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# THE THERMODYNAMIC PROPERTIES OF OXYGEN AND NITROGEN

## PART II - THERMODYNAMIC PROPERTIES OF OXYGEN FROM 100 R TO 600 R WITH PRESSURES TO 5000 PSIA.

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COLLEGE OF ENGINEERING  
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THE THERMODYNAMIC PROPERTIES OF  
OXYGEN AND NITROGEN

PART II - THERMODYNAMIC PROPERTIES  
OF OXYGEN FROM 100 R TO 600 R  
WITH PRESSURES TO 5000 PSIA.

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Systems Management Branch  
Houston, Texas 77058

ABSTRACT  
(PART II)

An equation of state,  $P = P(\rho, T)$ , is presented for liquid and gaseous oxygen for temperatures from 100 R to 600 R and pressures to 5000 psia. The Pressure-Density-Temperature (P- $\rho$ -T) data available from the published literature have been reviewed, and appropriate corrections have been applied to bring experimental temperatures into accord with the International Practical Temperature Scale of 1968. Representative comparisons of property values calculated from the equation of state to measured values are included to illustrate the accuracy of the equation of state. The coefficients of the equation of state were determined by a weighted least squares fit to selected published P- $\rho$ -T data, and simultaneously to isochoric heat capacity data, and to data which define the phase equilibrium for the saturated liquid and saturated vapor.

A vapor pressure equation and an equation to represent the ideal gas heat capacity are also presented. Comparisons are included of selected velocity of sound data to values calculated from the equation of state, using as appropriate, the ideal gas heat capacity equation and the vapor pressure equation. Comparisons of the isochoric heat capacity data used in the determination of the equation of state are given.

The equation of state is estimated to be accurate for the liquid to within 0.1 percent in density, to within 0.2 percent for the vapor below the critical temperature and for states above the critical temperatures to 250 K, and within 0.1 percent for supercritical states at temperatures from 250 K to 300 K. The vapor pressure equation is accurate to within  $\pm 0.01$  K between the triple point and the critical point. Tables of calculated thermodynamic properties of oxygen are presented including values of temperature, density, internal energy, enthalpy, entropy, specific heat at constant volume, specific heat at constant pressure, the isotherm derivative, the isochore derivative, and velocity of sound along selected isobars. A table of the thermodynamic properties of oxygen at saturation and additional tables of functions for heat transfer calculations are also included.

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## INTRODUCTION\*

The Consumables Analysis Section of the Systems Management Branch at the NASA-Manned Spacecraft Center has used the equation of state developed by Stewart<sup>1\*\*</sup> in three of its system computer models. The oxygen equation of state by Stewart has also been used extensively by the NASA Computational Fluid Dynamics Branch.<sup>2</sup> Although the more recent thermodynamic property tables published by the National Bureau of Standards, Cryogenics Division<sup>3</sup> were considered to be more accurate than the values by Stewart, the thermodynamic property calculation procedure used by Stewart was better suited for computer applications in thermodynamic modeling and simulation. A comparison of the NBS tables and the tables published by Stewart also indicated that the differences in these property tables could be considered negligible in the applications for which they were used.

In the Apollo program, the equation of state and the isotherm derivative,  $(\partial P/\partial \rho)_T$ , are the most useful functions employed in both the pre-mission and mission support activities. However, in Skylab analyses the vapor pressure and heat capacity values are also necessary to accurately account for venting rates.

In addition, advanced NASA programs, including Skylab and Space Shuttle, will employ a two gas (i.e., oxygen-nitrogen) atmosphere. It was fortuitous that a research group at the University of Idaho under the direction of R.B. Stewart<sup>4 5 6 7</sup> had been working since July, 1969, on a new formulation for thermodynamic property tables for nitrogen, and was using an equation of state for nitrogen similar to the earlier equation for oxygen

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\*This final report on Contract NAS 9-12078 with the NASA-Manned Spacecraft Center, Systems Management Branch, is issued in two parts, as follows:

Part I - Thermodynamic Properties of Nitrogen from 115 R to 3500 R with Pressures to 150,000 Psia.

Part II- Thermodynamic Properties of Oxygen from 100 R to 600 R with Pressures to 5000 Psia.

This introduction is included in both Parts I and II.

\*\*Numerical superscripts refer to references at the end of this Introduction.



by Stewart<sup>1</sup>. It was, therefore, considered that the continuation of the nitrogen thermodynamic property studies at the University of Idaho, and a review and revision of the earlier work on the properties of oxygen by R.B. Stewart and his colleagues would be of benefit to the NASA programs.

On July 1, 1971, this study was initiated with the objectives to (1) improve and extend the range of the equation of state for oxygen (as reported by Stewart<sup>1</sup>), (2) to develop a single equation of state for both nitrogen and oxygen, and (3) to develop computer programs incorporating these new equations to be used in all of the NASA space programs.

During the course of the work on the contract with NASA-MSC, three Progress Reports have been issued, as follows:

1. *An Equation of State for Oxygen and Nitrogen*, R.B. Stewart, R.T. Jacobsen, and A.F. Myers, University of Idaho, Engineering Experiment Station, Research Report, No. 13 (Oct. 1, 1971).
2. *An Equation of State for Oxygen and Nitrogen II*, R.B. Stewart, R.T. Jacobsen, and A.F. Myers, University of Idaho, Engineering Experiment Station, Progress Report (Jan. 1, 1972).
3. *Thermodynamic Properties of Oxygen and Nitrogen III*, R.B. Stewart, R.T. Jacobsen, and A.F. Myers, University of Idaho, Engineering Experiment Station, Progress Report (April 1, 1972).

In addition, the project has benefited from the preparation of a Ph.D. thesis,

R.T. Jacobsen, *The Thermodynamic Properties of Nitrogen from 65 K to 2000 K with Pressures to 10,000 Atm.*, Ph.D. Thesis, Washington State University (June 1972).

Dr. Jacobsen was employed part time on this project, but had a deeper commitment to the work since it paralleled the research which was the basis for his thesis. As a consequence, Dr. Jacobsen worked countless hours on this study beyond his commitments to the project, and the results of his efforts have been incorporated as a part of this project. Copies of Dr. Jacobsen's thesis were also distributed to the NASA Technical Monitor and all others on the distribution list for the Quarterly Progress Reports. The association of Dr. Jacobsen's Ph.D. research also brought Dr. Richard W. Crain, Jr., Associate Professor of Mechanical Engineering at Washington State University, in regular contact with the authors of this report during the course of the studies, and his interest and many suggestions are gratefully acknowledged.

This project is a part of a series of related thermodynamic property studies and contributions of several other studies have contributed to this work. Many of the developments reported here were made as a part of these related studies.

Computer programs for the calculation of the thermodynamic properties, as given in the accompanying thermodynamic property tables, have been supplied separately to the NASA Technical Monitor. These programs provide for the calculation of property values with either pressure and temperature or density and temperature as the input arguments.

The units used for all equations presented here are generally the units for which the majority of the data are published. The tables of thermodynamic properties are in engineering units, as required by the sponsor. The computer programs supplied separately to the NASA Technical Monitor include conversions to calculate thermodynamic properties in engineering units. The following conversion factors may be used for conversions between these two unit systems. These values have been taken or derived from,

*The International System of Units*, E.A. Mechtly, National Aeronautics and Space Administration Report Number SP-7012 (1969).

#### CONVERSION FACTORS

Temperature	1.8 R = 1 K
Pressure	14.6959 psia = 1 atm
	$1.01325 \times 10^5 \text{ N/m}^2 = 1 \text{ atm}$
	$6.89476 \times 10^3 \text{ N/m}^2 = 1 \text{ psia}$
Density	0.0624280 lbm/ft <sup>3</sup> = 1 g/liter
Energy	101.3278 joules = 1 liter-atm
	1054.350264488 joules = 1 Btu (thermochemical)
Mass	453.59237 gm = 1 lb
Velocity of Sound	3.280839 ft/sec = 1 m/sec

#### MOLECULAR WEIGHTS

Oxygen	31.9988
Nitrogen	28.0134

## UNIVERSAL GAS CONSTANT

$$R = 8.31434 \text{ joules/g mol-K} = 0.0820539 \text{ liter-atm/g mol-K}$$

$$= 1545.2546 \text{ ft-lbs/lb mol-R}$$

## CRITICAL POINT VALUES

## Oxygen:

$$T_c = 154.581 \text{ K} = 278.246 \text{ R}$$

$$P_c = 49.77 \text{ atm} = 731.417 \text{ psia}$$

$$\rho_c = 13.63 \text{ mol/l} = 27.227 \text{ lbm/ft}^3$$

## Nitrogen:

$$T_c = 126.20 \text{ K} = 227.16 \text{ R}$$

$$P_c = 33.555 \text{ atm} = 493.123 \text{ psia}$$

$$\rho_c = 11.21 \text{ mol/l} = 19.604 \text{ lbm/ft}^3$$

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<sup>1</sup>Stewart, R.B., *Thermodynamic Properties of Oxygen*, Ph.D. Thesis, University of Iowa (1956).

<sup>2</sup>NASA - Computational Fluid Dynamics Branch, Ames Research Center, *Convection in the Tanks of a Rotating Spacecraft*, NASA Technical Report, TR R-386 (June 1972).

<sup>3</sup>Weber, L.A., *Thermodynamic and Related Properties of Oxygen from the Triple Point to 300 K at Pressures to 330 Atmospheres*, NBS Report 9710 (June 20, 1968).

<sup>4</sup>Coleman, T.C., *The Thermodynamic Properties of Nitrogen*, Ph.D. Thesis, Worcester Polytechnic Institute (1971).

<sup>5</sup>Coleman, T.C. and R.B. Stewart, *The Thermodynamic Properties of Nitrogen*, University of Idaho, Engineering Experiment Station, Research Report No. 11 (Sept. 1, 1970).

<sup>6</sup>Coleman, T.C. and R.B. Stewart, *Thermodynamic Properties of Nitrogen from 70 K to 1000 K with Pressures to 1000 Atm.*, paper presented to the XIII International Congress of Refrigeration, Washington, D.C., (Sept. 1971).

<sup>7</sup>R.B. Stewart and R.T. Jacobsen, *The Thermodynamic Properties of Nitrogen II*, University of Idaho, Engineering Experiment Station, Research Report No. 12 (Sept. 1, 1971).

## 1. DATA USED FOR DETERMINING THE EQUATION OF STATE

### P- $\rho$ -T

The P- $\rho$ -T data selected for the determination of the equation of state for oxygen are the measurements reported by Michels, Schamp, and De Graaff [1]\*, Nijhoff and Keesom [2], and Weber [3]. A review of [28], and of the literature published subsequent to the compilation of [28] indicated that P- $\rho$ -T measurements by other experimenters are all within the ranges covered by selected data, and are less accurate. The range of values for these three data sets is listed in Table 1.

### Isochoric Heat Capacity

The measurements of  $C_v$  by Goodwin and Weber [7] were used in the least squares fit of the equation of state. The range of values for these data is listed in Table 1.

### Critical Point Parameters

The selected values of the critical point pressure and temperature are 49.77 atmospheres and 154.581 K. These values were taken from [3], and the temperature corrected to the IPTS-68 Temperature Scale. (The temperature reported in [3] is 154.576 K which is based on the IPTS-48 Temperature Scale.) The critical point density was determined as 13.63 moles/liter by the method of rectilinear diameters using values of saturated liquid and saturated vapor density calculated by simultaneous solution of the vapor pressure equation and an equation of state determined by a least squares fit to the appropriate data from [3].

### Saturated Liquid and Saturated Vapor Densities

The values of saturated liquid density and saturated vapor density near the critical point by Weber [4] were used in the least squares fit of the

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\*Numbers in brackets refer to citations in the bibliography.

equation of state. These data were supplemented for temperatures from the triple point to 150 K by values of saturated liquid and saturated vapor density calculated from the simultaneous solution of the vapor pressure equation and separate interim equations of state for the liquid and for the vapor determined by least squares fits to the appropriate P- $\rho$ -T data from [3].

TABLE 1

SUMMARY OF DATA FOR OXYGEN SELECTED FOR THE DETERMINATION OF THE EQUATION OF STATE			
Source	Temperature Range (K)	Pressure Range (atm)	Number of Data Points
P- $\rho$ -T Data			
Michels et al [1]	273 - 323	22 - 135	40
Nijhoff and Keesom [2]	120 - 233	3 - 10	43
Weber [3]	56 - 300	0.5 - 360	1482
Saturated Liquid and Saturated Vapor Density Data			
Weber [4]	150.000 - 154.566		20
$C_v$ Data			
Goodwin and Weber [7]	56 - 283	3.5 - 346	159

## 2. PREPARATION OF DATA FOR USE IN THE LEAST SQUARES FITTING OF THE EQUATION OF STATE

### P-ρ-T Data

Weights for the P-ρ-T data used in the least squares fit in the calculation of the coefficients of the equation of state were determined using root mean square (rms) deviations in pressure as defined by equation (1) along isotherms.

$$\text{rms} = \frac{[\sum(P_{\text{calc}} - P_{\text{data}})/P_{\text{data}}]^{1/2}}{N} \quad (1)$$

where  $P_{\text{calc}}$  is the pressure calculated from the appropriate liquid or vapor equation of state,  $P_{\text{data}}$  is the experimental pressure, and  $N$  is the number of data points on the isotherm or isochore. The values of  $P$  were determined from separate fits of an interim equation of state to selected data in the liquid and vapor regions. The weight applied to each data point was calculated from

$$\text{WT} = \frac{1}{(\text{rms} \times P_{\text{data}})} \quad (2a)$$

### $C_v$ and Saturation Density Data

The weights applied to the isochoric heat capacity data, and to the saturation data used in fitting phase equilibrium criteria were arbitrary, and were specified to make the effects of each of the data points compatible with P-ρ-T points in the same region of temperature and pressure. The weight applied to each  $C_v$  data point was

$$\text{WT} = 10,000/(C_v)^2. \quad (2b)$$

The weights applied to saturation data used to define the phase equilibrium criteria were

$$WT = 100/(P + 0.01).$$

(2c)

#### Temperature Scale Corrections

The data sets used in this investigation span the period of the evolution of several interim uniform temperature scales to the International Practical Temperature Scale of 1968 (IPTS-68) adopted by the *Comité International des Poids et Mesures (CIPM)* in October of 1968 [23]. Temperature scale corrections were applied to all experimental data to correct all data temperatures to the IPTS-68 scale as specified in [16], [17], [20], [21], and [22].

### 3. THE DETERMINATION OF THE EQUATION OF STATE

The equation of state for oxygen, given as equation (3) below, is the same functional form as that used for nitrogen in Part I of this report. This equation was developed by a stepwise multiple regression analysis for the determination of an equation of state with 32 adjustable coefficients. Part I of this report summarizes the procedures used in this analysis, which was taken from the work by Rose [27].

#### Simultaneous Fitting

To incorporate related thermodynamic data with the P- $\rho$ -T data in the determination of the equation of state, procedures were developed for including values of  $C_V$  and the criteria for phase equilibrium between saturated liquid and saturated vapor points in a simultaneous least squares fitting technique. The use of the criteria for phase equilibrium in the least squares fit of the equation of state was suggested by Bender [18]. These procedures are described in Part I of this report.

The  $C_V$  data from Goodwin and Weber [7] were used in the determination of the coefficients for the equation of state. The saturated liquid and saturated vapor densities used to establish the phase equilibrium criteria were taken from [4] for the range from 150 K to the critical point. From the triple point to 150 K values were calculated on 2 K intervals by simultaneous solution of the vapor pressure equation and an interim equation of state.

The coefficients for the equation of state (3), given in Table 2, were determined by a weighted least squares fit using the criteria outlined in Part I for simultaneous fitting. The equation of state was constrained to the critical point data given below using the procedure suggested by McCarty [24].

#### CONSTRAINTS IMPOSED ON THE EQUATION OF STATE

Constraint	Numerical Value
Pressure at the critical point	$P_C = 49.77 \text{ atm}$
Density at the critical point	$\rho_C = 13.63 \text{ moles/liter}$
Temperature at the critical point	$T_C = 154.581 \text{ K}$
Isotherm derivative at the critical point	$(\partial P / \partial \rho)_T = 0$
Second derivative of pressure with respect to density at the critical point	$(\partial^2 P / \partial^2 \rho)_T = 0$



$$\begin{aligned}
P = & \rho RT + \rho^2(N_1 T + N_2 T^1/2 + N_3 + N_4/T + N_5/T^2) \\
& + \rho^3(N_6 T + N_7 + N_8/T + N_9/T^2) \\
& + \rho^4(N_{10} T + N_{11} + N_{12}/T) + \rho^5(N_{13}) \\
& + \rho^6(N_{14}/T + N_{15}/T^2) + \rho^7(N_{16}/T) \\
& + \rho^8(N_{17}/T + N_{18}/T^2) + \rho^9(N_{19}/T^2) \\
& + \rho^3(N_{20}/T^2 + N_{21}/T^3) \exp(-\gamma\rho^2) \\
& + \rho^5(N_{22}/T^2 + N_{23}/T^4) \exp(-\gamma\rho^2) \\
& + \rho^7(N_{24}/T^2 + N_{25}/T^3) \exp(-\gamma\rho^2) \\
& + \rho^9(N_{26}/T^2 + N_{27}/T^4) \exp(-\gamma\rho^2) \\
& + \rho^{11}(N_{28}/T^2 + N_{29}/T^3) \exp(-\gamma\rho^2) \\
& + \rho^{13}(N_{30}/T^2 + N_{31}/T^3 + N_{32}/T^4) \exp(-\gamma\rho^2)
\end{aligned} \tag{3}$$

TABLE 2  
COEFFICIENTS FOR THE EQUATION OF STATE (3) FOR OXYGEN

Coefficient	Numerical Value	Coefficient	Numerical Value
$N_1$	$-0.430904539116151 \times 10^{-2}$	$N_{17}$	$0.996438361098119 \times 10^{-7}$
$N_2$	$0.352017371210142$	$N_{18}$	$0.624681098557646 \times 10^{-4}$
$N_3$	$-0.583622146387697 \times 10^{-1}$	$N_{19}$	$-0.731698500361039 \times 10^{-6}$
$N_4$	$0.243509085365005 \times 10^{-3}$	$N_{20}$	$0.117348522089476 \times 10^{-4}$
$N_5$	$-0.124636118754359 \times 10^{-5}$	$N_{21}$	$-0.398781039076253 \times 10^{-6}$
$N_6$	$0.120808823909537 \times 10^{-3}$	$N_{22}$	$-0.166821139899919 \times 10^{-2}$
$N_7$	$-0.550317003134128 \times 10^{-1}$	$N_{23}$	$0.109498608452644 \times 10^{-6}$
$N_8$	$-0.107757858055132 \times 10^{-3}$	$N_{24}$	$-0.178433458562360 \times 10^{-1}$
$N_9$	$0.278535713206315 \times 10^{-4}$	$N_{25}$	$0.187525619791366 \times 10^{-1}$
$N_{10}$	$-0.704063168225340 \times 10^{-5}$	$N_{26}$	$-0.941017857952665 \times 10^{-4}$
$N_{11}$	$0.734267224770646 \times 10^{-2}$	$N_{27}$	$-0.575396819330284$
$N_{12}$	$-0.593869823298574$	$N_{28}$	$-0.207155723961989 \times 10^{-7}$
$N_{13}$	$-0.636168419089612 \times 10^{-4}$	$N_{29}$	$0.157471345490601 \times 10^{-4}$
$N_{14}$	$0.330340156388619 \times 10^{-3}$	$N_{30}$	$-0.107579209254507 \times 10^{-9}$
$N_{15}$	$-0.857692988384297 \times 10^{-1}$	$N_{31}$	$-0.700238600921750 \times 10^{-8}$
$N_{16}$	$-0.754619159849318 \times 10^{-5}$	$N_{32}$	$0.343548518746171 \times 10^{-7}$

$$\gamma = 0.0056; \quad R = 0.0820539 \text{ liter-atm/mole-K}$$

\*Coefficients are for temperature in degrees Kelvin, pressure in atmospheres, and density in moles/liter.

#### 4. COMPARISONS OF THE P- $\rho$ -T DATA TO THE EQUATION OF STATE

Figures 1, 2, 3, 4, and 5 illustrate the accuracy of the equation of state (3) in representing the P- $\rho$ -T data selected for the determination of the coefficients for the equation of state. These comparisons are of the percent density deviation  $[(\rho_{\text{exp}} - \rho_{\text{calc}})/\rho_{\text{exp}}] \times 100$ , along approximate isotherms for data used in the determination of the coefficients in Table 2. The quantity  $\rho_{\text{exp}}$  represents the observed density reported by the experimenter at a particular temperature and pressure, and  $\rho_{\text{calc}}$  is the density calculated from equation (3) for each experimental temperature and pressure. In addition to the data illustrated in these figures, the density deviations for a few data points exceed the percent density deviation scales used in Figures 1 through 5. Table 3 is a listing of these data including the density deviation of each point.

The equation of state generally shows agreement with the P- $\rho$ -T data within the experimental uncertainty of the measured values. However, the deviations in the immediate vicinity of the critical point (see Figure 4) may exceed the uncertainties of the measurements. This is a difficult region for precise experimental measurements, and a difficult region for fitting the equation of state. Systematic deviations between the equation and the data are present for isotherms above the critical temperature, and extending to at least 250 K (see Figure 5). The magnitude of these systematic deviations is small, and comparisons between the derived thermodynamic properties calculated by the equation of state with smooth tables of thermodynamic properties given by McCarty and Weber [25] do not reflect any significant differences due to these systematic deviations in density.

Table 4 lists the root mean square deviations in pressure and in density for the three P- $\rho$ -T data sets used in the determination of the equation of state (3).

17

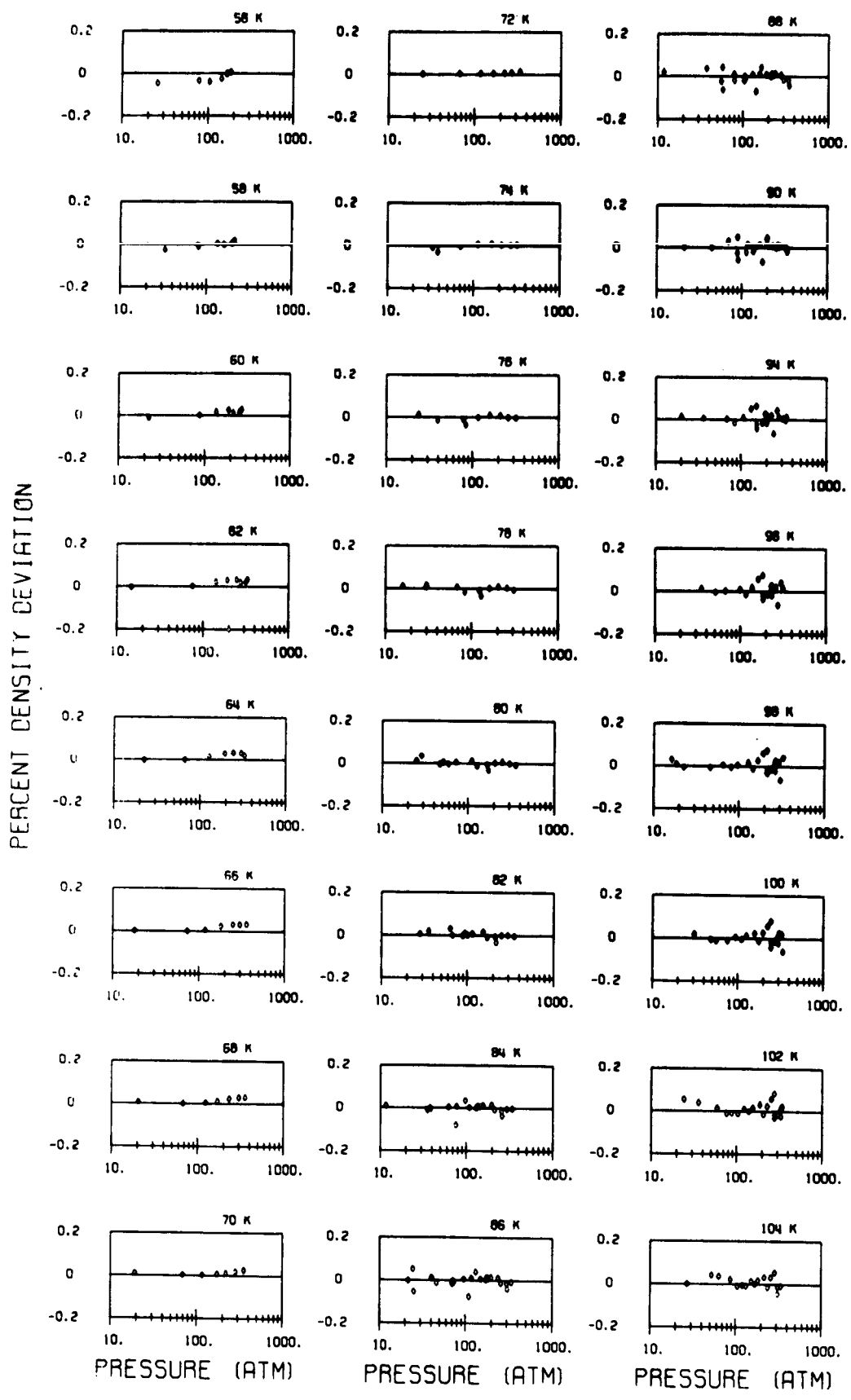


Fig. 1. Deviations in Density of Equation (3) from the P- $\rho$ -T Data for the Liquid from Weber [3].

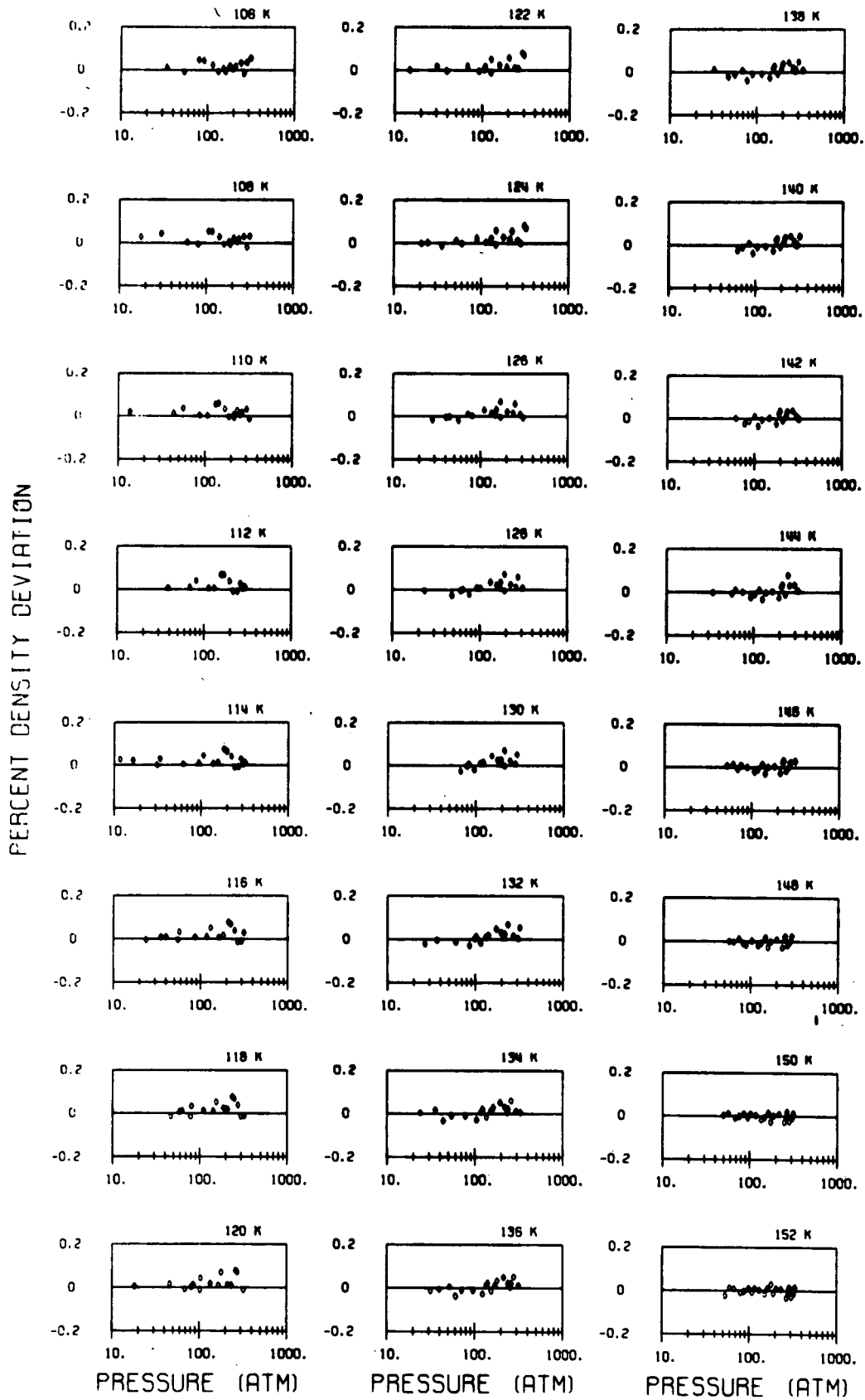


Fig. 1. (continued) Deviations in Density of Equation (3) from the P- $\rho$ -T Data for the Liquid from Weber [3].

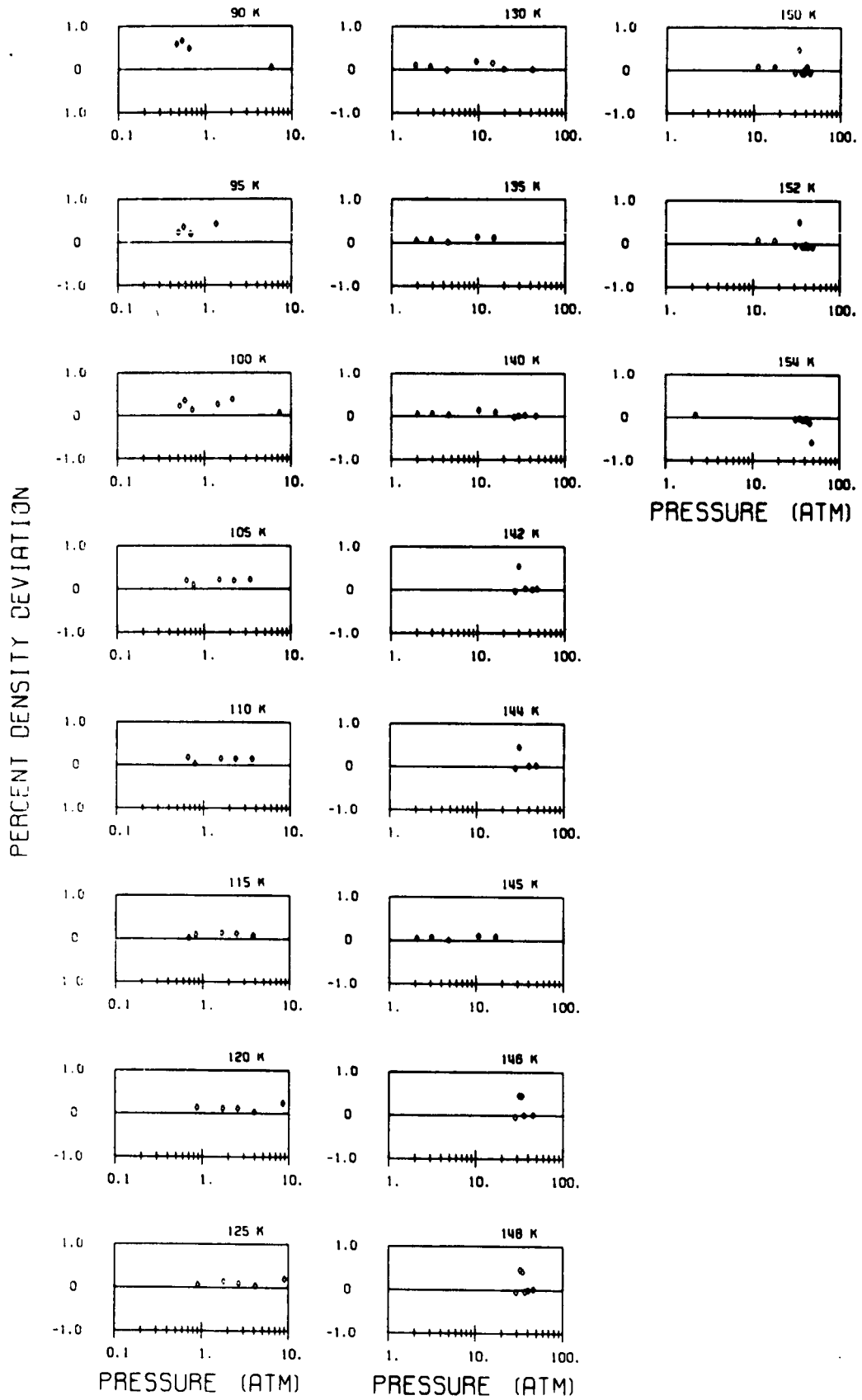


Fig. 2. Deviations in Density of Equation (3) from the P- $\rho$ -T Data for Vapor at Temperatures Below the Critical Temperature from Weber [3].

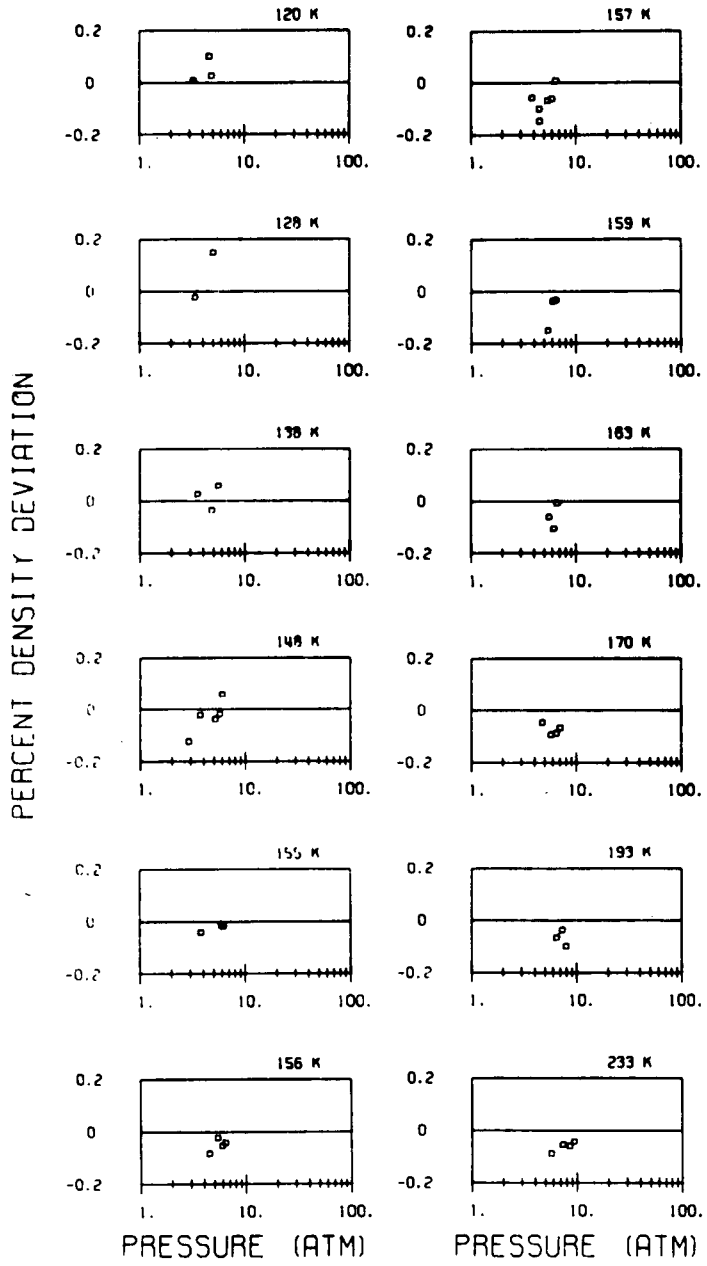


Fig. 3. Deviations in Density of Equation (3) from the P-V-T Data for the Low Temperature Vapor from Nijhoff and Keesom [2].

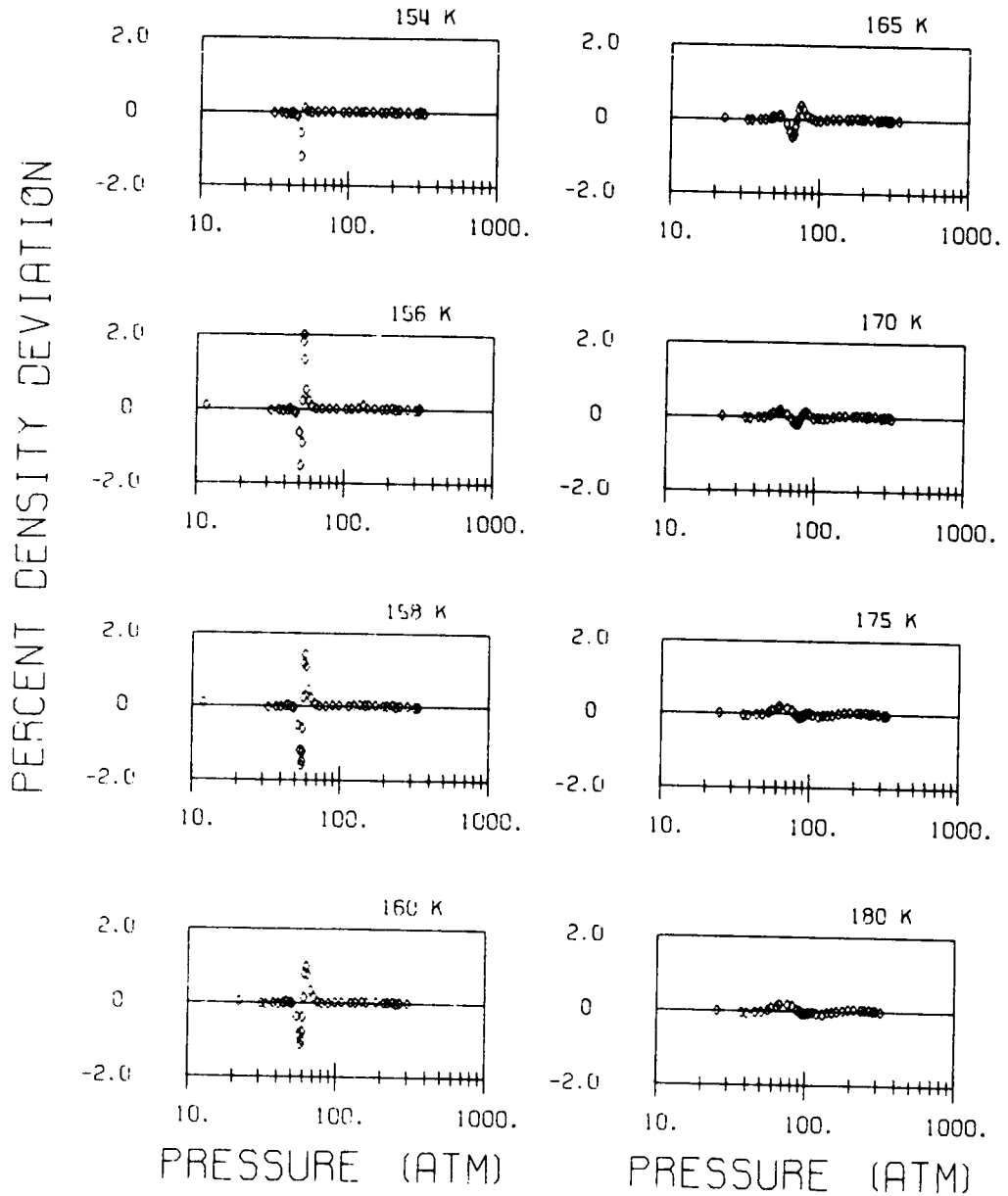


Fig. 4. Deviations in Density of Equation (3) from the P- $\rho$ -T Data Near the Critical Point from Weber [3]. (The data illustrated for 154 K in Figure 2, and for 170 K, 175 K, and 18 K in Figure 5 are repeated in this figure.)

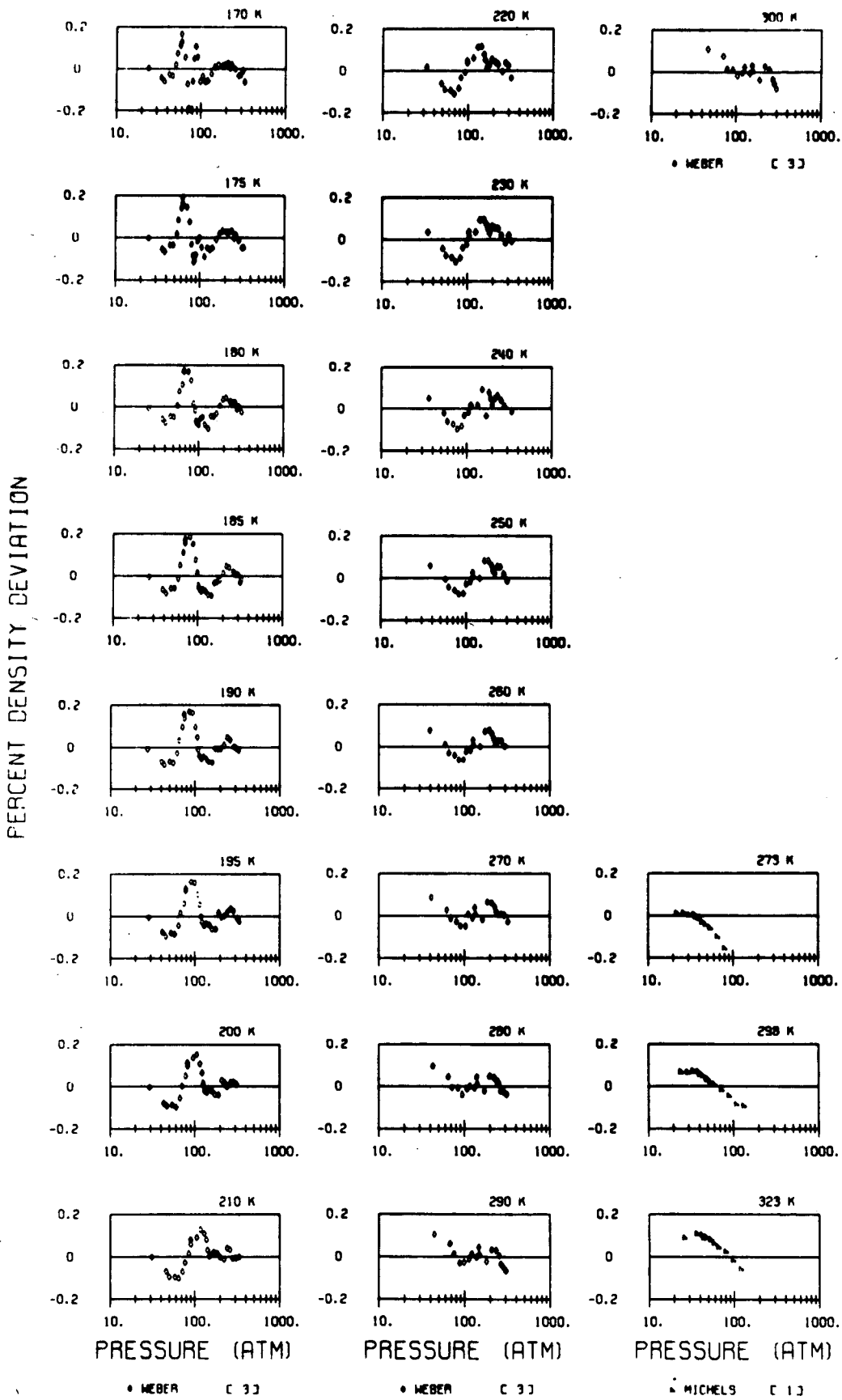


Fig. 5. Deviations in Density of Equation (3) from the P- $\rho$ -T Data at Temperatures from 170 K to 300 K from Weber [3] and at Temperatures of 273 K, 298 K, and 323 K from Michels, Schamp, and De Graaff [1].



TABLE 3

P- $\rho$ -T DATA WITH DENSITY DEVIATIONS IN EXCESS OF THE  
SCALE USED IN FIGURES 1 THROUGH 5.

Figure Number	Temperature (K)	Pressure (atm)	Density Deviation (percent)	Reference
2	154.004	48.542	-1.219	[3]
4	156.006	52.293	-2.300	[3]
4	156.006	52.184	-2.521	[3]
4	156.006	51.910	-2.419	[3]
5	170.020	75.127	-2.212	[3]
5	170.020	77.923	-0.203	[3]
5	273.150	98.417	-0.214	[1]
5	273.150	119.466	-0.217	[1]

TABLE 4

ROOT MEAN SQUARE DEVIATIONS IN DENSITY AND PRESSURE OF P- $\rho$ -T DATA  
FROM THE EQUATION OF STATE

Source	RMS Deviation in Density (percent)	RMS Deviation in Pressure (percent)	No. of Data Points
Michels, Schamp, & De Graaff [1]	.071	.068	40
Nijhoff & Keesom [2]	.079	.076	43
Weber [3]	.302	1.692	1482
TOTAL P- $\rho$ -T	.294	1.647	1565

## 5. THE VAPOR PRESSURE EQUATION

The vapor pressure equation for oxygen has the same functional form as that used for nitrogen in Part I of this report. This equation is

$$\begin{aligned} \ln(P) = & N_1/T + N_2 + N_3T + N_4(T_C - T)^{1.91576} + N_5T^3 \\ & + N_6T^4 + N_7T^5 + N_8T^6 + N_9 \ln(T) \end{aligned} \quad (4)$$

where  $T_C = 154.581$  K, the critical point temperature,  $T$  is the saturation temperature, and  $P$  is the vapor pressure. The coefficients for this equation for temperature in degrees Kelvin and pressure in atmospheres are given in Table 5.

The coefficients in Table 5 were determined by a least squares fit to the same data sets as used by Myers, Jacobsen, and Stewart [26]. This included the vapor pressure measurements by Hoge [5], Muijlwijk, Moussa, and Van Dijk [6], Weber [3], and values of vapor pressure calculated from the saturated liquid heat capacity data of Goodwin and Weber [8]. A review of [28] indicated that vapor pressure measurements by other experimenters are less accurate than the above data sets. The selected data sets used in the least squares fit of equation (4) are nearly equivalent in accuracy and precision for the entire range from the triple point to the critical point. Consequently, it was determined that weighing of the data was not necessary in the determination of the coefficients of the vapor pressure equation.

The vapor pressure equation proposed in [26] was not used since it was desirable to use the same functional form as used for nitrogen (see Part I). A comparison of the selected vapor pressure data with equation 4 is illustrated in Figure 6.

In the calculation of the thermodynamic property tables, the vapor pressure equation (4) is used only to determine the vapor pressure for the saturation table, and the saturation temperature for each isobar. (see Section 7.)

Similarly, an equation for the melting line from [25] was used to determine the melting temperature for each isobar. The melting line equation is

$$P = P_t + P_o [(T/T_t)^c - 1.0] \quad (5)$$

where  $P$  is the melting line pressure in atmospheres,  $P_t$  the triple point vapor pressure of  $P_t = 0.00150$  atm.,  $c = 1.769$ ,  $P_o = 2637.2$  atm.,  $T_t = 54.3507$  K, and  $T$  is the melting line temperature in degrees Kelvin, IPTS-48. The calculated values of the melting temperature were then converted to IPTS-68.

TABLE 5

COEFFICIENTS FOR THE VAPOR PRESSURE EQUATION (4) FOR OXYGEN

Coefficient	Numerical Value	Coefficient	Numerical Value
$N_1$	$-0.5581932039 \times 10^3$	$N_6$	$-0.2126247712 \times 10^{-6}$
$N_2$	$-0.1211887103 \times 10^3$	$N_7$	$0.9574109678 \times 10^{-9}$
$N_3$	$-0.8345621163 \times 10^{-1}$	$N_8$	$-0.1661764045 \times 10^{-11}$
$N_4$	$0.2660364433 \times 10^{-2}$	$N_9$	$0.2754560571 \times 10^2$
$N_5$	$0.1687502383 \times 10^{-4}$		

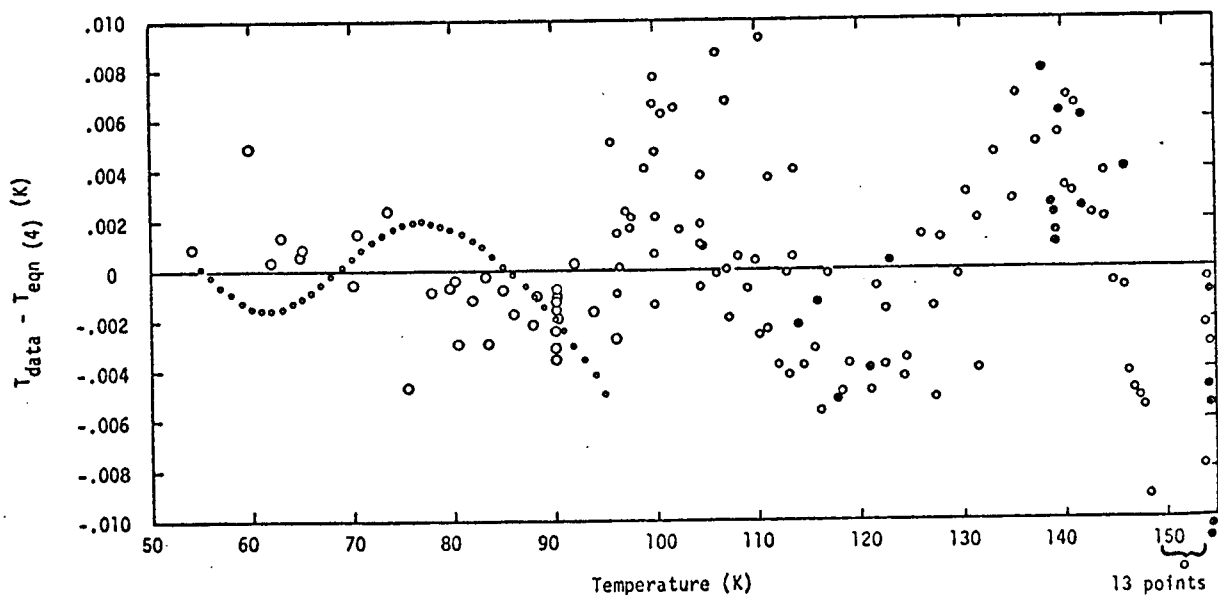


Figure 6. Deviations of the Oxygen Vapor Pressure Equation (4) from Selected Vapor Pressure Data; 13 points  
 -.017 max.  
 • Weber [3]; • Hoge [5]; • Muijlwijk, et al [6]; • Myers, et al [26].

## 6. THE IDEAL GAS HEAT CAPACITY

The value for ideal heat capacity used in the calculation of the thermodynamic property tables are from [13] and [14]. These appear to be the most accurate values published. The equation suggested by Barieau, et al [15], has been fitted to the data from [13]. This equation is

$$C_p^0/R = N_1T^3 + N_2/T^2 + N_3/T + N_4 + N_5T + N_6T^2 + N_7T^3 + N_8u^2e^u/(e^u - 1)^2 \quad (6)$$

where  $C_p^0$  is the ideal gas heat capacity,  $T$  the temperature, and  $u = N_9/T$ . The coefficients for equation (6) with values of  $T$  in degrees Kelvin are given in Table 6. Equation (5) is the same functional form as that used for nitrogen in Part I of this report.

TABLE 6

COEFFICIENTS FOR THE IDEAL GAS HEAT CAPACITY EQUATION (6)  
FOR OXYGEN

Coefficient	Numerical Value	Coefficient	Numerical Value
$N_1$	$-0.498199853711943 \times 10^{-4}$	$N_6$	$0.134635345013162 \times 10^{-7}$
$N_2$	$0.230247779995218 \times 10^{-3}$	$N_7$	$0.162059825959105 \times 10^{-10}$
$N_3$	$-0.345565323510732 \times 10^{-1}$	$N_8$	$0.103146851572565 \times 10^{-1}$
$N_4$	$0.352187677367116 \times 10^{-1}$	$N_9$	$0.223918105000000 \times 10^{-4}$
$N_5$	$-0.435420216024420 \times 10^{-4}$		

Table 7 is a listing of the ideal gas heat capacity values ( $C_p^0/R$ ) as a function of temperature as reported in [13]. The values of ( $C_p^0/R$ ) for oxygen calculated from equation (6) with coefficients from Table 6 exhibit a maximum deviation from values in Table 7 of 0.0006 from 50 to 2000 K which is the range of applicability of equation (6) for oxygen.

TABLE 7

VALUES OF IDEAL GAS HEAT CAPACITY,  $C_p^0/R$ ,  
FROM BAEHR ET AL [13]

Temp (K)	$C_p^0/R$	Temp (K)	$C_p^0/R$	Temp (K)	$C_p^0/R$
50.0	3.5030	450.0	3.6786	850.0	4.0972
60.0	3.5023	460.0	3.6906	860.0	4.1046
70.0	3.5019	470.0	3.7028	870.0	4.1119
80.0	3.5016	480.0	3.7150	880.0	4.1191
90.0	3.5015	490.0	3.7273	890.0	4.1261
100.0	3.5014	500.0	3.7396	900.0	4.1330
110.0	3.5013	510.0	3.7519	910.0	4.1397
120.0	3.5013	520.0	3.7642	920.0	4.1464
130.0	3.5013	530.0	3.7764	930.0	4.1529
140.0	3.5013	540.0	3.7886	940.0	4.1592
150.0	3.5014	550.0	3.8008	950.0	4.1655
160.0	3.5015	560.0	3.8128	960.0	4.1716
170.0	3.5017	570.0	3.8247	970.0	4.1777
180.0	3.5021	580.0	3.8366	980.0	4.1836
190.0	3.5026	590.0	3.8483	990.0	4.1894
200.0	3.5033	600.0	3.8598	1000.0	4.1951
210.0	3.5043	610.0	3.8713	1050.0	4.2223
220.0	3.5056	620.0	3.8826	1100.0	4.2472
230.0	3.5074	630.0	3.8937	1150.0	4.2703
240.0	3.5096	640.0	3.9047	1200.0	4.2917
250.0	3.5123	650.0	3.9155	1250.0	4.3118
260.0	3.5155	660.0	3.9262	1300.0	4.3308
270.0	3.5193	670.0	3.9367	1350.0	4.3488
280.0	3.5238	680.0	3.9470	1400.0	4.3660
290.0	3.5288	690.0	3.9572	1450.0	4.3826
300.0	3.5344	700.0	3.9672	1500.0	4.3986
310.0	3.5407	710.0	3.9770	1550.0	4.4143
320.0	3.5476	720.0	3.9867	1600.0	4.4295
330.0	3.5550	730.0	3.9962	1650.0	4.4446
340.0	3.5631	740.0	4.0055	1700.0	4.4594
350.0	3.5716	750.0	4.0146	1750.0	4.4740
360.0	3.5807	760.0	4.0236	1800.0	4.4885
370.0	3.5902	770.0	4.0324	1850.0	4.5030
380.0	3.6001	780.0	4.0411	1900.0	4.5173
390.0	3.6105	790.0	4.0495	1950.0	4.5316
400.0	3.6212	800.0	4.0579	2000.0	4.5458
410.0	3.6322	810.0	4.0660		
420.0	3.6434	820.0	4.0741		
430.0	3.6550	830.0	4.0819		
440.0	3.6667	840.0	4.0896		

## 7. DERIVED THERMODYNAMIC PROPERTIES

The values of entropy, enthalpy, internal energy, the isotherm derivative, the isochore derivative,  $C_v$ ,  $C_p$ , and the velocity of sound at various state points are calculated from the equation of state (3), and the ideal gas heat capacity equation (6). The vapor pressure equation (4) and the melting curve equation (5) from [25] were used to identify the temperature of the phase changes from vapor to liquid, and solid to vapor, respectively, for each isobar. The integral representations for the properties were continuously integrated through the two-phase region to calculate properties in the liquid range. This is made possible by the fitting procedures employed in the development of the equation of state as described in Section 3 in which the conditions for two-phase equilibrium were included in the least squares determination of the coefficients for the equation of state (3). The thermodynamic formulations for the calculation of the thermodynamic property tables were taken from [28]. These relations are summarized in the following paragraphs. Functions for the integrals and derivatives of the equation of state required to perform these calculations are given in Appendix A.

The entropy of any thermodynamic state was calculated from

$$S(T, \rho) = S_{T_0}^0 + \int_{T_0}^T (C_p^0/T) dT - R \ln(RT\rho) + \int_0^\rho [R/\rho - (1/\rho^2)(\partial P/\partial T)_\rho]_T d\rho \quad (7)$$

The ideal gas specific heat,  $C_p^0$ , is from equation (6). The reference entropy of the ideal gas at  $T_0 = 298.15$  K and  $P_0 = 1$  atmosphere,  $S_{T_0}^0 = 205.037 \pm 0.033$  joules/mol-K is taken from [19].

The enthalpy of any state may be calculated from

$$H(T, \rho) = H_{T_0}^0 + T \int_0^\rho \left[ \frac{P}{T\rho^2} - \left( \frac{1}{\rho^2} \right) \left( \frac{\partial P}{\partial T} \right)_\rho \right]_T d\rho \\ + (P - \rho RT)/\rho + \int_{T_0}^T C_p^0 dT. \quad (8)$$

However, it is convenient to replace the first integral term in (8) as follows:

$$T \int_0^\rho \left[ \frac{P}{T\rho^2} - \left( \frac{1}{\rho^2} \right) \left( \frac{\partial P}{\partial T} \right)_\rho \right]_T d\rho \\ \equiv T \int_0^\rho \left[ \frac{R}{\rho} - \left( \frac{1}{\rho^2} \right) \left( \frac{\partial P}{\partial T} \right)_\rho \right] d\rho \\ + \int_0^\rho \left[ \frac{P}{\rho^2} - \left( \frac{RT}{\rho} \right) \right]_T d\rho \quad (9)$$

By substitution of the identity of (9) in equation (8), the expression for enthalpy is given as

$$H(T, \rho) = H_{T_0}^0 + T \int_0^\rho \left[ \frac{R}{\rho} - \left( \frac{1}{\rho^2} \right) \left( \frac{\partial P}{\partial T} \right)_\rho \right]_T d\rho \\ + \int_0^\rho \left[ \frac{P}{\rho^2} - \left( \frac{RT}{\rho} \right) \right]_T d\rho + (P - \rho RT)/\rho \\ + \int_{T_0}^T C_p^0 dT. \quad (10)$$

The reference enthalpy of the ideal gas at  $T_0 = 298.15$  K of  $H_{T_0}^0 = 8682 \pm 4$  joules/mole was taken from the value of  $(H^0 - H_0^0)$  in [19]<sup>0</sup> with  $H_0^0 = 0.0$ . The internal energy of a fluid state was calculated from

$$U(T, \rho) = H(T, \rho) - P/\rho. \quad (11)$$

The specific heat at constant volume,  $C_V$ , of liquid and gas phase points was calculated using the relation

$$C_V(T, \rho) = (C_p^0 - R) - \int_0^{\rho} (T/\rho^2) [(\partial^2 P / \partial T^2)_{\rho}]_T d\rho \quad (12)$$

where  $C_p^0$  at temperature,  $T$ , is calculated from equation (6). The specific heat at constant pressure,  $C_p$ , is given by

$$C_p(T, \rho) = C_V(T, \rho) + [(T/\rho^2)(\partial P / \partial T)_{\rho}^2 / (\partial P / \partial \rho)_T] \quad (13)$$

It is notable that the calculation of properties from the equation developed in this work is considerably simplified from the prior methods of [28] by the continuous integration along isotherms through the two phase region due to the imposing of the requirements for phase equilibrium in the determination of the equation of state as suggested in [18]. Difference between values of the thermodynamic properties for the liquid for values calculated by continuous integration along isotherms through the vapor-liquid phase change, and calculated by use of the Clapeyron equation for the phase change are given in Table 8. The differences in liquid properties indicated in Table 8 are generally within the uncertainty of the property values.

A table of thermodynamic properties of oxygen illustrating the results of the property calculations outlined above is included in this report. A table of properties of the saturated liquid and vapor states is also included.



TABLE 8

COMPARISON BETWEEN LIQUID THERMODYNAMIC PROPERTY VALUES  
 CALCULATED BY CONTINUOUS INTEGRATION ALONG ISOTHERMS  
 AND THE CLAPEYRON EQUATION FOR THE VAPOR-LIQUID PHASE CHANGE  
 (Subscript c refers to Clapeyron Calculation, b to Continuous Integration)

Temp (K)	$H_c - H_b$ (J/mol)	$S_c - S_b$ (J/mol-K)	$C_{V_c} - C_{V_b}$ (J/mol-K)	$W_c - W_b$ (m/sec)
60	40	.48	-2.07	12
65	33	.35	-1.24	7
70	27	.28	-0.87	5
75	23	.22	-0.78	5
80	19	.17	-0.76	5
85	16	.13	-0.70	4
90	13	.09	-0.53	4
100	9	.06	-0.08	0
110	10	.06	+0.08	-1
120	10	.06	-0.13	1
130	8	.05	+0.09	-1
140	14	.09	-0.05	-6
150	13	.09	-2.82	18
154.58	0	0	0	0

## 8. COMPARISONS OF THE EQUATION OF STATE WITH RELATED DATA

Measurements of properties of nitrogen in addition to the P- $\rho$ -T data which are compared to values calculated using the equation of state (3) are the constant volume heat capacity,  $C_V$ , data by Goodwin and Weber [7], and values of velocity of sound from [9], [10], [11], and [12]. The velocity of sound measurements which have been selected for comparison include data for the liquid, the vapor to high pressures, and values for the saturated liquid and the saturated vapor. A large proportion of the velocity of sound data not included in these comparisons is for pressures of 1 atmosphere or less. Other calorimetric measurements on the properties of oxygen from the literature (i.e. the heat of vaporization,  $C_p$ ,  $C_V$ , and  $C_\sigma$ ) are reviewed in [28]. Comparisons of these older data to values calculated using the equation of state (3) have not been made.

### Comparisons of $C_V$ Data

The  $C_V$  data by Goodwin and Weber [7] are compared to values calculated using the equation of state (3) and the equation for the ideal gas heat capacity (6) in Figure 7. The comparisons in Figure 7 are of the percent deviation in  $C_V$ ,  $[(C_{V_{\text{exp}}} - C_{V_{\text{calc}}})/C_{V_{\text{exp}}}] \times 100$ , along approximate isochores. The quantity  $C_{V_{\text{exp}}}$  represents the observed  $C_V$  reported by Goodwin and Weber [7] at a particular temperature and density, and  $C_{V_{\text{calc}}}$  is the  $C_V$  calculated from equations (3) and (6) for each experimental temperature and density.

In addition to the data illustrated in Figure 7, the deviations in  $C_V$  of a few data points exceed the  $\pm 5$  percent scale used in Figure 7. Table 9 is a listing of these data including the percent deviation in  $C_V$  of each point.

All of the  $C_V$  data from [7] were included in the simultaneous least squares determination of the coefficients of the equation of state (3). It is notable that the data illustrated in Figure 7 deviate from values calculated using the equation of state (3) generally within the concordance between the P- $\rho$ -T data reported by Weber [3] and the  $C_V$  data by Goodwin and Weber [7].

This concordance between the P- $\rho$ -T and  $C_V$  data was studied further by adjustments in the relative weights assigned to the P- $\rho$ -T and the  $C_V$  data sets. The final weights were assigned to the  $C_V$  data so that the inclusion of the  $C_V$  data set in the least squares fit would have a minor effect on the fit to the P- $\rho$ -T data, and at the same time provide for an equation which would calculate the  $C_V$  values within the concordance between the P- $\rho$ -T and  $C_V$  data sets.

The deviations in  $C_V$  in excess of 5 percent (Table 9) all occur at the low pressure limits for the data runs made by Goodwin and Weber [7]. The P- $\rho$ -T data reported by Weber [3] was also along approximate isochores for a range of density values which is approximately the same as the range of values for the  $C_V$  data. Large deviations for the 13.1 mole/liter isochore occur at nearly the critical density at temperatures from 155 K to 159 K. These deviations may be attributed to the problem of fitting the equation of state at the critical point and to the anomalous behavior of the isochoric heat capacity at the critical point. *It is necessary that the user of the equation of state (3) for oxygen exercise caution in the application of derived property values in the immediate vicinity of the saturated liquid boundary and near the critical point, where errors in calculated heat capacity values may be as large as 25 percent.*

#### Comparisons of Selected Velocity of Sound Data

The velocity of sound data for oxygen from the literature have been reviewed, and the data from [9], [10], [11], and [12] have been selected for comparison in Table 10 with sonic velocities calculated from the equation of state. These data have been selected as representative and include measured values for the liquid at moderate and high pressures, and for the saturated liquid and saturated vapor. These comparisons indicate that the equation is sufficiently accurate for calculating the velocity of sound for the liquid at moderate pressures and for the saturated liquid and saturated vapor. However, the comparisons to measured velocity of sound values at high pressures for the liquid indicate deviations between the calculated and measured values which are greater than the probable uncertainty of the measured values. This is to be expected since the P- $\rho$ -T and the  $C_V$  data used in the determination of the coefficients of the equation of state were for pressures below 350 atmospheres.

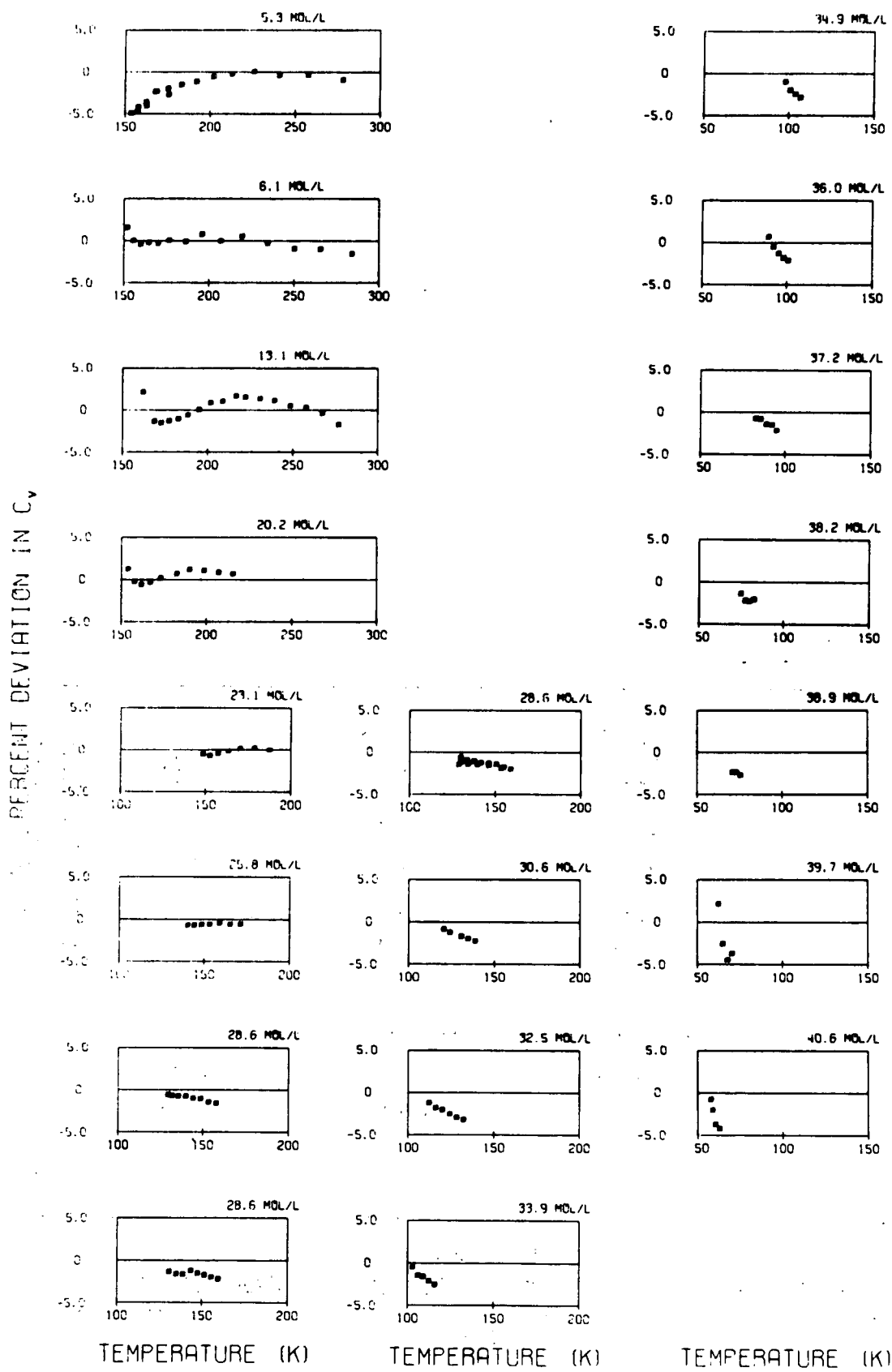


Fig. 7. Deviations in  $C_v$  of Values Calculated with Equation (3) from  $C_v$  Data from Goodwin and Weber [7].

TABLE 9

$C_v$  DATA FROM [8] WITH DEVIATIONS IN EXCESS OF  $\pm 5$  PERCENT  
(See Figure 7)

Temp. (K)	Press. (atm)	Density (Mol/l)	$C_v$ [7] (Joules/mol-K)	$C_v$ Deviation (percent)
155.30	51.1	13.2	47.883	31.24
155.97	52.4	13.2	40.978	20.30
156.76	53.9	13.2	38.103	15.08
157.84	56.0	13.2	35.905	10.99
159.57	59.3	13.2	33.402	6.13
108.88	10.3	32.6	37.350	24.69
95.09	9.7	34.9	36.569	19.50
80.10	5.9	37.2	38.279	17.95
72.90	3.5	38.2	39.092	16.48
68.10	20.6	39.0	36.401	7.33
56.37	31.3	40.7	36.444	5.38

TABLE 10

COMPARISONS OF SELECTED MEASURED VALUES OF SONIC VELOCITY (W) FOR OXYGEN TO CALCULATED VALUES

Press. (atm)	Temp. (K)	W <sub>data</sub> (meters/sec)	$\frac{\Delta W}{W_{data}} \cdot 100$	Press. (atm)	Temp. (K)	W <sub>data</sub> (meters/sec)	$\frac{\Delta W}{W_{data}} \cdot 100$	Press. (atm)	Temp. (K)	W <sub>data</sub> (meters/sec)	$\frac{\Delta W}{W_{data}} \cdot 100$
High Pressure Liquid Data of [12]				Saturated Liquid Data of [10]				Moderate Pressure Liquid Data of [9]			
883.6	67.5	1331	2.53	0.0095	61.1	1134	-1.25	6.3	77.3	1010	.41
820	67.5	1317	2.72	0.0097	61.2	1133	-1.24	12.5	77.3	1013	.48
730	67.5	1297	2.92	0.015	63.1	1119	.66	15.8	77.3	1014	.51
633	67.5	1274	3.09	0.02	65.0	1105	.26	19.7	77.3	1018	.75
535	67.5	1249	3.16	0.06	69.8	1068	.32	23.9	77.3	1019	.77
435.5	67.5	1223	3.12	0.08	71.5	1055	.41	27.8	77.3	1022	.88
340	67.5	1197	2.98	0.12	74.1	1035	.53	31.5	77.3	1022	.79
242	67.5	1168	2.52	0.17	76.1	1019	.50	34.7	77.3	1023	.82
145.2	67.5	1138	1.95	0.22	77.8	1005	.5	45.4	77.3	1028	.94
51.3	67.5	1106	.97	0.23	78.1	1003	.54	53.2	77.3	1032	1.08
867	73.4	1304	2.74	0.33	80.8	982	.47	55.1	77.3	1032	1.04
821	73.4	1289	2.90	0.48	83.7	959	.41	59.8	77.3	1035	1.17
728	73.4	1267	3.02	0.69	86.8	934	.35	62.2	77.3	1036	1.23
630	73.4	1242	3.10	0.95	89.7	910	.29	64.0	77.3	1037	1.21
333	73.4	1217	3.20	1.30	92.6	886	.24	70.1	77.3	1039	1.28
436	73.4	1190	3.12	1.80	96.0	859	.29	71.1	77.3	1040	1.30
342	73.4	1160	2.83	2.20	98.7	834	.14	3.8	90.3	905	.19
245	73.4	1131	2.58	3.00	102.2	805	.18	10.2	90.3	908	.22
147	73.4	1098	2.08	3.80	105.3	777	-.01	14.6	90.3	912	.39
49.3	73.4	1063	1.35	4.50	107.6	756	-.01	18.8	90.3	913	.31
909	77.7	1289	2.89	5.50	110.5	730	.01	23.6	90.3	917	.46
821	77.7	1269	3.06	6.90	113.7	701	.04	29.4	90.3	920	.52
732	77.7	1246	3.10	8.30	116.7	672	-.04	36.5	90.3	923	.44
627	77.7	1220	3.22	8.90	117.9	660	.07	38.3	90.3	926	.66
534	77.7	1195	3.26	9.80	119.6	646	.32	45.5	90.3	929	.64
436	77.7	1167	3.19	11.60	122.4	617	.36	49.6	90.3	930	.62
344	77.7	1137	2.94	13.70	125.6	586	.50	55.2	90.3	935	.84
243	77.7	1104	2.61	16.20	128.7	552	.59	58.3	90.3	938	.99
147	77.7	1068	1.98	18.50	131.9	517	.44	61.9	90.3	939	1.01
47	77.7	1029	1.23	21.80	134.9	484	.52	66.2	90.3	940	.82
891	83.8	1257	3.31	25.00	137.8	449	.45	68.3	90.3	942	1.02
824	83.8	1241	3.40	28.40	140.7	413	.36	71.2	90.3	945	1.12
732	83.8	1217	3.39	32.20	143.7	374	.07				
631	83.8	1190	3.37	36.70	146.8	330	-.07				
535	83.8	1161	3.15	42.40	150.5	266	-2.84				
439	83.8	1131	2.99	44.40	151.6	247	-2.59				
338	83.8	1098	2.74	46.00	152.5	229	-2.9				
245	83.8	1064	2.33	47.40	153.3	212	-2.77				
148	83.8	1027	1.89	48.40	153.9	198	3.34				
57.1	83.8	987	1.28								
900	90.4	1229	3.72	Saturated Vapor Data of [11]							
843	90.4	1215	3.72	1.01	90.3	178	0.01				
730	90.4	1184	3.58	0.67	86.5	174	-.74				
632	90.4	1156	3.47	0.43	82.8	171	-.23				
537	90.4	1126	3.20	0.24	78.4	167	-.53				
439	90.4	1094	2.92								
340	90.4	1059	2.58								
243	90.4	1021	2.14								
149	90.4	980	1.57								
63	90.4	940	.41								

$$\frac{W_{data} - W_{calc}}{W_{data}} \times 100$$

## 9. CONCLUSIONS AND RECOMMENDATIONS

The results of this study are summarized below:

1. The equation of state (3) developed in this work represents the available experimental  $P$ - $\rho$ - $T$  data in the liquid and vapor phases for pressures from 0 to 350 atmospheres and for temperatures from 56 to 300 K. It is estimated that the equation of state is valid for the liquid to within 0.1 percent in density, for the vapor below the critical temperature to within 0.2 percent, for states at temperatures above the critical temperature to 250 K to within 0.2 percent, and for supercritical states between 250 K and 300 K to within 0.1 percent. In the immediate vicinity of the critical point, errors in calculated values of density may be as large as 3 percent.
2. The vapor pressure equation (4) represents the selected data used in the determination of the coefficients generally within an accuracy of  $\pm 0.01$  K for the range from the triple point to the critical point.
3. The equation for the ideal gas specific heat (6) has been used to represent the data values of  $C_p^0/R$  from [13] with an accuracy of  $\pm 0.0006$  from 50 to 2000 K.
4. Values of the isochoric heat capacity,  $C_v$ , calculated using equations (3) and (6) may be expected to be accurate within  $\pm 5$  percent, except in the immediate vicinity of the saturated liquid boundary and near the critical point where errors in the calculated values approach 25 percent.
5. The least squares techniques used in the formulation presented here include the simultaneous fitting of  $P$ - $\rho$ - $T$  data,  $C_v$  data, and the criteria for phase equilibrium to allow for continuous integration along isotherms through the two-phase region. It is recommended that the derived properties for the liquid phase be calculated by this method in preference to the use of the Clapeyron equation for determining entropy or enthalpy differences for the phase change.

Suggestions for further research are presented below:

1. The work reported here is essentially complete within the limits imposed by the availability of experimental data to describe the P- $\rho$ -T surface for oxygen. However, a comparison of the P- $\rho$ -T surfaces for oxygen and nitrogen using the Principle of Corresponding States may suggest valid extrapolations of the equation of state beyond the range of data presently available.
2. Although comparisons of calculated values of the velocity of sound (Table 10) indicate good agreement with measured values in the range where P- $\rho$ -T data are available, the deviations in other regions are large. Further studies of the sonic velocity data and of simultaneous fitting techniques may identify a means of improving the equation of state by including sonic velocity data in the formulation.
3. The use of a single equation of state for the P- $\rho$ -T surface is accompanied by fitting problems for data near the critical point which are in evidence at temperatures above the critical value. New methods of fitting or different functional forms for terms in the equation may result in a more accurate description of the surface in this region.
4. The consistency of the vapor pressure equation, melting line equation, and equation of state in the region of the triple point should be investigated.



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## APPENDIX A

FUNCTIONS FOR THE CALCULATION OF THERMODYNAMIC  
PROPERTIES FROM THE EQUATION OF STATE (3)The Equation of State

Equation (3) may be written in the form:

$$P = \rho RT + \sum_{i=1}^{32} N_i X_i$$

where the  $N_i$  are listed in Table 2 and the  $X_i$  are as follows:

$X_1 = \rho^2 T$	$X_{12} = \rho^4 / T$	$X_{23} = \rho^5 F / T^4$
$X_2 = \rho^2 T^{1/2}$	$X_{13} = \rho^5$	$X_{24} = \rho^7 F / T^2$
$X_3 = \rho^2$	$X_{14} = \rho^6 / T$	$X_{25} = \rho^7 F / T^3$
$X_4 = \rho^2 / T$	$X_{15} = \rho^6 / T^2$	$X_{26} = \rho^9 F / T^2$
$X_5 = \rho^2 / T^2$	$X_{16} = \rho^7 / T$	$X_{27} = \rho^9 F / T^4$
$X_6 = \rho^3 T$	$X_{17} = \rho^8 / T$	$X_{28} = \rho^{11} F / T^2$
$X_7 = \rho^3$	$X_{18} = \rho^8 / T^2$	$X_{29} = \rho^{11} F / T^3$
$X_8 = \rho^3 / T$	$X_{19} = \rho^9 / T^2$	$X_{30} = \rho^{13} F / T^2$
$X_9 = \rho^3 / T^2$	$X_{20} = \rho^3 F / T^2$	$X_{31} = \rho^{13} F / T^3$
$X_{10} = \rho^4 T$	$X_{21} = \rho^3 F / T^3$	$X_{32} = \rho^{13} F / T^4$
$X_{11} = \rho^4$	$X_{22} = \rho^5 F / T^2$	

$$F = \exp(-0.0056 \rho^2)$$

The Isotherm Derivative

The isotherm derivative of the equation of state (3) may be represented as:

$$(\partial P / \partial \rho)_T = RT + \sum_{i=1}^{32} N_i X_i$$

where the  $N_i$  are given in Table 2 and the  $X_i$  are as follows:

$X_1 = 2\rho T$	$X_{12} = 4\rho^3 / T$	$X_{23} = F_{22} / T^4$
$X_2 = 2\rho T^{1/2}$	$X_{13} = 5\rho^4$	$X_{24} = F_{23} / T^2$
$X_3 = 2\rho$	$X_{14} = 6\rho^5 / T$	$X_{25} = F_{23} / T^3$
$X_4 = 2\rho / T$	$X_{15} = 6\rho^5 / T^2$	$X_{26} = F_{24} / T^2$
$X_5 = 2\rho / T^2$	$X_{16} = 7\rho^6 / T$	$X_{27} = F_{24} / T^4$
$X_6 = 3\rho^2 T$	$X_{17} = 8\rho^7 / T$	$X_{28} = F_{25} / T^2$
$X_7 = 3\rho^2$	$X_{18} = 8\rho^7 / T^2$	$X_{29} = F_{25} / T^3$
$X_8 = 3\rho^2 / T$	$X_{19} = 9\rho^8 / T^2$	$X_{30} = F_{26} / T^2$
$X_9 = 3\rho^2 / T^2$	$X_{20} = F_{21} / T^2$	$X_{31} = F_{26} / T^3$
$X_{10} = 4\rho^3 T$	$X_{21} = F_{21} / T^3$	$X_{32} = F_{26} / T^4$
$X_{11} = 4\rho^3$	$X_{22} = F_{22} / T^2$	

$$F = \exp(-0.0056 \rho^2)$$

$$F_1 = 2F\rho(-0.0056)$$

$$F_{21} = 3F\rho^2 + F_1\rho^3$$

$$F_{22} = 5F\rho^4 + F_1\rho^5$$

$$F_{23} = 7F\rho^6 + F_1\rho^7$$

$$F_{24} = 9F\rho^8 + F_1\rho^9$$

$$F_{25} = 11F\rho^{10} + F_1\rho^{11}$$

$$F_{26} = 13F\rho^{12} + F_1\rho^{13}$$

The Isochore Derivative

The isochore derivative of the equation of state (3) may be written as:

$$(\partial P/\partial T)_\rho = \rho R + \sum_{i=1}^{32} N_i X_i$$

where the  $N_i$  are given in Table 2 and the  $X_i$  are as follows:

$X_1 = \rho^2$	$X_{12} = -\rho^4/T^2$	$X_{23} = -4\rho^5 F/T^5$
$X_2 = \rho^2/(2T^{1/2})$	$X_{13} = 0.0$	$X_{24} = -2\rho^7 F/T^3$
$X_3 = 0.0$	$X_{14} = -\rho^6/T^2$	$X_{25} = -3\rho^7 F/T^4$
$X_4 = -\rho^2/T^2$	$X_{15} = -2\rho^6/T^3$	$X_{26} = -2\rho^9 F/T^3$
$X_5 = -2\rho^2/T^3$	$X_{16} = -\rho^7/T^2$	$X_{27} = -4\rho^9 F/T^5$
$X_6 = \rho^3$	$X_{17} = -\rho^8/T^2$	$X_{28} = -2\rho^{11} F/T^3$
$X_7 = 0.0$	$X_{18} = -2\rho^8/T^3$	$X_{29} = -3\rho^{11} F/T^4$
$X_8 = -\rho^3/T^2$	$X_{19} = -2\rho^9/T^3$	$X_{30} = -2\rho^{13} F/T^3$
$X_9 = -2\rho^3/T^3$	$X_{20} = -2\rho^3 F/T^3$	$X_{31} = -3\rho^{13} F/T^4$
$X_{10} = \rho^4$	$X_{21} = -3\rho^3 F/T^4$	$X_{32} = -4\rho^{13} F/T^5$
$X_{11} = 0.0$	$X_{22} = -2\rho^5 F/T^3$	

$$F = \exp(-0.0056 \rho^2)$$

The Evaluation of Integrals

The integral,  $\int [R/\rho - (1/\rho^2)(\partial P/\partial T)_\rho]_T d\rho$  may be written as:

$$\sum_{i=1}^{32} N_i Y_i$$

where the  $N_i$  are listed in Table 2 and the  $Y_i$  are listed below:

$Y_1 = -\rho$	$Y_{12} = \rho^3/(3T^2)$	$Y_{23} = 4G_2/T^5$
$Y_2 = -\rho/(2T^{1/2})$	$Y_{13} = 0.0$	$Y_{24} = 2G_3/T^3$
$Y_3 = 0.0$	$Y_{14} = \rho^5/(5T^2)$	$Y_{25} = 3G_3/T^4$
$Y_4 = \rho/T^2$	$Y_{15} = 2\rho^5/(5T^3)$	$Y_{26} = 2G_4/T^3$
$Y_5 = 2\rho/T^3$	$Y_{16} = \rho^6/(6T^2)$	$Y_{27} = 4G_4/T^5$
$Y_6 = -\rho^2/2$	$Y_{17} = \rho^7/(7T^2)$	$Y_{28} = 2G_5/T^3$
$Y_7 = 0.0$	$Y_{18} = 2\rho^7/(7T^3)$	$Y_{29} = 3G_5/T^4$
$Y_8 = \rho^2/(2T^2)$	$Y_{19} = \rho^8/(4T^3)$	$Y_{30} = 2G_6/T^3$
$Y_9 = \rho^2/T^3$	$Y_{20} = 2G_1/T^3$	$Y_{31} = 3G_6/T^4$
$Y_{10} = -\rho^3/3$	$Y_{21} = 3G_1/T^4$	$Y_{32} = 4G_6/T^5$
$Y_{11} = 0.0$	$Y_{22} = 2G_2/T^3$	

where the  $G_i$  and  $F$  are listed in Table 11.

The integral  $\int [(P/\rho^2) - (RT/\rho)]_T d\rho$  may be written as:

$$\sum_{i=1}^{11} N_i Y_i$$

where the  $N_i$  are listed in Table 2 and the  $Y_i$  are listed below:

$Y_1 = \rho T$	$Y_{12} = \rho^3/(3T)$	$Y_{23} = G_2/T^4$
$Y_2 = \rho T^{1/2}$	$Y_{13} = \rho^4/4$	$Y_{24} = G_3/T^2$
$Y_3 = \rho$	$Y_{14} = \rho^5/(5T)$	$Y_{25} = G_3/T^3$
$Y_4 = \rho/T$	$Y_{15} = \rho^5/(5T^2)$	$Y_{26} = G_4/T^2$
$Y_5 = \rho/T^2$	$Y_{16} = \rho^6/(6T)$	$Y_{27} = G_4/T^4$
$Y_6 = \rho^2 T/2$	$Y_{17} = \rho^7/(7T)$	$Y_{28} = G_5/T^2$
$Y_7 = \rho^2/2$	$Y_{18} = \rho^7/(7T^2)$	$Y_{29} = G_5/T^3$
$Y_8 = \rho^2/(2T)$	$Y_{19} = \rho^8/(8T^2)$	$Y_{30} = G_6/T^2$
$Y_9 = \rho^2/(2T^2)$	$Y_{20} = G_1/T^2$	$Y_{31} = G_6/T^3$
$Y_{10} = \rho^3 T/3$	$Y_{21} = G_1/T^3$	$Y_{32} = G_6/T^4$
$Y_{11} = \rho^3/3$	$Y_{22} = G_2/T^2$	

where the  $G_i$  and  $F$  are listed in Table 11.

The integral,  $\int [(T/\rho^2)(\partial^2 P/\partial T^2)]_T d\rho$  may be written as:

$$\sum_{i=1}^{11} N_i Y_i$$

where the  $N_i$  are listed in Table 2 and the  $Y_i$  are listed below:

$Y_1 = 0.0$	$Y_{12} = (2\rho^3)/(3T^2)$	$Y_{23} = 20G_2/T^5$
$Y_2 = \rho/(4T^{1/2})$	$Y_{13} = 0.0$	$Y_{24} = 6G_3/T^3$
$Y_3 = 0.0$	$Y_{14} = (2\rho^5)/(5T^2)$	$Y_{25} = 12G_3/T^4$
$Y_4 = 2\rho/T^2$	$Y_{15} = (6\rho^5)/(5T^3)$	$Y_{26} = 6G_4/T^3$
$Y_5 = 6\rho/T^3$	$Y_{16} = \rho^6/(3T^2)$	$Y_{27} = 20G_4/T^5$
$Y_6 = 0.0$	$Y_{17} = (2\rho^7)/(7T^2)$	$Y_{28} = 6G_5/T^3$
$Y_7 = 0.0$	$Y_{18} = (6\rho^7)/(7T^3)$	$Y_{29} = 12G_5/T^4$
$Y_8 = \rho^2/T^2$	$Y_{19} = (3\rho^8)/(4T^3)$	$Y_{30} = 6G_6/T^3$
$Y_9 = 3\rho^2/T^3$	$Y_{20} = 6G_1/T^3$	$Y_{31} = 12G_6/T^4$
$Y_{10} = 0.0$	$Y_{21} = 12G_1/T^4$	$Y_{32} = 20G_6/T^5$
$Y_{11} = 0.0$	$Y_{22} = 6G_2/T^3$	

where the  $G_i$  and  $F$  are listed in Table 11.

TABLE 11  
FUNCTIONS FOR DERIVATIVES OF THE  
EQUATION OF STATE

$F = \exp(-0.0056\rho^2)$
$G_1 = F/[2(-0.0056)]$
$G_2 = (F\rho^2 - 2G_1)/[2(-0.0056)]$
$G_3 = (F\rho^4 - 4G_2)/[2(-0.0056)]$
$G_4 = (F\rho^6 - 6G_3)/[2(-0.0056)]$
$G_5 = (F\rho^8 - 8G_4)/[2(-0.0056)]$
$G_6 = (F\rho^{10} - 10G_5)/[2(-0.0056)]$

The integral  $\int C_p^0 dT$  may be written as:

$$\sum_{i=1}^8 N_i Y_i$$

where the  $N_i$  are listed in Table 6

$$Y_1 = -1/(2T^2)$$

$$Y_2 = -1/T$$

$$Y_3 = \ln(T)$$

$$Y_4 = T$$

$$Y_5 = T^2/2$$

$$Y_6 = T^3/3$$

$$Y_7 = T^4/4$$

$$Y_8 = UT/[\exp(U)-1]$$

$$U = N_9/T \quad (N_9 \text{ from Table 6})$$

The integral  $\int (C_p^0/T) dT$  may be written as:

$$\sum_{i=1}^8 N_i Y_i$$

where the  $N_i$  are listed in Table 6 and the  $Y_i$  are given below:

$$Y_1 = -1/(3T^3)$$

$$Y_2 = -1/(2T^2)$$

$$Y_3 = -1/T$$

$$Y_4 = \ln(T)$$

$$Y_5 = T$$

$$Y_6 = T^2/2$$

$$Y_7 = T^3/3$$

$$Y_8 = U/(EU-1) - \ln[1-(1/EU)]$$

$$U = N_9/T \quad (N_9 \text{ from Table 6})$$

$$EU = \exp(U)$$

APPENDIX B

TABLE OF THERMODYNAMIC PROPERTIES OF OXYGEN  
IN BRITISH UNITS

(The number of significant figures given in the table is not justified on the basis of the uncertainty of the data, but is presented to maintain internal consistency.)



