	26223.0	29605.8	234.416	57.53	76.54	258
440.000	5.142	.19449	.95695	.6363	36.968	26868.9	30369.8	236.173	58.03	76.26	261
450.000	4.976	.20096	.96678	.6071	38.213	27514.0	31131.2	237.884	58.52	76.04	264
460.000	4.823	.20733	.97574	.5807	39.452	28158.9	31890.8	239.553	58.99	75.89	267
470.000	4.681	.21361	.98393	.5567	40.685	28804.1	32649.2	241.184	59.44	75.78	270
480.000	4.549	.21982	.99142	.5348	41.909	29449.9	33406.6	242.779	59.89	75.71	273
490.000	4.426	.22595	.99826	.5147	43.123	30096.5	34163.5	244.339	60.31	75.68	276
500.000	4.310	.23200	1.00453	.4961	44.328	30744.1	34920.2	245.868	60.72	75.67	278

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 200 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
70.021	26.357	.03794	1.30337	45.9455	897.227	164.4	923.2	94.911	48.49	72.20	1371
80.000	25.843	.03870	1.16349	40.2167	774.820	860.2	1634.1	104.392	45.25	70.26	1301
90.000	25.320	.03949	1.05556	35.4117	673.203	1541.7	2331.6	112.601	43.09	69.24	1234
100.000	24.791	.04034	.97029	31.3198	587.598	2214.4	3021.2	119.871	41.67	68.83	1169
110.000	24.254	.04123	.90160	27.7887	514.485	2883.9	3708.5	126.428	40.75	68.82	1106
120.000	23.710	.04218	.84542	24.7098	451.322	3553.9	4397.4	132.425	40.19	69.06	1045
130.000	23.159	.04318	.79897	22.0030	396.219	4226.9	5090.5	137.969	39.88	69.50	986
140.000	22.600	.04425	.76027	19.6074	347.752	4904.1	5789.1	143.140	39.78	70.08	928
150.000	22.031	.04539	.72789	17.4756	304.829	5586.3	6494.1	147.999	39.86	70.82	873
160.000	21.453	.04661	.70080	15.5696	266.613	6274.3	7206.6	152.598	40.10	71.72	819
170.000	20.863	.04793	.67823	13.8592	232.456	6969.4	7928.1	156.976	40.47	72.75	767
180.000	20.260	.04936	.65962	12.3194	201.859	7673.0	8660.2	161.166	40.90	73.87	716
190.000	19.641	.05091	.64457	10.9298	174.434	8386.3	9404.6	165.191	41.28	75.01	668
200.000	19.006	.05262	.63283	9.6737	149.880	9108.7	10161.0	169.065	41.46	76.03	622
210.000	18.349	.05450	.62424	8.5370	127.968	9836.3	10926.3	172.794	41.26	76.78	579
220.000	17.670	.05659	.61877	7.5083	108.519	10563.2	11695.0	176.377	40.64	77.24	538
230.000	16.965	.05895	.61648	6.5784	91.400	11295.3	12474.2	179.833	41.05	78.89	497
240.000	16.230	.06161	.61754	5.7397	76.512	12013.6	13245.9	183.116	44.82	84.05	449
250.000	15.464	.06467	.62221	4.9864	63.786	12801.4	14094.7	186.580	45.13	85.88	413
260.000	14.667	.06818	.63078	4.3142	53.178	13601.4	14965.0	189.994	45.90	88.20	379
270.000	13.844	.07223	.64353	3.7202	44.656	14413.9	15858.6	193.365	46.80	90.46	348
280.000	13.006	.07689	.66052	3.2029	38.171	15234.9	16772.6	196.690	47.73	92.22	322
290.000	12.174	.08214	.68136	2.7608	33.604	16056.9	17699.8	199.943	48.64	93.02	300
300.000	11.372	.08794	.70509	2.3908	30.718	16870.4	18629.1	203.093	49.49	92.66	284
310.000	10.624	.09413	.73040	2.0869	29.170	17667.0	19549.6	206.111	50.28	91.29	273
320.000	9.944	.10057	.75595	1.8398	28.577	18441.8	20453.1	208.980	51.03	89.36	265
330.000	9.336	.10712	.78078	1.6390	28.608	19194.0	21336.3	211.698	51.73	87.28	260
340.000	8.796	.11369	.80434	1.4748	29.019	19925.5	22199.3	214.274	52.40	85.34	257
350.000	8.317	.12024	.82638	1.3391	29.650	20639.2	23044.1	216.723	53.05	83.66	256
360.000	7.890	.12675	.84689	1.2256	30.400	21338.5	23873.4	219.060	53.68	82.26	256
370.000	7.508	.13319	.86592	1.1293	31.213	22026.2	24690.1	221.298	54.30	81.12	256
380.000	7.164	.13958	.88357	1.0469	32.093	22704.8	25496.5	223.448	54.89	80.18	256
390.000	6.854	.14590	.89990	.9757	33.049	23376.1	26294.2	225.520	55.47	79.39	258
400.000	6.573	.15215	.91496	.9137	34.075	24041.7	27084.7	227.522	56.04	78.72	259
410.000	6.317	.15832	.92882	.8592	35.156	24702.7	27869.0	229.459	56.59	78.17	261
420.000	6.083	.16440	.94156	.8111	36.278	25360.3	28648.3	231.337	57.12	77.71	263
430.000	5.868	.17040	.95323	.7684	37.428	26015.5	29423.5	233.161	57.64	77.33	265
440.000	5.671	.17632	.96394	.7301	38.598	26668.8	30195.3	234.935	58.14	77.03	268
450.000	5.490	.18217	.97375	.6957	39.779	27321.1	30964.4	236.663	58.63	76.80	270
460.000	5.321	.18793	.98274	.6647	40.966	27972.8	31731.4	238.349	59.10	76.62	273
470.000	5.165	.19363	.99097	.6364	42.155	28624.4	32496.9	239.995	59.55	76.48	276
480.000	5.019	.19925	.99852	.6106	43.343	29276.1	33261.2	241.604	59.99	76.39	278
490.000	4.882	.20481	1.00545	.5870	44.529	29928.4	34024.7	243.179	60.42	76.32	281
500.000	4.755	.21031	1.01180	.5653	45.709	30581.5	34787.8	244.720	60.83	76.29	284

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 220 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
70.379	26.361	.03793	1.42620	45.9967	903.687	180.1	1014.6	95.132	48.35	72.06	1377
80.000	25.868	.03866	1.27857	40.4798	785.431	848.6	1699.1	104.237	45.25	70.19	1309
90.000	25.350	.03945	1.15976	35.6652	683.283	1528.0	2395.9	112.438	43.09	69.16	1242
100.000	24.825	.04028	1.06587	31.5666	597.275	2198.3	3084.6	119.698	41.66	68.74	1178
110.000	24.293	.04116	.99019	28.0310	523.858	2865.2	3770.8	126.245	40.75	68.70	1115
120.000	23.754	.04210	.92825	24.9493	460.468	3532.4	4458.5	132.231	40.18	68.93	1054
130.000	23.209	.04309	.87697	22.2412	405.203	4202.2	5150.1	137.763	39.87	69.33	996
140.000	22.656	.04414	.83420	19.8456	356.624	4875.8	5846.8	142.921	39.77	69.89	939
150.000	22.096	.04526	.79834	17.7147	313.632	5554.0	6549.7	147.766	39.84	70.59	884
160.000	21.526	.04645	.76824	15.8109	275.381	6237.6	7259.6	152.347	40.08	71.43	831
170.000	20.947	.04774	.74304	14.1036	241.216	6927.6	7977.8	156.706	40.44	72.39	779
180.000	20.357	.04912	.72212	12.5678	210.629	7625.3	8706.0	160.873	40.86	73.44	730
190.000	19.753	.05062	.70501	11.1833	183.223	8331.8	9445.6	164.872	41.23	74.47	682
200.000	19.135	.05226	.69139	9.9329	158.691	9046.3	10196.0	168.715	41.40	75.36	637
210.000	18.501	.05405	.68105	8.8029	136.791	9764.6	10953.8	172.408	41.19	75.95	596
220.000	17.847	.05603	.67389	7.7814	117.333	10480.5	11713.2	175.948	40.55	76.20	557
230.000	17.174	.05823	.66988	6.8590	100.169	11199.5	12480.6	179.352	40.95	77.58	516
240.000	16.477	.06069	.66909	6.0278	85.181	11902.4	13237.5	182.571	44.69	82.40	470
250.000	15.758	.06346	.67164	5.2814	72.278	12671.8	14067.9	185.960	44.99	83.84	435
260.000	15.017	.06659	.67770	4.6145	61.388	13450.6	14915.6	189.285	45.73	85.73	402
270.000	14.257	.07014	.68739	4.0231	52.449	14239.3	15782.4	192.556	46.63	87.62	372
280.000	13.486	.07415	.70071	3.5041	45.393	15035.6	16666.9	195.773	47.56	89.20	346
290.000	12.718	.07863	.71741	3.0545	40.116	15834.6	17564.4	198.922	48.47	90.17	324
300.000	11.969	.08355	.73688	2.6712	36.446	16629.7	18467.7	201.984	49.35	90.35	306
310.000	11.258	.08883	.75819	2.3485	34.134	17414.4	19368.6	204.938	50.18	89.72	293
320.000	10.597	.09437	.78032	2.0811	32.883	18183.9	20260.1	207.768	50.96	88.49	283
330.000	9.993	.10007	.80237	1.8594	32.398	18936.0	21137.5	210.469	51.70	86.96	277
340.000	9.448	.10584	.82369	1.6758	32.432	19670.7	21999.2	213.041	52.40	85.38	272
350.000	8.958	.11163	.84392	1.5226	32.803	20389.6	22845.5	215.494	53.07	83.90	270
360.000	8.518	.11740	.86290	1.3938	33.382	21095.0	23677.8	217.839	53.72	82.60	268
370.000	8.121	.12314	.88058	1.2843	34.087	21789.2	24498.2	220.087	54.35	81.50	268
380.000	7.762	.12883	.89703	1.1904	34.862	22474.3	25308.4	222.248	54.96	80.59	268
390.000	7.437	.13447	.91232	1.1090	35.682	23152.2	26110.6	224.332	55.55	79.86	268
400.000	7.140	.14006	.92652	1.0379	36.557	23824.6	26906.0	226.345	56.12	79.24	269
410.000	6.868	.14561	.93969	.9753	37.492	24492.4	27695.8	228.296	56.68	78.73	270
420.000	6.618	.15109	.95188	.9200	38.481	25156.8	28480.9	230.188	57.21	78.30	272
430.000	6.389	.15652	.96315	.8707	39.516	25818.5	29262.0	232.026	57.73	77.94	274
440.000	6.177	.16189	.97354	.8265	40.586	26478.3	30039.9	233.814	58.24	77.65	276
450.000	5.981	.16720	.98311	.7868	41.683	27136.8	30815.1	235.556	58.72	77.41	278
460.000	5.799	.17244	.99192	.7510	42.798	27794.4	31588.2	237.255	59.19	77.22	280
470.000	5.630	.17763	1.00003	.7184	43.926	28451.7	32359.6	238.914	59.65	77.07	282
480.000	5.471	.18277	1.00749	.6886	45.062	29108.9	33129.7	240.536	60.08	76.96	285
490.000	5.324	.18784	1.01435	.6614	46.203	29766.3	33898.9	242.122	60.51	76.88	287
500.000	5.185	.19287	1.02065	.6364	47.346	30424.3	34667.4	243.674	60.92	76.83	289

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 250 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
70.913	26.367	.03793	1.60811	46.0734	913.385	203.3	1151.4	95.457	48.14	71.84	1385
80.000	25.906	.03860	1.45080	40.8715	801.347	831.6	1796.6	104.008	45.25	70.10	1322
90.000	25.393	.03938	1.31566	36.0420	698.387	1507.8	2492.3	112.196	43.08	69.04	1255
100.000	24.874	.04020	1.20880	31.9330	611.762	2174.7	3179.8	119.443	41.66	68.60	1191
110.000	24.349	.04107	1.12260	28.3902	537.875	2837.8	3864.5	125.976	40.74	68.54	1128
120.000	23.819	.04198	1.05198	25.3039	474.130	3500.8	4550.4	131.946	40.17	68.73	1068
130.000	23.282	.04295	.99344	22.5931	418.603	4166.0	5239.8	137.461	39.85	69.10	1011
140.000	22.739	.04398	.94451	20.1965	369.838	4834.6	5934.1	142.600	39.75	69.61	955
150.000	22.189	.04507	.90337	18.0663	326.722	5507.2	6633.9	147.424	39.82	70.25	901
160.000	21.633	.04623	.86870	16.1645	288.396	6184.5	7340.1	151.982	40.05	71.03	848
170.000	21.068	.04746	.83951	14.4604	254.192	6867.3	8053.9	156.314	40.40	71.91	798
180.000	20.495	.04879	.81506	12.9291	223.590	7557.1	8776.9	160.451	40.82	72.85	749
190.000	19.911	.05022	.79479	11.5501	196.184	8254.4	9510.0	164.415	41.17	73.76	703
200.000	19.317	.05177	.77828	10.3062	171.653	8958.3	10252.5	168.218	41.33	74.50	660
210.000	18.710	.05345	.76526	9.1833	149.740	9664.6	11000.7	171.864	41.10	74.88	619
220.000	18.090	.05528	.75552	8.1695	130.243	10366.4	11748.4	175.349	40.45	74.89	582
230.000	17.455	.05729	.74894	7.2548	112.993	11069.1	12501.3	178.689	40.82	75.98	544
240.000	16.806	.05950	.74548	6.4310	97.853	11753.0	13240.6	181.833	44.54	80.46	498
250.000	16.141	.06195	.74513	5.6909	84.710	12500.8	14049.6	185.135	44.81	81.50	465
260.000	15.463	.06467	.74790	5.0284	73.464	13255.1	14871.9	188.360	45.54	82.97	434
270.000	14.773	.06769	.75380	4.4386	64.027	14016.9	15709.2	191.520	46.42	84.48	405
280.000	14.078	.07103	.76277	3.9169	56.312	14785.2	16561.0	194.618	47.35	85.83	379
290.000	13.385	.07471	.77460	3.4593	50.219	15557.0	17424.7	197.648	48.27	86.84	356
300.000	12.704	.07871	.78892	3.0619	45.617	16328.4	18296.2	200.602	49.17	87.37	337
310.000	12.047	.08301	.80515	2.7201	42.334	17095.0	19170.3	203.468	50.03	87.37	322
320.000	11.422	.08755	.82262	2.4289	40.163	17853.2	20041.9	206.235	50.85	86.88	310
330.000	10.839	.09226	.84062	2.1821	38.877	18600.2	20906.7	208.897	51.63	86.03	302
340.000	10.300	.09708	.85856	1.9734	38.260	19334.8	21761.8	211.450	52.37	84.98	295
350.000	9.807	.10197	.87599	1.7968	38.127	20057.0	22606.2	213.898	53.07	83.88	291
360.000	9.357	.10687	.89262	1.6466	38.333	20767.9	23439.7	216.246	53.75	82.83	288
370.000	8.947	.11177	.90832	1.5180	38.769	21468.8	24263.2	218.502	54.40	81.87	286
380.000	8.573	.11665	.92302	1.4072	39.358	22161.3	25077.6	220.674	55.02	81.04	285
390.000	8.230	.12150	.93674	1.3109	40.047	22846.8	25884.3	222.769	55.63	80.33	285
400.000	7.917	.12632	.94951	1.2266	40.799	23526.7	26684.6	224.796	56.21	79.74	285
410.000	7.628	.13109	.96140	1.1522	41.588	24202.2	27479.6	226.759	56.77	79.27	285
420.000	7.362	.13584	.97247	1.0863	42.411	24874.3	28270.3	228.664	57.32	78.88	286
430.000	7.115	.14055	.98278	1.0274	43.275	25543.7	29057.4	230.516	57.84	78.56	287
440.000	6.886	.14522	.99236	.9745	44.182	26211.2	29841.6	232.319	58.35	78.29	288
450.000	6.673	.14985	1.00126	.9269	45.129	26877.2	30623.4	234.076	58.84	78.07	290
460.000	6.475	.15444	1.00951	.8838	46.110	27542.2	31403.2	235.790	59.31	77.90	292
470.000	6.290	.15899	1.01714	.8446	47.121	28206.6	32181.4	237.463	59.76	77.75	293
480.000	6.116	.16350	1.02421	.8089	48.154	28870.8	32958.4	239.099	60.20	77.64	295
490.000	5.953	.16797	1.03074	.7761	49.204	29535.0	33734.3	240.699	60.63	77.55	297
500.000	5.800	.17240	1.03677	.7461	50.267	30199.4	34509.5	242.265	61.03	77.49	299

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 300 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
71.796	26.377	.03791	1.90527	46.2008	929.573	241.3	1378.7	95.984	47.81	71.50	1399
80.000	25.968	.03851	1.73685	41.5165	827.873	804.1	1959.3	103.632	45.24	69.95	1342
90.000	25.464	.03927	1.57443	36.6616	723.527	1475.2	2653.4	111.800	43.08	68.86	1276
100.000	24.954	.04007	1.44590	32.5342	635.838	2136.6	3338.8	119.027	41.65	68.38	1212
110.000	24.440	.04092	1.34211	28.9782	561.131	2793.7	4021.2	125.537	40.73	68.28	1151
120.000	23.922	.04180	1.25694	25.8827	496.758	3450.2	4704.4	131.484	40.15	68.43	1091
130.000	23.398	.04274	1.18620	23.1660	440.755	4108.4	5390.5	136.972	39.83	68.75	1035
140.000	22.870	.04372	1.12690	20.7661	391.636	4769.2	6080.9	142.083	39.72	69.19	980
150.000	22.338	.04477	1.07685	18.6348	348.265	5433.2	6776.2	146.875	39.79	69.76	927
160.000	21.800	.04587	1.03445	16.7338	309.759	6100.9	7477.0	151.399	40.01	70.44	876
170.000	21.257	.04704	.99846	15.0323	275.433	6773.2	8184.5	155.692	40.35	71.22	827
180.000	20.708	.04829	.96798	13.5049	244.748	7451.2	8899.9	159.786	40.75	72.03	780
190.000	20.153	.04962	.94229	12.1310	217.278	8135.4	9623.9	163.701	41.09	72.78	736
200.000	19.592	.05104	.92084	10.8932	192.685	8824.4	10355.7	167.449	41.23	73.32	694
210.000	19.023	.05257	.90323	9.7770	170.693	9514.0	11091.1	171.032	40.98	73.48	656
220.000	18.446	.05421	.88913	8.7701	151.078	10197.0	11823.4	174.446	40.31	73.22	621
230.000	17.862	.05599	.87829	7.8621	133.654	10878.5	12558.1	177.705	40.66	74.00	585
240.000	17.270	.05791	.87055	7.0440	118.260	11538.7	13275.9	180.757	44.36	78.12	541
250.000	16.671	.05999	.86576	6.3081	104.759	12260.0	14059.6	183.956	44.60	78.77	510
260.000	16.066	.06224	.86380	5.6476	93.030	12985.2	14852.6	187.067	45.31	79.85	480
270.000	15.457	.06469	.86455	5.0564	82.961	13715.9	15656.8	190.101	46.18	81.00	452
280.000	14.848	.06735	.86788	4.5293	74.448	14451.9	16472.4	193.068	47.10	82.09	427
290.000	14.242	.07021	.87361	4.0613	67.386	15191.6	17298.1	195.965	48.02	83.02	405
300.000	13.644	.07329	.88147	3.6478	61.668	15933.2	18131.9	198.791	48.94	83.71	385
310.000	13.061	.07656	.89115	3.2844	57.171	16674.4	18971.3	201.543	49.83	84.12	368
320.000	12.497	.08002	.90224	2.9668	53.758	17412.7	19813.3	204.216	50.68	84.23	354
330.000	11.959	.08362	.91430	2.6904	51.280	18146.3	20655.0	206.807	51.50	84.07	343
340.000	11.449	.08734	.92691	2.4505	49.581	18873.6	21493.9	209.311	52.28	83.69	334
350.000	10.971	.09115	.93968	2.2426	48.514	19593.7	22328.3	211.730	53.02	83.17	327
360.000	10.525	.09502	.95231	2.0623	47.942	20306.5	23157.0	214.065	53.73	82.56	322
370.000	10.110	.09891	.96456	1.9056	47.750	21012.2	23979.5	216.318	54.41	81.94	318
380.000	9.726	.10282	.97628	1.7689	47.843	21711.3	24795.9	218.495	55.07	81.34	315
390.000	9.370	.10672	.98738	1.6491	48.148	22404.7	25606.5	220.601	55.69	80.78	313
400.000	9.040	.11062	.99783	1.5436	48.607	23093.2	26411.8	222.640	56.29	80.29	312
410.000	8.734	.11450	1.00760	1.4502	49.178	23777.6	27212.5	224.617	56.87	79.86	311
420.000	8.450	.11835	1.01672	1.3671	49.830	24458.7	28009.2	226.537	57.43	79.49	311
430.000	8.185	.12218	1.02522	1.2927	50.538	25137.1	28802.5	228.404	57.96	79.19	311
440.000	7.937	.12599	1.03313	1.2258	51.286	25813.6	29593.2	230.221	58.48	78.94	312
450.000	7.706	.12977	1.04050	1.1654	52.057	26488.5	30381.6	231.993	58.98	78.75	312
460.000	7.489	.13353	1.04736	1.1105	52.849	27162.4	31168.2	233.722	59.45	78.59	313
470.000	7.285	.13726	1.05375	1.0606	53.665	27835.7	31953.5	235.411	59.91	78.47	314
480.000	7.094	.14097	1.05970	1.0149	54.507	28508.5	32737.7	237.062	60.35	78.38	315
490.000	6.913	.14466	1.06523	.9730	55.377	29181.3	33521.2	238.677	60.76	78.31	316
500.000	6.742	.14833	1.07037	.9344	56.272	29854.2	34304.0	240.259	61.19	78.26	318

