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THE EXCHANGE OF ENERGY BETWEEN TUNGSTEN AT HIGH TEMPERATURES AND GASES AT ROOM TEMPERATURE

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AEC Contract W-7405-eng-48

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Mahn Jick Lim

(Ph.D. Thesis)

April 1967

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THE EXCHANGE OF ENERGY BETWEEN TUNGSTEN AT HIGH TEMPERATURES AND GASES AT ROOM TEMPERATURE

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ABSTRACT

April 1967

The exchanges of energy between a tungsten filament and room temperature neon, nitrogen, argon, krypton, oxygen, nitric oxide, nitrous oxide, mixtures of neon with krypton, and mixtures of argon with oxygen were studied over a wide range of filament temperatures and gas pressures. For non-reactive gases, the thermal accommodation coefficient was found to be independent of gas pressures between 1×10^{-7} atm and 5×10^{-5} atm and to depend on filament temperatures in a complex manner in the temperature range from 700°K to 2800°K. The general trends in temperature dependences of the thermal accommodation coefficients are similar for the noble gases and for nitrogen. The variations for these gases are believed to reflect primarily changes in the fraction of coverage of adsorbed surface impurities and in surface structures. All show maximum thermal accommodation coefficients near 2000°K. For oxygen, below 1500°K, the energy exchange phenomenon is very similar to those for non-reactive gases. In the temperature range from 1500° to 1800°K an exothermic energy exchange occurs that is nearly independent of gas pressure. Above 1900°K, where the exchange is again endothermic, the pressure dependence of the energy exchange becomes more pronounced as the solid temperature is

further raised. At very low oxygen pressures, an abnormally high apparent energy exchange was observed presumably due to instantaneous carbon content change causing an electrical resistance change and due to large errors in the measurement of energy exchange at low pressures. For oxygen, nitric oxide, and nitrous oxide, the energy exchange at about 2600°K is high enough to support the conclusion that essentially all incident molecules react. The energy exchanges of mixtures of neon with krypton are essentially the arithmetic sums of the energy exchanges of the individual species at 2142°K. The same was found for argon-oxygen mixtures at 2528°K. At 1740°K and 2200°K, departure from this simple addition rule was found especially for higher oxygen mole fractions.

I. INTRODUCTION

The exchange of energy between solid surfaces and gases that impinge upon the surfaces has been the subject of increasing theoretical and experimental study over the past two decades. Experimental methods for measuring gas-solid energy exchange and other aspects of this field were recently reviewed by Kaminsky.[1]

Most experimental work in the past was with low temperature solid surfaces (from liquid nitrogen temperature to little above room temperature) and with gases at temperatures slightly higher than the solid temperatures. Recent theoretical works by Goodman,[2] Chambers and Kinzer,[3] and Shin[4] were mainly directed to explaining and predicting experimental results in that temperature region.

The few studies that have been made of the energy exchange between solids at high temperatures and gases at much lower temperatures have yielded results that were not apparently predictable from the low temperature studies. Blodgett and Langmuir[5] measured energy exchange between hydrogen and tungsten surfaces. Their results showed that with tungsten held above 1000°K temperature, the efficiency of energy exchange was higher than that at lower temperature by a factor of 4. Meyer and Gomer[6] measured the energy exchange between hot graphite surfaces and several non-reacting gases. They showed that their data were consistent with the conclusion that a gas that impinges on a graphite surface cannot attain a temperature higher than a certain critical temperature T_c before it desorbs. They hypothesized that T_c is the temperature just high enough to break van der Waal's bonds to the surface. De Poorter and Searcy[7] studied the energy exchange between hot tungsten and noble gases at room

temperature and found the data could be similarly interpreted. There has appeared no theory applicable at high temperature comparable to those applied in low temperature energy exchange studies. It was apparent that study should be made over a wider range of temperatures and pressures both to provide a better empirical understanding of solid-gas energy exchange and to provide an improved basis for theoretical analysis of the energy exchange process.

This work was undertaken to obtain a wider range of reliable experimental data. The work includes measurements of energy exchange between a) tungsten at 700°K to 2800°K and nitrogen, neon, argon, and krypton at 1×10^{-7} to 5×10^{-5} atm; b) tungsten at 800°K to 2980°K and oxygen at 1×10^{-9} atm to 2×10^{-5} atm; c) tungsten at 900°K to 2800°K and nitric oxide and nitrous oxide gases at 2×10^{-7} to 3×10^{-6} atm and 1×10^{-7} to 1×10^{-6} atm, respectively; d) tungsten at selected high temperature with a quantitatively known mixture of neon with krypton and of argon with oxygen.

II. EXPERIMENTAL

A. Apparatus

The principal components of the apparatus were a gas inlet system, a vacuum chamber, a mass spectrometer, and a stabilized d.c. power supply system.

The gas-inlet system consisted of (a) a three-liter storage flask connected to the vacuum chamber through a Granville-Phillips variable leak valve; (b) a mercury diffusion pump (Consolidated Vacuum Corporation Type MHG-40), a cold trap and mechanical pump for evacuating and filling the storage flask; and (c) a precision dial manometer (Wallace and Tiernan Type FA-145) and a thermocouple gauge to measure the pressure in the storage flask. The connections of these components were made with tubes, Swage lock high-vacuum valves, and Swage lock connectors, all fabricated from stainless steel.

The vacuum chamber, a cylinder of Inconel, 20 cm in diameter and 31 cm in height, was pumped by another mercury diffusion pump (Consolidated Vacuum Corporation Type MHG-180). A tungsten filament 0.025 cm in diameter and 40 to 50 cm in length was held in the vacuum chamber by molybdenum connectors. Those connectors were joined to the stabilized d.c. power supply circuits through ceramic insulated electrodes. The background pressure, under most operating conditions, was 5×10^{-8} to 10^{-7} torr.

A mass spectrometer (Consolidated Engineering Corporation Type 21-620) was connected to the vacuum chamber. The vacuum chamber and mass spectrometer are described in detail elsewhere.[8]

The electrical circuit is shown in Fig. 1. Power at constant voltage was supplied by a d.c. power source (Kepco Regulated D.C. Supply Model

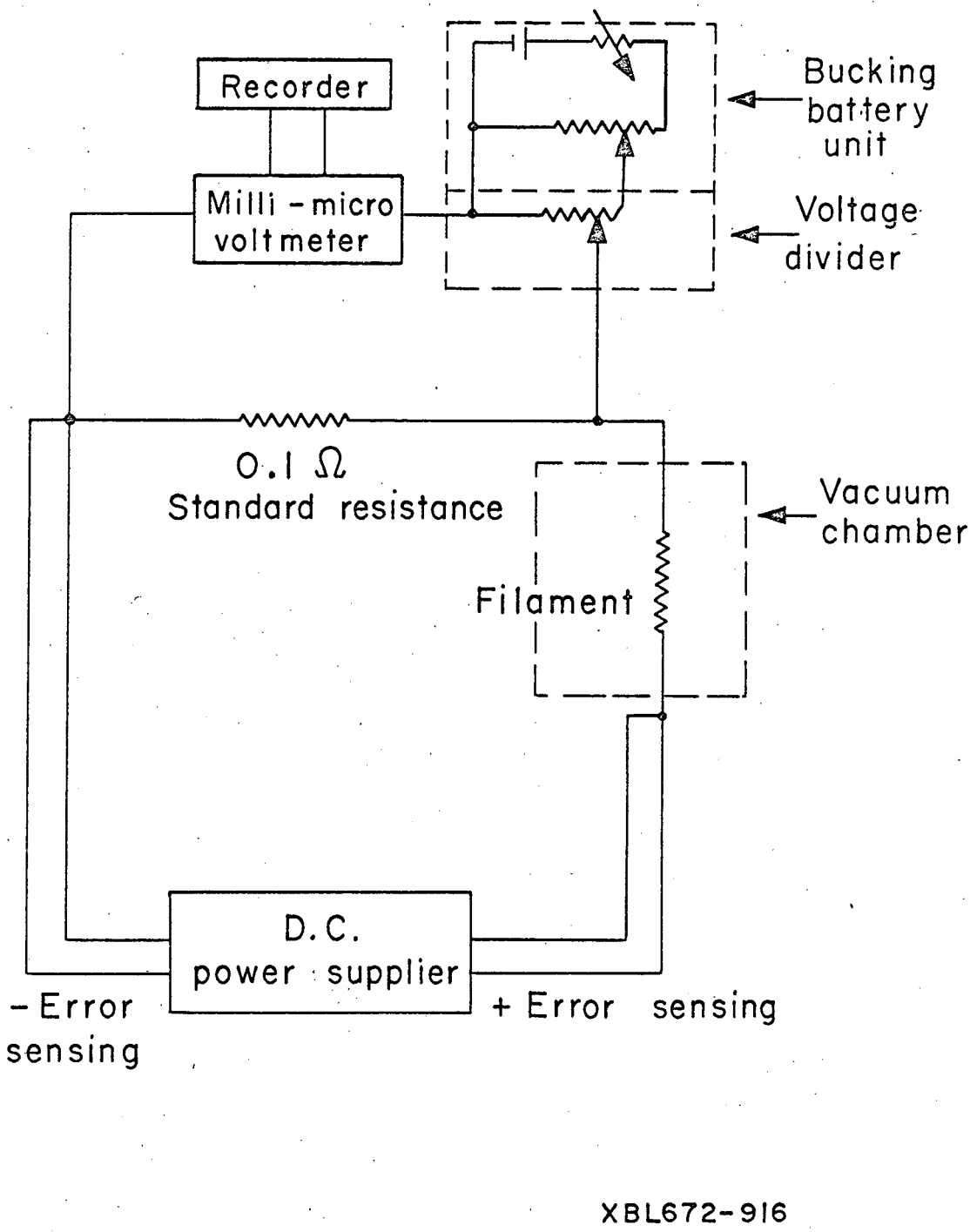

Fig. 1. Block diagram of electrical circuit for measuring energy exchange

SM 75-8MX) to the tungsten filament and a 0.1 Ω standard resistance connected in series. To eliminate errors from fluctuation in voltage an error sensing device was connected to the filament and standard resistance. The change in voltage drop across the standard resistance when cold gas was introduced into the vacuum system was measured by a milli-microvoltmeter (Keithley Model 149) in conjunction with the zero suppressor consisting of a bucking battery unit and a voltage divider (Dekavider Model DV411). The voltage across the filament was measured by a voltmeter (Ballantine Model 355 Digital DC-AC voltmeter). The tungsten wire was supplied by the Thermionic Product Company and was 99.95% pure. Neon, argon, krypton, nitrogen and oxygen gases were supplied by Airo Product Company and were of Research Grade purity.

B. Procedures

After the tungsten wire was purified of carbon by electrical heating at about 2700 °K and at 1×10^{-8} atm of oxygen pressure for at least 48 hours, it was heated to the desired temperature by direct current. The leak valve connecting the gas-inlet system to the vacuum chamber was opened to introduce the desired gas sample. The pressure or partial pressures of gases, and the exchange of energy between the gases and tungsten wire were measured with the voltage held constant. For reactive gases, reaction probabilities were also measured. The following subsections describe each of these measurements.

1. Pressure Measurements

Pressure measurements were made with a mass spectrometer, which was calibrated against an ionization gauge (Veeco RG 75K). In a relatively

low pressure range, the valve between the vacuum chamber and mass spectrometer was fully open. For pressures above about 1×10^{-4} torr in the vacuum chamber, this valve was partially closed to maintain molecular flow conditions in the mass spectrometer, so that the mass spectrometer output was just sensitive enough to be calibrated against the 10^{-4} torr range of the ionization gauge.

In calibrating the ionization gauge for various gases, the sensitivity for nitrogen was taken as unity and the method of calibration described by Anderson[9] was used. This calibration was made below 5×10^{-5} torr ionization gauge apparent pressure reading to maintain molecular flow conditions from the gas storage flask to the vacuum chamber. Ionization gauge pressure readings on the 10^{-4} torr scale were calibrated at 0.1×10^{-4} to 1×10^{-4} torr against 10^{-5} torr range readings. Thus all pressure calibration was made based on 10^{-5} torr range ionization gauge readings. Table I shows the ionization gauge sensitivity for various gases used in this investigation.

Table I. Ionization Gauge Sensitivity*

Ne	A	Kr	O_2	NO	N_2O
0.235	1.41	2.82	0.903	0.920	1.17

*Based on ionization gauge sensitivity of nitrogen as unity.

2. Temperature Measurements

The temperature of the tungsten wire was calculated by the method of Jones and Langmuir.[10] They showed that the temperature T_s is given

as functions F_1 and F_2:

$$T_s = F_1\left(V \sqrt[3]{I/\ell}\right) \tag{1}$$

$$T_s = F_2\left(V/d^{3/2}\right) \tag{2}$$

where V, I, L, and d are voltage, current, length and diameter of an ideal filament which is defined as a filament of uniform diameter at uniform temperature. At high temperatures, the end effect decreases. Accordingly, the filament was heated to 2600 to 2700°K where the end effect was assumed to be 1 cm, and T_s was calculated from Eqn. (1). Then by Eqn. (2), d was obtained. Subsequently temperatures of the filament were calculated from Eqn. (2). For reactive gases new values of d were obtained by repeating this procedure frequently during a set of experiments. For a 50 cm tungsten wire of 0.025 cm in diameter, at 2650°K, the error in d calculated by the above method is 0.03% when an error in the end effect is 1 cm.

The vacuum chamber was cooled by circulating water through copper tubing soldered to the chamber walls. The temperature of gases in the chamber in the molecular flow pressure range was assumed to be 298°K.

3. Energy Exchange Measurements

Let $T_s^{(1)}$ be the steady state temperature of a tungsten wire in vacuum. Then we have as a result of the energy balance

$$W_e^{(1)} - W_r^{(1)} - W_1^{(1)} - W^{(1)} = 0 \tag{3}$$

where $W_e^{(1)}$, $W_r^{(1)}$, $W_1^{(1)}$ and $W^{(1)}$ are respectively the power per unit

area supplied to the wire, the power loss per unit area by radiation, the power loss per unit area due to heat conduction through the wire, and any other power losses per unit area not included in W_r and W_1. After introducing a cold gas, with V held constant, the wire attains a new steady state temperature $T_s^{(2)}$. Then we have a new power balance

$$W_e^{(2)} - W_r^{(2)} - W_1^{(2)} - W^{(2)} = 0 \qquad (4)$$

Let ΔW_e, etc., stand for $(W_e^{(2)} - W_e^{(1)})$, etc., then from Eqns. (3) and (4),

$$\Delta W_e = \Delta W_r + \Delta W_1 + \Delta W \qquad (5)$$

Our investigation is concerned with obtaining ΔW as a function of T_s and gas pressures.

For gases which do not significantly react with tungsten, ΔW is the power loss due to heat transfer of the gas. For those gases which react with the tungsten wire significantly, ΔW is the summation of the power loss due to gas heat transfer and the power loss due to the chemical reaction (or power gain if the reaction is exothermic). From the measurement of T_s, V, and ΔI, we can calculate ΔW_e. We can also calculate ΔT from electrical resistance as a function of temperature. Once ΔT is known, ΔW_r can be calculated from the Steffan-Boltzmann radiation law. Since ΔT is found in our experiment to be low, less than 1 degree over most of our experimental range, ΔW_1 is assumed to be zero and ΔW is given from Eqn. (5) as $\Delta W_e - \Delta W_r$. The resistivity and the total emissivity of tungsten as a function of temperature were obtained by interpolation

from Tables I and II of Ref. 10.

The thermal accommodation coefficient, α, is defined by

$$\alpha = \frac{\Delta W}{\Delta W_{max}} \tag{6}$$

where ΔW_{max} is the maximum thermal energy which can be transferred at a given T_s assuming every collision of the room temperature gas with the solid surface leads to complete thermal equilibrium without chemical reaction. The same definition is used for reactive gases for relative comparisons of the energy transfer. It can be shown that

$$\Delta W_{max} = 10.74129 \frac{P}{\sqrt{M}} \int_{298}^{T_s} (C_v + 1/2R)\, dT \tag{7}$$

where W_{max} is in watts/cm^2, P is the pressure of the gas in atmospheres, M is the molecular weight of the gas in grams, C_v is the gas heat capacity at constant volume in cal/deg/mole, R is the gas constant in cal/deg/mole. For future comparison, we define ΔQ as

$$\Delta Q = \frac{N_o \Delta W}{4138\nu} \tag{8}$$

where ν is the collision frequency of incident gas at 298°K in c.g.s. units and N_o is the Avogadro number, so that ΔQ is the energy exchange in kcal per one mole of incident gas.

The technical details of measurements of ΔI for non-reactive gases were described elsewhere.[7] For reactive gases the decrease of diameter was reflected by a null point shift in I with time, but the immediate ΔI caused by introduction of the gas was equal and opposite in sign to the immediate ΔI caused by stopping the gas flow. In the very high

temperature (above about 2000°K) and very high pressure region (above about 5×10^{-7} atm) as soon as oxygen was introduced ΔI immediately increased but then dropped sharply because of a diameter decrease. The data were read from the initial sharp increase in I, but since the recorder takes a finite time (less than 1 sec) to arrive at that peak, the true value of ΔI may be somewhat higher than the value recorded in those temperature and pressure ranges.

4. Reaction Probability Measurements

For reactive gases, we made simultaneous measurements of energy exchange and of reaction probability, ϵ, which is defined as the probability that the gas molecule will disappear to new species (e.g., tungsten oxides, atomic oxygen, etc.) as a result of collision with the surface. The methods of calculation are given in detail elsewhere.[8] We used our measured pumping speed of 9.7 liters/sec for oxygen, 4.5 liters/sec for nitric oxide, and 4.3 liters/sec for nitrous oxide.

The reaction rates of oxygen and nitrogen written as R_{32} and R_{28} are defined as the number of moles produced in the heterogeneous decomposition reaction per one mole of incident gas.

III. RESULTS

A. Neon, Nitrogen, Argon, and Krypton

1. α Dependence on Gas Pressures

Energy exchange experiments were conducted at different constant temperatures between 800°K and 2700°K in a pressure range of 1×10^{-7} to 5×10^{-5} atm. Figures 2 to 5 show plots of log ΔW versus log p for a low temperature, a high temperature, and an intermediate temperature. Data collected at other temperatures are omitted from the plot for clarity of presentation. Those other data, (which are summarized in Tables A-I through A-XXVII of Appendix A) show comparable scatter. The solid lines are plots from the equation

$$\log \Delta W = \log p + B_1 \tag{9}$$

which assumes ΔW depends on the first power of pressure. Data collected at other temperatures fit this curve about as well as do the data shown. The experimental data at constant temperature and various pressures were also fit to the linear equation

$$\log \Delta W = A_2 \log P + B_2 \tag{10}$$

in which the power dependence of the pressure is a variable. The standard deviations for Eqs. (9) and (10) will be called $STDV_1$ and $STDV_2$ respectively. The value of α calculated by means of Eqs. (6) and (7) from the lines fit to Eq. (9) is called α_1 and the arithmetic average of α values from each data point at a constant temperature is called α_2.

The experimental results presented in Figs. 2 to 5 are summarized in Table II. Here, the first column is the gas species while the sixth

Table II. Summary of experimental data for energy exchange between tungsten and neon, nitrogen, argon, and krypton

	T_s [a]	α_1	α_2	T_r [a]	P(low) [b]	P(high) [b]	A_2	B_2	$STDV_2$	B_1	$STDV_1$
Neon	813	2.92×10^{-1}	2.96×10^{-1}	446	4.29×10^{-7}	2.86×10^{-5}	1.10	3.69	3.71×10^{-2}	3.15	6.84×10^{-2}
	1107	2.40×10^{-1}	2.41×10^{-1}	491	2.38×10^{-7}	4.24×10^{-5}	1.03	3.42	2.89×10^{-2}	3.26	3.49×10^{-2}
	1121	1.29×10^{-1}	1.31×10^{-1}	404	8.30×10^{-7}	5.34×10^{-5}	1.12	3.62	1.96×10^{-2}	3.00	6.85×10^{-2}
	1476	2.69×10^{-1}	2.72×10^{-1}	614	9.05×10^{-7}	4.05×10^{-5}	1.05	3.74	6.22×10^{-2}	3.48	6.84×10^{-2}
	1851	3.10×10^{-1}	3.10×10^{-1}	778	5.24×10^{-7}	4.76×10^{-5}	9.71×10^{-1}	3.51	1.51×10^{-2}	3.66	2.37×10^{-2}
	2114	2.24×10^{-1}	2.26×10^{-1}	704	1.45×10^{-6}	3.85×10^{-5}	8.97×10^{-1}	3.06	4.48×10^{-2}	3.59	6.24×10^{-2}
	2141	5.49×10^{-2}	5.51×10^{-2}	399	6.26×10^{-6}	4.56×10^{-5}	9.70×10^{-1}	2.84	4.19×10^{-2}	2.98	4.25×10^{-2}
	2155	1.66×10^{-1}	1.69×10^{-1}	607	1.81×10^{-6}	5.26×10^{-6}	1.13	4.10	2.96×10^{-2}	3.47	6.89×10^{-2}
	2437	7.84×10^{-2}	7.86×10^{-2}	465	3.86×10^{-6}	5.35×10^{-5}	1.03	3.36	2.35×10^{-2}	3.20	2.61×10^{-2}
	2704	1.23×10^{-1}	1.24×10^{-1}	593	3.43×10^{-6}	4.38×10^{-5}	9.60×10^{-1}	3.25	5.28×10^{-2}	3.45	5.51×10^{-2}
Nitrogen	1071	5.41×10^{-1}	5.43×10^{-1}	546	2.21×10^{-7}	2.94×10^{-5}	1.03	3.89	3.67×10^{-2}	3.73	4.12×10^{-2}
	1486	3.98×10^{-1}	3.98×10^{-1}	318	2.21×10^{-7}	2.45×10^{-5}	1.00	3.80	1.74×10^{-2}	3.80	1.74×10^{-2}
	1819	4.26×10^{-1}	4.29×10^{-1}	383	2.32×10^{-7}	2.43×10^{-5}	9.30×10^{-1}	3.57	2.10×10^{-2}	3.95	5.36×10^{-2}
	2127	4.98×10^{-1}	5.02×10^{-1}	482	2.53×10^{-7}	2.34×10^{-5}	9.35×10^{-1}	3.76	3.17×10^{-2}	4.11	4.94×10^{-2}
	2403	4.61×10^{-1}	4.62×10^{-1}	509	5.87×10^{-7}	2.62×10^{-5}	9.70×10^{-1}	3.98	3.02×10^{-2}	4.14	3.44×10^{-2}
	2680	3.36×10^{-1}	3.37×10^{-1}	453	6.84×10^{-7}	2.84×10^{-5}	9.79×10^{-1}	3.96	2.52×10^{-2}	4.07	2.69×10^{-2}

Table II (Continued)

	T_s	α_1	α_2	T_r	P(low)	P(high)	A_2	B_2	$STDV_2$	B_1	$STDV_1$
Argon	999	6.44×10^{-1}	6.46×10^{-1}	746	1.61×10^{-7}	2.42×10^{-5}	1.04	3.69	1.87×10^{-2}	3.48	3.17×10^{-2}
	1439	4.65×10^{-1}	4.66×10^{-1}	827	3.22×10^{-7}	4.27×10^{-5}	9.86×10^{-1}	3.48	2.89×10^{-2}	3.55	3.05×10^{-2}
	1788	5.94×10^{-1}	6.04×10^{-1}	1182	2.78×10^{-7}	3.60×10^{-5}	8.97×10^{-1}	3.22	$4.04\ 10^{-2}$	3.78	7.83×10^{-2}
	2396	6.22×10^{-1}	6.24×10^{-1}	1602	6.74×10^{-7}	3.78×10^{-5}	9.58×10^{-1}	3.72	3.10×10^{-2}	3.94	3.96×10^{-2}
	2674	3.38×10^{-1}	3.44×10^{-1}	1100	1.17×10^{-6}	2.86×10^{-5}	8.56×10^{-1}	3.01	4.37×10^{-2}	3.73	7.82×10^{-2}
Krypton	1089	1.09	1.10	1155	1.18×10^{-7}	1.09×10^{-5}	1.08	4.06	6.82×10^{-2}	3.60	8.08×10^{-2}
	1463	8.21×10^{-1}	8.35×10^{-1}	1254	4.35×10^{-7}	8.56×10^{-6}	1.17	4.59	4.54×10^{-2}	3.65	8.16×10^{-2}
	1812	9.64×10^{-1}	9.77×10^{-1}	1757	2.61×10^{-7}	8.70×10^{-6}	9.09×10^{-1}	3.32	5.23×10^{-2}	3.83	6.66×10^{-2}
	2141	6.64×10^{-1}	6.66×10^{-1}	1521	1.16×10^{-6}	5.36×10^{-6}	1.12	4.39	4.35×10^{-2}	3.76	5.04×10^{-2}
	2426	1.11	1.12	2650	4.66×10^{-7}	7.36×10^{-6}	1.04	4.24	6.55×10^{-2}	4.04	6.67×10^{-2}
	2707	7.54×10^{-1}	7.50×10^{-1}	2093	1.42×10^{-6}	7.30×10^{-6}	9.76×10^{-1}	3.79	4.82×10^{-2}	3.92	4.85×10^{-2}

a T_s and T_r in °K; b P in atm.

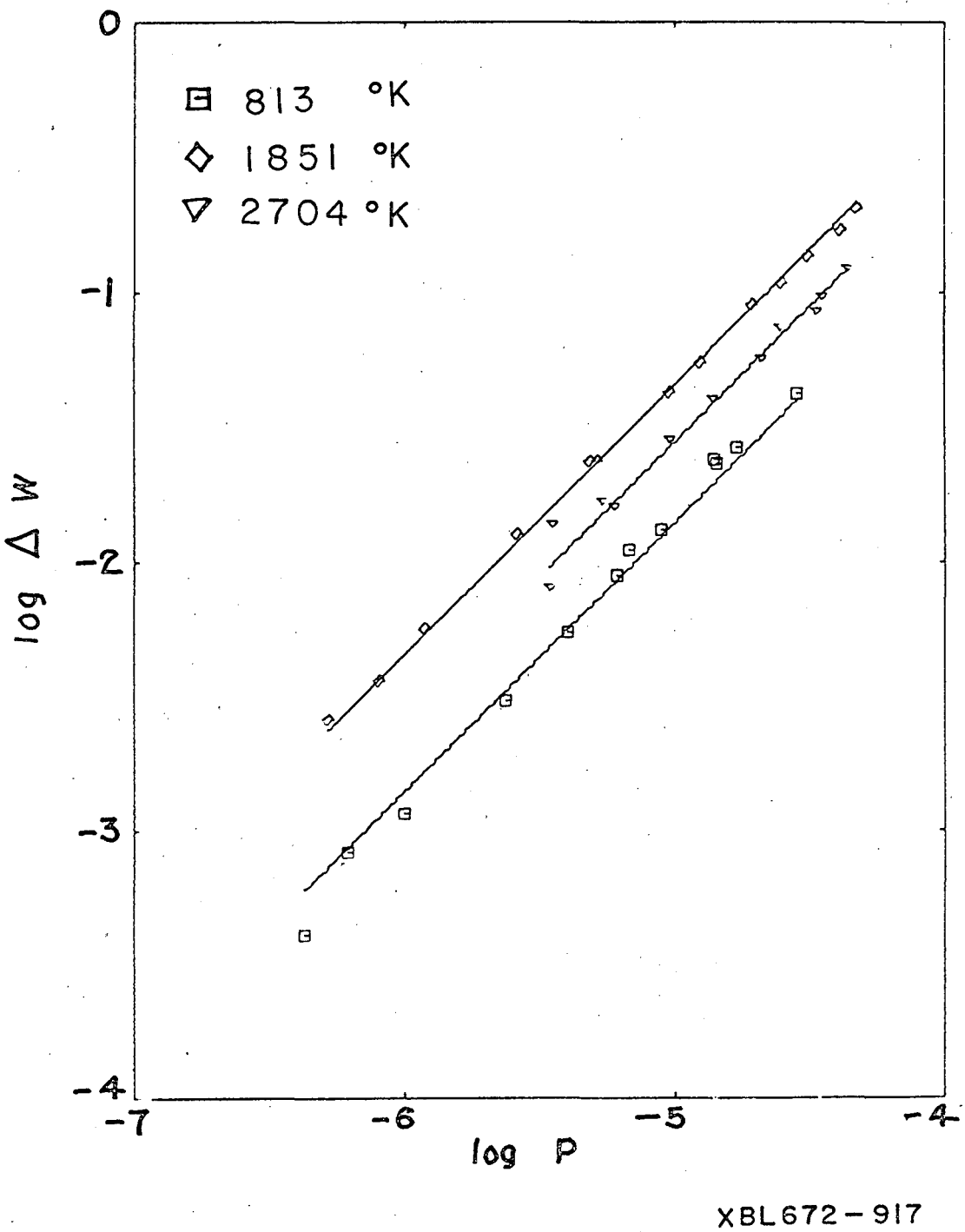

Fig. 2. Power loss vs neon pressure. ΔW in watts/cm^2; P in atm.

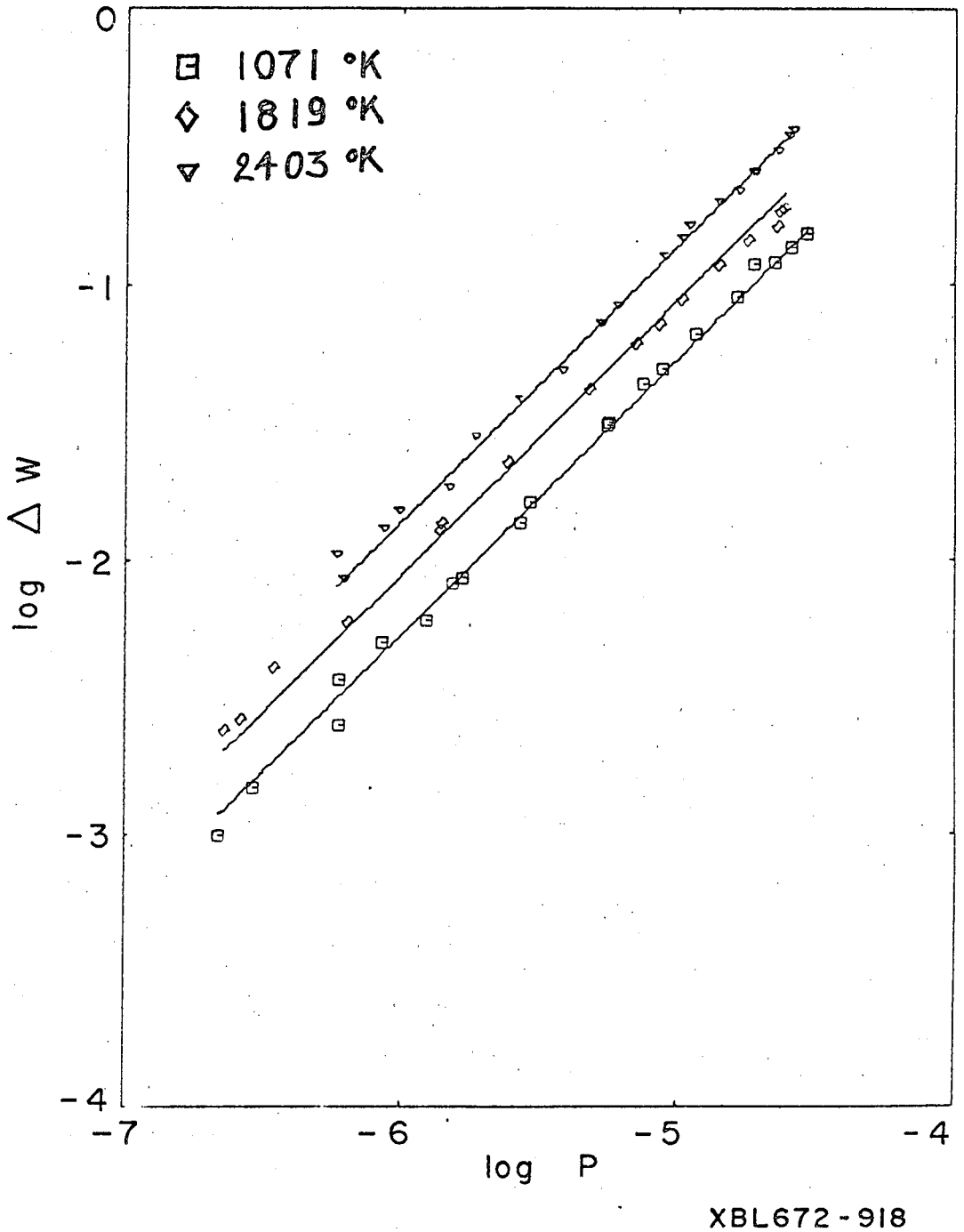

Fig. 3. Power loss vs nitrogen pressure. ΔW in watts/cm^2; p in atm.

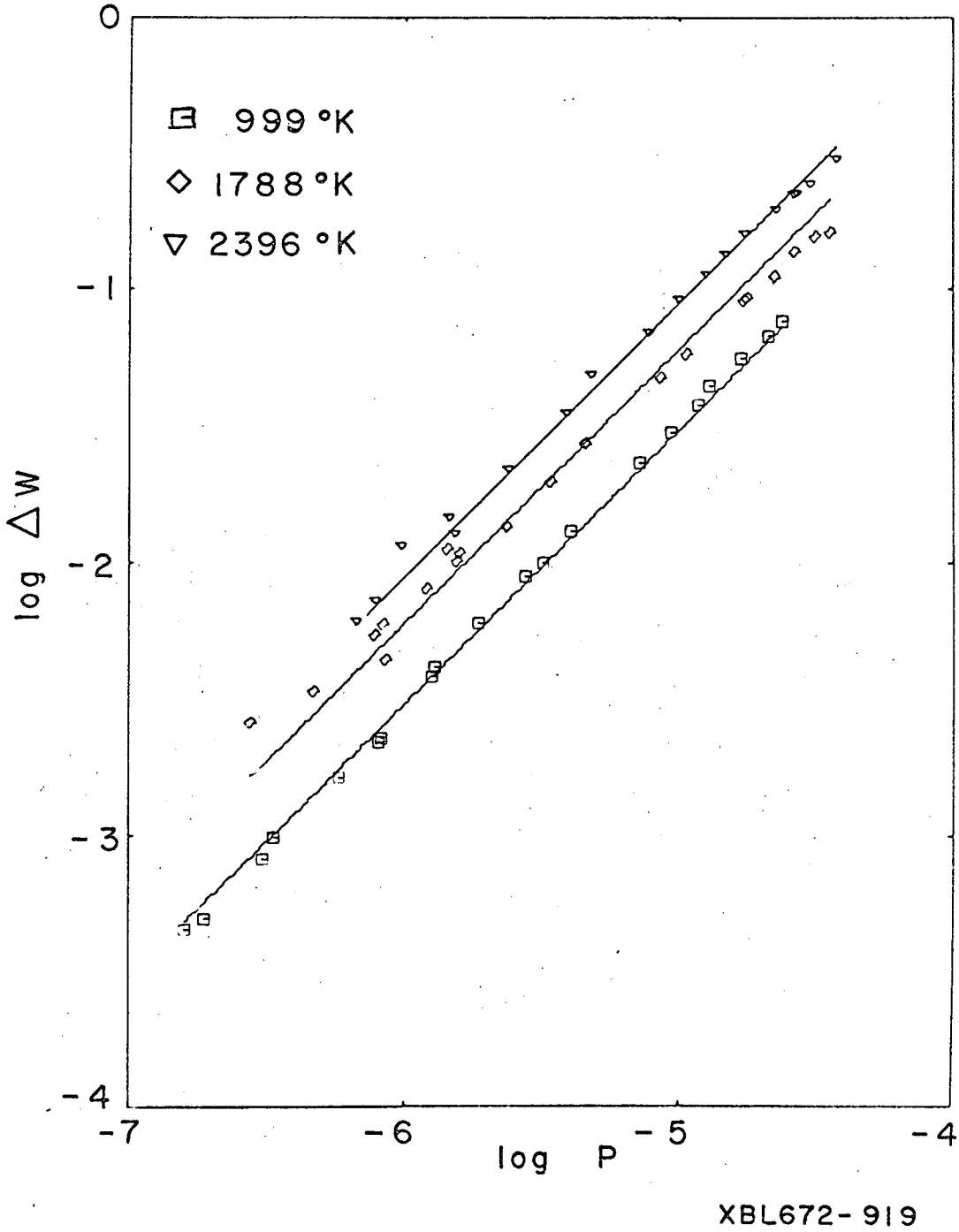

Fig. 4. Power loss vs argon pressure. ΔW in watts/cm^2; p in atm.

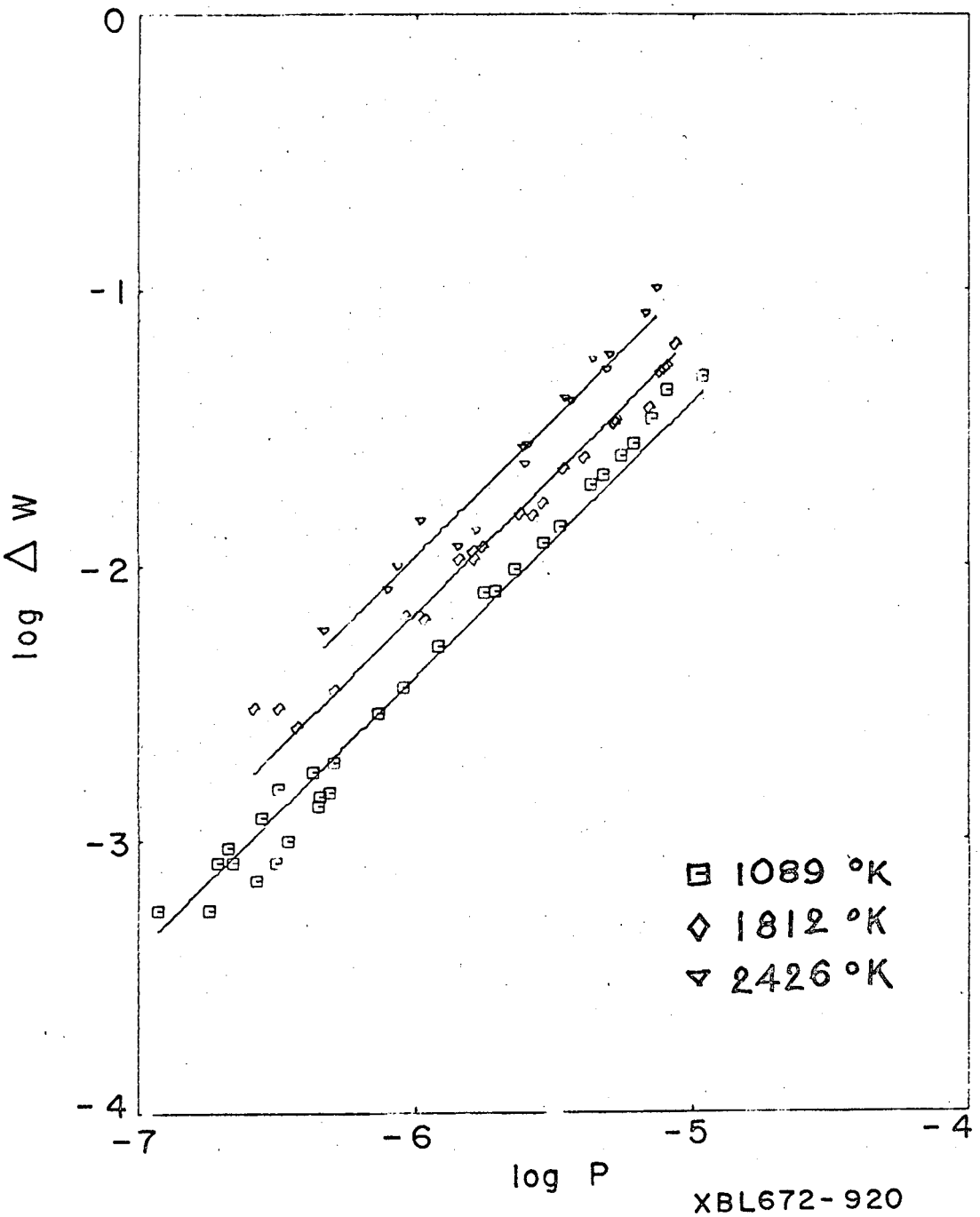

Fig. 5. Power loss vs krypton pressure. ΔW in watts/cm^2; p in atm.

and seventh columns list for each gas the minimum and the maximum pressures (in atm) studied at each tungsten temperature, T_s (in °K). The apparent average gas temperature after collision, T_r (in °K), is calculated from Eq. (7) by replacing ΔW_{max} (in watts/cm^2) by ΔW (in watts/cm^2) and T_s by T_r. Values of T_r are given in column 4. The meaning of other columns were defined above.

The pressure dependence of ΔW is seen to be close to unity. Deviations from unity in the measured pressure dependence of ΔW appear to be attributable to random experimental errors rather than to systematic changes with temperature or to the nature of the impinging gases. Note, for example, that two runs for neon made over similar pressure ranges at 2114°K and 2155°K yielded 0.897 and 1.13 for the power dependence of ΔW on pressures. These values are two of those farthest removed from unity. The most probable source of the error in pressure dependence lies in calibration of the mass-spectrometer pressure readings.

Comparison of B_1 and B_2 also shows close agreement, and in most cases, $STDV_1$ is not much larger than $STDV_2$. There are two experimental results for krypton where α values greater than unity were measured. Here also the errors are believed to have arisen in the pressure calibrations.

The overall trend of Table II shows clearly that $A_2 \approx 1$, $B_1 \approx B_2$, $STDV_1 \approx STDV_2$, and $\alpha_1 \approx \alpha_2$. Therefore, within our experimental error, ΔW is found to depend on the first power of pressures for neon, nitrogen, argon, and krypton, over a wide tungsten temperature range and in the pressure range of 1×10^{-7} to 5×10^{-5} atm. Equivalently, α is found to be independent of gas pressures at all temperatures studied.

2. α Dependence on Tungsten Temperature

In order to obtain improved measurements of the dependence of α on the surface temperature T_s, we made a new series of energy exchange experiments at relatively constant pressures and with variations in the surface temperatures between 700°K and 2800°K.

For neon, nitrogen, argon, and krypton most of the pressures were held at about 1 to 5×10^{-5} atm, 1 to 5×10^{-6} atm, 4 to 5×10^{-6} atm, and 7 to 9×10^{-6} atm, respectively. For each gas, the data were collected in one continuous series of measurements. Detailed results are given in Tables A-XXVIII to A-XXXI of Appendix A and are shown in Fig. 6. The reproducibility of data in any one of these experiments can be found by comparing data at close temperatures which have widely separated experimental sequence numbers. The very good reproducibility that is found constitutes a supporting indication that the discrepancies in Table II come from the difference in systematic errors from one experiment to the other.

In Fig. 6, we observe clearly the dependence of α on surface temperature. For each gas there seems to be a local maximum in α at about 1000°K, a local minimum at about 1400°K, a second maximum at about 1800°K, and an inflection point at about 2500°K.

B. Oxygen, Nitric Oxide, and Nitrous Oxide

The oxygen system was studied in a pressure range of 1×10^{-9} atm to 2×10^{-5} atm at tungsten temperatures of 1040°K to 2540°K. Twenty three different experimental runs were made at various constant temperatures while the oxygen pressure was varied. In the temperature range of about 1550°K to 1800°K, ΔW was negative, while at all other temperatures, ΔW was positive. Several different sets of experimental results for which the tungsten temperatures were nearly the same are grouped

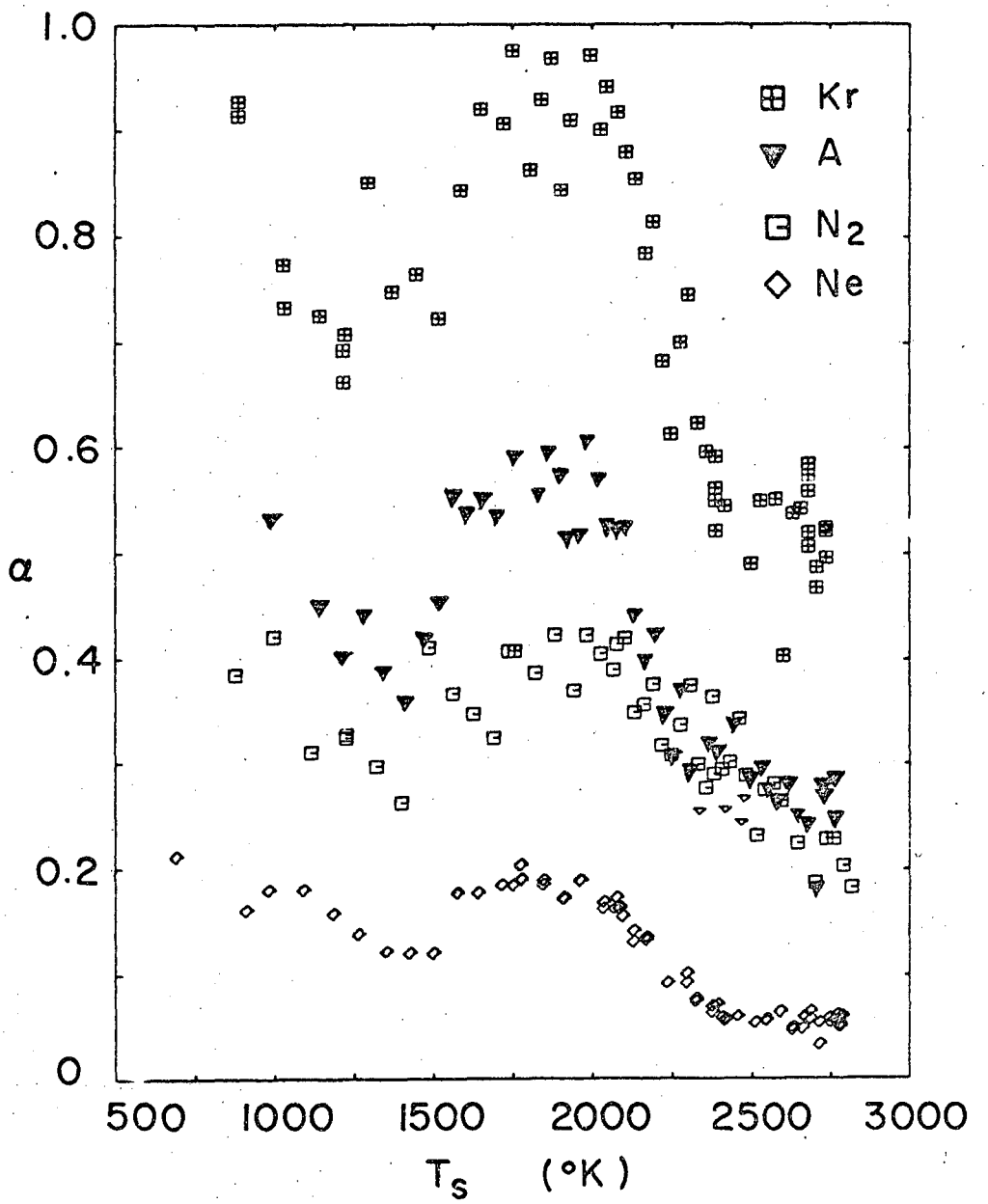

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Fig. 6. Thermal accommodation coefficient (α_1) vs tungsten temperature.

together and presented in Figs. 7 and 8 with their arithmetic average temperatures. Figure 7 reports those measurements for which ΔW was positive and Fig. 8 reports those for which ΔW was negative. Table III summarizes the oxygen energy exchange data and gives the relation of Fig. 7 and Fig. 8 to the original data in Appendix B. Table III includes for each average T_s, a least squares fit to Eq. (10) of all data taken above 1×10^{-8} atm pressure.