THERMODYNAMIC PROPERTIES OF SATURATED OXYGEN

TEMPERATURE	PRESSURE	DENSITY	ISOTHERM DERIVATIVE	ISOCHORE DERIVATIVE	INTERNAL ENERGY	ENTHALPY	ENTROPY	CV	CP	VELOCITY OF SOUND
DEG R	PSIA	LB/CU FT	CU FT-PSIA/LB	PSIA/R	BTU/LB	BTU/LB	BTU/LB-R	BTU / LB - R	- R	FT/SEC
97.832	0.0212	81.653 0.0006449	2220.47 32.79	360.508 0.0002	-83.867 15.079	-83.867 21.153	0.49593 1.56736	0.248 0.156	0.407 0.218	4109. 461.
98	0.0218	81.625 0.0006630	2216.11 32.85	359.472 0.0002	-83.799 15.105	-83.799 21.190	0.49663 1.56590	0.248 0.156	0.407 0.218	4103. 462.
100	0.0307	81.303 0.0009148	2164.84 33.52	347.750 0.0003	-82.982 15.415	-82.982 21.623	0.50488 1.56904	0.253 0.156	0.409 0.218	4030. 466.
102	0.0426	80.983 0.001245	2114.87 34.18	337.082 0.0004	-82.163 15.724	-82.163 22.056	0.51299 1.53299	0.255 0.156	0.410 0.218	3967. 471.
104	0.0583	80.665 0.001671	2066.20 34.84	327.320 0.0006	-81.342 16.033	-81.342 22.488	0.52096 1.51769	0.257 0.156	0.411 0.218	3910. 475.
106	0.0787	80.349 0.002217	2018.80 35.50	318.336 0.0007	-80.521 16.342	-80.521 22.920	0.52878 1.50311	0.258 0.156	0.411 0.218	3858. 480.
108	0.1051	80.034 0.002905	1972.65 36.16	310.024 0.0010	-79.700 16.650	-79.699 23.351	0.53646 1.48920	0.258 0.156	0.410 0.218	3811. 484.
110	0.1388	79.720 0.003766	1927.69 36.81	302.291 0.0013	-78.879 16.957	-78.879 23.781	0.54399 1.47592	0.258 0.156	0.410 0.218	3767. 489.
112	0.1812	79.407 0.004831	1883.88 37.47	295.059 0.0016	-78.060 17.264	-78.059 24.211	0.55137 1.46323	0.257 0.156	0.409 0.218	3726. 493.
114	0.2343	79.094 0.006137	1841.17 38.11	288.263 0.0021	-77.242 17.570	-77.241 24.639	0.55861 1.45110	0.256 0.156	0.409 0.218	3687. 497.
116	0.2999	78.780 0.007723	1799.52 38.76	281.845 0.0026	-76.425 17.875	-76.424 25.066	0.56571 1.43951	0.255 0.156	0.408 0.219	3651. 502.
118	0.3804	78.467 0.009634	1758.87 39.40	275.757 0.0032	-75.609 18.180	-75.608 25.492	0.57268 1.42841	0.254 0.156	0.407 0.219	3616. 506.
120	0.4784	78.153 0.01192	1719.17 40.03	269.958 0.0040	-74.795 18.483	-74.794 25.916	0.57952 1.41778	0.253 0.156	0.407 0.219	3582. 510.
122	0.5966	77.839 0.01463	1680.38 40.66	264.413 0.0049	-73.983 18.785	-73.981 26.338	0.58624 1.40759	0.251 0.156	0.406 0.219	3549. 514.
124	0.7383	77.524 0.01782	1642.45 41.28	259.091 0.0060	-73.171 19.086	-73.169 26.759	0.59284 1.39782	0.249 0.156	0.406 0.219	3518. 518.
126	0.9069	77.208 0.02155	1605.35 41.90	253.966 0.0073	-72.360 19.386	-72.358 27.177	0.59932 1.38845	0.248 0.156	0.405 0.220	3487. 522.
128	1.106	76.891 0.02590	1569.04 42.50	249.017 0.0087	-71.551 19.684	-71.548 27.594	0.60570 1.37945	0.246 0.157	0.405 0.220	3456. 526.
130	1.340	76.574 0.03092	1533.47 43.10	244.224 0.0104	-70.742 19.981	-70.739 28.008	0.61197 1.37080	0.245 0.157	0.404 0.220	3427. 530.
132	1.613	76.255 0.03669	1498.61 43.69	239.572 0.0124	-69.934 20.276	-69.930 28.420	0.61814 1.36249	0.243 0.157	0.404 0.221	3397. 534.
134	1.931	75.935 0.04328	1464.42 44.27	235.047 0.0146	-69.126 20.569	-69.121 28.829	0.62421 1.35450	0.242 0.157	0.404 0.221	3368. 537.
136	2.297	75.613 0.05079	1430.89 44.83	230.636 0.0172	-68.319 20.860	-68.313 29.234	0.63019 1.34681	0.240 0.157	0.404 0.222	3339. 541.
138	2.717	75.290 0.05928	1397.97 45.39	226.329 0.0201	-67.511 21.150	-67.505 29.637	0.63609 1.33940	0.239 0.157	0.404 0.222	3311. 545.
140	3.198	74.966 0.06886	1365.64 45.93	222.118 0.0234	-66.704 21.437	-66.696 30.037	0.64189 1.33226	0.237 0.158	0.404 0.223	3282. 548.
142	3.745	74.640 0.07961	1333.87 46.46	217.995 0.0271	-65.897 21.721	-65.888 30.433	0.64762 1.32537	0.236 0.158	0.404 0.223	3254. 552.
144	4.365	74.313 0.09163	1302.64 46.98	213.953 0.0312	-65.089 22.004	-65.079 30.825	0.65327 1.31873	0.234 0.158	0.404 0.224	3226. 555.

Thermodynamic Properties of Saturated Oxygen

TEMPERATURE DEG R	PRESSURE PSIA	DENSITY LB/CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV RTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
146	5.064	73.985 0.1050	1271.92 47.48	209.987 0.0358	-64.282 22.284	-64.269 31.213	0.65884 1.31232	0.233 0.158	0.404 0.225	3197. 558.
148	5.849	73.654 0.1199	1241.70 47.96	206.091 0.0409	-63.473 22.561	-63.459 31.597	0.66434 1.30612	0.232 0.159	0.405 0.225	3169. 562.
150	6.727	73.322 0.1363	1211.94 48.43	202.262 0.0466	-62.664 22.835	-62.647 31.977	0.66976 1.30013	0.231 0.159	0.405 0.226	3140. 565.
152	7.707	72.988 0.1544	1182.63 48.87	198.495 0.0529	-61.855 23.106	-61.835 32.352	0.67513 1.29434	0.229 0.159	0.405 0.227	3112. 568.
154	8.796	72.652 0.1742	1153.76 49.30	194.787 0.0598	-61.045 23.374	-61.022 32.722	0.68042 1.28873	0.228 0.160	0.406 0.228	3083. 571.
156	10.002	72.315 0.1960	1125.30 49.72	191.136 0.0674	-60.234 23.639	-60.208 33.087	0.68566 1.28329	0.227 0.160	0.406 0.229	3055. 574.
158	11.333	71.975 0.2198	1097.24 50.11	187.538 0.0758	-59.421 23.901	-59.392 33.447	0.69083 1.27803	0.226 0.160	0.407 0.230	3026. 577.
160	12.798	71.634 0.2458	1069.57 50.47	183.991 0.0849	-58.608 24.159	-58.575 33.801	0.69595 1.27292	0.225 0.161	0.408 0.231	2997. 580.
162	14.405	71.290 0.2740	1042.26 50.82	180.494 0.0949	-57.794 24.413	-57.756 34.150	0.70100 1.26796	0.224 0.161	0.408 0.232	2968. 582.
162.343	14.696	71.231 0.2790	1037.62 50.88	179.899 0.0967	-57.654 24.456	-57.616 34.209	0.70187 1.26713	0.224 0.161	0.409 0.232	2963. 583.
164	16.165	70.944 0.3045	1015.32 51.14	177.044 0.1057	-56.978 24.663	-56.936 34.492	0.70601 1.26315	0.223 0.161	0.409 0.233	2939. 585.
166	18.085	70.596 0.3376	988.71 51.44	173.640 0.1175	-56.161 24.910	-56.114 34.829	0.71096 1.25847	0.222 0.162	0.410 0.234	2909. 587.
168	20.176	70.246 0.3734	962.45 51.72	170.280 0.1303	-55.343 25.152	-55.290 35.159	0.71586 1.25392	0.221 0.162	0.411 0.235	2880. 590.
170	22.446	69.893 0.4119	936.51 51.96	166.962 0.1441	-54.523 25.390	-54.463 35.482	0.72072 1.24949	0.220 0.163	0.412 0.237	2850. 592.
172	24.906	69.537 0.4533	910.88 52.19	163.686 0.1591	-53.701 25.623	-53.635 35.798	0.72553 1.24517	0.219 0.163	0.413 0.238	2820. 594.
174	27.566	69.180 0.4978	885.56 52.38	160.450 0.1752	-52.878 25.852	-52.804 36.107	0.73029 1.24097	0.218 0.163	0.414 0.240	2790. 597.
176	30.435	68.819 0.5454	860.55 52.54	157.253 0.1926	-52.053 26.075	-51.971 36.408	0.73500 1.23687	0.217 0.164	0.415 0.241	2759. 599.
178	33.524	68.455 0.5965	835.82 52.68	154.094 0.2114	-51.226 26.294	-51.135 36.702	0.73968 1.23286	0.217 0.164	0.416 0.243	2729. 601.
180	36.843	68.089 0.6510	811.39 52.79	150.971 0.2315	-50.396 26.508	-50.296 36.988	0.74432 1.22895	0.216 0.165	0.418 0.245	2698. 603.
182	40.403	67.720 0.7092	787.24 52.86	147.885 0.2532	-49.565 26.716	-49.454 37.265	0.74891 1.22512	0.215 0.165	0.419 0.247	2667. 604.
184	44.213	67.347 0.7713	763.37 52.90	144.833 0.2764	-48.731 26.918	-48.610 37.534	0.75347 1.22138	0.214 0.166	0.421 0.249	2635. 606.
186	48.284	66.971 0.8373	739.78 52.91	141.816 0.3012	-47.895 27.115	-47.761 37.794	0.75800 1.21772	0.213 0.166	0.422 0.251	2604. 608.
188	52.628	66.592 0.9075	716.46 52.89	138.831 0.3278	-47.056 27.305	-46.910 38.044	0.76249 1.21412	0.213 0.167	0.424 0.253	2572. 609.
190	57.255	66.208 0.9821	693.41 52.83	135.879 0.3563	-46.215 27.490	-46.055 38.285	0.76694 1.21060	0.212 0.168	0.426 0.255	2540. 611.
192	62.176	65.821 1.061	670.64 52.74	132.958 0.3867	-45.370 27.668	-45.195 38.517	0.77137 1.20714	0.211 0.168	0.428 0.258	2508. 612.
194	67.402	65.430 1.145	648.14 52.61	130.068 0.4193	-44.523 27.839	-44.332 38.738	0.77577 1.20374	0.211 0.169	0.430 0.260	2475. 613.

Thermodynamic Properties of Saturated Oxygen

Temperature		Pressure	Density	Isotherm Derivative	Isochores Derivative	Internal Energy	Enthalpy	Entropy	CV	CP	Velocity of Sound
DEG	R	PSIA	LB/CU FT	CU FT-PSIA/LB	PSIA/R	BTU/LB	BTU/LB	BTU/LB-R	BTU / LB - R		FT/SEC
196		72.943	65.035 1.234	625.90 52.45	127.207 0.4540	-43.672 28.003	-43.465 38.949	0.78013 1.20039	0.210 0.169	0.432 0.263	2442. 614.
198		78.812	64.636 1.328	603.94 52.24	124.376 0.4910	-42.818 28.160	-42.592 39.149	0.78448 1.19710	0.209 0.170	0.434 0.266	2409. 615.
200		85.019	64.231 1.428	582.26 52.00	121.572 0.5305	-41.961 28.309	-41.716 39.337	0.78879 1.19385	0.209 0.171	0.436 0.269	2376. 616.
202		91.576	63.622 1.533	560.84 51.72	118.796 0.5727	-41.099 28.450	-40.834 39.514	0.79309 1.19065	0.208 0.171	0.439 0.272	2342. 617.
204		98.494	63.408 1.644	539.71 51.40	116.046 0.6176	-40.234 28.584	-39.946 39.679	0.79736 1.18749	0.207 0.172	0.442 0.276	2308. 618.
206		105.784	62.988 1.761	518.86 51.04	113.323 0.6654	-39.364 28.709	-39.053 39.832	0.80161 1.18436	0.207 0.173	0.445 0.280	2274. 618.
208		113.458	62.563 1.885	498.28 50.63	110.624 0.7164	-38.490 28.825	-38.154 39.971	0.80584 1.18127	0.206 0.174	0.448 0.283	2239. 619.
210		121.529	62.132 2.016	478.00 50.18	107.950 0.7708	-37.612 28.932	-37.249 40.097	0.81006 1.17820	0.206 0.174	0.451 0.288	2204. 619.
212		130.007	61.694 2.153	458.01 49.69	105.299 0.8287	-36.728 29.029	-36.338 40.209	0.81426 1.17516	0.205 0.175	0.455 0.292	2169. 620.
214		138.904	61.250 2.299	438.32 49.16	102.671 0.8904	-35.839 29.116	-35.419 40.307	0.81845 1.17215	0.205 0.176	0.459 0.297	2133. 620.
216		148.233	60.799 2.452	418.93 48.57	100.065 0.9561	-34.944 29.193	-34.492 40.389	0.82262 1.16915	0.204 0.177	0.463 0.302	2097. 620.
218		158.005	60.340 2.613	399.84 47.95	97.481 1.026	-34.043 29.259	-33.558 40.456	0.82679 1.16616	0.204 0.178	0.467 0.308	2061. 620.
220		168.233	59.873 2.783	381.07 47.27	94.917 1.101	-33.136 29.313	-32.616 40.506	0.83095 1.16318	0.203 0.179	0.472 0.314	2024. 620.
222		178.930	59.398 2.963	362.62 46.55	92.373 1.181	-32.223 29.356	-31.665 40.540	0.83510 1.16021	0.203 0.180	0.477 0.320	1987. 620.
224		190.107	58.915 3.152	344.49 45.78	89.848 1.266	-31.302 29.386	-30.704 40.555	0.83926 1.15724	0.203 0.181	0.483 0.327	1950. 619.
226		201.777	58.421 3.351	326.70 44.95	87.342 1.356	-30.373 29.402	-29.734 40.551	0.84341 1.15427	0.202 0.182	0.489 0.334	1912. 619.
228		213.954	57.918 3.562	309.24 44.08	84.853 1.453	-29.436 29.404	-28.752 40.528	0.84756 1.15130	0.202 0.183	0.495 0.342	1874. 618.
230		226.649	57.404 3.784	292.12 43.15	82.382 1.557	-28.491 29.392	-27.760 40.484	0.85171 1.14831	0.202 0.184	0.502 0.351	1836. 618.
232		239.876	56.878 4.018	275.36 42.18	79.926 1.668	-27.536 29.364	-26.755 40.418	0.85588 1.14530	0.201 0.185	0.509 0.361	1797. 617.
234		253.648	56.341 4.266	258.96 41.14	77.485 1.787	-26.572 29.319	-25.738 40.330	0.86005 1.14228	0.201 0.186	0.518 0.371	1757. 616.
236		267.978	55.790 4.528	242.91 40.05	75.059 1.914	-25.596 29.257	-24.707 40.216	0.86424 1.13923	0.201 0.188	0.527 0.383	1717. 615.
238		282.881	55.225 4.805	227.24 38.91	72.646 2.051	-24.609 29.175	-23.661 40.077	0.86844 1.13614	0.201 0.189	0.536 0.395	1677. 614.
240		298.369	54.644 5.098	211.94 37.71	70.246 2.198	-23.610 29.074	-22.599 39.911	0.87266 1.13302	0.201 0.190	0.547 0.409	1636. 613.
242		314.456	54.047 5.409	197.03 36.45	67.857 2.356	-22.597 28.950	-21.520 39.715	0.87691 1.12986	0.201 0.192	0.559 0.425	1595. 612.
244		331.156	53.433 5.740	182.49 35.13	65.478 2.526	-21.570 28.804	-20.422 39.488	0.88119 1.12664	0.201 0.193	0.573 0.443	1553. 610.

Thermodynamic Properties of Saturated Oxygen

TEMPERATURE DEG. R	PRESSURE PSIA	DENSITY LB/CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
246	348.485	52.798 6.091	168.35 33.75	63.108 2.710	-20.526 28.632	-19.304 39.226	0.88551 1.12336	0.201 0.195	0.588 0.462	1510. 609.
248	366.455	52.142 6.465	154.60 32.31	60.745 2.909	-19.465 28.432	-18.164 38.929	0.88987 1.12000	0.201 0.197	0.604 0.485	1467. 607.
250	385.083	51.462 6.864	141.25 30.80	58.387 3.125	-18.384 28.203	-16.999 38.591	0.89428 1.11657	0.201 0.199	0.623 0.510	1423. 605.
252	404.384	50.756 7.291	128.30 29.23	56.032 3.360	-17.282 27.940	-15.807 38.210	0.89875 1.11304	0.202 0.200	0.645 0.540	1379. 604.
254	424.373	50.020 7.750	115.74 27.59	53.678 3.616	-16.156 27.641	-14.585 37.781	0.90329 1.10940	0.202 0.203	0.670 0.574	1333. 602.
256	445.069	49.251 8.243	103.59 25.88	51.320 3.897	-15.002 27.301	-13.329 37.299	0.90791 1.10563	0.203 0.205	0.700 0.614	1287. 600.
258	466.488	48.443 8.777	91.85 24.09	48.955 4.205	-13.817 26.915	-12.034 36.757	0.91264 1.10170	0.203 0.207	0.735 0.662	1240. 598.
260	488.651	47.591 9.356	80.51 22.23	46.578 4.547	-12.595 26.475	-10.694 36.147	0.91748 1.09760	0.204 0.209	0.777 0.721	1191. 595.
262	511.580	46.686 9.990	69.59 20.29	44.180 4.926	-11.330 25.974	-9.301 35.457	0.92247 1.09327	0.205 0.212	0.830 0.794	1141. 593.
264	535.300	45.718 10.688	59.08 18.25	41.752 5.352	-10.013 25.400	-7.845 34.674	0.92765 1.08868	0.207 0.215	0.897 0.887	1090. 591.
266	559.839	44.670 11.466	48.99 16.12	39.280 5.835	-8.631 24.736	-6.310 33.777	0.93306 1.08374	0.208 0.218	0.986 1.009	1037. 588.
268	585.233	43.520 12.346	39.35 13.88	36.744 6.390	-7.165 23.958	-4.674 32.736	0.93879 1.07837	0.210 0.222	1.109 1.179	981. 585.
270	611.527	42.233 13.362	30.17 11.52	34.113 7.041	-5.584 23.030	-2.903 31.505	0.94495 1.07238	0.213 0.225	1.294 1.431	922. 582.
272	638.780	40.744 14.575	21.52 9.01	31.332 7.829	-3.838 21.885	-0.934 30.001	0.95176 1.06549	0.216 0.230	1.600 1.843	860. 579.
274	667.077	38.927 16.108	13.47 6.32	28.295 8.836	-1.818 20.394	1.356 28.062	0.95967 1.05714	0.220 0.234	2.210 2.649	792. 575.
276	696.547	36.438 18.295	6.22 3.43	24.725 10.275	0.767 18.205	4.307 25.256	0.96987 1.04578	0.226 0.241	4.011 4.940	715. 571.
278	727.447	30.889 23.364	0.41 0.38	18.845 13.550	5.997 13.086	10.358 18.852	0.99110 1.02165	0.241 0.248	47.349 45.862	609. 570.
278.246	731.417	27.228	0.00	16.075	9.359	14.334	1.00530	0.247		580.

THERMODYNAMIC PROPERTIES OF OXYGEN

0.10 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.846	81.65039	2220.11	360.4	-83.861	-83.861	0.49599	0.248	0.407	4109.
100	81.30765	2164.85	347.3	-82.982	-82.982	0.50488	0.253	0.409	4030.
105	80.50671	2042.35	322.7	-80.932	-80.931	0.52489	0.258	0.411	3833.
*107.647	80.08946	1980.69	311.4	-79.844	-79.844	0.53512	0.258	0.411	3819.
*107.647	0.00277	36.04	0.001	16.595	23.275	1.49160	0.156	0.218	434.
110	0.00271	36.84	0.001	16.967	23.788	1.49631	0.156	0.218	449.
115	0.00259	38.52	0.001	17.740	24.877	1.50600	0.156	0.218	500.
120	0.00249	40.20	0.001	18.513	25.967	1.51527	0.156	0.218	511.
125	0.00239	41.88	0.001	19.286	27.057	1.52416	0.156	0.218	521.
130	0.00229	43.56	0.001	20.074	28.144	1.53270	0.155	0.218	532.
135	0.00221	45.24	0.001	20.852	29.232	1.54091	0.155	0.218	542.
140	0.00213	46.92	0.001	21.629	30.320	1.54883	0.155	0.218	552.
145	0.00206	48.60	0.001	22.406	31.408	1.55647	0.155	0.218	561.
150	0.00199	50.28	0.001	23.184	32.496	1.56374	0.155	0.218	571.
155	0.00192	51.96	0.001	23.961	33.584	1.57098	0.155	0.218	581.
160	0.00186	53.63	0.001	24.738	34.672	1.57788	0.155	0.218	590.
165	0.00181	55.31	0.001	25.515	35.759	1.58458	0.155	0.218	599.
170	0.00175	56.99	0.001	26.292	36.847	1.59107	0.155	0.218	608.
175	0.00170	58.67	0.001	27.069	37.934	1.59737	0.155	0.217	617.
180	0.00166	60.35	0.001	27.845	39.022	1.60350	0.155	0.217	626.
185	0.00161	62.02	0.001	28.622	40.109	1.60946	0.155	0.217	634.
190	0.00157	63.70	0.001	29.399	41.197	1.61526	0.155	0.217	643.
195	0.00153	65.38	0.001	30.176	42.284	1.62091	0.155	0.217	651.
200	0.00149	67.06	0.001	30.953	43.371	1.62641	0.155	0.217	660.
205	0.00145	68.73	0.000	31.729	44.459	1.63178	0.155	0.217	668.
210	0.00142	70.41	0.000	32.506	45.546	1.63702	0.155	0.217	676.
215	0.00139	72.09	0.000	33.283	46.633	1.64214	0.155	0.217	684.
220	0.00136	73.77	0.000	34.060	47.721	1.64714	0.155	0.217	692.
225	0.00133	75.44	0.000	34.836	48.808	1.65203	0.155	0.217	700.
230	0.00130	77.12	0.000	35.613	49.895	1.65681	0.155	0.217	707.
235	0.00127	78.80	0.000	36.390	50.983	1.66148	0.155	0.217	715.
240	0.00124	80.48	0.000	37.166	52.070	1.66606	0.155	0.217	722.
245	0.00122	82.15	0.000	37.943	53.157	1.67055	0.155	0.217	730.
250	0.00119	83.83	0.000	38.720	54.245	1.67494	0.155	0.217	737.
255	0.00117	85.51	0.000	39.497	55.332	1.67925	0.155	0.217	745.
260	0.00115	87.18	0.000	40.273	56.420	1.68347	0.155	0.217	752.
265	0.00113	88.86	0.000	41.050	57.507	1.68761	0.155	0.217	759.
270	0.00110	90.54	0.000	41.827	58.595	1.69168	0.155	0.217	766.
275	0.00108	92.22	0.000	42.604	59.684	1.69568	0.155	0.217	773.
280	0.00106	93.90	0.000	43.381	60.769	1.69959	0.155	0.217	780.
285	0.00105	95.57	0.000	44.157	61.856	1.70343	0.155	0.217	787.
290	0.00103	97.25	0.000	44.934	62.944	1.70722	0.155	0.217	794.
295	0.00101	98.92	0.000	45.711	64.031	1.71093	0.155	0.217	801.
300	0.00099	100.60	0.000	46.488	65.118	1.71459	0.155	0.217	808.
310	0.00096	103.95	0.000	48.042	67.293	1.72172	0.155	0.217	821.
320	0.00093	107.31	0.000	49.596	69.468	1.72862	0.155	0.217	834.
330	0.00090	110.66	0.000	51.150	71.643	1.73532	0.155	0.218	847.
340	0.00088	114.02	0.000	52.704	73.818	1.74181	0.155	0.218	860.
350	0.00085	117.37	0.000	54.258	75.994	1.74812	0.155	0.218	872.
360	0.00083	120.72	0.000	55.813	78.169	1.75425	0.155	0.218	885.
370	0.00081	124.08	0.000	57.368	80.345	1.76021	0.156	0.218	897.
380	0.00078	127.43	0.000	58.923	82.521	1.76601	0.156	0.218	909.
390	0.00076	130.79	0.000	60.478	84.698	1.77167	0.156	0.218	921.
400	0.00075	134.14	0.000	62.035	86.875	1.77718	0.156	0.218	932.
410	0.00073	137.49	0.000	63.591	89.053	1.78255	0.156	0.218	944.
420	0.00071	140.85	0.000	65.148	91.231	1.78780	0.156	0.218	955.
430	0.00069	144.20	0.000	66.706	93.410	1.79293	0.156	0.218	967.
440	0.00068	147.56	0.000	68.265	95.590	1.79794	0.156	0.218	978.
450	0.00066	150.91	0.000	69.825	97.771	1.80284	0.156	0.218	989.
460	0.00065	154.26	0.000	71.386	99.952	1.80764	0.156	0.218	1000.
470	0.00063	157.62	0.000	72.948	102.135	1.81233	0.156	0.218	1010.
480	0.00062	160.97	0.000	74.511	104.319	1.81693	0.156	0.218	1021.
490	0.00061	164.32	0.000	76.075	106.505	1.82144	0.157	0.219	1031.
500	0.00060	167.68	0.000	77.641	108.692	1.82585	0.157	0.219	1042.
510	0.00058	171.03	0.000	79.208	110.880	1.83019	0.157	0.219	1052.
520	0.00057	174.39	0.000	80.777	113.070	1.83444	0.157	0.219	1062.
530	0.00056	177.74	0.000	82.348	115.262	1.83862	0.157	0.219	1072.
540	0.00055	181.09	0.000	83.921	117.456	1.84272	0.157	0.219	1082.
550	0.00054	184.45	0.000	85.496	119.652	1.84675	0.158	0.220	1091.
560	0.00053	187.80	0.000	87.073	121.850	1.85071	0.158	0.220	1101.
570	0.00052	191.15	0.000	88.652	124.050	1.85460	0.158	0.220	1111.
580	0.00051	194.51	0.000	90.234	126.253	1.85843	0.158	0.220	1120.
590	0.00051	197.86	0.000	91.819	128.458	1.86220	0.159	0.221	1130.
600	0.00050	201.22	0.000	93.405	130.666	1.86591	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

1 PSIA ISOBAR

1 PSIA ISOBAR

TEMPERATURE DENSITY ISOTHERM ISOCORE INTERNAL ENTHALPY ENTROPY CV CP VELOCITY  
 DEG R LB/ CU FT DERIVATIVE DERIVATIVE ENERGY OF SOUND  
 CU FT-PSIA/LB PSIA/R BTU/LB BTU/LB-R BTU / LB - R FT/SEC

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
* 97.848	81.65058	2220.13	360.4	-83.961	-83.859	0.49599	0.248	0.407	4109.
100	81.30307	2164.91	347.7	-82.983	-82.981	0.50487	0.253	0.409	4030.
105	80.50715	2042.41	322.7	-80.932	-80.930	0.52489	0.258	0.411	3883.
110	79.72056	1927.76	302.3	-78.830	-78.877	0.54398	0.259	0.410	3767.
115	78.93743	1820.28	285.0	-76.833	-76.831	0.56217	0.256	0.408	3669.
120	78.15367	1719.71	270.0	-74.796	-74.793	0.57952	0.253	0.407	3582.
125	77.36637	1623.82	256.5	-72.766	-72.763	0.59609	0.249	0.405	3502.
*126.976	77.05384	1587.54	251.5	-71.965	-71.963	0.60245	0.247	0.405	3472.
*126.976	0.02359	42.19	0.008	19.532	27.331	1.38401	0.157	0.220	524.
130	0.02304	43.23	0.008	20.007	28.046	1.38919	0.156	0.220	530.
135	0.02217	44.93	0.007	20.791	29.143	1.39747	0.156	0.219	541.
140	0.02137	46.64	0.007	21.574	30.239	1.40544	0.156	0.219	551.
145	0.02063	48.33	0.007	22.356	31.334	1.41312	0.156	0.219	561.
150	0.01993	50.03	0.007	23.137	32.427	1.42054	0.156	0.219	570.
155	0.01929	51.73	0.006	23.918	33.520	1.42771	0.156	0.219	580.
160	0.01868	53.42	0.006	24.698	34.613	1.43464	0.156	0.218	589.
165	0.01811	55.11	0.006	25.478	35.704	1.44136	0.156	0.218	598.
170	0.01757	56.80	0.006	26.258	36.795	1.44787	0.156	0.218	607.
175	0.01707	58.49	0.006	27.037	37.886	1.45420	0.156	0.218	616.
180	0.01659	60.17	0.006	27.815	38.976	1.46034	0.156	0.218	625.
185	0.01614	61.86	0.005	28.594	40.066	1.46631	0.156	0.218	634.
190	0.01571	63.55	0.005	29.372	41.156	1.47213	0.155	0.218	642.
195	0.01531	65.23	0.005	30.150	42.245	1.47779	0.155	0.218	651.
200	0.01493	66.92	0.005	30.928	43.335	1.48330	0.155	0.218	659.
205	0.01456	68.60	0.005	31.706	44.424	1.48868	0.155	0.218	667.
210	0.01421	70.28	0.005	32.484	45.513	1.49393	0.155	0.218	675.
215	0.01388	71.97	0.005	33.262	46.602	1.49905	0.155	0.218	683.
220	0.01356	73.65	0.005	34.039	47.691	1.50406	0.155	0.218	691.
225	0.01326	75.33	0.004	34.817	48.780	1.50895	0.155	0.218	699.
230	0.01297	77.01	0.004	35.594	49.869	1.51374	0.155	0.218	707.
235	0.01270	78.69	0.004	36.372	50.955	1.51841	0.155	0.218	715.
240	0.01243	80.37	0.004	37.149	52.043	1.52300	0.155	0.218	722.
245	0.01218	82.06	0.004	37.927	53.131	1.52748	0.155	0.218	730.
250	0.01193	83.74	0.004	38.704	54.220	1.53188	0.155	0.218	737.
255	0.01170	85.42	0.004	39.481	55.308	1.53619	0.155	0.218	744.
260	0.01148	87.10	0.004	40.258	56.396	1.54041	0.155	0.218	752.
265	0.01126	88.78	0.004	41.036	57.484	1.54456	0.155	0.218	759.
270	0.01105	90.46	0.004	41.813	58.572	1.54863	0.155	0.218	766.
275	0.01085	92.14	0.004	42.590	59.660	1.55262	0.155	0.218	773.
280	0.01065	93.82	0.004	43.367	60.748	1.55654	0.155	0.218	780.
285	0.01047	95.50	0.004	44.144	61.836	1.56039	0.155	0.218	787.
290	0.01029	97.18	0.003	44.921	62.924	1.56418	0.155	0.218	794.
295	0.01011	98.86	0.003	45.699	64.012	1.56790	0.155	0.218	801.
300	0.00994	100.54	0.003	46.476	65.099	1.57155	0.155	0.218	808.
310	0.00962	103.89	0.003	48.030	67.275	1.57869	0.155	0.218	821.
320	0.00932	107.25	0.003	49.584	69.451	1.58559	0.155	0.218	834.
330	0.00904	110.61	0.003	51.139	71.627	1.59229	0.155	0.218	847.
340	0.00877	113.97	0.003	52.694	73.803	1.59879	0.155	0.218	860.
350	0.00852	117.32	0.003	54.248	75.979	1.60509	0.155	0.218	872.
360	0.00828	120.68	0.003	55.803	78.155	1.61122	0.155	0.218	885.
370	0.00806	124.04	0.003	57.359	80.332	1.61719	0.156	0.218	897.
380	0.00785	127.39	0.003	58.914	82.509	1.62299	0.156	0.218	909.
390	0.00765	130.75	0.003	60.470	84.689	1.62866	0.156	0.218	921.
400	0.00745	134.11	0.003	62.026	86.867	1.63417	0.156	0.218	932.
410	0.00727	137.46	0.002	63.583	89.045	1.63955	0.156	0.218	944.
420	0.00710	140.82	0.002	65.141	91.223	1.64480	0.156	0.218	955.
430	0.00693	144.17	0.002	66.699	93.402	1.64993	0.156	0.218	967.
440	0.00678	147.53	0.002	68.258	95.583	1.65494	0.156	0.218	978.
450	0.00663	150.88	0.002	69.818	97.764	1.65984	0.156	0.218	989.
460	0.00648	154.24	0.002	71.379	99.945	1.66463	0.156	0.218	1000.
470	0.00634	157.59	0.002	72.941	102.129	1.66933	0.156	0.218	1010.
480	0.00621	160.95	0.002	74.504	104.313	1.67393	0.156	0.219	1021.
490	0.00609	164.31	0.002	76.069	106.498	1.67843	0.157	0.219	1031.
500	0.00596	167.66	0.002	77.635	108.686	1.68295	0.157	0.219	1042.
510	0.00585	171.02	0.002	79.202	110.874	1.68719	0.157	0.219	1052.
520	0.00573	174.37	0.002	80.772	113.064	1.69144	0.157	0.219	1062.
530	0.00563	177.73	0.002	82.343	115.257	1.69561	0.157	0.219	1072.
540	0.00552	181.08	0.002	83.916	117.451	1.69972	0.157	0.220	1082.
550	0.00542	184.43	0.002	85.491	119.647	1.70375	0.158	0.220	1091.
560	0.00532	187.79	0.002	87.068	121.845	1.70771	0.158	0.220	1101.
570	0.00523	191.14	0.002	88.648	124.045	1.71160	0.158	0.220	1111.
580	0.00514	194.50	0.002	90.229	126.248	1.71543	0.158	0.220	1120.
590	0.00505	197.85	0.002	91.814	128.454	1.71920	0.159	0.221	1130.
600	0.00497	201.21	0.002	93.401	130.662	1.72291	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

47

THERMODYNAMIC PROPERTIES OF OXYGEN

0.50 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.847	81.65047	2220.12	360.4	-83.861	-83.860	0.49599	0.248	0.407	4109.
100	81.30284	2164.87	347.7	-82.983	-82.982	0.50488	0.253	0.409	4030.
105	80.50690	2042.37	322.7	-80.932	-80.931	0.52489	0.258	0.411	3893.
110	79.72030	1927.72	302.3	-78.879	-78.878	0.54398	0.258	0.410	3767.
115	78.93716	1820.24	285.0	-76.833	-76.832	0.56218	0.256	0.408	3669.
120	78.15338	1719.17	270.0	-74.795	-74.794	0.57952	0.253	0.407	3582.
*120.395	78.09136	1711.44	268.8	-74.635	-74.634	0.58086	0.252	0.407	3575.
*120.395	0.01242	40.16	0.004	18.543	25.999	1.41573	0.156	0.219	511.
125	0.01196	41.72	0.004	19.263	27.007	1.42394	0.156	0.219	521.
130	0.01149	43.41	0.004	20.044	28.100	1.43252	0.156	0.219	531.
135	0.01106	45.10	0.004	20.825	29.193	1.44077	0.156	0.218	541.
140	0.01067	46.79	0.004	21.605	30.284	1.44871	0.156	0.218	551.
145	0.01030	48.48	0.003	22.384	31.375	1.45636	0.156	0.218	561.
150	0.00995	50.17	0.003	23.163	32.466	1.46376	0.156	0.218	571.
155	0.00963	51.85	0.003	23.942	33.556	1.47090	0.156	0.218	580.
160	0.00933	53.54	0.003	24.720	34.645	1.47782	0.156	0.218	590.
165	0.00905	55.22	0.003	25.498	35.735	1.48453	0.155	0.218	599.
170	0.00878	56.91	0.003	26.277	36.824	1.49103	0.155	0.218	608.
175	0.00853	58.59	0.003	27.054	37.913	1.49734	0.155	0.218	617.
180	0.00829	60.27	0.003	27.832	39.002	1.50348	0.155	0.218	625.
185	0.00806	61.95	0.003	28.610	40.090	1.50944	0.155	0.218	634.
190	0.00785	63.63	0.003	29.387	41.179	1.51525	0.155	0.218	643.
195	0.00765	65.31	0.003	30.165	42.267	1.52090	0.155	0.218	651.
200	0.00746	66.99	0.003	30.942	43.355	1.52641	0.155	0.218	659.
205	0.00728	68.67	0.002	31.719	44.443	1.53179	0.155	0.218	668.
210	0.00710	70.35	0.002	32.496	45.531	1.53703	0.155	0.218	676.
215	0.00694	72.03	0.002	33.273	46.619	1.54215	0.155	0.218	684.
220	0.00678	73.71	0.002	34.051	47.708	1.54715	0.155	0.218	692.
225	0.00663	75.39	0.002	34.828	48.796	1.55204	0.155	0.218	699.
230	0.00648	77.07	0.002	35.605	49.884	1.55683	0.155	0.218	707.
235	0.00635	78.75	0.002	36.382	50.972	1.56151	0.155	0.218	715.
240	0.00621	80.43	0.002	37.159	52.060	1.56609	0.155	0.218	722.
245	0.00609	82.11	0.002	37.936	53.148	1.57057	0.155	0.218	730.
250	0.00596	83.79	0.002	38.713	54.236	1.57497	0.155	0.218	737.
255	0.00585	85.47	0.002	39.490	55.324	1.57928	0.155	0.218	745.
260	0.00573	87.15	0.002	40.267	56.413	1.58351	0.155	0.218	752.
265	0.00563	88.82	0.002	41.044	57.496	1.58764	0.155	0.218	759.
270	0.00552	90.50	0.002	41.821	58.584	1.59170	0.155	0.218	766.
275	0.00542	92.18	0.002	42.598	59.672	1.59569	0.155	0.218	773.
280	0.00532	93.86	0.002	43.375	60.763	1.59962	0.155	0.218	780.
285	0.00523	95.54	0.002	44.152	61.850	1.60347	0.155	0.218	787.
290	0.00514	97.22	0.002	44.929	62.938	1.60726	0.155	0.218	794.
295	0.00505	98.99	0.002	45.706	64.025	1.61097	0.155	0.218	801.
300	0.00497	100.57	0.002	46.483	65.113	1.61463	0.155	0.218	808.
310	0.00481	103.93	0.002	48.037	67.288	1.62176	0.155	0.218	821.
320	0.00466	107.28	0.002	49.591	69.463	1.62867	0.155	0.218	834.
330	0.00452	110.64	0.002	51.145	71.638	1.63536	0.155	0.218	847.
340	0.00439	113.99	0.001	52.699	73.813	1.64185	0.155	0.218	860.
350	0.00426	117.35	0.001	54.254	75.989	1.64816	0.155	0.218	872.
360	0.00414	120.70	0.001	55.809	78.165	1.65429	0.155	0.218	885.
370	0.00403	124.06	0.001	57.364	80.341	1.66025	0.156	0.218	897.
380	0.00392	127.41	0.001	58.919	82.517	1.66606	0.156	0.218	909.
390	0.00382	130.77	0.001	60.475	84.694	1.67171	0.156	0.218	921.
400	0.00373	134.12	0.001	62.031	86.871	1.67722	0.156	0.218	932.
410	0.00364	137.48	0.001	63.588	89.049	1.68260	0.156	0.218	944.
420	0.00355	140.83	0.001	65.145	91.228	1.68785	0.156	0.218	955.
430	0.00347	144.19	0.001	66.703	93.407	1.69298	0.156	0.218	967.
440	0.00339	147.54	0.001	68.262	95.587	1.69799	0.156	0.218	978.
450	0.00331	150.90	0.001	69.822	97.767	1.70289	0.156	0.218	989.
460	0.00324	154.25	0.001	71.383	99.949	1.70768	0.156	0.218	1000.
470	0.00317	157.61	0.001	72.945	102.132	1.71238	0.156	0.218	1010.
480	0.00311	160.96	0.001	74.508	104.316	1.71698	0.156	0.218	1021.
490	0.00304	164.32	0.001	76.072	106.502	1.72148	0.157	0.219	1031.
500	0.00298	167.67	0.001	77.638	108.689	1.72590	0.157	0.219	1042.
510	0.00292	171.02	0.001	79.206	110.877	1.73024	0.157	0.219	1052.
520	0.00287	174.38	0.001	80.775	113.068	1.73449	0.157	0.219	1062.
530	0.00281	177.73	0.001	82.346	115.260	1.73866	0.157	0.219	1072.
540	0.00276	181.07	0.001	83.919	117.454	1.74277	0.157	0.219	1082.
550	0.00271	184.44	0.001	85.494	119.650	1.74679	0.158	0.220	1091.
560	0.00266	187.80	0.001	87.071	121.848	1.75076	0.158	0.220	1101.
570	0.00262	191.15	0.001	88.650	124.048	1.75465	0.158	0.220	1111.
580	0.00257	194.50	0.001	90.232	126.251	1.75848	0.158	0.220	1120.
590	0.00253	197.86	0.001	91.816	128.456	1.76225	0.159	0.221	1130.
600	0.00248	201.21	0.001	93.403	130.664	1.76596	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

10 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCURE DFRIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.860	81.65256	2220.34	360.3	-83.860	-83.837	0.49601	0.248	0.407	4108.
100	81.30722	2165.48	347.7	-82.987	-82.964	0.50433	0.253	0.409	4030.
105	80.51155	2043.05	322.7	-80.936	-80.913	0.52485	0.258	0.411	3883.
110	79.72523	1928.45	302.3	-78.884	-78.861	0.54394	0.259	0.410	3767.
115	78.94238	1821.02	285.0	-76.838	-76.815	0.56213	0.256	0.408	3669.
120	78.15490	1719.99	270.0	-74.801	-74.777	0.57948	0.253	0.407	3582.
125	77.37191	1624.63	256.5	-72.771	-72.747	0.59605	0.249	0.405	3503.
130	76.57929	1534.27	244.3	-70.748	-70.723	0.61192	0.245	0.404	3427.
135	75.77946	1448.34	232.9	-68.728	-68.703	0.62717	0.241	0.404	3354.
140	74.97114	1366.32	222.1	-66.709	-66.685	0.64196	0.237	0.404	3283.
145	74.15321	1287.76	212.0	-64.690	-64.665	0.65603	0.234	0.404	3212.
150	73.32462	1212.28	202.3	-62.667	-62.642	0.66975	0.231	0.405	3141.
155	72.48425	1139.55	193.0	-60.640	-60.614	0.68304	0.228	0.406	3069.
*155.997	72.31509	1125.34	191.1	-60.235	-60.209	0.68565	0.227	0.406	3055.
*155.997	0.19600	49.71	0.067	23.639	33.037	1.28330	0.160	0.229	574.
160	0.19073	51.19	0.065	24.291	34.000	1.28908	0.159	0.228	582.
165	0.18456	53.02	0.063	25.101	35.134	1.29606	0.159	0.226	592.
170	0.17981	54.84	0.061	25.907	36.263	1.30280	0.158	0.225	601.
175	0.17342	56.64	0.059	26.709	37.387	1.30932	0.158	0.224	611.
180	0.16836	58.43	0.057	27.508	38.507	1.31553	0.158	0.224	620.
185	0.16360	60.20	0.056	28.305	39.624	1.32175	0.157	0.223	629.
190	0.15912	61.97	0.054	29.100	40.738	1.32769	0.157	0.222	638.
195	0.15488	63.73	0.053	29.893	41.849	1.33346	0.157	0.222	646.
200	0.15087	65.49	0.051	30.684	42.958	1.33908	0.157	0.222	655.
205	0.14707	67.24	0.050	31.474	44.065	1.34454	0.157	0.221	664.
210	0.14346	68.98	0.049	32.262	45.170	1.34997	0.156	0.221	672.
215	0.14003	70.72	0.047	33.050	46.274	1.35507	0.156	0.221	680.
220	0.13677	72.46	0.046	33.837	47.377	1.36014	0.156	0.220	688.
225	0.13365	74.19	0.045	34.622	48.478	1.36509	0.156	0.220	696.
230	0.13068	75.92	0.044	35.408	49.578	1.36992	0.156	0.220	704.
235	0.12784	77.64	0.043	36.192	50.678	1.37465	0.156	0.220	712.
240	0.12512	79.36	0.042	36.976	51.776	1.37928	0.156	0.220	720.
245	0.12252	81.08	0.041	37.759	52.874	1.38380	0.156	0.219	727.
250	0.12002	82.80	0.040	38.542	53.971	1.38824	0.156	0.219	735.
255	0.11763	84.51	0.040	39.325	55.068	1.39258	0.156	0.219	742.
260	0.11533	86.23	0.039	40.107	56.164	1.39684	0.156	0.219	750.
265	0.11312	87.94	0.038	40.888	57.259	1.40101	0.156	0.219	757.
270	0.11099	89.65	0.037	41.670	58.354	1.40510	0.156	0.219	764.
275	0.10894	91.36	0.037	42.451	59.449	1.40912	0.156	0.219	772.
280	0.10697	93.06	0.036	43.232	60.543	1.41306	0.156	0.219	779.
285	0.10507	94.77	0.035	44.013	61.637	1.41694	0.156	0.219	786.
290	0.10324	96.47	0.035	44.793	62.730	1.42074	0.156	0.219	793.
295	0.10147	98.17	0.034	45.574	63.824	1.42448	0.156	0.219	799.
300	0.09976	99.88	0.034	46.354	64.917	1.42815	0.156	0.219	806.
310	0.09651	103.28	0.032	47.914	67.102	1.43532	0.156	0.218	820.
320	0.09346	106.67	0.031	49.474	69.287	1.44225	0.156	0.218	833.
330	0.09061	110.07	0.030	51.033	71.471	1.44897	0.156	0.218	846.
340	0.08792	113.46	0.030	52.592	73.654	1.45549	0.156	0.218	859.
350	0.08539	116.85	0.029	54.151	75.837	1.46182	0.156	0.218	872.
360	0.08300	120.23	0.028	55.709	78.020	1.46797	0.156	0.218	884.
370	0.08074	123.62	0.027	57.268	80.202	1.47395	0.156	0.218	896.
380	0.07861	127.00	0.026	58.827	82.385	1.47977	0.156	0.218	908.
390	0.07658	130.38	0.026	60.386	84.567	1.48544	0.156	0.218	920.
400	0.07465	133.76	0.025	61.945	86.750	1.49096	0.156	0.218	932.
410	0.07282	137.14	0.024	63.505	88.933	1.49635	0.156	0.218	944.
420	0.07108	140.51	0.024	65.065	91.116	1.50161	0.156	0.218	955.
430	0.06942	143.89	0.023	66.625	93.299	1.50675	0.156	0.218	966.
440	0.06784	147.26	0.023	68.187	95.484	1.51177	0.156	0.218	977.
450	0.06633	150.63	0.022	69.749	97.669	1.51668	0.156	0.219	988.
460	0.06488	154.00	0.022	71.312	99.854	1.52149	0.156	0.219	999.
470	0.06349	157.37	0.021	72.876	102.041	1.52619	0.156	0.219	1010.
480	0.06217	160.74	0.021	74.441	104.228	1.53080	0.156	0.219	1021.
490	0.06089	164.11	0.020	76.007	106.417	1.53531	0.157	0.219	1031.
500	0.05967	167.48	0.020	77.575	108.607	1.53973	0.157	0.219	1042.
510	0.05850	170.85	0.020	79.144	110.799	1.54407	0.157	0.219	1052.
520	0.05737	174.22	0.019	80.715	112.992	1.54833	0.157	0.219	1062.
530	0.05629	177.59	0.019	82.288	115.187	1.55251	0.157	0.220	1072.
540	0.05524	180.95	0.019	83.862	117.384	1.55662	0.157	0.220	1082.
550	0.05424	184.31	0.018	85.439	119.582	1.56065	0.158	0.220	1092.
560	0.05327	187.68	0.018	87.017	121.783	1.56462	0.158	0.220	1101.
570	0.05233	191.04	0.018	88.598	123.986	1.56852	0.158	0.220	1111.
580	0.05143	194.41	0.017	90.181	126.191	1.57235	0.158	0.221	1120.
590	0.05055	197.77	0.017	91.767	128.398	1.57613	0.159	0.221	1130.
600	0.04971	201.13	0.017	93.355	130.608	1.57984	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

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5 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHOPE DERIVATIVE PSIA/R	INTERNAL ENRGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SFC
* 97.853	81.65146	2220.22	360.4	-83.961	-83.849	0.49600	0.248	0.407	4109.
100	81.30492	2165.16	347.7	-82.985	-82.973	0.50486	0.253	0.409	4030.
105	80.50911	2042.69	322.7	-80.934	-80.922	0.52487	0.258	0.411	3883.
110	79.72763	1928.06	302.3	-78.882	-78.870	0.54396	0.258	0.410	3767.
115	78.93963	1820.61	285.0	-76.836	-76.824	0.56216	0.256	0.408	3669.
120	78.15600	1719.56	270.0	-74.798	-74.786	0.57950	0.253	0.407	3532.
125	77.36883	1624.18	256.5	-72.768	-72.756	0.59607	0.249	0.405	3502.
130	76.57603	1533.81	244.2	-70.744	-70.732	0.61195	0.245	0.404	3427.
135	75.77601	1447.86	232.8	-68.724	-68.712	0.62720	0.241	0.404	3354.
140	74.96748	1365.82	222.1	-66.705	-66.693	0.64198	0.237	0.404	3282.
145	74.14933	1287.25	212.0	-64.686	-64.673	0.65606	0.234	0.404	3211.
*145.827	74.01293	1274.55	210.3	-64.351	-64.339	0.65836	0.233	0.404	3200.
*145.827	0.10380	47.43	0.035	22.260	31.180	1.31286	0.158	0.225	558.
150	0.10078	48.92	0.034	22.928	32.115	1.31919	0.158	0.224	566.
155	0.09740	50.69	0.033	23.725	33.232	1.32651	0.158	0.223	576.
160	0.09425	52.45	0.032	24.520	34.345	1.33358	0.157	0.222	586.
165	0.09130	54.20	0.031	25.313	35.455	1.34041	0.157	0.222	595.
170	0.08853	55.94	0.030	26.104	36.562	1.34702	0.157	0.221	605.
175	0.08594	57.67	0.029	26.893	37.667	1.35342	0.157	0.221	614.
180	0.08349	59.40	0.028	27.680	38.770	1.35964	0.156	0.220	623.
185	0.08119	61.13	0.027	28.467	39.871	1.36567	0.156	0.220	632.
190	0.07901	62.85	0.027	29.252	40.972	1.37154	0.156	0.220	640.
195	0.07694	64.57	0.026	30.037	42.070	1.37725	0.156	0.220	649.
200	0.07499	66.29	0.025	30.821	43.168	1.38281	0.156	0.219	657.
205	0.07313	68.00	0.025	31.604	44.265	1.38823	0.156	0.219	666.
210	0.07136	69.71	0.024	32.386	45.361	1.39351	0.156	0.219	674.
215	0.06968	71.42	0.023	33.168	46.456	1.39866	0.156	0.219	682.
220	0.06807	73.12	0.023	33.950	47.551	1.40370	0.156	0.219	690.
225	0.06654	74.82	0.022	34.731	48.645	1.40862	0.156	0.219	698.
230	0.06508	76.53	0.022	35.512	49.739	1.41342	0.156	0.219	706.
235	0.06368	78.23	0.021	36.292	50.832	1.41812	0.156	0.219	713.
240	0.06234	79.93	0.021	37.072	51.925	1.42273	0.156	0.219	721.
245	0.06105	81.62	0.021	37.852	53.017	1.42723	0.156	0.218	729.
250	0.05982	83.32	0.020	38.632	54.110	1.43164	0.156	0.218	736.
255	0.05864	85.02	0.020	39.412	55.201	1.43597	0.156	0.218	744.
260	0.05750	86.71	0.019	40.191	56.293	1.44021	0.156	0.218	751.
265	0.05641	88.41	0.019	40.970	57.384	1.44436	0.156	0.218	758.
270	0.05536	90.10	0.019	41.749	58.475	1.44844	0.156	0.218	765.
275	0.05434	91.79	0.018	42.528	59.566	1.45245	0.155	0.218	772.
280	0.05337	93.48	0.018	43.307	60.657	1.45638	0.155	0.218	779.
285	0.05242	95.17	0.018	44.086	61.747	1.46024	0.155	0.218	786.
290	0.05152	96.86	0.017	44.865	62.838	1.46403	0.155	0.218	793.
295	0.05064	98.55	0.017	45.643	63.928	1.46776	0.155	0.218	800.
300	0.04979	100.24	0.017	46.422	65.018	1.47142	0.155	0.218	807.
310	0.04817	103.62	0.016	47.979	67.198	1.47857	0.155	0.218	820.
320	0.04666	106.99	0.016	49.535	69.378	1.48549	0.155	0.218	834.
330	0.04524	110.37	0.015	51.092	71.558	1.49220	0.155	0.218	847.
340	0.04391	113.74	0.015	52.648	73.737	1.49870	0.155	0.218	859.
350	0.04265	117.11	0.014	54.205	75.916	1.50502	0.156	0.218	872.
360	0.04146	120.48	0.014	55.762	78.095	1.51116	0.156	0.218	884.
370	0.04033	123.85	0.014	57.319	80.274	1.51713	0.156	0.218	897.
380	0.03927	127.22	0.013	58.875	82.454	1.52294	0.156	0.218	909.
390	0.03826	130.59	0.013	60.433	84.633	1.52860	0.156	0.218	921.
400	0.03730	133.95	0.013	61.990	86.813	1.53412	0.156	0.218	932.
410	0.03639	137.32	0.012	63.548	88.993	1.53951	0.156	0.218	944.
420	0.03552	140.69	0.012	65.107	91.174	1.54476	0.156	0.218	955.
430	0.03469	144.05	0.012	66.666	93.355	1.54989	0.156	0.218	966.
440	0.03390	147.41	0.011	68.226	95.537	1.55491	0.156	0.218	978.
450	0.03315	150.77	0.011	69.787	97.720	1.55992	0.156	0.218	989.
460	0.03243	154.13	0.011	71.349	99.904	1.56482	0.156	0.218	999.
470	0.03173	157.50	0.011	72.912	102.088	1.56931	0.156	0.219	1010.
480	0.03107	160.86	0.010	74.476	104.274	1.57372	0.156	0.219	1021.
490	0.03044	164.22	0.010	76.041	106.461	1.57843	0.157	0.219	1031.
500	0.02983	167.58	0.010	77.608	108.650	1.58295	0.157	0.219	1042.
510	0.02924	170.94	0.010	79.177	110.840	1.58718	0.157	0.219	1052.
520	0.02868	174.30	0.010	80.747	113.031	1.59144	0.157	0.219	1062.
530	0.02814	177.66	0.009	82.318	115.225	1.59562	0.157	0.219	1072.
540	0.02762	181.02	0.009	83.892	117.420	1.59972	0.157	0.220	1082.
550	0.02711	184.38	0.009	85.468	119.617	1.60375	0.158	0.220	1092.
560	0.02663	187.74	0.009	87.046	121.817	1.60772	0.158	0.220	1101.
570	0.02616	191.10	0.009	88.626	124.018	1.61161	0.158	0.220	1111.
580	0.02571	194.46	0.009	90.208	126.222	1.61544	0.158	0.221	1120.
590	0.02527	197.82	0.008	91.793	128.429	1.61922	0.157	0.221	1130.
600	0.02485	201.17	0.008	93.381	130.638	1.62293	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

15 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.867	81.65765	2220.45	360.3	-83.859	-83.825	0.49601	0.248	0.407	4108.
100	81.30953	2165.79	347.7	-82.989	-82.955	0.50481	0.253	0.409	4030.
105	80.51400	2043.40	322.7	-80.939	-80.904	0.52482	0.258	0.411	3883.
110	79.72792	1928.83	302.3	-78.887	-78.852	0.54392	0.258	0.410	3767.
115	78.94512	1821.43	285.0	-76.841	-76.806	0.56211	0.256	0.408	3669.
120	78.16181	1720.42	270.0	-74.804	-74.758	0.57945	0.253	0.407	3583.
125	77.37499	1625.08	256.5	-72.774	-72.738	0.59602	0.249	0.405	3503.
130	76.58255	1534.74	244.3	-70.751	-70.715	0.61190	0.245	0.404	3428.
135	75.78291	1448.82	232.9	-68.731	-68.695	0.62715	0.241	0.404	3355.
140	74.97480	1366.91	222.2	-66.713	-66.676	0.64183	0.237	0.404	3293.
145	74.15710	1288.27	212.0	-64.694	-64.656	0.65600	0.234	0.404	3212.
150	73.32874	1212.81	202.3	-62.672	-62.634	0.66972	0.231	0.405	3141.
155	72.48864	1140.09	193.0	-60.644	-60.606	0.68301	0.228	0.406	3069.
160	71.63557	1069.81	184.0	-58.610	-58.572	0.69593	0.225	0.408	2997.
*162.696	71.16973	1032.84	179.3	-57.510	-57.471	0.70275	0.224	0.409	2958.
*162.696	0.28433	50.94	0.099	24.501	34.270	1.26627	0.161	0.232	583.
165	0.27995	51.82	0.097	24.882	34.804	1.26953	0.161	0.231	588.
170	0.27094	53.71	0.093	25.704	35.956	1.27641	0.160	0.230	598.
175	0.26253	55.58	0.090	26.520	37.100	1.28305	0.159	0.228	607.
180	0.25468	57.43	0.087	27.332	38.239	1.28946	0.159	0.227	617.
185	0.24731	59.26	0.085	28.140	39.372	1.29557	0.158	0.226	626.
190	0.24038	61.08	0.082	28.944	40.500	1.30168	0.158	0.225	635.
195	0.23386	62.89	0.080	29.746	41.624	1.30752	0.158	0.224	644.
200	0.22769	64.68	0.078	30.545	42.744	1.31320	0.157	0.224	653.
205	0.22186	66.47	0.075	31.342	43.862	1.31872	0.157	0.223	661.
210	0.21633	68.25	0.074	32.137	44.977	1.32409	0.157	0.223	670.
215	0.21108	70.02	0.072	32.930	46.090	1.32933	0.157	0.222	678.
220	0.20609	71.79	0.070	33.722	47.200	1.33443	0.157	0.222	686.
225	0.20134	73.55	0.068	34.513	48.309	1.33942	0.157	0.222	695.
230	0.19581	75.30	0.067	35.302	49.416	1.34428	0.156	0.221	703.
235	0.19248	77.05	0.065	36.091	50.522	1.34904	0.156	0.221	711.
240	0.18835	78.80	0.064	36.878	51.626	1.35369	0.156	0.221	718.
245	0.18439	80.54	0.062	37.665	52.729	1.35824	0.156	0.221	726.
250	0.18060	82.28	0.061	38.451	53.832	1.36269	0.156	0.220	734.
255	0.17696	84.01	0.060	39.237	54.933	1.36705	0.156	0.220	741.
260	0.17348	85.74	0.059	40.022	56.034	1.37133	0.156	0.220	749.
265	0.17013	87.47	0.057	40.806	57.133	1.37552	0.156	0.220	756.
270	0.16691	89.20	0.056	41.590	58.232	1.37963	0.156	0.220	763.
275	0.16381	90.92	0.055	42.374	59.331	1.38366	0.156	0.220	771.
280	0.16082	92.64	0.054	43.157	60.428	1.38761	0.156	0.220	778.
285	0.15795	94.36	0.053	43.939	61.526	1.39150	0.156	0.219	785.
290	0.15517	96.08	0.052	44.722	62.622	1.39531	0.156	0.219	792.
295	0.15250	97.79	0.051	45.504	63.719	1.39906	0.156	0.219	799.
300	0.14991	99.51	0.051	46.286	64.815	1.40275	0.156	0.219	806.
310	0.14500	102.93	0.049	47.849	67.006	1.40993	0.156	0.219	819.
320	0.14041	106.35	0.047	49.412	69.195	1.41688	0.156	0.219	833.
330	0.13609	109.77	0.046	50.974	71.384	1.42361	0.156	0.219	846.
340	0.13204	113.18	0.044	52.535	73.571	1.43015	0.156	0.219	858.
350	0.12823	116.58	0.043	54.096	75.758	1.43648	0.156	0.219	871.
360	0.12463	119.98	0.042	55.657	77.944	1.44264	0.156	0.219	884.
370	0.12123	123.38	0.041	57.218	80.130	1.44863	0.156	0.219	896.
380	0.11801	126.78	0.040	58.778	82.316	1.45446	0.156	0.219	908.
390	0.11496	130.17	0.039	60.339	84.501	1.46014	0.156	0.219	920.
400	0.11206	133.57	0.038	61.900	86.687	1.46567	0.156	0.219	932.
410	0.10931	136.95	0.037	63.461	88.872	1.47107	0.156	0.219	943.
420	0.10669	140.34	0.036	65.022	91.058	1.47633	0.156	0.219	955.
430	0.10419	143.73	0.035	66.584	93.244	1.48148	0.156	0.219	966.
440	0.10181	147.11	0.034	68.147	95.430	1.48650	0.156	0.219	977.
450	0.09953	150.49	0.033	69.710	97.617	1.49142	0.156	0.219	988.
460	0.09736	153.87	0.033	71.274	99.805	1.49623	0.156	0.219	999.
470	0.09528	157.25	0.032	72.839	101.993	1.50093	0.156	0.219	1010.
480	0.09328	160.63	0.031	74.406	104.183	1.50554	0.156	0.219	1021.
490	0.09137	164.01	0.031	75.973	106.373	1.51006	0.157	0.219	1031.
500	0.08954	167.38	0.030	77.542	108.565	1.51449	0.157	0.219	1042.
510	0.08777	170.76	0.030	79.112	110.758	1.51883	0.157	0.219	1052.
520	0.08608	174.13	0.029	80.684	112.953	1.52309	0.157	0.220	1062.
530	0.08445	177.50	0.028	82.257	115.149	1.52728	0.157	0.220	1072.
540	0.08288	180.88	0.028	83.832	117.347	1.53138	0.157	0.220	1082.
550	0.08137	184.25	0.027	85.410	119.547	1.53542	0.158	0.220	1092.
560	0.07991	187.62	0.027	86.989	121.749	1.53939	0.158	0.220	1101.
570	0.07850	190.99	0.026	88.571	123.953	1.54329	0.158	0.221	1111.
580	0.07715	194.36	0.026	90.155	126.159	1.54713	0.158	0.221	1120.
590	0.07584	197.72	0.025	91.741	128.368	1.55090	0.159	0.221	1130.
600	0.07457	201.09	0.025	93.330	130.579	1.55462	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

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14.696 PSIA ISOBAR  
THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY HTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.867	81.65359	2220.44	360.3	-83.859	-83.826	0.49601	0.248	0.407	4108.
100	81.30939	2165.78	347.7	-82.989	-82.956	0.50481	0.253	0.409	4030.
105	80.51385	2043.38	322.7	-80.938	-80.905	0.52482	0.258	0.411	3893.
110	79.72766	1928.81	302.3	-78.886	-78.852	0.54392	0.259	0.410	3767.
115	78.94495	1821.40	285.0	-76.841	-76.806	0.56211	0.256	0.408	3669.
120	78.16163	1720.40	270.0	-74.803	-74.769	0.57945	0.253	0.407	3583.
125	77.37480	1625.05	255.5	-72.774	-72.739	0.59603	0.249	0.405	3503.
130	76.58235	1534.71	244.3	-70.751	-70.715	0.61190	0.245	0.404	3427.
135	75.78770	1448.79	232.9	-68.731	-68.695	0.62715	0.241	0.404	3355.
140	74.97458	1366.78	222.2	-66.713	-66.676	0.64183	0.237	0.404	3283.
145	74.15686	1288.24	212.0	-64.694	-64.657	0.65600	0.234	0.404	3212.
150	73.32949	1212.78	202.3	-62.671	-62.634	0.66972	0.231	0.405	3141.
155	72.48837	1140.05	193.0	-60.644	-60.607	0.68302	0.228	0.406	3069.
160	71.63529	1069.78	184.0	-58.610	-58.572	0.69593	0.225	0.408	2997.
*162.343	71.23070	1037.62	179.9	-57.654	-57.616	0.70187	0.224	0.409	2963.
*162.343	0.27903	50.89	0.097	24.456	34.209	1.26713	0.161	0.232	583.
165	0.27408	51.89	0.095	24.895	34.824	1.27089	0.161	0.231	588.
170	0.26528	53.78	0.091	25.716	35.975	1.27776	0.160	0.229	598.
175	0.25707	55.64	0.088	26.532	37.118	1.28438	0.159	0.228	607.
180	0.24939	57.49	0.085	27.343	38.255	1.29079	0.159	0.227	617.
185	0.24218	59.32	0.083	28.150	39.387	1.29699	0.158	0.226	626.
190	0.23541	61.13	0.080	28.954	40.514	1.30301	0.158	0.225	635.
195	0.22902	62.94	0.078	29.755	41.638	1.30884	0.158	0.224	644.
200	0.22279	64.73	0.076	30.554	42.757	1.31451	0.157	0.224	653.
205	0.21729	66.52	0.074	31.350	43.874	1.32003	0.157	0.223	662.
210	0.21188	68.29	0.072	32.145	44.989	1.32540	0.157	0.223	670.
215	0.20674	70.06	0.070	32.939	46.101	1.33063	0.157	0.222	678.
220	0.20186	71.83	0.068	33.729	47.211	1.33574	0.157	0.222	687.
225	0.19721	73.59	0.067	34.520	48.319	1.34072	0.156	0.221	695.
230	0.19277	75.34	0.065	35.309	49.426	1.34558	0.156	0.221	703.
235	0.18854	77.09	0.064	36.097	50.531	1.35034	0.156	0.221	711.
240	0.18449	78.83	0.062	36.884	51.635	1.35499	0.156	0.221	718.
245	0.18062	80.57	0.061	37.671	52.738	1.35953	0.156	0.220	726.
250	0.17690	82.31	0.060	38.457	53.840	1.36399	0.156	0.220	734.
255	0.17335	84.04	0.059	39.242	54.941	1.36835	0.156	0.220	741.
260	0.16993	85.77	0.057	40.027	56.041	1.37262	0.156	0.220	749.
265	0.16665	87.50	0.056	40.811	57.141	1.37681	0.156	0.220	756.
270	0.16350	89.22	0.055	41.595	58.240	1.38092	0.156	0.220	763.
275	0.16046	90.95	0.054	42.378	59.338	1.38495	0.156	0.220	771.
280	0.15754	92.67	0.053	43.161	60.435	1.38890	0.156	0.219	778.
285	0.15473	94.39	0.052	43.944	61.532	1.39279	0.156	0.219	785.
290	0.15201	96.10	0.051	44.726	62.629	1.39660	0.156	0.219	792.
295	0.14939	97.82	0.050	45.508	63.725	1.40035	0.156	0.219	799.
300	0.14686	99.53	0.050	46.290	64.821	1.40403	0.156	0.219	806.
310	0.14205	102.95	0.048	47.853	67.011	1.41121	0.156	0.219	819.
320	0.13755	106.37	0.046	49.416	69.201	1.41816	0.156	0.219	833.
330	0.13333	109.78	0.045	50.977	71.389	1.42490	0.156	0.219	846.
340	0.12936	113.19	0.044	52.539	73.576	1.43143	0.156	0.219	859.
350	0.12562	116.60	0.042	54.099	75.763	1.43777	0.156	0.219	871.
360	0.12210	120.00	0.041	55.660	77.949	1.44392	0.156	0.219	884.
370	0.11876	123.40	0.040	57.221	80.135	1.44991	0.156	0.219	896.
380	0.11561	126.79	0.039	58.781	82.320	1.45574	0.156	0.219	908.
390	0.11262	130.19	0.038	60.342	84.505	1.46142	0.156	0.219	920.
400	0.10979	133.59	0.037	61.902	86.690	1.46695	0.156	0.219	932.
410	0.10709	136.97	0.036	63.463	88.876	1.47235	0.156	0.219	943.
420	0.10452	140.35	0.035	65.025	91.061	1.47761	0.156	0.219	955.
430	0.10208	143.74	0.034	66.587	93.247	1.48275	0.156	0.219	966.
440	0.09974	147.12	0.034	68.149	95.433	1.48778	0.156	0.219	977.
450	0.09751	150.50	0.033	69.713	97.620	1.49270	0.156	0.219	988.
460	0.09538	153.88	0.032	71.277	99.808	1.49750	0.156	0.219	999.
470	0.09334	157.26	0.031	72.842	101.996	1.50221	0.156	0.219	1010.
480	0.09139	160.64	0.031	74.409	104.185	1.50682	0.156	0.219	1021.
490	0.08952	164.01	0.030	75.975	106.376	1.51134	0.157	0.219	1031.
500	0.08772	167.39	0.029	77.544	108.568	1.51576	0.157	0.219	1042.
510	0.08599	170.76	0.029	79.114	110.761	1.52011	0.157	0.219	1052.
520	0.08433	174.14	0.028	80.686	112.955	1.52437	0.157	0.220	1062.
530	0.08274	177.51	0.028	82.259	115.151	1.52855	0.157	0.220	1072.
540	0.08120	180.88	0.027	83.834	117.347	1.53266	0.157	0.220	1082.
550	0.07972	184.25	0.027	85.412	119.549	1.53670	0.159	0.220	1092.
560	0.07829	187.62	0.026	86.991	121.751	1.54066	0.158	0.220	1101.
570	0.07691	190.99	0.026	88.572	123.955	1.54456	0.158	0.221	1111.
580	0.07558	194.36	0.025	90.156	126.161	1.54840	0.158	0.221	1120.
590	0.07430	197.73	0.025	91.742	128.370	1.55218	0.159	0.221	1130.
600	0.07306	201.09	0.025	93.331	130.581	1.55589	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

20 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHOPE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.875	81.65475	2220.56	360.2	-83.859	-83.813	0.49602	0.248	0.407	4108.
100	81.31184	2166.11	347.7	-82.991	-82.946	0.50479	0.253	0.409	4030.
105	80.51645	2043.76	322.7	-80.941	-80.895	0.52480	0.258	0.411	3884.
110	79.73041	1929.22	302.3	-78.889	-78.843	0.54390	0.258	0.410	3767.
115	78.94737	1821.84	285.0	-76.844	-76.797	0.56209	0.256	0.408	3669.
120	78.16472	1720.85	270.0	-74.806	-74.759	0.57943	0.253	0.407	3583.
125	77.37806	1625.53	256.6	-72.777	-72.729	0.59600	0.249	0.405	3503.
130	76.58591	1535.21	244.3	-70.754	-70.706	0.61187	0.245	0.404	3428.
135	75.78637	1449.30	232.9	-68.735	-68.686	0.62712	0.241	0.404	3355.
140	74.97846	1367.31	222.2	-66.717	-66.667	0.64180	0.237	0.404	3284.
145	74.16098	1288.78	212.0	-64.698	-64.648	0.65598	0.234	0.404	3213.
150	73.33286	1213.33	202.3	-62.676	-62.625	0.66969	0.231	0.405	3142.
155	72.49302	1140.63	193.0	-60.649	-60.598	0.68298	0.228	0.406	3070.
160	71.64025	1070.37	184.0	-58.615	-58.564	0.69590	0.225	0.408	2998.
165	70.77316	1002.30	175.4	-56.573	-56.521	0.70847	0.222	0.410	2924.
*167.838	70.27400	964.56	170.5	-55.409	-55.356	0.71547	0.221	0.411	2882.
*167.838	0.37037	51.69	0.129	25.132	35.132	1.25428	0.162	0.235	590.
170	0.36505	52.54	0.127	25.494	35.640	1.25729	0.162	0.234	594.
175	0.35339	54.49	0.123	26.326	36.806	1.26405	0.161	0.232	604.
180	0.34253	56.40	0.118	27.151	37.964	1.27057	0.160	0.231	614.
185	0.33238	58.30	0.115	27.971	39.114	1.27687	0.160	0.229	623.
190	0.32286	60.17	0.111	28.786	40.257	1.28297	0.159	0.228	632.
195	0.31391	62.03	0.108	29.597	41.395	1.28888	0.159	0.227	641.
200	0.30548	63.87	0.105	30.404	42.528	1.29462	0.158	0.226	650.
205	0.29752	65.69	0.102	31.208	43.656	1.30019	0.158	0.225	659.
210	0.28999	67.51	0.099	32.010	44.781	1.30561	0.158	0.225	668.
215	0.28285	69.32	0.096	32.809	45.903	1.31089	0.157	0.224	676.
220	0.27607	71.11	0.094	33.607	47.022	1.31604	0.157	0.224	685.
225	0.26962	72.90	0.092	34.402	48.138	1.32105	0.157	0.223	693.
230	0.26348	74.68	0.090	35.196	49.252	1.32595	0.157	0.223	701.
235	0.25762	76.46	0.087	35.989	50.365	1.33074	0.157	0.222	709.
240	0.25203	78.23	0.086	36.780	51.475	1.33541	0.156	0.222	717.
245	0.24668	79.99	0.084	37.571	52.584	1.33999	0.156	0.222	725.
250	0.24157	81.75	0.082	38.360	53.692	1.34446	0.156	0.221	732.
255	0.23666	83.50	0.080	39.149	54.798	1.34884	0.156	0.221	740.
260	0.23196	85.25	0.079	39.936	55.903	1.35313	0.156	0.221	748.
265	0.22744	87.00	0.077	40.723	57.007	1.35734	0.156	0.221	755.
270	0.22310	88.74	0.075	41.510	58.110	1.36146	0.156	0.221	762.
275	0.21893	90.48	0.074	42.296	59.212	1.36551	0.156	0.220	770.
280	0.21492	92.22	0.073	43.081	60.313	1.36948	0.156	0.220	777.
285	0.21105	93.95	0.071	43.866	61.414	1.37337	0.156	0.220	784.
290	0.20732	95.69	0.070	44.650	62.514	1.37720	0.156	0.220	791.
295	0.20372	97.41	0.069	45.434	63.614	1.38096	0.156	0.220	798.
300	0.20025	99.14	0.068	46.218	64.713	1.38465	0.156	0.220	805.
310	0.19366	102.59	0.065	47.784	66.909	1.39185	0.156	0.220	815.
320	0.18749	106.03	0.063	49.350	69.103	1.39892	0.156	0.219	832.
330	0.18171	109.46	0.061	50.914	71.296	1.40557	0.156	0.219	845.
340	0.17628	112.89	0.059	52.478	73.488	1.41211	0.156	0.219	858.
350	0.17117	116.32	0.058	54.042	75.679	1.41846	0.156	0.219	871.
360	0.16634	119.74	0.056	55.604	77.869	1.42463	0.156	0.219	883.
370	0.16179	123.15	0.055	57.167	80.058	1.43063	0.156	0.219	896.
380	0.15748	126.56	0.053	58.729	82.247	1.43647	0.156	0.219	908.
390	0.15340	129.97	0.052	60.292	84.435	1.44215	0.156	0.219	920.
400	0.14952	133.37	0.050	61.854	86.623	1.44769	0.156	0.219	932.
410	0.14584	136.77	0.049	63.417	88.811	1.45309	0.156	0.219	943.
420	0.14234	140.17	0.048	64.980	91.000	1.45837	0.156	0.219	955.
430	0.13900	143.57	0.047	66.543	93.188	1.46352	0.156	0.219	966.
440	0.13591	146.96	0.046	68.107	95.376	1.46855	0.156	0.219	977.
450	0.13277	150.35	0.045	69.672	97.565	1.47347	0.156	0.219	988.
460	0.12987	153.74	0.044	71.237	99.755	1.47828	0.156	0.219	999.
470	0.12709	157.13	0.043	72.803	101.946	1.48299	0.156	0.219	1010.
480	0.12442	160.52	0.042	74.370	104.137	1.48760	0.156	0.219	1021.
490	0.12187	163.90	0.041	75.939	106.329	1.49212	0.157	0.219	1031.
500	0.11942	167.28	0.040	77.508	108.523	1.49656	0.157	0.219	1041.
510	0.11706	170.67	0.039	79.080	110.717	1.50090	0.157	0.220	1052.
520	0.11480	174.05	0.039	80.652	112.913	1.50517	0.157	0.220	1062.
530	0.11262	177.43	0.038	82.227	115.111	1.50935	0.157	0.220	1072.
540	0.11053	180.80	0.037	83.803	117.311	1.51346	0.157	0.220	1082.
550	0.10851	184.18	0.036	85.381	119.512	1.51750	0.158	0.220	1092.
560	0.10657	187.56	0.036	86.961	121.715	1.52147	0.158	0.220	1101.
570	0.10469	190.93	0.035	88.543	123.920	1.52538	0.158	0.221	1111.
580	0.10288	194.30	0.035	90.128	126.128	1.52922	0.158	0.221	1120.
590	0.10113	197.68	0.034	91.715	128.338	1.53299	0.159	0.221	1130.
600	0.09944	201.05	0.033	93.304	130.550	1.53671	0.159	0.221	1139.

\* INDICATES TWO PHASE BOUNDARY

C-2



THERMODYNAMIC PROPERTIES OF OXYGEN

35 PSIA ISODAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU.FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.896	81.65804	2220.91	360.0	-83.857	-83.777	0.49604	0.248	0.407	4107.
100	81.31876	2167.07	347.7	-82.978	-82.918	0.50472	0.253	0.409	4030.
105	80.52378	2044.83	322.7	-80.948	-80.868	0.52473	0.258	0.411	3884.
110	79.73819	1930.38	302.3	-78.897	-78.815	0.54383	0.258	0.410	3769.
115	78.95610	1823.07	285.1	-76.852	-76.769	0.56202	0.256	0.408	3670.
120	78.17343	1722.15	270.0	-74.815	-74.732	0.57936	0.253	0.407	3583.
125	77.38729	1626.88	256.6	-72.786	-72.703	0.59593	0.249	0.405	3504.
130	76.59558	1536.60	244.3	-70.764	-70.679	0.61180	0.245	0.404	3429.
135	75.79671	1450.75	233.0	-68.745	-68.660	0.62704	0.241	0.404	3356.
140	74.98942	1368.80	222.3	-66.729	-66.642	0.64172	0.237	0.404	3285.
145	74.17261	1290.31	212.1	-64.710	-64.622	0.65589	0.234	0.404	3214.
150	73.34522	1214.91	202.4	-62.689	-62.600	0.66960	0.231	0.405	3143.
155	72.50616	1142.25	193.1	-60.663	-60.573	0.68289	0.228	0.406	3071.
160	71.65425	1072.03	184.1	-58.630	-58.540	0.69581	0.225	0.408	2999.
165	70.78811	1004.02	175.5	-56.589	-56.497	0.70838	0.222	0.409	2926.
170	69.90614	937.98	167.1	-54.537	-54.445	0.72063	0.220	0.412	2851.
175	69.00647	873.75	158.9	-52.473	-52.379	0.73261	0.218	0.415	2775.
*178.907	68.28972	824.71	152.7	-50.850	-50.755	0.74179	0.216	0.417	2715.
*178.907	0.62076	52.73	0.220	26.392	36.832	1.23108	0.165	0.244	601.
180	0.61623	53.20	0.218	26.581	37.099	1.23256	0.164	0.243	604.
185	0.59648	55.29	0.210	27.440	38.306	1.23918	0.163	0.240	614.
190	0.57815	57.34	0.203	28.290	39.501	1.24555	0.162	0.238	624.
195	0.56106	59.36	0.196	29.132	40.683	1.25169	0.161	0.236	634.
200	0.54508	61.34	0.190	29.966	41.856	1.25763	0.161	0.234	643.
205	0.53009	63.30	0.184	30.794	43.021	1.26338	0.160	0.232	652.
210	0.51599	65.24	0.179	31.618	44.178	1.26896	0.159	0.231	662.
215	0.50269	67.15	0.174	32.436	45.329	1.27438	0.159	0.230	670.
220	0.49011	69.05	0.169	33.251	46.475	1.27965	0.159	0.229	679.
225	0.47820	70.93	0.165	34.063	47.616	1.28477	0.158	0.228	688.
230	0.46690	72.80	0.160	34.871	48.753	1.28977	0.158	0.227	696.
235	0.45616	74.65	0.156	35.677	49.885	1.29464	0.158	0.226	705.
240	0.44593	76.49	0.153	36.481	51.015	1.29940	0.157	0.226	713.
245	0.43618	78.33	0.149	37.282	52.141	1.30405	0.157	0.225	721.
250	0.42687	80.15	0.146	38.082	53.265	1.30859	0.157	0.225	729.
255	0.41796	81.97	0.143	38.880	54.387	1.31303	0.157	0.224	736.
260	0.40944	83.78	0.140	39.677	55.506	1.31738	0.157	0.224	744.
265	0.40128	85.58	0.137	40.472	56.624	1.32163	0.157	0.223	752.
270	0.39345	87.37	0.134	41.266	57.739	1.32580	0.157	0.223	759.
275	0.38593	89.16	0.131	42.059	58.853	1.32989	0.156	0.223	767.
280	0.37870	90.95	0.129	42.852	59.966	1.33390	0.156	0.222	774.
285	0.37175	92.72	0.126	43.643	61.077	1.33783	0.156	0.222	781.
290	0.36506	94.50	0.124	44.433	62.187	1.34170	0.156	0.222	789.
295	0.35862	96.27	0.122	45.223	63.296	1.34549	0.156	0.222	796.
300	0.35240	98.03	0.120	46.012	64.404	1.34921	0.156	0.221	803.
310	0.34061	101.55	0.116	47.589	66.617	1.35647	0.156	0.221	817.
320	0.32961	105.06	0.112	49.163	68.826	1.36348	0.156	0.221	830.
330	0.31931	108.56	0.108	50.736	71.033	1.37027	0.156	0.221	844.
340	0.30965	112.04	0.105	52.307	73.238	1.37686	0.156	0.220	857.
350	0.30057	115.52	0.102	53.877	75.441	1.38324	0.156	0.220	870.
360	0.29201	118.99	0.099	55.447	77.642	1.38944	0.156	0.220	882.
370	0.28394	122.45	0.096	57.015	79.841	1.39547	0.156	0.220	895.
380	0.27631	125.90	0.093	58.583	82.039	1.40133	0.156	0.220	907.
390	0.26909	129.35	0.091	60.151	84.237	1.40704	0.156	0.220	919.
400	0.26224	132.79	0.089	61.718	86.433	1.41260	0.156	0.220	931.
410	0.25573	136.23	0.086	63.285	88.629	1.41802	0.156	0.220	943.
420	0.24954	139.66	0.084	64.852	90.825	1.42331	0.156	0.220	954.
430	0.24365	143.09	0.082	66.420	93.020	1.42848	0.156	0.220	966.
440	0.23804	146.51	0.080	67.988	95.215	1.43352	0.156	0.220	977.
450	0.23268	149.93	0.079	69.556	97.411	1.43846	0.156	0.220	988.
460	0.22756	153.35	0.077	71.125	99.606	1.44328	0.156	0.220	999.
470	0.22266	156.76	0.075	72.694	101.803	1.44801	0.156	0.220	1010.
480	0.21797	160.18	0.074	74.265	103.999	1.45263	0.157	0.220	1020.
490	0.21347	163.58	0.072	75.836	106.197	1.45716	0.157	0.220	1031.
500	0.20916	166.99	0.071	77.409	108.395	1.46160	0.157	0.220	1041.
510	0.20502	170.39	0.069	78.983	110.595	1.46596	0.157	0.220	1052.
520	0.20105	173.79	0.068	80.558	112.795	1.47023	0.157	0.220	1062.
530	0.19727	177.19	0.066	82.135	114.997	1.47443	0.157	0.220	1072.
540	0.19354	180.59	0.065	83.713	117.201	1.47855	0.158	0.220	1082.
550	0.19000	183.98	0.064	85.294	119.406	1.48259	0.158	0.221	1092.
560	0.18658	187.37	0.063	86.876	121.613	1.48657	0.158	0.221	1101.
570	0.18329	190.76	0.062	88.461	123.822	1.49048	0.158	0.221	1111.
580	0.18011	194.15	0.061	90.047	126.033	1.49432	0.158	0.221	1121.
590	0.17703	197.54	0.060	91.637	128.247	1.49811	0.159	0.221	1130.
600	0.17407	200.93	0.059	93.228	130.462	1.50183	0.159	0.222	1139.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

30 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.889	81.65694	2220.79	360.1	-83.857	-83.789	0.49603	0.248	0.407	4107.
100	81.31646	2166.75	347.7	-82.996	-82.928	0.50476	0.253	0.409	4030.
105	80.52134	2044.47	322.7	-80.946	-80.877	0.52476	0.258	0.411	3884.
110	79.73559	1929.99	302.3	-78.894	-78.824	0.54385	0.258	0.410	3768.
115	78.95335	1822.66	285.1	-76.849	-76.779	0.56204	0.256	0.408	3670.
120	78.17053	1721.72	270.0	-74.812	-74.741	0.57938	0.253	0.407	3585.
125	77.38421	1626.43	256.6	-72.783	-72.712	0.59595	0.249	0.405	3504.
130	76.59232	1536.14	244.3	-70.761	-70.688	0.61182	0.245	0.404	3428.
135	75.79326	1450.26	232.9	-68.742	-68.668	0.62707	0.241	0.404	3356.
140	74.98577	1368.30	222.2	-66.724	-66.650	0.64175	0.237	0.404	3284.
145	74.16873	1289.80	212.1	-64.706	-64.631	0.65592	0.234	0.404	3213.
150	73.34110	1214.38	202.4	-62.684	-62.609	0.66963	0.231	0.405	3142.
155	72.50178	1141.71	193.1	-60.658	-60.582	0.68292	0.228	0.406	3071.
160	71.64958	1071.48	184.1	-58.625	-58.548	0.69584	0.225	0.408	2999.
165	70.78313	1003.45	175.4	-56.584	-56.505	0.70841	0.222	0.409	2925.
170	69.90081	937.40	167.0	-54.532	-54.452	0.72067	0.220	0.412	2851.
175	69.00074	873.14	158.9	-52.467	-52.386	0.73264	0.218	0.415	2775.
*175.706	68.87210	864.21	157.7	-52.174	-52.094	0.73431	0.218	0.415	2764.
*175.706	0.53823	52.52	0.190	26.043	36.364	1.23746	0.164	0.241	598.
180	0.52320	54.29	0.184	26.776	37.394	1.24325	0.163	0.239	607.
185	0.50688	56.31	0.177	27.622	38.502	1.24976	0.162	0.236	617.
190	0.49167	58.30	0.171	28.459	39.758	1.25603	0.161	0.234	627.
195	0.47746	60.26	0.166	29.290	40.925	1.26210	0.160	0.233	636.
200	0.46414	62.20	0.161	30.114	42.084	1.26797	0.160	0.231	646.
205	0.45160	64.11	0.156	30.934	43.236	1.27365	0.159	0.230	655.
210	0.43979	66.00	0.152	31.750	44.382	1.27918	0.159	0.229	664.
215	0.42863	67.88	0.147	32.562	45.523	1.28455	0.158	0.228	672.
220	0.41806	69.74	0.143	33.371	46.659	1.28977	0.158	0.227	681.
225	0.40804	71.59	0.140	34.177	47.792	1.29486	0.158	0.226	690.
230	0.39852	73.43	0.136	34.981	48.921	1.29983	0.158	0.225	698.
235	0.38945	75.26	0.133	35.782	50.046	1.30467	0.157	0.225	706.
240	0.38081	77.08	0.130	36.581	51.170	1.30940	0.157	0.224	714.
245	0.37257	78.88	0.127	37.379	52.290	1.31402	0.157	0.224	722.
250	0.36469	80.69	0.124	38.175	53.408	1.31854	0.157	0.223	730.
255	0.35716	82.48	0.122	38.970	54.525	1.32296	0.157	0.223	738.
260	0.34994	84.27	0.119	39.764	55.639	1.32729	0.157	0.223	745.
265	0.34302	86.05	0.117	40.556	56.752	1.33153	0.156	0.222	753.
270	0.33637	87.83	0.114	41.348	57.863	1.33568	0.156	0.222	760.
275	0.32999	89.60	0.112	42.138	58.973	1.33975	0.156	0.222	768.
280	0.32385	91.37	0.110	42.928	60.082	1.34375	0.156	0.222	775.
285	0.31795	93.14	0.108	43.717	61.190	1.34767	0.156	0.221	782.
290	0.31226	94.89	0.106	44.506	62.296	1.35152	0.156	0.221	789.
295	0.30678	96.65	0.104	45.294	63.402	1.35530	0.156	0.221	796.
300	0.30149	98.40	0.102	46.081	64.507	1.35901	0.156	0.221	803.
310	0.29146	101.90	0.099	47.654	66.714	1.36625	0.156	0.221	817.
320	0.28209	105.39	0.096	49.225	68.919	1.37325	0.156	0.220	831.
330	0.27332	108.86	0.092	50.795	71.121	1.38003	0.156	0.220	844.
340	0.26508	112.33	0.090	52.364	73.322	1.38660	0.156	0.220	857.
350	0.25733	115.79	0.087	53.932	75.520	1.39297	0.156	0.220	870.
360	0.25004	119.24	0.085	55.499	77.717	1.39916	0.156	0.220	883.
370	0.24315	122.68	0.082	57.066	79.914	1.40518	0.156	0.220	895.
380	0.23663	126.12	0.080	58.632	82.109	1.41103	0.156	0.219	907.
390	0.23046	129.56	0.078	60.198	84.303	1.41673	0.156	0.219	919.
400	0.22461	132.99	0.076	61.763	86.497	1.42228	0.156	0.219	931.
410	0.21905	136.41	0.074	63.329	88.690	1.42770	0.156	0.219	943.
420	0.21377	139.83	0.072	64.895	90.883	1.43299	0.156	0.219	954.
430	0.20873	143.25	0.070	66.461	93.076	1.43815	0.156	0.219	966.
440	0.20393	146.66	0.069	68.027	95.269	1.44319	0.156	0.219	977.
450	0.19935	150.07	0.067	69.594	97.462	1.44812	0.156	0.219	988.
460	0.19497	153.48	0.066	71.162	99.656	1.45294	0.156	0.219	999.
470	0.19078	156.89	0.064	72.730	101.850	1.45766	0.156	0.219	1010.
480	0.18674	160.29	0.063	74.300	104.045	1.46228	0.157	0.220	1021.
490	0.18292	163.69	0.062	75.870	106.241	1.46680	0.157	0.220	1031.
500	0.17923	167.09	0.060	77.442	108.438	1.47124	0.157	0.220	1041.
510	0.17569	170.48	0.059	79.015	110.636	1.47560	0.157	0.220	1052.
520	0.17228	173.88	0.058	80.589	112.835	1.47997	0.157	0.220	1062.
530	0.16901	177.27	0.057	82.165	115.035	1.48406	0.157	0.220	1072.
540	0.16586	180.66	0.056	83.743	117.238	1.48817	0.158	0.220	1082.
550	0.16282	184.05	0.055	85.323	119.441	1.49222	0.158	0.220	1092.
560	0.15990	187.43	0.054	86.904	121.647	1.49619	0.158	0.221	1101.
570	0.15708	190.82	0.053	88.488	123.855	1.50010	0.158	0.221	1111.
580	0.15436	194.20	0.052	90.074	126.065	1.50394	0.158	0.221	1121.
590	0.15173	197.59	0.051	91.663	128.277	1.50772	0.159	0.221	1130.
600	0.14919	200.97	0.050	93.254	130.491	1.51145	0.159	0.222	1139.

