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# Thermodynamic Properties of Nitrogen Gas Derived From Measurements of Sound Speed

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and Space Administration

**Scientific and Technical  
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## SUMMARY

A virial equation of state for nitrogen has been determined by use of newly measured speed-of-sound data and existing pressure-density-temperature data in a multiproperty fitting technique. The experimental data taken were chosen to optimize the equation of state for a pressure range of 0 to 10 atm and for a temperature range of 60 to 350 K. Comparisons are made for thermodynamic properties calculated both from the new equation and from existing equations of state.

## INTRODUCTION

Over the past several years, there has been renewed interest in gaseous nitrogen in the pressure range of 0 to 10 atm and the temperature range of 60 to 350 K. This interest has grown out of the development of the cryogenic wind-tunnel concept at the Langley Research Center (LaRC) of the National Aeronautics and Space Administration (NASA). This new wind-tunnel concept uses nitrogen gas at cryogenic temperatures to obtain aerodynamic data at high Reynolds numbers and at transonic Mach numbers. The need for an accurate equation of state became apparent as real-gas effects on flow simulation and data-reduction requirements were studied. Although the well-known equations of state (Jacobsen and Beattie-Bridgeman, refs. 1 and 2, respectively) were readily available, discussions between NASA and the National Bureau of Standards (NBS) revealed that very little experimental data were available for gaseous nitrogen at the time of their development to substantiate these equations of state in the pressure range of interest. Because of the lack of experimental data, it was believed that substantial uncertainty could exist in thermodynamic quantities derived from either the Jacobsen or the Beattie-Bridgeman equation. To eliminate this uncertainty and to provide an equation of state for gaseous nitrogen optimized to the more limited pressure and temperature regions used with cryogenic tunnels, NBS has taken sound-speed data (ref. 3) for the conditions of interest and has used a virial equation of state and a multiproperty fitting technique (ref. 4) to arrive at an optimized equation of state.

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## SYMBOLS

Symbols shown below in parentheses are those used in table I.

|   |       |                                       |
|---|-------|---------------------------------------|
| a | (VEL) | sound speed, m/sec                    |
| B | (BO)  | second virial coefficient, liters/mol |
|   | (B1)  | first derivative of B                 |

|                |        |  |
|----------------|--------|--|
|                | (B2)   | second derivative of B   |
| C              | (C0)   | third virial coefficient, (liters/mol) <sup>2</sup>              |
|                | (C1)   | first derivative of C  |
|                | (C2)   | second derivative of C   |
| c <sub>p</sub> | (CP)   | specific heat at constant pressure, J/(mol·K)                    |
| c <sub>v</sub> | (CV)   | specific heat at constant volume, J/(mol·K)                      |
|                | (DIF)  | percent difference between present values and reference 1 values |
| E              | (E)    | internal energy, J/mol   |
| H              | (H)    | enthalpy, J/mol  |
| p              | (PRES) | pressure, atm (1 atm = 101.3 kPa)                                |
| R              |        | gas constant, 8.31434 J/(mol·K)                                  |
| S              | (S)    | entropy, J/(mol·K)   |
| T              | (TEMP) | temperature, IPTS-68, K  |
| v              |        | specific volume, liters/mol                                      |
| ρ              | (DENS) | density, mol/liter   |

#### MULTIPROPERTY FITTING

The use of sound-speed measurements for calculating thermodynamic properties is well established (refs. 5 to 7). The sound speed relates to derivatives of the primary thermodynamic quantities  $p$ ,  $\rho$ , and  $T$  in a nonlinear fashion. For example,

$$a^2 = \left( \frac{\partial p}{\partial \rho} \right)_S \quad (1)$$

or, equivalently,

$$a^2 = \left( \frac{c_p}{c_v} \right) \left( \frac{\partial p}{\partial \rho} \right)_T \quad (2)$$

and

$$a^2 = \left( \frac{T}{\rho^2 c_v} \right) \left( \frac{\partial p}{\partial T} \right)_\rho^2 + \left( \frac{\partial p}{\partial \rho} \right)_T \quad (3)$$

It is this nonlinearity which prevents the use of conventional linear least-squares fitting techniques (ref. 4).

The pressure and the sound speed are computed from the density virial expansion

$$p = RT\rho(1 + B\rho + C\rho^2) \quad (4)$$

The virial coefficients  $B$  and  $C$  are in turn represented by an assumed power expansion in temperature as discussed later in the paper. Coefficients from which  $B$  and  $C$  are computed are found by using multiproperty fitting of two sets of data.

Multiproperty fitting is a technique which allows the use of different kinds of thermodynamic data simultaneously in a least-squares estimation of the adjustable parameters in an equation of state. In the present case this technique allows the simultaneous use of  $p$ - $\rho$ - $T$  data and sound-speed data to determine a virial equation of state. The technique is especially appropriate for this particular combination of data forms to determine the second virial coefficient  $B$ . An additional advantage is obtained in this case because the  $B$  in equation (4), which is the density virial expansion, and the  $B$  in

$$pv = RT + Bp \quad (5)$$

which is the pressure virial expansion, are interchangeable. Therefore, an expression for the sound speed may be derived from equation (5) which contains only the variables  $p$ ,  $a$ , and  $T$  (i.e., no density). These are the actual measured variables. This expression is then combined with equation (4) by multiproperty fitting to determine  $B$  in the density virial expansion. For details of this process, see reference 4.

#### EXPERIMENTAL METHOD

The sound speed was measured with a fixed-path-length cavity, or resonator. Electrostatic transducers were used for sound generation and detection. A standing wave is produced by exciting the generating transducer with a variable frequency. The frequency of the oscillator is adjusted for maximum received signal, which occurs at the cavity resonance. At resonance there are an integral number  $N$  of half-wavelengths in the tube of length  $L$ ,

$$\frac{N\lambda}{2} = L \quad (6)$$

The sound speed is computed from

$$a = F\lambda \quad (7)$$

Generally, frequencies  $F$  were measured corresponding to resonances for  $N = 6, 8, 10, 12, 14,$  or  $16$ . Three to five resonance frequencies were measured and the experimental sound speed was taken to be the average of the velocities computed from the various frequencies.

The cavity wall is a tube of Invar 67 mm long and 10 mm in diameter. The electrostatic transducers are at the ends of the cavity. The inside wall of the tube was ground and polished to allow proper evaluation of the boundary effects. The sound speed inside the tube is slower than it would be in an unbounded medium because of energy losses to the walls and ends via thermal conduction and viscous drag. This difference in sound speed can be computed accurately by using thermodynamic properties such as viscosity, thermal conductivity, heat capacity, and density of the gas medium (ref. 1). For the present experimental method, the size of this correction was generally a few hundredths of a percent in sound speed; however, it increased to about 0.5 percent in the worst case, which occurred at low temperature and high pressure.

The active transducer surface was a thin, flexible plastic film (ref. 8), coated on one side with aluminum of a thickness of approximately 50 nm (500 Å). The conducting side was placed on the ends of the tube and stretched tightly so as to produce a flat surface. Immediately on the other side of the coated surface were placed the electrodes, which were copper discs. The signal strength applied to the electrodes was 50 to 100 V at 1 to 30 kHz. The transducers produce sound of measurable intensity over this range of frequencies. Over the frequency variation of the width of a single resonance the sound intensity is essentially constant.

Temperatures were measured on the International Practical Temperature Scale-68 (IPTS-68) with a platinum resistance thermometer calibrated by the NBS Heat Section. Uncertainties in the measured temperature were estimated to be 5 mK at the lower temperatures and approximately 50 mK at 350 K. Pressures were measured with a precision quartz spiral Bourdon tube, calibrated at the National Engineering Laboratory with an air-dead-weight gage. Pressure uncertainties were estimated to be less than 0.013 percent at 15 atm, increasing to 0.3 percent at 0.33 atm. The sample gas was ultrapure carrier type. Analysis of the nitrogen gas by the supplier showed an oxygen concentration of 1 ppm and total hydrocarbon concentration of less than 0.2 ppm.

To estimate the uncertainty involved in the overall experimental procedure, sound-speed measurements of helium gas were taken in the apparatus and were

found to be within 0.05 percent of known values. This value of 0.05-percent uncertainty is taken to be the uncertainty in the present nitrogen measurements.

## RESULTS

The density virial coefficients resulting from application of the multi-property fit to sound-speed and  $p$ - $\rho$ - $T$  data are based on temperature expansions. The form of the second virial coefficient is expressed as

$$B = \sum B_j T^{(3-j)/2} \quad (j = 1, 2, 3, \dots, 7) \quad (8)$$

and the form of the third virial coefficient is expressed as

$$C = \sum C_j T^{(1-j)/2} \quad (j = 1, 2, 3, \dots, 5) \quad (9)$$

The newly calculated numerical values of  $B$  and  $C$  are given in the following table:

| Virial coefficient | Calculated numerical values of $B$ and $C$ |
|--------------------|--|
| $B_1$              | 0.2920642838E-02                           |
| $B_2$              | -.2334399080E+00                           |
| $B_3$              | .7425086518E+01                            |
| $B_4$              | -.1164300428E+03                           |
| $B_5$              | .9253305729E+03                            |
| $B_6$              | -.3351637808E+04                           |
| $B_7$              | .1992311954E+04                            |
| $C_1$              | .2189970095E-01                            |
| $C_2$              | -.5949349694E-01                           |
| $C_3$              | -.2399796650E+02                           |
| $C_4$              | .4534244413E+03                            |
| $C_5$              | -.2283997281E+04                           |

The values for the thermodynamic properties for nitrogen computed from equations (8) and (9) for  $B$  and  $C$  are given in table I. Values are computed for isotherms starting at 60 K, increasing at 10-K increments to 110 K and at 20-K increments from 110 to 350 K. The second and third density virial coefficients with the first and second derivatives of each are shown at the top of each page. For most isotherms the property values are computed at pressures beginning at 0.2 atm and increasing to 10 atm in 0.2-atm increments. The values for two-phase conditions are indicated by the notation "2-PHASE BOUNDARY" shown at the right side of the table. Values for the thermodynamic properties are given beyond the two-phase boundary as an indication of the properties for metastable conditions.

The tabular values of the thermodynamic properties are arranged for comparison of the values computed from the virial coefficients with the existing values from NBS Technical Note 648 (ref. 1). The first column for each case is computed from the virial equation. The numbers of the different columns are presented as percent of deviation from TN 648 values in the graphs in figures 1 to 7. However, above approximately 150 K the differences are omitted from the graphs because they generally are very close to the values of Technical Note 648 in that region.

The largest deviations (approximately 6 percent) were found for  $c_p$  and  $c_v$  for the values at saturation in figure 1 and for  $c_p$  for the 100-K isotherm in figure 2. Deviations of about 1 percent were found for internal energy (fig. 3) and enthalpy (fig. 4). Deviations of a few tenths of a percent were found for entropy (fig. 5), density (fig. 6), and sound speed (fig. 7). The largest deviations in property values occurred for isotherms at 90, 100, and 110 K and at pressures near the two-phase boundary, for which the change in sound speed with pressure is largest.

The sound-speed measurements (ref. 3) from which the virial coefficients are computed were taken for isotherms from 80 to 350 K and at pressures from 0.33 to 15 atm. Figures 8, 9, and 10 show sound-speed deviations at 80, 150, and 310 K, respectively, computed with the virial coefficient as the reference. These three figures illustrate the accuracy of the three equations - virial, Jacobsen, and Beattie-Bridgeman - for predicting the experimental sound speeds, and that no one of these equations is clearly superior in terms of fitting the sound speed for isotherms over the entire temperature range. However, as explained later, the virial equation is expected to be superior in predicting specific heat capacities.

For figures 8 to 10, the largest deviations of predicted sound speeds are at 150 K. Sound speeds calculated with the virial equation are 0.1 to 0.2 percent larger than those calculated from either the Beattie-Bridgeman or the Jacobsen equation. For the 80-K isotherm the deviations are in the other direction and become larger as the pressure increases, with the largest deviations occurring for the experimental data. The last three data points are believed to be incorrect, since they could not be represented by a virial expansion for this isotherm taken separately. However, comparison of virial surfaces computed with and without these points shows that the points do not affect the derived surface to any degree of significance. At temperatures larger than 150 K the agreement with the virial surface was generally as seen in figure 10.

#### ACCURACY OF THE CALCULATED VALUES OF THERMODYNAMIC PROPERTIES

The accuracy of calculated values of thermodynamic properties depends on a number of different factors. Often an estimation of accuracy is made on the basic agreement between the experimental value and the calculated value of the property in question. An estimate made in this manner is an estimate of the precision of the experimental data and almost always results in an assessment of accuracy which is unrealistically small. Systematic errors in experimental data are usually greater than the imprecision in those data.

A more realistic estimate of the accuracy of data is to compare those data with similar data from other sources and then make an estimate of the agreement. This method is probably conservative, but it is more realistic than equating precision to accuracy. In this particular case a realistic estimate of the accuracy of a property value may be determined by taking the maximum deviation shown for a particular property illustrated in figures 1 to 7. The one exception is the specific heat capacity, for which experience has shown that empirical equations of state usually predict erroneous heat capacities near the saturated vapor boundary (and other boundaries such as the saturated liquid and solid boundaries) unless extreme care is taken to prevent the error (refs. 9 to 12). This erroneous heat-capacity behavior is due to the high degree of flexibility of most equations of state (the Jacobsen equation, for example, has 32 adjustable parameters) and the absence of the data immediately beyond the saturation boundary to control the behavior of the equation of state. In the case of the saturated vapor boundary, additional strain is placed on the equation of state because the equation must evaluate the region of densities between the vapor and liquid phases in such a manner as to predict the same pressure given the same temperature but different densities (i.e., a van der Waals loop). This problem is avoided by choosing the virial equation of state which has a minimum of adjustable constants and by using only vapor-phase data (no van der Waals loop required) with pressures of 15 atm or less.

Although multiproperty-fitting techniques used with  $p$ - $\rho$ - $T$  data together with either sound-speed data or specific-heat-capacity data can reduce the error in specific-heat-capacity values as predicted by empirical equations of state near the two-phase transition, neither of these latter two kinds of data were available at the time the Jacobsen equation was formulated.

Based on the preceding arguments, the  $c_p$  and  $c_v$  from the wide-range equations of state near the saturated-vapor boundary are questionable. Therefore the maximum uncertainty of the virial  $c_p$  and  $c_v$  is estimated to be 2 percent, which corresponds to the disagreement shown in figures 2 and 3 for temperatures for which saturated conditions are not a factor. The average uncertainty in  $c_p$  and  $c_v$  is closer to 1 percent.

#### SUMMARY OF RESULTS

For many substances there is a lack of data in the gas region, especially near the two-phase boundary. As a consequence, the thermodynamic properties of this region are generally found to be poorly characterized by equations of state. To correct this situation for nitrogen, measurements of the speed of sound in the gas phase have been combined with  $p$ - $\rho$ - $T$  data by multiproperty-fitting techniques to produce a density virial expansion for nitrogen. This new virial expansion should provide a more accurate representation of the thermodynamic properties (especially heat capacity) in this region.

The values of the virial coefficients found from this optimization are compared in detail to the thermodynamic-property values derived by Jacobsen. The virial equation sound speeds are also compared to the new experimental data and to those computed from the Beattie-Bridgeman equation and from the Jacobsen equation for 80-, 150-, and 310-K isotherms.

Experimentalists should be encouraged to take more detailed data near two-phase boundaries, and especially in the gas region, since the behavior of the thermodynamic surfaces near these boundaries is generally the most uncertain. However, in the case of the gas phase this may well be the most difficult region to take data.

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TABLE I.- Continued

| TEMP= 70. K | B0=-.3368354E+00 | B1= .1054220E-01 | B2=-.5166845E-03 | C0=-.1995286E-01 | C1= .1675928E-02 | C2=-.1192735E-03 |               |          |            |          |          |             |
|-------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------|----------|------------|----------|----------|-------------|
| PRES<br>ATM | DENS<br>MDL/L    | DENS<br>J/MDL.K  | DIF<br>%         | CP<br>J/MDL.K    | CP<br>J/MDL.K    | CV<br>J/MDL.K    | CV<br>J/MDL.K | DIF<br>% | VEL<br>M/S | VEL<br>% | DIF<br>% | PRES<br>ATM |
| .20         | .0352            | .0352            | .07              | 29.86            | 29.70            | .51              | 21.10         | 21.01    | .40        | 169.42   | 169.44   | .20         |
| .3804       | .0678            | .0677            | .14              | 30.59            | 30.29            | .98              | 21.39         | 21.23    | .75        | 168.38   | 168.42   | .3804       |
| .40         | .0714            |                  |                  | 30.67            |                  |                  | 21.42         |          |            | 168.26   |          | .40         |
| .60         | .1084            |                  |                  | 31.55            |                  |                  | 21.75         |          |            | 167.06   |          | .60         |
| .80         | .1466            |                  |                  | 32.50            |                  |                  | 22.10         |          |            | 165.81   |          | .80         |
| 1.00        | .1859            |                  |                  | 33.54            |                  |                  | 22.47         |          |            | 164.52   |          | 1.00        |
| 1.20        | .2264            |                  |                  | 34.67            |                  |                  | 22.85         |          |            | 163.16   |          | 1.20        |
| 1.40        | .2684            |                  |                  | 35.92            |                  |                  | 23.24         |          |            | 161.75   |          | 1.40        |
| 1.60        | .3119            |                  |                  | 37.32            |                  |                  | 23.66         |          |            | 160.27   |          | 1.60        |
| 1.80        | .3573            |                  |                  | 38.88            |                  |                  | 24.11         |          |            | 158.71   |          | 1.80        |
| 2.00        | .4047            |                  |                  | 40.66            |                  |                  | 24.57         |          |            | 157.06   |          | 2.00        |
| 2.20        | .4544            |                  |                  | 42.71            |                  |                  | 25.07         |          |            | 155.30   |          | 2.20        |
| 2.40        | .5070            |                  |                  | 45.12            |                  |                  | 25.61         |          |            | 153.42   |          | 2.40        |
| 2.60        | .5630            |                  |                  | 48.01            |                  |                  | 26.19         |          |            | 151.39   |          | 2.60        |
| 2.80        | .6231            |                  |                  | 51.57            |                  |                  | 26.82         |          |            | 149.18   |          | 2.80        |
| 3.00        | .6884            |                  |                  | 56.14            |                  |                  | 27.52         |          |            | 146.72   |          | 3.00        |
| 3.20        | .7609            |                  |                  | 62.35            |                  |                  | 28.31         |          |            | 143.94   |          | 3.20        |
| 3.40        | .8437            |                  |                  | 71.57            |                  |                  | 29.23         |          |            | 140.70   |          | 3.40        |
| 3.60        | .9430            |                  |                  | 87.64            |                  |                  | 30.36         |          |            | 136.68   |          | 3.60        |
| 3.80        | 1.0780           |                  |                  | 129.17           |                  |                  | 31.94         |          |            | 131.01   |          | 3.80        |
| .20         | 162.50           | 162.54           | -.02             | 2008.7           | 2011.4           | 2011.4           | 1433.6        | 1435.9   | 1433.6     | 1435.9   | 1435.9   | .20         |
| .3804       | 156.96           | 157.02           | -.04             | 1988.2           | 1993.4           | 1993.4           | 1419.5        | 1424.0   | 1419.5     | 1424.0   | 1424.0   | .3804       |
| .40         | 156.51           |                  |                  | 1985.9           |                  |                  | 1418.0        |          |            | 1418.0   |          | .40         |
| .60         | 152.91           |                  |                  | 1962.4           |                  |                  | 1401.8        |          |            | 1401.8   |          | .60         |
| .80         | 150.27           |                  |                  | 1938.1           |                  |                  | 1385.1        |          |            | 1385.1   |          | .80         |
| 1.00        | 148.16           |                  |                  | 1913.0           |                  |                  | 1367.8        |          |            | 1367.8   |          | 1.00        |
| 1.20        | 146.38           |                  |                  | 1886.8           |                  |                  | 1349.8        |          |            | 1349.8   |          | 1.20        |
| 1.40        | 144.82           |                  |                  | 1859.6           |                  |                  | 1331.1        |          |            | 1331.1   |          | 1.40        |
| 1.60        | 143.41           |                  |                  | 1831.2           |                  |                  | 1311.5        |          |            | 1311.5   |          | 1.60        |
| 1.80        | 142.12           |                  |                  | 1801.5           |                  |                  | 1291.0        |          |            | 1291.0   |          | 1.80        |
| 2.00        | 140.91           |                  |                  | 1770.2           |                  |                  | 1269.4        |          |            | 1269.4   |          | 2.00        |
| 2.20        | 139.76           |                  |                  | 1737.1           |                  |                  | 1246.6        |          |            | 1246.6   |          | 2.20        |
| 2.40        | 138.66           |                  |                  | 1701.9           |                  |                  | 1222.3        |          |            | 1222.3   |          | 2.40        |
| 2.60        | 137.58           |                  |                  | 1664.2           |                  |                  | 1196.2        |          |            | 1196.2   |          | 2.60        |
| 2.80        | 136.50           |                  |                  | 1623.3           |                  |                  | 1167.9        |          |            | 1167.9   |          | 2.80        |
| 3.00        | 135.42           |                  |                  | 1578.5           |                  |                  | 1136.9        |          |            | 1136.9   |          | 3.00        |
| 3.20        | 134.30           |                  |                  | 1528.3           |                  |                  | 1102.2        |          |            | 1102.2   |          | 3.20        |
| 3.40        | 133.12           |                  |                  | 1470.5           |                  |                  | 1062.2        |          |            | 1062.2   |          | 3.40        |
| 3.60        | 131.79           |                  |                  | 1400.2           |                  |                  | 1013.4        |          |            | 1013.4   |          | 3.60        |
| 3.80        | 130.11           |                  |                  | 1333.3           |                  |                  | 946.1         |          |            | 946.1    |          | 3.80        |

TABLE I.- Continued

| TEMP=  | 80. K  | 80=-.2526119E+00 | B1= .6689605E-02 | B2=-.2820504E-03 | C0=-.7921200E-02 | C1= .8316227E-03 | C2=-.5779471E-04 |        |        |        |      |          |
|--------|--------|------------------|------------------|------------------|------------------|------------------|------------------|--------|--------|--------|------|----------|
| PRES   | DENS   | DENS             | DIF              | CP               | DIF              | CV               | DIF              | VEL    | DIF    | VEL    | DIF  | PRES     |
| ATM    | MOL/L  | MOL/L            | %                | J/MOL.K          | %                | J/MOL.K          | %                | M/S    | %      | M/S    | %    | ATM      |
| .20    | .0307  | .0307            | .02              | 29.57            | 29.47            | 20.97            | 20.91            | 181.53 | 181.53 | 181.53 | -.00 | .20      |
| .40    | .0619  | .0619            | .05              | 30.06            | 29.87            | 21.17            | 21.05            | 180.72 | 180.74 | 180.74 | -.01 | .40      |
| .60    | .0936  | .0936            | .08              | 30.57            | 30.28            | 21.36            | 21.19            | 179.89 | 179.93 | 179.93 | -.02 | .60      |
| .80    | .1259  | .1257            | .12              | 31.11            | 30.71            | 21.57            | 21.33            | 179.05 | 179.10 | 179.10 | -.03 | .80      |
| 1.00   | .1587  | .1585            | .15              | 31.68            | 31.16            | 21.78            | 21.48            | 178.18 | 178.26 | 178.26 | -.04 | 1.00     |
| 1.20   | .1922  | .1918            | .19              | 32.28            | 31.64            | 21.99            | 21.63            | 177.30 | 177.40 | 177.40 | -.05 | 1.20     |
| 1.3490 | .2175  | .2170            | .23              | 32.75            | 32.02            | 22.16            | 21.75            | 176.63 | 176.74 | 176.74 | -.06 | 1.3490   |
|        |        |                  |                  |                  |                  |                  |                  |        |        |        |      | 2-PHASE  |
|        |        |                  |                  |                  |                  |                  |                  |        |        |        |      | BOUNDARY |
| 1.40   | .2263  | .2263            |                  | 32.92            |                  | 22.22            |                  | 176.40 |        | 176.40 |      | 1.40     |
| 1.60   | .2611  | .2611            |                  | 33.59            |                  | 22.45            |                  | 175.47 |        | 175.47 |      | 1.60     |
| 1.80   | .2966  | .2966            |                  | 34.31            |                  | 22.68            |                  | 174.52 |        | 174.52 |      | 1.80     |
| 2.00   | .3330  | .3330            |                  | 35.07            |                  | 22.93            |                  | 173.54 |        | 173.54 |      | 2.00     |
| 2.20   | .3701  | .3701            |                  | 35.89            |                  | 23.18            |                  | 172.54 |        | 172.54 |      | 2.20     |
| 2.40   | .4082  | .4082            |                  | 36.77            |                  | 23.44            |                  | 171.50 |        | 171.50 |      | 2.40     |
| 2.60   | .4473  | .4473            |                  | 37.71            |                  | 23.71            |                  | 170.44 |        | 170.44 |      | 2.60     |
| 2.80   | .4875  | .4875            |                  | 38.74            |                  | 24.00            |                  | 169.33 |        | 169.33 |      | 2.80     |
| 3.00   | .5288  | .5288            |                  | 39.85            |                  | 24.29            |                  | 168.19 |        | 168.19 |      | 3.00     |
| 3.20   | .5714  | .5714            |                  | 41.07            |                  | 24.60            |                  | 167.01 |        | 167.01 |      | 3.20     |
| 3.40   | .6155  | .6155            |                  | 42.41            |                  | 24.92            |                  | 165.78 |        | 165.78 |      | 3.40     |
| 3.60   | .6611  | .6611            |                  | 43.89            |                  | 25.25            |                  | 164.49 |        | 164.49 |      | 3.60     |
| 3.80   | .7085  | .7085            |                  | 45.56            |                  | 25.61            |                  | 163.15 |        | 163.15 |      | 3.80     |
| 4.00   | .7579  | .7579            |                  | 47.43            |                  | 25.98            |                  | 161.74 |        | 161.74 |      | 4.00     |
| 4.20   | .8096  | .8096            |                  | 49.58            |                  | 26.37            |                  | 160.25 |        | 160.25 |      | 4.20     |
| 4.40   | .8639  | .8639            |                  | 52.06            |                  | 26.80            |                  | 158.68 |        | 158.68 |      | 4.40     |
| 4.60   | .9214  | .9214            |                  | 54.99            |                  | 27.25            |                  | 156.99 |        | 156.99 |      | 4.60     |
| 4.80   | .9826  | .9826            |                  | 58.53            |                  | 27.74            |                  | 155.18 |        | 155.18 |      | 4.80     |
| 5.00   | 1.0485 | 1.0485           |                  | 62.93            |                  | 28.27            |                  | 153.21 |        | 153.21 |      | 5.00     |
| 5.20   | 1.1204 | 1.1204           |                  | 68.62            |                  | 28.86            |                  | 151.04 |        | 151.04 |      | 5.20     |
| 5.40   | 1.2001 | 1.2001           |                  | 76.41            |                  | 29.53            |                  | 148.59 |        | 148.59 |      | 5.40     |
| 5.60   | 1.2915 | 1.2915           |                  | 88.09            |                  | 30.32            |                  | 145.75 |        | 145.75 |      | 5.60     |
| 5.80   | 1.4016 | 1.4016           |                  | 108.72           |                  | 31.28            |                  | 142.25 |        | 142.25 |      | 5.80     |
| 6.00   | 1.5525 | 1.5525           |                  | 163.71           |                  | 32.64            |                  | 137.32 |        | 137.32 |      | 6.00     |

TABLE I.- Continued

TEMP= 80. K 80=-.2526119E+00 B1= .6689605E-02 B2=-.2820504E-03 C0=-.7921200E-02 C1= .8316227E-03 C2=-.5779471E-04

| PRES<br>ATM | S<br>J/MOL* $K$ | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM         |
|-------------|-----------------|--------|----------|------------|--------|----------|------------|--------|----------|---------------------|
| .20         | 166.47          | 166.49 | -.01     | 2305.7     | 2307.2 | -.06     | 1645.7     | 1647.0 | -.08     | .20                 |
| .40         | 160.57          | 160.60 | -.02     | 2289.2     | 2292.3 | -.13     | 1634.5     | 1637.2 | -.17     | .40                 |
| .60         | 157.05          | 157.10 | -.03     | 2272.5     | 2277.2 | -.21     | 1623.1     | 1627.3 | -.26     | .60                 |
| .80         | 154.51          | 154.58 | -.05     | 2255.4     | 2261.8 | -.28     | 1611.5     | 1617.1 | -.35     | .80                 |
| 1.00        | 152.50          | 152.59 | -.06     | 2237.9     | 2246.1 | -.36     | 1599.6     | 1606.7 | -.45     | 1.00                |
| 1.20        | 150.83          | 150.94 | -.07     | 2220.1     | 2230.1 | -.45     | 1587.4     | 1596.2 | -.55     | 1.20                |
| 1.3490      | 149.74          | 149.87 | -.08     | 2206.5     | 2217.9 | -.52     | 1578.2     | 1588.1 | -.63     | 1.3490              |
|             |                 |        |          |            |        |          |            |        |          | 2-PHASE<br>BOUNDARY |
| 1.40        | 149.39          |        |          | 2201.8     |        |          | 1574.9     |        |          | 1.40                |
| 1.60        | 148.11          |        |          | 2183.1     |        |          | 1562.2     |        |          | 1.60                |
| 1.80        | 146.97          |        |          | 2163.9     |        |          | 1549.1     |        |          | 1.80                |
| 2.00        | 145.91          |        |          | 2144.3     |        |          | 1535.7     |        |          | 2.00                |
| 2.20        | 144.94          |        |          | 2124.1     |        |          | 1521.8     |        |          | 2.20                |
| 2.40        | 144.03          |        |          | 2103.3     |        |          | 1507.6     |        |          | 2.40                |
| 2.60        | 143.17          |        |          | 2081.9     |        |          | 1493.0     |        |          | 2.60                |
| 2.80        | 142.35          |        |          | 2059.8     |        |          | 1477.8     |        |          | 2.80                |
| 3.00        | 141.57          |        |          | 2037.0     |        |          | 1462.2     |        |          | 3.00                |
| 3.20        | 140.81          |        |          | 2013.4     |        |          | 1446.0     |        |          | 3.20                |
| 3.40        | 140.08          |        |          | 1988.9     |        |          | 1429.2     |        |          | 3.40                |
| 3.60        | 139.36          |        |          | 1963.4     |        |          | 1411.6     |        |          | 3.60                |
| 3.80        | 138.66          |        |          | 1936.8     |        |          | 1393.3     |        |          | 3.80                |
| 4.00        | 137.96          |        |          | 1908.9     |        |          | 1374.1     |        |          | 4.00                |
| 4.20        | 137.27          |        |          | 1879.6     |        |          | 1354.0     |        |          | 4.20                |
| 4.40        | 136.58          |        |          | 1848.7     |        |          | 1332.6     |        |          | 4.40                |
| 4.60        | 135.89          |        |          | 1815.7     |        |          | 1309.9     |        |          | 4.60                |
| 4.80        | 135.18          |        |          | 1780.4     |        |          | 1285.5     |        |          | 4.80                |
| 5.00        | 134.45          |        |          | 1742.2     |        |          | 1259.1     |        |          | 5.00                |
| 5.20        | 133.70          |        |          | 1700.3     |        |          | 1230.1     |        |          | 5.20                |
| 5.40        | 132.89          |        |          | 1653.5     |        |          | 1197.6     |        |          | 5.40                |
| 5.60        | 132.01          |        |          | 1599.4     |        |          | 1160.0     |        |          | 5.60                |
| 5.80        | 131.00          |        |          | 1533.5     |        |          | 1114.2     |        |          | 5.80                |
| 6.00        | 129.69          |        |          | 1442.2     |        |          | 1050.7     |        |          | 6.00                |

TABLE I.- Continued

| TEMP= 90. K | B0=-.1975349E+00 | B1=.4520055E-02       | B2=-.1645472E-03 | C0=-.1933551E-02 | C1=.4127133E-03 | C2=-.2942937E-04 |          |             |      |        |        |      |        |
|-------------|------------------|-----------------------|------------------|------------------|-----------------|------------------|----------|-------------|------|--------|--------|------|--------|
| PRES<br>ATM | DENS<br>MOL/L    | DENS<br>CP<br>J/MOL.K | DIF<br>%         | CV<br>J/MOL.K    | CV<br>M/S       | VEL<br>%         | DIF<br>% | PRES<br>ATM |      |        |        |      |        |
| .20         | .0272            | .0272                 | .00              | 29.40            | 29.35           | .18              | 20.90    | 20.86       | .18  | 192.80 | 192.80 | .00  | .20    |
| .40         | .0548            | .0548                 | .01              | 29.72            | 29.61           | .37              | 21.02    | 20.95       | .36  | 192.21 | 192.21 | -.00 | .40    |
| .60         | .0826            | .0826                 | .02              | 30.04            | 29.87           | .56              | 21.14    | 21.03       | .54  | 191.61 | 191.62 | -.00 | .60    |
| .80         | .1108            | .1107                 | .03              | 30.38            | 30.15           | .76              | 21.27    | 21.12       | .72  | 191.00 | 191.02 | -.01 | .80    |
| 1.00        | .1392            | .1392                 | .04              | 30.73            | 30.44           | .96              | 21.40    | 21.20       | .90  | 190.39 | 190.41 | -.01 | 1.00   |
| 1.20        | .1681            | .1680                 | .05              | 31.09            | 30.73           | 1.16             | 21.53    | 21.29       | 1.09 | 189.76 | 189.80 | -.02 | 1.20   |
| 1.40        | .1973            | .1972                 | .06              | 31.47            | 31.04           | 1.37             | 21.66    | 21.38       | 1.28 | 189.13 | 189.17 | -.02 | 1.40   |
| 1.60        | .2268            | .2267                 | .07              | 31.86            | 31.35           | 1.58             | 21.80    | 21.48       | 1.47 | 188.49 | 188.54 | -.03 | 1.60   |
| 1.80        | .2568            | .2566                 | .09              | 32.26            | 31.68           | 1.80             | 21.94    | 21.57       | 1.66 | 187.84 | 187.90 | -.04 | 1.80   |
| 2.00        | .2872            | .2869                 | .10              | 32.68            | 32.02           | 2.02             | 22.08    | 21.67       | 1.85 | 187.18 | 187.26 | -.04 | 2.00   |
| 2.20        | .3179            | .3175                 | .12              | 33.12            | 32.38           | 2.25             | 22.22    | 21.77       | 2.04 | 186.51 | 186.60 | -.05 | 2.20   |
| 2.40        | .3491            | .3486                 | .14              | 33.58            | 32.74           | 2.48             | 22.37    | 21.97       | 2.24 | 185.82 | 185.93 | -.06 | 2.40   |
| 2.60        | .3808            | .3802                 | .16              | 34.05            | 33.13           | 2.72             | 22.53    | 21.98       | 2.44 | 185.13 | 185.25 | -.07 | 2.60   |
| 2.80        | .4130            | .4122                 | .19              | 34.55            | 33.53           | 2.97             | 22.68    | 22.08       | 2.64 | 184.42 | 184.56 | -.08 | 2.80   |
| 3.00        | .4456            | .4447                 | .21              | 35.07            | 33.94           | 3.22             | 22.84    | 22.19       | 2.84 | 183.71 | 183.87 | -.09 | 3.00   |
| 3.20        | .4788            | .4777                 | .24              | 35.62            | 34.38           | 3.49             | 23.01    | 22.31       | 3.05 | 182.98 | 183.15 | -.10 | 3.20   |
| 3.40        | .5125            | .5112                 | .27              | 36.20            | 34.83           | 3.76             | 23.17    | 22.42       | 3.26 | 182.23 | 182.43 | -.11 | 3.40   |
| 3.5504      | .5383            | .5367                 | .29              | 36.65            | 35.19           | 3.97             | 23.30    | 22.51       | 3.41 | 181.66 | 181.88 | -.12 | 3.5504 |
| 3.60        | .5469            |                       |                  | 36.80            |                 |                  | 23.35    |             |      | 181.47 |        |      | 3.60   |
| 3.80        | .5818            |                       |                  | 37.44            |                 |                  | 23.53    |             |      | 180.70 |        |      | 3.80   |
| 4.00        | .6174            |                       |                  | 38.11            |                 |                  | 23.71    |             |      | 179.91 |        |      | 4.00   |
| 4.20        | .6537            |                       |                  | 38.82            |                 |                  | 23.90    |             |      | 179.10 |        |      | 4.20   |
| 4.40        | .6907            |                       |                  | 39.57            |                 |                  | 24.09    |             |      | 178.28 |        |      | 4.40   |
| 4.60        | .7284            |                       |                  | 40.37            |                 |                  | 24.29    |             |      | 177.43 |        |      | 4.60   |
| 4.80        | .7671            |                       |                  | 41.22            |                 |                  | 24.50    |             |      | 176.57 |        |      | 4.80   |
| 5.00        | .8066            |                       |                  | 42.13            |                 |                  | 24.71    |             |      | 175.68 |        |      | 5.00   |
| 5.20        | .8470            |                       |                  | 43.11            |                 |                  | 24.93    |             |      | 174.77 |        |      | 5.20   |
| 5.40        | .8885            |                       |                  | 44.16            |                 |                  | 25.16    |             |      | 173.83 |        |      | 5.40   |
| 5.60        | .9311            |                       |                  | 45.30            |                 |                  | 25.39    |             |      | 172.87 |        |      | 5.60   |
| 5.80        | .9749            |                       |                  | 46.54            |                 |                  | 25.64    |             |      | 171.88 |        |      | 5.80   |
| 6.00        | 1.0200           |                       |                  | 47.88            |                 |                  | 25.90    |             |      | 170.85 |        |      | 6.00   |
| 6.20        | 1.0666           |                       |                  | 49.36            |                 |                  | 26.16    |             |      | 169.78 |        |      | 6.20   |
| 6.40        | 1.1148           |                       |                  | 50.99            |                 |                  | 26.44    |             |      | 168.68 |        |      | 6.40   |
| 6.60        | 1.1647           |                       |                  | 52.81            |                 |                  | 26.74    |             |      | 167.53 |        |      | 6.60   |
| 6.80        | 1.2167           |                       |                  | 54.84            |                 |                  | 27.04    |             |      | 166.33 |        |      | 6.80   |
| 7.00        | 1.2709           |                       |                  | 57.15            |                 |                  | 27.37    |             |      | 165.07 |        |      | 7.00   |
| 7.20        | 1.3277           |                       |                  | 59.80            |                 |                  | 27.72    |             |      | 163.75 |        |      | 7.20   |
| 7.40        | 1.3874           |                       |                  | 62.88            |                 |                  | 28.09    |             |      | 162.35 |        |      | 7.40   |
| 7.60        | 1.4508           |                       |                  | 66.54            |                 |                  | 28.48    |             |      | 160.86 |        |      | 7.60   |
| 7.80        | 1.5183           |                       |                  | 70.98            |                 |                  | 28.91    |             |      | 159.26 |        |      | 7.80   |
| 8.00        | 1.5912           |                       |                  | 76.52            |                 |                  | 29.38    |             |      | 157.53 |        |      | 8.00   |
| 8.20        | 1.6708           |                       |                  | 83.75            |                 |                  | 29.90    |             |      | 155.63 |        |      | 8.20   |
| 8.40        | 1.7595           |                       |                  | 93.73            |                 |                  | 30.49    |             |      | 153.49 |        |      | 8.40   |
| 8.60        | 1.8614           |                       |                  | 108.87           |                 |                  | 31.18    |             |      | 151.01 |        |      | 8.60   |
| 8.80        | 1.9853           |                       |                  | 136.20           |                 |                  | 32.04    |             |      | 147.97 |        |      | 8.80   |
| 9.00        | 2.1582           |                       |                  | 213.61           |                 |                  | 33.28    |             |      | 143.65 |        |      | 9.00   |