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 350 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
72.670	26.387	.03790	2.19524	46.3276	945.789	278.6	1605.0	96.493	47.50	71.18	1412
80.000	26.027	.03842	2.02170	42.1523	854.410	777.5	2122.2	103.264	45.24	69.80	1362
90.000	25.531	.03917	1.83195	37.2710	748.635	1443.8	2814.7	111.414	43.07	68.69	1296
100.000	25.032	.03995	1.68169	33.1243	659.843	2100.1	3498.3	118.621	41.64	68.18	1233
110.000	24.528	.04077	1.56022	29.5540	584.277	2751.6	4178.5	125.111	40.72	68.05	1172
120.000	24.020	.04163	1.46042	26.4479	519.233	3402.0	4859.2	131.035	40.14	68.16	1114
130.000	23.509	.04254	1.37739	23.7237	462.709	4053.6	5542.4	136.500	39.82	68.43	1058
140.000	22.995	.04349	1.30761	21.3186	413.189	4707.3	6229.4	141.585	39.70	68.82	1004
150.000	22.477	.04449	1.24854	19.1840	369.511	5363.4	6920.6	146.350	39.76	69.33	952
160.000	21.956	.04555	1.19827	17.2813	330.772	6022.7	7616.8	150.844	39.97	69.94	902
170.000	21.432	.04666	1.15536	15.5794	296.266	6685.8	8318.8	155.104	40.31	70.63	855
180.000	20.904	.04784	1.11872	14.0529	265.439	7353.6	9027.9	159.162	40.70	71.34	809
190.000	20.373	.04908	1.08748	12.6805	237.846	8026.5	9744.5	163.037	41.03	71.98	766
200.000	19.838	.05041	1.06097	11.4448	213.133	8703.3	10467.6	166.741	41.16	72.39	726
210.000	19.299	.05182	1.03866	10.3308	191.011	9379.4	11192.9	170.275	40.89	72.40	690
220.000	18.756	.05331	1.02014	9.3261	171.238	10047.5	11913.5	173.634	40.21	71.97	657
230.000	18.210	.05491	1.00506	8.4198	153.615	10712.7	12634.8	176.833	40.54	72.55	622
240.000	17.660	.05662	.99316	7.6026	137.967	11355.1	13337.0	179.819	44.23	76.46	579
250.000	17.108	.05845	.98421	6.8664	124.144	12057.2	14103.0	182.946	44.46	76.90	549
260.000	16.555	.06041	.97800	6.2039	112.011	12761.9	14876.1	185.979	45.15	77.75	521
270.000	16.001	.06250	.97436	5.6087	101.446	13471.0	15658.4	188.930	46.01	78.71	494
280.000	15.450	.06473	.97309	5.0750	92.337	14184.8	16450.2	191.810	46.92	79.64	469
290.000	14.903	.06710	.97402	4.5977	84.577	14902.4	17250.9	194.620	47.85	80.49	447
300.000	14.363	.06962	.97690	4.1719	78.063	15622.7	18059.4	197.360	48.77	81.20	427
310.000	13.835	.07228	.98150	3.7932	72.688	16344.4	18874.2	200.032	49.67	81.73	410
320.000	13.321	.07507	.98752	3.4573	68.345	17066.0	19693.5	202.633	50.55	82.08	395
330.000	12.824	.07798	.99468	3.1602	64.920	17786.1	20515.3	205.162	51.38	82.25	382
340.000	12.348	.08098	1.00265	2.8980	62.296	18503.5	21338.0	207.617	52.19	82.25	371
350.000	11.895	.08407	1.01115	2.6668	60.359	19217.3	22159.8	210.000	52.96	82.10	363
360.000	11.465	.08722	1.01991	2.4631	58.997	19926.9	22979.7	212.310	53.69	81.86	355
370.000	11.060	.09042	1.02870	2.2835	58.107	20632.1	23796.8	214.549	54.40	81.54	350
380.000	10.679	.09364	1.03736	2.1249	57.600	21332.9	24610.4	216.719	55.07	81.19	345
390.000	10.322	.09689	1.04574	1.9845	57.396	22029.6	25420.6	218.823	55.71	80.83	342
400.000	9.987	.10013	1.05377	1.8598	57.432	22722.5	26227.1	220.865	56.33	80.49	339
410.000	9.673	.10338	1.06138	1.7486	57.655	23412.2	27030.4	222.848	56.93	80.16	338
420.000	9.380	.10661	1.06854	1.6492	58.022	24099.1	27830.5	224.776	57.49	79.87	336
430.000	9.104	.10984	1.07526	1.5599	58.500	24783.7	28627.9	226.653	58.04	79.62	336
440.000	8.846	.11305	1.08152	1.4793	59.063	25466.4	29423.0	228.481	58.56	79.40	335
450.000	8.603	.11624	1.08735	1.4064	59.691	26147.7	30216.0	230.262	59.07	79.22	335
460.000	8.374	.11941	1.09276	1.3401	60.368	26828.0	31007.4	232.002	59.55	79.07	335
470.000	8.159	.12257	1.09778	1.2796	61.082	27507.6	31797.5	233.701	60.02	78.95	336
480.000	7.955	.12571	1.10243	1.2243	61.822	28186.7	32586.4	235.362	60.46	78.85	336
490.000	7.762	.12883	1.10674	1.1734	62.580	28865.7	33374.6	236.987	60.89	78.79	337
500.000	7.580	.13193	1.11073	1.1266	63.351	29544.7	34162.2	238.579	61.31	78.74	338

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 400 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
73.534	26.398	.03788	2.47836	46.4538	962.033	315.2	1830.4	96.984	47.20	70.87	1426
80.000	26.085	.03834	2.30541	42.7795	880.967	751.8	2285.3	102.903	45.24	69.67	1382
90.000	25.597	.03907	2.08828	37.8711	773.724	1413.6	2976.3	111.036	43.07	68.53	1316
100.000	25.106	.03983	1.91623	33.7040	683.791	2065.0	3658.2	118.225	41.64	68.00	1254
110.000	24.612	.04063	1.77702	30.1183	607.329	2711.2	4336.4	124.696	40.71	67.83	1193
120.000	24.114	.04147	1.66253	27.0006	541.578	3356.0	5014.7	130.600	40.13	67.91	1136
130.000	23.615	.04235	1.56712	24.2674	484.494	4001.4	5695.2	136.044	39.80	68.14	1080
140.000	23.113	.04327	1.48678	21.8556	434.532	4648.4	6379.1	141.106	39.68	68.49	1027
150.000	22.609	.04423	1.41860	19.7161	390.504	5297.6	7066.8	145.847	39.74	68.95	976
160.000	22.103	.04524	1.36037	17.8099	351.487	5949.2	7758.9	150.314	39.95	69.50	928
170.000	21.595	.04631	1.31044	16.1055	316.758	6604.0	8456.3	154.546	40.27	70.13	881
180.000	21.086	.04742	1.26753	14.5773	285.742	7262.9	9159.9	158.572	40.66	70.76	836
190.000	20.575	.04860	1.23064	13.2039	257.982	7926.2	9870.3	162.414	40.98	71.32	795
200.000	20.062	.04984	1.19898	11.9675	233.109	8592.6	10586.3	166.081	41.10	71.63	756
210.000	19.548	.05116	1.17192	10.8529	210.820	9257.3	11303.6	169.576	40.83	71.53	721
220.000	19.033	.05254	1.14894	9.8474	190.863	9913.2	12014.9	172.892	40.13	70.99	689
230.000	18.516	.05401	1.12963	8.9398	173.026	10565.4	12725.7	176.045	40.45	71.44	656
240.000	18.000	.05556	1.11365	8.1207	157.125	11193.8	13416.1	178.981	44.13	75.22	614
250.000	17.483	.05720	1.10069	7.3815	143.001	11881.1	14169.0	182.054	44.35	75.51	585
260.000	16.968	.05894	1.09051	6.7148	130.513	12570.2	14927.6	185.030	45.04	76.24	557
270.000	16.455	.06077	1.08287	6.1141	119.531	13263.2	15694.1	187.922	45.89	77.07	531
280.000	15.945	.06271	1.07755	5.5733	109.939	13960.5	16469.1	190.741	46.80	77.91	507
290.000	15.441	.06476	1.07434	5.0871	101.630	14661.7	17252.2	193.488	47.73	78.70	485
300.000	14.945	.06691	1.07304	4.6506	94.500	15366.2	18042.7	196.168	48.65	79.40	466
310.000	14.458	.06917	1.07340	4.2593	88.451	16073.0	18839.7	198.781	49.56	79.98	448
320.000	13.982	.07152	1.07521	3.9091	83.388	16781.1	19641.9	201.327	50.44	80.44	432
330.000	13.521	.07396	1.07822	3.5961	79.214	17489.6	20448.0	203.808	51.29	80.76	419
340.000	13.075	.07648	1.08219	3.3167	75.834	18197.5	21256.7	206.222	52.11	80.96	407
350.000	12.647	.07907	1.08688	3.0675	73.153	18903.9	22066.8	208.571	52.90	81.05	397
360.000	12.237	.08172	1.09209	2.8454	71.081	19608.5	22877.3	210.854	53.65	81.03	388
370.000	11.846	.08442	1.09760	2.6473	69.528	20310.7	23687.3	213.073	54.37	80.94	381
380.000	11.475	.08714	1.10326	2.4705	68.417	21010.2	24496.0	215.230	55.06	80.80	376
390.000	11.124	.08990	1.10893	2.3124	67.672	21707.3	25303.2	217.326	55.72	80.62	371
400.000	10.792	.09266	1.11449	2.1709	67.231	22401.8	26108.4	219.365	56.35	80.43	367
410.000	10.478	.09544	1.11988	2.0439	67.039	23094.1	26911.7	221.349	56.95	80.23	364
420.000	10.182	.09822	1.12502	1.9295	67.049	23784.3	27713.0	223.280	57.53	80.03	362
430.000	9.902	.10099	1.12989	1.8263	67.222	24472.7	28512.4	225.161	58.09	79.85	360
440.000	9.638	.10376	1.13447	1.7328	67.526	25159.7	29310.0	226.995	58.62	79.69	359
450.000	9.388	.10652	1.13874	1.6479	67.935	25845.6	30106.2	228.783	59.13	79.54	358
460.000	9.152	.10926	1.14270	1.5706	68.428	26530.5	30901.0	230.530	59.62	79.42	358
470.000	8.929	.11199	1.14637	1.4998	68.988	27214.9	31694.7	232.237	60.09	79.32	358
480.000	8.717	.11471	1.14975	1.4350	69.600	27898.8	32487.4	233.906	60.55	79.23	358
490.000	8.516	.11742	1.15285	1.3753	70.255	28582.6	33279.4	235.540	60.98	79.17	358
500.000	8.325	.12011	1.15570	1.3203	70.942	29266.3	34070.9	237.139	61.40	79.12	358

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 450 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
74.391	26.408	.03787	2.75497	46.5795	978.305	351.0	2055.0	97.459	46.91	70.57	1439
80.000	26.141	.03825	2.58803	43.3985	907.553	727.0	2448.5	102.550	45.25	69.54	1401
90.000	25.661	.03897	2.34350	38.4623	798.805	1384.5	3138.1	110.667	43.07	68.38	1336
100.000	25.178	.03972	2.14960	34.2741	707.697	2031.2	3818.4	117.839	41.64	67.82	1274
110.000	24.692	.04050	1.99261	30.6722	630.305	2672.3	4494.8	124.292	40.71	67.64	1214
120.000	24.205	.04131	1.86335	27.5418	563.812	3311.8	5170.9	130.178	40.12	67.68	1157
130.000	23.715	.04217	1.75550	24.7987	506.134	3951.5	5849.0	135.602	39.80	67.88	1102
140.000	23.225	.04306	1.66454	22.3789	455.694	4592.5	6530.1	140.643	39.67	68.19	1050
150.000	22.733	.04399	1.58716	20.2331	411.281	5235.2	7214.7	145.362	39.72	68.61	1000
160.000	22.241	.04496	1.52090	18.3218	371.949	5879.9	7903.2	149.806	39.93	69.12	952
170.000	21.748	.04598	1.46387	16.6133	336.958	6527.2	8596.4	154.013	40.25	69.69	906
180.000	21.255	.04705	1.41463	15.0817	305.718	7178.2	9295.3	158.013	40.63	70.27	862
190.000	20.762	.04817	1.37202	13.7054	277.757	7833.1	10000.5	161.826	40.95	70.75	822
200.000	20.268	.04934	1.33515	12.4662	252.693	8490.3	10710.6	165.463	41.05	71.00	784
210.000	19.775	.05057	1.30328	11.3490	230.211	9145.4	11421.0	168.924	40.78	70.82	750
220.000	19.282	.05186	1.27583	10.3407	210.050	9791.1	12124.9	172.206	40.07	70.19	719
230.000	18.791	.05322	1.25230	9.4299	191.989	10432.5	12827.3	175.321	40.39	70.56	687
240.000	18.300	.05464	1.23228	8.6070	175.837	11049.5	13508.4	178.218	44.05	74.25	646
250.000	17.812	.05614	1.21542	7.8632	161.428	11724.8	14251.2	181.250	44.27	74.45	618
260.000	17.326	.05772	1.20142	7.1912	148.616	12401.5	14998.7	184.182	44.95	75.09	591
270.000	16.844	.05937	1.19002	6.5840	137.267	13081.9	15753.4	187.029	45.80	75.85	565
280.000	16.367	.06110	1.18097	6.0357	127.263	13766.4	16515.8	189.802	46.71	76.63	542
290.000	15.896	.06291	1.17403	5.5409	118.495	14454.9	17285.8	192.504	47.64	77.37	520
300.000	15.433	.06480	1.16900	5.0945	110.862	15147.0	18062.9	195.138	48.56	78.05	500
310.000	14.978	.06677	1.16565	4.6922	104.268	15842.1	18846.5	197.707	49.48	78.65	483
320.000	14.533	.06881	1.16377	4.3298	98.623	16539.3	19635.7	200.212	50.36	79.16	467
330.000	14.100	.07092	1.16316	4.0036	93.842	17238.0	20429.4	202.655	51.22	79.57	453
340.000	13.680	.07310	1.16360	3.7102	89.838	17937.4	21226.8	205.035	52.05	79.89	440
350.000	13.275	.07533	1.16490	3.4463	86.532	18636.9	22026.9	207.355	52.85	80.11	429
360.000	12.884	.07762	1.16687	3.2090	83.844	19336.0	22828.7	209.614	53.61	80.25	420
370.000	12.509	.07994	1.16934	2.9956	81.699	20034.3	23631.6	211.813	54.34	80.31	412
380.000	12.151	.08230	1.17217	2.8035	80.027	20731.3	24434.8	213.955	55.04	80.32	405
390.000	11.809	.08468	1.17520	2.6305	78.761	21427.1	25237.8	216.041	55.71	80.29	399
400.000	11.483	.08709	1.17834	2.4744	77.842	22121.4	26040.4	218.073	56.36	80.22	395
410.000	11.173	.08950	1.18150	2.3334	77.217	22814.5	26842.1	220.053	56.97	80.13	391
420.000	10.878	.09193	1.18460	2.2057	76.840	23506.2	27642.9	221.983	57.56	80.03	387
430.000	10.598	.09435	1.18759	2.0898	76.669	24196.8	28442.7	223.865	58.12	79.93	385
440.000	10.333	.09678	1.19044	1.9844	76.671	24886.5	29241.5	225.701	58.66	79.83	383
450.000	10.081	.09920	1.19311	1.8883	76.815	25575.3	30039.4	227.494	59.18	79.74	381
460.000	9.841	.10162	1.19559	1.8004	77.077	26263.6	30836.4	229.245	59.68	79.65	380
470.000	9.613	.10402	1.19788	1.7199	77.436	26951.4	31632.5	230.958	60.15	79.58	379
480.000	9.396	.10642	1.19997	1.6459	77.874	27639.0	32428.1	232.633	60.61	79.52	379
490.000	9.190	.10881	1.20187	1.5777	78.379	28326.5	33223.0	234.272	61.05	79.47	379
500.000	8.994	.11119	1.20357	1.5147	78.936	29014.0	34017.6	235.877	61.47	79.44	379

Table 15. Continued.