\* INDICATES TWO PHASE BOUNDARY

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OTHER THERMODYNAMIC PROPERTIES OF OXYGEN

40 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB / CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LR	ENTHALPY BTU/LR	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.903	81.65914	2221.02	360.0	-83.856	-83.765	0.49605	0.249	0.407	4106.
100	81.32107	2167.38	347.7	-83.000	-82.909	0.50470	0.253	0.409	4030.
105	80.52623	2045.18	322.7	-80.950	-80.858	0.52471	0.258	0.411	3884.
110	79.74078	1930.76	302.3	-78.899	-78.806	0.54380	0.258	0.410	3768.
115	78.95384	1823.48	285.1	-76.854	-76.760	0.56199	0.256	0.408	3670.
120	78.17633	1722.58	270.0	-74.818	-74.723	0.57933	0.253	0.407	3584.
125	77.39016	1627.33	256.6	-72.789	-72.694	0.59590	0.249	0.405	3504.
130	76.59383	1537.07	244.4	-70.767	-70.671	0.61177	0.245	0.404	3429.
135	75.80016	1451.23	233.0	-68.749	-68.651	0.62702	0.241	0.404	3356.
140	74.99307	1369.29	222.3	-66.732	-66.633	0.64170	0.237	0.404	3285.
145	74.17648	1290.82	212.1	-64.714	-64.614	0.65586	0.234	0.404	3214.
150	73.34933	1215.43	202.4	-62.693	-62.592	0.66957	0.231	0.405	3143.
155	72.51054	1142.79	193.1	-60.667	-60.565	0.68287	0.228	0.406	3072.
160	71.65891	1072.59	184.2	-58.635	-58.532	0.69578	0.225	0.407	3000.
165	70.79309	1004.59	175.5	-56.594	-56.490	0.70834	0.223	0.409	2926.
170	69.91147	938.57	167.1	-54.543	-54.437	0.72060	0.220	0.412	2852.
175	69.01219	874.35	158.9	-52.479	-52.372	0.73257	0.218	0.414	2776.
180	68.09298	811.78	151.0	-50.401	-50.292	0.74429	0.216	0.418	2698.
*181.781	67.76032	789.88	148.2	-49.656	-49.547	0.74841	0.215	0.419	2670.
*181.781	0.70265	52.85	0.251	26.693	37.235	1.22554	0.165	0.246	604.
185	0.68777	54.25	0.244	27.255	38.025	1.22985	0.164	0.244	611.
190	0.66509	56.36	0.235	28.118	39.238	1.23632	0.163	0.241	621.
195	0.64595	58.44	0.227	28.970	40.437	1.24255	0.162	0.239	631.
200	0.62717	60.48	0.220	29.815	41.625	1.24856	0.161	0.236	641.
205	0.60959	62.48	0.213	30.652	42.803	1.25438	0.161	0.235	650.
210	0.59309	64.46	0.206	31.483	43.972	1.26001	0.160	0.233	659.
215	0.57756	66.41	0.200	32.309	45.134	1.26548	0.160	0.232	668.
220	0.56290	68.35	0.195	33.130	46.289	1.27079	0.159	0.230	677.
225	0.54903	70.26	0.190	33.947	47.438	1.27596	0.159	0.229	686.
230	0.53589	72.16	0.185	34.761	48.583	1.28099	0.158	0.228	695.
235	0.52341	74.04	0.180	35.571	49.723	1.28589	0.158	0.228	703.
240	0.51155	75.91	0.176	36.379	50.859	1.29068	0.158	0.227	711.
245	0.50024	77.77	0.172	37.185	51.992	1.29535	0.158	0.226	719.
250	0.48946	79.61	0.168	37.988	53.121	1.29991	0.157	0.226	727.
255	0.47916	81.45	0.164	38.789	54.248	1.30438	0.157	0.225	735.
260	0.46930	83.28	0.161	39.589	55.372	1.30874	0.157	0.225	743.
265	0.45987	85.10	0.157	40.387	56.494	1.31302	0.157	0.224	751.
270	0.45083	86.91	0.154	41.184	57.614	1.31720	0.157	0.224	758.
275	0.44215	88.72	0.151	41.980	58.733	1.32131	0.157	0.223	766.
280	0.43381	90.52	0.148	42.774	59.849	1.32533	0.157	0.223	773.
285	0.42580	92.31	0.145	43.568	60.964	1.32928	0.156	0.223	781.
290	0.41808	94.10	0.142	44.360	62.077	1.33315	0.156	0.223	788.
295	0.41056	95.88	0.140	45.152	63.189	1.33695	0.156	0.222	795.
300	0.40350	97.66	0.137	45.943	64.300	1.34069	0.156	0.222	802.
310	0.38993	101.21	0.133	47.523	66.519	1.34796	0.156	0.222	816.
320	0.37727	104.74	0.128	49.100	68.734	1.35499	0.156	0.221	830.
330	0.36543	108.26	0.124	50.676	70.945	1.36180	0.156	0.221	843.
340	0.35433	111.76	0.120	52.250	73.154	1.36839	0.156	0.221	856.
350	0.34390	115.25	0.117	53.822	75.361	1.37479	0.156	0.221	869.
360	0.33408	118.74	0.113	55.394	77.566	1.38100	0.156	0.220	882.
370	0.32481	122.21	0.110	56.964	79.769	1.38704	0.156	0.220	894.
380	0.31606	125.68	0.107	58.534	81.970	1.39291	0.156	0.220	907.
390	0.30777	129.14	0.104	60.103	84.170	1.39862	0.156	0.220	919.
400	0.29992	132.60	0.101	61.672	86.370	1.40419	0.156	0.220	931.
410	0.29246	136.05	0.099	63.241	88.568	1.40962	0.156	0.220	942.
420	0.28537	139.49	0.096	64.810	90.766	1.41492	0.156	0.220	954.
430	0.27862	142.93	0.094	66.379	92.964	1.42009	0.156	0.220	966.
440	0.27218	146.36	0.092	67.948	95.162	1.42514	0.156	0.220	977.
450	0.26604	149.79	0.090	69.517	97.359	1.43008	0.156	0.220	988.
460	0.26018	153.22	0.088	71.087	99.557	1.43491	0.156	0.220	999.
470	0.25457	156.64	0.086	72.658	101.755	1.43964	0.156	0.220	1010.
480	0.24920	160.06	0.084	74.229	103.953	1.44426	0.157	0.220	1020.
490	0.24405	163.48	0.082	75.802	106.153	1.44880	0.157	0.220	1031.
500	0.23911	166.89	0.081	77.375	108.353	1.45324	0.157	0.220	1041.
510	0.23438	170.30	0.079	78.950	110.554	1.45760	0.157	0.220	1052.
520	0.22982	173.71	0.078	80.526	112.756	1.46188	0.157	0.220	1062.
530	0.22545	177.11	0.076	82.104	114.960	1.46608	0.157	0.220	1072.
540	0.22123	180.51	0.075	83.684	117.164	1.47020	0.158	0.221	1082.
550	0.21718	183.91	0.073	85.265	119.371	1.47425	0.158	0.221	1092.
560	0.21327	187.31	0.072	86.848	121.579	1.47823	0.158	0.221	1102.
570	0.20950	190.71	0.071	88.433	123.790	1.48214	0.158	0.221	1111.
580	0.20586	194.10	0.069	90.021	126.002	1.48599	0.158	0.221	1121.
590	0.20235	197.49	0.068	91.610	128.216	1.48977	0.159	0.222	1130.
600	0.19896	200.89	0.067	93.203	130.433	1.49350	0.159	0.222	1139.

\* INDICATES TWO PHASE BOUNDARY



OTHERMODYNAMIC PROPERTIES OF OXYGEN

45 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCCHORE DERIVATIVE PSIA/R	INTERNAL ENFRGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.910	81.66023	2221.14	359.9	-83.855	-83.753	0.49605	0.249	0.407	4106.
100	81.32338	2167.70	347.7	-83.003	-82.900	0.50468	0.253	0.409	4030.
105	80.52867	2045.54	322.7	-80.953	-80.849	0.52469	0.258	0.411	3884.
110	79.74336	1931.15	302.3	-78.902	-78.797	0.54378	0.258	0.410	3768.
115	78.96158	1823.89	285.1	-76.857	-76.751	0.56197	0.256	0.408	3670.
120	78.17923	1723.01	270.1	-74.821	-74.714	0.57931	0.253	0.407	3534.
125	77.39343	1627.78	256.6	-72.793	-72.685	0.59588	0.249	0.405	3504.
130	76.60208	1537.54	244.4	-70.770	-70.662	0.61175	0.245	0.404	3429.
135	75.80360	1451.71	233.0	-68.752	-68.642	0.62699	0.241	0.404	3357.
140	74.99673	1369.79	222.3	-66.735	-66.624	0.64167	0.237	0.404	3285.
145	74.18036	1291.33	212.2	-64.718	-64.606	0.65584	0.234	0.404	3215.
150	73.35345	1215.96	202.5	-62.697	-62.584	0.66955	0.231	0.405	3144.
155	72.51491	1143.32	193.2	-60.672	-60.557	0.68284	0.228	0.406	3072.
160	71.66357	1073.14	184.2	-58.640	-58.524	0.69575	0.225	0.407	3000.
165	70.79906	1005.16	175.5	-56.600	-56.482	0.70831	0.223	0.409	2927.
170	69.91680	939.16	167.1	-54.549	-54.430	0.72057	0.220	0.412	2852.
175	69.01790	874.96	159.0	-52.485	-52.365	0.73254	0.218	0.414	2777.
180	68.09913	812.41	151.0	-50.407	-50.285	0.74426	0.216	0.418	2699.
*184.397	67.27260	758.66	144.2	-48.565	-48.441	0.75437	0.214	0.421	2625.
*184.397	0.78405	52.91	0.281	26.958	37.586	1.22065	0.166	0.249	606.
185	0.78086	53.18	0.280	27.064	37.736	1.22146	0.166	0.249	608.
190	0.75559	55.37	0.269	27.941	38.969	1.22804	0.164	0.245	618.
195	0.73220	57.51	0.259	28.806	40.187	1.23436	0.163	0.242	628.
200	0.71045	59.60	0.250	29.661	41.390	1.24046	0.162	0.239	638.
205	0.69015	61.65	0.242	30.507	42.581	1.24634	0.161	0.237	648.
210	0.67113	63.68	0.235	31.346	43.763	1.25203	0.161	0.235	657.
215	0.65327	65.67	0.228	32.179	44.935	1.25755	0.160	0.234	666.
220	0.63643	67.64	0.221	33.007	46.100	1.26291	0.160	0.232	675.
225	0.62054	69.59	0.215	33.830	47.259	1.26812	0.159	0.231	684.
230	0.60549	71.52	0.209	34.649	48.411	1.27318	0.159	0.230	693.
235	0.59122	73.43	0.204	35.464	49.559	1.27812	0.158	0.229	701.
240	0.57767	75.32	0.199	36.277	50.702	1.28293	0.158	0.228	710.
245	0.56477	77.20	0.194	37.085	51.841	1.28763	0.158	0.227	718.
250	0.55247	79.07	0.190	37.893	52.976	1.29222	0.158	0.227	726.
255	0.54074	80.93	0.186	38.698	54.109	1.29670	0.157	0.226	734.
260	0.52952	82.78	0.182	39.501	55.238	1.30109	0.157	0.226	742.
265	0.51879	84.62	0.178	40.302	56.365	1.30538	0.157	0.225	750.
270	0.50851	86.45	0.174	41.102	57.489	1.30958	0.157	0.225	757.
275	0.49865	88.27	0.171	41.900	58.611	1.31370	0.157	0.224	765.
280	0.48918	90.09	0.167	42.697	59.732	1.31774	0.157	0.224	772.
285	0.48008	91.90	0.164	43.493	60.850	1.32170	0.157	0.224	780.
290	0.47133	93.70	0.161	44.287	61.967	1.32558	0.156	0.223	787.
295	0.46291	95.50	0.158	45.081	63.082	1.32939	0.156	0.223	794.
300	0.45479	97.29	0.155	45.874	64.196	1.33314	0.156	0.223	801.
310	0.43942	100.86	0.150	47.457	66.421	1.34043	0.156	0.222	815.
320	0.42508	104.41	0.145	49.038	68.641	1.34748	0.156	0.222	829.
330	0.41168	107.95	0.140	50.616	70.857	1.35430	0.156	0.221	843.
340	0.39913	111.48	0.136	52.192	73.071	1.36091	0.156	0.221	856.
350	0.38733	114.99	0.132	53.767	75.281	1.36732	0.156	0.221	869.
360	0.37623	118.49	0.128	55.341	77.490	1.37354	0.156	0.221	881.
370	0.36576	121.98	0.124	56.913	79.695	1.37958	0.156	0.221	894.
380	0.35588	125.46	0.121	58.485	81.901	1.38546	0.156	0.220	906.
390	0.34652	128.94	0.117	60.056	84.104	1.39119	0.156	0.220	919.
400	0.33765	132.41	0.114	61.627	86.306	1.39676	0.156	0.220	930.
410	0.32923	135.87	0.111	63.197	88.507	1.40220	0.156	0.220	942.
420	0.32123	139.32	0.109	64.767	90.708	1.40750	0.156	0.220	954.
430	0.31362	142.77	0.106	66.337	92.908	1.41268	0.156	0.220	965.
440	0.30636	146.22	0.104	67.908	95.108	1.41773	0.156	0.220	977.
450	0.29944	149.66	0.101	69.478	97.307	1.42268	0.156	0.220	988.
460	0.29282	153.09	0.099	71.050	99.507	1.42751	0.156	0.220	999.
470	0.28650	156.52	0.097	72.621	101.707	1.43224	0.157	0.220	1010.
480	0.28044	159.95	0.095	74.194	103.908	1.43688	0.157	0.220	1020.
490	0.27465	163.37	0.093	75.767	106.109	1.44141	0.157	0.220	1031.
500	0.26908	166.79	0.091	77.342	108.310	1.44586	0.157	0.220	1041.
510	0.26374	170.21	0.089	78.918	110.513	1.45022	0.157	0.220	1052.
520	0.25862	173.62	0.087	80.495	112.717	1.45450	0.157	0.220	1062.
530	0.25368	177.03	0.086	82.073	114.922	1.45870	0.157	0.221	1072.
540	0.24894	180.44	0.084	83.654	117.128	1.46283	0.158	0.221	1082.
550	0.24437	183.85	0.082	85.236	119.336	1.46698	0.158	0.221	1092.
560	0.23997	187.25	0.081	86.820	121.545	1.47106	0.158	0.221	1102.
570	0.23572	190.65	0.079	88.406	123.757	1.47478	0.159	0.221	1111.
580	0.23163	194.05	0.078	89.994	125.970	1.47862	0.159	0.221	1121.
590	0.22767	197.45	0.077	91.584	128.186	1.48241	0.159	0.222	1130.
600	0.22385	200.84	0.075	93.177	130.404	1.48614	0.159	0.222	1139.

\* INDICATES TWO PHASE BOUNDARY

## 60 PSIA ISOBAR

## THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.932	81.66353	2221.49	359.8	-83.853	-83.717	0.49608	0.249	0.407	4105.
100	81.33030	2168.66	347.7	-83.009	-82.873	0.50461	0.253	0.409	4030.
105	80.53601	2046.60	322.7	-80.960	-80.822	0.52462	0.258	0.411	3884.
110	79.75113	1932.30	302.3	-78.909	-78.770	0.54371	0.258	0.410	3768.
115	78.96980	1825.12	285.1	-76.865	-76.724	0.56190	0.256	0.408	3671.
120	78.18794	1724.30	270.1	-74.829	-74.687	0.57924	0.253	0.407	3585.
125	77.40264	1629.13	256.7	-72.802	-72.658	0.59580	0.249	0.405	3505.
130	76.61183	1538.93	244.4	-70.780	-70.635	0.61167	0.245	0.404	3430.
135	75.81393	1453.15	233.1	-68.763	-68.616	0.62691	0.241	0.404	3353.
140	75.00767	1371.27	222.4	-66.747	-66.599	0.64159	0.237	0.404	3286.
145	74.19196	1292.86	212.2	-64.730	-64.580	0.65575	0.234	0.404	3216.
150	73.36577	1217.53	202.5	-62.710	-62.559	0.66946	0.231	0.405	3145.
155	72.52802	1144.94	193.2	-60.686	-60.533	0.68275	0.229	0.406	3074.
160	71.67754	1074.81	184.3	-58.655	-58.500	0.69565	0.225	0.407	3002.
165	70.81297	1006.87	175.6	-56.616	-56.459	0.70822	0.223	0.409	2929.
170	69.93276	940.92	167.2	-54.566	-54.407	0.72047	0.220	0.412	2854.
175	69.03503	876.78	159.1	-52.504	-52.343	0.73243	0.218	0.414	2779.
180	68.11757	814.28	151.2	-50.427	-50.264	0.74414	0.216	0.417	2701.
185	67.17774	753.32	143.4	-48.333	-48.168	0.75563	0.214	0.421	2622.
190	66.21232	693.78	135.9	-46.219	-46.051	0.76692	0.212	0.426	2541.
*191.131	65.99009	680.51	134.2	-45.738	-45.569	0.76945	0.212	0.427	2522.
*191.131	1.02628	52.79	0.373	27.591	38.417	1.20863	0.168	0.257	611.
195	0.99981	54.60	0.361	28.290	39.403	1.21374	0.167	0.253	620.
200	0.96802	56.87	0.347	29.180	40.658	1.22010	0.165	0.249	630.
205	0.93860	59.09	0.335	30.057	41.895	1.22620	0.164	0.246	641.
210	0.91125	61.26	0.323	30.923	43.116	1.23209	0.163	0.243	651.
215	0.88572	63.39	0.313	31.780	44.324	1.23778	0.162	0.240	660.
220	0.86181	65.47	0.303	32.629	45.521	1.24328	0.161	0.238	670.
225	0.83933	67.53	0.294	33.471	46.709	1.24862	0.161	0.237	679.
230	0.81815	69.56	0.286	34.307	47.887	1.25380	0.160	0.235	688.
235	0.79815	71.56	0.278	35.138	49.058	1.25884	0.160	0.234	697.
240	0.77921	73.54	0.271	35.964	50.223	1.26374	0.159	0.232	705.
245	0.76124	75.49	0.264	36.786	51.382	1.26852	0.159	0.231	714.
250	0.74416	77.44	0.258	37.605	52.536	1.27318	0.158	0.230	722.
255	0.72790	79.36	0.252	38.421	53.685	1.27773	0.158	0.229	730.
260	0.71239	81.27	0.246	39.233	54.830	1.28218	0.158	0.229	738.
265	0.69758	83.17	0.241	40.044	55.971	1.28653	0.158	0.228	746.
270	0.68343	85.06	0.236	40.852	57.109	1.29078	0.157	0.227	754.
275	0.66987	86.93	0.231	41.658	58.244	1.29495	0.157	0.227	762.
280	0.65688	88.80	0.226	42.462	59.376	1.29903	0.157	0.226	770.
285	0.64442	90.65	0.221	43.265	60.506	1.30303	0.157	0.226	777.
290	0.63245	92.50	0.217	44.066	61.634	1.30695	0.157	0.225	785.
295	0.62094	94.34	0.213	44.866	62.759	1.31079	0.157	0.225	792.
300	0.60986	96.17	0.209	45.664	63.883	1.31457	0.157	0.225	799.
310	0.58891	99.82	0.202	47.258	66.125	1.32192	0.157	0.224	813.
320	0.56942	103.44	0.195	48.848	68.361	1.32902	0.156	0.223	827.
330	0.55122	107.04	0.188	50.435	70.592	1.33589	0.156	0.223	841.
340	0.53420	110.62	0.182	52.019	72.818	1.34253	0.156	0.222	854.
350	0.51824	114.19	0.177	53.602	75.041	1.34898	0.156	0.222	867.
360	0.50323	117.74	0.171	55.182	77.261	1.35523	0.156	0.222	880.
370	0.48909	121.28	0.166	56.760	79.478	1.36130	0.156	0.222	893.
380	0.47575	124.81	0.162	58.338	81.692	1.36721	0.156	0.221	906.
390	0.46313	128.32	0.157	59.914	83.905	1.37296	0.156	0.221	918.
400	0.45116	131.83	0.153	61.490	86.115	1.37855	0.156	0.221	930.
410	0.43986	135.32	0.149	63.065	88.325	1.38401	0.156	0.221	942.
420	0.42909	138.81	0.146	64.639	90.533	1.38933	0.156	0.221	953.
430	0.41886	142.29	0.142	66.214	92.740	1.39452	0.156	0.221	965.
440	0.40911	145.77	0.139	67.788	94.946	1.39960	0.156	0.221	976.
450	0.39981	149.24	0.136	69.362	97.152	1.40455	0.156	0.221	988.
460	0.39093	152.70	0.132	70.937	99.358	1.40940	0.156	0.221	999.
470	0.38244	156.16	0.130	72.512	101.564	1.41415	0.157	0.221	1009.
480	0.37433	159.61	0.127	74.088	103.770	1.41879	0.157	0.221	1020.
490	0.36655	163.05	0.124	75.664	105.976	1.42334	0.157	0.221	1031.
500	0.35910	166.50	0.122	77.242	108.183	1.42780	0.157	0.221	1041.
510	0.35194	169.93	0.119	78.820	110.390	1.43217	0.157	0.221	1052.
520	0.34507	173.37	0.117	80.400	112.598	1.43646	0.157	0.221	1062.
530	0.33847	176.80	0.114	81.982	114.808	1.44067	0.157	0.221	1072.
540	0.33212	180.22	0.112	83.564	117.018	1.44480	0.158	0.221	1082.
550	0.32600	183.65	0.110	85.149	119.230	1.44886	0.158	0.221	1092.
560	0.32011	187.07	0.108	86.735	121.444	1.45284	0.158	0.221	1102.
570	0.31443	190.49	0.106	88.323	123.659	1.45677	0.158	0.222	1111.
580	0.30895	193.90	0.104	89.914	125.876	1.46062	0.159	0.222	1121.
590	0.30366	197.31	0.103	91.506	128.095	1.46441	0.159	0.222	1130.
600	0.29856	200.72	0.101	93.101	130.316	1.46815	0.159	0.222	1140.

\* INDICATES TWO PHASE BOUNDARY

Thermodynamic Properties of Oxygen

50 PSIA ISONAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.917	81.66133	2221.25	359.9	-83.855	-83.741	0.49606	0.249	0.407	4106.
100	81.32569	2168.02	347.7	-83.305	-82.891	0.50465	0.253	0.409	4030.
105	80.53112	2045.89	322.7	-80.955	-80.840	0.52467	0.258	0.411	3884.
110	79.74595	1931.53	302.3	-78.904	-78.738	0.54376	0.258	0.410	3768.
115	78.96432	1824.30	285.1	-76.860	-76.742	0.56195	0.256	0.409	3671.
120	78.18214	1723.44	270.1	-74.824	-74.705	0.57929	0.253	0.407	3584.
125	77.39650	1628.23	256.6	-72.796	-72.676	0.59585	0.249	0.405	3505.
130	76.60533	1538.00	244.4	-70.774	-70.653	0.61172	0.245	0.404	3430.
135	75.80704	1452.19	233.0	-68.756	-68.634	0.62696	0.241	0.404	3357.
140	75.00037	1370.28	222.3	-66.739	-66.616	0.64164	0.237	0.404	3286.
145	74.18423	1291.84	212.2	-64.722	-64.597	0.65581	0.234	0.404	3215.
150	73.35756	1216.48	202.5	-62.702	-62.575	0.66952	0.231	0.405	3144.
155	72.51929	1143.86	193.2	-60.677	-60.549	0.68281	0.228	0.406	3073.
160	71.66823	1073.70	184.2	-58.645	-58.516	0.69572	0.225	0.407	3001.
165	70.80304	1005.73	175.6	-56.605	-56.474	0.70828	0.223	0.409	2928.
170	69.92212	939.75	167.2	-54.555	-54.422	0.72053	0.220	0.412	2853.
175	69.02361	875.57	159.0	-52.492	-52.357	0.73250	0.218	0.414	2777.
180	68.10528	813.03	151.1	-50.414	-50.278	0.74422	0.216	0.418	2700.
185	67.16445	752.03	143.4	-48.319	-48.181	0.75571	0.214	0.421	2620.
*186.805	66.18663	730.36	140.6	-47.558	-47.419	0.75981	0.213	0.423	2591.
*186.805	0.86506	52.91	0.312	27.192	37.896	1.21626	0.167	0.252	608.
190	0.84673	54.35	0.304	27.760	38.695	1.22050	0.166	0.249	615.
195	0.81987	56.55	0.292	28.638	39.931	1.22692	0.164	0.245	626.
200	0.79498	58.71	0.282	29.504	41.150	1.23310	0.163	0.242	636.
205	0.77180	60.81	0.272	30.360	42.356	1.23906	0.162	0.240	645.
210	0.75015	62.88	0.264	31.208	43.550	1.24481	0.161	0.238	655.
215	0.72984	64.92	0.255	32.048	44.734	1.25038	0.161	0.236	664.
220	0.71075	66.92	0.248	32.883	45.910	1.25579	0.160	0.234	674.
225	0.69274	68.91	0.241	33.712	47.077	1.26104	0.160	0.233	682.
230	0.67573	70.87	0.235	34.536	48.238	1.26614	0.159	0.232	691.
235	0.65961	72.81	0.229	35.357	49.394	1.27111	0.159	0.231	700.
240	0.64431	74.73	0.223	36.173	50.544	1.27595	0.158	0.230	708.
245	0.62977	76.64	0.217	36.987	51.689	1.28067	0.158	0.229	717.
250	0.61592	78.53	0.212	37.798	52.831	1.28529	0.158	0.228	725.
255	0.60272	80.41	0.207	38.606	53.968	1.28979	0.158	0.227	733.
260	0.59011	82.28	0.203	39.412	55.103	1.29420	0.157	0.227	741.
265	0.57805	84.14	0.199	40.217	56.234	1.29851	0.157	0.226	749.
270	0.56650	85.99	0.194	41.019	57.363	1.30273	0.157	0.226	756.
275	0.55543	87.83	0.190	41.820	58.489	1.30686	0.157	0.225	764.
280	0.54481	89.66	0.187	42.619	59.614	1.31091	0.157	0.225	771.
285	0.53461	91.49	0.183	43.417	60.736	1.31489	0.157	0.224	779.
290	0.52491	93.30	0.179	44.214	61.856	1.31878	0.157	0.224	786.
295	0.51537	95.11	0.176	45.009	62.975	1.32261	0.157	0.224	793.
300	0.50628	96.92	0.173	45.804	64.092	1.32636	0.156	0.223	801.
310	0.48908	100.51	0.167	47.391	66.322	1.33368	0.156	0.223	815.
320	0.47304	104.09	0.161	48.975	68.548	1.34074	0.156	0.222	828.
330	0.45807	107.65	0.156	50.556	70.769	1.34758	0.156	0.222	842.
340	0.44404	111.19	0.151	52.135	72.987	1.35420	0.156	0.222	855.
350	0.43087	114.72	0.146	53.712	75.201	1.36062	0.156	0.221	868.
360	0.41847	118.24	0.142	55.298	77.413	1.36685	0.156	0.221	881.
370	0.40679	121.75	0.138	56.863	79.623	1.37290	0.156	0.221	894.
380	0.39576	125.24	0.134	58.436	81.831	1.37879	0.156	0.221	906.
390	0.38533	128.73	0.131	60.009	84.038	1.38452	0.156	0.221	918.
400	0.37544	132.21	0.127	61.581	86.243	1.39011	0.156	0.220	930.
410	0.36606	135.69	0.124	63.153	88.447	1.39555	0.156	0.220	942.
420	0.35714	139.15	0.121	64.725	90.650	1.40086	0.156	0.220	954.
430	0.34866	142.61	0.118	66.296	92.852	1.40604	0.156	0.220	965.
440	0.34057	146.07	0.115	67.868	95.054	1.41110	0.156	0.220	977.
450	0.33286	149.52	0.113	69.440	97.256	1.41605	0.156	0.220	988.
460	0.32550	152.96	0.110	71.012	99.458	1.42089	0.156	0.220	999.
470	0.31846	156.40	0.108	72.585	101.659	1.42562	0.157	0.220	1010.
480	0.31172	159.83	0.105	74.159	103.862	1.43026	0.157	0.220	1020.
490	0.30526	163.26	0.103	75.733	106.064	1.43480	0.157	0.220	1031.
500	0.29907	166.69	0.101	77.309	108.268	1.43925	0.157	0.220	1041.
510	0.29313	170.12	0.099	78.885	110.472	1.44362	0.157	0.220	1052.
520	0.28742	173.54	0.097	80.463	112.677	1.44790	0.157	0.221	1062.
530	0.28193	176.95	0.095	82.043	114.884	1.45210	0.157	0.221	1072.
540	0.27665	180.37	0.093	83.624	117.091	1.45623	0.158	0.221	1082.
550	0.27157	183.78	0.092	85.207	119.301	1.46028	0.158	0.221	1092.
560	0.26667	187.19	0.090	86.792	121.512	1.46427	0.158	0.221	1102.
570	0.26195	190.60	0.088	88.378	123.724	1.46818	0.158	0.221	1111.
580	0.25739	194.00	0.087	89.967	125.939	1.47204	0.159	0.222	1121.
590	0.25300	197.40	0.085	91.558	128.156	1.47582	0.159	0.222	1130.
600	0.24874	200.80	0.084	93.152	130.374	1.47955	0.159	0.222	1140.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN.

80 PSIA ISOBAR									
TEMPERATURE	DENSITY	ISOTHERM DERIVATIVE	ISOCHORE DERIVATIVE	INTERNAL ENERGY	ENTHALPY	ENTROPY	CV	CP	VELOCITY OF SOUND
DEG R	LB/ CU FT	CU FT-PSIA/LB	PSIA/R	BTU/LB	BTU/LB	BTU/LB-R	BTU / LB - R		FT/SEC
* 97.960	81.66792	2221.95	359.6	-83.850	-83.669	0.49610	0.249	0.407	4104.
100	81.33952	2169.93	347.6	-83.018	-82.836	0.50452	0.253	0.409	4030.
105	80.54577	2048.02	322.7	-80.969	-80.785	0.52453	0.258	0.411	3884.
110	79.76148	1933.85	302.3	-78.919	-78.733	0.54362	0.259	0.410	3769.
115	78.98076	1826.76	285.1	-76.876	-76.688	0.56181	0.256	0.408	3672.
120	78.19953	1726.03	270.1	-74.841	-74.651	0.57914	0.253	0.407	3585.
125	77.41491	1630.92	256.7	-72.814	-72.622	0.59571	0.249	0.405	3506.
130	76.62482	1540.80	244.5	-70.793	-70.600	0.61157	0.245	0.404	3431.
135	75.82768	1455.07	233.1	-68.777	-68.581	0.62681	0.241	0.404	3359.
140	75.02224	1373.25	222.5	-66.762	-66.564	0.64148	0.237	0.403	3288.
145	74.20742	1294.90	212.3	-64.746	-64.546	0.65564	0.234	0.404	3217.
150	73.38219	1219.62	202.7	-62.727	-62.525	0.66934	0.231	0.405	3147.
155	72.54548	1147.10	193.4	-60.704	-60.500	0.68263	0.228	0.406	3076.
160	71.69613	1077.02	184.4	-58.675	-58.468	0.69553	0.225	0.407	3004.
165	70.83281	1009.15	175.8	-56.637	-56.428	0.70809	0.223	0.409	2931.
170	69.95398	943.27	167.4	-54.589	-54.377	0.72033	0.220	0.411	2857.
175	69.05781	879.20	159.2	-52.529	-52.314	0.73229	0.218	0.414	2781.
180	68.14210	816.78	151.3	-50.454	-50.236	0.74400	0.216	0.417	2704.
185	67.20424	755.89	143.6	-48.362	-48.142	0.75547	0.214	0.421	2625.
190	66.24109	696.44	136.1	-46.250	-46.027	0.76676	0.212	0.425	2544.
195	65.24891	638.34	128.7	-44.115	-43.898	0.77787	0.210	0.430	2461.
*198.391	64.55685	599.68	123.8	-42.651	-42.421	0.78932	0.209	0.435	2403.
*198.391	1.36714	52.20	0.499	28.190	39.186	1.19646	0.170	0.267	615.
200	1.33201	53.02	0.491	28.492	39.614	1.19860	0.170	0.265	619.
205	1.28768	55.49	0.471	29.418	40.922	1.20507	0.168	0.259	630.
210	1.24697	57.89	0.453	30.326	42.206	1.21126	0.166	0.255	641.
215	1.20935	60.21	0.436	31.220	43.470	1.21720	0.165	0.251	652.
220	1.17443	62.48	0.421	32.101	44.715	1.22293	0.164	0.248	662.
225	1.14186	64.69	0.407	32.972	45.945	1.22846	0.163	0.245	671.
230	1.11137	66.86	0.395	33.833	47.163	1.23381	0.162	0.242	681.
235	1.08274	69.00	0.383	34.687	48.369	1.23900	0.161	0.240	690.
240	1.05577	71.10	0.372	35.534	49.565	1.24404	0.161	0.238	699.
245	1.03031	73.17	0.362	36.375	50.753	1.24893	0.160	0.237	708.
250	1.00620	75.21	0.353	37.210	51.933	1.25370	0.160	0.235	717.
255	0.98334	77.23	0.344	38.041	53.107	1.25835	0.159	0.234	725.
260	0.96161	79.23	0.336	38.868	54.274	1.26288	0.159	0.233	734.
265	0.94092	81.21	0.328	39.692	55.436	1.26731	0.159	0.232	742.
270	0.92120	83.18	0.321	40.512	56.594	1.27164	0.158	0.231	750.
275	0.90236	85.12	0.314	41.329	57.747	1.27587	0.158	0.230	758.
280	0.88435	87.06	0.307	42.144	58.896	1.28001	0.158	0.229	766.
285	0.86710	88.98	0.300	42.956	60.041	1.28407	0.158	0.229	774.
290	0.85057	90.89	0.294	43.767	61.184	1.28804	0.157	0.228	781.
295	0.83470	92.78	0.289	44.575	62.323	1.29193	0.157	0.228	789.
300	0.81946	94.67	0.283	45.382	63.460	1.29575	0.157	0.227	796.
310	0.79069	98.42	0.273	46.990	65.726	1.30319	0.157	0.226	811.
320	0.76400	102.13	0.263	48.593	67.984	1.31035	0.157	0.225	825.
330	0.73914	105.82	0.254	50.192	70.235	1.31728	0.157	0.225	839.
340	0.71593	109.48	0.246	51.787	72.479	1.32398	0.156	0.224	853.
350	0.69421	113.12	0.238	53.379	74.719	1.33047	0.156	0.224	866.
360	0.67382	116.74	0.231	54.968	76.954	1.33677	0.156	0.223	879.
370	0.65464	120.34	0.224	56.555	79.185	1.34288	0.156	0.223	892.
380	0.63656	123.93	0.218	58.141	81.413	1.34882	0.156	0.223	904.
390	0.61949	127.50	0.212	59.724	83.638	1.35460	0.156	0.222	917.
400	0.60335	131.05	0.206	61.306	85.860	1.36023	0.156	0.222	929.
410	0.58805	134.60	0.201	62.888	88.080	1.36571	0.156	0.222	941.
420	0.57353	138.13	0.195	64.468	90.298	1.37106	0.156	0.222	953.
430	0.55972	141.66	0.191	66.048	92.515	1.37627	0.156	0.222	964.
440	0.54659	145.17	0.186	67.628	94.731	1.38137	0.156	0.222	976.
450	0.53407	148.68	0.182	69.207	96.945	1.38634	0.157	0.221	987.
460	0.52213	152.18	0.178	70.786	99.159	1.39121	0.157	0.221	998.
470	0.51072	155.67	0.174	72.366	101.373	1.39597	0.157	0.221	1009.
480	0.49991	159.15	0.170	73.946	103.586	1.40063	0.157	0.221	1020.
490	0.48937	162.63	0.166	75.527	105.799	1.40519	0.157	0.221	1031.
500	0.47936	166.10	0.163	77.108	108.013	1.40966	0.157	0.221	1041.
510	0.46976	169.57	0.159	78.691	110.226	1.41405	0.157	0.221	1052.
520	0.46055	173.03	0.156	80.274	112.441	1.41835	0.157	0.221	1062.
530	0.45169	176.49	0.153	81.859	114.656	1.42257	0.158	0.222	1072.
540	0.44318	179.94	0.150	83.445	116.872	1.42671	0.158	0.222	1082.
550	0.43499	183.38	0.147	85.033	119.089	1.43078	0.158	0.222	1092.
560	0.42710	186.83	0.145	86.622	121.308	1.43478	0.158	0.222	1102.
570	0.41949	190.26	0.142	88.213	123.528	1.43871	0.158	0.222	1112.
580	0.41215	193.70	0.140	89.806	125.750	1.44257	0.159	0.222	1121.
590	0.40507	197.13	0.137	91.402	127.974	1.44637	0.159	0.222	1131.
600	0.39824	200.56	0.135	92.999	130.199	1.45011	0.159	0.223	1140.

\* INDICATES TWO PHASE BOUNDARY

61

THERMODYNAMIC PROPERTIES OF OXYGEN

70 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHEM DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 97.946	81.66572	2221.72	359.7	-83.857	-83.693	0.49609	0.249	0.407	4104.
100	81.33491	2169.29	347.6	-83.014	-82.854	0.50456	0.253	0.409	4030.
105	80.54089	2047.31	322.7	-80.965	-80.804	0.52458	0.258	0.411	3884.
110	79.75630	1933.07	302.3	-78.914	-78.752	0.54367	0.258	0.410	3769.
115	78.97528	1825.94	285.1	-76.870	-76.706	0.56185	0.256	0.408	3671.
120	78.19374	1725.17	270.1	-74.835	-74.669	0.57919	0.253	0.407	3585.
125	77.40978	1630.03	256.7	-72.808	-72.640	0.59576	0.249	0.405	3506.
130	76.61933	1539.67	244.5	-70.787	-70.618	0.61162	0.245	0.404	3431.
135	75.82081	1454.11	233.1	-68.770	-68.599	0.62686	0.241	0.404	3358.
140	75.01496	1372.26	222.4	-66.754	-66.581	0.64154	0.237	0.403	3287.
145	74.19970	1293.88	212.3	-64.738	-64.563	0.65570	0.234	0.404	3217.
150	73.37398	1218.58	202.6	-62.719	-62.542	0.66940	0.231	0.405	3146.
155	72.53675	1146.02	193.3	-60.695	-60.516	0.68269	0.228	0.406	3075.
160	71.68694	1075.91	184.3	-58.665	-58.484	0.69559	0.225	0.407	3003.
165	70.82290	1008.01	175.7	-56.626	-56.443	0.70815	0.223	0.409	2930.
170	69.94338	942.10	167.3	-54.577	-54.392	0.72040	0.220	0.411	2850.
175	69.04643	877.99	159.2	-52.516	-52.328	0.73236	0.218	0.414	2780.
180	68.12985	815.53	151.2	-50.441	-50.250	0.74407	0.216	0.417	2703.
185	67.19100	754.61	143.5	-48.348	-48.155	0.75555	0.214	0.421	2623.
190	66.22672	695.11	136.0	-46.235	-46.039	0.76684	0.212	0.425	2542.
*194.952	65.24279	637.52	128.7	-44.118	-43.920	0.77785	0.210	0.431	2460.
*194.952	1.18684	52.54	0.436	27.918	38.840	1.20214	0.169	0.262	614.
195	1.18644	52.56	0.435	27.927	38.852	1.20220	0.169	0.262	614.
200	1.14682	54.98	0.417	28.844	40.147	1.20876	0.167	0.256	625.
205	1.11040	57.32	0.401	29.744	41.417	1.21503	0.166	0.252	636.
210	1.07673	59.60	0.386	30.630	42.669	1.22106	0.164	0.248	646.
215	1.04546	61.82	0.373	31.504	43.903	1.22687	0.163	0.245	656.
220	1.01629	63.99	0.361	32.369	45.123	1.23248	0.162	0.243	666.
225	0.98897	66.12	0.350	33.224	46.331	1.23791	0.162	0.240	675.
230	0.96332	68.22	0.340	34.073	47.529	1.24318	0.161	0.239	684.
235	0.93915	70.29	0.330	34.915	48.717	1.24829	0.160	0.237	693.
240	0.91632	72.32	0.321	35.751	49.897	1.25326	0.160	0.235	702.
245	0.89472	74.34	0.313	36.582	51.070	1.25809	0.159	0.234	711.
250	0.87422	76.33	0.305	37.409	52.237	1.26281	0.159	0.233	720.
255	0.85475	78.30	0.297	38.232	53.398	1.26741	0.159	0.232	728.
260	0.83621	80.26	0.291	39.052	54.554	1.27190	0.158	0.231	736.
265	0.81853	82.20	0.284	39.869	55.705	1.27628	0.158	0.230	744.
270	0.80165	84.12	0.278	40.683	56.853	1.28057	0.158	0.229	752.
275	0.78550	86.03	0.272	41.494	57.997	1.28477	0.158	0.228	760.
280	0.77005	87.93	0.266	42.304	59.137	1.28888	0.157	0.228	768.
285	0.75524	89.82	0.261	43.111	60.275	1.29291	0.157	0.227	775.
290	0.74103	91.70	0.255	43.917	61.410	1.29685	0.157	0.227	783.
295	0.72737	93.56	0.250	44.721	62.542	1.30073	0.157	0.226	790.
300	0.71425	95.42	0.246	45.523	63.672	1.30452	0.157	0.226	798.
310	0.68945	99.12	0.237	47.124	65.926	1.31192	0.157	0.225	812.
320	0.66640	102.79	0.229	48.721	68.173	1.31905	0.157	0.224	826.
330	0.64491	106.43	0.221	50.314	70.414	1.32594	0.156	0.224	840.
340	0.62483	110.05	0.214	51.904	72.649	1.33262	0.156	0.223	853.
350	0.60602	113.66	0.207	53.491	74.880	1.33909	0.156	0.223	867.
360	0.58834	117.24	0.201	55.075	77.108	1.34536	0.156	0.223	880.
370	0.57170	120.81	0.195	56.658	79.332	1.35145	0.156	0.222	892.
380	0.55601	124.37	0.190	58.239	81.553	1.35738	0.156	0.222	905.
390	0.54119	127.91	0.184	59.819	83.771	1.36314	0.156	0.222	917.
400	0.52716	131.44	0.180	61.398	85.988	1.36875	0.156	0.222	929.
410	0.51385	134.96	0.175	62.976	88.202	1.37422	0.156	0.221	941.
420	0.50122	138.47	0.170	64.554	90.416	1.37955	0.156	0.221	953.
430	0.48921	141.98	0.166	66.131	92.628	1.38476	0.156	0.221	965.
440	0.47778	145.47	0.162	67.708	94.839	1.38984	0.156	0.221	976.
450	0.46688	148.96	0.159	69.285	97.049	1.39481	0.156	0.221	987.
460	0.45647	152.44	0.155	70.862	99.259	1.39967	0.157	0.221	998.
470	0.44653	155.91	0.152	72.439	101.468	1.40442	0.157	0.221	1009.
480	0.43702	159.38	0.148	74.017	103.678	1.40907	0.157	0.221	1020.
490	0.42792	162.84	0.145	75.596	105.888	1.41363	0.157	0.221	1031.
500	0.41919	166.30	0.142	77.175	108.098	1.41809	0.157	0.221	1041.
510	0.41082	169.75	0.139	78.756	110.308	1.42247	0.157	0.221	1052.
520	0.40278	173.20	0.136	80.337	112.520	1.42676	0.157	0.221	1062.
530	0.39506	176.64	0.134	81.920	114.732	1.43098	0.158	0.221	1072.
540	0.38763	180.08	0.131	83.505	116.945	1.43511	0.158	0.221	1082.
550	0.38048	183.52	0.129	85.091	119.160	1.43918	0.158	0.222	1092.
560	0.37359	186.95	0.126	86.678	121.376	1.44317	0.156	0.222	1102.
570	0.36695	190.37	0.124	88.268	123.594	1.44710	0.158	0.222	1112.
580	0.36054	193.80	0.122	89.860	125.813	1.45096	0.159	0.222	1121.
590	0.35436	197.22	0.120	91.454	128.034	1.45475	0.159	0.222	1131.
600	0.34839	200.64	0.118	93.050	130.258	1.45849	0.159	0.222	1140.

\* INDICATES TWO PHASE BOUNDARY

62

THERMODYNAMIC PROPERTIES OF OXYGEN

100 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
* 97.988	81.67232	2222.42	359.4	-83.848	-83.621	0.49613	0.249	0.407	4102.
100	81.34873	2171.20	347.6	-83.027	-82.800	0.50443	0.253	0.409	4030.
105	80.55554	2049.45	322.7	-80.979	-80.749	0.52444	0.258	0.411	3885.
110	79.77181	1935.39	302.4	-78.929	-78.697	0.54353	0.259	0.410	3769.
115	78.99170	1828.40	285.2	-76.886	-76.652	0.56171	0.256	0.408	3672.
120	78.21111	1727.75	270.2	-74.852	-74.615	0.57905	0.253	0.406	3586.
125	77.42717	1632.72	256.8	-72.826	-72.587	0.59561	0.249	0.405	3507.
130	76.63779	1542.66	244.6	-70.806	-70.565	0.61147	0.245	0.404	3433.
135	75.84142	1457.00	233.2	-68.790	-68.546	0.62671	0.241	0.403	3360.
140	75.03680	1375.23	222.5	-66.776	-66.530	0.64138	0.238	0.403	3289.
145	74.22286	1296.93	212.4	-64.762	-64.512	0.65553	0.234	0.404	3219.
150	73.39857	1221.72	202.8	-62.744	-62.492	0.66923	0.231	0.404	3148.
155	72.56289	1149.25	193.5	-60.723	-60.467	0.68251	0.228	0.406	3078.
160	71.71468	1079.23	184.5	-58.694	-58.436	0.69541	0.225	0.407	3006.
165	70.85261	1011.43	175.9	-56.658	-56.397	0.70796	0.223	0.409	2933.
170	69.97516	945.61	167.5	-54.611	-54.347	0.72020	0.220	0.411	2859.
175	69.08052	881.61	159.4	-52.553	-52.285	0.73215	0.218	0.414	2784.
180	68.16655	819.27	151.5	-50.480	-50.209	0.74385	0.216	0.417	2707.
185	67.23066	758.46	143.8	-48.391	-48.115	0.75532	0.214	0.421	2628.
190	66.26975	699.09	136.3	-46.281	-46.002	0.76659	0.212	0.425	2547.
195	65.28008	641.09	128.9	-44.149	-43.865	0.77769	0.210	0.430	2464.
200	64.25704	584.38	121.7	-41.989	-41.700	0.78865	0.209	0.436	2379.
*204.422	63.31998	535.29	115.5	-40.051	-39.758	0.79826	0.207	0.442	2301.
*204.422	1.66807	51.33	0.627	28.611	39.712	1.18683	0.172	0.277	618.
205	1.66104	51.64	0.624	28.724	39.872	1.18761	0.172	0.276	619.
210	1.60348	54.31	0.596	29.684	41.232	1.19416	0.170	0.269	631.
215	1.55099	56.87	0.571	30.622	42.561	1.20042	0.168	0.263	642.
220	1.50278	59.34	0.549	31.541	43.864	1.20641	0.166	0.258	653.
225	1.45823	61.74	0.530	32.446	45.144	1.21216	0.165	0.254	664.
230	1.41686	64.08	0.512	33.336	46.406	1.21771	0.164	0.251	674.
235	1.37827	66.36	0.495	34.216	47.652	1.22307	0.163	0.248	683.
240	1.34213	68.59	0.480	35.086	48.894	1.22825	0.162	0.245	693.
245	1.30819	70.78	0.466	35.948	50.103	1.23328	0.161	0.243	702.
250	1.27621	72.94	0.453	36.803	51.313	1.23817	0.161	0.241	711.
255	1.24600	75.06	0.441	37.651	52.513	1.24292	0.160	0.239	720.
260	1.21739	77.15	0.430	38.493	53.705	1.24755	0.160	0.239	729.
265	1.19025	79.22	0.419	39.331	54.889	1.25206	0.159	0.236	737.
270	1.16445	81.27	0.409	40.164	56.067	1.25647	0.159	0.235	746.
275	1.13997	83.29	0.400	40.994	57.239	1.26077	0.159	0.234	754.
280	1.11643	85.30	0.391	41.820	58.406	1.26498	0.158	0.233	762.
285	1.09404	87.28	0.382	42.642	59.569	1.26909	0.158	0.232	770.
290	1.07261	89.26	0.374	43.462	60.727	1.27312	0.158	0.231	778.
295	1.05209	91.21	0.366	44.280	61.881	1.27706	0.158	0.230	786.
300	1.03242	93.16	0.359	45.095	63.031	1.29093	0.158	0.230	793.
310	0.99537	97.01	0.345	46.719	65.323	1.28844	0.157	0.229	808.
320	0.96108	100.82	0.333	48.336	67.603	1.29569	0.157	0.228	823.
330	0.92924	104.60	0.321	49.947	69.875	1.30267	0.157	0.227	837.
340	0.89957	108.34	0.310	51.553	72.138	1.30943	0.157	0.226	851.
350	0.87185	112.05	0.300	53.155	74.395	1.31597	0.157	0.225	864.
360	0.84588	115.74	0.291	54.754	76.646	1.32231	0.157	0.225	877.
370	0.82149	119.40	0.282	56.349	78.891	1.32847	0.157	0.224	890.
380	0.79853	123.05	0.274	57.942	81.132	1.33444	0.156	0.224	903.
390	0.77687	126.67	0.267	59.533	83.370	1.34025	0.156	0.224	916.
400	0.75641	130.28	0.259	61.122	85.604	1.34591	0.156	0.223	928.
410	0.73704	133.88	0.252	62.710	87.835	1.35142	0.156	0.223	940.
420	0.71857	137.46	0.246	64.296	90.063	1.35679	0.156	0.223	952.
430	0.70123	141.02	0.240	65.882	92.290	1.36203	0.157	0.223	964.
440	0.68464	144.58	0.234	67.467	94.515	1.36714	0.157	0.222	975.
450	0.66894	148.12	0.228	69.051	96.738	1.37214	0.157	0.222	987.
460	0.65378	151.66	0.223	70.634	98.960	1.37702	0.157	0.222	998.
470	0.63940	155.19	0.218	72.220	101.181	1.38180	0.157	0.222	1009.
480	0.62566	158.70	0.213	73.804	103.402	1.38648	0.157	0.222	1020.
490	0.61251	162.21	0.209	75.389	105.622	1.39105	0.157	0.222	1031.
500	0.59991	165.71	0.204	76.975	107.842	1.39554	0.157	0.222	1041.
510	0.58784	169.21	0.200	78.561	110.062	1.39994	0.157	0.222	1052.
520	0.57625	172.69	0.196	80.148	112.283	1.40425	0.158	0.222	1062.
530	0.56512	176.17	0.192	81.736	114.504	1.40848	0.158	0.222	1072.
540	0.55442	179.65	0.188	83.325	116.726	1.41263	0.158	0.222	1082.
550	0.54413	183.12	0.185	84.916	118.949	1.41671	0.158	0.222	1092.
560	0.53422	186.58	0.181	86.509	121.172	1.42072	0.158	0.222	1102.
570	0.52467	190.04	0.178	88.103	123.397	1.42466	0.159	0.223	1112.
580	0.51546	193.50	0.175	89.699	125.624	1.42853	0.159	0.223	1121.
590	0.50658	196.95	0.172	91.297	127.852	1.43234	0.159	0.223	1131.
600	0.49800	200.40	0.169	92.897	130.082	1.43609	0.159	0.223	1140.

\* INDICATES TWO PHASE BOUNDARY

63

THERMODYNAMIC PROPERTIES OF OXYGEN

90 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
* 97.974	81.67012	2222.19	359.5	-83.849	-83.645	0.49612	0.249	0.407	4103.
100	81.34412	2170.57	347.6	-83.023	-82.818	0.50447	0.253	0.409	4030.
105	80.55066	2048.73	322.7	-80.974	-80.767	0.52449	0.258	0.411	3884.
110	79.76665	1934.62	302.3	-78.924	-78.715	0.54358	0.259	0.410	3769.
115	78.98623	1827.58	285.1	-76.881	-76.670	0.56176	0.256	0.408	3672.
120	78.20532	1726.89	270.2	-74.846	-74.633	0.57910	0.253	0.406	3586.
125	77.42104	1631.82	256.8	-72.820	-72.605	0.59566	0.249	0.405	3507.
130	76.63131	1541.73	244.5	-70.800	-70.582	0.61152	0.245	0.404	3432.
135	75.83455	1456.04	233.2	-68.784	-68.564	0.62676	0.241	0.403	3360.
140	75.02952	1374.24	222.5	-66.769	-66.547	0.64143	0.237	0.403	3289.
145	74.21514	1295.92	212.4	-64.754	-64.529	0.65559	0.234	0.404	3218.
150	73.39038	1220.67	202.7	-62.736	-62.509	0.66929	0.231	0.404	3148.
155	72.55419	1148.17	193.4	-60.713	-60.484	0.68257	0.228	0.406	3077.
160	71.70541	1078.13	184.5	-58.685	-58.452	0.69547	0.225	0.407	3005.
165	70.84272	1010.29	175.8	-56.647	-56.412	0.70802	0.223	0.409	2932.
170	69.96458	944.44	167.4	-54.600	-54.362	0.72026	0.220	0.411	2858.
175	69.06917	880.40	159.3	-52.541	-52.299	0.73222	0.218	0.414	2782.
180	68.15433	818.02	151.4	-50.467	-50.223	0.74392	0.216	0.417	2705.
185	67.21746	757.18	143.7	-48.376	-48.128	0.75540	0.214	0.421	2627.
190	66.25543	697.77	136.2	-46.266	-46.014	0.76667	0.212	0.425	2546.
195	65.26446	639.72	128.8	-44.132	-43.876	0.77778	0.210	0.430	2462.
200	64.23991	582.96	121.6	-41.970	-41.710	0.78875	0.209	0.436	2377.
*201.529	63.91903	565.86	119.4	-41.302	-41.042	0.79208	0.208	0.438	2350.
*201.529	1.50747	51.79	0.562	28.418	39.474	1.19140	0.171	0.272	617.
205	1.47100	53.60	0.545	29.078	40.408	1.19600	0.170	0.267	625.
210	1.42238	56.13	0.522	30.011	41.728	1.20236	0.168	0.261	636.
215	1.37774	58.56	0.502	30.926	43.023	1.20845	0.166	0.257	647.
220	1.33649	60.93	0.484	31.825	44.295	1.21431	0.165	0.253	657.
225	1.29820	63.23	0.467	32.712	45.550	1.21994	0.164	0.249	668.
230	1.26249	65.48	0.452	33.588	46.789	1.22539	0.163	0.246	677.
235	1.22906	67.69	0.438	34.454	48.014	1.23066	0.162	0.244	687.
240	1.19767	69.85	0.425	35.312	49.228	1.23577	0.161	0.242	696.
245	1.16810	71.98	0.414	36.163	50.431	1.24073	0.161	0.240	705.
250	1.14017	74.08	0.402	37.008	51.625	1.24556	0.160	0.238	714.
255	1.11373	76.15	0.392	37.848	52.812	1.25026	0.160	0.237	723.
260	1.08865	78.20	0.382	38.682	53.991	1.25484	0.159	0.235	731.
265	1.06481	80.22	0.373	39.513	55.164	1.25931	0.159	0.234	740.
270	1.04211	82.22	0.364	40.339	56.332	1.26367	0.159	0.233	748.
275	1.02047	84.21	0.356	41.162	57.494	1.26794	0.158	0.232	756.
280	0.99980	86.18	0.348	41.983	58.652	1.27211	0.158	0.231	764.
285	0.98002	88.13	0.341	42.800	59.806	1.27619	0.158	0.230	772.
290	0.96109	90.07	0.334	43.615	60.956	1.28019	0.158	0.230	780.
295	0.94293	92.00	0.327	44.428	62.103	1.28411	0.158	0.229	787.
300	0.92551	93.92	0.321	45.239	63.246	1.28796	0.157	0.228	795.
310	0.89266	97.72	0.309	46.855	65.525	1.29543	0.157	0.227	809.
320	0.86222	101.48	0.298	48.465	67.794	1.30264	0.157	0.226	824.
330	0.83392	105.21	0.287	50.070	70.055	1.30959	0.157	0.226	838.
340	0.80751	108.91	0.278	51.670	72.309	1.31632	0.157	0.225	852.
350	0.78292	112.59	0.269	53.267	74.557	1.32284	0.157	0.225	865.
360	0.75966	116.24	0.261	54.861	76.800	1.32916	0.156	0.224	878.
370	0.73790	119.87	0.253	56.452	79.038	1.33529	0.156	0.224	891.
380	0.71740	123.49	0.246	58.042	81.273	1.34125	0.156	0.223	904.
390	0.69806	127.09	0.239	59.629	83.504	1.34704	0.156	0.223	916.
400	0.67976	130.67	0.233	61.214	85.732	1.35268	0.156	0.223	929.
410	0.66244	134.24	0.226	62.799	87.957	1.35818	0.156	0.222	941.
420	0.64601	137.80	0.221	64.382	90.181	1.36354	0.156	0.222	952.
430	0.63040	141.34	0.215	65.965	92.403	1.36877	0.156	0.222	964.
440	0.61554	144.88	0.210	67.547	94.623	1.37337	0.157	0.222	976.
450	0.60139	148.40	0.205	69.129	96.842	1.37836	0.157	0.222	987.
460	0.58790	151.92	0.200	70.711	99.060	1.38373	0.157	0.222	998.
470	0.57501	155.43	0.196	72.293	101.277	1.38850	0.157	0.222	1009.
480	0.56269	158.93	0.192	73.875	103.494	1.39217	0.157	0.222	1020.
490	0.55090	162.42	0.187	75.458	105.711	1.39774	0.157	0.222	1031.
500	0.53960	165.91	0.183	77.041	107.927	1.40222	0.157	0.222	1041.
510	0.52877	169.39	0.180	78.626	110.144	1.40661	0.157	0.222	1052.
520	0.51837	172.86	0.176	80.211	112.362	1.41091	0.157	0.222	1062.
530	0.50838	176.33	0.173	81.797	114.580	1.41514	0.158	0.222	1072.
540	0.49878	179.79	0.169	83.385	116.799	1.41929	0.158	0.222	1082.
550	0.48954	183.25	0.166	84.974	119.019	1.42336	0.158	0.222	1092.
560	0.48064	186.70	0.163	86.565	121.240	1.42736	0.158	0.222	1102.
570	0.47206	190.15	0.160	88.158	123.463	1.43130	0.158	0.222	1112.
580	0.46379	193.60	0.157	89.753	125.687	1.43516	0.159	0.222	1121.
590	0.45581	197.04	0.154	91.349	127.913	1.43897	0.159	0.223	1131.
600	0.44811	200.48	0.152	92.948	130.141	1.44271	0.159	0.223	1140.

\* INDICATES TWO PHASE BOUNDARY

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200 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU. FT-PSIA/LB	ISCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.131	81.69434	2224.81	358.3	-83.833	-83.380	0.49628	0.250	0.407	4096.
100	81.39472	2177.58	347.5	-83.072	-82.617	0.50398	0.254	0.409	4030.
105	80.60425	2056.56	322.7	-81.026	-80.566	0.52399	0.259	0.411	3886.
110	79.82338	1943.10	302.4	-78.979	-78.515	0.54308	0.259	0.410	3772.
115	79.04627	1836.61	285.3	-76.939	-76.470	0.56125	0.257	0.408	3676.
120	78.26895	1736.37	270.4	-74.908	-74.435	0.57858	0.253	0.406	3591.
125	77.48825	1641.70	257.1	-72.886	-72.408	0.59513	0.249	0.405	3512.
130	76.70242	1551.95	244.9	-70.871	-70.388	0.61097	0.245	0.404	3438.
135	75.90983	1466.59	233.6	-68.859	-68.372	0.62619	0.242	0.403	3367.
140	75.10925	1385.11	223.0	-66.850	-66.357	0.64085	0.238	0.403	3297.
145	74.29966	1307.09	212.9	-64.841	-64.342	0.65499	0.234	0.403	3227.
150	73.48008	1232.15	203.3	-62.829	-62.325	0.66866	0.231	0.404	3157.
155	72.64950	1159.96	194.0	-60.813	-60.304	0.68192	0.228	0.405	3087.
160	71.80687	1090.25	185.1	-58.792	-58.276	0.69479	0.226	0.406	3016.
165	70.95093	1022.75	176.5	-56.763	-56.241	0.70732	0.223	0.408	2944.
170	70.08027	957.27	168.2	-54.724	-54.196	0.71953	0.221	0.410	2871.
175	69.19319	893.61	160.1	-52.674	-52.139	0.73145	0.218	0.413	2797.
180	68.28769	831.63	152.3	-50.611	-50.069	0.74312	0.216	0.416	2721.
185	67.36140	771.22	144.6	-48.533	-47.983	0.75455	0.214	0.419	2643.
190	66.41146	712.26	137.2	-46.435	-45.878	0.76578	0.212	0.423	2564.
195	65.43443	654.70	129.9	-44.317	-43.751	0.77683	0.211	0.428	2483.
200	64.42613	598.46	122.7	-42.172	-41.597	0.78773	0.209	0.434	2399.
205	63.38145	543.52	115.8	-39.998	-39.413	0.79851	0.207	0.440	2313.
210	62.29402	489.94	108.9	-37.787	-37.192	0.80922	0.206	0.448	2223.
215	61.15577	437.42	102.1	-35.532	-34.927	0.81988	0.205	0.458	2131.
220	59.95624	386.22	95.4	-33.225	-32.607	0.83054	0.203	0.470	2034.
225	58.68145	336.25	88.7	-30.851	-30.220	0.84127	0.202	0.485	1933.
*225.701	58.49572	329.34	87.7	-30.512	-29.879	0.84278	0.202	0.488	1918.
*225.701	3.32079	45.08	1.3	29.400	40.553	1.15472	0.182	0.333	619.
230	3.20021	48.19	1.3	30.380	41.953	1.16086	0.173	0.319	631.
235	3.07537	51.57	1.2	31.470	43.511	1.16756	0.175	0.305	645.
240	2.96509	54.75	1.1	32.520	45.010	1.17388	0.173	0.295	658.
245	2.86523	57.78	1.1	33.536	46.462	1.17986	0.171	0.286	670.
250	2.77436	60.67	1.1	34.525	47.875	1.18557	0.169	0.279	681.
255	2.69105	63.44	1.0	35.492	49.255	1.19104	0.167	0.273	693.
260	2.61417	66.13	0.978	36.440	50.607	1.19629	0.166	0.268	703.
265	2.54234	68.73	0.946	37.372	51.936	1.20135	0.165	0.264	714.
270	2.47635	71.27	0.916	38.290	53.245	1.20625	0.164	0.260	724.
275	2.41414	73.75	0.889	39.196	54.537	1.21099	0.163	0.257	733.
280	2.35571	76.17	0.863	40.091	55.813	1.21559	0.162	0.254	743.
285	2.30068	78.54	0.840	40.978	57.076	1.22006	0.162	0.251	752.
290	2.24869	80.87	0.818	41.857	58.326	1.22441	0.161	0.249	761.
295	2.19946	83.17	0.797	42.728	59.566	1.22865	0.161	0.247	770.
300	2.15275	85.42	0.778	43.593	60.797	1.23278	0.160	0.245	778.
310	2.06599	89.85	0.743	45.307	63.233	1.24077	0.160	0.242	795.
320	1.98700	94.18	0.711	47.002	65.642	1.24842	0.159	0.240	811.
330	1.91464	98.42	0.683	48.683	68.026	1.25576	0.159	0.237	826.
340	1.84802	102.58	0.657	50.351	70.392	1.26282	0.158	0.236	841.
350	1.78640	106.68	0.633	52.009	72.741	1.26963	0.158	0.234	856.
360	1.72919	110.72	0.611	53.658	75.076	1.27621	0.158	0.233	870.
370	1.67590	114.71	0.591	55.300	77.399	1.28257	0.158	0.232	884.
380	1.62609	118.66	0.572	56.935	79.711	1.28874	0.157	0.231	898.
390	1.57940	122.56	0.554	58.565	82.014	1.29472	0.157	0.230	911.
400	1.53554	126.44	0.538	60.190	84.309	1.30053	0.157	0.229	924.
410	1.49423	130.29	0.523	61.811	86.597	1.30618	0.157	0.228	937.
420	1.45525	134.09	0.508	63.429	88.879	1.31168	0.157	0.228	949.
430	1.41838	137.87	0.495	65.044	91.156	1.31703	0.157	0.227	961.
440	1.38346	141.63	0.482	66.657	93.427	1.32226	0.157	0.227	973.
450	1.35032	145.37	0.470	68.268	95.695	1.32735	0.157	0.227	985.
460	1.31882	149.09	0.458	69.877	97.959	1.33233	0.157	0.226	997.
470	1.28884	152.79	0.447	71.484	100.220	1.33719	0.157	0.226	1008.
480	1.26026	156.47	0.437	73.091	102.479	1.34195	0.158	0.226	1019.
490	1.23299	160.13	0.427	74.697	104.735	1.34660	0.159	0.226	1030.
500	1.20693	163.78	0.417	76.303	106.989	1.35115	0.158	0.225	1041.
510	1.18200	167.41	0.408	77.908	109.242	1.35561	0.158	0.225	1052.
520	1.15812	171.04	0.400	79.514	111.493	1.35999	0.158	0.225	1062.
530	1.13523	174.64	0.392	81.120	113.744	1.36427	0.158	0.225	1073.
540	1.11326	178.24	0.384	82.726	115.994	1.36848	0.158	0.225	1083.
550	1.09216	181.83	0.376	84.334	118.244	1.37261	0.159	0.225	1093.
560	1.07198	185.40	0.369	85.942	120.494	1.37666	0.159	0.225	1103.
570	1.05236	188.97	0.362	87.551	122.744	1.38064	0.159	0.225	1113.
580	1.03357	192.52	0.355	89.162	124.995	1.38456	0.159	0.225	1123.
590	1.01546	196.07	0.349	90.774	127.246	1.38841	0.159	0.225	1133.
600	0.99799	199.61	0.342	92.388	129.498	1.39219	0.160	0.225	1142.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

150 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.060	81.68332	2223.61	358.8	-83.841	-83.500	0.49620	0.250	0.407	4099.
100	81.37174	2174.39	347.5	-83.050	-82.708	0.50420	0.254	0.409	4030.
105	80.57991	2053.00	322.7	-81.002	-80.657	0.52422	0.259	0.411	3885.
110	79.79762	1939.24	302.4	-78.954	-78.606	0.54330	0.259	0.410	3771.
115	79.01901	1832.51	285.2	-76.913	-76.561	0.56148	0.257	0.408	3674.
120	78.24002	1732.06	270.3	-74.880	-74.525	0.57881	0.253	0.406	3589.
125	77.45775	1637.21	256.9	-72.856	-72.498	0.59537	0.249	0.405	3510.
130	76.67016	1547.31	244.7	-70.839	-70.476	0.61122	0.245	0.404	3435.
135	75.87568	1461.80	233.4	-68.825	-68.459	0.62645	0.241	0.403	3364.
140	75.07309	1380.17	222.8	-66.813	-66.443	0.64111	0.238	0.403	3293.
145	74.26133	1302.02	212.7	-64.801	-64.427	0.65526	0.234	0.403	3223.
150	73.43941	1226.94	203.0	-62.787	-62.409	0.66895	0.231	0.404	3153.
155	72.60630	1154.61	193.8	-60.768	-60.386	0.68221	0.228	0.405	3082.
160	71.76089	1084.75	184.8	-58.743	-58.356	0.69510	0.225	0.407	3011.
165	70.90191	1017.10	176.2	-56.710	-56.319	0.70764	0.223	0.408	2939.
170	70.02797	951.45	167.9	-54.668	-54.271	0.71986	0.220	0.411	2865.
175	69.13705	887.62	159.8	-52.614	-52.212	0.73180	0.218	0.413	2790.
180	68.22735	825.47	151.9	-50.546	-50.139	0.74348	0.216	0.416	2714.
185	67.29630	764.86	144.2	-48.462	-48.049	0.75493	0.214	0.420	2636.
190	66.34094	705.70	136.7	-46.359	-45.940	0.76618	0.212	0.424	2556.
195	65.35766	647.91	129.4	-44.233	-43.808	0.77726	0.210	0.429	2474.
200	64.34209	591.45	122.2	-42.081	-41.649	0.78819	0.209	0.435	2389.
205	63.28984	536.26	115.2	-39.897	-39.458	0.79901	0.207	0.442	2302.
210	62.19116	482.32	108.3	-37.676	-37.229	0.80975	0.206	0.450	2211.
215	61.04043	429.60	101.4	-35.408	-34.953	0.82046	0.204	0.460	2117.
*216.369	60.71481	415.39	99.6	-34.778	-34.321	0.82339	0.204	0.454	2091.
*216.369	2.48079	48.46	0.969	29.206	40.403	1.16859	0.177	0.303	620.
220	2.41125	50.75	0.932	29.568	41.488	1.17357	0.175	0.295	630.
225	2.32424	53.75	0.887	30.986	42.937	1.18008	0.172	0.285	642.
230	2.24563	56.61	0.848	31.974	44.344	1.18626	0.170	0.278	654.
235	2.17397	59.34	0.814	32.938	45.715	1.19216	0.168	0.271	665.
240	2.10817	61.98	0.783	33.881	47.057	1.19782	0.167	0.266	676.
245	2.04737	64.53	0.755	34.808	48.375	1.20325	0.166	0.261	687.
250	1.99091	67.00	0.730	35.720	49.671	1.20849	0.164	0.257	697.
255	1.93824	69.42	0.707	36.619	50.950	1.21355	0.164	0.254	707.
260	1.88992	71.78	0.686	37.507	52.213	1.21846	0.163	0.251	716.
265	1.84258	74.10	0.666	38.387	53.462	1.22321	0.162	0.249	726.
270	1.79831	76.37	0.648	39.258	54.699	1.22784	0.161	0.246	735.
275	1.75764	78.60	0.631	40.122	55.925	1.23234	0.161	0.244	744.
280	1.71855	80.80	0.615	40.979	57.142	1.23673	0.160	0.243	753.
285	1.68145	82.97	0.600	41.831	58.351	1.24100	0.160	0.241	761.
290	1.64616	85.11	0.586	42.678	59.552	1.24518	0.160	0.239	769.
295	1.61254	87.23	0.573	43.520	60.746	1.24926	0.159	0.238	778.
300	1.58045	89.33	0.560	44.359	61.934	1.25326	0.159	0.237	786.
310	1.52042	93.46	0.537	46.025	64.294	1.26100	0.158	0.235	802.
320	1.46530	97.52	0.516	47.679	66.635	1.26843	0.158	0.233	817.
330	1.41444	101.52	0.497	49.323	68.961	1.27559	0.158	0.232	832.
340	1.36732	105.46	0.479	50.959	71.273	1.28249	0.157	0.231	846.
350	1.32351	109.37	0.462	52.588	73.575	1.28916	0.157	0.230	860.
360	1.28264	113.23	0.447	54.210	75.866	1.29562	0.157	0.229	874.
370	1.24441	117.06	0.433	55.828	78.150	1.30187	0.157	0.228	887.
380	1.20855	120.85	0.420	57.442	80.425	1.30794	0.157	0.227	900.
390	1.17483	124.62	0.408	59.052	82.695	1.31384	0.157	0.227	913.
400	1.14306	128.36	0.396	60.659	84.959	1.31957	0.157	0.226	926.
410	1.11305	132.07	0.385	62.263	87.218	1.32515	0.157	0.226	938.
420	1.08467	135.77	0.375	63.865	89.473	1.33058	0.157	0.225	951.
430	1.05778	139.44	0.365	65.465	91.724	1.33588	0.157	0.225	963.
440	1.03225	143.10	0.356	67.063	93.972	1.34105	0.157	0.225	974.
450	1.00798	146.74	0.347	68.661	96.217	1.34609	0.157	0.224	986.
460	0.98498	150.37	0.339	70.257	98.460	1.35102	0.157	0.224	997.
470	0.96285	153.98	0.331	71.853	100.701	1.35584	0.157	0.224	1009.
480	0.94183	157.58	0.324	73.448	102.941	1.36056	0.157	0.224	1020.
490	0.92175	161.17	0.317	75.044	105.179	1.36517	0.157	0.224	1030.
500	0.90253	164.74	0.310	76.639	107.416	1.36969	0.157	0.224	1041.
510	0.88412	168.30	0.303	78.235	109.652	1.37412	0.158	0.224	1052.
520	0.86648	171.96	0.297	79.831	111.888	1.37846	0.158	0.224	1062.
530	0.84955	175.40	0.291	81.428	114.124	1.38272	0.158	0.224	1073.
540	0.83329	178.94	0.285	83.026	116.360	1.38690	0.158	0.224	1083.
550	0.81766	182.47	0.280	84.625	118.596	1.39100	0.158	0.224	1093.
560	0.80262	185.99	0.274	86.226	120.833	1.39503	0.159	0.224	1103.
570	0.78814	189.50	0.269	87.827	123.071	1.39879	0.159	0.224	1112.
580	0.77419	193.01	0.264	89.431	125.309	1.40289	0.159	0.224	1122.
590	0.76073	196.51	0.260	91.036	127.549	1.40672	0.159	0.224	1132.
600	0.74775	200.00	0.255	92.643	129.790	1.41048	0.160	0.224	1141.

\* INDICATES TWO PHASE BOUNDARY

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* 98.273	81.71644	2227.28	357.3	-83.819	-83.139	0.49642	0.251	0.400	4070.
100	81.44058	2183.96	347.3	-83.116	-82.434	0.50354	0.255	0.409	4030.
105	80.65279	2063.68	322.7	-81.072	-80.383	0.52355	C.260	0.411	3888.
110	79.87474	1950.81	302.5	-79.028	-78.333	0.54263	0.260	0.410	3775.
115	79.10060	1844.81	285.5	-76.991	-76.289	0.56079	0.257	0.408	3679.
120	78.32630	1744.98	270.6	-74.964	-74.255	0.57811	0.254	0.406	3595.
125	77.54900	1650.66	257.3	-72.946	-72.230	0.59464	0.250	0.404	3518.
130	76.76667	1561.23	245.2	-70.935	-70.211	0.61048	0.246	0.403	3444.
135	75.97779	1476.15	234.0	-68.928	-68.197	0.62568	0.242	0.403	3373.
140	75.19119	1394.94	223.4	-66.923	-66.184	0.64032	0.238	0.402	3304.
145	74.37587	1317.19	213.4	-64.919	-64.172	0.65444	0.235	0.403	3235.
150	73.56089	1242.52	203.8	-62.913	-62.158	0.66810	0.232	0.403	3166.
155	72.73532	1170.62	194.6	-60.903	-60.140	0.68133	0.229	0.404	3096.
160	71.89813	1101.19	185.7	-58.888	-58.116	0.69419	0.226	0.405	3026.
165	71.04817	1033.99	177.2	-56.866	-56.084	0.70669	0.223	0.407	2955.
170	70.18410	968.82	168.9	-54.835	-54.044	0.71887	0.221	0.409	2883.
175	69.30435	905.50	160.9	-52.794	-51.992	0.73076	0.219	0.411	2810.
180	68.40706	843.88	153.0	-50.740	-49.928	0.74239	0.217	0.414	2735.
185	67.49002	783.84	145.4	-48.672	-47.849	0.75379	0.215	0.418	2658.
190	66.55059	725.28	138.0	-46.586	-45.752	0.76497	0.213	0.421	2580.
195	65.58562	668.13	130.8	-44.481	-43.634	0.77598	0.211	0.426	2500.
200	64.59131	612.33	123.7	-42.352	-41.492	0.78682	0.209	0.431	2418.
205	63.56305	557.86	116.8	-40.195	-39.321	0.79754	0.208	0.437	2334.
210	62.49513	504.69	110.0	-38.004	-37.115	0.80817	0.206	0.445	2247.
215	61.38044	452.81	103.3	-35.774	-34.869	0.81874	0.205	0.454	2157.
220	60.20993	402.21	96.7	-33.497	-32.574	C.82929	0.203	0.465	2063.
225	58.97170	352.89	90.1	-31.160	-30.218	0.83988	0.202	0.478	1965.
230	57.64969	304.83	83.6	-28.750	-27.786	0.85057	0.202	0.495	1863.
235	56.22118	257.99	77.0	-26.246	-25.258	0.86145	0.201	0.517	1754.
240	54.65198	212.25	70.3	-23.618	-22.601	0.87263	0.201	0.547	1637.
*240.206	54.58351	210.39	70.0	-23.506	-22.488	0.87310	0.201	0.549	1632.
*240.206	5.12959	37.58	2.2	29.062	39.892	1.13270	0.191	0.411	613.
245	4.87296	42.06	2.1	30.376	41.776	1.14047	0.185	0.377	630.
250	4.64791	46.27	1.9	31.644	43.597	1.14782	0.181	0.352	646.
255	4.45442	50.14	1.8	32.837	45.309	1.15461	0.178	0.334	660.
260	4.28463	53.75	1.7	33.973	46.939	1.16094	0.175	0.319	674.
265	4.13338	57.15	1.6	35.063	48.504	1.16690	0.173	0.307	687.
270	3.99706	60.38	1.6	36.118	50.016	1.17255	0.171	0.298	699.
275	3.87305	63.46	1.5	37.142	51.486	1.17795	0.169	0.290	711.
280	3.75936	66.43	1.4	38.142	52.919	1.18311	0.168	0.283	722.
285	3.65447	69.30	1.4	39.121	54.323	1.18808	0.166	0.278	732.
290	3.55717	72.08	1.4	40.082	55.699	1.19287	0.165	0.273	743.
295	3.46648	74.78	1.3	41.028	57.054	1.19750	0.164	0.269	753.
300	3.38162	77.41	1.3	41.960	58.388	1.20198	0.164	0.265	763.
310	3.22686	82.51	1.2	43.791	61.007	1.21057	0.162	0.259	781.
320	3.08878	87.41	1.1	45.586	63.571	1.21871	0.161	0.254	799.
330	2.96441	92.16	1.1	47.351	66.092	1.22647	0.160	0.250	816.
340	2.85150	96.78	1.0	49.094	68.576	1.23389	0.160	0.247	832.
350	2.74831	101.29	1.0	50.817	71.031	1.24100	0.159	0.244	848.
360	2.65350	105.71	0.962	52.524	73.460	1.24785	0.159	0.242	863.
370	2.56594	110.04	0.927	54.218	75.868	1.25445	0.159	0.240	878.
380	2.48475	114.30	0.895	55.900	78.258	1.26082	0.158	0.238	892.
390	2.40918	118.50	0.865	57.574	80.633	1.26699	0.158	0.237	906.
400	2.33861	122.64	0.837	59.238	82.993	1.27296	0.158	0.235	920.
410	2.27251	126.73	0.811	60.896	85.342	1.27876	0.158	0.234	933.
420	2.21043	130.77	0.787	62.548	87.680	1.28440	0.158	0.233	946.
430	2.15199	134.78	0.765	64.195	90.010	1.28988	0.158	0.232	959.
440	2.09684	138.74	0.744	65.837	92.331	1.29521	0.158	0.232	971.
450	2.04470	142.67	0.724	67.475	94.645	1.30041	0.158	0.231	984.
460	1.99531	146.57	0.705	69.110	96.952	1.30549	0.158	0.230	996.
470	1.94844	150.44	0.687	70.742	99.254	1.31044	0.158	0.230	1007.
480	1.90389	154.29	0.670	72.372	101.551	1.31527	0.158	0.229	1019.
490	1.86148	158.11	0.654	74.000	103.844	1.32000	0.158	0.229	1030.
500	1.82105	161.90	0.639	75.627	106.133	1.32463	0.158	0.229	1041.
510	1.78246	165.68	0.625	77.252	108.419	1.32915	0.158	0.228	1052.
520	1.74557	169.43	0.611	78.877	110.702	1.33359	0.159	0.228	1063.
530	1.71028	173.16	0.598	80.501	112.983	1.33793	0.159	0.228	1074.
540	1.67647	176.88	0.586	82.125	115.262	1.34219	0.159	0.228	1084.
550	1.64404	180.58	0.574	83.749	117.540	1.34637	0.159	0.228	1094.
560	1.61292	184.27	0.562	85.373	119.816	1.35047	0.159	0.228	1105.
570	1.58301	187.94	0.551	86.998	122.091	1.35450	0.159	0.228	1115.
580	1.55426	191.59	0.540	88.623	124.366	1.35846	0.160	0.227	1125.
590	1.52657	195.24	0.530	90.250	126.641	1.36234	C.160	0.227	1134.
600	1.49991	198.87	0.521	91.877	128.915	1.36617	0.160	0.227	1144.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

250 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.202	81.70538	2226.03	357.8	-83.826	-83.260	0.49635	0.251	0.408	4093.
100	81.41767	2180.77	347.4	-83.094	-82.525	0.50376	0.255	0.409	4030.
105	80.62854	2060.12	322.7	-81.049	-80.475	0.52377	0.259	0.411	3887.
110	79.84909	1946.96	302.5	-79.003	-78.424	0.54285	0.260	0.410	3773.
115	79.07346	1840.71	285.4	-76.965	-76.380	0.56102	0.257	0.408	3678.
120	78.29761	1740.68	270.5	-74.936	-74.345	0.57834	0.254	0.406	3593.
125	77.51867	1646.18	257.2	-72.916	-72.319	0.59488	0.250	0.404	3515.
130	76.73459	1556.59	245.1	-70.903	-70.299	0.61073	0.246	0.403	3441.
135	75.94386	1471.37	233.8	-68.894	-68.284	0.62594	0.242	0.403	3370.
140	75.14529	1390.03	223.2	-66.887	-66.271	0.64058	0.238	0.403	3300.
145	74.33784	1312.14	213.1	-64.880	-64.257	0.65471	0.235	0.403	3231.
150	73.52057	1237.34	203.5	-62.871	-62.242	0.66838	0.231	0.404	3161.
155	72.69251	1165.30	194.3	-60.859	-60.222	0.68163	0.228	0.405	3092.
160	71.85261	1095.73	185.4	-58.840	-58.196	0.69449	0.226	0.406	3021.
165	70.99968	1028.38	176.9	-56.815	-56.162	0.70700	0.223	0.408	2950.
170	70.13234	963.06	168.5	-54.780	-54.120	0.71920	0.221	0.410	2877.
175	69.24895	899.57	160.5	-52.734	-52.066	0.73111	0.219	0.412	2803.
180	68.34760	837.77	152.7	-50.676	-49.999	0.74275	0.216	0.415	2728.
185	67.42597	777.54	145.0	-48.602	-47.916	0.75417	0.214	0.418	2651.
190	66.48134	718.79	137.6	-46.511	-45.815	0.76537	0.213	0.422	2572.
195	65.51041	661.43	130.3	-44.399	-43.693	0.77640	0.211	0.427	2492.
200	64.50919	605.42	123.3	-42.263	-41.545	0.78727	0.209	0.432	2409.
205	63.47284	550.72	116.3	-40.097	-39.367	0.79803	0.207	0.439	2323.
210	62.39532	497.30	109.5	-37.896	-37.154	0.80869	0.206	0.447	2235.
215	61.26908	445.15	102.7	-35.655	-34.899	0.81931	0.205	0.456	2144.
220	60.08437	394.26	96.0	-33.362	-32.592	0.82991	0.203	0.467	2049.
225	58.82933	344.62	89.4	-31.007	-30.220	0.84057	0.202	0.482	1946.
230	57.48331	296.20	82.8	-28.575	-27.769	0.85134	0.202	0.500	1844.
*233.478	56.48224	263.20	78.1	-26.824	-26.005	0.85896	0.201	0.515	1767.
*233.478	4.19999	41.42	1.8	29.333	40.355	1.14307	0.186	0.368	616.
235	4.13717	42.71	1.7	29.719	40.909	1.14544	0.185	0.360	621.
240	3.95126	46.70	1.6	30.936	42.652	1.15278	0.180	0.338	637.
245	3.79024	50.37	1.5	32.086	44.301	1.15957	0.177	0.322	651.
250	3.64920	53.81	1.4	33.186	45.875	1.16594	0.174	0.307	664.
255	3.52117	57.06	1.4	34.245	47.392	1.17195	0.172	0.298	677.
260	3.40630	60.15	1.3	35.271	48.862	1.17765	0.170	0.290	689.
265	3.30152	63.10	1.3	36.271	50.293	1.18311	0.168	0.283	701.
270	3.20525	65.95	1.2	37.248	51.692	1.18834	0.167	0.277	712.
275	3.11626	68.71	1.2	38.207	53.063	1.19337	0.166	0.272	722.
280	3.03358	71.38	1.1	39.149	54.410	1.19822	0.165	0.267	732.
285	2.95641	73.99	1.1	40.077	55.736	1.20292	0.164	0.263	742.
290	2.88411	76.53	1.1	40.993	57.045	1.20747	0.163	0.260	752.
295	2.81615	79.01	1.0	41.899	58.338	1.21189	0.162	0.257	761.
300	2.75206	81.45	1.0	42.795	59.617	1.21619	0.162	0.255	770.
310	2.63406	86.20	0.964	44.563	62.139	1.22446	0.161	0.250	788.
320	2.52763	90.81	0.920	46.305	64.621	1.23234	0.160	0.246	805.
330	2.43091	95.30	0.890	48.026	67.070	1.23988	0.159	0.244	821.
340	2.34246	99.68	0.845	49.730	69.493	1.24711	0.159	0.241	837.
350	2.26113	103.98	0.812	51.419	71.893	1.25407	0.159	0.239	852.
360	2.18599	108.21	0.782	53.096	74.274	1.26077	0.158	0.237	867.
370	2.11629	112.37	0.755	54.763	76.638	1.26725	0.158	0.236	891.
380	2.05140	116.47	0.730	56.421	78.988	1.27352	0.158	0.234	895.
390	1.99079	120.52	0.707	58.072	81.326	1.27959	0.158	0.233	909.
400	1.93401	124.53	0.685	59.717	83.654	1.28548	0.158	0.232	922.
410	1.88058	128.49	0.665	61.356	85.972	1.29121	0.158	0.231	935.
420	1.83048	132.42	0.646	62.990	88.281	1.29677	0.158	0.231	948.
430	1.78310	136.32	0.628	64.621	90.584	1.30219	0.158	0.230	960.
440	1.73831	140.18	0.611	66.248	92.880	1.30747	0.158	0.229	972.
450	1.69588	144.01	0.595	67.872	95.171	1.31262	0.158	0.229	984.
460	1.65562	147.82	0.580	69.494	97.456	1.31764	0.158	0.228	996.
470	1.61736	151.61	0.566	71.114	99.738	1.32255	0.158	0.228	1008.
480	1.58095	155.37	0.552	72.732	102.015	1.32734	0.158	0.228	1019.
490	1.54623	159.11	0.539	74.349	104.290	1.33203	0.158	0.227	1030.
500	1.51310	162.83	0.527	75.965	106.561	1.33662	0.158	0.227	1041.
510	1.48144	166.54	0.516	77.581	108.831	1.34112	0.158	0.227	1052.
520	1.45115	170.23	0.504	79.196	111.098	1.34552	0.158	0.227	1063.
530	1.42214	173.90	0.494	80.811	113.364	1.34984	0.158	0.227	1073.
540	1.39433	177.55	0.484	82.426	115.628	1.35407	0.159	0.226	1084.
550	1.36763	181.20	0.474	84.042	117.892	1.35822	0.159	0.226	1094.
560	1.34198	184.83	0.465	85.658	120.155	1.36230	0.159	0.226	1104.
570	1.31733	188.45	0.456	87.275	122.418	1.36630	0.159	0.226	1114.
580	1.29360	192.05	0.447	88.893	124.680	1.37024	0.159	0.226	1124.
590	1.27074	195.65	0.439	90.512	126.943	1.37411	0.160	0.226	1133.
600	1.24872	199.23	0.431	92.133	129.207	1.37791	0.160	0.226	1143.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

400 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R.	CP	VELOCITY OF SOUND FT/SEC
* 98.415	81.73859	2229.82	356.3	-83.805	-82.899	0.49656	0.253	0.408	4084.
100	81.48630	2190.37	347.2	-83.160	-82.251	0.50309	0.256	0.409	4030.
105	80.70116	2070.81	322.6	-81.118	-80.200	0.52310	0.260	0.410	3889.
110	79.92570	1958.53	302.6	-79.077	-78.150	0.54218	0.260	0.409	3777.
115	79.15468	1853.00	285.6	-77.043	-76.108	0.56034	0.258	0.408	3683.
120	78.38346	1753.58	270.8	-75.020	-74.075	0.57764	0.254	0.406	3600.
125	77.60942	1659.60	257.6	-73.005	-72.051	0.59417	0.250	0.404	3523.
130	76.83053	1570.48	245.6	-70.993	-70.034	0.60999	0.246	0.403	3450.
135	76.04532	1485.68	234.4	-68.995	-68.021	0.62518	0.242	0.402	3380.
140	75.25263	1404.74	223.8	-66.996	-66.012	0.63980	0.239	0.402	3311.
145	74.45150	1327.25	213.9	-64.997	-64.002	0.65390	0.235	0.402	3243.
150	73.64104	1252.85	204.3	-62.996	-61.990	0.66754	0.232	0.403	3174.
155	72.82036	1181.21	195.2	-60.992	-59.975	0.68076	0.229	0.404	3105.
160	71.99850	1112.06	186.3	-58.983	-57.954	0.69359	0.226	0.405	3036.
165	71.14437	1045.16	177.8	-56.968	-55.927	0.70606	0.224	0.406	2966.
170	70.28671	980.29	169.6	-54.945	-53.891	0.71822	0.221	0.408	2895.
175	69.41408	917.29	161.6	-52.912	-51.844	0.73008	0.219	0.410	2822.
180	68.52472	856.01	153.8	-50.867	-49.786	0.74168	0.217	0.413	2748.
185	67.61659	796.32	146.3	-48.809	-47.713	0.75304	0.215	0.416	2673.
190	66.68726	738.14	138.9	-46.734	-45.624	0.76419	0.213	0.420	2596.
195	65.73382	681.39	131.7	-44.642	-43.515	0.77514	0.211	0.424	2518.
200	64.75282	626.02	124.7	-42.527	-41.383	0.78593	0.209	0.429	2437.
205	63.74006	571.99	117.9	-40.386	-39.224	0.79659	0.208	0.435	2355.
210	62.69045	519.29	111.1	-38.216	-37.034	0.80715	0.206	0.442	2270.
215	61.59767	467.92	104.5	-36.008	-34.806	0.81763	0.205	0.450	2182.
220	60.45382	417.86	98.0	-33.758	-32.533	0.82809	0.204	0.460	2091.
225	59.26872	369.14	91.5	-31.455	-30.205	0.83855	0.202	0.472	1996.
230	57.96893	321.74	85.1	-29.087	-27.809	0.84908	0.202	0.487	1898.
235	56.59603	275.66	79.7	-26.637	-25.329	0.85975	0.201	0.506	1794.
240	55.10348	230.85	72.2	-24.083	-22.739	0.87065	0.200	0.531	1684.
245	53.45035	187.17	65.6	-21.387	-20.001	0.88174	0.200	0.566	1564.
250	51.56676	144.36	58.8	-18.488	-17.052	0.89386	0.201	0.618	1433.
*251.552	50.51679	131.16	56.6	-17.531	-16.076	0.89774	0.202	0.640	1389.
*251.552	7.19320	29.59	3.3	28.002	38.300	1.11384	0.200	0.533	634.
255	6.84638	33.81	3.1	29.213	40.032	1.12068	0.195	0.476	619.
260	6.44322	39.18	2.8	30.775	42.271	1.12938	0.189	0.423	638.
265	6.11665	43.93	2.6	32.184	44.294	1.13709	0.184	0.388	655.
270	5.84185	48.24	2.5	33.488	46.168	1.14409	0.180	0.363	671.
275	5.60455	52.22	2.3	34.715	47.931	1.15056	0.177	0.344	686.
280	5.39575	55.95	2.2	35.882	49.610	1.15661	0.174	0.329	699.
285	5.20941	59.47	2.1	37.003	51.222	1.16232	0.172	0.317	712.
290	5.04122	62.82	2.0	38.086	52.779	1.16774	0.170	0.307	724.
295	4.88806	66.03	1.9	39.137	54.291	1.17290	0.169	0.298	735.
300	4.74753	69.12	1.9	40.163	55.765	1.17786	0.167	0.291	747.
310	4.49736	75.00	1.7	42.150	58.620	1.18722	0.165	0.280	768.
320	4.27996	80.57	1.6	44.072	61.378	1.19598	0.164	0.272	787.
330	4.08817	85.88	1.6	45.943	64.062	1.20424	0.162	0.265	806.
340	3.91695	91.00	1.5	47.775	66.685	1.21207	0.162	0.260	824.
350	3.76265	95.94	1.4	49.575	69.261	1.21954	0.161	0.255	840.
360	3.62249	100.75	1.3	51.349	71.797	1.22668	0.160	0.252	857.
370	3.49435	105.43	1.3	53.102	74.300	1.23354	0.160	0.249	872.
380	3.37653	110.01	1.2	54.838	76.775	1.24014	0.159	0.246	887.
390	3.26768	114.50	1.2	56.559	79.227	1.24651	0.159	0.244	902.
400	3.16669	118.92	1.2	58.267	81.658	1.25266	0.159	0.242	916.
410	3.07265	123.26	1.1	59.964	84.071	1.25862	0.159	0.241	930.
420	2.98478	127.54	1.1	61.653	86.469	1.26440	0.159	0.239	944.
430	2.90243	131.76	1.1	63.333	88.853	1.27001	0.159	0.238	957.
440	2.82505	135.93	1.0	65.006	91.226	1.27547	0.158	0.237	970.
450	2.75215	140.05	0.991	66.674	93.588	1.28077	0.158	0.236	982.
460	2.68334	144.13	0.964	68.336	95.940	1.28595	0.158	0.235	995.
470	2.61823	148.17	0.939	69.994	98.284	1.29099	0.159	0.234	1007.
480	2.55653	152.18	0.915	71.648	100.621	1.29591	0.159	0.233	1019.
490	2.49793	156.15	0.892	73.299	102.952	1.30071	0.159	0.233	1030.
500	2.44221	160.09	0.870	74.947	105.277	1.30541	0.159	0.232	1042.
510	2.38914	164.00	0.850	76.593	107.596	1.31000	0.159	0.232	1053.
520	2.33851	167.89	0.830	78.237	109.912	1.31450	0.159	0.231	1064.
530	2.29016	171.74	0.812	79.880	112.223	1.31890	0.159	0.231	1075.
540	2.24392	175.58	0.794	81.522	114.531	1.32322	0.159	0.231	1085.
550	2.19965	179.39	0.777	83.163	116.837	1.32745	0.160	0.230	1096.
560	2.15722	183.19	0.761	84.803	119.140	1.33160	0.160	0.230	1106.
570	2.11651	186.96	0.746	86.443	121.440	1.33567	0.160	0.230	1116.
580	2.07741	190.72	0.731	88.084	123.740	1.33967	0.160	0.230	1126.
590	2.03982	194.45	0.717	89.725	126.038	1.34360	0.160	0.230	1136.
600	2.00365	198.17	0.703	91.366	128.335	1.34746	0.161	0.230	1146.