Figure 9 gives the results of a separate experiment at an approximately constant pressure of 3 to 6×10^{-7} atm and at varying temperatures. ΔQ is given in kcal per one mole of incident oxygen gas. Figure 10 presents the simultaneously measured reaction probability of oxygen at the various temperatures. The reaction probability became high enough to measure only above 1900°K. The data used in these figures are given in Appendix Table B-XXIV.

Experimental results obtained at constant T_s by changing p and at constant p by changing T_s appear to give the same ΔW within the random experimental error of either method of study.

Similar experiences for nitric oxide and nitrous oxide were made at approximate pressures of 2×10^{-7} atm to 3×10^{-6} atm, and 1×10^{-7} atm to 1×10^{-6} atm, respectively by changing T_s over a wide range. ΔQ vs T_s plots and reaction probability vs T_s plots for nitric oxide and nitrous oxide are given in Figs. 11, 12, 13, and 14, respectively.

C. Neon-Krypton Mixture and Argon-Oxygen Mixture

Let ΔW_{mix} be the observed energy exchange (in watts/cm^2) for a mixture of gases. If we assume that ΔW_{mix} is the summation of individual energy exchanges for components of the mixture as defined for each component by Eq. (5),

Table III Source of regrouped data in Fig. 8 and Fig. 9

Regrouped data with average T_s in Fig. 7 and Fig. 8				Original data given in Appendix B			
T_s °K	A_2 (For data above 1×10^{-8} atm)	B_2	$STDV_2$	Appendix Table No.	T_s (°K)	P(low)[a] (atm.)	P(high)[a] (atm.)
1089	9.51×10^{-1}	3.47	8.19×10^{-2}	B-I	1044	7.30×10^{-8}	1.17×10^{-6}
				B-II	1051	2.92×10^{-8}	1.17×10^{-6}
				B-III	1091	8.76×10^{-8}	1.17×10^{-6}
				B-IV	1108	8.76×10^{-8}	1.17×10^{-6}
				B-V	1142	7.13×10^{-8}	2.11×10^{-5}
1500	1.16	4.59	7.76×10^{-2}	B-VI	1488	2.92×10^{-7}	1.17×10^{-6}
				B-VII	1510	1.46×10^{-7}	1.17×10^{-6}
1569	-6.24×10^{-2}	-2.92	9.71×10^{-2}	B-VIII	1569	9.34×10^{-10}	9.63×10^{-7}
1649	-2.33×10^{-2}	-2.18	3.30×10^{-2}	B-IX	1649	5.84×10^{-10}	1.23×10^{-6}
1742	1.06×10^{-1}	-1.35	5.69×10^{-2}	B-X	1737	1.46×10^{-9}	1.02×10^{-6}
				B-XI	1740	1.46×10^{-9}	1.21×10^{-6}
				B-XII	1756	1.46×10^{-9}	1.02×10^{-6}
1965	5.36×10^{-2}	-1.85	9.10×10^{-2}	B-XIII	1965	1.46×10^{-9}	1.21×10^{-6}
2200	2.11×10^{-1}	-3.76×10^{-1}	5.56×10^{-2}	B-XIV	2200	1.46×10^{-9}	1.21×10^{-6}
				B-XV	2204	1.06×10^{-7}	6.02×10^{-6}

Table III (Continued)

Regrouped data with average T_s in Fig. 7 and Fig. 8				Original data given in Appendix B			
T_s °K	A_2 (for data above 1×10^{-8} atm)	B_2	$STDV_2$	Appendix Table No.	T_s (°K)	P(low) [a] (atm)	P(high) [a] (atm)
2401	2.50×10^{-1}	5.40×10^{-1}	3.08×10^{-2}	B-XVI	2386	1.46×10^{-9}	1.21×10^{-6}
				B-XVII	2415	1.37×10^{-9}	1.17×10^{-6}
2521	3.71×10^{-1}	1.43	4.56×10^{-2}	B-XVIII	2515	1.46×10^{-8}	1.46×10^{-7}
				B-XIX	2518	1.17×10^{-7}	1.17×10^{-6}
				B-XX	2519	1.17×10^{-7}	1.17×10^{-6}
				B-XXI	2520	1.46×10^{-9}	1.31×10^{-7}
				B-XXII	2521	8.76×10^{-10}	2.48×10^{-8}
				B-XXIII	2542	1.46×10^{-9}	1.46×10^{-3}

a. Pressure read with tungsten filament turned on.

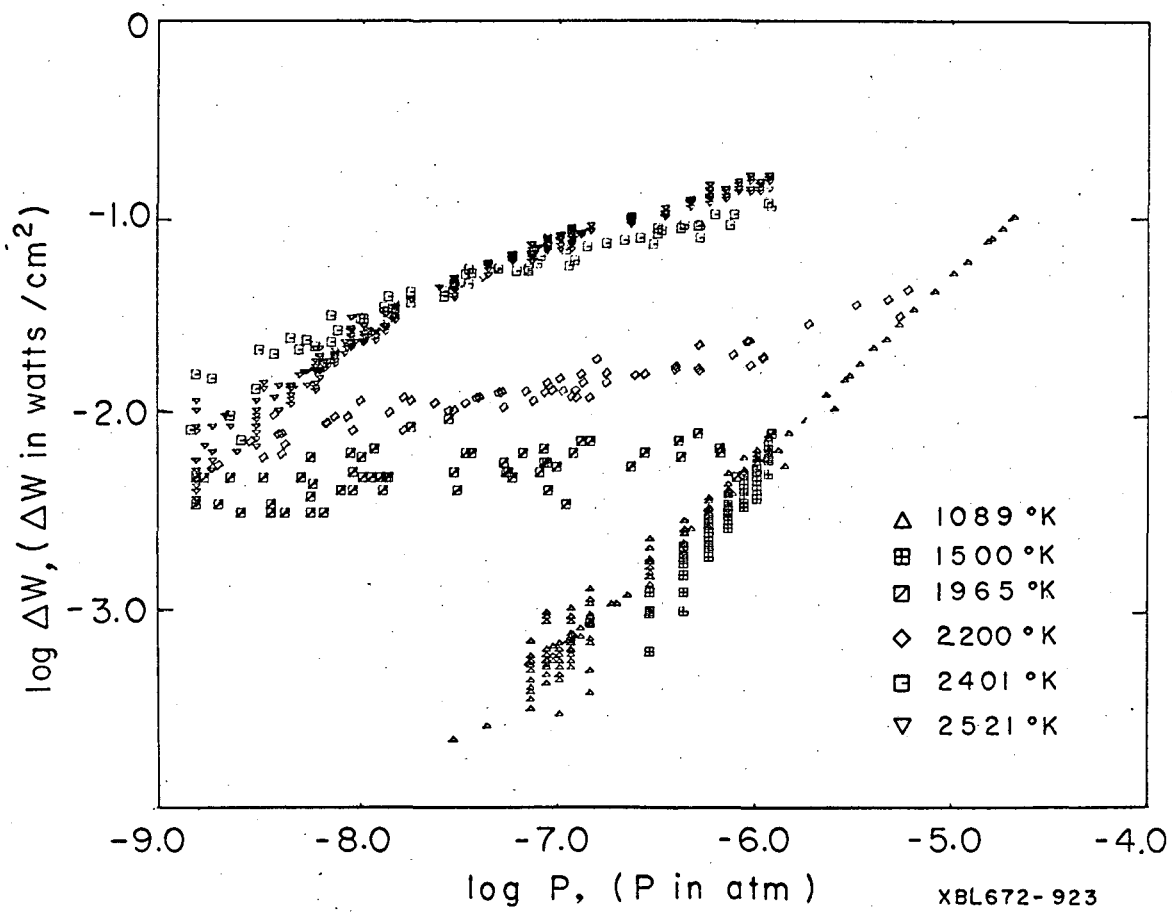

Fig. 7. Endothermic energy exchange rate vs oxygen pressures at different tungsten temperatures.

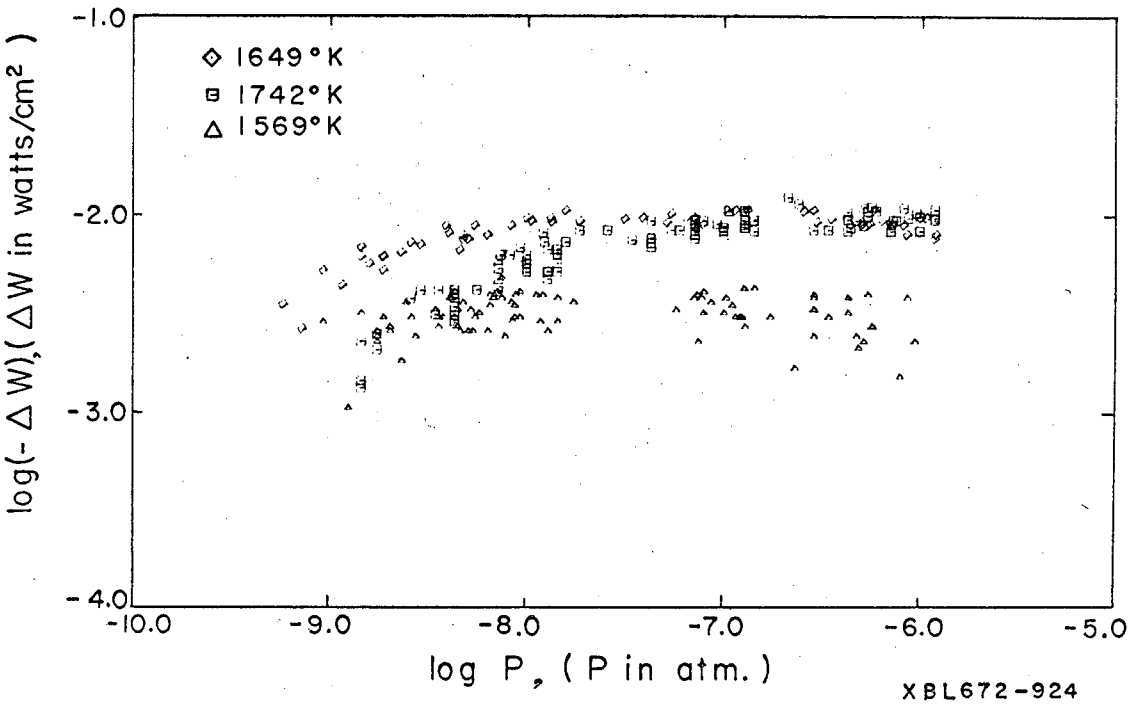

Fig. 8. Exothermic energy exchange rate vs oxygen pressures at different tungsten temperatures.

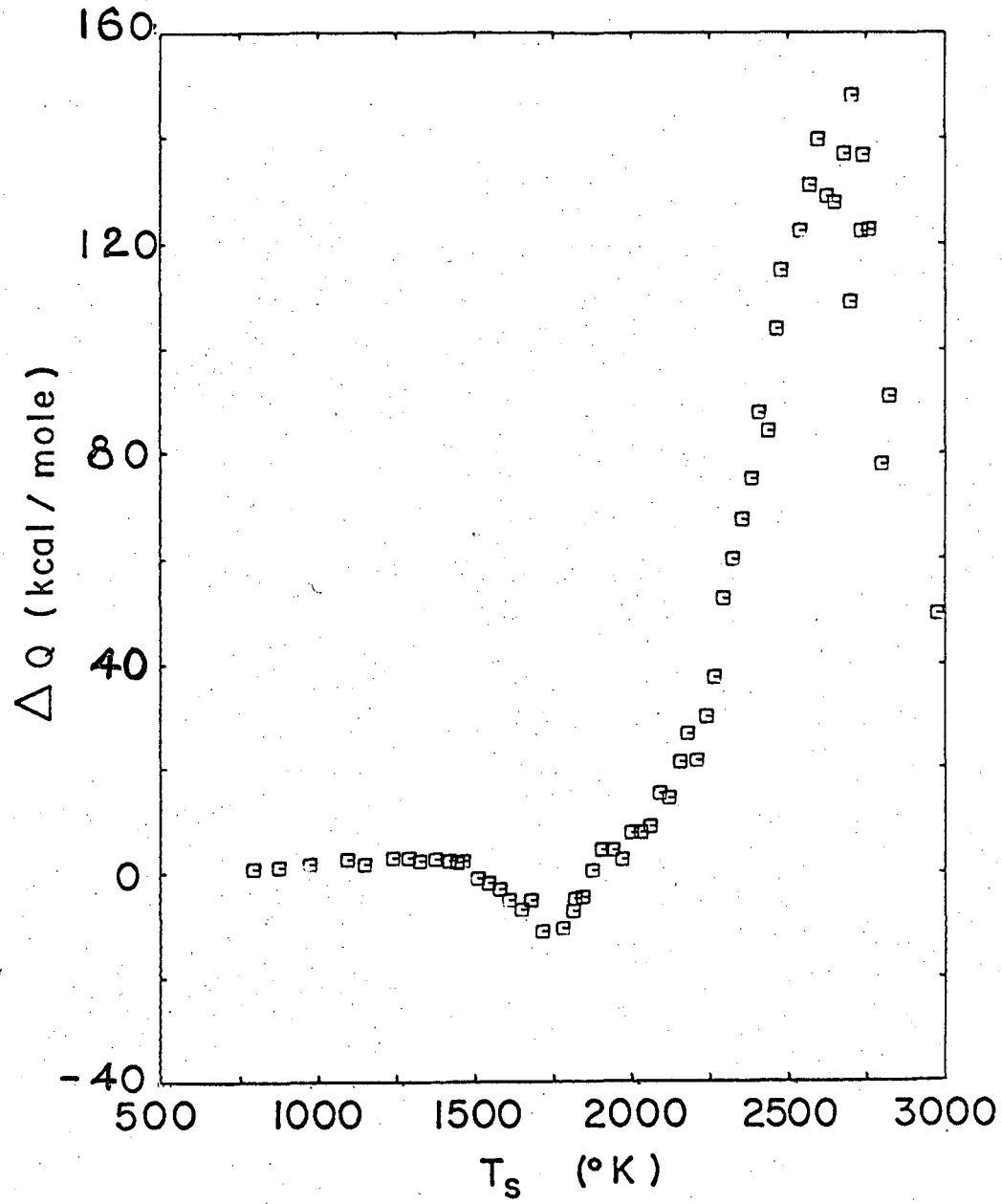

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Fig. 9. Energy exchange per one mole of incident oxygen gas as a function of tungsten temperatures.

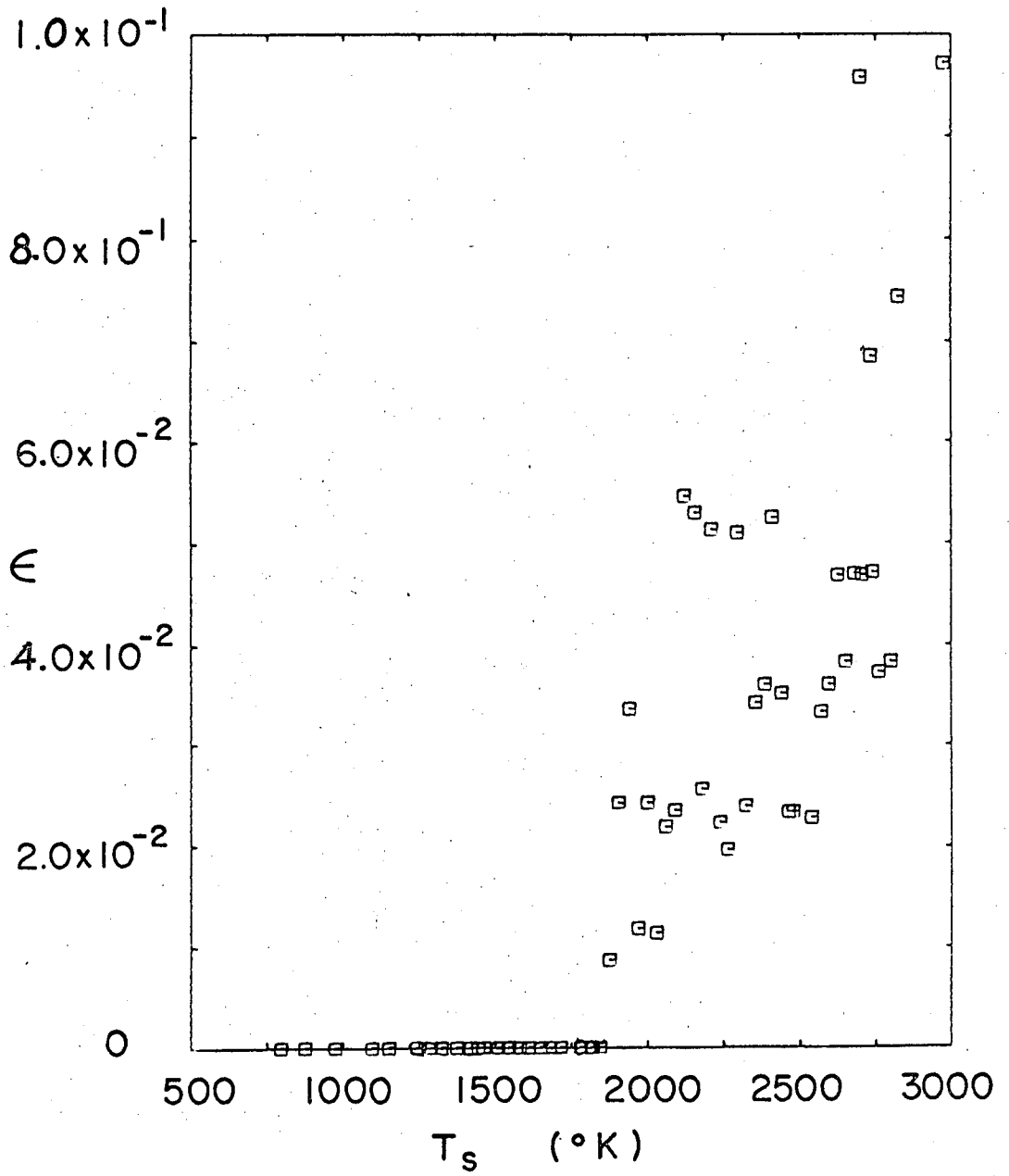

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Fig. 10. Reaction probability vs tungsten temperature for oxygen.

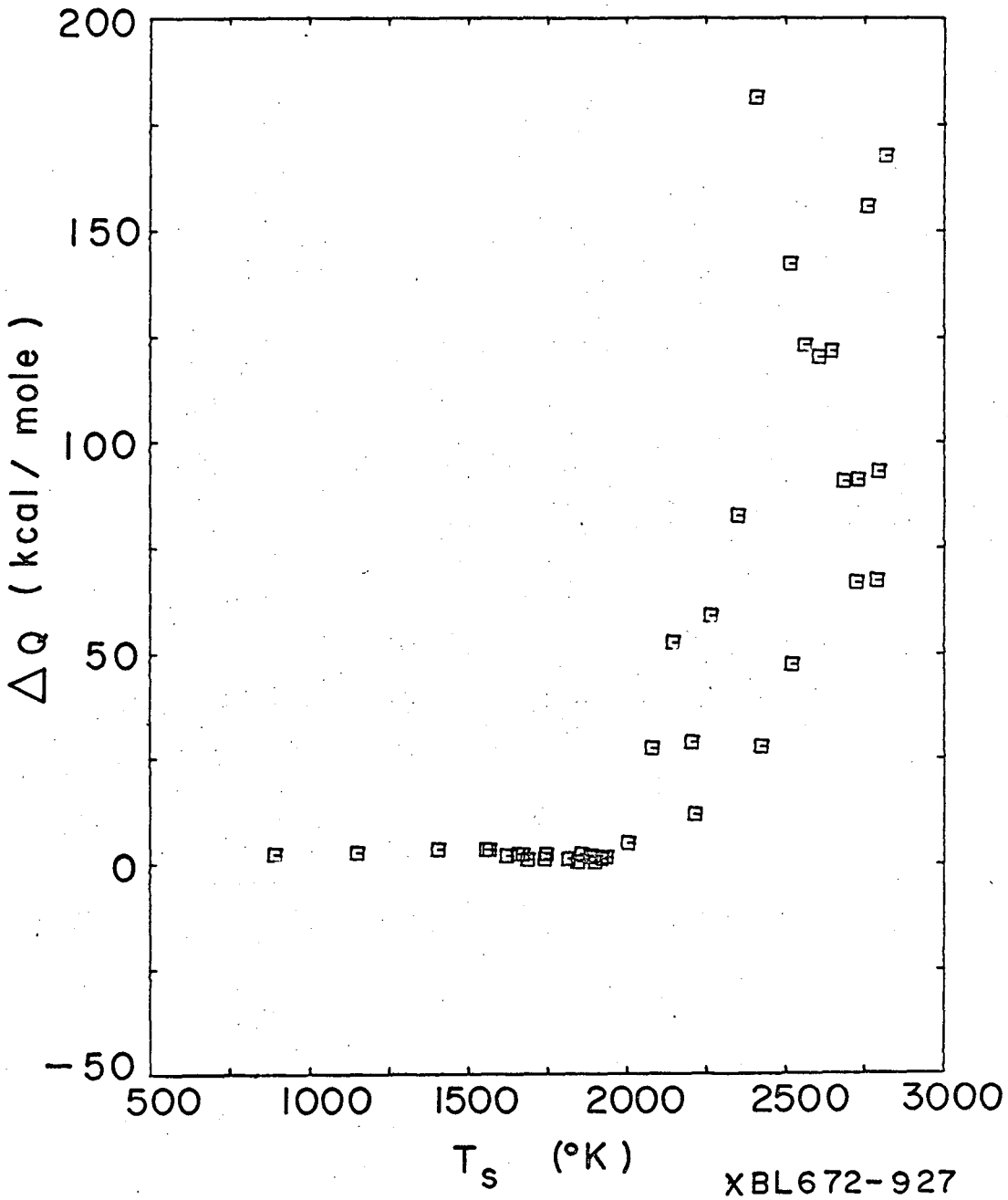

Fig. 11. Energy exchange per one mole of incident nitric oxide vs tungsten temperatures.

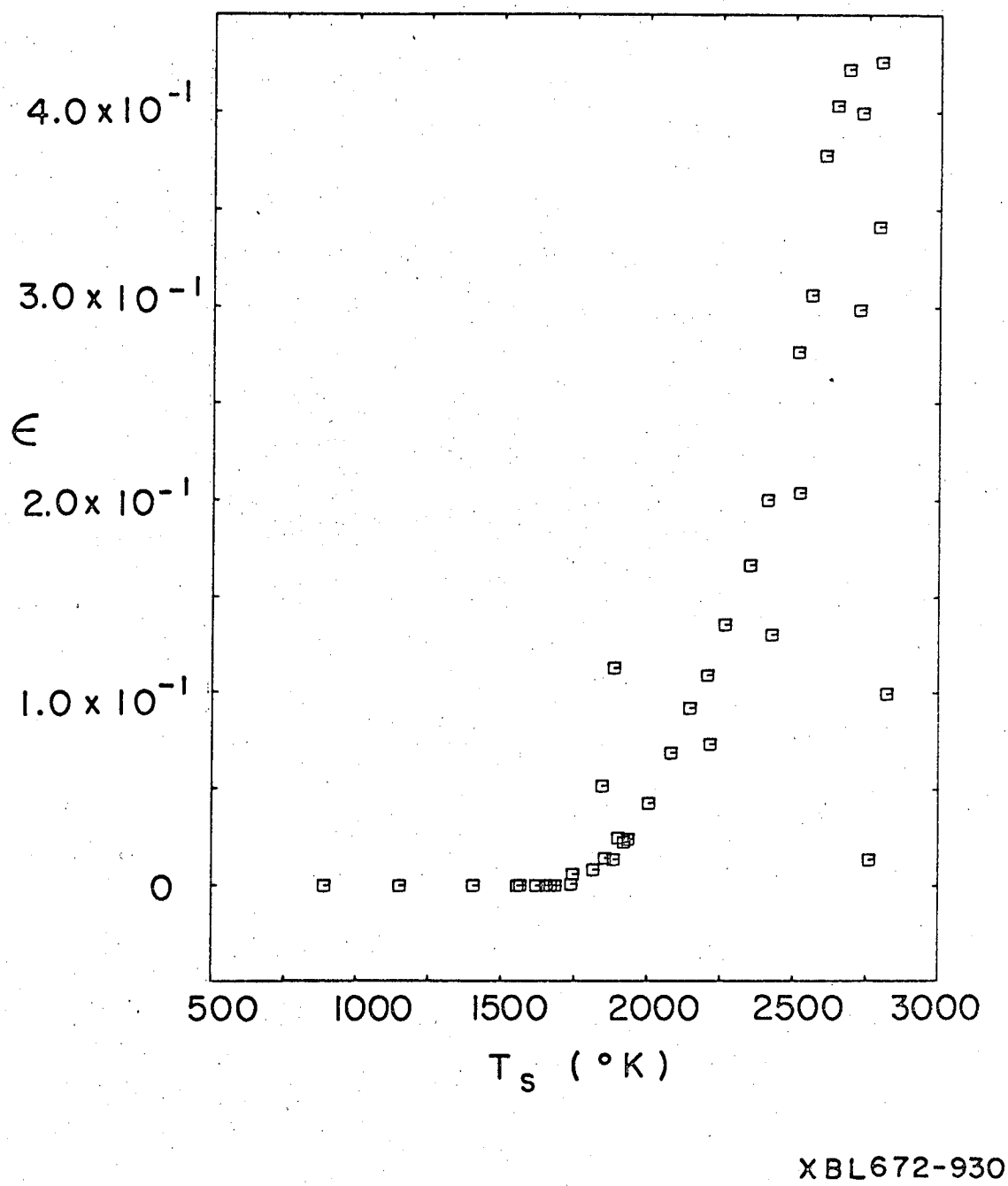

Fig. 12. Reaction probability vs tungsten temperature for nitric oxide.

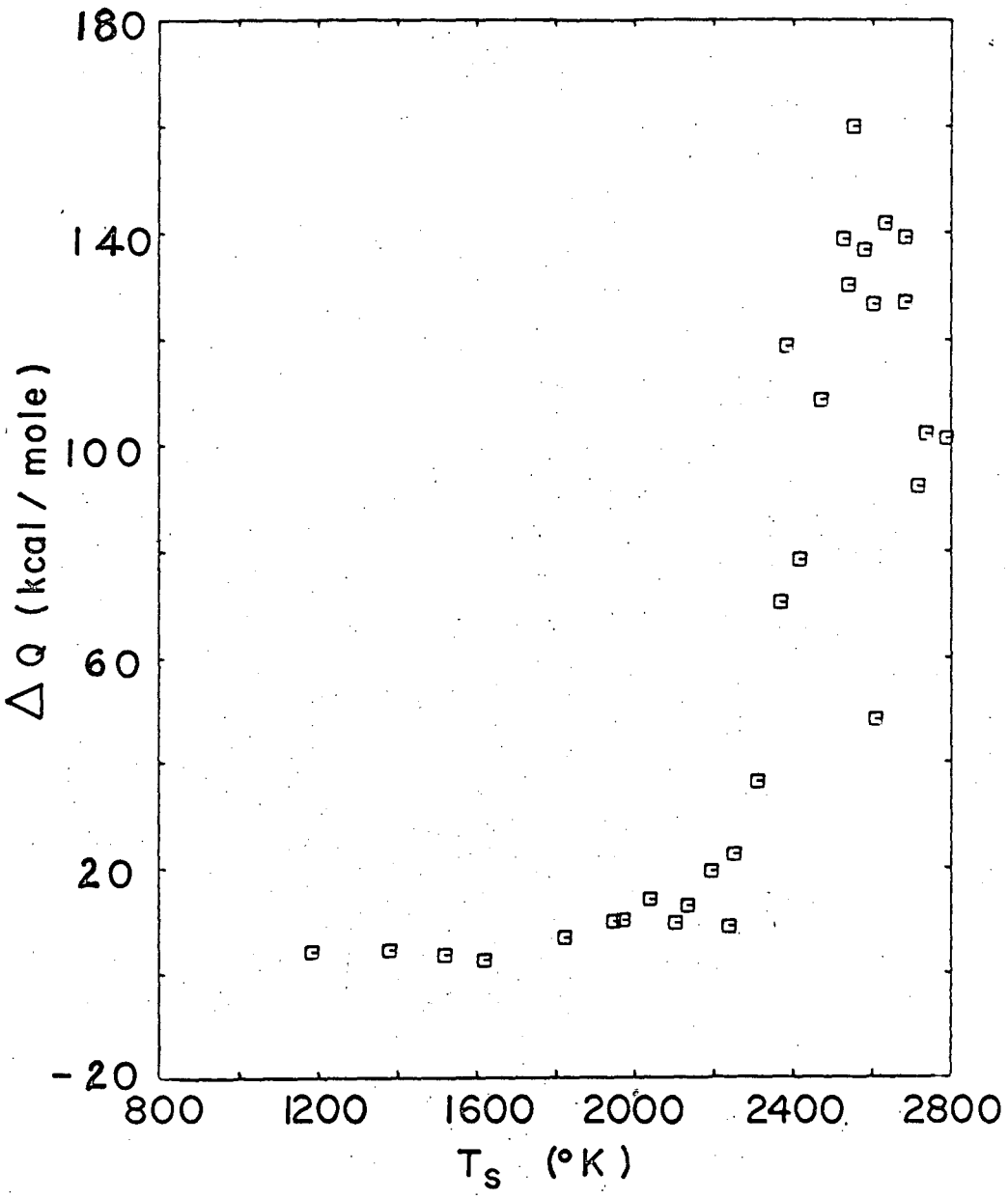

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Fig. 13. Energy exchange per one mole of incident nitrous oxide vs tungsten temperatures.

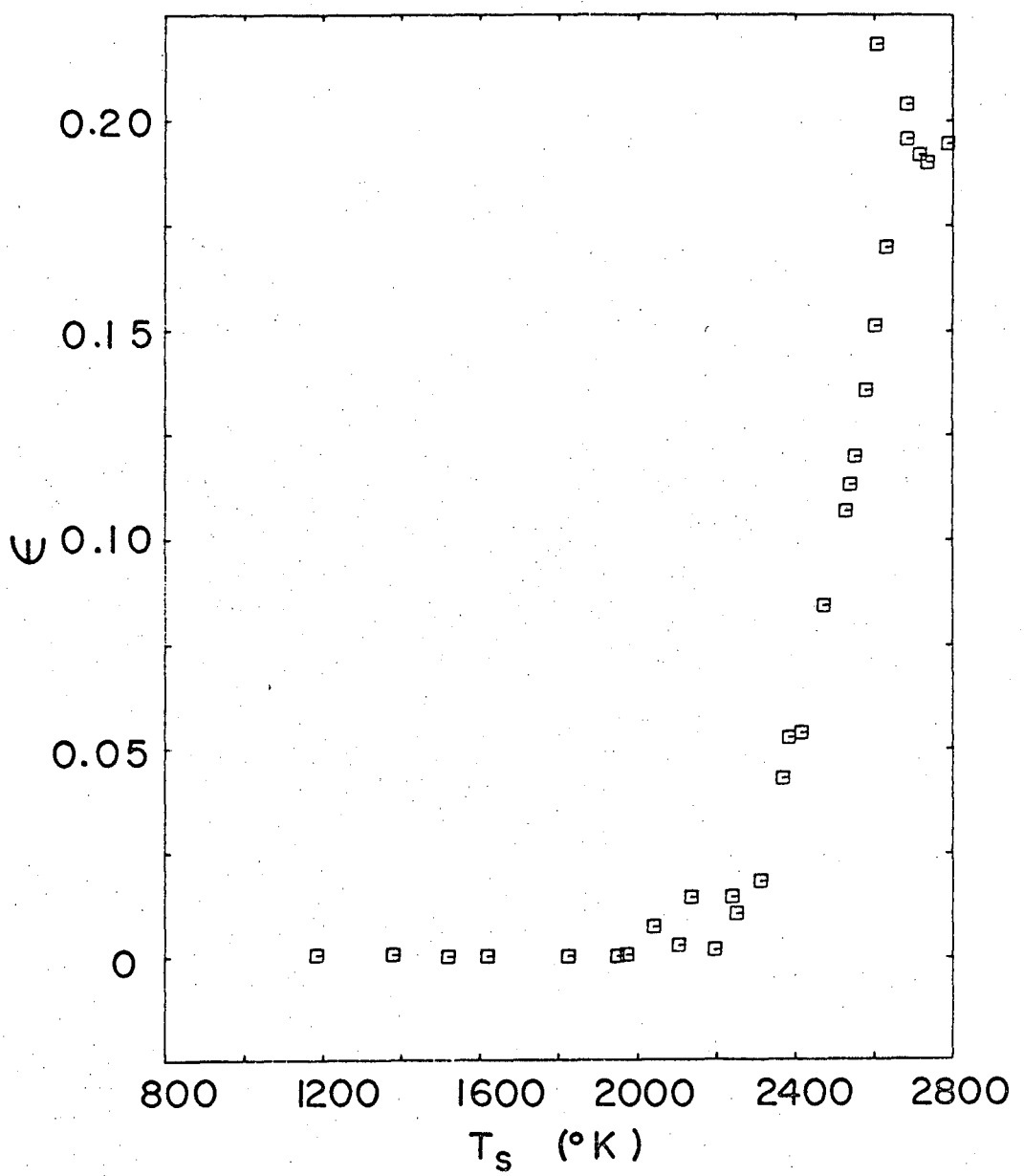

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Fig. 14. Reaction probability vs tungsten temperatures for nitrous oxide.

$$\Delta W_{mix} = \sum_i \Delta W_i \tag{11}$$

where A, B, ..., ... here and below identify components of a gas mixture. From Eqs. (11) and (6),

$$\Delta W_{mix} = \sum_i \alpha_i \, \Delta W_{i,max} \tag{12}$$

where $\Delta W_{i,max}$ was defined as in Eq. (7) except that the partial pressure of species i should be used here. Thus,

$$W_{i,max} = \frac{10.74129 \, p_i}{\sqrt{M}} \int_{298}^{T_s} (C_v + 1/2 \, R) \, dT \tag{13}$$

Since for the non-reacting gases the energy exchange per molecule does not depend on pressure, it is convenient to define a pressure independent term $\Delta W_{i,T}$ by

$$\Delta W_{i,T} = \Delta W_{i,max}/p_i \tag{14}$$

Then the energy exchange for a mixture per unit total pressure, P, is given by

$$\Delta W_{mix}/P = \sum_i y_i \, \alpha_i \, \Delta W_{i,T} \tag{15}$$

where y_i is the mole fraction of the ith species.

Figure 15 is the plot of $\Delta W_{mix}/P$ as a function of y_{Kr} at 2142°K. The squares are experimental points, and the solid line is calculated from Eq. (15) with use of α_{Ne} and α_{Kr} values as given in Table II. The average relative standard deviation for the neon-krypton mixture, defined as the standard deviation of

$$\frac{\Delta W_{mix}/P - \text{RHS of (15)}}{\text{RHS of (15)}}$$

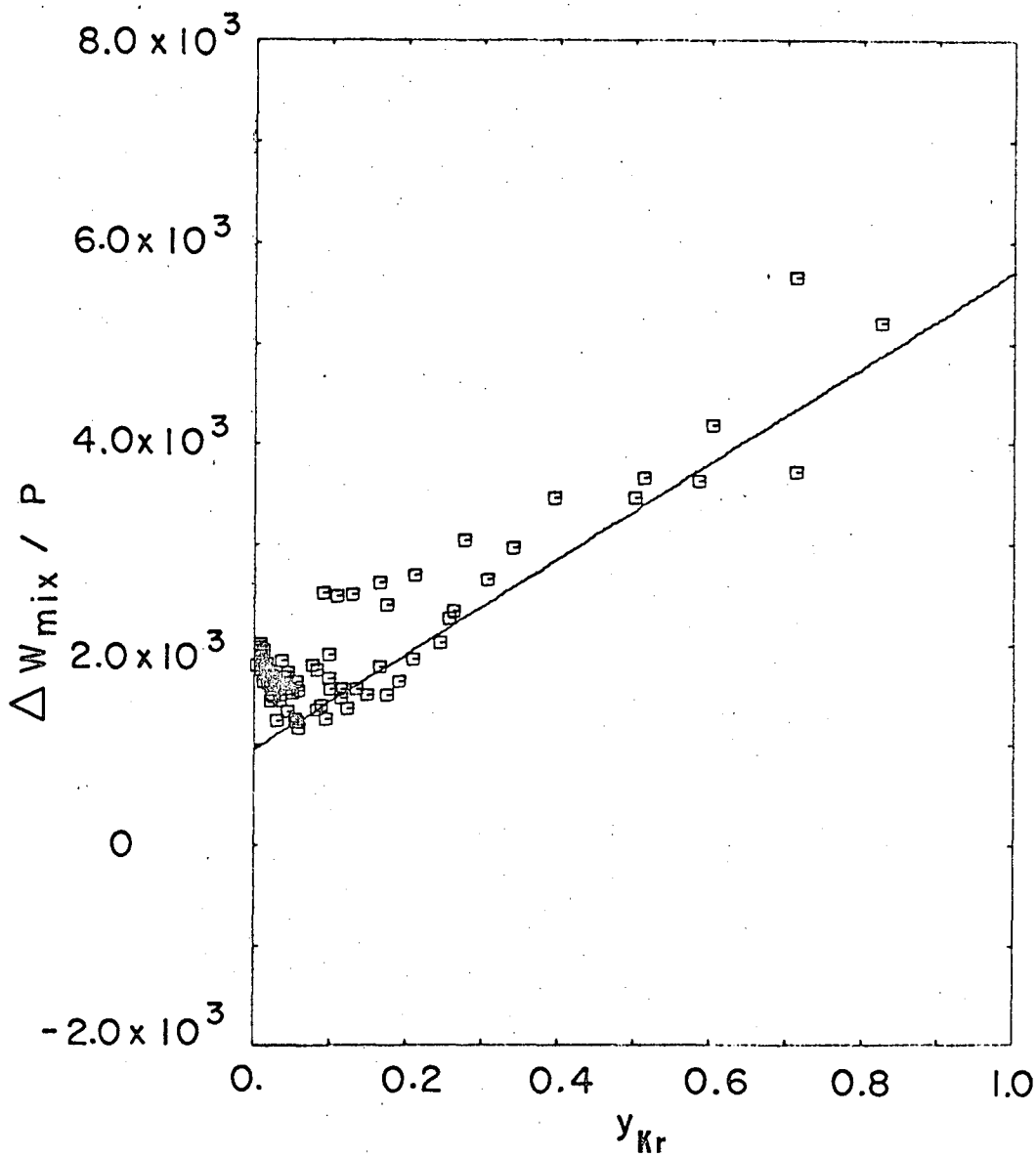

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Fig. 15. Energy exchange rate for neon-krypton mixture per unit total pressure (in watts/cm^2/atm) vs mole fraction of krypton in the mixture at the tungsten temperature of 2142°K.

is 4.45×10^{-1}. A small variation of α's in Eq. (15) changes this average deviation quite sensitively. Therefore, from the general trend of experimental points, we consider that the agreement between experiment and calculation is very good. The data are given in Appendix C, Table C-I.

The energy exchange of mixtures of argon and oxygen was measured at 1740°, 2203°, 2522°, and 2528°K. The first temperature lies in the region where oxygen energy exchange is exothermic, while for the others it is endothermic. Those four experimental results are shown in Figs. 16 to 19, respectively. The squares of these figures are experimental points, and diamonds are those points calculated by Eq. (15). Those corresponding points are shown by vertical lines connecting them. Since α_{O_2} at these four temperatures depends on pressure, $\Delta W/p$ for the mixture is a function of pressure of oxygen as well as of mole fraction. α_{O_2} as a function of pressure was calculated in Eq. (10) using data in the partial pressure range for the mixture experiment from those data presented in Fig. 7 and Fig. 8. α_A is obtained by interpolation from Table II. These data are listed in Tables C-II, C-III, C-IV, C-V of Appendix C.

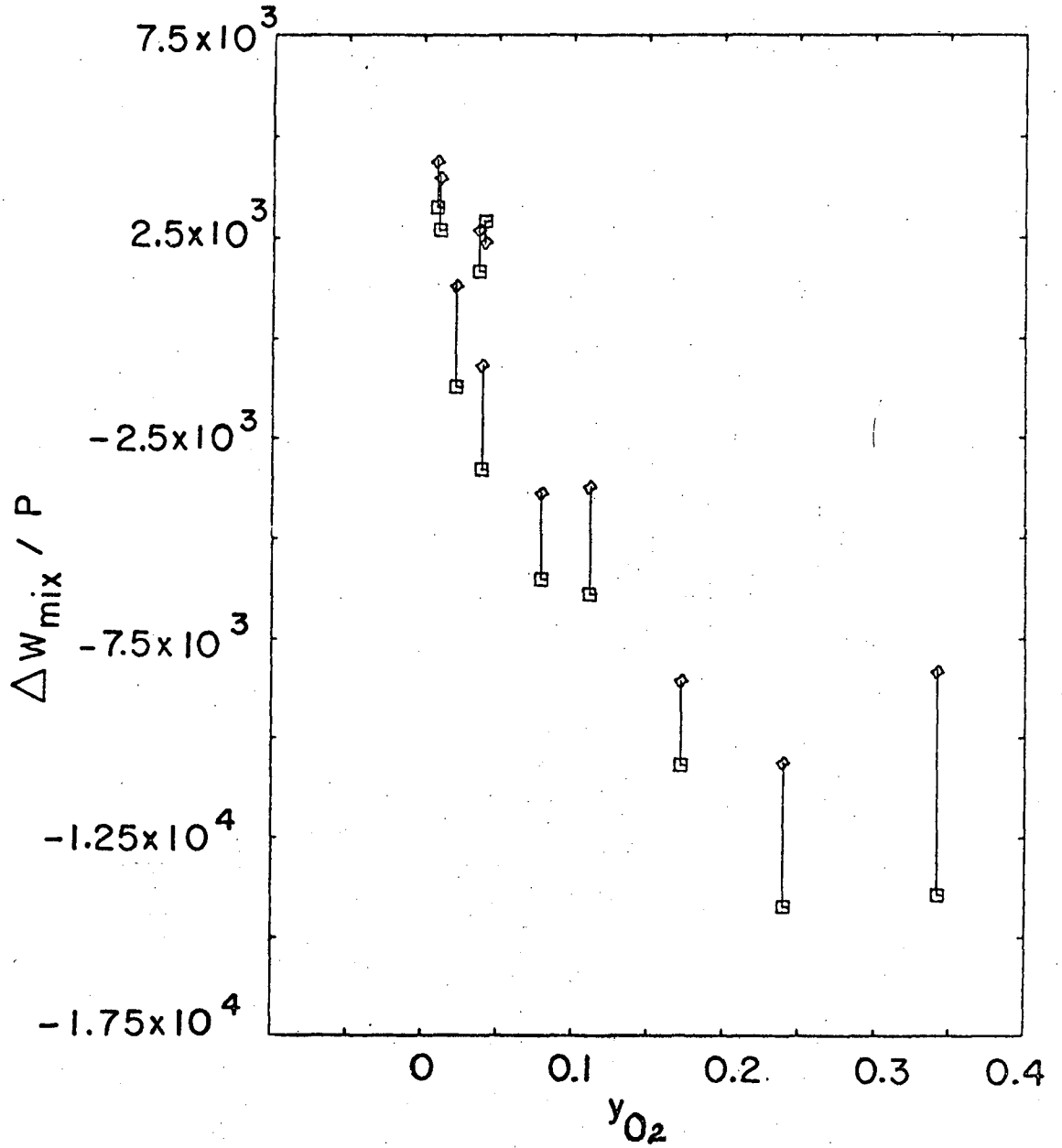

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Fig. 16. Energy exchange rate for argon-oxygen mixture per unit total pressure (in watts/cm^2/atm) vs mole fraction of oxygen in the mixture at the tungsten temperature of 1740°K.