2-PHASE  
BOUNDARY

TABLE I.- Continued

| TEMP=       | 90. K        | B0 = -.1975349E+00 | B1 = .4520055E-02 | B2 = -.1645472E-03 | C0 = -.1933551E-02 | C1 = .4127133E-03 | C2 = -.2942937E-04 |        |          |             |
|-------------|--------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|--------|----------|-------------|
| PRES<br>ATM | S<br>J/MOL.K | S                  | DIF<br>%          | H<br>J/MOL         | H                  | DIF<br>%          | E<br>J/MOL         | E      | DIF<br>% | PRES<br>ATM |
| .20         | 169.94       | 169.95             | -.00              | 2600.4             | 2601.2             | -.03              | 1856.2             | 1856.9 | -.04     | .20         |
| .40         | 164.08       | 164.10             | -.01              | 2587.9             | 2589.5             | -.06              | 1847.8             | 1849.3 | -.08     | .40         |
| .60         | 160.62       | 160.64             | -.02              | 2575.3             | 2577.7             | -.09              | 1839.2             | 1841.5 | -.12     | .60         |
| .80         | 158.13       | 158.16             | -.02              | 2562.5             | 2565.8             | -.13              | 1830.6             | 1833.7 | -.17     | .80         |
| 1.00        | 156.17       | 156.22             | -.03              | 2549.5             | 2553.7             | -.16              | 1821.9             | 1825.7 | -.22     | 1.00        |
| 1.20        | 154.56       | 154.61             | -.03              | 2536.3             | 2541.4             | -.20              | 1812.9             | 1817.7 | -.26     | 1.20        |
| 1.40        | 153.17       | 153.24             | -.04              | 2522.9             | 2529.1             | -.24              | 1803.9             | 1809.5 | -.31     | 1.40        |
| 1.60        | 151.96       | 152.03             | -.05              | 2509.4             | 2516.5             | -.28              | 1794.7             | 1801.3 | -.37     | 1.60        |
| 1.80        | 150.87       | 150.96             | -.06              | 2495.6             | 2503.8             | -.33              | 1785.4             | 1792.9 | -.42     | 1.80        |
| 2.00        | 149.89       | 149.99             | -.06              | 2481.6             | 2490.9             | -.37              | 1775.9             | 1784.4 | -.48     | 2.00        |
| 2.20        | 148.99       | 149.10             | -.07              | 2467.4             | 2477.8             | -.42              | 1766.3             | 1775.8 | -.54     | 2.20        |
| 2.40        | 148.15       | 148.27             | -.08              | 2453.0             | 2464.5             | -.47              | 1756.5             | 1767.0 | -.60     | 2.40        |
| 2.60        | 147.37       | 147.50             | -.09              | 2438.3             | 2451.1             | -.52              | 1746.5             | 1758.2 | -.67     | 2.60        |
| 2.80        | 146.64       | 146.78             | -.10              | 2423.4             | 2437.4             | -.58              | 1736.4             | 1749.1 | -.73     | 2.80        |
| 3.00        | 145.94       | 146.10             | -.11              | 2408.2             | 2423.5             | -.64              | 1726.1             | 1740.0 | -.81     | 3.00        |
| 3.20        | 145.28       | 145.46             | -.12              | 2392.7             | 2409.4             | -.70              | 1715.5             | 1730.6 | -.88     | 3.20        |
| 3.40        | 144.65       | 144.84             | -.13              | 2376.9             | 2395.1             | -.76              | 1704.8             | 1721.1 | -.96     | 3.40        |
| 3.5504      | 144.20       | 144.40             | -.14              | 2364.9             | 2384.2             | -.82              | 1696.6             | 1713.9 | -1.02    | 3.5504      |
| 3.60        | 144.05       |                    |                   | 2360.9             |                    |                   | 1693.8             |        |          | 3.60        |
| 3.80        | 143.47       |                    |                   | 2344.5             |                    |                   | 1682.7             |        |          | 3.80        |
| 4.00        | 142.91       |                    |                   | 2327.7             |                    |                   | 1671.2             |        |          | 4.00        |
| 4.20        | 142.36       |                    |                   | 2310.6             |                    |                   | 1659.6             |        |          | 4.20        |
| 4.40        | 141.83       |                    |                   | 2293.1             |                    |                   | 1647.6             |        |          | 4.40        |
| 4.60        | 141.32       |                    |                   | 2275.2             |                    |                   | 1635.3             |        |          | 4.60        |
| 4.80        | 140.81       |                    |                   | 2256.9             |                    |                   | 1622.8             |        |          | 4.80        |
| 5.00        | 140.32       |                    |                   | 2238.0             |                    |                   | 1609.9             |        |          | 5.00        |
| 5.20        | 139.83       |                    |                   | 2218.7             |                    |                   | 1596.7             |        |          | 5.20        |
| 5.40        | 139.35       |                    |                   | 2198.8             |                    |                   | 1583.0             |        |          | 5.40        |
| 5.60        | 138.87       |                    |                   | 2178.4             |                    |                   | 1569.0             |        |          | 5.60        |
| 5.80        | 138.40       |                    |                   | 2157.3             |                    |                   | 1554.5             |        |          | 5.80        |
| 6.00        | 137.94       |                    |                   | 2135.5             |                    |                   | 1539.5             |        |          | 6.00        |
| 6.20        | 137.47       |                    |                   | 2113.0             |                    |                   | 1524.0             |        |          | 6.20        |
| 6.40        | 137.00       |                    |                   | 2089.6             |                    |                   | 1507.8             |        |          | 6.40        |
| 6.60        | 136.53       |                    |                   | 2065.2             |                    |                   | 1491.1             |        |          | 6.60        |
| 6.80        | 136.06       |                    |                   | 2039.8             |                    |                   | 1473.5             |        |          | 6.80        |
| 7.00        | 135.59       |                    |                   | 2013.3             |                    |                   | 1455.2             |        |          | 7.00        |
| 7.20        | 135.10       |                    |                   | 1985.3             |                    |                   | 1435.8             |        |          | 7.20        |
| 7.40        | 134.61       |                    |                   | 1955.8             |                    |                   | 1415.4             |        |          | 7.40        |
| 7.60        | 134.10       |                    |                   | 1924.4             |                    |                   | 1393.6             |        |          | 7.60        |
| 7.80        | 133.58       |                    |                   | 1890.8             |                    |                   | 1370.2             |        |          | 7.80        |
| 8.00        | 133.03       |                    |                   | 1854.3             |                    |                   | 1344.9             |        |          | 8.00        |
| 8.20        | 132.44       |                    |                   | 1814.3             |                    |                   | 1317.1             |        |          | 8.20        |
| 8.40        | 131.82       |                    |                   | 1769.6             |                    |                   | 1285.8             |        |          | 8.40        |
| 8.60        | 131.12       |                    |                   | 1717.8             |                    |                   | 1249.7             |        |          | 8.60        |
| 8.80        | 130.29       |                    |                   | 1654.5             |                    |                   | 1205.4             |        |          | 8.80        |
| 9.00        | 129.19       |                    |                   | 1565.3             |                    |                   | 1142.8             |        |          | 9.00        |

2-PHASE  
BOUNDARY

TABLE I.- Continued

| TEMP=100. K | 80=-.1593534E+00 | 81=.3220555E-02 | 82=-.1015297E-03 | C0=.9953414E-03 | C1=.1961725E-03 | C2=-.1544784E-04 |               |       |          |            |        |          |             |
|-------------|------------------|-----------------|------------------|-----------------|-----------------|------------------|---------------|-------|----------|------------|--------|----------|-------------|
| PRES<br>ATH | DENS<br>MOL/L    | DENS            | DIF<br>%         | CP<br>J/MOL.K   | CP              | DIF<br>%         | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATH |
| .20         | .0245            | .0245           | -.00             | 29.30           | 29.27           | .11              | 20.86         | 20.84 | .11      | 203.41     | 203.39 | .01      | .20         |
| .40         | .0491            | .0491           | -.01             | 29.52           | 29.46           | .21              | 20.94         | 20.94 | .34      | 202.96     | 202.95 | .00      | .40         |
| .60         | .0740            | .0740           | -.01             | 29.74           | 29.64           | .32              | 21.01         | 20.89 | .34      | 202.51     | 202.50 | .00      | .60         |
| .80         | .0991            | .0991           | -.01             | 29.96           | 29.83           | .43              | 21.09         | 21.00 | .45      | 202.06     | 202.05 | .00      | .80         |
| 1.00        | .1243            | .1243           | -.01             | 30.19           | 30.02           | .55              | 21.17         | 21.05 | .57      | 201.60     | 201.60 | .00      | 1.00        |
| 1.20        | .1498            | .1498           | -.01             | 30.43           | 30.22           | .66              | 21.26         | 21.11 | .68      | 201.14     | 201.14 | -.00     | 1.20        |
| 1.40        | .1755            | .1755           | -.01             | 30.67           | 30.43           | .78              | 21.34         | 21.17 | .80      | 200.68     | 200.68 | -.00     | 1.40        |
| 1.60        | .2014            | .2015           | -.01             | 30.91           | 30.64           | .90              | 21.42         | 21.23 | .92      | 200.21     | 200.22 | -.00     | 1.60        |
| 1.80        | .2276            | .2276           | -.01             | 31.17           | 30.85           | 1.02             | 21.51         | 21.29 | 1.04     | 199.74     | 199.75 | -.01     | 1.80        |
| 2.00        | .2540            | .2540           | -.01             | 31.43           | 31.07           | 1.15             | 21.60         | 21.35 | 1.16     | 199.26     | 199.28 | -.01     | 2.00        |
| 2.20        | .2806            | .2807           | -.00             | 31.70           | 31.30           | 1.27             | 21.69         | 21.41 | 1.29     | 198.78     | 198.80 | -.01     | 2.20        |
| 2.40        | .3075            | .3075           | -.00             | 31.97           | 31.53           | 1.40             | 21.78         | 21.47 | 1.41     | 198.29     | 198.32 | -.01     | 2.40        |
| 2.60        | .3347            | .3347           | -.00             | 32.26           | 31.76           | 1.53             | 21.87         | 21.53 | 1.54     | 197.80     | 197.83 | -.02     | 2.60        |
| 2.80        | .3621            | .3621           | .00              | 32.55           | 32.01           | 1.67             | 21.96         | 21.60 | 1.67     | 197.31     | 197.34 | -.02     | 2.80        |
| 3.00        | .3898            | .3897           | .01              | 32.85           | 32.26           | 1.81             | 22.06         | 21.66 | 1.80     | 196.81     | 196.85 | -.02     | 3.00        |
| 3.20        | .4177            | .4177           | .01              | 33.16           | 32.52           | 1.95             | 22.16         | 21.73 | 1.93     | 196.30     | 196.35 | -.02     | 3.20        |
| 3.40        | .4460            | .4459           | .01              | 33.48           | 32.78           | 2.09             | 22.25         | 21.79 | 2.06     | 195.79     | 195.84 | -.03     | 3.40        |
| 3.60        | .4745            | .4744           | .02              | 33.81           | 33.05           | 2.24             | 22.35         | 21.86 | 2.20     | 195.27     | 195.33 | -.03     | 3.60        |
| 3.80        | .5033            | .5032           | .03              | 34.15           | 33.34           | 2.39             | 22.46         | 21.93 | 2.34     | 194.75     | 194.82 | -.03     | 3.80        |
| 4.00        | .5325            | .5323           | .03              | 34.50           | 33.63           | 2.54             | 22.56         | 22.00 | 2.48     | 194.22     | 194.30 | -.04     | 4.00        |
| 4.20        | .5620            | .5618           | .04              | 34.86           | 33.92           | 2.70             | 22.67         | 22.08 | 2.62     | 193.69     | 193.77 | -.04     | 4.20        |
| 4.40        | .5918            | .5916           | .05              | 35.24           | 34.23           | 2.86             | 22.78         | 22.15 | 2.76     | 193.15     | 193.24 | -.05     | 4.40        |
| 4.60        | .6220            | .6217           | .05              | 35.63           | 34.55           | 3.02             | 22.89         | 22.22 | 2.90     | 192.60     | 192.70 | -.05     | 4.60        |
| 4.80        | .6525            | .6521           | .06              | 36.03           | 34.88           | 3.19             | 23.00         | 22.30 | 3.05     | 192.05     | 192.16 | -.06     | 4.80        |
| 5.00        | .6835            | .6830           | .07              | 36.45           | 35.22           | 3.36             | 23.12         | 22.38 | 3.20     | 191.49     | 191.61 | -.06     | 5.00        |
| 5.20        | .7148            | .7142           | .08              | 36.88           | 35.57           | 3.54             | 23.23         | 22.46 | 3.35     | 190.92     | 191.05 | -.07     | 5.20        |
| 5.40        | .7465            | .7457           | .10              | 37.33           | 35.94           | 3.72             | 23.35         | 22.54 | 3.50     | 190.35     | 190.49 | -.07     | 5.40        |
| 5.60        | .7786            | .7777           | .11              | 37.79           | 36.31           | 3.91             | 23.48         | 22.62 | 3.65     | 189.76     | 189.92 | -.08     | 5.60        |
| 5.80        | .8111            | .8101           | .12              | 38.28           | 36.70           | 4.11             | 23.60         | 22.70 | 3.81     | 189.17     | 189.34 | -.09     | 5.80        |
| 6.00        | .8442            | .8430           | .14              | 38.78           | 37.11           | 4.31             | 23.73         | 22.79 | 3.97     | 188.57     | 188.75 | -.10     | 6.00        |
| 6.20        | .8777            | .8763           | .16              | 39.31           | 37.53           | 4.52             | 23.86         | 22.87 | 4.13     | 187.97     | 188.16 | -.10     | 6.20        |
| 6.40        | .9116            | .9100           | .17              | 39.86           | 37.97           | 4.73             | 23.99         | 22.96 | 4.30     | 187.35     | 187.56 | -.11     | 6.40        |
| 6.60        | .9461            | .9443           | .19              | 40.43           | 38.43           | 4.95             | 24.13         | 23.05 | 4.47     | 186.72     | 186.95 | -.12     | 6.60        |
| 6.80        | .9812            | .9790           | .22              | 41.03           | 38.90           | 5.18             | 24.27         | 23.15 | 4.64     | 186.09     | 186.33 | -.13     | 6.80        |
| 7.00        | 1.0168           | 1.0143          | .24              | 41.66           | 39.40           | 5.42             | 24.42         | 23.24 | 4.81     | 185.44     | 185.70 | -.14     | 7.00        |
| 7.20        | 1.0530           | 1.0502          | .26              | 42.32           | 39.92           | 5.66             | 24.56         | 23.34 | 4.99     | 184.78     | 185.06 | -.15     | 7.20        |
| 7.40        | 1.0898           | 1.0866          | .29              | 43.01           | 40.46           | 5.93             | 24.71         | 23.44 | 5.17     | 184.11     | 184.41 | -.16     | 7.40        |
| 7.60        | 1.1273           | 1.1236          | .32              | 43.74           | 41.03           | 6.20             | 24.87         | 23.54 | 5.36     | 183.43     | 183.76 | -.18     | 7.60        |
| 7.6751      | 1.1415           | 1.1377          | .33              | 44.03           | 41.25           | 6.31             | 24.93         | 23.58 | 5.43     | 183.17     | 183.50 | -.18     | 7.6751      |
| 7.80        | 1.1654           |                 |                  | 44.51           |                 |                  | 25.03         |       |          | 182.74     |        |          | 7.80        |
| 8.00        | 1.2043           |                 |                  | 45.33           |                 |                  | 25.19         |       |          | 182.03     |        |          | 8.00        |
| 8.20        | 1.2440           |                 |                  | 46.19           |                 |                  | 25.36         |       |          | 181.31     |        |          | 8.20        |
| 8.40        | 1.2845           |                 |                  | 47.11           |                 |                  | 25.54         |       |          | 180.57     |        |          | 8.40        |
| 8.60        | 1.3259           |                 |                  | 48.08           |                 |                  | 25.72         |       |          | 179.82     |        |          | 8.60        |
| 8.80        | 1.3682           |                 |                  | 49.12           |                 |                  | 25.90         |       |          | 179.05     |        |          | 8.80        |
| 9.00        | 1.4115           |                 |                  | 50.24           |                 |                  | 26.09         |       |          | 178.26     |        |          | 9.00        |
| 9.20        | 1.4559           |                 |                  | 51.43           |                 |                  | 26.29         |       |          | 177.45     |        |          | 9.20        |
| 9.40        | 1.5014           |                 |                  | 52.72           |                 |                  | 26.50         |       |          | 176.62     |        |          | 9.40        |
| 9.60        | 1.5482           |                 |                  | 54.11           |                 |                  | 26.71         |       |          | 175.76     |        |          | 9.60        |
| 9.80        | 1.5963           |                 |                  | 55.63           |                 |                  | 26.93         |       |          | 174.89     |        |          | 9.80        |
| 10.00       | 1.6460           |                 |                  | 57.29           |                 |                  | 27.16         |       |          | 173.98     |        |          | 10.00       |

2-PHASE  
BOUNDARY

TABLE I.- Continued

TEMP=100. K B0=-.1593534E+00 B1=.3220555E-02 B2=-.1015297E-03 C0=.9953414E-03 C1=.1961725E-03 C2=-.1544784E-04

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 173.03       | 173.04 | -.00     | 2893.9     | 2894.3 | -.01     | 2065.7     | 2066.1 | -.02     | .20         |
| .40         | 167.20       | 167.21 | -.00     | 2894.0     | 2894.8 | -.03     | 2059.1     | 2059.9 | -.04     | .40         |
| .60         | 163.77       | 163.78 | -.01     | 2874.1     | 2875.2 | -.04     | 2052.4     | 2053.6 | -.06     | .60         |
| .80         | 161.31       | 161.32 | -.01     | 2864.0     | 2865.5 | -.05     | 2045.7     | 2047.3 | -.08     | .80         |
| 1.00        | 159.38       | 159.40 | -.01     | 2853.9     | 2855.8 | -.07     | 2038.9     | 2040.9 | -.10     | 1.00        |
| 1.20        | 157.80       | 157.82 | -.02     | 2843.6     | 2846.0 | -.08     | 2032.0     | 2034.5 | -.12     | 1.20        |
| 1.40        | 156.44       | 156.47 | -.02     | 2833.2     | 2836.1 | -.10     | 2025.0     | 2028.0 | -.14     | 1.40        |
| 1.60        | 155.26       | 155.30 | -.02     | 2822.8     | 2826.1 | -.12     | 2018.0     | 2021.4 | -.17     | 1.60        |
| 1.80        | 154.21       | 154.25 | -.03     | 2812.2     | 2816.0 | -.13     | 2010.9     | 2014.8 | -.19     | 1.80        |
| 2.00        | 153.26       | 153.31 | -.03     | 2801.6     | 2805.6 | -.15     | 2003.8     | 2008.1 | -.22     | 2.00        |
| 2.20        | 152.40       | 152.44 | -.03     | 2790.8     | 2795.6 | -.17     | 1996.5     | 2001.3 | -.24     | 2.20        |
| 2.40        | 151.60       | 151.65 | -.04     | 2779.9     | 2785.3 | -.19     | 1989.2     | 1994.5 | -.27     | 2.40        |
| 2.60        | 150.86       | 150.92 | -.04     | 2769.0     | 2774.8 | -.21     | 1981.8     | 1987.7 | -.30     | 2.60        |
| 2.80        | 150.16       | 150.23 | -.04     | 2757.8     | 2764.3 | -.23     | 1974.3     | 1980.7 | -.33     | 2.80        |
| 3.00        | 149.51       | 149.58 | -.05     | 2746.6     | 2753.6 | -.26     | 1966.7     | 1973.7 | -.36     | 3.00        |
| 3.20        | 148.90       | 148.97 | -.05     | 2735.3     | 2742.9 | -.28     | 1959.0     | 1966.6 | -.39     | 3.20        |
| 3.40        | 148.31       | 148.39 | -.06     | 2723.8     | 2732.0 | -.30     | 1951.3     | 1959.4 | -.42     | 3.40        |
| 3.60        | 147.75       | 147.84 | -.06     | 2712.2     | 2721.1 | -.33     | 1943.4     | 1952.2 | -.45     | 3.60        |
| 3.80        | 147.22       | 147.32 | -.07     | 2700.4     | 2710.0 | -.35     | 1935.4     | 1944.8 | -.49     | 3.80        |
| 4.00        | 146.71       | 146.82 | -.07     | 2688.5     | 2698.8 | -.38     | 1927.4     | 1937.4 | -.52     | 4.00        |
| 4.20        | 146.22       | 146.33 | -.08     | 2676.5     | 2687.5 | -.41     | 1919.2     | 1929.9 | -.56     | 4.20        |
| 4.40        | 145.75       | 145.87 | -.08     | 2664.3     | 2676.0 | -.44     | 1911.0     | 1922.3 | -.60     | 4.40        |
| 4.60        | 145.29       | 145.42 | -.09     | 2651.9     | 2664.4 | -.47     | 1902.6     | 1914.7 | -.64     | 4.60        |
| 4.80        | 144.85       | 144.98 | -.09     | 2639.4     | 2652.7 | -.50     | 1894.1     | 1906.9 | -.68     | 4.80        |
| 5.00        | 144.42       | 144.56 | -.10     | 2626.7     | 2640.9 | -.54     | 1885.5     | 1899.0 | -.72     | 5.00        |
| 5.20        | 144.00       | 144.15 | -.10     | 2613.9     | 2628.9 | -.57     | 1876.7     | 1891.1 | -.76     | 5.20        |
| 5.40        | 143.59       | 143.75 | -.11     | 2600.9     | 2616.7 | -.61     | 1867.9     | 1883.0 | -.81     | 5.40        |
| 5.60        | 143.19       | 143.36 | -.12     | 2587.6     | 2604.4 | -.65     | 1858.9     | 1874.8 | -.86     | 5.60        |
| 5.80        | 142.80       | 142.98 | -.12     | 2574.2     | 2591.9 | -.69     | 1849.7     | 1866.5 | -.91     | 5.80        |
| 6.00        | 142.42       | 142.61 | -.13     | 2560.6     | 2579.3 | -.73     | 1840.4     | 1858.1 | -.96     | 6.00        |
| 6.20        | 142.05       | 142.24 | -.14     | 2546.8     | 2566.5 | -.77     | 1831.0     | 1849.6 | 1.02     | 6.20        |
| 6.40        | 141.68       | 141.89 | -.14     | 2532.7     | 2553.5 | -.82     | 1821.4     | 1841.0 | 1.07     | 6.40        |
| 6.60        | 141.32       | 141.54 | -.15     | 2518.5     | 2540.4 | -.87     | 1811.6     | 1832.2 | 1.13     | 6.60        |
| 6.80        | 140.97       | 141.19 | -.16     | 2504.0     | 2527.0 | -.92     | 1801.7     | 1823.3 | 1.20     | 6.80        |
| 7.00        | 140.61       | 140.85 | -.17     | 2489.2     | 2513.5 | -.98     | 1791.6     | 1814.2 | 1.26     | 7.00        |
| 7.20        | 140.27       | 140.52 | -.18     | 2474.1     | 2499.7 | -1.03    | 1781.3     | 1805.0 | 1.33     | 7.20        |
| 7.40        | 139.93       | 140.19 | -.19     | 2458.8     | 2485.7 | -1.09    | 1770.8     | 1795.6 | 1.40     | 7.40        |
| 7.60        | 139.59       | 139.86 | -.20     | 2443.2     | 2471.5 | -1.16    | 1760.1     | 1786.1 | 1.48     | 7.60        |
| 7.6751      | 139.46       | 139.74 | -.20     | 2437.3     | 2466.1 | -1.18    | 1756.0     | 1782.5 | -1.51    | 7.6751      |
| 7.80        | 139.25       |        |          | 2427.3     |        |          | 1749.2     |        |          | 7.80        |
| 8.00        | 138.92       |        |          | 2411.1     |        |          | 1738.0     |        |          | 8.00        |
| 8.20        | 138.59       |        |          | 2394.5     |        |          | 1726.6     |        |          | 8.20        |
| 8.40        | 138.26       |        |          | 2377.5     |        |          | 1714.9     |        |          | 8.40        |
| 8.60        | 137.93       |        |          | 2360.1     |        |          | 1702.9     |        |          | 8.60        |
| 8.80        | 137.60       |        |          | 2342.4     |        |          | 1690.7     |        |          | 8.80        |
| 9.00        | 137.27       |        |          | 2324.2     |        |          | 1678.1     |        |          | 9.00        |
| 9.20        | 136.94       |        |          | 2305.5     |        |          | 1665.2     |        |          | 9.20        |
| 9.40        | 136.61       |        |          | 2286.3     |        |          | 1651.9     |        |          | 9.40        |
| 9.60        | 136.28       |        |          | 2266.5     |        |          | 1638.2     |        |          | 9.60        |
| 9.80        | 135.95       |        |          | 2246.1     |        |          | 1624.1     |        |          | 9.80        |
| 10.00       | 135.62       |        |          | 2225.1     |        |          | 1609.5     |        |          | 10.00       |

2-PHASE  
BOUNDARY

TABLE I.- Continued

TEMP=110. K B0=-.1315468E+00 B1=.2400019E-02 B2=-.6578317E-04 C0=.2324862E-02 C1=.8171079E-04 C2=-.8207662E-05

| PRES<br>ATH | DENS<br>MOL/L | DENS   | DENS   | DIF<br>% | CP<br>J/MOL.K | CP    | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | CV    | DIF<br>% | VEL<br>M/S | VEL    | VEL    | DIF<br>% | PRES<br>ATH |
|-------------|---------------|--------|--------|----------|---------------|-------|-------|----------|---------------|-------|-------|----------|------------|--------|--------|----------|-------------|
| .20         | .0222         | .0222  | .0222  | -.01     | 29.24         | 29.23 | 29.24 | .06      | 20.83         | 20.82 | 20.83 | .07      | 213.46     | 213.44 | 213.46 | .01      | .20         |
| .40         | .0446         | .0446  | .0446  | -.01     | 29.39         | 29.36 | 29.39 | .12      | 20.88         | 20.85 | 20.88 | .13      | 213.12     | 213.10 | 213.12 | .01      | .40         |
| .60         | .0671         | .0671  | .0671  | -.02     | 29.55         | 29.50 | 29.55 | .18      | 20.93         | 20.89 | 20.93 | .20      | 212.77     | 212.76 | 212.77 | .01      | .60         |
| .80         | .0897         | .0897  | .0897  | -.02     | 29.70         | 29.63 | 29.70 | .24      | 20.98         | 20.93 | 20.98 | .27      | 212.43     | 212.41 | 212.43 | .01      | .80         |
| 1.00        | .1124         | .1124  | .1124  | -.02     | 29.86         | 29.77 | 29.86 | .30      | 21.04         | 20.97 | 21.04 | .34      | 212.08     | 212.06 | 212.08 | .01      | 1.00        |
| 1.20        | .1354         | .1354  | .1354  | -.03     | 30.03         | 29.92 | 30.03 | .36      | 21.09         | 21.00 | 21.09 | .41      | 211.73     | 211.71 | 211.73 | .01      | 1.20        |
| 1.40        | .1584         | .1584  | .1584  | -.03     | 30.19         | 30.06 | 30.19 | .43      | 21.14         | 21.04 | 21.14 | .48      | 211.38     | 211.36 | 211.38 | .01      | 1.40        |
| 1.60        | .1816         | .1816  | .1816  | -.04     | 30.36         | 30.21 | 30.36 | .49      | 21.20         | 21.08 | 21.20 | .55      | 211.03     | 211.01 | 211.03 | .01      | 1.60        |
| 1.80        | .2049         | .2049  | .2049  | -.04     | 30.53         | 30.36 | 30.53 | .56      | 21.25         | 21.12 | 21.25 | .62      | 210.68     | 210.66 | 210.68 | .01      | 1.80        |
| 2.00        | .2284         | .2284  | .2284  | -.05     | 30.71         | 30.51 | 30.71 | .63      | 21.31         | 21.16 | 21.31 | .70      | 210.32     | 210.30 | 210.32 | .01      | 2.00        |
| 2.20        | .2521         | .2521  | .2521  | -.05     | 30.88         | 30.67 | 30.88 | .70      | 21.37         | 21.20 | 21.37 | .77      | 209.96     | 209.94 | 209.96 | .01      | 2.20        |
| 2.40        | .2759         | .2759  | .2759  | -.05     | 31.06         | 30.83 | 31.06 | .77      | 21.42         | 21.24 | 21.42 | .85      | 209.60     | 209.58 | 209.60 | .01      | 2.40        |
| 2.60        | .2998         | .2998  | .2998  | -.06     | 31.25         | 30.99 | 31.25 | .84      | 21.48         | 21.28 | 21.48 | .93      | 209.24     | 209.22 | 209.24 | .01      | 2.60        |
| 2.80        | .3239         | .3239  | .3239  | -.06     | 31.44         | 31.15 | 31.44 | .91      | 21.54         | 21.32 | 21.54 | 1.01     | 208.87     | 208.85 | 208.87 | .01      | 2.80        |
| 3.00        | .3482         | .3482  | .3482  | -.06     | 31.63         | 31.32 | 31.63 | .99      | 21.60         | 21.36 | 21.60 | 1.09     | 208.50     | 208.49 | 208.50 | .01      | 3.00        |
| 3.20        | .3727         | .3727  | .3727  | -.07     | 31.83         | 31.49 | 31.83 | 1.06     | 21.66         | 21.41 | 21.66 | 1.17     | 208.13     | 208.12 | 208.13 | .01      | 3.20        |
| 3.40        | .3973         | .3973  | .3973  | -.07     | 32.03         | 31.67 | 32.03 | 1.14     | 21.72         | 21.45 | 21.72 | 1.25     | 207.76     | 207.75 | 207.76 | .01      | 3.40        |
| 3.60        | .4221         | .4221  | .4221  | -.07     | 32.24         | 31.84 | 32.24 | 1.22     | 21.78         | 21.49 | 21.78 | 1.33     | 207.39     | 207.37 | 207.39 | .01      | 3.60        |
| 3.80        | .4471         | .4471  | .4471  | -.07     | 32.45         | 32.03 | 32.45 | 1.29     | 21.85         | 21.54 | 21.85 | 1.42     | 207.01     | 207.00 | 207.01 | .01      | 3.80        |
| 4.00        | .4722         | .4722  | .4722  | -.08     | 32.66         | 32.21 | 32.66 | 1.37     | 21.91         | 21.58 | 21.91 | 1.50     | 206.63     | 206.62 | 206.63 | .01      | 4.00        |
| 4.20        | .4976         | .4976  | .4976  | -.08     | 32.88         | 32.40 | 32.88 | 1.46     | 21.97         | 21.63 | 21.97 | 1.59     | 206.25     | 206.24 | 206.25 | .01      | 4.20        |
| 4.40        | .5231         | .5231  | .5231  | -.08     | 33.10         | 32.59 | 33.10 | 1.54     | 22.04         | 21.67 | 22.04 | 1.67     | 205.86     | 205.86 | 205.86 | .00      | 4.40        |
| 4.60        | .5489         | .5489  | .5489  | -.09     | 33.33         | 32.79 | 33.33 | 1.62     | 22.11         | 21.72 | 22.11 | 1.76     | 205.48     | 205.47 | 205.48 | .00      | 4.60        |
| 4.80        | .5748         | .5748  | .5748  | -.09     | 33.57         | 32.99 | 33.57 | 1.71     | 22.17         | 21.76 | 22.17 | 1.85     | 205.09     | 205.08 | 205.09 | .00      | 4.80        |
| 5.00        | .6009         | .6015  | .6009  | -.09     | 33.81         | 33.20 | 33.81 | 1.80     | 22.24         | 21.81 | 22.24 | 1.94     | 204.69     | 204.69 | 204.69 | .00      | 5.00        |
| 5.20        | .6273         | .6279  | .6273  | -.09     | 34.05         | 33.41 | 34.05 | 1.89     | 22.31         | 21.86 | 22.31 | 2.04     | 204.30     | 204.30 | 204.30 | .00      | 5.20        |
| 5.40        | .6538         | .6545  | .6538  | -.09     | 34.30         | 33.62 | 34.30 | 1.98     | 22.38         | 21.91 | 22.38 | 2.13     | 203.90     | 203.90 | 203.90 | .00      | 5.40        |
| 5.60        | .6806         | .6813  | .6806  | -.10     | 34.56         | 33.84 | 34.56 | 2.07     | 22.46         | 21.96 | 22.46 | 2.22     | 203.50     | 203.50 | 203.50 | .00      | 5.60        |
| 5.80        | .7076         | .7083  | .7076  | -.10     | 34.82         | 34.07 | 34.82 | 2.17     | 22.53         | 22.01 | 22.53 | 2.32     | 203.09     | 203.10 | 203.09 | .00      | 5.80        |
| 6.00        | .7348         | .7356  | .7348  | -.10     | 35.09         | 34.30 | 35.09 | 2.26     | 22.60         | 22.06 | 22.60 | 2.42     | 202.69     | 202.70 | 202.69 | .00      | 6.00        |
| 6.20        | .7623         | .7631  | .7623  | -.10     | 35.37         | 34.54 | 35.37 | 2.36     | 22.68         | 22.11 | 22.68 | 2.52     | 202.28     | 202.29 | 202.28 | .00      | 6.20        |
| 6.40        | .7900         | .7908  | .7900  | -.10     | 35.65         | 34.78 | 35.65 | 2.46     | 22.75         | 22.16 | 22.75 | 2.62     | 201.86     | 201.88 | 201.86 | .00      | 6.40        |
| 6.60        | .8179         | .8188  | .8179  | -.10     | 35.95         | 35.02 | 35.95 | 2.56     | 22.83         | 22.21 | 22.83 | 2.72     | 201.44     | 201.47 | 201.44 | .00      | 6.60        |
| 6.80        | .8461         | .8470  | .8461  | -.10     | 36.24         | 35.28 | 36.24 | 2.67     | 22.91         | 22.26 | 22.91 | 2.82     | 201.02     | 201.05 | 201.02 | .00      | 6.80        |
| 7.00        | .8746         | .8755  | .8746  | -.10     | 36.55         | 35.54 | 36.55 | 2.77     | 22.99         | 22.32 | 22.99 | 2.93     | 200.60     | 200.63 | 200.60 | .00      | 7.00        |
| 7.20        | .9033         | .9042  | .9033  | -.10     | 36.87         | 35.80 | 36.87 | 2.88     | 23.07         | 22.37 | 23.07 | 3.03     | 200.17     | 200.21 | 200.17 | .00      | 7.20        |
| 7.40        | .9323         | .9333  | .9323  | -.10     | 37.19         | 36.08 | 37.19 | 2.99     | 23.15         | 22.43 | 23.15 | 3.14     | 199.74     | 199.78 | 199.74 | .00      | 7.40        |
| 7.60        | .9616         | .9626  | .9616  | -.10     | 37.52         | 36.36 | 37.52 | 3.10     | 23.24         | 22.48 | 23.24 | 3.25     | 199.31     | 199.35 | 199.31 | .00      | 7.60        |
| 7.80        | .9911         | .9921  | .9911  | -.10     | 37.87         | 36.65 | 37.87 | 3.22     | 23.32         | 22.54 | 23.32 | 3.36     | 198.87     | 198.92 | 198.87 | .00      | 7.80        |
| 8.00        | 1.0210        | 1.0220 | 1.0210 | -.10     | 38.22         | 36.94 | 38.22 | 3.33     | 23.41         | 22.60 | 23.41 | 3.47     | 198.42     | 198.48 | 198.42 | .00      | 8.00        |
| 8.20        | 1.0511        | 1.0522 | 1.0511 | -.10     | 38.58         | 37.25 | 38.58 | 3.45     | 23.50         | 22.65 | 23.50 | 3.59     | 197.98     | 198.04 | 197.98 | .00      | 8.20        |
| 8.40        | 1.0816        | 1.0827 | 1.0816 | -.10     | 38.96         | 37.56 | 38.96 | 3.58     | 23.59         | 22.71 | 23.59 | 3.70     | 197.52     | 197.60 | 197.52 | .00      | 8.40        |
| 8.60        | 1.1123        | 1.1135 | 1.1123 | -.10     | 39.34         | 37.88 | 39.34 | 3.70     | 23.68         | 22.77 | 23.68 | 3.82     | 197.07     | 197.15 | 197.07 | .00      | 8.60        |
| 8.80        | 1.1435        | 1.1446 | 1.1435 | -.10     | 39.74         | 38.22 | 39.74 | 3.83     | 23.77         | 22.83 | 23.77 | 3.94     | 196.61     | 196.70 | 196.61 | .00      | 8.80        |
| 9.00        | 1.1749        | 1.1760 | 1.1749 | -.10     | 40.15         | 38.56 | 40.15 | 3.96     | 23.87         | 22.89 | 23.87 | 4.06     | 196.14     | 196.24 | 196.14 | .00      | 9.00        |
| 9.20        | 1.2067        | 1.2078 | 1.2067 | -.09     | 40.57         | 38.91 | 40.57 | 4.10     | 23.96         | 22.96 | 23.96 | 4.19     | 195.67     | 195.78 | 195.67 | .00      | 9.20        |
| 9.40        | 1.2389        | 1.2400 | 1.2389 | -.09     | 41.01         | 39.25 | 41.01 | 4.20     | 24.06         | 23.02 | 24.06 | 4.31     | 195.20     | 195.31 | 195.20 | .00      | 9.40        |
| 9.60        | 1.2714        | 1.2725 | 1.2714 | -.09     | 41.46         | 39.65 | 41.46 | 4.38     | 24.16         | 23.09 | 24.16 | 4.44     | 194.72     | 194.84 | 194.72 | .00      | 9.60        |
| 9.80        | 1.3044        | 1.3054 | 1.3044 | -.08     | 41.93         | 40.03 | 41.93 | 4.52     | 24.26         | 23.15 | 24.26 | 4.57     | 194.24     | 194.37 | 194.24 | .00      | 9.80        |
| 10.00       | 1.3377        | 1.3387 | 1.3377 | -.08     | 42.42         | 40.43 | 42.42 | 4.67     | 24.37         | 23.22 | 24.37 | 4.70     | 193.75     | 193.89 | 193.75 | .00      | 10.00       |

TABLE I.- Continued

TEMP=110. K B0=-.1315468E+00 B1=.2400019E-02 B2=-.6578317E-04 C0=.2324862E-02 C1=.8171079E-04 C2=-.8207662E-05

| PRES<br>ATH | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATH |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 175.82       | 175.82 | -00      | 3186.7     | 3186.8 | -00      | 2274.7     | 2274.9 | -01      | .20         |
| .40         | 170.01       | 170.01 | -00      | 3178.6     | 3178.8 | -01      | 2269.3     | 2269.7 | -02      | .40         |
| .60         | 166.59       | 166.59 | -00      | 3170.8     | 3170.8 | -01      | 2263.9     | 2264.5 | -02      | .60         |
| .80         | 164.15       | 164.15 | -00      | 3162.2     | 3162.8 | -02      | 2258.4     | 2259.2 | -03      | .80         |
| 1.00        | 162.24       | 162.25 | -01      | 3154.0     | 3154.7 | -02      | 2252.9     | 2253.8 | -04      | 1.00        |
| 1.20        | 160.68       | 160.69 | -01      | 3145.7     | 3146.6 | -03      | 2247.4     | 2248.5 | -04      | 1.20        |
| 1.40        | 159.34       | 159.35 | -01      | 3137.3     | 3138.4 | -03      | 2241.8     | 2243.1 | -06      | 1.40        |
| 1.60        | 158.18       | 158.19 | -01      | 3128.9     | 3130.2 | -04      | 2236.1     | 2237.7 | -07      | 1.60        |
| 1.80        | 157.15       | 157.17 | -01      | 3120.5     | 3121.9 | -05      | 2230.5     | 2232.2 | -08      | 1.80        |
| 2.00        | 156.22       | 156.24 | -01      | 3112.0     | 3113.6 | -05      | 2224.8     | 2226.7 | -09      | 2.00        |
| 2.20        | 155.38       | 155.40 | -01      | 3103.4     | 3105.2 | -06      | 2219.0     | 2221.2 | -10      | 2.20        |
| 2.40        | 154.60       | 154.62 | -01      | 3094.7     | 3096.7 | -06      | 2213.2     | 2215.7 | -11      | 2.40        |
| 2.60        | 153.88       | 153.90 | -02      | 3086.1     | 3088.3 | -07      | 2207.4     | 2210.1 | -12      | 2.60        |
| 2.80        | 153.21       | 153.24 | -02      | 3077.3     | 3079.7 | -08      | 2201.5     | 2204.4 | -13      | 2.80        |
| 3.00        | 152.58       | 152.61 | -02      | 3068.5     | 3071.1 | -09      | 2195.5     | 2198.7 | -15      | 3.00        |
| 3.20        | 151.99       | 152.02 | -02      | 3059.6     | 3062.5 | -09      | 2189.6     | 2193.0 | -16      | 3.20        |
| 3.40        | 151.43       | 151.46 | -02      | 3050.7     | 3053.8 | -10      | 2183.5     | 2187.3 | -17      | 3.40        |
| 3.60        | 150.90       | 150.93 | -02      | 3041.6     | 3045.0 | -11      | 2177.5     | 2181.5 | -18      | 3.60        |
| 3.80        | 150.39       | 150.43 | -03      | 3032.6     | 3036.2 | -12      | 2171.3     | 2175.6 | -20      | 3.80        |
| 4.00        | 149.91       | 149.95 | -03      | 3023.4     | 3027.3 | -13      | 2165.2     | 2169.7 | -21      | 4.00        |
| 4.20        | 149.44       | 149.49 | -03      | 3014.2     | 3018.3 | -14      | 2159.0     | 2163.8 | -22      | 4.20        |
| 4.40        | 149.00       | 149.04 | -03      | 3004.9     | 3009.3 | -15      | 2152.7     | 2157.8 | -24      | 4.40        |
| 4.60        | 148.57       | 148.62 | -03      | 2995.5     | 3000.2 | -16      | 2146.4     | 2151.8 | -25      | 4.60        |
| 4.80        | 148.15       | 148.21 | -04      | 2986.1     | 2991.1 | -17      | 2140.0     | 2145.7 | -27      | 4.80        |
| 5.00        | 147.75       | 147.81 | -04      | 2976.6     | 2981.9 | -18      | 2133.5     | 2139.6 | -28      | 5.00        |
| 5.20        | 147.37       | 147.43 | -04      | 2967.0     | 2972.6 | -19      | 2127.0     | 2133.4 | -30      | 5.20        |
| 5.40        | 146.99       | 147.05 | -04      | 2957.3     | 2963.3 | -20      | 2120.5     | 2127.2 | -32      | 5.40        |
| 5.60        | 146.63       | 146.69 | -04      | 2947.6     | 2953.8 | -21      | 2113.9     | 2121.0 | -34      | 5.60        |
| 5.80        | 146.27       | 146.34 | -05      | 2937.7     | 2944.3 | -22      | 2107.2     | 2114.6 | -35      | 5.80        |
| 6.00        | 145.92       | 146.00 | -05      | 2927.8     | 2934.8 | -24      | 2100.5     | 2108.3 | -37      | 6.00        |
| 6.20        | 145.59       | 145.66 | -05      | 2917.8     | 2925.1 | -25      | 2093.7     | 2101.8 | -39      | 6.20        |
| 6.40        | 145.26       | 145.34 | -06      | 2907.7     | 2915.4 | -27      | 2086.8     | 2095.4 | -41      | 6.40        |
| 6.60        | 144.94       | 145.02 | -06      | 2897.5     | 2905.6 | -28      | 2079.9     | 2088.8 | -43      | 6.60        |
| 6.80        | 144.62       | 144.71 | -06      | 2887.2     | 2895.7 | -29      | 2072.9     | 2082.2 | -45      | 6.80        |
| 7.00        | 144.31       | 144.40 | -06      | 2876.8     | 2885.7 | -31      | 2065.8     | 2075.6 | -47      | 7.00        |
| 7.20        | 144.01       | 144.11 | -07      | 2866.3     | 2875.6 | -33      | 2058.7     | 2068.8 | -49      | 7.20        |
| 7.40        | 143.71       | 143.81 | -07      | 2855.7     | 2865.5 | -34      | 2051.4     | 2062.0 | -52      | 7.40        |
| 7.60        | 143.42       | 143.53 | -07      | 2845.0     | 2855.2 | -36      | 2044.1     | 2055.2 | -54      | 7.60        |
| 7.80        | 143.13       | 143.24 | -08      | 2834.2     | 2844.9 | -38      | 2036.8     | 2048.3 | -56      | 7.80        |
| 8.00        | 142.85       | 142.96 | -08      | 2823.3     | 2834.4 | -39      | 2029.3     | 2041.3 | -59      | 8.00        |
| 8.20        | 142.57       | 142.69 | -08      | 2812.3     | 2823.9 | -41      | 2021.8     | 2034.2 | -62      | 8.20        |
| 8.40        | 142.30       | 142.42 | -09      | 2801.1     | 2813.3 | -43      | 2014.2     | 2027.1 | -64      | 8.40        |
| 8.60        | 142.03       | 142.16 | -09      | 2789.8     | 2802.5 | -45      | 2006.5     | 2019.9 | -67      | 8.60        |
| 8.80        | 141.76       | 141.89 | -09      | 2778.4     | 2791.6 | -48      | 1998.7     | 2012.6 | -70      | 8.80        |
| 9.00        | 141.50       | 141.64 | -10      | 2766.9     | 2780.7 | -50      | 1990.8     | 2005.3 | -73      | 9.00        |
| 9.20        | 141.24       | 141.38 | -10      | 2755.3     | 2769.6 | -52      | 1982.8     | 1997.8 | -76      | 9.20        |
| 9.40        | 140.98       | 141.13 | -11      | 2743.5     | 2758.4 | -54      | 1974.7     | 1990.3 | -79      | 9.40        |
| 9.60        | 140.73       | 140.88 | -11      | 2731.5     | 2747.1 | -57      | 1966.5     | 1982.7 | -82      | 9.60        |
| 9.80        | 140.47       | 140.63 | -11      | 2719.4     | 2735.6 | -60      | 1958.2     | 1975.0 | -85      | 9.80        |
| 10.00       | 140.22       | 140.39 | -12      | 2707.2     | 2724.1 | -62      | 1949.8     | 1967.2 | -89      | 10.00       |