\* INDICATES TWO PHASE BOUNDARY

69



THERMODYNAMIC PROPERTIES OF OXYGEN

500 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/K	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.556	81.76081	2232.44	355.3	-83.790	-82.658	0.49671	0.254	0.408	4079.
100	81.53149	2156.78	347.1	-83.203	-82.068	0.50265	0.256	0.409	4030.
105	80.74937	2077.95	322.6	-81.164	-80.017	0.52266	0.261	0.410	3891.
110	79.97686	1966.25	302.7	-79.125	-77.968	0.54173	0.261	0.409	3780.
115	79.20853	1861.20	285.8	-77.095	-75.926	0.55988	0.258	0.407	3687.
120	78.44035	1762.17	271.1	-75.075	-73.894	0.57718	0.255	0.405	3604.
125	77.66951	1668.53	257.9	-73.064	-71.872	0.59369	0.251	0.404	3528.
130	76.89402	1579.71	245.9	-71.060	-69.856	0.60950	0.247	0.402	3456.
135	76.11241	1495.18	234.8	-69.062	-67.846	0.62467	0.243	0.402	3386.
140	75.32357	1414.51	224.3	-67.067	-65.838	0.63928	0.239	0.401	3318.
145	74.52656	1337.27	214.3	-65.073	-63.831	0.65336	0.235	0.402	3250.
150	73.72054	1263.12	204.8	-63.078	-61.822	0.66699	0.232	0.402	3183.
155	72.90464	1191.74	195.7	-61.080	-59.810	0.68018	0.229	0.403	3115.
160	72.07799	1122.86	186.9	-59.077	-57.793	0.69299	0.227	0.404	3046.
165	71.23954	1056.24	178.4	-57.069	-55.769	0.70544	0.224	0.405	2976.
170	70.38914	991.67	170.2	-55.053	-53.737	0.71757	0.222	0.407	2906.
175	69.52240	928.98	162.3	-53.027	-51.696	0.72941	0.219	0.409	2834.
180	68.64073	868.02	154.6	-50.992	-49.643	0.74098	0.217	0.412	2762.
185	67.74120	808.68	147.0	-48.943	-47.576	0.75230	0.215	0.415	2687.
190	66.82158	750.86	139.7	-46.880	-45.494	0.76341	0.213	0.418	2612.
195	65.87919	694.49	132.6	-44.799	-43.394	0.77432	0.211	0.422	2535.
200	64.91086	639.52	125.7	-42.698	-41.272	0.78506	0.210	0.427	2456.
205	63.91279	585.91	118.9	-40.573	-39.125	0.79566	0.208	0.432	2375.
210	62.88039	533.66	112.2	-38.421	-36.948	0.80615	0.207	0.439	2291.
215	61.80806	482.76	105.7	-36.235	-34.737	0.81656	0.205	0.446	2206.
220	60.68893	433.21	99.2	-34.010	-32.484	0.82692	0.204	0.455	2118.
225	59.51393	385.02	92.9	-31.737	-30.182	0.83727	0.203	0.466	2026.
230	58.27201	338.22	86.6	-29.407	-27.818	0.84765	0.202	0.480	1931.
235	56.94791	292.80	80.3	-27.006	-25.380	0.85814	0.201	0.496	1832.
240	55.52059	248.76	74.0	-24.515	-22.847	0.86881	0.200	0.518	1727.
245	53.95919	206.04	67.7	-21.906	-20.190	0.87976	0.200	0.546	1615.
250	52.21481	164.50	61.2	-19.137	-17.363	0.89118	0.200	0.587	1494.
255	50.20063	123.81	54.4	-16.131	-14.286	0.90337	0.201	0.649	1360.
260	47.72981	83.24	47.0	-12.727	-10.787	0.91695	0.204	0.765	1202.
*260.998	47.14666	75.01	45.4	-11.970	-10.006	0.91995	0.205	0.802	1166.
*260.998	9.66490	21.27	4.7	26.233	35.813	1.09547	0.211	0.755	594.
265	8.93232	27.59	4.2	28.118	38.484	1.10562	0.202	0.599	616.
270	8.28341	34.03	3.8	30.030	41.207	1.11581	0.194	0.501	638.
275	7.79086	39.54	3.5	31.672	43.556	1.12443	0.188	0.443	657.
280	7.39280	44.43	3.2	33.147	45.672	1.13206	0.184	0.405	674.
285	7.05851	48.89	3.0	34.508	47.625	1.13897	0.180	0.378	690.
290	6.77037	53.02	2.9	35.783	49.459	1.14535	0.177	0.357	704.
295	6.51724	56.88	2.7	36.994	51.201	1.15131	0.174	0.341	717.
300	6.29165	60.54	2.6	38.154	52.870	1.15692	0.172	0.328	730.
310	5.90334	67.36	2.4	40.357	56.041	1.16732	0.169	0.308	754.
320	5.57742	73.68	2.2	42.444	59.045	1.17685	0.167	0.254	776.
330	5.29726	79.62	2.1	44.447	61.926	1.18572	0.165	0.283	796.
340	5.05216	85.26	2.0	46.387	64.714	1.19405	0.163	0.275	815.
350	4.83481	90.66	1.9	48.278	67.429	1.20192	0.162	0.268	833.
360	4.63998	95.88	1.8	50.131	70.085	1.20940	0.162	0.263	851.
370	4.46380	100.92	1.7	51.952	72.694	1.21655	0.161	0.259	867.
380	4.30333	105.83	1.6	53.747	75.262	1.22340	0.160	0.255	883.
390	4.15624	110.62	1.6	55.520	77.797	1.22998	0.160	0.252	898.
400	4.02073	115.31	1.5	57.276	80.304	1.23633	0.160	0.249	913.
410	3.89528	119.90	1.4	59.016	82.786	1.24246	0.159	0.247	928.
420	3.77870	124.41	1.4	60.743	85.246	1.24839	0.159	0.245	942.
430	3.66996	128.85	1.4	62.459	87.688	1.25413	0.159	0.243	955.
440	3.56921	133.22	1.3	64.166	90.114	1.25971	0.159	0.242	969.
450	3.47272	137.53	1.3	65.864	92.526	1.26513	0.159	0.240	982.
460	3.38288	141.79	1.2	67.555	94.925	1.27040	0.159	0.239	994.
470	3.29916	146.00	1.2	69.239	97.312	1.27554	0.159	0.238	1007.
480	3.21808	150.16	1.2	70.919	99.690	1.28054	0.159	0.237	1019.
490	3.14224	154.28	1.1	72.593	102.059	1.28543	0.159	0.236	1031.
500	3.07029	158.36	1.1	74.264	104.420	1.29020	0.159	0.236	1042.
510	3.00170	162.41	1.1	75.931	106.774	1.29486	0.159	0.235	1054.
520	2.93680	166.42	1.1	77.595	109.122	1.29942	0.159	0.235	1065.
530	2.87474	170.40	1.0	79.257	111.465	1.30388	0.160	0.234	1076.
540	2.81549	174.35	1.0	80.916	113.802	1.30825	0.160	0.234	1087.
550	2.75885	178.27	0.987	82.575	116.136	1.31253	0.160	0.233	1097.
560	2.70465	182.17	0.966	84.232	118.465	1.31673	0.160	0.233	1108.
570	2.65271	186.05	0.946	85.888	120.792	1.32085	0.160	0.233	1118.
580	2.60289	189.90	0.927	87.544	123.115	1.32489	0.161	0.232	1128.
590	2.55506	193.73	0.909	89.199	125.437	1.32886	0.161	0.232	1138.
600	2.50708	197.54	0.891	90.855	127.757	1.33276	0.161	0.232	1148.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

450 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.485	81.74970	2231.12	355.8	-83.799	-82.778	0.49664	0.253	0.408	4082.
100	81.50911	2193.57	347.2	-83.182	-82.159	0.50287	0.256	0.409	4030.
105	80.72528	2074.38	322.6	-81.141	-80.109	0.52288	0.261	0.410	3890.
110	79.95141	1962.39	302.6	-79.101	-78.059	0.54195	0.261	0.409	3779.
115	79.18164	1857.10	285.7	-77.069	-76.017	0.56011	0.258	0.407	3685.
120	78.41104	1757.87	271.0	-75.047	-73.984	0.57741	0.255	0.406	3602.
125	77.63950	1664.07	257.8	-73.034	-71.961	0.59393	0.251	0.404	3525.
130	76.86232	1575.09	245.7	-71.029	-69.945	0.60974	0.246	0.403	3453.
135	76.07892	1490.44	234.6	-69.079	-67.934	0.62492	0.242	0.402	3393.
140	75.28816	1409.63	224.1	-67.032	-65.925	0.63954	0.239	0.402	3315.
145	74.48910	1332.27	214.1	-65.035	-63.916	0.65363	0.235	0.402	3247.
150	73.68087	1257.99	204.6	-63.037	-61.906	0.66726	0.232	0.402	3178.
155	72.86260	1186.48	195.4	-61.036	-59.892	0.68047	0.229	0.403	3110.
160	72.03335	1117.47	186.6	-59.030	-57.874	0.69329	0.226	0.404	3041.
165	71.19208	1050.71	178.1	-57.018	-55.848	0.70575	0.224	0.406	2971.
170	70.33757	985.99	169.9	-54.999	-53.814	0.71790	0.221	0.408	2900.
175	69.46841	923.15	161.9	-52.970	-51.770	0.72975	0.219	0.410	2828.
180	68.58292	862.03	154.2	-50.929	-49.714	0.74133	0.217	0.412	2755.
185	67.67913	802.51	146.6	-48.876	-47.645	0.75267	0.215	0.415	2680.
190	66.75470	744.52	139.3	-46.807	-45.559	0.76379	0.213	0.419	2604.
195	65.80885	687.96	132.2	-44.721	-43.454	0.77473	0.211	0.423	2526.
200	64.83226	632.79	125.2	-42.613	-41.328	0.78550	0.210	0.428	2446.
205	63.82695	578.98	118.4	-40.480	-39.175	0.79613	0.208	0.433	2365.
210	62.78607	526.51	111.7	-38.319	-36.992	0.80665	0.206	0.440	2281.
215	61.70369	475.37	105.1	-36.123	-34.772	0.81709	0.205	0.448	2194.
220	60.57238	425.57	98.6	-33.895	-32.509	0.82750	0.204	0.457	2104.
225	59.38272	377.12	92.2	-31.598	-30.194	0.83790	0.203	0.469	2012.
230	58.12236	330.03	85.9	-29.249	-27.815	0.84836	0.202	0.483	1915.
235	56.77462	284.30	79.5	-26.824	-25.357	0.85893	0.201	0.501	1813.
240	55.31593	239.88	73.1	-24.303	-22.796	0.86971	0.200	0.524	1706.
245	53.71087	196.71	66.7	-21.652	-20.101	0.88083	0.200	0.556	1590.
250	51.90135	154.58	60.0	-18.822	-17.217	0.89248	0.201	0.601	1465.
255	49.77824	113.03	53.0	-15.717	-14.043	0.90505	0.202	0.675	1322.
*256.467	49.06630	100.82	50.8	-14.729	-13.030	0.90901	0.203	0.707	1276.
*256.467	8.36383	25.47	4.0	27.215	37.178	1.10473	0.205	0.625	599.
260	7.88319	30.40	3.6	28.644	39.215	1.11261	0.199	0.536	616.
265	7.36414	36.33	3.3	30.378	41.693	1.12206	0.192	0.462	637.
270	6.95736	41.48	3.0	31.904	43.881	1.13024	0.186	0.416	655.
275	6.62219	46.11	2.8	33.295	45.878	1.13757	0.182	0.384	672.
280	6.33701	50.35	2.7	34.590	47.739	1.14428	0.179	0.361	687.
285	6.08882	54.29	2.5	35.813	49.498	1.15050	0.176	0.343	701.
290	5.86920	58.00	2.4	36.980	51.178	1.15634	0.173	0.329	714.
295	5.67233	61.51	2.3	38.102	52.793	1.16187	0.171	0.317	727.
300	5.49404	64.87	2.2	39.188	54.356	1.16712	0.170	0.308	738.
310	5.18148	71.20	2.0	41.275	57.357	1.17696	0.167	0.293	761.
320	4.91419	77.13	1.9	43.273	60.230	1.18609	0.165	0.282	781.
330	4.68126	82.75	1.8	45.207	63.008	1.19463	0.164	0.274	801.
340	4.47531	88.12	1.7	47.090	65.710	1.20270	0.162	0.267	819.
350	4.29115	93.29	1.6	48.934	68.353	1.21036	0.162	0.262	837.
360	4.12493	98.30	1.6	50.746	70.947	1.21767	0.161	0.257	854.
370	3.97378	103.16	1.5	52.531	73.502	1.22467	0.160	0.254	870.
380	3.83544	107.91	1.4	54.296	76.022	1.23139	0.160	0.251	885.
390	3.70813	112.55	1.4	56.043	78.515	1.23787	0.160	0.248	900.
400	3.59042	117.10	1.3	57.774	80.993	1.24412	0.159	0.246	915.
410	3.48112	121.56	1.3	59.492	83.430	1.25016	0.159	0.244	929.
420	3.37927	125.96	1.2	61.200	85.859	1.25601	0.159	0.242	943.
430	3.28405	130.29	1.2	62.898	88.272	1.26169	0.159	0.241	956.
440	3.19475	134.56	1.2	64.587	90.671	1.26720	0.159	0.239	969.
450	3.11080	138.78	1.1	66.270	93.057	1.27257	0.159	0.238	982.
460	3.03168	142.95	1.1	67.946	95.433	1.27779	0.159	0.237	994.
470	2.95694	147.07	1.1	69.617	97.799	1.28288	0.159	0.236	1007.
480	2.88620	151.16	1.0	71.284	100.156	1.28784	0.159	0.235	1019.
490	2.81912	155.20	1.0	72.946	102.506	1.29268	0.159	0.235	1030.
500	2.75540	159.22	0.989	74.606	104.848	1.29742	0.159	0.234	1042.
510	2.69477	163.19	0.965	76.262	107.185	1.30205	0.159	0.233	1053.
520	2.63700	167.14	0.943	77.916	109.517	1.30657	0.159	0.233	1064.
530	2.58197	171.06	0.921	79.569	111.844	1.31101	0.159	0.232	1075.
540	2.52920	174.96	0.901	81.219	114.167	1.31535	0.160	0.232	1086.
550	2.47892	178.83	0.882	82.869	116.486	1.31960	0.160	0.232	1096.
560	2.43056	182.67	0.863	84.518	118.802	1.32378	0.160	0.231	1107.
570	2.38428	186.49	0.845	86.166	121.116	1.32787	0.160	0.231	1117.
580	2.33997	190.30	0.828	87.814	123.427	1.33189	0.160	0.231	1127.
590	2.29719	194.08	0.812	89.462	125.737	1.33584	0.161	0.231	1137.
600	2.25616	197.85	0.796	91.111	128.045	1.33972	0.161	0.231	1147.

\* INDICATES TWO PHASE BOUNDARY

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600 PSIA ISODAR

600 PSIA ISODAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT.	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.698	81.79309	2235.13	354.4	-83.775	-82.417	0.49686	0.255	0.408	4074.
100	81.57774	2203.21	347.0	-83.247	-81.885	0.50221	0.257	0.409	4031.
105	80.79741	2085.10	322.6	-81.209	-79.834	0.52222	0.262	0.410	3893.
110	80.02762	1973.98	302.7	-79.173	-77.785	0.54129	0.261	0.409	3783.
115	79.26214	1869.39	285.9	-77.146	-75.744	0.55943	0.259	0.407	3691.
120	78.49696	1770.75	271.3	-75.129	-73.714	0.57672	0.255	0.405	3609.
125	77.72928	1677.44	258.2	-73.122	-71.692	0.59332	0.251	0.403	3533.
130	76.95714	1588.92	246.2	-71.123	-69.679	0.60901	0.247	0.402	3462.
135	76.17908	1504.66	235.1	-69.129	-67.670	0.62417	0.243	0.401	3393.
140	75.39403	1424.24	224.7	-67.138	-65.665	0.63876	0.239	0.401	3325.
145	74.60106	1347.25	214.8	-65.149	-63.660	0.65283	0.236	0.401	3258.
150	73.79939	1273.34	205.3	-63.159	-61.654	0.66643	0.233	0.401	3191.
155	72.98819	1202.22	196.3	-61.167	-59.644	0.67961	0.230	0.402	3124.
160	72.16662	1133.60	187.5	-59.170	-57.630	0.69240	0.227	0.403	3056.
165	71.33373	1067.24	179.1	-57.168	-55.610	0.70483	0.224	0.405	2987.
170	70.48841	1002.96	170.9	-55.159	-53.583	0.71694	0.222	0.406	2917.
175	69.62938	940.57	163.0	-53.142	-51.546	0.72874	0.220	0.408	2847.
180	68.75515	879.92	155.3	-51.114	-49.498	0.74028	0.218	0.411	2775.
185	67.86393	820.91	147.8	-49.075	-47.438	0.75157	0.215	0.413	2702.
190	66.95365	763.44	140.6	-47.022	-45.363	0.76264	0.214	0.417	2627.
195	66.02185	707.43	133.5	-44.953	-43.270	0.77351	0.212	0.420	2551.
200	65.06562	652.84	126.6	-42.865	-41.158	0.78421	0.210	0.425	2474.
205	64.08149	599.64	119.9	-40.756	-39.022	0.79475	0.208	0.430	2394.
210	63.06533	547.81	113.3	-38.620	-36.859	0.80518	0.207	0.436	2313.
215	62.01212	497.34	106.8	-36.455	-34.663	0.81551	0.205	0.443	2229.
220	60.91574	448.26	100.4	-34.253	-32.429	0.82578	0.204	0.451	2143.
225	59.76853	400.57	94.2	-32.009	-30.150	0.83603	0.203	0.461	2055.
230	58.56083	354.30	88.0	-29.713	-27.816	0.84629	0.202	0.473	1963.
235	57.28002	309.48	81.9	-27.355	-25.415	0.85661	0.201	0.488	1867.
240	55.90912	266.10	75.7	-24.919	-22.931	0.86707	0.200	0.506	1767.
245	54.42424	224.16	69.6	-22.383	-20.341	0.87775	0.200	0.531	1662.
250	52.78970	183.59	63.4	-19.717	-17.612	0.88878	0.200	0.563	1549.
255	50.94754	144.25	57.0	-16.869	-14.688	0.90036	0.200	0.610	1427.
260	48.79064	105.80	50.3	-13.747	-11.470	0.91285	0.202	0.695	1290.
265	46.07214	67.45	42.8	-10.138	-7.727	0.92711	0.205	0.834	1127.
*269.132	42.81159	34.10	35.3	-6.287	-3.692	0.94221	0.211	1.203	948.
*269.132	12.90096	12.56	6.7	23.454	32.067	1.07507	0.224	1.308	583.
270	12.48106	14.71	6.4	24.215	33.117	1.07896	0.220	1.125	591.
275	10.96037	24.15	5.4	27.335	37.472	1.09496	0.206	0.711	622.
280	10.04904	31.26	4.7	29.564	40.621	1.10631	0.197	0.566	645.
285	9.38896	37.23	4.3	31.407	43.241	1.11558	0.190	0.489	665.
290	8.86979	42.49	4.0	33.027	45.553	1.12363	0.185	0.439	683.
295	8.44161	47.25	3.7	34.498	47.660	1.13083	0.182	0.405	699.
300	8.07733	51.64	3.5	35.863	49.619	1.13742	0.178	0.380	714.
310	7.48038	59.60	3.2	38.373	53.226	1.14925	0.173	0.344	741.
320	7.00250	66.78	2.9	40.681	56.547	1.15979	0.170	0.321	765.
330	6.60508	73.41	2.7	42.852	59.673	1.16941	0.167	0.305	787.
340	6.26579	79.62	2.5	44.924	62.657	1.17832	0.166	0.293	807.
350	5.97053	85.51	2.4	46.924	65.533	1.18666	0.164	0.283	827.
360	5.70980	91.14	2.2	48.866	68.325	1.19453	0.163	0.276	845.
370	5.47638	96.55	2.1	50.764	71.051	1.20199	0.162	0.270	863.
380	5.26696	101.79	2.0	52.626	73.721	1.20912	0.161	0.265	875.
390	5.07600	106.88	1.9	54.457	76.346	1.21574	0.161	0.260	895.
400	4.90142	111.83	1.9	56.265	78.933	1.22248	0.161	0.257	911.
410	4.74084	116.67	1.8	58.051	81.488	1.22879	0.160	0.254	926.
420	4.59242	121.41	1.7	59.821	84.014	1.23488	0.160	0.251	940.
430	4.45466	126.06	1.7	61.575	86.517	1.24077	0.160	0.249	954.
440	4.32631	130.63	1.6	63.316	88.998	1.24647	0.160	0.247	958.
450	4.20632	135.13	1.6	65.046	91.461	1.25201	0.160	0.245	931.
460	4.09332	139.56	1.5	66.767	93.907	1.25739	0.160	0.244	994.
470	3.98805	143.93	1.5	68.480	96.340	1.26262	0.160	0.243	1007.
480	3.88836	148.24	1.4	70.185	98.759	1.26771	0.160	0.241	1015.
490	3.79420	152.51	1.4	71.884	101.167	1.27268	0.160	0.240	1031.
500	3.70506	156.73	1.4	73.577	103.565	1.27752	0.160	0.239	1043.
510	3.62053	160.90	1.3	75.266	105.954	1.28225	0.160	0.238	1055.
520	3.54022	165.04	1.3	76.950	108.335	1.28687	0.160	0.238	1066.
530	3.46390	169.14	1.3	78.632	110.708	1.29140	0.160	0.237	1077.
540	3.39097	173.20	1.2	80.310	113.076	1.29582	0.160	0.236	1088.
550	3.32145	177.23	1.2	81.986	115.437	1.30015	0.160	0.236	1099.
560	3.25502	181.23	1.2	83.660	117.794	1.30440	0.161	0.235	1110.
570	3.19145	185.20	1.2	85.332	120.146	1.30856	0.161	0.235	1120.
580	3.13055	189.15	1.1	87.003	122.494	1.31265	0.161	0.235	1130.
590	3.07214	193.07	1.1	88.673	124.839	1.31666	0.161	0.234	1140.
600	3.01607	196.96	1.1	90.343	127.182	1.32059	0.161	0.234	1150.

\* INDICATES TWO PHASE BOUNDARY



THERMODYNAMIC PROPERTIES OF OXYGEN

550 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.627	81.77195	2233.77	354.8	-83.783	-82.537	0.49678	0.254	0.408	4076.
100	81.55463	2200.00	347.1	-83.225	-81.976	0.50243	0.257	0.409	4031.
105	80.77341	2081.53	322.6	-81.187	-79.926	0.52244	0.261	0.410	3892.
110	80.00226	1970.11	302.7	-79.149	-77.876	0.54151	0.261	0.409	3782.
115	79.23536	1865.30	285.9	-77.120	-75.835	0.55966	0.259	0.407	3689.
120	78.46869	1766.46	271.2	-75.102	-73.804	0.57695	0.255	0.405	3506.
125	77.69944	1672.99	258.1	-73.093	-71.782	0.59345	0.251	0.404	3531.
130	76.92562	1584.31	246.1	-71.092	-69.768	0.60925	0.247	0.402	3459.
135	76.14580	1499.93	235.0	-69.096	-67.758	0.62442	0.243	0.402	3390.
140	75.35886	1419.38	224.5	-67.103	-65.752	0.63902	0.239	0.401	3322.
145	74.56388	1342.26	214.6	-65.111	-63.745	0.65310	0.236	0.401	3254.
150	73.76004	1268.24	205.1	-63.119	-61.738	0.66671	0.232	0.402	3187.
155	72.94651	1196.99	196.0	-61.123	-59.727	0.67990	0.229	0.403	3119.
160	72.12241	1128.24	187.2	-59.124	-57.712	0.69269	0.227	0.404	3051.
165	71.28675	1061.75	178.8	-57.118	-55.690	0.70514	0.224	0.405	2982.
170	70.43841	997.32	170.6	-55.106	-53.660	0.71725	0.222	0.407	2912.
175	69.57606	934.78	162.6	-53.085	-51.621	0.72908	0.219	0.409	2840.
180	68.69813	873.98	154.9	-51.053	-49.571	0.74063	0.217	0.411	2768.
185	67.80290	814.81	147.4	-49.009	-47.507	0.75193	0.215	0.414	2695.
190	66.88789	757.16	140.2	-46.951	-45.429	0.76302	0.213	0.417	2620.
195	65.95085	700.98	133.1	-44.876	-43.332	0.77391	0.212	0.421	2543.
200	64.98864	646.20	126.1	-42.782	-41.215	0.78463	0.210	0.426	2465.
205	63.99763	592.80	119.4	-40.665	-39.074	0.79521	0.208	0.431	2384.
210	62.97347	540.76	112.7	-38.521	-36.904	0.80566	0.207	0.437	2302.
215	61.91085	490.08	106.2	-36.346	-34.701	0.81603	0.205	0.444	2218.
220	60.80325	440.77	99.8	-34.133	-32.458	0.82635	0.204	0.453	2131.
225	59.64249	392.84	93.5	-31.875	-30.167	0.83664	0.203	0.464	2040.
230	58.41810	346.31	87.3	-29.562	-27.819	0.84696	0.202	0.476	1947.
235	57.11626	301.20	81.1	-27.183	-25.400	0.85737	0.201	0.492	1850.
240	55.71813	257.50	74.9	-24.720	-22.892	0.86793	0.200	0.512	1747.
245	54.19661	215.18	68.7	-22.149	-20.270	0.87874	0.200	0.538	1639.
250	52.51014	174.16	62.3	-19.434	-17.494	0.88995	0.200	0.574	1522.
255	50.58932	134.20	55.7	-16.513	-14.500	0.90181	0.201	0.628	1394.
260	48.29188	94.81	48.7	-13.265	-11.156	0.91479	0.203	0.719	1248.
265	45.25152	54.66	40.6	-9.374	-7.124	0.93015	0.207	0.931	1067.
*265.206	45.09641	52.94	40.3	-9.188	-6.930	0.93088	0.208	0.947	1058.
*265.206	11.14642	16.98	5.6	25.011	34.148	1.08575	0.217	0.956	589.
270	9.96835	25.49	4.8	27.669	37.886	1.09973	0.204	0.660	618.
275	9.18432	32.34	4.3	29.752	40.841	1.11057	0.196	0.536	641.
280	8.60934	38.12	3.9	31.503	43.338	1.11957	0.190	0.468	660.
285	8.14483	43.23	3.6	33.055	45.560	1.12744	0.185	0.424	678.
290	7.76220	47.86	3.4	34.475	47.596	1.13452	0.181	0.392	694.
295	7.43489	52.14	3.2	35.799	49.497	1.14102	0.178	0.369	708.
300	7.14904	56.13	3.0	37.050	51.296	1.14707	0.175	0.351	722.
310	6.66774	63.49	2.7	39.391	54.666	1.15812	0.171	0.325	747.
320	6.27245	70.23	2.5	41.581	57.818	1.16813	0.168	0.307	770.
330	5.93789	76.50	2.4	43.663	60.815	1.17735	0.166	0.293	791.
340	5.64859	82.42	2.2	45.666	63.696	1.18596	0.164	0.283	811.
350	5.39436	88.07	2.1	47.609	66.489	1.19405	0.163	0.275	830.
360	5.16811	93.49	2.0	49.504	69.211	1.20172	0.162	0.269	848.
370	4.96674	98.72	1.9	51.362	71.877	1.20902	0.162	0.264	865.
380	4.78040	103.79	1.8	53.190	74.495	1.21601	0.161	0.260	881.
390	4.61216	108.73	1.8	54.992	77.074	1.22271	0.160	0.256	897.
400	4.45770	113.55	1.7	56.773	79.620	1.22915	0.160	0.253	912.
410	4.31518	118.27	1.6	58.536	82.138	1.23537	0.160	0.250	927.
420	4.18308	122.89	1.6	60.284	84.631	1.24138	0.160	0.248	941.
430	4.06016	127.44	1.5	62.018	87.103	1.24720	0.160	0.246	955.
440	3.94540	131.91	1.5	63.742	89.557	1.25294	0.159	0.244	968.
450	3.83790	136.31	1.4	65.456	91.994	1.25831	0.159	0.243	981.
460	3.73494	140.66	1.4	67.162	94.416	1.26364	0.159	0.242	994.
470	3.64187	144.95	1.3	68.860	96.826	1.26882	0.159	0.240	1007.
480	3.55214	149.19	1.3	70.552	99.225	1.27387	0.159	0.239	1019.
490	3.46728	153.38	1.3	72.239	101.613	1.27879	0.159	0.238	1031.
500	3.38685	157.53	1.2	73.921	103.992	1.28360	0.160	0.238	1043.
510	3.31050	161.64	1.2	75.599	106.364	1.28830	0.160	0.237	1054.
520	3.23798	165.72	1.2	77.273	108.728	1.29289	0.160	0.236	1065.
530	3.16872	169.76	1.1	78.944	111.086	1.29738	0.160	0.236	1076.
540	3.10275	173.77	1.1	80.613	113.438	1.30178	0.160	0.235	1087.
550	3.03974	177.74	1.1	82.280	115.786	1.30608	0.160	0.235	1098.
560	2.97948	181.69	1.1	83.946	118.129	1.31031	0.160	0.234	1109.
570	2.92177	185.62	1.0	85.610	120.468	1.31445	0.161	0.234	1119.
580	2.86646	189.51	1.0	87.273	122.804	1.31851	0.161	0.233	1129.
590	2.81338	193.39	1.0	88.936	125.138	1.32250	0.161	0.233	1139.
600	2.76239	197.24	0.906	90.599	127.469	1.32642	0.161	0.233	1149.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

700 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.839	81.80543	2237.89	353.4	-83.761	-82.176	0.49700	0.256	0.408	4069.
100	81.62266	2209.66	346.9	-83.290	-81.701	0.50178	0.258	0.409	4031.
105	80.84529	2092.26	322.7	-81.255	-79.651	0.52178	0.262	0.410	3894.
110	80.07818	1981.70	302.8	-79.221	-77.602	0.54084	0.262	0.409	3786.
115	79.31552	1877.58	286.1	-77.197	-75.562	0.55898	0.259	0.407	3694.
120	78.55330	1779.33	271.5	-75.183	-73.533	0.57626	0.256	0.405	3613.
125	77.78874	1686.35	259.5	-73.179	-71.513	0.59275	0.252	0.403	3539.
130	77.01939	1598.10	246.6	-71.184	-69.501	0.60853	0.247	0.402	3468.
135	76.24533	1514.11	235.5	-69.195	-67.494	0.62368	0.243	0.401	3395.
140	75.46400	1433.94	225.1	-67.209	-65.491	0.63825	0.240	0.401	3332.
145	74.67502	1357.19	215.3	-65.224	-63.488	0.65230	0.236	0.401	3266.
150	73.87761	1283.52	205.8	-63.239	-61.485	0.66589	0.233	0.401	3199.
155	73.07101	1212.64	196.8	-61.252	-59.478	0.67905	0.230	0.402	3133.
160	72.25442	1144.27	188.1	-59.262	-57.468	0.69181	0.227	0.403	3065.
165	71.42675	1078.18	179.7	-57.266	-55.451	0.70422	0.225	0.404	2997.
170	70.58756	1014.16	171.5	-55.264	-53.428	0.71630	0.222	0.406	2928.
175	69.73506	952.06	163.7	-53.254	-51.395	0.72809	0.220	0.407	2858.
180	68.86804	891.72	156.0	-51.235	-49.353	0.73959	0.218	0.410	2788.
185	67.98486	833.02	148.6	-49.205	-47.298	0.75085	0.216	0.412	2715.
190	67.08358	775.88	141.4	-47.162	-45.230	0.76188	0.214	0.415	2642.
195	66.16194	720.22	134.3	-45.104	-43.145	0.77271	0.212	0.419	2567.
200	65.21727	666.00	127.5	-43.029	-41.042	0.78337	0.210	0.423	2491.
205	64.24640	613.18	120.8	-40.934	-38.916	0.79386	0.209	0.428	2413.
210	63.24559	561.74	114.3	-38.815	-36.765	0.80423	0.207	0.433	2333.
215	62.21034	511.69	107.9	-36.668	-34.585	0.81449	0.205	0.439	2252.
220	61.13521	463.04	101.6	-34.489	-32.365	0.82468	0.204	0.447	2168.
225	60.01353	415.81	95.4	-32.271	-30.111	0.83483	0.203	0.456	2082.
230	58.83697	370.03	89.3	-30.007	-27.803	0.84497	0.202	0.467	1993.
235	57.59432	325.73	83.3	-27.687	-25.436	0.85515	0.201	0.480	1901.
240	56.27347	282.93	77.3	-25.299	-22.995	0.86543	0.200	0.497	1805.
245	54.85372	241.64	71.4	-22.826	-20.463	0.87587	0.199	0.517	1705.
250	53.30880	201.85	65.4	-20.244	-17.813	0.88658	0.199	0.544	1595.
255	51.59790	163.51	59.3	-17.518	-15.006	0.89769	0.199	0.581	1486.
260	49.65313	126.45	53.0	-14.589	-11.978	0.90945	0.200	0.634	1363.
265	47.34469	90.37	46.4	-11.344	-8.606	0.92229	0.202	0.723	1224.
270	44.35513	54.58	38.9	-7.512	-4.590	0.93730	0.206	0.913	1058.
275	39.21442	16.76	28.9	-1.848	1.457	0.95947	0.218	1.866	816.
*276.229	36.07028	5.46	24.3	1.133	4.727	0.97133	0.227	4.464	705.
*276.229	18.62592	3.09	10.5	17.870	24.829	1.04411	0.241	5.502	571.
280	14.52501	14.60	7.6	23.743	32.667	1.07233	0.219	1.199	608.
285	12.69955	23.78	6.3	27.117	37.324	1.08883	0.206	0.759	638.
290	11.60905	30.92	5.6	29.507	40.673	1.10048	0.197	0.600	660.
295	10.82440	36.98	5.1	31.466	43.441	1.10995	0.191	0.515	680.
300	10.21066	42.35	4.7	33.175	45.870	1.11811	0.186	0.461	697.
310	9.27969	51.72	4.1	36.147	50.115	1.13204	0.179	0.395	728.
320	8.58286	59.91	3.7	38.756	53.859	1.14393	0.174	0.357	755.
330	8.02763	67.30	3.4	41.142	57.289	1.15449	0.170	0.331	779.
340	7.56752	74.12	3.1	43.378	60.507	1.16409	0.168	0.313	801.
350	7.17582	80.51	2.9	45.506	63.570	1.17297	0.166	0.300	821.
360	6.83572	86.57	2.8	47.553	66.516	1.18127	0.165	0.290	840.
370	6.53595	92.36	2.6	49.539	69.371	1.18910	0.163	0.282	859.
380	6.26858	97.92	2.5	51.474	72.153	1.19651	0.163	0.275	876.
390	6.02781	103.30	2.4	53.371	74.875	1.20359	0.162	0.270	893.
400	5.80926	108.52	2.3	55.234	77.548	1.21035	0.161	0.265	909.
410	5.60954	113.60	2.2	57.071	80.179	1.21685	0.161	0.261	924.
420	5.42598	118.56	2.1	58.885	82.775	1.22310	0.161	0.258	939.
430	5.25645	123.42	2.0	60.680	85.340	1.22914	0.160	0.255	953.
440	5.09918	128.18	1.9	62.458	87.879	1.23498	0.160	0.253	967.
450	4.95273	132.85	1.9	64.222	90.394	1.24063	0.160	0.251	981.
460	4.81589	137.45	1.8	65.974	92.890	1.24612	0.160	0.249	994.
470	4.68764	141.78	1.8	67.715	95.367	1.25144	0.160	0.247	1007.
480	4.56710	146.44	1.7	69.447	97.829	1.25653	0.160	0.245	1020.
490	4.45353	150.85	1.7	71.171	100.277	1.26167	0.160	0.244	1032.
500	4.34628	155.20	1.6	72.888	102.712	1.26659	0.160	0.243	1044.
510	4.24478	159.50	1.6	74.599	105.136	1.27140	0.160	0.242	1056.
520	4.14854	163.76	1.5	76.304	107.550	1.27608	0.160	0.241	1068.
530	4.05712	167.97	1.5	78.005	109.955	1.28066	0.161	0.240	1079.
540	3.97013	172.14	1.5	79.702	112.353	1.28514	0.161	0.239	1090.
550	3.88774	176.28	1.4	81.396	114.742	1.28953	0.161	0.239	1101.
560	3.80813	180.37	1.4	83.087	117.126	1.29383	0.161	0.238	1112.
570	3.73253	184.44	1.4	84.776	119.504	1.29803	0.161	0.238	1122.
580	3.66020	188.47	1.3	86.462	121.877	1.30216	0.161	0.237	1133.
590	3.59090	192.48	1.3	88.148	124.246	1.30621	0.162	0.237	1143.
600	3.52445	196.46	1.3	89.832	126.610	1.31018	0.162	0.236	1153.

\* INDICATES TWO PHASE BOUNDARY

TIHERMODYNAMIC PROPERTIES OF OXYGEN

650 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENRGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.769	81.79475	2236.50	353.9	-83.768	-82.296	0.49693	0.255	0.408	4071.
100	81.60002	2206.43	347.0	-83.268	-81.793	0.50199	0.257	0.409	4031.
105	80.82137	2088.68	322.7	-81.232	-79.743	0.52200	0.262	0.410	3893.
110	80.05292	1977.84	302.8	-79.197	-77.694	0.54106	0.262	0.409	3784.
115	79.28836	1873.49	286.0	-77.171	-75.653	0.55921	0.259	0.407	3693.
120	78.52516	1775.04	271.4	-75.156	-73.623	0.57649	0.255	0.405	3611.
125	77.75935	1681.90	258.3	-73.151	-71.603	0.59298	0.251	0.403	3536.
130	76.98856	1593.51	246.4	-71.153	-69.590	0.60877	0.247	0.402	3465.
135	76.21226	1509.39	235.3	-69.162	-67.582	0.62392	0.243	0.401	3396.
140	75.42907	1429.09	224.9	-67.174	-65.578	0.63850	0.239	0.401	3329.
145	74.63911	1352.22	215.0	-65.187	-63.574	0.65257	0.236	0.401	3262.
150	73.83857	1278.44	205.6	-63.199	-61.569	0.66616	0.233	0.401	3195.
155	73.02969	1207.43	196.5	-61.210	-59.561	0.67933	0.230	0.402	3128.
160	72.21062	1138.94	187.8	-59.216	-57.549	0.69211	0.227	0.403	3060.
165	71.38046	1072.72	179.4	-57.217	-55.531	0.70453	0.224	0.404	2992.
170	70.53812	1008.57	171.2	-55.212	-53.505	0.71662	0.222	0.406	2923.
175	69.68238	946.32	163.3	-53.198	-51.471	0.72841	0.220	0.408	2853.
180	68.81178	885.83	155.7	-51.175	-49.426	0.73994	0.218	0.410	2781.
185	67.92461	826.98	148.2	-49.140	-47.368	0.75121	0.216	0.413	2709.
190	67.01888	769.67	141.0	-47.093	-45.297	0.76225	0.214	0.416	2635.
195	66.09221	713.84	133.9	-45.029	-43.208	0.77311	0.212	0.420	2559.
200	65.14182	659.44	127.0	-42.948	-41.100	0.78378	0.210	0.424	2482.
205	64.16441	606.43	120.3	-40.845	-38.970	0.79431	0.208	0.429	2404.
210	63.15603	554.80	113.8	-38.718	-36.812	0.80470	0.207	0.434	2323.
215	62.11194	504.55	107.3	-36.562	-34.624	0.81500	0.205	0.441	2241.
220	61.02636	455.68	101.0	-34.372	-32.400	0.82523	0.204	0.449	2156.
225	59.89218	408.23	94.8	-32.141	-30.131	0.83542	0.203	0.459	2068.
230	58.70040	362.21	88.7	-29.862	-27.811	0.84562	0.202	0.470	1978.
235	57.43949	317.65	82.6	-27.523	-25.427	0.85587	0.201	0.484	1884.
240	56.09409	274.57	76.6	-25.111	-22.966	0.86624	0.200	0.501	1786.
245	54.64301	232.97	70.5	-22.608	-20.405	0.87680	0.199	0.524	1683.
250	53.05540	192.82	64.4	-19.986	-17.717	0.88765	0.199	0.553	1574.
255	51.28299	154.01	58.2	-17.203	-14.856	0.89899	0.200	0.594	1457.
260	49.24106	116.31	51.7	-14.185	-11.741	0.91108	0.201	0.657	1328.
265	46.75464	79.25	44.7	-10.782	-8.207	0.92454	0.203	0.769	1178.
270	43.31084	41.53	36.5	-6.555	-3.776	0.94110	0.209	1.064	989.
*272.802	40.06594	18.21	30.2	-3.070	-0.065	0.95477	0.217	1.789	834.
*272.802	15.14035	7.95	8.2	21.340	29.290	1.06237	0.231	2.095	577.
275	13.60499	14.09	7.1	23.823	32.670	1.07471	0.220	1.206	598.
280	11.87810	23.60	5.9	27.146	37.279	1.09134	0.206	0.745	628.
285	10.86132	30.80	5.2	29.480	40.562	1.10296	0.197	0.589	652.
290	10.13129	36.36	4.7	31.394	43.274	1.11240	0.191	0.504	672.
295	9.56028	42.21	4.3	33.066	45.656	1.12054	0.186	0.452	690.
300	9.09123	47.05	4.0	34.579	47.819	1.12781	0.182	0.415	706.
310	8.34820	55.67	3.6	37.294	51.712	1.14058.	0.176	0.368	734.
320	7.77123	63.34	3.3	39.740	55.229	1.15175	0.172	0.338	760.
330	7.30090	70.34	3.0	42.012	58.499	1.16181	0.169	0.317	783.
340	6.90500	76.85	2.8	44.162	61.594	1.17106	0.167	0.302	804.
350	6.56410	82.99	2.6	46.223	64.560	1.17965	0.165	0.291	824.
360	6.26552	88.83	2.5	48.216	67.427	1.18773	0.164	0.282	843.
370	6.00053	94.43	2.4	50.156	70.215	1.19537	0.163	0.275	860.
380	5.76287	99.83	2.3	52.054	72.940	1.20264	0.162	0.270	878.
390	5.54786	105.07	2.2	53.917	75.613	1.20958	0.161	0.265	894.
400	5.35193	110.15	2.1	55.752	78.242	1.21624	0.161	0.261	910.
410	5.17230	115.12	2.0	57.563	80.834	1.22264	0.161	0.258	925.
420	5.00673	119.97	1.9	59.354	83.395	1.22881	0.160	0.255	939.
430	4.85343	124.72	1.8	61.128	85.929	1.23477	0.160	0.252	954.
440	4.71091	129.39	1.8	62.888	88.439	1.24054	0.160	0.250	968.
450	4.57794	133.97	1.7	64.635	90.928	1.24614	0.160	0.248	981.
460	4.45348	138.49	1.7	66.371	93.399	1.25157	0.160	0.246	994.
470	4.33665	142.94	1.6	68.098	95.853	1.25685	0.160	0.245	1007.
480	4.22670	147.33	1.6	69.816	98.294	1.26199	0.160	0.243	1019.
490	4.12296	151.66	1.5	71.528	100.722	1.26699	0.160	0.242	1032.
500	4.02489	155.95	1.5	73.233	103.138	1.27187	0.160	0.241	1044.
510	3.93197	160.19	1.4	74.932	105.545	1.27664	0.160	0.240	1055.
520	3.84379	164.39	1.4	76.628	107.942	1.28129	0.160	0.239	1067.
530	3.75994	168.54	1.4	78.319	110.331	1.28585	0.160	0.237	1078.
540	3.68010	172.66	1.3	80.006	112.714	1.29030	0.160	0.238	1089.
550	3.60396	176.74	1.3	81.691	115.089	1.29466	0.161	0.237	1100.
560	3.53125	180.79	1.3	83.373	117.459	1.29893	0.161	0.237	1111.
570	3.46171	184.81	1.3	85.054	119.825	1.30311	0.161	0.236	1121.
580	3.39514	188.80	1.2	86.733	122.185	1.30722	0.161	0.236	1131.
590	3.33133	192.76	1.2	88.410	124.542	1.31125	0.161	0.236	1142.
600	3.27009	196.70	1.2	90.087	126.895	1.31520	0.162	0.235	1152.

\* INDICATES TWO PHASE BOUNDARY

76

800 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.981	81.82782	2240.73	352.5	-83.746	-81.935	0.49715	0.257	0.409	4064.
100	81.66785	2216.11	346.9	-83.332	-81.518	0.50134	0.259	0.409	4032.
105	80.89300	2099.42	322.7	-81.297	-79.468	0.52135	0.263	0.410	3896.
110	80.12854	1989.43	302.9	-79.269	-77.420	0.54040	0.263	0.409	3789.
115	79.36866	1885.77	286.3	-77.247	-75.390	0.55853	0.260	0.407	3698.
120	78.60936	1787.89	271.8	-75.237	-73.352	0.57580	0.256	0.405	3618.
125	77.84788	1695.24	258.8	-73.237	-71.334	0.59228	0.252	0.403	3544.
130	77.08229	1607.28	246.9	-71.245	-69.323	0.60805	0.248	0.401	3474.
135	76.31118	1523.54	235.9	-69.260	-67.318	0.62318	0.244	0.401	3406.
140	75.53350	1443.60	225.6	-67.279	-65.317	0.63774	0.240	0.400	3339.
145	74.74843	1367.08	215.7	-65.298	-63.317	0.65178	0.236	0.400	3274.
150	73.95521	1293.65	206.3	-63.319	-61.315	0.66535	0.233	0.400	3209.
155	73.15312	1223.00	197.3	-61.337	-59.312	0.67849	0.230	0.401	3141.
160	72.34141	1154.87	189.7	-59.352	-57.304	0.69123	0.228	0.402	3075.
165	71.51923	1089.04	180.3	-57.363	-55.292	0.70362	0.225	0.403	3007.
170	70.68562	1025.29	172.2	-55.368	-53.272	0.71568	0.223	0.405	2939.
175	69.83947	963.46	164.3	-53.365	-51.244	0.72744	0.220	0.406	2870.
180	68.97945	903.41	156.7	-51.354	-49.206	0.73892	0.218	0.409	2800.
185	68.10404	845.02	149.3	-49.333	-47.158	0.75014	0.216	0.411	2729.
190	67.21145	788.20	142.2	-47.300	-45.096	0.76114	0.214	0.414	2657.
195	66.29958	732.87	135.2	-45.253	-43.018	0.77193	0.212	0.417	2583.
200	65.36597	679.00	128.4	-43.190	-40.923	0.78254	0.211	0.421	2508.
205	64.40773	626.54	121.8	-41.108	-38.808	0.79299	0.209	0.425	2432.
210	63.42146	575.48	115.3	-39.005	-36.669	0.80330	0.207	0.430	2353.
215	62.40311	525.82	109.9	-36.876	-34.502	0.81349	0.206	0.436	2274.
220	61.34784	477.57	102.7	-34.717	-32.302	0.82361	0.204	0.444	2192.
225	60.24979	430.77	96.6	-32.523	-30.064	0.83366	0.203	0.452	2108.
230	59.10173	385.43	90.6	-30.283	-27.781	0.84370	0.202	0.462	2021.
235	57.89465	341.60	84.7	-28.003	-25.444	0.85375	0.201	0.474	1932.
240	56.61702	299.31	78.9	-25.658	-23.041	0.86387	0.200	0.488	1840.
245	55.25363	258.58	73.1	-23.240	-20.558	0.87411	0.199	0.506	1745.
250	53.78369	219.43	67.2	-20.730	-17.975	0.88454	0.199	0.528	1644.
255	52.17732	181.85	61.4	-18.102	-15.262	0.89529	0.199	0.558	1539.
260	50.38854	145.78	55.5	-15.316	-12.376	0.90650	0.199	0.599	1426.
265	48.33952	111.10	49.3	-12.304	-9.239	0.91844	0.200	0.660	1303.
270	45.87788	77.58	42.8	-8.936	-5.707	0.93165	0.203	0.764	1164.
275	42.61911	44.88	35.5	-4.884	-1.408	0.94742	0.207	0.993	998.
280	36.75346	12.85	25.5	1.388	5.419	0.97199	0.221	2.163	764.
285	19.69089	7.58	11.0	18.723	26.247	1.04571	0.231	2.416	605.
290	15.78245	17.95	8.3	24.366	33.752	1.07185	0.214	1.040	636.
295	14.02908	25.96	7.1	27.513	38.072	1.08663	0.203	0.737	661.
300	12.89021	32.65	6.3	29.884	41.377	1.09774	0.195	0.559	682.
310	11.37864	43.78	5.3	33.601	46.621	1.11495	0.185	0.468	716.
320	10.35501	53.11	4.6	36.635	50.942	1.12867	0.178	0.403	746.
330	9.58402	61.33	4.2	39.302	54.760	1.14042	0.174	0.364	771.
340	8.96798	68.79	3.8	41.740	58.259	1.15087	0.170	0.338	795.
350	8.45678	75.71	3.6	44.021	61.539	1.16038	0.168	0.319	817.
360	8.02130	82.20	3.3	46.190	64.655	1.16917	0.166	0.305	837.
370	7.64306	88.36	3.1	48.274	67.657	1.17739	0.165	0.295	856.
380	7.30963	94.25	3.0	50.293	70.560	1.18513	0.164	0.286	874.
390	7.01222	99.92	2.8	52.260	73.387	1.19247	0.163	0.279	891.
400	6.74440	105.40	2.7	54.185	76.150	1.19947	0.162	0.274	908.
410	6.50130	110.72	2.6	56.076	78.862	1.20616	0.162	0.269	923.
420	6.27917	115.89	2.5	57.937	81.530	1.21259	0.161	0.265	939.
430	6.07502	120.94	2.4	59.775	84.160	1.21878	0.161	0.261	953.
440	5.88648	125.89	2.3	61.592	86.758	1.22475	0.161	0.253	968.
450	5.71158	130.73	2.2	63.391	89.328	1.23053	0.161	0.256	982.
460	5.54872	135.49	2.1	65.175	91.874	1.23612	0.161	0.253	995.
470	5.39655	140.17	2.1	66.946	94.398	1.24155	0.161	0.251	1009.
480	5.25373	144.78	2.0	68.706	96.902	1.24683	0.161	0.250	1021.
490	5.11989	149.31	1.9	70.456	99.390	1.25196	0.161	0.248	1034.
500	4.99359	153.79	1.9	72.197	101.853	1.25695	0.161	0.247	1046.
510	4.87431	158.21	1.8	73.930	104.323	1.26182	0.161	0.245	1058.
520	4.76143	162.58	1.8	75.657	106.770	1.26658	0.161	0.244	1069.
530	4.65439	166.90	1.7	77.378	109.207	1.27122	0.161	0.243	1081.
540	4.55271	171.18	1.7	79.094	111.634	1.27575	0.161	0.242	1092.
550	4.45595	175.41	1.7	80.806	114.052	1.28019	0.161	0.241	1103.
560	4.36374	179.61	1.6	82.514	116.463	1.28453	0.161	0.241	1114.
570	4.27574	183.76	1.6	84.219	118.867	1.28879	0.162	0.240	1125.
580	4.19163	187.88	1.5	85.922	121.264	1.29296	0.162	0.239	1135.
590	4.11114	191.97	1.5	87.622	123.656	1.29705	0.162	0.239	1145.
600	4.03403	196.03	1.5	89.320	126.044	1.30106	0.162	0.239	1156.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

750 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 98.910	81.81662	2739.30	353.0	-83.753	-82.056	0.49708	0.256	0.409	4067.
100	81.64527	2212.88	346.9	-83.311	-81.610	0.50156	0.258	0.409	4031.
105	80.86916	2095.84	322.7	-81.277	-79.560	0.52156	0.263	0.410	3895.
110	80.10339	1985.57	302.9	-79.245	-77.511	0.54062	0.262	0.409	3787.
115	79.34212	1881.68	286.2	-77.222	-75.471	0.55876	0.260	0.407	3676.
120	78.58136	1783.61	271.6	-75.210	-73.442	0.57603	0.256	0.405	3616.
125	77.81835	1690.79	259.6	-73.203	-71.423	0.59251	0.252	0.403	3541.
130	77.05113	1602.69	246.8	-71.215	-69.412	0.60829	0.248	0.402	3471.
135	76.27931	1518.83	235.7	-69.227	-67.406	0.62343	0.244	0.401	3403.
140	75.49981	1438.77	225.3	-67.243	-65.404	0.63799	0.240	0.400	3336.
145	74.71179	1362.14	215.5	-65.261	-63.402	0.65204	0.236	0.400	3270.
150	73.91648	1288.59	206.1	-63.279	-61.400	0.66562	0.233	0.401	3204.
155	73.11215	1217.83	197.1	-61.295	-59.395	0.67877	0.230	0.401	3137.
160	72.29802	1149.58	188.4	-59.307	-57.386	0.69152	0.227	0.402	3070.
165	71.47321	1083.61	180.0	-57.315	-55.371	0.70392	0.225	0.404	3002.
170	70.63672	1019.74	171.9	-55.316	-53.350	0.71599	0.222	0.405	2934.
175	69.78742	957.77	164.0	-53.310	-51.320	0.72776	0.220	0.407	2864.
180	68.92392	897.58	156.4	-51.295	-49.280	0.73925	0.218	0.409	2794.
185	68.04466	839.04	149.0	-49.269	-47.228	0.75050	0.216	0.412	2722.
190	67.14777	782.06	141.8	-47.231	-45.163	0.76151	0.214	0.415	2649.
195	66.23106	726.57	134.8	-45.179	-43.082	0.77232	0.212	0.418	2575.
200	65.29198	672.52	127.9	-43.110	-40.983	0.78295	0.210	0.422	2500.
205	64.32750	619.88	121.3	-41.022	-38.862	0.79342	0.209	0.426	2422.
210	63.33406	568.63	114.8	-38.910	-36.717	0.80376	0.207	0.432	2343.
215	62.30738	518.78	108.4	-36.773	-34.544	0.81399	0.206	0.438	2263.
220	61.24235	470.34	102.2	-34.604	-32.336	0.82414	0.204	0.445	2180.
225	60.13270	423.33	96.0	-32.398	-30.088	0.83424	0.203	0.454	2095.
230	58.97070	377.77	90.0	-30.149	-27.793	0.84433	0.202	0.464	2007.
235	57.74657	333.71	84.0	-27.846	-25.441	0.85444	0.201	0.477	1917.
240	56.44766	291.17	78.1	-25.481	-23.020	0.86464	0.200	0.492	1823.
245	55.05706	250.17	72.2	-23.036	-20.513	0.87498	0.199	0.511	1725.
250	53.55120	210.72	66.3	-20.492	-17.898	0.88554	0.199	0.536	1622.
255	51.89531	172.78	60.4	-17.817	-15.141	0.89646	0.199	0.569	1513.
260	50.03390	136.25	54.3	-14.964	-12.188	0.90793	0.200	0.615	1395.
265	47.86771	100.95	47.9	-11.847	-8.946	0.92028	0.201	0.688	1265.
270	45.18285	66.47	41.0	-8.282	-5.208	0.93425	0.204	0.824	1115.
275	41.31006	31.98	32.8	-3.700	-0.338	0.95211	0.211	1.212	922.
280	21.25293	2.76	12.2	15.814	22.349	1.03352	0.242	6.378	581.
285	15.23833	15.97	8.0	23.947	33.061	1.07153	0.217	1.131	621.
290	13.41555	24.61	6.7	27.244	37.597	1.08731	0.205	0.755	648.
295	12.28569	31.56	6.0	29.644	40.949	1.09877	0.196	0.603	670.
300	11.46353	37.55	5.4	31.624	43.739	1.10816	0.190	0.520	699.
310	10.28542	47.76	4.7	34.920	48.423	1.12352	0.182	0.428	722.
320	9.44225	56.49	4.1	37.722	52.431	1.13625	0.176	0.378	750.
330	8.78776	64.29	3.8	40.240	56.044	1.14737	0.172	0.347	775.
340	8.25470	71.43	3.5	42.571	59.396	1.15738	0.169	0.325	798.
350	7.80645	78.08	3.2	44.772	62.563	1.16656	0.167	0.309	819.
360	7.42084	84.36	3.0	46.878	65.594	1.17510	0.165	0.297	838.
370	7.08339	90.33	2.9	48.911	68.518	1.18311	0.164	0.288	857.
380	6.78414	96.06	2.7	50.888	71.360	1.19069	0.163	0.281	875.
390	6.51592	101.58	2.6	52.818	74.133	1.19790	0.162	0.274	892.
400	6.27342	106.93	2.5	54.712	76.851	1.20478	0.162	0.269	908.
410	6.05255	112.14	2.4	56.575	79.521	1.21137	0.161	0.265	924.
420	5.85014	117.21	2.3	58.413	82.153	1.21771	0.161	0.261	939.
430	5.66366	122.16	2.2	60.228	84.750	1.22382	0.161	0.258	953.
440	5.49105	127.01	2.1	62.026	87.318	1.22973	0.161	0.255	968.
450	5.33063	131.77	2.0	63.807	89.861	1.23544	0.160	0.253	981.
460	5.18099	136.45	2.0	65.575	92.381	1.24098	0.160	0.251	995.
470	5.04096	141.06	1.9	67.331	94.882	1.24636	0.160	0.249	1008.
480	4.90953	145.59	1.9	69.077	97.365	1.25159	0.160	0.248	1020.
490	4.78596	150.07	1.8	70.814	99.833	1.25668	0.160	0.246	1033.
500	4.66920	154.48	1.8	72.542	102.287	1.26163	0.160	0.245	1045.
510	4.55891	158.84	1.7	74.265	104.729	1.26647	0.161	0.244	1057.
520	4.45443	163.16	1.7	75.981	107.160	1.27119	0.161	0.243	1068.
530	4.35528	167.42	1.6	77.692	109.581	1.27580	0.161	0.242	1080.
540	4.26101	171.55	1.6	79.399	111.993	1.28031	0.161	0.241	1071.
550	4.17125	175.83	1.5	81.101	114.397	1.28472	0.161	0.240	1102.
560	4.08564	179.98	1.5	82.801	116.794	1.28904	0.161	0.239	1113.
570	4.00388	184.09	1.5	84.499	119.185	1.29327	0.161	0.239	1123.
580	3.92570	188.17	1.4	86.192	121.570	1.29742	0.162	0.238	1134.
590	3.85095	192.22	1.4	87.885	123.950	1.30149	0.162	0.238	1144.
600	3.77910	196.23	1.4	89.576	126.326	1.30548	0.162	0.237	1154.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

900 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
* 99.122	81.85026	2243.63	351.6	-83.730	-81.694	0.49730	0.258	0.409	4060.
100	81.71291	2223.58	346.8	-83.374	-81.335	0.50091	0.259	0.409	4032.
105	80.94055	2106.60	322.7	-81.344	-79.285	0.52091	0.263	0.410	3898.
110	80.17871	1997.17	303.0	-79.315	-77.237	0.53997	0.263	0.409	3792.
115	79.42158	1893.96	286.5	-77.297	-75.198	0.55809	0.260	0.407	3702.
120	78.66516	1796.45	272.0	-75.290	-73.171	0.57534	0.256	0.404	3622.
125	77.90672	1704.11	259.1	-73.293	-71.154	0.59131	0.252	0.403	3549.
130	77.14433	1616.43	247.3	-71.305	-69.145	0.60757	0.248	0.401	3480.
135	76.37661	1532.94	236.3	-69.324	-67.142	0.62269	0.244	0.400	3412.
140	75.60255	1453.23	226.0	-67.347	-65.143	0.63723	0.240	0.400	3347.
145	74.82132	1376.74	216.2	-65.372	-63.145	0.65126	0.237	0.400	3281.
150	74.03221	1303.73	206.8	-63.397	-61.146	0.66481	0.234	0.400	3216.
155	73.23455	1233.31	197.9	-61.421	-59.145	0.67793	0.231	0.400	3150.
160	72.42761	1165.42	189.2	-59.442	-57.141	0.69066	0.228	0.401	3084.
165	71.61060	1099.83	180.9	-57.459	-55.131	0.70302	0.225	0.402	3018.
170	70.79264	1036.33	172.8	-55.470	-53.115	0.71506	0.223	0.404	2950.
175	69.94265	974.77	165.0	-53.475	-51.092	0.72679	0.221	0.406	2882.
180	69.08944	915.00	157.4	-51.471	-49.059	0.73824	0.218	0.408	2813.
185	68.22156	856.91	150.1	-49.459	-47.016	0.74944	0.216	0.410	2742.
190	67.33735	800.39	142.9	-47.435	-44.960	0.76041	0.214	0.413	2671.
195	66.43487	745.39	136.0	-45.398	-42.890	0.77116	0.213	0.416	2599.
200	65.51187	691.84	129.3	-43.347	-40.803	0.78173	0.211	0.419	2525.
205	64.56568	639.72	122.7	-41.278	-38.697	0.79213	0.209	0.423	2450.
210	63.59321	589.02	116.2	-39.190	-36.569	0.80238	0.207	0.428	2373.
215	62.59081	539.73	110.0	-37.078	-34.415	0.81252	0.206	0.434	2295.
220	61.55415	491.87	103.8	-34.938	-32.231	0.82256	0.205	0.440	2215.
225	60.47805	445.46	97.8	-32.767	-30.011	0.83254	0.203	0.448	2133.
230	59.35621	400.53	91.9	-30.558	-27.751	0.84247	0.202	0.457	2049.
235	58.18091	357.13	86.1	-28.305	-25.441	0.85241	0.201	0.467	1963.
240	56.94248	315.28	80.3	-25.999	-23.072	0.86238	0.200	0.480	1874.
245	55.62849	275.04	74.6	-23.629	-20.633	0.87244	0.199	0.496	1782.
250	54.22254	236.43	69.0	-21.180	-18.107	0.88265	0.198	0.515	1687.
255	52.70204	199.46	63.3	-18.633	-15.471	0.89308	0.198	0.540	1587.
260	51.03433	164.13	57.6	-15.960	-12.694	0.90387	0.199	0.572	1482.
265	49.16874	130.40	51.9	-13.115	-9.726	0.91518	0.199	0.618	1370.
270	47.01887	98.21	45.9	-10.026	-6.481	0.92730	0.200	0.685	1248.
275	44.41493	67.50	39.6	-6.545	-2.793	0.94034	0.203	0.802	1112.
280	40.93778	38.49	32.5	-2.317	1.755	0.95722	0.208	1.057	952.
285	35.04821	13.84	23.6	3.979	8.735	0.98190	0.220	1.948	753.
290	24.63870	8.17	14.4	14.668	21.433	1.02606	0.231	2.461	635.
295	19.05106	15.20	10.4	21.681	30.429	1.05684	0.218	1.295	647.
300	16.53180	22.95	8.6	25.589	35.670	1.07447	0.207	0.869	669.
310	13.89825	35.90	6.8	30.625	42.616	1.09727	0.192	0.577	707.
320	12.36743	46.46	5.8	34.277	47.753	1.11359	0.183	0.464	738.
330	11.29696	55.57	5.1	37.313	52.066	1.12637	0.177	0.404	766.
340	10.47871	63.70	4.6	40.001	55.906	1.13833	0.173	0.367	791.
350	9.81953	71.14	4.3	42.466	59.438	1.14857	0.170	0.341	813.
360	9.26976	78.07	4.0	44.775	62.754	1.15791	0.168	0.323	834.
370	8.79982	84.60	3.7	46.972	65.911	1.16656	0.166	0.309	854.
380	8.39069	90.91	3.5	49.082	68.945	1.17466	0.165	0.298	873.
390	8.02939	96.76	3.3	51.127	71.893	1.18229	0.164	0.290	890.
400	7.70670	102.49	3.1	53.118	74.743	1.18953	0.163	0.283	907.
410	7.41581	108.03	3.0	55.066	77.539	1.19644	0.163	0.277	923.
420	7.15154	113.41	2.9	56.978	80.282	1.20305	0.162	0.272	939.
430	6.90990	118.65	2.7	58.861	82.980	1.20939	0.162	0.268	954.
440	6.68769	123.77	2.6	60.718	85.639	1.21551	0.161	0.264	969.
450	6.48236	128.78	2.5	62.554	88.264	1.22141	0.161	0.261	983.
460	6.29181	133.69	2.5	64.372	90.860	1.22711	0.161	0.258	996.
470	6.11430	138.51	2.4	66.174	93.431	1.23264	0.161	0.256	1010.
480	5.94838	143.25	2.3	67.962	95.980	1.23801	0.161	0.254	1023.
490	5.79283	147.91	2.2	69.738	98.508	1.24322	0.161	0.252	1035.
500	5.64659	152.51	2.2	71.504	101.019	1.24829	0.161	0.250	1048.
510	5.50875	157.05	2.1	73.261	103.514	1.25323	0.161	0.249	1060.
520	5.37855	161.52	2.0	75.009	105.995	1.25805	0.161	0.247	1072.
530	5.25529	165.95	2.0	76.751	108.464	1.26275	0.161	0.246	1083.
540	5.13839	170.32	1.9	78.486	110.921	1.26735	0.161	0.245	1095.
550	5.02731	174.65	1.9	80.216	113.368	1.27184	0.162	0.244	1106.
560	4.92159	178.93	1.8	81.942	115.805	1.27623	0.162	0.243	1117.
570	4.82081	183.18	1.8	83.664	118.235	1.28053	0.162	0.243	1127.
580	4.72461	187.38	1.8	85.382	120.657	1.28474	0.162	0.242	1138.
590	4.63265	191.55	1.7	87.097	123.072	1.28887	0.162	0.241	1148.
600	4.54464	195.68	1.7	88.810	125.482	1.29292	0.163	0.241	1159.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

850 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.051	81.87904	2242.17	352.1	-83.738	-81.815	0.49722	0.257	0.409	4062.
100	81.64040	2219.35	346.8	-83.353	-81.427	0.50112	0.259	0.409	4032.
105	80.91680	2103.01	322.7	-81.322	-79.376	0.52113	0.263	0.410	3897.
110	80.15365	1993.30	303.0	-79.292	-77.328	0.54018	0.263	0.409	3790.
115	79.39515	1889.87	285.4	-77.272	-75.289	0.55831	0.260	0.407	3700.
120	78.63730	1792.17	271.9	-75.263	-73.262	0.57557	0.256	0.405	3620.
125	77.87734	1699.67	258.9	-73.265	-71.244	0.59205	0.252	0.403	3546.
130	77.11335	1611.85	247.1	-71.275	-69.234	0.60781	0.248	0.401	3477.
135	76.34394	1529.24	236.1	-69.292	-67.230	0.62294	0.244	0.400	3405.
140	75.56808	1448.42	225.8	-67.313	-65.230	0.63749	0.240	0.400	3343.
145	74.78494	1372.02	216.0	-65.335	-63.231	0.65152	0.237	0.400	3277.
150	73.99379	1298.70	206.6	-63.358	-61.231	0.66508	0.233	0.400	3212.
155	73.19392	1228.16	197.6	-61.379	-59.229	0.67821	0.230	0.401	3146.
160	72.38461	1160.15	188.9	-59.397	-57.223	0.69094	0.228	0.402	3080.
165	71.56503	1094.44	180.6	-57.411	-55.211	0.70332	0.225	0.403	3013.
170	70.73426	1030.82	172.5	-55.419	-53.194	0.71537	0.223	0.404	2945.
175	69.89121	969.13	164.7	-53.420	-51.168	0.72711	0.220	0.406	2876.
180	69.03462	909.22	157.1	-51.413	-49.133	0.73858	0.218	0.408	2806.
185	68.16300	850.98	149.7	-49.396	-47.087	0.74979	0.216	0.410	2736.
190	67.27464	794.31	142.6	-47.368	-45.028	0.76077	0.214	0.413	2664.
195	66.36751	739.15	135.6	-45.326	-42.954	0.77154	0.212	0.416	2591.
200	65.43926	685.44	128.8	-43.269	-40.863	0.78213	0.211	0.420	2516.
205	64.48712	633.15	122.2	-41.194	-38.753	0.79255	0.209	0.424	2441.
210	63.50784	582.27	115.8	-39.098	-36.619	0.80284	0.207	0.429	2363.
215	62.49758	532.80	109.5	-36.977	-34.459	0.81300	0.206	0.435	2284.
220	61.45176	484.75	103.3	-34.828	-32.267	0.82308	0.204	0.442	2203.
225	60.36487	438.15	97.2	-32.646	-30.039	0.83310	0.203	0.450	2120.
230	59.23019	393.02	91.3	-30.424	-27.767	0.84308	0.202	0.459	2035.
235	58.03937	349.40	85.4	-28.156	-25.444	0.85307	0.201	0.470	1948.
240	56.78186	307.34	79.6	-25.831	-23.059	0.86312	0.200	0.484	1857.
245	55.44395	266.87	73.9	-23.437	-20.598	0.87326	0.199	0.501	1764.
250	54.00721	228.00	68.1	-20.959	-18.044	0.88358	0.199	0.522	1666.
255	52.44574	190.74	62.4	-18.373	-15.372	0.89416	0.198	0.549	1563.
260	50.72099	155.07	56.6	-15.647	-12.543	0.90515	0.199	0.585	1455.
265	48.77071	120.90	50.6	-12.725	-9.497	0.91675	0.199	0.637	1338.
270	46.48186	88.12	44.4	-9.511	-6.124	0.92936	0.201	0.720	1208.
275	43.60762	56.58	37.7	-5.793	-2.193	0.94382	0.205	0.877	1059.
280	39.39421	26.44	29.6	-0.922	3.074	0.96275	0.213	1.324	873.
285	29.13053	5.42	17.6	9.230	14.633	1.00360	0.234	3.803	639.
290	19.25225	11.52	10.6	20.352	28.528	1.05200	0.224	1.650	627.
295	16.20172	20.32	8.5	24.930	34.645	1.07292	0.210	0.950	652.
300	14.55044	27.72	7.3	27.898	38.716	1.08661	0.201	0.711	674.
310	12.57601	39.91	6.0	32.176	44.692	1.10623	0.188	0.517	711.
320	11.32761	49.76	5.2	35.489	49.384	1.12113	0.181	0.431	742.
330	10.41936	58.42	4.6	38.328	53.434	1.13360	0.175	0.383	769.
340	9.70881	66.22	4.2	40.884	57.096	1.14453	0.172	0.352	793.
350	9.12756	73.39	3.9	43.253	60.497	1.15439	0.169	0.330	815.
360	8.63749	80.11	3.6	45.489	63.712	1.16345	0.167	0.314	835.
370	8.21515	86.45	3.4	47.628	66.788	1.17188	0.165	0.302	855.
380	7.84513	92.50	3.2	49.692	69.755	1.17979	0.164	0.292	873.
390	7.51672	98.31	3.1	51.696	72.637	1.18728	0.163	0.284	891.
400	7.22218	103.92	2.9	53.654	75.448	1.19439	0.163	0.278	907.
410	6.95575	109.35	2.8	55.572	78.201	1.20119	0.162	0.273	923.
420	6.71299	114.63	2.7	57.459	80.906	1.20771	0.162	0.268	939.
430	6.49046	119.77	2.6	59.319	83.570	1.21398	0.161	0.265	954.
440	6.28538	124.81	2.5	61.156	86.198	1.22002	0.161	0.261	969.
450	6.09552	129.73	2.4	62.973	88.796	1.22586	0.161	0.258	982.
460	5.91902	134.57	2.3	64.774	91.367	1.23151	0.161	0.256	996.
470	5.75435	139.32	2.2	66.560	93.914	1.23699	0.161	0.254	1009.
480	5.60023	143.99	2.1	68.334	96.440	1.24231	0.161	0.252	1022.
490	5.45556	148.60	2.1	70.097	98.949	1.24748	0.161	0.250	1034.
500	5.31940	153.14	2.0	71.850	101.441	1.25251	0.161	0.248	1047.
510	5.19094	157.61	2.0	73.595	103.918	1.25742	0.161	0.247	1059.
520	5.06949	162.04	1.9	75.333	106.382	1.26221	0.161	0.246	1071.
530	4.95441	166.41	1.9	77.064	108.835	1.26688	0.161	0.245	1082.
540	4.84518	170.74	1.8	78.790	111.277	1.27144	0.161	0.244	1093.
550	4.74132	175.02	1.8	80.511	113.709	1.27591	0.161	0.243	1104.
560	4.64240	179.26	1.7	82.228	116.133	1.28027	0.162	0.242	1115.
570	4.54806	183.46	1.7	83.941	118.550	1.28455	0.162	0.241	1126.
580	4.45794	187.62	1.7	85.652	120.960	1.28874	0.162	0.241	1137.
590	4.37175	191.75	1.6	87.359	123.364	1.29285	0.162	0.240	1147.
600	4.28922	195.84	1.6	89.065	125.762	1.29688	0.162	0.240	1157.

\* INDICATES TWO PHASE BOUNDARY

950 PSIA ISOBAR

950 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB.	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.192	81.86151	2245.11	351.2	-83.723	-81.574	0.49737	0.258	0.409	4058.
100	81.73539	2225.83	346.8	-83.395	-81.243	0.50069	0.260	0.409	4033.
105	80.96427	2110.19	322.7	-81.366	-79.193	0.52070	0.264	0.410	3879.
110	80.20372	2001.04	303.1	-79.339	-77.145	0.53975	0.263	0.409	3793.
115	79.44795	1898.05	286.5	-77.322	-75.107	0.55787	0.261	0.406	3704.
120	78.69296	1800.73	272.1	-75.316	-73.081	0.57512	0.257	0.404	3625.
125	77.93602	1708.54	259.2	-73.321	-71.064	0.59158	0.252	0.402	3552.
130	77.17522	1621.00	247.4	-71.335	-69.056	0.60733	0.248	0.401	3483.
135	76.40918	1537.63	236.5	-69.356	-67.054	0.62245	0.244	0.400	3416.
140	75.63689	1458.04	226.2	-67.381	-65.055	0.63698	0.240	0.399	3350.
145	74.85756	1381.86	216.4	-65.408	-63.058	0.65100	0.237	0.397	3285.
150	74.07049	1308.76	207.1	-63.436	-61.061	0.66454	0.234	0.400	3220.
155	73.27500	1238.45	198.1	-61.462	-59.062	0.67765	0.231	0.400	3155.
160	72.47041	1170.67	189.5	-59.486	-57.059	0.69037	0.228	0.401	3089.
165	71.65596	1105.20	181.2	-57.506	-55.051	0.70273	0.225	0.402	3023.
170	70.83075	1041.83	173.1	-55.521	-53.037	0.71475	0.223	0.404	2956.
175	69.99390	980.40	165.3	-53.529	-51.015	0.72647	0.221	0.405	2888.
180	69.14391	920.76	157.8	-51.529	-48.985	0.73791	0.219	0.407	2819.
185	68.27971	862.81	150.5	-49.521	-46.944	0.74909	0.217	0.409	2749.
190	67.39958	806.44	143.3	-47.502	-44.891	0.76004	0.215	0.412	2678.
195	66.50168	751.59	136.4	-45.470	-42.825	0.77078	0.213	0.415	2606.
200	65.58391	698.21	129.7	-43.424	-40.742	0.78132	0.211	0.418	2533.
205	64.64344	646.26	123.1	-41.362	-38.641	0.79170	0.209	0.422	2458.
210	63.67762	595.73	116.7	-39.280	-36.518	0.80193	0.208	0.427	2382.
215	62.68237	546.62	110.5	-37.176	-34.370	0.81204	0.206	0.432	2305.
220	61.65508	498.93	104.4	-35.046	-32.193	0.82205	0.205	0.439	2226.
225	60.58939	452.71	98.4	-32.886	-29.993	0.83198	0.203	0.446	2145.
230	59.47999	407.98	92.5	-30.690	-27.732	0.84188	0.202	0.454	2062.
235	58.31944	364.77	86.7	-28.452	-25.435	0.85176	0.201	0.455	1977.
240	57.09912	323.13	81.0	-26.164	-23.083	0.86166	0.200	0.477	1890.
245	55.80766	283.11	75.4	-23.816	-20.663	0.87164	0.199	0.491	1800.
250	54.43038	244.74	69.8	-21.395	-18.163	0.88174	0.198	0.509	1707.
255	52.94746	208.03	64.2	-18.883	-15.561	0.89205	0.198	0.532	1610.
260	51.33098	173.01	58.7	-16.257	-12.830	0.90265	0.198	0.561	1508.
265	49.53913	139.65	53.0	-13.481	-9.930	0.91370	0.198	0.601	1401.
270	47.50421	107.93	47.3	-10.494	-6.791	0.92543	0.199	0.658	1285.
275	45.10372	77.95	41.3	-7.194	-3.293	0.93826	0.201	0.749	1158.
280	42.07708	49.62	34.8	-3.356	0.825	0.95310	0.205	0.919	1015.
285	37.72067	24.65	27.3	1.620	6.284	0.97241	0.213	1.336	847.
290	30.27592	10.53	18.8	9.337	15.148	1.00322	0.226	2.185	687.
295	22.80469	12.06	13.0	17.662	25.377	1.03821	0.224	1.703	652.
300	18.94563	18.78	10.3	22.872	32.158	1.06102	0.212	1.085	667.
310	15.37004	32.15	7.8	28.929	40.375	1.08799	0.196	0.651	704.
320	13.48262	43.26	6.5	32.993	46.041	1.10600	0.186	0.502	736.
330	12.22012	52.79	5.7	36.257	50.653	1.12019	0.179	0.428	764.
340	11.27916	61.26	5.1	39.092	54.689	1.13225	0.174	0.383	789.
350	10.53337	68.97	4.6	41.660	58.361	1.14289	0.171	0.353	812.
360	9.91842	76.11	4.3	44.048	61.784	1.15254	0.169	0.332	834.
370	9.39718	82.82	4.0	46.305	65.026	1.16142	0.167	0.317	854.
380	8.94631	89.18	3.8	48.466	68.130	1.16970	0.165	0.305	872.
390	8.55020	95.27	3.6	50.552	71.127	1.17748	0.164	0.295	890.
400	8.19789	101.11	3.4	52.578	74.037	1.18485	0.164	0.287	907.
410	7.88140	106.76	3.2	54.556	76.877	1.19187	0.163	0.281	924.
420	7.59472	112.24	3.1	56.495	79.658	1.19857	0.162	0.276	939.
430	7.33324	117.58	2.9	58.401	82.390	1.20500	0.162	0.271	955.
440	7.09331	122.78	2.8	60.279	85.080	1.21118	0.162	0.267	969.
450	6.87202	127.86	2.7	62.134	87.733	1.21714	0.162	0.264	983.
460	6.66701	132.85	2.6	63.969	90.356	1.22291	0.161	0.261	997.
470	6.47631	137.73	2.5	65.787	92.950	1.22849	0.161	0.258	1011.
480	6.29830	142.54	2.5	67.589	95.521	1.23390	0.161	0.256	1024.
490	6.13161	147.26	2.4	69.379	98.070	1.23916	0.161	0.254	1036.
500	5.97507	151.92	2.3	71.157	100.599	1.24427	0.161	0.252	1049.
510	5.82768	156.51	2.2	72.925	103.112	1.24924	0.161	0.251	1061.
520	5.68857	161.04	2.2	74.685	105.610	1.25409	0.161	0.249	1073.
530	5.55679	165.51	2.1	76.437	108.094	1.25882	0.162	0.248	1085.
540	5.43229	169.93	2.1	78.182	110.566	1.26345	0.162	0.247	1096.
550	5.31388	174.31	2.0	79.922	113.027	1.26796	0.162	0.246	1107.
560	5.20126	178.63	2.0	81.656	115.479	1.27238	0.162	0.245	1118.
570	5.09397	182.92	1.9	83.386	117.921	1.27670	0.162	0.244	1129.
580	4.99161	187.16	1.9	85.112	120.355	1.28093	0.162	0.243	1139.
590	4.89341	191.37	1.8	86.835	122.782	1.28508	0.163	0.242	1150.
600	4.80025	195.54	1.8	88.555	125.203	1.28915	0.163	0.242	1160.

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

1000 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.263	81.87276	2246.61	350.8	-83.715	-81.453	0.47745	0.259	0.409	4056.
100	81.75734	2229.07	346.7	-83.416	-81.151	0.50047	0.260	0.409	4033.
105	80.98794	2113.78	322.7	-81.388	-79.101	0.52048	0.264	0.410	3900.
110	80.27868	2004.91	303.2	-79.362	-77.054	0.53953	0.264	0.409	3795.
115	79.47426	1902.15	285.6	-77.346	-75.016	0.55765	0.261	0.406	3706.
120	78.72069	1805.01	272.2	-75.342	-72.990	0.57489	0.257	0.404	3677.
125	77.96525	1712.97	259.4	-73.349	-70.974	0.59135	0.253	0.402	3554.
130	77.20602	1525.56	247.6	-71.365	-68.967	0.60710	0.248	0.401	3496.
135	76.44165	1542.32	236.7	-69.388	-66.966	0.62220	0.244	0.400	3419.
140	75.67113	1462.84	226.4	-67.415	-64.968	0.63673	0.241	0.399	3354.
145	74.89368	1386.77	216.7	-65.445	-62.972	0.65074	0.237	0.399	3224.
150	74.10962	1313.57	207.3	-63.475	-60.976	0.66427	0.234	0.399	3224.
155	73.31529	1243.77	198.4	-61.504	-58.978	0.67738	0.231	0.400	3159.
160	72.51303	1175.91	189.8	-59.530	-56.976	0.69009	0.228	0.401	3094.
165	71.70109	1110.55	181.5	-57.553	-54.970	0.70243	0.226	0.402	3028.
170	70.87362	1047.30	173.4	-55.571	-52.958	0.71445	0.223	0.403	2961.
175	70.04465	986.00	165.7	-53.582	-50.939	0.72615	0.221	0.405	2893.
180	69.19804	926.50	158.1	-51.587	-48.911	0.73758	0.219	0.407	2825.
185	68.33746	868.69	150.8	-49.582	-46.873	0.74875	0.217	0.409	2756.
190	67.46135	812.47	143.7	-47.568	-44.823	0.75966	0.215	0.411	2685.
195	66.56793	757.77	136.8	-45.541	-42.759	0.77040	0.213	0.414	2614.
200	65.65509	704.54	130.1	-43.501	-40.681	0.78093	0.211	0.417	2541.
205	64.72042	657.75	123.6	-41.445	-38.584	0.79128	0.209	0.421	2467.
210	63.76108	602.39	117.2	-39.370	-36.466	0.80149	0.208	0.426	2392.
215	62.77377	553.45	111.0	-37.274	-34.324	0.81157	0.206	0.431	2315.
220	61.75460	505.94	104.9	-35.153	-32.155	0.82154	0.205	0.437	2237.
225	60.69896	459.90	98.9	-33.003	-29.952	0.83144	0.203	0.444	2157.
230	59.60135	415.35	93.1	-30.819	-27.712	0.84129	0.202	0.452	2075.
235	58.45511	372.34	87.4	-28.595	-25.427	0.85111	0.201	0.462	1992.
240	57.25202	330.90	81.7	-26.324	-23.090	0.86096	0.200	0.473	1906.
245	55.98193	291.08	76.1	-23.997	-20.689	0.87086	0.199	0.487	1817.
250	54.63133	252.93	70.6	-21.602	-18.212	0.88086	0.198	0.504	1726.
255	53.18305	216.46	65.1	-19.124	-15.642	0.89104	0.198	0.525	1632.
260	51.61293	181.71	59.7	-16.541	-12.954	0.90148	0.198	0.552	1533.
265	49.88604	148.67	54.1	-13.824	-10.112	0.91231	0.198	0.587	1429.
270	47.94829	117.34	48.6	-10.926	-7.064	0.92370	0.199	0.636	1315.
275	45.70808	87.75	42.8	-7.768	-3.717	0.93598	0.200	0.709	1200.
280	42.99053	60.09	36.7	-4.201	0.107	0.94976	0.203	0.633	1069.
285	39.40527	35.27	30.1	0.110	4.810	0.96640	0.203	1.081	921.
290	34.03946	17.10	22.7	5.965	11.405	0.98933	0.217	1.609	766.
295	27.00273	12.34	15.1	13.505	20.362	1.01995	0.224	1.803	679.
300	21.85151	16.03	12.3	19.753	28.227	1.06460	0.217	1.318	672.
310	17.01730	28.69	8.9	27.070	37.952	1.07833	0.200	0.741	702.
320	14.69165	40.20	7.2	31.631	44.244	1.09832	0.189	0.546	734.
330	13.19216	50.12	6.2	35.156	49.193	1.11356	0.181	0.454	763.
340	12.11158	58.90	5.6	38.154	53.444	1.12625	0.176	0.401	788.
350	11.26971	66.97	5.0	40.836	57.267	1.13734	0.172	0.366	812.
360	10.58372	74.22	4.6	43.307	60.804	1.14730	0.170	0.342	833.
370	10.00728	81.11	4.3	45.630	64.134	1.15643	0.168	0.325	853.
380	9.51195	87.62	4.0	47.843	67.311	1.16490	0.166	0.311	872.
390	9.07905	93.84	3.8	49.971	70.367	1.17284	0.165	0.301	890.
400	8.69564	99.80	3.6	52.034	73.329	1.18034	0.164	0.292	908.
410	8.35241	105.56	3.4	54.043	76.214	1.18747	0.163	0.285	924.
420	8.04241	111.13	3.3	56.009	79.034	1.19426	0.163	0.279	940.
430	7.76037	116.55	3.1	57.939	81.801	1.20077	0.162	0.274	955.
440	7.50213	121.83	3.0	59.839	84.522	1.20703	0.162	0.270	970.
450	7.26441	127.00	2.9	61.713	87.204	1.21306	0.162	0.266	984.
460	7.04453	132.05	2.8	63.565	89.852	1.21888	0.162	0.263	998.
470	6.84031	137.00	2.7	65.399	92.471	1.22451	0.162	0.260	1012.
480	6.64992	141.87	2.6	67.216	95.063	1.22997	0.162	0.258	1025.
490	6.47185	146.65	2.5	69.019	97.632	1.23526	0.161	0.256	1038.
500	6.30480	151.36	2.5	70.810	100.181	1.24041	0.162	0.254	1050.
510	6.14767	156.01	2.4	72.590	102.712	1.24543	0.162	0.252	1062.
520	5.99949	160.59	2.3	74.361	105.227	1.25031	0.162	0.251	1074.
530	5.85946	165.11	2.2	76.123	107.727	1.25507	0.162	0.249	1086.
540	5.72683	169.58	2.2	77.878	110.214	1.25972	0.162	0.248	1077.
550	5.60099	173.99	2.1	79.627	112.689	1.26426	0.162	0.247	1109.
560	5.48138	178.36	2.1	81.370	115.153	1.26870	0.162	0.246	1120.
570	5.36749	182.68	2.0	83.108	117.608	1.27305	0.162	0.245	1130.
580	5.25890	186.97	2.0	84.843	120.055	1.27730	0.163	0.244	1141.
590	5.15520	191.21	1.9	86.573	122.494	1.28147	0.163	0.244	1151.
600	5.05604	195.42	1.9	88.301	124.926	1.28556	0.163	0.243	1162.

