NASA SP–3087
Revised

TABLE AND CHARTS OF EQUILIBRIUM NORMAL-SHOCK PROPERTIES FOR PURE HYDROGEN WITH VELOCITIES TO 70 km/sec

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

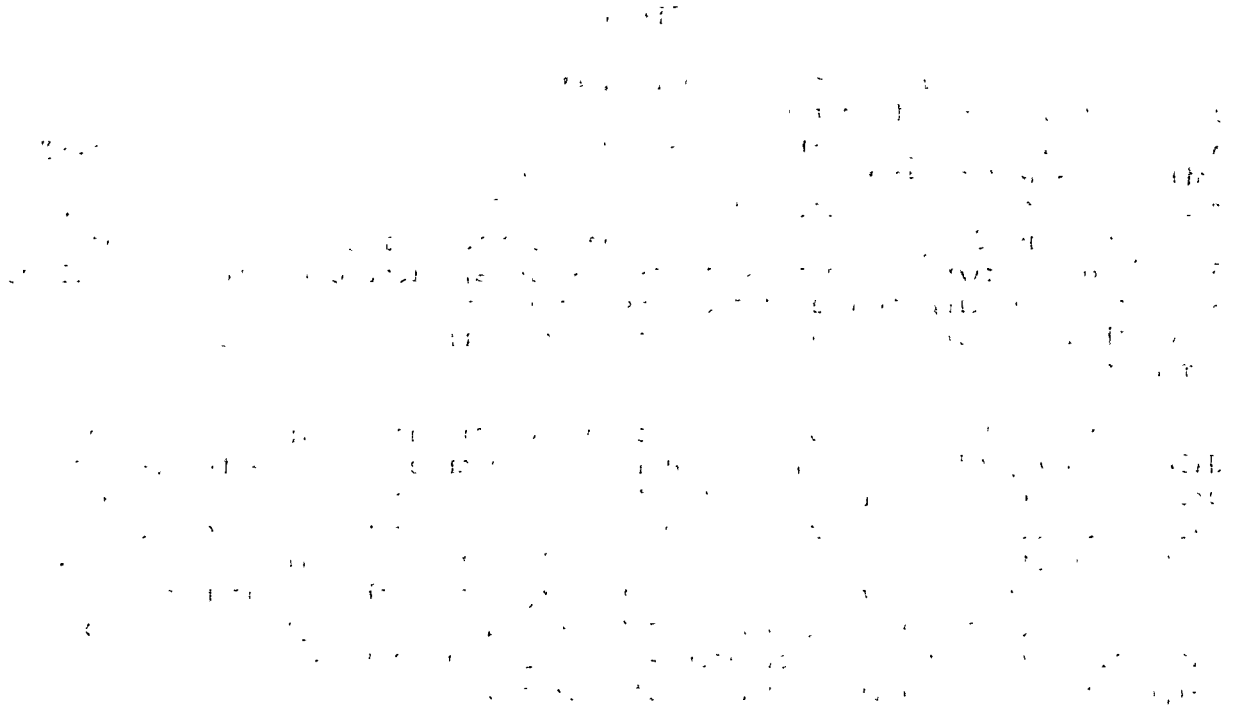
NASA SP–3087
Revised

TABLE AND CHARTS OF EQUILIBRIUM NORMAL-SHOCK PROPERTIES FOR PURE HYDROGEN WITH VELOCITIES TO 70 km/sec

By Charles G. Miller III and Sue E. Wilder
Langley Research Center

Prepared at Langley Research Center

Scientific and Technical Information Office 1976
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C.



For sale by the National Technical Information Service
Springfield, Virginia 22161
Price – $9.25

PREFACE

Equilibrium thermodynamic and flow properties are presented in tabulated and graphical form for moving, standing, and reflected normal-shock waves in pure hydrogen. Properties include pressure, temperature, density, enthalpy, speed of sound, entropy, molecular-weight ratio, isentropic exponent, velocity, and species mole fractions. Incident (moving) shock velocities are varied from 4 to 70 km/sec for a range of initial pressure of 5 N/m^2 to 100 kN/m^2. The present results are applicable to shock-tube flows and for determining flow conditions behind the normal portion of the bow shock about a blunt body at high velocities in proposed outer planet atmospheres.

This report represents a revised version of the original edition of NASA SP-3087 published in 1974. Primary differences in these two versions are (1) errors found in the input data used in the original version have been corrected; (2) the present version includes a more complete discussion of the computational procedure employed, the method used to compute equilibrium thermodynamic properties for real hydrogen, the hydrogen model employed, and the required input quantities; and (3) the present version includes comparisons of calculated equilibrium properties for high-temperature hydrogen from a number of sources.

Page intentionally left blank

Page intentionally left blank

CONTENTS

INTRODUCTION

Interest in the exploration of the outer planets with entry probes led to the development of a number of proposed atmospheric models for these planets (refs. 1 to 3). The most abundant gas in these atmospheres is hydrogen, and early atmospheric models for Jupiter (ref. 1) and Saturn (ref. 2) proposed significant amounts of helium as well. In order to study the high-temperature gas behavior behind the normal portion of the bow shock about a probe entering the atmosphere of an outer planet, a number of shock-tube studies were initiated. (For example, see refs. 4 to 7.) Such studies require a convenient, rapid, and accurate means for determining equilibrium thermodynamic properties and flow velocities for hydrogen and hydrogen-helium mixtures. This need resulted in the publication of NASA SP-3087 (original edition) for pure hydrogen and NASA SP-3085 (original edition) for hydrogen-helium mixtures.

The purposes of these two reports were threefold: (1) to present charts and tables for use in the rapid determination of equilibrium thermodynamic properties, flow velocity, and species mole fractions for incident (moving), standing, and reflected normal shocks in hydrogen or hydrogen-helium mixtures; (2) to provide a convenient means of determining flow conditions behind the normal portion of the bow shock about a vehicle at high velocities in hydrogen or a hydrogen-helium mixture; and (3) to provide engineering estimates of idealized constant-area shock-tube performance.

Following the publication of NASA SP-3087 and NASA SP-3085, an error was found in the spectroscopic constant input data for the proton H^+ used in the calculation of the equilibrium composition and corresponding thermodynamic properties for high-temperature hydrogen. A more detailed examination of the spectroscopic constant input data for atomic hydrogen H also revealed that only a single energy level was used in the calculations contained in NASA SP-3087. A brief study of the effect of these errors revealed that differences in some of the thermodynamic properties in the region behind the incident shock were as high as 20 percent and corresponding mole fractions contained differences of factors of 2. Regrettably, the same species input data for hydrogen were employed to generate the hydrogen-helium data presented in NASA SP-3085; hence, these results are also in error.

The purpose of this revised edition of NASA SP-3087 is to correct the errors contained in the original edition. In this revised edition, the procedure for solving the conservation relations for an incident (moving), standing, and reflected normal shock is refined somewhat and discussed in more detail. The computational method for determining thermochemical-equilibrium hydrogen properties is also refined somewhat and discussed in greater detail. A six-species hydrogen model (e^-, H, H^+, H^-, H_2, and H_2^+) replaces the original four-species model (e^-, H, H^+, and H_2), and the heat of formation and spectroscopic constants used in this six-species model are listed in appendix A. In appendix B, comparisons are made between a number of methods for determining equilibrium thermodynamic properties for hydrogen

for several values of pressure and temperatures to 50 000 K. A comparison is also performed between the present method and a second method for determining thermodynamic properties and flow velocity behind an incident shock into pure hydrogen and behind a reflected shock. This latter comparison is of particular interest since both shock-crossing procedures used identical hydrogen models consisting of six species, with the same heat of formation and spectroscopic constant input data for each species.

Due to the close relationship of NASA SP-3087 and NASA SP-3085, it should be noted that a revised edition of the later report for hydrogen-helium mixtures is also being published. However, the format of NASA SP-3085 is modified. Four volumes are generated for hydrogen-helium mixtures of $0.95H_2$-0.05He, $0.90H_2$-0.10He, $0.85H_2$-0.15He, and $0.75H_2$-0.25He, by volume. The primary reason for this change in format is that more recent analysis of the Jovian atmosphere revealed the presence of a higher percent of hydrogen than was postulated in earlier atmospheric models (ref. 3). Since the present report represents the limit of hydrogen concentration for outer planet atmospheres, the two reports cover the range of hydrogen-helium volumetric compositions presently believed to be likely for the outer planets.

SYMBOLS

a	speed of sound, m/sec
h	specific enthalpy, J/kg
p	pressure, N/m^2
p_o	reference pressure, 101.325 kN/m^2
R	universal gas constant, 8.31434 kJ/kmol-K
s	specific entropy, kJ/kg-K
sW_o/R	nondimensional specific entropy
T	temperature, K
U	velocity, m/sec
U_r	velocity of reflected shock, m/sec
U_s	velocity of incident shock, m/sec
W	molecular weight, kg/kmol
W_o	molecular weight of undissociated hydrogen, kg/kmol
x	mole fraction

Z number of kmoles of dissociated hydrogen per number of kmoles of undissociated hydrogen, W_o/W

γ_E isentropic exponent $\left(\frac{\partial \log p}{\partial \log \rho}\right)_{sW_o/R}$

ρ density, kg/m^3

Subscripts:

1 state of quiescent test gas ahead of incident normal shock

2 state of test gas behind incident normal shock (see fig. 1)

2r state of test gas behind reflected normal shock into region ② (see fig. 1)

2s state of test gas behind standing normal shock in region ② (see fig. 1)

3 state of expanded driver gas (see fig. 1)

4 driver-gas conditions at time of diaphragm rupture

CONVERSION FACTORS AND CONSTANTS

Conversion factors between the International System of Units (SI) and U.S. Customary Units (ref. 8) for the quantities presented in table I and figures 3 to 5 are as follows:

$1\ N/m^2 = 9.8692 \times 10^{-6}$ atm $= 1.4504 \times 10^{-4}$ psi $= 2.0885 \times 10^{-2}\ lbf/ft^2$

$1\ kg/m^3 = 6.2428 \times 10^{-2}\ lbm/ft^3 = 1.9403 \times 10^{-3}\ slug/ft^3$

$1\ J/kg = 1\ m^2/sec^2 = 10.764\ ft^2/sec^2 = 4.3021 \times 10^{-4}$ Btu/lbm

1 m/sec = 3.2808 ft/sec = 2.2369 mph

Physical constants appearing herein for pure hydrogen at an initial temperature T_1 of 300 K are as follows:

$W_o = 2.016$ kg/kmol

$h_1 = 4.215$ MJ/kg

$a_1 = 1.315$ km/sec

$\gamma_{E,1} = 1.40$

$Z_1 = 1.00$

COMPUTATION PROCEDURE AND ANALYSIS

Shock-Tube Flow Regions

The regions of interest for a shock tube are illustrated in figure 1. The quiescent driver gas at the time of diaphragm rupture is designated as region (4) and the quiescent test gas is designated as region (1). (See fig. 1(a).) Upon rupture of the diaphragm, an incident shock wave propagates into region (1) with velocity U_s. The flow conditions immediately behind this shock are denoted as region (2) (fig. 1(b)). An expansion wave propagates into the driver gas; the region between the contact surface and the expansion wave is designated as region (3). For a blunt model positioned in the driven section of the shock tube, a bow shock wave is formed about the model, provided the flow in region (2) is supersonic (fig. 1(c)). The flow conditions immediately behind the normal portion of this standing shock are designated as region (2s). When the incident shock wave reaches the end wall of the shock tube, it is reflected back into region (2) (fig. 1(d)). The gas behind the reflected shock wave is brought to rest relative to the shock tube. Flow conditions behind this reflected shock wave, which is propagating upstream with a velocity U_r, are designated as region (2r).

Conservation Relations and Method of Solution

The computer code of reference 9 was used to calculate the present results. This procedure was developed primarily to calculate expansion-tube flow quantities for thermochemical equilibrium gas mixtures. However, to do so, flow properties behind the incident shock in the intermediate section, which corresponds to the driven section of a shock tube, must first be determined. Since the procedure of reference 9 already contained a means for determining gas mixture thermodynamic properties behind an incident shock (region (2)) and standing shock (region (2s)), only minor modifications were required to include a reflected normal shock as well.

For an incident normal-shock wave moving through region (1) in a laboratory-fixed coordinate system, the conservation relations for mass, momentum, and energy are

$$\left.\begin{aligned} \rho_1 U_s &= \rho_2 (U_s - U_2) \\ p_1 + \rho_1 U_s^2 &= p_2 + \rho_2 (U_s - U_2)^2 \\ h_1 + \frac{1}{2} U_s^2 &= h_2 + \frac{1}{2}(U_s - U_2)^2 \end{aligned}\right\} \qquad (1)$$

The conservation relations for a standing normal-shock wave, where the conditions downstream of the incident shock wave (region ②) are the upstream conditions for this standing shock wave, are

$$\left.\begin{aligned} \rho_2 U_2 &= \rho_{2s} U_{2s} \\ p_2 + \rho_2 U_2^2 &= p_{2s} + \rho_{2s} U_{2s}^2 \\ h_2 + \frac{1}{2} U_2^2 &= h_{2s} + \frac{1}{2} U_{2s}^2 \end{aligned}\right\} \qquad (2)$$

The conservation relations for a reflected normal-shock wave, where the conditions in region ② are the upstream conditions for this reflected shock wave, are

$$\left.\begin{aligned} \rho_2 (U_2 + U_r) &= \rho_{2r} U_r \\ p_2 + \rho_2 (U_2 + U_r)^2 &= p_{2r} + \rho_{2r} U_r^2 \\ h_2 + \frac{1}{2}(U_2 + U_r)^2 &= h_{2r} + \frac{1}{2} U_r^2 \end{aligned}\right\} \qquad (3)$$

As mentioned previously, the upstream conditions for the standing and reflected shock waves are conditions in region ②. Hence, it is first necessary to solve for conditions behind the incident shock wave. The thermodynamic properties and gas composition (mole fractions) in region ① are assumed to be known, as is the incident shock velocity U_s. Hence, quantities appearing on the left-hand side of the conservation relations for an incident normal shock (eqs. (1)) are known. The method of successive approximations (iteration on ρ_2, ref. 9) is used to solve equations (1) for ρ_2, p_2, h_2, and U_2, in conjunction with the equation of state $\rho_2 = \rho_2(p_2, h_2)$. Thermodynamic properties corresponding to p_2 and h_2 are obtained from the computational procedure of references 10, 11, and 12, which is discussed subsequently. With the conditions determined in region ②, the corresponding conditions in regions ⑵s and ⑵r are obtained in a similar manner (i.e., by an iterative procedure on density ρ_{2s} and ρ_{2r}, respectively).

In the original editions of NASA SP-3087 and NASA SP-3085, the iterative procedure for solving the conservation relations (eqs. (1) to (3)) was continued until successive values of density (ρ_2, ρ_{2s}, and ρ_{2r}) were within 0.5 percent. In the present study, an iterative tolerance of 0.25 percent was used since this value was found to give a small increase in accuracy with no appreciable increase in computer time. Studies of the

effect of iterative tolerance on accuracy carried out in the original version of NASA SP-3085 and during the present investigation showed that reduction of the iterative tolerance to 0.05 percent required large increases in computing time (roughly, a factor of 40) but resulted in differences in calculated thermodynamic and flow properties of less than 0.4 percent.

To provide estimates of shock-tube performance for pure hydrogen test gas, predictions using conventional shock-tube theory were performed in the first edition of NASA SP-3087 and are included in the present edition. This conventional theory assumes one-dimensional, constant-area, inviscid flow and instantaneous diaphragm rupture and shock formation. In predicting shock-tube performance, the helium or hydrogen driver-gas pressure p_4 and temperature T_4 are assumed to be known, in conjunction with p_1 and T_1. Thermodynamic properties in region ④ are determined from imperfect-gas relations based on the virial form of the equation of state (ref. 9). The unsteady expansion, which occurs upon rupture of the diaphragm, is assumed to be isentropic. An array of thermodynamic properties, including p_3, is generated in the expansion region (region ③) and the corresponding velocity U_3 is obtained numerically from the differential equation for a one-dimensional unsteady expansion. By varying U_s over a range, an array of U_2 and p_2 is also generated. The solution is found by requiring that $p_3 = p_2$ and $U_3 = U_2$ (i.e., the solution is the intersection of the U_2,p_2 and U_3,p_3 curves (ref. 9)).

Thermodynamic Properties and Accuracy

As discussed previously, an equation of state is required in conjunction with the conservation relations for solutions for incident, standing, or reflected normal shocks. For thermochemical equilibrium gas mixtures, this equation of state cannot be expressed in closed analytical form due to the chemical reactions occurring; hence, it generally takes the form of a computer code.

Methods for determining thermochemical equilibrium properties of dissociated and ionized gases have received considerable attention over the last two decades. A number of analytical procedures of differing sophistication have evolved for determining first-order thermodynamic properties - pressure, density, temperature, enthalpy, entropy, and molecular-weight ratio - and second-order properties (calculated from the partial derivatives of species concentrations) - speed of sound, specific heat at constant volume, specific heat at constant pressure, and isentropic exponent. The procedure incorporated into the program of reference 9, and used in the present study, was developed at the Langley Research Center and was reported in references 10, 11, and 12. This computer code was obtained from the author of references 10 and 11 and incorporated into the program of reference 9 as a subroutine. This method for calculating equilibrium thermodynamic properties of a gas mixture is referred to hereafter as the method of reference 10.

The method of reference 10 is based upon the Gibbs free-energy minimization method of reference 13. For this method, the pressure, temperature,

and initial composition must be known quantities and the basic assumptions are as follows:

(1) The mixture is composed of ideal gases (intermolecular force effects are neglected).

(2) For diatomic species the rigid-rotor harmonic-oscillator model is used with vibrational-rotational corrections.

(3) Only electronic levels with principal quantum number less than or equal to five are included.

For a given pressure and temperature, the free energies for individual species are computed from partition functions of statistical mechanics. The equilibrium composition is then obtained by minimization of the free energy. In carrying out the calculation procedure, iterations on species concentration are continued until the absolute value of each concentration changes by less than a prescribed absolute criterion (10^{-12} in the present study). A relative criterion is also employed to prevent termination of the iterations while a minor species is still changing by as much as 0.1 of its previous value.

For the solution of the conservation relations by the method of successive approximations, the equation of state must possess the form $\rho = \rho(p,h)$. Since the quantities pressure and temperature are employed in the free-energy minimization procedure, an iterative-interpolation scheme was developed in reference 9. This scheme provides the capability of determining thermodynamic properties from a number of possible combinations of thermodynamic quantities including pressure p and enthalpy h. For this particular combination of quantities, p and h, the temperature is varied until successive values of enthalpy are within 0.1 percent. Reducing this tolerance on enthalpy to 0.01 percent produced differences in thermodynamic properties in regions (2), (2s), and (2r) less than 0.2 percent for $p_1 = 100$ N/m^2 and U_s from 4 to 70 km/sec. However, this small increase in accuracy was not an acceptable trade-off in view of the additional computer time it required.

In the original edition of NASA SP-3087, thermodynamic properties were computed by using this technique (ref. 9) and a four-species model (e^-, H, H^+, and H_2) for high-temperature hydrogen. However, following publication of the original edition, two errors were discovered by the present authors in the spectroscopic-constant input. Since nuclear spin is ignored for the species H and H_2, it must also be ignored for H^+ to maintain consistency in the method of reference 10; thus, the degeneracy for H^+ must be entered as unity. In the original edition, however, the degeneracy of H^+ was entered as 0.1 instead of 1. The second error was that only a single energy level was considered for atomic hydrogen, whereas reference 14 tabulates 26 levels. A brief study of the effect of these errors revealed uncertainties in some of the thermodynamic properties in region (2) (particularly T_2) as high as 20 percent. Corresponding mole-fraction uncertainties were as high as a factor of 2. These uncertainties, which were considered unacceptable, motivated the present study to correct the original edition of NASA SP-3087.

In the present study, the errors described have been corrected. The H^+ degeneracy has been correctly entered as unity, and the complete set of 26 energy levels (taken from ref. 14) has been used for atomic hydrogen. In an attempt to increase further the precision of the computations, additional changes between the original edition of NASA SP-3087 and the present study have been made. These changes are (1) the four-species (e^-, H, H^+, and H_2) hydrogen model used in the original edition has been replaced with a six-species model containing e^-, H, H^+, H_2, H^-, and H_2^+ and (2) the absolute criterion for species-concentration convergence has been decreased from 10^{-8} to 10^{-12}.

A number of selected check calculations have been carried out. To examine the contribution of the various species in the hydrogen model, calculations were performed for pressures p/p_o of 0.1, 1, 10, and 100 and temperatures from 2000 K to 50 000 K in which (1) all six species were included, (2) H_2^+ was deleted, (3) H^- was deleted, and (4) both H_2^+ and H^- were deleted. Calculations were carried out with 16 levels and with a single level to assess the influence of the number of energy levels used to describe H^-. (See appendix A.) To assess a grouping procedure (refs. 10, 11, 15, and 16) to reduce the number of energy levels for input for atomic hydrogen, calculations were performed with all 26 energy levels (ref. 14) entered separately and with energy levels grouped according to reference 15, which yields 6 levels. The resulting solutions showed that for pressures up to $p/p_o = 100$ and for the range of temperature under consideration, a four-species hydrogen model (e^-, H, H^+, and H_2) provides a valid description of thermochemical equilibrium hydrogen (i.e., first-order thermodynamic properties for the four-species model were within 0.05 percent of those calculated with the six-species model) and, if included in the hydrogen model, the trace species H^- can be described by a single energy level. Differences in thermodynamic properties because of grouping atomic hydrogen energy levels were within 0.08, 0.18, and 0.7 percent for values of p/p_o of 1, 10, 100, respectively; thus, at the higher pressures, these energy levels should be entered individually as input to obtain the highest precision. For pressures above $p/p_o = 100$, somewhat different results were obtained. For example, at $p/p_o = 1000$, differences resulting from the 16-level H^- and the single-level H^- were still insignificant, but discrepancies as large as 2.1 percent in first-order properties were observed due to grouping the hydrogen energy levels. When both H_2^+ and H^- were eliminated from the hydrogen model, differences up to 0.3 percent in first-order thermodynamic properties and up to 1.3 percent in second-order thermodynamic properties were observed. Thus, at higher pressures ($p/p_o > 100$), the contribution of species H_2^+ and H^- becomes more important and should be included in the hydrogen model.

Mole fractions calculated using the method of reference 10 for the six-species hydrogen model are plotted in figure 2 as a function of temperature for various pressures and denoted by the solid symbols. Also shown in figure 2 are the results of reference 17 which considered an additional species H_3^+ in the hydrogen model. Calculated mole fractions of reference 17 are denoted by the open symbols. At pressures $p/p_o \leq 10$, mole fractions for the species H_2^+ and H^- do not exceed 10^{-4} for the temperature range 2000 K to 50 000 K. However, at $p/p_o = 100$, mole fractions for these species exceed 10^{-4}, and for $p/p_o = 1000$, these mole fractions exceed 10^{-3}. Thus, the importance of

these species (H_2^+ and H^-) increases as the pressure increases. Also, the temperature interval for which H_2^+ and H^- mole fractions are significant (exceed 10^{-4}) increases with increasing pressure. For this reason, and reasons to be discussed in appendix B, the six-species hydrogen model was used to calculate the present results.

It is well recognized that to determine the suitability of a method for predicting high-temperature gas properties, comparisons are generally made for properties calculated with other computational procedures. In order to establish precisely the differences associated with the calculation of hydrogen thermodynamic properties, rather comprehensive comparisons for a number of sources of equilibrium hydrogen properties are presented in appendix B. Before summarizing the findings of appendix B, some insight into the differences between various procedures for calculating thermodynamic properties for hydrogen may be inferred from figure 2 where mole fractions calculated using the methods of reference 10 (solid symbols) and reference 17 (open symbols) are plotted as a function of temperature for several values of pressure. In general, mole fractions for the various hydrogen species are in good agreement between the two sources. As mentioned previously, at high temperatures, hydrogen consists primarily of three species: atomic hydrogen, electrons, and protons. In order to examine differences between the predicted composition by using the analytical method of reference 10 and the method of reference 17 in more detail, mole fractions for the species atomic hydrogen x_H are compared in the following table (on next page) for pressures p/p_o of 1, 10, and 100. Note that the temperature range for each pressure was obtained by assuming that only values of x_H greater than 10^{-2} were significant contributors to predicted thermodynamic properties.

The temperature interval for which atomic hydrogen is an important species (i.e., $x_H > 10^{-2}$ for the present comparison) increases as the pressure increases. At the lowest pressure, values of x_H predicted by using the method of reference 10 are in relatively good agreement (within 10 percent) with those tabulated in reference 17 over the temperature range considered. For the two highest pressures, the percent difference in x_H increases rapidly with increasing temperature. However, in the region of the higher temperatures, the magnitude of x_H diminishes with temperature; thus, the importance of atomic hydrogen decreases. Since the differences in thermodynamic properties are much smaller than differences in corresponding mole fractions, this table implies that thermodynamic properties determined from references 10 and 17 are in good agreement for a pressure p/p_o equal to unity. For p/p_o of 10 and 100, it is difficult to estimate the differences in thermodynamic properties between references 10 and 17 from the table because the differences in atomic hydrogen mole fraction increase with temperature, but the influence of x_H on thermodynamic properties diminishes. The actual differences in thermodynamic properties are presented in appendix B.

In appendix B, thermodynamic properties of density, entropy, and enthalpy calculated with the method of reference 10 are shown to be in good agreement (within approximately 3 percent) with more rigorous calculations of reference 18 (which uses the same seven-species hydrogen model as used in ref. 17) for a range of temperature from 2000 K to 50 000 K and pressures

T, kK	x_H (ref. 10)	x_H (ref. 17)	Percent difference
		$p/p_o = 1$	
10	0.9579	0.9572	0.07
12	.8182	.8138	.54
14	.5417	.5297	2.22
16	.2531	.2418	4.46
18	.0939	.0878	6.50
20	.0348	.0319	8.33
		$p/p_o = 10$	
12	0.9381	0.9351	0.32
14	.8213	.8102	1.35
16	.6279	.6050	3.65
18	.4048	.3762	7.07
20	.2247	.2030	9.66
22	.1164	.0993	14.69
24	.0612	.0497	18.79
26	.0343	.0261	23.91
		$p/p_o = 100$	
14	0.9379	0.9301	0.83
16	.8610	.8406	2.37
18	.7439	.7064	5.04
20	.5989	.5445	9.08
22	.4500	.3864	14.13
24	.3204	.2567	19.88
26	.2221	.1645	25.93
28	.1538	.1045	32.06
30	.1086	.0671	38.21
32	.0788	.0441	44.04

p/p_o from 0.1 to 1000. In general, the agreement between the two sources diminishes with increasing pressure. For example, since density is an important quantity because it is iterated upon in the shock-crossing procedure, it should be noted that the comparison in appendix B for $2000 \text{ K} < T < 50\,000 \text{ K}$ revealed the following maximum differences in density between the two sources for values of p/p_o of 0.1, 1, 10, 100, and 1000: 0.8, 1.4, 2.0, 1.8, and 2.5 percent, respectively. Similarly, for enthalpy and these same values of pressure, the respective maximum percent differences were 0.8, 1.7, 2.7, 3.6, and 2.2. Maximum percent differences for entropy were approximately one-half those of density for a given pressure and the temperature range 2000 K to 50 000 K. The comparisons of appendix B imply the present calculated thermodynamic properties in regions (2), (2s), and (2r) should be quite accurate for temperatures less than 50 000 K and pressures p/p_o less than 1000. (Since comparisons of first-order and second-order thermodynamic properties for equilibrium hydrogen at high temperatures are performed between a number of sources in appendix B, the reader is encouraged to read appendix B.)

DISCUSSION OF TABLE AND CHARTS

Before discussing the present table and charts, it should be noted that flow properties behind the normal portion of the bow shock wave of a hypervelocity entry body are equivalent to the properties behind a moving shock in a shock tube. In free flight, the free-stream conditions and flight velocity correspond to the initial conditions in region ① and the shock-wave velocity, respectively, whereas the conditions behind the normal portion of the bow shock correspond to conditions in region ②.

Table

The solutions for incident (moving), standing, and reflected normal shocks are presented in table I for pure hydrogen. These tabulated computer results are arranged in groups of constant pressure in region ① (P1) and the incident shock velocity (US1) is varied within the group. In table I, p_1 is varied from 5 N/m^2 to 100 kN/m^2 and U_s is varied from 4 to 30 km/sec in increments of 1 km/sec and from 30 to 70 km/sec in increments of 2 km/sec.

For each p_1, a complete list of calculated thermodynamic properties (p, T, ρ, h, a, sW_o/R, Z, and γ_E), flow velocity (U), and species volumetric composition is given for the three shock-tube regions under consideration. The rows in the upper portion of each tabulation, for a given p_1 and U_s, are identified by letters (FORTRAN symbols), the designations of which, in terms of the symbols defined, are given in the following table:

FORTRAN symbol	Moving shock	Standing shock	Reflected shock
P	p_2/p_1	p_{2s}/p_1	p_{2r}/p_1
T	T_2/T_1	T_{2s}/T_1	T_{2r}/T_1
RHO	ρ_2/ρ_1	ρ_{2s}/ρ_1	ρ_{2r}/ρ_1
H	h_2/h_1	h_{2s}/h_1	h_{2r}/h_1
A	a_2/a_1	a_{2s}/a_1	a_{2r}/a_1
S	s_2/s_1	s_{2s}/s_1	s_{2r}/s_1
Z	Z_2/Z_1	Z_{2s}/Z_1	Z_{2r}/Z_1
GAME	$\gamma_{E,2}/\gamma_{E,1}$	$\gamma_{E,2s}/\gamma_{E,1}$	$\gamma_{E,2r}/\gamma_{E,1}$
U	U_2/a_1	U_{2s}/a_1	U_r/a_1

The lower portion of each tabulation illustrates the species composition for moving, standing, and reflected shock regions. Rows are identified by the species symbol.

The conditions in region ① are used to nondimensionalize calculated properties in regions ②, ②s, and ②r. The temperature in region ① T_1 is 300 K for all cases in table I. Corresponding thermodynamic properties for pure hydrogen in region ① are given in the following table:

INITIAL CONDITIONS AHEAD OF INCIDENT NORMAL SHOCK IN PURE HYDROGEN

[W_o = 2.016 kg/kmol; R = 8.31434 kJ/kmol-K]

T_1 = 300 K a_1 = 1.315 km/sec h_1 = 4.215 MJ/kg Z_1 = 1.00 $\gamma_{E,1}$ = 1.40		
p_1, N/m^2	ρ_1, g/m^3	$s_1 W_o/R$
5	0.004041	25.64
10	.008082	24.94
20	.01616	24.25
50	.04041	23.33
100	.08082	22.64
200	.1616	21.95
500	.4041	21.03
1 000	.8082	20.34
2 000	1.616	19.64
5 000	4.041	18.73
10 000	8.082	18.03
20 000	16.16	17.34
50 000	40.41	16.42
100 000	80.82	15.73

In the present results of table I, no upper limitations on pressure and temperature in regions ②, ②s, and ②r are imposed; hence, values of pressure exceeding 100 MN/m^2 are presented for the three shock-tube regions of interest. Based on the comparisons of thermodynamic properties for equilibrium hydrogen discussed in appendix B, the user of these tables is cautioned to exercise discretion in employing the present results at pressures exceeding 100 MN/m^2. As illustrated in references 19 and 20, relatively large effects of intermolecular forces exist for molecular hydrogen at low temperatures and high pressures. From table I, the combination of quiescent pressure p_1 and incident shock velocity U_s which should represent the greatest intermolecular force effects on thermodynamic properties is p_1 = 100 kN/m^2 and U_s = 4 km/sec. Corresponding values of pressure and temperature in regions ②, ②s, and ②r were compared to the tabulations of compressibility factor presented in reference 19 in terms of pressure and temperature. This comparison demonstrated that for the present range of p_1 and U_s for hydrogen, intermolecular force effects on thermodynamic properties in regions ②, ②s, and ②r should be negligible. That is, the com-

pressibility factor was less than 1.005 for the combination of pressure and temperature occurring within all three shock-tube regions of interest.

Charts

Working charts for pure hydrogen (corresponding to the results of table I) are shown in figures 3 to 5. In these figures, the nondimensionalized thermodynamic properties and flow velocity for regions ②, ⑵s, and ⑵r are plotted as a function of incident shock velocity U_s for various quiescent test gas pressures. For each property, the incident-shock-velocity scale is 0 to 36 km/sec and 34 to 70 km/sec. This division of the U_s scale is to enhance the readability of these charts. The figures were generated by machine, and linear line segments were used to connect adjacent data points.

Unlike table I, a maximum pressure limitation $p \leq 100$ MN/m^2 is imposed on the results of figures 3 to 5; calculated quantities above this pressure limitation are not plotted. Again, the properties in region ① presented previously must be used to obtain the desired value of the thermodynamic property or flow velocity from the ratio presented.

THEORETICAL SHOCK-TUBE PERFORMANCE

Before a study is performed in a shock tube, it is essential to ascertain the theoretical performance for the gas being tested. The wide range of flow conditions and very short test times (generally, a few μsec to several msec) impose stringent requirements on shock-tube instrumentation. Thus, in preparing shock-tube instrumentation for a test, it is necessary that the physical quantities to be measured be known to within reasonable limits.

Results from the procedure for determining shock-tube performance (ref. 9) are shown in figure 6 for a helium and a hydrogen driver gas, where the incident shock velocity U_s is plotted as a function of the ratio of driver-gas pressure in region ④ to quiescent test-gas pressure in region ① for various values of temperature T_4. With p_4, T_4, and p_1 known, a theoretical value of U_s may be obtained from this figure. Corresponding thermodynamic properties and flow velocity in regions ②, ⑵s, and ⑵r may be obtained from figures 3 to 5 or from table I. The range of T_4 is 4000 K to 24 000 K for helium driver gas (fig. 6(a)) and 300 K to 700 K for hydrogen driver gas (fig. 6(b)); p_4 is equal to 68.95 MN/m^2. At the maximum value of T_4 of 24 000 K and p_4 of 68.95 MN/m^2, ionization of the helium driver gas is small ($Z < 1.05$ (ref. 21)), and the method of reference 9 for calculating imperfect-helium driver gas properties is applicable.

The data presented in figure 6 are the same data as presented in figure 5 of the original edition of NASA SP-3087. The data in figure 5 of the original edition were not regenerated primarily because (1) the uncertainties arising from errors in the original hydrogen model are not expected to

produce large uncertainties in the calculations presented in figure 6 because the quantities p_2 and U_2 (see section "Conservation Relations and Method of Solution") are relatively insensitive to these errors, (2) an extremely large amount of computer time is required to generate plots of p_4/p_1 against U_s for imperfect driver gases and thermochemical equilibrium hydrogen test gas, and (3) simple, conventional shock-tube theory supplies only rough estimates of physical flow quantities (ref. 22).

CONCLUDING REMARKS

Equilibrium thermodynamic and flow properties are presented in tabulated and graphical form for moving, standing, and reflected normal-shock waves in pure hydrogen. Properties include pressure, temperature, density, enthalpy, speed of sound, entropy, molecular-weight ratio, isentropic exponent, velocity, and species mole fractions. Incident (moving) shock velocities are varied from 4 to 70 km/sec for a range of initial pressure of 5 N/m^2 to 100 kN/m^2. The present results are applicable to shock-tube flows and for determining flow conditions behind the normal portion of the bow shock about a blunt body at high velocities in proposed outer planet atmospheres.

This report represents a revised version of the original NASA SP-3087 published in 1974. Primary differences in these two versions are (1) errors found in the input data for atomic hydrogen and proton (H^+) used in the original version have been corrected, and (2) the present version includes more complete discussion of the computational procedure employed, the method used to compute equilibrium thermodynamic properties for hydrogen, the hydrogen model employed, and the required input quantities. To increase the precision of the computations, the four-species (e^-, H, H^+, and H_2) hydrogen model used in the original edition was replaced by a six-species (e^-, H, H^+, H_2, H^-, and H_2^+) model. Calculations showed that for pressures up to 10 MN/m^2 and temperatures from 2000 K to 50 000 K, thermodynamic properties obtained with the four-species model were within 0.05 percent of those obtained with the six-species model; however, at higher pressures, the contribution of species H^- and H_2^+ becomes significant and should be included in the hydrogen model. Calculations were performed to assess a grouping procedure used to reduce the number of energy levels for input for atomic hydrogen. At pressures above 10 MN/m^2, differences in thermodynamic properties due to this grouping exceeded 1 percent; thus, it is recommended that the energy levels for atomic hydrogen be entered individually as input to insure the highest precision. Rather comprehensive comparisons of equilibrium hydrogen properties obtained from a number of sources were made over a large range of temperature and pressure to examine the differences in these properties between the various sources and the analytical method used in the present study. Present thermodynamic properties are in good agreement (within 3 percent) with more rigorous calculations for pressures to 100 MN/m^2 and temperatures from 2000 K to 50 000 K. For the present range of incident shock velocity and initial pressure, intermolecular force

effects on thermodynamic properties behind moving, standing, and reflected normal-shock waves in pure hydrogen are negligible.

Langley Research Center
National Aeronautics and Space Administration
Hampton, VA 23665
October 26, 1976

APPENDIX A

TABULATION OF HEAT OF FORMATION AND SPECTROSCOPIC CONSTANTS EMPLOYED AS INPUTS FOR DISSOCIATED AND IONIZED HYDROGEN

The accuracy associated with the computation of thermodynamic properties and species mole fractions using the free-energy minimization method of references 10, 11, and 12 (referred to herein as the method of ref. 10) is strongly dependent upon the heat of formation and spectroscopic constant inputs. Because of the importance of such input data, a tabulation of the input data for the species e^-, H, H^+, H_2, H^-, and H_2^+ is presented in this appendix. A listing of the computer code of reference 10 is presented in reference 9 and denoted as the subroutine ROGO. The listing of ROGO is written in FORTRAN IV language for Control Data series 6000 computer systems and contains the format for reading in the input data. The procedure for utilizing the subroutine ROGO in the program of reference 9 is discussed in appendix C of reference 9.

Electrons are treated as atomic species in reference 10. The internal partition function for an electron is its spin degeneracy. Thus, the electron is assumed to have a ground state degeneracy of 2 and no electronic excitation states. The proton H^+ is also treated herein as an atomic species. Even though the proton possesses a nuclear spin of 1/2, the same spin value as the electron, the degeneracy input is unity instead of two. The nuclear spin for a proton is ignored since it was also ignored for the other hydrogen species H_2, H, H_2^+, and H^-. As noted in reference 16, consistently ignoring or including nuclear spin has no effect upon the thermochemical behavior of a gaseous mixture in a calculation procedure such as reference 10.

As a check on the molecular weight, heat of formation, and spectroscopic constant inputs, the present species inputs were compared with the tabulations presented in references 15 and 16. As expected, molecular weight inputs for the six hydrogen species were the same. With the exception of the species H^-, heats of formation agreed to within 0.02 percent; for H^-, the heat of formation difference was 0.6 percent. Values of the heat of formation used herein for species H, H^+, and H^- represent an average between those tabulated in reference 15 and those given in reference 23; the heat of formation for species H_2^+ was taken from reference 15. The hydrogen negative ion H^- was initially treated as an atomic species having a ground state degeneracy of one and no electronic excitation states. To estimate properties for H^-, energy levels for atomic species of the same isoelectronic sequence were used in references 15 and 16; thus, H^- corresponds to the energy level of atomic helium. As shown previously, the additional levels due to this assumption have no effect on calculated thermodynamic properties using a single level with a degeneracy of one for pressures to 10 MN/m^2 and temperatures to 50 000 K. For the sake of comparison, however, and because the pressures and temperatures encountered in region (2r) exceed these values of 10 MN/m^2 and 50 000 K for the present range of p_1 and U_s, the assumption of references 15 and 16 for H^- was used herein.

APPENDIX A

The one major change between the spectroscopic constant inputs for the two procedures (method used herein and method of ref. 15) was that each of the 26 energy levels for atomic hydrogen H was entered individually from the tabulations of reference 14 for the present case, whereas in reference 15, a grouping procedure corresponding to these same 26 levels was employed for H. In this grouping procedure, a reduced list of energy levels was obtained by replacing terms close together by a single energy level and the corresponding degeneracy was the sum of the degeneracies. The tabulations of reference 14 were also used in reference 15 to obtain the grouping of energy levels for atomic hydrogen. In this grouping, the single energy level entered was that corresponding to the term of largest degeneracy (ref. 16). As discussed previously, the difference in thermodynamic properties resulting from these two procedures for inputting data for atomic hydrogen is relatively small (less than 0.7 percent) for values of $p/p_o \leqq 100$, but increases to approximately 2 percent for $p/p_o = 1000$. It may be that a weighting of the energies according to the values of degeneracy contained within a group might improve agreement with the case where the energies were entered individually.

The input data required by the computer code of reference 10 for predicting equilibrium thermodynamic properties for hydrogen are as follows for the present six-species hydrogen model:

Species	Number of electronic levels considered	Molecular weight, kg/kmol	Heat of formation at 0 K, ergs/mol	Symmetry number	Spectroscopic constants, cm^{-1}				Maximum vibrational quantum number
					Rotational	Vibrational rotational	Vibrational	Anharmonic vibrational	
e^-	1	0.00054905	0	0	0	0	0	0	0
H	26	1.00797	2.1601364×10^{12}	0	0	0	0	0	0
H^+	1	1.00742	15.280951×10^{12}	0	0	0	0	0	0
H_2	1	2.01594	0	2	60 81	2.99	4395.2	117.9	5
H^-	16	1.00852	1.4351120×10^{12}	0	0	0	0	0	0
H_2^+	1	2.01539	14.884162×10^{12}	2	29.8	1.4	2297.0	62.0	10

APPENDIX A

Degeneracy of energy level	Energy of electronic level, cm^{-1}
e^-	
2	0
H	
2	0
2	8.2258907×10^4
2	8.2258942
4	8.2259272
2	9.7492198
2	9.7492208
4	9.7492306
6	9.7492342
2	10.282384
2	10.282384
4	10.282388
6	10.282390
8	10.282390
2	10.529162
2	10.529162
4	10.529164
6	10.529165
8	10.529165
10	10.529165
2	10.663214
2	10.663214
4	10.663215
6	10.663215
8	10.663216
10	10.663216
12	10.663216

Degeneracy of energy level	Energy of electronic level, cm^{-1}
H^+	
1	0
H_2	
1	0
H^-	
1	0
3	15.985031×10^4
1	16.627169
12	16.908106
3	18.323106
1	18.485900
9	18.555888
23	18.609588
4	19.029244
60	19.144656
13	19.379506
51	19.391575
68	19.525681
188	19.695031
340	19.739856
78	19.805650
H_2^+	
2	0

APPENDIX B

COMPARISON OF PRESENT HYDROGEN THERMODYNAMIC PROPERTIES TO THOSE FROM OTHER SOURCES

As discussed previously, the solution to the simple one-dimensional conservation relations for incident, standing, and reflected normal-shock waves requires an equation of state. When the state of the shock-heated test gas is such that chemical reactions (dissociation and ionization) occur, the equation of state cannot be expressed explicitly and generally takes the form of a computer code. Naturally, the accuracy of the solution for the conservation relations is dependent on the accuracy associated with the prediction of equilibrium thermodynamic properties. In order to establish a confidence level for the method used herein (ref. 10) to predict equilibrium properties for hydrogen over a large range of pressures and temperatures, a rather comprehensive comparison between this method and a number of other sources of equilibrium hydrogen properties was made. The results of this comparison are presented in this appendix.

At the time the procedure of reference 10 was derived, primary interest in planetary entry centered about Earth, Mars, and Venus. Naturally, Earth's atmosphere consists primarily of molecular nitrogen and oxygen and proposed atmospheres for Mars and Venus consisted primarily of carbon dioxide, along with argon for Mars and nitrogen for Venus. Thus, particular attention was given to the diatomic species in reference 10. The procedure of reference 10 was employed in the computer code of reference 9 primarily (1) because of the high accuracies this procedure yielded for air and carbon dioxide gases and (2) because it was developed at the Langley Research Center and was readily available for incorporation into the program of reference 9. (In initially employing a computer code developed by another individual or group, it is often desirable, and sometimes necessary, to have a consultant available to assist and instruct in the utilization of the program. This was another factor in selecting the program of ref. 10.)

In figures 7 and 8, thermodynamic properties in regions ② and ②r calculated by the present method are compared with unpublished tabulations for shock crossings in pure hydrogen supplied to the Langley Research Center by the Jet Propulsion Laboratory (JPL). The present method and the computer code developed at JPL and reported in reference 15 contain a number of significant similarities. Both use a minimization procedure for determining the equilibrium composition, hence thermodynamic properties, and a six-species (e^-, H_2, H, H^+, H_2^+, and H^-) hydrogen model. The heat of formation, molecular weight, and spectroscopic inputs to the two shock-crossing procedures were essentially identical. The ranges of quiescent pressure p_1 and incident shock velocity U_s in the JPL tabulations were not nearly as extensive as those of the present study, since p_1 varied from 33 to 533 N/m^2 and U_s varied from 7 to 48 km/sec in these tabulations. Comparisons between the two procedures were made for p_1 equal to 33 N/m^2 and 533 N/m^2 and $7 < U_s < 48$ km/sec; the quiescent temperature T_1 was equal to 300 K. In figures 7 and 8, the parameter ξ_ϕ is defined by

$$\xi_\phi \equiv \frac{\phi_{JPL} - \phi_{present}}{\phi_{present}} \times 100$$

and plotted as a function of incident shock velocity U_s for the two values of p_1. The parameter ϕ represents the ratios p_2/p_1, T_2/T_1, ρ_2/ρ_1, h_2/h_1, or U_2/a_1 in figure 7 and the ratios p_{2r}/p_1, T_{2r}/T_1, ρ_{2r}/ρ_1, h_{2r}/h_1, and U_r/a_1 in figure 8. For the range of p_1 and U_s considered, the corresponding pressure and temperature range is approximately $0.01 < p_2/p_o < 9.0$ and $1850\ K < T_2 < 17\ 000\ K$ in region (2), and approximately $0.07 < p_{2r}/p_o < 119$ and $2500\ K < T_{2r} < 31\ 500\ K$ in region (2r).

From figure 7, the agreement between the two shock-crossing procedures for the quantities p_2/p_1, h_2/h_1, and U_2/a_1 is seen to be excellent (within approximately 0.5 percent) for both values of p_1 and the range of U_s considered. The agreement for the quantities T_2/T_1 and ρ_2/ρ_1, which are more sensitive to p_1 and U_s as observed in figure 3, is poorer. For a value of p_1 equal to 33 N/m^2, the agreement for T_2/T_1 and ρ_2/ρ_1 is very good (roughly within 1 percent); however, at p_1 equal to 533 N/m^2, differences in T_2/T_1 as high as 5 percent and differences in ρ_2/ρ_1 as high as 2.6 percent are observed. For both T_2/T_1 and ρ_2/ρ_1, the largest differences occur in the temperature range $4000\ K < T_2 < 5000\ K$. This temperature range is characterized by a rapid diminishing of molecular hydrogen; however, the same is true for a value of p_1 equal to 33 N/m^2. Values of p_2/p_o corresponding to the above temperature range are 1.6 to 2.3 for $p_1 = 533\ N/m^2$ and 0.1 to 0.15 for $p_1 = 33\ N/m^2$. This relatively small difference in pressure range is not expected to significantly affect calculated thermodynamic properties between the two procedures, and the reason for the poorer agreement for $p_1 = 533\ N/m^2$ is not known.

For the case of an incident shock, the conditions immediately ahead of the shock (region (1)) should be in excellent agreement between the two procedures (present and that of ref. 15). However, for a reflected shock, the conditions immediately ahead of this shock correspond to region (2); thus, any differences between the two procedures in thermodynamic properties in region (2) will naturally result in differences in region (2r). In general, the thermodynamic quantities p_{2r}/p_1, T_{2r}/T_1, ρ_{2r}/ρ_1, and h_{2r}/h_1 and reflected shock velocity U_r/a_1 agree to within 4 percent with a few instances of differences being as high as 5.2 percent. Thus, it is concluded from figures 7 and 8 that the present procedure and that of JPL yield thermodynamic and flow properties in regions (2) and (2r) that are in reasonably good agreement for the range of p_1 and U_s examined.

Thermodynamic properties of density ρ, entropy s, and enthalpy h for pure hydrogen in thermochemical equilibrium are shown in figures 9, 10, and 11 as a function of temperature for various values of pressure. In these figures, hydrogen properties obtained from existing tabulations (refs. 18, 24, 25, and 26) and from two other computer codes (refs. 15 and 27) are compared to corresponding properties calculated by the present method. As in the shock-crossing procedure, the parameter ξ is used for comparing the results from other sources with those of reference 10 and is defined, for example, for reference 18 as

APPENDIX B

$$\xi_\phi \equiv \frac{\phi_{18} - \phi_{10}}{\phi_{10}} \times 100$$

where ϕ may be the quantity ρ, s, or h, and the subscripts refer to the reference from which ϕ was obtained. Of the four tabulations of equilibrium hydrogen properties employed in the comparisons of figures 9 to 11, the calculations of reference 18 are the most recent and believed to be the most rigorous.

In the earliest study considered (ref. 24), equilibrium properties for hydrogen were calculated for temperatures from 300 K to 100 000 K and $10^{-5} \leqq p/p_o \leqq 10^2$. The molecular hydrogen was assumed to be 75 percent ortho and 25 percent para, where ortho and para refer to H_2 states with triplet and singlet nuclear spin states, respectively. The interdependence of vibrational and rotational motions of the hydrogen nuclei was taken into account. The convergence of the internal partition function of the hydrogen atom was obtained by terminating the series when the average volume associated with the electronic orbit exceeded the average volume per particle within the gas. This approximation to the partition function of the hydrogen atom corresponds to accounting for the reduction in the ionizational potential.

First- and second-order thermodynamic properties are tabulated in reference 25 for $300 \text{ K} \leqq T \leqq 20\,000 \text{ K}$ and $10^{-4} \leqq p/p_o \leqq 10^3$. Basic assumptions are (1) the mixture of hydrogen species behaves as an ideal gas, (2) the partition function of molecular hydrogen is approximated by a rigid-rotor harmonic oscillator model which remains in its electronic ground state, and (3) the electronic partition function for the hydrogen atom can be approximated by the first six terms (i.e., the electronic partition function series is given in closed form by arbitrarily cutting the series off at six terms). Reduction in ionization potential was ignored.

In reference 26, thermodynamic properties are tabulated for $1667 \text{ K} \leqq T \leqq 111\,111 \text{ K}$ and $1 \leqq p/p_o \leqq 1000$. Species considered were e^-, H_2, H, H^+, and H^-. The lowering of the ionization potential was included; however, as discussed in reference 18, the study employed in reference 26 to obtain corrected ionization potentials was later retracted. Thus, the data tabulated in reference 26 should be used with caution.

The calculations of reference 18 include the species e^-, H_2, H, H^+, H_2^+, H^-, and H_3^+. The first six species are relatively well-known, whereas H_3^+ has not been included in previous calculations of thermodynamic properties for hydrogen. Although observed experimentally, no optical spectrum has been obtained for H_3^+ and the partition function is only an estimate. This partition function is believed (ref. 18) to be accurate to within 20 percent from 300 K to 8000 K and within a factor of two from 8000 K to 15 000 K. The role of the species H_3^+ on calculated thermodynamic properties of hydrogen diminishes rapidly above 8000 K and is negligible for $T > 15\,000$ K. The inclusion of H_3^+ increases the concentration of species e^- and H^+ at high pressures ($p/p_o = 1000$) but is less important at lower pressures. Both ideal-gas approximations and Debye-Huckel approximations (for example, ref. 28) are used in the calculations of reference 18, and it is recommended in reference 18 that, for high temperatures and pressures approaching $p/p_o = 1000$,

the Debye-Huckel approximation be used since the ideal-gas approximation was found to be inadequate at these conditions. At the higher temperatures, hydrogen equilibrium properties were calculated in reference 18 by using a major-minor Debye-Hückel iteration scheme. The major species were taken to be H, H^+, and e^-, while the minor species were H^- and H_2^+. (See fig. 2.)

The computer code of reference 27 was also used to calculate thermodynamic properties of hydrogen at high temperatures. A five-species hydrogen model (H_2, H, e^-, H^+, and H^-) was used in this code, which is based on curve fits to the results of reference 23. These curve fits were performed for a value of p/p_o of 1 and for two temperature ranges, the first being 500 K to 3000 K and the second being 3000 K to 6000 K. At the lower temperatures, the specific heat at constant pressure (the parameter curve fitted) varies with temperature much more than in the higher temperature range and is, therefore, less amenable to accurate curve fitting with simple expressions. Because the simplicity of this computer code (ref. 27) requires relatively little computer time to generate thermodynamic properties, it is often used to determine engineering estimates of flow quantities in the shock layer about hypervelocity entry vehicles into the atmosphere of inner and outer planets. Furthermore, this computer code has been successfully applied at temperatures in excess of the temperature range for which the curve fits are truly applicable.

Another computer code used in the present comparison was developed at JPL for computing shock-tube thermodynamic properties in regions (2), (2s), and (2r) and is described in reference 15. Only the phase of the program in which equilibrium thermodynamic properties of arbitrary gas mixtures are calculated was utilized. Basic inputs to this phase of the program are density and temperature. However, an iterative scheme was employed which permitted pressure and temperature to be the basic inputs. The same six-species hydrogen model used in the method of reference 10 was used in this modified version of reference 15 and heat of formation and spectroscopic constant inputs for the species H_2, H, H_2^+, and H^- are listed in reference 15. Modifications to the program of reference 15 were performed by Ernest V. Zoby of the Langley Research Center. The results generated by Zoby with this modified program are referred to hereafter as the method or computer code of reference 15.

As mentioned previously, in the shock-crossing procedure of reference 9, the method of successive approximations is employed. That is, the density in the high-temperature region (2), (2s), or (2r) is iterated upon. Thus, an accurate procedure for determining the density is required in reference 9. In figure 9, values of density for equilibrium hydrogen as obtained from the four studies in which density was tabulated in terms of pressure and temperature and the computer codes of references 15 and 27, are compared with values calculated by the method of reference 10. At the lowest pressure $p/p_o = 0.1$, the values of density from references 18, 24, and 25 and the computer codes of references 15 and 27 are within 0.8 percent of those calculated by the method of reference 10 for temperatures from 2000 K to 50 000 K. As the pressure increases, differences between the various sources and reference 10, in general, also increase. At a pressure p/p_o of 1, the agreement between the various sources with respect to reference 10 is good (within

1.5 percent) with the exception of reference 26. As discussed previously, the results of reference 26 may be erroneous, and the data of figure 9 tends to support this. Note that the trend between references 10 and 18 is similar to that observed for $p/p_o = 0.1$ and for $p/p_o = 10$ and 100 (figs. 9(c) and 9(d)). For these latter two pressures and $2000 \text{ K} \leq T \leq 50\,000 \text{ K}$, the agreement between references 10 and 18 is within 2 percent; for values of p/p_o equal to 1, 10, and 100, the agreement between these two sources is within 1 percent for temperatures less than 17 000 K, 20 000 K, and 28 000 K, respectively. For values of pressure between 0.1 and 100, agreement between the computer codes of references 15 and 27, relative to the method of reference 10, is within 1 percent for the entire temperature range. With the exception of a single point for pressures p/p_o equal to 1, 10, and 100, the agreement between references 10 and 25 is also within 1 percent. At the highest value of pressure ($p/p_o = 1000$, fig. 9(e)), the agreement between references 10 and 18 is within 1 percent for temperatures to approximately 22 000 K; the maximum discrepancy between these sources for $22\,000 \leq T \leq 50\,000$ is 2.5 percent. The computer code of reference 15 is within 1 percent of reference 10 for temperatures up to 26 000 K, but the agreement declines for higher temperatures, being approximately 2.5 to 3 percent between temperatures from 35 000 K to 50 000 K. Similarly, the computer code of reference 27 is within 2 percent of reference 10 for $T < 26\,000$ K, but for higher temperatures, differences up to 8.3 percent were observed.

From figure 9, the following conclusions may be drawn:

(1) The analytical method used herein (ref. 10) to determine thermochemical equilibrium hydrogen properties yields values of density to within 2.5 percent of those calculated with the more rigorous scheme of reference 18 for temperatures from 2000 K to 50 000 K and pressures p/p_o from 0.1 to 1000. The agreement between these sources diminishes with increasing pressure.

(2) The methods of references 24 and 25 and the computer codes of references 15 and 27 provide values of density within 1 percent of those calculated by using reference 10 for the present temperature range and $0.1 < p/p_o < 100$.

(3) For $p/p_o = 1000$, the computer code of reference 27 provides reasonably accurate (within approximately 2 percent) values of density for temperatures to 26 000 K, with the uncertainty increasing rapidly with further increase in temperature above 26 000 K. The comparison between the code of reference 27 and the methods of references 10 and 18 provides justification for the use of this simpler computer code (ref. 27) in determining equilibrium thermodynamic properties in flow-field analysis about hypervelocity entry vehicles into outer planets where hydrogen is the predominant atmospheric constituent.

(4) As noted in reference 18, the results of reference 26 appear erroneous and should be used with discretion.

Comparisons between reference 10 and the other sources for determining hydrogen properties are shown in figure 10 for entropy. As for density, fig-

ure 10 demonstrates that the results of reference 26 are erroneous and that the agreement between the other sources and reference 10 is very good (within 1.3 percent) over the entire temperature range for values of $p/p_o < 100$. Again, the agreement between the various sources with reference 10 is best at the lowest pressure and diminishes somewhat with increasing pressure. For example, at $p/p_o = 0.1$, the maximum percent difference between the various sources and reference 10 is 0.3 to 0.4; for $p/p_o = 1$, it is 0.6; for $p/p_o = 10$, it is 1.0; and for $p/p_o = 100$, it is 1.3. At the highest pressure, $p/p_o = 1000$, agreement in entropy between references 10 and 18 is excellent (within 0.7 percent); the simple computer code of reference 27 is in good agreement (within 2 percent) with reference 10 for 2000 K < T < 21 000 K and 35 000 K < T < 50 000 K, with the maximum difference of 3 percent occurring between 26 000 K and 28 000 K.

Figure 11 shows percent differences for enthalpy as a function of temperature. At the lowest value of pressure (fig. 11(a)), the tabulations of enthalpy from references 18, 24, and 25 agree with values calculated using reference 10 to within 1.1 percent over the temperature range. For temperatures equal to or in excess of 4000 K, the computer code of reference 27 yields values of enthalpy within 1.5 percent of those calculated by using reference 10 at the lowest value of pressure; however, at the lowest temperature of 2000 K, the difference is 13 percent. As discussed previously, this large uncertainty in the code of reference 27 is believed due to the curve-fitting procedure upon which it is based. Values of enthalpy calculated with the computer code of reference 15 agree with those calculated with the method of reference 10 to within 1 percent for pressures $p/p_o < 100$. As for density and entropy, the maximum percent difference between the various sources and the calculations of reference 10 tends to increase with increasing pressure. The results of figure 11 also illustrate that the data of reference 26 are erroneous. Comparing the results of reference 18 to the calculations of reference 10, it is observed that for $p/p_o = 10$, agreement is within approximately 1 percent, except for the temperature range 14 000 K to 20 000 K, where percent differences up to 2.8 percent occur. The maximum percent difference between these two sources for $p/p_o = 100$ is 3.6 and for $p/p_o = 1000$ is 2.2. For both pressures, the maximum percent difference occurs at 20 000 K. It is interesting to note the trend between reference 18 and reference 10 and reference 27 and reference 10 for the two highest values of pressure (figs. 11(d) and 11(e)). For example, at $p/p_o = 100$ and temperature of 20 000 K, the enthalpy from reference 18 is 3.6 percent greater than that calculated from reference 10, whereas the enthalpy calculated from reference 27 is 2.9 percent less than that from reference 10. Since it has been assumed that the hydrogen data of reference 18 are the best available, the results of figures 11(d) and 11(e) demonstrate that the computer code of reference 27 should be used with discretion in calculating values of enthalpy for hydrogen at pressures $p/p_o \geq 100$ over a wide range of temperatures.

Second-order thermodynamic properties isentropic exponent γ_E and speed of sound a are compared in figure 12 between the tabulations of reference 18 and values calculated by using the program of reference 10. These properties (γ_E and a) are plotted as a function of temperature for various values of p/p_o. From figure 12(a), the agreement between these two sources

for the isentropic exponent for $p/p_o < 100$ is within 2 percent. At $p/p_o = 1000$, differences as high as 7 percent are observed; however, in view of the discussion of the accuracies of second-order thermodynamic properties for air in reference 12, this maximum difference of 7 percent does not appear to be unreasonable. Although tabulations of the isentropic exponent are presented in reference 18, corresponding tabulations of the speed of sound are not. Thus, the values of speed of sound for reference 18 presented in figure 12(b) were calculated from the expression

$$a = \sqrt{\frac{\gamma_E RT}{W}}$$

where values of the equilibrium-hydrogen molecular weight W are tabulated in reference 18. From figure 12(b), the speeds of sound from references 10 and 18 are in excellent agreement (within 0.5 percent) for $0.1 < p/p_o < 10$. The agreement is still good (within 2.5 percent) for a pressure of $p/p_o = 100$; at the highest pressure, percent differences between the two sources as high as 8.2 percent were observed. Thus, for pressures $p/p_o < 100$, second-order thermodynamic properties γ_E and a determined from references 10 and 18 are in good agreement (within approximately 2 percent) for temperatures from 2000 K to 50 000 K; however, the percent difference in both γ_E and a increases markedly between these two sources for $p/p_o > 100$ but is still judged to be in reasonable agreement over a wide range of temperature.

In the previous comparisons of figures 9 to 12, sources of equilibrium hydrogen properties at high temperatures were chosen which possessed tabulations of properties in terms of pressure and temperature, or in the case of the modified program of reference 15 or the program of reference 27, the inputs to these computer codes were pressure and temperature. This criteria for selecting existing sources was due to the fact that the basic inputs to the program of reference 10 are pressure and temperature. However, in figure 13, a comparison of equilibrium thermodynamic properties for hydrogen between those calculated using the program of reference 10 and those tabulated in reference 29 is made. In reference 29, basic inputs were density and temperature; thus, for a given density, the calculated pressure for a given temperature tabulated in reference 29 was used as input to the program of reference 10. This comparison is performed because the results of reference 29 are relatively recent, they account for reduction in the ionization potential, and they include a Debye theory pressure correction term. The value of pressure used as input into the program of reference 10 is referred to in reference 29 as the total pressure. Comparisons in figure 13 correspond to two values of density, 10^{-3} kg/m^3 and 10^{-4} kg/m^3. For both values of density, the temperature range for the comparison was 10 000 K to 50 000 K; for a density of 10^{-3} kg/m^3, the corresponding range of pressure p/p_o was 0.83 to 8.13, and for a density of 10^{-4} kg/m^3, the pressure range was 0.09 to 0.81. From figure 13, the maximum percent differences are observed to be 2 percent for density, 1.8 percent for entropy, 3 percent for enthalpy, and 0.6 percent for the speed of sound. At temperatures in excess of 24 000 K, all thermodynamic properties considered in figure 13 are within 1 percent.

APPENDIX B

As discussed previously, the primary purpose of the comparisons performed in this appendix is to establish a confidence level for the use of the program of reference 10, in conjunction with the inputs presented in appendix A, as the equation of state for generating the present equilibrium normal-shock properties for hydrogen. This comparison demonstrates that equilibrium first-order and second-order thermodynamic properties for hydrogen generated with the analytical method of reference 10 over a temperature range from 2000 K to 50 000 K and pressure p/p_o range from 0.1 to 100 are in good agreement with a number of other sources of hydrogen properties. In particular, the predicted density, enthalpy, and entropy from the method of reference 10 and the more rigorous computations of reference 18 were within approximately 3.5 percent for this temperature range and pressures p/p_o to 1000. Thus, it is concluded that the present thermodynamic properties calculated in region ② for the present range of p_1 and U_s possess a high level of confidence (i.e., they are believed to be relatively accurate).

REFERENCES

1. The Planet Jupiter (1970). NASA SP-8069, 1971.

2. The Planet Saturn (1970). NASA SP-8091, 1972.

3. Hunten, Donald M.: The Outer Planets. Sci. American, vol. 233, no. 3, Sept. 1975, pp. 130-139.

4. Menard, W. A.: A High Performance Electric-Arc-Driven Shock Tube. JPL Quarterly Tech. Rev., vol. 1, no. 1, Apr. 1971, pp. 17-28.

5. Leibowitz, Lewis P.: Jupiter Entry Simulation With the ANAA Shock Tube. AIAA Paper No. 74-610, July 1974.

6. Dannenberg, Robert E.: A Conical Arc Driver for High-Energy Test Facilities. AIAA J., vol. 10, no. 12, Dec. 1972, pp. 1692-1695.

7. Leibowitz, Lewis P.: Measurements of the Structure of an Ionizing Shock Wave in a Hydrogen-Helium Mixture. Tech. Memo. 33-563, California Inst. Technol., Sept. 1, 1972. (Available as NASA CR-128343.)

8. Mechtly, E. A.: The International System of Units - Physical Constants and Conversion Factors (Second Revision). NASA SP-7012, 1973.

9. Miller, Charles G., III: A Program for Calculating Expansion-Tube Flow Quantities for Real-Gas Mixtures and Comparison With Experimental Results. NASA TN D-6830, 1972.

10. Allison, Dennis O.: Calculation of Thermodynamic Properties of Gas Mixtures at High Temperatures. M.S. Thesis, Virginia Polytech. Inst., 1965.

11. Allison, Dennis O.: Calculation of Thermodynamic Properties of Arbitrary Gas Mixtures With Modified Vibrational-Rotational Corrections. NASA TN D-3538, 1966.

12. Newman, Perry A.; and Allison, Dennis O.: Direct Calculation of Specific Heats and Related Thermodynamic Properties of Arbitrary Gas Mixtures With Tabulated Results. NASA TN D-3540, 1966.

13. White, W. B.; Johnson, S. M.; and Dantzig, G. B.: Chemical Equilibrium in Complex Mixtures. J. Chem. Phys., vol. 28, no. 5, May 1958, pp. 751-755.

14. Moore, Charlotte E.: Atomic Energy Levels. Vol. I. ^{1}H-^{23}V. NBS Circ. 467, U.S. Dep. Commer., June 15, 1949.

15. Horton, T. E.; and Menard, W. A.: A Program for Computing Shock-Tube Gasdynamic Properties. Tech. Rep. 32-1350 (Contract No. NAS7-100), Jet Propulsion Lab., California Inst. Technol., Jan. 15, 1969.

16. Horton, T. E.: The Computation of Partition Functions and Thermochemistry Data for Atomic, Ionic, Diatomic, and Polyatomic Species. Tech. Rep. 32-1425, Jet Propulsion Lab., California Inst. Technol., Mar. 1, 1970.

17. Patch, R. W.: Components of a Hydrogen Plasma Including Minor Species. NASA TN D-4993, 1969.

18. Patch, R. W.: Thermodynamic Properties and Theoretical Rocket Performance of Hydrogen to 100000 K and 1.01325×10^8 N/m^2. NASA SP-3069, 1971.

19. Holley, C. E., Jr.; Worlton, W. J.; and Zeigler, R. K.: Compressibility Factors and Fugacity Coefficients Calculated From the Beattie-Bridgeman Equation of State for Hydrogen, Nitrogen, Oxygen, Carbon Dioxide, Ammonia, Methane, and Helium. LA-2271 (Contract W-7405 - ENG. 36), Los Alamos Sci. Lab., Univ. of California, Mar. 17, 1959.

20. Grose, William L.; and Nealy, John E.: Imperfect Gas Effect in Real Hydrogen Drives. AIAA J., vol. 8, no. 6, June 1970, pp. 1164-1165.

21. Olstad, Walter B.; Kemper, Jane T.; and Bengtson, Roger D.: Equilibrium Normal-Shock and Stagnation-Point Properties of Helium for Incident-Shock Mach Numbers From 1 to 30. NASA TN D-4754, 1968.

22. Miller, Charles G., III; and Jones, Jim J.: Incident Shock-Wave Characteristics in Air, Argon, Carbon Dioxide, and Helium in a Shock Tube With Unheated Helium Driver. NASA TN D-8099, 1975.

23. JANAF Thermochemical Tables. Second ed. NSRDS-NBS 37, U.S. Dep. Commer., June 1971.

24. Rosenbaum, Burt M.; and Levitt, Leo: Thermodynamic Properties of Hydrogen From Room Temperature to 100,000 K. NASA TN D-1107, 1962.

25. Kubin, Robert F.; and Presley, Leroy L.: Thermodynamic Properties and Mollier Chart for Hydrogen From 300° to 20,000° K. NASA SP-3002, 1964.

26. Krascella, N. L.: Tables of the Composition, Opacity, and Thermodynamic Properties of Hydrogen at High Temperatures. NASA SP-3005, 1963.

27. Nicolet, W. E.: User's Manual for the Generalized Radiation Code (RAD/EQUIL). Rep. No. UM-69-9 (Contract NASI-9399), Aerotherm Corp., Oct. 1, 1969. (Available as NASA CR-116353.)

28. Lewis, Gilbert Newton; and Randall, Merle: Thermodynamics. Second ed., McGraw-Hill Book Co., Inc., 1961.

29. Nelson, H. F.: Thermodynamic Properties of Hydrogen-Helium Plasmas. NASA CR-1861, 1971.

TABLE I.-NONDIMENSIONAL THERMODYNAMIC PROPERTIES AND FLOW VELOCITY FOR INCIDENT (MOVING), STANDING, AND REFLECTED NORMAL SHOCKS IN PURE HYDROGEN

[User cautioned about using table at pressures exceeding 100 MN/ m^2]

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3606E+01
T	2.7140E+00	3.3569E+00	4.7130E+00
RHO	3.9200E+00	6.5476E+00	1.1373E+01
H	2.7745E+00	3.4526E+00	4.9381E+00
A	1.6432E+00	1.8212E+00	2.1346E+00
S	1.0450E+00	1.0465E+00	1.0611E+00
Z	1.0000E+00	1.0000E+00	1.0001E+00
GAME	9.9494E-01	9.8810E-01	9.6671E-01
U	2.2663E+00	1.3533E+00	1.1934E+00

SPECIES	MOLE FRACTIONS		
E-	1.4763E-35	2.7956E-33	2.2612E-25
H	6.1638E-10	2.3045E-08	1.1315E-04
H+	1.2321E-34	3.5936E-33	2.1873E-25
H2	1.0000E+00	1.0000E+00	9.9989E-01
H-	9.4456E-46	2.0050E-40	1.4956E-31
H2+	1.8060E-35	1.5496E-34	7.3881E-27

P1 = 5.00E+00 N/SQ-M, US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4296E+01	7.9552E+01	1.4942E+02
T	4.8530E+00	6.4479E+00	7.3179E+00
RHO	5.0060E+00	1.2238E+01	1.9788E+01
H	5.1003E+00	7.3816E+00	9.6990E+00
A	2.1596E+00	2.3635E+00	2.4846E+00
S	1.0965E+00	1.1035E+00	1.1231E+00
Z	1.0001E+00	1.0081E+00	1.0317E+00
GAME	9.6091E-01	8.5934E-01	8.1762E-01
U	3.6527E+00	1.4912E+00	1.2417E+00

SPECIES	MOLE FRACTIONS		
E-	7.0923E-24	2.9115E-17	6.3574E-15
H	2.8888E-04	1.6149E-02	6.1492E-02
H+	7.0373E-24	2.8810E-17	6.2941E-15
H2	9.9971E-01	9.8385E-01	9.3851E-01
H-	2.7869E-29	7.7596E-22	5.2526E-19
H2+	5.4971E-26	3.0653E-19	6.3891E-17

P1 = 5.00E+00 N/SQ-M, US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4594E+01	9.6251E+01
T	3.7003E+00	4.9179E+00	6.3657E+00
RHO	4.5254E+00	9.0644E+00	1.5025E+01
H	3.8206E+00	5.1739E+00	7.1773E+00
A	1.9077E+00	2.1735E+00	2.3619E+00
S	1.0710E+00	1.0748E+00	1.0918E+00
Z	1.0000E+00	1.0001E+00	1.0062E+00
GAME	9.8357E-01	9.6047E-01	8.7091E-01
U	2.9621E+00	1.4759E+00	1.2805E+00

SPECIES	MOLE FRACTIONS		
E-	1.0281E-29	3.6549E-23	1.7452E-17
H	6.4569E-07	2.9444E-04	1.2226E-02
H+	1.0042E-29	3.5934E-23	1.7252E-17
H2	1.0000E+00	9.9971E-01	9.8777E-01
H-	1.8260E-36	1.0234E-28	5.3265E-22
H2+	2.3922E-31	6.1433E-25	2.0016E-19

P1 = 5.00E+00 N/SQ-M, US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3509E+01	1.3520E+02	2.2277E+02
T	5.9864E+00	7.3986E+00	7.9701E+00
RHO	5.5735E+00	1.7600E+01	2.6069E+01
H	6.6255E+00	1.0150E+01	1.2676E+01
A	2.3035E+00	2.4993E+00	2.6222E+00
S	1.1213E+00	1.1352E+00	1.1584E+00
Z	1.0042E+00	1.0383E+00	1.0721E+00
GAME	8.8256E-01	8.1318E-01	8.0468E-01
U	4.3691E+00	1.3820E+00	1.1904E+00

SPECIES	MOLE FRACTIONS		
E-	1.5595E-18	1.0727E-14	1.5870E-13
H	8.4330E-03	7.3750E-02	1.3446E-01
H+	1.5466E-18	1.0628E-14	1.5719E-13
H2	9.9157E-01	9.2625E-01	8.6554E-01
H-	1.7325E-23	8.8357E-19	2.4627E-17
H2+	1.2834E-20	9.9804E-17	1.5380E-15

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.4774E+01	2.2461E+02	3.3982E+02
T	6.7520E+00	8.0834E+00	8.5457E+00
RHO	6.4981E+00	2.5620E+01	3.5315E+01
H	8.4117E+00	1.3500E+01	1.6302E+01
A	2.3842E+00	2.6538E+00	2.7773E+00
S	1.1469E+00	1.1717E+00	1.1986E+00
Z	1.0206E+00	1.0848E+00	1.1259E+00
GAME	8.2493E-01	8.0319E-01	8.0167E-01
U	5.1476E+00	1.3020E+00	1.1617E+00

SPECIES	MOLE FRACTIONS		
E-	3.0612E-16	2.4356E-13	1.6771E-12
H	4.0330E-02	1.5626E-01	2.2361E-01
H+	3.0378E-16	2.4118E-13	1.6612E-12
H2	9.5967E-01	8.4374E-01	7.7639E-01
H-	5.6494E-21	3.7167E-17	4.3418E-16
H2+	2.3425E-18	2.4124E-15	1.6290E-14

P1 = 5.00E+00 N/SQ-M, US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.2619E+01	5.2593E+02	7.2474E+02
T	7.6661E+00	9.1812E+00	9.5733E+00
RHO	8.7708E+00	4.7329E+01	5.9796E+01
H	1.2707E+01	2.1700E+01	2.5217E+01
A	2.5718E+00	2.9869E+00	3.1233E+00
S	1.2060E+00	1.2596E+00	1.2940E+00
Z	1.0798E+00	1.2107E+00	1.2662E+00
GAME	7.9898E-01	8.0264E-01	8.0476E-01
U	6.7376E+00	1.2507E+00	1.1558E+00

SPECIES	MOLE FRACTIONS		
E-	7.6016E-14	1.4062E-11	4.8087E-11
H	1.4773E-01	3.4792E-01	4.2041E-01
H+	7.5567E-14	1.3924E-11	4.7633E-11
H2	8.5227E-01	6.5208E-01	5.7959E-01
H-	5.4515E-18	5.6813E-15	2.5853E-14
H2+	4.5465E-16	1.4365E-13	4.7951E-13

P1 = 5.00E+00 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7866E+01	3.5360E+02	5.0663E+02
T	7.2649E+00	8.6621E+00	9.0744E+00
RHO	7.6097E+00	3.5727E+01	4.6875E+01
H	1.0442E+01	1.7361E+01	2.0502E+01
A	2.4760E+00	2.8165E+00	2.9449E+00
S	1.1750E+00	1.2132E+00	1.2439E+00
Z	1.0468E+00	1.1428E+00	1.1911E+00
GAME	8.0615E-01	8.0141E-01	8.0237E-01
U	5.9442E+00	1.2676E+00	1.1524E+00

SPECIES	MOLE FRACTIONS		
E-	8.1529E-15	2.4873E-12	1.0486E-11
H	8.9435E-02	2.4982E-01	3.2084E-01
H+	8.0991E-15	2.4634E-12	1.0386E-11
H2	9.1056E-01	7.5018E-01	6.7916E-01
H-	3.5079E-19	6.7085E-16	4.0642E-15
H2+	5.4155E-17	2.4592E-14	1.0395E-13

P1 = 5.00E+00 N/SQ-M, US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.8964E+01	7.4485E+02	9.9876E+02
T	7.9983E+00	9.6688E+00	1.0060E+01
RHO	9.9444E+00	5.9858E+01	7.3508E+01
H	1.5207E+01	2.6497E+01	3.0448E+01
A	2.6699E+00	3.1662E+00	3.3141E+00
S	1.2396E+00	1.3103E+00	1.3485E+00
Z	1.1185E+00	1.2875E+00	1.3508E+00
GAME	7.9678E-01	8.0527E-01	8.0822E-01
U	7.5230E+00	1.2520E+00	1.1757E+00

SPECIES	MOLE FRACTIONS		
E-	3.5093E-13	6.0557E-11	1.8168E-10
H	2.1191E-01	4.4639E-01	5.1933E-01
H+	3.4891E-13	5.9974E-11	1.8002E-10
H2	7.8809E-01	5.5361E-01	4.8067E-01
H-	3.3245E-17	3.3768E-14	1.2719E-13
H2+	2.0525E-15	6.1702E-13	1.7820E-12

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0687E+02	1.0113E+03	1.3297E+03
T	8.2963E+00	1.0143E+01	1.0548E+01
RHO	1.1085E+01	7.2655E+01	8.7289E+01
H	1.7941E+01	3.1746E+01	3.6186E+01
A	2.7708E+00	3.3560E+00	3.5189E+00
S	1.2761E+00	1.3648E+00	1.4069E+00
Z	1.1623E+00	1.3727E+00	1.4444E+00
GAME	7.9618E-01	8.0890E-01	8.1275E-01
U	8.3002E+00	1.2685E+00	1.2067E+00

SPECIES	MOLE FRACTIONS		
E-	1.2162E-12	2.2652E-10	6.0665E-10
H	2.7920E-01	5.4285E-01	6.1527E-01
H+	1.2093E-12	2.2450E-10	6.0148E-10
H2	7.2080E-01	4.5715E-01	3.8473E-01
H-	1.4463E-16	1.6118E-13	5.2227E-13
H2+	7.0163E-15	2.1806E-12	5.6903E-12

P1 = 5.00E+00 N/SQ-M, US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4739E+02	1.6905E+03	2.1711E+03
T	8.8318E+00	1.1118E+01	1.1621E+01
RHO	1.3206E+01	9.7026E+01	1.1274E+02
H	2.4114E+01	4.3600E+01	4.9237E+01
A	2.9839E+00	3.7785E+00	3.9911E+00
S	1.3566E+00	1.4838E+00	1.5340E+00
Z	1.2639E+00	1.5665E+00	1.6571E+00
GAME	7.9759E-01	8.1970E-01	8.2715E-01
U	9.8373E+00	1.3410E+00	1.3051E+00

SPECIES	MOLE FRACTIONS		
E-	9.3439E-12	2.3722E-09	6.1619E-09
H	4.1757E-01	7.2348E-01	7.9308E-01
H+	9.2954E-12	2.3557E-09	6.1224E-09
H2	5.8243E-01	2.7652E-01	2.0692E-01
H-	1.6011E-15	2.2914E-12	6.7819E-12
H2+	5.0153E-14	1.8823E-11	4.6283E-11

P1 = 5.00E+00 N/SQ-M, US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2635E+02	1.3260E+03	1.7192E+03
T	8.5736E+00	1.0620E+01	1.1057E+01
RHO	1.2170E+01	8.5172E+01	1.0053E+02
H	2.0909E+01	3.7446E+01	4.2441E+01
A	2.8755E+00	3.5588E+00	3.7418E+00
S	1.3151E+00	1.4229E+00	1.4689E+00
Z	1.2108E+00	1.4658E+00	1.5467E+00
GAME	7.9652E-01	8.1356E-01	8.1869E-01
U	9.0711E+00	1.2983E+00	1.2490E+00

SPECIES	MOLE FRACTIONS		
E-	3.7860E-12	7.6344E-10	1.9131E-09
H	3.4817E-01	6.3566E-01	7.0686E-01
H+	3.7660E-12	7.5737E-10	1.8985E-09
H2	6.5183E-01	3.6434E-01	2.9314E-01
H-	5.5400E-16	6.4845E-13	1.9181E-12
H2+	2.0504E-14	6.7216E-12	1.6523E-11

P1 = 5.00E+00 N/SQ-M, US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6998E+02	2.1000E+03	2.6830E+03
T	9.0844E+00	1.1663E+01	1.2312E+01
RHO	1.4158E+01	1.0758E+02	1.2281E+02
H	2.7554E+01	5.0198E+01	5.6611E+01
A	3.0972E+00	4.0208E+00	4.2884E+00
S	1.4005E+00	1.5472E+00	1.6019E+00
Z	1.3215E+00	1.6737E+00	1.7745E+00
GAME	7.9907E-01	8.2823E-01	8.4177E-01
U	1.0598E+01	1.3968E+00	1.3826E+00

SPECIES	MOLE FRACTIONS		
E-	2.3225E-11	6.9029E-09	2.2854E-08
H	4.8663E-01	8.0504E-01	8.7293E-01
H+	2.3114E-11	6.8611E-09	2.2744E-08
H2	5.1337E-01	1.9496E-01	1.2707E-01
H-	4.5553E-15	7.3175E-12	2.5482E-11
H2+	1.1544E-13	4.9099E-11	1.3535E-10

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9412E+02	2.5530E+03	3.2629E+03
T	9.3300E+00	1.2329E+01	1.3352E+01
RHO	1.5040E+01	1.1597E+02	1.2898E+02
H	3.1230E+01	5.7237E+01	6.4665E+01
A	3.2154E+00	4.3078E+00	4.7146E+00
S	1.4465E+00	1.6121E+00	1.6717E+00
Z	1.3835E+00	1.7855E+00	1.8945E+00
GAME	8.0099E-01	8.4297E-01	8.7869E-01
U	1.1355E+01	1.4746E+00	1.4986E+00

SPECIES	MOLE FRACTIONS		
E-	4.9781E-11	2.3962E-08	1.2177E-07
H	5.5432E-01	8.7988E-01	9.4431E-01
H+	4.9553E-11	2.3852E-08	1.2141E-07
H2	4.4568E-01	1.2012E-01	5.5686E-02
H-	1.0964E-14	2.5576E-11	1.2311E-10
H2+	2.3948E-13	1.3561E-10	4.8687E-10

P1 = 5.00E+00 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4698E+02	3.5152E+03	4.8210E+03
T	9.8316E+00	1.5479E+01	2.4057E+01
RHO	1.6529E+01	1.1465E+02	1.0008E+02
H	3.9289E+01	7.2494E+01	8.6603E+01
A	3.4710E+00	5.6326E+00	7.3010E+00
S	1.5447E+00	1.7393E+00	1.8117E+00
Z	1.5199E+00	1.9807E+00	2.0024E+00
GAME	8.0623E-01	1.0348E+00	1.1065E+00
U	1.2856E+01	1.8549E+00	2.5405E+00

SPECIES	MOLE FRACTIONS		
E-	2.2321E-10	2.1911E-06	1.3958E-03
H	6.8411E-01	9.9026E-01	9.9703E-01
H+	2.2235E-10	2.1892E-06	1.3958E-03
H2	3.1589E-01	9.7307E-03	1.7949E-04
H-	5.7722E-14	1.2737E-09	1.9027E-07
H2+	9.1887E-13	3.1959E-09	2.3289E-07

P1 = 5.00E+00 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1979E+02	3.0365E+03	3.9492E+03
T	9.5782E+00	1.3304E+01	1.6362E+01
RHO	1.5829E+01	1.2036E+02	1.2138E+02
H	3.5141E+01	6.4696E+01	7.4221E+01
A	3.3398E+00	4.7087E+00	5.9495E+00
S	1.4947E+00	1.6773E+00	1.7447E+00
Z	1.4496E+00	1.8963E+00	1.9886E+00
GAME	8.0335E-01	8.7885E-01	1.0879E+00
U	1.2107E+01	1.5943E+00	1.8123E+00

SPECIES	MOLE FRACTIONS		
E-	1.0910E-10	1.1819E-07	5.5648E-06
H	6.2038E-01	9.4534E-01	9.9424E-01
H+	1.0865E-10	1.1785E-07	5.5614E-06
H2	3.7962E-01	5.4662E-02	5.7475E-03
H-	2.6179E-14	1.1262E-10	2.8668E-09
H2+	4.8162E-13	4.5018E-10	6.2588E-09

P1 = 5.00E+00 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7569E+02	3.9238E+03	5.6721E+03
T	1.0100E+01	2.0191E+01	2.9395E+01
RHO	1.7124E+01	9.7216E+01	9.5338E+01
H	4.3672E+01	8.0447E+01	9.8214E+01
A	3.6109E+00	6.8633E+00	7.5159E+00
S	1.5965E+00	1.7908E+00	1.8564E+00
Z	1.5940E+00	1.9990E+00	2.0240E+00
GAME	8.0991E-01	1.1671E+00	9.4947E-01
U	1.3601E+01	2.3973E+00	2.9722E+00

SPECIES	MOLE FRACTIONS		
E-	4.7119E-10	1.5336E-04	1.1910E-02
H	7.4532E-01	9.9904E-01	9.7613E-01
H+	4.6959E-10	1.5334E-04	1.1910E-02
H2	2.5468E-01	6.5761E-04	4.8198E-05
H-	1.2751E-13	3.3297E-08	9.0986E-07
H2+	1.7365E-12	4.9144E-08	1.0170E-06

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0589E+02	4.3273E+03	6.4925E+03
T	1.0391E+01	2.5204E+01	3.2494E+01
RHO	1.7610E+01	8.5635E+01	9.7001E+01
H	4.8291E+01	8.8702E+01	1.0921E+02
A	3.7619E+00	7.3443E+00	7.7300E+00
S	1.6498E+00	1.8315E+00	1.8927E+00
Z	1.6717E+00	2.0049E+00	2.0599E+00
GAME	8.1472E-01	1.0674E+00	8.9272E-01
U	1.4341E+01	2.9513E+00	3.1812E+00

SPECIES	MOLE FRACTIONS		
E-	9.5758E-10	2.5655E-03	2.9094E-02
H	8.0358E-01	9.9476E-01	9.4178E-01
H+	9.5465E-10	2.5654E-03	2.9094E-02
H2	1.9642E-01	1.1209E-04	2.7549E-05
H-	2.7031E-13	2.6384E-07	1.7385E-06
H2+	3.2078E-12	3.1283E-07	1.9334E-06

P1 = 5.00E+00 N/SQ-M, US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.7052E+02	5.3477E+03	8.0387E+03
T	1.1159E+01	3.1338E+01	3.6455E+01
RHO	1.8098E+01	8.5497E+01	1.0259E+02
H	5.8232E+01	1.0715E+02	1.3137E+02
A	4.1349E+00	7.5993E+00	8.2060E+00
S	1.7597E+00	1.8980E+00	1.9606E+00
Z	1.8347E+00	2.0581E+00	2.1494E+00
GAME	8.3509E-01	9.1879E-01	8.5938E-01
U	1.5801E+01	3.3519E+00	3.3790E+00

SPECIES	MOLE FRACTIONS		
E-	6.0428E-09	2.8587E-02	6.9541E-02
H	9.0991E-01	9.4273E-01	8.6090E-01
H+	6.0314E-09	2.8587E-02	6.9540E-02
H2	9.0086E-02	9.5943E-05	1.4908E-05
H-	1.5882E-12	1.5256E-06	3.2008E-06
H2+	1.3031E-11	1.6809E-06	3.6383E-06

P1 = 5.00E+00 N/SQ-M, US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3752E+02	4.7902E+03	7.2879E+03
T	1.0732E+01	2.9009E+01	3.4697E+01
RHO	1.7948E+01	8.1972E+01	9.9902E+01
H	5.3144E+01	9.7534E+01	1.2018E+02
A	3.9323E+00	7.4484E+00	7.9678E+00
S	1.7044E+00	1.8664E+00	1.9269E+00
Z	1.7523E+00	2.0234E+00	2.1025E+00
GAME	8.2224E-01	9.4818E-01	8.7025E-01
U	1.5076E+01	3.3042E+00	3.2988E+00

SPECIES	MOLE FRACTIONS		
E-	2.3175E-09	1.1651E-02	4.8778E-02
H	8.5867E-01	9.7664E-01	9.0242E-01
H+	2.3118E-09	1.1651E-02	4.8777E-02
H2	1.4133E-01	5.9637E-05	1.9458E-05
H-	6.3852E-13	7.9065E-07	2.5139E-06
H2+	6.3073E-12	8.8318E-07	2.8213E-06

P1 = 5.00E+00 N/SQ-M, US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.0462E+02	5.8581E+03	8.6468E+03
T	1.1800E+01	3.2751E+01	3.7904E+01
RHO	1.7903E+01	8.9337E+01	1.0375E+02
H	6.3548E+01	1.1722E+02	1.4276E+02
A	4.4255E+00	7.9210E+00	8.4341E+00
S	1.8150E+00	1.9299E+00	1.9949E+00
Z	1.9154E+00	2.1021E+00	2.1989E+00
GAME	8.6651E-01	9.4823E-01	8.5349E-01
U	1.6509E+01	3.3110E+00	3.4383E+00

SPECIES	MOLE FRACTIONS		
E-	2.2968E-08	4.9449E-02	9.0465E-02
H	9.5584E-01	9.0101E-01	8.1905E-01
H+	2.2940E-08	4.9449E-02	9.0464E-02
H2	4.4162E-02	8.9886E-05	1.1826E-05
H-	5.2173E-12	2.1516E-06	3.7493E-06
H2+	3.3253E-11	2.3954E-06	4.3193E-06

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3883E+02	5.8944E+03	8.7717E+03
T	1.3168E+01	3.5085E+01	3.9040E+01
RHO	1.6830E+01	7.9223E+01	9.9860E+01
H	6.9078E+01	1.2677E+02	1.5397E+02
A	5.0905E+00	8.0641E+00	8.6396E+00
S	1.8682E+00	1.9686E+00	2.0324E+00
Z	1.9802E+00	2.1354E+00	2.2500E+00
GAME	9.9381E-01	8.7149E-01	8.4976E-01
U	1.7162E+01	3.6519E+00	3.4737E+00

SPECIES	MOLE FRACTIONS		
E-	2.5675E-07	6.3596E-02	1.1113E-01
H	9.8999E-01	8.7278E-01	7.7771E-01
H+	2.5663E-07	6.3596E-02	1.1113E-01
H2	1.0014E-02	1.8131E-05	9.3039E-06
H-	3.8795E-11	2.3659E-06	4.0295E-06
H2+	1.6109E-10	2.6723E-06	4.6981E-06

P1 = 5.00E+00 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0344E+02	5.0953E+03	7.3579E+03
T	2.0199E+01	3.7194E+01	4.0317E+01
RHO	1.2458E+01	6.1669E+01	7.7689E+01
H	8.0663E+01	1.4570E+02	1.7434E+02
A	6.8149E+00	8.3663E+00	8.9446E+00
S	1.9521E+00	2.0509E+00	2.1163E+00
Z	2.0007E+00	2.2214E+00	2.3491E+00
GAME	1.1493E+00	8.4715E-01	8.4474E-01
U	1.8180E+01	3.6779E+00	3.4678E+00

SPECIES	MOLE FRACTIONS		
E-	4.3051E-04	9.9692E-02	1.4864E-01
H	9.9905E-01	8.0060E-01	7.0271E-01
H+	4.3050E-04	9.9691E-02	1.4864E-01
H2	8.4071E-05	7.3471E-06	5.4308E-06
H-	1.1974E-08	2.5318E-06	3.6804E-06
H2+	1.7665E-08	2.8968E-06	4.3553E-06

P1 = 5.00E+00 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.7104E+02	5.4540E+03	8.0093E+03
T	1.6359E+01	3.6340E+01	3.9725E+01
RHO	1.4406E+01	6.8958E+01	8.7686E+01
H	7.4774E+01	1.3615E+02	1.6417E+02
A	6.1917E+00	8.2092E+00	8.7947E+00
S	1.9147E+00	2.0106E+00	2.0748E+00
Z	1.9986E+00	2.1765E+00	2.2993E+00
GAME	1.1725E+00	8.5206E-01	8.4679E-01
U	1.7688E+01	3.7003E+00	3.4726E+00

SPECIES	MOLE FRACTIONS		
E-	1.6112E-05	8.1090E-02	1.3019E-01
H	9.9927E-01	8.3781E-01	7.3960E-01
H+	1.6111E-05	8.1089E-02	1.3019E-01
H2	6.9352E-04	9.7433E-06	7.0429E-06
H-	9.9549E-10	2.4902E-06	3.8742E-06
H2+	2.1751E-09	2.8278E-06	4.5524E-06

P1 = 5.00E+00 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3810E+02	4.9930E+03	7.1090E+03
T	2.3690E+01	3.8058E+01	4.1000E+01
RHO	1.1318E+01	5.7807E+01	7.2177E+01
H	8.6791E+01	1.5588E+02	1.8534E+02
A	6.9908E+00	8.5389E+00	9.1157E+00
S	1.9842E+00	2.0886E+00	2.1555E+00
Z	2.0069E+00	2.2695E+00	2.4023E+00
GAME	1.0279E+00	8.4415E-01	8.4365E-01
U	1.8714E+01	3.6695E+00	3.4765E+00

SPECIES	MOLE FRACTIONS		
E-	3.4533E-03	1.1876E-01	1.6747E-01
H	9.9307E-01	7.6247E-01	6.6505E-01
H+	3.4533E-03	1.1876E-01	1.6747E-01
H2	2.2444E-05	5.7947E-06	4.3304E-06
H-	5.5406E-08	2.6108E-06	3.5921E-06
H2+	6.8640E-08	3.0123E-06	4.2868E-06

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7628E+02	5.1686E+03	7.2796E+03
T	2.6231E+01	3.9007E+01	4.1840E+01
RHO	1.0864E+01	5.7067E+01	7.0706E+01
H	9.3202E+01	1.6707E+02	1.9766E+02
A	7.0326E+00	8.7357E+00	9.3187E+00
S	2.0129E+00	2.1241E+00	2.1927E+00
Z	2.0223E+00	2.3219E+00	2.4607E+00
GAME	9.3236E-01	8.4256E-01	8.4346E-01
U	1.9329E+01	3.6852E+00	3.5056E+00

SPECIES	MOLE FRACTIONS		
E-	1.1023E-02	1.3864E-01	1.8723E-01
H	9.7794E-01	7.2271E-01	6.2553E-01
H+	1.1023E-02	1.3864E-01	1.8723E-01
H2	1.0743E-05	4.7538E-06	3.5604E-06
H-	1.2839E-07	2.7600E-06	3.6242E-06
H2+	1.4894E-07	3.2168E-06	4.3722E-06

P1 = 5.00E+00 N/SQ-M, US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.6116E+02	5.9696E+03	8.2752E+03
T	2.9470E+01	4.1004E+01	4.3752E+01
RHO	1.0825E+01	5.9723E+01	7.3017E+01
H	1.0684E+02	1.9187E+02	2.2536E+02
A	7.2607E+00	9.1738E+00	9.7850E+00
S	2.0667E+00	2.1931E+00	2.2661E+00
Z	2.0724E+00	2.4376E+00	2.5903E+00
GAME	8.6316E-01	8.4197E-01	8.4483E-01
U	2.0702E+01	3.7582E+00	3.6009E+00

SPECIES	MOLE FRACTIONS		
E-	3.4951E-02	1.7954E-01	2.2791E-01
H	9.3009E-01	6.4091E-01	5.4417E-01
H+	3.4951E-02	1.7954E-01	2.2791E-01
H2	5.0155E-06	3.3755E-06	2.4875E-06
H-	2.9392E-07	3.1154E-06	3.7833E-06
H2+	3.2839E-07	3.7181E-06	4.6850E-06

P1 = 5.00E+00 N/SQ-M, US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1752E+02	5.5172E+03	7.7036E+03
T	2.8058E+01	4.0001E+01	4.2774E+01
RHO	1.0762E+01	5.7997E+01	7.1364E+01
H	9.9889E+01	1.7912E+02	2.1108E+02
A	7.1309E+00	8.9494E+00	9.5446E+00
S	2.0401E+00	2.1587E+00	2.2294E+00
Z	2.0450E+00	2.3782E+00	2.5237E+00
GAME	8.8621E-01	8.4193E-01	8.4391E-01
U	2.0000E+01	3.7169E+00	3.5489E+00

SPECIES	MOLE FRACTIONS		
E-	2.2008E-02	1.5903E-01	2.0752E-01
H	9.5598E-01	6.8194E-01	5.8494E-01
H+	2.2008E-02	1.5903E-01	2.0752E-01
H2	6.8585E-06	3.9864E-06	2.9701E-06
H-	2.1109E-07	2.9390E-06	3.7044E-06
H2+	2.3853E-07	3.4648E-06	4.5252E-06

P1 = 5.00E+00 N/SQ-M, US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.5441E+02	7.0764E+03	9.6958E+03
T	3.1637E+01	4.2997E+01	4.5769E+01
RHO	1.1162E+01	6.4175E+01	7.7535E+01
H	1.2148E+02	2.1908E+02	2.5595E+02
A	7.5470E+00	9.6435E+00	1.0296E+01
S	2.1194E+00	2.2626E+00	2.3405E+00
Z	2.1363E+00	2.5645E+00	2.7322E+00
GAME	8.4273E-01	8.4338E-01	8.4772E-01
U	2.2149E+01	3.8586E+00	3.7201E+00

SPECIES	MOLE FRACTIONS		
E-	6.3807E-02	2.2012E-01	2.6800E-01
H	8.7238E-01	5.5975E-01	4.6400E-01
H+	6.3807E-02	2.2012E-01	2.6800E-01
H2	3.2244E-06	2.4385E-06	1.7303E-06
H-	4.4951E-07	3.3969E-06	3.8539E-06
H2+	4.9942E-07	4.1624E-06	4.9149E-06

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.5471E+02	8.3840E+03	1.1391E+04
T	3.3344E+01	4.4972E+01	4.7858E+01
RHO	1.1606E+01	6.9039E+01	8.2521E+01
H	1.3709E+02	2.4833E+02	2.8906E+02
A	7.8402E+00	1.0136E+01	1.0844E+01
S	2.1727E+00	2.3336E+00	2.4168E+00
Z	2.2086E+00	2.7003E+00	2.8843E+00
GAME	8.3469E-01	8.4605E-01	8.5185E-01
U	2.3622E+01	3.9774E+00	3.8674E+00

SPECIES	MOLE FRACTIONS		
E-	9.4456E-02	2.5936E-01	3.0659E-01
H	8.1108E-01	4.8128E-01	3.8680E-01
H+	9.4456E-02	2.5936E-01	3.0659E-01
H2	2.3120E-06	1.7404E-06	1.1639E-06
H-	5.8641E-07	3.5361E-06	3.7530E-06
H2+	6.5378E-07	4.4566E-06	4.9420E-06

P1 = 5.00E+00 N/SQ-M, US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0749E+03	1.1483E+04	1.5438E+04
T	3.6117E+01	4.8982E+01	5.2397E+01
RHO	1.2547E+01	7.8291E+01	9.1723E+01
H	1.7118E+02	3.1247E+02	3.6217E+02
A	8.4325E+00	1.1196E+01	1.2064E+01
S	2.2825E+00	2.4802E+00	2.5747E+00
Z	2.3721E+00	2.9945E+00	3.2122E+00
GAME	8.2998E-01	8.5454E-01	8.6473E-01
U	2.6587E+01	4.2673E+00	4.2128E+00

SPECIES	MOLE FRACTIONS		
E-	1.5687E-01	3.3212E-01	3.7738E-01
H	6.8625E-01	3.3576E-01	2.4523E-01
H+	1.5687E-01	3.3212E-01	3.7738E-01
H2	1.3316E-06	8.0141E-07	4.3581E-07
H-	7.9369E-07	3.3083E-06	2.9918E-06
H2+	8.9969E-07	4.4344E-06	4.2387E-06

P1 = 5.00E+00 N/SQ-M, US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.6162E+02	9.8590E+03	1.3310E+04
T	3.4804E+01	4.6953E+01	5.0041E+01
RHO	1.2078E+01	7.3831E+01	8.7360E+01
H	1.5366E+02	2.7948E+02	3.2444E+02
A	8.1351E+00	1.0652E+01	1.1429E+01
S	2.2269E+00	2.4061E+00	2.4949E+00
Z	2.2875E+00	2.8440E+00	3.0445E+00
GAME	8.3126E-01	8.4974E-01	8.5733E-01
U	2.5103E+01	4.1133E+00	4.0270E+00

SPECIES	MOLE FRACTIONS		
E-	1.2568E-01	2.9677E-01	3.4309E-01
H	7.4863E-01	4.0645E-01	3.1381E-01
H+	1.2568E-01	2.9677E-01	3.4309E-01
H2	1.7368E-06	1.2073E-06	7.4215E-07
H-	7.0174E-07	3.5078E-06	3.4628E-06
H2+	7.8808E-07	4.5548E-06	4.7210E-06

P1 = 5.00E+00 N/SQ-M, US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1945E+03	1.3245E+04	1.7773E+04
T	3.7334E+01	5.1113E+01	5.5056E+01
RHO	1.2996E+01	8.2241E+01	9.5338E+01
H	1.8965E+02	3.4727E+02	4.0241E+02
A	8.7341E+00	1.1774E+01	1.2774E+01
S	2.3393E+00	2.5555E+00	2.6562E+00
Z	2.4620E+00	3.1508E+00	3.3860E+00
GAME	8.2992E-01	8.6076E-01	8.7535E-01
U	2.8071E+01	4.4425E+00	4.4356E+00

SPECIES	MOLE FRACTIONS		
E-	1.8765E-01	3.6525E-01	4.0933E-01
H	6.2469E-01	2.6949E-01	1.8133E-01
H+	1.8765E-01	3.6525E-01	4.0933E-01
H2	1.0282E-06	4.9923E-07	2.2541E-07
H-	8.6106E-07	2.9492E-06	2.3686E-06
H2+	9.8648E-07	4.0912E-06	3.5074E-06

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3202E+03	1.5124E+04	2.0291E+04
T	3.8490E+01	5.3425E+01	5.8204E+01
RHO	1.3416E+01	8.5491E+01	9.7944E+01
H	2.0906E+02	3.8379E+02	4.4496E+02
A	9.0412E+00	1.2400E+01	1.3594E+01
S	2.3976E+00	2.6317E+00	2.7372E+00
Z	2.5568E+00	3.3113E+00	3.5594E+00
GAME	8.3063E-01	8.6916E-01	8.9197E-01
U	2.9550E+01	4.6441E+00	4.6797E+00

SPECIES	MOLE FRACTIONS		
E-	2.1777E-01	3.9601E-01	4.3811E-01
H	5.6447E-01	2.0798E-01	1.2378E-01
H+	2.1777E-01	3.9601E-01	4.3811E-01
H2	7.9272E-07	2.8411E-07	9.6701E-08
H-	9.0326E-07	2.4555E-06	1.6618E-06
H2+	1.0469E-06	3.5386E-06	2.5946E-06

P1 = 5.00E+00 N/SQ-M, US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5901E+03	1.9161E+04	2.6086E+04
T	4.0707E+01	5.9244E+01	6.9754E+01
RHO	1.4153E+01	8.9002E+01	9.6204E+01
H	2.5072E+02	4.6194E+02	5.4204E+02
A	9.6781E+00	1.3928E+01	1.6481E+01
S	2.5181E+00	2.7847E+00	2.9063E+00
Z	2.7601E+00	3.6339E+00	3.8873E+00
GAME	8.3366E-01	9.0109E-01	1.0018E+00
U	3.2500E+01	5.1750E+00	5.5940E+00

SPECIES	MOLE FRACTIONS		
E-	2.7539E-01	4.4963E-01	4.8550E-01
H	4.4921E-01	1.0073E-01	2.9000E-02
H+	2.7539E-01	4.4963E-01	4.8550E-01
H2	4.5759E-07	5.6524E-08	3.4309E-09
H-	9.1329E-07	1.2402E-06	3.1210E-07
H2+	1.0859E-06	1.9707E-06	5.9101E-07

P1 = 5.00E+00 N/SQ-M, US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4521E+03	1.7106E+04	2.3050E+04
T	3.9608E+01	5.6053E+01	6.2579E+01
RHO	1.3803E+01	8.7851E+01	9.8614E+01
H	2.2942E+02	4.2204E+02	4.9119E+02
A	9.3554E+00	1.3100E+01	1.4701E+01
S	2.4572E+00	2.7083E+00	2.8220E+00
Z	2.6562E+00	3.4737E+00	3.7351E+00
GAME	8.3191E-01	8.8136E-01	9.2462E-01
U	3.1027E+01	4.8818E+00	5.0467E+00

SPECIES	MOLE FRACTIONS		
E-	2.4705E-01	4.2426E-01	4.6454E-01
H	5.0589E-01	1.5149E-01	7.0910E-02
H+	2.4705E-01	4.2425E-01	4.6454E-01
H2	6.0632E-07	1.4118E-07	2.7379E-08
H-	9.2046E-07	1.8668E-06	9.1374E-07
H2+	1.0801E-06	2.8110E-06	1.5359E-06

P1 = 5.00E+00 N/SQ-M, US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7341E+03	2.1242E+04	2.9631E+04
T	4.1804E+01	6.3527E+01	8.4322E+01
RHO	1.4463E+01	8.8388E+01	8.8427E+01
H	2.7297E+02	5.0335E+02	6.0238E+02
A	1.0011E+01	1.5015E+01	1.9521E+01
S	2.5802E+00	2.8596E+00	2.9914E+00
Z	2.8682E+00	3.7831E+00	3.9740E+00
GAME	8.3588E-01	9.3805E-01	1.1372E+00
U	3.3968E+01	5.5649E+00	6.6493E+00

SPECIES	MOLE FRACTIONS		
E-	3.0270E-01	4.7134E-01	4.9673E-01
H	3.9459E-01	5.7328E-02	6.5472E-03
H+	3.0270E-01	4.7133E-01	4.9673E-01
H2	3.3888E-07	1.5581E-08	9.0918E-11
H-	8.8296E-07	6.5868E-07	4.2761E-08
H2+	1.0647E-06	1.1250E-06	1.0108E-07

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8841E+03	2.3253E+04	3.3659E+04
T	4.2916E+01	7.0074E+01	1.0681E+02
RHO	1.4731E+01	8.5028E+01	7.8904E+01
H	2.9616E+02	5.4597E+02	6.7170E+02
A	1.0357E+01	1.6653E+01	2.2484E+01
S	2.6435E+00	2.9313E+00	3.0695E+00
Z	2.9802E+00	3.9027E+00	3.9939E+00
GAME	8.3860E-01	1.0140E+00	1.1850E+00
U	3.5431E+01	6.1465E+00	8.1144E+00

SPECIES	MOLE FRACTIONS		
E-	3.2892E-01	4.8753E-01	4.9924E-01
H	3.4217E-01	2.4939E-02	1.5271E-03
H+	3.2892E-01	4.8753E-01	4.9924E-01
H2	2.4470E-07	2.2222E-09	1.6757E-12
H-	8.3115E-07	2.3667E-07	4.8178E-09
H2+	1.0173E-06	4.5053E-07	1.4068E-08

P1 = 5.00E+00 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.2017E+03	2.6669E+04	4.2320E+04
T	4.5271E+01	9.4079E+01	1.5766E+02
RHO	1.5128E+01	7.1057E+01	6.7128E+01
H	3.4535E+02	6.3326E+02	8.2216E+02
A	1.1097E+01	2.0988E+01	2.7411E+01
S	2.7731E+00	3.0551E+00	3.1867E+00
Z	3.2148E+00	3.9894E+00	3.9987E+00
GAME	8.4615E-01	1.1737E+00	1.1918E+00
U	3.8339E+01	8.1641E+00	1.1138E+01

SPECIES	MOLE FRACTIONS		
E-	3.7788E-01	4.9867E-01	4.9983E-01
H	2.4424E-01	2.6642E-03	3.3702E-04
H+	3.7788E-01	4.9867E-01	4.9983E-01
H2	1.1429E-07	8.0341E-12	9.0991E-15
H-	6.7233E-07	1.0531E-08	5.8674E-10
H2+	8.5110E-07	2.8034E-08	1.0855E-09

P1 = 5.00E+00 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.0399E+03	2.5073E+04	3.7904E+04
T	4.4067E+01	8.0417E+01	1.3152E+02
RHO	1.4950E+01	7.8577E+01	7.2095E+01
H	3.2028E+02	5.8936E+02	7.4523E+02
A	1.0718E+01	1.8903E+01	2.5022E+01
S	2.7081E+00	2.9968E+00	3.1330E+00
Z	3.0963E+00	3.9679E+00	3.9975E+00
GAME	8.4197E-01	1.1198E+00	1.1909E+00
U	3.6887E+01	7.0109E+00	9.6318E+00

SPECIES	MOLE FRACTIONS		
E-	3.5408E-01	4.9595E-01	4.9969E-01
H	2.9184E-01	8.0980E-03	6.1425E-04
H+	3.5408E-01	4.9595E-01	4.9969E-01
H2	1.7067E-07	1.4486E-10	8.5581E-14
H-	7.5956E-07	5.2878E-08	1.2199E-09
H2+	9.4482E-07	1.1824E-07	3.2531E-09

P1 = 5.00E+00 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3690E+03	2.8140E+04	4.6799E+04
T	4.6572E+01	1.0879E+02	1.8456E+02
RHO	1.5247E+01	6.4741E+01	6.3406E+01
H	3.7136E+02	6.7796E+02	9.0199E+02
A	1.1503E+01	2.2715E+01	2.9662E+01
S	2.8390E+00	3.1050E+00	3.2325E+00
Z	3.3363E+00	3.9954E+00	3.9991E+00
GAME	8.5157E-01	1.1871E+00	1.1920E+00
U	3.9781E+01	9.3883E+00	1.2616E+01

SPECIES	MOLE FRACTIONS		
E-	4.0054E-01	4.9942E-01	4.9989E-01
H	1.9892E-01	1.1522E-03	2.1863E-04
H+	4.0054E-01	4.9942E-01	4.9989E-01
H2	7.1992E-08	7.1703E-13	1.6239E-15
H-	5.7117E-07	2.8550E-09	3.8115E-10
H2+	7.3734E-07	8.3897E-09	4.6892E-10

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.5418E+03	2.9536E+04	5.1260E+04
T	4.8019E+01	1.2420E+02	2.1275E+02
RHO	1.5300E+01	5.9491E+01	6.0245E+01
H	3.9830E+02	7.2375E+02	9.8441E+02
A	1.1945E+01	2.4312E+01	3.1848E+01
S	2.9054E+00	3.1495E+00	3.2738E+00
Z	3.4596E+00	3.9975E+00	3.9994E+00
GAME	8.5892E-01	1.1905E+00	1.1921E+00
U	4.1212E+01	1.0590E+01	1.4053E+01

SPECIES	MOLE FRACTIONS		
E-	4.2190E-01	4.9969E-01	4.9992E-01
H	1.5620E-01	6.2000E-04	1.5409E-04
H+	4.2190E-01	4.9969E-01	4.9992E-01
H2	4.1748E-08	1.0318E-13	3.9604E-16
H-	4.6047E-07	1.0971E-09	2.7230E-10
H2+	6.0789E-07	3.1150E-09	2.3623E-10

P1 = 5.00E+00 N/SQ-M, US1 = 6.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9021E+03	3.1857E+04	5.9480E+04
T	5.1767E+01	1.5634E+02	2.7100E+02
RHO	1.5133E+01	5.1427E+01	5.4875E+01
H	4.5494E+02	8.1822E+02	1.1547E+03
A	1.3042E+01	2.7275E+01	3.5947E+01
S	3.0381E+00	3.2266E+00	3.3450E+00
Z	3.7045E+00	3.9984E+00	3.9996E+00
GAME	8.8692E-01	1.1908E+00	1.1921E+00
U	4.4021E+01	1.2931E+01	1.6728E+01

SPECIES	MOLE FRACTIONS		
E-	4.6012E-01	4.9980E-01	4.9996E-01
H	7.9764E-02	4.0046E-04	8.8802E-05
H+	4.6012E-01	4.9980E-01	4.9996E-01
H2	9.1000E-09	2.2953E-13	4.5659E-17
H-	2.3160E-07	9.8519E-10	1.5189E-10
H2+	3.2474E-07	2.5626E-09	8.2636E-11

P1 = 5.00E+00 N/SQ-M, US1 = 6.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7197E+03	3.0766E+04	5.5500E+04
T	4.9698E+01	1.4004E+02	2.4101E+02
RHO	1.5273E+01	5.5065E+01	5.7575E+01
H	4.2616E+02	7.7035E+02	1.0677E+03
A	1.2444E+01	2.5823E+01	3.3899E+01
S	2.9719E+00	3.1899E+00	3.3101E+00
Z	3.5832E+00	3.9983E+00	3.9995E+00
GAME	8.6964E-01	1.1911E+00	1.1921E+00
U	4.2628E+01	1.1814E+01	1.5361E+01

SPECIES	MOLE FRACTIONS		
E-	4.4184E-01	4.9978E-01	4.9994E-01
H	1.1632E-01	4.3337E-04	1.1560E-04
H+	4.4184E-01	4.9978E-01	4.9994E-01
H2	2.1437E-08	1.3656E-13	1.2630E-16
H-	3.4511E-07	8.1204E-10	2.0348E-10
H2+	4.6790E-07	2.0587E-09	1.3568E-10

P1 = 5.00E+00 N/SQ-M, US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0878E+03	3.2613E+04	6.2654E+04
T	5.4553E+01	1.7294E+02	3.0048E+02
RHO	1.4824E+01	4.8084E+01	5.2132E+01
H	4.8461E+02	8.6694E+02	1.2416E+03
A	1.3833E+01	2.8673E+01	3.7852E+01
S	3.1033E+00	3.2613E+00	3.3772E+00
Z	3.8182E+00	3.9985E+00	3.9997E+00
GAME	9.1873E-01	1.1907E+00	1.1921E+00
U	4.5374E+01	1.3976E+01	1.7970E+01

SPECIES	MOLE FRACTIONS		
E-	4.7619E-01	4.9981E-01	4.9996E-01
H	4.7613E-02	3.7807E-04	7.0249E-05
H+	4.7619E-01	4.9981E-01	4.9996E-01
H2	2.7994E-09	1.8927E-13	1.9122E-17
H-	1.2934E-07	9.8195E-10	1.1422E-10
H2+	1.8993E-07	2.7202E-09	5.3828E-11

TABLE I. - Continued

$p_1 = 5\ N/m^2$

P1 = 5.00E+00 N/SQ-M, US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2740E+03	3.2650E+04	6.4431E+04
T	5.8773E+01	1.8942E+02	3.3068E+02
RHO	1.4236E+01	4.4167E+01	4.8714E+01
H	5.1511E+02	9.1540E+02	1.3294E+03
A	1.5045E+01	3.0009E+01	3.9709E+01
S	3.1663E+00	3.2961E+00	3.4102E+00
Z	3.9129E+00	3.9989E+00	3.9998E+00
GAME	9.8430E-01	1.1913E+00	1.1921E+00
U	4.6653E+01	1.5016E+01	1.9211E+01

SPECIES	MOLE FRACTIONS		
E-	4.8887E-01	4.9986E-01	4.9997E-01
H	2.2264E-02	2.8201E-04	5.5633E-05
H+	4.8887E-01	4.9986E-01	4.9997E-01
H2	4.8638E-10	7.0650E-14	8.3507E-18
H-	5.2208E-08	6.0751E-10	8.3462E-11
H2+	8.2299E-08	1.7056E-09	3.5417E-11

P1 = 5.00E+00 N/SQ-M, US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6338E+03	2.9545E+04	6.1582E+04
T	7.5200E+01	2.1980E+02	3.8641E+02
RHO	1.2106E+01	3.3774E+01	3.9844E+01
H	5.7822E+02	1.0047E+03	1.4941E+03
A	1.8698E+01	3.2365E+01	4.2925E+01
S	3.2785E+00	3.3719E+00	3.4780E+00
Z	3.9915E+00	3.9996E+00	3.9999E+00
GAME	1.1648E+00	1.1921E+00	1.1922E+00
U	4.8824E+01	1.7467E+01	2.1303E+01

SPECIES	MOLE FRACTIONS		
E-	4.9894E-01	4.9996E-01	4.9998E-01
H	2.1188E-03	8.8270E-05	3.5004E-05
H+	4.9894E-01	4.9996E-01	4.9998E-01
H2	1.8980E-12	4.4760E-16	1.7779E-18
H-	2.5422E-09	9.2267E-11	4.1042E-11
H2+	5.2522E-09	1.0742E-10	1.5499E-11

P1 = 5.00E+00 N/SQ-M, US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.4563E+03	3.1447E+04	6.3845E+04
T	6.5594E+01	2.0495E+02	3.5862E+02
RHO	1.3271E+01	3.8982E+01	4.4509E+01
H	5.4634E+02	9.6106E+02	1.4131E+03
A	1.6866E+01	3.1233E+01	4.1352E+01
S	3.2250E+00	3.3337E+00	3.4432E+00
Z	3.9706E+00	3.9994E+00	3.9998E+00
GAME	1.0921E+00	1.1919E+00	1.1921E+00
U	4.7804E+01	1.6244E+01	2.0285E+01

SPECIES	MOLE FRACTIONS		
E-	4.9630E-01	4.9992E-01	4.9998E-01
H	7.4096E-03	1.5452E-04	4.4301E-05
H+	4.9630E-01	4.9992E-01	4.9998E-01
H2	3.7524E-11	8.8015E-15	3.8553E-18
H-	1.3174E-08	2.2383E-10	5.9523E-11
H2+	2.3291E-08	5.0429E-10	2.3582E-11

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3609E+01
T	2.7140E+00	3.3569E+00	4.7140E+00
RHO	3.9200E+00	6.5476E+00	1.1372E+01
H	2.7745E+00	3.4526E+00	4.9383E+00
A	1.6432E+00	1.8212E+00	2.1357E+00
S	1.0463E+00	1.0478E+00	1.0628E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8810E-01	9.6755E-01
U	2.2663E+00	1.3533E+00	1.1936E+00

SPECIES	MOLE FRACTIONS		
E-	1.0003E-34	1.8139E-33	1.5078E-25
H	4.3585E-10	1.6293E-08	8.0343E-05
H+	5.8683E-47	2.1867E-33	1.4417E-25
H2	1.0000E+00	1.0000E+00	9.9992E-01
H-	1.1488E-43	1.6874E-40	7.3136E-32
H2+	6.9111E-48	1.3334E-34	6.6125E-27

P1 = 1.00E+01 N/SQ-M, US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4294E+01	7.8955E+01	1.4992E+02
T	4.8548E+00	6.5067E+00	7.4683E+00
RHO	5.0037E+00	1.2055E+01	1.9510E+01
H	5.1002E+00	7.3675E+00	9.7322E+00
A	2.1621E+00	2.3871E+00	2.5148E+00
S	1.0992E+00	1.1062E+00	1.1261E+00
Z	1.0001E+00	1.0066E+00	1.0289E+00
GAME	9.6285E-01	8.7001E-01	8.2304E-01
U	3.6523E+00	1.5129E+00	1.2645E+00

SPECIES	MOLE FRACTIONS		
E-	3.8525E-24	2.9754E-17	8.7047E-15
H	2.0576E-04	1.3026E-02	5.6147E-02
H+	3.8126E-24	2.9333E-17	8.5865E-15
H2	9.9979E-01	9.8697E-01	9.4385E-01
H-	2.2284E-29	1.2505E-21	1.1211E-18
H2+	3.9921E-26	4.2234E-19	1.1929E-16

P1 = 1.00E+01 N/SQ-M, US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4576E+01	9.6465E+01
T	3.7003E+00	4.9194E+00	6.4286E+00
RHO	4.5254E+00	9.0585E+00	1.4927E+01
H	3.8206E+00	5.1733E+00	7.1912E+00
A	1.9077E+00	2.1759E+00	2.3861E+00
S	1.0730E+00	1.0769E+00	1.0944E+00
Z	1.0000E+00	1.0001E+00	1.0050E+00
GAME	9.8358E-01	9.6229E-01	8.8112E-01
U	2.9621E+00	1.4765E+00	1.2920E+00

SPECIES	MOLE FRACTIONS		
E-	6.1436E-30	2.2106E-23	1.7628E-17
H	4.5639E-07	2.0954E-04	9.9582E-03
H+	5.9448E-30	2.1584E-23	1.7351E-17
H2	1.0000E+00	9.9979E-01	9.9004E-01
H-	1.5434E-36	8.7561E-29	8.1380E-22
H2+	2.0030E-31	5.2169E-25	2.7760E-19

P1 = 1.00E+01 N/SQ-M, US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3458E+01	1.3292E+02	2.2173E+02
T	6.0257E+00	7.5415E+00	8.1705E+00
RHO	5.5336E+00	1.7037E+01	2.5412E+01
H	6.6228E+00	1.0116E+01	1.2705E+01
A	2.3246E+00	2.5262E+00	2.6559E+00
S	1.1245E+00	1.1381E+00	1.1615E+00
Z	1.0033E+00	1.0344E+00	1.0679E+00
GAME	8.9378E-01	8.1804E-01	8.0845E-01
U	4.3622E+00	1.4149E+00	1.2167E+00

SPECIES	MOLE FRACTIONS		
E-	1.3841E-18	1.5339E-14	2.4679E-13
H	6.6042E-03	6.6425E-02	1.2719E-01
H+	1.3684E-18	1.5153E-14	2.4362E-13
H2	9.9340E-01	9.3357E-01	8.7281E-01
H-	2.3052E-23	2.0433E-18	6.0686E-17
H2+	1.5686E-20	1.8884E-16	3.2357E-15

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.4644E+01	2.1877E+02	3.3469E+02
T	6.8599E+00	8.2762E+00	8.7866E+00
RHO	6.3937E+00	2.4500E+01	3.3992E+01
H	8.4058E+00	1.3444E+01	1.6316E+01
A	2.4100E+00	2.6842E+00	2.8148E+00
S	1.1505E+00	1.1743E+00	1.2017E+00
Z	1.0180E+00	1.0792E+00	1.1204E+00
GAME	8.3178E-01	8.0673E-01	8.0481E-01
U	5.1323E+00	1.3367E+00	1.1900E+00

SPECIES	MOLE FRACTIONS		
E-	4.0209E-16	3.7204E-13	2.8308E-12
H	3.5411E-02	1.4671E-01	2.1491E-01
H+	3.9807E-16	3.6725E-13	2.7955E-12
H2	9.6459E-01	8.5329E-01	7.8509E-01
H-	1.3425E-20	8.9997E-17	1.1808E-15
H2+	4.0423E-18	4.8787E-15	3.6513E-14

P1 = 1.00E+01 N/SQ-M, US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.2417E+01	5.1025E+02	7.0964E+02
T	7.8495E+00	9.4550E+00	9.8883E+00
RHO	8.5806E+00	4.4890E+01	5.7014E+01
H	1.2700E+01	2.1623E+01	2.5236E+01
A	2.6030E+00	3.0267E+00	3.1713E+00
S	1.2095E+00	1.2614E+00	1.2962E+00
Z	1.0754E+00	1.2026E+00	1.2588E+00
GAME	8.0271E-01	8.0570E-01	8.0795E-01
U	6.7187E+00	1.2863E+00	1.1877E+00

SPECIES	MOLE FRACTIONS		
E-	1.0903E-13	2.3767E-11	8.5655E-11
H	1.4015E-01	3.3679E-01	4.1117E-01
H+	1.0813E-13	2.3462E-11	8.4602E-11
H2	8.5985E-01	6.6321E-01	5.8883E-01
H-	1.1821E-17	1.5260E-14	7.3878E-14
H2+	9.1475E-16	3.2024E-13	1.1274E-12

P1 = 1.00E+01 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7687E+01	3.4320E+02	4.9658E+02
T	7.4200E+00	8.8967E+00	9.3525E+00
RHO	7.4540E+00	3.3971E+01	4.4822E+01
H	1.0435E+01	1.7291E+01	2.0513E+01
A	2.5044E+00	2.8513E+00	2.9872E+00
S	1.1786E+00	1.2155E+00	1.2466E+00
Z	1.0431E+00	1.1358E+00	1.1845E+00
GAME	8.1037E-01	8.0453E-01	8.0546E-01
U	5.9254E+00	1.3015E+00	1.1824E+00

SPECIES	MOLE FRACTIONS		
E-	1.2793E-14	3.9234E-12	1.8284E-11
H	8.2648E-02	2.3913E-01	3.1160E-01
H+	1.2683E-14	3.8729E-12	1.8056E-11
H2	9.1735E-01	7.6087E-01	6.8840E-01
H-	9.3720E-19	1.6610E-15	1.1398E-14
H2+	1.1129E-16	5.2156E-14	2.3950E-13

P1 = 1.00E+01 N/SQ-M, US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.8740E+01	7.2121E+02	9.7553E+02
T	8.2156E+00	9.9784E+00	1.0410E+01
RHO	9.7010E+00	5.6562E+01	6.9802E+01
H	1.5200E+01	2.6412E+01	3.0478E+01
A	2.7043E+00	3.2112E+00	3.3682E+00
S	1.2431E+00	1.3115E+00	1.3502E+00
Z	1.1133E+00	1.2783E+00	1.3426E+00
GAME	7.9958E-01	8.0844E-01	8.1165E-01
U	7.5039E+00	1.2892E+00	1.2098E+00

SPECIES	MOLE FRACTIONS		
E-	6.0953E-13	1.0679E-10	3.2732E-10
H	2.0345E-01	4.3525E-01	5.1034E-01
H+	6.0490E-13	1.0547E-10	3.2345E-10
H2	7.9655E-01	5.6475E-01	4.8966E-01
H-	9.4947E-17	9.4441E-14	3.6605E-13
H2+	4.7279E-15	1.4153E-12	4.2356E-12

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0660E+02	9.7786E+02	1.2968E+03
T	8.5353E+00	1.0486E+01	1.0933E+01
RHO	1.0800E+01	6.8464E+01	8.2647E+01
H	1.7933E+01	3.1644E+01	3.6220E+01
A	2.8082E+00	3.4063E+00	3.5794E+00
S	1.2793E+00	1.3653E+00	1.4079E+00
Z	1.1564E+00	1.3622E+00	1.4353E+00
GAME	7.9896E-01	8.1225E-01	8.1647E-01
U	8.2786E+00	1.3081E+00	1.2436E+00

SPECIES	MOLE FRACTIONS		
E-	2.2120E-12	4.0270E-10	1.0987E-09
H	2.7052E-01	5.3174E-01	6.0650E-01
H+	2.1958E-12	3.9810E-10	1.0866E-09
H2	7.2948E-01	4.6826E-01	3.9350E-01
H-	4.3480E-16	4.5301E-13	1.5053E-12
H2+	1.6671E-14	5.0596E-12	1.3610E-11

P1 = 1.00E+01 N/SQ-M, US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4705E+02	1.6319E+03	2.1134E+03
T	9.1115E+00	1.1525E+01	1.2083E+01
RHO	1.2838E+01	9.1129E+01	1.0624E+02
H	2.4106E+01	4.3475E+01	4.9300E+01
A	3.0277E+00	3.8401E+00	4.0673E+00
S	1.3593E+00	1.4824E+00	1.5333E+00
Z	1.2570E+00	1.5537E+00	1.6463E+00
GAME	8.0042E-01	8.2350E-01	8.3160E-01
U	9.8143E+00	1.3848E+00	1.3488E+00

SPECIES	MOLE FRACTIONS		
E-	1.7758E-11	3.9649E-09	1.1083E-08
H	4.0891E-01	7.1277E-01	7.8515E-01
H+	1.7640E-11	3.9280E-09	1.0991E-08
H2	5.9109E-01	2.8723E-01	2.1485E-01
H-	4.9869E-15	6.1185E-12	1.9315E-11
H2+	1.2347E-13	4.2999E-11	1.1094E-10

P1 = 1.00E+01 N/SQ-M, US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2605E+02	1.2821E+03	1.6765E+03
T	8.8301E+00	1.0997E+01	1.1480E+01
RHO	1.1854E+01	8.0152E+01	9.5031E+01
H	2.0902E+01	3.7336E+01	4.2492E+01
A	2.9157E+00	3.6151E+00	3.8099E+00
S	1.3181E+00	1.4225E+00	1.4691E+00
Z	1.2044E+00	1.4542E+00	1.5368E+00
GAME	7.9938E-01	8.1717E-01	8.2276E-01
U	9.0495E+00	1.3406E+00	1.2893E+00

SPECIES	MOLE FRACTIONS		
E-	6.4446E-12	1.3448E-09	3.4733E-09
H	3.3939E-01	6.2484E-01	6.9853E-01
H+	6.3982E-12	1.3309E-09	3.4391E-09
H2	6.6061E-01	3.7516E-01	3.0147E-01
H-	1.5304E-15	1.8081E-12	5.5275E-12
H2+	4.7872E-14	1.5659E-11	3.9734E-11

P1 = 1.00E+01 N/SQ-M, US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6961E+02	2.0276E+03	2.6127E+03
T	9.3788E+00	1.2107E+01	1.2816E+01
RHO	1.3764E+01	1.0091E+02	1.1564E+02
H	2.7546E+01	5.0062E+01	5.6700E+01
A	3.1440E+00	4.0895E+00	4.3732E+00
S	1.4028E+00	1.5446E+00	1.6001E+00
Z	1.3141E+00	1.6597E+00	1.7628E+00
GAME	8.0203E-01	8.3232E-01	8.4645E-01
U	1.0575E+01	1.4447E+00	1.4309E+00

SPECIES	MOLE FRACTIONS		
E-	4.0513E-11	1.1798E-08	3.9837E-08
H	4.7793E-01	7.9493E-01	8.6550E-01
H+	4.0249E-11	1.1704E-08	3.9587E-08
H2	5.2207E-01	2.0507E-01	1.3450E-01
H-	1.3029E-14	1.9844E-11	7.0654E-11
H2+	2.7690E-13	1.1341E-10	3.2035E-10

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9370E+02	2.4610E+03	3.1719E+03
T	9.6453E+00	1.2803E+01	1.3885E+01
RHO	1.4598E+01	1.0859E+02	1.2138E+02
H	3.1221E+01	5.7084E+01	6.4762E+01
A	3.2661E+00	4.3809E+00	4.7989E+00
S	1.4484E+00	1.6084E+00	1.6687E+00
Z	1.3755E+00	1.7702E+00	1.8821E+00
GAME	8.0405E-01	8.4685E-01	8.8127E-01
U	1.1330E+01	1.5254E+00	1.5489E+00

SPECIES	MOLE FRACTIONS		
E-	9.4937E-11	3.9461E-08	1.9691E-07
H	5.4603E-01	8.7021E-01	9.3738E-01
H+	9.4374E-11	3.9221E-08	1.9613E-07
H2	4.5397E-01	1.2979E-01	6.2618E-02
H-	3.4000E-14	6.7088E-11	3.1851E-10
H2+	5.9648E-13	3.0705E-10	1.0992E-09

P1 = 1.00E+01 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4648E+02	3.3924E+03	4.6627E+03
T	1.0182E+01	1.5754E+01	2.4037E+01
RHO	1.6021E+01	1.0929E+02	9.6929E+01
H	3.9279E+01	7.2326E+01	8.6415E+01
A	3.5291E+00	5.5766E+00	7.3589E+00
S	1.5455E+00	1.7340E+00	1.8080E+00
Z	1.5108E+00	1.9703E+00	2.0013E+00
GAME	8.0961E-01	1.0019E+00	1.1257E+00
U	1.2830E+01	1.8825E+00	2.5380E+00

SPECIES	MOLE FRACTIONS		
E-	4.2253E-10	2.1709E-06	9.9366E-04
H	6.7629E-01	9.8494E-01	9.9766E-01
H+	4.2041E-10	2.1678E-06	9.9361E-04
H2	3.2371E-01	1.5055E-02	3.4994E-04
H-	1.7734E-13	2.2395E-09	2.6298E-07
H2+	2.2977E-12	5.3608E-09	3.2209E-07

P1 = 1.00E+01 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1934E+02	2.9276E+03	3.8306E+03
T	9.9087E+00	1.3785E+01	1.6602E+01
RHO	1.5362E+01	1.1293E+02	1.1644E+02
H	3.5133E+01	6.4530E+01	7.4179E+01
A	3.3937E+00	4.7745E+00	5.8867E+00
S	1.4960E+00	1.6725E+00	1.7401E+00
Z	1.4411E+00	1.8805E+00	1.9814E+00
GAME	8.0653E-01	8.7935E-01	1.0534E+00
U	1.2083E+01	1.6457E+00	1.8341E+00

SPECIES	MOLE FRACTIONS		
E-	1.9322E-10	1.7698E-07	5.1320E-06
H	6.1212E-01	9.3647E-01	9.9061E-01
H+	1.9213E-10	1.7629E-07	5.1267E-06
H2	3.8788E-01	6.3527E-02	9.3805E-03
H-	7.6386E-14	2.7290E-10	4.7997E-09
H2+	1.1730E-12	9.6454E-10	1.0123E-08

P1 = 1.00E+01 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7515E+02	3.7974E+03	5.5011E+03
T	1.0466E+01	2.0147E+01	2.9885E+01
RHO	1.6594E+01	9.4356E+01	9.1114E+01
H	4.3662E+01	8.0295E+01	9.8296E+01
A	3.6725E+00	6.8411E+00	7.6487E+00
S	1.5967E+00	1.7866E+00	1.8546E+00
Z	1.5844E+00	1.9976E+00	2.0203E+00
GAME	8.1338E-01	1.1629E+00	9.6896E-01
U	1.3574E+01	2.3887E+00	3.0216E+00

SPECIES	MOLE FRACTIONS		
E-	8.3379E-10	1.0685E-04	1.0129E-02
H	7.3762E-01	9.9849E-01	9.7966E-01
H+	8.2991E-10	1.0683E-04	1.0128E-02
H2	2.6238E-01	1.2973E-03	8.4630E-05
H-	3.7263E-13	4.5257E-08	1.4220E-06
H2+	4.2462E-12	6.6994E-08	1.5855E-06

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0528E+02	4.1791E+03	6.2968E+03
T	1.0779E+01	2.5248E+01	3.3313E+01
RHO	1.7045E+01	8.2622E+01	9.2020E+01
H	4.8280E+01	8.8519E+01	1.0942E+02
A	3.8288E+00	7.4325E+00	7.8689E+00
S	1.6494E+00	1.8285E+00	1.8916E+00
Z	1.6614E+00	2.0033E+00	2.0541E+00
GAME	8.1857E-01	1.0922E+00	9.0488E-01
U	1.4313E+01	2.9548E+00	3.2539E+00

SPECIES	MOLE FRACTIONS		
E-	1.8479E-09	1.8854E-03	2.6375E-02
H	7.9627E-01	9.9601E-01	9.4720E-01
H+	1.8407E-09	1.8853E-03	2.6374E-02
H2	2.0373E-01	2.1418E-04	4.6706E-05
H-	8.3674E-13	3.7258E-07	2.8260E-06
H2+	8.0864E-12	4.4129E-07	3.1503E-06

P1 = 1.00E+01 N/SQ-M, US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6980E+02	5.1043E+03	7.8041E+03
T	1.1579E+01	3.2157E+01	3.7659E+01
RHO	1.7516E+01	7.8791E+01	9.6807E+01
H	5.8220E+01	1.0672E+02	1.3177E+02
A	4.2072E+00	7.7402E+00	8.3605E+00
S	1.7578E+00	1.8966E+00	1.9593E+00
Z	1.8234E+00	2.0486E+00	2.1407E+00
GAME	8.3844E-01	9.2179E-01	8.6706E-01
U	1.5770E+01	3.5107E+00	3.4804E+00

SPECIES	MOLE FRACTIONS		
E-	1.0277E-08	2.3997E-02	6.5744E-02
H	9.0312E-01	9.5159E-01	8.6848E-01
H+	1.0250E-08	2.3997E-02	6.5743E-02
H2	9.6880E-02	1.0171E-04	2.4822E-05
H-	4.4755E-12	2.3048E-06	5.3269E-06
H2+	3.1169E-11	2.5515E-06	6.1218E-06