NITROGEN TRIFLUORIDE ISOBAR AT 500 BAR

T	DEN	VOL	Z	DP/DT	DP/DD	E	H	S	CV	CP	W
K	MOL/L	L/MOL		BAR/K	BAR-L/MOL	J/MOL	J/MOL	J/MOL/K	J/MOL/K	J/MOL/K	M/SEC
75.239	26.419	.03785	3.02536	46.7047	994.604	386.2	2278.8	97.918	46.64	70.28	1452
80.000	26.195	.03818	2.86963	44.0098	934.178	703.1	2611.8	102.204	45.25	69.42	1420
90.000	25.722	.03888	2.59765	39.0451	823.887	1356.3	3300.2	110.305	43.07	68.24	1355
100.000	25.247	.03961	2.38187	34.8353	731.572	1998.5	3979.0	117.461	41.64	67.66	1293
110.000	24.770	.04037	2.20704	31.2164	653.219	2635.0	4653.6	123.898	40.71	67.45	1234
120.000	24.292	.04117	2.06298	28.0725	585.953	3269.4	5327.8	129.766	40.12	67.47	1178
130.000	23.812	.04200	1.94263	25.3184	527.650	3903.9	6003.6	135.173	39.79	67.64	1123
140.000	23.332	.04286	1.84099	22.8898	476.702	4539.2	6682.2	140.195	39.66	67.93	1072
150.000	22.852	.04376	1.75436	20.7365	431.871	5175.9	7363.9	144.894	39.71	68.31	1022
160.000	22.372	.04470	1.68000	18.8189	392.194	5814.2	8049.2	149.317	39.91	68.78	975
170.000	21.892	.04568	1.61581	17.1051	356.910	6454.9	8738.7	153.503	40.23	69.31	930
180.000	21.414	.04670	1.56017	15.5687	325.416	7098.7	9433.7	157.479	40.60	69.84	887
190.000	20.936	.04777	1.51180	14.1880	297.226	7746.0	10134.3	161.268	40.92	70.27	847
200.000	20.459	.04888	1.46967	12.9447	271.946	8395.4	10839.3	164.878	41.02	70.46	811
210.000	19.984	.05004	1.43297	11.8234	249.252	9042.1	11544.1	168.313	40.74	70.23	777
220.000	19.510	.05125	1.40103	10.8108	228.874	9679.0	12241.7	171.565	40.03	69.54	748
230.000	19.039	.05252	1.37328	9.8955	210.581	10311.1	12937.2	174.650	40.33	69.84	716
240.000	18.571	.05385	1.34926	9.0675	194.179	10918.5	13610.9	177.515	44.00	73.46	675
250.000	18.105	.05523	1.32857	8.3183	179.496	11583.9	14345.5	180.513	44.21	73.61	648
260.000	17.644	.05668	1.31088	7.6400	166.381	12250.5	15084.4	183.411	44.89	74.19	622
270.000	17.187	.05818	1.29587	7.0260	154.700	12920.6	15829.7	186.224	45.73	74.90	597
280.000	16.736	.05975	1.28329	6.4700	144.332	13594.8	16582.3	188.961	46.64	75.63	574
290.000	16.291	.06138	1.27287	5.9666	135.166	14273.1	17342.2	191.628	47.57	76.35	552
300.000	15.854	.06308	1.26441	5.5110	127.103	14955.2	18109.1	194.227	48.50	77.02	533
310.000	15.424	.06483	1.25767	5.0985	120.049	15640.7	18882.3	196.762	49.41	77.63	515
320.000	15.004	.06665	1.25246	4.7253	113.918	16329.0	19661.3	199.235	50.30	78.16	499
330.000	14.595	.06852	1.24858	4.3876	108.627	17019.5	20445.3	201.648	51.17	78.62	484
340.000	14.197	.07044	1.24584	4.0821	104.100	17711.6	21233.5	204.000	52.00	79.00	471
350.000	13.811	.07241	1.24406	3.8056	100.263	18404.9	22025.2	206.295	52.80	79.31	460
360.000	13.438	.07442	1.24307	3.5555	97.045	19098.7	22819.5	208.533	53.58	79.55	450
370.000	13.078	.07646	1.24273	3.3290	94.379	19792.8	23615.9	210.715	54.32	79.72	441
380.000	12.733	.07854	1.24289	3.1239	92.202	20486.8	24413.7	212.843	55.03	79.84	434
390.000	12.401	.08064	1.24342	2.9379	90.455	21180.4	25212.4	214.917	55.71	79.91	427
400.000	12.083	.08276	1.24422	2.7691	89.084	21873.7	26011.7	216.941	56.36	79.94	421
410.000	11.779	.08490	1.24520	2.6157	88.038	22566.3	26811.2	218.915	56.98	79.95	417
420.000	11.489	.08704	1.24627	2.4761	87.273	23258.5	27610.6	220.841	57.58	79.93	413
430.000	11.211	.08919	1.24739	2.3488	86.748	23950.1	28409.8	222.722	58.15	79.91	409
440.000	10.947	.09135	1.24849	2.2325	86.428	24641.2	29208.7	224.559	58.70	79.87	406
450.000	10.695	.09350	1.24955	2.1260	86.284	25331.9	30007.2	226.353	59.22	79.83	404
460.000	10.454	.09566	1.25053	2.0284	86.287	26022.4	30805.3	228.107	59.72	79.79	402
470.000	10.224	.09781	1.25141	1.9386	86.415	26712.8	31603.0	229.823	60.20	79.76	401
480.000	10.005	.09995	1.25219	1.8559	86.649	27403.0	32400.4	231.501	60.66	79.72	400
490.000	9.796	.10208	1.25285	1.7796	86.972	28093.3	33197.6	233.145	61.10	79.70	399
500.000	9.596	.10421	1.25339	1.7089	87.369	28783.8	33994.4	234.755	61.53	79.68	399

Table 15. Continued.

Table 16. List of Coefficients for the BWR Equation.

G(1)	=	.1751151116E-01
G(2)	=	-.5338642406E+00
G(3)	=	.3924633078E+01
G(4)	=	-.5141353757E+03
G(5)	=	-.3243348520E+05
G(6)	=	-.5912181013E-03
G(7)	=	.9096990477E+00
G(8)	=	-.4785568295E+03
G(9)	=	-.4180501052E+07
G(10)	=	-.9695778991E-05
G(11)	=	.5361200088E-01
G(12)	=	-.1443265236E+02
G(13)	=	-.3322161796E-02
G(14)	=	.2764741771E+00
G(15)	=	.8324982578E+01
G(16)	=	-.1307102346E-01
G(17)	=	.1851077593E-03
G(18)	=	.2920941516E+00
G(19)	=	-.6918309272E-02
G(20)	=	.4308730236E+07
G(21)	=	-.1096864087E+08
G(22)	=	.2380327276E+05
G(23)	=	.3137563559E+07
G(24)	=	.6086206849E+02
G(25)	=	.4205136659E+02
G(26)	=	.1076337320E+00
G(27)	=	-.3297262333E+02
G(28)	=	.8485003350E-04
G(29)	=	.1224321948E-02
G(30)	=	.1269404637E-06
G(31)	=	-.8824183840E-06
G(32)	=	.3309207594E-04

Table 17. Comparison of Results From the Two Equations of State.

PRESS	TEMP	DIFFERENCE IN				
		DENSITY	H	S	CV	CP
BAR	K	PCT	J/MOL	J/MOL-K	PCT	PCT
1.0	70.0	.011	-.6	.111	-5.26	-2.03
1.0	120.0	.010	6.6	.125	3.69	.06
1.0	170.0	-.150	-15.7	-.060	1.05	1.17
1.0	220.0	-.201	-3.0	.008	.30	.26
1.0	240.0	-.186	-1.2	.015	.20	.13
1.0	280.0	-.139	-.0	.019	.07	.02
1.0	320.0	-.102	-.3	.018	.02	-.02
1.0	350.0	-.087	-.7	.016	-.00	-.04
10.0	70.0	.006	-.5	.113	-4.04	-2.04
10.0	120.0	.017	6.5	.124	3.39	.06
10.0	170.0	.057	-49.1	-.241	-1.62	-1.77
10.0	220.0	-.127	-17.8	-.109	2.45	2.39
10.0	240.0	-.220	.9	-.028	1.51	1.37
10.0	280.0	-.223	17.2	.036	.52	.36
10.0	320.0	-.204	20.4	.045	.11	.00
10.0	350.0	-.177	19.0	.043	-.05	-.12
40.0	70.0	.002	-.1	.118	-.07	-2.10
40.0	120.0	.036	6.3	.122	2.47	.06
40.0	170.0	.055	-48.2	-.235	-2.05	-1.79
40.0	220.0	-.057	-37.4	-.205	4.49	1.98
40.0	240.0	-.597	10.2	.007	3.79	.27
40.0	280.0	.173	27.1	.072	1.25	.24
40.0	320.0	.333	25.7	.067	-.01	-.28
40.0	350.0	.330	18.3	.048	-.43	-.44
50.0	70.0	.003	.1	.121	1.19	-2.14
50.0	120.0	.040	6.2	.122	2.20	.05
50.0	170.0	.054	-48.0	-.234	-2.16	-1.80
50.0	220.0	-.058	-38.0	-.208	4.03	2.30
50.0	240.0	-.156	-15.5	-.107	1.76	4.34
50.0	280.0	-.029	41.0	.124	1.38	-.13
50.0	320.0	.330	31.0	.090	-.14	-.53
50.0	350.0	.386	19.3	.057	-.59	-.63
100.0	70.0	.017	1.5	.141	7.11	-2.41
100.0	120.0	.057	5.7	.119	1.03	.04
100.0	170.0	.058	-47.4	-.228	-2.26	-1.85
100.0	220.0	-.095	-42.1	-.227	3.44	3.16
100.0	240.0	-.069	34.4	.109	-2.18	-1.68
100.0	280.0	.097	34.3	.085	1.50	4.56
100.0	320.0	-.509	76.1	.231	-.77	-.87
100.0	350.0	-.206	48.0	.151	-1.45	-1.38
200.0	120.0	.064	5.3	.117	-.57	.04
200.0	170.0	.086	-46.8	-.223	-1.40	-1.95
200.0	220.0	-.031	-52.2	-.276	5.45	3.37
200.0	240.0	-.179	35.2	.107	-1.11	-.11
200.0	280.0	-.011	21.1	.054	-.37	-1.14
200.0	320.0	.230	3.8	-.007	-1.35	.59
200.0	350.0	-.330	23.6	.057	-1.95	.59
300.0	120.0	.050	5.0	.117	-1.41	.09
300.0	170.0	.135	-45.8	-.215	.34	-2.01
300.0	220.0	.137	-58.4	-.303	8.76	3.28
300.0	240.0	.053	26.3	.068	2.02	-.05
300.0	280.0	-.050	34.6	.101	2.16	-.31
300.0	320.0	.144	6.3	.006	.23	-1.08
300.0	350.0	.196	-17.1	-.060	-.80	-.73

```
      PROGRAM NF3THRM (INPUT,OUTPUT)
C     NITROGEN TRIFLUORIDE THERMOPHYSICAL PROPERTIES.
C     NEW XEF, DENGASF, EDELF, FOR LOW DENSITIES.
      COMMON GK,GKK, B1,B2,B3,B4,B5, C1,C2,C3, E1,E2,E3, ER,IX
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/2/ NFP, EPP, PJ(6)
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/5/ DDSDT
      COMMON/6/ TSAT, THETA, PSAT
      COMMON/7/ NFG,  GE, AV(6)
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/ DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
      COMMON/10/ NFL,  EL, AW(6)
      COMMON/12/ DELS, DELCV
      COMMON/13/ ZCRT,ZSAT,DZSDT, ZFX, FRT,DFRTDT
      COMMON/19/ KD
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION PP(99)
    1 FORMAT(I5, 2F10.0)
    2 FORMAT(I5, 3F10.0)
    3 FORMAT(8I10)
    5 FORMAT(1X)
    9 FORMAT(8F10.0)
   14 FORMAT(1H1 18X *NITROGEN TRIFLUORIDE ISOBAR AT *F8.5, 4H BAR / )
   15 FORMAT(1H1 18X *NITROGEN TRIFLUORIDE ISOBAR AT *  I3, 4H BAR / )
   16 FORMAT(19X 1HT 6X3HDEN 6X3HVOL 8X1HZ 5X5HDP/DT 5X5HDP/DD
     2 8X1HE 8X1HH 8X1HS 6X2HCV 6X2HCP 5X1HW /
     3 15X 5HDEG K 4X5HMOL/L 4X5HL/MOL 14X5HBAR/K 1X9HBAR-L/MOL
     4 4X5HJ/MOL 4X5HJ/MOL 2X7HJ/MOL/K 1X7HJ/MOL/K
     5 1X7HJ/MOL/K 1X5HM/SEC )
   17 FORMAT(10XF10.3, F9.3, F9.5, F9.5,F10.4,F10.3,2F9.1,F9.3,2F8.2,I6)
   18 FORMAT(10XF10.3, F9.5, F9.3, F9.5,F10.6,F10.3,2F9.1,F9.3,2F8.2,I6)
   20 CALL PVTDATA
      CALL IDELFIT  $  CALL QVAPFIT
   21 CALL JTLOCUS
   22 CALL TABLIQ
   29 GO TO 90
C     TEST SUBROUTINE THERMO.
   30 P = 40  $  PRINT 14, P  $  PRINT 16
   31 CALL THERMOM  $  V = 1/DEN  $  IW = W $  Z = P/DEN/GKK/T
   32 PRINT 17, T,DEN,V,Z, DPDT,DPDD, E,H,S, CV,CP,IW
   33 CALL THERMOL  $  V = 1/DEN  $  IW = W  $  Z = P/DEN/GKK/T
   34 PRINT 18, T,DEN,V,Z, DPDT,DPDD, E,H,S, CV,CP,IW
   35 CALL THERMOV  $  V = 1/DEN  $  IW = W  $  Z = P/DEN/GKK/T
   36 PRINT 18, T,DEN,V,Z, DPDT,DPDD, E,H,S, CV,CP,IW
   40 P = 50  $  PRINT 14, P  $  PRINT 16
   41 T = 230  $  CALL THERMO  $  V = 1/DEN  $  IW = W $ Z=P/DEN/GKK/T
   42 PRINT 18, T,DEN,V,Z, DPDT,DPDD, E,H,S, CV,CP,IW
   43 T = 234  $  CALL THERMO  $  V = 1/DEN  $  IW = W
   46 Z = P/DEN/GKK/T
   47 PRINT 18, T,DEN,V,Z, DPDT,DPDD, E,H,S, CV,CP,IW
   48 T = 240  $  CALL THERMO  $  V = 1/DEN  $  IW = W $ Z=P/DEN/GKK/T
   49 PRINT 18, T,DEN,V,Z, DPDT,DPDD, E,H,S, CV,CP,IW
C
C     COMPUTE THERMOFUNCTIONS ON ISOBARS. START ON THE MELTING LINE.
C     ISOBARS AT P UNDER PCRT TRAVERSE THE DOME.
C     NOTE USE OF QVAP ,DATA, TO CROSS THE ,DOME,.
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C     NOTE USE OF CSAT ,DATA, FOR SPECIFIC HEATS IN COMPRESSED LIQUID.
   90 IN = 1  $  NI = 48  $  READ 9, (PP(I),I=1,NI)
   91 DO 300 I=IN,NI  $  IP = P = PP(I)  $  IK = I  $  LS = 0
   92 IF(P-IP) 93,94
   93 PRINT 14, P   $   GO TO 95
   94 PRINT 15, IP
   95 PRINT 16
   96 IF(I.EQ.24)  P = PCRT
  100 T = FINDTMF(P)  $  CALL COMPRLQ  $  V=1/DEN  $  IW=W
  101 Z = P/DEN/GKK/T
  102 PRINT 17, T,DEN,V,Z, DPDT,DPDD,E,H,S,CV,CP,IW
  103 IT = T/10  $  IF(P.LT.PCRT) 110,180
C
C     CASES FOR P LESS THAN PCRT.
  110 TS = FINDTSF(P)  $  K = L = 0
  111 DO 150 J=1,99  $  T = JT = 10*(IT+J)
  112 IF(T.LT.TS) 115,117
  115 CALL COMPRLQ  $  V=1/DEN $ IW=W $ Z = P/DEN/GKK/T
  116 PRINT 17, T,DEN,V,Z, DPDT,DPDD, E,H,S, CV,CP,IW  $  GO TO 150
  117 LS = LS + 1  $  IF(LS.EQ.1) 120,130
C     CASE FOR SATURATED LIQUID AND VAPOR.
  120 T = TS  $  CALL COEXIST
  123 V=1/DEN $ VG=1/DNG $ IW=W $ IWG=WG
      Z = P/DEN/GKK/T   $   ZG = P/DNG/GKK/T
  124 PRINT 17, T,DEN,V,Z, DPDT,DPDD,E,H,S,CV,CP,IW  $  PRINT 5
  125 IF(P.LT.30) 126,127
  126 PRINT 18, T,DNG,VG,ZG,DPGDT,DPGDD,EG,HG,SG,CVG,CPG,IWG $ GOTO 128
  127 PRINT 17, T,DNG,VG,ZG,DPGDT,DPGDD,EG,HG,SG,CVG,CPG,IWG
  128 T = JT
C     CASES FOR THE HOMOGENEOUS DOMAIN.
  130 IF(JT.GT.500) 131,132
  131 K = K+1  $  T = JT = JT + 10*K  $  IF(JT.GT.500) 300,132
C 132 CALL GENEOUS  $  V=1/DEN $ IW=W  $  Z = P/DEN/GKK/T
  132 CALL GENIUS   $  V=1/DEN $ IW=W  $  Z = P/DEN/GKK/T
  133 IF(P.LT.30) 134,135
  134 PRINT 18, T,DEN,V,Z, DPDT,DPDD,E,H,S,CV,CP,IW  $  GO TO 150
  135 PRINT 17, T,DEN,V,Z, DPDT,DPDD,E,H,S,CV,CP,IW
  150 CONTINUE
C
C     FOR P.GE.PCRT, CASES T.LE.TCRT, AND T.GT.TCRT.
  180 K=L=0  $  DO 250 J=1,99  $  T = JT = 10*(IT+J)
  181 IF(T.LE.TCRT) 192,210
C     CASE FOR T.LE.TCRT.
  192 CALL COMPRLQ $ V=1/DEN $ IW=W  $  Z = P/DEN/GKK/T
  193 PRINT 17, T,DEN,V,Z, DPDT,DPDD,E,H,S,CV,CP,IW  $  GO TO 250
C     CASE FOR T ABOVE TCRT, HOMOGENEOUS DOMAIN.
  210 IF(JT.GT.500) 211,220
  211 K = K+1  $  T = JT = JT + 10*K  $  IF(JT.GT.500) 300,220
C 220 CALL GENEOUS $ V=1/DEN $ IW=W  $  Z = P/DEN/GKK/T
  220 CALL GENIUS  $ V=1/DEN $ IW=W  $  Z = P/DEN/GKK/T
  221 PRINT 17, T,DEN,V,Z, DPDT,DPDD,E,H,S,CV,CP,IW
  250 CONTINUE
  300 CONTINUE
  999 STOP   $   END
```

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      SUBROUTINE COEXIST
C     GIVEN T AT COEXISTENCE, GET BOTH VAPOR AND LIQUID FUNCTIONS.
C     FOR VAPOR, GET  DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD,  -
C     FOR LIQUID, GET  DEN,E,H,S, CV,CP,CSAT,W. DPDT,DPDD.
C     COEXIST CALLED BY COMPRLQ. P NOT USED, MUST NOT CHANGE.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
      COMMON/12/ DELS, DELCV
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DATA (Q=1.01325),(G=0.083145)
    1 FORMAT(1H0 9X *T EXCEEDS TCRT IN COEXIST. * / )
    2 IF(T.GT.TCRT) 3,4
    3 PRINT 1   $   STOP
    4 PS = PSATF(T)  $  DNG = DB = DENGASF(T)
    5 TI = T  $  CALL IDEAL  $  N = 11  $  LD = 1  $  DA = 0
    6 EG = EZZ + EZ + EDELF(0,N,T,DA,DB,LD)  $  HG = EG + 100*PS/DB
    7 SG = SZ + DELS - 100*G*ALOG(G*T*DB/Q)
    8 IF(T.EQ.TCRT) 9,11
    9 PX = PVTF(T,DB,1)  $  DPGDT = DPDT  $  DPGDD = DPDD
   10 CPG = CVG = WG = 0  $  GO TO 14
   11 CVG = CVZ + DELCV  $  PX = PVTF(T,DB,1)
   12 CPG = CVG + 100*T/DPDD*(DPDT/DB)**2  $  WG = SQRT(WK*CPG*DPDD/CVG)
   13 DPGDT = DPDT  $  DPGDD = DPDD
C    NOW TRAVERSE THE ,DOME, USING QVAP ,DATA,.
   14 DEN = DL = DENLIQF(T)  $  DDLDT = DDSDT  $  QV = QVAPXF(T)
   15 QVT = -QV/T  $  H = HG-QV  $  S = SG+QVT  $  E = H - 100*PS/DL
   17 IF(T.EQ.TCRT) 18,19
   18 PX = PVTF(T,DL,1)  $  CP=CV=CSAT=W=0  $  RETURN
   19 CSAT = CSATXF(T)  $  PX = PVTF(T,DL,1)
C  20 IF(T.GT.200) 21,22
C  21 CV = CVSATF(T)  $  GO TO 23
   22 CV = CSAT + 100*T*DPDT*DDLDT/DL/DL
   23 CP = CV + 100*T/DPDD*(DPDT/DL)**2
   30 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END
```