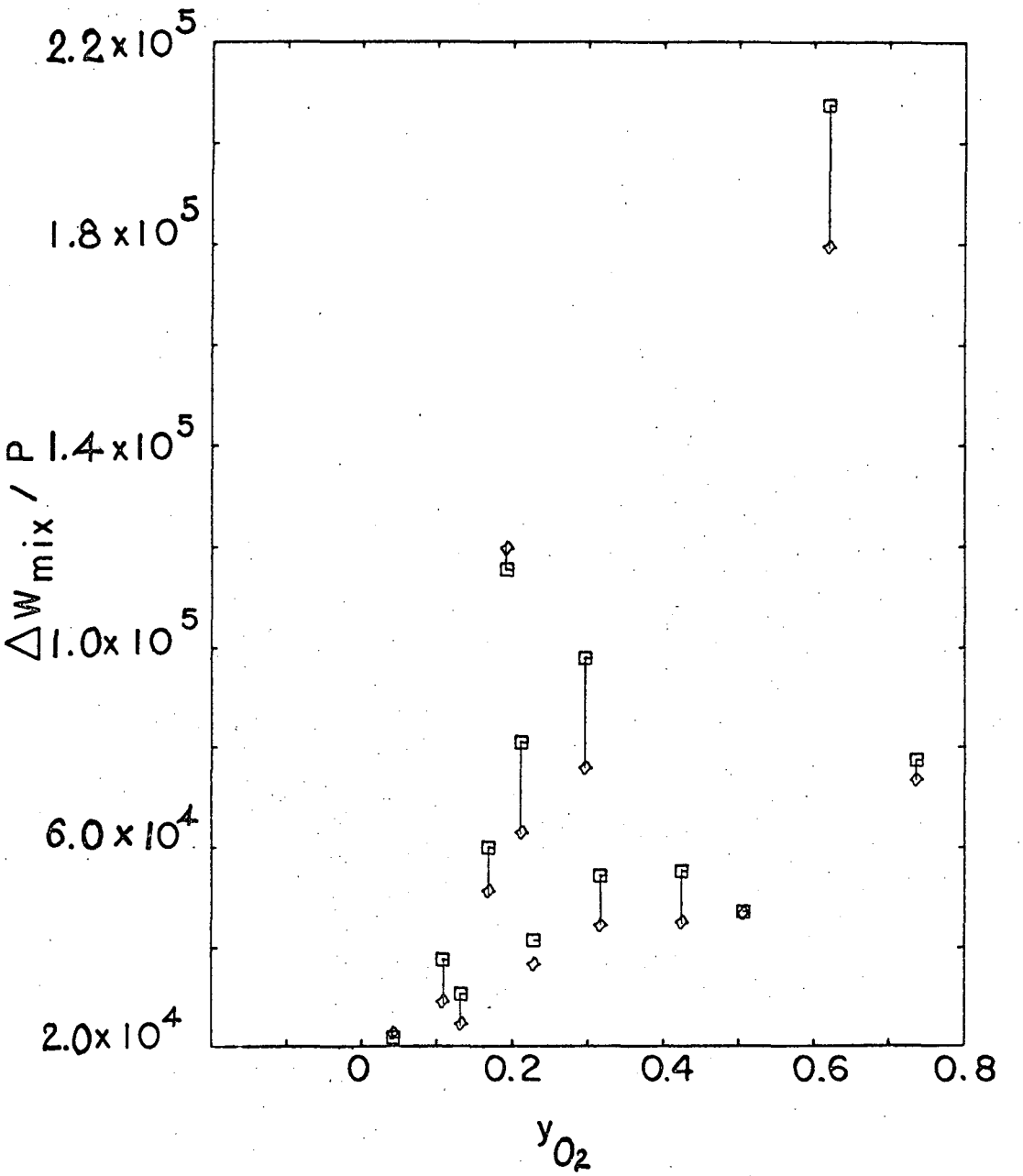

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Fig. 17. Energy exchange rate for argon-oxygen mixture per unit total pressure (in watts/cm^2/atm) vs mole fraction of oxygen in the mixture at the tungsten temperature of 2203°K.

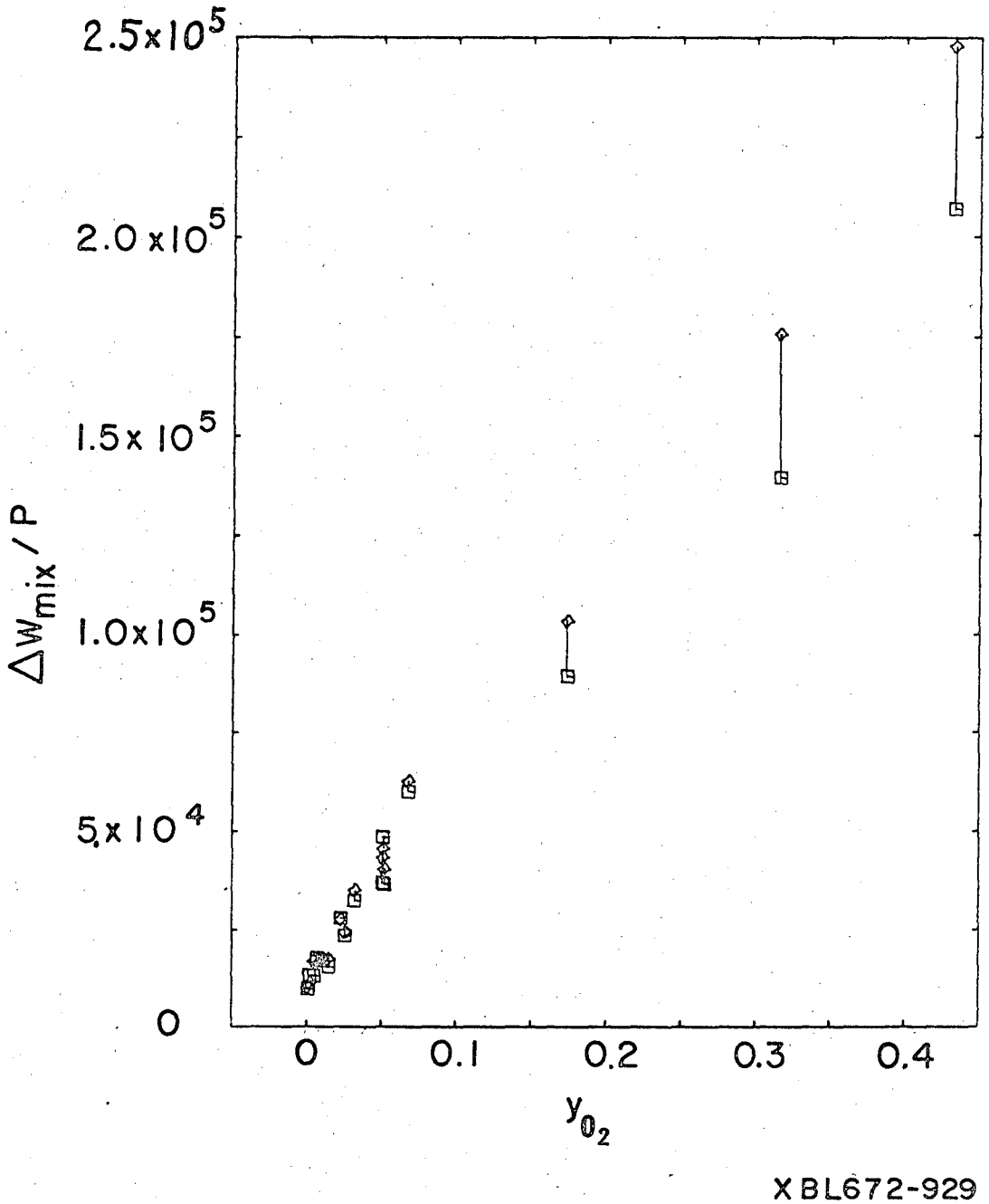

Fig. 18. Energy exchange rate for argon-oxygen mixture per unit total pressure (in watts/cm^2/atm) vs mole fraction of oxygen in the mixture at the tungsten temperature of 2522 °K.

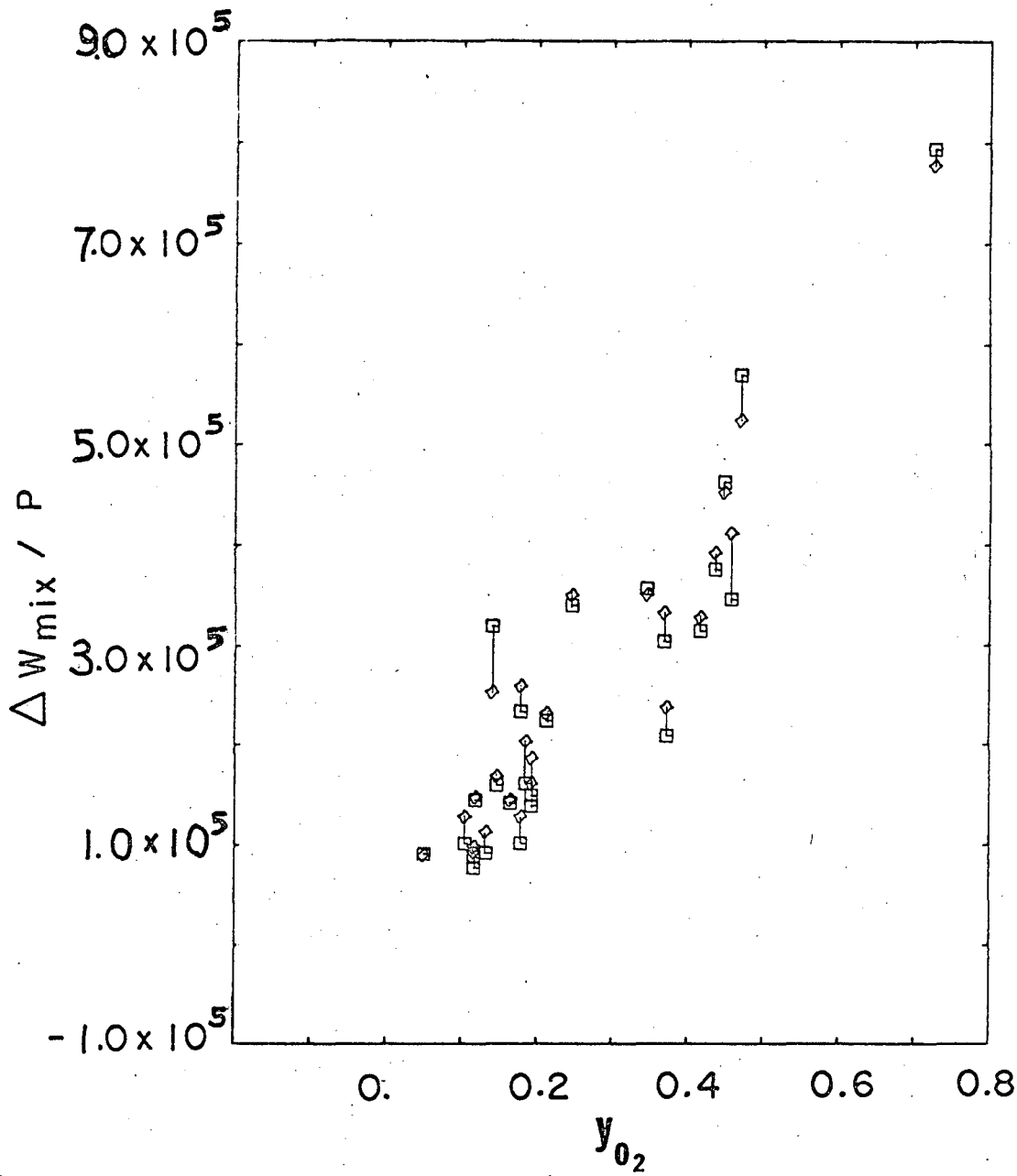

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Fig. 19. Energy exchange rate for argon-oxygen mixture per unit total pressure (in watts/cm^2/atm) vs mole fraction of oxygen in the mixture at the tungsten temperature of 2528°K.

IV. DISCUSSION

A. Neon, Nitrogen, Argon, and Krypton

In Part III, A, we have shown by extensive measurement for these non-reacting gases that within experimental error, α is independent of pressure and depends on T_s in a complicated way.

It is pertinent to consider briefly the general status of thermal accommodation theory, and the applicability of these theories to our results. Several theoretical analyses have assumed that the collision of gas molecules on one dimensional chain-lattices with harmonic interaction between nearest neighbors. Cabrera,[11] Zwanzig,[12] and McCarroll and Ehrlich[13] used such models. Goodman[14,15] studied one, two, and three dimensional models using a Morse potential between the gas molecule and a single surface atom, and showed that the one dimensional model is qualitatively wrong.

Very recently Chambers and Kinzer[3] used a higher dimensional lattice model incorporating an arbitrary choice of the ratio of the strengths of longitudinal and transverse harmonic interactions, Goodman[2] developed a theory which accounts for the effect of trapping, and Shin[4] solved for α the quantum mechanical equation which Jackson and Howarth[16] formulated.

Chambers and Kinzer's[3] and Goodman's[2] theories are based on classical mechanics and have several assumptions in common. Among these are a) that the solid atom is at rest (i.e., at 0°K) before collision, b) that the surface is clean, c) that the collision is head-on, d) that the solid atom hit is the only one which is directly effected by the collision, e) that the solid surface is represented by a three dimentional semi-infinite lattice, and f) that the temperature difference between the solid and impinging gas is small.

It should be noted that quantitative agreement in these theories with experiments even at low temperatures, at best, requires parameter adjustments. Shin's[4] results using the Morse potential parameter of D and a, where the Morse potential U(r) is

$$U(r) = D\{\exp(-2ar) - 2\exp(-ar)\}$$

and r is the intermolecule distance which was chosen by Goodman[15] in his theoretical calculation, show a factor of 3 difference from the experimental data, and demonstrate the very sensitive effect of "realistic choice" of these parameters on their theoretical prediction.

Violations of the assumption that the surface atoms are at rest and of the assumption that a small temperature difference exists between gas and solid are serious obstacles to realistic application of these theories to the present investigation. However, one prediction of these theories, that α increases with μ, the mass ratio of gas to solid, is confirmed for the inert gases in our investigation throughout all the temperature and pressure ranges.

Not only can μ be varied by changing the gas studied but also by adsorption of foreign gases on the surface. As tungsten oxide or oxygen molecules cover the solid surface, the effective value of μ should increase and these theories predict that α should increase as a result. There are many experimental studies (see Refs. 1 and 17) on low temperature solids that demonstrate that dirty surfaces, as is required by the theory, do have higher values of α than do clean surfaces.

Recently Hinchem and Foley[18] studied the scattering of room temperature rare gas beams on polycrystalline platinum surfaces held at 300° to 1300°K, and background pressures of 10^{-9} torr. Their study included inadvertently contaminated surfaces. They concluded that as the

surface becomes dirtier, diffuse reflection increases with a consequent increase in α from as little as 0.1 for a clean surface to as much as 0.8 for an oxide covered surface. For a clean surface, they found that with the solid at 300°K, true specular reflection was approached. Similar results were obtained by Smith and Saltzburg[19] in their room temperature noble gas measurement on continuously deposited clean gold surfaces. Kulthau and Bishara[20] observed that the reflection of a nitrogen beam at 300°K on an "engineering surface" of aluminum at 300°K without a particular cleaning or finishing process, is diffuse with possible incomplete temperature accommodation. These experimental examples and the theoretical predictions imply that in our investigation for the lower T_s range where the surfaces were presumably not clean, our observed α should be higher than would have been observed if the surfaces were clean.

The first study in a temperature range comparable with that of this research was by Meyer and Gomer,[6] who held graphite at 1150°K to 1800°K, pressure of helium, neon, krypton, hydrogen, and methane gases at 300°K to 625°K. They found that the quantity of energy exchanged per collision seemed for clean surfaces to be independent of the surface temperature. They proposed a mechanism for thermal accommodation which assumed adsorption of each incident gas molecule followed by desorption at a "critical temperature", T_c, which is independent of T_s as long as $T_s > T_c$. The critical temperature was hypothesized to be the temperature at which the thermal energy of the gas could overcome the van der Waals attractive force on the surface.

De Poorter and Searcy[7] in their energy exchange study between tungsten at temperatures of 1710°K to 2500°K and helium, neon, argon, nitrogen and carbon monoxide at room temperature also concluded that

this critical temperature desorption mechanism could explain their data. Our study was undertaken, in part, to provide a wider range of data with which to test this mechanism.

For a monatomic gas, Eq. (6) may be written

$$\alpha = \frac{T_r - 300}{T_s - 300} \tag{16}$$

Then according to the Meyer and Gomer hypothesis, T_c is given by van der Waals force, $T_r = T_c = \text{const}$, if $T_s > T_c$. Therefore, Eq. (15) becomes

$$\alpha = \frac{T_c - 300}{T_s - 300} \quad \text{for } T_s > T_c \quad . \tag{17}$$

This equation predicts that as T_s is lowered toward T_c, α should monotonically approach unity at $T_s = T_c$.

Ehrlich[21] gives for argon on tungsten $\Delta H \approx 1.9$ kcal/mole and for krypton on tungsten system, $\Delta H < 4.5$ kcal/mole so that T_c should be about 475°K and 1125°K, respectively.

Experiments in which cold gases strike a tungsten surface held near the critical temperatures for the gas should favor high thermal accommodations for a second reason. At our background pressures of about 10^{-7} torr and these relatively low temperatures, the surface should be covered with adsorbed oxygen. As discussed, a surface contaminated by low molecular weight gases is expected to exchange energy more efficiently than a clean surface.

Our results (see Fig. 6) are in good agreement with those reported by De Poorter and Searcy,[7] but variations of α with temperature that appeared simply to reflect random errors in the experiments of De Poorter and Searcy can be seen in this more detailed study to be real. The temperature dependence of α is complex (Fig. 6), and α certainly does not decrease monotonically

with temperature as required by Meyer and Gomer's model. The complex temperature dependence implies that parameters not included in either the Meyer and Gomer model or the low temperature theories are important.

The Meyer-Gomer model makes one of the simplest possible assumptions, that all impinging molecules spend a considerable time in the field of force of the surface, and thus are equally heated to the same temperature T_c, which is independent of T_s.

A model that may be more realistic is one which assumes that a fraction S of molecules condenses on collision and is heated to complete thermal equilibrium with the surface, while another fraction during the time of a single collision absorbs a smaller amount of energy. The fraction S can be viewed as the sticking probability in the sense that an incident molecule is viewed as having become fully adsorbed only if it is brought to thermal equilibrium with the surface. The observed thermal accommodation coefficient would be given by a superposition of these different energy exchange mechanisms. Since α depends on surface states very sensitively, an improved model should also include explicit consideration of the effect of surface impurities and surface structures.

Let α_R be the thermal accommodation coefficient on a clean, molecularly smooth surface where energy transfer is by single collisions. Then on a clean surface, the observed thermal accommodation coefficient will be

$$\alpha_o = (1 - S_o)\,\alpha_R + S_o \qquad (18)$$

where subscript o refers to a clean surface. Any decrease in the fraction of specular reflections will increase the extent of energy transfer by multiple collisions and will thus have an equivalent effect to

increasing the sticking probability. In Eq.(18), S_o is the effective sticking probability, which is a function of T_c, the critical temperature for condensation on a homogeneous surface, of the surface structure η, and of the coverage of impinging sample gas θ,

$$S_o = S_o\ (T_c,\ \eta,\ \theta) \tag{19}$$

For a surface impurity, a similar equation to Eq. (18) may be written

$$\alpha_I = (1-S_I)\ \alpha_R \left[\frac{4\mu_I}{(1+\mu_I)^2} \Big/ \frac{4\mu}{(1+\mu)^2} \right] + S_I \tag{20}$$

where subscript I refers to the portion of the surface covered by an impurity (e.g., oxygen). Here S_I depends on the critical condensation temperature T_I for the impurity covered surface, on surface structure η, and on surface coverage of the impinging gas θ,

$$S_I = S_I\ (T_I,\ \eta,\ \theta) \tag{21}$$

The bracket term of the right hand side of Eq. (19) corrects the thermal accommodation coefficient from its value on an impurity-free homogeneous surface α_R to its value on an impurity contaminated homogeneous surface α_I, where μ is the mass ratio of the gas under study to tungsten, and μ_I is the mass ratio of gas under study to impurity gas. According to the hard sphere model, the thermal accommodation coefficient is given by

$$\alpha = \frac{4\mu}{(1+\mu)^2} \tag{22}$$

thus α depends only on the mass of the impinging gas and of the solid surface. Combining Eq. (18) and (20), if impurity surface coverage is θ_I, the observed thermal accommodation coefficient α is

$$\alpha = \theta_I \alpha_I + (1 - \theta_I) \alpha_0 \tag{23}$$

or

$$\alpha = \left[(1-S_I) \alpha_R \left\{ \frac{4\mu_I}{(1+\mu_I)^2} \Big/ \frac{4\mu}{(1+\mu)^2} \right\} + S_I \right] \theta_I$$

$$+ \left[(1 - S_0) \alpha_R + S_0 \right] (1 - \theta_I) \tag{24}$$

The analysis of our results (Fig. 6) requires knowledge of α_R, θ_I, S_o and S_I as a function of the temperature of the solid.

The average energy E^* of a gas molecule below which adsorption occurs, called the critical energy, has been the subject of discussion for the one dimensional case by Zwanzig[12] and by McCaroll and Ehrlich.[13] A three dimensional theory was considered by Goodman.[14] These theories are inadequate for quantitative analysis. Stickney[22] considered qualitatively the effect of condensation of impinging molecules on the energy transfer process, i.e., on S_o, and Goodman[2] derived quantitatively the effect on α_o. The general conclusion of these analyses is that energy transfer by condensation must play a minor role except for heavy atoms. In Goodman's[2] calculation, which is equivalent to Eq. (18), evaluation of the energy exchange by condensation is calculated to be 18%, 7.1%, 0.13% of the total for krypton, argon and neon respectively, and most of the energy exchange is found to be due to the repulsive part of the interaction potential.

There does not exist experimental data on S_o and S_I for the range of the variables T_s, P, θ_I, and θ from which our data can be evaluated in terms of Eq. (18). S_o as a function of surface coverage and T_s was theoretically considered by Smith.[23] He showed that for nitrogen S_o drops rapidly as T_s increases and as surface coverage increases. Recent experimental work by Madey and Yates Jr.[24] showed surface coverage of nitrogen at 1×10^{-6} torr pressure on tungsten becomes negligibly small above 1600°K. Hill, Lecchini and Pethica[25] showed for nitrogen at 1300°K, and at 1×10^{-6} torr pressure S_o is about 5% at 1% surface coverage. In light of these results, it is apparent that under most of our experimental conditions surface coverage by non-reacting gases and S_o as well

must have been very small.

Most of the impurity on the tungsten surface during our experiments with non-reacting gases is believed to have been oxygen. Assuming that a 1.31×10^{-10} atm background pressure consists of oxygen only, the first layer oxygen coverage calculated from Schissel and Trulson's[26] derivation as a function of surface temperature is given in Table IV. The data of Table IV indicate that below 1500°K, the surface is completely covered by oxygen, and above at about 2000°K, a nearly clean surface is obtained. Low energy electron diffraction work of Germer and May[27] confirms that a clean tungsten surface is obtained by flashing oxygen covered surface to 2000°K.

Thermodynamic calculations using enthalpy and entropies of formation of $WO_2(s)$, $WO_3(s)$ given by Ackermann and Rauh[28] show that at the background oxygen pressure of 1.31×10^{-10} atm, formation of these solid tungsten dioxides is thermodynamically possible if the temperature is not higher than about 1580°K. Ptushinskii and Chuikov[29] studied interaction of polycrystalline tungsten and oxygen ($\sim10^{-7}$ torr) and concluded that a condensed tungsten oxide is formed if the metal is heated above 800°K.

More important to our considerations are the structural changes of tungsten surfaces when oxygen is present. It is well established that under certain conditions surface faceting occurs. Anderson and Danforth[30] reported from low energy electron diffraction studies that the (100) face of tungsten faceted to (110) planes when heated at 1250°K at 10^{-7} torr oxygen pressure. Taylor[31] reported from his low energy electron diffraction studies that (111) tungsten planes faceted to (211) planes. Taylor's study showed that in the course of faceting, there

Table IV. FIRST LAYER OXYGEN COVERAGE AT 1.31×10^{-10} atm. OXYGEN PRESSURE*

T_s(°K)	Q_I	T_s(°K)	Q_I
1200	1.0	1980	1.69×10^{-2}
1350	9.99×10^{-1}	2010	9.77×10^{-3}
1500	9.81×10^{-1}	2040	5.71×10^{-3}
1620	8.89×10^{-1}	2070	3.38×10^{-3}
1650	8.37×10^{-1}	2100	2.03×10^{-3}
1680	7.67×10^{-1}	2130	1.23×10^{-3}
1710	6.78×10^{-1}	2160	7.57×10^{-4}
1740	5.71×10^{-1}	2190	4.72×10^{-4}
1770	4.52×10^{-1}	2220	2.98×10^{-4}
1800	3.33×10^{-1}	2250	1.90×10^{-4}
1830	2.27×10^{-1}	2310	8.02×10^{-5}
1860	1.44×10^{-1}	2400	2.38×10^{-5}
1890	8.71×10^{-2}	2520	5.38×10^{-6}
1920	5.09×10^{-2}	2700	7.36×10^{-7}
1950	2.93×10^{-2}	2940	4.69×10^{-8}

* Calculated from derivation given by Schissel and Trulson.[26]

appeared three different complex superstructures in addition to the clean tungsten structure at different oxygen exposures and tungsten temperatures. At 10^{-4} torr sec exposure, the first transition to a different structure occurs at 1550°K, and another occurs at 1750°K; a clean surface structure was obtained at 2000°K. Germer and May's[27] low energy electron diffraction study from 1250°K to 2000°K on (110) tungsten single crystal faces showed no faceting phenomena, however they observed various complex superstructures produced by tungsten and oxygen interaction. The faceting phenomenon is believed to be brought about by a selective evaporation of oxide which lowers the surface energy. Since the (110) plane is most densely packed, no faceting is observed.

These low energy electron diffraction studies[27,30,31] were made for single crystals, and flash heating was used with rapid cooling to observe the surfaces. Our sample was a continuously heated polycrystalline filament, and a background of about 10^{-10} atm was always present. Therefore unambiguous conclusions about surface structures in our filament studies from the low energy electron diffraction work cannot be made.

However some plausible inferences can be drawn. In this work nearly the same temperature is found for the maximum value of α for each nonreacting gas. This fact lends support to the view that the variations in α with temperature reflect a change in characteristics of the surface. A possible explanation may be found from Eq. (24).

Above about 2000°K, $\theta_I \approx 0$, and Eq. (24) reduces

$$\alpha \approx (1-S_o)\,\alpha_R + S_o \tag{25}$$

As T_s further increases in the 2000° to 2800°K range, grain growth can

be expected and the surface will become more and more smooth. As a result, specular reflection should increase and S_o will decrease. Accordingly from Eq. (25), α should decrease as T_s increases above 2000°K, as is observed for each gas.

As temperatures in the range over which α for each gas increases with temperature as shown in Fig. 6, about 1400°K to 2000°K, oxygen impurity coverage decreases from full coverage to almost a clean surface as is shown in Table IV. (Though it must be remembered that these coverage estimates from the paper of Schissel and Trulson[26] are not unequivocally established. For example, see Refs. 32 and 33).

In these temperature ranges if we assume both S_o and S_I are very small, Eq. (24) predicts that the major factor effecting changes in α comes from changes in mass ratios between clean and impurity covered surfaces and changes in θ_I. From Eq. (24), one would then expect a decrease in α with increase in surface temperature. The observed results contradict this explanation. It is apparent that a significant change in both S_o and S_I follows as the temperature of the surface changes.

Some effect such as increased thermal faceting with temperature in the 1500° to 2000°K range must outweigh the effect of changing mass ratios in that temperature range. An increase in faceting would increase both S_I and S_o.

It is very possible that S_o is larger than S_I, and that the increase in measured α in the 1400° to 2000°K range results primarily from the decrease in impurity coverage over the range. The reduction in surface energy that results from impurity adsorption could well reduce the attractive forces of a surface toward impinging gas molecules with a consequent decrease in the effectiveness of energy exchange reflected by

a decrease in the effective condensation coefficient.

Below 1400°K, surface coverage by impurities is certainly complete so that Eq. (24) reduces to

$$\alpha = (1-S_I)\alpha_{RI} + S_I \tag{26}$$

where the symbol α_{RI} is α_R times the bracketed expression in Eq. (24). A decrease in S_I with increase in temperature would probably account for our experimental observations below 1400°K. However, the correction term for the mass ratios in α_{IR} in this case is not the same as for those higher temperatures, since below 1400°K, surface coverage by impinging gases become important. At about 1000°K, the time to arrive at steady state is as long as one minute while at higher temperatures it is instantaneous within recorder response time. Therefore, in this lower temperature range, the method of measurement as well as surface layers are different for those at higher temperatures, and Eq. (24) may not be applied safely unless further correction for α_{IR} is made. Such a correction can be made in a similar way as Eq. (24) is derived, however correction of mass ratio will be in great doubt. Experiments so far made for single crystals suggest that variations in S_I are primarily responsible for variations in α in this range.

One point deserves special mention in this discussion of thermal accomodation of nonreacting gases, and that is the experimental fact that nitrogen appears to behave like the noble gases over the entire range of our study. We might expect that the N_2 molecule would dissociate and strongly chemisorb as atoms on the tungsten surface. The energy of adsorption would of course be essentially cancelled by the subsequent desorption as N_2 molecules. But the strong chemisorption

process would constitute a mechanism for thermal equilibration not available to the noble gases, and nitrogen would not then be expected to show, as it does, just the temperature and pressure dependences in thermal accomodation that would characterize an inert gas of mass intermediate between the masses of neon and argon. The nitrogen thermal accomodation data strongly imply that the portion of nitrogen which dissociates to atoms is negligible on tungsten in the temperature and pressure range of our study. This is reflected in Eq. (24), by giving small S_o and S_I values at high temperatures.

In the derivation of Eq. (24), θ appears implicitly in S_o and S_I. Since α does not depend on p, it appears as if α does not depend on θ. In most of our work, the change in θ with p is very small as θ itself is near zero except at lower temperature ranges. This pressure independence of α with respect to p does not necessarily mean it is independent of θ, but it is not sensitive enough to reflect small changes in θ. De Poorter and Searcy[7] also observed pressure independence for gas pressures of the 1 to 10μ range, and our observation shows that within experimental error, for all pressure ranges of our investigation, α is independent of p.

B. Oxygen, Nitric Oxide, Nitrous Oxide

Figure 7 shows that at temperatures below 1500°K, where chemical reaction is not significant, ΔW for oxygen depends linearly on P just as is true for the noble gases and for nitrogen. Furthermore, the energy exchanged in this temperature range is about 3 kcal/mole of oxygen compared to about 3 kcal/mole for nitrogen. Up to 1500°K on a surface covered by adsorbed oxygen or by a condensed oxide layer, oxygen acts basically like a nonreacting gas. At 1569°, 1649°, and 1742°K, however, the energy exchange is dominated by an exothermic process and the quantity of energy exchanged per unit time is virtually independent of pressure (Fig. 8). At 1965°K the dominant process is again endothermic, but still pressure independent. The rate of energy exchange remains time independent in this 1500-2000°K range.

These facts indicate that in this temperature range the rate determining process of energy exchange probably involves transfer of matter across an adsorption boundary layer or across an oxide layer which has a constant thickness at any given temperature. One means by which a fixed layer thickness could be established would be the following: Oxygen might diffuse across a tungsten oxide layer to react at the tungsten surface to produce additional condensed phase oxide at a rate equal to the rate of sublimation of tungsten oxide vapor at the gas interface. With full monolayer coverage of the gas interface by adsorbed oxygen, the oxygen diffusion rate could become insensitive to pressure, while the rate of oxide vaporization depends only on temperature and condensed oxide composition.

That the net energy exchange is exothermic at 1550° to 1750°K is

consistent with the observations that gaseous polymers such as $(WO_3)_2$ are reaction products in this general range of temperatures and oxygen pressures. At 1965°K, where the net energy exchange is endothermic, but where the dependence on pressure and temperature of the energy exchange remains similar to that in the exothermic range, Schissel and Trulson's work[26] indicates that the principal gaseous reaction products are the monomers WO_3 and WO_2. These molecules are known to have endothermic formation reactions.

Above 2000°K, the net energy exchange becomes increasingly dependent on the pressure. At 2521°K, the pressure dependence appears to decrease with increasing pressure. Over the most reliable range of measurements from 10^{-6} to 10^{-7} atmospheres ΔW varies with $\approx 0.2^{th}$ power. The probability of reaction of oxygen per collision varies in this temperature and pressure range approximately linearly with P. The lower power of the dependence of the energy exchange on pressure is consistent with the fact that the reaction products favored by successively lower oxygen pressures have successively higher enthalpies of formation.

It has been shown by Schissel and Trulson[26] that at 2800°K and 1×10^{-4} torr pressures of O_2, all oxygen molecules that collide with the surface decompose. This point has been subject to controversy,[32,33] and our energy exchange measurements are pertinent to resolution of the controversy. At the highest peak of Fig. 9, we observe ΔW to be approximately equal to the sum of dissociation energy and the thermal energy for one mole of incident gas molecules. The agreement between this sum and the measured value of about 150 kcal indicated that the assumption of $S = 1$ for O_2 at about 2600 - 2700°K is valid. However, our data of Fig. 9 suggest that S for oxygen on tungsten decreases above 2700°K. Our measurements of reaction probability for O_2

(Fig. 10) are scattered. They show, however, that important decomposition begins at about 2000°K, in agreement with previous investigators as well as with thermal exchange measurements of Fig. 9. In the very high temperature region our values of reaction probability are one order of magnitude smaller than those of Schissel and Trulson.[26] Since our energy exchange measurements support their reaction probabilities, our reaction probability data are probably in error. The extreme scatter of our reaction probability values also indicate our measurements were in great error. In our system the distance from the tungsten wire to the mass spectrometer is about 30 cm and it is clear that atomic oxygen is lost to the wall or recombined to form O_2, giving the apparent low S values. In the low pressure range the energy exchange gave readings of the order of .01 millivolt, and this is comparable to the background drift. Our apparent very high energy exchange per mole of oxygen in lower pressure regions may be caused in part by error in recording. Also, since the resistance change is very sensitive to carbon content above 2000°K, a very rapid carbon loss with oxygen introduction may have affected the resistivity in a manner which we could not distinguish from a thermal energy exchange effect.

The experiments that we performed with two other reactive gases, nitrous oxide and nitric oxide, gave results generally similar to those found with oxygen. With each a steep increase of ΔQ at temperatures above about 2000°K is observed. This is the temperature of significant decomposition. This result is consistent with the observation of Yates and Madey[34] that nitrous oxide adsorbs non-dissociatively on W and decomposition begins only at relatively high temperature. No exothermic energy exchange for nitric oxide and nitrous oxide is observed. It is believed that formation of polymers of WO_3 is ineffective due to low population of

oxygen atoms, and the reaction mechanism is unfavorable for the formation of WO_3 polymers or for oxygen diffusion.

Since nitrous oxide and nitric oxide will produce oxygen and nitrogen by heterogeneous decomposition,[8,35] the similarity of Figs. 11 to 14 for nitric oxide and for nitrous oxide to Figs. 9 and 10 for oxygen suggests that large heats of decomposition on the surface predominate in the energy exchange mechanism, with the production of atomic oxygen, atomic nitrogen from nitrous oxide, and nitric oxide via various intermediate steps.

C. Neon-krypton Mixture and Argon-oxygen Mixture

For the neon-krypton mixtures, since the temperature of tungsten was kept at 2142°K, the surface would be nearly free from chemisorption of background oxygen, and α_A, A_{Kr} would be represented by Eq. (25). Since θ_A, θ_{Kr} would be very small, lateral interaction of adsorbed species would be negligible, and consequently the energy exchange of the mixture would be expected to obey Eq. (12). That it does so is shown in Fig. 15.

For the argon-oxygen mixtures at 2528°K (Fig. 19), the experimental points agree with those calculated to within the scatter in experimental measurements. But at the other three temperatures (Figs. 16,17,18), one of which is only negligibly lower (Fig. 18), the experimentally measured energy exchange appears to deviate systematically at high mole fractions of oxygen from the predictions. In general, oxygen pressure varied from about 1 to 5×10^{-8} at the lowest oxygen mole fractions studied to values an order of magnitude higher at the highest mole fractions. From Schissel and Trulson's derivation,[26] at 1740°K the first layer fraction oxygen coverage is expected to vary from about 0.5 to 0.8 as the oxygen pressure

increases. At 2203°K, the variation should be from 0.003 to 0.05 and at 2525°K, from 1×10^{-3} to 1×10^{-4}.

The larger systematic deviation at higher mole fraction of oxygen is thus believed to be a reflection of the effect of a surface coverage change on energy exchange. The average relative standard deviation between experiment and calculations are 1.32, 1.93×10^{-1}, 1.20×10^{-1} and 1.28×10^{-1} for 1740°K, 2203°K, 2522°K and 2528°K, respectively.

ACKNOWLEDGEMENTS

The author expresses his sincere appreciation to Professor Alan W. Searcy for his direction, many helpful suggestions and discussions throughout his work, and to Dr. David J. Meschi for many valuable discussions. Gratitudes are also due to the various members of the supporting staff of the Lawrence Radiation Laboratory who were so helpful in making this study. The author also wishes to express his thanks to his wife, Mija, for her help in typing the manuscript and editing the appendix tables.

This work was performed under the auspices of the United States Atomic Energy Commission.

APPENDICES

Symbols used in the appendices which differ from the text are compared below.

A-, B-, C- :	Table numbers beginning with these prefixes refer to Appendix A, B, and C, respectively.
(CAL.) :	Calculated quantity
D :	Δ in text
(EXP.) :	Experimental quantity
(Fil. ON) (Fil. OFF):	Refers to experimental conditions where tungsten filament was turned on, off.
REL. DEV. :	Relative Deviation
RUN NO. :	Experimental number. All experiments performed in increasing order of RUN NO. No experiment of one RUN NO. was performed in more than one day in the last step of collecting data.
SQ. :	Sequence of measurement of data.
TS :	T_s

TABLE A-I. EXPERIMENTAL DATA(RUN NO. 4.07) FOR NEON AT TS= 813, V= 1.025, AND I= .533.

P	DI	DW	ALPHA	DT	SQ.
4.29E-07	2.80E-04	4.10E-04	1.95E-01	-2.40E-01	1
6.19E-07	5.70E-04	8.34E-04	2.75E-01	-4.89E-01	2
1.00E-06	8.00E-04	1.17E-03	2.39E-01	-6.86E-01	3
2.38E-06	2.10E-03	3.06E-03	2.63E-01	-1.80E+00	4
4.C5E-06	3.80E-03	5.50E-03	2.79E-01	-3.24E+00	5
6.15E-06	6.20E-03	8.91E-03	2.99E-01	-5.26E+00	6
6.81E-06	7.80E-03	1.12E-02	3.39E-01	-6.60E+00	12
9.00E-06	9.30E-03	1.32E-02	3.05E-01	-7.84E+00	7
1.41E-05	1.74E-02	2.42E-02	3.61E-01	-1.45E+01	11
1.43E-05	1.68E-02	2.34E-02	3.43E-01	-1.40E+01	8
1.72E-05	1.95E-02	2.69E-02	3.31E-01	-1.61E+01	9
2.86E-05	3.20E-02	4.26E-02	3.20E-01	-2.59E+01	10

TABLE A-II. EXPERIMENTAL DATA(RUN NO. 4.06) FOR NEON AT TS=1107, V= 3.200, AND I=1.058.

P	DI	DW	ALPHA	DT	SQ.
2.38E-07	1.00E-04	4.49E-04	2.45E-01	-6.54E-02	1
7.15E-07	2.60E-04	1.17E-03	2.12E-01	-1.70E-01	2
1.62E-06	6.30E-04	2.83E-03	2.27E-01	-4.12E-01	3
2.38E-06	9.60E-04	4.30E-03	2.35E-01	-6.28E-01	5
3.C0E-06	1.05E-03	4.71E-03	2.04E-01	-6.86E-01	4
4.81E-06	1.89E-03	8.46E-03	2.29E-01	-1.23E+00	7
6.72E-06	2.70E-03	1.21E-02	2.34E-01	-1.76E+00	6
1.C4E-05	4.35E-03	1.94E-02	2.42E-01	-2.83E+00	8
1.38E-05	6.35E-03	2.82E-02	2.67E-01	-4.13E+00	9
2.00E-05	9.40E-03	4.15E-02	2.72E-01	-6.10E+00	10
2.86E-05	1.32E-02	5.79E-02	2.66E-01	-8.53E+00	12
4.C0E-05	1.71E-02	7.46E-02	2.45E-01	-1.10E+01	11
4.24E-05	1.89E-02	8.22E-02	2.56E-01	-1.22E+01	13

TABLE A-III. EXPERIMENTAL DATA(RUN NO. 9.01) FOR NEON AT TS=1121, V= 3.486, AND I=1.049.

P	DI	DW	ALPHA	DT	SQ.
8.30E-07	1.30E-04	6.56E-04	1.01E-01	-9.18E-02	1
1.30E-06	2.00E-04	1.01E-03	9.90E-02	-1.41E-01	3
1.42E-06	2.40E-04	1.21E-03	1.09E-01	-1.69E-01	2
2.C2E-06	3.30E-04	1.67E-03	1.06E-01	-2.33E-01	4
3.26E-06	5.70E-04	2.88E-03	1.13E-01	-4.02E-01	5
4.09E-06	7.30E-04	3.68E-03	1.15E-01	-5.15E-01	6
7.65E-06	1.41E-03	7.10E-03	1.19E-01	-9.94E-01	7
9.43E-06	1.89E-03	9.51E-03	1.29E-01	-1.33E+00	8
9.43E-06	1.89E-03	9.51E-03	1.29E-01	-1.33E+00	9
1.17E-05	2.70E-03	1.36E-02	1.48E-01	-1.90E+00	10
1.48E-05	3.10E-03	1.56E-02	1.35E-01	-2.18E+00	11
1.60E-05	3.60E-03	1.81E-02	1.45E-01	-2.53E+00	12
2.25E-05	5.40E-03	2.70E-02	1.54E-01	-3.79E+00	13
2.96E-05	7.10E-03	3.54E-02	1.54E-01	-4.98E+00	14
3.32E-05	8.10E-03	4.03E-02	1.56E-01	-5.67E+00	15
3.91E-05	9.78E-03	4.85E-02	1.60E-01	-6.84E+00	16
5.34E-05	1.25E-02	6.17E-02	1.50E-01	-8.72E+00	17

TABLE A-IV. EXPERIMENTAL DATA(RUN NO. 4.05) FOR NEON AT TS=1476, V= 9.700, AND I=2.056.

P	DI	DW	ALPHA	DT	SQ.
9.C5E-07	1.30E-04	1.69E-03	1.67E-01	-7.50E-02	2
1.14E-06	3.00E-04	3.91E-03	3.05E-01	-1.73E-01	1
1.62E-06	3.30E-04	4.30E-03	2.37E-01	-1.90E-01	3
2.62E-06	6.80E-04	8.85E-03	3.02E-01	-3.92E-01	4
4.72E-06	1.20E-03	1.56E-02	2.96E-01	-6.92E-01	5
8.15E-06	1.95E-03	2.54E-02	2.78E-01	-1.12E+00	6
1.16E-05	2.80E-03	3.64E-02	2.81E-01	-1.61E+00	7
1.S5E-05	5.00E-03	6.48E-02	2.97E-01	-2.88E+00	8
2.10E-05	5.20E-03	6.74E-02	2.88E-01	-2.99E+00	9
2.53E-05	6.00E-03	7.77E-02	2.76E-01	-3.45E+00	12
3.C0E-05	7.00E-03	9.05E-02	2.70E-01	-4.03E+00	10
4.C5E-05	9.50E-03	1.23E-01	2.71E-01	-5.46E+00	11

TABLE A-V. EXPERIMENTAL DATA(RUN NO. 4.04) FOR NEON AT TS=1851, V=17.900, AND I=3.055.

P	DI	DW	ALPHA	DT	SQ.
5.24E-07	1.00E-04	2.61E-03	3.37E-01	-4.73E-02	1
8.10E-07	1.40E-04	3.65E-03	3.05E-01	-6.62E-02	2
1.19E-06	2.20E-04	5.74E-03	3.26E-01	-1.04E-01	3
2.62E-06	4.90E-04	1.28E-02	3.30E-01	-2.32E-01	4
4.86E-06	9.10E-04	2.37E-02	3.31E-01	-4.30E-01	5
5.15E-06	9.20E-04	2.40E-02	3.16E-01	-4.35E-01	6
9.58E-06	1.65E-03	4.30E-02	3.04E-01	-7.80E-01	7
1.26E-05	2.13E-03	5.55E-02	2.99E-01	-1.01E+00	8
1.94E-05	3.50E-03	9.11E-02	3.18E-01	-1.65E+00	10
2.50E-05	4.20E-03	1.09E-01	2.96E-01	-1.98E+00	9
3.14E-05	5.25E-03	1.36E-01	2.94E-01	-2.48E+00	11
4.12E-05	6.60E-03	1.71E-01	2.82E-01	-3.11E+00	12
4.76E-05	7.90E-03	2.05E-01	2.92E-01	-3.73E+00	13

TABLE A-VI. EXPERIMENTAL DATA(RUN NO. 8.01) FOR NEON AT TS=2114, V=28.330, AND I=3.791.