P1 = 1.00E+01 N/SQ-M, US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3686E+02	4.6058E+03	7.0729E+03
T	1.1135E+01	2.9371E+01	3.5736E+01
RHO	1.7371E+01	7.7782E+01	9.4467E+01
H	5.3133E+01	9.7260E+01	1.2050E+02
A	4.0021E+00	7.5906E+00	8.1142E+00
S	1.7032E+00	1.8642E+00	1.9257E+00
Z	1.7415E+00	2.0187E+00	2.0951E+00
GAME	8.2595E-01	9.7263E-01	8.7937E-01
U	1.5046E+01	3.3629E+00	3.3890E+00

SPECIES	MOLE FRACTIONS		
E-	4.0961E-09	9.3765E-03	4.5448E-02
H	8.5156E-01	9.8116E-01	9.0906E-01
H+	4.0826E-09	9.3764E-03	4.5448E-02
H2	1.4844E-01	8.6375E-05	3.2571E-05
H-	1.8555E-12	1.1744E-06	4.1517E-06
H2+	1.5377E-11	1.3115E-06	4.6922E-06

P1 = 1.00E+01 N/SQ-M, US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.0386E+02	5.5826E+03	8.4107E+03
T	1.2223E+01	3.3963E+01	3.9259E+01
RHO	1.7355E+01	8.1296E+01	9.7853E+01
H	6.3536E+01	1.1670E+02	1.4324E+02
A	4.4918E+00	8.0129E+00	8.5993E+00
S	1.8123E+00	1.9286E+00	1.9935E+00
Z	1.9039E+00	2.0885E+00	2.1894E+00
GAME	8.6702E-01	9.2893E-01	8.6034E-01
U	1.6478E+01	3.5256E+00	3.5481E+00

SPECIES	MOLE FRACTIONS		
E-	3.6428E-08	4.3147E-02	8.6527E-02
H	9.4952E-01	9.1360E-01	8.2691E-01
H+	3.6365E-08	4.3146E-02	8.6526E-02
H2	5.0480E-02	1.0186E-04	1.9612E-05
H-	1.3824E-11	3.3698E-06	6.2817E-06
H2+	7.6078E-11	3.7787E-06	7.3420E-06

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3831E+02	5.7271E+03	8.6344E+03
T	1.3477E+01	3.6098E+01	4.0542E+01
RHO	1.6494E+01	7.5260E+01	9.5083E+01
H	6.9069E+01	1.2645E+02	1.5463E+02
A	5.0717E+00	8.2022E+00	8.8177E+00
S	1.8652E+00	1.9654E+00	2.0301E+00
Z	1.9717E+00	2.1248E+00	2.2399E+00
GAME	9.6797E-01	8.8139E-01	8.5622E-01
U	1.7142E+01	3.7622E+00	3.5927E+00

SPECIES	MOLE FRACTIONS		
E-	2.9460E-07	5.8941E-02	1.0711E-01
H	9.8566E-01	8.8208E-01	7.8574E-01
H+	2.9438E-07	5.8940E-02	1.0711E-01
H2	1.4344E-02	3.1599E-05	1.5508E-05
H-	7.9494E-11	3.9116E-06	6.8366E-06
H2+	3.0419E-10	4.4556E-06	8.1124E-06

P1 = 1.00E+01 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0333E+02	5.0353E+03	7.3747E+03
T	2.0261E+01	3.8484E+01	4.2012E+01
RHO	1.2419E+01	5.9246E+01	7.5078E+01
H	8.0660E+01	1.4545E+02	1.7528E+02
A	6.8521E+00	8.5190E+00	9.1417E+00
S	1.9511E+00	2.0465E+00	2.1129E+00
Z	2.0003E+00	2.2085E+00	2.3381E+00
GAME	1.1585E+00	8.5391E-01	8.5079E-01
U	1.8176E+01	3.8150E+00	3.5980E+00

SPECIES	MOLE FRACTIONS		
E-	3.1810E-04	9.4405E-02	1.4461E-01
H	9.9920E-01	8.1117E-01	7.1076E-01
H+	3.1809E-04	9.4405E-02	1.4461E-01
H2	1.6343E-04	1.2496E-05	9.1339E-06
H-	1.7482E-08	4.2945E-06	6.3602E-06
H2+	2.5681E-08	4.9770E-06	7.6902E-06

P1 = 1.00E+01 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.7095E+02	5.3921E+03	8.0335E+03
T	1.6407E+01	3.7535E+01	4.1361E+01
RHO	1.4371E+01	6.6366E+01	8.4856E+01
H	7.4772E+01	1.3592E+02	1.6507E+02
A	6.1629E+00	8.3568E+00	8.9867E+00
S	1.9123E+00	2.0063E+00	2.0715E+00
Z	1.9973E+00	2.1646E+00	2.2890E+00
GAME	1.1590E+00	8.5954E-01	8.5306E-01
U	1.7685E+01	3.8339E+00	3.6007E+00

SPECIES	MOLE FRACTIONS		
E-	1.1989E-05	7.6058E-02	1.2626E-01
H	9.9864E-01	8.4786E-01	7.4745E-01
H+	1.1987E-05	7.6058E-02	1.2626E-01
H2	1.3392E-03	1.6628E-05	1.1855E-05
H-	1.4615E-09	4.2019E-06	6.6882E-06
H2+	3.1708E-09	4.8231E-06	8.0184E-06

P1 = 1.00E+01 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3779E+02	4.9209E+03	7.1035E+03
T	2.3831E+01	3.9427E+01	4.2749E+01
RHO	1.1254E+01	5.5342E+01	6.9522E+01
H	8.6783E+01	1.5558E+02	1.8625E+02
A	7.1007E+00	8.6959E+00	9.3168E+00
S	1.9832E+00	2.0841E+00	2.1518E+00
Z	2.0052E+00	2.2552E+00	2.3902E+00
GAME	1.0552E+00	8.5043E-01	8.4954E-01
U	1.8703E+01	3.8086E+00	3.6084E+00

SPECIES	MOLE FRACTIONS		
E-	2.6294E-03	1.1319E-01	1.6326E-01
H	9.9470E-01	7.7360E-01	6.7346E-01
H+	2.6294E-03	1.1319E-01	1.6326E-01
H2	4.2945E-05	9.8298E-06	7.2804E-06
H-	8.2625E-08	4.4359E-06	6.1995E-06
H2+	1.0188E-07	5.1946E-06	7.5705E-06

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7540E+02	5.0442E+03	7.1982E+03
T	2.6634E+01	4.0432E+01	4.3624E+01
RHO	1.0702E+01	5.4102E+01	6.7434E+01
H	9.3178E+01	1.6660E+02	1.9840E+02
A	7.1567E+00	8.8942E+00	9.5208E+00
S	2.0127E+00	2.1195E+00	2.1889E+00
Z	2.0187E+00	2.3059E+00	2.4469E+00
GAME	9.5261E-01	8.4848E-01	8.4917E-01
U	1.9299E+01	3.8230E+00	3.6370E+00

SPECIES	MOLE FRACTIONS		
E-	9.2722E-03	1.3269E-01	1.8267E-01
H	9.8144E-01	7.3460E-01	6.3465E-01
H+	9.2721E-03	1.3269E-01	1.8267E-01
H2	1.9363E-05	8.0247E-06	5.9650E-06
H-	2.0485E-07	4.6661E-06	6.2102E-06
H2+	2.3597E-07	5.5294E-06	7.6763E-06

P1 = 1.00E+01 N/SQ-M, US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.5953E+02	5.7705E+03	8.1004E+03
T	3.0210E+01	4.2570E+01	4.5661E+01
RHO	1.0568E+01	5.6050E+01	6.8933E+01
H	1.0679E+02	1.9117E+02	2.2595E+02
A	7.3822E+00	9.3409E+00	9.9966E+00
S	2.0666E+00	2.1876E+00	2.2613E+00
Z	2.0658E+00	2.4185E+00	2.5736E+00
GAME	8.7326E-01	8.4749E-01	8.5040E-01
U	2.0651E+01	3.8996E+00	3.7366E+00

SPECIES	MOLE FRACTIONS		
E-	3.1858E-02	1.7304E-01	2.2288E-01
H	9.3627E-01	6.5391E-01	5.5422E-01
H+	3.1858E-02	1.7304E-01	2.2288E-01
H2	8.6508E-06	5.6857E-06	4.1684E-06
H-	4.9367E-07	5.2525E-06	6.4446E-06
H2+	5.4972E-07	6.3985E-06	8.2056E-06

P1 = 1.00E+01 N/SQ-M, US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1622E+02	5.3533E+03	7.5709E+03
T	2.8652E+01	4.1493E+01	4.4615E+01
RHO	1.0544E+01	5.4654E+01	6.7650E+01
H	9.9854E+01	1.7852E+02	2.1173E+02
A	7.2520E+00	9.1117E+00	9.7505E+00
S	2.0400E+00	2.1537E+00	2.2252E+00
Z	2.0397E+00	2.3606E+00	2.5084E+00
GAME	8.9988E-01	8.4761E-01	8.4953E-01
U	1.9958E+01	3.8559E+00	3.6819E+00

SPECIES	MOLE FRACTIONS		
E-	1.9474E-02	1.5276E-01	2.0269E-01
H	9.6104E-01	6.9445E-01	5.9459E-01
H+	1.9474E-02	1.5276E-01	2.0269E-01
H2	1.2014E-05	6.7152E-06	4.9725E-06
H-	3.4807E-07	4.9587E-06	6.3234E-06
H2+	3.9112E-07	5.9551E-06	7.9280E-06

P1 = 1.00E+01 N/SQ-M, US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.5229E+02	6.8102E+03	9.4477E+03
T	3.2586E+01	4.4715E+01	4.7832E+01
RHO	1.0851E+01	5.9911E+01	7.2813E+01
H	1.2142E+02	2.1822E+02	2.5655E+02
A	7.6755E+00	9.8222E+00	1.0522E+01
S	2.1191E+00	2.2558E+00	2.3344E+00
Z	2.1276E+00	2.5421E+00	2.7127E+00
GAME	8.4973E-01	8.4873E-01	8.5329E-01
U	2.2087E+01	4.0063E+00	3.8658E+00

SPECIES	MOLE FRACTIONS		
E-	5.9988E-02	2.1326E-01	2.6273E-01
H	8.8002E-01	5.7346E-01	4.7453E-01
H+	5.9988E-02	2.1326E-01	2.6272E-01
H2	5.4800E-06	4.1186E-06	2.9127E-06
H-	7.6880E-07	5.7312E-06	6.5555E-06
H2+	8.5517E-07	7.1960E-06	8.6289E-06

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.5220E+02	8.0483E+03	1.1068E+04
T	3.4448E+01	4.6841E+01	5.0081E+01
RHO	1.1254E+01	6.4240E+01	7.7230E+01
H	1.3703E+02	2.4734E+02	2.8965E+02
A	7.9781E+00	1.0328E+01	1.1085E+01
S	2.1718E+00	2.3252E+00	2.4091E+00
Z	2.1982E+00	2.6747E+00	2.8615E+00
GAME	8.4054E-01	8.5135E-01	8.5748E-01
U	2.3552E+01	4.1324E+00	4.0161E+00

SPECIES	MOLE FRACTIONS		
E-	9.0190E-02	2.5226E-01	3.0108E-01
H	8.1961E-01	4.9546E-01	3.9782E-01
H+	9.0190E-02	2.5226E-01	3.0108E-01
H2	3.9083E-06	2.9603E-06	1.9772E-06
H-	1.0113E-06	5.9750E-06	6.3911E-06
H2+	1.1334E-06	7.7501E-06	8.7187E-06

P1 = 1.00E+01 N/SQ-M, US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0717E+03	1.0991E+04	1.4956E+04
T	3.7462E+01	5.1149E+01	5.4967E+01
RHO	1.2129E+01	7.2548E+01	8.5678E+01
H	1.7111E+02	3.1123E+02	3.6294E+02
A	8.5901E+00	1.1413E+01	1.2342E+01
S	2.2802E+00	2.4682E+00	2.5635E+00
Z	2.3587E+00	2.9619E+00	3.1831E+00
GAME	8.3507E-01	8.5986E-01	8.7055E-01
U	2.6508E+01	4.4385E+00	4.3828E+00

SPECIES	MOLE FRACTIONS		
E-	1.5209E-01	3.2477E-01	3.7170E-01
H	6.9581E-01	3.5045E-01	2.5659E-01
H+	1.5209E-01	3.2477E-01	3.7170E-01
H2	2.2486E-06	1.3971E-06	7.6449E-07
H-	1.3793E-06	5.6471E-06	5.1482E-06
H2+	1.5821E-06	7.8385E-06	7.6120E-06

P1 = 1.00E+01 N/SQ-M, US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.5876E+02	9.4481E+03	1.2910E+04
T	3.6037E+01	4.8972E+01	5.2436E+01
RHO	1.1691E+01	6.8537E+01	8.1561E+01
H	1.5359E+02	2.7836E+02	3.2512E+02
A	8.2828E+00	1.0857E+01	1.1688E+01
S	2.2254E+00	2.3960E+00	2.4855E+00
Z	2.2756E+00	2.8150E+00	3.0188E+00
GAME	8.3659E-01	8.5505E-01	8.6306E-01
U	2.5028E+01	4.2761E+00	4.1873E+00

SPECIES	MOLE FRACTIONS		
E-	1.2112E-01	2.8952E-01	3.3749E-01
H	7.5776E-01	4.2094E-01	3.2501E-01
H+	1.2112E-01	2.8952E-01	3.3749E-01
H2	2.9311E-06	2.0744E-06	1.2765E-06
H-	1.2159E-06	5.9533E-06	5.9172E-06
H2+	1.3774E-06	7.9784E-06	8.3886E-06

P1 = 1.00E+01 N/SQ-M, US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1909E+03	1.2663E+04	1.7199E+04
T	3.8783E+01	5.3426E+01	5.7802E+01
RHO	1.2549E+01	7.6103E+01	8.8728E+01
H	1.8957E+02	3.4589E+02	4.0329E+02
A	8.9014E+00	1.2004E+01	1.3069E+01
S	2.3361E+00	2.5415E+00	2.6430E+00
Z	2.4471E+00	3.1144E+00	3.3534E+00
GAME	8.3489E-01	8.6606E-01	8.8113E-01
U	2.7986E+01	4.6216E+00	4.6168E+00

SPECIES	MOLE FRACTIONS		
E-	1.8271E-01	3.5784E-01	4.0360E-01
H	6.3457E-01	2.8431E-01	1.9278E-01
H+	1.8271E-01	3.5784E-01	4.0360E-01
H2	1.7390E-06	8.8907E-07	4.0837E-07
H-	1.4997E-06	5.0792E-06	4.1303E-06
H2+	1.7436E-06	7.3195E-06	6.4051E-06

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3164E+03	1.4449E+04	1.9620E+04
T	4.0035E+01	5.5878E+01	6.1143E+01
RHO	1.2943E+01	7.9048E+01	9.1022E+01
H	2.0898E+02	3.8229E+02	4.4593E+02
A	9.2184E+00	1.2642E+01	1.3908E+01
S	2.3934E+00	2.6156E+00	2.7228E+00
Z	2.3404E+00	3.2712E+00	3.5253E+00
GAME	8.3557E-01	8.7432E-01	8.9735E-01
U	2.9463E+01	4.8315E+00	4.8677E+00

SPECIES	MOLE FRACTIONS		
E-	2.1271E-01	3.8660E-01	4.3268E-01
H	5.7457E-01	2.2279E-01	1.3463E-01
H+	2.1271E-01	3.8660E-01	4.3268E-01
H2	1.3447E-06	5.2216E-07	1.8341E-07
H-	1.5763E-06	4.2898E-06	2.9591E-06
H2+	1.8590E-06	6.4405E-06	4.8550E-06

P1 = 1.00E+01 N/SQ-M, US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5855E+03	1.8285E+04	2.5154E+04
T	4.2433E+01	6.1887E+01	7.2360E+01
RHO	1.3635E+01	8.2362E+01	9.0267E+01
H	2.5063E+02	4.6017E+02	5.4251E+02
A	9.8754E+00	1.4166E+01	1.6606E+01
S	2.5116E+00	2.7645E+00	2.8861E+00
Z	2.7405E+00	3.5873E+00	3.8510E+00
GAME	8.3865E-01	9.0394E-01	9.8960E-01
U	3.2406E+01	5.3720E+00	5.7473E+00

SPECIES	MOLE FRACTIONS		
E-	2.7020E-01	4.4248E-01	4.8065E-01
H	4.5959E-01	1.1504E-01	3.8691E-02
H+	2.7020E-01	4.4248E-01	4.8065E-01
H2	7.8339E-07	1.1922E-07	1.0212E-08
H-	1.6003E-06	2.3199E-06	7.0447E-07
H2+	1.9459E-06	3.8544E-06	1.3915E-06

P1 = 1.00E+01 N/SQ-M, US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4479E+03	1.6331E+04	2.2267E+04
T	4.1245E+01	5.8645E+01	6.5567E+01
RHO	1.3306E+01	8.1158E+01	9.1864E+01
H	2.2933E+02	4.2041E+02	4.9218E+02
A	9.5426E+00	1.3353E+01	1.4987E+01
S	2.4519E+00	2.6909E+00	2.8044E+00
Z	2.6382E+00	3.4312E+00	3.6968E+00
GAME	8.3665E-01	8.8607E-01	9.2671E-01
U	3.0937E+01	5.0761E+00	5.2377E+00

SPECIES	MOLE FRACTIONS		
E-	2.4192E-01	4.1713E-01	4.5899E-01
H	5.1616E-01	1.6574E-01	8.2007E-02
H+	2.4192E-01	4.1712E-01	4.5899E-01
H2	1.0326E-06	2.7115E-07	5.9316E-08
H-	1.6094E-06	3.3309E-06	1.7397E-06
H2+	1.9266E-06	5.2395E-06	3.0744E-06

P1 = 1.00E+01 N/SQ-M, US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7292E+03	2.0267E+04	2.8471E+04
T	4.3618E+01	6.6109E+01	8.5267E+01
RHO	1.3926E+01	8.2037E+01	8.4431E+01
H	2.7286E+02	5.0144E+02	6.0114E+02
A	1.0219E+01	1.5201E+01	1.9351E+01
S	2.5725E+00	2.8382E+00	2.9692E+00
Z	2.8468E+00	3.7370E+00	3.9548E+00
GAME	8.4093E-01	9.3534E-01	1.1104E+00
U	3.3871E+01	5.7582E+00	6.6839E+00

SPECIES	MOLE FRACTIONS		
E-	2.9747E-01	4.6481E-01	4.9429E-01
H	4.0506E-01	7.0369E-02	1.1422E-02
H+	2.9747E-01	4.6481E-01	4.9429E-01
H2	5.8412E-07	3.8532E-08	5.0565E-10
H-	1.5512E-06	1.3402E-06	1.3704E-07
H2+	1.9172E-06	2.3859E-06	3.2812E-07

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.87d8E+03	2.2213E+04	3.2240E+04
T	4.4817E+01	7.2128E+01	1.0580E+02
RHO	1.4176E+01	7.9720E+01	7.6418E+01
H	2.9605E+02	5.4403E+02	6.6855E+02
A	1.0574E+01	1.6650E+01	2.2291E+01
S	2.6345E+00	2.9085E+00	3.0456E+00
Z	2.9571E+00	3.8631E+00	3.9877E+00
GAME	8.4374E-01	9.9492E-01	1.1778E+00
U	3.5331E+01	6.2909E+00	8.0292E+00

SPECIES	MOLE FRACTIONS		
E-	3.2365E-01	4.8228E-01	4.9846E-01
H	3.5269E-01	3.5447E-02	3.0799E-03
H+	3.2365E-01	4.8228E-01	4.9846E-01
H2	4.2542E-07	7.6654E-09	1.3787E-11
H-	1.4651E-06	5.7802E-07	1.9210E-08
H2+	1.8423E-06	1.1375E-06	5.5863E-08

P1 = 1.00E+01 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1955E+03	2.5600E+04	4.0526E+04
T	4.7344E+01	9.3949E+01	1.5630E+02
RHO	1.4547E+01	6.8473E+01	6.4864E+01
H	3.4523E+02	6.3155E+02	8.1875E+02
A	1.1336E+01	2.0812E+01	2.7284E+01
S	2.7612E+00	3.0325E+00	3.1674E+00
Z	3.1877E+00	3.9796E+00	3.9973E+00
GAME	8.5142E-01	1.1586E+00	1.1915E+00
U	3.8231E+01	8.1285E+00	1.1069E+01

SPECIES	MOLE FRACTIONS		
E-	3.7260E-01	4.9743E-01	4.9967E-01
H	2.5480E-01	5.1378E-03	6.6553E-04
H+	3.7260E-01	4.9743E-01	4.9967E-01
H2	2.0391E-07	5.7764E-11	7.1758E-14
H-	1.1980E-06	3.9092E-08	2.2347E-09
H2+	1.5649E-06	1.0392E-07	4.2239E-09

P1 = 1.00E+01 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.0342E+03	2.4011E+04	3.6340E+04
T	4.6051E+01	8.1318E+01	1.3062E+02
RHO	1.4385E+01	7.4850E+01	6.9640E+01
H	3.2017E+02	5.8751E+02	7.4256E+02
A	1.0945E+01	1.8688E+01	2.4915E+01
S	2.6974E+00	2.9738E+00	3.1126E+00
Z	3.0708E+00	3.9448E+00	3.9952E+00
GAME	8.4717E-01	1.0887E+00	1.1896E+00
U	3.6784E+01	7.0754E+00	9.5918E+00

SPECIES	MOLE FRACTIONS		
E-	3.4871E-01	4.9301E-01	4.9939E-01
H	3.0257E-01	1.3982E-02	1.2120E-03
H+	3.4871E-01	4.9301E-01	4.9939E-01
H2	3.0048E-07	7.8846E-10	6.6738E-13
H-	1.3458E-06	1.6715E-07	4.6771E-09
H2+	1.7236E-06	3.7871E-07	1.2587E-08

P1 = 1.00E+01 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3623E+03	2.7037E+04	4.4772E+04
T	4.8737E+01	1.0844E+02	1.8353E+02
RHO	1.4653E+01	6.2470E+01	6.1014E+01
H	3.7123E+02	6.7633E+02	8.9788E+02
A	1.1753E+01	2.2622E+01	2.9574E+01
S	2.8260E+00	3.0844E+00	3.2160E+00
Z	3.3079E+00	3.9910E+00	3.9983E+00
GAME	8.5688E-01	1.1824E+00	1.1919E+00
U	3.9669E+01	9.3051E+00	1.2519E+01

SPECIES	MOLE FRACTIONS		
E-	3.9539E-01	4.9888E-01	4.9979E-01
H	2.0921E-01	2.2487E-03	4.2577E-04
H+	3.9539E-01	4.9888E-01	4.9979E-01
H2	1.3074E-07	5.3468E-12	1.2180E-14
H-	1.0257E-06	1.0812E-08	1.4242E-09
H2+	1.3694E-06	3.1742E-08	1.7778E-09

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.5347E+03	2.8371E+04	4.9066E+04
T	5.0258E+01	1.2388E+02	2.1117E+02
RHO	1.4710E+01	5.7324E+01	5.8104E+01
H	3.9816E+02	7.2194E+02	9.8009E+02
A	1.2202E+01	2.4258E+01	3.1727E+01
S	2.8904E+00	3.1310E+00	3.2576E+00
Z	3.4285E+00	3.9952E+00	3.9988E+00
GAME	8.6407E-01	1.1890E+00	1.1921E+00
U	4.1096E+01	1.0527E+01	1.3960E+01

SPECIES	MOLE FRACTIONS		
E-	4.1666E-01	4.9940E-01	4.9985E-01
H	1.6669E-01	1.2008E-03	3.0156E-04
H+	4.1666E-01	4.9940E-01	4.9985E-01
H2	7.8338E-08	7.1423E-13	3.0231E-15
H-	8.3942E-07	4.0792E-09	1.0245E-09
H2+	1.1484E-06	1.1615E-08	9.0413E-10

P1 = 1.00E+01 N/SQ-M, US1 = 6.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8942E+03	3.0582E+04	5.7007E+04
T	5.4113E+01	1.5557E+02	2.6902E+02
RHO	1.4573E+01	4.9344E+01	5.2985E+01
H	4.5479E+02	8.1583E+02	1.1492E+03
A	1.3295E+01	2.7213E+01	3.5814E+01
S	3.0201E+00	3.2103E+00	3.3306E+00
Z	3.6701E+00	3.9976E+00	3.9993E+00
GAME	8.9004E-01	1.1910E+00	1.1921E+00
U	4.3901E+01	1.2945E+01	1.6599E+01

SPECIES	MOLE FRACTIONS		
E-	4.5506E-01	4.9970E-01	4.9991E-01
H	8.9889E-02	5.9232E-04	1.7372E-04
H+	4.5505E-01	4.9970E-01	4.9991E-01
H2	1.9309E-08	3.7602E-13	3.4639E-16
H-	4.4856E-07	1.9438E-09	5.7335E-10
H2+	6.5386E-07	4.4903E-09	3.1553E-10

P1 = 1.00E+01 N/SQ-M, US1 = 6.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7122E+03	2.9554E+04	5.3223E+04
T	5.2006E+01	1.3944E+02	2.3999E+02
RHO	1.4690E+01	5.3050E+01	5.5457E+01
H	4.2601E+02	7.6838E+02	1.0645E+03
A	1.2705E+01	2.5761E+01	3.3825E+01
S	2.9554E+00	3.1721E+00	3.2958E+00
Z	3.5502E+00	3.9969E+00	3.9991E+00
GAME	8.7429E-01	1.1908E+00	1.1921E+00
U	4.2509E+01	1.1762E+01	1.5351E+01

SPECIES	MOLE FRACTIONS		
E-	4.3665E-01	4.9962E-01	4.9989E-01
H	1.2669E-01	7.6468E-04	2.2443E-04
H+	4.3665E-01	4.9962E-01	4.9989E-01
H2	4.2120E-08	2.2907E-13	9.3267E-16
H-	6.4319E-07	2.2273E-09	7.6002E-10
H2+	9.0540E-07	5.4710E-09	5.1097E-10

P1 = 1.00E+01 N/SQ-M, US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0799E+03	3.1363E+04	6.0328E+04
T	5.6847E+01	1.7205E+02	2.9894E+02
RHO	1.4318E+01	4.6027E+01	5.0458E+01
H	4.8445E+02	8.6426E+02	1.2377E+03
A	1.4045E+01	2.8612E+01	3.7754E+01
S	3.0839E+00	3.2460E+00	3.3639E+00
Z	3.7839E+00	3.9979E+00	3.9995E+00
GAME	9.1710E-01	1.1910E+00	1.1921E+00
U	4.5258E+01	1.4039E+01	1.7933E+01

SPECIES	MOLE FRACTIONS		
E-	4.7144E-01	4.9974E-01	4.9993E-01
H	5.7121E-02	5.1593E-04	1.3718E-04
H+	4.7144E-01	4.9974E-01	4.9993E-01
H2	6.8453E-09	3.9913E-13	1.4350E-16
H-	2.6962E-07	1.8941E-09	4.3185E-10
H2+	4.1144E-07	4.6301E-09	2.0482E-10

TABLE I. - Continued

$p_1 = 10\ N/m^2$

P1 = 1.00E+01 N/SQ-M, US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2674E+03	3.1579E+04	6.2515E+04
T	6.0758E+01	1.8851E+02	3.2908E+02
RHO	1.3850E+01	4.2497E+01	4.7498E+01
H	5.1497E+02	9.1262E+02	1.3258E+03
A	1.5118E+01	2.9947E+01	3.9611E+01
S	3.1459E+00	3.2810E+00	3.3967E+00
Z	3.8828E+00	3.9983E+00	3.9996E+00
GAME	9.6881E-01	1.1913E+00	1.1921E+00
U	4.6559E+01	1.5155E+01	1.9161E+01

SPECIES	MOLE FRACTIONS		
E-	4.8491E-01	4.9979E-01	4.9995E-01
H	3.0177E-02	4.1412E-04	1.0938E-04
H+	4.8491E-01	4.9979E-01	4.9995E-01
H2	1.5719E-09	2.0162E-13	6.3846E-17
H-	1.2627E-07	1.4036E-09	3.2026E-10
H2+	2.0584E-07	3.4384E-09	1.3654E-10

P1 = 1.00E+01 N/SQ-M, US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6329E+03	2.9389E+04	6.1241E+04
T	7.5719E+01	2.1973E+02	3.8628E+02
RHO	1.2042E+01	3.3587E+01	3.9638E+01
H	5.7820E+02	1.0044E+03	1.4935E+03
A	1.8589E+01	3.2359E+01	4.2917E+01
S	3.2589E+00	3.3552E+00	3.4642E+00
Z	3.9842E+00	3.9993E+00	3.9997E+00
GAME	1.1454E+00	1.1921E+00	1.1921E+00
U	4.8811E+01	1.7468E+01	2.1293E+01

SPECIES	MOLE FRACTIONS		
E-	4.9802E-01	4.9991E-01	4.9997E-01
H	3.9697E-03	1.7329E-04	6.9680E-05
H+	4.9802E-01	4.9991E-01	4.9997E-01
H2	1.2957E-11	2.9030E-15	1.4028E-17
H-	9.2866E-09	3.5760E-10	1.6256E-10
H2+	1.9342E-08	3.9661E-10	6.1401E-11

P1 = 1.00E+01 N/SQ-M, US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.4515E+03	3.0836E+04	6.2675E+04
T	6.6898E+01	2.0436E+02	3.5843E+02
RHO	1.3053E+01	3.8158E+01	4.3718E+01
H	5.4623E+02	9.5925E+02	1.4104E+03
A	1.6746E+01	3.1193E+01	4.1341E+01
S	3.2053E+00	3.3176E+00	3.4305E+00
Z	3.9526E+00	3.9989E+00	3.9997E+00
GAME	1.0606E+00	1.1918E+00	1.1921E+00
U	4.7737E+01	1.6302E+01	2.0245E+01

SPECIES	MOLE FRACTIONS		
E-	4.9400E-01	4.9986E-01	4.9996E-01
H	1.2003E-02	2.7182E-04	8.7093E-05
H+	4.9400E-01	4.9986E-01	4.9996E-01
H2	1.8253E-10	3.7990E-14	2.9310E-17
H-	3.9832E-08	7.1214E-10	2.2989E-10
H2+	7.1965E-08	1.3868E-09	9.1112E-11

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M, US1 = 4.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3611E+01
T	2.7140E+00	3.3569E+00	4.7147E+00
RHO	3.9200E+00	6.5476E+00	1.1371E+01
M	2.7745E+00	3.4526E+00	4.9385E+00
A	1.6432E+00	1.8212E+00	2.1365E+00
S	1.0476E+00	1.0492E+00	1.0646E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8810E-01	9.6816E-01
U	2.2663E+00	1.3533E+00	1.1938E+00

SPECIES	MOLE FRACTIONS		
E-	9.1201E-35	8.7707E-34	9.7123E-26
H	3.0819E-10	1.1520E-08	5.6979E-05
H+	2.4303E-34	1.2355E-33	9.1345E-26
H2	1.0000E+00	1.0000E+00	9.9994E-01
H-	3.7672E-43	1.4753E-42	2.8895E-32
H2+	9.9826E-35	1.0396E-34	5.7784E-27

P1 = 2.00E+01 N/SQ-M, US1 = 6.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4292E+01	7.8439E+01	1.5043E+02
T	4.8561E+00	6.5574E+00	7.6192E+00
RHO	5.0021E+00	1.1899E+01	1.9244E+01
M	5.1001E+00	7.3553E+00	9.7653E+00
A	2.1640E+00	2.4099E+00	2.5454E+00
S	1.1020E+00	1.1091E+00	1.1294E+00
Z	1.0001E+00	1.0052E+00	1.0260E+00
GAME	9.6425E-01	8.8101E-01	8.2884E-01
U	3.6573E+00	1.5319E+00	1.2871E+00

SPECIES	MOLE FRACTIONS		
E-	2.1311E-24	2.6639E-17	1.1452E-14
H	1.4624E-04	1.0315E-02	5.0726E-02
H+	2.1015E-24	2.6122E-17	1.1239E-14
H2	9.9995E-01	9.8948E-01	9.4927E-01
H-	1.8044E-29	1.6748E-21	2.2606E-18
H2+	2.9646E-26	5.1860E-19	2.1481E-16

P1 = 2.00E+01 N/SQ-M, US1 = 5.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4563E+01	9.6650E+01
T	3.7003E+00	4.9204E+00	6.4936E+00
RHO	4.5254E+00	9.0543E+00	1.4844E+01
M	3.8206E+00	5.1729E+00	7.2031E+00
A	1.9077E+00	2.1776E+00	2.4387E+00
S	1.0751E+00	1.0791E+00	1.0971E+00
Z	1.0000E+00	1.0001E+00	1.0040E+00
GAME	9.8359E-01	9.5362E-01	8.9121E-01
U	2.9821E+00	1.4776E+00	1.3018E+00

SPECIES	MOLE FRACTIONS		
E-	3.6788E-30	1.3336E-23	1.5394E-17
H	3.2263E-07	1.4895E-04	7.0609E-03
H+	2.5118E-30	1.2835E-23	1.5058E-17
H2	1.0000E+00	9.9985E-01	9.9204E-01
H-	1.3070E-34	7.4730E-29	1.0399E-21
H2+	1.6733E-31	4.4069E-25	3.3665E-19

P1 = 2.00E+01 N/SQ-M, US1 = 7.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3416E+01	1.3099E+02	2.2135E+02
T	6.0584E+00	7.6815E+00	8.3786E+00
RHO	5.5013E+00	1.6531E+01	2.4836E+01
M	6.6205E+00	1.0085E+01	1.2738E+01
A	2.3438E+00	2.5537E+00	2.6907E+00
S	1.1283E+00	1.1412E+00	1.1650E+00
Z	1.0025E+00	1.0305E+00	1.0636E+00
GAME	9.3442E-01	8.2373E-01	8.1241E-01
U	4.3568E+00	1.4473E+00	1.2438E+00

SPECIES	MOLE FRACTIONS		
E-	1.0990E-19	1.9791E-14	3.7983E-13
H	5.0816E-03	5.9259E-02	1.1966E-01
H+	1.0808E-19	1.9467E-14	3.7325E-13
H2	9.9402E-01	9.4074E-01	8.8034E-01
H-	2.6672E-23	4.3848E-18	1.4783E-16
H2+	1.7297E-20	3.2873E-16	6.7306E-15

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M, US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.4516E+01	2.1308E+02	3.2981E+02
T	6.9652E+00	9.4742E+00	9.0376E+00
RHO	6.2935E+00	2.3429E+01	3.2733E+01
H	8.3999E+00	1.3384E+01	1.6333E+01
A	2.4362E+00	2.7152E+00	2.8534E+00
S	1.1543E+00	1.1774E+00	1.2050E+00
Z	1.0155E+00	1.0734E+00	1.1147E+00
GAME	8.3905E-01	8.1048E-01	8.0917E-01
U	5.1173E+00	1.3734E+00	1.2192E+00

SPECIES	MOLE FRACTIONS		
E-	4.0560E-16	5.8159E-13	4.7007E-12
H	3.3652E-02	1.3679E-01	2.0878E-01
H+	5.9785E-16	5.7201E-13	4.6232E-12
H2	9.6944E-01	8.6321E-01	7.9422E-01
H-	4.0087E-20	2.2911E-16	3.1456E-15
H2+	7.6919E-18	9.9152E-15	8.0672E-14

P1 = 2.00E+01 N/SQ-M, US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.2194E+01	4.9395E+02	6.9359E+02
T	8.0462E+00	9.7410E+00	1.0220E+01
RHO	8.3804E+00	4.2481E+01	5.4252E+01
H	1.2693E+01	2.1539E+01	2.5252E+01
A	2.6351E+00	3.0674E+00	3.2207E+00
S	1.2134E+00	1.2636E+00	1.2988E+00
Z	1.0705E+00	1.1940E+00	1.2509E+00
GAME	8.3604E-01	8.0892E-01	8.1136E-01
U	6.6979E+00	1.3233E+00	1.2208E+00

SPECIES	MOLE FRACTIONS		
E-	1.9188E-13	4.0191E-11	1.5068E-10
H	1.3139E-01	3.2493E-01	4.0117E-01
H+	1.8995E-13	3.9524E-11	1.4827E-10
H2	8.6811E-01	6.7507E-01	5.9883E-01
H-	3.6818E-17	4.0926E-14	2.0758E-13
H2+	2.0694E-15	7.0796E-13	2.6203E-12

P1 = 2.00E+01 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7501E+01	3.3285E+02	4.8554E+02
T	7.5795E+00	9.1406E+00	9.6443E+00
RHO	7.2986E+00	3.2273E+01	4.2833E+01
H	1.0427E+01	1.7217E+01	2.0525E+01
A	2.5332E+00	2.8869E+00	3.0307E+00
S	1.1826E+00	1.2182E+00	1.2497E+00
Z	1.0393E+00	1.1286E+00	1.1777E+00
GAME	8.1461E-01	8.0783E-01	8.0873E-01
U	5.9063E+00	1.3368E+00	1.2135E+00

SPECIES	MOLE FRACTIONS		
E-	2.3749E-14	6.3096E-12	3.1475E-11
H	7.5584E-02	2.2789E-01	3.0174E-01
H+	2.3517E-14	6.2933E-12	3.3961E-11
H2	9.2442E-01	7.7211E-01	6.9826E-01
H-	2.6115E-18	4.2320E-15	3.1433E-14
H2+	2.3466E-16	1.1050E-13	5.4558E-13

P1 = 2.00E+01 N/SQ-M, US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.8469E+01	6.9759E+02	9.5250E+02
T	8.4355E+00	1.0304E+01	1.0781E+01
RHO	9.4675E+00	5.3390E+01	6.6244E+01
H	1.5192E+01	2.6311E+01	3.0498E+01
A	2.7393E+00	3.2572E+00	3.4239E+00
S	1.2469E+00	1.3130E+00	1.3521E+00
Z	1.1079E+00	1.2684E+00	1.3337E+00
GAME	8.0292E-01	8.1177E-01	8.1529E-01
U	7.4807E+00	1.3287E+00	1.2458E+00

SPECIES	MOLE FRACTIONS		
E-	9.6794E-13	1.8635E-10	5.8330E-10
H	1.9475E-01	4.2310E-01	5.0041E-01
H+	9.5792E-13	1.8309E-10	5.7436E-10
H2	8.0525E-01	5.7690E-01	4.9959E-01
H-	2.3945E-16	2.6015E-13	1.0387E-12
H2+	1.0254E-14	3.2136E-12	9.9776E-12

TABLE I.- Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M, US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0632E+02	9.4535E+02	1.2651E+03
T	8.7832E+00	1.0850E+01	1.1345E+01
RHO	1.0524E+01	8.4482E+01	7.8228E+01
H	1.7924E+01	3.1538E+01	3.6258E+01
A	2.8464E+00	3.4583E+00	3.6426E+00
S	1.2828E+00	1.3661E+00	1.4392E+00
Z	1.1502E+00	1.3512E+00	1.4256E+00
GAMF	8.0198E-01	8.1580E-01	8.2343E-01
U	8.2566E+00	1.3498E+00	1.2826E+00

SPECIES	MOLE FRACTIONS		
E-	3.7994E-12	7.0571E-10	1.9755E-09
H	2.6114E-01	5.1981E-01	6.9703E-01
H+	3.7623E-12	6.9533E-10	1.9474E-09
H2	7.3886E-01	4.8019E-01	4.0297E-01
H-	1.2145E-15	1.2530E-12	4.2961E-12
H2+	3.8348E-14	1.1635E-11	3.2392E-11

P1 = 2.00E+01 N/SQ-M, US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4671E+02	1.5755E+03	2.0588E+03
T	9.4025E+00	1.1962E+01	1.2581E+01
RHO	1.2487E+01	8.5512E+01	1.0010E+02
H	2.4098E+01	4.3346E+01	4.9372E+01
A	3.0729E+00	3.9048E+00	4.1473E+00
S	1.3623E+00	1.4813E+00	1.5328E+00
Z	1.2497E+00	1.5401E+00	1.6347E+00
GAMF	8.0349E-01	8.2762E-01	8.3636E-01
U	9.7910E+00	1.4321E+00	1.3952E+00

SPECIES	MOLE FRACTIONS		
E-	3.0518E-11	6.8390E-09	1.9780E-08
H	3.9953E-01	7.0141E-01	7.7657E-01
H+	3.0241E-11	6.7564E-09	1.9570E-08
H2	6.0047E-01	2.9859E-01	2.2343E-01
H-	1.3941E-14	1.6662E-11	5.4491E-11
H2+	2.9085E-13	9.9289E-11	2.6497E-10

P1 = 2.00E+01 N/SQ-M, US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2573E+02	1.2377E+03	1.6328E+03
T	9.1037E+00	1.1396E+01	1.1933E+01
RHO	1.1531E+01	7.5331E+01	8.9665E+01
H	2.0994E+01	3.7217E+01	4.2542E+01
A	2.9576E+00	3.6728E+00	3.8810E+00
S	1.3215E+00	1.4223E+00	1.4696E+00
Z	1.1976E+00	1.4420E+00	1.5261E+00
GAMF	8.0232E-01	8.2097E-01	8.2709E-01
U	9.0262E+00	1.3839E+00	1.3316E+00

SPECIES	MOLE FRACTIONS		
E-	1.1889E-11	2.2556E-09	6.2495E-09
H	3.7306E-01	6.1298E-01	6.8944E-01
H+	1.1779E-11	2.2248E-09	6.1703E-09
H2	6.2994E-01	3.8702E-01	3.1054E-01
H-	4.6360E-15	4.8174E-12	1.5729E-11
H2+	1.1515E-13	3.5590E-11	9.4890E-11

P1 = 2.00E+01 N/SQ-M, US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6921E+02	1.9537E+03	2.5404E+03
T	9.6945E+00	1.2580E+01	1.3358E+01
RHO	1.3361E+01	9.4427E+01	1.0866E+02
H	2.7537E+01	4.9915E+01	5.6789E+01
A	3.1929E+00	4.1607E+00	4.4617E+00
S	1.4055E+00	1.5424E+00	1.5986E+00
Z	1.3061E+00	1.6447E+00	1.7503E+00
GAMF	8.0514E-01	8.3669E-01	8.5142E-01
U	1.0550E+01	1.4952E+00	1.4819E+00

SPECIES	MOLE FRACTIONS		
E-	7.6942E-11	2.0156E-08	6.8842E-08
H	4.6882E-01	7.8395E-01	8.5737E-01
H+	7.6299E-11	1.9949E-08	6.8282E-08
H2	5.3118E-01	2.1605E-01	1.4263E-01
H-	4.0257E-14	5.3407E-11	1.9347E-10
H2+	6.8347E-13	2.6072E-10	7.5344E-10

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9328E+02	2.3720E+03	3.0848E+03
T	9.9773E+00	1.3311E+01	1.4462E+01
RHO	1.4173E+01	1.0160E+02	1.1414E+02
H	3.1213E+01	5.6924E+01	6.4871E+01
A	3.3182E+00	4.4575E+00	4.8891E+00
S	1.4506E+00	1.6050E+00	1.6661E+00
Z	1.3673E+00	1.7543E+00	1.8688E+00
GAME	8.0732E-01	8.5105E-01	8.8442E-01
U	1.1305E+01	1.5795E+00	1.6027E+00

SPECIES	MOLE FRACTIONS		
E-	1.6732E-10	6.4607E-08	3.1536E-07
H	5.3688E-01	8.5973E-01	9.2982E-01
H+	1.6598E-10	6.4089E-08	3.1370E-07
H2	4.6312E-01	1.4027E-01	7.0179E-02
H-	9.8050E-14	1.7452E-10	8.1768E-10
H2+	1.4394E-12	6.9284E-10	2.4787E-09

P1 = 2.00E+01 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4594E+02	3.2703E+03	4.5074E+03
T	1.0553E+01	1.6122E+01	2.3986E+01
RHO	1.5526E+01	1.0364E+02	9.3958E+01
H	3.9270E+01	7.2144E+01	8.6200E+01
A	3.5892E+00	5.5533E+00	7.3944E+00
S	1.5467E+00	1.7288E+00	1.8041E+00
Z	1.6012E+00	1.9573E+00	2.0000E+00
GAME	8.1317E-01	9.7734E-01	1.1398E+00
U	1.2803E+01	1.9199E+00	2.5317E+00

SPECIES	MOLE FRACTIONS		
E-	7.5561E-10	2.3392E-06	6.9660E-04
H	6.6766E-01	9.7815E-01	9.9792E-01
H+	7.5051E-10	2.3339E-06	6.9652E-04
H2	3.3234E-01	2.1843E-02	6.3826E-04
H-	5.1922E-13	4.1899E-09	3.5935E-07
H2+	5.6118E-12	9.4664E-09	4.4079E-07

P1 = 2.00E+01 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1885E+02	2.9173E+03	3.7123E+03
T	1.0263E+01	1.4306E+01	1.6956E+01
RHO	1.4988E+01	1.0569E+02	1.1103E+02
H	3.5123E+01	6.4350E+01	7.4173E+01
A	3.4503E+00	4.8457E+00	5.8516E+00
S	1.4978E+00	1.6683E+00	1.7358E+00
Z	1.4320E+00	1.8635E+00	1.9719E+00
GAME	8.0996E-01	8.8079E-01	1.0241E+00
U	1.2056E+01	1.7007E+00	1.8656E+00

SPECIES	MOLE FRACTIONS		
E-	3.7007E-10	2.6690E-07	5.2413E-06
H	6.0346E-01	9.2673E-01	9.8575E-01
H+	3.6737E-10	2.6549E-07	5.2326E-06
H2	3.9654E-01	7.3271E-02	1.4241E-02
H-	2.3626E-13	6.6113E-10	8.6592E-09
H2+	2.9297E-12	2.0712E-09	1.7419E-08

P1 = 2.00E+01 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7454E+02	3.6703E+03	5.3260E+03
T	1.0859E+01	2.0133E+01	3.0313E+01
RHO	1.6065E+01	9.1375E+01	8.7125E+01
H	4.3652E+01	9.0128E+01	9.8302E+01
A	3.7371E+00	6.7977E+00	7.7819E+00
S	1.5971E+00	1.7822E+00	1.8527E+00
Z	1.5739E+00	1.9951E+00	2.0166E+00
GAME	8.1718E-01	1.1504E+00	9.9064E-01
U	1.3545E+01	2.3824E+00	3.0602E+00

SPECIES	MOLE FRACTIONS		
E-	1.5729E-09	7.6006E-05	8.4028E-03
H	7.2926E-01	9.9733E-01	9.8304E-01
H+	1.5634E-09	7.5976E-05	8.4026E-03
H2	2.7074E-01	2.5192E-03	1.5071E-04
H-	1.1334E-12	6.2352E-08	2.1821E-06
H2+	1.3587E-11	9.2379E-08	2.4290E-06

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M, US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0464E+02	4.0354E+03	6.1030E+03
T	1.1192E+01	2.5263E+01	3.4127E+01
RHO	1.6492E+01	7.9799E+01	8.7312E+01
U	4.8269E+01	8.8334E+01	1.0961E+02
A	3.8979E+00	7.5030E+00	8.0124E+00
S	1.6492E+00	1.8254E+00	1.8905E+00
Z	1.6505E+00	2.0019E+00	2.0482E+00
GAME	8.2250E-01	1.1132E+00	9.1844E-01
U	1.4283E+01	2.9537E+00	3.3251E+00

SPECIES	MOLE FRACTIONS		
E-	3.3440E-09	1.3649E-03	2.3631E-02
H	7.8828E-01	9.9646E-01	9.5265E-01
H+	3.3265E-09	1.3649E-03	2.3631E-02
H2	2.1172E-01	4.1284E-04	7.9750E-05
H-	2.4676E-12	5.2340E-07	4.5521E-06
H2+	1.9889E-11	6.1618E-07	5.0925E-06

P1 = 2.00E+01 N/SQ-M, US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6903E+02	4.8777E+03	7.5691E+03
T	1.2030E+01	3.2860E+01	3.8917E+01
RHO	1.6936E+01	7.3324E+01	9.1229E+01
U	5.8207E+01	1.0631E+02	1.3217E+02
A	4.2839E+00	7.8824E+00	8.5220E+00
S	1.7561E+00	1.8950E+00	1.9584E+00
Z	1.8112E+00	2.0404E+00	2.1319E+00
GAME	8.4222E-01	9.3233E-01	8.7533E-01
U	1.5739E+01	3.6383E+00	3.5948E+00

SPECIES	MOLE FRACTIONS		
E-	1.7729E-08	1.9978E-02	6.1919E-02
H	9.9573E-01	9.5992E-01	8.7610E-01
H+	1.7667E-08	1.9978E-02	6.1917E-02
H2	1.0427E-01	1.1865E-04	4.1405E-05
H-	1.2676E-11	3.4793E-06	8.8186E-06
H2+	7.4892E-11	3.8667E-06	1.0268E-05

P1 = 2.00E+01 N/SQ-M, US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3614E+02	4.4302E+03	6.8579E+03
T	1.1569E+01	2.9665E+01	3.6804E+01
RHO	1.4798E+01	7.4138E+01	8.9252E+01
U	5.3121E+01	9.6997E+01	1.2082E+02
A	4.0753E+00	7.7235E+00	8.2664E+00
S	1.7023E+00	1.8619E+00	1.9249E+00
Z	1.7299E+00	2.0147E+00	2.0877E+00
GAME	8.2994E-01	9.9921E-01	8.8933E-01
U	1.5015E+01	3.4042E+00	3.4807E+00

SPECIES	MOLE FRACTIONS		
E-	7.2113E-09	7.4375E-03	4.2079E-02
H	9.4387E-01	9.8498E-01	9.1577E-01
H+	7.1793E-09	7.4373E-03	4.2078E-02
H2	1.5613E-01	1.4586E-04	5.4712E-05
H-	5.2591E-12	1.7354E-06	6.9129E-06
H2+	3.7411E-11	1.9366E-06	7.7674E-06

P1 = 2.00E+01 N/SQ-M, US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.0336E+02	5.3232E+03	8.1721E+03
T	1.2683E+01	3.5063E+01	4.0677E+01
RHO	1.6806E+01	7.4574E+01	9.2183E+01
U	6.3522E+01	1.1619E+02	1.4372E+02
A	4.5434E+00	8.1231E+00	8.7705E+00
S	1.9099E+00	1.9272E+00	1.9923E+00
Z	1.8915E+00	2.0767E+00	2.1794E+00
GAME	8.6929E-01	9.2034E-01	8.6770E-01
U	1.6445E+01	3.7111E+00	3.6621E+00

SPECIES	MOLE FRACTIONS		
E-	5.8012E-09	3.7344E-02	8.2357E-02
H	9.4281E-01	9.2518E-01	8.1523E-01
H+	5.7874E-08	3.7343E-02	8.2355E-02
H2	5.7388E-01	1.1763E-04	3.2636E-05
H-	3.6641E-11	5.2510E-06	1.0464E-05
H2+	1.7461E-10	5.9281E-06	1.2437E-05

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3759E+02	5.5355E+03	8.4659E+03
T	1.3949E+01	3.7159E+01	4.2113E+01
RHO	1.4103E+01	7.1006E+01	9.0192E+01
H	5.9056E+01	1.2605E+02	1.5524E+02
A	5.0778E+00	8.3383E+00	9.0008E+00
S	1.9623E+00	1.9625E+00	2.0282E+00
Z	1.9616E+00	2.1133E+00	2.2289E+00
GAME	9.4918E-01	8.9944E-01	8.6309E-01
U	1.7114E+01	3.8849E+00	3.7162E+00

SPECIES	MOLE FRACTIONS		
E-	3.6426E-07	5.3852E-02	1.0273E-01
H	9.8040E-01	8.9223E-01	7.9448E-01
H+	3.6594E-07	5.3851E-02	1.0273E-01
H2	1.9597E-02	5.1974E-05	2.5909E-05
H-	1.7233E-10	6.3958E-06	1.1507E-05
H2+	6.0032E-10	7.3475E-06	1.3932E-05

P1 = 2.00E+01 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0327E+02	4.9820E+03	7.4068E+03
T	2.0292E+01	3.9831E+01	4.3929E+01
RHO	1.2432E+01	5.4982E+01	7.2647E+01
H	8.0659E+01	1.4521E+02	1.7629E+02
A	6.8747E+00	8.6776E+00	9.3487E+00
S	1.9497E+00	2.0421E+00	2.1095E+00
Z	1.9998E+00	2.1950E+00	2.3262E+00
GAME	1.1445E+00	8.6127E-01	8.5720E-01
U	1.8174E+01	3.9596E+00	3.7362E+00

SPECIES	MOLE FRACTIONS		
E-	2.2994E-04	9.8871E-02	1.4027E-01
H	9.9922E-01	8.2222E-01	7.1942E-01
H+	2.2993E-04	8.8870E-02	1.4027E-01
H2	3.2218E-04	2.1374E-05	1.5440E-05
H-	2.5120E-08	7.2519E-06	1.0960E-05
H2+	3.6820E-08	8.5320E-06	1.3587E-05

P1 = 2.00E+01 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.7383E+02	5.3177E+03	8.0435E+03
T	1.6496E+01	3.8762E+01	4.3096E+01
RHO	1.4309E+01	6.3740E+01	8.1938E+01
H	7.4769E+01	1.3645E+02	1.6600E+02
A	6.1164E+00	8.5085E+00	9.1866E+00
S	1.9399E+00	2.0022E+00	2.0684E+00
Z	1.9950E+00	2.1523E+00	2.2778E+00
GAME	1.1369E+00	8.6775E-01	8.5970E-01
U	1.7679E+01	3.9720E+00	3.7354E+00

SPECIES	MOLE FRACTIONS		
E-	9.2793E-06	7.0804E-02	1.2201E-01
H	9.9746E-01	8.5835E-01	7.5594E-01
H+	9.2768E-06	7.0833E-02	1.2231E-01
H2	2.5166E-03	2.8490E-05	2.0005E-05
H-	2.2087E-09	7.0323E-06	1.1477E-05
H2+	4.7329E-09	8.1742E-06	1.4083E-05

P1 = 2.00E+01 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3740E+02	4.8374E+03	7.0845E+03
T	2.4013E+01	4.0853E+01	4.4611E+01
RHO	1.1163E+01	5.2854E+01	6.6806E+01
H	8.6773E+01	1.5523E+02	1.8718E+02
A	7.2035E+00	8.8574E+00	9.5260E+00
S	1.9930E+00	2.0798E+00	2.1484E+00
Z	2.0339E+00	2.2403E+00	2.3771E+00
GAME	1.0783E+00	8.5720E-01	8.5572E-01
U	1.8690E+01	3.9537E+00	3.7470E+00

SPECIES	MOLE FRACTIONS		
E-	2.0434E-03	1.0730E-01	1.5866E-01
H	9.9593E-01	7.8537E-01	6.8264E-01
H+	2.0434E-03	1.0730E-01	1.5866E-01
H2	8.0990E-05	1.6728E-05	1.2271E-05
H-	1.2489E-07	7.4838E-06	1.0638E-05
H2+	1.5337E-07	8.9146E-06	1.3337E-05

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M. US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7460E+02	4.9276E+03	7.1307E+03
T	2.7006E+01	4.1932E+01	4.5539E+01
RHO	1.0557E+01	5.1330E+01	6.4376E+01
H	9.3156E+01	1.6613E+02	1.9923E+02
A	7.2845E+00	9.0588E+00	9.7328E+00
S	2.0125E+00	2.1150E+00	2.1853E+00
Z	2.0154E+00	2.2894E+00	2.4323E+00
GAMF	9.7495E-01	8.5483E-01	8.5520E-01
U	1.9272E+01	3.9689E+00	3.7765E+00

SPECIES	MOLE FRACTIONS		
E-	7.6603E-03	1.2643E-01	1.7777E-01
H	9.8464E-01	7.4712E-01	6.4443E-01
H+	7.6603E-03	1.2643E-01	1.7776E-01
H2	3.5280E-05	1.3609E-05	1.0041E-05
H-	3.2268E-37	7.8598E-36	1.0612E-35
H2+	3.6952E-07	9.4920E-06	1.3487E-05

P1 = 2.00E+01 N/SQ-M. US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.5772E+02	5.5737E+03	7.9297E+03
T	3.0951E+01	4.4217E+01	4.7704E+01
RHO	1.0320E+01	5.2562E+01	6.5050E+01
H	1.0674E+02	1.9039E+02	2.2655E+02
A	7.5087E+00	9.5125E+00	1.0216E+01
S	2.0667E+00	2.1822E+00	2.2567E+00
Z	2.0591E+00	2.3982E+00	2.5553E+00
GAMF	8.8465E-01	8.5333E-01	8.5621E-01
U	2.0594E+01	4.0491E+00	3.8802E+00

SPECIES	MOLE FRACTIONS		
E-	2.8738E-02	1.4605E-01	2.1735E-01
H	9.4251E-01	6.6788E-01	5.6528E-01
H+	2.8738E-02	1.6604E-01	2.1734E-01
H2	1.5016E-05	9.6199E-06	7.0175E-06
H-	8.2237E-07	8.8134E-06	1.0936E-05
H2+	9.1407E-07	1.0986E-05	1.4367E-05

P1 = 2.00E+01 N/SQ-M. US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1478E+02	5.1925E+03	7.4445E+03
T	2.9231E+01	4.3041E+01	4.6585E+01
RHO	1.0338E+01	5.1487E+01	6.4131E+01
H	9.9813E+01	1.7787E+02	2.1239E+02
A	7.3784E+00	9.2786E+00	9.9549E+00
S	2.0401E+00	2.1488E+00	2.2211E+00
Z	2.0345E+00	2.3420E+00	2.4918E+00
GAMF	9.1542E-01	8.5366E-01	8.5542E-01
U	1.9911E+01	4.0031E+00	3.8228E+00

SPECIES	MOLE FRACTIONS		
E-	1.6992E-02	1.4607E-01	1.9740E-01
H	9.8599E-01	7.0784E-01	6.0516E-01
H+	1.6992E-02	1.4606E-01	1.9740E-01
H2	2.1225E-05	1.1367E-05	8.3663E-06
H-	5.6796E-07	8.3271E-06	1.0756E-05
H2+	6.3548E-07	1.0212E-05	1.3887E-05

P1 = 2.00E+01 N/SQ-M. US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.5011E+02	6.5504E+03	9.2064E+03
T	3.3566E+01	4.6534E+01	5.0048E+01
RHO	1.0548E+01	5.5891E+01	6.8347E+01
H	1.2136E+02	2.1732E+02	2.5717E+02
A	7.8091E+00	1.0036E+01	1.0757E+01
S	2.1190E+00	2.2492E+00	2.3286E+00
Z	2.1187E+00	2.5186E+00	2.6915E+00
GAMF	8.5749E-01	8.5434E-01	8.5905E-01
U	2.2023E+01	4.1621E+00	4.0167E+00

SPECIES	MOLE FRACTIONS		
E-	5.6041E-02	2.0592E-01	2.5693E-01
H	8.8791E-01	5.8814E-01	4.8612E-01
H+	5.6041E-02	2.0592E-01	2.5692E-01
H2	9.3587E-06	6.9860E-06	4.9246E-06
H-	1.3074E-06	9.6272E-06	1.1111E-05
H2+	1.4589E-06	1.2421E-05	1.5149E-05

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M. US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.4959E+02	7.7193E+03	1.0753E+04
T	3.5603E+01	4.8826E+01	5.2475E+01
RHO	1.0909E+01	5.9713E+01	7.2229E+01
M	1.3694E+02	2.4629E+02	2.9031E+02
A	8.1215E+00	1.0525E+01	1.1336E+01
S	2.1712E+00	2.3171E+00	2.4017E+00
Z	2.1875E+00	2.6476E+00	2.8370E+00
GAME	8.4692E-01	8.5684E-01	8.6325E-01
U	2.3483E+01	4.2959E+00	4.1757E+00

SPECIES	MOLE FRACTIONS		
E-	8.5720E-02	2.4462E-01	2.9504E-01
H	8.285EE-01	5.1074E-01	4.0989E-01
H+	8.5720E-02	2.4461E-01	2.9504E-01
H2	6.6331E-06	5.0E31E-06	3.371EE-06
H-	1.7359E-06	1.0066E-05	1.0842E-05
H2+	1.9610E-06	1.3459E-05	1.5380E-05

P1 = 2.00E+01 N/SQ-M. US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0484E+03	1.0512E+04	1.4488E+04
T	3.8878E+01	5.3458E+01	5.7744E+01
RHO	1.1723E+01	6.7194E+01	7.9620E+01
M	1.7102E+02	3.0991E+02	3.6376E+02
A	8.7522E+00	1.1634E+01	1.2629E+01
S	2.2777E+00	2.4560E+00	2.5524E+00
Z	2.3441E+00	2.9264E+00	3.1513E+00
GAME	8.4054E-01	8.6526E-01	8.7644E-01
U	2.6425E+01	4.6195E+00	4.5622E+00

SPECIES	MOLE FRACTIONS		
E-	1.4680E-01	3.1659E-01	3.6536E-01
H	7.0640E-01	3.668CE-01	2.6926E-01
H+	1.4679E-01	3.1659E-01	3.6536E-01
H2	3.8188E-06	2.4510E-06	1.3473E-06
H-	2.3872E-06	9.4075E-06	8.8259E-06
H2+	2.7734E-06	1.3852E-05	1.3673E-05

P1 = 2.00E+01 N/SQ-M. US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.5581E+02	9.0462E+03	1.2520E+04
T	3.7336E+01	5.1125E+01	5.5019E+01
RHO	1.1312E+01	6.3553E+01	7.6089E+01
M	1.5362E+02	2.7719E+02	3.2585E+02
A	8.4365E+00	1.1067E+01	1.1957E+01
S	2.2242E+00	2.3862E+00	2.4764E+00
Z	2.2632E+00	2.7842E+00	2.9907E+00
GAME	8.4235E-01	8.6049E-01	8.6889E-01
U	2.4951E+01	4.4477E+00	4.3563E+00

SPECIES	MOLE FRACTIONS		
E-	1.1629E-01	2.8168E-01	3.3129E-01
H	7.6741E-01	4.3653E-01	3.3741E-01
H+	1.1629E-01	2.8167E-01	3.3128E-01
H2	4.9654E-06	3.5769E-06	2.2050E-06
H-	2.0978E-06	1.0060E-05	1.0072E-05
H2+	2.4034E-06	1.3958E-05	1.4905E-05

P1 = 2.00E+01 N/SQ-M. US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1872E+03	1.2092E+04	1.6635E+04
T	4.0322E+01	5.5915E+01	6.0774E+01
RHO	1.2110E+01	7.0291E+01	8.2502E+01
M	1.8948E+02	3.4443E+02	4.0421E+02
A	9.0759E+00	1.2244E+01	1.3373E+01
S	2.3337E+00	2.5284E+00	2.6299E+00
Z	2.4314E+00	3.0767E+00	3.3178E+00
GAME	8.4021E-01	8.7147E-01	8.8695E-01
U	2.7899E+01	4.8106E+00	4.8376E+00

SPECIES	MOLE FRACTIONS		
E-	1.7744E-01	3.4997E-01	3.9720E-01
H	6.4512E-01	3.0005E-01	2.0559E-01
H+	1.7743E-01	3.4996E-01	3.9720E-01
H2	2.9521E-06	1.5812E-06	7.4211E-07
H-	2.6023E-06	8.6910E-06	7.1692E-06
H2+	3.3796E-06	1.3056E-05	1.1690E-05

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M. US1 = 4.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3123E+03	1.3786E+04	1.8958E+04
T	4.1682E+01	5.8507E+01	6.4297E+01
RHO	1.2479E+01	7.2993E+01	8.4587E+01
H	2.0889E+02	3.8069E+02	4.4694E+02
A	9.4034E+00	1.2889E+01	1.4223E+01
S	2.3894E+00	2.5999E+00	2.7077E+00
Z	2.5230E+00	3.2281E+00	3.4358E+00
GAMF	8.4382E-01	8.7952E-01	9.0263E-01
U	2.9372E+01	5.0288E+00	5.0660E+00

SPECIES	MOLE FRACTIONS		
E-	2.0729E-01	3.8046E-01	4.2626E-01
H	5.8543E-01	2.3937E-01	1.4748E-01
H+	2.0729E-01	3.8065E-01	4.2625E-01
H2	2.2894E-04	9.6105E-07	3.5172E-07
H-	2.7408E-06	7.4528E-06	5.2654E-06
H2+	3.2996E-04	1.1696E-05	9.1095E-06

P1 = 2.00E+01 N/SQ-M. US1 = 4.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5807E+03	1.7424E+04	2.4251E+04
T	4.4283E+01	6.4749E+01	7.5410E+01
RHO	1.3125E+01	7.6087E+01	8.4417E+01
H	2.5052E+02	4.5827E+02	5.4334E+02
A	1.0081E+01	1.4414E+01	1.6796E+01
S	2.5054E+00	2.7446E+00	2.8664E+00
Z	2.7196E+00	3.5368E+00	3.8095E+00
GAMF	8.4394E-01	9.0720E-01	9.8199E-01
U	3.2307E+01	5.5805E+00	5.9347E+00

SPECIES	MOLE FRACTIONS		
E-	2.6459E-01	4.3453E-01	4.7500E-01
H	4.7031E-01	1.3094E-01	4.9997E-02
H+	2.6459E-01	4.3452E-01	4.7500E-01
H2	1.3466E-06	2.4816E-07	2.7897E-08
H-	2.7945E-06	4.2835E-06	1.5131E-06
H2+	3.4869E-04	7.4671E-06	3.1303E-06

P1 = 2.00E+01 N/SQ-M. US1 = 4.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4435E+03	1.5570E+04	2.1496E+04
T	4.2995E+01	6.1394E+01	6.9834E+01
RHO	1.2818E+01	7.4969E+01	8.5456E+01
H	2.2923E+02	4.1866E+02	4.9323E+02
A	9.7380E+00	1.3401E+01	1.5290E+01
S	2.4469E+00	2.6723E+00	2.7870E+00
Z	2.6191E+00	3.3927E+00	3.6543E+00
GAMF	8.4711E-01	8.9068E-01	9.2947E-01
U	3.0841E+01	5.2807E+00	5.4431E+00

SPECIES	MOLE FRACTIONS		
E-	2.3639E-01	4.3993E-01	4.8271E-01
H	5.2721E-01	1.8239E-01	9.4577E-02
H+	2.3439E-01	4.0990E-01	4.8271E-01
H2	1.7653E-06	5.2468E-07	1.2658E-07
H-	2.9041E-06	5.9348E-06	3.2667E-06
H2+	3.4359E-06	9.7794E-06	6.0936E-06

P1 = 2.00E+01 N/SQ-M. US1 = 4.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7233E+03	1.9314E+04	2.7356E+04
T	4.5564E+01	6.8917E+01	8.6954E+01
RHO	1.3397E+01	7.6065E+01	8.0116E+01
H	2.7275E+02	4.9942E+02	6.3038E+02
A	1.0435E+01	1.5403E+01	1.9738E+01
S	2.5653E+00	2.8159E+00	2.9473E+00
Z	2.8240E+00	3.4844E+00	3.9269E+00
GAMF	8.4827E-01	9.3402E-01	1.0939E+00
U	3.3769E+01	5.9547E+00	6.7604E+00

SPECIES	MOLE FRACTIONS		
E-	2.9180E-01	4.5717E-01	4.9069E-01
H	4.1643E-01	8.5646E-02	1.8624E-02
H+	2.9130E-01	4.5717E-01	4.9069E-01
H2	1.0138E-06	9.2843E-08	2.3613E-09
H-	3.7153E-06	2.6738E-06	3.9704E-07
H2+	3.4533E-06	4.9943E-06	9.7209E-07

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M. US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8731E+03	2.1184E+04	3.0884E+04
T	4.6861E+01	7.4558E+01	1.0571E+02
RHO	1.3631E+01	7.4467E+01	7.3473E+01
H	2.9593E+03	5.4193E+02	6.6605E+02
A	1.0902E+01	1.4709E+01	2.2138E+01
S	2.6256E+00	2.8850E+00	3.0228E+00
Z	2.9323E+00	3.8151E+00	3.9765E+00
GAME	8.4914E-01	9.8146E-01	1.1659E+00
U	3.5223E+01	6.4538E+00	7.9963E+00

SPECIES	MOLE FRACTIONS		
E-	3.1794E-01	4.7577E-01	4.9705E-01
H	3.6411E-01	4.8466E-02	5.8969E-03
H+	3.1794E-01	4.7576E-01	4.9705E-01
H2	7.4267E-07	2.3959E-08	9.7309E-11
H-	2.5741E-06	1.3305E-06	7.0478E-08
H2+	3.3377E-06	7.7217E-06	2.0487E-07

P1 = 2.00E+01 N/SQ-M. US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1889E+03	2.4521E+04	3.8770E+04
T	4.9579E+01	9.4317E+01	1.5537E+02
RHO	1.3974E+01	6.5515E+01	6.2466E+01
H	3.4509E+02	6.2961E+02	8.1524E+02
A	1.1585E+01	2.0611E+01	2.7186E+01
S	2.7494E+00	3.0095E+00	3.1482E+00
Z	3.1588E+00	3.9624E+00	3.9948E+00
GAME	8.5495E-01	1.1367E+00	1.1909E+00
U	3.8116E+01	8.1205E+00	1.1002E+01

SPECIES	MOLE FRACTIONS		
E-	3.6695E-01	4.9525E-01	4.9935E-01
H	2.4630E-01	9.5004E-03	1.2997E-03
H+	3.6634E-01	4.9525E-01	4.9935E-01
H2	3.6536E-07	3.7094E-10	5.4373E-13
H-	2.1277E-06	1.3589E-07	8.3884E-09
H2+	2.8792E-06	3.6263E-07	1.6090E-08

P1 = 2.00E+01 N/SQ-M. US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.0281E+03	2.2944E+04	3.4768E+04
T	4.8191E+01	8.2819E+01	1.2963E+02
RHO	1.3925E+01	7.0929E+01	6.7712E+01
H	3.2004E+02	5.8545E+02	7.3918E+02
A	1.1194E+01	1.8525E+01	2.4779E+01
S	2.4871E+00	2.9503E+00	3.0907E+00
Z	3.0440E+00	3.9114E+00	3.9905E+00
GAME	8.5264E-01	1.0594E+00	1.1869E+00
U	3.6673E+01	7.1647E+00	9.5160E+00

SPECIES	MOLE FRACTIONS		
E-	3.4297E-01	4.8868E-01	4.9880E-01
H	3.1405E-01	2.2636E-02	2.3915E-03
H+	3.4297E-01	4.8968E-01	4.9880E-01
H2	5.3051E-07	3.6464E-09	5.2166E-12
H-	2.3753E-06	4.8042E-07	1.7918E-08
H2+	3.1443E-06	1.1121E-06	4.8688E-08

P1 = 2.00E+01 N/SQ-M. US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3553E+03	2.5925E+04	4.2832E+04
T	5.1059E+01	1.0827E+02	1.8235E+02
RHO	1.4083E+01	6.0118E+01	5.8770E+01
H	3.7138E+02	6.7436E+02	8.9392E+02
A	1.2011E+01	2.2499E+01	2.9471E+01
S	2.8122E+00	3.0630E+00	3.1981E+00
Z	3.2761E+00	3.9827E+00	3.9967E+00
GAME	8.6239E-01	1.1739E+00	1.1917E+00
U	3.9553E+01	9.2757E+00	1.2442E+01

SPECIES	MOLE FRACTIONS		
E-	3.8951E-01	4.9783E-01	4.9958E-01
H	2.2097E-01	4.3321E-03	8.3105E-04
H+	3.8951E-01	4.9783E-01	4.9958E-01
H2	2.3977E-07	3.8400E-11	9.2217E-14
H-	1.8403E-06	4.0071E-08	5.3349E-09
H2+	2.5507E-06	1.1758E-07	6.7716E-09

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M, US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.5271E+03	2.7225E+04	4.6848E+04
T	5.2677E+01	1.2332E+02	2.0922E+02
RHO	1.4133E+01	5.5321E+01	5.6014E+01
H	3.9800E+02	7.2000E+02	9.7419E+02
A	1.2473E+01	2.4158E+01	3.1574E+01
S	2.8755E+00	3.1104E+00	3.2401E+00
Z	3.3951E+00	3.9905E+00	3.9976E+00
GAME	8.4949E-01	1.1859E+00	1.1920E+00
U	4.0974E+01	1.0460E+01	1.3783E+01

SPECIES	MOLE FRACTIONS		
E-	4.1092E-01	4.9883E-01	4.9970E-01
H	1.7816E-01	2.3481E-03	5.9194E-04
H+	4.1092E-01	4.9883E-01	4.9970E-01
H2	1.4741E-07	5.3907E-12	2.3403E-14
H-	1.5242E-06	1.5465E-08	3.8602E-09
H2+	2.1694E-06	4.4191E-08	3.4811E-09

P1 = 2.00E+01 N/SQ-M, US1 = 6.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8858E+03	2.9369E+04	5.4594E+04
T	5.6664E+01	1.5490E+02	2.6723E+02
RHO	1.4019E+01	4.7490E+01	5.1091E+01
H	4.5461E+02	8.1358E+02	1.1441E+03
A	1.3564E+01	2.7149E+01	3.5691E+01
S	3.0320E+00	3.1927E+00	3.3158E+00
Z	3.6330E+00	3.9959E+00	3.9986E+00
GAME	8.9371E-01	1.1909E+00	1.1921E+00
U	4.3773E+01	1.2903E+01	1.6501E+01

SPECIES	MOLE FRACTIONS		
E-	4.4948E-01	4.9949E-01	4.9983E-01
H	1.0103E-01	1.0273E-03	3.3894E-04
H+	4.4948E-01	4.9949E-01	4.9983E-01
H2	4.0633E-08	5.9233E-13	2.6046E-15
H-	9.6060E-07	5.3092E-09	2.1552E-09
H2+	1.3093E-06	1.0817E-08	1.1987E-09

P1 = 2.00E+01 N/SQ-M, US1 = 6.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7041E+03	2.8376E+04	5.0841E+04
T	5.4505E+01	1.3891E+02	2.3793E+02
RHO	1.4116E+01	5.1145E+01	5.3442E+01
H	4.2585E+02	7.6637E+02	1.0582E+03
A	1.2978E+01	2.6692E+01	3.3675E+01
S	2.9389E+00	3.1533E+00	3.2797E+00
Z	3.5147E+00	3.9942E+00	3.9982E+00
GAME	8.7926E-01	1.1897E+00	1.1921E+00
U	4.2383E+01	1.1690E+01	1.5173E+01

SPECIES	MOLE FRACTIONS		
E-	4.3097E-01	4.9927E-01	4.9978E-01
H	1.3806E-01	1.4614E-03	4.3935E-04
H+	4.3097E-01	4.9927E-01	4.9978E-01
H2	8.2732E-08	1.0323E-12	7.1279E-15
H-	1.1923E-06	7.8902E-09	2.8599E-09
H2+	1.7493E-06	1.9286E-08	1.9552E-09

P1 = 2.00E+01 N/SQ-M, US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0714E+03	3.0142E+04	5.7917E+04
T	5.9374E+01	1.7122E+02	2.9750E+02
RHO	1.3808E+01	4.4208E+01	4.8682E+01
H	4.8427E+02	8.6163E+02	1.2322E+03
A	1.4282E+01	2.8547E+01	3.7660E+01
S	3.0645E+00	3.2296E+00	3.3504E+00
Z	3.7463E+00	3.9968E+00	3.9989E+00
GAME	9.1704E-01	1.1911E+00	1.1921E+00
U	4.5132E+01	1.4041E+01	1.7818E+01

SPECIES	MOLE FRACTIONS		
E-	4.4614E-01	4.9959E-01	4.9987E-01
H	8.7723E-02	8.1144E-04	2.6686E-04
H+	4.4614E-01	4.9959E-01	4.9987E-01
H2	1.6244E-08	6.8320E-13	1.0643E-15
H-	5.5044E-07	4.4377E-09	1.6210E-09
H2+	8.7655E-07	8.7105E-09	7.7350E-10

TABLE I. - Continued

$p_1 = 20\ N/m^2$

P1 = 2.00E+01 N/SQ-M. US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2591E+03	3.0484E+04	6.0347E+04
T	6.3061E+01	1.8760E+02	3.2749E+02
RHO	1.3431E+01	4.0936E+01	4.6078E+01
H	5.1480E+02	9.0978E+02	1.3199E+03
A	1.5251E+01	2.9881E+01	3.9513E+01
S	3.1254E+00	3.2650E+00	3.3832E+00
Z	3.8480E+00	3.9974E+00	3.9991E+00
GAME	9.5847E-01	1.1914E+00	1.1921E+00
U	4.6441E+01	1.5220E+01	1.9026E+01

SPECIES	MOLE FRACTIONS		
E-	4.8326E-01	4.9967E-01	4.9989E-01
H	3.9488E-02	6.5343E-04	2.1391E-04
H+	4.8376E-01	4.9967E-01	4.9989E-01
H2	4.6645E-09	4.6774E-13	4.8054E-16
H-	2.9018E-07	3.5300E-09	1.2161E-09
H2+	4.9208E-07	6.8396E-09	5.2092E-10

P1 = 2.00E+01 N/SQ-M. US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6307E+03	2.9244E+04	6.0883E+04
T	7.6239E+01	2.1955E+02	3.8507E+02
RHO	1.1994E+01	3.3431E+01	3.9533E+01
H	5.7814E+02	1.0039E+03	1.4909E+03
A	1.8383E+01	3.2343E+01	4.2848E+01
S	3.2363E+00	3.3373E+00	3.4486E+00
Z	3.9705E+00	3.9986E+00	3.9994E+00
GAME	1.1163E+00	1.1920E+00	1.1921E+00
U	4.8782E+01	1.7469E+01	2.1209E+01

SPECIES	MOLE FRACTIONS		
E-	4.9629E-01	4.9983E-01	4.9993E-01
H	7.4176E-03	3.4105E-04	1.3969E-04
H+	4.9629E-01	4.9983E-01	4.9993E-01
H2	8.7950E-11	1.8742E-14	1.1333E-16
H-	3.3770E-08	1.3912E-09	6.5075E-10
H2+	7.3904E-08	1.4724E-09	2.4622E-10

P1 = 2.00E+01 N/SQ-M. US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.4463E+03	3.0213E+04	6.1433E+04
T	6.8454E+01	2.0381E+02	3.5746E+02
RHO	1.2823E+01	3.7345E+01	4.2972E+01
H	5.4611E+02	9.5747E+02	1.4073E+03
A	1.6642E+01	3.1152E+01	4.1283E+01
S	3.1831E+00	3.3008E+00	3.4164E+00
Z	3.9262E+00	3.9981E+00	3.9993E+00
GAME	1.0305E+00	1.1917E+00	1.1921E+00
U	4.7665E+01	1.6341E+01	2.0195E+01

SPECIES	MOLE FRACTIONS		
E-	4.9060E-01	4.9976E-01	4.9991E-01
H	1.8801E-02	4.8539E-04	1.7195E-04
H+	4.9060E-01	4.9976E-01	4.9991E-01
H2	8.1917E-10	1.4624E-13	2.2623E-16
H-	1.1497E-07	2.3162E-09	8.9284E-10
H2+	2.1295E-07	3.7487E-09	3.5457E-10

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 4.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0635E+01	2.1076E+01	5.3612E+01
T	2.7140E+00	3.3569E+00	4.7153E+00
RHO	3.9200E+00	6.5476E+00	1.1370E+01
M	2.7745E+00	3.4526E+00	4.9386E+00
A	1.6432E+00	1.9212E+00	2.1372E+00
S	1.0495E+00	1.0511E+00	1.0671E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.0494E-01	9.8813E-01	9.6870E-01
U	2.2663E+00	1.3533E+00	1.1939E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	3.5282E-34	3.4717E-34	5.2741E-26
H	1.9499E-13	7.2851E-09	3.6132E-05
H+	7.9527E-48	4.2338E-34	4.8031E-26
H2	1.0000E+00	1.0000E+00	9.9996E-01
H-	1.4418E-43	1.1063E-40	1.4360E-33
H2+	2.0937E-48	3.5011E-35	4.7104E-27

P1 = 5.00E+01 N/SQ-M. US1 = 5.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4551E+01	9.6851E+01
T	3.7033E+00	4.9213E+00	6.5442E+00
RHO	4.5254E+00	9.0504E+00	1.4755E+01
M	3.8205E+00	4.8725E+00	7.2162E+00
A	1.9077E+00	2.1791E+00	2.4365E+00
S	1.0784E+00	1.0922E+00	1.1010E+00
Z	1.0000E+00	1.0000E+00	1.0329E+00
GAME	9.8359E-01	9.6482E-01	9.0383E-01
U	2.9421E+00	1.4792E+00	1.3126E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	1.8749E-10	6.8397E-24	1.1077E-17
H	2.2430E-07	9.4524E-05	5.7436E-03
H+	1.7439E-10	6.4797E-24	1.0702E-17
H2	1.0000E+00	9.9991E-01	9.9426E-01
H-	1.3593E-16	4.6530E-29	1.2173E-21
H2+	1.3140E-11	3.9037E-25	3.7547E-19

P1 = 5.00E+01 N/SQ-M. US1 = 6.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4290E+01	7.7877E+01	1.5114E+02
T	4.8572E+00	6.6122E+00	7.8184E+00
RHO	5.0007E+00	1.1734E+01	1.8911E+01
M	5.1000E+00	7.3413E+00	9.8093E+00
A	2.1656E+00	2.4375E+00	2.5866E+00
S	1.1361E+00	1.1132E+00	1.1342E+00
Z	1.0000E+00	1.0037E+00	1.0222E+00
GAME	9.6552E-01	8.952AE-01	8.3709E-01
U	3.6518E+00	1.5528E+00	1.3169E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	9.9942E-25	1.9745E-17	1.7978E-14
H	9.2938E-05	7.3438E-03	4.3506E-02
H+	9.7872E-25	1.9157E-17	1.7495E-14
H2	9.9991E-01	9.9264E-01	9.5649E-01
H-	1.3870E-29	2.0399E-21	6.9847E-18
H2+	3.0715E-24	5.8099E-19	4.9030E-16

P1 = 5.00E+01 N/SQ-M. US1 = 7.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3372E+01	1.2855E+02	2.2066E+02
T	6.0921E+00	7.8594E+00	8.6650E+00
RHO	5.4679E+00	1.5948E+01	2.4076E+01
M	6.6182E+00	1.0047E+01	1.2799E+01
A	2.3654E+00	2.5937E+00	2.7183E+00
S	1.1733E+00	1.1457E+00	1.1700E+00
Z	1.0319E+00	1.0257E+00	1.0578E+00
GAME	9.1698E-01	8.3257E-01	8.1805E-01
U	4.3503E+00	1.4997E+00	1.2309E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	7.1912E-19	2.1905E-14	6.9039E-13
H	3.5331E-03	5.3135E-02	1.0933E-01
H+	7.0156E-19	2.1344E-14	6.7307E-13
H2	9.9650E-01	9.4996E-01	8.9267E-01
H-	2.9212E-23	7.0333E-18	5.3883E-16
H2+	1.7699E-23	5.4831E-18	1.7831E-14

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.4353E+01	2.0628E+02	3.2422E+02
T	7.3645E+00	8.7433E+00	9.3360E+00
RHO	6.1750E+00	2.2138E+01	3.1204E+01
U	8.3025E+00	1.3813E+01	1.6361E+01
A	2.4711E+00	2.7572E+00	2.9063E+00
S	1.1599E+00	1.1819E+00	1.2130E+00
Z	1.0124E+00	1.0857E+00	1.1069E+00
GAME	9.5010E-01	8.1583E-01	8.1302E-01
U	5.0993E+00	1.4203E+00	1.2592E+00

SPECIES	MOLE FRACTIONS		
E-	7.7341E-16	1.0306E-12	8.9568E-12
H	2.4571E-02	1.2328E-01	1.9310E-01
H+	7.5932E-16	1.0065E-12	8.7430E-12
H2	9.7543E-01	8.7672E-01	8.0690E-01
H-	9.5471E-20	7.7178E-16	1.1127E-14
H2+	1.4491E-17	2.4896E-14	2.2484E-13

P1 = 5.00E+01 N/SQ-M. US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.1908E+01	4.7359E+02	6.7386E+02
T	8.3079E+00	1.0141E+01	1.0589E+01
RHO	8.1332E+00	3.9511E+01	5.0849E+01
U	1.2493E+01	2.1425E+01	2.5290E+01
A	2.6784E+00	3.1229E+00	3.2889E+00
S	1.2192E+00	1.2671E+00	1.3029E+00
Z	1.0643E+00	1.1922E+00	1.2399E+00
GAME	8.1133E-01	8.1349E-01	8.1619E-01
U	4.6707E+00	1.3749E+00	1.2648E+00

SPECIES	MOLE FRACTIONS		
E-	3.2150E-13	7.9699E-11	3.1355E-10
H	1.2078E-01	3.0819E-01	3.8692E-01
H+	3.1638E-13	7.7843E-11	3.0645E-10
H2	8.7922E-01	6.9181E-01	6.1308E-01
H-	1.0827E-16	1.4900E-13	7.9897E-13
H2+	5.2309E-15	1.0954E-12	7.9301E-12

P1 = 5.00E+01 N/SQ-M. US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7269E+01	3.2032E+02	4.7478E+02
T	7.7830E+00	9.4790E+00	1.0054E+01
RHO	7.1139E+00	3.0188E+01	4.0419E+01
U	1.0418E+01	1.7119E+01	2.0548E+01
A	2.5722E+00	2.9351E+00	3.0908E+00
S	1.1983E+00	1.2223E+00	1.2543E+00
Z	1.0344E+00	1.1187E+00	1.1681E+00
GAME	8.2177E-01	8.1253E-01	8.1339E-01
U	5.8816E+00	1.3892E+00	1.2567E+00

SPECIES	MOLE FRACTIONS		
E-	2.8351E-14	1.1873E-11	6.3476E-11
H	4.5459E-02	2.1220E-01	2.8787E-01
H+	2.7864E-14	1.1592E-11	6.1996E-11
H2	9.3354E-01	7.8780E-01	7.1213E-01
H-	6.0237E-18	1.4743E-14	1.1772E-13
H2+	4.9340E-16	2.9545E-13	1.5979E-12

P1 = 5.00E+01 N/SQ-M. US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.8122E+01	6.6684E+02	9.2237E+02
T	8.7442E+00	1.0741E+01	1.1309E+01
RHO	9.1542E+00	4.9395E+01	6.1733E+01
U	1.5181E+01	2.6179E+01	3.0533E+01
A	2.7873E+00	3.3201E+00	3.5012E+00
S	1.2525E+00	1.3157E+00	1.3554E+00
Z	1.1003E+00	1.2544E+00	1.3212E+00
GAME	8.0728E-01	8.1649E-01	8.2046E-01
U	7.4510E+00	1.3833E+00	1.2957E+00

SPECIES	MOLE FRACTIONS		
E-	1.9526E-12	3.7796E-10	1.2356E-09
H	1.9230E-01	4.0591E-01	4.8623E-01
H+	1.9237E-12	3.6961E-10	1.2089E-09
H2	8.1770E-01	5.9409E-01	5.1377E-01
H-	9.3023E-18	9.6442E-13	4.0483E-12
H2+	2.9843E-14	9.3146E-12	3.0624E-11

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0591E+02	9.0206E+02	1.2226E+03
T	9.1314E+00	1.1361E+01	1.1931E+01
RHO	1.0157E+01	5.9454E+01	7.2588E+01
H	1.7914E+01	3.1386E+01	3.6304E+01
A	2.8992E+00	3.5291E+00	3.7299E+00
S	1.2884E+00	1.3677E+00	1.4115E+00
Z	1.1417E+00	1.3356E+00	1.4116E+00
GAME	8.0620E-01	8.2082E-01	8.2604E-01
U	8.2245E+00	1.4074E+00	1.3371E+00

SPECIES	MOLE FRACTIONS		
E-	7.8222E-12	1.4094E-09	4.2253E-09
H	2.4833E-01	5.0248E-01	5.8317E-01
H+	7.7118E-12	1.3800E-09	4.1415E-09
H2	7.5170E-01	4.9752E-01	4.1683E-01
H-	4.7614E-15	4.5639E-12	1.6828E-11
H2+	1.1517E-13	3.3968E-11	1.0062E-10

P1 = 5.00E+01 N/SQ-M. US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4621E+02	1.5004E+03	1.9855E+03
T	9.8165E+00	1.2584E+01	1.3295E+01
RHO	1.2018E+01	7.8400E+01	9.2295E+01
H	2.4084E+01	4.3161E+01	4.9470E+01
A	3.1349E+00	3.9937E+00	4.2587E+00
S	1.3670E+00	1.4804E+00	1.5328E+00
Z	1.2393E+00	1.5208E+00	1.6180E+00
GAME	8.0778E-01	8.3344E-01	8.4312E-01
U	9.7579E+00	1.4983E+00	1.4606E+00

SPECIES	MOLE FRACTIONS		
E-	6.7091E-11	1.3792E-08	4.1914E-08
H	3.8620E-01	6.8488E-01	7.6396E-01
H+	6.6227E-11	1.3557E-08	4.1296E-08
H2	6.1380E-01	3.1512E-01	2.3603E-01
H-	5.8297E-14	6.1119E-11	2.1036E-10
H2+	9.2310E-13	2.9565E-10	8.2880E-10

P1 = 5.00E+01 N/SQ-M. US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2530E+02	1.1810E+03	1.5777E+03
T	9.4828E+00	1.1963E+01	1.2583E+01
RHO	1.1121E+01	6.9303E+01	8.2990E+01
H	2.0883E+01	3.7054E+01	4.2618E+01
A	3.0147E+00	3.7527E+00	3.9801E+00
S	1.3265E+00	1.4228E+00	1.4708E+00
Z	1.1882E+00	1.4246E+00	1.5108E+00
GAME	8.0660E-01	8.2634E-01	8.3327E-01
U	8.9948E+00	1.4459E+00	1.3913E+00

SPECIES	MOLE FRACTIONS		
E-	2.4193E-11	4.6118E-09	1.3415E-08
H	3.1679E-01	5.9407E-01	6.7626E-01
H+	2.3852E-11	4.5237E-09	1.3179E-08
H2	6.8321E-01	4.0393E-01	3.2374E-01
H-	1.7839E-14	1.7906E-11	6.1655E-11
H2+	3.4864E-13	1.0633E-10	2.9756E-10

P1 = 5.00E+01 N/SQ-M. US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6867E+02	1.8592E+03	2.4487E+03
T	1.0137E+01	1.3258E+01	1.4139E+01
RHO	1.2949E+01	8.6382E+01	9.9979E+01
H	2.7525E+01	4.9711E+01	5.6921E+01
A	3.2600E+00	4.2593E+00	4.5852E+00
S	1.4096E+00	1.5400E+00	1.5972E+00
Z	1.2949E+00	1.6234E+00	1.7323E+00
GAME	8.0960E-01	8.4291E-01	8.5841E-01
U	1.0514E+01	1.5466E+00	1.5543E+00

SPECIES	MOLE FRACTIONS		
E-	1.4555E-10	4.0561E-08	1.3799E-07
H	4.5554E-01	7.6800E-01	8.4543E-01
H+	1.6354E-10	3.9978E-08	1.3640E-07
H2	5.4446E-01	2.3200E-01	1.5457E-01
H-	1.6448E-13	1.9478E-10	7.1379E-10
H2+	2.1722E-12	7.7762E-10	2.3037E-09

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9267E+02	2.2541E+03	2.9693E+03
T	1.0459E+01	1.4040E+01	1.5300E+01
RHO	1.3609E+01	9.2763E+01	1.0493E+02
H	3.1203E+01	5.6696E+01	6.5025E+01
A	3.3905E+00	4.5639E+00	5.0172E+00
S	1.4542E+00	1.4010E+00	1.6631E+00
Z	1.3549E+00	1.7307E+00	1.8495E+00
GAMF	8.1196E-01	8.5718E-01	8.8954E-01
U	1.1273E+01	1.6559E+00	1.6794E+00

SPECIES	MOLE FRACTIONS		
E-	3.6730E-10	1.2450E-07	5.8854E-07
H	5.2336E-01	8.4440E-01	9.1863E-01
H+	3.6277E-10	1.2330E-07	5.8411E-07
H2	4.7614E-01	1.5560E-01	8.1367E-02
H-	4.0924E-13	7.1238E-10	2.8214E-09
H2+	4.6449E-12	2.0235E-09	7.2562E-09

P1 = 5.00E+01 N/SQ-M. US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4522E+02	3.1068E+03	4.3024E+03
T	1.1085E+01	1.6743E+01	2.3914E+01
RHO	1.4874E+01	9.5866E+01	9.0068E+01
H	3.9255E+01	7.1875E+01	8.5892E+01
A	3.6730E+00	5.5665E+00	7.4042E+00
S	1.5488E+00	1.7222E+00	1.7985E+00
Z	1.4873E+00	1.9360E+00	1.9975E+00
GAMF	8.1826E-01	9.5613E-01	1.1476E+00
U	1.2764E+01	1.9826E+00	2.5221E+00

SPECIES	MOLE FRACTIONS		
E-	1.6758E-09	2.9022E-06	4.3461E-04
H	4.5529E-01	9.6694E-01	9.9745E-01
H+	1.6595E-09	2.8911E-06	4.3449E-04
H2	3.4471E-01	3.3056E-02	1.6802E-03
H-	2.1807E-12	1.0373E-08	5.4072E-07
H2+	1.8396E-11	2.1412E-08	6.6473E-07

P1 = 5.00E+01 N/SQ-M. US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1819E+02	2.6750E+03	3.5617E+03
T	1.0766E+01	1.5063E+01	1.7583E+01
RHO	1.4283E+01	9.6573E+01	1.0358E+02
H	3.5110E+01	6.4098E+01	7.4195E+01
A	3.5282E+00	4.9484E+00	5.8510E+00
S	1.5006E+00	1.6624E+00	1.7305E+00
Z	1.4191E+00	1.8389E+00	1.9557E+00
GAME	8.1483E-01	8.8432E-01	9.9558E-01
U	1.2019E+01	1.7796E+00	1.9155E+00

SPECIES	MOLE FRACTIONS		
E-	8.1372E-10	4.6393E-07	6.1470E-06
H	5.9071E-01	9.1238E-01	9.7733E-01
H+	8.0517E-10	4.6025E-07	6.1291E-06
H2	4.0929E-01	8.7424E-02	2.2655E-02
H-	9.8571E-13	2.1285E-09	2.0725E-08
H2+	9.5283E-12	5.7102E-09	3.8573E-08

P1 = 5.00E+01 N/SQ-M. US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7375E+02	3.5038E+03	5.0934E+03
T	1.1420E+01	2.0216E+01	3.0787E+01
RHO	1.5372E+01	8.7076E+01	8.2224E+01
H	4.3637E+01	7.9888E+01	9.8244E+01
A	3.8273E+00	6.7086E+00	7.9547E+00
S	1.5984E+00	1.7763E+00	1.8699E+00
Z	1.5594E+00	1.9887E+00	2.0121E+00
GAME	8.2254E-01	1.1194E+00	1.3215E+00
U	1.3505E+01	2.3859E+00	3.1017E+00

SPECIES	MOLE FRACTIONS		
E-	3.4249E-09	5.2149E-05	6.3452E-03
H	7.1740E-01	9.9415E-01	9.8697E-01
H+	3.3949E-09	5.2122E-05	6.3448E-03
H2	2.9260E-01	5.7417E-03	3.2954E-04
H-	4.6959E-12	1.0336E-07	3.7492E-06
H2+	3.4614E-11	1.4731E-07	4.1681E-06

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M, US1 = 2.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0374E+02	3.8486E+03	5.8454E+03
T	1.1784E+01	2.5245E+01	3.5170E+01
RHO	1.5765E+01	7.6233E+01	8.1454E+01
U	4.8253E+01	8.8077E+01	1.0981E+02
A	3.9942E+00	7.5631E+00	8.2377E+00
S	1.6495E+00	1.8211E+00	1.8890E+00
Z	1.6349E+00	1.9998E+00	2.0405E+00
GAME	8.2813E-01	1.1331E+00	9.3874E-01
U	1.4240E+01	2.9470E+00	3.4145E+00

SPECIES	MOLE FRACTIONS		
E-	7.3023E-09	8.7783E-04	2.0904E-02
H	7.7668E-01	9.9725E-01	9.7981E-01
H+	7.2474E-09	8.7769E-04	2.0003E-02
H2	2.2332E-01	9.8975E-04	1.6375E-04
H-	1.0214E-11	8.0017E-07	8.4069E-06
H2+	6.5125E-11	9.4769E-07	9.4630E-06

P1 = 5.00E+01 N/SQ-M, US1 = 2.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6795E+02	4.5983E+03	7.2580E+03
T	1.2683E+01	3.3628E+01	4.0644E+01
RHO	1.6175E+01	6.7456E+01	8.4245E+01
U	5.8147E+01	1.0579E+02	1.3270E+02
A	4.3919E+00	8.0697E+00	8.7433E+00
S	1.7543E+00	1.8928E+00	1.9576E+00
Z	1.7936E+00	2.0309E+00	2.1197E+00
GAME	8.4793E-01	9.5481E-01	8.8732E-01
U	1.5691E+01	3.7690E+00	3.7267E+00

SPECIES	MOLE FRACTIONS		
E-	3.7445E-08	1.5442E-02	5.6589E-02
H	8.9493E-01	9.6892E-01	8.8671E-01
H+	3.7255E-08	1.5441E-02	5.6586E-02
H2	1.1507E-01	1.9477E-04	8.1997E-05
H-	5.0616E-11	5.9691E-06	1.6993E-05
H2+	2.4034E-10	6.6604E-06	2.0189E-05

P1 = 5.00E+01 N/SQ-M, US1 = 2.10E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3517E+02	4.2094E+03	6.5692E+03
T	1.2191E+01	2.9961E+01	3.8225E+01
RHO	1.6047E+01	6.9896E+01	8.2726E+01
U	5.3103E+01	9.6664E+01	1.2115E+02
A	4.1793E+00	7.8863E+00	8.4734E+00
S	1.7015E+00	1.8587E+00	1.9238E+00
Z	1.7133E+00	2.0101E+00	2.0774E+00
GAME	8.3583E-01	1.0327E+00	9.0415E-01
U	1.4973E+01	3.4339E+00	3.5927E+00

SPECIES	MOLE FRACTIONS		
E-	1.5757E-08	5.3348E-03	3.7375E-02
H	8.3266E-01	9.8930E-01	9.2512E-01
H+	1.5657E-08	5.3364E-03	3.7373E-02
H2	1.6734E-01	3.2467E-04	1.0974E-04
H-	2.2080E-11	2.8687E-06	1.2930E-05
H2+	1.2238E-10	3.1973E-06	1.4943E-05

P1 = 5.00E+01 N/SQ-M, US1 = 2.30E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.0190E+02	4.9974E+03	7.8526E+03
T	1.3345E+01	3.6341E+01	4.2643E+01
RHO	1.6075E+01	6.7246E+01	8.5041E+01
U	6.3501E+01	1.1550E+02	1.4437E+02
A	4.6673E+00	8.2894E+00	9.0052E+00
S	1.8073E+00	1.9254E+00	1.9912E+00
Z	1.8734E+00	2.0621E+00	2.1654E+00
GAME	8.7132E-01	9.2266E-01	8.7821E-01
U	1.6399E+01	3.9299E+00	3.8186E+00

SPECIES	MOLE FRACTIONS		
E-	1.1021E-07	3.0406E-02	7.6465E-02
H	9.3243E-01	9.3901E-01	8.4697E-01
H+	1.0992E-07	3.0405E-02	7.6460E-02
H2	6.7565E-02	1.5636E-04	6.4380E-05
H-	1.3443E-10	9.3431E-06	2.0344E-05
H2+	5.2956E-10	1.0637E-05	2.4806E-05

TABLE I.-Continued

$p_1 = 50 N/m^2$

P1 = 5.00E+01 N/SQ-M, US1 = 2.43E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3654E+02	5.2603E+03	8.2144E+03
T	1.4431E+01	3.8590E+01	4.4306E+01
RHO	1.5548E+01	6.5307E+01	8.3766E+01
U	6.9035E+01	1.2543E+02	1.5606E+02
A	5.1181E+00	8.5193E+00	9.2512E+00
S	1.8587E+00	1.9595E+00	2.0263E+00
Z	1.9457E+00	2.0977E+00	2.2133E+00
GAME	9.3295E-01	8.9945E-01	8.7275E-01
U	1.7073E+01	4.0741E+00	3.8862E+00

SPECIES	MOLE FRACTIONS		
E-	5.2254E-07	4.6773E-02	9.6467E-02
H	9.7207E-01	9.0534E-01	8.0697E-01
H+	5.2152E-07	4.6771E-02	9.6461E-02
H2	2.7928E-02	9.5628E-05	5.1275E-05
H-	5.0440E-10	1.2032E-05	2.2650E-05
H2+	1.5418E-09	1.3981E-05	2.8270E-05

P1 = 5.00E+01 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0317E+02	4.9068E+03	7.4500E+03
T	2.0344E+01	4.1485E+01	4.6418E+01
RHO	1.2374E+01	5.4083E+01	6.9505E+01
U	8.0656E+01	1.4484E+02	1.7770E+02
A	5.8857E+00	8.8945E+00	9.6352E+00
S	1.9477E+00	2.0344E+00	2.1053E+00
Z	1.9987E+00	2.1745E+00	2.3091E+00
GAME	1.1660E+00	8.7197E-01	8.6613E-01
U	1.8173E+01	4.1605E+00	3.9303E+00

SPECIES	MOLE FRACTIONS		
E-	1.5078E-04	8.1149E-02	1.3393E-01
H	9.9891E-01	9.3763E-01	7.3207E-01
H+	1.5076E-04	8.1146E-02	1.3392E-01
H2	7.8604E-04	4.3798E-05	3.1111E-05
H-	4.0748E-08	1.4348E-05	2.2335E-05
H2+	5.9515E-08	1.7273E-05	2.8763E-05

P1 = 5.00E+01 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.7041E+02	5.1879E+03	8.0163E+03
T	1.4702E+01	4.0409E+01	4.5535E+01
RHO	1.4154E+01	6.0119E+01	7.7843E+01
U	7.4761E+01	1.3521E+02	1.6720E+02
A	6.0343E+00	8.7134E+00	9.4597E+00
S	1.9047E+00	1.9972E+00	2.0648E+00
Z	1.9992E+00	2.1355E+00	2.2616E+00
GAME	1.0956E+00	8.7994E-01	8.6896E-01
U	1.7664E+01	4.1698E+00	3.9210E+00

SPECIES	MOLE FRACTIONS		
E-	7.2735E-06	6.3510E-02	1.1572E-01
H	9.9457E-01	9.7289E-01	7.6847E-01
H+	7.2691E-06	6.3507E-02	1.1572E-01
H2	5.4182E-03	5.8426E-05	4.0139E-05
H-	4.0903E-09	1.3671E-05	2.3158E-05
H2+	8.5134E-09	1.6196E-05	2.9430E-05

P1 = 5.00E+01 N/SQ-M, US1 = 2.73E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3707E+02	4.7449E+03	7.0930E+03
T	2.4168E+01	4.2860E+01	4.7291E+01
RHO	1.1098E+01	4.9858E+01	6.3597E+01
U	8.6764E+01	1.5480E+02	1.8857E+02
A	7.3192E+00	9.0831E+00	9.8184E+00
S	1.9822E+00	2.0746E+00	2.1441E+00
Z	2.0024E+00	2.2204E+00	2.3584E+00
GAME	1.1073E+00	8.6691E-01	8.6433E-01
U	1.8679E+01	4.1598E+00	3.9438E+00

SPECIES	MOLE FRACTIONS		
E-	1.3994E-03	9.9332E-02	1.5203E-01
H	9.9701E-01	8.0127E-01	6.9587E-01
H+	1.3983E-03	9.9329E-02	1.5202E-01
H2	1.9286E-04	3.4004E-05	2.4689E-05
H-	2.0876E-07	1.4865E-05	2.1641E-05
H2+	2.5464E-07	1.8179E-05	2.8246E-05

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7349E+02	4.7778E+03	7.0522E+03
T	2.7463E+01	4.4022E+01	4.8280E+01
RHO	1.0381E+01	4.7889E+01	6.0579E+01
H	9.3125E+01	1.6544E+02	2.0040E+02
A	7.4563E+00	9.2438E+00	1.0026E+01
S	2.0128E+00	2.1093E+00	2.1808E+00
Z	2.0116E+00	2.2663E+00	2.4112E+00
GAME	1.0063E+00	8.6389E-01	8.6350E-01
U	1.923EE+01	4.1739E+00	3.9734E+00

SPECIES	MOLE FRACTIONS		
E-	5.8335E-03	1.1757E-01	1.7058E-01
H	9.8825E-01	7.6481E-01	6.5878E-01
H+	5.8334E-03	1.1756E-01	1.7057E-01
H2	7.8862E-05	2.7581E-05	2.3135E-05
H-	5.7964E-07	1.5531E-05	2.1419E-05
H2+	4.5958E-07	1.9305E-05	2.8391E-05

P1 = 5.00E+01 N/SQ-M. US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.5565E+02	5.3323E+03	7.7298E+03
T	3.1927E+01	4.6543E+01	5.0647E+01
RHO	1.0315E+01	4.8335E+01	6.0336E+01
H	1.0668E+02	1.8943E+02	2.2754E+02
A	7.6845E+00	9.7489E+00	1.0522E+01
S	2.0672E+00	2.1757E+00	2.2512E+00
Z	2.0505E+00	2.3703E+00	2.5295E+00
GAME	9.0202E-01	8.6151E-01	8.6413E-01
U	2.0529E+01	4.2587E+00	4.0824E+00

SPECIES	MOLE FRACTIONS		
E-	2.4647E-02	1.5626E-01	2.0939E-01
H	9.5067E-01	6.8743E-01	5.8117E-01
H+	2.4647E-02	1.5625E-01	2.0938E-01
H2	3.1487E-05	1.9407E-05	1.4068E-05
H-	1.5940E-06	1.7367E-05	2.1894E-05
H2+	1.7713E-06	2.2409E-05	3.0142E-05

P1 = 5.00E+01 N/SQ-M. US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1331E+02	5.0005E+03	7.3076E+03
T	2.9964E+01	4.5273E+01	4.9426E+01
RHO	1.0093E+01	4.7675E+01	5.9892E+01
H	9.9771E+01	1.7709E+02	2.1350E+02
A	7.5539E+00	9.5098E+00	1.0264E+01
S	2.0439E+00	2.1429E+00	2.2163E+00
Z	2.0280E+00	2.3168E+00	2.4686E+00
GAME	9.3900E-01	8.5222E-01	8.6351E-01
U	1.9863E+01	4.2098E+00	4.0218E+00

SPECIES	MOLE FRACTIONS		
E-	1.3874E-02	1.3678E-01	1.8988E-01
H	9.7220E-01	7.2638E-01	6.2013E-01
H+	1.3874E-02	1.3678E-01	1.8987E-01
H2	4.5680E-05	2.2952E-05	1.6754E-05
H-	1.0679E-06	1.6436E-05	2.1615E-05
H2+	1.1902E-06	2.0807E-05	2.9177E-05

P1 = 5.00E+01 N/SQ-M. US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.4704E+02	6.2153E+03	8.8974E+03
T	3.4902E+01	4.9097E+01	5.3227E+01
RHO	1.0160E+01	5.0935E+01	6.2833E+01
H	1.2129E+02	2.1604E+02	2.5803E+02
A	7.9937E+00	1.0256E+01	1.1079E+01
S	2.1192E+00	2.2410E+00	2.3213E+00
Z	2.1366E+00	2.4854E+00	2.6604E+00
GAME	8.6909E-01	8.6203E-01	8.6674E-01
U	2.1933E+01	4.3808E+00	4.2283E+00

SPECIES	MOLE FRACTIONS		
E-	5.0637E-02	1.9533E-01	2.4828E-01
H	8.9870E-01	4.0930E-01	5.0339E-01
H+	5.0637E-02	1.9532E-01	2.4827E-01
H2	1.9143E-05	1.4144E-05	9.9383E-06
H-	2.6122E-06	1.8970E-05	2.2176E-05
H2+	2.9354E-06	2.5473E-05	3.1851E-05

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.4599E+02	7.2961E+03	1.0349E+04
T	3.7205E+01	5.1639E+01	5.5923E+01
RHO	1.0446E+01	5.4151E+01	6.6070E+01
H	1.3684E+02	2.4482E+02	2.9122E+02
A	8.3197E+00	1.0791E+01	1.1679E+01
S	2.1739E+00	2.3069E+00	2.3924E+00
Z	2.1727E+00	2.6092E+00	2.8009E+00
GAMF	8.5628E-01	8.6425E-01	8.7385E-01
U	2.3380E+01	4.5249E+00	4.3989E+00

SPECIES	MOLE FRACTIONS		
E-	7.9492E-02	2.3352E-01	2.9598E-01
H	8.4099E-01	5.3290E-01	4.2799E-01
H+	7.9492E-02	2.3352E-01	2.8597E-01
H2	1.3439E-05	1.0315E-05	4.8797E-06
H-	3.5176E-06	1.9995E-05	2.1665E-05
H2+	4.0251E-06	2.7837E-05	3.2550E-05

P1 = 5.00E+01 N/SQ-M. US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0435E+03	9.8837E+03	1.3867E+04
T	4.0397E+01	5.6764E+01	6.1753E+01
RHO	1.1186E+01	6.0514E+01	7.2345E+01
H	1.7393E+02	3.0834E+02	3.6484E+02
A	8.9814E+00	1.1937E+01	1.3017E+01
S	2.2753E+00	2.4416E+00	2.5383E+00
Z	2.3249E+00	2.8773E+00	3.1039E+00
GAMF	8.4835E-01	8.7235E-01	8.8399E-01
U	2.6308E+01	4.8731E+00	4.8115E+00

SPECIES	MOLE FRACTIONS		
E-	1.3978E-01	3.0495E-01	3.5569E-01
H	7.2043E-01	3.9006E-01	2.8858E-01
H+	1.3978E-01	3.0494E-01	3.5568E-01
H2	7.6964E-06	5.1509E-06	2.8684E-06
H-	4.8997E-04	1.9196E-05	1.7861E-05
H2+	5.8395E-06	2.9252E-05	2.9607E-05

P1 = 5.00E+01 N/SQ-M. US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.5159E+02	8.5252E+03	1.2013E+04
T	3.9156E+01	5.4181E+01	5.8742E+01
RHO	1.0821E+01	5.7422E+01	6.9343E+01
H	1.5340E+02	2.7553E+02	3.2682E+02
A	8.6491E+00	1.1353E+01	1.2322E+01
S	2.2230E+00	2.3737E+00	2.4647E+00
Z	2.2459E+00	2.7402E+00	2.9491E+00
GAMF	8.5069E-01	8.6772E-01	8.7646E-01
U	2.4841E+01	4.6879E+00	4.5923E+00

SPECIES	MOLE FRACTIONS		
E-	1.3949E-01	2.7014E-01	3.2186E-01
H	7.8131E-01	4.5943E-01	3.5423E-01
H+	1.0944E-01	2.7015E-01	3.2185E-01
H2	1.0329E-05	7.3988E-06	4.5780E-06
H-	4.2833E-06	1.9978E-05	2.0213E-05
H2+	5.0005E-06	2.9153E-05	3.1846E-05

P1 = 5.00E+01 N/SQ-M. US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1819E+03	1.1353E+04	1.5901E+04
T	4.2519E+01	5.9449E+01	6.5081E+01
RHO	1.1539E+01	6.3227E+01	7.4840E+01
H	1.8935E+02	3.4234E+02	4.0549E+02
A	9.3183E+00	1.2559E+01	1.3785E+01
S	2.3370E+00	2.5108E+00	2.6133E+00
Z	2.4096E+00	3.0204E+00	3.2646E+00
GAMF	8.4777E-01	8.7839E-01	8.9441E-01
U	2.7775E+01	5.0736E+00	5.0774E+00

SPECIES	MOLE FRACTIONS		
E-	1.7000E-01	3.3787E-01	3.8740E-01
H	6.5999E-01	3.2422E-01	2.2517E-01
H+	1.7000E-01	3.3786E-01	3.8739E-01
H2	5.9705E-06	3.4243E-06	1.6422E-06
H-	5.3577E-06	1.7582E-05	1.4741E-05
H2+	6.5215E-06	2.8033E-05	2.5839E-05

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M, US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3065E+03	1.2931E+04	1.8100E+04
T	4.4328E+01	6.2277E+01	6.8870E+01
RHO	1.1878E+01	5.6583E+01	7.6711E+01
U	2.0874E+02	3.7842E+02	4.4829E+02
A	9.6594E+00	1.3219E+01	1.4648E+01
S	2.3847E+00	2.5797E+00	2.6878E+00
Z	2.4984E+00	3.1663E+00	3.4260E+00
GAME	8.4826E-01	8.8620E-01	9.0938E-01
W	2.9243E+01	5.3034E+00	5.3420E+00

SPECIES	MOLE FRACTIONS		
E-	1.9949E-01	3.4831E-01	4.1626E-01
H	6.0130E-01	2.4335E-01	1.6746E-01
H+	1.9949E-01	3.4830E-01	4.1625E-01
H2	4.6544E-06	2.1575E-06	9.3372E-07
H-	5.6604E-06	1.5327E-05	1.1177E-05
H2+	7.0370E-06	2.5629E-05	2.0360E-05

P1 = 5.00E+01 N/SQ-M, US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5739E+03	1.6315E+04	2.3085E+04
T	4.6934E+01	6.8895E+01	8.0144E+01
RHO	1.2467E+01	6.8381E+01	7.6892E+01
U	2.5036E+02	4.5557E+02	5.4453E+02
A	1.0367E+01	1.4749E+01	1.7126E+01
S	2.4976E+00	2.7198E+00	2.8418E+00
Z	2.6997E+00	3.4632E+00	3.7461E+00
GAME	8.5134E-01	9.1174E-01	9.7698E-01
W	3.2166E+01	5.9720E+00	6.2037E+00

SPECIES	MOLE FRACTIONS		
E-	2.5644E-01	4.2251E-01	4.6612E-01
H	4.8710E-01	1.5496E-01	6.7752E-02
H+	2.5644E-01	4.2250E-01	4.6612E-01
H2	2.7732E-06	6.4260E-07	9.4724E-08
H-	5.8060E-06	9.4513E-06	3.8743E-06
H2+	7.5347E-06	1.7649E-05	8.5288E-06

P1 = 5.00E+01 N/SQ-M, US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4372E+03	1.4693E+04	2.0496E+04
T	4.5499E+01	6.5375E+01	7.3622E+01
RHO	1.2187E+01	6.7333E+01	7.7545E+01
U	2.2933E+02	4.1618E+02	4.9475E+02
A	1.0309E+01	1.3943E+01	1.5709E+01
S	2.4404E+00	2.6493E+00	2.7645E+00
Z	2.5920E+00	3.3145E+00	3.5902E+00
GAME	8.4953E-01	8.9677E-01	9.3366E-01
W	3.0704E+01	5.5656E+00	5.7236E+00

SPECIES	MOLE FRACTIONS		
E-	2.2940E-01	3.9443E-01	4.4294E-01
H	5.4319E-01	2.0571E-01	1.1411E-01
H+	2.2939E-01	3.9442E-01	4.4293E-01
H2	3.6093E-06	1.2493E-06	3.1801E-07
H-	5.3378E-06	1.2533E-05	7.3634E-06
H2+	7.3744E-06	2.2073E-05	1.4839E-05

P1 = 5.00E+01 N/SQ-M, US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7165E+03	1.8079E+04	2.5956E+04
T	4.8364E+01	7.3099E+01	9.0210E+01
RHO	1.2714E+01	6.8557E+01	7.4287E+01
U	2.7259E+02	4.9652E+02	6.0373E+02
A	1.0736E+01	1.5697E+01	1.9191E+01
S	2.5555E+00	2.7975E+00	2.9177E+00
Z	2.7914E+00	3.6075E+00	3.9732E+00
GAME	8.5373E-01	9.3141E-01	1.0541E+00
W	3.3622E+01	6.2429E+00	6.9379E+00

SPECIES	MOLE FRACTIONS		
E-	2.9353E-01	4.4561E-01	4.8364E-01
H	4.3209E-01	1.0876E-01	3.2726E-02
H+	2.8535E-01	4.4551E-01	4.8363E-01
H2	2.1012E-06	7.7341E-07	1.4527E-08
H-	5.4433E-06	1.3782E-06	1.4259E-06
H2+	7.5177E-06	1.2748E-05	3.6352E-06

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9653E+03	1.9842E+04	2.9195E+04
T	4.9904E+01	7.8403E+01	1.0664E+02
RHO	1.2927E+01	6.7698E+01	6.9336E+01
U	2.9575E+02	5.3889E+02	6.6391E+02
A	1.1117E+01	1.5966E+01	2.1729E+01
S	2.4143E+00	2.8538E+00	2.9923E+00
Z	2.8968E+00	3.7390E+00	3.9494E+00
GAME	8.5667E-01	9.7044E-01	1.1421E+00
U	3.5072E+01	6.7092E+00	8.0463E+00

SPECIES	MOLE FRACTIONS		
E-	3.0958E-01	4.6510E-01	4.9347E-01
H	3.8082E-01	4.9703E-02	1.3059E-02
H+	3.0958E-01	4.6510E-01	4.9347E-01
H2	1.5619E-04	9.4780E-08	1.0724E-09
H-	5.3927E-06	3.6950E-06	3.5514E-07
H2+	7.3240E-06	9.0188E-06	1.0364E-06

P1 = 5.00E+01 N/SQ-M. US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1795E+03	2.3099E+04	3.6498E+04
T	5.2909E+01	9.5975E+01	1.5400E+02
RHO	1.3241E+01	6.1384E+01	5.9437E+01
U	3.4489E+02	6.2444E+02	8.1014E+02
A	1.1930E+01	2.0358E+01	2.7018E+01
S	2.7341E+00	2.9738E+00	3.1205E+00
Z	3.1170E+00	3.9230E+00	3.9874E+00
GAME	8.6461E-01	1.1019E+00	1.1888E+00
U	3.7953E+01	9.1903E+00	1.0898E+01

SPECIES	MOLE FRACTIONS		
E-	3.5837E-01	4.9019E-01	4.9843E-01
H	2.8324E-01	1.9429E-02	3.1475E-03
H+	3.5937E-01	4.9019E-01	4.9843E-01
H2	7.9535E-07	3.4267E-09	7.9334E-12
H-	4.5215E-06	6.1570E-07	4.8134E-08
H2+	4.4496E-06	1.4687E-06	9.4261E-08

P1 = 5.00E+01 N/SQ-M. US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.0194E+03	2.1534E+04	3.2755E+04
T	5.1273E+01	8.5774E+01	1.2909E+02
RHO	1.3103E+01	6.5203E+01	6.3793E+01
U	3.1985E+02	5.8236E+02	7.3474E+02
A	1.1514E+01	1.8437E+01	2.4614E+01
S	2.6739E+00	2.9189E+00	3.0615E+00
Z	3.0354E+00	3.8499E+00	3.9773E+00
GAME	8.6024E-01	1.0293E+00	1.1799E+00
U	3.6516E+01	7.3429E+00	9.4308E+00

SPECIES	MOLE FRACTIONS		
E-	3.3468E-01	4.9051E-01	4.9715E-01
H	3.3090E-01	3.8983E-02	5.6985E-03
H+	3.3454E-01	4.8050E-01	4.9715E-01
H2	1.1326E-06	2.1676E-08	7.1614E-11
H-	5.0066E-06	1.6827E-06	1.0111E-07
H2+	6.9640E-06	4.0567E-06	2.7614E-07

P1 = 5.00E+01 N/SQ-M. US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3452E+03	2.4440E+04	4.0227E+04
T	5.4445E+01	1.0868E+02	1.7991E+02
RHO	1.3326E+01	5.6777E+01	5.6013E+01
U	3.7087E+02	6.7144E+02	8.8705E+02
A	1.2374E+01	2.2294E+01	2.9246E+01
S	2.7957E+00	3.0334E+00	3.1711E+00
Z	3.2324E+00	3.9609E+00	3.9919E+00
GAME	8.7009E-01	1.1644E+00	1.1910E+00
U	3.9381E+01	9.2664E+00	1.2252E+01

SPECIES	MOLE FRACTIONS		
E-	3.8127E-01	4.9505E-01	4.9898E-01
H	2.3744E-01	9.8897E-03	2.3339E-03
H+	3.8127E-01	4.9505E-01	4.9898E-01
H2	5.3296E-07	4.6161E-10	1.4048E-12
H-	3.9467E-06	2.1172E-07	3.0841E-08
H2+	5.7849E-06	5.2197E-07	4.0547E-08

TABLE I. - Continued

$p_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 5.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.5164E+03	2.5720E+04	4.4147E+04
T	5.6182E+01	1.2337E+02	2.0778E+02
RHO	1.3382E+01	5.2536E+01	5.3193E+01
H	3.9777E+02	7.1713E+02	9.6933E+02
A	1.2841E+01	2.4012E+01	3.1449E+01
S	2.8560E+00	3.0823E+00	3.2172E+00
Z	3.3467E+00	3.9779E+00	3.9943E+00
GAME	8.7690E-01	1.1778E+00	1.1917E+00
U	4.0799E+01	1.0401E+01	1.3740E+01

SPECIES	MOLE FRACTIONS		
E-	4.0244E-01	4.9722E-01	4.9929E-01
H	1.9512E-01	5.5628E-03	1.4216E-03
H+	4.0243E-01	4.9722E-01	4.9929E-01
H2	3.4150E-07	7.2372E-11	3.3021E-13
H-	3.3313E-06	8.6697E-08	2.1908E-08
H2+	5.0271E-06	2.4813E-07	2.0079E-08

P1 = 5.00E+01 N/SQ-M. US1 = 6.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8738E+03	2.7826E+04	5.1488E+04
T	6.0383E+01	1.5419E+02	2.6537E+02
RHO	1.3298E+01	4.5226E+01	4.8546E+01
H	4.5435E+02	8.1060E+02	1.1375E+03
A	1.3941E+01	2.7054E+01	3.5557E+01
S	2.9793E+00	3.1678E+00	3.2959E+00
Z	3.5793E+00	3.9934E+00	3.9967E+00
GAME	8.9926E-01	1.1896E+00	1.1920E+00
U	4.3591E+01	1.2800E+01	1.6399E+01

SPECIES	MOLE FRACTIONS		
E-	4.4119E-01	4.9880E-01	4.9959E-01
H	1.1762E-01	2.3934E-03	8.1423E-04
H+	4.4119E-01	4.9880E-01	4.9959E-01
H2	1.0751E-07	3.5020E-12	3.6602E-14
H-	2.0078E-06	2.7891E-08	1.2278E-08
H2+	3.2523E-06	5.4529E-08	6.9058E-09

P1 = 5.00E+01 N/SQ-M. US1 = 6.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6927E+03	2.6852E+04	4.7882E+04
T	5.8133E+01	1.3852E+02	2.3613E+02
RHO	1.3374E+01	4.8631E+01	5.0747E+01
H	4.2560E+02	7.6350E+02	1.0519E+03
A	1.3398E+01	2.5594E+01	3.3536E+01
S	2.9173E+00	3.1273E+00	3.2582E+00
Z	3.4534E+00	3.9815E+00	3.9958E+00
GAME	8.8624E-01	1.1964E+00	1.1919E+00
U	4.2204E+01	1.1988E+01	1.5062E+01

SPECIES	MOLE FRACTIONS		
E-	4.2254E-01	4.9824E-01	4.9947E-01
H	1.5492E-01	3.4812E-03	1.0561E-03
H+	4.2254E-01	4.9826E-01	4.9947E-01
H2	2.0197E-07	1.3994E-11	1.3076E-13
H-	2.6721E-06	4.4539E-08	1.6267E-08
H2+	4.1671E-06	1.0939E-07	1.1288E-08

P1 = 5.00E+01 N/SQ-M. US1 = 6.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0591E+03	2.8607E+04	5.4768E+04
T	6.3105E+01	1.7033E+02	2.9526E+02
RHO	1.3133E+01	4.2083E+01	4.6403E+01
H	4.8431E+02	8.5839E+02	1.2250E+03
A	1.4630E+01	2.8458E+01	3.7510E+01
S	3.0388E+00	3.2061E+00	3.3311E+00
Z	3.6910E+00	3.9930E+00	3.9974E+00
GAME	9.1390E-01	1.1908E+00	1.1921E+00
U	4.4952E+01	1.3997E+01	1.7699E+01

SPECIES	MOLE FRACTIONS		
E-	4.5815E-01	4.9912E-01	4.9968E-01
H	8.3706E-02	1.7599E-03	6.4368E-04
H+	4.5814E-01	4.9912E-01	4.9968E-01
H2	4.9054E-08	1.6347E-12	1.5119E-14
H-	1.3749E-06	1.9898E-08	9.3138E-09
H2+	2.3316E-06	3.1400E-08	4.4873E-09

TABLE I.- Continued

$P_1 = 50\ N/m^2$

P1 = 5.00E+01 N/SQ-M. US1 = 6.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2472E+03	2.9069E+04	5.7411E+04
T	6.6605E+01	1.8651E+02	3.2500E+02
RHO	1.2849E+01	3.9067E+01	4.4185E+01
M	5.1453E+02	9.0640E+02	1.3126E+03
A	1.6501E+01	2.9787E+01	3.9357E+01
S	3.0980E+00	3.2425E+00	3.3642E+00
Z	3.7947E+00	3.9945E+00	3.9979E+00
GAME	9.5371E-01	1.1913E+00	1.1921E+00
U	4.6272E+01	1.5203E+01	1.8998E+01

SPECIES	MOLE FRACTIONS		
E-	4.7295E-01	4.9932E-01	4.9974E-01
H	5.4096E-03	1.3647E-03	5.1937E-04
H+	4.7295E-01	4.9932E-01	4.9974E-01
H2	1.7732E-08	1.2146E-12	4.9358E-15
H-	8.1990E-07	1.5224E-08	7.0792E-09
H2+	1.4742E-06	2.1127E-08	3.0556E-09

P1 = 5.00E+01 N/SQ-M. US1 = 7.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6235E+03	2.8578E+04	5.9438E+04
T	7.8313E+01	2.1902E+02	3.8414E+02
RHO	1.1736E+01	3.2703E+01	3.8677E+01
M	5.7796E+02	1.0019E+03	1.4870E+03
A	1.8252E+01	3.2298E+01	4.2792E+01
S	3.2396E+00	3.3143E+00	3.4300E+00
Z	3.9430E+00	3.9968E+00	3.9986E+00
GAME	1.0789E+00	1.1919E+00	1.1921E+00
U	4.9684E+01	1.7439E+01	2.1163E+01

SPECIES	MOLE FRACTIONS		
E-	4.9278E-01	4.9960E-01	4.9983E-01
H	1.4448E-02	8.0924E-04	3.4283E-04
H+	4.9278E-01	4.9960E-01	4.9983E-01
H2	7.4527E-10	1.4125E-13	1.4793E-15
H-	1.4858E-07	7.9767E-09	3.9083E-09
H2+	3.2202E-07	7.3339E-09	1.4807E-09

P1 = 5.00E+01 N/SQ-M. US1 = 6.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.4364E+03	2.9120E+04	5.9146E+04
T	7.1413E+01	2.0295E+02	3.5513E+02
RHO	1.2395E+01	3.6001E+01	4.1655E+01
M	5.4589E+02	9.5455E+02	1.4017E+03
A	1.6681E+01	3.1083E+01	4.1143E+01
S	3.1552E+00	3.2782E+00	3.3971E+00
Z	3.8820E+00	3.9959E+00	3.9983E+00
GAME	1.0034E+00	1.1916E+00	1.1921E+00
U	4.7527E+01	1.6341E+01	2.0118E+01

SPECIES	MOLE FRACTIONS		
E-	4.9443E-01	4.9947E-01	4.9979E-01
H	3.0430E-02	1.0617E-03	4.2101E-04
H+	4.8490E-01	4.9947E-01	4.9979E-01
H2	4.5327E-09	5.6148E-13	3.3442E-15
H-	3.9826E-07	1.1296E-08	5.3049E-09
H2+	7.7434E-07	1.3459E-08	2.1172E-09

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M. US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0436E+01	2.1076E+01	5.3613E+01
T	2.7140E+00	3.3569E+00	4.7156E+00
RHO	3.9200E+00	6.5476E+00	1.1369E+01
H	2.7745E+00	3.4576E+00	4.9387E+00
A	1.6432E+00	1.8212E+00	2.1376E+00
S	1.0510E+00	1.0527E+00	1.0692E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8810E-01	9.6897E-01
U	2.2663E+00	1.3533E+00	1.1940E+00

SPECIES	MOLE FRACTIONS		
E-	2.4475E-34	1.5500E-34	3.2872E-26
H	1.3773E-10	5.1511E-09	2.5583E-05
H+	2.8357E-48	3.8023E-34	2.8899E-26
H2	1.0000E+00	1.0000E+00	9.9997E-01
H-	7.3721E-44	6.4523E-41	1.4752E-32
H2+	1.3564E-48	7.3343E-35	3.9730E-27

P1 = 1.00E+02 N/SQ-M. US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4545E+01	9.6972E+01
T	3.7003E+00	4.9219E+00	6.5911E+00
RHO	4.5254E+00	9.0485E+00	1.4702E+01
H	3.8206E+00	5.1723E+00	7.2241E+00
A	1.9079E+00	2.1799E+00	2.4533E+00
S	1.0804E+00	1.0847E+00	1.1042E+00
Z	1.0000E+00	1.0000E+00	1.0022E+00
GAME	9.836JE-01	9.6544E-01	9.1250E-01
U	2.9421E+00	1.4796E+00	1.3190E+00

SPECIES	MOLE FRACTIONS		
E-	1.1310E-30	4.1215E-24	7.9784E-18
H	1.4423E-07	4.6979E-05	4.3872E-03
H+	1.0273E-30	3.9291E-24	7.6035E-18
H2	1.0000E+00	9.9933E-01	9.9861E-01
H-	9.9869E-37	5.1672E-29	1.2482E-21
H2+	1.0994E-31	2.9253E-25	3.7616E-19

P1 = 1.00E+02 N/SQ-M. US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4289E+01	7.7540E+01	1.5167E+02
T	4.8578E+00	6.6449E+00	7.9648E+00
RHO	5.0000E+00	1.1636E+01	1.8678E+01
H	5.0999E+00	7.3330E+00	9.8416E+00
A	2.1665E+00	2.4561E+00	2.6179E+00
S	1.1092E+00	1.1166E+00	1.1381E+00
Z	1.0000E+00	1.0028E+00	1.0194E+00
GAME	9.6617E-01	9.0525E-01	8.4405E-01
U	3.6514E+00	1.5654E+00	1.3386E+00

SPECIES	MOLE FRACTIONS		
E-	5.7299E-25	1.4457E-17	2.3151E-14
H	4.5875E-05	5.5903E-03	3.8147E-02
H+	5.5682E-25	1.3861E-17	2.2317E-14
H2	9.9993E-01	9.9441E-01	9.6185E-01
H-	1.1503E-29	2.1461E-21	1.4055E-17
H2+	1.6183E-26	5.9848E-19	8.4849E-16

P1 = 1.00E+02 N/SQ-M. US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3347E+01	1.2697E+02	2.2069E+02
T	6.1114E+00	7.9910E+00	8.8887E+00
RHO	5.4491E+00	1.5846E+01	2.3572E+01
H	6.6169E+00	1.0023E+01	1.2831E+01
A	2.3792E+00	2.6189E+00	2.7753E+00
S	1.1370E+00	1.1495E+00	1.1743E+00
Z	1.0013E+00	1.0222E+00	1.0533E+00
GAME	9.2503E-01	8.3974E-01	8.2266E-01
U	4.3473E+00	1.5204E+00	1.3096E+00

SPECIES	MOLE FRACTIONS		
E-	4.9112E-19	2.6026E-14	1.0721E-12
H	2.5996E-03	4.3360E-02	1.0124E-01
H+	4.7443E-19	2.5138E-14	1.0367E-12
H2	9.9740E-01	9.5664E-01	8.9876E-01
H-	2.7528E-23	1.3189E-17	1.2836E-15
H2+	1.6751E-20	9.0139E-16	3.6704E-14

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.70E+02 N/SQ-M, US1 = 8.03E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.4253E+01	2.0163E+02	3.2075E+02
T	7.1829E+00	8.9515E+00	9.6622E+00
RHO	6.0975E+00	2.1252E+01	3.0156E+01
H	8.3974E+00	1.3260E+01	1.6389E+01
A	2.4974E+00	2.7894E+00	2.9478E+00
S	1.1644E+00	1.1857E+00	1.2142E+00
Z	1.0133E+00	1.0598E+00	1.1008E+00
GAME	8.5939E-01	8.2028E-01	8.1703E-01
U	5.3864E+00	1.4567E+00	1.2934E+00

SPECIES	MOLE FRACTIONS		
E-	7.6864E-16	1.5145E-12	1.4267E-11
H	2.0451E-02	1.1283E-01	1.8305E-01
H+	7.4838E-16	1.4682E-12	1.3817E-11
H2	9.7955E-01	8.8717E-01	8.1695E-01
H-	1.4143E-19	1.8069E-15	2.8166E-14
H2+	1.9796E-17	4.8171E-14	4.7841E-13

P1 = 1.30E+02 N/SQ-M, US1 = 1.03E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.1681E+01	4.5843E+02	6.5936E+02
T	8.5128E+00	1.0459E+01	1.1068E+01
RHO	7.9491E+00	3.7377E+01	4.8392E+01
H	1.2674E+01	2.1335E+01	2.5302E+01
A	2.7119E+00	3.1659E+00	3.3426E+00
S	1.2240E+00	1.2702E+00	1.3065E+00
Z	1.0593E+00	1.1729E+00	1.2309E+00
GAME	8.1556E-01	8.1716E-01	8.2011E-01
U	6.6494E+00	1.4158E+00	1.3034E+00

SPECIES	MOLE FRACTIONS		
E-	5.0442E-13	1.3105E-10	5.3813E-10
H	1.1195E-01	2.9442E-01	3.7520E-01
H+	4.9398E-13	1.2714E-10	5.2234E-10
H2	8.8805E-01	7.0538E-01	6.2480E-01
H-	2.7921E-16	3.8638E-13	2.1740E-12
H2+	1.0820E-14	4.2937E-12	1.7970E-11

P1 = 1.00E+02 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7089E+01	3.1094E+02	4.6622E+02
T	7.9392E+00	9.7439E+00	1.0383E+01
RHO	6.9774E+00	2.8719E+01	3.8488E+01
H	1.0410E+01	1.7045E+01	2.0568E+01
A	2.6321E+00	2.9726E+00	3.1379E+00
S	1.1931E+00	1.2259E+00	1.2593E+00
Z	1.0306E+00	1.1199E+00	1.1605E+00
GAME	8.2755E-01	8.1629E-01	8.1719E-01
U	5.8630E+00	1.4262E+00	1.2907E+00

SPECIES	MOLE FRACTIONS		
E-	3.8913E-14	1.8838E-11	1.0604E-10
H	5.9435E-02	1.9970E-01	2.7660E-01
H+	3.8025E-14	1.8263E-11	1.0281E-10
H2	9.4057E-01	8.0030E-01	7.2340E-01
H-	1.3462E-17	3.7179E-14	3.1262E-13
H2+	9.3098E-16	6.1248E-13	3.5445E-12

P1 = 1.00E+02 N/SQ-M, US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.7859E+01	6.4467E+02	9.3095E+02
T	8.9871E+00	1.1128E+01	1.1738E+01
RHO	9.9333E+00	4.6584E+01	5.8539E+01
H	1.5172E+01	2.6077E+01	3.0566E+01
A	2.8244E+00	3.3693E+00	3.5624E+00
S	1.2573E+00	1.3182E+00	1.3585E+00
Z	1.0944E+00	1.2437E+00	1.3110E+00
GAME	8.1110E-01	8.2030E-01	8.2467E-01
U	7.4285E+00	1.4267E+00	1.3357E+00

SPECIES	MOLE FRACTIONS		
E-	3.0615E-12	6.2833E-10	2.1570E-09
H	1.7251E-01	3.9196E-01	4.7453E-01
H+	3.0006E-12	6.1038E-10	2.0973E-09
H2	8.2749E-01	6.0814E-01	5.2547E-01
H-	2.3229E-15	2.5183E-12	1.1172E-11
H2+	6.3210E-14	2.0469E-11	7.0915E-11

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M. US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0563E+02	8.7163E+02	1.1933E+03
T	9.4053E+00	1.1776E+01	1.2414E+01
RHO	9.8965E+00	5.5940E+01	6.8639E+01
H	1.7906E+01	3.1278E+01	3.6359E+01
A	2.9401E+00	3.5852E+00	3.8000E+00
S	1.2929E+00	1.3695E+00	1.4139E+00
Z	1.1350E+00	1.3232E+00	1.4004E+00
GAME	8.0977E-01	8.2490E-01	8.3064E-01
U	8.2029E+00	1.4536E+00	1.3808E+00