TABLE I.- Continued

TEMP=130. K 80=-.9384490E-01 B1=.1482973E-02 82=-.3134095E-04 C0=.2841572E-02 C1=-.1043616E-04 C2=-.2180309E-05

| PRES<br>ATM | DENS<br>MOL/L | DENS   | DIF<br>% | CP<br>J/MOL.K | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATM |
|-------------|---------------|--------|----------|---------------|-------|----------|---------------|-------|----------|------------|--------|----------|-------------|
| .20         | .0188         | .0188  | -.01     | 29.18         | 29.17 | .01      | 20.80         | 20.80 | .02      | 232.22     | 232.20 | .01      | .20         |
| .40         | .0376         | .0376  | -.01     | 29.26         | 29.25 | .03      | 20.83         | 20.82 | .04      | 232.01     | 231.99 | .01      | .40         |
| .60         | .0565         | .0566  | -.02     | 29.35         | 29.34 | .04      | 20.85         | 20.84 | .06      | 231.81     | 231.78 | .01      | .60         |
| .80         | .0755         | .0755  | -.02     | 29.43         | 29.42 | .06      | 20.87         | 20.86 | .08      | 231.60     | 231.56 | .02      | .80         |
| 1.00        | .0946         | .0946  | -.03     | 29.52         | 29.50 | .07      | 20.90         | 20.88 | .10      | 231.39     | 231.35 | .02      | 1.00        |
| 1.20        | .1137         | .1137  | -.03     | 29.61         | 29.58 | .08      | 20.92         | 20.90 | .12      | 231.19     | 231.14 | .02      | 1.20        |
| 1.40        | .1329         | .1329  | -.04     | 29.70         | 29.67 | .10      | 20.94         | 20.91 | .14      | 230.98     | 230.93 | .02      | 1.40        |
| 1.60        | .1522         | .1522  | -.04     | 29.78         | 29.75 | .13      | 20.97         | 20.93 | .16      | 230.77     | 230.71 | .02      | 1.60        |
| 1.80        | .1715         | .1716  | -.05     | 29.88         | 29.84 | .12      | 20.99         | 20.95 | .18      | 230.56     | 230.50 | .02      | 1.80        |
| 2.00        | .1909         | .1910  | -.05     | 29.97         | 29.92 | .15      | 21.02         | 20.97 | .20      | 230.35     | 230.28 | .03      | 2.00        |
| 2.20        | .2104         | .2105  | -.06     | 30.06         | 30.01 | .16      | 21.04         | 20.99 | .22      | 230.14     | 230.07 | .03      | 2.20        |
| 2.40        | .2299         | .2301  | -.06     | 30.15         | 30.10 | .18      | 21.07         | 21.01 | .25      | 229.93     | 229.86 | .03      | 2.40        |
| 2.60        | .2495         | .2497  | -.07     | 30.25         | 30.19 | .20      | 21.09         | 21.03 | .27      | 229.72     | 229.64 | .03      | 2.60        |
| 2.80        | .2692         | .2694  | -.07     | 30.34         | 30.28 | .21      | 21.12         | 21.05 | .29      | 229.51     | 229.42 | .04      | 2.80        |
| 3.00        | .2890         | .2892  | -.08     | 30.44         | 30.37 | .23      | 21.14         | 21.07 | .32      | 229.30     | 229.21 | .04      | 3.00        |
| 3.20        | .3089         | .3091  | -.08     | 30.54         | 30.46 | .25      | 21.17         | 21.09 | .34      | 229.08     | 228.99 | .04      | 3.20        |
| 3.40        | .3288         | .3291  | -.09     | 30.63         | 30.55 | .27      | 21.19         | 21.12 | .37      | 228.87     | 228.78 | .04      | 3.40        |
| 3.60        | .3488         | .3491  | -.09     | 30.73         | 30.65 | .28      | 21.22         | 21.14 | .39      | 228.66     | 228.56 | .04      | 3.60        |
| 3.80        | .3689         | .3692  | -.10     | 30.83         | 30.74 | .30      | 21.25         | 21.16 | .42      | 228.44     | 228.34 | .04      | 3.80        |
| 4.00        | .3890         | .3894  | -.10     | 30.94         | 30.84 | .32      | 21.27         | 21.18 | .45      | 228.23     | 228.12 | .05      | 4.00        |
| 4.20        | .4092         | .4097  | -.11     | 31.04         | 30.93 | .34      | 21.30         | 21.20 | .47      | 228.01     | 227.90 | .05      | 4.20        |
| 4.40        | .4296         | .4301  | -.12     | 31.14         | 31.03 | .36      | 21.33         | 21.22 | .50      | 227.79     | 227.69 | .05      | 4.40        |
| 4.60        | .4500         | .4505  | -.12     | 31.25         | 31.13 | .38      | 21.35         | 21.24 | .53      | 227.58     | 227.47 | .05      | 4.60        |
| 4.80        | .4704         | .4710  | -.13     | 31.36         | 31.23 | .40      | 21.38         | 21.26 | .56      | 227.36     | 227.25 | .05      | 4.80        |
| 5.00        | .4910         | .4917  | -.13     | 31.46         | 31.33 | .42      | 21.41         | 21.28 | .59      | 227.14     | 227.03 | .05      | 5.00        |
| 5.20        | .5117         | .5124  | -.14     | 31.57         | 31.43 | .44      | 21.44         | 21.31 | .62      | 226.92     | 226.81 | .05      | 5.20        |
| 5.40        | .5324         | .5331  | -.14     | 31.68         | 31.54 | .46      | 21.47         | 21.33 | .65      | 226.71     | 226.59 | .05      | 5.40        |
| 5.60        | .5532         | .5540  | -.15     | 31.79         | 31.64 | .48      | 21.49         | 21.35 | .68      | 226.49     | 226.36 | .05      | 5.60        |
| 5.80        | .5741         | .5750  | -.15     | 31.91         | 31.75 | .50      | 21.52         | 21.37 | .71      | 226.27     | 226.14 | .05      | 5.80        |
| 6.00        | .5951         | .5960  | -.16     | 32.02         | 31.85 | .52      | 21.55         | 21.39 | .74      | 226.04     | 225.92 | .05      | 6.00        |
| 6.20        | .6162         | .6172  | -.16     | 32.14         | 31.96 | .55      | 21.58         | 21.42 | .77      | 225.82     | 225.70 | .06      | 6.20        |
| 6.40        | .6373         | .6384  | -.17     | 32.25         | 32.07 | .57      | 21.61         | 21.44 | .80      | 225.60     | 225.47 | .06      | 6.40        |
| 6.60        | .6586         | .6598  | -.18     | 32.37         | 32.18 | .59      | 21.64         | 21.46 | .84      | 225.38     | 225.25 | .06      | 6.60        |
| 6.80        | .6800         | .6812  | -.18     | 32.49         | 32.29 | .61      | 21.67         | 21.48 | .87      | 225.15     | 225.03 | .06      | 6.80        |
| 7.00        | .7014         | .7027  | -.19     | 32.61         | 32.41 | .64      | 21.70         | 21.51 | .90      | 224.93     | 224.80 | .06      | 7.00        |
| 7.20        | .7229         | .7243  | -.19     | 32.74         | 32.52 | .66      | 21.73         | 21.53 | .94      | 224.71     | 224.58 | .06      | 7.20        |
| 7.40        | .7446         | .7460  | -.20     | 32.86         | 32.64 | .68      | 21.76         | 21.55 | .97      | 224.48     | 224.35 | .06      | 7.40        |
| 7.60        | .7663         | .7679  | -.20     | 32.99         | 32.76 | .71      | 21.80         | 21.58 | 1.01     | 224.25     | 224.13 | .06      | 7.60        |
| 7.80        | .7881         | .7898  | -.21     | 33.12         | 32.87 | .73      | 21.83         | 21.60 | 1.05     | 224.03     | 223.90 | .06      | 7.80        |
| 8.00        | .8100         | .8118  | -.22     | 33.24         | 32.99 | .76      | 21.86         | 21.62 | 1.08     | 223.80     | 223.67 | .06      | 8.00        |
| 8.20        | .8320         | .8339  | -.22     | 33.38         | 33.12 | .78      | 21.89         | 21.65 | 1.12     | 223.57     | 223.45 | .06      | 8.20        |
| 8.40        | .8541         | .8561  | -.23     | 33.51         | 33.24 | .80      | 21.92         | 21.67 | 1.16     | 223.34     | 223.22 | .06      | 8.40        |
| 8.60        | .8764         | .8784  | -.23     | 33.64         | 33.36 | .83      | 21.96         | 21.70 | 1.20     | 223.11     | 222.99 | .05      | 8.60        |
| 8.80        | .8987         | .9008  | -.24     | 33.78         | 33.49 | .85      | 21.99         | 21.72 | 1.23     | 222.88     | 222.76 | .05      | 8.80        |
| 9.00        | .9211         | .9234  | -.25     | 33.92         | 33.62 | .88      | 22.02         | 21.74 | 1.27     | 222.65     | 222.53 | .05      | 9.00        |
| 9.20        | .9436         | .9460  | -.25     | 34.06         | 33.75 | .91      | 22.06         | 21.77 | 1.31     | 222.42     | 222.30 | .05      | 9.20        |
| 9.40        | .9663         | .9688  | -.26     | 34.20         | 33.88 | .93      | 22.09         | 21.79 | 1.35     | 222.19     | 222.07 | .05      | 9.40        |
| 9.60        | .9890         | .9916  | -.27     | 34.34         | 34.01 | .96      | 22.13         | 21.82 | 1.40     | 221.95     | 221.84 | .05      | 9.60        |
| 9.80        | 1.0118        | 1.0146 | -.27     | 34.48         | 34.15 | .98      | 22.16         | 21.84 | 1.44     | 221.72     | 221.61 | .05      | 9.80        |
| 10.00       | 1.0348        | 1.0377 | -.28     | 34.63         | 34.28 | 1.01     | 22.20         | 21.87 | 1.48     | 221.49     | 221.38 | .05      | 10.00       |

TABLE I.- Continued

TEMP=130. K 80=-.9384490E-01 BI=-.1482973E-02 B2=-.3134095E-04 C0=.28441572E-02 C1=-.1043616E-04 C2=-.2180309E-05

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 180.70       | 180.70 | .00      | 3770.8     | 3770.7 | .00      | 2691.8     | 2691.8 | -.00     | .20         |
| .40         | 174.91       | 174.91 | .00      | 3765.0     | 3764.8 | .00      | 2687.9     | 2687.9 | -.00     | .40         |
| .60         | 171.51       | 171.51 | .00      | 3759.1     | 3758.9 | .00      | 2684.0     | 2684.0 | -.00     | .60         |
| .80         | 169.09       | 169.09 | .00      | 3753.2     | 3753.0 | .01      | 2680.0     | 2680.0 | -.00     | .80         |
| 1.00        | 167.20       | 167.20 | .00      | 3747.3     | 3747.1 | .01      | 2676.0     | 2676.1 | -.00     | 1.00        |
| 1.20        | 165.65       | 165.65 | -.00     | 3741.4     | 3741.1 | .01      | 2672.1     | 2672.1 | -.00     | 1.20        |
| 1.40        | 164.34       | 164.34 | -.00     | 3735.5     | 3735.2 | .01      | 2668.1     | 2668.1 | -.00     | 1.40        |
| 1.60        | 163.20       | 163.20 | -.00     | 3729.6     | 3729.2 | .01      | 2664.1     | 2664.1 | -.00     | 1.60        |
| 1.80        | 162.19       | 162.15 | -.00     | 3723.6     | 3723.2 | .01      | 2660.0     | 2660.1 | -.00     | 1.80        |
| 2.00        | 161.28       | 161.28 | -.00     | 3717.6     | 3717.1 | .01      | 2656.0     | 2656.1 | -.00     | 2.00        |
| 2.20        | 160.46       | 160.46 | -.00     | 3711.6     | 3711.1 | .01      | 2651.9     | 2652.0 | -.00     | 2.20        |
| 2.40        | 159.70       | 159.70 | -.00     | 3705.6     | 3705.0 | .02      | 2647.9     | 2648.0 | -.00     | 2.40        |
| 2.60        | 159.01       | 159.01 | -.00     | 3699.5     | 3698.9 | .02      | 2643.8     | 2643.9 | -.00     | 2.60        |
| 2.80        | 158.36       | 158.36 | -.00     | 3693.5     | 3692.8 | .02      | 2639.7     | 2639.8 | -.00     | 2.80        |
| 3.00        | 157.75       | 157.75 | -.00     | 3687.4     | 3686.7 | .02      | 2635.6     | 2635.7 | -.00     | 3.00        |
| 3.20        | 157.18       | 157.18 | -.00     | 3681.3     | 3680.5 | .02      | 2631.5     | 2631.6 | -.00     | 3.20        |
| 3.40        | 156.65       | 156.65 | -.00     | 3675.2     | 3674.4 | .02      | 2627.3     | 2627.5 | -.01     | 3.40        |
| 3.60        | 156.14       | 156.14 | -.00     | 3669.0     | 3668.2 | .02      | 2623.2     | 2623.3 | -.01     | 3.60        |
| 3.80        | 155.66       | 155.66 | -.00     | 3662.9     | 3662.0 | .02      | 2619.0     | 2619.2 | -.01     | 3.80        |
| 4.00        | 155.20       | 155.20 | -.00     | 3656.7     | 3655.8 | .03      | 2614.8     | 2615.0 | -.01     | 4.00        |
| 4.20        | 154.76       | 154.76 | -.00     | 3650.5     | 3649.5 | .03      | 2610.6     | 2610.8 | -.01     | 4.20        |
| 4.40        | 154.34       | 154.34 | -.00     | 3644.2     | 3643.2 | .03      | 2606.4     | 2606.6 | -.01     | 4.40        |
| 4.60        | 153.94       | 153.94 | -.00     | 3638.0     | 3636.9 | .03      | 2602.1     | 2602.4 | -.01     | 4.60        |
| 4.80        | 153.55       | 153.55 | -.00     | 3631.7     | 3630.6 | .03      | 2597.9     | 2598.1 | -.01     | 4.80        |
| 5.00        | 153.18       | 153.18 | -.00     | 3625.4     | 3624.3 | .03      | 2593.6     | 2593.9 | -.01     | 5.00        |
| 5.20        | 152.82       | 152.82 | -.00     | 3619.1     | 3617.9 | .03      | 2589.3     | 2589.6 | -.01     | 5.20        |
| 5.40        | 152.47       | 152.47 | -.00     | 3612.8     | 3611.6 | .03      | 2585.0     | 2585.3 | -.01     | 5.40        |
| 5.60        | 152.13       | 152.14 | -.00     | 3606.4     | 3605.2 | .03      | 2580.7     | 2581.0 | -.01     | 5.60        |
| 5.80        | 151.81       | 151.81 | -.00     | 3600.0     | 3598.7 | .04      | 2576.4     | 2576.7 | -.01     | 5.80        |
| 6.00        | 151.49       | 151.50 | -.00     | 3593.6     | 3592.3 | .04      | 2572.0     | 2572.3 | -.01     | 6.00        |
| 6.20        | 151.19       | 151.19 | -.00     | 3587.2     | 3585.8 | .04      | 2567.6     | 2568.0 | -.01     | 6.20        |
| 6.40        | 150.89       | 150.89 | -.00     | 3580.7     | 3579.3 | .04      | 2563.2     | 2563.6 | -.01     | 6.40        |
| 6.60        | 150.60       | 150.60 | -.00     | 3574.2     | 3572.8 | .04      | 2558.8     | 2559.2 | -.01     | 6.60        |
| 6.80        | 150.31       | 150.32 | -.00     | 3567.7     | 3566.3 | .04      | 2554.4     | 2554.8 | -.02     | 6.80        |
| 7.00        | 150.04       | 150.04 | -.00     | 3561.2     | 3559.7 | .04      | 2550.0     | 2550.4 | -.02     | 7.00        |
| 7.20        | 149.77       | 149.77 | -.00     | 3554.6     | 3553.1 | .04      | 2545.5     | 2545.9 | -.02     | 7.20        |
| 7.40        | 149.51       | 149.51 | -.00     | 3548.1     | 3546.5 | .04      | 2541.0     | 2541.5 | -.02     | 7.40        |
| 7.60        | 149.25       | 149.25 | -.00     | 3541.4     | 3539.9 | .04      | 2536.5     | 2537.0 | -.02     | 7.60        |
| 7.80        | 149.00       | 149.00 | -.00     | 3534.8     | 3533.2 | .05      | 2532.0     | 2532.5 | -.02     | 7.80        |
| 8.00        | 148.75       | 148.75 | -.00     | 3528.2     | 3526.5 | .05      | 2527.4     | 2528.0 | -.02     | 8.00        |
| 8.20        | 148.51       | 148.51 | -.00     | 3521.5     | 3519.8 | .05      | 2522.9     | 2523.4 | -.02     | 8.20        |
| 8.40        | 148.27       | 148.28 | -.00     | 3514.8     | 3513.0 | .05      | 2518.3     | 2518.9 | -.02     | 8.40        |
| 8.60        | 148.04       | 148.05 | -.00     | 3508.0     | 3506.3 | .05      | 2513.7     | 2514.3 | -.02     | 8.60        |
| 8.80        | 147.81       | 147.82 | -.00     | 3501.3     | 3499.5 | .05      | 2509.1     | 2509.7 | -.02     | 8.80        |
| 9.00        | 147.59       | 147.59 | -.00     | 3494.5     | 3492.7 | .05      | 2504.4     | 2505.1 | -.02     | 9.00        |
| 9.20        | 147.37       | 147.37 | -.00     | 3487.7     | 3485.8 | .05      | 2499.8     | 2500.4 | -.03     | 9.20        |
| 9.40        | 147.15       | 147.16 | -.00     | 3480.8     | 3478.9 | .05      | 2495.1     | 2495.8 | -.03     | 9.40        |
| 9.60        | 146.94       | 146.95 | -.00     | 3473.9     | 3472.0 | .06      | 2490.4     | 2491.1 | -.03     | 9.60        |
| 9.80        | 146.73       | 146.74 | -.00     | 3467.0     | 3465.1 | .06      | 2485.7     | 2486.4 | -.03     | 9.80        |
| 10.00       | 146.53       | 146.53 | -.00     | 3460.1     | 3458.1 | .06      | 2480.9     | 2481.6 | -.03     | 10.00       |

TABLE I.- Continued

| PRES<br>ATH | DENS<br>MOL/L | DENS  | DIF<br>% | CP<br>J/MOL.K | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATH |
|-------------|---------------|-------|----------|---------------|-------|----------|---------------|-------|----------|------------|--------|----------|-------------|
| 20          | .0163         | .0163 | -.01     | 29.15         | 29.15 | -.00     | 20.79         | 20.79 | .00      | 249.54     | 249.52 | .01      | 20          |
| .40         | .0326         | .0326 | -.01     | 29.20         | 29.20 | -.00     | 20.80         | 20.80 | .00      | 249.42     | 249.38 | .01      | .40         |
| .60         | .0489         | .0489 | -.02     | 29.25         | 29.25 | -.00     | 20.81         | 20.81 | .00      | 249.29     | 249.25 | .02      | .60         |
| .80         | .0653         | .0653 | -.02     | 29.31         | 29.31 | -.00     | 20.83         | 20.83 | .01      | 249.17     | 249.12 | .02      | .80         |
| 1.00        | .0817         | .0817 | -.02     | 29.36         | 29.36 | -.00     | 20.84         | 20.84 | .01      | 249.04     | 248.99 | .02      | 1.00        |
| 1.20        | .0982         | .0982 | -.03     | 29.42         | 29.42 | -.00     | 20.85         | 20.85 | .01      | 248.92     | 248.86 | .03      | 1.20        |
| 1.40        | .1147         | .1147 | -.03     | 29.47         | 29.47 | -.00     | 20.86         | 20.86 | .01      | 248.80     | 248.72 | .03      | 1.40        |
| 1.60        | .1312         | .1312 | -.04     | 29.52         | 29.53 | -.00     | 20.87         | 20.87 | .01      | 248.67     | 248.59 | .03      | 1.60        |
| 1.80        | .1477         | .1478 | -.04     | 29.58         | 29.58 | -.00     | 20.88         | 20.88 | .01      | 248.55     | 248.46 | .03      | 1.80        |
| 2.00        | .1644         | .1644 | -.04     | 29.64         | 29.64 | -.00     | 20.89         | 20.89 | .02      | 248.42     | 248.33 | .04      | 2.00        |
| 2.20        | .1810         | .1811 | -.05     | 29.69         | 29.69 | -.00     | 20.91         | 20.90 | .02      | 248.30     | 248.20 | .04      | 2.20        |
| 2.40        | .1977         | .1978 | -.05     | 29.75         | 29.75 | -.00     | 20.92         | 20.91 | .02      | 248.17     | 248.07 | .04      | 2.40        |
| 2.60        | .2144         | .2145 | -.06     | 29.80         | 29.80 | -.00     | 20.93         | 20.93 | .03      | 248.05     | 247.93 | .05      | 2.60        |
| 2.80        | .2312         | .2313 | -.06     | 29.86         | 29.86 | -.00     | 20.94         | 20.94 | .03      | 247.92     | 247.80 | .05      | 2.80        |
| 3.00        | .2480         | .2481 | -.06     | 29.92         | 29.92 | -.00     | 20.96         | 20.95 | .03      | 247.80     | 247.67 | .05      | 3.00        |
| 3.20        | .2648         | .2650 | -.07     | 29.98         | 29.98 | -.00     | 20.97         | 20.96 | .04      | 247.67     | 247.54 | .05      | 3.20        |
| 3.40        | .2817         | .2819 | -.07     | 30.03         | 30.03 | -.00     | 20.98         | 20.97 | .04      | 247.54     | 247.41 | .05      | 3.40        |
| 3.60        | .2986         | .2988 | -.08     | 30.09         | 30.09 | -.00     | 20.99         | 20.98 | .04      | 247.42     | 247.28 | .06      | 3.60        |
| 3.80        | .3156         | .3158 | -.08     | 30.15         | 30.15 | -.00     | 21.00         | 21.00 | .05      | 247.29     | 247.15 | .06      | 3.80        |
| 4.00        | .3326         | .3328 | -.08     | 30.21         | 30.21 | -.00     | 21.02         | 21.01 | .05      | 247.17     | 247.01 | .06      | 4.00        |
| 4.20        | .3496         | .3499 | -.09     | 30.27         | 30.27 | -.00     | 21.03         | 21.02 | .05      | 247.04     | 246.88 | .06      | 4.20        |
| 4.40        | .3667         | .3670 | -.09     | 30.33         | 30.33 | -.00     | 21.04         | 21.03 | .06      | 246.91     | 246.75 | .07      | 4.40        |
| 4.60        | .3838         | .3842 | -.10     | 30.39         | 30.39 | -.00     | 21.05         | 21.04 | .06      | 246.79     | 246.62 | .07      | 4.60        |
| 4.80        | .4010         | .4014 | -.10     | 30.45         | 30.45 | -.00     | 21.07         | 21.05 | .07      | 246.66     | 246.49 | .07      | 4.80        |
| 5.00        | .4182         | .4186 | -.11     | 30.51         | 30.51 | -.00     | 21.08         | 21.07 | .07      | 246.54     | 246.36 | .07      | 5.00        |
| 5.20        | .4354         | .4359 | -.11     | 30.57         | 30.57 | -.00     | 21.09         | 21.07 | .08      | 246.41     | 246.23 | .07      | 5.20        |
| 5.40        | .4527         | .4532 | -.11     | 30.63         | 30.63 | -.00     | 21.11         | 21.09 | .08      | 246.28     | 246.10 | .07      | 5.40        |
| 5.60        | .4700         | .4706 | -.12     | 30.70         | 30.70 | -.00     | 21.12         | 21.10 | .09      | 246.15     | 245.97 | .08      | 5.60        |
| 5.80        | .4874         | .4880 | -.12     | 30.76         | 30.76 | -.00     | 21.13         | 21.11 | .09      | 246.03     | 245.84 | .08      | 5.80        |
| 6.00        | .5048         | .5055 | -.13     | 30.82         | 30.82 | -.00     | 21.15         | 21.12 | .10      | 245.90     | 245.71 | .08      | 6.00        |
| 6.20        | .5223         | .5230 | -.13     | 30.88         | 30.88 | -.00     | 21.16         | 21.14 | .11      | 245.77     | 245.58 | .08      | 6.20        |
| 6.40        | .5398         | .5405 | -.13     | 30.95         | 30.95 | -.00     | 21.17         | 21.15 | .11      | 245.64     | 245.45 | .08      | 6.40        |
| 6.60        | .5573         | .5581 | -.14     | 31.01         | 31.01 | -.00     | 21.19         | 21.16 | .12      | 245.52     | 245.32 | .08      | 6.60        |
| 6.80        | .5749         | .5758 | -.14     | 31.08         | 31.08 | -.00     | 21.20         | 21.17 | .12      | 245.39     | 245.19 | .08      | 6.80        |
| 7.00        | .5926         | .5934 | -.15     | 31.14         | 31.14 | -.00     | 21.21         | 21.18 | .13      | 245.26     | 245.05 | .08      | 7.00        |
| 7.20        | .6102         | .6112 | -.15     | 31.21         | 31.21 | -.00     | 21.23         | 21.20 | .14      | 245.13     | 244.92 | .09      | 7.20        |
| 7.40        | .6280         | .6289 | -.16     | 31.27         | 31.27 | -.01     | 21.24         | 21.21 | .14      | 245.00     | 244.79 | .09      | 7.40        |
| 7.60        | .6457         | .6468 | -.16     | 31.34         | 31.34 | -.01     | 21.25         | 21.22 | .15      | 244.88     | 244.66 | .09      | 7.60        |
| 7.80        | .6635         | .6646 | -.16     | 31.41         | 31.40 | -.01     | 21.27         | 21.23 | .16      | 244.75     | 244.53 | .09      | 7.80        |
| 8.00        | .6814         | .6825 | -.17     | 31.47         | 31.47 | .01      | 21.28         | 21.25 | .17      | 244.62     | 244.41 | .09      | 8.00        |
| 8.20        | .6993         | .7005 | -.17     | 31.54         | 31.54 | .01      | 21.30         | 21.26 | .17      | 244.49     | 244.28 | .09      | 8.20        |
| 8.40        | .7172         | .7185 | -.18     | 31.61         | 31.61 | .01      | 21.31         | 21.27 | .18      | 244.36     | 244.15 | .09      | 8.40        |
| 8.60        | .7352         | .7366 | -.18     | 31.68         | 31.68 | .01      | 21.32         | 21.28 | .19      | 244.23     | 244.02 | .09      | 8.60        |
| 8.80        | .7533         | .7547 | -.18     | 31.75         | 31.74 | .01      | 21.34         | 21.30 | .20      | 244.10     | 243.89 | .09      | 8.80        |
| 9.00        | .7714         | .7728 | -.19     | 31.82         | 31.81 | .01      | 21.35         | 21.31 | .21      | 243.97     | 243.76 | .09      | 9.00        |
| 9.20        | .7895         | .7910 | -.19     | 31.89         | 31.88 | .01      | 21.37         | 21.32 | .22      | 243.84     | 243.63 | .09      | 9.20        |
| 9.40        | .8077         | .8093 | -.20     | 31.96         | 31.95 | .01      | 21.38         | 21.33 | .22      | 243.71     | 243.50 | .09      | 9.40        |
| 9.60        | .8259         | .8276 | -.20     | 32.03         | 32.02 | .01      | 21.40         | 21.35 | .23      | 243.58     | 243.37 | .09      | 9.60        |
| 9.80        | .8442         | .8459 | -.21     | 32.10         | 32.10 | .01      | 21.41         | 21.36 | .24      | 243.45     | 243.24 | .09      | 9.80        |
| 10.00       | .8625         | .8643 | -.21     | 32.17         | 32.17 | .01      | 21.43         | 21.37 | .25      | 243.32     | 243.11 | .09      | 10.00       |

TEMP=150. K 80=-.6931640E-01 81=.1016315E-02 82=-.1722542E-04 C0=.2357622E-02 C1=-.3188146E-04 C2=-.3170416E-06

TABLE I.- Continued

TEMP=150. K B0=-.6931640E-01 B1=.1016315E-02 B2=-.1722542E-04 C0=.2357622E-02 C1=-.3188146E-04 C2=-.3170416E-06

| PRES<br>ATH | S<br>J/MOL-K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATH |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 184.88       | 184.88 | .00      | 4354.0     | 4353.9 | .00      | 3108.3     | 3108.3 | .00      | .20         |
| .40         | 179.09       | 179.09 | .00      | 4349.5     | 4349.3 | .00      | 3105.2     | 3105.1 | .00      | .40         |
| .60         | 175.70       | 175.70 | .00      | 4344.7     | 4344.7 | .01      | 3102.1     | 3102.0 | .00      | .60         |
| .80         | 173.29       | 173.29 | .00      | 4340.5     | 4340.1 | .01      | 3099.0     | 3098.9 | .00      | .80         |
| 1.00        | 171.41       | 171.41 | .00      | 4336.0     | 4335.5 | .01      | 3095.9     | 3095.7 | .00      | 1.00        |
| 1.20        | 169.87       | 169.87 | .00      | 4331.4     | 4330.9 | .01      | 3092.7     | 3092.6 | .01      | 1.20        |
| 1.40        | 168.57       | 168.57 | .00      | 4326.9     | 4326.3 | .01      | 3089.6     | 3089.4 | .01      | 1.40        |
| 1.60        | 167.44       | 167.44 | .00      | 4322.3     | 4321.7 | .02      | 3086.5     | 3086.3 | .01      | 1.60        |
| 1.80        | 166.44       | 166.44 | .00      | 4317.8     | 4317.0 | .02      | 3083.3     | 3083.1 | .01      | 1.80        |
| 2.00        | 165.54       | 165.54 | .00      | 4313.2     | 4312.4 | .02      | 3080.2     | 3079.9 | .01      | 2.00        |
| 2.20        | 164.73       | 164.73 | .00      | 4308.7     | 4307.7 | .02      | 3077.1     | 3076.7 | .01      | 2.20        |
| 2.40        | 163.99       | 163.98 | .00      | 4304.1     | 4303.1 | .02      | 3073.9     | 3073.6 | .01      | 2.40        |
| 2.60        | 163.30       | 163.30 | .00      | 4299.5     | 4298.4 | .03      | 3070.7     | 3070.4 | .01      | 2.60        |
| 2.80        | 162.66       | 162.66 | .00      | 4294.9     | 4293.7 | .03      | 3067.6     | 3067.2 | .01      | 2.80        |
| 3.00        | 162.07       | 162.06 | .00      | 4290.3     | 4289.1 | .03      | 3064.4     | 3064.0 | .01      | 3.00        |
| 3.20        | 161.51       | 161.51 | .00      | 4285.7     | 4284.4 | .03      | 3061.2     | 3060.7 | .02      | 3.20        |
| 3.40        | 160.98       | 160.98 | .00      | 4281.1     | 4279.7 | .03      | 3058.0     | 3057.5 | .02      | 3.40        |
| 3.60        | 160.49       | 160.48 | .00      | 4276.5     | 4275.0 | .04      | 3054.9     | 3054.3 | .02      | 3.60        |
| 3.80        | 160.02       | 160.01 | .00      | 4271.8     | 4270.2 | .04      | 3051.7     | 3051.1 | .02      | 3.80        |
| 4.00        | 159.57       | 159.56 | .00      | 4267.2     | 4265.5 | .04      | 3048.5     | 3047.8 | .02      | 4.00        |
| 4.20        | 159.14       | 159.14 | .00      | 4262.6     | 4260.8 | .04      | 3045.3     | 3044.6 | .02      | 4.20        |
| 4.40        | 158.73       | 158.73 | .00      | 4257.9     | 4256.0 | .04      | 3042.1     | 3041.3 | .02      | 4.40        |
| 4.60        | 158.34       | 158.34 | .00      | 4253.2     | 4251.3 | .05      | 3038.8     | 3038.1 | .03      | 4.60        |
| 4.80        | 157.97       | 157.96 | .00      | 4248.6     | 4246.5 | .05      | 3035.6     | 3034.8 | .03      | 4.80        |
| 5.00        | 157.61       | 157.60 | .00      | 4243.9     | 4241.8 | .05      | 3032.4     | 3031.5 | .03      | 5.00        |
| 5.20        | 157.26       | 157.25 | .00      | 4239.2     | 4237.0 | .05      | 3029.2     | 3028.2 | .03      | 5.20        |
| 5.40        | 156.92       | 156.92 | .00      | 4234.5     | 4232.2 | .06      | 3025.9     | 3025.0 | .03      | 5.40        |
| 5.60        | 156.60       | 156.59 | .00      | 4229.8     | 4227.4 | .06      | 3022.7     | 3021.7 | .03      | 5.60        |
| 5.80        | 156.28       | 156.28 | .00      | 4225.1     | 4222.6 | .06      | 3019.4     | 3018.4 | .03      | 5.80        |
| 6.00        | 155.98       | 155.97 | .00      | 4220.4     | 4217.8 | .06      | 3016.2     | 3015.1 | .04      | 6.00        |
| 6.20        | 155.69       | 155.68 | .00      | 4215.7     | 4213.0 | .06      | 3012.9     | 3011.7 | .04      | 6.20        |
| 6.40        | 155.40       | 155.39 | .01      | 4211.0     | 4208.2 | .07      | 3009.6     | 3008.4 | .04      | 6.40        |
| 6.60        | 155.12       | 155.11 | .01      | 4206.2     | 4203.3 | .07      | 3006.3     | 3005.1 | .04      | 6.60        |
| 6.80        | 154.85       | 154.84 | .01      | 4201.5     | 4198.5 | .07      | 3003.1     | 3001.8 | .04      | 6.80        |
| 7.00        | 154.59       | 154.58 | .01      | 4196.7     | 4193.6 | .07      | 2999.8     | 2998.4 | .05      | 7.00        |
| 7.20        | 154.33       | 154.32 | .01      | 4192.0     | 4188.7 | .08      | 2996.5     | 2995.1 | .05      | 7.20        |
| 7.40        | 154.08       | 154.07 | .01      | 4187.2     | 4183.9 | .08      | 2993.2     | 2991.7 | .05      | 7.40        |
| 7.60        | 153.84       | 153.83 | .01      | 4182.4     | 4179.0 | .08      | 2989.8     | 2988.3 | .05      | 7.60        |
| 7.80        | 153.60       | 153.59 | .01      | 4177.6     | 4174.1 | .08      | 2986.5     | 2985.0 | .05      | 7.80        |
| 8.00        | 153.37       | 153.36 | .01      | 4172.8     | 4169.2 | .09      | 2983.2     | 2981.6 | .05      | 8.00        |
| 8.20        | 153.14       | 153.13 | .01      | 4168.0     | 4164.3 | .09      | 2979.9     | 2978.2 | .06      | 8.20        |
| 8.40        | 152.92       | 152.90 | .01      | 4163.2     | 4159.4 | .09      | 2976.5     | 2974.8 | .06      | 8.40        |
| 8.60        | 152.70       | 152.69 | .01      | 4158.4     | 4154.4 | .09      | 2973.2     | 2971.4 | .06      | 8.60        |
| 8.80        | 152.48       | 152.47 | .01      | 4153.6     | 4149.5 | .10      | 2969.9     | 2968.0 | .06      | 8.80        |
| 9.00        | 152.27       | 152.26 | .01      | 4148.7     | 4144.6 | .10      | 2966.5     | 2964.6 | .06      | 9.00        |
| 9.20        | 152.07       | 152.06 | .01      | 4143.9     | 4139.6 | .10      | 2963.1     | 2961.1 | .07      | 9.20        |
| 9.40        | 151.87       | 151.85 | .01      | 4139.0     | 4134.6 | .11      | 2959.8     | 2957.7 | .07      | 9.40        |
| 9.60        | 151.67       | 151.66 | .01      | 4134.1     | 4129.7 | .11      | 2956.4     | 2954.3 | .07      | 9.60        |
| 9.80        | 151.48       | 151.46 | .01      | 4129.3     | 4124.7 | .11      | 2953.0     | 2950.8 | .07      | 9.80        |
| 10.00       | 151.28       | 151.27 | .01      | 4124.4     | 4119.7 | .11      | 2949.6     | 2947.4 | .08      | 10.00       |

TABLE I.- Continued

TEMP=170. K 80=-.5191681E-01 81=.7454409E-03 82=-.1062136E-04 C0=.1706282E-02 C1=-.3140903E-04 C2=.2484947E-06

| PRES<br>ATM | DENS<br>MOL/L | DENS  | DIF<br>% | CP<br>J/MOL.K | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATM |
|-------------|---------------|-------|----------|---------------|-------|----------|---------------|-------|----------|------------|--------|----------|-------------|
| .20         | .0143         | .0143 | -.01     | 29.13         | 29.13 | -.00     | 20.79         | 20.79 | -.00     | 265.72     | 265.69 | .01      | .20         |
| .40         | .0287         | .0287 | -.01     | 29.17         | 29.17 | -.01     | 20.79         | 20.79 | -.01     | 265.65     | 265.61 | .01      | .40         |
| .60         | .0431         | .0431 | -.01     | 29.21         | 29.21 | -.01     | 20.80         | 20.80 | -.01     | 265.57     | 265.53 | .02      | .60         |
| .80         | .0575         | .0575 | -.02     | 29.24         | 29.25 | -.01     | 20.81         | 20.81 | -.01     | 265.50     | 265.45 | .02      | .80         |
| 1.00        | .0720         | .0720 | -.02     | 29.28         | 29.28 | -.01     | 20.81         | 20.82 | -.02     | 265.43     | 265.37 | .02      | 1.00        |
| 1.20        | .0864         | .0864 | -.02     | 29.32         | 29.32 | -.02     | 20.82         | 20.82 | -.02     | 265.36     | 265.29 | .03      | 1.20        |
| 1.40        | .1009         | .1009 | -.03     | 29.35         | 29.36 | -.02     | 20.83         | 20.83 | -.02     | 265.29     | 265.21 | .03      | 1.40        |
| 1.60        | .1154         | .1154 | -.03     | 29.39         | 29.40 | -.02     | 20.83         | 20.84 | -.02     | 265.22     | 265.13 | .03      | 1.60        |
| 1.80        | .1299         | .1300 | -.03     | 29.43         | 29.44 | -.03     | 20.84         | 20.84 | -.03     | 265.14     | 265.05 | .04      | 1.80        |
| 2.00        | .1445         | .1445 | -.04     | 29.47         | 29.48 | -.03     | 20.84         | 20.85 | -.03     | 265.07     | 264.97 | .04      | 2.00        |
| 2.20        | .1590         | .1591 | -.04     | 29.50         | 29.51 | -.03     | 20.85         | 20.86 | -.03     | 265.00     | 264.89 | .04      | 2.20        |
| 2.40        | .1736         | .1737 | -.04     | 29.54         | 29.55 | -.04     | 20.86         | 20.87 | -.04     | 264.93     | 264.81 | .04      | 2.40        |
| 2.60        | .1882         | .1883 | -.05     | 29.58         | 29.59 | -.04     | 20.86         | 20.87 | -.04     | 264.86     | 264.73 | .05      | 2.60        |
| 2.80        | .2028         | .2029 | -.05     | 29.62         | 29.63 | -.04     | 20.87         | 20.88 | -.04     | 264.79     | 264.65 | .05      | 2.80        |
| 3.00        | .2175         | .2176 | -.05     | 29.66         | 29.67 | -.05     | 20.88         | 20.89 | -.05     | 264.72     | 264.57 | .06      | 3.00        |
| 3.20        | .2322         | .2323 | -.06     | 29.70         | 29.71 | -.05     | 20.88         | 20.89 | -.05     | 264.64     | 264.50 | .06      | 3.20        |
| 3.40        | .2469         | .2470 | -.06     | 29.74         | 29.75 | -.05     | 20.89         | 20.90 | -.05     | 264.57     | 264.42 | .06      | 3.40        |
| 3.60        | .2616         | .2618 | -.06     | 29.77         | 29.79 | -.06     | 20.90         | 20.91 | -.05     | 264.50     | 264.34 | .06      | 3.60        |
| 3.80        | .2763         | .2765 | -.07     | 29.81         | 29.83 | -.06     | 20.90         | 20.92 | -.05     | 264.43     | 264.26 | .06      | 3.80        |
| 4.00        | .2911         | .2913 | -.07     | 29.85         | 29.87 | -.06     | 20.91         | 20.92 | -.06     | 264.36     | 264.18 | .07      | 4.00        |
| 4.20        | .3059         | .3061 | -.07     | 29.89         | 29.91 | -.07     | 20.92         | 20.93 | -.06     | 264.29     | 264.11 | .07      | 4.20        |
| 4.40        | .3207         | .3209 | -.07     | 29.93         | 29.95 | -.07     | 20.92         | 20.94 | -.06     | 264.21     | 264.03 | .07      | 4.40        |
| 4.60        | .3355         | .3358 | -.08     | 29.97         | 29.99 | -.08     | 20.93         | 20.94 | -.06     | 264.14     | 263.95 | .07      | 4.60        |
| 4.80        | .3504         | .3507 | -.08     | 30.01         | 30.03 | -.08     | 20.94         | 20.95 | -.07     | 264.07     | 263.87 | .07      | 4.80        |
| 5.00        | .3653         | .3656 | -.08     | 30.05         | 30.08 | -.08     | 20.94         | 20.96 | -.07     | 264.00     | 263.80 | .08      | 5.00        |
| 5.20        | .3802         | .3805 | -.09     | 30.09         | 30.12 | -.09     | 20.95         | 20.97 | -.07     | 263.93     | 263.72 | .08      | 5.20        |
| 5.40        | .3951         | .3955 | -.09     | 30.13         | 30.16 | -.09     | 20.96         | 20.97 | -.07     | 263.86     | 263.64 | .08      | 5.40        |
| 5.60        | .4101         | .4104 | -.09     | 30.17         | 30.20 | -.09     | 20.97         | 20.98 | -.08     | 263.78     | 263.57 | .08      | 5.60        |
| 5.80        | .4250         | .4254 | -.10     | 30.21         | 30.24 | -.10     | 20.97         | 20.99 | -.08     | 263.71     | 263.49 | .08      | 5.80        |
| 6.00        | .4400         | .4405 | -.10     | 30.25         | 30.28 | -.10     | 20.98         | 21.00 | -.08     | 263.64     | 263.41 | .09      | 6.00        |
| 6.20        | .4550         | .4555 | -.10     | 30.29         | 30.33 | -.11     | 20.99         | 21.00 | -.08     | 263.57     | 263.34 | .09      | 6.20        |
| 6.40        | .4701         | .4706 | -.10     | 30.33         | 30.37 | -.11     | 20.99         | 21.01 | -.08     | 263.50     | 263.26 | .09      | 6.40        |
| 6.60        | .4852         | .4857 | -.11     | 30.37         | 30.41 | -.12     | 21.00         | 21.02 | -.09     | 263.42     | 263.19 | .09      | 6.60        |
| 6.80        | .5002         | .5008 | -.11     | 30.42         | 30.45 | -.12     | 21.01         | 21.03 | -.09     | 263.35     | 263.11 | .09      | 6.80        |
| 7.00        | .5154         | .5159 | -.11     | 30.46         | 30.49 | -.12     | 21.01         | 21.03 | -.09     | 263.28     | 263.04 | .09      | 7.00        |
| 7.20        | .5305         | .5311 | -.12     | 30.50         | 30.54 | -.13     | 21.02         | 21.04 | -.09     | 263.21     | 262.96 | .09      | 7.20        |
| 7.40        | .5457         | .5463 | -.12     | 30.54         | 30.58 | -.13     | 21.03         | 21.05 | -.09     | 263.14     | 262.89 | .10      | 7.40        |
| 7.60        | .5609         | .5615 | -.12     | 30.58         | 30.62 | -.14     | 21.03         | 21.05 | -.10     | 263.07     | 262.81 | .10      | 7.60        |
| 7.80        | .5761         | .5768 | -.12     | 30.62         | 30.67 | -.14     | 21.04         | 21.06 | -.10     | 262.99     | 262.74 | .10      | 7.80        |
| 8.00        | .5913         | .5920 | -.13     | 30.67         | 30.71 | -.15     | 21.05         | 21.07 | -.10     | 262.92     | 262.66 | .10      | 8.00        |
| 8.20        | .6066         | .6073 | -.13     | 30.71         | 30.75 | -.15     | 21.06         | 21.08 | -.10     | 262.85     | 262.59 | .10      | 8.20        |
| 8.40        | .6218         | .6227 | -.13     | 30.75         | 30.80 | -.15     | 21.06         | 21.08 | -.10     | 262.78     | 262.52 | .10      | 8.40        |
| 8.60        | .6371         | .6380 | -.13     | 30.79         | 30.84 | -.16     | 21.07         | 21.09 | -.11     | 262.71     | 262.44 | .10      | 8.60        |
| 8.80        | .6525         | .6534 | -.14     | 30.84         | 30.89 | -.16     | 21.08         | 21.10 | -.11     | 262.63     | 262.37 | .10      | 8.80        |
| 9.00        | .6678         | .6688 | -.14     | 30.88         | 30.93 | -.17     | 21.08         | 21.11 | -.11     | 262.56     | 262.30 | .10      | 9.00        |
| 9.20        | .6832         | .6842 | -.14     | 30.92         | 30.97 | -.17     | 21.09         | 21.11 | -.11     | 262.49     | 262.22 | .10      | 9.20        |
| 9.40        | .6986         | .6996 | -.15     | 30.96         | 31.02 | -.18     | 21.10         | 21.12 | -.11     | 262.42     | 262.15 | .10      | 9.40        |
| 9.60        | .7140         | .7151 | -.15     | 31.01         | 31.06 | -.18     | 21.11         | 21.13 | -.11     | 262.35     | 262.08 | .10      | 9.60        |
| 9.80        | .7295         | .7306 | -.15     | 31.05         | 31.11 | -.19     | 21.11         | 21.14 | -.11     | 262.28     | 262.01 | .10      | 9.80        |
| 10.00       | .7450         | .7461 | -.15     | 31.09         | 31.15 | -.19     | 21.12         | 21.14 | -.12     | 262.20     | 261.93 | .10      | 10.00       |