P	DI	DW	ALPHA	DT	SQ.
1.45E-06	2.00E-04	7.82E-03	3.12E-01	-8.59E-02	19
1.99E-06	2.30E-04	8.99E-03	2.62E-01	-9.88E-02	5
2.52E-06	3.20E-04	1.25E-02	2.88E-01	-1.37E-01	2
3.05E-06	3.40E-04	1.33E-02	2.52E-01	-1.46E-01	7
3.25E-06	3.50E-04	1.37E-02	2.44E-01	-1.50E-01	6
4.51E-06	4.30E-04	1.68E-02	2.16E-01	-1.85E-01	20
4.77E-06	4.90E-04	1.91E-02	2.32E-01	-2.10E-01	1
6.64E-06	6.70E-04	2.62E-02	2.29E-01	-2.88E-01	8
7.99E-06	5.60E-04	2.19E-02	1.59E-01	-2.41E-01	4
8.62E-06	8.70E-04	3.40E-02	2.28E-01	-3.74E-01	9
1.06E-05	1.02E-03	3.98E-02	2.18E-01	-4.38E-01	10
1.19E-05	9.90E-04	3.87E-02	1.88E-01	-4.25E-01	3
1.19E-05	1.23E-03	4.80E-02	2.34E-01	-5.28E-01	11
1.65E-05	1.59E-03	6.21E-02	2.19E-01	-6.83E-01	12
1.84E-05	1.77E-03	6.91E-02	2.18E-01	-7.60E-01	13
2.18E-05	1.98E-03	7.73E-02	2.06E-01	-8.50E-01	14
2.62E-05	2.37E-03	9.25E-02	2.05E-01	-1.02E+00	15
3.09E-05	2.80E-03	1.09E-01	2.05E-01	-1.20E+00	16
3.29E-05	3.00E-03	1.17E-01	2.06E-01	-1.29E+00	17
3.85E-05	3.50E-03	1.37E-01	2.06E-01	-1.50E+00	18

TABLE A-VII. EXPERIMENTAL DATA(RUN NO. 18.01) FOR NEON AT TS=2141, V=28.550, AND I=4.280.

P	DI	DW	ALPHA	DT	SQ.
6.26E-06	1.80E-04	6.68E-03	6.09E-02	-7.00E-02	4
6.34E-06	2.00E-04	7.42E-03	6.69E-02	-7.78E-02	3
9.30E-06	2.20E-04	8.17E-03	5.01E-02	-8.56E-02	2
1.16E-05	2.60E-04	9.65E-03	4.76E-02	-1.01E-01	5
1.33E-05	3.00E-04	1.11E-02	4.77E-02	-1.17E-01	6
1.38E-05	3.80E-04	1.41E-02	5.82E-02	-1.48E-01	19
1.46E-05	4.70E-04	1.74E-02	6.83E-02	-1.83E-01	1
1.58E-05	3.70E-04	1.37E-02	4.95E-02	-1.44E-01	7
1.81E-05	4.70E-04	1.74E-02	5.50E-02	-1.83E-01	10
1.81E-05	4.20E-04	1.56E-02	4.91E-02	-1.63E-01	8
2.19E-05	5.60E-04	2.08E-02	5.42E-02	-2.18E-01	18
2.34E-05	6.00E-04	2.23E-02	5.43E-02	-2.33E-01	11
2.56E-05	7.00E-04	2.60E-02	5.78E-02	-2.72E-01	9
2.56E-05	6.60E-04	2.45E-02	5.45E-02	-2.57E-01	12
3.14E-05	7.80E-04	2.89E-02	5.26E-02	-3.03E-01	13
3.70E-05	9.30E-04	3.45E-02	5.33E-02	-3.62E-01	17
3.77E-05	9.60E-04	3.56E-02	5.39E-02	-3.73E-01	16
3.92E-05	1.02E-03	3.78E-02	5.51E-02	-3.97E-01	14
4.56E-05	1.26E-03	4.67E-02	5.85E-02	-4.90E-01	15

TABLE A-VIII. EXPERIMENTAL DATA(RUN NO. 4.03) FOR NEON AT TS=2155, V=29.000, AND I=4.059.

P	DI	DW	ALPHA	DT	SQ.
1.81E-06	1.20E-04	4.91E-03	1.54E-01	-5.04E-02	1
1.95E-06	1.10E-04	4.50E-03	1.30E-01	-4.62E-02	3
2.29E-06	1.40E-04	5.73E-03	1.42E-01	-5.88E-02	4
3.57E-06	2.10E-04	8.59E-03	1.36E-01	-8.81E-02	2
4.10E-06	2.50E-04	1.02E-02	1.41E-01	-1.05E-01	5
4.43E-06	3.00E-04	1.23E-02	1.57E-01	-1.26E-01	6
9.43E-06	5.80E-04	2.37E-02	1.42E-01	-2.43E-01	7
1.29E-05	9.90E-04	4.05E-02	1.78E-01	-4.15E-01	8
1.52E-05	1.20E-03	4.91E-02	1.82E-01	-5.04E-01	9
1.86E-05	1.41E-03	5.77E-02	1.76E-01	-5.92E-01	10
2.24E-05	1.71E-03	6.99E-02	1.77E-01	-7.17E-01	11
3.00E-05	2.46E-03	1.01E-01	1.90E-01	-1.03E+00	12
4.10E-05	3.35E-03	1.37E-01	1.89E-01	-1.40E+00	13
4.15E-05	3.90E-03	1.59E-01	2.18E-01	-1.64E+00	14
5.36E-05	5.00E-03	2.04E-01	2.16E-01	-2.10E+00	15

TABLE A-IX. EXPERIMENTAL DATA(RUN NO. 4.02) FOR NEON AT TS=2437, V=42.300, AND I=5.054.

P	DI	DW	ALPHA	DT	SQ.
3.86E-06	1.00E-04	5.67E-03	7.22E-02	-3.79E-02	13
4.24E-06	1.20E-04	6.80E-03	7.89E-02	-4.55E-02	1
1.32E-05	3.80E-04	2.15E-02	7.99E-02	-1.44E-01	12
1.36E-05	3.50E-04	1.98E-02	7.18E-02	-1.33E-01	2
1.60E-05	4.50E-04	2.55E-02	7.86E-02	-1.71E-01	4
1.76E-05	4.70E-04	2.66E-02	7.43E-02	-1.78E-01	3
2.12E-05	5.70E-04	3.23E-02	7.49E-02	-2.16E-01	5
2.67E-05	8.70E-04	4.93E-02	9.09E-02	-3.30E-01	11
3.10E-05	9.00E-04	5.10E-02	8.10E-02	-3.41E-01	6
3.62E-05	1.02E-03	5.78E-02	7.85E-02	-3.87E-01	8
4.05E-05	1.20E-03	6.80E-02	8.26E-02	-4.55E-01	9
4.24E-05	1.17E-03	6.63E-02	7.69E-02	-4.44E-01	7
5.35E-05	1.56E-03	8.84E-02	8.13E-02	-5.92E-01	10

TABLE A-X. EXPERIMENTAL DATA(RUN NO. 4.08) FOR NEON AT TS=2704, V=58.500, AND I=6.055.

P	DI	DW	ALPHA	DT	SQ.
3.43E-06	1.10E-04	7.88E-03	1.00E-01	-3.60E-02	9
3.53E-06	1.90E-04	1.36E-02	1.69E-01	-6.22E-02	10
5.43E-06	2.30E-04	1.65E-02	1.33E-01	-7.53E-02	11
6.00E-06	2.20E-04	1.58E-02	1.15E-01	-7.20E-02	2
9.58E-06	3.90E-04	2.79E-02	1.28E-01	-1.28E-01	1
1.38E-05	5.50E-04	3.94E-02	1.25E-01	-1.80E-01	3
2.10E-05	7.80E-04	5.59E-02	1.17E-01	-2.55E-01	4
2.48E-05	1.02E-03	7.31E-02	1.29E-01	-3.34E-01	5
3.38E-05	1.17E-03	8.38E-02	1.08E-01	-3.83E-01	6
3.53E-05	1.32E-03	9.45E-02	1.17E-01	-4.32E-01	7
4.38E-05	1.68E-03	1.20E-01	1.20E-01	-5.50E-01	8

TABLE A-XI. EXPERIMENTAL DATA(RUN NO. 5.10) FOR NITROGEN AT TS=1071, V= 2.974, AND I= .964.

P	DI	DW	ALPHA	DT	SQ.
2.21E-07	2.00E-04	9.91E-04	4.45E-01	-1.71E-01	2
2.95E-07	3.00E-04	1.49E-03	5.01E-01	-2.56E-01	3
6.00E-07	5.10E-04	2.52E-03	4.18E-01	-4.35E-01	1
6.00E-07	7.50E-04	3.71E-03	6.15E-01	-6.40E-01	19
8.53E-07	1.02E-03	5.04E-03	5.88E-01	-8.70E-01	20
1.23E-06	1.23E-03	6.08E-03	4.91E-01	-1.05E+00	4
1.54E-06	1.68E-03	8.29E-03	5.37E-01	-1.43E+00	9
1.67E-06	1.76E-03	8.69E-03	5.17E-01	-1.50E+00	6
2.72E-06	2.80E-03	1.38E-02	5.06E-01	-2.38E+00	7
2.95E-06	3.30E-03	1.62E-02	5.49E-01	-2.81E+00	5
5.58E-06	6.40E-03	3.13E-02	5.61E-01	-5.43E+00	8
5.63E-06	6.52E-03	3.18E-02	5.66E-01	-5.53E+00	10
7.58E-06	9.00E-03	4.37E-02	5.79E-01	-7.61E+00	12
8.84E-06	1.03E-02	5.01E-02	5.70E-01	-8.74E+00	11
1.17E-05	1.38E-02	6.63E-02	5.73E-01	-1.16E+01	13
1.64E-05	1.92E-02	9.11E-02	5.64E-01	-1.61E+01	14
1.89E-05	2.55E-02	1.19E-01	6.45E-01	-2.12E+01	15
2.24E-05	2.60E-02	1.22E-01	5.55E-01	-2.16E+01	16
2.59E-05	2.96E-02	1.37E-01	5.45E-01	-2.45E+01	17
2.94E-05	3.35E-02	1.54E-01	5.42E-01	-2.76E+01	18

TABLE A-XII. EXPERIMENTAL DATA(RUN NO. 5.09) FOR NITROGEN AT TS=1486, V= 9.100, AND I=1.932.

P	DI	DW	ALPHA	DT	SQ.
2.21E-07	1.00E-04	1.47E-03	4.17E-01	-6.34E-02	6
3.26E-07	1.40E-04	2.06E-03	3.95E-01	-8.88E-02	5
3.68E-07	1.60E-04	2.35E-03	4.00E-01	-1.01E-01	4
6.32E-07	2.70E-04	3.97E-03	3.94E-01	-1.71E-01	1
6.63E-07	2.80E-04	4.11E-03	3.89E-01	-1.78E-01	7
8.11E-07	3.60E-04	5.29E-03	4.09E-01	-2.28E-01	3
8.74E-07	3.30E-04	4.85E-03	3.48E-01	-2.09E-01	8
1.57E-06	7.20E-04	1.06E-02	4.23E-01	-4.56E-01	9
3.17E-06	1.41E-03	2.07E-02	4.10E-01	-8.93E-01	10
4.58E-06	1.96E-03	2.87E-02	3.94E-01	-1.24E+00	11
5.47E-06	2.35E-03	3.44E-02	3.95E-01	-1.49E+00	12
6.37E-06	2.75E-03	4.03E-02	3.97E-01	-1.74E+00	13
8.74E-06	3.65E-03	5.34E-02	3.84E-01	-2.31E+00	14
9.16E-06	4.05E-03	5.92E-02	4.06E-01	-2.56E+00	15
1.15E-05	5.20E-03	7.59E-02	4.14E-01	-3.29E+00	16
1.49E-05	6.55E-03	9.55E-02	4.03E-01	-4.14E+00	17
1.77E-05	7.75E-03	1.13E-01	4.02E-01	-4.89E+00	18
2.18E-05	9.30E-03	1.35E-01	3.91E-01	-5.87E+00	19
2.45E-05	1.05E-02	1.52E-01	3.93E-01	-6.62E+00	2

TABLE A-XIII. EXPERIMENTAL DATA(RUN NO. 5.08) FOR NITROGEN AT TS=1819, V=17.000, AND I=2.893.

P	DI	DW	ALPHA	DT	SQ.
2.32E-07	1.00E-04	2.41E-03	4.97E-01	-4.62E-02	1
2.63E-07	1.10E-04	2.65E-03	4.81E-01	-5.08E-02	2
3.47E-07	1.70E-04	4.09E-03	5.63E-01	-7.85E-02	3
6.42E-07	2.50E-04	6.01E-03	4.48E-01	-1.15E-01	4
1.39E-06	5.40E-04	1.30E-02	4.47E-01	-2.49E-01	6
1.40E-06	5.70E-04	1.37E-02	4.69E-01	-2.63E-01	7
2.44E-06	9.50E-04	2.28E-02	4.48E-01	-4.39E-01	8
4.79E-06	1.74E-03	4.18E-02	4.18E-01	-8.03E-01	9
7.16E-06	2.55E-03	6.13E-02	4.10E-01	-1.18E+00	10
8.63E-06	2.99E-03	7.18E-02	3.98E-01	-1.38E+00	11
1.04E-05	3.70E-03	8.88E-02	4.08E-01	-1.71E+00	12
1.42E-05	4.90E-03	1.18E-01	3.96E-01	-2.26E+00	13
1.80E-05	6.10E-03	1.46E-01	3.89E-01	-2.81E+00	14
2.31E-05	6.80E-03	1.63E-01	3.39E-01	-3.13E+00	15
2.37E-05	7.75E-03	1.86E-01	3.76E-01	-3.57E+00	16
2.43E-05	7.90E-03	1.89E-01	3.73E-01	-3.64E+00	5

TABLE A-XIV. EXPERIMENTAL DATA(RUN NO. 5.07) FOR NITROGEN AT TS=2127, V=28.000, AND I=3.881.

P	DI	DW	ALPHA	DT	SQ.
2.53E-07	1.00E-04	3.92E-03	6.05E-01	-4.21E-02	7
4.53E-07	1.60E-04	6.28E-03	5.41E-01	-6.73E-02	2
6.55E-07	2.10E-04	8.24E-03	4.62E-01	-8.84E-02	6
8.74E-07	2.90E-04	1.14E-02	5.08E-01	-1.22E-01	1
1.47E-06	5.40E-04	2.12E-02	5.60E-01	-2.27E-01	3
1.47E-06	5.80E-04	2.27E-02	6.02E-01	-2.44E-01	5
2.44E-06	8.90E-04	3.49E-02	5.57E-01	-3.74E-01	4
2.55E-06	1.08E-03	4.23E-02	5.60E-01	-4.54E-01	8
4.14E-06	1.47E-03	5.76E-02	5.43E-01	-6.18E-01	9
5.40E-06	1.82E-03	7.13E-02	5.15E-01	-7.65E-01	10
6.84E-06	2.22E-03	8.70E-02	4.96E-01	-9.34E-01	11
7.81E-06	2.43E-03	9.52E-02	4.76E-01	-1.02E+00	12
9.47E-06	2.90E-03	1.14E-01	4.68E-01	-1.22E+00	13
1.09E-05	3.30E-03	1.29E-01	4.64E-01	-1.39E+00	14
1.42E-05	4.21E-03	1.65E-01	4.53E-01	-1.77E+00	15
1.55E-05	4.50E-03	1.76E-01	4.44E-01	-1.89E+00	16
1.79E-05	5.00E-03	1.96E-01	4.26E-01	-2.10E+00	17
2.08E-05	5.80E-03	2.27E-01	4.25E-01	-2.44E+00	18
2.34E-05	6.50E-03	2.54E-01	4.25E-01	-2.73E+00	19

TABLE A-XV. EXPERIMENTAL DATA(RUN NO. 5.06) FOR NITROGEN AT TS=2403, V=41.000, AND I=4.827.

P	DI	DW	ALPHA	DT	SQ.
5.87E-07	1.60E-04	1.03E-02	5.84E-01	-7.55E-02	1
6.18E-07	1.30E-04	8.37E-03	4.50E-01	-6.13E-02	3
8.62E-07	2.00E-04	1.29E-02	4.97E-01	-9.43E-02	4
9.79E-07	2.30E-04	1.48E-02	5.03E-01	-1.08E-01	2
1.49E-06	2.80E-04	1.80E-02	4.01E-01	-1.32E-01	5
1.84E-06	4.30E-04	2.77E-02	5.00E-01	-2.03E-01	6
2.71E-06	5.90E-04	3.80E-02	4.67E-01	-2.78E-01	7
3.84E-06	7.50E-04	4.83E-02	4.18E-01	-3.54E-01	8
5.26E-06	1.11E-03	7.14E-02	4.51E-01	-5.23E-01	9
6.05E-06	1.29E-03	8.30E-02	4.56E-01	-6.08E-01	13
9.00E-06	1.95E-03	1.25E-01	4.64E-01	-9.19E-01	10
1.04E-05	2.26E-03	1.45E-01	4.64E-01	-1.07E+00	12
1.11E-05	2.52E-03	1.62E-01	4.88E-01	-1.19E+00	11
1.42E-05	3.05E-03	1.96E-01	4.59E-01	-1.44E+00	14
1.67E-05	3.33E-03	2.14E-01	4.26E-01	-1.57E+00	20
1.89E-05	3.95E-03	2.54E-01	4.46E-01	-1.86E+00	16
1.90E-05	3.89E-03	2.50E-01	4.38E-01	-1.83E+00	15
2.31E-05	4.65E-03	2.99E-01	4.30E-01	-2.19E+00	18
2.53E-05	5.30E-03	3.40E-01	4.49E-01	-2.50E+00	17
2.62E-05	5.55E-03	3.56E-01	4.53E-01	-2.61E+00	19

TABLE A-XVI EXPERIMENTAL DATA(RUN NO. 5.05) FOR NITROGEN AT TS=2680, V=57.500, AND I=5.829.

P	DI	DW	ALPHA	DT	SQ.
6.84E-07	1.00E-04	7.77E-03	3.28E-01	-3.76E-02	2
1.00E-06	1.40E-04	1.09E-02	3.14E-01	-5.26E-02	3
1.35E-06	2.50E-04	1.94E-02	4.16E-01	-9.40E-02	4
1.45E-06	2.30E-04	1.79E-02	3.55E-01	-8.64E-02	1
1.98E-06	2.90E-04	2.25E-02	3.29E-01	-1.09E-01	6
2.07E-06	3.10E-04	2.41E-02	3.36E-01	-1.17E-01	5
3.12E-06	4.60E-04	3.57E-02	3.31E-01	-1.73E-01	7
4.11E-06	6.30E-04	4.90E-02	3.44E-01	-2.37E-01	8
5.03E-06	7.50E-04	5.83E-02	3.35E-01	-2.82E-01	20
5.42E-06	8.50E-04	6.60E-02	3.52E-01	-3.19E-01	9
7.05E-06	1.02E-03	7.93E-02	3.25E-01	-3.83E-01	10
7.68E-06	1.14E-03	8.86E-02	3.33E-01	-4.28E-01	11
9.37E-06	1.35E-03	1.05E-01	3.23E-01	-5.07E-01	12
9.47E-06	1.47E-03	1.14E-01	3.48E-01	-5.52E-01	13
1.09E-05	1.68E-03	1.31E-01	3.44E-01	-6.31E-01	14
1.33E-05	2.04E-03	1.58E-01	3.45E-01	-7.66E-01	15
1.74E-05	2.55E-03	1.98E-01	3.29E-01	-9.58E-01	17
1.93E-05	2.70E-03	2.10E-01	3.14E-01	-1.01E+00	16
1.99E-05	2.82E-03	2.19E-01	3.18E-01	-1.06E+00	18
2.84E-05	3.95E-03	3.07E-01	3.12E-01	-1.48E+00	19

TABLE A-XVII. EXPERIMENTAL DATA(RUN NO. 6.06) FOR ARGON AT TS= 999, V= 2.310, AND I= .819.

P	DI	DW	ALPHA	DT	SQ.
1.61E-07	1.10E-04	4.55E-04	5.96E-01	-1.12E-01	1
1.90E-07	1.20E-04	4.96E-04	5.50E-01	-1.22E-01	2
3.08E-07	2.00E-04	8.27E-04	5.67E-01	-2.04E-01	3
3.37E-07	2.40E-04	9.92E-04	6.22E-01	-2.45E-01	6
5.86E-07	4.00E-04	1.65E-03	5.96E-01	-4.07E-01	5
8.20E-07	5.40E-04	2.23E-03	5.74E-01	-5.50E-01	4
8.35E-07	5.60E-04	2.31E-03	5.85E-01	-5.70E-01	9
1.27E-06	9.40E-04	3.88E-03	6.43E-01	-9.57E-01	10
1.32E-06	1.02E-03	4.21E-03	6.74E-01	-1.04E+00	8
1.89E-06	1.47E-03	6.05E-03	6.78E-01	-1.50E+00	11
2.81E-06	2.19E-03	9.00E-03	6.78E-01	-2.23E+00	12
3.25E-06	2.46E-03	1.01E-02	6.58E-01	-2.50E+00	7
4.09E-06	3.20E-03	1.31E-02	6.80E-01	-3.25E+00	13
7.32E-06	5.75E-03	2.34E-02	6.80E-01	-5.82E+00	14
9.52E-06	7.40E-03	3.00E-02	6.71E-01	-7.47E+00	15
1.20E-05	9.40E-03	3.79E-02	6.74E-01	-9.47E+00	16
1.32E-05	1.11E-02	4.45E-02	7.24E-01	-1.12E+01	17
1.71E-05	1.41E-02	5.60E-02	7.04E-01	-1.41E+01	18
2.15E-05	1.71E-02	6.74E-02	6.77E-01	-1.71E+01	19
2.42E-05	1.95E-02	7.64E-02	6.86E-01	-1.94E+01	20

TABLE A-XVIII. EXPERIMENTAL DATA(RUN NO. 6.05) FOR ARGON AT TS=1439, V= 8.227, AND I=1.792.

P	DI	DW	ALPHA	DT	SQ.
3.22E-07	1.10E-04	1.34E-03	5.39E-01	-6.47E-02	1
4.10E-07	1.30E-04	1.58E-03	5.00E-01	-7.65E-02	2
4.39E-07	1.50E-04	1.82E-03	5.39E-01	-8.83E-02	5
5.86E-07	1.50E-04	1.82E-03	4.04E-01	-8.83E-02	3
7.76E-07	2.10E-04	2.55E-03	4.27E-01	-1.24E-01	4
8.06E-07	2.50E-04	3.04E-03	4.90E-01	-1.47E-01	6
1.45E-06	4.30E-04	5.23E-03	4.68E-01	-2.53E-01	20
2.02E-06	5.60E-04	6.81E-03	4.37E-01	-3.29E-01	7
2.04E-06	5.70E-04	6.93E-03	4.42E-01	-3.35E-01	8
4.39E-06	1.35E-03	1.64E-02	4.84E-01	-7.94E-01	9
7.06E-06	2.16E-03	2.62E-02	4.82E-01	-1.27E+00	10
8.49E-06	2.32E-03	2.81E-02	4.30E-01	-1.36E+00	11
1.16E-05	3.40E-03	4.12E-02	4.63E-01	-2.00E+00	12
1.35E-05	4.05E-03	4.90E-02	4.73E-01	-2.38E+00	13
1.67E-05	5.00E-03	6.05E-02	4.71E-01	-2.93E+00	14
2.20E-05	6.50E-03	7.85E-02	4.65E-01	-3.81E+00	15
2.72E-05	7.80E-03	9.40E-02	4.50E-01	-4.57E+00	16
3.30E-05	9.60E-03	1.15E-01	4.57E-01	-5.62E+00	17
3.71E-05	1.08E-02	1.30E-01	4.56E-01	-6.32E+00	18
4.27E-05	1.22E-02	1.47E-01	4.49E-01	-7.15E+00	19

TABLE A-XIX. EXPERIMENTAL DATA(RUN NO. 6.04) FOR ARGON AT TS=1788, V=16.770, AND I=2.773.

P	DI	DW	ALPHA	DT	SQ.
2.78E-07	1.00E-04	2.61E-03	9.32E-01	-5.38E-02	4
4.69E-07	1.30E-04	3.39E-03	7.19E-01	-7.00E-02	1
7.91E-07	2.10E-04	5.48E-03	6.89E-01	-1.13E-01	2
8.49E-07	2.30E-04	6.00E-03	7.02E-01	-1.24E-01	9
8.64E-07	1.70E-04	4.44E-03	5.10E-01	-9.15E-02	5
1.23E-06	3.10E-04	8.09E-03	6.53E-01	-1.67E-01	6
1.45E-06	4.30E-04	1.12E-02	7.69E-01	-2.31E-01	3
1.58E-06	3.90E-04	1.02E-02	6.39E-01	-2.10E-01	10
1.61E-06	4.20E-04	1.10E-02	6.76E-01	-2.26E-01	14
2.37E-06	5.20E-04	1.36E-02	5.68E-01	-2.80E-01	7
3.46E-06	7.60E-04	1.98E-02	5.70E-01	-4.09E-01	8
4.61E-06	1.05E-03	2.74E-02	5.90E-01	-5.65E-01	11
8.64E-06	1.83E-03	4.77E-02	5.49E-01	-9.84E-01	12
1.08E-05	2.22E-03	5.79E-02	5.31E-01	-1.19E+00	13
1.76E-05	3.50E-03	9.11E-02	5.16E-01	-1.88E+00	15
1.78E-05	3.56E-03	9.27E-02	5.18E-01	-1.91E+00	16
2.24E-05	4.30E-03	1.12E-01	4.97E-01	-2.31E+00	17
2.68E-05	5.30E-03	1.38E-01	5.12E-01	-2.85E+00	18
3.16E-05	6.00E-03	1.56E-01	4.91E-01	-3.22E+00	19
3.60E-05	6.20E-03	1.61E-01	4.45E-01	-3.33E+00	20

TABLE A-XX. EXPERIMENTAL DATA(RUN NO. 6.02) FOR ARGON AT TS=2396, V=41.350, AND I=4.762.

P	DI	DW	ALPHA	DT	SQ.
6.74E-07	1.00E-04	5.97E-03	6.25E-01	-4.26E-02	3
7.91E-07	1.20E-04	7.16E-03	6.39E-01	-5.11E-02	5
9.81E-07	1.90E-04	1.13E-02	8.15E-01	-8.10E-02	4
1.46E-06	2.40E-04	1.43E-02	6.90E-01	-1.02E-01	2
1.54E-06	2.10E-04	1.25E-02	5.75E-01	-8.95E-02	1
2.42E-06	3.60E-04	2.15E-02	6.27E-01	-1.53E-01	6
3.91E-06	5.80E-04	3.46E-02	6.24E-01	-2.47E-01	7
4.83E-06	8.00E-04	4.77E-02	6.97E-01	-3.41E-01	8
7.79E-06	1.14E-03	6.80E-02	6.16E-01	-4.86E-01	9
1.00E-05	1.50E-03	8.94E-02	6.29E-01	-6.39E-01	10
1.27E-05	1.86E-03	1.11E-01	6.19E-01	-7.92E-01	11
1.49E-05	2.20E-03	1.31E-01	6.20E-01	-9.37E-01	12
1.76E-05	2.60E-03	1.55E-01	6.22E-01	-1.11E+00	13
2.28E-05	3.20E-03	1.91E-01	5.89E-01	-1.36E+00	14
2.66E-05	3.65E-03	2.17E-01	5.78E-01	-1.55E+00	16
2.70E-05	3.70E-03	2.20E-01	5.76E-01	-1.58E+00	15
3.03E-05	4.00E-03	2.38E-01	5.55E-01	-1.70E+00	17
3.78E-05	4.90E-03	2.92E-01	5.45E-01	-2.09E+00	18

TABLE A-XXI. EXPERIMENTAL DATA(RUN NO. 6.01) FOR ARGON AT TS=2674, V=57.250, AND I=5.752.

P	DI	DW	ALPHA	DT	SQ.
1.17E-06	1.30E-04	1.01E-02	5.38E-01	-4.90E-02	13
1.84E-06	1.70E-04	1.32E-02	4.45E-01	-6.41E-02	3
2.52E-06	2.00E-04	1.55E-02	3.83E-01	-7.54E-02	14
3.63E-06	2.70E-04	2.09E-02	3.58E-01	-1.02E-01	4
3.88E-06	3.10E-04	2.40E-02	3.85E-01	-1.17E-01	1
6.37E-06	3.80E-04	2.94E-02	2.88E-01	-1.43E-01	2
9.77E-06	6.00E-04	4.64E-02	2.96E-01	-2.26E-01	6
1.21E-05	8.10E-04	6.27E-02	3.22E-01	-3.05E-01	5
1.50E-05	9.60E-04	7.43E-02	3.08E-01	-3.62E-01	7
1.73E-05	1.17E-03	9.05E-02	3.26E-01	-4.41E-01	8
2.12E-05	1.23E-03	9.52E-02	2.79E-01	-4.63E-01	9
2.33E-05	1.30E-03	1.01E-01	2.69E-01	-4.90E-01	10
2.54E-05	1.60E-03	1.24E-01	3.04E-01	-6.03E-01	11
2.82E-05	1.90E-03	1.47E-01	3.25E-01	-7.16E-01	12
2.86E-05	1.95E-03	1.51E-01	3.29E-01	-7.35E-01	15

TABLE A-XXII. EXPERIMENTAL DATA(RUN NO. 7.07) FOR KRYPTON AT TS=1089, V= 3.158, AND I= .987.

P	DI	DW	ALPHA	DT	SQ.
1.18E-07	1.00E-04	5.57E-04	1.28E+00	-8.99E-02	31
1.81E-07	1.00E-04	5.57E-04	8.33E-01	-8.99E-02	3
1.93E-07	1.50E-04	8.35E-04	1.17E+00	-1.35E-01	30
2.13E-07	1.70E-04	9.46E-04	1.20E+00	-1.53E-01	29
2.21E-07	1.50E-04	8.35E-04	1.02E+00	-1.35E-01	28
2.68E-07	1.30E-04	7.23E-04	7.31E-01	-1.17E-01	2
2.82E-07	2.20E-04	1.22E-03	1.18E+00	-1.98E-01	27
3.14E-07	1.50E-04	8.35E-04	7.21E-01	-1.35E-01	4
3.22E-07	2.80E-04	1.56E-03	1.31E+00	-2.52E-01	26
3.50E-07	1.80E-04	1.00E-03	7.76E-01	-1.62E-01	5
4.29E-07	3.20E-04	1.78E-03	1.12E+00	-2.88E-01	25
4.49E-07	2.40E-04	1.34E-03	8.06E-01	-2.16E-01	6
4.56E-07	2.60E-04	1.45E-03	8.60E-01	-2.34E-01	7
4.92E-07	2.70E-04	1.50E-03	8.27E-01	-2.43E-01	1
5.10E-07	3.50E-04	1.95E-03	1.04E+00	-3.15E-01	24
7.38E-07	5.30E-04	2.95E-03	1.08E+00	-4.76E-01	8
7.38E-07	5.30E-04	2.95E-03	1.08E+00	-4.76E-01	23
9.05E-07	6.60E-04	3.67E-03	1.10E+00	-5.93E-01	22
1.21E-06	9.30E-04	5.17E-03	1.15E+00	-8.35E-01	9
1.77E-06	1.46E-03	8.10E-03	1.24E+00	-1.31E+00	21
1.93E-06	1.47E-03	8.15E-03	1.15E+00	-1.32E+00	10
2.27E-06	1.77E-03	9.81E-03	1.17E+00	-1.59E+00	20
2.90E-06	2.22E-03	1.23E-02	1.15E+00	-1.99E+00	11
3.34E-06	2.55E-03	1.41E-02	1.15E+00	-2.29E+00	19
4.29E-06	3.60E-03	1.99E-02	1.26E+00	-3.23E+00	12
4.76E-06	3.90E-03	2.15E-02	1.23E+00	-3.49E+00	18
5.50E-06	4.60E-03	2.53E-02	1.26E+00	-4.12E+00	13
6.10E-06	5.10E-03	2.81E-02	1.25E+00	-4.56E+00	17
7.11E-06	6.30E-03	3.46E-02	1.33E+00	-5.63E+00	14
8.05E-06	8.00E-03	4.37E-02	1.49E+00	-7.14E+00	15
1.09E-05	9.00E-03	4.91E-02	1.24E+00	-8.02E+00	16

TABLE A-XXIII. EXPERIMENTAL DATA(RUN NO. 7.06) FOR KRYPTON AT TS=1463, V= 8.703, AND I=1.848.

P	DI	DW	ALPHA	DT	SQ.
4.35E-07	1.00E-04	1.35E-03	5.72E-01	-6.18E-02	14
6.09E-07	1.50E-04	2.03E-03	6.13E-01	-9.27E-02	15
8.92E-07	2.10E-04	2.84E-03	5.86E-01	-1.30E-01	13
1.02E-06	3.40E-04	4.60E-03	8.28E-01	-2.10E-01	1
1.52E-06	5.30E-04	7.17E-03	8.67E-01	-3.27E-01	3
1.78E-06	6.30E-04	8.52E-03	8.79E-01	-3.89E-01	12
2.18E-06	6.50E-04	8.79E-03	7.44E-01	-4.01E-01	2
2.76E-06	1.14E-03	1.54E-02	1.03E+00	-7.04E-01	11
3.09E-06	9.60E-04	1.30E-02	7.74E-01	-5.93E-01	4
4.42E-06	1.59E-03	2.15E-02	8.94E-01	-9.81E-01	5
5.12E-06	1.77E-03	2.39E-02	8.60E-01	-1.09E+00	10
5.73E-06	2.07E-03	2.80E-02	8.99E-01	-1.28E+00	6
7.83E-06	3.10E-03	4.18E-02	9.84E-01	-1.91E+00	8
7.83E-06	3.00E-03	4.05E-02	9.52E-01	-1.85E+00	9
8.56E-06	3.60E-03	4.85E-02	1.05E+00	-2.22E+00	7

TABLE A-XXIV. EXPERIMENTAL DATA(RUN NO. 7.05) FOR KRYPTON AT TS=1812, V=17.640, AND I=2.833.

P	DI	DW	ALPHA	DT	SQ.
2.61E-07	1.30E-04	3.09E-03	1.67E+00	-6.00E-02	16
3.22E-07	1.30E-04	3.09E-03	1.36E+00	-6.00E-02	15
3.74E-07	1.10E-04	2.61E-03	9.89E-01	-5.08E-02	13
5.08E-07	1.50E-04	3.56E-03	9.94E-01	-6.93E-02	17
9.14E-07	2.80E-04	6.65E-03	1.03E+00	-1.29E-01	12
1.03E-06	2.80E-04	6.65E-03	9.17E-01	-1.29E-01	18
1.07E-06	2.70E-04	6.41E-03	8.46E-01	-1.25E-01	14
1.44E-06	4.50E-04	1.07E-02	1.05E+00	-2.08E-01	2
1.61E-06	4.80E-04	1.14E-02	1.00E+00	-2.22E-01	10
1.63E-06	4.50E-04	1.07E-02	9.27E-01	-2.08E-01	11
1.74E-06	5.00E-04	1.19E-02	9.66E-01	-2.31E-01	19
2.39E-06	6.60E-04	1.57E-02	9.27E-01	-3.05E-01	9
2.65E-06	6.50E-04	1.54E-02	8.23E-01	-3.00E-01	20
2.87E-06	7.20E-04	1.71E-02	8.43E-01	-3.32E-01	1
3.42E-06	9.60E-04	2.28E-02	9.45E-01	-4.43E-01	3
4.05E-06	1.05E-03	2.49E-02	8.72E-01	-4.85E-01	21
4.86E-06	1.35E-03	3.20E-02	9.34E-01	-6.23E-01	4
5.21E-06	1.38E-03	3.27E-02	8.91E-01	-6.37E-01	22
5.22E-06	1.41E-03	3.34E-02	9.08E-01	-6.51E-01	5
5.29E-06	1.44E-03	3.42E-02	9.14E-01	-6.65E-01	7
6.96E-06	1.59E-03	3.77E-02	7.68E-01	-7.34E-01	23
7.66E-06	2.16E-03	5.12E-02	9.48E-01	-9.97E-01	24
7.90E-06	2.19E-03	5.19E-02	9.31E-01	-1.01E+00	6
8.12E-06	2.25E-03	5.33E-02	9.31E-01	-1.04E+00	8
8.70E-06	2.70E-03	6.40E-02	1.04E+00	-1.25E+00	25

TABLE A-XXV. EXPERIMENTAL DATA(RUN NO. 18.03) FOR KRYPTON AT TS=2141, V=28.550, AND I=4.280.

P	DI	DW	ALPHA	DT	SQ.
1.16E-06	1.40E-04	5.20E-03	5.21E-01	-5.45E-02	8
1.43E-06	2.00E-04	7.42E-03	6.05E-01	-7.78E-02	9
1.71E-06	2.60E-04	9.65E-03	6.55E-01	-1.01E-01	7
1.83E-06	3.40E-04	1.26E-02	8.02E-01	-1.32E-01	10
2.50E-06	3.80E-04	1.41E-02	6.56E-01	-1.48E-01	6
3.03E-06	4.50E-04	1.67E-02	6.40E-01	-1.75E-01	5
3.12E-06	4.20E-04	1.56E-02	5.80E-01	-1.63E-01	11
3.93E-06	6.00E-04	2.23E-02	6.60E-01	-2.33E-01	4
4.11E-06	5.70E-04	2.12E-02	5.99E-01	-2.22E-01	12
4.55E-06	7.50E-04	2.78E-02	7.11E-01	-2.92E-01	1
4.60E-06	7.50E-04	2.78E-02	7.04E-01	-2.92E-01	3
5.36E-06	8.50E-04	3.15E-02	6.85E-01	-3.31E-01	2
5.36E-06	9.00E-04	3.34E-02	7.25E-01	-3.50E-01	13
5.36E-06	1.00E-03	3.71E-02	8.06E-01	-3.89E-01	14

TABLE A-XXVI. EXPERIMENTAL DATA(RUN NO. 7.03) FOR KRYPTON AT TS=2426, V=43.020, AND I=4.846.

P	DI	DW	ALPHA	DT	SQ.
4.66E-07	1.00E-04	5.75E-03	1.24E+00	-3.91E-02	1
7.88E-07	1.40E-04	8.05E-03	1.03E+00	-5.48E-02	16
8.54E-07	1.70E-04	9.77E-03	1.15E+00	-6.65E-02	2
1.04E-06	2.50E-04	1.44E-02	1.39E+00	-9.78E-02	15
1.42E-06	2.00E-04	1.15E-02	8.17E-01	-7.83E-02	3
1.65E-06	2.30E-04	1.32E-02	8.05E-01	-9.00E-02	14
2.44E-06	4.60E-04	2.64E-02	1.09E+00	-1.80E-01	5
2.46E-06	4.00E-04	2.30E-02	9.41E-01	-1.57E-01	4
2.52E-06	4.70E-04	2.70E-02	1.08E+00	-1.84E-01	13
3.43E-06	7.00E-04	4.02E-02	1.18E+00	-2.74E-01	6
3.61E-06	6.80E-04	3.91E-02	1.09E+00	-2.66E-01	12
4.33E-06	9.60E-04	5.52E-02	1.28E+00	-3.76E-01	7
4.86E-06	8.80E-04	5.06E-02	1.05E+00	-3.44E-01	11
4.99E-06	9.90E-04	5.69E-02	1.15E+00	-3.87E-01	10
6.70E-06	1.41E-03	8.10E-02	1.22E+00	-5.52E-01	9
7.36E-06	1.74E-03	1.00E-01	1.37E+00	-6.81E-01	8

TABLE A-XXVII. EXPERIMENTAL DATA(RUN NO. 7.02) FOR KRYPTON AT TS=2707, V=59.380, AND I=5.856.

P	DI	DW	ALPHA	DT	SQ.
1.42E-06	1.80E-04	1.35E-02	8.49E-01	-6.17E-02	2
1.83E-06	2.10E-04	1.58E-02	7.67E-01	-7.20E-02	6
2.36E-06	2.00E-04	1.50E-02	5.66E-01	-6.86E-02	3
2.78E-06	3.20E-04	2.41E-02	7.71E-01	-1.10E-01	1
2.84E-06	3.70E-04	2.78E-02	8.73E-01	-1.27E-01	5
3.61E-06	4.00E-04	3.01E-02	7.42E-01	-1.37E-01	4
3.94E-06	4.30E-04	3.23E-02	7.30E-01	-1.47E-01	8
4.01E-06	4.30E-04	3.23E-02	7.18E-01	-1.47E-01	7
4.99E-06	5.00E-04	3.76E-02	6.70E-01	-1.71E-01	9
6.11E-06	7.20E-04	5.41E-02	7.89E-01	-2.47E-01	10
7.03E-06	8.10E-04	6.09E-02	7.71E-01	-2.78E-01	11

TABLE A-XXVIII.EXPERIMENTAL DATA (RUN NO. 10.01) FOR NEON AT DIFFERENT TUNGSTEN TEMPERATURES.