SPECIES	MOLE FRACTIONS		
E-	1.2618E-11	2.3796E-09	7.4567E-09
H	2.3799E-01	4.8847E-01	5.7187E-01
H+	1.2377E-11	2.3156E-09	7.2674E-09
H2	7.6211E-01	5.1153E-01	4.2813E-01
H-	1.2252E-14	1.2386E-11	4.6806E-11
H2+	2.5299E-13	7.6070E-11	2.3812E-10

P1 = 1.00E+02 N/SQ-M. US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4582E+02	1.4447E+03	1.9313E+03
T	1.0150E+01	1.3092E+01	1.3883E+01
RHO	1.1671E+01	7.3321E+01	8.6715E+01
H	2.4077E+01	4.3013E+01	4.9550E+01
A	3.1837E+00	4.0639E+00	4.3474E+00
S	1.3711E+00	1.4802E+00	1.5333E+00
Z	1.2309E+00	1.5051E+00	1.6043E+00
GAME	8.1127E-01	8.3815E-01	8.4859E-01
U	9.7316E+00	1.5515E+00	1.5132E+00

SPECIES	MOLE FRACTIONS		
E-	1.1849E-10	2.3224E-08	7.2046E-08
H	3.7525E-01	6.7114E-01	7.5332E-01
H+	1.1648E-10	2.2716E-08	7.0679E-08
H2	6.2475E-01	3.2886E-01	2.4668E-01
H-	1.5671E-13	1.6103E-10	5.6996E-10
H2+	2.1748E-12	6.6890E-10	1.9373E-09

P1 = 1.00E+02 N/SQ-M. US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2494E+02	1.1381E+03	1.5359E+03
T	9.7894E+00	1.2423E+01	1.3116E+01
RHO	1.0910E+01	6.4948E+01	7.8150E+01
H	2.0873E+01	3.6921E+01	4.2677E+01
A	3.0594E+00	3.8154E+00	4.0588E+00
S	1.3307E+00	1.4236E+00	1.4723E+00
Z	1.1806E+00	1.4124E+00	1.4983E+00
GAME	8.1000E-01	8.3076E-01	8.3830E-01
U	8.9694E+00	1.4954E+00	1.4393E+00

SPECIES	MOLE FRACTIONS		
E-	4.2513E-11	7.8076E-09	2.3632E-08
H	3.0593E-01	5.8203E-01	6.6519E-01
H+	4.1752E-11	7.6159E-09	2.3102E-08
H2	6.9407E-01	4.1797E-01	3.3481E-01
H-	5.0844E-14	4.7426E-11	1.7052E-10
H2+	8.1152E-13	2.3939E-10	7.0000E-10

P1 = 1.00E+02 N/SQ-M. US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6824E+02	1.7893E+03	2.3839E+03
T	1.0495E+01	1.3814E+01	1.4788E+01
RHO	1.2469E+01	8.0638E+01	9.3750E+01
H	2.7515E+01	4.9547E+01	5.7030E+01
A	3.3128E+00	4.3373E+00	4.6858E+00
S	1.4133E+00	1.5387E+00	1.5966E+00
Z	1.2859E+00	1.6060E+00	1.7173E+00
GAME	8.1322E-01	8.4796E-01	8.6428E-01
U	1.0489E+01	1.6243E+00	1.6130E+00

SPECIES	MOLE FRACTIONS		
E-	2.8880E-10	6.9010E-08	2.3608E-07
H	4.4459E-01	7.5468E-01	8.3538E-01
H+	2.8413E-10	6.6759E-08	2.3262E-07
H2	5.5541E-01	2.4532E-01	1.6462E-01
H-	4.6454E-13	5.1006E-10	1.9155E-09
H2+	5.1338E-12	1.7611E-09	5.3765E-09

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9210E+02	2.1657E+03	2.8826E+03
T	1.0835E+01	1.4640E+01	1.5999E+01
RHO	1.3186E+01	8.6420E+01	9.8270E+01
H	3.1189E+01	5.6513E+01	6.5151E+01
A	3.4480E+00	4.6483E+00	5.1213E+00
S	1.4574E+00	1.5984E+00	1.6612E+00
Z	1.3451E+00	1.7117E+00	1.8334E+00
GAMF	8.1570E-01	8.6923E-01	8.9413E-01
U	1.1241E+01	1.7177E+00	1.7419E+00

SPECIES	MOLE FRACTIONS		
E-	6.7220E-10	2.0342E-07	9.4328E-07
H	5.1314E-01	9.3155E-01	9.0914E-01
H+	6.6214E-10	2.0046E-07	9.3410E-07
H2	4.8696E-01	1.6845E-01	9.0862E-02
H-	1.2062E-12	1.5643E-09	7.1488E-09
H2+	1.1269E-11	4.5245E-09	1.6333E-08

P1 = 1.00E+02 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4463E+02	2.9835E+03	4.1509E+03
T	1.1520E+01	1.7302E+01	2.3939E+01
RHO	1.4388E+01	8.9945E+01	8.7060E+01
H	3.9244E+01	7.1655E+01	8.5668E+01
A	3.7395E+00	5.6335E+00	7.3835E+00
S	1.5608E+00	1.7174E+00	1.7942E+00
Z	1.4760E+00	1.9171E+00	1.9942E+00
GAMF	8.2241E-01	9.4658E-01	1.1434E+00
U	1.2733E+01	2.0392E+00	2.5186E+00

SPECIES	MOLE FRACTIONS		
E-	3.0057E-09	3.5217E-06	3.1183E-04
H	6.4499E-01	9.5676E-01	9.9614E-01
H+	2.9683E-09	3.6021E-06	3.1166E-04
H2	3.5501E-01	4.3228E-02	3.2394E-03
H-	5.3337E-12	2.1405E-08	7.4832E-07
H2+	4.4707E-11	4.1062E-08	9.1981E-07

P1 = 1.00E+02 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1765E+02	2.5689E+03	3.4527E+03
T	1.1175E+01	1.5693E+01	1.8190E+01
RHO	1.3827E+01	9.0015E+01	9.7784E+01
H	3.5099E+01	6.3893E+01	7.4279E+01
A	3.5993E+00	5.0322E+00	5.8889E+00
S	1.5033E+00	1.6586E+00	1.7272E+00
Z	1.4096E+00	1.9186E+00	1.9412E+00
GAMF	8.187E-01	8.8733E-01	9.8214E-01
U	1.1989E+01	1.8442E+00	1.9493E+00

SPECIES	MOLE FRACTIONS		
E-	1.4607E-09	7.0556E-07	7.6520E-06
H	5.9013E-01	9.0025E-01	9.6969E-01
H+	1.4405E-09	6.9939E-07	7.5204E-06
H2	4.1987E-01	9.9751E-02	3.0303E-02
H-	2.8620E-12	5.1337E-09	4.2613E-08
H2+	2.3058E-11	1.2296E-08	7.4203E-08

P1 = 1.00E+02 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7309E+02	3.3707E+03	4.9165E+03
T	1.1881E+01	2.0401E+01	3.1064E+01
RHO	1.4855E+01	8.3441E+01	7.8789E+01
H	4.3624E+01	7.9679E+01	9.8136E+01
A	3.8990E+00	6.6302E+00	8.0772E+00
S	1.5998E+00	1.7717E+00	1.8476E+00
Z	1.5473E+00	1.9801E+00	2.0098E+00
GAMF	8.2494E-01	1.0882E+00	1.0455E+00
U	1.3472E+01	2.4302E+00	3.1249E+00

SPECIES	MOLE FRACTIONS		
E-	6.2771E-09	4.2675E-05	4.9906E-03
H	7.0743E-01	9.8984E-01	9.8940E-01
H+	6.2359E-09	4.2607E-05	4.9900E-03
H2	2.9257E-01	1.0078E-02	6.0469E-04
H-	1.3834E-11	1.5147E-07	5.5334E-06
H2+	8.4997E-11	2.2007E-07	6.1487E-06

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M. US1 = 2.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0301E+02	3.7095E+03	5.6500E+03
T	1.2270E+01	2.5234E+01	3.5918E+01
RHO	1.5225E+01	7.3596E+01	7.7314E+01
U	4.8239E+01	8.7871E+01	1.0991E+02
A	4.0709E+01	7.5805E+00	8.3585E+00
S	1.6501E+00	1.8177E+00	1.8880E+00
Z	1.6223E+00	1.9974E+00	2.0346E+00
GAME	8.3272E-01	1.1401E+00	9.5403E-01
U	1.4206E+01	2.9407E+00	3.4767E+00

SPECIES	MOLE FRACTIONS		
E-	1.3072E-08	6.2904E-04	1.7308E-02
N	7.6697E-31	9.9693E-31	9.6537E-31
N+	1.2943E-08	4.2384E-04	1.7306E-02
N2	2.3303E-01	1.9123E-03	2.9525E-04
N-	2.0547E-11	1.1066E-04	1.3185E-08
N2+	1.5878E-10	1.3137E-06	1.4921E-05

P1 = 1.00E+02 N/SQ-M. US1 = 2.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6706E+02	4.4043E+03	7.0234E+03
T	1.3220E+01	3.4107E+01	4.1988E+01
RHO	1.5606E+01	6.3796E+01	7.9272E+01
U	5.8171E+01	1.0543E+02	1.3309E+02
A	4.4780E+00	8.2094E+00	8.9159E+00
S	1.7533E+00	1.8913E+00	1.9572E+00
Z	1.7792E+00	2.0248E+00	2.1101E+00
GAME	8.9258E-01	9.7610E-01	8.9722E-01
U	1.5654E+01	3.8325E+00	3.8360E+00

SPECIES	MOLE FRACTIONS		
E-	4.4629E-09	1.2553E-02	5.2358E-02
N	9.7549E-01	9.7457E-01	8.9509E-01
N+	6.4194E-09	1.2552E-02	5.2343E-02
N2	1.2411E-01	3.0608E-04	1.3835E-04
N-	1.4164E-13	8.9383E-06	2.7673E-05
N2+	6.7571E-10	9.9973E-06	3.3442E-05

P1 = 1.00E+02 N/SQ-M. US1 = 2.10E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3436E+02	4.0428E+03	6.3572E+03
T	1.2734E+01	3.0136E+01	3.9331E+01
RHO	1.5486E+01	6.6913E+01	7.8095E+01
U	5.3089E+01	9.6385E+01	1.2148E+02
A	4.2602E+00	7.9970E+00	8.6370E+00
S	1.7016E+00	1.8863E+00	1.9235E+00
Z	1.6996E+00	2.3369E+00	2.0497E+00
GAME	8.4058E-01	1.0585E+00	9.1640E-01
U	1.4934E+01	3.4667E+00	3.6941E+00

SPECIES	MOLE FRACTIONS		
E-	2.7864E-08	4.0458E-04	3.3907E-02
N	8.2328E-31	9.9129E-01	9.3197E-31
N+	2.7630E-08	4.0456E-04	3.3899E-02
N2	1.7872E-01	6.3756E-04	1.4568E-04
N-	6.3153E-11	4.1177E-06	2.0843E-05
N2+	2.9696E-10	4.5864E-06	2.4378E-05

P1 = 1.00E+02 N/SQ-M. US1 = 2.30E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.0096E+02	4.7491E+03	7.6093E+03
T	1.3996E+01	3.7183E+01	4.4195E+01
RHO	1.5524E+01	6.2711E+01	7.9929E+01
U	6.3484E+01	1.1502E+02	1.4485E+02
A	4.7516E+00	8.4961E+00	9.1879E+00
S	1.6952E+00	1.9240E+00	1.9907E+00
Z	1.8585E+00	2.0523E+00	2.1541E+00
GAME	8.742?E-01	9.3273E-01	8.8672E-01
U	1.4359E+01	4.0580E+00	3.9406E+00

SPECIES	MOLE FRACTIONS		
E-	1.7826E-07	2.5756E-02	7.1705E-02
N	9.2396E-31	9.6826E-31	9.5642E-01
N+	1.7739E-07	2.5751E-02	7.1691E-02
N2	7.6137E-32	2.2377E-34	1.3822E-34
N-	3.7AA6E-10	1.4352E-05	3.3369E-05
N2+	1.2240E-09	1.6442E-09	4.1578E-09

TABLE I. - Continued

$p_1 = 100$ N/m^2

P1 = 1.00E+02 N/SQ-M. US1 = 2.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3564E+02	5.0457E+03	8.0057E+03
T	1.4941E+01	3.9653E+01	4.6048E+01
RHO	1.5094E+01	6.1185E+01	7.9002E+01
H	6.9319E+01	1.2493E+02	1.5667E+02
A	5.1485E+00	8.6600E+00	9.4455E+00
S	1.8563E+00	1.9574E+00	2.0253E+00
Z	1.9318E+00	2.0958E+00	2.2006E+00
GAME	9.2554E-01	9.0842E-01	8.6042E-01
U	1.7337E+01	4.2142E+00	4.0191E+00

SPECIES	MOLE FRACTIONS		
E-	7.1725E-07	4.1365E-02	9.1313E-02
H	9.6468E-01	9.1708E-01	8.1722E-01
H+	7.1819E-07	4.1362E-02	9.1299E-02
H2	3.5322E-02	1.5190E-04	8.6299E-05
H-	1.1738E-09	1.9061E-05	3.7467E-05
H2+	3.2362E-09	2.2438E-05	4.7978E-05

P1 = 1.00E+02 N/SQ-M. US1 = 2.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0306E+02	4.8410E+03	7.4781E+03
T	2.0437E+01	4.3128E+01	4.8521E+01
RHO	1.2343E+01	5.1920E+01	6.7160E+01
H	8.0654E+01	1.4452E+02	1.7881E+02
A	6.8771E+00	9.0626E+00	9.8597E+00
S	1.9462E+00	2.0327E+00	2.1024E+00
Z	1.9972E+00	2.1619E+00	2.2948E+00
GAME	1.1604E+00	8.8085E-01	8.7307E-01
U	1.8166E+01	4.3277E+00	4.0851E+00

SPECIES	MOLE FRACTIONS		
E-	1.1141E-04	7.4989E-02	1.2858E-01
H	9.9825E-01	8.4990E-01	7.4272E-01
H+	1.1138E-04	7.4984E-02	1.2854E-01
H2	1.5252E-03	7.5833E-05	5.3144E-05
H-	5.9429E-08	2.3810E-05	3.8005E-05
H2+	8.6429E-08	2.9726E-05	5.0566E-05

P1 = 1.00E+02 N/SQ-M. US1 = 2.50E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6995E+02	5.0686E+03	7.9555E+03
T	1.6967E+01	4.1666E+01	4.7485E+01
RHO	1.3974E+01	5.7316E+01	7.4528E+01
H	7.4751E+01	1.3484E+02	1.6809E+02
A	5.9734E+00	8.8716E+00	9.6711E+00
S	1.9043E+00	1.9940E+00	2.0626E+00
Z	1.9821E+00	2.1224E+00	2.2480E+00
GAME	1.0613E+00	8.8998E-01	8.7619E-01
U	1.7647E+01	4.3071E+00	4.0670E+00

SPECIES	MOLE FRACTIONS		
E-	6.6971E-06	5.7813E-02	1.1043E-01
H	9.9095E-01	8.8423E-01	7.7899E-01
H+	6.6901E-06	5.7908E-02	1.1042E-01
H2	9.0389E-03	1.0105E-04	6.8185E-05
H-	7.3099E-09	2.2324E-05	3.8971E-05
H2+	1.4082E-08	2.6868E-05	5.1015E-05

P1 = 1.00E+02 N/SQ-M. US1 = 2.70E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3687E+02	4.6781E+03	7.1394E+03
T	2.4263E+01	4.4419E+01	4.9486E+01
RHO	1.1054E+01	4.7792E+01	6.1316E+01
H	8.6759E+01	1.5445E+02	1.8971E+02
A	7.3989E+00	9.2545E+00	1.0049E+01
S	1.9816E+00	2.0701E+00	2.1412E+00
Z	2.0013E+00	2.2037E+00	2.3430E+00
GAME	1.1243E+00	8.7495E-01	8.7099E-01
U	1.8671E+01	4.3224E+00	4.1017E+00

SPECIES	MOLE FRACTIONS		
E-	1.0375E-03	9.2512E-02	1.4650E-01
H	9.9755E-01	9.1487E-01	7.0689E-01
H+	1.0374E-03	9.2506E-02	1.4649E-01
H2	3.7431E-04	5.8865E-05	4.2138E-05
H-	3.3514E-07	2.4782E-05	3.6844E-05
H2+	3.7136E-07	3.0980E-05	4.9780E-05

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M. US1 = 2.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7292E+02	4.6843E+03	7.0259E+03
T	2.7722E+01	4.5699E+01	5.0543E+01
RHO	1.0288E+01	4.5591E+01	5.8068E+01
H	9.3109E+01	1.6500E+02	2.0145E+02
A	7.5821E+00	9.4613E+00	1.0259E+01
S	2.0126E+00	2.1052E+00	2.1777E+00
Z	2.0089E+00	2.2483E+00	2.3939E+00
GAME	1.0323E+00	8.7124E-01	8.6990E-01
U	1.9216E+01	4.3395E+00	4.1328E+00

SPECIES	MOLE FRACTIONS		
E-	4.5717E-03	1.1052E-01	1.6463E-01
H	9.9071E-01	7.7886E-01	6.7063E-01
H+	4.5715E-03	1.1051E-01	1.6462E-01
H2	1.4842E-04	4.7497E-05	3.4343E-05
H-	8.8037E-07	2.5902E-05	3.6344E-05
H2+	9.9821E-07	3.2997E-05	4.9948E-05

P1 = 1.00E+02 N/SQ-M. US1 = 3.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.5434E+02	5.1648E+03	7.5998E+03
T	3.2652E+01	4.8417E+01	5.3072E+01
RHO	9.8041E+00	4.5425E+01	5.7089E+01
H	1.0664E+02	1.8875E+02	2.2845F+02
A	7.8239E+00	9.9341E+00	1.0762E+01
S	2.0678E+00	2.1712E+00	2.2476E+00
Z	2.0440E+00	2.3483E+00	2.5083E+00
GAME	9.1716E-01	8.6798E-01	8.7009E-01
U	2.0488E+01	4.4264E+00	4.2448E+00

SPECIES	MOLE FRACTIONS		
E-	2.1608E-02	1.4839E-01	2.0274E-01
H	9.5672E-01	7.0313E-01	5.9442E-01
H+	2.1608E-02	1.4838E-01	2.0272E-01
H2	5.5678E-05	3.3196E-05	2.3949E-05
H-	2.6009E-06	2.8872E-05	3.6863E-05
H2+	2.8935E-06	3.8353E-05	5.2808E-05

P1 = 1.00E+02 N/SQ-M. US1 = 2.90E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1227E+02	4.9651E+03	7.2200E+03
T	3.0482E+01	4.7043E+01	5.1757E+01
RHO	9.9267E+00	4.5029E+01	5.6953E+01
H	9.9743E+01	1.7649E+02	2.1444E+02
A	7.6919E+00	9.6901E+00	1.0500E+01
S	2.0409E+00	2.1387E+00	2.2129E+00
Z	2.0234E+00	2.2967E+00	2.4493E+00
GAME	9.5924E-01	8.6904E-01	8.6966E-01
U	1.9833E+01	4.3755E+00	4.1816E+00

SPECIES	MOLE FRACTIONS		
E-	1.1673E-02	1.2927E-01	1.8353E-01
H	9.7657E-01	7.4137E-01	6.3285E-01
H+	1.1673E-02	1.2926E-01	1.8351E-01
H2	8.2540E-05	3.9322E-05	2.8525E-05
H-	1.6990E-06	2.7340E-05	3.6488E-05
H2+	1.8891E-06	3.5548E-05	5.1149E-05

P1 = 1.00E+02 N/SQ-M. US1 = 3.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.4495E+02	5.9778E+03	8.6828E+03
T	3.5939E+01	5.1171E+01	5.5847E+01
RHO	9.8829E+00	4.7509E+01	5.9011E+01
H	1.2122E+02	2.1510E+02	2.5882E+02
A	8.1399E+00	1.0490E+01	1.1330E+01
S	2.1199E+00	2.2353E+00	2.3163E+00
Z	2.0973E+00	2.4589E+00	2.6346E+00
GAME	8.7899E-01	8.6796E-01	8.7239E-01
U	2.1871E+01	4.5546E+00	4.3970E+00

SPECIES	MOLE FRACTIONS		
E-	4.6447E-02	1.8670E-01	2.4096E-01
H	9.0706E-01	6.2651E-01	5.1799E-01
H+	4.6447E-02	1.8669E-01	2.4094E-01
H2	3.3117E-05	2.4243E-05	1.6999E-05
H-	4.3759E-06	3.1524E-05	3.7228E-05
H2+	4.9533E-06	4.3769E-05	5.5860E-05

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M. US1 = 3.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.4304E+02	6.9938E+03	1.3350E+04
T	3.8472E+01	5.3909E+01	5.8754E+01
RHO	1.0140E+01	8.0253E+01	8.1750E+01
M	1.3678E+02	2.4361E+02	2.9190E+02
A	8.4763E+00	1.0994E+01	1.1942E+01
S	2.1713E+00	2.2997E+00	2.3858E+00
Z	2.1610E+00	2.5779E+00	2.7701E+00
GAME	8.6414E-01	8.6979E-01	8.7628E-01
U	2.3299E+01	4.7071E+00	4.5759E+00

SPECIES	MOLE FRACTIONS		
E-	7.4537E-02	2.2423E-01	2.7805E-01
H	8.5099E-01	6.5145E-01	4.4379E-01
H+	7.4536E-02	2.2422E-01	2.7804E-01
H2	2.3058E-05	1.7799E-05	1.1879E-05
H-	5.9610E-06	3.3137E-05	3.6477E-05
H2+	6.9074E-04	4.8092E-05	5.7321E-05

P1 = 1.00E+02 N/SQ-M. US1 = 3.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0599E+03	9.4288E+03	1.3618E+04
T	4.2510E+01	6.9448E+01	6.5069E+01
RHO	1.0800E+01	5.5923E+01	6.7324E+01
M	1.7083E+02	3.0653E+02	3.6568E+02
A	9.1591E+00	1.2163E+01	1.3313E+01
S	2.2743E+00	2.4308E+00	2.5281E+00
Z	2.3087E+00	2.8361E+00	3.0631E+00
GAME	8.5476E-01	8.7740E-01	8.8919E-01
U	2.6215E+01	5.0715E+00	5.0084E+00

SPECIES	MOLE FRACTIONS		
E-	1.3337E-01	2.9487E-01	3.4712E-01
H	7.3251E-01	4.1018E-01	3.0569E-01
H+	1.3373E-01	2.9485E-01	3.4710E-01
H2	1.3191E-05	9.1036E-06	5.1121E-06
H-	8.3898E-04	3.2246E-05	3.0282E-05
H2+	1.0212E-04	5.1411E-05	5.3068E-05

P1 = 1.00E+02 N/SQ-M. US1 = 3.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.4828E+02	8.1439E+03	1.1640E+04
T	4.0612E+01	5.6661E+01	6.1911E+01
RHO	1.0441E+01	6.3151E+01	6.4637E+01
M	1.5331E+02	2.7416E+02	3.2758E+02
A	8.8173E+00	1.1565E+01	1.2601E+01
S	2.2225E+00	2.3649E+00	2.4564E+00
Z	2.2321E+00	2.7042E+00	2.9134E+00
GAME	8.5798E-01	8.7299E-01	8.8174E-01
U	2.4794E+01	4.8783E+00	4.7788E+00

SPECIES	MOLE FRACTIONS		
E-	1.0430E-01	2.6047E-01	3.1359E-01
H	7.9196E-01	4.7898E-01	3.7274E-01
H+	1.0400E-01	2.6045E-01	3.1357E-01
H2	1.7157E-05	1.2889E-05	8.0356E-06
H-	7.3069E-06	3.3368E-05	3.4045E-05
H2+	9.6779E-04	5.0757E-05	5.6487E-05

P1 = 1.00E+02 N/SQ-M. US1 = 4.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1778E+03	1.0817E+04	1.5364E+04
T	4.4277E+01	6.2329E+01	6.8648E+01
RHO	1.1123E+01	5.8369E+01	6.9542E+01
M	1.8924E+02	3.4068E+02	4.0640E+02
A	9.5084E+00	1.2794E+01	1.4097E+01
S	2.3276E+00	2.4977E+00	2.6010E+00
Z	2.3914E+00	2.9733E+00	3.2183E+00
GAME	8.5389E-01	8.8320E-01	8.9947E-01
U	2.7677E+01	5.2815E+00	5.2824E+00

SPECIES	MOLE FRACTIONS		
E-	1.6349E-01	3.2741E-01	3.7860E-01
H	6.7259E-01	3.4512E-01	2.4274E-01
H+	1.6369E-01	3.2739E-01	3.7858E-01
H2	1.0245E-05	6.1799E-06	3.0110E-06
H-	9.2092E-06	2.9792E-05	2.9280E-05
H2+	1.1485E-04	4.9866E-05	4.7010E-05

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M. US1 = 4.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3019E+03	1.2304E+04	1.7465E+04
T	4.5939E+01	6.5364E+01	7.2691E+01
RHO	1.1434E+01	6.0444E+01	7.1187E+01
H	2.0863E+02	3.7659E+02	4.4932E+02
A	9.8620E+00	1.3466E+01	1.4975E+01
S	2.3815E+00	2.5650E+00	2.6738E+00
Z	2.4784E+00	3.1142E+00	3.3761E+00
GAME	8.5423E-01	8.9079E-01	9.1410E-01
U	2.9139E+01	5.5196E+00	5.5604E+00

SPECIES	MOLE FRACTIONS		
E-	1.9305E-01	3.5783E-01	4.3746E-01
H	6.1388E-01	2.8428E-01	1.8503E-01
H+	1.9304E-01	3.5781E-01	4.0744E-01
H2	8.0014E-06	3.9851E-06	1.5928E-06
H-	9.7494E-06	2.6237E-05	1.9532E-05
H2+	1.2464E-05	4.6207E-05	3.8783E-05

P1 = 1.00E+02 N/SQ-M. US1 = 4.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6683E+03	1.5502E+04	2.2226E+04
T	4.9109E+01	7.2326E+01	8.4136E+01
RHO	1.1982E+01	6.3019E+01	7.1648E+01
H	2.5023E+02	4.5339E+02	5.4548E+02
A	1.0592E+01	1.5003E+01	1.7388E+01
S	2.4920E+00	2.7001E+00	2.8226E+00
Z	2.6653E+00	3.4012E+00	3.6871E+00
GAME	8.6721E-01	9.1497E-01	9.7460E-01
U	3.2053E+01	6.1018E+00	6.4216E+00

SPECIES	MOLE FRACTIONS		
E-	2.4963E-01	4.1200E-01	4.5759E-01
H	5.0072E-01	1.7597E-01	8.4811E-02
H+	2.4962E-01	4.1198E-01	4.5758E-01
H2	4.8156E-06	1.3043E-06	2.3115E-07
H-	1.0047E-05	1.6952E-05	7.7160E-06
H2+	1.3494E-05	3.3465E-05	1.8192E-05

P1 = 1.00E+02 N/SQ-M. US1 = 4.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4321E+03	1.3872E+04	1.9757E+04
T	4.7541E+01	6.8651E+01	7.7607E+01
RHO	1.1722E+01	6.2029E+01	7.2054E+01
H	2.2895E+02	4.1417E+02	4.9571E+02
A	1.0223E+01	1.4194E+01	1.6326E+01
S	2.4363E+00	2.6326E+00	2.7475E+00
Z	2.5698E+00	3.2575E+00	3.5331E+00
GAME	8.5545E-01	9.0093E-01	9.3665E-01
U	3.0599E+01	5.7895E+00	5.9469E+00

SPECIES	MOLE FRACTIONS		
E-	2.2175E-01	3.8607E-01	4.3395E-01
H	5.5648E-01	2.2791E-01	1.3207E-01
H+	2.2174E-01	3.8605E-01	4.3393E-01
H2	6.2321E-06	2.3939E-06	7.0515E-07
H-	1.0076E-05	2.1840E-05	1.3457E-05
H2+	1.3137E-05	4.0615E-05	2.9854E-05

P1 = 1.00E+02 N/SQ-M. US1 = 4.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7105E+03	1.7172E+04	2.4941E+04
T	5.0644E+01	7.6614E+01	9.3523E+01
RHO	1.2212E+01	6.3292E+01	6.9828E+01
H	2.7746E+02	4.9415E+02	6.0348E+02
A	1.0973E+01	1.5932E+01	1.9253E+01
S	2.5487E+00	2.7668E+00	2.8957E+00
Z	2.7646E+00	3.5419E+00	3.8191E+00
GAME	8.5959E-01	9.3537E-01	1.0378E+00
U	3.3504E+01	6.4728E+00	7.1089E+00

SPECIES	MOLE FRACTIONS		
E-	2.7658E-01	4.3536E-01	4.7632E-01
H	4.4681E-01	1.2926E-01	4.7344E-02
H+	2.7658E-01	4.3535E-01	4.7632E-01
H2	3.6748E-06	6.1898E-07	4.8896E-08
H-	9.8298E-06	1.2306E-05	3.4175E-06
H2+	1.3537E-05	2.5349E-05	9.0443E-06

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8585E+03	1.8847E+04	2.7952E+04
T	5.2230E+01	8.1886E+01	1.0838E+02
RHO	1.2410E+01	6.2641E+01	6.5922E+01
H	2.9560E+02	5.3635E+02	6.6217E+02
A	1.1366E+01	1.7052E+01	2.1796E+01
S	2.6061E+00	2.8323E+00	2.9694E+00
Z	2.8674E+00	3.6743E+00	3.9124E+00
GAME	8.6255E-01	9.6636E-01	1.1204E+00
U	3.4949E+01	6.9306E+00	8.0858E+00

SPECIES	MOLE FRACTIONS		
E-	3.0253E-01	4.5570E-01	4.8880E-01
H	3.9493E-01	9.8584E-02	2.2393E-02
H+	3.0252E-01	4.5569E-01	4.8880E-01
H2	2.7553E-06	2.4102E-07	5.5005E-09
H-	9.3927E-06	7.4964E-06	1.0928E-06
H2+	1.3270E-05	1.7124E-05	3.2078E-06

P1 = 1.00E+02 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1719E+03	2.2036E+04	3.4826E+04
T	5.5482E+01	9.7899E+01	1.5323E+02
RHO	1.2698E+01	5.7986E+01	5.7163E+01
H	3.4472E+02	6.2411E+02	8.0603E+02
A	1.2202E+01	2.0212E+01	2.6875E+01
S	2.7230E+00	2.9549E+00	3.0982E+00
Z	3.0826E+00	3.8765E+00	3.9758E+00
GAME	8.7055E-01	1.0764E+00	1.1855E+00
U	3.7819E+01	8.2776E+00	1.0816E+01

SPECIES	MOLE FRACTIONS		
E-	3.5121E-01	4.8408E-01	4.9696E-01
H	2.9755E-01	3.1834E-02	6.0812E-03
H+	3.5121E-01	4.8408E-01	4.9696E-01
H2	1.4394E-06	1.5402E-08	5.8318E-11
H-	7.9573E-06	1.7405E-06	1.7767E-07
H2+	1.1848E-05	4.8051E-06	3.5232E-07

P1 = 1.00E+02 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.0124E+03	2.0479E+04	3.1264E+04
T	5.3827E+01	8.8737E+01	1.2870E+02
RHO	1.2573E+01	6.0898E+01	6.1390E+01
H	3.1969E+02	5.7977E+02	7.3087E+02
A	1.1774E+01	1.8463E+01	2.4405E+01
S	2.6642E+00	2.8953E+00	3.0366E+00
Z	2.9735E+00	3.7896E+00	3.9568E+00
GAME	8.6616E-01	1.0136E+00	1.1696E+00
U	3.6389E+01	7.5185E+00	9.3429E+00

SPECIES	MOLE FRACTIONS		
E-	3.2741E-01	4.7225E-01	4.9454E-01
H	3.4517E-01	5.5500E-02	1.0910E-02
H+	3.2740E-01	4.7224E-01	4.9454E-01
H2	2.0215E-06	7.1341E-08	5.1077E-10
H-	8.7602E-06	3.9577E-06	3.6999E-07
H2+	1.2709E-05	9.9113E-06	1.3141E-06

P1 = 1.00E+02 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3371E+03	2.3374E+04	3.8424E+04
T	5.7223E+01	1.0953E+02	1.7907E+02
RHO	1.2789E+01	5.4305E+01	5.3855E+01
H	3.7068E+02	6.6908E+02	8.8294E+02
A	1.2652E+01	2.2386E+01	2.9136E+01
S	2.7921E+00	3.0094E+00	3.1510E+00
Z	3.1937E+00	3.9299E+00	3.9843E+00
GAME	8.7595E-01	1.1333E+00	1.1898E+00
U	3.9245E+01	9.2628E+00	1.2187E+01

SPECIES	MOLE FRACTIONS		
E-	3.7378E-01	4.9108E-01	4.9803E-01
H	2.5242E-01	1.7831E-02	3.9304E-03
H+	3.7378E-01	4.9108E-01	4.9803E-01
H2	9.8901E-07	2.7428E-09	1.0305E-11
H-	7.0231E-06	7.0560E-07	1.1393E-07
H2+	1.0785E-05	2.0770E-06	1.5163E-07

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M, US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.5077E+03	2.4594E+04	4.2094E+04
T	5.9115E+01	1.2354E+02	2.0654E+02
RHO	1.2823E+01	5.0289E+01	5.1090E+01
H	3.9759E+02	7.1476E+02	9.6454E+02
A	1.3140E+01	2.3892E+01	3.1328E+01
S	2.8425E+00	3.0608E+00	3.1985E+00
Z	3.3083E+00	3.9590E+00	3.9990E+00
GAME	8.8288E-01	1.1671E+00	1.1912E+00
U	4.0659E+01	1.0353E+01	1.3653E+01

SPECIES	MOLE FRACTIONS		
E-	3.0547E-01	4.9492E-01	4.9862E-01
H	2.0904E-01	1.0351E-02	2.7531E-03
H+	3.9547E-01	4.9482E-01	4.9862E-01
H2	4.4250E-07	4.6807E-10	2.4406E-12
H-	5.9658E-06	3.0414E-07	8.1079E-08
H2+	9.4597E-06	8.6790E-07	7.5361E-08

P1 = 1.00E+02 N/SQ-M, US1 = 6.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8641E+03	2.6689E+04	4.9174E+04
T	6.3493E+01	1.5386E+02	2.6355E+02
RHO	1.2765E+01	4.3564E+01	4.6720E+01
H	4.5413E+02	8.0819E+02	1.1317E+03
A	1.4240E+01	2.6969E+01	3.5419E+01
S	2.9606E+00	3.1478E+00	3.2792E+00
Z	3.5338E+00	3.9817E+00	3.9937E+00
GAME	9.0385E-01	1.1872E+00	1.1919E+00
U	4.3443E+01	1.2714E+01	1.6288E+01

SPECIES	MOLE FRACTIONS		
E-	4.3405E-01	4.9770E-01	4.9921E-01
H	1.3190E-01	4.6045E-03	1.5832E-03
H+	4.3404E-01	4.9770E-01	4.9921E-01
H2	2.2791E-07	2.4970E-11	2.7293E-13
H-	3.7702E-06	1.0285E-07	4.5845E-08
H2+	6.4351E-06	2.0197E-07	2.6076E-08

P1 = 1.00E+02 N/SQ-M, US1 = 6.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6835E+03	2.5707E+04	4.5695E+04
T	6.1152E+01	1.3826E+02	2.3455E+02
RHO	1.2829E+01	4.6795E+01	4.8835E+01
H	4.2540E+02	7.6103E+02	1.0465E+03
A	1.3657E+01	2.5474E+01	3.3403E+01
S	2.9012E+00	3.1077E+00	3.2404E+00
Z	3.4206E+00	3.9735E+00	3.9918E+00
GAME	8.9173E-01	1.1813E+00	1.1917E+00
U	4.2060E+01	1.1539E+01	1.4958E+01

SPECIES	MOLE FRACTIONS		
E-	4.1531E-01	4.9666E-01	4.9897E-01
H	1.6937E-01	4.6747E-03	2.0515E-03
H+	4.1531E-01	4.9646E-01	4.9897E-01
H2	3.9692E-07	9.9711E-11	7.5075E-13
H-	4.9851E-06	1.4348E-07	6.0540E-08
H2+	9.0162E-06	4.0288E-07	4.2580E-08

P1 = 1.00E+02 N/SQ-M, US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0490E+03	2.7486E+04	5.2430E+04
T	6.6251E+01	1.6986E+02	2.9374E+02
RHO	1.2629E+01	4.0590E+01	4.4678E+01
H	4.8378E+02	8.5593E+02	1.2196E+03
A	1.4915E+01	2.8384E+01	3.7401E+01
S	3.0195E+00	3.1870E+00	3.3159E+00
Z	3.6443E+00	3.9866E+00	3.9950E+00
GAME	9.2134E-01	1.1897E+00	1.1920E+00
U	4.4804E+01	1.3911E+01	1.7624E+01

SPECIES	MOLE FRACTIONS		
E-	4.5120E-01	4.9832E-01	4.9938E-01
H	9.7595E-02	3.3572E-03	1.2485E-03
H+	4.5120E-01	4.9832E-01	4.9938E-01
H2	1.1059E-07	7.4911E-12	1.1133E-13
H-	2.6958E-06	7.1828E-08	3.4752E-08
H2+	4.8185E-06	1.0991E-07	1.6855E-08

TABLE I. - Continued

$p_1 = 100\ N/m^2$

P1 = 1.00E+02 N/SQ-M, US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2373E+03	2.8015E+04	5.5201E+04
T	6.9477E+01	1.8605E+02	3.2325E+02
RHO	1.2395E+01	3.7755E+01	4.2735E+01
H	5.1430E+02	9.0391E+02	1.3082E+03
A	1.5735E+01	2.9730E+01	3.9240E+01
S	3.0774E+00	3.2242E+00	3.3491E+00
Z	3.7483E+00	3.9896E+00	3.9960E+00
GAMF	9.4803E-01	1.1909E+00	1.1921E+00
U	4.6129E+01	1.5132E+01	1.8977E+01

SPECIES	MOLE FRACTIONS		
E-	4.6643E-01	4.9872E-01	4.9949E-01
H	6.7141E-03	2.5565E-03	1.0119E-03
H+	4.6643E-01	4.9872E-01	4.9949E-01
H2	4.5940E-08	3.2291E-12	5.1793E-14
H-	1.7202E-06	5.3271E-08	2.6695E-08
H2+	3.2704E-06	6.5775E-08	1.1586E-08

P1 = 1.30E+02 N/SQ-M, US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6167E+03	2.7999E+04	5.8073E+04
T	8.0389E+01	2.1865E+02	3.8259E+02
RHO	1.1504E+01	3.2086E+01	3.7973E+01
H	5.7779E+02	1.0002E+03	1.4828E+03
A	1.8189E+01	3.2258E+01	4.2698E+01
S	3.1877E+00	3.2960E+00	3.4147E+00
Z	3.9110E+00	3.9939E+00	3.9973E+00
GAME	1.0522E+00	1.1917E+00	1.1921E+00
U	4.8594E+01	1.7394E+01	2.1089E+01

SPECIES	MOLE FRACTIONS		
E-	4.9863E-01	4.9922E-01	4.9966E-01
H	2.2745E-02	1.5634E-03	6.7702E-04
H+	4.9863E-01	4.9922E-01	4.9966E-01
H2	3.3019E-09	5.7345E-13	1.2985E-14
H-	4.2268E-07	2.9771E-08	1.5168E-08
H2+	9.4490E-07	2.5456E-08	5.7599E-09

P1 = 1.00E+02 N/SQ-M, US1 = 6.80E+04 M/SEC
XH2 = 1.30 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.4273E+03	2.8244E+04	5.7207E+04
T	7.4162E+01	2.0240E+02	3.5332E+02
RHO	1.2036E+01	3.4984E+01	4.0511E+01
H	5.4566E+02	9.5223E+02	1.3961E+03
A	1.6790E+01	3.1025E+01	4.1029E+01
S	3.1334E+00	3.2602E+00	3.3822E+00
Z	3.8194E+00	3.9920E+00	3.9967E+00
GAMF	9.8997E-01	1.1913E+00	1.1921E+00
U	4.7402E+01	1.6280E+01	2.0322E+01

SPECIES	MOLE FRACTIONS		
E-	4.7911E-01	4.9900E-01	4.9959E-01
H	4.1772E-02	1.9961E-03	8.2495E-04
H+	4.7911E-01	4.9900E-01	4.9959E-01
H2	1.4714E-08	1.5943E-12	2.5313E-14
H-	9.5146E-07	4.0222E-08	2.0231E-08
H2+	1.9940E-06	4.1580E-08	8.1061E-09

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 4.00E+03 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3636E+01	2.1976E+01	5.3414E+01
T	2.7143E+00	3.3569E+00	4.7158E+00
RHO	3.9209E+00	6.5476E+00	1.1369E+01
M	2.7745E+00	3.4526E+00	4.9347E+00
A	1.6432E+00	1.8212E+00	2.1379E+00
S	1.0526E+00	1.0844E+00	1.0714E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAMF	9.9494E-01	9.8813E-01	9.6917E-01
U	2.2643E+00	1.3533E+00	1.1940E+00

SPECIES	MOLE FRACTIONS		
E-	2.1923E-34	4.9404E-34	2.0433E-26
H	9.7459E-11	3.6423E-09	1.8107E-05
H+	1.7392E-35	1.7148E-34	1.7122E-26
H2	1.0000E+00	1.0000E+00	9.9998E-01
H-	1.4725E-43	4.4557GE-41	1.9529E-32
H2+	2.9422E-35	4.6780E-35	3.3112E-27

P1 = 2.00E+02 N/SQ-M. US1 = 6.00E+03 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4289E+01	7.7252E+01	1.5216E+02
T	4.8582E+00	6.6705E+00	8.1043E+00
RHO	4.9995E+00	1.1587E+01	1.8466E+01
M	5.0999E+00	7.3259E+00	9.8713E+00
A	2.1671E+00	2.4720E+00	2.6491E+00
S	1.1127E+00	1.1202E+00	1.1424E+00
Z	1.0000E+00	1.0021E+00	1.0168E+00
GAMF	9.6664E-01	9.1421E-01	8.5168E-01
U	3.6515E+00	1.5761E+00	1.3586E+00

SPECIES	MOLE FRACTIONS		
E-	3.3241E-25	1.0326E-17	2.6195E-14
H	4.6660E-05	4.1751E-03	3.2963E-02
H+	3.1955E-25	9.4541E-18	2.4909E-14
H2	9.9995E-01	9.9532E-01	9.6704E-01
H-	9.6126E-30	2.1252E-21	2.3987E-17
H2+	1.2870E-24	5.7392E-19	1.3105E-14

P1 = 2.00E+02 N/SQ-M. US1 = 5.00E+03 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4541E+01	9.7070E+01
T	3.7003E+00	4.9221E+00	6.6141E+00
RHO	4.5254E+00	9.0472E+00	1.4652E+01
M	3.8204E+00	5.1721E+00	7.2304E+00
A	1.9379E+00	2.1835E+00	2.4688E+00
S	1.0933E+00	1.0874E+00	1.1076E+00
Z	1.0000E+00	1.0003E+00	1.0017E+00
GAMF	9.8340E-01	9.4589E-01	9.2000E-01
U	2.9621E+00	1.4798E+00	1.3243E+00

SPECIES	MOLE FRACTIONS		
E-	6.8511E-31	2.4969E-24	5.5597E-18
H	1.3178E-07	4.7430E-05	3.3161E-03
H+	5.9636E-31	2.2539E-24	5.1980E-18
H2	1.7332E+00	9.9995E-01	9.9668E-01
H-	7.7092E-37	4.4227E-29	1.2395E-21
H2+	9.9885E-32	2.4317E-28	3.6296E-19

P1 = 2.00E+02 N/SQ-M. US1 = 7.00E+03 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3323E+01	1.2554E+02	2.2094E+02
T	6.1262E+00	8.1167E+00	9.1168E+00
RHO	5.4349E+00	1.5182E+01	2.3127E+01
M	6.6159E+00	9.9949E+00	1.2875E+01
A	2.3903E+00	2.6472E+00	2.8131E+00
S	1.1413E+00	1.1534E+00	1.1789E+00
Z	1.0010E+00	1.0198E+00	1.0497E+00
GAMF	9.3177E-01	8.4747E-01	8.2765E-01
U	4.3447E+00	1.5615E+00	1.3387E+00

SPECIES	MOLE FRACTIONS		
E-	3.2362E-19	3.2234E-14	1.6096E-12
H	1.9064E-03	1.6848E-02	9.9435E-02
H+	3.0829E-19	3.0901E-14	1.5394E-12
H2	9.9829E-01	9.8315E-01	9.0704E-01
H-	2.5812E-23	2.7157E-17	3.0981E-14
H2+	1.5354E-20	1.4606E-15	7.3285E-14

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9168E+02	2.0788E+03	2.7978E+03
T	1.1245E+01	1.5287E+01	1.6761E+01
RHO	1.2771E+01	8.0496E+01	9.1923E+01
H	3.1179E+01	5.6314E+01	6.5287E+01
A	3.5374E+00	4.7343E+00	5.2319E+00
S	1.4611E+00	1.5963E+00	1.6598E+00
Z	1.3345E+00	1.6913E+00	1.8159E+00
GAME	8.1971E-01	8.6745E-01	8.9935E-01
U	1.1211E+01	1.7833E+00	1.8087E+00

SPECIES	MOLE FRACTIONS		
E-	1.1997E-09	3.2967E-07	1.5101E-06
H	5.0149E-01	9.1747E-01	8.9863E-01
H+	1.1763E-09	3.2357E-07	1.4913E-06
H2	4.9851E-01	1.8253E-01	1.0137E-01
H-	3.4679E-12	3.9457E-09	1.7988E-08
H2+	2.4947E-11	1.0349E-08	3.6716E-08

P1 = 2.00E+02 N/SQ-M. US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4400E+02	2.8407E+03	4.0010E+03
T	1.1984E+01	1.7944E+01	2.3981E+01
RHO	1.3907E+01	8.4086E+01	8.3905E+01
H	3.9230E+01	7.1416E+01	8.5432E+01
A	3.8089E+00	5.6583E+00	7.3383E+00
S	1.5534E+00	1.7130E+00	1.7898E+00
Z	1.4639E+00	1.8959E+00	1.9884E+00
GAME	8.2685E-01	9.4109E-01	1.1293E+00
U	1.2700E+01	2.1030E+00	2.5152E+00

SPECIES	MOLE FRACTIONS		
E-	5.4040E-09	4.6888E-06	2.3287E-04
H	6.3379E-01	9.4538E-01	9.9347E-01
H+	5.3140E-09	4.6536E-06	2.3263E-04
H2	3.6621E-01	5.4013E-02	6.0637E-03
H-	1.8316E-11	4.5140E-08	1.0622E-06
H2+	1.0832E-10	8.0349E-08	1.3019E-06

P1 = 2.00E+02 N/SQ-M. US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1709E+02	2.4643E+03	3.3461E+03
T	1.1412E+01	1.6375E+01	1.8897E+01
RHO	1.3370E+01	8.3748E+01	9.2008E+01
H	3.5085E+01	6.3674E+01	7.4389E+01
A	3.6541E+00	5.1210E+00	5.9504E+00
S	1.5065E+00	1.6552E+00	1.7244E+00
Z	1.3973E+00	1.7967E+00	1.9246E+00
GAME	8.2294E-01	8.9133E-01	9.7359E-01
U	1.1958E+01	1.9132E+00	2.0305E+00

SPECIES	MOLE FRACTIONS		
E-	2.5952E-09	1.0757E-06	9.7312E-06
H	5.6865E-01	9.8587E-01	9.6077E-01
H+	2.5430E-09	1.0616E-06	9.6747E-06
H2	4.3135E-01	1.1312E-01	3.9212E-02
H-	8.1992E-12	1.2294E-08	9.3320E-08
H2+	5.5358E-11	2.4420E-08	1.4680E-07

P1 = 2.00E+02 N/SQ-M. US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7239E+02	3.2391E+03	4.7400E+03
T	1.2374E+01	2.0723E+01	3.1247E+01
RHO	1.4345E+01	7.9442E+01	7.5644E+01
H	4.3610E+01	7.9447E+01	9.7977E+01
A	3.9738E+00	6.5647E+00	8.1545E+00
S	1.6017E+00	1.7671E+00	1.8449E+00
Z	1.5343E+00	1.9675E+00	2.0054E+00
GAME	8.3162E-01	1.0573E+00	1.0690E+00
U	1.3437E+01	2.4284E+00	3.1412E+00

SPECIES	MOLE FRACTIONS		
E-	1.1271E-08	3.8268E-05	3.8082E-03
H	6.9653E-01	9.8336E-01	9.9124E-01
H+	1.1104E-08	3.8168E-05	3.8073E-03
H2	3.0347E-01	1.5560E-02	1.1287E-03
H-	3.9944E-11	2.4388E-07	7.9937E-06
H2+	2.0655E-10	3.4663E-07	8.8802E-06

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0224E+02	3.5713E+03	5.4539E+03
T	1.2793E+01	2.5256E+01	3.6614E+01
RHO	1.4491E+01	7.0925E+01	7.3424E+01
U	4.8224E+01	8.7649E+01	1.0996E+02
A	4.1512E+00	7.5709E+00	8.5099E+00
S	1.6512E+00	1.8141E+00	1.8869E+00
Z	1.6082E+00	1.9936E+00	2.0288E+00
GAME	8.3763E-01	1.1384E+00	9.7493E-01
U	1.4170E+01	2.9368E+00	3.5325E+00

SPECIES	MOLE FRACTIONS		
E-	2.3267E-08	4.5781E-04	1.4703E-02
H	7.5638E-01	9.9543E-01	9.7005E-01
H+	2.2966E-08	4.5753E-04	1.4700E-02
H2	2.4362E-01	3.6474E-03	5.0192E-04
H-	8.4641E-11	1.5434E-06	2.0399E-05
H2+	3.8527E-10	1.8266E-06	2.3214E-05

P1 = 2.00E+02 N/SQ-M. US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6613E+02	4.2178E+03	6.7888E+03
T	1.3800E+01	3.4503E+01	4.3353E+01
RHO	1.5043E+01	6.0542E+01	7.4564E+01
U	5.8153E+01	1.0508E+02	1.3345E+02
A	4.5685E+00	8.3449E+00	9.0914E+00
S	1.7527E+00	1.8893E+00	1.9571E+00
Z	1.7636E+00	2.0192E+00	2.1001E+00
GAME	8.5754E-01	9.9958E-01	9.0781E-01
U	1.5614E+01	3.9839E+00	3.9458E+00

SPECIES	MOLE FRACTIONS		
E-	1.1117E-07	1.0051E-02	4.7968E-02
H	8.6597E-01	9.7932E-01	9.0374E-01
H+	1.1019E-07	1.0050E-02	4.7958E-02
H2	1.3403E-01	5.4739E-04	2.3479E-04
H-	3.9318E-10	1.3259E-05	4.4678E-05
H2+	1.3751E-09	1.4862E-05	5.5005E-05

P1 = 2.00E+02 N/SQ-M. US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3351E+02	3.8853E+03	6.1418E+03
T	1.3255E+01	3.0215E+01	4.0412E+01
RHO	1.4932E+01	6.4174E+01	7.3716E+01
U	5.3077E+01	9.6121E+01	1.2172E+02
A	4.3461E+00	8.3923E+00	8.8020E+00
S	1.7017E+00	1.8539E+00	1.9232E+00
Z	1.6849E+00	2.0038E+00	2.0617E+00
GAME	8.4588E-01	1.0816E+00	9.2989E-01
U	1.4894E+01	3.4736E+00	3.7833E+00

SPECIES	MOLE FRACTIONS		
E-	4.9132E-08	3.0276E-03	3.0285E-02
H	9.1331E-01	9.9279E-01	9.3904E-01
H+	4.8583E-08	3.0269E-03	3.0279E-02
H2	1.8699E-01	1.1449E-03	3.2309E-04
H-	1.7917E-10	5.8579E-06	3.3206E-05
H2+	7.1778E-10	6.5214E-06	3.9333E-05

P1 = 2.00E+02 N/SQ-M. US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.9995E+02	4.5594E+03	7.3673E+03
T	1.4491E+01	3.7933E+01	4.5793E+01
RHO	1.4984E+01	5.8884E+01	7.5098E+01
U	6.3464E+01	1.1457E+02	1.4531E+02
A	4.8402E+00	8.5690E+00	9.3735E+00
S	1.8036E+00	1.9226E+00	1.9905E+00
Z	1.8420E+00	2.0434E+00	2.1423E+00
GAME	8.7767E-01	9.4797E-01	8.9563E-01
U	1.6318E+01	4.1491E+00	4.0647E+00

SPECIES	MOLE FRACTIONS		
E-	2.8671E-07	2.1604E-02	6.6673E-02
H	9.1423E-01	9.5640E-01	8.6636E-01
H+	2.8482E-07	2.1601E-02	6.6658E-02
H2	8.5765E-02	3.5072E-04	1.8293E-04
H-	9.3756E-10	3.1922E-05	5.4322E-05
H2+	2.8130E-09	2.5271E-05	6.9287E-05

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3465E+02	4.8381E+03	7.7861E+03
T	1.5513E+01	4.0683E+01	4.7858E+01
RHO	1.4622E+01	5.7411E+01	7.4383E+01
H	4.8999E+01	1.2444E+02	1.5729E+02
A	5.2333E+00	8.8056E+00	9.6425E+00
S	1.8542E+00	1.9560E+00	2.0248E+00
Z	1.9162E+00	2.0743E+00	2.1872E+00
GAME	9.2121E-01	9.1966E-01	8.8875E-01
U	1.6998E+01	4.3254E+00	4.1588E+00

SPECIES	MOLE FRACTIONS		
E-	1.0119E-06	3.6127E-02	8.5813E-02
H	9.5628E-01	9.2744E-01	8.2811E-01
H+	1.0078E-06	3.6121E-02	8.5790E-02
H2	4.3714E-02	2.4826E-04	1.4584E-04
H-	2.7798E-09	2.9964E-05	6.1483E-05
H2+	6.9064E-09	3.5661E-05	8.3944E-05

P1 = 2.00E+02 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0287E+02	4.7680E+03	7.4938E+03
T	2.0514E+01	4.4597E+01	5.0742E+01
RHO	1.2291E+01	4.9798E+01	6.4801E+01
H	8.0649E+01	1.4417E+02	1.7994E+02
A	6.8507E+00	9.2332E+00	1.0087E+01
S	1.9446E+00	2.0291E+00	2.0999E+00
Z	1.9944E+00	2.1469E+00	2.2791E+00
GAME	1.1471E+00	8.9039E-01	8.7993E-01
U	1.8159E+01	4.4906E+00	4.2451E+00

SPECIES	MOLE FRACTIONS		
E-	8.4790E-05	6.8603E-02	1.2262E-01
H	9.9693E-01	8.6258E-01	7.5453E-01
H+	8.4751E-05	6.8593E-02	1.2260E-01
H2	2.8982E-03	1.3205E-04	9.1253E-05
H-	8.8460E-08	3.9155E-05	6.4181E-05
H2+	1.2770E-07	4.9071E-05	8.8479E-05

P1 = 2.00E+02 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6930E+02	4.9294E+03	7.8552E+03
T	1.7334E+01	4.2914E+01	4.9514E+01
RHO	1.3728E+01	5.4459E+01	7.1042E+01
H	7.4737E+01	1.3442E+02	1.6894E+02
A	5.9331E+00	9.0309E+00	9.8834E+00
S	1.9023E+00	1.9913E+00	2.0610E+00
Z	1.9721E+00	2.1092E+00	2.2331E+00
GAME	1.0297E+00	9.0104E-01	8.8342E-01
U	1.7522E+01	4.4351E+00	4.2158E+00

SPECIES	MOLE FRACTIONS		
E-	6.7330E-06	5.2005E-02	1.0461E-01
H	9.8594E-01	8.9574E-01	7.9054E-01
H+	6.7213E-06	5.1997E-02	1.0458E-01
H2	1.4150E-02	1.7556E-04	1.1619E-04
H-	1.2811E-08	3.4008E-05	6.4903E-05
H2+	2.4579E-08	4.4065E-05	8.7718E-05

P1 = 2.00E+02 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3669E+02	4.6099E+03	7.1309E+03
T	2.4353E+01	4.6036E+01	5.1816E+01
RHO	1.1020E+01	4.5793E+01	5.9171E+01
H	8.6754E+01	1.5408E+02	1.9091E+02
A	7.4412E+00	9.4305E+00	1.0284E+01
S	1.9810E+00	2.0662E+00	2.1383E+00
Z	2.0001E+00	2.1867E+00	2.3258E+00
GAME	1.1370E+00	8.8345E-01	8.7752E-01
U	1.8665E+01	4.5005E+00	4.2665E+00

SPECIES	MOLE FRACTIONS		
E-	7.6613E-06	8.5533E-02	1.4023E-01
H	9.9774E-01	8.2875E-01	7.1935E-01
H+	7.6604E-06	8.5522E-02	1.4020E-01
H2	7.2818E-04	1.0233E-04	7.2463E-05
H-	4.4490E-07	4.1022E-05	6.2378E-05
H2+	5.3977E-07	5.2520E-05	8.7519E-05

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7736E+02	4.5869E+03	7.0001E+03
T	2.7982E+01	4.7434E+01	5.2952E+01
RHO	1.0194E+01	4.3374E+01	5.5664E+01
H	9.3092E+01	1.6451E+02	2.0256E+02
A	7.7028E+00	9.6408E+00	1.0496E+01
S	2.3129E+00	2.1918E+00	2.1748E+00
Z	2.0066E+00	2.2294E+00	2.3749E+00
GAME	1.0567E+00	8.7891E-01	8.7611E-01
U	1.9197E+01	4.5226E+00	4.2986E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	3.5774E-03	1.0305E-01	1.5800E-01
H	9.9256E-01	7.9373E-01	6.8382E-01
H+	3.5772E-03	1.0304E-01	1.5797E-01
H2	2.7923E-04	8.2009E-05	5.9917E-05
H-	1.3337E-06	4.2873E-05	6.1309E-05
H2+	1.5092E-06	5.6077E-05	8.7646E-05

P1 = 2.00E+02 N/SQ-M. US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.5266E+02	4.9961E+03	7.4691E+03
T	3.3354E+01	5.0362E+01	5.5647E+01
RHO	9.6021E+00	4.2672E+01	5.4026E+01
H	1.0659E+02	1.8793E+02	2.2928E+02
A	7.9683E+00	1.0119E+01	1.1003E+01
S	2.0687E+00	2.1670E+00	2.2440E+00
Z	2.0378E+00	2.3247E+00	2.4844E+00
GAME	9.3415E-01	8.7453E-01	8.7570E-01
U	2.0435E+01	4.6023E+00	4.4129E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	1.8672E-02	1.3981E-01	1.9510E-01
H	9.6255E-01	7.2023E-01	6.0963E-01
H+	1.8471E-02	1.3979E-01	1.9507E-01
H2	9.9271E-05	5.7165E-05	4.1080E-05
H-	4.1975E-06	4.7669E-05	6.1720E-05
H2+	4.6797E-06	6.5318E-05	9.2291E-05

P1 = 2.00E+02 N/SQ-M. US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1131E+02	4.7387E+03	7.1468E+03
T	3.0963E+01	4.8893E+01	5.4253E+01
RHO	9.7784E+00	4.2587E+01	5.4252E+01
H	9.9712E+01	1.7589E+02	2.1546E+02
A	7.8328E+00	9.8734E+00	1.0740E+01
S	2.0415E+00	2.1349E+00	2.2009E+00
Z	2.0192E+00	2.2758E+00	2.4281E+00
GAME	9.8133E-01	8.7611E-01	8.7557E-01
U	1.9799E+01	4.5490E+00	4.3486E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	9.6470E-03	1.2131E-01	1.7644E-01
H	9.8955E-01	7.5722E-01	6.4490E-01
H+	9.6447E-03	1.2130E-01	1.7644E-01
H2	1.5074E-04	6.7791E-05	4.9985E-05
H-	2.6652E-06	4.5239E-05	6.1331E-05
H2+	2.9534E-06	6.0545E-05	8.9594E-05

P1 = 2.00E+02 N/SQ-M. US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.4255E+02	5.7435E+03	8.4705E+03
T	3.6990E+01	5.3341E+01	5.8641E+01
RHO	9.6146E+00	4.4297E+01	5.5436E+01
H	1.2114E+02	2.1405E+02	2.5955E+02
A	8.2910E+00	1.0643E+01	1.1580E+01
S	2.1206E+00	2.2301E+00	2.3117E+00
Z	2.0879E+00	2.4306E+00	2.6056E+00
GAME	8.9306E-01	8.7376E-01	8.7754E-01
U	2.1901E+01	4.7365E+00	4.5714E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	4.2174E-02	1.7727E-01	2.3256E-01
H	9.1558E-01	6.4532E-01	5.3473E-01
H+	4.2173E-02	1.7725E-01	2.3252E-01
H2	5.7654E-05	4.1808E-05	2.9285E-05
H-	7.2737E-06	5.2060E-05	6.2164E-05
H2+	8.3030E-06	7.4907E-05	9.7763E-05

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.4037E+02	6.6899E+03	9.7707E+03
T	3.9785E+01	5.6317E+01	6.1817E+01
RHO	9.8283E+00	4.6670E+01	5.7752E+01
U	1.3470E+03	2.4245E+02	2.9271E+02
A	8.6382E+00	1.1199E+01	1.2209E+01
S	2.1715E+00	2.2032E+00	2.3803E+00
Z	2.1493E+00	2.5448E+00	2.7369E+00
GAME	8.7273E-01	9.7505E-01	8.8109E-01
U	2.3225E+01	4.8956E+00	4.7590E+00

SPECIES	MOLE FRACTIONS		
E-	6.0398E-02	2.1420E-01	2.6936E-01
H	9.4114E-01	5.7145E-01	4.6114E-01
H+	6.0396E-02	2.1418E-01	2.6932E-01
H2	3.9773E-05	3.0863E-05	2.3563E-05
H-	1.0042E-05	5.4814E-05	6.0719E-05
H2+	1.1908E-05	8.2894E-05	1.0375E-04

P1 = 2.00E+02 N/SQ-M. US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0560E+03	8.9823E+03	1.2968E+04
T	4.4229E+01	6.2301E+01	6.8631E+01
RHO	1.0415E+01	5.1642E+01	6.2636E+01
U	1.7069E+02	3.0494E+02	3.6646E+02
A	9.3464E+00	1.2395E+01	1.3631E+01
S	2.2738E+00	2.4210E+00	2.5184E+00
Z	2.2025E+00	2.7918E+00	3.0167E+00
GAME	8.6155E-01	8.9184E-01	8.9368E-01
U	2.6118E+01	5.2734E+00	5.2081E+00

SPECIES	MOLE FRACTIONS		
E-	1.2762E-01	2.9373E-01	3.3712E-01
H	7.4471E-01	4.3242E-01	3.2565E-01
H+	1.2742E-01	2.8369E-01	3.3708E-01
H2	2.2632E-05	1.6139E-05	9.1566E-06
H-	1.4298E-05	5.3798E-05	5.1018E-05
H2+	1.7826E-05	8.9994E-05	9.4840E-05

P1 = 2.00E+02 N/SQ-M. US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.4474E+02	7.7724E+03	1.1273E+04
T	4.2134E+01	5.9283E+01	6.5102E+01
RHO	1.0110E+01	4.9189E+01	6.0271E+01
U	1.5321E+02	2.7272E+02	3.2829E+02
A	8.9906E+00	1.1777E+01	1.2875E+01
S	2.2274E+00	2.3567E+00	2.4486E+00
Z	2.2177E+00	2.6653E+00	2.8731E+00
GAME	8.6501E-01	8.7773E-01	8.8625E-01
U	2.4662E+01	5.0748E+00	4.9694E+00

SPECIES	MOLE FRACTIONS		
E-	9.8212E-02	2.4974E-01	3.0400E-01
H	8.0352E-01	5.0039E-01	3.9187E-01
H+	9.8213E-02	2.4971E-01	3.0396E-01
H2	2.0496E-05	2.2573E-05	1.4088E-05
H-	1.2394E-05	5.5405E-05	5.7031E-05
H2+	1.5010E-05	9.8094E-05	9.9992E-05

P1 = 2.00E+02 N/SQ-M. US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1735E+03	1.0361E+04	1.4843E+04
T	4.6143E+01	6.5439E+01	7.2501E+01
RHO	1.0723E+01	5.3879E+01	6.4673E+01
U	1.8912E+02	3.3094E+02	4.0731E+02
A	9.7033E+00	1.3025E+01	1.4401E+01
S	2.3254E+00	2.4859E+00	2.5893E+00
Z	2.3717E+00	2.9229E+00	3.1657E+00
GAME	8.6033E-01	8.8732E-01	9.0360E-01
U	2.7575E+01	5.4945E+00	5.4954E+00

SPECIES	MOLE FRACTIONS		
E-	1.5678E-01	3.1584E-01	3.6831E-01
H	6.8440E-01	3.6821E-01	2.6328E-01
H+	1.5677E-01	3.1580E-01	3.6827E-01
H2	1.7698E-05	1.1165E-05	5.5385E-06
H-	1.5737E-05	5.0114E-05	4.3074E-05
H2+	2.0183E-05	8.8317E-05	8.5265E-05

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 4.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2973E+03	1.1697E+04	1.6841E+04
T	4.7975E+01	6.8663E+01	7.6813E+01
RHO	1.1003E+01	5.5717E+01	6.6117E+01
M	2.0850E+02	3.7464E+02	4.5024E+02
A	1.0071E+01	1.3704E+01	1.5290E+01
S	2.3788E+00	2.5512E+00	2.6630E+00
Z	2.4571E+00	3.0576E+00	3.3161E+00
GAME	8.6044E-01	8.9457E-01	9.1784E-01
U	2.9030E+01	5.7399E+00	6.7788E+00

SPECIES	MOLE FRACTIONS		
E-	1.8606E-01	3.4557E-01	3.9695E-01
H	6.2793E-01	3.0796E-01	2.0603E-01
H+	1.8606E-01	3.4553E-01	3.9691E-01
H2	1.3822E-05	7.3730E-06	3.0520E-06
H-	1.6739E-05	4.4594E-05	3.3916E-05
H2+	2.2042E-05	8.2943E-05	7.1837E-05

P1 = 2.00E+02 N/SQ-M. US1 = 4.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5625E+03	1.4717E+04	2.1389E+04
T	5.1438E+01	7.6028E+01	8.8573E+01
RHO	1.1511E+01	5.8084E+01	6.6741E+01
M	2.5008E+02	4.5108E+02	5.4641E+02
A	1.0825E+01	1.5247E+01	1.7660E+01
S	2.4870E+00	2.6821E+00	2.8038E+00
Z	2.6389E+00	3.3327E+00	3.6182E+00
GAME	8.6319E-01	9.1756E-01	9.7313E-01
U	3.1934E+01	6.3356E+00	6.6468E+00

SPECIES	MOLE FRACTIONS		
E-	2.4215E-01	3.9994E-01	4.4727E-01
H	5.1565E-01	2.0005E-01	1.0542E-01
H+	2.4214E-01	3.9991E-01	4.4725E-01
H2	8.4051E-06	2.6223E-06	5.4244E-07
H-	1.7308E-05	3.0031E-05	1.4974E-05
H2+	2.4138E-05	6.2845E-05	3.7423E-05

P1 = 2.00E+02 N/SQ-M. US1 = 4.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4267E+03	1.3177E+04	1.9032E+04
T	4.9726E+01	7.2162E+01	8.2005E+01
RHO	1.1260E+01	5.7158E+01	6.6895E+01
M	2.2892E+02	4.1205E+02	4.9670E+02
A	1.0443E+01	1.4439E+01	1.6348E+01
S	2.4325E+00	2.6167E+00	2.7320E+00
Z	2.5640E+00	3.1947E+00	3.4694E+00
GAME	8.6146E-01	9.0420E-01	9.3940E-01
U	3.0484E+01	6.0174E+00	6.1738E+00

SPECIES	MOLE FRACTIONS		
E-	2.1449E-01	3.7405E-01	4.2359E-01
H	5.7097E-01	2.5183E-01	1.5277E-01
H+	2.1449E-01	3.7401E-01	4.2356E-01
H2	1.3814E-05	4.5816E-06	1.4386E-06
H-	1.7226E-05	3.7727E-05	2.4146E-05
H2+	2.3356E-05	7.4276E-05	5.5244E-05

P1 = 2.00E+02 N/SQ-M. US1 = 4.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7041E+03	1.6296E+04	2.3942E+04
T	5.3136E+01	8.0449E+01	9.7544E+01
RHO	1.1774E+01	5.8397E+01	6.5415E+01
M	2.7227E+02	4.9145E+02	6.0042E+02
A	1.1214E+01	1.6164E+01	1.9379E+01
S	2.5423E+00	2.7449E+00	2.8745E+00
Z	2.7356E+00	3.4688E+00	3.7522E+00
GAME	8.6553E-01	9.3624E-01	1.0261E+00
U	3.3380E+01	6.7085E+00	7.2663E+00

SPECIES	MOLE FRACTIONS		
E-	2.6892E-01	4.2348E-01	4.6700E-01
H	4.6212E-01	1.5299E-01	6.5993E-02
H+	2.6891E-01	4.2345E-01	4.6698E-01
H2	8.4405E-06	1.3419E-06	1.4681E-07
H-	1.6994E-05	2.2147E-05	7.6757E-06
H2+	2.4357E-05	4.9544E-05	2.1124E-05

TABLE I. - Continued

$p_1 = 200 N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 5.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8517E+03	1.7887E+04	2.6788E+04
T	5.4841E+01	8.5689E+01	1.1119E+02
RHO	1.1907E+01	5.8014E+01	6.2419E+01
M	2.9543E+02	5.3369E+02	6.6135E+02
A	1.1621E+01	1.7232E+01	2.1722E+01
S	2.5983E+00	2.8101E+00	2.9467E+00
Z	2.8356E+00	3.5982E+00	3.8600E+00
GAME	8.6847E-01	9.6312E-01	1.0994E+00
U	3.4921E+01	7.1570E+00	8.1995E+00

SPECIES	MOLE FRACTIONS		
E-	2.9471E-01	4.4420E-01	4.8187E-01
H	4.1055E-01	1.1157E-01	3.6258E-02
H+	2.9470E-01	4.4418E-01	4.8186E-01
H2	4.8897E-36	5.9277E-07	2.3792E-38
H-	1.6287E-05	1.4849E-05	3.0706E-06
H2+	2.4031E-05	3.5752E-05	9.0630E-06

P1 = 2.00E+02 N/SQ-M. US1 = 5.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1643E+03	2.0915E+04	3.3236E+04
T	5.8367E+01	1.0077E+02	1.5332E+02
RHO	1.2177E+01	5.4412E+01	5.4815E+01
M	3.4453E+02	6.2121E+02	8.0214E+02
A	1.2480E+01	2.0142E+01	2.6748E+01
S	2.7121E+00	2.9314E+00	3.0760E+00
Z	3.0446E+00	3.8142E+00	3.9547E+00
GAME	8.7644E-01	1.0555E+00	1.1830E+00
U	3.7683E+01	8.4542E+00	1.0753E+01

SPECIES	MOLE FRACTIONS		
E-	3.4313E-01	4.7566E-01	4.9427E-01
H	3.1371E-01	4.8666E-02	1.1458E-02
H+	3.4312E-01	4.7565E-01	4.9427E-01
H2	2.6216E-04	5.8570E-08	3.9374E-10
H-	1.3950E-05	4.4705E-06	6.3515E-07
H2+	2.1839E-05	1.2626E-05	1.2578E-06

P1 = 2.00E+02 N/SQ-M. US1 = 5.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.0050E+03	1.9448E+04	2.9898E+04
T	5.6574E+01	9.2378E+01	1.3020E+02
RHO	1.2059E+01	5.6417E+01	5.8629E+01
M	3.1951E+02	5.7698E+02	7.2873E+02
A	1.2041E+01	1.8563E+01	2.4302E+01
S	2.6549E+00	2.8731E+00	3.0146E+00
Z	2.9387E+00	3.7183E+00	3.9235E+00
GAME	8.7205E-01	1.0032E+00	1.1562E+00
U	3.6255E+01	7.7183E+00	9.3790E+00

SPECIES	MOLE FRACTIONS		
E-	3.1946E-01	4.4215E-01	4.9025E-01
H	3.6104E-01	7.5685E-02	1.9492E-02
H+	3.1945E-01	4.6713E-01	4.9025E-01
H2	3.4270E-04	2.0726E-07	2.8990E-09
H-	1.5240E-05	8.6515E-06	1.2231E-06
H2+	2.3131E-05	2.2613E-05	3.3055E-06

P1 = 2.00E+02 N/SQ-M. US1 = 5.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3286E+03	2.2283E+04	3.6654E+04
T	6.0244E+01	1.1149E+02	1.7862E+02
RHO	1.2260E+01	5.1470E+01	5.1686E+01
M	3.7049E+02	6.6633E+02	8.7860E+02
A	1.2942E+01	2.1928E+01	2.9021E+01
S	2.7697E+00	2.9842E+00	3.1302E+00
Z	3.1528E+00	3.8833E+00	3.9702E+00
GAME	8.8182E-01	1.1107E+00	1.1876E+00
U	3.9102E+01	9.3273E+00	1.2117E+01

SPECIES	MOLE FRACTIONS		
E-	3.6557E-01	4.8495E-01	4.9625E-01
H	2.6864E-01	3.0101E-02	7.5060E-03
H+	3.6556E-01	4.8494E-01	4.9625E-01
H2	1.8336E-06	1.3421E-08	7.2784E-11
H-	1.2408E-05	2.1152E-06	4.1418E-07
H2+	2.0051E-05	6.2449E-06	5.5485E-07

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 5.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4986E+03	2.3563E+04	4.0180E+04
T	6.2228E+01	1.2421E+02	2.0563E+02
RHO	1.2312E+01	4.8321E+01	4.9108E+01
H	3.9737E+02	7.1230E+02	9.5897E+02
A	1.3428E+01	2.3688E+01	3.1206E+01
S	2.8268E+00	3.0360E+00	3.1787E+00
Z	3.2614E+00	3.9254E+00	3.9789E+00
GAME	8.9845E-01	1.1508E+00	1.1902E+00
U	4.0512E+01	1.0307E+01	1.3527E+01

SPECIES	MOLE FRACTIONS		
E-	3.8678E-01	4.9050E-01	4.9735E-01
H	2.2641E-01	1.9000E-02	5.3002E-03
H+	3.8678E-01	4.9050E-01	4.9735E-01
H2	1.2362E-06	2.9202E-09	1.7695E-11
H-	1.0721E-05	1.0459E-06	2.9797E-07
H2+	1.7914E-05	2.9714E-06	2.7989E-07

P1 = 2.00E+02 N/SQ-M. US1 = 6.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8536E+03	2.5553E+04	4.6875E+04
T	6.6898E+01	1.5392E+02	2.6175E+02
RHO	1.2239E+01	4.1867E+01	4.4908E+01
H	4.5389E+02	8.0552E+02	1.1252E+03
A	1.4555E+01	2.6870E+01	3.5268E+01
S	2.9439E+00	3.1270E+00	3.2615E+00
Z	3.4851E+00	3.9654E+00	3.9878E+00
GAME	9.0868E-01	1.1829E+00	1.1916E+00
U	4.3284E+01	1.2635E+01	1.6153E+01

SPECIES	MOLE FRACTIONS		
E-	4.2614E-01	4.9563E-01	4.9847E-01
H	1.4770E-01	8.7329E-03	3.0682E-03
H+	4.2614E-01	4.9563E-01	4.9847E-01
H2	4.5695E-07	1.7161E-10	2.0178E-12
H-	6.9909E-06	3.7186E-07	1.7015E-07
H2+	1.2631E-05	7.2962E-07	9.7878E-08

P1 = 2.00E+02 N/SQ-M. US1 = 6.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6739E+03	2.4624E+04	4.3570E+04
T	6.4432E+01	1.3871E+02	2.3305E+02
RHO	1.2301E+01	4.4936E+01	4.6924E+01
H	4.2517E+02	7.5861E+02	1.0407E+03
A	1.3964E+01	2.5353E+01	3.3257E+01
S	2.8855E+00	3.0837E+00	3.2215E+00
Z	3.3735E+00	3.9507E+00	3.9842E+00
GAME	8.9714E-01	1.1729E+00	1.1912E+00
U	4.1907E+01	1.1447E+01	1.4839E+01

SPECIES	MOLE FRACTIONS		
E-	4.0716E-01	4.9376E-01	4.9801E-01
H	1.9565E-01	1.2470E-02	3.9704E-03
H+	4.0716E-01	4.9376E-01	4.9801E-01
H2	7.7992E-07	6.5290E-10	5.5406E-12
H-	8.8703E-06	5.7872E-07	2.2404E-07
H2+	1.5381E-05	1.4178E-06	1.5962E-07

P1 = 2.00E+02 N/SQ-M. US1 = 6.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0383E+03	2.6384E+04	5.0063E+04
T	6.9704E+01	1.6967E+02	2.9132E+02
RHO	1.2133E+01	3.9126E+01	4.3066E+01
H	4.8352E+02	8.5331E+02	1.2121E+03
A	1.5214E+01	2.8298E+01	3.7222E+01
S	3.0006E+00	3.1669E+00	3.2985E+00
Z	3.5925E+00	3.9744E+00	3.9903E+00
GAME	9.2437E-01	1.1875E+00	1.1918E+00
U	4.4647E+01	1.3821E+01	1.7445E+01

SPECIES	MOLE FRACTIONS		
E-	4.4329E-01	4.9679E-01	4.9878E-01
H	1.1341E-01	6.4275E-03	2.4336E-03
H+	4.4328E-01	4.9679E-01	4.9878E-01
H2	2.4516E-07	5.2407E-11	8.3718E-13
H-	5.2043E-06	2.6327E-07	1.3032E-07
H2+	9.8471E-06	4.0358E-07	6.3897E-08

TABLE I. - Continued

$p_1 = 200\ N/m^2$

P1 = 2.00E+02 N/SQ-M. US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2263E+03	2.6995E+04	5.2833E+04
T	7.3124E+01	1.8583E+02	3.2130E+02
RHO	1.1936E+01	3.4500E+01	4.1189E+01
H	5.1403E+02	9.0156E+02	1.3003E+03
A	1.6002E+01	2.9642E+01	3.9101E+01
S	3.0573E+00	3.2050E+00	3.3335E+00
Z	3.6965E+00	3.9805E+00	3.9922E+00
GAME	9.4739E-01	1.1896E+00	1.1919E+00
U	4.5973E+01	1.4989E+01	1.8692E+01

SPECIES	MOLE FRACTIONS		
E-	4.5895E-01	4.9755E-01	4.9902E-01
H	8.2096E-02	4.8916E-03	1.9654E-03
H+	4.5894E-01	4.9755E-01	4.9902E-01
H2	1.1316E-07	1.8081E-11	3.8318E-13
H-	3.5354E-06	1.9517E-07	9.9854E-08
H2+	7.0690E-06	2.3607E-07	4.3608E-08

P1 = 2.30E+02 N/SQ-M. US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6087E+03	2.7357E+04	5.6573E+04
T	8.2983E+01	2.1839E+02	3.8124E+02
RHO	1.1244E+01	3.1416E+01	3.7147E+01
H	5.7759E+02	9.9832E+02	1.4778E+03
A	1.8185E+01	3.2210E+01	4.2608E+01
S	3.1645E+00	3.2770E+00	3.3992E+00
Z	3.8676E+00	3.9879E+00	3.9947E+00
GAME	1.0303E+00	1.1913E+00	1.1920E+00
U	4.8486E+01	1.7327E+01	2.1006E+01

SPECIES	MOLE FRACTIONS		
E-	4.8289E-01	4.9849E-01	4.9934E-01
H	3.4217E-02	3.0306E-03	1.3298E-03
H+	4.8289E-01	4.9848E-01	4.9936E-01
H2	1.7990E-08	3.0675E-12	9.8822E-14
H-	1.1207E-06	1.1229E-07	5.8291E-08
H2+	2.6003E-06	9.2653E-08	2.2181E-08

P1 = 2.00E+02 N/SQ-M. US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.4171E+03	2.7324E+04	5.5110E+04
T	7.7395E+01	2.0203E+02	3.5185E+02
RHO	1.1649E+01	3.3944E+01	3.9220E+01
H	5.4541E+02	9.4983E+02	1.3896E+03
A	1.6967E+01	3.0960E+01	4.0926E+01
S	3.1120E+00	3.2414E+00	3.3673E+00
Z	3.7899E+00	3.9848E+00	3.9936E+00
GAME	9.8137E-01	1.1907E+00	1.1920E+00
U	4.7261E+01	1.6202E+01	1.9897E+01

SPECIES	MOLE FRACTIONS		
E-	4.7229E-01	4.9809E-01	4.9920E-01
H	5.5409E-02	3.8213E-03	1.6049E-03
H+	4.7229E-01	4.9809E-01	4.9920E-01
H2	4.3419E-08	7.2403E-12	1.8748E-13
H-	2.1456E-06	1.4785E-07	7.6178E-08
H2+	4.5858E-06	1.4570E-07	3.0622E-08

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M, US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1975E+01	5.3615E+01
T	2.7140E+00	3.3569E+00	4.7160E+00
RHO	3.9200E+00	6.5476E+00	1.1369E+01
H	2.7745E+00	3.4526E+00	4.9388E+00
A	1.6432E+00	1.8212E+00	2.1381E+00
S	1.0549E+00	1.0567E+00	1.0745E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8810E-01	9.6934E-01
U	2.2663E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	5.2168E-34	7.9776E-34	1.0938E-26
H	6.1638E-11	2.3035E-09	1.1462E-05
H+	1.3634E-49	8.8819E-35	8.3829E-27
H2	1.0000E+00	1.0000E+00	9.9999E-01
H-	7.3518E-44	8.2017E-41	2.2167E-32
H2+	1.1355E-49	3.8312E-35	2.5547E-27

P1 = 5.00E+02 N/SQ-M, US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4288E+01	7.6999E+01	1.5279E+02
T	4.8586E+00	6.6962E+00	8.2784E+00
RHO	4.9990E+00	1.1483E+01	1.8213E+01
H	5.0999E+00	7.3194E+00	9.9094E+00
A	2.1676E+00	2.4892E+00	2.6898E+00
S	1.1176E+00	1.1253E+00	1.1485E+00
Z	1.0003E+00	1.0014E+00	1.0134E+00
GAME	9.6705E-01	9.2404E-01	8.6243E-01
U	3.6514E+00	1.5859E+00	1.3842E+00

SPECIES	MOLE FRACTIONS		
E-	1.6434E-25	4.9727E-18	3.0275E-14
H	2.9555E-08	2.7862E-03	2.6475E-02
H+	1.5463E-25	4.5210E-18	2.8081E-14
H2	9.9997E-01	9.9721E-01	9.7353E-01
H-	7.6712E-30	1.3781E-21	4.9088E-17
H2+	9.7123E-27	4.5304E-19	2.2437E-15

P1 = 5.00E+02 N/SQ-M, US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4537E+01	9.7167E+01
T	3.7003E+00	4.9224E+00	6.6402E+00
RHO	4.5254E+00	9.0459E+00	1.4617E+01
H	3.8206E+00	5.1720E+00	7.2367E+00
A	1.9079E+00	2.1910E+00	2.4844E+00
S	1.0866E+00	1.0912E+00	1.1122E+00
Z	1.0003E+00	1.0030E+00	1.0011E+00
GAME	9.8363E-01	9.6627E-01	9.2849E-01
U	2.9621E+00	1.4790E+00	1.3294E+00

SPECIES	MOLE FRACTIONS		
E-	3.5756E-31	1.2930E-24	4.6366E-21
H	6.4491E-08	3.0337E-05	2.2092E-33
H+	2.8899E-31	1.1044E-24	8.9802E-20
H2	1.0000E+00	9.9997E-01	9.9779E-01
H-	6.3605E-37	3.6240E-29	1.3322E-21
H2+	6.0870E-32	1.8962E-25	8.3833E-20

P1 = 5.00E+02 N/SQ-M, US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3313E+01	1.2393E+02	2.2153E+02
T	4.1402E+00	8.2486E+00	9.4211E+00
RHO	5.4213E+00	1.4766E+01	2.2551E+01
H	6.6149E+00	9.9649E+00	1.2937E+01
A	2.4014E+00	2.6942E+00	2.8639E+00
S	1.1474E+00	1.1597E+00	1.1957E+00
Z	1.0006E+00	1.0147E+00	1.0427E+00
GAME	9.3855E-01	8.5875E-01	8.3497E-01
U	4.3423E+00	1.6897E+00	1.3768E+00

SPECIES	MOLE FRACTIONS		
E-	1.7981E-19	3.4636E-14	2.5459E-12
H	1.2475E-03	2.9926E-02	8.1808E-02
H+	1.6673E-19	3.4266E-14	2.3848E-12
H2	9.9875E-01	9.7107E-01	9.1819E-01
H-	2.2792E-23	5.5538E-17	8.9701E-15
H2+	1.3100E-20	2.4249E-15	1.7007E-13

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.4048E+01	1.9221E+02	3.1490E+02
T	7.3538E+00	9.4305E+00	1.0348E+01
RHO	5.9532E+00	1.9480E+01	2.8029E+01
H	9.3775E+00	1.3145E+01	1.6474E+01
A	2.5551E+00	2.8665E+00	3.0490E+00
S	1.1754E+00	1.1963E+00	1.2258E+00
Z	1.0062E+00	1.0463E+00	1.0858E+00
GAME	8.8230E-01	8.3279E-01	8.2741E-01
U	5.0623E+00	1.5456E+00	1.3665E+00

SPECIES	MOLE FRACTIONS		
E-	4.8274E-16	2.8498E-12	3.9174E-11
H	1.2398E-02	8.8476E-02	1.5804E-01
H+	4.5548E-16	2.6797E-12	3.6826E-11
H2	9.8740E-01	9.1152E-01	8.4196E-01
H-	1.7678E-19	9.2343E-15	2.2344E-13
H2+	2.7438E-17	1.7838E-13	2.5716E-12

P1 = 5.00E+02 N/SQ-M. US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.1118E+01	4.2474E+02	6.2731E+02
T	8.9952E+00	1.1246E+01	1.2033E+01
RHO	7.5479E+00	3.2861E+01	4.3152E+01
H	1.2653E+01	2.1109E+01	2.5354E+01
A	2.7916E+00	3.2688E+00	3.4738E+00
S	1.2371E+00	1.2795E+00	1.3168E+00
Z	1.0475E+00	1.1494E+00	1.2080E+00
GAME	8.2708E-01	8.2666E-01	8.3021E-01
U	6.5964E+00	1.5162E+00	1.3940E+00

SPECIES	MOLE FRACTIONS		
E-	1.1457E-12	3.7120E-10	1.7832E-09
H	9.0698E-02	2.5989E-01	3.4438E-01
H+	1.0989E-12	3.5109E-10	1.6890E-09
H2	9.0930E-01	7.4011E-01	6.5562E-01
H-	1.8382E-15	3.0781E-12	2.0683E-11
H2+	4.8663E-14	2.3182E-11	1.1487E-10

P1 = 5.00E+02 N/SQ-M. US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6693E+01	2.9127E+02	4.4868E+02
T	8.2857E+00	1.0391E+01	1.1208E+01
RHO	6.6936E+00	2.5662E+01	3.5070E+01
H	1.0393E+01	1.6875E+01	2.0629E+01
A	2.6725E+00	3.0620E+00	3.2528E+00
S	1.2059E+00	1.2362E+00	1.2696E+00
Z	1.0222E+00	1.0922E+00	1.1414E+00
GAME	8.4325E-01	8.2618E-01	8.2704E-01
U	5.8215E+00	1.5156E+00	1.3740E+00

SPECIES	MOLE FRACTIONS		
E-	6.4261E-14	4.8994E-11	3.2688E-10
H	4.3514E-02	1.6878E-01	2.4783E-01
H+	6.1357E-14	4.6259E-11	3.0853E-10
H2	9.5649E-01	8.3122E-01	7.5217E-01
H-	6.2605E-17	2.7591E-13	2.7828E-12
H2+	2.9662E-15	3.0137E-12	2.1155E-11

P1 = 5.00E+02 N/SQ-M. US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.7215E+01	5.9470E+02	8.5275E+02
T	9.5802E+00	1.2052E+01	1.2846E+01
RHO	8.4306E+00	4.0575E+01	5.1458E+01
H	1.5151E+01	2.5923E+01	3.0648E+01
A	2.9139E+00	3.4880E+00	3.7135E+00
S	1.2704E+00	1.3262E+00	1.3676E+00
Z	1.0798E+00	1.2161E+00	1.2848E+00
GAME	8.2076E-01	8.3007E-01	8.3550E-01
U	7.3734E+00	1.5339E+00	1.4355E+00

SPECIES	MOLE FRACTIONS		
E-	8.6441E-12	1.9148E-09	7.5034E-09
H	1.4784E-01	3.5542E-01	4.4343E-01
H+	8.3154E-12	1.8167E-09	7.1370E-09
H2	8.5216E-01	6.4458E-01	5.5657E-01
H-	1.9634E-14	2.1525E-11	1.1082E-10
H2+	3.4834E-13	1.1956E-10	4.7721E-10

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0487E+02	8.0052E+02	1.1243E+03
T	1.0091E+01	1.2832E+01	1.3664E+01
RHO	9.2952E+00	4.8309E+01	6.0025E+01
H	1.7882E+01	3.0982E+01	3.6668E+01
A	3.0393E+00	3.7203E+00	3.9724E+00
S	1.3057E+00	1.3757E+00	1.4214E+00
Z	1.1180E+00	1.2913E+00	1.3708E+00
GAME	8.1877E-01	8.3528E-01	8.4248E-01
U	8.1431E+00	1.5691E+00	1.4906E+00

SPECIES	MOLE FRACTIONS		
E-	4.0261E-11	7.5793E-09	2.6278E-08
H	2.1109E-01	4.5119E-01	5.4099E-01
H+	3.8814E-11	7.2199E-09	2.5115E-08
H2	7.8891E-01	5.4881E-01	4.5901E-01
H-	1.1812E-13	1.0748E-10	4.6732E-10
H2+	1.5647E-12	4.6696E-10	1.6306E-09

P1 = 5.00E+02 N/SQ-M. US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4486E+02	1.3195E+03	1.8104E+03
T	1.0995E+01	1.4412E+01	1.5444E+01
RHO	1.0892E+01	6.2515E+01	7.4761E+01
H	2.4051E+01	4.2640E+01	4.9762E+01
A	3.3030E+00	4.2364E+00	4.5713E+00
S	1.3826E+00	1.4819E+00	1.5365E+00
Z	1.2297E+00	1.4646E+00	1.5679E+00
GAME	8.2030E-01	8.5031E-01	8.6296E-01
U	9.6667E+00	1.6869E+00	1.6482E+00

SPECIES	MOLE FRACTIONS		
E-	4.1145E-10	7.6046E-08	2.5547E-07
H	3.4666E-01	6.3441E-01	7.2445E-01
H+	3.9820E-10	7.3187E-08	2.4732E-07
H2	6.5334E-01	3.6559E-01	2.7555E-01
H-	1.7417E-12	1.4584E-09	5.6419E-09
H2+	1.4990E-11	4.3172E-09	1.3790E-08

P1 = 5.00E+02 N/SQ-M. US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2408E+02	1.0422E+03	1.4430E+03
T	1.0557E+01	1.3610E+01	1.4517E+01
RHO	1.0123E+01	5.5723E+01	6.7838E+01
H	2.0849E+01	3.6586E+01	4.2829E+01
A	3.1687E+00	3.9684E+00	4.2555E+00
S	1.3432E+00	1.4277E+00	1.4778E+00
Z	1.1414E+00	1.3743E+00	1.4653E+00
GAME	8.1892E-01	8.4197E-01	8.5133E-01
U	8.9065E+00	1.6200E+00	1.5608E+00

SPECIES	MOLE FRACTIONS		
E-	1.4110E-10	2.5161E-08	8.3765E-08
H	2.7796E-01	5.4472E-01	6.3512E-01
H+	1.3629E-10	2.4078E-08	8.0541E-08
H2	7.2204E-01	4.5528E-01	3.6488E-01
H-	5.0659E-13	4.2568E-10	1.7025E-09
H2+	5.3193E-12	1.5089E-09	4.9271E-09

P1 = 5.00E+02 N/SQ-M. US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6715E+02	1.6287E+03	2.2259E+03
T	1.1415E+01	1.5264E+01	1.6516E+01
RHO	1.1599E+01	6.8358E+01	8.0342E+01
H	2.7489E+01	4.912?E+01	5.7308E+01
A	3.4430E+00	4.5291E+00	4.9364E+00
S	1.4239E+00	1.5376E+00	1.5972E+00
Z	1.2625E+00	1.5610E+00	1.6775E+00
GAME	8.2252E-01	8.6092E-01	8.7955E-01
U	1.0421E+01	1.7708E+00	1.7631E+00

SPECIES	MOLE FRACTIONS		
E-	1.0633E-09	2.1540E-07	7.9425E-07
H	4.1586E-01	7.1873E-01	8.0775E-01
H+	1.0313E-09	2.0857E-07	7.7472E-07
H2	5.8414E-01	2.8127E-01	1.9225E-01
H-	5.1518E-12	4.4771E-09	1.8008E-08
H2+	3.7176E-11	1.1308E-08	3.7545E-08

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9097E+02	1.9664E+03	2.6885E+03
T	1.1827E+01	1.6218E+01	1.7878E+01
RHO	1.2234E+01	7.2946E+01	8.3996E+01
U	3.1161E+01	5.6036E+01	6.5485E+01
A	3.5894E+00	4.8578E+00	5.3887E+00
S	1.4670E+00	1.5945E+00	1.6589E+00
Z	1.3197E+00	1.6621E+00	1.7904E+00
GAME	8.2541E-01	8.7541E-01	9.0723E-01
U	1.1170E+01	1.8760E+00	1.9039E+00

SPECIES	MOLE FRACTIONS		
E-	2.5235E-09	6.1390E-07	2.7985E-06
H	4.8457E-01	7.9670E-01	8.8290E-01
H+	2.4533E-09	5.9852E-07	2.7519E-06
H2	5.1543E-01	2.0330E-01	1.1709E-01
H-	1.3626E-11	1.3099E-08	6.0057E-08
H2+	8.3835E-11	2.8482E-08	1.0668E-07

P1 = 5.00E+02 N/SQ-M. US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4311E+02	2.6998E+03	3.8141E+03
T	1.2654E+01	1.8918E+01	2.4377E+01
RHO	1.3281E+01	7.6555E+01	7.9198E+01
U	3.9211E+01	7.1073E+01	8.5276E+01
A	3.9053E+00	5.7528E+00	7.2803E+00
S	1.5577E+00	1.7078E+00	1.7849E+00
Z	1.4466E+00	1.8642E+00	1.9756E+00
GAME	8.3319E-01	9.3842E-01	1.1006E+00
U	1.2654E+01	2.1980E+00	2.5444E+00

SPECIES	MOLE FRACTIONS		
E-	1.1661E-08	6.8739E-06	1.8341E-04
H	4.1743E-01	9.2713E-01	9.8708E-01
H+	1.1389E-08	6.7981E-06	1.8302E-04
H2	5.8257E-01	7.2857E-02	1.2552E-02
H-	7.3535E-11	1.2352E-07	1.8650E-06
H2+	3.4583E-10	1.9930E-07	2.2558E-06

P1 = 5.00E+02 N/SQ-M. US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1629E+02	2.3270E+03	3.2078E+03
T	1.2238E+01	1.7366E+01	1.9986E+01
RHO	1.2796E+01	7.5907E+01	8.4514E+01
U	3.5069E+01	6.3362E+01	7.4563E+01
A	3.7431E+00	5.2457E+00	6.0614E+00
S	1.5114E+00	1.6516E+00	1.7215E+00
Z	1.3812E+00	1.7652E+00	1.8991E+00
GAME	8.2895E-01	8.9761E-01	9.6798E-01
U	1.1914E+01	2.0112E+00	2.1214E+00

SPECIES	MOLE FRACTIONS		
E-	5.5566E-09	1.8658E-06	1.4315E-05
H	5.5197E-01	8.6730E-01	9.4685E-01
H+	5.4143E-09	1.8320E-06	1.4193E-05
H2	4.4803E-01	1.3300E-01	5.3118E-02
H-	3.2725E-11	3.8387E-08	2.5081E-07
H2+	1.7533E-10	7.2152E-08	3.7247E-07

P1 = 5.00E+02 N/SQ-M. US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7141E+02	3.0634E+03	4.5127E+03
T	1.3086E+01	2.1383E+01	3.1540E+01
RHO	1.3683E+01	7.3695E+01	7.1530E+01
U	4.3589E+01	7.9098E+01	9.7787E+01
A	4.0777E+00	6.5241E+00	8.3035E+00
S	1.6051E+00	1.7614E+00	1.8420E+00
Z	1.5157E+00	1.9440E+00	2.3003E+00
GAME	8.3920E-01	1.0240E+00	1.0929E+00
U	1.3389E+01	2.4883E+00	3.1704E+00

SPECIES	MOLE FRACTIONS		
E-	2.3895E-08	3.8098E-05	2.7018E-03
H	6.8053E-01	9.7107E-01	9.9203E-01
H+	2.3384E-08	3.7915E-05	2.7003E-03
H2	3.1950E-01	2.8854E-02	2.5413E-03
H-	1.5809E-10	5.0184E-07	1.3084E-05
H2+	6.5842E-10	6.8470E-07	1.4529E-05

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 2.00E+04 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0115E+02	3.3886E+03	5.2002E+03
T	1.3747E+01	2.5413E+01	3.7484E+01
RHO	1.3997E+01	6.7196E+01	6.8635E+01
H	4.8701E+01	8.7322E+01	1.1004E+02
A	4.2633E+00	7.5196E+00	8.7092E+00
S	1.6536E+00	1.8093E+00	1.8859E+00
Z	1.7883E+00	1.9844E+00	2.0212E+00
GAMF	8.4464E-01	1.1213E+00	1.0011E+00
U	1.4119E+01	2.9426E+00	3.6146E+00

SPECIES	MOLE FRACTIONS		
E-	4.8819E-08	3.1886E-04	1.1622E-02
N	7.4077E-01	9.9117E-01	9.7562E-01
N+	4.7924E-08	3.1842E-04	1.1616E-02
N2	2.5923E-01	8.1903E-03	1.0691E-03
N-	3.3210E-10	2.4824E-06	3.5782E-05
N2+	1.2276E-09	2.9249E-06	4.1034E-05

P1 = 5.00E+02 N/SQ-M. US1 = 2.20E+04 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6480E+02	3.9871E+03	6.4794E+03
T	1.4643E+01	3.4932E+01	4.5166E+01
RHO	1.4311E+01	5.4723E+01	6.8759E+01
H	5.8124E+01	1.0463E+02	1.3388E+02
A	4.6948E+00	8.5147E+00	9.3248E+00
S	1.7527E+00	1.9871E+00	1.9574E+00
Z	1.7411E+00	2.0122E+00	2.0863E+00
GAMF	8.6469E-01	1.0314E+00	9.2274E-01
U	1.5557E+01	3.9186E+00	4.0890E+00

SPECIES	MOLE FRACTIONS		
E-	2.2309E-07	7.3094E-03	4.1964E-02
N	8.5132E-01	9.8412E-01	9.1543E-01
N+	2.2027E-07	7.3067E-03	4.1942E-02
N2	1.4868E-01	1.2192E-03	4.7735E-04
N-	1.4819E-09	2.1975E-05	8.2960E-05
N2+	4.2990E-09	2.4689E-05	1.0480E-04

P1 = 5.00E+02 N/SQ-M. US1 = 2.10E+04 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3233E+02	3.6834E+03	5.8574E+03
T	1.4054E+01	3.0326E+01	4.1798E+01
RHO	1.4212E+01	6.0767E+01	6.8331E+01
H	5.3047E+01	9.5761E+01	1.2196E+02
A	4.4658E+00	8.1432E+00	9.0213E+00
S	1.7029E+00	1.8506E+00	1.9230E+00
Z	1.6637E+00	1.9998E+00	2.0508E+00
GAMF	8.5296E-01	1.1048E+00	9.4941E-01
U	1.4842E+01	3.4774E+00	3.8951E+00

SPECIES	MOLE FRACTIONS		
E-	1.0170E-07	2.0408E-03	2.5512E-02
N	9.9784E-01	9.9325E-01	9.4819E-01
N+	1.0012E-07	2.0398E-03	2.5500E-02
N2	2.0214E-01	2.6528E-03	6.6139E-04
N-	6.9413E-10	9.2440E-06	6.0425E-05
N2+	2.2777E-09	1.0284E-05	7.2821E-05

P1 = 5.00E+02 N/SQ-M. US1 = 2.30E+04 M/SEC
XM2 = 1.00 XMF = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.9951E+02	4.2909E+03	7.3389E+03
T	1.5367E+01	3.8776E+01	4.7950E+01
RHO	1.4259E+01	5.4446E+01	6.9059E+01
H	6.3435E+01	1.1397E+02	1.4589E+02
A	4.9693E+00	8.7586E+00	9.6189E+00
S	1.8327E+00	1.9213E+00	1.9909E+00
Z	1.8198E+00	2.0325E+00	2.1257E+00
GAMF	8.9351E-01	9.7336E-01	9.0776E-01
U	1.6253E+01	4.2497E+00	4.2289E+00

SPECIES	MOLE FRACTIONS		
E-	5.4797E-07	1.6776E-02	5.9621E-02
N	9.0039E-01	9.6555E-01	8.8018E-01
N+	5.4278E-07	1.6770E-02	5.9588E-02
N2	9.9604E-02	7.2661E-04	3.6938E-04
N-	3.3825E-09	3.7765E-05	1.3230E-04
N2+	8.5716E-09	4.3899E-05	1.3444E-04

TABLE I.- Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3319E+02	4.5620E+03	7.4776E+03
T	1.6369E+01	4.1928E+01	5.0318E+01
RHO	1.3979E+01	5.2839E+01	6.8556E+01
H	6.8969E+01	1.2375E+02	1.5799E+02
A	5.3370E+03	9.0013E+03	9.8999E+03
S	1.8520E+00	1.9543E+00	2.0246E+00
Z	1.8930E+00	2.0594E+00	2.1677E+00
GAME	9.1919E-01	9.3836E-01	8.9854E-01
U	1.6941E+01	4.4704E+00	4.3358E+00

SPECIES	MOLE FRACTIONS		
E-	1.6559E-06	2.9519E-02	7.7811E-02
H	9.4350E-01	9.4035E-01	8.4385E-01
H+	1.6456E-06	2.9508E-02	7.7768E-02
H2	5.6501E-02	5.0193E-04	2.9470E-04
H-	8.9581E-09	5.3415E-05	1.1662E-04
H2+	1.9205E-08	4.4504E-05	1.5962E-04

P1 = 5.00E+02 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0242E+02	4.6546E+03	7.4788E+03
T	2.0776E+01	4.6549E+01	5.3829E+01
RHO	1.2168E+01	4.7021E+01	6.1598E+01
H	8.0639E+01	1.4366E+02	1.8138E+02
A	6.7911E+03	9.4593E+03	1.0385E+01
S	1.9426E+00	2.0251E+00	2.0973E+00
Z	1.9874E+00	2.1266E+00	2.2555E+00
GAME	1.1170E+00	9.3390E-01	8.8829E-01
U	1.8143E+01	4.6896E+00	4.4608E+00

SPECIES	MOLE FRACTIONS		
E-	4.3935E-06	5.9899E-02	1.1366E-01
H	9.9347E-01	8.7978E-01	7.7224E-01
H+	4.3869E-06	5.9877E-02	1.1360E-01
H2	6.4061E-03	2.7730E-04	1.8800E-04
H-	1.5805E-07	7.4341E-05	1.2642E-04
H2+	2.2428E-07	9.5900E-05	1.8331E-04

P1 = 5.00E+02 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6816E+02	4.7104E+03	7.6660E+03
T	1.7989E+01	4.4505E+01	5.2292E+01
RHO	1.3316E+01	5.0404E+01	6.6293E+01
H	7.4713E+01	1.3374E+02	1.6996E+02
A	5.9254E+03	9.2396E+00	1.0159E+01
S	1.8993E+00	1.9886E+00	2.0598E+00
Z	1.9543E+00	2.0915E+00	2.2114E+00
GAME	9.9869E-01	9.1714E-01	8.9250E-01
U	1.7579E+01	4.6172E+00	4.4140E+00

SPECIES	MOLE FRACTIONS		
E-	7.7359E-06	4.4208E-02	9.5999E-02
H	9.7661E-01	9.1108E-01	8.0751E-01
H+	7.7116E-06	4.4191E-02	9.5947E-02
H2	2.3378E-02	3.6726E-04	2.3653E-04
H-	3.1162E-08	6.6254E-05	1.2522E-04
H2+	5.5449E-08	8.2933E-05	1.7701E-04

P1 = 5.00E+02 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3645E+02	4.5270E+03	7.1595E+03
T	2.4483E+01	4.8254E+01	5.5106E+01
RHO	1.0949E+01	4.3353E+01	5.6482E+01
H	8.6748E+01	1.5361E+02	1.9255E+02
A	7.4812E+03	9.6682E+00	1.0593E+01
S	1.9802E+00	2.0619E+00	2.1352E+00
Z	1.9976E+00	2.1440E+00	2.3002E+00
GAME	1.1444E+00	8.9517E-01	8.8533E-01
U	1.8657E+01	4.7099E+00	4.4911E+00

SPECIES	MOLE FRACTIONS		
E-	5.1710E-04	7.6098E-02	1.3085E-01
H	9.9722E-01	8.4743E-01	7.3791E-01
H+	5.1715E-04	7.6072E-02	1.3079E-01
H2	1.7428E-03	2.1437E-04	1.4983E-04
H-	7.3557E-07	7.9034E-05	1.2376E-04
H2+	8.8865E-07	1.0469E-04	1.8334E-04

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7190E+02	4.4811E+03	6.9982E+03
T	2.8238E+01	4.9832E+01	5.6386E+01
RHO	1.0108E+01	4.0807E+01	5.2888E+01
H	9.3079E+01	1.6392E+02	2.0420E+02
A	7.8421E+00	9.8823E+00	1.0812E+01
S	2.0131E+00	2.0970E+00	2.1716E+00
Z	2.0037E+00	2.2036E+00	2.3467E+00
GAME	1.0869E+00	8.8934E-01	8.8340E-01
U	1.9182E+01	4.7595E+00	4.5268E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	2.4955E-03	9.2696E-02	1.4805E-01
H	9.9435E-01	8.1427E-01	7.0354E-01
H+	2.4952E-03	9.2666E-02	1.4799E-01
H2	6.5806E-04	1.7118E-04	1.2175E-04
H-	2.2543E-06	8.2814E-05	1.2152E-04
H2+	2.5424E-06	1.1249E-04	1.8393E-04

P1 = 5.00F+02 N/SQ-M. US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.5082E+02	4.7960E+03	7.3318E+03
T	3.4208E+01	5.3068E+01	5.9326E+01
RHO	9.3728E+00	3.9429E+01	5.0466E+01
H	1.0654E+02	1.8690F+02	2.3056E+02
A	8.1645E+00	1.0364E+01	1.1319E+01
S	2.0699E+00	2.1621E+00	2.2401E+00
Z	2.0298E+00	2.2921E+00	2.4489E+00
GAME	9.6000E-01	8.8300E-01	8.8193E-01
U	2.0378E+01	4.8536E+00	4.6432E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	1.4919E-02	1.2768E-01	1.8359E-01
H	9.6993E-01	7.4434E-01	6.3249E-01
H+	1.4918E-02	1.2764E-01	1.8352E-01
H2	2.1740E-04	1.1852E-04	8.4823E-05
H-	7.7396E-06	9.1745E-05	1.2114E-04
H2+	8.6607E-06	1.3139E-04	1.9268E-04

P1 = 5.00F+02 N/SQ-M. US1 = 2.90F+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1018E+02	4.5841E+03	7.0723E+03
T	3.1527E+01	5.1446E+01	5.7802E+01
RHO	9.6103E+00	3.9662E+01	5.1055E+01
H	9.9678E+01	1.7509E+02	2.1692E+02
A	8.0191E+00	1.0116E+01	1.1055E+01
S	2.0426E+00	2.1303E+00	2.2066E+00
Z	2.0140E+00	2.2467E+00	2.3965E+00
GAME	1.0129E+00	8.8546E-01	8.8232E-01
U	1.9762E+01	4.7943E+00	4.5773E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	7.2912E-03	1.1005E-01	1.6574E-01
H	9.8507E-01	7.7958E-01	6.6817E-01
H+	7.2907E-03	1.1002E-01	1.6568E-01
H2	3.3965E-04	1.4082E-04	1.0086E-04
H-	4.7477E-06	8.7191E-05	1.2087E-04
H2+	5.2744E-06	1.2158E-04	1.8736E-04

P1 = 5.00E+02 N/SQ-M. US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.3950E+02	5.4571E+03	8.2175E+03
T	3.8359E+01	5.6370E+01	6.2623E+01
RHO	9.2907E+00	4.0495E+01	5.1220E+01
H	1.2105E+02	2.1267E+02	2.6059E+02
A	8.4963E+00	1.0895E+01	1.1901E+01
S	2.1219E+00	2.2240E+00	2.3063E+00
Z	2.0750E+00	2.3906E+00	2.5619E+00
GAME	9.0692E-01	8.8081E-01	8.8281E-01
U	2.1711E+01	4.9817E+00	4.8071E+00

SPECIES	---------- MOLE FRACTIONS ----------		
E-	3.6283E-02	1.6363E-01	2.1960E-01
H	9.2728E-01	6.7245E-01	5.6049E-01
H+	3.6281E-02	1.6358E-01	2.1952E-01
H2	1.2191E-04	8.6827E-05	6.0821E-05
H-	1.4032E-05	1.0019E-04	1.2145E-04
H2+	1.6205E-05	1.5162E-04	2.0422E-04

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M, US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.3628E+02	6.3097E+03	9.4033E+03
T	4.1576E+01	5.9667E+01	6.6120E+01
RHO	9.4314E+00	4.2351E+01	5.3000E+01
H	1.3657E+02	2.4072E+02	2.9359E+02
A	8.8603E+00	1.1457E+01	1.2534E+01
S	2.1728E+00	2.2854E+00	2.3726E+00
Z	2.1326E+00	2.4969E+00	2.6933E+00
GAME	8.8532E-01	8.8097E-01	8.8561E-01
U	2.3112E+01	5.1508E+00	5.0007E+00

SPECIES	MOLE FRACTIONS		
E-	6.2303E-02	1.9925E-01	2.5491E-01
H	8.7527E-01	6.3122E-01	4.8990E-01
H+	6.2299E-02	1.9919E-01	2.5481E-01
H2	9.2527E-05	6.4531E-05	4.3296E-05
H-	1.9782E-05	1.0564E-04	1.1864E-04
H2+	2.3791E-05	1.6901E-04	2.1152E-04

P1 = 5.00E+02 N/SQ-M, US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0536E+03	8.4251E+03	1.2398E+04
T	4.6625E+01	6.6324E+01	7.3732E+01
RHO	9.9304E+00	4.6581E+01	5.7098E+01
H	1.7054E+02	3.0277E+02	3.6740E+02
A	9.5997E+00	1.2659E+01	1.3954E+01
S	2.2735E+00	2.4091E+00	2.5068E+00
Z	2.2691E+00	2.7270E+00	2.9449E+00
GAME	8.7106E-01	8.8604E-01	8.9680E-01
U	2.5985E+01	5.5427E+00	5.4700E+00

SPECIES	MOLE FRACTIONS		
E-	1.1868E-01	2.6682E-01	3.2107E-01
H	7.6254E-01	4.6612E-01	3.5763E-01
H+	1.1867E-01	2.6674E-01	3.2097E-01
H2	4.6690E-05	3.4708E-05	1.9964E-05
H-	2.8669E-05	1.0482E-04	1.0068E-04
H2+	3.7036E-05	1.8753E-04	2.0320E-04

P1 = 5.00E+02 N/SQ-M, US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.4041E+02	7.3152E+03	1.0919E+04
T	4.4254E+01	6.2985E+01	6.9819E+01
RHO	9.6689E+00	4.4504E+01	5.5115E+01
H	1.5309E+02	2.7088E+02	3.2933E+02
A	9.2284E+00	1.2046E+01	1.3218E+01
S	2.2230E+00	2.3472E+00	2.4394E+00
Z	2.1979E+00	2.6097E+00	2.8116E+00
GAME	8.7563E-01	8.8279E-01	8.9007E-01
U	2.4549E+01	5.3385E+00	5.2215E+00

SPECIES	MOLE FRACTIONS		
E-	9.3133E-02	2.3386E-01	2.8891E-01
H	8.1948E-01	5.3202E-01	4.2192E-01
H+	9.0097E-02	2.3378E-01	2.8881E-01
H2	6.0898E-05	4.7730E-05	3.0014E-05
H-	2.4694E-05	1.0731E-04	1.1173E-04
H2+	3.0797E-05	1.8156E-04	2.1173E-04

P1 = 5.00E+02 N/SQ-M, US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1671E+03	9.6306E+03	1.4145E+04
T	4.8804E+01	6.9751E+01	7.8011E+01
RHO	1.0195E+01	4.8471E+01	5.8802E+01
H	1.8895E+02	3.3642E+02	4.0823E+02
A	9.9746E+00	1.3304E+01	1.4767E+01
S	2.3244E+00	2.4716E+00	2.5751E+00
Z	2.3455E+00	2.8485E+00	3.0835E+00
GAME	8.6915E-01	8.9083E-01	9.0653E-01
U	2.7425E+01	5.7747E+00	5.7723E+00

SPECIES	MOLE FRACTIONS		
E-	1.4739E-01	2.9809E-01	3.5157E-01
H	7.0511E-01	4.0361E-01	2.9667E-01
H+	1.4738E-01	2.9800E-01	3.5147E-01
H2	3.6474E-05	2.4539E-05	1.2465E-05
H-	3.1695E-05	9.8470E-05	8.6111E-05
H2+	4.2360E-05	1.8641E-04	1.8572E-04

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2903E+03	1.0934E+04	1.6038E+04
T	5.0862E+01	7.3352E+01	8.2763E+01
RHO	1.0454E+01	5.0125E+01	6.0108E+01
U	2.0831E+02	3.7196E+02	4.5128E+02
A	1.0355E+01	1.3992E+01	1.5671E+01
S	2.3760E+00	2.5345E+00	2.6431E+00
Z	2.4266E+00	2.9738E+00	3.2240E+00
GAME	8.6880E-01	8.9749E-01	9.2039E-01
U	2.8878E+01	6.0294E+00	6.0645E+00

SPECIES	MOLE FRACTIONS		
E-	1.7587E-01	3.2767E-01	3.7982E-01
H	6.4817E-01	3.4447E-01	2.4021E-01
H+	1.7586E-01	3.2758E-01	3.7973E-01
H2	2.8705E-05	1.6674E-05	7.1973E-06
H-	3.3786E-05	8.8810E-05	6.9414E-05
H2+	4.6674E-05	1.7817E-04	1.6052E-04

P1 = 5.00E+02 N/SQ-M. US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5544E+03	1.3732E+04	2.0316E+04
T	5.4770E+01	8.1355E+01	9.5222E+01
RHO	1.0912E+01	5.2254E+01	6.0783E+01
U	2.4987E+02	4.4789E+02	5.4745E+02
A	1.1138E+01	1.5541E+01	1.8018E+01
S	2.4812E+00	2.6602E+00	2.7812E+00
Z	2.6007E+00	3.2303E+00	3.5102E+00
GAME	8.7098E-01	9.1901E-01	9.7132E-01
U	3.1769E+01	6.6410E+00	6.9435E+00

SPECIES	MOLE FRACTIONS		
E-	2.3104E-01	3.8101E-01	4.3032E-01
H	5.3782E-01	2.3785E-01	1.3929E-01
H+	2.3103E-01	3.8093E-01	4.3026E-01
H2	1.7700E-05	6.5113E-06	1.5729E-06
H-	3.5246E-05	6.2735E-05	3.4614E-05
H2+	5.1939E-05	1.4219E-04	9.3203E-05

P1 = 5.00E+02 N/SQ-M. US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4193E+03	1.2305E+04	1.8101E+04
T	5.2839E+01	7.7190E+01	8.8366E+01
RHO	1.0594E+01	5.1405E+01	6.0817E+01
U	2.2862E+02	4.0911E+02	4.9778E+02
A	1.0742E+01	1.4731E+01	1.6734E+01
S	2.4283E+00	2.5974E+00	2.7123E+00
Z	2.5117E+00	3.1315E+00	3.3581E+00
GAME	8.6950E-01	9.0659E-01	9.4089E-01
U	3.0325E+01	6.3154E+00	6.4682E+00

SPECIES	MOLE FRACTIONS		
E-	2.0391E-01	3.5532E-01	4.0632E-01
H	5.9229E-01	2.8920E-01	1.8724E-01
H+	2.0379E-01	3.5523E-01	4.0625E-01
H2	2.2596E-05	1.0772E-05	3.6607E-06
H-	3.4953E-05	7.6577E-05	5.1558E-05
H2+	4.9830E-05	1.6339E-04	1.2853E-04

P1 = 5.00E+02 N/SQ-M. US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6953E+03	1.5199E+04	2.2708E+04
T	5.6681E+01	8.6034E+01	1.0416E+02
RHO	1.1104E+01	5.2600E+01	6.9820E+01
U	2.7206E+02	4.8821E+02	6.0115E+02
A	1.1545E+01	1.6447E+01	1.9641E+01
S	2.5348E+00	2.7224E+00	2.8497E+00
Z	2.6932E+00	3.3585E+00	3.6445E+00
GAME	8.7314E-01	9.3611E-01	1.0162E+00
U	3.3209E+01	7.0176E+00	7.5466E+00

SPECIES	MOLE FRACTIONS		
E-	2.5744E-01	4.0462E-01	4.5129E-01
H	4.8503E-01	1.9066E-01	9.7382E-02
H+	2.5743E-01	4.0455E-01	4.5122E-01
H2	1.3739E-05	3.6097E-06	5.3021E-07
H-	3.4723E-05	4.8387E-05	2.0459E-05
H2+	5.2836E-05	1.1703E-04	5.9021E-05

TABLE I.- Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8421E+03	1.6679E+04	2.5334E+04
T	5.8596E+01	9.1441E+01	1.1658E+02
RHO	1.1273E+01	5.2364E+01	5.7768E+01
U	2.9519E+02	5.2996E+02	6.6045E+02
A	1.1964E+01	1.7495E+01	2.1724E+01
S	2.5889E+00	2.7836E+00	2.9181E+00
Z	2.7888E+00	3.4834E+00	3.7617E+00
GAME	8.7595E-01	9.5978E-01	1.0761E+00
U	3.4641E+01	7.4634E+00	8.3902E+00

SPECIES	MOLE FRACTIONS		
E-	2.8291E-01	4.2593E-01	4.6836E-01
H	4.3410E-01	1.4804E-01	6.3267E-02
H+	2.8289E-01	4.2588E-01	4.6834E-01
H2	1.0524E-05	1.7885E-06	1.2983E-07
H-	3.3459E-05	3.4727E-05	1.0622E-05
H2+	5.2594E-05	9.9837E-05	3.1250E-05

P1 = 5.00E+02 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1530E+03	1.9544E+04	3.1246E+04
T	6.2540E+01	1.0578E+02	1.5472E+02
RHO	1.1519E+01	4.9873E+01	5.1766E+01
U	3.4426E+02	6.1716E+02	7.9722E+02
A	1.2852E+01	2.0134E+01	2.6542E+01
S	2.6988E+00	2.9006E+00	3.0452E+00
Z	2.9887E+00	3.7044E+00	3.9011E+00
GAME	8.8374E-01	1.0344E+00	1.1671E+00
U	3.7490E+01	8.6846E+00	1.0698E+01

SPECIES	MOLE FRACTIONS		
E-	3.3086E-01	4.6017E-01	4.8734E-01
H	3.3821E-01	7.9631E-02	2.5321E-02
H+	3.3084E-01	4.6014E-01	4.8733E-01
H2	5.9312E-06	2.7961E-07	4.2675E-09
H-	2.9950E-05	1.3905E-05	3.2253E-06
H2+	4.8794E-05	4.0432E-05	6.2490E-06

P1 = 5.00E+02 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9047E+03	1.8146E+04	2.8194E+04
T	6.0541E+01	9.7901E+01	1.3346E+02
RHO	1.1411E+01	5.1474E+01	5.4886E+01
U	3.1926E+02	5.7305E+02	7.2597E+02
A	1.2399E+01	1.8703E+01	2.4121E+01
S	2.6437E+00	2.8433E+00	2.9837E+00
Z	2.8875E+00	3.6008E+00	3.8475E+00
GAME	8.7945E-01	9.9229E-01	1.1330E+00
U	3.6070E+01	8.0011E+00	9.4444E+00

SPECIES	MOLE FRACTIONS		
E-	3.0741E-01	4.4463E-01	4.8019E-01
H	3.8511E-01	1.1070E-01	3.9607E-02
H+	3.0739E-01	4.4459E-01	4.8018E-01
H2	7.9209E-06	7.6782E-07	2.4098E-08
H-	3.1536E-05	2.2918E-05	5.4638E-06
H2+	5.1215E-05	5.3266E-05	1.4267E-05

P1 = 5.00E+02 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3167E+03	2.0985E+04	3.4468E+04
T	6.4624E+01	1.1556E+02	1.7898E+02
RHO	1.1594E+01	4.7691E+01	4.8973E+01
U	3.7019E+02	6.6236E+02	8.7360E+02
A	1.3329E+01	2.1773E+01	2.8837E+01
S	2.7543E+00	2.9551E+00	3.1009E+00
Z	3.0921E+00	3.7896E+00	3.9324E+00
GAME	8.8903E-01	1.0826E+00	1.1816E+00
U	3.8903E+01	9.4564E+00	1.2084E+01

SPECIES	MOLE FRACTIONS		
E-	3.5324E-01	4.7226E-01	4.9140E-01
H	2.9347E-01	5.5455E-02	1.7190E-02
H+	3.5322E-01	4.7225E-01	4.9140E-01
H2	4.1743E-06	8.6093E-08	8.8485E-10
H-	2.6103E-05	7.9464E-06	2.2057E-06
H2+	4.5436E-05	2.3425E-05	2.9396E-06

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4959E+03	2.2108E+04	3.7677E+04
T	6.6830E+01	1.2713E+02	2.0473E+02
RHO	1.1635E+01	4.5150E+01	4.6580E+01
H	3.9705E+02	7.0828E+02	9.5154E+02
A	1.3833E+01	2.3474E+01	3.0988E+01
S	2.8100E+00	3.0056E+00	3.1503E+00
Z	3.1972E+00	3.8516E+00	3.9509E+00
GAME	8.9558E-01	1.1254E+00	1.1872E+00
U	4.0306E+01	1.0375E+01	1.3373E+01

SPECIES	MOLE FRACTIONS		
E-	3.7449E-01	4.8074E-01	4.9379E-01
H	2.5096E-01	3.8505E-02	1.2413E-02
H+	3.7448E-01	4.8073E-01	4.9379E-01
H2	2.8844E-06	2.4311E-08	2.3313E-10
H-	2.2810E-05	4.6124E-06	1.6283E-06
H2+	4.1162E-05	1.2817E-05	1.5456E-06

P1 = 5.00E+02 N/SQ-M. US1 = 6.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8396E+03	2.4141E+04	4.4117E+04
T	7.1828E+01	1.5516E+02	2.6068E+02
RHO	1.1595E+01	3.9659E+01	4.2616E+01
H	4.5354E+02	8.0179E+02	1.1178E+03
A	1.4965E+01	2.6717E+01	3.5108E+01
S	2.9213E+00	3.0984E+00	3.2375E+00
Z	3.4094E+00	3.9231E+00	3.9712E+00
GAME	9.1450E-01	1.1727E+00	1.1906E+00
U	4.3072E+01	1.2563E+01	1.6046E+01

SPECIES	MOLE FRACTIONS		
E-	4.1343E-01	4.9020E-01	4.9638E-01
H	1.7312E-01	1.9592E-02	7.2421E-03
H+	4.1341E-01	4.9020E-01	4.9638E-01
H2	1.1879E-06	1.9393E-09	2.6963E-11
H-	1.5683E-05	1.9346E-06	9.4433E-07
H2+	3.0713E-05	3.7227E-06	5.4694E-07

P1 = 5.00E+02 N/SQ-M. US1 = 6.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6603E+03	2.3199E+04	4.0965E+04
T	6.9209E+01	1.4058E+02	2.3215E+02
RHO	1.1637E+01	4.2371E+01	4.4527E+01
H	4.2484E+02	7.5490E+02	1.0343E+03
A	1.4375E+01	2.5153E+01	3.3081E+01
S	2.8657E+00	3.0537E+00	3.1956E+00
Z	3.3033E+00	3.8947E+00	3.9630E+00
GAME	9.0384E-01	1.1556E+00	1.1895E+00
U	4.1695E+01	1.1419E+01	1.4773E+01

SPECIES	MOLE FRACTIONS		
E-	3.9458E-01	4.8649E-01	4.9533E-01
H	2.1080E-01	2.7014E-02	9.3374E-03
H+	3.9456E-01	4.8649E-01	4.9533E-01
H2	1.9055E-06	6.6266E-09	7.3459E-11
H-	1.9291E-05	2.8509E-06	1.2351E-06
H2+	3.6209E-05	4.8133E-06	8.8689E-07

P1 = 5.00E+02 N/SQ-M. US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0234E+03	2.4956E+04	4.7138E+04
T	7.4783E+01	1.7032E+02	2.8964E+02
RHO	1.1504E+01	3.7172E+01	4.0922E+01
H	4.8315E+02	8.4944E+02	1.2038E+03
A	1.5623E+01	2.8164E+01	3.7041E+01
S	2.9764E+00	3.1394E+00	3.2755E+00
Z	3.5143E+00	3.9418E+00	3.9770E+00
GAME	9.2864E-01	1.1815E+00	1.1911E+00
U	4.4428E+01	1.3732E+01	1.7313E+01

SPECIES	MOLE FRACTIONS		
E-	4.3092E-01	4.9262E-01	4.9711E-01
H	1.3814E-01	1.4753E-02	5.7819E-03
H+	4.3091E-01	4.9262E-01	4.9711E-01
H2	6.8627E-07	6.3790E-10	1.1407E-11
H-	1.2133E-05	1.4137E-06	7.3067E-07
H2+	2.4906E-05	2.1456E-06	3.6105E-07

TABLE I. - Continued

$p_1 = 500\ N/m^2$

P1 = 5.00E+02 N/SQ-M. US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2112E+03	2.5646E+04	4.9962E+04
T	7.8235E+01	1.8596E+02	3.1929E+02
RHO	1.1352E+01	3.4872E+01	3.9304E+01
H	5.1365E+02	8.9791E+02	1.2929E+03
A	1.6375E+01	2.9534E+01	3.8917E+01
S	3.0309E+00	3.1778E+00	3.3112E+00
Z	3.6158E+00	3.9548E+00	3.9813E+00
GAMF	9.4796E-01	1.1841E+00	1.1914E+00
U	4.5758E+01	1.4865E+01	1.8619E+01

SPECIES	MOLE FRACTIONS		
E-	4.4689E-01	4.9428E-01	4.9765E-01
H	1.0621E-01	1.1433E-02	4.7008E-03
H+	4.4689E-01	4.9428E-01	4.9765E-01
H2	3.5841E-07	2.3283E-10	5.3144E-12
H-	8.8089E-06	1.0757E-06	5.6715E-07
H2+	1.9058E-05	1.2979E-06	2.4932E-07

P1 = 5.00E+02 N/SQ-M. US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5953E+03	2.6288E+04	5.4057E+04
T	8.7653E+01	2.1811E+02	3.7896E+02
RHO	1.0803E+01	3.0353E+01	3.5776E+01
H	5.7722E+02	9.9524E+02	1.4696E+03
A	1.8360E+01	3.2103E+01	4.2434E+01
S	3.1369E+00	3.2510E+00	3.3782E+00
Z	3.7965E+00	3.9713E+00	3.9872E+00
GAMF	1.0129E+00	1.1899E+00	1.1917E+00
U	4.8302E+01	1.7194E+01	2.0870E+01

SPECIES	MOLE FRACTIONS		
E-	4.7321E-01	4.9638E-01	4.9839E-01
H	5.3581E-02	7.2319E-03	3.2158E-03
H+	4.7320E-01	4.9638E-01	4.9839E-01
H2	6.1850E-08	3.9150E-11	1.4100E-12
H-	3.5151E-06	6.4101E-07	3.3887E-07
H2+	8.6837E-06	5.2574E-07	1.2940E-07

P1 = 5.00E+02 N/SQ-M. US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.4021E+03	2.6098E+04	5.2333E+04
T	8.2388E+01	2.0211E+02	3.4951E+02
RHO	1.1129E+01	3.2573E+01	3.7578E+01
H	5.4502E+02	9.4644E+02	1.3814E+03
A	1.7264E+01	3.0859E+01	4.0737E+01
S	3.0841E+00	3.2153E+00	3.3457E+00
Z	3.7108E+00	3.9643E+00	3.9846E+00
GAME	9.7492E-01	1.1885E+00	1.1916E+00
U	4.7054E+01	1.6049E+01	1.9789E+01

SPECIES	MOLE FRACTIONS		
E-	4.6105E-01	4.9550E-01	4.9807E-01
H	7.7887E-02	9.0043E-03	3.8617E-03
H+	4.6104E-01	4.9550E-01	4.9807E-01
H2	1.6374E-07	9.1324E-11	2.6423E-12
H-	5.8896E-06	8.2704E-07	4.3788E-07
H2+	1.3550E-05	8.0976E-07	1.7696E-07

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3615E+01
T	2.7143E+00	3.3569E+00	4.7161E+00
RHO	3.9200E+00	6.5476E+00	1.1369E+01
H	2.7745E+00	3.4526E+00	4.9388E+00
A	1.6432E+00	1.8212E+00	2.1382E+00
S	1.0568E+00	1.0587E+00	1.0770E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8810E-01	9.6943E-01
U	2.2663E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	1.3642E-35	7.2341E-35	6.8693E-27
H	4.3596E-11	1.6288E-09	8.1080E-06
H+	8.2326E-35	3.1434E-35	4.8011E-27
H2	1.0000E+00	1.0000E+00	9.9999E-01
H-	6.4306E-43	8.6831E-41	2.2847E-32
H2+	1.6492E-34	3.8552E-35	2.0682E-27

P1 = 1.00E+03 N/SQ-M. US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4288E+01	7.6852E+01	1.5323E+02
T	4.8588E+00	6.7099E+00	8.3987E+00
RHO	4.9988E+00	1.1442E+01	1.8044E+01
H	5.0999E+00	7.3157E+00	9.9354E+00
A	2.1679E+00	2.4992E+00	2.7196E+00
S	1.1216E+00	1.1296E+00	1.1535E+00
Z	1.0000E+00	1.0010E+00	1.0111E+00
GAME	9.6726E-01	9.2992E-01	8.7097E-01
U	3.6514E+00	1.5915E+00	1.4016E+00

SPECIES	MOLE FRACTIONS		
E-	9.7447E-26	2.8598E-18	3.3133E-14
H	2.0915E-05	2.0272E-03	2.1941E-02
H+	8.9513E-26	2.4938E-18	2.9956E-14
H2	9.9998E-01	9.9797E-01	9.7806E-01
H-	6.5239E-30	9.1379E-22	8.4160E-17
H2+	7.9401E-27	3.6690E-19	3.2610E-15

P1 = 1.00E+03 N/SQ-M. US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4535E+01	9.7221E+01
T	3.7003E+00	4.9225E+00	6.6564E+00
RHO	4.5254E+00	9.0453E+00	1.4594E+01
H	3.8206E+00	5.1720E+00	7.2402E+00
A	1.9078E+00	2.1812E+00	2.4936E+00
S	1.0895E+00	1.0943E+00	1.1161E+00
Z	1.0000E+00	1.0000E+00	1.0008E+00
GAME	9.8360E-01	9.6647E-01	9.3342E-01
U	2.9621E+00	1.4791E+00	1.1323E+00

SPECIES	MOLE FRACTIONS		
E-	2.2093E-31	7.9276E-28	9.9326E-19
H	4.5630E-09	2.1253E-05	1.6120E-03
H+	1.6557E-31	6.3956E-25	9.6753E-19
H2	1.0000E+00	9.9998E-01	9.9839E-01
H-	5.5563E-37	1.1445E-29	2.3111E-21
H2+	5.5828E-32	1.5423E-25	2.8041E-20

P1 = 1.00E+03 N/SQ-M. US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3300E+01	1.2268E+02	2.2210E+02
T	6.1476E+00	8.3686E+00	9.6504E+00
RHO	5.4141E+00	1.4486E+01	2.2172E+01
H	6.6143E+00	9.9417E+00	1.2983E+01
A	2.4075E+00	2.7111E+00	2.9027E+00
S	1.1524E+00	1.1647E+00	1.1913E+00
Z	1.0034E+00	1.0119E+00	1.0381E+00
GAME	9.4239E-01	8.6795E-01	8.4111E-01
U	4.3413E+00	1.6206E+00	1.4350E+00

SPECIES	MOLE FRACTIONS		
E-	1.1336E-19	3.5030E-14	3.1130E-12
H	8.9801E-04	2.3543E-02	7.3321E-02
H+	1.0206E-19	3.1998E-14	3.0332E-12
H2	9.9910E-01	9.7646E-01	9.2668E-01
H-	2.0372E-23	7.9034E-17	1.7950E-14
H2+	1.1328E-20	3.1216E-15	2.9777E-13

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3978E+01	1.8882E+02	3.1331E+02
T	7.4113E+00	9.6334E+00	1.0661E+01
RHO	5.9055E+00	1.8838E+01	2.7235E+01
H	8.3740E+00	1.3101E+01	1.6520E+01
A	2.5775E+00	2.9001E+00	3.0945E+00
S	1.1822E+00	1.2016E+00	1.2317E+00
Z	1.0049E+00	1.0406E+00	1.0791E+00
GAME	8.9209E-01	8.3900E-01	8.3236E-01
U	5.0541E+00	1.5828E+00	1.4007E+00

SPECIES	MOLE FRACTIONS		
E-	4.5513E-16	3.3665E-12	5.9900E-11
H	9.6655E-03	7.9099E-02	1.4654E-01
H+	4.2136E-16	3.0979E-12	5.5255E-11
H2	9.9033E-01	9.2190E-01	8.5346E-01
H-	2.8239E-19	1.6209E-14	5.4187E-13
H2+	3.4055E-17	2.8493E-13	5.1878E-12

P1 = 1.00E+03 N/SQ-M. US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.0885E+01	4.1108E+02	6.1479E+02
T	9.2046E+00	1.1606E+01	1.2488E+01
RHO	7.3876E+00	3.1105E+01	4.1115E+01
H	1.2644E+01	2.1010E+01	2.5385E+01
A	2.8766E+00	3.3143E+00	3.5335E+00
S	1.2437E+00	1.2845E+00	1.3223E+00
Z	1.0424E+00	1.1387E+00	1.1973E+00
GAME	8.3268E-01	8.3120E-01	8.3503E-01
U	5.5746E+00	1.5647E+00	1.4353E+00

SPECIES	MOLE FRACTIONS		
E-	1.5964E-12	5.6143E-10	2.9095E-09
H	8.1294E-02	2.4345E-01	3.2956E-01
H+	1.5105E-12	5.2744E-10	2.7134E-09
H2	9.1871E-01	7.5635E-01	6.7044E-01
H-	4.0864E-15	7.2144E-12	5.2788E-11
H2+	8.9974E-14	4.6235E-11	2.4885E-10

P1 = 1.00E+03 N/SQ-M. US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6535E+01	2.8349E+02	4.4236E+02
T	8.4237E+00	1.0677E+01	1.1592E+01
RHO	6.5874E+00	2.4494E+01	3.3692E+01
H	1.0386E+01	1.6801E+01	2.0463E+01
A	2.7027E+00	3.1012E+00	3.3047E+00
S	1.2122E+00	1.2415E+00	1.2754E+00
Z	1.0189E+00	1.0839E+00	1.1327E+00
GAME	8.5109E-01	8.3105E-01	8.3177E-01
U	5.8051E+00	1.5599E+00	1.4116E+00