```
      FUNCTION CSATXF(T)
C     NF3 SATLIQ ENTROPY AND CSAT, J/MOL/K, RDG/NBS, NOV. 13, 1979.
C     SSAT = SCRT + A*U**ES + B*LN(X) + C*U + D*U**2 + E*U**3,
C     WHERE  X ≡ T/TCRT,  U ≡ (1-X).
C     CSAT = -ES*A*X/U**(1-ES) + B - C*X - 2*D*X*U - 3*E*X*U**2.
      DIMENSION AS(7)
      DATA (NFS=7),(ES=0.33),(TCRT=234.0),(SCRT=197.03182)
      DATA(AS = -27.04141165, 168.4875348, 117.5913487,
     1 -16.46287979, 241.1959696, -288.5828349, 230.9162107)
    1 FORMAT(1H0 9X 3HT =F10.5, * IN CSATXF(T). * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1, T   $   STOP
    4 CSATXF = 0   $   RETURN
    5 X = T/TCRT  $  U = 1.0 - X  $  UE = U**(ES-1)
    6 CS = -AS(1)*ES*UE + AS(2)/X   $   DO 7 K=3,NFS
    7 CS = CS - (K-2)*AS(K)*U**(K-3)
    9 CSATXF = X*CS   $   RETURN  $  END
```

```
      SUBROUTINE COMPRLQ
C     GIVEN P,T  FOR COMPRLIQ. AT T.LE.TC, GET DEN AND FUNCTIONS.
C     REVISED TO USE HSATF, SSATF, CSATXF, BUT NOT COEXIST. TIMESAVER.
C     INTEGRATE ALONG ISOTHERM T FROM SATLIQ UP TO POINT (P,T).
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/12/ DELS, DELCV
    1 FORMAT(1H0 9X *COMPRLQ  T.GT.TCRT. * / )
    2 IF(T.GT.TCRT) 3,4
    3 PRINT 1   $   STOP
C     GET PSAT, DENLIQ, AND SATLIQ FUNCTIONS FOR START.
    4 PS = PSATF(T)  $  DL = DENLIQF(T)  $  DDLDT = DDSDT
    6 HS = HSATF(T)  $  ES = HS - 100*PS/DL  $  SS = SSATF(T)
C   7 IF(T.GT.200) 8,9
C   8 CVS = CVSATF(T)  $  GO TO 10
    9 PX=PVTF(T,DL,0)  $  CVS = CSATXF(T) + 100*T*DPDT*DDLDT/DL/DL
C     INTEGRATE UP TO POINT (P,T).
   10 DEN = DB = FINDENF(T,P)   $   DX = DB - DL
   11 N = 10  $  LD = 2  $  E = ES + EDELF(1,N,T,DL,DB,LD)
   12 H = E + 100*P/DB  $  S = SS + DELS  $  CV = CVS + DELCV
   13 PX = PVTF(T,DB,1)  $  IF(T.EQ.TCRT) 14,15
   14 CP = CV = W = 0   $   RETURN
   15 CP = CV + 100*T/DPDD*(DPDT/DB)**2  $  W = SQRT(WK*CP*DPDD/CV)
   30 RETURN   $   END
```

```
      FUNCTION DENGASF(T)
C     DESIGNED FOR ZSAT = 1 AT LOW DENSITIES, 5/29/77.
C     USE ZSAT = PS/DS/GK/TS WITH VAPOR PRESSURES, AND ZCRT.
C     Z = 1 + (ZCRT-1)*PI*F(X)/X/X.
C     F(X) = 1 + A1*VE + A2*V + A3*V**2
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/7/ NFG, GE, AV(6)
      COMMON/13/ ZCRT,ZSAT,DZSDT, ZFX, FRT,DFRTDT
      DATA (GKK = 0.083145)
    1 FORMAT(1H0 9X *T EXCEEDS TC IN DENGASF. * / )
    2 IF(TCRT-T) 3,4,6
    3 PRINT 1   $   STOP
    4 DENGASF = DCRT  $  DDSDT = 1.0E+100  $  DZSDT = -1.0E+100
    5 ZSAT = ZCRT  $  ZFX = 1   $   RETURN
    6 IF(T.LE.0) 7,9
    7 DENGASF = DDSDT = 0  $  ZSAT = 1  $  DZSDT = 0
    8 ZFX = 1 + AV(1) + AV(2) + AV(3)   $   RETURN
    9 ZN = ZCRT - 1  $  PC = PCRT  $  TC = TCRT
   10 X = T/TC  $  X2 = X*X  $  V = 1.0 - X
   11 P = PSATF(T)  $  PI = P/PC  $  PIT = DPSDT/PC
   12 VE = V**GE  $  VE1 = -GE*VE/V
   13 ZFX = F = 1 + AV(1)*VE + AV(2)*V + AV(3)*V*V
   14 F1 = AV(1)*VE1 - AV(2) - 2*AV(3)*V
   15 ZSAT = Z = 1 + ZN*PI*F/X2
   16 DZSDT = DZDT = (PI*(F1-2*F/X)/TC + F*PIT)*ZN/X2
   17 DDSDT = (DPSDT - P/T - P*DZDT/Z)/T/Z/GKK
   18 DENGASF = P/T/Z/GKK   $   RETURN   $   END
```

```
      FUNCTION EDELF(L,M,T,DA,DB,LD)
C     GET CHANGE OF E, S, CV WITH DENSITY ALONG ISOTHERMS.
C     GET EDELF, DELS, DELCV FROM DA TO DB ON ISOTHERM T.
C     ROMBERG NUMERICAL INTEGRATION VIA  -
C     CARNAHAN/LUTHER/WILKES, APPLIED NUMERICAL METHODS, P. 90,
C     JOHN WILEY AND SONS, INC., N.Y., 1969.
C     SPECIAL REVISION FOR VERY LOW DENSITIES.
C     NOTE NK GIVES FINAL, TOTAL SUBDIVISIONS OF INTERVAL DX.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT, DPMDT, DPDD,DPDR,DTSDR,DTHDR
      COMMON/12/ DELS, DELCV
      COMMON/13/ ZCRT,ZSAT,DZSDT,ZFX, FRT,DFRTDT
      DIMENSION E(20), S(20), C(20)
      DATA (DI = 0.0001),(G = 0.083145)
    1 FORMAT(1H09X*EDELF L =*I2,5H, N =I3,5H, T = F8.3,6H, DA =E10.4,
     1 6H, DB =E10.4, 6H, LD =I2//
     2 10X 1HN 7X5HEDELF 8X4HDELS 7X5HDELCV )
    2 FORMAT(1H0 9X 6HEDIF =F10.3, 8H, SDIF =F10.5, 9H, CVDIF =F10.3)
    3 FORMAT(6X I5, F12.3, F12.5, F12.3)
C     FOR DA=0 AND DB.LE.DI, IDEAL GAS, EDELF=DELS=DELCV=0.
C     FOR DA=0 AND DB.GT.DI, START ROMBERG WITH DA = DI,  -
C     TO AVOID INFINITIES IN ORDINATE FUNCTIONS AT DA = 0.
    9 NMAX = M  $  NK = 0  $  ZK = 1.0-1/ZCRT  $  RK = 100*G*TCRT/DCRT
   10 IF(L.EQ.0) 11,14
   11 IF(DB.LE.DI) 12,13
   12 EDELF = DELS = DELCV = 0   $   RETURN
   13 DA = DI
C    GET FIRST TRAPEZOID AREA, E(1) ETC., FROM DA TO DB.
   14 DX = DB - DA  $  P = PVTF(T,DA,0)  $  IF(DA.LT.DCRT) 16,17
   16 EA = RK*(ZK*ZSAT*ZFX + FRT - T*DFRTDT)  $  GO TO 18
   17 EA = 100*(P-T*DPDT)/DA/DA
   18 IF(L.EQ.0) 19,20
   19 SA =  100*(G-DPDT/DA)/DA  $  GO TO 21
   20 SA = -100*DPDT/DA/DA
   21 CA = -100*T*D2PDT2/DA/DA
   22 P = PVTF(T,DB,0)  $  IF(DB.LT.DCRT) 23,24
   23 EB = RK*(ZK*ZSAT*ZFX + FRT - T*DFRTDT)  $  GO TO 25
   24 EB = 100*(P-T*DPDT)/DB/DB
   25 IF(L.EQ.0) 26,27
   26 SB =  100*(G-DPDT/DB)/DB  $  GO TO 28
   27 SB = -100*DPDT/DB/DB
   28 CB = -100*T*D2PDT2/DB/DB
   29 E(1)=(EA+EB)*DX/2  $  S(1)=(SA+SB)*DX/2  $  C(1)=(CA+CB)*DX/2
C    INTERVAL HALVING, GET E(N+1), ETC.
   30 NK = 1  $  DO 60 N=1,M  $  NP = K = N + 1
   31 JM = 2**N - 1  $  DXN = DX/2**N  $  E(K) = S(K) = C(K) = 0
   33 DO 45 J=1,JM,2  $  NK = NK+1  $  DN = DA + J*DXN
   34 P = PVTF(T,DN,0)  $  IF(DN.LT.DCRT) 35,36
   35 EB = RK*(ZK*ZSAT*ZFX + FRT - T*DFRTDT)  $  GO TO 37
   36 EB = 100*(P-T*DPDT)/DN/DN
   37 IF(L.EQ.0) 38,39
   38 SB =  100*(G-DPDT/DN)/DN  $  GO TO 40
   39 SB = -100*DPDT/DN/DN
   40 CB = -100*T*D2PDT2/DN/DN
   41 E(K) = E(K) + EB  $  S(K) = S(K) + SB  $  C(K) = C(K) + CB
   45 CONTINUE  $  E(K) = E(N)/2 + E(K)*DXN
   46 S(K) = S(N)/2 + S(K)*DXN  $  C(K) = C(N)/2 + C(K)*DXN
C
```

```
C     TEST FOR CONVERGENCE.
   50 ED=ABS(E(K)-E(N))  $  SD=ABS(S(K)-S(N))  $  CD=ABS(C(K)-C(N))
   53 IF(ED.LT.0.5/LD) 54,60
   54 IF(SD.LT.0.002/LD) 55,60
   55 IF(T.EQ.TCRT.AND.DB.GE.DCRT)  GO TO 57
   56 IF(CD.LT.0.05/LD) 57,60
   57 EDELF = E(K)  $  DELS = S(K)  $  DELCV = C(K)  $  RETURN
   60 CONTINUE  $  N = M  $  NM = N-1  $  NP = N+1
   61 PRINT 1, L, N, T, DA, DB, LD
   62 PRINT 3, NM,E(NM),S(NM),C(NM)  $  PRINT 3, N,E(N),S(N),C(N)
   64 PRINT 3, NP,E(NP),S(NP),C(NP)  $  PRINT 2, ED, SD, CD
   99 STOP  $  END


      FUNCTION FINDENF(T,P)
C     ON ISOTHERM T, FIND DEN, MOL/L, TO MINIMIZE (P-PC) VIA EQNSTATE.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (DM=27.0),(GKK=0.083145)
   41 FORMAT(1H0 9X *FINDENF = 0,  FAILS TO CONVERGE. * / )
   42 FORMAT(1H0 9X *FINDENF = DCRT, DP/DR ZERO OR NEG. * / )
   43 FORMAT(1H0 9X *FINDENF = 0, DOUBLE-VALUED AT P = PSAT. * / )
      IF(T.GT.0.AND.P.GT.0) 1,35
    1 IF(T-TCRT) 2,5,8
    2 DG=DENGASF(T) $ DL=DENLIQF(T) $ PS=PSATF(T)  $  IF(P-PS) 3,32,4
    3 D = DG/2  $  GO TO 11
    4 D = (DL+DTRP)/2  $  GO TO 11
    5 DG=DL=DCRT  $  PS=PCRT  $  IF(P-PS) 6,33,7
    6 D = DCRT/2  $  GO TO 11
    7 D = 2*DCRT  $  GO TO 11
    8 IF(T.LT.300) 9,10
    9 PC = PVTF(T,DCRT,0)  $  IF(P-PC) 6,33,7
   10 D = DCRT
   11 DO 30 J=1,50 $ DP=P-PVTF(T,D,1) $ IF(ABS(DP/P)-1.0E-7) 31,31,12
   12 IF(DPDD.GT.0) 13,34
   13 DD = DP/DPDD  $  IF(ABS(DD/D)-1.0E-7) 31,31,14
   14 D = D + DD  $  IF(D.GT.0.0) 16,15
   15 D = P/GKK/T  $  GO TO 30
   16 IF(D.GT.DM) 17,18
   17 D = DM  $  GO TO 30
   18 IF(T-TCRT) 19,24,30
   19 IF(P.LT.PS) 20,22
   20 IF(D.GT.DG) 21,30
   21 D = DG  $  GO TO 30
   22 IF(D.LT.DL) 23,30
   23 D = DL  $  GO TO 30
   24 IF(P.LT.PCRT) 25,27
   25 IF(D.LT.DCRT) 30,26
   26 D = DCRT - 0.02  $  GO TO 30
   27 IF(D.GT.DCRT) 30,28
   28 D = DCRT + 0.02
   30 CONTINUE  $  PRINT 41  $  STOP
   31 FINDENF = D  $  RETURN
   32 PRINT 43  $  STOP
   33 FINDENF = DCRT  $  RETURN
   34 FINDENF = DCRT  $  PRINT 42  $  RETURN
   35 FINDENF=DPDT=D2PDT2=0  $  DPDD=GKK*T  $  DPDR=DPDD*DTRP
   36 RETURN  $  END
```

```
      FUNCTION DENLIQF(T)
C     DEN = DCRT + YNL*(X + (XE-X)*Y),    YNL ≡ DTRP - DCRT.
C     Y = A1 + A2*EXP(2*(1-1/U)),    U ≡ T/TC.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/5/ DDSDT
      COMMON/10/ NFL, EL, AW(6)
    1 FORMAT(1H0 9X *DENLIQF = 0, T EXCEEDS TCRT. * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1   $   STOP
    4 DENLIQF = DCRT  $  DDSDT = -1.0E+100 $  RETURN
    5 XN=TCRT-TTRP $ X=(TCRT-T)/XN $ X2 = X*X  $  DXDT = -1.0/XN
    6 XE = X**EL  $  V = XE - X  $  V1 = EL*XE/X - 1
    7 U = T/TCRT  $  ARG = 2.0*(1-1/U)
    8 XP = EXP(ARG)  $  XP1T = 2*XP/U/U/TCRT
    9 Y = AW(1) + AW(2)*XP  $  Y1T = AW(2)*XP1T
   10 V1T = V1*DXDT  $  YNL = DTRP - DCRT
   11 DENLIQF = DCRT + YNL*(X + V*Y)
   12 DDSDT = YNL*(DXDT + V*Y1T + V1T*Y)   $   RETURN  $  END
```

```
      FUNCTION FINDTMF(P)
C     GIVEN P ON THE MELTING LINE, FIND T FOR METHANE.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      DATA (QP=1.01325),(E=1.85),(A=1884.43)
    1 AQ = A*QP  $  X = (P-PTRP)/AQ + 1  $  FINDTMF = TTRP*X**(1.0/E)
    9 RETURN   $   END
```

```
      FUNCTION FINDTSF(P)
C     GIVEN VAPOR PRESSURE P, ITERATE T TO MINIMIZE (P-PC).
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPHDT,DPDD,DPDR,DTSDR,DTHDR
    1 FORMAT(1H0 9X *FINDTSF = 0,  FAILS TO CONVERGE. * / )
    2 FORMAT(1H0 9X *FINDTSF = 0,  P EXCEEDS PCRT. * / )
    3 IF(P-PCRT) 4,11,12
    4 T = 200  $  DO 9 J=1,50  $  DP = P - PSATF(T)  $  ADP = ABS (DP)
    5 IF(ADP/P-1.0E-6) 10,6,6
    6 IF(ADP/DPSDT/T-1.0E-6) 10,7,7
    7 T = T + DP/DPSDT  $  IF(T-TCRT) 9,9,8
    8 T = TCRT
    9 CONTINUE  $  PRINT 1  $  STOP
   10 FINDTSF = T   $   RETURN
   11 FINDTSF = TCRT   $   RETURN
   12 PRINT 2  $  STOP  $  END
```

```
      SUBROUTINE GENEOUS
C     GIVEN P,T FOR THE HOMOGENEOUS DOMAIN -
C     GET DEN AND FUNCTIONS AT ANY TEMPERATURE.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/12/ DELS, DELCV
      COMMON/19/ KD
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DATA (Q=1.01325),(G=0.083145)
    3 TI = T  $  CALL IDEAL  $  IF(P.GT.0) 4,10
    4 DEN = DB = FINDENF(T,P)  $  N = 11  $  LD = KD  $  DA = 0
    5 E = EZZ + EZ + EDELF(0,N,T,DA,DB,LD)  $  H = E + 100*P/DB
    6 S = SZ + DELS - 100*G*ALOG(G*T*DB/Q)
    7 CV = CVZ + DELCV  $  PX = PVTF(T,DB,1)
    8 CP = CV + 100*T/DPDD*(DPDT/DB)**2
    9 W = SQRT(WK*CP*DPDD/CV)  $  RETURN
   10 DEN=S=0  $  E = EZZ + EZ  $  H = E + 100*G*T  $  CV=CVZ $ CP=CPZ
   12 W = SQRT(WK*CP*G*T/CV)  $  RETURN  $  END
```

```
      SUBROUTINE GENIUS
C     SAVES COMPUTER TIME WHEN TABULATING FUNCTIONS ALONG ISOBARS.
C     SAVES DEN,E,S,CV ALONG ISOBARS FOR USE IN INTEGRATING TO NEXT
C     HIGHER ISOBAR. VALID ONLY FOR MONOTONICALLY INCREASING ISOBAR
C     PRESSURES, AND AT TEMPS. T = INTEGER MULTIPLES OF 10 K.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/12/ DELS, DELCV
      COMMON/19/ KD
      DIMENSION DK(70),EK(70),SK(70),CK(70)
    1 FORMAT(1H0 9X *GENIUS T NOT INTEGRAL. * / )
    2 J = T/10  $  IF(T - 10*J) 3,4
    3 PRINT 1  $  STOP
    4 IF(IK.EQ.IN) 5,9
    5 KD = LD = 2  $  CALL GENEOUS  $  KD = 1
    6 DK(J) = DEN  $  EK(J) = E  $  SK(J) = S  $  CK(J)=CV  $  RETURN
C     INTEGRATE FROM OLD DEN UP TO NEW DEN ON GIVEN ISOTHERM.
    9 DA = DK(J)  $  DK(J) = DEN = DB = FINDENF(T,P)  $  N = 10
   11 EK(J) = E = EK(J) + EDELF(1,N,T,DA,DB,LD)  $  H = E + 100*P/DB
   13 SK(J) = S = SK(J) + DELS  $  CK(J) = CV = CK(J) + DELCV
C     NOW GET NEW DP/DT, DP/DD, CP, W.
   15 PX = PVTF(T,DB,1)  $  CP = CV + 100*T/DPDD*(DPDT/DB)**2
   30 W = SQRT(WK*CP*DPDD/CV)  $  RETURN  $  END
```