TABLE I.-- Continued

TEMP=170. K B0=-.5191681E-01 B1=.7454409E-03 B2=-.1062136E-04 C0=.1706282E-02 C1=-.3140903E-04 C2=.2486947E-06

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 188.52       | 188.52 | .00      | 4936.8     | 4936.7 | .00      | 3524.4     | 3524.4 | .00      | .20         |
| .40         | 182.74       | 182.74 | .00      | 4933.2     | 4933.0 | .00      | 3521.8     | 3521.8 | .00      | .40         |
| .60         | 179.36       | 179.36 | .00      | 4929.6     | 4929.3 | .00      | 3519.3     | 3519.2 | .00      | .60         |
| .80         | 176.95       | 176.95 | .00      | 4925.9     | 4925.6 | .01      | 3516.7     | 3516.6 | .00      | .80         |
| 1.00        | 175.08       | 175.08 | .00      | 4922.3     | 4921.9 | .01      | 3514.1     | 3514.0 | .00      | 1.00        |
| 1.20        | 173.55       | 173.55 | .00      | 4918.7     | 4918.2 | .01      | 3511.5     | 3511.4 | .00      | 1.20        |
| 1.40        | 172.25       | 172.25 | .00      | 4915.0     | 4914.5 | .01      | 3509.0     | 3508.8 | .00      | 1.40        |
| 1.60        | 171.13       | 171.13 | .00      | 4911.4     | 4910.8 | .01      | 3506.4     | 3506.2 | .00      | 1.60        |
| 1.80        | 170.13       | 170.13 | .00      | 4907.7     | 4907.1 | .01      | 3503.8     | 3503.6 | .00      | 1.80        |
| 2.00        | 169.24       | 169.24 | .00      | 4904.1     | 4903.4 | .01      | 3501.2     | 3501.0 | .01      | 2.00        |
| 2.20        | 168.43       | 168.43 | .00      | 4900.4     | 4899.7 | .02      | 3498.6     | 3498.4 | .01      | 2.20        |
| 2.40        | 167.70       | 167.69 | .00      | 4896.8     | 4895.9 | .02      | 3496.0     | 3495.8 | .01      | 2.40        |
| 2.60        | 167.01       | 167.01 | .00      | 4893.1     | 4892.2 | .02      | 3493.4     | 3493.1 | .01      | 2.60        |
| 2.80        | 166.38       | 166.38 | .00      | 4889.5     | 4888.5 | .02      | 3490.8     | 3490.5 | .01      | 2.80        |
| 3.00        | 165.79       | 165.79 | .00      | 4885.8     | 4884.7 | .02      | 3488.2     | 3487.9 | .01      | 3.00        |
| 3.20        | 165.24       | 165.24 | .00      | 4882.1     | 4881.0 | .02      | 3485.6     | 3485.3 | .01      | 3.20        |
| 3.40        | 164.72       | 164.72 | .00      | 4878.5     | 4877.3 | .02      | 3483.0     | 3482.6 | .01      | 3.40        |
| 3.60        | 164.23       | 164.23 | .00      | 4874.8     | 4873.5 | .03      | 3480.4     | 3480.0 | .01      | 3.60        |
| 3.80        | 163.77       | 163.76 | .00      | 4871.1     | 4869.8 | .03      | 3477.8     | 3477.3 | .01      | 3.80        |
| 4.00        | 163.33       | 163.32 | .00      | 4867.4     | 4866.0 | .03      | 3475.2     | 3474.7 | .01      | 4.00        |
| 4.20        | 162.90       | 162.90 | .00      | 4863.8     | 4862.3 | .03      | 3472.5     | 3472.0 | .01      | 4.20        |
| 4.40        | 162.50       | 162.50 | .00      | 4860.1     | 4858.5 | .03      | 3469.9     | 3469.4 | .02      | 4.40        |
| 4.60        | 162.12       | 162.11 | .00      | 4856.4     | 4854.8 | .03      | 3467.3     | 3466.7 | .02      | 4.60        |
| 4.80        | 161.75       | 161.74 | .00      | 4852.7     | 4851.0 | .04      | 3464.7     | 3464.1 | .02      | 4.80        |
| 5.00        | 161.39       | 161.39 | .00      | 4849.0     | 4847.2 | .04      | 3462.1     | 3461.4 | .02      | 5.00        |
| 5.20        | 161.05       | 161.05 | .00      | 4845.3     | 4843.4 | .04      | 3459.4     | 3458.8 | .02      | 5.20        |
| 5.40        | 160.72       | 160.72 | .00      | 4841.6     | 4839.7 | .04      | 3456.8     | 3456.1 | .02      | 5.40        |
| 5.60        | 160.40       | 160.40 | .00      | 4837.9     | 4835.9 | .04      | 3454.2     | 3453.4 | .02      | 5.60        |
| 5.80        | 160.10       | 160.09 | .00      | 4834.2     | 4832.1 | .04      | 3451.5     | 3450.7 | .02      | 5.80        |
| 6.00        | 159.80       | 159.79 | .00      | 4830.5     | 4828.3 | .05      | 3448.9     | 3448.1 | .02      | 6.00        |
| 6.20        | 159.51       | 159.51 | .00      | 4826.8     | 4824.5 | .05      | 3446.3     | 3445.4 | .03      | 6.20        |
| 6.40        | 159.23       | 159.23 | .00      | 4823.1     | 4820.7 | .05      | 3443.6     | 3442.7 | .03      | 6.40        |
| 6.60        | 158.96       | 158.95 | .00      | 4819.4     | 4816.9 | .05      | 3441.0     | 3440.0 | .03      | 6.60        |
| 6.80        | 158.70       | 158.69 | .00      | 4815.7     | 4813.1 | .05      | 3438.3     | 3437.3 | .03      | 6.80        |
| 7.00        | 158.44       | 158.43 | .00      | 4811.9     | 4809.3 | .05      | 3435.7     | 3434.6 | .03      | 7.00        |
| 7.20        | 158.19       | 158.18 | .00      | 4808.2     | 4805.5 | .06      | 3433.0     | 3431.9 | .03      | 7.20        |
| 7.40        | 157.95       | 157.94 | .00      | 4804.5     | 4801.7 | .06      | 3430.4     | 3429.2 | .03      | 7.40        |
| 7.60        | 157.71       | 157.70 | .00      | 4800.8     | 4797.9 | .06      | 3427.7     | 3426.5 | .03      | 7.60        |
| 7.80        | 157.48       | 157.47 | .00      | 4797.0     | 4794.1 | .06      | 3425.1     | 3423.8 | .04      | 7.80        |
| 8.00        | 157.25       | 157.24 | .00      | 4793.3     | 4790.3 | .06      | 3422.4     | 3421.1 | .04      | 8.00        |
| 8.20        | 157.03       | 157.02 | .00      | 4789.5     | 4786.4 | .06      | 3419.7     | 3418.4 | .04      | 8.20        |
| 8.40        | 156.81       | 156.81 | .00      | 4785.8     | 4782.6 | .07      | 3417.1     | 3415.7 | .04      | 8.40        |
| 8.60        | 156.60       | 156.59 | .01      | 4782.1     | 4778.8 | .07      | 3414.4     | 3413.0 | .04      | 8.60        |
| 8.80        | 156.40       | 156.39 | .01      | 4778.3     | 4774.9 | .07      | 3411.7     | 3410.2 | .04      | 8.80        |
| 9.00        | 156.19       | 156.18 | .01      | 4774.6     | 4771.1 | .07      | 3409.1     | 3407.5 | .05      | 9.00        |
| 9.20        | 155.99       | 155.99 | .01      | 4770.8     | 4767.3 | .07      | 3406.4     | 3404.6 | .05      | 9.20        |
| 9.40        | 155.80       | 155.79 | .01      | 4767.0     | 4763.4 | .08      | 3403.7     | 3402.0 | .05      | 9.40        |
| 9.60        | 155.61       | 155.60 | .01      | 4763.3     | 4759.6 | .08      | 3401.0     | 3399.3 | .05      | 9.60        |
| 9.80        | 155.42       | 155.41 | .01      | 4759.5     | 4755.7 | .08      | 3398.3     | 3396.6 | .05      | 9.80        |
| 10.00       | 155.24       | 155.23 | .01      | 4755.8     | 4751.8 | .08      | 3395.6     | 3393.8 | .05      | 10.00       |

TABLE I.- Continued

TEMP=190. K B0=-.3886644E-01 B1= .5710719E-03 B2=-.7153215E-05 C0= .1140739E-02 C1=-.2471523E-04 C2= .3817643E-06

| PRES<br>ATM | DENS<br>MOL/L | DENS  | DIF<br>% | CP<br>J/MOL.K | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATM |
|-------------|---------------|-------|----------|---------------|-------|----------|---------------|-------|----------|------------|--------|----------|-------------|
| .20         | .0128         | .0128 | -.01     | 29.12         | 29.12 | -.00     | 20.78         | 20.78 | -.00     | 280.35     | 280.93 | .01      | .20         |
| .40         | .0257         | .0257 | -.01     | 29.15         | 29.15 | -.00     | 20.79         | 20.79 | -.00     | 280.92     | 280.88 | .01      | .40         |
| .60         | .0385         | .0385 | -.01     | 29.18         | 29.18 | -.00     | 20.79         | 20.79 | -.01     | 280.88     | 280.83 | .02      | .60         |
| 1.00        | .0514         | .0514 | -.01     | 29.20         | 29.21 | -.01     | 20.80         | 20.80 | -.01     | 280.84     | 280.79 | .02      | 1.00        |
| 1.20        | .0643         | .0643 | -.02     | 29.23         | 29.23 | -.01     | 20.81         | 20.81 | -.01     | 280.81     | 280.74 | .02      | 1.20        |
| 1.40        | .0772         | .0772 | -.02     | 29.26         | 29.26 | -.01     | 20.81         | 20.81 | -.01     | 280.77     | 280.70 | .03      | 1.40        |
| 1.60        | .0901         | .0901 | -.02     | 29.29         | 29.29 | -.01     | 20.81         | 20.81 | -.02     | 280.73     | 280.65 | .03      | 1.60        |
| 1.80        | .1030         | .1030 | -.03     | 29.32         | 29.32 | -.01     | 20.82         | 20.82 | -.02     | 280.70     | 280.61 | .03      | 1.80        |
| 2.00        | .1160         | .1160 | -.03     | 29.34         | 29.35 | -.02     | 20.82         | 20.82 | -.02     | 280.66     | 280.56 | .03      | 2.00        |
| 2.20        | .1289         | .1290 | -.03     | 29.37         | 29.38 | -.02     | 20.82         | 20.83 | -.02     | 280.62     | 280.52 | .04      | 2.20        |
| 2.40        | .1419         | .1419 | -.04     | 29.40         | 29.41 | -.02     | 20.83         | 20.83 | -.03     | 280.59     | 280.48 | .04      | 2.40        |
| 2.60        | .1549         | .1549 | -.04     | 29.43         | 29.44 | -.02     | 20.83         | 20.84 | -.03     | 280.55     | 280.43 | .04      | 2.60        |
| 2.80        | .1679         | .1679 | -.04     | 29.46         | 29.46 | -.03     | 20.84         | 20.84 | -.03     | 280.51     | 280.39 | .04      | 2.80        |
| 3.00        | .1809         | .1809 | -.04     | 29.48         | 29.49 | -.03     | 20.84         | 20.85 | -.03     | 280.48     | 280.34 | .05      | 3.00        |
| 3.20        | .1939         | .1940 | -.05     | 29.51         | 29.52 | -.03     | 20.85         | 20.85 | -.04     | 280.44     | 280.30 | .05      | 3.20        |
| 3.40        | .2069         | .2070 | -.05     | 29.54         | 29.55 | -.03     | 20.85         | 20.86 | -.04     | 280.40     | 280.26 | .05      | 3.40        |
| 3.60        | .2199         | .2201 | -.05     | 29.57         | 29.58 | -.04     | 20.85         | 20.86 | -.04     | 280.37     | 280.21 | .05      | 3.60        |
| 3.80        | .2330         | .2331 | -.05     | 29.60         | 29.61 | -.04     | 20.86         | 20.87 | -.04     | 280.33     | 280.17 | .06      | 3.80        |
| 4.00        | .2461         | .2462 | -.06     | 29.63         | 29.64 | -.04     | 20.86         | 20.87 | -.05     | 280.29     | 280.13 | .06      | 4.00        |
| 4.20        | .2592         | .2593 | -.06     | 29.66         | 29.67 | -.04     | 20.87         | 20.88 | -.05     | 280.26     | 280.09 | .06      | 4.20        |
| 4.40        | .2724         | .2724 | -.06     | 29.68         | 29.70 | -.05     | 20.87         | 20.88 | -.05     | 280.22     | 280.04 | .06      | 4.40        |
| 4.60        | .2854         | .2855 | -.06     | 29.71         | 29.73 | -.05     | 20.88         | 20.89 | -.05     | 280.19     | 280.00 | .07      | 4.60        |
| 4.80        | .2985         | .2987 | -.07     | 29.74         | 29.76 | -.05     | 20.88         | 20.89 | -.06     | 280.15     | 279.96 | .07      | 4.80        |
| 5.00        | .3116         | .3118 | -.07     | 29.77         | 29.79 | -.05     | 20.88         | 20.90 | -.06     | 280.11     | 279.92 | .07      | 5.00        |
| 5.20        | .3248         | .3250 | -.07     | 29.80         | 29.82 | -.06     | 20.89         | 20.90 | -.06     | 280.08     | 279.88 | .07      | 5.20        |
| 5.40        | .3379         | .3382 | -.07     | 29.83         | 29.85 | -.06     | 20.89         | 20.91 | -.06     | 280.04     | 279.83 | .07      | 5.40        |
| 5.60        | .3511         | .3514 | -.08     | 29.86         | 29.88 | -.06     | 20.90         | 20.91 | -.07     | 280.00     | 279.79 | .08      | 5.60        |
| 5.80        | .3643         | .3646 | -.08     | 29.89         | 29.91 | -.07     | 20.90         | 20.92 | -.07     | 279.97     | 279.75 | .08      | 5.80        |
| 6.00        | .3775         | .3778 | -.08     | 29.92         | 29.94 | -.07     | 20.91         | 20.92 | -.07     | 279.93     | 279.71 | .08      | 6.00        |
| 6.20        | .3907         | .3910 | -.08     | 29.94         | 29.97 | -.07     | 20.91         | 20.93 | -.08     | 279.90     | 279.67 | .08      | 6.20        |
| 6.40        | .4039         | .4043 | -.08     | 29.97         | 30.00 | -.08     | 20.92         | 20.93 | -.08     | 279.86     | 279.63 | .08      | 6.40        |
| 6.60        | .4172         | .4175 | -.09     | 30.00         | 30.03 | -.08     | 20.92         | 20.94 | -.08     | 279.82     | 279.59 | .08      | 6.60        |
| 6.80        | .4304         | .4308 | -.09     | 30.03         | 30.06 | -.08     | 20.92         | 20.94 | -.08     | 279.79     | 279.55 | .08      | 6.80        |
| 7.00        | .4437         | .4441 | -.09     | 30.06         | 30.09 | -.09     | 20.93         | 20.95 | -.09     | 279.75     | 279.51 | .09      | 7.00        |
| 7.20        | .4570         | .4574 | -.09     | 30.09         | 30.12 | -.09     | 20.93         | 20.95 | -.09     | 279.72     | 279.47 | .09      | 7.20        |
| 7.40        | .4703         | .4707 | -.10     | 30.12         | 30.15 | -.09     | 20.94         | 20.96 | -.09     | 279.68     | 279.43 | .09      | 7.40        |
| 7.60        | .4836         | .4841 | -.10     | 30.15         | 30.18 | -.10     | 20.94         | 20.96 | -.10     | 279.64     | 279.39 | .09      | 7.60        |
| 7.80        | .4969         | .4974 | -.10     | 30.18         | 30.21 | -.10     | 20.95         | 20.97 | -.10     | 279.61     | 279.35 | .09      | 7.80        |
| 8.00        | .5103         | .5108 | -.10     | 30.21         | 30.24 | -.10     | 20.95         | 20.97 | -.10     | 279.57     | 279.31 | .09      | 8.00        |
| 8.20        | .5236         | .5242 | -.10     | 30.24         | 30.27 | -.11     | 20.95         | 20.98 | -.10     | 279.54     | 279.28 | .09      | 8.20        |
| 8.40        | .5370         | .5376 | -.11     | 30.27         | 30.30 | -.11     | 20.96         | 20.98 | -.11     | 279.50     | 279.24 | .09      | 8.40        |
| 8.60        | .5504         | .5510 | -.11     | 30.30         | 30.33 | -.11     | 20.96         | 20.99 | -.11     | 279.47     | 279.20 | .10      | 8.60        |
| 8.80        | .5638         | .5644 | -.11     | 30.33         | 30.36 | -.12     | 20.97         | 20.99 | -.11     | 279.43     | 279.16 | .10      | 8.80        |
| 9.00        | .5772         | .5778 | -.11     | 30.36         | 30.39 | -.12     | 20.97         | 21.00 | -.12     | 279.39     | 279.12 | .10      | 9.00        |
| 9.20        | .5906         | .5913 | -.11     | 30.39         | 30.43 | -.13     | 20.98         | 21.00 | -.12     | 279.36     | 279.09 | .10      | 9.20        |
| 9.40        | .6040         | .6047 | -.11     | 30.42         | 30.46 | -.13     | 20.98         | 21.01 | -.12     | 279.32     | 279.05 | .10      | 9.40        |
| 9.60        | .6175         | .6182 | -.12     | 30.45         | 30.49 | -.13     | 20.98         | 21.01 | -.12     | 279.29     | 279.01 | .10      | 9.60        |
| 9.80        | .6309         | .6317 | -.12     | 30.48         | 30.52 | -.14     | 20.99         | 21.02 | -.13     | 279.25     | 278.98 | .10      | 9.80        |
| 10.00       | .6444         | .6452 | -.12     | 30.51         | 30.55 | -.14     | 20.99         | 21.02 | -.13     | 279.22     | 278.94 | .10      | 10.00       |
| 10.00       | .6579         | .6587 | -.12     | 30.54         | 30.58 | -.15     | 21.00         | 21.03 | -.13     | 279.18     | 278.90 | .10      | 10.00       |

TABLE I.- Continued

TEMP=190. K 80=-.3806644E-01 81=.5710719E-03 82=-.7153215E-05 C0=.1140739E-02 C1=-.2471523E-04 C2=.3817643E-06

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 191.76       | 191.76 | .00      | 5519.3     | 5519.2 | .00      | 3940.4     | 3940.4 | .00      | .20         |
| .40         | 185.99       | 185.99 | .00      | 5516.3     | 5516.2 | .00      | 3938.2     | 3938.2 | .00      | .40         |
| .60         | 182.60       | 182.60 | .00      | 5513.3     | 5513.2 | .00      | 3936.0     | 3936.0 | .00      | .60         |
| .80         | 180.20       | 180.20 | .00      | 5510.4     | 5510.1 | .00      | 3933.8     | 3933.8 | .00      | .80         |
| 1.00        | 178.33       | 178.33 | .00      | 5507.4     | 5507.1 | .00      | 3931.6     | 3931.6 | .00      | 1.00        |
| 1.20        | 176.81       | 176.81 | .00      | 5504.4     | 5504.0 | .00      | 3929.4     | 3929.4 | .00      | 1.20        |
| 1.40        | 175.51       | 175.51 | .00      | 5501.4     | 5501.0 | .00      | 3927.2     | 3927.1 | .00      | 1.40        |
| 1.60        | 174.39       | 174.39 | .00      | 5498.4     | 5497.9 | .00      | 3925.0     | 3924.9 | .00      | 1.60        |
| 1.80        | 173.40       | 173.40 | .00      | 5495.4     | 5494.9 | .00      | 3922.8     | 3922.7 | .00      | 1.80        |
| 2.00        | 172.51       | 172.51 | .00      | 5492.4     | 5491.8 | .00      | 3920.6     | 3920.5 | .00      | 2.00        |
| 2.20        | 171.71       | 171.71 | .00      | 5489.4     | 5488.8 | .00      | 3918.3     | 3918.3 | .00      | 2.20        |
| 2.40        | 170.97       | 170.97 | .00      | 5486.4     | 5485.7 | .00      | 3916.1     | 3916.1 | .00      | 2.40        |
| 2.60        | 170.30       | 170.30 | .00      | 5483.4     | 5482.7 | .00      | 3913.9     | 3913.8 | .00      | 2.60        |
| 2.80        | 169.67       | 169.67 | .00      | 5480.4     | 5479.6 | .00      | 3911.7     | 3911.6 | .00      | 2.80        |
| 3.00        | 169.08       | 169.08 | .00      | 5477.4     | 5476.6 | .00      | 3909.5     | 3909.4 | .00      | 3.00        |
| 3.20        | 168.54       | 168.54 | .00      | 5474.4     | 5473.5 | .02      | 3907.3     | 3907.2 | .00      | 3.20        |
| 3.40        | 168.02       | 168.02 | .00      | 5471.4     | 5470.5 | .02      | 3905.1     | 3904.9 | .00      | 3.40        |
| 3.60        | 167.53       | 167.53 | .00      | 5468.4     | 5467.4 | .02      | 3902.9     | 3902.7 | .00      | 3.60        |
| 3.80        | 167.07       | 167.07 | .00      | 5465.4     | 5464.3 | .02      | 3900.6     | 3900.5 | .00      | 3.80        |
| 4.00        | 166.63       | 166.63 | .00      | 5462.4     | 5461.3 | .02      | 3898.4     | 3898.2 | .00      | 4.00        |
| 4.20        | 166.22       | 166.22 | .00      | 5459.3     | 5458.2 | .02      | 3896.2     | 3896.0 | .00      | 4.20        |
| 4.40        | 165.82       | 165.82 | .00      | 5456.3     | 5455.1 | .02      | 3894.0     | 3893.8 | .00      | 4.40        |
| 4.60        | 165.44       | 165.44 | .00      | 5453.3     | 5452.1 | .02      | 3891.8     | 3891.5 | .01      | 4.60        |
| 4.80        | 165.07       | 165.07 | .00      | 5450.3     | 5449.0 | .02      | 3889.5     | 3889.3 | .01      | 4.80        |
| 5.00        | 164.72       | 164.72 | .00      | 5447.3     | 5445.9 | .02      | 3887.3     | 3887.1 | .01      | 5.00        |
| 5.20        | 164.38       | 164.38 | .00      | 5444.3     | 5442.9 | .03      | 3885.1     | 3884.8 | .01      | 5.20        |
| 5.40        | 164.06       | 164.06 | .00      | 5441.3     | 5439.8 | .03      | 3882.9     | 3882.6 | .01      | 5.40        |
| 5.60        | 163.74       | 163.74 | .00      | 5438.2     | 5436.7 | .03      | 3880.6     | 3880.3 | .01      | 5.60        |
| 5.80        | 163.44       | 163.44 | .00      | 5435.2     | 5433.6 | .03      | 3878.4     | 3878.1 | .01      | 5.80        |
| 6.00        | 163.15       | 163.14 | .00      | 5432.2     | 5430.6 | .03      | 3876.2     | 3875.8 | .01      | 6.00        |
| 6.20        | 162.86       | 162.86 | .00      | 5429.2     | 5427.5 | .03      | 3874.0     | 3873.6 | .01      | 6.20        |
| 6.40        | 162.59       | 162.58 | .00      | 5426.2     | 5424.4 | .03      | 3871.7     | 3871.3 | .01      | 6.40        |
| 6.60        | 162.32       | 162.32 | .00      | 5423.1     | 5421.3 | .03      | 3869.5     | 3869.1 | .01      | 6.60        |
| 6.80        | 162.06       | 162.06 | .00      | 5420.1     | 5418.2 | .03      | 3867.3     | 3866.8 | .01      | 6.80        |
| 7.00        | 161.81       | 161.80 | .00      | 5417.1     | 5415.2 | .04      | 3865.0     | 3864.6 | .01      | 7.00        |
| 7.20        | 161.56       | 161.56 | .00      | 5414.0     | 5412.1 | .04      | 3862.8     | 3862.3 | .01      | 7.20        |
| 7.40        | 161.32       | 161.32 | .00      | 5411.0     | 5409.0 | .04      | 3860.6     | 3860.0 | .01      | 7.40        |
| 7.60        | 161.09       | 161.08 | .00      | 5408.0     | 5405.9 | .04      | 3858.3     | 3857.8 | .01      | 7.60        |
| 7.80        | 160.86       | 160.86 | .00      | 5405.0     | 5402.8 | .04      | 3856.1     | 3855.5 | .01      | 7.80        |
| 8.00        | 160.64       | 160.63 | .00      | 5401.9     | 5399.7 | .04      | 3853.8     | 3853.2 | .02      | 8.00        |
| 8.20        | 160.42       | 160.42 | .00      | 5398.9     | 5396.6 | .04      | 3851.6     | 3851.0 | .02      | 8.20        |
| 8.40        | 160.21       | 160.20 | .00      | 5395.9     | 5393.5 | .04      | 3849.4     | 3848.7 | .02      | 8.40        |
| 8.60        | 160.00       | 160.00 | .00      | 5392.8     | 5390.4 | .04      | 3847.1     | 3846.4 | .02      | 8.60        |
| 8.80        | 159.80       | 159.79 | .00      | 5389.8     | 5387.3 | .05      | 3844.9     | 3844.2 | .02      | 8.80        |
| 9.00        | 159.60       | 159.59 | .00      | 5386.7     | 5384.2 | .05      | 3842.7     | 3841.9 | .02      | 9.00        |
| 9.20        | 159.40       | 159.40 | .00      | 5383.7     | 5381.1 | .05      | 3840.4     | 3839.6 | .02      | 9.20        |
| 9.40        | 159.21       | 159.21 | .00      | 5380.7     | 5378.0 | .05      | 3838.2     | 3837.3 | .02      | 9.40        |
| 9.60        | 159.03       | 159.02 | .00      | 5377.6     | 5374.9 | .05      | 3835.9     | 3835.1 | .02      | 9.60        |
| 9.80        | 158.84       | 158.84 | .00      | 5374.6     | 5371.8 | .05      | 3833.7     | 3832.8 | .02      | 9.80        |
| 10.00       | 158.66       | 158.66 | .00      | 5371.5     | 5368.7 | .05      | 3831.4     | 3830.5 | .02      | 10.00       |

TABLE I.- Continued

TEMP=210. K B0=-.2872425E-01 B1=.4498359E-03 B2=-.5135256E-05 C0=.7233657E-03 C1=-.1706327E-04 C2=.3709210E-06

| PRES<br>ATM | DENS<br>MOL/L | DENS  | DIF<br>% | CP<br>J/MOL.K | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATM |
|-------------|---------------|-------|----------|---------------|-------|----------|---------------|-------|----------|------------|--------|----------|-------------|
| .20         | .0116         | .0116 | -.01     | 29.12         | 29.12 | .00      | 20.78         | 20.78 | .00      | 295.40     | 295.37 | .01      | .20         |
| .40         | .0232         | .0232 | -.01     | 29.14         | 29.14 | .00      | 20.79         | 20.79 | .00      | 295.38     | 295.35 | .01      | .40         |
| .60         | .0349         | .0349 | -.01     | 29.16         | 29.16 | .00      | 20.79         | 20.79 | .00      | 295.37     | 295.33 | .01      | .60         |
| .80         | .0465         | .0465 | -.01     | 29.18         | 29.18 | .00      | 20.79         | 20.79 | .00      | 295.36     | 295.31 | .02      | .80         |
| 1.00        | .0581         | .0581 | -.02     | 29.20         | 29.20 | .00      | 20.80         | 20.80 | .00      | 295.34     | 295.29 | .02      | 1.00        |
| 1.20        | .0698         | .0698 | -.02     | 29.23         | 29.22 | .00      | 20.80         | 20.80 | .00      | 295.33     | 295.27 | .02      | 1.20        |
| 1.40        | .0814         | .0815 | -.02     | 29.25         | 29.25 | .00      | 20.80         | 20.80 | .00      | 295.32     | 295.25 | .02      | 1.40        |
| 1.60        | .0931         | .0931 | -.02     | 29.27         | 29.27 | .00      | 20.81         | 20.81 | .00      | 295.30     | 295.23 | .03      | 1.60        |
| 1.80        | .1048         | .1048 | -.03     | 29.29         | 29.29 | .00      | 20.81         | 20.81 | .00      | 295.29     | 295.21 | .03      | 1.80        |
| 2.00        | .1165         | .1165 | -.03     | 29.31         | 29.31 | .00      | 20.82         | 20.81 | .00      | 295.28     | 295.19 | .03      | 2.00        |
| 2.20        | .1281         | .1282 | -.03     | 29.34         | 29.34 | .00      | 20.82         | 20.82 | .00      | 295.27     | 295.17 | .03      | 2.20        |
| 2.40        | .1398         | .1399 | -.03     | 29.36         | 29.36 | .00      | 20.82         | 20.82 | .00      | 295.25     | 295.15 | .04      | 2.40        |
| 2.60        | .1515         | .1516 | -.04     | 29.38         | 29.38 | .00      | 20.83         | 20.83 | .00      | 295.24     | 295.13 | .04      | 2.60        |
| 2.80        | .1633         | .1633 | -.04     | 29.40         | 29.40 | .00      | 20.83         | 20.83 | .00      | 295.23     | 295.11 | .04      | 2.80        |
| 3.00        | .1750         | .1750 | -.04     | 29.42         | 29.42 | .00      | 20.83         | 20.83 | .00      | 295.21     | 295.09 | .04      | 3.00        |
| 3.20        | .1867         | .1868 | -.04     | 29.45         | 29.45 | .00      | 20.84         | 20.84 | .00      | 295.20     | 295.07 | .04      | 3.20        |
| 3.40        | .1984         | .1985 | -.05     | 29.47         | 29.47 | .00      | 20.84         | 20.84 | .00      | 295.19     | 295.05 | .05      | 3.40        |
| 3.60        | .2102         | .2103 | -.05     | 29.49         | 29.49 | .00      | 20.84         | 20.84 | .00      | 295.18     | 295.03 | .05      | 3.60        |
| 3.80        | .2219         | .2220 | -.05     | 29.51         | 29.51 | .00      | 20.85         | 20.85 | .00      | 295.16     | 295.02 | .05      | 3.80        |
| 4.00        | .2337         | .2338 | -.05     | 29.53         | 29.54 | .00      | 20.85         | 20.85 | .00      | 295.15     | 295.00 | .05      | 4.00        |
| 4.20        | .2455         | .2456 | -.05     | 29.56         | 29.56 | .00      | 20.85         | 20.85 | .00      | 295.14     | 294.98 | .05      | 4.20        |
| 4.40        | .2572         | .2574 | -.06     | 29.58         | 29.58 | .00      | 20.86         | 20.86 | .00      | 295.13     | 294.96 | .06      | 4.40        |
| 4.60        | .2690         | .2692 | -.06     | 29.60         | 29.60 | .01      | 20.86         | 20.86 | .00      | 295.11     | 294.95 | .06      | 4.60        |
| 4.80        | .2808         | .2810 | -.06     | 29.62         | 29.63 | -.01     | 20.86         | 20.86 | .00      | 295.10     | 294.93 | .06      | 4.80        |
| 5.00        | .2926         | .2928 | -.06     | 29.65         | 29.65 | -.01     | 20.87         | 20.87 | .00      | 295.09     | 294.91 | .06      | 5.00        |
| 5.20        | .3044         | .3046 | -.06     | 29.67         | 29.67 | .01      | 20.87         | 20.87 | -.01     | 295.08     | 294.89 | .06      | 5.20        |
| 5.40        | .3162         | .3164 | -.07     | 29.69         | 29.69 | -.01     | 20.87         | 20.88 | -.01     | 295.06     | 294.88 | .06      | 5.40        |
| 5.60        | .3280         | .3283 | -.07     | 29.71         | 29.72 | -.01     | 20.88         | 20.88 | -.01     | 295.05     | 294.86 | .07      | 5.60        |
| 5.80        | .3399         | .3401 | -.07     | 29.74         | 29.74 | -.01     | 20.88         | 20.88 | -.01     | 295.04     | 294.84 | .07      | 5.80        |
| 6.00        | .3517         | .3520 | -.07     | 29.76         | 29.76 | -.01     | 20.88         | 20.89 | -.01     | 295.03     | 294.83 | .07      | 6.00        |
| 6.20        | .3636         | .3638 | -.07     | 29.78         | 29.78 | -.01     | 20.89         | 20.89 | -.01     | 295.02     | 294.81 | .07      | 6.20        |
| 6.40        | .3754         | .3757 | -.08     | 29.80         | 29.81 | -.01     | 20.89         | 20.89 | -.01     | 295.00     | 294.80 | .07      | 6.40        |
| 6.60        | .3873         | .3876 | -.08     | 29.83         | 29.83 | -.02     | 20.89         | 20.90 | -.01     | 294.99     | 294.78 | .07      | 6.60        |
| 6.80        | .3991         | .3995 | -.08     | 29.85         | 29.85 | -.02     | 20.90         | 20.90 | -.01     | 294.98     | 294.76 | .07      | 6.80        |
| 7.00        | .4110         | .4114 | -.08     | 29.87         | 29.88 | -.02     | 20.90         | 20.90 | -.01     | 294.97     | 294.75 | .07      | 7.00        |
| 7.20        | .4229         | .4233 | -.08     | 29.89         | 29.90 | -.02     | 20.90         | 20.91 | -.01     | 294.96     | 294.73 | .08      | 7.20        |
| 7.40        | .4348         | .4352 | -.09     | 29.92         | 29.92 | -.02     | 20.91         | 20.91 | -.02     | 294.94     | 294.72 | .08      | 7.40        |
| 7.60        | .4467         | .4471 | -.09     | 29.94         | 29.95 | -.02     | 20.91         | 20.91 | -.02     | 294.93     | 294.70 | .08      | 7.60        |
| 7.80        | .4586         | .4590 | -.09     | 29.96         | 29.97 | -.02     | 20.91         | 20.92 | -.02     | 294.92     | 294.69 | .08      | 7.80        |
| 8.00        | .4705         | .4710 | -.09     | 29.98         | 29.99 | -.03     | 20.92         | 20.92 | -.02     | 294.91     | 294.68 | .08      | 8.00        |
| 8.20        | .4825         | .4829 | -.09     | 30.01         | 30.01 | -.03     | 20.92         | 20.93 | -.02     | 294.90     | 294.66 | .08      | 8.20        |
| 8.40        | .4944         | .4949 | -.09     | 30.03         | 30.04 | -.03     | 20.92         | 20.93 | -.02     | 294.88     | 294.65 | .08      | 8.40        |
| 8.60        | .5063         | .5068 | -.10     | 30.05         | 30.06 | -.03     | 20.93         | 20.93 | -.02     | 294.87     | 294.63 | .08      | 8.60        |
| 8.80        | .5183         | .5188 | -.10     | 30.08         | 30.08 | -.03     | 20.93         | 20.94 | -.02     | 294.86     | 294.62 | .08      | 8.80        |
| 9.00        | .5303         | .5308 | -.10     | 30.10         | 30.11 | -.03     | 20.93         | 20.94 | -.03     | 294.85     | 294.61 | .08      | 9.00        |
| 9.20        | .5422         | .5428 | -.10     | 30.12         | 30.13 | -.04     | 20.94         | 20.94 | -.03     | 294.84     | 294.59 | .08      | 9.20        |
| 9.40        | .5542         | .5548 | -.10     | 30.14         | 30.15 | -.04     | 20.94         | 20.95 | -.03     | 294.84     | 294.58 | .08      | 9.40        |
| 9.60        | .5662         | .5668 | -.10     | 30.17         | 30.18 | -.04     | 20.94         | 20.95 | -.03     | 294.82     | 294.57 | .08      | 9.60        |
| 9.80        | .5782         | .5788 | -.10     | 30.19         | 30.20 | -.04     | 20.95         | 20.95 | -.03     | 294.80     | 294.55 | .08      | 9.80        |
| 10.00       | .5902         | .5908 | -.11     | 30.21         | 30.22 | -.04     | 20.95         | 20.96 | -.03     | 294.79     | 294.54 | .09      | 10.00       |