\* INDICATES TWO PHASE BOUNDARY

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1200 PSIA ISOBAR  
THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.544	81.91789	2252.77	349.1	-83.684	-80.971	0.49775	0.261	0.409	4048.
100	81.84730	2242.08	346.7	-83.500	-80.785	0.49962	0.261	0.409	4035.
105	81.09224	2128.18	322.8	-81.475	-78.734	0.51962	0.265	0.410	3905.
110	80.32806	2020.40	303.4	-79.454	-76.688	0.53866	0.265	0.408	3801.
115	79.57896	1918.52	287.0	-77.444	-74.652	0.55677	0.262	0.406	3714.
120	78.83098	1827.10	272.7	-75.446	-72.627	0.57400	0.258	0.404	3636.
125	78.08141	1730.57	260.0	-73.460	-70.614	0.59043	0.253	0.402	3565.
130	77.32837	1643.78	248.3	-71.484	-68.610	0.60616	0.249	0.400	3497.
135	76.57054	1561.00	237.4	-69.514	-66.612	0.62124	0.245	0.399	3432.
140	75.80697	1481.96	227.2	-67.550	-64.618	0.63574	0.241	0.398	3367.
145	75.03690	1406.30	217.6	-65.588	-62.627	0.64972	0.238	0.398	3304.
150	74.25971	1333.73	208.3	-63.628	-60.635	0.66322	0.234	0.398	3240.
155	73.47481	1263.95	199.4	-61.667	-58.642	0.67629	0.231	0.399	3176.
160	72.68162	1196.71	190.9	-59.704	-56.647	0.68896	0.229	0.400	3112.
165	71.87947	1131.90	182.6	-57.738	-54.647	0.70127	0.226	0.400	3047.
170	71.06763	1069.02	174.7	-55.769	-52.642	0.71324	0.224	0.402	2982.
175	70.24524	1008.21	167.0	-53.794	-50.630	0.72490	0.221	0.403	2916.
180	69.41130	949.22	159.5	-51.813	-48.611	0.73627	0.219	0.405	2849.
185	68.56446	891.94	152.2	-49.824	-46.593	0.74739	0.217	0.407	2781.
190	67.70397	836.27	145.2	-47.827	-44.545	0.75826	0.215	0.409	2713.
195	66.82769	782.15	138.4	-45.819	-42.494	0.76891	0.213	0.411	2643.
200	65.93403	729.52	131.8	-43.800	-40.430	0.77936	0.212	0.414	2572.
205	65.02094	678.35	125.3	-41.768	-38.350	0.78964	0.210	0.418	2501.
210	64.08604	628.61	119.0	-39.719	-36.252	0.79975	0.208	0.422	2428.
215	63.12661	580.32	112.9	-37.653	-34.133	0.80972	0.207	0.426	2354.
220	62.13947	533.47	106.9	-35.565	-31.989	0.81958	0.205	0.431	2279.
225	61.12096	488.10	101.1	-33.454	-29.818	0.82933	0.204	0.437	2203.
230	60.06679	444.22	95.4	-31.314	-27.615	0.83902	0.202	0.444	2125.
235	58.97198	401.90	89.8	-29.143	-25.374	0.84866	0.201	0.452	2046.
240	57.83021	361.16	84.3	-26.933	-23.091	0.85827	0.200	0.462	1965.
245	56.63452	322.06	78.9	-24.679	-20.756	0.86790	0.199	0.473	1883.
250	55.37593	284.64	73.6	-22.374	-18.361	0.87758	0.198	0.486	1798.
255	54.04334	248.95	68.4	-20.006	-15.895	0.88734	0.197	0.501	1712.
260	52.62259	215.04	63.2	-17.565	-13.343	0.89725	0.197	0.520	1623.
265	51.09504	182.93	58.1	-15.034	-10.685	0.90738	0.197	0.544	1531.
270	49.43532	152.65	53.0	-12.391	-7.896	0.91780	0.197	0.573	1436.
275	47.60736	124.27	47.9	-9.604	-4.937	0.92866	0.197	0.612	1338.
280	45.55762	97.90	42.8	-6.629	-1.751	0.94014	0.198	0.665	1234.
285	43.20318	73.80	37.6	-3.393	1.750	0.95253	0.200	0.740	1126.
290	40.41482	52.67	32.3	0.213	5.712	0.96631	0.202	0.852	1014.
295	37.02128	35.95	26.9	4.343	10.345	0.98215	0.206	1.008	903.
300	32.99370	25.75	21.9	9.054	15.791	1.00045	0.210	1.159	811.
310	25.21021	23.31	14.8	18.484	27.299	1.03819	0.209	1.055	738.
320	20.40528	31.29	11.1	25.407	36.297	1.06679	0.198	0.759	745.
330	17.61544	41.22	9.1	30.297	42.912	1.08715	0.189	0.582	767.
340	15.78090	50.71	7.8	34.120	48.202	1.10295	0.182	0.485	791.
350	14.444759	59.45	6.9	37.351	52.732	1.11609	0.177	0.426	814.
360	13.41391	67.51	6.2	40.215	56.782	1.12750	0.173	0.387	836.
370	12.57415	75.03	5.7	42.835	60.507	1.13771	0.170	0.360	856.
380	11.87255	82.09	5.3	45.281	63.998	1.14702	0.168	0.340	876.
390	11.27217	88.78	5.0	47.600	67.313	1.15563	0.167	0.324	894.
400	10.74933	95.18	4.7	49.820	70.492	1.16368	0.166	0.312	912.
410	10.28772	101.32	4.4	51.963	73.563	1.17127	0.165	0.302	928.
420	9.87559	107.24	4.2	54.045	76.546	1.17845	0.164	0.294	944.
430	9.50426	112.98	4.0	56.076	79.456	1.18530	0.164	0.288	960.
440	9.16711	118.56	3.8	58.065	82.305	1.19185	0.163	0.282	975.
450	8.85900	123.99	3.7	60.019	85.103	1.19814	0.163	0.277	989.
460	8.57592	129.30	3.5	61.944	87.856	1.20419	0.163	0.273	1003.
470	8.31428	134.50	3.4	63.844	90.571	1.21003	0.162	0.270	1017.
480	8.07168	139.59	3.3	65.721	93.252	1.21567	0.162	0.267	1030.
490	7.84580	144.59	3.2	67.580	95.903	1.22114	0.162	0.264	1043.
500	7.63475	149.50	3.1	69.423	98.528	1.22645	0.162	0.261	1056.
510	7.43695	154.34	3.0	71.251	101.130	1.23160	0.162	0.259	1068.
520	7.25106	159.10	2.9	73.066	103.712	1.23661	0.162	0.257	1080.
530	7.07592	163.80	2.8	74.871	106.275	1.24149	0.163	0.255	1092.
540	6.91051	168.44	2.7	76.665	108.821	1.24625	0.163	0.254	1104.
550	6.75397	173.01	2.6	78.451	111.353	1.25070	0.163	0.252	1115.
560	6.60553	177.54	2.6	80.230	113.871	1.25543	0.163	0.251	1126.
570	6.46451	182.01	2.5	82.002	116.376	1.25987	0.163	0.250	1137.
580	6.33032	186.44	2.4	83.768	118.871	1.26421	0.163	0.249	1148.
590	6.20242	190.92	2.4	85.529	121.356	1.26846	0.163	0.248	1158.
600	6.08034	195.15	2.3	87.296	123.832	1.27262	0.164	0.247	1169.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1100 PSIA ISODAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENRGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.403	81.89530	2249.66	349.9	-83.700	-81.212	0.49760	0.260	0.409	4052.
100	81.80263	2235.57	346.7	-83.458	-80.968	0.50004	0.261	0.409	4034.
105	81.03517	2120.99	322.8	-81.432	-78.918	0.52005	0.265	0.410	3902.
110	80.27847	2012.65	303.3	-79.408	-76.871	0.53910	0.264	0.409	3798.
115	79.52672	1910.33	286.8	-77.395	-74.834	0.55720	0.261	0.406	3710.
120	78.77597	1813.55	272.5	-75.395	-72.809	0.57444	0.257	0.404	3632.
125	78.02348	1721.83	259.7	-73.405	-70.794	0.59089	0.253	0.402	3560.
130	77.26736	1634.68	247.9	-71.425	-68.788	0.60663	0.249	0.400	3491.
135	76.50629	1551.67	237.1	-69.451	-66.789	0.62172	0.245	0.399	3425.
140	75.73927	1472.41	226.8	-67.483	-64.793	0.63623	0.241	0.399	3361.
145	74.96554	1396.55	217.1	-65.517	-62.800	0.65023	0.237	0.399	3296.
150	74.18445	1323.77	207.8	-63.552	-60.806	0.66374	0.234	0.399	3232.
155	73.39538	1253.78	198.9	-61.586	-58.810	0.67683	0.231	0.399	3168.
160	72.59769	1186.34	190.3	-59.618	-56.812	0.68952	0.228	0.400	3103.
165	71.79070	1121.21	182.1	-57.646	-54.809	0.70185	0.226	0.401	3037.
170	70.97361	1058.20	174.1	-55.670	-52.800	0.71384	0.223	0.402	2971.
175	70.14550	997.15	166.3	-53.689	-50.785	0.72552	0.221	0.404	2905.
180	69.30532	937.91	158.8	-51.701	-48.761	0.73692	0.219	0.406	2837.
185	68.45181	880.36	151.5	-49.704	-46.728	0.74806	0.217	0.408	2768.
190	67.58354	824.42	144.5	-47.698	-44.684	0.75897	0.215	0.410	2699.
195	66.69884	770.02	137.6	-45.682	-42.628	0.76965	0.213	0.413	2628.
200	65.79578	717.10	130.9	-43.652	-40.556	0.78014	0.211	0.416	2557.
205	64.87213	665.62	124.4	-41.608	-38.468	0.79045	0.210	0.420	2484.
210	63.92529	615.58	118.1	-39.547	-36.360	0.80061	0.208	0.424	2410.
215	62.95228	566.97	111.9	-37.466	-34.230	0.81063	0.206	0.428	2335.
220	61.94958	519.81	105.9	-35.362	-32.074	0.82055	0.205	0.434	2258.
225	60.91310	474.11	100.0	-33.232	-29.888	0.83037	0.204	0.441	2180.
230	59.83798	429.91	94.3	-31.071	-27.667	0.84014	0.202	0.448	2101.
235	58.71842	387.25	88.6	-28.874	-25.405	0.84986	0.201	0.457	2019.
240	57.54744	346.18	83.0	-26.635	-23.096	0.85959	0.200	0.467	1936.
245	56.31642	306.74	77.6	-24.346	-20.729	0.86935	0.199	0.480	1851.
250	55.01461	268.98	72.2	-21.999	-18.296	0.87918	0.198	0.494	1763.
255	53.62921	232.94	66.8	-19.580	-15.781	0.88914	0.198	0.512	1673.
260	52.13897	198.64	61.5	-17.074	-13.167	0.89929	0.197	0.534	1590.
265	50.52178	166.13	56.2	-14.458	-10.427	0.90973	0.197	0.563	1483.
270	48.74047	135.40	50.9	-11.703	-7.524	0.92058	0.197	0.600	1381.
275	46.73967	106.53	45.5	-8.760	-4.402	0.93203	0.198	0.652	1274.
280	44.42937	79.66	40.0	-5.551	-0.966	0.94441	0.200	0.728	1159.
285	41.64497	55.24	34.3	-1.937	2.954	0.95829	0.203	0.850	1036.
290	38.09379	34.67	28.3	2.336	7.683	0.97473	0.208	1.060	906.
295	33.41170	21.22	22.2	7.606	13.702	0.99530	0.214	1.346	787.
300	28.15342	17.21	17.1	13.515	20.751	1.01899	0.217	1.411	720.
310	20.88387	23.77	11.5	22.883	32.637	1.05801	0.206	0.943	709.
320	17.35924	34.83	9.0	28.661	40.395	1.08267	0.194	0.649	735.
330	15.29444	45.21	7.5	32.816	46.134	1.10034	0.185	0.514	763.
340	13.87716	54.51	6.6	36.194	50.872	1.11449	0.179	0.440	788.
350	12.81180	62.93	5.9	39.130	55.030	1.12654	0.175	0.395	812.
360	11.96480	70.68	5.4	41.787	58.811	1.13720	0.171	0.364	834.
370	11.26567	77.90	5.0	44.250	62.332	1.14685	0.169	0.342	854.
380	10.67298	84.70	4.7	46.575	65.660	1.15572	0.167	0.325	873.
390	10.16042	91.17	4.4	48.795	68.843	1.16399	0.166	0.312	892.
400	9.71030	97.36	4.1	50.934	71.911	1.17176	0.165	0.302	909.
410	9.31014	103.32	3.9	53.008	74.887	1.17911	0.164	0.294	926.
420	8.95083	109.07	3.7	55.031	77.788	1.18610	0.163	0.287	942.
430	8.62553	114.66	3.6	57.010	80.626	1.19278	0.163	0.281	957.
440	8.32995	120.09	3.4	58.954	83.410	1.19918	0.163	0.276	972.
450	8.05693	125.40	3.3	60.868	86.150	1.20534	0.162	0.272	987.
460	7.80615	130.58	3.1	62.756	88.850	1.21127	0.162	0.268	1001.
470	7.57389	135.66	3.0	64.622	91.516	1.21701	0.162	0.265	1014.
480	7.35792	140.65	2.9	66.469	94.153	1.22256	0.162	0.262	1027.
490	7.15639	145.54	2.8	68.300	96.763	1.22794	0.162	0.260	1040.
500	6.96772	150.36	2.7	70.116	99.351	1.23317	0.162	0.258	1053.
510	6.79058	155.10	2.7	71.920	101.917	1.23825	0.162	0.256	1065.
520	6.62382	159.78	2.6	73.713	104.465	1.24320	0.162	0.254	1077.
530	6.46648	164.39	2.5	75.496	106.997	1.24802	0.162	0.252	1089.
540	6.31767	168.95	2.4	77.271	109.514	1.25272	0.162	0.251	1100.
550	6.17667	173.45	2.4	79.039	112.017	1.25732	0.162	0.250	1112.
560	6.04280	177.89	2.3	80.799	114.508	1.26181	0.163	0.249	1123.
570	5.91550	182.30	2.3	82.554	116.989	1.26620	0.163	0.248	1134.
580	5.79423	186.65	2.2	84.305	119.460	1.27049	0.163	0.247	1144.
590	5.67854	190.97	2.2	86.050	121.922	1.27470	0.163	0.246	1155.
600	5.56802	195.24	2.1	87.792	124.376	1.27883	0.163	0.245	1165.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1400 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.825	81.96319	2259.20	347.5	-83.652	-80.489	0.49805	0.262	0.410	4042.
100	81.93624	2255.16	346.6	-83.581	-80.417	0.49877	0.263	0.410	4037.
105	81.17590	2142.62	322.9	-81.561	-78.367	0.51877	0.266	0.410	3909.
110	80.42667	2035.91	303.7	-79.545	-76.321	0.53781	0.266	0.408	3808.
115	79.68276	1934.88	287.4	-77.540	-74.287	0.55590	0.263	0.406	3722.
120	78.94023	1839.16	273.2	-75.549	-72.264	0.57311	0.258	0.403	3646.
125	78.19678	1748.32	260.6	-73.569	-70.254	0.58953	0.254	0.401	3576.
130	77.44937	1661.92	249.0	-71.600	-68.252	0.60523	0.250	0.400	3509.
135	76.69791	1579.59	238.2	-69.638	-66.258	0.62028	0.246	0.398	3445.
140	75.94106	1500.96	228.1	-67.682	-64.268	0.63476	0.242	0.398	3381.
145	75.17814	1425.71	218.5	-65.729	-62.280	0.64870	0.238	0.397	3319.
150	74.40856	1353.52	209.3	-63.777	-60.293	0.66218	0.235	0.397	3256.
155	73.63180	1284.13	200.5	-61.826	-58.305	0.67521	0.232	0.398	3193.
160	72.84732	1217.30	192.0	-59.874	-56.315	0.68785	0.229	0.398	3130.
165	72.05456	1152.80	183.8	-57.920	-54.322	0.70012	0.227	0.399	3066.
170	71.25286	1090.46	175.9	-55.962	-52.323	0.71205	0.224	0.400	3002.
175	70.44148	1030.10	168.2	-54.000	-50.319	0.72367	0.222	0.401	2937.
180	69.61955	971.59	160.8	-52.032	-48.309	0.73500	0.220	0.403	2872.
185	68.78605	914.80	153.6	-50.059	-46.290	0.74606	0.218	0.405	2806.
190	67.93984	859.65	146.7	-48.078	-44.262	0.75687	0.216	0.407	2739.
195	67.07955	806.06	139.9	-46.088	-42.223	0.76746	0.214	0.409	2671.
200	66.20368	753.98	133.3	-44.089	-40.173	0.77785	0.212	0.411	2603.
205	65.31045	703.37	127.0	-42.078	-38.108	0.78804	0.210	0.414	2533.
210	64.39787	654.21	120.8	-40.053	-36.028	0.79807	0.209	0.418	2463.
215	63.46367	606.50	114.7	-38.014	-33.929	0.80795	0.207	0.422	2392.
220	62.50523	560.24	108.9	-35.957	-31.809	0.81769	0.206	0.426	2319.
225	61.51959	515.46	103.1	-33.879	-29.655	0.82733	0.204	0.431	2246.
230	60.50334	472.18	97.5	-31.779	-27.494	0.83687	0.203	0.437	2172.
235	59.45255	430.44	92.1	-29.652	-25.292	0.84635	0.202	0.444	2096.
240	58.36266	390.29	86.7	-27.495	-23.053	0.85577	0.200	0.452	2020.
245	57.22836	351.77	81.5	-25.302	-20.772	0.86518	0.199	0.461	1942.
250	56.04340	314.93	76.4	-23.069	-18.443	0.87459	0.198	0.471	1863.
255	54.80031	279.82	71.4	-20.788	-16.058	0.88404	0.197	0.483	1783.
260	53.49011	246.49	66.4	-18.453	-13.606	0.89355	0.196	0.498	1701.
265	52.10173	214.97	61.6	-16.053	-11.078	0.90319	0.196	0.514	1618.
270	50.62134	185.30	56.8	-13.577	-8.456	0.91299	0.195	0.535	1533.
275	49.03130	157.52	52.0	-11.010	-5.722	0.92302	0.195	0.560	1446.
280	47.30964	131.72	47.4	-8.331	-2.851	0.93337	0.195	0.590	1358.
285	45.42316	108.00	42.7	-5.515	0.193	0.94414	0.196	0.629	1267.
290	43.33574	86.61	38.2	-2.528	3.454	0.95548	0.197	0.678	1176.
295	40.99974	67.96	33.7	0.669	6.992	0.96758	0.198	0.740	1084.
300	38.37508	52.77	29.3	4.114	10.869	0.98061	0.200	0.812	997.
310	32.42687	35.39	21.5	11.631	19.626	1.00931	0.203	0.918	861.
320	26.83636	33.03	16.1	18.944	28.604	1.03782	0.201	0.850	805.
330	22.74464	38.14	12.8	24.966	36.364	1.06171	0.194	0.700	799.
340	19.95435	46.01	10.6	29.718	42.710	1.08067	0.187	0.576	811.
350	17.97834	54.43	9.2	33.606	48.027	1.09608	0.181	0.453	829.
360	16.49627	62.65	8.2	36.942	52.658	1.10913	0.177	0.437	848.
370	15.32974	70.48	7.4	39.912	56.823	1.12055	0.173	0.398	867.
380	14.37735	77.89	6.8	42.628	60.660	1.13078	0.171	0.370	885.
390	13.57901	84.93	6.3	45.162	64.255	1.14012	0.169	0.350	903.
400	12.89278	91.65	5.8	47.559	67.666	1.14876	0.167	0.333	920.
410	12.29554	98.10	5.5	49.849	70.934	1.15683	0.166	0.321	936.
420	11.76803	104.30	5.2	52.056	74.086	1.16442	0.165	0.310	952.
430	11.29702	110.30	4.9	54.195	77.144	1.17162	0.165	0.302	968.
440	10.87267	116.12	4.7	56.280	80.124	1.17847	0.164	0.295	983.
450	10.48744	121.78	4.5	58.319	83.039	1.18502	0.164	0.289	997.
460	10.13545	127.30	4.3	60.319	85.878	1.19131	0.163	0.283	1011.
470	9.81202	132.70	4.1	62.287	88.709	1.19735	0.163	0.279	1025.
480	9.51339	137.98	4.0	64.228	91.479	1.20318	0.163	0.275	1038.
490	9.23645	143.16	3.8	66.144	94.212	1.20882	0.163	0.272	1051.
500	8.97865	148.24	3.7	68.039	96.913	1.21428	0.163	0.269	1064.
510	8.73784	153.24	3.6	69.916	99.586	1.21957	0.163	0.266	1076.
520	8.51221	158.16	3.5	71.777	102.233	1.22471	0.163	0.264	1088.
530	8.30020	163.01	3.4	73.624	104.858	1.22971	0.163	0.261	1100.
540	8.10049	167.79	3.3	75.459	107.463	1.23458	0.163	0.260	1111.
550	7.91192	172.51	3.2	77.282	110.049	1.23933	0.163	0.258	1123.
560	7.73348	177.16	3.1	79.097	112.620	1.24396	0.164	0.256	1134.
570	7.56431	181.76	3.0	80.902	115.175	1.24848	0.164	0.255	1145.
580	7.40362	186.31	2.9	82.701	117.717	1.25270	0.164	0.254	1155.
590	7.25074	190.81	2.8	84.492	120.247	1.25723	0.164	0.252	1166.
600	7.10504	195.27	2.8	86.278	122.766	1.26146	0.164	0.251	1176.

\* INDICATES TWO PHASE BOUNDARY

1300 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

1300 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
* 99.684	81.94052	2255.95	348.3	-83.668	-80.730	0.49790	0.262	0.409	4045.
100	81.89144	2248.61	346.6	-83.541	-80.601	0.49919	0.262	0.410	4036.
105	81.12914	2135.39	322.9	-81.518	-78.551	0.51920	0.266	0.410	3907.
110	80.37746	2028.15	303.5	-79.500	-76.505	0.53823	0.265	0.408	3805.
115	79.63097	1926.70	287.2	-77.492	-74.469	0.55633	0.262	0.406	3718.
120	78.88573	1830.63	273.0	-75.499	-72.446	0.57355	0.258	0.403	3641.
125	78.13904	1739.50	260.3	-73.515	-70.434	0.58998	0.254	0.401	3570.
130	77.38904	1652.86	248.6	-71.542	-68.431	0.60569	0.249	0.400	3503.
135	76.63441	1570.31	237.8	-69.576	-66.435	0.62076	0.245	0.399	3438.
140	75.87423	1491.47	227.7	-67.616	-64.443	0.63524	0.242	0.398	3374.
145	75.10776	1416.02	218.0	-65.659	-62.454	0.64921	0.238	0.398	3311.
150	74.33441	1343.64	208.8	-63.703	-60.464	0.66270	0.235	0.398	3248.
155	73.55362	1274.06	199.9	-61.747	-58.474	0.67575	0.232	0.398	3195.
160	72.76492	1207.03	191.4	-59.790	-56.481	0.68840	0.229	0.399	3121.
165	71.96742	1142.33	183.2	-57.830	-54.485	0.70069	0.226	0.400	3057.
170	71.16071	1079.77	175.3	-55.866	-52.483	0.71264	0.224	0.401	2992.
175	70.34389	1019.19	167.6	-53.897	-50.475	0.72428	0.222	0.402	2927.
180	69.51603	960.44	160.1	-51.923	-48.460	0.73563	0.220	0.404	2861.
185	68.67606	903.42	152.9	-49.942	-46.437	0.74672	0.218	0.406	2794.
190	67.82272	848.01	145.9	-47.953	-44.404	0.75756	0.216	0.408	2726.
195	66.95457	794.16	139.1	-45.955	-42.360	0.76818	0.214	0.410	2657.
200	66.06997	741.81	132.6	-43.946	-40.302	0.77860	0.212	0.413	2588.
205	65.16701	690.93	126.1	-41.924	-38.230	0.78883	0.210	0.416	2517.
210	64.24351	641.49	119.9	-39.888	-36.141	0.79890	0.209	0.420	2446.
215	63.29700	593.49	113.8	-37.835	-34.032	0.80883	0.207	0.424	2373.
220	62.32455	546.95	107.9	-35.764	-31.901	0.81863	0.205	0.429	2300.
225	61.32300	501.88	102.1	-33.670	-29.744	0.82832	0.204	0.434	2225.
230	60.28939	458.31	96.5	-31.550	-27.557	0.83793	0.203	0.441	2149.
235	59.21633	416.29	91.0	-29.402	-25.336	0.84748	0.201	0.443	2072.
240	58.10160	375.86	85.5	-27.219	-23.076	0.85700	0.200	0.456	1993.
245	56.93799	337.06	80.2	-24.997	-20.769	0.86651	0.199	0.466	1913.
250	55.71809	299.95	75.0	-22.730	-18.409	0.87605	0.198	0.478	1831.
255	54.43298	264.57	69.9	-20.408	-15.986	0.88565	0.197	0.492	1748.
260	53.07113	230.97	64.9	-18.024	-13.488	0.89535	0.197	0.508	1663.
265	51.61856	199.18	59.9	-15.563	-10.899	0.90521	0.196	0.528	1576.
270	50.05698	169.25	55.0	-13.011	-8.202	0.91529	0.196	0.552	1487.
275	48.36138	141.22	50.1	-10.346	-5.368	0.92569	0.196	0.593	1395.
280	46.49772	115.18	45.2	-7.538	-2.361	0.93653	0.196	0.622	1300.
285	44.41794	91.31	40.3	-4.548	0.872	0.94797	0.197	0.674	1202.
290	42.05467	69.99	35.5	-1.315	4.409	0.96027	0.199	0.744	1101.
295	39.32300	51.98	30.6	2.232	8.354	0.97376	0.201	0.838	1001.
300	36.16172	38.47	25.9	6.153	12.810	0.98873	0.204	0.945	908.
310	29.20693	27.55	18.2	14.640	22.882	1.02175	0.207	1.017	792.
320	23.66577	30.59	13.5	22.067	32.239	1.05147	0.201	0.835	768.
330	20.12873	38.68	10.8	27.645	39.605	1.07415	0.192	0.649	779.
340	17.81607	47.76	9.1	31.950	45.462	1.09165	0.185	0.532	795.
350	16.17372	56.55	8.0	35.504	50.388	1.10593	0.179	0.459	820.
360	14.92569	64.80	7.2	38.598	54.726	1.11816	0.175	0.412	841.
370	13.93033	72.53	6.5	41.387	58.668	1.12876	0.172	0.379	861.
380	13.10847	79.80	6.0	43.965	62.329	1.13872	0.170	0.355	880.
390	12.41229	86.70	5.6	46.388	65.782	1.14770	0.168	0.337	898.
400	11.81094	93.27	5.2	48.694	69.076	1.15603	0.166	0.323	915.
410	11.28351	99.57	4.9	50.909	72.244	1.16386	0.165	0.311	932.
420	10.81523	105.65	4.7	53.052	75.311	1.17125	0.165	0.302	948.
430	10.39526	111.53	4.4	55.137	78.295	1.17827	0.164	0.295	963.
440	10.01546	117.23	4.2	57.173	81.209	1.18497	0.164	0.288	978.
450	9.66955	122.79	4.1	59.170	84.065	1.19139	0.163	0.283	993.
460	9.35259	128.21	3.9	61.132	86.871	1.19756	0.163	0.278	1007.
470	9.06053	133.51	3.7	63.065	89.634	1.20350	0.163	0.274	1021.
480	8.79044	138.70	3.6	64.974	92.360	1.20924	0.163	0.271	1034.
490	8.53939	143.79	3.5	66.861	95.052	1.21479	0.163	0.268	1047.
500	8.30528	148.80	3.4	68.730	97.715	1.22017	0.163	0.265	1060.
510	8.08624	153.72	3.3	70.582	100.353	1.22539	0.163	0.263	1072.
520	7.88070	158.56	3.2	72.421	102.968	1.23047	0.163	0.260	1084.
530	7.68732	163.34	3.1	74.246	105.562	1.23541	0.163	0.258	1096.
540	7.50493	168.05	3.0	76.061	108.137	1.24023	0.163	0.257	1107.
550	7.33252	172.70	2.9	77.866	110.697	1.24492	0.163	0.255	1119.
560	7.16921	177.29	2.8	79.662	113.241	1.24951	0.163	0.254	1130.
570	7.01473	181.83	2.7	81.451	115.772	1.25399	0.163	0.252	1141.
580	6.86988	186.32	2.7	83.233	118.290	1.25837	0.164	0.251	1151.
590	6.72658	190.77	2.6	85.010	120.798	1.26265	0.164	0.250	1162.
600	6.59276	195.16	2.6	86.781	123.295	1.26685	0.164	0.249	1172.

\* INDICATES TWO PHASE BOUNDARY

1600 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
*100.105	82.00864	2265.89	346.0	-83.620	-80.007	0.49835	0.264	0.410	4036.
105	81.26493	2157.09	323.1	-81.646	-78.000	0.51793	0.267	0.410	3914.
110	80.52453	2051.44	304.0	-79.634	-75.955	0.53696	0.266	0.408	3815.
115	79.78569	1951.25	287.8	-77.635	-73.921	0.55503	0.263	0.405	3730.
120	79.04847	1856.21	273.7	-75.649	-71.901	0.57223	0.259	0.403	3656.
125	78.31021	1765.92	261.2	-73.676	-69.893	0.58863	0.255	0.401	3586.
130	77.56906	1680.01	249.7	-71.714	-67.894	0.60431	0.250	0.399	3521.
135	76.82378	1598.11	239.0	-69.759	-65.903	0.61934	0.246	0.398	3457.
140	76.07348	1519.87	228.9	-67.811	-63.916	0.63379	0.242	0.397	3395.
145	75.31748	1444.98	219.4	-65.866	-61.933	0.64771	0.239	0.397	3333.
150	74.55526	1373.15	210.2	-63.924	-59.950	0.66115	0.236	0.397	3272.
155	73.78634	1304.13	201.5	-61.982	-57.967	0.67415	0.233	0.397	3210.
160	73.01026	1237.67	193.0	-60.040	-55.982	0.68676	0.230	0.397	3148.
165	72.22650	1173.57	184.9	-58.096	-53.994	0.69999	0.227	0.398	3085.
170	71.43451	1111.63	177.0	-56.150	-52.002	0.71088	0.225	0.399	3022.
175	70.63363	1051.70	169.4	-54.200	-50.006	0.72246	0.223	0.400	2959.
180	69.82309	993.62	162.1	-52.246	-48.003	0.73374	0.220	0.401	2895.
185	69.00203	937.30	155.0	-50.287	-45.993	0.74476	0.218	0.403	2830.
190	68.16943	882.62	148.1	-48.321	-43.975	0.75552	0.216	0.405	2764.
195	67.32412	829.53	141.4	-46.348	-41.947	0.76605	0.215	0.407	2698.
200	66.46479	777.95	134.9	-44.367	-39.909	0.77637	0.213	0.409	2632.
205	65.58994	727.86	128.6	-42.376	-37.859	0.78650	0.211	0.411	2564.
210	64.69786	679.23	122.4	-40.374	-35.794	0.79645	0.209	0.414	2496.
215	63.78655	632.05	116.5	-38.359	-33.714	0.80624	0.208	0.418	2427.
220	62.85413	586.32	110.7	-36.329	-31.615	0.81589	0.206	0.422	2357.
225	61.89787	542.07	105.1	-34.283	-29.496	0.82541	0.205	0.426	2286.
230	60.91513	499.32	99.6	-32.217	-27.353	0.83483	0.203	0.431	2215.
235	59.90280	458.10	94.2	-30.130	-25.183	0.84417	0.202	0.437	2143.
240	58.85736	418.45	89.0	-28.017	-22.983	0.85343	0.201	0.443	2070.
245	57.77432	380.42	83.9	-25.876	-20.748	0.86265	0.199	0.451	1996.
250	56.65062	344.05	79.9	-23.703	-18.473	0.87184	0.198	0.459	1922.
255	55.47953	309.39	74.0	-21.493	-16.153	0.88103	0.197	0.469	1846.
260	54.25550	276.48	69.3	-19.241	-13.780	0.89024	0.196	0.480	1770.
265	52.97149	245.36	64.6	-16.941	-11.348	0.89951	0.196	0.493	1693.
270	51.61925	216.06	60.0	-14.586	-8.846	0.90886	0.195	0.508	1615.
275	50.18897	188.63	55.6	-12.169	-6.264	0.91833	0.194	0.525	1537.
280	48.66899	163.11	51.2	-9.676	-3.588	0.92798	0.194	0.546	1458.
285	47.04548	139.55	46.9	-7.099	-0.801	0.93784	0.194	0.570	1378.
290	45.30238	118.05	42.7	-4.423	2.117	0.94799	0.194	0.598	1299.
295	43.42227	98.79	38.6	-1.633	5.190	0.95850	0.194	0.632	1220.
300	41.38971	82.03	34.7	1.283	8.442	0.96943	0.195	0.670	1142.
310	36.87005	57.35	27.3	7.498	15.534	0.99268	0.197	0.746	1005.
320	32.07080	45.49	21.3	13.962	23.200	1.01701	0.197	0.773	910.
330	27.73454	43.52	17.0	20.048	30.731	1.04019	0.194	0.722	866.
340	24.30207	47.08	14.0	25.323	37.515	1.06045	0.189	0.633	855.
350	21.71774	53.31	11.9	29.773	43.415	1.07756	0.184	0.550	859.
360	19.75745	60.56	10.4	33.575	48.572	1.09209	0.179	0.485	871.
370	18.22646	68.03	9.3	36.913	53.169	1.10469	0.176	0.437	886.
380	16.99260	75.39	8.4	39.919	57.355	1.11585	0.173	0.402	901.
390	15.97067	82.52	7.7	42.684	61.235	1.12594	0.171	0.375	917.
400	15.10506	89.39	7.2	45.268	64.883	1.13517	0.169	0.355	933.
410	14.35946	96.01	6.7	47.716	68.351	1.14373	0.168	0.339	949.
420	13.70493	102.40	6.3	50.055	71.674	1.15174	0.166	0.326	964.
430	13.12591	108.58	5.9	52.309	74.882	1.15929	0.166	0.316	979.
440	12.60773	114.57	5.6	54.493	77.993	1.16645	0.165	0.307	993.
450	12.14005	120.40	5.4	56.620	81.025	1.17326	0.165	0.300	1007.
460	11.71489	126.09	5.1	58.698	83.990	1.17978	0.164	0.293	1021.
470	11.32575	131.63	4.9	60.737	86.896	1.18603	0.164	0.288	1035.
480	10.96833	137.07	4.7	62.740	89.753	1.19204	0.164	0.283	1048.
490	10.63783	142.39	4.5	64.715	92.567	1.19784	0.164	0.279	1061.
500	10.33116	147.61	4.4	66.663	95.342	1.20345	0.164	0.276	1073.
510	10.04554	152.74	4.2	68.590	98.084	1.20888	0.164	0.273	1085.
520	9.77861	157.79	4.1	70.497	100.796	1.21415	0.164	0.270	1097.
530	9.52841	162.76	3.9	72.387	103.482	1.21926	0.164	0.267	1109.
540	9.29324	167.66	3.8	74.262	106.144	1.22424	0.164	0.265	1120.
550	9.07164	172.49	3.7	76.123	108.784	1.22908	0.164	0.263	1132.
560	8.86235	177.25	3.6	77.973	111.405	1.23381	0.164	0.261	1143.
570	8.66426	181.96	3.5	79.913	114.009	1.23841	0.164	0.260	1154.
580	8.47641	186.62	3.4	81.643	116.597	1.24292	0.165	0.258	1164.
590	8.29796	191.22	3.3	83.465	119.171	1.24732	0.165	0.257	1175.
600	8.12813	195.77	3.2	85.280	121.731	1.25162	0.165	0.255	1185.

\* INDICATES TWO PHASE BOUNDARY







1700 PSIA ISOBAR  
 THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
*100.245	82.03142	2269.34	345.3	-83.604	-79.766	0.49850	0.265	0.410	4033.
105	81.31521	2164.34	323.2	-81.687	-77.816	0.51751	0.268	0.410	3916.
110	80.57319	2059.21	304.1	-79.678	-75.771	0.53653	0.267	0.408	3818.
115	79.83683	1959.44	288.0	-77.682	-73.739	0.55461	0.264	0.405	3735.
120	79.10222	1864.73	274.0	-75.699	-71.719	0.57179	0.260	0.403	3660.
125	78.36669	1774.71	261.5	-73.729	-69.712	0.58818	0.255	0.400	3592.
130	77.62843	1689.03	250.0	-71.770	-67.715	0.60395	0.251	0.399	3527.
135	76.88618	1607.33	239.3	-69.819	-65.725	0.61887	0.247	0.397	3464.
140	76.13907	1529.28	229.3	-67.875	-63.740	0.63330	0.243	0.397	3402.
145	75.38646	1454.57	219.8	-65.934	-61.759	0.64721	0.239	0.396	3341.
150	74.62793	1382.92	210.7	-63.996	-59.778	0.66064	0.236	0.396	3279.
155	73.86273	1314.07	202.0	-62.059	-57.797	0.67363	0.233	0.396	3218.
160	73.09073	1247.79	193.6	-60.122	-55.815	0.68622	0.230	0.397	3157.
165	72.31134	1183.87	185.5	-58.183	-53.830	0.69843	0.228	0.397	3095.
170	71.52405	1122.12	177.6	-56.243	-51.841	0.71031	0.225	0.398	3032.
175	70.72823	1062.39	170.0	-54.299	-49.848	0.72186	0.223	0.399	2969.
180	69.92318	1004.52	162.7	-52.351	-47.849	0.73313	0.221	0.400	2906.
185	69.10809	948.42	155.6	-50.398	-45.843	0.74412	0.219	0.402	2842.
190	68.28200	893.97	148.7	-48.440	-43.830	0.75486	0.217	0.404	2777.
195	67.44384	841.10	142.1	-46.475	-41.807	0.76536	0.215	0.405	2712.
200	66.59237	789.77	135.6	-44.503	-39.775	0.77565	0.213	0.408	2646.
205	65.72620	739.92	129.3	-42.521	-37.731	0.78575	0.211	0.410	2579.
210	64.84377	691.53	123.3	-40.529	-35.675	0.79566	0.210	0.413	2512.
215	63.94331	644.60	117.3	-38.526	-33.603	0.80541	0.208	0.416	2444.
220	63.02284	599.13	111.6	-36.509	-31.514	0.81501	0.206	0.420	2375.
225	62.08016	555.12	106.0	-34.477	-29.406	0.82449	0.205	0.424	2306.
230	61.11278	512.61	100.5	-32.427	-27.276	0.83385	0.204	0.428	2236.
235	60.11792	471.63	95.2	-30.357	-25.121	0.84312	0.202	0.434	2165.
240	59.09248	432.20	90.1	-28.265	-22.938	0.85231	0.201	0.440	2094.
245	58.03296	394.39	85.0	-26.148	-20.723	0.86144	0.200	0.446	2022.
250	56.93543	358.22	80.1	-24.001	-18.472	0.87054	0.198	0.454	1949.
255	55.79545	323.75	75.3	-21.822	-16.180	0.87962	0.197	0.463	1876.
260	54.60798	291.01	70.6	-19.606	-13.841	0.88870	0.196	0.473	1802.
265	53.36729	260.05	66.0	-17.347	-11.448	0.89781	0.195	0.484	1728.
270	52.06693	230.89	61.5	-15.042	-8.995	0.90698	0.195	0.497	1653.
275	50.69908	203.57	57.2	-12.682	-6.473	0.91624	0.194	0.512	1578.
280	49.25537	178.13	52.9	-10.261	-3.870	0.92562	0.194	0.529	1502.
285	47.72585	154.60	48.7	-7.771	-1.175	0.93516	0.193	0.549	1427.
290	46.09957	133.06	44.7	-5.202	1.627	0.94491	0.193	0.572	1351.
295	44.36515	113.60	40.7	-2.544	4.552	0.95490	0.193	0.598	1277.
300	42.51270	96.41	36.9	0.210	7.615	0.96520	0.193	0.628	1204.
310	38.44993	69.72	29.8	6.013	14.201	0.98679	0.194	0.689	1070.
320	34.09314	54.38	23.8	12.069	21.305	1.00934	0.195	0.724	968.
330	29.90522	48.99	19.1	17.964	28.491	1.03146	0.193	0.703	910.
340	26.36799	50.01	15.8	23.291	35.230	1.05153	0.189	0.640	885.
350	23.57541	54.57	13.4	27.912	41.265	1.06908	0.185	0.567	891.
360	21.40695	60.95	11.6	31.906	46.612	1.08414	0.180	0.504	888.
370	19.70006	67.81	10.3	35.413	51.393	1.09725	0.177	0.454	899.
380	18.32398	74.92	9.3	38.560	55.740	1.10884	0.174	0.417	913.
390	17.18725	81.95	8.5	41.441	59.757	1.11928	0.171	0.398	927.
400	16.22789	88.90	7.9	44.121	63.520	1.12881	0.170	0.366	942.
410	15.40346	95.43	7.3	46.648	67.086	1.13761	0.168	0.348	957.
420	14.68432	101.86	6.9	49.056	70.494	1.14583	0.167	0.334	971.
430	14.04916	108.09	6.5	51.368	73.775	1.15355	0.166	0.323	986.
440	13.48232	114.15	6.1	53.602	76.952	1.16085	0.166	0.313	1000.
450	12.97195	120.04	5.8	55.773	80.041	1.16779	0.165	0.305	1014.
460	12.50908	125.78	5.6	57.892	83.058	1.17442	0.165	0.298	1027.
470	12.09648	131.39	5.3	59.965	86.011	1.18078	0.164	0.293	1040.
480	11.69850	136.87	5.1	62.001	88.911	1.18698	0.164	0.289	1053.
490	11.34055	142.25	4.9	64.005	91.764	1.19276	0.164	0.283	1066.
500	11.00887	147.53	4.7	65.980	94.576	1.19845	0.164	0.279	1078.
510	10.70035	152.71	4.5	67.932	97.352	1.20394	0.164	0.276	1091.
520	10.41237	157.91	4.4	69.862	100.095	1.20927	0.164	0.273	1102.
530	10.14272	162.84	4.3	71.773	102.810	1.21444	0.164	0.270	1114.
540	9.89951	167.78	4.1	73.668	105.500	1.21947	0.164	0.268	1125.
550	9.65113	172.66	4.0	75.548	108.167	1.22436	0.164	0.266	1137.
560	9.42618	177.48	3.9	77.416	110.813	1.22913	0.165	0.264	1148.
570	9.21345	182.23	3.8	79.272	113.440	1.23378	0.165	0.262	1158.
580	9.01185	186.93	3.7	81.118	116.050	1.23832	0.165	0.260	1169.
590	8.82045	191.57	3.6	82.955	118.645	1.24276	0.165	0.259	1179.
600	8.63843	196.17	3.5	84.784	121.227	1.24710	0.165	0.257	1190.

\* INDICATES TWO PHASE BOUNDARY

TIHERMODYNAMIC PROPERTIES OF OXYGEN

2000 PSIA ISOBAR									
TEMPERATURE	DENSITY	ISOTHERM	ISOCORE	INTERNAL	ENTHALPY	ENTROPY	CV	CP	VELOCITY
DEG R	LB/ CU FT	DERIVATIVE	DERIVATIVE	ENERGY	BTU/LB	BTU/LB-R	BTU / LB - R		OF SOUND
		CU FT-PSIA/LB	PSIA/R	BTU/LB					FT/SEC
*100.664	82.09973	2280.04	343.3	-83.554	-79.043	0.49896	0.267	0.410	4027.
105	81.45312	2186.16	323.5	-81.811	-77.264	0.51626	0.270	0.410	3924.
110	80.71805	2082.56	304.6	-79.809	-75.221	0.53528	0.268	0.408	3829.
115	79.58899	1984.00	288.7	-77.820	-73.190	0.55333	0.265	0.405	3747.
120	79.26201	1890.25	274.8	-75.846	-71.173	0.57050	0.261	0.402	3675.
125	78.53449	1801.03	262.4	-73.885	-69.169	0.58686	0.256	0.400	3608.
130	77.80664	1716.02	251.0	-71.936	-67.176	0.60250	0.252	0.398	3544.
135	77.07124	1634.90	240.5	-69.996	-65.190	0.61748	0.249	0.396	3483.
140	76.33346	1557.38	230.5	-68.063	-63.211	0.63198	0.244	0.396	3422.
145	75.59070	1483.16	221.1	-66.134	-61.235	0.64575	0.240	0.395	3362.
150	74.84251	1412.00	212.1	-64.209	-59.260	0.65914	0.237	0.395	3302.
155	74.08849	1343.64	203.4	-62.285	-57.286	0.67208	0.234	0.395	3243.
160	73.32829	1277.85	195.1	-60.362	-55.311	0.68462	0.231	0.395	3182.
165	72.56152	1214.45	187.1	-58.438	-53.334	0.69679	0.229	0.396	3122.
170	71.78775	1153.24	179.3	-56.514	-51.354	0.70861	0.226	0.396	3061.
175	71.00647	1094.06	171.8	-54.587	-49.371	0.72011	0.224	0.397	3000.
180	70.21712	1036.78	164.6	-52.657	-47.382	0.73131	0.222	0.398	2938.
185	69.41903	981.28	157.5	-50.724	-45.339	0.74224	0.220	0.399	2876.
190	68.61143	927.47	150.7	-48.786	-43.388	0.75291	0.218	0.401	2813.
195	67.79343	875.25	144.2	-46.844	-41.381	0.76334	0.216	0.402	2750.
200	66.96406	824.58	137.8	-44.896	-39.365	0.77354	0.214	0.404	2686.
205	66.12218	775.41	131.6	-42.941	-37.340	0.78354	0.212	0.406	2622.
210	65.26657	727.70	125.6	-40.979	-35.304	0.79336	0.211	0.408	2558.
215	64.39583	681.46	119.8	-39.007	-33.256	0.80300	0.209	0.411	2492.
220	63.50843	636.66	114.1	-37.025	-31.194	0.81248	0.207	0.414	2427.
225	62.60269	593.33	103.6	-35.032	-29.116	0.82132	0.206	0.417	2361.
230	61.67676	551.47	103.3	-33.025	-27.021	0.83103	0.204	0.421	2295.
235	60.72862	511.12	98.1	-31.004	-24.905	0.84012	0.203	0.425	2228.
240	59.75606	472.30	93.1	-28.966	-22.768	0.84912	0.201	0.430	2161.
245	58.75667	435.04	88.2	-26.909	-20.606	0.85804	0.200	0.435	2093.
250	57.72784	399.40	83.4	-24.831	-18.416	0.86689	0.199	0.441	2026.
255	56.66673	365.39	78.8	-22.730	-16.194	0.87569	0.198	0.448	1958.
260	55.57030	333.07	74.3	-20.603	-13.938	0.88445	0.197	0.455	1890.
265	54.43525	302.45	69.9	-18.447	-11.644	0.89319	0.196	0.463	1822.
270	53.25809	273.58	65.6	-16.260	-9.306	0.90193	0.195	0.472	1754.
275	52.03506	246.47	61.5	-14.038	-6.921	0.91068	0.194	0.482	1686.
280	50.76225	221.13	57.5	-11.778	-4.482	0.91947	0.193	0.493	1618.
285	49.43564	197.59	53.5	-9.477	-1.986	0.92831	0.192	0.506	1552.
290	48.05123	175.87	49.8	-7.132	0.576	0.93722	0.192	0.519	1485.
295	46.60539	155.99	46.1	-4.739	3.208	0.94621	0.191	0.534	1420.
300	45.09539	137.99	42.6	-2.297	5.916	0.95532	0.191	0.550	1357.
310	41.88258	107.89	36.0	2.736	11.579	0.97398	0.190	0.583	1237.
320	38.45589	86.11	30.1	7.928	17.559	0.99287	0.190	0.611	1133.
330	34.96157	72.71	25.1	13.154	23.748	1.01191	0.189	0.623	1053.
340	31.63063	66.46	21.1	18.215	29.924	1.03035	0.187	0.609	1000.
350	28.66176	65.35	19.0	22.933	35.854	1.04754	0.185	0.575	971.
360	26.13623	67.58	15.6	27.221	41.391	1.06314	0.182	0.532	958.
370	24.03486	71.84	13.7	31.085	46.494	1.07713	0.179	0.489	955.
380	22.29237	77.26	12.3	34.579	51.193	1.08966	0.176	0.452	959.
390	20.83657	83.26	11.1	37.771	55.545	1.10097	0.173	0.420	967.
400	19.60525	89.52	10.2	40.721	59.612	1.11126	0.171	0.384	977.
410	18.54967	95.83	9.4	43.480	63.446	1.12073	0.170	0.373	988.
420	17.63299	102.10	8.8	46.087	67.090	1.12951	0.169	0.356	1000.
430	16.82759	108.28	8.2	48.571	70.580	1.13773	0.168	0.342	1012.
440	16.11264	114.34	7.7	50.957	73.943	1.14546	0.167	0.331	1024.
450	15.47227	120.28	7.3	53.261	77.198	1.15277	0.166	0.321	1037.
460	14.89420	126.10	6.9	55.498	80.364	1.15973	0.166	0.313	1049.
470	14.36879	131.80	6.6	57.678	83.453	1.16638	0.166	0.305	1061.
480	13.88838	137.39	6.3	59.810	86.477	1.17274	0.165	0.299	1073.
490	13.44681	142.87	6.1	61.901	89.443	1.17896	0.165	0.294	1085.
500	13.03904	148.25	5.8	63.957	92.360	1.18475	0.165	0.289	1097.
510	12.66091	153.55	5.6	65.982	95.234	1.19044	0.165	0.285	1109.
520	12.30897	158.76	5.4	67.980	98.068	1.19595	0.165	0.282	1120.
530	11.98029	163.89	5.2	69.955	100.869	1.20128	0.165	0.278	1131.
540	11.67240	168.94	5.0	71.909	103.639	1.20646	0.165	0.276	1142.
550	11.38320	173.93	4.9	73.846	106.381	1.21149	0.165	0.273	1153.
560	11.11096	178.85	4.7	75.766	109.099	1.21639	0.166	0.271	1164.
570	10.85390	183.71	4.6	77.672	111.794	1.22116	0.166	0.268	1174.
580	10.61064	188.52	4.5	79.565	114.469	1.22581	0.166	0.267	1185.
590	10.38019	193.26	4.3	81.446	117.126	1.23035	0.166	0.265	1195.
600	10.16136	197.96	4.2	83.318	119.766	1.23479	0.166	0.263	1205.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1900 PSIA ISDBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHERE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
*100.524	82.07707	2276.41	343.9	-83.571	-79.284	0.49881	0.266	0.410	4029.
105	81.40730	2178.83	323.4	-81.770	-77.448	0.51668	0.269	0.410	3922.
110	80.66995	2074.77	304.4	-79.766	-75.404	0.53569	0.268	0.408	3825.
115	79.93848	1975.81	288.4	-77.774	-73.373	0.55375	0.265	0.405	3743.
120	79.20899	1881.75	274.5	-75.797	-71.355	0.57093	0.260	0.402	3670.
125	78.47983	1792.27	262.1	-73.833	-69.350	0.58730	0.256	0.400	3603.
130	77.74671	1707.04	250.7	-71.881	-67.356	0.60295	0.251	0.398	3539.
135	77.00970	1625.73	240.1	-69.938	-65.369	0.61794	0.247	0.397	3477.
140	76.26905	1548.03	230.1	-68.001	-63.387	0.63235	0.243	0.396	3416.
145	75.52306	1473.66	220.7	-66.068	-61.410	0.64623	0.240	0.395	3355.
150	74.77144	1402.34	211.6	-64.139	-59.433	0.65963	0.237	0.395	3295.
155	74.01380	1333.82	203.0	-62.211	-57.457	0.67259	0.234	0.395	3234.
160	73.24973	1267.89	194.6	-60.283	-55.480	0.68515	0.231	0.396	3174.
165	72.47883	1204.31	186.5	-58.354	-53.500	0.69733	0.228	0.396	3113.
170	71.70064	1142.93	178.8	-56.424	-51.517	0.70917	0.226	0.397	3051.
175	70.91463	1083.57	171.2	-54.492	-49.530	0.72069	0.223	0.398	2990.
180	70.12017	1026.10	164.0	-52.556	-47.535	0.73191	0.221	0.399	2927.
185	69.31655	970.41	156.9	-50.617	-45.541	0.74286	0.219	0.400	2864.
190	68.50296	916.39	150.1	-48.673	-43.536	0.75355	0.217	0.402	2801.
195	67.67944	863.96	143.5	-46.723	-41.524	0.76400	0.215	0.403	2737.
200	66.84193	813.08	137.1	-44.767	-39.503	0.77424	0.214	0.405	2673.
205	65.99224	763.69	130.9	-42.804	-37.472	0.78427	0.212	0.407	2608.
210	65.12801	715.77	124.8	-40.832	-35.429	0.79411	0.210	0.410	2543.
215	64.24776	669.30	119.0	-38.850	-33.374	0.80379	0.209	0.413	2477.
220	63.34982	624.29	113.3	-36.857	-31.303	0.81331	0.207	0.416	2410.
225	62.43234	580.74	107.8	-34.851	-29.216	0.82269	0.205	0.419	2343.
230	61.49330	538.68	102.4	-32.831	-27.109	0.83195	0.204	0.423	2276.
235	60.53045	498.13	97.2	-30.794	-24.982	0.84110	0.203	0.428	2208.
240	59.54133	459.12	92.1	-28.739	-22.830	0.85016	0.201	0.433	2139.
245	58.52321	421.69	87.2	-26.663	-20.651	0.85914	0.200	0.439	2070.
250	57.47314	385.88	82.4	-24.564	-18.443	0.86807	0.199	0.445	2001.
255	56.38782	351.73	77.7	-22.439	-16.199	0.87695	0.198	0.452	1931.
260	55.26369	319.29	73.1	-20.285	-13.918	0.88581	0.196	0.460	1862.
265	54.09682	288.57	68.7	-18.098	-11.594	0.89466	0.195	0.469	1792.
270	52.88293	259.62	64.3	-15.875	-9.222	0.90353	0.195	0.480	1722.
275	51.61737	232.45	60.1	-13.613	-6.796	0.91243	0.194	0.491	1652.
280	50.29510	207.10	56.0	-11.306	-4.311	0.92139	0.193	0.504	1582.
285	48.91077	183.58	52.0	-8.951	-1.757	0.93043	0.193	0.518	1513.
290	47.45870	161.92	48.2	-6.543	0.871	0.93957	0.192	0.534	1444.
295	45.93423	142.17	44.4	-4.077	3.583	0.94884	0.192	0.551	1376.
300	44.33258	124.39	40.8	-1.551	6.386	0.95826	0.192	0.570	1310.
310	40.89633	95.16	34.1	3.686	12.299	0.97762	0.191	0.610	1186.
320	37.21234	75.02	29.1	9.113	18.568	0.99755	0.191	0.643	1081.
330	33.49392	63.87	23.2	14.550	25.055	1.01751	0.190	0.649	1005.
340	30.04444	59.90	19.4	19.736	31.446	1.03659	0.188	0.624	960.
350	27.07227	60.69	16.4	24.475	37.471	1.05406	0.185	0.579	938.
360	24.61863	64.38	14.2	28.710	43.002	1.06964	0.181	0.528	931.
370	22.62043	69.70	12.6	32.485	48.039	1.08345	0.178	0.481	934.
380	20.98493	75.83	11.3	35.881	52.647	1.09574	0.175	0.442	941.
390	19.62783	82.29	10.2	38.978	56.903	1.10680	0.173	0.411	952.
400	18.48338	88.93	9.4	41.843	60.878	1.11686	0.171	0.395	964.
410	17.50304	95.32	8.7	44.527	64.629	1.12612	0.169	0.365	976.
420	16.65137	101.70	8.1	47.069	68.199	1.13473	0.168	0.349	989.
430	15.90237	107.93	7.6	49.497	71.622	1.14278	0.167	0.336	1002.
440	15.23669	114.02	7.2	51.833	74.924	1.15037	0.166	0.325	1015.
450	14.63968	119.97	6.9	54.093	78.126	1.15757	0.166	0.316	1029.
460	14.10005	125.78	6.5	56.290	81.244	1.16442	0.166	0.308	1041.
470	13.60900	131.47	6.2	58.435	84.289	1.17097	0.165	0.301	1054.
480	13.15949	137.03	5.9	60.535	87.272	1.17725	0.165	0.296	1066.
490	12.74588	142.49	5.7	62.597	90.202	1.18329	0.165	0.291	1078.
500	12.36354	147.85	5.4	64.626	93.084	1.18912	0.165	0.286	1090.
510	12.00869	153.12	5.2	66.627	95.926	1.19474	0.165	0.282	1102.
520	11.67812	158.30	5.1	68.603	98.731	1.20019	0.165	0.279	1114.
530	11.36916	163.40	4.9	70.557	101.503	1.20547	0.165	0.276	1125.
540	11.07955	163.43	4.7	72.491	104.247	1.21060	0.165	0.273	1136.
550	10.80732	173.38	4.6	74.409	106.965	1.21559	0.165	0.271	1147.
560	10.55091	178.28	4.4	76.312	109.659	1.22044	0.165	0.268	1158.
570	10.30855	183.11	4.3	78.201	112.332	1.22517	0.165	0.266	1169.
580	10.07926	187.89	4.2	80.079	114.986	1.22979	0.166	0.265	1179.
590	9.86184	192.60	4.1	81.946	117.623	1.23430	0.166	0.263	1190.
600	9.65530	197.24	4.0	83.803	120.244	1.23870	0.166	0.261	1200.

\* INDICATES TWO PHASE BOUNDARY

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2500 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
*101.358	82.21461	2299.07	340.2	-83.469	-77.838	0.49974	0.271	0.410	4019.
105	81.67995	2222.72	324.1	-82.012	-76.344	0.51422	0.272	0.410	3935.
110	80.95592	2121.59	305.5	-80.020	-74.301	0.53322	0.270	0.407	3847.
115	80.23844	2024.95	289.8	-78.043	-72.273	0.55125	0.267	0.404	3769.
120	79.52360	1932.73	276.2	-76.082	-70.261	0.56838	0.262	0.401	3700.
125	78.80879	1844.74	264.0	-74.136	-68.262	0.58470	0.258	0.398	3635.
130	78.09227	1760.75	252.8	-72.203	-66.275	0.60029	0.253	0.396	3574.
135	77.37287	1680.51	242.4	-70.280	-64.297	0.61522	0.249	0.395	3514.
140	76.64981	1603.76	232.6	-68.365	-62.325	0.62956	0.245	0.394	3456.
145	75.92256	1530.28	223.3	-66.455	-60.358	0.64337	0.241	0.393	3398.
150	75.19073	1459.82	214.4	-64.550	-58.393	0.65669	0.238	0.393	3340.
155	74.45404	1392.16	205.8	-62.647	-56.429	0.66957	0.235	0.393	3282.
160	73.71220	1327.10	197.6	-60.746	-54.465	0.68204	0.232	0.393	3224.
165	72.96495	1264.44	189.7	-58.845	-52.501	0.69413	0.230	0.393	3166.
170	72.21200	1204.00	182.0	-56.945	-50.534	0.70587	0.227	0.394	3107.
175	71.45299	1145.63	174.6	-55.044	-48.565	0.71729	0.225	0.394	3048.
180	70.68753	1089.19	167.5	-53.142	-46.593	0.72840	0.223	0.395	2989.
185	69.91514	1034.57	160.6	-51.238	-44.617	0.73923	0.221	0.396	2929.
190	69.13528	981.66	153.9	-49.332	-42.636	0.74979	0.219	0.397	2870.
195	68.34732	930.38	147.4	-47.424	-40.650	0.76011	0.217	0.398	2810.
200	67.55057	880.66	141.2	-45.512	-38.658	0.77019	0.215	0.399	2749.
205	66.74423	832.46	135.1	-43.596	-36.660	0.78006	0.214	0.400	2689.
210	65.92745	785.73	129.2	-41.676	-34.654	0.78973	0.212	0.402	2628.
215	65.09928	740.46	123.5	-39.750	-32.639	0.79922	0.210	0.404	2567.
220	64.25868	696.62	118.0	-37.819	-30.614	0.80853	0.209	0.406	2506.
225	63.40455	654.23	112.7	-35.879	-28.578	0.81768	0.207	0.408	2444.
230	62.53571	613.28	107.5	-33.933	-26.530	0.82668	0.206	0.411	2383.
235	61.65088	573.79	102.5	-31.977	-24.468	0.83555	0.204	0.414	2321.
240	60.74874	535.77	97.6	-30.011	-22.391	0.84429	0.203	0.417	2260.
245	59.82790	499.26	92.9	-28.034	-20.296	0.85293	0.201	0.421	2198.
250	58.88622	464.28	88.4	-26.045	-18.184	0.86147	0.200	0.425	2137.
255	57.92431	430.85	83.9	-24.043	-16.050	0.86992	0.199	0.429	2075.
260	56.93857	398.99	79.6	-22.025	-13.895	0.87829	0.198	0.434	2014.
265	55.92821	368.74	75.5	-19.992	-11.714	0.88659	0.196	0.439	1954.
270	54.89177	340.11	71.4	-17.942	-9.508	0.89484	0.195	0.444	1893.
275	53.82785	313.12	67.5	-15.873	-7.273	0.90304	0.194	0.450	1834.
280	52.73518	287.76	63.7	-13.786	-5.007	0.91121	0.193	0.456	1775.
285	51.61266	264.05	60.1	-11.679	-2.709	0.91934	0.192	0.463	1717.
290	50.45945	241.97	56.6	-9.551	-0.377	0.92746	0.191	0.470	1660.
295	49.27503	221.52	53.2	-7.403	1.992	0.93556	0.190	0.477	1604.
300	48.05939	202.68	49.9	-5.234	4.399	0.94364	0.190	0.485	1550.
310	45.53780	169.81	43.8	-0.838	9.328	0.95981	0.188	0.501	1447.
320	42.91154	143.27	38.2	3.620	14.408	0.97593	0.187	0.515	1353.
330	40.21934	122.95	33.3	8.105	19.615	0.99196	0.186	0.526	1270.
340	37.52615	108.53	29.9	12.560	24.897	1.00772	0.184	0.529	1202.
350	34.91517	99.38	25.3	16.912	30.171	1.02301	0.183	0.524	1149.
360	32.46619	94.54	22.2	21.090	35.349	1.03760	0.181	0.510	1111.
370	30.23404	92.99	19.7	25.044	40.356	1.05132	0.179	0.490	1086.
380	28.24121	93.83	17.6	28.754	45.146	1.06410	0.177	0.467	1071.
390	26.49357	96.36	15.9	32.221	49.702	1.07593	0.175	0.444	1064.
400	24.94151	100.04	14.4	35.466	54.027	1.08688	0.173	0.421	1061.
410	23.58816	104.48	13.3	38.512	58.138	1.09703	0.172	0.401	1063.
420	22.39638	109.42	12.3	41.388	62.059	1.10648	0.171	0.383	1067.
430	21.34125	114.65	11.4	44.120	65.813	1.11532	0.170	0.368	1073.
440	20.40130	120.04	10.7	46.730	69.422	1.12361	0.169	0.354	1081.
450	19.55857	125.52	10.0	49.236	72.906	1.13145	0.168	0.343	1089.
460	18.79829	131.01	9.5	51.656	76.293	1.13887	0.168	0.333	1099.
470	18.10833	136.50	9.0	54.003	79.568	1.14593	0.167	0.324	1107.
480	17.47878	141.95	8.5	56.286	82.772	1.15268	0.167	0.317	1117.
490	16.90148	147.34	8.2	58.515	85.906	1.15914	0.167	0.310	1127.
500	16.36766	152.69	7.8	60.698	88.979	1.16535	0.167	0.304	1137.
510	15.87773	157.97	7.5	62.841	91.998	1.17133	0.167	0.299	1147.
520	15.42097	163.19	7.2	64.948	94.969	1.17710	0.167	0.295	1157.
530	14.99541	168.35	6.9	67.025	97.877	1.18268	0.167	0.291	1167.
540	14.59768	173.45	6.7	69.074	100.788	1.18808	0.167	0.287	1177.
550	14.22489	178.50	6.4	71.099	103.644	1.19332	0.167	0.284	1187.
560	13.87455	183.48	6.2	73.103	106.470	1.19841	0.167	0.281	1196.
570	13.54452	188.41	6.0	75.088	109.258	1.20336	0.167	0.279	1206.
580	13.23293	193.29	5.9	77.056	112.041	1.20819	0.167	0.276	1216.
590	12.93812	198.11	5.7	79.009	114.771	1.21289	0.168	0.274	1225.
600	12.65867	202.89	5.5	80.949	117.520	1.21747	0.168	0.272	1235.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3000 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
*102.050	82.32969	2319.51	337.6	-83.380	-76.632	0.56052	0.274	0.411	4016.
105	81.90306	2259.54	324.9	-82.205	-75.422	0.51221	0.274	0.410	3954.
110	81.18945	2160.78	306.5	-80.223	-73.381	0.53121	0.272	0.407	3867.
115	80.48289	2065.96	291.1	-78.258	-71.355	0.54922	0.269	0.403	3792.
120	79.77950	1975.16	277.6	-76.310	-69.347	0.56651	0.264	0.400	3725.
125	79.07668	1888.29	265.6	-74.378	-67.353	0.58259	0.259	0.397	3663.
130	78.37271	1805.21	254.5	-72.460	-65.371	0.59814	0.255	0.395	3603.
135	77.66646	1725.74	244.2	-70.552	-63.400	0.61302	0.250	0.394	3546.
140	76.95719	1649.67	234.6	-68.654	-61.435	0.62731	0.246	0.392	3489.
145	76.24442	1576.80	225.4	-66.762	-59.475	0.64106	0.243	0.392	3433.
150	75.52792	1506.93	216.6	-64.875	-57.519	0.65432	0.239	0.391	3377.
155	74.80716	1439.85	208.1	-62.991	-55.565	0.66714	0.236	0.391	3320.
160	74.08225	1375.38	200.0	-61.110	-53.611	0.67955	0.234	0.391	3264.
165	73.35291	1313.33	192.2	-59.231	-51.658	0.69157	0.231	0.391	3208.
170	72.61894	1253.53	184.6	-57.353	-49.703	0.70324	0.229	0.391	3151.
175	71.88010	1195.83	177.3	-55.476	-47.747	0.71458	0.227	0.391	3094.
180	71.13614	1140.09	170.2	-53.599	-45.789	0.72561	0.224	0.392	3037.
185	70.39670	1086.20	163.4	-51.721	-43.829	0.73635	0.222	0.392	2990.
190	69.63143	1034.04	156.8	-49.843	-41.865	0.74683	0.220	0.393	2923.
195	68.86986	983.54	150.5	-47.964	-39.898	0.75705	0.219	0.394	2865.
200	68.10151	934.62	144.3	-46.084	-37.926	0.76703	0.217	0.395	2808.
205	67.32581	887.23	138.3	-44.202	-35.950	0.77679	0.215	0.396	2750.
210	66.54216	841.31	132.6	-42.318	-33.969	0.78634	0.213	0.397	2692.
215	65.74989	796.84	127.0	-40.431	-31.981	0.79569	0.212	0.398	2635.
220	64.94829	753.80	121.6	-38.541	-29.987	0.80486	0.210	0.400	2577.
225	64.13660	712.18	116.4	-36.647	-27.985	0.81386	0.209	0.401	2519.
230	63.31402	671.97	111.3	-34.749	-25.974	0.82270	0.207	0.403	2461.
235	62.47974	633.17	106.4	-32.846	-23.954	0.83139	0.206	0.405	2404.
240	61.63289	595.80	101.7	-30.937	-21.923	0.83994	0.204	0.407	2346.
245	60.77262	559.87	97.1	-29.022	-19.881	0.84836	0.203	0.410	2289.
250	59.89807	525.39	92.7	-27.101	-17.826	0.85666	0.201	0.412	2232.
255	59.00839	492.38	88.4	-25.171	-15.757	0.86486	0.200	0.415	2176.
260	58.10276	460.86	84.2	-23.234	-13.673	0.87295	0.199	0.418	2120.
265	57.18042	430.85	80.2	-21.288	-11.573	0.88095	0.198	0.422	2064.
270	56.24069	402.34	76.3	-19.333	-9.455	0.88887	0.196	0.425	2009.
275	55.28298	375.35	72.6	-17.369	-7.320	0.89670	0.195	0.429	1955.
280	54.30685	349.89	69.0	-15.394	-5.165	0.90447	0.194	0.433	1902.
285	53.31201	325.95	65.5	-13.410	-2.990	0.91217	0.193	0.437	1850.
290	52.29838	303.51	62.1	-11.416	-0.794	0.91981	0.192	0.441	1798.
295	51.26612	282.57	58.9	-9.412	1.424	0.92739	0.191	0.446	1748.
300	50.21566	263.10	55.7	-7.400	3.663	0.93492	0.190	0.450	1700.
310	48.06368	228.47	49.9	-3.350	8.208	0.94982	0.188	0.459	1607.
320	45.85358	199.38	44.5	0.721	12.837	0.96451	0.186	0.467	1521.
330	43.60433	175.58	39.7	4.797	17.538	0.97898	0.185	0.473	1443.
340	41.34380	156.74	35.3	8.853	22.290	0.99317	0.183	0.477	1374.
350	39.10791	142.52	31.5	12.857	27.062	1.00700	0.182	0.477	1316.
360	36.93672	132.41	28.1	16.773	31.813	1.02038	0.180	0.473	1268.
370	34.86801	125.82	25.2	20.569	36.502	1.03323	0.179	0.464	1230.
380	32.93098	122.12	22.8	24.220	41.090	1.04547	0.177	0.453	1202.
390	31.14293	120.69	20.6	27.711	45.549	1.05705	0.176	0.439	1181.
400	29.50946	121.03	18.8	31.039	49.864	1.05798	0.174	0.424	1167.
410	28.02708	122.71	17.3	34.207	54.029	1.07826	0.173	0.409	1158.
420	26.68635	125.38	16.0	37.227	58.045	1.08794	0.172	0.354	1154.
430	25.47471	127.79	14.8	40.112	61.919	1.09706	0.171	0.391	1152.
440	24.37360	132.73	13.8	42.876	65.663	1.10566	0.170	0.368	1153.
450	23.38473	137.04	13.0	45.532	69.289	1.11331	0.170	0.357	1156.
460	22.48076	141.62	12.2	48.096	72.807	1.12155	0.169	0.347	1160.
470	21.65557	146.38	11.5	50.578	76.231	1.12871	0.169	0.338	1165.
480	20.89979	151.26	11.0	52.988	79.569	1.13594	0.169	0.330	1171.
490	20.20475	156.20	10.4	55.337	82.832	1.14266	0.168	0.323	1178.
500	19.56334	161.18	9.9	57.631	86.028	1.14912	0.168	0.316	1186.
510	18.96938	166.18	9.5	59.877	89.163	1.15533	0.168	0.311	1193.
520	18.41754	171.17	9.1	62.082	92.246	1.16132	0.168	0.306	1201.
530	17.90327	176.15	8.8	64.250	95.290	1.16710	0.169	0.301	1209.
540	17.42263	181.10	8.4	66.386	98.271	1.17269	0.168	0.297	1218.
550	16.97271	186.03	8.1	68.492	101.224	1.17811	0.168	0.293	1226.
560	16.54906	190.93	7.8	70.573	104.142	1.18336	0.168	0.290	1235.
570	16.15060	195.79	7.6	72.630	107.028	1.18847	0.169	0.287	1243.
580	15.77457	200.62	7.3	74.667	109.885	1.19344	0.169	0.284	1252.
590	15.41700	205.41	7.1	76.686	112.715	1.19828	0.169	0.282	1260.
600	15.08213	210.16	6.9	78.688	115.522	1.20300	0.169	0.280	1269.

\* INDICATES TWO PHASE BOUNDARY

4000 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG P	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP BTU / LB - R	VELOCITY OF SOUND FT/SEC
*103.422	82.56028	2364.23	333.3	-83.196	-74.224	0.50210	0.279	0.411	4018.
105	82.33951	2337.97	326.9	-82.572	-73.576	0.50332	0.278	0.410	3989.
110	81.64401	2239.65	308.9	-80.609	-71.536	0.52730	0.276	0.406	3908.
115	80.95755	2148.19	293.8	-78.664	-69.515	0.54527	0.272	0.402	3839.
120	80.27522	2059.94	280.6	-76.740	-67.513	0.56231	0.267	0.399	3776.
125	79.59445	1975.05	268.9	-74.834	-65.527	0.57852	0.262	0.396	3718.
130	78.91353	1893.51	258.0	-72.943	-63.556	0.59399	0.257	0.393	3662.
135	78.23136	1815.29	248.0	-71.064	-61.596	0.60878	0.253	0.391	3608.
140	77.54727	1740.28	238.5	-69.196	-59.644	0.62298	0.249	0.390	3554.
145	76.86093	1668.34	229.5	-67.336	-57.699	0.63663	0.245	0.389	3500.
150	76.17179	1594.34	220.8	-65.482	-55.758	0.64979	0.242	0.388	3447.
155	75.48001	1533.11	212.5	-63.634	-53.820	0.66250	0.239	0.387	3394.
160	74.78540	1469.49	204.6	-61.789	-51.884	0.67479	0.236	0.387	3340.
165	74.08790	1408.33	195.9	-59.948	-49.950	0.68670	0.234	0.387	3287.
170	73.38744	1349.46	189.5	-58.109	-48.016	0.69824	0.231	0.387	3233.
175	72.68395	1292.75	182.3	-56.273	-46.082	0.70946	0.229	0.387	3180.
180	71.97733	1238.06	175.4	-54.439	-44.148	0.72035	0.227	0.387	3126.
185	71.26742	1185.27	168.7	-52.606	-42.213	0.73096	0.225	0.387	3073.
190	70.55407	1134.26	162.2	-50.776	-40.277	0.74128	0.223	0.387	3019.
195	69.83705	1084.95	156.0	-48.947	-38.341	0.75134	0.221	0.388	2966.
200	69.11613	1037.26	150.0	-47.119	-36.402	0.76116	0.220	0.388	2913.
205	68.39102	991.10	144.2	-45.293	-34.462	0.77074	0.218	0.388	2860.
210	67.66141	946.44	138.6	-43.467	-32.520	0.78010	0.216	0.389	2807.
215	66.92696	903.21	133.1	-41.643	-30.575	0.78925	0.215	0.389	2754.
220	66.18731	861.40	127.9	-39.819	-28.628	0.79820	0.213	0.390	2701.
225	65.44209	820.96	122.8	-37.996	-26.677	0.80697	0.212	0.390	2649.
230	64.69090	781.89	118.0	-36.173	-24.723	0.81556	0.210	0.391	2597.
235	63.93335	744.14	113.2	-34.350	-22.764	0.82399	0.209	0.392	2545.
240	63.16905	707.74	108.7	-32.527	-20.801	0.83225	0.207	0.393	2494.
245	62.39763	672.68	104.3	-30.703	-18.832	0.84037	0.206	0.394	2443.
250	61.61872	638.95	100.0	-28.879	-16.858	0.84835	0.205	0.395	2393.
255	60.83199	606.56	95.9	-27.054	-14.878	0.85619	0.203	0.397	2343.
260	60.03716	575.51	92.0	-25.228	-12.891	0.86391	0.202	0.398	2293.
265	59.23398	545.80	89.1	-23.401	-10.896	0.87151	0.201	0.400	2245.
270	58.42228	517.43	84.4	-21.573	-8.894	0.87899	0.199	0.401	2197.
275	57.60195	490.40	80.9	-19.744	-6.894	0.88637	0.198	0.403	2150.
280	56.77296	464.71	77.4	-17.913	-4.866	0.89364	0.197	0.405	2103.
285	55.93541	440.36	74.1	-16.082	-2.839	0.90081	0.196	0.406	2058.
290	55.08946	417.32	70.9	-14.249	-0.804	0.90789	0.195	0.408	2014.
295	54.23543	395.58	67.9	-12.417	1.241	0.91488	0.193	0.410	1970.
300	53.37374	375.13	64.9	-10.584	3.294	0.92179	0.192	0.411	1928.
310	51.62975	337.98	59.4	-6.921	7.425	0.93533	0.190	0.415	1848.
320	49.86368	305.63	54.2	-3.266	11.588	0.94855	0.188	0.418	1772.
330	48.08391	277.78	49.5	0.373	15.778	0.96144	0.187	0.420	1702.
340	46.30102	254.13	45.2	3.988	19.985	0.97400	0.185	0.421	1639.
350	44.52741	234.33	41.3	7.567	24.202	0.98622	0.183	0.422	1581.
360	42.77678	218.07	37.8	11.099	28.415	0.99809	0.182	0.421	1529.
370	41.06336	205.01	34.7	14.572	32.611	1.00959	0.180	0.418	1484.
380	39.40084	194.80	31.8	17.976	36.775	1.02070	0.179	0.414	1445.
390	37.80135	187.10	29.3	21.300	40.895	1.03140	0.178	0.409	1413.
400	36.27458	181.57	27.0	24.537	44.956	1.04168	0.177	0.403	1385.
410	34.82725	177.89	25.0	27.682	48.951	1.05154	0.176	0.396	1363.
420	33.46305	175.73	23.2	30.735	52.870	1.06099	0.175	0.388	1345.
430	32.18292	174.87	21.7	33.696	56.712	1.07003	0.174	0.390	1331.
440	30.98555	175.06	20.3	36.567	60.473	1.07867	0.173	0.372	1320.
450	29.86796	176.11	19.0	39.354	64.154	1.08695	0.173	0.364	1312.
460	28.82605	177.97	17.9	42.061	67.757	1.09487	0.172	0.357	1306.
470	27.85505	180.19	16.9	44.694	71.286	1.10246	0.172	0.349	1303.
480	26.94791	182.97	16.0	47.260	74.744	1.10974	0.171	0.342	1301.
490	26.10551	186.12	15.2	49.763	78.137	1.11673	0.171	0.336	1301.
500	25.31693	189.56	14.4	52.210	81.467	1.12346	0.171	0.330	1302.
510	24.57946	193.23	13.8	54.605	84.741	1.12994	0.171	0.325	1304.
520	23.88872	197.09	13.2	56.955	87.962	1.13620	0.171	0.320	1307.
530	23.24070	201.09	12.6	59.262	91.134	1.14224	0.171	0.315	1310.
540	22.63172	205.20	12.1	61.532	94.261	1.14809	0.171	0.311	1315.
550	22.05844	209.41	11.7	63.768	97.347	1.15375	0.171	0.307	1319.
560	21.51784	213.68	11.2	65.973	100.396	1.15924	0.171	0.303	1324.
570	21.00721	217.99	10.8	68.149	103.409	1.16458	0.171	0.300	1330.
580	20.52409	222.35	10.5	70.301	106.391	1.16976	0.171	0.297	1335.
590	20.06627	226.73	10.1	72.430	109.343	1.17481	0.172	0.294	1341.
600	19.63177	231.12	9.8	74.538	112.268	1.17973	0.172	0.291	1348.

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

3500 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
*102.737	82.44498	2341.26	335.3	-83.289	-75.428	0.50131	0.276	0.411	4015.
105	82.12255	2296.62	325.8	-82.392	-74.500	0.51025	0.276	0.410	3971.
110	81.41876	2200.13	307.7	-80.419	-72.459	0.52924	0.274	0.406	3887.
115	80.72254	2107.03	292.4	-78.465	-70.436	0.54722	0.270	0.403	3815.
120	80.07997	2017.55	279.1	-76.529	-68.430	0.56429	0.265	0.399	3750.
125	79.33947	1931.72	267.2	-74.610	-66.441	0.58053	0.261	0.396	3690.
130	78.64635	1849.46	256.3	-72.706	-64.465	0.59604	0.256	0.394	3633.
135	77.95249	1770.65	246.1	-70.814	-62.499	0.61087	0.252	0.392	3577.
140	77.25618	1695.15	236.5	-68.931	-60.541	0.62512	0.248	0.391	3522.
145	76.55697	1622.80	227.4	-67.055	-58.589	0.63882	0.244	0.390	3467.
150	75.85460	1553.41	218.7	-65.185	-56.641	0.65203	0.241	0.389	3412.
155	75.14886	1486.80	210.4	-63.320	-54.695	0.66479	0.238	0.389	3358.
160	74.43964	1422.81	202.3	-61.458	-52.751	0.67713	0.235	0.389	3303.
165	73.72682	1361.25	194.6	-59.598	-50.807	0.68909	0.232	0.389	3248.
170	73.01027	1301.97	187.1	-57.741	-48.864	0.70070	0.230	0.389	3193.
175	72.28985	1244.82	179.9	-55.885	-46.919	0.71197	0.228	0.389	3138.
180	71.56539	1189.66	172.9	-54.030	-44.974	0.72293	0.226	0.389	3083.
185	70.83667	1136.37	166.1	-52.176	-43.027	0.73360	0.224	0.390	3028.
190	70.10341	1084.85	159.6	-50.323	-41.078	0.74399	0.222	0.390	2972.
195	69.36531	1035.00	153.3	-48.471	-39.127	0.75413	0.220	0.390	2917.
200	68.62202	986.74	147.2	-46.618	-37.173	0.76402	0.218	0.391	2862.
205	67.87314	940.03	141.3	-44.766	-35.217	0.77369	0.217	0.392	2807.
210	67.11824	894.79	135.7	-42.913	-33.256	0.78313	0.215	0.392	2752.
215	66.35684	851.00	130.2	-41.059	-31.292	0.79238	0.213	0.393	2697.
220	65.58843	808.62	124.9	-39.205	-29.323	0.80143	0.212	0.394	2642.
225	64.81250	767.64	119.7	-37.349	-27.349	0.81030	0.210	0.395	2587.
230	64.02848	728.04	114.8	-35.491	-25.369	0.81901	0.209	0.397	2532.
235	63.23582	689.82	110.0	-33.632	-23.382	0.82755	0.207	0.398	2478.
240	62.43395	652.98	105.3	-31.770	-21.389	0.83595	0.206	0.400	2424.
245	61.62231	617.52	100.9	-29.905	-19.387	0.84420	0.204	0.401	2370.
250	60.80036	583.45	96.5	-28.037	-17.377	0.85232	0.203	0.403	2317.
255	59.96757	550.78	92.4	-26.165	-15.357	0.86032	0.202	0.405	2264.
260	59.12348	519.52	88.3	-24.290	-13.327	0.86820	0.200	0.407	2212.
265	58.26767	489.67	84.4	-22.410	-11.287	0.87598	0.199	0.409	2160.
270	57.39979	461.24	80.6	-20.526	-9.235	0.88365	0.198	0.412	2109.
275	56.51960	434.24	77.0	-18.638	-7.171	0.89123	0.197	0.414	2059.
280	55.62694	408.66	73.5	-16.745	-5.094	0.89871	0.195	0.417	2010.
285	54.72180	384.49	70.1	-14.848	-3.004	0.90611	0.194	0.419	1961.
290	53.80433	361.74	66.8	-12.946	-0.901	0.91342	0.193	0.422	1914.
295	52.87480	340.37	63.7	-11.041	1.216	0.92066	0.192	0.425	1868.
300	51.93372	320.37	60.7	-9.133	3.347	0.92782	0.191	0.427	1823.
310	50.01992	284.36	55.0	-5.309	7.649	0.94193	0.189	0.433	1737.
320	48.07078	253.46	49.8	-1.482	12.001	0.95574	0.187	0.438	1657.
330	46.09958	227.36	45.0	2.337	16.396	0.96927	0.185	0.441	1584.
340	44.11914	205.75	40.7	6.133	20.823	0.98249	0.184	0.444	1517.
350	42.15197	188.28	36.8	9.890	25.266	0.99536	0.182	0.444	1459.
360	40.21903	174.59	33.3	13.588	29.703	1.00786	0.181	0.443	1408.
370	38.34275	164.27	30.2	17.208	34.112	1.01994	0.179	0.439	1365.
380	36.54361	156.89	27.5	20.733	38.469	1.03156	0.178	0.432	1329.
390	34.83793	152.00	25.2	24.151	42.755	1.04270	0.177	0.424	1301.
400	33.23655	149.17	23.1	27.451	46.952	1.05332	0.175	0.415	1278.
410	31.74470	148.02	21.3	30.632	51.049	1.06344	0.174	0.405	1261.
420	30.36274	148.22	19.7	33.695	55.041	1.07306	0.173	0.394	1249.
430	29.08730	149.47	18.3	36.645	58.927	1.08221	0.173	0.383	1240.
440	27.91254	151.57	17.1	39.489	62.709	1.09090	0.172	0.373	1235.
450	26.83122	154.31	16.0	42.235	66.390	1.09917	0.171	0.363	1232.
460	25.83550	157.56	15.1	44.891	69.978	1.10706	0.171	0.354	1231.
470	24.91752	161.20	14.2	47.467	73.478	1.11459	0.170	0.346	1232.
480	24.06973	165.13	13.5	49.972	76.899	1.12179	0.170	0.338	1234.
490	23.28515	169.28	12.8	52.412	80.246	1.12869	0.170	0.331	1237.
500	22.55739	173.60	12.2	54.794	83.527	1.13532	0.170	0.325	1241.
510	21.88070	178.04	11.6	57.126	86.747	1.14170	0.169	0.319	1246.
520	21.24979	182.56	11.1	59.412	89.912	1.14784	0.169	0.314	1252.
530	20.66070	187.14	10.7	61.658	93.028	1.15378	0.169	0.309	1258.
540	20.10883	191.76	10.2	63.867	96.098	1.15952	0.170	0.305	1264.
550	19.59084	196.40	9.9	66.044	99.127	1.16508	0.170	0.301	1271.
560	19.10355	201.06	9.5	68.192	102.119	1.17047	0.170	0.297	1278.
570	18.64431	205.71	9.2	70.314	105.077	1.17570	0.170	0.294	1285.
580	18.21056	210.36	8.9	72.413	108.004	1.18079	0.170	0.291	1292.
590	17.80015	215.00	8.6	74.490	110.902	1.18575	0.170	0.288	1299.
600	17.41115	219.63	8.3	76.549	113.774	1.19057	0.170	0.286	1307.

\* INDICATES TWO PHASE BOUNDARY

## 4500 PSIA ISOBAR

## THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG R	DENSITY LB/ CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
*104.102	82.67544	2389.32	331.7	-83.100	-73.021	0.50290	0.281	0.410	4024.
105	82.55103	2371.58	323.1	-82.747	-72.652	0.50642	0.280	0.410	4008.
110	81.86530	2279.35	310.3	-80.791	-70.612	0.52540	0.278	0.406	3930.
115	81.18910	2189.44	295.3	-78.857	-68.593	0.54336	0.273	0.402	3863.
120	80.51548	2102.35	282.2	-76.943	-66.594	0.56038	0.268	0.398	3803.
125	79.84497	2018.31	270.5	-75.049	-64.612	0.57656	0.263	0.395	3746.
130	79.17457	1937.42	259.8	-73.170	-62.645	0.59198	0.258	0.392	3692.
135	78.50348	1859.70	249.8	-71.305	-60.690	0.60674	0.254	0.390	3639.
140	77.83094	1785.08	240.4	-69.451	-58.744	0.62089	0.250	0.388	3586.
145	77.15654	1713.48	231.5	-67.605	-56.805	0.63450	0.246	0.387	3533.
150	76.48006	1644.78	222.9	-65.767	-54.871	0.64762	0.243	0.386	3481.
155	75.80137	1578.84	214.7	-63.934	-52.940	0.66028	0.240	0.386	3429.
160	75.12042	1515.51	206.7	-62.105	-51.012	0.67252	0.237	0.385	3377.
165	74.43720	1454.65	199.1	-60.281	-49.086	0.68437	0.235	0.385	3325.
170	73.75168	1396.11	191.7	-58.460	-47.161	0.69597	0.233	0.385	3272.
175	73.06384	1339.75	184.6	-56.642	-45.237	0.70703	0.230	0.385	3220.
180	72.37362	1285.43	177.8	-54.827	-43.313	0.71767	0.228	0.385	3168.
185	71.68096	1233.03	171.1	-53.014	-41.389	0.72841	0.226	0.385	3116.
190	70.98574	1182.45	164.7	-51.204	-39.465	0.73867	0.225	0.385	3064.
195	70.28783	1133.59	158.5	-49.396	-37.541	0.74867	0.223	0.385	3012.
200	69.58706	1086.35	152.6	-47.591	-35.616	0.75841	0.221	0.385	2960.
205	68.88324	1040.67	146.8	-45.788	-33.690	0.76792	0.219	0.385	2909.
210	68.17615	996.48	141.3	-43.987	-31.764	0.77721	0.218	0.385	2858.
215	67.46554	953.73	135.9	-42.188	-29.836	0.78628	0.216	0.386	2807.
220	66.75115	912.38	130.7	-40.391	-27.907	0.79515	0.215	0.386	2757.
225	66.03271	872.40	125.7	-38.596	-25.977	0.80382	0.213	0.386	2706.
230	65.30995	833.76	120.9	-36.803	-24.044	0.81232	0.212	0.387	2656.
235	64.58257	796.43	116.2	-35.011	-22.109	0.82065	0.210	0.387	2607.
240	63.85032	760.41	111.7	-33.221	-20.170	0.82881	0.209	0.388	2558.
245	63.11292	725.69	107.4	-31.433	-18.229	0.83681	0.207	0.389	2509.
250	62.37012	692.25	103.2	-29.645	-16.285	0.84467	0.206	0.389	2461.
255	61.62172	660.10	99.2	-27.859	-14.336	0.85239	0.205	0.390	2414.
260	60.86752	629.23	95.3	-26.074	-12.383	0.85997	0.203	0.391	2367.
265	60.10739	599.64	91.5	-24.290	-10.426	0.86743	0.202	0.392	2321.
270	59.34122	571.32	87.9	-22.506	-8.464	0.87476	0.201	0.393	2275.
275	58.56997	544.27	84.4	-20.724	-6.497	0.88198	0.200	0.394	2230.
280	57.79069	518.50	81.0	-18.943	-4.524	0.88909	0.199	0.395	2186.
285	57.00647	493.97	77.8	-17.164	-2.546	0.89609	0.197	0.396	2143.
290	56.21650	470.70	74.6	-15.386	-0.562	0.90299	0.196	0.397	2101.
295	55.42103	448.65	71.6	-13.609	1.427	0.90979	0.195	0.398	2060.
300	54.62043	427.82	68.7	-11.835	3.421	0.91650	0.194	0.399	2020.
310	53.00574	389.70	63.2	-8.295	7.426	0.92963	0.192	0.402	1944.
320	51.37715	356.13	58.2	-4.769	11.450	0.94240	0.190	0.403	1872.
330	49.74089	326.84	53.5	-1.263	15.490	0.95483	0.188	0.405	1805.
340	48.10452	301.53	49.3	2.216	19.539	0.96692	0.186	0.405	1743.
350	46.47671	279.91	45.4	5.662	23.592	0.97867	0.185	0.405	1687.
360	44.86688	261.66	41.8	9.067	27.640	0.99007	0.183	0.404	1636.
370	43.28476	246.47	38.6	12.423	31.675	1.00113	0.182	0.402	1590.
380	41.73990	234.05	35.6	15.722	35.687	1.01183	0.180	0.400	1550.
390	40.24114	224.09	33.0	18.958	39.666	1.02217	0.179	0.395	1515.
400	38.79609	216.31	30.6	22.126	43.605	1.03214	0.178	0.392	1484.
410	37.41076	210.44	28.5	25.221	47.495	1.04174	0.177	0.386	1458.
420	36.08940	206.22	26.6	28.241	51.331	1.05099	0.176	0.381	1437.
430	34.83443	203.41	24.8	31.185	55.107	1.05987	0.175	0.375	1418.
440	33.64663	201.80	23.3	34.055	58.822	1.06841	0.175	0.368	1404.
450	32.52539	201.20	21.9	36.853	62.473	1.07662	0.174	0.362	1392.
460	31.46497	201.45	20.6	39.581	66.061	1.08451	0.174	0.356	1382.
470	30.47484	202.41	19.5	42.243	69.587	1.09209	0.173	0.350	1375.
480	29.53993	203.97	18.5	44.844	73.053	1.09939	0.173	0.344	1370.
490	28.66083	206.01	17.6	47.387	76.461	1.10641	0.173	0.338	1367.
500	27.83403	208.47	16.7	49.876	79.815	1.11319	0.173	0.333	1365.
510	27.05597	211.26	15.9	52.317	83.116	1.11973	0.172	0.328	1364.
520	26.32322	214.33	15.2	54.713	86.369	1.12604	0.172	0.323	1364.
530	25.63745	217.67	14.6	57.067	89.577	1.13215	0.172	0.319	1365.
540	24.98054	221.12	14.0	59.384	92.742	1.13807	0.172	0.314	1367.
550	24.36457	224.77	13.5	61.666	95.867	1.14391	0.172	0.311	1370.
560	23.78184	228.54	13.0	63.917	98.956	1.14937	0.172	0.307	1373.
570	23.22984	232.41	12.5	66.139	102.011	1.15478	0.173	0.304	1377.
580	22.70528	236.37	12.1	68.335	105.034	1.16004	0.173	0.301	1381.
590	22.20906	240.39	11.7	70.507	108.028	1.16515	0.173	0.298	1386.
600	21.73626	244.47	11.3	72.657	110.994	1.17014	0.173	0.295	1390.