SPECIES	MOLE FRACTIONS		
E-	7.1206E-14	6.8903E-11	5.1120E-10
H	3.7076E-02	1.5478E-01	2.3426E-01
H+	6.6872E-14	6.3895E-11	4.7393E-10
H2	9.6292E-01	8.4522E-01	7.6574E-01
H-	1.3566E-16	5.9934E-13	6.8154E-12
H2+	4.4403E-15	5.6076E-12	4.4084E-11

P1 = 1.00E+03 N/SQ-M. US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.6933E+01	5.7436E+02	8.3342E+02
T	9.8450E+00	1.2483E+01	1.3376E+01
RHO	8.2273E+00	3.8235E+01	4.8963E+01
H	1.5141E+01	2.5708E+01	3.0690E+01
A	2.9534E+00	3.5410E+00	3.7825E+00
S	1.2770E+00	1.3307E+00	1.3727E+00
Z	1.0733E+00	1.2033E+00	1.2724E+00
GAME	8.2552E-01	8.3469E-01	8.4066E-01
U	7.3493E+00	1.5831E+00	1.4815E+00

SPECIES	MOLE FRACTIONS		
E-	1.2677E-11	3.0102E-09	1.2545E-08
H	1.3656E-01	3.3796E-01	4.2815E-01
H+	1.2037E-11	2.8142E-09	1.1772E-08
H2	8.6344E-01	6.6234E-01	5.7185E-01
H-	4.5363E-14	5.2390E-11	2.8900E-10
H2+	6.8544E-13	2.4837E-10	1.0617E-09

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0453E+02	7.7142E+02	1.0964E+03
T	1.0405E+01	1.3331E+01	1.4270E+01
RHO	9.0499E+00	4.5338E+01	5.6640E+01
H	1.7872E+01	3.0849E+01	3.6525E+01
A	3.0836E+00	3.7810E+00	4.0519E+00
S	1.3123E+00	1.3795E+00	1.4258E+00
Z	1.1102E+00	1.2764E+00	1.3566E+00
GAME	8.2314E-01	8.4019E-01	8.4814E-01
U	8.1148E+00	1.6229E+00	1.5419E+00

SPECIES	MOLE FRACTIONS		
E-	6.2609E-11	1.2130E-08	4.4622E-08
H	1.9955E-01	4.3304E-01	5.2568E-01
H+	5.9633E-11	1.1403E-08	4.2161E-08
H2	8.0145E-01	5.6696E-01	4.7432E-01
H-	2.9112E-13	2.6579E-10	1.2326E-09
H2+	3.2668E-12	9.9306E-10	3.6938E-09

P1 = 1.00E+03 N/SQ-M. US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4441E+02	1.2671E+03	1.7599E+03
T	1.1393E+01	1.5047E+01	1.6212E+01
RHO	1.0864E+01	5.8267E+01	7.0031E+01
H	2.4039E+01	4.2465E+01	4.9863E+01
A	3.3571E+00	4.3146E+00	4.6754E+00
S	1.3887E+00	1.4838E+00	1.5390E+00
Z	1.1996E+00	1.4452E+00	1.5501E+00
GAME	8.2459E-01	8.5607E-01	8.6986E-01
U	9.6368E+00	1.7501E+00	1.7120E+00

SPECIES	MOLE FRACTIONS		
E-	6.9656E-10	1.2388E-07	4.3295E-07
H	3.3292E-01	6.1614E-01	7.0979E-01
H+	6.6744E-10	1.1809E-07	4.1604E-07
H2	6.6718E-01	3.8386E-01	2.9021E-01
H-	4.7139E-12	3.6537E-09	1.4760E-08
H2+	3.3832E-11	9.4423E-09	3.1667E-08

P1 = 1.00E+03 N/SQ-M. US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2372E+02	1.0033E+03	1.4058E+03
T	1.0915E+01	1.4179E+01	1.5203E+01
RHO	9.8389E+00	5.2135E+01	6.3794E+01
H	2.0839E+01	3.6443E+01	4.2917E+01
A	3.2179E+00	4.0381E+00	4.3473E+00
S	1.3496E+00	1.4307E+00	1.4814E+00
Z	1.1525E+00	1.3574E+00	1.4495E+00
GAME	8.2317E-01	8.4729E-01	8.5762E-01
U	8.8809E+00	1.6779E+00	1.6180E+00

SPECIES	MOLE FRACTIONS		
E-	2.3035E-10	4.1026E-08	1.4311E-07
H	2.5440E-01	5.2454E-01	6.2020E-01
H+	2.2006E-10	3.8918E-08	1.3631E-07
H2	7.3543E-01	4.7346E-01	3.7980E-01
H-	1.3108E-12	1.0699E-09	4.5036E-09
H2+	1.1610E-11	3.2784E-09	1.1301E-08

P1 = 1.00E+03 N/SQ-M. US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6665E+02	1.5617E+03	2.1612E+03
T	1.1853E+01	1.5968E+01	1.7371E+01
RHO	1.1235E+01	6.3536E+01	7.5046E+01
H	2.7476E+01	4.8926E+01	5.7439E+01
A	3.5023E+00	4.6166E+00	5.0538E+00
S	1.4297E+00	1.5383E+00	1.5986E+00
Z	1.2514E+00	1.5393E+00	1.6578E+00
GAME	8.2695E-01	8.6711E-01	8.8692E-01
U	1.0399E+01	1.8397E+00	1.8342E+00

SPECIES	MOLE FRACTIONS		
E-	1.8372E-09	3.4908E-07	1.3201E-06
H	4.0182E-01	7.0073E-01	7.9361E-01
H+	1.7657E-09	3.3541E-07	1.2806E-06
H2	5.9818E-01	2.9927E-01	2.0639E-01
H-	1.4211E-11	1.1137E-08	4.6179E-08
H2+	8.5699E-11	2.4807E-08	8.5743E-08

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9340E+02	1.8830E+03	2.6077E+03
T	1.2302E+01	1.6988E+01	1.8816E+01
RHO	1.1836E+01	6.7663E+01	7.8346E+01
H	3.1147E+01	5.5911E+01	6.5647E+01
A	3.6541E+00	4.9536E+00	5.5154E+00
S	1.4722E+00	1.5938E+00	1.6590E+00
Z	1.3074E+00	1.4382E+00	1.7690E+00
GAME	8.3005E-01	8.8174E-01	9.1393E-01
U	1.1136E+01	1.9509E+00	1.9815E+00

SPECIES	MOLE FRACTIONS		
E-	4.3793E-09	9.6925E-07	4.4345E-06
H	4.7050E-01	7.7912E-01	8.6939E-01
H+	4.2216E-09	9.3916E-07	4.3442E-06
H2	5.2959E-01	2.2087E-01	1.3061E-01
H-	3.7743E-11	3.1846E-08	1.4750E-07
H2+	1.9546E-10	6.1929E-08	2.3788E-07

P1 = 1.00E+03 N/SQ-M. US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4240E+02	2.5800E+03	3.6794E+03
T	1.3203E+01	1.9752E+01	2.4921E+01
RHO	1.2818E+01	7.1090E+01	7.5293E+01
H	3.9195E+01	7.3791E+01	8.5238E+01
A	3.9817E+00	5.8377E+00	7.2574E+00
S	1.5619E+00	1.7047E+00	1.7819E+00
Z	1.4323E+00	1.8374E+00	1.9609E+00
GAME	8.3834E-01	9.3902E-01	1.0778E+00
U	1.2617E+01	2.2776E+00	2.5850E+00

SPECIES	MOLE FRACTIONS		
E-	2.0532E-08	9.3766E-06	1.7130E-04
H	6.0369E-01	9.1147E-01	9.7953E-01
H+	1.9916E-08	9.2429E-06	1.7071E-04
H2	3.9631E-01	8.8513E-02	2.0126E-02
H-	2.0619E-10	2.6635E-07	3.0741E-06
H2+	8.2248E-10	4.0004E-07	3.6583E-06

P1 = 1.00E+03 N/SQ-M. US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1566E+02	2.2256E+03	3.1062E+03
T	1.2749E+01	1.8192E+01	2.0935E+01
RHO	1.2365E+01	7.0341E+01	7.9041E+01
H	3.5056E+01	6.3109E+01	7.4718E+01
A	3.8135E+00	5.3454E+00	6.1649E+00
S	1.5163E+00	1.6496E+00	1.7201E+00
Z	1.3680E+00	1.7392E+00	1.8772E+00
GAME	8.3384E-01	9.0309E-01	9.6739E-01
U	1.1879E+01	2.0909E+00	2.1977E+00

SPECIES	MOLE FRACTIONS		
E-	9.7142E-09	2.8140E-06	1.9687E-05
H	5.3831E-01	8.5307E-01	9.3453E-01
H+	9.3949E-09	2.7503E-06	1.9472E-05
H2	4.6199E-01	1.4993E-01	6.5429E-02
H-	9.1293E-11	8.9713E-08	5.4967E-07
H2+	4.1256E-10	1.5332E-07	7.6487E-07

P1 = 1.00E+03 N/SQ-M. US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7061E+02	2.9294E+03	4.3365E+03
T	1.3673E+01	2.2057E+01	3.1663E+01
RHO	1.3191E+01	6.9134E+01	6.8667E+01
H	4.3572E+01	7.8802E+01	9.7476E+01
A	4.1405E+00	6.5328E+00	8.3546E+00
S	1.6084E+00	1.7575E+00	1.8389E+00
Z	1.5004E+00	1.9211E+00	1.9945E+00
GAME	8.4377E-01	1.0072E+00	1.1053E+00
U	1.3350E+01	2.5497E+00	3.1655E+00

SPECIES	MOLE FRACTIONS		
E-	4.2170E-08	4.1454E-05	2.0228E-03
H	6.6733E-01	9.5881E-01	9.9116E-01
H+	4.1039E-08	4.1168E-05	2.0207E-03
H2	3.3297E-01	4.1104E-02	4.7608E-03
H-	4.4400E-10	9.1577E-07	1.8560E-05
H2+	1.5749E-09	1.2043E-06	2.0600E-05

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0026E+02	3.2489E+03	5.0053E+03
T	1.4171E+01	2.5694E+01	3.8039E+01
RHO	1.3480E+01	6.4104E+01	6.5299E+01
H	4.8182E+01	8.7039E+01	1.0998E+02
A	4.3524E+00	7.4657E+00	8.8501E+00
S	1.6561E+00	1.8058E+00	1.8848E+00
Z	1.5719E+00	1.9723E+00	2.0151E+00
GAMF	8.5041E-01	1.0998E+00	1.0218E+00
U	1.4077E+01	2.9619E+00	3.6592E+00

SPECIES	MOLE FRACTIONS		
E-	8.5829E-08	2.6093E-04	9.4684E-03
H	7.2761E-01	9.8518E-01	9.7903E-01
H+	8.3816E-08	2.6029E-04	9.4604E-03
H2	2.7239E-01	1.4293E-02	1.9206E-03
H-	9.2828E-13	3.7195E-06	5.3676E-05
H2+	2.9408E-09	4.3507E-06	6.1866E-05

P1 = 1.00E+03 N/SQ-M. US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6371E+02	3.8146E+03	6.2448E+03
T	1.5340E+01	3.5181E+01	4.6520E+01
RHO	1.3765E+01	5.4033E+01	6.4681E+01
H	5.8104E+01	1.0426E+02	1.3415E+02
A	4.7965E+00	8.6277E+00	9.4987E+00
S	1.7535E+00	1.8855E+00	1.9580E+00
Z	1.7225E+00	2.0067E+00	2.0754E+00
GAME	8.7069E-01	1.0544E+00	9.3451E-01
U	1.5510E+01	3.9486E+00	4.1934E+00

SPECIES	MOLE FRACTIONS		
E-	3.8032E-07	5.6303E-03	3.7329E-02
H	9.3888E-01	9.8642E-01	9.2426E-01
H+	3.7416E-07	5.6263E-03	3.7291E-02
H2	1.6112E-01	2.2536E-03	8.2349E-04
H-	4.0242E-09	3.1706E-05	1.3086E-04
H2+	1.0177E-08	3.5659E-05	1.6962E-04

P1 = 1.00E+03 N/SQ-M. US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3132E+02	3.5333E+03	5.6417E+03
T	1.4717E+01	3.0431E+01	4.2792E+01
RHO	1.3674E+01	5.8251E+01	6.4555E+01
H	5.3027E+01	9.5469E+01	1.2207E+02
A	4.5617E+00	8.2188E+00	9.1845E+00
S	1.7046E+00	1.8482E+00	1.9230E+00
Z	1.6462E+00	1.9931E+00	2.0423E+00
GAMF	8.5895E-01	1.1136E+00	9.6523E-01
U	1.4793E+01	3.4801E+00	3.9722E+00

SPECIES	MOLE FRACTIONS		
E-	1.7693E-07	1.5251E-03	2.1985E-02
H	7.9504E-01	9.9196E-01	9.5469E-01
H+	1.7341E-07	1.5237E-03	2.1964E-02
H2	2.1496E-01	4.9445E-03	1.1564E-03
H-	1.9204E-09	1.3076E-05	9.3690E-05
H2+	5.4414E-09	1.4836E-05	1.1437E-04

P1 = 1.00E+03 N/SQ-M. US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.9734E+02	4.0987E+03	6.7902E+03
T	1.6095E+01	3.9318E+01	4.9609E+01
RHO	1.3720E+01	5.1484E+01	6.4792E+01
H	6.3411E+01	1.1352E+02	1.4625E+02
A	5.0725E+00	8.8985E+00	9.8019E+00
S	1.8025E+00	1.9203E+00	1.9918E+00
Z	1.7993E+00	2.0249E+00	2.1125E+00
GAMF	8.8950E-01	9.9464E-01	9.1677E-01
U	1.6211E+01	4.3082E+00	4.3473E+00

SPECIES	MOLE FRACTIONS		
E-	8.9335E-07	1.3601E-02	5.4110E-02
H	8.9844E-01	9.7138E-01	8.9082E-01
H+	8.7241E-07	1.3591E-02	5.4052E-02
H2	1.1156E-01	1.3088E-03	6.3259E-04
H-	8.7938E-09	5.6248E-05	1.6253E-04
H2+	1.9739E-08	4.5740E-05	2.1982E-04

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3199E+02	4.3585E+03	7.2462E+03
T	1.7085E+01	4.2772E+01	5.2222E+01
RHO	1.3503E+01	4.9734E+01	6.4484E+01
H	6.8944E+01	1.2319E+02	1.5950E+02
A	5.4232E+00	9.1484E+00	1.0089E+01
S	1.8502E+00	1.9533E+00	2.0250E+00
Z	1.8725E+00	2.0489E+00	2.1518E+00
GAME	9.1932E-01	9.5502E-01	9.0583E-01
U	1.6894E+01	4.5826E+00	4.4718E+00

SPECIES	MOLE FRACTIONS		
E-	2.4106E-06	2.4854E-02	7.1321E-02
H	9.3189E-01	9.4924E-01	8.5648E-01
H+	2.3902E-06	2.4936E-02	7.1244E-02
H2	6.8133E-02	8.8518E-04	5.0577E-04
H-	2.1200E-08	8.1478E-05	1.8732E-04
H2+	4.1653E-08	9.9458E-05	2.6434E-04

P1 = 1.00E+03 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0185E+02	4.5417E+03	7.4261E+03
T	2.1111E+01	4.7985E+01	5.6240E+01
RHO	1.2016E+01	4.4840E+01	5.9071E+01
H	8.0625E+01	1.4318E+02	1.8238E+02
A	6.7419E+00	9.6252E+00	1.0598E+01
S	1.9412E+00	2.0227E+00	2.0961E+00
Z	1.9784E+00	2.1108E+00	2.2353E+00
GAME	1.0883E+00	9.1467E-01	8.9347E-01
U	1.8122E+01	4.8525E+00	4.6223E+00

SPECIES	MOLE FRACTIONS		
E-	5.6333E-05	5.3131E-02	1.0592E-01
H	9.8890E-01	8.9301E-01	7.8741E-01
H+	5.6231E-05	5.3094E-02	1.0582E-01
H2	1.0993E-02	4.8913E-04	3.2693E-04
H-	2.6013E-07	1.1874E-04	2.3818E-04
H2+	3.6150E-07	1.5656E-04	3.1414E-04

P1 = 1.00E+03 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6709E+02	4.5274E+03	7.4866E+03
T	1.8613E+01	4.5660E+01	5.4440E+01
RHO	1.2953E+01	4.7709E+01	6.2705E+01
H	7.4689E+01	1.3317E+02	1.7064E+02
A	5.9543E+00	9.3955E+00	1.0357E+01
S	1.8977E+00	1.9875E+00	2.0596E+00
Z	1.9374E+00	2.0783E+00	2.1931E+00
GAME	9.8316E-01	9.3023E-01	8.9851E-01
U	1.7539E+01	4.7555E+00	4.5617E+00

SPECIES	MOLE FRACTIONS		
E-	9.2870E-06	3.8463E-02	8.8766E-02
H	9.6768E-01	9.2222E-01	8.2165E-01
H+	9.2439E-06	3.8435E-02	8.8672E-02
H2	3.2302E-02	6.4513E-04	4.3751E-04
H-	6.4367E-08	1.0344E-04	2.0306E-04
H2+	1.0747E-07	1.3161E-04	2.9729E-04

P1 = 1.00E+03 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3620E+02	4.4530E+03	7.1710E+03
T	2.4628E+01	4.9931E+01	5.7719E+01
RHO	1.0919E+01	4.1558E+01	5.4537E+01
H	8.6741E+01	1.5319E+02	1.9376E+02
A	7.4966E+00	9.8431E+00	1.0817E+01
S	1.9797E+00	2.0590E+00	2.1334E+00
Z	1.9942E+00	2.1459E+00	2.2781E+00
GAME	1.1413E+00	9.0422E-01	8.8994E-01
U	1.8649E+01	4.8874E+00	4.6618E+00

SPECIES	MOLE FRACTIONS		
E-	3.9255E-04	6.8559E-02	1.2265E-01
H	9.9599E-01	9.6225E-01	7.5402E-01
H+	3.9233E-04	6.8513E-02	1.2254E-01
H2	3.3193E-03	3.7834E-04	2.6192E-04
H-	1.0902E-06	1.2810E-04	2.0561E-04
H2+	1.3114E-06	1.7422E-04	3.1812E-04

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7156E+02	4.4074E+03	7.0003E+03
T	2.8423E+01	5.1693E+01	5.9135E+01
RHO	1.0049E+01	3.9051E+01	5.0974E+01
H	9.3069E+01	1.6349E+02	2.0546E+02
A	7.9283E+00	1.0062E+01	1.1040E+01
S	2.0134E+00	2.0941E+00	2.1697E+00
Z	2.0013E+00	2.1833E+00	2.3223E+00
GAME	1.1051E+00	8.9711E-01	8.8749E-01
U	1.9170E+01	4.9258E+00	4.7025E+00

SPECIES	MOLE FRACTIONS		
E-	1.8912E-03	8.4454E-02	1.3932E-01
H	9.9495E-01	8.3052E-01	7.2075E-01
H+	1.8908E-03	8.4400E-02	1.3920E-01
H2	1.2603E-03	3.0140E-04	2.1292E-04
H-	3.3393E-06	1.3504E-04	2.0205E-04
H2+	3.7591E-06	1.8899E-04	3.2020E-04

P1 = 1.00E+03 N/SQ-M. US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.4942E+02	4.6515E+03	7.2310E+03
T	3.4845E+01	5.5185E+01	6.2271E+01
RHO	9.2064E+00	3.7198E+01	4.8023E+01
H	1.0649E+02	1.8611E+02	2.3149E+02
A	8.3180E+00	1.0543E+01	1.1544E+01
S	2.0716E+00	2.1590E+00	2.2377E+00
Z	2.0244E+00	2.2659E+00	2.4180E+00
GAME	9.8085E-01	8.8884E-01	8.8499E-01
U	2.0334E+01	5.0420E+00	4.8142E+00

SPECIES	MOLE FRACTIONS		
E-	1.2467E-02	1.1780E-01	1.7336E-01
H	9.7465E-01	7.6390E-01	6.5273E-01
H+	1.2465E-02	1.1772E-01	1.7323E-01
H2	3.9503E-04	2.0749E-04	1.4828E-04
H-	1.2193E-05	1.4922E-04	2.0002E-04
H2+	1.3695E-05	2.2130E-04	3.3421E-04

P1 = 1.00E+03 N/SQ-M. US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.0918E+02	4.4778E+03	7.0240E+03
T	3.1898E+01	5.3435E+01	6.0642E+01
RHO	9.4999E+00	3.7690E+01	4.8896E+01
H	9.9647E+01	1.7445E+02	2.1798E+02
A	8.1545E+00	1.0296E+01	1.1281E+01
S	2.0437E+00	2.1273E+00	2.2043E+00
Z	2.0103E+00	2.2234E+00	2.3689E+00
GAME	1.0370E+00	8.9220E-01	8.8590E-01
U	1.9729E+01	4.9652E+00	4.7621E+00

SPECIES	MOLE FRACTIONS		
E-	5.7773E-03	1.0092E-01	1.5621E-01
H	9.8780E-01	7.9762E-01	6.8700E-01
H+	5.7765E-03	1.0086E-01	1.5609E-01
H2	6.3526E-04	2.4727E-04	1.7640E-04
H-	7.2371E-06	1.4204E-04	2.0027E-04
H2+	8.0406E-06	2.0459E-04	3.2557E-04

P1 = 1.00E+03 N/SQ-M. US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.3722E+02	5.2442E+03	8.0275E+03
T	3.9434E+01	5.8750E+01	6.5819E+01
RHO	9.0486E+00	3.7852E+01	4.8324E+01
H	1.2098E+02	2.1158E+02	2.6134E+02
A	8.6614E+00	1.1074E+01	1.2124E+01
S	2.1241E+00	2.2203E+00	2.3031E+00
Z	2.0660E+00	2.3582E+00	2.5239E+00
GAME	9.2080E-01	8.8516E-01	8.8484E-01
U	2.1644E+01	5.1830E+00	4.9826E+00

SPECIES	MOLE FRACTIONS		
E-	3.2204E-02	1.5231E-01	2.0802E-01
H	9.3533E-01	6.9491E-01	5.8345E-01
H+	3.2200E-02	1.5221E-01	2.0787E-01
H2	2.1509E-04	1.5202E-04	1.0668E-04
H-	2.2847E-05	1.6284E-04	1.9977E-04
H2+	2.6753E-05	2.5644E-04	3.5425E-04

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.3324E+02	6.0366E+03	9.1405E+03
T	4.2965E+01	6.2320E+01	6.9603E+01
RHO	9.1482E+00	3.9413E+01	4.5797E+01
H	1.3648E+02	2.3938E+02	2.9422E+02
A	9.0329E+00	1.1637E+01	1.2757E+01
S	2.1744E+00	2.2806E+00	2.3680E+00
Z	2.1199E+00	2.4577E+00	2.6371E+00
GAME	8.9581E-01	8.8410E-01	8.8664E-01
U	2.3028E+01	5.3597E+00	5.1795E+00

SPECIES	MOLE FRACTIONS		
E-	5.6759E-02	1.8662E-01	2.4205E-01
H	8.8627E-01	6.2629E-01	5.1543E-01
H+	5.6752E-02	1.8651E-01	2.4188E-01
H2	1.4446E-04	1.1363E-04	7.6591E-05
H-	3.2741E-05	1.7205E-04	1.9518E-04
H2+	4.0095E-05	2.8776E-04	3.6844E-04

P1 = 1.00F+03 N/SQ-M. US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0463E+03	8.0232E+03	1.1976E+04
T	4.8534E+01	6.9534E+01	7.7858E+01
RHO	9.5799E+00	4.3173E+01	5.3393E+01
H	1.7041E+02	3.0103E+02	3.6788E+02
A	9.7953E+00	1.2841E+01	1.4181E+01
S	2.2739E+00	2.4014E+00	2.4989E+00
Z	2.2503E+00	2.6726E+00	2.8808E+00
GAME	8.7853E-01	8.8723E-01	8.9660E-01
U	2.5878E+01	5.7469E+00	5.6576E+00

SPECIES	MOLE FRACTIONS		
E-	1.1137E-01	2.5206E-01	3.0616E-01
H	7.7708E-01	4.9547E-01	3.8732E-01
H+	1.1136E-01	2.5191E-01	3.0596E-01
H2	8.1309E-05	6.2362E-05	3.6273E-05
H-	4.8152E-05	1.7206E-04	1.6691E-04
H2+	6.4076E-05	3.2446E-04	3.5903E-04

P1 = 1.00F+03 N/SQ-M. US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.3642E+02	6.9757E+03	1.0470E+04
T	4.5919E+01	6.5908E+01	7.3599E+01
RHO	9.3459E+00	4.1297E+01	5.1608E+01
H	1.5296E+02	2.6927E+02	3.2977E+02
A	9.4125E+00	1.2226E+01	1.3440E+01
S	2.2242E+00	2.3409E+00	2.4332E+00
Z	2.1820E+00	2.5629E+00	2.7564E+00
GAME	8.8422E-01	8.8487E-01	8.9042E-01
U	2.4445E+01	5.5361E+00	5.4040E+00

SPECIES	MOLE FRACTIONS		
E-	8.3578E-02	2.2003E-01	2.7485E-01
H	8.3266E-01	5.5950E-01	4.4987E-01
H+	8.3567E-02	2.1989E-01	2.7467E-01
H2	1.0609E-04	8.4815E-05	5.3741E-05
H-	4.1233E-05	1.7532E-04	1.8423E-04
H2+	5.2697E-05	3.1139E-04	3.7090E-04

P1 = 1.00F+03 N/SQ-M. US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1627E+03	9.1710E+03	1.3646F+04
T	5.0935E+01	7.3264E+01	8.2496E+01
RHO	9.8237E+00	4.4926E+01	5.4958E+01
H	1.8882F+02	3.3464E+02	4.0864F+02
A	1.0182E+01	1.3489F+01	1.4998E+01
S	2.3241E+00	2.4624E+00	2.5653E+00
Z	2.3237E+00	2.7864E+00	3.0099E+00
GAME	8.7587E-01	8.9129F-01	9.0592E-01
U	2.7322F+01	5.9797E+00	5.9466E+00

SPECIES	MOLE FRACTIONS		
E-	1.3944E-01	2.8259F-01	3.3587E-01
H	7.2095E-01	4.3445E-01	3.2794E-01
H+	1.3942E-01	2.8243E-01	3.3569E-01
H2	6.3633F-05	4.4705F-05	2.3153E-05
H-	5.3460F-05	1.6270E-04	1.4425E-04
H2+	7.3936F-05	3.2585E-04	3.3220E-04

TABLE I. - Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M, US1 = 4.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2849E+03	1.0391E+04	1.5445E+04
T	5.3194E+01	7.7134E+01	8.7622E+01
RHO	1.0059E+01	4.6408E+01	5.6113E+01
U	2.0816E+02	3.6985E+02	4.5171E+02
A	1.0572E+01	1.4174E+01	1.5909E+01
S	2.3747E+00	2.5234E+00	2.6314E+00
Z	2.4015E+00	2.9028E+00	3.1414E+00
GAME	8.7493E-01	8.9730E-01	9.1946E-01
U	2.8757E+01	6.2384E+00	6.2606E+00

SPECIES	MOLE FRACTIONS		
E-	1.6731E-01	3.1137E-01	3.6364E-01
H	4.6521E-01	3.7694E-01	2.7247E-01
H+	1.6729E-01	3.1120E-01	3.6347E-01
H2	5.0245E-05	3.0982E-05	1.3765E-05
H-	5.7146E-05	1.4803E-04	1.1818E-04
H2+	8.2025E-05	3.1494E-04	2.9170E-04

P1 = 1.00E+03 N/SQ-M, US1 = 4.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5480E+03	1.3038E+04	1.9536E+04
T	5.7484E+01	8.5718E+01	1.0082E+02
RHO	1.0484E+01	4.8400E+01	5.6786E+01
U	2.4969E+02	4.4541E+02	5.4796E+02
A	1.1376E+01	1.5723E+01	1.8251E+01
S	2.4776E+00	2.6454E+00	2.7655E+00
Z	2.5687E+00	3.1426E+00	3.4123E+00
GAME	8.7642E-01	9.1772E-01	9.6825E-01
U	3.1638E+01	6.8587E+00	7.1555E+00

SPECIES	MOLE FRACTIONS		
E-	2.2151E-01	3.6386E-01	4.1408E-01
H	5.5682E-01	2.7204E-01	1.7172E-01
H+	2.2148E-01	3.6371E-01	4.1396E-01
H2	3.1319E-05	1.2824E-05	3.3972E-06
H-	5.9951E-05	1.0795E-04	6.4027E-05
H2+	9.2460E-05	2.5993E-04	1.8085E-04

P1 = 1.00E+03 N/SQ-M, US1 = 4.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4131E+03	1.1680E+04	1.7408E+04
T	5.5364E+01	8.1242E+01	9.3605E+01
RHO	1.0279E+01	4.7577E+01	5.6756E+01
U	2.2845E+02	4.0673E+02	4.9818E+02
A	1.0970E+01	1.4912E+01	1.6975E+01
S	2.4259E+00	2.5844E+00	2.6986E+00
Z	2.4832E+00	3.0217E+00	3.2768E+00
GAME	8.7526E-01	9.0583E-01	9.3938E-01
U	3.0192E+01	6.5287E+00	6.6753E+00

SPECIES	MOLE FRACTIONS		
E-	1.9473E-01	3.3844E-01	3.8990E-01
H	6.1039E-01	3.2293E-01	2.2301E-01
H+	1.9470E-01	3.3828E-01	3.8975E-01
H2	3.9739E-05	2.0529E-05	7.3378E-06
H-	5.9278E-05	1.2930E-04	9.0445E-05
H2+	8.8230E-05	2.9249E-04	2.3948E-04

P1 = 1.00E+03 N/SQ-M, US1 = 4.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6884E+03	1.4426E+04	2.1831E+04
T	5.9579E+01	9.0662E+01	1.0993E+02
RHO	1.0664E+01	4.8757E+01	5.6045E+01
U	2.7187E+02	4.8553E+02	6.0187E+02
A	1.1792E+01	1.6623E+01	1.9825E+01
S	2.5300E+00	2.7058E+00	2.8320E+00
Z	2.6574E+00	3.2634E+00	3.5436E+00
GAME	8.7831E-01	9.3396E-01	1.0090E+00
U	3.3072E+01	7.2393E+00	7.7802E+00

SPECIES	MOLE FRACTIONS		
E-	2.4751E-01	3.8737E-01	4.3572E-01
H	5.0484E-01	2.2508E-01	1.2848E-01
H+	2.4747E-01	3.8724E-01	4.3564E-01
H2	2.4498E-05	7.4550E-06	1.3017E-06
H-	5.9243E-05	9.5713E-05	4.1620E-05
H2+	9.4656E-05	2.1962E-04	1.2259E-04

TABLE I.- Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8347E+03	1.5830E+04	2.4308E+04
T	6.1677E+01	9.6278E+01	1.2196E+02
RHO	1.0823E+01	4.8611E+01	5.4398E+01
H	2.9499E+02	5.2710E+02	6.6040E+02
A	1.2222E+01	1.7644E+01	2.1779E+01
S	2.5828E+00	2.7652E+00	2.8981E+00
Z	2.7492E+00	3.3824E+00	3.6638E+00
GAME	8.8093E-01	9.5598E-01	1.0615E+00
U	3.4501E+01	7.6849E+00	8.5599E+00

SPECIES	MOLE FRACTIONS		
E-	2.7263E-01	4.0888E-01	4.5420E-01
H	4.5461E-01	1.8211E-01	9.1552E-02
H+	2.7259E-01	4.0877E-01	4.5415E-01
H2	1.8925E-05	3.9574E-06	3.9201E-07
H-	5.7290E-05	6.4334E-05	2.5218E-05
H2+	9.4833E-05	1.7498E-04	7.2636E-05

P1 = 1.00E+03 N/SQ-M. US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1444E+03	1.8574E+04	2.9892E+04
T	6.5981E+01	1.1058E+02	1.5766E+02
RHO	1.1051E+01	4.6636E+01	4.9467E+01
H	3.4403E+02	6.1430E+02	7.9491E+02
A	1.3129E+01	2.0178E+01	2.6392E+01
S	2.6898E+00	2.8792E+00	3.0226E+00
Z	2.9408E+00	3.6018E+00	3.8328E+00
GAME	8.8838E-01	1.0222E+00	1.1527E+00
U	3.7341E+01	8.8618E+00	1.0756E+01

SPECIES	MOLE FRACTIONS		
E-	3.2001E-01	4.4481E-01	4.7820E-01
H	3.5988E-01	1.1031E-01	4.3578E-02
H+	3.1997E-01	4.4475E-01	4.7819E-01
H2	1.0741E-05	7.8858E-07	2.1491E-08
H-	5.0237E-05	3.0438E-05	1.0254E-05
H2+	8.9382E-05	8.9759E-05	1.9970E-05

P1 = 1.00E+03 N/SQ-M. US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9868E+03	1.7229E+04	2.7009E+04
T	6.3785E+01	1.0282E+02	1.3774E+02
RHO	1.0957E+01	4.7924E+01	5.2131E+01
H	3.1905E+02	5.6996E+02	7.2452E+02
A	1.2662E+01	1.8820E+01	2.4029E+01
S	2.6355E+00	2.8231E+00	2.9616E+00
Z	2.8428E+00	3.4965E+00	3.7614E+00
GAME	8.8419E-01	9.8522E-01	1.1144E+00
U	3.5926E+01	8.2302E+00	9.5419E+00

SPECIES	MOLE FRACTIONS		
E-	2.9656E-01	4.2812E-01	4.6833E-01
H	4.0675E-01	1.4366E-01	6.3315E-02
H+	2.9653E-01	4.2804E-01	4.6830E-01
H2	1.4449E-05	1.8824E-06	9.6552E-08
H-	5.4304E-05	4.5504E-05	1.5456E-05
H2+	9.3134E-05	1.3025E-04	3.8341E-05

P1 = 1.00E+03 N/SQ-M. US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3075E+03	1.9857E+04	3.2873E+04
T	6.8245E+01	1.1987E+02	1.8025E+02
RHO	1.1123E+01	4.4852E+01	4.7015E+01
H	3.6995E+02	6.5900E+02	8.6847E+02
A	1.3615E+01	2.1709E+01	2.8632E+01
S	2.7437E+00	2.9328E+00	3.0773E+00
Z	3.0399E+00	3.6934E+00	3.8791E+00
GAME	8.9353E-01	1.0645E+00	1.1725E+00
U	3.8749E+01	9.6219E+00	1.1979E+01

SPECIES	MOLE FRACTIONS		
E-	3.4217E-01	4.5856E-01	4.8442E-01
H	3.1556E-01	8.2848E-02	3.1138E-02
H+	3.4213E-01	4.5852E-01	4.8442E-01
H2	7.8165E-06	2.9200E-07	5.3220E-09
H-	4.5468E-05	1.9718E-05	7.4842E-06
H2+	9.3989E-05	5.7383E-05	9.7917E-06

TABLE I.- Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4761E+03	2.1059E+04	3.6006E+04
T	7.0629E+01	1.3086E+02	2.0589E+02
RHO	1.1162E+01	4.2711E+01	4.4719E+01
H	3.9683E+02	7.0492E+02	9.4781E+02
A	1.4129E+01	2.3348E+01	3.0850E+01
S	2.7979E+00	2.9835E+00	3.1291E+00
Z	3.1407E+00	3.7679E+00	3.9106E+00
GAME	8.9994E-01	1.1056E+00	1.1820E+00
U	4.0146E+01	1.0484E+01	1.3376E+01

SPECIES	MOLE FRACTIONS		
E-	3.6327E-01	4.6923E-01	4.8858E-01
H	2.7337E-01	6.1511E-02	2.2829E-02
H+	3.6324E-01	4.6921E-01	4.8858E-01
H2	5.5153E-06	9.8465E-08	1.4606E-09
H-	4.0116E-05	1.2876E-05	5.6451E-06
H2+	7.7049E-05	3.4569E-05	5.2865E-06

P1 = 1.00E+03 N/SQ-M. US1 = 6.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8285E+03	2.3089E+04	4.2121E+04
T	7.5965E+01	1.5697E+02	2.5987E+02
RHO	1.1132E+01	3.8053E+01	4.1080E+01
H	4.5326E+02	7.9854E+02	1.1116E+03
A	1.5274E+01	2.6528E+01	3.4905E+01
S	2.9057E+00	3.0751E+00	3.2168E+00
Z	3.3447E+00	3.8653E+00	3.9456E+00
GAME	9.1820E-01	1.1598E+00	1.1883E+00
U	4.2903E+01	1.2561E+01	1.5942E+01

SPECIES	MOLE FRACTIONS		
E-	4.0210E-01	4.8258E-01	4.9311E-01
H	1.9575E-01	3.4823E-02	1.3769E-02
H+	4.0207E-01	4.8258E-01	4.9311E-01
H2	2.4208E-06	1.0894E-08	1.8887E-10
H-	2.8470E-05	6.4101E-06	3.4150E-06
H2+	5.9520E-05	1.1988E-05	1.9883E-06

P1 = 1.00E+03 N/SQ-M. US1 = 6.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6498E+03	2.2126E+04	3.9094E+04
T	7.3182E+01	1.4351E+02	2.3296E+02
RHO	1.1167E+01	4.0309E+01	4.2702E+01
H	4.2457E+02	7.5137E+02	1.0286E+03
A	1.4679E+01	2.4999E+01	3.2955E+01
S	2.8518E+00	3.0317E+00	3.1760E+00
Z	3.2425E+00	3.8250E+00	3.9316E+00
GAME	9.0799E-01	1.1386E+00	1.1863E+00
U	4.1532E+01	1.1493E+01	1.4677E+01

SPECIES	MOLE FRACTIONS		
E-	3.8327E-01	4.7715E-01	4.9131E-01
H	2.3339E-01	4.5695E-02	1.7378E-02
H+	3.8323E-01	4.7714E-01	4.9131E-01
H2	3.7441E-06	3.1702E-08	4.7814E-10
H-	3.4378E-05	8.7652E-06	4.3423E-06
H2+	6.8796E-05	2.0113E-05	3.0989E-06

P1 = 1.00E+03 N/SQ-M. US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0118E+03	2.3932E+04	4.5046E+04
T	7.9064E+01	1.7172E+02	2.8850E+02
RHO	1.1054E+01	3.5779E+01	3.9467E+01
H	4.8285E+02	8.4637E+02	1.1971E+03
A	1.5933E+01	2.8011E+01	3.6845E+01
S	2.9592E+00	3.1171E+00	3.2560E+00
Z	3.4460E+00	3.8953E+00	3.9562E+00
GAME	9.3145E-01	1.1730E+00	1.1894E+00
U	4.4257E+01	1.3669E+01	1.7201E+01

SPECIES	MOLE FRACTIONS		
E-	4.1947E-01	4.8657E-01	4.9447E-01
H	1.6061E-01	2.6854E-02	1.1054E-02
H+	4.1965E-01	4.8657E-01	4.9447E-01
H2	1.4710E-06	3.8566E-09	8.1063E-11
H-	2.2622E-05	4.8536E-06	2.6663E-06
H2+	4.9591E-05	7.2058E-06	1.3246E-06

TABLE I.- Continued

$p_1 = 1\ kN/m^2$

P1 = 1.00E+03 N/SQ-M. US1 = 6.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.1992E+03	2.4641E+04	4.7791E+04
T	8.2600E+01	1.8714E+02	3.1825E+02
RHO	1.0925E+01	3.3614E+01	3.7880E+01
H	5.1333E+02	8.9482E+02	1.2849E+03
A	1.6669E+01	2.9418E+01	3.8749E+01
S	3.0121E+00	3.1568E+00	3.2934E+00
Z	3.5450E+00	3.9172E+00	3.9643E+00
GAME	9.4893E-01	1.1806E+00	1.1901E+00
U	4.5586E+01	1.4792E+01	1.8455E+01

SPECIES	MOLE FRACTIONS		
E-	4.3597E-01	4.8944E-01	4.9550E-01
H	1.2823E-01	2.1111E-02	8.9953E-03
H+	4.3584E-01	4.8944E-01	4.9550E-01
H2	9.2538E-07	1.4702E-09	3.7724E-11
H-	1.7084E-05	3.7671E-06	2.0751E-06
H2+	3.9421E-05	4.4717E-06	9.1538E-07

P1 = 1.00E+03 N/SQ-M. US1 = 7.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5821E+03	2.5445E+04	5.2134E+04
T	9.1804E+01	2.1875E+02	3.7829E+02
RHO	1.0469E+01	2.9478E+01	3.4668E+01
H	5.7687E+02	9.9217E+02	1.4628E+03
A	1.8533E+01	3.2014E+01	4.2317E+01
S	3.1153E+00	3.2309E+00	3.3623E+00
Z	3.7270E+00	3.9459E+00	3.9754E+00
GAME	1.0039E+00	1.1874E+00	1.1908E+00
U	4.8128E+01	1.7093E+01	2.0795E+01

SPECIES	MOLE FRACTIONS		
E-	4.6339E-01	4.9315E-01	4.9690E-01
H	7.3205E-02	1.3697E-02	6.1951E-03
H+	4.6338E-01	4.9315E-01	4.9690E-01
H2	1.8419E-07	2.6760E-10	1.0157E-11
H-	7.9073E-06	2.3306E-06	1.2585E-06
H2+	2.0536E-05	1.8989E-06	4.8107E-07

P1 = 1.00E+03 N/SQ-M. US1 = 6.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3900E+03	2.5146E+04	5.0212E+04
T	8.6746E+01	2.0314E+02	3.4796E+02
RHO	1.0738E+01	3.1469E+01	3.6345E+01
H	5.4469E+02	9.4335E+02	1.3735E+03
A	1.7520E+01	3.0771E+01	4.0555E+01
S	3.0640E+00	3.1953E+00	3.3282E+00
Z	3.6393E+00	3.9338E+00	3.9704E+00
GAME	9.7231E-01	1.1849E+00	1.1905E+00
U	4.6886E+01	1.5976E+01	1.9636E+01

SPECIES	MOLE FRACTIONS		
E-	4.5047E-01	4.9159E-01	4.9628E-01
H	9.9025E-02	1.6818E-02	7.4455E-03
H+	4.5046E-01	4.9159E-01	4.9628E-01
H2	4.1821E-07	5.9648E-10	1.9166E-11
H-	1.2114E-05	2.9443E-06	1.6233E-06
H2+	2.9577E-05	2.9475E-06	6.5840E-07

TABLE I. - Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M. US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3615E+01
T	2.7140E+00	3.3549E+00	4.7162E+00
RHO	3.9200E+00	6.5476E+00	1.1368E+01
H	2.7745E+00	3.4526E+00	4.9388E+00
A	1.6432E+00	1.8212E+00	2.1383E+00
S	1.0588E+00	1.0607E+00	1.0798E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8811E-01	9.6949E-01
U	2.2663E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	6.6229E-35	1.2646E-33	4.3576E-27
H	3.0823E-11	1.1517E-09	5.7350E-06
H+	4.2258E-35	2.6418E-35	2.7070E-27
H2	1.0000E+00	1.0000E+00	9.9999E-01
H-	2.7357E-42	3.8057E-40	2.3071E-32
H2+	1.5796E-34	2.2792E-35	1.6506E-27

P1 = 2.00E+03 N/SQ-M. US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4288E+01	7.6742E+01	1.5362E+02
T	4.8589E+00	6.7201E+00	8.5068E+00
RHO	4.9986E+00	1.1412E+01	1.7897E+01
H	5.0998E+00	7.3129E+00	9.9585E+00
A	2.1681E+00	2.5070E+00	2.7479E+00
S	1.1259E+00	1.1341E+00	1.1589E+00
Z	1.0003E+00	1.0007E+00	1.0090E+00
GAME	9.6741E-01	9.3456E-01	8.7968E-01
U	3.6514E+00	1.5957E+00	1.4171E+00

SPECIES	MOLE FRACTIONS		
E-	5.8281E-26	1.7072E-18	3.2803E-14
H	1.4797E-05	1.4639E-03	1.7837E-02
H+	5.1759E-26	1.4076E-18	2.8630E-14
H2	9.9999E-01	9.9854E-01	9.8216E-01
H-	5.6232E-30	6.5516E-22	1.2627E-16
H2+	6.5278E-27	3.0028E-19	4.2992E-15

P1 = 2.00E+03 N/SQ-M. US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4534E+01	9.7262E+01
T	3.7003E+00	4.9227E+00	6.6695E+00
RHO	4.5254E+00	9.0449E+00	1.4577E+01
H	3.8206E+00	5.1719E+00	7.2428E+00
A	1.9079E+00	2.1814E+00	2.5009E+00
S	1.0927E+00	1.0976E+00	1.1202E+00
Z	1.0003E+00	1.0000E+00	1.0006E+00
GAME	9.8361E-01	9.6441E-01	9.3728E-01
U	2.9621E+00	1.4731E+00	1.3345E+00

SPECIES	MOLE FRACTIONS		
E-	1.3819E-31	4.9047E-25	1.0172E-18
H	3.2243E-08	1.5035E-05	1.1665E-03
H+	9.3484E-32	3.6542E-25	9.4004E-19
H2	1.0000E+00	9.9998E-01	9.9883E-01
H-	4.9158E-37	2.7515E-29	2.6947E-21
H2+	4.4556E-32	1.2498E-25	7.9985E-20

P1 = 2.00E+03 N/SQ-M. US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3293E+01	1.2177E+02	2.2275E+02
T	6.1531E+00	9.4405E+00	9.8782E+00
RHO	5.4389E+00	1.4257E+01	2.1820E+01
H	6.6139E+00	9.9239E+00	1.3030E+01
A	2.4121E+00	2.7372E+00	2.9416E+00
S	1.1578E+00	1.1702E+00	1.1975E+00
Z	1.0003E+00	1.0095E+00	1.0335E+00
GAME	9.4527E-01	8.7720E-01	8.4760E-01
U	4.3409E+00	1.6442E+00	1.4327E+00

SPECIES	MOLE FRACTIONS		
E-	7.3655E-20	3.0776E-14	4.3200E-12
H	6.4323E-04	1.8880E-02	6.4904E-02
H+	6.1351E-20	2.7186E-14	3.8429E-12
H2	9.9936E-01	9.8112E-01	9.3523E-01
H-	1.8063E-23	1.0149E-16	3.6633E-14
H2+	9.6228E-21	3.6915E-15	5.1381E-13

TABLE I.- Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M. US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3921E+01	1.8583E+02	3.1228E+02
T	7.4588E+00	9.8324E+00	1.0984E+01
RHO	5.9557E+00	1.8256E+01	2.6516E+01
M	8.3711E+00	1.3059E+01	1.6571E+01
A	2.5976E+00	2.9337E+00	3.1409E+00
S	1.1985E+00	1.2076E+00	1.2383E+00
Z	1.0037E+00	1.0351E+00	1.0722E+00
GAME	9.0133E-01	8.4561E-01	8.3765E-01
U	5.0473E+00	1.6199E+00	1.4354E+00

SPECIES	MOLE FRACTIONS		
E-	3.9704E-16	4.2141E-12	8.9352E-11
H	7.4027E-03	5.7854E-02	1.3467E-01
H+	3.5886E-16	3.7806E-12	8.0441E-11
H2	9.9260E-01	9.3214E-01	8.6533E-01
H-	3.9132E-19	3.1918E-14	1.2766E-12
H2+	3.9473E-17	4.6540E-13	1.0188E-11

P1 = 2.00E+03 N/SQ-M. US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.0665E+01	3.9868E+02	6.0349E+02
T	9.4089E+00	1.1978E+01	1.2970E+01
RHO	7.2401E+00	2.9509E+01	3.9232E+01
M	1.2635E+01	2.0916E+01	2.5423E+01
A	2.8616E+00	3.3608E+00	3.5950E+00
S	1.2509E+00	1.2903E+00	1.3286E+00
Z	1.0374E+00	1.1279E+00	1.1861E+00
GAME	8.3900E-01	9.3603E-01	8.4016E-01
U	6.5538E+00	1.6093E+00	1.4781E+00

SPECIES	MOLE FRACTIONS		
E-	1.9592E-12	8.2961E-10	4.6530E-09
H	7.2331E-02	2.2672E-01	3.1374E-01
H+	1.8164E-12	7.5521E-10	4.2557E-09
H2	9.2797E-01	7.7329E-01	6.8626E-01
H-	7.6094E-15	1.6432E-11	1.3152E-10
H2+	1.4936E-13	8.9833E-11	5.2885E-10

P1 = 2.00E+03 N/SQ-M. US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6388E+01	2.7643E+02	4.3675E+02
T	8.5533E+00	1.0965E+01	1.1994E+01
RHO	6.4905E+00	2.3439E+01	3.2412E+01
M	1.0380E+01	1.6731E+01	2.0703E+01
A	2.7324E+00	3.1408E+00	3.3580E+00
S	1.2191E+00	1.2475E+00	1.2820E+00
Z	1.0157E+00	1.0756E+00	1.1236E+00
GAME	8.5939E-01	8.3641E-01	8.3678E-01
U	5.7897E+00	1.6312E+00	1.4505E+00

SPECIES	MOLE FRACTIONS		
E-	8.1674E-14	9.1915E-11	7.9218E-10
H	3.0993E-02	1.4060E-01	2.1094E-01
H+	7.5143E-14	8.3203E-11	7.1831E-10
H2	9.6901E-01	8.5940E-01	7.8006E-01
H-	1.9342E-14	1.2206E-12	1.6511E-11
H2+	6.7252E-15	9.9352E-12	9.0385E-11

P1 = 2.00E+03 N/SQ-M. US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.6647E+01	5.5469E+02	8.1482E+02
T	1.0115E+01	1.2933E+01	1.3940E+01
RHO	8.0311E+00	3.6039E+01	4.6424E+01
M	1.5133E+01	2.5591E+01	3.0735E+01
A	2.9935E+00	3.5948E+00	3.8538E+00
S	1.2843E+00	1.3360E+00	1.3785E+00
Z	1.0666E+00	1.1900E+00	1.2591E+00
GAME	8.3060E-01	8.3958E-01	8.4616E-01
U	7.3248E+00	1.6337E+00	1.5292E+00

SPECIES	MOLE FRACTIONS		
E-	1.8500E-11	4.6204E-09	2.0569E-08
H	1.2491E-01	3.1939E-01	4.1158E-01
H+	1.7278E-11	4.2405E-09	1.8985E-08
H2	8.7509E-01	6.8061E-01	5.8842E-01
H-	1.0498E-13	1.2387E-10	7.3579E-10
H2+	1.3271E-12	5.0380E-10	2.3201E-09

TABLE I.- Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M. US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0419E+02	7.4307E+02	1.0692E+03
T	1.0730E+01	1.3857E+01	1.4919E+01
RHO	8.8100E+00	4.2535E+01	5.3429E+01
H	1.7860E+01	3.0710E+01	3.6584E+01
A	3.1287E+00	3.8430E+00	4.1343E+00
S	1.3196E+00	1.3841E+00	1.4310E+00
Z	1.1021E+00	1.2607E+00	1.3413E+00
GAME	8.2775E-01	8.4537E-01	8.5416E-01
U	8.0895E+00	1.6776E+00	1.5956E+00

SPECIES	MOLE FRACTIONS		
E-	9.8195E-11	1.9086E-08	7.4662E-08
H	1.8530E-01	4.1358E-01	5.0890E-01
H+	9.2144E-11	1.7654E-08	6.9596E-08
H2	8.1470E-01	5.8542E-01	4.9110E-01
H-	7.2798E-13	6.4303E-10	3.1883E-09
H2+	6.7785E-12	2.0745E-09	8.2544E-09

P1 = 2.00E+03 N/SQ-M. US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4392E+02	1.2191E+03	1.7097E+03
T	1.1813E+01	1.5724E+01	1.7043E+01
RHO	1.0246E+01	5.4249E+01	6.5537E+01
H	2.4025E+01	4.2271E+01	4.9959E+01
A	3.4126E+00	4.3944E+00	4.7837E+00
S	1.3956E+00	1.4864E+00	1.5423E+00
Z	1.1890E+00	1.4245E+00	1.5307E+00
GAME	8.2914E-01	8.6214E-01	8.7720E-01
U	9.6035E+00	1.8163E+00	1.7792E+00

SPECIES	MOLE FRACTIONS		
E-	1.1594E-09	1.9793E-07	7.2296E-07
H	3.1795E-01	5.9604E-01	6.9339E-01
H+	1.0968E-09	1.8656E-07	6.8894E-07
H2	6.8205E-01	4.0396E-01	3.0661E-01
H-	1.2459E-11	8.9353E-09	3.7850E-08
H2+	7.5025E-11	2.0302E-08	7.1867E-08

P1 = 2.00E+03 N/SQ-M. US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2330E+02	9.6399E+02	1.3679E+03
T	1.1289E+01	1.4780E+01	1.5941E+01
RHO	9.5543E+00	4.8703E+01	5.9916E+01
H	2.0926E+01	3.6275E+01	4.2990E+01
A	3.2681E+00	4.1087E+00	4.4420E+00
S	1.3567E+00	1.4344E+00	1.4857E+00
Z	1.1431E+00	1.3392E+00	1.4321E+00
GAME	8.2766E-01	8.5989E-01	8.6428E-01
U	8.8502E+00	1.7385E+00	1.6781E+00

SPECIES	MOLE FRACTIONS		
E-	3.7485E-10	6.5622E-08	2.4032E-07
H	2.5335E-01	5.0654E-01	6.0347E-01
H+	3.5321E-10	6.1259E-08	2.2644E-07
H2	7.4965E-01	4.9146E-01	3.9642E-01
H-	3.4172E-12	2.6221E-09	1.1645E-08
H2+	2.5059E-11	6.9848E-09	2.5531E-08

P1 = 2.00E+03 N/SQ-M. US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4612E+02	1.4963E+03	2.0983E+03
T	1.2316E+01	1.6724E+01	1.8304E+01
RHO	1.0883E+01	5.9035E+01	7.0050E+01
H	2.7462E+01	4.8716E+01	5.7580E+01
A	3.5633E+00	4.7068E+00	5.1772E+00
S	1.4362E+00	1.5399E+00	1.6007E+00
Z	1.2394E+00	1.5162E+00	1.6364E+00
GAME	8.3167E-01	8.7344E-01	8.9482E-01
U	1.0356E+01	1.9123E+00	1.9093E+00

SPECIES	MOLE FRACTIONS		
E-	3.1055E-09	5.5841E-07	2.1763E-06
H	3.8654E-01	6.8095E-01	7.7783E-01
H+	2.9498E-09	5.3182E-07	2.0985E-06
H2	6.1336E-01	3.1905E-01	2.2217E-01
H-	3.8183E-11	2.7193E-08	1.1666E-07
H2+	1.9394E-10	5.3775E-08	1.9444E-07

TABLE I.- Continued

p_1 = 2 kN/ m^2

P1 = 2.00E+03 N/SQ-M. US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8981E+02	1.8014E+03	2.5287E+03
T	1.2808E+01	1.7820E+01	1.9953E+01
RHO	1.1444E+01	5.2690E+01	7.2944E+01
H	3.1132E+01	5.5573E+01	6.5822E+01
A	3.7210E+00	5.0529E+00	5.6519E+00
S	1.4783E+00	1.5941E+00	1.6603E+00
Z	1.2947E+00	1.6125E+00	1.7462E+00
GAME	8.3499E-01	8.8852E-01	9.2145E-01
U	1.1102E+01	2.0298E+00	2.0642E+00

SPECIES	MOLE FRACTIONS		
E-	7.4982E-09	1.5196E-06	7.0152E-06
H	4.5521E-01	7.5971E-01	8.5464E-01
H+	7.1511E-09	1.4624E-06	6.8444E-06
H2	5.4479E-01	2.4029E-01	1.4535E-01
H-	1.3967E-13	7.6282E-08	3.5904E-07
H2+	4.4970E-10	1.3349E-07	5.2976E-07

P1 = 2.00E+03 N/SQ-M. US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4145E+02	2.4421E+03	3.5503E+03
T	1.3793E+01	2.0676E+01	2.5693E+01
RHO	1.2363E+01	6.5862E+01	7.1171E+01
H	3.9178E+01	7.0489E+01	8.5270E+01
A	4.0613E+00	5.9323E+00	7.2678E+00
S	1.5667E+00	1.7023E+00	1.7796E+00
Z	1.4170E+00	1.8080E+00	1.9416E+00
GAME	8.4387E-01	9.4139E-01	1.0589E+00
U	1.2578E+01	2.3637E+00	2.6418E+00

SPECIES	MOLE FRACTIONS		
E-	3.5769E-08	1.2930E-05	1.7511E-04
H	5.8863E-01	8.9379E-01	9.6937E-01
H+	3.4402E-08	1.2598E-05	1.7422E-04
H2	4.1137E-01	1.0618E-01	3.0270E-02
H-	5.6951E-10	5.7406E-07	5.3695E-06
H2+	1.9366E-09	8.0577E-07	6.2641E-06

P1 = 2.00E+03 N/SQ-M. US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1499E+02	2.1261E+03	3.0078E+03
T	1.3297E+01	1.9089E+01	2.2035E+01
RHO	1.1942E+01	6.5085E+01	7.3768E+01
H	3.5038E+01	6.2839E+01	7.4913E+01
A	3.8865E+00	5.4493E+00	6.2843E+00
S	1.5218E+00	1.6485E+00	1.7195E+00
Z	1.3530E+00	1.7113E+00	1.8529E+00
GAME	8.3905E-01	9.0921E-01	9.6859E-01
U	1.1942E+01	2.1756E+00	2.2844E+00

SPECIES	MOLE FRACTIONS		
E-	1.6807E-08	4.2335E-06	2.7566E-05
H	5.2278E-01	8.3175E-01	9.2056E-01
H+	1.6096E-08	4.1138E-06	2.7191E-05
H2	4.7722E-01	1.6874E-01	7.9387E-02
H-	2.5068E-10	2.0721E-07	1.2116E-06
H2+	9.6178E-10	3.2395E-07	1.6867E-06

P1 = 2.00E+03 N/SQ-M. US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6977E+02	2.7963E+03	4.1684E+03
T	1.4304E+01	2.2877E+01	3.1931E+01
RHO	1.2703E+01	8.4529E+01	6.5737E+01
H	4.3553E+01	7.8477E+01	9.7262E+01
A	4.2469E+00	6.5714E+00	8.3838E+00
S	1.6126E+00	1.7542E+00	1.8364E+00
Z	1.4939E+00	1.9941E+00	1.9859E+00
GAME	8.4962E-01	9.9663E-01	1.1084E+00
U	1.3308E+01	2.6233E+00	3.1813E+00

SPECIES	MOLE FRACTIONS		
E-	7.3669E-08	4.7893E-05	1.5787E-03
H	6.5222E-01	9.4393E-01	9.8814E-01
H+	7.1145E-08	4.7435E-05	1.5758E-03
H2	3.4778E-01	5.5973E-02	8.6459E-03
H-	1.2281E-09	1.7299E-06	2.6979E-05
H2+	3.7326E-09	2.1890E-06	2.9923E-05

TABLE I. - Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M, US1 = 2.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9933E+02	3.1075E+03	4.8114E+03
T	1.4847E+01	2.6172E+01	3.8542E+01
RHO	1.2972E+01	4.0747E+01	6.2165E+01
M	4.8161E+01	8.6719E+01	1.0985E+02
A	4.4458E+00	7.4209E+00	8.9780E+00
S	1.6594E+00	1.8026E+00	1.8838E+00
Z	1.5541E+00	1.9546E+00	2.0081E+00
GAME	8.5659E-01	1.0765E+00	1.0414E+00
U	1.4033E+01	2.9985E+00	3.6968E+00

SPECIES	MOLE FRACTIONS		
E-	1.4951E-07	2.3156E-04	7.6082E-03
H	7.1310E-01	9.7606E-01	9.8116E-01
H+	1.4538E-07	2.3065E-04	7.5956E-03
H2	2.8690E-01	2.3466E-02	3.4673E-03
H-	2.5780E-09	5.8544E-06	7.9613E-05
H2+	6.9893E-09	4.7725E-06	9.2170E-05

P1 = 2.00E+03 N/SQ-M, US1 = 2.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6256E+02	3.6495E+03	6.0107E+03
T	1.6100E+01	3.5411E+01	4.7834E+01
RHO	1.3229E+01	5.1525E+01	6.0881E+01
M	5.8079E+01	1.0390E+02	1.3435E+02
A	4.9029E+00	8.7204E+00	9.6660E+00
S	1.7553E+00	1.8841E+00	1.9588E+00
Z	1.7023E+00	2.0002E+00	2.0640E+00
GAME	8.7713E-01	1.0737E+00	9.4636E-01
U	1.5461E+01	3.9659E+00	4.2917E+00

SPECIES	MOLE FRACTIONS		
E-	6.3666E-07	4.3110E-03	3.2693E-02
H	8.2508E-01	9.8712E-01	9.3277E-01
H+	6.2353E-07	4.3053E-03	3.2629E-02
H2	1.7492E-01	4.1458E-03	1.4317E-03
H-	1.3721E-08	4.5487E-05	2.0401E-04
H2+	2.3853E-08	5.1221E-05	2.6802E-04

P1 = 2.00E+03 N/SQ-M, US1 = 2.10E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3028E+02	3.3834E+03	5.4263E+03
T	1.5438E+01	3.0431E+01	4.3723E+01
RHO	1.3149E+01	5.5665E+01	6.1034E+01
M	5.3004E+01	9.5146E+01	1.2211E+02
A	4.6522E+00	9.2253E+00	9.3415E+00
S	1.7070E+00	1.8458E+00	1.9231E+00
Z	1.6272E+00	1.9843E+00	2.0334E+00
GAME	8.6838E-01	1.1131E+00	9.8153E-01
U	1.4751E+01	3.4919E+00	4.0414E+00

SPECIES	MOLE FRACTIONS		
E-	3.0449E-07	1.1732E-03	1.8523E-02
H	7.7097E-01	9.8956E-01	9.4043E-01
H+	2.9703E-07	1.1711E-03	1.3589E-02
H2	2.2913E-01	9.0664E-03	2.0383E-33
H-	5.2365E-09	1.8774E-05	1.4341E-04
H2+	1.2901E-08	2.0843E-05	1.7720E-04

P1 = 2.00E+03 N/SQ-M, US1 = 2.30E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.9609E+02	3.9122E+03	6.5444E+03
T	1.6892E+01	3.9788E+01	5.1230E+01
RHO	1.3188E+01	4.8752E+01	6.0882E+01
M	6.3383E+01	1.1336E+02	1.4664E+02
A	5.1822E+00	9.0304E+00	9.9741E+00
S	1.8030E+00	1.9193E+00	1.9928E+00
Z	1.7780E+00	2.0169E+00	2.0982E+00
GAME	8.9419E-01	1.0162E+00	9.2547E-01
U	1.6163E+01	4.3589E+00	4.4752E+00

SPECIES	MOLE FRACTIONS		
E-	1.4373E-06	1.0840E-02	4.8272E-02
H	8.7512E-01	9.7578E-01	9.0185E-01
H+	1.4329E-06	1.0825E-02	4.8173E-02
H2	1.2497E-01	2.3766E-03	1.0947E-03
H-	2.2747E-08	8.2722E-05	2.5597E-04
H2+	4.5445E-08	9.7146E-05	3.5504E-04

TABLE I. - Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3065E+02	4.1535E+03	6.9886E+03
T	1.7905E+01	4.3505E+01	5.4109E+01
RHO	1.2989E+01	4.6841E+01	6.0501E+01
H	6.8914E+01	1.2264E+02	1.5891E+02
A	5.5290E+00	9.2894E+00	1.0265E+01
S	1.8505E+00	1.9534E+00	2.0261E+00
Z	1.8517E+00	2.0382E+00	2.1348E+00
GAME	9.2204E-01	9.7316E-01	9.1273E-01
U	1.6841E+01	4.6484E+00	4.6070E+00

SPECIES	MOLE FRACTIONS		
E-	3.6472E-06	2.0495E-02	4.4445E-02
H	9.1998E-01	9.5720E-01	8.6964E-01
H+	3.6067E-06	2.0457E-02	6.4310E-02
H2	8.0115E-02	1.5858E-03	8.7301E-04
H-	5.1922E-08	1.2228E-04	2.9687E-04
H2+	9.2475E-08	1.5068E-04	4.3181E-04

P1 = 2.00E+03 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.0104E+02	4.4100E+03	7.3302E+03
T	2.1596E+01	4.9367E+01	5.8670E+01
RHO	1.1805E+01	4.2644E+01	5.6459E+01
H	8.0605E+01	1.4263E+02	1.8324E+02
A	6.7091E+00	9.7839E+00	1.0792E+01
S	1.9401E+00	2.0211E+00	2.0956E+00
Z	1.9653E+00	2.0948E+00	2.2129E+00
GAME	1.0605E+00	9.2564E-01	8.5703E-01
U	1.8093E+01	5.0021E+00	4.7775E+00

SPECIES	MOLE FRACTIONS		
E-	5.4115E-05	4.6378E-02	9.7307E-02
H	9.8219E-01	9.0600E-01	9.0414E-01
H+	5.3956E-05	4.6314E-02	9.7115E-02
H2	1.7703E-02	8.6744E-04	5.7203E-04
H-	4.5395E-07	1.8687E-04	3.3797E-04
H2+	6.1342E-07	2.5166E-04	5.3080E-04

P1 = 2.00E+03 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6586E+02	4.3409E+03	7.2822E+03
T	1.9349E+01	4.6714E+01	5.6593E+01
RHO	1.2557E+01	4.5004E+01	5.9208E+01
H	7.4660E+01	1.3257E+02	1.7121E+02
A	6.0091E+00	9.5437E+00	1.0540E+01
S	1.8966E+00	1.9865E+00	2.0502E+00
Z	1.9176E+00	2.0648E+00	2.1733E+00
GAME	9.7328E-01	9.4428E-01	9.0325E-01
U	1.7493E+01	4.8742E+00	4.7041E+00

SPECIES	MOLE FRACTIONS		
E-	1.1737E-05	3.2742E-02	8.0928E-02
H	9.5720E-01	9.3315E-01	8.3679E-01
H+	1.1660E-05	3.2695E-02	8.0760E-02
H2	4.2977E-02	1.1458E-03	7.0678E-04
H-	1.3736E-07	1.5999E-04	3.2711E-04
H2+	2.1466E-07	2.0540E-04	4.9299E-04

P1 = 2.00E+03 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3578E+02	4.3639E+03	7.1576E+03
T	2.4868E+01	5.1576E+01	6.0386E+01
RHO	1.0935E+01	3.9772E+01	5.2606E+01
H	8.6730E+01	1.5269E+02	1.9488E+02
A	7.4736E+00	1.0009E+01	1.1021E+01
S	1.9794E+00	2.0568E+00	2.1322E+00
Z	1.9884E+00	2.1274E+00	2.2532E+00
GAME	1.1295E+00	9.1311E-01	8.9269E-01
U	1.8633E+01	5.0710E+00	4.8273E+00

SPECIES	MOLE FRACTIONS		
E-	3.1132E-04	6.0872E-02	1.1338E-01
H	9.9325E-01	8.7727E-01	7.7210E-01
H+	3.1100E-04	6.0741E-02	1.1317E-01
H2	6.1252E-03	4.7210E-04	4.6145E-04
H-	1.6629E-06	2.0486E-04	3.3740E-04
H2+	1.9863E-06	2.8597E-04	5.4555E-04

TABLE I.- Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M, US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7127E+02	4.3343E+03	7.0032E+03
T	2.8615E+01	5.3564E+01	6.1977E+01
RHO	9.9916E+00	3.7423E+01	4.9241E+01
H	9.3061E+01	1.6305E+02	2.0668E+02
A	7.9928E+00	1.0235E+01	1.1248E+01
S	2.0139E+00	2.0917E+00	2.1682E+00
Z	1.9980E+00	2.1623E+00	2.2947E+00
GAME	1.1174E+00	9.0438E-01	8.8960E-01
U	1.9160E+01	5.1004E+00	4.8713E+00

SPECIES	MOLE FRACTIONS		
E-	1.4357E-03	7.5900E-02	1.2937E-01
H	9.9471E-01	8.4723E-01	7.4022E-01
H+	1.4351E-03	7.5804E-02	1.2915E-01
H2	2.4069E-03	5.3493E-04	3.7606E-04
H-	4.9473E-04	2.1801E-04	3.3279E-04
H2+	5.5585E-06	3.1450E-04	5.5281E-04

P1 = 2.00E+03 N/SQ-M, US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.4821E+02	4.5287E+03	7.1525E+03
T	3.5410E+01	5.7360E+01	6.5351E+01
RHO	9.0664E+00	3.5265E+01	4.5919E+01
H	1.0645E+02	1.8839E+02	2.3250E+02
A	8.4694E+00	1.0713E+01	1.1747E+01
S	2.0734E+00	2.1566E+00	2.2361E+00
Z	2.0190E+00	2.2388E+00	2.3835E+00
GAME	1.0033E+00	8.9372E-01	8.8584E-01
U	2.0296E+01	5.2116E+00	4.9875E+00

SPECIES	MOLE FRACTIONS		
E-	1.0179E-02	1.0739E-01	1.6174E-01
H	9.7888E-01	7.8437E-01	6.7561E-01
H+	1.0177E-02	1.0726E-01	1.6149E-01
H2	7.2771E-04	3.6667E-04	2.6188E-04
H-	1.8919E-05	2.4118E-04	3.2788E-04
H2+	2.1327E-05	3.7079E-04	5.7645E-04

P1 = 2.00E+03 N/SQ-M, US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.0843E+02	4.3809E+03	6.9918E+03
T	3.2234E+01	5.5459E+01	6.3604E+01
RHO	9.4073E+00	3.5918E+01	4.7019E+01
H	9.9625E+01	1.7386E+02	2.1911E+02
A	8.2900E+00	1.0467E+01	1.1487E+01
S	2.0449E+00	2.1249E+00	2.2027E+00
Z	2.0066E+00	2.1993E+00	2.3379E+00
GAME	1.0599E+00	8.9820E-01	8.8739E-01
U	1.9707E+01	5.1508E+00	4.9230E+00

SPECIES	MOLE FRACTIONS		
E+	4.5191E-03	9.1406E-02	1.4542E-01
H	9.8975E-01	8.1629E-01	7.0819E-01
H+	4.5168E-03	9.1293E-02	1.4519E-01
H2	1.1964E-03	4.3775E-04	3.1162E-04
H-	1.0931E-05	2.2951E-04	3.2926E-04
H2+	1.2148E-05	3.4174E-04	5.6216E-04

P1 = 2.00E+03 N/SQ-M, US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.3500E+02	5.0572E+03	7.8626E+03
T	4.0435E+01	6.1201E+01	6.9153E+01
RHO	8.8392E+00	3.5557E+01	4.5833E+01
H	1.2090E+02	2.1052E+02	2.6205E+02
A	8.8252E+00	1.1239E+01	1.2317E+01
S	2.1259E+00	2.2173E+00	2.3006E+00
Z	2.0564E+00	2.3239E+00	2.4807E+00
GAME	9.3665E-01	8.8814E-01	8.8440E-01
U	2.1579E+01	5.3699E+00	5.1511E+00

SPECIES	MOLE FRACTIONS		
E-	2.7879E-02	1.4008E-01	1.9458E-01
H	9.4378E-01	7.1905E-01	6.0999E-01
H+	2.7872E-02	1.3991E-01	1.9430E-01
H2	8.8595E-04	2.6976E-04	1.8922E-04
H-	3.6498E-05	2.6299E-04	3.2631E-04
H2+	4.3479E-05	4.3139E-04	6.1098E-04

TABLE I.- Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M. US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.3019E+02	5.7872E+03	8.9887E+03
T	4.4367E+01	6.5040E+01	7.3229E+01
RHO	8.9807E+00	3.6821E+01	4.6942E+01
U	1.3633E+02	2.3838E+02	2.9472E+02
A	9.2087E+00	1.1797E+01	1.2943E+01
S	2.1766E+00	2.2768E+00	2.3644E+00
Z	2.1070E+00	2.4158E+00	2.5947E+00
GAME	9.0711E-01	8.8546E-01	8.8502E-01
U	2.2943E+01	5.5413E+00	5.3469E+00

SPECIES	MOLE FRACTIONS		
E-	3.1107E-02	1.7280E-01	2.2698E-01
H	8.9742E-01	6.5345E-01	5.4526E-01
H+	5.1034E-02	1.7259E-01	2.2667E-01
H2	2.5475E-04	2.0172E-04	1.3675E-04
H-	5.3712E-05	2.7816E-04	3.1943E-04
H2+	6.7094E-05	4.8483E-04	6.3587E-04

P1 = 2.00E+03 N/SQ-M. US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0419E+03	7.6496E+03	1.1568E+04
T	5.0517E+01	7.2869E+01	8.2178E+01
RHO	9.2473E+00	4.0166E+01	5.0136E+01
U	1.7027E+02	2.9930E+02	3.6814E+02
A	9.9917E+00	1.2990E+01	1.4356E+01
S	2.2751E+00	2.3915E+00	2.4923E+00
Z	2.2305E+00	2.6135E+00	2.8078E+00
GAME	8.8602E-01	8.8632E-01	8.9320E-01
U	2.5770E+01	5.9364E+00	5.8269E+00

SPECIES	MOLE FRACTIONS		
E-	1.0359E-01	2.3543E-01	2.8839E-01
H	7.9252E-01	5.2847E-01	4.7261E-01
H+	1.0356E-01	2.3515E-01	2.8804E-01
H2	1.4258E-04	1.1273E-04	6.4301E-05
H-	8.0291E-05	2.8067E-04	2.7435E-04
H2+	1.1026E-04	5.5705E-04	6.2854E-04

P1 = 2.00E+03 N/SQ-M. US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.3270E+02	6.6598E+03	1.0141E+04
T	4.7633E+01	6.8934E+01	7.7556E+01
RHO	9.0414E+00	3.8451E+01	4.8536E+01
U	1.5294E+02	2.6771E+02	3.3013E+02
A	9.5987E+00	1.2390E+01	1.3619E+01
S	2.2259E+00	2.3359E+00	2.4282E+00
Z	2.1657E+00	2.5176E+00	2.6939E+00
GAME	8.9317E-01	8.8484E-01	8.8781E-01
U	2.4347E+01	5.7385E+00	5.5718E+00

SPECIES	MOLE FRACTIONS		
E-	7.6767E-02	2.0473E-01	2.5833E-01
H	8.4514E-01	5.8989E-01	4.8263E-01
H+	7.6745E-02	2.0445E-01	2.5799E-01
H2	1.8614E-04	1.5172E-04	9.6932E-05
H-	6.8327E-05	2.8408E-04	3.0122E-04
H2+	8.9635E-05	5.3015E-04	6.4451E-04

P1 = 2.00E+03 N/SQ-M. US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1576E+03	8.7291E+03	1.3153E+04
T	5.3151E+01	7.4900E+01	8.7207E+01
RHO	9.4662E+00	4.1764E+01	5.1548E+01
U	1.8866E+02	3.3267E+02	4.0878E+02
A	1.0387E+01	1.3631E+01	1.5170E+01
S	2.3245E+00	2.4545E+00	2.5569E+00
Z	2.3003E+00	2.7178E+00	2.9258E+00
GAME	8.8234E-01	8.8906E-01	9.0193E-01
U	2.7237E+01	6.1696E+00	6.1189E+00

SPECIES	MOLE FRACTIONS		
E-	1.3079E-01	2.6476E-01	3.1707E-01
H	7.3812E-01	4.6997E-01	3.6535E-01
H+	1.3075E-01	2.6446E-01	3.1672E-01
H2	1.1175E-04	8.1899E-05	4.3097E-05
H-	8.9494E-05	2.6636E-04	2.3943E-04
H2+	1.2836E-04	5.6436E-04	5.8748E-04

TABLE I. - Continued

$p_1 = 2$ kN/m^2

P1 = 2.00E+03 N/SQ-M, US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2799E+03	9.8989E+03	1.4892E+04
T	5.5651E+01	8.1121E+01	9.2819E+01
RHO	9.6859E+00	4.3192E+01	5.2645E+01
H	2.0801E+02	3.6790E+02	4.5216E+02
A	1.0789E+01	1.4316E+01	1.6090E+01
S	2.3742E+00	2.5142E+00	2.6217E+00
Z	2.3744E+00	2.8252E+00	3.0477E+00
GAME	8.8058E-01	8.9429E-01	9.1514E-01
U	2.8646E+01	6.4259E+00	6.4473E+00

SPECIES	MOLE FRACTIONS		
E-	1.5793E-01	2.9270E-01	3.4431E-01
H	6.8387E-01	4.1406E-01	3.1095E-01
H+	1.5788E-01	2.9239E-01	3.4399E-01
H2	8.8559E-05	5.7611E-05	2.6162E-05
H-	9.6016E-05	2.4438E-04	1.9925E-04
H2+	1.4356E-04	5.5155E-04	5.2285E-04

P1 = 2.00E+03 N/SQ-M, US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5414E+03	1.2394E+04	1.8786E+04
T	6.0362E+01	9.0351E+01	1.0690E+02
RHO	1.0079E+01	4.5044E+01	5.3263E+01
H	2.4951E+02	4.4292E+02	5.4807E+02
A	1.1607E+01	1.5853E+01	1.8419E+01
S	2.4751E+00	2.6326E+00	2.7516E+00
Z	2.5335E+00	3.0455E+00	3.2994E+00
GAME	8.8099E-01	9.1338E-01	9.6192E-01
U	3.1503E+01	7.0544E+00	7.3448E+00

SPECIES	MOLE FRACTIONS		
E-	2.1080E-01	3.4378E-01	3.9418E-01
H	5.7814E-01	3.1205E-01	2.1140E-01
H+	2.1074E-01	3.4350E-01	3.9396E-01
H2	5.5800E-05	2.5038E-05	7.1337E-06
H-	1.0128E-04	1.8352E-04	1.1721E-04
H2+	1.6394E-04	4.6830E-04	3.4220E-04

P1 = 2.00E+03 N/SQ-M, US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4074E+03	1.1119E+04	1.6748E+04
T	5.8036E+01	8.5541E+01	9.9251E+01
RHO	9.8936E+00	4.4288E+01	5.3240E+01
H	2.2829E+02	4.0460E+02	4.9853E+02
A	1.1193E+01	1.5050E+01	1.7156E+01
S	2.4244E+00	2.5735E+00	2.6868E+00
Z	2.4523E+00	2.9245E+00	3.1729E+00
GAME	8.8034E-01	9.0214E-01	9.3449E-01
U	3.0075E+01	6.7217E+00	6.8400E+00

SPECIES	MOLE FRACTIONS		
E-	1.8445E-01	3.1900E-01	3.7011E-01
H	6.3042E-01	3.6153E-01	2.5945E-01
H+	1.8440E-01	3.1870E-01	3.6983E-01
H2	7.0381E-05	3.8955E-05	1.4484E-05
H-	9.9884E-05	2.1596E-04	1.5711E-04
H2+	1.5546E-04	5.1843E-04	4.3833E-04

P1 = 2.00E+03 N/SQ-M, US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6910E+03	1.3706E+04	2.0961E+04
T	6.2661E+01	9.5619E+01	1.1631E+02
RHO	1.0248E+01	4.5399E+01	5.2624E+01
H	2.7167E+02	4.9277E+02	6.0142E+02
A	1.2031E+01	1.6746E+01	1.9951E+01
S	2.5262E+00	2.6912E+00	2.8159E+00
Z	2.6179E+00	3.1573E+00	3.4247E+00
GAME	8.8243E-01	9.2885E-01	9.9925E-01
U	3.2929E+01	7.4377E+00	7.9416E+00

SPECIES	MOLE FRACTIONS		
E-	2.3623E-01	3.6698E-01	4.1626E-01
H	5.2730E-01	2.6573E-01	1.6731E-01
H+	2.3616E-01	3.6672E-01	4.1613E-01
H2	4.3948E-05	1.5121E-05	3.0249E-06
H-	1.0039E-04	1.4965E-04	8.3205E-05
H2+	1.5891E-04	4.0430E-04	2.4485E-04

TABLE I. - Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8271E+03	1.5051E+04	2.3349E+04
T	6.4943E+01	1.0150E+02	1.2842E+02
RHO	1.0398E+01	4.5374E+01	5.1288E+01
H	2.9478E+02	5.2425E+02	6.6010E+02
A	1.2469E+01	1.7746E+01	2.1824E+01
S	2.5777E+00	2.7482E+00	2.8801E+00
Z	2.7051E+00	3.2678E+00	3.5451E+00
GAME	8.8466E-01	9.4942E-01	1.0442E+00
U	3.4359E+01	7.8823E+00	8.7311E+00

SPECIES	MOLE FRACTIONS		
E-	2.6085E-01	3.9831E-01	4.3600E-01
H	4.7807E-01	2.2314E-01	1.2789E-01
H+	2.6078E-01	3.8809E-01	4.3590E-01
H2	3.4261E-05	8.5185E-06	1.0634E-06
H-	9.7424E-05	1.1731E-04	5.7395E-05
H2+	1.7039E-04	3.3285E-04	1.5769E-04

P1 = 2.00E+03 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1357E+03	1.7668E+04	2.8620E+04
T	6.9472E+01	1.1621E+02	1.6235E+02
RHO	1.0618E+01	4.3661E+01	4.7204E+01
H	3.4380E+02	6.1074E+02	7.9214E+02
A	1.3392E+01	2.0217E+01	2.6210E+01
S	2.6819E+00	2.8603E+00	3.0009E+00
Z	2.8859E+00	3.4821E+00	3.7344E+00
GAME	8.9161E-01	1.0101E+00	1.1330E+00
U	3.7193E+01	9.0540E+00	1.0784E+01

SPECIES	MOLE FRACTIONS		
E-	3.0741E-01	4.2583E-01	4.6449E-01
H	3.8499E-01	1.4822E-01	7.0950E-02
H+	3.0733E-01	4.2570E-01	4.6447E-01
H2	1.9892E-05	2.0111E-06	9.0860E-08
H-	9.6244E-05	6.3715E-05	3.3355E-05
H2+	1.6306E-04	1.8755E-04	5.2154E-05

P1 = 2.00E+03 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9786E+03	1.6367E+04	2.5893E+04
T	6.7290E+01	1.0829E+02	1.4374E+02
RHO	1.0521E+01	4.4745E+01	4.9342E+01
H	3.1882E+02	5.6685E+02	7.2336E+02
A	1.2921E+01	1.8900E+01	2.3967E+01
S	2.6295E+00	2.8051E+00	2.9425E+00
Z	2.7949E+00	3.3777E+00	3.6507E+00
GAME	8.8769E-01	9.7653E-01	1.0947E+00
U	3.5778E+01	8.4360E+00	9.6659E+00

SPECIES	MOLE FRACTIONS		
E-	2.8459E-01	4.0813E-01	4.5225E-01
H	4.3060E-01	1.8355E-01	9.5424E-02
H+	2.9452E-01	4.0796E-01	4.5219E-01
H2	2.5338E-05	4.3475E-06	3.2031E-07
H-	9.2619E-05	8.7819E-05	4.0525E-05
H2+	1.6838E-04	2.5761E-04	9.2666E-05

P1 = 2.00E+03 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.2983E+03	1.8918E+04	3.1477E+04
T	7.2140E+01	1.2540E+02	1.8445E+02
RHO	1.0637E+01	4.2180E+01	4.4925E+01
H	3.6970E+02	6.5570E+02	8.6551E+02
A	1.3886E+01	2.1680E+01	2.8482E+01
S	2.7343E+00	2.9129E+00	3.0570E+00
Z	2.9810E+00	3.5767E+00	3.7987E+00
GAME	8.9657E-01	1.0479E+00	1.1577E+00
U	3.8593E+01	9.7687E+00	1.2012E+01

SPECIES	MOLE FRACTIONS		
E-	3.2976E-01	4.4095E-01	4.7353E-01
H	3.4131E-01	1.1800E-01	5.2884E-02
H+	3.2918E-01	4.4087E-01	4.7353E-01
H2	1.4697E-05	8.5203E-07	2.5656E-08
H-	7.8586E-05	4.5819E-05	2.3505E-05
H2+	1.5464E-04	1.2905E-04	2.8963E-05

TABLE I. - Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M. US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4662E+03	2.0072E+04	3.4391E+04
T	7.4729E+01	1.3584E+02	2.0816E+02
RHO	1.0726E+01	4.0390E+01	4.2985E+01
U	5.9653E+02	7.0142E+02	9.4207E+02
A	1.4407E+01	2.3221E+01	3.0637E+01
S	2.7868E+00	2.9627E+00	3.1067E+00
Z	3.0769E+00	3.6577E+00	3.8435E+00
GAME	9.0280E-01	1.0852E+00	1.1709E+00
U	3.9986E+01	1.0624E+01	1.3255E+01

SPECIES	MOLE FRACTIONS		
E-	3.5012E-01	4.5329E-01	4.7965E-01
H	2.9961E-01	9.3352E-02	4.0653E-02
H+	3.5004E-01	4.5324E-01	4.7966E-01
H2	1.0568E-06	3.4094E-07	8.3301E-09
H-	6.9954E-06	3.3652E-05	1.8735E-05
H2+	1.4344E-04	8.5210E-05	1.7096E-05

P1 = 2.00E+03 N/SQ-M. US1 = 6.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8174E+03	2.2110E+04	4.0294E+04
T	8.0462E+01	1.6108E+02	2.6138E+02
RHO	1.0705E+01	3.6306E+01	3.9517E+01
U	4.5296E+02	7.9524E+02	1.1058E+03
A	1.5864E+01	2.6383E+01	3.4718E+01
S	2.8915E+00	3.0546E+00	3.1971E+00
Z	3.2710E+00	3.7805E+00	3.9011E+00
GAME	9.2055E-01	1.1430E+00	1.1821E+00
U	4.2735E+01	1.2569E+01	1.5864E+01

SPECIES	MOLE FRACTIONS		
E-	3.8869E-01	4.7101E-01	4.8733E-01
H	2.2251E-01	5.7943E-02	2.5311E-02
H+	3.9863E-01	4.7099E-01	4.8734E-01
H2	4.0042E-06	4.9163E-08	1.1883E-09
H-	5.1083E-05	1.9532E-05	1.1811E-05
H2+	1.1429E-04	3.4241E-05	6.8102E-06

P1 = 2.00E+03 N/SQ-M. US1 = 6.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6394E+03	2.1163E+04	3.7398E+04
T	7.7484E+01	1.4785E+02	2.3446E+02
RHO	1.0733E+01	3.8417E+01	4.1141E+01
U	4.2429E+02	7.4814E+02	1.0237E+03
A	1.4964E+01	2.4819E+01	3.2726E+01
S	2.8392E+00	3.0095E+00	3.1543E+00
Z	3.1736E+00	3.7259E+00	3.8771E+00
GAME	9.1064E-01	1.1181E+00	1.1782E+00
U	4.1369E+01	1.1526E+01	1.4628E+01

SPECIES	MOLE FRACTIONS		
E-	3.6994E-01	4.6327E-01	4.8416E-01
H	2.5998E-01	7.3413E-02	3.1652E-02
H+	3.6937E-01	4.6324E-01	4.8416E-01
H2	7.3499E-06	1.2952E-07	2.9310E-09
H-	6.0672E-05	2.5229E-05	1.4839E-05
H2+	1.2992E-04	5.4301E-05	1.0445E-05

P1 = 2.00E+03 N/SQ-M. US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.0001E+03	2.2952E+04	4.3155E+04
T	8.3739E+01	1.7500E+02	2.8971E+02
RHO	1.0637E+01	3.4313E+01	3.8006E+01
U	4.8253E+02	8.4304E+02	1.1918E+03
A	1.6223E+01	2.7850E+01	3.6673E+01
S	2.9434E+00	3.0961E+00	3.2374E+00
Z	3.3581E+00	3.8223E+00	3.9194E+00
GAME	9.3317E-01	1.1596E+00	1.1944E+00
U	4.4085E+01	1.3651E+01	1.7165E+01

SPECIES	MOLE FRACTIONS		
E-	4.0629E-01	4.7677E-01	4.8972E-01
H	1.8733E-01	4.6419E-02	2.0536E-02
H+	4.0623E-01	4.7677E-01	4.8973E-01
H2	3.1095E-06	1.9709E-08	5.2639E-10
H-	4.1550E-05	1.5586E-05	9.3601E-06
H2+	9.7415E-05	2.2032E-05	4.6237E-06

TABLE I. - Continued

$p_1 = 2\ kN/m^2$

P1 = 2.00E+03 N/SQ-M. US1 = 6.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.187?E+03	2.3696E+04	4.5773E+04
T	8.7417E+01	1.8996E+02	3.1920E+02
RHO	1.0526E+01	3.2363E+01	3.6573E+01
U	5.1309E+02	8.9157E+02	1.2774E+03
A	1.6984E+01	2.9270E+01	3.8525E+01
S	2.9947E+00	3.1363E+00	3.2745E+00
Z	3.4636E+00	3.8553E+00	3.9332E+00
GAME	9.4939E-01	1.1734E+00	1.1959E+00
U	4.5413E+01	1.4739E+01	1.8312E+01

SPECIES	MOLE FRACTIONS		
E-	4.2265E-01	4.8125E-01	4.9151E-01
H	1.5464E-01	3.7479E-02	1.6962E-02
H+	4.2260E-01	4.8125E-01	4.9152E-01
H2	1.8501E-06	8.1325E-09	2.5711E-10
H-	3.2449E-05	1.2547E-05	7.4344E-06
H2+	7.9911E-05	1.4354E-05	3.2810E-06

P1 = 2.00E+03 N/SQ-M. US1 = 7.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5710E+03	2.4669E+04	5.0306E+04
T	9.6571E+01	2.2104E+02	3.7774E+02
RHO	1.0152E+01	2.8601E+01	3.3689E+01
U	5.7655E+02	9.8959E+02	1.4555E+03
A	1.8729E+01	3.1926E+01	4.2112E+01
S	3.0943E+00	3.2111E+00	3.3445E+00
Z	3.6426E+00	3.9018E+00	3.9530E+00
GAME	9.9714E-01	1.1818E+00	1.1876E+00
U	4.7979E+01	1.6996E+01	2.0655E+01

SPECIES	MOLE FRACTIONS		
E-	4.5099E-01	4.8742E-01	4.9436E-01
H	9.7993E-02	2.5149E-02	1.1865E-02
H+	4.5096E-01	4.8742E-01	4.9407E-01
H2	5.0838E-07	1.4548E-09	7.2266E-11
H-	1.7035E-05	8.1467E-06	4.6339E-06
H2+	4.4449E-05	4.4867E-06	1.7730E-06

P1 = 2.00E+03 N/SQ-M. US1 = 6.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3764E+03	2.4203E+04	4.9173E+04
T	9.1628E+01	2.0491E+02	3.4763E+02
RHO	1.0364E+01	3.0435E+01	3.5134E+01
U	5.4432E+02	9.3978E+02	1.3656E+03
A	1.7780E+01	3.0599E+01	4.0340E+01
S	3.0451E+00	3.1739E+00	3.3102E+00
Z	3.5559E+00	3.8809E+00	3.9442E+00
GAME	9.7031E-01	1.1773E+00	1.1949E+00
U	4.6703E+01	1.5920E+01	1.9506E+01

SPECIES	MOLE FRACTIONS		
E-	4.3740E-01	4.8447E-01	4.9293E-01
H	1.2474E-01	3.0546E-02	1.4130E-02
H+	4.3757E-01	4.8467E-01	4.9293E-01
H2	1.0177E-06	3.6331E-09	1.3293E-10
H-	2.4159E-05	1.0113E-05	5.8786E-06
H2+	6.2613E-05	9.5991E-06	2.3862E-06

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0534E+01	2.1976E+01	5.3615E+01
T	2.7143E+00	3.3549E+00	4.7152E+00
RHO	3.9200E+00	6.5476E+00	1.1368E+01
H	2.7745E+00	3.4524E+00	4.9398E+00
A	1.6437E+00	1.8212E+00	2.1384E+00
S	1.0616E+00	1.0637E+00	1.0837E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8911E-01	9.6955E-01
U	2.2463E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	1.0095E-35	2.6051E-34	2.4337E-27
H	1.9403E-11	7.2841E-10	3.4281E-06
H+	3.9300E-35	2.7005E-34	1.2374E-27
H2	1.0000E+00	1.0000E+00	1.0000E+00
H-	2.3475E-44	1.0133E-42	2.3173E-32
H2+	3.1693E-35	3.2730E-36	1.1963E-27

P1 = 5.00E+03 N/SQ-M. US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4289E+01	7.6640E+01	1.5406E+02
T	4.8591E+00	6.7295E+00	8.6290E+00
RHO	4.9985E+00	1.1393E+01	1.7736E+01
H	5.0993E+00	7.3103E+00	9.9844E+00
A	2.1683E+00	2.5144E+00	2.7819E+00
S	1.1321E+00	1.1406E+00	1.1667E+00
Z	1.0000E+00	1.0000E+00	1.0056E+00
GAME	9.6756E-01	9.3905E-01	8.9095E-01
U	3.6813E+00	1.5996E+00	1.4344E+00

SPECIES	MOLE FRACTIONS		
E-	2.9961E-26	9.9699E-19	2.7405E-14
H	9.3630E-06	9.4381E-04	1.3158E-02
H+	2.4919E-26	4.6767E-19	2.2346E-14
H2	9.9999E-01	9.9936E-01	9.8684E-01
H-	4.6353E-20	4.7313E-22	1.7377E-16
H2+	5.0467E-27	2.2979E-19	5.2324E-15

P1 = 5.00E+03 N/SQ-M. US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4532E+01	9.7299E+01
T	3.7033E+00	4.9228E+00	6.6797E+00
RHO	4.5254E+00	9.0445E+00	1.4562E+01
H	3.8206E+00	5.1719E+00	7.2453E+00
A	1.9078E+00	2.1614E+00	2.5076E+00
S	1.0972E+00	1.1024E+00	1.1261E+00
Z	1.0000E+00	1.0000E+00	1.0004E+00
GAME	9.8761E-01	9.6674E-01	9.4100E-01
U	2.9621E+00	1.4792E+00	1.3365E+00

SPECIES	MOLE FRACTIONS		
E-	7.5664E-32	3.6453E-25	7.1308E-19
H	2.0392E-08	9.5130E-06	7.5360E-04
H+	4.3162E-32	1.7179E-25	6.1634E-19
H2	1.0000E+00	9.9999E-01	9.9925E-01
H-	4.2602E-37	2.3387E-29	2.7368E-21
H2+	3.2535E-32	9.2744E-26	9.9774E-20

P1 = 5.00E+03 N/SQ-M. US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3287E+01	1.2078E+02	2.2367E+02
T	4.1580E+00	8.5562E+00	1.0171E+01
RHO	5.4042E+00	1.4021E+01	2.1400E+01
H	4.4134E+00	9.9042E+00	1.3090E+01
A	2.4164E+00	2.7480E+00	2.9924E+00
S	1.1655E+00	1.1781E+00	1.2066E+00
Z	1.0002E+00	1.0068E+00	1.0276E+00
GAME	9.4797E-01	8.8943E-01	8.5678E-01
U	4.3392E+00	1.6704E+00	1.4690E+00

SPECIES	MOLE FRACTIONS		
E-	3.8105E-20	2.1391E-14	5.8778E-12
H	4.1159E-04	1.3577E-02	5.3742E-02
H+	3.0549E-20	1.7667E-14	4.9705E-12
H2	9.9959E-01	9.8742E-01	9.4426E-01
H-	1.5340E-23	1.0627E-14	9.0256E-14
H2+	7.5713E-21	3.8301E-15	9.9757E-13

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3961E+01	1.8237E+02	3.1167E+02
T	7.5074E+00	1.0382E+01	1.1419E+01
RHO	5.8275E+00	1.7590E+01	2.5674E+01
U	8.3683E+00	1.3010E+01	1.0644E+01
A	2.4201E+00	2.9775E+00	3.2031E+00
S	1.1975E+00	1.2163E+00	1.2480E+00
Z	1.0025E+00	1.0282E+00	1.0430E+00
GAME	9.1209E-01	8.7513E-01	8.4521E-01
U	5.3433E+00	1.6673E+00	1.4814E+00

SPECIES	MOLE FRACTIONS		
E-	2.9318E-16	5.2342E-12	1.4288E-10
H	5.0786E-03	5.4920E-02	1.1853E-01
H+	2.5128E-16	4.4833E-12	1.2319E-10
H2	9.9492E-01	9.4508E-01	8.8147E-01
H-	4.8622E-19	7.0645E-14	3.6891E-12
H2+	4.2309E-17	8.2163E-13	2.3388E-11

P1 = 5.00E+03 N/SQ-M. US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.0377E+01	3.8322E+02	5.8967E+02
T	9.6725E+00	1.2485E+01	1.3646E+01
RHO	7.0579E+00	2.7575E+01	3.6924E+01
U	1.2423E+01	2.0792E+01	2.5479E+01
A	2.9077E+00	3.4224E+00	3.6788E+00
S	1.2615E+00	1.2992E+00	1.3383E+00
Z	1.0309E+00	1.1131E+00	1.1704E+00
GAME	8.4793E-01	8.4289E-01	8.4738E-01
U	6.5267E+00	1.6689E+00	1.5370E+00

SPECIES	MOLE FRACTIONS		
E-	2.6720E-12	1.3168E-09	8.4301E-09
H	5.9886E-02	2.3328E-01	2.9112E-01
H+	2.3972E-12	1.1576E-09	7.4661E-09
H2	9.4011E-01	7.9672E-01	7.0888E-01
H-	1.9933E-14	4.5906E-11	4.2531E-10
H2+	2.9365E-13	2.0512E-10	1.3893E-09

P1 = 5.00E+03 N/SQ-M. US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6215E+01	2.6807E+02	4.3076E+02
T	8.7083E+00	1.1348E+01	1.2352E+01
RHO	6.3805E+00	2.2188E+01	3.0989E+01
U	1.0372E+01	1.6643E+01	2.0767E+01
A	2.7703E+00	3.1933E+00	3.4335E+00
S	1.2292E+00	1.2565E+00	1.2919E+00
Z	1.0123E+00	1.0647E+00	1.1111E+00
GAME	8.7109E-01	8.4398E-01	8.4385E-01
U	5.7715E+00	1.6547E+00	1.5033E+00

SPECIES	MOLE FRACTIONS		
E-	8.2321E-14	1.2765E-10	1.3850E-09
H	2.3757E-02	1.2154E-01	1.9991E-01
H+	7.2736E-14	1.1045E-10	1.2104E-09
H2	9.7623E-01	9.7846E-01	9.0009E-01
H-	3.3787E-14	2.9302E-12	5.1961E-11
H2+	9.9227E-15	1.9951E-11	2.2664E-10

P1 = 5.00E+03 N/SQ-M. US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.6275E+01	5.2981E+02	7.9209E+02
T	1.0473E+01	1.3557E+01	1.4743E+01
RHO	7.7883E+00	2.3355E+01	4.3316E+01
U	1.5117E+01	2.5431E+01	3.0904E+01
A	3.0469E+00	3.6668E+00	3.9516E+00
S	1.2952E+00	1.3443E+00	1.3877E+00
Z	1.0577E+00	1.1717E+00	1.2403E+00
GAME	8.3801E-01	8.4646E-01	8.5391E-01
U	7.2729E+00	1.7374E+00	1.5955E+00

SPECIES	MOLE FRACTIONS		
E-	7.7825E-11	7.8354E-09	3.8823E-08
H	1.0918E-01	2.9307E-01	3.8755E-01
H+	2.5187E-11	6.9771E-09	3.4909E-08
H2	8.9092E-01	7.0693E-01	6.1245E-01
H-	2.8303E-13	3.5890E-10	2.4662E-09
H2+	2.9205E-12	1.2322E-09	6.3796E-09

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M, US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0373E+02	7.0732E+02	1.0354E+03
T	1.1171E+01	1.4597E+01	1.5853E+01
RHO	8.5097E+00	3.9115E+01	4.9499E+01
H	1.7845E+01	3.0521E+01	3.6672E+01
A	3.1892E+00	3.9266E+00	4.2480E+00
S	1.3305E+00	1.3916E+00	1.4393E+00
Z	1.0911E+00	1.2388E+00	1.3195E+00
GAME	8.3442E-01	8.5264E-01	8.6270E-01
U	8.0536E+00	1.7538E+00	1.6701E+00

SPECIES	MOLE FRACTIONS		
E-	1.4550E-10	3.3852E-08	1.4382E-07
H	1.6699E-01	3.8598E-01	4.8425E-01
H+	1.5106E-10	3.0517E-08	1.3127E-07
H2	8.3301E-01	6.1442E-01	5.1576E-01
H-	2.2319E-12	1.9976E-09	1.0842E-08
H2+	1.6662E-11	5.3319E-09	2.3366E-08

P1 = 5.00E+03 N/SQ-M, US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4334E+02	1.1512E+03	1.6491E+03
T	1.2403E+01	1.6699E+01	1.8263E+01
RHO	9.8442E+00	4.9400E+01	6.0080E+01
H	2.4008E+01	4.2031E+01	5.0134E+01
A	3.4882E+00	4.5046E+00	4.9363E+00
S	1.4061E+00	1.4916E+00	1.5484E+00
Z	1.1742E+00	1.3956E+00	1.5029E+00
GAME	8.3563E-01	8.7074E-01	8.8775E-01
U	9.5648E+00	1.9084E+00	1.8740E+00

SPECIES	MOLE FRACTIONS		
E-	2.1844E-09	3.6188E-07	1.4067E-06
H	2.9674E-01	5.6696E-01	6.6926E-01
H+	2.3231E-09	3.3538E-07	1.3250E-06
H2	7.0326E-01	4.3304E-01	3.3073E-01
H-	4.3013E-11	2.8431E-08	1.2866E-07
H2+	2.0726E-10	5.4932E-08	2.1034E-07

P1 = 5.00E+03 N/SQ-M, US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2275E+02	9.1471E+02	1.3239E+03
T	1.1806E+01	1.5634E+01	1.7011E+01
RHO	9.2001E+00	4.4534E+01	5.5178E+01
H	2.0809E+01	3.6055E+01	4.3107E+01
A	3.3359E+00	4.2047E+00	4.5736E+00
S	1.3675E+00	1.4408E+00	1.4930E+00
Z	1.1301E+00	1.3137E+00	1.4073E+00
GAME	8.3409E-01	8.6076E-01	8.7377E-01
U	8.8108E+00	1.8223E+00	1.7621E+00

SPECIES	MOLE FRACTIONS		
E-	6.7638E-10	1.1859E-07	4.6697E-07
H	2.3025E-01	4.7761E-01	5.7879E-01
H+	6.2162E-10	1.0838E-07	4.3300E-07
H2	7.6975E-01	5.2239E-01	4.2120E-01
H-	1.1271E-11	9.2720E-09	3.9727E-08
H2+	6.6030E-11	1.8491E-08	7.3699E-08

P1 = 5.00E+03 N/SQ-M, US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6540E+02	1.4126E+03	2.0181E+03
T	1.2970E+01	1.7812E+01	1.9674E+01
RHO	1.0427E+01	5.3461E+01	6.3902E+01
H	2.7442E+01	4.8422E+01	5.7779E+01
A	3.6467E+00	4.8299E+00	5.3493E+00
S	1.4463E+00	1.5434E+00	1.6051E+00
Z	1.2230E+00	1.4834E+00	1.6052E+00
GAME	8.3836E-01	8.8291E-01	9.0610E-01
U	1.0311E+01	2.0137E+00	2.0149E+00

SPECIES	MOLE FRACTIONS		
E-	4.0174E-09	1.0114E-06	4.1337E-06
H	3.6471E-01	6.5171E-01	7.5402E-01
H+	5.5991E-09	9.5068E-07	3.9539E-06
H2	6.3529E-01	3.4828E-01	2.4597E-01
H-	1.3549E-10	8.5483E-08	3.8590E-07
H2+	5.5381E-10	1.4619E-07	5.6571E-07

TABLE I.- Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8899E+02	1.6967E+03	2.4278E+03
T	1.3527E+01	1.9024E+01	2.1365E+01
RHO	1.0947E+01	5.6596E+01	6.6407E+01
H	3.1111E+01	5.5237E+01	6.6072E+01
A	3.8127E+00	6.1890E+00	5.8374E+00
S	1.4879E+00	1.5959E+00	1.6625E+00
Z	1.2762E+00	1.5758E+00	1.7112E+00
GAME	8.4231E-01	9.9815E-01	9.3233E-01
U	1.1053E+01	2.1406E+00	2.1815E+00

SPECIES	MOLE FRACTIONS		
E-	1.4848E-08	2.7004E-06	1.2529E-05
H	4.3294E-01	7.3383E-01	8.3120E-01
H+	1.3901E-08	2.5734E-06	1.2156E-05
H2	5.6706E-01	2.6916E-01	1.6877E-01
H-	3.7231E-10	2.3498E-07	1.1236E-06
H2+	1.3186E-09	3.6192E-07	1.4962E-06

P1 = 5.00E+03 N/SQ-M. US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4061E+02	2.3101E+03	3.3882E+03
T	1.4642E+01	2.2046E+01	2.7062E+01
RHO	1.1779E+01	6.9342E+01	8.5586E+01
H	3.9152E+01	7.0058E+01	8.5408E+01
A	4.1711E+00	6.3698E+00	7.3372E+00
S	1.5746E+00	1.7006E+00	1.7783E+00
Z	1.3951E+00	1.7652E+00	1.9090E+00
GAME	8.5173E-01	9.4472E-01	1.0421E+00
U	1.2523E+01	2.4875E+00	2.7400E+00

SPECIES	MOLE FRACTIONS		
E-	7.2627E-08	1.9917E-05	2.0143E-04
H	5.6640E-01	8.4692E-01	9.5169E-01
H+	4.8857E-08	1.9455E-05	1.9981E-04
H2	4.3340E-01	1.3304E-01	4.7882E-02
H-	2.1133E-09	1.5702E-06	1.2001E-05
H2+	5.8830E-09	2.0320E-06	1.3622E-05

P1 = 5.00E+03 N/SQ-M. US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1406E+02	1.9982E+03	2.8816E+03
T	1.4081E+01	2.0397E+01	2.3614E+01
RHO	1.1399E+01	5.9628E+01	7.1778E+01
H	3.5014E+01	6.2457E+01	7.5191E+01
A	3.9871E+00	6.5943E+00	6.4614E+00
S	1.5306E+00	1.6485E+00	1.7234E+00
Z	1.3337E+00	1.6710E+00	1.8165E+00
GAME	8.4646E-01	9.1824E-01	9.7329E-01
U	1.1791E+01	2.2950E+00	2.4067E+00

SPECIES	MOLE FRACTIONS		
E-	3.3799E-08	7.1678E-06	4.3507E-05
H	5.0043E-01	8.0306E-01	8.9886E-01
H+	3.1843E-08	6.9200E-06	4.2761E-05
H2	4.9957E-01	1.9693E-01	1.0104E-01
H-	9.2240E-10	6.1194E-07	3.4253E-06
H2+	2.8779E-09	8.5993E-07	4.1808E-06

P1 = 5.00E+03 N/SQ-M. US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6863E+02	2.6222E+03	3.9565E+03
T	1.5220E+01	2.4180E+01	3.2594E+01
RHO	1.2087E+01	5.8548E+01	6.1705E+01
H	4.3525E+01	7.8004E+01	9.7063E+01
A	4.3665E+00	6.6584E+00	8.3994E+00
S	1.6195E+00	1.7512E+00	1.8339E+00
Z	1.4601E+00	1.8522E+00	1.9673E+00
GAME	8.5795E-01	9.8995E-01	1.1033E+00
U	1.3250E+01	2.7377E+00	3.2223E+00

SPECIES	MOLE FRACTIONS		
E-	1.5016E-07	6.1611E-05	1.2394E-03
H	6.3026E-01	9.2031E-01	9.7960E-01
H+	1.4328E-07	6.0772E-05	1.2344E-03
H2	3.6974E-01	7.9854E-02	1.7833E-02
H-	4.6885E-09	4.1346E-06	4.6461E-05
H2+	1.1457E-08	4.9738E-06	5.1472E-05

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9801E+02	2.9195E+03	4.5607E+03
T	1.5827E+01	2.7135E+01	3.9213E+01
RHO	1.2319E+01	5.5991E+01	5.8268E+01
U	4.8131E+01	8.6236E+01	1.0965E+02
A	4.5755E+00	7.4034E+00	9.1177E+00
S	1.6653E+00	1.7991E+00	1.8928E+00
Z	1.5285E+00	1.9215E+00	1.9960E+00
GAME	8.6540E-01	1.0512E+00	1.0421E+00
U	1.3971E+01	3.0755E+00	3.7456E+00

SPECIES	MOLE FRACTIONS		
E-	3.3333E-07	2.2419E-04	5.6813E-03
H	6.9151E-01	9.5847E-01	9.9085E-01
H+	2.9134E-07	2.2243E-04	5.6595E-03
H2	3.0849E-01	4.1059E-02	7.5251E-03
H-	9.4804E-09	1.1481E-05	1.3314E-04
H2+	2.1548E-09	1.3032E-05	1.5494E-04

P1 = 5.00E+03 N/SQ-M. US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.6093E+02	3.4391E+03	5.7032E+03
T	1.7212E+01	3.5748E+01	4.9491E+01
RHO	1.2536E+01	4.8362E+01	5.6276E+01
U	5.8341E+01	1.0339E+02	1.3452E+02
A	5.0519E+00	8.8001E+00	9.8698E+00
S	1.7583E+00	1.8824E+00	1.9605E+00
Z	1.6728E+00	1.9876E+00	2.0477E+00
GAME	8.8639E-01	1.0893E+00	9.6121E-01
U	1.6391E+01	3.9831E+00	4.4141E+00

SPECIES	MOLE FRACTIONS		
E-	1.2438E-06	3.0422E-03	2.6791E-02
H	8.0442E-01	9.9449E-01	9.4269E-01
H+	1.2143E-06	3.0528E-03	2.6647E-02
H2	1.9558E-01	9.2385E-03	3.0045E-03
H-	3.8423E-08	7.3409E-05	3.6033E-04
H2+	7.2902E-08	8.2734E-05	4.8462E-04

P1 = 5.00E+03 N/SQ-M. US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2981E+02	3.1881E+03	5.1433E+03
T	1.6483E+01	3.1142E+01	4.4859E+01
RHO	1.2471E+01	5.2072E+01	5.6758E+01
U	5.2970E+01	9.4678E+01	1.2204E+02
A	4.8022E+00	8.2058E+00	9.5310E+00
S	1.7114E+00	1.8433E+00	1.9235E+00
Z	1.5096E+00	1.9647E+00	2.0201E+00
GAME	8.7459E-01	1.0098E+00	1.0024E+00
U	1.4685E+01	3.5174E+00	4.1195E+00

SPECIES	MOLE FRACTIONS		
E-	4.1237E-07	2.0077E-04	1.4404E-02
H	7.4971E-01	9.7930E-01	9.6595E-01
H+	5.9147E-07	2.9738E-04	1.4541E-02
H2	2.5029E-01	1.0836E-02	4.3503E-03
H-	1.0177E-08	9.1704E-05	2.4711E-04
H2+	2.9711E-09	3.5098E-05	3.0859E-04

P1 = 5.00E+03 N/SQ-M. US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.9433E+02	3.6729E+03	6.2122E+03
T	1.8060E+01	4.0331E+01	5.3291E+01
RHO	1.2498E+01	4.5421E+01	5.6098E+01
U	5.3143E+01	1.1243E+02	1.4688E+02
A	5.3365E+00	9.1812E+00	1.0178E+01
S	1.8053E+00	1.9186E+00	1.9948E+00
Z	1.7469E+00	2.0050E+00	2.0780E+00
GAME	9.0267E-01	1.0424E+00	9.3547E-01
U	1.6087E+01	4.4225E+00	4.6116E+00

SPECIES	MOLE FRACTIONS		
E-	9.6798E-06	7.8947E-03	4.0473E-02
H	8.5510E-01	9.7871E-01	9.1585E-01
H+	9.6214E-06	7.8603E-03	4.0276E-02
H2	1.4490E-01	5.7493E-03	2.2858E-03
H-	7.8316E-08	1.1558E-04	4.5751E-04
H2+	1.3578E-07	1.5997E-04	6.5463E-04

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.2875E+02	3.8991E+03	6.6530E+03
T	1.9104E+01	4.4433E+01	5.6549E+01
RHO	1.2334E+01	4.3352E+01	5.5747E+01
H	6.8872E+01	1.2189E+02	1.5931E+02
A	5.6747E+00	9.4482E+00	1.0469E+01
S	1.8512E+00	1.9529E+00	2.0283E+00
Z	1.8195E+00	2.0742E+00	2.1104E+00
GAME	9.2702E-01	9.9671E-01	9.1844E-01
U	1.6767E+01	4.7633E+00	4.7621E+00

SPECIES	MOLE FRACTIONS		
E-	6.2503E-06	1.5653E-02	5.4044E-02
H	9.0394E-01	9.6485E-01	8.8718E-01
H+	6.1536E-06	1.5602E-02	5.4690E-02
H2	9.9148E-02	3.4345E-03	1.8201E-03
H-	1.6657E-07	2.0670E-04	5.3601E-04
H2+	2.5373E-07	2.5763E-04	8.0981E-04

P1 = 5.00E+03 N/SQ-M. US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.9057E+02	4.2098E+03	7.1370E+03
T	2.2494E+01	5.1044E+01	6.1822E+01
RHO	1.1441E+01	3.9762E+01	5.2963E+01
H	8.0567E+01	1.4193E+02	1.8409E+02
A	6.7125E+00	9.9754E+00	1.1002E+01
S	1.9394E+00	2.0203E+00	2.0964E+00
Z	1.9412E+00	2.2734E+00	2.1797E+00
GAME	1.0319E+00	9.3987E-01	8.9829E-01
U	1.8043E+01	5.1807E+00	4.9646E+00

SPECIES	MOLE FRACTIONS		
E-	5.8319E-06	3.7724E-02	8.4703E-02
H	9.4954E-01	9.2202E-01	8.2813E-01
H+	5.9019E-06	3.7597E-02	8.4295E-02
H2	3.3345E-02	1.8648E-03	1.2106E-03
H-	1.0305E-06	3.3224E-04	6.2600E-04
H2+	1.3306E-06	4.5997E-04	1.0339E-03

P1 = 5.00E+03 N/SQ-M. US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6400E+02	4.0913E+03	6.9318E+03
T	2.0494E+01	4.8002E+01	5.9380E+01
RHO	1.1999E+01	4.1635E+01	5.4820E+01
H	7.4616E+01	1.3174E+02	1.7177E+02
A	6.1146E+00	9.7282E+00	1.0745E+01
S	1.8964E+00	1.9944E+00	2.0619E+00
Z	1.8868E+00	2.0471E+00	2.1445E+00
GAME	9.6690E-01	9.6307E-01	9.0664E-01
U	1.7423E+01	5.0123E+00	4.8774E+00

SPECIES	MOLE FRACTIONS		
E-	1.6994E-05	2.5850E-02	6.9797E-02
H	9.3999E-01	9.4529E-01	8.5774E-01
H+	1.6817E-05	2.5763E-02	6.9450E-02
H2	5.9987E-02	2.4650E-03	1.4804E-03
H-	2.8689E-07	2.7514E-04	5.9307E-04
H2+	5.5401E-07	3.6191E-04	9.3983E-04

P1 = 5.00E+03 N/SQ-M. US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3494E+02	4.2312E+03	7.0925E+03
T	2.5387E+01	5.3648E+01	6.3877E+01
RHO	1.0569E+01	3.7534E+01	5.0392E+01
H	8.4707E+01	1.5199E+02	1.9510E+02
A	7.4378E+00	1.0209E+01	1.1241E+01
S	1.9794E+00	2.0850E+00	2.1319E+00
Z	1.9750E+00	2.1622E+00	2.2159E+00
GAME	1.1333E+00	9.2383E-01	8.9241E-01
U	1.8604E+01	5.2836E+00	5.0277E+00

SPECIES	MOLE FRACTIONS		
E-	2.5330E-04	5.7624E-02	9.9503E-02
H	9.8658E-01	8.7656E-01	7.9874E-01
H+	2.4975E-04	5.7045E-02	9.9351E-02
H2	1.2938E-02	1.4539E-03	9.8796E-04
H-	3.0716E-04	3.7329E-04	6.3507E-04
H2+	3.4207E-06	5.3835E-04	1.0964E-03

TABLE I.- Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M, US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7069E+02	4.2252E+03	6.9885E+03
T	2.8947E+01	5.5969E+01	6.5767E+01
RHO	9.9022E+00	3.5389E+01	4.7163E+01
U	9.3044E+01	1.6234E+02	2.0811E+02
A	8.0402E+00	1.0437E+01	1.1472E+01
S	2.0149E+00	2.0895E+00	2.1674E+00
Z	1.9910E+00	2.1332E+00	2.2531E+00
GAME	1.1217E+00	9.1245E-01	8.8815E-01
U	1.9141E+01	5.3491E+00	5.0793E+00

SPECIES	MOLE FRACTIONS		
E-	1.0230E-03	6.4208E-02	1.1424E-01
H	9.9239E-01	8.6962E-01	7.6945E-01
H+	1.0220E-03	6.4008E-02	1.1376E-01
H2	5.5429E-03	1.1559E-03	8.1006E-04
H-	8.4351E-06	4.0249E-04	6.3137E-04
H2+	9.4471E-06	6.0331E-04	1.1147E-03

P1 = 5.00E+03 N/SQ-M, US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.4680E+02	4.3777E+03	7.0643E+03
T	3.4089E+01	6.0233E+01	6.9509E+01
RHO	8.9082E+00	3.3022E+01	4.3594E+01
U	1.0641E+02	1.8444E+02	2.3371E+02
A	8.6608E+00	1.0909E+01	1.1958E+01
S	2.0762E+00	2.1546E+00	2.2350E+00
Z	2.0119E+00	2.2009E+00	2.3313E+00
GAME	1.0331E+00	8.9777E-01	8.8239E-01
U	2.0251E+01	5.4585E+00	5.1939E+00

SPECIES	MOLE FRACTIONS		
E-	7.6055E-03	9.2810E-02	1.4384E-01
H	9.8307E-01	8.1270E-01	7.1051E-01
H+	7.6011E-03	9.2536E-02	1.4330E-01
H2	1.6513E-03	7.8928E-04	5.6533E-04
H-	3.3254E-05	4.4805E-04	6.2059E-04
H2+	3.7665E-05	7.2178E-04	1.1661E-03

P1 = 5.00E+03 N/SQ-M, US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.0767E+02	4.2619E+03	6.9575E+03
T	3.2452E+01	5.8119E+01	6.7609E+01
RHO	9.3013E+00	3.3854E+01	4.4906E+01
U	9.9600E+01	1.7308E+02	2.2051E+02
A	8.4203E+00	1.0669E+01	1.1709E+01
S	2.0469E+00	2.1228E+00	2.2020E+00
Z	2.0009E+00	2.1661E+00	2.2916E+00
GAME	1.0852E+00	9.0411E-01	8.8491E-01
U	1.9680E+01	5.4011E+00	5.1321E+00

SPECIES	MOLE FRACTIONS		
E-	3.2279E-03	7.8290E-02	1.2907E-01
H	9.9073E-01	8.4163E-01	7.3993E-01
H+	3.2258E-03	7.8054E-02	1.2856E-01
H2	2.7724E-03	9.4431E-04	6.7149E-04
H-	1.8692E-05	4.2604F-04	6.2494E-04
H2+	2.3771E-05	6.6224E-04	1.1379E-03

P1 = 5.00E+03 N/SQ-M, US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.3221E+02	4.8318E+03	7.6505E+03
T	4.1763E+01	6.4483E+01	7.3652E+01
RHO	8.5750E+00	3.2925E+01	4.2998E+01
U	1.2081E+02	2.0921E+02	2.6280E+02
A	9.0487E+00	1.1422E+01	1.2506E+01
S	2.1300E+00	2.2151E+00	2.2988E+00
Z	2.0446E+00	2.2759E+00	2.4158E+00
GAME	9.5889E-01	8.8896E-01	8.7894E-01
U	2.1497E+01	5.5888E+00	5.3490E+00

SPECIES	MOLE FRACTIONS		
E-	2.2739E-02	1.2266E-01	1.7377E-01
H	9.5355E-01	7.5312E-01	6.5082E-01
H+	2.2725E-02	1.2230E-01	1.7315E-01
H2	8.3948E-04	5.7818E-04	4.0978E-04
H-	6.7889E-05	4.8858E-04	6.1416E-04
H2+	8.1767E-05	8.4541E-04	1.2339E-03

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M, US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.2623E+03	5.4910E+03	8.5735E+03
T	4.6217E+01	6.8745E+01	7.8131E+01
RHO	8.5553E+00	3.3899E+01	4.3797E+01
M	1.3625E+02	2.3643E+02	2.9508E+02
A	9.4423E+00	1.1963E+01	1.3137E+01
S	2.1804E+00	2.2736E+00	2.3613E+00
Z	2.0896E+00	2.3563E+00	2.5055E+00
GAME	9.2309E-01	8.8356E-01	8.7762E-01
U	2.2834E+01	5.7525E+00	5.5348E+00

SPECIES	MOLE FRACTIONS		
E-	4.3576E-02	1.5263E-01	2.0334E-01
H	9.1213E-01	6.9327E-01	5.9182E-01
H+	4.3547E-02	1.5218E-01	2.0265E-01
H2	5.4587E-04	4.3653E-04	2.9877E-04
H-	1.0179E-04	5.1774E-04	5.9905E-04
H2+	1.3061E-04	9.6157E-04	1.2903E-03

P1 = 5.00E+03 N/SQ-M, US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0361E+03	7.1985E+03	1.1053E+04
T	5.3225E+01	7.7382E+01	8.8113E+01
RHO	8.8380E+00	3.6793E+01	4.6483E+01
M	1.7009E+02	2.9703E+02	3.6801E+02
A	1.0246E+01	1.3119E+01	1.4487E+01
S	2.2780E+00	2.3894E+00	2.4868E+00
Z	2.2027E+00	2.5283E+00	2.6987E+00
GAME	8.9541E-01	8.7971E-01	8.8260E-01
U	2.5627E+01	6.1654E+00	6.0085E+00

SPECIES	MOLE FRACTIONS		
E-	9.2543E-02	2.1033E-01	2.6034E-01
H	8.1430E-01	5.7803E-01	4.7814E-01
H+	9.2475E-02	2.0974E-01	2.5957E-01
H2	3.0288E-04	2.4904E-04	1.4775E-04
H-	1.5573E-04	5.2530E-04	5.2054E-04
H2+	2.2351E-04	1.1193E-03	1.2897E-03

P1 = 5.00E+03 N/SQ-M, US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.2775E+03	6.2876E+03	9.7248E+03
T	4.9942E+01	7.3027E+01	8.2924E+01
RHO	8.6680E+00	3.5277E+01	4.5112E+01
M	1.5268E+02	2.6574E+02	3.3023E+02
A	9.8429E+00	1.2528E+01	1.3763E+01
S	2.2294E+00	2.3316E+00	2.4236E+00
Z	2.1431E+00	2.4407E+00	2.5996E+00
GAME	9.0517E-01	8.8058E-01	8.7866E-01
U	2.4218E+01	5.9549E+00	5.7571E+00

SPECIES	MOLE FRACTIONS		
E-	6.7359E-02	1.8196E-01	2.3218E-01
H	8.6462E-01	6.3469E-01	5.3428E-01
H+	6.7312E-02	1.8143E-01	2.3144E-01
H2	3.9596E-04	3.3128E-04	2.1406E-04
H-	1.3139E-04	5.3034E-04	5.6832E-04
H2+	1.7871E-04	1.0557E-03	1.3133E-03

P1 = 5.00E+03 N/SQ-M, US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1511E+04	8.2026E+03	1.2538E+04
T	5.6229E+01	8.1865E+01	9.3698E+01
RHO	9.0301E+00	3.8263E+01	4.7800E+01
M	1.8845E+02	3.3016E+02	4.0848E+02
A	1.0650E+01	1.3743E+01	1.5279E+01
S	2.3265E+00	2.4472E+00	2.5487E+00
Z	2.2670E+00	2.6187E+00	2.7995E+00
GAME	8.8981E-01	8.8099E-01	8.8992E-01
U	2.7048E+01	6.3974E+00	6.2997E+00

SPECIES	MOLE FRACTIONS		
E-	1.1827E-01	2.3758E-01	2.8691E-01
H	7.6298E-01	5.2365E-01	4.2516E-01
H+	1.1818E-01	2.3694E-01	2.8615E-01
H2	2.3803E-04	1.8348E-04	9.8187E-05
H-	1.7454E-04	5.0320E-04	4.6147E-04
H2+	2.6355E-04	1.1460E-03	1.2203E-03

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 4.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2723E+03	9.2863E+03	1.4168E+04
T	5.9051E+01	8.4545E+01	9.9964E+01
RHO	9.2263E+00	3.0573E+01	4.8787E+01
M	2.0777E+02	3.6505E+02	4.5167E+02
A	1.1057E+01	1.4408E+01	1.6183E+01
S	2.3752E+00	2.6059E+00	2.6113E+00
Z	2.3352E+00	2.7114E+00	2.9051E+00
GAME	8.8645E-01	8.8469E-01	9.0180E-01
U	2.8475E+01	6.6560E+00	6.6358E+00

SPECIES	MOLE FRACTIONS		
E-	1.4412E-01	2.6345E-01	3.1272E-01
H	7.1138E-01	4.7164E-01	3.7371E-01
H+	1.4392E-01	2.6298E-01	3.1231E-01
H2	1.1952E-04	1.3134E-04	6.1102E-05
H-	1.8919E-04	4.6641E-04	3.9360E-04
H2+	2.9792E-04	1.1330E-03	1.1025E-03

P1 = 5.00E+03 N/SQ-M. US1 = 4.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5330E+03	1.1647E+04	1.7870E+04
T	6.4393E+01	9.6841E+01	1.1567E+02
RHO	9.5939E+00	4.1430E+01	4.9380E+01
M	2.4925E+02	4.3983E+02	5.4768E+02
A	1.1889E+01	1.5917E+01	1.8487E+01
S	2.4734E+00	2.6195E+00	2.7369E+00
Z	2.4814E+00	2.9030E+00	3.1287E+00
GAME	8.8465E-01	9.0120E-01	9.4440E-01
U	3.1331E+01	7.2629E+00	7.5468E+00

SPECIES	MOLE FRACTIONS		
E-	1.9448E-01	3.1210E-01	3.6154E-01
H	4.1052E-01	3.7501E-01	2.7538E-01
H+	1.9433E-01	3.1147E-01	3.6104E-01
H2	1.2117E-04	5.9890E-05	1.8192E-05
H-	2.0039E-04	3.6413E-04	2.5868E-04
H2+	3.4647E-04	9.9374E-04	7.6139E-04

P1 = 5.00E+03 N/SQ-M. US1 = 4.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3996E+03	1.0437E+04	1.5947E+04
T	6.1757E+01	9.1509E+01	1.0720E+02
RHO	9.4163E+00	4.0642E+01	4.9329E+01
M	2.2806E+02	4.0161E+02	4.9903E+02
A	1.1473E+01	1.5129E+01	1.7242E+01
S	2.4241E+00	2.5626E+00	2.6744E+00
Z	2.4068E+00	2.8065E+00	3.0157E+00
GAME	8.8507E-01	8.9124E-01	9.1960E-01
U	2.9903E+01	6.9450E+00	7.0510E+00

SPECIES	MOLE FRACTIONS		
E-	1.6950E-01	2.9853E-01	3.3777E-01
H	4.6046E-01	4.2202E-01	3.2377E-01
H+	1.6937E-01	2.9787E-01	3.3716E-01
H2	1.5161E-04	9.0599E-05	3.4942E-05
H-	1.9857E-04	4.1845E-04	3.2331E-04
H2+	3.2552E-04	1.0806E-03	9.4372E-04

P1 = 5.00E+03 N/SQ-M. US1 = 4.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6724E+03	1.2887E+04	1.9958E+04
T	6.6099E+01	1.0272E+02	1.2593E+02
RHO	9.7566E+00	4.1787E+01	4.8853E+01
M	2.7142E+02	4.7959E+02	6.0128E+02
A	1.2317E+01	1.6802E+01	1.9980E+01
S	2.5231E+00	2.6765E+00	2.7990E+00
Z	2.5588E+00	3.0023E+00	3.2441E+00
GAME	8.8526E-01	9.1542E-01	9.7713E-01
U	3.2763E+01	7.6678E+00	8.1540E+00

SPECIES	MOLE FRACTIONS		
E-	2.1894E-01	3.3476E-01	3.8438E-01
H	5.6192E-01	3.2982E-01	2.3142E-01
H+	2.1858E-01	3.3419E-01	3.8371E-01
H2	9.6336E-05	3.7301E-05	8.4170E-06
H-	1.9915E-04	3.0654E-04	2.0438E-04
H2+	3.4015E-04	9.7542E-04	5.7289E-04

TABLE I.- Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8175E+03	1.4142E+04	2.2207E+04
T	6.9601E+01	1.0921E+02	1.3859E+02
RHO	9.8967E+00	4.1750E+01	4.7656E+01
U	2.9450E+02	5.2066E+02	6.5954E+02
A	1.2761E+01	1.7791E+01	2.1768E+01
S	2.5731E+00	2.7370E+00	2.9614E+00
Z	2.6387E+00	3.1017E+00	3.3600E+00
GAME	8.8664E-01	9.3430E-01	1.0169E+00
U	3.4179E+01	8.1169E+00	8.9384E+00

SPECIES	MOLE FRACTIONS		
E-	2.4248E-01	3.5595E-01	4.0517E-01
H	5.1457E-01	2.8757E-01	1.8934E-01
H+	2.4231E-01	3.5547E-01	4.0493E-01
H2	7.5911E-05	2.1953E-05	3.3977E-06
H-	1.9411E-04	2.5195E-04	1.6260E-04
H2+	3.4640E-04	7.4013E-04	3.9827E-04

P1 = 5.00E+03 N/SQ-M. US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1244E+03	1.6630E+04	2.7175E+04
T	7.4917E+01	1.2476E+02	1.7226E+02
RHO	1.0109E+01	4.0421E+01	4.4296E+01
U	3.4343E+02	6.0670E+02	7.9003E+02
A	1.3695E+01	2.0153E+01	2.5888E+01
S	2.6739E+00	2.8387E+00	2.9776E+00
Z	2.8050E+00	3.2976E+00	3.5615E+00
GAME	8.9245E-01	9.8715E-01	1.0924E+00
U	3.6093E+01	9.2482E+00	1.0921E+01

SPECIES	MOLE FRACTIONS		
E-	2.8739E-01	3.9396E-01	4.3860E-01
H	4.2482E-01	2.1175E-01	1.2257E-01
H+	2.8721E-01	3.9366E-01	4.3855E-01
H2	4.5290E-05	6.2246E-06	4.4752E-07
H-	1.7395E-04	1.6342E-04	1.1309E-04
H2+	3.5736E-04	4.6214E-04	1.6661E-04

P1 = 5.00E+03 N/SQ-M. US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9479E+03	1.5389E+04	2.4608E+04
T	7.2229E+01	1.1648E+02	1.5391E+02
RHO	1.0014E+01	4.1279E+01	4.6130E+01
U	3.1852E+02	5.6298E+02	7.2233E+02
A	1.3218E+01	1.8901E+01	2.3745E+01
S	2.6233E+00	2.7861E+00	2.9202E+00
Z	2.7209E+00	3.2005E+00	3.4660E+00
GAME	8.8905E-01	9.5827E-01	1.0570E+00
U	3.5584E+01	8.6407E+00	9.8640E+00

SPECIES	MOLE FRACTIONS		
E-	2.6534E-01	3.7572E-01	4.2322E-01
H	4.6899E-01	2.4813E-01	1.5328E-01
H+	2.6516E-01	3.7533E-01	4.2309E-01
H2	5.9092E-05	1.2101E-05	1.2733E-06
H-	1.8549E-04	2.0353E-04	1.3419E-04
H2+	3.6535E-04	5.9830E-04	2.6324E-04

P1 = 5.00E+03 N/SQ-M. US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.2863E+03	1.7818E+04	2.9857E+04
T	7.7695E+01	1.3415E+02	1.9291E+02
RHO	1.0178E+01	3.9179E+01	4.2519E+01
U	3.6936E+02	6.5140E+02	8.6212E+02
A	1.4195E+01	2.1531E+01	2.8023E+01
S	2.7243E+00	2.8895E+00	3.0306E+00
Z	2.8911E+00	3.3902E+00	3.6400E+00
GAME	8.9701E-01	1.0194E+00	1.1183E+00
U	3.8389E+01	9.9545E+00	1.2086E+01

SPECIES	MOLE FRACTIONS		
E-	3.0960E-01	4.1041E-01	4.5066E-01
H	3.8244E-01	1.7892E-01	9.8488E-02
H+	3.0841E-01	4.1020E-01	4.5065E-01
H2	3.4052E-05	3.0395E-06	1.6262E-07
H-	1.5971E-04	1.3211E-04	9.6486E-05
H2+	3.4271E-04	3.4714E-04	1.0603E-04

TABLE I. - Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M. US1 = 5.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4533E+03	1.8943E+04	3.2610E+04
T	8.0600E+01	1.4463E+02	2.1630E+02
RHO	1.0218E+01	3.7488E+01	4.0683E+01
H	3.9617E+02	6.9704E+02	9.3779E+02
A	1.4724E+01	2.2994E+01	3.0182E+01
S	2.7749E+00	2.9378E+00	3.0818E+00
Z	2.9787E+00	3.4753E+00	3.7058E+00
GAME	9.0294E-01	1.0519E+00	1.1365E+00
U	3.9776E+01	1.0756E+01	1.3295E+01

SPECIES	MOLE FRACTIONS		
E-	3.2892E-01	4.2475E-01	4.6037E-01
H	3.4194E-01	1.5027E-01	7.9104E-02
H+	3.2874E-01	4.2462E-01	4.6038E-01
H2	2.5012E-05	1.3970E-06	6.0743E-08
H-	1.4370E-04	1.0876E-04	8.1081E-05
H2+	3.2203E-04	2.4549E-04	6.7749E-05

P1 = 5.00E+03 N/SQ-M. US1 = 6.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.8029E+03	2.0919E+04	3.8154E+04
T	8.6972E+01	1.6902E+02	2.6663E+02
RHO	1.0207E+01	3.4195E+01	3.7692E+01
H	4.5255E+02	7.9054E+02	1.0982E+03
A	1.5896E+01	2.6031E+01	3.4202E+01
S	2.8757E+00	3.0287E+00	3.1706E+00
Z	3.1574E+00	3.6194E+00	3.7965E+00
GAME	9.2013E-01	1.1077E+00	1.1556E+00
U	4.2515E+01	1.2654E+01	1.5755E+01

SPECIES	MOLE FRACTIONS		
E-	3.6684E-01	4.4755E-01	4.7323E-01
H	2.6609E-01	1.0475E-01	5.3422E-02
H+	3.6668E-01	4.4751E-01	4.7326E-01
H2	1.2334E-05	2.8247E-07	1.1422E-08
H-	1.0855E-04	7.6800E-05	5.6306E-05
H2+	2.6572E-04	1.1891E-04	3.1430E-05

P1 = 5.00E+03 N/SQ-M. US1 = 6.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6256E+03	1.9969E+04	3.5386E+04
T	8.3675E+01	1.5624E+02	2.4070E+02
RHO	1.0229E+01	3.5985E+01	3.9140E+01
H	4.2390E+02	7.4336E+02	1.0165E+03
A	1.5288E+01	2.4505E+01	3.2215E+01
S	2.8254E+00	2.9842E+00	3.1276E+00
Z	3.0676E+00	3.5519E+00	3.7561E+00
GAME	9.1052E-01	1.0820E+00	1.1479E+00
U	4.1152E+01	1.1681E+01	1.4517E+01

SPECIES	MOLE FRACTIONS		
E-	3.4835E-01	4.3739E-01	4.6757E-01
H	3.0303E-01	1.2563E-01	6.4718E-02
H+	3.4818E-01	4.3701E-01	4.6760E-01
H2	1.7843E-05	6.3163E-07	2.5402E-08
H-	1.2643E-04	9.0948E-05	6.7996E-05
H2+	2.9605E-04	1.7205E-04	4.5455E-05

P1 = 5.00E+03 N/SQ-M. US1 = 6.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9849E+03	2.1772E+04	4.0880E+04
T	9.0557E+01	1.8235E+02	2.9440E+02
RHO	1.0150E+01	3.2484E+01	3.6257E+01
H	4.8210E+02	8.3844E+02	1.1832E+03
A	1.6557E+01	2.7488E+01	3.6183E+01
S	2.9255E+00	3.0698E+00	3.2122E+00
Z	3.2473E+00	3.6756E+00	3.8299E+00
GAME	9.3225E-01	1.1273E+00	1.1611E+00
U	4.3862E+01	1.3677E+01	1.7021E+01