TABLE I.- Continued

TEMP=210. K B0=-.2872425E-01 B1=.4498359E-03 B2=-.5135256E-05 C0=.7233657E-03 C1=-.1706327E-04 C2=.3709210E-06

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 194.68       | 194.68 | .00      | 6101.7     | 6101.6 | .00      | 4356.3     | 4356.3 | -0.0     | .20         |
| .40         | 188.90       | 188.90 | .00      | 6099.1     | 6099.1 | .00      | 4354.3     | 4354.4 | -0.0     | .40         |
| .60         | 185.52       | 185.52 | .00      | 6096.7     | 6096.5 | .00      | 4352.4     | 4352.4 | -0.0     | .60         |
| .80         | 183.12       | 183.12 | .00      | 6094.2     | 6094.0 | .00      | 4350.5     | 4350.5 | -0.0     | .80         |
| 1.00        | 181.26       | 181.26 | .00      | 6091.7     | 6091.4 | .00      | 4348.6     | 4348.6 | -0.0     | 1.00        |
| 1.20        | 179.73       | 179.73 | .00      | 6089.2     | 6088.9 | .01      | 4346.7     | 4346.7 | -0.0     | 1.20        |
| 1.40        | 178.44       | 178.44 | .00      | 6086.7     | 6086.3 | .01      | 4344.8     | 4344.8 | -0.0     | 1.40        |
| 1.60        | 177.32       | 177.32 | .00      | 6084.2     | 6083.8 | .01      | 4342.9     | 4342.9 | -0.0     | 1.60        |
| 1.80        | 176.34       | 176.33 | .00      | 6081.7     | 6081.2 | .01      | 4340.9     | 4340.9 | -0.0     | 1.80        |
| 2.00        | 175.45       | 175.45 | .00      | 6079.2     | 6078.7 | .01      | 4339.0     | 4339.0 | .00      | 2.00        |
| 2.20        | 174.65       | 174.65 | .00      | 6076.7     | 6076.2 | .01      | 4337.1     | 4337.1 | .00      | 2.20        |
| 2.40        | 173.92       | 173.92 | .00      | 6074.2     | 6073.6 | .01      | 4335.2     | 4335.2 | .00      | 2.40        |
| 2.60        | 173.24       | 173.24 | .00      | 6071.7     | 6071.1 | .01      | 4333.3     | 4333.2 | .00      | 2.60        |
| 2.80        | 172.62       | 172.62 | .00      | 6069.2     | 6068.5 | .01      | 4331.3     | 4331.3 | .00      | 2.80        |
| 3.00        | 172.03       | 172.03 | .00      | 6066.7     | 6066.0 | .01      | 4329.4     | 4329.4 | .00      | 3.00        |
| 3.20        | 171.49       | 171.49 | .00      | 6064.2     | 6063.4 | .01      | 4327.5     | 4327.5 | .00      | 3.20        |
| 3.40        | 170.97       | 170.97 | .00      | 6061.7     | 6060.9 | .01      | 4325.6     | 4325.5 | .00      | 3.40        |
| 3.60        | 170.49       | 170.49 | .00      | 6059.2     | 6058.3 | .01      | 4323.7     | 4323.6 | .00      | 3.60        |
| 3.80        | 170.03       | 170.03 | .00      | 6056.7     | 6055.8 | .01      | 4321.7     | 4321.7 | .00      | 3.80        |
| 4.00        | 169.60       | 169.60 | .00      | 6054.2     | 6053.2 | .02      | 4319.8     | 4319.8 | .00      | 4.00        |
| 4.20        | 169.18       | 169.18 | .00      | 6051.7     | 6050.7 | .02      | 4317.9     | 4317.8 | .00      | 4.20        |
| 4.40        | 168.78       | 168.78 | .00      | 6049.2     | 6048.1 | .02      | 4316.0     | 4315.9 | .00      | 4.40        |
| 4.60        | 168.41       | 168.41 | .00      | 6046.6     | 6045.6 | .02      | 4314.0     | 4314.0 | .00      | 4.60        |
| 4.80        | 168.04       | 168.04 | .00      | 6044.1     | 6043.0 | .02      | 4312.1     | 4312.0 | .00      | 4.80        |
| 5.00        | 167.69       | 167.69 | .00      | 6041.6     | 6040.5 | .02      | 4310.1     | 4310.1 | .00      | 5.00        |
| 5.20        | 167.36       | 167.36 | .00      | 6039.1     | 6037.9 | .02      | 4308.3     | 4308.2 | .00      | 5.20        |
| 5.40        | 167.04       | 167.04 | .00      | 6036.6     | 6035.4 | .02      | 4306.3     | 4306.2 | .00      | 5.40        |
| 5.60        | 166.72       | 166.72 | .00      | 6034.1     | 6032.8 | .02      | 4304.4     | 4304.3 | .00      | 5.60        |
| 5.80        | 166.42       | 166.42 | .00      | 6031.6     | 6030.3 | .02      | 4302.5     | 4302.4 | .00      | 5.80        |
| 6.00        | 166.13       | 166.13 | .00      | 6029.1     | 6027.7 | .02      | 4300.6     | 4300.4 | .00      | 6.00        |
| 6.20        | 165.85       | 165.85 | .00      | 6026.6     | 6025.1 | .02      | 4298.6     | 4298.5 | .00      | 6.20        |
| 6.40        | 165.58       | 165.58 | .00      | 6024.1     | 6022.6 | .02      | 4296.7     | 4296.6 | .00      | 6.40        |
| 6.60        | 165.31       | 165.31 | .00      | 6021.5     | 6020.0 | .03      | 4294.8     | 4294.6 | .00      | 6.60        |
| 6.80        | 165.06       | 165.05 | .00      | 6019.0     | 6017.5 | .03      | 4292.8     | 4292.7 | .00      | 6.80        |
| 7.00        | 164.80       | 164.80 | .00      | 6016.5     | 6014.9 | .03      | 4290.9     | 4290.7 | .00      | 7.00        |
| 7.20        | 164.56       | 164.56 | .00      | 6014.0     | 6012.4 | .03      | 4289.0     | 4288.8 | .00      | 7.20        |
| 7.40        | 164.32       | 164.32 | .00      | 6011.5     | 6009.8 | .03      | 4287.1     | 4286.8 | .00      | 7.40        |
| 7.60        | 164.09       | 164.09 | .00      | 6009.0     | 6007.3 | .03      | 4285.1     | 4284.9 | .01      | 7.60        |
| 7.80        | 163.87       | 163.87 | .00      | 6006.5     | 6004.7 | .03      | 4283.2     | 4283.0 | .01      | 7.80        |
| 8.00        | 163.65       | 163.65 | .00      | 6004.0     | 6002.1 | .03      | 4281.3     | 4281.0 | .01      | 8.00        |
| 8.20        | 163.43       | 163.43 | .00      | 6001.4     | 5999.6 | .03      | 4279.3     | 4279.1 | .01      | 8.20        |
| 8.40        | 163.22       | 163.22 | .00      | 5998.9     | 5997.0 | .03      | 4277.4     | 4277.1 | .01      | 8.40        |
| 8.60        | 163.02       | 163.02 | .00      | 5996.4     | 5994.5 | .03      | 4275.5     | 4275.2 | .01      | 8.60        |
| 8.80        | 162.82       | 162.82 | .00      | 5993.9     | 5991.9 | .03      | 4273.5     | 4273.2 | .01      | 8.80        |
| 9.00        | 162.62       | 162.62 | .00      | 5991.4     | 5989.4 | .03      | 4271.6     | 4271.3 | .01      | 9.00        |
| 9.20        | 162.43       | 162.43 | .00      | 5988.9     | 5986.8 | .03      | 4269.7     | 4269.3 | .01      | 9.20        |
| 9.40        | 162.24       | 162.24 | .00      | 5986.3     | 5984.2 | .04      | 4267.7     | 4267.4 | .01      | 9.40        |
| 9.60        | 162.06       | 162.06 | .00      | 5983.8     | 5981.7 | .04      | 4265.8     | 4265.4 | .01      | 9.60        |
| 9.80        | 161.88       | 161.88 | .00      | 5981.3     | 5979.1 | .04      | 4263.9     | 4263.5 | .01      | 9.80        |
| 10.00       | 161.70       | 161.70 | .00      | 5978.8     | 5976.6 | .04      | 4261.9     | 4261.5 | .01      | 10.00       |

## TABLE I.- Continued

TEMP=230. K 90=-.2066007E-01 81E=.3608441E-03 82=-.3051582E-05 C0=-.4530346E-03 C1=-.1014998E-04 C2=.3174180E-06

| PRES<br>ATH | DENS<br>MOL/L | DENS  | DIF<br>% | CP<br>J/MOL.K | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATH |
|-------------|---------------|-------|----------|---------------|-------|----------|---------------|-------|----------|------------|--------|----------|-------------|
| .20         | .0106         | .0106 | -.01     | 29.11         | 29.11 | .00      | 20.78         | 20.78 | .00      | 309.16     | 309.13 | .01      | .20         |
| .40         | .0212         | .0212 | -.01     | 29.13         | 29.13 | .00      | 20.79         | 20.78 | .01      | 309.16     | 309.13 | .01      | .40         |
| .60         | .0318         | .0318 | -.01     | 29.15         | 29.15 | .00      | 20.79         | 20.79 | .01      | 309.17     | 309.13 | .01      | .60         |
| .80         | .0424         | .0424 | -.01     | 29.17         | 29.16 | .01      | 20.79         | 20.79 | .01      | 309.17     | 309.13 | .01      | .80         |
| 1.00        | .0530         | .0531 | -.01     | 29.18         | 29.18 | .01      | 20.80         | 20.79 | .01      | 309.17     | 309.12 | .02      | 1.00        |
| 1.20        | .0637         | .0637 | -.02     | 29.20         | 29.20 | .01      | 20.80         | 20.80 | .02      | 309.18     | 309.12 | .02      | 1.20        |
| 1.40        | .0743         | .0743 | -.02     | 29.22         | 29.22 | .01      | 20.80         | 20.80 | .02      | 309.18     | 309.12 | .02      | 1.40        |
| 1.60        | .0849         | .0849 | -.02     | 29.24         | 29.23 | .01      | 20.81         | 20.80 | .02      | 309.18     | 309.12 | .02      | 1.60        |
| 1.80        | .0956         | .0956 | -.02     | 29.26         | 29.25 | .02      | 20.81         | 20.80 | .02      | 309.19     | 309.11 | .02      | 1.80        |
| 2.00        | .1062         | .1062 | -.03     | 29.27         | 29.27 | .02      | 20.81         | 20.81 | .03      | 309.19     | 309.11 | .02      | 2.00        |
| 2.20        | .1169         | .1169 | -.03     | 29.29         | 29.29 | .02      | 20.82         | 20.81 | .03      | 309.19     | 309.11 | .03      | 2.20        |
| 2.40        | .1275         | .1275 | -.03     | 29.31         | 29.30 | .02      | 20.82         | 20.81 | .03      | 309.20     | 309.11 | .03      | 2.40        |
| 2.60        | .1382         | .1382 | -.03     | 29.33         | 29.32 | .02      | 20.82         | 20.81 | .03      | 309.20     | 309.11 | .03      | 2.60        |
| 2.80        | .1488         | .1489 | -.04     | 29.35         | 29.34 | .02      | 20.82         | 20.82 | .03      | 309.20     | 309.11 | .03      | 2.80        |
| 3.00        | .1595         | .1595 | -.04     | 29.36         | 29.36 | .02      | 20.83         | 20.82 | .04      | 309.21     | 309.10 | .03      | 3.00        |
| 3.20        | .1702         | .1702 | -.04     | 29.38         | 29.37 | .03      | 20.83         | 20.82 | .04      | 309.21     | 309.10 | .03      | 3.20        |
| 3.40        | .1808         | .1809 | -.04     | 29.40         | 29.39 | .03      | 20.83         | 20.83 | .04      | 309.21     | 309.10 | .04      | 3.40        |
| 3.60        | .1915         | .1916 | -.04     | 29.42         | 29.41 | .03      | 20.84         | 20.83 | .04      | 309.22     | 309.10 | .04      | 3.60        |
| 3.80        | .2022         | .2023 | -.05     | 29.44         | 29.43 | .03      | 20.84         | 20.83 | .05      | 309.22     | 309.10 | .04      | 3.80        |
| 4.00        | .2129         | .2130 | -.05     | 29.45         | 29.44 | .03      | 20.84         | 20.83 | .05      | 309.22     | 309.10 | .04      | 4.00        |
| 4.20        | .2236         | .2237 | -.05     | 29.47         | 29.46 | .03      | 20.85         | 20.84 | .05      | 309.23     | 309.10 | .04      | 4.20        |
| 4.40        | .2343         | .2344 | -.05     | 29.49         | 29.48 | .03      | 20.85         | 20.84 | .05      | 309.23     | 309.10 | .04      | 4.40        |
| 4.60        | .2450         | .2451 | -.05     | 29.51         | 29.50 | .03      | 20.85         | 20.84 | .05      | 309.24     | 309.10 | .04      | 4.60        |
| 4.80        | .2557         | .2558 | -.06     | 29.53         | 29.52 | .04      | 20.86         | 20.84 | .06      | 309.24     | 309.10 | .04      | 4.80        |
| 5.00        | .2664         | .2665 | -.06     | 29.54         | 29.53 | .04      | 20.86         | 20.85 | .06      | 309.24     | 309.10 | .05      | 5.00        |
| 5.20        | .2771         | .2773 | -.06     | 29.56         | 29.55 | .04      | 20.86         | 20.85 | .06      | 309.25     | 309.10 | .05      | 5.20        |
| 5.40        | .2878         | .2880 | -.06     | 29.58         | 29.57 | .04      | 20.87         | 20.85 | .06      | 309.25     | 309.10 | .05      | 5.40        |
| 5.60        | .2986         | .2987 | -.06     | 29.60         | 29.59 | .04      | 20.87         | 20.86 | .06      | 309.25     | 309.10 | .05      | 5.60        |
| 5.80        | .3093         | .3095 | -.06     | 29.62         | 29.61 | .04      | 20.87         | 20.86 | .06      | 309.26     | 309.11 | .05      | 5.80        |
| 6.00        | .3200         | .3202 | -.07     | 29.64         | 29.62 | .04      | 20.87         | 20.86 | .07      | 309.27     | 309.11 | .05      | 6.00        |
| 6.20        | .3308         | .3310 | -.07     | 29.65         | 29.64 | .04      | 20.88         | 20.86 | .07      | 309.27     | 309.11 | .05      | 6.20        |
| 6.40        | .3415         | .3417 | -.07     | 29.67         | 29.66 | .04      | 20.88         | 20.87 | .07      | 309.27     | 309.11 | .05      | 6.40        |
| 6.60        | .3523         | .3525 | -.07     | 29.69         | 29.68 | .04      | 20.88         | 20.87 | .07      | 309.28     | 309.11 | .05      | 6.60        |
| 6.80        | .3630         | .3633 | -.07     | 29.71         | 29.69 | .04      | 20.89         | 20.87 | .07      | 309.28     | 309.11 | .06      | 6.80        |
| 7.00        | .3738         | .3740 | -.07     | 29.73         | 29.71 | .04      | 20.89         | 20.87 | .07      | 309.29     | 309.11 | .06      | 7.00        |
| 7.20        | .3845         | .3848 | -.08     | 29.74         | 29.73 | .04      | 20.89         | 20.88 | .07      | 309.29     | 309.12 | .06      | 7.20        |
| 7.40        | .3953         | .3956 | -.08     | 29.76         | 29.75 | .05      | 20.90         | 20.88 | .08      | 309.30     | 309.12 | .06      | 7.40        |
| 7.60        | .4061         | .4064 | -.08     | 29.78         | 29.77 | .05      | 20.90         | 20.88 | .08      | 309.30     | 309.12 | .06      | 7.60        |
| 7.80        | .4168         | .4172 | -.08     | 29.80         | 29.79 | .05      | 20.90         | 20.89 | .08      | 309.31     | 309.12 | .06      | 7.80        |
| 8.00        | .4276         | .4280 | -.08     | 29.82         | 29.80 | .05      | 20.90         | 20.89 | .08      | 309.31     | 309.13 | .06      | 8.00        |
| 8.20        | .4384         | .4388 | -.08     | 29.84         | 29.82 | .05      | 20.91         | 20.89 | .08      | 309.32     | 309.13 | .06      | 8.20        |
| 8.40        | .4492         | .4496 | -.09     | 29.85         | 29.84 | .05      | 20.91         | 20.89 | .08      | 309.32     | 309.13 | .06      | 8.40        |
| 8.60        | .4600         | .4604 | -.09     | 29.87         | 29.86 | .05      | 20.91         | 20.90 | .08      | 309.32     | 309.14 | .06      | 8.60        |
| 8.80        | .4708         | .4712 | -.09     | 29.89         | 29.88 | .05      | 20.92         | 20.90 | .08      | 309.33     | 309.14 | .06      | 8.80        |
| 9.00        | .4816         | .4820 | -.09     | 29.91         | 29.89 | .05      | 20.92         | 20.90 | .08      | 309.33     | 309.14 | .06      | 9.00        |
| 9.20        | .4924         | .4929 | -.09     | 29.93         | 29.91 | .05      | 20.92         | 20.90 | .08      | 309.34     | 309.15 | .06      | 9.20        |
| 9.40        | .5032         | .5037 | -.09     | 29.94         | 29.93 | .05      | 20.92         | 20.91 | .08      | 309.34     | 309.15 | .06      | 9.40        |
| 9.60        | .5141         | .5145 | -.09     | 29.96         | 29.95 | .05      | 20.93         | 20.91 | .08      | 309.35     | 309.15 | .06      | 9.60        |
| 9.80        | .5249         | .5254 | -.09     | 29.98         | 29.97 | .05      | 20.93         | 20.91 | .09      | 309.36     | 309.16 | .06      | 9.80        |
| 10.00       | .5357         | .5362 | -.10     | 30.00         | 29.98 | .05      | 20.93         | 20.91 | .09      | 309.36     | 309.16 | .06      | 10.00       |

TABLE I.- Continued

TEMP=230. K B0=-.2066007E-01 B1=.3608441E-03 B2=-.3851582E-05 C0=.4530346E-03 C1=-.1014998E-04 C2=.3174180E-06

| PRES<br>ATH | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATH |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 197.33       | 197.32 | .00      | 6684.0     | 6683.9 | .00      | 4772.1     | 4772.1 | .00      | .20         |
| .40         | 191.55       | 191.55 | .00      | 6681.9     | 6681.7 | .00      | 4770.4     | 4770.4 | .00      | .40         |
| .60         | 188.18       | 188.18 | .00      | 6679.8     | 6679.6 | .00      | 4768.7     | 4768.7 | .00      | .60         |
| .80         | 185.78       | 185.78 | .00      | 6677.7     | 6677.4 | .00      | 4767.0     | 4767.0 | .00      | .80         |
| 1.00        | 183.91       | 183.91 | .00      | 6675.6     | 6675.2 | .00      | 4765.4     | 4765.3 | .00      | 1.00        |
| 1.20        | 182.39       | 182.39 | .00      | 6673.5     | 6673.1 | .00      | 4763.7     | 4763.6 | .00      | 1.20        |
| 1.40        | 181.10       | 181.10 | .00      | 6671.4     | 6670.9 | .00      | 4762.0     | 4761.9 | .00      | 1.40        |
| 1.60        | 179.98       | 179.98 | .00      | 6669.2     | 6668.8 | .00      | 4760.3     | 4760.3 | .00      | 1.60        |
| 1.80        | 179.00       | 179.00 | .00      | 6667.1     | 6666.6 | .00      | 4758.6     | 4758.6 | .00      | 1.80        |
| 2.00        | 178.11       | 178.11 | .00      | 6665.0     | 6664.5 | .00      | 4756.9     | 4756.9 | .00      | 2.00        |
| 2.20        | 177.31       | 177.31 | .00      | 6662.9     | 6662.3 | .00      | 4755.2     | 4755.2 | .00      | 2.20        |
| 2.40        | 176.58       | 176.58 | .00      | 6660.8     | 6660.2 | .00      | 4753.6     | 4753.5 | .00      | 2.40        |
| 2.60        | 175.91       | 175.91 | .00      | 6658.7     | 6658.0 | .00      | 4751.9     | 4751.8 | .00      | 2.60        |
| 2.80        | 175.29       | 175.29 | .00      | 6656.6     | 6655.9 | .00      | 4750.2     | 4750.1 | .00      | 2.80        |
| 3.00        | 174.71       | 174.71 | .00      | 6654.5     | 6653.7 | .00      | 4748.5     | 4748.4 | .00      | 3.00        |
| 3.20        | 174.16       | 174.16 | .00      | 6652.4     | 6651.6 | .00      | 4746.8     | 4746.7 | .00      | 3.20        |
| 3.40        | 173.65       | 173.65 | .00      | 6650.3     | 6649.4 | .00      | 4745.1     | 4745.0 | .00      | 3.40        |
| 3.60        | 173.17       | 173.17 | .00      | 6648.2     | 6647.3 | .00      | 4743.5     | 4743.3 | .00      | 3.60        |
| 3.80        | 172.71       | 172.71 | .00      | 6646.1     | 6645.1 | .00      | 4741.8     | 4741.6 | .00      | 3.80        |
| 4.00        | 172.28       | 172.28 | .00      | 6644.0     | 6643.0 | .00      | 4740.1     | 4740.0 | .00      | 4.00        |
| 4.20        | 171.87       | 171.86 | .00      | 6641.9     | 6640.8 | .00      | 4738.4     | 4738.3 | .00      | 4.20        |
| 4.40        | 171.47       | 171.47 | .00      | 6639.8     | 6638.7 | .00      | 4736.7     | 4736.6 | .00      | 4.40        |
| 4.60        | 171.09       | 171.09 | .00      | 6637.7     | 6636.5 | .00      | 4735.0     | 4734.9 | .00      | 4.60        |
| 4.80        | 170.73       | 170.73 | .00      | 6635.6     | 6634.4 | .00      | 4733.3     | 4733.2 | .00      | 4.80        |
| 5.00        | 170.39       | 170.39 | .00      | 6633.5     | 6632.2 | .00      | 4731.6     | 4731.5 | .00      | 5.00        |
| 5.20        | 170.05       | 170.05 | .00      | 6631.4     | 6630.1 | .00      | 4730.0     | 4729.8 | .00      | 5.20        |
| 5.40        | 169.73       | 169.73 | .00      | 6629.3     | 6627.9 | .00      | 4728.3     | 4728.1 | .00      | 5.40        |
| 5.60        | 169.42       | 169.42 | .00      | 6627.2     | 6625.8 | .00      | 4726.6     | 4726.4 | .00      | 5.60        |
| 5.80        | 169.12       | 169.12 | .00      | 6625.1     | 6623.6 | .00      | 4724.9     | 4724.7 | .00      | 5.80        |
| 6.00        | 168.83       | 168.83 | .00      | 6622.9     | 6621.5 | .00      | 4723.2     | 4723.0 | .00      | 6.00        |
| 6.20        | 168.55       | 168.55 | .00      | 6620.8     | 6619.3 | .00      | 4721.5     | 4721.3 | .00      | 6.20        |
| 6.40        | 168.28       | 168.28 | .00      | 6618.7     | 6617.2 | .00      | 4719.8     | 4719.6 | .00      | 6.40        |
| 6.60        | 168.02       | 168.02 | .00      | 6616.6     | 6615.0 | .00      | 4718.1     | 4717.9 | .00      | 6.60        |
| 6.80        | 167.76       | 167.76 | .00      | 6614.5     | 6612.9 | .00      | 4716.4     | 4716.2 | .00      | 6.80        |
| 7.00        | 167.52       | 167.51 | .00      | 6612.4     | 6610.7 | .00      | 4714.8     | 4714.5 | .00      | 7.00        |
| 7.20        | 167.27       | 167.27 | .00      | 6610.3     | 6608.6 | .00      | 4713.1     | 4712.8 | .00      | 7.20        |
| 7.40        | 167.04       | 167.04 | .00      | 6608.2     | 6606.4 | .00      | 4711.4     | 4711.1 | .00      | 7.40        |
| 7.60        | 166.81       | 166.81 | .00      | 6606.1     | 6604.3 | .00      | 4709.7     | 4709.4 | .00      | 7.60        |
| 7.80        | 166.59       | 166.59 | .00      | 6604.0     | 6602.1 | .00      | 4708.0     | 4707.7 | .00      | 7.80        |
| 8.00        | 166.37       | 166.37 | .00      | 6601.9     | 6600.0 | .00      | 4706.3     | 4706.0 | .00      | 8.00        |
| 8.20        | 166.16       | 166.16 | .00      | 6599.8     | 6597.8 | .00      | 4704.6     | 4704.3 | .00      | 8.20        |
| 8.40        | 165.95       | 165.95 | .00      | 6597.6     | 6595.7 | .00      | 4702.9     | 4702.6 | .00      | 8.40        |
| 8.60        | 165.75       | 165.74 | .00      | 6595.5     | 6593.5 | .00      | 4701.2     | 4700.9 | .00      | 8.60        |
| 8.80        | 165.55       | 165.55 | .00      | 6593.4     | 6591.4 | .00      | 4699.5     | 4699.2 | .00      | 8.80        |
| 9.00        | 165.35       | 165.35 | .00      | 6591.3     | 6589.2 | .00      | 4697.8     | 4697.5 | .00      | 9.00        |
| 9.20        | 165.16       | 165.16 | .00      | 6589.2     | 6587.1 | .00      | 4696.1     | 4695.8 | .00      | 9.20        |
| 9.40        | 164.98       | 164.98 | .00      | 6587.1     | 6584.9 | .00      | 4694.5     | 4694.0 | .00      | 9.40        |
| 9.60        | 164.79       | 164.79 | .00      | 6585.0     | 6582.8 | .00      | 4692.8     | 4692.3 | .00      | 9.60        |
| 9.80        | 164.61       | 164.61 | .00      | 6582.9     | 6580.7 | .00      | 4691.1     | 4690.6 | .00      | 9.80        |
| 10.00       | 164.44       | 164.44 | .00      | 6580.8     | 6578.5 | .00      | 4689.4     | 4688.9 | .00      | 10.00       |

TABLE I.- Continued

| TEMP=250. K | B0=-.1414974E-01 | B1=.2931131E-03 | B2=-.2971934E-05 | C0=.3094885E-03 | C1=-.4405322E-05 | C2=.2573863E-06 |               |       |          |            |        |          |             |
|-------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|---------------|-------|----------|------------|--------|----------|-------------|
| PRES<br>ATM | DENS<br>MOL/L    | DCNS            | DIF<br>%         | CP<br>J/MOL.K   | CP               | DIF<br>%        | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATM |
| .20         | .0098            | .0098           | -.00             | 29.11           | 29.11            | .00             | 20.78         | 20.78 | .00      | 322.33     | 322.33 | .01      | .20         |
| .40         | .0195            | .0195           | -.01             | 29.12           | 29.12            | .01             | 20.79         | 20.79 | .01      | 322.35     | 322.35 | .01      | .40         |
| .60         | .0293            | .0293           | -.01             | 29.14           | 29.14            | .01             | 20.79         | 20.79 | .01      | 322.36     | 322.36 | .01      | .60         |
| .80         | .0390            | .0390           | -.01             | 29.15           | 29.15            | .01             | 20.79         | 20.79 | .02      | 322.37     | 322.37 | .01      | .80         |
| 1.00        | .0488            | .0488           | -.01             | 29.17           | 29.17            | .01             | 20.80         | 20.80 | .02      | 322.39     | 322.39 | .01      | 1.00        |
| 1.20        | .0585            | .0586           | -.02             | 29.18           | 29.18            | .02             | 20.80         | 20.79 | .03      | 322.40     | 322.36 | .01      | 1.20        |
| 1.40        | .0683            | .0683           | -.02             | 29.20           | 29.19            | .02             | 20.80         | 20.80 | .03      | 322.42     | 322.37 | .01      | 1.40        |
| 1.60        | .0781            | .0781           | -.02             | 29.21           | 29.21            | .02             | 20.80         | 20.80 | .04      | 322.43     | 322.38 | .02      | 1.60        |
| 1.80        | .0879            | .0879           | -.02             | 29.23           | 29.22            | .03             | 20.81         | 20.80 | .04      | 322.45     | 322.39 | .02      | 1.80        |
| 2.00        | .0976            | .0977           | -.02             | 29.24           | 29.24            | .03             | 20.81         | 20.80 | .04      | 322.46     | 322.40 | .02      | 2.00        |
| 2.20        | .1074            | .1074           | -.03             | 29.26           | 29.25            | .03             | 20.81         | 20.80 | .05      | 322.48     | 322.42 | .02      | 2.20        |
| 2.40        | .1172            | .1172           | -.03             | 29.28           | 29.27            | .03             | 20.82         | 20.81 | .05      | 322.49     | 322.43 | .02      | 2.40        |
| 2.60        | .1270            | .1270           | -.03             | 29.29           | 29.28            | .04             | 20.82         | 20.81 | .06      | 322.51     | 322.44 | .02      | 2.60        |
| 2.80        | .1368            | .1368           | -.03             | 29.31           | 29.29            | .04             | 20.83         | 20.81 | .06      | 322.52     | 322.45 | .02      | 2.80        |
| 3.00        | .1465            | .1466           | -.03             | 29.32           | 29.31            | .04             | 20.83         | 20.81 | .07      | 322.54     | 322.46 | .02      | 3.00        |
| 3.20        | .1563            | .1564           | -.04             | 29.34           | 29.32            | .04             | 20.83         | 20.81 | .07      | 322.55     | 322.47 | .02      | 3.20        |
| 3.40        | .1661            | .1662           | -.04             | 29.35           | 29.34            | .05             | 20.83         | 20.82 | .07      | 322.57     | 322.49 | .02      | 3.40        |
| 3.60        | .1759            | .1760           | -.04             | 29.37           | 29.35            | .05             | 20.84         | 20.82 | .08      | 322.58     | 322.50 | .03      | 3.60        |
| 3.80        | .1857            | .1858           | -.04             | 29.38           | 29.37            | .05             | 20.84         | 20.82 | .08      | 322.60     | 322.51 | .03      | 3.80        |
| 4.00        | .1955            | .1956           | -.04             | 29.40           | 29.38            | .05             | 20.84         | 20.82 | .09      | 322.61     | 322.52 | .03      | 4.00        |
| 4.20        | .2053            | .2054           | -.04             | 29.41           | 29.39            | .05             | 20.85         | 20.83 | .09      | 322.63     | 322.54 | .03      | 4.20        |
| 4.40        | .2151            | .2152           | -.05             | 29.43           | 29.41            | .06             | 20.85         | 20.83 | .09      | 322.64     | 322.55 | .03      | 4.40        |
| 4.60        | .2249            | .2251           | -.05             | 29.44           | 29.42            | .06             | 20.85         | 20.83 | .10      | 322.66     | 322.56 | .03      | 4.60        |
| 4.80        | .2348            | .2349           | -.05             | 29.46           | 29.44            | .06             | 20.85         | 20.83 | .10      | 322.67     | 322.58 | .03      | 4.80        |
| 5.00        | .2446            | .2447           | -.05             | 29.47           | 29.45            | .06             | 20.86         | 20.83 | .10      | 322.69     | 322.59 | .03      | 5.00        |
| 5.20        | .2544            | .2545           | -.05             | 29.49           | 29.47            | .07             | 20.86         | 20.84 | .11      | 322.71     | 322.60 | .03      | 5.20        |
| 5.40        | .2642            | .2644           | -.06             | 29.50           | 29.48            | .07             | 20.86         | 20.84 | .11      | 322.72     | 322.62 | .03      | 5.40        |
| 5.60        | .2740            | .2742           | -.06             | 29.52           | 29.50            | .07             | 20.86         | 20.84 | .12      | 322.74     | 322.63 | .03      | 5.60        |
| 5.80        | .2839            | .2840           | -.06             | 29.53           | 29.51            | .07             | 20.87         | 20.84 | .12      | 322.75     | 322.64 | .03      | 5.80        |
| 6.00        | .2937            | .2939           | -.06             | 29.55           | 29.52            | .07             | 20.87         | 20.85 | .12      | 322.77     | 322.66 | .03      | 6.00        |
| 6.20        | .3035            | .3037           | -.06             | 29.56           | 29.54            | .08             | 20.87         | 20.85 | .13      | 322.78     | 322.67 | .03      | 6.20        |
| 6.40        | .3134            | .3136           | -.06             | 29.58           | 29.55            | .08             | 20.88         | 20.85 | .13      | 322.80     | 322.69 | .04      | 6.40        |
| 6.60        | .3232            | .3234           | -.06             | 29.59           | 29.57            | .08             | 20.88         | 20.85 | .13      | 322.82     | 322.70 | .04      | 6.60        |
| 6.80        | .3330            | .3333           | -.07             | 29.61           | 29.58            | .08             | 20.88         | 20.85 | .14      | 322.83     | 322.72 | .04      | 6.80        |
| 7.00        | .3429            | .3431           | -.07             | 29.62           | 29.60            | .08             | 20.88         | 20.85 | .14      | 322.85     | 322.73 | .04      | 7.00        |
| 7.20        | .3527            | .3530           | -.07             | 29.64           | 29.61            | .09             | 20.89         | 20.86 | .14      | 322.86     | 322.74 | .04      | 7.20        |
| 7.40        | .3626            | .3628           | -.07             | 29.65           | 29.63            | .09             | 20.89         | 20.86 | .14      | 322.88     | 322.76 | .04      | 7.40        |
| 7.60        | .3724            | .3727           | -.07             | 29.67           | 29.64            | .09             | 20.89         | 20.86 | .15      | 322.90     | 322.77 | .04      | 7.60        |
| 7.80        | .3823            | .3826           | -.07             | 29.68           | 29.66            | .09             | 20.90         | 20.86 | .15      | 322.91     | 322.79 | .04      | 7.80        |
| 8.00        | .3921            | .3924           | -.07             | 29.70           | 29.67            | .09             | 20.90         | 20.87 | .15      | 322.93     | 322.81 | .04      | 8.00        |
| 8.20        | .4020            | .4023           | -.08             | 29.71           | 29.68            | .09             | 20.90         | 20.87 | .16      | 322.95     | 322.82 | .04      | 8.20        |
| 8.40        | .4119            | .4122           | -.08             | 29.73           | 29.70            | .10             | 20.90         | 20.87 | .16      | 322.96     | 322.84 | .04      | 8.40        |
| 8.60        | .4217            | .4221           | -.08             | 29.74           | 29.71            | .10             | 20.91         | 20.87 | .16      | 322.98     | 322.85 | .04      | 8.60        |
| 8.80        | .4316            | .4319           | -.08             | 29.76           | 29.73            | .10             | 20.91         | 20.88 | .16      | 323.00     | 322.87 | .04      | 8.80        |
| 9.00        | .4415            | .4418           | -.08             | 29.77           | 29.74            | .10             | 20.91         | 20.88 | .17      | 323.01     | 322.88 | .04      | 9.00        |
| 9.20        | .4513            | .4517           | -.08             | 29.79           | 29.76            | .10             | 20.92         | 20.88 | .17      | 323.03     | 322.90 | .04      | 9.20        |
| 9.40        | .4612            | .4616           | -.08             | 29.80           | 29.77            | .11             | 20.92         | 20.88 | .17      | 323.05     | 322.92 | .04      | 9.40        |
| 9.60        | .4711            | .4715           | -.08             | 29.82           | 29.79            | .11             | 20.92         | 20.88 | .18      | 323.06     | 322.93 | .04      | 9.60        |
| 9.80        | .4810            | .4814           | -.09             | 29.83           | 29.80            | .11             | 20.92         | 20.89 | .18      | 323.08     | 322.95 | .04      | 9.80        |
| 10.00       | .4908            | .4913           | -.09             | 29.85           | 29.82            | .11             | 20.93         | 20.89 | .18      | 323.10     | 322.97 | .04      | 10.00       |

TABLE I.- Continued

TEMP=250. K B0=-.1414974E-01 B1=.2931131E-03 B2=-.2971934E-05 C0=.3094885E-03 C1=-.4405322E-05 C2=.2573863E-06

| PRES<br>ATH | S<br>J/HOL.K | S      | DIF<br>% | H<br>J/HOL | H      | DIF<br>% | E<br>J/HOL | E      | DIF<br>% | PRES<br>ATH |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 199.75       | 199.75 | .00      | 7266.2     | 7266.0 | .00      | 5187.9     | 5187.8 | .00      | .20         |
| .40         | 193.98       | 193.98 | .00      | 7264.4     | 7264.2 | .00      | 5186.4     | 5186.3 | .00      | .40         |
| .60         | 190.61       | 190.61 | .00      | 7262.6     | 7262.4 | .00      | 5184.9     | 5184.8 | .00      | .60         |
| .80         | 188.21       | 188.21 | .00      | 7260.8     | 7260.5 | .00      | 5183.4     | 5183.3 | .00      | .80         |
| 1.00        | 186.35       | 186.35 | .00      | 7259.1     | 7258.7 | .01      | 5181.9     | 5181.8 | .00      | 1.00        |
| 1.20        | 184.83       | 184.82 | .00      | 7257.3     | 7256.9 | .01      | 5180.4     | 5180.3 | .00      | 1.20        |
| 1.40        | 183.54       | 183.54 | .00      | 7255.5     | 7255.0 | .01      | 5179.0     | 5178.8 | .00      | 1.40        |
| 1.60        | 182.42       | 182.42 | .00      | 7253.8     | 7253.2 | .01      | 5177.5     | 5177.3 | .00      | 1.60        |
| 1.80        | 181.44       | 181.44 | .00      | 7252.0     | 7251.4 | .01      | 5176.0     | 5175.8 | .00      | 1.80        |
| 2.00        | 180.55       | 180.55 | .00      | 7249.5     | 7249.5 | .00      | 5174.5     | 5174.3 | .00      | 2.00        |
| 2.20        | 179.76       | 179.75 | .00      | 7248.4     | 7247.7 | .01      | 5173.0     | 5172.8 | .00      | 2.20        |
| 2.40        | 179.03       | 179.03 | .00      | 7246.7     | 7245.9 | .01      | 5171.5     | 5171.3 | .00      | 2.40        |
| 2.60        | 178.36       | 178.35 | .00      | 7244.9     | 7244.0 | .01      | 5170.0     | 5169.8 | .00      | 2.60        |
| 2.80        | 177.73       | 177.73 | .00      | 7243.1     | 7242.2 | .01      | 5168.5     | 5168.3 | .01      | 2.80        |
| 3.00        | 177.15       | 177.15 | .00      | 7241.3     | 7240.4 | .01      | 5167.1     | 5166.8 | .01      | 3.00        |
| 3.20        | 176.61       | 176.61 | .00      | 7239.6     | 7238.5 | .01      | 5165.6     | 5165.3 | .01      | 3.20        |
| 3.40        | 176.10       | 176.10 | .00      | 7237.8     | 7236.7 | .02      | 5164.1     | 5163.8 | .01      | 3.40        |
| 3.60        | 175.62       | 175.62 | .00      | 7236.0     | 7234.9 | .02      | 5162.6     | 5162.2 | .01      | 3.60        |
| 3.80        | 175.16       | 175.16 | .00      | 7234.2     | 7233.0 | .02      | 5161.1     | 5160.7 | .01      | 3.80        |
| 4.00        | 174.73       | 174.73 | .00      | 7232.5     | 7231.2 | .02      | 5159.6     | 5159.2 | .01      | 4.00        |
| 4.20        | 174.32       | 174.32 | .00      | 7230.7     | 7229.4 | .02      | 5158.1     | 5157.7 | .01      | 4.20        |
| 4.40        | 173.93       | 173.93 | .00      | 7228.9     | 7227.5 | .02      | 5156.6     | 5156.2 | .01      | 4.40        |
| 4.60        | 173.55       | 173.55 | .00      | 7227.1     | 7225.7 | .02      | 5155.1     | 5154.7 | .01      | 4.60        |
| 4.80        | 173.19       | 173.19 | .00      | 7225.4     | 7223.9 | .02      | 5153.7     | 5153.2 | .01      | 4.80        |
| 5.00        | 172.85       | 172.84 | .00      | 7223.6     | 7222.0 | .02      | 5152.2     | 5151.7 | .01      | 5.00        |
| 5.20        | 172.51       | 172.51 | .00      | 7221.8     | 7220.2 | .02      | 5150.7     | 5150.2 | .01      | 5.20        |
| 5.40        | 172.19       | 172.19 | .00      | 7220.0     | 7218.4 | .02      | 5149.2     | 5148.7 | .01      | 5.40        |
| 5.60        | 171.89       | 171.88 | .00      | 7218.3     | 7216.6 | .02      | 5147.7     | 5147.2 | .01      | 5.60        |
| 5.80        | 171.59       | 171.59 | .00      | 7216.5     | 7214.7 | .02      | 5146.2     | 5145.6 | .01      | 5.80        |
| 6.00        | 171.30       | 171.30 | .00      | 7214.7     | 7212.9 | .03      | 5144.7     | 5144.1 | .01      | 6.00        |
| 6.20        | 171.02       | 171.02 | .00      | 7212.9     | 7211.1 | .03      | 5143.2     | 5142.6 | .01      | 6.20        |
| 6.40        | 170.75       | 170.75 | .00      | 7211.2     | 7209.2 | .03      | 5141.7     | 5141.1 | .01      | 6.40        |
| 6.60        | 170.49       | 170.49 | .00      | 7209.4     | 7207.4 | .03      | 5140.2     | 5139.6 | .01      | 6.60        |
| 6.80        | 170.24       | 170.23 | .00      | 7207.6     | 7205.6 | .03      | 5138.8     | 5138.1 | .01      | 6.80        |
| 7.00        | 169.99       | 169.99 | .00      | 7205.8     | 7203.8 | .03      | 5137.3     | 5136.6 | .01      | 7.00        |
| 7.20        | 169.75       | 169.75 | .00      | 7204.1     | 7201.9 | .03      | 5135.8     | 5135.1 | .01      | 7.20        |
| 7.40        | 169.52       | 169.51 | .00      | 7202.3     | 7200.1 | .03      | 5134.3     | 5133.6 | .01      | 7.40        |
| 7.60        | 169.29       | 169.29 | .00      | 7200.5     | 7198.3 | .03      | 5132.8     | 5132.1 | .01      | 7.60        |
| 7.80        | 169.07       | 169.06 | .00      | 7198.7     | 7196.5 | .03      | 5131.3     | 5130.5 | .01      | 7.80        |
| 8.00        | 168.85       | 168.85 | .00      | 7197.0     | 7194.6 | .03      | 5129.8     | 5129.0 | .01      | 8.00        |
| 8.20        | 168.64       | 168.64 | .00      | 7195.2     | 7192.8 | .03      | 5128.3     | 5127.5 | .02      | 8.20        |
| 8.40        | 168.43       | 168.43 | .00      | 7193.4     | 7191.0 | .03      | 5126.8     | 5126.0 | .02      | 8.40        |
| 8.60        | 168.23       | 168.23 | .00      | 7191.6     | 7189.2 | .03      | 5125.3     | 5124.5 | .02      | 8.60        |
| 8.80        | 168.03       | 168.03 | .00      | 7189.8     | 7187.3 | .03      | 5123.8     | 5123.0 | .02      | 8.80        |
| 9.00        | 167.84       | 167.84 | .00      | 7188.1     | 7185.5 | .04      | 5122.3     | 5121.5 | .02      | 9.00        |
| 9.20        | 167.65       | 167.65 | .00      | 7186.3     | 7183.7 | .04      | 5120.8     | 5120.0 | .02      | 9.20        |
| 9.40        | 167.47       | 167.46 | .00      | 7184.5     | 7181.9 | .04      | 5119.3     | 5118.4 | .02      | 9.40        |
| 9.60        | 167.29       | 167.28 | .00      | 7182.7     | 7180.1 | .04      | 5117.9     | 5116.9 | .02      | 9.60        |
| 9.80        | 167.11       | 167.11 | .00      | 7180.9     | 7178.2 | .04      | 5116.4     | 5115.4 | .02      | 9.80        |
| 10.00       | 166.93       | 166.93 | .00      | 7179.2     | 7176.4 | .04      | 5114.9     | 5113.9 | .02      | 10.00       |