P	DI	DW	ALPHA	DT	SQ.	V	I	TS	TR
1.12E-05	8.00E-03	8.64E-03	2.12E-01	-1.22E+01	59	5.850E-01	3.462E-01	693	379
2.00E-05	7.90E-03	1.85E-02	1.60E-01	-6.53E+00	58	1.563E+00	6.496E-01	911	395
1.60E-05	5.00E-03	1.87E-02	1.81E-01	-4.98E+00	57	2.185E+00	7.658E-01	980	420
2.16E-05	5.10E-03	2.94E-02	1.81E-01	-4.71E+00	56	3.235E+00	9.719E-01	1093	441
3.72E-05	6.80E-03	4.95E-02	1.58E-01	-5.66E+00	55	4.311E+00	1.151E+00	1187	437
3.38E-05	4.90E-03	4.25E-02	1.39E-01	-3.60E+00	54	5.430E+00	1.339E+00	1258	432
2.20E-05	2.60E-03	2.69E-02	1.22E-01	-1.72E+00	53	6.732E+00	1.529E+00	1351	426
2.80E-05	3.05E-03	3.62E-02	1.20E-01	-1.80E+00	52	8.110E+00	1.717E+00	1428	433
2.68E-05	2.85E-03	3.71E-02	1.21E-01	-1.49E+00	51	9.540E+00	1.910E+00	1504	443
1.72E-05	2.08E-03	3.71E-02	1.77E-01	-1.27E+00	50	1.132E+01	2.110E+00	1579	524
1.72E-05	2.04E-03	3.90E-02	1.77E-01	-1.12E+00	49	1.290E+01	2.287E+00	1644	536
1.42E-05	1.68E-03	3.54E-02	1.85E-01	-8.43E-01	48	1.482E+01	2.489E+00	1716	560
1.86E-05	2.00E-03	4.78E-02	1.86E-01	-1.06E+00	60	1.588E+01	2.599E+00	1754	568
1.68E-05	1.75E-03	4.48E-02	1.90E-01	-9.50E-01	66	1.555E+01	2.659E+00	1775	578
1.24E-05	1.38E-03	3.59E-02	2.05E-01	-7.53E-01	46	1.565E+01	2.672E+00	1779	602
3.32E-05	3.45E-03	8.95E-02	1.92E-01	-1.88E+00	47	1.565E+01	2.672E+00	1779	581
1.32E-05	1.35E-03	3.70E-02	1.90E-01	-6.73E-01	44	1.383E+01	2.879E+00	1849	592
3.60E-05	3.60E-03	9.84E-02	1.86E-01	-1.79E+00	45	1.383E+01	2.879E+00	1849	585
2.48E-05	2.28E-03	6.56E-02	1.72E-01	-1.03E+00	42	2.103E+01	3.073E+00	1914	576
7.44E-06	6.90E-04	1.99E-02	1.74E-01	-3.11E-01	43	2.103E+01	3.073E+00	1914	578
1.48E-05	1.32E-03	4.44E-02	1.89E-01	-6.44E-01	41	2.265E+01	3.221E+00	1961	612
1.29E-05	9.60E-04	3.48E-02	1.63E-01	-4.43E-01	39	2.555E+01	3.461E+00	2038	581
3.40E-05	2.61E-03	9.46E-02	1.68E-01	-1.20E+00	40	2.555E+01	3.461E+00	2038	590
1.34E-05	9.30E-04	3.69E-02	1.63E-01	-4.44E-01	65	2.588E+01	3.571E+00	2073	587
3.24E-05	2.37E-03	9.44E-02	1.72E-01	-1.13E+00	61	2.698E+01	3.577E+00	2075	604
1.90E-05	1.29E-03	5.28E-02	1.64E-01	-6.23E-01	37	2.735E+01	3.610E+00	2085	590
2.84E-05	1.92E-03	7.86E-02	1.63E-01	-9.27E-01	38	2.735E+01	3.610E+00	2085	589
2.88E-05	1.80E-03	7.63E-02	1.55E-01	-8.81E-01	67	2.794E+01	3.654E+00	2099	576
1.67E-05	9.30E-04	3.82E-02	1.31E-01	-4.06E-01	35	2.933E+01	3.751E+00	2132	538
3.64E-05	2.19E-03	8.99E-02	1.42E-01	-9.56E-01	36	2.933E+01	3.761E+00	2132	557
1.01E-05	5.30E-04	2.38E-02	1.32E-01	-2.38E-01	33	3.097E+01	3.881E+00	2170	546
3.45E-05	1.85E-03	8.29E-02	1.35E-01	-8.32E-01	34	3.397E+01	3.881E+00	2170	550
1.24E-05	4.50E-04	2.10E-02	9.19E-02	-1.88E-01	32	3.388E+01	4.097E+00	2236	476
1.48E-05	5.20E-04	2.87E-02	1.02E-01	-2.37E-01	28	3.590E+01	4.308E+00	2299	502
3.67E-05	1.17E-03	6.46E-02	9.24E-02	-5.32E-01	29	3.590E+01	4.309E+00	2299	483
1.12E-05	3.00E-04	1.60E-02	7.40E-02	-1.26E-01	30	3.817E+01	4.394E+00	2325	448
2.68E-05	7.50E-04	4.00E-02	7.73E-02	-3.16E-01	31	3.817E+01	4.394E+00	2325	454
1.48E-05	3.20E-04	1.88E-02	6.41E-02	-1.38E-01	26	4.082E+01	4.555E+00	2375	431
3.09E-05	7.20E-04	4.22E-02	6.91E-02	-3.10E-01	27	4.082E+01	4.555E+00	2375	441
1.80E-05	4.20E-04	2.54E-02	7.10E-02	-1.83E-01	64	4.143E+01	4.617E+00	2391	446
2.80E-05	5.70E-04	3.35E-02	5.97E-02	-2.35E-01	68	4.240E+01	4.679E+00	2409	424
1.56E-05	3.00E-04	1.75E-02	5.57E-02	-1.21E-01	24	4.288E+01	4.706E+00	2417	416
3.96E-05	7.80E-04	4.55E-02	5.70E-02	-3.14E-01	25	4.288E+01	4.706E+00	2417	418
2.56E-05	5.10E-04	3.19E-02	6.07E-02	-2.08E-01	23	4.515E+01	4.850E+00	2459	429
3.18E-05	5.90E-04	3.63E-02	5.42E-02	-2.14E-01	22	4.797E+01	5.023E+00	2510	418
3.55E-05	6.50E-04	4.41E-02	5.80E-02	-2.50E-01	21	5.016E+01	5.159E+00	2549	428
4.38E-05	7.60E-04	5.16E-02	5.58E-02	-2.92E-01	20	5.016E+01	5.159E+00	2549	423
1.24E-05	2.40E-04	1.78E-02	6.59E-02	-9.60E-02	19	5.270E+01	5.306E+00	2592	449
3.40E-05	5.20E-04	3.77E-02	4.98E-02	-1.91E-01	17	5.525E+01	5.455E+00	2634	414
3.40E-05	4.90E-04	3.55E-02	4.70E-02	-1.80E-01	18	5.525E+01	5.455E+00	2634	407
2.32E-05	3.30E-04	2.55E-02	4.89E-02	-1.26E-01	16	5.588E+01	5.548E+00	2660	413
1.80E-05	3.10E-04	2.44E-02	6.00E-02	-1.19E-01	63	5.732E+01	5.576E+00	2668	440
3.96E-05	6.40E-04	5.25E-02	5.83E-02	-2.52E-01	14	5.867E+01	5.649E+00	2688	437
1.22E-05	2.20E-04	1.80E-02	6.51E-02	-8.65E-02	15	5.867E+01	5.649E+00	2688	453
3.38E-05	5.40E-04	4.27E-02	5.49E-02	-1.93E-01	70	6.052E+01	5.751E+00	2717	430
3.12E-05	3.00E-04	2.37E-02	3.30E-02	-1.07E-01	13	6.052E+01	5.751E+00	2717	378
2.88E-05	4.60E-04	3.64E-02	5.49E-02	-1.64E-01	69	6.052E+01	5.751E+00	2717	430
2.42E-05	4.00E-04	3.36E-02	5.96E-02	-1.47E-01	12	6.247E+01	5.858E+00	2747	444
2.67E-05	4.00E-04	3.39E-02	5.44E-02	-1.48E-01	62	6.275E+01	5.875E+00	2752	431
4.68E-05	7.80E-04	6.85E-02	6.22E-02	-2.93E-01	11	6.400E+01	5.940E+00	2770	451
4.08E-05	6.00E-04	5.27E-02	5.49E-02	-2.25E-01	10	6.400E+01	5.940E+00	2771	433
5.40E-05	7.20E-04	6.43E-02	5.04E-02	-2.72E-01	9	6.458E+01	5.974E+00	2780	423
2.31E-05	3.60E-04	3.22E-02	5.92E-02	-1.36E-01	7	6.464E+01	5.978E+00	2781	445
4.14E-05	5.60E-04	5.01E-02	5.12E-02	-2.12E-01	8	6.464E+01	5.978E+00	2781	425
4.48E-05	6.00E-04	5.39E-02	5.09E-02	-2.27E-01	6	6.477E+01	5.986E+00	2783	424
2.23E-05	3.10E-04	2.78E-02	5.28E-02	-1.17E-01	5	6.477E+01	5.986E+00	2783	429
4.20E-05	5.80E-04	5.21E-02	5.25E-02	-2.20E-01	4	6.478E+01	5.986E+00	2783	428
2.68E-05	4.30E-04	3.86E-02	6.10E-02	-1.63E-01	3	6.478E+01	5.987E+00	2783	449
3.36E-05	5.20E-04	4.69E-02	5.90E-02	-1.97E-01	2	6.490E+01	5.995E+00	2785	444
4.56E-05	7.20E-04	6.49E-02	6.02E-02	-2.73E-01	1	6.490E+01	5.995E+00	2785	447

TABLE A-XXIX. EXPERIMENTAL DATA (RUN NO. 13.01) FOR NITROGEN AT DIFFERENT TUNGSTEN TEMPERATURES.

P	DI	DW	ALPHA	DT	SQ.	V	I	TS	TR
9.93E-07	1.17E-03	2.83E-03	3.85E-01	-1.26E+00	43	1.112E+00	6.127E-01	875	449
1.81E-06	1.71E-03	6.84E-03	4.21E-01	-1.72E+00	42	1.778E+00	8.133E-01	995	514
1.90E-06	1.29E-03	6.31E-03	3.11E-01	-8.94E-01	41	2.710E+00	1.050E+00	1117	482
4.33E-06	2.49E-03	1.72E-02	3.25E-01	-1.64E+00	39	3.760E+00	1.284E+00	1227	526
2.08E-06	1.20E-03	8.31E-03	3.27E-01	-7.90E-01	40	3.760E+00	1.284E+00	1227	528
2.26E-06	1.05E-03	9.11E-03	2.98E-01	-6.29E-01	38	4.850E+00	1.500E+00	1320	531
1.40E-06	5.50E-04	5.43E-03	2.63E-01	-2.83E-01	37	6.020E+00	1.703E+00	1403	520
1.67E-06	7.40E-04	1.09E-02	4.10E-01	-4.72E-01	36	7.250E+00	1.917E+00	1486	701
2.08E-06	8.00E-04	1.30E-02	3.67E-01	-4.63E-01	35	8.580E+00	2.124E+00	1562	683
1.94E-06	6.90E-04	1.22E-02	3.47E-01	-3.59E-01	34	9.990E+00	2.313E+00	1629	683
1.90E-06	5.30E-04	1.17E-02	3.25E-01	-3.03E-01	33	1.117E+01	2.496E+00	1693	677
1.90E-06	6.90E-04	1.52E-02	4.07E-01	-3.46E-01	44	1.210E+01	2.625E+00	1737	802
1.85E-06	6.40E-04	1.50E-02	4.06E-01	-3.29E-01	32	1.257E+01	2.683E+00	1756	809
1.90E-06	6.30E-04	1.53E-02	3.86E-01	-2.93E-01	31	1.410E+01	2.877E+00	1821	807
2.30E-06	7.20E-04	2.13E-02	4.23E-01	-3.65E-01	30	1.571E+01	3.070E+00	1883	888
2.30E-06	6.30E-04	1.93E-02	3.69E-01	-2.90E-01	29	1.725E+01	3.249E+00	1940	829
1.94E-06	5.50E-04	1.92E-02	4.22E-01	-2.68E-01	28	1.840E+01	3.385E+00	1983	931
2.89E-06	8.20E-04	2.81E-02	4.04E-01	-3.64E-01	27	1.975E+01	3.524E+00	2026	920
1.90E-06	4.80E-04	1.82E-02	3.89E-01	-2.21E-01	45	2.098E+01	3.658E+00	2067	912
3.07E-06	8.10E-04	3.15E-02	4.12E-01	-3.77E-01	26	2.125E+01	3.687E+00	2075	956
2.93E-06	7.50E-04	3.11E-02	4.20E-01	-3.56E-01	25	2.218E+01	3.779E+00	2104	981
3.30E-06	7.40E-04	2.96E-02	3.49E-01	-3.14E-01	24	2.310E+01	3.875E+00	2133	869
3.21E-06	7.00E-04	2.99E-02	3.56E-01	-3.04E-01	23	2.410E+01	3.971E+00	2162	894
3.39E-06	7.40E-04	3.38E-02	3.75E-01	-3.29E-01	22	2.508E+01	4.052E+00	2190	939
3.11E-06	6.30E-04	2.68E-02	3.17E-01	-2.44E-01	21	2.508E+01	4.159E+00	2218	843
3.43E-06	6.20E-04	2.92E-02	3.08E-01	-2.57E-01	20	2.715E+01	4.251E+00	2248	837
3.39E-06	6.30E-04	3.19E-02	3.36E-01	-2.71E-01	19	2.313E+01	4.357E+00	2276	900
3.43E-06	6.50E-04	3.65E-02	3.74E-01	-3.06E-01	18	2.925E+01	4.456E+00	2305	984
3.39E-06	5.60E-04	2.93E-02	2.99E-01	-2.29E-01	17	3.035E+01	4.554E+00	2333	848
4.06E-06	6.00E-04	3.29E-02	2.76E-01	-2.48E-01	16	3.134E+01	4.639E+00	2358	809
2.17E-06	4.10E-04	2.33E-02	3.64E-01	-1.71E-01	46	3.206E+01	4.700E+00	2375	992
3.34E-06	5.00E-04	2.88E-02	2.90E-01	-2.10E-01	15	3.232E+01	4.720E+00	2381	845
3.39E-06	5.20E-04	3.00E-02	2.94E-01	-2.12E-01	14	3.334E+01	4.811E+00	2407	862
3.39E-06	5.40E-04	3.13E-02	3.02E-01	-2.10E-01	13	3.453E+01	4.905E+00	2434	887
3.43E-06	6.00E-04	3.65E-02	3.43E-01	-2.37E-01	12	3.558E+01	4.994E+00	2460	983
3.25E-06	4.60E-04	2.94E-02	2.88E-01	-1.85E-01	11	3.568E+01	5.079E+00	2484	874
3.61E-06	4.40E-04	2.67E-02	2.32E-01	-1.57E-01	10	3.303E+01	5.188E+00	2515	761
3.66E-06	5.00E-04	3.26E-02	2.75E-01	-1.86E-01	9	3.927E+01	5.291E+00	2544	865
4.20E-06	5.60E-04	3.88E-02	2.81E-01	-2.14E-01	8	4.058E+01	5.392E+00	2572	887
3.57E-06	4.30E-04	3.14E-02	2.65E-01	-1.68E-01	7	4.183E+01	5.486E+00	2598	858
2.39E-06	2.50E-04	1.82E-02	2.24E-01	-9.12E-02	6	4.424E+01	5.668E+00	2648	777
3.79E-06	3.40E-04	2.47E-02	1.86E-01	-1.13E-01	5	4.594E+01	5.868E+00	2703	701
5.42E-06	5.50E-04	4.39E-02	2.28E-01	-1.95E-01	4	4.868E+01	5.991E+00	2736	810
6.64E-06	6.50E-04	5.46E-02	2.29E-01	-2.35E-01	3	5.004E+01	6.087E+00	2763	818
2.98E-06	2.50E-04	2.21E-02	2.03E-01	-9.25E-02	2	5.140E+01	5.186E+00	2790	762
1.27E-05	1.02E-03	8.59E-02	1.83E-01	-3.46E-01	1	5.291E+01	5.292E+00	2818	717

TABLE A-XXX. EXPERIMENTAL DATA (RUN NO. 16.01) FOR ARGON AT DIFFERENT TUNGSTEN TEMPERATURES.

P	DI	DW	ALPHA	DT	SQ.	V	I	TS	TR
4.10E-06	2.61E-03	1.01E-02	5.32E-01	-2.63E+00	48	1.712E+00	7.771E-01	986	662
4.39E-06	1.92E-03	1.12E-02	4.47E-01	-1.46E+00	47	2.951E+00	1.077E+00	1144	675
4.49E-06	1.65E-03	1.10E-02	4.00E-01	-1.09E+00	46	3.626E+00	1.222E+00	1213	663
4.75E-06	1.50E-03	1.38E-02	4.38E-01	-1.13E+00	45	4.379E+00	1.371E+00	1280	728
4.39E-06	1.19E-03	1.20E-02	3.86E-01	-7.75E-01	44	5.203E+00	1.522E+00	1345	701
4.63E-06	1.14E-03	1.24E-02	3.57E-01	-6.41E-01	43	6.120E+00	1.682E+00	1412	695
4.69E-06	1.11E-03	1.54E-02	4.18E-01	-7.01E-01	42	6.950E+00	1.817E+00	1465	785
4.75E-06	1.26E-03	1.77E-02	4.51E-01	-6.92E-01	41	7.832E+00	1.955E+00	1519	848
5.28E-06	1.50E-03	2.49E-02	5.53E-01	-8.90E-01	40	8.591E+00	2.059E+00	1561	997
4.75E-06	1.35E-03	2.26E-02	5.38E-01	-6.98E-01	39	9.463E+00	2.196E+00	1608	1002
4.69E-06	1.20E-03	2.37E-02	5.51E-01	-6.64E-01	38	1.035E+01	2.323E+00	1654	1045
4.81E-06	1.17E-03	2.43E-02	5.34E-01	-6.02E-01	37	1.139E+01	2.457E+00	1702	1047
4.87E-06	1.19E-03	2.82E-02	5.91E-01	-6.25E-01	36	1.257E+01	2.604E+00	1752	1156
4.75E-06	1.05E-03	2.73E-02	5.54E-01	-5.11E-01	35	1.452E+01	2.843E+00	1833	1148
4.75E-06	1.05E-03	2.98E-02	5.94E-01	-5.30E-01	34	1.524E+01	2.927E+00	1861	1226
4.87E-06	9.60E-04	3.01E-02	5.73E-01	-5.06E-01	33	1.610E+01	3.026E+00	1895	1213
5.58E-06	1.05E-03	3.14E-02	5.13E-01	-4.84E-01	32	1.695E+01	3.120E+00	1925	1132
4.63E-06	8.10E-04	2.68E-02	5.17E-01	-3.91E-01	31	1.782E+01	3.217E+00	1956	1154
4.69E-06	9.00E-04	3.23E-02	6.05E-01	-4.50E-01	30	1.862E+01	3.304E+00	1984	1318
5.16E-06	9.90E-04	3.41E-02	5.70E-01	-4.51E-01	29	1.959E+01	3.404E+00	2016	1276
4.51E-06	7.60E-04	2.80E-02	5.26E-01	-3.52E-01	28	2.050E+01	3.497E+00	2045	1216
4.45E-06	7.00E-04	2.79E-02	5.22E-01	-3.34E-01	27	2.147E+01	3.595E+00	2075	1226
4.93E-06	7.20E-04	3.15E-02	5.24E-01	-3.63E-01	26	2.233E+01	3.682E+00	2103	1245
5.28E-06	7.00E-04	2.88E-02	4.39E-01	-3.05E-01	25	2.334E+01	3.782E+00	2134	1104
4.75E-06	5.40E-04	2.37E-02	3.96E-01	-2.40E-01	24	2.431E+01	3.872E+00	2162	1037
4.63E-06	5.30E-04	2.50E-02	4.22E-01	-2.43E-01	23	2.532E+01	3.968E+00	2192	1097
5.28E-06	5.40E-04	2.38E-02	3.46E-01	-2.17E-01	22	2.634E+01	4.061E+00	2221	964
5.05E-06	4.20E-04	2.03E-02	3.05E-01	-1.79E-01	21	2.734E+01	4.154E+00	2248	892
5.05E-06	4.80E-04	2.49E-02	3.70E-01	-2.12E-01	20	2.843E+01	4.246E+00	2275	1029
4.63E-06	3.10E-04	1.84E-02	2.93E-01	-1.55E-01	19	2.958E+01	4.341E+00	2304	886
4.99E-06	3.20E-04	1.72E-02	2.51E-01	-1.34E-01	18	3.078E+01	4.445E+00	2335	810
4.75E-06	3.70E-04	2.11E-02	3.18E-01	-1.57E-01	17	3.197E+01	4.543E+00	2364	955
7.12E-06	5.20E-04	3.12E-02	3.11E-01	-2.25E-01	16	3.302E+01	4.627E+00	2389	947
5.46E-06	3.40E-04	1.98E-02	2.53E-01	-1.36E-01	15	3.423E+01	4.727E+00	2418	834
4.81E-06	3.90E-04	2.35E-02	3.37E-01	-1.56E-01	13	3.515E+01	4.804E+00	2441	1020
4.69E-06	2.60E-04	1.65E-02	2.40E-01	-1.06E-01	12	3.534E+01	4.900E+00	2469	820
4.99E-06	3.00E-04	1.93E-02	2.63E-01	-1.23E-01	14	3.562E+01	4.921E+00	2475	871
4.75E-06	3.00E-04	2.02E-02	2.86E-01	-1.25E-01	11	3.758E+01	4.995E+00	2497	927
4.93E-06	3.40E-04	2.18E-02	2.94E-01	-1.27E-01	10	3.885E+01	5.093E+00	2525	952
4.93E-06	3.00E-04	2.05E-02	2.73E-01	-1.16E-01	9	4.019E+01	5.194E+00	2554	914
5.16E-06	2.90E-04	2.11E-02	2.65E-01	-1.15E-01	8	4.160E+01	5.299E+00	2584	903
5.64E-06	3.70E-04	2.48E-02	2.81E-01	-1.27E-01	7	4.310E+01	5.407E+00	2615	949
4.87E-06	2.60E-04	1.93E-02	2.50E-01	-9.68E-02	6	4.455E+01	5.513E+00	2645	885
5.46E-06	2.70E-04	2.12E-02	2.43E-01	-1.04E-01	5	4.582E+01	5.603E+00	2670	873
5.10E-06	2.20E-04	1.50E-02	1.81E-01	-6.67E-02	4	4.733E+01	5.712E+00	2700	733
5.16E-06	2.90E-04	2.35E-02	2.77E-01	-1.05E-01	3	4.880E+01	5.819E+00	2730	971
4.81E-06	2.60E-04	2.11E-02	2.67E-01	-9.41E-02	49	4.873E+01	5.825E+00	2732	948
1.13E-05	6.20E-04	5.33E-02	2.84E-01	-2.30E-01	1	5.041E+01	5.925E+00	2761	998
5.05E-06	2.40E-04	2.07E-02	2.46E-01	-8.91E-02	2	5.041E+01	5.925E+00	2761	904

TABLE A-XXXI. EXPERIMENTAL DATA (RUN NO. 14.01) FOR KRYPTON AT DIFFERENT TUNGSTEN TEMPERATURES.

P	DI	DW	ALPHA	DT	SQ.	V	I	TS	TR
7.42E-06	7.20E-03	1.87E-02	9.27E-01	-7.97E+00	49	1.180E+00	6.330E-01	889	838
7.42E-06	7.10E-03	1.84E-02	9.14E-01	-7.87E+00	50	1.170E+00	6.330E-01	889	831
7.68E-06	5.25E-03	2.01E-02	7.73E-01	-4.05E+00	47	2.050E+00	8.782E-01	1029	860
7.42E-06	4.80E-03	1.85E-02	7.33E-01	-3.70E+00	48	2.060E+00	8.785E-01	1030	831
7.55E-06	3.80E-03	2.15E-02	7.25E-01	-2.81E+00	46	2.970E+00	1.105E+00	1143	909
7.81E-06	3.50E-03	2.31E-02	6.92E-01	-2.26E+00	43	3.700E+00	1.264E+00	1218	932
7.95E-06	3.40E-03	2.25E-02	6.61E-01	-2.20E+00	42	3.700E+00	1.264E+00	1218	905
7.92E-06	3.60E-03	2.40E-02	7.07E-01	-2.34E+00	44	3.730E+00	1.258E+00	1220	948
7.81E-06	3.55E-03	2.37E-02	7.06E-01	-2.30E+00	45	3.730E+00	1.258E+00	1220	947
7.95E-06	3.25E-03	3.14E-02	8.50E-01	-2.45E+00	41	4.590E+00	1.444E+00	1297	1145
8.01E-06	2.70E-03	3.00E-02	7.47E-01	-1.81E+00	40	5.583E+00	1.628E+00	1373	1100
7.95E-06	2.60E-03	3.25E-02	7.64E-01	-1.55E+00	39	6.560E+00	1.815E+00	1446	1174
7.95E-06	2.40E-03	3.26E-02	7.22E-01	-1.28E+00	38	7.800E+00	2.002E+00	1517	1177
8.08E-06	2.30E-03	4.09E-02	8.43E-01	-1.38E+00	37	9.070E+00	2.191E+00	1586	1383
7.95E-06	2.40E-03	4.62E-02	9.20E-01	-1.30E+00	36	1.034E+01	2.383E+00	1654	1544
8.34E-06	2.40E-03	5.02E-02	9.06E-01	-1.18E+00	35	1.183E+01	2.581E+00	1722	1588
8.03E-06	2.31E-03	5.30E-02	9.75E-01	-1.18E+00	34	1.244E+01	2.664E+00	1750	1713
8.08E-06	2.10E-03	4.91E-02	8.63E-01	-9.59E-01	33	1.385E+01	2.842E+00	1809	1601
6.62E-06	1.71E-03	4.42E-02	9.29E-01	-8.19E-01	32	1.460E+01	2.936E+00	1840	1731
8.21E-06	2.04E-03	5.83E-02	9.68E-01	-1.02E+00	31	1.540E+01	3.035E+00	1872	1820
8.48E-06	2.04E-03	5.36E-02	8.44E-01	-8.43E-01	30	1.525E+01	3.134E+00	1904	1653
8.21E-06	1.89E-03	5.69E-02	9.09E-01	-8.63E-01	29	1.710E+01	3.229E+00	1934	1784
8.34E-06	1.77E-03	6.41E-02	9.70E-01	-8.76E-01	28	1.885E+01	3.427E+00	1996	1945
8.48E-06	1.80E-03	6.14E-02	9.01E-01	-7.99E-01	27	1.973E+01	3.519E+00	2025	1852
8.21E-06	1.74E-03	6.30E-02	9.40E-01	-7.87E-01	25	2.043E+01	3.598E+00	2049	1944
8.34E-06	1.62E-03	6.35E-02	9.17E-01	-7.56E-01	25	2.140E+01	3.698E+00	2080	1930
8.48E-06	1.59E-03	6.28E-02	8.79E-01	-7.04E-01	24	2.232E+01	3.789E+00	2107	1887
8.74E-06	1.59E-03	6.40E-02	8.54E-01	-6.76E-01	23	2.325E+01	3.885E+00	2136	1868
9.67E-06	1.53E-03	6.59E-02	7.83E-01	-6.66E-01	22	2.425E+01	3.980E+00	2165	1760
8.48E-06	1.32E-03	6.09E-02	8.13E-01	-5.90E-01	21	2.513E+01	4.072E+00	2193	1838
8.48E-06	1.20E-03	5.18E-02	6.81E-01	-4.72E-01	20	2.624E+01	4.170E+00	2222	1608
8.61E-06	1.02E-03	4.79E-02	6.13E-01	-4.23E-01	19	2.717E+01	4.259E+00	2248	1492
8.48E-06	1.08E-03	5.46E-02	6.99E-01	-4.65E-01	18	2.820E+01	4.354E+00	2276	1680
8.67E-06	1.05E-03	6.04E-02	7.45E-01	-5.10E-01	17	2.927E+01	4.453E+00	2304	1792
8.48E-06	9.60E-04	5.01E-02	6.23E-01	-3.92E-01	16	3.032E+01	4.544E+00	2331	1565
8.61E-06	9.00E-04	4.93E-02	5.96E-01	-3.71E-01	15	3.134E+01	4.634E+00	2357	1525
8.81E-06	8.10E-04	4.71E-02	5.49E-01	-3.41E-01	12	3.253E+01	4.733E+00	2385	1444
8.61E-06	7.50E-04	4.36E-02	5.20E-01	-3.16E-01	13	3.253E+01	4.733E+00	2385	1384
8.61E-06	8.10E-04	4.71E-02	5.62E-01	-3.41E-01	14	3.253E+01	4.733E+00	2385	1471
7.28E-06	7.20E-04	4.19E-02	5.91E-01	-3.04E-01	53	3.253E+01	4.734E+00	2386	1531
9.80E-06	9.30E-04	5.27E-02	5.45E-01	-3.65E-01	11	3.375E+01	4.833E+00	2415	1451
9.00E-06	6.90E-04	4.52E-02	4.90E-01	-2.81E-01	10	3.721E+01	5.120E+00	2496	1374
8.87E-06	8.10E-04	5.06E-02	5.49E-01	-2.94E-01	9	3.351E+01	5.223E+00	2525	1520
9.67E-06	8.10E-04	5.67E-02	5.52E-01	-3.11E-01	8	4.085E+01	5.408E+00	2577	1555
8.87E-06	7.20E-04	3.84E-02	4.03E-01	-1.87E-01	7	4.210E+01	5.501E+00	2603	1226
8.94E-06	7.50E-04	5.23E-02	5.38E-01	-2.66E-01	6	4.340E+01	5.603E+00	2631	1552
8.74E-06	7.00E-04	5.22E-02	5.43E-01	-2.58E-01	5	4.471E+01	5.700E+00	2657	1578
7.15E-06	5.10E-04	4.02E-02	5.06E-01	-1.94E-01	56	4.610E+01	5.796E+00	2683	1504
7.28E-06	6.00E-04	4.73E-02	5.84E-01	-2.28E-01	57	4.510E+01	5.796E+00	2683	1691
7.42E-06	6.00E-04	4.73E-02	5.74E-01	-2.28E-01	55	4.610E+01	5.796E+00	2683	1666
9.00E-06	6.60E-04	5.21E-02	5.20E-01	-2.51E-01	4	4.510E+01	5.797E+00	2683	1538
7.26E-06	5.70E-04	4.51E-02	5.58E-01	-2.17E-01	54	4.510E+01	5.800E+00	2684	1630
5.69E-06	4.00E-04	2.99E-02	4.68E-01	-1.37E-01	3	4.725E+01	5.883E+00	2707	1424
7.42E-06	5.40E-04	4.05E-02	4.86E-01	-1.85E-01	51	4.725E+01	5.886E+00	2708	1469
9.27E-06	6.90E-04	5.49E-02	5.22E-01	-2.44E-01	2	4.860E+01	5.982E+00	2735	1568
7.22E-06	5.40E-04	4.30E-02	5.24E-01	-1.91E-01	52	4.860E+01	5.982E+00	2735	1575
8.48E-06	6.00E-04	4.78E-02	4.96E-01	-2.12E-01	1	4.860E+01	5.986E+00	2735	1506

TABLE B-I. EXPERIMENTAL DATA(RUN NO. 2.15) FOR OXYGEN AT TS=1044, V= 2.550, AND I=1.041.

P	DL	DW	ALPHA	DT	SQ.
7.30E-08	1.40E-04	5.18E-04	7.47E-01	-9.82E-02	2
7.30E-08	9.00E-05	3.33E-04	4.80E-01	-6.31E-02	3
7.30E-08	1.00E-04	3.70E-04	5.34E-01	-7.02E-02	4
7.30E-08	1.50E-04	5.55E-04	8.01E-01	-1.05E-01	5
7.30E-08	9.00E-05	3.33E-04	4.80E-01	-6.31E-02	6
7.30E-08	1.10E-04	4.07E-04	5.87E-01	-7.72E-02	29
8.76E-08	1.70E-04	6.29E-04	7.56E-01	-1.19E-01	8
8.76E-08	1.50E-04	5.55E-04	6.67E-01	-1.05E-01	9
8.76E-08	1.60E-04	5.92E-04	7.12E-01	-1.12E-01	10
8.76E-08	1.70E-04	6.29E-04	7.56E-01	-1.19E-01	7
1.46E-07	2.40E-04	8.88E-04	6.40E-01	-1.68E-01	28
1.46E-07	2.50E-04	9.25E-04	6.67E-01	-1.75E-01	11
1.46E-07	1.40E-04	5.18E-04	3.74E-01	-9.82E-02	30
2.92E-07	4.70E-04	1.74E-03	6.27E-01	-3.30E-01	14
2.92E-07	4.40E-04	1.63E-03	5.87E-01	-3.09E-01	1
2.92E-07	4.70E-04	1.74E-03	6.27E-01	-3.30E-01	12
2.92E-07	4.20E-04	1.55E-03	5.60E-01	-2.95E-01	13
4.38E-07	7.00E-04	2.59E-03	6.22E-01	-4.91E-01	16
4.38E-07	6.90E-04	2.55E-03	6.13E-01	-4.84E-01	15
5.84E-07	9.30E-04	3.44E-03	6.20E-01	-6.52E-01	18
5.84E-07	9.20E-04	3.40E-03	6.13E-01	-6.45E-01	17
7.30E-07	1.17E-03	4.32E-03	6.24E-01	-8.20E-01	19
7.30E-07	1.11E-03	4.10E-03	5.92E-01	-7.78E-01	20
7.30E-07	1.14E-03	4.21E-03	6.08E-01	-7.99E-01	21
8.76E-07	1.41E-03	5.21E-03	6.26E-01	-9.88E-01	23
8.76E-07	1.38E-03	5.10E-03	6.13E-01	-9.67E-01	22
1.02E-06	1.65E-03	6.09E-03	6.28E-01	-1.16E+00	25
1.02E-06	1.65E-03	6.09E-03	6.28E-01	-1.16E+00	24
1.17E-06	1.77E-03	6.53E-03	5.90E-01	-1.24E+00	27
1.17E-06	1.77E-03	6.53E-03	5.90E-01	-1.24E+00	26

TABLE B-II. EXPERIMENTAL DATA(RUN NO. 2.17) FOR OXYGEN AT TS=1051, V= 1.440, AND I=1.057.

P	DL	DW	ALPHA	DT	SQ.
2.92E-08	6.00E-05	2.32E-04	8.28E-01	-4.29E-02	12
2.92E-08	6.00E-05	2.32E-04	8.28E-01	-4.29E-02	34
4.38E-08	7.00E-05	2.71E-04	6.44E-01	-5.00E-02	13
7.30E-08	1.50E-04	5.81E-04	8.28E-01	-1.07E-01	8
7.30E-08	1.20E-04	4.64E-04	6.63E-01	-8.57E-02	1
7.30E-08	1.60E-04	6.19E-04	8.84E-01	-1.14E-01	2
7.30E-08	1.10E-04	4.26E-04	6.07E-01	-7.86E-02	17
7.30E-08	1.50E-04	5.81E-04	8.28E-01	-1.07E-01	18
7.30E-08	1.90E-04	7.35E-04	1.05E+00	-1.36E-01	3
9.48E-08	1.50E-04	5.81E-04	6.37E-01	-1.07E-01	6
9.48E-08	1.60E-04	6.19E-04	6.80E-01	-1.14E-01	7
9.48E-08	1.60E-04	6.19E-04	6.80E-01	-1.14E-01	4
9.48E-08	1.80E-04	6.97E-04	7.65E-01	-1.29E-01	5
1.02E-07	1.20E-04	4.64E-04	4.73E-01	-8.57E-02	14
1.17E-07	1.70E-04	6.58E-04	5.87E-01	-1.21E-01	9
1.17E-07	2.00E-04	7.74E-04	6.90E-01	-1.43E-01	10
1.17E-07	1.90E-04	7.35E-04	6.56E-01	-1.36E-01	11
1.31E-07	2.00E-04	7.74E-04	6.14E-01	-1.43E-01	16
1.31E-07	2.20E-04	8.51E-04	6.75E-01	-1.57E-01	15
1.46E-07	2.60E-04	1.01E-03	7.18E-01	-1.86E-01	19
2.92E-07	4.80E-04	1.86E-03	6.62E-01	-3.43E-01	21
2.92E-07	4.00E-04	1.55E-03	5.52E-01	-2.86E-01	22
2.92E-07	4.00E-04	1.55E-03	5.52E-01	-2.86E-01	23
2.92E-07	5.00E-04	1.93E-03	6.90E-01	-3.57E-01	20
4.38E-07	7.00E-04	2.71E-03	6.44E-01	-5.00E-01	25
4.38E-07	6.00E-04	2.32E-03	5.52E-01	-4.28E-01	24
5.84E-07	8.40E-04	3.25E-03	5.79E-01	-6.00E-01	27
5.84E-07	9.00E-04	3.48E-03	6.21E-01	-6.43E-01	28
5.84E-07	9.00E-04	3.48E-03	6.21E-01	-6.43E-01	26
7.30E-07	1.05E-03	4.06E-03	5.79E-01	-7.49E-01	29
8.76E-07	1.32E-03	5.10E-03	6.07E-01	-9.42E-01	30
1.02E-06	1.62E-03	6.25E-03	6.38E-01	-1.16E+00	31
1.17E-06	1.80E-03	6.94E-03	6.20E-01	-1.28E+00	33
1.17E-06	1.68E-03	6.48E-03	5.79E-01	-1.20E+00	32

TABLE B-III. EXPERIMENTAL DATA(RUN NO. 2.13) FOR OXYGEN AT TS=1091, V= 2.710, AND I=1.027.

P	DI	DW	ALPHA	DT	SQ.
8.76E-08	1.80E-04	9.81E-04	1.10E+00	-1.57E-01	1
8.76E-08	1.70E-04	9.26E-04	1.04E+00	-1.48E-01	2
8.76E-08	1.70E-04	9.26E-04	1.04E+00	-1.48E-01	3
8.76E-08	1.90E-04	1.04E-03	1.16E+00	-1.66E-01	4
1.17E-07	1.80E-04	9.81E-04	8.27E-01	-1.57E-01	5
1.17E-07	1.80E-04	9.81E-04	8.27E-01	-1.57E-01	6
1.17E-07	2.00E-04	1.09E-03	9.19E-01	-1.75E-01	7
1.17E-07	1.70E-04	9.26E-04	7.81E-01	-1.48E-01	8
1.46E-07	2.10E-04	1.14E-03	7.72E-01	-1.83E-01	9
1.46E-07	2.20E-04	1.20E-03	8.09E-01	-1.92E-01	10
1.46E-07	2.50E-04	1.36E-03	9.19E-01	-2.18E-01	11
2.92E-07	3.40E-04	1.85E-03	6.25E-01	-2.97E-01	12
2.92E-07	3.50E-04	1.91E-03	6.43E-01	-3.05E-01	13
2.92E-07	4.50E-04	2.45E-03	8.27E-01	-3.93E-01	14
2.92E-07	4.00E-04	2.18E-03	7.35E-01	-3.49E-01	15
4.38E-07	5.00E-04	2.72E-03	6.13E-01	-4.36E-01	16
4.38E-07	5.50E-04	2.99E-03	6.74E-01	-4.80E-01	17
5.84E-07	6.90E-04	3.75E-03	6.34E-01	-6.02E-01	18
5.84E-07	7.20E-04	3.92E-03	6.61E-01	-6.28E-01	19
7.30E-07	9.60E-04	5.22E-03	7.05E-01	-8.37E-01	20
7.30E-07	8.40E-04	4.57E-03	6.17E-01	-7.33E-01	21
8.76E-07	1.15E-03	6.25E-03	7.04E-01	-1.00E+00	22
8.76E-07	9.90E-04	5.38E-03	6.06E-01	-8.63E-01	23
1.02E-06	1.20E-03	6.52E-03	6.30E-01	-1.05E+00	25
1.02E-06	1.26E-03	6.85E-03	6.61E-01	-1.10E+00	27
1.17E-06	1.44E-03	7.82E-03	6.61E-01	-1.26E+00	26
1.17E-06	1.50E-03	8.15E-03	6.88E-01	-1.31E+00	24

TABLE 8-IV. EXPERIMENTAL DATA(RUN NO. 2.12) FOR OXYGEN AT TS=1108, V= 2.680, AND I=1.065.

P	DI	DW	ALPHA	DT	SQ.
8.76E-08	1.50E-04	6.71E-04	7.38E-01	-9.77E-02	5
8.76E-08	1.20E-04	5.37E-04	5.91E-01	-7.82E-02	6
8.76E-08	1.30E-04	5.82E-04	6.40E-01	-8.47E-02	7
8.76E-08	1.10E-04	4.92E-04	5.42E-01	-7.16E-02	8
8.76E-08	1.30E-04	5.82E-04	6.40E-01	-8.47E-02	9
8.76E-08	1.00E-04	4.47E-04	4.92E-01	-6.51E-02	10
8.76E-08	1.00E-04	4.47E-04	4.92E-01	-6.51E-02	11
8.76E-08	1.40E-04	6.26E-04	6.89E-01	-9.12E-02	12
1.02E-07	1.50E-04	6.71E-04	6.33E-01	-9.77E-02	15
1.02E-07	1.60E-04	7.16E-04	6.75E-01	-1.04E-01	16
1.02E-07	1.30E-04	5.82E-04	5.49E-01	-8.47E-02	17
1.02E-07	7.00E-05	3.13E-04	2.95E-01	-4.56E-02	18
1.02E-07	1.10E-04	4.92E-04	4.64E-01	-7.16E-02	19
1.02E-07	1.10E-04	4.92E-04	4.64E-01	-7.16E-02	20
1.02E-07	1.30E-04	5.82E-04	5.49E-01	-8.47E-02	21
1.02E-07	1.10E-04	4.92E-04	4.64E-01	-7.16E-02	34
1.02E-07	1.40E-04	6.26E-04	5.91E-01	-9.12E-02	35
1.02E-07	1.20E-04	5.37E-04	5.06E-01	-7.82E-02	36
1.02E-07	1.50E-04	6.71E-04	6.33E-01	-9.77E-02	37
1.17E-07	1.60E-04	7.16E-04	5.91E-01	-1.04E-01	26
1.17E-07	1.80E-04	8.05E-04	6.65E-01	-1.17E-01	27
1.17E-07	1.40E-04	6.26E-04	5.17E-01	-9.12E-02	28
1.17E-07	1.70E-04	7.60E-04	6.28E-01	-1.11E-01	29
1.17E-07	1.50E-04	6.71E-04	5.54E-01	-9.77E-02	30
1.17E-07	1.70E-04	7.60E-04	6.28E-01	-1.11E-01	31
1.17E-07	1.60E-04	7.16E-04	5.91E-01	-1.04E-01	32
1.17E-07	1.50E-04	6.71E-04	5.54E-01	-9.77E-02	33
1.17E-07	1.20E-04	5.37E-04	4.43E-01	-7.82E-02	22
1.17E-07	1.50E-04	6.71E-04	5.54E-01	-9.77E-02	23
1.17E-07	1.60E-04	7.16E-04	5.91E-01	-1.04E-01	24
1.17E-07	1.30E-04	5.82E-04	4.80E-01	-8.47E-02	25
1.46E-07	1.70E-04	7.60E-04	5.02E-01	-1.11E-01	4
1.46E-07	9.00E-05	4.03E-04	2.66E-01	-5.86E-02	3
1.46E-07	1.60E-04	7.16E-04	4.73E-01	-1.04E-01	38
1.46E-07	2.00E-04	8.95E-04	5.91E-01	-1.30E-01	39
1.46E-07	2.20E-04	9.84E-04	6.50E-01	-1.43E-01	40
1.46E-07	2.00E-04	8.95E-04	5.91E-01	-1.30E-01	41
2.92E-07	3.20E-04	1.43E-03	4.73E-01	-2.08E-01	42
2.92E-07	3.50E-04	1.57E-03	5.17E-01	-2.28E-01	43
4.38E-07	4.70E-04	2.10E-03	4.63E-01	-3.06E-01	44
4.38E-07	4.60E-04	2.06E-03	4.53E-01	-3.00E-01	45
4.38E-07	5.00E-04	2.24E-03	4.92E-01	-3.26E-01	46
5.84E-07	6.30E-04	2.82E-03	4.65E-01	-4.10E-01	47
5.84E-07	6.20E-04	2.77E-03	4.58E-01	-4.04E-01	48
7.30E-07	8.10E-04	3.62E-03	4.78E-01	-5.27E-01	49
7.30E-07	9.60E-04	4.29E-03	5.67E-01	-6.25E-01	51
7.30E-07	9.00E-04	4.02E-03	5.31E-01	-5.86E-01	52
8.76E-07	1.20E-03	5.36E-03	5.90E-01	-7.81E-01	50
8.76E-07	1.11E-03	4.96E-03	5.46E-01	-7.22E-01	53
8.76E-07	1.20E-03	5.36E-03	5.90E-01	-7.81E-01	54
1.02E-06	1.32E-03	5.89E-03	5.56E-01	-8.59E-01	13
1.02E-06	1.20E-03	5.36E-03	5.06E-01	-7.81E-01	14
1.17E-06	1.47E-03	6.56E-03	5.42E-01	-9.56E-01	1
1.17E-06	1.53E-03	6.83E-03	5.64E-01	-9.95E-01	2

TABLE B-V. EXPERIMENTAL DATA(RUN NO. 9.02) FOR OXYGEN AT TS=1142, V= 3.486, AND I=1.093.

P	DI	DW	ALPHA	DT	SQ.
7.13E-08	1.00E-04	5.69E-04	7.35E-01	-7.44E-02	2
1.13E-07	1.30E-04	7.40E-04	6.04E-01	-9.68E-02	3
1.20E-07	1.40E-04	7.97E-04	6.12E-01	-1.04E-01	1
1.87E-07	2.00E-04	1.14E-03	5.60E-01	-1.49E-01	6
2.00E-07	2.00E-04	1.14E-03	5.24E-01	-1.49E-01	4
2.26E-07	2.20E-04	1.25E-03	5.11E-01	-1.64E-01	5
4.71E-07	4.80E-04	2.73E-03	5.34E-01	-3.57E-01	7
7.65E-07	7.20E-04	4.09E-03	4.94E-01	-5.36E-01	12
1.12E-06	1.08E-03	6.14E-03	5.07E-01	-8.03E-01	13
1.30E-06	1.20E-03	6.82E-03	4.83E-01	-8.92E-01	10
1.41E-06	1.00E-03	5.68E-03	3.73E-01	-7.44E-01	9
1.49E-06	1.47E-03	8.35E-03	5.18E-01	-1.09E+00	14
1.80E-06	1.70E-03	9.65E-03	4.95E-01	-1.26E+00	15
2.29E-06	2.30E-03	1.30E-02	5.25E-01	-1.71E+00	16
2.54E-06	1.96E-03	1.11E-02	4.04E-01	-1.46E+00	8
2.85E-06	2.75E-03	1.56E-02	5.05E-01	-2.04E+00	17
3.02E-06	2.90E-03	1.64E-02	5.03E-01	-2.15E+00	11
3.41E-06	3.30E-03	1.87E-02	5.06E-01	-2.45E+00	18
4.03E-06	4.00E-03	2.26E-02	5.19E-01	-2.97E+00	19
4.65E-06	4.40E-03	2.48E-02	4.95E-01	-3.26E+00	20
5.39E-06	5.30E-03	2.99E-02	5.13E-01	-3.93E+00	21
6.41E-06	6.30E-03	3.55E-02	5.13E-01	-4.66E+00	22
8.26E-06	7.80E-03	4.38E-02	4.92E-01	-5.77E+00	23
1.03E-05	9.60E-03	5.37E-02	4.83E-01	-7.08E+00	24
1.22E-05	1.11E-02	6.19E-02	4.73E-01	-8.18E+00	25
1.53E-05	1.41E-02	7.82E-02	4.78E-01	-1.04E+01	26
1.61E-05	1.47E-02	8.15E-02	4.72E-01	-1.08E+01	27
1.84E-05	1.65E-02	9.12E-02	4.64E-01	-1.21E+01	28
2.05E-05	1.88E-02	1.03E-01	4.74E-01	-1.38E+01	29
2.11E-05	1.90E-02	1.05E-01	4.65E-01	-1.39E+01	30

TABLE B-VI. EXPERIMENTAL DATA(RUN NO. 2.08) FOR OXYGEN AT TS=1488, V= 5.750, AND I=2.045.

