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HIGH TEMPERATURE PROPERTIES OF SODIUM, POTASSIUM, AND CESIUM

FOURTEENTH PROGRESS REPORT FOR PERIOD 1 JANUARY TO 31 MARCH 1964

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ABSTRACT

A program is in progress at this Laboratory to measure various thermophysical properties of sodium, potassium, cesium, and their vapors. Experimental values are presented for the pressure-volume-temperature properties of sodium vapor and the density of sodium liquid. Two equations of state are advanced for sodium, and properties of the saturated and superheated vapor are derived from these equations by a thermodynamic treatment, which is presented in outline form. Enthalpy, entropy, specific volume, and specific heat and compositional information (weight fraction of dimer, weight fraction of tetramer, and average molecular weight) are tabulated for some 800 selected vapor states in the temperature range from 1625° to 2575°F, and in the pressure range from 0.2 to 26 atm. Similar tables for potassium, which were previously reported in the Twelfth Progress Report, were computed from a saturated liquid base. These tables have been recomputed using properties of the monomeric gas as a base, and are published in this report.

PROBLEM STATUS

This is an interim report on the problem; work is continuing.

AUTHORIZATION

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INTRODUCTION

The National Aeronautics and Space Administration is sponsoring a property measurement program in order to evaluate working fluids for generating electrical power in space vehicles. As an integral part of the program, this Laboratory is engaged in the measurement of several thermophysical properties of sodium to 2500 °F, potassium to 2300 °F, and cesium to 2300 °F.

SUMMARY OF EXPERIMENTAL PROGRAM

Properties being determined experimentally for the three alkali metals sodium, potassium, and cesium, include vapor pressure, specific volume of liquid, specific heat of liquid (except for cesium), surface tension of liquid (except for sodium), and specific volume of saturated and superheated vapors (pressure-volume-temperature, or PVT, studies). Additional thermodynamic properties, including latent heat of vaporization, enthalpy, entropy, and specific heat of the vapor, are being calculated from the measured properties.

The thermodynamic properties of potassium, as obtained from a comprehensive thermodynamic treatment of the vapor and liquid properties, were presented in Ref. 1. For that reporting, each property was computed along constant temperature lines using properties of the saturated liquid as a starting point. It is now believed that an alternate base, the monomeric gas, is preferable. Therefore, the enthalpy, entropy, specific volume, and specific heat of potassium were recomputed with this new base and are published in this report. Saturation properties are presented in Table 11 and superheat properties in Table 12 for selected temperatures (1400 ° to 2525 °F at 25-degree intervals), from the saturation pressure at each temperature to 1 atm at intervals of 1 atm, and from 1 atm to 0.2 atm at intervals of 0.2 atm.

The PVT data for sodium have also been reduced thermodynamically to yield additional properties, and an outline of the thermodynamic steps and of the experimental measurements used in the treatment is presented. Two equations of state were derived, and properties were computed from these equations using, first, the saturated liquid and, finally, the monomeric gas as the base. As in the case of potassium, the latter base for sodium was believed to give more accurate properties. Therefore, all equations and properties in this report are based on the monomeric gas. Enthalpy, entropy, specific volume, and specific heat of sodium are presented in Table 9, and compositional information (weight fraction of dimer, weight fraction of tetramer, and average molecular weight) are presented in Table 10. Properties in both tables are tabulated for selected temperatures (1625 ° to 2575 °F at 25-degree intervals) from the saturation pressure at each temperature to 1 atm at intervals of 1 atm, and from 1 atm to 0.2 atm at intervals of 0.2 atm.

Six PVT experiments for cesium to temperatures of 2550 °F have been completed. Five additional experiments are required to complete the experimental phase, and these

are expected to be completed in six weeks. The remaining measurements on the current proposal, the density of liquid cesium and the surface tension of liquid potassium and cesium, are scheduled for the last quarter of this fiscal year.

SATURATED VAPOR PRESSURE OF SODIUM

Saturation pressures of sodium for the full temperature range (0.34 atm at 1437 °F to 23.8 atm at 2539 °F) were measured with a special PVT experiment using a large excess of sodium, and results are grouped in the first section of Table 1. Pressures measured in the course of eight PVT experiments are grouped together in the second section of the table. As previously reported, it was found that saturation pressures observed for each experiment near the intersection of the saturation and superheat curves were always below corresponding values on the true saturation curve. This lowering of the vapor pressure may be satisfactorily explained by several phenomena, such as adsorption, capillarity, and saturation-superheat effects, and observed pressures in these ranges have not been included in the table.

The vapor pressure data were fitted for the full temperature range (normal boiling point to 2539 °F) with one three-term equation. A few measurements of vapor pressure below the normal boiling point were made (Table 1), but these were believed to be of lower precision and were not used in determining the coefficients of the vapor pressure equation. The least-squares method with no weighting of the data (1) was used to derive coefficients for the three vapor pressure equations.*

$$\log p = 6.83770 - \frac{9980.94}{T} - 0.61344 \log T \qquad (1)$$

$$\log p = 7.11285 - \frac{10{,}063.7}{T} - 0.68464 \log T \qquad (2)$$

$$\log p = 7.00980 - \frac{10{,}035.2}{T} - 0.65769 \log T \qquad (3)$$

Equation (1) was derived from a treatment using all the observed vapor pressures above the normal boiling point. Equation (2) was derived from twenty points selected at equal intervals from a smoothed plot of log p versus 1/T for all the data. Equation (3) was derived from the data of the vapor pressure experiment in the first section of Table 1. The average deviation of all the observed vapor pressure data in Table 1, from corresponding values computed from any one of the three equations, is ±0.37%. The three equations are effectively equivalent, but other thermodynamic quantities in this report are based on Eq. (1). The normal boiling point, as obtained from Eq. (1), is 1618.6 °F (881.4 °C) and from Eqs. (2) and (3) is 1619.0 °F (881.7 °C).

PRESSURE-VOLUME-TEMPERATURE MEASUREMENTS OF SODIUM

PVT data for the vapor states of sodium between 1758 °F (1.86 atm) and 2588 °F (25.15 atm) have been obtained. The Cb-1%Zr apparatus, the method, and the measurement parameters were covered in Ref. 2. Final PVT data for nine experiments are presented in Table 2. For each experimental determination, in both the saturation and superheat regions, pressure and temperature were directly observed, and the specific volume was calculated from the weight of sodium added to the known volume. Equilibrium for each measurement condition was established, and multiple readings of temperature

*A list of nomenclature and the units used appears at the end of the text.

Table 1
Saturated Vapor Pressures of Sodium

Temperature (°F)	Pressure (abs atm)	Temperature (°F)	Pressure (abs atm)
Vapor Pressure Experiment			
1693.3	1.4283	2304.8	13.077
1800.7	2.3197	2223.9	10.363
1910.1	3.587	2152.5	8.329
2009.2	5.172	2053.0	6.023
2116.7	7.442	1947.0	4.131
2183.3	9.155	1837.3	2.7035
2262.4	11.582	1722.1	1.6399
2331.4	14.063	1628.1	1.0472
2413.1	17.466	1593.6	0.8737
2470.1	20.164	1557.7	0.7172
2539.2	23.821	1513.1	0.5512
2511.6	22.297	1478.7	0.4464
2443.4	18.851	1437.0	0.3362
2381.1	16.065		
Null Point Experiments			
1690.0	1.4242		
1769.2	2.0325	1640.5	1.1187
1851.4	2.8729	1772.4	2.0645
1947.4	4.113	1872.0	3.1138
1810.4	2.4081	1976.7	4.607
1661.5	1.2391	2075.5	6.505
1692.9	1.4249	2189.7	9.347
1635.8	1.0867	2299.8	12.916
1709.2	1.5365	2149.2	8.237
1651.5	1.1697	2017.0	5.318
1634.4	1.0744	1906.7	3.562
1645.5	1.1500	1738.4	1.7835
1758.2	1.9291	1636.9	1.1085
1854.1	2.8933	1688.4	1.4017
1958.9	4.301	1633.4	1.0772
2062.0	6.212	1695.8	1.4630
2168.6	8.764	1825.3	2.5681
2135.3	3.854	1760.5	1.9522
2020.6	4.032	1696.9	1.4671
1905.0	4.229	1629.1	1.0629
1716.4	4.596	1636.9	1.0860
1765.5	1.9700	1863.9	2.9831
1873.6	3.1056	1810.4	2.4102
1988.7	4.799	1678.0	1.3371
1937.6	3.994	1648.4	1.1622
1813.7	2.4442	1779.6	2.1366
1700.7	1.4820	1880.6	3.2288
1623.7	1.0221	1998.7	4.986
1639.2	1.0853	1937.0	3.996
1760.3	1.9223	1728.4	1.7052

Table 2
Pressure-Volume-Temperature Measurements Superheat Region

Temperature (°F)	Pressure (abs atm)	Specific Volume (cu ft/lb)
Experiment 3		
2126.7	6.623	10.709
2231.4	7.033	10.720
2324.3	7.375	10.731
2414.3	7.701	10.741
2508.6	8.025	10.751
2472.8	7.909	10.747
2376.9	7.568	10.737
2287.8	7.236	10.727
2185.9	6.860	10.715
2113.3	6.579	10.707
2095.5	6.478	10.705
2099.3	6.497	10.706
2102.9	6.514	10.706
Experiment 4		
1807.3	1.9237	33.317
1959.8	2.1162	33.369
2110.5	2.2999	33.421
2333.5	2.5442	33.498
2445.5	2.6613	33.536
2537.2	2.7552	33.568
2397.9	2.6089	33.520
2258.1	2.4605	33.472
2157.4	2.3510	33.437
2059.3	2.2394	33.403
2019.4	2.1931	33.390
1891.2	2.0427	33.345
1825.2	1.9604	33.323
1767.4	1.8849	33.303
1758.2	1.8631	33.300
Experiment 18		
2051.1	4.992	13.871
2172.0	5.326	13.888
2273.6	5.612	13.903
2387.1	5.921	13.919
2521.8	6.268	13.938
2479.6	6.162	13.932
Experiment 19		
1971.9	3.4737	19.697
2099.4	3.7241	19.723
2193.0	3.9194	19.742
2306.9	4.1270	19.765
2417.5	4.3161	19.787
2520.7	4.4985	19.808
2472.4	4.4121	19.799
2373.2	4.2474	19.778
2248.6	4.0269	19.753
2141.7	3.8174	19.731
2038.8	3.6023	19.710
1942.4	3.4145	19.691
1910.2	3.3472	19.684

Temperature (°F)	Pressure (abs atm)	Specific Volume (cu ft/lb)
Experiment 20		
2317.9	9.709	7.8143
2382.2	10.027	7.8195
2449.4	10.368	7.8249
2514.0	10.677	7.8301
2486.4	10.549	7.8279
2419.5	10.216	7.8225
2353.8	9.886	7.8172
2284.2	9.536	7.8116
2238.1	9.304	7.8079
2204.6	9.123	7.8052
Experiment 23		
2399.9	13.250	5.7697
2517.3	14.053	5.7766
2536.1	14.175	5.7778
2491.4	13.884	5.7751
2456.3	13.628	5.7730
2417.4	13.367	5.7707
2373.2	13.078	5.7681
2341.9	12.860	5.7662
2306.2	12.547	5.7641
Experiment 7		
2571.6	24.837	3.0463
2572.3	24.850	3.0501
2576.5	24.935	3.0503
2579.0	24.983	3.0504
2581.9	25.044	3.0504
2582.6	25.054	3.0505
2586.4	25.123	3.0505
2588.0	25.146	3.0506
2579.9	25.014	3.0504
Experiment 25		
2439.6	17.259	4.3527
2479.2	17.632	4.3544
2524.5	18.020	4.3565
2511.9	17.917	4.3559
2491.8	17.745	4.3550
2468.2	17.540	4.3540
2452.1	17.403	4.3532
2433.5	17.209	4.3524
Experiment 17		
2534.4	21.023	3.6525
2516.1	20.832	3.6519
2506.6	20.723	3.6515
2502.7	20.676	3.6514
2496.6	20.604	3.6511
2495.7	20.589	3.6511
2490.5	20.506	3.6509

and pressure were made at 5 to 10 minute intervals until successive readings showed a temperature drift rate of 0.04°C/min or less and a temperature difference across the apparatus of 0.5 °C or less. For each PVT experiment (except for number 18), measurements were made over a minimum of one full cycle from the normal boiling point to 2525 °F, and equilibrium pressures generally were reproduced to better than ±0.1 psi before, during, and after cycling.

Two experiments, 1 and 5, for which preliminary data were reported in Ref. 2, have not been included in this report, and have been given no weight in the thermodynamic analysis. Experiment 1 was made before a proper filling technique was developed and the chamber at the conclusion of the experiment was found to contain approximately 0.6 psi of argon. Experiment 5 was grossly in error by what appeared to be a weight error. Both experiments were repeated.

In the course of the ten experiments (including the saturation experiment), sodium samples from four independent distillations were used. Sodium introduced to the still pot was a pure grade of E. I. duPont de Nemours & Co. A spectrographic analysis of a typical sodium fraction used in the PVT capsules is presented in Table 3. Metal impurities were present in such low concentrations that the observed vapor pressures should not have been affected significantly.

Table 3
Spectrographic Analysis of Distilled Sodium

Metal	Analyses (parts per million by weight)
K	1 → 10
Rb	Not Detected
Li	Not Detected
Cs	Not Detected

THERMODYNAMIC REDUCTION OF PVT DATA FOR SODIUM

It was shown in Ref. 1 that enthalpy, entropy, and specific heat may be reduced from the PVT data by the use of either of two methods – the virial or the equilibrium constant. For the analysis and reduction of the sodium data, both methods were used. The virial equation of state, with coefficients through the fourth virial, was reduced from the raw data and used to compute enthalpies, entropies, specific volumes, and specific heats. The alternative equation of state, consisting of the perfect gas equation and the equilibrium constants of the association reactions, was used as a check to compute the same properties and, in addition, to compute for the saturated and superheated vapor other properties which required for their computation a knowledge of molecular composition. For the equilibrium constant method (1), it is assumed that all species behave as perfect gases. All experimental measurements and all thermodynamic equations pertinent to each treatment are presented in outline form.

The properties of sodium by both the virial and the equilibrium constant method were computed along constant-temperature lines. The starting point for a particular property could have been the absolute value of that property for either the saturated liquid or for the monomeric gas at one atmosphere. For comparison, the properties were computed using both bases. In the temperature range of the liquid specific heat measurements

(1625° to 2200°F), absolute enthalpies based on the monomeric gas properties by Evans, et al. (3) were 13 to 15 Btu/lb (approximately 0.6%) higher than corresponding values based on the saturated liquid properties; entropies by the monomeric gas base were 0.003 to 0.004 Btu/lb-°F (approximately 0.2%) lower than those by the liquid base. As explained in a previous section, the specific heat of the vapor, because of the shorter computation path, would be expected to be more accurate when based on the monomeric gas; therefore, all tabular data and all thermodynamic equations presented in this report are based on the monomeric gas.

Before equilibrium constants could be reduced from the raw data, a determination of the polymeric species present in equilibrium sodium vapor was required. It was noted in a previous report (1) that the potassium data, when analyzed by the method of MacDougall (4), did not offer good differentiation between the trimer and higher molecular species, and it was assumed then that only dimer and trimer were present. On the other hand, the sodium data, when treated by the method of MacDougall, gave rather positive evidence for the existence of dimer and tetramer species with no trimer. The analysis and reduction of the sodium data was made with the assumption that only dimer and tetramer species were present with the monomer.

The confidence level assigned to the identification of the higher molecular specie (trimer or tetramer) will be covered more completely in a future report. It should be recognized, however, that the assumptions made regarding gas imperfections could have influenced the identification of the higher molecular weight specie, its properties, and its reported concentration in the metal vapor. The same assumptions could also have influenced, to a smaller degree, the properties and the reported concentration of the dimer. Since all the alkali metals would be expected to exhibit the same type of association, it is believed that a more positive identification of the higher specie can be made upon reduction of the cesium data.

DENSITY OF THE CONDENSED SODIUM PHASE

The final densities of liquid sodium as measured at NRL (5) are presented in Table 4. The recommended density equation for sodium (Eq. 4) was obtained by fitting the best curve to the high temperature data in Table 4 and to the lower temperature data of Novikov (6), Nishibayashi (7), Rinck (8), MSA (9), Hagen (10), and NRL (11).

Table 4
Density of Liquid Sodium

Temp. (°F)	Density (lb/cu ft)
1576.8	46.815
1873.4	44.056
2093.5	42.383
2268.9	40.828
2491.2	39.161

$$d^{\ell} = 59.621 - 8.2544 \times 10^{-3}t \ . \qquad (4)$$

The seven independent sets of measurements used to derive Eq. (4) are summarized in Table 5. For each investigation, the temperature range, the general method, and the average deviation are presented. In general, the dilatometric measurements show good internal consistency over the full temperature range, and it is believed that Eq. (4) will give density values which are accurate to ±0.2% between the melting point and 1100°F and to ±0.4% between 1100° and 2500°F.

Table 5
Summary of Density Measurements for Liquid Sodium

Investigator †	Method	Temp. Range (°F)	Average Deviation of All Observed Values From those Calculated with Eq. (4) (%)
NRL (11)	Dilatometric	mp to 503	±0.08
MSA (9)	Buoyancy	937 to 1314	+0.74
Rinck (8)	Buoyancy	804 to 1183	-0.15
Hagen (10)	Dilatometric	mp to 336	±0.05
NRL (Table 4)	Dilatometric (Pycnometers)	1577 to 2491	±0.20
Novikov (A)*	Buoyancy	248 to 505	+0.14
(6) (B)*	Buoyancy	275 to 1324	-0.71
Nishibayashi (7)	Buoyancy	486 to 1580	±1.09

*(A) with steel sinker; (B) with tungsten sinker.
†Numbers in parentheses refer to the references.

SPECIFIC VOLUME OF SATURATED SODIUM VAPOR

Specific volumes of several saturated vapor states (Table 6) were directly observed over the temperature range from 1750° to 2555° F. The measurements were made in the course of the PVT studies, and each point represents an intersection of the saturated and superheated vapor curves for one of the nine PVT experiments. For the low-weight and low-pressure experiments (particularly experiments 4, 18, and 19), it was found that superheat pressures observed near the intersection of the saturated and superheated vapor curves were always slightly depressed. This slight lowering of the vapor pressure for experiments with low-weight additions of alkali metal may be satisfactorily explained by one or more of several phenomena, including adsorption and capillarity effects. It is believed

Table 6
Specific Volume of Saturated Sodium Vapor

Experiment Number	Temperature (°F)	Specific Volume (cu ft/lb)
4	1750.1	33.30
19	1888.3	19.68
18	1988.8	13.86
3	2071.8	10.70
20	2177.6	7.803
23	2289.0	5.763
25	2402.3	4.351
17	2474.4	3.650
7	2555.1	3.050

that the virial equation (Eqs. 13 through 16) will give more reliable saturation volumes than those observed at intersection points. Even so, corresponding values computed from the virial equation show an average deviation of only ±0.57% from the observed values.

ENTHALPY AND ENTROPY OF CONDENSED SODIUM

When comparison calculations were made using the properties of the saturated liquid as a starting point, the absolute enthalpies and entropies of the liquid (relative to the solid at 0°R) were computed with

$$h_s^{\ell} = 0.389352T - 0.552955 \times 10^{-4}T^2 + 0.113726 \times 10^{-7}T^3 - 29.023 \quad (5)$$

$$s_s^{\ell} = 0.896497 \log T - 1.10557 \times 10^{-4}T + 0.170408 \times 10^{-7}T^2 - 1.792026 . \quad (6)$$

These equations were derived directly from the work of Ginnings et al. (12) and are based on their specific heats for the solid and liquid over the temperature range 32° to 1650 °F. The absolute enthalpy and entropy of solid sodium at 32 °F was taken from the work of Evans et al. (3). Specific heat of liquid sodium was also measured at NRL (2) for the temperature range from 600° to 2138°F. The NRL results overlap and extend the NBS range, but fit their specific heat equation with an average deviation of only ±1.5%. Therefore, the upper measured limit of Eqs. (5) and (6) becomes 2150°F, and thermodynamic calculations to 2575°F with the liquid base requires a 400°F extrapolation of the data.

ENTHALPY AND ENTROPY OF MONOMERIC SODIUM VAPOR

Equations for the enthalpies and entropies of monomeric sodium vapor as a function of temperature were derived directly from the work of Evans et al. (3) and were based on their standard enthalpies and entropies for the monomeric gas over the temperature range from 0° to 3100°R. These equations for the monomeric gas at one atmosphere (relative to the solid at 0°R) are

$$(h^g)^\circ = 2028.35 + 0.21598T + 12,172\ e^{-43,830/T} \quad (7)$$

$$(s^g)^\circ = 0.23859 + 0.21598 \ln T . \quad (8)$$

SPECIFIC HEAT AT CONSTANT PRESSURE OF MONOMERIC SODIUM VAPOR

The temperature equation for the specific heat at constant pressure of monomeric sodium vapor was also derived from the work of Evans et al., and was based on their computed specific heats over the temperature range from 0° to 3200°R. This relation for the monomeric gas at one atmosphere is

$$(c_p^g)^\circ = 0.21598 + 6.054\ e^{-37,279/T} . \quad (9)$$

ENTHALPY AND ENTROPY OF VAPORIZATION

Heats of vaporization were calculated with Eq. (11). This equation was derived by differentiation of Eq. (1) to give $(dp/dT)_s$ and a substitution of the differential into the Clapeyron equation (Eq. 10).

$$\Delta h_v = J\left[\frac{dp}{dT}\right]_s T\,(v_s^g - v_s^\ell) \tag{10}$$

$$\Delta h_v = J\,p_s\left[\frac{22,982}{T} - 0.61344\right]\,(v_s^g - v_s^\ell)\,. \tag{11}$$

The entropy of vaporization at each saturated state was obtained with

$$\Delta s_v = \frac{\Delta h_v}{T}\,. \tag{12}$$

VIRIAL EQUATION OF STATE FOR SODIUM

The virial equation of state for sodium with coefficients through the fourth virial is

$$\frac{p\tilde{V}}{RT} = 1 + \frac{B}{\tilde{V}} + \frac{C}{\tilde{V}^2} + \frac{D}{\tilde{V}^3} \tag{13}$$

where

$$\log |B| = -4.3447 + \frac{6842.9}{T} + \log T \tag{14}$$

B less than 0

$$\log C = -0.51542 + \frac{10,857}{T} \tag{15}$$

$$\log |D| = +0.0720 + \frac{13,500}{T} \tag{16}$$

D less than 0 .