TABLE I.- Continued

TEMP=270. K B0=-.0836055E-02 B1=.2403824E-03 B2=-.2332314E-05 C0=.2690972E-03 C1=.1845232E-06 C2=.2029606E-06

| PRES<br>ATM | DENS<br>MOL/L | DENS<br>% | DIF<br>% | CP<br>J/MOL.K | CP<br>J/MOL.K | DIF<br>% | CV<br>J/MOL.K | CV<br>J/MOL.K | DIF<br>% | VEL<br>H/S | VEL    | DIF<br>% | PRES<br>ATM |
|-------------|---------------|-----------|----------|---------------|---------------|----------|---------------|---------------|----------|------------|--------|----------|-------------|
| .20         | .0090         | .0090     | -.00     | 29.11         | 29.11         | .00      | 20.79         | 20.78         | .01      | 334.98     | 334.95 | .01      | .20         |
| .40         | .0181         | .0181     | -.01     | 29.12         | 29.12         | .01      | 20.79         | 20.79         | .01      | 335.00     | 334.98 | .01      | .40         |
| .60         | .0271         | .0271     | -.01     | 29.13         | 29.13         | .01      | 20.79         | 20.79         | .02      | 335.02     | 335.00 | .01      | .60         |
| .80         | .0361         | .0361     | -.01     | 29.15         | 29.14         | .01      | 20.79         | 20.79         | .02      | 335.05     | 335.02 | .01      | .80         |
| 1.00        | .0452         | .0452     | -.01     | 29.16         | 29.16         | .02      | 20.80         | 20.79         | .03      | 335.07     | 335.04 | .01      | 1.00        |
| 1.20        | .0542         | .0542     | -.01     | 29.17         | 29.17         | .02      | 20.80         | 20.79         | .03      | 335.09     | 335.06 | .01      | 1.20        |
| 1.40        | .0632         | .0632     | -.02     | 29.19         | 29.18         | .03      | 20.80         | 20.79         | .04      | 335.11     | 335.08 | .01      | 1.40        |
| 1.60        | .0723         | .0723     | -.02     | 29.20         | 29.19         | .03      | 20.81         | 20.80         | .05      | 335.14     | 335.10 | .01      | 1.60        |
| 1.80        | .0813         | .0813     | -.02     | 29.21         | 29.20         | .03      | 20.81         | 20.80         | .06      | 335.16     | 335.12 | .01      | 1.80        |
| 2.00        | .0903         | .0904     | -.02     | 29.22         | 29.21         | .03      | 20.81         | 20.80         | .06      | 335.18     | 335.14 | .01      | 2.00        |
| 2.20        | .0994         | .0994     | -.02     | 29.24         | 29.23         | .03      | 20.81         | 20.80         | .06      | 335.21     | 335.16 | .01      | 2.20        |
| 2.40        | .1084         | .1084     | -.03     | 29.25         | 29.24         | .04      | 20.82         | 20.80         | .07      | 335.23     | 335.19 | .01      | 2.40        |
| 2.60        | .1175         | .1175     | -.03     | 29.26         | 29.25         | .04      | 20.82         | 20.81         | .07      | 335.25     | 335.21 | .01      | 2.60        |
| 2.80        | .1265         | .1266     | -.03     | 29.28         | 29.26         | .04      | 20.82         | 20.81         | .08      | 335.28     | 335.23 | .01      | 2.80        |
| 3.00        | .1356         | .1356     | -.03     | 29.29         | 29.27         | .05      | 20.83         | 20.81         | .08      | 335.30     | 335.25 | .01      | 3.00        |
| 3.20        | .1446         | .1447     | -.03     | 29.30         | 29.29         | .05      | 20.83         | 20.81         | .09      | 335.32     | 335.27 | .01      | 3.20        |
| 3.40        | .1537         | .1537     | -.03     | 29.31         | 29.30         | .05      | 20.83         | 20.81         | .09      | 335.35     | 335.30 | .02      | 3.40        |
| 3.60        | .1627         | .1628     | -.04     | 29.33         | 29.31         | .05      | 20.83         | 20.81         | .10      | 335.37     | 335.32 | .02      | 3.60        |
| 3.80        | .1718         | .1718     | -.04     | 29.34         | 29.32         | .06      | 20.84         | 20.82         | .10      | 335.39     | 335.34 | .02      | 3.80        |
| 4.00        | .1809         | .1809     | -.04     | 29.35         | 29.33         | .06      | 20.84         | 20.82         | .11      | 335.42     | 335.36 | .02      | 4.00        |
| 4.20        | .1899         | .1900     | -.04     | 29.36         | 29.35         | .06      | 20.84         | 20.82         | .11      | 335.44     | 335.38 | .02      | 4.20        |
| 4.40        | .1989         | .1990     | -.04     | 29.38         | 29.36         | .07      | 20.85         | 20.82         | .12      | 335.46     | 335.41 | .02      | 4.40        |
| 4.60        | .2080         | .2081     | -.04     | 29.39         | 29.37         | .07      | 20.85         | 20.82         | .12      | 335.49     | 335.43 | .02      | 4.60        |
| 4.80        | .2171         | .2172     | -.04     | 29.40         | 29.38         | .07      | 20.85         | 20.83         | .13      | 335.51     | 335.45 | .02      | 4.80        |
| 5.00        | .2262         | .2262     | -.05     | 29.42         | 29.39         | .07      | 20.85         | 20.83         | .13      | 335.53     | 335.48 | .02      | 5.00        |
| 5.20        | .2352         | .2353     | -.05     | 29.43         | 29.41         | .08      | 20.86         | 20.83         | .14      | 335.56     | 335.50 | .02      | 5.20        |
| 5.40        | .2443         | .2444     | -.05     | 29.44         | 29.42         | .08      | 20.86         | 20.83         | .14      | 335.58     | 335.52 | .02      | 5.40        |
| 5.60        | .2533         | .2535     | -.05     | 29.45         | 29.43         | .08      | 20.86         | 20.83         | .15      | 335.61     | 335.55 | .02      | 5.60        |
| 5.80        | .2624         | .2625     | -.05     | 29.47         | 29.44         | .08      | 20.87         | 20.83         | .15      | 335.63     | 335.57 | .02      | 5.80        |
| 6.00        | .2715         | .2716     | -.05     | 29.48         | 29.45         | .09      | 20.87         | 20.84         | .16      | 335.66     | 335.59 | .02      | 6.00        |
| 6.20        | .2805         | .2807     | -.06     | 29.49         | 29.47         | .09      | 20.87         | 20.84         | .16      | 335.68     | 335.62 | .02      | 6.20        |
| 6.40        | .2896         | .2898     | -.06     | 29.50         | 29.48         | .09      | 20.87         | 20.84         | .16      | 335.70     | 335.64 | .02      | 6.40        |
| 6.60        | .2987         | .2989     | -.06     | 29.52         | 29.49         | .09      | 20.88         | 20.84         | .17      | 335.73     | 335.66 | .02      | 6.60        |
| 6.80        | .3078         | .3079     | -.06     | 29.53         | 29.50         | .10      | 20.88         | 20.84         | .17      | 335.75     | 335.69 | .02      | 6.80        |
| 7.00        | .3168         | .3170     | -.06     | 29.54         | 29.51         | .10      | 20.88         | 20.84         | .18      | 335.78     | 335.71 | .02      | 7.00        |
| 7.20        | .3259         | .3261     | -.06     | 29.56         | 29.53         | .10      | 20.88         | 20.85         | .18      | 335.80     | 335.74 | .02      | 7.20        |
| 7.40        | .3350         | .3352     | -.06     | 29.57         | 29.54         | .10      | 20.89         | 20.85         | .19      | 335.83     | 335.76 | .02      | 7.40        |
| 7.60        | .3441         | .3443     | -.06     | 29.58         | 29.55         | .11      | 20.89         | 20.85         | .19      | 335.85     | 335.79 | .02      | 7.60        |
| 7.80        | .3532         | .3534     | -.07     | 29.59         | 29.56         | .11      | 20.89         | 20.85         | .19      | 335.88     | 335.81 | .02      | 7.80        |
| 8.00        | .3622         | .3625     | -.07     | 29.61         | 29.57         | .11      | 20.90         | 20.85         | .20      | 335.90     | 335.83 | .02      | 8.00        |
| 8.20        | .3713         | .3716     | -.07     | 29.62         | 29.58         | .11      | 20.90         | 20.86         | .20      | 335.92     | 335.86 | .02      | 8.20        |
| 8.40        | .3804         | .3807     | -.07     | 29.63         | 29.60         | .12      | 20.90         | 20.86         | .21      | 335.95     | 335.88 | .02      | 8.40        |
| 8.60        | .3895         | .3898     | -.07     | 29.64         | 29.61         | .12      | 20.90         | 20.86         | .21      | 335.97     | 335.91 | .02      | 8.60        |
| 8.80        | .3986         | .3989     | -.07     | 29.66         | 29.62         | .12      | 20.91         | 20.86         | .21      | 336.00     | 335.93 | .02      | 8.80        |
| 9.00        | .4077         | .4080     | -.07     | 29.67         | 29.63         | .12      | 20.91         | 20.86         | .22      | 336.02     | 335.96 | .02      | 9.00        |
| 9.20        | .4168         | .4171     | -.07     | 29.68         | 29.64         | .13      | 20.91         | 20.86         | .22      | 336.05     | 335.99 | .02      | 9.20        |
| 9.40        | .4259         | .4262     | -.08     | 29.70         | 29.66         | .13      | 20.91         | 20.87         | .23      | 336.08     | 336.01 | .02      | 9.40        |
| 9.60        | .4350         | .4353     | -.08     | 29.71         | 29.67         | .13      | 20.92         | 20.87         | .23      | 336.10     | 336.04 | .02      | 9.60        |
| 9.80        | .4441         | .4444     | -.08     | 29.72         | 29.68         | .13      | 20.92         | 20.87         | .23      | 336.13     | 336.06 | .02      | 9.80        |
| 10.00       | .4532         | .4535     | -.08     | 29.73         | 29.69         | .14      | 20.92         | 20.87         | .24      | 336.15     | 336.09 | .02      | 10.00       |

TABLE I.- Continued

TEMP=270. K 80=-.8836055E-02 81=.2403824E-03 82=-.2332314E-05 C0=.2690972E-03 C1=.1846232E-06 C2=.2029606E-06

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 201.99       | 201.99 | .00      | 7848.3     | 7848.2 | .00      | 5603.7     | 5603.6 | .00      | .20         |
| .40         | 196.22       | 196.22 | .00      | 7846.9     | 7846.6 | .00      | 5602.3     | 5602.3 | .00      | .40         |
| .60         | 192.85       | 192.85 | .00      | 7845.4     | 7845.0 | .00      | 5601.0     | 5600.9 | .00      | .60         |
| .80         | 190.45       | 190.45 | .00      | 7843.9     | 7843.5 | .00      | 5599.7     | 5599.6 | .00      | .80         |
| 1.00        | 188.59       | 188.59 | .00      | 7842.4     | 7841.9 | .01      | 5598.4     | 5598.2 | .00      | 1.00        |
| 1.20        | 187.07       | 187.07 | .00      | 7840.9     | 7840.3 | .01      | 5597.1     | 5596.8 | .00      | 1.20        |
| 1.40        | 185.78       | 185.78 | .00      | 7839.4     | 7838.7 | .01      | 5595.8     | 5595.5 | .00      | 1.40        |
| 1.60        | 184.67       | 184.67 | .00      | 7837.9     | 7837.2 | .01      | 5594.4     | 5594.1 | .01      | 1.60        |
| 1.80        | 183.69       | 183.68 | .00      | 7836.4     | 7835.6 | .01      | 5593.1     | 5592.8 | .01      | 1.80        |
| 2.00        | 182.80       | 182.80 | .00      | 7834.9     | 7834.0 | .01      | 5591.8     | 5591.4 | .01      | 2.00        |
| 2.20        | 182.01       | 182.01 | .00      | 7833.4     | 7832.4 | .01      | 5590.5     | 5590.1 | .01      | 2.20        |
| 2.40        | 181.28       | 181.28 | .00      | 7831.9     | 7830.9 | .01      | 5589.2     | 5588.7 | .01      | 2.40        |
| 2.60        | 180.61       | 180.61 | .00      | 7830.4     | 7829.3 | .01      | 5587.9     | 5587.4 | .01      | 2.60        |
| 2.80        | 179.99       | 179.99 | .00      | 7828.9     | 7827.7 | .02      | 5586.5     | 5586.0 | .01      | 2.80        |
| 3.00        | 179.41       | 179.41 | .00      | 7827.4     | 7826.2 | .02      | 5585.2     | 5584.6 | .01      | 3.00        |
| 3.20        | 178.87       | 178.86 | .00      | 7825.9     | 7824.6 | .02      | 5583.9     | 5583.3 | .01      | 3.20        |
| 3.40        | 178.36       | 178.36 | .00      | 7824.4     | 7823.0 | .02      | 5582.6     | 5581.9 | .01      | 3.40        |
| 3.60        | 177.88       | 177.88 | .00      | 7822.9     | 7821.4 | .02      | 5581.3     | 5580.6 | .01      | 3.60        |
| 3.80        | 177.42       | 177.42 | .00      | 7821.4     | 7819.9 | .02      | 5579.9     | 5579.2 | .01      | 3.80        |
| 4.00        | 176.99       | 176.99 | .00      | 7819.9     | 7818.3 | .02      | 5578.6     | 5577.9 | .01      | 4.00        |
| 4.20        | 176.58       | 176.58 | .00      | 7818.4     | 7816.7 | .02      | 5577.3     | 5576.5 | .01      | 4.20        |
| 4.40        | 176.19       | 176.19 | .00      | 7816.9     | 7815.2 | .02      | 5576.0     | 5575.2 | .01      | 4.40        |
| 4.60        | 175.82       | 175.81 | .00      | 7815.4     | 7813.6 | .02      | 5574.7     | 5573.8 | .02      | 4.60        |
| 4.80        | 175.46       | 175.45 | .00      | 7813.9     | 7812.0 | .02      | 5573.3     | 5572.4 | .02      | 4.80        |
| 5.00        | 175.11       | 175.11 | .00      | 7812.4     | 7810.5 | .03      | 5572.0     | 5571.1 | .02      | 5.00        |
| 5.20        | 174.78       | 174.78 | .00      | 7810.9     | 7808.9 | .03      | 5570.7     | 5569.7 | .02      | 5.20        |
| 5.40        | 174.46       | 174.46 | .00      | 7809.4     | 7807.3 | .03      | 5569.4     | 5568.4 | .02      | 5.40        |
| 5.60        | 174.16       | 174.15 | .00      | 7807.9     | 7805.8 | .03      | 5568.1     | 5567.0 | .02      | 5.60        |
| 5.80        | 173.86       | 173.86 | .00      | 7806.4     | 7804.2 | .03      | 5566.7     | 5565.7 | .02      | 5.80        |
| 6.00        | 173.57       | 173.57 | .00      | 7804.9     | 7802.6 | .03      | 5565.4     | 5564.3 | .02      | 6.00        |
| 6.20        | 173.29       | 173.29 | .00      | 7803.4     | 7801.1 | .03      | 5564.1     | 5563.0 | .02      | 6.20        |
| 6.40        | 173.03       | 173.02 | .00      | 7801.9     | 7799.5 | .03      | 5562.8     | 5561.6 | .02      | 6.40        |
| 6.60        | 172.77       | 172.76 | .00      | 7800.4     | 7797.9 | .03      | 5561.4     | 5560.2 | .02      | 6.60        |
| 6.80        | 172.51       | 172.51 | .00      | 7798.9     | 7796.4 | .03      | 5560.1     | 5558.9 | .02      | 6.80        |
| 7.00        | 172.27       | 172.26 | .00      | 7797.4     | 7794.8 | .03      | 5558.8     | 5557.5 | .02      | 7.00        |
| 7.20        | 172.03       | 172.02 | .00      | 7795.9     | 7793.3 | .03      | 5557.5     | 5556.2 | .02      | 7.20        |
| 7.40        | 171.79       | 171.79 | .00      | 7794.4     | 7791.7 | .04      | 5556.2     | 5554.8 | .02      | 7.40        |
| 7.60        | 171.57       | 171.56 | .00      | 7793.0     | 7790.1 | .04      | 5554.8     | 5553.5 | .02      | 7.60        |
| 7.80        | 171.35       | 171.34 | .00      | 7791.5     | 7788.6 | .04      | 5553.5     | 5552.1 | .03      | 7.80        |
| 8.00        | 171.13       | 171.13 | .00      | 7789.9     | 7787.0 | .04      | 5552.2     | 5550.8 | .03      | 8.00        |
| 8.20        | 170.92       | 170.92 | .00      | 7788.4     | 7785.5 | .04      | 5550.9     | 5549.4 | .03      | 8.20        |
| 8.40        | 170.72       | 170.71 | .00      | 7786.9     | 7783.9 | .04      | 5549.5     | 5548.0 | .03      | 8.40        |
| 8.60        | 170.52       | 170.51 | .00      | 7785.4     | 7782.3 | .04      | 5548.2     | 5546.7 | .03      | 8.60        |
| 8.80        | 170.32       | 170.31 | .00      | 7783.9     | 7780.8 | .04      | 5546.9     | 5545.3 | .03      | 8.80        |
| 9.00        | 170.13       | 170.12 | .00      | 7782.4     | 7779.2 | .04      | 5545.6     | 5544.0 | .03      | 9.00        |
| 9.20        | 169.94       | 169.93 | .00      | 7780.9     | 7777.7 | .04      | 5544.2     | 5542.6 | .03      | 9.20        |
| 9.40        | 169.76       | 169.75 | .00      | 7779.4     | 7776.1 | .04      | 5542.9     | 5541.3 | .03      | 9.40        |
| 9.60        | 169.58       | 169.57 | .00      | 7777.9     | 7774.6 | .04      | 5541.6     | 5539.9 | .03      | 9.60        |
| 9.80        | 169.40       | 169.39 | .00      | 7776.4     | 7773.0 | .04      | 5540.3     | 5538.5 | .03      | 9.80        |
| 10.00       | 169.23       | 169.22 | .00      | 7774.9     | 7771.4 | .04      | 5538.9     | 5537.2 | .03      | 10.00       |

TABLE I.- Continued

| TEMP=290. K | B0=-.4460336E-02 | B1=.1988092E-03 | B2=-.1845577E-05 | C0=.3101873E-03 | C1=.3772233E-05 | C2=.1573080E-06 |               |       |          |            |        |          |             |
|-------------|------------------|-----------------|------------------|-----------------|-----------------|-----------------|---------------|-------|----------|------------|--------|----------|-------------|
| PRES<br>ATM | DENS<br>MOL/L    | DENS            | DIF<br>%         | CP<br>J/MOL.K   | CP              | DIF<br>%        | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATM |
| .20         | .0084            | .0084           | -.00             | 29.11           | 29.11           | .00             | 20.79         | 20.79 | .01      | 347.16     | 347.13 | .01      | .20         |
| .40         | .0168            | .0168           | -.01             | 29.12           | 29.12           | .01             | 20.79         | 20.79 | .01      | 347.19     | 347.16 | .01      | .40         |
| .60         | .0252            | .0252           | -.01             | 29.13           | 29.13           | .01             | 20.80         | 20.79 | .02      | 347.21     | 347.19 | .01      | .60         |
| .80         | .0336            | .0336           | -.01             | 29.14           | 29.14           | .01             | 20.80         | 20.79 | .02      | 347.24     | 347.22 | .01      | .80         |
| 1.00        | .0420            | .0420           | -.01             | 29.16           | 29.15           | .02             | 20.80         | 20.79 | .03      | 347.27     | 347.25 | .01      | 1.00        |
| 1.20        | .0504            | .0504           | -.01             | 29.17           | 29.16           | .02             | 20.80         | 20.80 | .04      | 347.30     | 347.28 | .01      | 1.20        |
| 1.40        | .0588            | .0589           | -.01             | 29.18           | 29.17           | .02             | 20.81         | 20.80 | .04      | 347.33     | 347.31 | .01      | 1.40        |
| 1.60        | .0673            | .0673           | -.02             | 29.19           | 29.18           | .02             | 20.81         | 20.80 | .05      | 347.36     | 347.33 | .01      | 1.60        |
| 1.80        | .0757            | .0757           | -.02             | 29.20           | 29.19           | .03             | 20.81         | 20.80 | .05      | 347.39     | 347.36 | .01      | 1.80        |
| 2.00        | .0841            | .0841           | -.02             | 29.21           | 29.20           | .03             | 20.81         | 20.80 | .06      | 347.42     | 347.39 | .01      | 2.00        |
| 2.20        | .0925            | .0925           | -.02             | 29.22           | 29.21           | .03             | 20.82         | 20.80 | .06      | 347.45     | 347.42 | .01      | 2.20        |
| 2.40        | .1009            | .1009           | -.02             | 29.23           | 29.22           | .03             | 20.82         | 20.81 | .07      | 347.47     | 347.45 | .01      | 2.40        |
| 2.60        | .1093            | .1093           | -.02             | 29.24           | 29.23           | .04             | 20.82         | 20.81 | .08      | 347.50     | 347.48 | .01      | 2.60        |
| 2.80        | .1177            | .1178           | -.02             | 29.25           | 29.24           | .04             | 20.83         | 20.81 | .08      | 347.53     | 347.51 | .01      | 2.80        |
| 3.00        | .1261            | .1262           | -.03             | 29.26           | 29.25           | .04             | 20.83         | 20.81 | .09      | 347.56     | 347.54 | .01      | 3.00        |
| 3.20        | .1346            | .1346           | -.03             | 29.27           | 29.26           | .05             | 20.83         | 20.81 | .09      | 347.59     | 347.57 | .01      | 3.20        |
| 3.40        | .1430            | .1430           | -.03             | 29.28           | 29.27           | .05             | 20.83         | 20.81 | .10      | 347.62     | 347.60 | .01      | 3.40        |
| 3.60        | .1514            | .1514           | -.03             | 29.30           | 29.28           | .05             | 20.84         | 20.81 | .10      | 347.65     | 347.63 | .01      | 3.60        |
| 3.80        | .1598            | .1599           | -.03             | 29.31           | 29.29           | .05             | 20.84         | 20.82 | .11      | 347.68     | 347.66 | .01      | 3.80        |
| 4.00        | .1682            | .1683           | -.03             | 29.32           | 29.30           | .06             | 20.84         | 20.82 | .11      | 347.71     | 347.69 | .01      | 4.00        |
| 4.20        | .1766            | .1767           | -.04             | 29.33           | 29.31           | .06             | 20.84         | 20.82 | .12      | 347.74     | 347.72 | .01      | 4.20        |
| 4.40        | .1851            | .1851           | -.04             | 29.34           | 29.32           | .06             | 20.85         | 20.82 | .12      | 347.77     | 347.75 | .01      | 4.40        |
| 4.60        | .1935            | .1935           | -.04             | 29.35           | 29.33           | .06             | 20.85         | 20.82 | .13      | 347.80     | 347.78 | .01      | 4.60        |
| 4.80        | .2019            | .2020           | -.04             | 29.36           | 29.34           | .07             | 20.85         | 20.82 | .13      | 347.83     | 347.81 | .01      | 4.80        |
| 5.00        | .2103            | .2104           | -.04             | 29.37           | 29.35           | .07             | 20.85         | 20.82 | .14      | 347.86     | 347.84 | .01      | 5.00        |
| 5.20        | .2187            | .2188           | -.04             | 29.38           | 29.36           | .07             | 20.86         | 20.83 | .14      | 347.89     | 347.87 | .01      | 5.20        |
| 5.40        | .2272            | .2273           | -.04             | 29.39           | 29.37           | .07             | 20.86         | 20.83 | .15      | 347.92     | 347.90 | .01      | 5.40        |
| 5.60        | .2356            | .2357           | -.04             | 29.40           | 29.38           | .08             | 20.86         | 20.83 | .15      | 347.95     | 347.93 | .01      | 5.60        |
| 5.80        | .2440            | .2441           | -.05             | 29.42           | 29.39           | .08             | 20.86         | 20.83 | .16      | 347.98     | 347.96 | .01      | 5.80        |
| 6.00        | .2524            | .2525           | -.05             | 29.43           | 29.40           | .08             | 20.87         | 20.83 | .16      | 348.01     | 347.99 | .01      | 6.00        |
| 6.20        | .2608            | .2610           | -.05             | 29.44           | 29.41           | .08             | 20.87         | 20.83 | .17      | 348.04     | 348.02 | .01      | 6.20        |
| 6.40        | .2693            | .2694           | -.05             | 29.45           | 29.42           | .09             | 20.87         | 20.84 | .17      | 348.07     | 348.05 | .01      | 6.40        |
| 6.60        | .2777            | .2778           | -.05             | 29.46           | 29.43           | .09             | 20.87         | 20.84 | .18      | 348.10     | 348.08 | .01      | 6.60        |
| 6.80        | .2861            | .2863           | -.05             | 29.47           | 29.44           | .09             | 20.88         | 20.84 | .18      | 348.13     | 348.11 | .01      | 6.80        |
| 7.00        | .2945            | .2947           | -.05             | 29.48           | 29.45           | .09             | 20.88         | 20.84 | .19      | 348.16     | 348.15 | .01      | 7.00        |
| 7.20        | .3030            | .3031           | -.05             | 29.49           | 29.46           | .10             | 20.88         | 20.84 | .19      | 348.19     | 348.18 | .01      | 7.20        |
| 7.40        | .3114            | .3116           | -.06             | 29.50           | 29.47           | .10             | 20.88         | 20.84 | .20      | 348.23     | 348.21 | .00      | 7.40        |
| 7.60        | .3198            | .3201           | -.06             | 29.51           | 29.48           | .10             | 20.89         | 20.84 | .20      | 348.26     | 348.24 | .00      | 7.60        |
| 7.80        | .3283            | .3284           | -.06             | 29.52           | 29.49           | .10             | 20.89         | 20.85 | .21      | 348.29     | 348.27 | .00      | 7.80        |
| 8.00        | .3367            | .3369           | -.06             | 29.53           | 29.50           | .11             | 20.89         | 20.85 | .21      | 348.32     | 348.30 | .00      | 8.00        |
| 8.20        | .3451            | .3453           | -.06             | 29.54           | 29.51           | .11             | 20.89         | 20.85 | .22      | 348.35     | 348.34 | .00      | 8.20        |
| 8.40        | .3535            | .3538           | -.06             | 29.55           | 29.52           | .11             | 20.90         | 20.85 | .22      | 348.38     | 348.37 | .00      | 8.40        |
| 8.60        | .3620            | .3622           | -.06             | 29.57           | 29.53           | .11             | 20.90         | 20.85 | .22      | 348.41     | 348.40 | .00      | 8.60        |
| 8.80        | .3704            | .3706           | -.06             | 29.58           | 29.54           | .12             | 20.90         | 20.85 | .23      | 348.44     | 348.43 | .00      | 8.80        |
| 9.00        | .3788            | .3791           | -.06             | 29.59           | 29.55           | .12             | 20.90         | 20.85 | .23      | 348.48     | 348.46 | .00      | 9.00        |
| 9.20        | .3873            | .3875           | -.07             | 29.60           | 29.56           | .12             | 20.91         | 20.86 | .24      | 348.51     | 348.50 | .00      | 9.20        |
| 9.40        | .3957            | .3960           | -.07             | 29.61           | 29.57           | .13             | 20.91         | 20.86 | .24      | 348.54     | 348.53 | .00      | 9.40        |
| 9.60        | .4041            | .4044           | -.07             | 29.62           | 29.58           | .13             | 20.91         | 20.86 | .24      | 348.57     | 348.56 | .00      | 9.60        |
| 9.80        | .4126            | .4128           | -.07             | 29.63           | 29.59           | .13             | 20.91         | 20.86 | .25      | 348.60     | 348.59 | .00      | 9.80        |
| 10.00       | .4210            | .4213           | -.07             | 29.64           | 29.60           | .13             | 20.92         | 20.86 | .25      | 348.63     | 348.63 | .00      | 10.00       |

TABLE I.- Continued

TEMP=290. K B0=-.4460336E-02 B1=.1988092E-03 B2=-.1845577E-05 C0=.3101873E-03 C1=.3772233E-05 C2=.1573080E-06

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 204.07       | 204.07 | .00      | 8430.6     | 8430.4 | .00      | 6019.5     | 6019.4 | .00      | .20         |
| .40         | 198.31       | 198.31 | .00      | 8429.3     | 8429.0 | .00      | 6018.3     | 6018.2 | .00      | .40         |
| .60         | 194.93       | 194.93 | .00      | 8428.0     | 8427.7 | .00      | 6017.1     | 6017.0 | .00      | .60         |
| .80         | 192.53       | 192.53 | .00      | 8426.8     | 8426.3 | .01      | 6016.0     | 6015.7 | .00      | .80         |
| 1.00        | 190.68       | 190.67 | .00      | 8425.5     | 8425.0 | .01      | 6014.8     | 6014.5 | .00      | 1.00        |
| 1.20        | 189.16       | 189.15 | .00      | 8424.3     | 8423.6 | .01      | 6013.6     | 6013.3 | .01      | 1.20        |
| 1.40        | 187.87       | 187.87 | .00      | 8423.0     | 8422.2 | .01      | 6012.5     | 6012.1 | .01      | 1.40        |
| 1.60        | 186.76       | 186.75 | .00      | 8421.7     | 8420.9 | .01      | 6011.3     | 6010.8 | .01      | 1.60        |
| 1.80        | 185.77       | 185.77 | .00      | 8420.5     | 8419.5 | .01      | 6010.1     | 6009.6 | .01      | 1.80        |
| 2.00        | 184.89       | 184.89 | .00      | 8419.2     | 8418.2 | .01      | 6009.0     | 6008.4 | .01      | 2.00        |
| 2.20        | 184.10       | 184.09 | .00      | 8418.0     | 8416.8 | .01      | 6007.8     | 6007.1 | .01      | 2.20        |
| 2.40        | 183.37       | 183.37 | .00      | 8416.7     | 8415.5 | .01      | 6006.6     | 6005.9 | .01      | 2.40        |
| 2.60        | 182.70       | 182.70 | .00      | 8415.4     | 8414.1 | .02      | 6005.4     | 6004.7 | .01      | 2.60        |
| 2.80        | 182.08       | 182.08 | .00      | 8414.2     | 8412.8 | .02      | 6004.3     | 6003.5 | .01      | 2.80        |
| 3.00        | 181.50       | 181.50 | .00      | 8412.9     | 8411.4 | .02      | 6003.1     | 6002.2 | .01      | 3.00        |
| 3.20        | 180.96       | 180.96 | .00      | 8411.7     | 8410.0 | .02      | 6001.9     | 6001.0 | .02      | 3.20        |
| 3.40        | 180.45       | 180.45 | .00      | 8410.4     | 8408.7 | .02      | 6000.8     | 5999.8 | .02      | 3.40        |
| 3.60        | 179.97       | 179.97 | .00      | 8409.1     | 8407.3 | .02      | 5999.6     | 5998.5 | .02      | 3.60        |
| 3.80        | 179.52       | 179.52 | .00      | 8407.9     | 8406.0 | .02      | 5998.4     | 5997.3 | .02      | 3.80        |
| 4.00        | 179.09       | 179.08 | .00      | 8406.6     | 8404.6 | .02      | 5997.2     | 5996.1 | .02      | 4.00        |
| 4.20        | 178.68       | 178.67 | .00      | 8405.3     | 8403.3 | .02      | 5996.1     | 5994.9 | .02      | 4.20        |
| 4.40        | 178.29       | 178.28 | .00      | 8404.1     | 8401.9 | .03      | 5994.9     | 5993.6 | .02      | 4.40        |
| 4.60        | 177.91       | 177.91 | .00      | 8402.8     | 8400.6 | .03      | 5993.7     | 5992.4 | .02      | 4.60        |
| 4.80        | 177.56       | 177.55 | .00      | 8401.6     | 8399.2 | .03      | 5992.5     | 5991.2 | .02      | 4.80        |
| 5.00        | 177.21       | 177.21 | .00      | 8400.3     | 8397.9 | .03      | 5991.4     | 5989.9 | .02      | 5.00        |
| 5.20        | 176.88       | 176.88 | .00      | 8399.0     | 8396.5 | .03      | 5990.2     | 5988.7 | .02      | 5.20        |
| 5.40        | 176.57       | 176.56 | .00      | 8397.8     | 8395.2 | .03      | 5989.0     | 5987.5 | .03      | 5.40        |
| 5.60        | 176.26       | 176.25 | .00      | 8396.5     | 8393.9 | .03      | 5987.8     | 5986.3 | .03      | 5.60        |
| 5.80        | 175.96       | 175.96 | .00      | 8395.2     | 8392.5 | .03      | 5986.7     | 5985.0 | .03      | 5.80        |
| 6.00        | 175.68       | 175.67 | .00      | 8394.0     | 8391.2 | .03      | 5985.5     | 5983.8 | .03      | 6.00        |
| 6.20        | 175.40       | 175.39 | .00      | 8392.7     | 8389.8 | .03      | 5984.3     | 5982.6 | .03      | 6.20        |
| 6.40        | 175.13       | 175.13 | .00      | 8391.4     | 8388.5 | .04      | 5983.1     | 5981.3 | .03      | 6.40        |
| 6.60        | 174.87       | 174.87 | .00      | 8390.2     | 8387.1 | .04      | 5981.9     | 5980.1 | .03      | 6.60        |
| 6.80        | 174.62       | 174.61 | .00      | 8388.9     | 8385.8 | .04      | 5980.8     | 5978.9 | .03      | 6.80        |
| 7.00        | 174.37       | 174.37 | .00      | 8387.7     | 8384.4 | .04      | 5979.6     | 5977.7 | .03      | 7.00        |
| 7.20        | 174.14       | 174.13 | .00      | 8386.4     | 8383.1 | .04      | 5978.4     | 5976.4 | .03      | 7.20        |
| 7.40        | 173.90       | 173.90 | .00      | 8385.1     | 8381.8 | .04      | 5977.2     | 5975.2 | .03      | 7.40        |
| 7.60        | 173.68       | 173.67 | .00      | 8383.9     | 8380.4 | .04      | 5976.1     | 5974.0 | .03      | 7.60        |
| 7.80        | 173.46       | 173.45 | .00      | 8382.6     | 8379.1 | .04      | 5974.9     | 5972.7 | .04      | 7.80        |
| 8.00        | 173.24       | 173.24 | .00      | 8381.3     | 8377.7 | .04      | 5973.7     | 5971.5 | .04      | 8.00        |
| 8.20        | 173.04       | 173.03 | .00      | 8380.1     | 8376.4 | .04      | 5972.5     | 5970.3 | .04      | 8.20        |
| 8.40        | 172.83       | 172.82 | .00      | 8378.8     | 8375.1 | .04      | 5971.3     | 5969.1 | .04      | 8.40        |
| 8.60        | 172.63       | 172.62 | .00      | 8377.5     | 8373.7 | .05      | 5970.2     | 5967.8 | .04      | 8.60        |
| 8.80        | 172.44       | 172.43 | .00      | 8376.3     | 8372.4 | .05      | 5969.0     | 5966.6 | .04      | 8.80        |
| 9.00        | 172.24       | 172.24 | .00      | 8375.0     | 8371.0 | .05      | 5967.8     | 5965.4 | .04      | 9.00        |
| 9.20        | 172.06       | 172.05 | .00      | 8373.7     | 8369.7 | .05      | 5966.6     | 5964.2 | .04      | 9.20        |
| 9.40        | 171.88       | 171.87 | .00      | 8372.5     | 8368.4 | .05      | 5965.4     | 5962.9 | .04      | 9.40        |
| 9.60        | 171.70       | 171.69 | .00      | 8371.2     | 8367.0 | .05      | 5964.3     | 5961.7 | .04      | 9.60        |
| 9.80        | 171.52       | 171.51 | .00      | 8369.9     | 8365.7 | .05      | 5963.1     | 5960.5 | .04      | 9.80        |
| 10.00       | 171.35       | 171.34 | .01      | 8368.7     | 8364.4 | .05      | 5961.9     | 5959.3 | .04      | 10.00       |

TABLE I.- Continued

| TEMP=310. K | B0=-.8262681E-03 | B1=.1658733E-03 | B2=-.1462365E-05 | C0=.4144916E-03 | C1=.6535021E-05 | C2=.1203368E-06 |               |       |          |            |        |          |             |
|-------------|------------------|-----------------|------------------|-----------------|-----------------|-----------------|---------------|-------|----------|------------|--------|----------|-------------|
| PRES<br>ATH | DENS<br>MOL/L    | DENS            | DIF<br>%         | CP<br>J/MOL.K   | CP              | DIF<br>%        | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATH |
| .20         | .0079            | .0079           | -.00             | 29.12           | 29.12           | .00             | 20.80         | 20.80 | .01      | 358.91     | 358.89 | .01      | .20         |
| .40         | .0157            | .0157           | -.01             | 29.13           | 29.13           | .01             | 20.80         | 20.80 | .01      | 358.95     | 358.92 | .01      | .40         |
| .60         | .0236            | .0236           | -.01             | 29.14           | 29.14           | .01             | 20.80         | 20.80 | .02      | 358.98     | 358.96 | .01      | .60         |
| .80         | .0315            | .0315           | -.01             | 29.15           | 29.15           | .01             | 20.81         | 20.80 | .02      | 359.01     | 358.99 | .01      | .80         |
| 1.00        | .0393            | .0393           | -.01             | 29.16           | 29.16           | .01             | 20.81         | 20.80 | .03      | 359.04     | 359.03 | .01      | 1.00        |
| 1.20        | .0472            | .0472           | -.01             | 29.16           | 29.16           | .01             | 20.81         | 20.80 | .03      | 359.08     | 359.06 | .00      | 1.20        |
| 1.40        | .0550            | .0550           | -.01             | 29.17           | 29.17           | .02             | 20.81         | 20.80 | .04      | 359.11     | 359.10 | .00      | 1.40        |
| 1.60        | .0629            | .0629           | -.01             | 29.18           | 29.18           | .02             | 20.81         | 20.81 | .04      | 359.15     | 359.13 | .00      | 1.60        |
| 1.80        | .0708            | .0708           | -.01             | 29.19           | 29.19           | .02             | 20.82         | 20.81 | .05      | 359.18     | 359.17 | .00      | 1.80        |
| 2.00        | .0786            | .0786           | -.02             | 29.20           | 29.19           | .02             | 20.82         | 20.81 | .05      | 359.21     | 359.20 | .00      | 2.00        |
| 2.20        | .0865            | .0865           | -.02             | 29.21           | 29.20           | .02             | 20.82         | 20.81 | .06      | 359.25     | 359.24 | .00      | 2.20        |
| 2.40        | .0944            | .0944           | -.02             | 29.22           | 29.21           | .03             | 20.82         | 20.81 | .06      | 359.28     | 359.27 | .00      | 2.40        |
| 2.60        | .1022            | .1022           | -.02             | 29.23           | 29.22           | .03             | 20.83         | 20.81 | .07      | 359.31     | 359.31 | .00      | 2.60        |
| 2.80        | .1101            | .1101           | -.02             | 29.24           | 29.23           | .03             | 20.83         | 20.81 | .07      | 359.35     | 359.34 | .00      | 2.80        |
| 3.00        | .1179            | .1180           | -.02             | 29.25           | 29.24           | .03             | 20.83         | 20.81 | .08      | 359.38     | 359.38 | .00      | 3.00        |
| 3.20        | .1258            | .1258           | -.02             | 29.26           | 29.25           | .03             | 20.83         | 20.82 | .08      | 359.42     | 359.41 | .00      | 3.20        |
| 3.40        | .1337            | .1337           | -.02             | 29.27           | 29.25           | .04             | 20.84         | 20.82 | .09      | 359.45     | 359.45 | .00      | 3.40        |
| 3.60        | .1415            | .1416           | -.03             | 29.27           | 29.26           | .04             | 20.84         | 20.82 | .09      | 359.49     | 359.48 | .00      | 3.60        |
| 3.80        | .1494            | .1494           | -.03             | 29.28           | 29.27           | .04             | 20.84         | 20.82 | .10      | 359.52     | 359.52 | .00      | 3.80        |
| 4.00        | .1573            | .1573           | -.03             | 29.29           | 29.28           | .04             | 20.84         | 20.82 | .10      | 359.55     | 359.55 | .00      | 4.00        |
| 4.20        | .1651            | .1652           | -.03             | 29.30           | 29.29           | .04             | 20.85         | 20.82 | .11      | 359.59     | 359.59 | .00      | 4.20        |
| 4.40        | .1730            | .1730           | -.03             | 29.31           | 29.30           | .05             | 20.85         | 20.82 | .11      | 359.62     | 359.62 | -.00     | 4.40        |
| 4.60        | .1809            | .1809           | -.03             | 29.32           | 29.31           | .05             | 20.85         | 20.83 | .12      | 359.66     | 359.66 | -.00     | 4.60        |
| 4.80        | .1887            | .1888           | -.03             | 29.33           | 29.31           | .05             | 20.85         | 20.83 | .12      | 359.69     | 359.70 | -.00     | 4.80        |
| 5.00        | .1966            | .1967           | -.03             | 29.34           | 29.32           | .05             | 20.85         | 20.83 | .13      | 359.73     | 359.73 | -.00     | 5.00        |
| 5.20        | .2045            | .2045           | -.04             | 29.35           | 29.33           | .05             | 20.86         | 20.83 | .13      | 359.76     | 359.77 | -.00     | 5.20        |
| 5.40        | .2123            | .2124           | -.04             | 29.36           | 29.34           | .06             | 20.86         | 20.83 | .14      | 359.80     | 359.80 | -.00     | 5.40        |
| 5.60        | .2202            | .2203           | -.04             | 29.37           | 29.35           | .06             | 20.86         | 20.83 | .14      | 359.83     | 359.84 | -.00     | 5.60        |
| 5.80        | .2280            | .2281           | -.04             | 29.38           | 29.36           | .06             | 20.86         | 20.83 | .14      | 359.87     | 359.88 | -.00     | 5.80        |
| 6.00        | .2359            | .2360           | -.04             | 29.38           | 29.37           | .06             | 20.87         | 20.83 | .15      | 359.90     | 359.91 | -.00     | 6.00        |
| 6.20        | .2438            | .2439           | -.04             | 29.39           | 29.37           | .06             | 20.87         | 20.84 | .15      | 359.94     | 359.95 | -.00     | 6.20        |
| 6.40        | .2516            | .2517           | -.04             | 29.40           | 29.38           | .07             | 20.87         | 20.84 | .16      | 359.97     | 359.99 | -.00     | 6.40        |
| 6.60        | .2595            | .2596           | -.04             | 29.41           | 29.39           | .07             | 20.87         | 20.84 | .16      | 360.01     | 360.02 | -.00     | 6.60        |
| 6.80        | .2674            | .2675           | -.04             | 29.42           | 29.40           | .07             | 20.87         | 20.84 | .17      | 360.05     | 360.06 | -.00     | 6.80        |
| 7.00        | .2752            | .2754           | -.04             | 29.43           | 29.41           | .07             | 20.88         | 20.84 | .17      | 360.08     | 360.10 | -.00     | 7.00        |
| 7.20        | .2831            | .2832           | -.05             | 29.44           | 29.42           | .07             | 20.88         | 20.84 | .17      | 360.12     | 360.13 | -.00     | 7.20        |
| 7.40        | .2910            | .2911           | -.05             | 29.45           | 29.43           | .08             | 20.88         | 20.84 | .18      | 360.15     | 360.17 | -.00     | 7.40        |
| 7.60        | .2988            | .2990           | -.05             | 29.46           | 29.43           | .08             | 20.88         | 20.84 | .18      | 360.19     | 360.21 | -.01     | 7.60        |
| 7.80        | .3067            | .3069           | -.05             | 29.47           | 29.44           | .08             | 20.89         | 20.85 | .19      | 360.23     | 360.25 | -.01     | 7.80        |
| 8.00        | .3146            | .3147           | -.05             | 29.48           | 29.46           | .08             | 20.89         | 20.85 | .19      | 360.26     | 360.28 | -.01     | 8.00        |
| 8.20        | .3224            | .3226           | -.05             | 29.49           | 29.46           | .08             | 20.89         | 20.85 | .20      | 360.30     | 360.32 | -.01     | 8.20        |
| 8.40        | .3303            | .3305           | -.05             | 29.49           | 29.47           | .09             | 20.89         | 20.85 | .20      | 360.33     | 360.36 | -.01     | 8.40        |
| 8.60        | .3382            | .3383           | -.05             | 29.50           | 29.48           | .09             | 20.89         | 20.85 | .21      | 360.37     | 360.39 | -.01     | 8.60        |
| 8.80        | .3460            | .3462           | -.05             | 29.51           | 29.49           | .09             | 20.90         | 20.85 | .21      | 360.41     | 360.43 | -.01     | 8.80        |
| 9.00        | .3539            | .3541           | -.05             | 29.52           | 29.49           | .09             | 20.90         | 20.85 | .21      | 360.44     | 360.47 | -.01     | 9.00        |
| 9.20        | .3618            | .3620           | -.06             | 29.53           | 29.50           | .09             | 20.90         | 20.86 | .22      | 360.48     | 360.51 | -.01     | 9.20        |
| 9.40        | .3696            | .3698           | -.06             | 29.54           | 29.51           | .10             | 20.90         | 20.86 | .22      | 360.52     | 360.55 | -.01     | 9.40        |
| 9.60        | .3775            | .3777           | -.06             | 29.55           | 29.52           | .10             | 20.90         | 20.86 | .22      | 360.55     | 360.58 | -.01     | 9.60        |
| 9.80        | .3854            | .3856           | -.06             | 29.56           | 29.53           | .10             | 20.91         | 20.86 | .23      | 360.59     | 360.62 | -.01     | 9.80        |
| 10.00       | .3932            | .3935           | -.06             | 29.57           | 29.54           | .10             | 20.91         | 20.86 | .23      | 360.63     | 360.66 | -.01     | 10.00       |