P	DI	DW	ALPHA	DT	SQ.
2.92E-07	7.00E-05	9.83E-04	2.14E-01	-4.22E-02	8
2.92E-07	9.00E-05	1.26E-03	2.75E-01	-5.43E-02	9
2.92E-07	9.00E-05	1.26E-03	2.75E-01	-5.43E-02	10
4.38E-07	1.10E-04	1.54E-03	2.24E-01	-6.63E-02	11
4.38E-07	1.10E-04	1.54E-03	2.24E-01	-6.63E-02	12
5.84E-07	1.50E-04	2.11E-03	2.29E-01	-9.04E-02	6
5.84E-07	2.00E-04	2.81E-03	3.05E-01	-1.21E-01	1
5.84E-07	2.00E-04	2.81E-03	3.05E-01	-1.21E-01	2
5.84E-07	2.00E-04	2.81E-03	3.05E-01	-1.21E-01	13
5.84E-07	1.80E-04	2.53E-03	2.75E-01	-1.09E-01	14
7.30E-07	2.20E-04	3.09E-03	2.69E-01	-1.33E-01	5
7.30E-07	2.00E-04	2.81E-03	2.44E-01	-1.21E-01	3
7.30E-07	2.30E-04	3.23E-03	2.81E-01	-1.39E-01	4
7.30E-07	2.30E-04	3.23E-03	2.81E-01	-1.39E-01	15
7.30E-07	2.50E-04	3.51E-03	3.05E-01	-1.51E-01	16
8.76E-07	3.00E-04	4.21E-03	3.05E-01	-1.81E-01	18
8.76E-07	3.30E-04	4.63E-03	3.36E-01	-1.99E-01	19
8.76E-07	3.00E-04	4.21E-03	3.05E-01	-1.81E-01	20
1.02E-06	3.80E-04	5.33E-03	3.31E-01	-2.29E-01	17
1.02E-06	3.70E-04	5.19E-03	3.23E-01	-2.23E-01	21
1.02E-06	3.50E-04	4.91E-03	3.05E-01	-2.11E-01	22
1.17E-06	5.00E-04	7.02E-03	3.81E-01	-3.01E-01	7
1.17E-06	4.20E-04	5.89E-03	3.20E-01	-2.53E-01	23
1.17E-06	4.30E-04	6.03E-03	3.28E-01	-2.59E-01	24

TABLE B-VII. EXPERIMENTAL DATA(RUN NO. 2.11) FOR OXYGEN AT TS=1510, V= 8.000, AND I=2.064.

P	DI	DW	ALPHA	DT	SQ.
1.46E-07	7.00E-05	8.81E-04	3.76E-01	-3.52E-02	3
2.92E-07	8.00E-05	1.01E-03	2.15E-01	-4.02E-02	5
2.92E-07	5.00E-05	6.29E-04	1.34E-01	-2.51E-02	6
2.92E-07	8.00E-05	1.01E-03	2.15E-01	-4.02E-02	26
4.38E-07	8.00E-05	1.01E-03	1.43E-01	-4.02E-02	10
4.38E-07	1.40E-04	1.76E-03	2.51E-01	-7.03E-02	15
4.38E-07	1.00E-04	1.26E-03	1.79E-01	-5.02E-02	16
4.38E-07	1.70E-04	2.14E-03	3.04E-01	-8.54E-02	25
4.38E-07	1.50E-04	1.89E-03	2.68E-01	-7.53E-02	8
5.84E-07	1.70E-04	2.14E-03	2.28E-01	-8.54E-02	18
5.84E-07	1.70E-04	2.14E-03	2.28E-01	-8.54E-02	19
5.84E-07	1.90E-04	2.39E-03	2.55E-01	-9.54E-02	20
5.84E-07	2.00E-04	2.52E-03	2.68E-01	-1.00E-01	21
5.84E-07	2.00E-04	2.52E-03	2.68E-01	-1.00E-01	22
5.84E-07	1.80E-04	2.27E-03	2.42E-01	-9.04E-02	23
5.84E-07	1.50E-04	1.89E-03	2.01E-01	-7.53E-02	11
5.84E-07	2.40E-04	3.02E-03	3.22E-01	-1.21E-01	17
7.30E-07	2.60E-04	3.27E-03	2.79E-01	-1.31E-01	7
7.30E-07	2.10E-04	2.64E-03	2.26E-01	-1.05E-01	24
7.30E-07	2.70E-04	3.40E-03	2.90E-01	-1.36E-01	27
7.30E-07	2.50E-04	3.15E-03	2.68E-01	-1.26E-01	28
7.30E-07	2.30E-04	2.90E-03	2.47E-01	-1.16E-01	29
7.30E-07	2.60E-04	3.27E-03	2.79E-01	-1.31E-01	30
8.76E-07	2.70E-04	3.40E-03	2.42E-01	-1.36E-01	12
8.76E-07	2.70E-04	3.40E-03	2.42E-01	-1.36E-01	13
8.76E-07	2.80E-04	3.52E-03	2.51E-01	-1.41E-01	1
8.76E-07	2.70E-04	3.40E-03	2.42E-01	-1.36E-01	31
8.76E-07	3.10E-04	3.90E-03	2.77E-01	-1.56E-01	32
1.02E-06	3.70E-04	4.66E-03	2.84E-01	-1.86E-01	2
1.02E-06	3.00E-04	3.78E-03	2.30E-01	-1.51E-01	4
1.02E-06	3.30E-04	4.15E-03	2.53E-01	-1.66E-01	14
1.17E-06	4.00E-04	5.03E-03	2.68E-01	-2.01E-01	9

TABLE B-VIII. EXPERIMENTAL DATA(RUN NO. 2.24) FOR OXYGEN AT TS=1569, V=10.800, AND I=2.307.

P	DI	DW	ALPHA	DT	SQ.
9.34E-10	-1.90E-04	-2.95E-03	-1.87E+02	1.04E-01	80
1.25E-09	-7.00E-05	-1.09E-03	-5.12E+01	3.81E-02	78
1.46E-09	-2.10E-04	-3.27E-03	-1.32E+02	1.14E-01	23
1.75E-09	-1.70E-04	-2.64E-03	-8.91E+01	9.26E-02	79
1.75E-09	-1.60E-04	-2.49E-03	-8.39E+01	8.72E-02	28
1.75E-09	-1.50E-04	-2.33E-03	-7.86E+01	8.17E-02	90
1.90E-09	-2.00E-04	-3.11E-03	-9.68E+01	1.09E-01	18
2.04E-09	-1.70E-04	-2.64E-03	-7.64E+01	9.26E-02	15
2.04E-09	-1.80E-04	-2.80E-03	-8.09E+01	9.81E-02	61
2.33E-09	-1.20E-04	-1.87E-03	-4.72E+01	6.54E-02	7
2.48E-09	-2.40E-04	-3.73E-03	-8.88E+01	1.31E-01	21
2.63E-09	-2.00E-04	-3.11E-03	-6.99E+01	1.09E-01	14
2.77E-09	-1.60E-04	-2.49E-03	-5.30E+01	8.72E-02	20
3.50E-09	-2.20E-04	-3.42E-03	-5.77E+01	1.20E-01	30
3.65E-09	-1.80E-04	-2.80E-03	-4.53E+01	9.81E-02	19
3.65E-09	-2.00E-04	-3.11E-03	-5.03E+01	1.09E-01	29
3.79E-09	-2.00E-04	-3.11E-03	-4.84E+01	1.09E-01	32
4.09E-09	-2.50E-04	-3.89E-03	-5.62E+01	1.36E-01	24
4.23E-09	-2.50E-04	-3.89E-03	-5.42E+01	1.36E-01	17
4.38E-09	-2.00E-04	-3.11E-03	-4.19E+01	1.09E-01	36
4.38E-09	-2.70E-04	-4.20E-03	-5.66E+01	1.47E-01	35
4.52E-09	-1.80E-04	-2.80E-03	-3.65E+01	9.81E-02	8
4.52E-09	-2.20E-04	-3.42E-03	-4.46E+01	1.20E-01	16
4.67E-09	-1.70E-04	-2.64E-03	-3.34E+01	9.26E-02	33
4.82E-09	-2.40E-04	-3.73E-03	-4.58E+01	1.31E-01	42
5.11E-09	-1.70E-04	-2.64E-03	-3.06E+01	9.26E-02	4
5.25E-09	-2.20E-04	-3.42E-03	-3.84E+01	1.20E-01	37
5.40E-09	-1.70E-04	-2.64E-03	-2.89E+01	9.26E-02	13
5.54E-09	-2.00E-04	-3.11E-03	-3.31E+01	1.09E-01	10
5.84E-09	-2.10E-04	-3.27E-03	-3.30E+01	1.14E-01	11
6.42E-09	-1.70E-04	-2.64E-03	-2.43E+01	9.26E-02	5
6.57E-09	-2.30E-04	-3.58E-03	-3.22E+01	1.25E-01	6
6.57E-09	-2.60E-04	-4.04E-03	-3.63E+01	1.42E-01	27
6.86E-09	-2.50E-04	-3.89E-03	-3.35E+01	1.36E-01	34
7.15E-09	-2.70E-04	-4.20E-03	-3.47E+01	1.47E-01	39
7.30E-09	-2.60E-04	-4.04E-03	-3.27E+01	1.42E-01	45
7.59E-09	-2.50E-04	-3.89E-03	-3.02E+01	1.36E-01	49
7.59E-09	-3.20E-04	-4.98E-03	-3.87E+01	1.74E-01	46
7.88E-09	-1.60E-04	-2.49E-03	-1.86E+01	8.72E-02	9
8.46E-09	-2.40E-04	-3.73E-03	-2.60E+01	1.31E-01	48
8.61E-09	-1.90E-04	-2.95E-03	-2.03E+01	1.04E-01	40
8.76E-09	-2.30E-04	-3.58E-03	-2.41E+01	1.25E-01	1
8.76E-09	-2.00E-04	-3.11E-03	-2.10E+01	1.09E-01	31
8.90E-09	-2.60E-04	-4.04E-03	-2.68E+01	1.42E-01	43
9.34E-09	-2.70E-04	-4.20E-03	-2.65E+01	1.47E-01	41
9.34E-09	-2.00E-04	-3.11E-03	-1.97E+01	1.09E-01	62
1.14E-08	-2.60E-04	-4.04E-03	-2.10E+01	1.42E-01	44
1.20E-08	-1.90E-04	-2.95E-03	-1.46E+01	1.04E-01	3
1.23E-08	-2.60E-04	-4.04E-03	-1.95E+01	1.42E-01	47
1.31E-08	-1.70E-04	-2.64E-03	-1.19E+01	9.26E-02	2
1.46E-08	-2.50E-04	-3.89E-03	-1.57E+01	1.36E-01	38
1.46E-08	-1.90E-04	-2.95E-03	-1.20E+01	1.04E-01	25
1.75E-08	-2.40E-04	-3.73E-03	-1.26E+01	1.31E-01	22
5.84E-08	-2.20E-04	-3.42E-03	-3.46E+00	1.20E-01	12
7.15E-08	-2.50E-04	-3.89E-03	-3.21E+00	1.36E-01	64
7.44E-08	-2.60E-04	-4.04E-03	-3.21E+00	1.42E-01	59
7.59E-08	-1.50E-04	-2.33E-03	-1.81E+00	8.17E-02	57
7.88E-08	-2.50E-04	-3.89E-03	-2.91E+00	1.36E-01	51
8.03E-08	-2.70E-04	-4.20E-03	-3.09E+00	1.47E-01	50
8.03E-08	-2.10E-04	-3.27E-03	-2.40E+00	1.14E-01	58
8.76E-08	-2.40E-04	-3.73E-03	-2.52E+00	1.31E-01	54
1.02E-07	-2.10E-04	-3.27E-03	-1.89E+00	1.14E-01	60
1.05E-07	-2.50E-04	-3.89E-03	-2.18E+00	1.36E-01	65
1.12E-07	-2.30E-04	-3.58E-03	-1.88E+00	1.25E-01	67
1.17E-07	-2.00E-04	-3.11E-03	-1.57E+00	1.09E-01	53
1.23E-07	-2.00E-04	-3.11E-03	-1.50E+00	1.09E-01	63
1.25E-07	-2.00E-04	-3.11E-03	-1.46E+00	1.09E-01	55
1.25E-07	-2.00E-04	-3.11E-03	-1.46E+00	1.09E-01	56
1.28E-07	-2.80E-04	-4.35E-03	-2.00E+00	1.53E-01	66
1.31E-07	-1.80E-04	-2.80E-03	-1.26E+00	9.81E-02	52
1.46E-07	-2.80E-04	-4.35E-03	-1.76E+00	1.53E-01	26
1.75E-07	-2.00E-04	-3.11E-03	-1.05E+00	1.09E-01	68
2.33E-07	-1.10E-04	-1.71E-03	-4.32E-01	5.99E-02	87
2.92E-07	-1.60E-04	-2.49E-03	-5.03E-01	8.72E-02	69
2.92E-07	-2.60E-04	-4.04E-03	-8.18E-01	1.42E-01	73
2.92E-07	-2.20E-04	-3.42E-03	-6.92E-01	1.20E-01	75
2.92E-07	-2.50E-04	-3.89E-03	-7.86E-01	1.36E-01	76
2.92E-07	-2.20E-04	-3.42E-03	-6.92E-01	1.20E-01	77
3.50E-07	-2.00E-04	-3.11E-03	-5.24E-01	1.09E-01	72
4.38E-07	-2.50E-04	-3.89E-03	-5.24E-01	1.36E-01	70
4.38E-07	-2.10E-04	-3.27E-03	-4.40E-01	1.14E-01	74
4.82E-07	-1.60E-04	-2.49E-03	-3.05E-01	8.72E-02	85
4.96E-07	-1.40E-04	-2.18E-03	-2.59E-01	7.63E-02	86
5.25E-07	-1.50E-04	-2.33E-03	-2.62E-01	8.17E-02	82
5.54E-07	-2.60E-04	-4.04E-03	-4.30E-01	1.42E-01	89
5.84E-07	-1.80E-04	-2.80E-03	-2.83E-01	9.81E-02	84
5.84E-07	-1.80E-04	-2.80E-03	-2.83E-01	9.81E-02	71
8.03E-07	-1.00E-04	-1.55E-03	-1.14E-01	5.45E-02	81
8.76E-07	-2.50E-04	-3.89E-03	-2.62E-01	1.36E-01	83
9.63E-07	-1.50E-04	-2.33E-03	-1.43E-01	8.17E-02	88

TABLE 8-IX. EXPERIMENTAL DATA(RUN NO. 2.25) FOR OXYGEN AT TS=1649, V=18.400, AND I=2.546.

P	DI	DW	ALPHA	DT	SQ.
5.84E-10	-2.00E-04	-3.53E-03	-3.34E+02	9.99E-02	12
7.30E-10	-1.50E-04	-2.65E-03	-2.00E+02	7.50E-02	10
9.34E-10	-3.00E-04	-5.30E-03	-3.13E+02	1.50E-01	11
1.17E-09	-2.50E-04	-4.41E-03	-2.09E+02	1.25E-01	4
1.46E-09	-3.50E-04	-6.18E-03	-2.34E+02	1.75E-01	20
1.46E-09	-3.90E-04	-6.89E-03	-2.60E+02	1.95E-01	22
1.61E-09	-3.20E-04	-5.65E-03	-1.94E+02	1.60E-01	3
1.90E-09	-3.50E-04	-6.18E-03	-1.80E+02	1.75E-01	5
1.90E-09	-3.00E-04	-5.30E-03	-1.54E+02	1.50E-01	1
2.33E-09	-3.70E-04	-6.53E-03	-1.54E+02	1.85E-01	13
2.63E-09	-4.10E-04	-7.24E-03	-1.52E+02	2.05E-01	21
2.92E-09	-4.00E-04	-7.06E-03	-1.34E+02	2.00E-01	19
3.94E-09	-5.00E-04	-8.83E-03	-1.24E+02	2.50E-01	14
4.09E-09	-4.60E-04	-8.12E-03	-1.10E+02	2.30E-01	18
4.67E-09	-3.80E-04	-6.71E-03	-7.93E+01	1.90E-01	16
4.82E-09	-4.30E-04	-7.59E-03	-8.70E+01	2.15E-01	17
4.82E-09	-4.50E-04	-7.95E-03	-9.11E+01	2.25E-01	7
5.11E-09	-4.30E-04	-7.59E-03	-8.20E+01	2.15E-01	27
5.54E-09	-5.00E-04	-8.83E-03	-8.79E+01	2.50E-01	23
6.42E-09	-4.50E-04	-7.95E-03	-6.83E+01	2.25E-01	6
6.42E-09	-4.50E-04	-7.95E-03	-6.83E+01	2.25E-01	2
8.46E-09	-5.00E-04	-8.83E-03	-5.76E+01	2.50E-01	29
1.02E-08	-5.50E-04	-9.71E-03	-5.25E+01	2.75E-01	24
1.08E-08	-5.30E-04	-9.36E-03	-4.78E+01	2.65E-01	9
1.36E-08	-5.50E-04	-9.71E-03	-3.95E+01	2.75E-01	8
1.37E-08	-5.20E-04	-9.18E-03	-3.69E+01	2.60E-01	28
1.61E-08	-6.00E-04	-1.06E-02	-3.64E+01	3.00E-01	15
1.90E-08	-5.30E-04	-9.36E-03	-2.72E+01	2.65E-01	25
3.21E-08	-5.40E-04	-9.54E-03	-1.64E+01	2.70E-01	30
3.94E-08	-5.50E-04	-9.71E-03	-1.36E+01	2.75E-01	31
5.25E-08	-5.20E-04	-9.18E-03	-9.65E+00	2.60E-01	36
5.54E-08	-5.80E-04	-1.02E-02	-1.02E+01	2.90E-01	32
6.57E-08	-5.50E-04	-9.71E-03	-8.16E+00	2.75E-01	26
7.30E-08	-5.50E-04	-9.71E-03	-7.35E+00	2.75E-01	33
8.03E-08	-5.10E-04	-9.01E-03	-6.19E+00	2.55E-01	35
1.05E-07	-6.10E-04	-1.08E-02	-5.66E+00	3.05E-01	37
1.17E-07	-6.00E-04	-1.06E-02	-5.01E+00	3.00E-01	39
1.28E-07	-5.90E-04	-1.04E-02	-4.48E+00	2.95E-01	34
1.36E-07	-6.00E-04	-1.06E-02	-4.31E+00	3.00E-01	38
2.63E-07	-5.90E-04	-1.04E-02	-2.19E+00	2.95E-01	42
2.92E-07	-6.00E-04	-1.06E-02	-2.00E+00	3.00E-01	49
3.06E-07	-5.20E-04	-9.18E-03	-1.65E+00	2.60E-01	46
3.65E-07	-5.40E-04	-9.54E-03	-1.44E+00	2.70E-01	50
4.52E-07	-5.00E-04	-8.83E-03	-1.08E+00	2.50E-01	41
5.11E-07	-5.20E-04	-9.18E-03	-9.92E-01	2.60E-01	43
5.11E-07	-5.00E-04	-8.83E-03	-9.54E-01	2.50E-01	53
5.25E-07	-5.10E-04	-9.01E-03	-9.46E-01	2.55E-01	51
5.54E-07	-5.00E-04	-8.83E-03	-8.79E-01	2.50E-01	45
5.69E-07	-5.10E-04	-9.01E-03	-8.73E-01	2.55E-01	48
5.98E-07	-6.00E-04	-1.06E-02	-9.77E-01	3.00E-01	40
6.57E-07	-5.30E-04	-9.36E-03	-7.87E-01	2.65E-01	54
7.30E-07	-5.00E-04	-8.83E-03	-6.68E-01	2.50E-01	55
7.44E-07	-5.00E-04	-8.83E-03	-6.55E-01	2.50E-01	47
8.46E-07	-5.00E-04	-8.83E-03	-5.76E-01	2.50E-01	52
8.76E-07	-4.50E-04	-7.95E-03	-5.01E-01	2.25E-01	56
1.04E-06	-5.50E-04	-9.71E-03	-5.17E-01	2.75E-01	57
1.09E-06	-5.50E-04	-9.71E-03	-4.90E-01	2.75E-01	58
1.21E-06	-4.30E-04	-7.59E-03	-3.46E-01	2.15E-01	44
1.23E-06	-4.50E-04	-7.95E-03	-3.58E-01	2.25E-01	59

TABLE B-X. EXPERIMENTAL DATA(RUN NO. 2.18) FOR OXYGEN AT TS=1737, V=15.000, AND I=3.050.

P.	DL	DW	ALPHA	DT	SQ.
1.46E-09	-7.00E-05	-1.33E-03	-4.68E+01	3.02E-02	5
4.38E-09	-2.10E-04	-3.98E-03	-4.68E+01	9.07E-02	6
4.38E-09	-2.00E-04	-3.79E-03	-4.46E+01	8.64E-02	7
4.38E-09	-1.50E-04	-2.84E-03	-3.34E+01	6.48E-02	8
4.38E-09	-1.70E-04	-3.22E-03	-3.79E+01	7.34E-02	9
4.38E-09	-2.10E-04	-3.98E-03	-4.68E+01	9.07E-02	10
4.38E-09	-1.80E-04	-3.41E-03	-4.01E+01	7.77E-02	11
4.38E-09	-2.00E-04	-3.79E-03	-4.46E+01	8.64E-02	12
7.30E-09	-2.50E-04	-4.74E-03	-3.34E+01	1.08E-01	3
7.30E-09	-3.10E-04	-5.88E-03	-4.15E+01	1.34E-01	1
7.30E-09	-2.80E-04	-5.31E-03	-3.74E+01	1.21E-01	2
1.02E-08	-3.30E-04	-6.26E-03	-3.15E+01	1.43E-01	13
1.02E-08	-2.80E-04	-5.31E-03	-2.67E+01	1.21E-01	14
1.02E-08	-3.00E-04	-5.69E-03	-2.87E+01	1.30E-01	15
1.31E-08	-2.50E-04	-4.74E-03	-1.86E+01	1.08E-01	16
1.31E-08	-3.50E-04	-6.63E-03	-2.60E+01	1.51E-01	17
1.46E-08	-3.30E-04	-6.26E-03	-2.21E+01	1.43E-01	18
1.46E-08	-3.50E-04	-6.63E-03	-2.34E+01	1.51E-01	19
1.46E-08	-3.50E-04	-6.63E-03	-2.34E+01	1.51E-01	20
1.46E-08	-3.00E-04	-5.69E-03	-2.01E+01	1.30E-01	21
1.46E-08	-3.40E-04	-6.44E-03	-2.27E+01	1.47E-01	22
4.38E-08	-4.00E-04	-7.58E-03	-8.92E+00	1.73E-01	23
4.38E-08	-3.60E-04	-6.82E-03	-8.02E+00	1.55E-01	24
4.38E-08	-3.80E-04	-7.20E-03	-8.47E+00	1.64E-01	25
7.30E-08	-4.00E-04	-7.58E-03	-5.35E+00	1.73E-01	26
7.30E-08	-4.20E-04	-7.96E-03	-5.62E+00	1.81E-01	27
7.30E-08	-4.50E-04	-8.53E-03	-6.02E+00	1.94E-01	28
7.30E-08	-4.70E-04	-8.91E-03	-6.29E+00	2.03E-01	29
7.30E-08	-4.20E-04	-7.96E-03	-5.62E+00	1.81E-01	30
7.30E-08	-4.80E-04	-9.10E-03	-6.42E+00	2.07E-01	31
7.30E-08	-5.00E-04	-9.48E-03	-6.69E+00	2.16E-01	40
1.02E-07	-4.60E-04	-8.72E-03	-4.39E+00	1.99E-01	33
1.02E-07	-4.40E-04	-8.34E-03	-4.20E+00	1.90E-01	34
1.02E-07	-4.30E-04	-8.15E-03	-4.11E+00	1.86E-01	35
1.02E-07	-4.50E-04	-8.53E-03	-4.30E+00	1.94E-01	32
1.31E-07	-4.60E-04	-8.72E-03	-3.42E+00	1.99E-01	37
1.31E-07	-4.80E-04	-9.10E-03	-3.57E+00	2.07E-01	38
1.31E-07	-4.80E-04	-9.10E-03	-3.57E+00	2.07E-01	39
1.31E-07	-4.50E-04	-8.53E-03	-3.34E+00	1.94E-01	36
1.46E-07	-5.00E-04	-9.48E-03	-3.34E+00	2.16E-01	41
4.38E-07	-5.00E-04	-9.48E-03	-1.11E+00	2.16E-01	42
4.38E-07	-5.00E-04	-9.48E-03	-1.11E+00	2.16E-01	43
7.30E-07	-4.70E-04	-8.91E-03	-6.29E-01	2.03E-01	44
1.02E-06	-5.20E-04	-9.86E-03	-4.97E-01	2.25E-01	4

TABLE B-XI. EXPERIMENTAL DATA(RUN NO. 2.26) FOR OXYGEN AT TS=1740, V=14.500, AND I=2.815.

P	DL	DW	ALPHA	DT	SQ.
1.46E-09	-1.10E-04	-2.29E-03	-8.05E+01	5.18E-02	2
1.75E-09	-1.20E-04	-2.50E-03	-7.32E+01	5.66E-02	4
1.75E-09	-1.00E-04	-2.08E-03	-6.10E+01	4.71E-02	8
2.63E-09	-1.80E-04	-3.74E-03	-7.32E+01	8.48E-02	3
2.92E-09	-2.00E-04	-4.16E-03	-7.32E+01	9.43E-02	13
3.50E-09	-1.50E-04	-3.12E-03	-4.58E+01	7.07E-02	5
3.65E-09	-2.00E-04	-4.16E-03	-5.86E+01	9.43E-02	12
4.38E-09	-2.00E-04	-4.16E-03	-4.88E+01	9.43E-02	1
5.69E-09	-2.00E-04	-4.16E-03	-3.76E+01	9.43E-02	11
7.44E-09	-3.00E-04	-6.24E-03	-4.31E+01	1.41E-01	14
7.44E-09	-3.00E-04	-6.24E-03	-4.31E+01	1.41E-01	15
8.32E-09	-3.00E-04	-6.24E-03	-3.85E+01	1.41E-01	9
9.48E-09	-3.30E-04	-6.87E-03	-3.72E+01	1.56E-01	16
9.63E-09	-2.80E-04	-5.83E-03	-3.11E+01	1.32E-01	7
1.24E-08	-3.90E-04	-8.12E-03	-3.36E+01	1.84E-01	10
1.25E-08	-3.50E-04	-7.28E-03	-2.98E+01	1.65E-01	19
1.61E-08	-3.50E-04	-7.28E-03	-2.33E+01	1.65E-01	18
1.90E-08	-4.00E-04	-8.32E-03	-2.25E+01	1.89E-01	20
2.63E-08	-4.00E-04	-8.32E-03	-1.63E+01	1.89E-01	21
3.50E-08	-3.60E-04	-7.49E-03	-1.10E+01	1.70E-01	23
4.38E-08	-4.50E-04	-9.36E-03	-1.10E+01	2.12E-01	6
5.54E-08	-4.00E-04	-8.32E-03	-7.71E+00	1.89E-01	22
6.13E-08	-4.00E-04	-8.32E-03	-6.97E+00	1.89E-01	24
7.30E-08	-4.20E-04	-8.74E-03	-6.15E+00	1.98E-01	25
8.03E-08	-4.50E-04	-9.36E-03	-5.99E+00	2.12E-01	26
9.48E-08	-4.30E-04	-8.95E-03	-4.84E+00	2.03E-01	27
1.08E-07	-5.00E-04	-1.04E-02	-4.95E+00	2.36E-01	17
1.31E-07	-5.00E-04	-1.04E-02	-4.07E+00	2.36E-01	28
1.31E-07	-4.70E-04	-9.78E-03	-3.82E+00	2.22E-01	29
2.19E-07	-5.90E-04	-1.23E-02	-2.88E+00	2.78E-01	30
2.48E-07	-5.50E-04	-1.14E-02	-2.37E+00	2.59E-01	31
2.92E-07	-4.00E-04	-8.32E-03	-1.46E+00	1.89E-01	34
3.50E-07	-4.00E-04	-8.32E-03	-1.22E+00	1.89E-01	35
4.52E-07	-4.10E-04	-8.53E-03	-9.69E-01	1.93E-01	33
4.82E-07	-4.50E-04	-9.36E-03	-9.99E-01	2.12E-01	36
5.25E-07	-4.20E-04	-8.74E-03	-8.54E-01	1.98E-01	40
5.25E-07	-5.20E-04	-1.08E-02	-1.06E+00	2.45E-01	44
5.54E-07	-4.70E-04	-9.78E-03	-9.06E-01	2.22E-01	39
5.54E-07	-5.00E-04	-1.04E-02	-9.64E-01	2.36E-01	45
5.84E-07	-5.30E-04	-1.10E-02	-9.70E-01	2.50E-01	42
6.13E-07	-5.00E-04	-1.04E-02	-8.72E-01	2.36E-01	32
7.44E-07	-4.50E-04	-9.36E-03	-6.46E-01	2.12E-01	48
7.73E-07	-4.50E-04	-9.36E-03	-6.22E-01	2.12E-01	37
8.46E-07	-5.20E-04	-1.08E-02	-6.57E-01	2.45E-01	41
8.90E-07	-4.60E-04	-9.57E-03	-5.52E-01	2.17E-01	43
9.78E-07	-4.90E-04	-1.02E-02	-5.36E-01	2.31E-01	47
1.21E-06	-4.50E-04	-9.36E-03	-3.97E-01	2.12E-01	38
1.21E-06	-5.10E-04	-1.06E-02	-4.50E-01	2.40E-01	46
1.21E-06	-4.60E-04	-9.57E-03	-4.06E-01	2.17E-01	49

TABLE B-XII. EXPERIMENTAL DATA(RUN NO. 2.22) FOR OXYGEN AT TS=1756, V= 9.200, AND I=3.052.

P	DI	DW	ALPHA	DT	SQ.
1.46E-09	-7.00E-05	-1.45E-03	-5.02E+01	3.17E-02	1
4.38E-09	-1.50E-04	-3.10E-03	-3.59E+01	6.79E-02	3
4.38E-09	-1.40E-04	-2.89E-03	-3.35E+01	6.34E-02	4
7.30E-09	-2.00E-04	-4.13E-03	-2.87E+01	9.06E-02	5
7.30E-09	-2.00E-04	-4.13E-03	-2.87E+01	9.06E-02	6
1.02E-08	-2.70E-04	-5.58E-03	-2.77E+01	1.22E-01	7
1.02E-08	-2.50E-04	-5.16E-03	-2.56E+01	1.13E-01	8
1.31E-08	-2.50E-04	-5.16E-03	-1.99E+01	1.13E-01	9
1.31E-08	-2.50E-04	-5.16E-03	-1.99E+01	1.13E-01	10
1.46E-08	-2.50E-04	-5.16E-03	-1.79E+01	1.13E-01	11
1.46E-08	-2.50E-04	-5.16E-03	-1.79E+01	1.13E-01	12
4.38E-08	-3.50E-04	-7.23E-03	-8.37E+00	1.59E-01	13
4.38E-08	-3.50E-04	-7.23E-03	-8.37E+00	1.59E-01	14
4.38E-08	-3.70E-04	-7.64E-03	-8.85E+00	1.68E-01	15
7.30E-08	-4.00E-04	-8.26E-03	-5.74E+00	1.81E-01	16
7.30E-08	-4.50E-04	-9.29E-03	-6.46E+00	2.04E-01	17
7.30E-08	-4.30E-04	-8.88E-03	-6.17E+00	1.95E-01	18
1.02E-07	-4.00E-04	-8.26E-03	-4.10E+00	1.81E-01	19
1.02E-07	-4.00E-04	-8.26E-03	-4.10E+00	1.81E-01	20
1.31E-07	-4.50E-04	-9.29E-03	-3.59E+00	2.04E-01	21
1.31E-07	-4.30E-04	-8.88E-03	-3.43E+00	1.95E-01	22
1.46E-07	-4.00E-04	-8.26E-03	-2.87E+00	1.81E-01	23
1.46E-07	-4.50E-04	-9.29E-03	-3.23E+00	2.04E-01	24
4.38E-07	-5.00E-04	-1.03E+02	-1.20E+00	2.26E-01	25
4.38E-07	-4.00E-04	-8.26E-03	-9.57E-01	1.81E-01	26
4.38E-07	-4.00E-04	-8.26E-03	-9.57E-01	1.81E-01	27
7.30E-07	-4.00E-04	-8.26E-03	-5.74E-01	1.81E-01	28
7.30E-07	-4.00E-04	-8.26E-03	-5.74E-01	1.81E-01	29
1.02E-06	-4.00E-04	-8.26E-03	-4.10E-01	1.81E-01	2
1.02E-06	-4.00E-04	-8.26E-03	-4.10E-01	1.81E-01	30

TABLE B-XIII. EXPERIMENTAL DATA(RUN NO. 2.28) FOR OXYGEN AT TS=1965, V=22.800, AND I=3.430.

P	DI	DW	ALPHA	DT	SQ.
1.46E-09	1.50E-04	4.82E-03	1.44E+02	-6.93E-02	1
1.46E-09	1.10E-04	3.53E-03	1.06E+02	-5.09E-02	2
1.61E-09	1.50E-04	4.82E-03	1.31E+02	-6.93E-02	8
1.90E-09	1.10E-04	3.53E-03	8.14E+01	-5.09E-02	12
2.19E-09	1.50E-04	4.82E-03	9.61E+01	-6.93E-02	3
2.48E-09	1.00E-04	3.21E-03	5.66E+01	-4.62E-02	9
3.21E-09	1.50E-04	4.82E-03	6.56E+01	-6.93E-02	4
3.50E-09	1.00E-04	3.21E-03	4.01E+01	-4.62E-02	11
3.50E-09	1.00E-04	3.21E-03	4.01E+01	-4.62E-02	10
3.50E-09	1.10E-04	3.53E-03	4.41E+01	-5.09E-02	16
4.09E-09	1.00E-04	3.21E-03	3.43E+01	-4.62E-02	14
4.96E-09	1.50E-04	4.82E-03	4.24E+01	-6.93E-02	6
5.54E-09	1.00E-04	3.21E-03	2.53E+01	-4.62E-02	15
5.54E-09	1.90E-04	6.10E-03	4.81E+01	-8.78E-02	19
5.54E-09	1.20E-04	3.85E-03	3.04E+01	-5.55E-02	21
5.69E-09	1.40E-04	4.50E-03	3.45E+01	-6.47E-02	20
6.42E-09	1.00E-04	3.21E-03	2.19E+01	-4.62E-02	23
7.88E-09	1.30E-04	4.17E-03	2.31E+01	-6.01E-02	24
8.76E-09	2.00E-04	6.42E-03	3.20E+01	-9.25E-02	7
9.05E-09	1.30E-04	4.17E-03	2.02E+01	-6.01E-02	25
9.05E-09	1.60E-04	5.14E-03	2.48E+01	-7.40E-02	26
9.92E-09	1.90E-04	6.10E-03	2.69E+01	-8.78E-02	17
1.01E-08	1.50E-04	4.82E-03	2.09E+01	-6.93E-02	27
1.11E-08	1.50E-04	4.82E-03	1.90E+01	-6.93E-02	5
1.15E-08	2.10E-04	6.74E-03	2.56E+01	-9.71E-02	28
1.24E-08	1.50E-04	4.82E-03	1.70E+01	-6.93E-02	29
1.27E-08	1.30E-04	4.17E-03	1.44E+01	-6.01E-02	32
1.33E-08	1.50E-04	4.82E-03	1.58E+01	-6.93E-02	31
1.36E-08	1.50E-04	4.82E-03	1.55E+01	-6.93E-02	30
1.75E-08	2.70E-04	8.67E-03	2.16E+01	-1.25E-01	34
2.77E-08	3.00E-04	9.63E-03	1.52E+01	-1.39E-01	35
2.92E-08	1.60E-04	5.14E-03	7.69E+00	-7.40E-02	47
3.06E-08	1.30E-04	4.17E-03	5.95E+00	-6.01E-02	36
3.36E-08	2.00E-04	6.42E-03	8.36E+00	-9.25E-02	37
3.65E-08	2.00E-04	6.42E-03	7.69E+00	-9.25E-02	22
5.25E-08	1.80E-04	5.78E-03	4.81E+00	-8.32E-02	48
5.40E-08	1.60E-04	5.14E-03	4.16E+00	-7.40E-02	42
5.54E-08	1.60E-04	5.14E-03	4.05E+00	-7.40E-02	39
5.84E-08	1.50E-04	4.82E-03	3.61E+00	-6.93E-02	49
6.57E-08	2.00E-04	6.42E-03	4.27E+00	-9.25E-02	38
8.03E-08	1.60E-04	5.14E-03	2.80E+00	-7.40E-02	40
8.46E-08	2.10E-04	6.74E-03	3.48E+00	-9.71E-02	13
8.46E-08	1.80E-04	5.78E-03	2.98E+00	-8.32E-02	50
8.76E-08	1.80E-04	5.78E-03	2.88E+00	-8.32E-02	43
8.90E-08	1.30E-04	4.17E-03	2.05E+00	-6.01E-02	44
9.78E-08	1.70E-04	5.46E-03	2.44E+00	-7.86E-02	51
1.09E-07	1.10E-04	3.53E-03	1.41E+00	-5.09E-02	41
1.20E-07	2.00E-04	6.42E-03	2.34E+00	-9.25E-02	52
1.31E-07	2.30E-04	7.39E-03	2.46E+00	-1.06E-01	45
1.46E-07	2.30E-04	7.39E-03	2.21E+00	-1.06E-01	46
2.33E-07	1.70E-04	5.46E-03	1.02E+00	-7.86E-02	55
2.77E-07	2.00E-04	6.42E-03	1.01E+00	-9.25E-02	53
4.09E-07	2.30E-04	7.39E-03	7.90E-01	-1.06E-01	56
4.23E-07	1.90E-04	6.10E-03	6.30E-01	-8.78E-02	54
5.11E-07	2.50E-04	8.03E-03	6.87E-01	-1.16E-01	57
6.57E-07	2.10E-04	6.74E-03	4.49E-01	-9.71E-02	33
6.71E-07	2.00E-04	6.42E-03	4.18E-01	-9.25E-02	18
8.03E-07	1.50E-04	4.82E-03	2.62E-01	-6.93E-02	58
1.21E-06	2.50E-04	8.03E-03	2.90E-01	-1.16E-01	59

TABLE B-XIV. EXPERIMENTAL DATA(RUN NO. 2.29) FOR OXYGEN AT TS=2200, V=38.400, AND I=3.990.

P	DI	DW	ALPHA	DT	SQ.
1.46E-09	2.10E-04	5.15E-03	1.33E+02	-3.81E-02	9
1.75E-09	2.20E-04	5.39E-03	1.16E+02	-3.99E-02	14
1.90E-09	2.30E-04	5.64E-03	1.12E+02	-4.17E-02	10
2.77E-09	3.00E-04	7.35E-03	9.98E+01	-5.44E-02	15
3.21E-09	2.50E-04	6.13E-03	7.18E+01	-4.54E-02	8
3.65E-09	4.10E-04	1.00E-02	1.04E+02	-7.44E-02	17
3.79E-09	3.30E-04	8.09E-03	8.02E+01	-5.99E-02	11
3.94E-09	3.30E-04	8.09E-03	7.72E+01	-5.99E-02	16
3.94E-09	2.60E-04	6.37E-03	6.09E+01	-4.72E-02	7
4.09E-09	2.90E-04	7.11E-03	6.55E+01	-5.26E-02	6
6.57E-09	3.70E-04	9.07E-03	5.20E+01	-6.71E-02	13
6.71E-09	3.70E-04	9.07E-03	5.08E+01	-6.71E-02	18
7.30E-09	4.00E-04	9.80E-03	5.06E+01	-7.26E-02	12
8.46E-09	4.00E-04	9.80E-03	4.36E+01	-7.26E-02	19
9.05E-09	3.40E-04	8.33E-03	3.47E+01	-6.17E-02	5
9.78E-09	4.80E-04	1.18E-02	4.53E+01	-8.71E-02	22
1.37E-08	4.20E-04	1.03E-02	2.82E+01	-7.62E-02	21
1.61E-08	3.40E-04	8.33E-03	1.95E+01	-6.17E-02	4
1.61E-08	5.00E-04	1.23E-02	2.87E+01	-9.07E-02	20
1.75E-08	4.80E-04	1.18E-02	2.53E+01	-8.71E-02	23
2.33E-08	4.70E-04	1.15E-02	1.86E+01	-8.53E-02	25
2.77E-08	4.30E-04	1.05E-02	1.43E+01	-7.80E-02	2
2.92E-08	4.30E-04	1.05E-02	1.36E+01	-7.80E-02	33
3.36E-08	4.70E-04	1.15E-02	1.29E+01	-8.53E-02	34
3.79E-08	5.00E-04	1.23E-02	1.22E+01	-9.07E-02	24
3.94E-08	5.00E-04	1.23E-02	1.17E+01	-9.07E-02	36
4.96E-08	5.30E-04	1.30E-02	9.85E+00	-9.62E-02	35
5.11E-08	5.30E-04	1.30E-02	9.57E+00	-9.62E-02	26
5.25E-08	4.50E-04	1.10E-02	7.90E+00	-8.17E-02	37
6.86E-08	5.40E-04	1.32E-02	7.26E+00	-9.80E-02	27
7.44E-08	4.80E-04	1.18E-02	5.95E+00	-8.71E-02	38
8.61E-08	5.30E-04	1.30E-02	5.68E+00	-9.62E-02	39
8.76E-08	6.00E-04	1.47E-02	6.32E+00	-1.09E-01	29
9.34E-08	5.50E-04	1.35E-02	5.43E+00	-9.98E-02	28
1.02E-07	6.30E-04	1.54E-02	5.69E+00	-1.14E-01	3
1.17E-07	5.10E-04	1.25E-02	4.03E+00	-9.25E-02	40
1.23E-07	5.50E-04	1.35E-02	4.14E+00	-9.98E-02	30
1.24E-07	5.00E-04	1.23E-02	3.72E+00	-9.07E-02	31
1.31E-07	6.60E-04	1.62E-02	4.63E+00	-1.20E-01	42
1.34E-07	6.00E-04	1.47E-02	4.12E+00	-1.09E-01	32
1.44E-07	5.00E-04	1.23E-02	3.19E+00	-9.07E-02	1
1.75E-07	6.00E-04	1.47E-02	3.16E+00	-1.09E-01	41
1.75E-07	6.70E-04	1.64E-02	3.53E+00	-1.22E-01	43
2.48E-07	6.50E-04	1.59E-02	2.42E+00	-1.18E-01	44
2.77E-07	6.60E-04	1.62E-02	2.20E+00	-1.20E-01	45
3.94E-07	6.90E-04	1.69E-02	1.62E+00	-1.25E-01	46
3.94E-07	7.20E-04	1.76E-02	1.69E+00	-1.31E-01	47
5.11E-07	7.00E-04	1.72E-02	1.26E+00	-1.27E-01	49
5.25E-07	6.80E-04	1.67E-02	1.19E+00	-1.23E-01	48
7.73E-07	8.20E-04	2.01E-02	9.78E-01	-1.49E-01	50
9.48E-07	7.30E-04	1.79E-02	7.10E-01	-1.32E-01	52
1.09E-06	7.90E-04	1.94E-02	6.66E-01	-1.43E-01	51
1.09E-06	8.00E-04	1.96E-02	6.74E-01	-1.45E-01	53

TABLE B-XV. EXPERIMENTAL DATA(RUN NO. 16.05) FOR OXYGEN AT TS=2204, V=25.960, AND I=3.926.

R	DI	DW	ALPHA	DT	SQ.
1.06E-07	3.50E-04	1.33E-02	4.72E+00	-1.19E-01	11
1.58E-07	5.10E-04	1.93E-02	4.58E+00	-1.73E-01	1
5.17E-07	6.00E-04	2.27E-02	1.65E+00	-2.03E-01	3
5.17E-07	6.00E-04	2.27E-02	1.65E+00	-2.03E-01	2
9.15E-07	6.30E-04	2.39E-02	9.79E-01	-2.14E-01	10
9.29E-07	6.30E-04	2.39E-02	9.65E-01	-2.14E-01	4
1.87E-06	7.70E-04	2.92E-02	5.87E-01	-2.61E-01	9
3.27E-06	9.60E-04	3.64E-02	4.17E-01	-3.25E-01	8
4.75E-06	1.02E-03	3.86E-02	3.05E-01	-3.46E-01	5
5.49E-06	8.40E-04	3.18E-02	2.18E-01	-2.85E-01	7
6.02E-06	1.14E-03	4.32E-02	2.69E-01	-3.86E-01	6

TABLE B-XVI EXPERIMENTAL DATA(RUN NO. 2.30) FOR OXYGEN AT TS=2386, V=42.300, AND I=4.472.

P	DI	DW	ALPHA	DT	SQ.
1.46E-09	2.60E-04	1.61E-02	3.72E+02	-1.16E-01	3
1.75E-09	2.50E-04	1.54E-02	2.98E+02	-1.12E-01	4
3.06E-09	3.50E-04	2.16E-02	2.39E+02	-1.56E-01	5
4.38E-09	4.00E-04	2.47E-02	1.91E+02	-1.79E-01	2
5.84E-09	3.60E-04	2.22E-02	1.29E+02	-1.61E-01	6
7.00E-09	5.20E-04	3.21E-02	1.55E+02	-2.32E-01	7
9.78E-09	5.00E-04	3.09E-02	1.07E+02	-2.23E-01	1
1.02E-08	5.00E-04	3.09E-02	1.02E+02	-2.23E-01	8
1.36E-08	6.50E-04	4.01E-02	1.00E+02	-2.90E-01	10
1.75E-08	6.80E-04	4.20E-02	8.11E+01	-3.04E-01	9
2.63E-08	6.90E-04	4.26E-02	5.49E+01	-3.08E-01	12
3.36E-08	8.40E-04	5.19E-02	5.23E+01	-3.75E-01	13
3.50E-08	9.00E-04	5.56E-02	5.37E+01	-4.02E-01	11
4.96E-08	9.00E-04	5.56E-02	3.79E+01	-4.02E-01	14
7.00E-08	9.00E-04	5.56E-02	2.68E+01	-4.02E-01	16
7.88E-08	9.60E-04	5.93E-02	2.54E+01	-4.29E-01	15
1.14E-07	9.30E-04	5.74E-02	1.71E+01	-4.16E-01	19
1.21E-07	9.90E-04	6.11E-02	1.71E+01	-4.42E-01	18
3.06E-07	1.20E-03	7.41E-02	8.18E+00	-5.36E-01	21
3.21E-07	1.44E-03	8.89E-02	9.37E+00	-6.43E-01	17
3.21E-07	1.35E-03	8.33E-02	8.78E+00	-6.03E-01	22
4.38E-07	1.50E-03	9.26E-02	7.16E+00	-6.70E-01	20
5.25E-07	1.29E-03	7.96E-02	5.13E+00	-5.76E-01	23
5.25E-07	1.50E-03	9.26E-02	5.96E+00	-6.70E-01	24
7.44E-07	1.50E-03	9.26E-02	4.21E+00	-6.70E-01	25
1.21E-06	1.86E-03	1.15E-01	3.21E+00	-8.31E-01	26

TABLE B-XVII. EXPERIMENTAL DATA(RUN NO. 2.31) FOR OXYGEN AT TS=2415, V=24.600, AND I=5.482.