The coefficients for the volume expansion form (Eq. 13) of the virial equation were derived graphically by a method somewhat analogous to that described by Liley (13) for the pressure expansion form, and a complete description of the method will be included in a future report for potassium. The observed specific volume data in Table 2 were fitted by Eqs. 13 through 16 with an average deviation of ±0.34%. As in the case of the potassium data (1), this deviation is of a magnitude predicted by combined random and systematic errors in the null-point measurements.

SPECIFIC VOLUME OF SATURATED AND SUPERHEATED VAPOR OF SODIUM FROM VIRIAL EQUATION

The specific volumes of saturated and superheated vapor of sodium, for all saturation and superheat states in Tables 7 and 9, were computed from the virial equation of state.

ENTHALPY OF SATURATED AND SUPERHEATED VAPOR FROM VIRIAL EQUATION

Enthalpy values in Tables 7 and 9 were computed along isotherms in the superheat region with the monomeric gas state at one atmosphere as a base. The general working equation in terms of the virial coefficients and their derivatives is

$$h_1^g = (h^g)^\circ + \frac{RT}{M_1}\left\{\frac{1}{\tilde{V}}\left[B - T\left(\frac{dB}{dT}\right)\right] + \frac{1}{\tilde{V}^2}\left[C - \frac{T}{2}\left(\frac{dC}{dT}\right)\right] + \frac{1}{\tilde{V}^3}\left[D - \frac{T}{3}\left(\frac{dD}{dT}\right)\right]\right\}. \tag{17}$$

ENTROPY OF SATURATED AND SUPERHEATED VAPOR FROM VIRIAL EQUATION

Entropy values for all vapor states (Tables 7 and 9) were calculated along isotherms in the superheat region with the entropy of the monomeric gas at one atmosphere as a starting point. The general equation in virial form is

$$s_i^g = (s^g)^\circ - \frac{R}{M_1}\left\{\ln p - \ln\frac{p\tilde{V}}{RT} + \frac{B}{\tilde{V}} + \frac{T}{\tilde{V}}\left(\frac{dB}{dT}\right) + \frac{C}{2\tilde{V}^2} + \frac{T}{2\tilde{V}^2}\left(\frac{dC}{dT}\right) + \frac{D}{3\tilde{V}^3} + \frac{T}{3\tilde{V}^3}\left(\frac{dD}{dT}\right)\right\}. \quad (18)$$

SPECIFIC HEAT AT CONSTANT PRESSURE OF SATURATED AND SUPERHEATED VAPOR FROM VIRIAL EQUATION

Specific heats of saturated and superheated vapors (Table 9) were computed along isotherms with the monomeric gas value for each temperature as a starting point. The general equation in virial form is

$$(c_p^g)_i = (c_p^g)^\circ - \frac{R}{M_1} + \frac{R}{M_1}\left\{\frac{\left[1 + \frac{1}{\tilde{V}}\left(B + T\frac{dB}{dT}\right) + \frac{1}{\tilde{V}^2}\left(C + T\frac{dC}{dT}\right) + \frac{1}{\tilde{V}^3}\left(D + T\frac{dD}{dT}\right)\right]^2}{\left[1 + \frac{2B}{\tilde{V}} + \frac{3C}{\tilde{V}^2} + \frac{4D}{\tilde{V}^3}\right]}\right\} \quad (19)$$

$$- \frac{RT}{\tilde{V}M_1}\left\{\left(T\frac{d^2B}{dT^2} + 2\frac{dB}{dT}\right) + \frac{1}{2\tilde{V}}\left(T\frac{d^2C}{dT^2} + 2\frac{dC}{dT}\right) + \frac{1}{3\tilde{V}^2}\left(T\frac{d^2D}{dT^2} + 2\frac{dD}{dT}\right)\right\}.$$

ENTHALPY AND ENTROPY OF THE CONDENSED PHASE

The enthalpy (or entropy) of the saturated liquid at each temperature was obtained by subtracting the enthalpy (or entropy) of vaporization from that quantity for the saturated vapor.

EQUILIBRIUM CONSTANTS AND A SECOND EQUATION OF STATE FOR SODIUM

The method used to identify the association reactions in sodium vapor has been discussed. Dimers and tetramers were the only higher-molecular-weight species which appeared to be present in the vapor for the temperature and pressure range of the measurements. The data permitted reliable determinations of k_4 in the temperature range from 2275° to 2575°F and of k_2 in the temperature range from 1775° to 2575°F. For the two association reactions, equilibrium constants were fitted with the linear equations

$$\log k_2 = -4.28355 + \frac{7185}{T} \quad (20)$$

$$\log k_4 = -9.96622 + \frac{14,194}{T}. \quad (21)$$

The temperature equations for the two equilibrium constants, when combined with the ideal gas equation, constitute another equation of state for sodium. The observed specific volumes in Table 2 may be calculated from the three equations with an average deviation of ±0.26%. This equation of state, therefore, is equivalent to the virial form and has been used to compute other thermodynamic properties.

ENTHALPIES OF THE DIMER AND TETRAMER REACTIONS IN SODIUM VAPOR

Enthalpies of the two reactions were obtained by substituting differentials from Eqs. (20) and (21) into the van't Hoff relation

$$\frac{d \ln k}{dT} = \frac{\Delta H^\circ}{RT^2} . \tag{22}$$

The standard enthalpy values, so obtained, are

$2k \rightleftarrows k_2 \quad \Delta H_2^\circ = 32{,}860$ Btu/lb mole

$4k \rightleftarrows k_4 \quad \Delta H_4^\circ = 64{,}915$ Btu/lb mole .

EQUILIBRIUM COMPOSITION OF SATURATED AND SUPERHEATED SODIUM VAPOR

The relative amounts of dimer and tetramer in the equilibrium vapor and its average molecular weight at each pressure and temperature state (Tables 8 and 10) were computed by a modification of the method of Ritter and Simons (14). The application of this method required a knowledge of the average molecular weight of the vapor and the two equilibrium constants. The equilibrium constants were obtained from Eqs. (20) and (21). The average molecular weight of the vapor at a given state was computed from the three equations

$$k_2' = k_2 + 3k_4 p^2 - 2k_2 k_4 p^3 \tag{23}$$

$$k_2' = \frac{(N_2')}{(N_1')^2 p} \tag{24}$$

$$M_a = N_1' M_1 + N_2'(2M_1) . \tag{25}$$

ENTHALPY OF SATURATED AND SUPERHEATED SODIUM VAPOR (EQUILIBRIUM CONSTANT METHOD)

As with the virial method, the enthalpy of the vapor was computed along isotherms with the enthalpy of the monomeric gas at each temperature as a starting point. The general relation for the absolute enthalpy is

$$h_i^g = (h^g)^\circ + \Delta h_2 x_2 + \Delta h_4 x_4 . \tag{26}$$

Since all species are assumed to be ideal, any change in enthalpy with change in pressure along a constant temperature line must result from the association reactions. The enthalpy change contributed by each specie in moving from zero to some finite concentration was evaluated analytically by the functions in Eq. (26). The reaction enthalpies are those for the association reactions, and it was assumed that $\Delta h_2 = \Delta H_2^\circ / 2M_1$ and $\Delta h_4 = \Delta H_4^\circ / 4M_1$ for the full temperature range.

Enthalpy values were computed for all the superheat states in Table 9 as a check on the accuracy of the virial equation and as a guarantee of internal consistency. Enthalpy changes along constant temperature lines as computed by this method were in good agreement with those computed with the virial equation. For example, the maximum enthalpy changes (from p_s to 0.2 atm) for temperatures in the range 1800° to 2575 °F, as computed by the equilibrium constant method, were an average of 3.0% lower than corresponding changes computed with the virial equation.

ENTROPY OF SATURATED AND SUPERHEATED SODIUM VAPOR (EQUILIBRIUM CONSTANT METHOD)

The general entropy equation along a constant temperature line is

$$s_i^g = (s^g)^\circ + \frac{\Delta h_2 x_2}{T} + \frac{\Delta h_4 x_4}{T} - \frac{R \ln p}{M_1} - \left\{ \frac{R(N_1 \ln N_1 + N_2 \ln N_2 + N_4 \ln N_4)}{M_a} \right\} \tag{27}$$

The reactive terms are those for the corresponding enthalpies divided by the absolute temperature. The term used for mixing is that for a mixture of perfect gases being formed from their pure phases at constant temperature and pressure.

Entropy values were computed for all the states in Table 9 using Eq. (27), and were in good agreement with those computed by the virial method. For example, the maximum entropy changes (from saturation pressure to 0.2 atm) in the temperature range from 1800° to 2575° F, as computed with equilibrium constants, were an average of 4.8% lower than corresponding changes obtained with the virial equation.

ENTHALPY OF VAPORIZATION OF THE MONOMERIC, DIMERIC, AND TETRAMERIC SPECIES OF SODIUM

The enthalpies of vaporization of the monomeric, dimeric, and tetrameric species of sodium, from 1625° to 2575 °F, are presented in Table 6 and were computed with the equations

$$\Delta h_{v_1} = \Delta h_v - (\Delta h_2)(x_2)_s - (\Delta h_4)(x_4)_s \tag{28}$$

$$\Delta h_{v_2} = \Delta h_{v_1} + \Delta h_2 \tag{29}$$

$$\Delta h_{v_4} = \Delta h_{v_1} + \Delta h_4 . \tag{30}$$

THERMODYNAMIC REDUCTION OF PVT DATA FOR POTASSIUM

The properties of potassium as presented in the Twelfth Progress Report (1) were computed using the saturated liquid properties as a base. It was shown in that report that the same properties could also be computed using the monomeric gas properties at one atmosphere as a base. A choice of one base over the other results in a small shift in the absolute property values. For example, if the monomeric gas base (properties by Evans (3)) were chosen for potassium instead of the liquid base, the absolute enthalpies would be increased by 15 to 21 Btu/lb (approximately 1.2 to 1.7%), and the absolute entropies would be increased by 0.006 to 0.008 Btu/lb-°F (approximately 0.5 to 0.8%). Design calculations put prime emphasis on the change in a given property when moving from one state to another rather than the absolute value; therefore, the choice of base is of minor importance in the case of both enthalpy and entropy. However, specific heats of the vapor would be expected to be more accurate if they were computed from the monomeric gas, since the path would be independent of vaporization quantities and would not require an extrapolation of the specific heat of the liquid above its measured range.

Because of the increased reliability of the specific heat of the vapor, the monomeric gas has been chosen as the base for all the thermodynamic properties included in this report. Enthalpy, entropy, specific volume, and specific heat of potassium were recomputed with the new base, and have been published in this report as Tables 11 and 12. Properties are presented for selected temperatures (1400 ° to 2525 °F at 25-degree intervals) from saturation pressure at a given temperature to 1 atm at intervals of 1 atm, and from 1 atm to 0.2 atm at intervals of 0.2 atm.

ENTHALPY, ENTROPY, AND SPECIFIC HEAT AT CONSTANT PRESSURE OF MONOMERIC POTASSIUM VAPOR

Properties of potassium vapor as based on the monomeric gas were computed with the same method and from the same outline as that presented for the sodium reduction

using the virial coefficients and the potassium properties in the Twelfth Progress Report (1). The working equations for the monomeric gas properties have not been previously reported. Equations for these quantities as a function of temperature were derived directly from the work of Evans et al. (3) and were based on their computed properties for the monomeric gas over the temperature range from 0° to 3300 °R. The general working equations are

$$(h^g)^o = 998.95 + 0.12700T + 24,836\ e^{-39,375/T} \tag{31}$$

$$(s^g)^o = 0.18075 + 0.12700\ \ln T + 0.7617\ e^{-31,126/T} \tag{32}$$

$$(c_p^g)^o = 0.12700 + 2.888\ e^{-28,070/T}\ . \tag{33}$$

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NOMENCLATURE AND UNITS

B	second virial coefficient, cu ft/mole
C	third virial coefficient $(\text{cu ft})^2/(\text{mole})^2$
D	fourth virial coefficient $(\text{cu ft})^3/(\text{mole})^3$
c_p	specific heat at constant pressure Btu/lb-°F
d	density, lb/cu ft
h	enthalpy per unit mass, Btu/lb
ΔH	enthalpy change per mole, Btu/lb-mole
Δh	enthalpy change per unit mass, Btu/lb
Δh_2	enthalpy change for the formation of a unit mass of dimer from monomer
Δh_4	enthalpy change for the formation of a unit mass of tetramer from monomer
Δh_v	enthalpy change upon vaporization of a unit mass of equilibrium vapor
Δh_{v_1}, Δh_{v_2}, Δh_{v_4}	enthalpy change upon vaporization of a unit mass of monomer, dimer, and tetramer, respectively
J	any unit conversion
k	equilibrium constant
k_2'	apparent equilibrium constant assuming only diatomic and monatomic species

M	molecular weight
N	mole fraction
p	absolute pressure, atm
R	gas constant
s	entropy per unit mass, Btu/lb-°F
T	absolute temperature, °R
t	temperature, °F
$\tilde{V}$	molal volume (normally per formula weight of monomer), cu ft/lb-mole
v	specific volume, cu ft/lb
x	weight fraction
z	compressibility factor

Subscripts

a	quantity for equilibrium molecular mixture
i	quantity at any state i
p	constant pressure change
s	quantity at saturation
t	constant temperature change
1	quantity for monatomic specie
2	quantity for diatomic specie
4	quantity for quadratomic specie

Superscripts

g	quantity in gas state
ℓ	quantity in liquid state
o	standard state, 1 atm for gas
	apparent quantity, when assuming only diatomic and monatomic species

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TABLE 7

SATURATION PROPERTIES OF SODIUM
(Monomer Gas Base)

t	p_s	v^{ℓ}	v_s^g	h^{ℓ}	Δh_v	h_s^g	s^{ℓ}	Δs_v	s_s^g
2575.	25.8638	.02606	2.8974	992.72	1405.98	2398.70	1.1535	.4633	1.6168
2550.	24.4105	.02593	3.0671	980.97	1418.19	2399.16	1.1496	.4712	1.6208
2525.	23.0156	.02579	3.2478	969.61	1429.53	2399.15	1.1459	.4790	1.6248
2500.	21.6779	.02565	3.4405	958.60	1440.12	2398.72	1.1422	.4866	1.6288
2475.	20.3962	.02552	3.6465	947.89	1450.06	2397.95	1.1386	.4941	1.6327
2450.	19.1693	.02538	3.8671	937.46	1459.41	2396.88	1.1351	.5016	1.6366
2425.	17.9961	.02525	4.1039	927.29	1468.25	2395.53	1.1316	.5090	1.6406
2400.	16.8752	.02512	4.3584	917.34	1476.62	2393.96	1.1281	.5164	1.6445
2375.	15.8055	.02499	4.6325	907.60	1484.58	2392.18	1.1247	.5237	1.6485
2350.	14.7856	.02486	4.9282	898.05	1492.18	2390.22	1.1214	.5311	1.6525
2325.	13.8143	.02473	5.2477	888.67	1499.44	2388.12	1.1181	.5385	1.6565
2300.	12.8903	.02461	5.5935	879.46	1506.42	2385.88	1.1148	.5459	1.6606
2275.	12.0122	.02448	5.9685	870.40	1513.13	2383.54	1.1115	.5533	1.6648
2250.	11.1789	.02436	6.3756	861.48	1519.62	2381.10	1.1082	.5608	1.6690
2225.	10.3888	.02424	6.8186	852.68	1525.91	2378.59	1.1050	.5684	1.6734
2200.	9.6408	.02412	7.3012	844.00	1532.02	2376.02	1.1018	.5760	1.6778
2175.	8.9335	.02400	7.8281	835.43	1537.98	2373.41	1.0985	.5837	1.6823
2150.	8.2656	.02388	8.4043	826.95	1543.82	2370.77	1.0953	.5916	1.6869
2125.	7.6356	.02376	9.0356	818.57	1549.56	2368.12	1.0921	.5995	1.6916
2100.	7.0424	.02365	9.7285	810.26	1555.21	2365.47	1.0889	.6076	1.6965
2075.	6.4845	.02353	10.4904	802.02	1560.80	2362.82	1.0857	.6158	1.7014
2050.	5.9606	.02342	11.3299	793.85	1566.35	2360.19	1.0824	.6241	1.7066
2025.	5.4694	.02331	12.2567	785.73	1571.87	2357.60	1.0792	.6326	1.7118
2000.	5.0097	.02320	13.2818	777.66	1577.38	2355.04	1.0759	.6413	1.7172
1975.	4.5800	.02308	14.4181	769.63	1582.90	2352.54	1.0727	.6501	1.7228
1950.	4.1791	.02298	15.6804	761.64	1588.45	2350.09	1.0694	.6592	1.7286
1925.	3.8057	.02287	17.0856	753.68	1594.03	2347.70	1.0661	.6684	1.7345
1900.	3.4586	.02276	18.6534	745.74	1599.65	2345.39	1.0627	.6779	1.7406
1875.	3.1365	.02265	20.4066	737.81	1605.34	2343.15	1.0594	.6876	1.7470
1850.	2.8382	.02255	22.3718	729.89	1611.10	2340.99	1.0560	.6975	1.7535
1825.	2.5625	.02244	24.5799	721.98	1616.93	2338.92	1.0525	.7077	1.7602
1800.	2.3081	.02234	27.0672	714.07	1622.85	2336.93	1.0490	.7182	1.7672
1775.	2.0740	.02224	29.8761	706.16	1628.87	2335.03	1.0455	.7289	1.7744
1750.	1.8590	.02214	33.0565	698.24	1634.98	2333.22	1.0420	.7399	1.7819
1725.	1.6620	.02204	36.6675	690.31	1641.19	2331.50	1.0384	.7512	1.7896
1700.	1.4818	.02194	40.7788	682.36	1647.51	2329.87	1.0347	.7628	1.7976
1675.	1.3176	.02184	45.4732	674.39	1653.93	2328.32	1.0310	.7748	1.8058
1650.	1.1682	.02174	50.8495	666.41	1660.45	2326.87	1.0272	.7871	1.8143
1625.	1.0327	.02164	57.0256	658.40	1667.08	2325.49	1.0234	.7997	1.8231
1600.	.9100	.02155	64.1433	650.38	1673.81	2324.18	1.0196	.8126	1.8322

TABLE 8

MOLECULAR COMPOSITION OF SATURATED SODIUM VAPOR AND ENTHALPIES OF VAPORIZATION OF THE MOLECULAR SPECIES

t	p_s	$(x_2)_s$	$(x_4)_s$	$(Ma)_s$	Δh_V	Δh_{V_1}	Δh_{V_2}	Δh_{V_4}
2575.	25.8638	.288363	.095749	29.3235	1405.98	1679.65	964.99	973.74
2550.	24.4105	.289030	.090250	29.1824	1418.19	1688.45	973.79	982.54
2525.	23.0156	.289548	.084898	29.0439	1429.53	1696.39	981.73	990.48
2500.	21.6779	.289915	.079701	28.9083	1440.12	1703.58	988.92	997.67
2475.	20.3962	.290127	.074666	28.7755	1450.06	1710.11	995.45	1004.20
2450.	19.1693	.290180	.069800	28.6456	1459.41	1716.06	1001.40	1010.15
2425.	17.9961	.290072	.065111	28.5187	1468.25	1721.51	1006.85	1015.60
2400.	16.8752	.289800	.060602	28.3948	1476.62	1726.51	1011.85	1020.60
2375.	15.8055	.289364	.056278	28.2739	1484.58	1731.11	1016.45	1025.20
2350.	14.7856	.288763	.052143	28.1561	1492.18	1735.35	1020.69	1029.44
2325.	13.8143	.287995	.048199	28.0414	1499.44	1739.29	1024.63	1033.38
2300.	12.8903	.287062	.044448	27.9296	1506.42	1742.95	1028.29	1037.04
2275.	12.0122	.285964	.040889	27.8209	1513.13	1746.36	1031.70	1040.45
2250.	11.1789	.284702	.037522	27.7150	1519.62	1749.57	1034.91	1043.66
2225.	10.3888	.283279	.034346	27.6120	1525.91	1752.60	1037.94	1046.69
2200.	9.6408	.281696	.031359	27.5119	1532.02	1755.47	1040.81	1049.56
2175.	8.9335	.279956	.028558	27.4144	1537.98	1758.21	1043.55	1052.30
2150.	8.2656	.278061	.025938	27.3195	1543.82	1760.85	1046.19	1054.94
2125.	7.6356	.276016	.023494	27.2271	1549.56	1763.40	1048.74	1057.49
2100.	7.0424	.273823	.021223	27.1371	1555.21	1765.88	1051.22	1059.97
2075.	6.4845	.271486	.019118	27.0494	1560.80	1768.31	1053.65	1062.40
2050.	5.9606	.269009	.017172	26.9638	1566.35	1770.72	1056.06	1064.81
2025.	5.4694	.266397	.015380	26.8803	1571.87	1773.11	1058.45	1067.20
2000.	5.0097	.263652	.013733	26.7986	1577.38	1775.50	1060.84	1069.59
1975.	4.5800	.260780	.012226	26.7186	1582.90	1777.90	1063.24	1071.99
1950.	4.1791	.257783	.010850	26.6403	1588.45	1780.33	1065.67	1074.42
1925.	3.8057	.254667	.009599	26.5634	1594.03	1782.80	1068.14	1076.89
1900.	3.4586	.251435	.008464	26.4879	1599.65	1785.32	1070.66	1079.41
1875.	3.1365	.248091	.007438	26.4136	1605.34	1787.89	1073.23	1081.98
1850.	2.8382	.244639	.006514	26.3404	1611.10	1790.53	1075.87	1084.62
1825.	2.5625	.241082	.005685	26.2682	1616.93	1793.24	1078.58	1087.33
1800.	2.3081	.237424	.004943	26.1968	1622.85	1796.02	1081.36	1090.11
1775.	2.0740	.233669	.004282	26.1261	1628.87	1798.88	1084.22	1092.97
1750.	1.8590	.229819	.003695	26.0561	1634.98	1801.83	1087.17	1095.92
1725.	1.6620	.225878	.003176	25.9866	1641.19	1804.86	1090.20	1098.95
1700.	1.4818	.221849	.002719	25.9175	1647.51	1807.98	1093.32	1102.07
1675.	1.3176	.217735	.002317	25.8488	1653.93	1811.17	1096.51	1105.26
1650.	1.1682	.213539	.001966	25.7804	1660.45	1814.45	1099.79	1108.54
1625.	1.0327	.209264	.001661	25.7121	1667.08	1817.81	1103.15	1111.90