TABLE I.- Continued

TEMP=310. K B0=-.8262681E-03 B1=.1658733E-03 B2=-.1462365E-05 C0=.4144916E-03 C1=.6535021E-05 C2=.1203368E-06

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 206.01       | 206.01 | .00      | 9012.9     | 9012.7 | .00      | 6435.4     | 6435.3 | .00      | .20         |
| .40         | 200.25       | 200.25 | .00      | 9011.8     | 9011.5 | .00      | 6434.4     | 6434.2 | .00      | .40         |
| .60         | 196.87       | 196.87 | .00      | 9010.7     | 9010.3 | .00      | 6433.3     | 6433.1 | .00      | .60         |
| .80         | 194.48       | 194.48 | .00      | 9009.7     | 9009.1 | .01      | 6432.3     | 6432.0 | .00      | .80         |
| 1.00        | 192.62       | 192.62 | .00      | 9008.6     | 9008.0 | .01      | 6431.3     | 6430.9 | .01      | 1.00        |
| 1.20        | 191.10       | 191.10 | .00      | 9007.6     | 9006.8 | .01      | 6430.2     | 6429.7 | .01      | 1.20        |
| 1.40        | 189.82       | 189.81 | .00      | 9006.5     | 9005.6 | .01      | 6429.2     | 6428.6 | .01      | 1.40        |
| 1.60        | 188.70       | 188.70 | .00      | 9005.4     | 9004.5 | .01      | 6428.1     | 6427.5 | .01      | 1.60        |
| 1.80        | 187.72       | 187.72 | .00      | 9004.4     | 9003.3 | .01      | 6427.1     | 6426.4 | .01      | 1.80        |
| 2.00        | 186.84       | 186.84 | .00      | 9003.3     | 9002.1 | .01      | 6426.0     | 6425.3 | .01      | 2.00        |
| 2.20        | 186.04       | 186.04 | .00      | 9002.3     | 9000.9 | .01      | 6425.0     | 6424.1 | .01      | 2.20        |
| 2.40        | 185.32       | 185.31 | .00      | 9001.2     | 8999.8 | .02      | 6423.9     | 6423.0 | .01      | 2.40        |
| 2.60        | 184.65       | 184.64 | .00      | 9000.1     | 8998.6 | .02      | 6422.9     | 6421.9 | .02      | 2.60        |
| 2.80        | 184.03       | 184.03 | .00      | 8999.1     | 8997.4 | .02      | 6421.8     | 6420.8 | .02      | 2.80        |
| 3.00        | 183.45       | 183.45 | .00      | 8998.0     | 8996.3 | .02      | 6420.8     | 6419.6 | .02      | 3.00        |
| 3.20        | 182.91       | 182.91 | .00      | 8996.9     | 8995.1 | .02      | 6419.8     | 6418.5 | .02      | 3.20        |
| 3.40        | 182.40       | 182.40 | .00      | 8995.9     | 8993.9 | .02      | 6418.7     | 6417.4 | .02      | 3.40        |
| 3.60        | 181.93       | 181.92 | .00      | 8994.8     | 8992.8 | .02      | 6417.7     | 6416.3 | .02      | 3.60        |
| 3.80        | 181.47       | 181.47 | .00      | 8993.8     | 8991.6 | .02      | 6416.6     | 6415.2 | .02      | 3.80        |
| 4.00        | 181.04       | 181.04 | .00      | 8992.7     | 8990.4 | .02      | 6415.6     | 6414.0 | .02      | 4.00        |
| 4.20        | 180.63       | 180.63 | .00      | 8991.6     | 8989.3 | .03      | 6414.5     | 6412.9 | .03      | 4.20        |
| 4.40        | 180.24       | 180.24 | .00      | 8990.6     | 8988.1 | .03      | 6413.5     | 6411.8 | .03      | 4.40        |
| 4.60        | 179.87       | 179.87 | .00      | 8989.5     | 8987.0 | .03      | 6412.4     | 6410.7 | .03      | 4.60        |
| 4.80        | 179.51       | 179.51 | .00      | 8988.4     | 8985.8 | .03      | 6411.4     | 6409.6 | .03      | 4.80        |
| 5.00        | 179.17       | 179.16 | .00      | 8987.4     | 8984.6 | .03      | 6410.3     | 6408.4 | .03      | 5.00        |
| 5.20        | 178.84       | 178.83 | .00      | 8986.3     | 8983.5 | .03      | 6409.3     | 6407.3 | .03      | 5.20        |
| 5.40        | 178.52       | 178.52 | .00      | 8985.3     | 8982.3 | .03      | 6408.2     | 6406.2 | .03      | 5.40        |
| 5.60        | 178.22       | 178.21 | .00      | 8984.2     | 8981.1 | .03      | 6407.2     | 6405.1 | .03      | 5.60        |
| 5.80        | 177.92       | 177.92 | .00      | 8983.1     | 8980.0 | .04      | 6406.1     | 6404.0 | .03      | 5.80        |
| 6.00        | 177.64       | 177.63 | .00      | 8982.1     | 8978.8 | .04      | 6405.1     | 6402.8 | .03      | 6.00        |
| 6.20        | 177.36       | 177.35 | .00      | 8981.0     | 8977.7 | .04      | 6404.0     | 6401.7 | .04      | 6.20        |
| 6.40        | 177.09       | 177.09 | .00      | 8979.9     | 8976.5 | .04      | 6403.0     | 6400.6 | .04      | 6.40        |
| 6.60        | 176.84       | 176.83 | .00      | 8978.9     | 8975.3 | .04      | 6401.9     | 6399.5 | .04      | 6.60        |
| 6.80        | 176.58       | 176.58 | .00      | 8977.8     | 8974.2 | .04      | 6400.8     | 6398.4 | .04      | 6.80        |
| 7.00        | 176.34       | 176.33 | .00      | 8976.7     | 8973.0 | .04      | 6399.8     | 6397.2 | .04      | 7.00        |
| 7.20        | 176.10       | 176.09 | .00      | 8975.6     | 8971.9 | .04      | 6398.7     | 6396.1 | .04      | 7.20        |
| 7.40        | 175.87       | 175.86 | .00      | 8974.6     | 8970.7 | .04      | 6397.7     | 6395.1 | .04      | 7.40        |
| 7.60        | 175.65       | 175.64 | .00      | 8973.5     | 8969.6 | .04      | 6396.6     | 6393.9 | .04      | 7.60        |
| 7.80        | 175.43       | 175.42 | .01      | 8972.5     | 8968.4 | .05      | 6395.6     | 6392.8 | .04      | 7.80        |
| 8.00        | 175.21       | 175.20 | .01      | 8971.4     | 8967.2 | .05      | 6394.5     | 6391.6 | .04      | 8.00        |
| 8.20        | 175.00       | 174.99 | .01      | 8970.3     | 8966.1 | .05      | 6393.5     | 6390.5 | .05      | 8.20        |
| 8.40        | 174.80       | 174.79 | .01      | 8969.3     | 8964.9 | .05      | 6392.4     | 6389.4 | .05      | 8.40        |
| 8.60        | 174.60       | 174.59 | .01      | 8968.2     | 8963.8 | .05      | 6391.4     | 6388.3 | .05      | 8.60        |
| 8.80        | 174.41       | 174.40 | .01      | 8967.1     | 8962.6 | .05      | 6390.3     | 6387.2 | .05      | 8.80        |
| 9.00        | 174.22       | 174.21 | .01      | 8966.1     | 8961.5 | .05      | 6389.2     | 6386.1 | .05      | 9.00        |
| 9.20        | 174.03       | 174.02 | .01      | 8965.0     | 8960.3 | .05      | 6388.2     | 6384.9 | .05      | 9.20        |
| 9.40        | 173.85       | 173.84 | .01      | 8963.9     | 8959.2 | .05      | 6387.1     | 6383.8 | .05      | 9.40        |
| 9.60        | 173.67       | 173.66 | .01      | 8962.8     | 8958.0 | .05      | 6386.1     | 6382.7 | .05      | 9.60        |
| 9.80        | 173.49       | 173.48 | .01      | 8961.8     | 8956.9 | .05      | 6385.0     | 6381.6 | .05      | 9.80        |
| 10.00       | 173.32       | 173.31 | .01      | 8960.7     | 8955.7 | .06      | 6383.9     | 6380.5 | .05      | 10.00       |

TABLE I.- Continued

| PRES<br>ATM | DENS<br>MOL/L | DENS  | DIF<br>% | CP<br>J/MOL.K | CP    | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>% | VEL<br>M/S | VEL    | DIF<br>% | PRES<br>ATM |
|-------------|---------------|-------|----------|---------------|-------|----------|---------------|-------|----------|------------|--------|----------|-------------|
| .20         | .0074         | .0074 | -.00     | 29.13         | 29.13 | .00      | 20.81         | 20.81 | .00      | 370.28     | 370.26 | .01      | .20         |
| .40         | .0148         | .0148 | -.00     | 29.14         | 29.14 | .00      | 20.81         | 20.81 | .01      | 370.32     | 370.30 | .01      | .40         |
| .60         | .0222         | .0222 | -.01     | 29.15         | 29.14 | .00      | 20.81         | 20.81 | .01      | 370.35     | 370.33 | .00      | .60         |
| .80         | .0295         | .0295 | -.01     | 29.15         | 29.15 | .00      | 20.82         | 20.81 | .02      | 370.39     | 370.37 | .00      | .80         |
| 1.00        | .0369         | .0369 | -.01     | 29.16         | 29.16 | .01      | 20.82         | 20.81 | .02      | 370.43     | 370.41 | .00      | 1.00        |
| 1.20        | .0443         | .0443 | -.01     | 29.17         | 29.17 | .01      | 20.82         | 20.82 | .02      | 370.46     | 370.45 | .00      | 1.20        |
| 1.40        | .0517         | .0517 | -.01     | 29.18         | 29.17 | .01      | 20.82         | 20.82 | .03      | 370.50     | 370.49 | .00      | 1.40        |
| 1.60        | .0591         | .0591 | -.01     | 29.18         | 29.18 | .01      | 20.82         | 20.82 | .03      | 370.54     | 370.53 | .00      | 1.60        |
| 1.80        | .0665         | .0665 | -.01     | 29.19         | 29.19 | .01      | 20.83         | 20.82 | .04      | 370.58     | 370.57 | .00      | 1.80        |
| 2.00        | .0738         | .0739 | -.01     | 29.20         | 29.20 | .01      | 20.83         | 20.82 | .04      | 370.61     | 370.61 | .00      | 2.00        |
| 2.20        | .0812         | .0812 | -.01     | 29.21         | 29.20 | .01      | 20.83         | 20.82 | .04      | 370.65     | 370.65 | .00      | 2.20        |
| 2.40        | .0886         | .0886 | -.02     | 29.22         | 29.21 | .01      | 20.83         | 20.82 | .05      | 370.69     | 370.69 | .00      | 2.40        |
| 2.60        | .0960         | .0960 | -.02     | 29.22         | 29.22 | .01      | 20.83         | 20.82 | .05      | 370.73     | 370.73 | .00      | 2.60        |
| 2.80        | .1034         | .1034 | -.02     | 29.23         | 29.23 | .02      | 20.84         | 20.82 | .06      | 370.77     | 370.77 | .00      | 2.80        |
| 3.00        | .1108         | .1108 | -.02     | 29.24         | 29.23 | .02      | 20.84         | 20.83 | .06      | 370.80     | 370.81 | -.00     | 3.00        |
| 3.20        | .1182         | .1182 | -.02     | 29.25         | 29.24 | .02      | 20.84         | 20.83 | .06      | 370.84     | 370.85 | -.00     | 3.20        |
| 3.40        | .1255         | .1256 | -.02     | 29.25         | 29.25 | .02      | 20.84         | 20.83 | .07      | 370.88     | 370.89 | -.00     | 3.40        |
| 3.60        | .1329         | .1329 | -.02     | 29.26         | 29.26 | .02      | 20.84         | 20.83 | .07      | 370.92     | 370.93 | -.00     | 3.60        |
| 3.80        | .1403         | .1403 | -.02     | 29.27         | 29.26 | .02      | 20.85         | 20.83 | .07      | 370.96     | 370.97 | -.00     | 3.80        |
| 4.00        | .1477         | .1477 | -.02     | 29.28         | 29.27 | .02      | 20.85         | 20.83 | .08      | 371.00     | 371.01 | -.00     | 4.00        |
| 4.20        | .1551         | .1551 | -.02     | 29.28         | 29.28 | .02      | 20.85         | 20.83 | .08      | 371.03     | 371.05 | -.00     | 4.20        |
| 4.40        | .1625         | .1625 | -.03     | 29.29         | 29.29 | .02      | 20.85         | 20.83 | .09      | 371.07     | 371.09 | -.00     | 4.40        |
| 4.60        | .1698         | .1699 | -.03     | 29.30         | 29.29 | .02      | 20.85         | 20.83 | .09      | 371.11     | 371.13 | -.00     | 4.60        |
| 4.80        | .1772         | .1772 | -.03     | 29.31         | 29.30 | .03      | 20.86         | 20.84 | .09      | 371.15     | 371.17 | -.00     | 4.80        |
| 5.00        | .1846         | .1846 | -.03     | 29.32         | 29.31 | .03      | 20.86         | 20.84 | .10      | 371.19     | 371.21 | -.00     | 5.00        |
| 5.20        | .1919         | .1920 | -.03     | 29.32         | 29.31 | .03      | 20.86         | 20.84 | .10      | 371.23     | 371.25 | -.00     | 5.20        |
| 5.40        | .1993         | .1994 | -.03     | 29.33         | 29.32 | .03      | 20.86         | 20.84 | .10      | 371.27     | 371.29 | -.01     | 5.40        |
| 5.60        | .2067         | .2068 | -.03     | 29.34         | 29.33 | .03      | 20.86         | 20.84 | .11      | 371.31     | 371.33 | -.01     | 5.60        |
| 5.80        | .2141         | .2142 | -.03     | 29.35         | 29.34 | .03      | 20.86         | 20.84 | .11      | 371.35     | 371.37 | -.01     | 5.80        |
| 6.00        | .2215         | .2215 | -.03     | 29.35         | 29.34 | .03      | 20.87         | 20.84 | .11      | 371.39     | 371.41 | -.01     | 6.00        |
| 6.20        | .2288         | .2289 | -.03     | 29.36         | 29.35 | .03      | 20.87         | 20.84 | .12      | 371.43     | 371.45 | -.01     | 6.20        |
| 6.40        | .2362         | .2363 | -.03     | 29.37         | 29.36 | .04      | 20.87         | 20.85 | .12      | 371.47     | 371.49 | -.01     | 6.40        |
| 6.60        | .2436         | .2437 | -.04     | 29.38         | 29.37 | .04      | 20.87         | 20.85 | .12      | 371.51     | 371.53 | -.01     | 6.60        |
| 6.80        | .2510         | .2511 | -.04     | 29.38         | 29.37 | .04      | 20.87         | 20.85 | .13      | 371.54     | 371.57 | -.01     | 6.80        |
| 7.00        | .2583         | .2584 | -.04     | 29.39         | 29.38 | .04      | 20.88         | 20.85 | .13      | 371.58     | 371.61 | -.01     | 7.00        |
| 7.20        | .2657         | .2658 | -.04     | 29.40         | 29.39 | .04      | 20.88         | 20.85 | .13      | 371.62     | 371.66 | -.01     | 7.20        |
| 7.40        | .2731         | .2732 | -.04     | 29.41         | 29.40 | .04      | 20.88         | 20.85 | .14      | 371.66     | 371.70 | -.01     | 7.40        |
| 7.60        | .2805         | .2806 | -.04     | 29.42         | 29.40 | .04      | 20.88         | 20.85 | .14      | 371.70     | 371.74 | -.01     | 7.60        |
| 7.80        | .2879         | .2880 | -.04     | 29.42         | 29.41 | .04      | 20.88         | 20.85 | .14      | 371.74     | 371.78 | -.01     | 7.80        |
| 8.00        | .2952         | .2954 | -.04     | 29.43         | 29.42 | .04      | 20.88         | 20.85 | .14      | 371.78     | 371.82 | -.01     | 8.00        |
| 8.20        | .3026         | .3027 | -.04     | 29.44         | 29.43 | .04      | 20.89         | 20.86 | .15      | 371.83     | 371.86 | -.01     | 8.20        |
| 8.40        | .3100         | .3101 | -.04     | 29.45         | 29.43 | .04      | 20.89         | 20.86 | .15      | 371.87     | 371.90 | -.01     | 8.40        |
| 8.60        | .3174         | .3175 | -.04     | 29.45         | 29.44 | .05      | 20.89         | 20.86 | .15      | 371.91     | 371.95 | -.01     | 8.60        |
| 8.80        | .3247         | .3249 | -.04     | 29.46         | 29.45 | .05      | 20.89         | 20.86 | .16      | 371.95     | 371.99 | -.01     | 8.80        |
| 9.00        | .3321         | .3323 | -.04     | 29.47         | 29.45 | .05      | 20.89         | 20.86 | .16      | 371.99     | 372.03 | -.01     | 9.00        |
| 9.20        | .3395         | .3396 | -.05     | 29.48         | 29.46 | .05      | 20.89         | 20.86 | .16      | 372.03     | 372.07 | -.01     | 9.20        |
| 9.40        | .3468         | .3470 | -.05     | 29.48         | 29.47 | .05      | 20.90         | 20.86 | .16      | 372.07     | 372.11 | -.01     | 9.40        |
| 9.60        | .3542         | .3544 | -.05     | 29.49         | 29.48 | .05      | 20.90         | 20.86 | .17      | 372.11     | 372.16 | -.01     | 9.60        |
| 9.80        | .3616         | .3618 | -.05     | 29.50         | 29.48 | .05      | 20.90         | 20.86 | .17      | 372.15     | 372.20 | -.01     | 9.80        |
| 10.00       | .3690         | .3691 | -.05     | 29.51         | 29.49 | .05      | 20.90         | 20.87 | .17      | 372.19     | 372.24 | -.01     | 10.00       |

TEMP=330. K B0= .2220409E-02 B1= .1398246E-03 B2=-.1152995E-05 C0= .5671822E-03 C1= .8636027E-05 C2= .9090898E-07

TABLE I.- Continued

TEMP=330. K B0= .2220409E-02 B1= .1398246E-03 B2=-.1152995E-05 C0=.5671822E-03 C1=.8635027E-05 C2=.9090898E-07

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H      | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|--------|----------|------------|--------|----------|-------------|
| .20         | 207.84       | 207.83 | .00      | 9595.3     | 9595.1 | .00      | 6851.6     | 6851.5 | .00      | .20         |
| .40         | 202.07       | 202.07 | .00      | 9594.4     | 9594.1 | .00      | 6850.6     | 6850.4 | .00      | .40         |
| .60         | 198.70       | 198.69 | .00      | 9593.6     | 9593.1 | .00      | 6849.7     | 6849.4 | .00      | .60         |
| .80         | 196.30       | 196.30 | .00      | 9592.1     | 9592.1 | .01      | 6848.8     | 6848.4 | .01      | .80         |
| 1.00        | 194.44       | 194.44 | .00      | 9591.8     | 9591.1 | .01      | 6847.8     | 6847.3 | .01      | 1.00        |
| 1.20        | 192.92       | 192.92 | .00      | 9590.9     | 9590.1 | .01      | 6846.9     | 6846.3 | .01      | 1.20        |
| 1.40        | 191.64       | 191.64 | .00      | 9590.0     | 9589.1 | .01      | 6845.9     | 6845.3 | .01      | 1.40        |
| 1.60        | 190.53       | 190.52 | .00      | 9589.2     | 9588.0 | .01      | 6845.0     | 6844.3 | .01      | 1.60        |
| 1.80        | 189.54       | 189.54 | .00      | 9588.2     | 9587.0 | .01      | 6844.1     | 6843.2 | .01      | 1.80        |
| 2.00        | 188.67       | 188.66 | .00      | 9587.3     | 9586.0 | .01      | 6843.1     | 6842.2 | .01      | 2.00        |
| 2.20        | 187.87       | 187.87 | .00      | 9586.4     | 9585.0 | .01      | 6842.2     | 6841.2 | .01      | 2.20        |
| 2.40        | 187.14       | 187.14 | .00      | 9585.5     | 9584.0 | .02      | 6841.2     | 6840.1 | .02      | 2.40        |
| 2.60        | 186.48       | 186.47 | .00      | 9584.6     | 9583.0 | .02      | 6840.3     | 6839.1 | .02      | 2.60        |
| 2.80        | 185.86       | 185.85 | .00      | 9583.7     | 9582.0 | .02      | 6839.4     | 6838.1 | .02      | 2.80        |
| 3.00        | 185.28       | 185.28 | .00      | 9582.9     | 9581.0 | .02      | 6838.4     | 6837.1 | .02      | 3.00        |
| 3.20        | 184.74       | 184.74 | .00      | 9582.0     | 9580.0 | .02      | 6837.5     | 6836.0 | .02      | 3.20        |
| 3.40        | 184.23       | 184.23 | .00      | 9581.1     | 9579.0 | .02      | 6836.5     | 6835.0 | .02      | 3.40        |
| 3.60        | 183.76       | 183.75 | .00      | 9580.2     | 9577.9 | .02      | 6835.6     | 6834.0 | .02      | 3.60        |
| 3.80        | 183.30       | 183.30 | .00      | 9579.3     | 9576.9 | .02      | 6834.7     | 6832.9 | .03      | 3.80        |
| 4.00        | 182.87       | 182.87 | .00      | 9578.4     | 9575.9 | .03      | 6833.7     | 6831.9 | .03      | 4.00        |
| 4.20        | 182.47       | 182.46 | .00      | 9577.5     | 9574.9 | .03      | 6832.8     | 6830.9 | .03      | 4.20        |
| 4.40        | 182.08       | 182.07 | .00      | 9576.6     | 9573.9 | .03      | 6831.8     | 6829.9 | .03      | 4.40        |
| 4.60        | 181.70       | 181.70 | .00      | 9575.7     | 9572.9 | .03      | 6830.9     | 6828.8 | .03      | 4.60        |
| 4.80        | 181.35       | 181.34 | .00      | 9574.8     | 9571.9 | .03      | 6829.9     | 6827.8 | .03      | 4.80        |
| 5.00        | 181.00       | 181.00 | .00      | 9573.9     | 9570.9 | .03      | 6829.0     | 6826.8 | .03      | 5.00        |
| 5.20        | 180.68       | 180.67 | .00      | 9573.0     | 9569.9 | .03      | 6828.1     | 6825.7 | .03      | 5.20        |
| 5.40        | 180.36       | 180.35 | .00      | 9572.1     | 9568.9 | .03      | 6827.1     | 6824.7 | .03      | 5.40        |
| 5.60        | 180.05       | 180.05 | .00      | 9571.2     | 9567.9 | .03      | 6826.2     | 6823.7 | .04      | 5.60        |
| 5.80        | 179.76       | 179.75 | .00      | 9570.3     | 9566.9 | .04      | 6825.2     | 6822.7 | .04      | 5.80        |
| 6.00        | 179.47       | 179.47 | .00      | 9569.4     | 9565.9 | .04      | 6824.3     | 6821.6 | .04      | 6.00        |
| 6.20        | 179.20       | 179.19 | .00      | 9568.5     | 9564.9 | .04      | 6823.3     | 6820.6 | .04      | 6.20        |
| 6.40        | 178.93       | 178.92 | .00      | 9567.6     | 9563.9 | .04      | 6822.4     | 6819.6 | .04      | 6.40        |
| 6.60        | 178.67       | 178.66 | .00      | 9566.7     | 9562.9 | .04      | 6821.4     | 6818.6 | .04      | 6.60        |
| 6.80        | 178.42       | 178.41 | .01      | 9565.8     | 9561.9 | .04      | 6820.5     | 6817.5 | .04      | 6.80        |
| 7.00        | 178.18       | 178.17 | .01      | 9564.9     | 9560.9 | .04      | 6819.5     | 6816.5 | .04      | 7.00        |
| 7.20        | 177.94       | 177.93 | .01      | 9564.0     | 9559.9 | .04      | 6818.6     | 6815.5 | .05      | 7.20        |
| 7.40        | 177.71       | 177.70 | .01      | 9563.1     | 9558.9 | .04      | 6817.6     | 6814.5 | .05      | 7.40        |
| 7.60        | 177.49       | 177.48 | .01      | 9562.2     | 9557.9 | .05      | 6816.7     | 6813.4 | .05      | 7.60        |
| 7.80        | 177.27       | 177.26 | .01      | 9561.3     | 9556.9 | .05      | 6815.7     | 6812.4 | .05      | 7.80        |
| 8.00        | 177.05       | 177.04 | .01      | 9560.4     | 9555.9 | .05      | 6814.8     | 6811.4 | .05      | 8.00        |
| 8.20        | 176.85       | 176.83 | .01      | 9559.5     | 9554.9 | .05      | 6813.8     | 6810.3 | .05      | 8.20        |
| 8.40        | 176.64       | 176.63 | .01      | 9558.6     | 9553.9 | .05      | 6812.9     | 6809.3 | .05      | 8.40        |
| 8.60        | 176.44       | 176.43 | .01      | 9557.7     | 9552.9 | .05      | 6811.9     | 6808.3 | .05      | 8.60        |
| 8.80        | 176.25       | 176.24 | .01      | 9556.8     | 9551.9 | .05      | 6811.0     | 6807.3 | .05      | 8.80        |
| 9.00        | 176.06       | 176.05 | .01      | 9555.9     | 9550.9 | .05      | 6810.0     | 6806.2 | .06      | 9.00        |
| 9.20        | 175.87       | 175.86 | .01      | 9555.0     | 9549.9 | .05      | 6809.1     | 6805.2 | .06      | 9.20        |
| 9.40        | 175.69       | 175.68 | .01      | 9554.1     | 9549.0 | .05      | 6808.1     | 6804.2 | .06      | 9.40        |
| 9.60        | 175.51       | 175.50 | .01      | 9553.2     | 9548.0 | .06      | 6807.2     | 6803.2 | .06      | 9.60        |
| 9.80        | 175.34       | 175.33 | .01      | 9552.3     | 9547.0 | .06      | 6806.2     | 6802.1 | .06      | 9.80        |
| 10.00       | 175.17       | 175.16 | .01      | 9551.4     | 9546.0 | .06      | 6805.3     | 6801.1 | .06      | 10.00       |

TABLE I.- Continued

| TEMP=350. K | B0=           | .4804067E-02 | B1=      | .1193885E-03  | B2=-.8985834E-06 | C0=      | .7564431E-03  | C1=   | .1021273E-04 | C2=        | .6768831E-07 |          |             |
|-------------|---------------|--------------|----------|---------------|------------------|----------|---------------|-------|--------------|------------|--------------|----------|-------------|
| PRES<br>ATM | DENS<br>MOL/L | DENS         | DIF<br>% | CP<br>J/MOL.K | CP               | DIF<br>% | CV<br>J/MOL.K | CV    | DIF<br>%     | VEL<br>M/S | VEL          | DIF<br>% | PRES<br>ATM |
| .20         | .0070         | .0070        | -.00     | 29.15         | 29.15            | .00      | 20.83         | 20.83 | .00          | 381.29     | 381.26       | .01      | .20         |
| .40         | .0139         | .0139        | -.00     | 29.15         | 29.15            | .00      | 20.83         | 20.83 | .00          | 381.33     | 381.31       | .01      | .40         |
| .60         | .0209         | .0209        | -.01     | 29.16         | 29.16            | -.00     | 20.83         | 20.83 | .01          | 381.37     | 381.35       | .00      | .60         |
| .80         | .0279         | .0279        | -.01     | 29.17         | 29.17            | -.00     | 20.83         | 20.83 | .01          | 381.41     | 381.39       | .00      | .80         |
| 1.00        | .0348         | .0348        | -.01     | 29.17         | 29.17            | -.00     | 20.84         | 20.83 | .01          | 381.45     | 381.43       | .00      | 1.00        |
| 1.20        | .0418         | .0418        | -.01     | 29.18         | 29.18            | -.00     | 20.84         | 20.83 | .01          | 381.49     | 381.48       | .00      | 1.20        |
| 1.40        | .0487         | .0487        | -.01     | 29.19         | 29.19            | -.00     | 20.84         | 20.83 | .02          | 381.53     | 381.52       | .00      | 1.40        |
| 1.60        | .0557         | .0557        | -.01     | 29.19         | 29.19            | -.00     | 20.84         | 20.84 | .02          | 381.57     | 381.56       | .00      | 1.60        |
| 1.80        | .0627         | .0627        | -.01     | 29.20         | 29.20            | -.00     | 20.84         | 20.84 | .02          | 381.61     | 381.60       | .00      | 1.80        |
| 2.00        | .0696         | .0696        | -.01     | 29.21         | 29.21            | -.00     | 20.84         | 20.84 | .02          | 381.65     | 381.65       | .00      | 2.00        |
| 2.20        | .0766         | .0766        | -.01     | 29.21         | 29.21            | -.00     | 20.84         | 20.84 | .02          | 381.70     | 381.69       | .00      | 2.20        |
| 2.40        | .0835         | .0835        | -.01     | 29.22         | 29.22            | -.00     | 20.85         | 20.84 | .03          | 381.74     | 381.73       | .00      | 2.40        |
| 2.60        | .0905         | .0905        | -.01     | 29.22         | 29.23            | -.00     | 20.85         | 20.84 | .03          | 381.78     | 381.78       | .00      | 2.60        |
| 2.80        | .0974         | .0974        | -.01     | 29.23         | 29.23            | -.00     | 20.85         | 20.84 | .03          | 381.82     | 381.82       | .00      | 2.80        |
| 3.00        | .1044         | .1044        | -.01     | 29.24         | 29.24            | -.00     | 20.85         | 20.84 | .03          | 381.86     | 381.86       | .00      | 3.00        |
| 3.20        | .1114         | .1114        | -.02     | 29.24         | 29.24            | -.00     | 20.85         | 20.84 | .03          | 381.90     | 381.91       | -.00     | 3.20        |
| 3.40        | .1183         | .1183        | -.02     | 29.25         | 29.25            | -.00     | 20.85         | 20.84 | .04          | 381.95     | 381.95       | .00      | 3.40        |
| 3.60        | .1253         | .1253        | -.02     | 29.26         | 29.26            | -.00     | 20.85         | 20.85 | .04          | 381.99     | 381.99       | .00      | 3.60        |
| 3.80        | .1322         | .1322        | -.02     | 29.26         | 29.26            | -.00     | 20.86         | 20.85 | .04          | 382.03     | 382.04       | -.00     | 3.80        |
| 4.00        | .1392         | .1392        | -.02     | 29.27         | 29.27            | -.00     | 20.86         | 20.85 | .04          | 382.07     | 382.08       | -.00     | 4.00        |
| 4.20        | .1461         | .1461        | -.02     | 29.28         | 29.28            | -.00     | 20.86         | 20.85 | .04          | 382.11     | 382.12       | -.00     | 4.20        |
| 4.40        | .1531         | .1531        | -.02     | 29.28         | 29.28            | -.01     | 20.86         | 20.85 | .05          | 382.16     | 382.17       | -.00     | 4.40        |
| 4.60        | .1600         | .1600        | -.02     | 29.29         | 29.29            | -.01     | 20.86         | 20.85 | .05          | 382.20     | 382.21       | -.00     | 4.60        |
| 4.80        | .1670         | .1670        | -.02     | 29.29         | 29.30            | -.01     | 20.86         | 20.85 | .05          | 382.24     | 382.26       | -.00     | 4.80        |
| 5.00        | .1739         | .1739        | -.02     | 29.30         | 29.30            | -.01     | 20.86         | 20.85 | .05          | 382.28     | 382.30       | -.00     | 5.00        |
| 5.20        | .1809         | .1809        | -.02     | 29.31         | 29.31            | -.01     | 20.87         | 20.85 | .05          | 382.33     | 382.34       | -.00     | 5.20        |
| 5.40        | .1878         | .1878        | -.02     | 29.31         | 29.32            | -.01     | 20.87         | 20.86 | .05          | 382.37     | 382.39       | -.00     | 5.40        |
| 5.60        | .1948         | .1948        | -.02     | 29.32         | 29.32            | -.01     | 20.87         | 20.86 | .06          | 382.41     | 382.43       | -.00     | 5.60        |
| 5.80        | .2018         | .2018        | -.03     | 29.33         | 29.33            | -.01     | 20.87         | 20.86 | .06          | 382.46     | 382.47       | -.00     | 5.80        |
| 6.00        | .2087         | .2088        | -.03     | 29.33         | 29.33            | -.01     | 20.87         | 20.86 | .06          | 382.50     | 382.52       | -.01     | 6.00        |
| 6.20        | .2156         | .2157        | -.03     | 29.34         | 29.34            | -.01     | 20.87         | 20.86 | .06          | 382.54     | 382.56       | -.01     | 6.20        |
| 6.40        | .2226         | .2227        | -.03     | 29.35         | 29.35            | -.01     | 20.87         | 20.86 | .06          | 382.59     | 382.61       | -.01     | 6.40        |
| 6.60        | .2295         | .2296        | -.03     | 29.35         | 29.35            | -.01     | 20.87         | 20.86 | .06          | 382.63     | 382.65       | -.01     | 6.60        |
| 6.80        | .2365         | .2366        | -.03     | 29.36         | 29.36            | -.01     | 20.88         | 20.86 | .07          | 382.67     | 382.70       | -.01     | 6.80        |
| 7.00        | .2434         | .2435        | -.03     | 29.36         | 29.37            | -.01     | 20.88         | 20.86 | .07          | 382.72     | 382.74       | -.01     | 7.00        |
| 7.20        | .2504         | .2504        | -.03     | 29.37         | 29.37            | -.01     | 20.88         | 20.86 | .07          | 382.76     | 382.79       | -.01     | 7.20        |
| 7.40        | .2573         | .2573        | -.03     | 29.38         | 29.38            | -.01     | 20.88         | 20.87 | .07          | 382.80     | 382.83       | -.01     | 7.40        |
| 7.60        | .2643         | .2644        | -.03     | 29.38         | 29.39            | -.01     | 20.88         | 20.87 | .07          | 382.85     | 382.87       | -.01     | 7.60        |
| 7.80        | .2712         | .2713        | -.03     | 29.39         | 29.39            | -.01     | 20.88         | 20.87 | .07          | 382.89     | 382.92       | -.01     | 7.80        |
| 8.00        | .2782         | .2783        | -.03     | 29.40         | 29.40            | -.01     | 20.88         | 20.87 | .07          | 382.94     | 382.96       | -.01     | 8.00        |
| 8.20        | .2851         | .2852        | -.03     | 29.40         | 29.41            | -.01     | 20.89         | 20.87 | .08          | 382.98     | 383.01       | -.01     | 8.20        |
| 8.40        | .2921         | .2922        | -.03     | 29.41         | 29.41            | -.01     | 20.89         | 20.87 | .08          | 383.02     | 383.05       | -.01     | 8.40        |
| 8.60        | .2990         | .2991        | -.03     | 29.42         | 29.42            | -.01     | 20.89         | 20.87 | .08          | 383.07     | 383.10       | -.01     | 8.60        |
| 8.80        | .3059         | .3060        | -.04     | 29.42         | 29.42            | -.01     | 20.89         | 20.87 | .08          | 383.11     | 383.14       | -.01     | 8.80        |
| 9.00        | .3129         | .3130        | -.04     | 29.43         | 29.43            | -.01     | 20.89         | 20.87 | .08          | 383.16     | 383.19       | -.01     | 9.00        |
| 9.20        | .3198         | .3199        | -.04     | 29.43         | 29.44            | -.01     | 20.89         | 20.87 | .08          | 383.20     | 383.23       | -.01     | 9.20        |
| 9.40        | .3268         | .3269        | -.04     | 29.44         | 29.44            | -.01     | 20.89         | 20.88 | .08          | 383.25     | 383.28       | -.01     | 9.40        |
| 9.60        | .3337         | .3338        | -.04     | 29.45         | 29.45            | -.01     | 20.89         | 20.88 | .08          | 383.29     | 383.32       | -.01     | 9.60        |
| 9.80        | .3406         | .3408        | -.04     | 29.45         | 29.46            | -.01     | 20.90         | 20.88 | .08          | 383.34     | 383.37       | -.01     | 9.80        |
| 10.00       | .3476         | .3477        | -.04     | 29.46         | 29.46            | -.01     | 20.90         | 20.88 | .09          | 383.38     | 383.41       | -.01     | 10.00       |

TABLE I.- Concluded

TEMP=350. K B0= .4804067E-02 B1= .1193885E-03 B2=-.8985834E-06 C0= .7564431E-03 C1= .1021273E-04 C2= .6768831E-07

| PRES<br>ATM | S<br>J/MOL.K | S      | DIF<br>% | H<br>J/MOL | H       | DIF<br>% | E<br>J/MOL | E      | DIF<br>% | PRES<br>ATM |
|-------------|--------------|--------|----------|------------|---------|----------|------------|--------|----------|-------------|
| .20         | 209.55       | 209.55 | .00      | 10178.1    | 10177.9 | .00      | 7268.0     | 7267.9 | .00      | .20         |
| .40         | 203.78       | 203.78 | .00      | 10177.4    | 10177.0 | .00      | 7267.1     | 7266.9 | .00      | .40         |
| .60         | 200.41       | 200.41 | .00      | 10176.6    | 10176.2 | .00      | 7266.3     | 7266.0 | .00      | .60         |
| .80         | 198.02       | 198.02 | .00      | 10175.9    | 10175.3 | .01      | 7265.5     | 7265.0 | .01      | .80         |
| 1.00        | 196.16       | 196.16 | .00      | 10175.1    | 10174.4 | .01      | 7264.6     | 7264.1 | .01      | 1.00        |
| 1.20        | 194.64       | 194.64 | .00      | 10174.4    | 10173.5 | .01      | 7263.8     | 7263.1 | .01      | 1.20        |
| 1.40        | 193.36       | 193.35 | .00      | 10173.6    | 10172.7 | .01      | 7262.9     | 7262.2 | .01      | 1.40        |
| 1.60        | 192.24       | 192.24 | .00      | 10172.9    | 10171.8 | .01      | 7262.1     | 7261.2 | .01      | 1.60        |
| 1.80        | 191.26       | 191.26 | .00      | 10172.1    | 10170.9 | .01      | 7261.2     | 7260.3 | .01      | 1.80        |
| 2.00        | 190.38       | 190.38 | .00      | 10171.4    | 10170.0 | .01      | 7260.4     | 7259.3 | .01      | 2.00        |
| 2.20        | 189.59       | 189.59 | .00      | 10170.6    | 10169.2 | .01      | 7259.5     | 7258.4 | .02      | 2.20        |
| 2.40        | 188.86       | 188.86 | .00      | 10169.9    | 10168.3 | .02      | 7258.6     | 7257.5 | .02      | 2.40        |
| 2.60        | 188.19       | 188.19 | .00      | 10169.1    | 10167.4 | .02      | 7257.8     | 7256.5 | .02      | 2.60        |
| 2.80        | 187.58       | 187.57 | .00      | 10168.3    | 10166.5 | .02      | 7256.9     | 7255.6 | .02      | 2.80        |
| 3.00        | 187.00       | 187.00 | .00      | 10167.6    | 10165.7 | .02      | 7256.1     | 7254.6 | .02      | 3.00        |
| 3.20        | 186.46       | 186.46 | .00      | 10166.8    | 10164.8 | .02      | 7255.2     | 7253.7 | .02      | 3.20        |
| 3.40        | 185.95       | 185.95 | .00      | 10166.1    | 10163.9 | .02      | 7254.4     | 7252.7 | .02      | 3.40        |
| 3.60        | 185.48       | 185.47 | .01      | 10165.3    | 10163.1 | .02      | 7253.5     | 7251.8 | .02      | 3.60        |
| 3.80        | 185.03       | 185.02 | .00      | 10164.6    | 10162.2 | .02      | 7252.7     | 7250.8 | .03      | 3.80        |
| 4.00        | 184.60       | 184.59 | .00      | 10163.8    | 10161.3 | .02      | 7251.8     | 7249.9 | .03      | 4.00        |
| 4.20        | 184.19       | 184.18 | .00      | 10163.1    | 10160.5 | .03      | 7251.0     | 7248.9 | .03      | 4.20        |
| 4.40        | 183.83       | 183.79 | .00      | 10162.3    | 10159.6 | .03      | 7250.1     | 7248.0 | .03      | 4.40        |
| 4.60        | 183.43       | 183.42 | .00      | 10161.6    | 10158.7 | .03      | 7249.2     | 7247.0 | .03      | 4.60        |
| 4.80        | 183.07       | 183.06 | .00      | 10160.8    | 10157.9 | .03      | 7248.4     | 7246.1 | .03      | 4.80        |
| 5.00        | 182.73       | 182.72 | .00      | 10160.1    | 10157.0 | .03      | 7247.5     | 7245.1 | .03      | 5.00        |
| 5.20        | 182.40       | 182.39 | .00      | 10159.3    | 10156.1 | .03      | 7246.7     | 7244.2 | .03      | 5.20        |
| 5.40        | 182.08       | 182.08 | .00      | 10158.5    | 10155.3 | .03      | 7245.8     | 7243.2 | .04      | 5.40        |
| 5.60        | 181.78       | 181.77 | .00      | 10157.8    | 10154.4 | .03      | 7245.0     | 7242.3 | .04      | 5.60        |
| 5.80        | 181.48       | 181.48 | .00      | 10157.0    | 10153.5 | .03      | 7244.1     | 7241.3 | .04      | 5.80        |
| 6.00        | 181.20       | 181.19 | .00      | 10156.3    | 10152.7 | .04      | 7243.2     | 7240.4 | .04      | 6.00        |
| 6.20        | 180.93       | 180.92 | .00      | 10155.5    | 10151.8 | .04      | 7242.4     | 7239.4 | .04      | 6.20        |
| 6.40        | 180.66       | 180.65 | .00      | 10154.8    | 10150.9 | .04      | 7241.5     | 7238.5 | .04      | 6.40        |
| 6.60        | 180.40       | 180.39 | .00      | 10154.0    | 10150.1 | .04      | 7240.7     | 7237.6 | .04      | 6.60        |
| 6.80        | 180.15       | 180.14 | .01      | 10153.2    | 10149.2 | .04      | 7239.8     | 7236.6 | .04      | 6.80        |
| 7.00        | 179.91       | 179.90 | .01      | 10152.5    | 10148.4 | .04      | 7238.9     | 7235.7 | .05      | 7.00        |
| 7.20        | 179.67       | 179.66 | .01      | 10151.7    | 10147.5 | .04      | 7238.1     | 7234.7 | .05      | 7.20        |
| 7.40        | 179.44       | 179.43 | .01      | 10151.0    | 10146.6 | .04      | 7237.2     | 7233.8 | .05      | 7.40        |
| 7.60        | 179.22       | 179.21 | .01      | 10150.2    | 10145.8 | .04      | 7236.3     | 7232.8 | .05      | 7.60        |
| 7.80        | 179.00       | 178.99 | .01      | 10149.5    | 10144.9 | .04      | 7235.5     | 7231.9 | .05      | 7.80        |
| 8.00        | 178.78       | 178.77 | .01      | 10148.7    | 10144.1 | .05      | 7234.6     | 7230.9 | .05      | 8.00        |
| 8.20        | 178.58       | 178.57 | .01      | 10147.9    | 10143.2 | .05      | 7233.8     | 7230.0 | .05      | 8.20        |
| 8.40        | 178.37       | 178.36 | .01      | 10147.2    | 10142.3 | .05      | 7232.9     | 7229.0 | .05      | 8.40        |
| 8.60        | 178.18       | 178.16 | .01      | 10146.4    | 10141.5 | .05      | 7232.0     | 7228.1 | .05      | 8.60        |
| 8.80        | 177.98       | 177.97 | .01      | 10145.7    | 10140.6 | .05      | 7231.2     | 7227.2 | .06      | 8.80        |
| 9.00        | 177.79       | 177.78 | .01      | 10144.9    | 10139.8 | .05      | 7230.3     | 7226.2 | .06      | 9.00        |
| 9.20        | 177.61       | 177.50 | .01      | 10144.1    | 10138.9 | .05      | 7229.4     | 7225.3 | .06      | 9.20        |
| 9.40        | 177.43       | 177.41 | .01      | 10143.4    | 10138.1 | .05      | 7228.6     | 7224.3 | .06      | 9.40        |
| 9.60        | 177.25       | 177.24 | .01      | 10142.6    | 10137.2 | .05      | 7227.7     | 7223.4 | .06      | 9.60        |
| 9.80        | 177.07       | 177.06 | .01      | 10141.9    | 10136.4 | .05      | 7226.8     | 7222.4 | .06      | 9.80        |
| 10.00       | 176.90       | 176.89 | .01      | 10141.1    | 10135.5 | .06      | 7225.9     | 7221.5 | .06      | 10.00       |