\* INDICATES TWO PHASE BOUNDARY



THERMODYNAMIC PROPERTIES OF OXYGEN

5000 PSIA ISOBAR

TEMPERATURE DEG R	DENSITY LB / CU FT	ISOTHERM DERIVATIVE CU FT-PSIA/LB	ISOCCHORE DERIVATIVE PSIA/R	INTERNAL ENERGY BTU/LB	ENTHALPY BTU/LB	ENTROPY BTU/LB-R	CV BTU / LB - R	CP	VELOCITY OF SOUND FT/SEC
*104.780	82.79031	2413.45	330.3	-83.002	-71.818	0.50370	0.282	0.410	4031.
105	82.76019	2409.46	329.5	-82.916	-71.728	0.50456	0.282	0.410	4028.
110	82.08277	2319.23	311.8	-80.968	-69.688	0.52354	0.279	0.406	3953.
115	81.41434	2230.79	296.9	-79.042	-67.670	0.54148	0.274	0.401	3888.
120	80.75095	2144.78	283.9	-77.139	-65.673	0.55848	0.269	0.397	3829.
125	80.08999	2061.52	272.3	-75.256	-63.695	0.57463	0.264	0.394	3774.
130	79.42977	1981.21	261.6	-73.387	-61.732	0.59002	0.259	0.391	3721.
135	78.76920	1903.91	251.7	-71.537	-59.782	0.60474	0.255	0.389	3669.
140	78.10760	1829.62	242.3	-69.696	-57.842	0.61836	0.251	0.387	3617.
145	77.44459	1758.28	233.4	-67.864	-55.909	0.63243	0.247	0.386	3566.
150	76.77996	1689.80	224.9	-66.039	-53.980	0.64550	0.244	0.385	3515.
155	76.11360	1624.07	216.7	-64.221	-52.057	0.65812	0.241	0.384	3464.
160	75.44549	1560.95	208.9	-62.408	-50.136	0.67031	0.238	0.384	3412.
165	74.77563	1500.31	201.3	-60.599	-48.217	0.68212	0.236	0.384	3361.
170	74.10404	1442.01	193.9	-58.795	-46.300	0.69357	0.234	0.383	3310.
175	73.43074	1385.91	186.9	-56.993	-44.384	0.70467	0.232	0.383	3259.
180	72.75571	1331.88	180.0	-55.196	-42.459	0.71546	0.230	0.383	3208.
185	72.07894	1279.90	173.5	-53.401	-40.555	0.72595	0.228	0.383	3157.
190	71.40036	1229.55	167.1	-51.609	-38.642	0.73616	0.226	0.383	3106.
195	70.71939	1181.04	161.0	-49.821	-36.729	0.74610	0.224	0.383	3056.
200	70.03744	1134.18	155.0	-48.036	-34.816	0.75578	0.223	0.383	3006.
205	69.35286	1088.89	149.3	-46.254	-32.903	0.76523	0.221	0.383	2956.
210	68.66600	1045.10	143.8	-44.475	-30.991	0.77444	0.219	0.383	2906.
215	67.97670	1002.75	138.5	-42.699	-29.078	0.78345	0.218	0.383	2857.
220	67.28477	961.80	133.4	-40.926	-27.165	0.79224	0.216	0.383	2808.
225	66.59000	922.20	128.4	-39.156	-25.251	0.80084	0.215	0.383	2760.
230	65.89220	883.93	123.6	-37.389	-23.337	0.80926	0.213	0.383	2712.
235	65.19116	846.95	119.0	-35.624	-21.422	0.81750	0.212	0.383	2664.
240	64.48669	811.26	114.6	-33.863	-19.505	0.82557	0.210	0.383	2617.
245	63.77860	776.82	110.3	-32.104	-17.587	0.83348	0.209	0.384	2570.
250	63.06671	743.63	106.2	-30.348	-15.667	0.84124	0.208	0.384	2524.
255	62.35088	711.69	102.2	-28.594	-13.745	0.84885	0.206	0.385	2479.
260	61.63098	680.98	98.3	-26.843	-11.820	0.85632	0.205	0.385	2434.
265	60.90673	651.49	94.6	-25.095	-9.893	0.86356	0.204	0.386	2389.
270	60.17867	623.22	91.0	-23.349	-7.963	0.87088	0.203	0.386	2346.
275	59.44620	596.16	87.6	-21.606	-6.031	0.87797	0.201	0.387	2303.
280	58.70957	570.31	84.3	-19.866	-4.095	0.88495	0.200	0.387	2261.
285	57.96888	545.65	81.0	-18.128	-2.156	0.89181	0.199	0.388	2220.
290	57.22428	522.17	78.0	-16.394	-0.214	0.89857	0.198	0.389	2180.
295	56.47601	499.87	75.0	-14.663	1.732	0.90522	0.197	0.389	2141.
300	55.72436	478.71	72.1	-12.935	3.631	0.91177	0.196	0.390	2103.
310	54.21242	439.77	66.7	-9.492	7.587	0.92458	0.194	0.391	2029.
320	52.69214	405.15	61.7	-6.067	11.505	0.93701	0.192	0.392	1960.
330	51.16828	374.63	57.1	-2.665	15.430	0.94909	0.190	0.393	1896.
340	49.64648	347.93	52.8	0.709	19.359	0.96082	0.188	0.393	1836.
350	48.13314	324.78	48.9	4.051	23.288	0.97221	0.186	0.393	1781.
360	46.63515	304.38	45.4	7.356	27.210	0.98326	0.185	0.392	1730.
370	45.15959	287.95	42.1	10.617	31.120	0.99377	0.183	0.390	1685.
380	43.71345	273.72	39.1	13.830	35.011	1.00435	0.182	0.388	1644.
390	42.30332	261.90	36.4	16.989	38.876	1.01439	0.181	0.385	1607.
400	40.93510	252.25	33.9	20.092	42.710	1.02410	0.180	0.382	1575.
410	39.61374	244.53	31.7	23.134	46.507	1.03347	0.179	0.378	1547.
420	38.34311	238.50	29.7	26.114	50.252	1.04252	0.178	0.373	1523.
430	37.12593	233.96	27.8	29.031	53.970	1.05125	0.177	0.368	1502.
440	35.96374	230.71	26.2	31.885	57.630	1.05966	0.176	0.363	1484.
450	34.85707	228.57	24.7	34.676	61.239	1.06777	0.176	0.358	1469.
460	33.80550	227.38	23.3	37.407	64.796	1.07559	0.175	0.353	1457.
470	32.80738	227.02	22.0	40.080	68.302	1.08313	0.175	0.348	1447.
480	31.86252	227.35	20.9	42.698	71.757	1.09040	0.175	0.343	1439.
490	30.97678	228.28	19.9	45.263	75.162	1.09743	0.174	0.338	1433.
500	30.14978	229.71	18.9	47.780	78.520	1.10421	0.174	0.333	1428.
510	29.37478	231.57	18.1	50.250	81.832	1.11077	0.174	0.329	1425.
520	28.65778	233.80	17.3	52.678	85.099	1.11711	0.174	0.325	1422.
530	27.99309	236.33	16.6	55.066	88.326	1.12326	0.174	0.321	1421.
540	27.37588	239.13	15.9	57.417	91.513	1.12922	0.174	0.317	1421.
550	26.80373	242.14	15.3	59.735	94.663	1.13500	0.174	0.313	1422.
560	25.89430	245.34	14.7	62.022	97.779	1.14061	0.174	0.310	1423.
570	25.31042	248.69	14.2	64.280	100.842	1.14607	0.174	0.307	1425.
580	24.75503	252.18	13.7	66.512	103.914	1.15138	0.174	0.304	1428.
590	24.22623	255.78	13.2	68.720	106.939	1.15655	0.174	0.301	1431.
600	23.72223	259.47	12.8	70.905	109.936	1.16158	0.174	0.298	1434.

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APPENDIX C

ADDITIONAL THERMODYNAMIC PROPERTIES OF OXYGEN  
IN BRITISH UNITS

(The number of significant figures given in the table is not justified on the basis of the uncertainty of the data, but is presented to maintain internal consistency.)

THERMODYNAMIC PROPERTIES OF SATURATED OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(CH/DV)		V(OP/DV)		V(DV/DV)		(DV/DV) / V	
		P BTU/LB	P PSIA-CU FT/BTU	V PSIA	T PSIA	T PSIA	P DEG. R	P DEG. R	
97.832	81.65261 0.00064	204.68 21.28	17.837 2.157	-181306.95 -0.02	0.0019884 0.0102300				
98	81.62540 0.00066	204.90 21.32	17.732 2.157	-180890.97 -0.02	0.0019872 0.0102127				
100	81.30262 0.00071	207.04 21.75	16.934 2.157	-176007.44 -0.03	0.0019758 0.0100110				
102	80.98265 0.00124	208.40 22.18	16.296 2.157	-171268.05 -0.04	0.0019682 0.0098178				
104	80.66490 0.00167	209.10 22.62	15.778 2.157	-166669.85 -0.06	0.0019639 0.0096327				
106	80.34885 0.00222	209.28 23.05	15.351 2.157	-162208.50 -0.08	0.0019625 0.0094553				
108	80.03404 0.00291	209.03 23.48	14.995 2.157	-157878.91 -0.11	0.0019637 0.0092853				
110	79.72011 0.00377	208.43 23.91	14.693 2.157	-153675.56 -0.14	0.0019671 0.0091225				
112	79.40672 0.00483	207.57 24.34	14.435 2.157	-149592.81 -0.18	0.0019724 0.0089664				
114	79.09358 0.00614	206.50 24.77	14.211 2.157	-145625.09 -0.23	0.0019795 0.0088159				
116	78.78045 0.00772	205.26 25.20	14.014 2.156	-141766.95 -0.30	0.0019881 0.0086738				
118	78.46711 0.00963	203.89 25.62	13.839 2.156	-138013.17 -0.38	0.0019981 0.0085368				
120	78.15337 0.01192	202.43 26.05	13.690 2.156	-134358.79 -0.48	0.0020032 0.0084058				
122	77.83907 0.01463	200.90 26.47	13.535 2.156	-130799.12 -0.59	0.0020215 0.0082805				
124	77.52406 0.01782	199.32 26.89	13.400 2.155	-127329.74 -0.74	0.0020348 0.0081609				
126	77.20823 0.02155	197.70 27.31	13.273 2.155	-123946.49 -0.90	0.0020490 0.0080467				
128	76.89146 0.02590	196.06 27.72	13.152 2.155	-120645.48 -1.10	0.0020640 0.0079378				
130	76.57365 0.03092	194.41 28.13	13.036 2.154	-117423.05 -1.33	0.0020799 0.0078342				
132	76.25471 0.03669	192.75 28.54	12.924 2.154	-114275.78 -1.60	0.0020964 0.0077356				
134	75.93456 0.04328	191.09 28.95	12.814 2.154	-111200.44 -1.92	0.0021137 0.0076420				
136	75.61313 0.05079	189.43 29.35	12.706 2.153	-108194.02 -2.28	0.0021317 0.0075532				
138	75.29035 0.05928	187.77 29.75	12.599 2.153	-105253.69 -2.69	0.0021503 0.0074693				
140	74.96616 0.06886	186.12 30.14	12.493 2.152	-102376.80 -3.16	0.0021696 0.0073900				
142	74.64049 0.07961	184.48 30.53	12.387 2.152	-99560.84 -3.70	0.0021896 0.0073154				
144	74.31329 0.09163	182.84 30.91	12.282 2.152	-96803.48 -4.30	0.0022102 0.0072453				

THEMODYNAMIC PROPERTIES OF SATURATED OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(CP/DU) PSIA-CU FT/BTU	V(OP/DV) PSIA	(DV/DT) / V DEG. R
146	73.58450 0.10501	181.20 31.28	12.176 2.151	-94102.52 -4.99	0.0022315 0.0071798
148	73.65406 0.11985	179.57 31.65	12.069 2.151	-91455.89 -5.75	0.0022535 0.0071187
150	73.32192 0.13627	177.94 32.01	11.962 2.151	-88861.66 -6.60	0.0022761 0.0070620
152	72.98801 0.15437	176.31 32.37	11.955 2.151	-86318.01 -7.54	0.0022996 0.0070096
154	72.65228 0.17425	174.68 32.71	11.746 2.151	-83823.24 -8.59	0.0023238 0.0069617
156	72.31466 0.19603	173.05 33.05	11.637 2.150	-81375.76 -9.75	0.0023488 0.0069180
158	71.97510 0.21983	171.42 33.38	11.528 2.150	-78974.10 -11.01	0.0023747 0.0068787
160	71.63351 0.24577	169.78 33.70	11.417 2.151	-76616.85 -12.40	0.0024014 0.0068437
162	71.28985 0.27396	168.14 34.02	11.306 2.151	-74302.74 -13.92	0.0024292 0.0068130
162.343	71.23071 0.27903	167.85 34.07	11.287 2.151	-73910.21 -14.20	0.0024340 0.0068082
164	70.94402 0.30454	166.49 34.32	11.195 2.151	-72030.56 -15.58	0.0024579 0.0067866
166	70.59595 0.33763	164.83 34.61	11.082 2.151	-69799.22 -17.37	0.0024877 0.0067646
168	70.24555 0.37336	163.16 34.89	10.969 2.152	-67607.68 -19.31	0.0025186 0.0067471
170	69.89275 0.41187	161.48 35.16	10.855 2.152	-65455.00 -21.40	0.0025508 0.0067339
172	69.53744 0.45329	159.78 35.42	10.740 2.153	-63340.31 -23.66	0.0025842 0.0067253
174	69.17953 0.49776	158.08 35.66	10.625 2.154	-61262.84 -26.07	0.0026190 0.0067212
176	68.81891 0.54544	156.36 35.90	10.509 2.155	-59221.84 -28.66	0.0026553 0.0067218
178	68.45547 0.59648	154.62 36.12	10.393 2.156	-57216.69 -31.42	0.0026932 0.0067272
180	68.08909 0.65102	152.87 36.33	10.276 2.157	-55246.79 -34.37	0.0027327 0.0067374
182	67.71964 0.70922	151.10 36.53	10.158 2.158	-53311.61 -37.49	0.0027740 0.0067526
184	67.34699 0.77126	149.31 36.71	10.040 2.160	-51410.70 -40.80	0.0028172 0.0067730
186	66.97099 0.83730	147.50 36.88	9.921 2.161	-49543.65 -44.31	0.0028624 0.0067987
188	66.59150 0.90752	145.67 37.03	9.802 2.163	-47710.11 -48.00	0.0029099 0.0068299
190	66.20836 0.98211	143.83 37.17	9.692 2.165	-45909.78 -51.89	0.0029597 0.0068667
192	65.82138 1.06126	141.96 37.30	9.562 2.167	-44142.41 -55.97	0.0030120 0.0069096
194	65.43040 1.14516	140.07 37.41	9.440 2.169	-42407.79 -60.25	0.0030671 0.0069587

THERMODYNAMIC PROPERTIES OF SATURATED OXYGEN.

TEMPERATURE DEG. R	DENSITY LB/CU FT	$V(DH/DV)$	$V(CP/DU)$	$V(CP/DV)$	$(DV/DT) / V$
		BTU/LB P	PSIA-CU FT/HTU V	PSIA T	DEG. R P
196	65.03570 1.23404	138.16 37.50	9.319 2.172	-40705.77 -64.72	0.0031250 0.0070143
198	64.63560 1.32810	136.23 37.58	9.196 2.174	-39036.23 -69.38	0.0031862 0.0070767
200	64.23136 1.42760	134.27 37.65	9.073 2.177	-37399.09 -74.24	0.0032507 0.0071464
202	63.82225 1.53276	132.30 37.70	8.949 2.180	-35794.32 -79.27	0.0033188 0.0072238
204	63.40803 1.64385	130.30 37.74	8.825 2.183	-34221.90 -84.49	0.0033910 0.0073093
206	62.98841 1.76115	128.27 37.76	8.699 2.186	-32681.86 -89.88	0.0034674 0.0074034
208	62.56313 1.88494	126.23 37.76	8.573 2.190	-31174.27 -95.44	0.0035486 0.0075069
210	62.13186 2.01555	124.16 37.75	8.446 2.193	-29699.19 -101.15	0.0036348 0.0076203
212	61.69429 2.15330	122.07 37.73	8.318 2.197	-28256.73 -107.00	0.0037265 0.0077444
214	61.25005 2.29855	119.95 37.69	8.189 2.201	-26847.04 -112.99	0.0038243 0.0078801
216	60.79878 2.45168	117.81 37.63	8.060 2.205	-25470.25 -119.09	0.0039287 0.0080284
218	60.34005 2.61311	115.65 37.56	7.929 2.209	-24126.53 -125.29	0.0040404 0.0081904
220	59.87344 2.78328	113.46 37.47	7.797 2.213	-22816.05 -131.57	0.0041601 0.0083673
222	59.39847 2.96268	111.25 37.37	7.664 2.218	-21539.01 -137.91	0.0042886 0.0085606
224	58.91462 3.15183	109.01 37.25	7.529 2.223	-20295.60 -144.28	0.0044270 0.0087720
226	58.42133 3.35131	106.75 37.12	7.394 2.227	-19086.01 -150.65	0.0045762 0.0090035
228	57.91798 3.56173	104.47 36.97	7.257 2.232	-17910.44 -157.00	0.0047377 0.0092572
230	57.40393 3.78380	102.16 36.81	7.118 2.237	-16769.09 -163.29	0.0049127 0.0095359
232	56.87842 4.01827	99.83 36.64	6.978 2.243	-15662.14 -169.47	0.0051031 0.0098424
234	56.34065 4.26596	97.47 36.45	6.837 2.248	-14589.76 -175.51	0.0053109 0.0101805
236	55.78972 4.52783	95.09 36.25	6.694 2.253	-13552.11 -181.36	0.0055396 0.0105545
238	55.22464 4.80490	92.68 36.04	6.548 2.259	-12549.32 -186.96	0.0057889 0.0109693
240	54.64428 5.09834	90.24 35.81	6.401 2.264	-11581.51 -192.25	0.0060654 0.0114313
242	54.04740 5.40947	87.79 35.57	6.253 2.270	-10648.76 -197.17	0.0063723 0.0119478
244	53.43254 5.73978	85.28 35.32	6.101 2.276	-9751.13 -201.63	0.0067149 0.0125281

THEMODYNAMIC PROPERTIES OF SATURATED OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/CV)	V(CP/DU)	V(CP/DV)	(DV/DT) /V
		<sup>P</sup> BTU/LB	<sup>V</sup> PSIA-CU FT/RTU	<sup>T</sup> PSIA	<sup>P</sup> DEG. R
246	52.79806 6.09098	82.75 35.06	5.948 2.291	-8888.64 -205.56	0.0070999 0.0131836
248	52.14206 6.46506	80.19 34.79	5.792 2.287	-8061.29 -208.86	0.0075354 0.0139267
250	51.46230 6.86433	77.60 34.51	5.633 2.293	-7269.03 -211.42	0.0080323 0.0147817
252	50.75613 7.29145	74.96 34.22	5.472 2.298	-6511.80 -213.11	0.0086048 0.0157665
254	50.02036 7.74979	72.29 33.92	5.307 2.304	-5789.53 -213.79	0.0092716 0.0169147
256	49.25108 8.24319	69.56 33.62	5.138 2.309	-5102.14 -213.30	0.0100586 0.0182691
258	48.44343 8.77653	66.78 33.30	4.966 2.315	-4449.54 -211.44	0.0110024 0.0198892
260	47.59120 9.35600	63.93 32.98	4.789 2.320	-3831.72 -207.99	0.0121558 0.0218602
262	46.68625 9.98955	61.02 32.65	4.607 2.325	-3248.75 -202.65	0.0135990 0.0243093
264	45.71762 10.68789	58.02 32.32	4.419 2.329	-2700.83 -195.08	0.0154588 0.0274349
266	44.66988 11.46595	54.91 31.97	4.223 2.333	-2188.44 -184.84	0.0175489 0.0315651
268	43.52022 12.34565	51.69 31.63	4.018 2.337	-1712.43 -171.37	0.0214575 0.0372856
270	42.23257 13.36180	48.32 31.27	3.801 2.339	-1274.30 -153.87	0.0267701 0.0457562
272	40.74408 14.57475	44.77 30.90	3.567 2.340	-876.66 -131.26	0.0357401 0.0596447
274	39.92725 16.10773	40.95 30.53	3.307 2.339	-524.23 -101.84	0.0535739 0.0867590
276	36.43841 18.29455	36.75 30.18	3.000 2.335	-226.57 -62.77	0.1091270 0.1637101
278	30.88851 23.36411	31.57 30.02	2.535 2.334	-12.56 -8.87	1.4598497 1.5278526
278.246	27.22756	0.00	2.388	-0.00	

0.10 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) /V DEG. R
* 97.846	81.65039	204.70	17.801	-181272.85	0.0019883
100	81.30265	207.05	16.934	-176007.87	0.0019758
105	80.50671	209.25	15.554	-164422.59	0.0019629
*107.647	80.08046	209.10	15.053	-158632.69	0.0019633
*107.647	0.00277	23.40	2.157	-0.10	0.0093148
110	0.00271	23.91	2.157	-0.10	0.0091136
115	0.00259	25.00	2.157	-0.10	0.0087140
120	0.00249	26.09	2.158	-0.10	0.0083484
125	0.00239	27.17	2.158	-0.10	0.0080124
130	0.00229	28.26	2.158	-0.10	0.0077027
135	0.00221	29.35	2.158	-0.10	0.0074161
140	0.00213	30.43	2.158	-0.10	0.0071503
145	0.00206	31.52	2.159	-0.10	0.0069029
150	0.00199	32.61	2.159	-0.10	0.0066721
155	0.00192	33.69	2.159	-0.10	0.0064564
160	0.00186	34.78	2.159	-0.10	0.0062541
165	0.00181	35.87	2.159	-0.10	0.0060642
170	0.00175	36.96	2.159	-0.10	0.0058856
175	0.00170	38.04	2.159	-0.10	0.0057171
180	0.00166	39.13	2.159	-0.10	0.0055581
185	0.00161	40.22	2.159	-0.10	0.0054077
190	0.00157	41.30	2.159	-0.10	0.0052652
195	0.00153	42.39	2.159	-0.10	0.0051300
200	0.00149	43.48	2.159	-0.10	0.0050017
205	0.00145	44.57	2.159	-0.10	0.0048796
210	0.00142	45.65	2.159	-0.10	0.0047633
215	0.00139	46.74	2.159	-0.10	0.0046524
220	0.00136	47.83	2.159	-0.10	0.0045466
225	0.00133	48.92	2.159	-0.10	0.0044455
230	0.00130	50.00	2.159	-0.10	0.0043488
235	0.00127	51.09	2.159	-0.10	0.0042562
240	0.00124	52.18	2.159	-0.10	0.0041675
245	0.00122	53.27	2.159	-0.10	0.0040824
250	0.00119	54.36	2.159	-0.10	0.0040007
255	0.00117	55.44	2.159	-0.10	0.0039222
260	0.00115	56.53	2.159	-0.10	0.0038468
265	0.00113	57.62	2.159	-0.10	0.0037742
270	0.00110	58.71	2.159	-0.10	0.0037042
275	0.00108	59.79	2.159	-0.10	0.0036369
280	0.00106	60.88	2.159	-0.10	0.0035719
285	0.00105	61.97	2.159	-0.10	0.0035092
290	0.00103	63.06	2.159	-0.10	0.0034487
295	0.00101	64.15	2.159	-0.10	0.0033902
300	0.00099	65.24	2.159	-0.10	0.0033337
310	0.00096	67.41	2.158	-0.10	0.0032261
320	0.00093	69.59	2.158	-0.10	0.0031253
330	0.00090	71.77	2.158	-0.10	0.0030306
340	0.00088	73.95	2.158	-0.10	0.0029414
350	0.00085	76.14	2.157	-0.10	0.0028573
360	0.00083	78.32	2.157	-0.10	0.0027780
370	0.00081	80.51	2.157	-0.10	0.0027029
380	0.00078	82.70	2.156	-0.10	0.0026317
390	0.00076	84.99	2.156	-0.10	0.0025642
400	0.00075	87.09	2.155	-0.10	0.0025001
410	0.00073	89.29	2.154	-0.10	0.0024391
420	0.00071	91.50	2.153	-0.10	0.0023811
430	0.00069	93.71	2.152	-0.10	0.0023257
440	0.00068	95.93	2.151	-0.10	0.0022728
450	0.00066	98.15	2.150	-0.10	0.0022223
460	0.00065	100.38	2.148	-0.10	0.0021740
470	0.00063	102.62	2.146	-0.10	0.0021277
480	0.00062	104.86	2.145	-0.10	0.0020834
490	0.00061	107.12	2.143	-0.10	0.0020409
500	0.00060	109.38	2.141	-0.10	0.0020001
510	0.00058	111.65	2.138	-0.10	0.0019608
520	0.00057	113.93	2.136	-0.10	0.0019231
530	0.00056	116.22	2.134	-0.10	0.0018868
540	0.00055	118.52	2.131	-0.10	0.0018519
550	0.00054	120.83	2.128	-0.10	0.0018182
560	0.00053	123.15	2.125	-0.10	0.0017857
570	0.00052	125.49	2.122	-0.10	0.0017544
580	0.00051	127.83	2.119	-0.10	0.0017242
590	0.00051	130.19	2.115	-0.10	0.0016949
600	0.00050	132.55	2.112	-0.10	0.0016667

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

0.50 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 97.847	81.65047	204.70	17.800	-181273.79	0.0019882
100	81.30284	207.05	16.934	-176010.34	0.0019757
105	80.50690	209.25	15.554	-164425.28	0.0019628
110	79.72030	208.44	14.693	-153678.14	0.0019670
115	78.93716	205.90	14.110	-143684.41	0.0019836
120	78.15338	202.43	13.680	-134358.96	0.0020092
*120.395	78.09136	202.13	13.650	-133648.60	0.0020116
*120.395	0.01242	26.13	2.156	-0.50	0.0093806
125	0.01196	27.13	2.156	-0.50	0.0090626
130	0.01149	28.22	2.157	-0.50	0.0077445
135	0.01106	29.31	2.157	-0.50	0.0074513
140	0.01067	30.40	2.158	-0.50	0.0071801
145	0.01030	31.49	2.158	-0.50	0.0069284
150	0.00995	32.57	2.158	-0.50	0.0066941
155	0.00963	33.66	2.158	-0.50	0.0064754
160	0.00933	34.75	2.159	-0.50	0.0062707
165	0.00905	35.84	2.159	-0.50	0.0060788
170	0.00878	36.92	2.159	-0.50	0.0058984
175	0.00853	38.01	2.159	-0.50	0.0057285
180	0.00829	39.10	2.159	-0.50	0.0055682
185	0.00806	40.19	2.159	-0.50	0.0054167
190	0.00785	41.28	2.159	-0.50	0.0052733
195	0.00765	42.37	2.159	-0.50	0.0051374
200	0.00746	43.45	2.159	-0.50	0.0050083
205	0.00728	44.54	2.159	-0.50	0.0048856
210	0.00710	45.63	2.159	-0.50	0.0047688
215	0.00694	46.72	2.159	-0.50	0.0046574
220	0.00678	47.81	2.159	-0.50	0.0045512
225	0.00663	48.89	2.159	-0.50	0.0044497
230	0.00648	49.98	2.159	-0.50	0.0043527
235	0.00635	51.07	2.159	-0.50	0.0042598
240	0.00621	52.16	2.159	-0.50	0.0041708
245	0.00609	53.25	2.159	-0.50	0.0040854
250	0.00596	54.34	2.159	-0.50	0.0040035
255	0.00585	55.42	2.159	-0.50	0.0039249
260	0.00573	56.51	2.159	-0.50	0.0038492
265	0.00563	57.60	2.159	-0.50	0.0037764
270	0.00552	58.69	2.159	-0.50	0.0037064
275	0.00542	59.78	2.159	-0.50	0.0036389
280	0.00532	60.87	2.159	-0.50	0.0035738
285	0.00523	61.95	2.159	-0.50	0.0035110
290	0.00514	63.04	2.159	-0.50	0.0034503
295	0.00505	64.13	2.159	-0.50	0.0033918
300	0.00497	65.22	2.159	-0.50	0.0033351
310	0.00481	67.40	2.159	-0.50	0.0032274
320	0.00466	69.58	2.158	-0.50	0.0031264
330	0.00452	71.76	2.158	-0.50	0.0030316
340	0.00439	73.94	2.158	-0.50	0.0029423
350	0.00426	76.13	2.158	-0.50	0.0028587
360	0.00414	78.31	2.157	-0.50	0.0027767
370	0.00403	80.50	2.157	-0.50	0.0027035
380	0.00392	82.69	2.156	-0.50	0.0026323
390	0.00382	84.88	2.156	-0.50	0.0025648
400	0.00373	87.08	2.155	-0.50	0.0025006
410	0.00364	89.28	2.154	-0.50	0.0024396
420	0.00355	91.49	2.153	-0.50	0.0023815
430	0.00347	93.70	2.152	-0.50	0.0023261
440	0.00339	95.92	2.151	-0.50	0.0022732
450	0.00331	98.14	2.150	-0.50	0.0022226
460	0.00324	100.38	2.148	-0.50	0.0021743
470	0.00317	102.61	2.147	-0.50	0.0021290
480	0.00311	104.86	2.145	-0.50	0.0020837
490	0.00304	107.11	2.143	-0.50	0.0020411
500	0.00298	109.37	2.141	-0.50	0.0020003
510	0.00292	111.65	2.139	-0.50	0.0019610
520	0.00287	113.93	2.136	-0.50	0.0019233
530	0.00281	116.22	2.134	-0.50	0.0018870
540	0.00276	118.52	2.131	-0.50	0.0018521
550	0.00271	120.83	2.128	-0.50	0.0018184
560	0.00266	123.15	2.125	-0.50	0.0017859
570	0.00262	125.48	2.122	-0.50	0.0017545
580	0.00257	127.83	2.119	-0.50	0.0017243
590	0.00253	130.18	2.115	-0.50	0.0016951
600	0.00248	132.55	2.112	-0.50	0.0016668

\* INDICATES TWO PHASE BOUNDARY

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1 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DI/DV) BTU/LB	V(DP/DU) PSIA-CU FT/RTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 97.848	81.65058	204.71	17.800	-181274.96	0.0019882
100	81.30307	207.05	16.933	-176013.42	0.0019757
105	80.50715	209.26	15.554	-164428.64	0.0019628
110	79.72056	208.44	14.693	-153681.71	0.0019670
115	78.93743	205.90	14.110	-143688.15	0.0019835
120	78.15367	202.43	13.680	-134362.83	0.0020092
125	77.36617	198.51	13.335	-125629.04	0.0020418
*126.976	77.05384	196.90	13.213	-122326.27	0.0020562
*126.976	0.02359	27.51	2.155	-1.00	0.0079929
130	0.02304	28.17	2.155	-1.00	0.0077475
135	0.02217	29.26	2.156	-1.00	0.0074959
140	0.02137	30.35	2.157	-1.00	0.0072178
145	0.02063	31.44	2.157	-1.00	0.0069606
150	0.01993	32.53	2.158	-1.00	0.0067218
155	0.01929	33.62	2.158	-1.00	0.0064994
160	0.01858	34.71	2.158	-1.00	0.0062917
165	0.01811	35.80	2.159	-1.00	0.0060972
170	0.01757	36.89	2.159	-1.00	0.0059146
175	0.01707	37.98	2.159	-1.00	0.0057428
180	0.01659	39.06	2.159	-1.00	0.0055810
185	0.01614	40.15	2.159	-1.00	0.0054281
190	0.01571	41.24	2.159	-1.00	0.0052836
195	0.01531	42.33	2.159	-1.00	0.0051466
200	0.01493	43.42	2.159	-1.00	0.0050166
205	0.01456	44.51	2.159	-1.00	0.0048931
210	0.01421	45.60	2.159	-1.00	0.0047756
215	0.01388	46.69	2.159	-1.00	0.0046637
220	0.01356	47.78	2.159	-1.00	0.0045565
225	0.01326	48.87	2.159	-1.00	0.0044550
230	0.01297	49.96	2.159	-1.00	0.0043575
235	0.01270	51.04	2.159	-1.00	0.0042642
240	0.01243	52.13	2.159	-1.00	0.0041749
245	0.01218	53.22	2.159	-1.00	0.0040893
250	0.01193	54.31	2.159	-1.00	0.0040071
255	0.01170	55.40	2.159	-1.00	0.0039281
260	0.01148	56.49	2.159	-1.00	0.0038523
265	0.01126	57.58	2.159	-1.00	0.0037793
270	0.01105	58.67	2.159	-1.00	0.0037090
275	0.01085	59.76	2.159	-1.00	0.0036413
280	0.01065	60.85	2.159	-1.00	0.0035761
285	0.01047	61.93	2.159	-1.00	0.0035131
290	0.01029	63.02	2.159	-1.00	0.0034524
295	0.01011	64.11	2.159	-1.00	0.0033937
300	0.00994	65.20	2.159	-1.00	0.0033370
310	0.00962	67.38	2.159	-1.00	0.0032290
320	0.00932	69.56	2.159	-1.00	0.0031279
330	0.00904	71.74	2.158	-1.00	0.0030329
340	0.00877	73.93	2.158	-1.00	0.0029435
350	0.00852	76.11	2.158	-1.00	0.0028592
360	0.00828	78.30	2.157	-1.00	0.0027796
370	0.00806	80.49	2.157	-1.00	0.0027044
380	0.00785	82.68	2.157	-1.00	0.0026331
390	0.00765	84.87	2.156	-1.00	0.0025655
400	0.00745	87.07	2.155	-1.00	0.0025013
410	0.00727	89.27	2.154	-1.00	0.0024402
420	0.00710	91.48	2.153	-1.00	0.0023820
430	0.00693	93.69	2.152	-1.00	0.0023266
440	0.00678	95.91	2.151	-1.00	0.0022736
450	0.00663	98.14	2.150	-1.00	0.0022230
460	0.00648	100.37	2.149	-1.00	0.0021747
470	0.00634	102.60	2.147	-1.00	0.0021284
480	0.00621	104.85	2.145	-1.00	0.0020840
490	0.00609	107.10	2.143	-1.00	0.0020414
500	0.00596	109.37	2.141	-1.00	0.0020005
510	0.00585	111.64	2.139	-1.00	0.0019613
520	0.00573	113.92	2.136	-1.00	0.0019235
530	0.00563	116.21	2.134	-1.00	0.0018872
540	0.00552	118.51	2.131	-1.00	0.0018523
550	0.00542	120.82	2.128	-1.00	0.0018186
560	0.00532	123.14	2.125	-1.00	0.0017861
570	0.00523	125.48	2.122	-1.00	0.0017547
580	0.00514	127.82	2.119	-1.00	0.0017244
590	0.00505	130.18	2.115	-1.00	0.0016952
600	0.00497	132.55	2.112	-1.00	0.0016669

\* INDICATES TWO PHASE BOUNDARY

5 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) T	(DV/DT) / V P
* 97.853	81.65146	204.75	17.794	-181284.34	0.0019879
100	81.30492	207.09	16.931	-176038.09	0.0019754
105	80.50911	209.29	15.552	-164455.51	0.0019625
110	79.72263	208.48	14.691	-153710.29	0.0019666
115	78.93963	205.93	14.108	-143718.07	0.0019832
120	78.15600	202.47	13.679	-134393.81	0.0020088
125	77.36983	198.55	13.334	-125060.89	0.0020413
130	76.57603	194.44	13.036	-117452.86	0.0020794
135	75.77601	190.29	12.760	-109712.81	0.0021223
140	74.96748	186.14	12.493	-102392.01	0.0021694
145	74.14933	182.02	12.229	-95448.62	0.0022207
*145.827	74.01293	181.34	12.185	-94333.35	0.0022296
*145.827	0.10380	31.25	2.151	-4.92	0.0071852
150	0.10078	32.17	2.153	-4.93	0.0069548
155	0.09740	33.27	2.154	-4.94	0.0067001
160	0.09425	34.38	2.156	-4.94	0.0064658
165	0.09130	35.48	2.157	-4.95	0.0062492
170	0.08853	36.58	2.158	-4.95	0.0060482
175	0.08594	37.68	2.158	-4.96	0.0058608
180	0.08349	38.77	2.159	-4.96	0.0056857
185	0.08119	39.87	2.159	-4.96	0.0055215
190	0.07901	40.97	2.160	-4.97	0.0053672
195	0.07694	42.07	2.160	-4.97	0.0052218
200	0.07499	43.16	2.161	-4.97	0.0050846
205	0.07313	44.26	2.161	-4.97	0.0049547
210	0.07136	45.36	2.161	-4.97	0.0048316
215	0.06968	46.45	2.161	-4.98	0.0047147
220	0.06807	47.55	2.161	-4.98	0.0046035
225	0.06654	48.64	2.161	-4.98	0.0044977
230	0.06508	49.74	2.161	-4.98	0.0043967
235	0.06368	50.83	2.161	-4.98	0.0043004
240	0.06234	51.93	2.161	-4.98	0.0042083
245	0.06105	53.02	2.161	-4.98	0.0041201
250	0.05982	54.12	2.161	-4.98	0.0040357
255	0.05864	55.21	2.161	-4.99	0.0039547
260	0.05750	56.30	2.161	-4.99	0.0038770
265	0.05641	57.40	2.161	-4.99	0.0038023
270	0.05536	58.49	2.161	-4.99	0.0037305
275	0.05434	59.58	2.161	-4.99	0.0036614
280	0.05337	60.68	2.161	-4.99	0.0035949
285	0.05242	61.77	2.161	-4.99	0.0035307
290	0.05152	62.86	2.161	-4.99	0.0034689
295	0.05064	63.96	2.161	-4.99	0.0034092
300	0.04979	65.05	2.161	-4.99	0.0033515
310	0.04817	67.24	2.161	-4.99	0.0032419
320	0.04666	69.43	2.161	-4.99	0.0031394
330	0.04524	71.61	2.160	-4.99	0.0030432
340	0.04391	73.80	2.160	-4.99	0.0029527
350	0.04265	75.99	2.160	-4.99	0.0028675
360	0.04146	78.19	2.159	-4.99	0.0027871
370	0.04033	80.38	2.159	-5.00	0.0027112
380	0.03927	82.58	2.158	-5.00	0.0026393
390	0.03826	84.78	2.157	-5.00	0.0025711
400	0.03730	86.98	2.157	-5.00	0.0025064
410	0.03639	89.19	2.156	-5.00	0.0024448
420	0.03552	91.40	2.155	-5.00	0.0023863
430	0.03469	93.61	2.154	-5.00	0.0023304
440	0.03390	95.84	2.152	-5.00	0.0022772
450	0.03315	98.06	2.151	-5.00	0.0022263
460	0.03243	100.30	2.150	-5.00	0.0021777
470	0.03173	102.54	2.148	-5.00	0.0021311
480	0.03107	104.79	2.146	-5.00	0.0020865
490	0.03044	107.05	2.144	-5.00	0.0020438
500	0.02983	109.31	2.142	-5.00	0.0020027
510	0.02924	111.59	2.140	-5.00	0.0019633
520	0.02868	113.87	2.137	-5.00	0.0019254
530	0.02814	116.16	2.135	-5.00	0.0018890
540	0.02762	118.47	2.132	-5.00	0.0018539
550	0.02711	120.78	2.129	-5.00	0.0018201
560	0.02663	123.10	2.126	-5.00	0.0017875
570	0.02616	125.44	2.123	-5.00	0.0017560
580	0.02571	127.79	2.120	-5.00	0.0017256
590	0.02527	130.15	2.116	-5.00	0.0016963
600	0.02485	132.52	2.112	-5.00	0.0016680

\* INDICATES TWO PHASE BOUNDARY

THEMODYNAMIC PROPERTIES OF OXYGEN

10 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(OP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) /V DEG. R
* 97.860	81.65256	204.80	17.786	-181296.08	0.0019874
100	81.30722	207.13	16.927	-176068.92	0.0019750
105	80.51155	209.33	15.549	-164489.10	0.0019620
110	79.72523	208.52	14.689	-153746.02	0.0019662
115	78.94238	205.98	14.107	-143755.47	0.0019827
120	78.15890	202.51	13.678	-134432.54	0.0020083
125	77.37191	198.59	13.333	-125700.70	0.0020408
130	76.57929	194.49	13.035	-117493.58	0.0020789
135	75.77946	190.33	12.759	-109754.31	0.0021216
140	74.97114	186.19	12.493	-102434.22	0.0021687
145	74.15321	182.07	12.228	-95491.50	0.0022200
150	73.32462	177.97	11.962	-88890.15	0.0022756
155	72.48425	173.87	11.692	-82599.13	0.0023361
*155.997	72.31505	173.05	11.638	-81378.82	0.0023488
*155.997	0.19600	33.05	2.150	-9.74	0.0069181
160	0.19073	33.95	2.152	-9.76	0.0067018
165	0.18456	35.07	2.154	-9.79	0.0064536
170	0.17891	36.18	2.156	-9.81	0.0062264
175	0.17342	37.29	2.158	-9.82	0.0060173
180	0.16836	38.41	2.159	-9.84	0.0058238
185	0.16360	39.52	2.160	-9.85	0.0056441
190	0.15912	40.62	2.161	-9.86	0.0054765
195	0.15488	41.73	2.161	-9.87	0.0053198
200	0.15087	42.84	2.162	-9.88	0.0051726
205	0.14707	43.94	2.162	-9.89	0.0050342
210	0.14346	45.05	2.163	-9.90	0.0049037
215	0.14003	46.15	2.163	-9.90	0.0047802
220	0.13677	47.26	2.163	-9.91	0.0046633
225	0.13365	48.36	2.164	-9.92	0.0045524
230	0.13068	49.46	2.164	-9.92	0.0044469
235	0.12784	50.57	2.164	-9.93	0.0043465
240	0.12512	51.67	2.164	-9.93	0.0042508
245	0.12252	52.77	2.164	-9.93	0.0041594
250	0.12002	53.87	2.164	-9.94	0.0040720
255	0.11763	54.97	2.164	-9.94	0.0039884
260	0.11533	56.07	2.164	-9.94	0.0039083
265	0.11312	57.17	2.164	-9.95	0.0038314
270	0.11099	58.27	2.164	-9.95	0.0037577
275	0.10894	59.37	2.164	-9.95	0.0036868
280	0.10697	60.47	2.164	-9.96	0.0036186
285	0.10507	61.57	2.164	-9.96	0.0035529
290	0.10324	62.67	2.164	-9.96	0.0034897
295	0.10147	63.77	2.164	-9.96	0.0034287
300	0.09976	64.86	2.163	-9.96	0.0033699
310	0.09651	67.06	2.163	-9.97	0.0032582
320	0.09346	69.26	2.163	-9.97	0.0031539
330	0.09061	71.45	2.163	-9.97	0.0030561
340	0.08792	73.65	2.162	-9.98	0.0029643
350	0.08539	75.85	2.162	-9.98	0.0028779
360	0.08300	78.05	2.161	-9.98	0.0027965
370	0.08074	80.25	2.161	-9.98	0.0027197
380	0.07861	82.45	2.160	-9.98	0.0026470
390	0.07658	84.66	2.159	-9.98	0.0025781
400	0.07465	86.87	2.158	-9.99	0.0025127
410	0.07292	89.08	2.157	-9.99	0.0024506
420	0.07108	91.29	2.156	-9.99	0.0023916
430	0.06942	93.52	2.155	-9.99	0.0023353
440	0.06784	95.74	2.154	-9.99	0.0022816
450	0.06633	97.98	2.153	-9.99	0.0022304
460	0.06498	100.21	2.151	-9.99	0.0021815
470	0.06349	102.46	2.149	-9.99	0.0021346
480	0.06217	104.71	2.147	-9.99	0.0020897
490	0.06089	106.97	2.145	-9.99	0.0020467
500	0.05967	109.24	2.143	-9.99	0.0020055
510	0.05850	111.52	2.141	-9.99	0.0019658
520	0.05737	113.81	2.138	-10.00	0.0019278
530	0.05629	116.10	2.136	-10.00	0.0018911
540	0.05524	118.41	2.133	-10.00	0.0018559
550	0.05424	120.73	2.130	-10.00	0.0018219
560	0.05327	123.06	2.127	-10.00	0.0017892
570	0.05233	125.39	2.124	-10.00	0.0017576
580	0.05143	127.74	2.120	-10.00	0.0017272
590	0.05055	130.10	2.117	-10.00	0.0016977
600	0.04971	132.48	2.113	-10.00	0.0016693

\* INDICATES TWO PHASE BOUNDARY

15 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT.	V(DH/OV) BTU/LB	V(DP/OU) PSIA-CU FT/BTU	V(OP/OV) PSIA	(OV/DT) / V DEG. R
* 97.867	81.65365	204.95	17.779	-181307.83	0.0019870
100	81.30953	207.17	16.924	-176099.76	0.0019746
105	80.51400	209.37	15.547	-164522.69	0.0019616
110	79.72782	208.56	14.687	-153781.74	0.0019658
115	78.94512	206.02	14.105	-143792.86	0.0019822
120	78.16181	202.55	13.676	-134471.27	0.0020078
125	77.37499	198.64	13.332	-125740.51	0.0020403
130	76.58255	194.53	13.034	-117534.29	0.0020783
135	75.78291	190.38	12.759	-109799.81	0.0021210
140	74.97490	186.23	12.492	-102476.43	0.0021680
145	74.15710	182.12	12.228	-95534.38	0.0022192
150	73.32874	178.02	11.962	-88933.67	0.0022748
155	72.48864	173.92	11.692	-82643.30	0.0023352
160	71.63557	169.80	11.418	-76636.59	0.0024010
*162.696	71.16973	167.56	11.267	-73507.21	0.0024391
*162.696	0.28433	34.12	2.151	-14.48	0.0068033
165	0.27995	34.65	2.152	-14.51	0.0066757
170	0.27094	35.78	2.155	-14.55	0.0064185
175	0.26253	36.91	2.157	-14.59	0.0061846
180	0.25468	38.03	2.159	-14.63	0.0059706
185	0.24731	39.16	2.160	-14.66	0.0057736
190	0.24038	40.28	2.161	-14.68	0.0055915
195	0.23386	41.40	2.162	-14.71	0.0054223
200	0.22759	42.51	2.163	-14.73	0.0052645
205	0.22186	43.63	2.164	-14.75	0.0051169
210	0.21633	44.74	2.165	-14.76	0.0049783
215	0.21108	45.86	2.165	-14.78	0.0048479
220	0.20609	46.97	2.165	-14.79	0.0047249
225	0.20134	48.08	2.166	-14.81	0.0046086
230	0.19681	49.19	2.166	-14.82	0.0044984
235	0.19248	50.30	2.166	-14.83	0.0043937
240	0.18835	51.41	2.166	-14.84	0.0042942
245	0.18439	52.52	2.166	-14.85	0.0041995
250	0.18060	53.63	2.167	-14.86	0.0041091
255	0.17696	54.73	2.167	-14.87	0.0040227
260	0.17348	55.84	2.167	-14.87	0.0039401
265	0.17013	56.95	2.167	-14.88	0.0038610
270	0.16691	58.05	2.166	-14.89	0.0037852
275	0.16381	59.16	2.166	-14.89	0.0037125
280	0.16082	60.26	2.166	-14.90	0.0036426
285	0.15795	61.37	2.166	-14.90	0.0035754
290	0.15517	62.47	2.166	-14.91	0.0035107
295	0.15250	63.57	2.166	-14.91	0.0034485
300	0.14991	64.68	2.166	-14.92	0.0033884
310	0.14500	66.88	2.166	-14.93	0.0032746
320	0.14041	69.09	2.165	-14.93	0.0031685
330	0.13609	71.29	2.165	-14.94	0.0030691
340	0.13204	73.50	2.164	-14.94	0.0029760
350	0.12823	75.70	2.164	-14.95	0.0028884
360	0.12463	77.91	2.163	-14.95	0.0028060
370	0.12123	80.12	2.163	-14.96	0.0027282
380	0.11801	82.32	2.162	-14.96	0.0026547
390	0.11496	84.54	2.161	-14.96	0.0025851
400	0.11206	86.75	2.160	-14.97	0.0025191
410	0.10931	88.97	2.159	-14.97	0.0024565
420	0.10659	91.19	2.158	-14.97	0.0023969
430	0.10419	93.42	2.157	-14.98	0.0023402
440	0.10181	95.65	2.156	-14.98	0.0022861
450	0.09953	97.89	2.154	-14.98	0.0022345
460	0.09736	100.13	2.152	-14.98	0.0021852
470	0.09528	102.38	2.151	-14.98	0.0021381
480	0.09328	104.64	2.149	-14.98	0.0020929
490	0.09137	106.90	2.147	-14.99	0.0020497
500	0.08954	109.17	2.145	-14.99	0.0020082
510	0.08777	111.46	2.142	-14.99	0.0019684
520	0.08608	113.75	2.140	-14.99	0.0019301
530	0.08445	116.05	2.137	-14.99	0.0018933
540	0.08288	118.36	2.134	-14.99	0.0018579
550	0.08137	120.68	2.131	-14.99	0.0018238
560	0.07991	123.01	2.128	-14.99	0.0017909
570	0.07850	125.35	2.125	-14.99	0.0017592
580	0.07715	127.70	2.121	-14.99	0.0017287
590	0.07584	130.06	2.118	-14.99	0.0016991
600	0.07457	132.44	2.114	-15.00	0.0016706

\* INDICATES TWO PHASE BOUNDARY

110

THERMODYNAMIC PROPERTIES OF OXYGEN

14.696 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEC. R
* 97.867	81.65359	204.85	17.780	-181307.12	0.0019870
100	81.30939	207.17	16.924	-176097.88	0.0019746
105	80.51385	209.37	15.547	-164520.65	0.0019617
110	79.72766	208.56	14.687	-153779.57	0.0019658
115	78.94495	206.02	14.105	-143790.59	0.0019673
120	78.16163	202.55	13.676	-134468.92	0.0020078
125	77.37480	198.63	13.333	-125738.09	0.0020403
130	76.58235	194.53	13.034	-117531.81	0.0020783
135	75.78270	190.37	12.759	-109793.29	0.0021210
140	74.97458	186.23	12.492	-102473.87	0.0021681
145	74.15686	182.11	12.228	-95531.77	0.0022193
150	73.32849	178.02	11.962	-88931.02	0.0022748
155	72.48837	173.92	11.692	-82640.61	0.0023352
160	71.63529	169.80	11.418	-76633.87	0.0024011
*162.343	71.23070	167.85	11.287	-73910.14	0.0024340
*162.343	0.27903	34.07	2.151	-14.20	0.0068092
165	0.27408	34.67	2.152	-14.22	0.0066617
170	0.26528	35.80	2.155	-14.27	0.0064064
175	0.25707	36.93	2.157	-14.30	0.0061741
180	0.24939	38.05	2.159	-14.34	0.0059614
185	0.24218	39.18	2.160	-14.37	0.0057655
190	0.23541	40.30	2.161	-14.39	0.0055843
195	0.22902	41.42	2.162	-14.41	0.0054159
200	0.22299	42.53	2.163	-14.44	0.0052588
205	0.21729	43.65	2.164	-14.45	0.0051118
210	0.21188	44.76	2.164	-14.47	0.0049737
215	0.20674	45.88	2.165	-14.49	0.0048438
220	0.20186	46.99	2.165	-14.50	0.0047211
225	0.19721	48.10	2.166	-14.51	0.0046051
230	0.19277	49.21	2.166	-14.52	0.0044952
235	0.18854	50.32	2.166	-14.53	0.0043908
240	0.18449	51.43	2.166	-14.54	0.0042916
245	0.18062	52.53	2.166	-14.55	0.0041970
250	0.17690	53.64	2.166	-14.56	0.0041058
255	0.17335	54.75	2.166	-14.57	0.0040206
260	0.16993	55.85	2.166	-14.58	0.0039382
265	0.16665	56.96	2.166	-14.58	0.0038592
270	0.16350	58.06	2.166	-14.59	0.0037835
275	0.16046	59.17	2.166	-14.59	0.0037109
280	0.15754	60.27	2.166	-14.60	0.0036411
285	0.15473	61.38	2.166	-14.60	0.0035740
290	0.15201	62.48	2.166	-14.61	0.0035095
295	0.14939	63.58	2.166	-14.61	0.0034473
300	0.14686	64.69	2.166	-14.62	0.0033873
310	0.14205	66.89	2.165	-14.62	0.0032736
320	0.13755	69.10	2.165	-14.63	0.0031676
330	0.13333	71.30	2.165	-14.64	0.0030683
340	0.12936	73.51	2.164	-14.64	0.0029753
350	0.12562	75.71	2.164	-14.65	0.0028878
360	0.12210	77.92	2.163	-14.65	0.0028054
370	0.11876	80.12	2.163	-14.66	0.0027277
380	0.11561	82.33	2.162	-14.66	0.0026542
390	0.11262	84.54	2.161	-14.66	0.0025847
400	0.10979	86.76	2.160	-14.66	0.0025187
410	0.10709	88.98	2.159	-14.67	0.0024561
420	0.10452	91.20	2.158	-14.67	0.0023966
430	0.10208	93.42	2.157	-14.67	0.0023399
440	0.09974	95.66	2.155	-14.67	0.0022859
450	0.09751	97.99	2.154	-14.68	0.0022343
460	0.09538	100.14	2.152	-14.68	0.0021850
470	0.09334	102.38	2.151	-14.68	0.0021379
480	0.09139	104.64	2.149	-14.68	0.0020928
490	0.08952	106.91	2.147	-14.68	0.0020495
500	0.08772	109.18	2.144	-14.68	0.0020080
510	0.08599	111.46	2.142	-14.68	0.0019682
520	0.08433	113.75	2.140	-14.69	0.0019300
530	0.08274	116.05	2.137	-14.69	0.0018932
540	0.08120	118.36	2.134	-14.69	0.0018578
550	0.07972	120.68	2.131	-14.69	0.0018237
560	0.07829	123.01	2.128	-14.69	0.0017908
570	0.07691	125.35	2.125	-14.69	0.0017591
580	0.07558	127.70	2.121	-14.69	0.0017286
590	0.07430	130.06	2.118	-14.69	0.0016990
600	0.07306	132.44	2.114	-14.69	0.0016705

\* INDICATES TWO PHASE BOUNDARY



THERMODYNAMIC PROPERTIES OF OXYGEN

25 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(OP/DU) PSIA-CU FT/BTU	V(CP/DV) PSIA	(DV/DT) / V P DEG. R
* 97.882	81.65585	204.95	17.765	-181331.39	0.0019862
100	81.31415	207.25	16.917	-176161.45	0.0019738
105	80.51989	209.46	15.542	-164589.89	0.0019608
110	79.73300	208.65	14.683	-153853.21	0.0019649
115	78.95061	206.11	14.102	-143867.66	0.0019813
120	78.16762	202.64	13.674	-134548.73	0.0020068
125	77.38114	198.72	13.331	-125820.12	0.0020392
130	76.58907	194.62	13.033	-117615.71	0.0020771
135	75.78981	190.47	12.758	-109878.80	0.0021198
140	74.98211	186.33	12.492	-102560.83	0.0021667
145	74.16486	182.21	12.228	-95620.11	0.0022177
150	73.33698	178.12	11.962	-89020.68	0.0022732
155	72.49740	174.03	11.693	-82731.60	0.0023334
160	71.64492	169.91	11.418	-76726.20	0.0023990
165	70.77814	165.75	11.139	-70981.66	0.0024709
170	69.89548	161.51	10.855	-65478.57	0.0025501
*172.073	69.52442	159.72	10.736	-63263.82	0.0025855
*172.073	0.45486	35.43	2.153	-23.74	0.0067251
175	0.44610	36.11	2.155	-23.81	0.0065570
180	0.43200	37.27	2.158	-23.92	0.0062937
185	0.41887	38.42	2.160	-24.01	0.0060561
190	0.40660	39.57	2.163	-24.09	0.0058401
195	0.39510	40.71	2.164	-24.16	0.0056424
200	0.38428	41.85	2.166	-24.22	0.0054605
205	0.37409	42.99	2.167	-24.28	0.0052923
210	0.36447	44.13	2.168	-24.33	0.0051360
215	0.35536	45.26	2.169	-24.38	0.0049903
220	0.34672	46.39	2.170	-24.42	0.0048539
225	0.33852	47.52	2.170	-24.46	0.0047259
230	0.33071	48.64	2.171	-24.49	0.0046054
235	0.32328	49.77	2.171	-24.52	0.0044916
240	0.31618	50.89	2.171	-24.55	0.0043841
245	0.30941	52.02	2.171	-24.58	0.0042821
250	0.30293	53.14	2.172	-24.60	0.0041853
255	0.29672	54.26	2.172	-24.63	0.0040932
260	0.29078	55.38	2.172	-24.65	0.0040054
265	0.28507	56.50	2.172	-24.67	0.0039216
270	0.27959	57.61	2.172	-24.68	0.0038416
275	0.27433	58.73	2.172	-24.70	0.0037649
280	0.26926	59.84	2.171	-24.72	0.0036916
285	0.26438	60.96	2.171	-24.73	0.0036212
290	0.25968	62.07	2.171	-24.75	0.0035536
295	0.25515	63.19	2.171	-24.76	0.0034886
300	0.25078	64.30	2.171	-24.77	0.0034261
310	0.24248	66.52	2.170	-24.79	0.0033079
320	0.23472	68.75	2.170	-24.81	0.0031980
330	0.22745	70.97	2.169	-24.83	0.0030955
340	0.22062	73.19	2.169	-24.84	0.0029995
350	0.21420	75.41	2.168	-24.86	0.0029096
360	0.20815	77.63	2.167	-24.87	0.0028250
370	0.20243	79.85	2.167	-24.88	0.0027454
380	0.19702	82.07	2.166	-24.89	0.0026703
390	0.19190	84.30	2.165	-24.90	0.0025993
400	0.18704	86.52	2.164	-24.91	0.0025320
410	0.18242	88.75	2.163	-24.92	0.0024682
420	0.17803	90.99	2.162	-24.92	0.0024076
430	0.17395	93.22	2.160	-24.93	0.0023500
440	0.16985	95.46	2.159	-24.94	0.0022951
450	0.16604	97.71	2.157	-24.94	0.0022428
460	0.16240	99.96	2.155	-24.95	0.0021928
470	0.15892	102.22	2.154	-24.95	0.0021451
480	0.15558	104.48	2.152	-24.96	0.0020994
490	0.15238	106.74	2.149	-24.96	0.0020556
500	0.14931	109.04	2.147	-24.96	0.0020137
510	0.14637	111.33	2.145	-24.97	0.0019735
520	0.14353	113.62	2.142	-24.97	0.0019348
530	0.14081	115.93	2.139	-24.97	0.0018977
540	0.13819	118.25	2.136	-24.97	0.0018619
550	0.13566	120.57	2.133	-24.98	0.0018276
560	0.13323	122.91	2.130	-24.98	0.0017944
570	0.13088	125.25	2.127	-24.98	0.0017625
580	0.12861	127.61	2.123	-24.98	0.0017317
590	0.12642	129.98	2.120	-24.99	0.0017017
600	0.12431	132.36	2.116	-24.99	0.0016732

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

20 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/UTU	V(OP/DV) PSIA	(DV/DT) / V DEG. R
* 97.875	81.65475	204.90	17.772	-181319.60	0.0019866
100	81.31184	207.21	16.920	-176130.60	0.0019742
105	80.51645	209.42	15.544	-164556.29	0.0019612
110	79.73041	208.60	14.685	-153817.47	0.0019653
115	78.94737	206.06	14.104	-143830.26	0.0019918
120	78.16472	202.60	13.675	-134510.00	0.0020073
125	77.37806	198.68	13.332	-125780.32	0.0020397
130	76.58531	194.59	13.033	-117575.00	0.0020777
135	75.78637	190.42	12.758	-109837.31	0.0021204
140	74.97846	186.23	12.492	-102518.64	0.0021673
145	74.16098	182.17	12.228	-95577.25	0.0022185
150	73.33286	178.07	11.962	-88977.18	0.0022740
155	72.49302	173.98	11.692	-82687.45	0.0023343
160	71.64025	169.36	11.418	-76681.40	0.0024000
165	70.77316	165.69	11.139	-70936.19	0.0024720
*167.838	70.27400	163.29	10.978	-67783.56	0.0025161
*167.838	0.37037	34.87	2.152	-19.15	0.0067483
170	0.36505	35.37	2.153	-19.18	0.0066261
175	0.35339	36.51	2.156	-19.26	0.0063640
180	0.34253	37.65	2.158	-19.32	0.0061269
185	0.33238	38.79	2.160	-19.38	0.0059107
190	0.32286	39.92	2.162	-19.43	0.0057125
195	0.31391	41.06	2.163	-19.47	0.0055297
200	0.30548	42.19	2.165	-19.51	0.0053604
205	0.29752	43.31	2.166	-19.55	0.0052028
210	0.28999	44.44	2.166	-19.58	0.0050557
215	0.28285	45.56	2.167	-19.61	0.0049179
220	0.27607	46.68	2.168	-19.63	0.0047884
225	0.26962	47.80	2.168	-19.66	0.0046664
230	0.26348	48.92	2.168	-19.68	0.0045512
235	0.25762	50.04	2.169	-19.70	0.0044421
240	0.25203	51.15	2.169	-19.72	0.0043387
245	0.24668	52.27	2.169	-19.73	0.0042404
250	0.24157	53.38	2.169	-19.75	0.0041468
255	0.23666	54.50	2.169	-19.76	0.0040576
260	0.23196	55.61	2.169	-19.78	0.0039725
265	0.22744	56.72	2.169	-19.79	0.0038911
270	0.22310	57.83	2.169	-19.80	0.0038132
275	0.21893	58.94	2.169	-19.81	0.0037385
280	0.21492	60.05	2.169	-19.82	0.0036669
285	0.21105	61.16	2.169	-19.83	0.0035981
290	0.20732	62.27	2.169	-19.84	0.0035320
295	0.20372	63.38	2.169	-19.85	0.0034684
300	0.20025	64.49	2.168	-19.85	0.0034072
310	0.19366	66.70	2.168	-19.87	0.0032912
320	0.18749	68.92	2.168	-19.88	0.0031832
330	0.18171	71.13	2.167	-19.89	0.0030823
340	0.17628	73.34	2.167	-19.90	0.0029877
350	0.17117	75.56	2.166	-19.91	0.0028990
360	0.16634	77.77	2.165	-19.92	0.0028155
370	0.16179	79.98	2.165	-19.92	0.0027368
380	0.15748	82.20	2.164	-19.93	0.0026625
390	0.15340	84.42	2.163	-19.94	0.0025922
400	0.14952	86.64	2.162	-19.94	0.0025256
410	0.14584	88.86	2.161	-19.95	0.0024623
420	0.14234	91.09	2.160	-19.95	0.0024023
430	0.13900	93.32	2.159	-19.96	0.0023451
440	0.13581	95.56	2.157	-19.96	0.0022906
450	0.13277	97.80	2.156	-19.96	0.0022386
460	0.12987	100.05	2.154	-19.97	0.0021890
470	0.12709	102.30	2.152	-19.97	0.0021416
480	0.12442	104.56	2.150	-19.97	0.0020962
490	0.12187	106.83	2.148	-19.97	0.0020527
500	0.11942	109.11	2.146	-19.98	0.0020109
510	0.11706	111.39	2.143	-19.98	0.0019709
520	0.11480	113.68	2.141	-19.98	0.0019325
530	0.11262	115.99	2.138	-19.98	0.0018955
540	0.11053	118.30	2.135	-19.98	0.0018599
550	0.10851	120.62	2.132	-19.99	0.0018257
560	0.10657	122.96	2.129	-19.99	0.0017927
570	0.10469	125.30	2.126	-19.99	0.0017609
580	0.10288	127.65	2.122	-19.99	0.0017302
590	0.10113	130.02	2.119	-19.99	0.0017005
600	0.09944	132.40	2.115	-19.99	0.0016719

\* INDICATES TWO PHASE BOUNDARY

35 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 97.896	81.65804	205.05	17.750	-181355.02	0.0019853
100	81.31976	207.33	16.910	-176223.15	0.0019731
105	80.52378	209.54	15.536	-164657.09	0.0019600
110	79.73819	208.73	14.679	-153924.67	0.0019640
115	78.95610	206.19	14.099	-143942.47	0.0019804
120	78.17343	202.73	13.671	-134626.18	0.0020058
125	77.38729	198.81	13.329	-125899.73	0.0020381
130	76.59558	194.71	13.031	-117697.11	0.0020760
135	75.79671	190.56	12.756	-109961.76	0.0021185
140	74.98942	186.42	12.491	-102645.21	0.0021653
145	74.17261	182.31	12.228	-95705.81	0.0022163
150	73.34522	178.22	11.962	-89107.67	0.0022715
155	72.50616	174.13	11.693	-82819.86	0.0023316
160	71.65425	170.02	11.419	-76815.76	0.0023970
165	70.78811	165.86	11.140	-71072.57	0.0024687
170	69.90614	161.62	10.857	-65570.87	0.0025476
175	69.00647	157.29	10.568	-60294.30	0.0026353
*178.907	68.28972	153.83	10.340	-56319.19	0.0027109
*178.907	0.62076	36.22	2.156	-32.73	0.0067312
180	0.61623	36.48	2.157	-32.78	0.0066633
185	0.59648	37.67	2.161	-32.98	0.0063749
190	0.57815	38.85	2.164	-33.15	0.0061173
195	0.56106	40.02	2.166	-33.30	0.0058854
200	0.54508	41.19	2.168	-33.44	0.0056749
205	0.53009	42.35	2.170	-33.56	0.0054826
210	0.51599	43.50	2.171	-33.66	0.0053059
215	0.50269	44.66	2.173	-33.76	0.0051426
220	0.49011	45.81	2.174	-33.84	0.0049912
225	0.47820	46.95	2.174	-33.92	0.0048501
230	0.46690	48.10	2.175	-33.99	0.0047182
235	0.45616	49.24	2.176	-34.05	0.0045945
240	0.44593	50.38	2.176	-34.11	0.0044781
245	0.43618	51.51	2.176	-34.16	0.0043683
250	0.42687	52.65	2.177	-34.21	0.0042646
255	0.41796	53.78	2.177	-34.26	0.0041662
260	0.40944	54.92	2.177	-34.30	0.0040729
265	0.40128	56.05	2.177	-34.34	0.0039841
270	0.39345	57.18	2.177	-34.38	0.0038996
275	0.38593	58.30	2.177	-34.41	0.0038189
280	0.37870	59.43	2.176	-34.44	0.0037418
285	0.37175	60.56	2.176	-34.47	0.0036680
290	0.36506	61.68	2.176	-34.50	0.0035974
295	0.35862	62.80	2.176	-34.52	0.0035296
300	0.35240	63.93	2.176	-34.55	0.0034645
310	0.34061	66.17	2.175	-34.59	0.0033418
320	0.32961	68.41	2.175	-34.63	0.0032280
330	0.31931	70.65	2.174	-34.66	0.0031222
340	0.30965	72.88	2.173	-34.69	0.0030234
350	0.30057	75.12	2.172	-34.72	0.0029310
360	0.29201	77.35	2.172	-34.75	0.0028443
370	0.28394	79.59	2.171	-34.77	0.0027628
380	0.27631	81.82	2.170	-34.79	0.0026860
390	0.26909	84.06	2.169	-34.81	0.0026135
400	0.26224	86.30	2.168	-34.82	0.0025449
410	0.25573	88.54	2.166	-34.84	0.0024800
420	0.24954	90.78	2.165	-34.85	0.0024184
430	0.24365	93.03	2.163	-34.86	0.0023598
440	0.23804	95.28	2.162	-34.88	0.0023041
450	0.23268	97.53	2.160	-34.89	0.0022510
460	0.22756	99.79	2.158	-34.90	0.0022004
470	0.22266	102.06	2.156	-34.90	0.0021521
480	0.21797	104.33	2.154	-34.91	0.0021058
490	0.21347	106.61	2.152	-34.92	0.0020616
500	0.20916	108.90	2.150	-34.93	0.0020192
510	0.20502	111.20	2.147	-34.93	0.0019785
520	0.20105	113.50	2.144	-34.94	0.0019395
530	0.19722	115.81	2.142	-34.95	0.0019020
540	0.19354	118.13	2.139	-34.95	0.0018660
550	0.19000	120.47	2.136	-34.96	0.0018313
560	0.18658	122.81	2.132	-34.96	0.0017979
570	0.18329	125.16	2.129	-34.96	0.0017657
580	0.18011	127.52	2.125	-34.97	0.0017347
590	0.17703	129.90	2.122	-34.97	0.0017047
600	0.17407	132.28	2.118	-34.97	0.0016758

\* INDICATES TWO PHASE BOUNDARY

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30 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

30 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(OP/DV) PSIA	(DV/DT) /V DEG. R
* 97.889	81.65694	205.00	17.758	-181343.20	0.0019857
100	81.31646	207.29	16.913	-176192.30	0.0019734
105	80.52134	209.50	15.539	-164623.49	0.0019604
110	79.73559	208.69	14.681	-153888.94	0.0019645
115	79.95335	206.15	14.100	-143905.07	0.0019808
120	78.17053	202.68	13.673	-134587.45	0.0020063
125	77.38421	198.77	13.330	-125859.92	0.0020387
130	76.59232	194.67	13.032	-117656.41	0.0020766
135	75.79326	190.51	12.757	-109920.28	0.0021191
140	74.98577	186.37	12.491	-102603.03	0.0021660
145	74.16873	182.26	12.228	-95662.96	0.0022170
150	73.34110	178.17	11.962	-89064.18	0.0022724
155	72.50178	174.08	11.693	-82775.73	0.0023325
160	71.64958	169.96	11.419	-76770.99	0.0023980
165	70.78313	165.80	11.140	-71027.12	0.0024678
170	69.90081	161.57	10.856	-65524.73	0.0025489
175	69.00074	157.23	10.568	-60247.44	0.0026367
*175.706	68.87210	156.61	10.526	-59519.66	0.0026499
*175.706	0.53823	35.87	2.154	-28.27	0.0067214
180	0.52320	36.88	2.157	-28.41	0.0064721
185	0.50688	38.05	2.160	-28.54	0.0062105
190	0.49167	39.21	2.163	-28.67	0.0059748
195	0.47746	40.37	2.165	-28.77	0.0057608
200	0.46414	41.52	2.167	-28.87	0.0055653
205	0.45160	42.67	2.169	-28.95	0.0053855
210	0.43979	43.82	2.170	-29.03	0.0052193
215	0.42863	44.96	2.171	-29.10	0.0050651
220	0.41806	46.10	2.172	-29.16	0.0049215
225	0.40804	47.24	2.172	-29.21	0.0047871
230	0.39852	48.37	2.173	-29.26	0.0046610
235	0.38945	49.50	2.173	-29.31	0.0045424
240	0.38091	50.64	2.174	-29.35	0.0044305
245	0.37257	51.77	2.174	-29.39	0.0043248
250	0.36469	52.89	2.174	-29.43	0.0042245
255	0.35716	54.02	2.174	-29.46	0.0041294
260	0.34994	55.15	2.174	-29.49	0.0040389
265	0.34302	56.27	2.174	-29.52	0.0039526
270	0.33637	57.39	2.174	-29.54	0.0038703
275	0.32999	58.52	2.174	-29.57	0.0037917
280	0.32385	59.64	2.174	-29.59	0.0037165
285	0.31795	60.76	2.174	-29.61	0.0036444
290	0.31226	61.88	2.174	-29.63	0.0035753
295	0.30678	63.00	2.173	-29.65	0.0035090
300	0.30149	64.11	2.173	-29.67	0.0034452
310	0.29146	66.35	2.173	-29.70	0.0033248
320	0.28209	68.58	2.172	-29.73	0.0032130
330	0.27332	70.81	2.172	-29.75	0.0031088
340	0.26508	73.04	2.171	-29.78	0.0030114
350	0.25733	75.26	2.170	-29.80	0.0029202
360	0.25004	77.49	2.170	-29.81	0.0028346
370	0.24315	79.72	2.169	-29.83	0.0027541
380	0.23663	81.95	2.168	-29.84	0.0026781
390	0.23046	84.18	2.167	-29.86	0.0026064
400	0.22461	86.41	2.166	-29.87	0.0025385
410	0.21905	88.65	2.165	-29.88	0.0024741
420	0.21377	90.88	2.163	-29.89	0.0024130
430	0.20873	93.12	2.162	-29.90	0.0023549
440	0.20393	95.37	2.160	-29.91	0.0022996
450	0.19935	97.62	2.159	-29.92	0.0022469
460	0.19497	99.88	2.157	-29.92	0.0021966
470	0.19078	102.14	2.155	-29.93	0.0021486
480	0.18676	104.41	2.153	-29.94	0.0021026
490	0.18292	106.69	2.151	-29.94	0.0020586
500	0.17923	108.97	2.148	-29.95	0.0020164
510	0.17569	111.26	2.146	-29.95	0.0019760
520	0.17228	113.56	2.143	-29.96	0.0019372
530	0.16901	115.87	2.140	-29.96	0.0018999
540	0.16586	118.19	2.138	-29.96	0.0018640
550	0.16282	120.52	2.134	-29.97	0.0018294
560	0.15990	122.86	2.131	-29.97	0.0017962
570	0.15708	125.21	2.128	-29.97	0.0017641
580	0.15436	127.57	2.124	-29.98	0.0017332
590	0.15173	129.94	2.121	-29.98	0.0017033
600	0.14919	132.32	2.117	-29.98	0.0016745

\* INDICATES TWO PHASE BOUNDARY

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40 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(OP/DV) PSIA	(OV/OT) /V P DEG. R
* 97.903	81.65914	205.10	17.743	-181366.86	0.0019849
100	81.32107	207.37	16.906	-176254.01	0.0019727
105	80.52623	209.58	15.534	-164690.70	0.0019596
110	79.74078	208.77	14.677	-153960.41	0.0019636
115	78.95994	206.23	14.097	-143979.87	0.0019799
120	78.17633	202.77	13.670	-134664.90	0.0020053
125	77.39036	198.86	13.328	-125939.53	0.0020376
130	76.59883	194.75	13.030	-117737.81	0.0020754
135	75.80016	190.61	12.756	-110003.24	0.0021179
140	74.99307	186.47	12.491	-102687.39	0.0021646
145	74.17648	182.36	12.227	-95748.64	0.0022155
150	73.34933	178.27	11.962	-89151.15	0.0022707
155	72.51054	174.18	11.693	-82863.97	0.0023307
160	71.65891	170.07	11.419	-76860.53	0.0023960
165	70.79309	165.91	11.141	-71118.00	0.0024676
170	69.91147	161.68	10.857	-65616.99	0.0025464
175	69.01219	157.36	10.569	-60341.15	0.0026339
180	68.09298	152.91	10.277	-55276.83	0.0027316
*181.781	67.76032	151.29	10.171	-53522.22	0.0027693
*181.781	0.70265	36.50	2.158	-37.14	0.0067507
185	0.68777	37.28	2.160	-37.31	0.0065502
190	0.66609	38.48	2.164	-37.54	0.0062683
195	0.64595	39.67	2.167	-37.75	0.0060166
200	0.62717	40.85	2.169	-37.93	0.0057898
205	0.60959	42.02	2.171	-38.09	0.0055340
210	0.59309	43.19	2.173	-38.23	0.0053959
215	0.57756	44.35	2.174	-38.36	0.0052230
220	0.56290	45.51	2.176	-38.47	0.0050632
225	0.54903	46.67	2.177	-38.58	0.0049150
230	0.53589	47.82	2.177	-38.67	0.0047770
235	0.52341	48.97	2.178	-38.75	0.0046479
240	0.51155	50.12	2.178	-38.83	0.0045268
245	0.50024	51.26	2.179	-38.90	0.0044128
250	0.48946	52.41	2.179	-38.97	0.0043054
255	0.47916	53.55	2.179	-39.03	0.0042038
260	0.46930	54.69	2.179	-39.08	0.0041075
265	0.45987	55.82	2.179	-39.13	0.0040162
270	0.45083	56.96	2.179	-39.18	0.0039292
275	0.44215	58.09	2.179	-39.23	0.0038464
280	0.43381	59.22	2.179	-39.27	0.0037674
285	0.42580	60.35	2.179	-39.31	0.0036919
290	0.41808	61.48	2.179	-39.34	0.0036196
295	0.41066	62.61	2.178	-39.38	0.0035504
300	0.40350	63.74	2.178	-39.41	0.0034840
310	0.38993	65.99	2.178	-39.46	0.0033590
320	0.37727	68.24	2.177	-39.51	0.0032432
330	0.36543	70.49	2.176	-39.56	0.0031357
340	0.35433	72.73	2.175	-39.60	0.0030354
350	0.34390	74.97	2.175	-39.64	0.0029418
360	0.33408	77.22	2.174	-39.67	0.0028540
370	0.32481	79.46	2.173	-39.70	0.0027715
380	0.31606	81.70	2.172	-39.72	0.0026939
390	0.30777	83.94	2.171	-39.75	0.0026206
400	0.29992	86.19	2.169	-39.77	0.0025514
410	0.29246	88.43	2.168	-39.79	0.0024859
420	0.28537	90.68	2.167	-39.81	0.0024238
430	0.27862	92.93	2.165	-39.82	0.0023648
440	0.27218	95.19	2.163	-39.84	0.0023086
450	0.26604	97.45	2.162	-39.85	0.0022552
460	0.26018	99.71	2.160	-39.86	0.0022042
470	0.25457	101.98	2.159	-39.88	0.0021556
480	0.24920	104.26	2.156	-39.89	0.0021091
490	0.24405	106.54	2.153	-39.90	0.0020646
500	0.23911	108.83	2.151	-39.91	0.0020219
510	0.23438	111.13	2.148	-39.91	0.0019811
520	0.22982	113.44	2.146	-39.92	0.0019419
530	0.22545	115.75	2.143	-39.93	0.0019042
540	0.22123	118.08	2.140	-39.94	0.0018680
550	0.21718	120.41	2.137	-39.94	0.0018332
560	0.21327	122.76	2.133	-39.95	0.0017997
570	0.20950	125.11	2.130	-39.95	0.0017674
580	0.20586	127.49	2.126	-39.96	0.0017362
590	0.20235	129.85	2.123	-39.96	0.0017062
600	0.19896	132.24	2.119	-39.97	0.0016771

\* INDICATES TWO PHASE BOUNDARY

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45 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 97.910	81.66073	205.15	17.736	-181378.72	0.0019845
100	81.32318	207.41	16.903	-176284.87	0.0019723
105	80.52867	209.63	15.531	-164724.30	0.0019592
110	79.74736	208.82	14.675	-153996.14	0.0019631
115	78.96158	206.28	14.078	-144017.27	0.0019794
120	78.17923	202.81	13.669	-134703.63	0.0020048
125	77.39343	198.90	13.327	-125979.32	0.0020371
130	76.60208	194.80	13.030	-117778.51	0.0020748
135	75.80360	190.65	12.755	-110044.71	0.0021173
140	74.99673	186.51	12.490	-102729.57	0.0021640
145	74.18036	182.41	12.227	-95791.48	0.0022148
150	73.35345	178.32	11.952	-89194.62	0.0022699
155	72.51491	174.23	11.693	-82908.08	0.0023298
160	71.66357	170.13	11.419	-76905.28	0.0023950
165	70.79306	165.97	11.141	-71163.42	0.0024665
170	69.91690	161.74	10.858	-65663.10	0.0025451
175	69.01790	157.42	10.570	-60387.97	0.0026324
180	68.09913	152.97	10.278	-55324.41	0.0027300
*184.397	67.27260	148.95	10.017	-51037.31	0.0028260
*184.397	0.78405	36.74	2.160	-41.48	0.0067777
185	0.78086	36.89	2.160	-41.52	0.0067376
190	0.75559	38.11	2.164	-41.84	0.0064286
195	0.73270	39.31	2.168	-42.11	0.0061551
200	0.71045	40.51	2.170	-42.34	0.0059105
205	0.69015	41.69	2.173	-42.55	0.0056899
210	0.67113	42.87	2.175	-42.73	0.0054895
215	0.65327	44.05	2.176	-42.90	0.0053062
220	0.63643	45.22	2.178	-43.05	0.0051377
225	0.62054	46.38	2.179	-43.18	0.0049820
230	0.60549	47.55	2.180	-43.30	0.0048374
235	0.59122	48.70	2.180	-43.41	0.0047026
240	0.57767	49.86	2.181	-43.51	0.0045766
245	0.56477	51.01	2.181	-43.60	0.0044583
250	0.55247	52.16	2.181	-43.69	0.0043470
255	0.54074	53.31	2.182	-43.76	0.0042421
260	0.52952	54.45	2.182	-43.83	0.0041429
265	0.51879	55.60	2.182	-43.90	0.0040487
270	0.50851	56.74	2.182	-43.96	0.0039593
275	0.49865	57.88	2.182	-44.02	0.0038743
280	0.48918	59.02	2.182	-44.07	0.0037933
285	0.48008	60.15	2.181	-44.12	0.0037160
290	0.47133	61.29	2.181	-44.17	0.0036422
295	0.46291	62.42	2.181	-44.21	0.0035715
300	0.45479	63.55	2.181	-44.25	0.0035037
310	0.43942	65.82	2.180	-44.32	0.0033763
320	0.42508	68.07	2.179	-44.38	0.0032585
330	0.41168	70.33	2.178	-44.44	0.0031492
340	0.39913	72.58	2.178	-44.49	0.0030475
350	0.38733	74.83	2.177	-44.54	0.0029526
360	0.37623	77.08	2.176	-44.58	0.0028637
370	0.36576	79.33	2.175	-44.62	0.0027803
380	0.35588	81.57	2.174	-44.65	0.0027018
390	0.34652	83.82	2.172	-44.68	0.0026278
400	0.33765	86.07	2.171	-44.71	0.0025580
410	0.32923	88.32	2.170	-44.73	0.0024918
420	0.32123	90.58	2.168	-44.75	0.0024292
430	0.31362	92.83	2.167	-44.78	0.0023697
440	0.30636	95.09	2.165	-44.79	0.0023132
450	0.29944	97.36	2.163	-44.81	0.0022593
460	0.29282	99.63	2.161	-44.83	0.0022080
470	0.28650	101.90	2.159	-44.84	0.0021591
480	0.28044	104.18	2.157	-44.86	0.0021123
490	0.27465	106.47	2.155	-44.87	0.0020675
500	0.26908	108.76	2.152	-44.88	0.0020247
510	0.26374	111.07	2.150	-44.89	0.0019836
520	0.25862	113.38	2.147	-44.90	0.0019442
530	0.25368	115.70	2.144	-44.91	0.0019064
540	0.24894	118.02	2.141	-44.92	0.0018700
550	0.24437	120.36	2.138	-44.93	0.0018351
560	0.23997	122.71	2.134	-44.93	0.0018014
570	0.23572	125.07	2.131	-44.94	0.0017690
580	0.23163	127.44	2.127	-44.95	0.0017377
590	0.22767	129.81	2.124	-44.95	0.0017076
600	0.22385	132.20	2.120	-44.96	0.0016784

\* INDICATES TWO PHASE BOUNDARY

THEMODYNAMIC PROPERTIES OF OXYGEN

60 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(OP/DU) PSIA-CU FT/BTU	V(CP/DV) PSIA	(DV/DT) / V DEG. R
* 97.932	81.66353	205.30	17.715	-181414.38	0.0019832
100	81.33030	207.54	16.893	-176377.47	0.0019711
105	80.53601	209.75	15.523	-164825.14	0.0019579
110	79.75113	208.94	14.669	-154103.36	0.0019618
115	78.96980	206.41	14.091	-144129.48	0.0019780
120	78.18794	202.94	13.665	-134819.80	0.0020033
125	77.40264	199.03	13.324	-126098.71	0.0020355
130	76.61193	194.93	13.028	-117903.57	0.0020731
135	75.81393	190.79	12.754	-110169.11	0.0021154
140	75.00767	186.65	12.489	-102856.06	0.0021619
145	74.19196	182.55	12.227	-95919.94	0.0022126
150	73.36577	178.47	11.962	-89324.98	0.0022675
155	72.52802	174.39	11.694	-83040.34	0.0023271
160	71.67754	170.29	11.420	-77039.47	0.0023921
165	70.81297	166.14	11.143	-71299.60	0.0024631
170	69.93276	161.92	10.860	-65801.34	0.0025414
175	69.03503	157.60	10.573	-60528.36	0.0026282
180	68.11757	153.17	10.281	-55467.04	0.0027252
185	67.17774	148.60	9.984	-50606.17	0.0028344
190	66.21232	143.97	9.683	-45936.73	0.0029585
*191.131	65.99009	142.77	9.614	-44906.70	0.0029890
*191.131	1.02628	37.24	2.166	-54.17	0.0068902
195	0.99981	38.22	2.169	-54.59	0.0066204
200	0.96802	39.46	2.173	-55.06	0.0063111
205	0.93860	40.70	2.176	-55.47	0.0060380
210	0.91125	41.92	2.179	-55.82	0.0057945
215	0.88572	43.13	2.181	-56.14	0.0055755
220	0.86181	44.33	2.183	-56.43	0.0053769
225	0.83933	45.53	2.185	-56.68	0.0051956
230	0.81815	46.72	2.186	-56.91	0.0050293
235	0.79815	47.90	2.187	-57.11	0.0048757
240	0.77921	49.08	2.188	-57.30	0.0047334
245	0.76124	50.26	2.188	-57.47	0.0046010
250	0.74416	51.43	2.189	-57.62	0.0044773
255	0.72790	52.60	2.189	-57.77	0.0043613
260	0.71239	53.76	2.189	-57.90	0.0042523
265	0.69758	54.93	2.189	-58.02	0.0041496
270	0.68343	56.09	2.199	-58.13	0.0040525
275	0.66987	57.24	2.189	-58.23	0.0039605
280	0.65688	58.40	2.189	-58.33	0.0038733
285	0.64442	59.55	2.189	-58.42	0.0037903
290	0.63245	60.70	2.199	-58.50	0.0037113
295	0.62094	61.85	2.188	-58.58	0.0036360
300	0.60986	63.00	2.188	-58.65	0.0035640
310	0.58991	65.29	2.187	-58.78	0.0034291
320	0.56942	67.57	2.186	-58.90	0.0033051
330	0.55122	69.85	2.185	-59.00	0.0031906
340	0.53420	72.13	2.184	-59.09	0.0030843
350	0.51824	74.40	2.193	-59.18	0.0029855
360	0.50323	76.67	2.192	-59.25	0.0028932
370	0.48909	78.94	2.181	-59.32	0.0028068
380	0.47575	81.20	2.179	-59.38	0.0027258
390	0.46313	83.47	2.178	-59.43	0.0026495
400	0.45119	85.74	2.177	-59.48	0.0025776
410	0.43986	88.00	2.175	-59.52	0.0025098
420	0.42909	90.27	2.173	-59.56	0.0024455
430	0.41886	92.54	2.172	-59.60	0.0023846
440	0.40911	94.82	2.170	-59.63	0.0023268
450	0.39981	97.10	2.168	-59.67	0.0022719
460	0.39093	99.38	2.166	-59.69	0.0022195
470	0.38244	101.66	2.163	-59.72	0.0021696
480	0.37433	103.96	2.161	-59.74	0.0021220
490	0.36655	106.26	2.159	-59.77	0.0020765
500	0.35910	108.56	2.156	-59.79	0.0020330
510	0.35194	110.87	2.153	-59.81	0.0019913
520	0.34507	113.19	2.150	-59.82	0.0019513
530	0.33847	115.52	2.147	-59.84	0.0019130
540	0.33212	117.86	2.144	-59.86	0.0018761
550	0.32600	120.21	2.141	-59.87	0.0018407
560	0.32011	122.56	2.138	-59.88	0.0018067
570	0.31443	124.93	2.134	-59.89	0.0017739
580	0.30895	127.30	2.130	-59.91	0.0017423
590	0.30366	129.69	2.126	-59.92	0.0017118
600	0.29856	132.09	2.123	-59.93	0.0016824

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

50 PSIA ISOBAR

TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(OP/OV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
* 97.017	81.66133	205.20	17.729	-181390.59	0.0019840
100	81.32559	207.46	16.899	-176315.73	0.0019719
105	80.53112	209.67	15.529	-164757.91	0.0019588
110	79.74595	208.86	14.673	-154031.88	0.0019627
115	78.96432	206.32	14.094	-144054.67	0.0019790
120	78.18214	202.86	13.668	-134742.35	0.0020043
125	77.39650	198.94	13.326	-126019.12	0.0020365
130	76.60533	194.84	13.029	-117819.20	0.0020743
135	75.80704	190.70	12.755	-110086.18	0.0021167
140	75.00037	186.56	12.490	-102771.74	0.0021633
145	74.18423	182.45	12.227	-95834.30	0.0022140
150	73.35756	178.37	11.962	-89238.08	0.0022691
155	72.51929	174.29	11.693	-82952.18	0.0023289
160	71.66823	170.18	11.420	-76950.02	0.0023940
165	70.80304	166.03	11.142	-71208.82	0.0024653
170	69.92212	161.80	10.859	-65709.20	0.0025439
175	69.02361	157.48	10.571	-60434.79	0.0026310
180	68.10528	153.04	10.279	-55371.97	0.0027284
185	67.16445	148.46	9.932	-50509.56	0.0028381
*186.805	66.81853	146.77	9.873	-48801.41	0.0029913
*186.805	0.86506	36.94	2.162	-45.77	0.0068106
190	0.84673	37.73	2.165	-46.02	0.0065991
195	0.81987	38.95	2.168	-46.37	0.0063013
200	0.79498	40.16	2.171	-46.67	0.0060372
205	0.77180	41.36	2.174	-46.94	0.0058006
210	0.75015	42.56	2.176	-47.17	0.0055869
215	0.72984	43.74	2.178	-47.38	0.0053926
220	0.71075	44.92	2.179	-47.57	0.0052147
225	0.69274	46.10	2.181	-47.73	0.0050510
230	0.67573	47.27	2.182	-47.89	0.0048995
235	0.65961	48.44	2.182	-48.02	0.0047588
240	0.64431	49.60	2.183	-48.15	0.0046276
245	0.62977	50.76	2.184	-48.26	0.0045048
250	0.61592	51.92	2.184	-48.37	0.0043896
255	0.60272	53.07	2.184	-48.47	0.0042811
260	0.59011	54.22	2.184	-48.55	0.0041786
265	0.57805	55.37	2.184	-48.64	0.0040818
270	0.56650	56.52	2.184	-48.71	0.0039899
275	0.55543	57.67	2.184	-48.78	0.0039027
280	0.54491	58.81	2.184	-48.85	0.0038196
285	0.53461	59.95	2.184	-48.91	0.0037405
290	0.52481	61.09	2.184	-48.97	0.0036650
295	0.51537	62.23	2.183	-49.02	0.0035927
300	0.50628	63.37	2.183	-49.07	0.0035236
310	0.48908	65.64	2.182	-49.16	0.0033937
320	0.47304	67.91	2.182	-49.24	0.0032739
330	0.45807	70.17	2.181	-49.31	0.0031629
340	0.44404	72.43	2.180	-49.37	0.0030597
350	0.43087	74.69	2.179	-49.43	0.0029635
360	0.41847	76.94	2.178	-49.48	0.0028735
370	0.40679	79.20	2.177	-49.53	0.0027891
380	0.39576	81.45	2.176	-49.57	0.0027098
390	0.38533	83.70	2.174	-49.60	0.0026350
400	0.37544	85.96	2.173	-49.64	0.0025645
410	0.36606	88.22	2.172	-49.67	0.0024978
420	0.35714	90.47	2.170	-49.70	0.0024346
430	0.34856	92.74	2.168	-49.72	0.0023747
440	0.34057	95.00	2.167	-49.75	0.0023177
450	0.33286	97.27	2.165	-49.77	0.0022635
460	0.32550	99.54	2.163	-49.79	0.0022119
470	0.31846	101.82	2.161	-49.81	0.0021626
480	0.31172	104.11	2.159	-49.82	0.0021155
490	0.30526	106.40	2.156	-49.84	0.0020705
500	0.29907	108.70	2.153	-49.85	0.0020275
510	0.29313	111.00	2.151	-49.87	0.0019862
520	0.28742	113.32	2.148	-49.88	0.0019466
530	0.28193	115.64	2.145	-49.89	0.0019086
540	0.27665	117.97	2.142	-49.90	0.0018721
550	0.27157	120.31	2.139	-49.91	0.0018370
560	0.26667	122.66	2.135	-49.92	0.0018032
570	0.26195	125.02	2.132	-49.93	0.0017706
580	0.25739	127.39	2.128	-49.93	0.0017392
590	0.25300	129.77	2.125	-49.94	0.0017090
600	0.24874	132.16	2.121	-49.95	0.0016799