```
      FUNCTION HSATF(T)
C     NF3 SATLIQ ENTHALPY, J/MOL, RDG/NBS, NOV. 13, 1979.
C     BASED ON EZZ = HZZ = 12340.685 J/MOL.
C     FOR 35 POINTS, TTRP THRU TCRT, RMSPCT = 0.003.
C     DEFINE YH ≡ (H-HC)/(HT-HC),  X ≡ (TC-T)/(TC-TT),  WHEN -
C     YH = X + (XE-X)*(A1 + A2*X + A3*X2 + . . .)
      DIMENSION AH(8)
      DATA (NFH=8),(TTRP=66.35),(TCRT=234.0)
      DATA (EH=0.35),(HTRP=0.0),(HCRT=15460.422)
      DATA(AH = 0.4046924015, -0.222397394, 1.684556929, -5.424338100,
     1 8.875748786, -7.740104222, 3.181911763, -0.4505783783)
    1 FORMAT(1H0 9X 3HT =F10.5, * IN HSATF(T).*/)
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1, T  $  STOP
    4 HSATF = HCRT  $  RETURN
    5 IF(T.EQ.TTRP) 6,7
    6 HSATF = 0.0  $  RETURN
    7 X = (TCRT-T)/(TCRT-TTRP)  $  V = X**EH - X  $  FX = X
    8 DO 9 K=1,NFH  $  FX = FX + V*AH(K)*X**(K-1)
    9 CONTINUE  $  HSATF = HCRT*(1 - FX)  $  RETURN  $  END



      SUBROUTINE IDEAL
C     NITROGEN TRIFLUORIDE IDEAL GAS FUNCTIONS, R.D.G., 1/23/79.
C     CPZ/R = 4 + (A1 + A2/X + A3/X2 + . . )*EXP(-E/X),  X ≡ T/100.
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION A(5)
      DATA (NF=5),(E=8.76),(R=8.3145)
      DATA(A=6.1189724,48.162688,228.231405,-249.067052,564.293045)
    1 XI = TI/100  $  XP = EXP(-E/XI)
    4 CP = 4.0  $  DO 5 K=1,NF
    5 CP = CP + A(K)*XP*XI**(1-K)
C     NUMERICAL INTEGRATION FOR HZ/RT, SZ/R. START AT T = 300.
    9 SI = 4.184*62.378/R  $  HI = 4184.0*(0.024 + 2.832)/300/R
   10 H = S = 0  $  N = ABS(TI-300)/2 + 2  $  DX = (XI-3)/N
   11 DO 20 J=1,N  $  X = 3.0 + (J-0.5)*DX  $  XP = EXP(-E/X)
   15 CPX = 4.0  $  DO 16 K=1,NF
   16 CPX = CPX + A(K)*XP*X**(1-K)
   17 H = H + CPX*DX  $  S = S + CPX*DX/X
   20 CONTINUE  $  S = SI + S  $  H = (H + 3*HI)/XI
C     CONVERT TO JOULES, MOLES, KELVINS.
   21 HZ = H*R*TI  $  EZ = HZ - R*TI  $  SZ = R*S
   22 CPZ = R*CP  $  CVZ = CPZ - R  $  RETURN  $  END



      FUNCTION PMELTF(T)
C     METHANE SOLID-LIQUID MELTING PRESSURE, BAR.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (QP=1.01325),(E=1.85),(A=1884.43)
    1 X = T/TTRP  $  XE = X**E  $  AQ = A*QP
    2 PMELTF = PTRP + AQ*(XE-1)
    3 DPMDT = AQ*E*XE/X/TTRP  $  RETURN  $  END
```

```
      SUBROUTINE JTLOCUS
C     DERIVE THE J-T INVERSION CURVE.  USE ROUTINE DELTAF(T,DI).
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      DIMENSION DK(60),DN(60),TT(60),PP(60)
      DATA (A=1.29079),(B=0.49734)
    1 FORMAT(1H1 16X *THE JOULE-THOMSON INVERSION LOCUS FOR NITROGEN TRI
     1FLUORIDE. * //
     2 17X 3HT,K 8X2HDI 5X5HMOL/L 5X5HP,BAR
     3  7X3HT,K 8X2HDI 5X5HMOL/L 5X5HP,BAR )
    2 FORMAT(10X I10, 2F10.3, F10.2,  I10, 2F10.3, F10.2)
C     SAVE INITIAL, TRIAL DENSITY, DK(I) = DI.
    5 TA = 180   $   NP = 52
    6 PRINT 1  $  DO 25 I=1,NP  $  DX = 1.6
    7 T = TA + 10*I  $  X = T/TCRT  $  DK(I) = DI = DCRT*EXP(A-B*X)
   10 IF(T-TCRT) 11,12,12
   11 DL = DENLIQF(T)  $  IF(DI.LT.DL) 23,12
   12 SS = DELTAF(T,DI)   $   DO 20 IT=1,20
   14 D=DI-DX $ SL=DELTAF(T,D)   $   D=DI+DX $ SP=DELTAF(T,D)
   15 IF(SS-SL) 18,16,16
   16 IF(SP-SL) 19,17,17
   17 SS = SL  $  DI = DI - DX  $  GO TO 20
   18 IF(SS-SP) 20,20,19
   19 SS = SP  $  DI = DI + DX
   20 DX = DX/2  $  TT(I) = T  $  DN(I) = DI  $  PP(I) = PVTF(T,DI,0)
   21 GO TO 25
   23 TT(I) = T  $  DK(I) = DN(I) = PP(I) = 0
   25 CONTINUE  $  N = NP/2  $  DO 29 J=1,N  $  K = J + N
   26 IT = TT(J)  $  ITT = TT(K)
   29 PRINT 2, IT,DK(J),DN(J),PP(J), ITT,DK(K),DN(K),PP(K)
   30 RETURN    $    END
```

```
      FUNCTION DELTAF(T,D)
C     GET (T*DP/DT - D*DP/DD) FOR THE J-T INVERSION CURVE.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
    1 IF(T-TCRT) 2,4,4
    2 DL = DENLIQF(T)  $  IF(D-DL) 3,3,4
    3 DELTAF = 1.0E+100  $  RETURN
    4 P = PVTF(T,D,1)
    5 DELTAF = ABS (T*DPDT-D*DPDD)   $   RETURN  $  END
```

```
      SUBROUTINE PRINTIT
C     PRINTOUT ISOCHORES AND ISOTHERMS.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPHDT,DPDD,DPDR,DTSDR,DTHDR
      DATA (R = 0.083145)
    1 FORMAT(I5, 2F10.0)
    5 FORMAT(1X)
    6 FORMAT(1H1 25X *NF3 ISOCHORE AT*F7.3, * MOL/L*// 17X 3HT,K
     1 5X5HP,BAR 9X1HZ 5X5HDP/DD 5X5HDP/DT 5X7HD2P/DT2 )
    7 FORMAT(10X 2F10.3, F10.5, F10.3, F10.4, F12.6)
    8 FORMAT(1H1 25X *NF3 ISOTHERM AT*F7.2, * DEG. K*// 15X 5HMOL/L
     1 5X5HP,BAR 9X1HZ 5X5HDP/DD 5X5HDP/DT 5X7HD2P/DT2 )
    9 FORMAT(10X 2F10.3, F10.5, F10.3, F10.4, F12.6)
C     PRINTOUT THE ISOCHORES.
   20 DO 60 I=1,27  $  IF(I.EQ.1) 21,22
   21 DN = 0.5  $  GO TO 30
   22 IF(I.EQ.9) 23,24
   23 DN = DCRT  $  GO TO 30
   24 DN = I - 1
   30 PRINT 6, DN  $  TS = TSATF(DN)  $  PS = PVTF(TS,DN,1)
   31 Z = PS/DN/R/TS
   32 PRINT 7, TS,PS,Z, DPDD,DPDT,D2PDT2
   38 IF(I.LT.10) 39,40
   39 IT = 8  $  GO TO 50
   40 IF(I.LT.14) 41,42
   41 IT = 4  $  GO TO 50
   42 IF(I.LT.19) 43,44
   43 IT = 2  $  GO TO 50
   44 IT = 1
   50 DO 59 J=68,504,IT  $  TT = J  $  IF(TT-TS) 59,59,52
   52 PP = PVTF(TT,DN,1)  $  IF(PP.GT.360) 60,55
   55 Z = PP/DN/R/TT
   58 PRINT 7, TT,PP,Z, DPDD,DPDT,D2PDT2
   59 CONTINUE
   60 CONTINUE
C     PRINTOUT THE ISOTHERMS.
  100 DO 130 I=1,99  $  READ 1, IDD, TT,DX  $  IF(IDD) 101,999
  101 PRINT 8, TT  $  PM = PMELTF(TT)
  102 IF(TT-TCRT) 103,103,104
  103 DG = DENGASF(TT)  $  DL = DENLIQF(TT)
  104 L = 0  $  DS = DX
  105 DO 120 N=1,1500  $  DN = N*DS  $  IF(TT-TCRT) 106,106,117
  106 IF(DN.GE.DG.AND.DN.LE.DL) 107,117
  107 L = L+1  $  IF(L.EQ.1) 108,120
  108 PG = PVTF(TT,DG,1)  $  Z = PG/DG/R/TT
  109 PRINT 9, DG,PG,Z, DPDD,DPDT,D2PDT2
  110 PRINT 5
  111 PL = PVTF(TT,DL,1)  $  Z = PL/DL/R/TT
  112 PRINT 9, DL,PL,Z, DPDD,DPDT,D2PDT2
  116 GO TO 120
  117 PP = PVTF(TT,DN,1)  $  IF(PP.GT.PM.OR.PP.GT.400) 130,118
  118 Z = PP/DN/R/TT
  119 PRINT 9, DN,PP,Z, DPDD,DPDT,D2PDT2
  120 CONTINUE
  130 CONTINUE
  999 RETURN  $  END
```

```
      FUNCTION PSATF(T)
C     LN(P) = P1 + P2/X + P3*X + P4*X2 + P5*X3 + P6*X*(1-X)**EPP.
C     WHERE,  X ≡ T/TCRT,  U ≡ 1/X.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/2/ NFP, EPP, PJ(6)
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
    1 FORMAT(1H0 9X *T ABOVE TCRT IN PSATF(T), * / )
    2 X = T/TCRT  $  X2 = X*X  $  X3 = X*X2  $  X1T = 1.0/TCRT
    3 IF(X.LE.0) 4,5
    4 PSATF = DPSDT = 0   $   RETURN
    5 U = 1.0/X  $  U1T = -X1T/X/X
    6 V = 1.0 - X  $  IF(V) 7,8,9
    7 PRINT 1   $   STOP
    8 Z = Z1 = 0  $  GO TO 10
    9 Z = V**EPP  $  Z1 = -EPP*Z/V
   10 A=PJ(1) $ B=PJ(2) $ C=PJ(3) $ D=PJ(4) $ E=PJ(5) $ F=PJ(6)
   11 PL = A + B*U + C*X + D*X2 + E*X3 + F*X*Z
   12 PL1T = B*U1T + (C + 2*D*X + 3*E*X2 + F*(X*Z1+Z))*X1T
   16 PSATF = EXP(PL)  $  DPSDT = PL1T*PSATF  $  RETURN  $  END
```

```
      SUBROUTINE PVTDATA
C     NITROGEN TRIFLUORIDE EQNSTATE, R.D.G.(NBS), SEPT. 24, (1979).
      COMMON GK,GKK, B1,B2,B3,B4,B5, C1,C2,C3, E1,E2,E3, ER,IX
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/2/ NFP, EPP, PJ(6)
      COMMON/7/ NFG, GE, AV(6)
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/10/ NFL, EL, AW(6)
      COMMON/13/ ZCRT,ZSAT,DZSDT, ZFX, FRT,DFRTDT
      COMMON/19/ KD
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
   15 NFP=6 $ EPP=1.75 $ NFG=3 $ NFL=2 $ GE = EL = 1.0/3.0
   17 WM = 71.0019  $  DCRT = 7.92  $  DTRP = 26.32
   18 TTRP = 66.35  $  TCRT = 234.0  $  GKK = 0.083145  $  GK=GKK*DCRT
   19 PJ(1) = 20.315417602  $  PJ(2) = -8.362069370
   20 PJ(3) =-21.398986401  $  PJ(4) = 20.162194616
   21 PJ(5) = -6.918662727  $  PJ(6) =  3.677799376
   22 PTRP = PSATF(TTRP)  $  PCRT = PSATF(TCRT)
   23 ZCRT = PCRT/DCRT/GKK/TCRT
   25 AV(1) = -0.7109566941  $  AV(2) = 0.3800175233
   26 AV(3) =  1.622847586  $  DGAT = DENGASF(TTRP)
   28 AW(1) = 0.754377410  $  AW(2) = 0.027975083
   30 IX=1 $ AL=1 $ GA=1 $ DE=0.5 $ EP=1  $  BE = ER = 0
   31 B1 = 0.55199813920  $  B2 = 0.13268809584  $  B3 = 0.20608495802
   32 E1 = 0.74067409894  $  E2 = 0.29375371520  $  E3 = 0
   33 WK = 100000/WM  $  KD = 1  $  EZZ = 12340.685
   99 RETURN   $   END
```

```
      FUNCTION PVTF(T,D,M)
C     NF3 EQNSTATE, PVTF = P,BAR.
C     NOTE, M=0 RETURNS DP/DT, D2P/DT2.  M=1 RETURNS ALSO DP/DD.
C     P-PSAT = S*GK*(T-TSAT) + S*S*GK*TCRT*F(S,T),  WHERE -
C     F(S,T) ≡ B(S)*XBF(S,T) + E(S)*XEF(S,T),  AND -
C     B(S) ≡ B1 + B2*S + B3*S2,  E(S) ≡ (E1+E2*S)*(S-1)*EXP(-GA*S**IX).
C     WHERE,   R ≡ DEN/DTRP,  S ≡ DEN/DCRT.
      COMMON GK,GKK, B1,B2,B3,B4,B5, C1,C2,C3, E1,E2,E3, ER,IX
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
      COMMON/13/ ZCRT,ZSAT,DZSDT, ZFX, FRT,DFRTDT
    1 S = D/DCRT  $  S2=S*S  $  S3=S*S2  $  SN=S-1  $  SX=S**IX
    2 GK = DCRT*GKK  $  TC = TCRT  $  DSDR = DTRP/DCRT
    3 RG = S*GK  $  GKT = GK*TC  $  TSAT = TS = TSATF(D)
    4 THETA = THETAF(D)  $  PSAT = PS = PSATF(TS)
    5 XB = XBF(T,D)  $  XE = XEF(T,D)
    6 B = (B1 + B2*S + B3*S2)*S2  $  XP = EXP(-GA*SX)
   10 SE = E1*S2 + E2*S3  $  SM = SE*SN  $  E = SM*XP
   12 F = B*XB + E*XE  $  F1 = B*XB1 + E*XE1  $  F2 = B*XB2 + E*XE2
   13 PVTF = PS + RG*(T-TS) + GKT*F  $  FRT=F/S2  $  DFRTDT=F1/S2/TC
   14 DPDT = RG + GK*F1  $  D2PDT2 = GK*F2/TC  $  IF(M) 15,30
   15 BD = (2*B1 + 3*B2*S + 4*B3*S2)*S*DSDR
   16 SM1 = SE + (2*E1*S + 3*E2*S2)*SN  $  XP1 = -IX*GA*SX/S
   17 ED = (SM*XP1 + SM1)*XP*DSDR
   20 F1 = B*DXBDR + BD*XB  +  E*DXEDR + ED*XE
   26 DPDR = (DPSDT-RG)*DTSDR + (T-TS)*GK*DSDR + GKT*F1
   27 DPDD = DPDR/DTRP
   30 RETURN  $  END
```

```
      FUNCTION QVAPXF(T)
C     NITROGEN TRIFLUORIDE, OCT. 16, 1969.  NBS/RDG.
C     FOR 16 THERMALOOP AND 35 CLAPEYRON DATA, RMSPCT = 0.05.
C     QVAP/QTRP = X + (XE-X)*(A + B*X + C*X2),  WHERE -
C     X ≡ (TC-T)/(TC-TT),    XE ≡ X**E.
      DATA (E=0.38),(QT=14.548),(TTRP=66.35),(TCRT=234.0),(XN=167.65)
      DATA (A=0.998247122),(B=0.269536103),(C=-0.405010672)
    1 FORMAT(1H0 9X *T EXCEEDS TCRT IN QVAPXF(T). * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1   $ ' STOP
    4 QVAPXF = 0  $  RETURN
    5 X = (TCRT-T)/XN  $  X2 = X*X  $  XE = X**E
    6 Q = QT*(X + (XE-X)*(A + B*X + C*X2))
    7 QVAPXF = Q*1000   $   RETURN  $  END
```

```
      FUNCTION SSATF(T)
C     NF3 SATLIQ ENTROPY, J/MOL/K, RDG/NBS, NOV. 13, 1979.
C     FOR 35 POINTS, TTRP THRU TCRT, RMSPCT = 0.002.
C     SSAT - SCRT = A1*U**ES + A2*LN(X) + A3*U + A4*U2 + A5*U3,  WHERE -
C     X ≡ T/TCRT,  U ≡ (1-X).
      DIMENSION AS(7)
      DATA (NFS=7),(ES=0.33),(TCRT=234.0),(SCRT=197.03182)
      DATA(AS = -27.04141165, 168.4875348, 117.5913487,
     1 -16.46287979, 241.1959696, -288.5828349, 230.9162107)
    1 FORMAT(1H0 9X 3HT =F10.5, * IN SSATF(T). * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1, T   $   STOP
    4 SSATF = SCRT   $   RETURN
    5 X = T/TCRT  $  U = 1.0 - X
    6 SSATF = SCRT + AS(1)*U**ES + AS(2)*ALOG(X)  $  DO 7 K=3,NFS
    7 SSATF = SSATF + AS(K)*U**(K-2)   $   RETURN  $  END
```

```
      SUBROUTINE TABLIQ
C     TABULATE NF3 SATURATED LIQUID FUNCTIONS.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      COMMON/6/ TSAT, THETA, PSAT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
      DIMENSION TSA(40), PSA(40)
      DATA (G = 0.083145)
    4 FORMAT(1H1 13X *PROPERTIES OF SATURATED LIQUID NITROGEN TRIFLUORID
     1E. * //
     1 14X 1HT 10X1HP 5X3HDEN 7X1HZ 3X5HV,LIQ 6X5HV,GAS
     2 5X6HDPS/DT 3X6HDDL/DT 3X5HDP/DT 6X5HDP/DD /
     3 10X5HDEG K 8X3HBAR 3X5HMOL/L 8X 3X5HL/MOL 6X5HL/MOL
     4 6X5HBAR/K 2X7HMOL/L/K 3X5HBAR/K 2X9HBAR-L/MOL )
    5 FORMAT(5XF10.3, E11.4, F8.3, F8.5, F8.5, 2E11.4, F9.5, F8.3,E11.4)
   11 FORMAT(1H1 13X *PROPERTIES OF SATURATED LIQUID NITROGEN TRIFLUORID
     1E. * //
     1 14X1HT 10X1HP 4X5HQ,VAP 8X1HE 8X1HH 8X1HS
     2 6X2HCV 6X2HCS 6X2HCP 6X1HW /
     3 10X5HDEG K 8X3HBAR 4X5HJ/MOL 4X5HJ/MOL 4X5HJ/MOL 2X7HJ/MOL/K
     4 1X7HJ/MOL/K 1X7HJ/MOL/K 1X7HJ/MOL/K 2X5HM/SEC )
   12 FORMAT(5X F10.3, E11.4, 3F9.1, F9.3, 3F8.2, I7)
C     FOR PAGE ONE OF TABLIQ.
C     REPLACE T = 145 BY BOILING-POINT AT J = 17.
  130 PRINT 4   $   NP = 37
  131 DO 150 J=1,NP  $  IF(J.EQ.1) 132,133
  132 T = TTRP  $  GO TO 139
  133 IF(J.EQ.17) 134,135
  134 T = FINDTSF(1.01325)  $  GO TO 139
  135 IF(J.EQ.NP) 136,138
  136 T = TCRT  $  DG = DL = DCRT  $  DDLDT = 0
  137 VG = VL = 1.0/DCRT  $  GO TO 141
  138 T = 60 + 5*J
      IF(J.EQ.35)  T = 232
      IF(J.EQ.36)  T = 233
  139 DL = DENLIQF(T)  $  DDLDT = DDSDT
  140 DG = DENGASF(T)  $  VG = 1/DG  $  VL = 1/DL
  141 TSA(J) = T  $  PX = PVTF(T,DL,1)
  147 PSA(J) = PS = PSAT  $  Z = PS/DL/G/T
  150 PRINT 5, T,PS,DL,Z, VL,VG, DPSDT,DDLDT, DPDT,DPDD
C     FOR PAGE TWO OF TABLIQ.
C     USE COEXIST AT ALL TEMPS.
  160 PRINT 11  $  DO 170 J=1,NP  $  P = PSA(J)  $  T = TSA(J)
  164 CALL COEXIST  $  IW = W   $   QX = QVAPXF(T)
  170 PRINT 12, T,P,QX, E,H,S, CV,CSAT,CP, IW
  999 RETURN    $    END
```