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2575.	25.8638	2.8974	.77743	2398.70	1.61680	.5621
2575.	25.0000	3.0281	.78536	2407.09	1.62185	.5419
2575.	24.0000	3.1888	.79395	2416.35	1.62769	.5241
2575.	23.0000	3.3614	.80206	2425.29	1.63357	.5108
2575.	22.0000	3.5482	.80982	2434.04	1.63955	.5006
2575.	21.0000	3.7516	.81733	2442.70	1.64567	.4925
2575.	20.0000	3.9747	.82469	2451.36	1.65199	.4859
2575.	19.0000	4.2207	.83195	2460.09	1.65854	.4802
2575.	18.0000	4.4939	.83919	2468.95	1.66536	.4750
2575.	17.0000	4.7995	.84645	2477.99	1.67250	.4698
2575.	16.0000	5.1436	.85379	2487.27	1.68001	.4643
2575.	15.0000	5.5344	.86123	2496.81	1.68794	.4583
2575.	14.0000	5.9820	.86883	2506.66	1.69634	.4515
2575.	13.0000	6.4998	.87660	2516.85	1.70528	.4437
2575.	12.0000	7.1055	.88457	2527.39	1.71485	.4347
2575.	11.0000	7.8232	.89277	2538.30	1.72512	.4245
2575.	10.0000	8.6869	.90120	2549.60	1.73623	.4128
2575.	9.0000	9.7452	.90989	2561.30	1.74833	.3996
2575.	8.0000	11.0712	.91885	2573.39	1.76162	.3849
2575.	7.0000	12.7797	.92807	2585.89	1.77639	.3687
2575.	6.0000	15.0622	.93756	2598.77	1.79306	.3510
2575.	5.0000	18.2628	.94732	2612.05	1.81229	.3318
2575.	4.0000	23.0702	.95735	2625.70	1.83515	.3111
2575.	3.0000	31.0910	.96764	2639.72	1.86369	.2891
2575.	2.0000	47.1447	.97819	2654.09	1.90252	.2659
2575.	1.0000	95.3293	.98898	2668.78	1.96630	.2415
2575.	.8000	119.4251	.99116	2671.76	1.98637	.2364
2575.	.6000	159.5861	.99336	2674.75	2.01202	.2314
2575.	.4000	239.9105	.99556	2677.75	2.04785	.2263
2575.	.2000	480.8879	.99778	2680.77	2.10853	.2212
2550.	24.4105	3.0671	.78318	2399.16	1.62085	.5442
2550.	24.0000	3.1344	.78689	2403.10	1.62331	.5359
2550.	23.0000	3.3065	.79551	2412.41	1.62931	.5197
2550.	22.0000	3.4923	.80368	2421.44	1.63538	.5078
2550.	21.0000	3.6943	.81152	2430.31	1.64158	.4987
2550.	20.0000	3.9154	.81914	2439.14	1.64795	.4917
2550.	19.0000	4.1591	.82662	2448.01	1.65454	.4859
2550.	18.0000	4.4296	.83405	2457.00	1.66141	.4808
2550.	17.0000	4.7320	.84149	2466.17	1.66859	.4760
2550.	16.0000	5.0726	.84899	2475.58	1.67614	.4709
2550.	15.0000	5.4592	.85659	2485.27	1.68412	.4654
2550.	14.0000	5.9021	.86435	2495.28	1.69257	.4591
2550.	13.0000	6.4145	.87229	2505.65	1.70158	.4517
2550.	12.0000	7.0141	.88045	2516.41	1.71122	.4431
2550.	11.0000	7.7247	.88885	2527.58	1.72158	.4331
2550.	10.0000	8.5800	.89751	2539.17	1.73278	.4215
2550.	9.0000	9.6283	.90645	2551.20	1.74499	.4082
2550.	8.0000	10.9421	.91568	2563.66	1.75840	.3933
2550.	7.0000	12.6354	.92521	2576.57	1.77331	.3766
2550.	6.0000	14.8978	.93503	2589.91	1.79013	.3582
2550.	5.0000	18.0708	.94515	2603.68	1.80952	.3382
2550.	4.0000	22.8374	.95556	2617.86	1.83255	.3166

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2550.	3.0000	30,7910	.96627	2632.44	1,86129	.2934
2550.	2.0000	46,7113	.97725	2647.40	1,90031	.2688
2550.	1.0000	94,4980	.98850	2662.73	1,96430	.2430
2550.	.8000	118,3951	.99078	2665.83	1,98441	.2377
2550.	.6000	158,2251	.99307	2668.95	2,01010	.2323
2550.	.4000	237,8875	.99537	2672.09	2,04597	.2269
2550.	.2000	476,8796	.99768	2675.23	2,10670	.2215
2525.	23.0156	3,2478	.78846	2399.15	1,62484	.5300
2525.	23.0000	3,2505	.78860	2399.29	1,62493	.5297
2525.	22.0000	3,4356	.79725	2408.65	1,63111	.5153
2525.	21.0000	3,6363	.80547	2417.77	1,63739	.5048
2525.	20.0000	3,8556	.81339	2426.78	1,64382	.4970
2525.	19.0000	4,0971	.82112	2435.80	1,65047	.4910
2525.	18.0000	4,3650	.82876	2444.91	1,65737	.4861
2525.	17.0000	4,6642	.83637	2454.20	1,66460	.4816
2525.	16.0000	5,0011	.84404	2463.72	1,67219	.4771
2525.	15.0000	5,3836	.85180	2473.54	1,68021	.4722
2525.	14.0000	5,8217	.85971	2483.71	1,68871	.4665
2525.	13.0000	6,3287	.86783	2494.26	1,69778	.4597
2525.	12.0000	6,9220	.87617	2505.23	1,70748	.4515
2525.	11.0000	7,6254	.88477	2516.64	1,71793	.4418
2525.	10.0000	8,4722	.89366	2528.52	1,72923	.4304
2525.	9.0000	9,5104	.90285	2540.88	1,74155	.4172
2525.	8.0000	10,8119	.91236	2553.72	1,75509	.4020
2525.	7.0000	12,4897	.92220	2567.05	1,77013	.3850
2525.	6.0000	14,7319	.93236	2580.86	1,78711	.3659
2525.	5.0000	17,8772	.94286	2595.14	1,80667	.3451
2525.	4.0000	22,6029	.95367	2609.87	1,82989	.3224
2525.	3.0000	30,4892	.96481	2625.05	1,85882	.2980
2525.	2.0000	46,2761	.97625	2640.64	1,89805	.2720
2525.	1.0000	93,6647	.98799	2656.63	1,96226	.2447
2525.	.8000	117,3631	.99037	2659.87	1,98242	.2390
2525.	.6000	156,8620	.99276	2663.13	2,00816	.2333
2525.	.4000	235,8625	.99516	2666.40	2,04408	.2276
2525.	.2000	472,8692	.99758	2669.69	2,10485	.2218
2500.	21.6779	3,4405	.79334	2398.72	1,62879	.5189
2500.	21.0000	3,5776	.79917	2405.07	1,63312	.5109
2500.	20.0000	3,7954	.80744	2414.29	1,63962	.5021
2500.	19.0000	4,0347	.81545	2423.46	1,64632	.4957
2500.	18.0000	4,2999	.82331	2432.70	1,65326	.4908
2500.	17.0000	4,5960	.83111	2442.09	1,66052	.4867
2500.	16.0000	4,9293	.83894	2451.72	1,66815	.4828
2500.	15.0000	5,3075	.84686	2461.66	1,67621	.4785
2500.	14.0000	5,7408	.85493	2471.96	1,68476	.4735
2500.	13.0000	6,2423	.86321	2482.67	1,69388	.4674
2500.	12.0000	6,8292	.87173	2493.84	1,70365	.4599
2500.	11.0000	7,5253	.88053	2505.49	1,71417	.4507
2500.	10.0000	8,3635	.88964	2517.65	1,72557	.4396
2500.	9.0000	9,3914	.89908	2530.34	1,73800	.4264
2500.	8.0000	10,6804	.90888	2543.56	1,75167	.4112
2500.	7.0000	12,3426	.91903	2557.32	1,76686	.3937
2500.	6.0000	14,5644	.92955	2571.61	1,78400	.3741
2500.	5.0000	17,6819	.94043	2586.42	1,80373	.3524
2500.	4.0000	22,3666	.95167	2601.74	1,82715	.3286
2500.	3.0000	30,1854	.96327	2617.54	1,85629	.3029
2500.	2.0000	45,8388	.97519	2633.80	1,89575	.2755
2500.	1.0000	92,8293	.98744	2650.49	1,96020	.2465
2500.	.8000	116,3289	.98993	2653.88	1,98040	.2405
2500.	.6000	155,4967	.99243	2657.28	2,00619	.2344
2500.	.4000	233,8353	.99494	2660.70	2,04216	.2283

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2500.	.2000	468.8566	.99747	2664.14	2.10298	.2222
2475.	20.3962	3.6465	.79787	2397.95	1.63272	.5105
2475.	20.0000	3.7345	.80126	2401.68	1.63534	.5068
2475.	19.0000	3.9719	.80959	2411.02	1.64209	.4997
2475.	18.0000	4.2346	.81770	2420.38	1.64908	.4947
2475.	17.0000	4.5276	.82571	2429.87	1.65638	.4909
2475.	16.0000	4.8571	.83371	2439.59	1.66403	.4876
2475.	15.0000	5.2311	.84178	2449.62	1.67212	.4842
2475.	14.0000	5.6596	.85001	2460.04	1.68071	.4801
2475.	13.0000	6.1554	.85844	2470.89	1.68988	.4748
2475.	12.0000	6.7358	.86713	2482.24	1.69971	.4681
2475.	11.0000	7.4244	.87612	2494.11	1.71031	.4595
2475.	10.0000	8.2538	.88545	2506.54	1.72180	.4488
2475.	9.0000	9.2713	.89515	2519.56	1.73434	.4359
2475.	8.0000	10.5477	.90523	2533.16	1.74814	.4207
2475.	7.0000	12.1940	.91571	2547.36	1.76348	.4029
2475.	6.0000	14.3954	.92659	2562.15	1.78079	.3827
2475.	5.0000	17.4849	.93787	2577.51	1.80071	.3601
2475.	4.0000	22.1284	.94956	2593.44	1.82434	.3352
2475.	3.0000	29.8796	.96163	2609.90	1.85370	.3082
2475.	2.0000	45.3993	.97407	2626.87	1.89340	.2792
2475.	1.0000	91.9915	.98687	2644.31	1.95810	.2484
2475.	.8000	115.2923	.98947	2647.85	1.97836	.2420
2475.	.6000	154.1291	.99208	2651.41	2.00420	.2356
2475.	.4000	231.8057	.99471	2654.99	2.04022	.2291
2475.	.2000	464.8415	.99735	2658.58	2.10110	.2226
2450.	19.1693	3.8671	.80208	2396.88	1.63664	.5043
2450.	19.0000	3.9086	.80353	2398.48	1.63780	.5031
2450.	18.0000	4.1689	.81193	2407.97	1.64484	.4978
2450.	17.0000	4.4588	.82016	2417.55	1.65216	.4943
2450.	16.0000	4.7848	.82834	2427.35	1.65984	.4916
2450.	15.0000	5.1545	.83657	2437.46	1.66796	.4891
2450.	14.0000	5.5779	.84494	2447.96	1.67658	.4859
2450.	13.0000	6.0680	.85352	2458.93	1.68579	.4817
2450.	12.0000	6.6418	.86237	2470.44	1.69568	.4759
2450.	11.0000	7.3227	.87155	2482.51	1.70635	.4682
2450.	10.0000	8.1432	.88109	2495.21	1.71792	.4582
2450.	9.0000	9.1501	.89103	2508.54	1.73057	.4457
2450.	8.0000	10.4136	.90140	2522.52	1.74450	.4305
2450.	7.0000	12.0440	.91221	2537.17	1.75999	.4126
2450.	6.0000	14.2247	.92347	2552.47	1.77748	.3918
2450.	5.0000	17.2860	.93517	2568.41	1.79760	.3684
2450.	4.0000	21.8881	.94732	2584.97	1.82144	.3424
2450.	3.0000	29.5716	.95989	2602.12	1.85104	.3139
2450.	2.0000	44.9574	.97288	2619.84	1.89099	.2832
2450.	1.0000	91.1512	.98626	2638.07	1.95597	.2505
2450.	.8000	114.2533	.98898	2641.78	1.97628	.2437
2450.	.6000	152.7589	.99171	2645.50	2.00218	.2369
2450.	.4000	229.7736	.99446	2649.25	2.03825	.2300
2450.	.2000	460.8240	.99722	2653.01	2.09919	.2230
2425.	17.9961	4.1039	.80602	2395.53	1.64056	.5000
2425.	17.0000	4.3898	.81447	2405.16	1.64788	.4966
2425.	16.0000	4.7122	.82284	2415.02	1.65559	.4946
2425.	15.0000	5.0776	.83123	2425.18	1.66372	.4929
2425.	14.0000	5.4959	.83974	2435.75	1.67237	.4909
2425.	13.0000	5.9802	.84846	2446.81	1.68161	.4879
2425.	12.0000	6.5473	.85746	2458.44	1.69154	.4833
2425.	11.0000	7.2203	.86681	2470.70	1.70227	.4767
2425.	10.0000	8.0317	.87656	2483.63	1.71393	.4675
2425.	9.0000	9.0278	.88674	2497.27	1.72668	.4556

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2425.	8.0000	10.2783	.89740	2511.63	1.74074	.4407
2425.	7.0000	11.8924	.90854	2526.73	1.75639	.4226
2425.	6.0000	14.0522	.92018	2542.55	1.77405	.4015
2425.	5.0000	17.0851	.93232	2559.09	1.79438	.3772
2425.	4.0000	21.6457	.94494	2576.32	1.81845	.3500
2425.	3.0000	29.2612	.95805	2594.20	1.84831	.3200
2425.	2.0000	44.5131	.97161	2612.70	1.88853	.2875
2425.	1.0000	90.3083	.98560	2631.78	1.95380	.2527
2425.	.8000	113.2116	.98845	2635.66	1.97417	.2455
2425.	.6000	151.3861	.99132	2639.56	2.00013	.2382
2425.	.4000	227.7387	.99420	2643.49	2.03627	.2309
2425.	.2000	456.8036	.99709	2647.43	2.09727	.2235
2400.	16.8752	4.3584	.80972	2393.96	1.64450	.4974
2400.	16.0000	4.6394	.81722	2402.63	1.65128	.4962
2400.	15.0000	5.0005	.82578	2412.82	1.65942	.4956
2400.	14.0000	5.4138	.83442	2423.42	1.66808	.4949
2400.	13.0000	5.8921	.84327	2434.54	1.67734	.4933
2400.	12.0000	6.4523	.85241	2446.27	1.68730	.4901
2400.	11.0000	7.1174	.86192	2458.68	1.69808	.4847
2400.	10.0000	7.9193	.87186	2471.83	1.70982	.4767
2400.	9.0000	8.9044	.88227	2485.76	1.72267	.4655
2400.	8.0000	10.1416	.89321	2500.49	1.73686	.4511
2400.	7.0000	11.7393	.90468	2516.03	1.75267	.4331
2400.	6.0000	13.8780	.91671	2532.39	1.77052	.4116
2400.	5.0000	16.8822	.92930	2549.54	1.79106	.3865
2400.	4.0000	21.4010	.94243	2567.47	1.81537	.3581
2400.	3.0000	28.9483	.95609	2586.12	1.84549	.3265
2400.	2.0000	44.0660	.97026	2605.46	1.88601	.2921
2400.	1.0000	89.4625	.98491	2625.43	1.95159	.2551
2400.	.8000	112.1669	.98789	2629.50	1.97202	.2475
2400.	.6000	150.0103	.99089	2633.59	1.99805	.2397
2400.	.4000	225.7009	.99391	2637.70	2.03425	.2319
2400.	.2000	452.7803	.99695	2641.84	2.09532	.2240
2375.	15.8055	4.6325	.81319	2392.18	1.64847	.4963
2375.	15.0000	4.9235	.82022	2400.41	1.65506	.4967
2375.	14.0000	5.3316	.82900	2411.01	1.66372	.4974
2375.	13.0000	5.8038	.83797	2422.16	1.67299	.4975
2375.	12.0000	6.3570	.84723	2433.95	1.68297	.4959
2375.	11.0000	7.0138	.85687	2446.47	1.69379	.4922
2375.	10.0000	7.8063	.86698	2459.80	1.70560	.4855
2375.	9.0000	8.7800	.87762	2473.99	1.71854	.4755
2375.	8.0000	10.0036	.88883	2489.08	1.73285	.4617
2375.	7.0000	11.5846	.90063	2505.07	1.74882	.4440
2375.	6.0000	13.7018	.91306	2521.97	1.76686	.4222
2375.	5.0000	16.6771	.92610	2539.76	1.78762	.3964
2375.	4.0000	21.1539	.93976	2558.41	1.81219	.3668
2375.	3.0000	28.6328	.95401	2577.87	1.84259	.3336
2375.	2.0000	43.6161	.96883	2598.10	1.88342	.2971
2375.	1.0000	88.6137	.98417	2619.02	1.94933	.2578
2375.	.8000	111.1192	.98730	2623.29	1.96984	.2496
2375.	.6000	148.6514	.99044	2627.58	1.99594	.2413
2375.	.4000	223.6599	.99361	2631.89	2.03221	.2330
2375.	.2000	448.7537	.99680	2636.23	2.09335	.2245
2350.	14.7856	4.9282	.81648	2390.22	1.65247	.4966
2350.	14.0000	5.2494	.82349	2398.56	1.65931	.4984
2350.	13.0000	5.7155	.83256	2409.68	1.66857	.5002
2350.	12.0000	6.2614	.84192	2421.49	1.67856	.5006
2350.	11.0000	6.9099	.85169	2434.08	1.68941	.4988
2350.	10.0000	7.6925	.86195	2447.56	1.70126	.4938
2350.	9.0000	8.6547	.87279	2461.98	1.71429	.4852

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2350.	8.0000	9.8644	.88425	2477.40	1,72871	.4725
2350.	7.0000	11.4283	.89639	2493.83	1,74483	.4552
2350.	6.0000	13.5238	.90921	2511.27	1,76307	.4334
2350.	5.0000	16.4698	.92273	2529.72	1,78406	.4070
2350.	4.0000	20.9042	.93693	2549.12	1,80890	.3761
2350.	3.0000	28.3145	.95180	2569.44	1,83961	.3412
2350.	2.0000	43.1631	.96729	2590.60	1,88077	.3025
2350.	1.0000	87.7616	.98338	2612.54	1,94704	.2606
2350.	.8000	110.0682	.98666	2617.02	1,96762	.2519
2350.	.6000	147.2491	.98996	2621.52	1,99379	.2431
2350.	.4000	221.6155	.99329	2626.05	2,03014	.2341
2350.	.2000	444.7238	.99663	2630.61	2,09136	.2251
2325.	13.8143	5.2477	.81959	2388.12	1,65652	.4981
2325.	13.0000	5,6273	.82707	2397.16	1,66409	.5012
2325.	12.0000	6,1659	.83651	2408.93	1,67407	.5039
2325.	11.0000	6,8057	.84638	2421.54	1,68492	.5043
2325.	10.0000	7,5782	.85677	2435.12	1,69681	.5014
2325.	9.0000	8,5285	.86778	2449.73	1,70991	.4946
2325.	8.0000	9,7240	.87949	2465.45	1,72444	.4832
2325.	7.0000	11,2704	.89194	2482.30	1,74071	.4667
2325.	6.0000	13,3437	.90516	2500.29	1,75914	.4450
2325.	5.0000	16,2602	.91916	2519.40	1,78037	.4181
2325.	4.0000	20,6518	.93393	2539.59	1,80549	.3861
2325.	3.0000	27,9931	.94944	2560.81	1,83652	.3493
2325.	2.0000	42,7069	.96566	2582.97	1,87804	.3084
2325.	1.0000	86,9059	.98253	2605.99	1,94469	.2637
2325.	.8000	109,0136	.98598	2610.69	1,96536	.2544
2325.	.6000	145.8631	.98945	2615.42	1,99161	.2450
2325.	.4000	219,5674	.99294	2620.18	2,02804	.2354
2325.	.2000	440,6901	.99646	2624.97	2,08934	.2258
2300.	12.8903	5,5935	.82255	2385.88	1,66062	.5007
2300.	12.0000	6,0705	.83103	2396.31	1,66951	.5052
2300.	11.0000	6,7014	.84096	2408.88	1,68035	.5083
2300.	10.0000	7,4635	.85145	2422.50	1,69226	.5080
2300.	9.0000	8,4015	.86261	2437.26	1,70541	.5034
2300.	8.0000	9,5824	.87453	2453.24	1,72004	.4937
2300.	7.0000	11.1110	.88728	2470.49	1,73645	.4784
2300.	6.0000	13,1617	.90090	2489.02	1,75507	.4571
2300.	5.0000	16,0481	.91539	2508.81	1,77655	.4298
2300.	4.0000	20,3966	.93075	2529.81	1,80196	.3967
2300.	3.0000	27,6685	.94694	2551.96	1,83333	.3581
2300.	2.0000	42,2470	.96392	2575.18	1,87523	.3147
2300.	1.0000	86,0464	.98163	2599.36	1,94230	.2671
2300.	.8000	107.9551	.98525	2604.30	1,96305	.2571
2300.	.6000	144.4733	.98890	2609.27	1,98939	.2470
2300.	.4000	217,5153	.99258	2614.28	2,02592	.2368
2300.	.2000	436.6524	.99628	2619.32	2,08730	.2265
2275.	12.0122	5,9685	.82538	2383.54	1,66479	.5043
2275.	12.0000	5,9754	.82549	2383.68	1,66492	.5044
2275.	11.0000	6,5973	.83546	2396.14	1,67572	.5105
2275.	10.0000	7,3486	.84600	2409.73	1,68761	.5132
2275.	9.0000	8,2740	.85728	2424.57	1,70079	.5113
2275.	8.0000	9,4397	.86939	2440.77	1,71550	.5039
2275.	7.0000	10,9500	.88242	2458.38	1,73204	.4901
2275.	6.0000	12,9776	.89642	2477.44	1,75086	.4696
2275.	5.0000	15,8334	.91140	2497.91	1,77258	.4422
2275.	4.0000	20.1384	.92736	2519.76	1,79830	.4080
2275.	3.0000	27,3406	.94427	2542.89	1,83003	.3676
2275.	2.0000	41,7834	.96205	2567.23	1,87233	.3216
2275.	1.0000	85,1828	.98066	2592.63	1,93985	.2707