SPECIES	MOLE FRACTIONS		
E-	3.8434E-01	4.5595E-01	4.7781E-01
H	2.3112E-01	8.7966E-02	4.4288E-02
H+	3.8420E-01	4.5593E-01	4.7783E-01
H2	8.1785E-06	1.3130E-07	5.4097E-09
H-	9.0731E-05	6.5493E-05	4.5879E-05
H2+	2.3219E-04	8.3129E-05	2.2189E-05

TABLE I.- Continued

$p_1 = 5\ kN/m^2$

P1 = 5.00E+03 N/SQ-M, US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.1713E+03	2.2525E+04	4.3461E+04
T	9.4517E+01	1.9642E+02	3.2775E+02
RHO	1.0056E+01	3.0801E+01	3.4919E+01
H	5.1255E+02	8.8704E+02	1.2696E+03
A	1.7286E+01	2.8901E+01	3.8079E+01
S	2.9748E+00	3.1092E+00	3.2509E+00
Z	3.3365E+00	3.7233E+00	3.8563E+00
GAME	9.4747E-01	1.1421E+00	1.1650E+00
U	4.5189E+01	1.4725E+01	1.8229E+01

SPECIES	MOLE FRACTIONS		
E-	4.0080E-01	4.6289E-01	4.8138E-01
H	1.9826E-01	7.4102E-02	3.7159E-02
H+	4.0067E-01	4.6289E-01	4.8140E-01
H2	5.1649E-06	6.2668E-08	2.7666E-09
H-	7.3624E-05	5.5720E-05	3.7258E-05
H2+	1.9691E-04	5.8518E-05	1.6197E-05

P1 = 5.00E+03 N/SQ-M, US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5556E+03	2.3593E+04	4.8023E+04
T	1.0401E+02	2.2550E+02	3.8147E+02
RHO	9.7431E+00	2.7420E+01	3.2317E+01
H	5.7609E+02	9.8517E+02	1.4475E+03
A	1.9005E+01	3.1614E+01	4.1705E+01
S	3.0706E+00	3.1851E+00	3.3225E+00
Z	3.5087E+00	3.7988E+00	3.8955E+00
GAME	9.8980E-01	1.1616E+00	1.1704E+00
U	4.7771E+01	1.6978E+01	2.0566E+01

SPECIES	MOLE FRACTIONS		
E-	4.3011E-01	4.7355E-01	4.8660E-01
H	1.3968E-01	5.2826E-02	2.6758E-02
H+	4.3003E-01	4.7356E-01	4.8661E-01
H2	1.7221E-06	1.5372E-08	8.4735E-10
H-	4.4021E-05	3.9126E-05	2.4237E-05
H2+	1.2687E-04	2.9569E-05	9.2195E-06

P1 = 5.00E+03 N/SQ-M, US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3617E+03	2.3117E+04	4.5878E+04
T	9.8956E+01	2.1144E+02	3.5177E+02
RHO	9.9209E+00	2.9039E+01	3.3633E+01
H	5.4389E+02	9.3581E+02	1.3582E+03
A	1.8097E+01	3.0303E+01	3.9915E+01
S	3.0232E+00	3.1485E+00	3.2874E+00
Z	3.4243E+00	3.7649E+00	3.8777E+00
GAME	9.6646E-01	1.1535E+00	1.1680E+00
U	4.6494E+01	1.5859E+01	1.9437E+01

SPECIES	MOLE FRACTIONS		
E-	4.1610E-01	4.6883E-01	4.8424E-01
H	1.6769E-01	6.2256E-02	3.1450E-02
H+	4.1599E-01	4.6883E-01	4.8426E-01
H2	3.0830E-06	3.0145E-08	1.4997E-09
H-	5.7867E-05	4.6700E-05	3.0147E-05
H2+	1.6114E-04	4.1091E-05	1.2121E-05

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M. US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0638E+01	2.1976E+01	5.3615E+01
T	2.7140E+00	3.3569E+00	4.7163E+00
RHO	3.9203E+00	6.5476E+00	1.1369E+01
M	2.7745E+00	3.4526E+00	4.9388E+00
A	1.6432E+00	1.8712E+00	2.1384E+00
S	1.0640E+00	1.0661E+00	1.0849E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9496E-01	9.8811E-01	9.6957E-01
U	2.2663E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	2.8479E-10	2.6793E-34	1.5917E-27
H	1.3794E-11	5.1536E-13	2.5658E-06
H+	1.9713E-35	7.6285E-37	6.7126E-28
H2	1.0000E+00	1.0000E+00	1.0000E+00
H-	2.6334E-17	1.8318E-40	2.3296E-32
H2+	1.8257E-34	5.2006E-36	9.2049E-28

P1 = 1.00E+04 N/SQ-M. US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4287E+01	7.6587E+01	1.5433E+02
T	4.8591E+00	6.7344E+00	8.7053E+00
RHO	4.9984E+00	1.1369E+01	1.7638E+01
M	5.0998E+00	7.3089E+00	1.0001E+01
A	2.1683E+00	2.5184E+00	2.8065E+00
S	1.1371E+00	1.1460E+00	1.1732E+00
Z	1.0000E+00	1.0003E+00	1.0051E+00
GAME	9.6761E-01	9.4147E-01	8.9891E-01
U	3.6513E+00	1.6016E+00	1.4452E+00

SPECIES	MOLE FRACTIONS		
E-	1.9335E-26	5.6297E-19	2.2903E-14
H	6.6222E-06	6.7404E-04	1.0218E-02
H+	1.4204E-26	3.7774E-19	1.7416E-14
H2	9.9999E-01	9.9933E-01	9.8978E-01
H-	4.0939E-30	3.9686E-22	2.1260E-16
H2+	4.1346E-27	1.8563E-19	5.6975E-15

P1 = 1.00E+04 N/SQ-M. US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4532E+01	9.7319E+01
T	3.7003E+00	4.9228E+00	6.6856E+00
RHO	4.5254E+00	9.0443E+00	1.4553E+01
M	3.8206E+00	5.1719E+00	7.2466E+00
A	1.9079E+00	2.1816E+00	2.5112E+00
S	1.1013E+00	1.1063E+00	1.1310E+00
Z	1.0003E+00	1.0003E+00	1.0003E+00
GAME	9.8361E-01	9.5680E-01	9.4299E-01
U	2.9621E+00	1.4792E+00	1.3376E+00

SPECIES	MOLE FRACTIONS		
E-	4.8543E-32	1.4840E-25	4.9294E-19
H	1.4419E-03	4.7281E-06	5.3877E-04
H+	2.3719E-32	9.5496E-26	3.9880E-19
H2	1.0000E+00	9.9999E-01	9.9966E-01
H-	3.9795E-37	2.1123E-29	2.6120E-21
H2+	2.5296E-32	7.2972E-26	9.6749E-20

P1 = 1.00E+04 N/SQ-M. US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3283E+01	1.2317E+02	2.2434E+02
T	6.1605E+00	8.6155E+00	1.0379E+01
RHO	5.4017E+00	1.3876E+01	2.1119E+01
M	6.6134E+00	9.8917E+00	1.3133E+01
A	2.4186E+00	2.7887E+00	3.0298E+00
S	1.1718E+00	1.1847E+00	1.2142E+00
Z	1.0001E+00	1.0052E+00	1.0234E+00
GAME	9.4939E-01	8.9799E-01	8.6417E-01
U	4.3386E+00	1.6868E+00	1.4928E+00

SPECIES	MOLE FRACTIONS		
E-	2.3996E-20	1.7254E-14	6.7827E-12
H	2.9274E-14	1.3375E-07	4.5731E-32
H+	1.7706E-20	1.3365E-14	5.4409E-12
H2	9.9971E-01	9.8962E-01	9.5427E-01
H-	1.3631E-23	1.2729E-16	1.5941E-13
H2+	5.2037E-21	4.0158E-15	1.5012E-12

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3828E+01	1.8018E+02	3.1166E+02
T	7.5349E+00	1.0257E+01	1.1750E+01
RHO	5.9056E+00	1.7163E+01	2.5116E+01
M	8.3669E+00	1.2977E+01	1.6733E+01
A	2.6737E+00	3.0097E+00	3.2503E+00
S	1.2051E+00	1.2237E+00	1.2562E+00
Z	1.0019E+00	1.0235E+00	1.0560E+00
GAME	9.1884E-01	8.6293E-01	8.5139E-01
U	5.3364E+00	1.7007E+00	1.5156E+00

SPECIES	MOLE FRACTIONS		
E-	2.1606E-16	5.5471E-12	1.9199E-10
H	3.7596E-03	4.5853E-02	1.0612E-01
H+	1.7532E-16	4.5221E-12	1.5845E-10
H2	9.9624E-01	9.5415E-01	8.9388E-01
H-	5.3570E-19	1.1250E-13	7.6610E-12
H2+	4.1270E-17	1.1376E-12	4.1198E-11

P1 = 1.00E+04 N/SQ-M, US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.0175E+01	3.7260E+02	5.8067E+02
T	9.8604E+00	1.2879E+01	1.4190E+01
RHO	6.9350E+00	2.6260E+01	3.5341E+01
M	1.2615E+01	2.0701E+01	2.5532E+01
A	2.9420E+00	3.4696E+00	3.7441E+00
S	1.2705E+00	1.3069E+00	1.3468E+00
Z	1.0262E+00	1.1019E+00	1.1579E+00
GAME	8.5536E-01	8.4842E-01	8.5319E-01
U	6.5077E+00	1.7145E+00	1.5833E+00

SPECIES	MOLE FRACTIONS		
E-	2.9526E-12	1.8143E-09	1.3094E-08
H	5.1129E-02	1.8487E-01	2.7270E-01
H+	2.5605E-12	1.5414E-09	1.1279E-08
H2	9.4887E-01	8.1513E-01	7.2730E-01
H-	3.1597E-14	9.6526E-11	1.0194E-09
H2+	4.3365E-13	3.6944E-10	2.8346E-09

P1 = 1.00E+04 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.4103E+01	2.4250E+02	4.2731E+02
T	8.8043E+00	1.1637E+01	1.2991E+01
RHO	6.3114E+00	2.1351E+01	2.9865E+01
M	1.0367E+01	1.6592E+01	2.0823E+01
A	2.7970E+00	3.2329E+00	3.4864E+00
S	1.2376E+00	1.2643E+00	1.3004E+00
Z	1.0096E+00	1.0566E+00	1.1013E+00
GAME	8.8006E-01	8.5010E-01	8.4956E-01
U	5.7599E+00	1.6987E+00	1.5441E+00

SPECIES	MOLE FRACTIONS		
E-	7.1453E-14	1.6418E-10	2.0529E-09
H	1.9010E-02	1.0707E-01	1.8397E-01
H+	6.0332E-14	1.3679E-10	1.7327E-09
H2	9.8099E-01	8.9293E-01	8.1603E-01
H-	4.2326E-16	5.8159E-12	1.1959E-10
H2+	1.1544E-14	3.3203E-11	4.3977E-10

P1 = 1.00E+04 N/SQ-M, US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.5952E+01	5.1169E+02	7.7510E+02
T	1.0743E+01	1.4045E+01	1.5391E+01
RHO	7.6122E+00	3.1482E+01	4.1110E+01
M	1.5104E+01	2.5300E+01	3.0847E+01
A	3.0871E+00	3.7212E+00	4.0270E+00
S	1.3045E+00	1.3517E+00	1.3957E+00
Z	1.0510E+00	1.1572E+00	1.2250E+00
GAME	8.4403E-01	8.5196E-01	8.6013E-01
U	7.2654E+00	1.7591E+00	1.6477E+00

SPECIES	MOLE FRACTIONS		
E-	3.7398E-11	1.1332E-08	6.1151E-08
H	9.7071E-02	2.7171E-01	3.6738E-01
H+	3.2829E-11	9.8023E-09	5.3759E-08
H2	9.0293E-01	7.2829E-01	6.3262E-01
H-	5.9571E-13	8.1178E-10	5.9565E-09
H2+	5.1553E-12	2.3414E-09	1.3340E-08

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 1.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0338E+02	6.8164E+02	1.0114E+03
T	1.1513E+01	1.5188E+01	1.6618E+01
RHO	8.2949E+00	3.6742E+01	4.6753E+01
H	1.7833E+01	3.0375E+01	3.6745E+01
A	3.2354E+00	3.9907E+00	4.3372E+00
S	1.3399E+00	1.3986E+00	1.4469E+00
Z	1.0826E+00	1.2215E+00	1.3017E+00
GAME	8.3987E-01	8.5846E-01	8.6960E-01
U	8.0262E+00	1.8134E+00	1.7292E+00

SPECIES	MOLE FRACTIONS		
E-	2.3478E-10	5.0731E-08	2.3144E-07
H	1.5256E-01	3.6263E-01	4.6354E-01
H+	2.0832E-10	4.4696E-08	2.0769E-07
H2	8.4744E-01	6.3737E-01	5.3646E-01
H-	4.9315E-12	4.5473E-09	2.6649E-08
H2+	3.1389E-11	1.0582E-08	5.0395E-08

P1 = 1.00E+04 N/SQ-M, US1 = 1.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4282E+02	1.1031E+03	1.6032E+03
T	1.2869E+01	1.7488E+01	1.9277E+01
RHO	9.5479E+00	4.5974E+01	5.6209E+01
H	2.3993E+01	4.1822E+01	5.0253E+01
A	3.5465E+00	4.5888E+00	5.0560E+00
S	1.4153E+00	1.4968E+00	1.5542E+00
Z	1.1624E+00	1.3720E+00	1.4796E+00
GAME	8.4086E-01	8.7760E-01	8.9626E-01
U	9.5302E+00	1.9815E+00	1.9498E+00

SPECIES	MOLE FRACTIONS		
E-	3.4462E-09	5.5667E-07	2.2765E-06
H	2.7937E-01	5.4231E-01	6.4829E-01
H+	3.1178E-09	5.0885E-07	2.1261E-06
H2	7.2063E-01	4.5769E-01	3.5170E-01
H-	1.0658E-10	6.5983E-08	3.1500E-07
H2+	4.3502E-10	1.1381E-07	4.6541E-07

P1 = 1.00E+04 N/SQ-M, US1 = 1.30E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2233E+02	8.7904E+02	1.2672E+03
T	1.2213E+01	1.6325E+01	1.7898E+01
RHO	8.9442E+00	4.1634E+01	5.1858E+01
H	2.0795E+01	3.5881E+01	4.3203E+01
A	3.3881E+00	4.2786E+00	4.6775E+00
S	1.3769E+00	1.4470E+00	1.4998E+00
Z	1.1199E+00	1.2933E+00	1.3868E+00
GAME	8.3932E-01	8.6706E-01	8.8147E-01
U	8.7804E+00	1.8881E+00	1.8291E+00

SPECIES	MOLE FRACTIONS		
E-	1.0237E-09	1.8056E-07	7.5783E-07
H	2.1409E-01	4.5360E-01	5.5782E-01
H+	9.1772E-10	1.6202E-07	6.9405E-07
H2	7.8591E-01	5.4640E-01	4.4218E-01
H-	2.6741E-11	1.9081E-08	9.7970E-08
H2+	1.3269E-10	3.7622E-08	1.6175E-07

P1 = 1.00E+04 N/SQ-M, US1 = 1.50E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6482E+02	1.3510E+03	1.9591E+03
T	1.3497E+01	1.8705E+01	2.0823E+01
RHO	1.0095E+01	4.9585E+01	5.9582E+01
H	2.7425E+01	4.8184E+01	5.7934E+01
A	3.7116E+00	4.9252E+00	5.4857E+00
S	1.4552E+00	1.5475E+00	1.6098E+00
Z	1.2096E+00	1.4566E+00	1.5790E+00
GAME	8.4377E-01	8.9032E-01	9.1523E-01
U	1.0274E+01	2.0942E+00	2.0993E+00

SPECIES	MOLE FRACTIONS		
E-	9.7428E-09	1.5491E-06	6.5837E-06
H	3.4660E-01	6.2693E-01	7.3336E-01
H+	8.8895E-09	1.4411E-06	6.2615E-06
H2	6.5340E-01	3.7307E-01	2.6663E-01
H-	3.4453E-10	1.9731E-07	9.2837E-07
H2+	1.1979E-09	3.0535E-07	1.2505E-06

TABLE I.- Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8834E+02	1.6199E+03	2.3541E+03
T	1.4112E+01	2.0020E+01	2.2652E+01
RHO	1.0581E+01	5.2343E+01	6.1773E+01
H	3.1093E+01	5.4967E+01	6.6276E+01
A	3.8844E+00	5.2950E+00	5.9880E+00
S	1.4963E+00	1.5987E+00	1.6660E+00
Z	1.2613E+00	1.5459E+00	1.6823E+00
GAME	8.4768E-01	9.0592E-01	9.4092E-01
U	1.1015E+01	2.2292E+00	2.2763E+00

SPECIES	MOLE FRACTIONS		
E-	2.4517E-08	4.3862E-06	1.9290E-05
H	4.1439E-01	7.0622E-01	8.1112E-01
H+	2.2562E-08	3.8651E-06	1.8646E-05
H2	5.8561E-01	2.9377E-01	1.8883E-01
H-	9.6496E-10	5.3538E-07	2.6172E-06
H2+	2.9201E-09	7.5651E-07	3.2611E-06

P1 = 1.00E+04 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3977E+02	2.1982E+03	3.2693E+03
T	1.5341E+01	2.3205E+01	2.8343E+01
RHO	1.1349E+01	5.4772E+01	6.1400E+01
H	3.9131E+01	6.9708E+01	8.5527E+01
A	4.2577E+00	6.1816E+00	7.4233E+00
S	1.5819E+00	1.7008E+00	1.7784E+00
Z	1.3771E+00	1.7296E+00	1.8786E+00
GAME	8.5812E-01	9.5212E-01	1.0349E+00
U	1.2479E+01	2.5883E+00	2.8209E+00

SPECIES	MOLE FRACTIONS		
E-	1.2270E-07	2.7584E-05	2.3655E-04
H	5.4764E-01	8.4356E-01	9.3465E-01
H+	1.1484E-07	2.6833E-05	2.3396E-04
H2	4.5236E-01	1.5638E-01	6.4828E-02
H-	5.5892E-09	3.3184E-06	2.2670E-05
H2+	1.3447E-08	4.0695E-06	2.5263E-05

P1 = 1.00E+04 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1332E+02	1.9043E+03	2.7893E+03
T	1.4723E+01	2.1467E+01	2.4558E+01
RHO	1.0999E+01	5.4110E+01	6.2493E+01
H	3.4995E+01	6.2147E+01	7.5408E+01
A	4.0661E+00	5.7077E+00	6.6090E+00
S	1.5386E+00	1.6500E+00	1.7224E+00
Z	1.3172E+00	1.6378E+00	1.7855E+00
GAME	8.5246E-01	9.2571E-01	9.7860E-01
U	1.1750E+01	2.3910E+00	2.5072E+00

SPECIES	MOLE FRACTIONS		
E-	5.6012E-08	1.0528E-05	8.1662E-05
H	4.8168E-01	7.7885E-01	8.7966E-01
H+	5.2544E-08	1.0109E-05	8.0413E-05
H2	5.1832E-01	2.2112E-01	1.2020E-01
H-	2.4221E-09	1.3567E-06	7.4491E-06
H2+	6.4905E-09	1.7757E-06	8.6978E-06

P1 = 1.00E+04 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6765E+02	2.4932E+03	3.8044E+03
T	1.5976E+01	2.5334E+01	3.3432E+01
RHO	1.1630E+01	5.4192E+01	5.8484E+01
H	4.3501E+01	7.7617E+01	9.6598E+01
A	4.4611E+00	6.7454E+00	8.4163E+00
S	1.6261E+00	1.7502E+00	1.8331E+00
Z	1.4405E+00	1.8160E+00	1.9458E+00
GAME	8.6475E-01	9.8901E-01	1.0889E+00
U	1.3203E+01	2.8356E+00	3.2728E+00

SPECIES	MOLE FRACTIONS		
E-	2.5423E-07	7.6904E-05	1.1246E-03
H	6.1162E-01	8.9845E-01	9.6869E-01
H+	2.3991E-07	7.5596E-05	1.1167E-03
H2	3.8838E-01	1.0138E-01	2.8912E-02
H-	1.2097E-08	8.0785E-06	7.3580E-05
H2+	2.6416E-08	9.3869E-06	8.1483E-05

TABLE 1. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9695E+02	2.7756E+03	4.3740E+03
T	1.6642E+01	2.8119E+01	3.6797E+01
RHO	1.1839E+01	5.2250E+01	5.5445E+01
U	4.8105E+01	8.5813E+01	1.0943E+02
A	4.6784E+00	7.4270E+00	9.1932E+00
S	1.6710E+00	1.7974E+00	1.8823E+00
Z	1.5073E+00	1.8892E+00	1.9823E+00
GAME	8.7260E-01	1.0384E+00	1.0713E+00
U	1.3921E+01	3.1629E+00	3.7746E+00

SPECIES	MOLE FRACTIONS		
E-	5.1150E-07	2.3670E-04	4.6092E-03
H	6.7338E-01	9.4065E-01	9.7708E-01
H+	4.8656E-07	2.3436E-04	4.5762E-03
H2	3.2692E-01	5.9838E-02	1.3337E-02
H-	2.4971E-08	1.9929E-05	1.9675E-04
H2+	4.9906E-08	2.2283E-05	2.2974E-04

P1 = 1.00E+04 N/SQ-M, US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5961E+02	3.2794E+03	5.4692E+03
T	1.8143E+01	3.6202E+01	5.0648E+01
RHO	1.2025E+01	4.5927E+01	5.3099E+01
U	5.8010E+01	1.0296E+02	1.3448E+02
A	5.1707E+00	8.8285E+00	1.0001E+01
S	1.7421E+00	1.8816E+00	1.9620E+00
Z	1.6483E+00	1.9724E+00	2.0336E+00
GAME	8.9404E-01	1.0915E+00	9.7105E-01
U	1.5335E+01	4.3089E+00	4.6952E+00

SPECIES	MOLE FRACTIONS		
E-	2.0549E-06	2.4833E-03	2.2587E-02
H	7.8666E-01	9.7856E-01	9.4843E-01
H+	1.9859E-06	2.4396E-03	2.2388E-02
H2	2.1334E-01	1.6315E-02	5.3014E-03
H-	9.8995E-08	1.0717E-04	5.4540E-04
H2+	1.6809E-07	1.2088E-04	7.4428E-04

P1 = 1.00E+04 N/SQ-M, US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2762E+02	3.0390E+03	4.9371E+03
T	1.7356E+01	3.1793E+01	4.5733E+01
RHO	1.1872E+01	4.9230E+01	5.3743E+01
U	5.2943E+01	9.4245E+01	1.2203E+02
A	4.9132E+00	8.1823E+00	9.6568E+00
S	1.7164E+00	1.8414E+00	1.9246E+00
Z	1.5769E+00	1.9412E+00	2.0079E+00
GAME	8.9210E-01	1.0849E+00	1.0155E+00
U	1.4632E+01	3.5405E+00	4.1902E+00

SPECIES	MOLE FRACTIONS		
E-	1.0222E-06	2.8721E-04	1.2109E-02
H	7.3158E-01	9.6733E-01	9.6736E-01
H+	9.8074E-07	2.8215E-04	1.2011E-02
H2	2.6942E-01	3.0998E-02	7.4857E-03
H-	5.0118E-08	4.8712E-05	3.7042E-04
H2+	9.2128E-08	5.3776E-05	4.4859E-04

P1 = 1.00E+04 N/SQ-M, US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.9284E+02	3.5011E+03	5.9621E+03
T	1.9043E+01	4.0765E+01	5.4780E+01
RHO	1.1987E+01	4.3091E+01	5.2799E+01
U	6.3307E+01	1.1194E+02	1.4697E+02
A	5.4604E+00	9.2691E+00	1.0308E+01
S	1.8079E+00	1.9186E+00	1.9970E+00
Z	1.7209E+00	1.9930E+00	2.0613E+00
GAME	9.0984E-01	1.0575E+00	9.4100E-01
U	1.6027E+01	4.4555E+00	4.7049E+00

SPECIES	MOLE FRACTIONS		
E-	4.2647E-06	4.2102E-03	3.4794E-02
H	8.3780E-01	9.7771E-01	9.2500E-01
H+	4.1546E-06	4.1742E-03	3.4471E-02
H2	1.6219E-01	9.4779E-03	4.0137E-03
H-	1.9631E-07	1.9646E-04	6.9990E-04
H2+	3.9943E-07	2.3242E-04	1.0221E-03

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.2719E+02	3.7134E+03	6.3946E+03
T	2.0123E+01	4.5051E+01	5.8319E+01
RHO	1.1043E+01	4.0947E+01	5.2448E+01
H	4.8832E+01	1.2132E+02	1.5947E+02
A	5.7985E+00	9.5041E+00	1.0695E+01
S	1.8533E+00	1.9534E+00	2.0339E+00
Z	1.7925E+00	2.0120E+00	2.0906E+00
GAME	9.3215E-01	1.0134E+00	9.2062E-01
U	1.6705E+01	4.9247E+00	4.8690E+00

SPECIES	MOLE FRACTIONS		
E-	9.4146E-06	1.2552E-02	4.7806E-02
H	8.9424E-01	9.6810E-01	8.9954E-01
H+	9.2333E-06	1.2475E-02	4.7353E-02
H2	1.1574E-01	6.1898E-03	3.1947E-03
H-	3.9936E-07	3.3325E-04	8.2549E-04
H2+	5.9040E-07	3.8029E-04	1.2791E-03

P1 = 1.00E+04 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.9815E+02	4.0452E+03	6.9475E+03
T	2.3375E+01	5.2234E+01	6.4090E+01
RHO	1.1113E+01	3.7654E+01	5.0368E+01
H	8.0531E+01	1.4117E+02	1.8447E+02
A	6.7543E+00	1.0101E+01	1.1117E+01
S	1.9398E+00	2.0207E+00	2.0981E+00
Z	1.9177E+00	2.0557E+00	2.1522E+00
GAME	1.0174E+00	9.4973E-01	8.9604E-01
U	1.7989E+01	5.2977E+00	5.0864E+00

SPECIES	MOLE FRACTIONS		
E-	4.6918E-06	3.1625E-02	7.4545E-02
H	9.5689E-01	9.3240E-01	8.4680E-01
H+	6.6428E-06	3.1421E-02	7.3852E-02
H2	4.2976E-02	3.3431E-03	2.1508E-03
H-	2.0142E-06	5.0445E-04	9.7876E-04
H2+	2.5048E-06	7.0817E-04	1.6718E-03

P1 = 1.00E+04 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6241E+02	3.9047E+03	6.7373E+03
T	2.1503E+01	4.8882E+01	6.1386E+01
RHO	1.1563E+01	3.9290E+01	5.1751E+01
H	7.4576E+01	1.3113E+02	1.7230E+02
A	6.2151E+00	9.8519E+00	1.0863E+01
S	1.8973E+00	1.9971E+00	2.0642E+00
Z	1.8600E+00	2.0331E+00	2.1208E+00
GAME	9.6591E-01	9.7663E-01	9.0638E-01
U	1.7363E+01	5.0993E+00	4.9921E+00

SPECIES	MOLE FRACTIONS		
E-	2.3129E-05	2.1231E-02	6.1063E-02
H	9.2467E-01	9.5230E-01	8.7343E-01
H+	2.2833E-05	2.1095E-02	6.0482E-02
H2	7.5282E-02	4.4217E-03	2.6115E-03
H-	8.5740E-07	4.1051E-04	9.1887E-04
H2+	1.1533E-06	5.4597E-04	1.4994E-03

P1 = 1.00E+04 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3393E+02	4.1130E+03	6.9957E+03
T	2.5985E+01	5.5137E+01	6.6443E+01
RHO	1.0491E+01	3.5818E+01	4.8198E+01
H	8.4679E+01	1.5139E+02	1.9673E+02
A	7.4164E+00	1.0337E+01	1.1357E+01
S	1.9796E+00	2.0548E+00	2.1328E+00
Z	1.9587E+00	2.0826E+00	2.1845E+00
GAME	1.0807E+00	9.3054E-01	8.8864E-01
U	1.8569E+01	5.4248E+00	5.1582E+00

SPECIES	MOLE FRACTIONS		
E-	2.3040E-04	4.3136E-02	8.8018E-02
H	9.7820E-01	9.0996E-01	8.2018E-01
H+	2.2977E-04	4.2843E-02	8.7237E-02
H2	2.1331E-02	2.6122E-03	1.7726E-03
H-	5.1599E-06	5.7710E-04	1.0047E-03
H2+	5.9822E-06	8.5032E-04	1.7855E-03

TABLE I.- Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 2.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.7012E+02	4.1394E+03	6.9510E+03
T	2.9332E+01	5.7715E+01	6.8559E+01
RHO	9.8081E+00	3.3981E+01	4.5714E+01
U	9.3326E+01	1.6182E+02	2.0896E+02
A	8.0502E+00	1.0567E+01	1.1589E+01
S	2.0159E+00	2.0990E+00	2.1579E+00
Z	1.9817E+00	2.1105E+00	2.2179E+00
GAME	1.1149E+00	9.1641E-01	8.8321E-01
U	1.9122E+01	5.5087E+00	5.2148E+00

SPECIES	MOLE FRACTIONS		
E-	8.2791E-04	5.5454E-02	1.0154E-01
H	9.8825E-01	8.8574E-01	7.9344E-01
H+	8.2630E-04	5.5115E-02	1.0070E-01
H2	1.0069E-02	2.0868E-03	1.4627E-03
H-	1.2947E-05	6.3048E-04	1.0369E-03
H2+	1.4473E-05	9.7031E-04	1.8541E-03

P1 = 1.00E+04 N/SQ-M, US1 = 3.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.4584E+02	4.2782E+03	7.0050E+03
T	3.6571E+01	6.2367E+01	7.2626E+01
RHO	8.8044E+00	3.1594E+01	4.2169E+01
U	1.0637E+02	1.8377E+02	2.3448E+02
A	8.7914E+00	1.1029E+01	1.2061E+01
S	2.0788E+00	2.1541E+00	2.2353E+00
Z	2.0058E+00	2.1712E+00	2.2873E+00
GAME	1.0536E+00	8.9824E-01	8.7569E-01
U	2.0221E+01	5.6277E+00	5.3275E+00

SPECIES	MOLE FRACTIONS		
E-	6.0307E-03	8.1450E-02	1.2859E-01
H	9.8476E-01	8.3426E-01	7.3981E-01
H+	6.0238E-03	8.0980E-02	1.2763E-01
H2	3.0816E-03	1.4249E-03	1.0249E-03
H-	5.3487E-05	7.0719E-04	9.9145E-04
H2+	5.7380E-05	1.1776E-03	1.9520E-03

P1 = 1.00E+04 N/SQ-M, US1 = 2.90E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.0702E+02	4.1783E+03	6.9243E+03
T	3.3005E+01	6.0090E+01	7.0569E+01
RHO	9.2207E+00	3.2497E+01	4.3571E+01
U	9.9579E+01	1.7252E+02	2.2138E+02
A	8.4999E+00	1.0795E+01	1.1820E+01
S	2.0488E+00	2.1223E+00	2.2021E+00
Z	1.9946E+00	2.1401E+00	2.2520E+00
GAME	1.0974E+00	9.0626E-01	8.7907E-01
U	1.9659E+01	5.5672E+00	5.2683E+00

SPECIES	MOLE FRACTIONS		
E-	2.5225E-03	6.8251E-02	1.1502E-01
H	9.8971E-01	8.6045E-01	7.6674E-01
H+	2.5194E-03	6.7847E-02	1.1412E-01
H2	5.1885E-03	1.7054E-03	1.2174E-03
H-	2.9095E-05	6.7126E-04	9.9910E-04
H2+	3.1248E-05	1.0754E-03	1.9022E-03

P1 = 1.00E+04 N/SQ-M, US1 = 3.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.3026E+02	4.6791E+03	7.5087E+03
T	4.2695E+01	6.6923E+01	7.7336E+01
RHO	8.4034E+00	3.1245E+01	4.1277E+01
U	1.2074E+02	2.0824E+02	2.6320E+02
A	9.2138E+00	1.1522E+01	1.2584E+01
S	2.1334E+00	2.2147E+00	2.2989E+00
Z	2.0354E+00	2.2377E+00	2.3614E+00
GAME	9.7690E-01	8.8656E-01	8.7057E-01
U	2.1439E+01	5.7614E+00	5.4729E+00

SPECIES	MOLE FRACTIONS		
E-	1.9058E-02	1.0867E-01	1.5585E-01
H	9.6014E-01	7.8008E-01	6.8559E-01
H+	1.9035E-02	1.0805E-01	1.5477E-01
H2	1.5302E-03	1.0436E-03	7.4452E-04
H-	1.0650E-04	7.7103E-04	9.7809E-04
H2+	1.2979E-04	1.3857E-03	2.0645E-03

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M. US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.2334E+02	5.2884E+03	8.3515E+03
T	4.7590E+01	7.1503E+01	8.1822E+01
RHO	8.3324E+00	3.2034E+01	4.1841E+01
M	1.3516E+02	2.3521E+02	2.9511E+02
A	9.6152E+00	1.2044E+01	1.3159E+01
S	2.1842E+00	2.2730E+00	2.3608E+00
Z	2.0763E+00	2.3038E+00	2.4394E+00
GAME	9.3564E-01	8.7873E-01	8.6755E-01
U	2.2754E+01	5.9083E+00	5.6483E+00

SPECIES	MOLE FRACTIONS		
E-	3.7960E-02	1.3611E-01	1.8285E-01
H	9.2279E-01	7.2535E-01	6.3185E-01
H+	3.7900E-02	1.3535E-01	1.9164E-01
H2	9.8090E-04	7.9061E-04	5.4523E-04
H-	1.6305E-04	8.1798E-04	9.5335E-04
H2+	2.1363E-04	1.5946E-03	2.1614E-03

P1 = 1.00E+04 N/SQ-M. US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0318E+03	6.8968E+03	1.0686E+04
T	5.5309E+01	8.0804E+01	9.2551E+01
RHO	8.5564E+00	3.4700E+01	4.4303E+01
M	1.6994E+02	2.9543E+02	3.6749E+02
A	1.0427E+01	1.3156E+01	1.4478E+01
S	2.2813E+00	2.3874E+00	2.4836E+00
Z	2.1804E+00	2.4596E+00	2.6062E+00
GAME	9.0155E-01	8.7084E-01	8.6907E-01
U	2.5521E+01	6.3090E+00	6.1038E+00

SPECIES	MOLE FRACTIONS		
E-	8.3660E-02	1.8919E-01	2.3505E-01
H	8.3163E-01	6.1950E-01	5.2794E-01
H+	8.3537E-02	1.8815E-01	2.3371E-01
H2	5.4389E-04	4.5683E-04	2.7451E-04
H-	2.5417E-04	8.3464E-04	8.3750E-04
H2+	3.7741E-04	1.8668E-03	2.1807E-03

P1 = 1.00E+04 N/SQ-M. US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.2411E+02	6.0419E+03	9.4292E+03
T	5.1694E+01	7.6122E+01	8.6980E+01
RHO	8.4106E+00	3.3307E+01	4.2998E+01
M	1.5255E+02	2.6436E+02	3.2997E+02
A	1.0021E+01	1.2589E+01	1.3788E+01
S	2.2331E+00	2.3303E+00	2.4223E+00
Z	2.1254E+00	2.3830E+00	2.5212E+00
GAME	9.1394E-01	8.7359E-01	8.6691E-01
U	2.4123E+01	6.0803E+00	5.8621E+00

SPECIES	MOLE FRACTIONS		
E-	6.0027E-02	1.6308E-01	2.0932E-01
H	8.7881E-01	6.7157E-01	5.7915E-01
H+	5.9942E-02	1.6216E-01	2.0802E-01
H2	7.0752E-04	6.0355E-04	3.9294E-04
H-	2.1293E-04	9.4023E-04	9.0676E-04
H2+	2.9778E-04	1.7512E-03	2.2070E-03

P1 = 1.00E+04 N/SQ-M. US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1463E+03	7.8643E+03	1.2112E+04
T	5.8596E+01	8.5676E+01	9.8698E+01
RHO	9.7357E+00	3.6157E+01	4.5532E+01
M	1.8830E+02	3.2844E+02	4.0785E+02
A	1.0831E+01	1.3759E+01	1.5253E+01
S	2.3290E+00	2.4444E+00	2.5452E+00
Z	2.2395E+00	2.5386E+00	2.6951E+00
GAME	8.9402E-01	8.7040E-01	8.7662E-01
U	2.6937E+01	6.5169E+00	6.3947E+00

SPECIES	MOLE FRACTIONS		
E-	1.0781E-01	2.1443E-01	2.6017E-01
H	7.8339E-01	5.6920E-01	4.7797E-01
H+	1.0754E-01	2.1331E-01	2.5885E-01
H2	4.2657E-04	3.3935E-04	1.8302E-04
H-	2.8637E-04	9.0424E-04	7.5027E-04
H2+	4.4939E-04	1.9261E-03	2.0747E-03

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M. US1 = 4.20E+04 M/SEC
XH2 = 1.30 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2570E+03	8.8980E+03	1.3671E+04
T	6.1709E+01	9.0757E+01	1.0558E+02
RHO	8.9161E+00	3.7425E+01	4.6444E+01
U	2.0760E+02	3.6319E+02	4.5095E+02
A	1.1241E+01	1.4403E+01	1.6134E+01
S	2.3773E+00	2.5012E+00	2.6068E+00
Z	2.3029E+00	2.6197E+00	2.7881E+00
GAME	8.8923E-01	8.7250E-01	8.8436E-01
U	2.8357E+01	6.7682E+00	6.7346E+00

SPECIES	MOLE FRACTIONS		
E-	1.3233E-01	2.3870E-01	2.8444E-01
H	7.3439E-01	5.2085E-01	4.2925E-01
H+	1.3212E-01	2.3754E-01	2.8343E-01
H2	3.4037E-04	2.4499E-04	1.1492E-04
H-	3.0959E-04	7.5099E-04	6.5309E-04
H2+	5.1221E-04	1.9176E-03	1.8891E-03

P1 = 1.00E+04 N/SQ-M. US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5268E+03	1.1159E+04	1.7246E+04
T	6.7571E+01	1.0200E+02	1.2284E+02
RHO	9.2705E+00	3.9234E+01	4.6982E+01
U	2.4906E+02	4.3765E+02	5.4697E+02
A	1.2071E+01	1.5872E+01	1.8377E+01
S	2.4743E+00	2.6138E+00	2.7299E+00
Z	2.4374E+00	2.7882E+00	2.9882E+00
GAME	8.8473E-01	8.8574E-01	9.2004E-01
U	3.1205E+01	7.3982E+00	7.6629E+00

SPECIES	MOLE FRACTIONS		
E-	1.8027E-01	2.8463E-01	3.3209E-01
H	6.3858E-01	4.2952E-01	3.3485E-01
H+	1.7999E-01	2.8342E-01	3.3122E-01
H2	2.1998E-04	1.1395E-04	3.5582E-05
H-	3.3123E-04	6.3278E-04	4.6968E-04
H2+	6.0418E-04	1.7102E-03	1.3426E-03

P1 = 1.00E+04 N/SQ-M. US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3938E+03	1.0001E+04	1.5383E+04
T	6.4678E+01	9.4163E+01	1.1344E+02
RHO	9.0970E+00	3.8480E+01	4.7005E+01
U	2.2786E+02	3.9961E+02	4.9721E+02
A	1.1653E+01	1.5132E+01	1.7153E+01
S	2.4255E+00	2.5570E+00	2.6578E+00
Z	2.3587E+00	2.7078E+00	2.9848E+00
GAME	8.8630E-01	8.7747E-01	8.9904E-01
U	2.9780E+01	7.2552E+00	7.1511E+00

SPECIES	MOLE FRACTIONS		
E-	1.5650E-01	2.4205E-01	3.0842E-01
H	6.8637E-01	4.7436E-01	3.8198E-01
H+	1.5626E-01	2.6089E-01	3.0733E-01
H2	2.7363E-04	1.7371E-04	6.7265E-05
H-	3.2445E-04	7.8159E-04	5.5743E-04
H2+	5.6406E-04	1.8441E-03	1.6411E-03

P1 = 1.00E+04 N/SQ-M. US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6657E+03	1.2351E+04	1.9257E+04
T	7.0429E+01	1.0839E+02	1.3389E+02
RHO	9.4289E+00	3.9622E+01	4.6501E+01
U	2.7121E+02	4.7719E+02	6.0040E+02
A	1.2499E+01	1.6729E+01	1.979AE+01
S	2.5227E+00	2.6692E+00	2.7899E+00
Z	2.5086E+00	2.8758E+00	3.0929E+00
GAME	8.8420E-01	8.9783E-01	9.4646E-01
U	3.2427E+01	7.7825E+00	8.2749E+00

SPECIES	MOLE FRACTIONS		
E-	2.0349E-01	3.0614E-01	3.5442E-01
H	5.9219E-01	3.8659E-01	2.9034E-01
H+	2.0319E-01	3.0514E-01	3.5378E-01
H2	1.7605E-04	7.2395E-05	1.7337E-05
H-	3.3056E-04	5.2189E-04	4.0157E-04
H2+	6.3194E-04	1.5249E-03	1.0416E-03

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8104E+03	1.3571E+04	2.1442E+04
T	7.3284E+01	1.1548E+02	1.4736E+02
RHO	9.5693E+00	3.9638E+01	4.5473E+01
H	2.9429E+02	5.1822E+02	6.5965E+02
A	1.2939E+01	1.7691E+01	2.1471E+01
S	2.5717E+00	2.7233E+00	2.8497E+00
Z	2.5815E+00	2.9449E+00	3.2002E+00
GAME	8.8491E-01	9.1439E-01	9.7763E-01
U	3.4045E+01	8.2234E+00	9.0584E+00

SPECIES	MOLE FRACTIONS		
E-	2.2608E-01	3.2680E-01	3.7581E-01
H	5.4705E-01	3.4546E-01	2.4766E-01
H+	2.2576E-01	3.2594E-01	3.7540E-01
H2	1.3976E-04	4.3608E-05	7.6296E-06
H-	3.2325E-04	4.4614E-04	3.5101E-04
H2+	6.4704E-04	1.3119E-03	7.6063E-04

P1 = 1.00E+04 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1174E+03	1.5998E+04	2.6286E+04
T	7.9129E+01	1.3226E+02	1.8206E+02
RHO	9.7872E+00	3.8452E+01	4.2444E+01
H	3.4327E+02	6.0422E+02	7.8917E+02
A	1.3871E+01	1.9972E+01	2.5361E+01
S	2.6701E+00	2.8274E+00	2.9635E+00
Z	2.7341E+00	3.1449E+00	3.4016E+00
GAME	8.8941E-01	9.5898E-01	1.0386E+00
U	3.6977E+01	9.3563E+00	1.1037E+01

SPECIES	MOLE FRACTIONS		
E-	2.6921E-01	3.6492E-01	4.1240E-01
H	4.6090E-01	2.6950E-01	1.7463E-01
H+	2.6897E-01	3.6438E-01	4.1232E-01
H2	8.4879E-05	1.3418E-05	1.2612E-06
H-	2.9196E-04	3.2632E-04	2.9420E-04
H2+	6.3971E-04	8.6211E-04	3.6216E-04

P1 = 1.00E+04 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9613E+03	1.4783E+04	2.3808E+04
T	7.6175E+01	1.2338E+02	1.6351E+02
RHO	9.6908E+00	3.9219E+01	4.4055E+01
H	3.1932E+02	5.6357E+02	7.2194E+02
A	1.3395E+01	1.8770E+01	2.3361E+01
S	2.6208E+00	2.7762E+00	2.9081E+00
Z	2.6669E+00	3.0561E+00	3.3052E+00
GAME	8.8659E-01	9.3464E-01	1.0098E+00
U	3.5444E+01	8.7812E+00	1.0001E+01

SPECIES	MOLE FRACTIONS		
E-	2.4801E-01	3.4647E-01	3.9542E-01
H	5.0325E-01	3.0627E-01	2.0853E-01
H+	2.4767E-01	3.4577E-01	3.9520E-01
H2	1.0971E-04	2.4830E-05	3.1247E-06
H-	3.1011E-04	3.7995E-04	3.1430E-04
H2+	6.4960E-04	1.0831E-03	5.3007E-04

P1 = 1.00E+04 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.2787E+03	1.7136E+04	2.8862E+04
T	8.2177E+01	1.4207E+02	2.0283E+02
RHO	9.8579E+00	3.7317E+01	4.0808E+01
H	3.6914E+02	6.4866E+02	8.6023E+02
A	1.4372E+01	2.1275E+01	2.7404E+01
S	2.7194E+00	2.8744E+00	3.0156E+00
Z	2.8129E+00	3.2323E+00	3.4870E+00
GAME	8.9352E-01	9.8548E-01	1.0618E+00
U	3.8264E+01	1.0091E+01	1.2144E+01

SPECIES	MOLE FRACTIONS		
E-	2.8948E-01	3.8191E-01	4.2669E-01
H	4.2033E-01	2.3561E-01	1.4611E-01
H+	2.8933E-01	3.8153E-01	4.2670E-01
H2	6.4512E-05	6.9633E-06	5.2120E-07
H-	2.6078E-04	2.8406E-04	2.5505E-04
H2+	6.1808E-04	8.6449E-04	2.4759E-04

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M. US1 = 5.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4454E+03	1.8234E+04	3.1541E+04
T	8.5362E+01	1.5298E+02	2.2579E+02
RHO	9.9013E+00	3.5975E+01	3.9222E+01
H	3.9594E+02	6.9419E+02	9.3593E+02
A	1.4902E+01	2.2657E+01	2.9467E+01
S	2.7687E+00	2.9236E+00	3.0652E+00
Z	2.8934E+00	3.3153E+00	3.5616E+00
GAME	9.9911E-01	1.0128E+00	1.0797E+00
U	3.9649E+01	1.0881E+01	1.3365E+01

SPECIES	MOLE FRACTIONS		
E-	3.0939E-01	3.9723E-01	4.3862E-01
H	3.8048E-01	2.0503E-01	1.2231E-01
H+	3.0905E-01	3.9698E-01	4.3867E-01
H2	4.7999E-05	3.5213E-06	2.2394E-07
H-	2.4457E-04	2.5124E-04	2.2482E-04
H2+	5.8548E-04	5.0062E-04	1.7105E-04

P1 = 1.00F+04 N/SQ-M. US1 = 6.20F+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7942E+03	2.0166E+04	3.6913E+04
T	9.2323E+01	1.7725E+02	2.7599E+02
RHO	9.8974E+00	3.2844E+01	3.6371E+01
H	4.5230E+02	7.8744E+02	1.0956E+03
A	1.6080E+01	2.5535E+01	3.3460E+01
S	2.8668E+00	3.0118E+00	3.1547E+00
Z	3.0579E+00	3.4443E+00	3.6773E+00
GAME	9.1582E-01	1.0619E+00	1.1032E+00
U	4.2383E+01	1.2761E+01	1.5796E+01

SPECIES	MOLE FRACTIONS		
E-	3.4648E-01	4.2291E-01	4.5622E-01
H	3.0663E-01	1.5378E-01	8.7233E-02
H+	3.4618E-01	4.2284E-01	4.5630E-01
H2	2.4512E-05	8.8002E-07	5.0347E-08
H-	1.8920E-04	1.9977E-04	1.6614E-04
H2+	4.9380E-04	2.7303E-04	8.7931E-05

P1 = 1.00F+04 N/SQ-M. US1 = 6.00F+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6173E+03	1.9244F+04	3.4249F+04
T	8.8691E+01	1.6456E+02	2.5015E+02
RHO	9.9228E+00	3.4473E+01	3.7779E+01
H	4.2366E+02	7.4034E+02	1.0141E+03
A	1.5462E+01	2.4073E+01	3.1478E+01
S	2.8172E+00	2.9683E+00	3.1111E+00
Z	2.9740E+00	3.3923E+00	3.6241E+00
GAME	9.0533E-01	1.0385E+00	1.0929E+00
U	4.1022E+01	1.1804E+01	1.4563E+01

SPECIES	MOLE FRACTIONS		
E-	3.2809E-01	4.1081E-01	4.4825E-01
H	3.4335E-01	1.7794E-01	1.0310E-01
H+	3.2776E-01	4.1066E-01	4.4833E-01
H2	3.4995E-05	1.7672E-06	1.0329E-07
H-	2.1792E-04	2.2421E-04	1.9510E-04
H2+	5.4465E-04	3.7198E-04	1.2140E-04

P1 = 1.00E+04 N/SQ-M. US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9755E+03	2.0986E+04	3.9549E+04
T	9.6205E+01	1.9063E+02	3.0307E+02
RHO	9.8465E+00	3.1201E+01	3.5058E+01
H	4.8183E+02	8.3501E+02	1.1798E+03
A	1.6743E+01	2.6976E+01	3.5404E+01
S	2.9152E+00	3.0533E+00	3.1959E+00
Z	3.1412E+00	3.5284E+00	3.7222E+00
GAME	9.2765E-01	1.0819E+00	1.1111E+00
U	4.3725E+01	1.3803E+01	1.7038E+01

SPECIES	MOLE FRACTIONS		
E-	3.6376E-01	4.3337E-01	4.6275E-01
H	2.7214E-01	1.3291E-01	7.4216E-02
H+	3.6348E-01	4.3334E-01	4.6283E-01
H2	1.6679E-05	4.4585E-07	2.5986E-08
H-	1.6123E-04	1.7713E-04	1.3971E-04
H2+	4.3800E-04	2.0054E-04	6.5161E-05

TABLE I. - Continued

$p_1 = 10\ kN/m^2$

P1 = 1.00E+04 N/SQ-M, US1 = 6.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.161FE+03	2.1759E+04	4.2042E+04
T	1.0046E+02	2.0465E+02	3.3039E+02
RHO	9.7596E+00	2.9658E+01	3.3852E+01
H	5.122EE+02	8.8375E+02	1.2652E+03
A	1.7472E+01	2.8387E+01	3.7250E+01
S	2.9630E+00	3.0926E+00	3.2339E+00
Z	3.2246E+00	3.5850E+00	3.7590E+00
GAME	9.4239E-01	1.0994E+00	1.1173E+00
U	4.5050E+01	1.4794E+01	1.8205E+01

SPECIES	MOLE FRACTIONS		
E-	3.8016E-01	4.4226E-01	4.6800E-01
H	2.3941E-01	1.1516E-01	6.3773E-02
H+	3.7991E-01	4.4227E-01	4.6806E-01
H2	1.0897E-05	2.3227E-07	1.4369E-08
H-	1.3437E-04	1.5630E-04	1.1699E-04
H2+	3.7839E-04	1.4851E-04	4.9695E-05

P1 = 1.00E+04 N/SQ-M, US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5430E+03	2.2843E+04	4.6422E+04
T	1.1048E+02	2.3413E+02	3.8760E+02
RHO	9.4627E+00	2.6508E+01	3.1371E+01
H	5.7571E+02	9.8164E+02	1.4408E+03
A	1.9179E+01	3.1119E+01	4.0846E+01
S	3.0567E+00	3.1683E+00	3.3060E+00
Z	3.3889E+00	3.6806E+00	3.8179E+00
GAME	9.8228E-01	1.1238E+00	1.1274E+00
U	4.7602E+01	1.6954E+01	2.0488E+01

SPECIES	MOLE FRACTIONS		
E-	4.1009E-01	4.5670E-01	4.7618E-01
H	1.7944E-01	8.5369E-02	4.7485E-02
H+	4.0992E-01	4.5673E-01	4.7623E-01
H2	4.3093E-06	6.7126E-08	4.8805E-09
H-	8.7417E-05	1.1677E-04	7.9605E-05
H2+	2.5767E-04	9.2427E-05	3.0014E-05

P1 = 1.00E+04 N/SQ-M, US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3512E+03	2.2375E+04	4.4385E+04
T	1.0517E+02	2.1917E+02	3.5834E+02
RHO	9.6350E+00	2.8080E+01	3.2681E+01
H	5.4359E+02	9.3261E+02	1.3528E+03
A	1.8277E+01	2.9770E+01	3.9044E+01
S	3.0100E+00	3.1309E+00	3.2698E+00
Z	3.3072E+00	3.6356E+00	3.7931E+00
GAME	9.6042E-01	1.1122E+00	1.1224E+00
U	4.6349E+01	1.5879E+01	1.9375E+01

SPECIES	MOLE FRACTIONS		
E-	3.9558E-01	4.5030E-01	4.7235E-01
H	2.0861E-01	9.9725E-02	5.5101E-02
H+	3.9538E-01	4.5033E-01	4.7241E-01
H2	4.9006E-06	1.2349E-07	8.3163E-09
H-	1.0959E-04	1.3600E-04	9.7346E-05
H2+	3.1742E-04	1.1035E-04	3.8594E-05

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 4.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3615E+01
T	2.7140E+00	3.3569E+00	4.7163E+00
RHO	3.9200E+00	6.5476E+00	1.1368E+01
M	2.7745E+00	3.4526E+00	4.9388E+00
A	1.6432E+00	1.8212E+00	2.1384E+00
S	1.0666E+00	1.0688E+00	1.0903E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8811E-01	9.6959E-01
U	2.2663E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	3.8267E-35	1.6526E-34	1.0556E-27
H	9.7522E-12	3.6426E-10	1.8145E-06
H+	2.3861E-35	3.2445E-36	3.5838E-28
H2	1.0000E+00	1.0000E+00	1.0000E+00
H-	6.4341E-42	2.0386E-40	2.3371E-32
H2+	2.1377E-34	1.0029E-35	6.9729E-28

P1 = 2.00E+04 N/SQ-M, US1 = 6.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4287E+01	7.6548E+01	1.5455E+02
T	4.8592E+00	6.7379E+00	8.7680E+00
RHO	4.9984E+00	1.1358E+01	1.7558E+01
M	5.0998E+00	7.3075E+00	1.0014E+01
A	2.1684E+00	2.5213E+00	2.8241E+00
S	1.1426E+00	1.1518E+00	1.1801E+00
Z	1.0000E+00	1.0002E+00	1.0039E+00
GAME	9.6765E-01	9.4324E-01	9.0609E-01
U	3.6513E+00	1.6031E+00	1.4541E+00

SPECIES	MOLE FRACTIONS		
E-	1.1360E-26	3.5875E-19	1.8861E-14
H	4.6834E-06	4.8003E-04	7.7942E-03
H+	8.0069E-27	2.1127E-19	1.3144E-14
H2	1.0000E+00	9.9952E-01	9.9221E-01
H-	3.6544E-30	3.4836E-22	2.6003E-16
H2+	3.3567E-27	1.4787E-19	5.9765E-15

P1 = 2.00E+04 N/SQ-M, US1 = 5.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4531E+01	9.7333E+01
T	3.7003E+00	4.9229E+00	6.6898E+00
RHO	4.5254E+00	9.0442E+00	1.4547E+01
M	3.8206E+00	5.1719E+00	7.2475E+00
A	1.9078E+00	2.1817E+00	2.5138E+00
S	1.1056E+00	1.1126E+00	1.1362E+00
Z	1.0000E+00	1.0003E+00	1.0032E+00
GAME	9.8361E-01	9.6684E-01	9.4445E-01
U	2.9621E+00	1.4793E+00	1.1383E+00

SPECIES	MOLE FRACTIONS		
E-	3.1519E-32	1.0877E-25	3.2858E-19
H	1.0196E-08	4.7582E-06	3.8399E-04
H+	1.2833E-32	5.2306E-26	2.4454E-19
H2	1.0000E+00	1.0000E+00	9.9962E-01
H-	3.5891E-37	1.9295E-29	2.4427E-21
H2+	1.9405E-32	5.6482E-26	8.6884E-20

P1 = 2.00E+04 N/SQ-M, US1 = 7.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3281E+01	1.1969E+02	2.2501E+02
T	6.1623E+00	8.6632E+00	1.0574E+01
RHO	5.4000E+00	1.3763E+01	2.0873E+01
M	6.6133E+00	9.8815E+00	1.3173E+01
A	2.4202E+00	2.8065E+00	3.0656E+00
S	1.1787E+00	1.1915E+00	1.2225E+00
Z	1.0001E+00	1.0039E+00	1.0195E+00
GAME	9.5041E-01	9.0567E-01	8.7180E-01
U	4.3383E+00	1.7000E+00	1.5156E+00

SPECIES	MOLE FRACTIONS		
E-	1.5101E-20	1.3635E-14	7.1382E-12
H	2.0788E-04	7.8032E-03	3.8199E-02
H+	1.0106E-20	9.7364E-15	5.3404E-12
H2	9.9979E-01	9.9220E-01	9.6180E-01
H-	1.2188E-23	1.5032E-16	2.5063E-13
H2+	5.0066E-21	4.0464E-15	2.0484E-12

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3802E+01	1.7833E+02	3.1194E+02
T	7.5559E+00	1.0415E+01	1.2079E+01
RHO	5.7890E+00	1.6801E+01	2.4616E+01
H	8.3652E+00	1.2948E+01	1.6762E+01
A	2.6446E+00	3.0405E+00	3.2972E+00
S	1.2132E+00	1.2319E+00	1.2653E+00
Z	1.0014E+00	1.0191E+00	1.0491E+00
GAME	9.2437E-01	8.7098E-01	8.5788E-01
U	5.0334E+00	1.7310E+00	1.5496E+00

SPECIES	MOLE FRACTIONS		
E-	1.5254E-16	5.2856E-12	2.4524E-10
H	2.7526E-03	3.7567E-02	9.3661E-02
H+	1.1510E-16	4.0301E-12	1.9161E-10
H2	9.9725E-01	9.6243E-01	9.0634E-01
H-	5.4695E-19	1.5648E-13	1.4979E-11
H2+	3.7981E-17	1.4122E-12	6.8609E-11

P1 = 2.00E+04 N/SQ-M, US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.9986E+01	3.6241E+02	5.7272E+02
T	1.0037E+01	1.3271E+01	1.4757E+01
RHO	6.8236E+00	2.5042E+01	3.3897E+01
H	1.2607E+01	2.0608E+01	2.5589E+01
A	2.9753E+00	3.5161E+00	3.8104E+00
S	1.2803E+00	1.3158E+00	1.3563E+00
Z	1.0219E+00	1.0905E+00	1.1445E+00
GAME	8.6315E-01	8.5426E-01	8.5930E-01
U	6.4899E+00	1.7667E+00	1.6301E+00

SPECIES	MOLE FRACTIONS		
E-	3.2376E-12	2.3956E-09	1.9544E-08
H	4.2831E-02	1.6600E-01	2.5317E-01
H+	2.6704E-12	1.9532E-09	1.6297E-08
H2	9.5717E-01	8.3400E-01	7.4683E-01
H-	5.2717E-14	1.9320E-10	2.3356E-09
H2+	6.2007E-13	6.3562E-10	5.5831E-09

P1 = 2.00E+04 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6007E+01	2.5756E+02	4.2469E+02
T	8.8902E+00	1.1917E+01	1.3442E+01
RHO	6.2531E+00	2.0610E+01	2.8947E+01
H	1.0362E+01	1.6524E+01	2.0885E+01
A	2.8216E+00	3.2720E+00	3.5428E+00
S	1.2467E+00	1.2730E+00	1.3095E+00
Z	1.0075E+00	1.0487E+00	1.0914E+00
GAME	8.8884E-01	8.5663E-01	8.5557E-01
U	5.7498E+00	1.7396E+00	1.5850E+00

SPECIES	MOLE FRACTIONS		
E-	5.9797E-14	1.9763E-10	2.9329E-09
H	1.4902E-02	9.2875E-02	1.6745E-01
H+	4.7562E-14	1.5652E-10	2.3752E-09
H2	9.8510E-01	9.0713E-01	8.3255E-01
H-	5.1249E-16	1.0617E-11	2.6373E-10
H2+	1.2747E-14	5.1726E-11	8.2145E-10

P1 = 2.00E+04 N/SQ-M, US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.5678E+01	4.9553E+02	7.6052E+02
T	1.1007E+01	1.4552E+01	1.6081E+01
RHO	7.4530E+00	2.9804E+01	3.5115E+01
H	1.5094E+01	2.5182E+01	3.0910E+01
A	3.1270E+00	3.7764E+00	4.1056E+00
S	1.3148E+00	1.3604E+00	1.4051E+00
Z	1.0444E+00	1.1426E+00	1.2091E+00
GAME	8.5056E-01	8.5774E-01	8.6669E-01
U	7.2420E+00	1.8105E+00	1.7013E+00

SPECIES	MOLE FRACTIONS		
E-	4.6093E-11	1.5916E-08	9.4321E-08
H	8.5114E-02	2.4955E-01	3.4586E-01
H+	3.8832E-11	1.3323E-08	8.0939E-08
H2	9.1489E-01	7.5045E-01	6.5414E-01
H-	1.1229E-12	1.7276E-09	1.4027E-08
H2+	8.3833E-12	4.3159E-09	2.7409E-08

TABLE I.- Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0303E+02	6.5671E+02	9.8864E+02
T	1.1858E+01	1.5803E+01	1.7438E+01
RHO	8.0902E+00	3.4531E+01	4.4197E+01
H	1.7820E+01	3.0223E+01	3.6823E+01
A	3.2816E+00	4.0549E+00	4.4288E+00
S	1.3504E+00	1.4068E+00	1.4558E+00
Z	1.0739E+00	1.2035E+00	1.2828E+00
GAME	8.4564E-01	8.6453E-01	8.7686E-01
U	7.9988E+00	1.8787E+00	1.7903E+00

SPECIES	MOLE FRACTIONS		
E-	3.2743E-10	7.3548E-08	3.6405E-07
H	1.3769E-01	3.3813E-01	4.4087E-01
H+	2.8065E-10	6.3157E-08	3.2113E-07
H2	8.6231E-01	6.6187E-01	5.5913E-01
H-	1.0715E-11	9.9563E-09	6.3643E-08
H2+	5.7498E-11	2.0347E-08	1.0656E-07

P1 = 2.00E+04 N/SQ-M, US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4232E+02	1.0574E+03	1.5600E+03
T	1.3357E+01	1.8331E+01	2.0382E+01
RHO	9.2644E+00	4.2816E+01	5.2621E+01
H	2.3977E+01	4.1612E+01	5.0387E+01
A	3.6058E+00	4.6745E+00	5.1805E+00
S	1.4257E+00	1.5034E+00	1.5614E+00
Z	1.1500E+00	1.3473E+00	1.4545E+00
GAME	8.4640E-01	8.8478E-01	9.0528E-01
U	9.4965E+00	2.0568E+00	2.0291E+00

SPECIES	MOLE FRACTIONS		
E-	5.2884E-09	8.3574E-07	3.6127E-06
H	2.6091E-01	5.1550E-01	6.2496E-01
H+	4.6572E-09	7.5335E-07	3.3491E-06
H2	7.3909E-01	4.8450E-01	3.7503E-01
H-	2.5536E-10	1.4865E-07	7.5182E-07
H2+	8.8659E-10	2.3103E-07	1.0154E-06

P1 = 2.00E+04 N/SQ-M, US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2191E+02	8.4490E+02	1.2551E+03
T	1.2632E+01	1.7054E+01	1.8856E+01
RHO	8.6998E+00	3.8549E+01	4.8771E+01
H	2.0781E+01	3.5704E+01	4.3306E+01
A	3.4408E+00	4.3533E+00	4.7847E+00
S	1.3874E+00	1.4545E+00	1.5080E+00
Z	1.1094E+00	1.2726E+00	1.3648E+00
GAME	8.4485E-01	8.7363E-01	8.8959E-01
U	8.7497E+00	1.9555E+00	1.8988E+00

SPECIES	MOLE FRACTIONS		
E-	1.4994E-09	2.6874E-07	1.2038E-06
H	1.9715E-01	4.2765E-01	5.3461E-01
H+	1.3031E-09	2.3661E-07	1.0857E-06
H2	8.0285E-01	5.7235E-01	4.6539E-01
H-	6.1007E-11	4.2754E-08	2.3506E-07
H2+	2.5730E-10	7.4888E-08	3.4907E-07

P1 = 2.00E+04 N/SQ-M, US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6429E+02	1.2931E+03	1.9042E+03
T	1.4053E+01	1.9668E+01	2.2088E+01
RHO	9.7784E+00	4.6025E+01	5.5591E+01
H	2.7409E+01	4.7954E+01	5.8119E+01
A	3.7779E+00	5.0233E+00	5.6289E+00
S	1.4653E+00	1.5531E+00	1.6160E+00
Z	1.1955E+00	1.4284E+00	1.5508E+00
GAME	8.4949E-01	8.9814E-01	9.2497E-01
U	1.0241E+01	2.1779E+00	2.1874E+00

SPECIES	MOLE FRACTIONS		
E-	1.5417E-08	2.3351E-06	1.0330E-05
H	3.2713E-01	5.9987E-01	7.1029E-01
H+	1.3739E-08	2.1514E-06	9.7752E-06
H2	6.7287E-01	4.0013E-01	2.8968E-01
H-	8.5163E-10	4.4513E-07	2.1854E-06
H2+	2.5295E-09	6.2888E-07	2.7358E-06

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8763E+02	1.5448E+03	2.2817E+03
T	1.4733E+01	2.1092E+01	2.4067E+01
RHO	1.0225E+01	4.8384E+01	5.7437E+01
H	3.1073E+01	5.4673E+01	6.6478E+01
A	3.9579E+00	5.4024E+00	6.1444E+00
S	1.3061E+00	1.6030E+00	1.6708E+00
Z	1.2455E+00	1.5138E+00	1.6506E+00
GAME	8.5368E-01	9.1407E-01	9.5038E-01
U	1.0973E+01	2.3213E+00	2.3761E+00

SPECIES	MOLE FRACTIONS		
E-	3.9669E-08	6.0503E-06	2.9215E-05
H	3.9422E-01	6.7882E-01	7.8824E-01
H+	3.5774E-08	5.6835E-06	2.8150E-05
H2	6.0578E-01	3.2116E-01	2.1169E-01
H-	2.4362E-09	1.1855E-06	5.9499E-06
H2+	6.3310E-09	1.5523E-06	7.0150E-06

P1 = 2.00E+04 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3890E+02	2.0898E+03	3.1574E+03
T	1.6092E+01	2.4477E+01	2.9874E+01
RHO	1.0934E+01	5.0487E+01	5.7317E+01
H	3.9108E+01	6.9336E+01	8.5737E+01
A	4.3471E+00	6.2988E+00	7.5400E+00
S	1.5905E+00	1.7024E+00	1.7803E+00
Z	1.3578E+00	1.6911E+00	1.8440E+00
GAME	8.6490E-01	9.5851E-01	1.0320E+00
U	1.2434E+01	2.6948E+00	2.9226E+00

SPECIES	MOLE FRACTIONS		
E-	2.0269E-07	3.7985E-05	2.8985E-04
H	5.2698E-01	8.1722E-01	9.1449E-01
H+	1.8690E-07	3.6803E-05	2.8555E-04
H2	4.7302E-01	1.8269E-01	8.4847E-02
H-	1.4386E-08	6.9044E-06	4.3669E-05
H2+	3.0169E-08	8.0859E-06	4.7968E-05

P1 = 2.00E+04 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1255E+02	1.8134E+03	2.7002E+03
T	1.5410E+01	2.2672E+01	2.6544E+01
RHO	1.0613E+01	4.9917E+01	5.8091E+01
H	3.4974E+01	6.1821E+01	7.5653E+01
A	4.1473E+00	5.8242E+00	6.7672E+00
S	1.5478E+00	1.6532E+00	1.7258E+00
Z	1.2957E+00	1.6024E+00	1.7512E+00
GAME	8.5883E-01	9.3371E-01	9.8514E-01
U	1.1707E+01	2.4911E+00	2.6142E+00

SPECIES	MOLE FRACTIONS		
E-	9.2970E-08	1.5214E-05	8.7189E-05
H	4.6116E-01	7.5183E-01	8.5762E-01
H+	8.4806E-08	1.4536E-05	8.5161E-05
H2	5.3884E-01	2.4814E-01	1.4217E-01
H-	6.2006E-09	2.9366E-06	1.5950E-05
H2+	1.4364E-08	3.6163E-06	1.8017E-05

P1 = 2.00E+04 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6666E+02	2.3675E+03	3.6605E+03
T	1.6793E+01	2.6636E+01	3.4615E+01
RHO	1.1187E+01	5.0047E+01	5.5160E+01
H	4.3476E+01	7.7200E+01	9.7020E+01
A	4.5591E+00	6.8457E+00	8.4557E+00
S	1.6340E+00	1.7507E+00	1.8335E+00
Z	1.4194E+00	1.7760E+00	1.9171E+00
GAME	8.7198E-01	9.9065E-01	1.0774E+00
U	1.3154E+01	2.9421E+00	3.3428E+00

SPECIES	MOLE FRACTIONS		
E-	4.2189E-07	9.7501E-05	1.1021E-03
H	5.9099E-01	8.7358E-01	9.5335E-01
H+	3.9320E-07	9.5482E-05	1.0889E-03
H2	4.0901E-01	1.2619E-01	4.4207E-02
H-	3.1242E-08	1.5776E-05	1.2151E-04
H2+	5.9924E-08	1.7745E-05	1.3467E-04

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9583E+02	2.636CE+03	4.1954E+03
T	1.7526E+01	2.9326E+01	4.0619E+01
RHO	1.1372E+01	4.8557E+01	5.2632E+01
H	4.8077E+01	8.5365E+01	1.0927E+02
A	4.7853E+00	7.4805E+00	9.2490E+00
S	1.6781E+00	1.797CE+00	1.8826E+00
Z	1.4843E+00	1.8512E+00	1.9624E+00
GAME	8.8026E-01	1.0309E+00	1.0732E+00
U	1.3868E+01	3.2543E+00	3.8181E+00

SPECIES	MOLE FRACTIONS		
E-	8.5075E-07	2.6341E-04	3.8977E-03
H	6.5260E-01	9.1880E-01	9.6891E-01
H+	8.0113E-07	2.5977E-04	3.8466E-03
H2	3.4740E-01	8.06C4E-02	2.2704E-02
H-	6.4504E-08	3.55C7E-05	2.9629E-04
H2+	1.1412E-07	3.9154E-05	3.4731E-04

P1 = 2.00E+04 N/SQ-M, US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5820E+02	3.1224E+03	5.2392E+03
T	1.9161E+01	3.6862E+01	5.1783E+01
RHO	1.1527E+01	4.3441E+01	5.0161E+01
H	5.7974E+01	1.0245E+02	1.3439E+02
A	5.2950E+00	8.8374E+00	1.0108E+01
S	1.7673E+00	1.8814E+00	1.9641E+00
Z	1.6218E+00	1.9495E+00	2.0170E+00
GAME	9.0224E-01	1.0866E+00	9.7816E-01
U	1.5275E+01	4.0448E+00	4.5547E+00

SPECIES	MOLE FRACTIONS		
E-	3.3370E-06	2.0644E-03	1.8892E-02
H	7.6679E-01	9.6795E-01	9.5125E-01
H+	3.2036E-06	2.0441E-03	1.8581E-02
H2	2.3320E-01	2.7595E-02	9.3342E-03
H-	2.5007E-07	1.6005E-04	8.1808E-04
H2+	3.8352E-07	1.8074E-C4	1.1285E-03

P1 = 2.00E+04 N/SQ-M, US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2637E+02	2.8892E+03	4.7308E+03
T	1.8307E+01	3.274CE+01	4.6614E+01
RHO	1.1487E+01	4.62C3E+01	5.0956E+01
H	5.2910E+01	9.38C1E+01	1.2186E+02
A	5.0290E+00	8.1825E+00	9.7545E+00
S	1.7226E+00	1.84C8E+00	1.9258E+00
Z	1.5520E+00	1.910CE+00	1.9917E+00
GAME	8.9013E-01	1.0708E+00	1.025CE+00
U	1.4576E+01	3.6272E+00	4.2404E+00

SPECIES	MOLE FRACTIONS		
E-	1.6835E-06	7.47C7E-04	1.0009E-02
H	7.1134E-01	9.5057E-01	9.6539E-01
H+	1.6009E-06	7.3918E-04	9.8592E-03
H2	2.8866E-01	4.7775E-02	1.3492E-02
H-	1.2833E-07	7.8183E-05	5.5176E-04
H2+	2.1085E-07	8.6083E-05	7.02C4E-04

P1 = 2.00E+04 N/SQ-M, US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.9130E+02	3.3342E+03	5.7128E+03
T	2.0122E+01	4.1345E+01	5.6173E+01
RHO	1.1489E+01	4.08C6E+01	4.9794E+01
H	6.3269E+01	1.1143E+02	1.4693E+02
A	5.5905E+00	9.3314E+00	1.0408E+01
S	1.8119E+00	1.9194E+00	1.9997E+00
Z	1.6925E+00	1.9762E+00	2.0424E+00
GAME	9.1767E-01	1.0657E+00	9.4414E-01
U	1.5964E+01	4.4d76E+00	4.7885E+00

SPECIES	MOLE FRACTIONS		
E-	6.7299E-06	5.012CE-03	2.9414E-02
H	8.1833E-01	9.7271E-01	9.3198E-01
H+	6.5188E-06	4.9586E-03	2.8904E-02
H2	1.8165E-01	1.6654E-02	7.0795E-03
H-	4.8373E-07	2.8713E-04	1.0567E-03
H2+	6.9489E-07	3.4051E-04	1.5667E-03

TABLE I.- Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.2555E+02	3.5374E+03	6.1399E+03
T	2.1250E+01	4.5654E+01	5.9991E+01
RHO	1.1360E+01	3.8805E+01	4.5473E+01
H	6.8790E+01	1.2075E+02	1.5961E+02
A	5.9288E+00	9.6754E+00	1.0686E+01
S	1.8561E+00	1.9541E+00	2.0341E+00
Z	1.7628E+00	1.9967E+00	2.0688E+00
GAME	9.3834E-01	1.0269E+00	9.2009E-01
U	1.6642E+01	4.8681E+00	4.9789E+00

SPECIES	MOLE FRACTIONS		
E-	1.4148E-05	1.0014E-02	4.0856E-02
H	8.6542E-01	9.6756E-01	9.1014E-01
H+	1.3818E-05	9.8956E-03	4.0127E-02
H2	1.3455E-01	1.1112E-02	5.6391E-03
H-	9.4553E-07	4.4188E-04	1.2549E-03
H2+	1.2755E-06	5.5616E-04	1.9833E-03

P1 = 2.00E+04 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.9653E+02	3.8760E+03	6.7288E+03
T	2.4431E+01	5.3318E+01	6.6211E+01
RHO	1.0755E+01	3.5655E+01	4.7876E+01
H	8.0487E+01	1.4048E+02	1.8462E+02
A	6.8257E+00	1.0205E+01	1.1189E+01
S	1.9412E+00	2.0221E+00	2.1010E+00
Z	1.8897E+00	2.0385E+00	2.1227E+00
GAME	1.0091E+00	9.5790E-01	8.9081E-01
U	1.7930E+01	5.3942E+00	5.1875E+00

SPECIES	MOLE FRACTIONS		
E-	8.0923E-05	2.6137E-02	6.4294E-02
H	9.4139E-01	9.4022E-01	8.6456E-01
H+	8.0119E-05	2.5818E-02	6.3159E-02
H2	5.8440E-02	5.9995E-03	3.8396E-03
H-	4.0532E-06	7.5576E-04	1.5049E-03
H2+	4.8568E-06	1.0739E-03	2.6407E-03

P1 = 2.00E+04 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.6069E+02	3.7224E+03	6.4819E+03
T	2.2636E+01	4.9693E+01	6.3267E+01
RHO	1.1122E+01	3.7137E+01	4.6898E+01
H	7.4532E+01	1.3044E+02	1.7205E+02
A	6.3306E+00	9.9540E+00	1.0942E+01
S	1.8994E+00	1.9883E+00	2.0673E+00
Z	1.8300E+00	2.0171E+00	2.0952E+00
GAME	9.6749E-01	9.8851E-01	9.0327E-01
U	1.7298E+01	5.1710E+00	5.0890E+00

SPECIES	MOLE FRACTIONS		
E-	3.2035E-05	1.7215E-02	5.2423E-02
H	9.0698E-01	9.5642E-01	8.8772E-01
H+	3.1521E-05	1.7010E-02	5.1483E-02
H2	9.2950E-02	7.9385E-03	4.6311E-03
H-	1.9070E-06	6.0545E-04	1.4027E-03
H2+	2.4203E-06	8.1107E-04	2.3424E-03

P1 = 2.00E+04 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3262E+02	3.9777E+03	6.8486E+03
T	2.6826E+01	5.6498E+01	6.8820E+01
RHO	1.0253E+01	3.4141E+01	4.6266E+01
H	8.6642E+01	1.5072E+02	1.9705E+02
A	7.4253E+00	1.0439E+01	1.1424E+01
S	1.9609E+00	2.0558E+00	2.1351E+00
Z	1.9365E+00	2.0621E+00	2.1509E+00
GAME	1.0614E+00	9.3529E-01	8.8169E-01
U	1.8523E+01	5.5481E+00	5.2646E+00

SPECIES	MOLE FRACTIONS		
E-	2.3222E-04	3.6157E-02	7.6222E-02
H	9.6649E-01	9.2122E-01	8.4124E-01
H+	2.3093E-04	3.5715E-02	7.4923E-02
H2	3.3031E-02	4.7097E-03	3.1932E-03
H-	9.1154E-06	8.7806E-04	1.5597E-03
H2+	1.0409E-05	1.3166E-03	2.8592E-03

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6930E+02	4.0431E+03	6.8762E+03
T	2.9912E+01	5.9357E+01	7.1197E+01
RHO	9.6757E+00	3.2636E+01	4.4301E+01
H	9.3002E+01	1.6127E+02	2.0952E+02
A	8.0500E+00	1.0667E+01	1.1653E+01
S	2.0176E+00	2.0896E+00	2.1696E+00
Z	1.9670E+00	2.0871E+00	2.1801E+00
GAME	1.1014E+00	9.1843E-01	8.7486E-01
U	1.9094E+01	5.6443E+00	5.3245E+00

SPECIES	MOLE FRACTIONS		
E-	7.1213E-04	4.7044E-02	8.8283E-02
H	9.8107E-01	9.0018E-01	8.1762E-01
H+	7.0983E-04	4.6687E-02	8.6852E-02
H2	1.7463E-02	3.7823E-03	2.6565E-03
H-	2.0658E-05	9.7291E-04	1.5774E-03
H2+	2.2956E-05	1.5305E-03	3.0084E-03

P1 = 2.00E+04 N/SQ-M, US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.4493E+02	4.1883E+03	6.9449E+03
T	3.7071E+01	6.4439E+01	7.5624E+01
RHO	8.7076E+00	3.0361E+01	4.0989E+01
H	1.0634E+02	1.8315E+02	2.3505E+02
A	8.9025E+00	1.1117E+01	1.2109E+01
S	2.0819E+00	2.1551E+00	2.2368E+00
Z	1.9979E+00	2.1408E+00	2.2404E+00
GAME	1.0701E+00	8.9585E-01	8.6541E-01
U	2.0193E+01	5.7780E+00	5.4361E+00

SPECIES	MOLE FRACTIONS		
E-	4.7844E-03	7.0238E-02	1.1239E-01
H	9.8455E-01	8.5473E-01	7.7022E-01
H+	4.7737E-03	6.9450E-02	1.1075E-01
H2	5.7249E-03	2.5883E-03	1.8744E-03
H-	7.6483E-05	1.1031E-03	1.5613E-03
H2+	8.7213E-05	1.8916E-03	3.1998E-03

P1 = 2.00E+04 N/SQ-M, US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.0629E+02	4.0942E+03	6.8759E+03
T	3.3454E+01	6.1941E+01	7.3407E+01
RHO	9.1298E+00	3.1279E+01	4.2386E+01
H	9.9556E+01	1.7155E+02	2.2201E+02
A	8.5541E+00	1.0889E+01	1.1878E+01
S	2.0511E+00	2.1227E+00	2.2037E+00
Z	1.9850E+00	2.1132E+00	2.2095E+00
GAME	1.1019E+00	9.0585E-01	8.6969E-01
U	1.9636E+01	5.7192E+00	5.3799E+00

SPECIES	MOLE FRACTIONS		
E-	2.0180E-03	5.8375E-02	1.0029E-01
H	9.8636E-01	8.7806E-01	7.9405E-01
H+	2.0132E-03	5.7703E-02	9.8756E-02
H2	9.5165E-03	3.1005E-03	2.2220E-03
H-	4.2750E-05	1.0433E-03	1.5722E-03
H2+	4.7568E-05	1.7150E-03	3.1093E-03

P1 = 2.00E+04 N/SQ-M, US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.2846E+02	4.5510E+03	7.3850E+03
T	4.3548E+01	6.9297E+01	8.0316E+01
RHO	8.2581E+00	2.9872E+01	3.9909E+01
H	1.2068E+02	2.0737E+02	2.6343E+02
A	9.3697E+00	1.1586E+01	1.2604E+01
S	2.1372E+00	2.2157E+00	2.3005E+00
Z	2.0256E+00	2.1985E+00	2.3039E+00
GAME	9.9523E-01	8.8111E-01	8.5854E-01
U	2.1386E+01	5.9052E+00	5.5727E+00

SPECIES	MOLE FRACTIONS		
E-	1.5658E-02	9.4419E-02	1.3667E-01
H	9.6554E-01	8.0685E-01	7.2222E-01
H+	1.5619E-02	9.3385E-02	1.3482E-01
H2	2.8169E-03	1.9009E-03	1.3647E-03
H-	1.6482E-04	1.2040E-03	1.5379E-03
H2+	2.0302E-04	2.2383E-03	3.3874E-03

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.2061E+02	5.1130E+03	8.1480E+03
T	4.8922E+01	7.4191E+01	8.5414E+01
RHO	8.1320E+00	3.0496E+01	4.0242E+01
H	1.3605E+02	2.3411E+02	2.9500E+02
A	9.7810E+00	1.2082E+01	1.3147E+01
S	2.1887E+00	2.2741E+00	2.3623E+00
Z	2.0627E+00	2.2549E+00	2.3705E+00
GAME	9.4805E-01	8.7061E-01	8.5370E-01
U	2.2678E+01	6.0298E+00	5.7416E+00

SPECIES	MOLE FRACTIONS		
E-	3.2520E-02	1.1901E-01	1.6084E-01
H	9.3267E-01	7.5798E-01	6.7433E-01
H+	3.2434E-02	1.1772E-01	1.5879E-01
H2	1.7767E-03	1.4433E-03	1.0009E-03
H-	2.5820E-04	1.2779E-03	1.4974E-03
H2+	3.4483E-04	2.5705E-03	3.5467E-03

P1 = 2.00E+04 N/SQ-M, US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0277E+03	6.6444E+03	1.0348E+04
T	5.7385E+01	8.4189E+01	9.6962E+01
RHO	8.3026E+00	3.3035E+01	4.2489E+01
H	1.6980E+02	2.9400E+02	3.6673E+02
A	1.0591E+01	1.3139E+01	1.4395E+01
S	2.2858E+00	2.3879E+00	2.4839E+00
Z	2.1571E+00	2.3891E+00	2.5118E+00
GAME	9.0620E-01	8.5832E-01	8.5086E-01
U	2.5419E+01	6.3821E+00	6.1709E+00

SPECIES	MOLE FRACTIONS		
E-	7.4432E-02	1.6676E-01	2.0786E-01
H	8.4934E-01	6.6302E-01	5.8111E-01
H+	7.4213E-02	1.6501E-01	2.0559E-01
H2	9.7405E-04	8.4223E-04	5.0774E-04
H-	4.1022E-04	1.3113E-03	1.3293E-03
H2+	6.2983E-04	3.0615E-03	3.5996E-03

P1 = 2.00E+04 N/SQ-M, US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.2060E+02	5.8214E+03	9.1569E+03
T	5.3407E+01	7.9131E+01	9.0934E+01
RHO	8.1810E+00	3.1662E+01	4.1278E+01
H	1.5243E+02	2.6303E+02	3.2944E+02
A	1.0186E+01	1.2598E+01	1.3740E+01
S	2.2375E+00	2.3312E+00	2.4231E+00
Z	2.1070E+00	2.3235E+00	2.4396E+00
GAME	9.2194E-01	8.6326E-01	8.5103E-01
U	2.4031E+01	6.2004E+00	5.9353E+00

SPECIES	MOLE FRACTIONS		
E-	5.2552E-02	1.4319E-01	1.8453E-01
H	8.9294E-01	7.0988E-01	6.2735E-01
H+	5.2403E-02	1.4165E-01	1.8233E-01
H2	1.2769E-03	1.1076E-03	7.2463E-04
H-	3.4101E-04	1.3145E-03	1.4290E-03
H2+	4.8987E-04	2.8540E-03	3.6305E-03

P1 = 2.00E+04 N/SQ-M, US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1416E+03	7.5558E+03	1.1706E+04
T	6.1000E+01	8.9419E+01	1.0365E+02
RHO	8.4644E+00	3.4401E+01	4.3647E+01
H	1.8814E+02	3.2679E+02	4.0682E+02
A	1.0994E+01	1.3711E+01	1.5130E+01
S	2.3335E+00	2.4444E+00	2.5447E+00
Z	2.2110E+00	2.4562E+00	2.5875E+00
GAME	8.9613E-01	8.5585E-01	8.5353E-01
U	2.6826E+01	6.6202E+00	6.4535E+00

SPECIES	MOLE FRACTIONS		
E-	9.6945E-02	1.8957E-01	2.3083E-01
H	8.0441E-01	6.1710E-01	5.3558E-01
H+	9.6651E-02	1.8766E-01	2.2860E-01
H2	7.6880E-04	6.2873E-04	3.3987E-04
H-	4.6440E-04	1.2687E-03	1.2075E-03
H2+	7.5782E-04	3.1717E-03	3.4405E-03

TABLE I.- Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2619E+03	8.5634E+03	1.3217E+04
T	6.4392E+01	9.4957E+01	1.1124E+02
RHO	8.6413E+00	3.5709E+01	4.4539E+01
H	2.0743E+02	3.6149E+02	4.4987E+02
A	1.1396E+01	1.4326E+01	1.5971E+01
S	2.3810E+00	2.5006E+00	2.6056E+00
Z	2.2679E+00	2.5255E+00	2.6677E+00
GAME	8.8935E-01	8.5577E-01	8.5956E-01
U	2.8243E+01	6.8432E+00	6.7969E+00

SPECIES	MOLE FRACTIONS		
E-	1.1963E-01	2.1170E-01	2.5365E-01
H	7.5911E-01	5.7375E-01	4.9033E-01
H+	1.1927E-01	2.0972E-01	2.5157E-01
H2	6.1685E-04	4.5643E-04	2.1406E-04
H-	5.0396E-04	1.1949E-03	1.0768E-03
H2+	3.7060E-04	3.1792E-03	3.1523E-03

P1 = 2.00E+04 N/SQ-M, US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5211E+03	1.0757E+04	1.6694E+04
T	7.0805E+01	1.0731E+02	1.3029E+02
RHO	8.9916E+00	3.7532E+01	4.5081E+01
H	2.4888E+02	4.3578E+02	5.4587E+02
A	1.2213E+01	1.5735E+01	1.8084E+01
S	2.4764E+00	2.6121E+00	2.7261E+00
Z	2.3893E+00	2.6708E+00	2.8423E+00
GAME	8.8170E-01	8.6379E-01	8.8309E-01
U	3.1089E+01	7.4559E+00	7.7357E+00

SPECIES	MOLE FRACTIONS		
E-	1.6438E-01	2.5425E-01	2.9870E-01
H	6.6974E-01	4.8931E-01	4.0082E-01
H+	1.6389E-01	2.5227E-01	2.9726E-01
H2	4.0287E-04	2.1404E-04	6.8142E-05
H-	5.4201E-04	9.8880E-04	8.5441E-04
H2+	1.0409E-03	2.8713E-03	2.2958E-03

P1 = 2.00E+04 N/SQ-M, US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3885E+03	9.6335E+03	1.4880E+04
T	6.7640E+01	1.0087E+02	1.1998E+02
RHO	8.8195E+00	3.6780E+01	4.5063E+01
H	2.2766E+02	3.9782E+02	4.9613E+02
A	1.1802E+01	1.4994E+01	1.6943E+01
S	2.4286E+00	2.5964E+00	2.6866E+00
Z	2.3275E+00	2.5967E+00	2.7523E+00
GAME	8.8472E-01	8.5832E-01	8.6931E-01
U	2.9666E+01	7.1250E+00	7.2196E+00

SPECIES	MOLE FRACTIONS		
E-	1.4218E-01	2.3318E-01	2.7622E-01
H	7.1409E-01	5.3112E-01	4.4553E-01
H+	1.4174E-01	2.3120E-01	2.7442E-01
H2	4.9836E-04	3.1971E-04	1.2580E-04
H-	5.2954E-04	1.0980E-03	9.5471E-04
H2+	9.6556E-04	3.0769E-03	2.7591E-03

P1 = 2.00E+04 N/SQ-M, US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6598E+03	1.1921E+04	1.8665E+04
T	7.3932E+01	1.1432E+02	1.4255E+02
RHO	9.1516E+00	3.7972E+01	4.4582E+01
H	2.7102E+02	4.7526E+02	5.9956E+02
A	1.2633E+01	1.6548E+01	1.9417E+01
S	2.5244E+00	2.6655E+00	2.7854E+00
Z	2.4531E+00	2.7462E+00	2.9369E+00
GAME	8.8001E-01	8.7222E-01	9.0051E-01
U	3.2511E+01	7.8413E+00	8.3717E+00

SPECIES	MOLE FRACTIONS		
E-	1.6614E-01	2.7445E-01	3.2087E-01
H	6.2631E-01	4.4919E-01	3.5666E-01
H+	1.8559E-01	2.7235E-01	3.1984E-01
H2	3.2438E-04	1.3765E-04	3.4012E-05
H-	5.4245E-04	8.8268E-04	7.8335E-04
H2+	1.0953E-03	2.5900E-03	1.8160E-03

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8043E+03	1.3100E+04	2.0814E+04
T	7.7062E+01	1.2211E+02	1.5728E+02
RHO	9.2953E+00	3.7983E+01	4.3596E+01
H	2.9410E+02	5.1612E+02	6.5817E+02
A	1.3066E+01	1.7461E+01	2.0963E+01
S	2.5725E+00	2.7191E+00	2.8440E+00
Z	2.5188E+00	2.8245E+00	3.0355E+00
GAME	8.7934E-01	8.8355E-01	9.2049E-01
U	3.3929E+01	8.3096E+00	9.1853E+00

SPECIES	MOLE FRACTIONS		
E-	2.0737E-01	2.9425E-01	3.4251E-01
H	5.8394E-01	4.0984E-01	3.1348E-01
H+	2.0677E-01	2.9279E-01	3.4188E-01
H2	2.5919E-04	8.4054E-05	1.5724E-05
H-	5.3206E-04	7.8587E-04	7.3722E-04
H2+	1.1281E-03	2.2507E-03	1.3696E-03

P1 = 2.00E+04 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1102E+03	1.5434E+04	2.5523E+04
T	8.3502E+01	1.4026E+02	1.9391E+02
RHO	9.5139E+00	3.6872E+01	4.0788E+01
H	3.4305E+02	6.0162E+02	7.8836E+02
A	1.3990E+01	1.9579E+01	2.4499E+01
S	2.6697E+00	2.8198E+00	2.9544E+00
Z	2.6562E+00	2.9844E+00	3.2270E+00
GAME	8.8237E-01	9.1583E-01	9.5916E-01
U	3.6745E+01	9.4826E+00	1.1161E+01

SPECIES	MOLE FRACTIONS		
E-	2.4833E-01	3.3143E-01	3.8096E-01
H	5.0220E-01	3.3563E-01	2.3675E-01
H+	2.4769E-01	3.3053E-01	3.8090E-01
H2	1.5916E-04	2.7655E-05	3.1194E-06
H-	4.8376E-04	6.4471E-04	6.6859E-04
H2+	1.1277E-03	1.5433E-03	7.2455E-04

P1 = 2.00E+04 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9545E+03	1.4290E+04	2.3113E+04
T	8.0231E+01	1.3080E+02	1.7445E+02
RHO	9.4192E+00	3.7614E+01	4.2282E+01
H	3.1811E+02	5.5836E+02	7.2116E+02
A	1.3515E+01	1.8479E+01	2.2676E+01
S	2.6208E+00	2.7707E+00	2.9004E+00
Z	2.5863E+00	2.9047E+00	3.1334E+00
GAME	8.8030E-01	8.9875E-01	9.4067E-01
U	3.5342E+01	8.8354E+00	1.0121E+01

SPECIES	MOLE FRACTIONS		
E-	2.2803E-01	3.1340E-01	3.6272E-01
H	5.4270E-01	3.7175E-01	2.7316E-01
H+	2.2741E-01	3.1221E-01	3.6242E-01
H2	2.0487E-04	4.8950E-05	7.0039E-06
H-	5.1220E-04	7.0605E-04	7.0390E-04
H2+	1.1391E-03	1.8856E-03	1.0024E-03

P1 = 2.00E+04 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.2715E+03	1.6569E+04	2.8072E+04
T	8.6828E+01	1.5093E+02	2.1520E+02
RHO	9.5962E+00	3.5808E+01	3.9385E+01
H	3.6893E+02	6.4607E+02	8.5956E+02
A	1.4480E+01	2.0800E+01	2.6353E+01
S	2.7175E+00	2.8682E+00	3.0044E+00
Z	2.7262E+00	3.0657E+00	3.3121E+00
GAME	8.8577E-01	9.3499E-01	9.7438E-01
U	3.8143E+01	1.0203E+01	1.2276E+01

SPECIES	MOLE FRACTIONS		
E-	2.6759E-01	3.4866E-01	3.9668E-01
H	4.6380E-01	3.0107E-01	2.0539E-01
H+	2.6694E-01	3.4823E-01	3.9678E-01
H2	1.2240E-04	1.4567E-05	1.4492E-06
H-	4.5010E-04	5.9638E-04	6.2656E-04
H2+	1.0975E-03	1.2223E-03	5.2971E-04

TABLE I. - Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 5.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4388E+03	1.7635E+04	3.0698E+04
T	9.0338E+01	1.6251E+02	2.3873E+02
RHO	9.6469E+00	3.4504E+01	3.7914E+01
H	3.9574E+02	6.9150E+02	9.3474E+02
A	1.5007E+01	2.2090E+01	2.8276E+01
S	2.7657E+00	2.9146E+00	3.0532E+00
Z	2.7985E+00	3.1450E+00	3.3915E+00
GAME	8.9080E-01	9.5474E-01	9.8746E-01
U	3.9542E+01	1.1046E+01	1.3448E+01

SPECIES	---------- MOLE FRACTIONS ----------		
E-	2.8646E-01	3.6504E-01	4.1069E-01
H	4.2617E-01	2.6861E-01	1.7748E-01
H+	2.8582E-01	3.6464E-01	4.1087E-01
H2	9.1954E-05	7.9877E-06	6.9068E-07
H-	4.1117E-04	5.5650E-04	5.7182E-04
H2+	1.0478E-03	9.5219E-04	3.8854E-04

P1 = 2.00E+04 N/SQ-M, US1 = 6.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7856E+03	1.9511E+04	3.5905E+04
T	9.8031E+01	1.8764E+02	2.8908E+02
RHO	9.6381E+00	3.1600E+01	3.5258E+01
H	4.5204E+02	7.8431E+02	1.0943E+03
A	1.6188E+01	2.4746E+01	3.2018E+01
S	2.8622E+00	3.0002E+00	3.1412E+00
Z	2.9482E+00	3.2906E+00	3.5228E+00
GAME	9.0675E-01	9.9174E-01	1.0067E+00
U	4.2252E+01	1.2874E+01	1.5921E+01

SPECIES	---------- MOLE FRACTIONS ----------		
E-	3.2257E-01	3.9279E-01	4.3249E-01
H	3.5416E-01	2.1345E-01	1.3413E-01
H+	3.2200E-01	3.9270E-01	4.3271E-01
H2	4.7918E-05	2.3436E-06	1.8860E-07
H-	3.2505E-04	4.8341E-04	4.5018E-04
H2+	8.9679E-04	5.6982E-04	2.2315E-04

P1 = 2.00E+04 N/SQ-M, US1 = 6.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6103E+03	1.8622E+04	3.3364E+04
T	9.4038E+01	1.7481E+02	2.6357E+02
RHO	9.6648E+00	3.3081E+01	3.6569E+01
H	4.2345E+02	7.3759E+02	1.0140E+03
A	1.5571E+01	2.3414E+01	3.0174E+01
S	2.8137E+00	2.9585E+00	3.0987E+00
Z	2.8721E+00	3.2203E+00	3.4616E+00
GAME	8.9765E-01	9.7386E-01	9.9789E-01
U	4.0913E+01	1.1948E+01	1.4720E+01

SPECIES	---------- MOLE FRACTIONS ----------		
E-	3.0470E-01	3.7968E-01	4.2252E-01
H	3.8980E-01	2.3966E-01	1.5394E-01
H+	3.0408E-01	3.7946E-01	4.2274E-01
H2	6.7483E-05	4.2853E-06	3.5000E-07
H-	3.6919E-04	5.2014E-04	5.1193E-04
H2+	9.8039E-04	7.3695E-04	2.9129E-04

P1 = 2.00E+04 N/SQ-M, US1 = 6.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9678E+03	2.0376E+04	3.8544E+04
T	1.0218E+02	2.0157E+02	3.1591E+02
RHO	9.6126E+00	3.0101E+01	3.4115E+01
H	4.8159E+02	8.3212E+02	1.1777E+03
A	1.6833E+01	2.6129E+01	3.3842E+01
S	2.9077E+00	3.0413E+00	3.1813E+00
Z	3.0215E+00	3.3582E+00	3.5764E+00
GAME	9.1771E-01	1.0086E+00	1.0137E+00
U	4.3610E+01	1.3508E+01	1.7093E+01

SPECIES	---------- MOLE FRACTIONS ----------		
E-	3.3842E-01	4.0488E-01	4.4096E-01
H	3.2156E-01	1.8534E-01	1.1730E-01
H+	3.3840E-01	4.0489E-01	4.4117E-01
H2	3.3627E-05	1.2795E-06	1.0662E-07
H-	2.8405E-04	4.4434E-04	3.9173E-04
H2+	8.0874E-04	4.3785E-04	1.7427E-04

TABLE I.- Continued

$p_1 = 20\ kN/m^2$

P1 = 2.00E+04 N/SQ-M, US1 = 6.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.1519E+03	2.1077E+04	4.0883E+04
T	1.0685E+02	2.1516E+02	3.4256E+02
RHO	9.5184E+00	2.8664E+01	3.2896E+01
M	5.1197E+02	8.8016E+02	1.2616E+03
A	1.7567E+01	2.7431E+01	3.5612E+01
S	2.9549E+00	3.0785E+00	3.2196E+00
Z	3.0990E+00	3.4175E+00	3.6238E+00
GAME	9.3190E-01	1.0233E+00	1.0205E+00
U	4.4912E+01	1.4919E+01	1.8220E+01

SPECIES	MOLE FRACTIONS		
E-	3.5536E-01	4.1512E-01	4.4822E-01
H	2.8877E-01	1.6855E-01	1.0288E-01
H+	3.5489E-01	4.1518E-01	4.4842E-01
H2	2.2391E-05	7.3684E-07	6.2948E-08
H-	2.4256E-04	4.0501E-04	3.3592E-04
H2+	7.0748E-04	3.4245E-04	1.3757E-04

P1 = 2.00E+04 N/SQ-M, US1 = 7.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5330E+03	2.2205E+04	4.5217E+04
T	1.1756E+02	2.4431E+02	3.5944E+02
RHO	9.2432E+00	2.5778E+01	3.0574E+01
M	5.7540E+02	9.7821E+02	1.4367E+03
A	1.9244E+01	3.0074E+01	3.9078E+01
S	3.0455E+00	3.1528E+00	3.2915E+00
Z	3.2513E+00	3.5257E+00	3.7025E+00
GAME	9.6890E-01	1.0506E+00	1.0326E+00
U	4.7469E+01	1.7029E+01	2.0486E+01

SPECIES	MOLE FRACTIONS		
E-	3.8537E-01	4.3295E-01	4.5952E-01
H	2.2891E-01	1.3346E-01	7.9680E-02
H+	3.8504E-01	4.3306E-01	4.6007E-01
H2	3.9382E-06	2.5187E-07	2.4150E-08
H-	1.7212E-04	3.2222E-04	2.4093E-04
H2+	5.0467E-04	2.0944E-04	8.9491E-05

P1 = 2.00E+04 N/SQ-M, US1 = 6.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3406E+03	2.1689E+04	4.3165E+04
T	1.1194E+02	2.3001E+02	3.7133E+02
RHO	9.3974E+00	2.7129E+01	3.1706E+01
M	5.4325E+02	9.2887E+02	1.3491E+03
A	1.8366E+01	2.8804E+01	3.7387E+01
S	3.0008E+00	3.1178E+00	3.2568E+00
Z	3.1756E+00	3.4755E+00	3.6662E+00
GAME	9.4891E-01	1.0378E+00	1.0268E+00
U	4.6203E+01	1.5975E+01	1.9404E+01

SPECIES	MOLE FRACTIONS		
E-	3.7082E-01	4.2488E-01	4.5459E-01
H	2.5794E-01	1.4952E-01	9.0253E-02
H+	3.7042E-01	4.2497E-01	4.5476E-01
H2	1.4424E-05	4.1834E-07	3.8129E-08
H-	2.0508E-04	3.6160E-04	2.8478E-04
H2+	6.0503E-04	2.6471E-04	1.1017E-04

TABLE I.- Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 4.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3615E+01
T	2.7140E+00	3.3565E+00	4.7163E+00
RHO	3.9200E+00	6.5476E+00	1.1368E+01
H	2.7745E+00	3.4526E+00	4.9388E+00
A	1.6432E+00	1.8212E+00	2.1385E+00
S	1.0703E+00	1.0726E+00	1.0954E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8811E-01	9.6901E-01
U	2.2663E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	3.0720E-34	1.2512E-34	6.2562E-28
H	6.1638E-12	2.3034E-10	1.1477E-06
H+	3.4528E-37	3.2324E-36	1.5297E-28
H2	1.0000E+00	1.0000E+00	1.0000E+00
H-	1.3205E-41	7.3731E-40	2.3603E-32
H2+	4.2076E-35	3.0269E-35	4.7268E-28

P1 = 5.00E+04 N/SQ-M, US1 = 6.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4287E+01	7.6514E+01	1.5478E+02
T	4.8592E+00	6.7410E+00	8.8318E+00
RHO	4.9983E+00	1.1349E+01	1.7479E+01
H	5.0998E+00	7.3071E+00	1.0027E+01
A	2.1685E+00	2.5240E+00	2.8451E+00
S	1.1506E+00	1.1603E+00	1.1902E+00
Z	1.0000E+00	1.0002E+00	1.0027E+00
GAME	9.6770E-01	9.4487E-01	9.1409E-01
U	3.6513E+00	1.6044E+00	1.4631E+00

SPECIES	MOLE FRACTIONS		
E-	6.1670E-27	2.0227E-19	1.3683E-14
H	2.5625E-06	3.0555E-04	5.3197E-03
H+	3.6746E-27	9.5786E-20	8.2050E-15
H2	1.0000E+00	9.9969E-01	9.9468E-01
H-	3.2195E-30	3.0876E-22	3.1373E-16
H2+	2.4956E-27	1.0679E-19	5.7920E-15

P1 = 5.00E+04 N/SQ-M, US1 = 5.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4531E+01	9.7346E+01
T	3.7003E+00	4.4225E+00	6.6936E+00
RHO	4.5254E+00	9.0444E+00	1.4542E+01
H	3.8200E+00	5.1718E+00	7.2483E+00
A	1.9078E+00	2.1817E+00	2.5162E+00
S	1.1108E+00	1.1167E+00	1.1438E+00
Z	1.0000E+00	1.0000E+00	1.0001E+00
GAME	9.8361E-01	9.6688E-01	9.4579E-01
U	2.9621E+00	1.4793E+00	1.3390E+00

SPECIES	MOLE FRACTIONS		
E-	1.8323E-32	6.2431E-26	1.8889E-19
H	6.4483E-09	3.0098E-06	2.4459E-04
H+	5.5289E-33	2.3067E-26	1.2100E-19
H2	1.0000E+00	1.0000E+00	9.9976E-01
H-	3.3261E-37	1.7476E-29	2.2165E-21
H2+	1.3210E-32	3.9362E-26	7.0103E-20

P1 = 5.00E+04 N/SQ-M, US1 = 7.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3279E+01	1.1922E+02	2.2581E+02
T	6.1639E+00	8.7105E+00	1.0834E+01
RHO	5.3985E+00	1.3651E+01	2.0595E+01
H	6.6132E+00	9.8721E+00	1.3220E+01
A	2.4216E+00	2.8255E+00	3.1096E+00
S	1.1886E+00	1.2025E+00	1.2346E+00
Z	1.0001E+00	1.0026E+00	1.0148E+00
GAME	9.5133E-01	9.1415E-01	8.8190E-01
U	4.3381E+00	1.7132E+00	1.5423E+00

SPECIES	MOLE FRACTIONS		
E-	8.3661E-21	9.4289E-15	7.3869E-12
H	1.3194E-04	5.2438E-03	2.9180E-02
H+	4.6979E-21	5.8438E-15	4.9366E-12
H2	9.9987E-01	9.9476E-01	9.7082E-01
H-	1.0681E-23	1.7348E-16	4.4794E-13
H2+	3.6790E-21	3.7566E-15	2.8982E-12

TABLE I. - Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 8.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.3778E+01	1.7631E+02	3.1265E+02
T	7.5757E+00	1.0567E+01	1.2503E+01
RHO	5.7735E+00	1.6405E+01	2.4038E+01
H	8.3640E+00	1.2916E+01	1.6841E+01
A	2.6554E+00	3.0782E+00	3.3578E+00
S	1.2250E+00	1.2440E+00	1.2785E+00
Z	1.0009E+00	1.0142E+00	1.0403E+00
GAME	9.2993E-01	8.8168E-01	8.6683E-01
U	5.0305E+00	1.7666E+00	1.5913E+00

SPECIES	MOLE FRACTIONS		
E-	9.2515E-17	4.6973E-12	3.2607E-10
H	1.7989E-03	2.7966E-02	7.7401E-02
H+	6.1300E-17	3.1967E-12	2.3408E-10
H2	9.9820E-01	9.7203E-01	9.2260E-01
H-	5.3413E-19	2.3033E-13	3.5095E-11
H2+	3.1749E-17	1.7309E-12	1.2708E-10

P1 = 5.00E+04 N/SQ-M, US1 = 1.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.9764E+01	3.5076E+02	5.6408E+02
T	1.0246E+01	1.3788E+01	1.5540E+01
RHO	6.6964E+00	2.3647E+01	3.2202E+01
H	1.2597E+01	2.0496E+01	2.5677E+01
A	3.0171E+00	3.5767E+00	3.8985E+00
S	1.2949E+00	1.3293E+00	1.3710E+00
Z	1.0167E+00	1.0758E+00	1.1273E+00
GAME	8.7385E-01	8.6243E-01	8.6779E-01
U	6.4689E+00	1.8292E+00	1.6929E+00

SPECIES	MOLE FRACTIONS		
E-	3.3549E-12	3.2276E-09	3.1480E-08
H	3.2877E-02	1.4089E-01	2.2578E-01
H+	2.5477E-12	2.4646E-09	2.5053E-08
H2	9.6712E-01	8.5911E-01	7.7422E-01
H-	9.4509E-14	4.4713E-10	6.5741E-09
H2+	9.0173E-13	1.2102E-09	1.3001E-08

P1 = 5.00E+04 N/SQ-M, US1 = 9.00E+03 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.5903E+01	2.5173E+02	4.2241E+02
T	8.9613E+00	1.2267E+01	1.4047E+01
RHO	6.1919E+00	1.9753E+01	2.7891E+01
H	1.0357E+01	1.6452E+01	2.0973E+01
A	2.8499E+00	3.3216E+00	3.6173E+00
S	1.2602E+00	1.2866E+00	1.3242E+00
Z	1.0053E+00	1.0385E+00	1.0782E+00
GAME	8.9959E-01	8.6577E-01	8.6396E-01
U	5.7390E+00	1.7971E+00	1.6384E+00

SPECIES	MOLE FRACTIONS		
E-	4.7463E-14	2.3151E-10	4.3640E-09
H	1.0496E-02	7.4862E-02	1.4500E-01
H+	3.4107E-14	1.6851E-10	3.3117E-09
H2	9.8950E-01	9.2514E-01	8.5500E-01
H-	6.9237E-16	2.1305E-11	6.8851E-10
H2+	1.4048E-14	8.4305E-11	1.7408E-09

P1 = 5.00E+04 N/SQ-M, US1 = 1.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.5333E+01	4.7580E+02	7.4329E+02
T	1.1342E+01	1.5235E+01	1.7049E+01
RHO	7.2615E+00	2.7812E+01	3.6733E+01
H	1.5080E+01	2.5028E+01	3.1002E+01
A	3.1785E+00	3.8485E+00	4.2098E+00
S	1.3301E+00	1.3738E+00	1.4196E+00
Z	1.0361E+00	1.1230E+00	1.1869E+00
GAME	8.5972E-01	8.6576E-01	8.7582E-01
U	7.2125E+00	1.8796E+00	1.7736E+00

SPECIES	MOLE FRACTIONS		
E-	5.8337E-11	2.3434E-08	1.5913E-07
H	6.5679E-02	2.1858E-01	3.1493E-01
H+	4.5851E-11	1.8676E-08	1.3225E-07
H2	9.3032E-01	7.8102E-01	6.8507E-01
H-	2.5010E-12	4.3666E-09	4.1060E-08
H2+	1.4986E-11	9.1246E-09	6.7946E-08

TABLE I.- Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 1.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0258E+02	6.2691E+02	9.6129E+02
T	1.2312E+01	1.6654E+01	1.8606E+01
RHO	7.8407E+00	3.1930E+01	4.1134E+01
H	1.7804E+01	3.0029E+01	3.6938E+01
A	3.3422E+00	4.1399E+00	4.5529E+00
S	1.3662E+00	1.4198E+00	1.4698E+00
Z	1.0626E+00	1.1790E+00	1.2560E+00
GAME	8.5382E-01	8.7292E-01	8.8700E-01
U	7.9635E+00	1.9569E+00	1.8736E+00

SPECIES	MOLE FRACTIONS		
E-	4.7038E-10	1.1482E-07	6.3346E-07
H	1.1776E-01	3.0359E-01	4.0770E-01
H+	3.7984E-10	9.5150E-08	5.4746E-07
H2	8.8224E-01	6.9641E-01	5.9229E-01
H-	2.7264E-11	2.6594E-08	1.9070E-07
H2+	1.1781E-10	4.6227E-08	2.7670E-07

P1 = 5.00E+04 N/SQ-M, US1 = 1.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.4165E+02	1.0003E+03	1.5064E+03
T	1.4029E+01	1.9524E+01	2.1993E+01
RHO	8.9114E+00	3.9030E+01	4.8292E+01
H	2.3956E+01	4.1327E+01	5.0578E+01
A	3.6848E+00	4.7886E+00	5.3510E+00
S	1.4417E+00	1.5146E+00	1.5736E+00
Z	1.1331E+00	1.3127E+00	1.4184E+00
GAME	8.5418E-01	8.9471E-01	9.1792E-01
U	9.4514E+00	2.1594E+00	2.1386E+00

SPECIES	MOLE FRACTIONS		
E-	8.8417E-09	1.3686E-06	6.4103E-06
H	2.3489E-01	4.7638E-01	5.8989E-01
H+	7.4519E-09	1.2136E-06	5.9042E-06
H2	7.6511E-01	5.2361E-01	4.1009E-01
H-	7.6176E-10	4.1264E-07	2.2643E-06
H2+	2.1515E-09	5.6755E-07	2.7706E-06

P1 = 5.00E+04 N/SQ-M, US1 = 1.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2135E+02	8.0188E+02	1.2156E+03
T	1.3197E+01	1.8072E+01	2.0237E+01
RHO	8.3962E+00	3.5713E+01	4.5046E+01
H	2.0762E+01	3.5466E+01	4.3451E+01
A	3.5104E+00	4.4515E+00	4.9307E+00
S	1.4034E+00	1.4668E+00	1.5212E+00
Z	1.0951E+00	1.2425E+00	1.3335E+00
GAME	8.5263E-01	8.8270E-01	9.0096E-01
U	8.7092E+00	2.0522E+00	1.9944E+00

SPECIES	MOLE FRACTIONS		
E-	2.3644E-09	4.3262E-07	2.1283E-06
H	1.7372E-01	3.9028E-01	5.0014E-01
H+	1.9528E-09	3.7169E-07	1.9037E-06
H2	8.2628E-01	6.0971E-01	4.9986E-01
H-	1.7138E-10	1.1712E-07	7.1333E-07
H2+	5.8299E-10	1.7805E-07	9.3497E-07

P1 = 5.00E+04 N/SQ-M, US1 = 1.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6346E+02	1.2180E+03	1.8324E+03
T	1.4828E+01	2.1036E+01	2.3937E+01
RHO	9.3747E+00	4.1659E+01	5.0719E+01
H	2.7384E+01	4.7606E+01	5.8336E+01
A	3.8667E+00	5.1524E+00	5.8229E+00
S	1.4810E+00	1.5629E+00	1.6265E+00
Z	1.1759E+00	1.3885E+00	1.5093E+00
GAME	8.5749E-01	9.0889E-01	9.3850E-01
U	1.0189E+01	2.2923E+00	2.3085E+00

SPECIES	MOLE FRACTIONS		
E-	2.7146E-08	3.8349E-06	1.8046E-05
H	2.9918E-01	5.5958E-01	6.7483E-01
H+	2.3321E-08	3.4962E-06	1.7021E-05
H2	7.0082E-01	4.4041E-01	3.2512E-01
H-	2.6778E-09	1.2329E-06	6.4458E-06
H2+	8.5026E-09	1.5716E-06	7.4703E-06

TABLE I. - Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = C.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8679E+02	1.4531E+03	2.1947E+03
T	1.5610E+01	2.2648E+01	2.6180E+01
RHO	9.7824E+00	4.3678E+01	5.2242E+01
H	3.1048E+01	5.43C2E+01	6.6811E+01
A	4.0573E+00	5.54EEE+CC	6.3635E+00
S	1.5213E+00	1.6114E+00	1.680CE+00
Z	1.2233E+00	1.4685E+00	1.6047E+00
GAME	8.6211E-01	9.2552E-C1	9.6388E-01
U	1.J924E+01	2.4483E+CO	2.5162E+00

SPECIES	MOLE FRACTIONS		
E-	7.1950E-08	9.8940E-06	4.9484E-05
H	3.6503E-01	6.384CE-01	7.5351E-01
H+	6.2897E-08	9.2319E-06	4.7522E-05
H2	6.3497E-01	3.6157E-C1	2.4636E-01
H-	7.8889E-09	3.2627E-06	1.7034E-05
H2+	1.6942E-08	3.924EE-06	1.8996E-05

P1 = 5.00E+04 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = C.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3769E+02	1.9509E+03	3.0169E+03
T	1.7171E+01	2.6343E+C1	3.2268E+01
RHO	1.0407E+01	4.5274E+01	5.2205E+01
H	3.9075E+01	6.8804E+01	8.6063E+01
A	4.4691E+00	6.455CE+CO	7.7238E+00
S	1.6044E+00	1.7074E+CO	1.7856E+00
Z	1.3302E+00	1.6358E+00	1.7909E+00
GAME	8.7446E-01	9.6814E-C1	1.0323E+00
U	1.2370E+01	2.8512E+00	3.0714E+00

SPECIES	MOLE FRACTIONS		
E-	3.8163E-07	5.7068E-05	3.9139E-04
H	4.9645E-01	7.7716E-01	8.8159E-01
H+	3.4451E-07	5.5021E-05	3.8241E-04
H2	5.0355E-01	2.2269E-01	1.1702E-01
H-	4.8180E-08	1.761CE-05	1.0422E-04
H2+	8.5294E-08	1.9656E-05	1.1320E-04

P1 = 5.00E+04 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = C.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1148E+C2	1.698CE+03	2.5874E+03
T	1.6386E+01	2.4391E+01	2.8861E+01
RHO	1.0124E+01	4.486CE+01	5.2727E+01
H	3.4943E+01	6.1359E+C1	7.5991E+01
A	4.2575E+00	5.98C7E+00	6.9882E+00
S	1.5625E+00	1.659CE+00	1.7331E+00
Z	1.274dE+00	1.5519E+00	1.7003E+00
GAME	8.6778E-01	9.4498E-C1	9.9517E-01
U	1.1648E+01	2.6303E+00	2.7645E+00

SPECIES	MOLE FRACTIONS		
E-	1.7235E-07	2.4071E-05	1.3604E-04
H	4.3109E-01	7.1116E-C1	8.2327E-01
H+	1.5321E-07	2.2881E-05	1.3220E-04
H2	5.6891E-01	2.8878E-01	1.7637E-01
H-	2.3485E-08	7.833EE-06	4.2638E-05
H2+	3.9631E-08	9.0225E-06	4.6480E-05

P1 = 5.00E+04 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6529E+02	2.2063E+03	3.4823E+03
T	1.7974E+01	2.8592E+01	3.6742E+01
RHO	1.0625E+01	4.4931E+01	5.0737E+01
H	4.3439E+01	7.6601E+01	9.7175E+01
A	4.6933E+00	6.9921E+00	8.5508E+00
S	1.6469E+00	1.754CE+00	1.8370E+00
Z	1.3892E+00	1.7174E+00	1.8680E+00
GAME	8.8219E-01	9.9565E-01	1.0653E+00
U	1.3086E+01	3.1004E+00	3.4642E+00

SPECIES	MOLE FRACTIONS		
E-	8.0094E-07	1.3449E-04	1.1846E-03
H	5.6027E-01	8.35C1E-01	9.2555E-01
H+	7.3378E-07	1.3093E-04	1.1567E-03
H2	4.3973E-01	1.6465E-01	7.1587E-02
H-	1.0529E-07	3.7671E-05	2.4744E-04
H2+	1.7245E-07	4.1230E-05	2.7532E-04

TABLE I. - Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9428E+02	2.4549E+03	3.5726E+03
T	1.8810E+01	3.1245E+01	4.2246E+01
RHO	1.0780E+01	4.3827E+01	4.8897E+01
H	4.8036E+01	8.4706E+01	1.0915E+02
A	4.9322E+00	7.5846E+00	9.3073E+00
S	1.6899E+00	1.7991E+00	1.8851E+00
Z	1.4513E+00	1.7925E+00	1.9231E+00
GAME	8.9112E-01	1.027CE+CC	1.0662E+00
U	1.3795E+01	3.4024E+00	3.8977E+00

SPECIES	MOLE FRACTIONS		
E-	1.612dE-06	3.1545E-04	3.4J48E-03
H	6.2192E-01	8.8323E-01	9.4937E-01
H+	1.4978E-06	3.1271E-04	3.3100E-03
H2	3.7d08E-01	1.1558E-01	4.2759E-02
H-	2.1691E-07	7.7356E-05	5.2926E-04
H2+	3.3187E-07	8.4131E-05	6.2406E-04

P1 = 5.00E+04 N/SQ-M, US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5625E+02	2.9175E+03	4.G41dE+03
T	2.0654E+01	3.8233E+01	5.3339E+01
RHO	1.0896E+01	4.0036E+01	4.6622E+01
H	5.7923E+01	1.0178E+02	1.3411E+02
A	5.4665E+00	8.8486E+00	1.0198E+01
S	1.7766E+00	1.8825E+00	1.9680E+00
Z	1.5831E+00	1.9060E+00	1.9872E+00
GAME	9.1392E-01	1.0744E+00	9.8105E-01
U	1.5191E+01	4.1226E+00	4.6256E+00

SPECIES	MOLE FRACTIONS		
E-	6.1745E-06	1.8143E-03	1.4916E-02
H	7.3661E-01	9.45C0E-01	9.4799E-01
H+	5.8771E-06	1.7767E-03	1.4380E-02
H2	2.6338E-01	5.08C3E-02	1.9412E-02
H-	8.2082E-07	2.8455E-04	1.3844E-03
H2+	1.1182E-06	3.2210E-04	1.9206E-03

P1 = 5.00E+04 N/SQ-M, US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2461E+02	2.695EE+C3	4.4682E+03
T	1.9696E+01	3.4469E+C1	4.8014E+01
RHO	1.0b70E+01	4.2116E+C1	4.7491E+01
H	5.2864E+01	9.3122E+01	1.2163E+02
A	5.1866E+C0	8.2271E+00	9.8363E+00
S	1.7332E+00	1.8424E+00	1.9284E+00
Z	1.5161E+00	1.856EE+C0	1.9596E+00
GAME	9.0153E-01	1.C575E+C0	1.C284E+00
U	1.4497E+01	3.7357E+C0	4.3100E+00

SPECIES	MOLE FRACTIONS		
E-	3.1722E-06	7.7162E-04	7.991bE-03
H	6.8J85E-01	9.2C45E-01	9.5471E-C1
H+	2.9840E-06	7.5646E-04	7.7320E-03
H2	3.1914E-01	7.7657E-02	2.7432E-02
H-	4.2d36E-07	1.5337E-04	9.3752E-04
H2+	6.1660E-07	1.68E3E-C4	1.1973E-03

P1 = 5.00E+04 N/SQ-M, US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.8913E+02	3.1183E+03	5.3872E+03
T	2.1715E+01	4.2414E+01	5.7972E+01
RHO	1.0853E+01	3.78E8E+C1	4.6197E+01
H	6.3212E+01	1.1C68E+02	1.4668E+02
A	5.7715E+00	9.3685E+CC	1.C485E+01
S	1.8198E+00	1.9211E+00	2.0045E+00
Z	1.6512E+00	1.9415E+C0	2.C115E+00
GAME	9.2902E-01	1.0658E+C0	9.4275E-01
U	1.5875E+01	4.545CE+00	4.8746E+00

SPECIES	MOLE FRACTIONS		
E-	1.2059E-05	3.965CE-03	2.3290E-02
H	7.8869E-01	9.5759E-01	9.3456E-01
H+	1.1602E-05	3.8745E-C3	2.2400E-C2
H2	2.1128E-01	3.3517E-02	1.4874E-02
H-	1.5443E-06	4.8185E-04	1.7938E-03
H2+	2.0012E-06	5.7238E-C4	2.6832E-03

TABLE I.- Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 2.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.2315E+02	3.3098E+03	5.7904E+03
T	2.2926E+01	4.6722E+01	6.2016E+01
RHO	1.0736E+01	3.5598E+01	4.5888E+01
H	6.8726E+01	1.1993E+02	1.5928E+02
A	6.1126E+00	9.7565E+00	1.0743E+01
S	1.8626E+00	1.9572E+00	2.0394E+00
Z	1.7191E+00	1.9679E+00	2.0347E+00
GAME	9.4603E-01	1.0353E+00	9.1466E-01
U	1.0548E+01	4.9257E+00	5.0615E+00

SPECIES	MOLE FRACTIONS		
E-	2.4034E-05	7.7071E-03	3.2431E-02
H	8.3654E-01	9.6002E-01	9.1891E-01
H+	2.3346E-05	7.5152E-03	3.1151E-02
H2	1.6340E-01	2.3103E-02	1.1951E-02
H-	2.8889E-06	7.3360E-04	2.1366E-03
H2+	3.5766E-06	9.2556E-04	3.4170E-03

P1 = 5.00E+04 N/SQ-M, US1 = 2.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.9396E+02	3.6450E+03	6.4052E+03
T	2.6106E+01	5.4674E+01	6.8760E+01
RHO	1.0251E+01	3.3155E+01	4.4780E+01
H	8.0415E+01	1.3946E+02	1.8439E+02
A	6.9583E+00	1.0296E+01	1.1215E+01
S	1.9454E+00	2.0256E+00	2.1067E+00
Z	1.8458E+00	2.0108E+00	2.0802E+00
GAME	1.0048E+00	9.6427E-01	8.7929E-01
U	1.7837E+01	5.5101E+00	5.2877E+00

SPECIES	MOLE FRACTIONS		
E-	1.0995E-04	2.0058E-02	5.1468E-02
H	9.1610E-01	9.4446E-01	8.8361E-01
H+	1.0841E-04	1.9512E-02	4.9421E-02
H2	8.3660E-02	1.2889E-02	8.2646E-03
H-	1.0462E-05	1.2669E-03	2.5938E-03
H2+	1.1995E-05	1.8134E-03	4.6404E-03

P1 = 5.00E+04 N/SQ-M, US1 = 2.50E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.5820E+02	3.4908E+03	6.1369E+03
T	2.4350E+01	5.0868E+01	6.5568E+01
RHO	1.0544E+01	3.4485E+01	4.5493E+01
H	7.4464E+01	1.2955E+02	1.7181E+02
A	6.5011E+00	1.0050E+01	1.0984E+01
S	1.9044E+00	1.9918E+00	2.0730E+00
Z	1.7847E+00	1.9900E+00	2.0574E+00
GAME	9.7256E-01	9.9783E-01	8.9435E-01
U	1.7205E+01	5.2467E+00	5.1868E+00

SPECIES	MOLE FRACTIONS		
E-	4.9738E-05	1.3162E-02	4.1847E-02
H	8.7920E-01	9.5482E-01	9.0162E-01
H+	4.8715E-05	1.2815E-02	4.0174E-02
H2	1.2069E-01	1.6844E-02	9.8757E-03
H-	5.4335E-06	1.0074E-03	2.4029E-03
H2+	6.4562E-06	1.3551E-03	4.0767E-03

P1 = 5.00E+04 N/SQ-M, US1 = 2.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.3057E+02	3.7861E+03	6.5981E+03
T	2.8314E+01	5.8176E+01	7.1683E+01
RHO	9.8749E+00	3.2031E+01	4.3758E+01
H	8.6582E+01	1.4984E+02	1.9707E+02
A	7.4895E+00	1.0525E+01	1.1440E+01
S	1.9844E+00	2.0591E+00	2.1405E+00
Z	1.8976E+00	2.0318E+00	2.1035E+00
GAME	1.0440E+00	9.3717E-01	8.6788E-01
U	1.8452E+01	5.6721E+00	5.3668E+00

SPECIES	MOLE FRACTIONS		
E-	2.6106E-04	2.8123E-02	6.1257E-02
H	9.4525E-01	9.3054E-01	8.6511E-01
H+	2.5865E-04	2.7348E-02	5.8873E-02
H2	5.4182E-02	1.0217E-02	6.9474E-03
H-	2.0602E-05	1.4986E-03	2.7164E-03
H2+	2.3007E-05	2.2742E-03	5.1068E-03

TABLE I. - Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6740E+02	3.8801E+03	6.6974E+03
T	3.1055E+01	6.1319E+01	7.4349E+01
RHO	9.4195E+00	3.0818E+01	4.2345E+01
H	9.2944E+01	1.6032E+02	2.0965E+02
A	8.0683E+00	1.0742E+01	1.1658E+01
S	2.0215E+00	2.0926E+00	2.1747E+00
Z	1.9372E+00	2.0533E+00	2.1273E+00
GAME	1.0807E+00	9.1653E-01	8.5929E-01
U	1.9036E+01	5.8116E+00	5.4303E+00

SPECIES	MOLE FRACTIONS		
E-	6.5744E-04	3.6936E-02	7.1131E-02
H	9.6558E-01	9.1445E-01	8.4635E-01
H+	6.5318E-04	3.5526E-02	6.8463E-02
H2	3.3027E-02	8.2781E-03	5.8429E-03
H-	4.0909E-05	1.6815E-03	2.7728E-03
H2+	4.5168E-05	2.6914E-03	5.4408E-03

P1 = 5.00E+04 N/SQ-M, US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.4362E+02	4.0756E+03	6.8563E+03
T	3.7840E+01	6.6970E+01	7.9306E+01
RHO	8.5833E+00	2.9032E+01	3.5731E+01
H	1.0630E+02	1.8237E+02	2.3543E+02
A	9.2074E+00	1.1170E+01	1.2090E+01
S	2.0865E+00	2.1578E+00	2.2414E+00
Z	1.9816E+00	2.0983E+00	2.1760E+00
GAME	1.0820E+00	8.8797E-01	8.4707E-01
U	2.0152E+01	5.9427E+00	5.5398E+00

SPECIES	MOLE FRACTIONS		
E-	3.5873E-03	5.6013E-02	9.0969E-02
H	9.7985E-01	8.7833E-01	8.0832E-01
H+	3.5680E-03	5.4532E-02	8.7844E-02
H2	1.2708E-02	5.7521E-03	4.1868E-03
H-	1.3312E-04	1.9463E-03	2.7794E-03
H2+	1.5243E-04	3.4276E-03	5.9040E-03

P1 = 5.00E+04 N/SQ-M, US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.3497E+02	3.9742E+03	6.7663E+03
T	3.4348E+01	6.4233E+01	7.6828E+01
RHO	8.9693E+00	2.9810E+01	4.0941E+01
H	9.9513E+01	1.7118E+02	2.2238E+02
A	8.5968E+00	1.0957E+01	1.1871E+01
S	2.0554E+00	2.1256E+00	2.2080E+00
Z	1.9637E+00	2.0755E+00	2.1512E+00
GAME	1.0957E+00	9.0054E-01	8.5265E-01
U	1.9593E+01	5.8756E+00	5.4858E+00

SPECIES	MOLE FRACTIONS		
E-	1.6146E-03	4.6307E-02	8.0917E-02
H	9.7660E-01	8.9689E-01	8.2765E-01
H+	1.6058E-03	4.5062E-02	7.8010E-02
H2	2.0320E-02	6.8432E-03	4.9430E-03
H-	7.7324E-05	1.8285E-03	2.7877E-03
H2+	8.6134E-05	3.0756E-03	5.6945E-03

P1 = 5.00E+04 N/SQ-M, US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.2631E+02	4.4023E+03	7.2222E+03
T	4.4722E+01	7.2259E+01	8.4366E+01
RHO	8.0762E+00	2.8396E+01	3.8448E+01
H	1.2060E+02	2.0637E+02	2.6340E+02
A	9.5594E+00	1.1608E+01	1.2547E+01
S	2.1442E+00	2.2197E+00	2.3057E+00
Z	2.0109E+00	2.1456E+00	2.2266E+00
GAME	1.0161E+00	8.6907E-01	8.3804E-01
U	2.1323E+01	6.0545E+00	5.6582E+00

SPECIES	MOLE FRACTIONS		
E-	1.2055E-02	7.6163E-02	1.1107E-01
H	9.6904E-01	8.3919E-01	7.6935E-01
H+	1.1983E-02	7.4202E-02	1.0754E-01
H2	6.2675E-03	4.2273E-03	3.0527E-03
H-	2.9177E-04	2.1287E-03	2.7333E-03
H2+	3.6418E-04	4.0897E-03	6.2565E-03

TABLE I. - Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 3.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.1733E+02	4.9128E+03	7.9038E+03
T	5.0607E+01	7.754CE+01	8.5872E+01
RHO	7.9030E+00	2.8871E+01	3.8594E+01
M	1.3593E+02	2.3278E+02	2.9444E+02
A	9.9791E+00	1.2064E+01	1.3043E+01
S	2.1963E+00	2.2786E+00	2.3677E+00
Z	2.0436E+00	2.1946E+00	2.2787E+00
GAME	9.6290E-01	8.5524E-01	8.3073E-01
U	2.2587E+01	6.1764E+00	5.8085E+00

SPECIES	MOLE FRACTIONS		
E-	2.5896E-02	9.66C0E-02	1.3112E-01
M	9.4334E-01	7.99C6E-01	7.3020E-01
M+	2.5725E-02	9.4142E-02	1.2722E-01
M2	3.9319E-03	3.220CE-03	2.2426E-03
M-	4.6589E-04	2.26C2E-03	2.6628E-03
M2+	6.3677E-04	4.7182E-03	6.5606E-03

P1 = 5.00E+04 N/SQ-M, US1 = 3.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0228E+03	6.3590E+03	9.9544E+03
T	6.0059E+01	8.8452E+01	1.0258E+02
RHO	8.0149E+00	3.1308E+01	4.0616E+01
M	1.6962E+02	2.9232E+02	3.6542E+02
A	1.0770E+01	1.3038E+01	1.4185E+01
S	2.2939E+00	2.3929E+00	2.4893E+00
Z	2.1247E+00	2.2963E+00	2.3892E+00
GAME	9.0894E-01	8.3695E-01	8.2104E-01
U	2.5296E+01	6.4691E+00	6.2158E+00

SPECIES	MOLE FRACTIONS		
E-	6.2043E-02	1.366CE-01	1.7074E-01
M	8.7225E-01	7.2023E-01	6.5259E-01
M+	6.1588E-02	1.3326E-01	1.6645E-01
M2	2.1476E-03	1.894CE-03	1.1367E-03
M-	7.5786E-04	2.334CE-03	2.4013E-03
M2+	1.2120E-03	5.6816E-03	6.6924E-03

P1 = 5.00E+04 N/SQ-M, US1 = 3.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.1635E+02	5.5785E+03	8.8303E+03
T	5.5630E+01	8.2921E+01	9.5902E+01
RHO	7.9119E+00	2.9968E+01	3.9471E+01
M	1.5227E+02	2.6153E+02	3.2847E+02
A	1.0378E+01	1.2540E+01	1.3586E+01
S	2.2458E+00	2.3361E+00	2.4286E+00
Z	2.0820E+00	2.2445E+00	2.3327E+00
GAME	9.2987E-01	8.4477E-01	8.2506E-01
U	2.3920E+01	6.2957E+00	5.9906E+00

SPECIES	MOLE FRACTIONS		
E-	4.3104E-02	1.1684E-01	1.5099E-01
M	9.0973E-01	7.5919E-01	6.9129E-01
M+	4.2801E-02	1.1356E-01	1.4681E-01
M2	2.8092E-03	2.4756E-03	1.6222E-03
M-	6.2471E-04	2.3313E-03	2.5519E-03
M2+	9.2746E-04	5.2685E-03	6.7267E-03

P1 = 5.00E+04 N/SQ-M, US1 = 4.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1361E+03	7.2381E+03	1.1251E+04
T	6.4098E+01	9.4237E+01	1.1010E+02
RHO	8.1658E+00	3.2699E+01	4.1731E+01
M	1.8794E+02	3.2583E+02	4.0531E+02
A	1.1158E+01	1.3565E+01	1.4857E+01
S	2.3415E+00	2.4493E+00	2.5498E+00
Z	2.1705E+00	2.3489E+00	2.4485E+00
GAME	8.9481E-01	8.3133E-01	8.1871E-01
U	2.6696E+01	6.6741E+00	6.4940E+00

SPECIES	MOLE FRACTIONS		
E-	8.1750E-02	1.5585E-01	1.9049E-01
M	8.3307E-01	6.8226E-01	6.1380E-01
M+	8.1136E-02	1.5224E-01	1.8630E-01
M2	1.7012E-03	1.4178E-03	7.5878E-04
M-	8.6304E-04	2.2739E-03	2.2288E-03
M2+	1.4770E-03	5.9212E-03	6.4235E-03

TABLE I.- Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2559E+03	8.207CE+C3	1.2706E+04
T	6.7883E+01	1.004CE+02	1.1870E+02
RHO	8.3385E+00	3.4017E+C1	4.2602E+01
M	2.0723E+C2	3.5958E+C2	4.4815E+02
A	1.1544E+01	1.4131E+01	1.5620E+01
S	2.3887E+00	2.5053E+00	2.6100E+00
Z	2.2188E+00	2.4031E+00	2.5125E+00
GAME	8.8477E-01	8.2765E-01	8.1807E-01
U	2.8109E+01	6.8959E+C0	6.8331E+00

SPECIES	MOLE FRACTIONS		
E-	1.0168E-01	1.7474E-01	2.1039E-01
H	7.9338E-01	6.4515E-01	5.7461E-01
H+	1.0091E-01	1.7054E-01	2.0653E-01
H2	1.3722E-03	1.03C6E-03	4.7732E-04
H-	9.4054E-04	2.1652E-C3	2.0630E-03
H2+	1.7141E-03	5.9655E-03	5.9213E-03

P1 = 5.00E+04 N/SQ-M, US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5148E+03	1.0345E+04	1.6114E+04
T	7.5047E+01	1.1435E+02	1.4084E+02
RHO	8.6978E+00	3.5925E+C1	4.3075E+01
M	2.4867E+02	4.3377E+C2	5.4468E+02
A	1.2324E+01	1.542CE+01	1.7531E+01
S	2.4833E+00	2.6155E+CC	2.7296E+00
Z	2.3207E+00	2.5175E+00	2.6561E+00
GAME	8.7214E-01	8.2580E-C1	8.2160E-01
U	3.0959E+01	7.5045E+00	7.8207E+00