```
      SUBROUTINE THERMO
C     THERMO IS FOR COMPUTATION AT ANY, RANDOM (P,T) POINT.
C     THERMO ASSUMES AN ISOBAR IN SINGLE-PHASE ONLY.
C     GIVEN (P,T), RETURNS DEN, E,H,S, CV,CP,W, DPDT,DPDD.
C     ENTRIES BELOW FOR PHASE BOUNDARIES ASSUME A GIVEN ISOBAR P.
C     NITROGEN TRIFLUORIDE ROUTINES, RDG/NBS, NOV. 13, 1979.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/ DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
    1 FORMAT(1H0 9X *THERMO T =* F8.3, 5H, P = E12.5/
     1 10X *T BELOW TTRP, NOT DEFINED. * / )
    2 FORMAT(1H0 9X *THERMO T =* F8.3, 5H, P = E12.5/
     1 10X *P ABOVE MELTING LINE, NOT DEFINED. * / )
    3 FORMAT(1H0 9X *THERMO T =* F8.3, 5H, P = E12.5/
     1 10X *DOUBLE-VALUED AT COEXISTENCE. * / )
    4 FORMAT(1H0 9X *THERMO T =* F8.3, 5H, P = E12.5/
     1 10X *CP,CV,W UNAVAILABLE AT TCRT AND P.GT.PCRT. * / )
   10 IF(T.LT.TTRP) 11,13
   11 DEN=E=H=S=CV=CP=W=DPDT=DPDD=0  $  PRINT 1, T,P  $  RETURN
   13 IF(T.LT.TTRP+20) 14,20
   14 PM = PMELTF(T)  $  IF(P.GT.PM) 15,20
   15 DEN=E=H=S=CV=CP=W=DPDT=DPDD=0  $  PRINT 2, T,P  $  RETURN
   20 IF(P-PCRT) 21,30,35
C    SUBCRITICAL ISOBARS.
   21 TS = FINDTSF(P)  $  IF(T-TS) 22,23,25
   22 CALL COMPRLQ  $  RETURN
   23 DEN=E=H=S=CV=CP=W=DPDT=DPDD=0  $  PRINT 3, T,P  $  RETURN
   25 CALL GENEOUS  $  RETURN
C    THE CRITICAL ISOBAR.
   30 IF(T.LE.TCRT) 31,32
   31 CALL COMPRLQ  $  RETURN
   32 CALL GENEOUS  $  RETURN
C    SUPERCRITICAL ISOBARS.
   35 IF(T-TCRT) 36,37,39
   36 CALL COMPRLQ  $  RETURN
   37 CALL COMPRLQ  $  CP=CV=W=0  $  PRINT 4, T,P  $  RETURN
   39 CALL GENEOUS  $  RETURN
      ENTRY THERMOM
C    THERMOM FOR GIVEN ISOBAR AT THE MELTING LINE, GET T.
C    RETURNS T,DEN, E,H,S, CV,CP,W, DPMDT,DPDT,DPDD.
   40 T = FINDTMF(P)  $  CALL COMPRLQ  $  RETURN
      ENTRY THERMOL
C    THERMOL FOR GIVEN ISOBAR AT SATURATED LIQUID LINE, GET T.
C    RETURNS T,DEN, E,H,S, CV,CP,CSAT,W, DPSDT,DDSDT, DPDT,DPDD.
   43 T = FINDTSF(P)  $  CALL COEXIST  $  RETURN
      ENTRY THERMOV
C    THERMOV FOR GIVEN ISOBAR AT THE SATURATED VAPOR LINE, GET T.
C    RETURNS T,DEN, E,H,S, CV,CP,W, DPSDT,DDSDT, DPDT,DPDD.
   45 T = FINDTSF(P)  $  CALL COEXIST  $  DEN=DNG $ E=EG $ H=HG $ S=SG
   47 CV=CVG $ CP=CPG $ W=WG $ DPDT=DPGDT $ DPDD=DPGDD
   50 RETURN  $  END
```

```
      FUNCTION THETAF(DEN)
C     THETA = TSAT*EXP(U(S)).
C     LET Q = (S-1)/(ST-1),  WHERE ST = DTRP/DCRT,  THEN -
C     IF S < 1, U = AL*Q**3,     IF S > 1,  U = -AL*Q**3,
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ TSAT, THETA, PSAT
    1 S = DEN/DCRT  $  DSDR = DTRP/DCRT  $  C = DSDR-1
    2 Q = (S-1)/C  $  Q2 = Q*Q  $  U = AL*Q*Q2
    3 U1 = AL*3*Q2*DSDR/C   $   IF(Q) 5,9,4
    4 U = -U   $   U1 = -U1
    5 XP = EXP(U)     $   THETAF = TSAT*XP
    6 DTHDR = (TSAT*U1 + DTSDR)*XP     $    RETURN
    9 THETAF = TCRT  $  DTHDR = 0     $    RETURN   $   END
```

```
      FUNCTION TSATF(DEN)
C     ITERATE T TO MINIMIZE (DEN-DCALC) VIA DENGASF(T), DENLIQF(T).
C     IF ITERATION FAILS, PRINTOUT ONCE ONLY AND STOP AT K = 2.
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/5/ DDSDT
      DATA (Q=2.0),(FN=6.3890561)
C     NOTE,   FN ≡ EXP(Q) - 1.0.
    1 FORMAT(1H1 14X *TSATF(DEN) FAILS AT DEN =* E15.7//
     1 15X 5HDCALC 13X2HDD 10X5HDDSDT 13X2HDT 12X3HT,K )
    2 FORMAT(5X 4E15.7, E16.8)
      K = 0  $  D = DEN  $  IF(D.LE.0) 3,4
    3 TSATF = 0  $  DTSDR = 1.0E+100   $   RETURN
    4 S = D/DCRT  $  YN = TCRT/TTRP-1  $  IF(D-DCRT) 5,30,6
    5 ST=DGAT/DCRT $ F=ALOG(S)/ALOG(ST)*((1-S)/(1-ST))**2 $ GO TO 7
    6 ST=DTRP/DCRT $ U=((S-1)/(ST-1))**3 $ F=(EXP(Q*U)-1)/FN
    7 T = TCRT/(YN*F+1)
    8 DO 20 J=1,50  $  IF(D-DCRT) 9,30,10
    9 DC = DENGASF(T)  $  GO TO 11
   10 DC = DENLIQF(T)
   11 DD = D - DC  $  IF(ABS(DD/D).LT.1.0E-7) 25,12
   12 DT = DD/DDSDT  $  IF(ABS(DT/T).LT.1.0E-7) 25,13
   13 T = T + DT  $  IF(T) 14,14,15
   14 T = TTRP  $  GO TO 18
   15 IF(T.LT.TCRT) 18,16
   16 T = TCRT - 0.00001
   18 IF(K.EQ.1)  PRINT 2, DC, DD, DDSDT, DT, T
   20 CONTINUE  $  K = K+1  $  IF(K.NE.1)  STOP
   21 PRINT 1, DEN   $   GO TO 4
   25 TSATF = T  $  DTSDR = DTRP/DDSDT  $  RETURN
   30 TSATF = TCRT  $  DTSDR = 0  $  RETURN  $  END
```

```
      FUNCTION XBF(T,D)
C     XBF = SQRT(T/TC)*LN(T/TS) = Q(T)*Z(R,T),
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
    1 TC = TCRT  $  TS = TSAT  $  X = T/TC
    2 U = T/TS  $  U1X = TC/TS  $  U1R = -U*DTSDR/TS
    3 Z = ALOG(U)  $  Z1R=U1R/U  $  Z1X=U1X/U  $  Z2X=-Z1X*Z1X
    4 Q = SQRT(X)  $  Q1 = 0.5/Q  $  Q2 = -Q1/2/X
    5 XBF = Q*Z  $  DXBDR = Q*Z1R  $  XB1 = Q*Z1X + Q1*Z
    6 XB2 = Q*Z2X + Q1*2*Z1X + Q2*Z  $  RETURN  $  END
```

```
      FUNCTION XEF(T,D)
C     THIS H-FORM FROM NBS J.RES. 73A(6), 585, DEC.(1969).
C     XEF ≡ PSI - PSISAT,   PSI ≡ A*F(T) + B*H(R,T),  WHERE -
C     F(T) ≡ EXP(C*(1-X)),   W ≡ (1-TH/T),  WE ≡ W**EX,  AND -
C     H(R,T) ≡ 1 - (W - WE/E)/(1-1/E).
      COMMON/1/AL,BE,GA,DE,EP, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
      DATA (EX = 1.10)
    1 A=DE $ B=1-A $ C=EP $ E=EX $ TC=TCRT $ TS=TSAT $ TH=THETA
    2 EK = E/(E-1)      $  X=T/TC $ XS=TS/TC $ XS1=DTSDR/TC
    3 W = 1.0 - TH/T  $  IF(W) 30,30,4
    4 F = EXP(C*(1-X))  $  F1 = -C*F  $  F2 = -C*F1
    5 W1R = -DTHDR/T  $  W1X = TH/T/X  $  W2X = -2*W1X/X
    6 WE = W**E  $  WE1 = E*WE/W  $  WE1R = WE1*W1R
    7 WE1X = WE1*W1X  $  WE2X = WE1*W2X + (E-1)*WE1/W*W1X*W1X
    8 H = 1 - EK*(W-WE/E)  $  H1R = -EK*(W1R-WE1R/E)
    9 H1X = -EK*(W1X-WE1X/E)  $  H2X = -EK*(W2X-WE2X/E)
   10 P = A*F + B*H  $  P1R = B*H1R
   11 XE1 = A*F1 + B*H1X  $  XE2 = A*F2 + B*H2X
   12 WS = 1.0 - TH/TS  $  IF(WS) 13,13,14
   13 FS = HS = 1  $  FS1 = HS1 = 0  $  GO TO 22
   14 WS1 = (TH*DTSDR/TS - DTHDR)/TS
   15 WSE = WS**E  $  WSE1 = E*WSE*WS1/WS
   16 HS = 1 - EK*(WS-WSE/E)  $  HS1 = -EK*(WS1-WSE1/E)
   20 FS = EXP(C*(1-XS))  $  FS1 = -C*XS1*FS
   22 PS = A*FS + B*HS  $  PS1 = A*FS1 + B*HS1
   25 XEF = P - PS  $  DXEDR = P1R - PS1  $  RETURN
   30 XEF = XE1 = XE2 = DXEDR = 0  $  RETURN  $  END
```

```
      PROGRAM ZIEGLER(OUTPUT)
C     NF3,      ESTIM. V.P. AND QVAP FROM TRIPLE- TO BOILING-POINTS,
C     USING ENTHALPY AND ENTROPY CLOSED LOOPS.
      COMMON/1/ TA,TB,PB,QB, DELH,DELS
      COMMON/2/ EZA,HZA,SZA, HGB,SGB, DHLAB,DSLAB
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      COMMON/9/ PZIP, BZ, DBZDT, DPZDT, DZDD
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION QK(2),TK(150),DK(150),PIK(150),PK(150),QJ(150)
    1 FORMAT(I5, F10.3, E15.6)
    2 FORMAT(I5, F10.3, F10.3)
    3 FORMAT(1H1 11X *NF3 ESTIM. V.P.,BAR, AND QVAP, KJ/MOL, RDG/NBS.*//
     1 12X 4HTB =F10.5, 6H, PB =F8.5, 6H, DB =F9.6/
     2 12X5HEZB =F7.1, 7H, EGB =F7.1, 7H, HZB =F8.1, 7H, HGB =F8.1/
     3 12X 5HSZB =F9.4, 7H, SGB =F9.4, 6H, QB =F8.1/ )
    4 FORMAT(7X 3HT,K 8X2HPI 6X5HP,BAR 5X5HMOL/L 6X3HHZA 6X3HHGA
     1 6X3HSZA 6X3HSGA 4X5HDHGAB 4X5HDHLAB 4X5HDSGAB 4X5HDSLAB
     2 5X3HQAH 5X3HQAS )
    5 FORMAT(2XF8.2, E10.4,E11.5,E10.4, 2F9.1,2F9.3, 2F9.1,2F9.3, 2F8.3)
    6 FORMAT(12X 3HT,K 4X5H100/T 7X5HP,EQN 7X5HP,BAR 6X5HLN(P)
     1 4X8HDG,MOL/L 3X5HQ,EQN 3X5HQ,VAP )
    7 FORMAT(5X F10.2, F9.5, 2E12.5, F11.5, E12.5, 2F8.3)
    8 TTRP = 66.36  $  PB = 1.01325  $  TB = 144.10
C     NF3 QVAP,J/MOL VIA PIERCE/AEROJET AT BP = 144.10 K.
    9 QK(1) = QK(2) = 11587.0
C     GET HGB, SGB FOR SATVAPOR AT THE BOILING POINT.
   10 TI = TB  $  CALL IDEAL  $  EZB=EZ  $  HZB=HZ  $  SZB=SZ
   11 DNB = FINDENF(TB,PB)  $  EGB = EZ + EDELF(TB,DNB)
   12 SGB = SZ + DELS  $  HGB = EGB + 100*PB/DNB
   14 I = 1   $   QB = QK(I)
   15 PRINT 3, TB,PB,DNB, EZB,EGB, HZB,HGB, SZB,SGB, QB  $  PRINT 4
C     DO TEMPERATURES FROM TRIPLE- TO BOILING-POINTS -
   20 DO 50 J=1,78   $  IF(J.EQ.1) 21,22
   21 TA = T = TTRP  $  GO TO 23
   22 TA = T = 66 + J
C     GET EZA, HZA, SZA AT T = TA.
   23 TI = TA  $  CALL IDEAL  $  EZA=EZ  $  HZA=HZ  $  SZA=SZ
C     GET DHLAB, DSLAB FOR THE SATDLIQUID FROM TA TO TB.
   24 CALL CSATSUM  $  DHLAB = DELH  $  DSLAB = DELS
C     NOW ITERATE P (T=TA) TO MINIMIZE (QAH - QAS).
   30 P = PI = PSATF(T)  $  DP = P/2  $  SS = DELTAF(T,P)
   31 DO 40 IT=1,15  $  PL = P-DP  $  SL = DELTAF(T,PL)
   32 PP = P+DP  $  SP = DELTAF(T,PP)
   35 IF(SL-SS) 36,36,38
   36 IF(SL-SP) 37,37,39
   37 SS = SL  $  P = P - DP  $  GO TO 40
   38 IF(SP-SS) 39,40,40
   39 SS = SP  $  P = P + DP
   40 DP = DP/2   $   DNA = FINDENF(T,P)
C     USE FINAL P TO GET DNA, HGA,SGA, DHGAB,DSGAB,
C     AND THEN, VIA LOOP, GET QAH, QAS.
   42 EGA = EZA + EDELF(T,DNA)  $  SGA = SZA + DELS
   43 HGA = EGA + 100*P/DNA  $  DHGAB=HGB-HGA  $  DSGAB=SGB-SGA
   44 QAH = QB + DHLAB - DHGAB  $  QAS = TA*(QB/TB + DSLAB - DSGAB)
   45 QAH = QAH/1000  $  QAS = QAS/1000  $  PIK(J) = PI
   46 TK(J)=TA $ DK(J)=DNA $ PK(J)=P $ QJ(J) = (QAH+QAS)/2
   50 PRINT 5, TA,PI,P,DNA, HZA,HGA, SZA,SGA, DHGAB,DHLAB,
     1 DSGAB, DSLAB, QAH,QAS
```

```
C     PRINT T,1/T, PEQN,P,LN(P), DNA, QEQN,Q,  FOR PUBLICATION.
   61 PRINT 3, TB,PB,DNB, EZB,EGB, HZB,HGB, SZB,SGB, QB  $  PRINT 6
   62 DO 99 J=1,78
C  63 IF(J.EQ.50.OR.J.EQ.99) 67,70
C  67 PRINT 3, TB,PB,DNB, EZB,EGB,HZB,HGB,SZB,SGB, QB  $  PRINT 6
   70 T = TK(J)  $  AT = 100/T  $  P = PK(J)  $  GP = ALOG(P)
   71 QE = QVAPXF(T)/1000
C  75 PRINT 7, T,AT, PIK(J),P,GP, DK(J), QE,QJ(J)
   80 IDX = 40  $  IF(J.EQ.1) 90,81
   81 IT = T/5  $  IF(T-5*IT) 99,90
   90 QCALC = 1000*QJ(J)
   91 PRINT 7, T,AT, PIK(J),P,GP, DK(J), QE,QJ(J)
C  92 PUNCH 1, IDX,T,P  $  PUNCH 1, IDX,T,DK(J)  $  PUNCH 2, IDX,T,QCALC
   99 CONTINUE  $  STOP - $  END



      SUBROUTINE CSATSUM
C    GET DELH, DELS ALONG SATDLIQ FROM TA TO TB.
      COMMON/1/ TA,TB,PB,QB, DELH,DELS
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
    1 E = H = S = 0
    2 TR = TB - TA  $  N = ABS(TR)/2 + 2  $  DT = TR/N
    3 DO 8 J=1,N  $  TJ = TA + (J-0.5)*DT
    4 CS = CSATXF(TJ)  $  PS = PSATF(TJ)  $  DS = DENLIQF(TJ)
    5 H = H + CS*DT + 100*DPSDT*DT/DS  $  S = S + CS*DT/TJ
    8 CONTINUE
    9 DELH = H  $  DELS = S  $  RETURN  $  END



      FUNCTION CSATXF(T)
C    NF3 CSAT J/MOL/K VIA PIERCE/AEROJET FOR T = 70 TO 225 K.
C    CS CAL/MOL/K = A + B*X + C*X2 + ... + F*X5,  X = T/100.
      DATA (A=-3.53379),(B=98.9421),(C=-176.963),
     1 (D=148.825),(E=-60.0752),(F=9.55906)
    1 X = T/100  $  X2 = X*X  $  X3 = X*X2
    2 CS = A + B*X + C*X2 + D*X3 + E*X2*X2 + F*X2*X3
    3 CSATXF = 4.184*CS  $  RETURN  $  END