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2275.	.8000	106.8924	.98447	2597.83	1.96070	.2601
2275.	.6000	143.0792	.98831	2603.07	1.98713	.2493
2275.	.4000	215.4590	.99218	2608.34	2.02375	.2383
2275.	.2000	432.6104	.99608	2613.65	2.08524	.2272
2250.	11.1789	6.3756	.82808	2381.10	1.66903	.5088
2250.	11.0000	6.4935	.82990	2383.38	1.67103	.5103
2250.	10.0000	7.2338	.84047	2396.85	1.68288	.5166
2250.	9.0000	8.1461	.85181	2411.70	1.69606	.5181
2250.	8.0000	9.2962	.86407	2428.05	1.71083	.5134
2250.	7.0000	10.7875	.87735	2445.98	1.72749	.5018
2250.	6.0000	12.7915	.89172	2465.54	1.74649	.4824
2250.	5.0000	15.6162	.90720	2486.69	1.76846	.4551
2250.	4.0000	19.8770	.92377	2509.41	1.79450	.4201
2250.	3.0000	27.0089	.94142	2533.58	1.82661	.3778
2250.	2.0000	41.3157	.96006	2559.09	1.86935	.3290
2250.	1.0000	84.3147	.97962	2585.81	1.93735	.2747
2250.	.8000	105.8252	.98363	2591.29	1.95830	.2633
2250.	.6000	141.6806	.98768	2596.81	1.98483	.2517
2250.	.4000	213.3981	.99176	2602.36	2.02156	.2400
2250.	.2000	428.5636	.99586	2607.96	2.08315	.2280
2225.	10.3888	6.8186	.83069	2378.59	1.67335	.5142
2225.	10.0000	7.1194	.83487	2383.92	1.67808	.5177
2225.	9.0000	8.0180	.84623	2398.68	1.69123	.5232
2225.	8.0000	9.1520	.85859	2415.10	1.70603	.5220
2225.	7.0000	10.6238	.87208	2433.30	1.72279	.5131
2225.	6.0000	12.6035	.88679	2453.31	1.74195	.4954
2225.	5.0000	15.3964	.90275	2475.15	1.76418	.4686
2225.	4.0000	19.6124	.91996	2498.75	1.79055	.4329
2225.	3.0000	26.6734	.93838	2524.00	1.82306	.3887
2225.	2.0000	40.8436	.95793	2550.77	1.86626	.3371
2225.	1.0000	83.4418	.97851	2578.89	1.93478	.2791
2225.	.8000	104.7531	.98274	2584.66	1.95584	.2668
2225.	.6000	140.2769	.98700	2590.48	1.98249	.2544
2225.	.4000	211.3321	.99130	2596.34	2.01933	.2417
2225.	.2000	424.5118	.99563	2602.25	2.08103	.2289
2200.	9.6408	7.3012	.83321	2376.02	1.67776	.5203
2200.	9.0000	7.8902	.84057	2385.56	1.68632	.5261
2200.	8.0000	9.0075	.85297	2401.96	1.70111	.5293
2200.	7.0000	10.4590	.86662	2420.33	1.71793	.5238
2200.	6.0000	12.4135	.88163	2440.76	1.73726	.5084
2200.	5.0000	15.1738	.89807	2463.26	1.75973	.4827
2200.	4.0000	19.3443	.91592	2487.75	1.78643	.4465
2200.	3.0000	26.3338	.93514	2514.14	1.81937	.4005
2200.	2.0000	40.3667	.95564	2542.24	1.86307	.3458
2200.	1.0000	82.5637	.97731	2571.86	1.93215	.2838
2200.	.8000	103.6757	.98177	2577.95	1.95333	.2706
2200.	.6000	138.8680	.98627	2584.09	1.98009	.2573
2200.	.4000	209.2606	.99081	2590.28	2.01705	.2437
2200.	.2000	420.4545	.99539	2596.51	2.07889	.2299
2175.	8.9335	7.8281	.83565	2373.41	1.68227	.5272
2175.	8.0000	8.8628	.84724	2388.66	1.69608	.5346
2175.	7.0000	10.2932	.86098	2407.12	1.71294	.5335
2175.	6.0000	12.2218	.87625	2427.89	1.73240	.5213
2175.	5.0000	14.9486	.89313	2451.01	1.75511	.4971
2175.	4.0000	19.0727	.91163	2476.41	1.78215	.4609
2175.	3.0000	25.9898	.93168	2503.97	1.81552	.4132
2175.	2.0000	39.8849	.95320	2533.47	1.85976	.3553
2175.	1.0000	81.6800	.97602	2564.70	1.92945	.2890
2175.	.8000	102.5926	.98073	2571.13	1.95075	.2748
2175.	.6000	137.4532	.98549	2577.62	1.97765	.2605

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2175.	.4000	207,1833	.99028	2584.16	2,01474	.2459
2175.	.2000	416,3912	.99512	2590.75	2,07671	.2310
2150.	8.2656	8,4043	.83803	2370.77	1,68688	.5347
2150.	8.0000	8,7185	.84142	2375.25	1,69097	.5376
2150.	7.0000	10,1270	.85519	2393.67	1,70781	.5418
2150.	6.0000	12,0285	.87066	2414.70	1,72737	.5337
2150.	5.0000	14,7208	.88794	2438.40	1,75030	.5119
2150.	4.0000	18,7974	.90707	2464.70	1,77768	.4760
2150.	3.0000	25,6412	.92799	2493.47	1,81152	.4268
2150.	2.0000	39,3975	.95057	2524.46	1,85632	.3656
2150.	1.0000	80,7902	.97464	2557.41	1,92667	.2946
2150.	.8000	101,5033	.97961	2564.20	1,94811	.2794
2150.	.6000	136,0320	.98464	2571.06	1,97515	.2639
2150.	.4000	205,0995	.98971	2577.98	2,01239	.2482
2150.	.2000	412,3213	.99483	2584.96	2,07450	.2322
2125.	7.6356	9,0356	.84037	2368.12	1,69161	.5427
2125.	7.0000	9,9605	.84927	2380.04	1,70257	.5481
2125.	6.0000	11,8339	.86486	2401.21	1,72217	.5452
2125.	5.0000	14,4904	.88250	2425.41	1,74530	.5267
2125.	4.0000	18,5184	.90225	2452.61	1,77303	.4919
2125.	3.0000	25,2876	.92405	2482.62	1,80734	.4414
2125.	2.0000	38,9043	.94775	2515.18	1,85275	.3769
2125.	1.0000	79,8938	.97315	2549.96	1,92380	.3008
2125.	.8000	100,4072	.97841	2557.15	1,94540	.2844
2125.	.6000	134,6040	.98373	2564.42	1,97259	.2678
2125.	.4000	203,0088	.98910	2571.74	2,00999	.2508
2125.	.2000	408,2444	.99452	2579.14	2,07226	.2335
2100.	7.0424	9,7285	.84266	2365.47	1,69646	.5512
2100.	7.0000	9,7945	.84327	2366.29	1,69722	.5518
2100.	6.0000	11,6384	.85888	2387.45	1,71682	.5554
2100.	5.0000	14,2577	.87681	2412.06	1,74011	.5414
2100.	4.0000	18,2355	.89715	2440.10	1,76816	.5084
2100.	3.0000	24,9290	.91984	2471.39	1,80298	.4570
2100.	2.0000	38,4049	.94472	2505.61	1,84903	.3891
2100.	1.0000	78,9901	.97154	2542.36	1,92084	.3076
2100.	.8000	99,3038	.97711	2549.98	1,94260	.2900
2100.	.6000	133,1685	.98274	2557.67	1,96997	.2720
2100.	.4000	200,9104	.98844	2565.44	2,00754	.2536
2100.	.2000	404,1597	.99419	2573.28	2,06998	.2349
2075.	6.4845	10,4904	.84492	2362.82	1,70144	.5602
2075.	6.0000	11,4425	.85275	2373.46	1,71133	.5636
2075.	5.0000	14,0228	.87087	2398.35	1,73472	.5555
2075.	4.0000	17,9488	.89175	2427.18	1,76309	.5255
2075.	3.0000	24,5649	.91535	2459.76	1,79841	.4737
2075.	2.0000	37,8986	.94146	2495.72	1,84514	.4023
2075.	1.0000	78,0786	.96980	2534.58	1,91779	.3150
2075.	.8000	98,1924	.97570	2542.65	1,93973	.2960
2075.	.6000	131,7249	.98168	2550.81	1,96728	.2766
2075.	.4000	198,8037	.98772	2559.06	2,00503	.2567
2075.	.2000	400,0666	.99383	2567.39	2,06767	.2365
2050.	5.9606	11,3299	.84717	2360.19	1,70655	.5696
2050.	5.0000	13,7863	.86471	2384.30	1,72915	.5686
2050.	4.0000	17,6584	.88607	2413.82	1,75780	.5428
2050.	3.0000	24,1952	.91055	2447.70	1,79363	.4914
2050.	2.0000	37,3851	.93796	2485.49	1,84109	.4168
2050.	1.0000	77,1587	.96792	2526.60	1,91463	.3232
2050.	.8000	97,0722	.97418	2535.17	1,93676	.3027
2050.	.6000	130,2723	.98052	2543.84	1,96451	.2817
2050.	.4000	196,6879	.98694	2552.60	2.00247	.2602
2050.	.2000	395,9642	.99344	2561.45	2,06532	.2383

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2025.	5.4694	12,2567	.84941	2357.60	1,71182	,5792
2025.	5.0000	13,5486	.85835	2369.93	1,72340	,5801
2025.	4.0000	17,3645	.88008	2400.04	1,75227	,5603
2025.	3.0000	23,8197	.90544	2435.18	1,78861	,5102
2025.	2.0000	36,8639	.93418	2474.87	1,83684	,4324
2025.	1.0000	76,2294	.96588	2518.41	1,91135	,3322
2025.	.8000	95,9426	.97253	2527.51	1,93370	,3100
2025.	.6000	128,8100	.97927	2536.73	1,96166	,2873
2025.	.4000	194,5622	.98610	2546.05	1,99985	,2640
2025.	.2000	391,8517	.99301	2555.47	2,06292	,2402
2000.	5.0097	13,2818	.85165	2355.04	1,71723	,5891
2000.	5.0000	13,3105	.85184	2355.31	1,71749	,5892
2000.	4.0000	17,0674	.87382	2385.81	1,74652	,5773
2000.	3.0000	23,4383	.89999	2422.18	1,78336	,5300
2000.	2.0000	36,3343	.93012	2463.85	1,83238	,4495
2000.	1.0000	75,2900	.96368	2509.99	1,90794	,3421
2000.	.8000	94,8025	.97074	2519.66	1,93052	,3181
2000.	.6000	127,3370	.97791	2529.47	1,95873	,2935
2000.	.4000	192,4256	.98518	2539.40	1,99716	.2682
2000.	.2000	387,7281	.99255	2549.44	2,06048	,2423
1975.	4.5809	14,4181	.85389	2352.54	1,72282	,5992
1975.	4.0000	16,7675	.86728	2371.18	1,74054	,5935
1975.	3.0000	23,0507	.89420	2408.67	1,77784	,5506
1975.	2.0000	35,7958	.92575	2452.39	1,82769	,4679
1975.	1.0000	74,3396	.96128	2501.30	1,90439	,3531
1975.	.8000	93,6510	.96880	2511.60	1,92723	,3271
1975.	.6000	125,8523	.97643	2522.05	1,95569	.3003
1975.	.4000	190,2770	.98418	2532.64	1,99439	.2728
1975.	.2000	383,5923	.99204	2543.36	2,05800	,2447
1950.	4.1791	15,6804	.85616	2350.09	1,72857	,6094
1950.	4.0000	16,4655	.86049	2356.15	1,73434	,6081
1950.	3.0000	22,6572	.88806	2394.64	1,77204	,5718
1950.	2.0000	35,2478	.92103	2440.44	1,82276	.4879
1950.	1.0000	73,3771	.95868	2492.32	1,90068	.3651
1950.	.8000	92,4871	.96668	2503.30	1,92380	.3370
1950.	.6000	124,3549	.97482	2514.45	1,95256	.3079
1950.	.4000	188,1153	.98310	2525.75	1,99155	,2780
1950.	.2000	379,4430	.99149	2537.21	2,05546	.2473
1925.	3.8057	17,0856	.85844	2347.70	1,73451	.6196
1925.	3.0000	22,2579	.88155	2380.08	1,76597	.5934
1925.	2.0000	34,6898	.91595	2427.98	1,81756	,5095
1925.	1.0000	72,4014	.95585	2483.03	1,89681	.3785
1925.	.8000	91,3096	.96438	2494.74	1,92023	,3480
1925.	.6000	122,8433	.97307	2506.64	1,94930	,3163
1925.	.4000	185,9390	.98191	2518.73	1,98862	,2837
1925.	.2000	375,2790	.99089	2530.99	2,05286	,2502
1900.	3.4586	18,6534	.86076	2345.39	1,74064	.6297
1900.	3.0000	21,8532	.87469	2364.97	1,75960	.6148
1900.	2.0000	34,1212	.91049	2414.95	1,81207	,5328
1900.	1.0000	71,4114	.95277	2473.39	1,89274	,3932
1900.	.8000	90,1170	.96187	2485,89	1,91650	.3601
1900.	.6000	121,3162	.97116	2498.62	1,94592	.3257
1900.	.4000	183,7469	.98062	2511.56	1,98560	.2901
1900.	.2000	371,0986	.99023	2524.69	2,05021	,2535
1875.	3.1365	20,4066	.86311	2343.15	1,74696	.6397
1875.	3.0000	21,4439	.86750	2349.34	1,75294	.6354
1875.	2.0000	33,5416	.90460	2401.32	1,80626	.5576
1875.	1.0000	70,4055	.94940	2463.35	1,88847	.4096
1875.	.8000	88,9080	.95913	2476.72	1,91259	.3737
1875.	.6000	119,7721	.96906	2490.35	1,94240	.3361

TABLE 9

THERMODYNAMIC PROPERTIES OF SODIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
1875.	.4000	181,5371	.97920	2504.22	1,98247	.2972
1875.	.2000	366,9001	.98951	2518.31	2,04749	.2571
1850.	2.8382	22,3718	.86550	2340.99	1,75350	.6496
1850.	2.0000	32,9505	.89828	2387.06	1,80012	.5841
1850.	1.0000	69,3824	.94573	2452.89	1,88396	.4277
1850.	.8000	87,6809	.95613	2467.19	1,90849	.3887
1850.	.6000	118,2091	.96677	2481.80	1,93872	.3478
1850.	.4000	179,3079	.97764	2496.69	1,97923	.3052
1850.	.2000	362,6816	.98872	2511.83	2,04470	.2612
1825.	2.5625	24,5799	.86793	2338.92	1,76024	.6591
1825.	2.0000	32,3477	.89150	2372.11	1,79361	.6119
1825.	1.0000	68,3403	.94172	2441.95	1,87920	.4478
1825.	.8000	86,4338	.95284	2457.27	1,90417	.4055
1825.	.6000	116,6253	.96425	2472.95	1,93486	.3608
1825.	.4000	177,0571	.97593	2488.95	1,97586	.3141
1825.	.2000	358,4409	.98786	2505.25	2,04183	.2657
1800.	2.3081	27,0672	.87042	2336.93	1,76722	.6684
1800.	2.0000	31,7333	.88424	2356.45	1,78672	.6408
1800.	1.0000	67,2777	.93734	2430.48	1,87415	.4702
1800.	.8000	85,1648	.94924	2446.90	1,89961	.4242
1800.	.6000	115,0184	.96149	2463.75	1,93081	.3753
1800.	.4000	174,7823	.97405	2480.98	1,97235	.3241
1800.	.2000	354,1754	.98690	2498.54	2,03888	.2708
1775.	2.0740	29,8761	.87295	2335.03	1,77443	.6772
1775.	2.0000	31,1077	.87651	2340.06	1,77943	.6703
1775.	1.0000	66,1924	.93253	2418.42	1,86878	.4949
1775.	.8000	83,8716	.94528	2436.04	1,89477	.4450
1775.	.6000	113,3861	.95844	2454.17	1,92655	.3916
1775.	.4000	172,4808	.97198	2472.74	1,96869	.3353
1775.	.2000	349,8824	.98584	2491.70	2,03584	.2766
1750.	1.8590	33,0565	.87554	2333.22	1,78188	.6856
1750.	1.0000	65,0825	.92727	2405.71	1,86306	.5223
1750.	.8000	82,5518	.94093	2424.63	1,88964	.4683
1750.	.6000	111,7254	.95509	2444.15	1,92204	.4099
1750.	.4000	170,1498	.96969	2464.20	1,96484	.3479
1750.	.2000	345,5587	.98468	2484.71	2,03269	.2831
1725.	1.6620	36,6675	.87818	2331.50	1,78959	.6935
1725.	1.0000	63,9458	.92150	2392.28	1,85695	.5527
1725.	.8000	81,2027	.93615	2412.60	1,88416	.4944
1725.	.6000	110,0334	.95139	2433.65	1,91726	.4305
1725.	.4000	167,7856	.96716	2455.33	1,96080	.3622
1725.	.2000	341,2006	.98338	2477.54	2,02943	.2904
1700.	1.4818	40,7788	.88088	2329.87	1,79755	.7007
1700.	1.0000	62,7800	.91517	2378.05	1,85040	.5863
1700.	.8000	79,8214	.93087	2399.89	1,87831	.5234
1700.	.6000	108,3064	.94730	2422.61	1,91218	.4537
1700.	.4000	165,3845	.96435	2446.08	1,95655	.3783
1700.	.2000	336,8038	.98195	2470.18	2,02604	.2987
1675.	1.3176	45,4732	.88364	2328.32	1,80579	.7073
1675.	1.0000	61,5829	.90824	2362.94	1,84336	.6232
1675.	.8000	78,4046	.92506	2386.40	1,87203	.5559
1675.	.6000	106,5407	.94277	2410.94	1,90674	.4798
1675.	.4000	162,9420	.96124	2436.40	1,95204	.3966
1675.	.2000	332,3638	.98035	2462.60	2,02251	.3081
1650.	1.1682	50,8495	.88645	2326.87	1,81430	.7132
1650.	1.0000	60,3523	.90064	2346.86	1,83578	.6637
1650.	.8000	76,9490	.91865	2372.06	1,86527	.5922
1650.	.6000	104,7319	.93775	2398.59	1,90092	.5092
1650.	.4000	160,4531	.95777	2426.23	1,94724	.4173
1650.	.2000	327,8749	.97857	2454.76	2,01882	.3189
1625.	1.0327	57,0256	.88932	2325.49	1,82311	.7183
1625.	1.0000	59,0864	.89232	2329.72	1,82761	.7077
1625.	.8000	75,4512	.91157	2356.76	1,85797	.6325
1625.	.6000	102,8753	.93217	2385.45	1,89466	.5424
1625.	.4000	157,9121	.95391	2415.51	1,94213	.4409
1625.	.2000	323,3310	.97658	2446.64	2,01494	.3312

TABLE 10

MOLECULAR COMPOSITION OF SODIUM VAPOR

t	p	x_2	x_4	M_a
2575.	25.8638	.288363	.095749	29.3235
2575.	25.0000	.285666	.090194	29.1186
2575.	24.0000	.282187	.083796	28.8795
2575.	23.0000	.278298	.077455	28.6385
2575.	22.0000	.273973	.071194	28.3958
2575.	21.0000	.269180	.065037	28.1520
2575.	20.0000	.263890	.059012	27.9072
2575.	19.0000	.258072	.053145	27.6617
2575.	18.0000	.251694	.047465	27.4160
2575.	17.0000	.244725	.042000	27.1703
2575.	16.0000	.237131	.036779	26.9249
2575.	15.0000	.228882	.031831	26.6800
2575.	14.0000	.219943	.027183	26.4360
2575.	13.0000	.210283	.022860	26.1928
2575.	12.0000	.199868	.018887	25.9508
2575.	11.0000	.188663	.015283	25.7097
2575.	10.0000	.176635	.012065	25.4697
2575.	9.0000	.163745	.009244	25.2304
2575.	8.0000	.149954	.006826	24.9915
2575.	7.0000	.135217	.004810	24.7526
2575.	6.0000	.119484	.003188	24.5129
2575.	5.0000	.102698	.001943	24.2715
2575.	4.0000	.084790	.001049	24.0273
2575.	3.0000	.065679	.000467	23.7790
2575.	2.0000	.045263	.000146	23.5248
2575.	1.0000	.023421	.000019	23.2626
2575.	.8000	.018869	.000010	23.2089
2575.	.6000	.014252	.000004	23.1549
2575.	.4000	.009569	.000001	23.1004
2575.	.2000	.004819	.000000	23.0453
2550.	24.4105	.289030	.090250	29.1824
2550.	24.0000	.287618	.087566	29.0820
2550.	23.0000	.283884	.081061	28.8359
2550.	22.0000	.279705	.074623	28.5879
2550.	21.0000	.275048	.068277	28.3381
2550.	20.0000	.269882	.062051	28.0870
2550.	19.0000	.264172	.055974	27.8349
2550.	18.0000	.257884	.050075	27.5822
2550.	17.0000	.250983	.044384	27.3291
2550.	16.0000	.243433	.038934	27.0760
2550.	15.0000	.235198	.033755	26.8233
2550.	14.0000	.226242	.028877	26.5710
2550.	13.0000	.216528	.024329	26.3195
2550.	12.0000	.206019	.020137	26.0688
2550.	11.0000	.194677	.016324	25.8191
2550.	10.0000	.182462	.012911	25.5702
2550.	9.0000	.169332	.009910	25.3219
2550.	8.0000	.155244	.007332	25.0740
2550.	7.0000	.140147	.005177	24.8258
2550.	6.0000	.123986	.003438	24.5768
2550.	5.0000	.106697	.002100	24.3259
2550.	4.0000	.088203	.001136	24.0719