SPECIES	MOLE FRACTIONS		
E-	1.4118E-01	2.1164E-01	2.5156E-01
H	7.1470E-01	5.7248E-01	4.9300E-01
H+	1.4011E-01	2.08C6E-01	2.4903E-01
H2	9.0771E-04	4.8433E-04	1.5190E-04
H-	1.0185E-03	1.8804E-03	1.8636E-03
H2+	2.0833E-03	5.4582E-03	4.3935E-03

P1 = 5.00E+04 N/SQ-M, US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3623E+03	9.2487E+03	1.4331E+04
T	7.1510E+01	1.07C6E+C2	1.2853E+02
RHO	8.5197E+00	3.5127E+01	4.3041E+01
M	2.2746E+02	3.958EE+C2	4.9461E+02
A	1.1932E+01	1.4746E+C1	1.6515E+01
S	2.4360E+00	2.56C8E+00	2.6709E+00
Z	2.2689E+00	2.4593E+C0	2.5825E+00
GAME	8.7746E-01	8.2582E-C1	8.1917E-01
U	2.9534E+01	7.1716E+00	7.276CE+00

SPECIES	MOLE FRACTIONS		
E-	1.2155E-01	1.9330E-01	2.3103E-01
H	7.5360E-01	6.C863E-C1	5.3380E-C1
H+	1.2362E-01	1.8952E-01	2.2776E-C1
H2	1.1155E-03	7.2155E-C4	2.7716E-C4
H-	9.9161E-04	2.0264E-03	1.9310E-C3
H2+	1.9177E-03	5.8065E-03	5.2068E-C3

P1 = 5.00E+04 N/SQ-M, US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6533E+03	1.1480E+04	1.8065E+04
T	7.8549E+01	1.2241E+02	1.5515E+02
RHO	8.8663E+00	3.6355E+C1	4.2552E+01
M	2.7081E+02	4.7316E+C2	5.5893E+02
A	1.2726E+01	1.6164E+01	1.8718E+01
S	2.5306E+00	2.6651E+00	2.7875E+00
Z	2.3740E+00	2.5792E+00	2.7362E+00
GAME	8.6645E-01	8.2752E-C1	8.2525E-01
U	3.2384E+01	7.905CE+00	8.5031E+00

SPECIES	MOLE FRACTIONS		
E-	1.6047E-01	2.2984E-01	2.7267E-01
H	6.7628E-01	5.3651E-C1	4.4087E-C1
H+	1.5928E-01	2.2612E-01	2.7098E-01
H2	7.3575E-04	3.1071E-04	7.6872E-05
H-	1.0227E-03	1.7451E-03	1.8532E-03
H2+	2.2078E-03	4.9555E-C3	3.5443E-03

TABLE I. - Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 5.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7977E+03	1.2630E+04	2.0197E+04
T	8.2064E+01	1.3137E+02	1.7222E+02
RHO	9.0198E+00	3.6369E+01	4.1564E+01
H	2.9389E+02	5.1390E+02	6.5815E+02
A	1.3139E+01	1.6987E+01	2.0077E+01
S	2.5781E+00	2.7212E+00	2.8455E+00
Z	2.4287E+00	2.6433E+00	2.8215E+00
GAME	8.6621E-01	8.3089E-01	8.2954E-01
U	3.3806E+01	8.3960E+00	9.3565E+00

SPECIES	MOLE FRACTIONS		
E-	1.7938E-01	2.4792E-01	2.9396E-01
H	6.3863E-01	5.0067E-01	4.0829E-01
H+	1.7810E-01	2.4522E-01	2.9308E-01
H2	5.9179E-04	1.9077E-04	3.6952E-05
H-	1.0068E-03	1.6474E-03	1.8768E-03
H2+	2.2893E-03	4.3515E-03	2.7584E-03

P1 = 5.00E+04 N/SQ-M, US1 = 5.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1035E+03	1.4917E+04	2.4895E+04
T	8.9301E+01	1.5234E+02	2.1346E+02
RHO	9.2653E+00	3.5241E+01	3.8971E+01
H	3.4284E+02	5.9912E+02	7.8958E+02
A	1.4021E+01	1.8875E+01	2.3125E+01
S	2.6731E+00	2.8202E+00	2.9526E+00
Z	2.5424E+00	2.7765E+00	2.9926E+00
GAME	8.6587E-01	8.4171E-01	8.3712E-01
U	3.6629E+01	9.6232E+00	1.1407E+01

SPECIES	MOLE FRACTIONS		
E-	2.1602E-01	2.8333E-01	3.3332E-01
H	5.6574E-01	4.3019E-01	3.2959E-01
H+	2.1462E-01	2.8179E-01	3.3358E-01
H2	3.6941E-04	6.4840E-05	8.6423E-06
H-	9.2605E-04	1.5432E-03	1.8823E-03
H2+	2.3202E-03	3.0859E-03	1.6217E-03

P1 = 5.00E+04 N/SQ-M, US1 = 5.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9478E+03	1.3800E+04	2.2470E+04
T	8.5634E+01	1.4133E+02	1.9165E+02
RHO	9.1541E+00	3.6040E+01	4.0324E+01
H	3.1790E+02	5.5608E+02	7.2138E+02
A	1.3569E+01	1.7888E+01	2.1553E+01
S	2.6256E+00	2.7712E+00	2.9002E+00
Z	2.4848E+00	2.7094E+00	2.9075E+00
GAME	8.6534E-01	8.3558E-01	8.3363E-01
U	3.5221E+01	8.9264E+00	1.0306E+01

SPECIES	MOLE FRACTIONS		
E-	1.9790E-01	2.6566E-01	3.1425E-01
H	6.0178E-01	4.6535E-01	3.6768E-01
H+	1.9655E-01	2.6353E-01	3.1403E-01
H2	4.7082E-04	1.1359E-04	1.7712E-05
H-	9.7362E-04	1.5833E-03	1.8968E-03
H2+	2.3266E-03	3.7153E-03	2.1173E-03

P1 = 5.00E+04 N/SQ-M, US1 = 5.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.2646E+03	1.6004E+04	2.7384E+04
T	9.3107E+01	1.6429E+02	2.3660E+02
RHO	9.3499E+00	3.4205E+01	3.7674E+01
H	3.6871E+02	6.4327E+02	8.6058E+02
A	1.4498E+01	1.9925E+01	2.4705E+01
S	2.7206E+00	2.8666E+00	3.0008E+00
Z	2.6014E+00	2.8476E+00	3.0722E+00
GAME	8.6788F-01	8.4856E-01	8.3968E-01
U	3.8027E+01	1.0387E+01	1.2508E+01

SPECIES	MOLE FRACTIONS		
E-	2.3374E-01	3.0027E-01	3.5026E-01
H	5.3051E-01	3.9628E-01	2.9583E-01
H+	2.3233E-01	2.9927E-01	3.5082E-01
H2	2.8505E-04	3.6838E-05	4.4766E-06
H-	8.6732E-04	1.5197E-03	1.8248E-03
H2+	2.2714E-03	2.5245E-03	1.2634E-03

TABLE I.- Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 5.80E+04 M/SEC
XM2 = 1.00 XME = C.CO

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4309E+03	1.7031E+04	2.9954E+04
T	9.7097E+01	1.7707E+02	2.6148E+02
RHO	9.4051E+00	3.2974E+01	3.6387E+01
H	3.9550E+02	6.8829E+02	9.3573E+02
A	1.5008E+01	2.1026E+01	2.6323E+01
S	2.7678E+00	2.911CE+00	3.0471E+00
Z	2.6619E+00	2.9165E+00	3.1482E+00
GAME	8.7148E-01	8.5595E-01	8.4171E-01
U	3.9413E+01	1.1239E+01	1.3697E+01

SPECIES	MOLE FRACTIONS		
E-	2.5106E-01	3.1641E-01	3.6571E-01
H	4.9607E-01	3.6416E-01	2.6513E-01
H+	2.4967E-01	3.1586E-01	3.6644E-01
H2	2.1572E-04	2.0967E-05	2.4184E-06
H-	8.0079E-04	1.4955E-03	1.7248E-03
H2+	2.1831E-03	2.0461E-03	9.9583E-04

P1 = 5.00E+04 N/SQ-M, US1 = 6.20E+04 M/SEC
XM2 = 1.00 XME = C.CO

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7782E+03	1.8897E+04	3.5134E+04
T	1.0581E+02	2.0464E+02	3.1443E+02
RHO	9.4205E+00	3.0270E+01	3.4027E+01
H	4.5181E+02	7.8095E+02	1.0956E+03
A	1.6147E+01	2.3323E+01	2.9531E+01
S	2.8609E+00	2.994CE+00	3.1321E+00
Z	2.7870E+00	3.0506E+00	3.2838E+00
GAME	8.8410E-01	8.7134E-01	8.4458E-01
U	4.2139E+01	1.3096E+01	1.6162E+01

SPECIES	MOLE FRACTIONS		
E-	2.8441E-01	3.4574E-01	3.9161E-01
H	4.2974E-01	3.056CE-01	2.1387E-01
H+	2.8316E-01	3.45E1E-01	3.9241E-01
H2	1.1555E-04	7.1085E-06	8.2323E-07
H-	6.5856E-04	1.4085E-03	1.4531E-03
H2+	1.9069E-03	1.3386E-03	6.5078E-04

P1 = 5.00E+04 N/SQ-M, US1 = 6.COE+04 M/SEC
XM2 = 1.00 XME = C.OC

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6021E+C3	1.80C2E+C4	3.2539E+04
T	1.0132E+02	1.9059E+02	2.8737E+02
RHO	9.4282E+0C	3.1647E+01	3.5182E+01
H	4.2320E+02	7.3425E+02	1.0139F+03
A	1.5556E+01	2.2164E+01	2.7927E+01
S	2.8147E+00	2.9535E+CO	3.0906E+00
Z	2.7239E+00	2.9848E+00	3.2184E+00
GAME	8.7685E-01	8.6357E-C1	8.4324E-01
U	4.0783E+J1	1.2134E+01	1.4907E+01

SPECIES	MOLE FRACTIONS		
E-	2.6796E-01	3.3160E-01	3.7937E-01
H	4.6241E-01	3.3366E-01	2.3806E-C1
H+	2.6665E-01	3.3141E-01	3.8017E-01
H2	1.5969E-04	1.2081E-05	1.3813E-06
H-	7.2991E-J4	1.46C4E-03	1.5975E-03
H2+	2.0592E-03	1.6535E-03	7.9951E-04

P1 = 5.00E+04 N/SQ-M, US1 = 6.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9583E+03	1.9698E+04	3.7550E+04
T	1.1069E+02	2.1901E+02	3.4145E+02
RHO	9.3698E+00	2.8887E+01	3.2896E+01
H	4.8130E+02	8.2837E+C2	1.1772E+03
A	1.6796E+01	2.4485E+C1	3.1079E+01
S	2.9070E+00	3.0328E+00	3.1705E+00
Z	2.8523E+00	3.1136E+00	3.3430E+00
GAME	8.9357E-01	8.7919E-01	8.4617E-01
U	4.3473E+01	1.4073E+01	1.7277E+01

SPECIES	MOLE FRACTIONS		
E-	3.0061E-01	3.5876E-01	4.0228E-01
H	3.9752E-01	2.7980E-01	1.9284E-01
H+	2.9947E-01	3.5901E-01	4.0304E-01
H2	8.1057E-05	4.2959E-06	5.1645E-07
H-	5.8832E-04	1.3397E-03	1.3047E-03
H2+	1.7288E-03	1.0855E-03	5.3870E-04

TABLE I. - Continued

$p_1 = 50\ kN/m^2$

P1 = 5.00E+04 N/SQ-M, US1 = 6.60E+C4 M/SEC
XH2 = 1.00 XHE = C.CC

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.1426E+03	2.C386E+04	3.S900E+04
T	1.1597E+02	2.3352E+C2	3.6934E+02
RHO	9.2863E+00	2.7509E+01	3.1792E+01
H	5.1168E+02	8.7621E+C2	1.2621E+03
A	1.7503E+01	2.5642E+01	3.2622E+01
S	2.9522E+00	3.07CCE+C0	3.2084E+00
Z	2.9183E+00	3.1736E+00	3.3980E+00
GAME	9.0525E-01	8.8724E-01	8.4796E-01
U	4.4781E+01	1.5120E+01	1.8445E+01

SPECIES	MOLE FRACTIONS		
E-	3.1625E-01	3.7C7CE-01	4.1188E-01
H	3.6639E-01	2.56C5E-01	1.7393E-01
H+	3.1524E-01	3.7106E-01	4.1258E-01
H2	5.5354E-05	2.6665F-C6	3.3364E-07
H-	5.2346E-04	1.2564E-03	1.1574E-03
H2+	1.5371E-03	8.9239E-04	4.4995E-04

P1 = 5.00E+04 N/SQ-M, US1 = 7.C0E+04 M/SEC
XH2 = 1.00 XHE = C.CC

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5218E+03	2.1503E+04	4.4091E+04
T	1.2801E+02	2.6377E+02	4.2585E+02
RHO	9.0135E+00	2.4799E+C1	2.9627E+01
H	5.7504E+02	9.7299E+02	1.4368E+03
A	1.9117E+01	2.8002E+01	3.5625E+01
S	3.0397E+00	3.1423E+CC	3.2787E+00
Z	3.0523E+00	3.2874E+C0	3.4947E+00
GAME	9.3538E-01	9.0428E-C1	8.5281E-01
U	4.7318E+01	1.7160E+C1	2.C723E+01

SPECIES	MOLE FRACTIONS		
E-	3.4592E-01	3.9222E-01	4.2803E-01
H	3.0731E-01	2.1344E-01	1.4216E-01
H+	3.4519E-01	3.9268E-01	4.2860E-01
H2	2.3620E-05	1.C8C3E-06	1.5173E-C7
H-	4.1548E-04	1.06C9E-03	8.8845E-04
H2+	1.1435E-03	6.0331E-04	3.2214E-04

P1 = 5.00E+04 N/SQ-M, US1 = 6.80E+C4 M/SEC
XH2 = 1.00 XHE = C.CC

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3307E+03	2.10C5E+C4	4.2104E+04
T	1.2172E+02	2.4866E+C2	3.9738E+02
RHO	9.1670E+00	2.6133E+01	3.0729E+01
H	5.4294E+02	9.2495E+C2	1.3490E+03
A	1.8275E+01	2.6830E+C1	3.4128E+01
S	2.9965E+00	3.1C69E+00	3.2440E+00
Z	2.9851E+00	3.2322E+00	3.4481E+00
GAME	9.1922E-01	8.9564E-01	8.5002E-01
U	4.6066E+01	1.6129E+01	1.9610E+01

SPECIES	MOLE FRACTIONS		
E-	3.3138E-01	3.8157E-C1	4.2035E-01
H	3.3627E-01	2.3374E-01	1.5727E-01
H+	3.3051E-01	3.8240E-01	4.2099E-01
H2	3.6692E-05	1.6758E-06	2.2289E-07
H-	4.6546E-04	1.1613E-03	1.0192E-03
H2+	1.3391E-03	7.3115E-04	3.7996E-04

TABLE I.- Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 4.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0636E+01	2.1976E+01	5.3615E+01
T	2.7140E+00	3.3569E+00	4.7163E+00
RHO	3.9200E+00	6.5476E+00	1.1368E+01
M	2.7745E+00	3.4526E+00	4.9388E+00
A	1.6432E+00	1.8212E+00	2.1385E+00
S	1.0734E+00	1.0758E+00	1.0996E+00
Z	1.0000E+00	1.0000E+00	1.0000E+00
GAME	9.9494E-01	9.8811E-01	9.6962E-01
U	2.2663E+00	1.3533E+00	1.1941E+00

SPECIES	MOLE FRACTIONS		
E-	6.9520E-35	7.0697E-34	4.2659E-28
H	4.3585E-12	1.6287E-10	8.1155E-07
H+	2.0959E-36	3.7851E-38	7.9247E-29
H2	1.0000E+00	1.0000E+00	1.0000E+00
H-	5.3042E-42	1.2414E-39	2.3792E-32
H2+	4.2015E-35	2.3115E-37	3.4737E-28

P1 = 1.00E+05 N/SQ-M, US1 = 6.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4287E+01	7.6496E+01	1.5491E+02
T	4.8592E+00	6.7426E+00	8.8677E+00
RHO	4.9983E+00	1.1344E+01	1.7435E+01
M	5.0998E+00	7.3066E+00	1.0035E+01
A	2.1685E+00	2.5253E+00	2.8574E+00
S	1.1572E+00	1.1674E+00	1.1986E+00
Z	1.0000E+00	1.0001E+00	1.0020E+00
GAME	9.6772E-01	9.4571E-01	9.1894E-01
U	3.6513E+00	1.6051E+00	1.4682E+00

SPECIES	MOLE FRACTIONS		
E-	3.9561E-27	1.3325E-19	1.0256E-14
H	2.0550E-06	2.1676E-04	3.9246E-03
H+	2.0027E-27	5.1688E-20	5.3283E-15
H2	1.0000E+00	9.9978E-01	9.9608E-01
H-	2.9712E-30	2.9002E-22	3.4126E-16
H2+	1.9564E-27	8.1888E-20	5.2693E-15

P1 = 1.00E+05 N/SQ-M, US1 = 5.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6743E+01	4.4531E+01	9.7352E+01
T	3.7003E+00	4.9225E+00	6.6955E+00
RHO	4.5254E+00	9.0440E+00	1.4539E+01
M	3.8206E+00	5.1718E+00	7.2487E+00
A	1.9078E+00	2.1818E+00	2.5175E+00
S	1.1157E+00	1.1214E+00	1.1502E+00
Z	1.0000E+00	1.0000E+00	1.0001E+00
GAME	9.8361E-01	9.6654E-01	9.4647E-01
U	2.9621E+00	1.4793E+00	1.3393E+00

SPECIES	MOLE FRACTIONS		
E-	1.2703E-32	4.1652E-26	1.2395E-19
H	4.5596E-06	2.1264E-04	1.7358E-04
H+	2.8442E-33	1.2216E-26	6.8734E-20
H2	1.0000E+00	1.0000E+00	9.5983E-01
H-	3.2098E-37	1.6543E-29	2.0660E-21
H2+	9.5383E-33	2.9493E-26	5.7281E-20

P1 = 1.00E+05 N/SQ-M, US1 = 7.00E+03 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3278E+01	1.1856E+02	2.2634E+02
T	6.1647E+00	8.7365E+00	1.0955E+01
RHO	5.3978E+00	1.3551E+01	2.0421E+01
M	6.6131E+00	9.8667E+00	1.3250E+01
A	2.4224E+00	2.8366E+00	3.1395E+00
S	1.1970E+00	1.2113E+00	1.2449E+00
Z	1.0000E+00	1.0015E+00	1.0118E+00
GAME	9.5181E-01	9.1924E-01	8.8928E-01
U	4.3380E+00	1.7205E+00	1.5596E+00

SPECIES	MOLE FRACTIONS		
E-	5.4309E-21	6.8704E-15	7.1300E-12
H	9.3502E-05	3.833CE-03	2.3241E-02
H+	2.5818E-21	3.7140E-15	4.2725E-12
H2	9.9991E-01	9.9617E-01	9.7676E-01
H-	9.8077E-24	1.8367E-16	6.4489E-13
H2+	2.8589E-21	3.3400E-15	3.4724E-12

TABLE I. - Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 1.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.8604E+02	1.3844E+03	2.1298E+03
T	1.6312E+01	2.3914E+01	2.7957E+01
RHO	5.4613E+00	4.0415E+01	4.6643E+01
H	3.1025E+01	5.3976E+01	6.7038E+01
A	4.1333E+00	5.6577E+00	6.5317E+00
S	1.5349E+00	1.6201E+00	1.6892E+00
Z	1.2055E+00	1.4324E+00	1.5661E+00
GAME	8.6882E-01	9.3443E-01	9.7441E-01
U	1.0880E+01	2.5526E+00	2.6264E+00

SPECIES	MOLE FRACTIONS		
E-	1.0902E-07	1.3817E-05	7.1650E-05
H	3.4088E-01	6.0374E-01	7.2270E-01
H+	9.2930E-08	1.2853E-05	6.8623E-05
H2	6.5912E-01	3.9622E-01	2.7708E-01
H-	1.8383E-08	6.6963E-06	3.6295E-05
H2+	3.4477E-08	7.6558E-06	3.9323E-05

P1 = 1.00E+05 N/SQ-M, US1 = 1.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.3667E+02	1.8513E+03	2.9143E+03
T	1.8052E+01	2.7904E+01	3.4368E+01
RHO	1.0025E+01	4.1709E+01	4.8594E+01
H	3.9045E+01	6.8371E+01	8.6314E+01
A	4.5635E+00	6.582CE+00	7.8758E+00
S	1.6171E+00	1.7136E+00	1.7921E+00
Z	1.3078E+00	1.5906E+00	1.745CE+00
GAME	8.8211E-01	9.7607E-01	1.0343E+00
U	1.2317E+01	2.9645E+00	3.1934E+00

SPECIES	MOLE FRACTIONS		
E-	5.9766E-07	7.6218E-05	4.9539E-04
H	4.7068E-01	7.4236E-01	8.5220E-01
H+	5.3106E-07	7.3157E-05	4.7889E-04
H2	5.2932E-01	2.5742E-01	1.4641E-01
H-	1.1569E-07	3.4708E-05	1.9907E-04
H2+	1.8229E-07	3.7728E-05	2.1557E-04

P1 = 1.00E+05 N/SQ-M, US1 = 1.70E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1073E+02	1.6164E+03	2.5095E+03
T	1.7179E+01	2.5822E+01	3.0860E+01
RHO	9.7764E+00	4.1421E+01	4.9051E+01
H	3.4921E+01	6.1012E+01	7.6301E+01
A	4.3427E+00	6.1015E+00	7.1653E+00
S	1.5757E+00	1.6673E+00	1.7412E+00
Z	1.2547E+00	1.5112E+00	1.6578E+00
GAME	8.7494E-01	9.5400E-01	1.0035E+00
U	1.1606E+01	2.7446E+00	2.8858E+00

SPECIES	MOLE FRACTIONS		
E-	2.6601E-07	3.3266E-05	1.8873E-04
H	4.0601E-01	6.7647E-01	7.9295E-01
H+	2.3169E-07	3.1537E-05	1.8228E-04
H2	5.9399E-01	3.2343E-01	2.0650E-01
H-	4.8597E-08	1.5912E-05	8.7558E-05
H2+	3.2919E-08	1.7640E-05	9.4008E-05

P1 = 1.00E+05 N/SQ-M, US1 = 1.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.6416E+02	2.0894E+03	3.3544E+03
T	1.8947E+01	3.0257E+01	3.8766E+01
RHO	1.0218E+01	4.1380E+01	4.7483E+01
H	4.3407E+01	7.6108E+01	9.7338E+01
A	4.7977E+00	7.1085E+00	8.6461E+00
S	1.6590E+00	1.7591E+00	1.8421E+00
Z	1.3644E+00	1.6688E+00	1.8223E+00
GAME	8.9039E-01	1.3009E+00	1.0582E+00
U	1.3030E+01	3.2244E+00	3.5715E+00

SPECIES	MOLE FRACTIONS		
E-	1.2624E-06	1.7055E-04	1.3165E-03
H	5.3413E-01	8.0056E-01	8.9817E-01
H+	1.1423E-06	1.6543E-04	1.2658E-03
H2	4.6587E-01	1.9856E-01	9.8339E-02
H-	2.5417E-07	7.1403E-05	4.3137E-04
H2+	3.7425E-07	7.6927E-05	4.8212E-04

TABLE I.- Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 2.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9296E+02	2.3249E+03	3.8123E+03
T	1.9876E+01	3.2957E+01	4.3969E+01
RHO	1.0350E+01	4.0488E+01	4.6070E+01
H	4.7999E+01	8.4170E+01	1.0911E+02
A	5.0469E+00	7.6795E+00	9.3487E+00
S	1.7012E+00	1.8032E+00	1.8892E+00
Z	1.4241E+00	1.7423E+00	1.8820E+00
GAME	8.9985E-01	1.0271E+00	1.0562E+00
U	1.3733E+01	3.5086E+00	3.5772E+00

SPECIES	MOLE FRACTIONS		
E-	2.5484E-06	3.7832E-04	3.2901E-03
H	5.9560E-01	8.5084E-01	9.2675E-01
H+	2.3445E-06	3.6716E-04	3.1352E-03
H2	4.0439E-01	1.4812E-01	6.4983E-02
H-	5.2412E-07	1.3942E-04	8.4365E-04
H2+	7.2800E-07	1.5064E-04	9.9860E-04

P1 = 1.00E+05 N/SQ-M, US1 = 2.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5469E+02	2.7617E+03	4.7250E+03
T	2.1908E+01	3.9679E+01	5.4738E+01
RHO	1.0438E+01	3.7388E+01	4.4149E+01
H	5.7880E+01	1.0116E+02	1.3384E+02
A	5.6014E+00	8.8081E+00	1.0220E+01
S	1.7859E+00	1.8866E+00	1.9724E+00
Z	1.5510E+00	1.8616E+00	1.9552E+00
GAME	9.2338E-01	1.0647E+00	9.7599E-01
U	1.5124E+01	4.2187E+00	4.6769E+00

SPECIES	MOLE FRACTIONS		
E-	9.6113E-06	1.7631E-03	1.2729E-02
H	7.1046E-01	9.1958E-01	9.3764E-01
H+	9.0980E-06	1.7025E-03	1.1942E-02
H2	2.8952E-01	7.5591E-02	3.2782E-02
H-	1.9542E-06	4.5174E-04	2.0619E-03
H2+	2.4674E-06	5.1231E-04	2.8492E-03

P1 = 1.00E+05 N/SQ-M, US1 = 2.10E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.2322E+02	2.5526E+03	4.2785E+03
T	2.0857E+01	3.6098E+01	4.9525E+01
RHO	1.0425E+01	3.9117E+01	4.4890E+01
H	5.2826E+01	9.2554E+01	1.2143E+02
A	5.3138E+00	8.2821E+00	9.8681E+00
S	1.7436E+00	1.8456E+00	1.9328E+00
Z	1.4865E+00	1.8077E+00	1.9245E+00
GAME	9.1073E-01	1.0512E+00	1.0217E+00
U	1.4435E+01	3.8384E+00	4.3651E+00

SPECIES	MOLE FRACTIONS		
E-	4.9943E-06	8.2931E-04	7.1162E-03
H	8.5456E-01	8.9052E-01	9.3838E-01
H+	4.6043E-06	8.0376E-04	6.7212E-03
H2	3.4542E-01	1.0656E-01	4.4540E-02
H-	1.0308E-06	2.5917E-04	1.4262E-03
H2+	1.3608E-06	2.8466F-04	1.8213E-03

P1 = 1.00E+05 N/SQ-M, US1 = 2.30E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.8727E+02	2.9560E+03	5.1425E+03
T	2.3059E+01	4.3596E+01	5.9398E+01
RHO	1.0369E+01	3.5631E+01	4.3721E+01
H	6.3160E+01	1.1062E+02	1.4630E+02
A	5.9143E+00	9.3741E+00	1.0494E+01
S	1.8281E+00	1.9238E+00	2.0094E+00
Z	1.6166E+00	1.9036E+00	1.9803E+00
GAME	9.3832E-01	1.0592E+00	9.3627E-01
U	1.5799E+01	4.6045E+00	4.9242E+00

SPECIES	MOLE FRACTIONS		
E-	1.8390E-05	3.5181E-03	1.9579E-02
H	7.6261E-01	9.3786E-01	9.2993E-01
H+	1.7616E-05	3.3816E-03	1.8284E-02
H2	2.3715E-01	5.3652E-02	2.5603E-02
H-	3.6093E-06	7.2726E-04	2.6544E-03
H2+	4.3833E-06	8.6377E-04	3.9492E-03

TABLE I. - Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 2.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.2111E+02	3.1410E+03	5.5282E+03
T	2.4350E+01	4.7748E+01	6.3543E+01
RHO	1.0279E+01	3.3998E+01	4.3442E+01
H	6.8669E+01	1.1923E+02	1.5886E+02
A	6.2592E+00	9.7741E+00	1.0738E+01
S	1.8698E+00	1.9603E+00	2.0448E+00
Z	1.6824E+00	1.9349E+00	2.0026E+00
GAME	9.5634E-01	1.0346E+00	9.0602E-01
U	1.6467E+01	4.9742E+00	5.1125E+00

SPECIES	MOLE FRACTIONS		
E-	3.5449E-05	6.4986E-03	2.7138E-02
H	8.1111E-01	9.4606E-01	9.1860E-01
H+	3.4306E-05	6.2156E-03	2.5271E-02
H2	1.8880E-01	3.8779E-02	2.0862E-02
H-	6.5668E-06	1.0867E-03	3.1604E-03
H2+	7.7097E-06	1.3557E-03	5.0276E-03

P1 = 1.00E+05 N/SQ-M, US1 = 2.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.9202E+02	3.4806E+03	6.1528E+03
T	2.7599E+01	5.5822E+01	7.0586E+01
RHO	9.8641E+00	3.1446E+01	4.2645E+01
H	8.3358E+01	1.3876E+02	1.8404E+02
A	7.0820E+00	1.0326E+01	1.1185E+01
S	1.9507E+00	2.0306E+00	2.1125E+00
Z	1.8073E+00	1.9829E+00	2.0440E+00
GAME	1.0055E+00	9.6336E-01	8.6711E-01
U	1.7767E+01	5.5679E+00	5.3378E+00

SPECIES	MOLE FRACTIONS		
E-	1.4245E-04	1.6577E-02	4.3037E-02
H	8.9292E-01	9.4086E-01	8.9159E-01
H+	1.3995E-04	1.5778E-02	4.0009E-02
H2	1.0675E-01	2.2510E-02	1.4613E-02
H-	2.1564E-05	1.8670E-03	3.8554E-03
H2+	2.4065E-05	2.6655E-03	6.8870E-03

P1 = 1.00E+05 N/SQ-M, US1 = 2.50E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	4.5611E+02	3.3188E+03	5.8670E+03
T	2.5838E+01	5.1878E+01	6.7227E+01
RHO	1.0106E+01	3.2631E+01	4.3128E+01
H	7.4405E+01	1.2883E+02	1.7138E+02
A	6.6453E+00	1.0078E+01	1.0965E+01
S	1.9108E+00	1.9954E+00	2.0790E+00
Z	1.7467E+00	1.9605E+00	2.0235E+00
GAME	9.7846E-01	9.9855E-01	8.8380E-01
U	1.7126E+01	5.2946E+00	5.2368E+00

SPECIES	MOLE FRACTIONS		
E-	6.9874E-05	1.0875E-02	3.4981E-02
H	8.5479E-01	9.4626E-01	9.0558E-01
H+	6.8198E-05	1.0374E-02	3.2527E-02
H2	1.4504E-01	2.9039E-02	1.7333E-02
H-	1.1891E-05	1.4754E-03	3.5604E-03
H2+	1.3567E-05	1.9769E-03	6.0142E-03

P1 = 1.00E+05 N/SQ-M, US1 = 2.70E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.2852E+02	3.6268E+03	6.3699E+03
T	2.9728E+01	5.9434E+01	7.3654E+01
RHO	9.5528E+00	3.0457E+01	4.1894E+01
H	8.6520E+01	1.4963E+02	1.9668E+02
A	7.5741E+00	1.0546E+01	1.1399E+01
S	1.9891E+00	2.0636E+00	2.1467E+00
Z	1.8611E+00	2.0336E+00	2.0643E+00
GAME	1.0369E+00	9.3403E-01	8.5453E-01
U	1.8381E+01	5.7588E+00	5.4156E+00

SPECIES	MOLE FRACTIONS		
E-	3.0295E-04	2.3220E-02	5.1166E-02
H	9.2443E-01	9.3111E-01	8.7716E-01
H+	2.9898E-04	2.2057E-02	4.7610E-02
H2	7.4890E-02	1.8060E-02	1.2353E-02
H-	3.9277E-05	2.2165E-03	4.0581E-03
H2+	4.3249E-05	3.3598E-03	7.6141E-03

TABLE I. - Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 2.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	5.6571E+02	3.7537E+03	6.5261E+03
T	3.2314E+01	6.2766E+01	7.6516E+01
RHO	9.1885E+00	2.9552E+01	4.0910E+01
H	9.2890E+01	1.5962E+02	2.0943E+02
A	8.1065E+00	1.0756E+01	1.1609E+01
S	2.0256E+00	2.0976E+00	2.1805E+00
Z	1.9053E+00	2.0237E+00	2.0848E+00
GAME	1.0674E+00	9.1077E-01	8.4478E-01
U	1.8973E+01	5.8934E+00	5.4814E+00

SPECIES	MOLE FRACTIONS		
E-	6.6739E-04	3.0544E-02	5.9407E-02
H	9.4823E-01	9.1967E-01	8.6232E-01
H+	6.6026E-04	2.9030E-02	5.5379E-02
H2	5.0295E-02	1.4812E-02	1.0525E-02
H-	7.1309E-05	2.5124E-03	4.1711E-03
H2+	7.8432E-05	4.0264E-03	8.1992E-03

P1 = 1.00E+05 N/SQ-M, US1 = 3.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.4240E+02	3.9886E+03	6.7491E+03
T	3.8745E+01	6.8781E+01	8.1854E+01
RHO	8.4497E+00	2.8094E+01	3.8775E+01
H	1.0626E+02	1.8179E+02	2.3538E+02
A	9.0684E+00	1.1165E+01	1.2025E+01
S	2.0921E+00	2.1624E+00	2.2476E+00
Z	1.9622E+00	2.0638E+00	2.1265E+00
GAME	1.0817E+00	8.7814E-01	8.3077E-01
U	2.0113E+01	6.0328E+00	5.5884E+00

SPECIES	MOLE FRACTIONS		
E-	3.0700E-03	4.6589E-02	7.6111E-02
H	9.7135E-01	8.9049E-01	8.3173E-01
H+	3.0386E-03	4.4315E-02	7.1308E-02
H2	2.2088E-02	1.0440E-02	7.6216E-03
H-	2.0871E-04	2.9436E-03	4.2155E-03
H2+	2.4008E-04	5.2183E-03	9.0177E-03

P1 = 1.00E+05 N/SQ-M, US1 = 2.90E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	6.0356E+02	3.8668E+03	6.6390E+03
T	3.5364E+01	6.5854E+01	7.9221E+01
RHO	8.8046E+00	2.8731E+01	3.9801E+01
H	9.9467E+01	1.7051E+02	2.2227E+02
A	8.6264E+00	1.0961E+01	1.1817E+01
S	2.0603E+00	2.1306E+00	2.2143E+00
Z	1.9385E+00	2.0437E+00	2.1055E+00
GAME	1.0855E+00	8.9266E-01	8.3710E-01
U	1.9547E+01	5.9847E+00	5.5369E+00

SPECIES	MOLE FRACTIONS		
E-	1.4706E-03	3.8264E-02	6.7724E-02
H	9.6373E-01	9.0538E-01	8.4718E-01
H+	1.4560E-03	3.6451E-02	6.3285E-02
H2	3.3077E-02	1.2349E-02	8.9468E-03
H-	1.2583E-04	2.7506E-03	4.2155E-03
H2+	1.4042E-04	4.6433E-03	8.6543E-03

P1 = 1.00E+05 N/SQ-M, US1 = 3.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	7.2492E+02	4.3125E+03	7.1166E+03
T	4.5624E+01	7.4382E+01	8.7239E+01
RHO	7.9615E+00	2.7552E+01	3.7613E+01
H	1.2055E+02	2.0575E+02	2.6326E+02
A	9.6744E+00	1.1578E+01	1.2458E+01
S	2.1502E+00	2.2245E+00	2.3124E+00
Z	1.9957E+00	2.1044E+00	2.1685E+00
GAME	1.0279E+00	8.5647E-01	8.2026E-01
U	2.1282E+01	6.1370E+00	5.7006E+00

SPECIES	MOLE FRACTIONS		
E-	9.8475E-03	6.3603E-02	9.3050E-02
H	9.6799E-01	8.5860E-01	8.0001E-01
H+	9.7325E-03	6.0556E-02	8.7591E-02
H2	1.1421E-02	7.7302E-03	5.5810E-03
H-	4.4621E-04	3.2344E-03	4.1570E-03
H2+	5.6120E-04	6.2811E-03	9.6160E-03

TABLE I. - Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 3.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	8.1483E+02	4.7868E+03	7.7359E+03
T	5.1850E+01	7.9912E+01	9.3024E+01
RHO	7.7526E+00	2.7923E+01	3.7596E+01
H	1.3503E+02	2.3187E+02	2.9383E+02
A	1.0104E+01	1.2005E+01	1.2922E+01
S	2.2035E+00	2.2846E+00	2.3750E+00
Z	2.0271E+00	2.1453E+00	2.2115E+00
GAME	9.7137E-01	8.4064E-01	8.1147E-01
U	2.2518E+01	6.2446E+00	5.8391E+00

SPECIES	MOLE FRACTIONS		
E-	2.1527E-02	8.0865E-02	1.0999E-01
H	9.4833E-01	8.2550E-01	7.6783E-01
H+	2.1249E-02	7.7045E-02	1.0396E-01
H2	7.1766E-03	5.9040E-03	4.0976E-03
H-	7.1978E-04	3.4310E-03	4.0488E-03
H2+	9.9758E-04	7.2553E-03	1.0074E-02

P1 = 1.00E+05 N/SQ-M, US1 = 3.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.0195E+03	6.1877E+03	9.7069E+03
T	6.1992E+01	9.1520E+01	1.0670E+02
RHO	7.8359E+00	3.0333E+01	3.9503E+01
H	1.6950E+02	2.9126E+02	3.6446E+02
A	1.0866E+01	1.2920E+01	1.3994E+01
S	2.3020E+00	2.4003E+00	2.4979E+00
Z	2.0987E+00	2.2289E+00	2.3036E+00
GAME	9.0757E-01	8.1836E-01	7.9701E-01
U	2.5215E+01	6.5042E+00	6.2360E+00

SPECIES	MOLE FRACTIONS		
E-	5.2921E-02	1.1497E-01	1.4393E-01
H	8.8785E-01	7.5946E-01	7.0268E-01
H+	5.2160E-02	1.0974E-01	1.3733E-01
H2	3.9343E-03	3.4769E-03	2.0585E-03
H-	1.1876E-03	3.5564E-03	3.6995E-03
H2+	1.9482E-03	8.7876E-03	1.0303E-02

P1 = 1.00E+05 N/SQ-M, US1 = 3.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	9.1354E+02	5.4264E+03	8.6230E+03
T	5.7228E+01	8.5615E+01	9.9485E+01
RHO	7.7441E+00	2.8984E+01	3.8412E+01
H	1.5217E+02	2.6053E+02	3.2770E+02
A	1.0491E+01	1.2452E+01	1.3432E+01
S	2.2535E+00	2.3429E+00	2.4367E+00
Z	2.0613E+00	2.1868E+00	2.2565E+00
GAME	9.3296E-01	8.2821E-01	8.0371E-01
U	2.3847E+01	6.3667E+00	6.0147E+00

SPECIES	MOLE FRACTIONS		
E-	5.6370E-02	9.8100E-02	1.2697E-01
H	9.2018E-01	7.9216E-01	7.3532E-01
H+	3.5869E-02	9.3515E-02	1.2052E-01
H2	5.1352E-03	4.5504E-03	2.9554E-03
H-	9.7342E-04	3.5426E-03	3.8954E-03
H2+	1.4744E-03	8.1235E-03	1.0343E-02

P1 = 1.00E+05 N/SQ-M, US1 = 4.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.1325E+03	7.0517E+03	1.0972E+04
T	6.6339E+01	9.7745E+01	1.1493E+02
RHO	7.9834E+00	3.1754E+01	4.0585E+01
H	1.8781E+02	3.2395E+02	4.0427E+02
A	1.1236E+01	1.3416E+01	1.4625E+01
S	2.3497E+00	2.4572E+00	2.5588E+00
Z	2.1384E+00	2.2720E+00	2.3524E+00
GAME	8.9003E-01	8.1046E-01	7.9117E-01
U	2.6612E+01	6.6836E+00	6.5162E+00

SPECIES	MOLE FRACTIONS		
E-	7.0231E-02	1.3150E-01	1.6108E-01
H	8.5370E-01	7.2745E-01	6.6948E-01
H+	6.9194E-02	1.2579E-01	1.5467E-01
H2	3.1274E-03	2.5988E-03	1.3629E-03
H-	1.3575E-03	3.4822E-03	3.4959E-03
H2+	2.3942E-03	9.1841E-03	9.9050E-03

TABLE I. - Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 4.20E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.2523E+03	7.9965E+03	1.2407E+04
T	7.0415E+01	1.0441E+02	1.2445E+02
RHO	8.1591E+00	3.3064E+01	4.1448E+01
H	2.0710E+02	3.5841E+02	4.4721E+02
A	1.1604E+01	1.3945E+01	1.5340E+01
S	2.3971E+00	2.5136E+00	2.6191E+00
Z	2.1797E+00	2.3164E+00	2.4053E+00
GAME	8.7732E-01	8.0411E-01	7.8605E-01
U	2.8028E+01	6.9332E+00	6.8630E+00

SPECIES	MOLE FRACTIONS		
E-	8.7787E-02	1.4775E-01	1.7852E-01
H	8.1893E-01	6.9553E-01	6.3543E-01
H+	8.6474E-02	1.4183E-01	1.7270E-01
H2	2.5330E-03	1.8818E-03	8.4970E-04
H-	1.4836E-03	3.3431E-03	3.3363E-03
H2+	2.7973E-03	9.2702E-03	9.1544E-03

P1 = 1.00E+05 N/SQ-M, US1 = 4.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.5110E+03	1.0111E+04	1.5800E+04
T	7.8139E+01	1.1980E+02	1.4951E+02
RHO	8.5324E+00	3.4992E+01	4.1808E+01
H	2.4856E+02	4.3256E+02	5.4439E+02
A	1.2346E+01	1.5155E+01	1.7139E+01
S	2.4917E+00	2.6246E+00	2.7393E+00
Z	2.2664E+00	2.4118E+00	2.5277E+00
GAME	8.6065E-01	7.9487E-01	7.7732E-01
U	3.0882E+01	7.5385E+00	7.5045E+00

SPECIES	MOLE FRACTIONS		
E-	1.2267E-01	1.8014E-01	2.1589E-01
H	7.4975E-01	6.3282E-01	5.6133E-01
H+	1.2084E-01	1.7464E-01	2.1236E-01
H2	1.6895E-03	8.7036E-04	2.6342E-04
H-	1.6132E-03	3.0170E-03	3.3135E-03
H2+	3.4352E-03	8.5152E-03	6.8452E-03

P1 = 1.00E+05 N/SQ-M, US1 = 4.40E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.3785E+03	9.0285E+03	1.4017E+04
T	7.4322E+01	1.1177E+02	1.3587E+02
RHO	8.3458E+00	3.4178E+01	4.1872E+01
H	2.2734E+02	3.9472E+02	4.9386E+02
A	1.1973E+01	1.4528E+01	1.6174E+01
S	2.4444E+00	2.5761E+00	2.6798E+00
Z	2.2225E+00	2.3634E+00	2.4639E+00
GAME	8.6783E-01	7.9854E-01	7.8148E-01
U	2.9453E+01	7.1926E+00	7.3248E+00

SPECIES	MOLE FRACTIONS		
E-	1.0531E-01	1.6469E-01	1.9686E-01
H	7.8617E-01	6.6417E-01	5.9926E-01
H+	1.0373E-01	1.5823E-01	1.9204E-01
H2	2.0679E-03	1.3040E-03	4.8976E-04
H-	1.5678E-03	3.1736E-03	3.2649E-03
H2+	3.1469E-03	9.0356E-03	8.0867E-03

P1 = 1.00E+05 N/SQ-M, US1 = 4.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.6496E+03	1.1228E+04	1.7764E+04
T	8.1945E+01	1.2872E+02	1.6592E+02
RHO	8.7082E+00	3.5426E+01	4.1216E+01
H	2.7069E+02	4.7189E+02	5.9962E+02
A	1.2729E+01	1.5842E+01	1.8258E+01
S	2.5393E+00	2.6776E+00	2.7980E+00
Z	2.3117E+00	2.4628E+00	2.5976E+00
GAME	8.5528E-01	7.5172E-01	7.7344E-01
U	3.2312E+01	7.9619E+00	8.6522E+00

SPECIES	MOLE FRACTIONS		
E-	1.3987E-01	1.9622E-01	2.3578E-01
H	7.1564E-01	6.0119E-01	5.2139E-01
H+	1.3784E-01	1.9136E-01	2.3367E-01
H2	1.3725E-03	5.5658E-04	1.3314E-04
H-	1.6228E-03	2.9045E-03	3.4614E-03
H2+	3.6502E-03	7.7626E-03	5.5736E-03

TABLE I. - Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 5.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.7941E+03	1.2386E+04	1.9907E+04
T	6.5744E+01	1.3880E+02	1.8514E+02
RHO	8.8749E+00	3.5454E+01	4.0248E+01
H	2.9377E+02	5.1271E+02	6.5928E+02
A	1.3120E+01	1.6606E+01	1.9511E+01
S	2.5864E+00	2.7295E+00	2.8544E+00
Z	2.3577E+00	2.5165E+00	2.6715E+00
GAME	8.5148E-01	7.8931E-01	7.6964E-01
U	3.3738E+01	8.4344E+00	9.5332E+00

SPECIES	MOLE FRACTIONS		
E-	1.5662E-01	2.1257E-01	2.5587E-01
H	6.8245E-01	5.6881E-01	4.8091E-01
H+	1.5441E-01	2.0857E-01	2.5508E-01
H2	1.1089E-03	3.4021E-04	6.5633E-05
H-	1.6022E-03	2.8551E-03	3.6449E-03
H2+	3.8065E-03	6.8549E-03	4.4343E-03

P1 = 1.00E+05 N/SQ-M, US1 = 5.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.1001E+03	1.4638E+04	2.4635E+04
T	9.3646E+01	1.6224E+02	2.3131E+02
RHO	9.1394E+00	3.4275E+01	3.7710E+01
H	3.4273E+02	5.9767E+02	7.9209E+02
A	1.3959E+01	1.8331E+01	2.2313E+01
S	2.6810E+00	2.827CE+00	2.9599E+00
Z	2.4537E+00	2.6325E+00	2.8243E+00
GAME	8.4803E-01	7.8676E-01	7.6212E-01
U	3.6569E+01	9.7344E+00	1.1661E+01

SPECIES	MOLE FRACTIONS		
E-	1.8949E-01	2.4536E-01	2.9465E-01
H	6.1734E-01	5.0335E-01	4.0304E-01
H+	1.8709E-01	2.4330E-01	2.9570E-01
H2	6.9539E-04	1.1749E-04	1.6768E-05
H-	1.4855E-03	2.9106E-03	3.8237E-03
H2+	3.6866E-03	4.9686E-03	2.7760E-03

P1 = 1.00E+05 N/SQ-M, US1 = 5.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	1.9443E+03	1.3521E+04	2.2205E+04
T	8.9634E+01	1.5003E+02	2.0714E+02
RHO	9.0192E+00	3.5010E+01	3.9006E+01
H	3.1779E+02	5.5461E+02	7.2353E+02
A	1.3529E+01	1.7442E+01	2.0881E+01
S	2.6338E+00	2.7797E+00	2.9088E+00
Z	2.4051E+00	2.5742E+00	2.7482E+00
GAME	8.4908E-01	7.8774E-01	7.6590E-01
U	3.5158E+01	9.0427E+00	1.0546E+01

SPECIES	MOLE FRACTIONS		
E-	1.7319E-01	2.2914E-01	2.7578E-01
H	6.4963E-01	5.3579E-01	4.4084E-01
H+	1.7086E-01	2.2612E-01	2.7607E-01
H2	8.8451E-04	2.0087E-04	3.2486E-05
H-	1.5546E-03	2.8621E-03	3.7816E-03
H2+	3.8833E-03	5.8844E-03	3.4945E-03

P1 = 1.00E+05 N/SQ-M, US1 = 5.60E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.2611E+03	1.5693E+04	2.7159E+04
T	9.7830E+01	1.7551E+02	2.5672E+02
RHO	9.2313E+00	3.3199E+01	3.6526E+01
H	3.6860E+02	6.4151E+02	8.6446E+02
A	1.4415E+01	1.9281E+01	2.3746E+01
S	2.7282E+00	2.8725E+00	3.0068E+00
Z	2.5038E+00	2.6931E+00	2.8963E+00
GAME	8.4834E-01	7.8651E-01	7.5833E-01
U	3.7969E+01	1.0559E+01	1.2841E+01

SPECIES	MOLE FRACTIONS		
E-	2.0556E-01	2.6156E-01	3.1172E-01
H	5.8554E-01	4.7088E-01	3.6901E-01
H+	2.0314E-01	2.6035E-01	3.1324E-01
H2	5.3742E-04	6.8124E-05	9.2652E-06
H-	1.4005E-03	2.9604E-03	3.7693E-03
H2+	3.8185E-03	4.1340E-03	2.2514E-03

TABLE I.- Continued

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 5.80E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.4274E+03	1.6725E+04	2.9751E+04
T	1.0218E+02	1.8959E+02	2.8398E+02
RHO	9.2998E+00	3.2046E+01	3.5305E+01
H	3.9539E+02	6.8645E+02	9.3997E+02
A	1.4895E+01	2.0263E+01	2.5221E+01
S	2.7742E+00	2.9159E+00	3.0522E+00
Z	2.5544E+00	2.7533E+00	2.9673E+00
GAME	8.4998E-01	7.8657E-01	7.5486E-01
U	3.9356E+01	1.1412E+01	1.4043E+01

SPECIES	MOLE FRACTIONS		
E-	2.2114E-01	2.7707E-01	3.2784E-01
H	5.5469E-01	4.3984E-01	3.3708E-01
H+	2.1876E-01	2.7663E-01	3.2961E-01
H2	4.0921E-04	4.0157E-05	5.3347E-06
H-	1.3075E-03	2.9951E-03	3.6169E-03
H2+	3.6883E-03	3.4332E-03	1.8463E-03

P1 = 1.00E+05 N/SQ-M, US1 = 6.20E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.7741E+03	1.8521E+04	3.4828E+04
T	1.1194E+02	2.1951E+02	3.4043E+02
RHO	9.3058E+00	2.9364E+01	3.3032E+01
H	4.5168E+02	7.7858E+02	1.0994E+03
A	1.5993E+01	2.2301E+01	2.8109E+01
S	2.8674E+00	2.9971E+00	3.1348E+00
Z	2.6630E+00	2.8734E+00	3.0971E+00
GAME	8.5799E-01	7.8849E-01	7.4939E-01
U	4.2078E+01	1.3313E+01	1.6476E+01

SPECIES	MOLE FRACTIONS		
E-	2.5244E-01	3.0634E-01	3.5555E-01
H	4.9269E-01	3.8146E-01	2.8261E-01
H+	2.5030E-01	3.0665E-01	3.5738E-01
H2	2.1852E-04	1.4834E-05	2.0814E-06
H-	1.1072E-03	2.9284E-03	3.1465E-03
H2+	3.2426E-03	2.3722E-03	1.3068E-03

P1 = 1.00E+05 N/SQ-M, US1 = 6.00E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.5984E+03	1.7656E+04	3.2310E+04
T	1.0692E+02	2.0441E+02	3.1198E+02
RHO	9.3172E+00	3.0692E+01	3.4131E+01
H	4.2308E+02	7.3213E+02	1.0188E+03
A	1.5426E+01	2.1282E+01	2.6679E+01
S	2.8215E+00	2.9578E+00	3.0948E+00
Z	2.6084E+00	2.8143E+00	3.0344E+00
GAME	8.5324E-01	7.8736E-01	7.5188E-01
U	4.0726E+01	1.2343E+01	1.5282E+01

SPECIES	MOLE FRACTIONS		
E-	2.3702E-01	2.9221E-01	3.4244E-01
H	5.2324E-01	4.0958E-01	3.0833E-01
H+	2.3474E-01	2.9235E-01	3.4430E-01
H2	3.0191E-04	2.3958E-05	3.2493E-06
H-	1.2057E-03	2.9824E-03	3.3989E-03
H2+	3.4883E-03	2.8430E-03	1.5407E-03

P1 = 1.00E+05 N/SQ-M, US1 = 6.40E+04 M/SEC
XM2 = 1.00 XME = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	2.9540E+03	1.9297E+04	3.7248E+04
T	1.1736E+02	2.3495E+02	3.6920E+02
RHO	9.2561E+00	2.8018E+01	3.1968E+01
H	4.8116E+02	8.2572E+02	1.1821E+03
A	1.6609E+01	2.3328E+01	2.9513E+01
S	2.9126E+00	3.0351E+00	3.1727E+00
Z	2.7193E+00	2.9314E+00	3.1559E+00
GAME	8.6436E-01	7.9015E-01	7.4754E-01
U	4.3407E+01	1.4312E+01	1.7647E+01

SPECIES	MOLE FRACTIONS		
E-	2.6763E-01	3.1972E-01	3.6740E-01
H	4.6255E-01	3.5488E-01	2.5945E-01
H+	2.6569E-01	3.2057E-01	3.6915E-01
H2	1.5420E-04	9.4056E-06	1.3880E-06
H-	1.0148E-03	2.83C4E-03	2.8768E-03
H2+	2.9582E-03	1.9851E-03	1.1221E-03

TABLE I.- Concluded

$p_1 = 100\ kN/m^2$

P1 = 1.00E+05 N/SQ-M, US1 = 6.60E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.1378E+03	1.9937E+04	3.9564E+04
T	1.2324E+02	2.5034E+02	3.9851E+02
RHO	9.1682E+00	2.6656E+01	3.0910E+01
H	5.1153E+02	8.7305E+02	1.2675E+03
A	1.7279E+01	2.4347E+01	3.0908E+01
S	2.9571E+00	3.0716E+00	3.2094E+00
Z	2.7771E+00	2.5877E+00	3.2115E+00
GAME	8.7237E-01	7.9253E-01	7.4636E-01
U	4.4712E+01	1.5400E+01	1.8848E+01

SPECIES	MOLE FRACTIONS		
E-	2.8297E-01	3.3228E-01	3.7828E-01
H	4.3289E-01	3.3005E-01	2.3823E-01
H+	2.8085E-01	3.3329E-01	3.7991E-01
H2	1.0602E-04	6.1400E-06	9.5197E-07
H-	9.3225E-04	2.6933E-03	2.6007E-03
H2+	2.6491E-03	1.6786E-03	9.7091E-04

P1 = 1.00E+05 N/SQ-M, US1 = 7.00E+04 M/SEC
XH2 = 1.00 XHE = 0.00

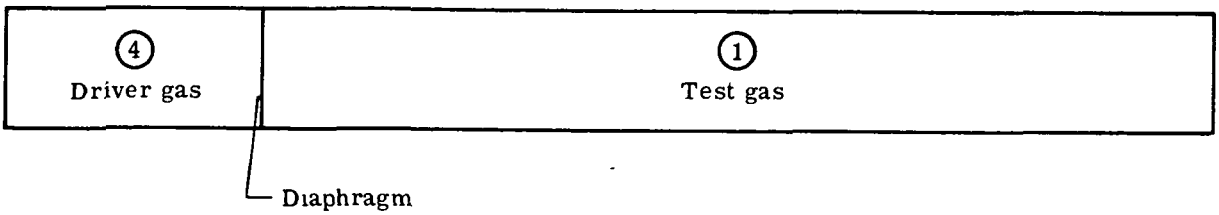
	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.5159E+03	2.1018E+04	4.3595E+04
T	1.3663E+02	2.8233E+02	4.5696E+02
RHO	8.8860E+00	2.4032E+01	2.8790E+01
H	5.7484E+02	9.7046E+02	1.4409E+03
A	1.8797E+01	2.6432E+01	3.3616E+01
S	3.0428E+00	3.1428E+00	3.2785E+00
Z	2.8960E+00	3.0978E+00	3.3137E+00
GAME	8.9298E-01	7.9883E-01	7.4627E-01
U	4.7239E+01	1.7415E+01	2.1057E+01

SPECIES	MOLE FRACTIONS		
E-	3.1146E-01	3.5559E-01	3.9719E-01
H	3.7543E-01	2.8412E-01	2.0146E-01
H+	3.1025E-01	3.5673E-01	3.9853E-01
H2	4.6534E-05	2.7478E-06	4.8330E-07
H-	8.0407E-04	2.3495E-03	2.0749E-03
H2+	2.0148E-03	1.2067E-03	7.4116E-04

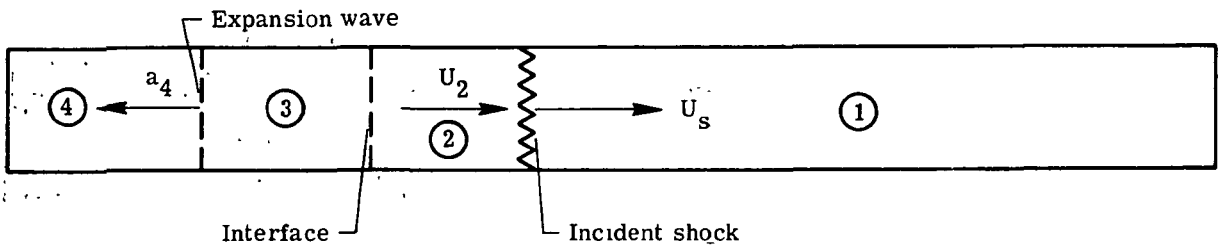
P1 = 1.00E+05 N/SQ-M, US1 = 6.80E+04 M/SEC
XH2 = 1.00 XHE = 0.00

	MOVING SHOCK	STANDING SHOCK	REFLECTED SHOCK
P	3.3252E+03	2.0523E+04	4.1663E+04
T	1.2968E+02	2.6646E+02	4.2800E+02
RHO	9.0396E+00	2.5301E+01	2.9814E+01
H	5.4276E+02	9.2153E+02	1.3536E+03
A	1.8013E+01	2.5402E+01	3.2289E+01
S	3.0008E+00	3.1081E+00	3.2451E+00
Z	2.8365E+00	3.0443E+00	3.2651E+00
GAME	8.8205E-01	7.9547E-01	7.4606E-01
U	4.5989E+01	1.6399E+01	1.9974E+01

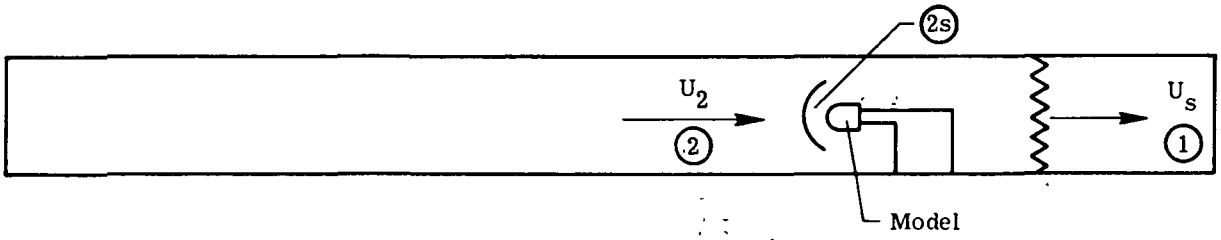
SPECIES	MOLE FRACTIONS		
E-	2.9731E-01	3.4446E-01	3.8831E-01
H	4.0359E-01	3.0603E-01	2.1873E-01
H+	2.9584E-01	3.4557E-01	3.8979E-01
H2	7.0866E-05	4.0445E-06	6.6758E-07
H-	8.6114E-04	2.5272E-03	2.3262E-03
H2+	2.3273E-03	1.4167E-03	8.4419E-04



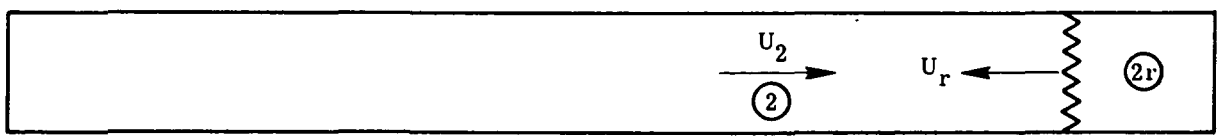
(a) Prior to diaphragm rupture.



(b) Incident (moving) normal shock in test gas.



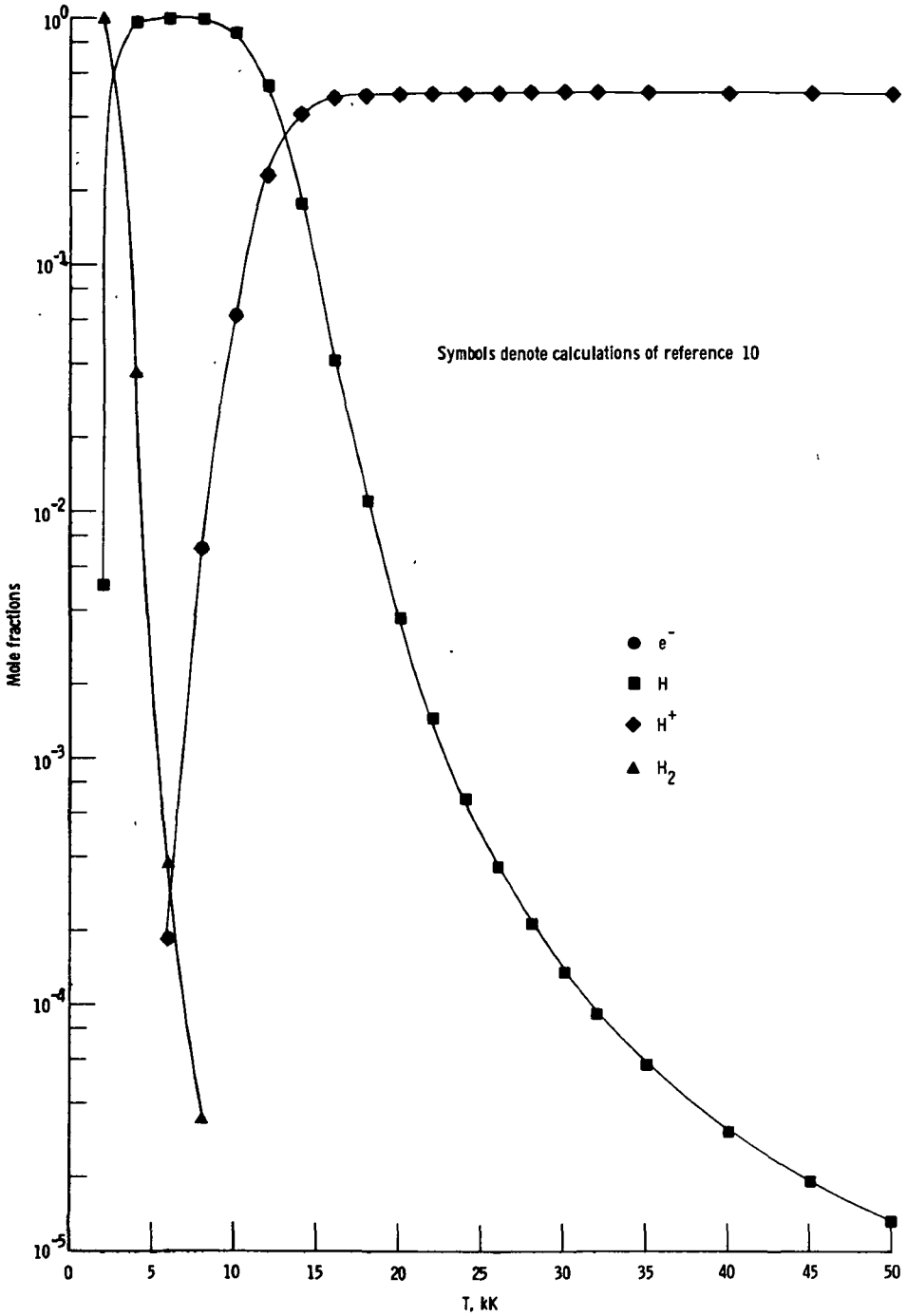
(c) Standing normal shock at test model.



(d) Reflected normal shock from end wall.

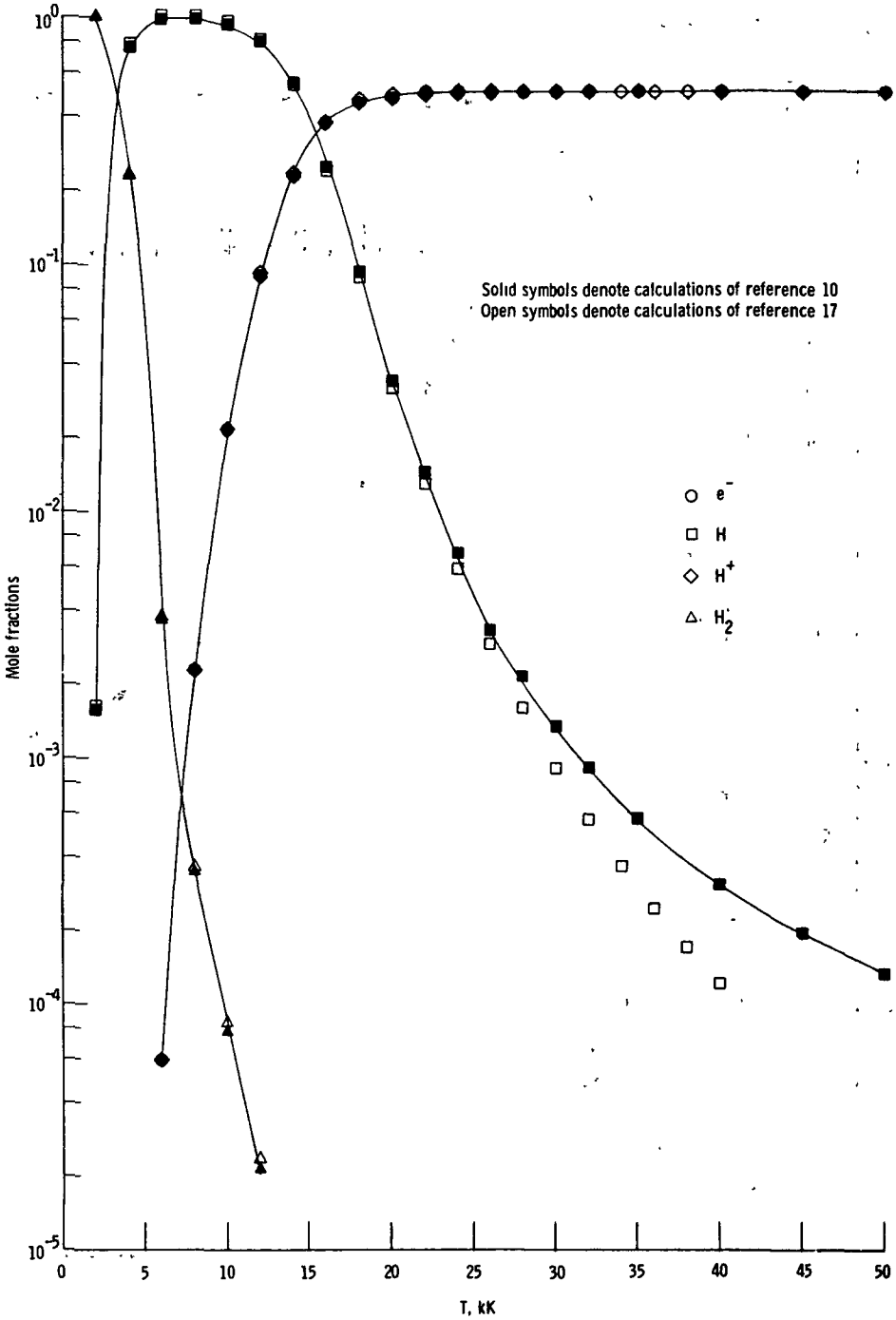
Figure 1.- Sketches illustrating shock-tube regions of interest: Regions (2), (2s), and (2r).

Page Intentionally Left Blank



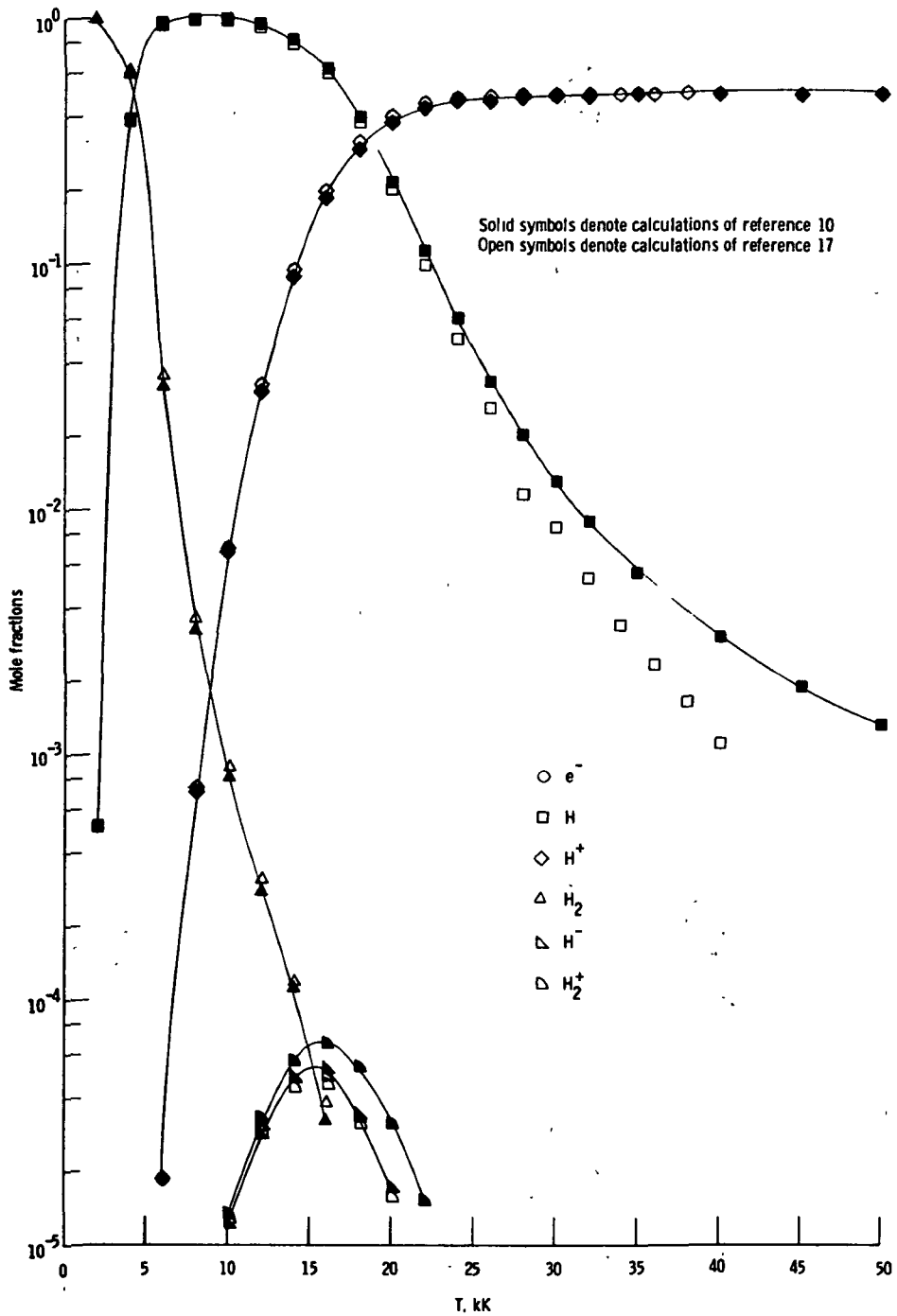
(a) $p/p_o = 0.1$.

Figure 2.- Mole fractions for hydrogen as a function of temperature for various pressures.



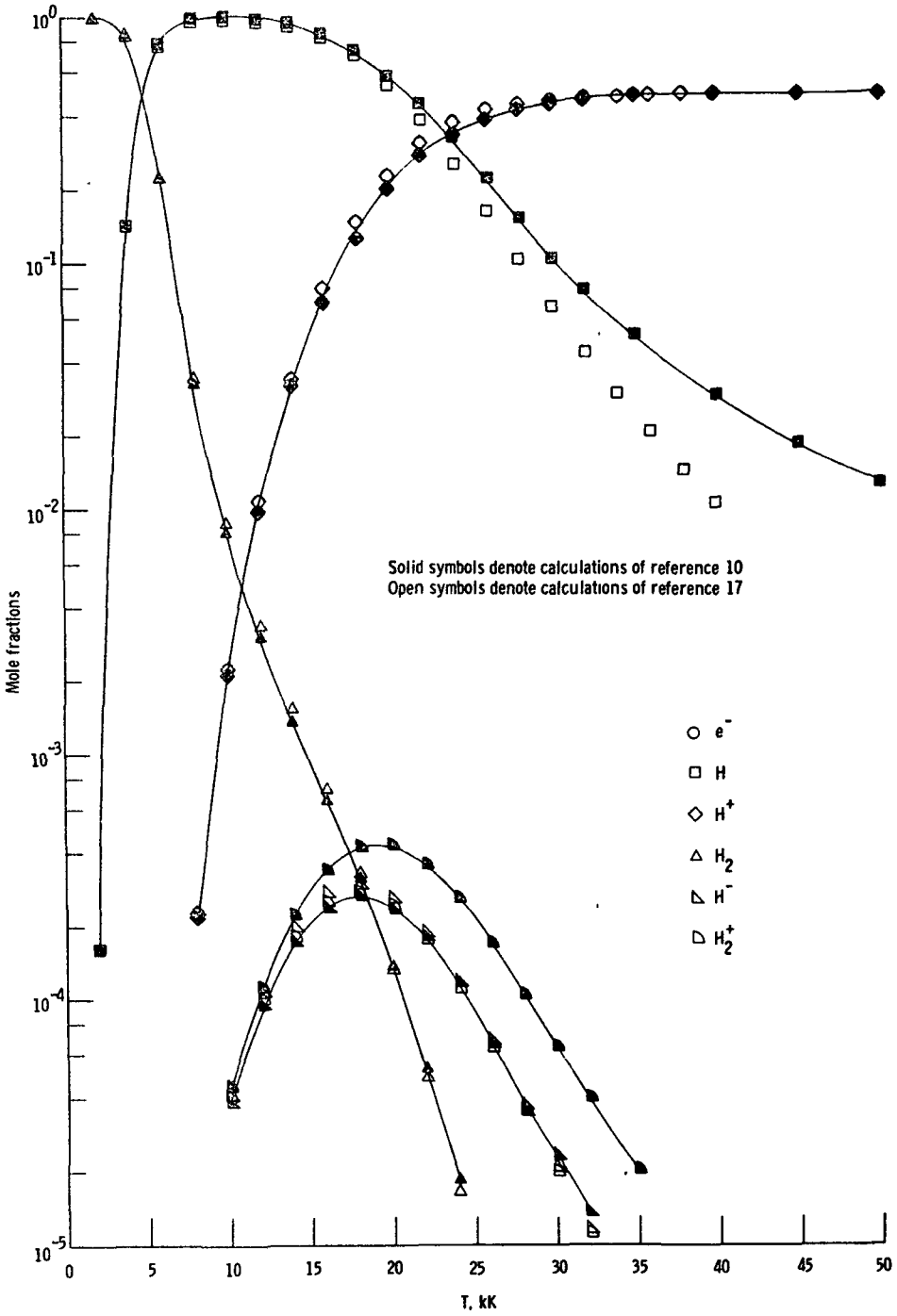
(b) $p/p_o = 1.$

Figure 2.- Continued.



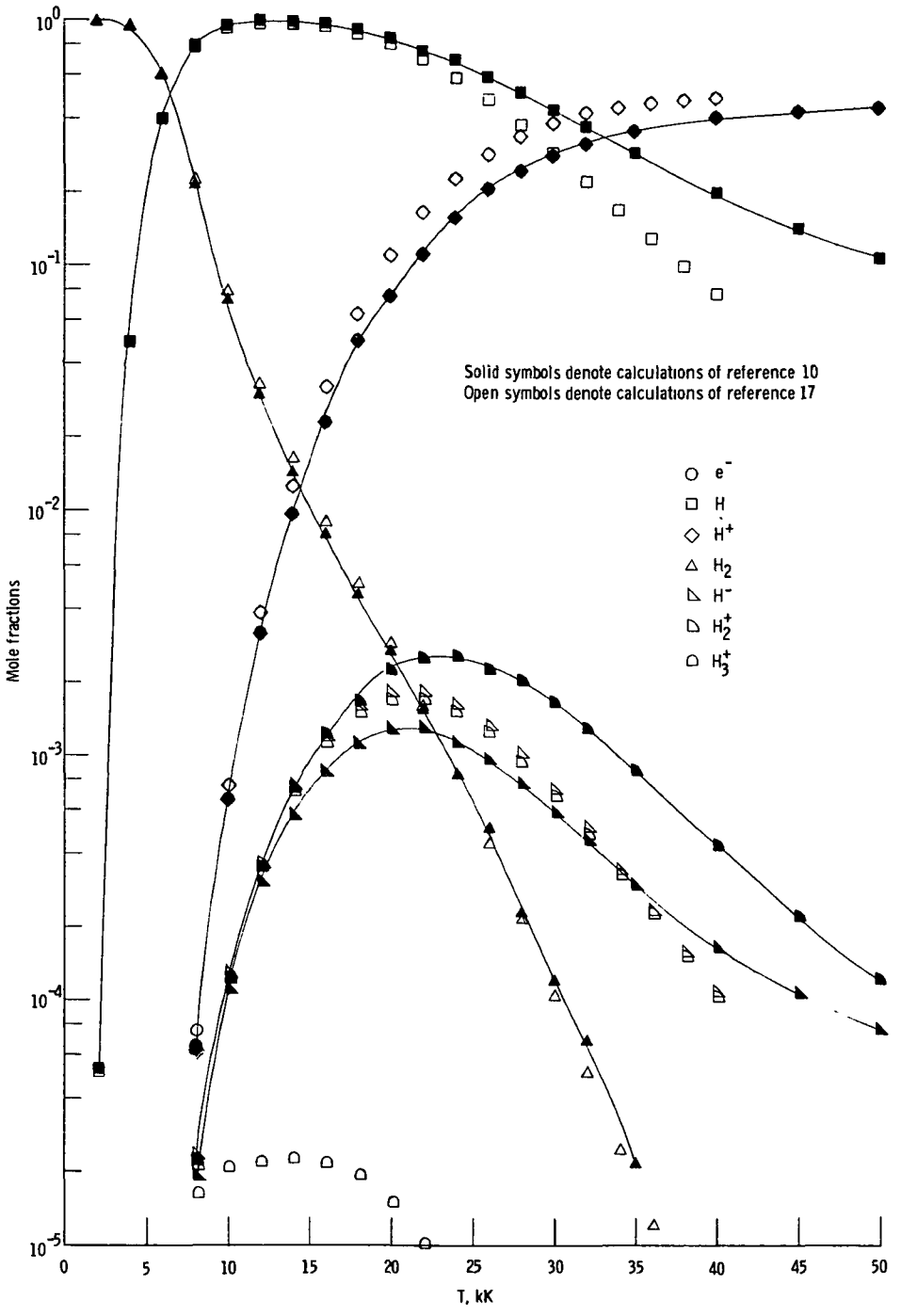
(c) $p/p_o = 10.$

Figure 2.- Continued.



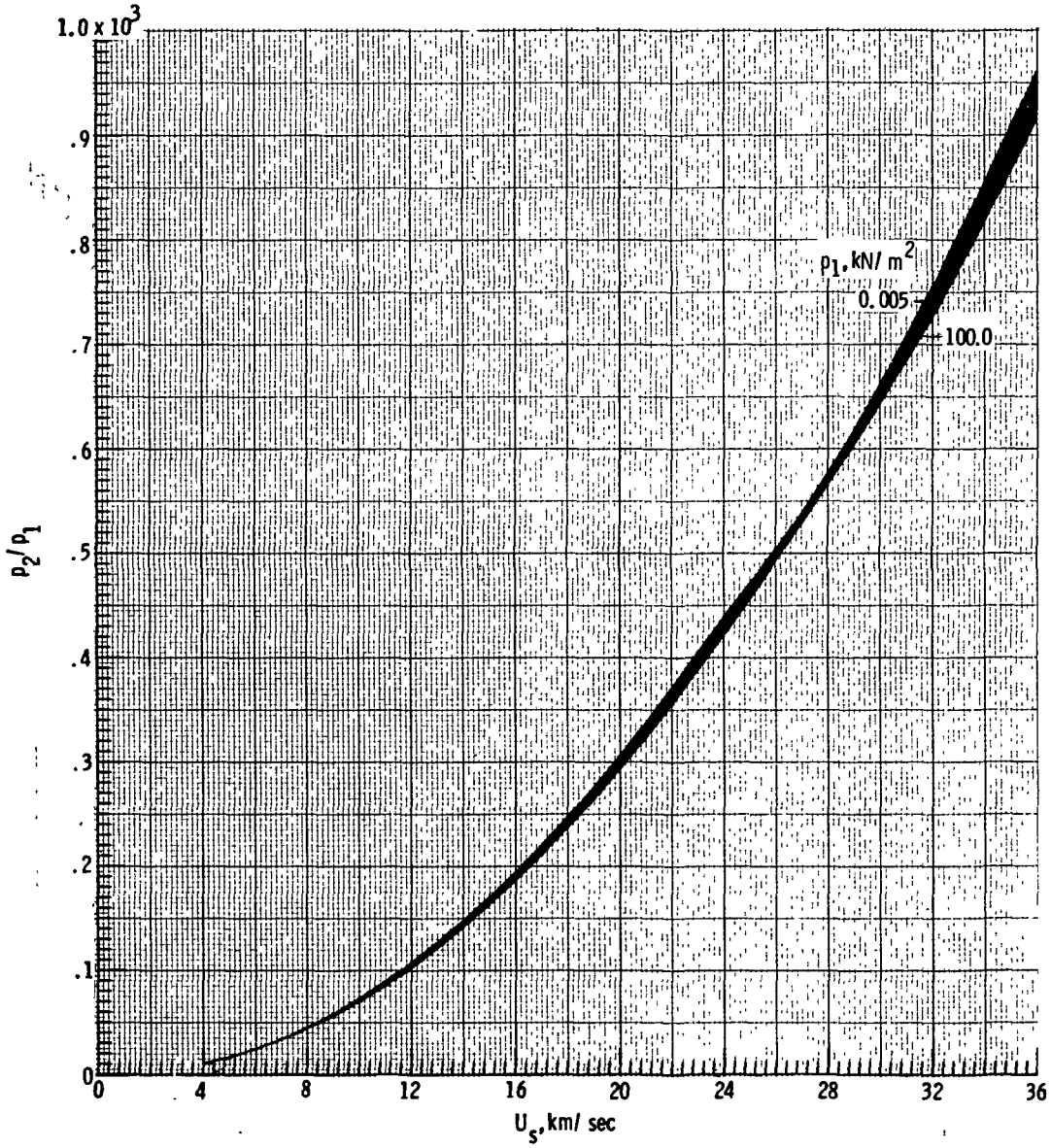
(d) $p/p_o = 100.$

Figure 2.- Continued.



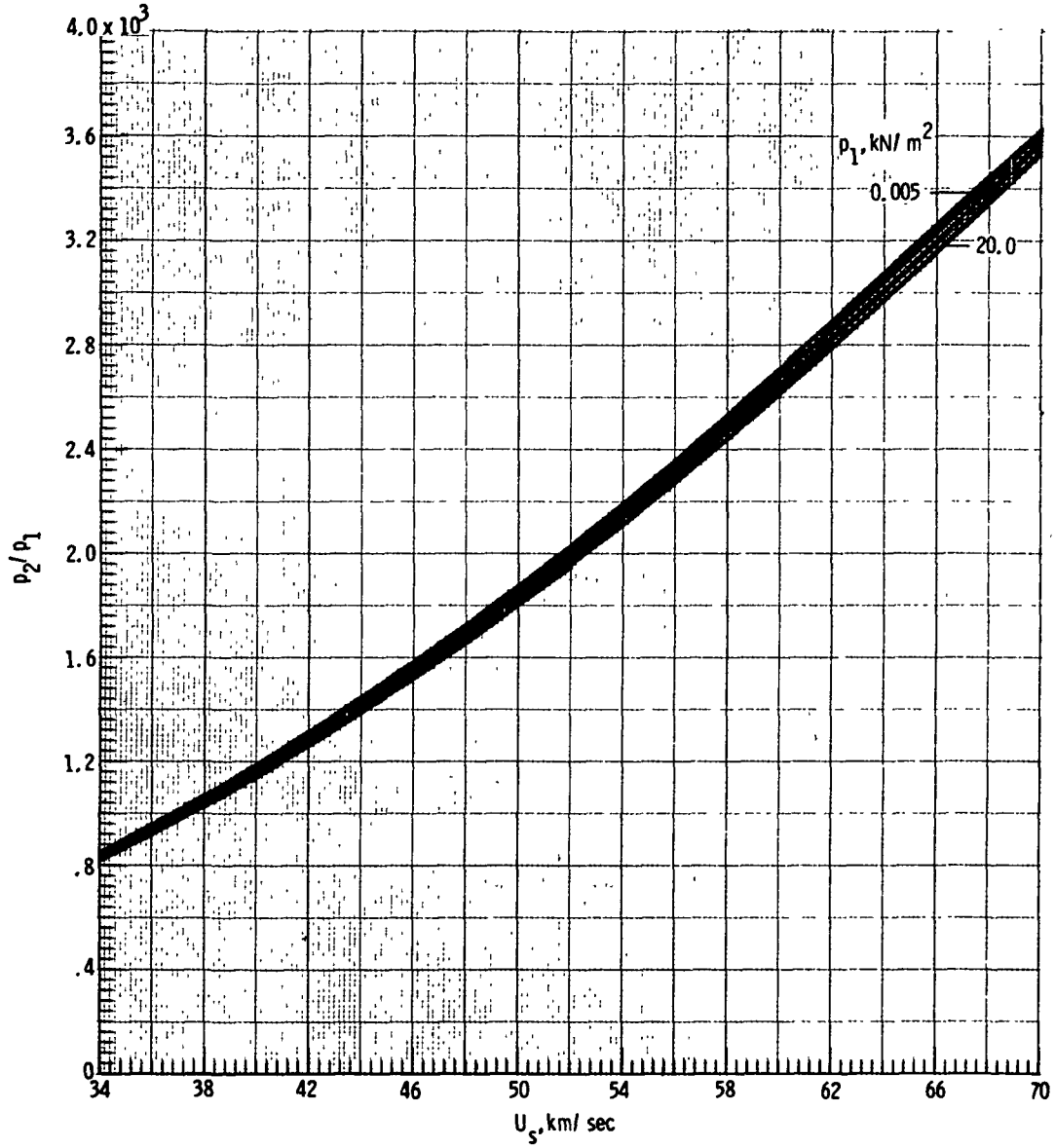
(e) p/p_o = 1000.

Figure 2.- Concluded.



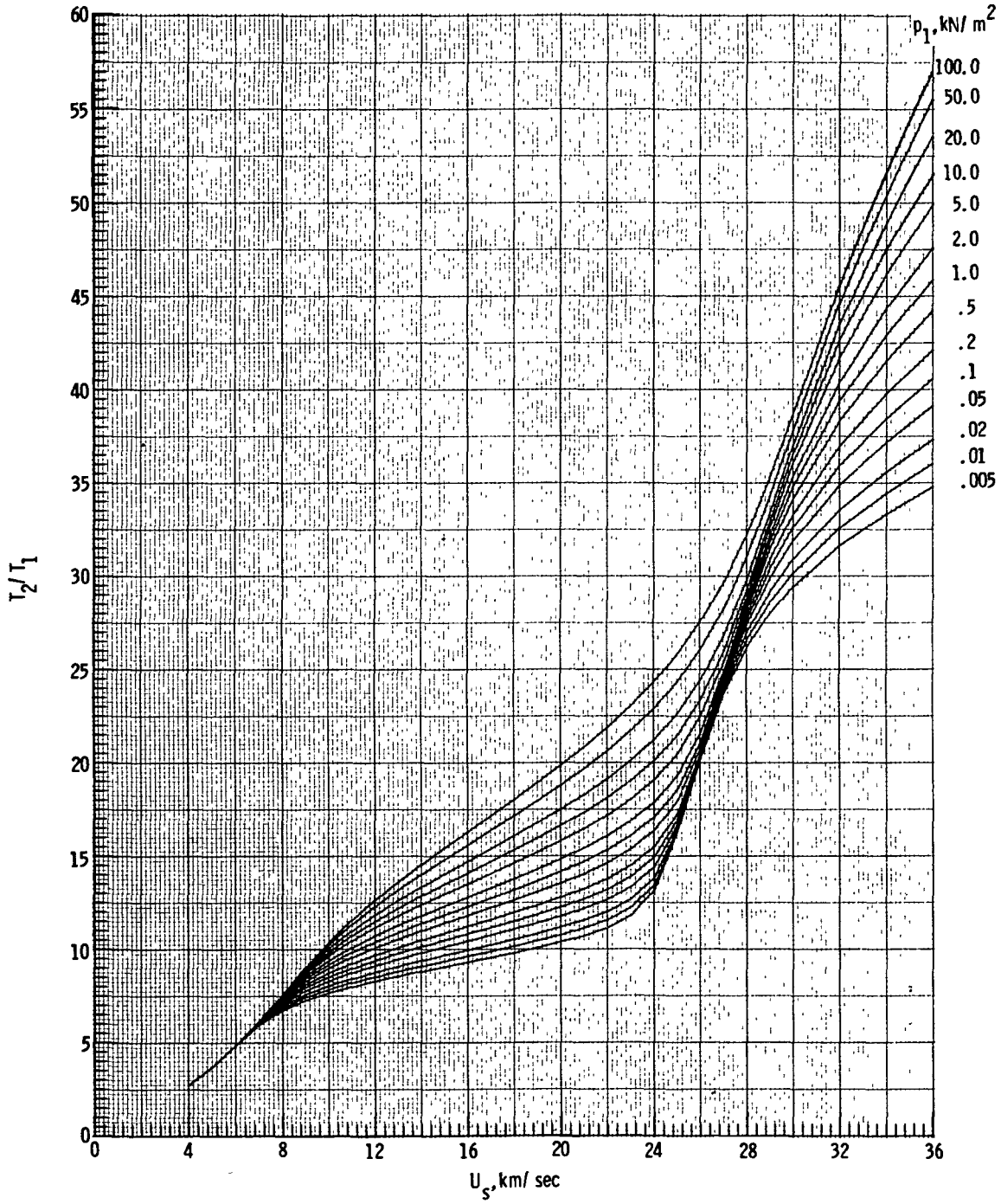
(a) Pressure p_2/p_1.

Figure 3.- Thermodynamic properties and flow velocity behind an incident normal shock into pure hydrogen.



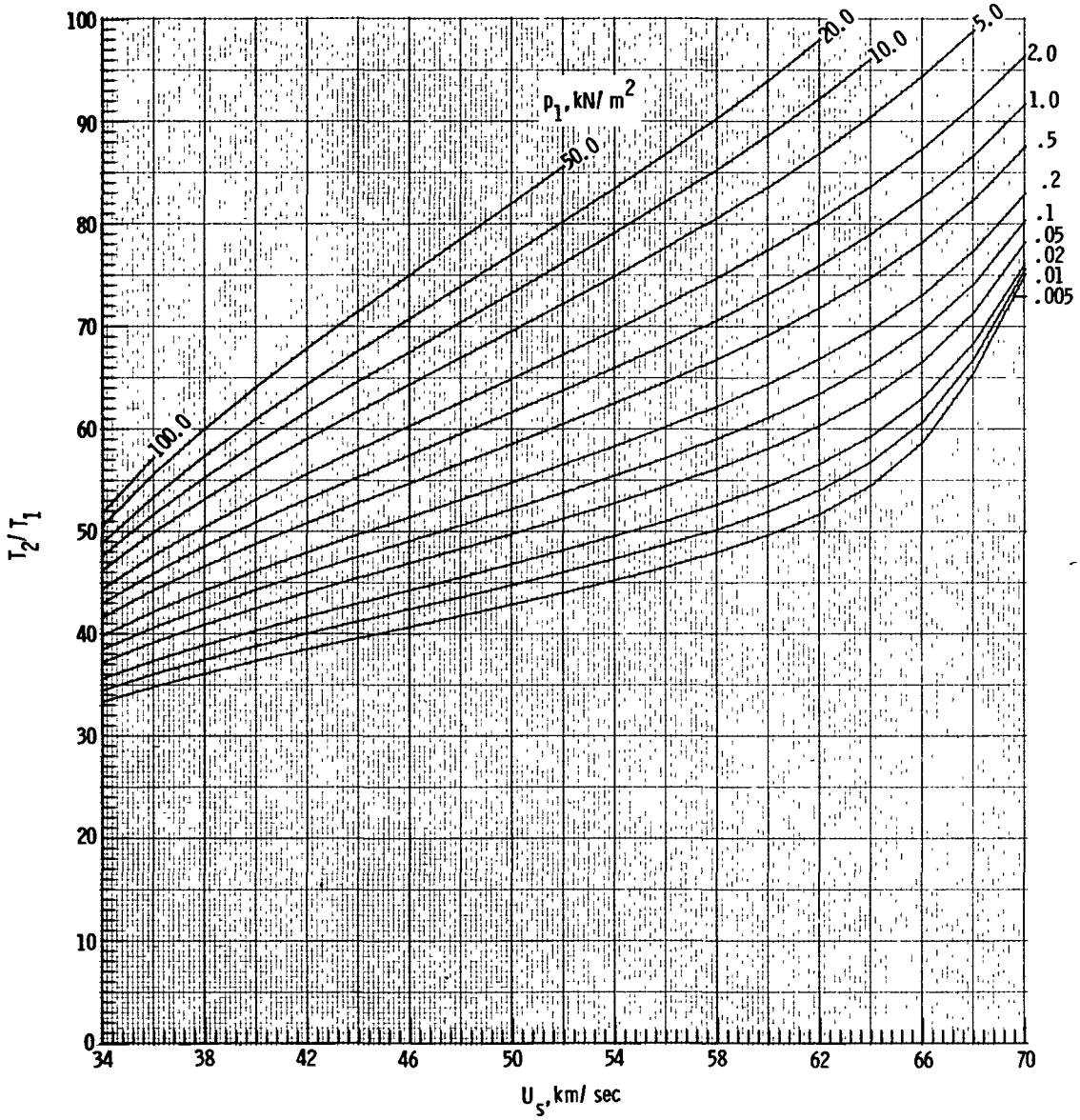
(a) Concluded.

Figure 3.- Continued.



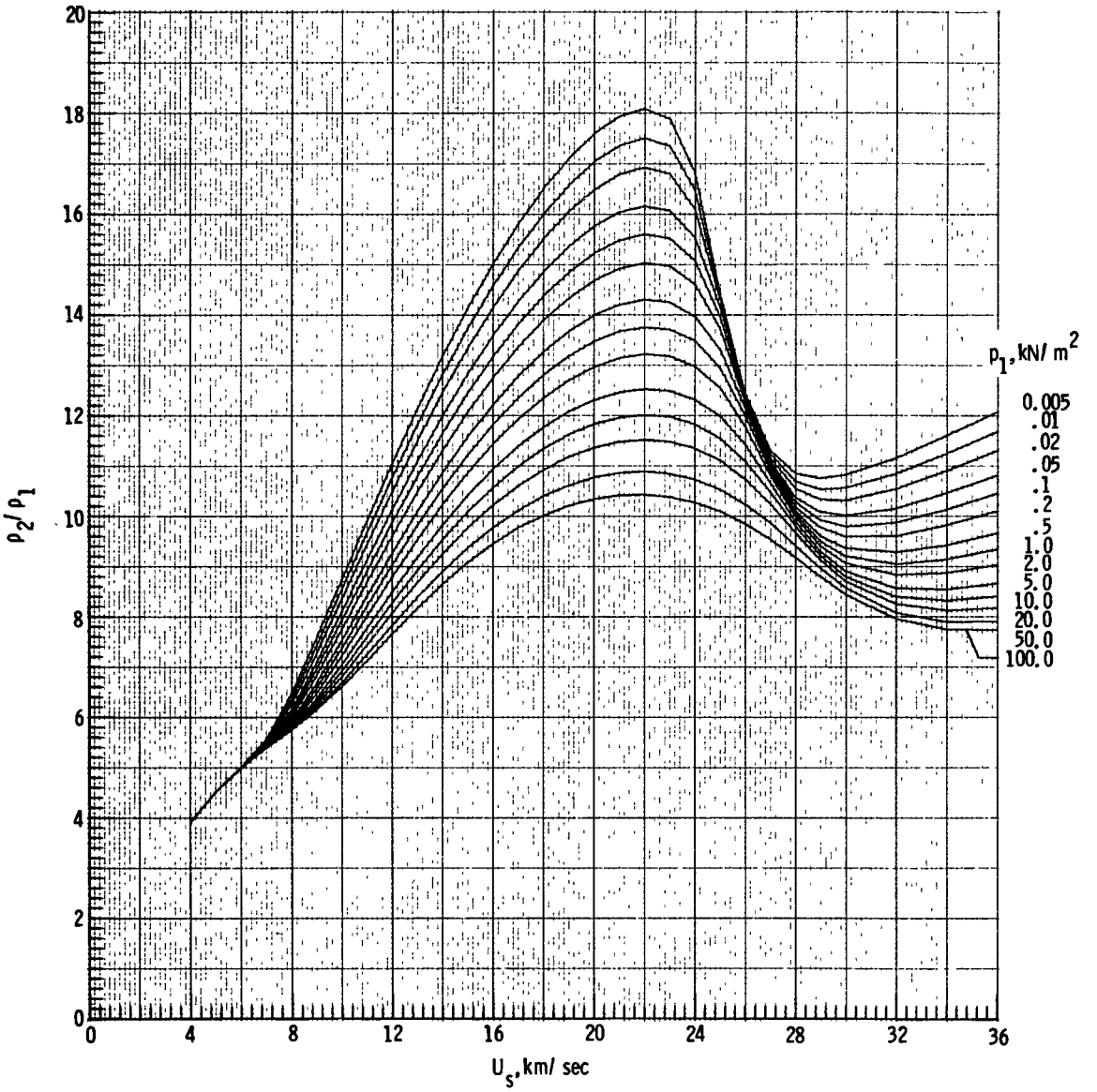
(b) Temperature T_2/T_1.

Figure 3.- Continued.



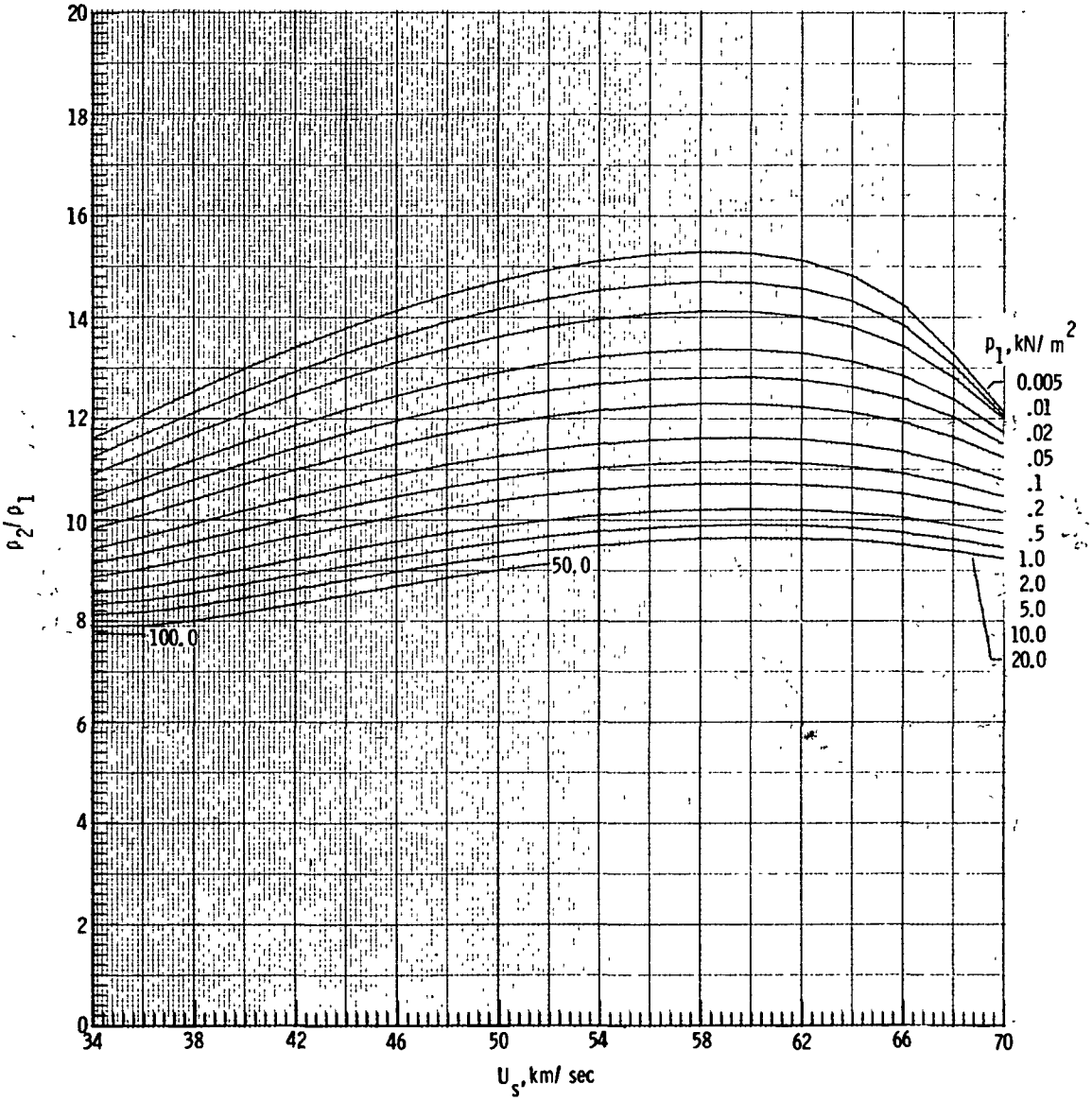
(b) Concluded.

Figure 3.- Continued.



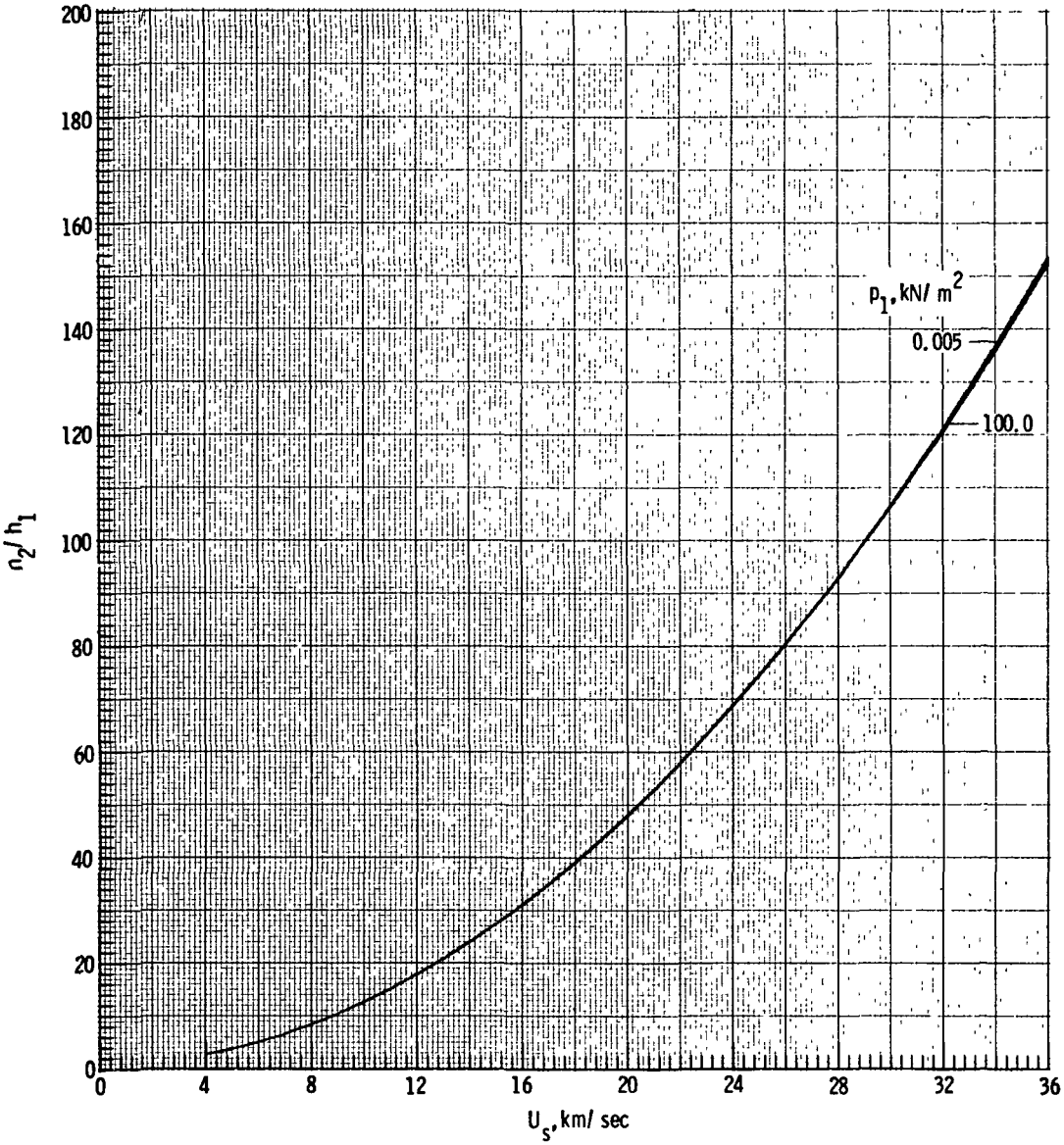
(c) Density ρ_2/ρ_1.

Figure 3.- Continued.



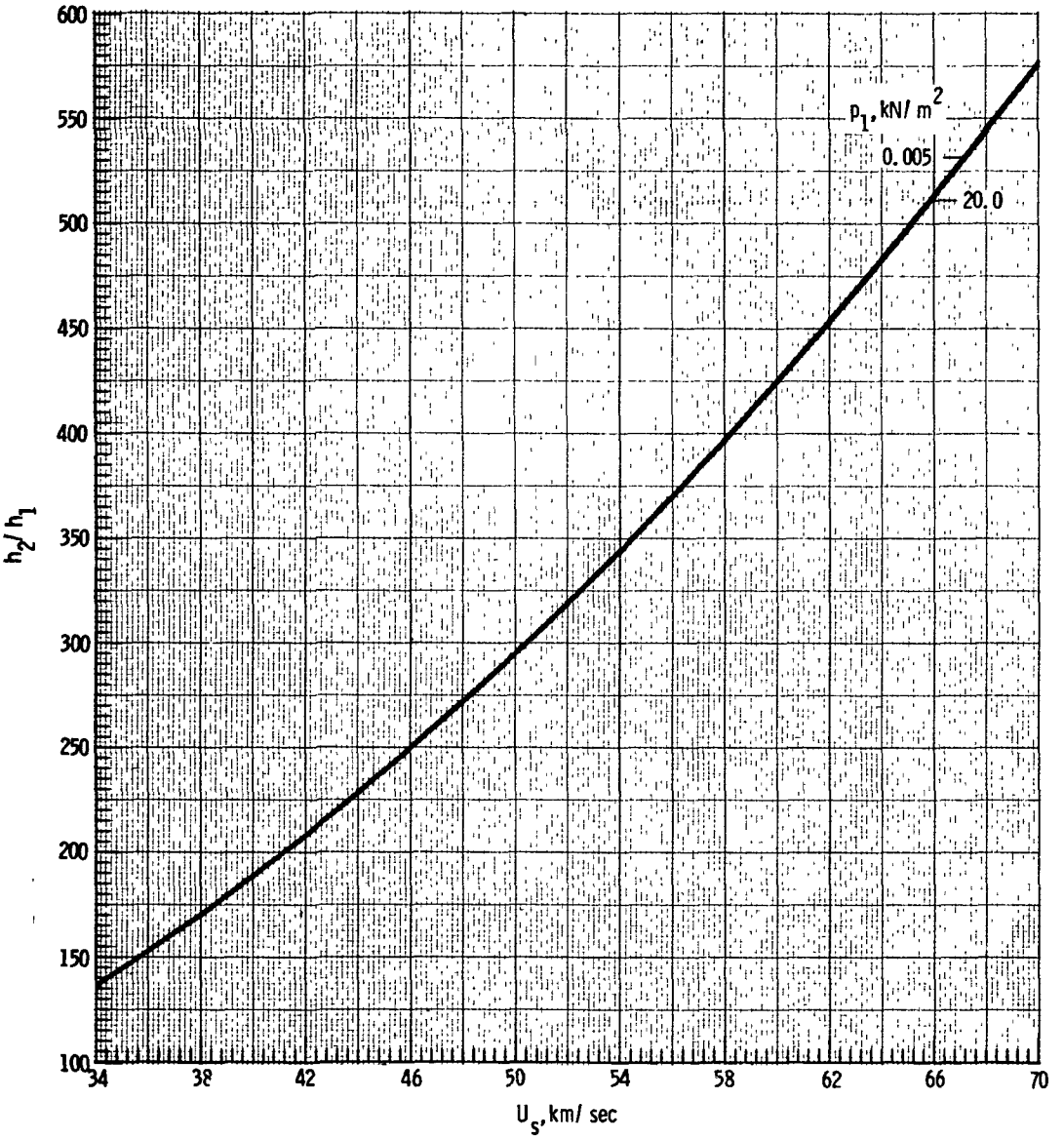
(c) Concluded.

Figure 3.- Continued.



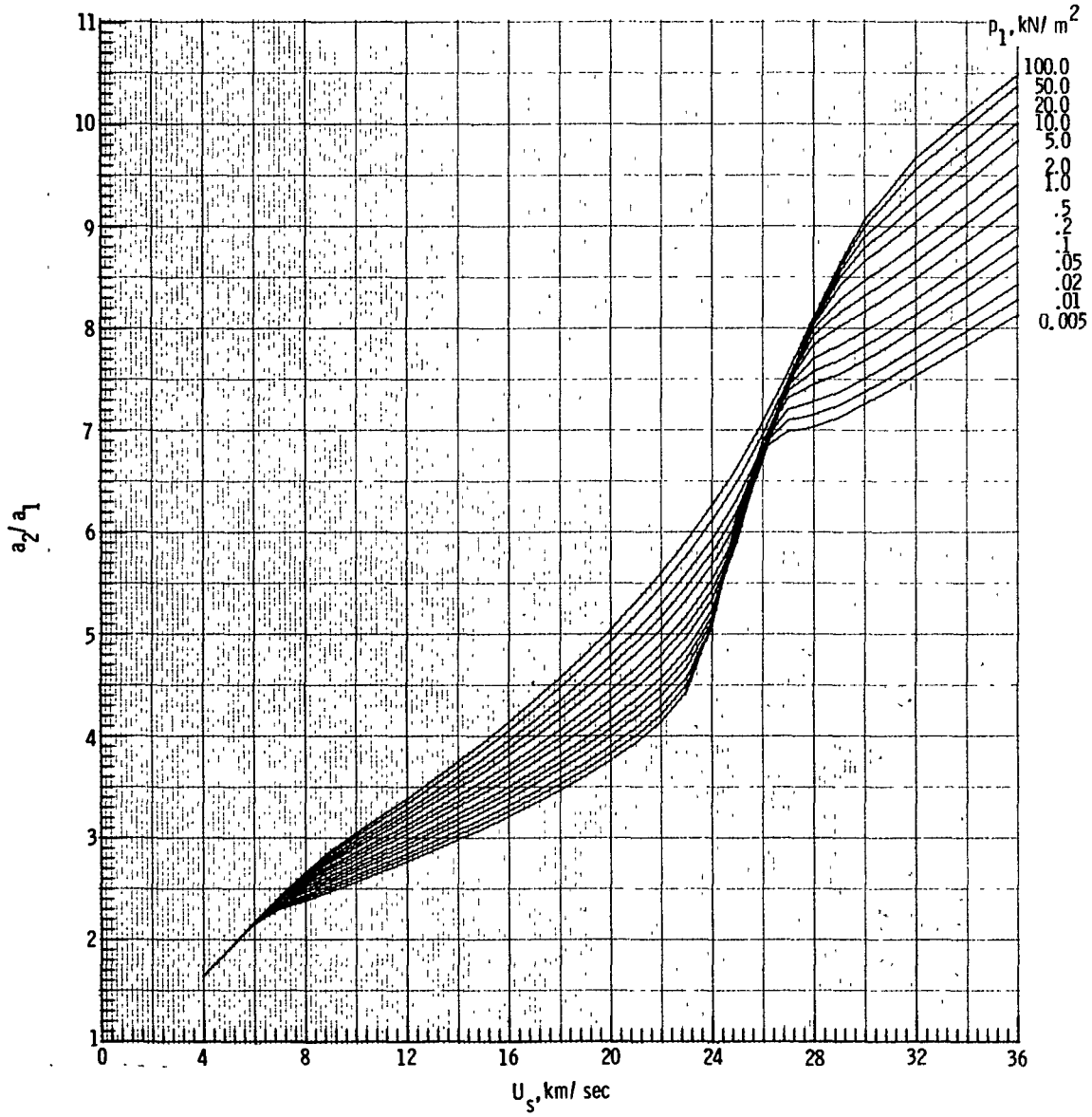
(d) Enthalpy h_2/h_1.

Figure 3.- Continued.



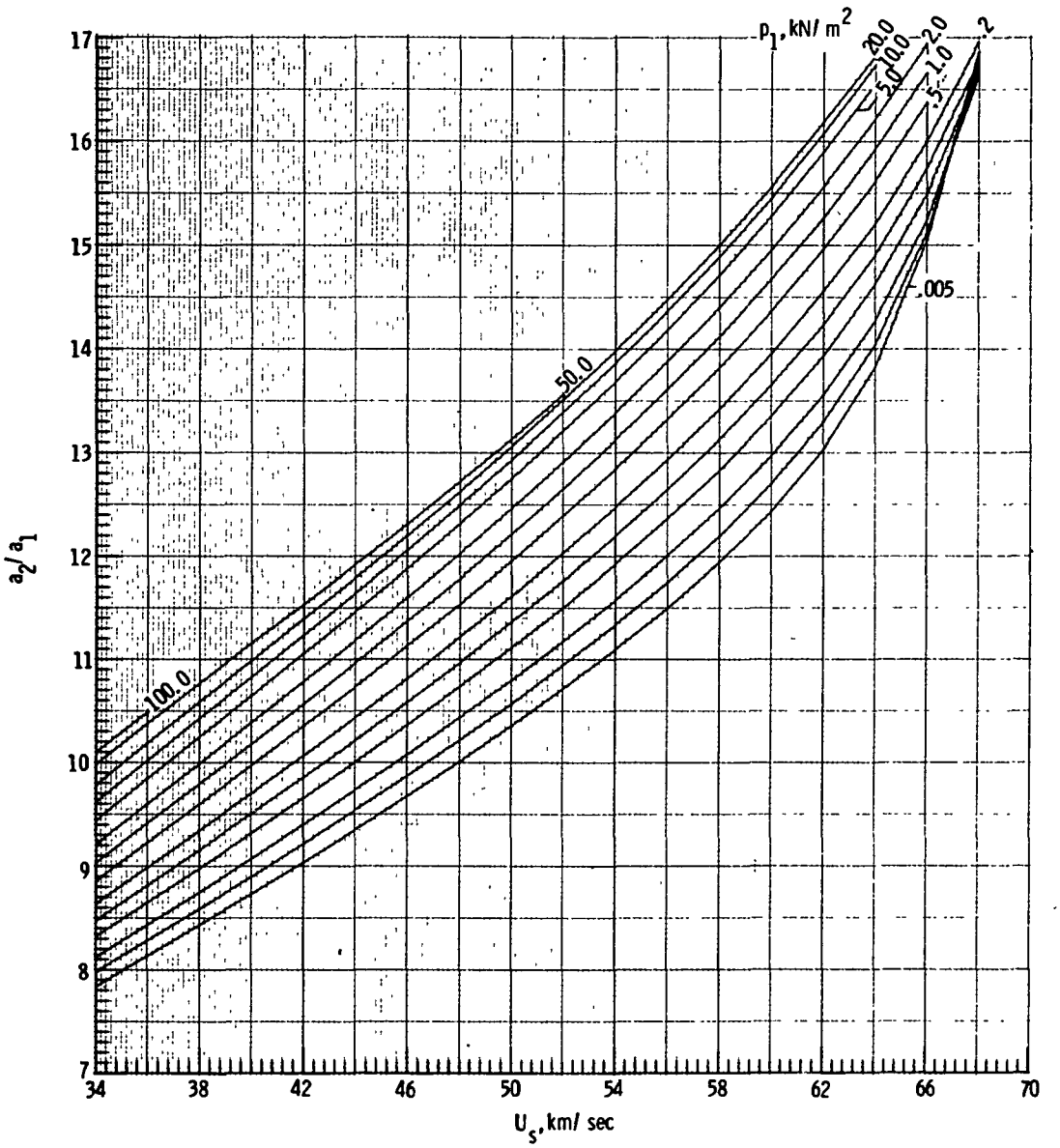
(d) Concluded.

Figure 3.- Continued.



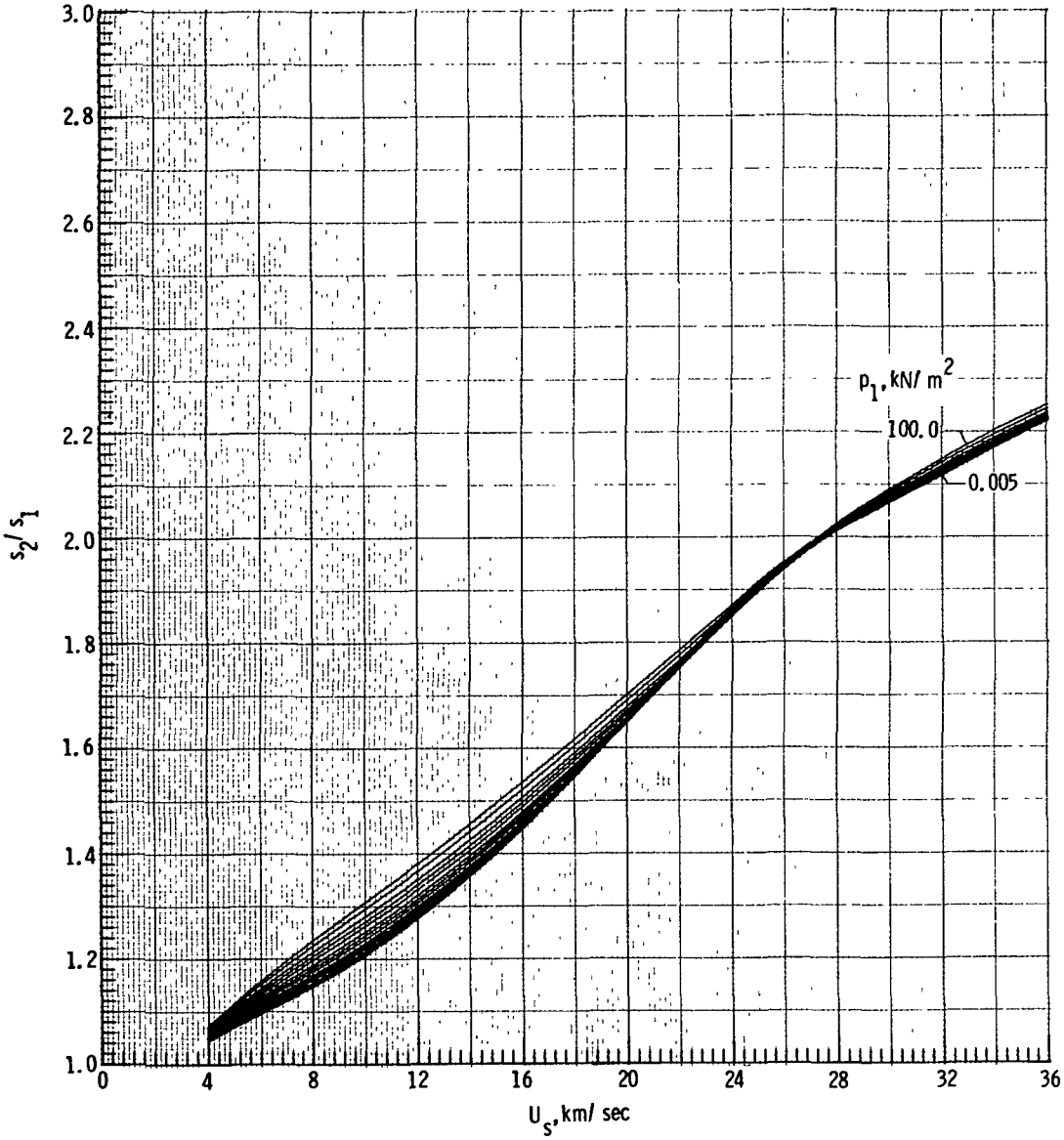
(e) Speed of sound a_2/a_1.

Figure 3.- Continued.



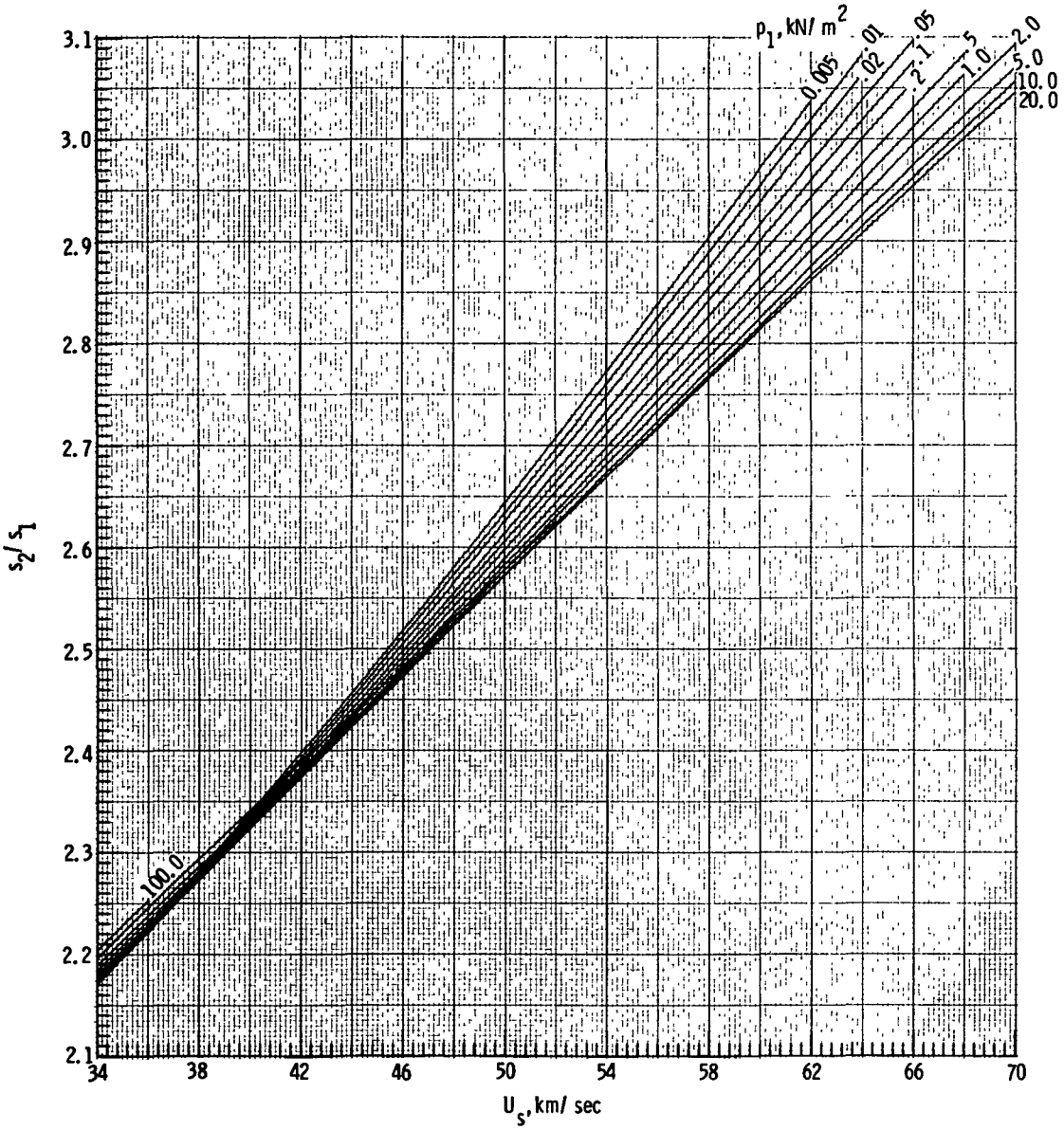
(e) Concluded.

Figure 3.- Continued.



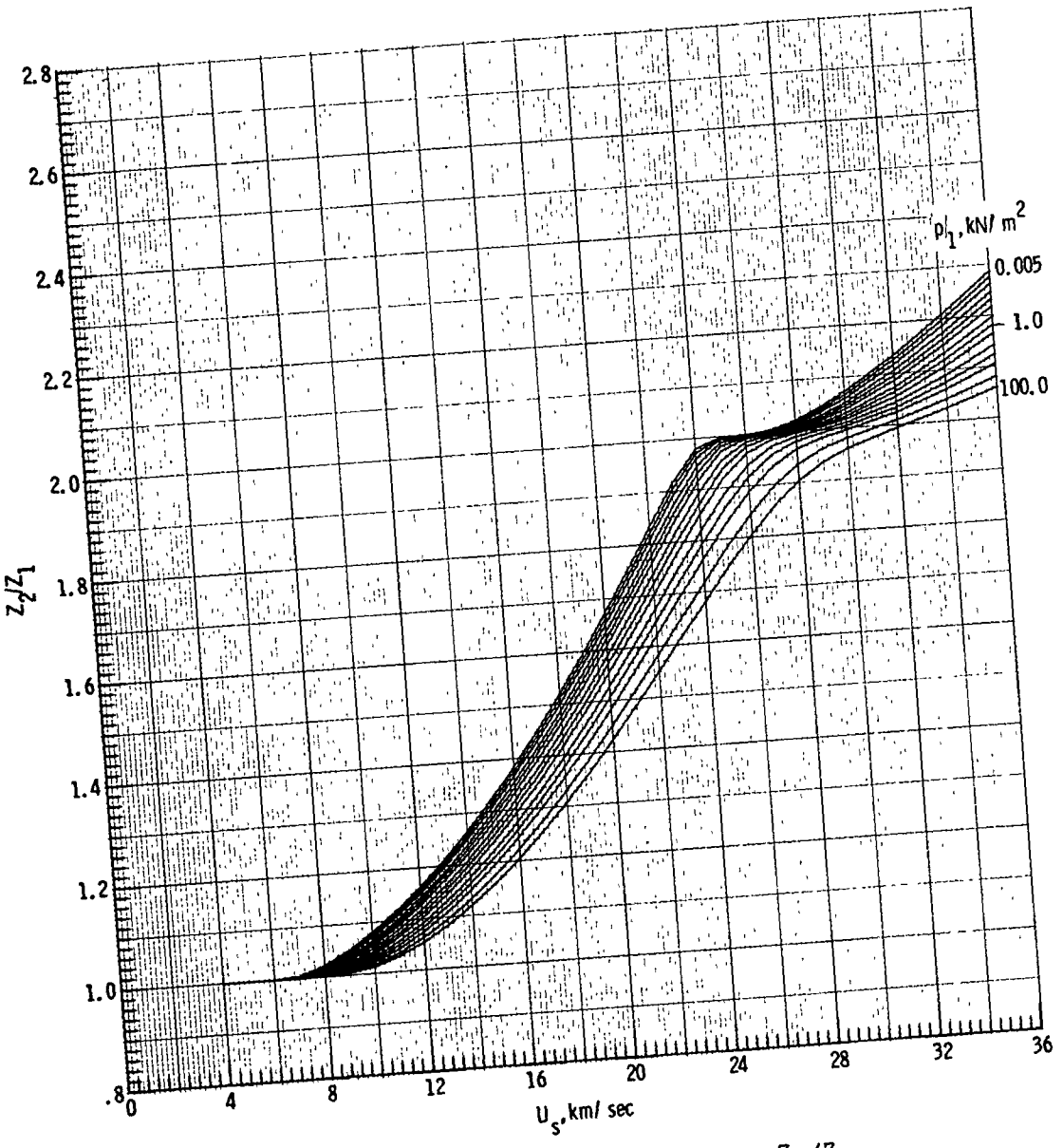
(f) Entropy s_2/s_1.

Figure 3.- Continued.



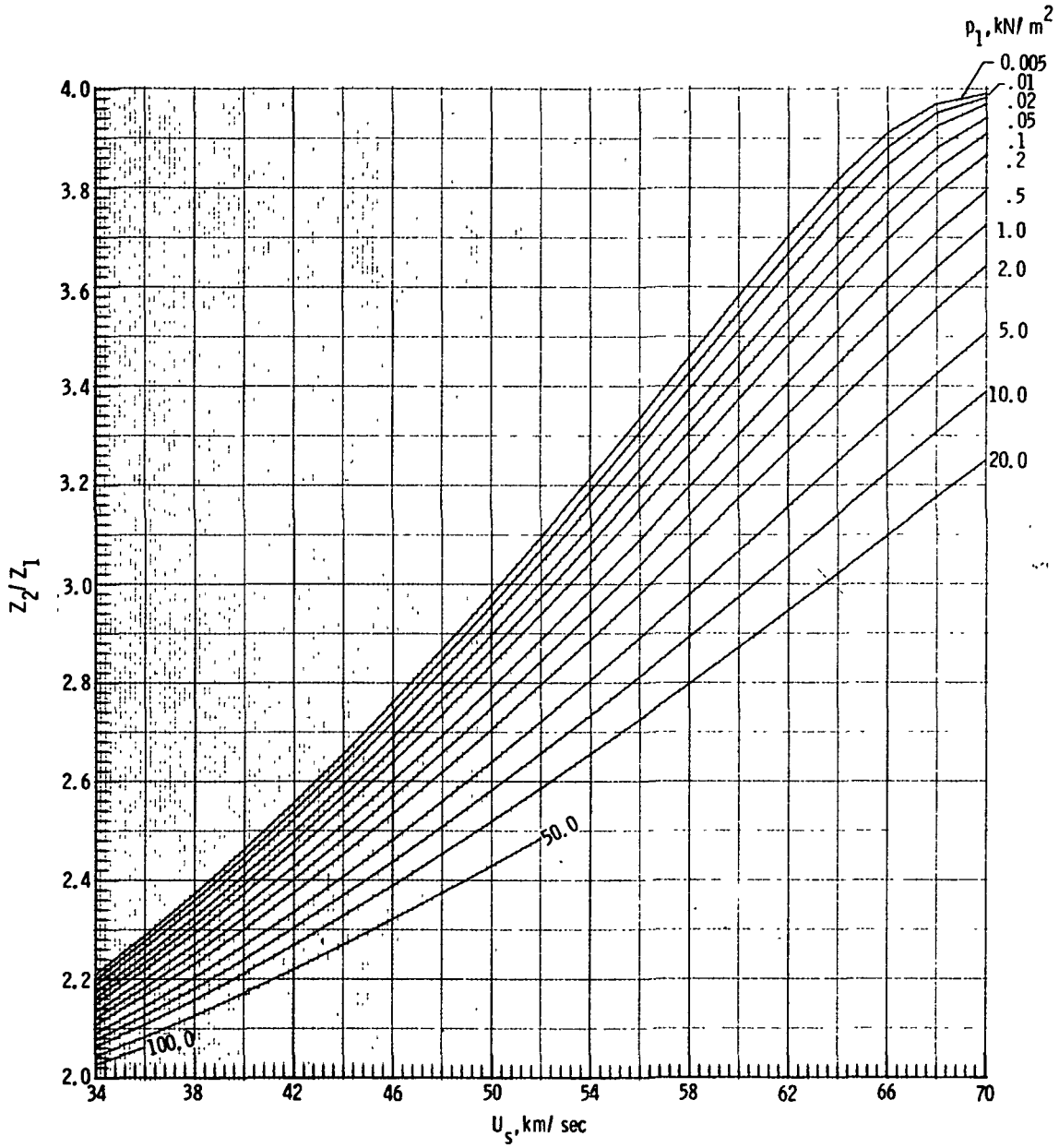
(f) Concluded.

Figure 3.- Continued.



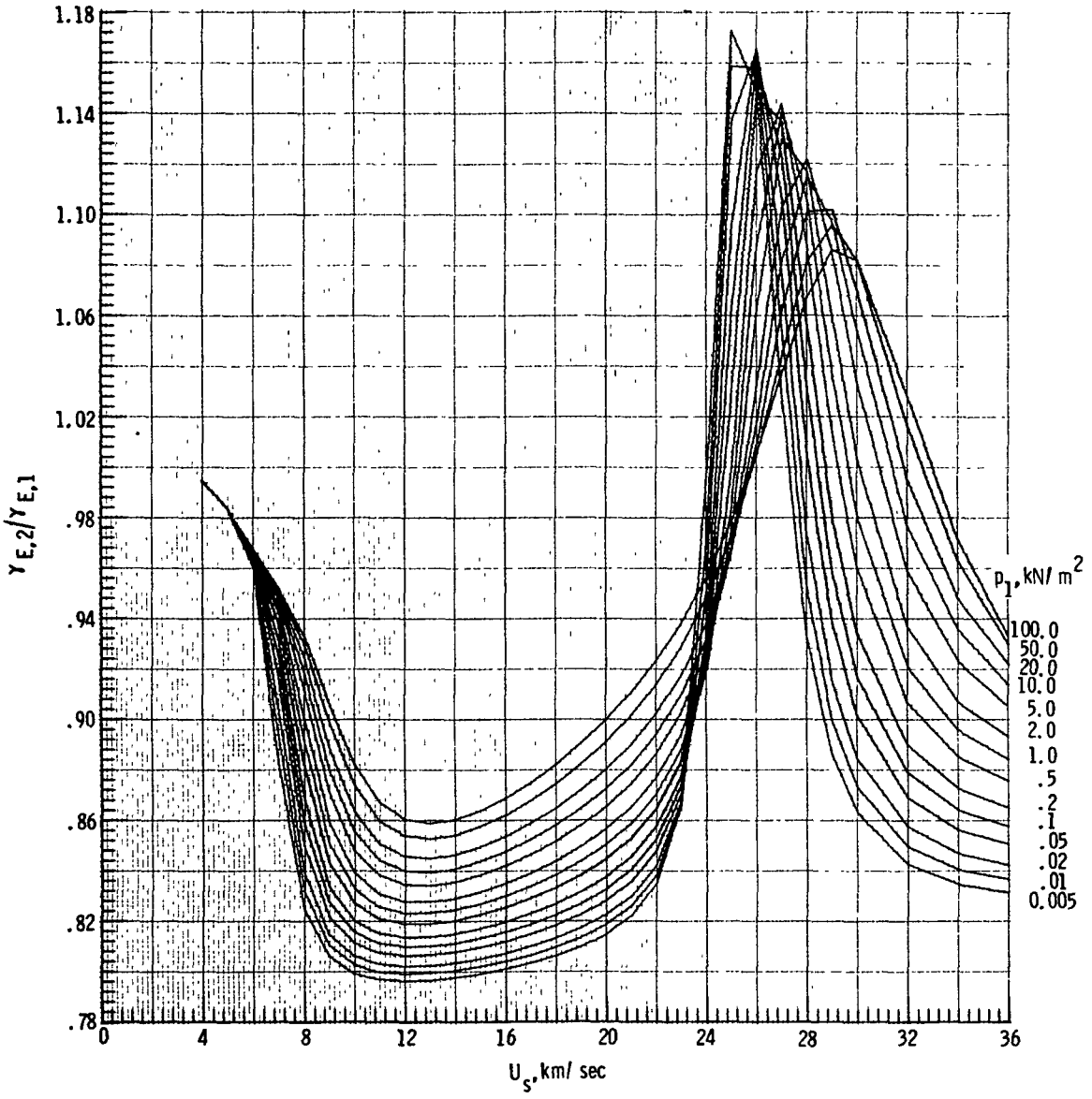
(g) Molecular-weight ratio Z_2/Z_1.

Figure 3.- Continued.