      FUNCTION DELTAF(T,P)
C    GET DNA,EGA,HGA,SGA FOR SATDVAPOR AT T,P, (T=TA),
C    GET DHGAB = HGB-HGA,  DSGAB = SGB-SGA,
C    GET QAH, QAS VIA CLOSED LOOPS, THEN, DELTAF = ABS(QAH-QAS).
      COMMON/1/ TA,TB,PB,QB, DELH,DELS
      COMMON/2/ EZA,HZA,SZA, HGB,SGB, DHLAB,DSLAB
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
    1 IF(P.GT.0) 2,9
    2 DNA = FINDENF(T,P)  $  EGA = EZA + EDELF(T,DNA)
    3 SGA = SZA + DELS  $  HGA = EGA + 100*P/DNA
    5 DHGAB = HGB - HGA  $  DSGAB = SGB - SGA
    6 QAH = QB + DHLAB - DHGAB  $  QAS = T*(QB/TB + DSLAB - DSGAB)
    8 DELTAF = ABS(QAH-QAS)  $  RETURN
    9 DELTAF = 1.0E+100  $  RETURN  $  END
```

```
      FUNCTION DENLIQF(T)
C     FOR NITROGEN TRIFLUORIDE, RDG/NBS, 1/23/79.
C     DEN = DCRT + YNL*(X + (XE-X)*Y),   YNL ≡ DTRP - DCRT.
C     Y = A1 + A2*X + A3*X2 + A4*X3.
      COMMON/5/ DDSDT
      DIMENSION AW(4)
      DATA (NFL=4),(EL=0.35)
      DATA (DCRT=7.92),(DTRP=26.20), (TTRP=66.36),(TCRT=233.90)
      DATA(AW = 0.740994164, 0.129520773, -0.021108622, -0.096307220)
    1 FORMAT(1HG 9X *DENLIQF = 0, T EXCEEDS TCRT. * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1   $   STOP
    4 DENLIQF = DCRT  $  DDSDT = -1.0E+10  $  RETURN
    5 XN=TCRT-TTRP $ X=(TCRT-T)/XN $ X2 = X*X  $  DXDT = -1.0/XN
    6 XE = X**EL  $  V = XE - X  $  V1 = EL*XE/X - 1
    8 Y = AW(1) + AW(2)*X + AW(3)*X2 + AW(4)*X*X2
    9 Y1 = AW(2) + 2*AW(3)*X + 3*AW(4)*X2  $  YNL = DTRP - DCRT
   11 DENLIQF = DCRT + YNL*(X + V*Y)
   12 DDSDT = YNL*(1 + V*Y1 + V1*Y)*DXDT   $   RETURN  $  END



      FUNCTION EDELF(T,D)
C     CHANGE OF E,S ON ISOTHERM T FROM DEN = 0 TO DEN = D.
C     USE VIRIAL EQNSTATE.  NOTE DCZ = 7.92 FOR NF3.
C     DELE = EDELF = -R*(D/DCZ)*T*T*DB(T)/DT,
C     DELS = -R*LN(D*R*T/P1) - R*(D/DCZ)*(B(T) + T*DB(T)/DT).
      COMMON/1/ TA,TB,PB,QB, DELH,DELS
      COMMON/9/ PZIP, BZ, DBZDT, DPZDT, DZDD
      DATA (Q=1.01325),(R=0.0831450),(DCZ=7.92)
    1 Z = ZIPF(T,D)  $  EDELF = -100*R*(D/DCZ)*T*T*DBZDT
    2 DELS = ALOG(D*R*T/Q) + (D/DCZ)*(BZ + T*DBZDT)
    9 DELS = -100*R*DELS   $   RETURN  $  END



      SUBROUTINE IDEAL
C     NITROGEN TRIFLUORIDE IDEAL GAS FUNCTIONS, R.D.G., 1/23/79.
C     CPZ/R = 4 + (A1 + A2/X + A3/X2 + . . )*EXP(-E/X),   X ≡ T/100.
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION A(5)
      DATA (NF=5),(E=8.76),(R=8.3145)
      DATA(A=6.1189724,48.162688,228.231405,-249.067052,564.293045)
    1 NK = NF  $  XI = TI/100  $  XP = EXP(-E/XI)
    2 CP = 4.0  $  DO 3 K=1,NK
    3 CP = CP + A(K)*XP*XI**(1-K)
    4 SI = 4.184*62.378/R  $  HI = 4184.0*(0.024+2.832)/300/R
C     NUMERICAL INTEGRATION FOR HZ/R, SZ/R  -
    5 H = S = 0  $  N = ABS(TI-300)/2 + 2   $   DX = (XI-3)/N
    6 DO 10 J=1,N  $  X = 3.0 + (J-0.5)*DX  $  XP = EXP(-E/X)
    7 CPX = 4.0  $  DO 8 K=1,NK
    8 CPX = CPX + A(K)*XP*X**(1-K)
    9 H = H + CPX*DX   $   S = S + CPX*DX/X
   10 CONTINUE  $  H = (HI*3 + H)/XI  $  S = SI + S
C     CONVERT TO JOULES, MOLES, KELVINS.
   11 HZ = R*TI*H  $  EZ = HZ - R*TI  $  SZ = R*S
   12 CPZ = R*CP  $  CVZ = CPZ - R   $   RETURN  $  END
```

```
      FUNCTION FINDENF(T,P)
C     GIVEN P,T IN VIRIAL EQN., SOLVE QUADRATIC FOR DEN, MOL/L.
C     USE VIRIAL EQNSTATE.  NOTE DCZ = 7.92 FOR NF3.
      DATA (DCRT=7.92),(TCRT=234.0),(R=0.083145)
      DATA (B1=0.49382731),(B2=-1.30972686),(B3=-0.38983811)
    1 X = T/TCRT  $  B = B1 + B2/X + B3/X/X/X
    2 Q = SQRT(1.0 + 4*P*B/R/T/DCRT)
    3 FINDENF = DCRT*(Q-1)/2/B   $   RETURN  $  END


      FUNCTION PSATF(T)
C     FOR NITROGEN TRIFLUORIDE, RDG/NBS, 1/23/79.
C     LN(P) = P1 + P2*U + (P3 + P4*X + P5*X2 + . .)*(1-X)**EPP.
C     WHERE,  X ≡ T/TCRT,  U ≡ (1-1/X).
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR
      DIMENSION PJ(4)
      DATA (NFP=4),(EPP=1.95),(TCRT=233.90)
      DATA(PJ = 3.81146639, 6.28921982, -1.95516249, 4.51743327)
    1 FORMAT(1H0 9X *T ABOVE TCRT IN PSATF(T). * / )
    2 X = T/TCRT  $  X2 = X*X  $  X1T = 1.0/TCRT
    3 U = 1.0 - 1/X  $  U1T = 1.0/X/T
    4 V = 1.0 - X  $  IF(V) 7,8,9
    7 PRINT 1   $   STOP
    8 Z = Z1 = 0  $  GO TO 10
    9 Z = V**EPP  $  Z1 = -EPP*Z/V
   10 S = S1 = 0  $  DO 13 K=3,NFP  $  L = K-3  $  XL = X**L
   12 S = S + PJ(K)*XL  $  S1 = S1 + L*PJ(K)*XL/X
   13 CONTINUE
   14 PL = PJ(1) + PJ(2)*U + S*Z
   15 PL1T = PJ(2)*U1T + (S*Z1 + S1*Z)*X1T
   16 PSATF = EXP(PL)  $  DPSDT = PL1T*PSATF  $  RETURN  $  END


      FUNCTION QVAPXF(T)
C     NF3 AEROJET FORMULA, J/MOL.
      DATA (EM=0.354),(EN=0.456),(TC=233.9)
      DATA (A=3323.72),(B=620.265)
    1 X = 1.0 - T/TC  $  Q = A*X**EM + B*X**EN
    2 QVAPXF = 4.184*Q   $   RETURN  $  END


      FUNCTION ZIPF(T,D)
C     ISOBUTANE VIRIAL EQN., R.D.G., SEPT., 1978.
C     CRITICAL CONSTS. FOR NF3.
C     Z(T,D) = 1 + B(X)*S,   X ≡ T/TCRT,  S ≡ DEN/DCRT.
C     B(X) = B1 + B2/X + B3/X3.   DEN IN MOL/L.
      COMMON/9/ PZIP, BZ, DBZDT, DPZDT, DZDD
      DATA (DCRT=7.92),(TCRT=234.0),(R=0.083145)
      DATA (B1=0.49382731),(B2=-1.30972686),(B3=-0.38983811)
    1 S = D/DCRT  $  X = T/TCRT  $  X2 = X*X  $  X3 = X*X2
    2 BZ = B = B1 + B2/X + B3/X3
    3 ZIPF = 1.0 + B*S  $  PZIP = D*R*T*ZIPF
    4 DBZDT = -(B2/X2 + 3*B3/X/X3)/TCRT  $  DZDD = B/DCRT
    5 DPZDT = D*R*(S*T*DBZDT + ZIPF)   $   RETURN  $  END
```

```
      PROGRAM COMPAR(INPUT,OUTPUT,PUNCH)
C      READS P,T,DENSITY,ENTHALPY,ENTROPY,SPECIFIC HEATS, CALCULATES SAME
C      FROM BWR EQN AND COMPARES VALUES
C     PROCESSES ONE POINT AT A TIME, BLANK CARD AT END OF RUN EXCEPT END
      COMMON F,Y,NFUN,RESS
      COMMON/HJM/ EPSI,CPCV,RRR,AKT
      COMMON/CRIT/ EM, EOK, RM, TC, DC, X , PC, SIG
      COMMON/14/TL,DWK,PSIG,TDWG,BHMM,TBRM,PH,PBAR,PDWG,PLOAD,TUBN
      COMMON/15/TVALVE
      COMMON/16/TBB,PBB,DPBDT, VB,DVBDT
      COMMON/17/ IPRINT
      COMMON/G/ RG
      DIMENSION ET(10),HI(4),CLK(10),ID(4),TT(10),HE(4),KD(4)
      DIMENSION F(40)
      CALL DATANF3
      DTP=26.32
      P=0.00000185  $  T=66.350
      H0=ENTHAL(P,DTP,T)
    1 READ 2,P,T,RG,HG,SG,CVG,CPG
    2 FORMAT(F10.4,F10.3,F11.4,F 9.1,F10.3,F10.2,F10.2)
      IF(T.EQ.0) GO TO 4
      P=P/1.01325 $ RBWR=FINDD(P,T)
      HBWR=ENTHAL(P,RBWR,T)-H0
      SBWR=ENTROP(RBWR,T)
      CVBWR=CV(RBWR,T) $ CPBWR=CP(RBWR,T)
      DR=(RBWR-RG)*100/RG  $  DH=HBWR-HG
      DS=SBWR-SG $ DCV=(CVBWR-CVG)*100/CVG $ DCP=(CPBWR-CPG)*100/CPG
      P=P*1.01325
      V=1.0/RG
C     PRINT 6,P,T,V,HBWR,SBWR
    6 FORMAT(2F10.3,F9.1,F9.3)
      PRINT 3,P,T,V,DR,DH,DS,DCV,DCP
    3 FORMAT(2F10.1,E13.4,F8.3,F9.1,F9.3,2F8.2)
      PUNCH 7,P,T,DR,DH,DS,DCV,DCP
    7 FORMAT(2F10.1,F8.3,F9.1,F9.3,2F8.2)
      GO TO 1
    4 CONTINUE
      CALL EXIT
      END



      SUBROUTINE DATANF3
C      PARAMETERS FOR NITROGEN TRIFLUORIDE
      DIMENSION G(32),VP(9),GI(11)
      DIMENSION GV(9),GT(9),FV(4),FT(4),EV(8),ET(8)
      COMMON/CRIT/ EM, EOK, RM, TC, DC, X , PC, SIG
      COMMON/DATA1/GV,GT,FV,FT,EV,ET
      COMMON/SEN/BETA,XO,DELTA,E1, E2, AGAM
      COMMON/DATA/G,R,GAMMA,VP,DTP
      COMMON/CPID/GI
      COMMON/ISP/N,NW,NWW
      NWW=0 $ N=0 $ NW=1
      TC=234.0 $ EM=71.019 $ DC=0.5625
      PC=44.607/1.01325  $  GAMMA=-0.0056
      T0=100.0 $ H0=3334.6 $ S0=215.69
      VP(1)=20.315417602 $ VP(2)=-8.362069370
      VP(3)=-21.398986401 $ VP(4)=20.162194616
      VP(5)=-6.918662727 $ VP(6)=3.677799376
      VP(7)=1.75
      DTP=26.20
      R=0.0820568
      G( 1) =                .1751151116E-01
      G( 2) =               -.5338642406E+00
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      G( 3) =              .3924633078E+01
      G( 4) =             -.5141353757E+03
      G( 5) =             -.3243348520E+05
      G( 6) =             -.5912181013E-03
      G( 7) =              .9096990477E+00
      G( 8) =             -.4785568295E+03
      G( 9) =             -.4180501052E+07
      G(10) =             -.9695778991E-05
      G(11) =              .5361200088E-01
      G(12) =             -.1443265236E+02
      G(13) =             -.3322161796E-02
      G(14) =              .2764741771E+00
      G(15) =              .8324982578E+01
      G(16) =             -.1307102346E-01
      G(17) =              .1851077599E-03
      G(18) =              .2920941516E+00
      G(19) =             -.6918309272E-02
      G(20) =              .4308730236E+07
      G(21) =             -.1096864087E+08
      G(22) =              .2380327276E+05
      G(23) =              .3137563559E+07
      G(24) =              .6086206849E+02
      G(25) =              .4205136659E+02
      G(26) =              .1076337320E+00
      G(27) =             -.3297262333E+02
      G(28) =              .8485003350E-04
      G(29) =              .1224321948E-02
      G(30) =              .1269404637E-06
      G(31) =             -.8824183840E-06
      G(32) =              .3309207594E-04
      DTP=26.32
      RETURN $ END


      SUBROUTINE PROPS(PP,DD,TT)
C      CALCS P,DP/DRHO,DPDT, AND NECESSARY INTEGRALS FOR H,S,G ETC
      DIMENSION X(33)
      DIMENSION B(33),G(32)
      EQUIVALENCE (B,X)
      COMMON/DATA/G,R,GAMMA
      COMMON/1/B
      DATA(ID=1)
      DATA(IZ=1)
    1 CONTINUE
      IF(IZ.LE.0)GO TO 2
      IZ=0
    2 CONTINUE
      D=DD
      P=PP
      T=TT
      GM=GAMMA
      D2=D*D
      D3=D2*D
      D4=D3*D
      D5=D4*D
      D6=D5*D
      D7=D6*D
      D8=D7*D
      D9=D8*D
      D10=D9*D
      D11=D10*D
      D12=D11*D
      D13=D12*D
```

```
      TS=SQRT (T)
      T2=T*T
      T3=T2*T
      T4=T3*T
      T5=T4*T
      F=EXP (GM*D2)
      GO TO (100,200,300,400,500,600,700),K
      ENTRY PRESS
C     ENTRY FOR PRESSURE, INPUT IS DENSITY
C     AND TEMP. IN MOL/L AND K, OUTPUT IS IN ATM.
      K=1
      GO TO 1
  100 CONTINUE
      B( 1)=D2*T
      B( 2)=D2*TS
      B( 3)=D2
      B( 4)=D2/T
      B( 5)=D2/T2
      B( 6)=D3*T
      B( 7)=D3
      B( 8)=D3/T
      B( 9)=D3/T2
      B(10)=D4*T
      B(11)=D4
      B(12)=D4/T
      B(13)=D5
      B(14)=D6/T
      B(15)=D6/T2
      B(16)=D7/T
      B(17)=D8/T
      B(18)=D8/T2
      B(19)=D9/T2
      B(20)=D3*F/T2
      B(21)=D3*F/T3
      B(22)=D5*F/T2
      B(23)=D5*F/T4
      B(24)=D7*F/T2
      B(25)=D7*F/T3
      B(26)=D9*F/T2
      B(27)=D9*F/T4
      B(28)=D11*F/T2
      B(29)=D11*F/T3
      B(30)=D13*F/T2
      B(31)=D13*F/T3
      B(32)=D13*F/T4
      IF(ID.GT.0)GO TO 102
      B(33)=P-R*D*T
      RETURN
  102 P=0
      M=32
      DO 101 I=1,M
  101 P=P+B(I)*G(I)
      P=P+R*D*T
      PP=P
      RETURN
      ENTRY DPDD
C     PARTIAL OF PRESSURE WITH RESPECT TO
C     DENSITY - SEE PRESSURE
C     ENTRY FOR UNITS
      K=2
      GO TO 1
  200 CONTINUE
      F1=2.00*F*GM*D
      F21=3.000*F*D2 +F1*D3
      F22=5.000*F*D4 +F1*D5
      F23=7.000*F*D6 +F1*D7
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      F24=9.000*F*D8 +F1*D9
      F25=11.00*F*D10+F1*D11
      F26=13.00*F*D12+F1*D13
      B( 1)=2.00*D*T
      B( 2)=2.00*D*TS
      B( 3)=2.00*D
      B( 4)=2.00*D/T
      B( 5)=2.00*D/T2
      B( 6)=3.00*D2*T
      B( 7)=3.00*D2
      B( 8)=3.00*D2/T
      B( 9)=3.00*D2/T2
      B(10)=4.00*D3*T
      B(11)=4.00*D3
      B(12)=4.00*D3/T
      B(13)=5.00*D4
      B(14)=6.00*D5/T
      B(15)=6.00*D5/T2
      B(16)=7.00*D6/T
      B(17)=8.00*D7/T
      B(18)=8.00*D7/T2
      B(19)=9.00*D8/T2
      B(20)=F21/T2
      B(21)=F21/T3
      B(22)=F22/T2
      B(23)=F22/T4
      B(24)=F23/T2
      B(25)=F23/T3
      B(26)=F24/T2
      B(27)=F24/T4
      B(28)=F25/T2
      B(29)=F25/T3
      B(30)=F26/T2
      B(31)=F26/T3
      B(32)=F26/T4
      M=32
      IF(ID.GT.0)GO TO 202
      B(33)=P-R*T
      RETURN
  202 P=0
      DO 201 I=1,M
  201 P=P+B(I)*G(I)
      P=P+R*T
      PP=P
      RETURN
      ENTRY DPDT
C     PARTIAL OF PRESSURE WITH RESPECT
C     TO TEMPERATURE - SEE PRESSURE
C     ENTRY FOR UNITS
      K=3
      GO TO 1
  300 CONTINUE
      X( 1)=D2
      X( 2)=D2/(2.00*TS)
      X( 3)=0
      X( 4)=-D2/T2
      X( 5)=-2.00*D2/T3
      X( 6)=D3
      X( 7)=0
      X( 8)=-D3/T2
      X( 9)=-2.00*D3/T3
      X(10)=D4
      X(11)=0
      X(12)=-D4/T2
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      X(13)=0
      X(14)=-D6/T2
      X(15)=-2.00*D6/T3
      X(16)=-D7/T2
      X(17)=-D8/T2
      X(18)=-2.00*D8/T3
      X(19)=-2.00*D9/T3
      X(20)=-2.00*D3*F/T3
      X(21)=-3.00*D3*F/T4
      X(22)=-2.00*D5*F/T3
      X(23)=-4.00*D5*F/T5
      X(24)=-2.00*D7*F/T3
      X(25)=-3.00*D7*F/T4
      X(26)=-2.00*D9*F/T3
      X(27)=-4.00*D9*F/T5
      X(28)=-2.00*D11*F/T3
      X(29)=-3.00*D11*F/T4
      X(30)=-2.00*D13*F/T3
      X(31)=-3.00*D13*F/T4
      X(32)=-4.00*D13*F/T5
      IF(ID.GT.0)GO TO 302
      X(33)=PP-R*D
      RETURN
  302 P=0
      DO 301 I=1,32
  301 P=P+G(I)*X(I)
      PP=P+R*D
      RETURN
      ENTRY DSDN
C     PARTIAL OF ENTROPY WITH
C     RESPECT TO THE G COEFFICIENTS
      K=4
      GO TO 1
  400 CONTINUE
C     S=S0-R*LOGF(D*R*T/P0)+(DSDN(D)-DSDN(0))*101.325 +CPOS(T)
      G1=F/(2.00*GM)
      G2=(F*D2-2.00*G1)/(2.00*GM)
      G3=(F*D4-4.00*G2)/(2.00*GM)
      G4=(F*D6-6.00*G3)/(2.00*GM)
      G5=(F*D8-8.00*G4)/(2.00*GM)
      G6=(F*D10-10.00*G5)/(2.00*GM)
      X( 1)=-D
      X( 2)=-D/(2.00*TS)
      X( 3)=0.D0
      X( 4)=+D/T2
      X( 5)=2.00*D/T3
      X( 6)=-D2/2.00
      X( 7)=0.D0
      X( 8)=D2/(2.00*T2)
      X( 9)=D2/T3
      X(10)=-D3/3.00
      X(11)=0.D0
      X(12)=D3/(3.00*T2)
      X(13)=0.D0
      X(14)=D5/(5.00*T2)
      X(15)= 2.00*D5/(5.00*T3)
      X(16)=D6/(6.00*T2)
      X(17)=D7/(7.00*T2)
      X(18)=2.00*D7/(7.00*T3)
      X(19)=D8/(4.00*T3)
      X(20)=2.00*G1/T3
      X(21)=3.00*G1/T4
      X(22)=2.00*G2/T3
      X(23)=4.00*G2/T5
      X(24)=2.00*G3/T3
      X(25)=3.00*G3/T4
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      X(26)=2.00*G4/T3
      X(27)=4.00*G4/T5
      X(28)=2.00*G5/T3
      X(29)=3.00*G5/T4
      X(30)=2.00*G6/T3
      X(31)=3.00*G6/T4
      X(32)=4.00*G6/T5
      IF(ID.GT.0)GO TO 402
      RETURN
  402 P=0
      DO 401 I=1,32
  401 P=P+G(I)*X(I)
      PP=P
      RETURN
      ENTRY DUDN
C     TERMS NEEDED FOR ENTHALPY CALCULATION
      K=5
      GO TO 1
  500 CONTINUE
C     H=H0+(T*DSDN(D)-DSDN(0))*101.325+(DUDN(D-DUDN(0))*101.325+CPOH(T)
C     +(P/D-R*T)*101.325
      G1=F/(2.00*GM)
      G2=(F*D2-2.00*G1)/(2.00*GM)
      G3=(F*D4-4.00*G2)/(2.00*GM)
      G4=(F*D6-6.00*G3)/(2.00*GM)
      G5=(F*D8-8.00*G4)/(2.00*GM)
      G6=(F*D10-10.00*G5)/(2.00*GM)
      X( 1)=D*T
      X( 2)=D*TS
      X( 3)=D
      X( 4)=D/T
      X( 5)=D/T2
      X( 6)=D2*T/2.00
      X( 7)=D2/2.00
      X( 8)=D2/(2.00*T)
      X( 9)=D2/(2.00*T2)
      X(10)=D3*T/3.00
      X(11)=D3/3.00
      X(12)=D3/(3.00*T)
      X(13)=D4/4.00
      X(14)=D5/(5.00*T)
      X(15)=D5/(5.00*T2)
      X(16)=D6/(6.00*T)
      X(17)=D7/(7.00*T)
      X(18)=D7/(7.00*T2)
      X(19)=D8/(8.00*T2)
      X(20)=G1/T2
      X(21)=G1/T3
      X(22)=G2/T2
      X(23)=G2/T4
      X(24)=G3/T2
      X(25)=G3/T3
      X(26)=G4/T2
      X(27)=G4/T4
      X(28)=G5/T2
      X(29)=G5/T3
      X(30)=G6/T2
      X(31)=G6/T3
      X(32)=G6/T4
      IF(ID.GT.0)GO TO 502
      RETURN
  502 P=0
      DO 501 I=1,32
  501 P=P+G(I)*X(I)
```