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
2550.	3.0000	.068412	.000507	23.8134
2550.	2.0000	.047213	.000159	23.5485
2550.	1.0000	.024467	.000021	23.2749
2550.	.8000	.019717	.000011	23.2189
2550.	.6000	.014898	.000005	23.1624
2550.	.4000	.010006	.000001	23.1054
2550.	.2000	.005041	.000000	23.0479
2525.	23.0156	.289548	.084898	29.0439
2525.	23.0000	.289489	.084794	29.0400
2525.	22.0000	.285470	.078183	28.7866
2525.	21.0000	.280964	.071650	28.5311
2525.	20.0000	.275936	.065224	28.2738
2525.	19.0000	.270351	.058936	28.0151
2525.	18.0000	.264169	.052815	27.7553
2525.	17.0000	.257353	.046896	27.4948
2525.	16.0000	.249863	.041211	27.2339
2525.	15.0000	.241660	.035794	26.9731
2525.	14.0000	.232702	.030677	26.7124
2525.	13.0000	.222950	.025894	26.4523
2525.	12.0000	.212360	.021473	26.1928
2525.	11.0000	.200891	.017441	25.9340
2525.	10.0000	.188498	.013820	25.6759
2525.	9.0000	.175135	.010629	25.4182
2525.	8.0000	.160752	.007880	25.1608
2525.	7.0000	.145293	.005575	24.9030
2525.	6.0000	.128697	.003710	24.6442
2525.	5.0000	.110892	.002271	24.3833
2525.	4.0000	.091792	.001231	24.1190
2525.	3.0000	.071295	.000551	23.8498
2525.	2.0000	.049275	.000173	23.5737
2525.	1.0000	.025576	.000023	23.2880
2525.	.8000	.020618	.000012	23.2295
2525.	.6000	.015583	.000005	23.1704
2525.	.4000	.010470	.000002	23.1108
2525.	.2000	.005276	.000000	23.0506
2500.	21.6779	.289915	.079701	28.9083
2500.	21.0000	.286917	.075156	28.7310
2500.	20.0000	.282045	.068532	28.4676
2500.	19.0000	.276600	.062033	28.2023
2500.	18.0000	.270542	.055690	27.9354
2500.	17.0000	.263828	.049538	27.6675
2500.	16.0000	.256417	.043614	27.3988
2500.	15.0000	.248262	.037952	27.1297
2500.	14.0000	.239320	.032590	26.8605
2500.	13.0000	.229545	.027561	26.5914
2500.	12.0000	.218890	.022900	26.3228
2500.	11.0000	.207307	.018637	26.0547
2500.	10.0000	.194747	.014799	25.7870
2500.	9.0000	.181158	.011405	25.5196
2500.	8.0000	.166483	.008472	25.2523
2500.	7.0000	.150662	.006007	24.9845
2500.	6.0000	.133625	.004007	24.7154
2500.	5.0000	.115291	.002458	24.4440
2500.	4.0000	.095567	.001336	24.1689
2500.	3.0000	.074336	.000599	23.8884
2500.	2.0000	.051457	.000189	23.6003
2500.	1.0000	.026753	.000025	23.3019
2500.	.8000	.021574	.000013	23.2407
2500.	.6000	.016312	.000006	23.1789
2500.	.4000	.010964	.000002	23.1166

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
2500.	.2000	.005527	.000000	23.0535
2475.	20.3962	.290127	.074666	28.7755
2475.	20.0000	.288197	.071975	28.6684
2475.	19.0000	.282909	.065266	28.3966
2475.	18.0000	.276993	.058701	28.1228
2475.	17.0000	.270401	.052315	27.8474
2475.	16.0000	.263087	.046147	27.5708
2475.	15.0000	.255001	.040235	27.2933
2475.	14.0000	.246093	.034619	27.0154
2475.	13.0000	.236313	.029337	26.7373
2475.	12.0000	.225610	.024426	26.4592
2475.	11.0000	.213928	.019920	26.1814
2475.	10.0000	.201213	.015851	25.9038
2475.	9.0000	.187407	.012243	25.6264
2475.	8.0000	.172446	.009114	25.3487
2475.	7.0000	.156263	.006477	25.0704
2475.	6.0000	.138780	.004330	24.7905
2475.	5.0000	.119907	.002663	24.5081
2475.	4.0000	.099538	.001451	24.2216
2475.	3.0000	.077545	.000652	23.9293
2475.	2.0000	.053766	.000206	23.6287
2475.	1.0000	.028003	.000028	23.3168
2475.	.8000	.022591	.000014	23.2527
2475.	.6000	.017087	.000006	23.1880
2475.	.4000	.011489	.000002	23.1227
2475.	.2000	.005794	.000000	23.0566
2450.	19.1693	.290180	.069800	28.6456
2450.	19.0000	.289270	.068637	28.5983
2450.	18.0000	.283514	.061850	28.3176
2450.	17.0000	.277064	.055228	28.0347
2450.	16.0000	.269866	.048814	27.7502
2450.	15.0000	.261869	.042647	27.4643
2450.	14.0000	.253016	.036770	27.1774
2450.	13.0000	.243252	.031225	26.8901
2450.	12.0000	.232518	.026054	26.6024
2450.	11.0000	.220754	.021294	26.3146
2450.	10.0000	.207898	.016982	26.0267
2450.	9.0000	.193886	.013146	25.7388
2450.	8.0000	.178647	.009809	25.4504
2450.	7.0000	.162105	.006987	25.1610
2450.	6.0000	.144172	.004682	24.8699
2450.	5.0000	.124749	.002887	24.5759
2450.	4.0000	.103717	.001577	24.2775
2450.	3.0000	.080932	.000711	23.9727
2450.	2.0000	.056212	.000226	23.6588
2450.	1.0000	.029332	.000030	23.3325
2450.	.8000	.023673	.000016	23.2655
2450.	.6000	.017913	.000007	23.1977
2450.	.4000	.012049	.000002	23.1292
2450.	.2000	.006079	.000000	23.0599
2425.	17.9961	.290072	.065111	28.5187
2425.	17.0000	.283806	.058281	28.2296
2425.	16.0000	.276747	.051618	27.9371
2425.	15.0000	.268360	.045192	27.6427
2425.	14.0000	.260084	.039048	27.3469
2425.	13.0000	.250356	.033232	27.0501
2425.	12.0000	.239612	.027790	26.7525
2425.	11.0000	.227785	.022765	26.4544
2425.	10.0000	.214806	.018197	26.1560
2425.	9.0000	.200601	.014120	25.8571

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
2425.	8.0000	.185093	.010561	25.5575
2425.	7.0000	.168195	.007541	25.2567
2425.	6.0000	.149811	.005066	24.9538
2425.	5.0000	.129829	.003132	24.6477
2425.	4.0000	.108115	.001716	24.3367
2425.	3.0000	.084508	.000776	24.0187
2425.	2.0000	.058804	.000247	23.6907
2425.	1.0000	.030746	.000033	23.3493
2425.	.8000	.024824	.000017	23.2790
2425.	.6000	.018792	.000007	23.2080
2425.	.4000	.012646	.000002	23.1361
2425.	.2000	.006384	.000000	23.0634
2400.	16.8752	.289800	.060602	28.3948
2400.	16.0000	.283719	.054562	28.1317
2400.	15.0000	.275965	.047873	27.8289
2400.	14.0000	.267289	.041457	27.5240
2400.	13.0000	.257621	.035364	27.2176
2400.	12.0000	.246890	.029642	26.9099
2400.	11.0000	.235021	.024339	26.6013
2400.	10.0000	.221937	.019502	26.2919
2400.	9.0000	.207555	.015170	25.9817
2400.	8.0000	.191789	.011376	25.6705
2400.	7.0000	.174542	.008143	25.3577
2400.	6.0000	.155706	.005486	25.0425
2400.	5.0000	.135157	.003401	24.7236
2400.	4.0000	.112744	.001868	24.3994
2400.	3.0000	.088286	.000847	24.0675
2400.	2.0000	.061552	.000271	23.7248
2400.	1.0000	.032251	.000037	23.3673
2400.	.8000	.026051	.000019	23.2935
2400.	.6000	.019730	.000008	23.2190
2400.	.4000	.013284	.000002	23.1436
2400.	.2000	.006708	.000000	23.0672
2375.	15.8055	.289364	.056278	28.2739
2375.	15.0000	.283175	.050696	28.0230
2375.	14.0000	.274623	.044003	27.7090
2375.	13.0000	.265041	.037624	27.3929
2375.	12.0000	.254347	.031612	27.0749
2375.	11.0000	.242459	.026022	26.7555
2375.	10.0000	.229291	.020903	26.4349
2375.	9.0000	.214751	.016301	26.1130
2375.	8.0000	.198741	.012257	25.7896
2375.	7.0000	.181154	.008798	25.4643
2375.	6.0000	.161869	.005943	25.1362
2375.	5.0000	.140745	.003695	24.8041
2375.	4.0000	.117616	.002036	24.4660
2375.	3.0000	.092276	.000927	24.1194
2375.	2.0000	.064467	.000297	23.7610
2375.	1.0000	.033854	.000040	23.3864
2375.	.8000	.027359	.000021	23.3090
2375.	.6000	.020731	.000009	23.2308
2375.	.4000	.013965	.000003	23.1515
2375.	.2000	.007056	.000000	23.0712
2350.	14.7856	.288763	.052143	28.1561
2350.	14.0000	.282078	.046688	27.9021
2350.	13.0000	.272607	.040018	27.5762
2350.	12.0000	.261977	.033709	27.2478
2350.	11.0000	.250097	.027819	26.9174
2350.	10.0000	.236869	.022406	26.5851
2350.	9.0000	.222191	.017521	26.2511

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
2350.	8.0000	.205954	.013210	25.9152
2350.	7.0000	.188038	.009509	25.5769
2350.	6.0000	.168307	.006443	25.2354
2350.	5.0000	.146605	.004018	24.8892
2350.	4.0000	.122744	.002221	24.5365
2350.	3.0000	.096494	.001014	24.1745
2350.	2.0000	.067560	.000326	23.7996
2350.	1.0000	.035564	.000044	23.4068
2350.	.8000	.028755	.000023	23.3256
2350.	.6000	.021800	.000010	23.2433
2350.	.4000	.014693	.000003	23.1600
2350.	.2000	.007428	.000000	23.0755
2325.	13.8143	.287995	.048199	28.0414
2325.	13.0000	.280311	.042551	27.7678
2325.	12.0000	.269774	.035936	27.4289
2325.	11.0000	.257929	.029737	27.0872
2325.	10.0000	.244667	.024016	26.7431
2325.	9.0000	.229876	.018833	26.3966
2325.	8.0000	.213432	.014240	26.0477
2325.	7.0000	.195202	.010282	25.6959
2325.	6.0000	.175032	.006988	25.3403
2325.	5.0000	.152749	.004372	24.9795
2325.	4.0000	.128142	.002425	24.6114
2325.	3.0000	.100951	.001111	24.2332
2325.	2.0000	.070844	.000359	23.8407
2325.	1.0000	.037387	.000049	23.4286
2325.	.8000	.030246	.000026	23.3433
2325.	.6000	.022943	.000011	23.2568
2325.	.4000	.015472	.000003	23.1691
2325.	.2000	.007826	.000000	23.0801
2300.	12.8903	.287062	.044448	27.9296
2300.	12.0000	.277729	.038299	27.6183
2300.	11.0000	.265949	.031781	27.2653
2300.	10.0000	.252684	.025741	26.9090
2300.	9.0000	.237806	.020245	26.5498
2300.	8.0000	.221178	.015355	26.1874
2300.	7.0000	.202650	.011121	25.8215
2300.	6.0000	.182053	.007583	25.4513
2300.	5.0000	.159189	.004760	25.0752
2300.	4.0000	.133823	.002650	24.6910
2300.	3.0000	.105663	.001219	24.2956
2300.	2.0000	.074331	.000395	23.8846
2300.	1.0000	.039334	.000054	23.4520
2300.	.8000	.031839	.000028	23.3622
2300.	.6000	.024166	.000012	23.2712
2300.	.4000	.016306	.000004	23.1788
2300.	.2000	.008254	.000000	23.0851
2275.	12.0122	.285964	.040889	27.8209
2275.	12.0000	.285830	.040802	27.8164
2275.	11.0000	.274150	.033957	27.4519
2275.	10.0000	.260914	.027586	27.0833
2275.	9.0000	.245980	.021763	26.7110
2275.	8.0000	.229194	.016558	26.3347
2275.	7.0000	.210390	.012032	25.9543
2275.	6.0000	.189378	.008232	25.5687
2275.	5.0000	.165937	.005186	25.1766
2275.	4.0000	.139802	.002898	24.7755
2275.	3.0000	.110644	.001339	24.3620
2275.	2.0000	.078036	.000436	23.9314
2275.	1.0000	.041413	.000060	23.4770

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
2275.	.8000	.033543	.000031	23.3825
2275.	.6000	.025475	.000014	23.2867
2275.	.4000	.017201	.000004	23.1893
2275.	.2000	.008713	.000001	23.0904
2250.	11.1789	.284702	.037522	27.7150
2250.	11.0000	.282522	.036270	27.6474
2250.	10.0000	.269350	.029557	27.2663
2250.	9.0000	.254393	.023393	26.8805
2250.	8.0000	.237481	.017858	26.4900
2250.	7.0000	.218426	.013021	26.0945
2250.	6.0000	.197015	.008940	25.6930
2250.	5.0000	.173003	.005654	25.2841
2250.	4.0000	.146093	.003172	24.8653
2250.	3.0000	.115911	.001471	24.4328
2250.	2.0000	.081974	.000482	23.9814
2250.	1.0000	.043637	.000067	23.5038
2250.	.8000	.035368	.000035	23.4043
2250.	.6000	.026879	.000015	23.3033
2250.	.4000	.018162	.000005	23.2006
2250.	.2000	.009206	.000001	23.0961
2225.	10.3888	.283279	.034346	27.6120
2225.	10.0000	.277985	.031659	27.4583
2225.	9.0000	.263042	.025141	27.0588
2225.	8.0000	.246037	.019259	26.6537
2225.	7.0000	.226760	.014094	26.2426
2225.	6.0000	.204973	.009713	25.8246
2225.	5.0000	.180401	.006166	25.3982
2225.	4.0000	.152709	.003474	24.9607
2225.	3.0000	.121479	.001619	24.5082
2225.	2.0000	.086162	.000532	24.0348
2225.	1.0000	.046016	.000074	23.5325
2225.	.8000	.037322	.000039	23.4277
2225.	.6000	.028385	.000017	23.3211
2225.	.4000	.019194	.000005	23.2127
2225.	.2000	.009737	.000001	23.1023
2200.	9.6408	.281696	.031359	27.5119
2200.	9.0000	.271920	.027015	27.2462
2200.	8.0000	.254861	.020769	26.8261
2200.	7.0000	.235395	.015256	26.3990
2200.	6.0000	.213258	.010556	25.9639
2200.	5.0000	.188140	.006729	25.5192
2200.	4.0000	.159667	.003808	25.0622
2200.	3.0000	.127366	.001783	24.5886
2200.	2.0000	.090615	.000589	24.0920
2200.	1.0000	.048562	.000083	23.5634
2200.	.8000	.039418	.000043	23.4528
2200.	.6000	.030003	.000019	23.3403
2200.	.4000	.020304	.000006	23.2257
2200.	.2000	.010308	.000001	23.1089
2175.	8.9335	.279956	.028558	27.4144
2175.	8.0000	.263946	.022395	27.0077
2175.	7.0000	.244331	.016516	26.5640
2175.	6.0000	.221875	.011475	26.1112
2175.	5.0000	.196232	.007347	25.6476
2175.	4.0000	.166981	.004177	25.1701
2175.	3.0000	.133590	.001965	24.6743
2175.	2.0000	.095352	.000653	24.1532
2175.	1.0000	.051291	.000092	23.5966
2175.	.8000	.041666	.000049	23.4798
2175.	.6000	.031741	.000021	23.3609

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
2175.	.4000	.021499	.000006	23.2397
2175.	.2000	.010925	.000001	23.1161
2150.	8.2656	.278061	.025938	27.3195
2150.	8.0000	.273288	.024143	27.1988
2150.	7.0000	.253566	.017878	26.7383
2150.	6.0000	.230828	.012475	26.2672
2150.	5.0000	.204684	.008024	25.7837
2150.	4.0000	.174665	.004584	25.2849
2150.	3.0000	.140169	.002169	24.7658
2150.	2.0000	.100393	.000725	24.2187
2150.	1.0000	.054216	.000103	23.6323
2150.	.8000	.044081	.000054	23.5089
2150.	.6000	.033610	.000024	23.3832
2150.	.4000	.022787	.000007	23.2549
2150.	.2000	.011590	.000001	23.1238
2125.	7.6356	.276016	.023494	27.2271
2125.	7.0000	.263098	.019351	26.9221
2125.	6.0000	.240119	.013564	26.4321
2125.	5.0000	.213507	.008766	25.9282
2125.	4.0000	.182734	.005034	25.4071
2125.	3.0000	.147121	.002395	24.8634
2125.	2.0000	.105757	.000806	24.2888
2125.	1.0000	.057354	.000116	23.6707
2125.	.8000	.046676	.000061	23.5403
2125.	.6000	.035623	.000026	23.4072
2125.	.4000	.024176	.000008	23.2712
2125.	.2000	.012310	.000001	23.1322
2100.	7.0424	.273823	.021223	27.1371
2100.	7.0000	.272919	.020940	27.1159
2100.	6.0000	.249749	.014748	26.6066
2100.	5.0000	.222707	.009580	26.0815
2100.	4.0000	.191200	.005531	25.5371
2100.	3.0000	.154464	.002647	24.9677
2100.	2.0000	.111465	.000897	24.3641
2100.	1.0000	.060722	.000129	23.7120
2100.	.8000	.049466	.000068	23.5741
2100.	.6000	.037793	.000030	23.4331
2100.	.4000	.025676	.000009	23.2889
2100.	.2000	.013088	.000001	23.1413
2075.	6.4845	.271486	.019118	27.0494
2075.	6.0000	.259716	.016034	26.7910
2075.	5.0000	.232289	.010470	26.2440
2075.	4.0000	.200077	.006080	25.6754
2075.	3.0000	.162219	.002928	25.0790
2075.	2.0000	.117541	.000999	24.4447
2075.	1.0000	.064340	.000145	23.7566
2075.	.8000	.052470	.000077	23.6106
2075.	.6000	.040132	.000034	23.4612
2075.	.4000	.027297	.000010	23.3081
2075.	.2000	.013932	.000001	23.1511
2050.	5.9606	.269009	.017172	26.9638
2050.	5.0000	.242257	.011445	26.4163
2050.	4.0000	.209376	.006685	25.8226
2050.	3.0000	.170404	.003241	25.1980
2050.	2.0000	.124007	.001114	24.5313
2050.	1.0000	.068228	.000164	23.8048
2050.	.8000	.055705	.000087	23.6500
2050.	.6000	.042658	.000038	23.4915
2050.	.4000	.029052	.000012	23.3289
2050.	.2000	.014847	.000002	23.1618

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
2025.	5.4694	.266397	.015380	26.8803
2025.	5.0000	.252612	.012510	26.5990
2025.	4.0000	.219107	.007354	25.9792
2025.	3.0000	.179036	.003590	25.3250
2025.	2.0000	.130888	.001244	24.6243
2025.	1.0000	.072409	.000184	23.8568
2025.	.8000	.059191	.000098	23.6927
2025.	.6000	.045387	.000043	23.5244
2025.	.4000	.030952	.000013	23.3514
2025.	.2000	.015841	.000002	23.1734
2000.	5.0097	.263652	.013733	26.7986
2000.	5.0000	.263353	.013673	26.7925
2000.	4.0000	.229278	.008091	26.1458
2000.	3.0000	.188135	.003979	25.4608
2000.	2.0000	.138208	.001390	24.7241
2000.	1.0000	.076906	.000208	23.9131
2000.	.8000	.062951	.000111	23.7390
2000.	.6000	.048337	.000049	23.5601
2000.	.4000	.033013	.000015	23.3759
2000.	.2000	.016922	.000002	23.1860
1975.	4.5800	.260780	.012226	26.7186
1975.	4.0000	.239896	.008902	26.3229
1975.	3.0000	.197717	.004412	25.6059
1975.	2.0000	.145993	.001555	24.8314
1975.	1.0000	.081746	.000235	23.9739
1975.	.8000	.067009	.000126	23.7891
1975.	.6000	.051530	.000055	23.5988
1975.	.4000	.035250	.000017	23.4026
1975.	.2000	.018100	.000002	23.1998
1950.	4.1791	.257783	.010850	26.6403
1950.	4.0000	.250965	.009795	26.5113
1950.	3.0000	.207798	.004894	25.7609
1950.	2.0000	.154270	.001741	24.9466
1950.	1.0000	.086956	.000267	24.0398
1950.	.8000	.071389	.000143	23.8434
1950.	.6000	.054989	.000063	23.6409
1950.	.4000	.037681	.000020	23.4316
1950.	.2000	.019384	.000003	23.2148
1925.	3.8057	.254667	.009599	26.5634
1925.	3.0000	.218391	.005431	25.9265
1925.	2.0000	.163063	.001952	25.0705
1925.	1.0000	.092567	.000302	24.1112
1925.	.8000	.076122	.000162	23.9025
1925.	.6000	.058737	.000072	23.6867
1925.	.4000	.040325	.000022	23.4633
1925.	.2000	.020785	.000003	23.2313
1900.	3.4586	.251435	.008464	26.4879
1900.	3.0000	.229510	.006028	26.1033
1900.	2.0000	.172401	.002189	25.2038
1900.	1.0000	.098610	.000344	24.1887
1900.	.8000	.081236	.000185	23.9666
1900.	.6000	.062803	.000082	23.7366
1900.	.4000	.043204	.000026	23.4979
1900.	.2000	.022318	.000003	23.2493
1875.	3.1365	.248091	.007438	26.4136
1875.	3.0000	.241162	.006691	26.2921
1875.	2.0000	.182307	.002458	25.3470
1875.	1.0000	.105120	.000391	24.2727
1875.	.8000	.086765	.000211	24.0364
1875.	.6000	.067215	.000094	23.7910