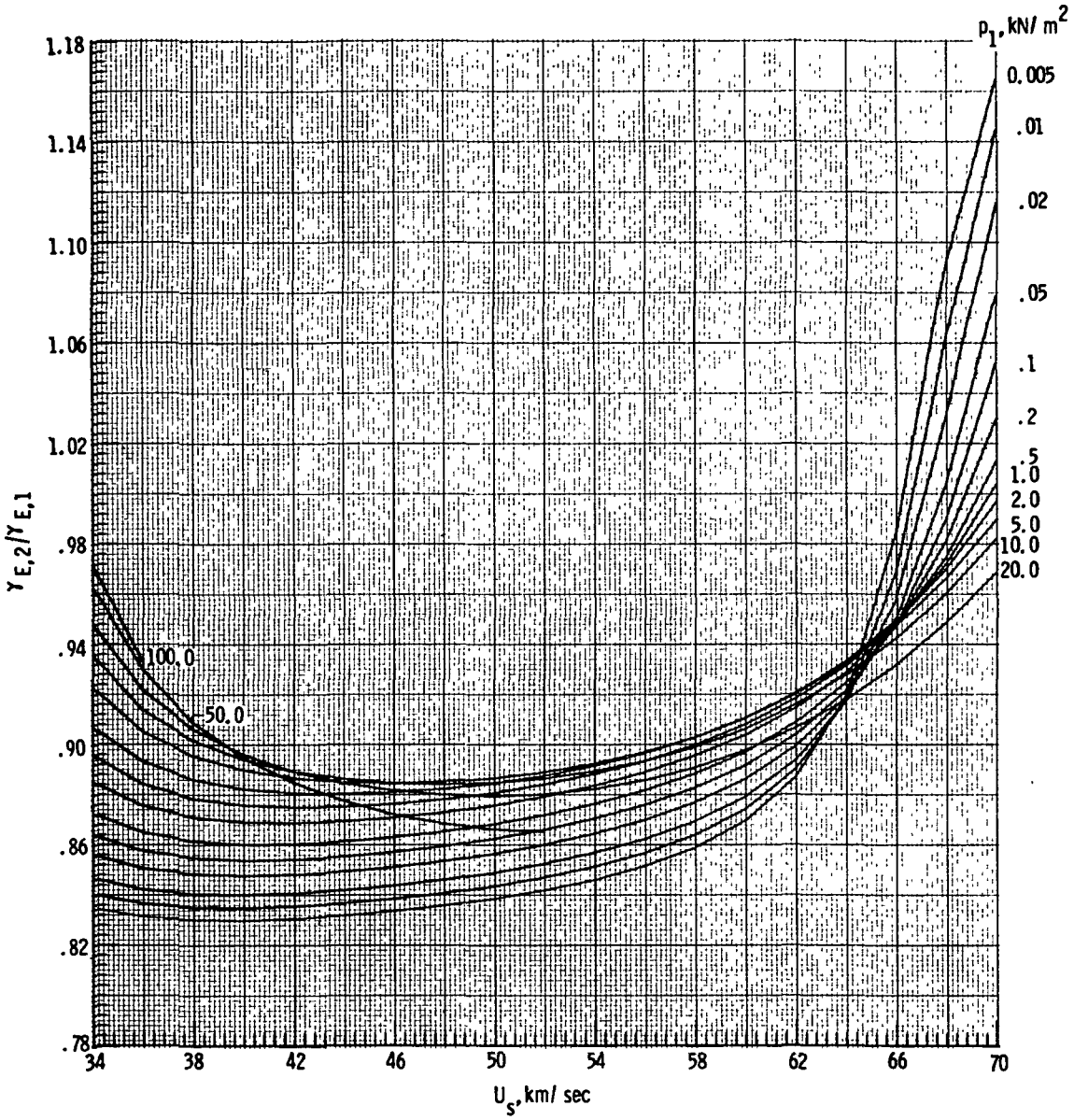
(g) Concluded.

Figure 3.- Continued.



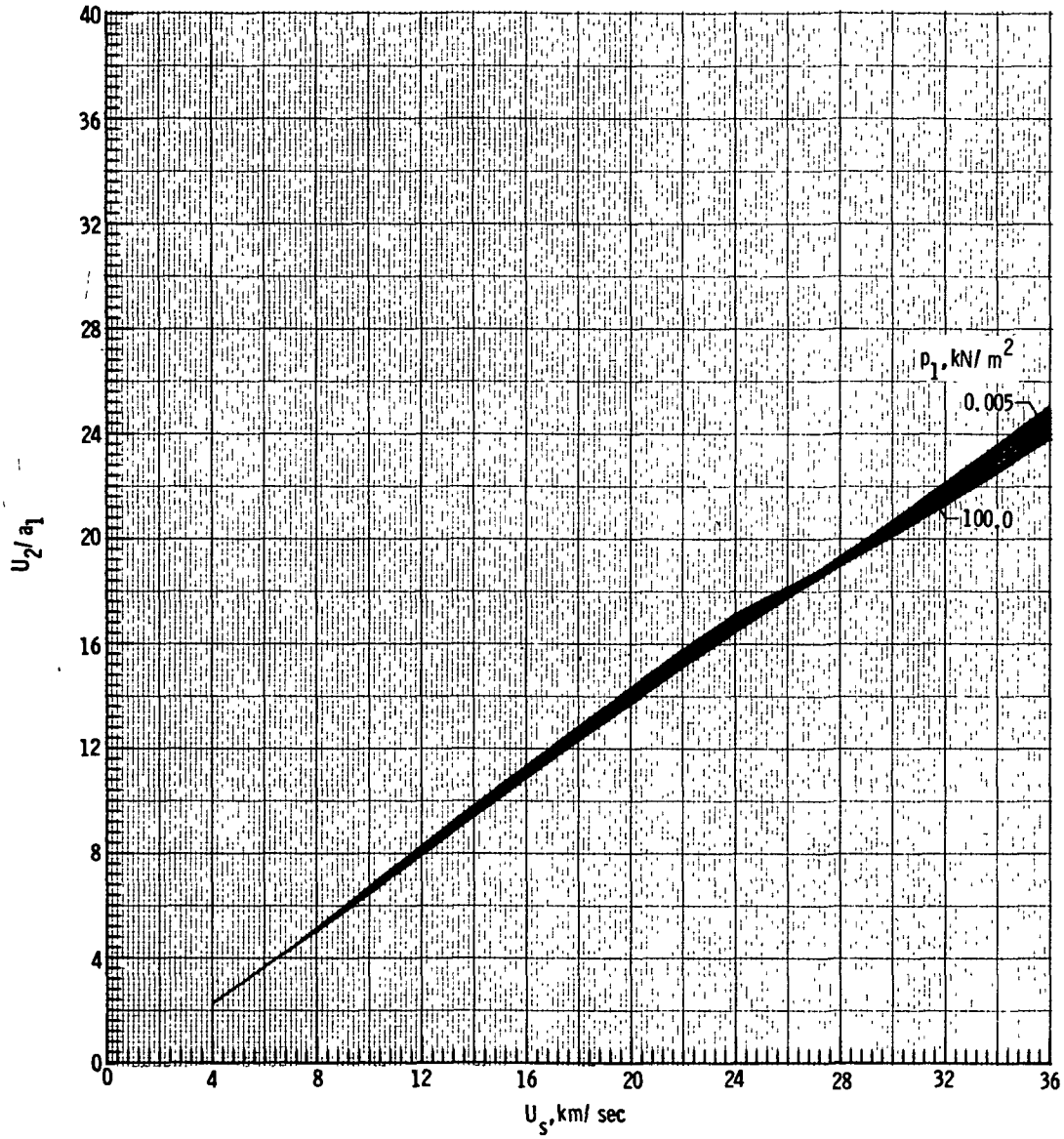
(h) Isentropic exponent $\gamma_{E,2}/\gamma_{E,1}$.

Figure 3.- Continued.



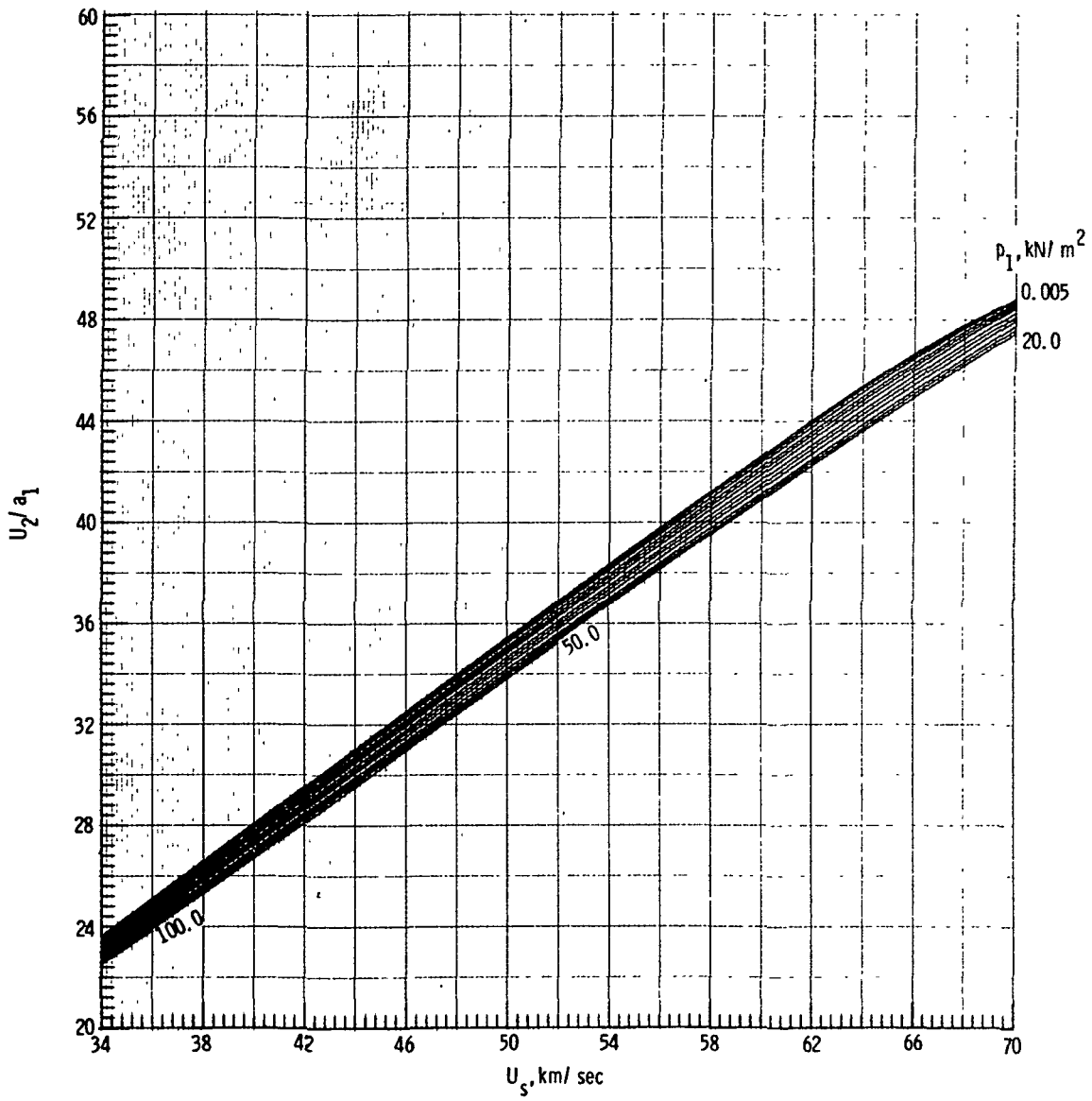
(h) Concluded.

Figure 3.- Continued.



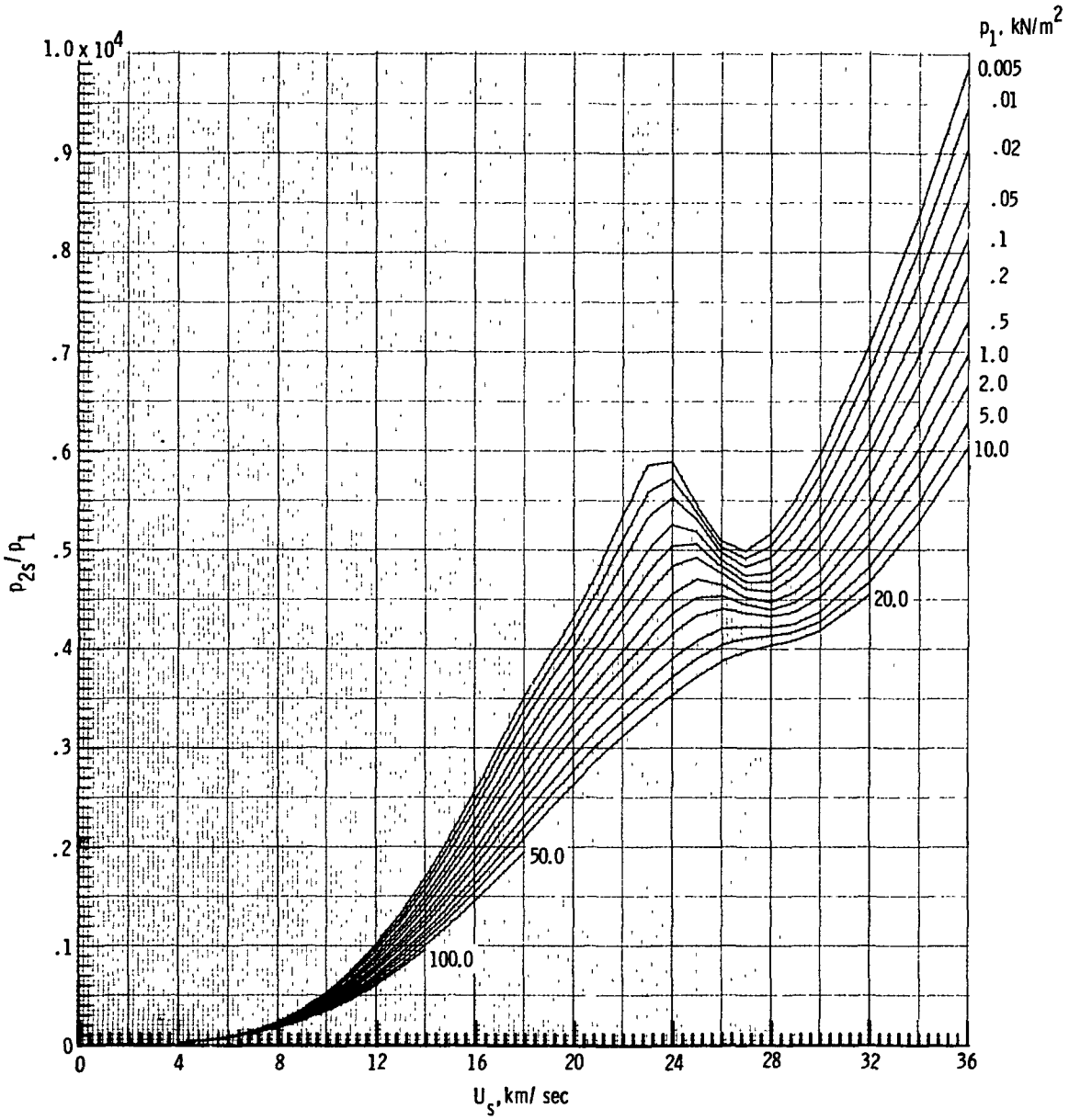
(i) Flow velocity U_2/a_1.

Figure 3.- Continued.



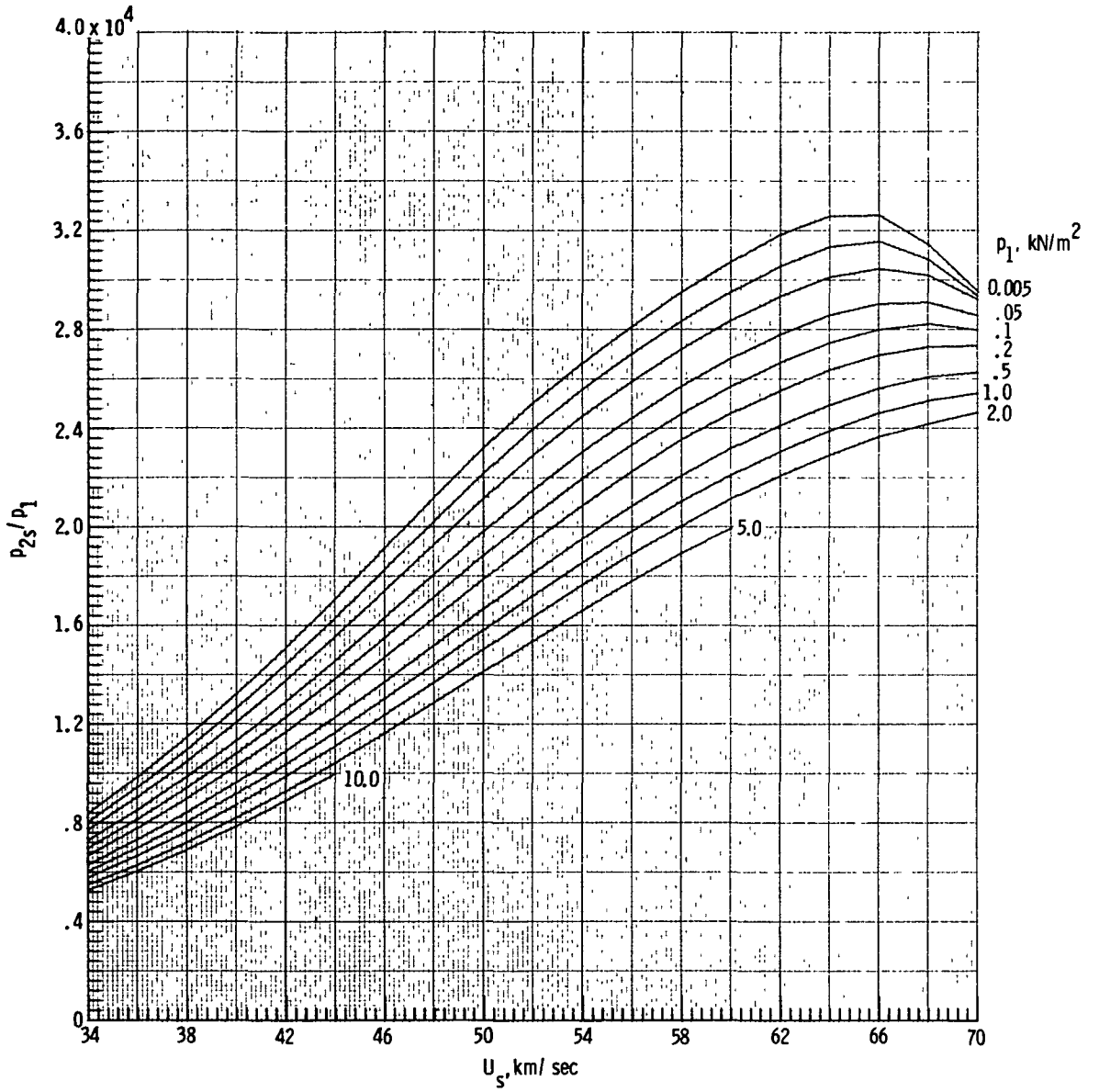
(i) Concluded.

Figure 3.- Concluded.



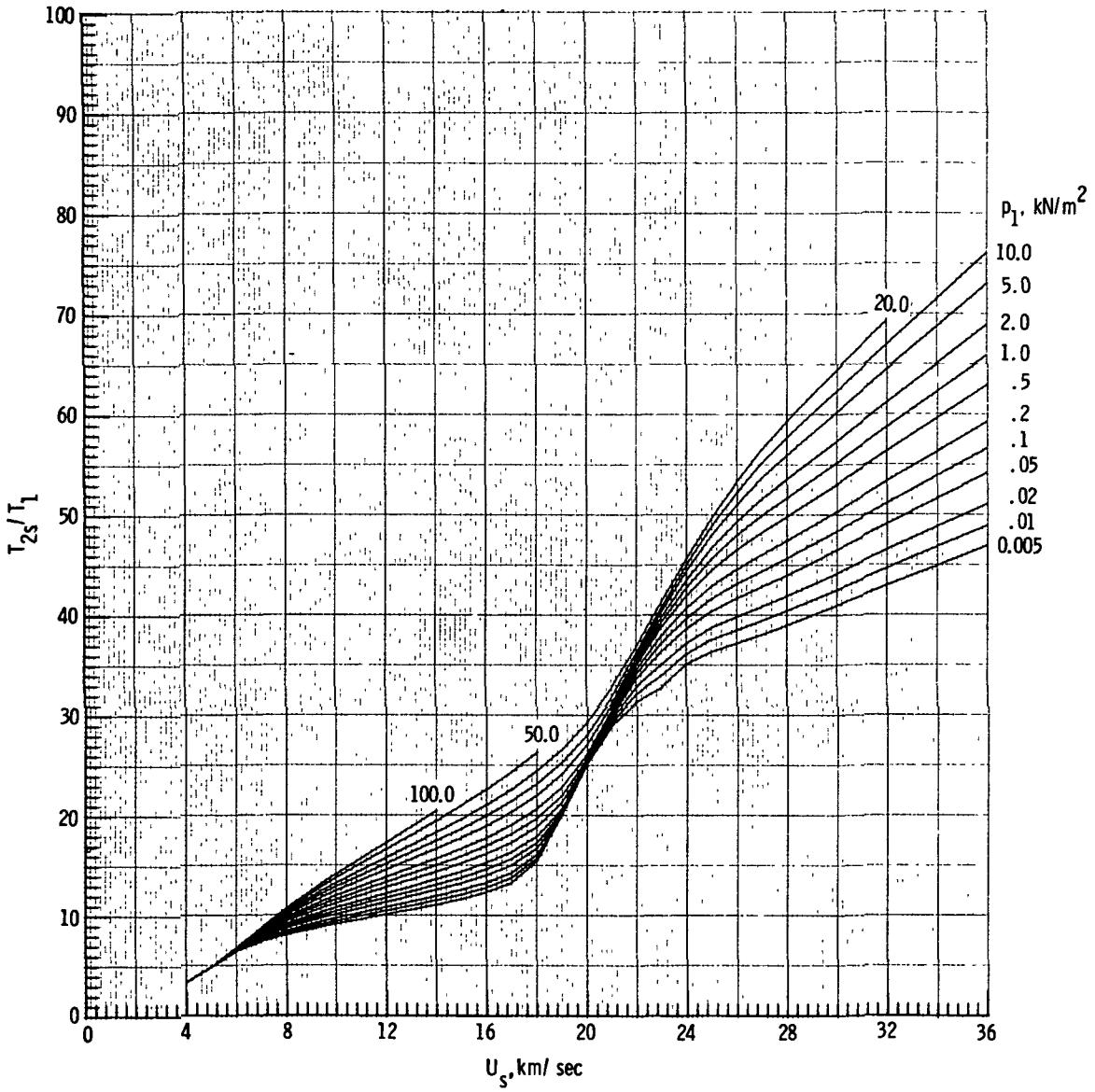
(a) Pressure p_{2s}/p_1.

Figure 4.- Thermodynamic properties and flow velocity behind a standing normal shock for pure hydrogen.



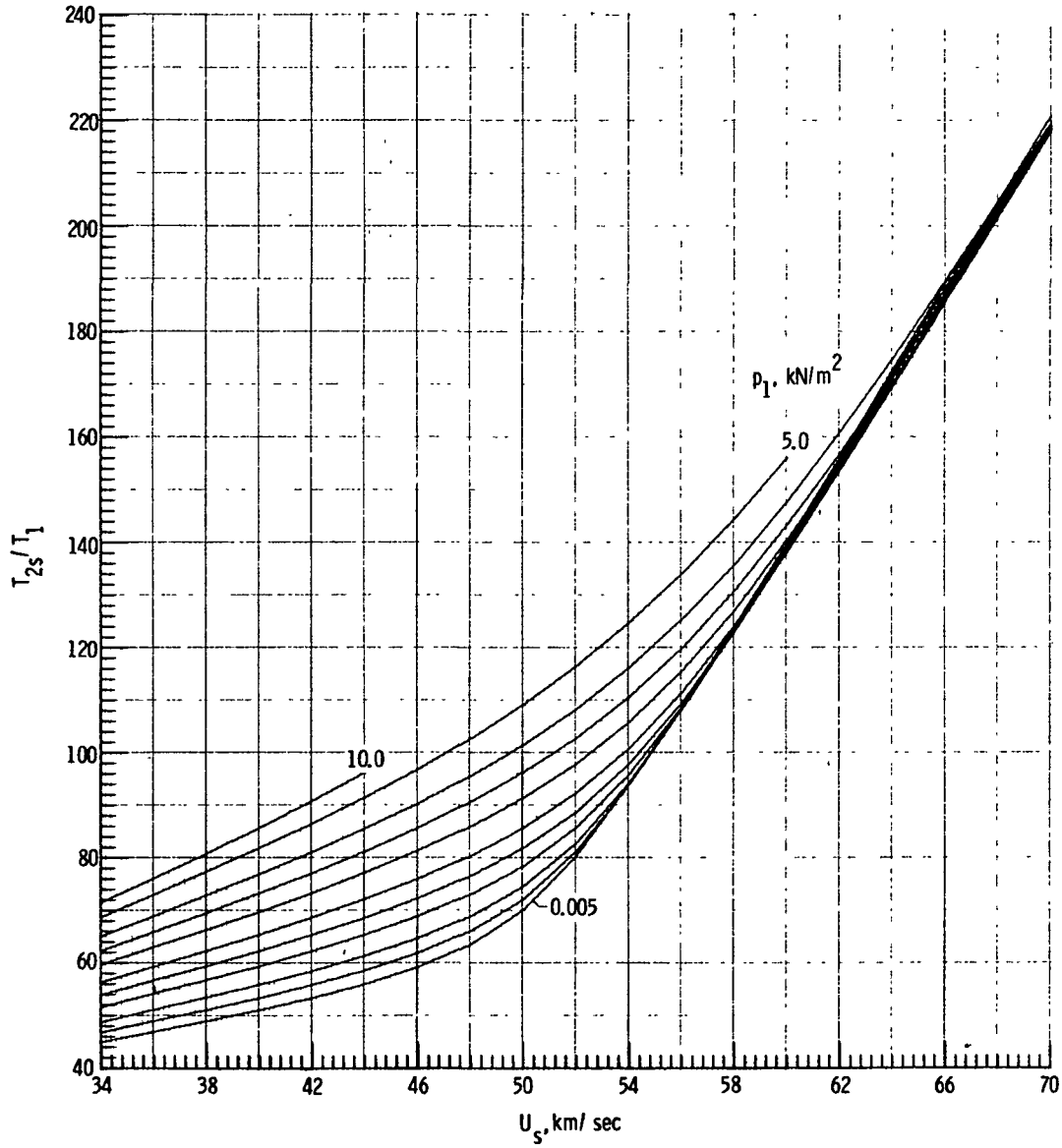
(a) Concluded.

Figure 4.- Continued.



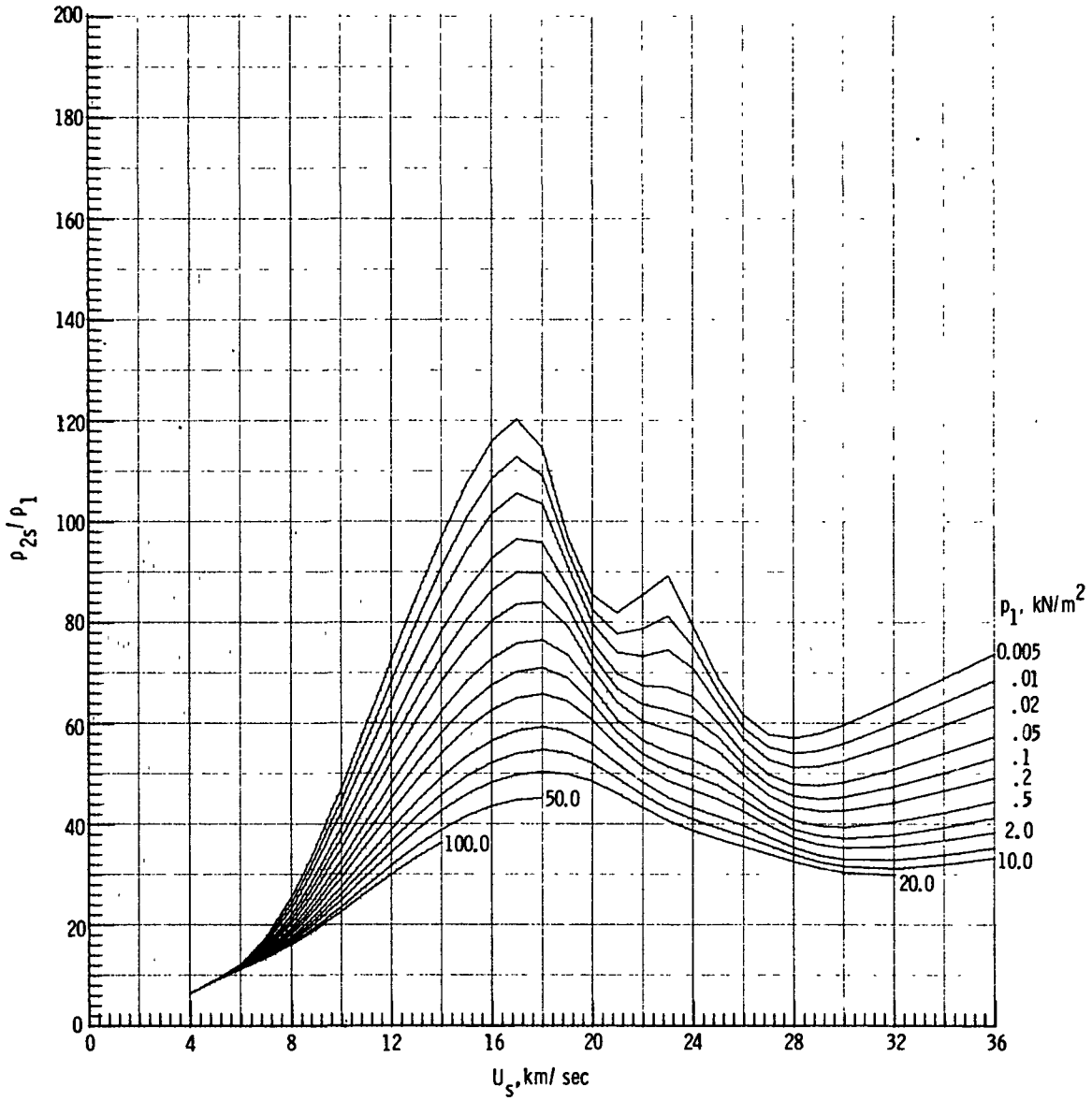
(b) Temperature T_{2s}/T_1.

Figure 4.- Continued.



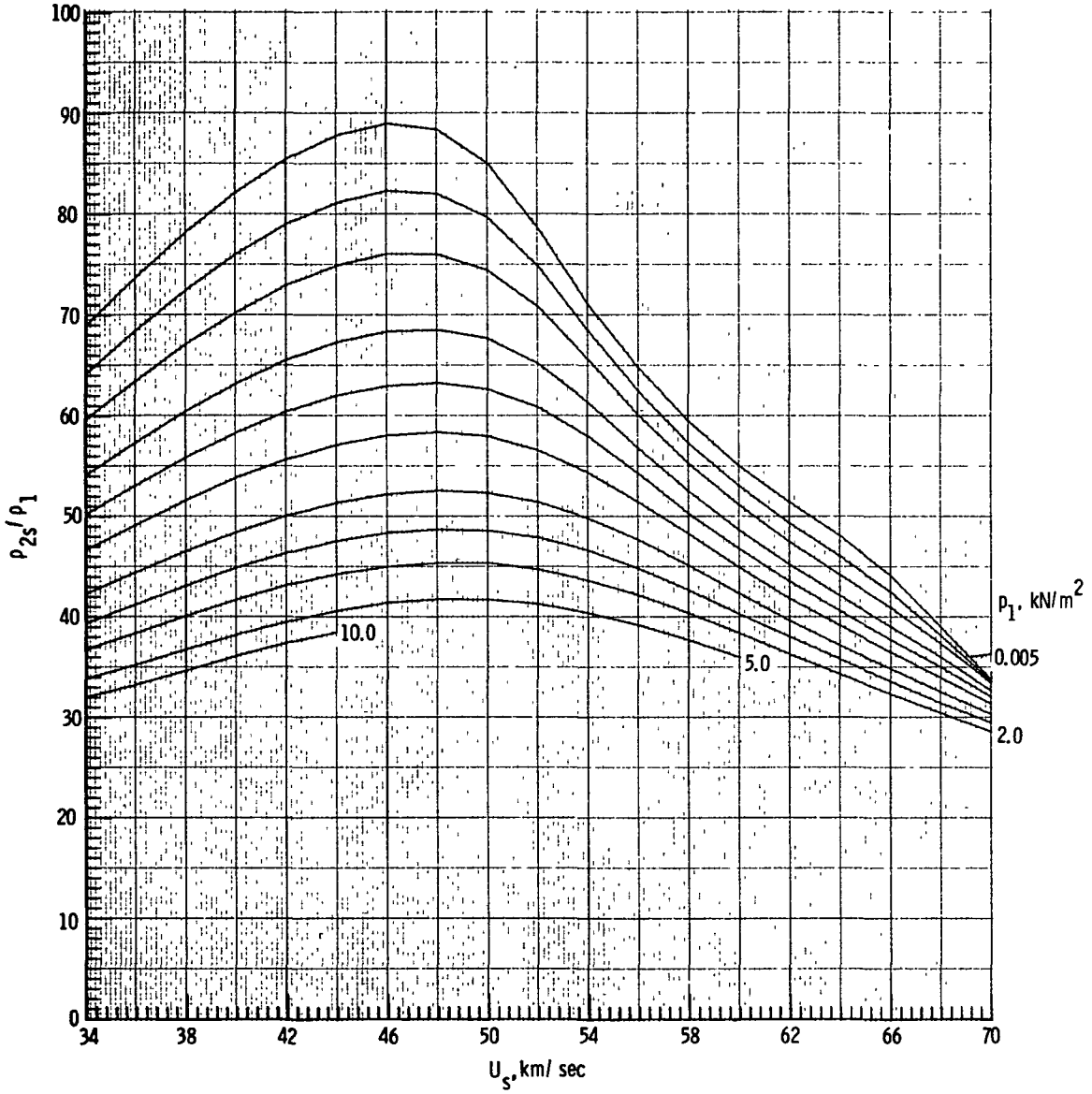
(b) Concluded.

Figure 4.- Continued.



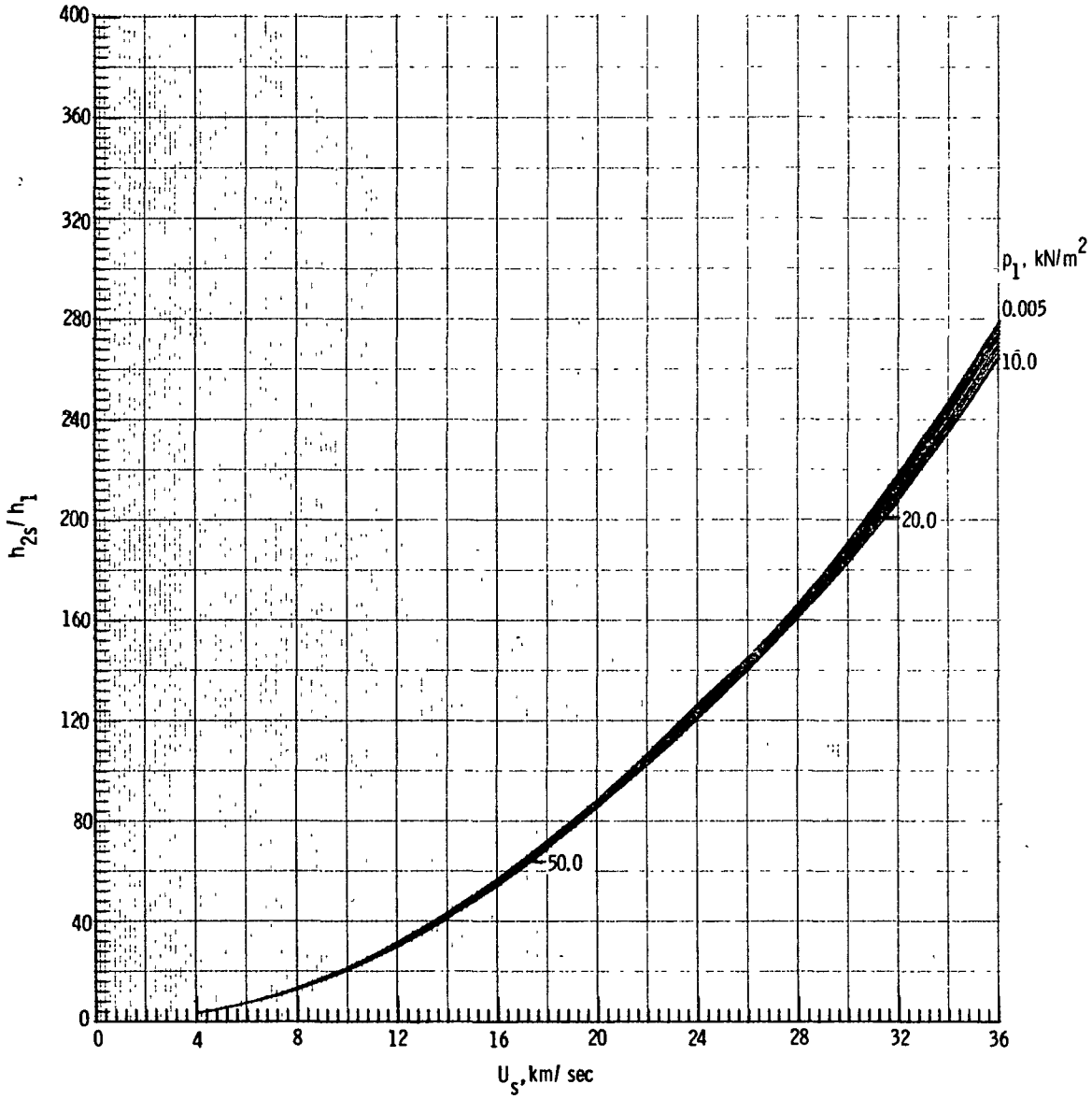
(c) Density ρ_{2s}/ρ_1.

Figure 4.- Continued.



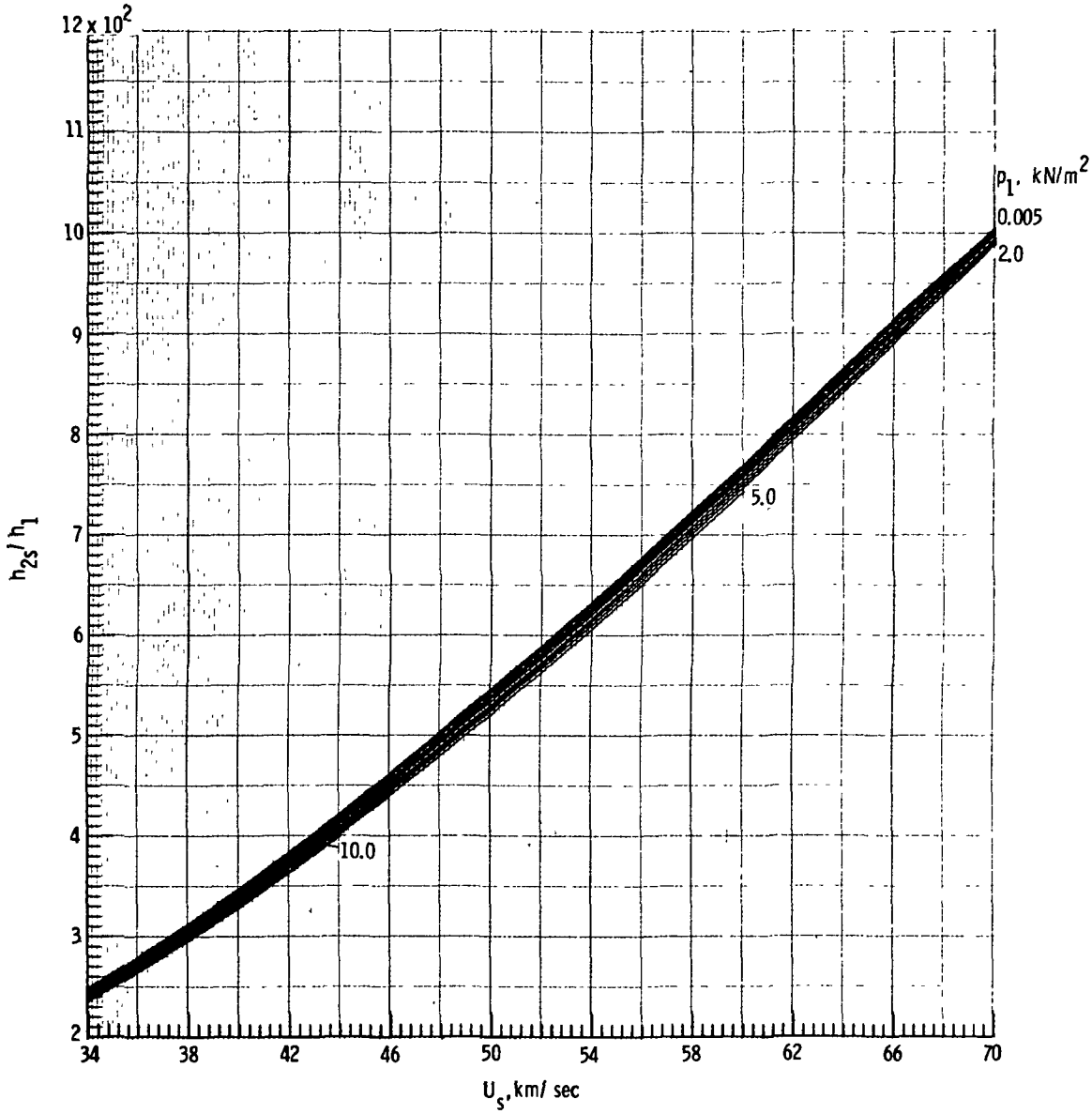
(c) Concluded.

Figure 4.- Continued.



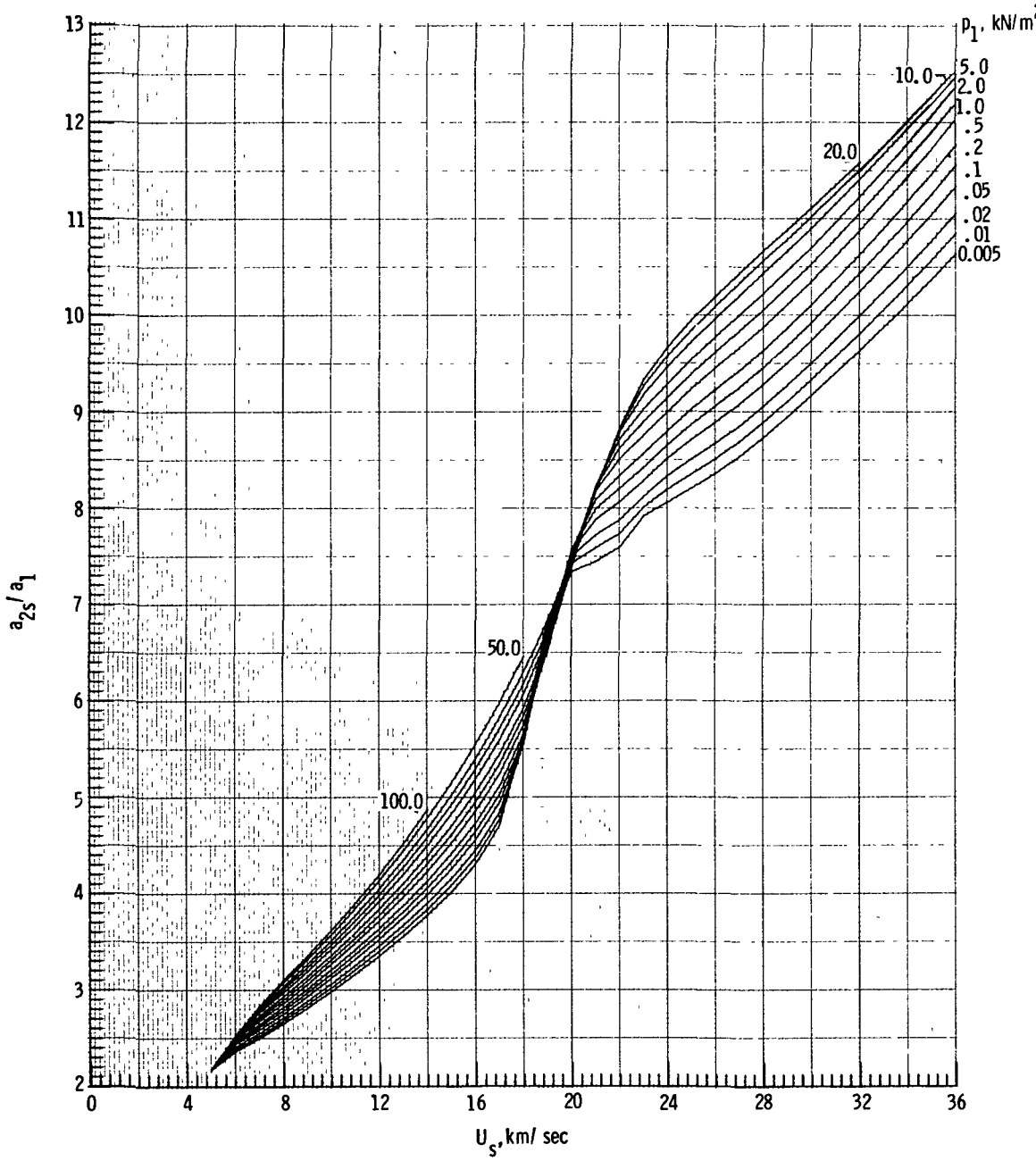
(d) Enthalpy h_{2s}/h_1.

Figure 4.- Continued.



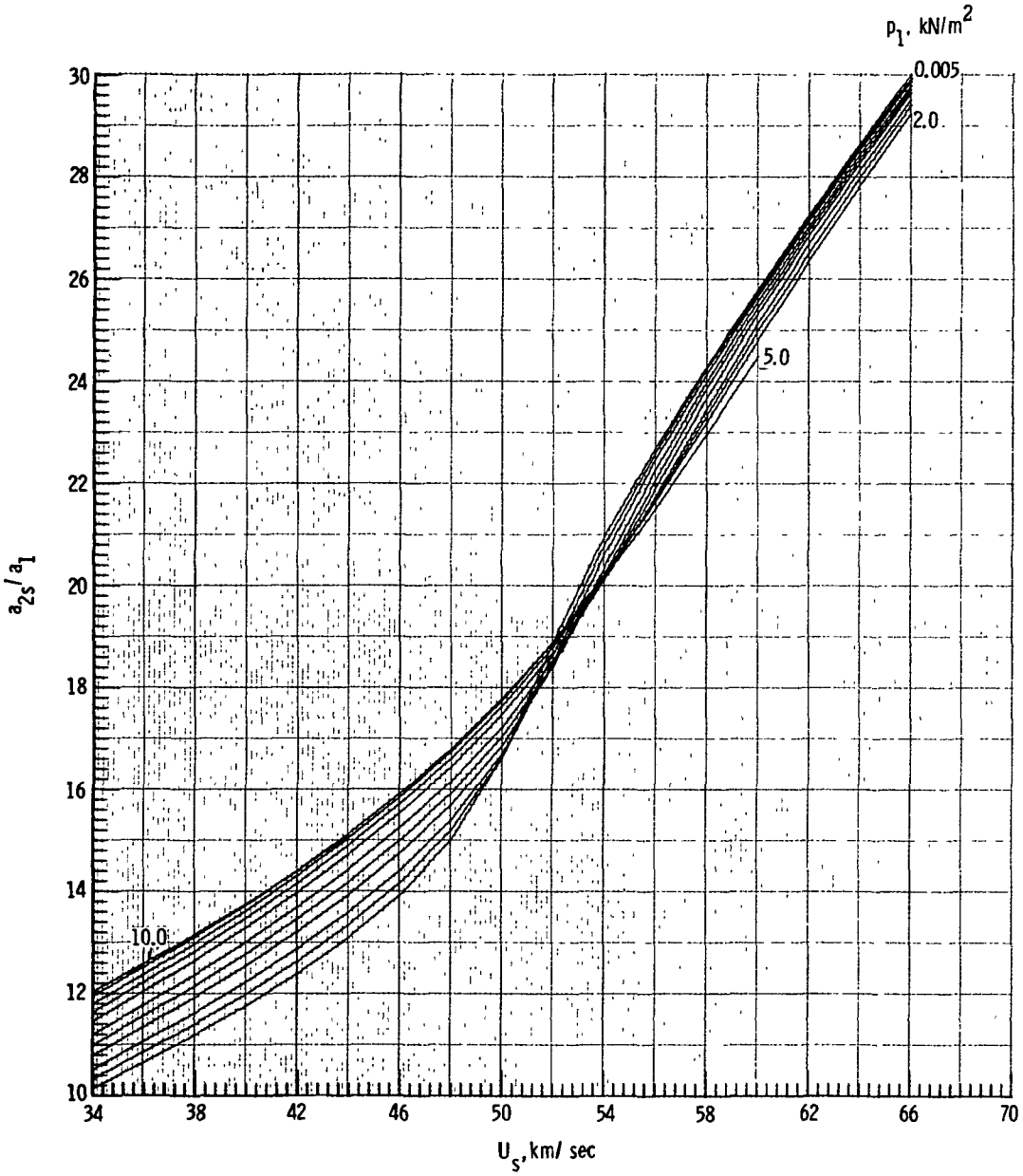
(d) Concluded.

Figure 4.- Continued.



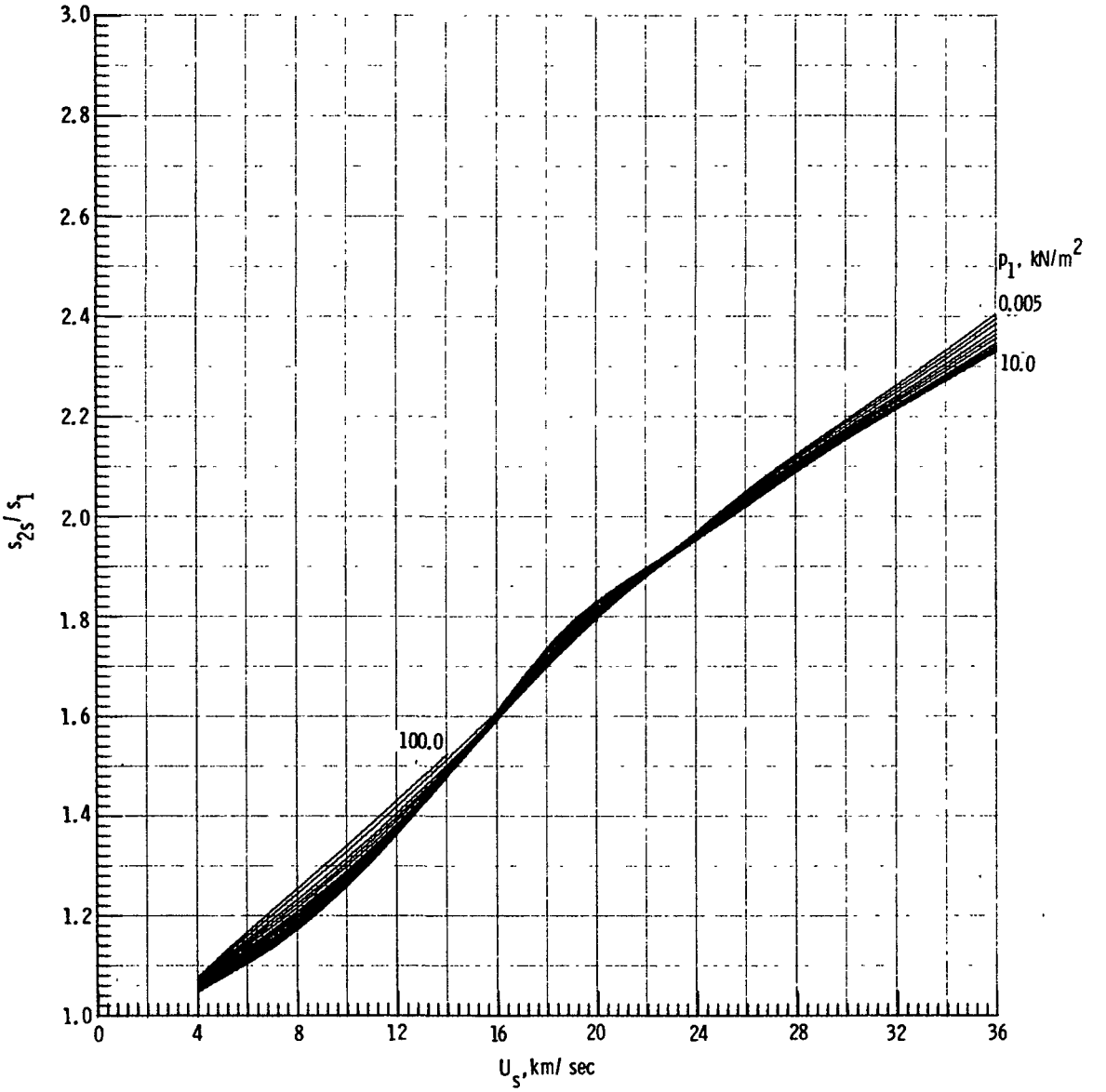
(e) Speed of sound a_{2s}/a_1.

Figure 4.- Continued.



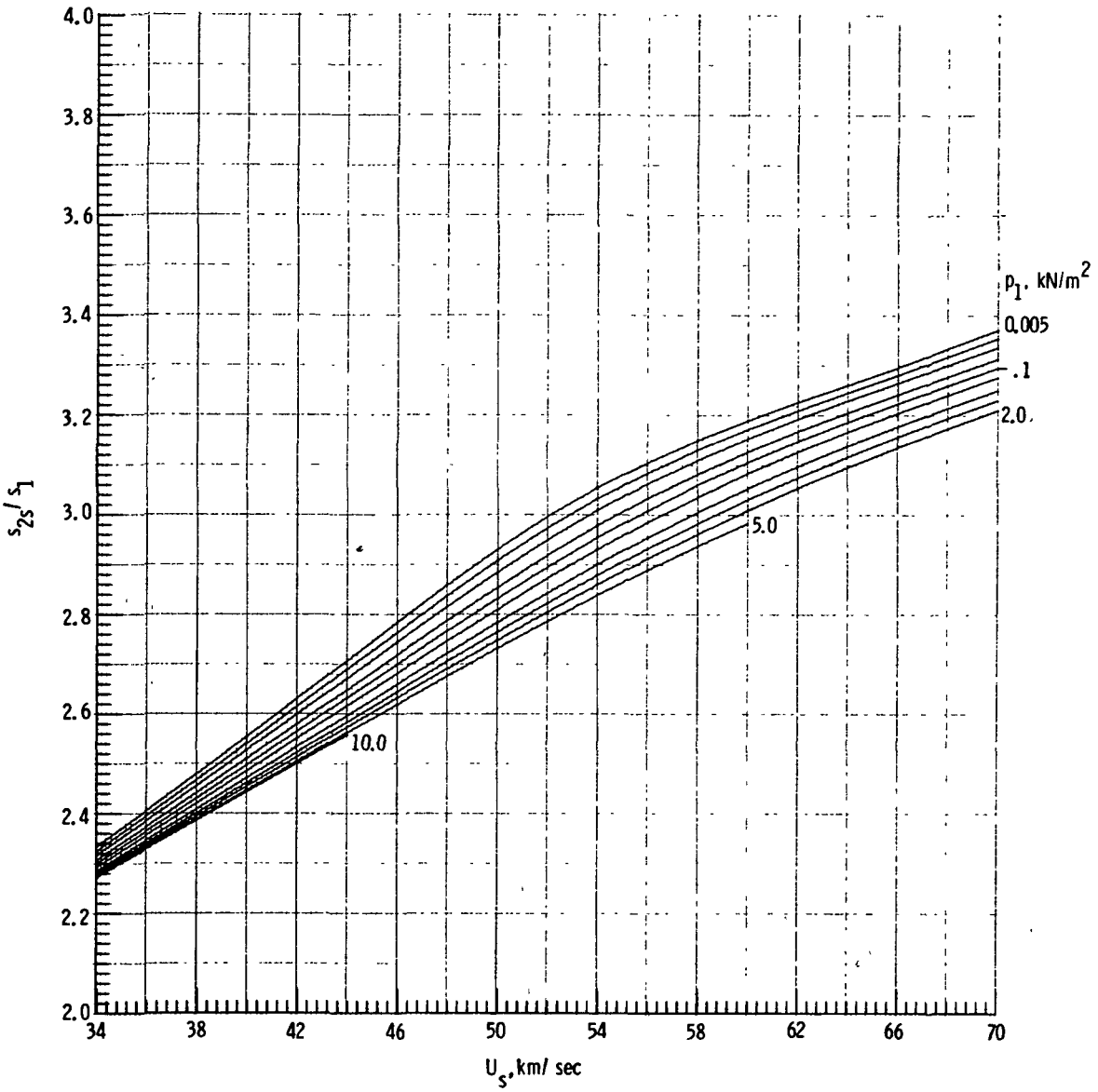
(e) Concluded.

Figure 4.- Continued.



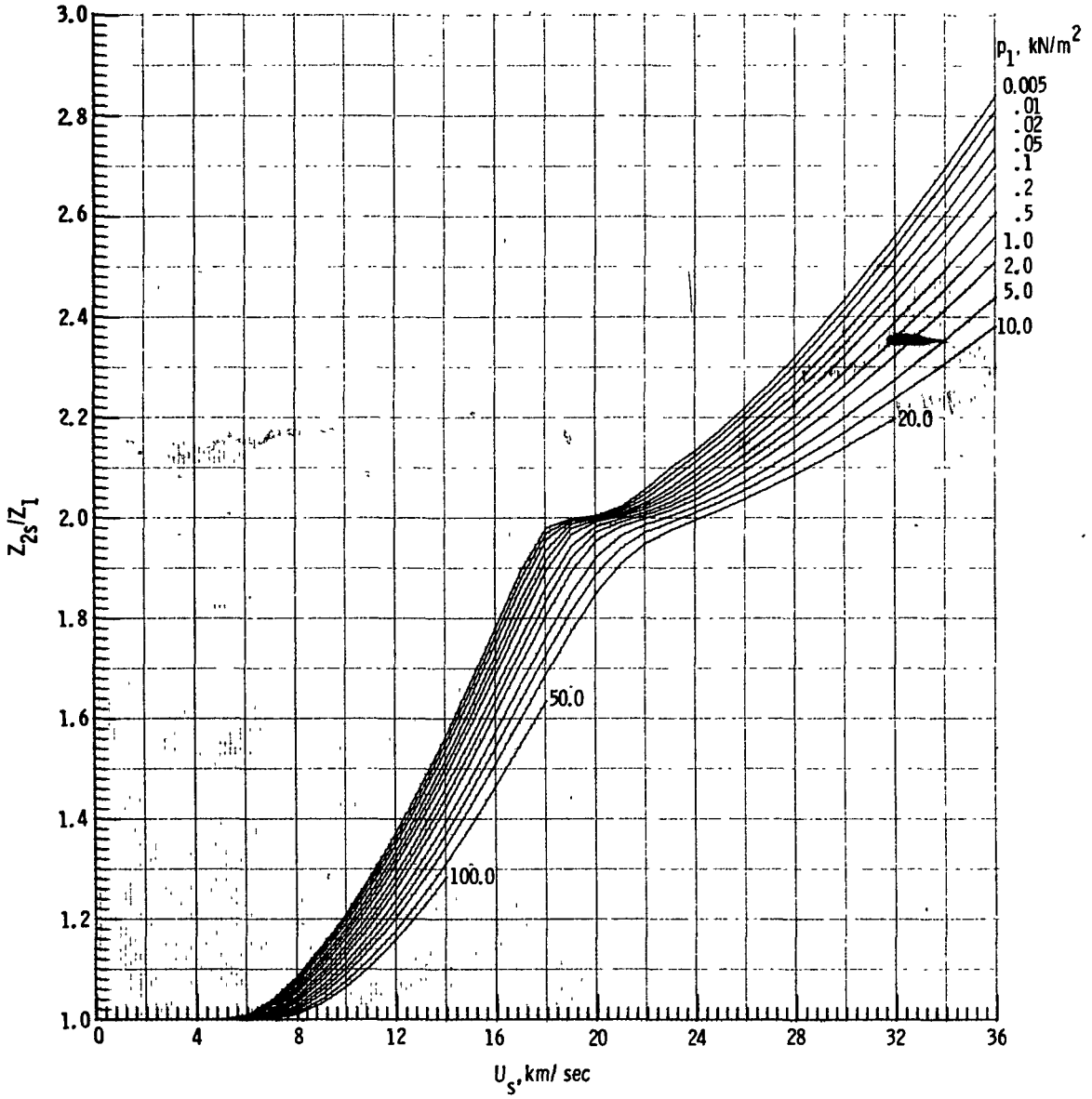
(f) Entropy s_{2s}/s_1.

Figure 4.- Continued.



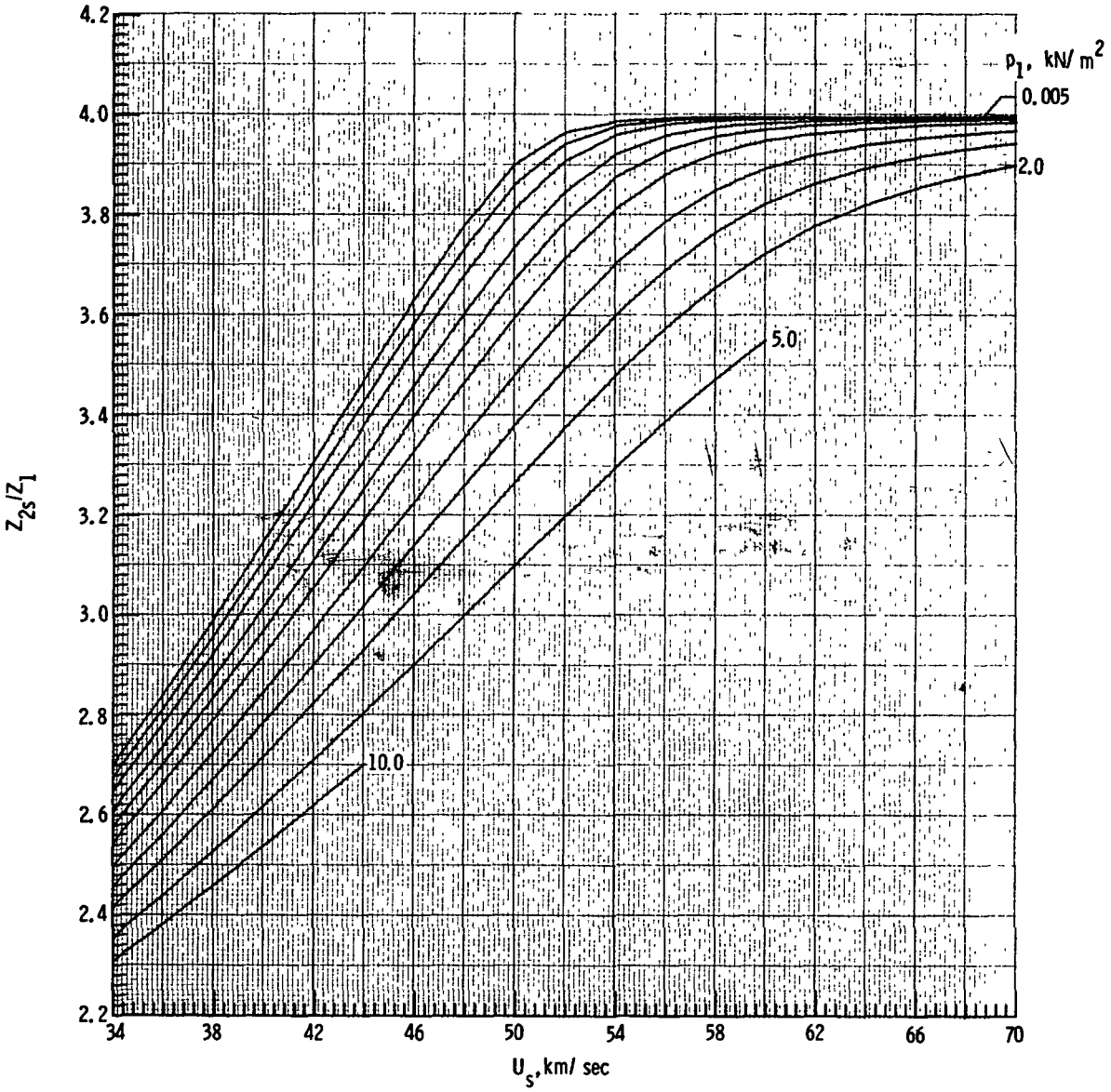
(f) Concluded.

Figure 4.- Continued.



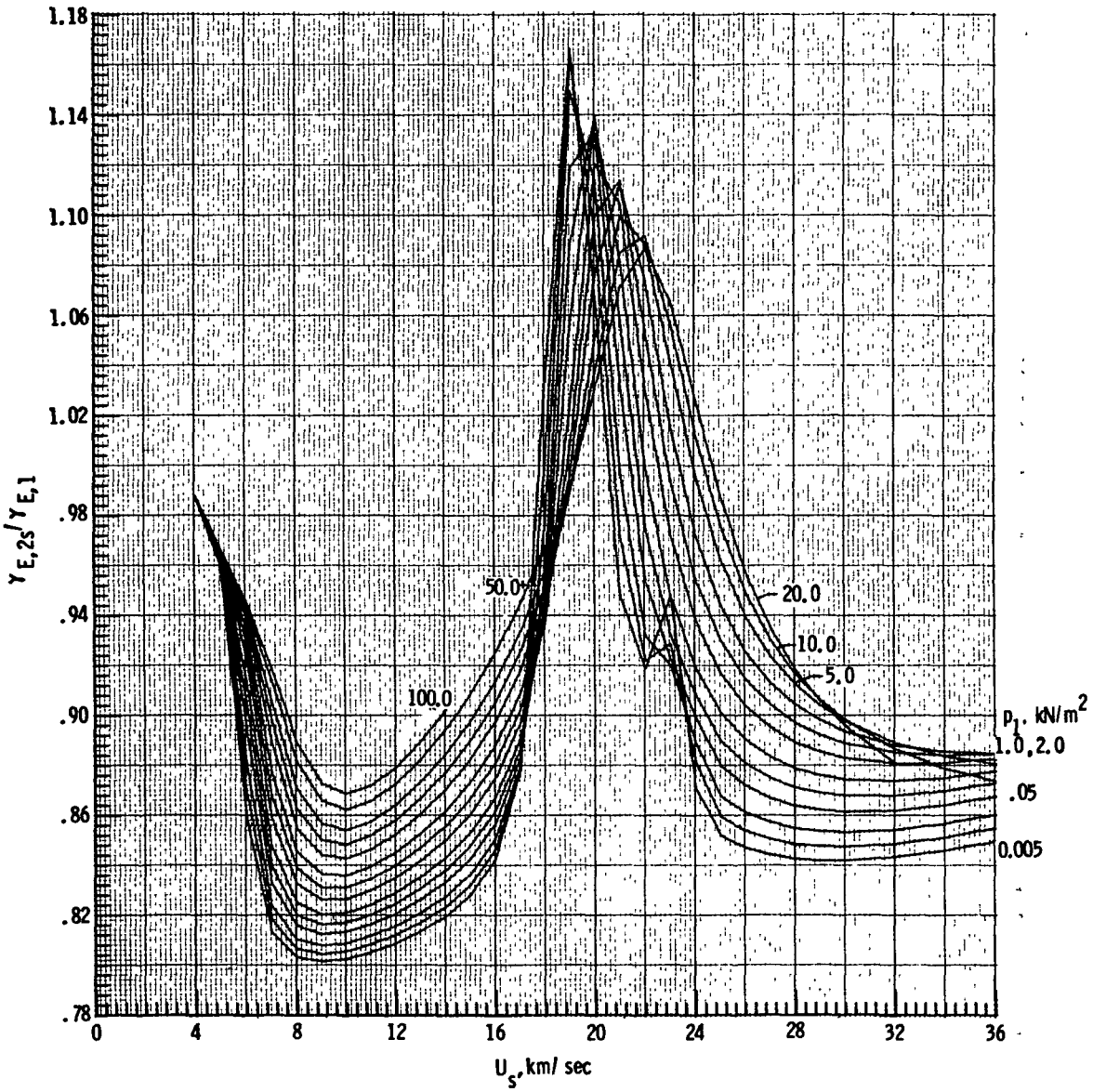
(g) Molecular-weight ratio Z_{2s}/Z_1.

Figure 4.- Continued.



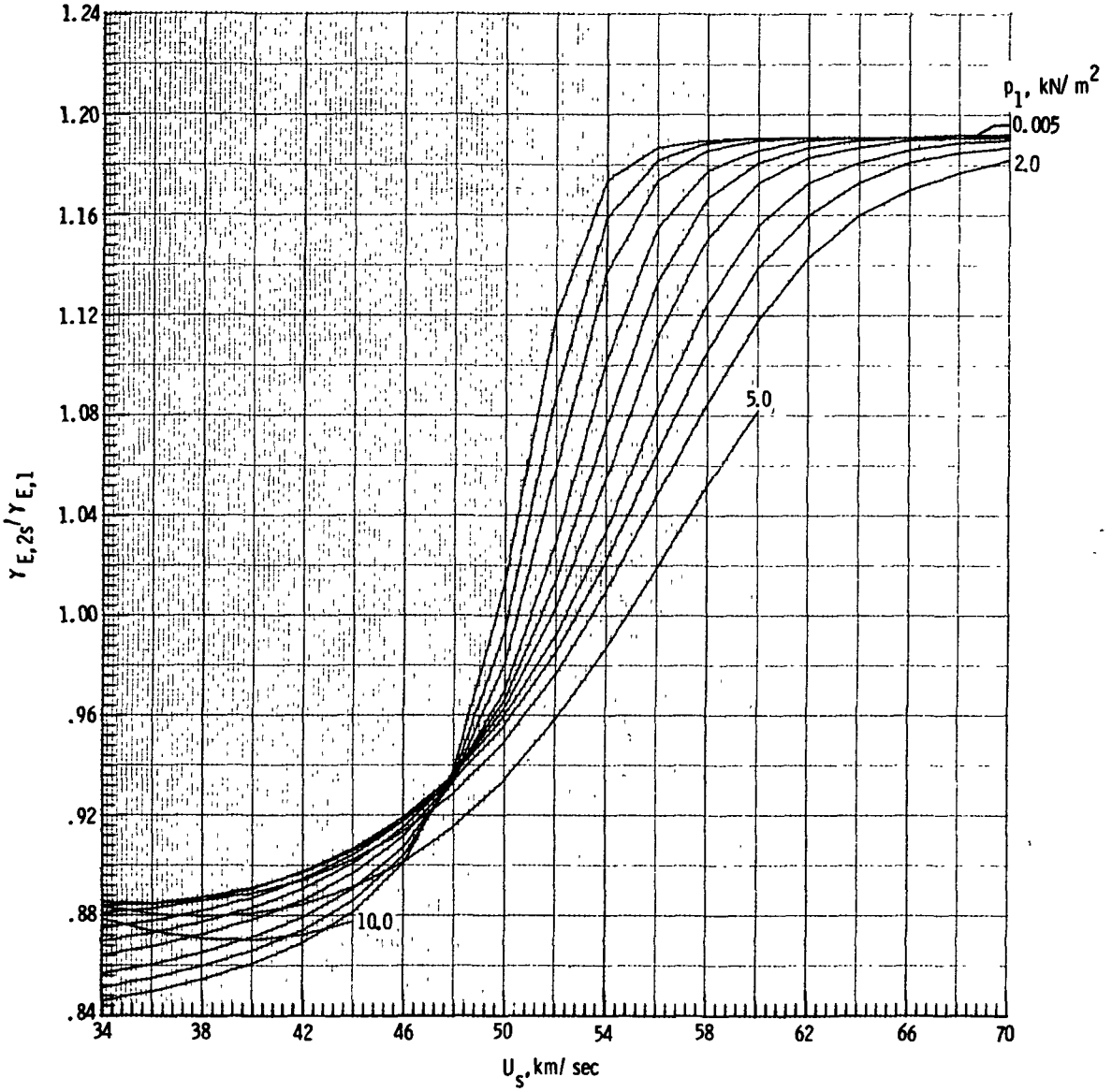
(g) Concluded.

Figure 4.- Continued.



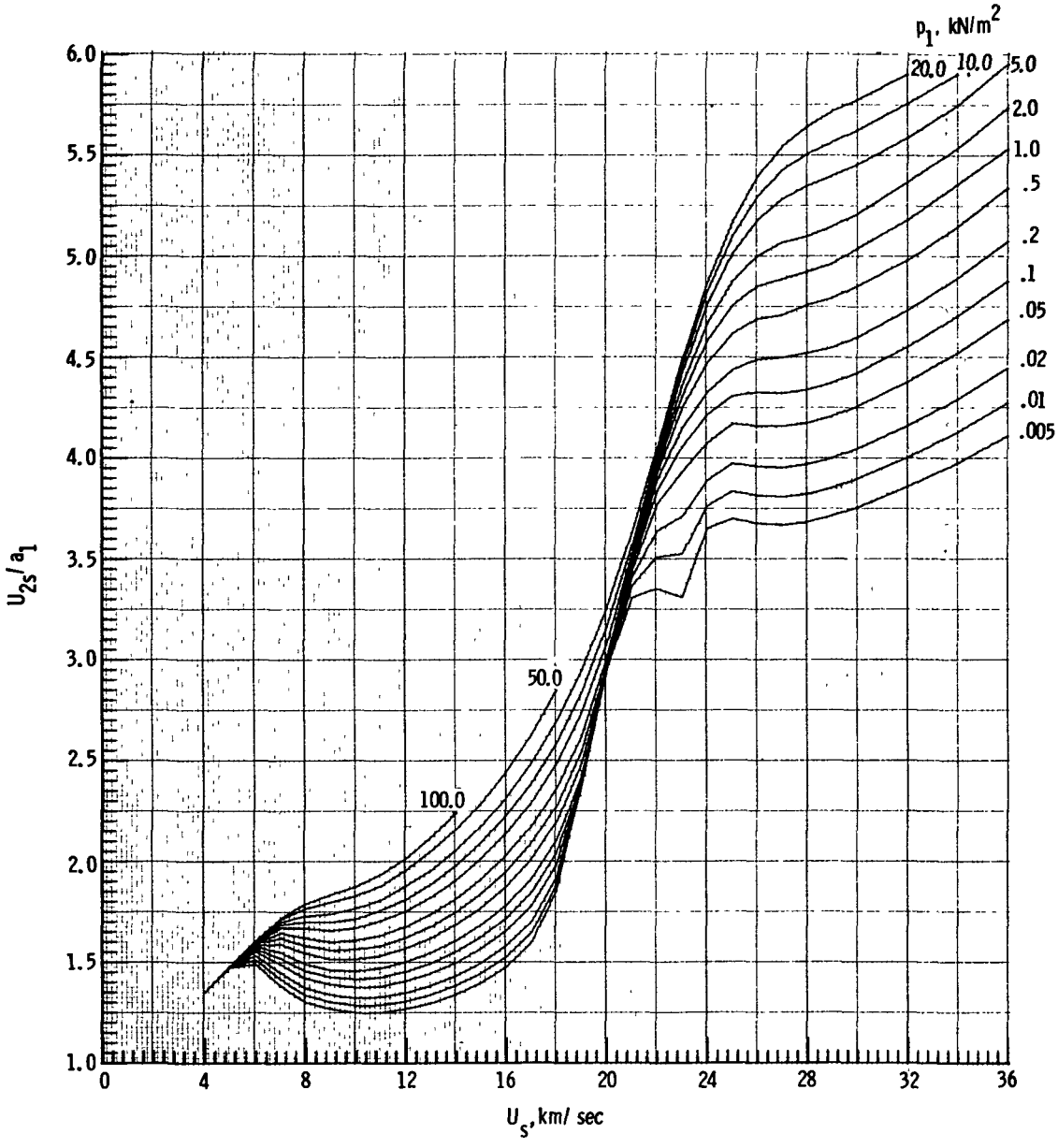
(h) Isentropic exponent $\gamma_{E,2s}/\gamma_{E,1}$.

Figure 4.- Continued.



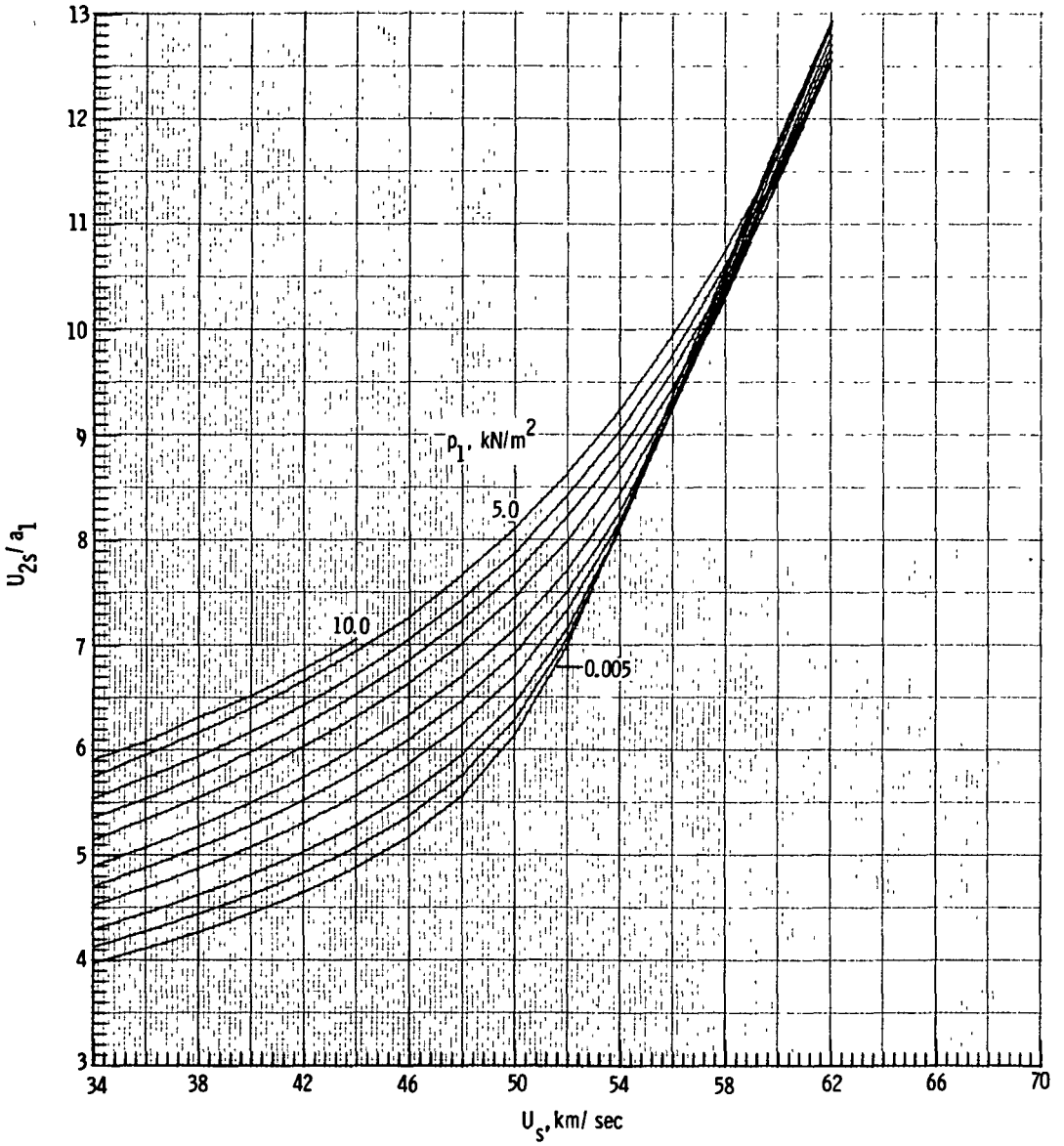
(h) Concluded.

Figure 4.- Continued.



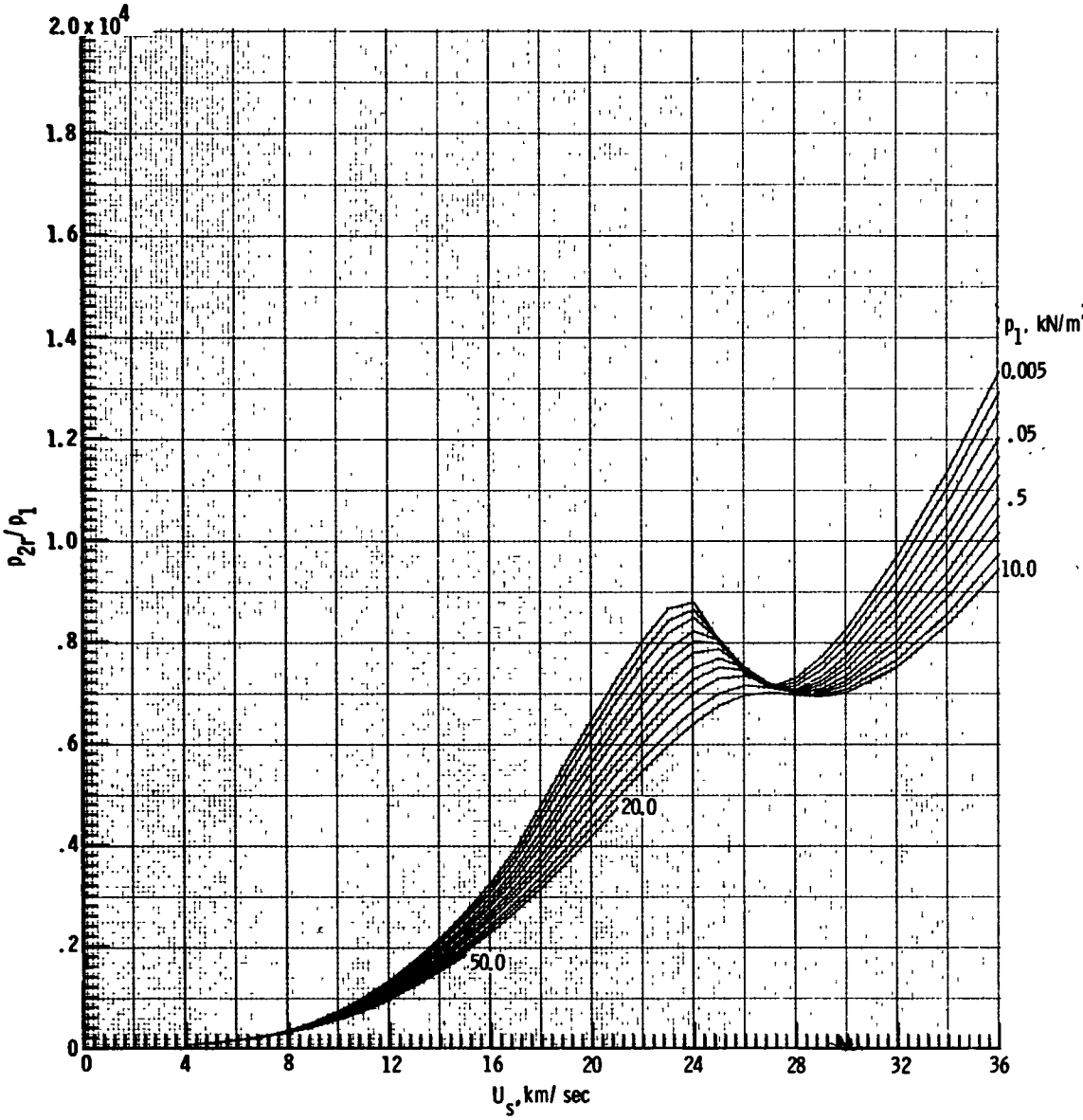
(i) Flow velocity U_{2s}/a_1.

Figure 4.- Continued.



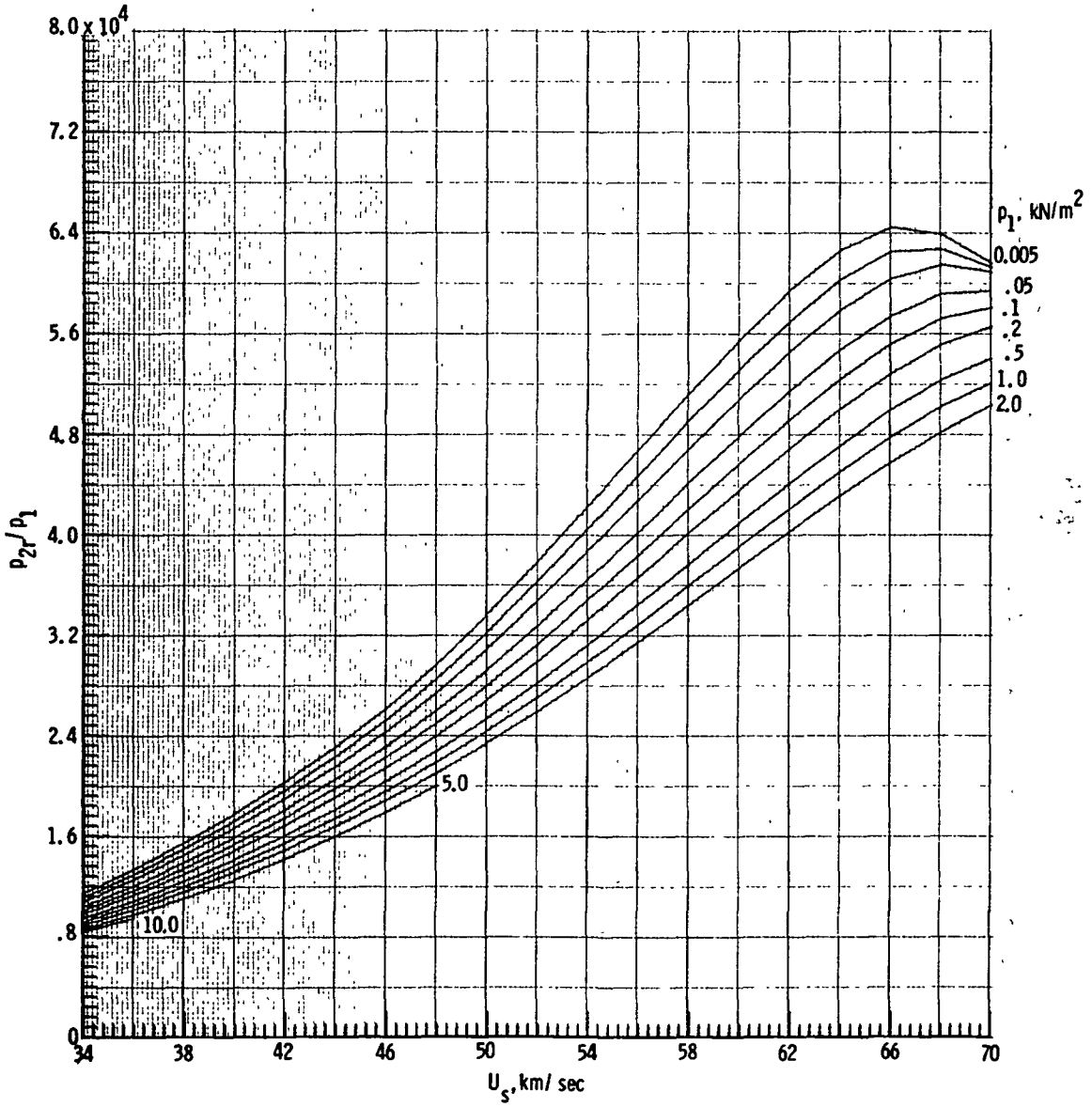
(i) Concluded.

Figure 4.- Concluded.



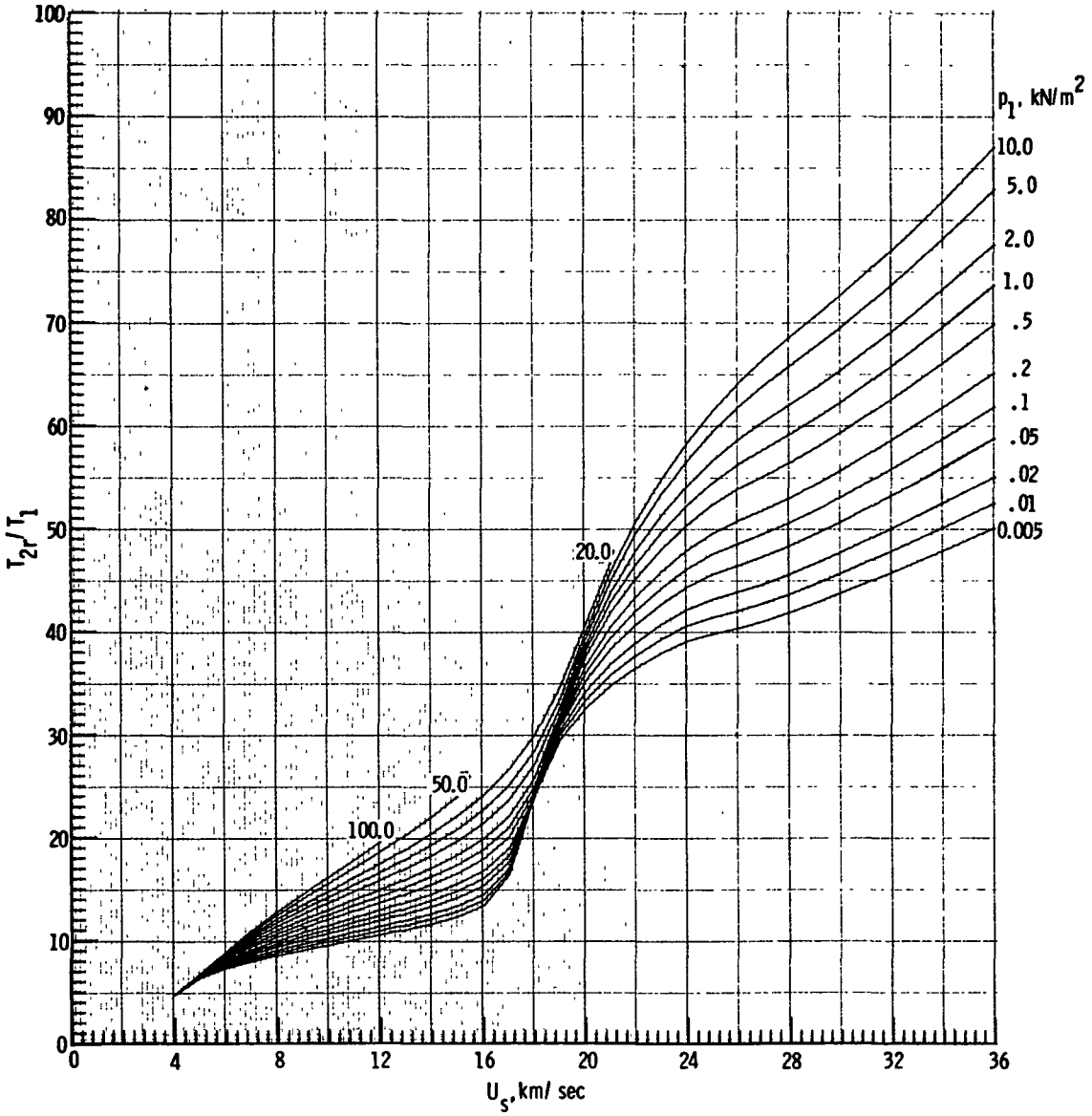
(a) Pressure p_{2r}/p_1.

Figure 5.- Thermodynamic properties behind a reflected normal shock and reflected shock velocity for pure hydrogen.



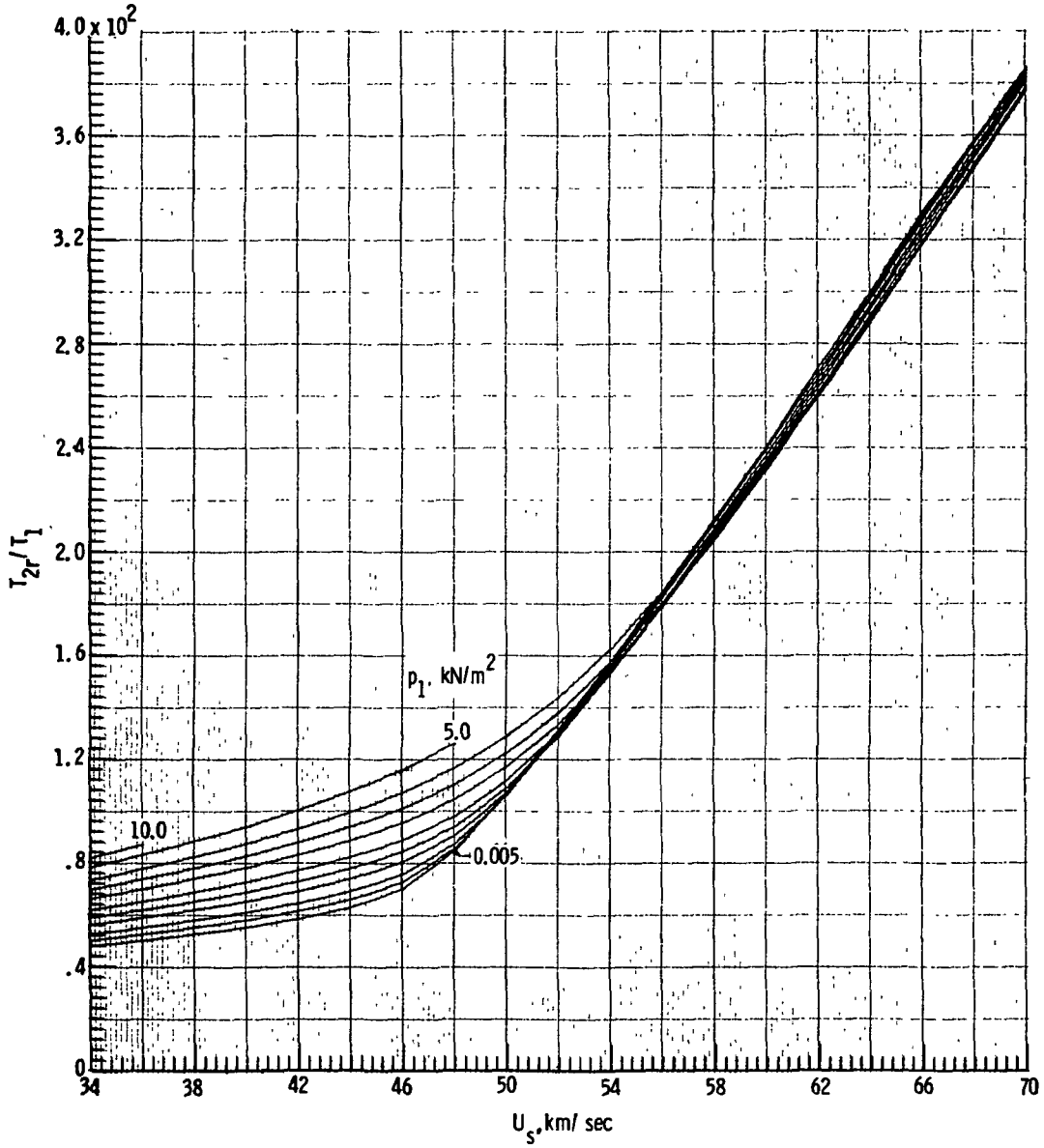
(a) Concluded.

Figure 5.- Continued.



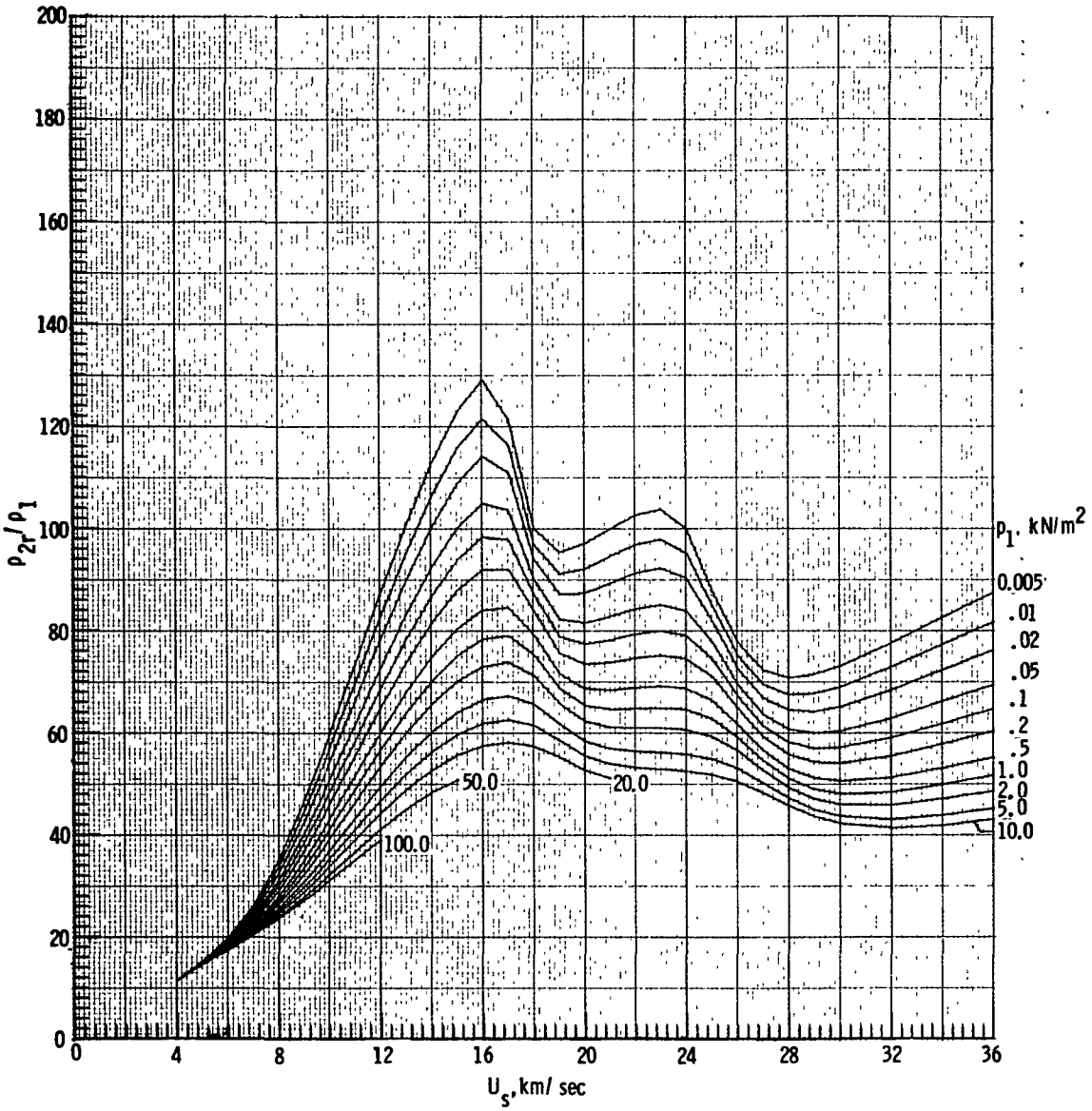
(b) Temperature T_{2r}/T_1.

Figure 5.- Continued.



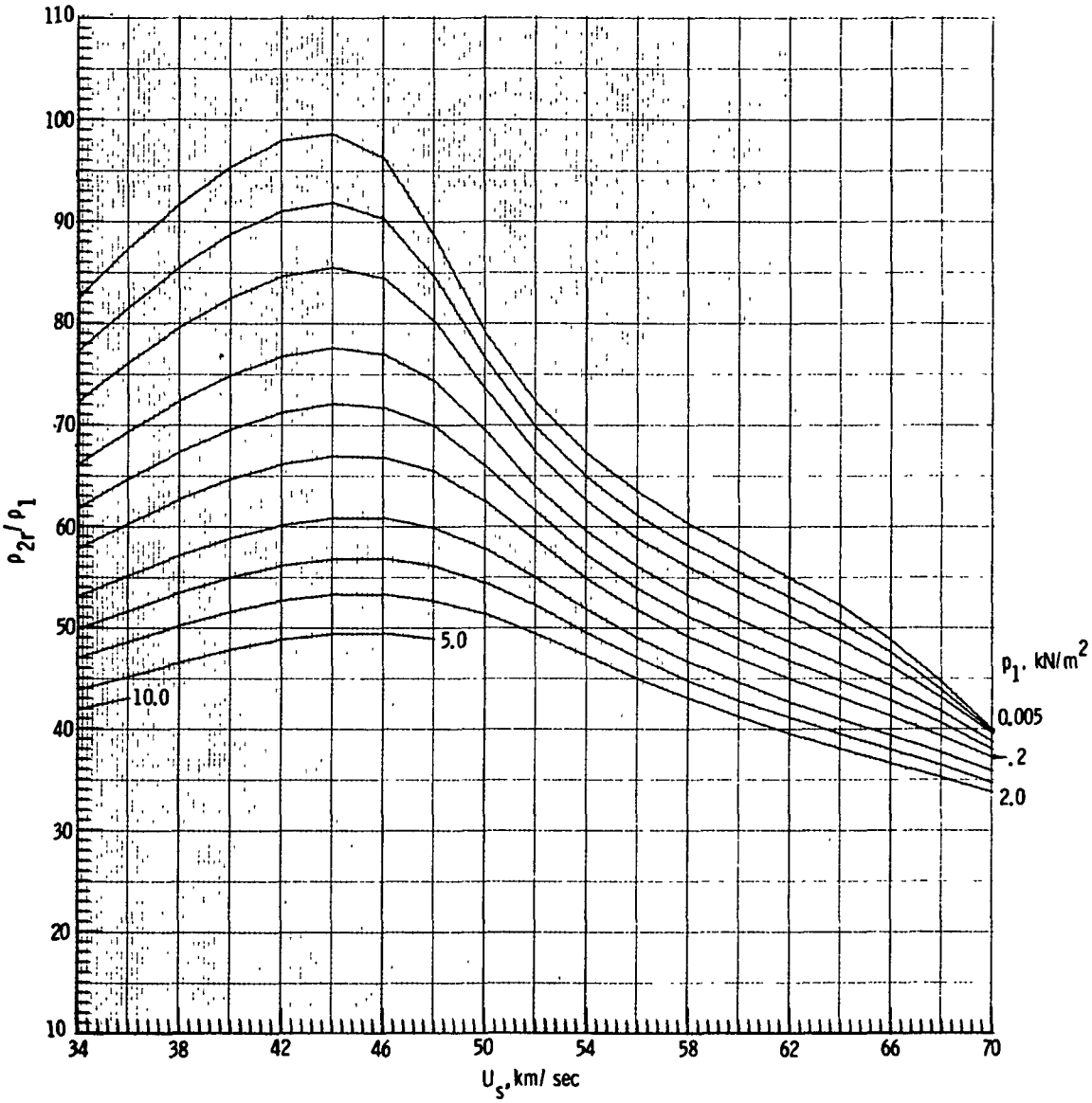
(b) Concluded.

Figure 5.- Continued.



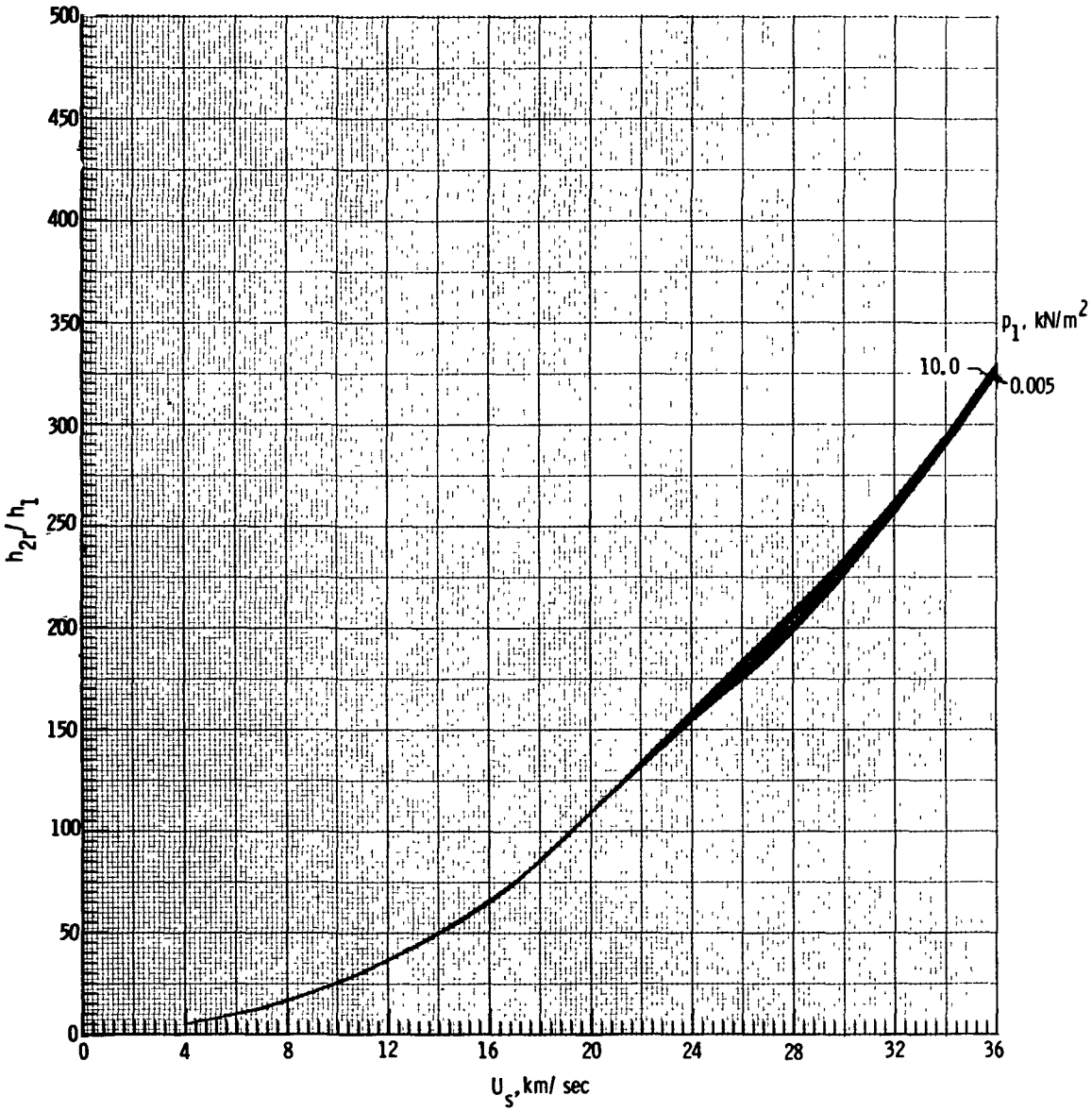
(c) Density ρ_{2r}/ρ_1.

Figure 5.- Continued.



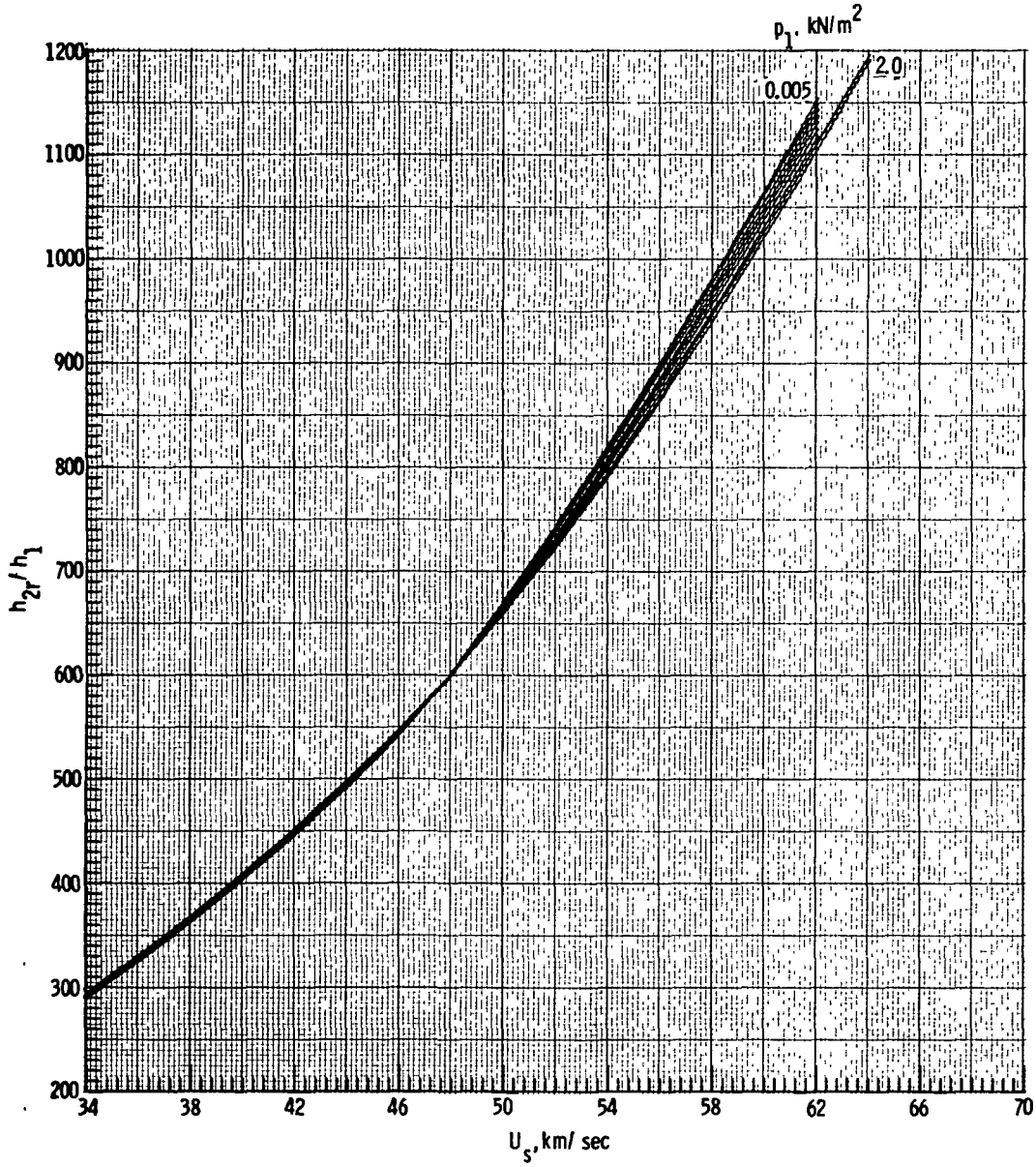
(c) Concluded.

Figure 5.- Continued.



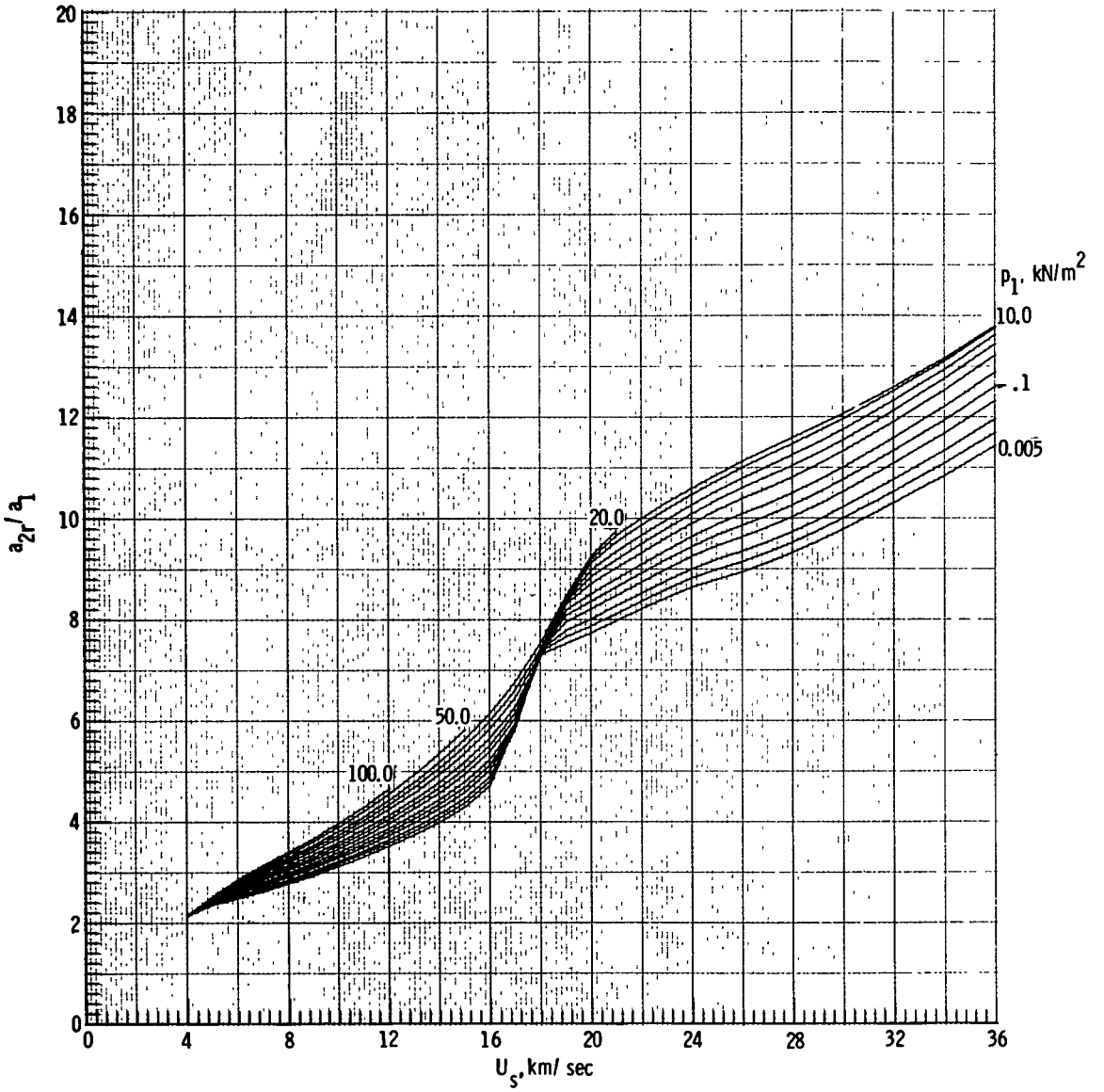
(d) Enthalpy h_{2r}/h_1.

Figure 5.- Continued.



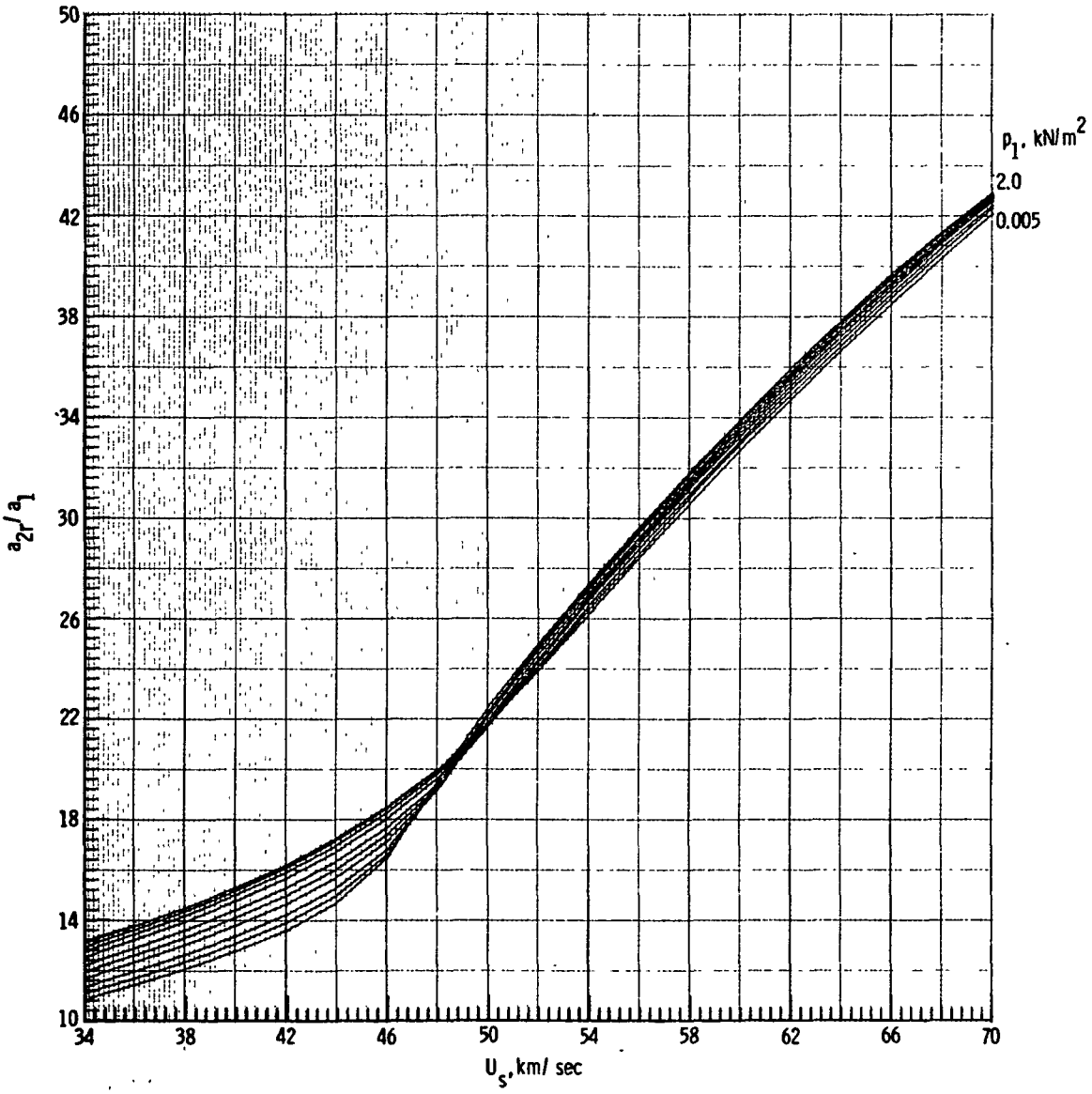
(d) Concluded.

Figure 5.- Continued.



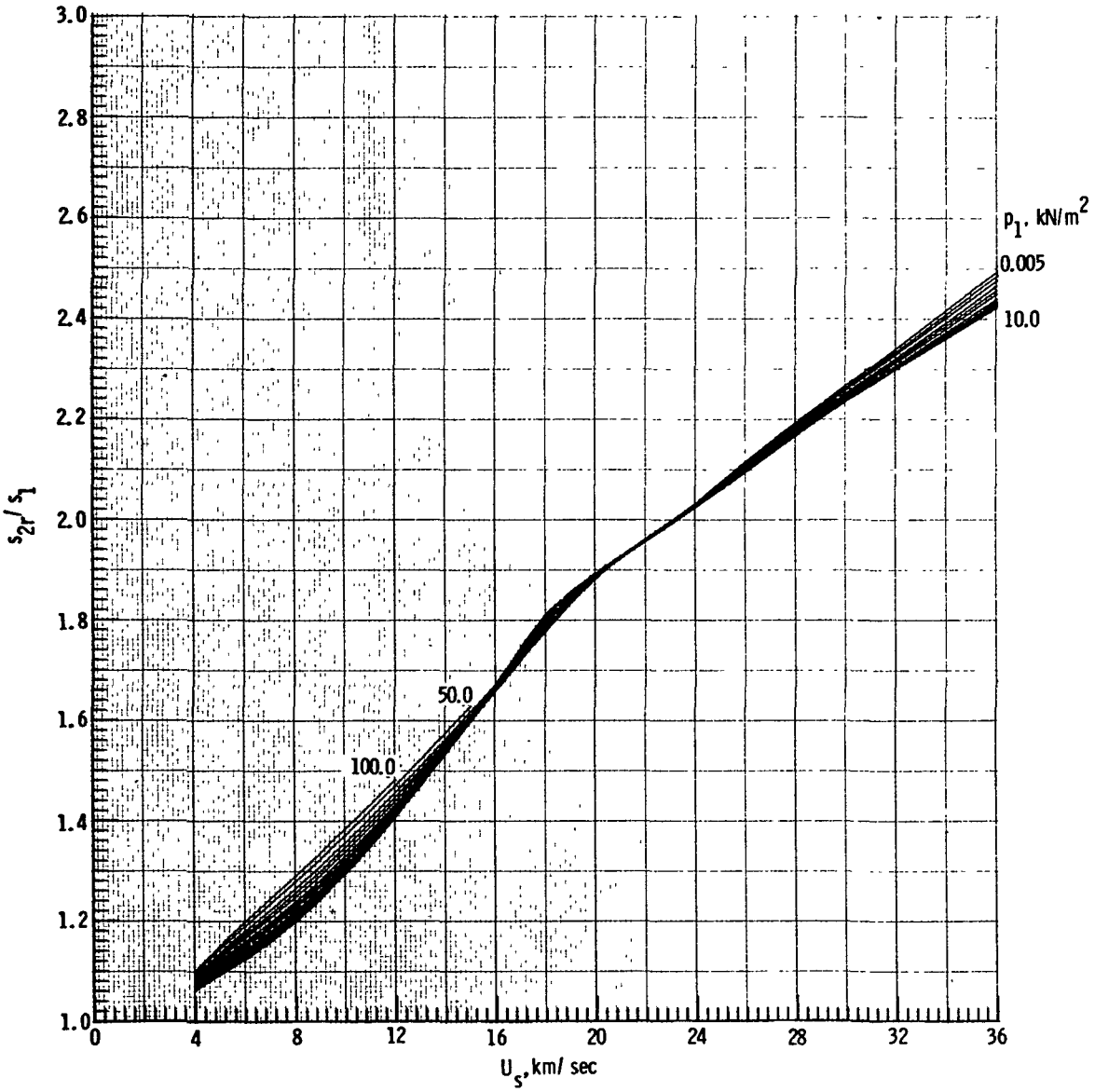
(e) Speed of sound a_{2r}/a_1.

Figure 5.- Continued.



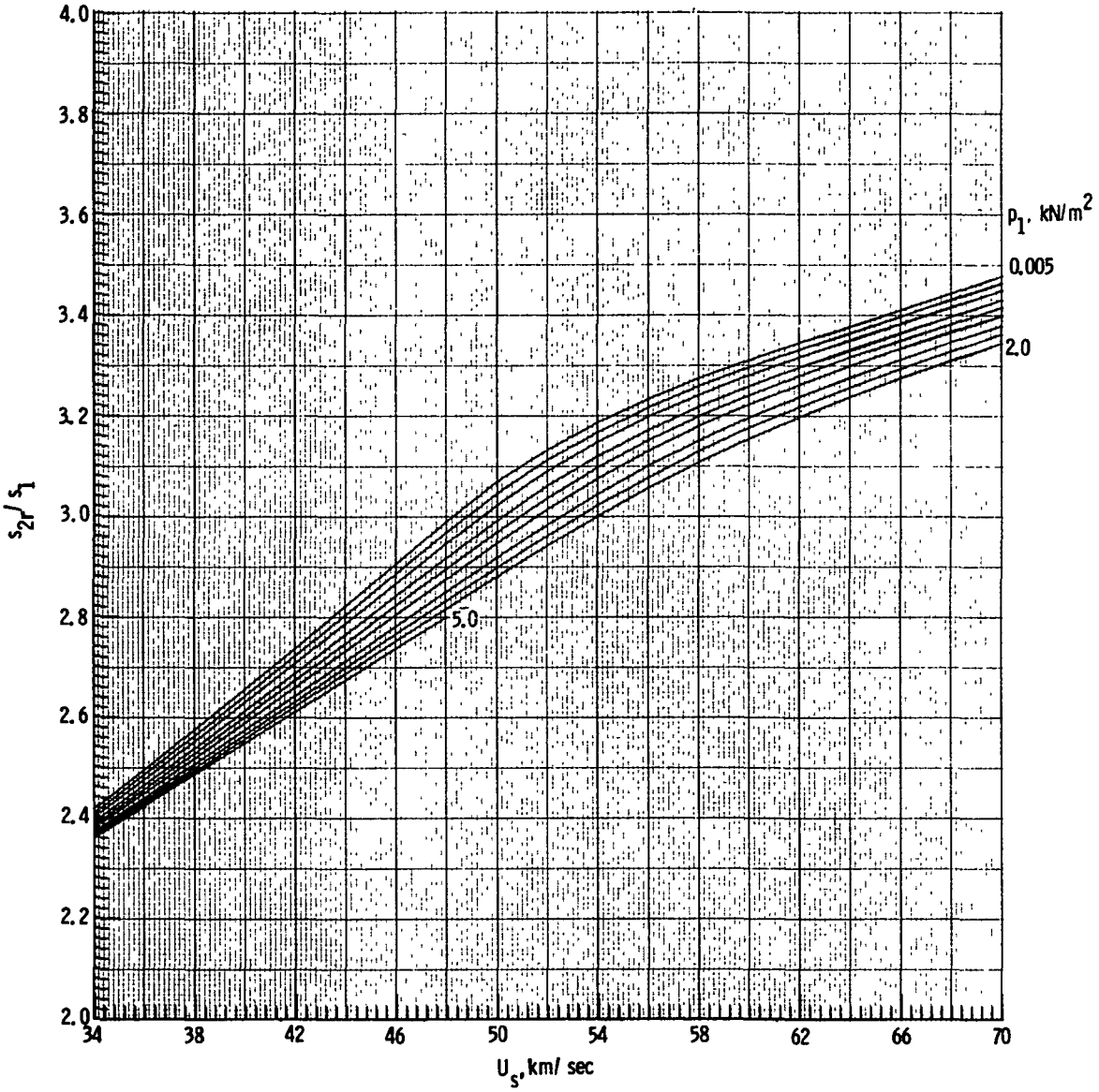
(e) Concluded.

Figure 5.- Continued.



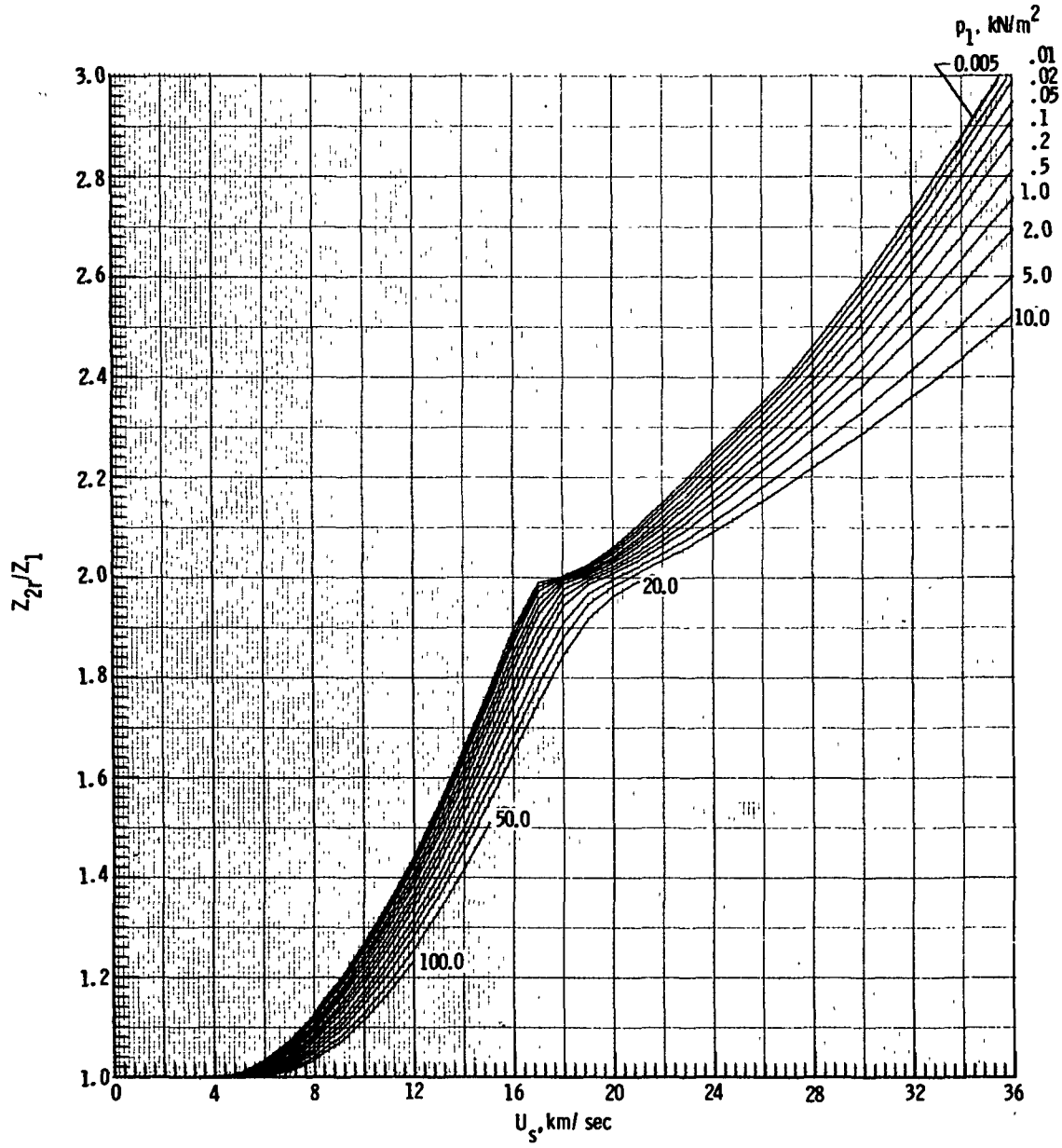
(f) Entropy s_{2r}/s_1.

Figure 5.- Continued.



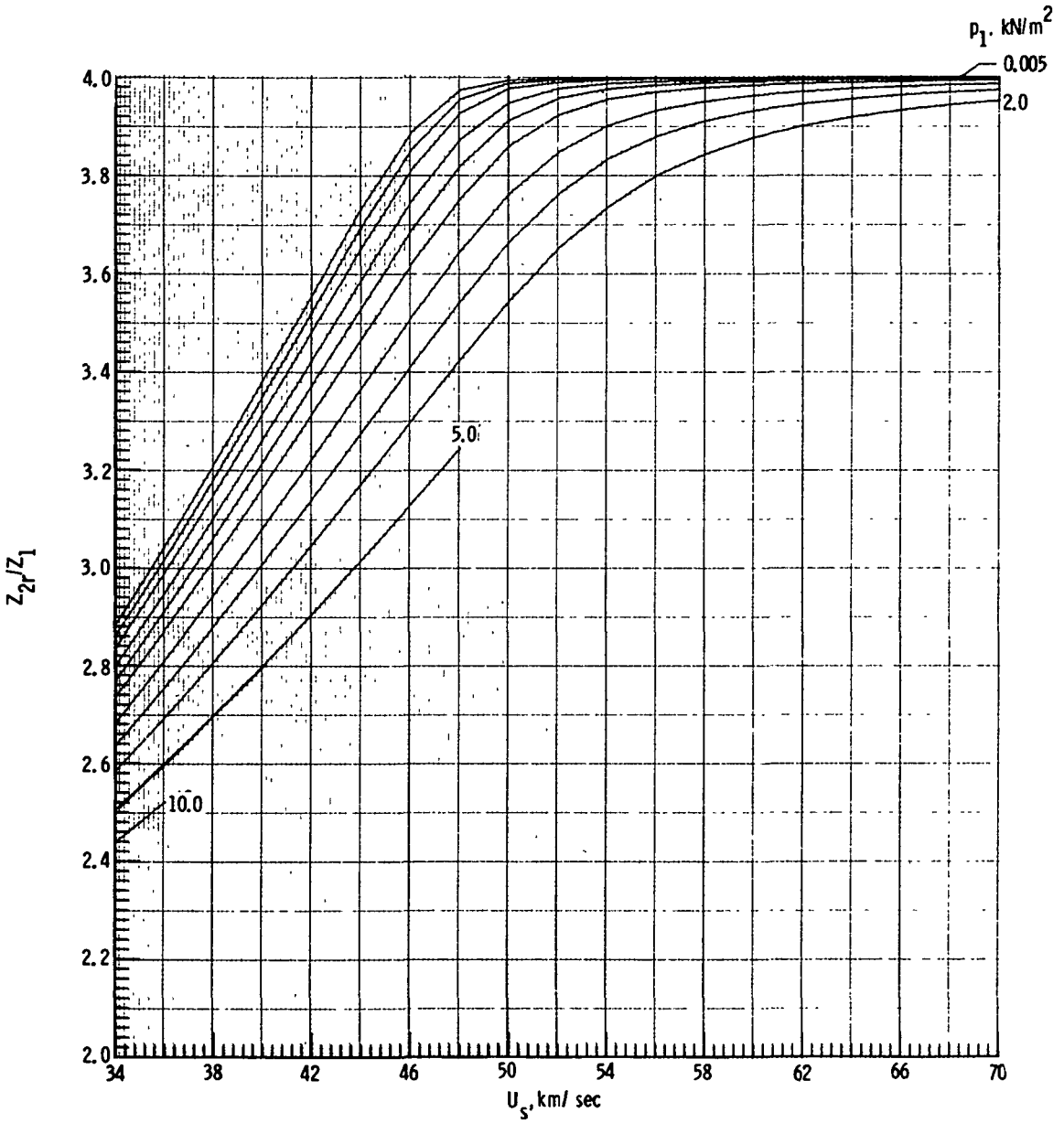
(f) Concluded.

Figure 5.- Continued.



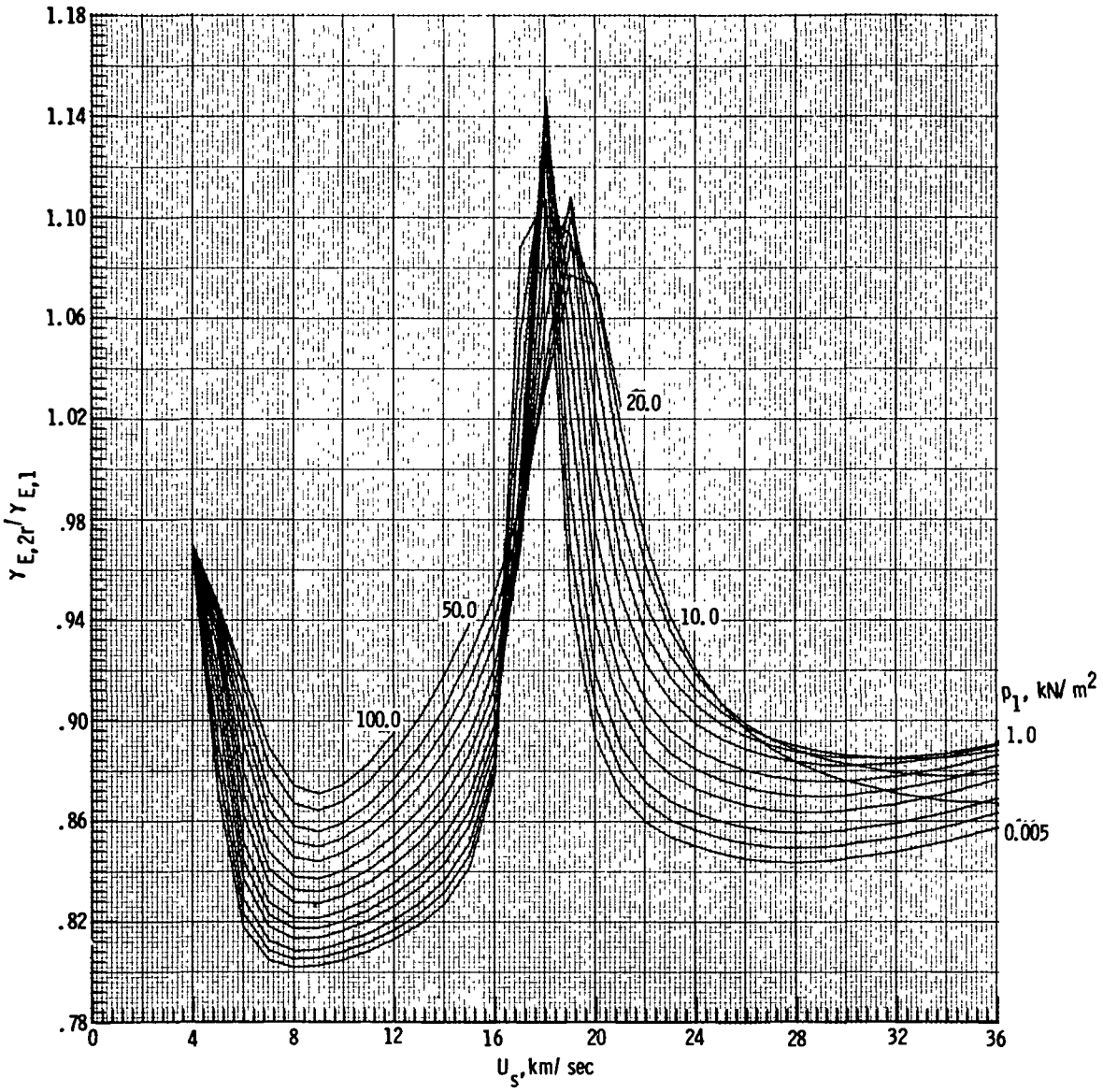
(g) Molecular-weight ratio Z_{2r}/Z_1.