P	DI	DW	ALPHA	DT	SQ.
1.37E-09	1.70E-04	8.50E-03	2.06E+02	-5.89E-02	2
2.19E-09	2.00E-04	1.00E-02	1.52E+02	-6.93E-02	3
2.48E-09	1.50E-04	7.50E-03	1.01E+02	-5.20E-02	1
2.92E-09	2.70E-04	1.35E-02	1.54E+02	-9.35E-02	4
3.65E-09	4.10E-04	2.05E-02	1.87E+02	-1.42E-01	5
4.82E-09	4.30E-04	2.15E-02	1.49E+02	-1.49E-01	8
5.25E-09	4.80E-04	2.40E-02	1.52E+02	-1.66E-01	7
7.00E-09	4.70E-04	2.35E-02	1.12E+02	-1.63E-01	6
7.59E-09	5.40E-04	2.70E-02	1.18E+02	-1.87E-01	9
1.30E-08	7.10E-04	3.55E-02	9.10E+01	-2.46E-01	10
1.75E-08	7.40E-04	3.70E-02	7.04E+01	-2.56E-01	11
2.63E-08	8.00E-04	4.00E-02	5.07E+01	-2.77E-01	12
3.50E-08	9.30E-04	4.65E-02	4.42E+01	-3.22E-01	13
3.65E-08	1.05E-03	5.25E-02	4.79E+01	-3.64E-01	14
6.13E-08	1.08E-03	5.40E-02	2.93E+01	-3.74E-01	15
7.00E-08	1.08E-03	5.40E-02	2.57E+01	-3.74E-01	17
8.17E-08	1.29E-03	6.44E-02	2.63E+01	-4.47E-01	16
1.09E-07	1.38E-03	6.89E-02	2.10E+01	-4.78E-01	18
1.42E-07	1.44E-03	7.19E-02	1.69E+01	-4.99E-01	19
1.75E-07	1.50E-03	7.49E-02	1.43E+01	-5.19E-01	20
2.19E-07	1.56E-03	7.79E-02	1.19E+01	-5.40E-01	21
2.63E-07	1.59E-03	7.94E-02	1.01E+01	-5.51E-01	22
3.36E-07	1.74E-03	8.69E-02	8.63E+00	-6.02E-01	23
4.23E-07	1.77E-03	8.84E-02	6.96E+00	-6.13E-01	24
5.11E-07	1.83E-03	9.14E-02	5.96E+00	-6.34E-01	25
6.27E-07	2.10E-03	1.05E-01	5.57E+00	-7.27E-01	26
7.88E-07	2.10E-03	1.05E-01	4.44E+00	-7.27E-01	27
1.17E-06	2.40E-03	1.20E-01	3.42E+00	-8.31E-01	28

TABLE B-XVIII. EXPERIMENTAL DATA(RUN NO. 2.04) FOR OXYGEN AT TS=2515, V=30.000, AND I=5.594.

P	DI	DW	ALPHA	DT	SQ.
1.46E-08	6.00E-04	3.39E-02	7.33E+01	-1.99E-01	1
1.46E-08	6.00E-04	3.39E-02	7.33E+01	-1.99E-01	2
1.46E-08	5.70E-04	3.22E-02	6.96E+01	-1.89E-01	3
1.46E-08	6.00E-04	3.39E-02	7.33E+01	-1.99E-01	4
2.92E-08	8.70E-04	4.91E-02	5.32E+01	-2.89E-01	5
2.92E-08	7.50E-04	4.23E-02	4.58E+01	-2.49E-01	6
2.92E-08	8.10E-04	4.57E-02	4.95E+01	-2.69E-01	7
2.92E-08	7.80E-04	4.40E-02	4.77E+01	-2.59E-01	8
2.92E-08	8.10E-04	4.57E-02	4.95E+01	-2.69E-01	9
4.38E-08	9.90E-04	5.59E-02	4.03E+01	-3.29E-01	14
4.38E-08	1.02E-03	5.76E-02	4.15E+01	-3.38E-01	15
4.38E-08	9.90E-04	5.59E-02	4.03E+01	-3.29E-01	16
5.84E-08	1.08E-03	6.10E-02	3.30E+01	-3.58E-01	13
5.84E-08	1.05E-03	5.93E-02	3.21E+01	-3.48E-01	10
5.84E-08	1.14E-03	6.44E-02	3.48E+01	-3.78E-01	11
5.84E-08	1.05E-03	5.93E-02	3.21E+01	-3.48E-01	12
7.30E-08	1.05E-03	5.93E-02	2.57E+01	-3.48E-01	17
7.30E-08	1.05E-03	5.93E-02	2.57E+01	-3.48E-01	18
7.30E-08	1.08E-03	6.10E-02	2.64E+01	-3.58E-01	19
7.30E-08	1.20E-03	6.77E-02	2.93E+01	-3.98E-01	20
7.30E-08	1.11E-03	6.27E-02	2.71E+01	-3.68E-01	21
7.30E-08	1.14E-03	6.44E-02	2.79E+01	-3.78E-01	22
7.30E-08	1.14E-03	6.44E-02	2.79E+01	-3.78E-01	23
8.76E-08	1.26E-03	7.11E-02	2.57E+01	-4.18E-01	24
8.76E-08	1.17E-03	6.60E-02	2.38E+01	-3.88E-01	25
8.76E-08	1.26E-03	7.11E-02	2.57E+01	-4.18E-01	26
8.76E-08	1.20E-03	6.77E-02	2.44E+01	-3.98E-01	27
8.76E-08	1.26E-03	7.11E-02	2.57E+01	-4.18E-01	28
1.02E-07	1.20E-03	6.77E-02	2.09E+01	-3.98E-01	29
1.02E-07	1.35E-03	7.62E-02	2.36E+01	-4.48E-01	30
1.02E-07	1.26E-03	7.11E-02	2.20E+01	-4.18E-01	31
1.02E-07	1.32E-03	7.45E-02	2.30E+01	-4.38E-01	32
1.02E-07	1.35E-03	7.62E-02	2.36E+01	-4.48E-01	33
1.17E-07	1.35E-03	7.62E-02	2.06E+01	-4.48E-01	34
1.17E-07	1.35E-03	7.62E-02	2.06E+01	-4.48E-01	35
1.17E-07	1.41E-03	7.96E-02	2.15E+01	-4.68E-01	36
1.17E-07	1.29E-03	7.28E-02	1.97E+01	-4.28E-01	37
1.17E-07	1.29E-03	7.28E-02	1.97E+01	-4.28E-01	38
1.17E-07	1.26E-03	7.11E-02	1.92E+01	-4.18E-01	39
1.31E-07	1.44E-03	8.13E-02	1.95E+01	-4.78E-01	40
1.31E-07	1.41E-03	7.96E-02	1.91E+01	-4.68E-01	41
1.31E-07	1.41E-03	7.96E-02	1.91E+01	-4.68E-01	42
1.46E-07	1.59E-03	8.97E-02	1.94E+01	-5.28E-01	43
1.46E-07	1.50E-03	8.47E-02	1.83E+01	-4.98E-01	44
1.46E-07	1.47E-03	8.30E-02	1.80E+01	-4.88E-01	45

TABLE B-XIX. EXPERIMENTAL DATA(RUN NO. 2.03) FOR OXYGEN AT TS=2518, V=39.800, AND I=5.543.

P	DL	DW	ALPHA	DT	SQ.
1.17E-07	1.35E-03	7.76E-02	2.10E+01	-4.55E-01	1
1.17E-07	1.41E-03	8.10E-02	2.19E+01	-4.75E-01	3
1.17E-07	1.50E-03	8.62E-02	2.33E+01	-5.06E-01	4
1.17E-07	1.45E-03	8.33E-02	2.25E+01	-4.89E-01	5
1.17E-07	1.35E-03	7.76E-02	2.10E+01	-4.55E-01	12
1.17E-07	1.44E-03	8.28E-02	2.24E+01	-4.85E-01	14
2.33E-07	1.68E-03	9.66E-02	1.30E+01	-5.66E-01	8
2.33E-07	1.71E-03	9.83E-02	1.33E+01	-5.76E-01	9
2.33E-07	1.74E-03	1.00E-01	1.35E+01	-5.86E-01	10
2.33E-07	1.65E-03	9.48E-02	1.28E+01	-5.56E-01	11
2.33E-07	1.59E-03	9.14E-02	1.23E+01	-5.36E-01	6
2.33E-07	1.71E-03	9.83E-02	1.33E+01	-5.76E-01	7
3.50E-07	1.80E-03	1.03E-01	9.32E+00	-6.07E-01	15
3.50E-07	1.90E-03	1.09E-01	9.84E+00	-6.40E-01	16
3.50E-07	1.80E-03	1.03E-01	9.32E+00	-6.07E-01	17
3.50E-07	1.80E-03	1.03E-01	9.32E+00	-6.07E-01	18
4.67E-07	2.04E-03	1.17E-01	7.92E+00	-5.88E-01	2
4.67E-07	2.00E-03	1.15E-01	7.76E+00	-6.74E-01	19
4.67E-07	1.90E-03	1.09E-01	7.38E+00	-6.40E-01	20
4.67E-07	2.10E-03	1.21E-01	8.15E+00	-7.08E-01	21
4.67E-07	2.10E-03	1.21E-01	8.15E+00	-7.08E-01	22
4.67E-07	2.00E-03	1.15E-01	7.76E+00	-6.74E-01	23
5.84E-07	2.30E-03	1.32E-01	7.14E+00	-7.75E-01	24
5.84E-07	2.50E-03	1.44E-01	7.76E+00	-8.42E-01	25
5.84E-07	2.20E-03	1.26E-01	6.83E+00	-7.41E-01	26
5.84E-07	2.50E-03	1.44E-01	7.76E+00	-8.42E-01	27
5.84E-07	2.35E-03	1.35E-01	7.30E+00	-7.92E-01	28
7.00E-07	2.40E-03	1.38E-01	6.21E+00	-8.09E-01	29
7.00E-07	2.40E-03	1.38E-01	6.21E+00	-8.09E-01	30
7.00E-07	2.30E-03	1.32E-01	5.95E+00	-7.75E-01	31
7.00E-07	2.40E-03	1.38E-01	6.21E+00	-8.09E-01	32
8.17E-07	2.50E-03	1.44E-01	5.55E+00	-8.42E-01	33
8.17E-07	2.60E-03	1.49E-01	5.77E+00	-8.76E-01	34
8.17E-07	2.40E-03	1.38E-01	5.32E+00	-8.09E-01	35
8.17E-07	2.50E-03	1.44E-01	5.55E+00	-8.42E-01	36
9.34E-07	2.80E-03	1.61E-01	5.43E+00	-9.44E-01	37
9.34E-07	2.80E-03	1.61E-01	5.43E+00	-9.44E-01	38
9.34E-07	2.40E-03	1.38E-01	4.66E+00	-8.09E-01	39
9.34E-07	2.60E-03	1.49E-01	5.05E+00	-8.76E-01	40
1.17E-06	2.60E-03	1.49E-01	4.04E+00	-8.76E-01	13
1.17E-06	2.70E-03	1.55E-01	4.19E+00	-9.10E-01	41
1.17E-06	2.70E-03	1.55E-01	4.19E+00	-9.10E-01	42

TABLE B-XX. EXPERIMENTAL DATA(RUN NO. 2.05) FOR OXYGEN AT TS=2519, V=30.200, AND I=5.560.

P	DL	DW	ALPHA	DT	SQ.
1.17E-07	1.50E-03	8.62E-02	2.33E+01	-5.05E-01	1
1.17E-07	1.29E-03	7.41E-02	2.00E+01	-4.34E-01	2
1.17E-07	1.17E-03	6.72E-02	1.82E+01	-3.94E-01	3
1.17E-07	1.26E-03	7.24E-02	1.96E+01	-4.24E-01	4
1.17E-07	1.38E-03	7.93E-02	2.14E+01	-4.65E-01	5
2.33E-07	1.59E-03	9.13E-02	1.23E+01	-5.35E-01	6
2.33E-07	1.65E-03	9.48E-02	1.28E+01	-5.55E-01	7
2.33E-07	1.56E-03	8.96E-02	1.21E+01	-5.25E-01	8
2.33E-07	1.62E-03	9.30E-02	1.26E+01	-5.45E-01	9
3.50E-07	1.80E-03	1.03E-01	9.31E+00	-6.06E-01	10
3.50E-07	1.74E-03	9.99E-02	9.00E+00	-5.86E-01	11
3.50E-07	1.71E-03	9.82E-02	8.84E+00	-5.76E-01	12
4.67E-07	2.07E-03	1.19E-01	8.03E+00	-6.97E-01	13
4.67E-07	2.07E-03	1.19E-01	8.03E+00	-6.97E-01	14
4.67E-07	2.04E-03	1.17E-01	7.91E+00	-6.87E-01	15
5.84E-07	2.13E-03	1.22E-01	6.61E+00	-7.17E-01	16
5.84E-07	2.10E-03	1.21E-01	6.52E+00	-7.07E-01	17
5.84E-07	2.00E-03	1.15E-01	6.21E+00	-6.73E-01	18
5.84E-07	2.20E-03	1.26E-01	6.83E+00	-7.40E-01	19
7.00E-07	2.10E-03	1.21E-01	5.43E+00	-7.07E-01	20
7.00E-07	2.10E-03	1.21E-01	5.43E+00	-7.07E-01	21
7.00E-07	2.20E-03	1.26E-01	5.69E+00	-7.40E-01	22
7.00E-07	2.20E-03	1.26E-01	5.69E+00	-7.40E-01	23
8.17E-07	2.30E-03	1.32E-01	5.10E+00	-7.74E-01	24
8.17E-07	2.30E-03	1.32E-01	5.10E+00	-7.74E-01	25
8.17E-07	2.40E-03	1.38E-01	5.32E+00	-8.08E-01	26
8.17E-07	2.30E-03	1.32E-01	5.10E+00	-7.74E-01	27
9.34E-07	2.30E-03	1.32E-01	4.46E+00	-7.74E-01	28
9.34E-07	2.70E-03	1.55E-01	5.24E+00	-9.09E-01	29
9.34E-07	2.40E-03	1.38E-01	4.65E+00	-8.08E-01	30
9.34E-07	2.40E-03	1.38E-01	4.65E+00	-8.08E-01	31
9.34E-07	2.30E-03	1.32E-01	4.46E+00	-7.74E-01	32
1.05E-06	2.50E-03	1.44E-01	4.31E+00	-8.41E-01	33
1.05E-06	2.40E-03	1.38E-01	4.14E+00	-8.08E-01	34
1.05E-06	2.60E-03	1.49E-01	4.48E+00	-8.75E-01	35
1.05E-06	2.30E-03	1.32E-01	3.96E+00	-7.74E-01	36
1.05E-06	2.50E-03	1.44E-01	4.31E+00	-8.41E-01	37
1.05E-06	2.60E-03	1.49E-01	4.48E+00	-8.75E-01	38
1.17E-06	2.40E-03	1.38E-01	3.72E+00	-8.08E-01	39
1.17E-06	2.60E-03	1.49E-01	4.03E+00	-8.75E-01	40
1.17E-06	2.70E-03	1.55E-01	4.19E+00	-9.09E-01	41
1.17E-06	2.80E-03	1.61E-01	4.34E+00	-9.42E-01	42
1.17E-06	2.80E-03	1.61E-01	4.34E+00	-9.42E-01	43
1.17E-06	2.80E-03	1.61E-01	4.34E+00	-9.42E-01	44
1.17E-06	2.70E-03	1.55E-01	4.19E+00	-9.09E-01	45

TABLE B-XXI. EXPERIMENTAL DATA(RUN NO. 2.02) FOR OXYGEN AT TS=2520, V=39.800, AND I=5.586.

P	DI	DW	ALPHA	DT	SQ.
1.46E-09	1.00E-04	5.74E-03	1.24E+02	-3.36E-02	1
8.17E-09	4.00E-04	2.30E-02	8.85E+01	-1.34E-01	2
1.46E-08	6.00E-04	3.44E-02	7.44E+01	-2.02E-01	12
1.46E-08	6.00E-04	3.44E-02	7.44E+01	-2.02E-01	13
1.46E-08	6.00E-04	3.44E-02	7.44E+01	-2.02E-01	14
1.46E-08	6.00E-04	3.44E-02	7.44E+01	-2.02E-01	17
1.46E-08	5.80E-04	3.33E-02	7.19E+01	-1.95E-01	18
1.46E-08	6.00E-04	3.44E-02	7.44E+01	-2.02E-01	19
2.92E-08	8.10E-04	4.65E-02	5.02E+01	-2.72E-01	15
2.92E-08	6.90E-04	3.96E-02	4.28E+01	-2.32E-01	20
2.92E-08	8.40E-04	4.82E-02	5.21E+01	-2.82E-01	21
2.92E-08	7.20E-04	4.13E-02	4.46E+01	-2.42E-01	24
2.92E-08	6.60E-04	3.79E-02	4.09E+01	-2.22E-01	25
2.92E-08	7.50E-04	4.30E-02	4.65E+01	-2.52E-01	26
2.92E-08	7.80E-04	4.48E-02	4.83E+01	-2.62E-01	27
2.92E-08	7.80E-04	4.48E-02	4.83E+01	-2.62E-01	28
2.92E-08	7.50E-04	4.30E-02	4.65E+01	-2.52E-01	29
2.92E-08	7.50E-04	4.30E-02	4.65E+01	-2.52E-01	30
2.92E-08	6.90E-04	3.96E-02	4.28E+01	-2.32E-01	33
3.21E-08	7.80E-04	4.48E-02	4.39E+01	-2.62E-01	6
4.09E-08	8.40E-04	4.82E-02	3.72E+01	-2.82E-01	4
4.38E-08	9.60E-04	5.51E-02	3.97E+01	-3.22E-01	31
4.38E-08	8.70E-04	4.99E-02	3.59E+01	-2.92E-01	11
4.38E-08	1.02E-03	5.85E-02	4.21E+01	-3.43E-01	36
4.38E-08	9.30E-04	5.34E-02	3.84E+01	-3.12E-01	38
4.38E-08	8.70E-04	4.99E-02	3.59E+01	-2.92E-01	39
4.38E-08	9.60E-04	5.51E-02	3.97E+01	-3.22E-01	40
4.38E-08	9.60E-04	5.51E-02	3.97E+01	-3.22E-01	41
4.82E-08	9.30E-04	5.34E-02	3.49E+01	-3.12E-01	5
5.84E-08	1.05E-03	6.03E-02	3.25E+01	-3.53E-01	34
5.84E-08	1.08E-03	6.20E-02	3.35E+01	-3.63E-01	37
5.84E-08	1.11E-03	6.37E-02	3.44E+01	-3.73E-01	42
5.84E-08	1.11E-03	6.37E-02	3.44E+01	-3.73E-01	43
5.84E-08	1.05E-03	6.03E-02	3.25E+01	-3.53E-01	44
5.84E-08	1.02E-03	5.85E-02	3.16E+01	-3.43E-01	45
5.84E-08	1.05E-03	6.03E-02	3.25E+01	-3.53E-01	46
5.84E-08	1.05E-03	6.03E-02	3.25E+01	-3.53E-01	47
5.84E-08	1.08E-03	6.20E-02	3.35E+01	-3.63E-01	48
7.30E-08	1.14E-03	6.54E-02	2.83E+01	-3.83E-01	35
7.30E-08	1.14E-03	6.54E-02	2.83E+01	-3.83E-01	32
7.30E-08	1.26E-03	7.23E-02	3.12E+01	-4.23E-01	49
7.30E-08	1.26E-03	7.23E-02	3.12E+01	-4.23E-01	50
7.30E-08	1.26E-03	7.23E-02	3.12E+01	-4.23E-01	51
7.30E-08	1.25E-03	7.17E-02	3.10E+01	-4.20E-01	54
7.30E-08	1.26E-03	7.23E-02	3.12E+01	-4.23E-01	77
7.59E-08	1.14E-03	6.54E-02	2.72E+01	-3.83E-01	74
7.59E-08	1.17E-03	6.71E-02	2.79E+01	-3.93E-01	7
7.88E-08	1.20E-03	6.89E-02	2.75E+01	-4.03E-01	10
7.88E-08	1.20E-03	6.89E-02	2.75E+01	-4.03E-01	9
8.76E-08	1.20E-03	6.89E-02	2.48E+01	-4.03E-01	56
8.76E-08	1.35E-03	7.75E-02	2.79E+01	-4.53E-01	57
8.76E-08	1.35E-03	7.75E-02	2.79E+01	-4.53E-01	58
8.76E-08	1.29E-03	7.40E-02	2.65E+01	-4.33E-01	59
8.76E-08	1.20E-03	6.89E-02	2.48E+01	-4.03E-01	62
8.76E-08	1.38E-03	7.92E-02	2.85E+01	-4.64E-01	64
8.76E-08	1.20E-03	6.89E-02	2.48E+01	-4.03E-01	71
8.76E-08	1.23E-03	7.06E-02	2.54E+01	-4.13E-01	53
8.76E-08	1.32E-03	7.58E-02	2.73E+01	-4.43E-01	76
8.76E-08	1.23E-03	7.06E-02	2.54E+01	-4.13E-01	52
8.90E-08	1.26E-03	7.23E-02	2.56E+01	-4.23E-01	55
1.02E-07	1.38E-03	7.92E-02	2.44E+01	-4.64E-01	70
1.02E-07	1.38E-03	7.92E-02	2.44E+01	-4.64E-01	23
1.02E-07	1.23E-03	7.06E-02	2.18E+01	-4.13E-01	60
1.02E-07	1.41E-03	8.09E-02	2.50E+01	-4.74E-01	66
1.02E-07	1.32E-03	7.58E-02	2.34E+01	-4.43E-01	69
1.04E-07	1.41E-03	8.09E-02	2.46E+01	-4.74E-01	73
1.17E-07	1.38E-03	7.92E-02	2.14E+01	-4.64E-01	16
1.17E-07	1.47E-03	8.44E-02	2.28E+01	-4.94E-01	63
1.17E-07	1.44E-03	8.26E-02	2.23E+01	-4.84E-01	22
1.17E-07	1.41E-03	8.09E-02	2.18E+01	-4.74E-01	65
1.17E-07	1.53E-03	8.78E-02	2.37E+01	-5.14E-01	61
1.17E-07	1.44E-03	8.26E-02	2.23E+01	-4.84E-01	75
1.17E-07	1.47E-03	8.44E-02	2.28E+01	-4.94E-01	67
1.17E-07	1.35E-03	7.75E-02	2.09E+01	-4.53E-01	68
1.23E-07	1.38E-03	7.92E-02	2.04E+01	-4.64E-01	8
1.31E-07	1.44E-03	8.26E-02	1.98E+01	-4.84E-01	72
1.31E-07	1.44E-03	8.26E-02	1.98E+01	-4.84E-01	3

TABLE B-XXII. EXPERIMENTAL DATA(RUN NO. 2.01) FOR OXYGEN AT TS=2521, V=39.800, AND I=5.606.

P	DI	DW	ALPHA	DT	SQ.
8.76E-10	8.00E-05	4.59E-03	1.65E+02	-2.68E-02	46
1.46E-09	6.00E-05	3.44E-03	7.43E+01	-2.01E-02	29
1.46E-09	1.00E-04	5.74E-03	1.24E+02	-3.35E-02	30
1.46E-09	8.00E-05	4.59E-03	9.90E+01	-2.68E-02	31
1.46E-09	2.00E-04	1.15E-02	2.48E+02	-6.71E-02	32
1.46E-09	1.80E-04	1.03E-02	2.23E+02	-6.04E-02	33
1.46E-09	1.40E-04	8.03E-03	1.73E+02	-4.70E-02	35
1.46E-09	1.00E-04	5.74E-03	1.24E+02	-3.35E-02	38
1.46E-09	8.00E-05	4.59E-03	9.90E+01	-2.68E-02	43
1.46E-09	1.50E-04	8.60E-03	1.86E+02	-5.03E-02	44
1.46E-09	1.00E-04	5.74E-03	1.24E+02	-3.35E-02	28
1.46E-09	9.00E-05	5.16E-03	1.11E+02	-3.02E-02	48
1.46E-09	7.00E-05	4.02E-03	8.67E+01	-2.35E-02	51
1.46E-09	7.00E-05	4.02E-03	8.67E+01	-2.35E-02	102
1.61E-09	1.20E-04	6.88E-03	1.35E+02	-4.02E-02	39
1.75E-09	9.00E-05	5.16E-03	9.29E+01	-3.02E-02	47
1.75E-09	1.50E-04	8.60E-03	1.55E+02	-5.03E-02	37
1.75E-09	1.00E-04	5.74E-03	1.03E+02	-3.35E-02	45
1.75E-09	1.10E-04	6.31E-03	1.13E+02	-3.69E-02	36
2.04E-09	1.70E-04	9.75E-03	1.50E+02	-5.70E-02	77
2.19E-09	1.50E-04	8.60E-03	1.24E+02	-5.03E-02	88
2.33E-09	1.10E-04	6.31E-03	8.51E+01	-3.69E-02	94
2.33E-09	1.10E-04	6.31E-03	8.51E+01	-3.69E-02	103
2.92E-09	1.80E-04	1.03E-02	1.11E+02	-6.04E-02	78
2.92E-09	1.60E-04	9.18E-03	9.90E+01	-5.37E-02	83
2.92E-09	2.00E-04	1.15E-02	1.24E+02	-6.71E-02	27
2.92E-09	1.50E-04	8.60E-03	9.29E+01	-5.03E-02	6
2.92E-09	1.50E-04	8.60E-03	9.29E+01	-5.03E-02	7
2.92E-09	1.70E-04	9.75E-03	1.05E+02	-5.70E-02	15
3.21E-09	2.50E-04	1.43E-02	1.41E+02	-8.39E-02	8
3.21E-09	2.30E-04	1.32E-02	1.29E+02	-7.71E-02	40
3.65E-09	2.10E-04	1.20E-02	1.04E+02	-7.04E-02	89
3.79E-09	2.40E-04	1.38E-02	1.14E+02	-8.05E-02	15
3.79E-09	1.80E-04	1.03E-02	8.57E+01	-6.04E-02	97
4.38E-09	2.40E-04	1.38E-02	9.90E+01	-8.05E-02	10
4.38E-09	2.40E-04	1.38E-02	9.90E+01	-8.05E-02	99
4.38E-09	2.30E-04	1.32E-02	9.49E+01	-7.71E-02	13
4.38E-09	2.30E-04	1.32E-02	9.49E+01	-7.71E-02	95
4.38E-09	2.30E-04	1.32E-02	9.49E+01	-7.71E-02	104
4.67E-09	2.40E-04	1.38E-02	9.29E+01	-8.05E-02	98
4.82E-09	2.70E-04	1.55E-02	1.01E+02	-9.06E-02	87
5.11E-09	2.80E-04	1.61E-02	9.90E+01	-9.39E-02	70
5.25E-09	2.40E-04	1.38E-02	8.25E+01	-8.05E-02	100
5.25E-09	2.80E-04	1.61E-02	9.63E+01	-9.39E-02	93
5.84E-09	3.20E-04	1.84E-02	9.90E+01	-1.07E-01	67
5.84E-09	3.00E-04	1.72E-02	9.29E+01	-1.01E-01	11
5.84E-09	2.80E-04	1.61E-02	8.67E+01	-9.39E-02	55
5.84E-09	2.90E-04	1.66E-02	8.98E+01	-9.73E-02	60
5.84E-09	2.90E-04	1.66E-02	8.98E+01	-9.73E-02	62
5.84E-09	3.70E-04	2.12E-02	1.15E+02	-1.24E-01	65
6.13E-09	3.70E-04	2.12E-02	1.09E+02	-1.24E-01	64
6.13E-09	3.00E-04	1.72E-02	8.84E+01	-1.01E-01	53
6.13E-09	3.20E-04	1.84E-02	9.43E+01	-1.07E-01	66
6.13E-09	3.30E-04	1.89E-02	9.73E+01	-1.11E-01	54
6.13E-09	3.40E-04	1.95E-02	1.00E+02	-1.14E-01	50
6.13E-09	2.90E-04	1.66E-02	8.55E+01	-9.73E-02	58
6.13E-09	2.60E-04	1.49E-02	7.66E+01	-8.72E-02	49
6.13E-09	3.10E-04	1.78E-02	9.14E+01	-1.04E-01	81
6.13E-09	2.80E-04	1.61E-02	8.25E+01	-9.39E-02	61
6.13E-09	3.00E-04	1.72E-02	8.84E+01	-1.01E-01	52
6.13E-09	3.40E-04	1.95E-02	1.00E+02	-1.14E-01	63
6.42E-09	2.90E-04	1.66E-02	8.16E+01	-9.73E-02	59
6.42E-09	3.00E-04	1.72E-02	8.44E+01	-1.01E-01	57
6.42E-09	3.20E-04	1.84E-02	9.00E+01	-1.07E-01	56
6.71E-09	3.20E-04	1.84E-02	8.61E+01	-1.07E-01	85
6.71E-09	3.00E-04	1.72E-02	8.07E+01	-1.01E-01	75
7.30E-09	3.40E-04	1.95E-02	8.42E+01	-1.14E-01	42
7.30E-09	3.60E-04	2.07E-02	8.91E+01	-1.21E-01	14
7.30E-09	3.50E-04	2.01E-02	8.67E+01	-1.17E-01	105
8.17E-09	3.50E-04	2.01E-02	7.74E+01	-1.17E-01	4
8.32E-09	3.70E-04	2.12E-02	8.04E+01	-1.24E-01	86
8.76E-09	4.60E-04	2.64E-02	9.43E+01	-1.54E-01	19
8.76E-09	4.50E-04	2.58E-02	9.29E+01	-1.51E-01	96
8.76E-09	4.00E-04	2.29E-02	8.25E+01	-1.34E-01	84
8.76E-09	4.50E-04	2.58E-02	9.29E+01	-1.51E-01	20
8.76E-09	5.30E-04	3.04E-02	1.09E+02	-1.78E-01	21
8.76E-09	4.00E-04	2.29E-02	8.25E+01	-1.34E-01	72
8.76E-09	3.70E-04	2.12E-02	7.63E+01	-1.24E-01	101
8.76E-09	4.70E-04	2.70E-02	9.70E+01	-1.58E-01	22
8.76E-09	4.30E-04	2.47E-02	8.87E+01	-1.44E-01	23
8.76E-09	3.90E-04	2.24E-02	8.05E+01	-1.31E-01	9
8.76E-09	4.20E-04	2.41E-02	8.67E+01	-1.41E-01	18
8.76E-09	3.90E-04	2.24E-02	8.05E+01	-1.31E-01	106
9.19E-09	4.00E-04	2.29E-02	7.86E+01	-1.34E-01	41
9.92E-09	4.00E-04	2.29E-02	7.28E+01	-1.34E-01	79
1.02E-08	4.40E-04	2.52E-02	7.78E+01	-1.48E-01	92
1.02E-08	4.00E-04	2.29E-02	7.07E+01	-1.34E-01	71
1.02E-08	4.80E-04	2.75E-02	8.49E+01	-1.61E-01	12
1.02E-08	4.40E-04	2.52E-02	7.78E+01	-1.48E-01	73
1.02E-08	4.00E-04	2.29E-02	7.07E+01	-1.34E-01	74
1.02E-08	4.70E-04	2.70E-02	8.31E+01	-1.58E-01	109
1.05E-08	4.30E-04	2.47E-02	7.39E+01	-1.44E-01	112
1.07E-08	4.60E-04	2.64E-02	7.80E+01	-1.54E-01	75
1.08E-08	4.50E-04	2.58E-02	7.53E+01	-1.51E-01	1
1.08E-08	4.50E-04	2.58E-02	7.53E+01	-1.51E-01	2
1.08E-08	4.30E-04	2.47E-02	7.17E+01	-1.44E-01	3
1.17E-08	4.60E-04	2.64E-02	7.12E+01	-1.54E-01	5
1.24E-08	5.00E-04	2.87E-02	7.28E+01	-1.68E-01	69
1.27E-08	4.60E-04	2.64E-02	6.55E+01	-1.54E-01	17
1.28E-08	5.50E-04	3.15E-02	7.74E+01	-1.84E-01	113
1.31E-08	5.60E-04	3.21E-02	7.70E+01	-1.88E-01	26
1.31E-08	5.80E-04	3.33E-02	7.98E+01	-1.95E-01	24
1.31E-08	5.50E-04	3.15E-02	7.57E+01	-1.84E-01	68
1.31E-08	5.80E-04	3.33E-02	7.98E+01	-1.95E-01	25
1.31E-08	4.80E-04	2.75E-02	6.60E+01	-1.61E-01	114
1.33E-08	5.50E-04	3.15E-02	7.48E+01	-1.84E-01	115
1.42E-08	5.20E-04	2.98E-02	6.64E+01	-1.74E-01	110
1.43E-08	5.30E-04	3.04E-02	6.70E+01	-1.78E-01	90
1.46E-08	5.70E-04	3.27E-02	7.05E+01	-1.91E-01	108
1.46E-08	6.30E-04	3.61E-02	7.80E+01	-2.11E-01	82
1.46E-08	5.80E-04	3.33E-02	7.19E+01	-1.95E-01	34
1.46E-08	5.60E-04	3.21E-02	6.93E+01	-1.88E-01	111
1.75E-08	6.50E-04	3.73E-02	6.71E+01	-2.18E-01	91
1.75E-08	6.60E-04	3.79E-02	6.81E+01	-2.21E-01	107
2.48E-08	7.60E-04	4.36E-02	5.53E+01	-2.55E-01	80

TABLE B-XXIII. EXPERIMENTAL DATA(RUN NO. 2.06) FOR OXYGEN AT TS=2542, V=31.100, AND I=5.610.

P	DI	DW	ALPHA	DT	SQ.
1.46E-09	6.00E-05	3.67E-03	7.83E+01	-2.09E-02	1
1.46E-09	7.00E-05	4.28E-03	9.13E+01	-2.44E-02	2
1.46E-09	6.00E-05	3.67E-03	7.83E+01	-2.09E-02	35
2.92E-09	1.30E-04	7.95E-03	8.48E+01	-4.54E-02	4
2.92E-09	1.10E-04	6.72E-03	7.18E+01	-3.84E-02	5
2.92E-09	1.20E-04	7.33E-03	7.83E+01	-4.19E-02	3
4.38E-09	2.00E-04	1.22E-02	8.70E+01	-6.98E-02	7
4.38E-09	1.80E-04	1.10E-02	7.83E+01	-6.28E-02	8
4.38E-09	1.90E-04	1.16E-02	8.26E+01	-6.63E-02	6
5.84E-09	2.10E-04	1.28E-02	6.85E+01	-7.33E-02	10
5.84E-09	2.10E-04	1.28E-02	6.85E+01	-7.33E-02	11
5.84E-09	2.30E-04	1.41E-02	7.50E+01	-8.03E-02	12
5.84E-09	2.20E-04	1.34E-02	7.18E+01	-7.68E-02	9
7.30E-09	3.10E-04	1.89E-02	8.09E+01	-1.08E-01	14
7.30E-09	3.00E-04	1.83E-02	7.83E+01	-1.05E-01	15
7.30E-09	2.90E-04	1.77E-02	7.57E+01	-1.01E-01	13
8.76E-09	3.50E-04	2.14E-02	7.61E+01	-1.22E-01	17
8.76E-09	3.50E-04	2.14E-02	7.61E+01	-1.22E-01	18
8.76E-09	3.60E-04	2.20E-02	7.83E+01	-1.26E-01	16
1.02E-08	3.80E-04	2.32E-02	7.08E+01	-1.33E-01	20
1.02E-08	3.70E-04	2.26E-02	6.90E+01	-1.29E-01	21
1.02E-08	4.00E-04	2.44E-02	7.46E+01	-1.40E-01	19
1.17E-08	4.00E-04	2.44E-02	6.52E+01	-1.40E-01	23
1.17E-08	3.80E-04	2.32E-02	6.20E+01	-1.33E-01	24
1.17E-08	4.00E-04	2.44E-02	6.52E+01	-1.40E-01	25
1.17E-08	4.20E-04	2.57E-02	6.85E+01	-1.47E-01	22
1.31E-08	4.20E-04	2.57E-02	6.09E+01	-1.47E-01	27
1.31E-08	4.40E-04	2.69E-02	6.38E+01	-1.54E-01	28
1.31E-08	4.40E-04	2.69E-02	6.38E+01	-1.54E-01	29
1.31E-08	4.50E-04	2.75E-02	6.52E+01	-1.57E-01	26
1.46E-08	5.00E-04	3.06E-02	6.52E+01	-1.75E-01	31
1.46E-08	4.80E-04	2.93E-02	6.26E+01	-1.68E-01	32
1.46E-08	4.80E-04	2.93E-02	6.26E+01	-1.68E-01	33
1.46E-08	4.80E-04	2.93E-02	6.26E+01	-1.68E-01	34
1.46E-08	5.10E-04	3.12E-02	6.65E+01	-1.78E-01	30

TABLE B-XXIV. EXPERIMENTAL DATA (RUN NO. 15.01) FOR OXYGEN AT DIFFERENT TUNGSTEN TEMPERATURES.

TS	DI	DT	V	I	SQ.	P_{O_2} (Fil. On)	P_{O_2} (Fil. Off)	DW	DQ	EPSYLON	ALPHA
796	2.70E-04	-3.56E-01	7.53E-01	4.85E-01	54	2.89E-07	2.89E-07	5.01E-04	9.15E-01	0.	2.81E-01
878	4.50E-04	-4.98E-01	1.11E+00	6.08E-01	53	4.45E-07	4.45E-07	1.13E-03	1.34E+00	0.	3.49E-01
978	4.40E-04	-4.32E-01	1.66E+00	7.72E-01	52	5.05E-07	5.05E-07	1.61E-03	1.69E+00	0.	3.71E-01
1097	4.00E-04	-3.69E-01	2.52E+00	9.92E-01	51	4.33E-07	4.33E-07	2.34E-03	2.85E+00	0.	5.30E-01
1151	2.60E-04	-1.99E-01	3.01E+00	1.10E+00	50	4.33E-07	4.33E-07	1.57E-03	1.91E+00	0.	3.30E-01
1243	3.30E-04	-2.28E-01	3.94E+00	1.30E+00	49	4.57E-07	4.57E-07	2.52E-03	2.91E+00	0.	4.50E-01
1293	3.60E-04	-2.73E-01	4.50E+00	1.41E+00	48	6.01E-07	6.01E-07	3.47E-03	3.04E+00	0.	4.46E-01
1328	2.30E-04	-1.43E-01	4.94E+00	1.50E+00	47	4.45E-07	4.45E-07	2.11E-03	2.49E+00	0.	3.52E-01
1379	2.10E-04	-1.44E-01	5.63E+00	1.62E+00	46	4.81E-07	4.81E-07	2.44E-03	2.67E+00	0.	3.57E-01
1422	2.30E-04	-1.32E-01	6.25E+00	1.73E+00	45	5.77E-07	5.77E-07	2.62E-03	2.39E+00	0.	3.07E-01
1448	1.70E-04	-1.03E-01	6.69E+00	1.79E+00	53	5.65E-07	5.65E-07	2.18E-03	2.03E+00	0.	2.54E-01
1467	1.50E-04	-9.42E-02	6.95E+00	1.84E+00	44	4.81E-07	4.81E-07	2.09E-03	2.29E+00	0.	2.81E-01
1510	-6.00E-05	3.19E-02	7.64E+00	1.95E+00	43	4.81E-07	4.81E-07	-8.01E-04	-8.77E-01	0.	-1.04E-01
1545	-1.00E-04	5.72E-02	8.26E+00	2.05E+00	42	4.81E-07	4.81E-07	-1.55E-03	-1.69E+00	0.	-1.94E-01
1580	-1.60E-04	9.68E-02	8.89E+00	2.14E+00	41	4.93E-07	4.93E-07	-2.83E-03	-3.02E+00	0.	-3.36E-01
1613	-2.60E-04	1.34E-01	9.51E+00	2.23E+00	40	4.45E-07	4.45E-07	-4.39E-03	-5.19E+00	0.	-5.61E-01
1651	-3.70E-04	2.02E-01	1.02E+01	2.34E+00	39	5.41E-07	5.41E-07	-7.16E-03	-5.97E+00	0.	-7.30E-01
1684	-4.20E-04	2.41E-01	1.10E+01	2.43E+00	38	9.38E-07	9.38E-07	-9.14E-03	-5.13E+00	0.	-5.23E-01
1716	-6.00E-04	2.98E-01	1.17E+01	2.53E+00	37	6.01E-07	6.01E-07	-1.25E-02	-1.10E+01	0.	-1.09E+00
1784	-3.50E-04	1.90E-01	1.32E+01	2.73E+00	36	4.57E-07	4.57E-07	-9.14E-03	-1.05E+01	0.	-9.93E-01
1817	-2.70E-04	1.27E-01	1.40E+01	2.82E+00	35	4.81E-07	4.81E-07	-6.60E-03	-7.22E+00	0.	-6.65E-01
1824	-2.50E-04	1.19E-01	1.42E+01	2.84E+00	59	6.97E-07	6.97E-07	-6.25E-03	-4.72E+00	0.	-4.32E-01
1848	-2.00E-04	9.83E-02	1.48E+01	2.92E+00	34	6.37E-07	6.37E-07	-5.39E-03	-4.45E+00	0.	-4.01E-01
1878	3.00E-05	-1.53E-02	1.55E+01	3.01E+00	33	6.01E-07	6.13E-07	8.86E-04	7.60E-01	8.72E-03	6.84E-02
1908	1.40E-04	-6.09E-02	1.62E+01	3.10E+00	32	4.33E-07	4.57E-07	3.87E-03	4.46E+00	2.44E-02	4.06E-01
1940	1.40E-04	-6.55E-02	1.71E+01	3.20E+00	31	4.69E-07	5.05E-07	4.35E-03	4.55E+00	3.37E-02	4.14E-01
1972	7.00E-05	-3.42E-02	1.80E+01	3.30E+00	30	4.45E-07	4.57E-07	2.40E-03	2.77E+00	1.18E-02	2.35E-01
2003	1.90E-04	-9.51E-02	1.88E+01	3.40E+00	29	4.33E-07	4.57E-07	6.88E-03	7.93E+00	2.43E-02	6.77E-01
2034	2.00E-04	-9.07E-02	1.97E+01	3.50E+00	28	4.57E-07	4.69E-07	7.08E-03	7.95E+00	1.15E-02	6.47E-01
2063	2.30E-04	-1.07E-01	2.06E+01	3.59E+00	27	4.81E-07	5.05E-07	8.78E-03	9.15E+00	2.19E-02	7.48E-01
2093	3.30E-04	-1.59E-01	2.16E+01	3.69E+00	26	4.45E-07	4.69E-07	1.36E-02	1.53E+01	2.36E-02	1.23E+00
2123	3.00E-04	-1.29E-01	2.25E+01	3.78E+00	25	3.85E-07	4.33E-07	1.19E-02	1.45E+01	5.45E-02	1.22E+00
2155	4.20E-04	-1.84E-01	2.36E+01	3.89E+00	24	3.97E-07	4.45E-07	1.79E-02	2.12E+01	5.30E-02	1.75E+00
2183	4.80E-04	-2.15E-01	2.45E+01	3.98E+00	23	4.09E-07	4.33E-07	2.19E-02	2.66E+01	2.57E-02	2.04E+00
2213	4.50E-04	-1.72E-01	2.55E+01	4.08E+00	22	4.09E-07	4.57E-07	1.88E-02	2.17E+01	5.13E-02	1.72E+00
2242	6.00E-04	-2.50E-01	2.66E+01	4.18E+00	21	4.69E-07	4.93E-07	2.81E-02	3.00E+01	2.24E-02	2.20E+00
2269	7.80E-04	-3.38E-01	2.76E+01	4.27E+00	20	5.29E-07	5.53E-07	3.93E-02	3.75E+01	1.98E-02	2.69E+00
2298	8.40E-04	-3.77E-01	2.87E+01	4.37E+00	19	4.09E-07	4.57E-07	4.56E-02	5.26E+01	5.10E-02	3.97E+00
2325	9.90E-04	-4.11E-01	2.97E+01	4.46E+00	18	4.33E-07	4.57E-07	5.20E-02	5.99E+01	2.41E-02	4.21E+00
2356	1.14E-03	-4.77E-01	3.10E+01	4.56E+00	17	4.57E-07	4.93E-07	6.32E-02	6.75E+01	3.42E-02	4.76E+00
2385	1.14E-03	-4.87E-01	3.21E+01	4.66E+00	16	4.33E-07	4.69E-07	6.72E-02	7.54E+01	3.61E-02	5.26E+00
2414	1.29E-03	-5.15E-01	3.32E+01	4.76E+00	15	3.97E-07	4.45E-07	7.42E-02	8.78E+01	5.25E-02	6.24E+00
2441	1.29E-03	-5.12E-01	3.43E+01	4.86E+00	14	4.45E-07	4.81E-07	7.69E-02	9.41E+01	3.52E-02	5.67E+00
2469	1.47E-03	-5.94E-01	3.56E+01	4.95E+00	13	4.45E-07	4.69E-07	9.25E-02	1.04E+02	2.34E-02	6.73E+00
2481	1.56E-03	-6.31E-01	3.67E+01	5.04E+00	12	4.33E-07	4.57E-07	9.97E-02	1.15E+02	2.35E-02	7.41E+00
2540	1.68E-03	-6.24E-01	3.92E+01	5.25E+00	11	4.45E-07	4.69E-07	1.09E-01	1.22E+02	2.28E-02	7.65E+00
2570	1.77E-03	-6.78E-01	4.06E+01	5.35E+00	10	4.57E-07	4.93E-07	1.23E-01	1.31E+02	3.34E-02	8.25E+00
2598	1.65E-03	-6.48E-01	4.20E+01	5.46E+00	9	4.21E-07	4.57E-07	1.21E-01	1.40E+02	3.61E-02	8.72E+00
2626	1.71E-03	-6.01E-01	4.33E+01	5.56E+00	8	4.33E-07	4.81E-07	1.18E-01	1.29E+02	4.69E-02	8.13E+00
2653	1.89E-03	-6.98E-01	4.46E+01	5.65E+00	7	5.29E-07	5.77E-07	1.40E-01	1.28E+02	3.84E-02	7.81E+00
2680	1.59E-03	-6.06E-01	4.58E+01	5.75E+00	5	4.33E-07	4.81E-07	1.25E-01	1.37E+02	4.70E-02	8.41E+00
2704	1.26E-03	-4.31E-01	4.73E+01	5.79E+00	55	3.73E-07	4.57E-07	9.44E-02	1.09E+02	9.59E-02	7.28E+00
2707	1.80E-03	-6.17E-01	4.73E+01	5.85E+00	5	4.33E-07	4.81E-07	1.35E-01	1.48E+02	4.69E-02	8.97E+00
2735	1.50E-03	-5.33E-01	4.87E+01	5.95E+00	4	4.45E-07	5.17E-07	1.20E-01	1.22E+02	6.84E-02	7.64E+00
2740	1.53E-03	-5.52E-01	4.91E+01	5.91E+00	57	4.33E-07	4.81E-07	1.25E-01	1.37E+02	4.72E-02	8.15E+00
2762	1.23E-03	-4.48E-01	5.01E+01	6.05E+00	3	4.09E-07	4.45E-07	1.04E-01	1.23E+02	3.72E-02	7.09E+00
2801	9.30E-04	-2.48E-01	5.21E+01	6.19E+00	2	3.97E-07	4.33E-07	6.42E-02	7.81E+01	3.83E-02	4.44E+00
2827	9.60E-04	-3.32E-01	5.35E+01	6.30E+00	1	4.09E-07	4.81E-07	8.30E-02	9.09E+01	7.43E-02	5.51E+00
2977	6.30E-04	-2.24E-01	6.22E+01	6.78E+00	55	5.77E-07	7.09E-07	6.66E-02	4.95E+01	9.73E-02	2.92E+00

TABLE B-XXV. EXPERIMENTAL DATA (RUN NO. 12.01) FOR NITRIC OXIDE AT DIFFERENT TUNGSTEN TEMPERATURES.