```
      PP=P
      RETURN
      ENTRY TDSDT
C     TEMP. TIMES THE PARTIAL OF
C     ENTROPY WITH RESPECT TO TEMP.
      K=6
      GO TO 1
  600 CONTINUE
C     CV=CV0+(TDSDN(/)-TDSDN(D))*101.325
      G1=F/(2.00*GM)
      G2=(F*D2-2.00*G1)/(2.00*GM)
      G3=(F*D4-4.00*G2)/(2.00*GM)
      G4=(F*D6-6.00*G3)/(2.00*GM)
      G5=(F*D8-8.00*G4)/(2.00*GM)
      G6=(F*D10-10.00*G5)/(2.00*GM)
      X(1)=0
      X( 2)=-D/(4.00*TS)
      X(3)=0
      X( 4)=2.00*D/T2
      X( 5)=6.00*D/T3
      X(6)=0
      X(7)=0
      X( 8)=D2/T2
      X( 9)=3.00*D2/T3
      X(10)=0
      X(11)=0
      X(12)=(2.00*D3)/(3.00*T2)
      X(13)=0
      X(14)=(2.00*D5)/(5.00*T2)
      X(15)=(6.00*D5)/(5.00*T3)
      X(16)=D6/(3.00*T2)
      X(17)=(2.00*D7)/(7.00*T2)
      X(18)=(6.00*D7)/(7.00*T3)
      X(19)=(3.00*D8)/(4.00*T3)
      X(20)=6.000*G1/T3
      X(21)=12.00*G1/T4
      X(22)=6.000*G2/T3
      X(23)=20.00*G2/T5
      X(24)=6.000*G3/T3
      X(25)=12.00*G3/T4
      X(26)=6.000*G4/T3
      X(27)=20.00*G4/T5
      X(28)=6.000*G5/T3
      X(29)=12.00*G5/T4
      X(30)=6.000*G6/T3
      X(31)=12.00*G6/T4
      X(32)=20.00*G6/T5
      IF(ID.GT.0)GO TO 602
      RETURN
  602 P=0
      DO 601 I=1,32
  601 P=P+G(I)*X(I)
      PP=P
      RETURN
      ENTRY DP2D2
C     SECOND PARTIAL OF PRESSURE WITH
C     RESPECT TO DENSITY SQUARED
      K=7
      GO TO 1
  700 CONTINUE
      F1=2.*F*GM*D
      F12=2.*F1*GM*D+2.*F*GM
      F212=3.*F1*D2+3.*2.*D*F+F12*D3+F1*3.*D2
      F222=5.*F1*D4 +5.*4.*D3*F+5.*D4*F1+F12*D5
      F232=7.*F1*D6+7.*6.*D5*F+7.*D6*F1+F12*D7
      F242=9.*F1*D8+9.*8.*D7*F+9.*D8*F1+F12*D9
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      F252=11.*F1*D10+10.*11.*D9*F+11.*D10*F1+F12*D11
      F262=13.*F1*D12+13.*12.*D11*F+13.*D12*F1+F12*D13
      B(1)=2.*T  $B(2)=2.*TS  $  B(3)=2.
      B(4)=2./T  $  B(5)=2./T2  $  B(6)=6.*D*T
      B(7)=6.*D  $  B(8)=6.*D/T  $  B(9)=6.*D/T2
      B(10)=12.*D2*T  $  B(11)=12.*D2  $  B(12)=12.*D2/T
      B(13)=20.*D3  $  B(14)=30.*D4/T  $  B(15)=30.*D4/T2
      B(16)=42.*D5/T  $  B(17)=56.*D6/T  $  B(18)=56.*D6/T2
      B(19)=72.*D7/T2  $  B(20)=F212/T2  $  B(21)=F212/T3
      B(22)=F222/T2
      B(23)=F222/T4  $  B(24)=F232/T2  $  B(25)=F232/T3
      B(26)=F242/T2  $  B(27)=F242/T4  $  B(28)=F252/T2
      B(29)=F252/T3  $  B(30)=F262/T2  $  B(31)=F262/T3
      B(32)=F262/T4
      M=32
      IF(ID.GT.0)GO TO 702
      B(33)=PP
      RETURN
  702 P=0
      DO 701 I=1,M
  701 P=P+B(I)*G(I)
      PP=P
      RETURN
      END



      FUNCTION DPDTVP(T)
C      VAPOR PRESSURE DP/DT
      DIMENSION G(32),VP(9)
      COMMON/DATA/G,R,GAMMA,VP
      COMMON/CRIT/ EM, EOK, RM, TC, DC, X , PC, SIG
      T2=T+0.001 $ P2=VPN(T2)
      T1=T-0.001 $ P1=VPN(T1)
      DPDTVP=(P2-P1)/0.002
      RETURN $ END



      FUNCTION VPN(T)
C      VAPOR PRESSURE IN ATM
      DIMENSION G(32),VP(9)
      COMMON/DATA/G,R,GAMMA,VP
      COMMON/CRIT/ EM, EOK, RM, TC, DC, X , PC, SIG
      VP(1)=20.315417602 $ VP(2)=-8.362069370
      VP(3)=-21.398986401 $ VP(4)=20.162194616
      VP(5)=-6.918662727 $ VP(6)=3.677799376
      VP(7)=1.75
      TC=234.0
      IF(T.GT.TC) 18,19
   18 VPN=PC+(1.245/1.01325)*(T-TC)
      PRINT 30
   30 FORMAT(1H *T GREATER THAN TC, VP EXTENSION USED*)
      GO TO 17
   19 CONTINUE
      X=T/TC
      P=VP(1)+VP(2)/X+VP(3)*X+VP(4)*X**2+VP(5)*X**3+VP(6)*X*(1.0-X)**VP
     1 (7)
      VPN=EXP(P)/1.01325
   17 CONTINUE
      RETURN $ END
```

```
      FUNCTION FIND D(P,T)
      DIMENSION G(32),VP(9)
      COMMON/DATA/G,R,GAMMA,VP,DTP
      COMMON/CRIT/ EM,EOK,RM,TC,DC,XX,PC,SIG
      COMMON/G/ RG
C     ITTERATES EQUATION OF STATE
C     FOR DENSITY, GIVEN PRESSURE
C     AND TEMP. IN ATM. AND KELVIN.  IF
C     ITTERATION FAILS TRY USING
C     FUNCTION CALLED FIND M
      TT=T
      IF(TT.GT.TC) GO TO 100
      IF( P.GT.VPN(TT))GO TO 101
      X=P*(.8-1.)/PC+1.0
      DD=P/(R*T*X)
      GO TO 102
  100 X=(1.1/(9.*PC))*P+.7/9.
      DD=P/(R*T*X)
      IF(P/PC.GT.20..AND.T/ TC  .LT.2.5)DD=DTP
      GO TO 102
  101 DD=DTP
  102 CONTINUE
      DO 10 I=1,50
      CALL PRESS(PP,DD,TT)
      P2=PP
      IF(ABS (P-P2)-1.E-7*P) 20,20,1
    1 CALL DPDD(PP,DD,TT)
      DP=PP
      CORR=(P2-P)/DP
      D=DD
      IF(ABS(CORR)-0.00005*D) 20,20,10
   10 DD=DD-CORR
      FIND D=0
      RETURN
   20 FIND D=DD
      IF(D.LT.0) 25,26
   25 DD=RG
      GO TO 102
   26 CONTINUE
      RETURN
      END


      FUNCTION CV(D,T)
C     CALCULATES SPECIFIC HEAT CAPACITY
C     AT CONSTANT VOLUME FOR AN INPUT
C     OF DENSITY AND TEMPERATURE IN MOL/L AND K
      DATA(R=8.31434)
      DD=D
      TT=T
      CALL TDSDT(CD,DD,TT)
      DD=0
      CALL TDSDT(C0,DD,TT)
      CV=CPI(TT)+(C0-CD)*101.325
      CV=CV-R
      RETURN
      END


      FUNCTION CP(D,T)
C     CALCULATES SPECIFIC HEAT CAPACITY
C     AT CONSTANT PRESSURE FOR INPUT OF
C     DENSITY AND TEMPERATURE IN MOL/L AND K
C     CP IS IN JOULES/MOL-K
```

```
      CVEE=CV(D,T)
      CALL DPDT(DPT,D,T)
      CALL DPDD(DPD,D,T)
      CP=CVEE+(T/(D**2)*(DPT**2)/DPD)*101.325
      RETURN
      END



      FUNCTION ENTHAL(P,D,T)
C     CALCULATES ENTHALPY FOR INPUT OF
C     PRESSURE, DENSITY AND TEMP. IN
C     ATM., MOL/L AND K.  OUTPUT IS IN
C     JOULES/MOL
      R=0.0820568
      DD=D
      TT=T
      CALL DSDN(SD,DD,TT)
      CALL DUDN(UD,DD,TT)
      DD=0
      CALL DSDN(S0,DD,TT)
      CALL DUDN(U0,DD,TT)
      CALL HI(HSI,T)
      ENTHAL=T*(SD-S0)*101.325+(UD-U0)*101.325+ HSI +(P/D-R*T)*101.325
      RETURN
      END



      FUNCTION ENTROP(D,T)
C     CALCULATES ENTROPY
C     FOR AN INPUT OF DENSITY AND
C     TEMP. IN MOL/L AND K.  OUTPUT IS IN
C     JOULES/MOL-K
      R=0.0820568
      DD=D
      TT=T
      CALL DSDN(SD,DD,TT)
      DD=0
      CALL DSDN(S0,DD,TT)
      CALL SI(HSI,T)
      ENTROP=(SD-S0)*101.325-R*ALOG(D*R*T)*101.325+HSI
      RETURN
      END



      FUNCTION SOUND(D,T)
C     CALCULATES THE SPEED OF SOUND
C     FOR AN INPUT OF DENSITY AND TEMP.
C     IN MOL/L AND KELVIN.  OUTPUT IS IN
C     METERS/SECOND.
      COMMON/CRIT/W
      CALL DPDD(DP,D,T)
      SOUND=((CP(D,T)/CV(D,T))*DP*101325./W)**.5
      RETURN
      END



      FUNCTION CPI(T)
C       IDEAL GAS SPECIFIC HEAT,CP, IN J/MOL-K
      DIMENSION  Q(5)
      DATA((Q(I),I=1,5)=6.1189724,48.162688,228.231405,-249.067052,
```

```
     1        564.293045)
       X=T/100.
       CPI=0.0
       DO 1 I=1,5
     1 CPI=CPI+Q(I)*X**(1-I)
       CPI=(CPI*EXP(-8.76/X)+4.0)*8.31441
       RETURN
       END


       SUBROUTINE HI(HSI,T)
C       IDEAL GAS ENTHALPY IN J/MOL AND ENTROPY IN J/MOL-K
       T0=100.0 & H0=3334.6
       DT=(T-T0)/50.0
       HSI=H0
       DO 1 I=1,50
       CP=CPI(T0+(I-0.5)*DT)
     1 HSI=HSI+CP*DT
       RETURN
       ENTRY SI
       T0=100.0
       DT=(T-T0)/50.0
       HSI=215.69
       DO 2 I=1,50
       CP=CPI(T0+(I-0.5)*DT)
     2 HSI=HSI+CP*DT/(T0+(I-0.5)*DT)
       RETURN
       END
```

Appendix E. Explanations for Table Headings

In many tables we have included values of parameters, constants and coefficients in the headings to ensure that correct values have been transcribed into the manuscript. These include -

Table 1, EPP, exponent in eq. (1)
TTRP, triple-point temperature, K
TCRT, critical-point temperature, K
PTRP, triple-point pressure, bar
PCRT, critical-point pressure, bar
DPSDT, vapor-pressure slope at the C.P., bar/K
list of coefficients for eq. (1)

Table 2, EL, exponent in eq. (2)
DTRP, triple-point liquid density, mol/L
DCRT, critical-point density, mol/L
list of coefficients for eq. (2)

Table 3, EG, exponent in eq. (3),
EGX, exponent for last term in eq. (3)
DGAT, triple-point vapor density, mol/L
list of coefficients for eq. (3)

Table 4, EV, highest exponent in eq. (5)
list of coefficients for eq. (5)

Table 6
TBLP, boiling-point temperature, K
DGBP, vapor density at the B.P., mol/L
DLBP, liquid density at the B.P., mol/L
DPS/DTB, vapor-pressure slope at the B.P., bar/K
QVAPB, heat of vaporization at the B.P., kJ/mol
IX thru EP, non-linear parameters in eq. (6)
B1 thru C3, coefficients in eq. (6)
B,C are $B(\rho)$, $C(\rho)$ in eq. (6)

Table 7
TC, critical temperature, K
DC, critical density, mol/L
PC, critical pressure, bar
DPS/DT, vapor pressure slope at the C.P, bar/K
DP/DT, slope of the critical isochore at the C.P., bar/K

Table 10, NF, number of coefficients,
E, exponent in eq. (8),
QT, triple-Point heat of vaporization, kJ/mol
list of coefficients for eq. (8)

NBS-114A (REV. 9-78)

U.S. DEPT. OF COMM. BIBLIOGRAPHIC DATA SHEET	1. PUBLICATION OR REPORT NO. NBSIR 80-1632	2. Gov't. Accession No.	3. Recipient's Accession No.

4. TITLE AND SUBTITLE

THERMOPHYSICAL PROPERTIES OF NITROGEN TRIFLUORIDE FROM 66 TO 500 K AT PRESSURES TO 500 BAR

5. Publication Date: July 1980

6. Performing Organization Code

7. AUTHOR(S)

Robert D. Goodwin and Lloyd A. Weber

8. Performing Organ. Report No.

9. PERFORMING ORGANIZATION NAME AND ADDRESS

NATIONAL BUREAU OF STANDARDS
DEPARTMENT OF COMMERCE
WASHINGTON, DC 20234

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. SPONSORING ORGANIZATION NAME AND COMPLETE ADDRESS *(Street, City, State, ZIP)*

Air Force Weapons Laboratory (AFSC)
Kirtland Air Force Base, NM 87117

13. Type of Report & Period Covered

14. Sponsoring Agency Code

15. SUPPLEMENTARY NOTES

☐ Document describes a computer program; SF-185, FIPS Software Summary, is attached.

16. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

Density and specific heat data for nitrogen trifluoride have been measured in the approximate ranges $90 < T < 320$ K, $0.07 < \rho/\rho_c < 3$, at pressures up to 300 bar. These include vapor pressures, some orthobaric densities away from the critical region, and specific heats in the single and two phase regions. A nonanalytic equation of state is used to tabulate thermophysical properties along isobars. The tables include: compressibility factors, densities, enthalpies, entropies, heats of vaporization, isochores, isotherms, Joule-Thomson inversion, orthobaric densities, specific heats, speeds of sound, and vapor pressures. The data also are represented by an analytic equation of state and comparisons are made between some results from the two equations.

17. KEY WORDS *(six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)*

Compressibility factors; densities; enthalpies; entropies; equation of state; heats of vaporization; isobars; isochores; isotherms; Joule-Thomson inversion; nitrogen trifluoride; orthobaric densities; specific heats; speeds of sound; vapor pressures.

18. AVAILABILITY

☒ For Official Distribution. Do Not Release to NTIS

☐ Order From Sup. of Doc., U.S. Government Printing Office, Washington, DC 20402

☐ Order From National Technical Information Service (NTIS), Springfield, VA, 22161

19. SECURITY CLASS (THIS REPORT): UNCLASSIFIED

21. NO. OF PRINTED PAGES

20. SECURITY CLASS (THIS PAGE): UNCLASSIFIED

22. Price

USCOMM-DC