\* INDICATES TWO PHASE BOUNDARY

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70 PSIA ISOBAR

## THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/D1) /V DEG. R
* 97.946	81.66572	205.40	17.700	-181438.24	0.0019823
100	81.33491	207.62	16.896	-176439.22	0.0019704
105	80.54039	209.84	15.513	-164892.38	0.0019571
110	79.75630	209.03	14.665	-154174.85	0.0019610
115	78.97528	206.49	14.038	-144204.28	0.0019771
120	78.19374	203.03	13.663	-134897.24	0.0020023
125	77.40978	199.12	13.322	-126173.28	0.0020344
130	76.61833	195.02	13.026	-117981.04	0.0020720
135	75.82091	190.88	12.753	-110252.02	0.0021142
140	75.01496	186.75	12.499	-102940.36	0.0021606
145	74.19970	182.65	12.226	-96005.54	0.0022111
150	73.37338	178.57	11.962	-89411.85	0.0022659
155	72.53675	174.49	11.694	-83128.47	0.0023253
160	71.68694	170.39	11.421	-77128.88	0.0023901
165	70.82220	166.25	11.144	-71390.32	0.0024609
170	69.94338	162.04	10.861	-65893.43	0.0025399
175	69.04643	157.73	10.574	-60621.87	0.0026254
180	68.12985	153.30	10.293	-55562.03	0.0027220
185	67.19130	148.74	9.997	-50702.70	0.0028307
190	66.22672	144.01	9.686	-46034.86	0.0029542
*194.952	65.24279	139.16	9.393	-41593.42	0.0030943
*194.952	1.18684	37.45	2.170	-62.35	0.0069843
195	1.18644	37.47	2.170	-62.36	0.0069806
200	1.14682	38.75	2.175	-63.05	0.0066162
205	1.11040	40.02	2.179	-63.65	0.0062995
210	1.07673	41.27	2.182	-64.17	0.0060210
215	1.04546	42.51	2.185	-64.63	0.0057733
220	1.01629	43.73	2.187	-65.03	0.0055510
225	0.98897	44.95	2.199	-65.40	0.0053500
230	0.96332	46.16	2.190	-65.72	0.0051669
235	0.93915	47.37	2.191	-66.01	0.0049992
240	0.91632	48.56	2.192	-66.27	0.0048447
245	0.89472	49.76	2.193	-66.51	0.0047017
250	0.87422	50.94	2.194	-66.73	0.0045688
255	0.85475	52.13	2.194	-66.93	0.0044447
260	0.83621	53.30	2.194	-67.11	0.0043287
265	0.81853	54.48	2.194	-67.28	0.0042196
270	0.80165	55.65	2.194	-67.43	0.0041170
275	0.78550	56.82	2.194	-67.58	0.0040201
280	0.77005	57.99	2.194	-67.71	0.0039284
285	0.75524	59.15	2.194	-67.83	0.0038414
290	0.74103	60.31	2.193	-67.95	0.0037588
295	0.72737	61.47	2.193	-68.06	0.0036802
300	0.71425	62.63	2.193	-68.16	0.0036052
310	0.68945	64.94	2.192	-68.34	0.0034652
320	0.66640	67.24	2.191	-68.50	0.0033368
330	0.64491	69.54	2.190	-68.64	0.0032186
340	0.62483	71.83	2.189	-68.76	0.0031093
350	0.60602	74.11	2.197	-68.88	0.0030077
360	0.58934	76.40	2.186	-68.98	0.0029131
370	0.57170	78.68	2.185	-69.07	0.0028247
380	0.55601	80.96	2.193	-69.15	0.0027419
390	0.54119	83.23	2.192	-69.22	0.0026641
400	0.52716	85.51	2.190	-69.29	0.0025909
410	0.51385	87.79	2.179	-69.35	0.0025218
420	0.50122	90.07	2.177	-69.41	0.0024565
430	0.48921	92.35	2.175	-69.46	0.0023946
440	0.47778	94.63	2.173	-69.50	0.0023360
450	0.46688	96.92	2.171	-69.55	0.0022802
460	0.45647	99.21	2.169	-69.58	0.0022272
470	0.44653	101.51	2.166	-69.62	0.0021767
480	0.43702	103.81	2.164	-69.65	0.0021285
490	0.42792	106.11	2.161	-69.68	0.0020925
500	0.41919	108.43	2.159	-69.71	0.0020385
510	0.41082	110.75	2.156	-69.74	0.0019964
520	0.40278	113.07	2.153	-69.76	0.0019561
530	0.39506	115.41	2.150	-69.78	0.0019173
540	0.38763	117.75	2.146	-69.80	0.0018802
550	0.38048	120.10	2.143	-69.82	0.0018445
560	0.37359	122.47	2.140	-69.84	0.0018102
570	0.36695	124.84	2.136	-69.86	0.0017771
580	0.36054	127.22	2.132	-69.87	0.0017453
590	0.35436	129.61	2.129	-69.89	0.0017146
600	0.34939	132.01	2.124	-69.90	0.0016850

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

80 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) /V P DEC. R
* 97.960	81.66792	205.50	17.686	-181462.17	0.0019915
100	81.33952	207.70	16.879	-176500.98	0.0019696
105	80.54577	209.92	15.513	-164959.63	0.0019563
110	79.76148	209.11	14.661	-154246.34	0.0019601
115	78.98076	206.58	14.055	-144279.09	0.0019762
120	78.19953	203.12	13.660	-134974.69	0.0020013
125	77.41491	199.21	13.320	-126257.86	0.0020333
130	76.62482	195.11	13.025	-118063.29	0.0020708
135	75.82768	190.97	12.752	-110334.91	0.0021129
140	75.02224	186.84	12.488	-103024.64	0.0021592
145	74.20742	182.74	12.226	-96091.12	0.0022096
150	73.38219	178.67	11.962	-89498.68	0.0022643
155	72.54548	174.59	11.694	-83216.56	0.0023236
160	71.69613	170.50	11.422	-77218.24	0.0023881
165	70.83281	166.36	11.144	-71481.00	0.0024587
170	69.95398	162.16	10.863	-65985.47	0.0025364
175	69.05781	157.85	10.576	-60715.32	0.0026226
180	68.14210	153.43	10.285	-55656.94	0.0027187
185	67.20424	148.87	9.990	-50799.15	0.0028270
190	66.24109	144.16	9.689	-46132.90	0.0029499
195	65.24881	139.27	9.383	-41651.09	0.0030907
*198.391	64.55685	135.85	9.172	-38713.27	0.0031985
*198.391	1.34714	37.60	2.175	-70.32	0.0070898
200	1.33201	38.02	2.176	-70.62	0.0069584
205	1.28768	39.33	2.181	-71.46	0.0065891
210	1.24697	40.61	2.185	-72.18	0.0062690
215	1.20935	41.88	2.188	-72.82	0.0059880
220	1.17443	43.13	2.190	-73.38	0.0057385
225	1.14186	44.37	2.192	-73.87	0.0055150
230	1.11137	45.60	2.194	-74.31	0.0053132
235	1.08274	46.83	2.196	-74.71	0.0051297
240	1.05577	48.04	2.197	-75.06	0.0049617
245	1.03031	49.25	2.198	-75.38	0.0048072
250	1.00620	50.45	2.198	-75.68	0.0046643
255	0.98334	51.65	2.199	-75.95	0.0045316
260	0.96161	52.85	2.199	-76.19	0.0044079
265	0.94092	54.03	2.199	-76.41	0.0042922
270	0.92120	55.22	2.199	-76.62	0.0041836
275	0.90236	56.40	2.199	-76.81	0.0040814
280	0.88435	57.58	2.199	-76.99	0.0039850
285	0.86710	58.75	2.199	-77.15	0.0038939
290	0.85057	59.93	2.198	-77.31	0.0038074
295	0.83470	61.09	2.198	-77.45	0.0037254
300	0.81946	62.26	2.198	-77.58	0.0036473
310	0.79069	64.59	2.197	-77.82	0.0035019
320	0.76400	66.91	2.196	-78.03	0.0033691
330	0.73914	69.22	2.194	-78.22	0.0032471
340	0.71593	71.53	2.193	-78.38	0.0031345
350	0.69421	73.83	2.192	-78.53	0.0030302
360	0.67382	76.13	2.190	-78.66	0.0029332
370	0.65464	78.42	2.189	-78.78	0.0028428
380	0.63656	80.71	2.187	-78.89	0.0027582
390	0.61949	83.00	2.186	-78.98	0.0026788
400	0.60335	85.29	2.184	-79.07	0.0026042
410	0.58805	87.58	2.182	-79.15	0.0025339
420	0.57353	89.87	2.180	-79.22	0.0024675
430	0.55972	92.16	2.178	-79.29	0.0024047
440	0.54659	94.45	2.176	-79.35	0.0023452
450	0.53407	96.75	2.174	-79.41	0.0022887
460	0.52213	99.05	2.172	-79.46	0.0022349
470	0.51072	101.35	2.169	-79.50	0.0021838
480	0.49981	103.66	2.167	-79.55	0.0021351
490	0.48937	105.97	2.164	-79.59	0.0020885
500	0.47936	108.29	2.161	-79.62	0.0020441
510	0.46976	110.62	2.158	-79.66	0.0020015
520	0.46055	112.95	2.155	-79.69	0.0019608
530	0.45169	115.29	2.152	-79.72	0.0019217
540	0.44318	117.64	2.149	-79.74	0.0018843
550	0.43479	120.00	2.145	-79.77	0.0018483
560	0.42710	122.37	2.142	-79.79	0.0018137
570	0.41949	124.75	2.138	-79.81	0.0017804
580	0.41215	127.13	2.134	-79.83	0.0017483
590	0.40507	129.53	2.130	-79.85	0.0017174
600	0.39824	131.93	2.126	-79.87	0.0016876

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

90 PSIA ISORAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DP) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 97.974	81.67012	205.60	17.672	-181486.16	0.0019806
100	81.34412	207.78	16.872	-176562.76	0.0019688
105	80.55086	210.00	15.508	-165026.89	0.0019555
110	79.76665	209.20	14.657	-154317.84	0.0019592
115	78.98623	206.66	14.092	-144353.90	0.0019753
120	78.20532	203.20	13.658	-135052.11	0.0020003
125	77.42104	199.29	13.318	-126337.42	0.0020323
130	76.63131	195.20	13.023	-118144.63	0.0020697
135	75.83455	191.06	12.751	-110417.79	0.0021117
140	75.02952	186.93	12.497	-103108.00	0.0021579
145	74.21514	182.84	12.226	-96176.67	0.0022082
150	73.39038	178.77	11.962	-89585.49	0.0022627
155	72.55419	174.70	11.694	-83304.61	0.0023218
160	71.70541	170.61	11.422	-77307.56	0.0023862
165	70.84272	166.48	11.145	-71571.62	0.0024565
170	69.96458	162.27	10.864	-66077.44	0.0025340
175	69.06917	157.93	10.578	-60808.70	0.0026198
180	68.15433	153.56	10.287	-55751.79	0.0027156
185	67.21746	149.01	9.992	-50895.52	0.0028233
190	66.25543	144.31	9.692	-46230.85	0.0029456
195	65.26446	139.43	9.397	-41750.68	0.0030856
200	64.23991	134.36	9.075	-37449.54	0.0032477
*201.529	63.91903	132.76	8.978	-36169.27	0.0033024
*201.529	1.50747	37.69	2.179	-78.07	0.0072048
205	1.47100	38.62	2.183	-78.85	0.0069118
210	1.42238	39.94	2.187	-79.83	0.0065421
215	1.37774	41.24	2.191	-80.69	0.0062219
220	1.33649	42.52	2.194	-81.43	0.0059411
225	1.29820	43.79	2.196	-82.09	0.0056920
230	1.26249	45.04	2.198	-82.67	0.0054691
235	1.22906	46.29	2.200	-83.19	0.0052679
240	1.19767	47.52	2.201	-83.66	0.0050851
245	1.16810	48.75	2.202	-84.08	0.0049179
250	1.14017	49.97	2.203	-84.46	0.0047641
255	1.11373	51.18	2.203	-84.81	0.0046220
260	1.08865	52.39	2.204	-85.13	0.0044901
265	1.06481	53.59	2.204	-85.42	0.0043673
270	1.04211	54.79	2.204	-85.69	0.0042524
275	1.02047	55.98	2.204	-85.93	0.0041446
280	0.99980	57.17	2.204	-86.16	0.0040432
285	0.98002	58.36	2.204	-86.37	0.0039476
290	0.96109	59.54	2.203	-86.57	0.0038572
295	0.94293	60.72	2.203	-86.75	0.0037716
300	0.92551	61.90	2.202	-86.92	0.0036903
310	0.89266	64.24	2.201	-87.23	0.0035393
320	0.86222	66.58	2.200	-87.50	0.0034018
330	0.83392	68.91	2.199	-87.74	0.0032759
340	0.80751	71.23	2.198	-87.95	0.0031600
350	0.78232	73.55	2.196	-88.13	0.0030529
360	0.75966	75.86	2.194	-88.30	0.0029535
370	0.73790	78.16	2.193	-88.45	0.0028610
380	0.71740	80.47	2.191	-88.59	0.0027746
390	0.69906	82.77	2.189	-88.71	0.0026936
400	0.67976	85.07	2.188	-88.82	0.0026176
410	0.66244	87.37	2.186	-88.92	0.0025460
420	0.64601	89.67	2.184	-89.02	0.0024786
430	0.63040	91.97	2.181	-89.10	0.0024148
440	0.61554	94.27	2.179	-89.18	0.0023544
450	0.60139	96.58	2.177	-89.25	0.0022971
460	0.58790	98.88	2.175	-89.31	0.0022427
470	0.57501	101.20	2.172	-89.37	0.0021909
480	0.56269	103.51	2.169	-89.43	0.0021416
490	0.55090	105.83	2.167	-89.48	0.0020946
500	0.53960	108.16	2.164	-89.52	0.0020496
510	0.52877	110.49	2.161	-89.57	0.0020067
520	0.51837	112.83	2.158	-89.61	0.0019655
530	0.50838	115.19	2.154	-89.64	0.0019261
540	0.49878	117.54	2.151	-89.68	0.0018883
550	0.48954	119.90	2.147	-89.71	0.0018520
560	0.48064	122.27	2.144	-89.74	0.0018172
570	0.47206	124.65	2.140	-89.76	0.0017836
580	0.46379	127.05	2.136	-89.79	0.0017513
590	0.45581	129.45	2.132	-89.81	0.0017202
600	0.44811	131.86	2.128	-89.84	0.0016902

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

100 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 97.988	81.67232	205.70	17.658	-181510.22	0.0019798
100	81.34873	207.87	16.865	-176624.55	0.0019681
105	80.55554	210.09	15.503	-165094.16	0.0019547
110	79.77181	209.28	14.653	-154389.35	0.0019584
115	78.99170	206.75	14.078	-144428.72	0.0019744
120	78.21111	203.29	13.655	-135129.55	0.0019994
125	77.42717	199.39	13.316	-126416.98	0.0020312
130	76.63779	195.29	13.022	-118225.96	0.0020686
135	75.84142	191.15	12.749	-110500.65	0.0021105
140	75.03690	187.03	12.486	-103193.13	0.0021566
145	74.22286	182.93	12.225	-96262.19	0.0022067
150	73.39857	178.86	11.962	-89672.26	0.0022611
155	72.56289	174.80	11.695	-83392.63	0.0023200
160	71.71458	170.72	11.423	-77396.84	0.0023842
165	70.85261	166.59	11.146	-71662.19	0.0024543
170	69.97516	162.39	10.865	-66169.36	0.0025315
175	69.08052	158.10	10.579	-60902.02	0.0026170
180	68.16655	153.69	10.289	-55846.56	0.0027124
185	67.23066	149.15	9.995	-50991.80	0.0028196
190	66.26975	144.45	9.695	-46328.71	0.0029413
195	65.28008	139.59	9.390	-41850.17	0.0030806
200	64.25734	134.52	9.079	-37550.72	0.0032417
*204.422	63.31998	129.87	8.798	-33894.38	0.0034067
*204.422	1.66807	37.74	2.184	-85.61	0.0073284
205	1.66104	37.90	2.184	-85.78	0.0072738
210	1.60348	39.26	2.139	-87.09	0.0068443
215	1.55099	40.60	2.193	-88.21	0.0064779
220	1.50278	41.91	2.197	-89.18	0.0061606
225	1.45823	43.20	2.200	-90.04	0.0058823
230	1.41636	44.48	2.202	-90.79	0.0056355
235	1.37827	45.74	2.204	-91.46	0.0054146
240	1.34213	47.00	2.205	-92.06	0.0052153
245	1.30819	48.24	2.207	-92.60	0.0050341
250	1.27621	49.48	2.208	-93.08	0.0048585
255	1.24600	50.71	2.208	-93.52	0.0047163
260	1.21739	51.93	2.209	-93.93	0.0045756
265	1.19025	53.15	2.209	-94.29	0.0044450
270	1.16445	54.36	2.209	-94.63	0.0043234
275	1.13997	55.56	2.209	-94.94	0.0042097
280	1.11643	56.76	2.209	-95.23	0.0041031
285	1.09404	57.96	2.209	-95.49	0.0040028
290	1.07261	59.15	2.208	-95.74	0.0039083
295	1.05209	60.34	2.208	-95.97	0.0038189
300	1.03242	61.53	2.207	-96.18	0.0037342
310	0.99537	63.90	2.206	-96.56	0.0035774
320	0.96108	66.25	2.205	-96.90	0.0034351
330	0.92924	68.60	2.203	-97.20	0.0033052
340	0.89957	70.93	2.202	-97.46	0.0031859
350	0.87135	73.26	2.200	-97.69	0.0030759
360	0.84588	75.59	2.199	-97.90	0.0029741
370	0.82149	77.91	2.197	-98.09	0.0028794
380	0.79953	80.22	2.195	-98.26	0.0027911
390	0.77697	82.54	2.193	-98.41	0.0027085
400	0.75641	84.85	2.191	-98.55	0.0026311
410	0.73704	87.16	2.189	-98.67	0.0025583
420	0.71857	89.47	2.187	-98.79	0.0024897
430	0.70123	91.78	2.185	-98.89	0.0024249
440	0.68464	94.09	2.182	-98.98	0.0023636
450	0.66884	96.40	2.180	-99.07	0.0023056
460	0.65378	98.72	2.178	-99.15	0.0022504
470	0.63940	101.04	2.175	-99.23	0.0021980
480	0.62566	103.36	2.172	-99.29	0.0021482
490	0.61251	105.69	2.169	-99.35	0.0021006
500	0.59991	108.03	2.166	-99.41	0.0020552
510	0.58784	110.37	2.163	-99.47	0.0020118
520	0.57625	112.71	2.160	-99.51	0.0019703
530	0.56512	115.07	2.157	-99.56	0.0019305
540	0.55442	117.43	2.153	-99.60	0.0018924
550	0.54413	119.80	2.150	-99.64	0.0018558
560	0.53422	122.18	2.146	-99.68	0.0018207
570	0.52467	124.56	2.142	-99.71	0.0017869
580	0.51546	126.96	2.138	-99.74	0.0017544
590	0.50658	129.37	2.134	-99.77	0.0017230
600	0.49800	131.78	2.130	-99.80	0.0016929

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

150 PSIA ISOBAR

TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(DP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/RTU	PSIA	DEG. R
* 98.060	81.68332	206.20	17.588	-181631.51	0.0019756
100	81.37174	208.28	16.831	-176933.73	0.0019642
105	80.57991	210.51	15.478	-165430.66	0.0019506
110	79.79742	209.71	14.634	-154746.96	0.0019541
115	79.01901	207.18	14.063	-144802.81	0.0019698
120	78.24002	203.72	13.643	-135516.68	0.0019945
125	77.45775	199.82	13.307	-126814.66	0.0020260
130	76.67016	195.73	13.014	-118632.43	0.0020629
135	75.87568	191.60	12.744	-110914.70	0.0021044
140	75.07309	187.49	12.493	-103614.00	0.0021499
145	74.26133	183.41	12.224	-96699.42	0.0021995
150	73.43941	179.36	11.962	-90105.64	0.0022531
155	72.60630	175.31	11.696	-83832.13	0.0023113
160	71.76089	171.25	11.426	-77842.56	0.0023745
165	70.90191	167.15	11.151	-72114.32	0.0024435
170	70.02787	162.98	10.872	-66628.11	0.0025193
175	69.13705	158.71	10.588	-61367.66	0.0026032
180	68.22735	154.34	10.300	-56319.36	0.0026966
185	67.29630	149.84	10.007	-51472.04	0.0028015
190	66.34094	145.18	9.710	-46816.67	0.0029203
195	65.35766	140.36	9.408	-42346.13	0.0030559
200	64.34209	135.36	9.100	-38054.97	0.0032122
205	63.28884	130.15	8.795	-33939.17	0.0033946
210	62.19116	124.71	8.462	-29995.89	0.0036101
215	61.04043	119.02	8.129	-26223.22	0.0038687
*216.369	60.71431	117.41	8.036	-25220.11	0.0039487
*216.369	2.48079	37.62	2.206	-120.23	0.0030572
220	2.41125	38.71	2.210	-122.38	0.0076146
225	2.32424	40.17	2.215	-124.93	0.0071017
230	2.24563	41.60	2.219	-127.12	0.0066732
235	2.17397	42.99	2.223	-129.01	0.0063085
240	2.10817	44.36	2.226	-130.66	0.0059933
245	2.04737	45.70	2.228	-132.11	0.0057174
250	1.99091	47.03	2.230	-133.40	0.0054732
255	1.93824	48.34	2.231	-134.55	0.0052549
260	1.88992	49.64	2.232	-135.59	0.0050584
265	1.84258	50.93	2.232	-136.53	0.0048801
270	1.79891	52.21	2.233	-137.38	0.0047173
275	1.75764	53.48	2.233	-138.15	0.0045579
280	1.71855	54.75	2.233	-138.86	0.0044300
285	1.68145	56.00	2.233	-139.51	0.0043023
290	1.64616	57.25	2.232	-140.11	0.0041834
295	1.61254	58.49	2.232	-140.66	0.0040725
300	1.58045	59.73	2.231	-141.18	0.0039686
310	1.52042	62.19	2.230	-142.09	0.0037790
320	1.46530	64.63	2.228	-142.89	0.0036100
330	1.41444	67.06	2.226	-143.59	0.0034580
340	1.36732	69.47	2.224	-144.20	0.0033204
350	1.32351	71.87	2.222	-144.75	0.0031948
360	1.28264	74.27	2.219	-145.23	0.0030793
370	1.24441	76.65	2.217	-145.66	0.0029738
380	1.20855	79.03	2.215	-146.05	0.0028757
390	1.17483	81.40	2.212	-146.40	0.0027846
400	1.14306	83.76	2.209	-146.72	0.0026998
410	1.11305	86.13	2.207	-147.00	0.0026205
420	1.08467	88.49	2.204	-147.26	0.0025461
430	1.05778	90.84	2.201	-147.50	0.0024763
440	1.03225	93.20	2.198	-147.72	0.0024105
450	1.00798	95.56	2.195	-147.91	0.0023484
460	0.98488	97.91	2.192	-148.09	0.0022876
470	0.96285	100.27	2.189	-148.26	0.0022340
480	0.94183	102.64	2.186	-148.41	0.0021812
490	0.92175	105.00	2.183	-148.55	0.0021310
500	0.90253	107.37	2.179	-148.68	0.0020832
510	0.88412	109.74	2.176	-148.80	0.0020376
520	0.86648	112.12	2.172	-148.91	0.0019941
530	0.84955	114.51	2.168	-149.01	0.0019526
540	0.83329	116.90	2.164	-149.11	0.0019128
550	0.81766	119.30	2.161	-149.20	0.0018747
560	0.80262	121.70	2.156	-149.28	0.0018382
570	0.78814	124.12	2.152	-149.35	0.0018032
580	0.77419	126.54	2.148	-149.42	0.0017695
590	0.76073	128.97	2.144	-149.49	0.0017371
600	0.74775	131.41	2.139	-149.55	0.0017060

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

200 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(OH/DV) BTU/LB	V(OP/DU) PSIA-CU FT/BTU	V(OP/DV) PSIA	(DV/DT) / V DEG. R
* 98.131	81.69434	206.69	17.519	-181754.43	0.0019714
100	81.39472	208.69	16.798	-177243.25	0.0019504
105	80.60425	210.93	15.453	-165767.41	0.0019466
110	79.82338	210.13	14.614	-155104.73	0.0019498
115	79.04627	207.60	14.048	-145175.94	0.0019552
120	78.26885	204.15	13.631	-135903.75	0.0019896
125	77.48825	200.25	13.297	-127212.17	0.0020207
130	76.70242	196.17	13.007	-119038.61	0.0020573
135	75.90983	192.05	12.739	-111328.34	0.0020983
140	75.10925	187.95	12.480	-104034.33	0.0021433
145	74.29966	183.89	12.222	-97115.99	0.0021923
150	73.48008	179.85	11.962	-90538.23	0.0022453
155	72.64950	175.82	11.698	-84270.71	0.0023026
160	71.80687	171.78	11.429	-78287.22	0.0023649
165	70.95093	167.70	11.156	-72565.21	0.0024328
170	70.08027	163.56	10.878	-67085.47	0.0025073
175	69.19319	159.33	10.596	-61831.73	0.0025896
180	68.28769	154.99	10.310	-56790.40	0.0026812
185	67.36140	150.52	10.019	-51950.32	0.0027838
190	66.41146	145.91	9.725	-47302.44	0.0028997
195	65.43443	141.14	9.425	-42839.64	0.0030317
200	64.42613	136.18	9.120	-38556.47	0.0031836
205	63.38145	131.03	8.809	-34448.94	0.0033602
210	62.29402	125.66	8.490	-30514.23	0.0035680
215	61.15577	120.05	8.161	-26750.52	0.0038162
220	59.95624	114.18	7.821	-23156.60	0.0041179
225	58.68145	107.99	7.465	-19731.46	0.0044931
*225.701	58.49572	107.09	7.414	-19264.75	0.0045532
*225.701	3.32079	37.14	2.227	-149.70	0.0089675
230	3.20021	38.55	2.233	-154.21	0.0082652
235	3.07587	40.12	2.238	-158.62	0.0076104
240	2.96509	41.64	2.243	-162.35	0.0070791
245	2.86523	43.11	2.247	-165.54	0.0066375
250	2.77436	44.56	2.250	-168.31	0.0062632
255	2.69105	45.97	2.252	-170.73	0.0059408
260	2.61417	47.36	2.254	-172.87	0.0056595
265	2.54234	48.73	2.255	-174.78	0.0054113
270	2.47635	50.09	2.255	-176.49	0.0051900
275	2.41414	51.43	2.256	-178.03	0.0049912
280	2.35571	52.76	2.256	-179.43	0.0048112
285	2.30068	54.07	2.256	-180.70	0.0046473
290	2.24869	55.38	2.256	-181.86	0.0044971
295	2.19946	56.67	2.256	-182.92	0.0043587
300	2.15275	57.96	2.255	-183.90	0.0042308
310	2.06599	60.52	2.253	-185.64	0.0040011
320	1.98700	63.05	2.251	-187.13	0.0038002
330	1.91464	65.55	2.249	-188.43	0.0036225
340	1.84802	68.04	2.246	-189.57	0.0034637
350	1.78640	70.52	2.243	-190.57	0.0033207
360	1.72919	72.97	2.240	-191.45	0.0031909
370	1.67590	75.42	2.237	-192.24	0.0030724
380	1.62609	77.86	2.234	-192.95	0.0029637
390	1.57940	80.29	2.231	-193.58	0.0028634
400	1.53554	82.71	2.228	-194.15	0.0027706
410	1.49423	85.12	2.224	-194.66	0.0026843
420	1.45525	87.53	2.221	-195.13	0.0026039
430	1.41838	89.93	2.218	-195.56	0.0025287
440	1.38346	92.33	2.214	-195.94	0.0024582
450	1.35032	94.73	2.211	-196.30	0.0023919
460	1.31892	97.13	2.207	-196.62	0.0023294
470	1.28884	99.53	2.204	-196.92	0.0022704
480	1.26026	101.92	2.200	-197.19	0.0022145
490	1.23299	104.32	2.196	-197.44	0.0021616
500	1.20693	106.73	2.192	-197.67	0.0021114
510	1.18200	109.13	2.188	-197.88	0.0020636
520	1.15812	111.54	2.184	-198.08	0.0020181
530	1.13523	113.96	2.180	-198.26	0.0019748
540	1.11326	116.38	2.176	-198.43	0.0019333
550	1.09216	118.81	2.171	-198.59	0.0018937
560	1.07188	121.24	2.167	-198.73	0.0018558
570	1.05236	123.68	2.162	-198.86	0.0018195
580	1.03357	126.12	2.158	-198.99	0.0017847
590	1.01546	128.58	2.153	-199.10	0.0017512
600	0.99799	131.04	2.148	-199.21	0.0017191

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

250 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) RTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(CP/DV) PSIA	(DV/DT) / V DEG. R
* 98.202	81.70538	207.19	17.452	-181878.98	0.0019672
100	81.41767	209.10	16.765	-177553.12	0.0019567
105	80.62354	211.34	15.428	-166104.42	0.0019426
110	79.84909	210.55	14.595	-155462.65	0.0019455
115	79.07346	208.03	14.033	-145551.13	0.0019607
120	78.29761	204.58	13.619	-136290.76	0.0019847
125	77.51867	200.69	13.288	-127609.51	0.0020156
130	76.73459	196.62	13.000	-119444.51	0.0020517
135	75.94386	192.51	12.734	-111741.59	0.0020923
140	75.14529	188.42	12.476	-104454.14	0.0021368
145	74.33784	184.36	12.220	-97541.91	0.0021852
150	73.52057	180.34	11.962	-90970.05	0.0022375
155	72.69251	176.33	11.699	-84708.38	0.0022940
160	71.85261	172.31	11.432	-78730.81	0.0023554
165	70.99968	168.26	11.160	-73014.90	0.0024222
170	70.13234	164.14	10.884	-67541.45	0.0024955
175	69.24895	159.94	10.604	-62294.25	0.0025763
180	68.34760	155.63	10.320	-57259.72	0.0026660
185	67.42597	151.20	10.031	-52426.66	0.0027664
190	66.48134	146.63	9.739	-47786.05	0.0028795
195	65.51041	141.90	9.442	-43330.75	0.0030082
200	64.50919	137.00	9.140	-39055.30	0.0031558
205	63.47284	131.91	8.832	-34955.70	0.0033268
210	62.39532	126.61	8.517	-31029.19	0.0035274
215	61.26908	121.08	8.193	-27273.99	0.0037658
220	60.08437	115.29	7.853	-23689.01	0.0040540
225	58.82933	109.21	7.509	-20273.52	0.0044097
230	57.48331	102.79	7.142	-17026.54	0.0048609
*233.478	56.48224	98.09	6.874	-14866.32	0.0052549
*233.478	4.19999	36.50	2.247	-173.95	0.0100890
235	4.13717	37.05	2.249	-176.69	0.0097193
240	3.95126	38.79	2.256	-184.51	0.0087195
245	3.79024	40.44	2.262	-190.93	0.0079540
250	3.64820	42.03	2.267	-196.32	0.0073453
255	3.52117	43.57	2.271	-200.91	0.0068473
260	3.40630	45.07	2.274	-204.87	0.0064306
265	3.30152	46.54	2.276	-208.34	0.0060756
270	3.20525	47.98	2.277	-211.39	0.0057685
275	3.11626	49.40	2.278	-214.11	0.0054997
280	3.03358	50.79	2.279	-216.54	0.0052617
285	2.95641	52.18	2.279	-218.73	0.0050491
290	2.88411	53.54	2.279	-220.71	0.0048577
295	2.81615	54.89	2.279	-222.52	0.0046842
300	2.75206	56.23	2.278	-224.16	0.0045259
310	2.63406	58.88	2.276	-227.06	0.0042468
320	2.52763	61.50	2.274	-229.53	0.0040077
330	2.43091	64.09	2.271	-231.65	0.0037998
340	2.34246	66.65	2.268	-233.50	0.0036167
350	2.26113	69.19	2.264	-235.12	0.0034538
360	2.18599	71.72	2.261	-236.54	0.0033076
370	2.11629	74.23	2.257	-237.80	0.0031754
380	2.05140	76.72	2.254	-238.93	0.0030550
390	1.99079	79.20	2.250	-239.94	0.0029449
400	1.93401	81.67	2.246	-240.84	0.0028435
410	1.88068	84.14	2.242	-241.66	0.0027499
420	1.83048	86.59	2.238	-242.40	0.0026631
430	1.78310	89.04	2.234	-243.07	0.0025822
440	1.73831	91.48	2.230	-243.68	0.0025067
450	1.69588	93.92	2.226	-244.23	0.0024360
460	1.65562	96.36	2.222	-244.74	0.0023697
470	1.61736	98.80	2.218	-245.20	0.0023072
480	1.58095	101.23	2.214	-245.63	0.0022483
490	1.54623	103.67	2.210	-246.02	0.0021926
500	1.51310	106.10	2.205	-246.38	0.0021398
510	1.48144	108.54	2.201	-246.72	0.0020898
520	1.45115	110.98	2.196	-247.02	0.0020423
530	1.42214	113.42	2.192	-247.31	0.0019970
540	1.39433	115.87	2.187	-247.57	0.0019539
550	1.36763	118.33	2.182	-247.81	0.0019128
560	1.34198	120.78	2.178	-248.04	0.0018734
570	1.31733	123.25	2.173	-248.25	0.0018358
580	1.29360	125.72	2.168	-248.44	0.0017998
590	1.27074	128.20	2.163	-248.62	0.0017653
600	1.24872	130.68	2.158	-248.79	0.0017322

\* INDICATES TWO PHASE BOUNDARY

300 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(DP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
* 98.273	81.71644	207.68	17.385	-182005.15	0.0019630
100	81.44058	209.50	16.732	-177863.35	0.0019529
105	80.65279	211.76	15.404	-166441.68	0.0019386
110	79.87474	210.97	14.577	-155820.73	0.0019413
115	79.10060	208.45	14.018	-145925.36	0.0019562
120	78.32630	205.01	13.608	-136677.72	0.0019799
125	77.54900	201.12	13.279	-128006.69	0.0020104
130	76.76667	197.06	12.993	-119850.13	0.0020462
135	75.97779	192.96	12.729	-112154.45	0.0020863
140	75.18119	188.88	12.473	-104873.45	0.0021303
145	74.37597	184.84	12.219	-97967.20	0.0021781
150	73.56089	180.83	11.962	-91401.10	0.0022298
155	72.73532	176.84	11.701	-85145.15	0.0022856
160	71.89813	172.84	11.435	-79173.37	0.0023460
165	71.04817	168.81	11.165	-73463.39	0.0024118
170	70.18410	164.71	10.890	-67996.09	0.0024838
175	69.30435	160.54	10.612	-62755.26	0.0025631
180	68.40706	156.27	10.329	-57727.33	0.0026511
185	67.49002	151.87	10.043	-52901.12	0.0027493
190	66.55059	147.34	9.753	-48267.56	0.0028599
195	65.58562	142.66	9.459	-43819.52	0.0029852
200	64.59131	137.81	9.159	-39551.52	0.0031287
205	63.56305	132.77	8.855	-35459.56	0.0032945
210	62.49513	127.54	8.543	-31540.88	0.0034882
215	61.38044	122.08	8.223	-27793.75	0.0037174
220	60.20993	116.38	7.893	-24217.18	0.0039930
225	58.97170	110.41	7.551	-20810.63	0.0043309
230	57.64969	104.12	7.192	-17573.50	0.0047554
235	56.22118	97.45	6.812	-14504.43	0.0053070
240	54.65198	90.30	6.404	-11600.06	0.0060585
* 240.206	54.58351	89.99	6.386	-11483.68	0.0060955
* 240.206	5.12959	35.79	2.265	-192.78	0.0114319
245	4.87236	37.63	2.274	-204.94	0.0100260
250	4.64791	39.42	2.281	-215.07	0.0039343
255	4.45442	41.13	2.287	-223.36	0.0031095
260	4.28463	42.76	2.292	-230.30	0.0074600
265	4.13338	44.34	2.295	-236.22	0.0059327
270	3.99706	45.88	2.298	-241.33	0.0064941
275	3.87305	47.39	2.300	-245.80	0.0061224
280	3.75936	48.86	2.301	-249.74	0.0058023
285	3.65447	50.31	2.301	-253.24	0.0055230
290	3.55717	51.74	2.302	-256.38	0.0052767
295	3.46548	53.15	2.301	-259.21	0.0050572
300	3.38162	54.54	2.301	-261.78	0.0048602
310	3.22686	57.29	2.299	-266.24	0.0045198
320	3.08878	60.00	2.297	-270.00	0.0042347
330	2.96441	62.67	2.293	-273.21	0.0039912
340	2.85150	65.30	2.290	-275.98	0.0037802
350	2.74831	67.91	2.296	-279.38	0.0035948
360	2.65350	70.50	2.282	-280.49	0.0034303
370	2.56594	73.07	2.278	-282.35	0.0032829
380	2.48475	75.62	2.273	-284.01	0.0031499
390	2.40918	78.15	2.269	-285.48	0.0030291
400	2.33861	80.67	2.264	-286.80	0.0029186
410	2.27251	83.18	2.260	-287.99	0.0028171
420	2.21043	85.68	2.255	-289.07	0.0027235
430	2.15199	88.17	2.251	-290.04	0.0026367
440	2.09694	90.66	2.246	-290.92	0.0025561
450	2.04470	93.14	2.242	-291.73	0.0024808
460	1.99531	95.61	2.237	-292.46	0.0024104
470	1.94844	98.08	2.233	-293.13	0.0023444
480	1.90339	100.55	2.228	-293.75	0.0022823
490	1.86148	103.02	2.223	-294.31	0.0022237
500	1.82105	105.49	2.218	-294.83	0.0021694
510	1.78246	107.96	2.213	-295.31	0.0021161
520	1.74557	110.43	2.209	-295.75	0.0020664
530	1.71028	112.90	2.204	-296.16	0.0020193
540	1.67647	115.38	2.199	-296.54	0.0019745
550	1.64404	117.86	2.193	-296.88	0.0019318
560	1.61292	120.34	2.188	-297.21	0.0018911
570	1.58301	122.83	2.183	-297.51	0.0018522
580	1.55426	125.33	2.178	-297.79	0.0018150
590	1.52657	127.83	2.172	-298.04	0.0017793
600	1.49991	130.34	2.167	-298.28	0.0017452

\* INDICATES TWO PHASE BOUNDARY

## 350 PSIA ISOBAR

## THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV)	V(DP/DU)	V(OP/DV)	(DV/DT) / V
		BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
* 98.344	81.72751	208.17	17.320	-182132.94	0.0019589
100	81.46345	209.91	16.700	-178173.93	0.0019492
105	80.67699	212.18	15.380	-166779.21	0.0019346
110	79.90035	211.39	14.558	-156178.96	0.0019371
115	79.12767	208.88	14.003	-146299.66	0.0019517
120	78.35491	205.44	13.576	-137064.63	0.0019752
125	77.57925	201.55	13.270	-128403.71	0.0020053
130	76.79864	197.50	12.987	-120255.48	0.0020407
135	76.01161	193.40	12.724	-112566.92	0.0020804
140	75.21698	189.34	12.470	-105292.25	0.0021239
145	74.41376	185.31	12.217	-98391.86	0.0021711
150	73.60105	181.32	11.962	-91831.40	0.0022221
155	72.77794	177.35	11.702	-85581.03	0.0022772
160	71.94342	173.37	11.438	-79614.90	0.0023368
165	71.09640	169.36	11.169	-73910.72	0.0024015
170	70.23556	165.29	10.897	-68449.41	0.0024723
175	69.35939	161.14	10.620	-63214.79	0.0025502
180	68.46610	156.90	10.339	-58193.29	0.0026364
185	67.55355	152.54	10.055	-53373.72	0.0027326
190	66.61922	148.05	9.767	-48747.01	0.0028406
195	65.66009	143.41	9.475	-44306.00	0.0029628
200	64.67251	138.61	9.178	-40045.20	0.0031023
205	63.65211	133.63	8.877	-35960.58	0.0032631
210	62.59348	128.46	8.569	-32049.39	0.0034503
215	61.48795	123.07	8.253	-28309.93	0.0036710
220	60.33304	117.46	7.928	-24741.29	0.0039348
225	59.11177	111.59	7.591	-21343.05	0.0042562
230	57.81147	105.42	7.240	-18114.90	0.0046565
235	56.41171	98.91	6.869	-15056.06	0.0051706
240	54.88246	91.95	6.473	-12164.25	0.0058589
245	53.17602	84.41	6.042	-9433.86	0.0068397
*246.171	52.74269	82.54	5.935	-8816.33	0.0071351
*246.171	6.12213	35.04	2.292	-205.87	0.0132438
250	5.83951	36.64	2.291	-220.34	0.0115477
255	5.53444	38.58	2.300	-235.30	0.0100104
260	5.27942	40.40	2.307	-247.23	0.0039143
265	5.06020	42.13	2.312	-257.04	0.0030858
270	4.86792	43.78	2.316	-265.28	0.0074336
275	4.69673	45.39	2.319	-272.33	0.0069040
280	4.54251	46.95	2.321	-278.44	0.0064636
285	4.40226	48.47	2.323	-283.79	0.0060904
290	4.27374	49.97	2.323	-288.52	0.0057692
295	4.15519	51.44	2.324	-292.74	0.0054890
300	4.04525	52.90	2.323	-296.52	0.0052419
310	3.84697	55.75	2.322	-303.04	0.0048245
320	3.67223	58.54	2.319	-308.46	0.0044836
330	3.51637	61.28	2.316	-313.04	0.0041983
340	3.37601	63.99	2.312	-316.96	0.0039549
350	3.24950	66.67	2.307	-320.34	0.0037442
360	3.13217	69.32	2.303	-323.29	0.0035592
370	3.02518	71.94	2.298	-325.89	0.0033952
380	2.92638	74.54	2.293	-328.18	0.0032484
390	2.83475	77.13	2.288	-330.22	0.0031160
400	2.74946	79.70	2.283	-332.04	0.0029958
410	2.66990	82.25	2.278	-333.68	0.0028860
420	2.59518	84.80	2.273	-335.15	0.0027852
430	2.52508	87.33	2.268	-336.48	0.0026923
440	2.45908	89.86	2.262	-337.69	0.0026062
450	2.39679	92.37	2.257	-338.79	0.0025262
460	2.33748	94.89	2.252	-339.79	0.0024517
470	2.28206	97.39	2.247	-340.71	0.0023819
480	2.22998	99.90	2.242	-341.55	0.0023165
490	2.17872	102.40	2.237	-342.32	0.0022551
500	2.13076	104.90	2.231	-343.02	0.0021971
510	2.08503	107.40	2.226	-343.67	0.0021425
520	2.04136	109.90	2.221	-344.27	0.0020907
530	1.99962	112.40	2.215	-344.83	0.0020417
540	1.95947	114.90	2.210	-345.34	0.0019951
550	1.92139	117.40	2.204	-345.81	0.0019508
560	1.88467	119.91	2.199	-346.25	0.0019087
570	1.84941	122.43	2.193	-346.66	0.0018685
580	1.81553	124.94	2.188	-347.03	0.0018301
590	1.78294	127.47	2.182	-347.38	0.0017934
600	1.75156	130.00	2.176	-347.71	0.0017582

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

400 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LR	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 98.415	81.73859	208.46	17.255	-182262.32	0.0019549
100	81.48640	210.32	16.663	-178484.87	0.0019455
105	80.70116	212.59	15.356	-167116.99	0.0019307
110	79.92590	211.81	14.540	-156537.36	0.0019329
115	79.15468	209.30	13.989	-146674.01	0.0019472
120	78.38346	205.86	13.585	-137451.49	0.0019704
125	77.60942	201.99	13.261	-128300.57	0.0020002
130	76.83053	197.94	12.980	-120460.57	0.0020352
135	76.04532	193.85	12.719	-112979.01	0.0020745
140	75.25263	189.79	12.467	-105710.56	0.0021176
145	74.45150	185.78	12.215	-98815.91	0.0021642
150	73.64104	181.81	11.962	-92260.97	0.0022146
155	72.82036	177.85	11.704	-86016.05	0.0022689
160	71.98850	173.89	11.441	-80055.43	0.0023276
165	71.14437	169.90	11.174	-74356.90	0.0023914
170	70.28671	165.86	10.903	-68901.43	0.0024610
175	69.41408	161.74	10.627	-63672.85	0.0025375
180	68.52472	157.53	10.348	-58657.61	0.0026220
185	67.61659	153.21	10.066	-53844.50	0.0027162
190	66.68726	148.75	9.780	-49224.45	0.0028217
195	65.73382	144.16	9.491	-44790.25	0.0029409
200	64.75292	139.40	9.197	-40536.39	0.0030767
205	63.74006	134.48	8.898	-36458.84	0.0032327
210	62.69045	129.37	8.593	-32554.83	0.0034137
215	61.59767	124.05	8.282	-28822.67	0.0036262
220	60.45392	118.52	7.962	-25261.48	0.0038792
225	59.24872	112.75	7.630	-21870.97	0.0041853
230	57.96893	106.70	7.286	-18651.06	0.0045636
235	56.59603	100.32	6.924	-15601.36	0.0050441
240	55.10348	93.55	6.539	-12720.46	0.0055777
245	53.45035	86.27	6.124	-10004.47	0.0062595
250	51.56676	78.25	5.664	-7444.22	0.0070950
*251.552	50.91679	75.56	5.508	-6678.42	0.0084691
*251.552	7.19320	34.29	2.297	-212.81	0.0155330
255	6.84638	35.86	2.307	-231.49	0.0132915
260	6.44322	37.94	2.318	-252.43	0.0111555
265	6.11665	39.86	2.326	-268.68	0.0097335
270	5.84185	41.67	2.333	-281.79	0.0087035
275	5.60455	43.40	2.337	-292.67	0.0079166
280	5.39575	45.06	2.341	-301.88	0.0072923
285	5.20941	46.67	2.343	-309.80	0.0067824
290	5.04122	48.24	2.344	-316.69	0.0063564
295	4.88906	49.78	2.345	-322.76	0.0059942
300	4.74753	51.29	2.345	-328.15	0.0056814
310	4.49736	54.24	2.344	-337.32	0.0051665
320	4.27996	57.12	2.341	-344.83	0.0047574
330	4.08817	59.95	2.338	-351.10	0.0044226
340	3.91695	62.72	2.334	-356.42	0.0041419
350	3.76265	65.46	2.329	-360.99	0.0039023
360	3.62249	68.17	2.324	-364.95	0.0036946
370	3.49435	70.85	2.318	-368.41	0.0035122
380	3.37653	73.51	2.313	-371.46	0.0033505
390	3.26768	76.14	2.307	-374.17	0.0032057
400	3.16669	78.76	2.301	-376.57	0.0030750
410	3.07265	81.36	2.296	-378.73	0.0029564
420	2.98478	83.94	2.290	-380.67	0.0028481
430	2.90243	86.52	2.284	-382.42	0.0027487
440	2.82505	89.08	2.279	-384.01	0.0026571
450	2.75215	91.63	2.273	-385.45	0.0025722
460	2.68334	94.18	2.267	-386.76	0.0024933
470	2.61823	96.72	2.262	-387.96	0.0024198
480	2.55653	99.26	2.256	-389.05	0.0023510
490	2.49793	101.79	2.250	-390.05	0.0022866
500	2.44221	104.32	2.245	-390.98	0.0022260
510	2.38914	106.85	2.239	-391.82	0.0021689
520	2.33851	109.38	2.233	-392.60	0.0021150
530	2.29016	111.90	2.227	-393.32	0.0020640
540	2.24392	114.43	2.221	-393.99	0.0020157
550	2.19965	116.96	2.216	-394.60	0.0019699
560	2.15722	119.50	2.210	-395.17	0.0019263
570	2.11651	122.03	2.204	-395.70	0.0018847
580	2.07741	124.57	2.198	-396.19	0.0018451
590	2.03992	127.12	2.192	-396.65	0.0018073
600	2.00365	129.67	2.186	-397.07	0.0017712

\* INDICATES TWO PHASE BOUNDARY

500 PSIA ISOBAR

THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(DP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
* 98.556	91.76081	209.64	17.129	-182525.85	0.0019466
100	81.53199	211.13	16.605	-179107.80	0.0019381
105	80.74937	213.42	15.709	-167793.33	0.0019229
110	79.97696	212.65	14.504	-157254.63	0.0019246
115	79.20953	210.15	13.961	-147422.89	0.0019384
120	78.44035	206.72	13.563	-138225.08	0.0019610
125	77.66951	202.35	13.244	-129593.85	0.0019902
130	76.89402	198.81	12.967	-121469.98	0.0020244
135	76.11241	194.74	12.710	-113802.10	0.0020629
140	75.32357	190.71	12.461	-106545.72	0.0021050
145	74.52656	186.72	12.212	-99662.21	0.0021506
150	73.72054	182.78	11.962	-93117.92	0.0021997
155	72.90464	178.85	11.706	-86883.52	0.0022526
160	72.07799	174.93	11.447	-80933.52	0.0023096
165	71.23954	170.99	11.182	-75245.88	0.0023715
170	70.38814	167.00	10.914	-69801.64	0.0024388
175	69.52240	162.93	10.642	-64584.69	0.0025126
180	68.64073	158.78	10.367	-59581.47	0.0025940
185	67.74120	154.53	10.089	-54790.76	0.0026842
190	66.82158	150.15	9.806	-50173.42	0.0027851
195	65.87919	145.63	9.521	-45752.22	0.0028986
200	64.91086	140.97	9.232	-41511.57	0.0030272
205	63.91279	136.15	8.939	-37447.38	0.0031743
210	62.88039	131.15	8.641	-33556.84	0.0033439
215	61.80806	125.97	8.337	-29838.23	0.0035416
220	60.68883	120.60	8.026	-26290.73	0.0037747
225	59.51393	115.00	7.705	-22914.14	0.0040537
230	58.27201	109.16	7.373	-19708.69	0.0043935
235	56.96791	103.05	7.027	-16674.57	0.0048169
240	55.52059	96.60	6.662	-13811.48	0.0053605
245	53.95919	89.76	6.273	-11117.81	0.0060882
250	52.21481	82.36	5.851	-8589.18	0.0071239
255	50.20063	74.18	5.380	-6215.57	0.0087511
260	47.72981	64.65	4.826	-3973.01	0.0118278
*260.998	47.14666	62.49	4.699	-3536.35	0.0128335
*260.998	9.66490	32.82	2.322	-205.58	0.0230128
265	8.93232	34.97	2.340	-246.45	0.0171243
270	8.28341	37.30	2.355	-281.92	0.0134259
275	7.79086	39.38	2.366	-308.05	0.0112577
280	7.39280	41.31	2.374	-328.49	0.0098059
285	7.05851	43.14	2.379	-345.10	0.0087541
290	6.77037	44.88	2.383	-358.95	0.0079508
295	6.51724	46.57	2.386	-370.73	0.0073137
300	6.29165	48.21	2.387	-380.91	0.0067937
310	5.90334	51.38	2.388	-397.66	0.0059908
320	5.57742	54.44	2.386	-410.93	0.0053946
330	5.29726	57.41	2.382	-421.75	0.0049306
340	5.05216	60.32	2.377	-430.74	0.0045567
350	4.83481	63.19	2.372	-438.35	0.0042473
360	4.63998	66.00	2.356	-444.86	0.0039859
370	4.46380	68.79	2.359	-450.50	0.0037613
380	4.30333	71.54	2.353	-455.43	0.0035556
390	4.15624	74.27	2.346	-459.77	0.0033931
400	4.02073	76.97	2.339	-463.61	0.0032397
410	3.89528	79.65	2.332	-467.04	0.0031019
420	3.77870	82.32	2.325	-470.10	0.0029775
430	3.66996	84.97	2.318	-472.86	0.0028642
440	3.56821	87.60	2.311	-475.35	0.0027607
450	3.47272	90.23	2.305	-477.61	0.0026655
460	3.38288	92.84	2.298	-479.66	0.0025776
470	3.29816	95.44	2.291	-481.52	0.0024962
480	3.21808	98.04	2.284	-483.23	0.0024206
490	3.14224	100.63	2.278	-484.79	0.0023499
500	3.07029	103.22	2.271	-486.22	0.0022939
510	3.00190	105.80	2.264	-487.53	0.0022219
520	2.93690	108.38	2.258	-488.74	0.0021636
530	2.87474	110.96	2.251	-489.85	0.0021087
540	2.81549	113.54	2.244	-490.88	0.0020568
550	2.75885	116.12	2.238	-491.83	0.0020078
560	2.70465	118.70	2.231	-492.71	0.0019612
570	2.65271	121.28	2.225	-493.53	0.0019171
580	2.60289	123.87	2.218	-494.28	0.0018751
590	2.55506	126.45	2.211	-494.98	0.0018351
600	2.50908	129.04	2.205	-495.63	0.0017969

\* INDICATES TWO PHASE BOUNDARY



THEIRMOODYNAMIC PROPERTIES OF OXYGEN

450 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(CP/DU) PSIA-CU FT/BTU	V(OP/DV) PSIA	(DV/DT) /V DEG. R
* 98.485	81.74970	209.15	17.192	-182393.29	0.0019507
100	81.50911	210.73	16.637	-178796.15	0.0019418
105	80.72528	213.01	15.332	-167455.03	0.0019268
110	79.95141	212.23	14.522	-156895.91	0.0019287
115	79.18164	209.72	13.975	-147048.42	0.0019428
120	78.41194	206.29	13.574	-137838.30	0.0019657
125	77.63950	202.42	13.252	-129197.28	0.0019952
130	76.86232	198.37	12.973	-121065.40	0.0020298
135	76.07892	194.30	12.715	-113390.74	0.0020687
140	75.28816	190.25	12.464	-106128.38	0.0021112
145	74.48910	186.25	12.214	-99239.36	0.0021574
150	73.68097	182.29	11.962	-92689.80	0.0022071
155	72.86260	178.25	11.705	-86450.20	0.0022607
160	72.03325	174.41	11.444	-80494.96	0.0023186
165	71.19208	170.45	11.178	-74801.95	0.0023814
170	70.33757	166.43	10.908	-69352.16	0.0024498
175	69.46841	162.34	10.635	-64129.48	0.0025250
180	68.58292	158.16	10.358	-59120.33	0.0026079
185	67.67913	153.87	10.077	-54313.51	0.0027001
190	66.75470	149.45	9.793	-49699.90	0.0028032
195	65.80685	144.90	9.506	-45272.30	0.0029175
200	64.83226	140.19	9.215	-41025.16	0.0030516
205	63.82695	135.32	8.919	-36954.42	0.0032031
210	62.78607	130.26	8.618	-33057.29	0.0033782
215	61.70369	125.02	8.310	-29332.07	0.0035831
220	60.57238	119.57	7.994	-25777.92	0.0038258
225	59.38272	113.88	7.668	-22394.61	0.0041179
230	58.12736	107.94	7.330	-19182.23	0.0044761
235	56.77462	101.70	6.976	-16140.75	0.0049266
240	55.31593	95.10	6.602	-13269.35	0.0055123
245	53.71087	88.05	6.201	-10565.47	0.0063109
250	51.90135	80.36	5.761	-8022.71	0.0074804
255	49.77824	71.72	5.262	-5626.29	0.0094133
*256.467	49.06630	68.91	5.079	-4946.79	0.0102631
*256.467	8.36383	33.54	2.311	-213.00	0.0186207
260	7.98319	35.30	2.323	-239.62	0.0151303
265	7.36414	37.51	2.336	-267.54	0.0123193
270	6.95736	39.52	2.346	-288.61	0.0105300
275	6.62219	41.40	2.353	-305.33	0.0092465
280	6.33701	43.18	2.358	-319.04	0.0083631
285	6.08832	44.89	2.362	-330.55	0.0076455
290	5.86920	46.54	2.364	-340.39	0.0070687
295	5.67233	48.15	2.366	-348.92	0.0065930
300	5.49404	49.73	2.367	-356.39	0.0061925
310	5.18148	52.79	2.366	-368.91	0.0055524
320	4.91419	55.75	2.364	-379.02	0.0050597
330	4.68126	58.66	2.360	-387.35	0.0046660
340	4.47531	61.50	2.355	-394.36	0.0043421
350	4.29115	64.30	2.350	-400.32	0.0040698
360	4.12493	67.07	2.345	-405.47	0.0038367
370	3.97378	69.80	2.339	-409.94	0.0036342
380	3.83544	72.50	2.333	-413.87	0.0034562
390	3.70813	75.19	2.326	-417.34	0.0032980
400	3.59042	77.85	2.320	-420.42	0.0031564
410	3.48112	80.49	2.314	-423.18	0.0030285
420	3.37927	83.12	2.308	-425.65	0.0029122
430	3.28405	85.73	2.301	-427.87	0.0028061
440	3.19475	88.33	2.295	-429.89	0.0027086
450	3.11080	90.92	2.289	-431.71	0.0026186
460	3.03168	93.50	2.283	-433.37	0.0025353
470	2.95694	96.07	2.276	-434.89	0.0024579
480	2.88620	98.64	2.270	-436.27	0.0023857
490	2.81912	101.20	2.264	-437.54	0.0023182
500	2.75540	103.76	2.258	-438.70	0.0022549
510	2.69477	106.32	2.252	-439.77	0.0021954
520	2.63700	108.87	2.245	-440.75	0.0021393
530	2.58197	111.43	2.239	-441.66	0.0020864
540	2.52920	113.99	2.233	-442.50	0.0020363
550	2.47882	116.53	2.227	-443.27	0.0019888
560	2.43056	119.09	2.220	-443.99	0.0019438
570	2.38428	121.65	2.214	-444.66	0.0019009
580	2.33987	124.21	2.208	-445.27	0.0018601
590	2.29719	126.78	2.201	-445.84	0.0018212
600	2.25616	129.35	2.195	-446.38	0.0017841

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

550 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) RTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 98.627	81.77195	210.13	17.068	-182659.97	0.0019426
100	81.55463	211.54	16.575	-179419.80	0.0019345
105	80.77341	213.84	15.286	-168131.90	0.0019190
110	80.00226	213.07	14.486	-157613.52	0.0019205
115	79.23536	210.57	13.947	-147797.43	0.0019341
120	78.46869	207.14	13.552	-138611.82	0.0019564
125	77.69944	203.23	13.236	-129990.28	0.0019852
130	76.92562	199.25	12.961	-121874.31	0.0020191
135	76.14580	195.19	12.706	-114213.10	0.0020572
140	75.35886	191.16	12.458	-106962.60	0.0020988
145	74.56388	187.19	12.211	-100084.48	0.0021439
150	73.76004	183.26	11.962	-93545.33	0.0021924
155	72.94651	179.35	11.708	-87316.00	0.0022446
160	72.12241	175.45	11.449	-81371.12	0.0023008
165	71.28675	171.53	11.187	-75688.71	0.0023617
170	70.43841	167.56	10.920	-70249.88	0.0024280
175	69.57606	163.52	10.649	-65038.51	0.0025005
180	68.69813	159.40	10.376	-60041.07	0.0025803
185	67.80280	155.18	10.099	-55246.30	0.0026687
190	66.88789	150.84	9.819	-50645.05	0.0027673
195	65.95085	146.36	9.536	-46230.04	0.0028781
200	64.98864	141.74	9.249	-41995.66	0.0030034
205	63.99763	136.97	8.959	-37937.79	0.0031463
210	62.97347	132.03	8.664	-34053.57	0.0033107
215	61.91085	126.92	8.364	-30341.27	0.0035015
220	60.80325	121.61	8.056	-26800.04	0.0037256
225	59.64249	116.10	7.740	-23429.74	0.0039924
230	58.41910	110.35	7.414	-20230.65	0.0043153
235	57.11626	104.36	7.075	-17203.16	0.0047142
240	55.71813	98.07	6.719	-14347.34	0.0052206
245	54.19661	91.41	6.342	-11662.30	0.0058873
250	52.51014	84.27	5.936	-9145.12	0.0066131
255	50.59932	76.47	5.488	-6789.01	0.0075085
260	48.29188	67.62	4.974	-4578.69	0.0106364
265	45.25152	56.69	4.333	-2473.56	0.0164311
*265.206	45.09641	56.16	4.302	-2387.50	0.0168659
*265.206	11.14642	32.11	2.332	-189.26	0.0297764
270	9.96835	34.90	2.358	-254.07	0.0189066
275	9.18432	37.30	2.375	-297.00	0.0143814
280	8.60534	39.43	2.387	-328.05	0.0118679
285	8.14483	41.40	2.395	-352.10	0.0102341
290	7.76220	43.25	2.401	-371.51	0.0090728
295	7.43489	45.03	2.405	-387.63	0.0081976
300	7.14904	46.74	2.407	-401.30	0.0075105
310	6.66774	50.02	2.409	-423.36	0.0064924
320	6.27245	53.17	2.408	-440.50	0.0057671
330	5.93789	56.22	2.404	-454.26	0.0052188
340	5.64859	59.20	2.399	-465.58	0.0047867
350	5.39436	62.11	2.393	-475.07	0.0044352
360	5.16811	64.99	2.387	-483.15	0.0041423
370	4.96474	67.82	2.380	-490.11	0.0038935
380	4.78040	70.61	2.373	-496.16	0.0036787
390	4.61216	73.38	2.365	-501.48	0.0034909
400	4.45770	76.13	2.358	-506.17	0.0033249
410	4.31518	78.85	2.350	-510.34	0.0031768
420	4.18308	81.55	2.343	-514.06	0.0030437
430	4.06016	84.23	2.335	-517.41	0.0029231
440	3.94540	86.90	2.328	-520.43	0.0028133
450	3.83790	89.56	2.320	-523.15	0.0027128
460	3.73694	92.20	2.313	-525.63	0.0026202
470	3.64187	94.84	2.306	-527.88	0.0025348
480	3.55214	97.47	2.299	-529.94	0.0024555
490	3.46728	100.08	2.291	-531.82	0.0023817
500	3.38685	102.70	2.284	-533.54	0.0023129
510	3.31050	105.31	2.277	-535.12	0.0022484
520	3.23788	107.91	2.270	-536.57	0.0021879
530	3.16872	110.52	2.263	-537.91	0.0021310
540	3.10275	113.12	2.256	-539.15	0.0020773
550	3.03974	115.72	2.249	-540.29	0.0020266
560	2.97948	118.32	2.242	-541.35	0.0019786
570	2.92177	120.92	2.235	-542.33	0.0019331
580	2.86646	123.53	2.228	-543.23	0.0018899
590	2.81338	126.14	2.221	-544.07	0.0018488
600	2.76239	128.75	2.214	-544.86	0.0018096

\* INDICATES TWO PHASE BOUNDARY

THEMODYNAMIC PROPERTIES OF OXYGEN

600 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) RTU/LB	V(DP/DU) PSIA-CU FT/RTU	V(DP/DV) PSIA	(DV/DT) / V P
* 98.698	81.78309	210.61	17.007	-182795.66	0.0019385
100	81.57734	211.95	16.544	-179732.16	0.0019303
105	80.79741	214.25	15.264	-168470.73	0.0019152
110	80.02762	213.49	14.469	-157972.57	0.0019164
115	79.26214	210.94	13.933	-148172.04	0.0019297
120	78.49696	207.57	13.541	-138998.53	0.0019518
125	77.72928	203.71	13.227	-130386.57	0.0019803
130	76.95714	199.68	12.954	-122278.40	0.0020138
135	76.17908	195.63	12.701	-114623.76	0.0020515
140	75.39403	191.62	12.455	-107379.01	0.0020927
145	74.60106	187.66	12.210	-100506.17	0.0021372
150	73.79939	183.74	11.962	-93972.04	0.0021951
155	72.98819	179.85	11.709	-87747.66	0.0022366
160	72.16662	175.97	11.452	-81807.77	0.0022921
165	71.33373	172.07	11.191	-76130.47	0.0023521
170	70.49841	168.12	10.925	-70696.90	0.0024173
175	69.62938	164.11	10.656	-65490.97	0.0024885
180	68.75515	160.02	10.384	-60499.14	0.0025668
185	67.86393	155.83	10.109	-55710.15	0.0026535
190	66.95365	151.52	9.831	-51114.81	0.0027499
195	66.02185	147.08	9.550	-46705.81	0.0028581
200	65.06562	142.51	9.266	-42477.50	0.0029802
205	64.08149	137.79	8.979	-38425.71	0.0031191
210	63.06533	132.90	8.687	-34547.56	0.0032784
215	62.01212	127.85	8.399	-30841.27	0.0034628
220	60.91574	122.61	8.096	-27305.98	0.0036784
225	59.76853	117.18	7.775	-23941.55	0.0039339
230	58.56083	111.53	7.454	-20748.32	0.0042412
235	57.28002	105.65	7.122	-17726.81	0.0046179
240	55.90912	99.49	6.774	-14877.35	0.0050909
245	54.42424	93.00	6.407	-12199.60	0.0057048
250	52.78970	86.10	6.015	-9691.72	0.0065390
255	50.94754	78.63	5.587	-7349.13	0.0077535
260	48.79064	70.31	5.106	-5161.93	0.0097355
265	46.07214	60.49	4.532	-3107.43	0.0137794
*269.132	42.81159	49.81	3.897	-1459.69	0.0241625
*269.132	12.90096	31.42	2.338	-162.02	0.0416251
270	12.48106	32.08	2.347	-183.62	0.0350855
275	10.96037	35.08	2.378	-264.73	0.0202658
280	10.04904	37.51	2.397	-314.17	0.0150932
285	9.38896	39.67	2.409	-349.59	0.0123190
290	8.86979	41.65	2.417	-376.90	0.0105496
295	8.44161	43.53	2.423	-398.88	0.0093071
300	8.07733	45.31	2.427	-417.10	0.0083788
310	7.48038	48.72	2.430	-445.81	0.0070710
320	7.00250	51.95	2.429	-467.62	0.0061829
330	6.60508	55.08	2.426	-484.85	0.0055334
340	6.26579	58.12	2.421	-498.87	0.0050335
350	5.97053	61.09	2.415	-510.52	0.0046342
360	5.70980	64.01	2.408	-520.37	0.0043063
370	5.47689	66.89	2.401	-528.81	0.0040309
380	5.26686	69.73	2.393	-536.12	0.0037955
390	5.07600	72.54	2.385	-542.50	0.0035913
400	4.90142	75.32	2.377	-548.13	0.0034120
410	4.74084	78.07	2.369	-553.12	0.0032531
420	4.59242	80.81	2.360	-557.57	0.0031109
430	4.45466	83.53	2.352	-561.55	0.0029827
440	4.32631	86.23	2.344	-565.14	0.0028664
450	4.20632	88.92	2.336	-568.38	0.0027603
460	4.09382	91.59	2.328	-571.32	0.0026630
470	3.98805	94.26	2.321	-573.99	0.0025734
480	3.88936	96.91	2.313	-576.42	0.0024905
490	3.79420	99.56	2.305	-578.65	0.0024135
500	3.70506	102.20	2.298	-580.69	0.0023418
510	3.62053	104.83	2.290	-582.56	0.0022748
520	3.54027	107.46	2.283	-584.28	0.0022121
530	3.46380	110.07	2.275	-585.86	0.0021532
540	3.39097	112.71	2.268	-587.32	0.0020977
550	3.32145	115.33	2.260	-588.67	0.0020454
560	3.25502	117.96	2.253	-589.91	0.0019959
570	3.19145	120.58	2.245	-591.07	0.0019491
580	3.13055	123.21	2.238	-592.14	0.0019046
590	3.07214	125.83	2.231	-593.13	0.0018624
600	3.01607	128.46	2.223	-594.05	0.0018222

\* INDICATES TWO PHASE BOUNDARY

133

THEIRMOUUNAMIC PROPERTIES OF OXYGEN

650 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(CP/DV) PSIA	(OV/DT) / V DEC. R
* 98.769	81.79425	211.10	16.948	-182932.90	0.0019345
100	81.60002	212.35	16.514	-180044.87	0.0019272
105	80.82137	214.66	15.241	-168809.83	0.0019113
110	80.05792	213.91	14.451	-158331.80	0.0019124
115	79.28986	211.41	13.920	-148546.71	0.0019254
120	78.52516	207.99	13.531	-139395.20	0.0019472
125	77.75905	204.14	13.219	-130782.73	0.0019754
130	76.99356	200.12	12.948	-122682.25	0.0020086
135	76.21226	196.09	12.697	-115034.07	0.0020458
140	75.42907	192.07	12.452	-107794.97	0.0020866
145	74.63911	188.12	12.208	-100927.29	0.0021306
150	73.83857	184.22	11.962	-94398.07	0.0021779
155	73.02369	180.35	11.711	-88178.52	0.0022288
160	72.21062	176.48	11.455	-82243.49	0.0022835
165	71.39046	172.60	11.195	-76571.16	0.0023425
170	70.53912	168.68	10.931	-71142.72	0.0024067
175	69.68238	164.70	10.663	-65942.09	0.0024767
180	68.81178	160.63	10.393	-60955.73	0.0025536
185	67.92461	156.47	10.119	-56172.35	0.0026385
190	67.01898	152.20	9.843	-51582.75	0.0027329
195	66.09221	147.90	9.564	-47179.57	0.0028385
200	65.14182	143.27	9.283	-42957.13	0.0029576
205	64.16441	138.60	8.998	-38911.21	0.0030926
210	63.15603	133.76	8.708	-35038.88	0.0032471
215	62.11124	128.77	8.415	-31339.33	0.0034253
220	61.02636	123.60	8.115	-27808.67	0.0036330
225	59.89218	118.24	7.808	-24449.73	0.0038780
230	58.70040	112.69	7.493	-21261.90	0.0041709
235	57.43949	106.91	7.166	-18245.77	0.0045272
240	56.09409	100.87	6.827	-15401.89	0.0049705
245	54.64301	94.55	6.470	-12730.31	0.0055381
250	53.05540	87.85	6.090	-10229.96	0.0062950
255	51.28289	80.67	5.680	-7897.83	0.0073649
260	49.24106	72.79	5.226	-5727.44	0.0090242
265	46.75464	63.78	4.700	-3705.54	0.0120632
270	43.31084	52.44	4.027	-1798.70	0.0202868
*272.802	40.06594	43.27	3.456	-729.48	0.0413357
*272.802	15.14039	30.76	2.340	-120.40	0.0681017
275	13.60499	32.54	2.368	-191.71	0.0376569
280	11.87910	35.51	2.401	-280.34	0.0209339
285	10.86132	37.92	2.420	-334.57	0.0154973
290	10.13129	40.08	2.432	-373.48	0.0125855
295	9.56028	42.06	2.440	-403.51	0.0107406
300	9.09123	43.94	2.445	-427.71	0.0094511
310	8.34820	47.47	2.451	-464.78	0.0077444
320	7.77123	50.80	2.451	-492.21	0.0066493
330	7.30090	53.99	2.448	-513.51	0.0058773
340	6.90500	57.09	2.443	-530.63	0.0052983
350	6.56410	60.11	2.437	-544.73	0.0048449
360	6.26552	63.08	2.429	-556.56	0.0044780
370	6.00053	66.00	2.421	-566.63	0.0041735
380	5.76287	68.88	2.413	-575.32	0.0039159
390	5.54786	71.73	2.404	-582.89	0.0036942
400	5.35193	74.54	2.396	-589.53	0.0035009
410	5.17230	77.34	2.387	-595.41	0.0033306
420	5.00673	80.10	2.378	-600.64	0.0031789
430	4.85343	82.85	2.370	-605.32	0.0030429
440	4.71091	85.58	2.361	-609.52	0.0029199
450	4.57794	88.30	2.352	-613.32	0.0028082
460	4.45348	91.00	2.344	-616.75	0.0027060
470	4.33665	93.69	2.336	-619.87	0.0026121
480	4.22670	96.38	2.327	-622.71	0.0025255
490	4.12296	99.05	2.319	-625.31	0.0024453
500	4.02489	101.71	2.311	-627.68	0.0023707
510	3.93197	104.37	2.303	-629.86	0.0023012
520	3.84379	107.02	2.295	-631.86	0.0022362
530	3.75994	109.67	2.287	-633.71	0.0021752
540	3.68010	112.32	2.279	-635.41	0.0021180
550	3.60396	114.96	2.272	-636.97	0.0020640
560	3.53125	117.61	2.264	-638.42	0.0020131
570	3.46171	120.25	2.256	-639.76	0.0019649
580	3.39514	122.89	2.248	-641.01	0.0019193
590	3.33133	125.54	2.241	-642.16	0.0018759
600	3.27009	128.19	2.233	-643.23	0.0018348

\* INDICATES TWO PHASE BOUNDARY

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700 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE	DENSITY	V(DH/DV)	V(OP/DU)	V(CP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
* 98.839	81.80543	211.58	16.899	-183071.68	0.0019306
100	81.62266	212.76	16.485	-180357.95	0.0019237
105	80.84529	215.08	15.219	-169149.19	0.0019075
110	80.07318	214.32	14.434	-158691.19	0.0019084
115	79.31552	211.83	13.907	-148021.46	0.0019212
120	78.55330	208.41	13.520	-139771.85	0.0019426
125	77.78874	204.56	13.211	-131178.77	0.0019705
130	77.01989	200.55	12.942	-123085.87	0.0020034
135	76.24533	196.52	12.692	-115444.04	0.0020407
140	75.46400	192.52	12.450	-108210.48	0.0020805
145	74.67502	188.59	12.207	-101347.85	0.0021241
150	73.87761	184.70	11.962	-94823.43	0.0021708
155	73.07101	180.84	11.712	-88608.59	0.0022210
160	72.25442	177.00	11.458	-82678.30	0.0022749
165	71.42695	173.14	11.199	-77010.81	0.0023331
170	70.58756	169.24	10.936	-71587.36	0.0023963
175	69.73506	165.28	10.670	-66391.89	0.0024651
180	68.86804	161.24	10.401	-61410.84	0.0025405
185	67.98486	157.11	10.130	-56632.92	0.0026238
190	67.08358	152.88	9.855	-52048.89	0.0027162
195	66.16194	148.52	9.578	-47651.37	0.0028194
200	65.21727	144.03	9.299	-43434.60	0.0029354
205	64.24640	139.40	9.016	-39394.34	0.0030668
210	63.24559	134.62	8.730	-35527.61	0.0032167
215	62.21034	129.68	8.439	-31832.53	0.0033891
220	61.13521	124.57	8.143	-28308.19	0.0035893
225	60.01353	119.29	7.840	-24954.41	0.0038244
230	58.83697	113.82	7.530	-21771.55	0.0041039
235	57.59492	108.14	7.210	-18760.29	0.0044417
240	56.27347	102.23	6.877	-15921.29	0.0048581
245	54.85372	96.05	6.529	-13254.91	0.0053851
250	53.30880	89.54	6.161	-10760.64	0.0060759
255	51.59790	82.62	5.767	-8436.56	0.0070280
260	49.65313	75.11	5.335	-6278.47	0.0084446
265	47.34469	66.72	4.847	-4278.39	0.0108407
270	44.35513	56.72	4.257	-2420.88	0.0160888
275	39.21442	42.46	3.392	-657.34	0.0439363
*276.229	36.07028	36.23	2.960	-196.85	0.1231914
*276.229	18.62592	30.14	2.334	-57.48	0.1825549
280	14.52501	33.32	2.395	-212.00	0.0359824
285	12.69955	36.16	2.426	-302.05	0.0209936
290	11.60705	38.52	2.444	-358.97	0.0155775
295	10.82440	40.64	2.456	-400.31	0.0126630
300	10.21066	42.62	2.463	-432.42	0.0108065
310	9.27969	46.28	2.471	-479.99	0.0085362
320	8.58286	49.70	2.473	-514.17	0.0071748
330	8.02763	52.96	2.470	-540.22	0.0062540
340	7.56752	56.11	2.465	-560.87	0.0055828
350	7.17582	59.19	2.459	-577.72	0.0050678
360	6.83572	62.20	2.451	-591.75	0.0046576
370	6.53595	65.16	2.443	-603.63	0.0043215
380	6.26358	68.07	2.434	-613.83	0.0040398
390	6.02781	70.96	2.424	-622.68	0.0037995
400	5.80926	73.81	2.415	-630.42	0.0035915
410	5.60954	76.63	2.406	-637.26	0.0034092
420	5.42598	79.43	2.396	-643.33	0.0032478
430	5.25645	82.21	2.387	-648.75	0.0031036
440	5.09918	84.97	2.378	-653.61	0.0029739
450	4.95273	87.71	2.369	-657.99	0.0028562
460	4.81599	90.44	2.360	-661.96	0.0027490
470	4.68764	93.16	2.351	-665.55	0.0026508
480	4.56710	95.86	2.342	-668.83	0.0025604
490	4.45353	98.56	2.333	-671.82	0.0024769
500	4.34628	101.25	2.325	-674.55	0.0023995
510	4.24478	103.93	2.316	-677.05	0.0023274
520	4.14854	106.60	2.308	-679.36	0.0022602
530	4.05712	109.27	2.299	-681.47	0.0021972
540	3.97013	111.94	2.291	-683.42	0.0021381
550	3.88774	114.61	2.283	-685.22	0.0020825
560	3.80913	117.27	2.275	-686.89	0.0020301
570	3.73253	119.93	2.267	-688.43	0.0019806
580	3.66020	122.60	2.259	-689.85	0.0019338
590	3.59290	125.26	2.251	-691.18	0.0018893
600	3.52445	127.92	2.243	-692.40	0.0018472

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

750 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(OP/DV) PSIA	(DV/DT) / V DEG. R
* 98.910	81.81662	212.06	16.832	-183211.99	0.0019266
100	81.64577	213.16	16.455	-180671.38	0.0019201
105	80.86916	215.49	15.198	-169488.82	0.0019038
110	80.10339	214.74	14.418	-159050.75	0.0019044
115	79.34212	212.25	13.894	-149296.29	0.0019169
120	78.58136	208.84	13.510	-140158.48	0.0019381
125	77.81835	204.99	13.203	-131574.67	0.0019657
130	77.05113	200.99	12.936	-123489.26	0.0019982
135	76.27831	196.96	12.698	-115853.68	0.0020347
140	75.49981	192.97	12.447	-108625.56	0.0020745
145	74.71179	189.05	12.206	-101767.86	0.0021176
150	73.91648	185.17	11.962	-95248.13	0.0021638
155	73.11215	181.34	11.713	-89037.87	0.0022133
160	72.29902	177.51	11.460	-83112.20	0.0022665
165	71.47321	173.67	11.293	-77449.43	0.0023239
170	70.63672	169.79	10.942	-72030.84	0.0023860
175	69.78742	165.86	10.677	-66840.39	0.0024536
180	68.92392	161.85	10.410	-61864.51	0.0025277
185	68.04466	157.75	10.139	-57091.90	0.0026093
190	67.14777	153.55	9.867	-52513.29	0.0026997
195	66.23106	149.22	9.592	-48121.23	0.0028006
200	65.29198	144.78	9.314	-43909.97	0.0029138
205	64.32750	140.19	9.034	-39875.16	0.0030417
210	63.33406	135.46	8.750	-36013.80	0.0031972
215	62.30738	130.58	8.463	-32323.96	0.0033541
220	61.24235	125.54	8.170	-28804.67	0.0035472
225	60.13270	120.32	7.872	-25455.72	0.0037729
230	58.97070	114.93	7.566	-22277.45	0.0040401
235	57.74657	109.35	7.251	-19270.57	0.0043608
240	56.44766	103.55	6.925	-16435.85	0.0047530
245	55.05706	97.51	6.596	-13773.83	0.0052439
250	53.55120	91.17	6.228	-11284.43	0.0058778
255	51.89531	84.47	5.848	-8966.51	0.0067324
260	50.03390	77.29	5.436	-6817.33	0.0079607
265	47.86771	69.39	4.978	-4832.08	0.0099149
270	45.18285	60.33	4.446	-3003.37	0.0136536
275	41.31096	48.89	3.755	-1321.29	0.0247985
280	21.25293	30.83	2.361	-58.76	0.2068863
285	15.23833	34.35	2.426	-243.41	0.0329322
290	13.41555	36.99	2.454	-330.13	0.0203995
295	12.28569	39.27	2.470	-397.74	0.0153665
300	11.46353	41.35	2.431	-430.41	0.0125676
310	10.28542	45.15	2.492	-491.18	0.0094774
320	9.44225	48.66	2.495	-533.42	0.0077696
330	8.78776	51.99	2.493	-564.97	0.0066674
340	8.25470	55.19	2.488	-589.63	0.0058884
350	7.80645	58.31	2.481	-609.54	0.0053036
360	7.42084	61.36	2.473	-626.00	0.0048454
370	7.08339	64.36	2.464	-639.85	0.0044747
380	6.78414	67.31	2.454	-651.69	0.0041673
390	6.51592	70.22	2.444	-661.92	0.0039072
400	6.27342	73.10	2.434	-670.85	0.0036937
410	6.05255	75.96	2.424	-678.70	0.0034889
420	5.85014	78.79	2.414	-685.67	0.0033173
430	5.66366	81.59	2.404	-691.87	0.0031647
440	5.49105	84.38	2.395	-697.44	0.0030279
450	5.33063	87.15	2.385	-702.44	0.0029043
460	5.18099	89.90	2.375	-706.96	0.0027920
470	5.04096	92.64	2.366	-711.06	0.0026895
480	4.90953	95.37	2.356	-714.79	0.0025953
490	4.78586	98.09	2.347	-718.20	0.0025085
500	4.66920	100.80	2.338	-721.31	0.0024282
510	4.55891	103.50	2.329	-724.15	0.0023535
520	4.45443	106.20	2.320	-726.77	0.0022840
530	4.35528	109.89	2.311	-729.18	0.0022190
540	4.26101	111.58	2.303	-731.39	0.0021581
550	4.17125	114.27	2.294	-733.44	0.0021009
560	4.08564	116.95	2.286	-735.33	0.0020470
570	4.00388	119.63	2.277	-737.07	0.0019962
580	3.92570	122.31	2.269	-738.69	0.0019481
590	3.85095	124.99	2.260	-740.19	0.0019026
600	3.77910	127.67	2.252	-741.59	0.0018594

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

800 PSIA ISOBAR

TEMPERATURE	DENSITY	V(OH/DV)	V(OP/OU)	V(OP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/RTU	PSIA	DEG. R
* 98.981	81.82782	212.54	16.775	-183353.82	0.0019226
100	81.66795	213.56	16.427	-180985.17	0.0019166
105	80.89300	215.90	15.176	-169828.72	0.0019000
110	80.12854	215.16	14.401	-159410.49	0.0019004
115	79.36966	212.67	13.881	-149671.19	0.0019127
120	78.60936	209.26	13.500	-140545.09	0.0019336
125	77.84788	205.42	13.195	-131970.46	0.0019609
130	77.08229	201.42	12.930	-123492.44	0.0019931
135	76.31118	197.40	12.684	-116263.00	0.0020292
140	75.53350	193.47	12.444	-109040.20	0.0020686
145	74.74843	189.51	12.204	-102187.34	0.0021112
150	73.95521	185.65	11.962	-95672.17	0.0021568
155	73.15312	181.83	11.715	-89466.39	0.0022057
160	72.34141	178.02	11.463	-83545.21	0.0022582
165	71.51923	174.20	11.207	-77887.04	0.0023147
170	70.68562	170.34	10.947	-72473.18	0.0023758
175	69.83947	166.44	10.684	-67287.61	0.0024423
180	68.97945	162.45	10.418	-62316.77	0.0025151
185	68.10404	158.38	10.149	-57549.32	0.0025951
190	67.21145	154.21	9.878	-52975.96	0.0026936
195	66.29958	149.93	9.605	-48589.21	0.0027822
200	65.36597	145.52	9.330	-44383.26	0.0028926
205	64.40773	140.98	9.052	-40353.73	0.0030171
210	63.42146	136.30	8.771	-36497.53	0.0031585
215	62.40311	131.47	8.486	-32812.69	0.0033201
220	61.34784	126.49	8.197	-29298.19	0.0035065
225	60.24979	121.34	7.902	-25953.77	0.0037236
230	59.10173	116.03	7.601	-22779.75	0.0039792
235	57.89465	110.54	7.292	-19776.83	0.0042842
240	56.61702	104.84	6.972	-16945.84	0.0046544
245	55.25363	98.93	6.640	-14287.46	0.0051131
250	53.78369	92.75	6.292	-11801.91	0.0056975
255	52.17732	86.26	5.925	-9488.59	0.0064703
260	50.38854	79.35	5.530	-7345.78	0.0075491
265	48.33952	71.36	5.097	-5370.54	0.0091835
270	45.87788	63.49	4.607	-3559.43	0.0120266
275	42.61911	53.57	4.013	-1912.68	0.0185453
280	36.75346	40.06	3.147	-472.41	0.0539863
285	19.69089	32.69	2.419	-149.26	0.0738886
290	15.78245	35.52	2.461	-283.30	0.0292910
295	14.02908	37.96	2.483	-364.16	0.0194011
300	12.89021	40.15	2.497	-420.85	0.0149290
310	11.37864	44.09	2.512	-498.11	0.0106090
320	10.35501	47.68	2.516	-549.90	0.0084459
330	9.58402	51.07	2.515	-587.77	0.0071218
340	8.96798	54.33	2.511	-616.94	0.0062166
350	8.45678	57.49	2.503	-640.25	0.0055528
360	8.02130	60.58	2.495	-659.36	0.0050415
370	7.64306	63.61	2.485	-675.36	0.0046332
380	7.30963	66.59	2.475	-688.95	0.0042982
390	7.01222	69.53	2.465	-700.66	0.0040172
400	6.74440	72.44	2.454	-710.85	0.0037772
410	6.50130	75.32	2.443	-719.79	0.0035695
420	6.27917	78.17	2.433	-727.70	0.0033874
430	6.07502	81.01	2.422	-734.74	0.0032261
440	5.88648	83.82	2.411	-741.04	0.0030821
450	5.71158	86.61	2.401	-746.70	0.0029525
460	5.54872	89.39	2.391	-751.81	0.0028351
470	5.39655	92.15	2.381	-756.43	0.0027281
480	5.25393	94.91	2.371	-760.64	0.0026301
490	5.11949	97.65	2.361	-764.47	0.0025399
500	4.99359	100.38	2.352	-767.98	0.0024567
510	4.87431	103.10	2.342	-771.19	0.0023794
520	4.76143	105.82	2.333	-774.13	0.0023076
530	4.65439	108.53	2.324	-776.84	0.0022406
540	4.55271	111.24	2.315	-779.33	0.0021779
550	4.45595	113.94	2.306	-781.63	0.0021190
560	4.36374	116.64	2.297	-783.75	0.0020637
570	4.27574	119.34	2.288	-785.72	0.0020115
580	4.19163	122.04	2.279	-787.54	0.0019623
590	4.11114	124.74	2.270	-789.22	0.0019157
600	4.03403	127.43	2.262	-790.79	0.0018716

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

850 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 99.051	81.83904	213.02	16.719	-183497.18	0.0019187
100	81.69340	213.97	16.398	-181299.33	0.0019131
105	80.91680	216.31	15.155	-170168.89	0.0018963
110	80.15365	215.57	14.385	-159770.41	0.0018764
115	79.39515	213.08	13.868	-150046.18	0.0019085
120	78.63730	209.68	13.490	-140931.68	0.0019292
125	77.87734	205.84	13.189	-132366.13	0.0019562
130	77.11335	201.85	12.925	-124295.39	0.0019880
135	76.34394	197.84	12.680	-116671.99	0.0020237
140	75.56908	193.87	12.442	-109454.42	0.0020627
145	74.78494	189.97	12.203	-102606.28	0.0021048
150	73.99379	186.12	11.962	-96095.57	0.0021499
155	73.19392	182.32	11.716	-89894.15	0.0021982
160	72.38461	178.53	11.465	-83977.35	0.0022499
165	71.56503	174.72	11.211	-78323.65	0.0023056
170	70.73426	170.89	10.952	-72914.39	0.0023658
175	69.89121	167.01	10.690	-67733.57	0.0024312
180	69.03462	163.06	10.426	-62767.63	0.0025026
185	68.16300	159.02	10.159	-58005.19	0.0025811
190	67.27464	154.88	9.889	-53436.93	0.0026678
195	66.36751	150.63	9.618	-49055.34	0.0027642
200	65.43026	146.26	9.345	-44854.53	0.0028720
205	64.48712	141.76	9.069	-40830.08	0.0029932
210	63.50784	137.12	8.791	-36978.84	0.0031306
215	62.49758	132.35	8.509	-33298.79	0.0032872
220	61.45176	127.43	8.223	-29788.84	0.0034673
225	60.36497	122.35	7.932	-26448.67	0.0036761
230	59.23019	117.11	7.635	-23278.57	0.0039210
235	58.03937	111.70	7.330	-20279.23	0.0042116
240	56.78186	106.11	7.017	-17451.49	0.0045617
245	55.44395	100.31	6.692	-14796.14	0.0049915
250	54.00721	94.28	6.353	-12313.58	0.0055325
255	52.44574	87.97	5.997	-10003.60	0.0062359
260	50.72099	81.31	5.617	-7865.15	0.0071933
265	48.77071	74.17	5.206	-5896.47	0.0083874
270	46.48186	66.34	4.750	-4096.10	0.0108460
275	43.60762	57.41	4.219	-2467.30	0.0152708
280	39.38421	46.49	3.542	-1041.19	0.0284705
285	29.13053	34.06	2.537	-157.99	0.1116648
290	19.25225	34.36	2.469	-221.71	0.0490171
295	16.20172	36.79	2.496	-329.22	0.0258116
300	14.55044	39.05	2.514	-403.38	0.0181972
310	12.57601	43.10	2.533	-500.64	0.0119835
320	11.32761	46.78	2.539	-563.61	0.0092177
330	10.41936	50.22	2.538	-608.66	0.0076216
340	9.70881	53.52	2.534	-642.87	0.0065691
350	9.12756	56.72	2.526	-669.91	0.0058159
360	8.63749	59.84	2.517	-691.91	0.0052459
370	8.21515	62.90	2.507	-710.21	0.0047969
380	7.84513	65.91	2.496	-725.69	0.0044323
390	7.51672	68.88	2.485	-738.97	0.0041291
400	7.22218	71.81	2.474	-750.49	0.0038721
410	6.95575	74.72	2.462	-760.58	0.0036509
420	6.71299	77.60	2.451	-769.48	0.0034579
430	6.49046	80.45	2.440	-777.39	0.0032878
440	6.28538	83.29	2.429	-784.45	0.0031364
450	6.09552	86.10	2.418	-790.80	0.0030006
460	5.91902	88.90	2.407	-796.52	0.0028780
470	5.75435	91.69	2.396	-801.69	0.0027665
480	5.60023	94.46	2.386	-806.40	0.0026647
490	5.45556	97.22	2.375	-810.68	0.0025712
500	5.31940	99.97	2.365	-814.59	0.0024849
510	5.19094	102.72	2.355	-818.17	0.0024052
520	5.06949	105.45	2.346	-821.45	0.0023310
530	4.95441	108.18	2.336	-824.47	0.0022620
540	4.84518	110.91	2.326	-827.25	0.0021975
550	4.74132	113.63	2.317	-829.82	0.0021370
560	4.64240	116.35	2.308	-832.18	0.0020802
570	4.54806	119.06	2.298	-834.37	0.0020268
580	4.45794	121.78	2.289	-836.40	0.0019763
590	4.37175	124.49	2.280	-838.28	0.0019287
600	4.28922	127.21	2.271	-840.02	0.0018835