TABLE 10
MOLECULAR COMPOSITION OF SODIUM VAPOR (continued)

t	p	x_2	x_4	M_a
1875.	.4000	.046342	.000029	23.5357
1875.	.2000	.023996	.000004	23.2690
1850.	2.8382	.244639	.006514	26.3404
1850.	2.0000	.192808	.002760	25.5010
1850.	1.0000	.112133	.000446	24.3640
1850.	.8000	.092745	.000242	24.1123
1850.	.6000	.072007	.000108	23.8504
1850.	.4000	.049764	.000034	23.5771
1850.	.2000	.025835	.000005	23.2907
1825.	2.5625	.241082	.005685	26.2682
1825.	2.0000	.203925	.003102	25.6665
1825.	1.0000	.119687	.000509	24.4631
1825.	.8000	.099212	.000277	24.1950
1825.	.6000	.077213	.000124	23.9153
1825.	.4000	.053501	.000039	23.6224
1825.	.2000	.027854	.000005	23.3146
1800.	2.3081	.237424	.004943	26.1968
1800.	2.0000	.215680	.003487	25.8445
1800.	1.0000	.127821	.000582	24.5709
1800.	.8000	.106208	.000318	24.2852
1800.	.6000	.082872	.000143	23.9863
1800.	.4000	.057585	.000046	23.6722
1800.	.2000	.030074	.000006	23.3409
1775.	2.0740	.233669	.004282	26.1261
1775.	2.0000	.228090	.003921	26.0356
1775.	1.0000	.136578	.000667	24.6881
1775.	.8000	.113775	.000365	24.3836
1775.	.6000	.089025	.000166	24.0639
1775.	.4000	.062051	.000053	23.7269
1775.	.2000	.032517	.000007	23.3699
1750.	1.8590	.229819	.003695	26.0561
1750.	1.0000	.145999	.000764	24.8155
1750.	.8000	.121959	.000421	24.4910
1750.	.6000	.095717	.000192	24.1490
1750.	.4000	.066939	.000062	23.7870
1750.	.2000	.035209	.000008	23.4019
1725.	1.6620	.225878	.003176	25.9866
1725.	1.0000	.156128	.000877	24.9542
1725.	.8000	.130806	.000486	24.6082
1725.	.6000	.102996	.000222	24.2423
1725.	.4000	.072292	.000072	23.8533
1725.	.2000	.038181	.000010	23.4374
1700.	1.4818	.221849	.002719	25.9175
1700.	1.0000	.167009	.001007	25.1052
1700.	.8000	.140365	.000561	24.7363
1700.	.6000	.110912	.000258	24.3446
1700.	.4000	.078157	.000084	23.9263
1700.	.2000	.041464	.000012	23.4767
1675.	1.3176	.217735	.002317	25.8488
1675.	1.0000	.178683	.001158	25.2693
1675.	.8000	.150687	.000649	24.8762
1675.	.6000	.119520	.000301	24.4569
1675.	.4000	.084585	.000099	24.0069
1675.	.2000	.045096	.000014	23.5204
1650.	1.1682	.213539	.001966	25.7804
1650.	1.0000	.191193	.001332	25.4480
1650.	.8000	.161821	.000751	25.0290
1650.	.6000	.128877	.000351	24.5802
1650.	.4000	.091634	.000116	24.0959
1650.	.2000	.049119	.000016	23.5689
1625.	1.0327	.209264	.001661	25.7121
1625.	1.0000	.204576	.001533	25.6422
1625.	.8000	.173818	.000870	25.1960
1625.	.6000	.139041	.000410	24.7156
1625.	.4000	.099362	.000137	24.1943
1625.	.2000	.053580	.000019	23.6230

TABLE 11

SATURATION PROPERTIES OF POTASSIUM
(Monomer Gas Base)

t	p_s	v^{ℓ}	v_s^g	h^{ℓ}	Δh_v	h_s^g	s^{ℓ}	Δs_v	s_s^g
2525.	35.6462	.03216	1.1810	610.82	639.20	1250.02	.7716	.2142	.9857
2500.	33.9590	.03191	1.2383	603.67	645.37	1249.05	.7692	.2181	.9873
2475.	32.3238	.03167	1.2988	596.75	651.22	1247.98	.7669	.2219	.9888
2450.	30.7400	.03143	1.3627	590.04	656.79	1246.83	.7646	.2257	.9904
2425.	29.2072	.03120	1.4305	583.49	662.12	1245.61	.7624	.2295	.9920
2400.	27.7249	.03097	1.5025	577.11	667.24	1244.35	.7603	.2333	.9936
2375.	26.2926	.03075	1.5791	570.86	672.19	1243.05	.7581	.2371	.9952
2350.	24.9097	.03052	1.6607	564.74	676.98	1241.72	.7560	.2409	.9969
2325.	23.5757	.03030	1.7478	558.74	681.64	1240.38	.7539	.2448	.9986
2300.	22.2899	.03009	1.8410	552.83	686.20	1239.02	.7518	.2486	1.0004
2275.	21.0517	.02988	1.9408	547.01	690.66	1237.66	.7497	.2526	1.0022
2250.	19.8605	.02967	2.0478	541.26	695.04	1236.30	.7476	.2565	1.0041
2225.	18.7154	.02946	2.1629	535.59	699.36	1234.95	.7455	.2605	1.0060
2200.	17.6159	.02926	2.2867	529.98	703.63	1233.61	.7435	.2646	1.0080
2175.	16.5612	.02906	2.4202	524.42	707.86	1232.28	.7414	.2687	1.0101
2150.	15.5504	.02887	2.5643	518.91	712.07	1230.98	.7393	.2729	1.0122
2125.	14.5829	.02867	2.7201	513.44	716.25	1229.69	.7373	.2771	1.0144
2100.	13.6577	.02848	2.8888	508.01	720.42	1228.43	.7352	.2814	1.0166
2075.	12.7740	.02830	3.0718	502.60	724.59	1227.19	.7331	.2859	1.0189
2050.	11.9309	.02811	3.2706	497.22	728.75	1225.97	.7310	.2904	1.0213
2025.	11.1276	.02793	3.4869	491.86	732.93	1224.78	.7289	.2950	1.0238
2000.	10.3632	.02775	3.7226	486.51	737.11	1223.62	.7267	.2997	1.0264
1975.	9.6366	.02758	3.9800	481.18	741.30	1222.48	.7246	.3045	1.0290
1950.	8.9469	.02740	4.2614	475.87	745.50	1221.37	.7224	.3094	1.0318
1925.	8.2932	.02723	4.5697	470.55	749.73	1220.28	.7202	.3144	1.0346
1900.	7.6745	.02706	4.9081	465.25	753.96	1219.21	.7180	.3195	1.0375
1875.	7.0897	.02690	5.2800	459.95	758.21	1218.16	.7157	.3248	1.0405
1850.	6.5378	.02673	5.6896	454.65	762.48	1217.13	.7135	.3301	1.0436
1825.	6.0179	.02657	6.1417	449.36	766.76	1216.12	.7112	.3356	1.0468
1800.	5.5287	.02641	6.6414	444.07	771.04	1215.11	.7089	.3412	1.0501
1775.	5.0694	.02626	7.1951	438.78	775.34	1214.12	.7065	.3470	1.0535
1750.	4.6388	.02610	7.8098	433.49	779.64	1213.13	.7042	.3528	1.0570
1725.	4.2359	.02595	8.4937	428.21	783.94	1212.15	.7018	.3588	1.0606
1700.	3.8596	.02580	9.2563	422.92	788.24	1211.17	.6993	.3650	1.0643
1675.	3.5088	.02565	10.1085	417.64	792.54	1210.18	.6969	.3713	1.0682
1650.	3.1824	.02550	11.0631	412.37	796.82	1209.19	.6944	.3777	1.0721
1625.	2.8795	.02536	12.1351	407.10	801.09	1208.19	.6919	.3843	1.0762
1600.	2.5988	.02522	13.3420	401.84	805.34	1207.18	.6894	.3910	1.0804
1575.	2.3394	.02508	14.7043	396.59	809.56	1206.15	.6868	.3979	1.0847
1550.	2.1003	.02494	16.2463	391.34	813.76	1205.10	.6843	.4049	1.0892
1525.	1.8803	.02480	17.9965	386.11	817.92	1204.03	.6816	.4121	1.0938
1500.	1.6785	.02467	19.9890	380.89	822.04	1202.94	.6790	.4195	1.0985
1475.	1.4938	.02453	22.2642	375.69	826.12	1201.81	.6763	.4270	1.1033
1450.	1.3252	.02440	24.8705	370.51	830.15	1200.66	.6736	.4347	1.1083
1425.	1.1719	.02427	27.8660	365.34	834.13	1199.47	.6709	.4426	1.1135
1400.	1.0327	.02414	31.3207	360.19	838.05	1198.24	.6682	.4506	1.1188

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2525.	35.6462	1.1810	.75523	1250.02	.98571	.2527
2525.	35.0000	1.2099	.75970	1252.05	.98710	.2510
2525.	34.0000	1.2566	.76647	1255.18	.98927	.2484
2525.	33.0000	1.3058	.77310	1258.29	.99148	.2460
2525.	32.0000	1.3580	.77960	1261.40	.99373	.2437
2525.	31.0000	1.4133	.78602	1264.52	.99604	.2414
2525.	30.0000	1.4722	.79238	1267.64	.99840	.2392
2525.	29.0000	1.5351	.79869	1270.79	1.00083	.2369
2525.	28.0000	1.6025	.80498	1273.96	1.00332	.2346
2525.	27.0000	1.6748	.81125	1277.16	1.00589	.2322
2525.	26.0000	1.7526	.81753	1280.39	1.00853	.2297
2525.	25.0000	1.8368	.82382	1283.66	1.01126	.2271
2525.	24.0000	1.9280	.83013	1286.96	1.01408	.2245
2525.	23.0000	2.0272	.83648	1290.30	1.01700	.2217
2525.	22.0000	2.1355	.84287	1293.68	1.02003	.2188
2525.	21.0000	2.2543	.84931	1297.10	1.02318	.2157
2525.	20.0000	2.3851	.85580	1300.57	1.02645	.2126
2525.	19.0000	2.5299	.86235	1304.07	1.02986	.2093
2525.	18.0000	2.6909	.86897	1307.63	1.03343	.2059
2525.	17.0000	2.8711	.87565	1311.22	1.03717	.2023
2525.	16.0000	3.0741	.88240	1314.86	1.04110	.1986
2525.	15.0000	3.3043	.88922	1318.54	1.04523	.1949
2525.	14.0000	3.5678	.89612	1322.26	1.04961	.1909
2525.	13.0000	3.8722	.90309	1326.03	1.05426	.1869
2525.	12.0000	4.2275	.91013	1329.83	1.05922	.1828
2525.	11.0000	4.6479	.91725	1333.67	1.06455	.1785
2525.	10.0000	5.1528	.92443	1337.55	1.07030	.1742
2525.	9.0000	5.7703	.93170	1341.47	1.07658	.1698
2525.	8.0000	6.5427	.93903	1345.42	1.08350	.1653
2525.	7.0000	7.5362	.94643	1349.40	1.09123	.1607
2525.	6.0000	8.8617	.95390	1353.41	1.10002	.1561
2525.	5.0000	10.7180	.96143	1357.46	1.11025	.1514
2525.	4.0000	13.5033	.96903	1361.53	1.12255	.1466

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2525.	3.0000	18.1467	.97668	1365.62	1.13815	.1418
2525.	2.0000	27.4352	.98440	1369.75	1.15973	.1370
2525.	1.0000	55.3036	.99217	1373.89	1.19593	.1321
2525.	.8000	69.2383	.99373	1374.72	1.20747	.1312
2525.	.6000	92.4629	.99530	1375.55	1.22228	.1302
2525.	.4000	138.9125	.99686	1376.39	1.24308	.1292
2525.	.2000	278.2618	.99843	1377.22	1.27849	.1282
2500.	33.9590	1.2383	.76079	1249.05	.98725	.2523
2500.	33.0000	1.2852	.76732	1252.09	.98939	.2499
2500.	32.0000	1.3369	.77401	1255.26	.99167	.2476
2500.	31.0000	1.3918	.78059	1258.43	.99399	.2453
2500.	30.0000	1.4502	.78709	1261.62	.99638	.2431
2500.	29.0000	1.5125	.79354	1264.82	.99882	.2408
2500.	28.0000	1.5792	.79996	1268.05	1.00133	.2385
2500.	27.0000	1.6508	.80637	1271.31	1.00392	.2361
2500.	26.0000	1.7279	.81278	1274.60	1.00658	.2336
2500.	25.0000	1.8112	.81920	1277.93	1.00933	.2310
2500.	24.0000	1.9015	.82565	1281.30	1.01218	.2283
2500.	23.0000	1.9997	.83213	1284.71	1.01512	.2255
2500.	22.0000	2.1070	.83865	1288.16	1.01817	.2225
2500.	21.0000	2.2247	.84523	1291.66	1.02135	.2195
2500.	20.0000	2.3543	.85187	1295.21	1.02465	.2162
2500.	19.0000	2.4977	.85857	1298.80	1.02809	.2128
2500.	18.0000	2.6572	.86534	1302.44	1.03169	.2093
2500.	17.0000	2.8358	.87218	1306.12	1.03545	.2057
2500.	16.0000	3.0369	.87910	1309.86	1.03941	.2019
2500.	15.0000	3.2651	.88609	1313.63	1.04358	.1979
2500.	14.0000	3.5263	.89316	1317.46	1.04799	.1939
2500.	13.0000	3.8279	.90031	1321.32	1.05267	.1897
2500.	12.0000	4.1802	.90754	1325.23	1.05767	.1854
2500.	11.0000	4.5969	.91485	1329.18	1.06303	.1809
2500.	10.0000	5.0975	.92223	1333.17	1.06883	.1764
2500.	9.0000	5.7097	.92970	1337.20	1.07515	.1718
2500.	8.0000	6.4755	.93723	1341.27	1.08211	.1671
2500.	7.0000	7.4606	.94485	1345.36	1.08988	.1623
2500.	6.0000	8.7749	.95253	1349.50	1.09870	.1574
2500.	5.0000	10.6155	.96028	1353.66	1.10897	.1525
2500.	4.0000	13.3775	96810	1357.85	1.12132	.1475
2500.	3.0000	17.9819	.97599	1362.07	1.13695	.1425
2500.	2.0000	27.1925	.98393	1366.32	1.15858	.1374
2500.	1.0000	54.8274	.99194	1370.58	1.19482	.1323
2500.	.8000	68.6453	.99355	1371.44	1.20637	.1313
2500.	.6000	91.6754	.99516	1372.30	1.22119	.1303
2500.	.4000	137.7359	.99677	1373.16	1.24199	.1293
2500.	.2000	275.9181	.99838	1374.01	1.27742	.1282
2475.	32.3238	1.2988	.76600	1247.98	.98880	.2523
2475.	32.0000	1.3157	.76821	1249.02	.98955	.2515
2475.	31.0000	1.3701	.77496	1252.25	.99190	.2493
2475.	30.0000	1.4279	.78161	1255.49	.99430	.2470
2475.	29.0000	1.4896	.78821	1258.75	.99676	.2448
2475.	28.0000	1.5557	.79477	1262.04	.99929	.2425
2475.	27.0000	1.6266	.80132	1265.36	1.00190	.2401
2475.	26.0000	1.7029	.80786	1268.71	1.00458	.2376
2475.	25.0000	1.7854	.81441	1272.11	1.00736	.2350
2475.	24.0000	1.8748	.82099	1275.54	1.01022	.2323
2475.	23.0000	1.9721	.82761	1279.02	1.01319	.2295
2475.	22.0000	2.0783	.83427	1282.55	1.01627	.2265
2475.	21.0000	2.1948	.84099	1286.13	1.01947	.2233
2475.	20.0000	2.3232	.84778	1289.76	1.02280	.2200
2475.	19.0000	2.4652	.85463	1293.43	1.02627	.2166

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2475.	18.0000	2.6233	.86156	1297.16	1.02989	.2130
2475.	17.0000	2.8002	.86856	1300.94	1.03369	.2092
2475.	16.0000	2.9994	.87565	1304.77	1.03769	.2053
2475.	15.0000	3.2256	.88282	1308.65	1.04189	.2012
2475.	14.0000	3.4844	.89007	1312.57	1.04633	.1970
2475.	13.0000	3.7833	.89741	1316.55	1.05105	.1926
2475.	12.0000	4.1325	.90483	1320.56	1.05609	.1881
2475.	11.0000	4.5456	.91234	1324.63	1.06149	.1835
2475.	10.0000	5.0418	.91993	1328.73	1.06732	.1788
2475.	9.0000	5.6487	.92760	1332.88	1.07368	.1739
2475.	8.0000	6.4079	.93536	1337.07	1.08068	.1690
2475.	7.0000	7.3846	.94319	1341.29	1.08849	.1640
2475.	6.0000	8.6877	.95110	1345.54	1.09736	.1589
2475.	5.0000	10.5127	.95908	1349.83	1.10767	.1537
2475.	4.0000	13.2512	.96714	1354.15	1.12006	.1485
2475.	3.0000	17.8167	.97526	1358.50	1.13574	.1432
2475.	2.0000	26.9494	.98344	1362.87	1.15741	.1379
2475.	1.0000	54.3508	.99169	1367.27	1.19370	.1326
2475.	.8000	68.0520	.99335	1368.16	1.20525	.1315
2475.	.6000	90.8876	.99501	1369.04	1.22008	.1304
2475.	.4000	136.5590	.99667	1369.92	1.24090	.1294
2475.	.2000	273.5739	.99833	1370.81	1.27633	.1283
2450.	30.7400	1.3627	.77091	1246.83	.99037	.2527
2450.	30.0000	1.4055	.77595	1249.27	.99217	.2510
2450.	29.0000	1.4666	.78270	1252.59	.99465	.2488
2450.	28.0000	1.5320	.78940	1255.93	.99720	.2466
2450.	27.0000	1.6022	.79608	1259.31	.99983	.2442
2450.	26.0000	1.6777	.80275	1262.72	1.00253	.2418
2450.	25.0000	1.7594	.80944	1266.18	1.00533	.2392
2450.	24.0000	1.8479	.81616	1269.68	1.00822	.2365
2450.	23.0000	1.9442	.82291	1273.24	1.01121	.2336
2450.	22.0000	2.0494	.82972	1276.84	1.01431	.2306
2450.	21.0000	2.1647	.83659	1280.50	1.01754	.2274
2450.	20.0000	2.2918	.84352	1284.21	1.02090	.2241
2450.	19.0000	2.4325	.85053	1287.97	1.02440	.2205
2450.	18.0000	2.5890	.85762	1291.79	1.02806	.2168
2450.	17.0000	2.7642	.86479	1295.66	1.03189	.2129
2450.	16.0000	2.9617	.87205	1299.59	1.03591	.2089
2450.	15.0000	3.1857	.87940	1303.57	1.04015	.2046
2450.	14.0000	3.4422	.88684	1307.61	1.04464	.2002
2450.	13.0000	3.7384	.89437	1311.69	1.04939	.1957
2450.	12.0000	4.0845	.90199	1315.83	1.05447	.1910
2450.	11.0000	4.4939	.90971	1320.01	1.05991	.1862
2450.	10.0000	4.9857	.91752	1324.23	1.06578	.1813
2450.	9.0000	5.5873	.92541	1328.50	1.07218	.1762
2450.	8.0000	6.3400	.93339	1332.82	1.07923	.1710
2450.	7.0000	7.3083	.94145	1337.17	1.08708	.1658
2450.	6.0000	8.6001	.94960	1341.55	1.09599	.1604
2450.	5.0000	10.4095	.95782	1345.97	1.10635	.1550
2450.	4.0000	13.1246	.96612	1350.43	1.11879	.1495
2450.	3.0000	17.6510	.97449	1354.91	1.13451	.1440
2450.	2.0000	26.7058	.98293	1359.42	1.15623	.1384
2450.	1.0000	53.8738	.99143	1363.96	1.19256	.1328
2450.	.8000	67.4583	.99314	1364.87	1.20413	.1317
2450.	.6000	90.0993	.99485	1365.78	1.21897	.1306
2450.	.4000	135.3816	.99657	1366.69	1.23979	.1294
2450.	.2000	271.2293	.99829	1367.60	1.27523	.1283
2425.	29.2072	1.4305	.77556	1245.61	.99196	.2534
2425.	29.0000	1.4434	.77699	1246.31	.99249	.2529
2425.	28.0000	1.5081	.78384	1249.71	.99505	.2507

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g		h^g	s^g	c_p^g
2425.	27.0000	1.5776	.79066	1253.15	.99770	.2484
2425.	26.0000	1.6524	.79747	1256.63	1.00043	.2460
2425.	25.0000	1.7332	.80430	1260.15	1.00324	.2435
2425.	24.0000	1.8208	.81115	1263.72	1.00616	.2408
2425.	23.0000	1.9161	.81804	1267.34	1.00917	.2379
2425.	22.0000	2.0202	.82499	1271.02	1.01231	.2349
2425.	21.0000	2.1344	.83200	1274.76	1.01556	.2317
2425.	20.0000	2.2602	.83909	1278.55	1.01895	.2283
2425.	19.0000	2.3995	.84625	1282.41	1.02248	.2247
2425.	18.0000	2.5545	.85351	1286.32	1.02617	.2209
2425.	17.0000	2.7280	.86085	1290.29	1.03003	.2168
2425.	16.0000	2.9236	.86829	1294.33	1.03410	.2127
2425.	15.0000	3.1455	.87583	1298.41	1.03837	.2083
2425.	14.0000	3.3996	.88346	1302.56	1.04289	.2037
2425.	13.0000	3.6931	.89119	1306.76	1.04769	.1990
2425.	12.0000	4.0361	.89903	1311.01	1.05280	.1941
2425.	11.0000	4.4418	.90696	1315.32	1.05829	.1891
2425.	10.0000	4.9292	.91499	1319.67	1.06421	.1839
2425.	9.0000	5.5256	.92311	1324.07	1.07065	.1786
2425.	8.0000	6.2716	.93133	1328.51	1.07774	.1732
2425.	7.0000	7.2315	.93963	1333.00	1.08564	.1677
2425.	6.0000	8.5121	.94802	1337.52	1.09460	.1621
2425.	5.0000	10.3058	.95650	1342.08	1.10501	.1564
2425.	4.0000	12.9975	.96506	1346.68	1.11749	.1506
2425.	3.0000	17.4850	.97369	1351.30	1.13326	.1448
2425.	2.0000	26.4619	.98239	1355.95	1.15503	.1390
2425.	1.0000	53.3963	.99116	1360.63	1.19142	.1331
2425.	.8000	66.8640	.99293	1361.57	1.20299	.1319
2425.	.6000	89.3105	.99469	1362.51	1.21784	.1307
2425.	.4000	134.2038	.99646	1363.45	1.23867	.1295
2425.	.2000	268.8843	.99823	1364.39	1.27412	.1284
2400.	27.7249	1.5025	.78000	1244.35	.99358	.2543
2400.	27.0000	1.5528	.78505	1246.89	.99552	.2527
2400.	26.0000	1.6268	.79200	1250.42	.99827	.2504
2400.	25.0000	1.7067	.79896	1254.01	1.00111	.2479
2400.	24.0000	1.7934	.80595	1257.64	1.00404	.2452
2400.	23.0000	1.8877	.81298	1261.34	1.00708	.2424
2400.	22.0000	1.9907	.82007	1265.09	1.01024	.2394
2400.	21.0000	2.1037	.82723	1268.91	1.01352	.2361
2400.	20.0000	2.2283	.83447	1272.79	1.01694	.2327
2400.	19.0000	2.3661	.84180	1276.74	1.02050	.2290
2400.	18.0000	2.5196	.84922	1280.75	1.02423	.2251
2400.	17.0000	2.6914	.85674	1284.82	1.02813	.2210
2400.	16.0000	2.8851	.86436	1288.96	1.03223	.2167
2400.	15.0000	3.1050	.87209	1293.16	1.03654	.2122
2400.	14.0000	3.3566	.87993	1297.42	1.04110	.2074
2400.	13.0000	3.6475	.88787	1301.74	1.04594	.2025
2400.	12.0000	3.9872	.89592	1306.12	1.05110	.1974
2400.	11.0000	4.3893	.90408	1310.55	1.05663	.1922
2400.	10.0000	4.8724	.91234	1315.04	1.06259	.1867
2400.	9.0000	5.4634	.92070	1319.57	1.06909	.1812
2400.	8.0000	6.2028	.92916	1324.16	1.07622	.1755
2400.	7.0000	7.1542	.93772	1328.78	1.08417	.1697
2400.	6.0000	8.4236	.94637	1333.45	1.09318	.1638
2400.	5.0000	10.2017	.95511	1338.16	1.10364	.1579
2400.	4.0000	12.8699	.96394	1342.90	1.11617	.1518
2400.	3.0000	17.3184	.97284	1347.67	1.13200	.1457
2400.	2.0000	26.2174	.98183	1352.47	1.15382	.1396
2400.	1.0000	52.9184	.99088	1357.30	1.19026	.1334
2400.	.8000	66.2694	.99270	1358.27	1.20184	.1321