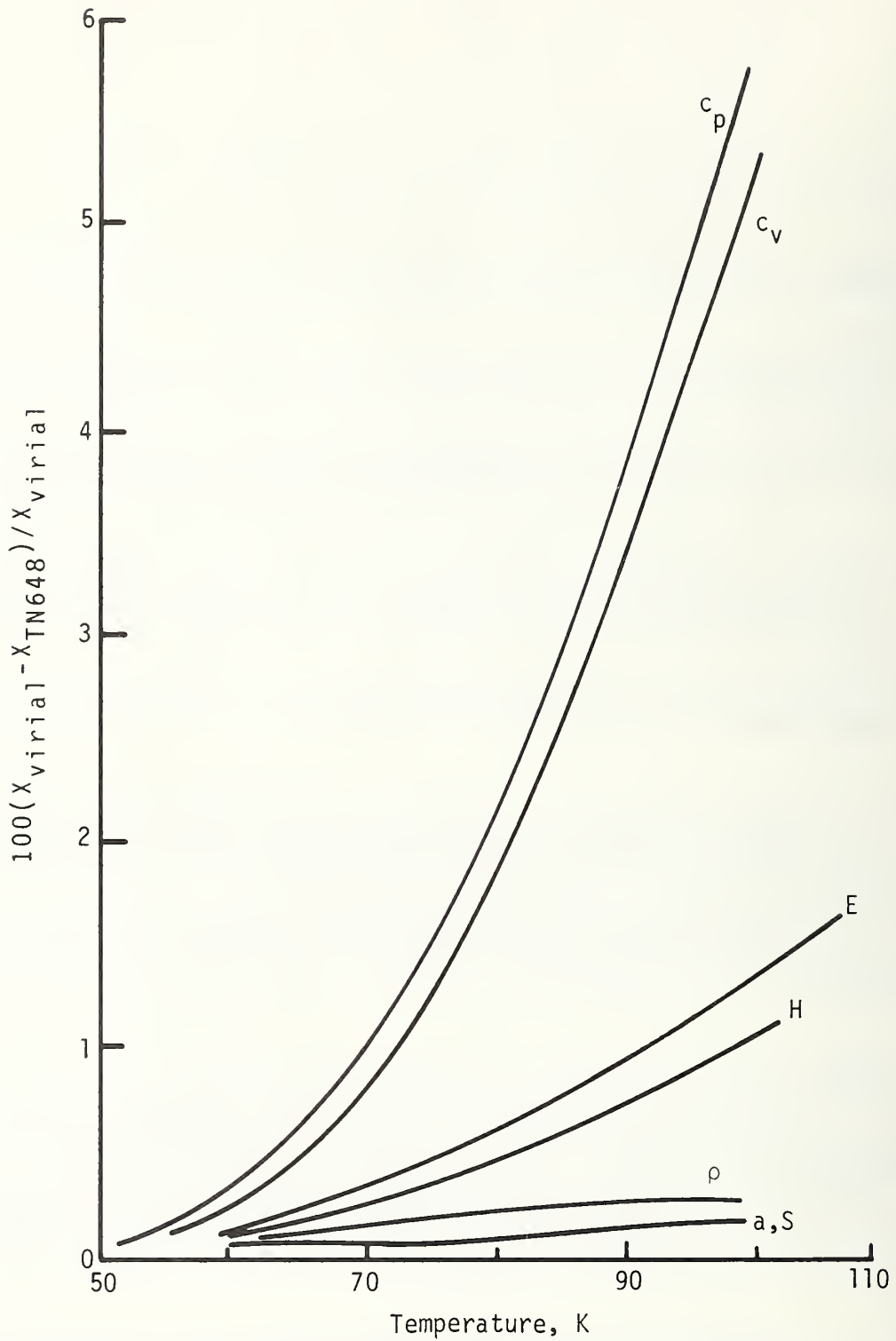


Figure 1.- Percent of deviation from TN 648 values at the saturation boundary for various thermodynamic properties X.

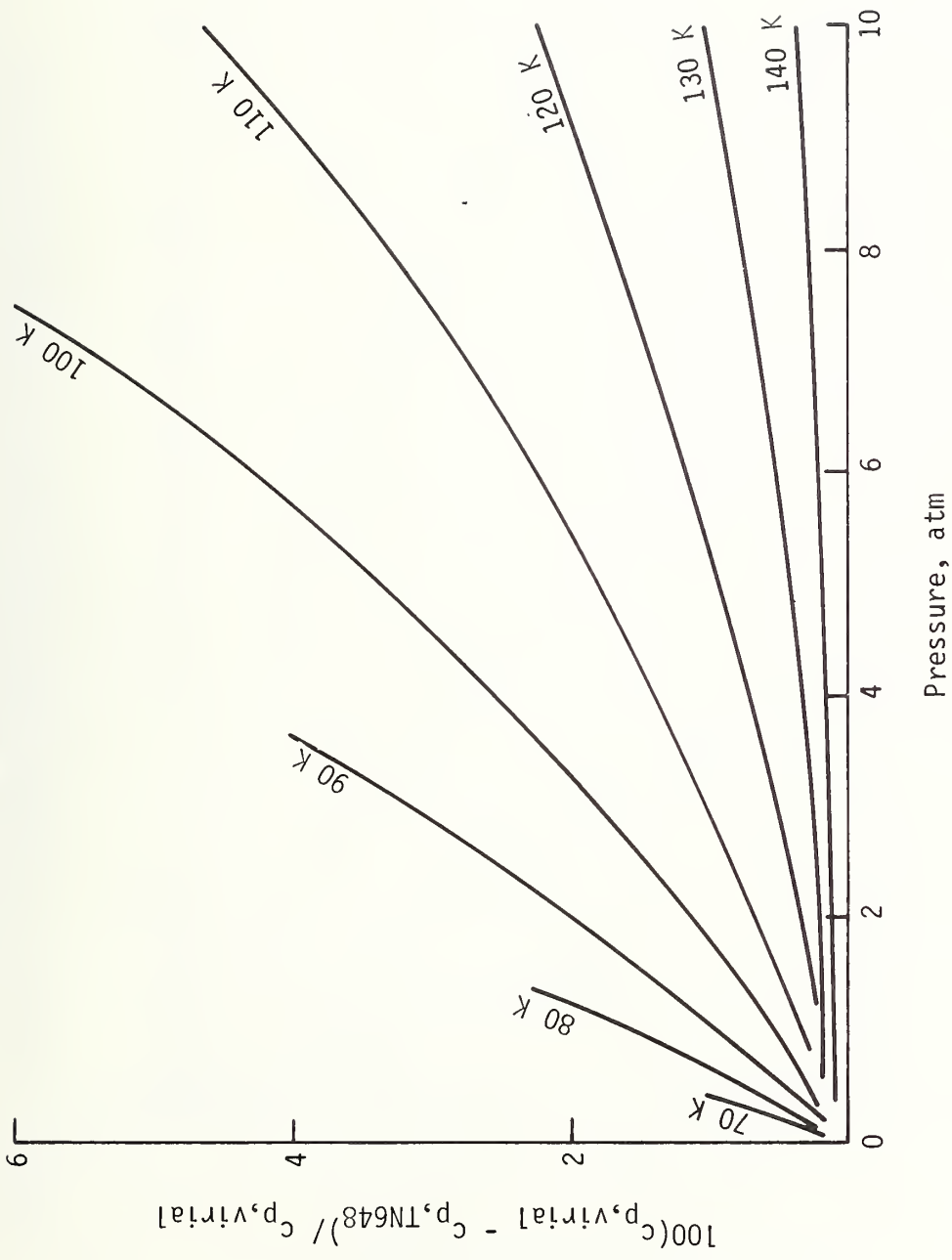


Figure 2.- Percent of deviation from TN 648 values of specific heat at constant pressure versus pressure at isotherms of 70 to 140 K.

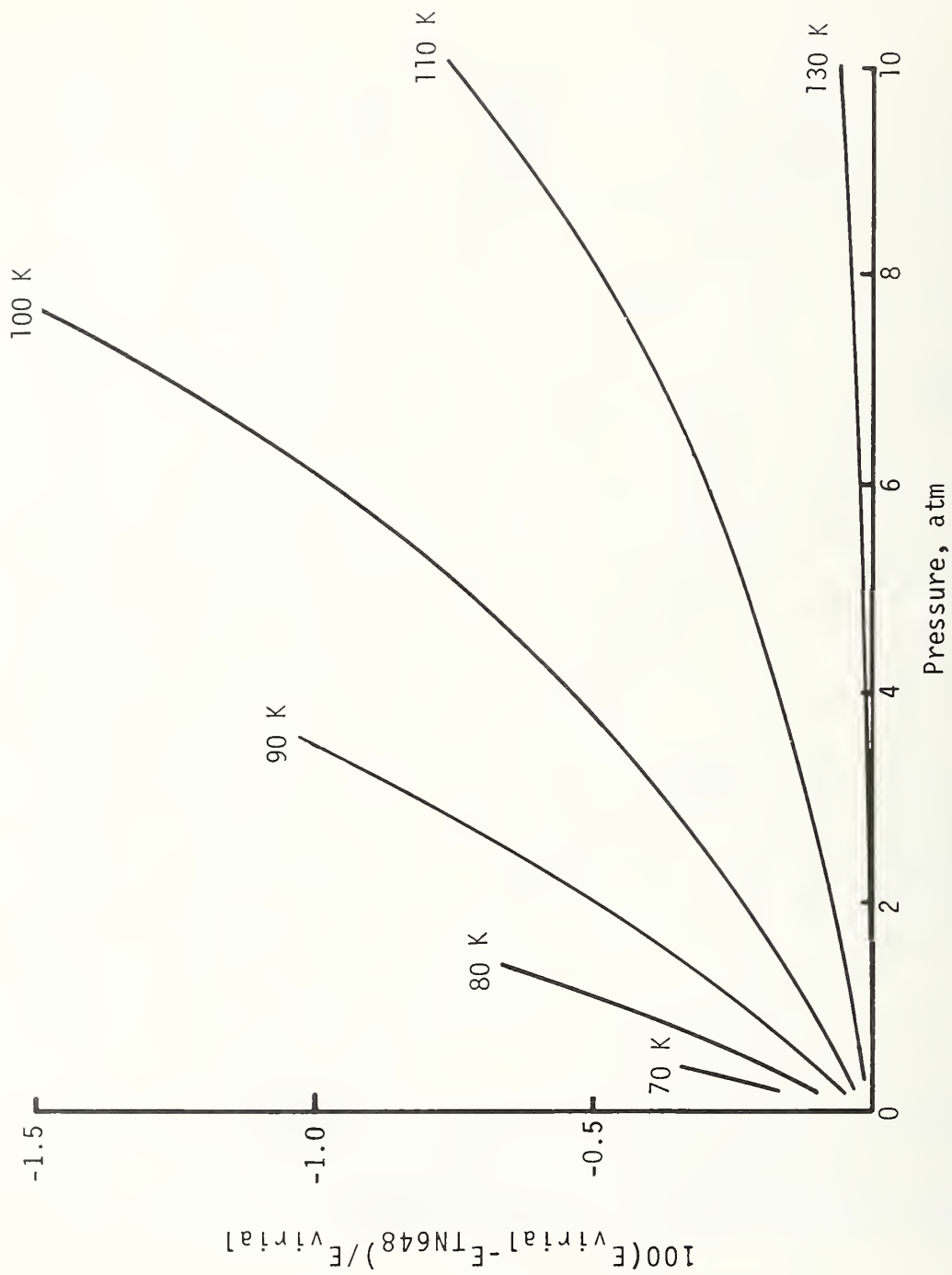


Figure 3.- Percent of deviation from TN 648 values of internal energy versus pressure at some isotherms from 70 to 130 K.

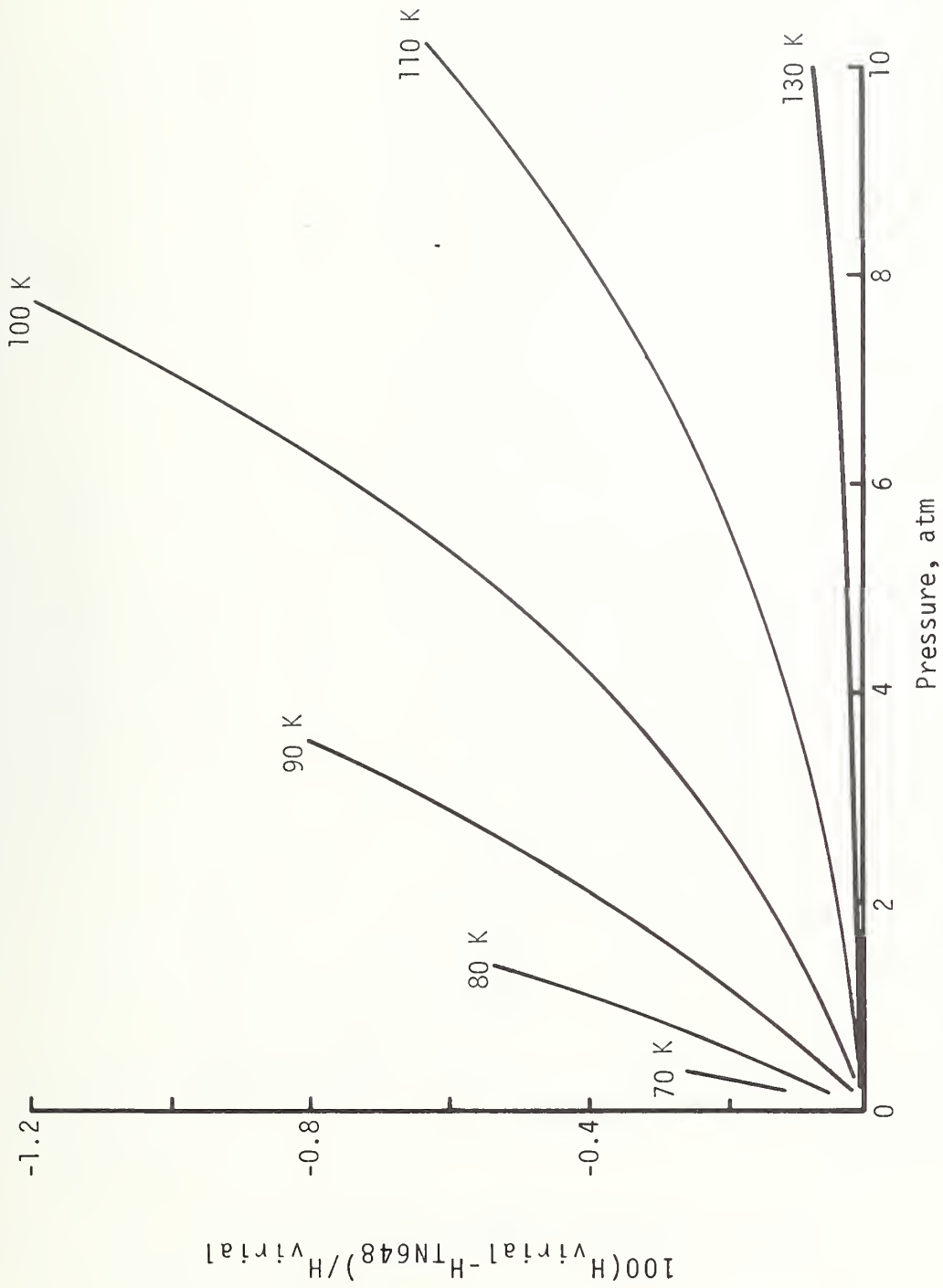


Figure 4.- Percent of deviation from TN 648 values of enthalpy versus pressure at some isotherms from 70 to 130 K.

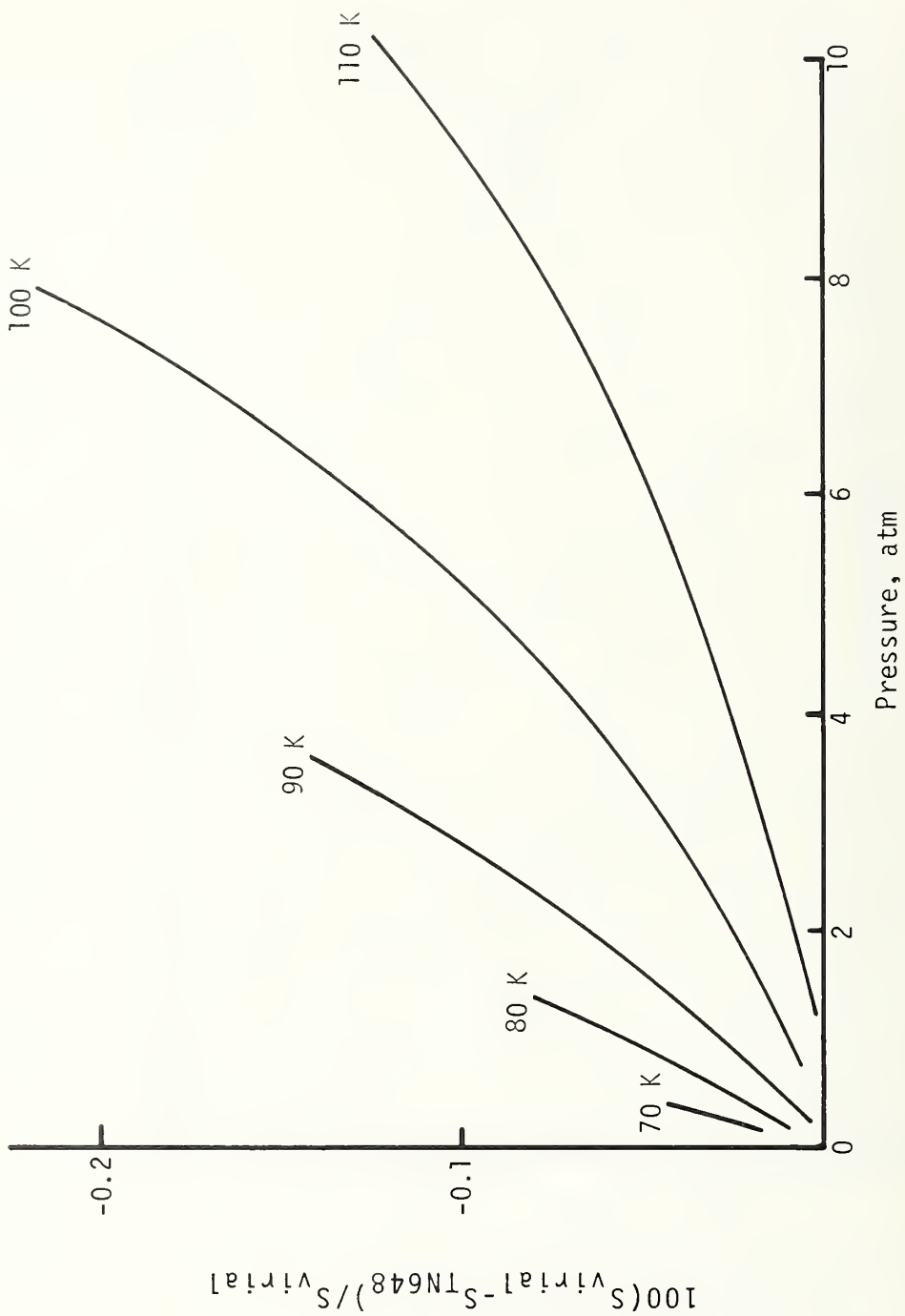


Figure 5.- Percent of deviation from TN 648 values of entropy versus pressure at isotherms of 70 to 110 K.

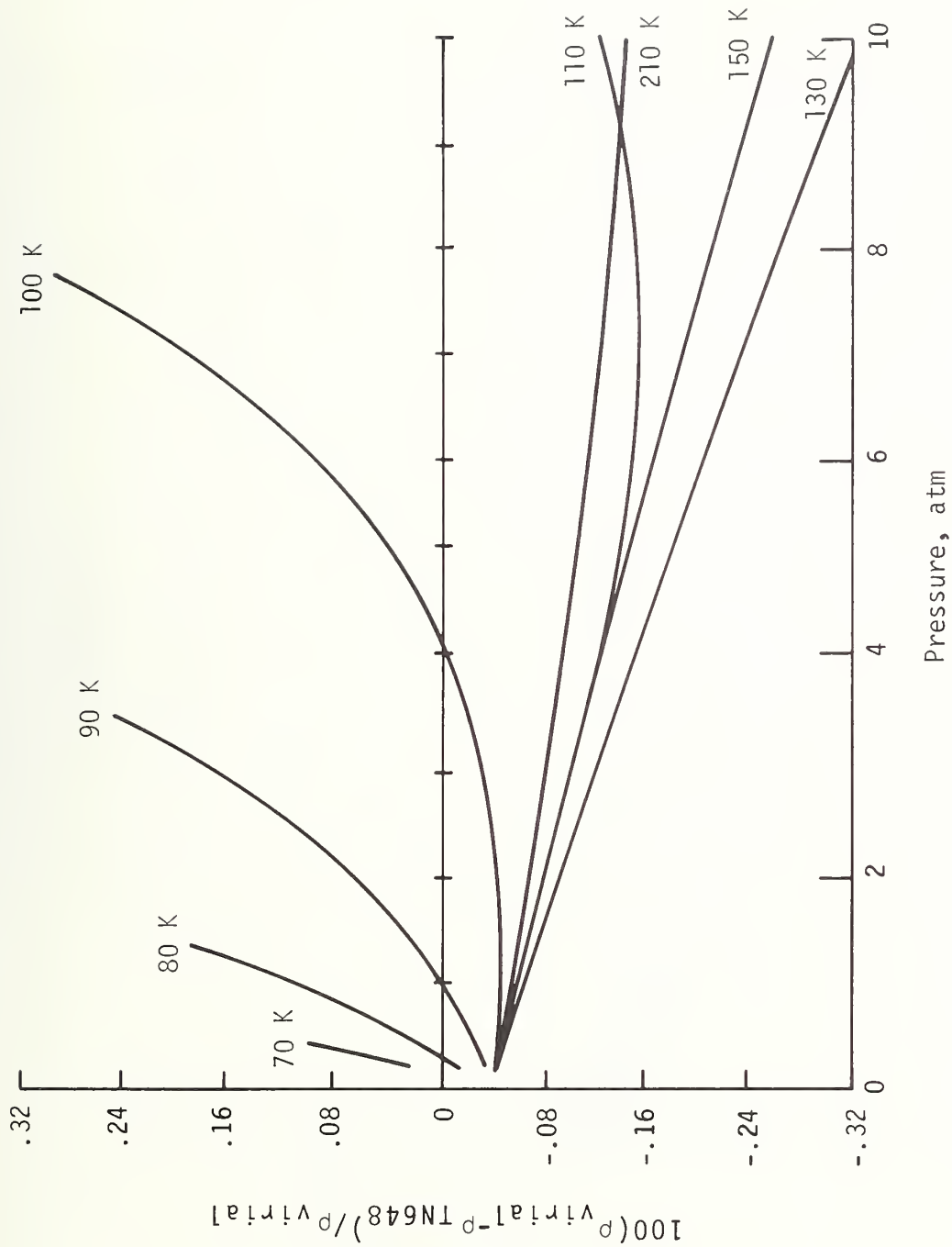


Figure 6.- Percent of deviation from TN 648 values of density versus pressure at some isotherms from 70 to 210 K.

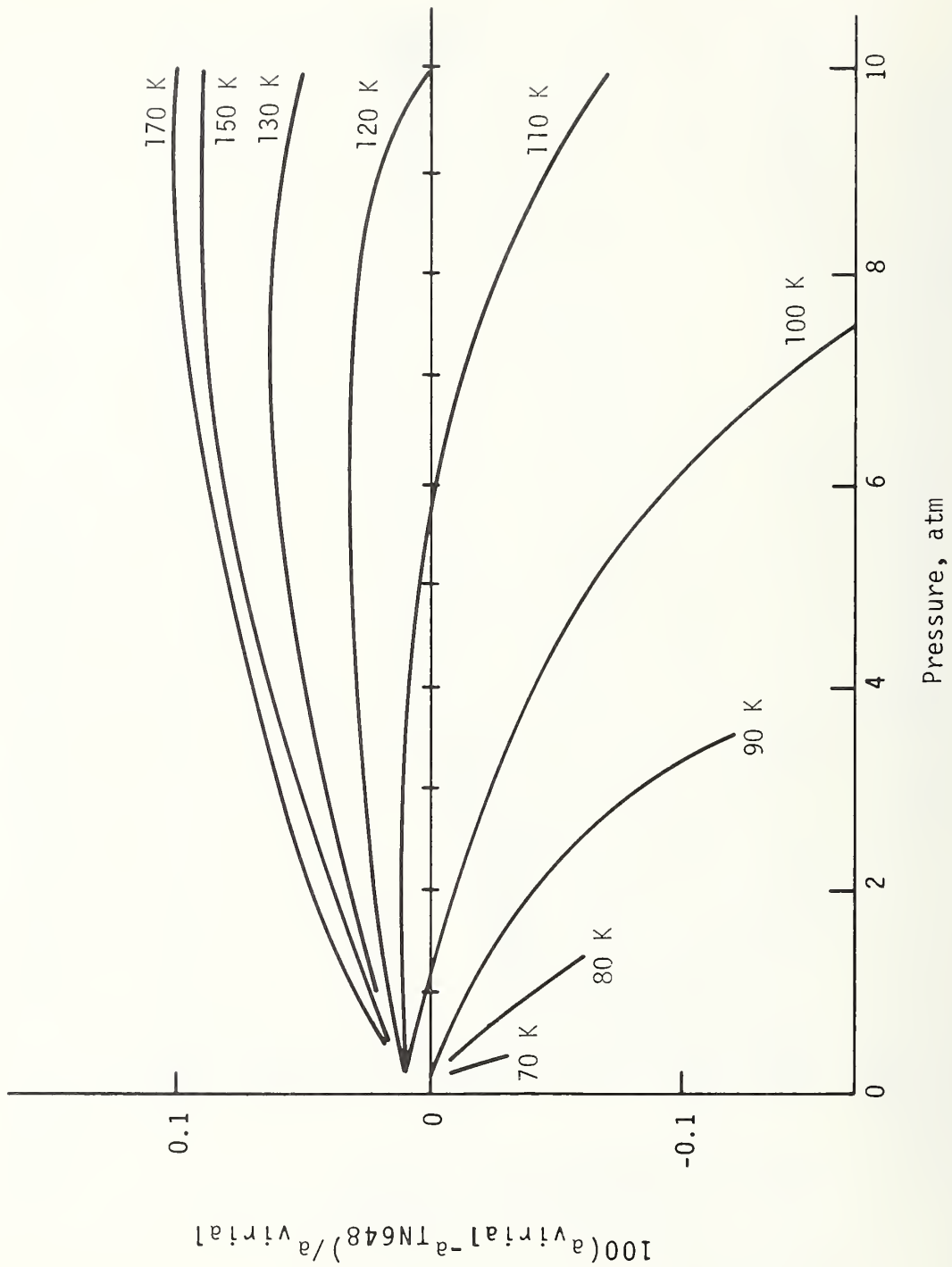


Figure 7.- Percent of deviation from TN 648 values of sound speed versus pressure at some isotherms from 70 to 170 K.

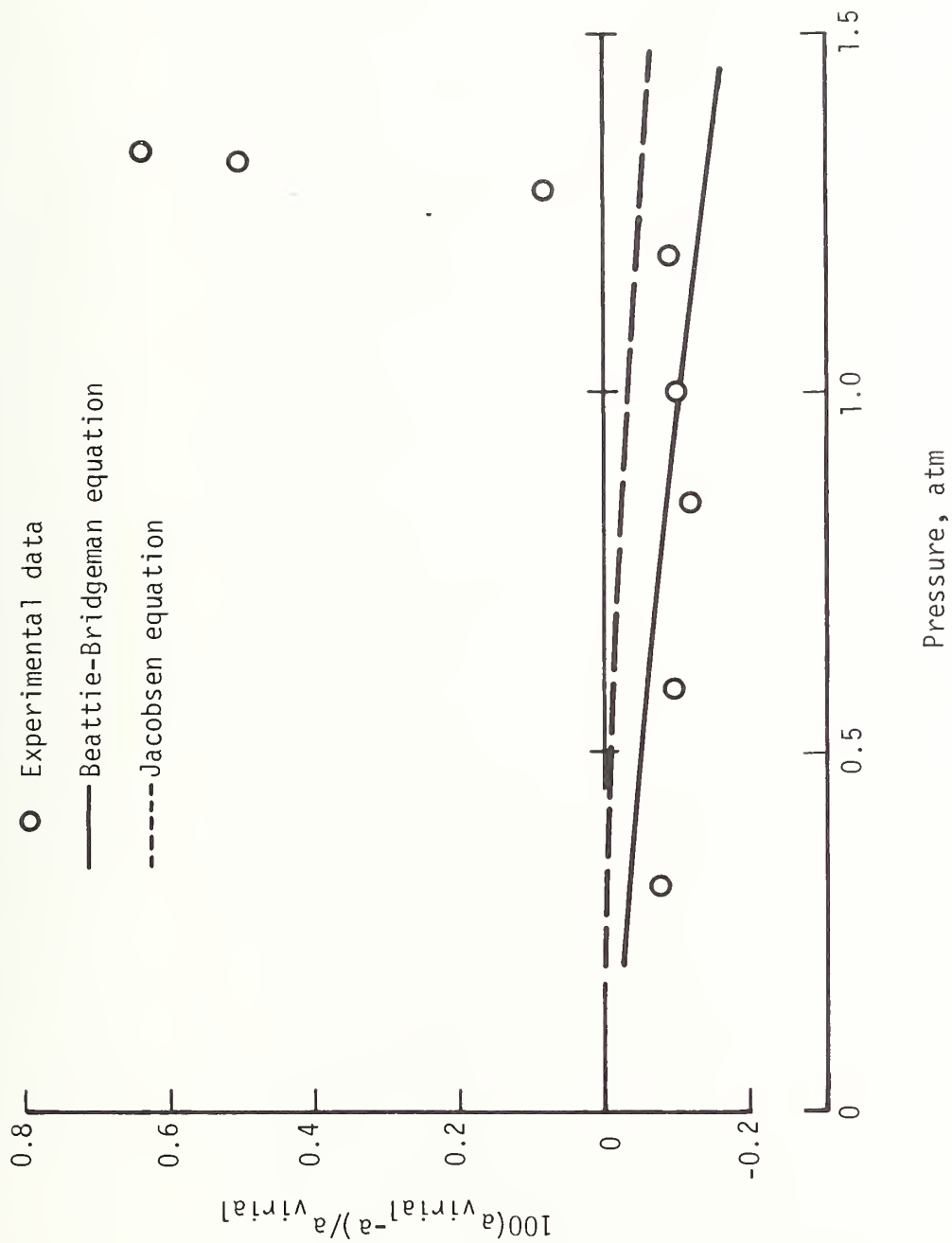


Figure 8.- Percent of deviation from the virial equation of sound speed at 80 K for Beattie-Bridgeman equation, Jacobsen equation, and experimental data.

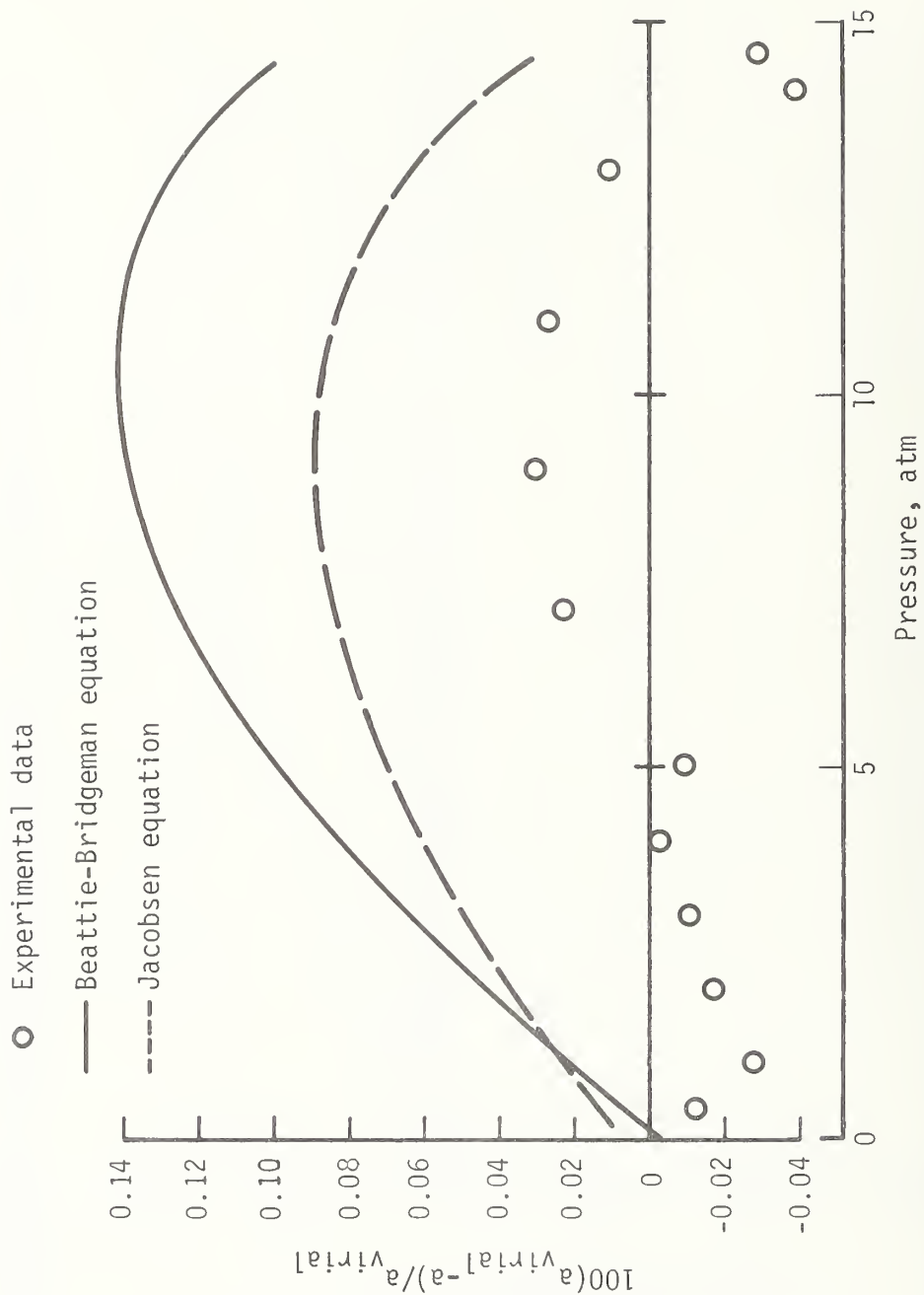


Figure 9.- Percent of deviation from the virial equation of sound speed at 150 K for Beattie-Bridgeman equation, Jacobsen equation, and experimental data.

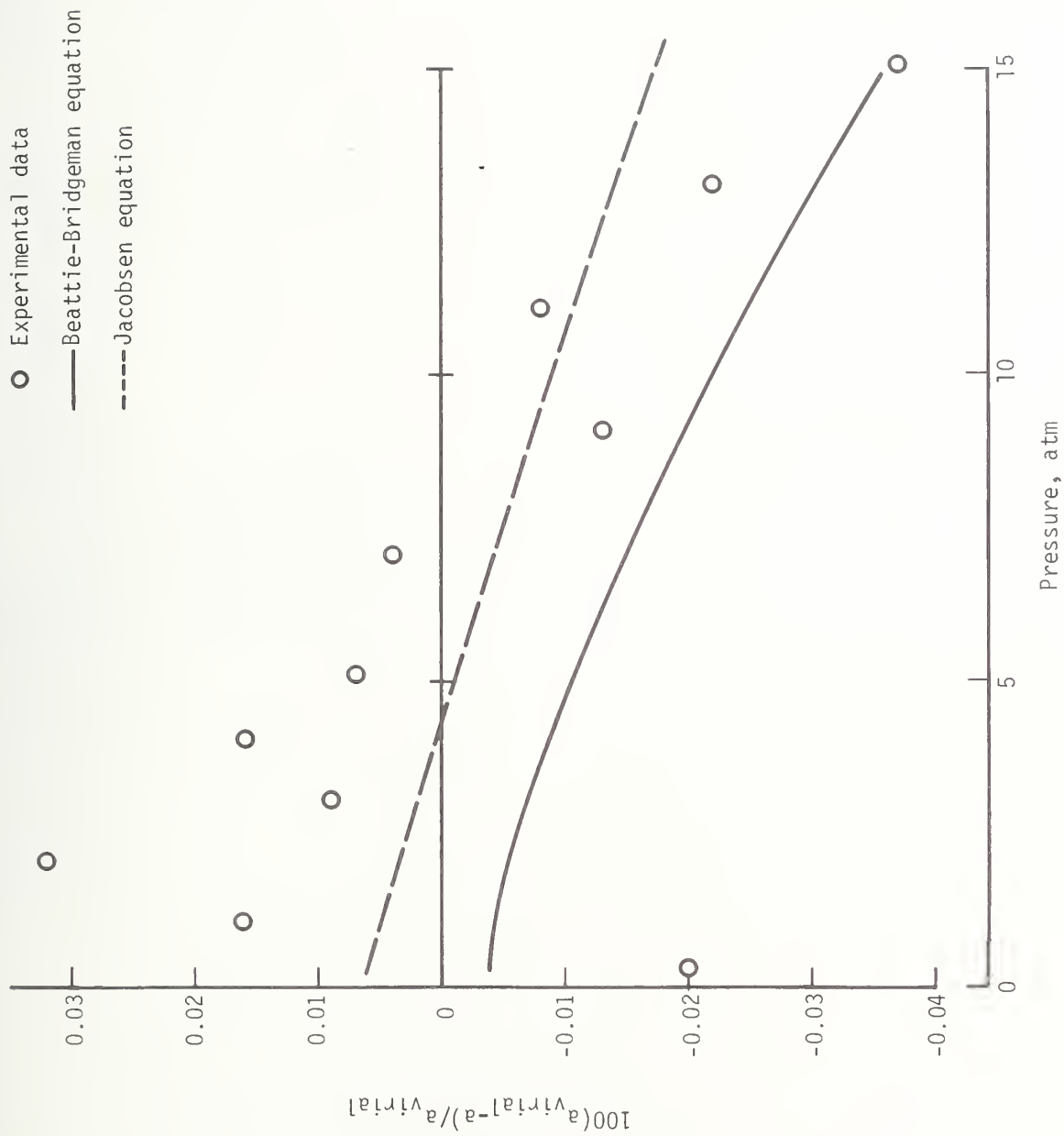


Figure 10.- Percent of deviation from the virial equation of sound speed at 310 K for Beattie-Bridgeman equation, Jacobsen equation, and experimental data.

|   |  |  |   |   |                      |
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