\* INDICATES TWO PHASE BOUNDARY



THERMODYNAMIC PROPERTIES OF OXYGEN

900 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 90.122	81.85026	213.50	16.644	-183642.05	0.0019148
100	81.71291	214.37	16.370	-181613.84	0.0019096
105	80.94055	216.72	15.134	-170509.33	0.0018926
110	80.17871	215.98	14.369	-160130.50	0.0018925
115	79.42158	213.50	13.855	-150421.24	0.0019043
120	78.66516	210.10	13.480	-141318.25	0.0019247
125	77.90672	206.27	13.190	-132761.69	0.0019514
130	77.14433	202.29	12.919	-124698.14	0.0019829
135	76.37661	198.28	12.676	-117080.68	0.0020183
140	75.60255	194.32	12.439	-109868.23	0.0020569
145	74.82132	190.43	12.202	-103024.70	0.0020985
150	74.03221	186.60	11.962	-96518.33	0.0021430
155	73.23455	182.81	11.717	-90321.16	0.0021907
160	72.42761	179.03	11.468	-84408.63	0.0022418
165	71.61060	175.25	11.214	-78759.28	0.0022967
170	70.78264	171.44	10.957	-73354.50	0.0023559
175	69.94265	167.58	10.697	-68178.30	0.0024202
180	69.08944	163.65	10.433	-63217.11	0.0024904
185	68.22156	159.64	10.168	-58459.56	0.0025674
190	67.33735	155.53	9.900	-53896.25	0.0026523
195	66.43487	151.32	9.631	-49519.65	0.0027466
200	65.51187	146.99	9.360	-45323.82	0.0028518
205	64.56568	142.53	9.086	-41304.28	0.0029699
210	63.59321	137.94	8.810	-37457.81	0.0031034
215	62.59081	133.22	8.531	-33782.34	0.0032552
220	61.55415	128.35	8.248	-30276.70	0.0034293
225	60.47305	123.34	7.961	-26940.53	0.0036305
230	59.35621	118.17	7.668	-23774.06	0.0038653
235	58.18091	112.85	7.368	-20777.94	0.0041424
240	56.94248	107.35	7.060	-17953.03	0.0044742
245	55.62349	101.67	6.742	-15300.15	0.0048781
250	54.22254	95.77	6.412	-12819.85	0.0053808
255	52.70204	89.63	6.066	-10512.17	0.0060245
260	51.03433	83.18	5.700	-8376.52	0.0068820
265	49.16374	76.34	5.307	-6411.85	0.0080898
270	47.01987	68.95	4.877	-4617.69	0.0099414
275	44.41493	60.74	4.392	-2997.96	0.0132013
280	40.93778	51.25	3.813	-1575.89	0.0206177
285	35.04821	40.05	3.058	-485.04	0.0486427
290	24.63870	34.51	2.524	-201.27	0.0712963
295	19.05106	35.95	2.514	-289.58	0.0360185
300	16.53190	38.12	2.533	-379.41	0.0227923
310	13.89825	42.22	2.554	-498.99	0.0136633
320	12.36743	45.95	2.562	-574.64	0.0100998
330	11.29696	49.44	2.562	-627.74	0.0081713
340	10.47871	52.77	2.557	-667.50	0.0069472
350	9.81953	56.00	2.549	-698.61	0.0060932
360	9.26976	59.15	2.540	-723.73	0.0054587
370	8.79982	62.24	2.529	-744.49	0.0049657
380	8.39069	65.27	2.518	-761.97	0.0045696
390	8.02939	68.26	2.506	-776.91	0.0042430
400	7.70670	71.22	2.494	-789.83	0.0039682
410	7.41581	74.15	2.482	-801.12	0.0037329
420	7.15154	77.05	2.469	-811.05	0.0035288
430	6.90990	79.93	2.458	-819.87	0.0033496
440	6.68769	82.78	2.446	-827.73	0.0031907
450	6.48236	85.62	2.434	-834.78	0.0030487
460	6.29181	88.44	2.423	-841.13	0.0029207
470	6.11430	91.25	2.412	-846.88	0.0028047
480	5.94338	94.04	2.401	-852.09	0.0026990
490	5.79283	96.82	2.390	-856.83	0.0026021
500	5.64659	99.59	2.379	-861.17	0.0025130
510	5.50375	102.35	2.369	-865.13	0.0024305
520	5.37855	105.11	2.358	-868.77	0.0023542
530	5.25529	107.85	2.348	-872.11	0.0022832
540	5.13839	110.60	2.338	-875.18	0.0022169
550	5.02731	113.33	2.328	-878.02	0.0021548
560	4.92159	116.07	2.319	-880.63	0.0020965
570	4.82081	118.80	2.309	-883.05	0.0020418
580	4.72461	121.53	2.300	-885.29	0.0019902
590	4.63265	124.26	2.290	-887.37	0.0019414
600	4.54464	126.99	2.281	-889.29	0.0018953

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DO) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) /V DEG. R
* 99.263	81.87276	214.45	16.557	-183936.27	0.0019071
100	81.75734	215.17	16.314	-182243.96	0.0019027
105	80.98794	217.54	15.093	-171191.02	0.0018853
110	80.22868	216.81	14.337	-160851.23	0.0018847
115	79.47426	214.33	13.831	-151171.63	0.0018761
120	78.72069	210.94	13.461	-142091.37	0.0019160
125	77.96525	207.11	13.166	-133552.50	0.0019421
130	77.20602	203.14	12.908	-125503.01	0.0019729
135	76.44165	199.15	12.668	-117897.13	0.0020075
140	75.67113	195.21	12.434	-110694.61	0.0020453
145	74.89368	191.35	12.200	-103860.00	0.0020860
150	74.10862	187.54	11.962	-97362.01	0.0021295
155	73.31529	183.78	11.720	-91173.00	0.0021760
160	72.51303	180.04	11.473	-85268.65	0.0022257
165	71.70109	176.30	11.222	-79627.64	0.0022791
170	70.87862	172.53	10.967	-74231.46	0.0023365
175	70.04465	168.72	10.709	-69064.13	0.0023987
180	69.19804	164.84	10.449	-64112.07	0.0024664
185	68.3746	160.89	10.186	-59363.85	0.0025405
190	67.46135	156.84	9.922	-54810.03	0.0026221
195	66.56793	152.69	9.656	-50442.97	0.0027123
200	65.65509	148.44	9.388	-46256.62	0.0028126
205	64.72042	144.06	9.119	-42246.39	0.0029249
210	63.76108	139.56	8.847	-38408.93	0.0030512
215	62.77377	134.94	8.573	-34742.03	0.0031941
220	61.75460	130.18	8.296	-31244.39	0.0033571
225	60.69896	125.29	8.016	-27915.51	0.0035441
230	59.60135	120.26	7.730	-24755.50	0.0037607
235	58.45511	115.09	7.440	-21764.91	0.0040138
240	57.25202	109.76	7.142	-18944.54	0.0043133
245	55.98183	104.28	6.836	-16295.23	0.0046724
250	54.63133	98.63	6.521	-13817.64	0.0051107
255	53.18305	92.78	6.193	-11512.12	0.0056577
260	51.61293	86.71	5.850	-9378.53	0.0063607
265	49.88604	80.35	5.488	-7416.51	0.0073008
270	47.94829	73.64	5.100	-5626.23	0.0086304
275	45.70808	66.44	4.679	-4010.85	0.0106707
280	42.99053	58.58	4.208	-2583.52	0.0142161
285	39.40527	49.92	3.666	-1389.93	0.0216465
290	34.03946	41.33	3.061	-581.97	0.0389269
295	27.00273	37.24	2.670	-333.09	0.0484093
300	21.85151	37.48	2.597	-350.30	0.0351559
310	17.01730	40.88	2.603	-498.31	0.0181251
320	14.68165	44.57	2.611	-590.25	0.0122442
330	13.19216	48.09	2.611	-661.23	0.0094340
340	12.11158	51.47	2.606	-713.41	0.0077840
350	11.26971	54.74	2.597	-753.55	0.0066911
360	10.58372	57.93	2.586	-785.51	0.0059087
370	10.00728	61.05	2.574	-811.64	0.0053175
380	9.51195	64.13	2.561	-833.45	0.0048525
390	9.07905	67.16	2.548	-851.94	0.0044757
400	8.69564	70.15	2.534	-867.84	0.0041630
410	8.35241	73.12	2.521	-881.66	0.0038984
420	8.04241	76.06	2.507	-893.78	0.0036711
430	7.76037	78.97	2.494	-904.49	0.0034732
440	7.50213	81.86	2.481	-914.02	0.0032989
450	7.26441	84.74	2.468	-922.55	0.0031441
460	7.04453	87.59	2.455	-930.21	0.0030055
470	6.84031	90.43	2.443	-937.14	0.0028804
480	6.64992	93.26	2.430	-943.41	0.0027668
490	6.47185	96.08	2.418	-949.12	0.0026632
500	6.30480	98.88	2.407	-954.32	0.0025682
510	6.14767	101.68	2.395	-959.08	0.0024807
520	5.99949	104.47	2.384	-963.44	0.0023998
530	5.85946	107.25	2.373	-967.45	0.0023247
540	5.72683	110.02	2.362	-971.13	0.0022549
550	5.60099	112.79	2.352	-974.53	0.0021896
560	5.48138	115.56	2.341	-977.66	0.0021285
570	5.36749	118.32	2.331	-980.56	0.0020712
580	5.25870	121.08	2.320	-983.24	0.0020173
590	5.15520	123.84	2.310	-985.72	0.0019664
600	5.05604	126.60	2.300	-988.03	0.0019184

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

950 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(OH/DV) BTU/LB	V(OP/OU) PSIA-CU FT/HTU	V(OP/OV) PSIA	(OV/DT) /V DEG. R
* 99.192	81.86151	213.97	16.610	-183788.42	0.0019109
100	81.73539	214.77	16.342	-181928.72	0.0019061
105	80.96427	217.13	15.113	-170850.04	0.0018989
110	80.20372	216.40	14.353	-160490.78	0.0018886
115	79.44795	213.92	13.843	-150796.39	0.0019002
120	78.69296	210.52	13.471	-141704.82	0.0019203
125	77.93602	206.69	13.173	-133157.15	0.0019467
130	77.17522	202.71	12.914	-125100.69	0.0019779
135	76.40918	198.71	12.672	-117489.06	0.0020129
140	75.63689	194.77	12.447	-110281.62	0.0020511
145	74.85756	190.89	12.201	-103442.60	0.0020922
150	74.07049	187.07	11.962	-96940.48	0.0021363
155	73.27500	183.29	11.719	-90747.44	0.0021833
160	72.47041	179.54	11.471	-84839.06	0.0022337
165	71.65596	175.77	11.218	-79193.94	0.0022878
170	70.83075	171.99	10.962	-73793.51	0.0023461
175	69.99380	168.15	10.703	-68621.82	0.0024094
180	69.14391	164.25	10.441	-63655.26	0.0024783
185	68.27971	160.27	10.177	-58912.43	0.0025538
190	67.39958	156.19	9.911	-54353.94	0.0026370
195	66.50168	152.01	9.644	-49982.19	0.0027293
200	65.58381	147.71	9.374	-45791.17	0.0028320
205	64.64344	143.30	9.103	-41776.36	0.0029471
210	63.67762	138.76	8.829	-37934.49	0.0030769
215	62.68287	134.08	8.552	-34263.40	0.0032242
220	61.65508	129.27	8.272	-30761.86	0.0033926
225	60.58939	124.32	7.988	-27429.44	0.0035865
230	59.47989	119.22	7.699	-24266.33	0.0038119
235	58.31944	113.97	7.404	-21273.12	0.0040766
240	57.09912	108.57	7.102	-18450.65	0.0043915
245	55.80766	102.99	6.790	-15799.77	0.0047720
250	54.43038	97.22	6.467	-13321.09	0.0052407
255	52.94746	91.23	6.131	-11014.85	0.0058328
260	51.33098	84.98	5.777	-8880.74	0.0066066
265	49.53913	78.40	5.400	-6918.14	0.0076665
270	47.50421	71.37	4.994	-5127.05	0.0092210
275	45.10372	63.72	4.544	-3511.17	0.0117527
280	42.07708	55.17	4.028	-2087.93	0.0166556
285	37.72067	45.47	3.405	-929.93	0.0293822
290	30.27592	37.12	2.748	-318.80	0.0588636
295	22.80469	35.94	2.556	-275.09	0.0473755
300	18.94563	37.51	2.556	-355.73	0.0289193
310	15.37004	41.46	2.577	-494.09	0.0157071
320	13.48262	45.20	2.586	-583.31	0.0111060
330	12.22012	48.73	2.586	-645.16	0.0087747
340	11.27916	52.09	2.581	-690.95	0.0073521
350	10.53337	55.34	2.573	-726.44	0.0063850
360	9.91842	58.51	2.563	-754.89	0.0056797
370	9.39718	61.62	2.552	-778.27	0.0051393
380	8.94631	64.68	2.539	-797.86	0.0047097
390	8.55020	67.69	2.527	-814.55	0.0043586
400	8.19789	70.67	2.514	-828.93	0.0040652
410	7.88140	73.62	2.501	-841.46	0.0038155
420	7.59472	76.54	2.488	-852.47	0.0035999
430	7.33324	79.43	2.476	-862.22	0.0034114
440	7.09331	82.31	2.463	-870.90	0.0032449
450	6.87202	85.16	2.451	-878.68	0.0030965
460	6.66701	88.00	2.439	-885.68	0.0029632
470	6.47631	90.83	2.427	-892.01	0.0028427
480	6.29830	93.64	2.415	-897.75	0.0027331
490	6.13161	96.44	2.404	-902.97	0.0026328
500	5.97507	99.23	2.393	-907.74	0.0025408
510	5.82768	102.01	2.382	-912.09	0.0024558
520	5.68957	104.78	2.371	-916.09	0.0023772
530	5.55699	107.54	2.361	-919.76	0.0023041
540	5.43229	110.30	2.350	-923.13	0.0022360
550	5.31388	113.06	2.340	-926.25	0.0021723
560	5.20126	115.81	2.330	-929.12	0.0021126
570	5.09397	118.55	2.320	-931.78	0.0020566
580	4.99161	121.30	2.310	-934.24	0.0020038
590	4.89381	124.05	2.300	-936.51	0.0019540
600	4.80025	126.79	2.291	-938.63	0.0019070

\* INDICATES TWO PHASE BOUNDARY

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1200 PSIA ISOBAR  
THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(CP/DV) PSIA	(DV/DT) / V DEG. R
* 99.544	81.91789	216.33	16.352	-184542.34	0.0018918
100	81.84730	216.77	16.207	-183508.54	0.0018891
105	81.08224	219.16	15.014	-172557.71	0.0018708
110	80.32906	218.46	14.277	-162294.88	0.0018695
115	79.57896	215.99	13.734	-152673.50	0.0018799
120	78.83098	212.61	13.425	-143637.58	0.0018988
125	78.08141	208.80	13.139	-135132.93	0.0019238
130	77.32817	204.85	12.897	-127110.44	0.0019534
135	76.57054	200.89	12.653	-119526.55	0.0019866
140	75.80697	196.99	12.425	-112342.69	0.0020229
145	75.03690	193.16	12.196	-105524.69	0.0020617
150	74.25971	189.41	11.963	-99042.18	0.0021033
155	73.47491	185.71	11.725	-92868.21	0.0021475
160	72.68162	182.03	11.483	-86978.90	0.0021947
165	71.87947	178.37	11.236	-81353.23	0.0022450
170	71.06763	174.69	10.996	-75972.84	0.0022991
175	70.24524	170.96	10.733	-70821.80	0.0023574
180	69.41130	167.18	10.478	-65886.49	0.0024206
185	68.56466	163.34	10.221	-61155.41	0.0024894
190	67.70397	159.41	9.962	-56618.95	0.0025647
195	66.82769	155.39	9.702	-52269.29	0.0026476
200	65.93403	151.27	9.442	-48100.15	0.0027391
205	65.02094	147.05	9.190	-44106.70	0.0028408
210	64.08604	142.72	8.917	-40285.31	0.0029544
215	63.12661	138.27	8.652	-36633.48	0.0030918
220	62.13947	133.72	8.386	-33149.61	0.0032255
225	61.12096	129.04	8.117	-29832.89	0.0033886
230	60.06679	124.26	7.845	-26683.13	0.0035748
235	58.97198	119.36	7.570	-23700.59	0.0037889
240	57.83021	114.34	7.290	-20885.83	0.0040372
245	56.63452	109.21	7.005	-18239.51	0.0043277
250	55.37593	103.96	6.714	-15762.21	0.0046718
255	54.04334	98.58	6.415	-13454.32	0.0050848
260	52.62259	93.08	6.107	-11315.87	0.0055891
265	51.09504	87.42	5.789	-9346.65	0.0062185
270	49.43532	81.60	5.457	-7546.50	0.0070260
275	47.60736	75.57	5.110	-5916.26	0.0080795
280	45.55762	69.32	4.745	-4459.86	0.0095923
285	43.20318	62.83	4.356	-3188.50	0.0117824
290	40.41482	56.21	3.945	-2128.54	0.0151532
295	37.02128	49.89	3.526	-1330.76	0.0202126
300	32.98370	44.98	3.154	-849.24	0.0257419
310	25.21021	41.95	2.805	-587.61	0.0251424
320	20.40528	43.65	2.744	-638.45	0.0173925
330	17.61544	46.58	2.728	-726.02	0.0124977
340	15.78090	49.77	2.716	-800.22	0.0097397
350	14.44759	52.97	2.702	-858.90	0.0080375
360	13.41301	56.14	2.687	-905.57	0.0068912
370	12.57415	59.28	2.671	-943.38	0.0060665
380	11.87255	62.37	2.654	-974.59	0.0054431
390	11.27217	65.44	2.636	-1000.79	0.0049537
400	10.74933	68.47	2.619	-1023.10	0.0045580
410	10.28772	71.48	2.602	-1042.33	0.0042304
420	9.87559	74.47	2.585	-1059.09	0.0039540
430	9.50426	77.43	2.568	-1073.81	0.0037170
440	9.16711	80.37	2.552	-1086.84	0.0035112
450	8.85900	83.30	2.536	-1098.46	0.0033304
460	8.57582	86.21	2.521	-1108.86	0.0031701
470	8.31428	89.10	2.506	-1118.24	0.0030269
480	8.07168	91.99	2.491	-1126.71	0.0028978
490	7.84580	94.96	2.477	-1134.40	0.0027809
500	7.63475	97.72	2.463	-1141.41	0.0026743
510	7.43695	100.57	2.449	-1147.81	0.0025768
520	7.25106	103.41	2.436	-1153.66	0.0024871
530	7.07592	106.25	2.423	-1159.04	0.0024042
540	6.91051	109.07	2.411	-1163.98	0.0023274
550	6.75397	111.90	2.398	-1168.53	0.0022560
560	6.60553	114.72	2.386	-1172.73	0.0021894
570	6.46451	117.53	2.374	-1176.61	0.0021272
580	6.33032	120.34	2.362	-1180.20	0.0020688
590	6.20242	123.15	2.351	-1183.52	0.0020140
600	6.08034	125.96	2.340	-1186.61	0.0019623

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

1100 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 99.403	91.89530	215.39	16.452	-184236.39	0.0018794
100	81.80263	215.97	16.260	-102875.52	0.0018458
105	81.03517	218.35	15.053	-171873.81	0.0018780
110	80.27847	217.63	14.307	-161572.68	0.0018771
115	79.52672	215.16	13.807	-151922.38	0.0018879
120	78.77597	211.77	13.443	-142664.47	0.0019073
125	78.02348	207.96	13.151	-134342.90	0.0019329
130	77.26736	203.99	12.897	-126307.10	0.0019631
135	76.50629	200.02	12.661	-118712.41	0.0019970
140	75.73927	196.10	12.429	-111519.42	0.0020340
145	74.96554	192.26	12.198	-104693.31	0.0020734
150	74.18445	188.48	11.962	-99203.27	0.0021163
155	73.39538	184.75	11.723	-92021.99	0.0021616
160	72.59769	181.04	11.478	-86125.37	0.0022100
165	71.79070	177.33	11.229	-80492.26	0.0022619
170	70.97361	173.61	10.977	-75104.19	0.0023176
175	70.14550	169.84	10.721	-69945.25	0.0023778
180	69.30532	166.02	10.463	-65001.81	0.0024432
185	68.45181	162.12	10.204	-60262.41	0.0025146
190	67.58354	158.13	9.942	-55717.53	0.0025729
195	66.69884	154.05	9.680	-51359.43	0.0026793
200	65.79578	149.86	9.416	-47181.97	0.0027751
205	64.87213	145.57	9.150	-43180.42	0.0028819
210	63.92529	141.15	8.883	-39351.30	0.0030016
215	62.95228	136.62	8.614	-35692.26	0.0031364
220	61.94958	131.97	8.342	-32201.85	0.0032893
225	60.91310	127.19	8.068	-28879.42	0.0034637
230	59.83798	122.28	7.789	-25724.93	0.0036642
235	58.71942	117.25	7.507	-22738.81	0.0038965
240	57.54744	112.09	7.219	-19921.75	0.0041684
245	56.31642	106.79	6.924	-17274.51	0.0044903
250	55.01461	101.35	6.621	-14797.78	0.0048769
255	53.62821	95.76	6.309	-12491.95	0.0053491
260	52.13997	89.99	5.995	-10357.07	0.0059391
265	50.52178	84.02	5.647	-8392.95	0.0066980
270	48.74047	77.81	5.291	-6599.70	0.0077127
275	46.73967	71.29	4.912	-4979.24	0.0091426
280	44.42937	64.39	4.504	-3538.97	0.0113071
285	41.64497	57.06	4.059	-2300.60	0.0149034
290	38.09379	49.53	3.574	-1320.58	0.0213946
295	33.41170	43.07	3.101	-709.13	0.0312447
300	28.15342	39.93	2.801	-484.62	0.0353342
310	20.88387	40.59	2.675	-496.41	0.0232313
320	17.35924	43.71	2.669	-604.69	0.0148528
330	15.29444	47.10	2.665	-691.48	0.0109097
340	13.87716	50.45	2.658	-756.47	0.0087250
350	12.81180	53.72	2.648	-806.30	0.0073437
360	11.96490	56.92	2.635	-845.67	0.0063987
370	11.26567	60.07	2.621	-877.60	0.0056860
380	10.67298	63.16	2.607	-904.05	0.0051448
390	10.16042	66.22	2.591	-926.34	0.0047134
400	9.71030	69.24	2.576	-945.40	0.0043602
410	9.31014	72.23	2.561	-961.89	0.0040647
420	8.95093	75.20	2.546	-976.30	0.0038132
430	8.62553	78.14	2.531	-989.00	0.0035959
440	8.32895	81.06	2.516	-1000.26	0.0034060
450	8.05693	83.96	2.502	-1010.32	0.0032382
460	7.80615	86.85	2.488	-1019.35	0.0030888
470	7.57389	89.72	2.474	-1027.50	0.0029546
480	7.35792	92.58	2.461	-1034.87	0.0028332
490	7.15639	95.42	2.448	-1041.56	0.0027229
500	6.96772	98.26	2.435	-1047.66	0.0026221
510	6.79058	101.08	2.422	-1053.24	0.0025295
520	6.62382	103.90	2.410	-1058.34	0.0024442
530	6.46648	106.71	2.398	-1063.03	0.0023651
540	6.31767	109.51	2.386	-1067.34	0.0022918
550	6.17667	112.31	2.375	-1071.32	0.0022234
560	6.04280	115.11	2.363	-1074.98	0.0021595
570	5.91550	117.90	2.352	-1078.37	0.0020997
580	5.79423	120.69	2.341	-1081.50	0.0020435
590	5.67854	123.47	2.331	-1084.40	0.0019906
600	5.56802	126.26	2.320	-1087.10	0.0019408

\* INDICATES TWO PHASE BOUNDARY

1300 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
* 99.684	81.94052	217.26	16.254	-184854.04	0.0018943
100	81.89144	217.56	16.156	-184143.02	0.0018924
105	81.12014	219.98	14.976	-173242.71	0.0018638
110	80.37746	219.27	14.248	-163017.83	0.0018620
115	79.63097	216.81	13.761	-153425.01	0.0018719
120	78.88573	213.44	13.407	-144410.71	0.0018903
125	78.13904	209.64	13.174	-135922.61	0.0019148
130	77.38904	205.70	12.877	-127913.06	0.0019439
135	76.63441	201.75	12.647	-120339.59	0.0019763
140	75.87423	197.87	12.421	-113164.49	0.0020118
145	75.10776	194.07	12.194	-106354.20	0.0020499
150	74.33441	190.34	11.963	-99878.83	0.0020905
155	73.55362	186.66	11.728	-93711.76	0.0021337
160	72.76492	183.02	11.497	-87829.33	0.0021796
165	71.96742	179.39	11.243	-82210.63	0.0022286
170	71.16071	175.74	10.995	-76837.51	0.0022811
175	70.34389	172.07	10.744	-71693.92	0.0023376
180	69.51603	168.34	10.491	-66766.29	0.0023986
185	68.67606	164.54	10.237	-62043.05	0.0024650
190	67.82272	160.67	9.981	-57514.52	0.0025375
195	66.95457	156.71	9.724	-53172.78	0.0026169
200	66.06997	152.66	9.467	-49011.44	0.0027045
205	65.16701	148.51	9.209	-45025.54	0.0028015
210	64.24351	144.26	8.950	-41211.32	0.0029094
215	63.29700	139.90	8.689	-37566.11	0.0030300
220	62.32459	135.43	8.428	-34088.17	0.0031654
225	61.32300	130.86	8.164	-30776.51	0.0033182
230	60.28839	126.18	7.898	-27630.78	0.0034917
235	59.21633	121.40	7.629	-24651.07	0.0036897
240	58.10160	116.52	7.357	-21837.79	0.0039174
245	56.93799	111.54	7.081	-19191.45	0.0041814
250	55.71809	106.46	6.800	-16712.52	0.0044901
255	54.43288	101.28	6.513	-14401.28	0.0048552
260	53.07113	96.00	6.219	-12257.70	0.0052927
265	51.61866	90.61	5.917	-10281.43	0.0058256
270	50.05698	85.10	5.605	-8472.01	0.0064881
275	48.36138	79.46	5.283	-6829.46	0.0073321
280	46.49772	73.68	4.948	-5355.46	0.0084403
285	44.41794	67.77	4.599	-4055.70	0.0099442
290	42.05467	61.79	4.236	-2943.49	0.0120447
295	39.32300	55.95	3.866	-2044.03	0.0149695
300	36.16172	50.75	3.510	-1391.26	0.0196166
310	29.20683	44.93	3.015	-804.69	0.0226272
320	23.66577	44.63	2.852	-723.82	0.0187090
330	20.12873	46.68	2.805	-778.62	0.0139128
340	17.81607	49.49	2.781	-850.95	0.0107453
350	16.17372	52.52	2.762	-914.68	0.0087415
360	14.92569	55.61	2.742	-967.24	0.0074018
370	13.93033	58.70	2.723	-1010.36	0.0064513
380	13.10947	61.77	2.703	-1046.10	0.0057427
390	12.41229	64.83	2.683	-1076.10	0.0051934
400	11.81094	67.86	2.664	-1101.61	0.0047541
410	11.28351	70.87	2.644	-1123.55	0.0043938
420	10.81523	73.87	2.625	-1142.62	0.0040922
430	10.39526	76.84	2.607	-1159.35	0.0038354
440	10.01546	79.80	2.589	-1174.14	0.0036137
450	9.66955	82.74	2.572	-1187.29	0.0034200
460	9.35259	85.67	2.555	-1199.06	0.0032491
470	9.06063	88.58	2.538	-1209.65	0.0030968
480	8.77044	91.49	2.522	-1219.21	0.0029602
490	8.53939	94.38	2.507	-1227.89	0.0028368
500	8.30528	97.26	2.492	-1235.79	0.0027247
510	8.08624	100.13	2.477	-1242.99	0.0026223
520	7.88070	102.99	2.463	-1249.59	0.0025284
530	7.68732	105.85	2.449	-1255.64	0.0024418
540	7.50493	108.70	2.435	-1261.20	0.0023617
550	7.33252	111.55	2.422	-1266.32	0.0022974
560	7.16921	114.39	2.409	-1271.05	0.0022482
570	7.01423	117.22	2.396	-1275.42	0.0022136
580	6.86688	120.06	2.384	-1279.46	0.0021931
590	6.72658	122.89	2.371	-1283.20	0.0021833
600	6.59276	125.72	2.359	-1286.67	0.0021829

\* INDICATES TWO PHASE BOUNDARY

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1400 PSIA ISOBAR  
THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DT) /V DEG. R
* 99.825	81.96319	218.19	16.159	-185171.43	0.0018769
100	81.93624	218.36	16.106	-184778.97	0.0018758
105	81.17590	220.78	14.938	-173928.83	0.0018568
110	80.42667	220.09	14.219	-163741.54	0.0018546
115	79.68276	217.64	13.740	-154176.92	0.0018641
120	78.94073	214.26	13.390	-145183.89	0.0018820
125	78.19638	210.47	13.111	-136711.99	0.0019059
130	77.44937	206.54	12.868	-128715.01	0.0019343
135	76.69791	202.61	12.640	-121151.59	0.0019662
140	75.94106	198.75	12.417	-113984.86	0.0020010
145	75.17814	194.97	12.192	-107131.90	0.0020383
150	74.40856	191.26	11.964	-100713.28	0.0020779
155	73.63180	187.61	11.730	-94552.71	0.0021201
160	72.84732	184.00	11.492	-88676.76	0.0021649
165	72.05456	180.41	11.250	-83064.70	0.0022125
170	71.25286	176.80	11.004	-77698.32	0.0022635
175	70.44148	173.16	10.755	-72561.76	0.0023182
180	69.61955	169.48	10.505	-67641.35	0.0023773
185	68.78605	165.74	10.252	-62925.49	0.0024413
190	67.93994	161.92	9.999	-58404.42	0.0025111
195	67.07955	158.02	9.746	-54070.12	0.0025874
200	66.20368	154.03	9.491	-49916.09	0.0026713
205	65.31045	149.95	9.236	-45937.24	0.0027639
210	64.39787	145.77	8.981	-42129.66	0.0028665
215	63.46367	141.49	8.724	-38490.54	0.0029808
220	62.50523	137.12	8.467	-35017.96	0.0031086
225	61.51959	132.64	8.208	-31710.79	0.0032521
230	60.50334	128.07	7.948	-28568.48	0.0034141
235	59.45255	123.40	7.686	-25590.97	0.0035979
240	58.36266	118.64	7.421	-22778.49	0.0038077
245	57.22936	113.80	7.152	-20131.38	0.0040487
250	56.04340	108.87	6.880	-17650.00	0.0043276
255	54.80031	103.86	6.603	-15334.47	0.0046532
260	53.49011	98.77	6.321	-13184.66	0.0050374
265	52.10173	93.61	6.033	-11200.06	0.0054962
270	50.62134	88.36	5.738	-9379.93	0.0060523
275	49.03130	83.03	5.436	-7723.63	0.0067385
280	47.30964	77.63	5.125	-6231.41	0.0076026
285	45.42316	72.15	4.804	-4905.70	0.0087143
290	43.33574	66.65	4.476	-3753.09	0.0101701
295	40.99974	61.25	4.142	-2786.54	0.0120769
300	38.37508	56.20	3.814	-2024.93	0.0144524
310	32.42687	48.93	3.271	-1147.65	0.0197594
320	26.83636	46.67	2.999	-896.33	0.0182207
330	22.74464	47.50	2.901	-867.42	0.0147419
340	19.95435	49.70	2.857	-918.04	0.0115963
350	17.97834	52.42	2.827	-978.62	0.0094009
360	16.49627	55.34	2.802	-1033.57	0.0078966
370	15.32974	58.34	2.778	-1080.40	0.0068282
380	14.37735	61.36	2.755	-1119.86	0.0060369
390	13.57801	64.39	2.732	-1153.23	0.0054285
400	12.89278	67.40	2.710	-1181.68	0.0049459
410	12.29554	70.40	2.688	-1206.17	0.0045531
420	11.76803	73.40	2.667	-1227.45	0.0042265
430	11.29702	76.37	2.647	-1246.09	0.0039502
440	10.87267	79.34	2.627	-1262.56	0.0037129
450	10.48744	82.29	2.608	-1277.19	0.0035065
460	10.13545	85.23	2.589	-1290.27	0.0033251
470	9.81202	88.16	2.571	-1302.03	0.0031641
480	9.51339	91.07	2.554	-1312.64	0.0030201
490	9.23645	93.99	2.537	-1322.27	0.0028905
500	8.97865	96.88	2.520	-1331.02	0.0027730
510	8.73784	99.77	2.505	-1339.01	0.0026659
520	8.51221	102.65	2.489	-1346.32	0.0025679
530	8.30020	105.52	2.474	-1353.02	0.0024777
540	8.10049	108.39	2.460	-1359.18	0.0023945
550	7.91172	111.26	2.445	-1364.86	0.0023173
560	7.73348	114.12	2.432	-1370.09	0.0022456
570	7.56431	116.97	2.418	-1374.93	0.0021788
580	7.40362	119.83	2.405	-1379.40	0.0021163
590	7.25074	122.68	2.392	-1383.55	0.0020577
600	7.10504	125.53	2.379	-1387.39	0.0020026

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

1500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(OH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/BTU	V(DP/DV) PSIA	(DV/DU) / V DEG. R
* 99.965	81.98590	219.12	16.067	-185494.43	0.0018695
100	81.98052	219.15	16.057	-185416.38	0.0018693
105	81.72249	221.59	14.902	-174616.08	0.0018499
110	80.47569	220.90	14.192	-164466.03	0.0018472
115	79.73433	218.45	13.718	-154929.26	0.0018563
120	78.99448	215.09	13.374	-145957.14	0.0018738
125	78.25744	211.31	13.099	-137501.08	0.0018972
130	77.50938	207.39	12.859	-129516.31	0.0019250
135	76.76103	203.47	12.633	-121962.59	0.0019563
140	76.00748	199.62	12.413	-114803.86	0.0019903
145	75.24804	195.86	12.190	-108007.86	0.0020268
150	74.48217	192.18	11.964	-101545.60	0.0020656
155	73.70937	188.56	11.733	-95391.13	0.0021068
160	72.92913	184.98	11.497	-89521.26	0.0021504
165	72.14092	181.42	11.256	-83915.40	0.0021968
170	71.34412	177.85	11.012	-78555.40	0.0022463
175	70.53805	174.25	10.766	-73425.43	0.0022994
180	69.72189	170.62	10.517	-68511.82	0.0023565
185	68.89470	166.92	10.268	-63802.90	0.0024184
190	68.05539	163.16	10.017	-59288.84	0.0024855
195	67.20272	159.32	9.766	-54961.53	0.0025599
200	66.33526	155.39	9.514	-50814.35	0.0026392
205	65.45139	151.37	9.263	-46842.06	0.0027277
210	64.54927	147.27	9.010	-43040.64	0.0028255
215	63.62682	143.06	8.758	-39407.11	0.0029339
220	62.68156	138.77	8.505	-35939.39	0.0030547
225	61.71111	134.38	8.251	-32636.19	0.0031898
230	60.71211	129.91	7.996	-29496.78	0.0033415
235	59.68118	125.35	7.739	-26520.92	0.0035126
240	58.61432	120.71	7.480	-23708.67	0.0037066
245	57.50634	115.99	7.219	-21060.21	0.0039277
250	56.35372	111.20	6.955	-18575.74	0.0041812
255	55.14844	106.35	6.687	-16255.24	0.0044739
260	53.88378	101.43	6.416	-14098.43	0.0048146
265	52.55097	96.46	6.140	-12104.65	0.0052149
270	51.13943	91.44	5.859	-10272.91	0.0056904
275	49.63616	86.37	5.573	-8602.10	0.0062624
280	48.02506	81.25	5.281	-7091.46	0.0069603
285	46.28609	76.11	4.983	-5741.40	0.0078239
290	44.39431	70.98	4.680	-4554.70	0.0089045
295	42.32353	65.94	4.374	-3537.68	0.0102562
300	40.04752	61.14	4.072	-2700.41	0.0119003
310	34.91712	53.35	3.531	-1594.67	0.0154141
320	29.66576	49.52	3.181	-1132.92	0.0165786
330	25.32329	49.06	3.019	-1007.84	0.0147536
340	22.14074	50.45	2.945	-1012.56	0.0121261
350	19.83805	52.71	2.901	-1057.26	0.0099412
360	18.11283	55.38	2.867	-1108.44	0.0083419
370	16.76522	58.22	2.837	-1155.95	0.0071308
380	15.67426	61.15	2.810	-1197.53	0.0063167
390	14.76569	64.12	2.783	-1233.36	0.0056536
400	13.99199	67.10	2.758	-1264.21	0.0051300
410	13.32144	70.08	2.733	-1290.90	0.0047061
420	12.73200	73.06	2.710	-1314.14	0.0043555
430	12.20786	76.03	2.687	-1334.53	0.0040503
440	11.73728	78.99	2.665	-1352.53	0.0038079
450	11.31139	81.94	2.644	-1368.53	0.0035922
460	10.92327	84.89	2.624	-1382.83	0.0033977
470	10.56748	87.82	2.604	-1395.68	0.0032284
480	10.23765	90.75	2.586	-1407.27	0.0030773
490	9.93620	93.66	2.567	-1417.78	0.0029416
500	9.65418	96.57	2.550	-1427.34	0.0028190
510	9.39115	99.48	2.533	-1436.06	0.0027074
520	9.14503	102.37	2.516	-1444.04	0.0026055
530	8.91407	105.26	2.500	-1451.35	0.0025119
540	8.69674	108.15	2.485	-1458.08	0.0024256
550	8.49176	111.03	2.469	-1464.27	0.0023458
560	8.29799	113.90	2.455	-1469.99	0.0022717
570	8.11444	116.78	2.440	-1475.27	0.0022027
580	7.94024	119.65	2.426	-1480.16	0.0021383
590	7.77462	122.52	2.412	-1484.68	0.0020780
600	7.61691	125.38	2.399	-1488.88	0.0020214

\* INDICATES TWO PHASE BOUNDARY

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1600 PSIA ISOBAR  
THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(DP/DV)	(DV/DU) / V
DEG. R	LB/CU FT	RTU/LB	PSIA-CU FT/RTU	PSIA	DEG. R
*100.105	82.00964	220.03	15.978	-185822.96	0.0018622
105	81.26993	222.39	14.867	-175304.45	0.0018430
110	80.52453	221.71	14.165	-165191.30	0.0018400
115	79.78569	219.27	13.698	-155682.04	0.0018487
120	79.04847	215.91	13.359	-146730.48	0.0018656
125	78.31021	212.14	13.097	-138287.91	0.0018885
130	77.56906	208.23	12.850	-130317.00	0.0019158
135	76.82178	204.32	12.627	-122772.61	0.0019464
140	76.07348	200.49	12.409	-115621.54	0.0019798
145	75.31748	196.75	12.199	-108832.12	0.0020155
150	74.55526	193.09	11.964	-102375.85	0.0020535
155	73.78634	189.50	11.735	-96227.11	0.0020937
160	73.01026	185.95	11.501	-90362.93	0.0021362
165	72.22650	182.42	11.262	-84762.87	0.0021814
170	71.43451	178.89	11.021	-79408.95	0.0022295
175	70.63363	175.34	10.776	-74285.07	0.0022810
180	69.82309	171.74	10.530	-69377.84	0.0023363
185	69.00203	168.09	10.282	-64675.44	0.0023960
190	68.16743	164.38	10.034	-60167.97	0.0024608
195	67.32412	160.59	9.785	-55847.20	0.0025313
200	66.46479	156.73	9.537	-51706.42	0.0026084
205	65.58994	152.78	9.288	-47740.26	0.0026930
210	64.69786	148.74	9.039	-43944.55	0.0027862
215	63.78665	144.61	8.790	-40316.15	0.0028893
220	62.85413	140.40	8.541	-36852.84	0.0030036
225	61.89787	136.10	8.291	-33553.14	0.0031310
230	60.91513	131.71	8.041	-30416.17	0.0032734
235	59.90280	127.25	7.789	-27441.49	0.0034331
240	58.85736	122.72	7.536	-24629.00	0.0036131
245	57.77482	118.12	7.282	-21978.72	0.0038167
250	56.65062	113.46	7.025	-19490.65	0.0040484
255	55.47953	108.74	6.766	-17164.67	0.0043132
260	54.25550	103.98	6.503	-15000.34	0.0046180
265	52.97149	99.19	6.238	-12996.83	0.0049711
270	51.61925	94.35	5.969	-11152.96	0.0053936
275	50.18897	89.50	5.697	-9467.24	0.0058699
280	48.66999	84.63	5.421	-7938.23	0.0064486
285	47.04548	79.76	5.141	-6565.05	0.0071440
290	45.30238	74.92	4.858	-5348.10	0.0079850
295	43.42227	70.19	4.574	-4289.87	0.0090010
300	41.38971	65.61	4.293	-3395.15	0.0102058
310	36.87005	57.75	3.772	-2114.41	0.0129237
320	32.07080	52.88	3.381	-1458.97	0.0146263
330	27.73454	51.24	3.159	-1207.01	0.0140871
340	24.30207	51.73	3.047	-1144.18	0.0122396
350	21.71774	53.42	2.983	-1157.75	0.0102892
360	19.75745	55.73	2.938	-1196.51	0.0086990
370	18.22646	58.36	2.900	-1239.99	0.0074890
380	16.99260	61.16	2.867	-1281.11	0.0065713
390	15.97067	64.03	2.837	-1317.91	0.0058627
400	15.10506	66.95	2.808	-1350.25	0.0053029
410	14.35946	69.89	2.780	-1378.54	0.0048505
420	13.70493	72.84	2.754	-1403.34	0.0044776
430	13.12591	75.90	2.729	-1425.18	0.0041646
440	12.60773	78.75	2.705	-1444.50	0.0038979
450	12.14005	81.70	2.682	-1461.69	0.0036676
460	11.71489	84.64	2.660	-1477.07	0.0034665
470	11.32599	87.58	2.638	-1490.90	0.0032992
480	10.96933	90.51	2.618	-1503.37	0.0031314
490	10.63783	93.43	2.598	-1514.68	0.0029900
500	10.33116	96.35	2.579	-1524.97	0.0028625
510	10.04554	99.26	2.561	-1534.36	0.0027467
520	9.77861	102.17	2.543	-1542.94	0.0026411
530	9.52841	105.07	2.526	-1550.87	0.0025442
540	9.29324	107.97	2.510	-1558.06	0.0024551
550	9.07164	110.86	2.493	-1564.73	0.0023728
560	8.86235	113.75	2.478	-1570.89	0.0022964
570	8.66426	116.64	2.462	-1576.58	0.0022254
580	8.47641	119.52	2.448	-1581.84	0.0021592
590	8.29776	122.40	2.433	-1586.72	0.0020972
600	8.12813	125.29	2.419	-1591.24	0.0020391

\* INDICATES TWO PHASE BOUNDARY

1700 PSIA ISOBAR  
THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LR/CU FT	V(DH/DV) BTU/LB	V(DP/DU) PSIA-CU FT/RTU	V(CP/DV) PSIA	(DV/DT) /V DEG. R
*100.245	82.03152	220.95	15.892	-186156.96	0.0018550
105	81.31521	223.19	14.833	-175993.97	0.0018363
110	80.57319	222.52	14.139	-165917.36	0.0018329
115	79.83683	220.08	13.678	-156435.27	0.0018411
120	79.10222	216.73	13.343	-147503.93	0.0018576
125	78.36669	212.96	13.075	-139078.50	0.0018900
130	77.62843	209.06	12.841	-131117.12	0.0019067
135	76.88618	205.17	12.621	-123581.71	0.0019368
140	76.13907	201.36	12.405	-116437.93	0.0019695
145	75.38646	197.64	12.187	-109654.74	0.0020045
150	74.62783	194.00	11.965	-103204.10	0.0020416
155	73.86273	190.44	11.738	-97060.72	0.0020808
160	73.09073	186.92	11.505	-91201.85	0.0021223
165	72.31134	183.42	11.269	-85607.20	0.0021663
170	71.52405	179.92	11.029	-80258.78	0.0022131
175	70.72823	176.41	10.786	-75140.80	0.0022630
180	69.92318	172.86	10.542	-70239.55	0.0023166
185	69.10809	169.26	10.296	-65543.26	0.0023743
190	68.28200	165.59	10.050	-61041.96	0.0024368
195	67.44344	161.86	9.804	-56727.34	0.0025046
200	66.59237	158.05	9.558	-52592.54	0.0025786
205	65.72620	154.16	9.312	-48632.09	0.0026596
210	64.84377	150.19	9.066	-44841.66	0.0027486
215	63.94331	146.13	8.821	-41217.98	0.0028466
220	63.02244	142.00	8.575	-37758.65	0.0029551
225	62.08016	137.78	8.329	-34462.04	0.0030754
230	61.11278	133.48	8.083	-31327.08	0.0032092
235	60.11792	129.11	7.837	-28353.19	0.0033597
240	59.09248	124.68	7.589	-25540.06	0.0035262
245	58.03296	120.19	7.341	-22897.56	0.0037145
250	56.93543	115.65	7.091	-20395.54	0.0039272
255	55.79545	111.06	6.839	-18063.70	0.0041682
260	54.60798	106.44	6.585	-15891.48	0.0044428
265	53.36729	101.79	6.329	-13877.91	0.0047572
270	52.06683	97.13	6.071	-12021.61	0.0051194
275	50.69908	92.46	5.810	-10320.84	0.0055393
280	49.25537	87.80	5.547	-8773.67	0.0060293
285	47.72595	83.16	5.282	-7378.35	0.0066044
290	46.09957	78.56	5.016	-6133.78	0.0072820
295	44.36515	74.06	4.749	-5040.07	0.0080787
300	42.51270	69.71	4.486	-4098.75	0.0090027
310	38.44993	61.97	3.998	-2680.86	0.0111143
320	34.08314	56.49	3.582	-1853.42	0.0128205
330	29.90522	53.97	3.315	-1465.02	0.0130573
340	26.36799	53.49	3.163	-1318.62	0.0119685
350	23.57541	54.54	3.074	-1286.44	0.0104036
360	21.40695	56.42	3.015	-1302.62	0.0089334
370	19.70006	58.77	2.968	-1335.90	0.0077321
380	18.32398	61.38	2.928	-1372.92	0.0067889
390	17.18725	64.13	2.892	-1408.51	0.0060488
400	16.22789	66.97	2.859	-1440.98	0.0054602
410	15.40346	69.85	2.828	-1470.00	0.0049836
420	14.68432	72.76	2.799	-1495.76	0.0045909
430	14.04916	75.69	2.771	-1518.62	0.0042619
440	13.48232	78.62	2.745	-1538.95	0.0039821
450	12.97199	81.55	2.720	-1557.09	0.0037411
460	12.50908	84.49	2.696	-1573.36	0.0035311
470	12.08648	87.42	2.673	-1588.00	0.0033463
480	11.69850	90.35	2.651	-1601.22	0.0031822
490	11.34055	93.28	2.630	-1613.22	0.0030355
500	11.00887	96.20	2.609	-1624.14	0.0029033
510	10.70035	99.12	2.590	-1634.10	0.0027836
520	10.41237	102.03	2.571	-1643.22	0.0026745
530	10.14272	104.94	2.552	-1651.59	0.0025746
540	9.88951	107.85	2.535	-1659.29	0.0024828
550	9.65113	110.75	2.518	-1666.38	0.0023981
560	9.42618	113.65	2.501	-1672.93	0.0023196
570	9.21345	116.55	2.485	-1678.98	0.0022467
580	9.01145	119.45	2.469	-1684.58	0.0021788
590	8.82045	122.34	2.454	-1689.78	0.0021153
600	8.63943	125.24	2.439	-1694.59	0.0020558

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

1800 PSIA ISOBAR

TEMPERATURE	DENSITY	V(OH/OV) <sup>P</sup>	V(DP/OU) <sup>V</sup>	V(DP/DV) <sup>T</sup>	(DV/DT) / V <sup>P</sup>
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
*100.385	92.05423	221.85	15.808	-186496.36	0.0018479
105	91.36133	223.99	14.799	-176684.62	0.0018296
110	90.62166	223.33	14.114	-166644.24	0.0018258
115	79.88776	220.90	13.658	-157198.97	0.0018337
120	79.15573	217.55	13.328	-148277.50	0.0018497
125	78.42290	213.79	13.064	-139866.90	0.0018716
130	77.68748	209.90	12.833	-131916.63	0.0018978
135	76.94822	206.02	12.616	-124399.93	0.0019272
140	76.20426	202.22	12.402	-117253.09	0.0019593
145	75.45498	198.52	12.196	-110475.78	0.0019935
150	74.69989	194.91	11.966	-104030.41	0.0020299
155	73.93855	191.37	11.740	-97892.02	0.0020682
160	73.17055	187.88	11.509	-92038.11	0.0021087
165	72.39545	184.41	11.275	-86448.50	0.0021515
170	71.61275	180.95	11.036	-81105.29	0.0021970
175	70.82189	177.47	10.796	-75992.72	0.0022455
180	70.02220	173.97	10.553	-71097.06	0.0022974
185	69.21292	170.41	10.310	-66466.50	0.0023532
190	68.39316	166.79	10.066	-61910.99	0.0024135
195	67.56192	163.11	9.822	-57602.11	0.0024788
200	66.71806	159.36	9.579	-53472.90	0.0025498
205	65.86027	155.53	9.335	-49517.76	0.0026274
210	64.98711	151.62	9.092	-45732.22	0.0027124
215	64.09696	147.64	8.850	-42112.86	0.0028059
220	63.18901	143.57	8.609	-38657.14	0.0029088
225	62.25823	139.43	8.366	-35363.24	0.0030226
230	61.30540	135.22	8.124	-32229.94	0.0031489
235	60.32700	130.94	7.882	-29256.47	0.0032890
240	59.32029	126.60	7.640	-26442.37	0.0034453
245	58.28219	122.21	7.396	-23787.34	0.0036200
250	57.20928	117.78	7.152	-21291.06	0.0038160
255	56.09777	113.31	6.907	-18953.10	0.0040365
260	54.94343	108.82	6.661	-16772.76	0.0042954
265	53.74154	104.31	6.413	-14748.93	0.0045677
270	52.48684	99.79	6.164	-12830.09	0.0048889
275	51.17344	95.29	5.914	-11164.28	0.0052561
280	49.79479	90.80	5.662	-9599.25	0.0056777
285	48.34371	86.35	5.410	-8182.64	0.0061635
290	46.81252	81.95	5.157	-6912.39	0.0067240
295	45.19356	77.65	4.905	-5787.07	0.0073691
300	43.48042	73.50	4.656	-4806.12	0.0081031
310	39.76797	65.95	4.182	-3276.81	0.0097761
320	35.77364	60.16	3.775	-2302.16	0.0113052
330	31.81903	56.79	3.478	-1777.92	0.0119264
340	28.28963	55.63	3.290	-1537.50	0.0114303
350	25.37063	56.04	3.175	-1447.60	0.0102926
360	23.03554	57.44	3.098	-1431.09	0.0090265
370	21.17026	59.45	3.040	-1447.10	0.0078932
380	19.65841	61.83	2.993	-1475.47	0.0069581
390	18.40878	64.42	2.951	-1506.98	0.0062048
400	17.35574	67.15	2.913	-1537.74	0.0055975
410	16.45294	69.95	2.878	-1566.27	0.0051026
420	15.66744	72.81	2.846	-1592.17	0.0046937
430	14.97542	75.69	2.815	-1615.47	0.0043509
440	14.35927	78.60	2.786	-1636.38	0.0040596
450	13.80572	81.51	2.759	-1655.15	0.0038090
460	13.30457	84.43	2.733	-1672.05	0.0035909
470	12.84785	87.36	2.703	-1687.29	0.0033993
480	12.42920	90.28	2.684	-1701.10	0.0032295
490	12.04351	93.20	2.661	-1713.64	0.0030778
500	11.68658	96.13	2.639	-1725.06	0.0029414
510	11.35495	99.05	2.618	-1735.50	0.0028180
520	11.04573	101.96	2.598	-1745.06	0.0027057
530	10.75647	104.89	2.579	-1753.84	0.0026030
540	10.48510	107.79	2.560	-1761.92	0.0025087
550	10.22993	110.70	2.542	-1769.37	0.0024218
560	9.98913	113.61	2.524	-1776.24	0.0023414
570	9.76165	116.52	2.507	-1782.60	0.0022667
580	9.54623	119.43	2.491	-1788.49	0.0021971
590	9.34184	122.33	2.475	-1793.96	0.0021322
600	9.14757	125.24	2.459	-1799.02	0.0020714

\* INDICATES TWO PHASE BOUNDARY

THERMODYNAMIC PROPERTIES OF OXYGEN

1900 PSIA ISOBAR

TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(OP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
*100.524	82.07707	222.75	15.727	-186841.08	0.0018408
105	81.40730	224.79	14.767	-177376.42	0.0018230
110	80.66905	224.13	14.089	-167371.92	0.0018188
115	79.93848	221.70	13.639	-157943.15	0.0018263
120	79.20899	218.36	13.313	-149051.23	0.0019419
125	78.47893	214.61	13.053	-140655.10	0.0018633
130	77.74621	210.73	12.825	-132715.74	0.0018390
135	77.00990	206.86	12.610	-125197.29	0.0019178
140	76.26905	203.08	12.399	-118067.06	0.0019492
145	75.52306	199.40	12.185	-111295.23	0.0019828
150	74.77144	195.81	11.966	-104854.84	0.0020183
155	74.01380	192.30	11.742	-98721.10	0.0020558
160	73.24973	188.83	11.513	-92871.77	0.0020953
165	72.47833	185.40	11.290	-87286.84	0.0021371
170	71.70064	181.97	11.044	-81948.48	0.0021813
175	70.91463	178.53	10.805	-76840.95	0.0022284
180	70.12017	175.06	10.564	-71950.52	0.0022787
185	69.31655	171.55	10.323	-67265.31	0.0023327
190	68.50296	167.99	10.081	-62775.20	0.0023908
195	67.67844	164.36	9.840	-58471.69	0.0024537
200	66.84193	160.66	9.598	-54347.70	0.0025220
205	65.99224	156.88	9.358	-50397.49	0.0025964
210	65.12801	153.04	9.117	-46616.47	0.0026777
215	64.24776	149.12	8.878	-43001.08	0.0027668
220	63.34982	145.12	8.639	-39548.60	0.0028647
225	62.43234	141.05	8.401	-36257.07	0.0029725
230	61.49330	136.92	8.163	-33125.10	0.0030916
235	60.53045	132.73	7.925	-30151.75	0.0032234
240	59.54133	128.48	7.687	-27336.40	0.0033696
245	58.52321	124.19	7.449	-24678.58	0.0035322
250	57.47314	119.85	7.211	-22177.82	0.0037135
255	56.38782	115.49	6.972	-19833.56	0.0039161
260	55.26369	111.12	6.732	-17644.94	0.0041431
265	54.09682	106.73	6.492	-15610.77	0.0043982
270	52.88293	102.35	6.251	-13729.37	0.0046855
275	51.61737	97.99	6.010	-11998.66	0.0050101
280	50.29510	93.65	5.768	-10416.10	0.0053778
285	48.91077	89.37	5.526	-8978.98	0.0057950
290	47.45930	85.15	5.285	-7684.56	0.0062684
295	45.93423	81.02	5.045	-6530.41	0.0068037
300	44.33258	77.03	4.809	-5514.59	0.0074032
310	40.89633	69.69	4.355	-3891.60	0.0087580
320	37.21234	63.77	3.954	-2791.80	0.0100770
330	33.49392	59.88	3.640	-2139.39	0.0108448
340	30.04444	58.05	3.423	-1799.61	0.0107534
350	27.07227	57.84	3.282	-1643.13	0.0100032
360	24.61963	58.75	3.197	-1585.06	0.0089911
370	22.62043	60.39	3.117	-1576.61	0.0079637
380	20.98433	62.50	3.060	-1591.20	0.0070705
390	19.62793	64.91	3.012	-1615.18	0.0063246
400	18.48338	67.50	2.969	-1641.94	0.0057107
410	17.50304	70.20	2.930	-1668.45	0.0052048
420	16.65137	72.98	2.894	-1693.42	0.0047842
430	15.90237	75.82	2.860	-1716.40	0.0044305
440	15.23669	78.68	2.828	-1737.33	0.0041297
450	14.63968	81.57	2.798	-1756.31	0.0038708
460	14.10005	84.47	2.770	-1773.51	0.0036456
470	13.60900	87.37	2.743	-1789.11	0.0034480
480	13.15949	90.29	2.718	-1803.28	0.0032730
490	12.74588	93.21	2.693	-1816.19	0.0031169
500	12.36354	96.12	2.670	-1827.97	0.0029766
510	12.00969	99.04	2.648	-1838.75	0.0028498
520	11.67812	101.96	2.626	-1848.64	0.0027346
530	11.36916	104.88	2.606	-1857.73	0.0026293
540	11.07955	107.80	2.586	-1866.10	0.0025328
550	10.80732	110.71	2.567	-1873.83	0.0024438
560	10.55281	113.63	2.548	-1880.96	0.0023615
570	10.30855	116.54	2.530	-1887.57	0.0022852
580	10.07926	119.46	2.513	-1893.69	0.0022142
590	9.86184	122.37	2.496	-1899.37	0.0021480
600	9.65530	125.28	2.479	-1904.64	0.0020860

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

2000 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(OP/DU) PSIA-CU FT/BTU	V(CP/DV) PSIA	(DV/DT) / V DEG. R
*100.664	82.09993	223.65	15.648	-187191.05	0.0018338
105	81.45312	225.53	14.735	-178069.37	0.0018165
110	80.71805	224.93	14.065	-168100.43	0.0018119
115	79.98899	222.51	13.621	-158697.82	0.0018190
120	79.26201	219.17	13.299	-149825.13	0.0018341
125	78.53449	215.43	13.042	-141443.15	0.0018551
130	77.80464	211.56	12.817	-133514.31	0.0018803
135	77.07124	207.71	12.605	-126003.84	0.0019086
140	76.33346	203.94	12.396	-118879.89	0.0019393
145	75.59070	200.28	12.184	-112113.31	0.0019722
150	74.84251	196.71	11.967	-105677.45	0.0020070
155	74.09849	193.22	11.745	-99548.00	0.0020436
160	73.32829	189.78	11.517	-93702.91	0.0020822
165	72.56152	186.38	11.286	-88122.31	0.0021229
170	71.78775	182.99	11.051	-82788.45	0.0021659
175	71.00647	179.58	10.814	-77685.61	0.0022117
180	70.21712	176.16	10.575	-72800.03	0.0022604
185	69.41903	172.69	10.336	-68119.81	0.0023127
190	68.61143	169.16	10.096	-63634.75	0.0023688
195	67.79343	165.58	9.856	-59336.24	0.0024295
200	66.96406	161.94	9.617	-55217.11	0.0024952
205	66.12218	158.22	9.379	-51271.48	0.0025665
210	65.26657	154.44	9.142	-47494.64	0.0026443
215	64.39593	150.58	8.905	-43882.87	0.0027294
220	63.50843	146.65	8.669	-40433.31	0.0028225
225	62.60269	142.65	8.434	-37143.83	0.0029248
230	61.67676	138.60	8.200	-34012.90	0.0030374
235	60.72962	134.48	7.966	-31039.41	0.0031615
240	59.75606	130.32	7.732	-28222.56	0.0032986
245	58.75667	126.11	7.499	-25561.74	0.0034504
250	57.72794	121.88	7.266	-23056.34	0.0036186
255	56.66673	117.62	7.033	-20705.64	0.0038056
260	55.57030	113.35	6.799	-18508.69	0.0040136
265	54.43525	109.08	6.566	-16464.15	0.0042454
270	52.25809	104.82	6.332	-14570.28	0.0045043
275	52.03506	100.58	6.098	-12824.84	0.0047939
280	50.76225	96.39	5.865	-11225.16	0.0051181
285	49.43564	92.24	5.632	-9768.22	0.0054813
290	48.05123	88.17	5.401	-8450.86	0.0058877
295	46.60539	84.19	5.172	-7269.99	0.0063408
300	45.09539	80.35	4.946	-6222.74	0.0068415
310	41.88258	73.22	4.512	-4518.62	0.0079610
320	38.45599	67.27	4.120	-3311.57	0.0090874
330	34.96157	63.03	3.797	-2541.95	0.0098767
340	31.63063	60.66	3.559	-2102.03	0.0100350
350	28.66176	59.90	3.395	-1873.00	0.0095968
360	26.13623	60.32	3.281	-1766.24	0.0098180
370	24.03436	61.58	3.197	-1726.75	0.0079451
380	22.29237	63.40	3.131	-1722.32	0.0071221
390	20.83657	65.58	3.075	-1734.95	0.0064037
400	19.60525	68.01	3.027	-1755.03	0.0057964
410	18.54967	70.60	2.983	-1777.64	0.0052877
420	17.63299	73.29	2.943	-1800.37	0.0048606
430	16.82759	76.06	2.906	-1822.10	0.0044996
440	16.11264	78.87	2.871	-1842.37	0.0041714
450	15.47227	81.72	2.839	-1861.04	0.0039259
460	14.89420	84.59	2.808	-1878.15	0.0036949
470	14.36979	87.48	2.779	-1893.78	0.0034921
480	13.88938	90.38	2.752	-1908.06	0.0033126
490	13.44681	93.28	2.726	-1921.12	0.0031525
500	13.03904	96.19	2.701	-1933.08	0.0030088
510	12.66091	99.11	2.677	-1944.06	0.0028790
520	12.30897	102.02	2.654	-1954.14	0.0027611
530	11.98029	104.94	2.632	-1963.43	0.0026535
540	11.67240	107.96	2.611	-1971.99	0.0025549
550	11.38320	110.77	2.591	-1979.90	0.0024641
560	11.11086	113.69	2.572	-1987.22	0.0023802
570	10.85340	116.61	2.553	-1994.00	0.0023024
580	10.61064	119.53	2.534	-2000.28	0.0022300
590	10.38019	122.45	2.517	-2006.11	0.0021625
600	10.16136	125.38	2.500	-2011.54	0.0020994

\* INDICATES TWO PHASE BOUNDARY

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3000 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE	DENSITY	V(DH/DV)	V(OP/DU)	V(DP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/RTU	PSIA	DEG. R
*102.050	82.32969	232.31	14.931	-190964.64	0.0017677
105	81.90306	233.37	14.461	-185063.17	0.0017554
110	81.18945	232.80	13.860	-175432.47	0.0017473
115	80.48289	230.43	13.466	-166274.40	0.0017506
120	79.77950	227.15	13.183	-157577.04	0.0017617
125	79.07668	223.48	12.956	-149319.82	0.0017784
130	78.37271	219.70	12.756	-141479.43	0.0017990
135	77.66646	215.96	12.565	-134031.99	0.0018223
140	76.95719	212.34	12.374	-126953.93	0.0018477
145	76.24442	208.85	12.178	-120222.31	0.0018746
150	75.52732	205.48	11.976	-113815.10	0.0019029
155	74.80716	202.22	11.767	-107711.31	0.0019323
160	74.08225	199.04	11.554	-101891.16	0.0019629
165	73.35291	195.91	11.335	-96236.27	0.0019948
170	72.61894	192.82	11.114	-91029.71	0.0020280
175	71.88010	189.74	10.890	-85956.07	0.0020627
180	71.13614	186.67	10.666	-81101.52	0.0020992
185	70.39670	183.59	10.441	-76453.73	0.0021376
190	69.63143	180.46	10.217	-72001.84	0.0021782
195	68.85936	177.31	9.993	-67736.39	0.0022212
200	68.10151	174.11	9.772	-63649.20	0.0022670
205	67.32581	170.88	9.552	-59733.28	0.0023158
210	66.54216	167.60	9.335	-55982.68	0.0023680
215	65.74989	164.27	9.120	-52392.41	0.0024238
220	64.94929	160.90	8.907	-48958.27	0.0024836
225	64.13660	157.49	8.696	-45676.77	0.0025477
230	63.31402	154.04	8.488	-42544.99	0.0026165
235	62.47974	150.57	8.283	-39560.44	0.0026902
240	61.63289	147.07	8.080	-36721.01	0.0027693
245	60.77262	143.55	7.879	-34024.77	0.0028541
250	59.89907	140.03	7.681	-31469.97	0.0029449
255	59.00839	136.51	7.485	-29054.82	0.0030420
260	58.10276	133.00	7.292	-26777.47	0.0031457
265	57.18042	129.51	7.101	-24635.91	0.0032561
270	56.24069	126.06	6.913	-22627.86	0.0033735
275	55.28298	122.66	6.727	-20750.73	0.0034978
280	54.30695	119.30	6.544	-19001.56	0.0036292
285	53.31201	116.02	6.365	-17376.99	0.0037674
290	52.29838	112.81	6.189	-15873.30	0.0039122
295	51.26612	109.70	6.015	-14486.39	0.0040630
300	50.21566	106.68	5.845	-13211.87	0.0042191
310	48.06368	100.99	5.518	-10931.21	0.0045429
320	45.85358	95.32	5.210	-9142.51	0.0048711
330	43.60433	91.27	4.924	-7655.85	0.0051836
340	41.34390	87.43	4.653	-6480.43	0.0054536
350	39.10791	84.38	4.430	-5573.62	0.0056517
360	36.93672	82.13	4.226	-4890.75	0.0057550
370	34.86801	80.69	4.049	-4387.09	0.0057554
380	32.93098	79.97	3.899	-4021.39	0.0056615
390	31.14293	79.90	3.770	-3758.75	0.0054935
400	29.50946	80.37	3.659	-3571.62	0.0052754
410	28.02708	81.30	3.562	-3439.16	0.0050296
420	26.68635	82.61	3.477	-3345.98	0.0047729
430	25.47471	84.23	3.401	-3280.86	0.0045206
440	24.37860	86.09	3.332	-3235.72	0.0042777
450	23.38273	88.16	3.270	-3204.76	0.0040495
460	22.48076	90.39	3.212	-3183.83	0.0038380
470	21.65567	92.75	3.159	-3170.01	0.0036433
480	20.89979	95.21	3.110	-3161.21	0.0034649
490	20.20475	97.76	3.065	-3155.96	0.0033018
500	19.56334	100.38	3.022	-3153.22	0.0031525
510	18.96938	103.06	2.992	-3152.24	0.0030158
520	18.41754	105.78	2.964	-3152.49	0.0028904
530	17.90377	108.54	2.909	-3153.60	0.0027752
540	17.42263	111.33	2.875	-3155.29	0.0026690
550	16.97221	114.15	2.843	-3157.36	0.0025708
560	16.54906	116.99	2.812	-3159.68	0.0024799
570	16.15060	119.85	2.783	-3162.13	0.0023955
580	15.77457	122.73	2.756	-3164.66	0.0023170
590	15.41900	125.62	2.729	-3167.19	0.0022437
600	15.08213	128.52	2.704	-3169.70	0.0021751

\* INDICATES TWO PHASE BOUNDARY

2500 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

2500 PSIA ISOBAR		THERMODYNAMIC PROPERTIES OF OXYGEN			
TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(DP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
*101.358	82.21461	228.05	15.299	-189017.24	0.0017999
105	81.67095	229.51	14.589	-181551.58	0.0017851
110	80.95592	228.90	13.955	-171755.60	0.0017787
115	80.23844	226.50	13.537	-162479.04	0.0017838
120	79.52360	223.14	13.235	-153647.74	0.0017969
125	78.80879	219.43	12.995	-145381.83	0.0018156
130	78.09227	215.66	12.783	-137500.89	0.0018383
135	77.37287	211.87	12.592	-130025.60	0.0018640
140	76.64981	208.18	12.393	-122928.28	0.0018919
145	75.92256	204.60	12.180	-116182.90	0.0019217
150	75.19073	201.14	11.971	-109765.10	0.0019529
155	74.45404	197.77	11.756	-103652.24	0.0019857
160	73.71220	194.46	11.536	-97823.41	0.0020200
165	72.96495	191.20	11.312	-92259.46	0.0020559
170	72.21200	187.97	11.095	-86943.05	0.0020936
175	71.45299	184.74	10.855	-81859.60	0.0021333
180	70.68753	181.50	10.624	-76992.31	0.0021753
185	69.91514	178.23	10.393	-72332.02	0.0022199
190	69.13529	174.92	10.162	-67867.21	0.0022674
195	68.34732	171.57	9.931	-63598.80	0.0023193
200	67.55057	168.16	9.702	-59489.12	0.0023728
205	66.74423	164.70	9.474	-55561.68	0.0024314
210	65.92745	161.19	9.248	-51801.14	0.0024946
215	65.09928	157.61	9.023	-48203.10	0.0025629
220	64.25868	153.99	8.801	-44763.99	0.0026368
225	63.40455	150.31	8.580	-41480.95	0.0027168
230	62.53571	146.59	8.360	-38351.71	0.0028036
235	61.65088	142.82	8.143	-35374.42	0.0028978
240	60.74974	139.02	7.927	-32547.55	0.0030001
245	59.82790	135.20	7.713	-29869.78	0.0031112
250	58.88692	131.37	7.500	-27339.86	0.0032319
255	57.92431	127.53	7.289	-24956.47	0.0033627
260	56.93857	123.69	7.079	-22718.16	0.0035048
265	55.92921	119.87	6.871	-20623.19	0.0036588
270	54.89177	116.08	6.665	-18669.43	0.0038255
275	53.82785	112.34	6.461	-16854.40	0.0040057
280	52.73518	108.65	6.258	-15175.12	0.0042000
285	51.61266	105.02	6.058	-13628.13	0.0044088
290	50.45945	101.48	5.861	-12209.60	0.0046325
295	49.27503	98.03	5.667	-10915.32	0.0048707
300	48.05939	94.69	5.477	-9740.86	0.0051233
310	45.53780	88.42	5.110	-7732.96	0.0056619
320	42.91154	82.84	4.767	-6148.08	0.0062171
330	40.21934	78.13	4.456	-4944.82	0.0067271
340	37.52615	74.48	4.186	-4072.77	0.0071058
350	34.91517	71.99	3.960	-3469.89	0.0072797
360	32.46619	70.59	3.777	-3069.40	0.0072290
370	30.23404	70.14	3.632	-2811.46	0.0069911
380	28.24121	70.48	3.515	-2649.86	0.0066316
390	26.48367	71.42	3.419	-2551.84	0.0062141
400	24.94151	72.84	3.338	-2495.04	0.0057861
410	23.58816	74.62	3.267	-2464.55	0.0053762
420	22.39638	76.69	3.205	-2450.55	0.0049989
430	21.34125	78.74	3.149	-2446.72	0.0046589
440	20.40130	81.36	3.097	-2449.03	0.0043557
450	19.55857	83.89	3.050	-2454.93	0.0040866
460	18.79829	86.51	3.007	-2462.83	0.0038477
470	18.10933	89.20	2.966	-2471.73	0.0036351
480	17.47978	91.74	2.929	-2481.03	0.0034453
490	16.90148	94.72	2.893	-2490.35	0.0032751
500	16.36956	97.53	2.860	-2499.46	0.0031217
510	15.87773	100.37	2.829	-2508.23	0.0029830
520	15.42097	103.22	2.798	-2516.60	0.0028568
530	14.99541	106.09	2.769	-2524.54	0.0027417
540	14.59768	108.98	2.742	-2532.03	0.0026362
550	14.22499	111.87	2.716	-2539.09	0.0025391
560	13.87455	114.78	2.691	-2545.72	0.0024474
570	13.54452	117.69	2.668	-2551.94	0.0023664
580	13.23293	120.61	2.645	-2557.77	0.0022993
590	12.93812	123.54	2.623	-2563.23	0.0022175
600	12.65867	126.47	2.601	-2568.35	0.0021504

\* INDICATES TWO PHASE BOUNDARY

OTHER THERMODYNAMIC PROPERTIES OF OXYGEN

4000 PSIA ISOBAR

TEMPERATURE	DENSITY	V(DH/DV)	V(DP/DU)	V(DP/DV)	(DV/DT) / V
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/RTU	PSIA	DEG. R
*103.422	82.56078	240.46	14.493	-195191.17	0.0017078
105	82.33851	240.90	14.257	-192175.55	0.0017010
110	81.64401	240.42	13.711	-182854.09	0.0016895
115	80.95755	238.12	13.357	-173912.24	0.0016894
120	80.27522	234.90	13.103	-165362.50	0.0016972
125	79.59445	231.29	12.900	-157202.81	0.0017102
130	78.91353	227.60	12.718	-149423.91	0.0017270
135	78.23136	223.98	12.542	-142012.65	0.0017462
140	77.54727	220.43	12.364	-134953.59	0.0017672
145	76.86083	217.14	12.179	-128229.98	0.0017895
150	76.17179	213.95	11.987	-121824.34	0.0018127
155	75.48001	210.88	11.788	-115719.01	0.0018367
160	74.78540	207.91	11.583	-109876.56	0.0018615
165	74.08790	205.02	11.374	-104340.15	0.0018869
170	73.38744	202.18	11.161	-99033.78	0.0019130
175	72.68395	199.38	10.946	-93962.48	0.0019400
180	71.97733	196.59	10.730	-89112.42	0.0019680
185	71.26742	193.81	10.515	-84471.03	0.0019970
190	70.55407	191.02	10.301	-80026.93	0.0020272
195	69.83705	188.21	10.088	-75769.98	0.0020589
200	69.11613	185.38	9.877	-71691.19	0.0020920
205	68.39102	182.52	9.669	-67782.63	0.0021269
210	67.66141	179.63	9.464	-64037.39	0.0021636
215	66.92696	176.71	9.252	-60449.43	0.0022024
220	66.18731	173.77	9.063	-57013.52	0.0022432
225	65.44209	170.79	8.867	-53725.10	0.0022864
230	64.69090	167.79	8.675	-50580.21	0.0023320
235	63.93325	164.77	8.486	-47575.35	0.0023802
240	63.16905	161.74	8.300	-44707.43	0.0024309
245	62.39763	158.69	8.117	-41973.67	0.0024844
250	61.61872	155.65	7.938	-39371.46	0.0025407
255	60.83199	152.61	7.762	-36898.36	0.0025997
260	60.03716	149.59	7.589	-34551.95	0.0026616
265	59.23398	146.59	7.419	-32329.80	0.0027262
270	58.42228	143.61	7.253	-30229.42	0.0027935
275	57.60195	140.68	7.089	-28248.15	0.0028633
280	56.77296	137.80	6.930	-26383.19	0.0029355
285	55.93541	134.97	6.773	-24631.50	0.0030099
290	55.08946	132.20	6.620	-22989.81	0.0030861
295	54.23543	129.51	6.470	-21454.65	0.0031638
300	53.37374	126.90	6.323	-20022.28	0.0032426
310	51.62975	121.94	6.042	-17450.04	0.0034016
320	49.86368	117.38	5.775	-15239.81	0.0035587
330	48.08391	113.25	5.523	-13356.82	0.0037086
340	46.30102	109.59	5.288	-11766.25	0.0038454
350	44.52741	106.42	5.069	-10434.25	0.0039627
360	42.77678	103.76	4.866	-9328.51	0.0040545
370	41.06336	101.62	4.680	-8418.46	0.0041160
380	39.40084	100.00	4.510	-7675.40	0.0041442
390	37.80135	98.88	4.356	-7072.74	0.0041388
400	36.27458	98.24	4.216	-6596.36	0.0041018
410	34.82725	98.03	4.089	-6195.03	0.0040375
420	33.46305	98.23	3.973	-5880.58	0.0039510
430	32.19292	98.78	3.868	-5627.82	0.0038479
440	30.93555	99.66	3.773	-5424.36	0.0037336
450	29.6796	100.81	3.685	-5260.18	0.0036126
460	28.42605	102.21	3.604	-5127.25	0.0034886
470	27.18505	103.81	3.530	-5019.22	0.0033646
480	26.94991	105.61	3.461	-4931.03	0.0032428
490	26.10551	107.56	3.397	-4858.67	0.0031246
500	25.31693	109.65	3.337	-4798.99	0.0030109
510	24.57946	111.85	3.291	-4749.48	0.0029024
520	23.88872	114.16	3.229	-4708.16	0.0027994
530	23.24070	116.56	3.190	-4673.46	0.0027018
540	22.63172	119.03	3.134	-4644.14	0.0026096
550	22.05844	121.57	3.090	-4619.20	0.0025227
560	21.51784	124.17	3.049	-4597.84	0.0024407
570	21.00721	126.81	3.010	-4579.44	0.0023634
580	20.52409	129.51	2.972	-4563.48	0.0022906
590	20.06627	132.24	2.937	-4549.55	0.0022219
600	19.63177	135.00	2.903	-4537.32	0.0021570

\* INDICATES TWO PHASE BOUNDARY



3500 PSIA ISORAP

## THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE	DENSITY	V(DH/DV) <sub>P</sub>	V(DP/DU) <sub>V</sub>	V(DP/DV) <sub>T</sub>	(DV/DT) / V <sub>P</sub>
DEG. R	LB/CU FT	BTU/LB	PSIA-CU FT/BTU	PSIA	DEG. R
*102.737	82.44498	236.45	14.718	-193025.20	0.0017370
105	82.12255	237.17	14.351	-188604.44	0.0017274
110	81.41876	236.64	13.779	-179131.78	0.0017176
115	80.72254	234.30	13.407	-170095.13	0.0017192
120	80.02997	231.05	13.139	-161464.79	0.0017286
125	79.33847	227.41	12.925	-153259.47	0.0017434
130	78.64675	223.68	12.735	-145452.91	0.0017619
135	77.95249	220.00	12.552	-138026.61	0.0017831
140	77.25618	216.44	12.367	-130951.11	0.0018062
145	76.55697	213.03	12.178	-124236.55	0.0018307
150	75.85460	209.75	11.991	-117833.18	0.0018563
155	75.14886	206.59	11.778	-111731.68	0.0018828
160	74.43964	203.51	11.569	-105913.43	0.0019103
165	73.72682	200.51	11.356	-100360.83	0.0019387
170	73.01027	197.55	11.139	-95057.38	0.0019681
175	72.28985	194.62	10.920	-89987.88	0.0019986
180	71.56539	191.69	10.701	-85138.50	0.0020305
185	70.83667	188.76	10.481	-80496.75	0.0020637
190	70.10341	185.82	10.262	-76051.50	0.0020987
195	69.36531	182.84	10.045	-71792.93	0.0021355
200	68.62202	179.84	9.830	-67712.43	0.0021743
205	67.87314	176.81	9.617	-63802.53	0.0022154
210	67.11824	173.73	9.406	-60056.76	0.0022589
215	66.35694	170.62	9.198	-56469.57	0.0023052
220	65.58843	167.47	8.993	-53036.24	0.0023543
225	64.81250	164.29	8.791	-49752.69	0.0024066
230	64.02848	161.09	8.592	-46615.44	0.0024622
235	63.23582	157.85	8.395	-43621.49	0.0025213
240	62.43395	154.60	8.202	-40768.19	0.0025840
245	61.62231	151.34	8.012	-38053.15	0.0026507
250	60.80036	148.03	7.824	-35474.16	0.0027213
255	59.96757	144.82	7.639	-33029.07	0.0027961
260	59.12348	141.57	7.458	-30715.73	0.0028750
265	58.26767	138.35	7.279	-28531.91	0.0029581
270	57.39979	135.16	7.103	-26475.19	0.0030453
275	56.51960	132.01	6.931	-24542.96	0.0031367
280	55.62694	128.92	6.761	-22732.35	0.0032319
285	54.72180	125.89	6.595	-21040.16	0.0033308
290	53.80433	122.93	6.432	-19467.92	0.0034330
295	52.87480	120.05	6.272	-17996.83	0.0035382
300	51.93372	117.26	6.116	-16637.82	0.0036456
310	50.01992	111.99	5.816	-14223.63	0.0038647
320	48.07078	107.15	5.532	-12183.93	0.0040835
330	46.09858	102.82	5.265	-10481.07	0.0042925
340	44.11914	99.04	5.018	-9077.49	0.0044806
350	42.15197	95.86	4.791	-7936.41	0.0046352
360	40.21903	93.30	4.595	-7021.81	0.0047447
370	38.34275	91.38	4.399	-6298.61	0.0048010
380	36.54361	90.06	4.234	-5733.36	0.0048016
390	34.83793	89.33	4.097	-5295.42	0.0047502
400	33.23655	89.13	3.957	-4958.06	0.0046546
410	31.74470	89.39	3.841	-4698.99	0.0045255
420	30.36274	90.07	3.738	-4500.26	0.0043734
430	29.08730	91.09	3.645	-4347.78	0.0042079
440	27.91254	92.41	3.561	-4230.62	0.0040367
450	26.83122	93.99	3.484	-4140.40	0.0038656
460	25.83550	95.79	3.414	-4070.73	0.0036986
470	24.91752	97.77	3.350	-4016.72	0.0035383
480	24.06973	99.90	3.290	-3974.68	0.0033863
490	23.28515	102.15	3.235	-3941.81	0.0032431
500	22.55739	104.52	3.183	-3915.98	0.0031091
510	21.88070	106.97	3.135	-3895.57	0.0029839
520	21.24999	109.50	3.099	-3879.37	0.0028673
530	20.66070	112.09	3.047	-3866.43	0.0027586
540	20.10983	114.74	3.006	-3856.05	0.0026574
550	19.59084	117.44	2.968	-3847.67	0.0025631
560	19.10359	120.17	2.932	-3840.87	0.0024751
570	18.64431	122.94	2.898	-3835.33	0.0023928
580	18.21056	125.74	2.866	-3830.78	0.0023159
590	17.80015	128.56	2.834	-3827.03	0.0022438
600	17.41115	131.41	2.805	-3823.92	0.0021761

\* INDICATES TWO PHASE BOUNDARY

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THERMODYNAMIC PROPERTIES OF OXYGEN

4500 PSIA ISOBAR

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) BTU/LB	V(CP/DU) PSIA-CU FT/RTU	V(DP/DV) PSIA	(DV/DT) /V DEG. R
*104.102	82.67564	244.35	14.300	-197455.36	0.0016799
105	82.55103	244.58	14.176	-195776.51	0.0016760
110	81.86530	244.15	13.654	-186599.78	0.0016629
115	81.19810	241.88	13.316	-177756.54	0.0016613
120	80.51548	238.69	13.075	-169271.46	0.0016674
125	79.84487	235.12	12.881	-161151.61	0.0016788
130	79.17457	231.47	12.707	-153304.70	0.0016939
135	78.50348	227.90	12.537	-145992.86	0.0017113
140	77.83074	224.47	12.363	-138934.70	0.0017305
145	77.15654	221.20	12.193	-132206.47	0.0017508
150	76.48006	218.08	11.994	-125793.00	0.0017719
155	75.80137	215.10	11.798	-119678.29	0.0017937
160	75.12042	212.23	11.596	-113846.09	0.0018160
165	74.43720	209.44	11.390	-108280.38	0.0018388
170	73.75168	206.72	11.180	-102965.65	0.0018621
175	73.06384	204.04	10.968	-97887.17	0.0018861
180	72.37362	201.38	10.755	-93031.22	0.0019107
185	71.68096	198.74	10.543	-88395.10	0.0019361
190	70.98574	196.09	10.332	-83937.26	0.0019625
195	70.28783	193.43	10.123	-79677.28	0.0019898
200	69.58706	190.76	9.917	-75595.80	0.0020184
205	68.88324	188.06	9.713	-71684.52	0.0020482
210	68.17615	185.34	9.512	-67936.10	0.0020794
215	67.46554	182.59	9.314	-64344.06	0.0021121
220	66.75115	179.82	9.120	-60902.72	0.0021464
225	66.03271	177.03	8.929	-57607.08	0.0021824
230	65.30995	174.21	8.742	-54452.73	0.0022203
235	64.58257	171.38	8.559	-51435.78	0.0022600
240	63.85032	168.54	8.378	-48552.73	0.0023016
245	63.11292	165.69	8.202	-45800.43	0.0023452
250	62.37012	162.84	8.029	-43175.96	0.0023908
255	61.62172	159.99	7.859	-40676.58	0.0024383
260	60.86752	157.16	7.693	-38299.66	0.0024879
265	60.10739	154.35	7.530	-36042.61	0.0025393
270	59.34122	151.57	7.371	-33902.82	0.0025925
275	58.56897	148.82	7.215	-31877.60	0.0026474
280	57.79069	146.11	7.062	-29964.19	0.0027038
285	57.00647	143.45	6.913	-28159.66	0.0027616
290	56.21650	140.85	6.767	-26460.93	0.0028204
295	55.42103	138.32	6.624	-24864.76	0.0028801
300	54.62043	135.85	6.485	-23367.71	0.0029404
310	53.00574	131.16	6.217	-20656.48	0.0030611
320	51.37715	126.83	5.963	-18296.90	0.0031796
330	49.74089	122.87	5.723	-16257.18	0.0032924
340	48.10452	119.33	5.497	-14505.17	0.0033960
350	46.47671	116.21	5.285	-13009.41	0.0034866
360	44.86688	113.54	5.088	-11739.90	0.0035608
370	43.28476	111.32	4.904	-10668.49	0.0036157
380	41.73970	109.54	4.734	-9769.05	0.0036492
390	40.24114	108.20	4.577	-9017.53	0.0036606
400	38.79609	107.28	4.433	-8391.99	0.0036500
410	37.41076	106.76	4.300	-7872.73	0.0036190
420	36.08940	106.63	4.177	-7442.33	0.0035701
430	34.83443	106.83	4.065	-7085.68	0.0035063
440	33.64663	107.35	3.961	-6789.90	0.0034307
450	32.52539	108.16	3.865	-6544.17	0.0033465
460	31.46337	109.22	3.777	-6339.50	0.0032565
470	30.47484	110.51	3.695	-6168.52	0.0031632
480	29.53993	112.00	3.619	-6025.16	0.0030685
490	28.66093	113.66	3.548	-5904.47	0.0029739
500	27.83403	115.49	3.481	-5802.44	0.0028808
510	27.05597	117.45	3.419	-5715.79	0.0027899
520	26.32322	119.54	3.361	-5641.83	0.0027019
530	25.63245	121.73	3.306	-5578.40	0.0026171
540	24.98054	124.02	3.254	-5523.72	0.0025358
550	24.36457	126.39	3.206	-5476.33	0.0024581
560	23.78184	128.83	3.160	-5435.05	0.0023840
570	23.22984	131.34	3.116	-5398.90	0.0023135
580	22.70678	133.90	3.075	-5367.07	0.0022463
590	22.20906	136.52	3.035	-5338.92	0.0021825
600	21.73626	139.19	2.998	-5313.88	0.0021218

\* INDICATES TWO PHASE BOUNDARY

5000 PSIA ISOBAR THERMODYNAMIC PROPERTIES OF OXYGEN

TEMPERATURE DEG. R	DENSITY LB/CU FT	V(DH/DV) RTU/LB	V(DP/DU) PSIA-CU FT/RTU	V(DP/DV) PSIA	(DV/DT) / V DEG. R
*104.780	82.79031	248.14	14.137	-199810.65	0.0016533
105	82.76019	248.19	14.109	-199407.17	0.0016523
110	82.08277	247.81	13.607	-190369.09	0.0016377
115	81.41434	245.58	13.284	-181618.68	0.0016346
120	80.75025	242.43	13.053	-173192.72	0.0016392
125	80.08999	238.90	12.868	-165107.38	0.0016491
130	79.42977	235.30	12.699	-157367.25	0.0016625
135	78.76920	231.78	12.534	-149969.70	0.0016783
140	78.10760	228.41	12.364	-142907.33	0.0016957
145	77.44459	225.21	12.197	-136169.42	0.0017143
150	76.77996	222.17	12.001	-129743.05	0.0017335
155	76.11360	219.27	11.808	-123613.89	0.0017533
160	75.44549	216.49	11.608	-117766.91	0.0017734
165	74.77563	213.80	11.404	-112186.89	0.0017940
170	74.10404	211.18	11.196	-106858.85	0.0018149
175	73.43074	208.61	10.936	-101763.36	0.0018362
180	72.75571	206.09	10.776	-96901.76	0.0018580
185	72.07894	203.56	10.567	-92246.33	0.0018803
190	71.40036	201.04	10.358	-87790.35	0.0019034
195	70.71999	198.52	10.152	-83523.15	0.0019272
200	70.03744	195.99	9.949	-79435.06	0.0019518
205	69.35286	193.44	9.743	-75517.42	0.0019774
210	68.66600	190.88	9.550	-71762.52	0.0020040
215	67.97670	188.29	9.356	-68163.47	0.0020318
220	67.28477	185.68	9.166	-64714.19	0.0020608
225	66.59000	183.05	8.979	-61409.27	0.0020912
230	65.89220	180.41	8.796	-58243.91	0.0021229
235	65.19116	177.75	8.617	-55213.84	0.0021559
240	64.48569	175.07	8.442	-52315.21	0.0021904
245	63.77860	172.40	8.270	-49544.53	0.0022263
250	63.06571	169.72	8.102	-46898.60	0.0022638
255	62.35098	167.05	7.937	-44374.42	0.0023026
260	61.63098	164.39	7.776	-41969.17	0.0023429
265	60.90693	161.74	7.619	-39680.07	0.0023845
270	60.17967	159.12	7.465	-37504.42	0.0024273
275	59.44520	156.53	7.314	-35439.50	0.0024714
280	58.70957	153.98	7.167	-33482.54	0.0025164
285	57.96888	151.48	7.024	-31630.69	0.0025623
290	57.22428	149.02	6.883	-29881.01	0.0026099
295	56.47501	146.62	6.746	-28230.43	0.0026560
300	55.72436	144.29	6.613	-26675.76	0.0027034
310	54.21242	139.83	6.355	-23840.77	0.0027979
320	52.69214	135.69	6.111	-21348.23	0.0028903
330	51.16828	131.89	5.880	-19169.04	0.0029781
340	49.64648	128.46	5.662	-17273.60	0.0030590
350	48.13314	125.42	5.457	-15632.70	0.0031306
360	46.63515	122.77	5.264	-14218.28	0.0031906
370	45.15959	120.51	5.094	-13003.90	0.0032374
380	43.71345	118.66	4.915	-11965.03	0.0032694
390	42.30332	117.19	4.759	-11079.18	0.0032860
400	40.93510	116.10	4.613	-10325.88	0.0032970
410	39.61374	115.38	4.477	-9686.62	0.0032730
420	38.34311	115.01	4.351	-9144.84	0.0032451
430	37.12593	114.96	4.234	-8685.92	0.0032049
440	35.96374	115.22	4.125	-8297.03	0.0031544
450	34.85707	115.76	4.024	-7967.14	0.0030955
460	33.80550	116.55	3.930	-7686.78	0.0030301
470	32.80788	117.57	3.842	-7447.97	0.0029602
480	31.86252	118.80	3.761	-7243.98	0.0028872
490	30.96728	120.22	3.684	-7069.19	0.0028125
500	30.11978	121.81	3.613	-6918.89	0.0027373
510	29.31748	123.55	3.545	-6789.18	0.0026625
520	28.55778	125.42	3.482	-6676.81	0.0025887
530	27.83809	127.42	3.423	-6579.07	0.0025165
540	27.15588	129.57	3.367	-6493.70	0.0024462
550	26.50873	131.72	3.314	-6418.83	0.0023781
560	25.89430	134.01	3.263	-6352.89	0.0023125
570	25.31042	136.38	3.216	-6294.56	0.0022493
580	24.75503	138.81	3.171	-6242.75	0.0021886
590	24.22622	141.31	3.128	-6196.54	0.0021304
600	23.72223	143.86	3.087	-6155.14	0.0020747

\* INDICATES TWO PHASE BOUNDARY

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