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2400.	.6000	88.5213	.99452	1359.24	1.21670	.1309
2400.	.4000	133.0255	.99634	1360.21	1.23755	.1296
2400.	.2000	266.5388	.99817	1361.19	1.27301	.1284
2375.	26.2926	1.5791	.78426	1243.05	.99523	.2555
2375.	26.0000	1.6011	.78633	1244.11	.99605	.2548
2375.	25.0000	1.6801	.79343	1247.75	.99891	.2524
2375.	24.0000	1.7658	.80056	1251.46	1.00187	.2498
2375.	23.0000	1.8591	.80773	1255.22	1.00494	.2470
2375.	22.0000	1.9610	.81496	1259.05	1.00812	.2440
2375.	21.0000	2.0729	.82227	1262.95	1.01143	.2408
2375.	20.0000	2.1961	.82967	1266.92	1.01488	.2373
2375.	19.0000	2.3325	.83716	1270.96	1.01847	.2336
2375.	18.0000	2.4844	.84475	1275.07	1.02223	.2296
2375.	17.0000	2.6546	.85245	1279.24	1.02617	.2254
2375.	16.0000	2.8463	.86026	1283.49	1.03031	.2209
2375.	15.0000	3.0640	.86819	1287.81	1.03466	.2163
2375.	14.0000	3.3133	.87623	1292.19	1.03926	.2114
2375.	13.0000	3.6014	.88439	1296.63	1.04415	.2062
2375.	12.0000	3.9380	.89266	1301.14	1.04935	.2009
2375.	11.0000	4.3364	.90105	1305.71	1.05493	.1954
2375.	10.0000	4.8151	.90956	1310.33	1.06094	.1898
2375.	9.0000	5.4007	.91817	1315.01	1.06748	.1840
2375.	8.0000	6.1335	.92689	1319.74	1.07467	.1780
2375.	7.0000	7.0765	.93572	1324.51	1.08267	.1719
2375.	6.0000	8.3346	.94464	1329.33	1.09174	.1657
2375.	5.0000	10.0970	.95366	1334.19	1.10224	.1594
2375.	4.0000	12.7419	.96277	1339.09	1.11484	.1531
2375.	3.0000	17.1514	.97196	1344.02	1.13072	.1467
2375.	2.0000	25.9725	.98123	1348.98	1.15259	.1402
2375.	1.0000	52.4399	.99058	1353.97	1.18908	.1337
2375.	.8000	65.6742	.99246	1354.97	1.20068	.1324
2375.	.6000	87.7316	.99434	1355.97	1.21555	.1311
2375.	.4000	131.8467	.99622	1356.97	1.23641	.1298
2375.	.2000	264.1928	.99811	1357.98	1.27188	.1285
2350.	24.9097	1.6607	.78836	1241.72	.99692	.2568
2350.	24.0000	1.7381	.79497	1245.15	.99964	.2545
2350.	23.0000	1.8303	.80228	1248.99	1.00273	.2518
2350.	22.0000	1.9311	.80966	1252.89	1.00594	.2488
2350.	21.0000	2.0417	.81712	1256.87	1.00928	.2456
2350.	20.0000	2.1636	.82467	1260.93	1.01275	.2421
2350.	19.0000	2.2986	.83232	1265.06	1.01638	.2384
2350.	18.0000	2.4489	.84008	1269.27	1.02018	.2343
2350.	17.0000	2.6173	.84797	1273.55	1.02415	.2300
2350.	16.0000	2.8071	.85597	1277.91	1.02833	.2254
2350.	15.0000	3.0227	.86410	1282.35	1.03273	.2206
2350.	14.0000	3.2696	.87235	1286.85	1.03737	.2155
2350.	13.0000	3.5549	.88074	1291.43	1.04230	.2102
2350.	12.0000	3.8884	.88925	1296.07	1.04755	.2047
2350.	11.0000	4.2830	.89788	1300.78	1.05318	.1989
2350.	10.0000	4.7573	.90664	1305.55	1.05925	.1930
2350.	9.0000	5.3376	.91551	1310.38	1.06584	.1869
2350.	8.0000	6.0638	.92450	1315.26	1.07308	.1806
2350.	7.0000	6.9983	.93361	1320.19	1.08114	.1742
2350.	6.0000	8.2452	.94282	1325.16	1.09026	.1677
2350.	5.0000	9.9919	.95213	1330.18	1.10082	.1611
2350.	4.0000	12.6133	.96153	1335.24	1.11347	.1544
2350.	3.0000	16.9838	.97103	1340.34	1.12941	.1477
2350.	2.0000	25.7270	.98061	1345.47	1.15134	.1409
2350.	1.0000	51.9610	.99027	1350.62	1.18790	.1340
2350.	.8000	65.0785	.99221	1351.66	1.19950	.1326

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2350.	.6000	86.9413	.99415	1352.69	1.21439	.1313
2350.	.4000	130.6674	.99610	1353.73	1.23526	.1299
2350.	.2000	261.8462	.99805	1354.76	1.27074	.1285
2325.	23.5757	1.7478	.79234	1240.38	.99865	.2582
2325.	23.0000	1.8013	.79663	1242.63	1.00045	.2567
2325.	22.0000	1.9009	.80415	1246.61	1.00369	.2538
2325.	21.0000	2.0102	.81176	1250.67	1.00706	.2506
2325.	20.0000	2.1308	.81946	1254.81	1.01057	.2472
2325.	19.0000	2.2643	.82728	1259.04	1.01423	.2434
2325.	18.0000	2.4131	.83522	1263.35	1.01806	.2393
2325.	17.0000	2.5797	.84328	1267.74	1.02208	.2349
2325.	16.0000	2.7676	.85148	1272.22	1.02629	.2302
2325.	15.0000	2.9810	.85982	1276.78	1.03074	.2252
2325.	14.0000	3.2254	.86830	1281.41	1.03543	.2200
2325.	13.0000	3.5080	.87691	1286.12	1.04041	.2144
2325.	12.0000	3.8382	.88566	1290.91	1.04571	.2087
2325.	11.0000	4.2292	.89455	1295.76	1.05139	.2027
2325.	10.0000	4.6990	.90357	1300.68	1.05751	.1964
2325.	9.0000	5.2740	.91272	1305.67	1.06416	.1900
2325.	8.0000	5.9935	.92200	1310.71	1.07146	.1835
2325.	7.0000	6.9195	.93139	1315.80	1.07957	.1767
2325.	6.0000	8.1552	.94090	1320.95	1.08875	.1699
2325.	5.0000	9.8863	.95051	1326.13	1.09938	.1629
2325.	4.0000	12.4842	.96023	1331.37	1.11209	.1559
2325.	3.0000	16.8157	.97005	1336.63	1.12809	.1487
2325.	2.0000	25.4810	.97995	1341.94	1.15008	.1416
2325.	1.0000	51.4814	.98994	1347.27	1.18670	.1344
2325.	.8000	64.4822	.99194	1348.34	1.19832	.1329
2325.	.6000	86.1505	.99395	1349.41	1.21321	.1315
2325.	.4000	129.4875	.99597	1350.48	1.23410	.1300
2325.	.2000	259.4991	.99798	1351.55	1.26959	.1286
2300.	22.2899	1.8410	.79621	1239.02	1.00042	.2598
2300.	22.0000	1.8704	.79844	1240.20	1.00138	.2589
2300.	21.0000	1.9785	.80619	1244.34	1.00477	.2558
2300.	20.0000	2.0977	.81405	1248.57	1.00831	.2524
2300.	19.0000	2.2298	.82203	1252.89	1.01201	.2486
2300.	18.0000	2.3769	.83014	1257.30	1.01588	.2445
2300.	17.0000	2.5417	.83839	1261.81	1.01993	.2400
2300.	16.0000	2.7276	.84679	1266.40	1.02419	.2352
2300.	15.0000	2.9388	.85534	1271.09	1.02868	.2301
2300.	14.0000	3.1808	.86405	1275.86	1.03342	.2247
2300.	13.0000	3.4606	.87290	1280.71	1.03845	.2189
2300.	12.0000	3.7876	.88190	1285.64	1.04381	.2129
2300.	11.0000	4.1748	.89105	1290.65	1.04954	.2066
2300.	10.0000	4.6402	.90035	1295.73	1.05572	.2001
2300.	9.0000	5.2098	.90979	1300.87	1.06243	.1934
2300.	8.0000	5.9227	.91936	1306.08	1.06979	.1865
2300.	7.0000	6.8402	.92906	1311.35	1.07797	.1794
2300.	6.0000	8.0646	.93888	1316.67	1.08721	.1722
2300.	5.0000	9.7800	.94882	1322.04	1.09790	.1649
2300.	4.0000	12.3545	.95886	1327.45	1.11067	.1574
2300.	3.0000	16.6470	.96901	1332.90	1.12674	.1499
2300.	2.0000	25.2344	.97926	1338.39	1.14880	.1423
2300.	1.0000	51.0013	.98959	1343.90	1.18549	.1347
2300.	.8000	63.8854	.99166	1345.01	1.19712	.1332
2300.	.6000	85.3591	.99374	1346.12	1.21203	.1317
2300.	.4000	128.3070	.99583	1347.23	1.23292	.1302
2300.	.2000	257.1514	.99791	1348.34	1.26843	.1286
2275.	21.0517	1.9408	.79999	1237.66	1.00224	.2613
2275.	21.0000	1.9465	.80040	1237.88	1.00242	.2612

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2275.	20.0000	2.0643	.80841	1242.19	1.00599	.2578
2275.	19.0000	2.1949	.81656	1246.61	1.00972	.2541
2275.	18.0000	2.3403	.82484	1251.12	1.01363	.2500
2275.	17.0000	2.5033	.83329	1255.74	1.01773	.2455
2275.	16.0000	2.6873	.84189	1260.46	1.02203	.2406
2275.	15.0000	2.8963	.85065	1265.27	1.02656	.2353
2275.	14.0000	3.1357	.85959	1270.18	1.03136	.2297
2275.	13.0000	3.4127	.86869	1275.18	1.03644	.2237
2275.	12.0000	3.7365	.87795	1280.26	1.04185	.2174
2275.	11.0000	4.1199	.88738	1285.43	1.04764	.2109
2275.	10.0000	4.5809	.89696	1290.68	1.05388	.2041
2275.	9.0000	5.1451	.90670	1296.00	1.06065	.1970
2275.	8.0000	5.8513	.91658	1301.38	1.06808	.1897
2275.	7.0000	6.7603	.92660	1306.83	1.07632	.1823
2275.	6.0000	7.9735	.93675	1312.34	1.08563	.1747
2275.	5.0000	9.6731	.94703	1317.89	1.09639	.1669
2275.	4.0000	12.2241	.95742	1323.50	1.10923	.1591
2275.	3.0000	16.4776	.96792	1329.14	1.12537	.1511
2275.	2.0000	24.9872	.97853	1334.82	1.14750	.1432
2275.	1.0000	50.5205	.98922	1340.53	1.18426	.1351
2275.	.8000	63.2879	.99137	1341.68	1.19590	.1335
2275.	.6000	84.5671	.99352	1342.82	1.21083	.1319
2275.	.4000	127.1259	.99568	1343.97	1.23174	.1303
2275.	.2000	254.8031	.99784	1345.12	1.26726	.1287
2250.	19.8605	2.0478	.80371	1236.30	1.00412	.2630
2250.	19.0000	2.1596	.81086	1240.19	1.00737	.2598
2250.	18.0000	2.3034	.81932	1244.80	1.01131	.2557
2250.	17.0000	2.4646	.82795	1249.53	1.01545	.2511
2250.	16.0000	2.6465	.83676	1254.37	1.01980	.2462
2250.	15.0000	2.8532	.84574	1259.32	1.02438	.2408
2250.	14.0000	3.0902	.85491	1264.37	1.02922	.2350
2250.	13.0000	3.3643	.86427	1269.52	1.03436	.2288
2250.	12.0000	3.6848	.87380	1274.77	1.03983	.2223
2250.	11.0000	4.0645	.88351	1280.10	1.04568	.2154
2250.	10.0000	4.5209	.89339	1285.52	1.05199	.2083
2250.	9.0000	5.0798	.90344	1291.02	1.05883	.2009
2250.	8.0000	5.7793	.91365	1296.60	1.06632	.1932
2250.	7.0000	6.6798	.92401	1302.24	1.07463	.1853
2250.	6.0000	7.8817	.93451	1307.94	1.08402	.1773
2250.	5.0000	9.5656	.94514	1313.69	1.09485	.1691
2250.	4.0000	12.0931	.95590	1319.50	1.10777	.1609
2250.	3.0000	16.3076	.96678	1325.34	1.12398	.1525
2250.	2.0000	24.7393	.97776	1331.23	1.14618	.1441
2250.	1.0000	50.0391	.98883	1337.15	1.18302	.1356
2250.	.8000	62.6897	.99106	1338.34	1.19468	.1339
2250.	.6000	83.7744	.99329	1339.52	1.20962	.1322
2250.	.4000	125.9441	.99552	1340.71	1.23054	.1305
2250.	.2000	252.4541	.99776	1341.90	1.26608	.1288
2225.	18.7154	2.1629	.80737	1234.95	1.00604	.2646
2225.	18.0000	2.2661	.81357	1238.34	1.00891	.2616
2225.	17.0000	2.4254	.82238	1243.18	1.01309	.2571
2225.	16.0000	2.6052	.83139	1248.15	1.01749	.2521
2225.	15.0000	2.8097	.84060	1253.23	1.02212	.2466
2225.	14.0000	3.0441	.85001	1258.43	1.02702	.2406
2225.	13.0000	3.3153	.85962	1263.73	1.03221	.2343
2225.	12.0000	3.6326	.86943	1269.15	1.03775	.2275
2225.	11.0000	4.0084	.87944	1274.66	1.04366	.2203
2225.	10.0000	4.4604	.88964	1280.26	1.05004	.2128
2225.	9.0000	5.0138	.90001	1285.95	1.05694	.2050
2225.	8.0000	5.7066	.91056	1291.72	1.06451	.1969

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2225.	7.0000	6.5986	.92127	1297.56	1.07290	.1886
2225.	6.0000	7.7892	.93214	1303.47	1.08236	.1802
2225.	5.0000	9.4574	.94315	1309.44	1.09327	.1715
2225.	4.0000	11.9615	.95430	1315.45	1.10627	.1628
2225.	3.0000	16.1369	.96556	1321.52	1.12256	.1539
2225.	2.0000	24.4906	.97694	1327.62	1.14484	.1450
2225.	1.0000	49.5570	.98843	1333.75	1.18176	.1360
2225.	.8000	62.0908	.99073	1334.98	1.19343	.1343
2225.	.6000	82.9809	.99304	1336.22	1.20839	.1325
2225.	.4000	124.7616	.99536	1337.45	1.22933	.1307
2225.	.2000	250.1044	.99768	1338.68	1.26488	.1289
2200.	17.6159	2.2867	.81100	1233.61	1.00803	.2662
2200.	17.0000	2.3858	.81657	1236.68	1.01066	.2634
2200.	16.0000	2.5635	.82578	1241.77	1.01510	.2583
2200.	15.0000	2.7657	.83521	1246.99	1.01978	.2528
2200.	14.0000	2.9975	.84487	1252.34	1.02474	.2466
2200.	13.0000	3.2658	.85475	1257.81	1.03000	.2401
2200.	12.0000	3.5798	.86484	1263.39	1.03559	.2330
2200.	11.0000	3.9518	.87516	1269.09	1.04158	.2255
2200.	10.0000	4.3992	.88568	1274.88	1.04802	.2177
2200.	9.0000	4.9471	.89639	1280.77	1.05501	.2094
2200.	8.0000	5.6333	.90730	1286.75	1.06265	.2009
2200.	7.0000	6.5167	.91839	1292.80	1.07112	.1922
2200.	6.0000	7.6959	.92964	1298.93	1.08066	.1832
2200.	5.0000	9.3485	.94105	1305.12	1.09165	.1741
2200.	4.0000	11.8290	.95260	1311.36	1.10473	.1648
2200.	3.0000	15.9654	.96428	1317.65	1.12111	.1555
2200.	2.0000	24.2412	.97608	1323.98	1.14348	.1460
2200.	1.0000	49.0740	.98799	1330.35	1.18048	.1366
2200.	.8000	61.4912	.99039	1331.62	1.19218	.1347
2200.	.6000	82.1867	.99279	1332.90	1.20715	.1328
2200.	.4000	123.5783	.99519	1334.18	1.22811	.1309
2200.	.2000	247.7539	.99759	1335.46	1.26368	.1290
2175.	16.5612	2.4202	.81460	1232.28	1.01008	.2678
2175.	16.0000	2.5214	.81991	1235.23	1.01263	.2649
2175.	15.0000	2.7212	.82957	1240.59	1.01737	.2592
2175.	14.0000	2.9503	.83947	1246.09	1.02238	.2530
2175.	13.0000	3.2157	.84962	1251.73	1.02770	.2462
2175.	12.0000	3.5263	.86001	1257.50	1.03336	.2389
2175.	11.0000	3.8944	.87064	1263.38	1.03942	.2311
2175.	10.0000	4.3373	.88150	1269.38	1.04594	.2229
2175.	9.0000	4.8798	.89258	1275.48	1.05301	.2142
2175.	8.0000	5.5591	.90386	1281.67	1.06073	.2053
2175.	7.0000	6.4340	.91534	1287.95	1.06929	.1960
2175.	6.0000	7.6019	.92700	1294.31	1.07891	.1865
2175.	5.0000	9.2387	.93882	1300.73	1.08999	.1769
2175.	4.0000	11.6957	.95081	1307.21	1.10317	.1670
2175.	3.0000	15.7931	.96293	1313.74	1.11963	.1571
2175.	2.0000	23.9910	.97517	1320.32	1.14210	.1471
2175.	1.0000	48.5903	.98754	1326.93	1.17919	.1371
2175.	.8000	60.8907	.99002	1328.25	1.19090	.1351
2175.	.6000	81.3917	.99251	1329.58	1.20589	.1331
2175.	.4000	122.3942	.99500	1330.91	1.22687	.1311
2175.	.2000	245.4026	.99750	1332.24	1.26246	.1291
2150.	15.5504	2.5643	.81818	1230.98	1.01219	.2693
2150.	15.0000	2.6761	.82365	1234.03	1.01486	.2661
2150.	14.0000	2.9026	.83381	1239.68	1.01994	.2598
2150.	13.0000	3.1650	.84423	1245.49	1.02532	.2528
2150.	12.0000	3.4722	.85493	1251.45	1.03106	.2452
2150.	11.0000	3.8364	.86588	1257.53	1.03719	.2371

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2150.	10.0000	4.2747	.87709	1263.74	1.04379	.2284
2150.	9.0000	4.8116	.88854	1270.06	1.05094	.2194
2150.	8.0000	5.4842	.90022	1276.48	1.05875	.2099
2150.	7.0000	6.3505	.91211	1283.00	1.06740	.2001
2150.	6.0000	7.5071	.92420	1289.60	1.07712	.1901
2150.	5.0000	9.1281	.93647	1296.27	1.08829	.1798
2150.	4.0000	11.5616	.94891	1303.01	1.10156	.1694
2150.	3.0000	15.6200	.96149	1309.79	1.11813	.1589
2150.	2.0000	23.7399	.97421	1316.63	1.14069	.1483
2150.	1.0000	48.1057	.98705	1323.49	1.17788	.1377
2150.	.8000	60.2894	.98963	1324.87	1.18961	.1356
2150.	.6000	80.5958	.99222	1326.25	1.20462	.1334
2150.	.4000	121.2092	.99481	1327.63	1.22562	.1313
2150.	.2000	243.0504	.99740	1329.01	1.26123	.1292
2125.	14.5829	2.7201	.82176	1229.69	1.01437	.2707
2125.	14.0000	2.8543	.82786	1233.10	1.01740	.2669
2125.	13.0000	3.1136	.83856	1239.09	1.02286	.2598
2125.	12.0000	3.4174	.84957	1245.23	1.02866	.2520
2125.	11.0000	3.7776	.86086	1251.52	1.03488	.2435
2125.	10.0000	4.2112	.87244	1257.95	1.04156	.2345
2125.	9.0000	4.7427	.88428	1264.51	1.04880	.2249
2125.	8.0000	5.4085	.89637	1271.18	1.05671	.2149
2125.	7.0000	6.2661	.90870	1277.94	1.06545	.2046
2125.	6.0000	7.4113	.92124	1284.80	1.07527	.1939
2125.	5.0000	9.0166	.93398	1291.74	1.08655	.1831
2125.	4.0000	11.4266	.94689	1298.74	1.09992	.1720
2125.	3.0000	15.4459	.95997	1305.80	1.11659	.1608
2125.	2.0000	23.4879	.97319	1312.90	1.13926	.1496
2125.	1.0000	47.6201	.98654	1320.04	1.17655	.1383
2125.	.8000	59.6871	.98922	1321.48	1.18830	.1361
2125.	.6000	79.7990	.99191	1322.91	1.20334	.1338
2125.	.4000	120.0233	.99460	1324.34	1.22435	.1316
2125.	.2000	240.6972	.99730	1325.78	1.25998	.1293
2100.	13.6577	2.8888	.82535	1228.43	1.01662	.2721
2100.	13.0000	3.0616	.83261	1232.50	1.02029	.2672
2100.	12.0000	3.3618	.84392	1238.85	1.02618	.2592
2100.	11.0000	3.7181	.85557	1245.35	1.03248	.2504
2100.	10.0000	4.1470	.86752	1252.01	1.03925	.2409
2100.	9.0000	4.6728	.87977	1258.81	1.04659	.2309
2100.	8.0000	5.3318	.89230	1265.74	1.05459	.2203
2100.	7.0000	6.1808	.90508	1272.77	1.06344	.2094
2100.	6.0000	7.3146	.91810	1279.90	1.07337	.1981
2100.	5.0000	8.9041	.93133	1287.12	1.08475	.1865
2100.	4.0000	11.2906	.94476	1294.41	1.09823	.1748
2100.	3.0000	15.2708	.95836	1301.75	1.11502	.1629
2100.	2.0000	23.2349	.97211	1309.15	1.13780	.1510
2100.	1.0000	47.1336	.98600	1316.58	1.17520	.1390
2100.	.8000	59.0838	.98879	1318.07	1.18698	.1366
2100.	.6000	79.0011	.99159	1319.56	1.20203	.1342
2100.	.4000	118.8364	.99439	1321.05	1.22307	.1318
2100.	.2000	238.3431	.99719	1322.54	1.25873	.1294
2075.	12.7740	3.0718	.82894	1227.19	1.01895	.2733
2075.	12.0000	3.3055	.83798	1232.27	1.02360	.2669
2075.	11.0000	3.6577	.84997	1239.00	1.02999	.2578
2075.	10.0000	4.0819	.86232	1245.91	1.03686	.2479
2075.	9.0000	4.6021	.87500	1252.96	1.04429	.2373
2075.	8.0000	5.2542	.88798	1260.16	1.05240	.2262
2075.	7.0000	6.0945	.90124	1267.47	1.06136	.2146
2075.	6.0000	7.2169	.91477	1274.90	1.07140	.2026
2075.	5.0000	8.7905	.92853	1282.41	1.08290	.1903