Figure 5.- Continued.



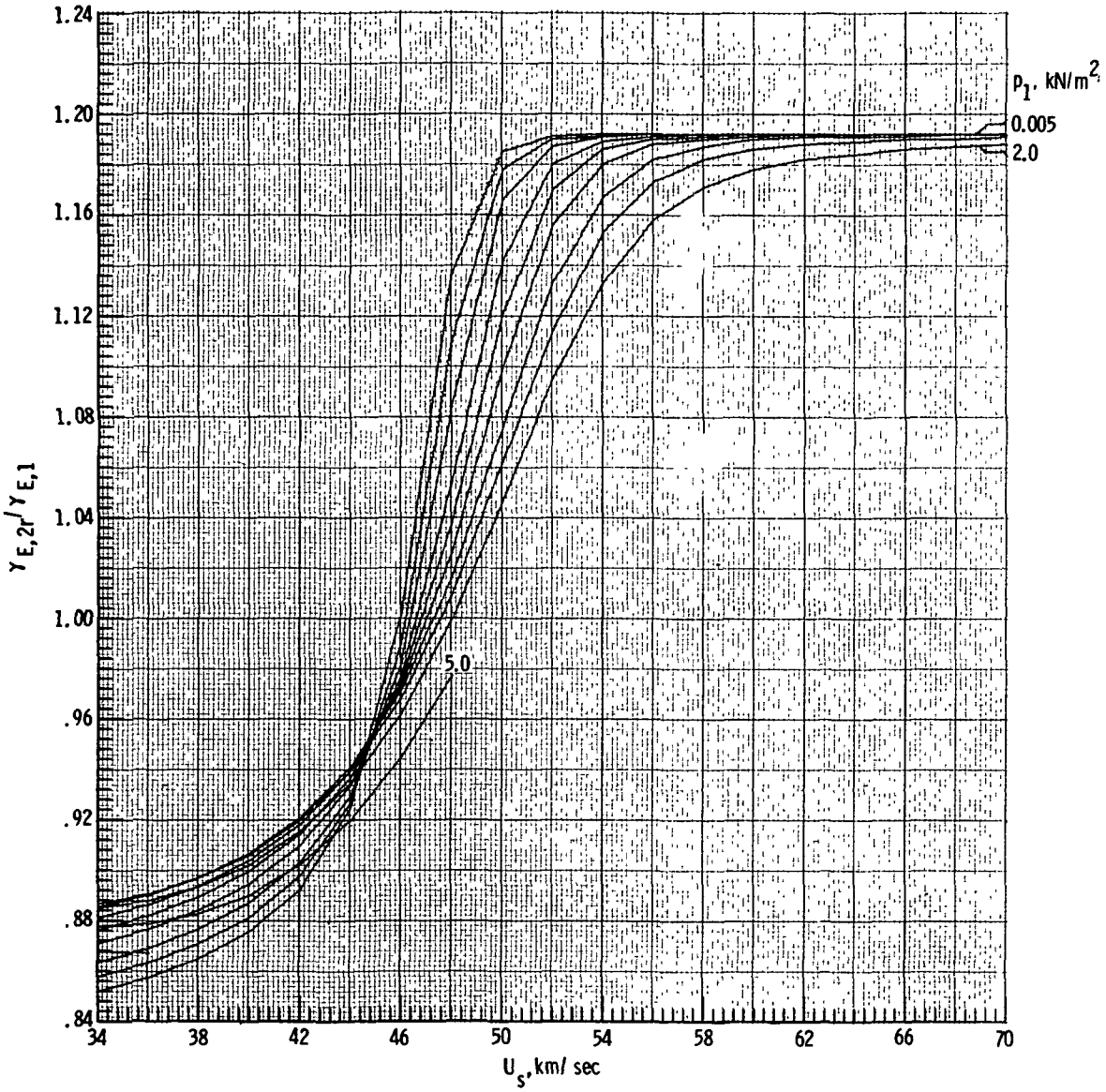
(g) Concluded.

Figure 5.- Continued.



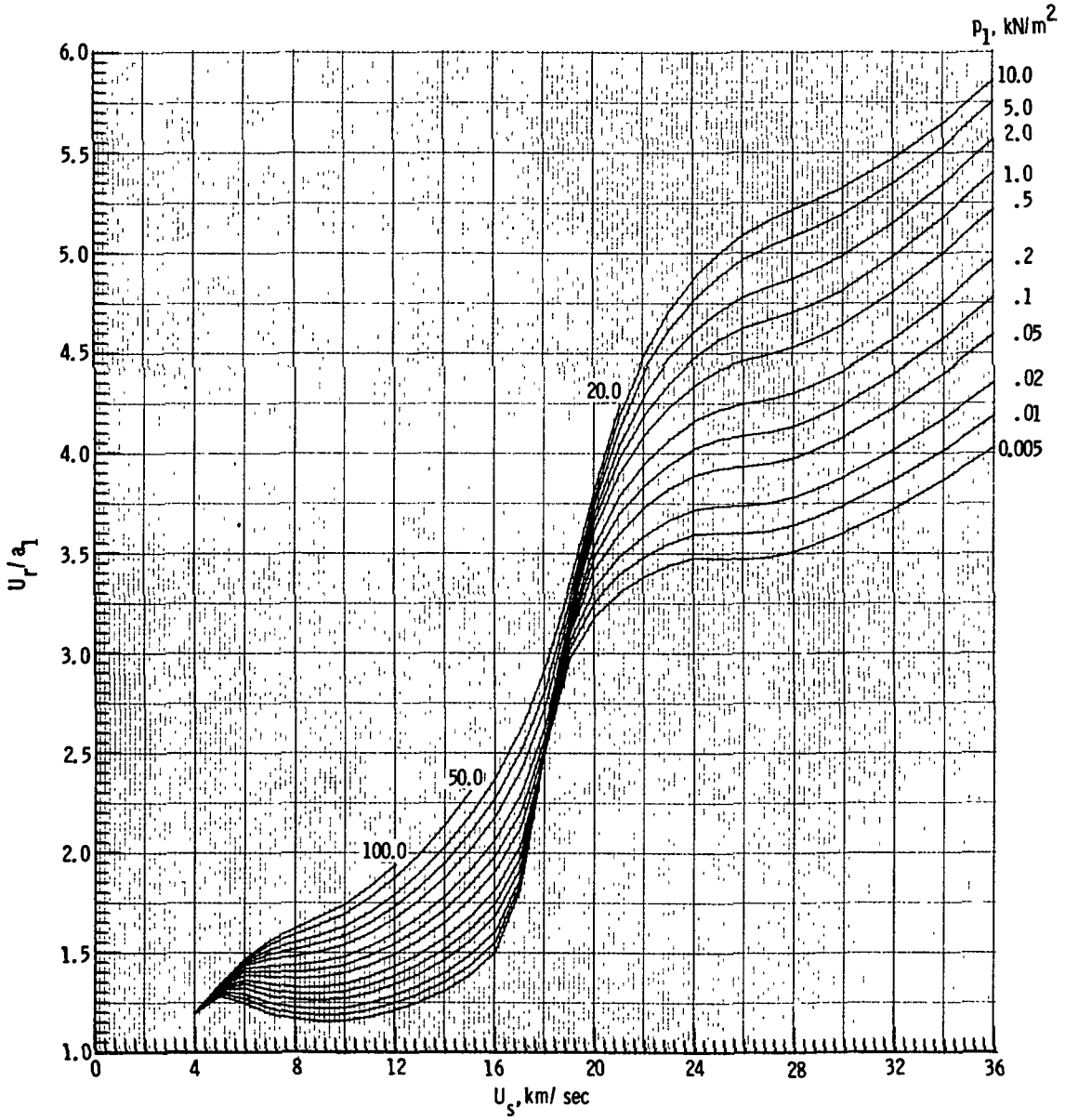
(h) Isentropic exponent $\gamma_{E,2r}/\gamma_{E,1}$.

Figure 5.- Continued.



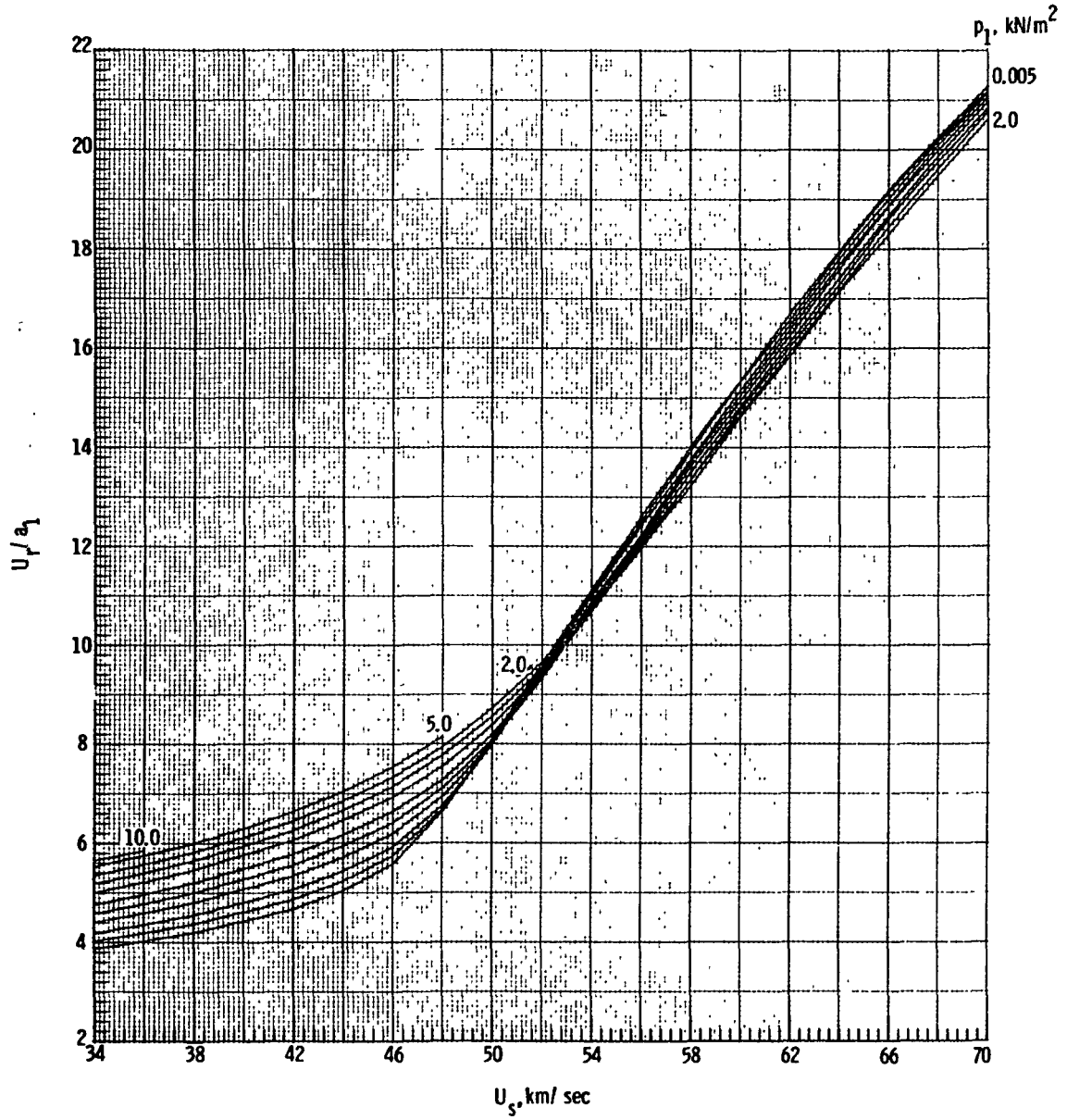
(h) Concluded.

Figure 5.- Continued.



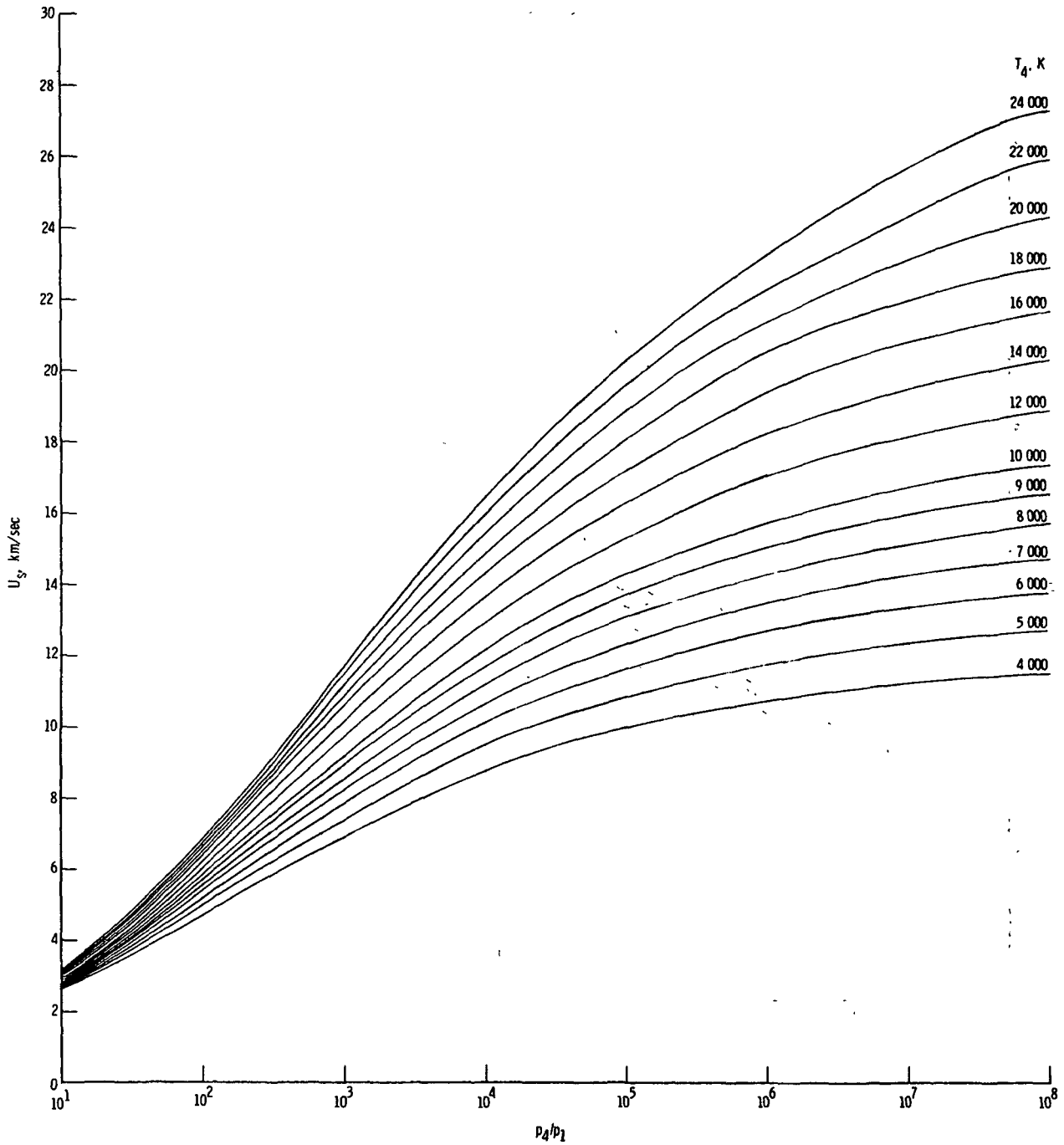
(i) Reflected shock velocity U_r/a_1.

Figure 5.- Continued.



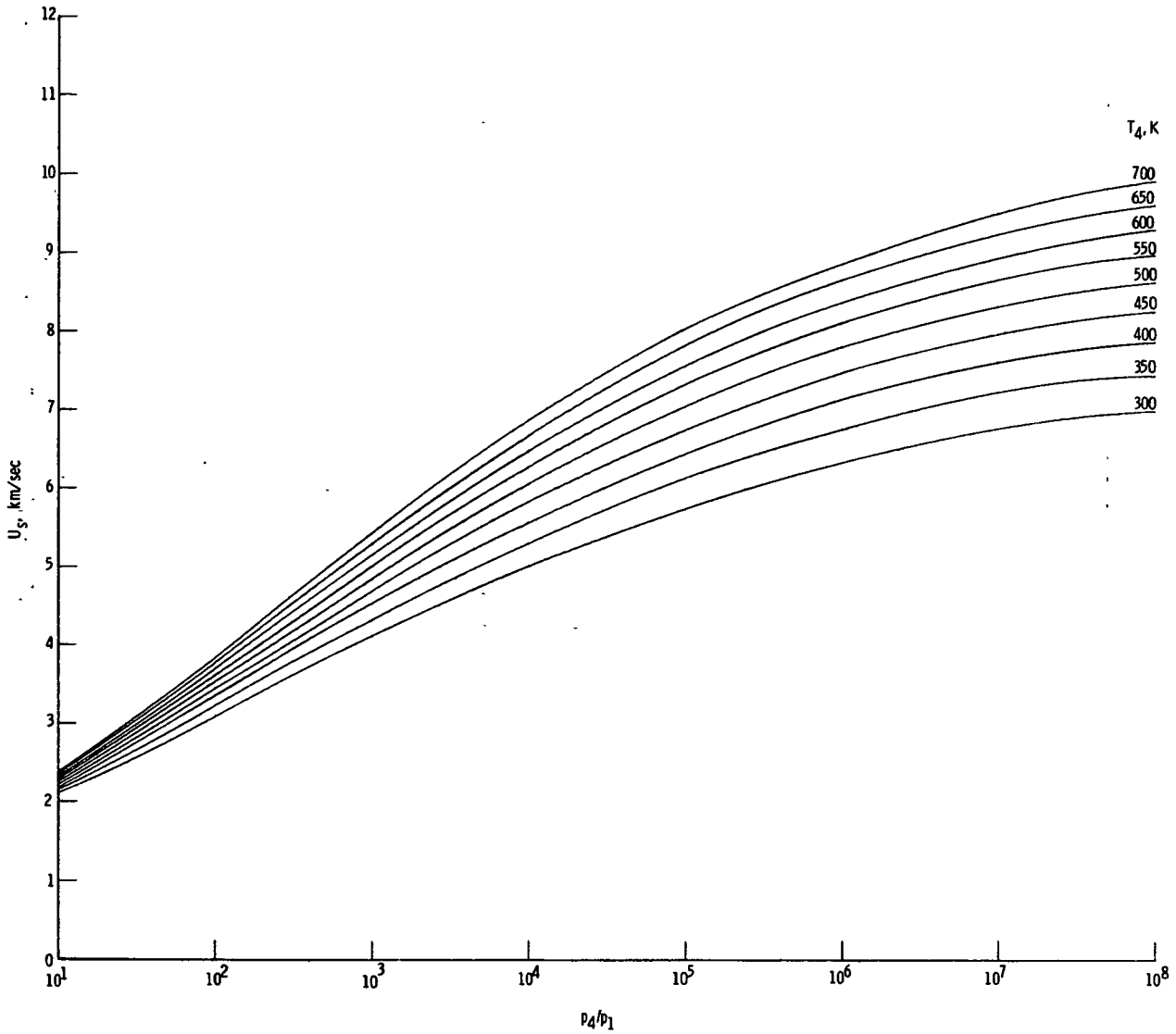
(i) Concluded.

Figure 5.- Concluded.



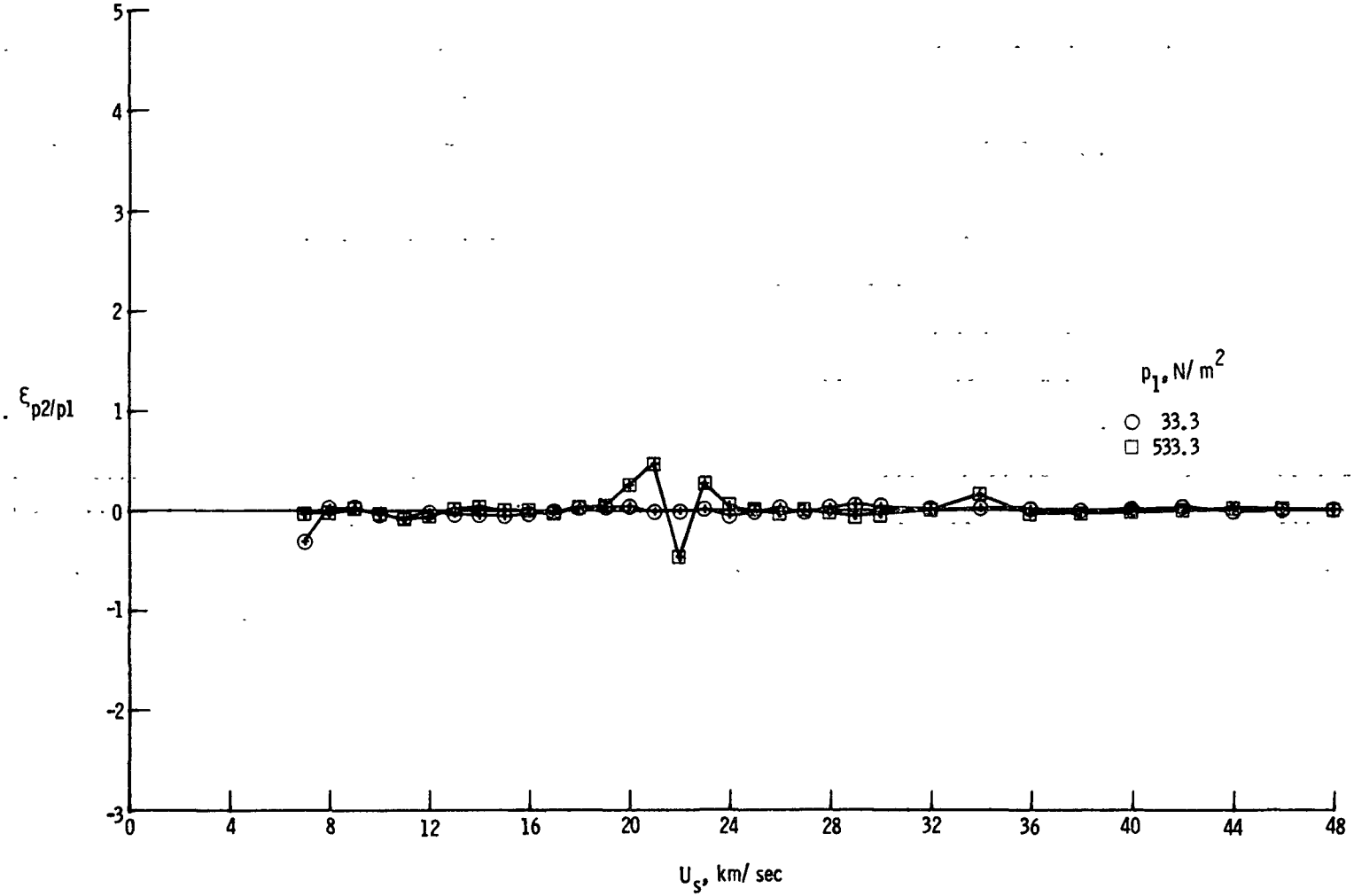
(a) Helium driver gas.

Figure 6.- Incident shock velocity as a function of ratio of driver gas pressure to hydrogen test gas pressure for helium and hydrogen driver gases. $p_4 = 68.95$ MN/m^2.



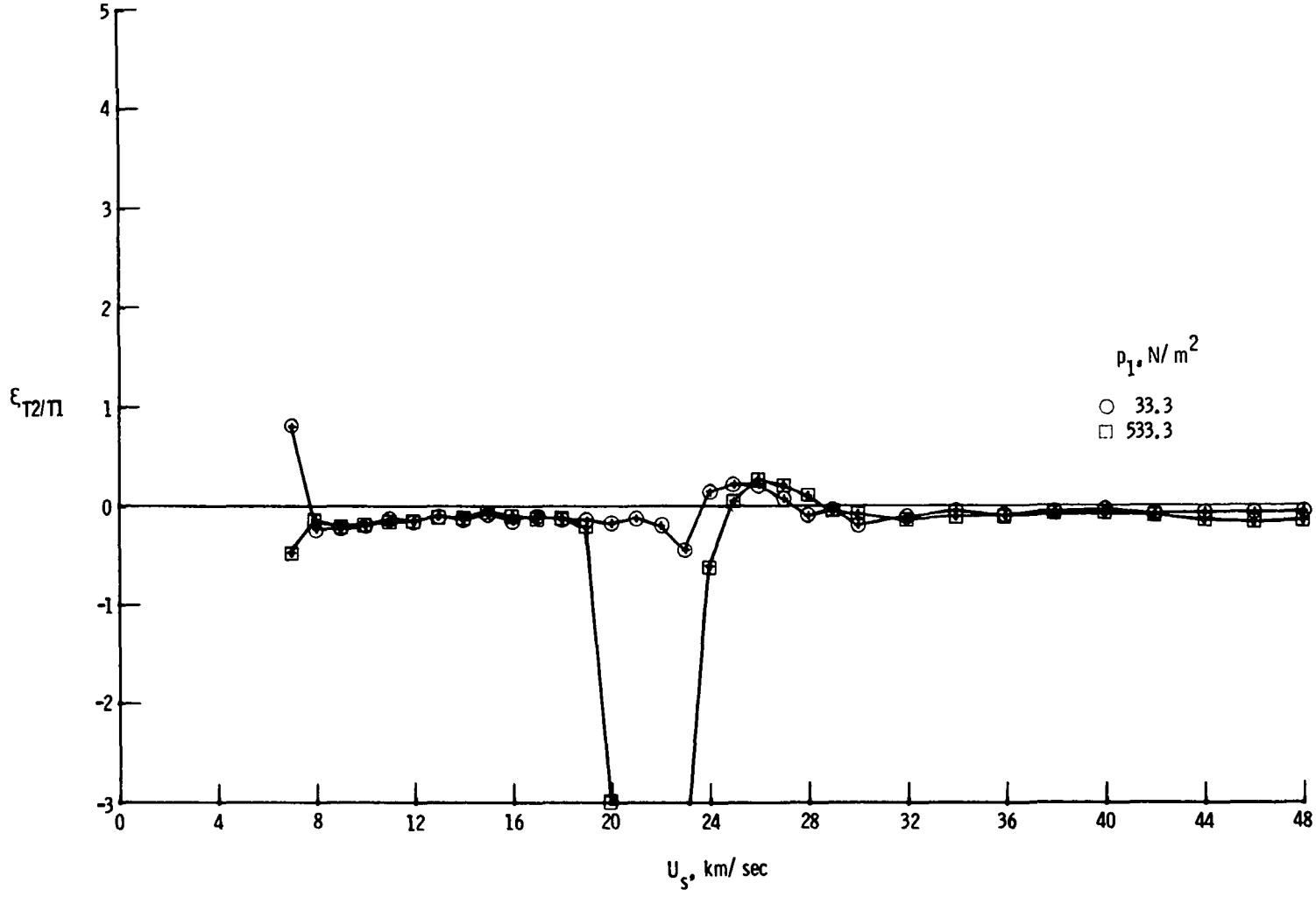
(b) Hydrogen driver gas.

Figure 6.- Concluded.



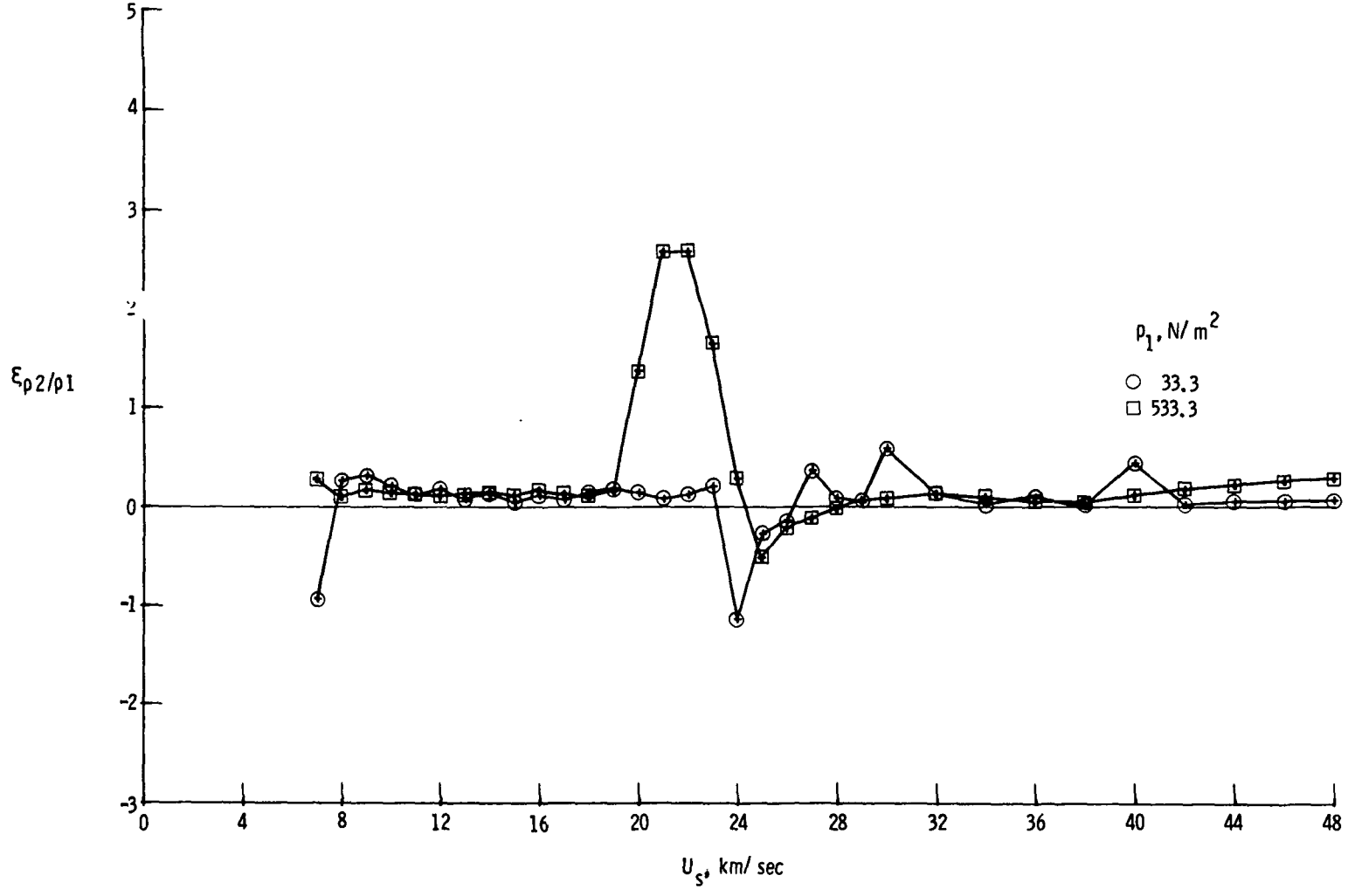
(a) Pressure p_2/p_1.

Figure 7.- Comparison of thermodynamic properties for hydrogen and flow velocity in region ② between the present procedure and the procedure described in reference 15.



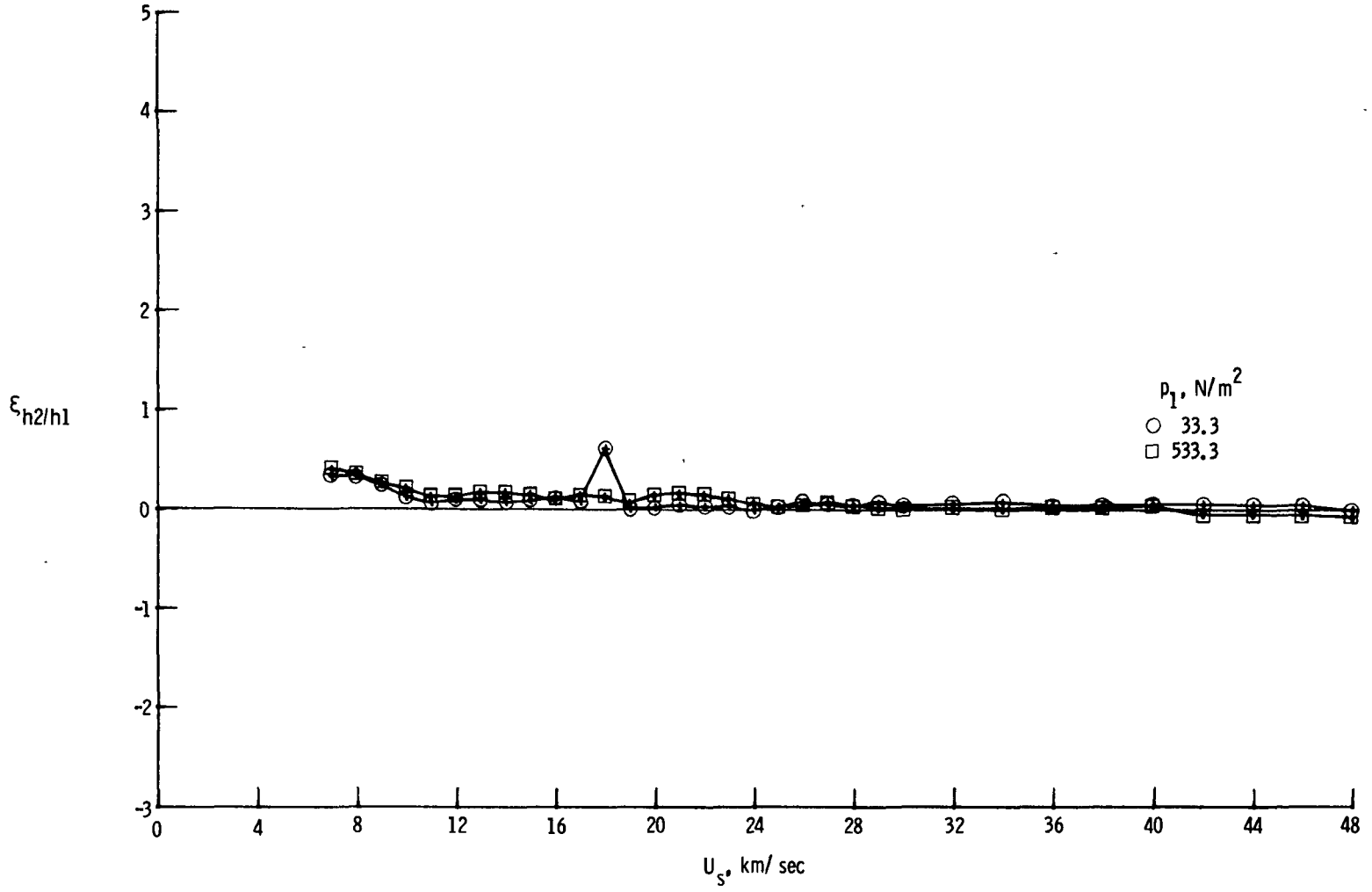
(b) Temperature T_2/T_1.

Figure 7.- Continued.



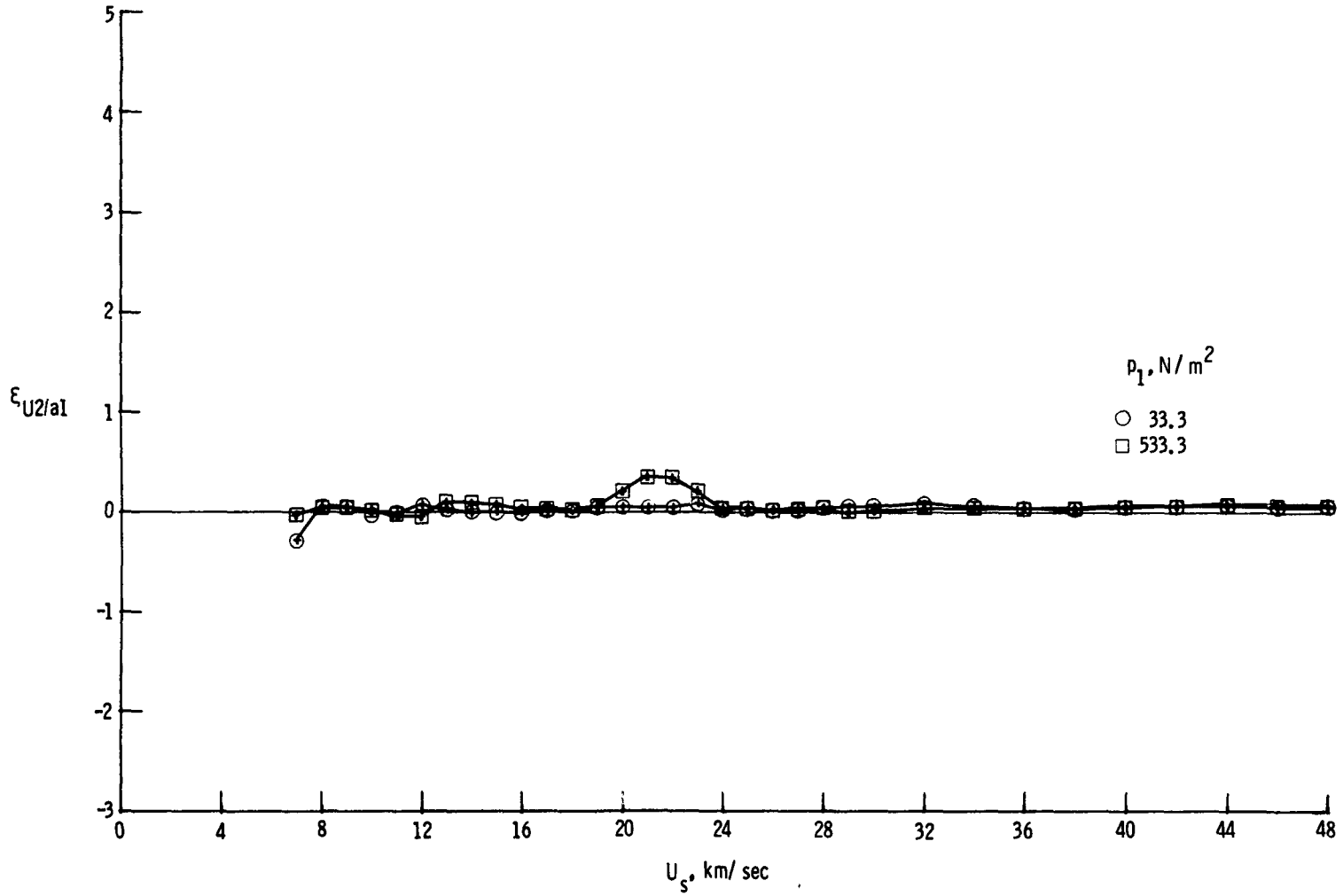
(c) Density ρ_2/ρ_1.

Figure 7.- Continued.



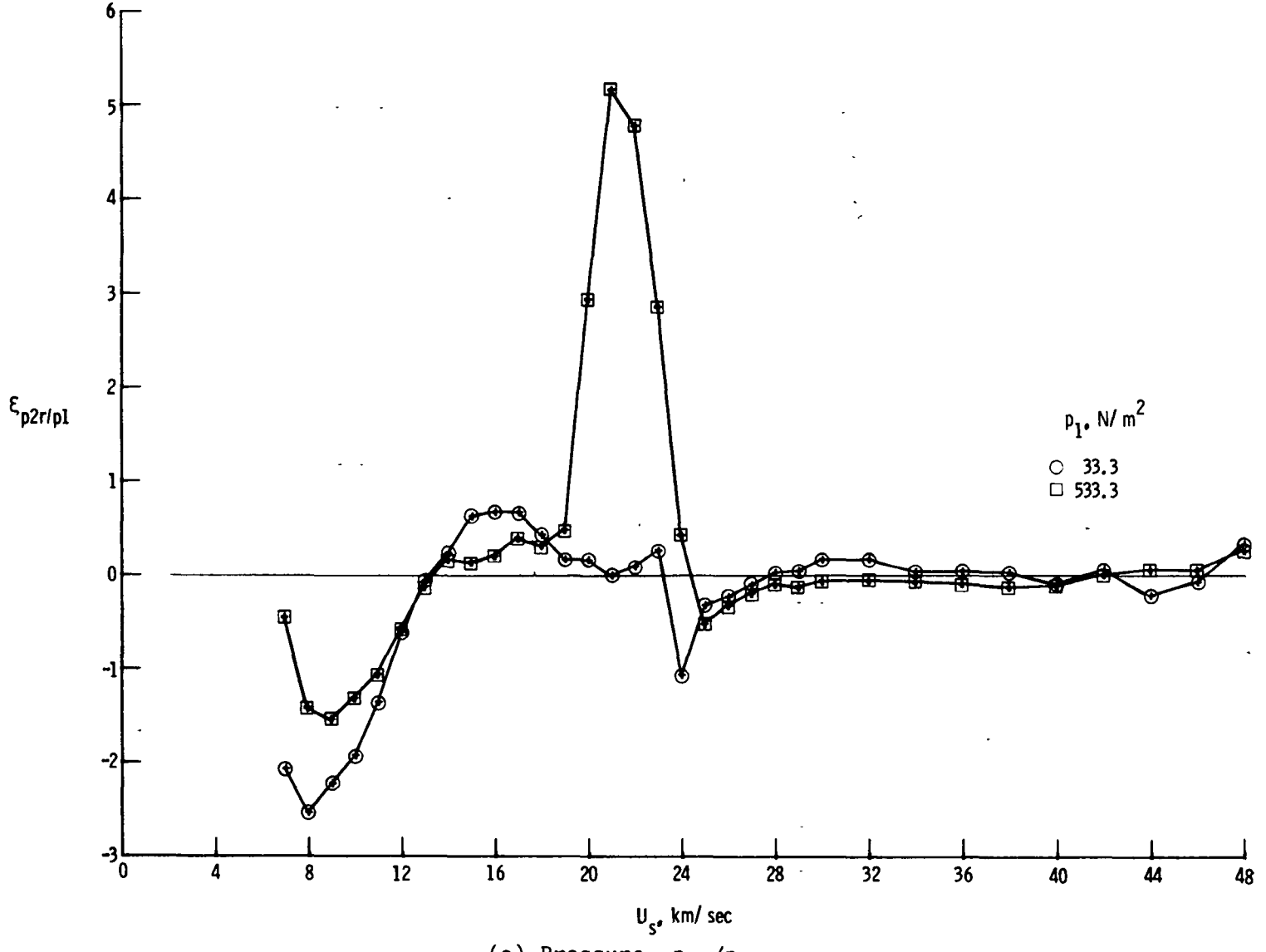
(d) Enthalpy h_2/h_1.

Figure 7.- Continued.



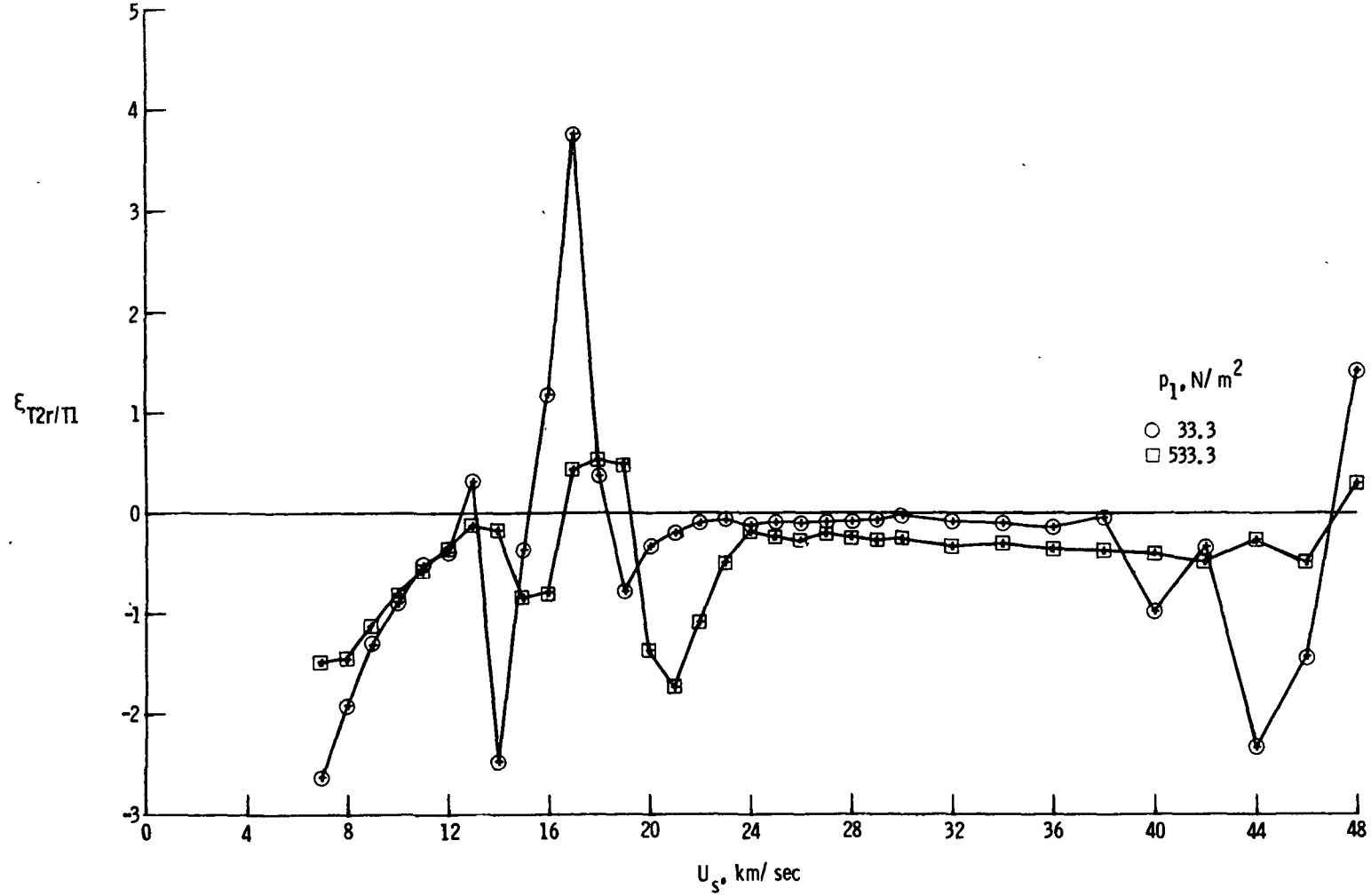
(e) Flow velocity U_2/a_1.

Figure 7.- Concluded.



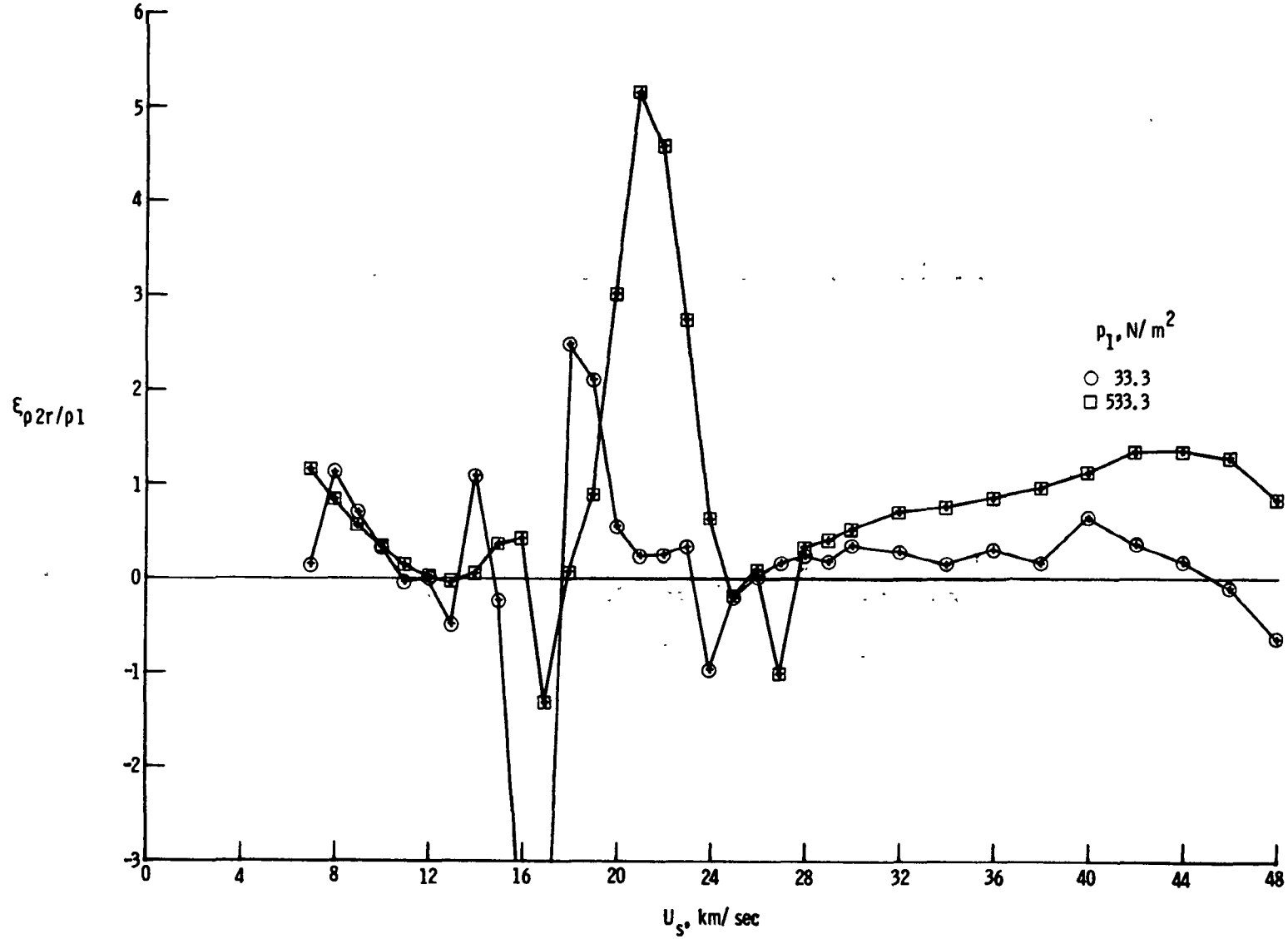
(a) Pressure p_{2r}/p_1.

Figure 8.- Comparison of thermodynamic properties for hydrogen in reflected shock region (2r) and reflected shock velocity between present procedure and the procedure described in reference 15.



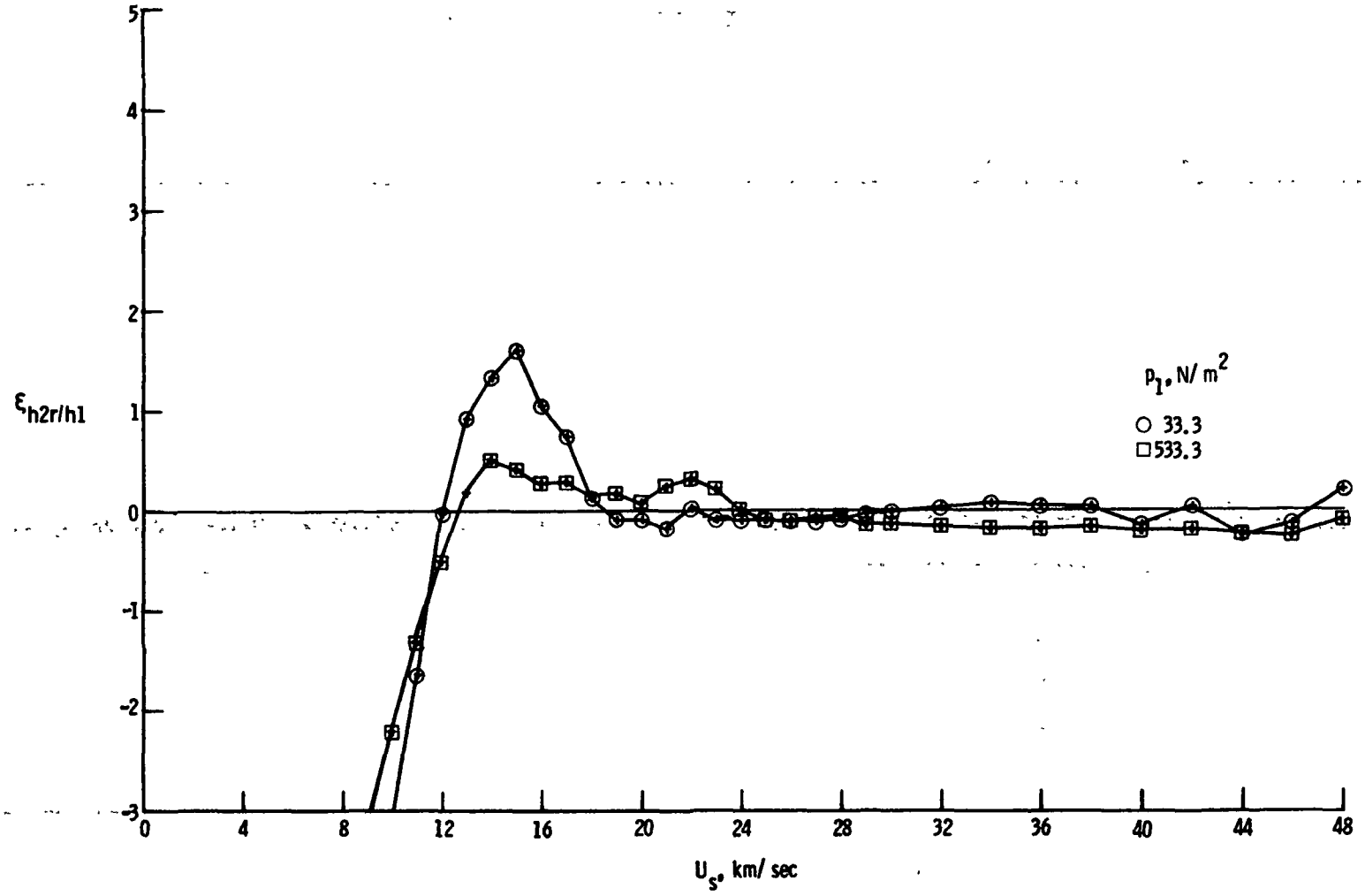
(b) Temperature T_{2r}/T_1.

Figure 8.- Continued.



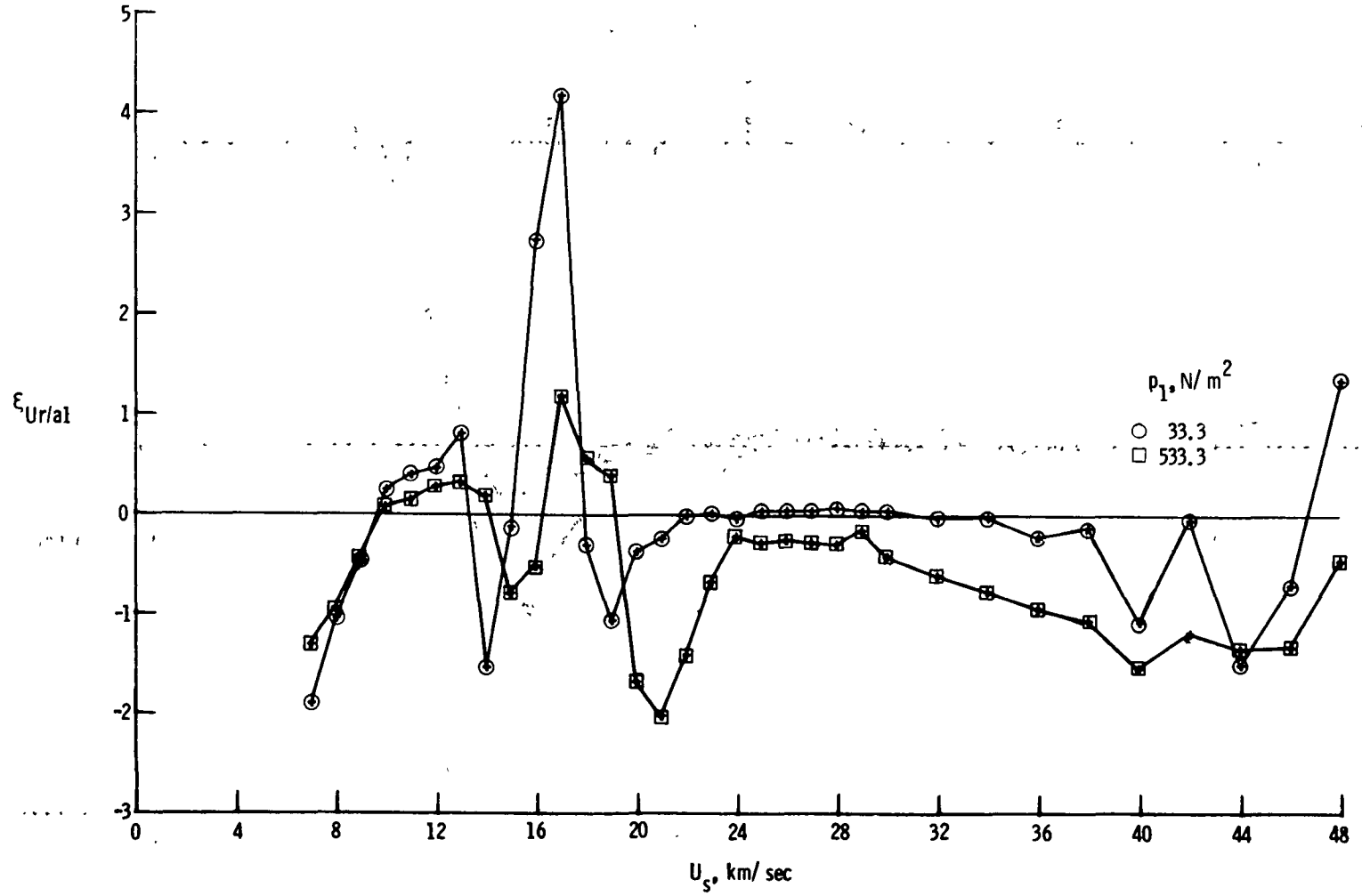
(c) Density ρ_{2r}/ρ_1.

Figure 8.- Continued.



(d) Enthalpy h_{2r}/h_1.

Figure 8.- Continued.

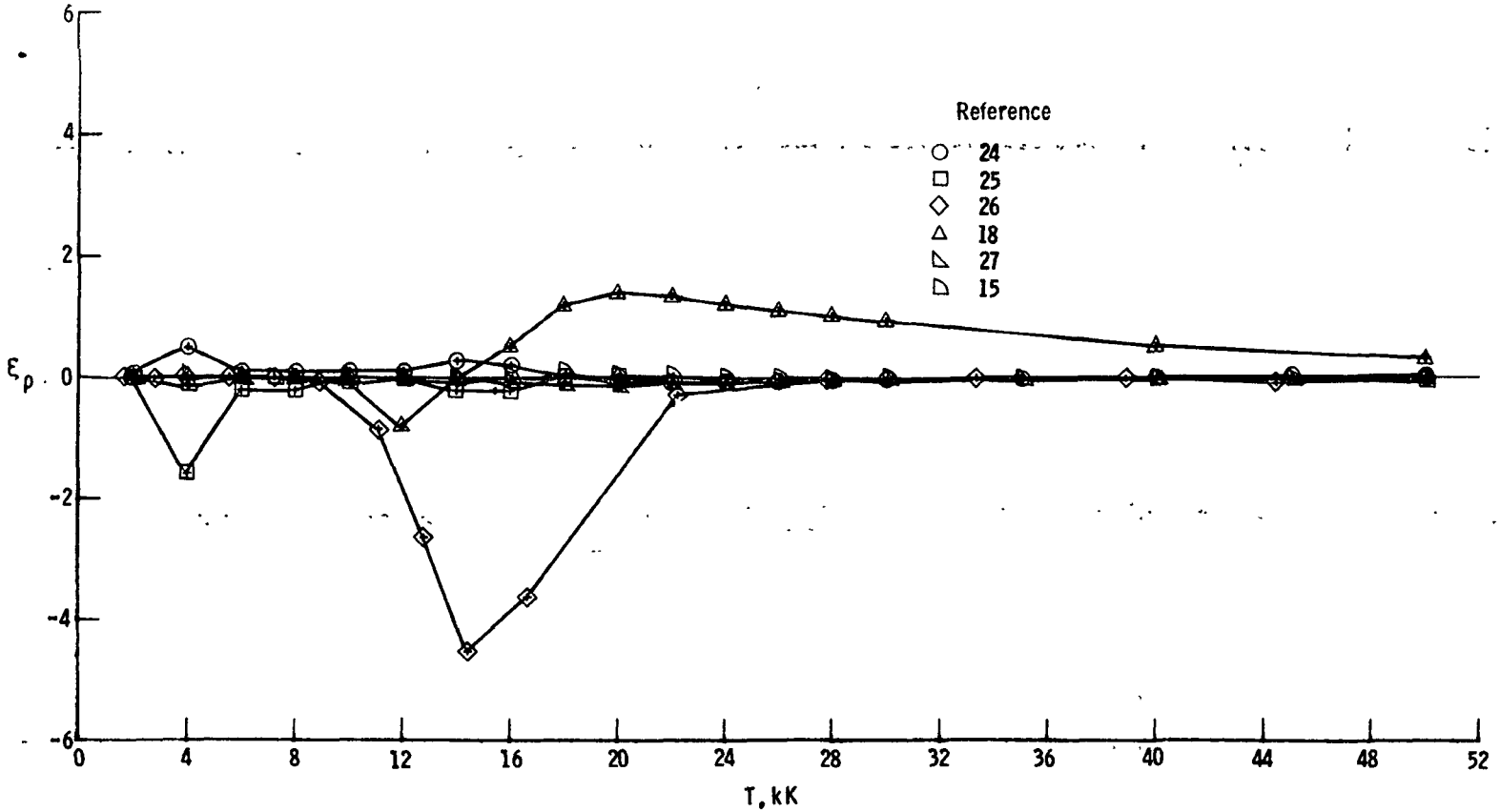


(e) Reflected shock velocity U_r/a_1.

Figure 8.- Concluded.

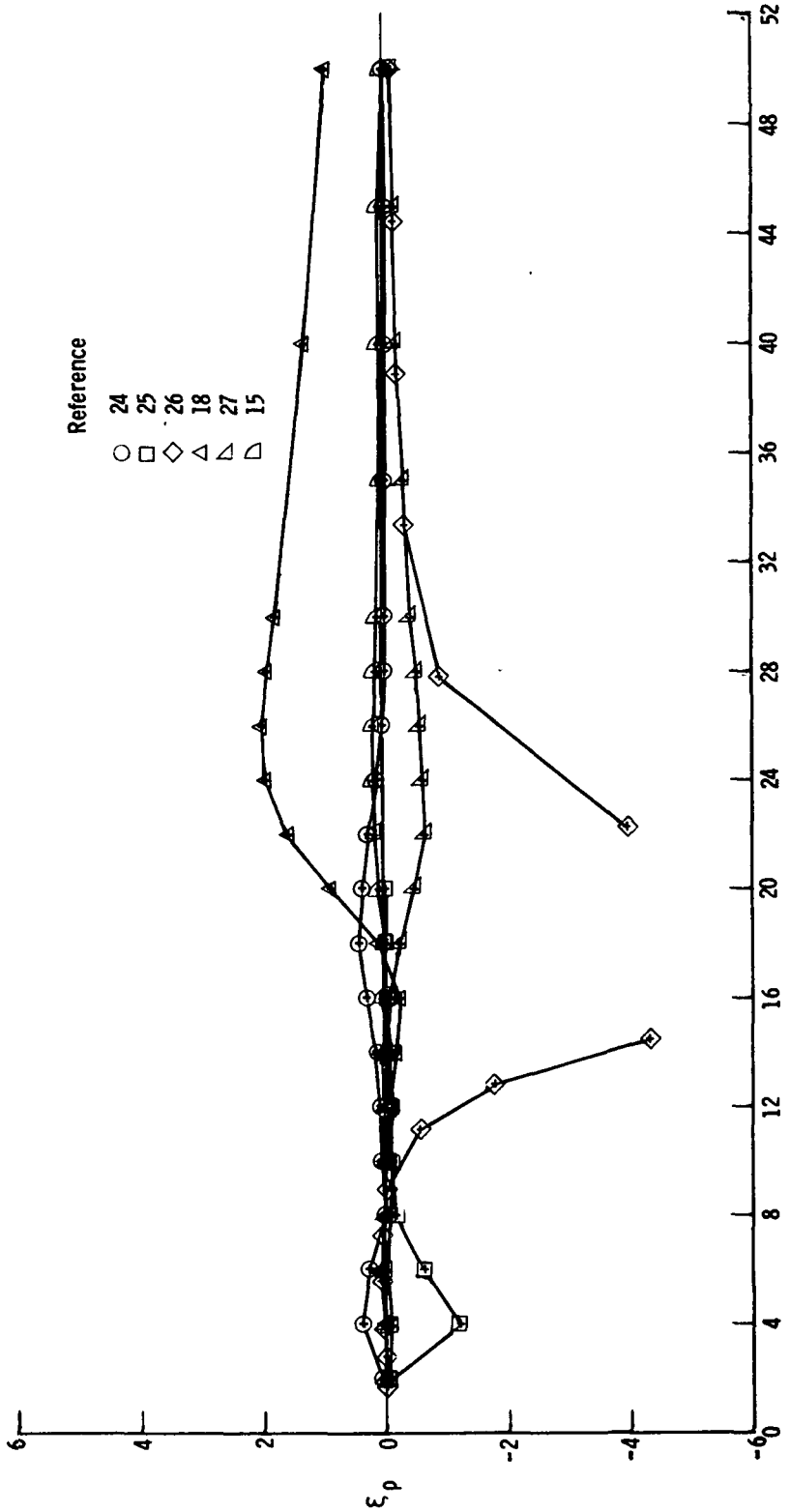
(a) $p/p_o = 0.1$.

Figure 9.- Comparison of density for equilibrium hydrogen from several sources to that calculated from the program of reference 10 for various values of pressure.



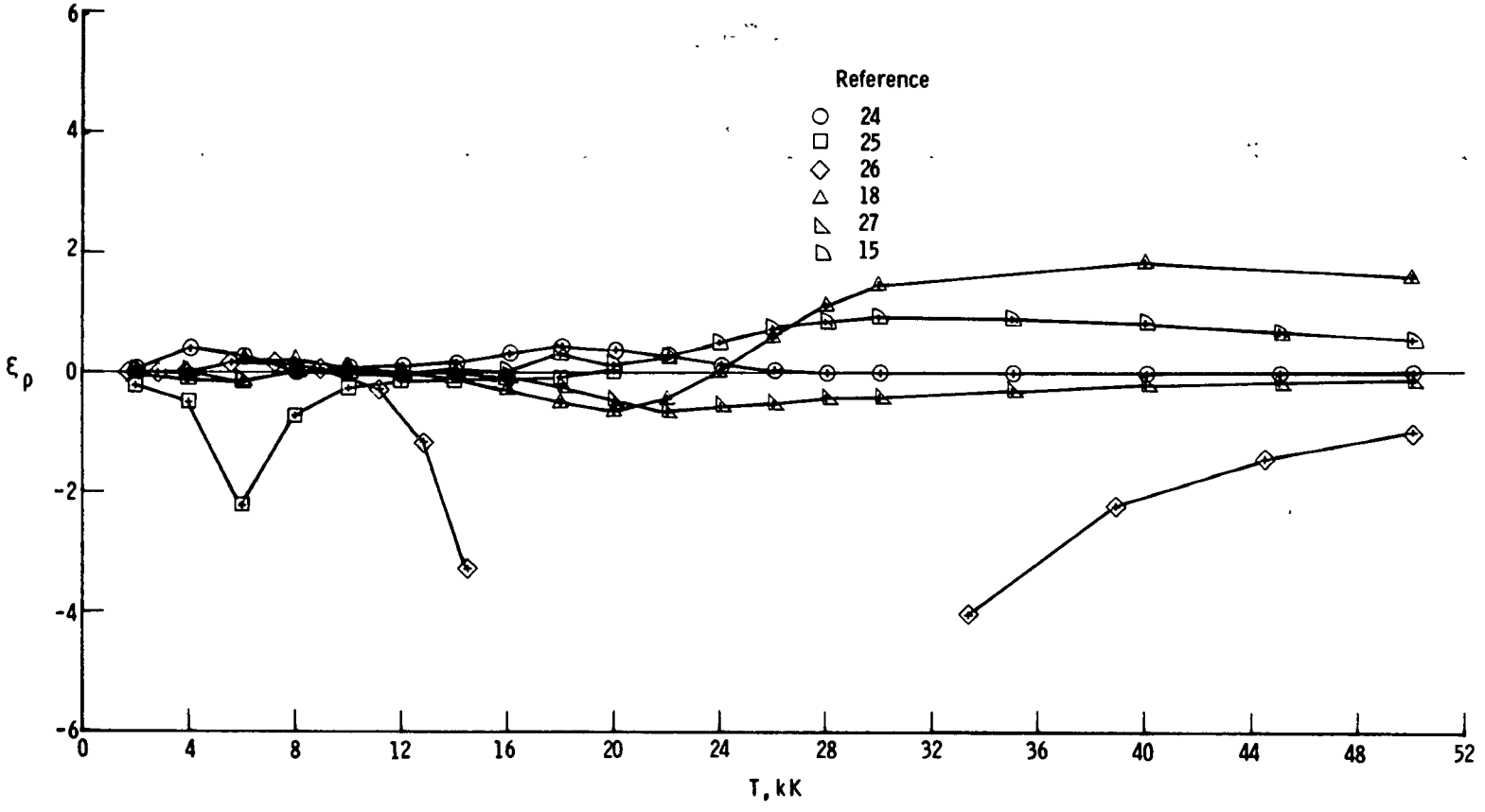
(b) $p/p_o = 1.$

Figure 9.- Continued.



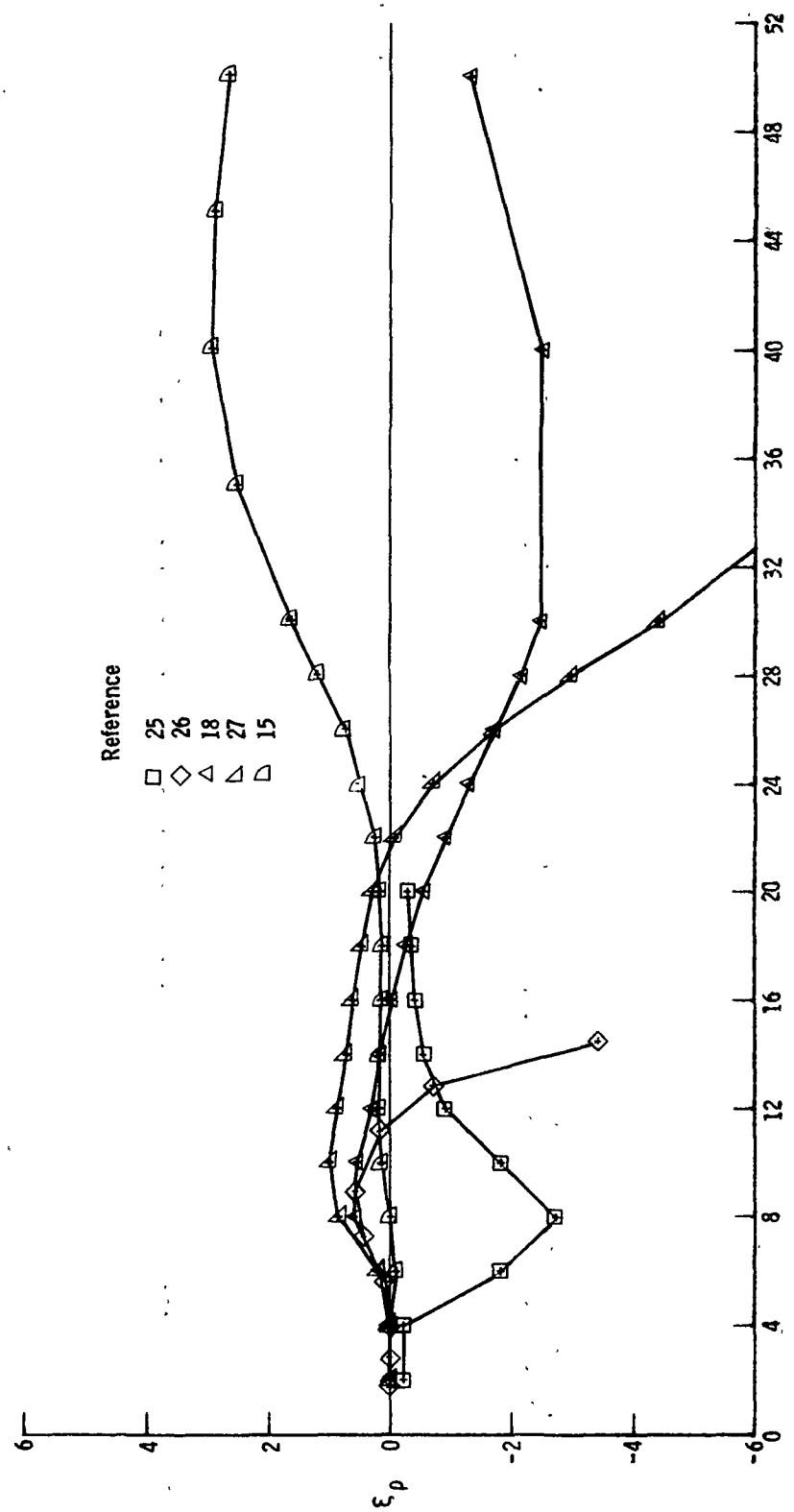
(c) $p/p_o = 10.$

Figure 9.- Continued.



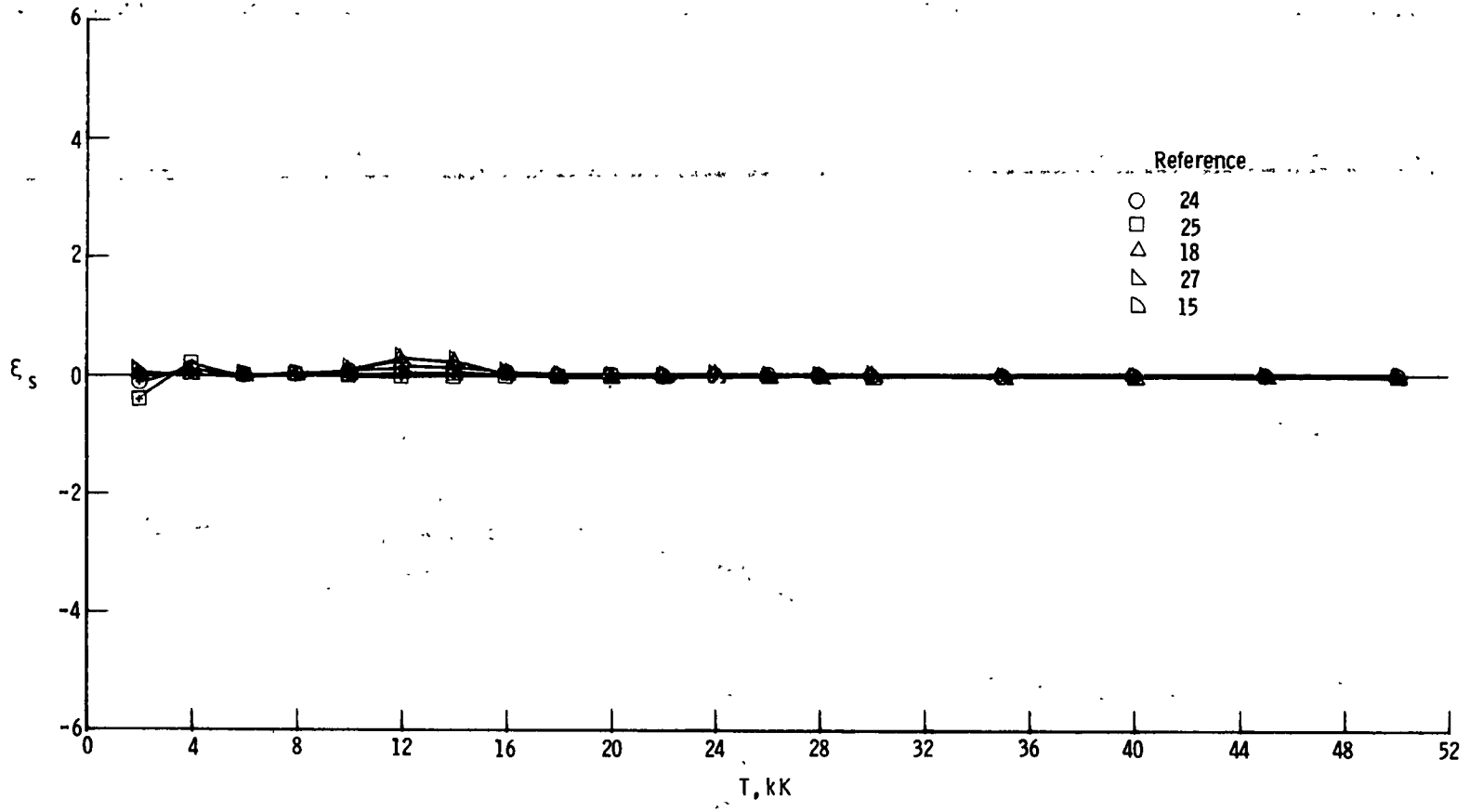
(d) $p/p_o = 100.$

Figure 9.- Continued.



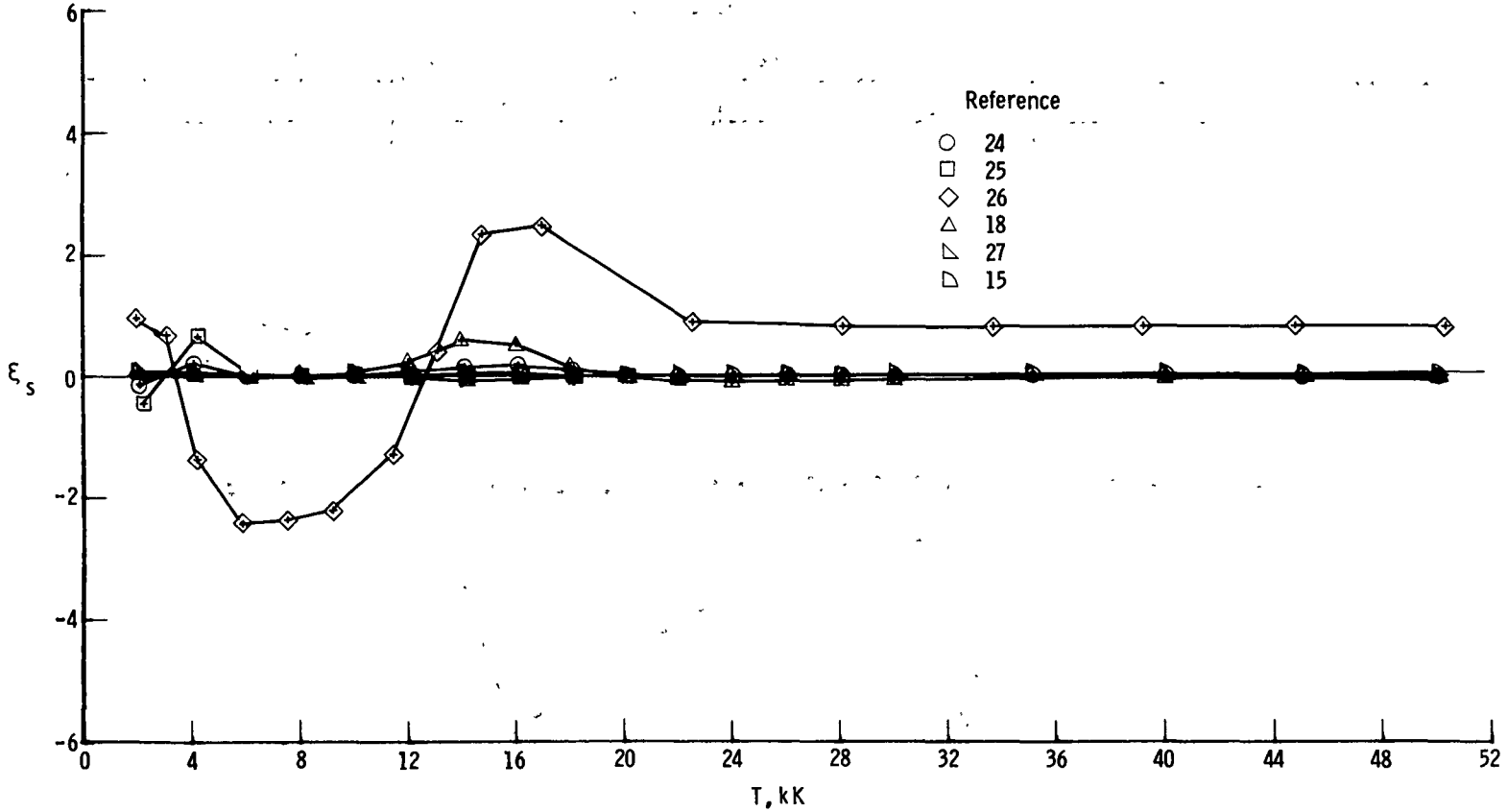
(e) p/p_o = 1000.

Figure 9.- Concluded.



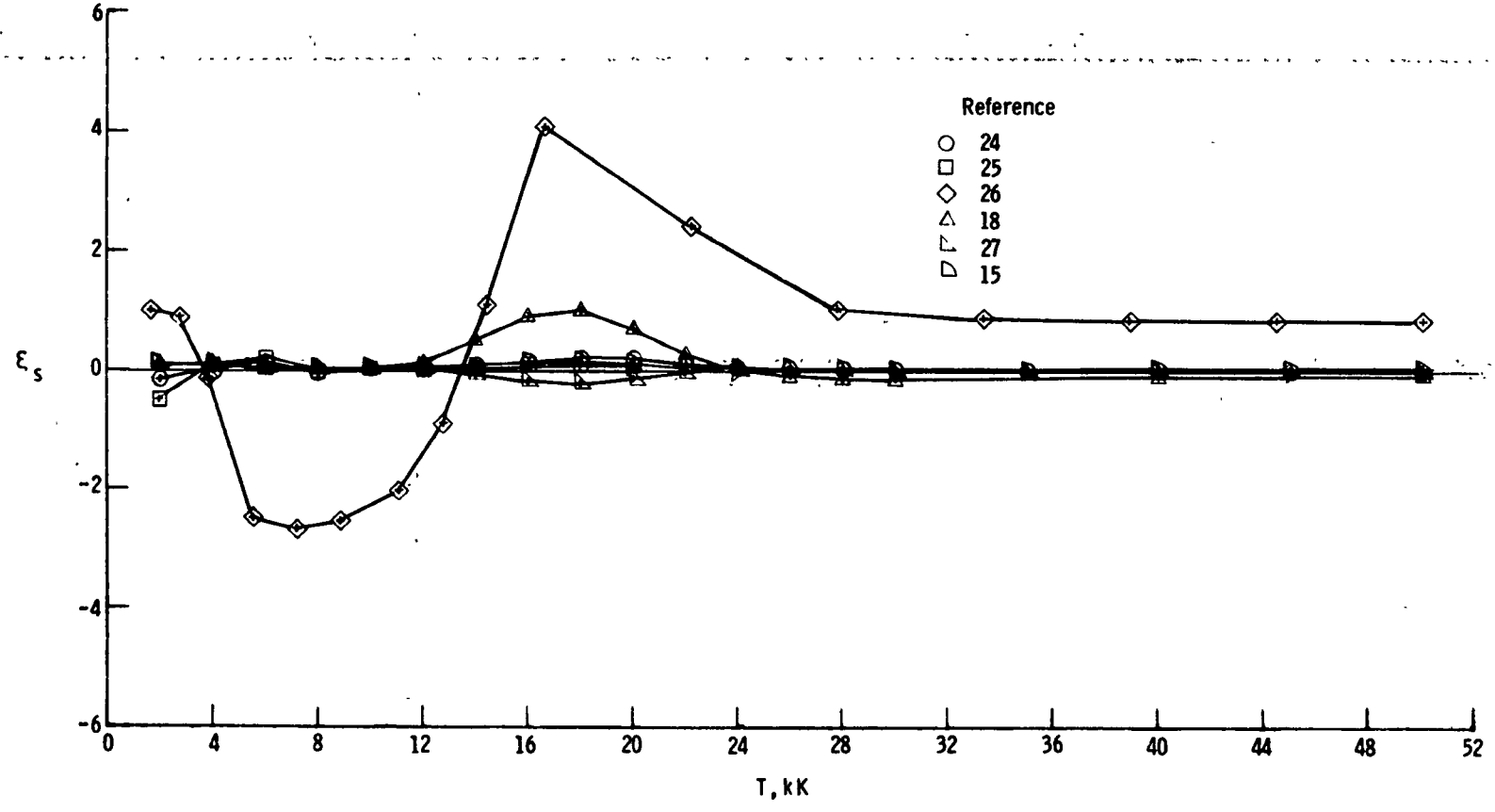
(a) $p/p_o = 0.1$.

Figure 10.- Comparison of entropy for equilibrium hydrogen from several sources to that calculated from the program of reference 10 for various values of pressure.



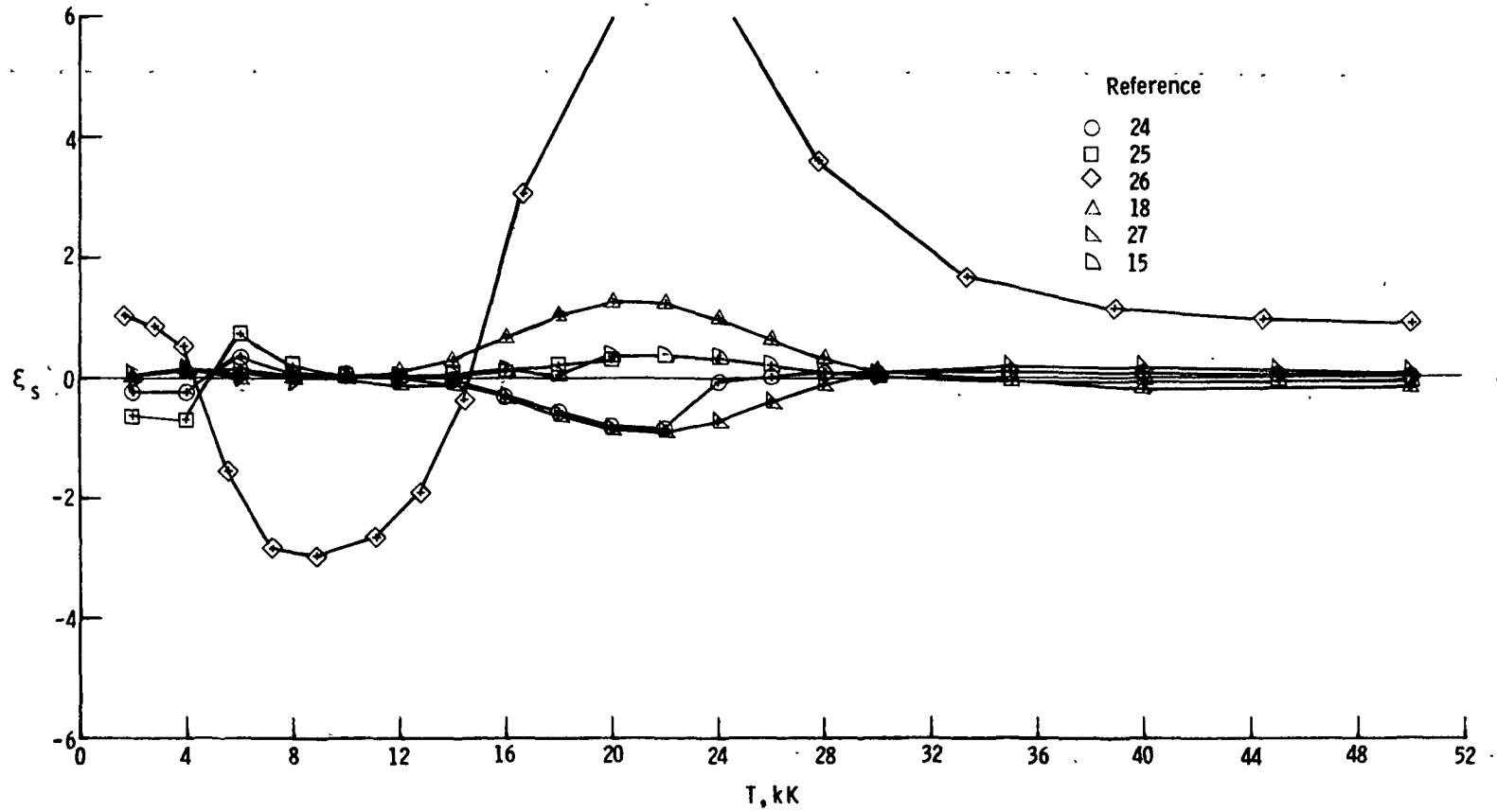
(b) $p/p_o = 1.$

Figure 10.- Continued.



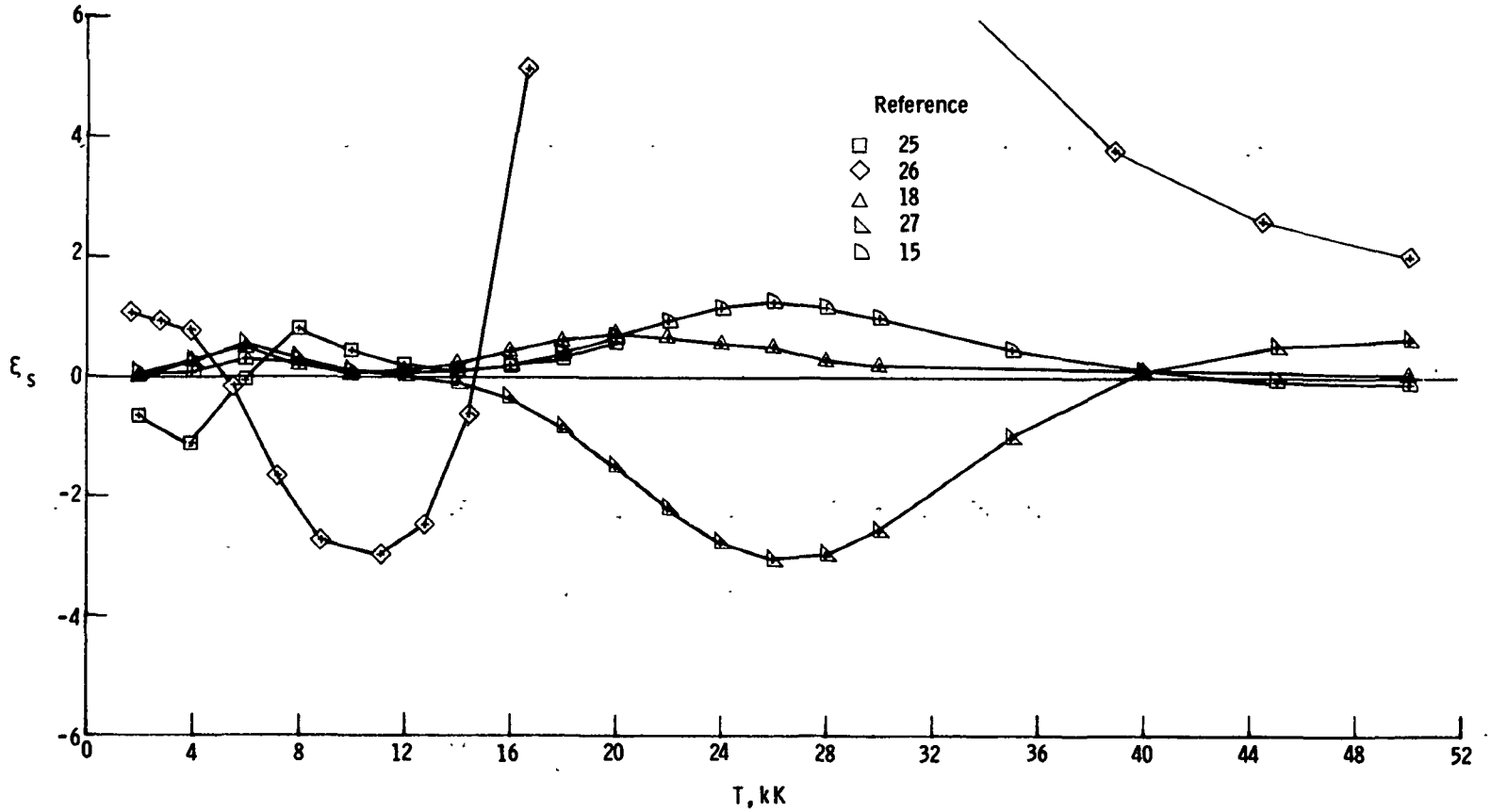
(c) p/p_o = 10.

Figure 10.- Continued.



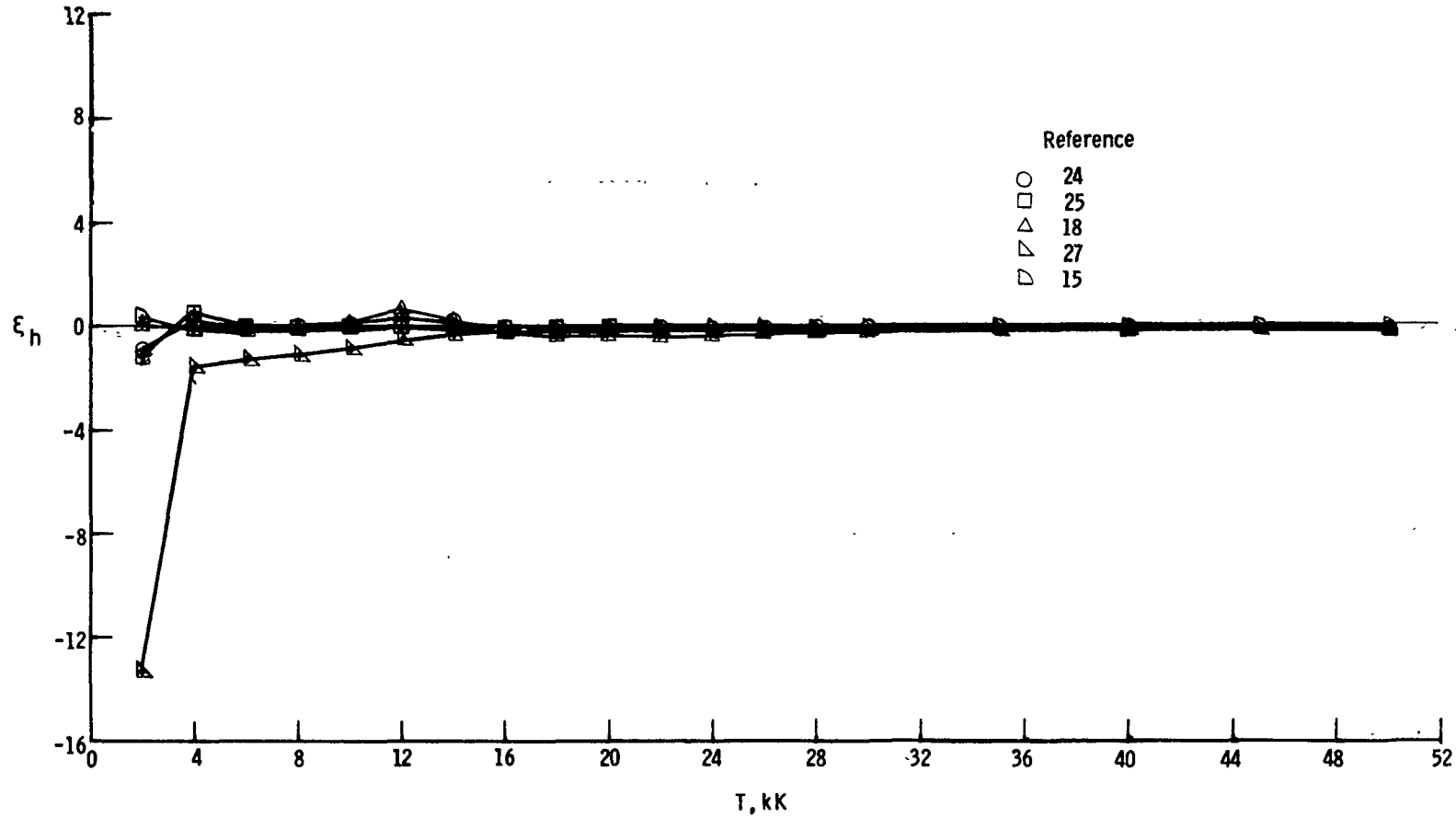
(d) p/p_o = 100.

Figure 10.- Continued.



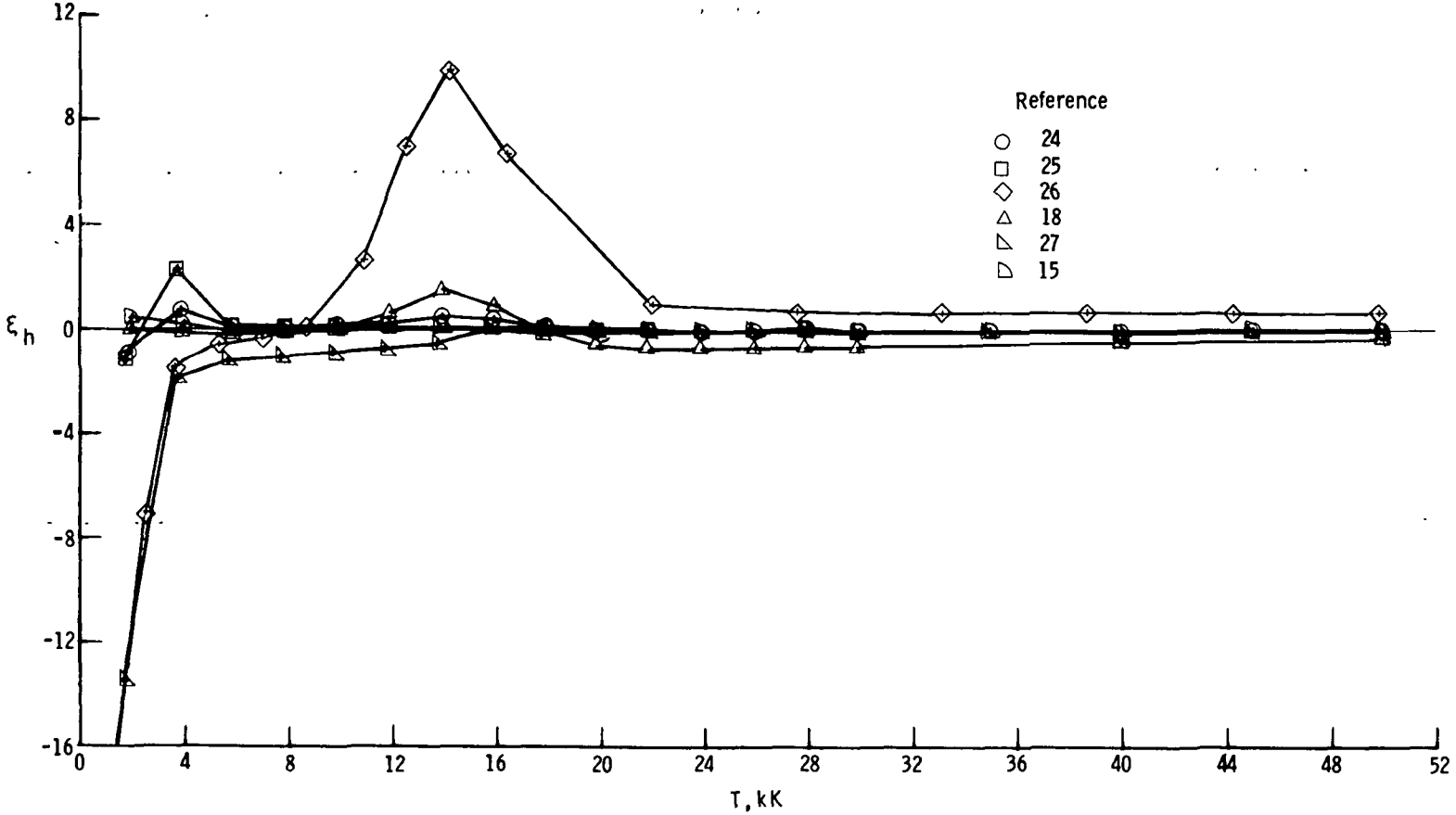
(e) p/p_o = 1000.

Figure 10.- Concluded.



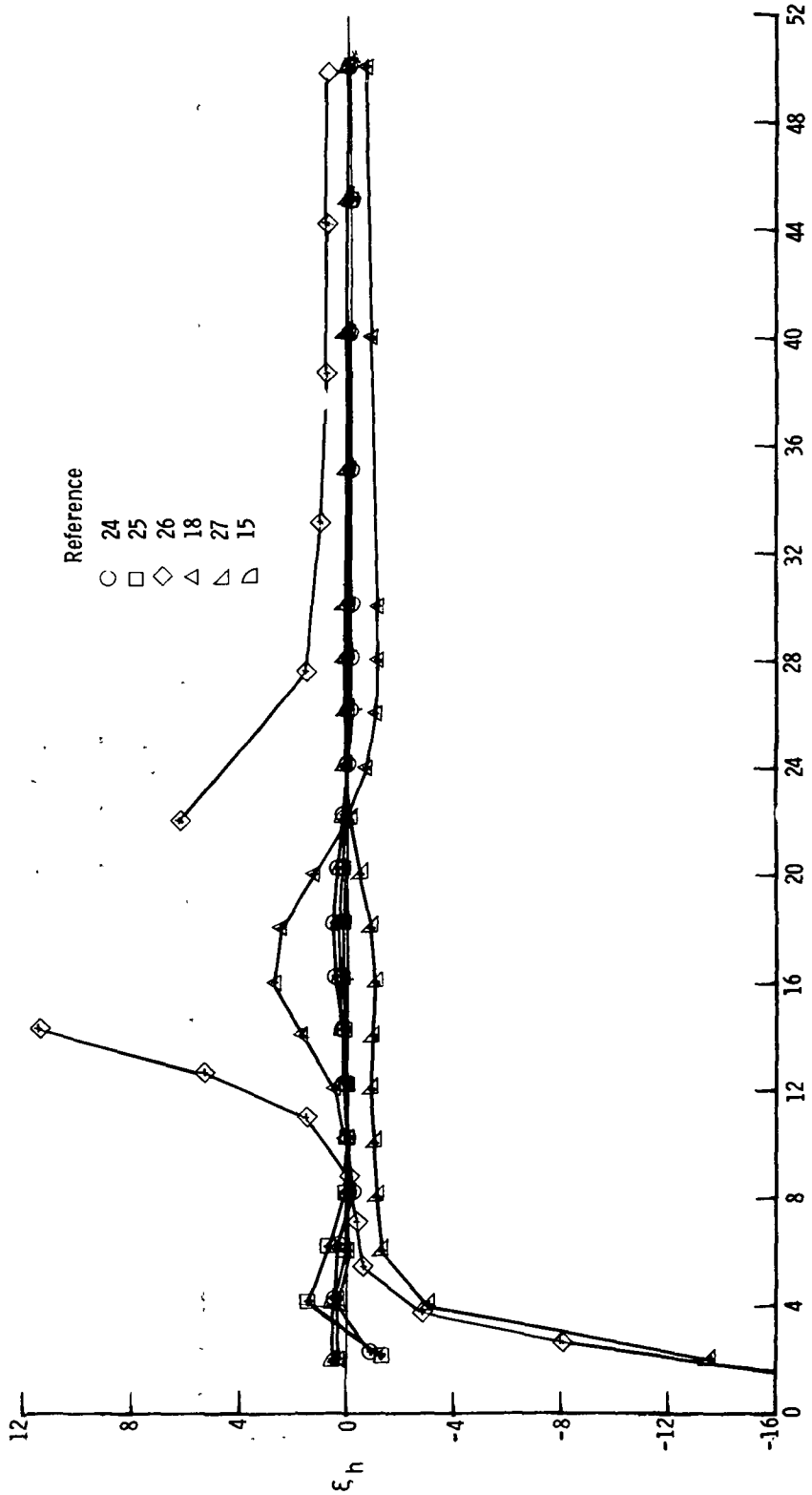
(a) $p/p_o = 0.1$.

Figure 11.- Comparison of enthalpy for equilibrium hydrogen from several sources to that calculated from the program of reference 10 for various values of pressure.



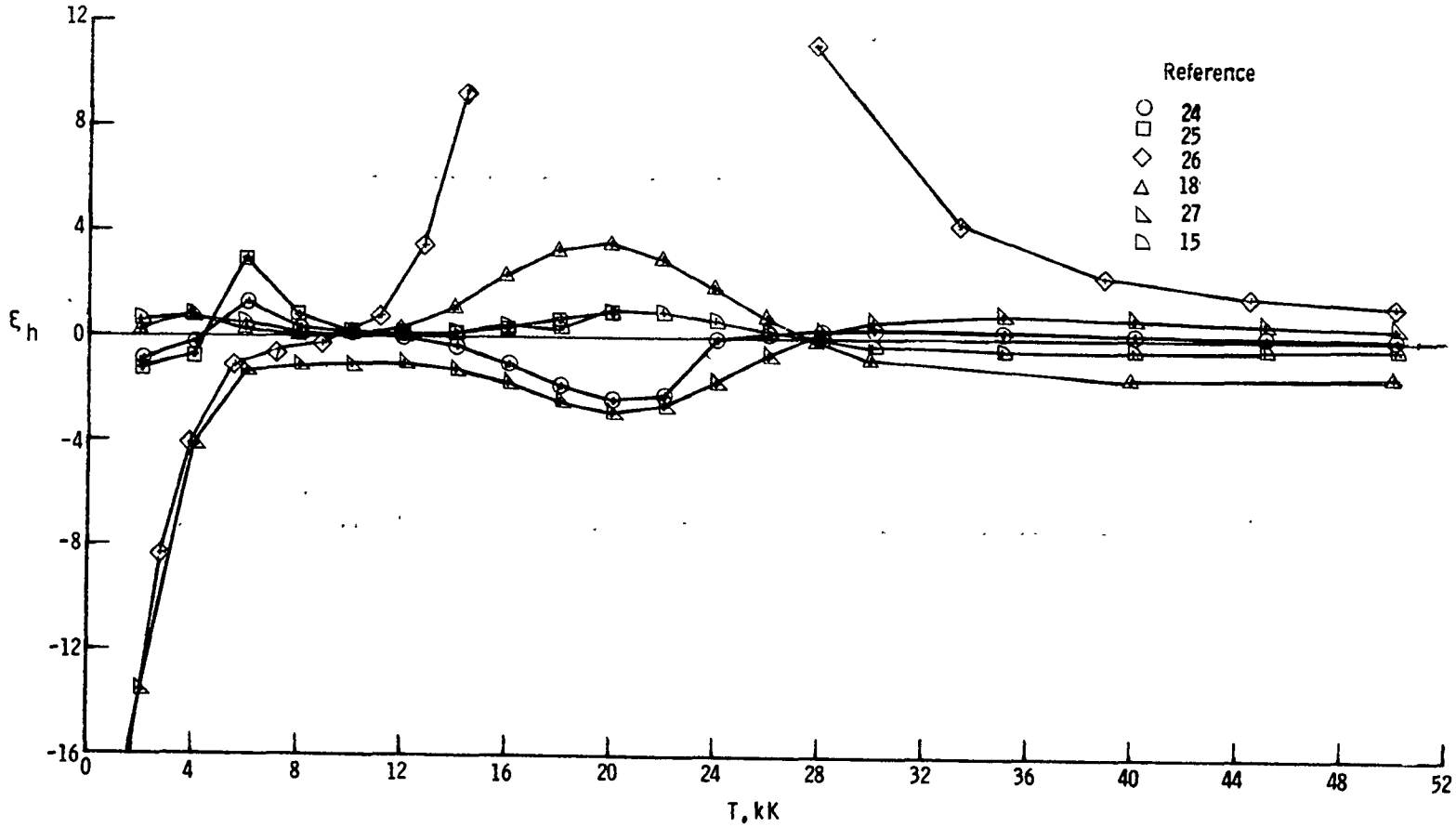
(b) $p/p_o = 1.$

Figure 11.- Continued.



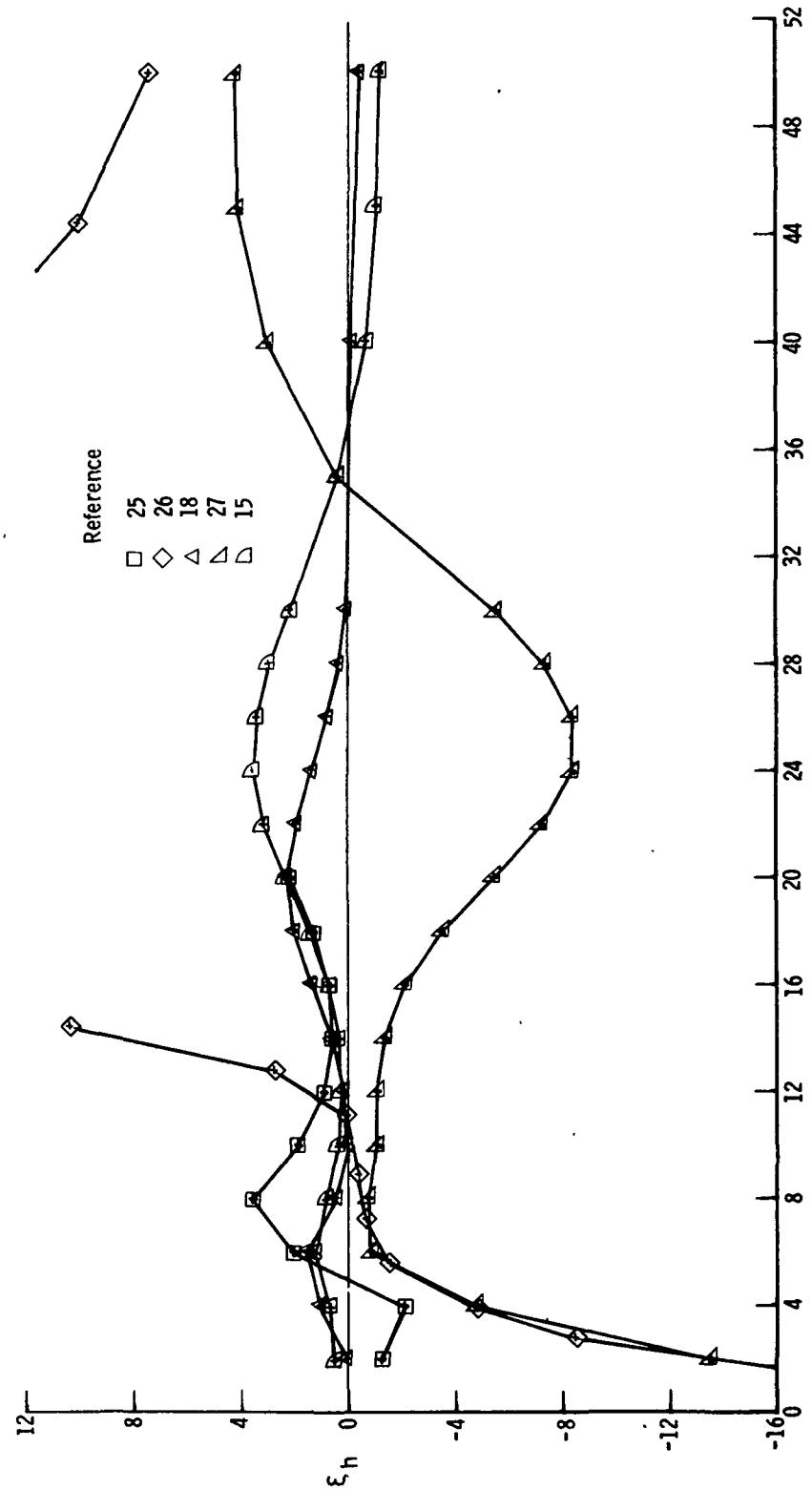
(c) $p/p_o = 10.$

Figure 11.- Continued.



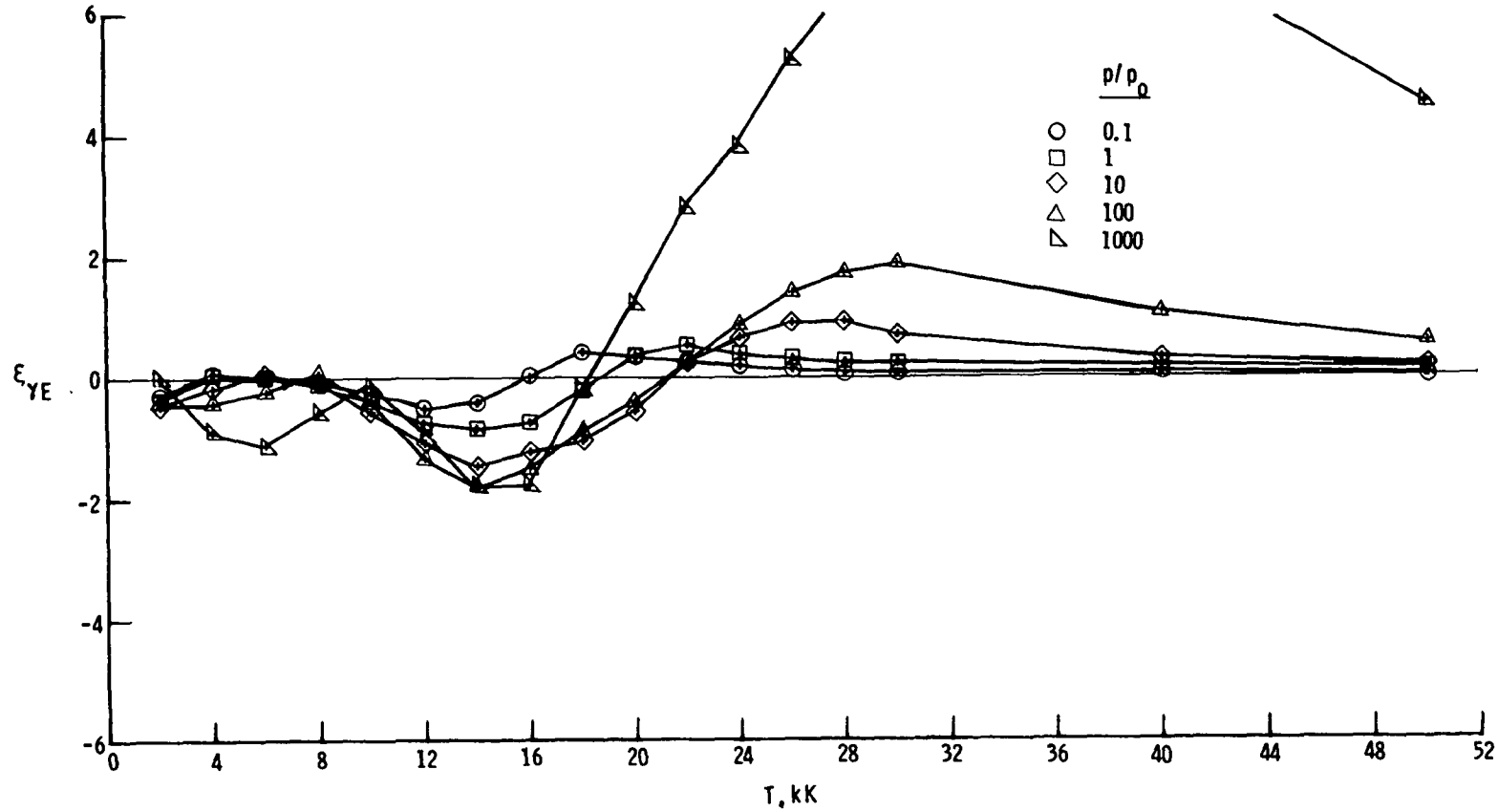
(d) p/p_o = 100.

Figure 11.- Continued.



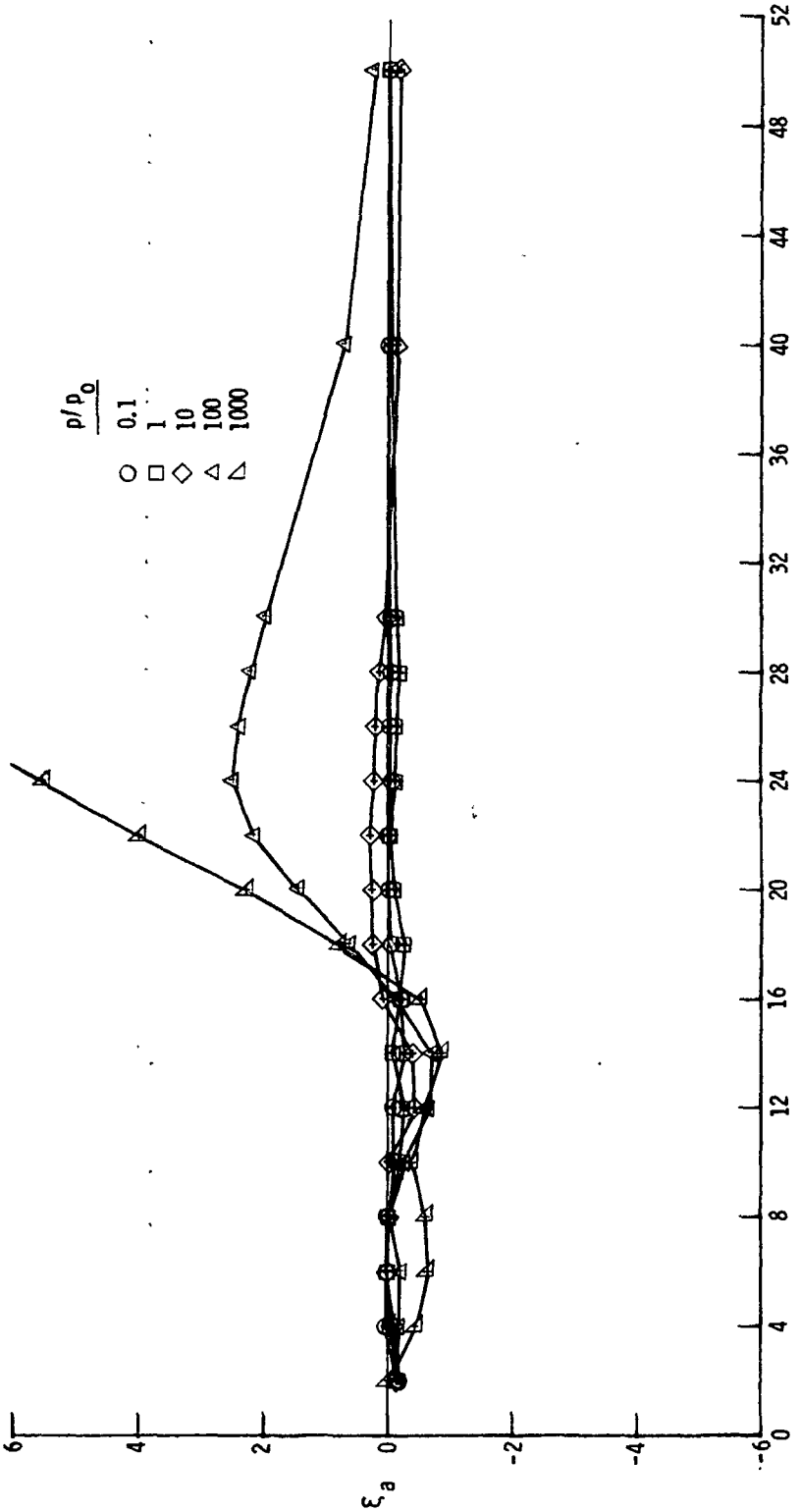
(e) p/p_o = 1000.

Figure 11.- Concluded.



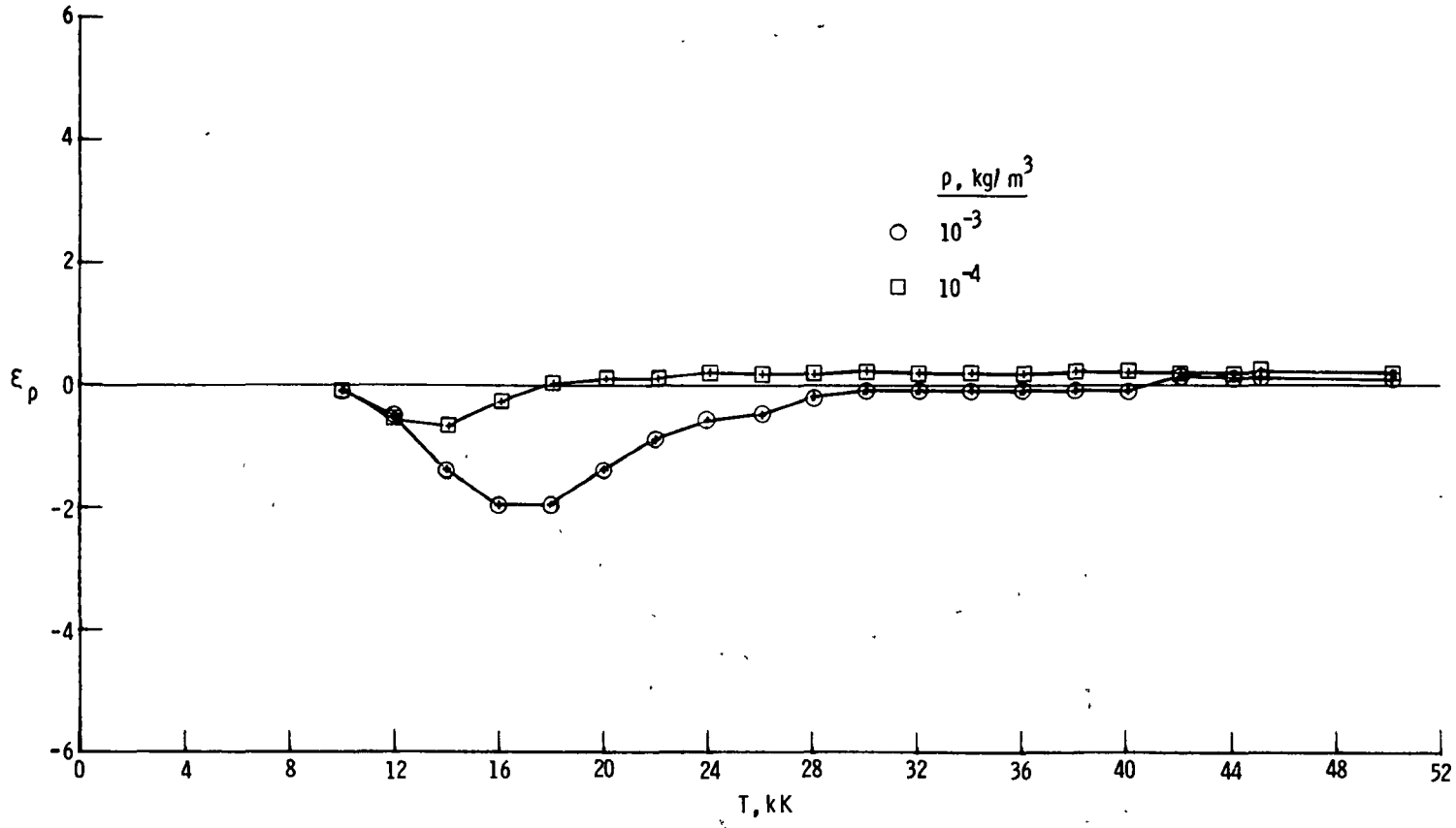
(a) Isentropic exponent.

Figure 12.- Comparison of second-order thermodynamic properties (isentropic exponent and speed of sound) for equilibrium hydrogen between method of reference 18 and program of reference 10 for various values of pressure.



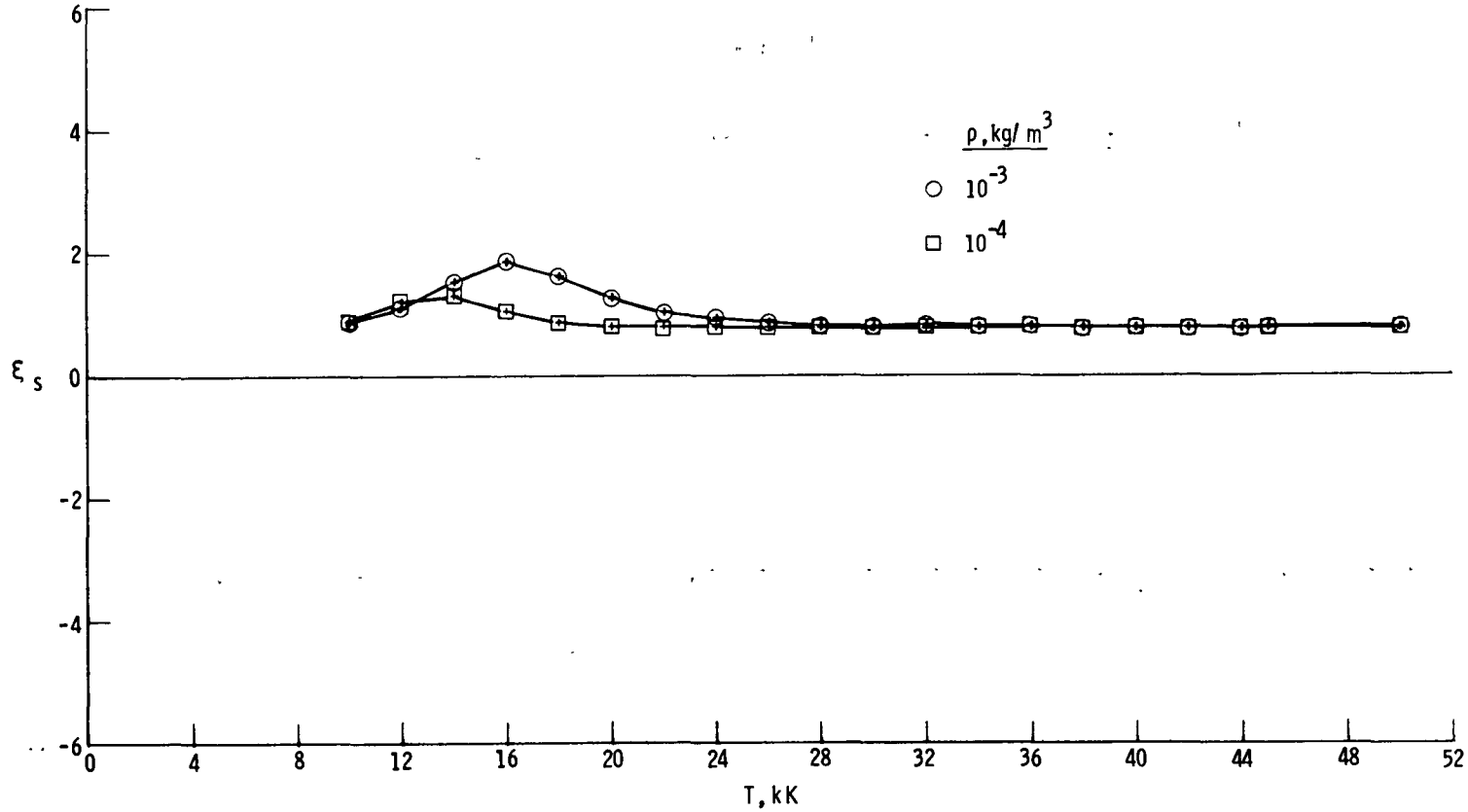
(b) Speed of sound.

Figure 12.- Concluded.



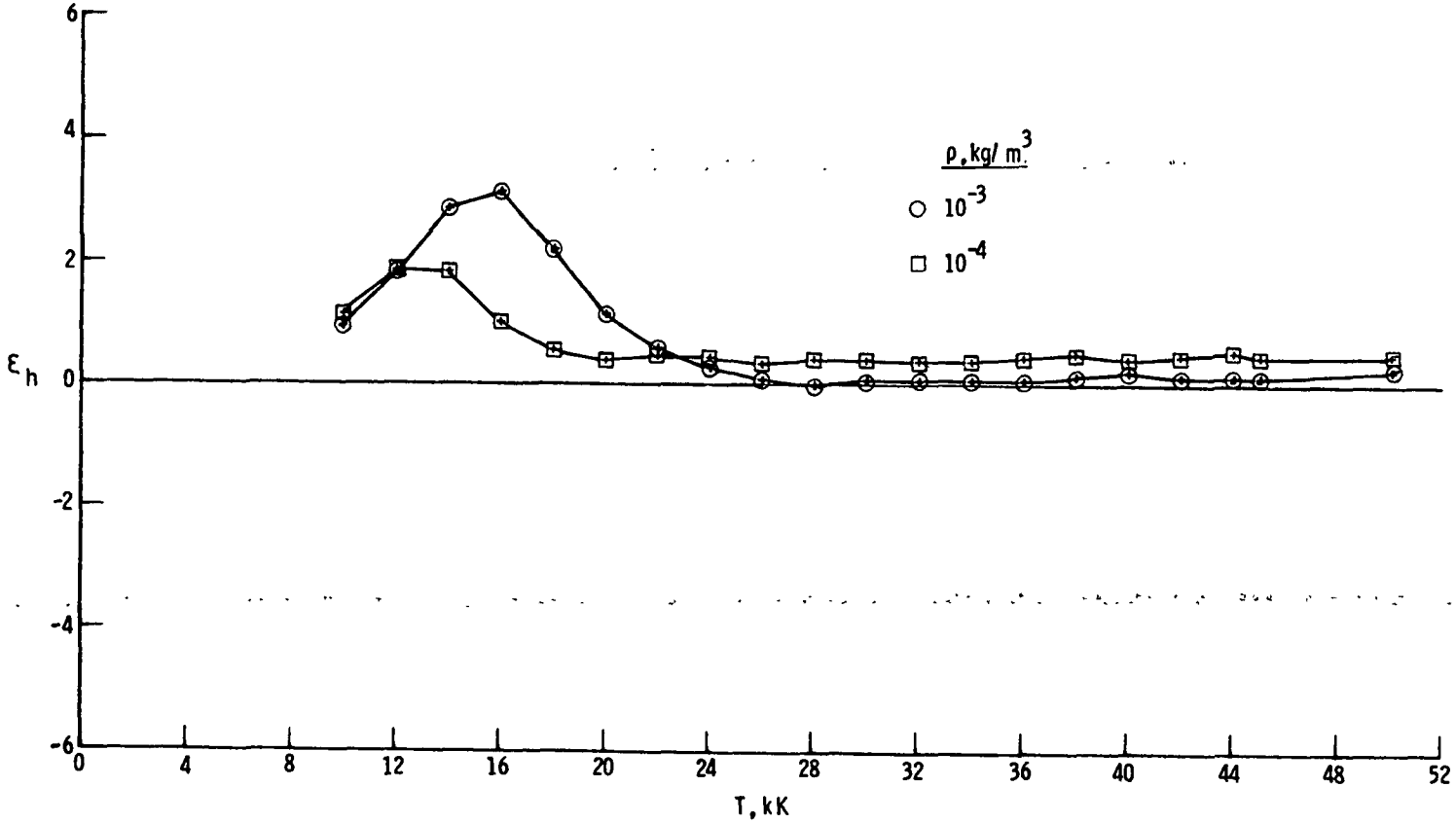
(a) Density.

Figure 13.- Comparison of various equilibrium thermodynamic properties for hydrogen between references 10 and 29 for two values of density.



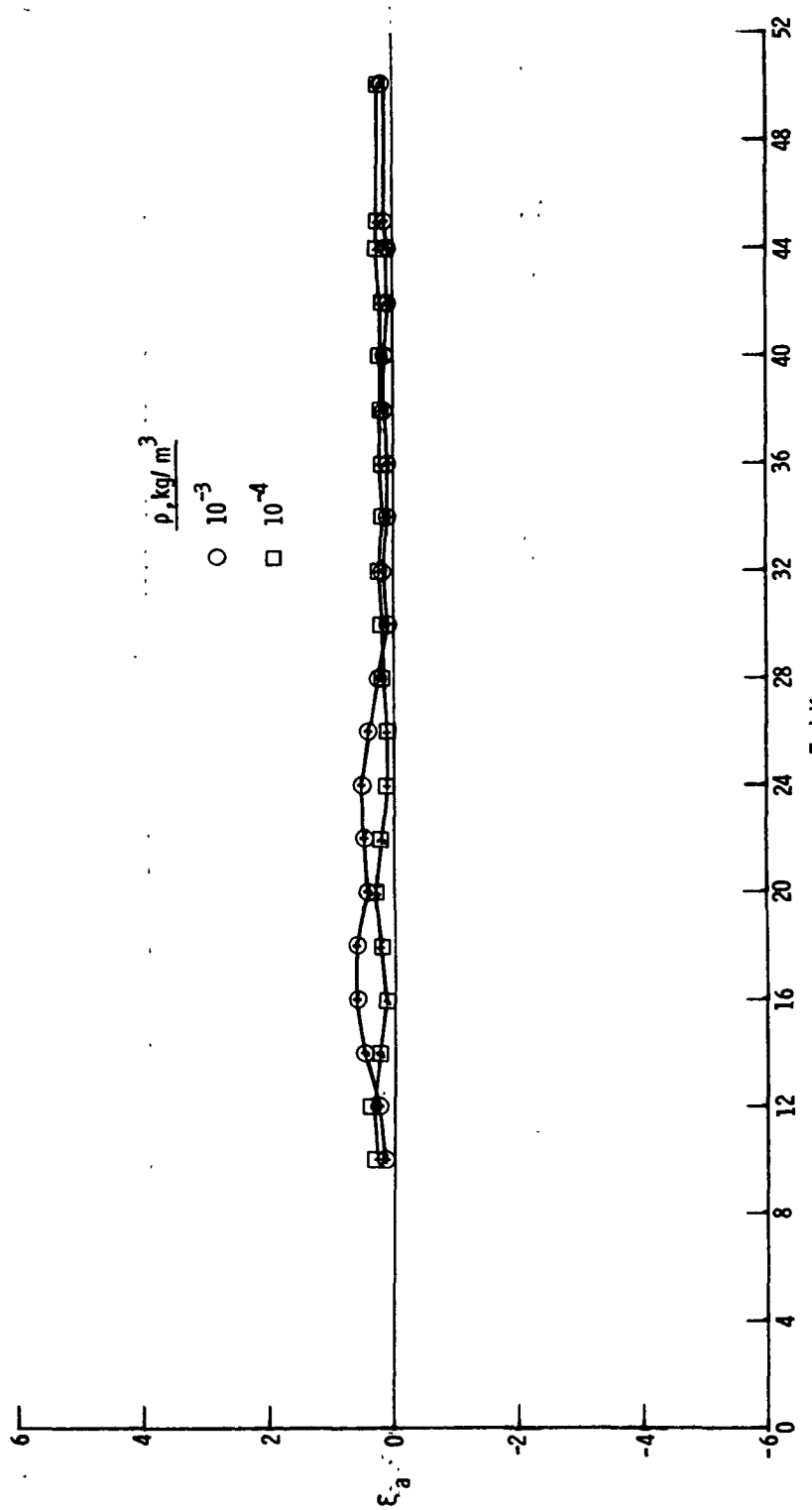
(b) Entropy.

Figure 13.- Continued.



(c) Enthalpy.

Figure 13.- Continued.



(d) Speed of sound.

Figure 13.- Concluded.

*U.S. GOVERNMENT PRINTING OFFICE: 1977 - 735-004/30

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

SPECIAL FOURTH-CLASS RATE BOOK

POSTAGE AND FEES PAID
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
451

U.S.MAIL

POSTMASTER: If Undeliverable (Section 158 Postal Manual) Do Not Return

"The aeronautical and space activities of the United States shall be conducted so as to contribute . . . to the expansion of human knowledge of phenomena in the atmosphere and space. The Administration shall provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof."

—NATIONAL AERONAUTICS AND SPACE ACT OF 1958

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

TECHNICAL REPORTS: Scientific and technical information considered important, complete, and a lasting contribution to existing knowledge.

TECHNICAL NOTES: Information less broad in scope but nevertheless of importance as a contribution to existing knowledge.

TECHNICAL MEMORANDUMS: Information receiving limited distribution because of preliminary data, security classification, or other reasons. Also includes conference proceedings with either limited or unlimited distribution.

CONTRACTOR REPORTS: Scientific and technical information generated under a NASA contract or grant and considered an important contribution to existing knowledge.

TECHNICAL TRANSLATIONS: Information published in a foreign language considered to merit NASA distribution in English.

SPECIAL PUBLICATIONS: Information derived from or of value to NASA activities. Publications include final reports of major projects, monographs, data compilations, handbooks, sourcebooks, and special bibliographies.

TECHNOLOGY UTILIZATION PUBLICATIONS: Information on technology used by NASA that may be of particular interest in commercial and other non-aerospace applications. Publications include Tech Briefs, Technology Utilization Reports and Technology Surveys.

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D.C. 20546