TS	DI	DT	V	I	SQ.	p_{NO} (Fil. On)	p_{NO} (Fil. Off)	p_{O_2} (Fil. On)	p_{N_2} (Fil. On)
892	4.60E-03	-5.40E+00	1.56E+00	6.10E-01	20	2.72E-05	2.72E-05	6.50E-09	1.44E-09
1151	5.00E-04	-3.95E-01	3.92E+00	1.07E+00	30	5.68E-07	5.68E-07	1.50E-09	1.16E-09
1405	7.50E-04	-4.15E-01	7.75E+00	1.63E+00	19	1.19E-06	1.19E-06	3.00E-09	2.16E-09
1557	6.80E-04	-4.09E-01	1.10E+01	2.02E+00	22	1.75E-05	1.75E-05	4.00E-09	4.47E-09
1566	4.20E-04	-2.56E-01	1.12E+01	2.04E+00	18	1.14E-06	1.14E-05	3.50E-09	4.45E-09
1622	1.60E-04	-8.62E-02	1.26E+01	2.19E+00	31	7.23E-07	7.23E-07	1.50E-09	6.00E-09
1659	4.50E-04	-2.56E-01	1.36E+01	2.29E+00	17	1.97E-05	1.97E-06	5.00E-09	1.27E-08
1670	4.70E-04	-2.72E-01	1.38E+01	2.32E+00	21	2.08E-05	2.08E-06	5.50E-09	1.56E-08
1685	1.00E-04	-5.92E-02	1.42E+01	2.36E+00	23	1.05E-06	1.05E-06	2.00E-09	1.32E-08
1743	2.20E-04	-1.16E-01	1.58E+01	2.52E+00	29	2.00E-05	2.01E-05	4.00E-09	2.90E-08
1748	4.50E-04	-2.40E-01	1.60E+01	2.54E+00	24	2.49E-06	2.58E-06	6.00E-09	3.99E-08
1817	1.60E-04	-7.76E-02	1.81E+01	2.74E+00	25	2.00E-05	2.10E-05	4.50E-09	6.39E-08
1847	5.00E-05	-2.53E-02	1.90E+01	2.83E+00	16	1.31E-06	1.34E-06	4.00E-09	5.47E-08
1857	2.00E-04	-1.03E-01	1.94E+01	2.86E+00	26	1.16E-06	1.26E-06	1.00E-09	5.90E-08
1888	1.70E-04	-9.07E-02	2.06E+00	2.95E+00	32	1.71E-06	1.83E-06	5.00E-09	9.59E-08
1889	3.50E-04	-1.87E-01	2.06E+01	2.95E+00	33	2.50E-06	2.82E-05	5.50E-09	1.31E-07
1901	7.00E-05	-2.75E-02	2.09E+01	2.99E+00	27	1.53E-06	1.77E-05	3.50E-09	9.71E-08
1924	1.40E-04	-6.57E-02	2.16E+01	3.05E+00	15	1.57E-05	1.91E-06	5.00E-09	1.18E-07
1937	1.90E-04	-9.12E-02	2.22E+01	3.09E+00	28	1.58E-06	1.82E-05	3.50E-09	1.19E-07
2008	1.80E-04	-8.55E-02	2.46E+01	3.31E+00	14	5.35E-07	6.81E-07	5.50E-09	6.81E-08
2081	2.70E-04	-1.32E-01	2.75E+01	3.54E+00	13	1.45E-07	2.08E-07	8.50E-09	3.09E-08
2146	4.80E-04	-2.15E-01	3.01E+01	3.74E+00	12	1.27E-07	2.01E-07	1.35E-08	3.36E-08
2207	4.30E-04	-1.59E-01	3.28E+01	3.94E+00	11	1.83E-07	3.10E-07	2.40E-08	5.52E-08
2219	6.00E-04	-2.44E-01	3.39E+01	3.97E+00	34	7.95E-07	1.17E-05	3.50E-08	1.75E-07
2268	6.00E-04	-2.68E-01	3.57E+01	4.14E+00	10	1.45E-07	2.70E-07	3.00E-08	5.70E-08
2352	7.80E-04	-3.36E-01	3.98E+01	4.41E+00	9	1.33E-07	2.73E-07	4.05E-08	6.59E-08
2412	1.02E-03	-4.22E-01	4.29E+01	4.61E+00	8	7.47E-08	1.70E-07	3.30E-08	5.11E-08
2426	1.65E-03	-6.81E-01	4.36E+01	4.60E+00	36	1.01E-06	1.84E-05	1.63E-07	3.70E-07
2519	8.40E-04	-3.17E-01	4.88E+01	4.97E+00	7	7.01E-08	1.94E-07	3.90E-08	6.28E-08
2524	1.50E-03	-5.69E-01	5.01E+01	4.99E+00	35	4.52E-07	1.05E-05	1.55E-07	8.29E-08
2563	8.70E-04	-3.45E-01	5.13E+01	5.12E+00	6	8.69E-08	2.57E-07	5.10E-08	8.42E-08
2607	7.00E-04	-2.23E-01	5.39E+01	5.27E+00	5	5.49E-08	1.88E-07	3.90E-08	6.78E-08
2649	6.80E-04	-2.60E-01	5.66E+01	5.42E+00	4	5.10E-08	2.19E-07	4.35E-08	7.91E-08
2689	4.00E-04	-1.60E-01	5.90E+01	5.56E+00	3	5.08E-08	1.88E-07	3.90E-08	7.02E-08
2728	1.62E-03	-6.04E-01	6.18E+01	5.62E+00	37	3.56E-07	1.03E-05	2.02E-07	3.32E-07
2732	4.60E-04	-1.70E-01	6.18E+01	5.71E+00	2	6.00E-08	2.13E-07	4.50E-08	8.18E-08
2760	1.26E-03	-4.83E-01	6.39E+01	5.72E+00	38	3.38E-07	3.56E-07	2.26E-07	3.46E-07
2791	1.92E-03	-7.56E-01	6.60E+01	5.82E+00	39	4.34E-07	1.37E-06	2.62E-07	4.45E-07
2797	3.60E-04	-1.42E-01	6.64E+01	5.85E+00	1	5.08E-08	1.88E-07	3.90E-08	7.36E-08
2823	1.14E-03	-4.15E-01	6.83E+01	5.94E+00	40	1.93E-07	3.15E-07	1.79E-07	3.09E-07

TS	DW	DQ	EPSYLON	R_{32}	R_{28}
892	1.29E-02	2.41E+00	0.	0.	0.
1151	3.10E-03	2.79E+00	0.	0.	0.
1405	7.95E-03	3.42E+00	0.	0.	0.
1557	1.13E-02	3.30E+00	0.	0.	0.
1566	7.27E-03	3.25E+00	0.	0.	0.
1622	2.88E-03	2.03E+00	0.	0.	0.
1659	9.23E-03	2.39E+00	0.	0.	0.
1670	1.00E-02	2.46E+00	0.	0.	0.
1685	2.25E-03	1.09E+00	0.	0.	0.
1743	5.16E-03	1.31E+00	8.06E-04	7.98E-04	6.18E-03
1748	1.08E-02	2.12E+00	6.14E-03	9.29E-04	6.60E-03
1817	4.02E-03	9.75E-01	8.42E-03	8.39E-04	1.27E-02
1847	1.38E-03	5.25E-01	5.17E-02	1.16E-03	2.00E-02
1857	5.72E-03	2.31E+00	1.40E-02	3.08E-04	1.94E-02
1888	5.34E-03	1.49E+00	1.13E-01	1.05E-03	2.15E-02
1889	1.10E-02	1.99E+00	1.31E-02	7.50E-04	1.90E-02
1901	1.78E-03	5.12E-01	2.47E-02	7.58E-04	2.25E-02
1924	4.26E-03	1.14E+00	2.23E-02	9.98E-04	2.51E-02
1937	6.05E-03	1.70E+00	2.37E-02	7.32E-04	2.65E-02
2008	6.35E-03	4.75E+00	4.29E-02	3.01E-03	3.99E-02
2081	1.11E-02	2.72E+01	6.89E-02	1.50E-02	5.80E-02
2146	2.07E-02	5.25E+01	9.24E-02	2.43E-02	6.46E-02
2207	1.75E-02	2.88E+01	1.09E-01	2.76E-02	6.78E-02
2219	2.67E-02	1.16E+01	7.31E-02	1.06E-02	5.67E-02
2268	3.12E-02	5.89E+01	1.35E-01	3.90E-02	7.92E-02
2352	4.43E-02	8.26E+01	1.66E-01	5.11E-02	9.02E-02
2412	6.06E-02	1.81E+02	2.00E-01	6.60E-02	1.09E-01
2426	1.00E-01	2.77E+01	1.30E-01	3.00E-02	7.29E-02
2519	5.40E-02	1.42E+02	2.76E-01	6.69E-02	1.15E-01
2524	9.77E-02	4.72E+01	2.04E-01	4.88E-02	2.80E-02
2563	6.19E-02	1.23E+02	3.05E-01	6.56E-02	1.16E-01
2607	4.41E-02	1.20E+02	3.77E-01	6.81E-02	1.26E-01
2649	5.21E-02	1.22E+02	4.03E-01	6.47E-02	1.26E-01
2689	3.34E-02	9.06E+01	4.22E-01	6.69E-02	1.29E-01
2728	1.35E-01	6.69E+01	2.98E-01	6.28E-02	1.10E-01
2732	3.81E-02	9.11E+01	4.00E-01	6.74E-02	1.31E-01
2760	1.12E-01	1.56E+02	1.30E-02	1.97E-01	3.22E-01
2791	1.81E-01	6.72E+01	3.41E-01	6.04E-02	1.10E-01
2797	3.43E-02	9.29E+01	4.26E-01	6.56E-02	1.32E-01
2823	1.04E-01	1.68E+02	9.96E-02	1.78E-01	3.30E-01

TABLE B-XXVI. EXPERIMENTAL DATA (RUN NO. 11.01) FOR NITROUS OXIDE AT DIFFERENT TUNGSTEN TEMPERATURES.

TS	DI	DT	V	I	SQ.	P_{N_2O} (Fil. On)	P_{N_2O} (Fil. Off)	P_{O_2} (Fil. On)	P_{N_2} (Fil. on)
1185	5.30E-04	-4.46E-01	4.26E+00	1.15E+00	21	5.65E-07	5.67E-07	0.	-4.89E-02
1381	3.60E-04	-2.54E-01	7.25E+00	1.59E+00	20	5.99E-07	6.00E-07	0.	-5.19E-02
1521	3.70E-04	-2.07E-01	1.01E+01	1.94E+00	19	9.18E-07	9.20E-07	0.	-7.26E-02
1622	2.10E-04	-1.12E-01	1.24E+01	2.21E+00	18	8.99E-07	9.00E-07	0.	-7.03E-02
1825	2.20E-04	-1.07E-01	1.81E+01	2.78E+00	17	5.11E-07	5.12E-07	0.	-3.16E-02
1949	3.00E-04	-1.45E-01	2.22E+01	3.16E+00	16	6.18E-07	6.19E-07	5.07E-10	-3.06E-02
1975	2.30E-04	-1.15E-01	2.32E+01	3.24E+00	22	5.01E-07	5.03E-07	5.07E-10	-2.95E-02
2043	2.60E-04	-1.21E-01	2.58E+01	3.45E+00	15	4.07E-07	4.24E-07	1.01E-09	2.84E-09
2106	2.10E-04	-9.80E-02	2.83E+01	3.65E+00	23	5.47E-07	5.56E-07	1.01E-09	8.96E-09
2136	2.80E-04	-1.24E-01	2.96E+01	3.74E+00	14	5.18E-07	5.59E-07	3.55E-09	1.28E-08
2196	2.50E-04	-1.16E-01	3.21E+01	3.93E+00	13	3.80E-07	3.84E-07	4.06E-09	1.87E-08
2240	4.30E-04	-1.83E-01	3.41E+01	4.08E+00	24	1.31E-06	1.41E-06	6.09E-09	-1.63E-01
2253	3.20E-04	-1.39E-01	3.48E+01	4.12E+00	12	4.06E-07	4.30E-07	7.61E-09	3.19E-08
2312	4.20E-04	-1.84E-01	3.76E+01	4.32E+00	11	3.47E-07	3.83E-07	1.01E-08	4.92E-08
2368	6.00E-04	-2.59E-01	4.04E+01	4.51E+00	10	2.48E-07	3.07E-07	1.27E-08	6.31E-08
2386	7.50E-04	-3.28E-01	4.16E+01	4.56E+00	25	1.82E-07	2.35E-07	1.17E-08	6.80E-08
2418	6.30E-04	-2.55E-01	4.31E+01	4.67E+00	9	2.24E-07	2.91E-07	1.62E-08	7.75E-08
2473	7.50E-04	-3.11E-01	4.60E+01	4.86E+00	8	1.88E-07	2.77E-07	1.93E-08	9.71E-08
2529	8.70E-04	-3.30E-01	4.91E+01	5.05E+00	7	1.59E-07	2.53E-07	2.08E-08	1.06E-07
2541	1.05E-03	-4.03E-01	4.98E+01	5.08E+00	26	2.06E-07	3.35E-07	2.84E-08	1.41E-07
2555	9.90E-04	-3.86E-01	5.07E+01	5.14E+00	27	1.59E-07	2.65E-07	2.54E-08	1.30E-07
2583	7.80E-04	-3.12E-01	5.23E+01	5.24E+00	6	1.48E-07	2.59E-07	2.43E-08	1.26E-07
2606	9.00E-04	-2.79E-01	5.37E+01	5.31E+00	28	1.47E-07	2.71E-07	2.89E-08	1.50E-07
2608	3.10E-04	-9.92E-02	5.37E+01	5.38E+00	1	1.12E-07	2.50E-07	2.99E-08	1.64E-07
2633	6.50E-04	-2.40E-01	5.53E+01	5.41E+00	5	1.06E-07	2.06E-07	2.18E-08	1.15E-07
2684	7.20E-04	-2.85E-01	5.84E+01	5.58E+00	29	1.35E-07	2.88E-07	3.20E-08	1.70E-07
2687	3.70E-04	-1.46E-01	5.87E+01	5.60E+00	4	6.47E-08	1.35E-07	1.57E-08	8.69E-08
2718	5.40E-04	-1.95E-01	6.07E+01	5.70E+00	30	1.39E-07	2.88E-07	3.50E-08	1.78E-07
2738	4.80E-04	-1.77E-01	6.20E+01	5.78E+00	3	1.17E-07	2.41E-07	2.69E-08	1.53E-07
2791	8.40E-04	-3.23E-01	6.64E+01	5.96E+00	2	2.24E-07	4.71E-07	4.87E-08	2.88E-07

TS	DW	DQ	EPSYLON	R_{32}	R_{28}
1185	3.90E-03	4.25E+00	6.02E-04	0.	0.
1381	4.30E-03	4.43E+00	5.53E-04	0.	0.
1521	5.31E-03	3.56E+00	3.56E-04	0.	0.
1622	3.74E-03	2.56E+00	3.63E-04	0.	0.
1825	5.63E-03	6.78E+00	2.11E-04	0.	0.
1949	9.81E-03	9.79E+00	1.74E-04	3.76E-04	0.
1975	8.14E-03	9.99E+00	8.55E-04	4.59E-04	0.
2043	9.63E-03	1.40E+01	7.34E-03	1.07E-03	3.21E-03
2106	8.70E-03	9.66E+00	2.92E-03	8.05E-04	7.60E-03
2136	1.17E-02	1.29E+01	1.44E-02	2.78E-03	1.07E-02
2196	1.20E-02	1.94E+01	1.96E-03	4.57E-03	2.25E-02
2240	2.05E-02	8.94E+00	1.47E-02	1.84E-03	0.
2253	1.58E-02	2.28E+01	1.05E-02	7.55E-03	3.39E-02
2312	2.27E-02	3.66E+01	1.83E-02	1.12E-02	5.78E-02
2368	3.49E-02	7.03E+01	4.29E-02	1.72E-02	9.15E-02
2386	4.53E-02	1.19E+02	5.27E-02	2.05E-02	1.28E-01
2418	3.71E-02	7.85E+01	5.39E-02	2.29E-02	1.17E-01
2473	4.87E-02	1.09E+02	8.43E-02	2.84E-02	1.53E-01
2529	5.69E-02	1.39E+02	1.07E-01	3.31E-02	1.80E-01
2541	7.06E-02	1.30E+02	1.13E-01	3.40E-02	1.80E-01
2555	6.86E-02	1.60E+02	1.20E-01	3.84E-02	2.10E-01
2583	5.73E-02	1.37E+02	1.35E-01	3.74E-02	2.07E-01
2606	5.54E-02	1.26E+02	1.51E-01	4.24E-02	2.35E-01
2608	1.95E-02	4.82E+01	2.18E-01	4.74E-02	2.78E-01
2633	4.73E-02	1.42E+02	1.70E-01	4.18E-02	2.35E-01
2684	5.92E-02	1.27E+02	2.04E-01	4.33E-02	2.45E-01
2687	3.05E-02	1.39E+02	1.96E-01	4.54E-02	2.68E-01
2718	4.32E-02	9.24E+01	1.92E-01	4.71E-02	2.57E-01
2738	3.99E-02	1.02E+02	1.90E-01	4.31E-02	2.62E-01
2791	7.73E-02	1.01E+02	1.95E-01	3.96E-02	2.50E-01

TABLE C-I. EXPERIMENTAL DATA (RUN NO. 18.02) FOR NEON-KEYPTON MIXTURE AT TS=2142, V=28.55, I=4.28, and ALPHA(NEON)=5.49×10^{-2}, ALPHA(KRYPTON)=6.64×10^{-1} AVERAGE RELATIVE STANDARD DEVIATION=4.452×10^{-1}.

y_{Kr}	p_{Ne}	p_{Kr}	DI	DW	DW/p (EXP.)	DW/p (CAL.)	REL.DEV	DT	SQ.
3.74E-03	2.21E-05	8.30E-08	1.08E-03	4.01E-02	1.81E+03	9.80E+02	8.43E-01	-4.20E-01	50
8.09E-03	3.12E-05	2.54E-07	1.70E-03	6.31E-02	2.01E+03	1.00E+03	1.01E+00	-6.61E-01	53
8.30E-03	3.52E-05	2.95E-07	1.89E-03	7.02E-02	1.98E+03	1.00E+03	9.74E-01	-7.35E-01	52
9.15E-03	2.51E-05	2.32E-07	1.20E-03	4.46E-02	1.76E+03	1.01E+03	7.47E-01	-4.67E-01	47
9.38E-03	2.26E-05	2.14E-07	1.20E-03	4.46E-02	1.95E+03	1.01E+03	9.38E-01	-4.67E-01	51
9.50E-03	2.77E-05	2.65E-07	1.40E-03	5.20E-02	1.86E+03	1.01E+03	8.49E-01	-5.45E-01	49
1.17E-02	2.26E-05	2.68E-07	1.14E-03	4.23E-02	1.85E+03	1.02E+03	8.17E-01	-4.44E-01	48
1.30E-02	4.32E-05	5.71E-07	2.30E-03	8.54E-02	1.95E+03	1.02E+03	9.03E-01	-8.95E-01	46
1.33E-02	2.51E-05	3.39E-07	1.12E-03	4.16E-02	1.63E+03	1.03E+03	5.92E-01	-4.36E-01	45
1.41E-02	4.02E-05	5.76E-07	1.95E-03	7.24E-02	1.77E+03	1.03E+03	7.24E-01	-7.59E-01	44
1.53E-02	2.24E-05	3.48E-07	1.05E-03	3.90E-02	1.72E+03	1.03E+03	6.58E-01	-4.09E-01	43
1.77E-02	3.52E-05	6.34E-07	1.75E-03	6.50E-02	1.81E+03	1.05E+03	7.34E-01	-6.81E-01	42
1.89E-02	3.14E-05	6.07E-07	1.50E-03	5.57E-02	1.74E+03	1.05E+03	6.53E-01	-5.84E-01	41
1.95E-02	3.14E-05	6.25E-07	1.40E-03	5.20E-02	1.62E+03	1.05E+03	5.38E-01	-5.45E-01	40
2.25E-02	2.56E-05	5.89E-07	1.02E-03	3.79E-02	1.44E+03	1.07E+03	3.51E-01	-3.97E-01	38
2.30E-02	3.52E-05	8.30E-07	1.65E-03	6.13E-02	1.70E+03	1.07E+03	5.87E-01	-6.42E-01	37
2.32E-02	2.51E-05	5.98E-07	1.10E-03	4.09E-02	1.59E+03	1.07E+03	4.80E-01	-4.28E-01	39
2.53E-02	2.89E-05	7.50E-07	1.20E-03	4.46E-02	1.50E+03	1.08E+03	3.88E-01	-4.67E-01	34
2.65E-02	2.26E-05	6.16E-07	9.30E-04	3.45E-02	1.49E+03	1.09E+03	3.66E-01	-3.62E-01	36
3.17E-02	1.47E-05	4.82E-07	5.10E-04	1.89E-02	1.25E+03	1.11E+03	1.21E-01	-1.98E-01	35
3.43E-02	3.14E-05	1.12E-06	1.40E-03	5.20E-02	1.60E+03	1.12E+03	4.20E-01	-5.45E-01	32
3.43E-02	1.76E-05	6.25E-07	7.10E-04	2.64E-02	1.45E+03	1.12E+03	2.86E-01	-2.76E-01	33
3.70E-02	3.02E-05	1.16E-06	1.35E-03	5.01E-02	1.60E+03	1.14E+03	4.06E-01	-5.25E-01	31
3.76E-02	2.51E-05	9.82E-07	1.30E-03	4.83E-02	1.85E+03	1.14E+03	6.20E-01	-5.06E-01	30
4.03E-02	2.77E-05	1.16E-06	1.30E-03	4.83E-02	1.68E+03	1.15E+03	4.53E-01	-5.06E-01	29
4.21E-02	2.64E-05	1.16E-06	1.19E-03	4.42E-02	1.60E+03	1.16E+03	3.80E-01	-4.63E-01	28
4.52E-02	3.17E-05	1.50E-06	1.20E-03	4.46E-02	1.34E+03	1.18E+03	1.42E-01	-4.67E-01	21
4.56E-02	3.65E-05	1.74E-06	1.78E-03	6.61E-02	1.73E+03	1.18E+03	4.69E-01	-6.93E-01	27
4.63E-02	2.39E-05	1.16E-06	1.05E-03	3.90E-02	1.56E+03	1.18E+03	3.17E-01	-4.09E-01	25
4.80E-02	2.79E-05	1.41E-06	1.23E-03	4.57E-02	1.56E+03	1.19E+03	3.10E-01	-4.79E-01	24
5.18E-02	2.78E-05	1.52E-06	1.20E-03	4.46E-02	1.52E+03	1.21E+03	2.59E-01	-4.67E-01	26
5.42E-02	2.94E-05	1.69E-06	1.05E-03	3.90E-02	1.25E+03	1.22E+03	2.81E-02	-4.09E-01	20
5.60E-02	2.64E-05	1.57E-06	1.23E-03	4.57E-02	1.63E+03	1.23E+03	3.30E-01	-4.79E-01	23
5.62E-02	1.71E-05	1.02E-06	6.00E-04	2.23E-02	1.23E+03	1.23E+03	1.33E-03	-2.34E-01	1
5.92E-02	2.64E-05	1.66E-06	1.17E-03	4.34E-02	1.55E+03	1.24E+03	2.46E-01	-4.55E-01	22
5.97E-02	1.31E-05	8.30E-07	4.40E-04	1.63E-02	1.18E+03	1.25E+03	-5.62E-02	-1.71E-01	2
7.72E-02	2.11E-05	1.77E-06	1.11E-03	4.12E-02	1.80E+03	1.33E+03	3.56E-01	-4.32E-01	19
8.35E-02	2.26E-05	2.06E-06	9.00E-04	3.34E-02	1.35E+03	1.36E+03	-3.36E-03	-3.50E-01	17
8.37E-02	9.68E-06	8.84E-07	5.00E-04	1.86E-02	1.76E+03	1.36E+03	2.94E-01	-1.95E-01	65
8.87E-02	2.34E-05	2.28E-06	9.60E-04	3.57E-02	1.39E+03	1.38E+03	4.70E-03	-3.74E-01	16
9.03E-02	2.21E-05	2.20E-06	1.65E-03	6.13E-02	2.52E+03	1.39E+03	8.12E-01	-6.42E-01	63
9.57E-02	1.92E-05	2.04E-06	7.20E-04	2.67E-02	1.26E+03	1.42E+03	-1.12E-01	-2.80E-01	15
9.83E-02	2.11E-05	2.30E-06	1.20E-03	4.46E-02	1.90E+03	1.43E+03	3.32E-01	-4.67E-01	18
9.99E-02	1.21E-05	1.34E-06	6.00E-04	2.23E-02	1.66E+03	1.44E+03	1.58E-01	-2.34E-01	64
1.01E-01	2.19E-05	2.46E-06	1.02E-03	3.79E-02	1.56E+03	1.44E+03	7.91E-02	-3.97E-01	14
1.10E-01	2.39E-05	2.95E-06	1.80E-03	6.68E-02	2.49E+03	1.48E+03	6.80E-01	-7.00E-01	62
1.15E-01	1.96E-05	2.54E-06	9.30E-04	3.45E-02	1.56E+03	1.51E+03	3.45E-02	-3.62E-01	13
1.15E-01	1.01E-05	1.31E-06	4.50E-04	1.67E-02	1.47E+03	1.51E+03	-2.62E-02	-1.75E-01	3
1.23E-01	1.80E-05	2.52E-06	7.50E-04	2.79E-02	1.36E+03	1.55E+03	-1.20E-01	-2.92E-01	12
1.29E-01	2.26E-05	3.35E-06	1.75E-03	6.50E-02	2.50E+03	1.57E+03	5.90E-01	-6.81E-01	61
1.34E-01	1.61E-05	2.49E-06	7.80E-04	2.90E-02	1.56E+03	1.60E+03	-2.44E-02	-3.04E-01	11
1.49E-01	1.43E-05	2.52E-06	6.80E-04	2.53E-02	1.50E+03	1.67E+03	-1.03E-01	-2.65E-01	10
1.64E-01	9.55E-06	1.87E-06	5.50E-04	2.04E-02	1.79E+03	1.74E+03	2.70E-02	-2.14E-01	4
1.66E-01	1.89E-05	3.75E-06	1.60E-03	5.94E-02	2.63E+03	1.75E+03	5.03E-01	-6.23E-01	60
1.74E-01	1.21E-05	2.54E-06	5.90E-04	2.19E-02	1.50E+03	1.79E+03	-1.61E-01	-2.30E-01	9
1.76E-01	7.54E-06	1.61E-06	5.90E-04	2.19E-02	2.40E+03	1.80E+03	3.34E-01	-2.30E-01	66
1.92E-01	1.11E-05	2.62E-06	6.00E-04	2.23E-02	1.63E+03	1.87E+03	-1.30E-01	-2.34E-01	8
2.09E-01	9.80E-06	2.60E-06	6.20E-04	2.30E-02	1.86E+03	1.96E+03	-5.08E-02	-2.41E-01	5
2.11E-01	1.57E-05	4.20E-06	1.45E-03	5.38E-02	2.70E+03	1.96E+03	3.78E-01	-5.64E-01	59
2.44E-01	9.80E-06	3.17E-06	7.10E-04	2.64E-02	2.03E+03	2.12E+03	-4.18E-02	-2.76E-01	7
2.57E-01	8.55E-06	2.95E-06	7.00E-04	2.60E-02	2.26E+03	2.18E+03	3.63E-02	-2.72E-01	6
2.62E-01	5.03E-06	1.79E-06	4.30E-04	1.60E-02	2.34E+03	2.21E+03	6.29E-02	-1.67E-01	67
2.77E-01	1.23E-05	4.73E-06	1.40E-03	5.20E-02	3.05E+03	2.28E+03	3.38E-01	-5.45E-01	58
3.06E-01	4.65E-06	2.05E-06	4.80E-04	1.78E-02	2.66E+03	2.42E+03	1.01E-01	-1.87E-01	68
3.41E-01	9.30E-06	4.82E-06	1.13E-03	4.20E-02	2.97E+03	2.58E+03	1.51E-01	-4.40E-01	57
3.95E-01	3.82E-06	2.50E-06	5.90E-04	2.19E-02	3.47E+03	2.84E+03	2.21E-01	-2.30E-01	69
5.01E-01	4.27E-06	4.28E-06	8.00E-04	2.97E-02	3.47E+03	3.34E+03	4.01E-02	-3.11E-01	56
5.13E-01	2.97E-06	3.12E-06	6.00E-04	2.23E-02	3.66E+03	3.40E+03	7.73E-02	-2.34E-01	70
5.86E-01	2.72E-06	3.84E-06	6.40E-04	2.38E-02	3.63E+03	3.74E+03	-3.06E-02	-2.49E-01	71
6.03E-01	3.52E-06	5.36E-06	1.00E-03	3.71E-02	4.18E+03	3.83E+03	9.37E-02	-3.89E-01	55
7.13E-01	2.26E-06	5.62E-06	1.20E-03	4.46E-02	5.65E+03	4.35E+03	3.00E-01	-4.67E-01	54
7.14E-01	1.43E-06	3.57E-06	5.00E-04	1.86E-02	3.71E+03	4.35E+03	-1.46E-01	-1.95E-01	72
8.24E-01	6.28E-07	2.95E-06	5.00E-04	1.86E-02	5.20E+03	4.87E+03	6.62E-02	-1.95E-01	73

TABLE C-II. EXPERIMENTAL DATA (RUN NO. 16.04) FOR ARGON-OXYGEN MIXTURE AT TS=1740, V=12.35, I=2.528, ALPHA(ARGON)=5.92×10^{-1}, A2(OXYGEN)=5.261×10^{-2} B2(OXYGEN)=-1.695, AVERAGE RELATIVE STANDARD DEVIATION=1.320.

yO_2	p_A	pO_2	DI	DW	DW/p (EXP)	DW/p (CAL)	REL.DEV	DT	SQ.
9.10E-03	6.13E-06	5.63E-08	8.70E-04	2.01E-02	3.25E+03	4.36E+03	-2.54E-01	-4.56E-01	11
1.17E-02	4.75E-06	5.63E-08	5.60E-04	1.30E-02	2.70E+03	3.95E+03	-3.18E-01	-2.94E-01	10
2.22E-02	1.86E-06	4.22E-08	-1.00E-04	-2.31E-03	-1.22E+03	1.30E+03	-1.94E+00	5.25E-02	7
3.73E-02	2.91E-06	1.13E-07	2.20E-04	5.09E-03	1.69E+03	2.67E+03	-3.70E-01	-1.15E-01	8
3.94E-02	1.29E-06	5.28E-08	-1.90E-04	-4.40E-03	-3.29E+03	-7.00E+02	3.69E+00	9.97E-02	6
4.17E-02	2.67E-06	1.16E-07	3.50E-04	8.10E-03	2.91E+03	2.40E+03	2.10E-01	-1.84E-01	9
7.99E-02	8.51E-07	7.39E-08	-2.40E-04	-5.56E-03	-6.01E+03	-3.89E+03	5.45E-01	1.26E-01	5
1.11E-01	8.71E-07	1.09E-07	-2.70E-04	-6.25E-03	-6.38E+03	-3.73E+03	7.09E-01	1.42E-01	4
1.73E-01	5.40E-07	1.13E-07	-3.00E-04	-6.95E-03	-1.06E+04	-8.55E+03	2.45E-01	1.57E-01	3
2.40E-01	4.45E-07	1.41E-07	-3.60E-04	-8.34E-03	-1.42E+04	-1.06E+04	3.38E-01	1.89E-01	2
3.43E-01	4.93E-07	2.57E-07	-4.50E-04	-1.04E-02	-1.39E+04	-8.32E+03	6.71E-01	2.36E-01	1

TABLE C-III. EXPERIMENTAL DATA (RUN NO. 16.06) FOR ARGON-OXYGEN MIXTURE AT TS=2203, V=25.98, I=3.902, ALPHA (ARGON)=6.17×10^{-1}. A2(OXYGEN)=1.748×10^{-1} B2(OXYGEN)=-6.325×10^{-1}, AVERAGE RELATIVE STANDARD DEVIATION=1.932×10^{-1}

yO_2	p_A	pO_2	DI	DW	DW/p (EXP)	DW/p (CAL)	REL.DEV	DT	SQ.
4.26E-02	7.12E-07	3.17E-08	4.50E-04	1.63E-02	2.19E+04	2.29E+04	-4.62E-02	-1.43E-01	12
1.09E-01	5.16E-07	6.33E-08	6.00E-04	2.17E-02	3.74E+04	2.93E+04	2.78E-01	-1.91E-01	13
1.32E-01	6.93E-07	1.06E-07	6.80E-04	2.46E-02	3.08E+04	2.45E+04	2.56E-01	-2.16E-01	3
1.69E-01	2.26E-07	4.57E-08	4.50E-04	1.63E-02	5.99E+04	5.14E+04	1.66E-01	-1.43E-01	10
1.94E-01	7.32E-08	1.76E-08	2.90E-04	1.05E-02	1.15E+05	1.20E+05	-3.53E-02	-9.23E-02	9
2.14E-01	1.68E-07	4.57E-08	4.80E-04	1.73E-02	8.11E+04	5.30E+04	2.86E-01	-1.53E-01	11
2.29E-01	3.56E-07	1.06E-07	5.30E-04	1.92E-02	4.15E+04	3.66E+04	1.34E-01	-1.69E-01	2
2.97E-01	1.25E-07	5.28E-08	4.80E-04	1.73E-02	9.78E+04	7.58E+04	2.90E-01	-1.53E-01	7
3.18E-01	2.49E-07	1.16E-07	5.50E-04	1.99E-02	5.44E+04	4.46E+04	2.21E-01	-1.75E-01	8
4.26E-01	2.14E-07	1.58E-07	5.70E-04	2.06E-02	5.54E+04	4.51E+04	2.27E-01	-1.81E-01	1
5.07E-01	1.78E-07	1.83E-07	4.70E-04	1.70E-02	4.70E+04	4.68E+04	5.19E-03	-1.50E-01	6
6.21E-01	2.57E-08	4.22E-08	3.90E-04	1.41E-02	2.07E+05	1.79E+05	1.56E-01	-1.24E-01	5
7.36E-01	5.54E-08	1.55E-07	4.50E-04	1.63E-02	7.74E+04	7.36E+04	5.07E-02	-1.43E-01	4

TABLE C-IV. EXPERIMENTAL DATA (RUN NO. 16.02) FOR ARGON-OXYGEN MIXTURE AT
TS=2522, V=38.75, I=5.057, ALPHA(ARGON)=4.93x10^{-1}, A2(OXYGEN)=4.609x10^{-1}
B2(OXYGEN)=2.104, AVERAGE RELATIVE STANDARD DEVIATION=1.20x10^{-1}

y_{O_2}	p_A	p_{O_2}	DI	DW	DW/p (EXP)	DW/p (CAL)	REL.DEV	DT	SQ.
1.20E-03	8.80E-06	1.06E-08	1.38E-03	8.82E-02	1.00E+04	1.04E+04	-4.15E-02	-5.15E-01	16
2.42E-03	8.71E-06	2.11E-08	1.83E-03	1.17E-01	1.34E+04	1.16E+04	1.54E-01	-6.83E-01	15
5.61E-03	3.74E-06	2.11E-08	7.80E-04	4.98E-02	1.33E+04	1.72E+04	-2.28E-01	-2.91E-01	14
7.31E-03	5.74E-06	4.22E-08	1.62E-03	1.04E-01	1.79E+04	1.61E+04	1.10E-01	-6.04E-01	11
1.19E-02	6.73E-06	8.09E-08	1.80E-03	1.15E-01	1.69E+04	1.74E+04	-2.81E-02	-6.71E-01	12
1.54E-02	8.31E-06	1.30E-07	2.07E-03	1.32E-01	1.57E+04	1.74E+04	-9.93E-02	-7.72E-01	13
2.36E-02	3.21E-06	7.74E-08	1.44E-03	9.20E-02	2.80E+04	2.77E+04	1.28E-02	-5.37E-01	8
2.61E-02	4.99E-06	1.34E-07	1.89E-03	1.21E-01	2.36E+04	2.41E+04	-2.04E-02	-7.05E-01	10
3.30E-02	2.37E-06	8.09E-08	1.25E-03	7.99E-02	3.25E+04	3.51E+04	-7.22E-02	-4.65E-01	7
5.14E-02	2.08E-06	1.13E-07	1.26E-03	8.05E-02	3.68E+04	4.34E+04	-1.54E-01	-4.70E-01	6
5.15E-02	1.88E-06	1.02E-07	1.50E-03	9.58E-02	4.84E+04	4.55E+04	6.32E-02	-5.60E-01	5
5.22E-02	2.49E-06	1.37E-07	1.50E-03	9.58E-02	3.64E+04	4.02E+04	-9.45E-02	-5.60E-01	9
6.90E-02	1.19E-06	8.80E-08	1.20E-03	7.67E-02	6.01E+04	5.27E+04	-4.12E-02	-4.48E-01	4
1.75E-01	8.31E-07	1.76E-07	1.41E-03	9.01E-02	8.95E+04	1.03E+05	-1.35E-01	-5.26E-01	3
3.16E-01	4.04E-07	1.87E-07	1.29E-03	8.24E-02	1.40E+05	1.76E+05	-2.05E-01	-4.81E-01	2
4.33E-01	2.26E-07	1.72E-07	1.29E-03	8.24E-02	2.07E+05	2.48E+05	-1.65E-01	-4.81E-01	1

TABLE C-V. EXPERIMENTAL DATA (RUN NO. 16.07) FOR ARGON-OXYGEN MIXTURE AT
TS=2528, V=39.25, I=4.960, ALPHA(ARGON)=4.93x10^{-1}, A2(OXYGEN)=4.609x10^{-1}
B2(OXYGEN)=2.104, AVERAGE RELATIVE STANDARD DEVIATION=1.283x10^{-1}

y_{O_2}	p_A	p_{O_2}	DI	DW	DW/p (EXP)	DW/p (CAL)	REL.DEV	DT	SQ.
5.11E-02	4.57E-07	2.46E-08	6.60E-04	4.37E-02	9.08E+04	8.92E+04	1.77E-02	-2.54E-01	24
1.06E-01	3.86E-07	4.57E-08	6.60E-04	4.37E-02	1.01E+05	1.29E+05	-2.12E-01	-2.54E-01	21
1.17E-01	6.93E-07	9.15E-08	1.05E-03	6.96E-02	8.88E+04	9.90E+04	-1.04E-01	-4.04E-01	25
1.18E-01	7.91E-07	1.06E-07	1.05E-03	6.96E-02	7.76E+04	9.29E+04	-1.65E-01	-4.04E-01	22
1.18E-01	3.15E-07	4.22E-08	7.80E-04	5.17E-02	1.45E+05	1.49E+05	-2.63E-02	-3.00E-01	23
1.33E-01	5.76E-07	8.80E-08	9.30E-04	6.16E-02	9.29E+04	1.14E+05	-1.83E-01	-3.58E-01	20
1.41E-01	1.29E-07	2.11E-08	7.20E-04	4.77E-02	3.19E+05	2.53E+05	2.61E-01	-2.77E-01	11
1.47E-01	2.85E-07	4.93E-08	8.10E-04	5.37E-02	1.61E+05	1.69E+05	-5.17E-02	-3.12E-01	19
1.65E-01	4.10E-07	8.09E-08	1.05E-03	6.96E-02	1.42E+05	1.46E+05	-2.74E-02	-4.04E-01	16
1.80E-01	5.46E-07	1.20E-07	1.02E-03	6.76E-02	1.02E+05	1.29E+05	-2.15E-01	-3.92E-01	18
1.80E-01	1.44E-07	3.17E-08	6.20E-04	4.11E-02	2.33E+05	2.59E+05	-9.73E-02	-2.38E-01	13
1.86E-01	2.31E-07	5.28E-08	6.90E-04	4.57E-02	1.61E+05	2.04E+05	-2.11E-01	-2.65E-01	14
1.93E-01	3.68E-07	8.80E-08	9.60E-04	6.36E-02	1.40E+05	1.62E+05	-1.39E-01	-3.69E-01	17
1.93E-01	2.79E-07	6.69E-08	7.80E-04	5.17E-02	1.49E+05	1.87E+05	-2.02E-01	-3.00E-01	15
2.12E-01	1.96E-07	5.28E-08	8.40E-04	5.57E-02	2.24E+05	2.32E+05	-3.53E-02	-3.23E-01	12
2.46E-01	9.70E-08	3.17E-08	6.60E-04	4.37E-02	3.40E+05	3.51E+05	-3.16E-02	-2.54E-01	10
3.47E-01	1.13E-07	5.98E-08	9.30E-04	6.16E-02	3.57E+05	3.50E+05	1.99E-02	-3.58E-01	9
3.69E-01	1.27E-07	7.39E-08	9.20E-04	6.10E-02	3.04E+05	3.32E+05	-8.49E-02	-3.54E-01	8
3.72E-01	2.37E-07	1.41E-07	1.20E-03	7.95E-02	2.10E+05	2.38E+05	-1.18E-01	-4.62E-01	3
4.17E-01	1.33E-07	9.50E-08	1.08E-03	7.16E-02	3.14E+05	3.28E+05	-4.24E-02	-4.15E-01	7
4.38E-01	9.50E-08	7.39E-08	9.60E-04	6.36E-02	3.77E+05	3.93E+05	-4.18E-02	-3.69E-01	6
4.50E-01	7.32E-08	5.98E-08	9.30E-04	6.16E-02	4.63E+05	4.52E+05	2.49E-02	-3.58E-01	5
4.59E-01	8.71E-08	7.39E-08	8.40E-04	5.57E-02	3.46E+05	4.12E+05	-1.51E-01	-3.23E-01	4
4.71E-01	5.54E-08	4.93E-08	9.00E-04	5.96E-02	5.70E+05	5.25E+05	8.64E-02	-3.46E-01	2
7.27E-01	1.98E-08	5.28E-08	8.70E-04	5.77E-02	7.95E+05	7.77E+05	2.23E-02	-3.35E-01	1

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