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
2075.	4.0000	11.1535	.94249	1290.00	1.09650	.1778
2075.	3.0000	15.0946	.95665	1297.65	1.11341	.1652
2075.	2.0000	22.9808	.97096	1305.35	1.13631	.1525
2075.	1.0000	46.6459	.98542	1313.09	1.17384	.1397
2075.	.8000	58.4794	.98833	1314.65	1.18564	.1372
2075.	.6000	78.2022	.99124	1316.20	1.20071	.1347
2075.	.4000	117.6484	.99416	1317.75	1.22178	.1321
2075.	.2000	235.9879	.99708	1319.31	1.25746	.1296
2050.	11.9309	3.2706	.83255	1225.97	1.02135	.2745
2050.	11.0000	3.5964	.84407	1232.46	1.02739	.2657
2050.	10.0000	4.0158	.85683	1239.62	1.03436	.2554
2050.	9.0000	4.5303	.86994	1246.94	1.04190	.2443
2050.	8.0000	5.1755	.88339	1254.42	1.05013	.2325
2050.	7.0000	6.0071	.89717	1262.04	1.05921	.2202
2050.	6.0000	7.1181	.91123	1269.77	1.06937	.2075
2050.	5.0000	8.6759	.92554	1277.60	1.08100	.1944
2050.	4.0000	11.0152	.94008	1285.51	1.09473	.1811
2050.	3.0000	14.9173	.95483	1293.49	1.11176	.1676
2050.	2.0000	22.7255	.96974	1301.52	1.13479	.1541
2050.	1.0000	46.1572	.98481	1309.59	1.17245	.1405
2050.	.8000	57.8739	.98784	1311.21	1.18427	.1378
2050.	.6000	77.4022	.99087	1312.83	1.19938	.1351
2050.	.4000	116.4593	.99391	1314.45	1.22047	.1324
2050.	.2000	233.6316	.99695	1316.07	1.25617	.1297
2025.	11.1276	3.4869	.83618	1224.78	1.02383	.2755
2025.	11.0000	3.5343	.83783	1225.72	1.02469	.2742
2025.	10.0000	3.9488	.85100	1233.13	1.03177	.2634
2025.	9.0000	4.4576	.86457	1240.74	1.03942	.2518
2025.	8.0000	5.0957	.87853	1248.53	1.04777	.2394
2025.	7.0000	5.9185	.89284	1256.46	1.05697	.2263
2025.	6.0000	7.0181	.90746	1264.52	1.06726	.2128
2025.	5.0000	8.5600	.92237	1272.69	1.07903	.1988
2025.	4.0000	10.8758	.93752	1280.94	1.09290	.1846
2025.	3.0000	14.7388	.95289	1289.27	1.11007	.1703
2025.	2.0000	22.4690	.96845	1297.65	1.13324	.1558
2025.	1.0000	45.6671	.98416	1306.07	1.17104	.1414
2025.	.8000	57.2671	.98732	1307.75	1.18289	.1385
2025.	.6000	76.6009	.99048	1309.44	1.19802	.1356
2025.	.4000	115.2689	.99365	1311.13	1.21914	.1328
2025.	.2000	231.2740	.99682	1312.82	1.25487	.1299
2000.	10.3632	3.7226	.83984	1223.62	1.02639	.2763
2000.	10.0000	3.8807	.84483	1226.44	1.02906	.2721
2000.	9.0000	4.3837	.85888	1234.35	1.03683	.2599
2000.	8.0000	5.0148	.87336	1242.45	1.04531	.2468
2000.	7.0000	5.8288	.88823	1250.72	1.05465	.2330
2000.	6.0000	6.9168	.90346	1259.13	1.06508	.2185
2000.	5.0000	8.4428	.91899	1267.66	1.07699	.2037
2000.	4.0000	10.7350	.93479	1276.28	1.09101	.1885
2000.	3.0000	14.5589	.95083	1284.98	1.10833	.1732
2000.	2.0000	22.2112	.96706	1293.73	1.13165	.1578
2000.	1.0000	45.1758	.98346	1302.52	1.16960	.1424
2000.	.8000	56.6591	.98676	1304.28	1.18148	.1393
2000.	.6000	75.7982	.99006	1306.04	1.19665	.1362
2000.	.4000	114.0772	.99337	1307.81	1.21779	.1331
2000.	.2000	228.9151	.99668	1309.57	1.25356	.1301
1975.	9.6366	3.9800	.84352	1222.48	1.02903	.2770
1975.	9.0000	4.3086	.85284	1227.74	1.03413	.2687
1975.	8.0000	4.9326	.86787	1236.18	1.04275	.2549
1975.	7.0000	5.7377	.88333	1244.81	1.05223	.2402
1975.	6.0000	6.8141	.89919	1253.59	1.06282	.2248

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
1975.	5.0000	8.3242	.91538	1262.50	1.07489	.2089
1975.	4.0000	10.5928	.93188	1271.52	1.08906	.1927
1975.	3.0000	14.3776	.94863	1280.61	1.10654	.1763
1975.	2.0000	21.9519	.96559	1289.76	1.13003	.1598
1975.	1.0000	44.6830	.98272	1298.95	1.16814	.1434
1975.	.8000	56.0495	.98617	1300.79	1.18006	.1401
1975.	.6000	74.9942	.98962	1302.63	1.19525	.1368
1975.	.4000	112.8840	.99307	1304.47	1.21643	.1335
1975.	.2000	226.5547	.99654	1306.32	1.25223	.1303
1950.	8.9469	4.2614	.84723	1221.37	1.03176	.2775
1950.	8.0000	4.8490	.86201	1229.70	1.04007	.2636
1950.	7.0000	5.6452	.87810	1238.71	1.04971	.2480
1950.	6.0000	6.7100	.89463	1247.89	1.06047	.2316
1950.	5.0000	8.2041	.91154	1257.21	1.07270	.2146
1950.	4.0000	10.4490	.92877	1266.64	1.08705	.1973
1950.	3.0000	14.1947	.94628	1276.16	1.10471	.1797
1950.	2.0000	21.6911	.96401	1285.74	1.12837	.1621
1950.	1.0000	44.1887	.98193	1295.35	1.16666	.1445
1950.	.8000	55.4385	.98554	1297.28	1.17861	.1410
1950.	.6000	74.1886	.98915	1299.20	1.19384	.1375
1950.	.4000	111.6894	.99276	1301.13	1.21505	.1340
1950.	.2000	224.1929	.99638	1303.06	1.25088	.1305
1925.	8.2932	4.5697	.85097	1220.28	1.03458	.2778
1925.	8.0000	4.7640	.85578	1222.99	1.03728	.2732
1925.	7.0000	5.5511	.87253	1232.40	1.04708	.2566
1925.	6.0000	6.6042	.88976	1242.00	1.05801	.2391
1925.	5.0000	8.0824	.90743	1251.77	1.07043	.2209
1925.	4.0000	10.3036	.92545	1261.65	1.08497	.2023
1925.	3.0000	14.0101	.94377	1271.62	1.10281	.1835
1925.	2.0000	21.4286	.96233	1281.66	1.12667	.1645
1925.	1.0000	43.6926	.98109	1291.73	1.16514	.1457
1925.	.8000	54.8257	.98486	1293.74	1.17713	.1419
1925.	.6000	73.3813	.98864	1295.76	1.19240	.1382
1925.	.4000	110.4930	.99242	1297.77	1.21365	.1345
1925.	.2000	221.8293	.99621	1299.79	1.24952	.1307
1900.	7.6745	4.9081	.85475	1219.21	1.03749	.2780
1900.	7.0000	5.4554	.86657	1225.87	1.04433	.2660
1900.	6.0000	6.4968	.88456	1235.93	1.05545	.2473
1900.	5.0000	7.9589	.90302	1246.16	1.06807	.2278
1900.	4.0000	10.1564	.92189	1256.52	1.08281	.2078
1900.	3.0000	13.8238	.94108	1266.99	1.10086	.1875
1900.	2.0000	21.1643	.96053	1277.51	1.12492	.1672
1900.	1.0000	43.1948	.98019	1288.07	1.16360	.1470
1900.	.8000	54.2112	.98414	1290.18	1.17563	.1430
1900.	.6000	72.5722	.98810	1292.29	1.19094	.1390
1900.	.4000	109.2949	.99206	1294.41	1.21223	.1350
1900.	.2000	219.4640	.99603	1296.52	1.24814	.1310
1875.	7.0897	5.2800	.85855	1218.16	1.04049	.2779
1875.	7.0000	5.3580	.86020	1219.10	1.04144	.2762
1875.	6.0000	6.3875	.87899	1229.64	1.05277	.2562
1875.	5.0000	7.8334	.89831	1240.37	1.06560	.2353
1875.	4.0000	10.0072	.91807	1251.26	1.08056	.2138
1875.	3.0000	13.6354	.93820	1262.24	1.09884	.1920
1875.	2.0000	20.8980	.95860	1273.29	1.12312	.1702
1875.	1.0000	42.6950	.97922	1284.37	1.16203	.1485
1875.	.8000	53.5947	.98337	1286.59	1.17410	.1441
1875.	.6000	71.7612	.98752	1288.81	1.18945	.1398
1875.	.4000	108.0948	.99167	1291.03	1.21079	.1356
1875.	.2000	217.0967	.99583	1293.24	1.24674	.1313
1850.	6.5378	5.6896	.86238	1217.13	1.04359	.2777

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
1850.	6.0000	6.2761	.87302	1223.11	1.04996	.2660
1850.	5.0000	7.7059	.89325	1234.39	1.06302	.2436
1850.	4.0000	9.8559	.91398	1245.83	1.07823	.2204
1850.	3.0000	13.4449	.93510	1257.38	1.09675	.1969
1850.	2.0000	20.6295	.95653	1269.00	1.12127	.1734
1850.	1.0000	42.1931	.97818	1280.64	1.16042	.1500
1850.	.8000	52.9761	.98254	1282.97	1.17254	.1454
1850.	.6000	70.9481	.98690	1285.30	1.18794	.1408
1850.	.4000	106.8926	.99126	1287.63	1.20933	.1362
1850.	.2000	214.7274	.99563	1289.96	1.24533	.1316
1825.	6.0179	6.1417	.86623	1216.12	1.04678	.2773
1825.	6.0000	6.1626	.86660	1216.33	1.04701	.2769
1825.	5.0000	7.5761	.88781	1228.19	1.06032	.2527
1825.	4.0000	9.7022	.90957	1240.23	1.07579	.2277
1825.	3.0000	13.2520	.93177	1252.39	1.09457	.2023
1825.	2.0000	20.3587	.95430	1264.62	1.11937	.1769
1825.	1.0000	41.6889	.97707	1276.87	1.15878	.1518
1825.	.8000	52.3551	.98165	1279.32	1.17095	.1468
1825.	.6000	70.1326	.98623	1281.77	1.18641	.1418
1825.	.4000	105.6881	.99081	1284.22	1.20784	.1369
1825.	.2000	212.3557	.99540	1286.66	1.24389	.1319
1800.	5.5287	6.6414	.87011	1215.11	1.05008	.2767
1800.	5.0000	7.4438	.88196	1221.75	1.05749	.2627
1800.	4.0000	9.5460	.90483	1234.44	1.07324	.2357
1800.	3.0000	13.0566	.92819	1247.26	1.09232	.2083
1800.	2.0000	20.0854	.95191	1260.15	1.11740	.1808
1800.	1.0000	41.1822	.97587	1273.05	1.15710	.1537
1800.	.8000	51.7317	.98069	1275.63	1.16933	.1483
1800.	.6000	69.3147	.98551	1278.21	1.18484	.1429
1800.	.4000	104.4812	.99034	1280.79	1.20633	.1376
1800.	.2000	209.9816	.99517	1283.36	1.24244	.1323
1775.	5.0694	7.1951	.87400	1214.12	1.05348	.2759
1775.	5.0000	7.3088	.87565	1215.04	1.05451	.2739
1775.	4.0000	9.3871	.89972	1228.44	1.07057	.2446
1775.	3.0000	12.8584	.92432	1241.97	1.08996	.2149
1775.	2.0000	19.8093	.94932	1255.58	1.11536	.1851
1775.	1.0000	40.6727	.97458	1269.19	1.15538	.1557
1775.	.8000	51.1055	.97966	1271.91	1.16767	.1499
1775.	.6000	68.4940	.98474	1274.62	1.18324	.1442
1775.	.4000	103.2715	.98982	1277.34	1.20480	.1384
1775.	.2000	207.6048	.99491	1280.05	1.24097	.1327
1750.	4.6388	7.8098	.87791	1213.13	1.05699	.2749
1750.	4.0000	9.2251	.89419	1222.20	1.06776	.2545
1750.	3.0000	12.6571	.92015	1236.51	1.08750	.2222
1750.	2.0000	19.5301	.94653	1250.89	1.11325	.1899
1750.	1.0000	40.1602	.97319	1265.27	1.15361	.1581
1750.	.8000	50.4764	.97854	1268.13	1.16597	.1518
1750.	.6000	67.6704	.98390	1271.00	1.18161	.1455
1750.	.4000	102.0589	.98926	1273.87	1.20324	.1393
1750.	.2000	205.2250	.99463	1276.73	1.23947	.1331
1725.	4.2359	8.4937	.88183	1212.15	1.06060	.2737
1725.	4.0000	9.0597	.88821	1215.71	1.06480	.2654
1725.	3.0000	12.4525	.91563	1230.86	1.08493	.2302
1725.	2.0000	19.2476	.94352	1246.08	1.11106	.1951
1725.	1.0000	39.6445	.97169	1261.28	1.15180	.1606
1725.	.8000	49.8440	.97734	1264.32	1.16424	.1538
1725.	.6000	66.8436	.98300	1267.34	1.17995	.1470
1725.	.4000	100.8430	.98866	1270.37	1.20165	.1403
1725.	.2000	202.8420	.99433	1273.39	1.23795	.1336
1700.	3.8596	9.2563	.88576	1211.17	1.06433	.2723

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
1700.	3.0000	12.2441	.91073	1224.99	1.08223	.2393
1700.	2.0000	18.9614	.94025	1241.13	1.10879	.2009
1700.	1.0000	39.1251	.97006	1257.23	1.14994	.1634
1700.	.8000	49.2080	.97604	1260.44	1.16245	.1560
1700.	.6000	66.0132	.98203	1263.65	1.17825	.1487
1700.	.4000	99.6237	.98802	1266.85	1.20002	.1414
1700.	.2000	200.4556	.99401	1270.04	1.23641	.1342
1675.	3.5088	10.1085	.88969	1210.18	1.06816	.2708
1675.	3.0000	12.0317	.90541	1218.89	1.07939	.2493
1675.	2.0000	18.6712	.93670	1236.03	1.10641	.2074
1675.	1.0000	38.6019	.96829	1253.11	1.14802	.1665
1675.	.8000	48.5682	.97463	1256.51	1.16062	.1585
1675.	.6000	65.1789	.98097	1259.91	1.17651	.1505
1675.	.4000	98.4004	.98731	1263.30	1.19837	.1426
1675.	.2000	198.0653	.99366	1266.68	1.23485	.1348
1650.	3.1824	11.0631	.89361	1209.19	1.07212	.2690
1650.	3.0000	11.8147	.89962	1212.52	1.07639	.2606
1650.	2.0000	18.3765	.93284	1230.75	1.10392	.2147
1650.	1.0000	38.0743	.96638	1248.91	1.14603	.1700
1650.	.8000	47.9240	.97310	1252.52	1.15874	.1612
1650.	.6000	64.3403	.97982	1256.12	1.17472	.1526
1650.	.4000	97.1730	.98655	1259.72	1.19668	.1440
1650.	.2000	195.6708	.99328	1263.30	1.23325	.1354
1625.	2.8795	12.1351	.89752	1208.19	1.07619	.2671
1625.	2.0000	18.0768	.92863	1225.29	1.10132	.2228
1625.	1.0000	37.5419	.96429	1244.61	1.14398	.1738
1625.	.8000	47.2750	.97143	1248.45	1.15680	.1643
1625.	.6000	63.4970	.97858	1252.28	1.17289	.1548
1625.	.4000	95.9408	.98572	1256.10	1.19496	.1455
1625.	.2000	193.2717	.99286	1259.91	1.23164	.1362
1600.	2.5988	13.3420	.90142	1207.18	1.08039	.2651
1600.	2.0000	17.7716	.92404	1219.61	1.09857	.2319
1600.	1.0000	37.0042	.96201	1240.21	1.14186	.1781
1600.	.8000	46.6209	.96962	1244.30	1.15480	.1677
1600.	.6000	62.6486	.97722	1248.38	1.17101	.1573
1600.	.4000	94.7036	.98482	1252.44	1.19319	.1471
1600.	.2000	190.8675	.99241	1256.49	1.22999	.1370
1575.	2.3394	14.7043	.90530	1206.15	1.08471	.2629
1575.	2.0000	17.4604	.91900	1213.68	1.09568	.2422
1575.	1.0000	36.4606	.95953	1235.70	1.13966	.1830
1575.	.8000	45.9609	.96764	1240.06	1.15273	.1715
1575.	.6000	61.7944	.97574	1244.41	1.16907	.1602
1575.	.4000	93.4606	.98384	1248.74	1.19139	.1490
1575.	.2000	188.4577	.99192	1253.06	1.22831	.1379
1550.	2.1003	16.2463	.90915	1205.10	1.08917	.2605
1550.	2.0000	17.1422	.91348	1207.49	1.09262	.2538
1550.	1.0000	35.9106	.95681	1231.06	1.13736	.1884
1550.	.8000	45.2945	.96547	1235.72	1.15058	.1758
1550.	.6000	60.9338	.97412	1240.37	1.16707	.1633
1550.	.4000	92.2114	.98276	1244.99	1.18953	.1510
1550.	.2000	186.0416	.99139	1249.60	1.22660	.1389
1525.	1.8803	17.9965	.91296	1204.03	1.09375	.2580
1525.	1.0000	35.3532	.95383	1226.27	1.13497	.1945
1525.	.8000	44.6209	.96309	1231.27	1.14835	.1806
1525.	.6000	60.0661	.97235	1236.24	1.16500	.1669
1525.	.4000	90.9551	.98158	1241.19	1.18763	.1534
1525.	.2000	183.6187	.99080	1246.11	1.22485	.1401
1500.	1.6785	19.9890	.91674	1202.94	1.09847	.2554
1500.	1.0000	34.7878	.95054	1221.33	1.13246	.2014
1500.	.8000	43.9393	.96048	1226.69	1.14603	.1860

TABLE 12

THERMODYNAMIC PROPERTIES OF POTASSIUM VAPOR (continued)
(Monomer Gas Base)

t	p	v^g	z	h^g	s^g	c_p^g
1500.	.6000	59.1906	.97040	1232.02	1.16286	.1708
1500.	.4000	89.6912	.98029	1237.32	1.18567	.1560
1500.	.2000	181.1882	.99016	1242.59	1.22307	.1414
1475.	1.4938	22.2642	.92047	1201.81	1.10334	.2527
1475.	1.0000	34.2132	.94692	1216.20	1.12982	.2092
1475.	.8000	43.2487	.95760	1221.96	1.14360	.1921
1475.	.6000	58.3063	.96825	1227.69	1.16064	.1753
1475.	.4000	88.4185	.97887	1233.39	1.18364	.1589
1475.	.2000	178.7491	.98945	1239.04	1.22124	.1428
1450.	1.3252	24.8705	.92415	1200.66	1.10834	.2498
1450.	1.0000	33.6284	.94292	1210.86	1.12705	.2181
1450.	.8000	42.5481	.95442	1217.08	1.14106	.1990
1450.	.6000	57.4121	.96588	1223.25	1.15833	.1804
1450.	.4000	87.1363	.97730	1229.37	1.18156	.1622
1450.	.2000	176.3006	.98868	1235.45	1.21938	.1444
1425.	1.1719	27.8660	.92778	1199.47	1.11350	.2469
1425.	1.0000	33.0320	.93849	1205.28	1.12411	.2282
1425.	.8000	41.8362	.95090	1212.00	1.13839	.2070
1425.	.6000	56.5068	.96326	1218.67	1.15591	.1862
1425.	.4000	85.8431	.97557	1225.27	1.17939	.1660
1425.	.2000	173.8415	.98782	1231.82	1.21746	.1463
1400.	1.0327	31.3207	.93135	1198.24	1.11882	.2438
1400.	1.0000	32.4225	.93355	1199.44	1.12099	.2399
1400.	.8000	41.1115	.94699	1206.72	1.13556	.2160
1400.	.6000	55.5890	.96036	1213.93	1.15338	.1928
1400.	.4000	84.5378	.97365	1221.07	1.17715	.1703
1400.	.2000	171.3704	.98687	1228.14	1.21549	.1483